PLANNING MANUAL
ALU

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ALU

Planning manual:
Hardware system for aluminium windows.

Window systems
Door systems
Comfort systems

Directives of the Trade Organisation for Locks and Fittings (Gütegemeinschaft Schlösser und Beschläge e. V.)

The directives of the Trade Organisation for Locks and Fittings provide comprehensive information on the correct operation and maintenance of hardware for windows and portal doors. Compliance with these guidelines is mandatory.

You can find the latest versions of the directives, in a range of languages, at:
http://www.beschlagindustrie.de/ggsb/richtlinien.asp

TBDK – Attachment of supporting fitting components for turn-only and tilt&turn fittings
with definitions for turn-only and tilt&turn fittings and their possible installation positions

VHBH – Hardware for windows and balcony doors
Guidelines/advice on the product and on liability

VHBE – Hardware for windows and balcony doors
Guidelines/advice for end-users

FPKF – Restrictor and cleaning stays for Tilt-Only sashes and Tilt-Only fanlights
Use of restrictor and cleaning stays

FBDF – Casement stoppers for variable rotational position of window leafs
Casement stoppers that are controlled via the central locking system - definitions and tests

Further relevant documents

You can find further relevant documents, for example structural design charts, assembly instructions, profile spec sheets, individual component sheets, and maintenance, operating and care instructions, on our documentation pages:
http://downloads.siegenia.com/

Feedback on documentation

We welcome your comments and suggestions on how to improve our documentation. Please e-mail your comments to:
dokumentation@siegenia.com.

Basic safety notes

Intended use

The hardware described in this document is intended for installation in aluminium window frames by a specialist window fabricator in accordance with these instructions. The windows must only be installed vertically.
The specialist window fabricator must determine the suitability of the hardware for its intended use by means of the information in these instructions and additional listed documents.

Overloading

Bearing components can break as a result of overloading. This can lead to the window sash falling out and causing serious injuries. If overloading of the bearing components is anticipated due to particular circumstances (ie: use in schools, nurseries etc), this should be prevented by taking appropriate measures, eg: by using turning locks, or by opting for the Tilt before Turn (TBT) opening type.

- In case of doubt, always contact your nearest SIEGENIA Sales Consultant.

Do not mix hardware components

The hardware components are compatible with each other technically. The function of the hardware components is not guaranteed if hardware components from different systems or manufacturers are mixed and used on a window. Hardware components can break and cause accidents.

- Only use the hardware components listed in these instructions together on a window.

Only treat window surfaces before fitting the hardware

- Any surface treatment applied to the window surfaces after the assembly of the hardware components may limit their functionality.

Avoid damage caused by corrosion and debris

Corrosive materials, dirt and moisture may damage hardware components and cause hazards.

- Do **not** use acetic or acid-releasing sealants.
- Do **not** use the hardware components in environments where the air contains aggressive or corrosive components.
- Keep all rebates free of debris and dirt, especially cement and plaster residue.
- Keep the hardware dry.

Clean hardware gently

- Only clean the hardware with a soft cloth and mild, diluted pH-neutral cleaning agents.
- The hardware must not be exposed to abrasive cleaners or aggressive, acidic cleaning agents.
- Leave the hardware to dry after the cleaning process.

Pass on information to the user of the window

- Attach the user information order no. 05083 to the installed window or door element so that it can be seen easily.
- Provide the user with the following documents:
  - Maintenance and cleaning instructions, order no. 15750/19748
  - Operating Instructions, order no. 05766

Exclusion of liability

- We assume no liability for loss of function and damage to the fittings (as well as the windows and French windows that are equipped with them) resulting from inadequate tendering, failure to follow these installation instructions or from force being applied to the fittings (e.g. through improper use).

Application diagrams
Intended use

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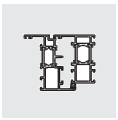
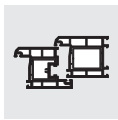
TITAN

Application diagrams:
Intended use.

Window systems
Door systems
Comfort systems





Function

Application diagrams show the maximum sash dimensions at a specific element weight for which a piece of hardware may be used. Application diagrams focus exclusively on the property of **durability** and may also provide information on the load-bearing capacity of the hardware when subjected to an additional load according to EN 14608 (Figure A.1).

Basic principles

Application diagrams are produced on the basis of the ift guideline "Preparation of application diagrams for turn and tilt-turn hardware". The guideline provides more information on using application diagrams and can be downloaded at **www.anwendungsdiagramme.de.**

Abbreviations and icons

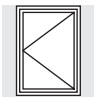
The following abbreviations and icons are used in this document and in all other application diagrams.

Abbreviations

CG	Reduction in glass size [mm]	**GG**	Specific element weight [kg/m2]
FB	Sash width [mm]	**FFB**	Sash rebate width [mm]
FFH	Sash rebate height [mm]	**FFH AB**	Sash rebate height up to the start of the arched head [mm]
FFH BS	Sash rebate height on the hinge side [mm]	**FH**	Sash height [mm]
FH AB	Sash height up to the start of the arched head [mm]	**FH BS**	Sash height on the hinge side [mm]
PG	Profile weight [kg/m]	**$Q_{B/H}$**	Max. width-to-height ratio (= FFB/FFH)

Icons


Tilt-turn window element


Turn window element


Tilt window element


Arched head window element

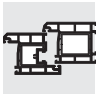

Rounded head window element


Angled window element


Triangular window element

Maximum permissible sash weight


Frame material: timber


Frame material: PVC


Frame material: light metal

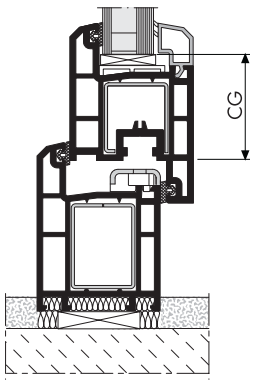
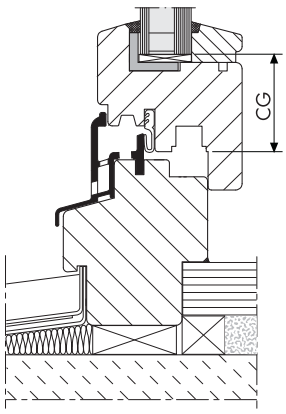
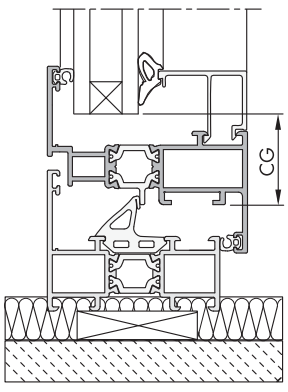
Requirements for use

Please note and comply with the following points at all times when using application diagrams and hardware:

- The application ranges for the hardware are derived from the size specifications in the assembly instructions/component catalogue **and** from those in the relevant application diagram. If the values differ, the data in the assembly instructions always applies, with the data in the component catalogue providing an alternative.
- If a combination of components with different load-bearing capacities is being used, the application diagram for the component with the lowest load-bearing capacity is always the one that applies.
- Guidelines/notes on the product and on liability (VHBH directive as well as the other applicable documents listed here in - directive can be downloaded at **www.beschlagindustrie.de/ggsb/richtlinien.asp**).
- Specifications from the profile manufacturers/system owners (e.g. for window systems with frames made of timber, PVC, light metal or combinations of materials) or DIN 68121 "Timber profiles for windows and French windows" – with particular regard to potential restrictions for the sash dimensions and sash weight.
- Guidelines and, where applicable, application diagrams in the product documentation supplied by the relevant glass or infill panel manufacturer.
- In accordance with the application diagrams, the hardware is to be used exclusively for window elements which are installed vertically in walls in permanent structures, unless otherwise indicated.
- The application diagrams apply exclusively to hardware used in window elements which open inwards, unless otherwise indicated.
- In accordance with the relevant application diagrams, the hardware is to be used exclusively for window elements in which the reduction in glass size (**CG**) is greater than or equal to the specified value, and the profile weight (**PG**) is less than or equal to the specified value.
- If the application range approved in the application diagrams is exceeded, there is a risk of damage to persons or property. If the application ranges are exceeded, our liability ceases to the extent permissible under law.

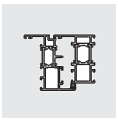
Reduction in glass size

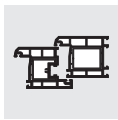
The reduction in glass size (**CG**) is to be determined for each material (timber, PVC, light metal or combinations of materials) as shown in the following drawings.

PVC	Timber	Aluminium
		

Profile weight

The profile weight is the specific weight per running metre of the sash profile (complete sash profile including all reinforcements, glazing beads, etc.).





Element weight

When calculating application diagrams, various values are taken into account for the specific element weight **(GG)** and illustrated in graphs in the application diagram.

The specific element weight (**GG**) covers all filling materials (which are suitable for window construction) – glazing with all kinds of structural parts as well as infill panels made of different materials and material combinations.

Determining the element weight

For glazing, the specific element weight (**GG**) for a glass mass of 2.5 kg/m2 mm, for example, is calculated as follows:

GG ≈ 2.5 kg/m2 mm x total glass thickness

Example

Glazing made of 2 glass panes, each with a thickness of 4 mm, total glass thickness = 8 mm

GG ≈ 2.5 kg/m2 mm x 8 mm

GG ≈ 20 kg/m2

Additional examples of specific element weights for different glass thicknesses are shown in the following table.

Mass of glass per mm glass thickness [kg/m^2 mm]	Glass thickness	Element weight (GG) [kg/m^2]
2,5	1	2,5
2,5	8	20
2,5	12	30
2,5	16	40
2,5	20	50
2,5	24	60
2,5	28	70

Reading the data

In the subsequent examples, the following has been assumed:

- The reduction in glass size (**CG**) for the window element is greater than or equal to the value specified in the application diagram.
- The profile weight (**PG**) of the window element is less than or equal to the value specified in the application diagram.
- The bases of testing and calculation specified in the application diagram relate to the application of the hardware.
- The additional load taken into account in the application diagram relates to the application of the hardware.
- The window manufacturer has provided evidence that the load-bearing components have been fixed in accordance with TBDK using the values specified in the application diagram.

Determining the valid application range for a specific element weight

The permissible application range for use of the hardware is highlighted in grey in the application diagrams. However, the entire grey area is not valid; in each case, it is only the part to the **left** of the curve for the relevant element weight (**GG**) which applies.

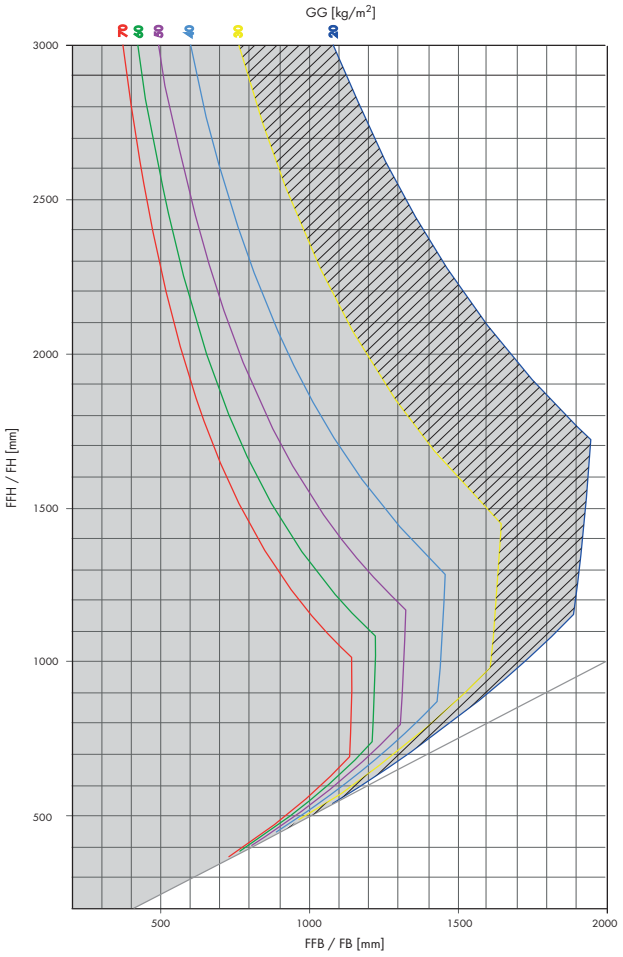
*Note: This example, and all subsequent examples, use the reference values **FFH** and **FFB**. All descriptions and results for each of the examples also apply correspondingly for the reference values **FH** and **FB**.*

Example 1

The permissible FFH and FFB are to be determined from the accompanying application diagram for window elements with the specific element weight **GG = 30 kg/m²**. To do this, we must consider the graph for this element weight.

The area to the **left** of the curve shows the permissible range for a specific element weight of **GG = 30 kg/m²**.

The area to the **right** of the curve (shaded here for the purposes of clarification) shows the impermissible range for a specific element weight of **GG = 30 kg/m²**.



Determining the valid application range for the maximum specific element weight

The hardware may only be used in sashes which use glazing or infill panels whose specific element weight is less than or equal to the maximum specific element weight shown in the relevant application diagram.

Example 2

In the following example, **70 kg/m²** is specified as the maximum specific element weight. Element weights over **70 kg/m²** are, therefore, generally not permitted in this example.

The permissible FFH and FFB are to be determined from the accompanying application diagram for window elements with the specific element weight **GG = 70 kg/m²**. To do this, we must consider the graph for this element weight.

The area to the left of the curve (shaded here for the purposes of clarification) shows the permissible range for the maximum specific element weight of **GG = 70 kg/m²**.

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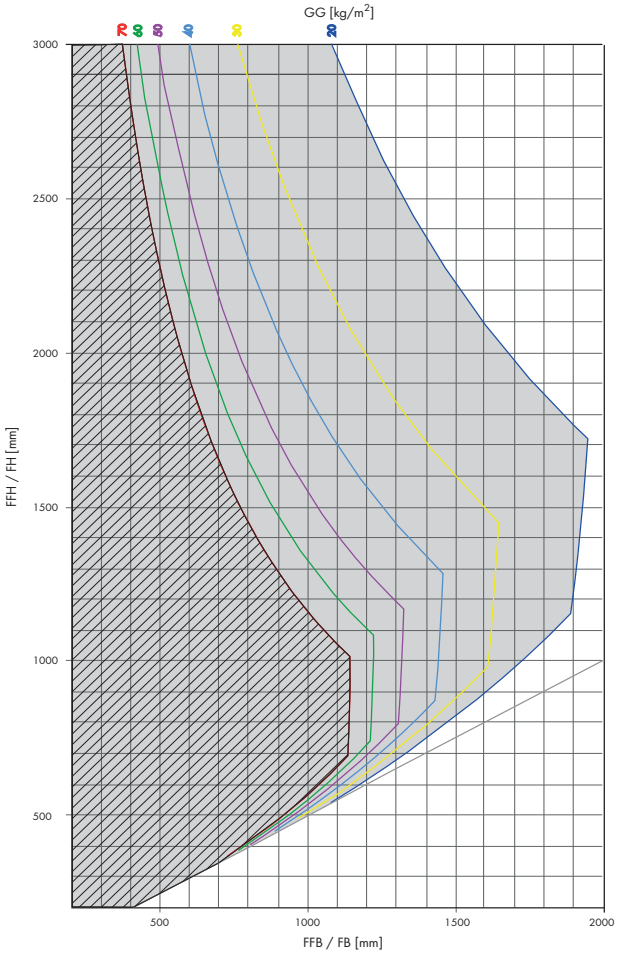


Example 3

The following sash is to be fitted with hardware according to the associated application diagram:

- Intended sash rebate width **(FFB) = 1.300 mm**
- Intended sash rebate height **(FFH) = 1.800 mm**
- Intended glazing 3 x 4 mm float glass – **GG = 30 kg/m²**

Basis of testing and calculation:

Tilt-turn test according to QM 328 Appendix 2–Figure A

- 15.000 tilt & turn cycles
- 10.000 turn cycle

Additional loads taken into account in accordance with EN 14608 (Figure A.1)/Class 4 in accordance with EN 13115 (800 N)

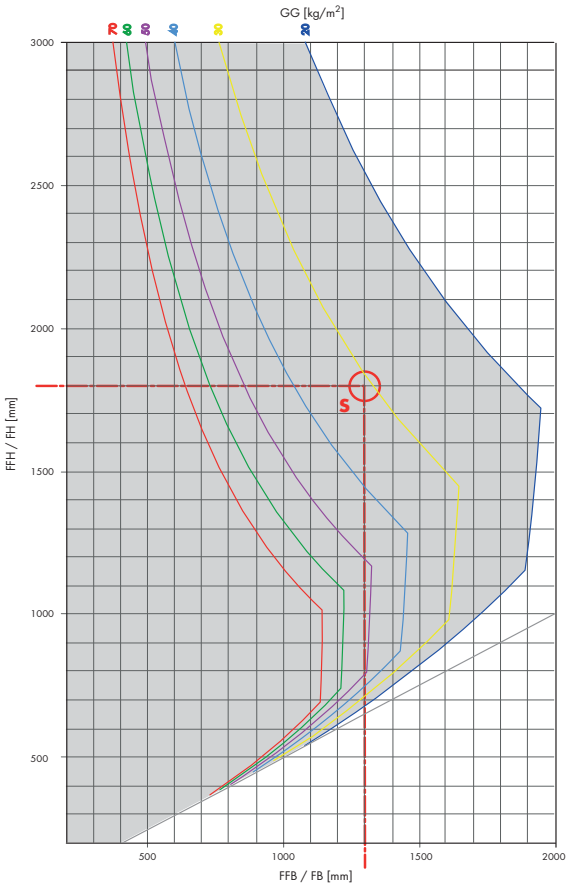
Requirements for the use of the application diagram:

Proof that the load bearing components have been fixed to the window system by the window manufacturer in accordance with TBDK using the following forces:

- To the top hinge with 2.710 N
- To the bottom hinge with 2.890 N

Comply with the following values for all window systems:

- Max. width-to-height ratio $\mathbf{Q_{B/H} \leq 2,0}$
- Reduction in glass size **CG ≥ 28 mm**
- Profile weight **PG ≤ 3,25 kg/m²**



Result after reading the data in the application diagram:

- The point of intersection (**S**) for **FFB x FFH = 1.300 x 1.800** mm is to the left of the curve in the permissible range for the specific element weight **GG = 30 kg/m²**.
- The hardware **can be used** as indicated in the associated application diagram.

Example 4

The following sash is to be fitted with hardware according to the associated application diagram:

- Intended sash rebate width **(FFB) = 1.400 mm**
- Intended sash rebate height **(FFH) = 1.900 mm**
- Intended glazing 3 x 4 mm float glass – **GG = 30 kg/m²**

Basis of testing and calculation:

Tilt-turn test according to QM 328 Appendix 2–Figure A

- 15.000 tilt & turn cycles
- 10.000 turn cycle

Additional loads taken into account in accordance with EN 14608 (Figure A.1)/Class 4 in accordance with EN 13115 (800 N)

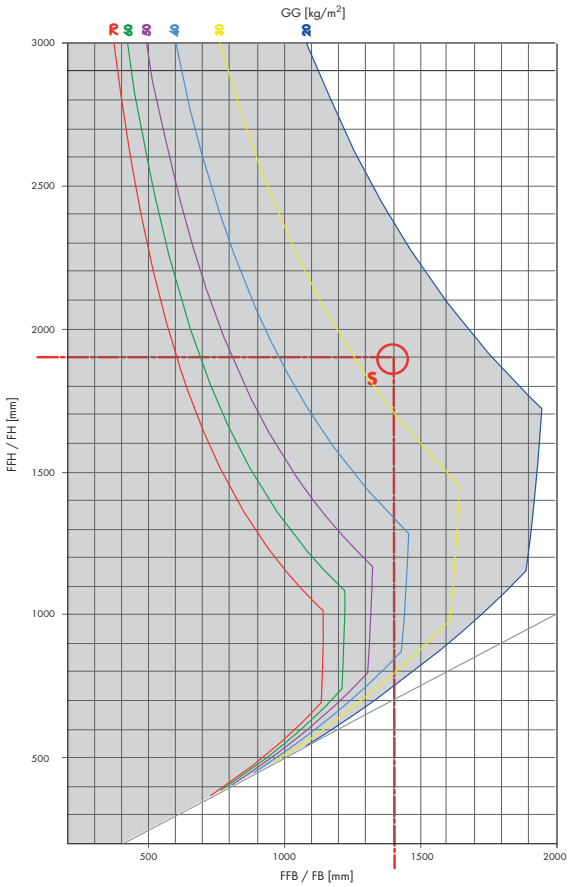
Requirements for the use of the application diagram:

Proof that the load bearing components have been fixed to the window system by the window manufacturer in accordance with TBDK using the following forces:

- To the top hinge with 2.710 N
- To the bottom hinge with 2.890 N

Comply with the following values for all window systems:

- Max. width-to-height ratio $Q_{B/H} \leq 2,0$
- Reduction in glass size **CG ≥ 28 mm**
- Profile weight **PG ≤ 3,25 kg/m²**



Result after reading the data in the application diagram:

- The point of intersection (**S**) for **FFB x FFH = 1.400 x 1.900 mm** is to the right of the curve in the impermissible range for the specific element weight **GG = 30 kg/m²**.
- The hardware **cannot be used** as indicated in the associated application diagram.

Example 5

The following sash is to be fitted with hardware according to the associated application diagram:

- Intended sash rebate width **(FFB) = 1.600 mm**
- Intended sash rebate height **(FFH) = 2.200 mm**
- Intended glazing 2 x 4 mm float glass – **GG = 20 kg/m²**

Basis of testing and calculation:

Tilt-turn test according to QM 328 Appendix 2–Figure A

- 15.000 tilt & turn cycles
- 10.000 turn cycle

Additional loads taken into account in accordance with EN 14608 (Figure A.1)/Class 4 in accordance with EN 13115 (800 N)

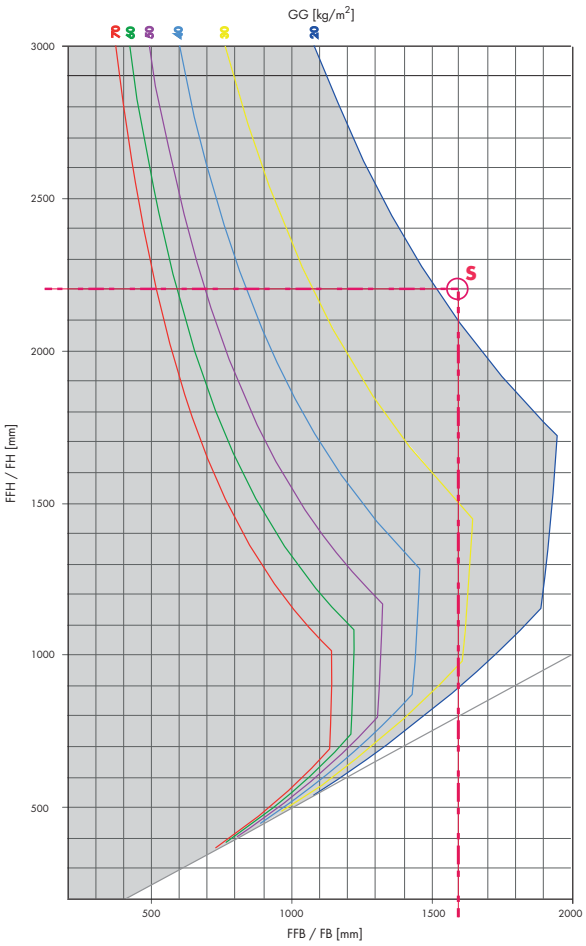
Requirements for the use of the application diagram:

Proof that the load bearing components have been fixed to the window system by the window manufacturer in accordance with TBDK using the following forces:

- To the top hinge with 2.710 N
- To the bottom hinge with 2.890 N

Comply with the following values for all window systems:

- Max. width-to-height ratio **$Q_{B/H}$ ≤ 2,0**
- Reduction in glass size **CG ≥ 28 mm**
- Profile weight **PG ≤ 3,25 kg/m²**



Result after reading the data in the application diagram:

- The point of intersection (**S**) for **FFB x FFH = 1.600 x 2.200 mm** is to the right of the curve in the impermissible range for the specific element weight **GG = 20 kg/m²**.
- The hardware **cannot be used** as indicated in the associated application diagram.

Example 6 (specific element weight between the curves)

The following sash is to be fitted with hardware according to the associated application diagram:

- Intended sash rebate width **(FFB) = 1.000 mm**
- Intended sash rebate height **(FFH) = 2.100 mm**
- Intended glazing – **GG = 35 kg/m²**
- For a specific element weight of 35 kg/m², an additional curve is plotted in the application diagram whose position and progression are determined by means of linear interpolation.

Please note and comply with the following points at all times for interpolation:

- For specific element weights (GG) less than 50 kg/m², linear interpolation is only permissible if there is a maximum difference of 10 kg/m² be-tween the two curves in the application diagram.
- For specific element weights (GG) greater than 50 kg/m², linear interpolation is only permissible if there is a maximum difference of 20 kg/m² between the two curves in the application diagram.

Basis of testing and calculation:

Tilt-turn test according to QM 328 Appendix 2–Figure A

- 15.000 tilt & turn cycles
- 10.000 turn cycle

Additional loads taken into account in accordance with EN 14608 (Figure A.1)/Class 4 in accordance with EN 13115 (800 N)

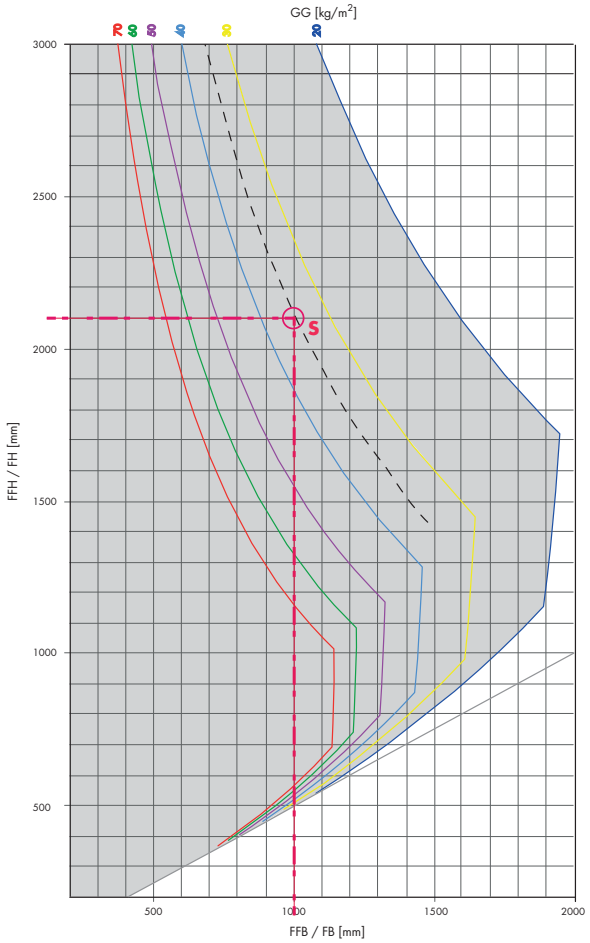
Requirements for the use of the application diagram:

Proof that the load bearing components have been fixed to the window system by the window manufacturer in accordance with TBDK using the following forces:

- To the top hinge with 2.710 N
- To the bottom hinge with 2.890 N

Comply with the following values for all window systems:

- Max. width-to-height ratio **$Q_{B/H}$ ≤ 2,0**
- Reduction in glass size **CG ≥ 28 mm**
- Profile weight **PG ≤ 3,25 kg/m²**



Result after reading the data in the application diagram:

- The point of intersection (**S**) for **FFB x FFH = 1.000 x 2.100 mm** is located exactly on the curve determined by linear interpolation for the specific element weight **GG = 35 kg/m²**, and is therefore within the permissible range for this element weight.
- The hardware **can be used** as indicated in the associated application diagram.

Example 7 (Special areas during interpolation)

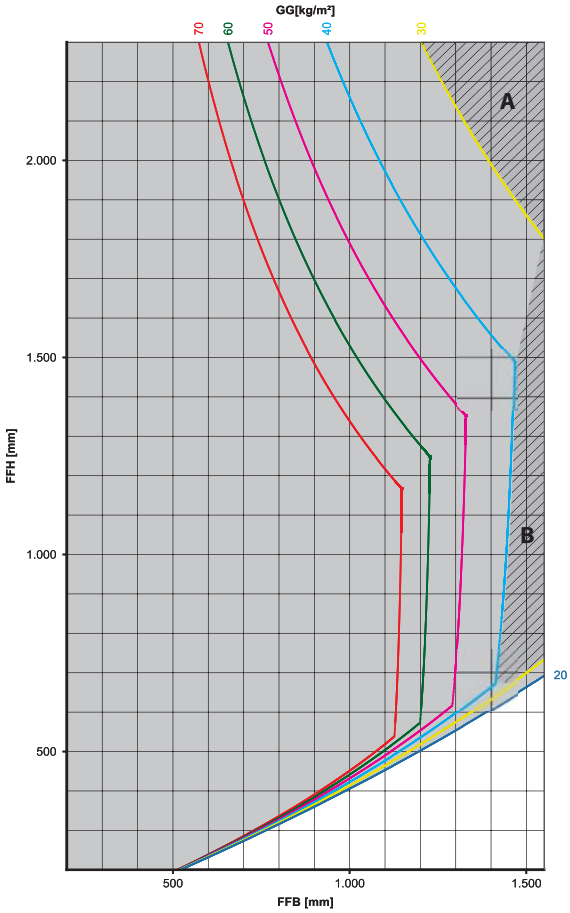
The procedure shown in example 6 (diagram) for specific element weights between the curves only applies if two curves are displayed in the diagram, between which linear interpolation is possible.

Example A

In the area to the right next to the curve for the specific element weight **GG = 30 kg/m²** (also cross-hatched here for illustration purposes), no additional curve is displayed here for linear interpolation and only elements with a specific weight of **GG = 20 kg/m² maximum** may be used in this area (the next lowest level of specific element weight).

Example B

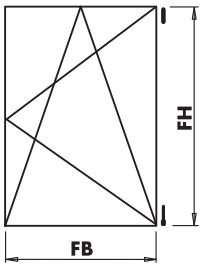
In the area to the right next to the curve for the specific element weight **GG = 40 kg/m²** (also cross-hatched here for illustration purposes), no additional curve is displayed here for linear interpolation and only elements with a specific weight of **GG = 30 kg/m² maximum** may be used in this area (the next lowest level of specific element weight).



Application diagram

H58.AWDLS003DE

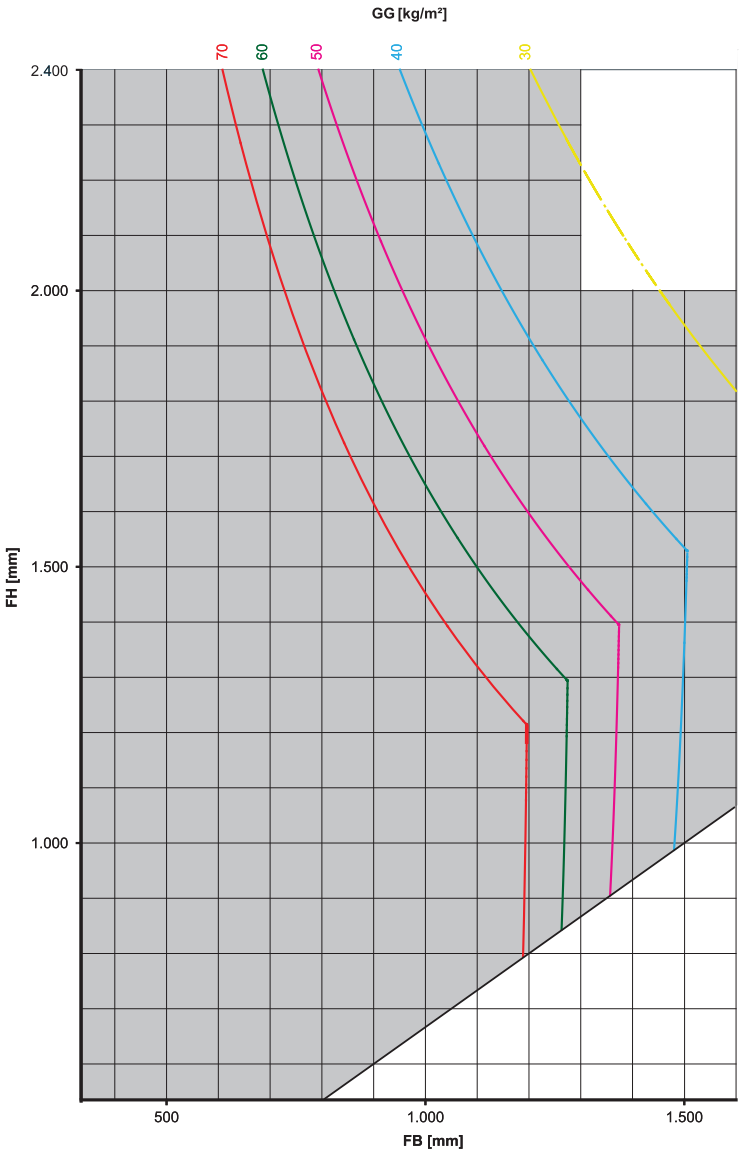
Restrictions on sash formats for tilt and turn/turn elements



permissible application range

outside the limits

FH =sash rebate height
FB= sash rebate width



Testing and calculation specifications:

- Tilt & turn testing in accordance with QM 328 Appendix 2 – Figure A:
  - 15,000 tilt & turn cycles
  - 10,000 turn cycles
- Additional loads in accordance with EN 14608 (Figure A.1) / Class 4 in accordance with EN 13115 (800 N) taken into account

Requirements for the use of the size range chart:

- Proof that the load-bearing components have been attached to the window system by the window manufacturer in accordance with TBDK using the following forces:
  - To the top hinge with 2,710 N
  - To the bottom hinge with 2,890 N

- Comply with the following values for all window systems:
  - Max. width-to-height ratio $Q_{W/H} \leq 1.5$
  - Reduction in glass size CG ≥ 40 mm
  - Profile weight PW ≤ 3.6 kg/m

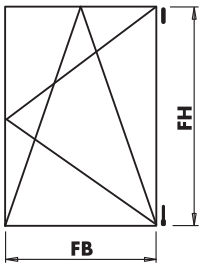
- Observe the notes on proper use - basics and use of the application diagrams (see document H58.AWD_BG_EN)!

Application diagram

H58.AWDLS004EN

kg
≤130

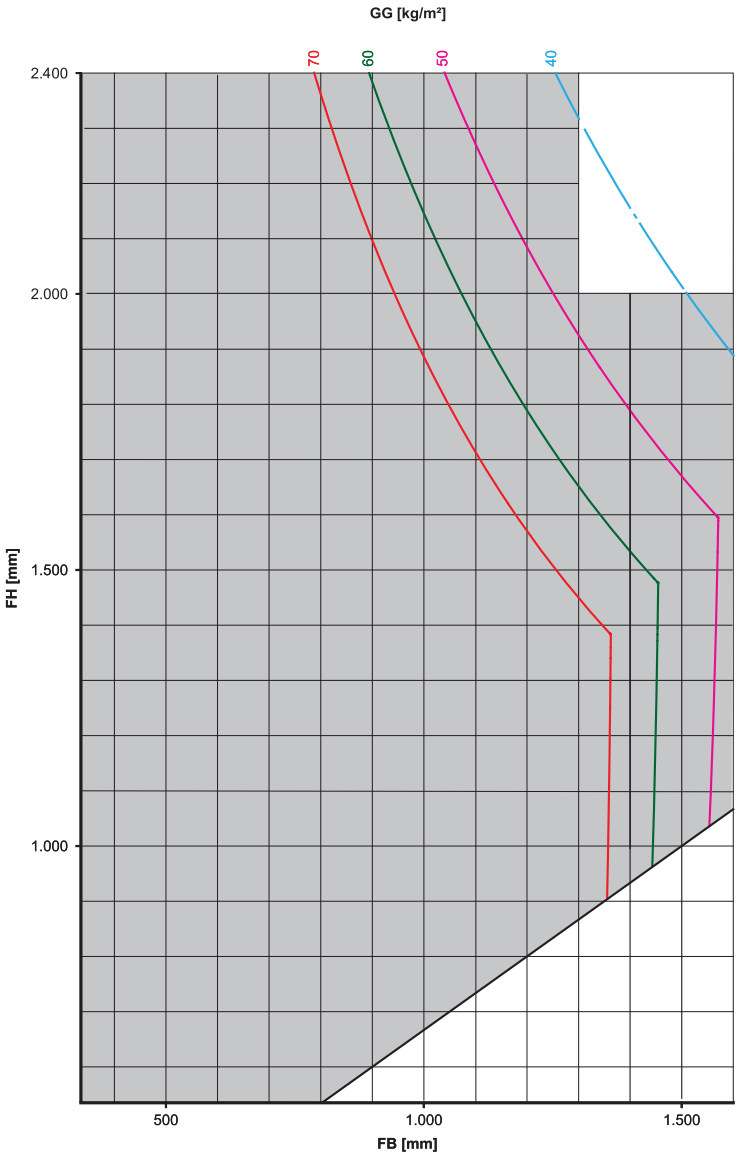
Restrictions on sash formats for tilt and turn/turn elements



permissible application range

outside the limits

FH =sash rebate height
FB= sash rebate width



Testing and calculation specifications:

- Tilt & turn testing in accordance with QM 328 Appendix 2 – Figure A:
  - 15,000 tilt & turn cycles
  - 10,000 turn cycles
- Additional loads in accordance with EN 14608 (Figure A.1) / Class 4 in accordance with EN 13115 (800 N) taken into account

Requirements for the use of the size range chart:

- Proof that the load-bearing components have been attached to the window system by the window manufacturer in accordance with TBDK using the following forces:
  - To the top hinge with 3,525 N
  - To the bottom hinge with 3,760 N

- Comply with the following values for all window systems:
  - Max. width-to-height ratio $Q_{W/H} \leq 1.5$
  - Reduction in glass size CG ≥ 40 mm
  - Profile weight PW ≤ 3.6 kg/m

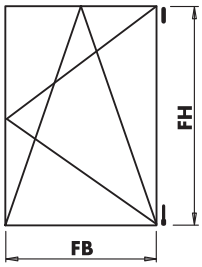
- Observe the notes on proper use - basics and use of the application diagrams (see document H58.AWD_BG_EN)!

Application diagram

H58.AWDLS005EN

≤150

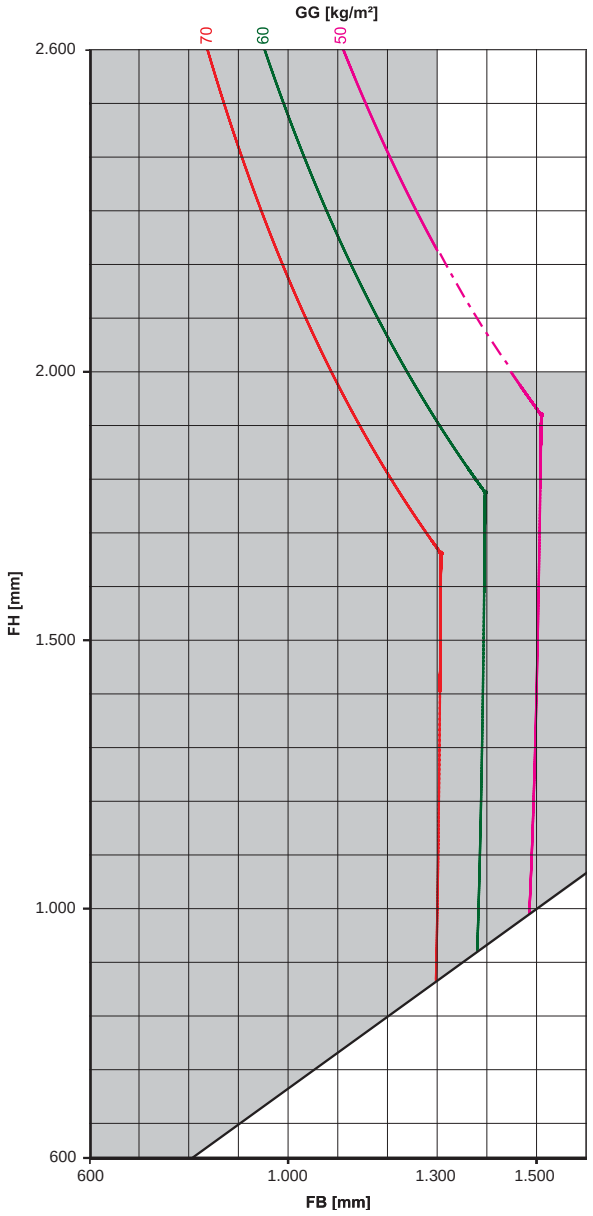
Restrictions on sash formats for tilt and turn/turn elements



permissible application range

outside the limits

FH = sash rebate height
FB = sash rebate width



Testing and calculation specifications:

- Tilt & turn testing in accordance with QM 328 Appendix 2 – Figure A:
  - 15,000 tilt & turn cycles
  - 10,000 turn cycles

- Additional loads in accordance with EN 14608 (Figure A.1) / Class 4 in accordance with EN 13115 (800 N) taken into account

Requirements for the use of the size range chart:

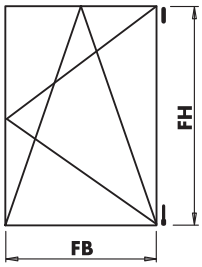
- Proof that the load-bearing components have been attached to the window system by the window manufacturer in accordance with TBDK using the following forces:
  - To the top hinge with 4,200 N
  - To the bottom hinge with 4,340 N
- Comply with the following values for all window systems:
  - Max. width-to-height ratio QW/H ≤ 1.5
  - Reduction in glass size CG ≥ 40 mm
  - Profile weight PW ≤ 3.6 kg/m
- Observe the notes on proper use:
  - basics and use of the application diagrams - see document H58.AWD_BG_EN

Application diagram

H58.AWDLS006EN

kg
≤170

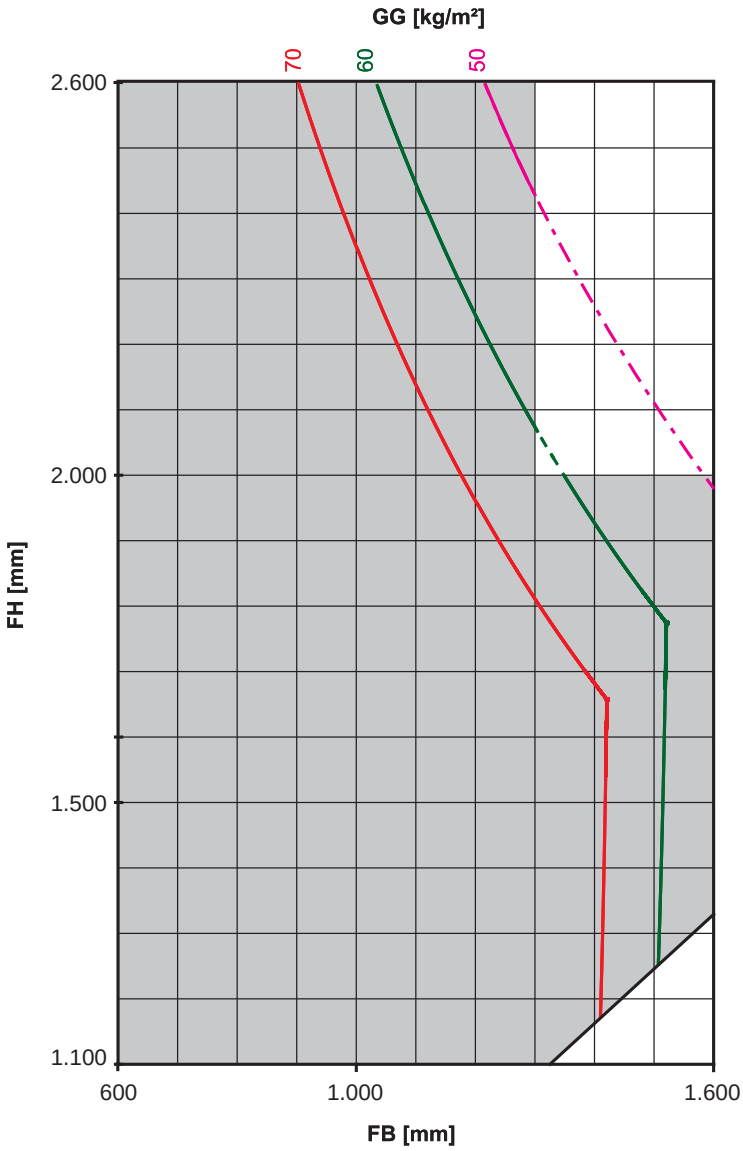
Restrictions on sash formats for tilt and turn/turn elements



permissible application range

outside the limits

FH = sash rebate height
FB = sash rebate width



Testing and calculation specifications:

- Tilt & turn testing in accordance with QM 328 Appendix 2 – Figure A:
  - 15,000 tilt & turn cycles
  - 10,000 turn cycles
- Additional loads in accordance with EN 14608 (Figure A.1) / Class 4 in accordance with EN 13115 (800 N) taken into account

Requirements for the use of the size range chart:

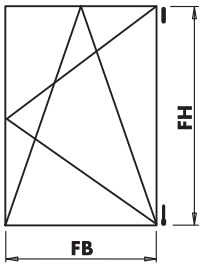
- Proof that the load-bearing components have been attached to the window system by the window manufacturer in accordance with TBDK using the following forces:
  - To the top hinge with 4,710 N
  - To the bottom hinge with 4,910 N
- Comply with the following values for all window systems:
  - Max. width-to-height ratio QW/H ≤ 1.2
  - Reduction in glass size CG ≥ 20 mm
  - Profile weight PW ≤ 3.6 kg/m
- Observe the notes on proper use:
  - basics and use of the application diagrams - see document H58.AWD_BG_EN

Application diagram

H58.AWDLS007EN

kg
≤200

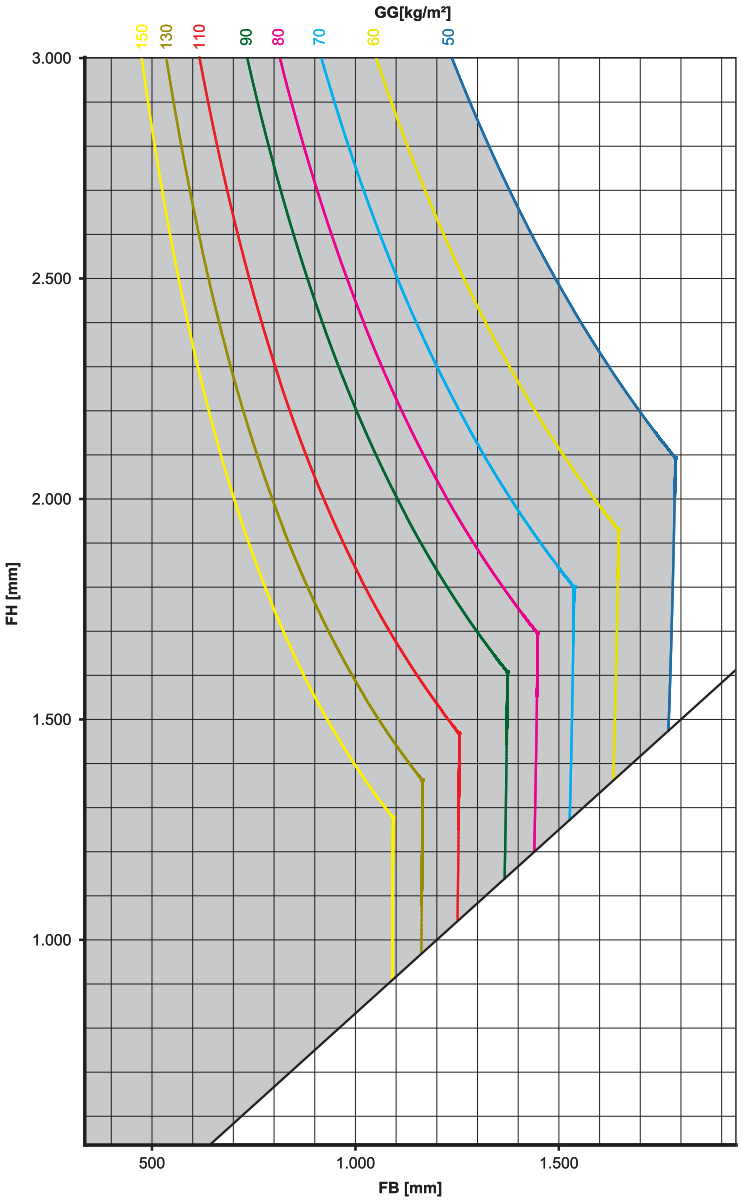
Restrictions on sash formats for tilt and turn elements



permissible application range

outside the limits

FH = sash rebate height
FB = sash rebate width



Testing and calculation specifications:

- Tilt & turn testing in accordance with QM 328 Appendix 2 – Figure A:
  - 15,000 tilt & turn cycles
  - 10,000 turn cycles

- Additional loads in accordance with EN 14608 (Figure A.1) / Class 4 in accordance with EN 13115 (800 N) taken into account

Requirements for the use of the size range chart:

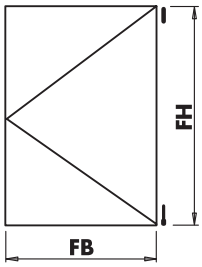
- Proof that the load-bearing components have been attached to the window system by the window manufacturer in accordance with TBDK using the following forces:
  - To the top hinge with 5,550 N
  - To the bottom hinge with 5,780 N
- Comply with the following values for all window systems:
  - Max. width-to-height ratio QW/H ≤ 1.2
  - Reduction in glass size CG ≥ 20 mm
  - Profile weight PW ≤ 3.6 kg/m
- Observe the notes on proper use:
  - basics and use of the application diagrams - see document H58.AWD_BG_EN

Application diagram

H58.AWDLS008EN

kg
≤300

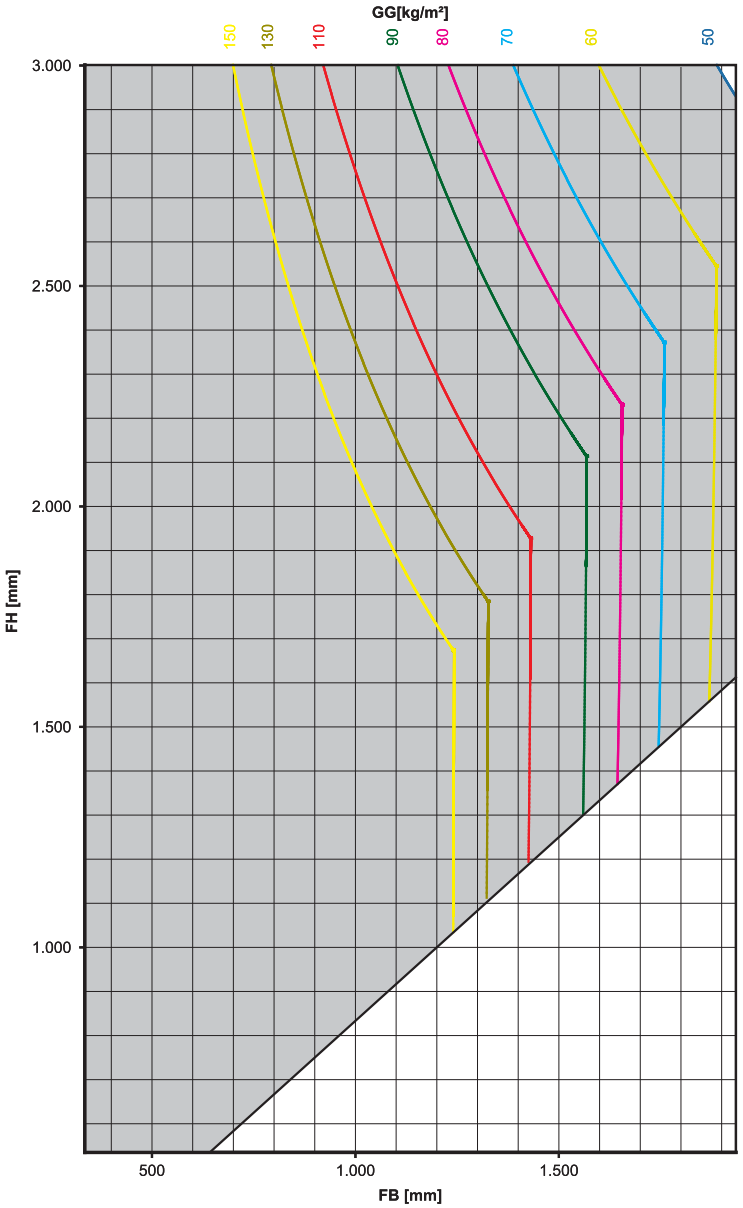
Restrictions on sash formats for turn elements



permissible application range

outside the limits

FH = sash rebate height
FB = sash rebate width



Testing and calculation specifications:

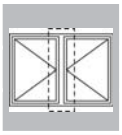
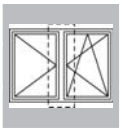
- Tilt & turn testing in accordance with QM 328 Appendix 2 – Figure B:
  - 25,000 turn cycles
- Additional loads in accordance with EN 14608 (Figure A.1) / Class 4 in accordance with EN 13115 (800 N) taken into account

Requirements for the use of the size range chart:

- Proof that the load-bearing components have been attached to the window system by the window manufacturer in accordance with TBDK using the following forces:
  - To the top hinge with 8,304 N
  - To the bottom hinge with 8,660 N
- Comply with the following values for all window systems:
  - Max. width-to-height ratio QW/H ≤ 1.2
  - Reduction in glass size CG ≥ 20 mm
  - Profile weight PW ≤ 3.6 kg/m
- Observe the notes on proper use:
  - basics and use of the application diagrams - see document H58.AWD_BG_EN

Öffnungsarten und Bauformen

Opening and design variants

	Dreh-Kipp-Fensterelement/Kipp-Dreh-Fensterelement *Turn-and-tilt/tilt-and-turn window element*
	Dreh-Fensterelement *Turn-only window element*
	Kipp-Fensterelement *Tilt window element*
	Rundbogen-Fensterelement *Round-arch window element*
	Stichbogen-Fensterelement *Segmental-arch window element*
	Schräg-Fensterelement *Pitched window element*
	Klapp-Fensterelement *Folding window element*
	Dreh-Fensterelement, 2-flügelig *Turn-only window element, double sash*
	Dreh-/Dreh-Kipp-Fensterelement, 2-flügelig *Turn/turn-and-tilt element, double sash*
	Stulp-Fensterelement *Secondary sash window element*
	Rundbogen-Fensterelement, 2-flügelig *Round-arch window element, double sash*
	Stichbogen-Fensterelement, 2-flügelig *Segmental-arch window element, double sash*
	Schräg-Fensterelement, 2-flügelig *Pitched window element, double sash*
	Dreh-Fensterelement, nach außen öffnend *Turn-only window element, outward opening*

Symbole und Abkürzungen
Symbols and abbreviations
H45.5200LS002de/en

Verzeichnis der verwendeten Abkürzungen

List of abbreviations used

DE	**Deutsch**	***EN***	***English***
Kürzel	**Beschreibung**	***Abbrev.***	***Description***
ALU	Aluminium	***ALU***	*Aluminum*
AV	Andruckeinstellung	***AV***	*Pressure setting*
AWD	Anwendungsdiagramm	***AWD***	*Application diagram*
BF	Ausführung „Barrierefrei“	***BF***	*Version „barrier-free“*
BD	Banddurchgang	***BD***	*Hinge clearance*
BS	Bandseite	***BS***	*Hinge side*
BSO	Bandseite oben	***BSO***	*Hinge side, top*
BSU	Bandseite unten	***BSU***	*Hinge side, bottom*
CG	Glas-Abzugsmaß	***CG***	*Glass deduction dimension*
D	Ausführung „Dreh“	***D***	*Version „turn only“*
DG	Dreh - gegenläufig	***DG***	*Turn - counter-rotating*
DK	Ausführung „Dreh-Kipp“	***DK***	*Version „turn-tilt“*
DF	Drehflügel	***DF***	*Turn only sash*
DS	Ausführung „Dreh-Stulp“	***DS***	*Version „turn secondary sash“*
DS/A	Dreh-Stulp aufliegendes Getriebe	***DS/A***	*Secondary sash slip-on gear*
DS/K	Dreh-Stulp Kantenriegelschieber	***DS/K***	*Secondary sash shoot bolt*
E	Einbruchhemmung	***E***	*Burglar resistance*
ESG	Einsteckgetriebe	***ESG***	*Routed-in drive gear*
EUL	Eckumlenkung	***EUL***	*Corner drive*
FB (a)	Flügelbreite	***FB (a)***	*Sash width*
FB1	Flügelbreite Erstflügel	***FB1***	*Sash width primary sash*
FB2	Flügelbreite Zweitflügel	***FB2***	*Sash width secondary sash*
FBS	Fehlbedienungssperre	***FBS***	*Mishandling device*
FBS-EUL	Fehlbedienungssperre an der Eckumlenkung	***FBS-EUL***	*Mishandling device on corner drive*
FBS-G	Fehlbedienungssperre am Griff	***FBS-G***	*Mishandling device on gear*
FH BS	Flügelhöhe Bandseite	***FH BS***	*Sash height hinge side*
FH (b)	Flügelhöhe	***FH (b)***	*Sash height*
FH VS	Flügelhöhe Verschlussseite	***FH VS***	*Sash height locking side*
FP	Fang-Putz-Schere	***FP***	*Tilt-only safety stay*
GG	Glasgewicht	***GG***	*Glass weight*
G1...2	Griffsitz 1 - 2	***G1...2***	*Handle position 1 - 2*
Gr.	Größe	***Gr.***	*Size*
H1...H4	Hebel Ausführung 1 - 4	***H1...H4***	*Handle version 1- 4*

Verzeichnis der verwendeten Abkürzungen

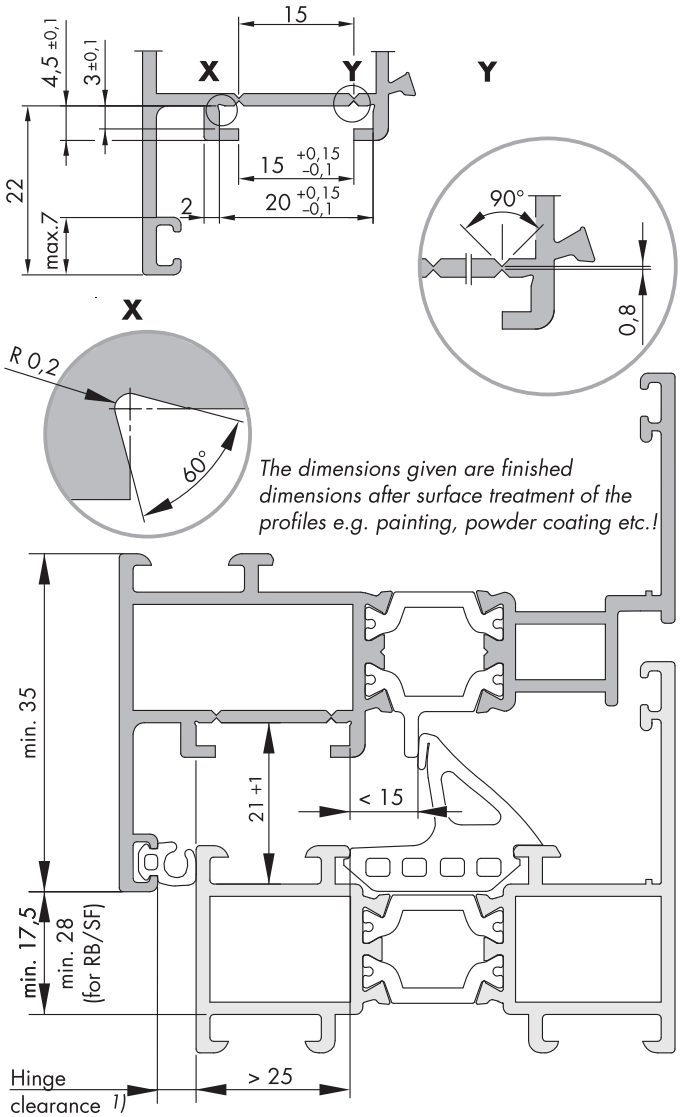
List of abbreviations used

DE	Deutsch	EN	English
Kürzel	**Beschreibung**	***Abbrev.***	***Description***
iP	Industrieverpackung	***iP***	*Industrial packaging*
K	Ausführung „Kipp“	***K***	*Version „tilt“*
KM	Kammermaß	***KM***	*Chamber dimension*
KPS	Kipp-Punkt Senkrecht	***KPS***	*Vertical tilt point*
KPW	Kipp-Punkt Waagerecht	***KPW***	*Horizontal tilt point*
LM	Leichtmetall	***LM***	*Aluminum*
LS	Länge der Schräge	***LS***	*Length of incline*
MV	Mittelverschluss	***MV***	*Center lock*
Nm	Newton-Meter (Drehmoment)	***Nm***	*Newton-meter (Torque)*
PG	Profilgewicht	***PG***	*Profile weight*
RC1...3	Wiederstandsklasse	***RC1...3***	*Resistance class*
RR	Rundrosette	***RR***	*Round rose*
RB	Rundbogen	***RB***	*Round arch*
S	Scherenposition	***S***	*Stay position*
S1...9	Schubstangen 1 - 9	***S1...9***	*Operating rods 1 - 9*
SDF	Schere Drehflügel	***SDF***	*Stay turn sash*
SF	Schrägfenster	***SF***	*Pitched window*
SV	Seiteneinstellung	***SV***	*Side adjustment*
SW	Schlüsselweite	***SW***	*Wrench size*
TBT	Ausführung „Kipp-Vor-Dreh“	***TBT***	*Version „tilt-before-turn“*
USH	Überschlaghöhe	***USH***	*Rebate height*
VE	Verpackungseinheit	***VE***	*Packaging unit*
VS	Verschlussseite	***VS***	*Locking side*
VS/A	Verschlussseite aufliegendes Getriebe	***VS/A***	*Locking side slip-on gear*
VS/K	Verschlussseite Kantenriegel	***VS/K***	*Locking side shoot bolt*
VSO	Verschlussseite oben	***VSO***	*Locking side, top*
VSU	Verschlussseite unten	***VSU***	*Locking side, bottom*
WK1...3	Wiederstandsklasse nach DIN EN 1627-1630	***WK1...3***	*Resistance class according to DIN EN 1627-1630*
WRB	Winkelband Rundbogen	***WRB***	*Stay hinge, arched-head*
X	Anfang Rundbogen	***X***	*Begin of arch*
ZS	Position Zusatzschere	***ZS***	*Position of additional stay*
ZV	Zentralverschluss	***ZV***	*Central locking gear*

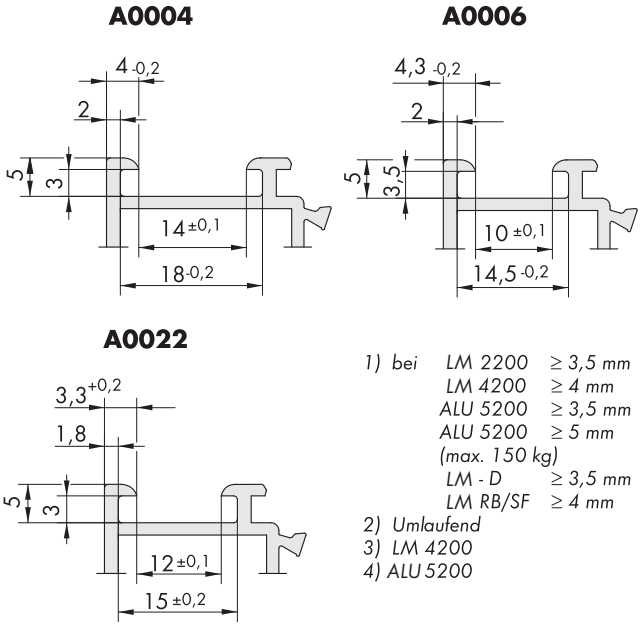
ALU Profile suggestion

Profile details, operating rod dimensions and pivot points for aluminium windows and patio doors

Sash dimensions

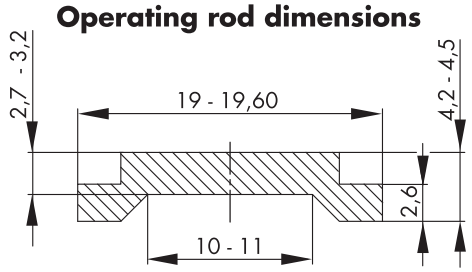


Frame groove dimensions

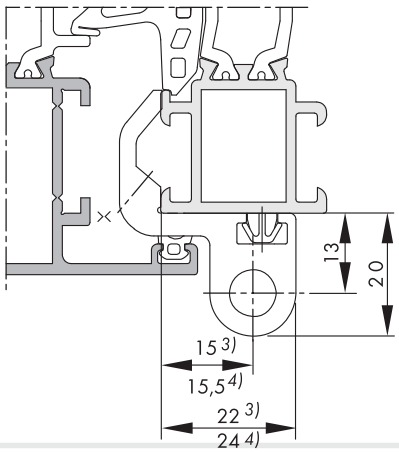


1) bei LM 2200 ≥ 3,5 mm
LM 4200 ≥ 4 mm
ALU 5200 ≥ 3,5 mm
ALU 5200 ≥ 5 mm (max. 150 kg)
LM - D ≥ 3,5 mm
LM RB/SF ≥ 4 mm
2) Umlaufend
3) LM 4200
4) ALU 5200

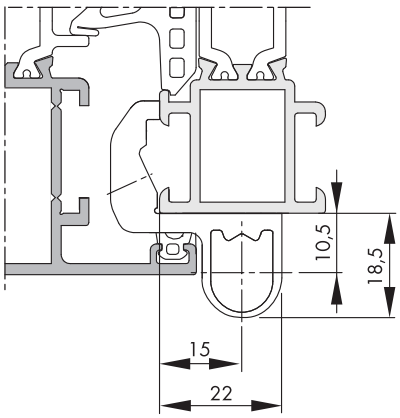
Operating rod dimensions



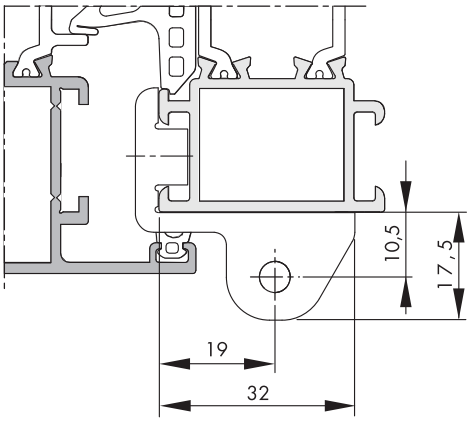
Pivot point LM 4200/ALU 5200



Pivot point LM 2200



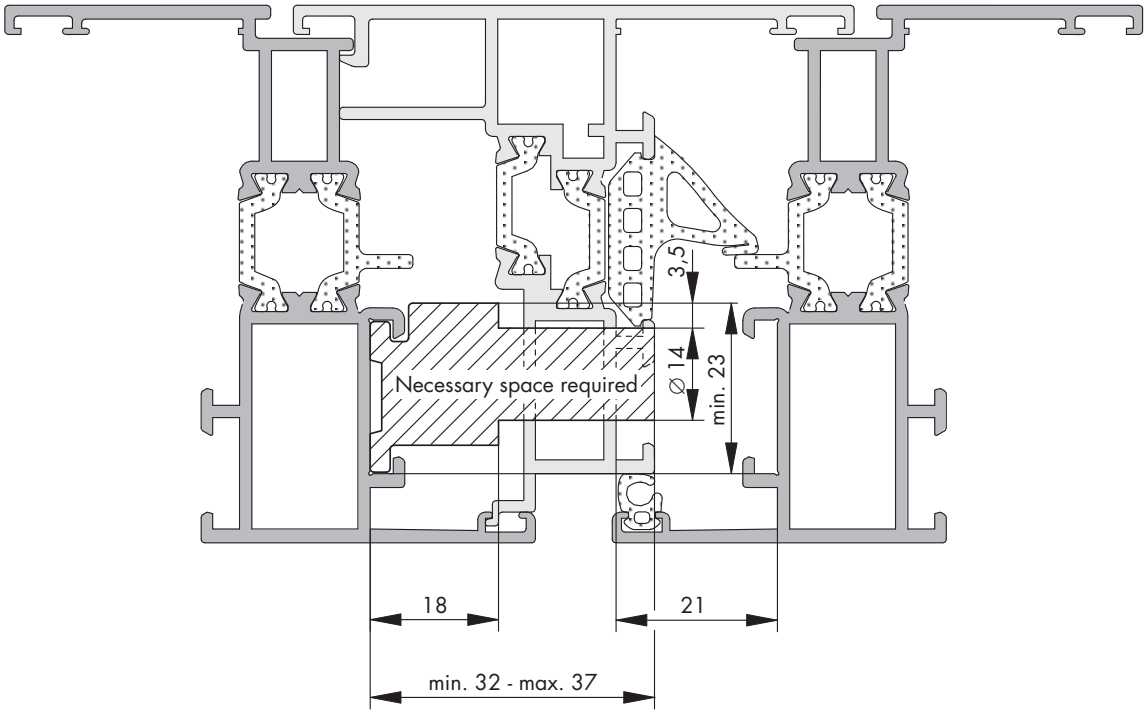
Pivot point LM RB/SF



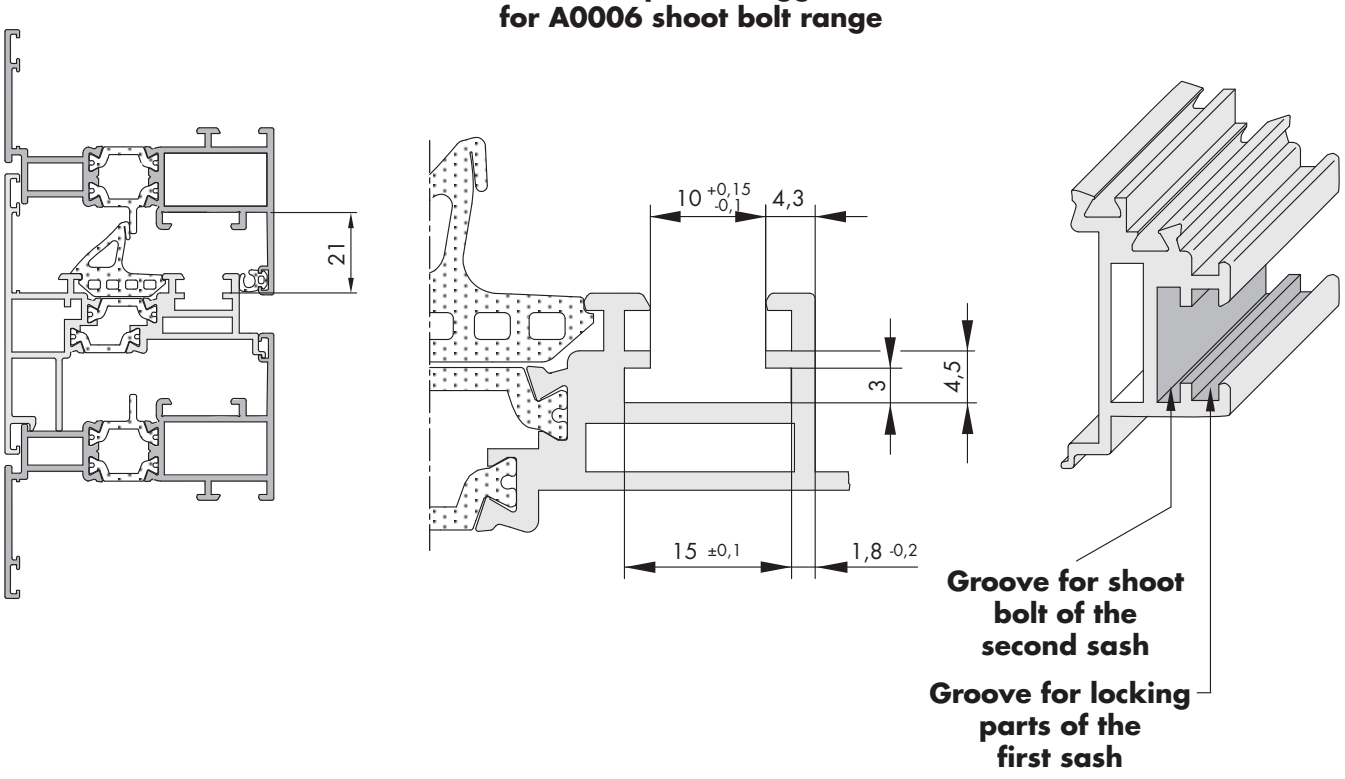
Technical specifications and colours are subject to change

H48.ZUBHLS008en/1

Slave sash profile suggestion for slave sash gear



Slave sash profile suggestion for A0006 shoot bolt range



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Industriestraße 1-3 57234 Wilnsdorf, Germany
Tel. +49 271 39 31-0 - Fax +49 271 39 31-3 33

ALU maintenance and adjustment instructions

ALU 5200
ALU axxent
ALU 2200
ALU-DK/TBT200
ALU-D300
ALU RB/SF

It is imperative that the information below is adhered to:

- Fundamental safety information: see document no. H45.5200LS001EN
- All maintenance and adjustment work must be carried out by a specialist window fabricator.

- Use **only** acid-free and resin-free grease or oil.
- Grease the sockets of the bottom hinge pins (**exception:** ALU axxent); **do not oil them!**

The directives of the Trade Organisation for Locks and Fittings provide comprehensive information on the correct operation and maintenance of hardware for windows and French doors. We deem these directives to be binding.

You can find the latest versions of the directives, in a range of languages, at:
http://www.beschlagindustrie.de/ggsb/richtlinien.asp

Explanation of symbols:

= lubrication points

= adjustable eccentric locking cams

= standard adjustment point

= adjustment point dependent on SW/SH

= safety-related area

= observe information!

Table of contents

Maintenance instructions
H45.5200LS004en

H45.5200LS004en/0

Your windows/French doors are equipped with high-quality **SIEGENIA** fittings. To ensure that the ease of movement and proper functioning is retained for as long as possible, we recommend that the following maintenance and inspection work is carried out at regular intervals (at least once a year, twice a year in school and hotels).

Inspection, maintenance and installation (<u>only</u> by a specialist window fabricator!)

- Check that all safety-relevant hardware components ( ) are secure and check for wear.
- Check that the hinge pins are pushed in all the way to the stop. If this is not the case, push them upwards all the way to the stop by hand and secure them with the corresponding safety screws (according to the hardware)!
- Check for loose fixing screws and check that the handle is secure. Tighten the loose fixing screws using an appropriate tool.
  Attention: Do not over tighten the screws!
- Replace any worn/defective hardware components or overtightened screws as soon as possible!
- Grease or oil all movable fittings and all locking points. Use only acid-free and resin-free oil or grease.
- Use a grease spray on the movable parts in the window sash and spray into all openings in the fittings. Then move the fittings into position several times until the grease is distributed.
- Wipe off any excess oil or grease.

Grease the striker plates in the window frame using a firm grease (consistency class 2 according to DIN 51818) in the places where the locking cam engages with the striker plate.

Our maintenance grease is particularly suited for this. You can order it from **SIEGENIA** under the material number ZXSX0120-093010.

Cleaning, care and surface protection

- When treating surfaces (e.g. painting or glazing your windows, French doors), remove all hardware components and protect them from any stains which may result from this treatment.
- Remove any stains or spills immediately because they could impair functioning and damage the surface protection of the hardware!
- Use only mild, pH-neutral, diluted cleaning agents.
- Never use sharp objects, abrasives or aggressive cleaning agents (such as vinegar or acidic cleaning agents) as they could damage the corrosion protection of the hardware!
- When cleaning, ensure that no water runs into the hardware.
- Dry the fittings thoroughly after cleaning and oil the surface with a non-acidic and non-resinous oil by wiping them with an oil-impregnated cloth.

Certain climatic conditions cause "condensation" of glass, frames and other window components. Regulation and abundant ventilation will prevent the occurrence of condensation water. Open all windows for approx. 5 minutes 3 - 4 times a day after using the rooms.

Further information on maintenance and inspection can be found in the „Directives of the Trade Organisation for Locks and Fittings (Gütegemeinschaft Schlösser und Beschläge e. V.)“ **(http://www.beschlagindustrie.de/ggsb/richtlinien.asp)**

Attention, risk of injury in case of window element functional disorder!

- If the window element does not function properly, it may not be used. Secure the window and have it repaired by a qualified technician as soon as possible.

These maintenance instructions also apply to hardware, fittings and window types which are not specifically described here.

Size ranges:

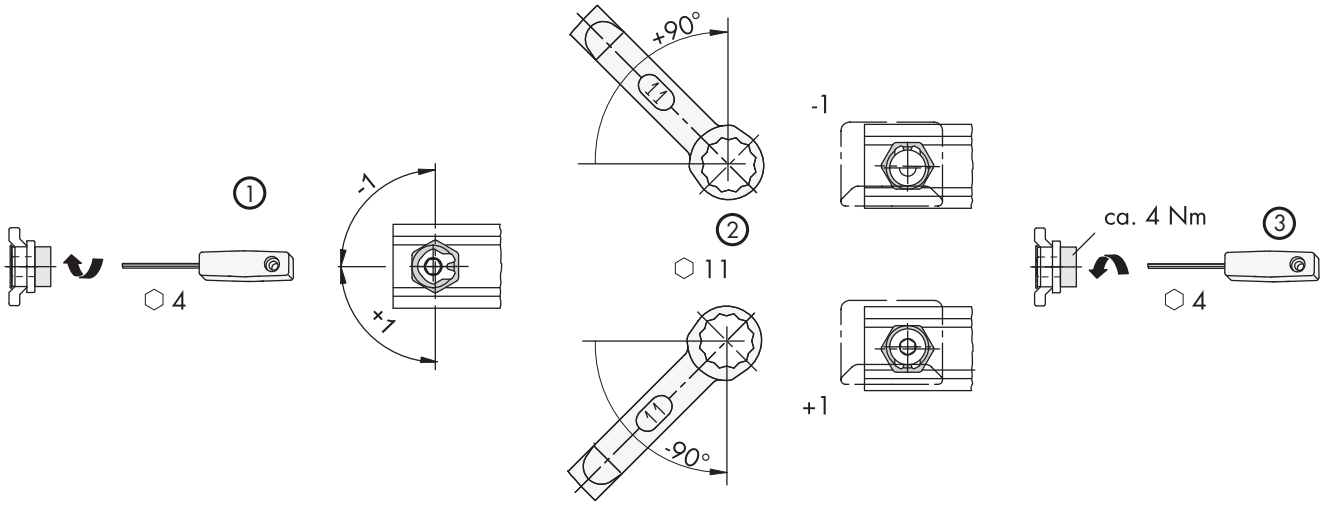
- ALU 5200-DK/TBT

- ALU 2200-DK/TBT

- ALU axxent-D 130 kg, DK/TBT

- ALU-DK/TBT200

- ALU RB/SF

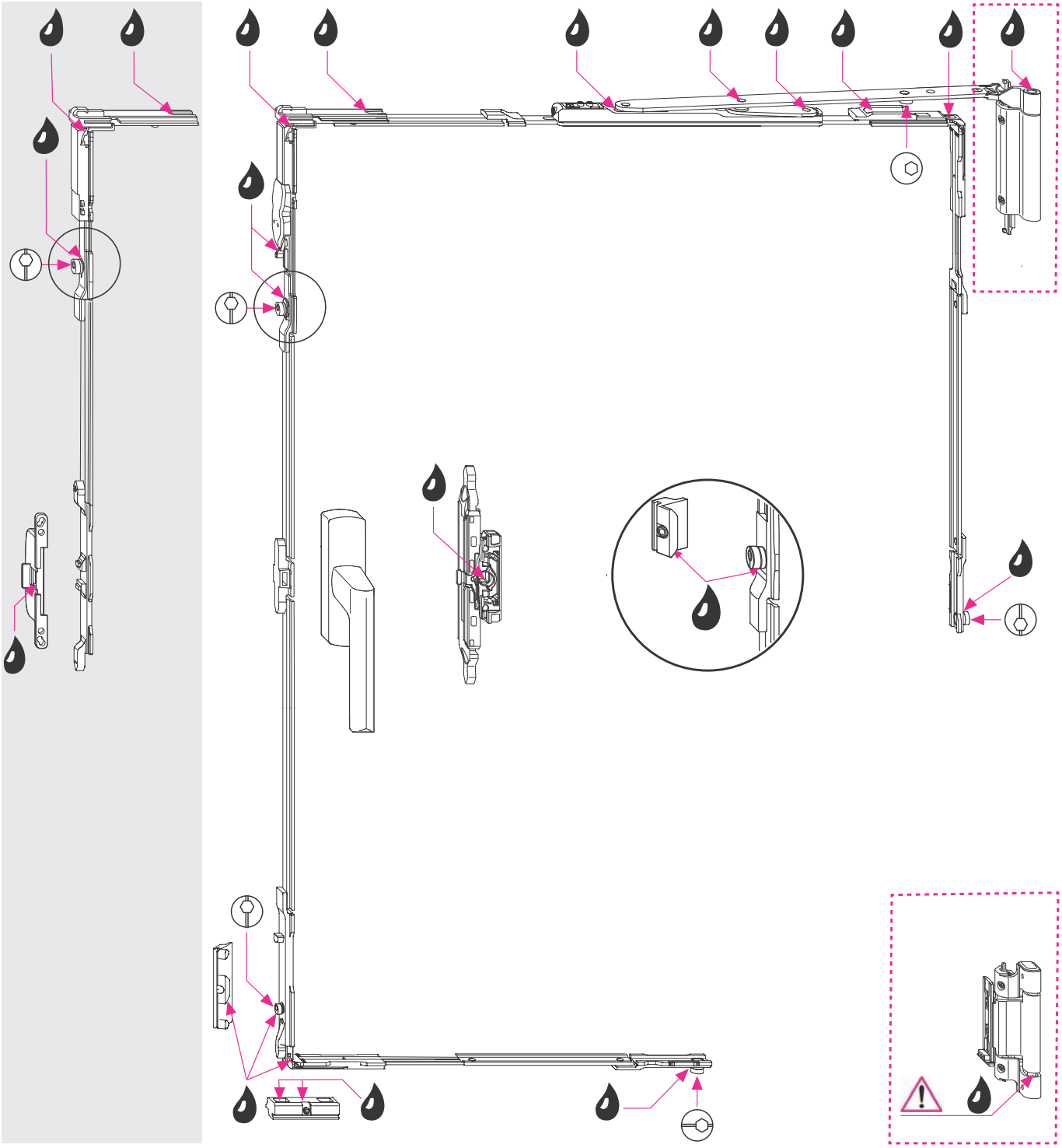


±1 mm pressure setting on sash:

- For setting purposes, loosen eccentric rivet using 4 mm hexagon screwdriver ①

- Perform pressure setting for locking cam using AF 11 mm ring spanner ②

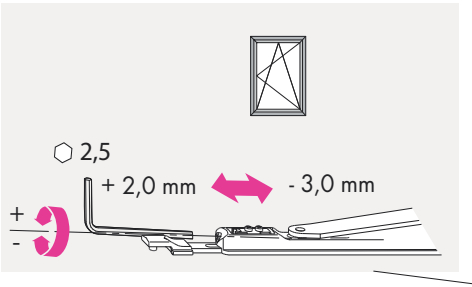
- Once the setting has been made, tighten the eccentric rivet again. This secures the locking cam! ③

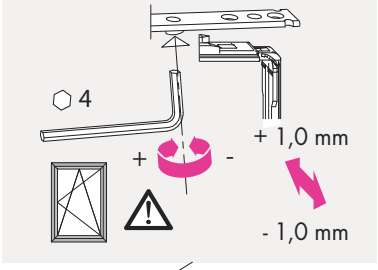


Note:

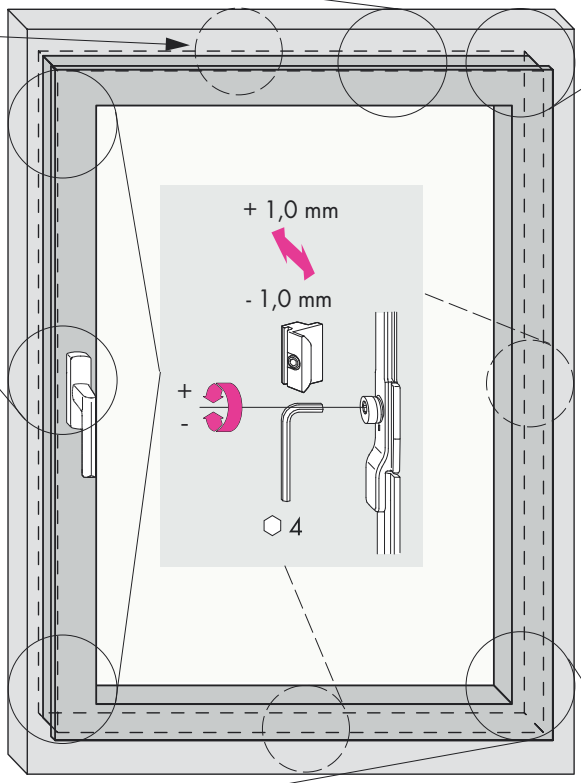
- Grease/oil all strikers, eccentric locking cams, mishandling devices and routed-in drive gears!
- For further information, please refer to the H48.5200LS...en installation instructions.
- The specifications on page 1 must be observed.

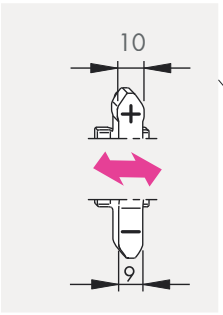
⚠ Grease the sockets of the bottom hinge pins; **do not oil them!**

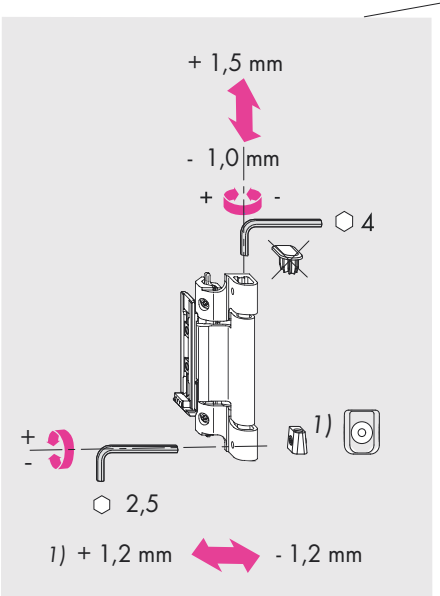


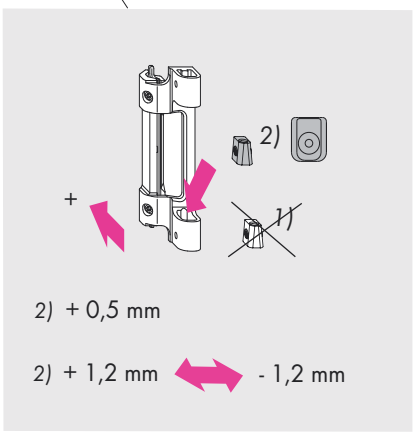


If SW > 1250 mm/> 100 kg: see the pressure setting information on page 3!







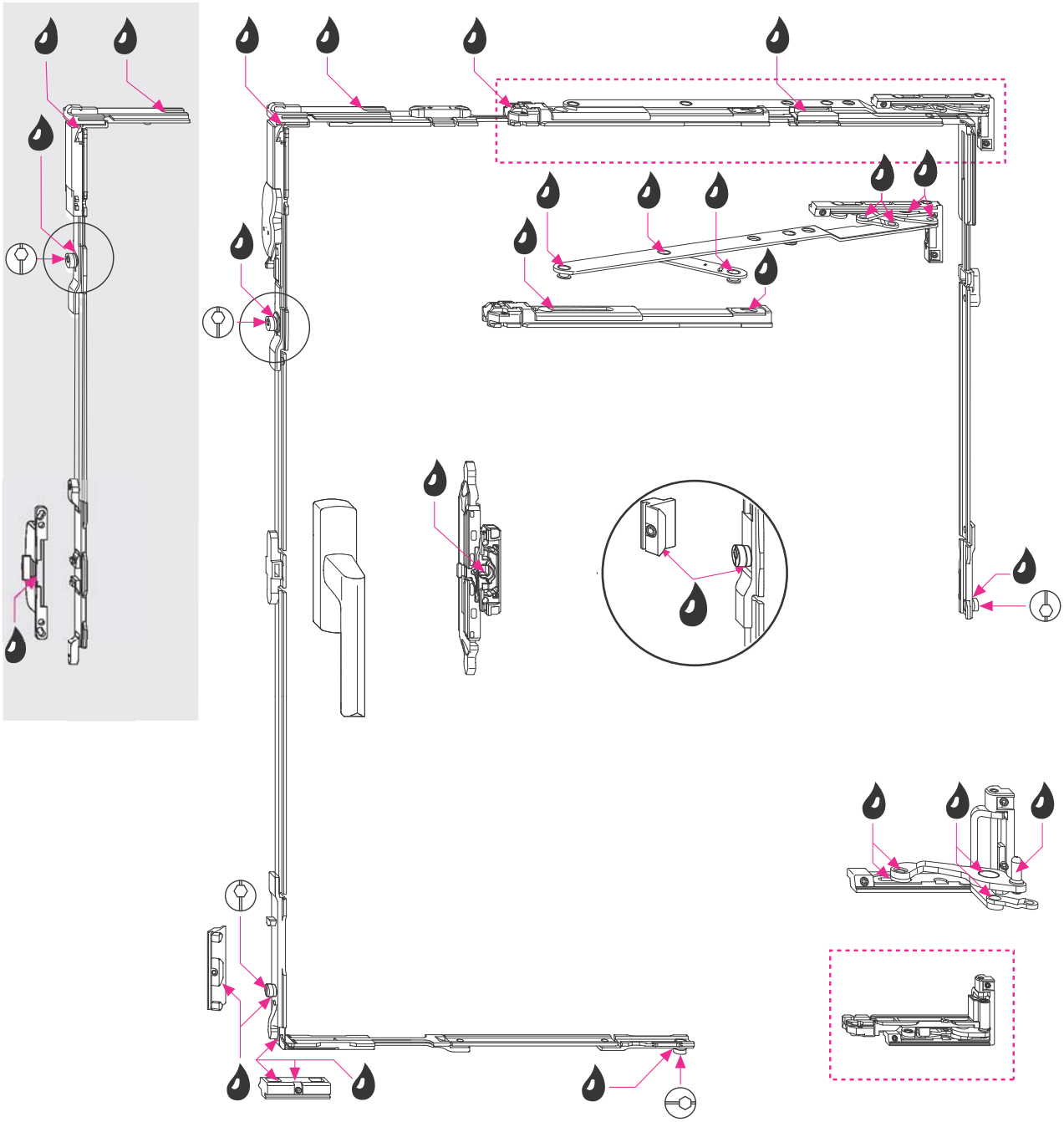


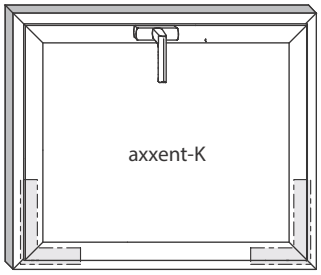
1) Side adjustment using ALU 5200 standard adjusting piece

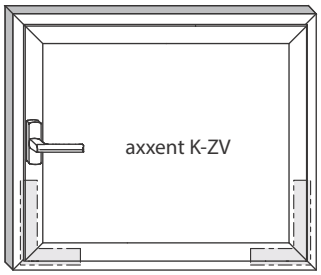
2) For pressure setting purposes, remove the standard adjusting piece and, if required, use the "AV adjusting piece" (brass), mat. no. MXBS0100-000010 (with integrated side adjustment)

Note:

- For further information, please refer to the H48.5200LS...en installation instructions.
- The specifications on page 1 must be observed.

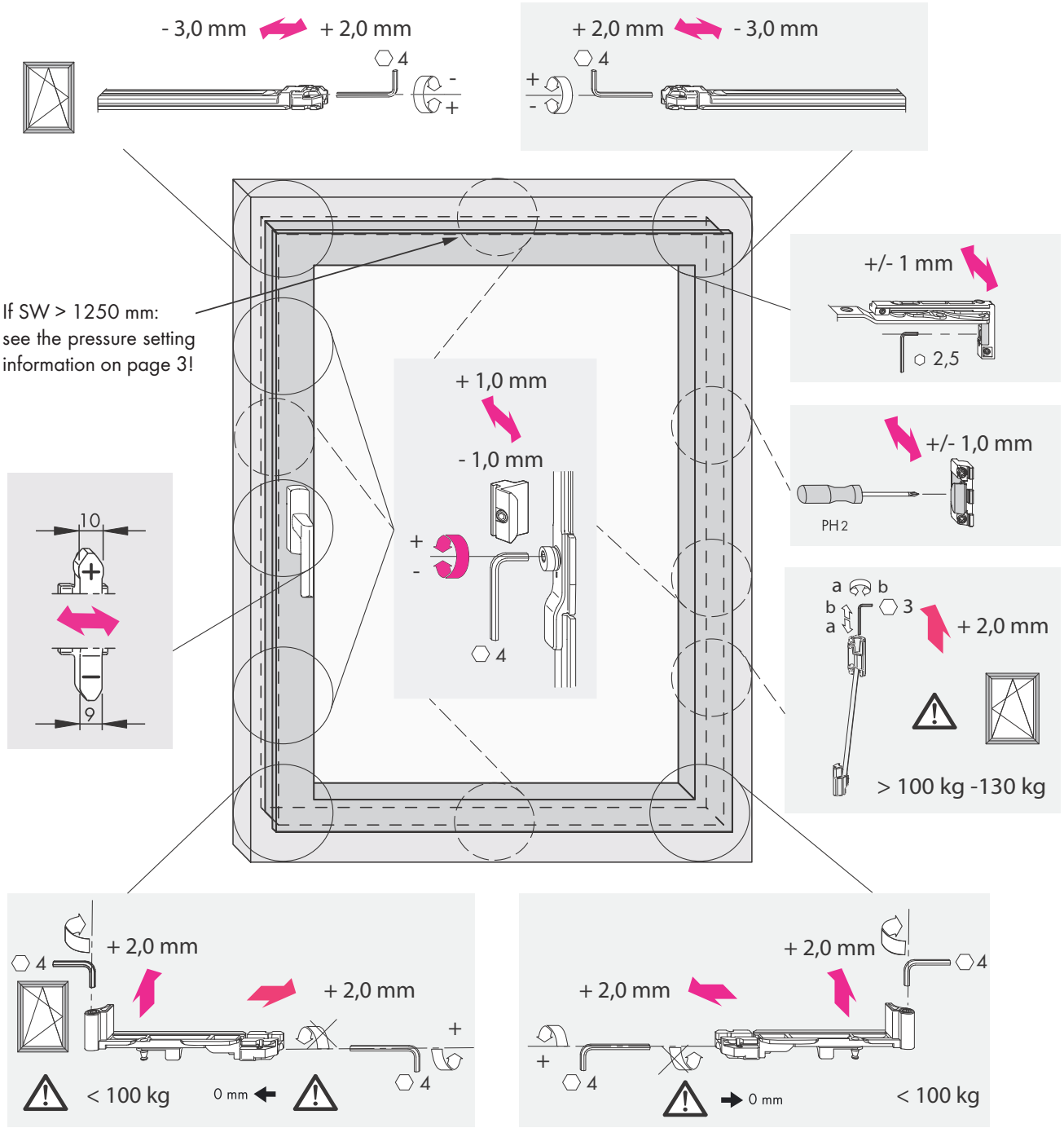






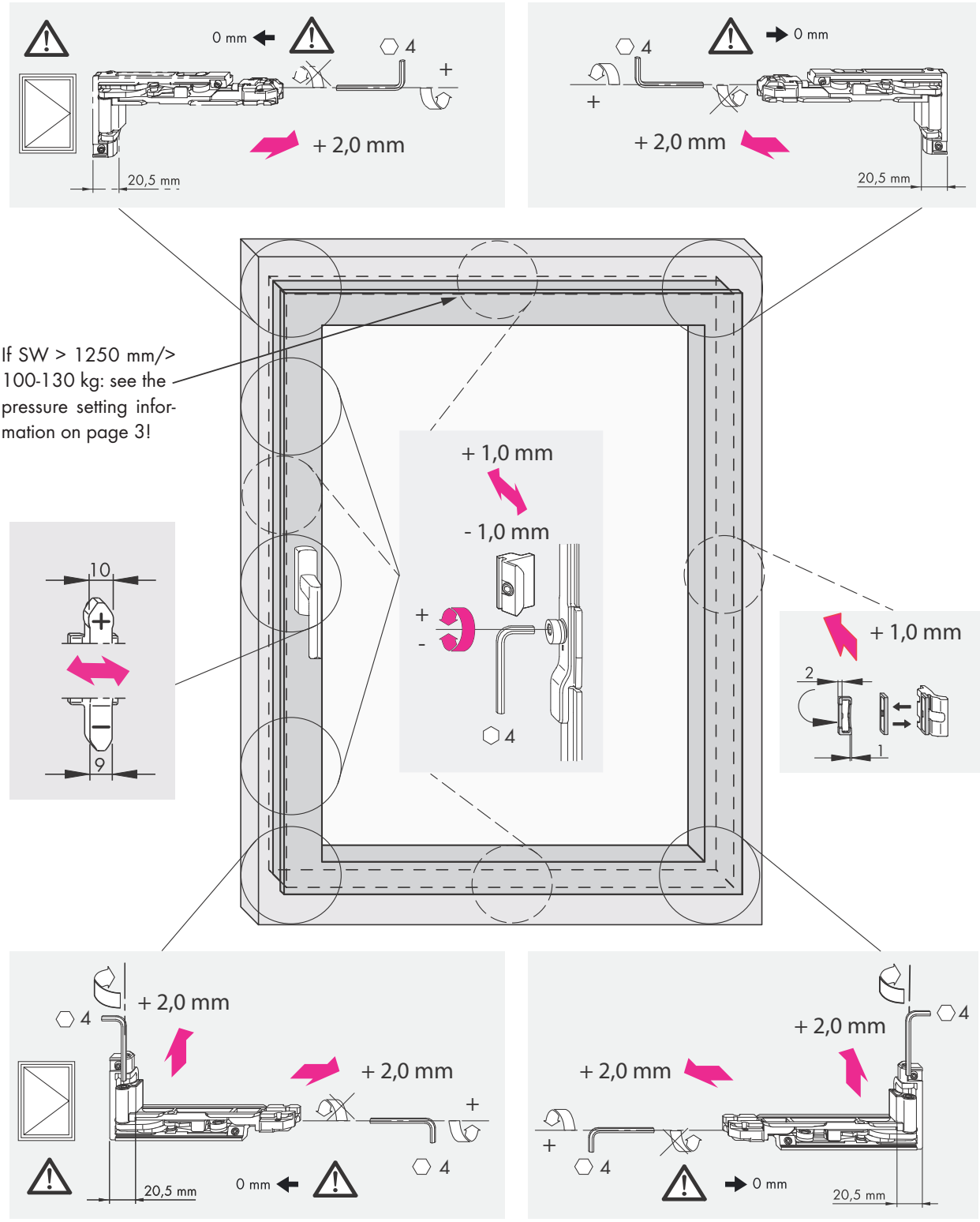
Note:

- The illustrations show ALU axxent-D/DK/TBT. Follow the same procedure for ALU axxent-K/K-ZV.
- Grease/oil all strikers, eccentric locking cams, mishandling devices and routed-in drive gears!
- For further information, please refer to the H48.axntLS...en installation instructions.
- The specifications on page 1 must be observed.



Notes:
- For further information, please refer to the H48.axntLS...en installation instructions.
- The specifications on page 1 must be observed.

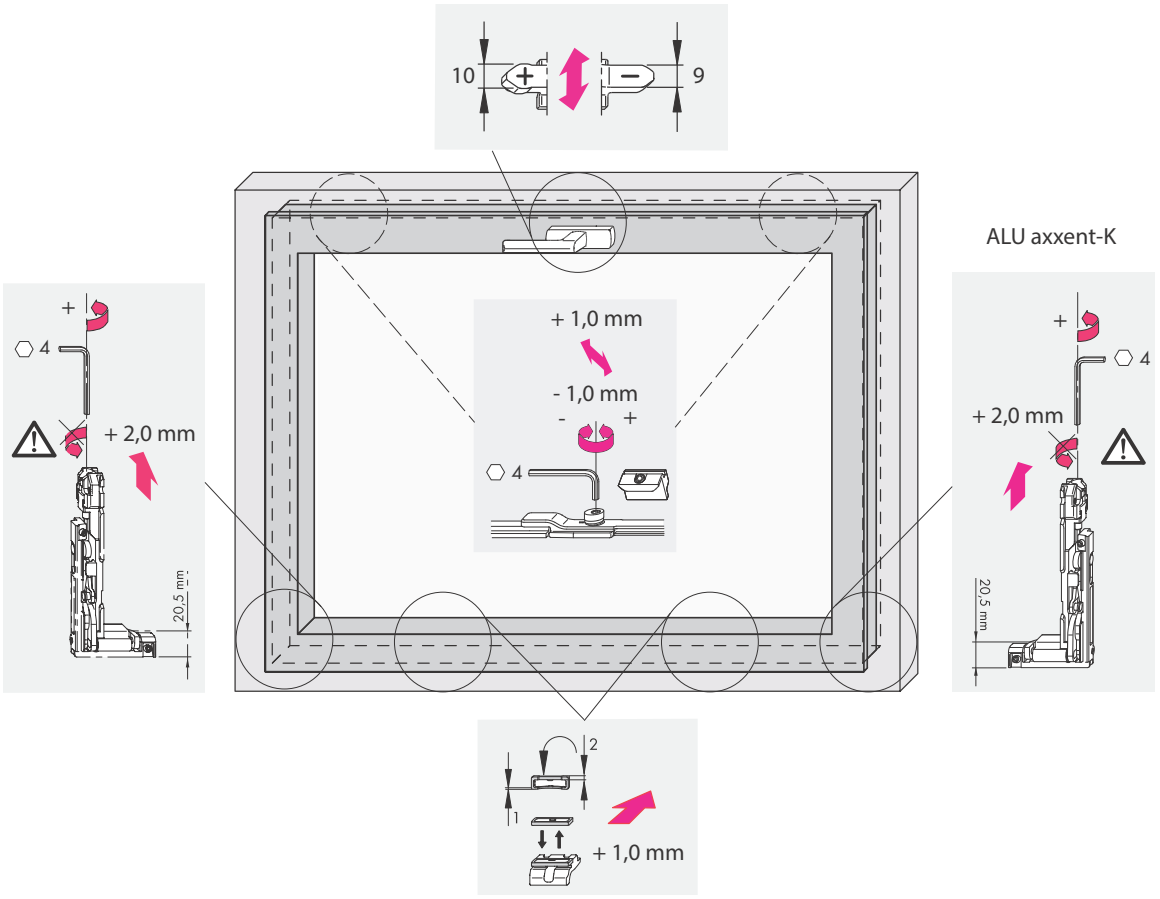
Turn the adjusting screws only in the direction specified!

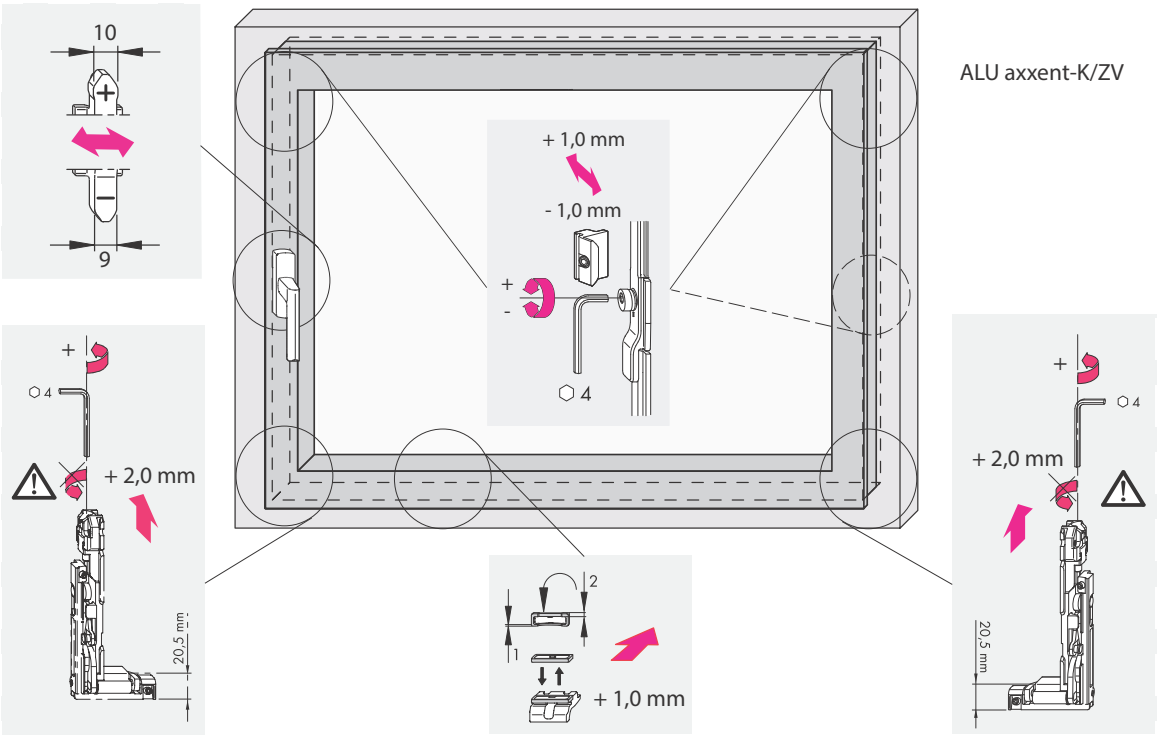


Notes:

- For further information, please refer to the H48.axntLS...en installation instructions.
- The specifications on page 1 must be observed.

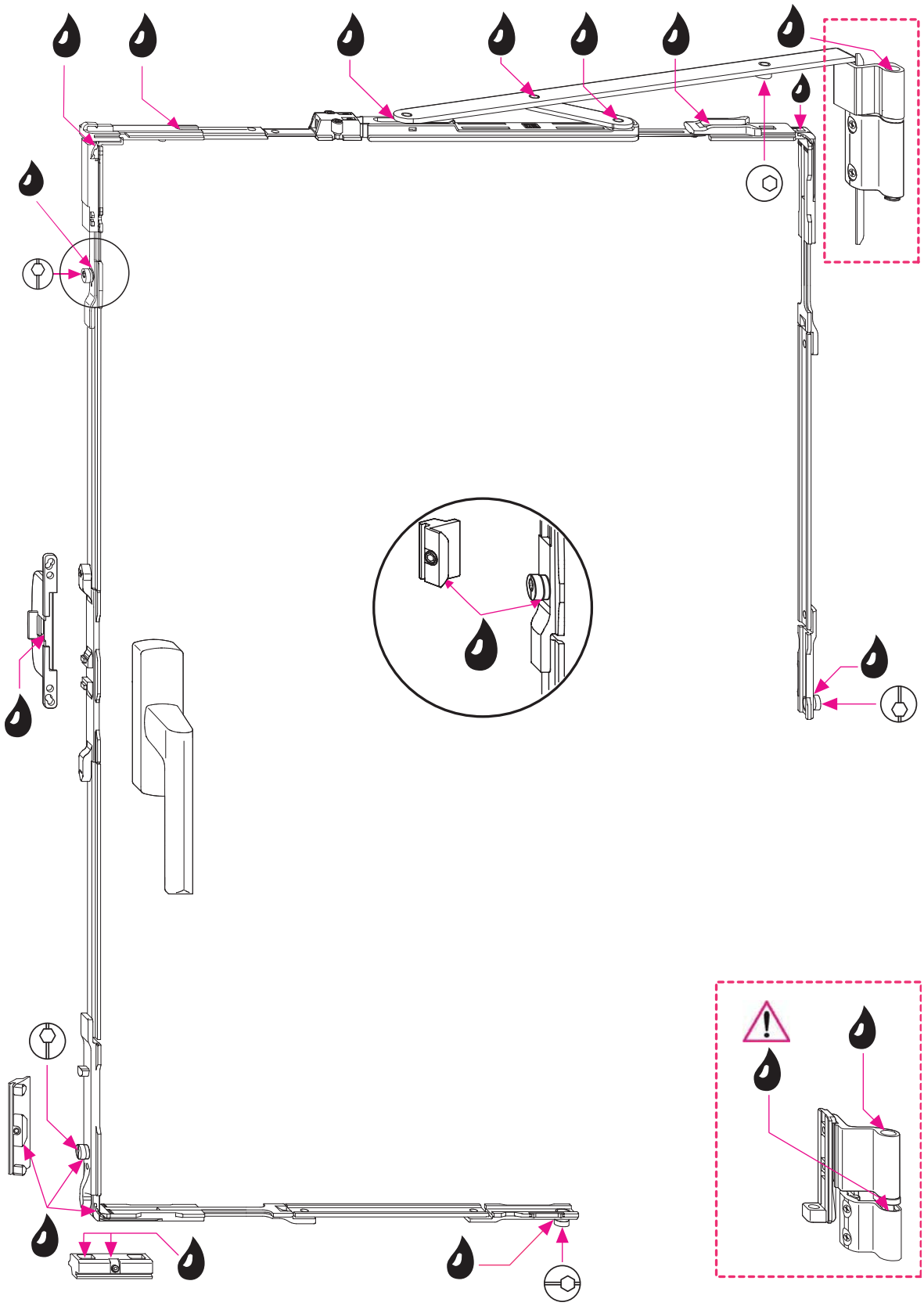
Turn the adjusting screws only in the direction specified!





Notes:
- For further information, please refer to the H48.axntLS...en installation instructions.
- The specifications on page 1 must be observed.

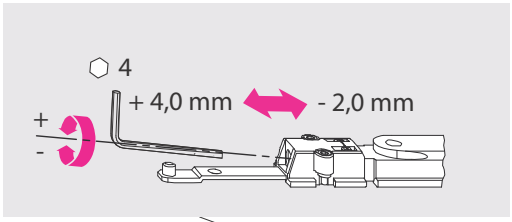
Turn the adjusting screws only in the direction specified!



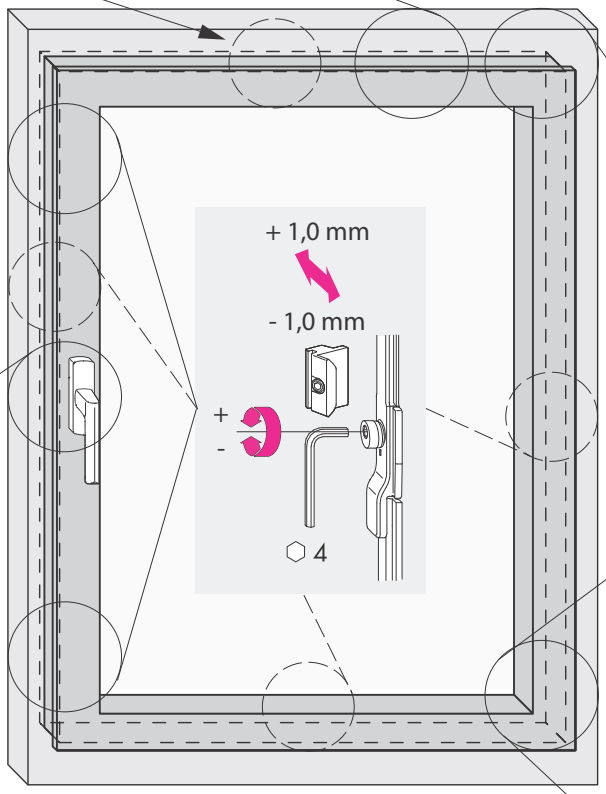
Note:

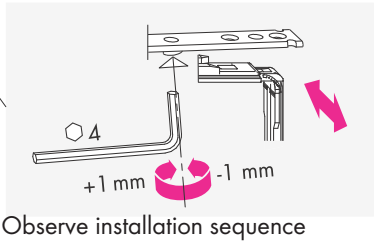
- Grease/oil all strikers, eccentric locking cams, mishandling devices and routed-in drive gears!
- For further information, please refer to the H48.2200LS...en installation instructions.
- The specifications on page 1 must be observed.

Grease the sockets of the bottom hinge pins; **do not oil them!**

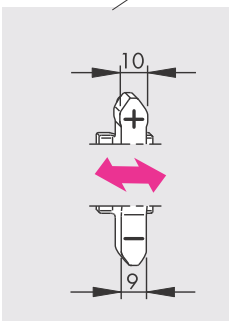


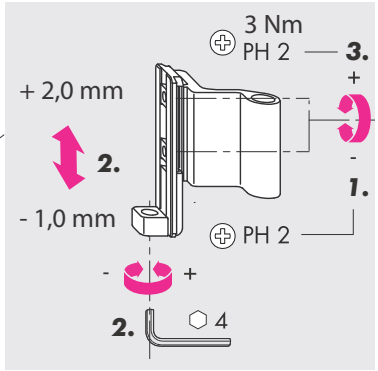
If SW > 1250 mm, see the pressure setting information on page 3!





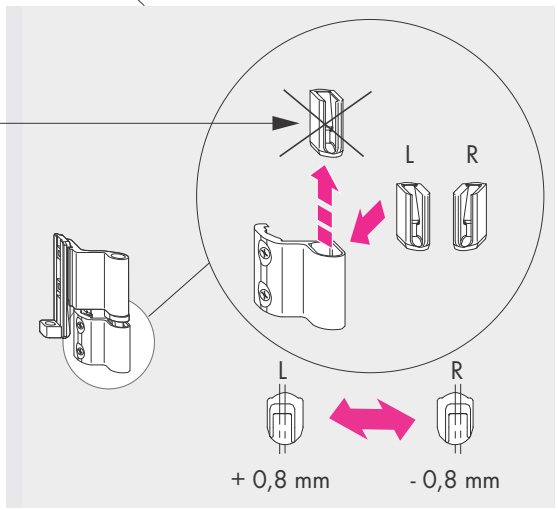
Observe installation sequence
1. - 2. - 3. during height adjustment via the clamping piece E.
Note: Loosen countersunk screws at the corner hinge 1/2 turn only.
Do not unscrew them completely.



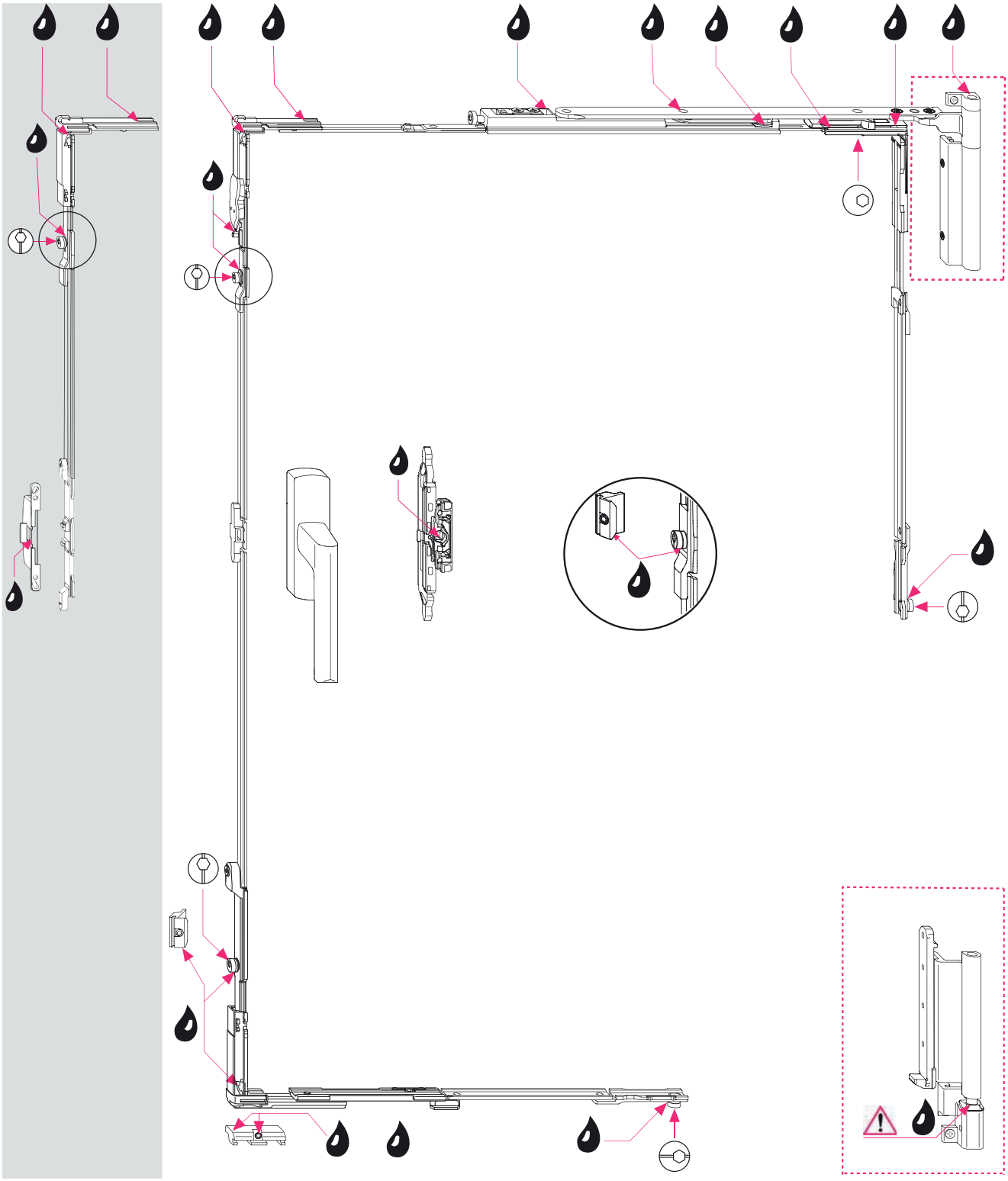


For side adjustment purposes, remove the standard pressure piece and, if required, use either the "right pressure piece" (R), mat. no. MBDR0021-10010, or the "left pressure piece" (L), mat no. MBDR0022-10010

.



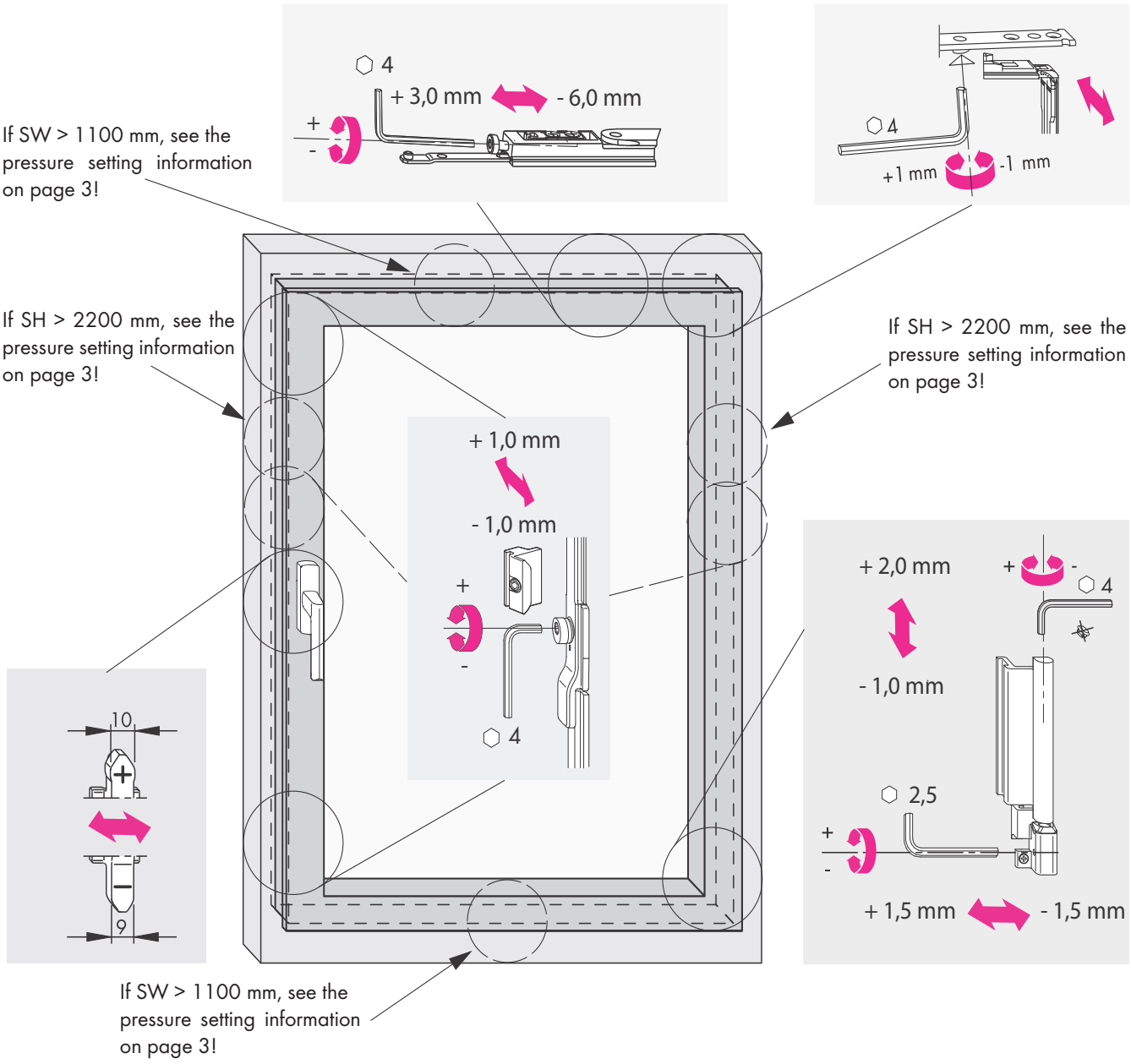
Notes:
- For further information, please refer to the H48.2200LS...en installation instructions.
- The specifications on page 1 must be observed.



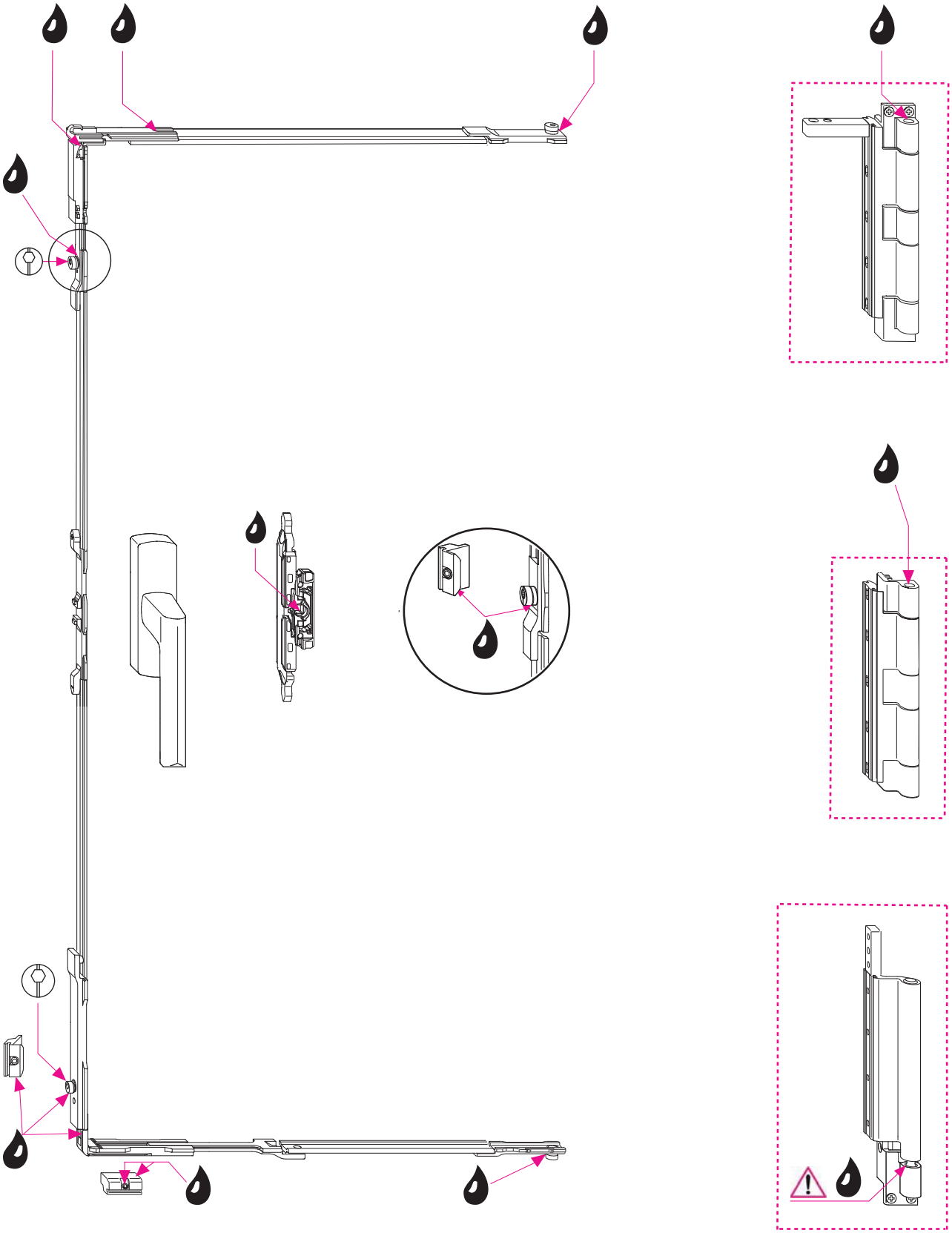
Notes:

- Grease/oil all strikers, eccentric locking cams, mishandling devices and routed-in drive gears!
- For further information, please refer to the H48.200LS...en installation instructions.
- The specifications on page 1 must be observed.

Grease the sockets of the bottom hinge pins; **do not oil them!**



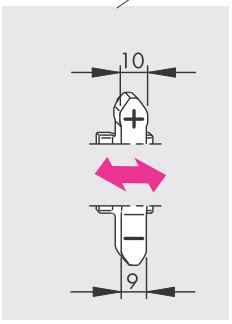
Note:
- For further information, please refer to the H48.200LS...en installation instructions.
- The specifications on page 1 must be observed.

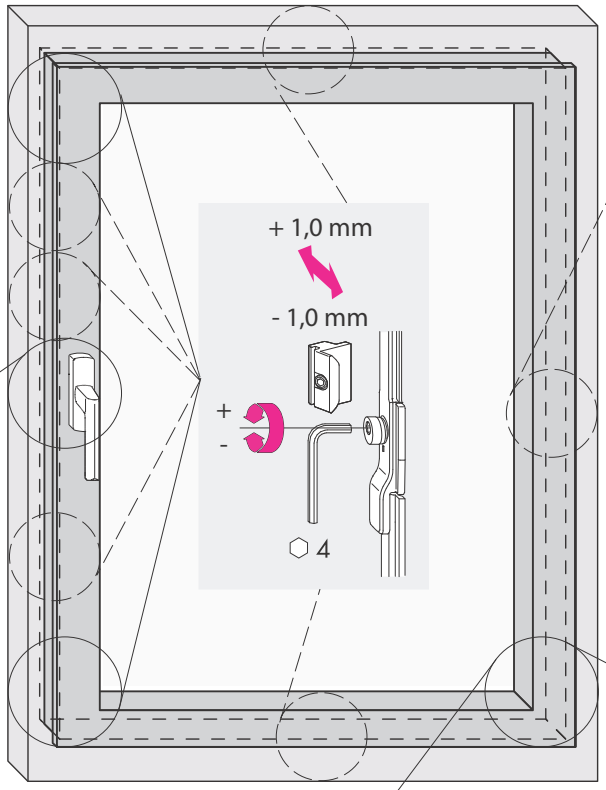


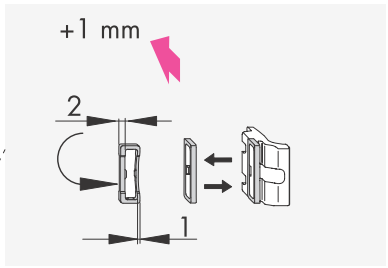
Note:

- Grease/oil all strikers, eccentric locking cams, mishandling devices and routed-in drive gears!
- For further information, please refer to the H48.300LS...en installation instructions.
- The specifications on page 1 must be observed.

⚠ Grease the sockets of the bottom hinge pins; **do not oil them!**

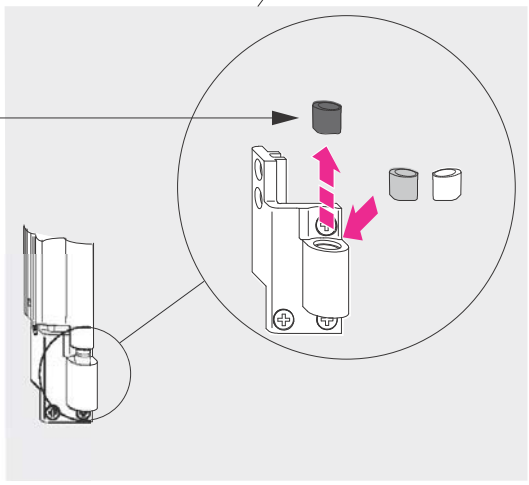


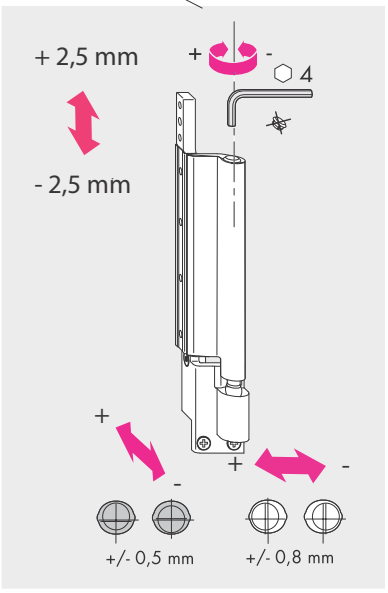




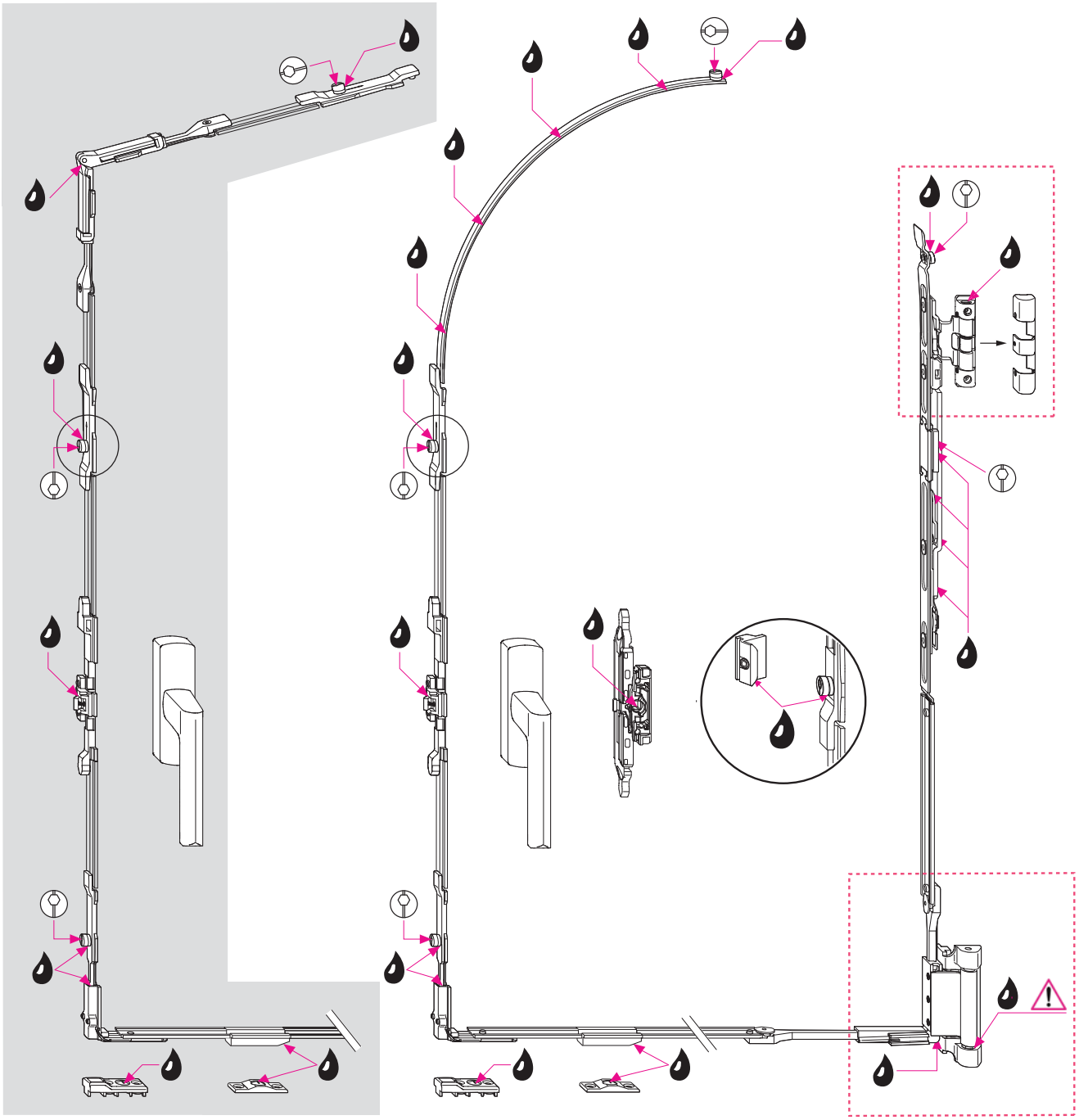
For pressure setting purposes, remove the standard adjusting piece and, if required, use the "AV pressure piece" (grey), mat. no. 855 133.

For side adjustment purposes, remove the standard adjusting piece and, if required, use the "AV pressure piece" (white), mat. no. 818 138.





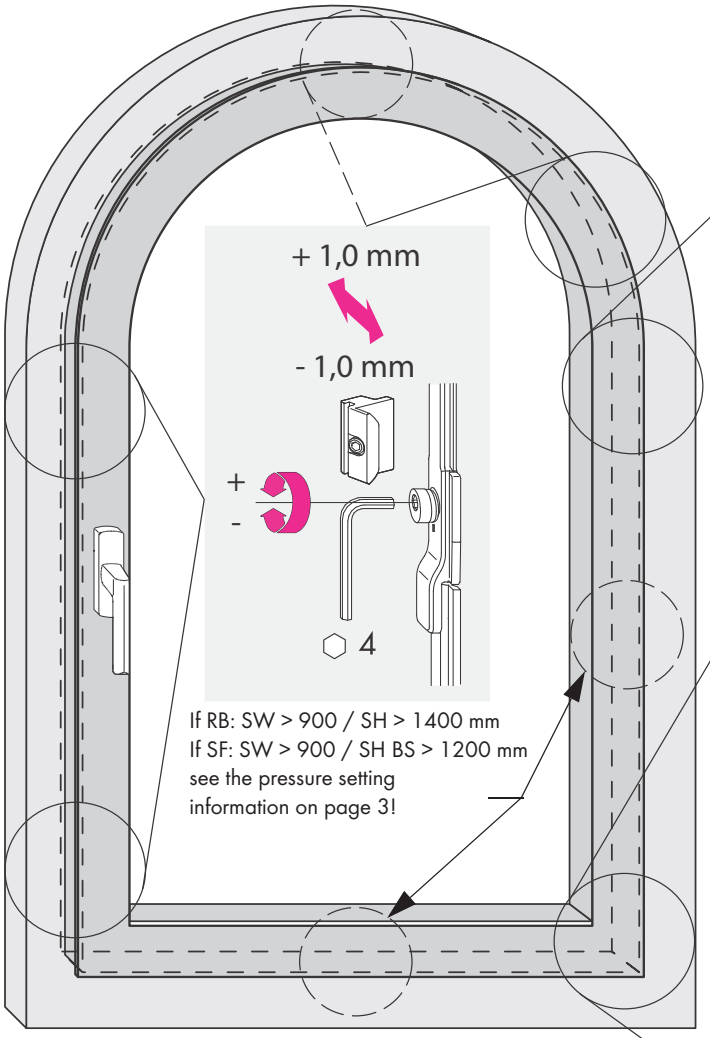
Note:
- For further information, please refer to the H48.300LS...en installation instructions.
- The specifications on page 1 must be observed.



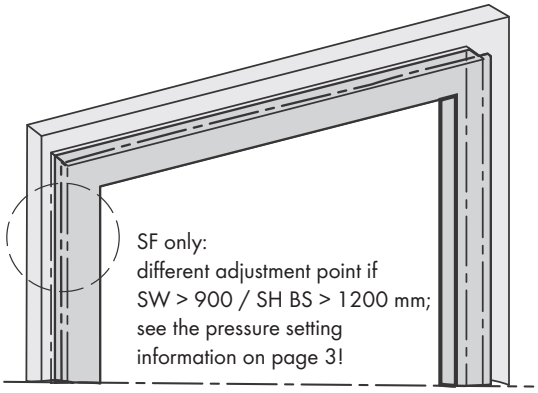
Notes:

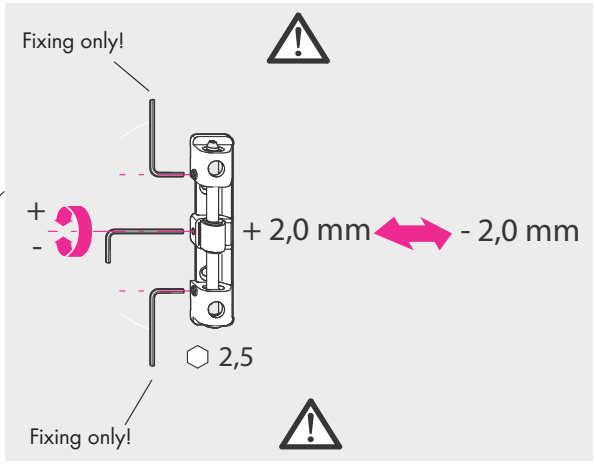
- Grease/oil all strikers, eccentric locking cams, mishandling devices and routed-in drive gears!
- For further information, please refer to the H48.RBLS...en and H48.SFLS...en installation instructions.
- The specifications on page 1 must be observed.

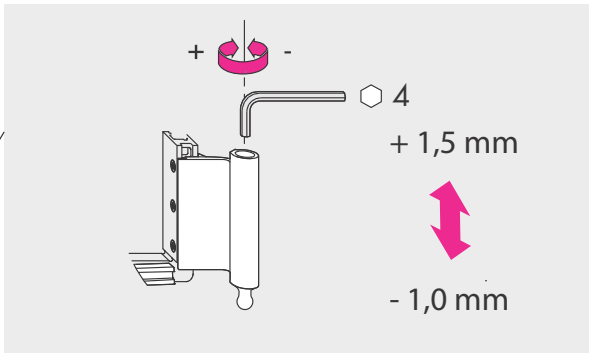
⚠ Grease the sockets of the bottom hinge pins; **do not oil them!**

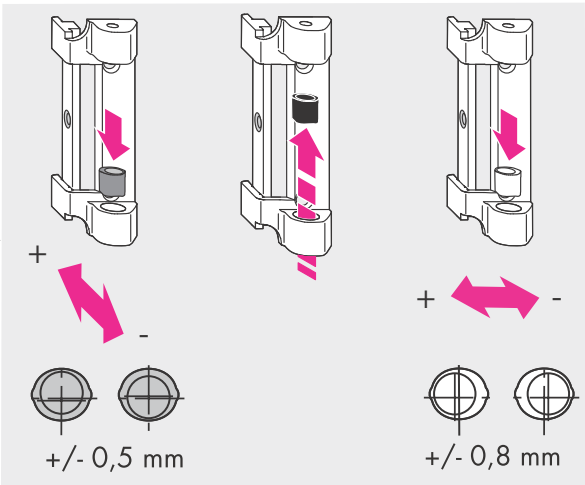


Perform all adjustments in the same way for ALU SF!







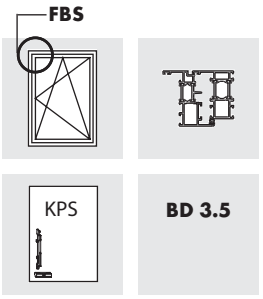


For pressure setting purposes, remove the standard adjusting piece and, if required, use the "AV pressure piece" (grey), mat. no. 855 133.

For side adjustment purposes, remove the standard adjusting piece and, if required, use the "AV pressure piece" (white), mat. no. 818 138.

Note:
- The illustrations show ALU RB. Follow the same procedure for ALU SF.
- For further information, please refer to the H48.RBLS...en and H48.SFLS...en installation instructions.
- The specifications on page 1 must be observed.

ALU 5200-DK (130 kg)



Turn-and-tilt hardware for hinge clearance (BD) 3.5 mm with mishandling device (FBS) on the corner drive (EUL)

Tilt point vertical (KPS)

Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	Patio doors max.
Sash width	(mm)	365 to 1600		1300
Sash height	(mm)	550 to 2000		2400
Sash weight	(kg)	**max. 100/130**		**max. 100/130**

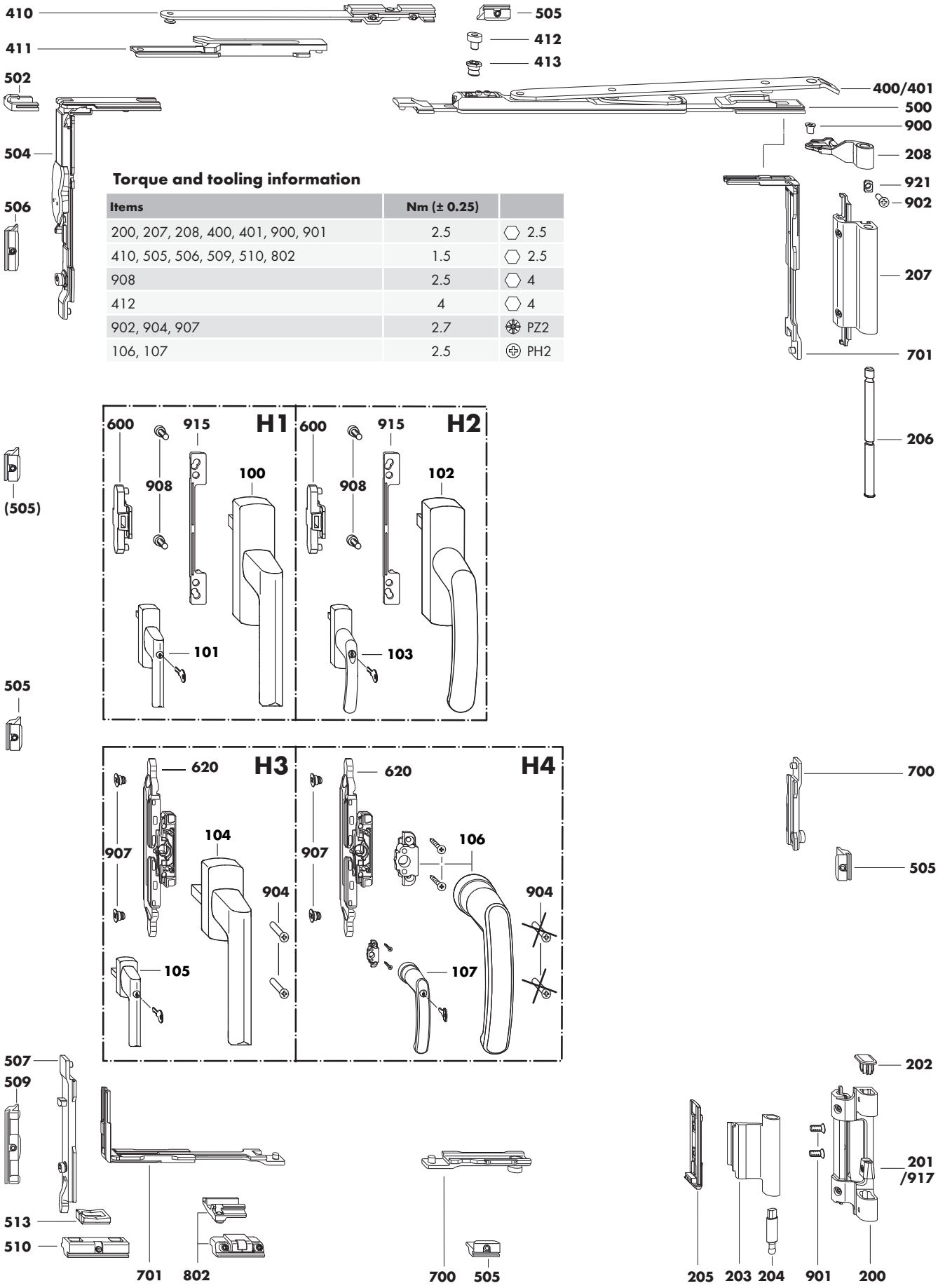
The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 100 kg: Document no. H58.AWDLMS003EN
- Sash weight up to max. 130 kg: Document no. H58.AWDLMS004EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Adjustment options:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

Table of contents

Assembly instructions
H48.5200LS001en

H48.5200LS001en/2



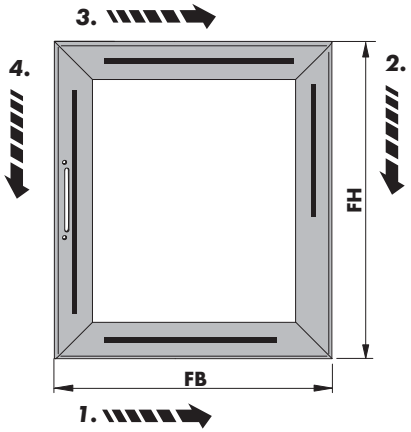
Torque and tooling information

Items	Nm (± 0.25)	
200, 207, 208, 400, 401, 900, 901	2.5	⬡ 2.5
410, 505, 506, 509, 510, 802	1.5	⬡ 2.5
908	2.5	⬡ 4
412	4	⬡ 4
902, 904, 907	2.7	✱ PZ2
106, 107	2.5	⊕ PH2

ALU 5200-DK BD 3.5 KPS (FBS-EUL) 130 kg *Hardware list*

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	100	1	**Handle ALU Si-line**	*Only use in combination with coupling set*	*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
	101		**ALU Si-line lockable**					
H2	102		**ALU Globe**					
	103		**ALU Globe lockable**					
H3	104		**TITAN**	*Only use in combination with gear set*	*□ 7 mm x 25, cam Ø 10 mm Only use in combination with gear set*			
	105		**TITAN lockable**					
H4	106		**ALU Globe RR**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en in ALU planning manual*			
	107		**ALU Globe RR lockable**					
		1	**Hinge side ALU 5200 BD 3.5**	**silver**	**MMBS0220-525010**	**1**	**MMBS0220-525020**	**10**
				white *RAL 9016*	**MMBS0220-504010**	**1**	**MMBS0220-504020**	**10**
				black *RAL 9005*	**MMBS0220-523010**	**1**	**MMBS0220-523020**	**10**
				EV 1	**MMBS0220-524010**	**1**	**MMBS0220-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0220-500120**	**5**
	200	1	Bottom hinge					
	201	1	Adjusting piece					
	202	1	Cover cap					
	203	1	Corner hinge					
	204	1	Bottom hinge pin					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	208	1	Stay hinge					
	900	1	M5 x 7.5 countersunk screw					
	901	2	M5 x 8.5 countersunk screw					
	400	**0...1**	**Top stay ALU size 20**	*Sash width > 365 ≤ 600 weight ≤ 100 kg*	**884805**	**1**	**273098**	**20**
	401	**0...1**	**Top stay ALU size 35**	*Sash width > 600 ≤ 1600*	**884782**	**1**	**314203**	**20**
depending on FB/kg		**0...1**	**Additional stay ALU**	*Sash width > 1250 with top stay size 35 ≤ 100 kg Sash width > 1020 with top stay size 35 ≤ 100 kg*	**857076**	**1**	**247006**	**10**
	410	1	Additional stay					
	411	1	Striker plate					
	412	1	Locking cam					
	413	1	Eccentric rivet					
depending on kg		**0...1**	**Accessories set for 130 kg**	*> 100 kg*	**-**	**1**	**247037**	**20**
	902	1	M5 x 13 countersunk screw					
	921	1	Supporting piece					
		1	**Locking side ALU DK (with FBS on corner drive) KPS**		**MMVS0310-100010**	**1**	**MMVS0310-100030**	**20**
	500	1	DK locking bolt					
	502	1	EUL clamping piece					
	504	1	Corner drive, VSO-FBS					
	506	1	Striker EUL					
	507	1	Tilt lock cam 10 mm					
	509	1	E striker cam 10					
	510	1	Tilt locking part					
	513	1	Run-up block					
H1/H2		**0...1**	**Coupling set ALU (without FBS on gear)**	*Only use in combination with H1/H2*	**MMKL0060-100010**	**1**	**MMKL0060-100030**	**20**
	600	1	ALU coupling bracket					
	908	2	M5 x 12 cheese head screw					
H3/H4		**0...1**	**Gear set ALU (without FBS on gear)**	*Only use in combination with H3/H4 (see drawing no. H48.ZubhLS005en)*	**MMGI0090-100010**	**1**	**MMGI0090-100030**	**20**
	620	1	M6 ESG					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...2**	**MV ALU-DK/TBT**	*(FB/FH > 1250) (recommendation)*	**857045**	**1**	**246979**	**20**
	505	2	Striker					
	700	1	Slider					
	701	1	VSU/BSO corner drive					
Accessories	**802**	**0...1**	**Sash lifter ALU**	*(see drawing no. H48.ZubhLS014en)*	**MMFH0010-100010**	**1**	**MMFH0010-100030**	**20**
	915	**0...1**	**Handle support ALU**	*Only use in combination with H1/H2*	**-**	**-**	*See table on page 4*	**200**
	917	**0...1**	**AV adjusting piece**	*For compression + 0.5 mm*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (> 100 kg; see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

Observe assembly sequence

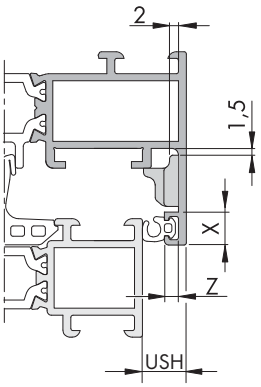


Sequence of installation in sash

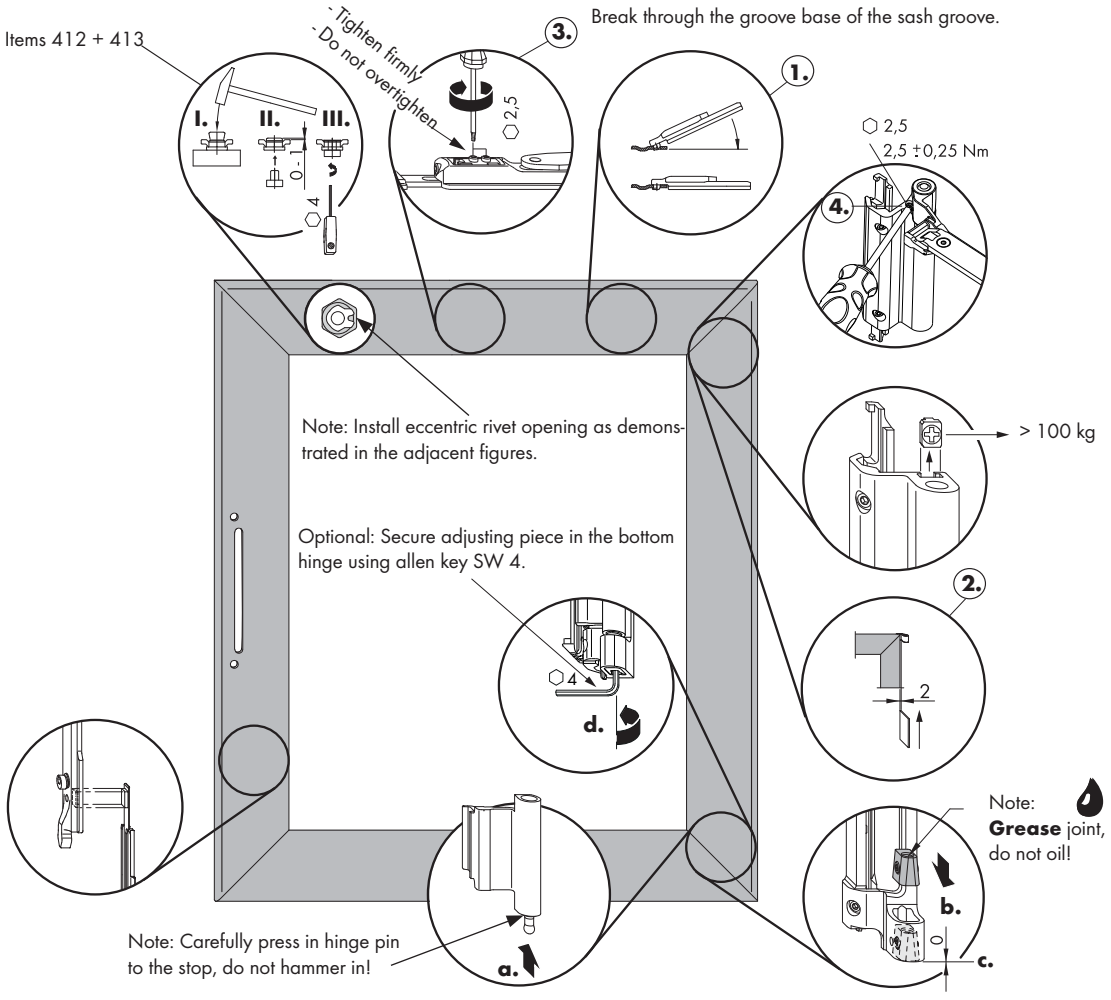
- without centre lock (**3. - 4.**)
- with centre lock (**1. - 2. - 3. - 4.**)

Design variations for handle support (item 915) (H1/H2)

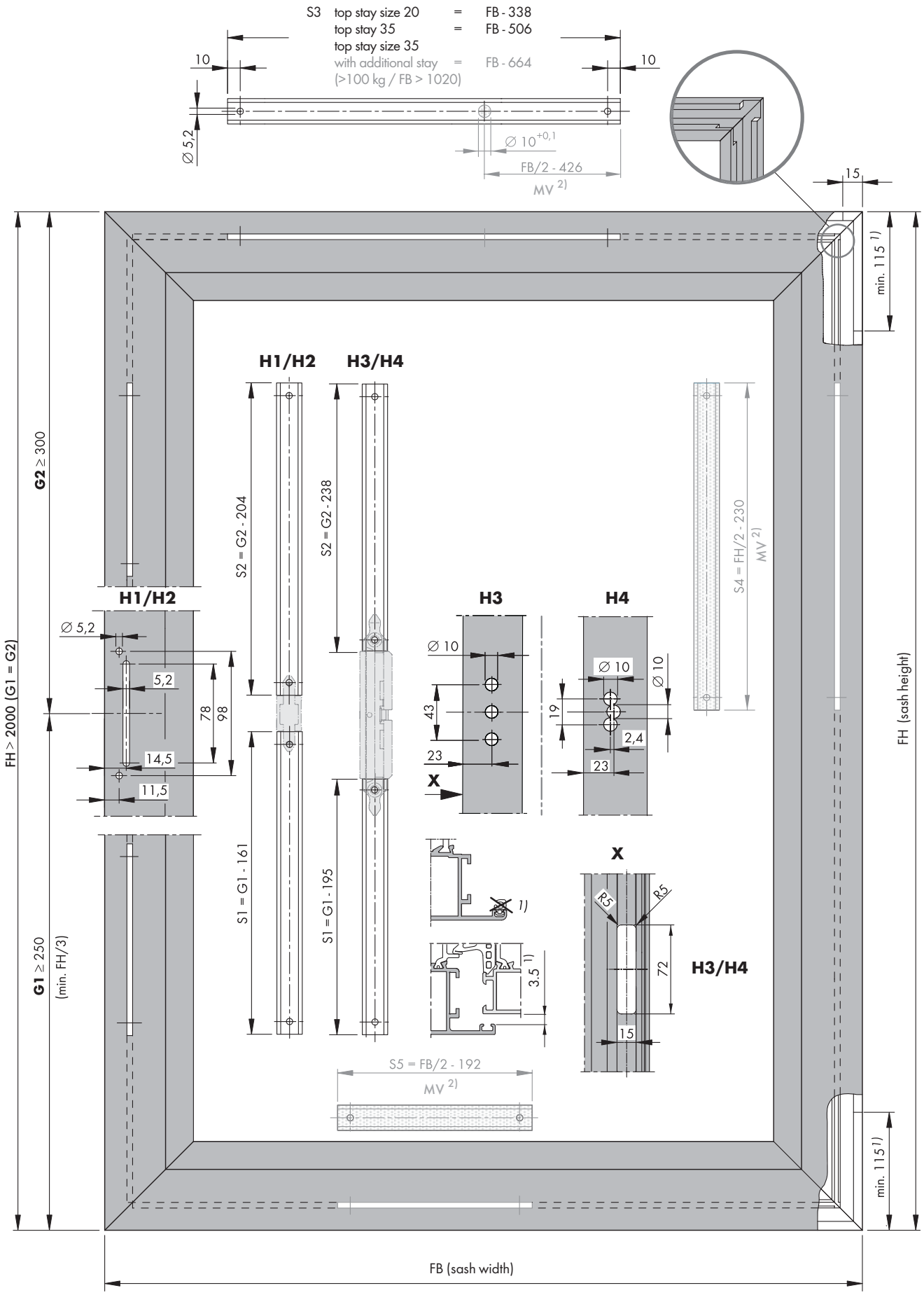
USH (mm)	Z (mm)	X ≤ 7 mm	X > 7 ≤ 8.5 mm
7 - 10	≤ 2	MFHA0010-100200	MFHA0010-100200
	> 2 ≤ 3		MFHA0020-100200
	> 3		-
12	-	MFHA0030-100200	-



Assembly settings and installation sequence ① to ④

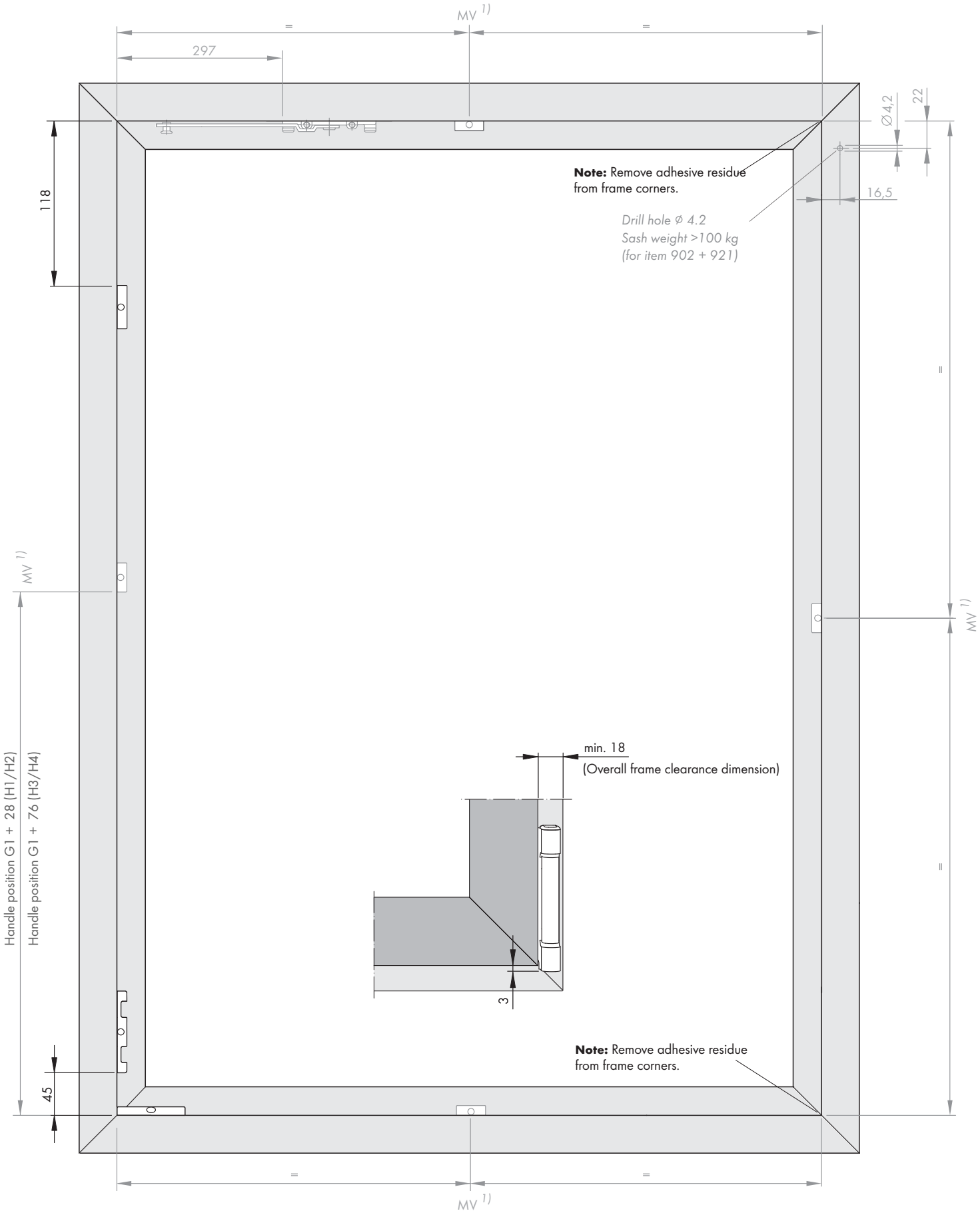


ALU 5200-DK BD 3.5 KPS (FBS-EUL) 130 kg *Sash dimensions*



1) Remove the rebate seal in the hinge gap area (minimum hinge gap 3.5 mm).
2) Installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-DK BD 3.5 KPS (FBS-EUL) 130 kg *Frame dimensions*

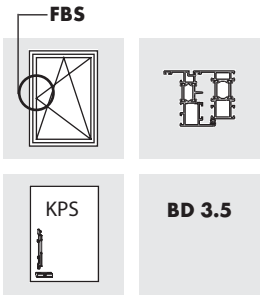


1) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-DK (130 kg)

Turn-and-tilt hardware for hinge clearance (BD) 3.5 mm with mishandling device (FBS) on the gear (G)

Tilt point vertical (KPS)



Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	Patio doors max.
Sash width	(mm)	365 to 1600		1300
Sash height	(mm)	550 to 2000		2400
Sash weight	(kg)	**max. 100/130**		**max. 100/130**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 100 kg: Document no. H58.AWDLMS003EN
- Sash weight up to max. 130 kg: Document no. H58.AWDLMS004EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Adjustment options:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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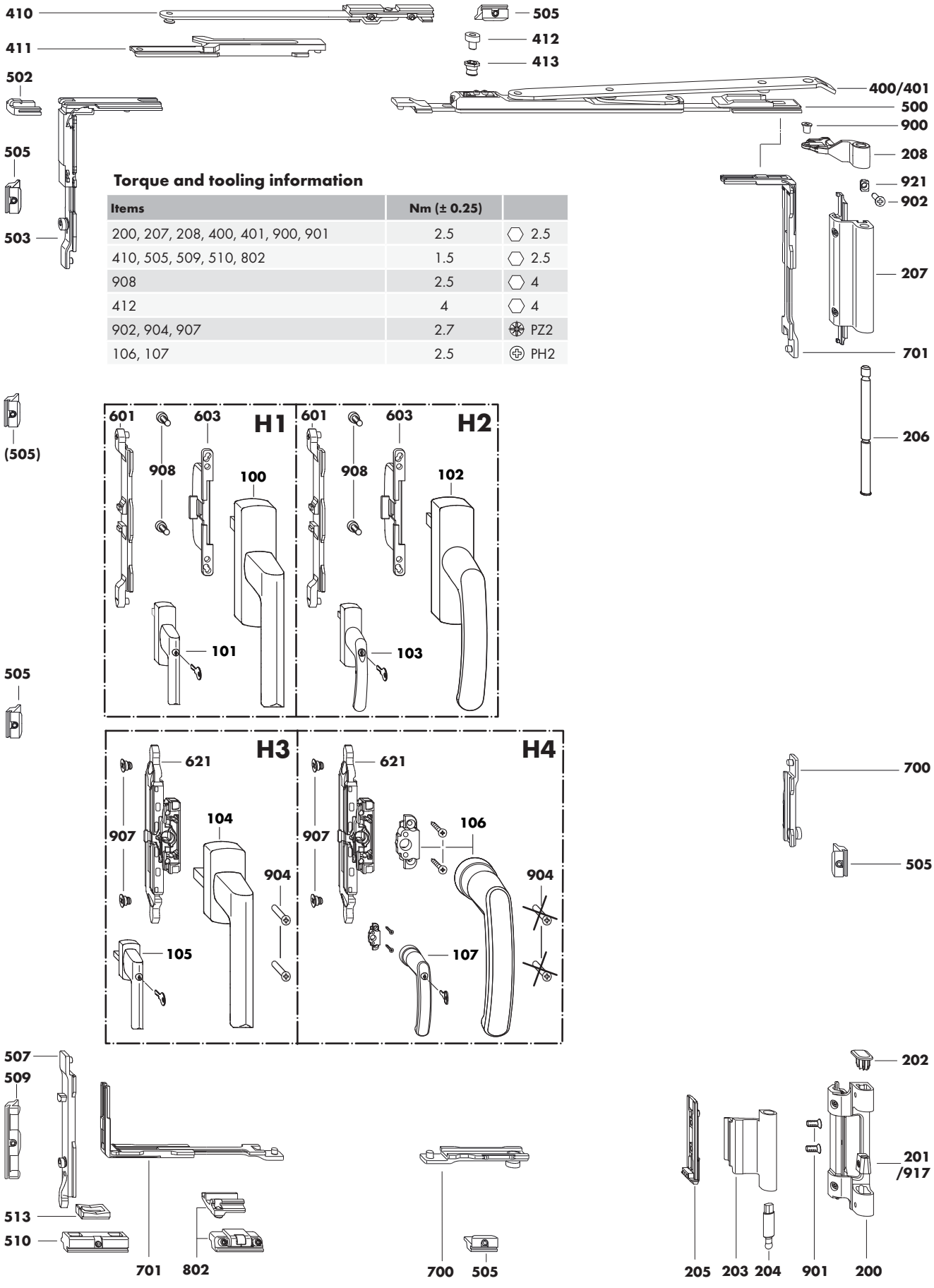


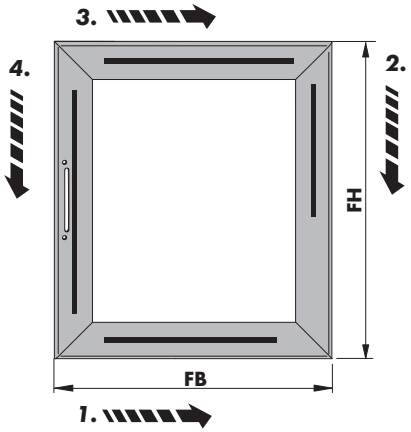
Torque and tooling information

Items	Nm (± 0.25)	
200, 207, 208, 400, 401, 900, 901	2.5	⬡ 2.5
410, 505, 509, 510, 802	1.5	⬡ 2.5
908	2.5	⬡ 4
412	4	⬡ 4
902, 904, 907	2.7	✱ PZ2
106, 107	2.5	⊕ PH2

ALU 5200-DK BD 3.5 KPS (FBS-G) 130 kg Hardware list

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	100	1	**Handle ALU Si-line**	*Only use in combination with coupling set*	*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
	101		**ALU Si-line lockable**					
H2	102		**ALU Globe**					
	103		**ALU Globe lockable**					
H3	104		**TITAN**	*Only use in combination with gear set*	*□ 7 mm x 25, cam Ø 10 mm Only use in combination with gear set*			
	105		**TITAN lockable**					
H4	106		**ALU Globe RR**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en in ALU planning manual*			
	107		**ALU Globe RR lockable**					
		1	**Hinge side ALU 5200 BD 3.5**	**silver**	**MMBS0220-525010**	**1**	**MMBS0220-525020**	**10**
				white *RAL 9016*	**MMBS0220-504010**	**1**	**MMBS0220-504020**	**10**
				black *RAL 9005*	**MMBS0220-523010**	**1**	**MMBS0220-523020**	**10**
				EV 1	**MMBS0220-524010**	**1**	**MMBS0220-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0220-500120**	**5**
	200	1	Bottom hinge					
	201	1	Adjusting piece					
	202	1	Cover cap					
	203	1	Corner hinge					
	204	1	Bottom hinge pin					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	208	1	Stay hinge					
	900	1	M5 x 7.5 countersunk screw					
	901	2	M5 x 8.5 countersunk screw					
	400	**0...1**	**Top stay ALU size 20**	*Sash width > 365 ≤ 600 weight ≤ 100 kg*	**884805**	**1**	**273098**	**20**
	401	**0...1**	**Top stay ALU size 35**	*Sash width > 600 ≤ 1600*	**884782**	**1**	**314203**	**20**
depending on FB/kg		**0...1**	**Additional stay ALU**	*Sash width > 1250 with top stay size 35 ≤ 100 kg Sash width > 1020 with top stay size 35 > 100 kg*	**857076**	**1**	**247006**	**10**
	410	1	Additional stay					
	411	1	Striker plate					
	412	1	Locking cam					
	413	1	Eccentric rivet					
depending on kg		**0...1**	**Accessories set ALU for 130 kg**	*> 100 kg*	**-**	**1**	**247037**	**20**
	902	1	M5 x 13 countersunk screw					
	921	1	Supporting piece					
		1	**Locking side ALU DK (for FBS on gear) KPS**		**MMVS0250-100010**	**1**	**MMVS0250-100030**	**20**
	500	1	DK locking bolt					
	502	1	EUL clamping piece					
	503	1	Corner drive VSO					
	506	1	Striker EUL					
	507	1	Tilt lock cam 10					
	509	1	E striker cam 10					
	510	1	Tilt locking part					
	513	1	Run-up block					
H1/H2		**0...1**	**Coupling set ALU FBS (with FBS on gear)** **Y= 9 mm**	*Only use in combination with H1/H2 (For notes on rebate height (USH) and dimension Y see page 4)*	**MMKL0030-100010**	**1**	**MMKL0030-100030**	**20**
			Y=10 mm		**MMKL0010-100010**	**1**	**MMKL0010-100030**	**20**
			USH 12 mm		**MMKL0040-100010**	**1**	**MMKL0040-100030**	**20**
	601	1	ALU coupling bracket					
	603	1	Mishandling device					
	908	2	M5 x 12 cheese head screw					
H3/H4		**0...1**	**Gear set ALU FBS (with FBS on gear)**	*Only use in combination with H3/H4 (see drawing no. H48.ZubhLS005en)*	**MMGI0080-100010**	**1**	**MMGI0080-100030**	**20**
	621	1	ESG M6 FBS					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...2**	**MV ALU-DK/TBT**	*FB/FH > 1250 (recommendation)*	**857045**	**1**	**246979**	**20**
	505	2	Striker					
	700	1	Slider					
	701	1	VSU/BSO corner drive					
Accessories	**802**	**0...1**	**Sash lifter ALU**	*(see drawing no. H48.ZubhLS014en)*	**MMFH0010-100010**	**1**	**MMFH0010-100030**	**20**
	917	**0...1**	**AV adjusting piece**	*For compression + 0.5*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (> 100 kg; see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

Observe assembly sequence

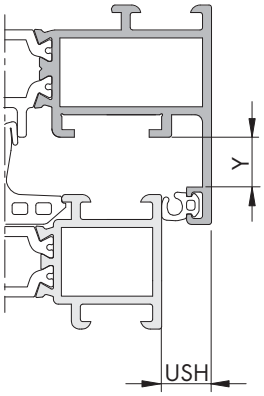


Sequence of installation in sash

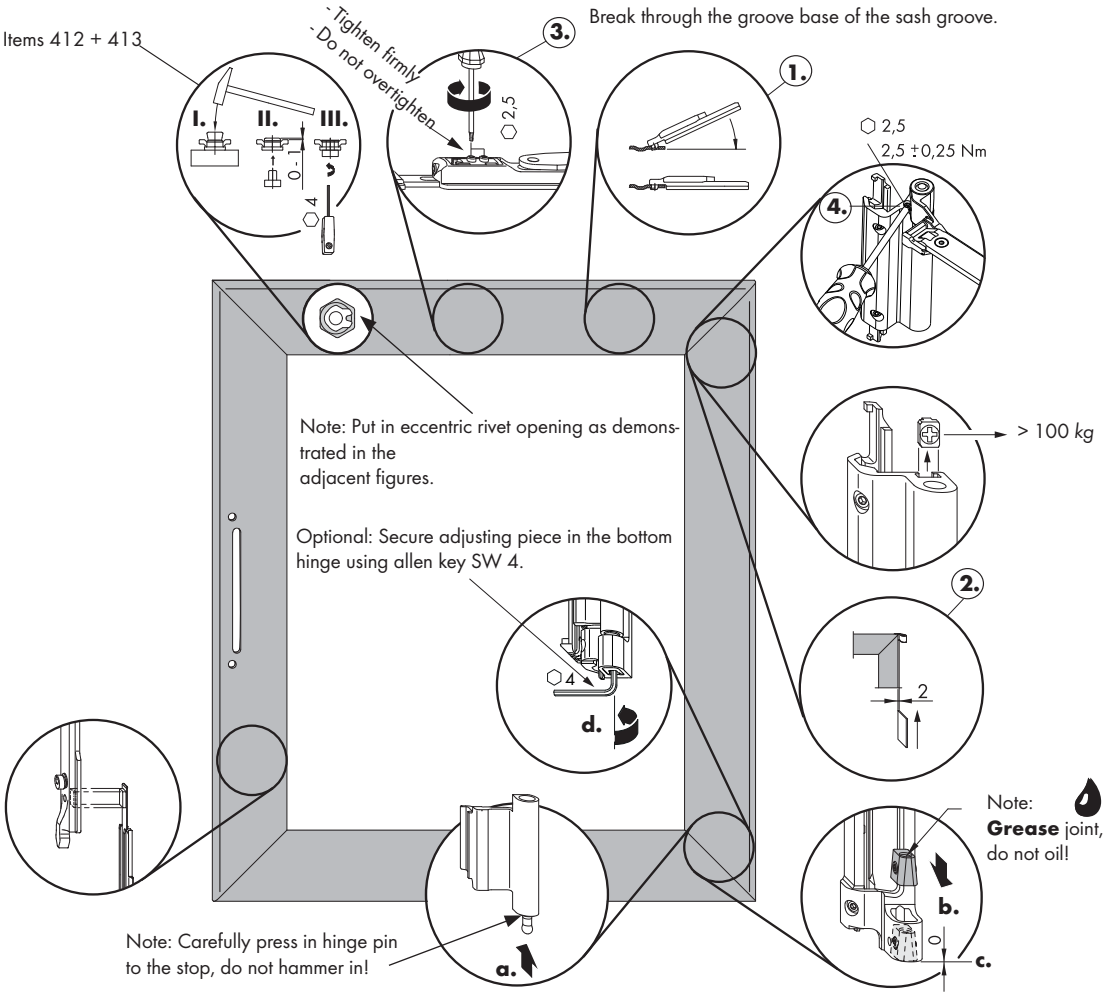
- without centre lock (**3. - 4.**)
- with centre lock (**1. - 2. - 3. - 4.**)

Design variations for coupling set (item 601-603-908) (H1/H2)

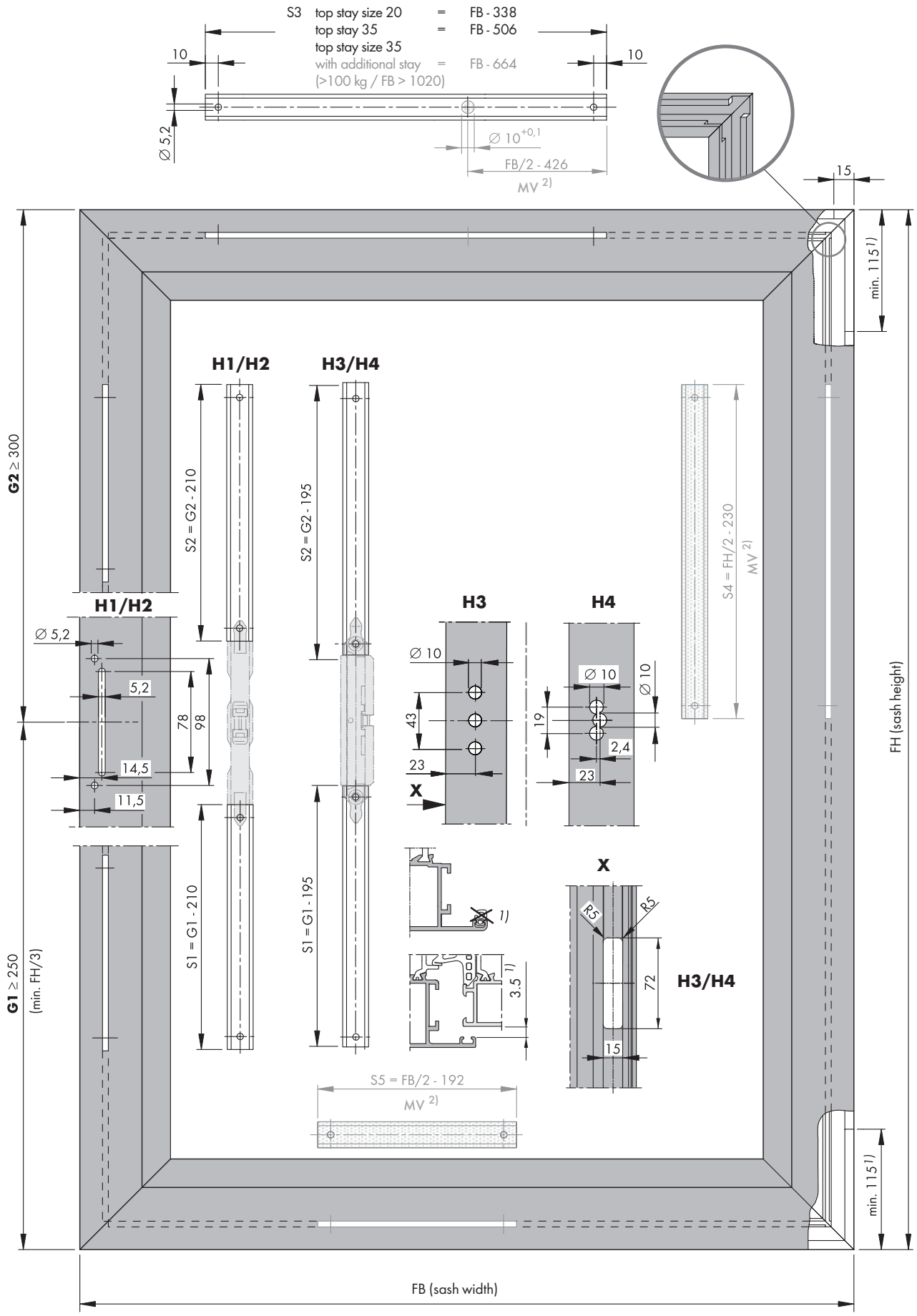
USH (mm)	Y (mm)	Material-Nr.
7 - 10	≥ 9 < 10	MMKL0030-100030
	≥ 10	MMKL0010-100030
12	-	MMKL0040-100030



Assembly settings and installation sequence ① to ④



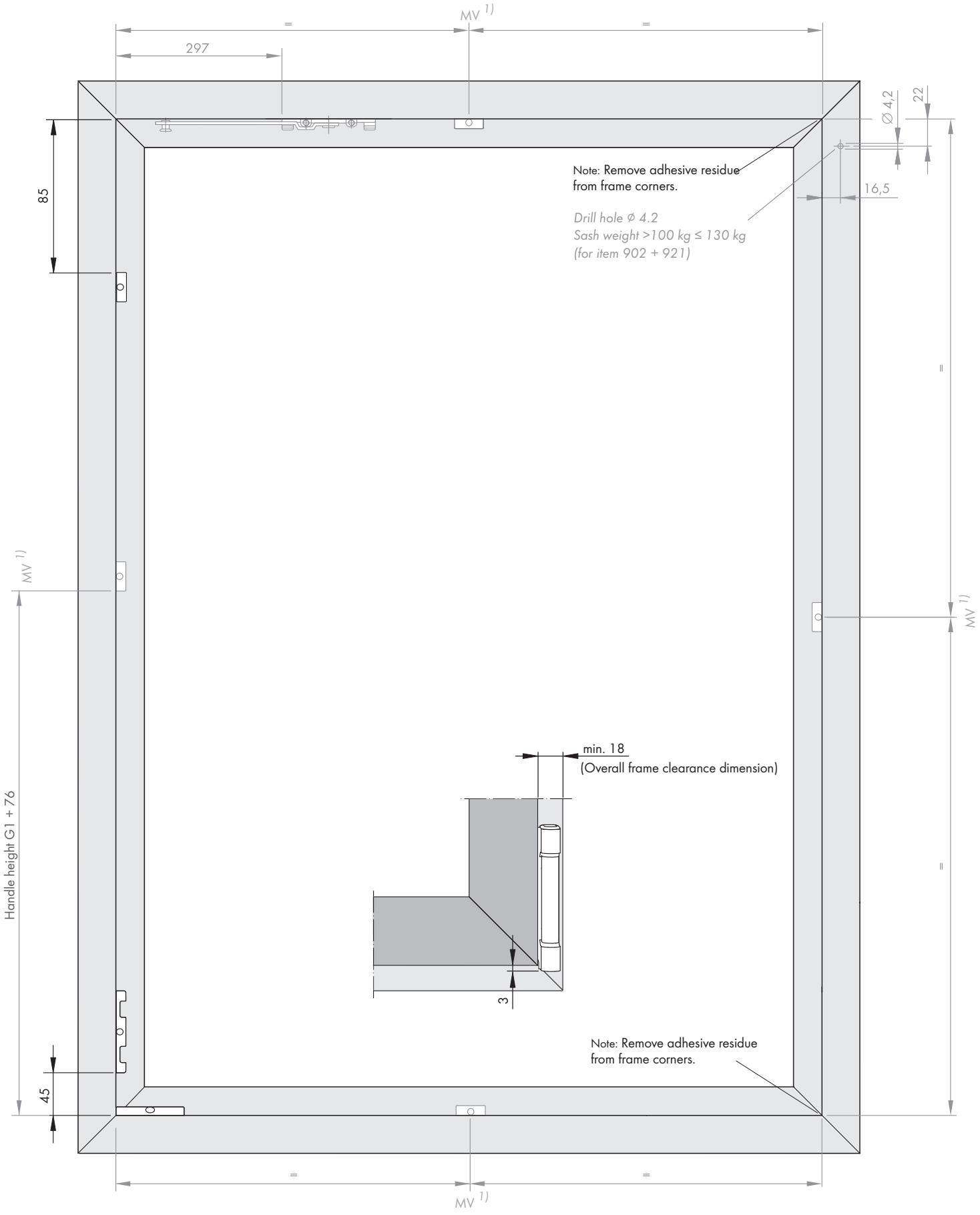
ALU 5200-EUL BD 3.5 KPS (FBS-G) 130 kg *Sash dimensions*



1) Remove the rebate seal in the hinge gap area (minimum hinge gap 3.5 mm).

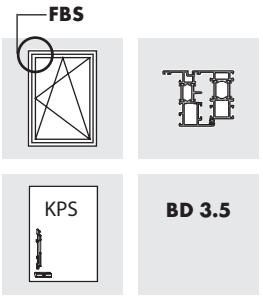
2) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-DK BD 3.5 KPS (FBS-G) 130 kg *Frame dimensions*



1) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-TBT (130kg)



Tilt-and-turn hardware for hinge clearance (BD) 3.5 mm with mishandling device (FBS) on the corner drive (EUL)

Tilt point vertical (KPS)

Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	Patio doors max.
Sash width	(mm)	365	to 1600	1300
Sash height	(mm)	550	to 2000	2400
Sash weight	(kg)	**max. 100/130**		**max. 100/130**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 100 kg: Document no. H58.AWDLMS003EN
- Sash weight up to max. 130 kg: Document no. H58.AWDLMS004EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Adjustment options:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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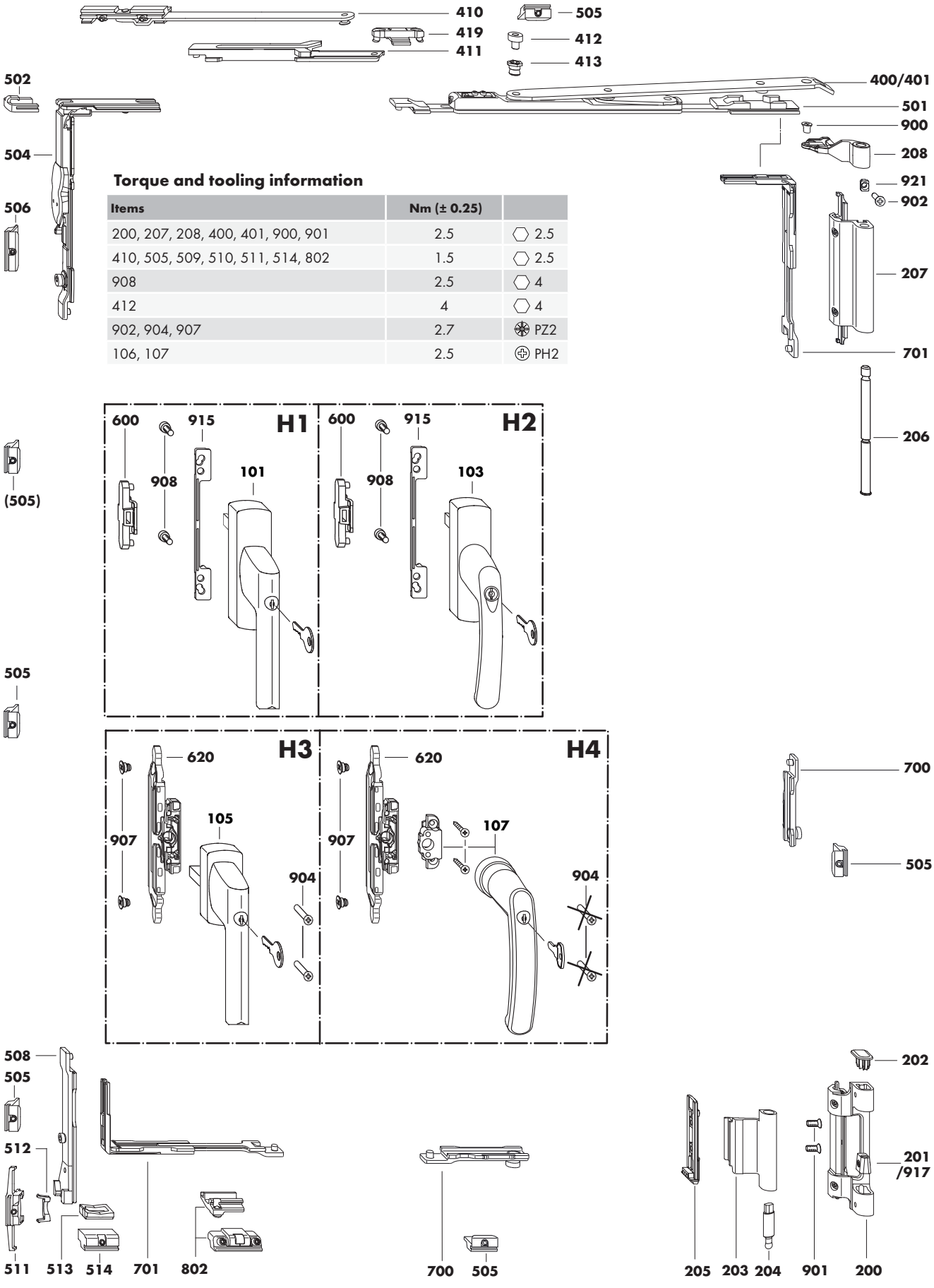


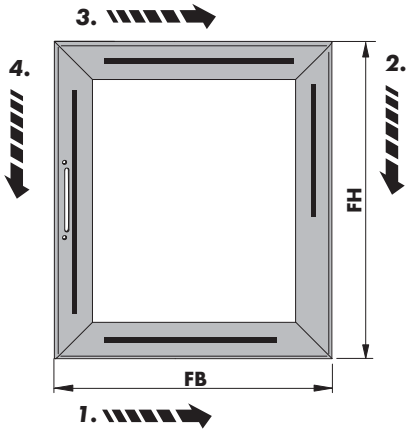
Torque and tooling information

Items	Nm (± 0.25)	
200, 207, 208, 400, 401, 900, 901	2.5	⬡ 2.5
410, 505, 509, 510, 511, 514, 802	1.5	⬡ 2.5
908	2.5	⬡ 4
412	4	⬡ 4
902, 904, 907	2.7	✱ PZ2
106, 107	2.5	⊕ PH2

ALU 5200-TBT BD 3.5 KPS (FBS-EUL) 130 kg *Hardware list*

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	**100**		**Handle ALU Si-line lockable/TBT**	*Only use in combination with coupling set*	*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
H2	**103**		**ALU Globe lockable /TBT**					
H3	**105**	**1**	**TITAN lockable/TBT**	*Only use in combination with gear set*	*□ 7 mm x 25, cam Ø 10 mm*			
H4	**107**		**ALU Globe RR lockable /TBT**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en*			
		1	**Hinge side ALU 5200 BD 3.5**	**silver**	**MMBS0220-525010**	**1**	**MMBS0220-525020**	**10**
				white *RAL 9016*	**MMBS0220-504010**	**1**	**MMBS0220-504020**	**10**
				black *RAL 9005*	**MMBS0220-523010**	**1**	**MMBS0220-523020**	**10**
				EV 1	**MMBS0220-524010**	**1**	**MMBS0220-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0220-500120**	**5**
	200	1	Bottom hinge					
	201	1	Adjusting piece					
	202	1	Cover cap					
	203	1	Corner hinge					
	204	1	Bottom hinge pin					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	208	1	Stay hinge					
	900	1	M5 x 7.5 countersunk screw					
	901	2	M5 x 8.5 countersunk screw					
	400	**0...1**	**Top stay ALU size 20**	*Sash width > 365 ≤ 600 weight ≤ 100 kg*	**884805**	**1**	**273098**	**20**
	401	**0...1**	**Top stay ALU size 35**	*Sash width > 600 ≤ 1600*	**884782**	**1**	**314203**	**20**
depending on FB/kg		**0...1**	**Additional stay ALU**	*Sash width > 1250 with top stay size 35 ≤ 100 kg* *Sash width > 1020 with top stay size 35 > 100 kg*	**857076**	**1**	**247006**	**10**
	410	1	Additional stay					
	411	1	Striker plate					
	412	1	Locking cam					
	413	1	Eccentric rivet					
	419	**0...1**	**MV stay striker**	*(FB > 1020 weight > 100 kg)* *(FB > 1250 weight ≤ 100 kg)*	**MXSK0010-100010**	**1**	**MXSK0010-100030**	**20**
depending on kg		**0...1**	**Accessories set ALU for 130 kg**	*> 100 kg*	**-**	**1**	**247037**	**20**
	902	1	M5 x 13 countersunk screw					
	921	1	Supporting piece					
		1	**Locking side ALU TBT (with FBS on corner drive) KPS**		**MMVS0320-100010**	**1**	**MMVS0320-100030**	**20**
	501	1	Locking bolt TBT					
	502	1	EUL clamping piece					
	504	1	Corner drive, VSO-FBS					
	505	1	Striker					
	506	1	Striker EUL					
	508	1	TBT tilt lock					
	511	1	TBT tilt locking part					
	512	1	Spring	*Colour grey FH > 550 ≤ 1100* *Colour black FH > 1100*				
	513	1	Run-up block					
	514	1	TBT run-up block					
H1/H2		**0...1**	**Coupling set ALU (without FBS on gear)**	*Only use in combination with H1/H2*	**MMKL0060-100010**	**1**	**MMKL0060-100030**	**20**
	600	1	ALU coupling bracket					
	908	2	M5 x 12 cheese head screw					
H3/H4		**0...1**	**Gear set ALU (without FBS on gear)**	*Only use in combination with H3/H4 (see drawing no. H48.ZubhLS005en)*	**MMGI0090-100010**	**1**	**MMGI0090-100030**	**20**
	620	1	M6 ESG					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...2**	**MV ALU-DK/TBT**	*FB/FH > 1250 (recommendation)*	**857045**	**1**	**246979**	**20**
	505	2	Striker					
	700	1	Slider					
	701	1	VSU/BSO corner drive					
Accessories	**802**	**0...1**	**Sash lifter ALU**	*(see drawing no. H48.ZubhLS014en)*	**MMFH0010-100010**	**1**	**MMFH0010-100030**	**20**
	915	**0...1**	**Handle support ALU**	*Only use in combination with H1/H2*	**-**	**-**	*See table on page 4*	**200**
	917	**0...1**	**AV adjusting piece**	*for compression + 0.5*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (> 100 kg; see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

Observe assembly sequence

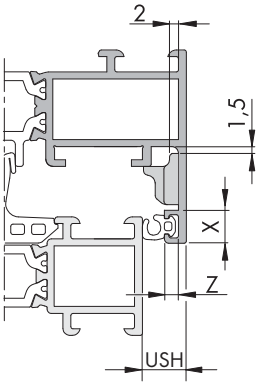


Sequence of installation in sash

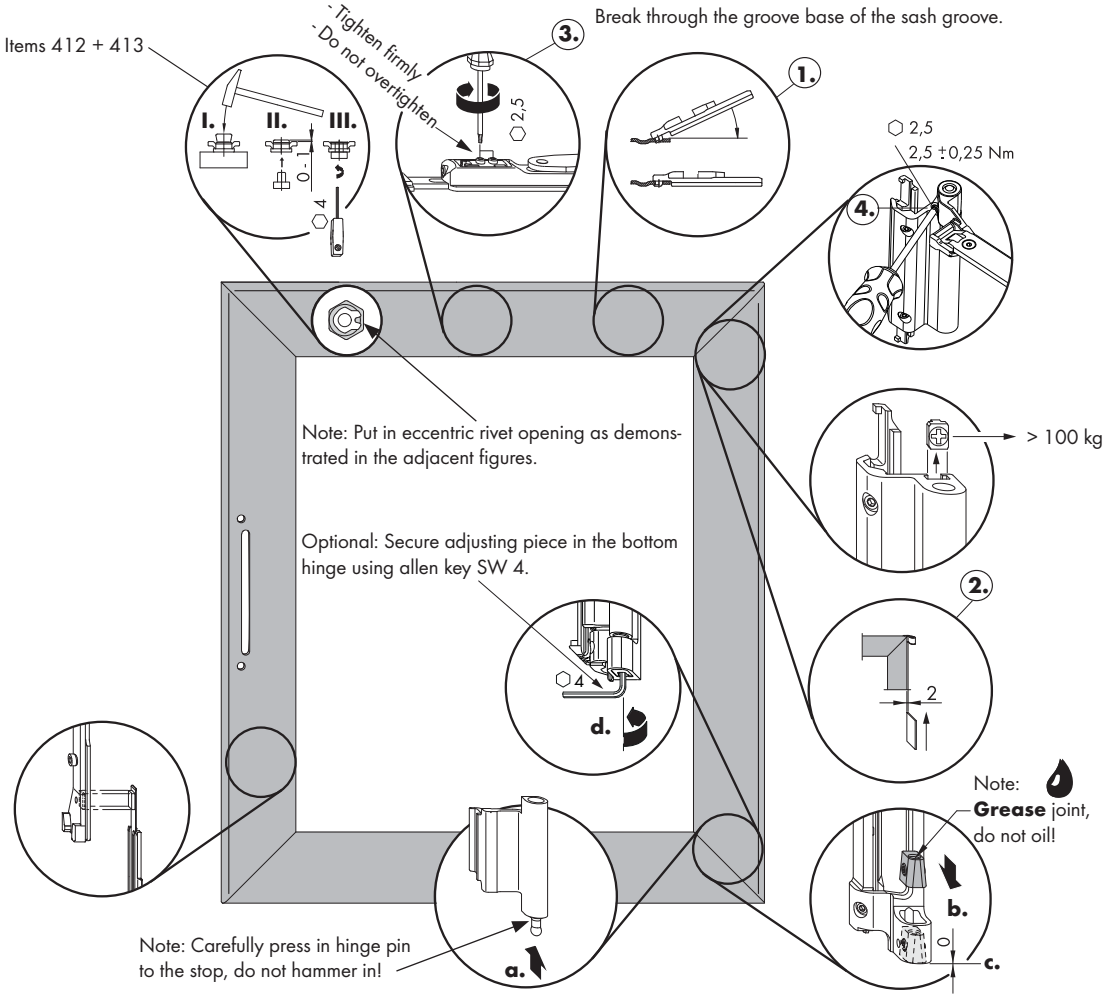
- without centre lock (**3. - 4.**)
- with centre lock (**1. - 2. - 3. - 4.**)

Design variations for handle support (item 915) (H1/H2)

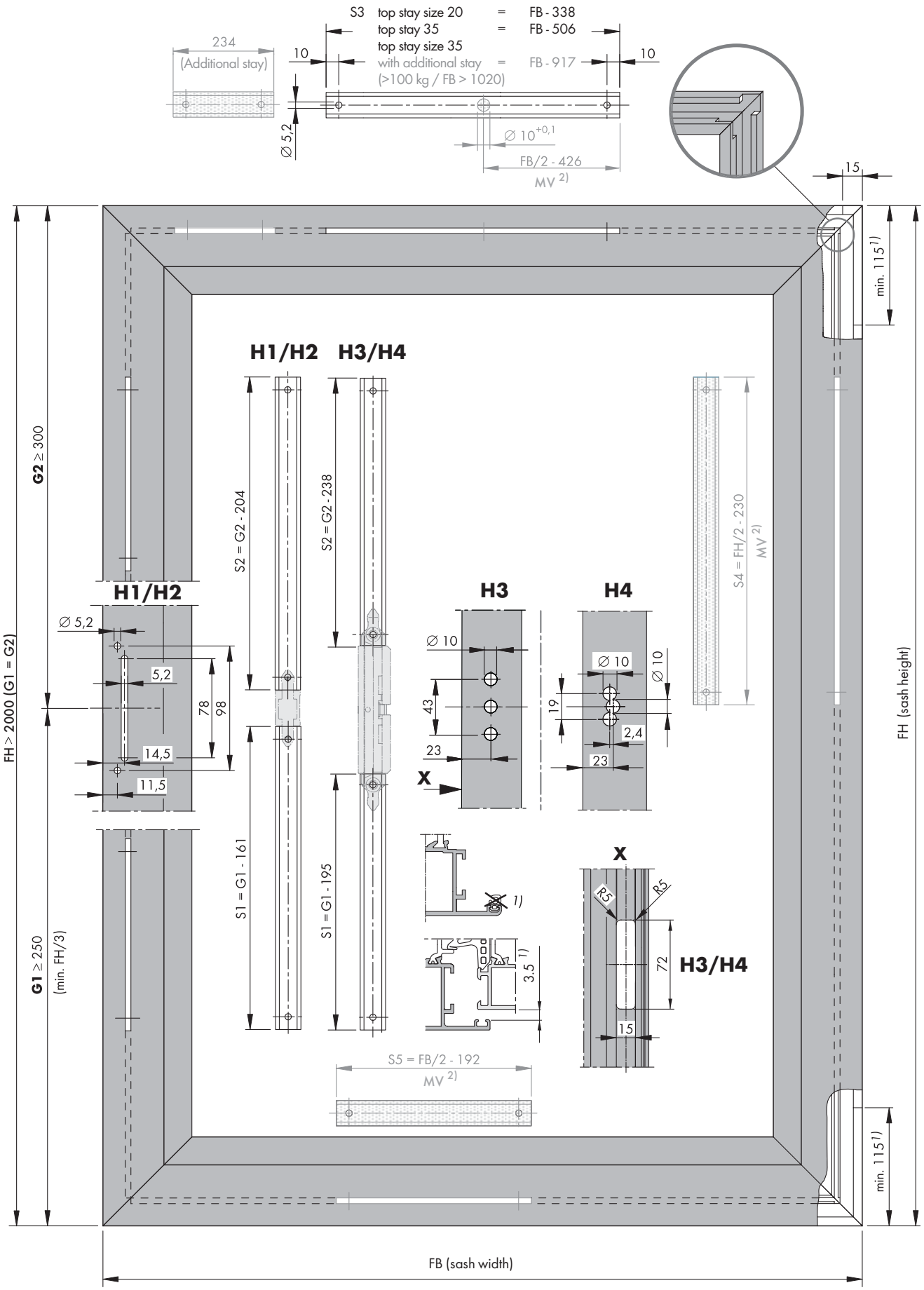
USH (mm)	Z (mm)	X ≤ 7 mm	X > 7 ≤ 8.5 mm
7 - 10	≤ 2	MFHA0010-100200	MFHA0010-100200
	> 2 ≤ 3		MFHA0020-100200
	> 3		-
12	-	MFHA0030-100200	-



Assembly settings and installation sequence ① to ④



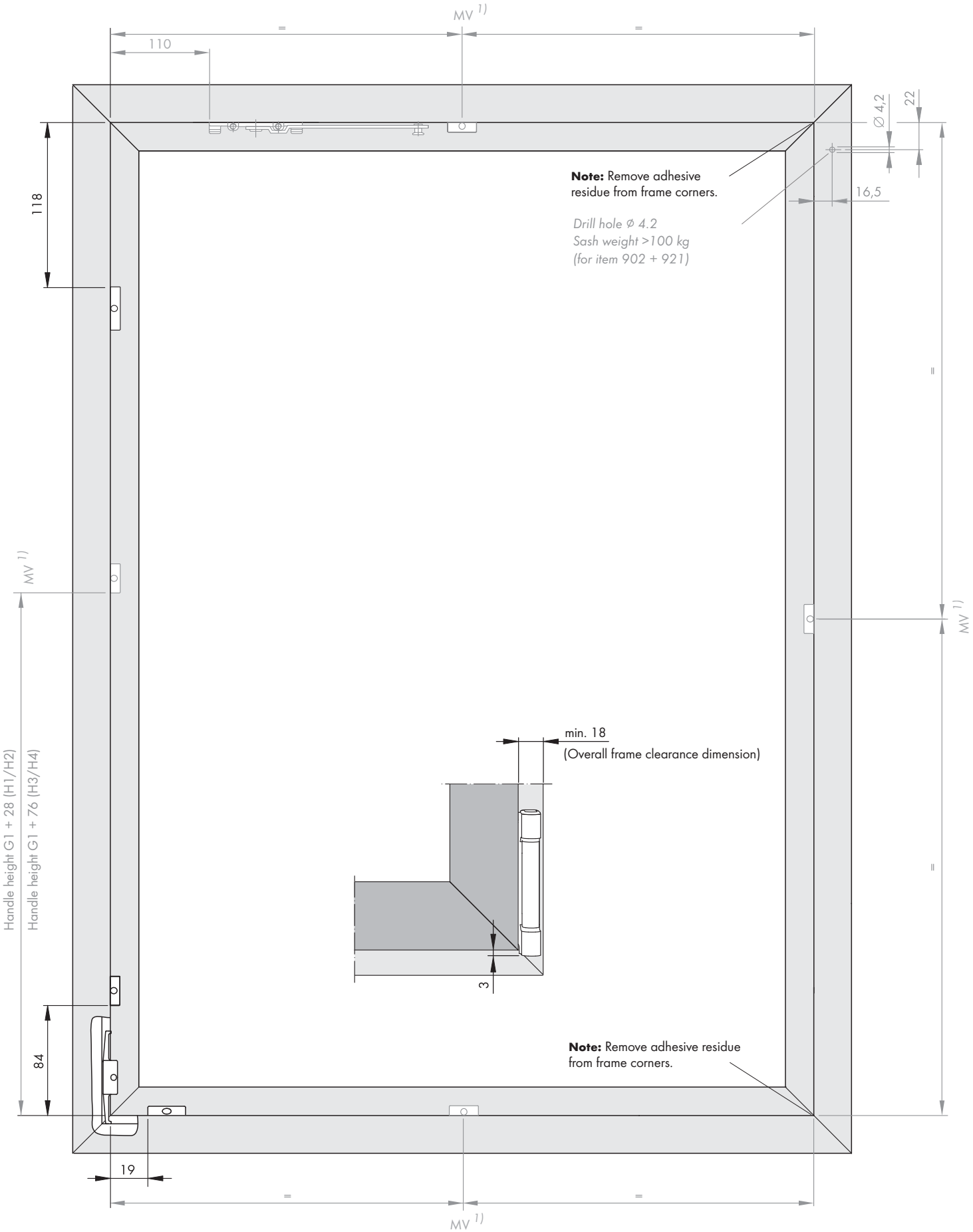
ALU 5200-TBT BD 3.5 KPS (FBS-EUL) 130 kg *Sash dimensions*



1) Remove the rebate seal in the hinge gap area (minimum hinge gap 3.5 mm).

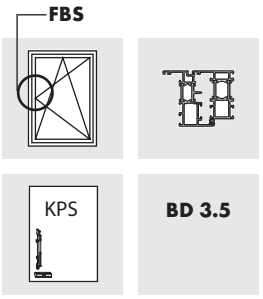
2) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-TBT BD 3.5 KPS (FBS-EUL) 130 kg *Frame dimensions*



1) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-TBT (130 kg)



Tilt-and turn Turn-and-tilt hardware for hinge clearance (BD) 3.5 mm with mishandling device (FBS) on the gear (G)

Tilt point vertical (KPS)

Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	Patio doors max.
Sash width	(mm)	365	1600	1300
Sash height	(mm)	550	2000	2400
Sash weight	(kg)		**max. 100/130**	**max. 100/130**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 100 kg: Document no. H58.AWDLMS003EN
- Sash weight up to max. 130 kg: Document no. H58.AWDLMS004EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Adjustment options:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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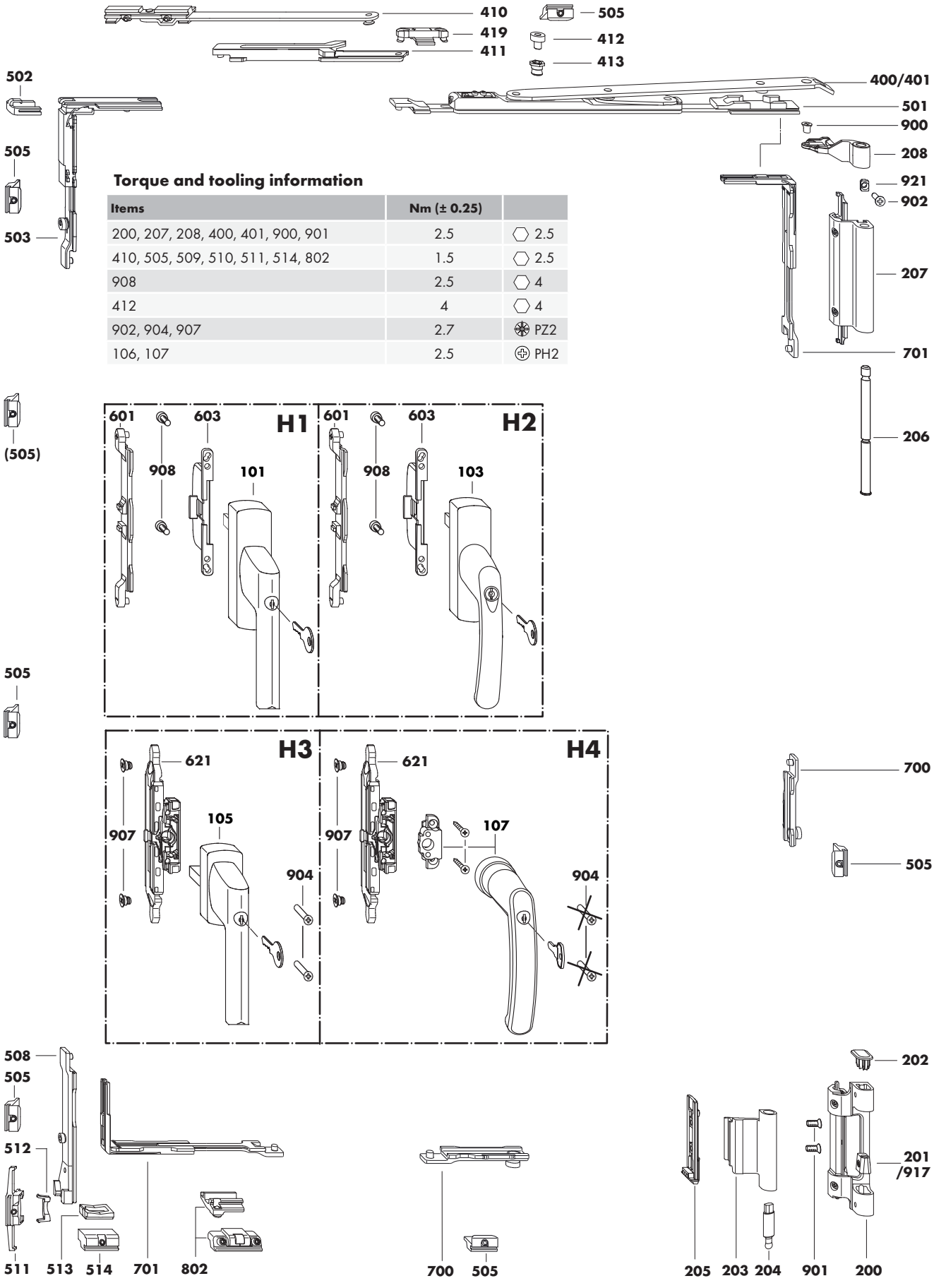


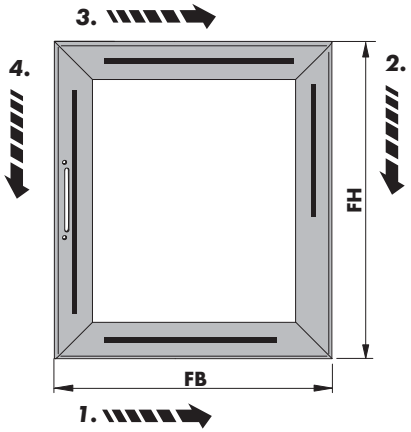
Torque and tooling information

Items	Nm (± 0.25)	
200, 207, 208, 400, 401, 900, 901	2.5	⬡ 2.5
410, 505, 509, 510, 511, 514, 802	1.5	⬡ 2.5
908	2.5	⬡ 4
412	4	⬡ 4
902, 904, 907	2.7	✱ PZ2
106, 107	2.5	⊕ PH2

ALU 5200-TBT BD 3.5 KPS (FBS-G) 130 kg *Hardware list*

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	**100**		**Handle ALU Si-line lockable/TBT**	*Only use in combination with coupling set*	*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
H2	**103**		**ALU Globe lockable /TBT**					
H3	**105**	**1**	**TITAN lockable/TBT**	*Only use in combination with gear set*	*□ 7 mm x 25, cam Ø 10 mm*			
H4	**107**		**ALU Globe RR lockable /TBT**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en*			
		1	**Hinge side ALU 5200 BD 3.5**	**silver**	**MMBS0220-525010**	**1**	**MMBS0220-525020**	**10**
				white *RAL 9016*	**MMBS0220-504010**	**1**	**MMBS0220-504020**	**10**
				black *RAL 9005*	**MMBS0220-523010**	**1**	**MMBS0220-523020**	**10**
				EV 1	**MMBS0220-524010**	**1**	**MMBS0220-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0220-500120**	**5**
	200	1	Bottom hinge					
	201	1	Adjusting piece					
	202	1	Cover cap					
	203	1	Corner hinge					
	204	1	Bottom hinge pin					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	208	1	Stay hinge					
	900	1	M5 x 7.5 countersunk screw					
	901	2	M5 x 8.5 countersunk screw					
	400	**0...1**	**Top stay ALU size 20**	*Sash width > 365 ≤ 600 weight ≤ 100 kg*	**884805**	**1**	**273098**	**20**
	401	**0...1**	**Top stay ALU size 35**	*Sash width > 600 ≤ 1600*	**884782**	**1**	**314203**	**20**
depending on FB/kg		**0...1**	**Additional stay ALU**	*Sash width > 1250 with top stay size 35 ≤ 100 kg* *Sash width > 1020 with top stay size 35 ≤ 100 kg*	**857076**	**1**	**247006**	**10**
	410	1	Additional stay					
	411	1	Striker plate					
	412	1	Locking cam					
	413	1	Eccentric rivet					
	419	**0...1**	**MV stay striker**	*(FB > 1020 weight > 100 kg)* *(FB > 1250 weight ≤ 100 kg)*	**MXSK0010-100010**	**1**	**MXSK0010-100030**	**20**
depending on kg		**0...1**	**Accessories set ALU for 130 kg**	*> 100 kg*	**-**	**1**	**247037**	**20**
	902	1	M5 x 13 countersunk screw					
	921	1	Supporting piece					
		1	**Locking side ALU TBT (for FBS on gear) KPS**		**MMVS0270-100010**	**1**	**MMVS0270-100030**	**20**
	500	1	Locking bolt TBT					
	502	1	EUL clamping piece					
	503	1	Corner drive VSO					
	505	2	Striker					
	508	1	TBT tilt lock					
	511	1	TBT tilt locking part					
	512	1	Spring	*Colour grey FH > 550 ≤ 1100* *Colour black FH > 1100*				
	513	1	Run-up block					
	514	1	TBT run-up block					
H1/H2		**0...1**	**Coupling set ALU FBS (with FBS on gear)** **Y= 9 mm**	*Only use in combination with H1/H2 (For notes on rebate height (USH) and dimension Y see page 4)*	**MMKL0030-100010**	**1**	**MMKL0030-100030**	**20**
			Y=10 mm		**MMKL0010-100010**	**1**	**MMKL0010-100030**	**20**
			USH 12 mm		**MMKL0040-100010**	**1**	**MMKL0040-100030**	**20**
	601	1	ALU coupling bracket					
	603	1	Mishandling device					
	908	2	M5 x 12 cheese head screw					
H3/H4		**0...1**	**Gear set ALU FBS (with FBS on gear)**	*Only use in combination with H3/H4 (see drawing no. H48.ZubhLS005en)*	**MMGI0080-100010**	**1**	**MMGI0080-100030**	**20**
	621	1	ESG M6 FBS					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...2**	**MV ALU-DK/TBT**	*FB/FH > 1250 (recommendation)*	**857045**	**1**	**246979**	**20**
	505	2	Striker					
	700	1	Slider					
	701	1	VSU/BSO corner drive					
Accessories	**802**	**0...1**	**Sash lifter ALU**	*(see drawing no. H48.ZubhLS014en)*	**MMFH0010-100010**	**1**	**MMFH0010-100030**	**20**
	917	**0...1**	**AV adjusting piece**	*for compression + 0.5*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (> 100 kg; see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

Observe assembly sequence

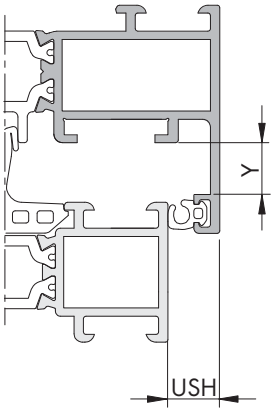


Sequence of installation in sash

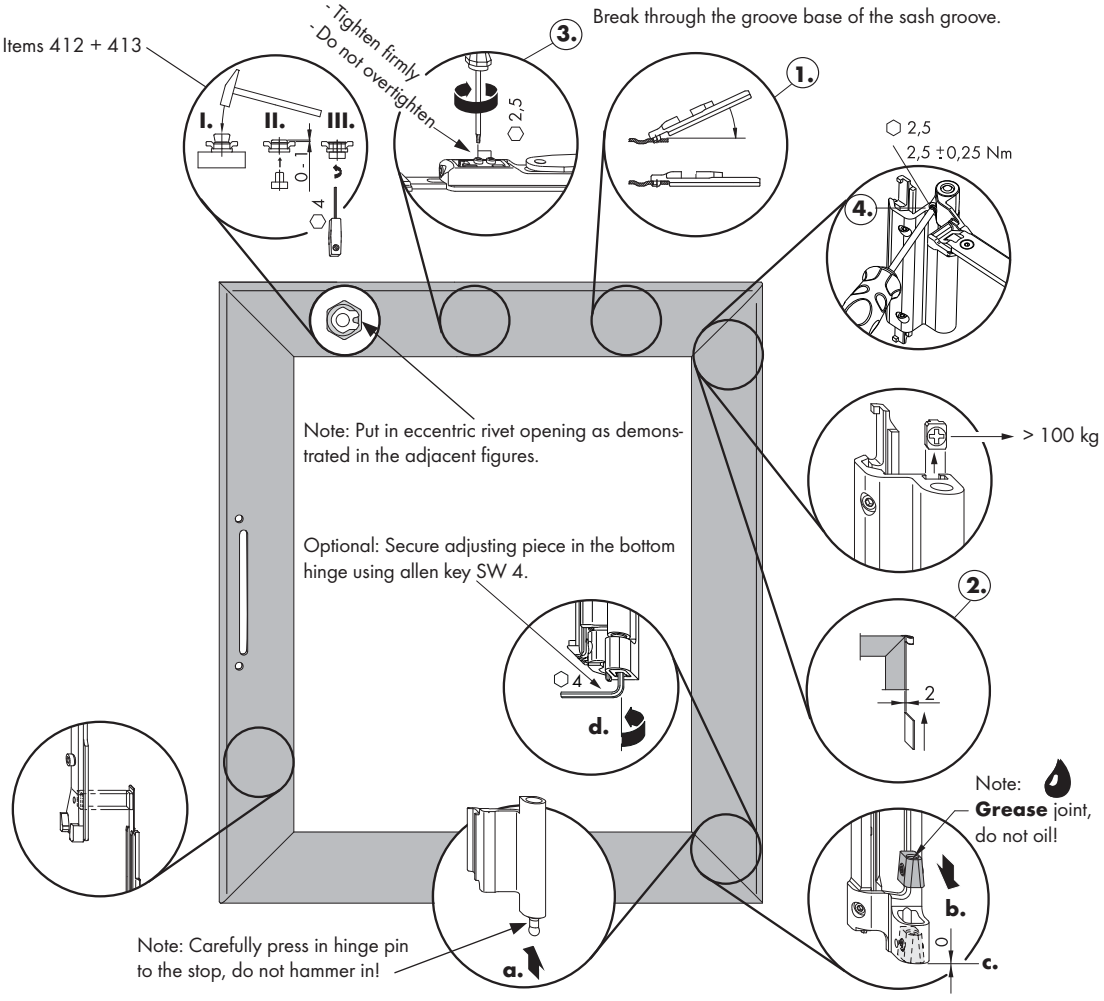
- without centre lock (**3. - 4.**)
- with centre lock (**1. - 2. - 3. - 4.**)

Design variations for coupling set (item 601-603-908) (H1/H2)

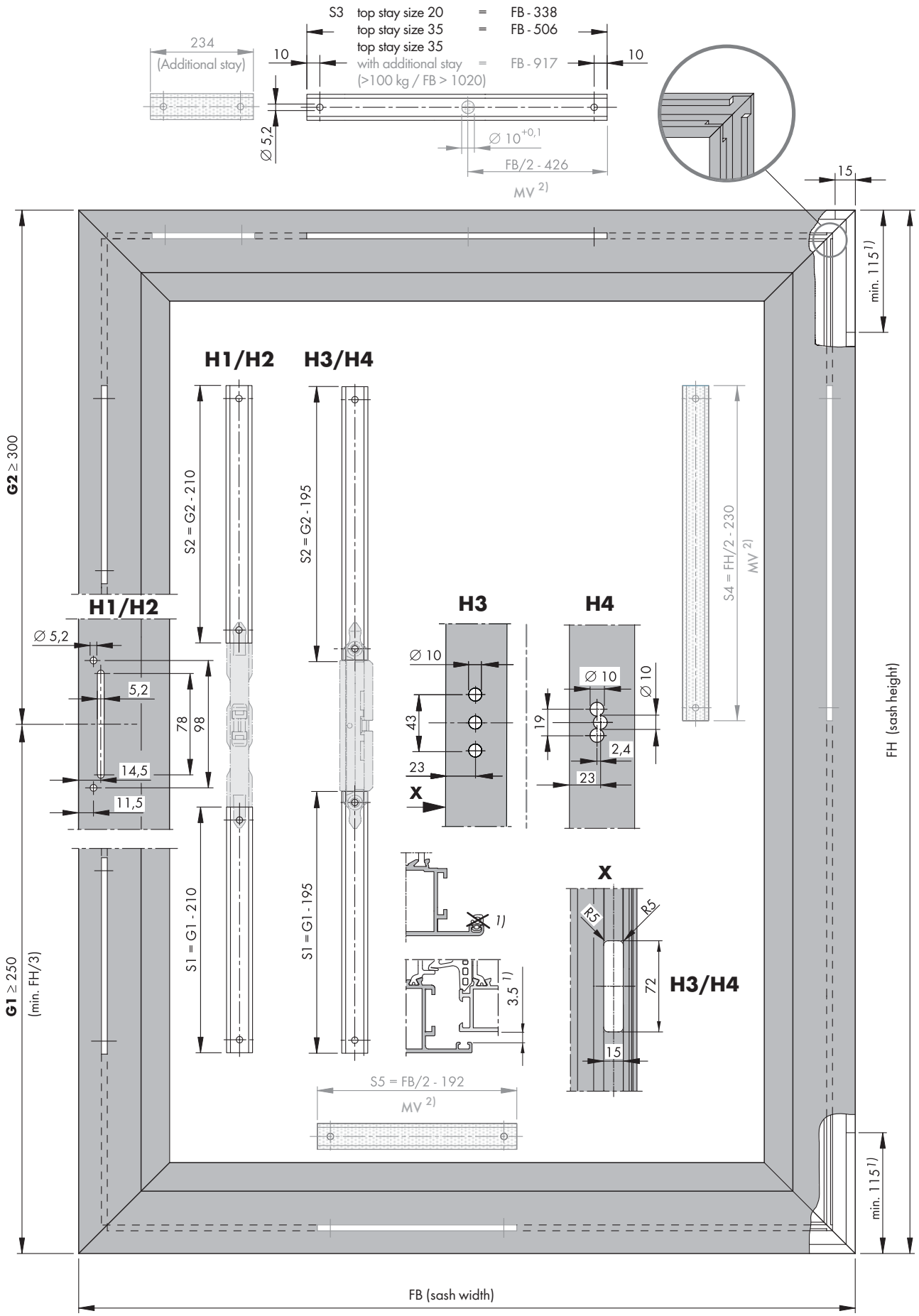
USH (mm)	Y (mm)	Material-Nr.
7 - 10	≥ 9 < 10	MMKL0030-100030
	≥ 10	MMKL0010-100030
12	-	MMKL0040-100030



Assembly settings and installation sequence ① to ④



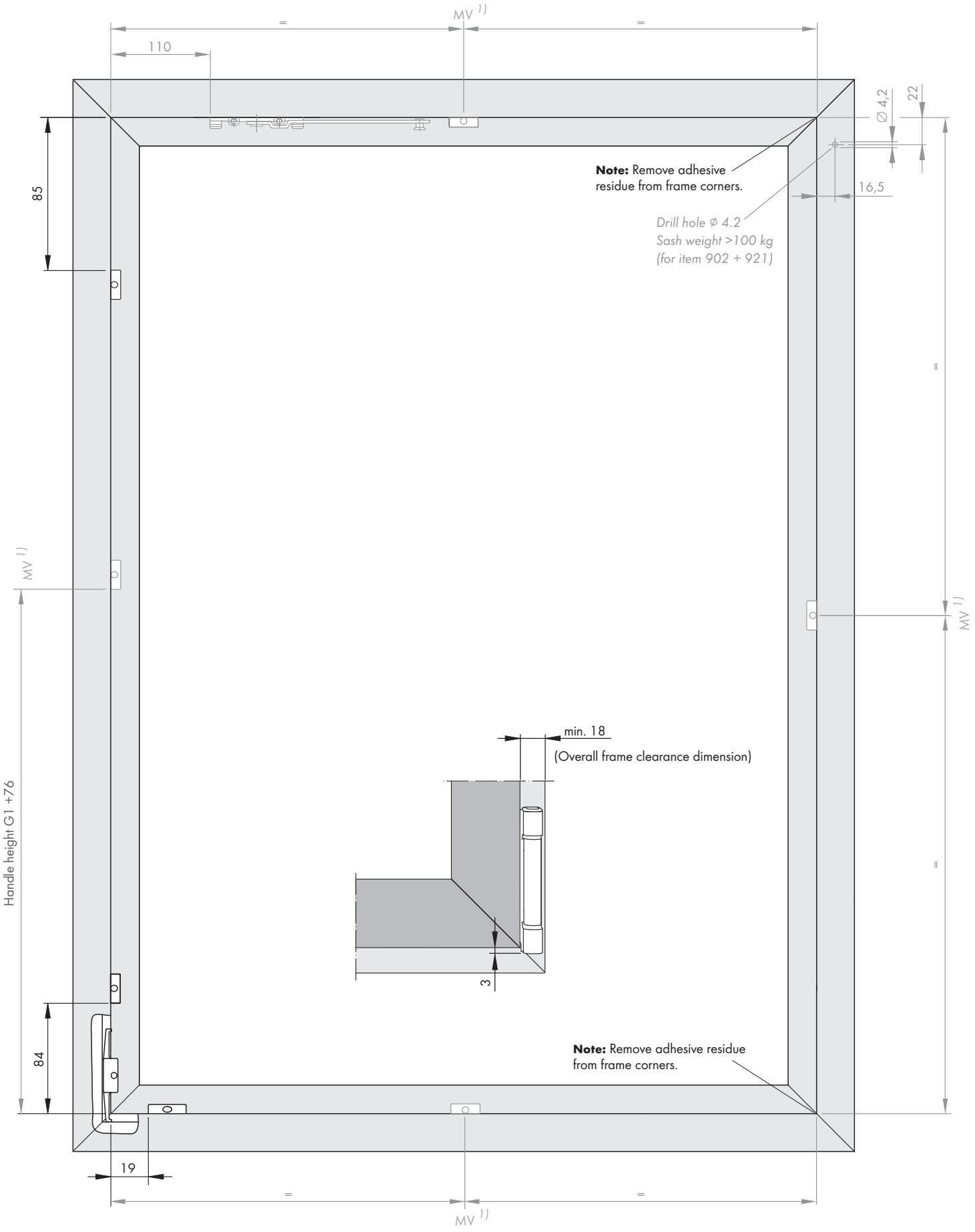
ALU 5200-TBT BD 3.5 KPS (FBS-G) 130 kg *Sash dimensions*



1) Remove the rebate seal in the hinge gap area (minimum hinge gap 3.5 mm).

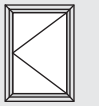
2) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-TBT BD 3.5 KPS (FBS-G) 130 kg *Frame dimensions*



1) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-D (130 kg)



Standard turn only hardware for hinge clearance (BD) 3.5 mm

BD 3.5

Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	Patio doors max.
Sash width	(mm)	365 to 1600		1300
Sash height	(mm)	550 to 2000		2400
Sash weight	(kg)	**max. 100/130**		**max. 100/130**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 100 kg: Document no. H58.AWDLMS003EN
- Sash weight up to max. 130 kg: Document no. H58.AWDLMS004EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Adjustment options:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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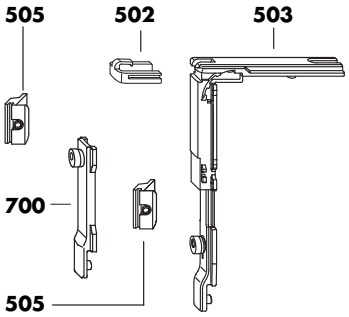
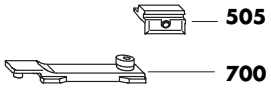
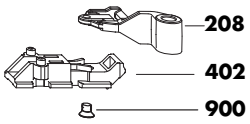
H48.5200LS005en

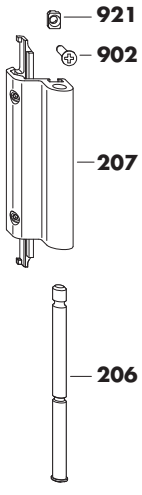


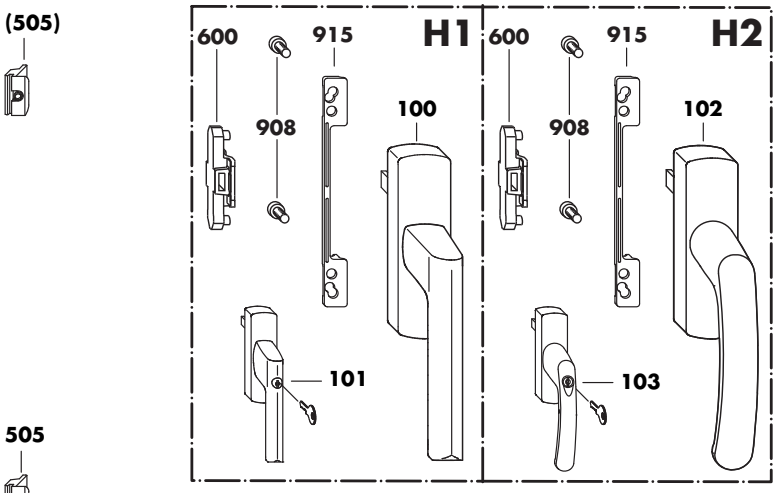


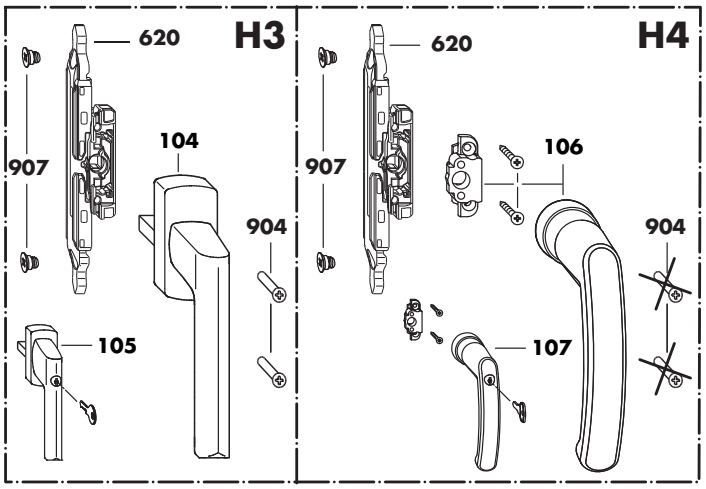


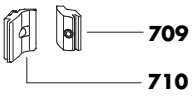
Torque and tooling information

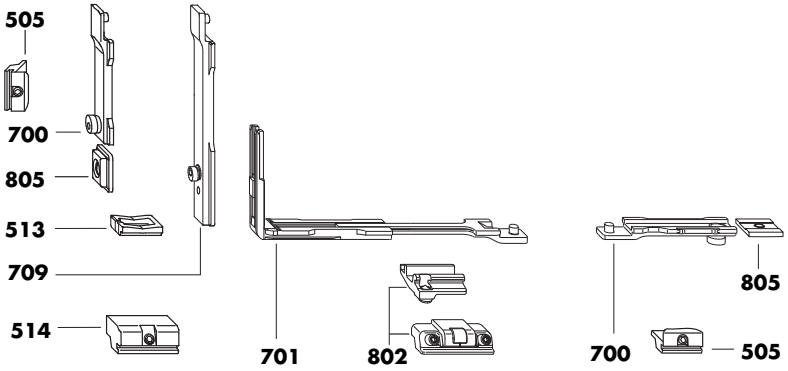
Items	Nm (± 0.25)	
200, 207, 208, 900, 901	2.5	⬡ 2.5
505, 514, 709, 710, 802	1.5	⬡ 2.5
805, 908	2.5	⬡ 4
902, 904, 907	2.7	✱ PZ2
106, 107	2.5	⊕ PH2

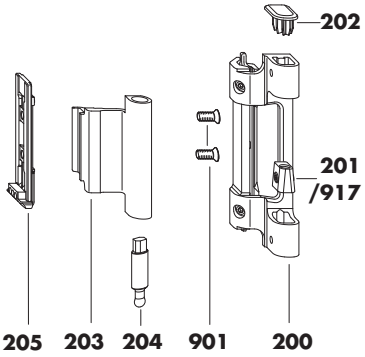








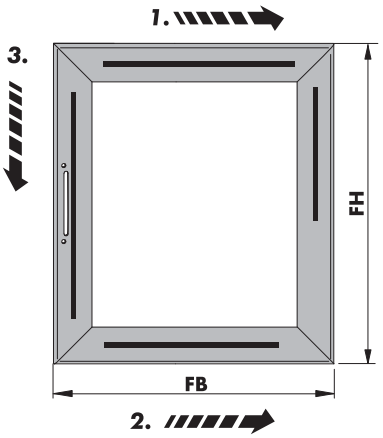




ALU 5200-D BD 3.5 130 kg *Hardware list*

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	100	1	**Handle ALU Si-line**	*Only use in combination with coupling set*	*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
	101		**ALU Si-line lockable**					
H2	102		**ALU Globe**					
	103		**ALU Globe lockable**					
H3	104		**TITAN**	*Only use in combination with gear set*	*□ 7 mm x 25, cam Ø 10 mm Only use in combination with gear set*			
	105		**TITAN lockable**					
H4	106		**ALU Globe RR**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en in ALU planning manual*			
	107		**ALU Globe RR lockable**					
		1	**Hinge side ALU 5200 BD 3.5**	**silver**	**MMBS0220-525010**	**1**	**MMBS0220-525020**	**10**
				white *RAL 9016*	**MMBS0220-504010**	**1**	**MMBS0220-504020**	**10**
				black *RAL 9005*	**MMBS0220-523010**	**1**	**MMBS0220-523020**	**10**
				EV 1	**MMBS0220-524010**	**1**	**MMBS0220-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0220-500120**	**5**
	200	1	Bottom hinge					
	201	1	Adjusting piece					
	202	1	Cover cap					
	203	1	Corner hinge					
	204	1	Bottom hinge pin					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	208	1	Stay hinge					
	900	1	M5 x 7.5 countersunk screw					
	901	2	M5 x 8.5 countersunk screw					
depending on kg		**0...1**	**Accessories set ALU for 130 kg**	*> 100 kg*	**-**	**1**	**247037**	**20**
	902	1	M5 x 13 countersunk screw					
	921	1	Supporting piece					
		1	**Locking side ALU-D SDF (with FBS on corner drive) KPS**		**MMVS0280-100010**	**1**	**MMVS0280-100030**	**20**
	402	1	Top stay ALU-D					
	505	2	Striker					
	513	1	Run-up block					
	514	1	TBT run-up block					
	700	2	Slider	*Horizontal installation for MV ALU-D VSU/VSO*				
H1/H2		**0...1**	**Coupling set ALU (without FBS on gear)**	*Only use in combination with H1/H2*	**MMKL0060-100010**	**1**	**MMKL0060-100030**	**20**
	600	1	ALU coupling bracket					
	908	2	M5 x 12 cheese head screw					
H3/H4		**0...1**	**Gear set ALU (without FBS on gear)**	*Only use in combination with H3/H4 (see drawing no. H48.ZubhLS005en)*	**MMGI0090-100010**	**1**	**MMGI0090-100030**	**20**
	620	1	M6 ESG					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...1**	**MV ALU-D VS/BS**	*FH > 1250 (recommendation)*	**857052**	**1**	**246986**	**20**
	505	1	Striker					
	709	1	Striker MV					
	710	1	Locking bolt					
		0...1	**MV ALU-D VSU/VSO**	*FB > 1250 (recommendation)*	**MMMV0040-100010**	**1**	**MMMV0040-100030**	**20**
	502	1	EUL clamping piece					
	503	1	Corner drive VSO					
	505	2	Striker					
	701	1	VSU/BSO corner drive					
	709	1	Locking bolt					
Accessories	**802**	**0...1**	**Sash lifter ALU**	*(see drawing no. H48.ZubhLS014en)*	**MMFH0010-100010**	**1**	**MMFH0010-100030**	**20**
	805	**0...1**	**Stop**	*for travel restriction (FB > 1250: install horizontally)*	**820544**	**1**	**222805**	**10**
	915	**0...1**	**Handle support ALU**	*Only use in combination with H1/H2*	**-**	**-**	*See table on page 4*	**200**
	917	**0...1**	**AV adjusting piece**	*for compression + 0.5*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (> 100 kg; see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

Observe assembly sequence

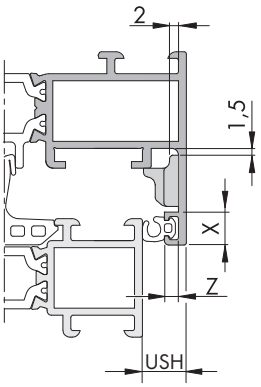


Sequence of installation in sash

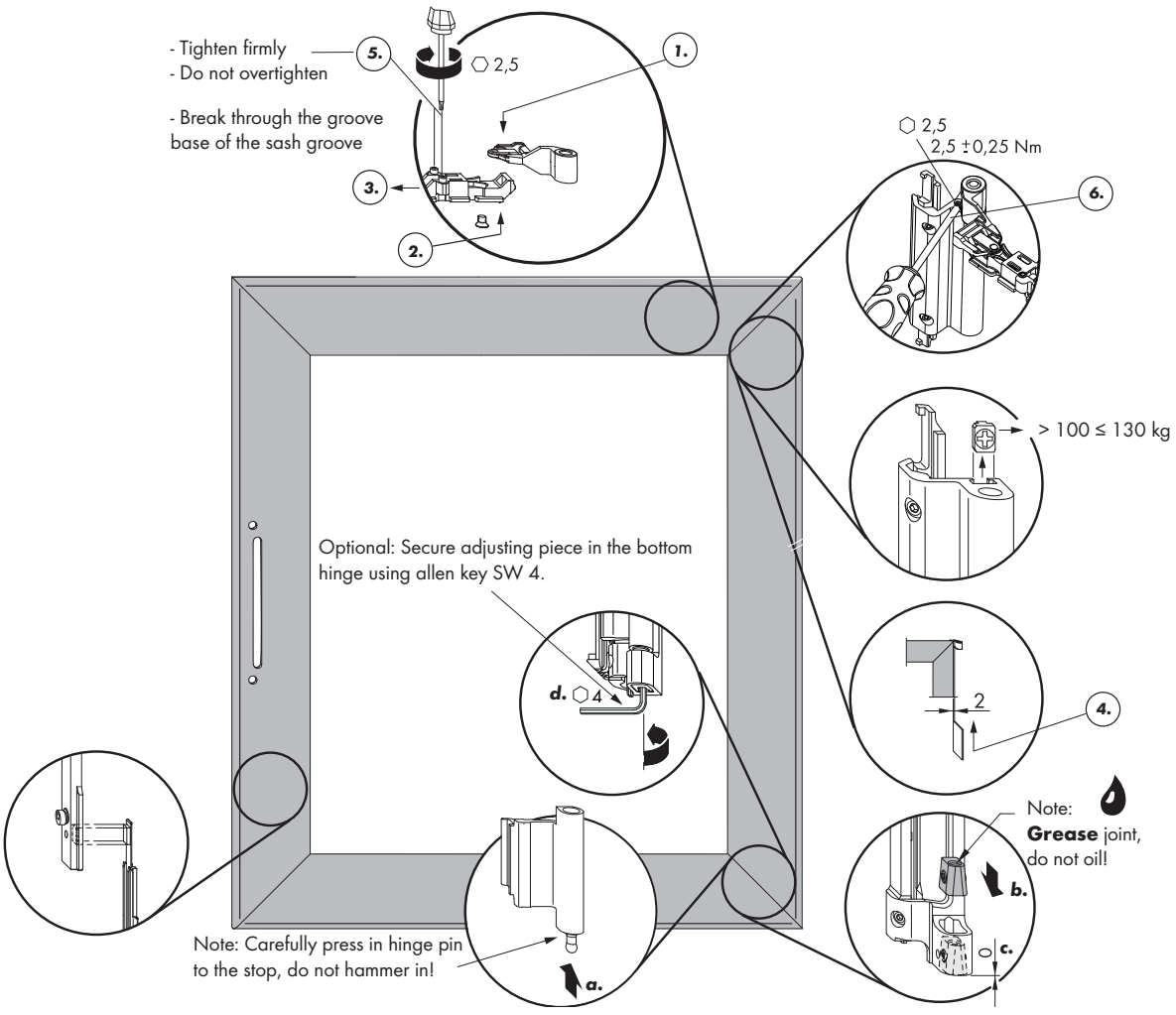
- without centre lock (**3.**)
- with centre lock (**1. - 2. - 3.)**

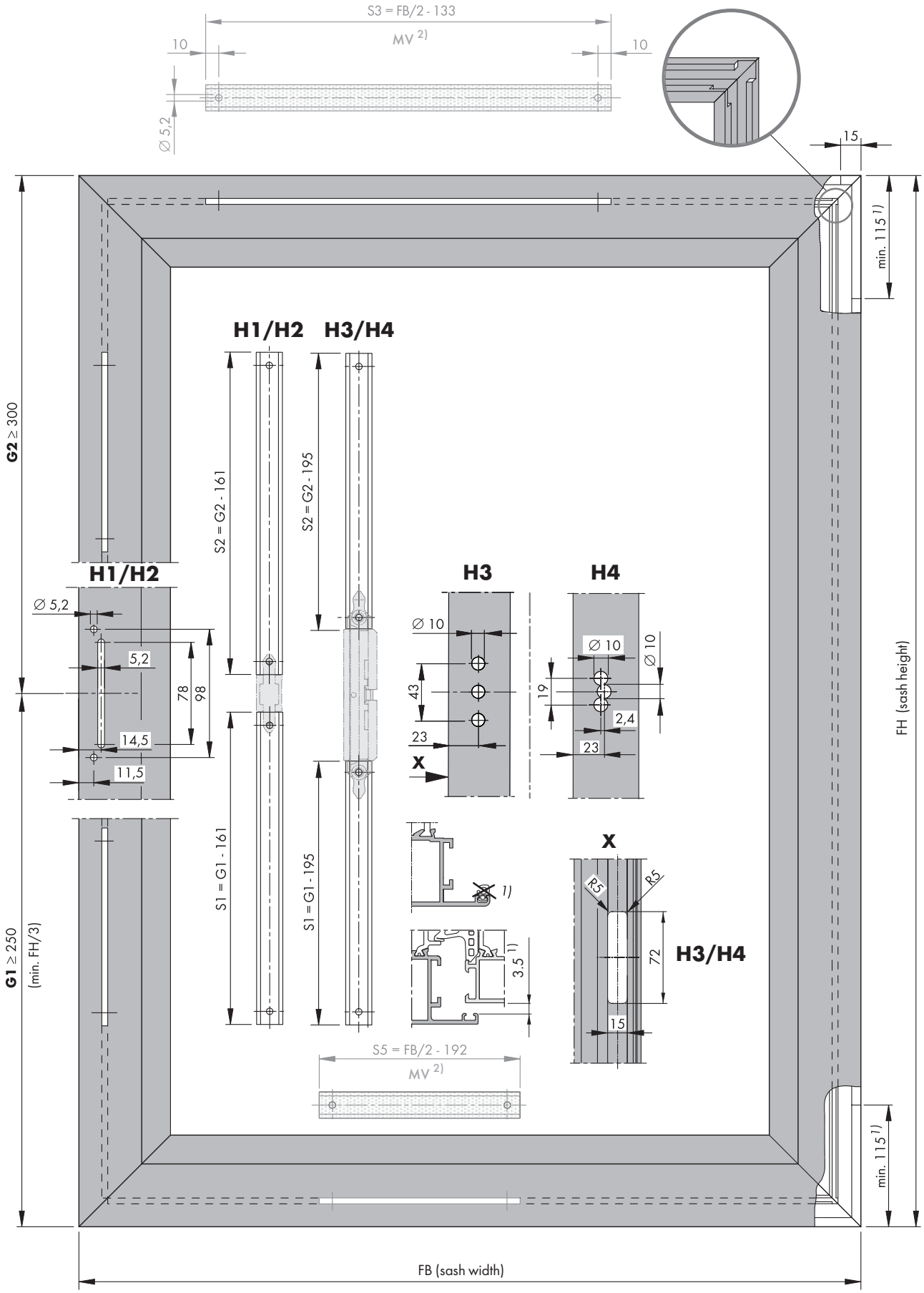
Design variations for handle support (item 915) (H1/H2)

USH (mm)	Z (mm)	X ≤ 7 mm	X > 7 ≤ 8.5 mm
7 - 10	≤ 2	MFHA0010-100200	MFHA0010-100200
	> 2 ≤ 3		MFHA0020-100200
	> 3		-
12	-	MFHA0030-100200	-



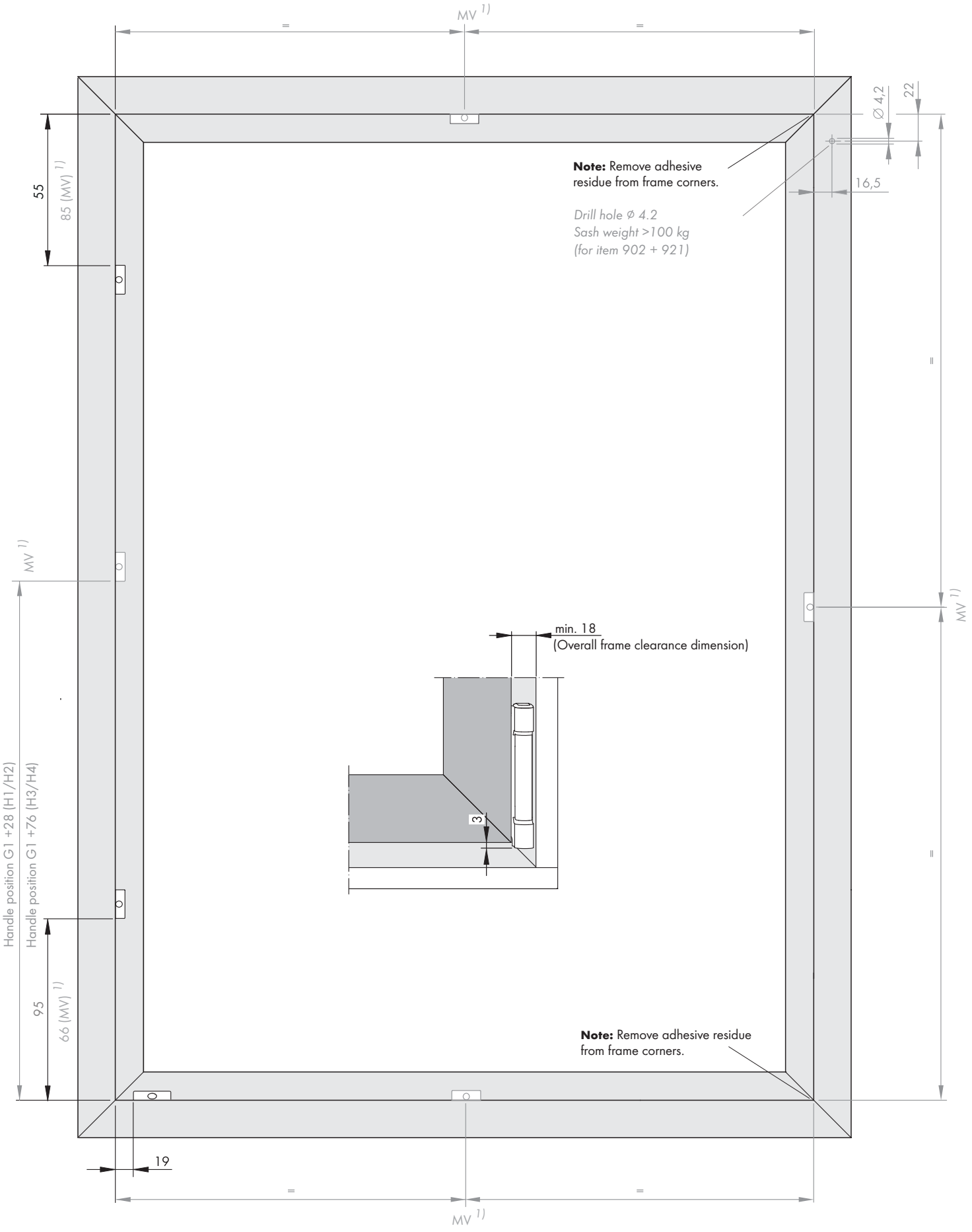
Assembly settings and installation sequence ① to ⑥





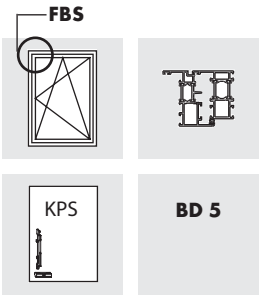
1) Remove the rebate seal in the hinge gap area (minimum hinge gap 3.5 mm).
2) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-D BD 3.5 130 kg *Frame dimensions*



1) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-DK (130 kg)



Turn-and-tilt hardware for hinge clearance (BD) 5 mm with mishandling device (FBS) on the corner drive (EUL)

Tilt point vertical (KPS)

Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	Patio doors max.
Sash width	(mm)	365	1600	1300
Sash height	(mm)	550	2000	2400
Sash weight	(kg)		**max. 100/130**	**max. 100/130**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 100 kg: Document no. H58.AWDLMS003EN
- Sash weight up to max. 130 kg: Document no. H58.AWDLMS004EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Adjustment options:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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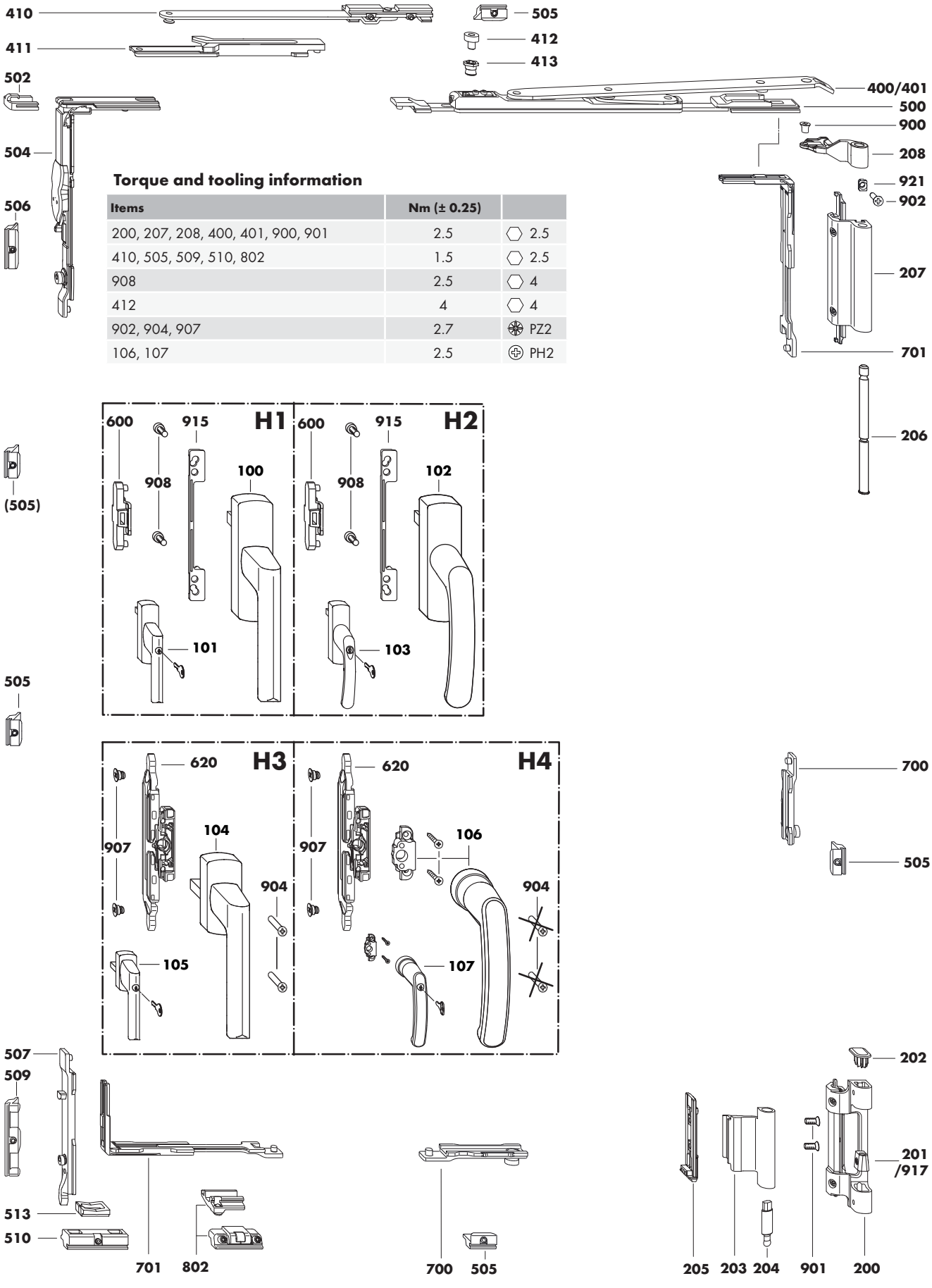
H48.5200LS014en/2



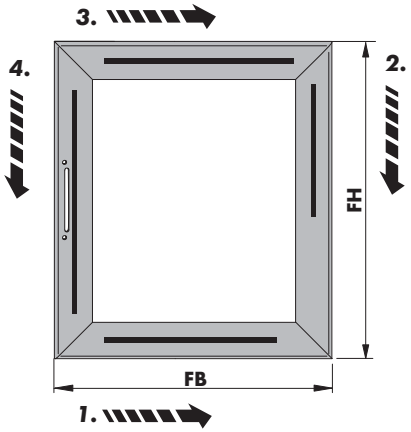
Torque and tooling information

Items	Nm (± 0.25)	
200, 207, 208, 400, 401, 900, 901	2.5	⬡ 2.5
410, 505, 509, 510, 802	1.5	⬡ 2.5
908	2.5	⬡ 4
412	4	⬡ 4
902, 904, 907	2.7	✱ PZ2
106, 107	2.5	⊕ PH2

ALU 5200-DK BD 5 KPS (FBS-EUL) 130 kg Hardware list

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	100	1	**Handle ALU Si-line**	*Only use in combination with coupling set*	*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
	101		**ALU Si-line lockable**					
H2	102		**ALU Globe**					
	103		**ALU Globe lockable**					
H3	104		**TITAN**	*Only use in combination with gear set*	*□ 7 mm x 25, cam Ø 10 mm Only use in combination with gear set*			
	105		**TITAN lockable**					
H4	106		**ALU Globe RR**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en in ALU planning manual*			
	107		**ALU Globe RR lockable**					
		1	**Hinge side ALU 5200 BD 5**	**silver**	**MMBS0230-525010**	**1**	**MMBS0230-525020**	**10**
				white *RAL 9016*	**MMBS0230-504010**	**1**	**MMBS0230-504020**	**10**
				black *RAL 9005*	**MMBS0230-523010**	**1**	**MMBS0230-523020**	**10**
				EV 1	**MMBS0230-524010**	**1**	**MMBS0230-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0230-500120**	**5**
	200	1	Bottom hinge					
	201	1	Adjusting piece					
	202	1	Cover cap					
	203	1	Corner hinge					
	204	1	Bottom hinge pin					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	208	1	Stay hinge					
	900	1	M5 x 7.5 countersunk screw					
	901	2	M5 x 8.5 countersunk screw					
	400	**0...1**	**Top stay ALU size 20**	*Sash width > 365 ≤ 600 weight ≤ 100 kg*	**884805**	**1**	**273098**	**20**
	401	**0...1**	**Top stay ALU size 35**	*Sash width > 600 ≤ 1600*	**884782**	**1**	**314203**	**20**
depending on FB/kg		**0...1**	**Additional stay ALU**	*Sash width > 1250 with top stay size 35 ≤ 100 kg* *Sash width > 1020 with top stay size 35 > 100 kg ≤ 130 kg*	**857076**	**1**	**247006**	**10**
	410	1	Additional stay					
	411	1	Striker plate					
	412	1	Locking cam					
	413	1	Eccentric rivet					
depending on kg		**0...1**	**Accessories set ALU for 130 kg**	*> 100 kg*	**-**	**1**	**247037**	**20**
	902	1	M5 x 13 countersunk screw					
	921	1	Supporting piece					
		1	**Locking side ALU DK (with FBS on corner drive) KPS**		**MMVS0310-100010**	**1**	**MMVS0310-100030**	**20**
	500	1	DK locking bolt					
	502	1	EUL clamping piece					
	504	1	Corner drive, VSO-FBS					
	506	1	Striker EUL					
	507	1	Tilt lock cam, 10					
	509	1	E striker cam 10					
	510	1	Tilt locking part					
	513	1	Run-up block					
H1/H2		**0...1**	**Coupling set ALU (without FBS on gear)**	*Only use in combination with H1/H2*	**MMKL0060-100010**	**1**	**MMKL0060-100030**	**20**
	600	1	ALU coupling bracket					
	908	2	M5 x 12 cheese head screw					
H3/H4		**0...1**	**Gear set ALU (without FBS on gear)**	*Only use in combination with H3/H4 (see drawing no. H48.ZubhLS005en)*	**MMGI0090-100010**	**1**	**MMGI0090-100030**	**20**
	620	1	M6 ESG					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...2**	**MV ALU-DK/TBT**	*FB/FH > 1250 (recommendation)*	**857045**	**1**	**246979**	**20**
	505	2	Striker					
	700	1	Slider					
	701	1	VSU/BSO corner drive					
Accessories	**802**	**0...1**	**Sash lifter ALU**	*(see drawing no. H48.ZubhLS014en)*	**MMFH0010-100010**	**1**	**MMFH0010-100030**	**20**
	915	**0...1**	**Handle support ALU**	*Only use in combination with H1/H2*	**-**	**-**	*See table on page 4*	**200**
	917	**0...1**	**AV adjusting piece**	*for compression + 0.5*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (> 100 kg; see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

Observe assembly sequence

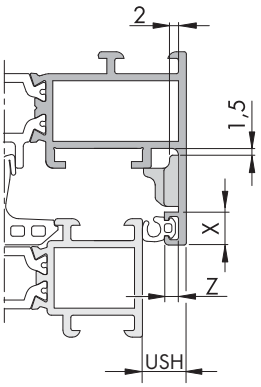


Sequence of installation in sash

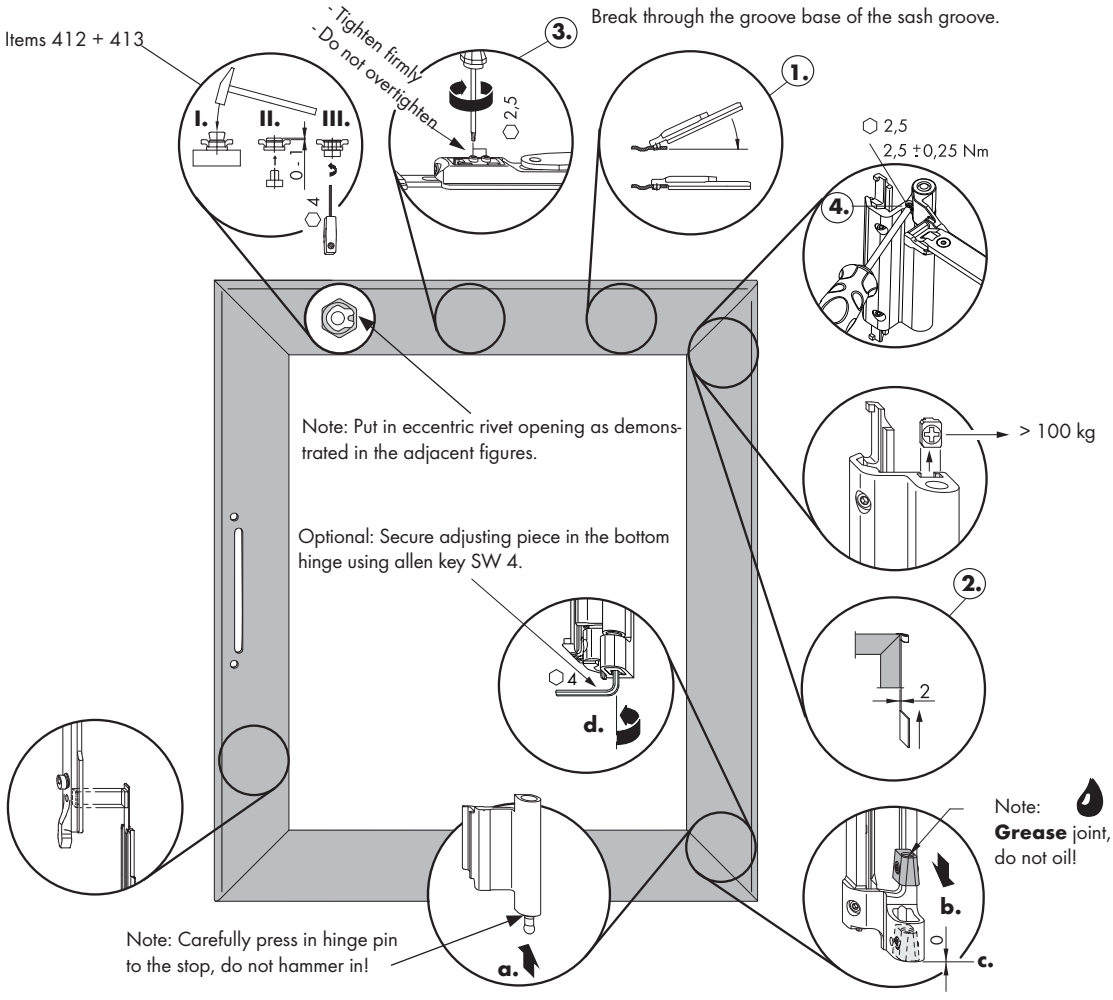
- without centre lock (**3. - 4.**)
- with centre lock (**1. - 2. - 3. - 4.**)

Design variations for handle support (item 915) (H1/H2)

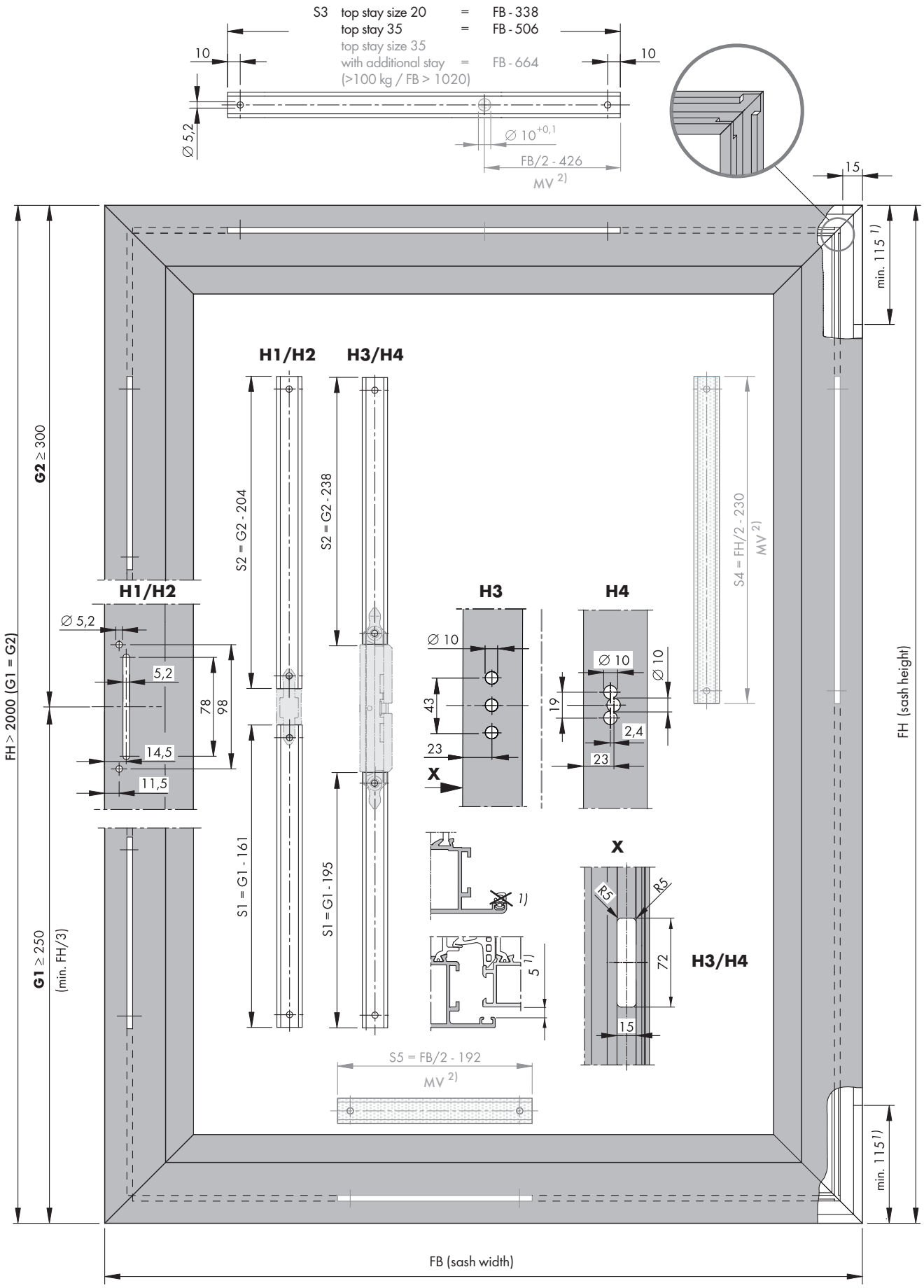
USH (mm)	Z (mm)	X ≤ 7 mm	X > 7 ≤ 8.5 mm
7 - 10	≤ 2	MFHA0010-100200	MFHA0010-100200
	> 2 ≤ 3		MFHA0020-100200
	> 3		-
12	-	MFHA0030-100200	-



Assembly settings and installation sequence ① to ④

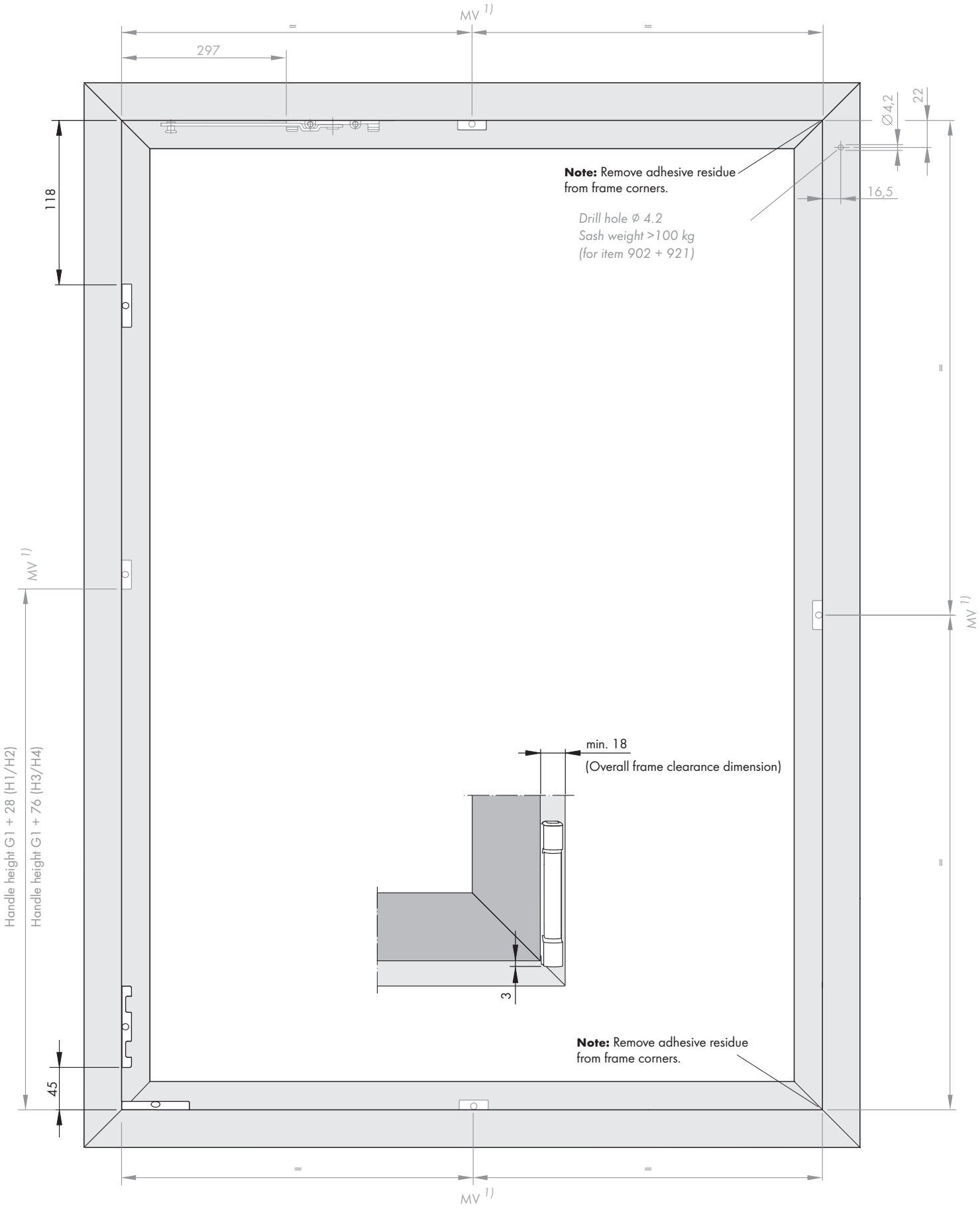


ALU 5200-DK BD 5 KPS (FBS-EUL) 130 kg *Sash dimensions*



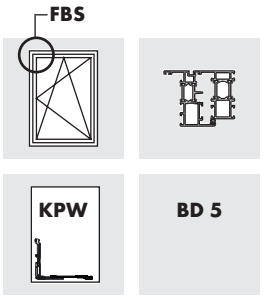
1) Remove the rebate seal in the hinge gap area (minimum hinge gap 5 mm).
2) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-DK BD 5 KPS (FBS-EUL) 130 kg *Frame dimensions*



1) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-DK (150 kg)



Turn-and-tilt hardware for hinge clearance (BD) 5 mm with mishandling device (FBS) on the corner drive (EUL)

Tip point horizontal (KPW)

Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	Patio doors max.
Sash width	(mm)	600	to 1600	1300
Sash height	(mm)	600	to 2000	2600
Sash weight	(kg)	**max. 100/150**		**max. 100/150**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 100 kg: Document no. H58.AWDLMS003EN
- Sash weight up to max. 150 kg: Document no. H58.AWDLMS005EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Adjustment options:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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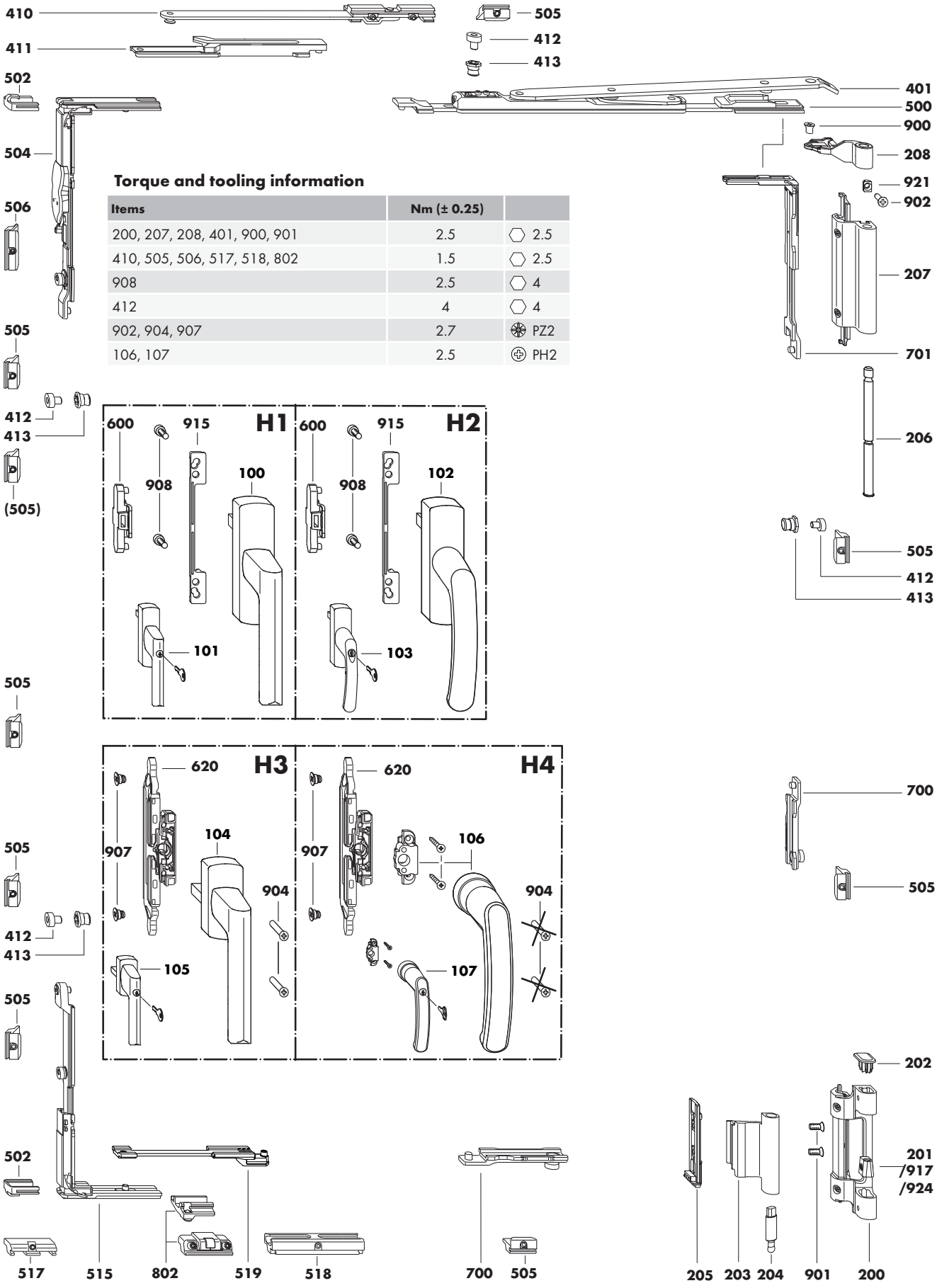
H48.5200LS007en/2



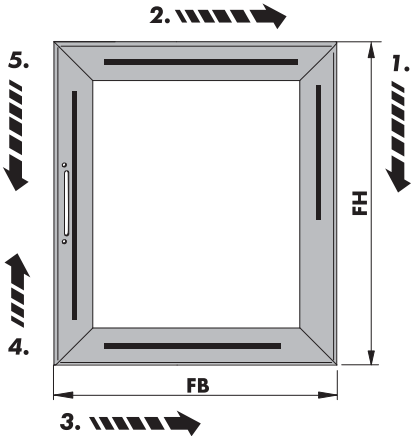
Torque and tooling information

Items	Nm (± 0.25)	
200, 207, 208, 401, 900, 901	2.5	⬡ 2.5
410, 505, 506, 517, 518, 802	1.5	⬡ 2.5
908	2.5	⬡ 4
412	4	⬡ 4
902, 904, 907	2.7	PZ2
106, 107	2.5	PH2

ALU 5200-DK BD 5 KPW (FBS-EUL) 150 kg Hardware list

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	100	1	**Handle ALU Si-line**	*Only use in combination with coupling set*	*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
	101		**ALU Si-line lockable**					
H2	102		**ALU Globe**					
	103		**ALU Globe lockable**					
H3	104		**TITAN**	*Only use in combination with gear set*	□ *7 mm x 25, cam Ø 10 mm Only use in combination with gear set*			
	105		**TITAN lockable**					
H4	106		**ALU Globe RR**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en in ALU planning manual*			
	107		**ALU Globe RR lockable**					
		1	**Hinge side ALU 5200 BD 5**	**silver**	**MMBS0230-525010**	**1**	**MMBS0230-525020**	**10**
				white *RAL 9016*	**MMBS0230-504010**	**1**	**MMBS0230-504020**	**10**
				black *RAL 9005*	**MMBS0230-523010**	**1**	**MMBS0230-523020**	**10**
				EV 1	**MMBS0230-524010**	**1**	**MMBS0230-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0230-500120**	**5**
	200	1	Bottom hinge					
	201	1	Adjusting piece	*(replaced by item 924 with sash weight >100 kg)*				
	202	1	Cover cap					
	203	1	Corner hinge					
	204	1	Bottom hinge pin					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	208	1	Stay hinge					
	900	1	M5 x 7.5 countersunk screw					
	901	2	M5 x 8.5 countersunk screw					
	401	**1**	**Top stay ALU size 35**		**884782**	**1**	**314203**	**20**
depending on FB/kg		**0...1**	**Additional stay ALU**	*Sash width > 1250 with top stay size 35 ≤ 100 kg* *Sash width > 1020 with top stay size 35 > 100 kg*	**857076**	**1**	**247006**	**10**
	410	1	Additional stay					
	411	1	Striker plate					
	412	1	Locking cam					
	413	1	Eccentric rivet					
depending on kg		**1**	**Accessories set ALU BD 5 150 kg**	*> 100 kg*	**-**	**-**	**MZBS0110-000030**	**20**
	902	1	M5 x 13 countersunk screw					
	921	1	Supporting piece					
	924	1	Adjusting piece S					
		1	**Locking side ALU DK KPW (with FBS on corner drive)**		**MMVS0450-100010**	**1**	**MMVS0450-100030**	**20**
	500	1	DK locking bolt					
	502	2	EUL clamping piece					
	504	1	Corner drive, VSO-FBS					
	505	1	Striker					
	506	1	Striker EUL VSO					
	515	1	VSU corner drive					
	517	1	Run-up block					
	518	1	Tilt locking part					
	519	1	Tilt lock DK					
H1/H2		**0...1**	**Coupling set ALU (without FBS on gear)**	*Only use in combination with H1/H2*	**MMKL0060-100010**	**1**	**MMKL0060-100030**	**20**
	600	1	ALU coupling bracket					
	908	2	M5 x 12 cheese head screw					
H3/H4		**0...1**	**Gear set ALU (without FBS on gear)**	*Only use in combination with H3/H4 (see drawing no. H48.ZubhLS005en)*	**MMGI0090-100010**	**1**	**MMGI0090-100030**	**20**
	620	1	M6 ESG					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...1**	**MV ALU-DK/TBT**	*FH > 1250 (recommendation)*	**857045**	**1**	**246979**	**20**
	505	2	Striker					
	700	1	Slider					
	701	1	VSU/BSO corner drive					
		0...3	**Locking part ALU**	*FH > 2400 (recommendation)*	**-**	**-**	**317556**	**20**
	412	1	Locking cam					
	413	1	Eccentric rivet					
	505	1	Striker					
		0...1	**MV ALU slider**	*FB > 1250 (recommendation)*	**MMMV0070-100010**	**1**	**MMMV0070-100030**	**20**
	505	2	Striker					
	700	1	Slider					
Accessories	**802**	**0...1**	**Sash lifter ALU**	*(see drawing no. H48.ZubhLS014en)*	**MMFH0010-100010**	**1**	**MMFH0010-100030**	**20**
	915	**0...1**	**Handle support ALU**	*Only use in combination with H1/H2*	**-**	**-**	*See table on page 4*	
	917	**0...1**	**AV adjusting piece**	*For compression + 0.5 mm*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (> 100 kg; see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

Observe assembly sequence

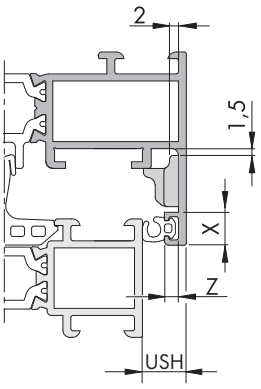


Sequence of installation in sash

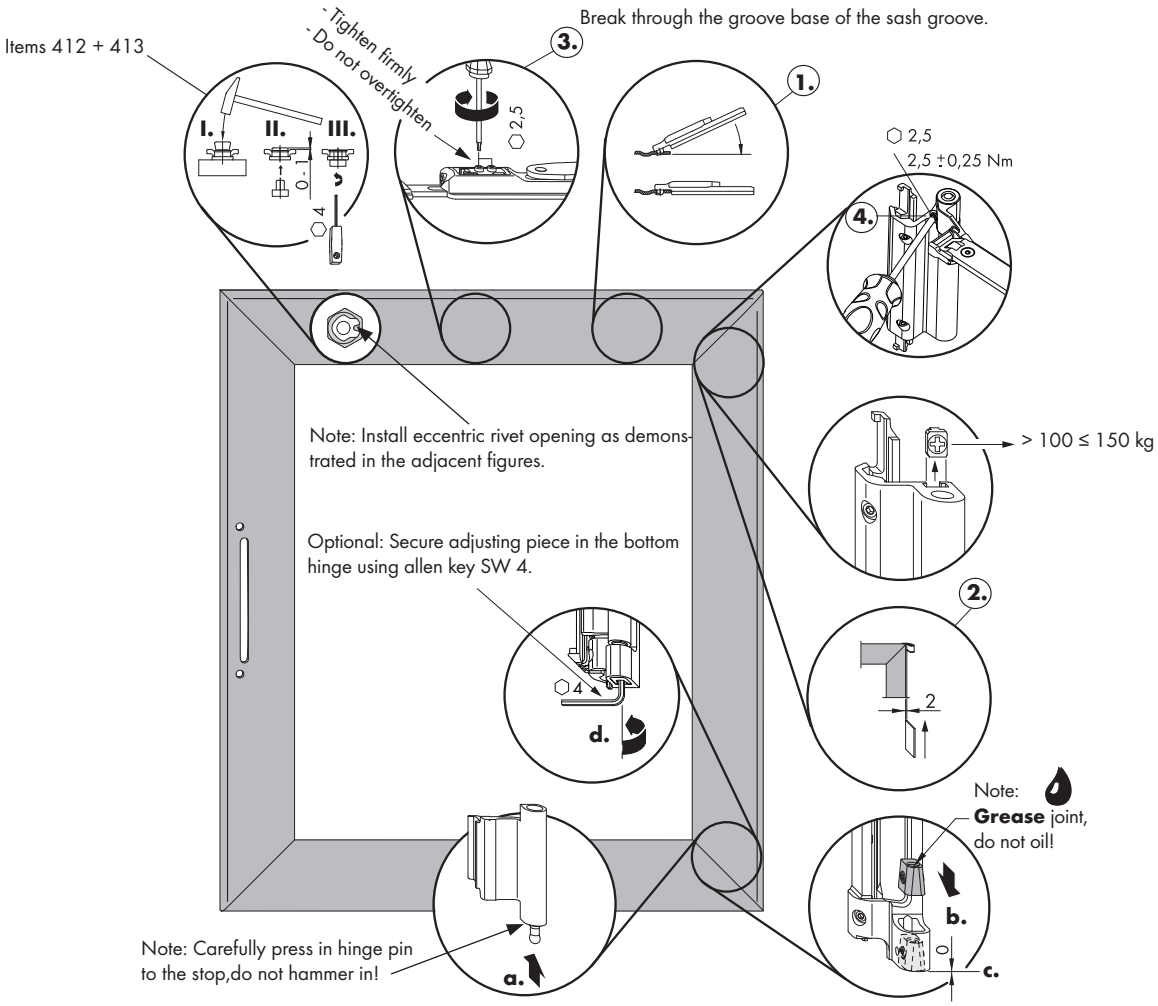
- without centre lock (**2. - 3. - 4. - 5.**)
- with centre lock (**1. - 2. - 3. - 4. - 5.**)

Design variations for handle support (item 915) (H1/H2)

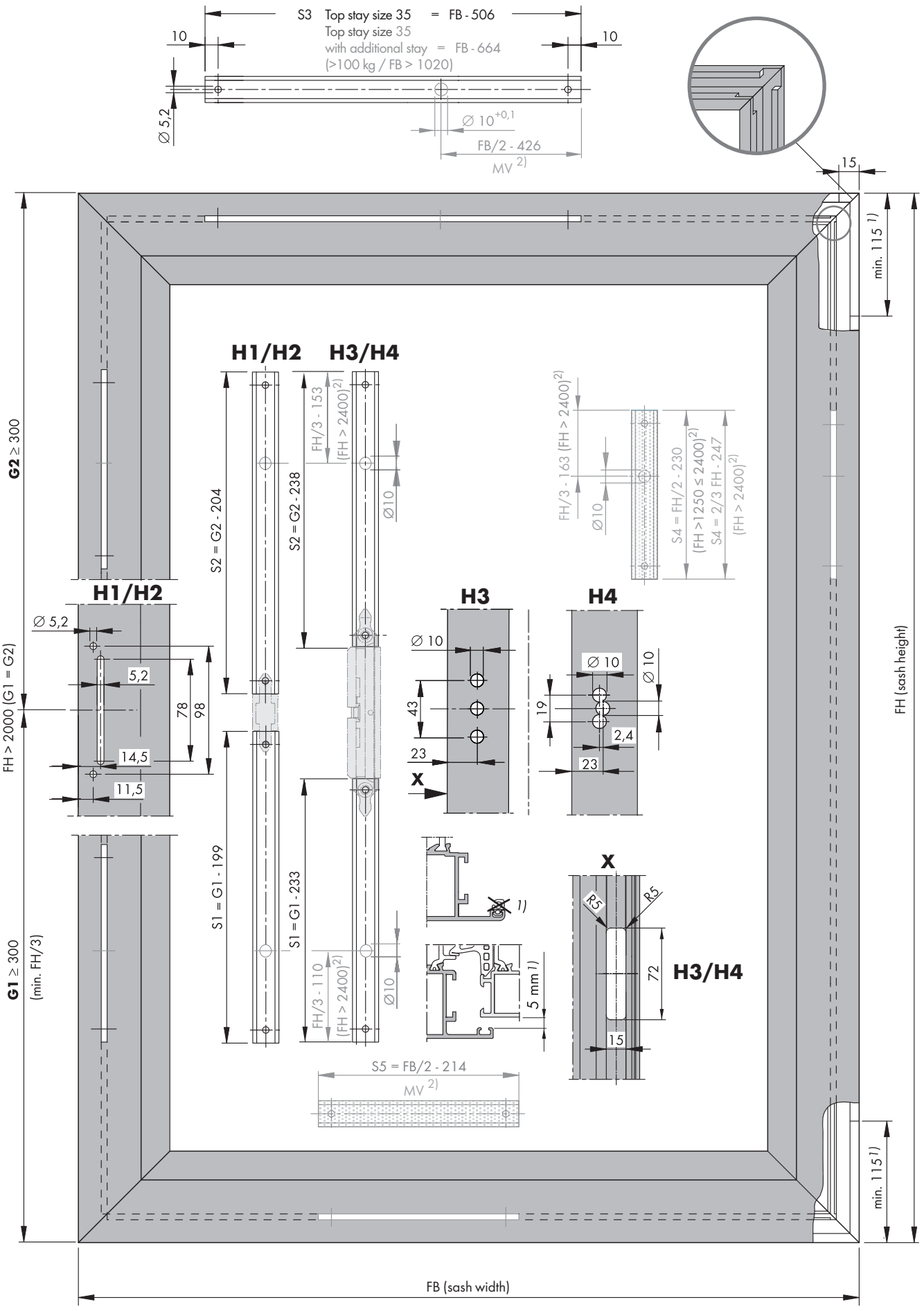
USH (mm)	Z (mm)	X ≤ 7 mm	X > 7 ≤ 8.5 mm
7 - 10	≤ 2	MFHA0010-100200	MFHA0010-100200
	> 2 ≤ 3		MFHA0020-100200
	> 3		-
12	-	MFHA0030-100200	-



Assembly settings and installation sequence ① to ④



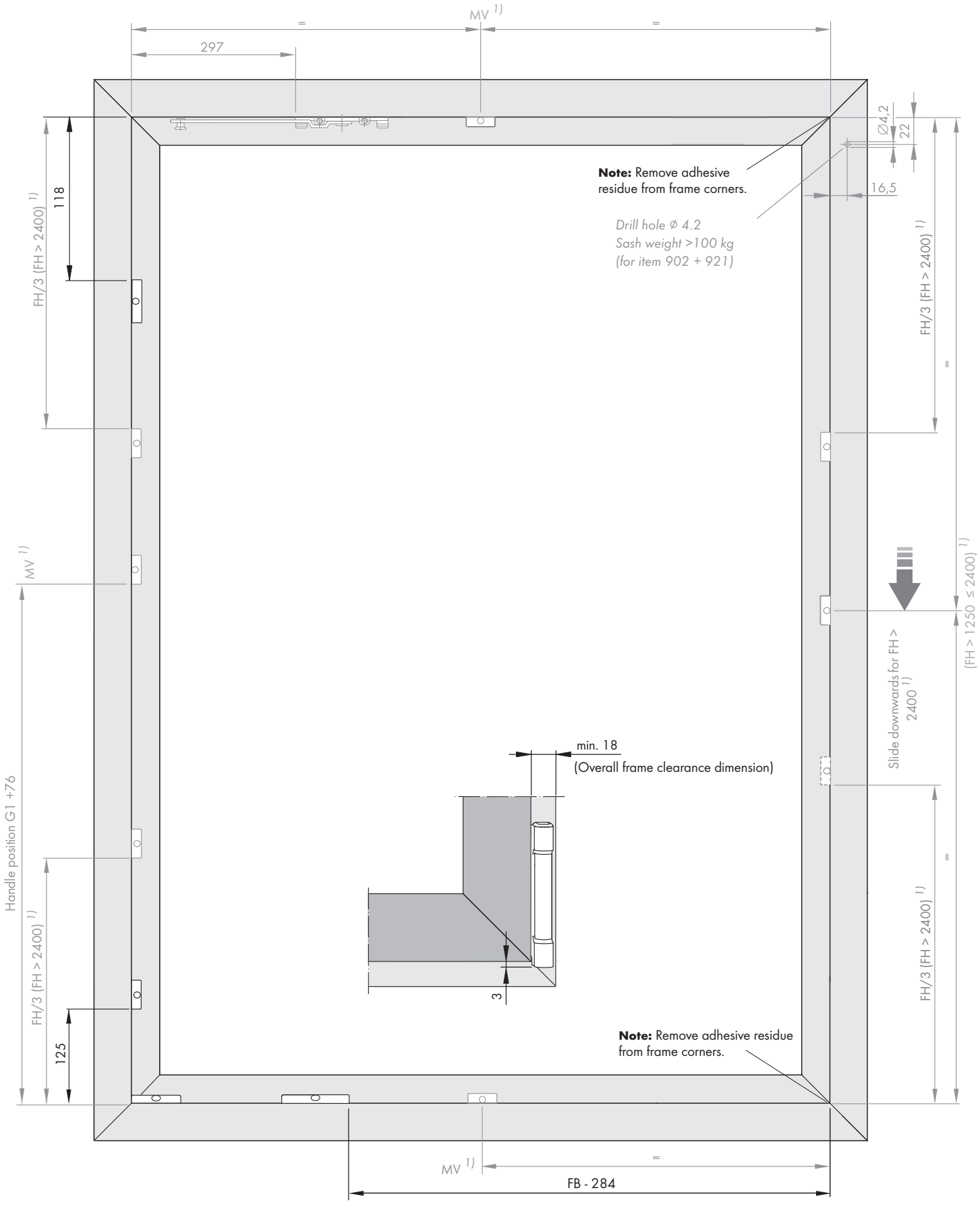
ALU 5200-DK BD 5 KPW (FBS-EUL) 150 kg *Sash dimensions*



1) Remove the rebate seal in the hinge gap area (minimum hinge gap 5 mm).

2) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-DK BD 5 KPW (FBS-EUL) 150 kg *Frame dimensions*



1) For installation recommendation for the centre locks and additional locks see page 3.

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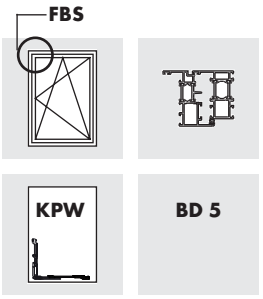
ALU 5200-DK (170 kg)



Turn-and-tilt hardware for hinge clearance (BD) 5 mm with mishandling device (FBS) on the corner drive (EUL)

Tilt point horizontal (KPW)

Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	French doors max.
Sash width	(mm)	600 to 1600		1300
Sash height	(mm)	1100 to 2000		2600
Sash weight	(kg)	**max. 170**		**max. 170**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 170 kg: Document no. H58.AWDLMS006EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Maintenance und adjustment instructions:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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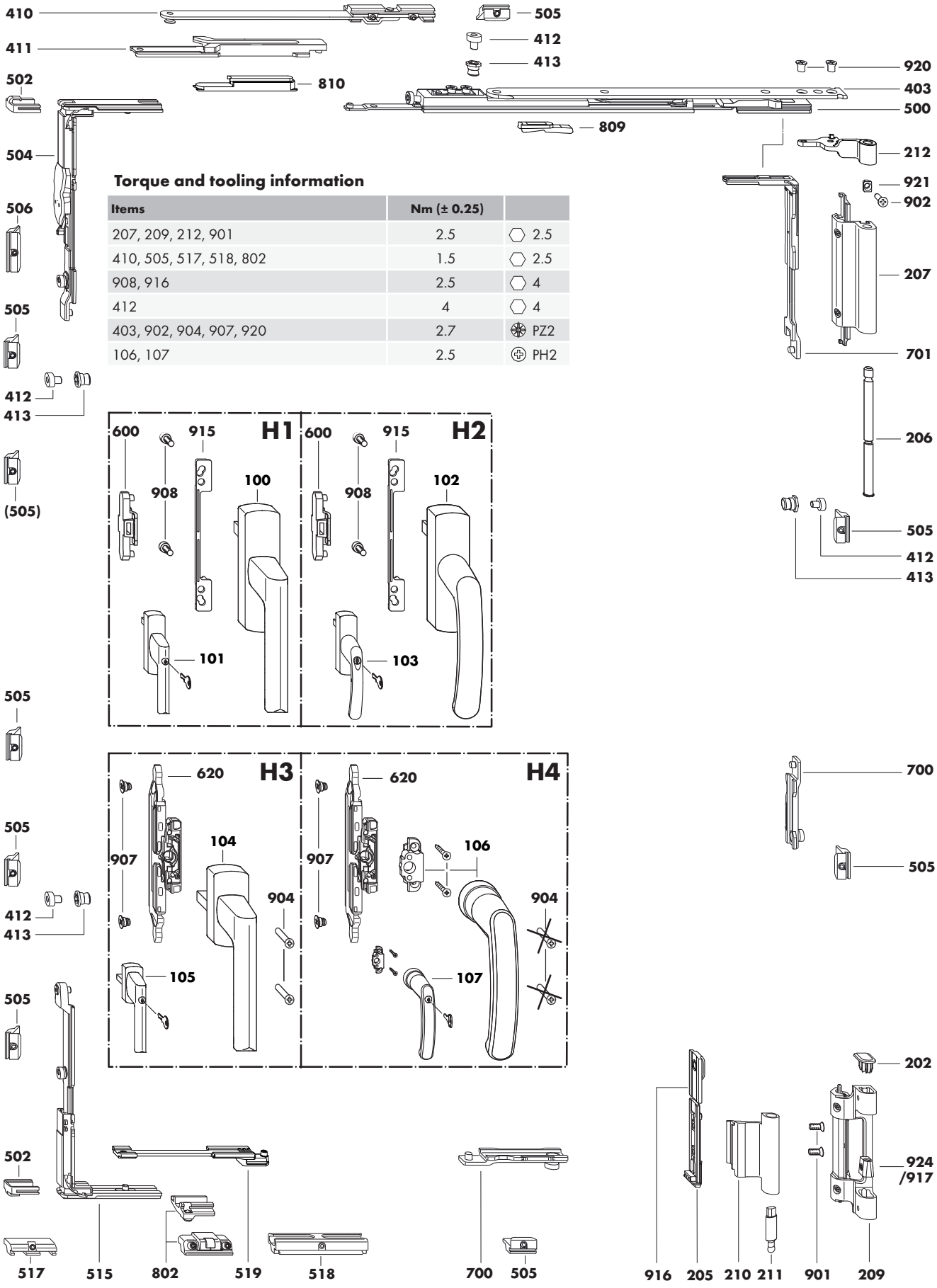


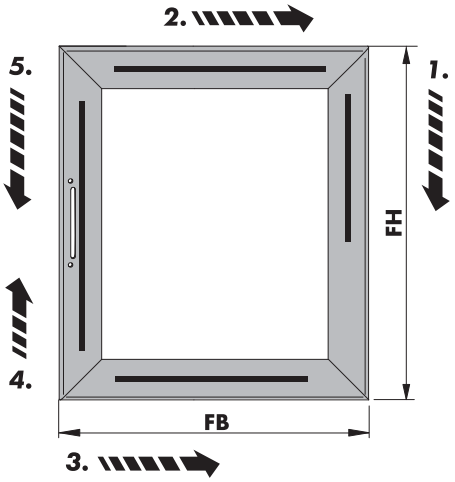
Torque and tooling information

Items	Nm (± 0.25)	
207, 209, 212, 901	2.5	⬡ 2.5
410, 505, 517, 518, 802	1.5	⬡ 2.5
908, 916	2.5	⬡ 4
412	4	⬡ 4
403, 902, 904, 907, 920	2.7	✱ PZ2
106, 107	2.5	⊕ PH2

ALU 5200-DK BD 5 KPW (FBS-EUL) 170 kg *Hardware list*

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	100	1	**Handle ALU Si-line**	*Only use in combination with coupling set*	*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
	101		**ALU Si-line lockable**					
H2	102		**ALU Globe**					
	103		**ALU Globe lockable**					
H3	104		**TITAN**	*Only use in combination with gear set*	*□ 7 mm x 25, cam Ø 10 mm Only use in combination with gear set*			
	105		**TITAN lockable**					
H4	106		**ALU Globe RR**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en in ALU planning manual*			
	107		**ALU Globe RR lockable**					
		1	**Hinge side ALU 5200-170 BD 5**	**silver**	**MMBS0240-525010**	**1**	**MMBS0240-525020**	**10**
				white *RAL 9016*	**MMBS0240-504010**	**1**	**MMBS0240-504020**	**10**
				black *RAL 9005*	**MMBS0240-523010**	**1**	**MMBS0240-523020**	**10**
				EV 1	**MMBS0240-524010**	**1**	**MMBS0240-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0240-500120**	**5**
	202	1	Cover cap					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	209	1	Bottom hinge ALU 5200-170					
	210	1	Corner hinge ALU 5200-170					
	211	1	Bottom hinge pin ALU 5200-170					
	212	1	Stay hinge ALU 5200-170					
	901	2	M5 x 8.5 countersunk screw	*(blue thread protection)*				
	902	1	M5 x 13 countersunk screw					
	916	1	Long stop					
	920	2	Countersunk screw M5 x 7 PZ2	*(green thread protection)*				
	921	1	Supporting piece					
	924	1	Adjusting piece S					
	403	**1**	**Top stay ALU-DK size 30**		**MSKK0020-000010**	**1**	**MSKK0020-000030**	**20**
depending on FB/kg		**0...1**	**Additional stay ALU**	*FB > 1020 > 100 kg*	**857076**	**1**	**247006**	**10**
	410	1	Additional stay					
	411	1	Striker plate					
	412	1	Locking cam					
	413	1	Eccentric rivet					
		1	**Locking side ALU DK KPW (with FBS on corner drive)**		**MMVS0450-100010**	**1**	**MMVS0450-100030**	**20**
	500	1	DK locking bolt					
	502	2	EUL clamping piece					
	504	1	Corner drive, VSO-FBS					
	505	1	Striker					
	506	1	Striker EUL VSO					
	515	1	VSU corner drive					
	517	1	Run-up block					
	518	1	Tilt locking part					
	519	1	Tilt lock DK					
H1/H2		**0...1**	**Coupling set ALU (without FBS on gear)**	*Only use in combination with H1/H2*	**MMKL0060-100010**	**1**	**MMKL0060-100030**	**20**
	600	1	ALU coupling bracket					
	908	2	M5 x 12 cheese head screw					
H3/H4		**0...1**	**Gear set ALU (without FBS on gear)**	*Only use in combination with H3/H4 (see drawing no. H48.ZubhLS005en)*	**MMGI0090-100010**	**1**	**MMGI0090-100030**	**20**
	620	1	M6 ESG					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...1**	**MV ALU-DK/TBT**	*FH > 1250 (recommendation)*	**857045**	**1**	**246979**	**20**
	505	2	Striker					
	700	1	Slider					
	701	1	VSU/BSO corner drive					
		0...3	**Locking part ALU**	*FH > 2400 (recommendation)*	**-**	**-**	**317556**	**20**
	412	1	Locking cam					
	413	1	Eccentric rivet					
	505	1	Striker					
		0...1	**MV ALU slider**	*FB > 1250 (recommendation)*	**MMMV0070-100010**	**1**	**MMMV0070-100030**	**20**
	505	2	Striker					
	700	1	Slider					
Accessories	**802**	**0...1**	**Sash lifter ALU**	*(see drawing no. H48.ZubhLS014en)*	**MMFH0010-100010**	**1**	**MMFH0010-100030**	**20**
	809	**0...1**	**Tilt restrictor top stay ALU**	*for top stay ALU-DK*	**MFKB0010-023010**	**1**	**MFKB0010-023050**	**50**
	810	**0...1**	**Tilt restrictor additional stay**	*for additional stay ALU*	**MFKB0020-023010**	**1**	**MFKB0020-023050**	**50**
	915	**0...1**	**Handle support ALU**	*Only use in combination with H1/H2*	**-**	**-**	*See table on page 4*	
	917	**0...1**	**AV adjusting piece**	*For compression + 0.5*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU-DK 200**	*for top stay size 30 (item 403) (see page 5)*	**MASB0010-500010**	**1**	**-**	**-**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

Observe assembly sequence

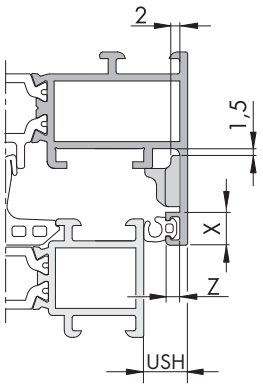


Sequence of installation in sash

- without centre lock (**2. - 3. - 4. - 5.**)
- with centre lock (**1. -2. - 3. - 4. - 5.**)

Design variations for handle support (item 915) (H1/H2)

USH (mm)	Z (mm)	X ≤ 7 mm	X > 7 ≤ 8.5 mm
7 - 10	≤ 2	MFHA0010-100200	MFHA0010-100200
	> 2 ≤ 3		MFHA0020-100200
	> 3		-
12	-	MFHA0030-100200	-



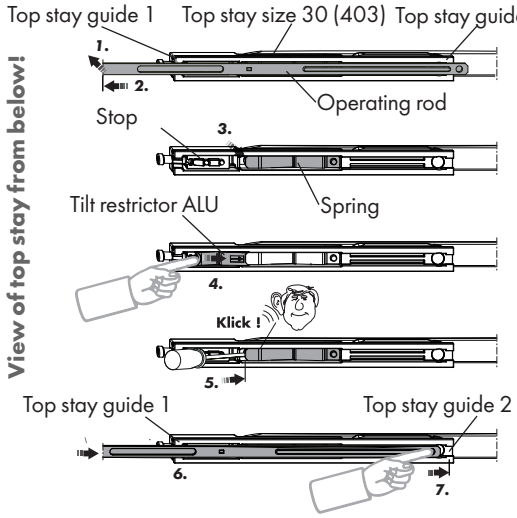
Installation of tilt restrictor ALU 1. to 7.

On requirement: Always mount the tilt restrictor ALU (809) **prior to** the installation and **not** with the top stay size 30 (403) in tilt position.

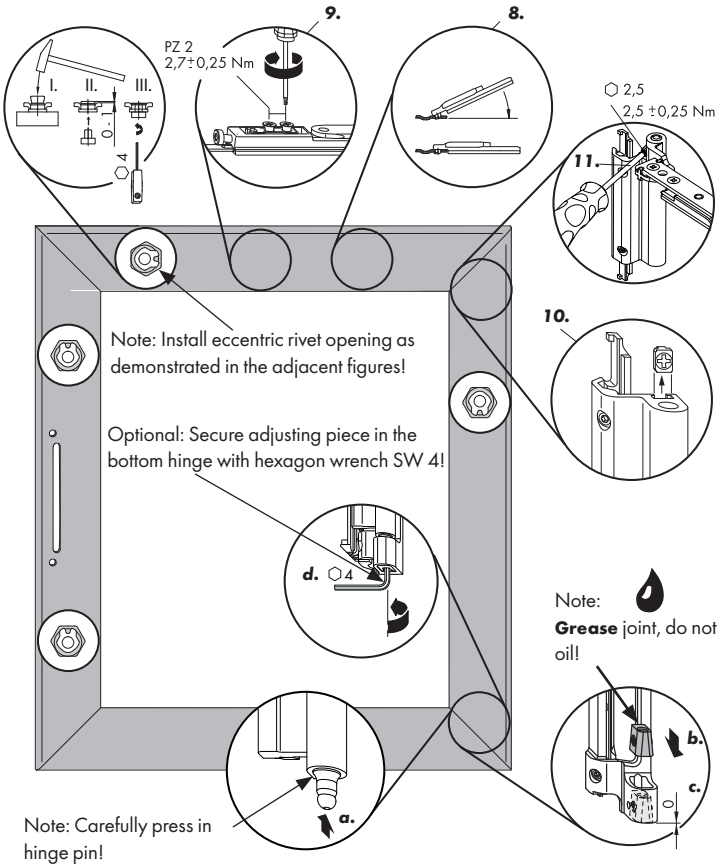
Pos. 809 Installation view Tilt restrictor ALU (809)

1. Bend the operating rod in the direction of the top stay. The bend of the operating rod must be positioned over the stop.
2. Pull the operating rod in the direction of the arrow out of the top stay guide1 and 2.
3. Lift the spring minimally.
4. Slide the tilt restrictor ALU horizontally under the spring.
5. Slide the concealed tilt restrictor ALU with a screwdriver horizontally under the spring until it engages.
6. Slide the operating rod into the top stay guide 1.
7. Slide the operating rod as far as the top stay guide 2, press the end of the operating rod and then push the operating rod through the top stay guide 2.

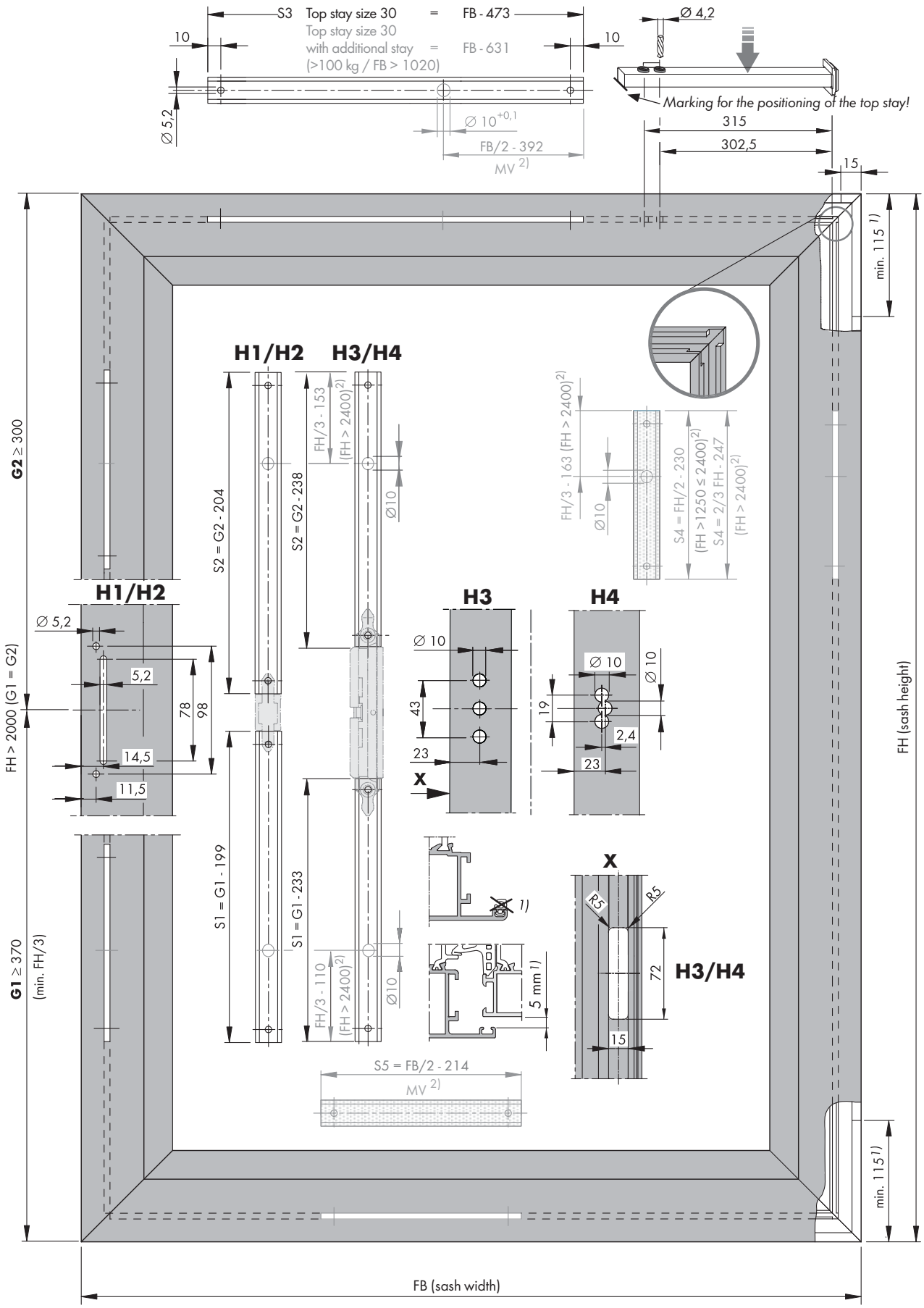
Note: Check whether the operating rod is seated in the top stay guides by moving the operating rod back and forth.



Assembly settings and installation sequence 8. to 11.



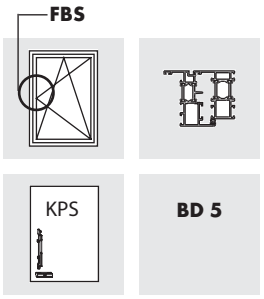
ALU 5200-DK BD 5 KPW (FBS-EUL) 170 kg *Sash dimensions*



1) Remove the rebate seal in the hinge gap area (minimum hinge gap 5 mm).

2) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-DK (130 kg)



Turn-and-tilt hardware for hinge clearance (BD) 5 mm with mishandling device (FBS) on the gear (G)

Tilt point vertical (KPS)

Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	Patio doors max.
Sash width	(mm)	365 to 1600		1300
Sash height	(mm)	550 to 2000		2400
Sash weight	(kg)	**max. 100/130**		**max. 100/130**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 100 kg: Document no. H58.AWDLMS003EN
- Sash weight up to max. 130 kg: Document no. H58.AWDLMS004EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Adjustment options:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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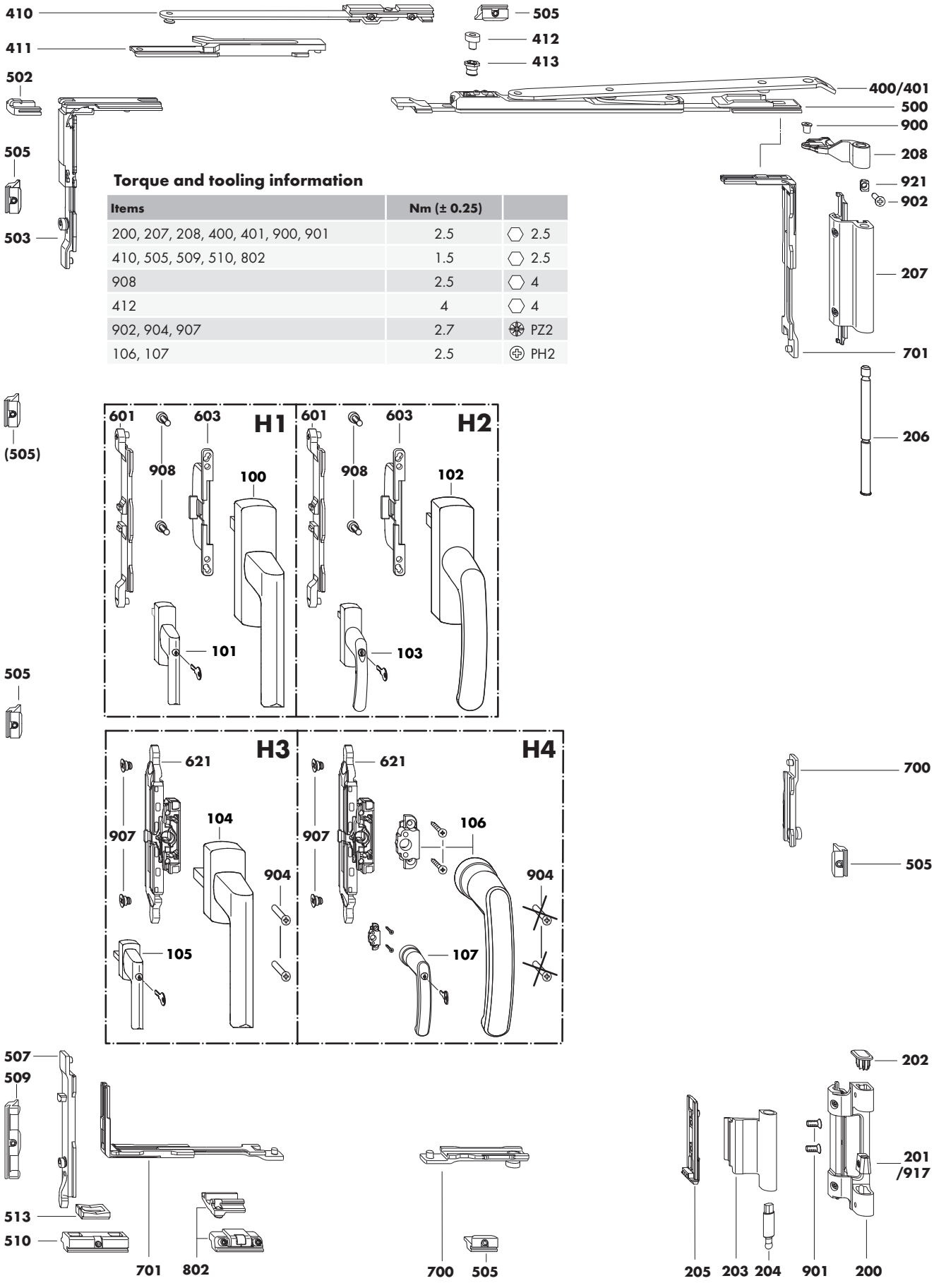


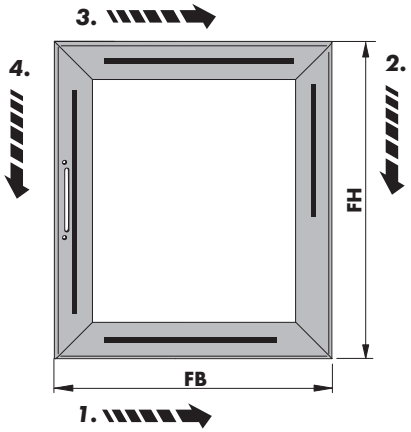
Torque and tooling information

Items	Nm (± 0.25)	
200, 207, 208, 400, 401, 900, 901	2.5	⬡ 2.5
410, 505, 509, 510, 802	1.5	⬡ 2.5
908	2.5	⬡ 4
412	4	⬡ 4
902, 904, 907	2.7	✱ PZ2
106, 107	2.5	⊕ PH2

ALU 5200-DK BD 5 KPS (FBS-G) 130 kg *Hardware list*

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	100	1	**Handle ALU Si-line**	*Only use in combination with coupling set*	*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
	101		**ALU Si-line lockable**					
H2	102		**ALU Globe**					
	103		**ALU Globe lockable**					
H3	104		**TITAN**	*Only use in combination with gear set*	*□ 7 mm x 25, cam Ø 10 mm Only use in combination with gear set*			
	105		**TITAN lockable**					
H4	106		**ALU Globe RR**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en in ALU planning manual*			
	107		**ALU Globe RR lockable**					
		1	**Hinge side ALU 5200 BD 5**	**silver**	**MMBS0230-525010**	**1**	**MMBS0230-525020**	**10**
				white *RAL 9016*	**MMBS0230-504010**	**1**	**MMBS0230-504020**	**10**
				black *RAL 9005*	**MMBS0230-523010**	**1**	**MMBS0230-523020**	**10**
				EV 1	**MMBS0230-524010**	**1**	**MMBS0230-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0230-500120**	**5**
	200	1	Bottom hinge					
	201	1	Adjusting piece					
	202	1	Cover cap					
	203	1	Corner hinge					
	204	1	Bottom hinge pin					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	208	1	Stay hinge					
	900	1	M5 x 7.5 countersunk screw					
	901	2	M5 x 8.5 countersunk screw					
	400	**0...1**	**Top stay ALU size 20**	*Sash width > 365 ≤ 600 weight ≤ 100 kg*	**884805**	**1**	**273098**	**20**
	401	**0...1**	**Top stay ALU size 35**	*Sash width > 600 ≤ 1600*	**884782**	**1**	**314203**	**20**
depending on FB/kg		**0...1**	**Additional stay ALU**	*Sash width > 1250 with top stay size 35 ≤ 100 kg Sash width > 1020 with top stay size 35 > 100 kg*	**857076**	**1**	**247006**	**10**
	410	1	Additional stay					
	411	1	Striker plate					
	412	1	Locking cam					
	413	1	Eccentric rivet					
depending on kg		**0...1**	**Accessories set ALU for 130 kg**	*> 100 kg*	**-**	**1**	**247037**	**20**
	902	1	M5 x 13 countersunk screw					
	921	1	Supporting piece					
		1	**Locking side ALU DK (for FBS on gear) KPS**		**MMVS0250-100010**	**1**	**MMVS0250-100030**	**20**
	500	1	DK locking bolt					
	502	1	EUL clamping piece					
	503	1	Corner drive VSO					
	506	1	Striker EUL					
	507	1	Tilt lock cam 10					
	509	1	E striker cam 10					
	510	1	Tilt locking part					
	513	1	Run-up block					
H1/H2		**0...1**	**Coupling set ALU FBS (with FBS on gear)** **Y= 9 mm**	*Only use in combination with H1/H2 (For notes on rebate height (USH) and dimension Y see page 4)*	**MMKL0030-100010**	**1**	**MMKL0030-100030**	**20**
			Y=10 mm		**MMKL0010-100010**	**1**	**MMKL0010-100030**	**20**
			USH 12 mm		**MMKL0040-100010**	**1**	**MMKL0040-100030**	**20**
	601	1	ALU coupling bracket					
	603	1	Mishandling device					
	908	2	M5 x 12 cheese head screw					
H3/H4		**0...1**	**Gear set ALU FBS (with FBS on gear)**	*Only use in combination with H3/H4 (see drawing no. H48.ZubhLS005en)*	**MMGI0080-100010**	**1**	**MMGI0080-100030**	**20**
	621	1	ESG M6 FBS					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...2**	**MV ALU-DK/TBT**	*FB/FH > 1250 (recommendation)*	**857045**	**1**	**246979**	**20**
	505	2	Striker					
	700	1	Slider					
	701	1	VSU/BSO corner drive					
Accessories	**802**	**0...1**	**Sash lifter ALU**	*(see drawing no. H48.ZubhLS014en)*	**MMFH0010-100010**	**1**	**MMFH0010-100030**	**20**
	917	**0...1**	**AV adjusting piece**	*for compression + 0.5*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (> 100 kg; see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

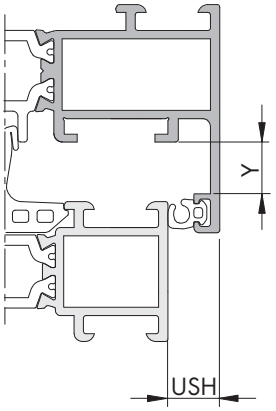
Observe assembly sequence



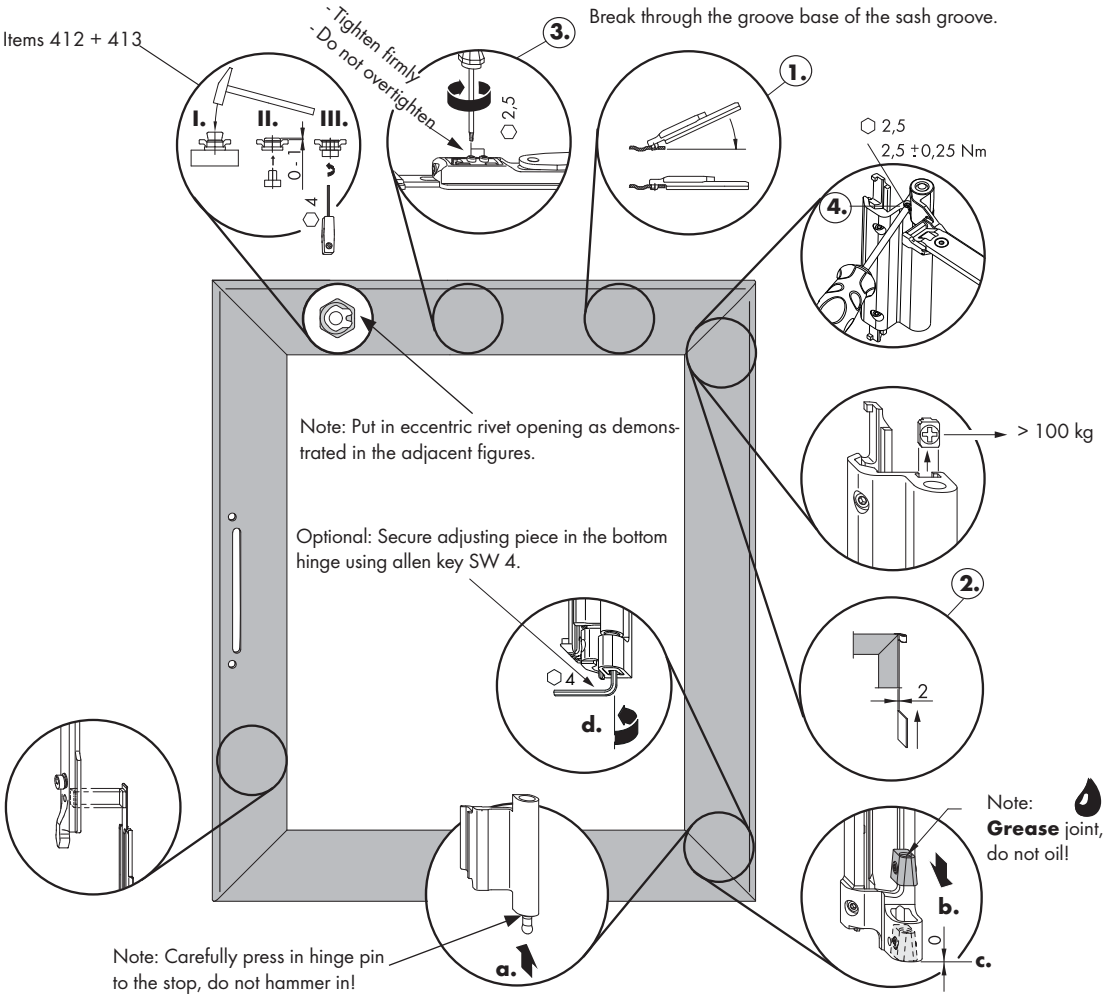
Sequence of installation in sash
- without centre lock (**3. - 4.**)
- with centre lock (**1. - 2. - 3. - 4.**)

Design variations for coupling set (item 601-603-908) (H1/H2)

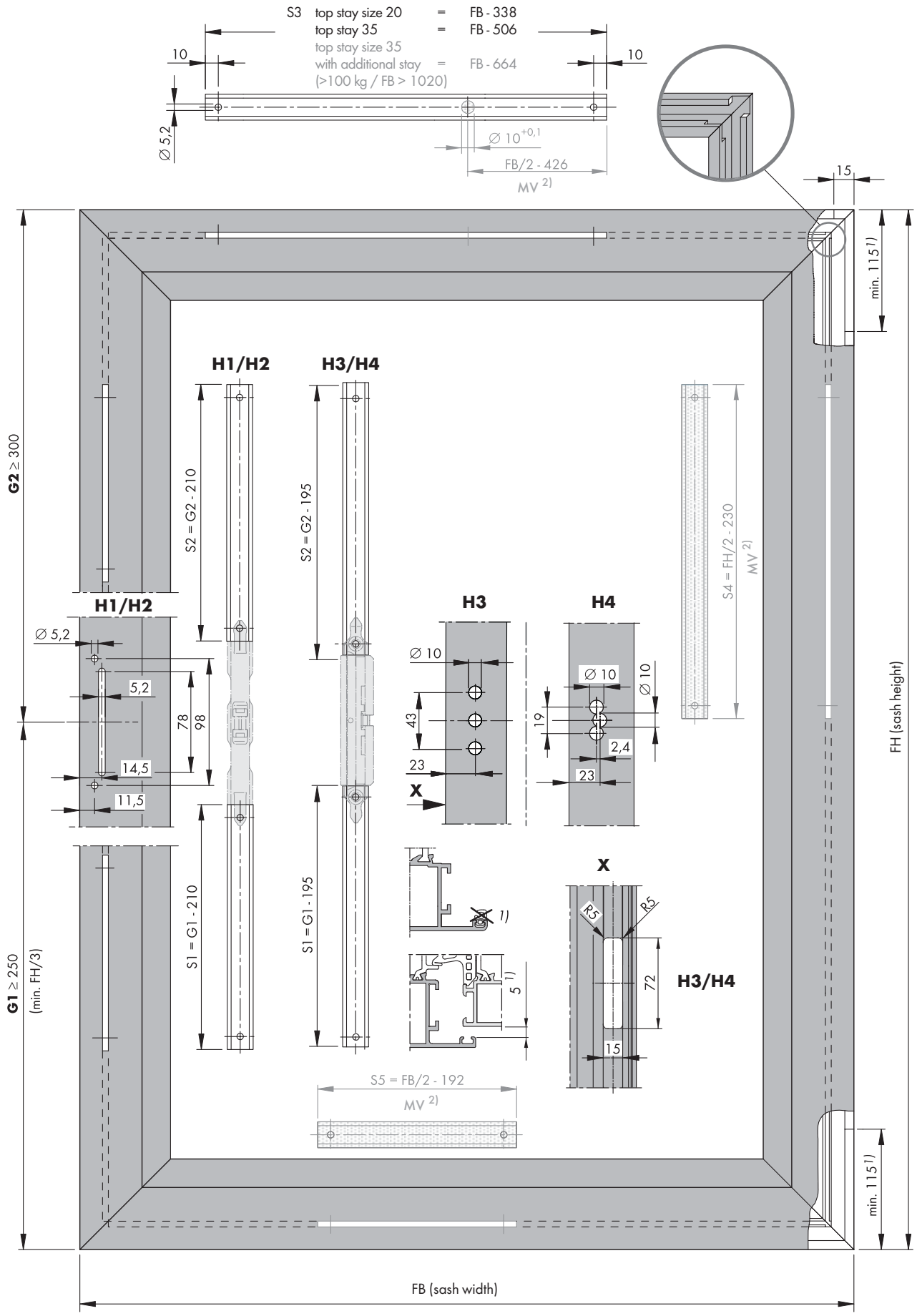
USH (mm)	Y (mm)	Material-Nr.
7 - 10	≥ 9 < 10	MMKL0030-100030
	≥ 10	MMKL0010-100030
12	-	MMKL0040-100030



Assembly settings and installation sequence ① to ④



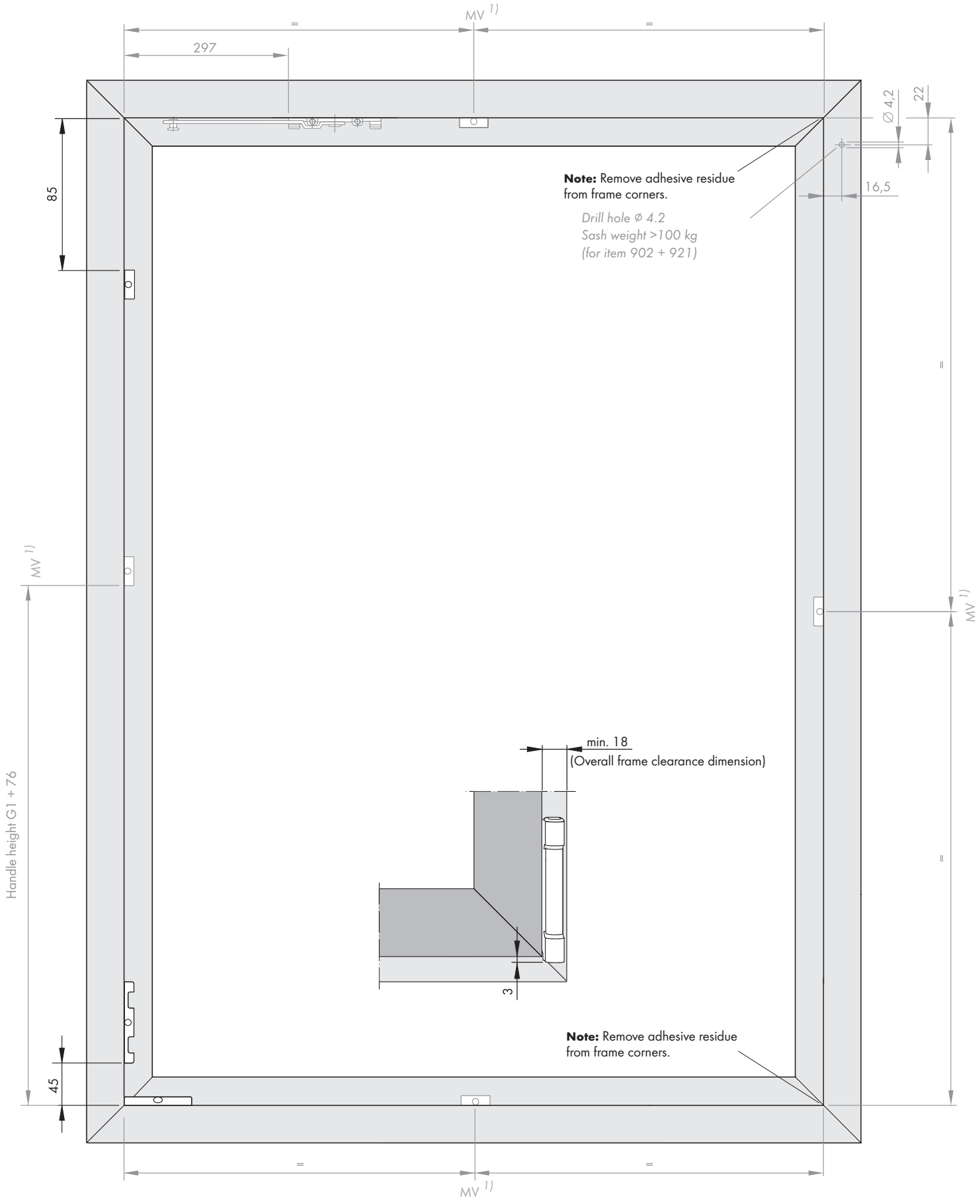
ALU 5200-EUL BD 5 KPS (FBS-G) 130 kg *Sash dimensions*



1) Remove the rebate seal in the hinge gap area (minimum hinge gap 5 mm).

2) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-DK BD 5 KPS (FBS-G) 130 kg *Frame dimensions*



1) For installation recommendation for the centre locks and additional locks see page 3.

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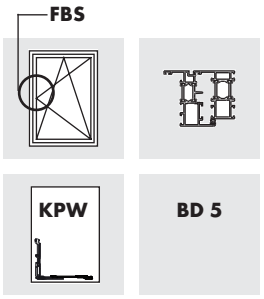
ALU 5200-DK (150 kg)



Turn-and-tilt hardware for hinge clearance (BD) 5 mm with mishandling device (FBS) on the gear (G)

Tilt point horizontal (KPW)

Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	Patio doors max.
Sash width	(mm)	600	to 1600	1300
Sash height	(mm)	600	to 2000	2600
Sash weight	(kg)	**max. 100/150**		**max. 100/150**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 100 kg: Document no. H58.AWDLMS003EN
- Sash weight up to max. 150 kg: Document no. H58.AWDLMS005EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Adjustment options:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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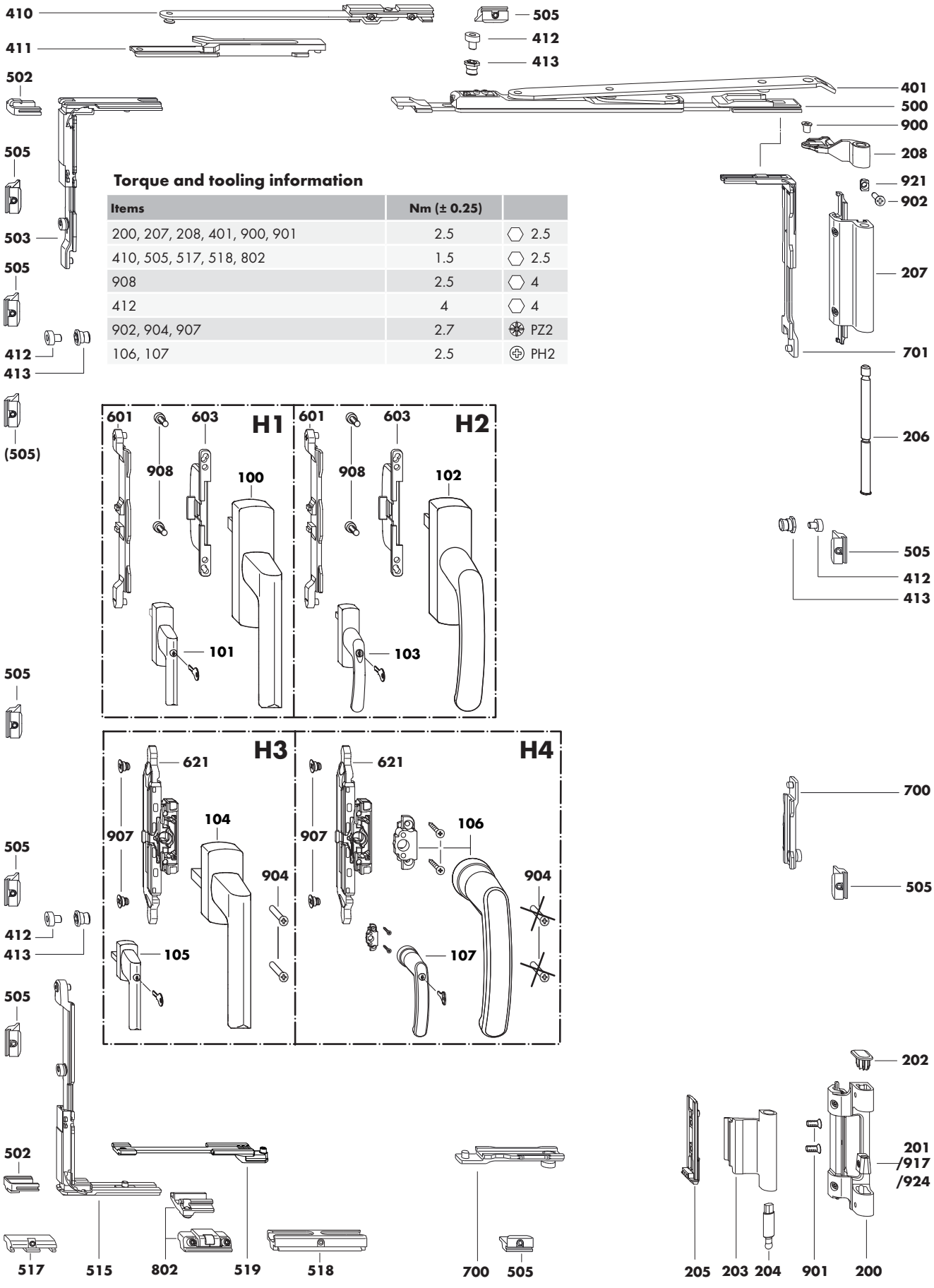


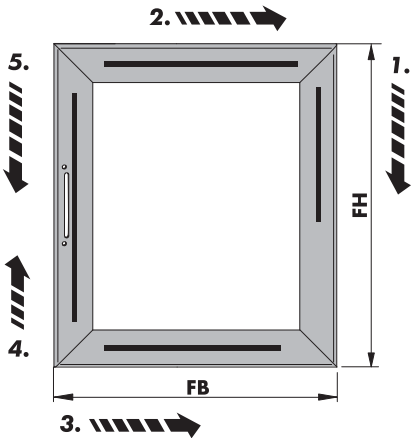
Torque and tooling information

Items	Nm (± 0.25)	
200, 207, 208, 401, 900, 901	2.5	⬡ 2.5
410, 505, 517, 518, 802	1.5	⬡ 2.5
908	2.5	⬡ 4
412	4	⬡ 4
902, 904, 907	2.7	PZ2
106, 107	2.5	PH2

ALU 5200-DK BD 5 KPW (FBS-G) 150 kg Hardware list

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	100	1	**Handle ALU Si-line**	*Only use in combination with coupling set*	*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
	101		**ALU Si-line lockable**					
H2	102		**ALU Globe**					
	103		**ALU Globe lockable**					
H3	104		**TITAN**	*Only use in combination with gear set*	*□ 7 mm x 25, cam Ø 10 mm Only use in combination with gear set*			
	105		**TITAN lockable**					
H4	106		**ALU Globe RR**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en in ALU planning manual*			
	107		**ALU Globe RR lockable**					
		1	**Hinge side ALU 5200 BD 5**	**silver**	**MMBS0230-525010**	**1**	**MMBS0230-525020**	**10**
				white *RAL 9016*	**MMBS0230-504010**	**1**	**MMBS0230-504020**	**10**
				black *RAL 9005*	**MMBS0230-523010**	**1**	**MMBS0230-523020**	**10**
				EV 1	**MMBS0230-524010**	**1**	**MMBS0230-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0230-500120**	**5**
	200	1	Bottom hinge					
	201	1	Adjusting piece	*(replaced by item 924 with sash weight >100 kg)*				
	202	1	Cover cap					
	203	1	Corner hinge					
	204	1	Bottom hinge pin					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	208	1	Stay hinge					
	900	1	M5 x 7.5 countersunk screw					
	901	2	M5 x 8.5 countersunk screw					
	401	**1**	**Top stay ALU size 35**		**884782**	**1**	**314203**	**20**
depending on FB/kg		**0...1**	**Additional stay ALU**	*Sash width > 1250 with top stay size 35 ≤ 100 kg* *Sash width > 1020 with top stay size 35 > 100 kg*	**857076**	**1**	**247006**	**10**
	410	1	Additional stay					
	411	1	Striker plate					
	412	1	Locking cam					
	413	1	Eccentric rivet					
depending on kg		**0...1**	**Accessories set ALU BD 5 150 kg**	*> 100 kg*	**-**	**-**	**MZBS0110-000030**	**20**
	902	1	M5 x 13 countersunk screw					
	921	1	Supporting piece					
	924	1	Adjusting piece S					
		1	**Locking side ALU DK KPW (for FBS on gear)**		**MMVS0470-100010**	**1**	**MMVS0470-100030**	**20**
	500	1	DK locking bolt					
	502	2	EUL clamping piece					
	503	1	Corner drive VSO					
	505	2	Striker					
	515	1	VSU corner drive					
	517	1	Run-up block					
	518	1	Tilt locking part					
	519	1	Tilt lock DK					
H1/H2		**0...1**	**Coupling set ALU FBS (with FBS on gear)** **Y= 9 mm**	*Only use in combination with H1/H2 (For notes on rebate height (USH) and dimension Y see page 4)*	**MMKL0030-100010**	**1**	**MMKL0030-100030**	**20**
			Y=10 mm		**MMKL0010-100010**	**1**	**MMKL0010-100030**	**20**
			USH 12 mm		**MMKL0040-100010**	**1**	**MMKL0040-100030**	**20**
	601	1	ALU coupling bracket					
	603	1	Mishandling device					
	908	2	M5 x 12 cheese head screw					
H3/H4		**0...1**	**Gear set ALU FBS (with FBS on gear)**	*Only use in combination with H3/H4 (see drawing no. H48.ZubhLS005en)*	**MMGI0080-100010**	**1**	**MMGI0080-100030**	**20**
	621	1	ESG M6 FBS					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...1**	**MV ALU-DK/TBT**	*FH > 1250 (recommendation)*	**857045**	**1**	**246979**	**20**
	505	2	Striker					
	700	1	Slider					
	701	1	VSU/BSO corner drive					
		0...3	**Locking part ALU**	*FH > 2400 (recommendation)*	**-**	**-**	**317556**	**20**
	412	1	Locking cam					
	413	1	Eccentric rivet					
	505	1	Striker					
		0...1	**MV ALU slider**	*FB > 1250 (recommendation)*	**MMMV0070-100010**	**1**	**MMMV0070-100030**	**20**
	505	2	Striker					
	700	1	Slider					
Accessories	**802**	**0...1**	**Sash lifter ALU**	*(see drawing no. H48.ZubhLS014en)*	**MMFH0010-100010**	**1**	**MMFH0010-100030**	**20**
	917	**0...1**	**AV adjusting piece**	*For compression + 0.5*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (> 100 kg; see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

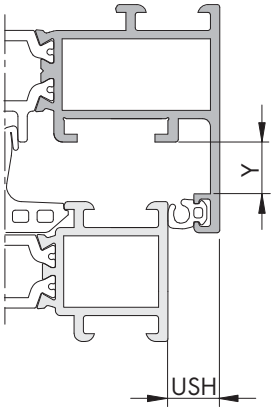
Observe assembly sequence



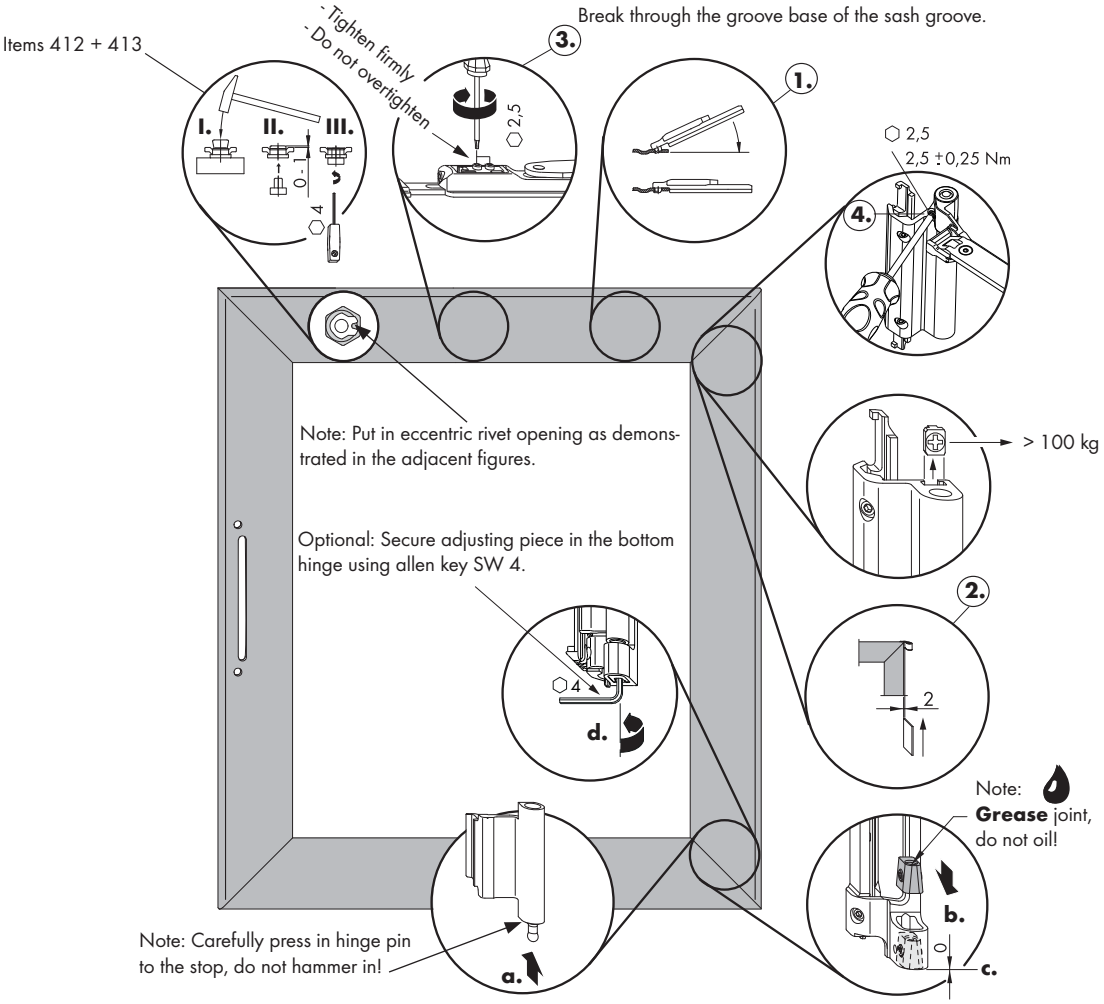
Sequence of installation in sash
- without centre lock (**2. - 3. - 4. - 5.**)
- with centre lock (**1. - 2. - 3. - 4. - 5.**)

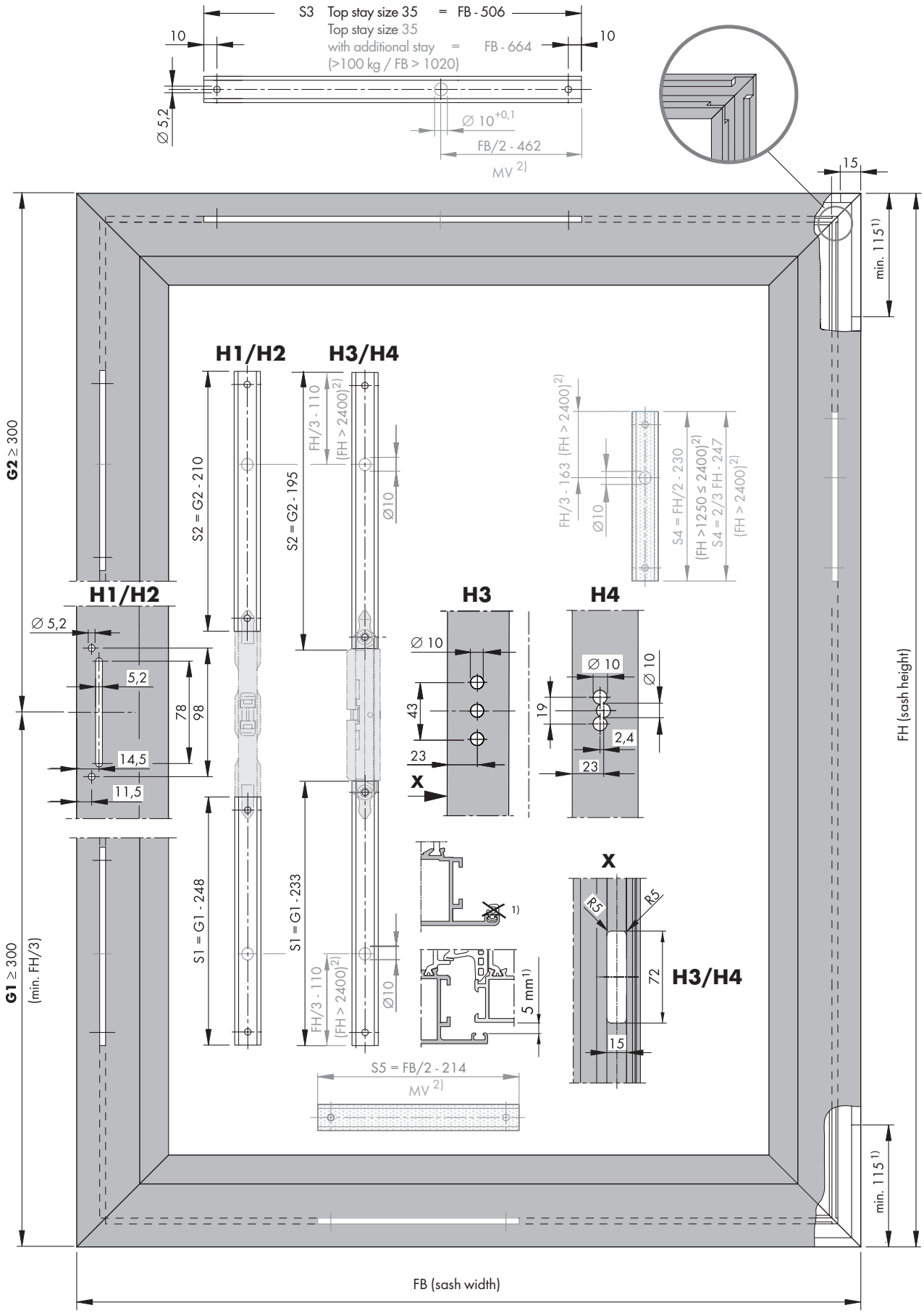
Design variations for coupling set (item 601-603-908) (H1/H2)

USH (mm)	Y (mm)	Material-Nr.
7 - 10	≥ 9 < 10	MMKL0030-100030
	≥ 10	MMKL0010-100030
12	-	MMKL0040-100030



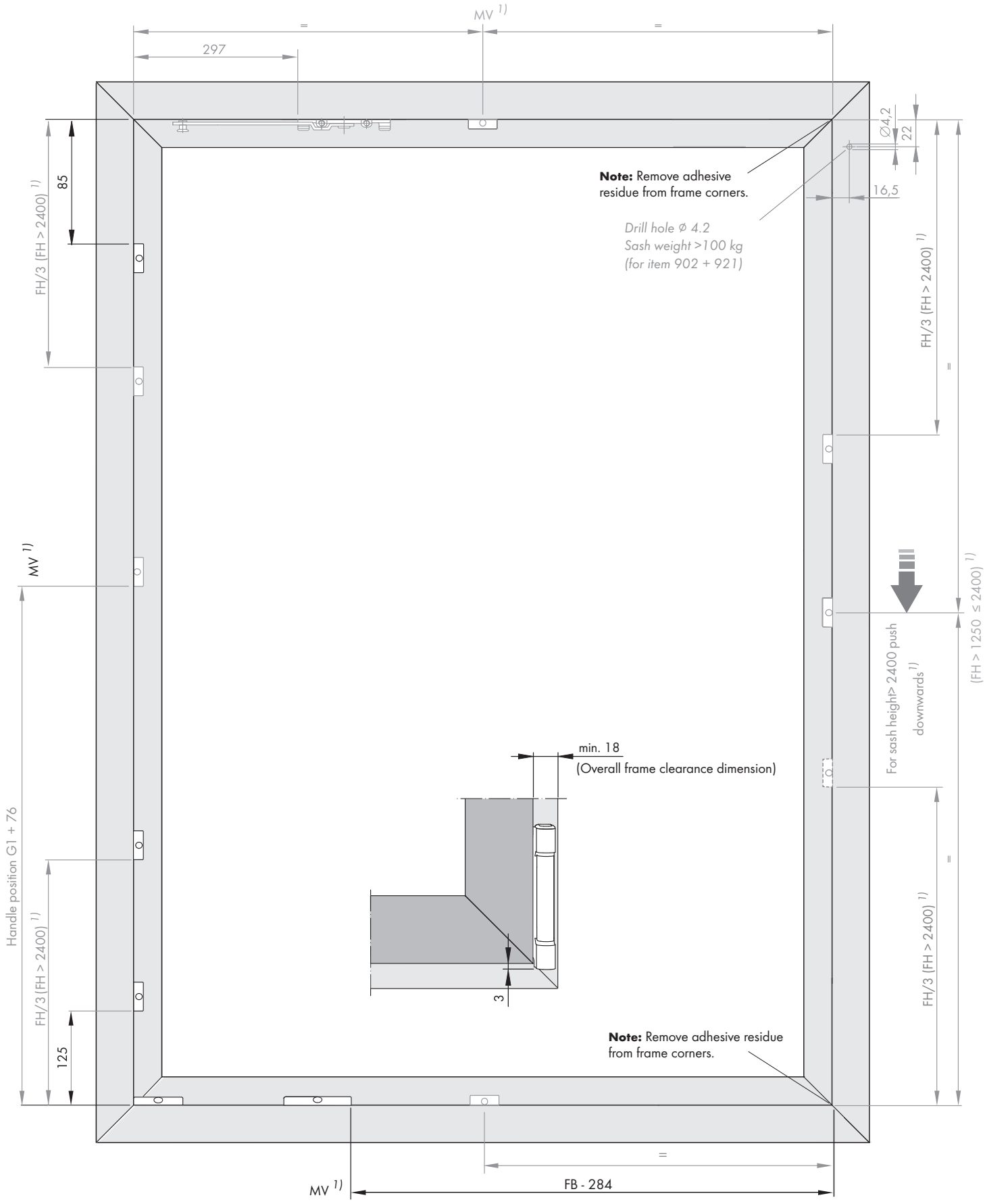
Assembly settings and installation sequence ① to ④





1) Remove the rebate seal in the hinge gap area (minimum hinge gap 5 mm).
2) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-DK BD 5 KPW (FBS-G) 150 kg *Frame dimensions*



1) For installation recommendation for the centre locks and additional locks see page 3.

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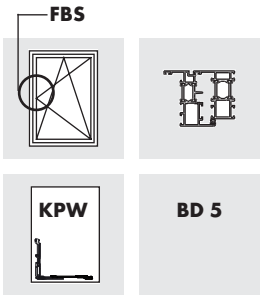
ALU 5200-DK (170 kg)



Turn-and-tilt hardware for hinge clearance (BD) 5 mm with mishandling device (FBS) on the gear (G)

Tilt point horizontal (KPW)

Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	French doors max.
Sash width	(mm)	600 to 1600		1300
Sash height	(mm)	1100 to 2000		2600
Sash weight	(kg)	**max. 170**		**max. 170**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 170 kg: Document no. H58.AWDLMS006EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Maintenance und adjustment instructions:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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H48.5200LS019en

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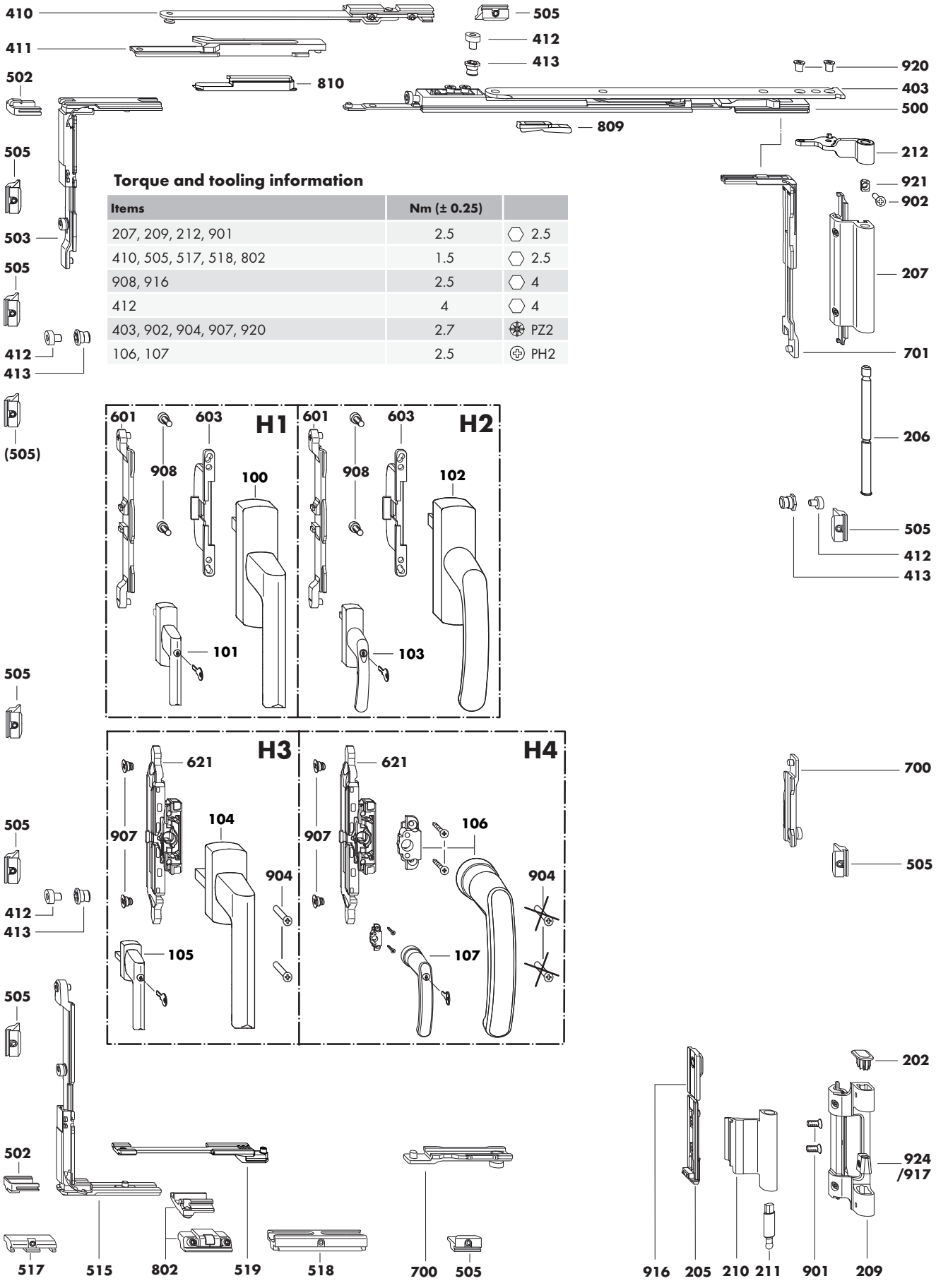


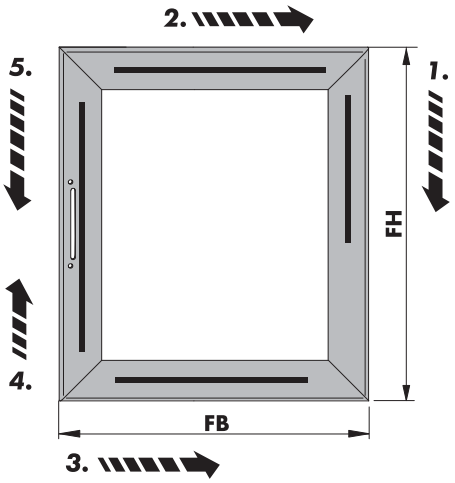
Torque and tooling information

Items	Nm (± 0.25)	
207, 209, 212, 901	2.5	⬡ 2.5
410, 505, 517, 518, 802	1.5	⬡ 2.5
908, 916	2.5	⬡ 4
412	4	⬡ 4
403, 902, 904, 907, 920	2.7	✱ PZ2
106, 107	2.5	⊕ PH2

ALU 5200-DK BD 5 KPW (FBS-G) 170 kg *Hardware list*

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	100	1	**Handle ALU Si-line**	*Only use in combination with coupling set*	*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
	101		**ALU Si-line lockable**					
H2	102		**ALU Globe**					
	103		**ALU Globe lockable**					
H3	104		**TITAN**	*Only use in combination with gear set*	*□ 7 mm x 25, cam Ø 10 mm Only use in combination with gear set*			
	105		**TITAN lockable**					
H4	106		**ALU Globe RR**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en in ALU planning manual*			
	107		**ALU Globe RR lockable**					
		1	**Hinge side ALU 5200-170 BD 5**	**silver**	**MMBS0240-525010**	**1**	**MMBS0240-525020**	**10**
				white *RAL 9016*	**MMBS0240-504010**	**1**	**MMBS0240-504020**	**10**
				black *RAL 9005*	**MMBS0240-523010**	**1**	**MMBS0240-523020**	**10**
				EV 1	**MMBS0240-524010**	**1**	**MMBS0240-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0240-500120**	**5**
	202	1	Cover cap					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	209	1	Bottom hinge ALU 5200-170					
	210	1	Corner hinge ALU 5200-170					
	211	1	Bottom hinge pin ALU 5200-170					
	212	1	Stay hinge ALU 5200-170					
	901	2	M5 x 8.5 countersunk screw	*(blue thread protection)*				
	902	1	M5 x 13 countersunk screw					
	916	1	Long stop					
	920	2	Countersunk screw M5 x 7 PZ2	*(green thread protection)*				
	921	1	Supporting piece					
	924	1	Adjusting piece S					
	403	**1**	**Top stay ALU-DK size 30**		**MSKK0020-000010**	**1**	**MSKK0020-000030**	**20**
depending on FB/kg		**0...1**	**Additional stay ALU**	*FB > 1020 > 100 kg*	**857076**	**1**	**247006**	**10**
	410	1	Additional stay					
	411	1	Striker plate					
	412	1	Locking cam					
	413	1	Eccentric rivet					
		1	**Locking side ALU DK KPW (for FBS on gear)**		**MMVS0470-100010**	**1**	**MMVS0470-100030**	**20**
	500	1	DK locking bolt					
	502	2	EUL clamping piece					
	503	1	Corner drive VSO					
	505	2	Striker					
	515	1	VSU corner drive					
	517	1	Run-up block					
	518	1	Tilt locking part					
	519	1	Tilt lock DK					
H1/H2		**0...1**	**Coupling set ALU FBS (with FBS on gear)** **Y= 9 mm**	*Only use in combination with H1/H2 (For notes on rebate height (USH) and dimension Y see page 4)*	**MMKL0030-100010**	**1**	**MMKL0030-100030**	**20**
			Y=10 mm		**MMKL0010-100010**	**1**	**MMKL0010-100030**	**20**
			USH 12 mm		**MMKL0040-100010**	**1**	**MMKL0040-100030**	**20**
	601	1	ALU coupling bracket					
	603	1	Mishandling device					
	908	2	M5 x 12 cheese head screw					
H3/H4		**0...1**	**Gear set ALU FBS (with FBS on gear)**	*Only use in combination with H3/H4 (see drawing no. H48.ZubhLS005en)*	**MMGI0080-100010**	**1**	**MMGI0080-100030**	**20**
	621	1	ESG M6 FBS					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...1**	**MV ALU-DK/TBT**	*FH > 1250 (recommendation)*	**857045**	**1**	**246979**	**20**
	505	2	Striker					
	700	1	Slider					
	701	1	VSU/BSO corner drive					
		0...3	**Locking part ALU**	*FH > 2400 (recommendation)*	**-**	**-**	**317556**	**20**
	412	1	Locking cam					
	413	1	Eccentric rivet					
	505	1	Striker					
		0...1	**MV ALU slider**	*FB > 1250 (recommendation)*	**MMMV0070-100010**	**1**	**MMMV0070-100030**	**20**
	505	2	Striker					
	700	1	Slider					
Accessories	**802**	**0...1**	**Sash lifter ALU**	*(see drawing no. H48.ZubhLS014en)*	**MMFH0010-100010**	**1**	**MMFH0010-100030**	**20**
	809	**0...1**	**Tilt restrictor top stay ALU**	*for top stay ALU-DK*	**MFKB0010-023010**	**1**	**MFKB0010-023050**	**50**
	810	**0...1**	**Tilt restrictor additional stay**	*for additional stay ALU*	**MFKB0020-023010**	**1**	**MFKB0020-023050**	**50**
	917	**0...1**	**AV adjusting piece**	*For compression + 0.5*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU-DK 200**	*for top stay size 30 (item 403) (see page 5)*	**MASB0010-500010**	**1**	**-**	**-**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

Observe assembly sequence

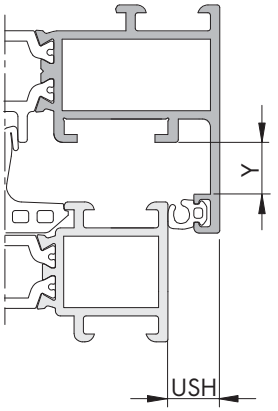


Sequence of installation in sash

- without centre lock (**2. - 3. - 4. - 5.**)
- with centre lock (**1. -2. - 3. - 4. - 5.**)

Design versions for coupling set (item 601-603-908) (H1/H2)

USH (mm)	Y (mm)	Material-Nr.
7 - 10	≥ 9 < 10	MMKL0030-100030
	≥ 10	MMKL0010-100030
12	-	MMKL0040-100030



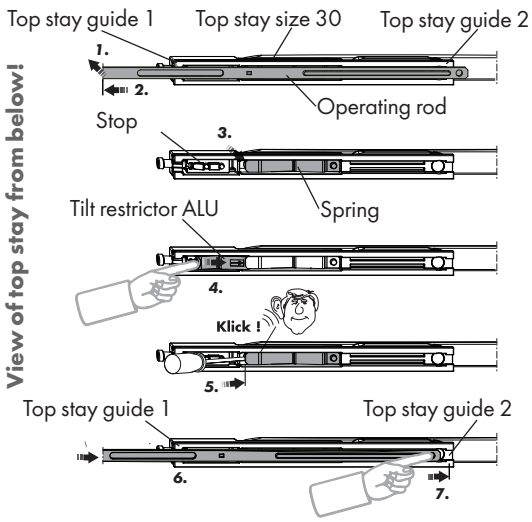
Installation of tilt restrictor ALU 1. to 7.

On requirement: Always mount the tilt restrictor ALU (809) **prior to** the installation and **not** with the top stay size 30 (403) in tilt position.

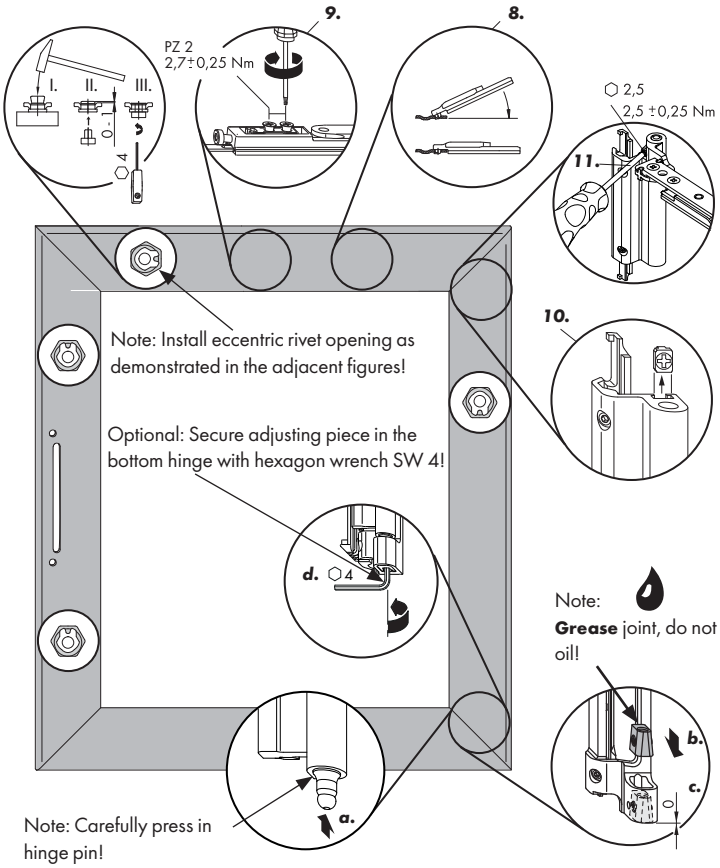
Installation view
Tilt restrictor ALU (809)

1. Bend the operating rod in the direction of the top stay. The bend of the operating rod must be positioned over the stop.
2. Pull the operating rod in the direction of the arrow out of the top stay guide 1 and 2.
3. Lift the spring minimally.
4. Slide the tilt restrictor ALU horizontally under the spring.
5. Slide the concealed tilt restrictor ALU with a screwdriver horizontally under the spring until it engages.
6. Slide the operating rod into the top stay guide 1.
7. Slide the operating rod as far as the top stay guide 2, press the end of the operating rod and then push the operating rod through the top stay guide 2.

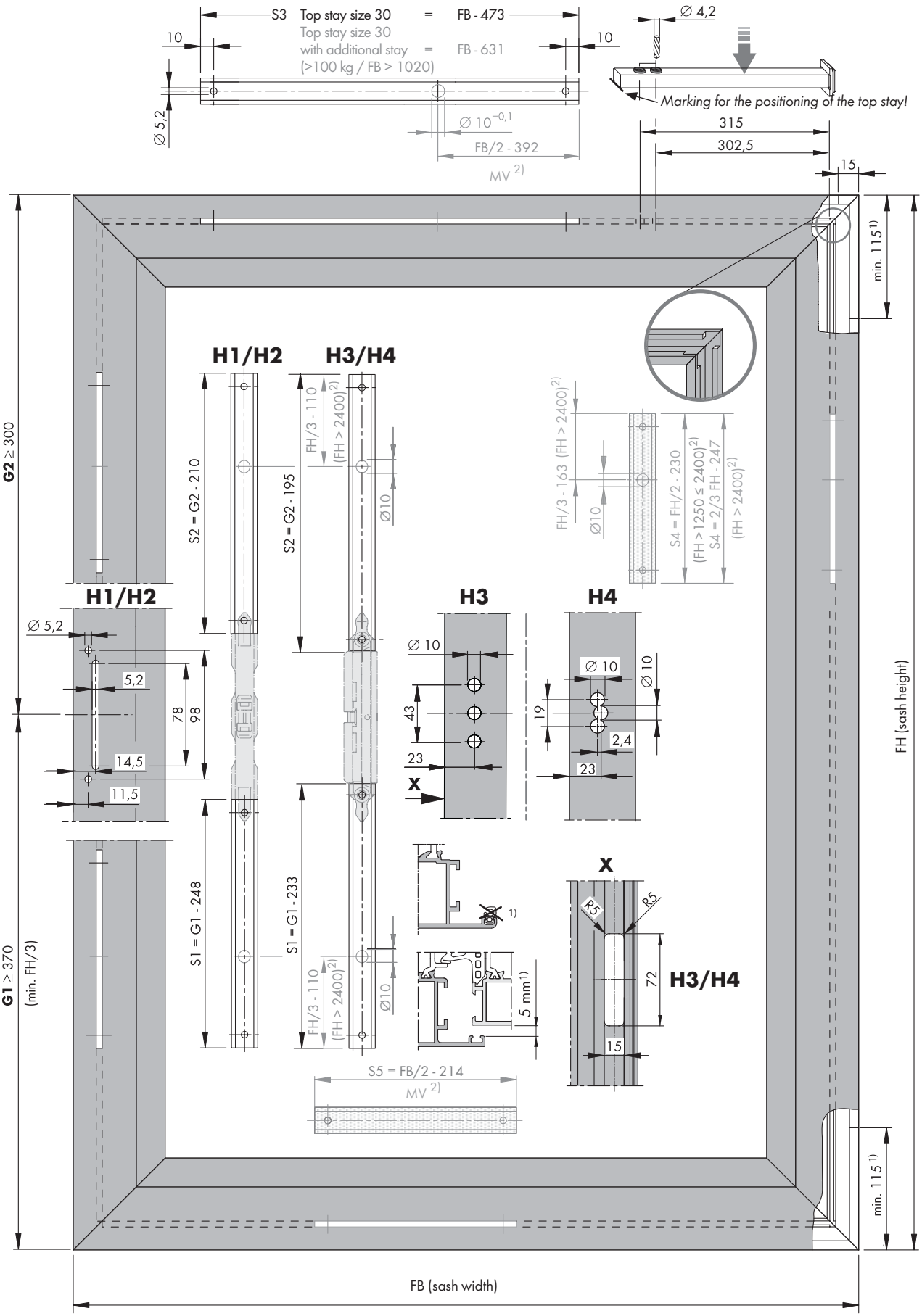
Note: Check whether the operating rod is seated in the top stay guides by moving the operating rod back and forth.



Assembly settings and installation sequence 8. to 11.



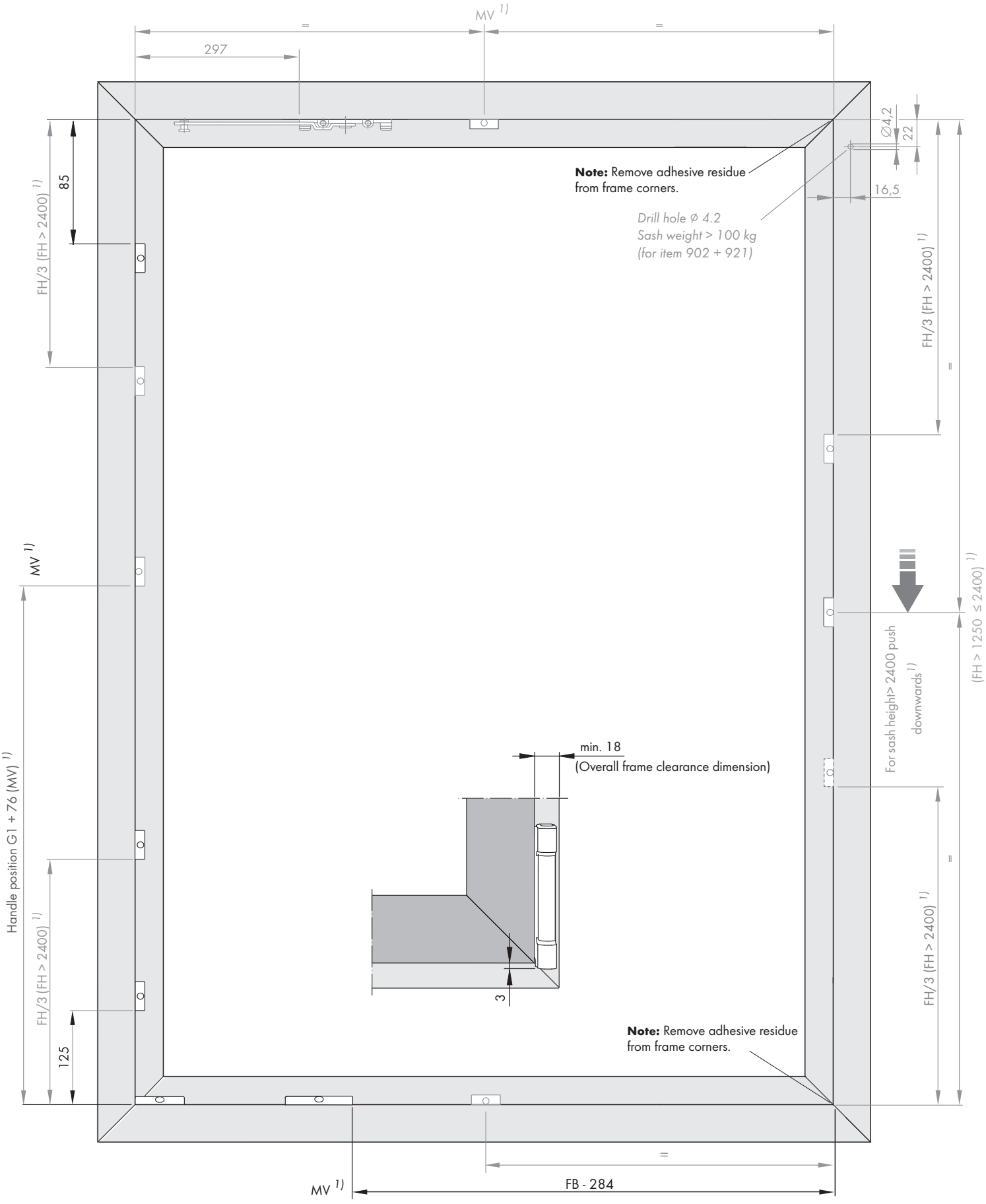
ALU 5200-DK BD 5 KPW (FBS-G) 170 kg *Sash dimensions*



1) Remove the rebate seal in the hinge gap area (minimum hinge gap 5 mm).

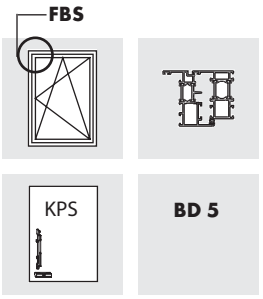
2) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-DK BD 5 KPW (FBS-G) 170 kg *Frame dimensions*



1) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-TBT (130 kg)



Tilt-and-turn hardware for hinge clearance (BD) 5 mm with mishandling device (FBS) on the corner drive (EUL)

Tilt point vertical (KPS)

Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	Patio doors max.
Sash width	(mm)	365	1600	1300
Sash height	(mm)	550	2000	2400
Sash weight	(kg)		**max. 100/130**	**max. 100/130**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 100 kg: Document no. H58.AWDLMS003EN
- Sash weight up to max. 130 kg: Document no. H58.AWDLMS004EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Adjustment options:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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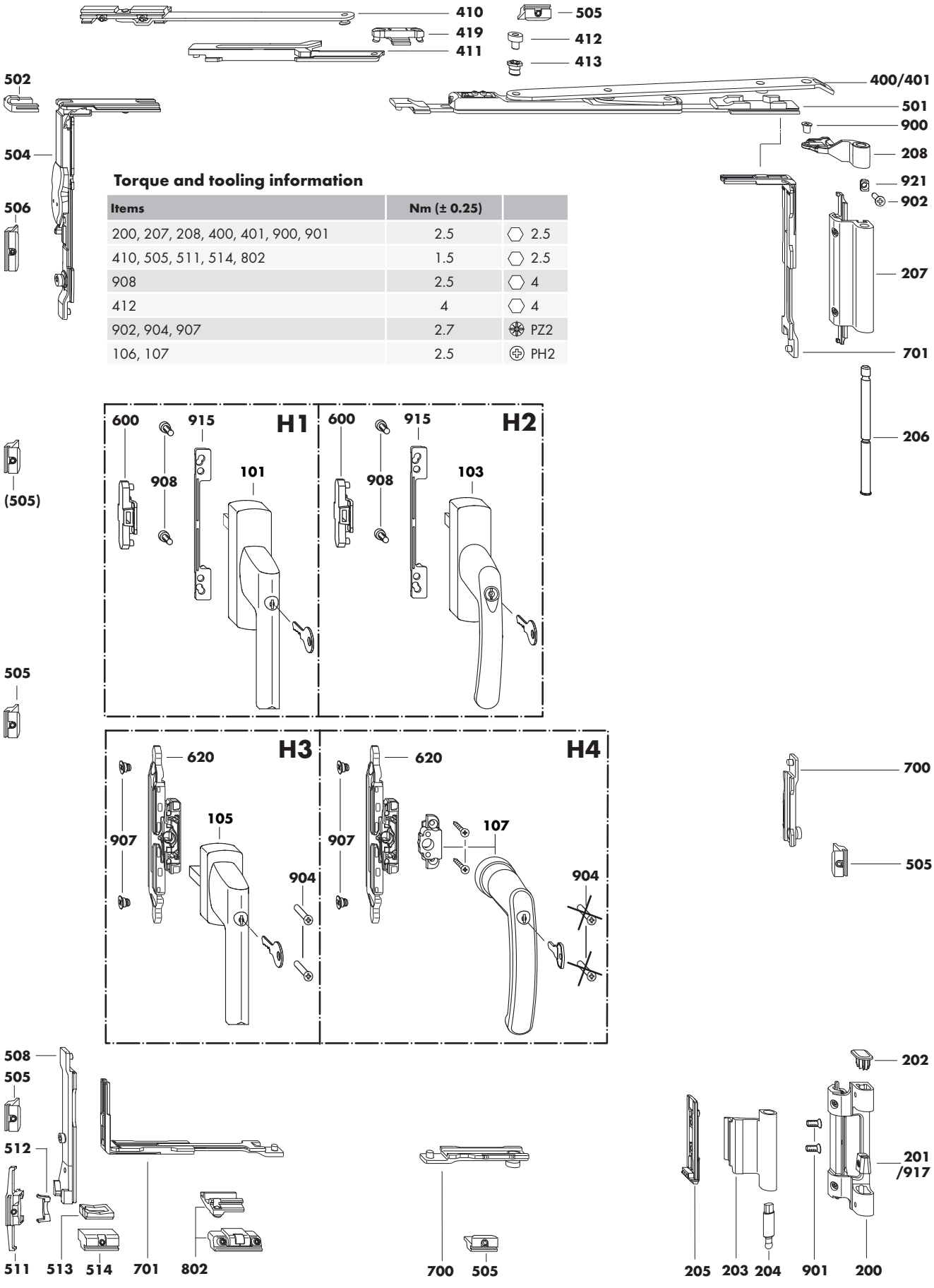


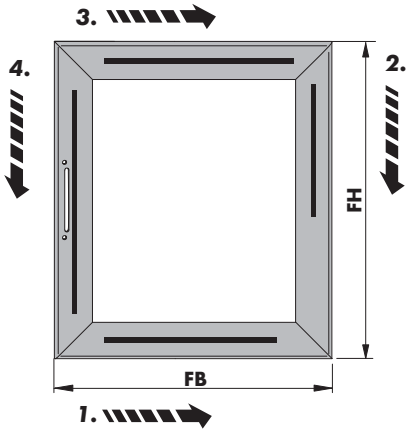
Torque and tooling information

Items	Nm (± 0.25)	
200, 207, 208, 400, 401, 900, 901	2.5	⬡ 2.5
410, 505, 511, 514, 802	1.5	⬡ 2.5
908	2.5	⬡ 4
412	4	⬡ 4
902, 904, 907	2.7	✱ PZ2
106, 107	2.5	⊕ PH2

ALU 5200-TBT BD 5 KPS (FBS-EUL) 130 kg *Hardware list*

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	**100**		**Handle ALU Si-line lockable/TBT**	*Only use in combination with coupling set*	*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
H2	**103**		**ALU Globe lockable /TBT**					
H3	**105**	**1**	**TITAN lockable/TBT**	*Only use in combination with gear set*	*□ 7 mm x 25, cam Ø 10 mm*			
H4	**107**		**ALU Globe RR lockable /TBT**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en*			
		1	**Hinge side ALU 5200 BD 5**	**silver**	**MMBS0230-525010**	**1**	**MMBS0230-525020**	**10**
				white *RAL 9016*	**MMBS0230-504010**	**1**	**MMBS0230-504020**	**10**
				black *RAL 9005*	**MMBS0230-523010**	**1**	**MMBS0230-523020**	**10**
				EV 1	**MMBS0230-524010**	**1**	**MMBS0230-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0230-500120**	**5**
	200	1	Bottom hinge					
	201	1	Adjusting piece					
	202	1	Cover cap					
	203	1	Corner hinge					
	204	1	Bottom hinge pin					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	208	1	Stay hinge					
	900	1	M5 x 7.5 countersunk screw					
	901	2	M5 x 8.5 countersunk screw					
	400	**0...1**	**Top stay ALU size 20**	*Sash width > 365 ≤ 600 weight ≤ 100 kg*	**884805**	**1**	**273098**	**20**
	401	**0...1**	**Top stay ALU size 35**	*Sash width > 600 ≤ 1600*	**884782**	**1**	**314203**	**20**
depending on FB/kg		**0...1**	**Additional stay ALU**	*Sash width > 1250 with top stay size 35 ≤ 100 kg* *Sash width > 1020 with top stay size 35 > 100 kg*	**857076**	**1**	**247006**	**10**
	410	1	Additional stay					
	411	1	Striker plate					
	412	1	Locking cam					
	413	1	Eccentric rivet					
	419	**0...1**	**MV stay striker**	*(FB > 1020 weight > 100 kg)* *(FB > 1250 weight ≤ 100 kg)*	**MXSK0010-100010**	**1**	**MXSK0010-100030**	**20**
depending on kg		**0...1**	**Accessories set ALU for 130 kg**	*> 100 kg*	**-**	**1**	**247037**	**20**
	902	1	M5 x 13 countersunk screw					
	921	1	Supporting piece					
		1	**Locking side ALU TBT (with FBS on corner drive) KPS**		**MMVS0320-100010**	**1**	**MMVS0320-100030**	**20**
	501	1	Locking bolt TBT					
	502	1	EUL clamping piece					
	504	1	Corner drive, VSO-FBS					
	505	1	Striker					
	506	1	Striker EUL					
	508	1	TBT tilt lock					
	511	1	TBT tilt locking part					
	512	1	Spring	*Colour grey FH > 550 ≤ 1100* *Colour black FH > 1100 ≤ 2400*				
	513	1	Run-up block					
	514	1	TBT run-up block					
H1/H2		**0...1**	**Coupling set ALU (without FBS on gear)**	*Only use in combination with H1/H2*	**MMKL0060-100010**	**1**	**MMKL0060-100030**	**20**
	600	1	ALU coupling bracket					
	908	2	M5 x 12 cheese head screw					
H3/H4		**0...1**	**Gear set ALU (without FBS on gear)**	*Only use in combination with H3/H4 (see drawing no. H48.ZubhLS005en)*	**MMGI0090-100010**	**1**	**MMGI0090-100030**	**20**
	620	1	M6 ESG					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...2**	**MV ALU-DK/TBT**	*FB/FH > 1250 (recommendation)*	**857045**	**1**	**246979**	**20**
	505	2	Striker					
	700	1	Slider					
	701	1	VSU/BSO corner drive					
Accessories	**802**	**0...1**	**Sash lifter ALU**	*(see drawing no. H48.ZubhLS014en)*	**MMFH0010-100010**	**1**	**MMFH0010-100030**	**20**
	915	**0...1**	**Handle support ALU**	*Only use in combination with H1/H2*	**-**	**-**	*See table on page 4*	**200**
	917	**0...1**	**AV adjusting piece**	*for compression + 0.5*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (> 100 kg; see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

Observe assembly sequence

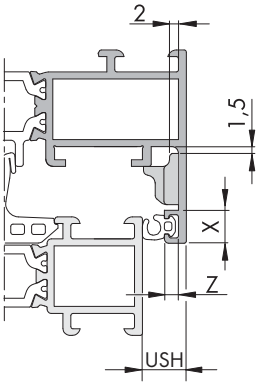


Sequence of installation in sash

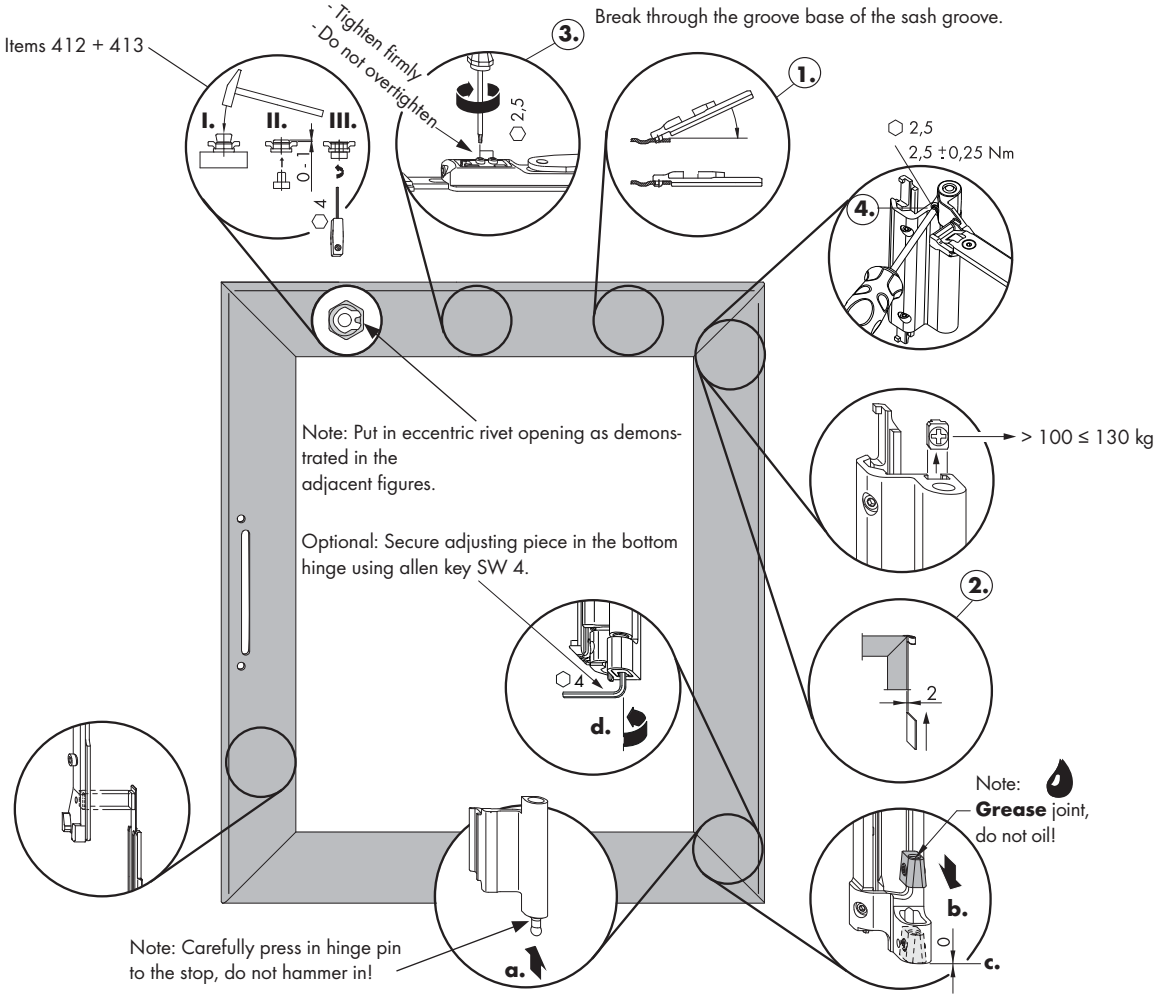
- without centre lock (**3. - 4.**)
- with centre lock (**1. - 2. - 3. - 4.**)

Design variations for handle support (item 915) (H1/H2)

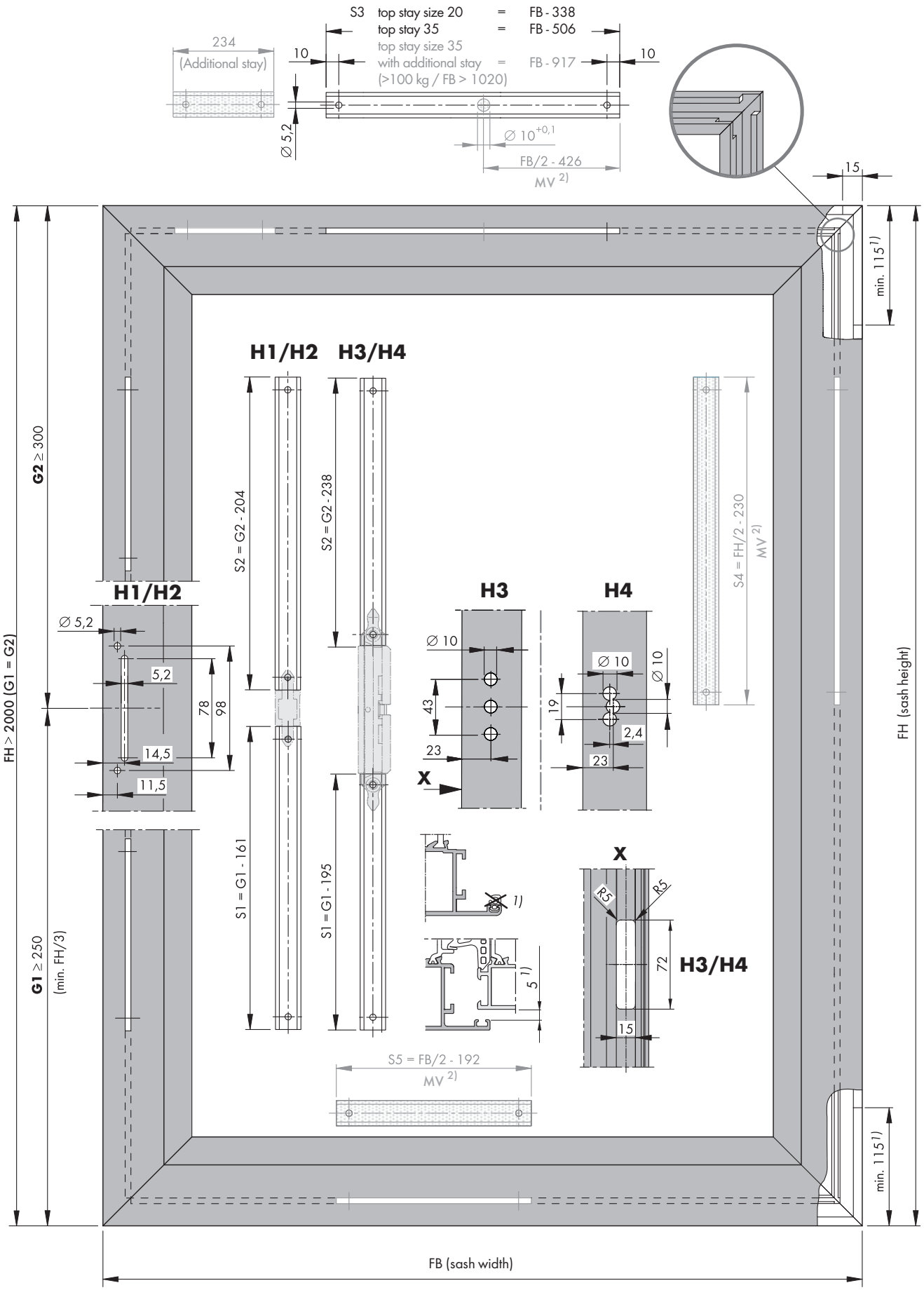
USH (mm)	Z (mm)	X ≤ 7 mm	X > 7 ≤ 8.5 mm
7 - 10	≤ 2	MFHA0010-100200	MFHA0010-100200
	> 2 ≤ 3		MFHA0020-100200
	> 3		-
12	-	MFHA0030-100200	-



Assembly settings and installation sequence ① to ④

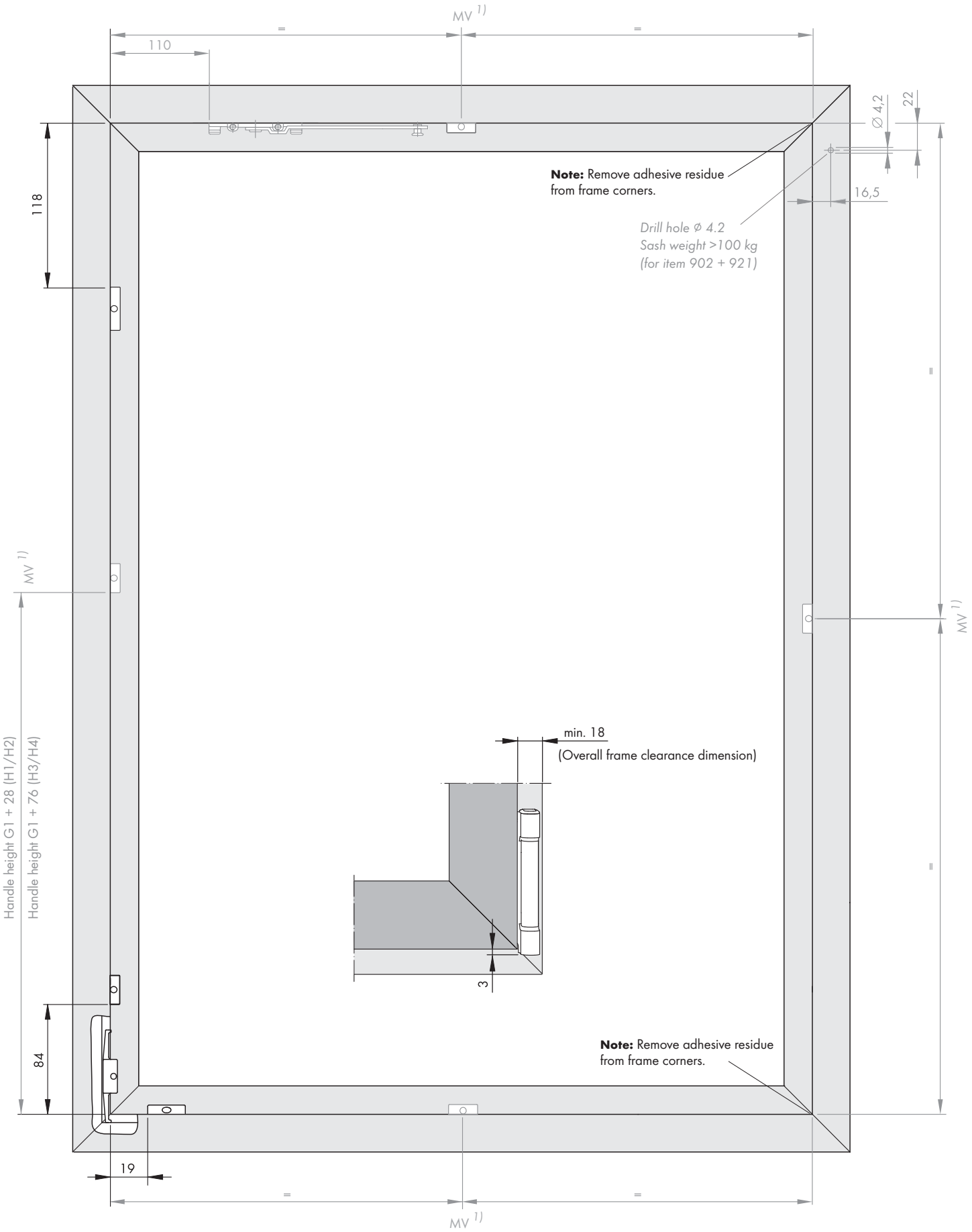


ALU 5200-TBT BD 5 KPS (FBS-EUL) 130 kg *Sash dimensions*



1) Remove the rebate seal in the hinge gap area (minimum hinge gap 5 mm).
2) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-TBT BD 5 KPS (FBS-G) 130 kg *Frame dimensions*



1) For installation recommendation for the centre locks and additional locks see page 3.

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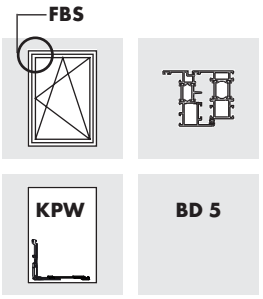
ALU 5200-TBT (150 kg)



Tilt-and-turn hardware for hinge clearance (BD) 5 mm with mishandling device (FBS) on the corner drive (EUL)

Tilt point horizontal (KPW)

Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	Patio doors max.
Sash width	(mm)	600	to 1600	1300
Sash height	(mm)	600	to 2000	2600
Sash weight	(kg)	**max. 100/150**		**max. 100/150**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 100 kg: Document no. H58.AWDLMS003EN
- Sash weight up to max. 150 kg: Document no. H58.AWDLMS005EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Adjustment options:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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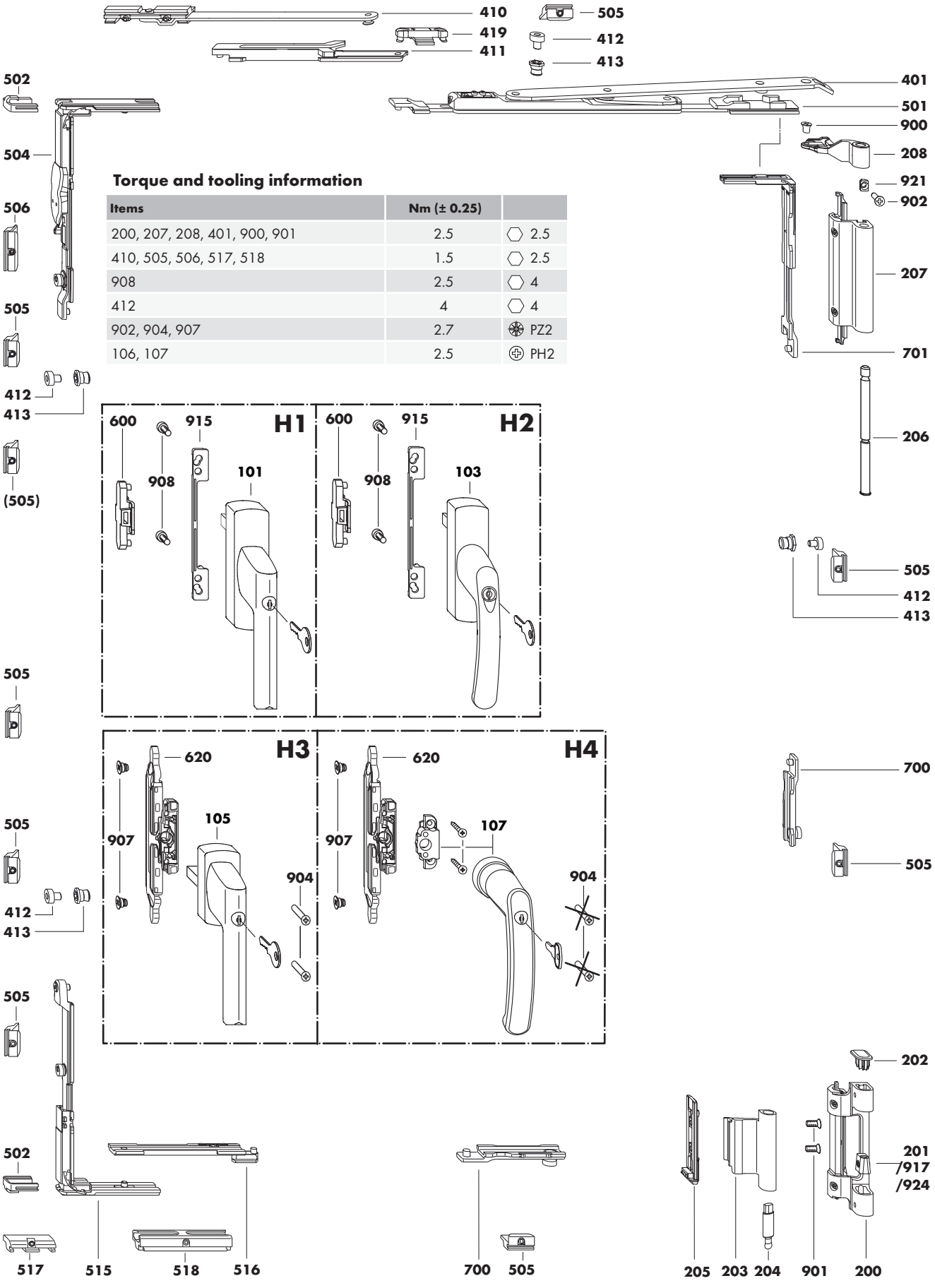
H48.5200LS009en/2



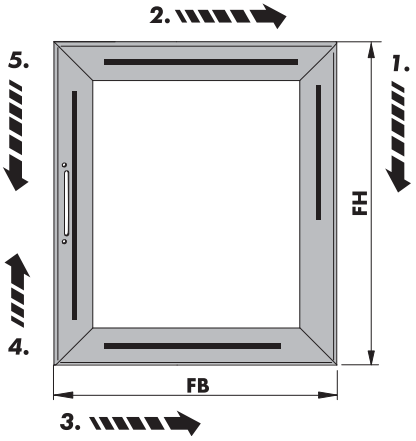
Torque and tooling information

Items	Nm (± 0.25)	
200, 207, 208, 401, 900, 901	2.5	⬡ 2.5
410, 505, 506, 517, 518	1.5	⬡ 2.5
908	2.5	⬡ 4
412	4	⬡ 4
902, 904, 907	2.7	✱ PZ2
106, 107	2.5	⊕ PH2

ALU 5200-TBT BD 5 KPW (FBS-EUL) 150 kg *Hardware list*

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	**100**		**Handle ALU Si-line lockable/TBT**	*Only use in combination with coupling set*	*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
H2	**103**		**ALU Globe lockable /TBT**					
H3	**105**	**1**	**TITAN lockable/TBT**	*Only use in combination with gear set*	*□ 7 mm x 25, cam Ø 10 mm*			
H4	**107**		**ALU Globe RR lockable /TBT**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en*			
		1	**Hinge side ALU 5200 BD 5**	**silver**	**MMBS0230-525010**	**1**	**MMBS0230-525020**	**10**
				white *RAL 9016*	**MMBS0230-504010**	**1**	**MMBS0230-504020**	**10**
				black *RAL 9005*	**MMBS0230-523010**	**1**	**MMBS0230-523020**	**10**
				EV 1	**MMBS0230-524010**	**1**	**MMBS0230-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0230-500120**	**10**
	200	1	Bottom hinge					
	201	1	Adjusting piece	*(replaced by item 924 with sash weight >100 kg)*				
	202	1	Cover cap					
	203	1	Corner hinge					
	204	1	Bottom hinge pin					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	208	1	Stay hinge					
	900	1	M5 x 7.5 countersunk screw					
	901	2	M5 x 8.5 countersunk screw					
	401	**1**	**Top stay ALU size 35**		**884782**	**1**	**314203**	**20**
depending on FB/kg		**0...1**	**Additional stay ALU**	*Sash width > 1250 with top stay size 35 ≤ 100 kg* *Sash width > 1020 with top stay size 35 > 100 kg*	**857076**	**1**	**247006**	**10**
	410	1	Additional stay					
	411	1	Striker plate					
	412	1	Locking cam					
	413	1	Eccentric rivet					
	419	**0...1**	**MV stay striker**	*(FB > 1020 weight > 100 kg)* *(FB > 1250 weight ≤ 100 kg)*	**MXSK0010-100010**	**1**	**MXSK0010-100030**	**20**
depending on kg		**1**	**Accessories set ALU BD 5 150 kg**	*> 100 kg*	**-**	**-**	**MZBS0110-000030**	**20**
	902	1	M5 x 13 countersunk screw					
	921	1	Supporting piece					
	924	1	Adjusting piece S					
		1	**Locking side ALU TBT KPW (with FBS on corner drive)**		**MMVS0460-100010**	**1**	**MMVS0460-100030**	**20**
	501	1	Locking bolt TBT					
	502	2	EUL clamping piece					
	504	1	Corner drive, VSO-FBS					
	505	1	Striker					
	506	1	Striker EUL VSO					
	515	1	VSU corner drive					
	516	1	Tilt lock					
	517	1	Run-up block					
	518	1	Tilt locking part					
H1/H2		**0...1**	**Coupling set ALU (without FBS on gear)**	*Only use in combination with H1/H2*	**MMKL0060-100010**	**1**	**MMKL0060-100030**	**20**
	600	1	ALU coupling bracket					
	908	2	M5 x 12 cheese head screw					
H3/H4		**0...1**	**Gear set ALU (without FBS on gear)**	*Only use in combination with H3/H4 (see drawing no. H48.ZubhLS005en)*	**MMGI0090-100010**	**1**	**MMGI0090-100030**	**20**
	620	1	M6 ESG					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...1**	**MV ALU-DK/TBT**	*FH > 1250 (recommendation)*	**857045**	**1**	**246979**	**20**
	505	2	Striker					
	700	1	Slider					
	701	1	VSU/BSO corner drive					
		0...3	**Locking part ALU**	*FH > 2400 (recommendation)*	**-**	**-**	**317556**	**20**
	412	1	Locking cam					
	413	1	Eccentric rivet					
	505	1	Striker					
		0...1	**MV ALU slider**	*FB > 1250 (recommendation)*	**MMMV0070-100010**	**1**	**MMMV0070-100030**	**20**
	505	2	Striker					
	700	1	Slider					
Accessories	**915**	**0...1**	**Handle support ALU**	*Only use in combination with H1/H2*	**-**	**-**	*See table on page 4*	**200**
	917	**0...1**	**AV adjusting piece**	*for compression + 0.5*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (> 100 kg; see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

Observe assembly sequence

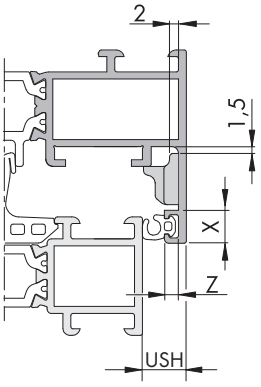


Sequence of installation in sash

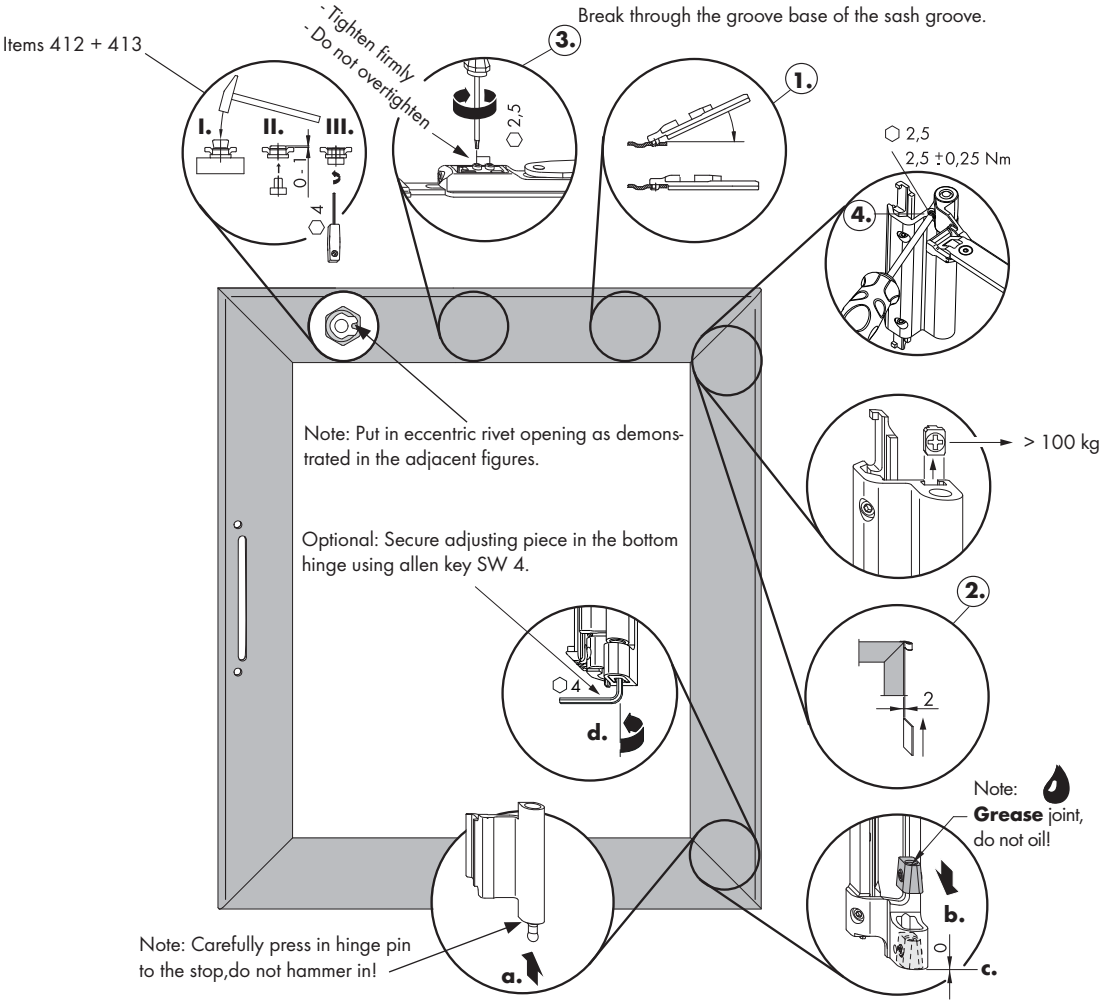
- without centre lock (**2. - 3. - 4. - 5.**)
- with centre lock (**1. - 2. - 3. - 4. - 5.**)

Design variations for handle support (item 915) (H1/H2)

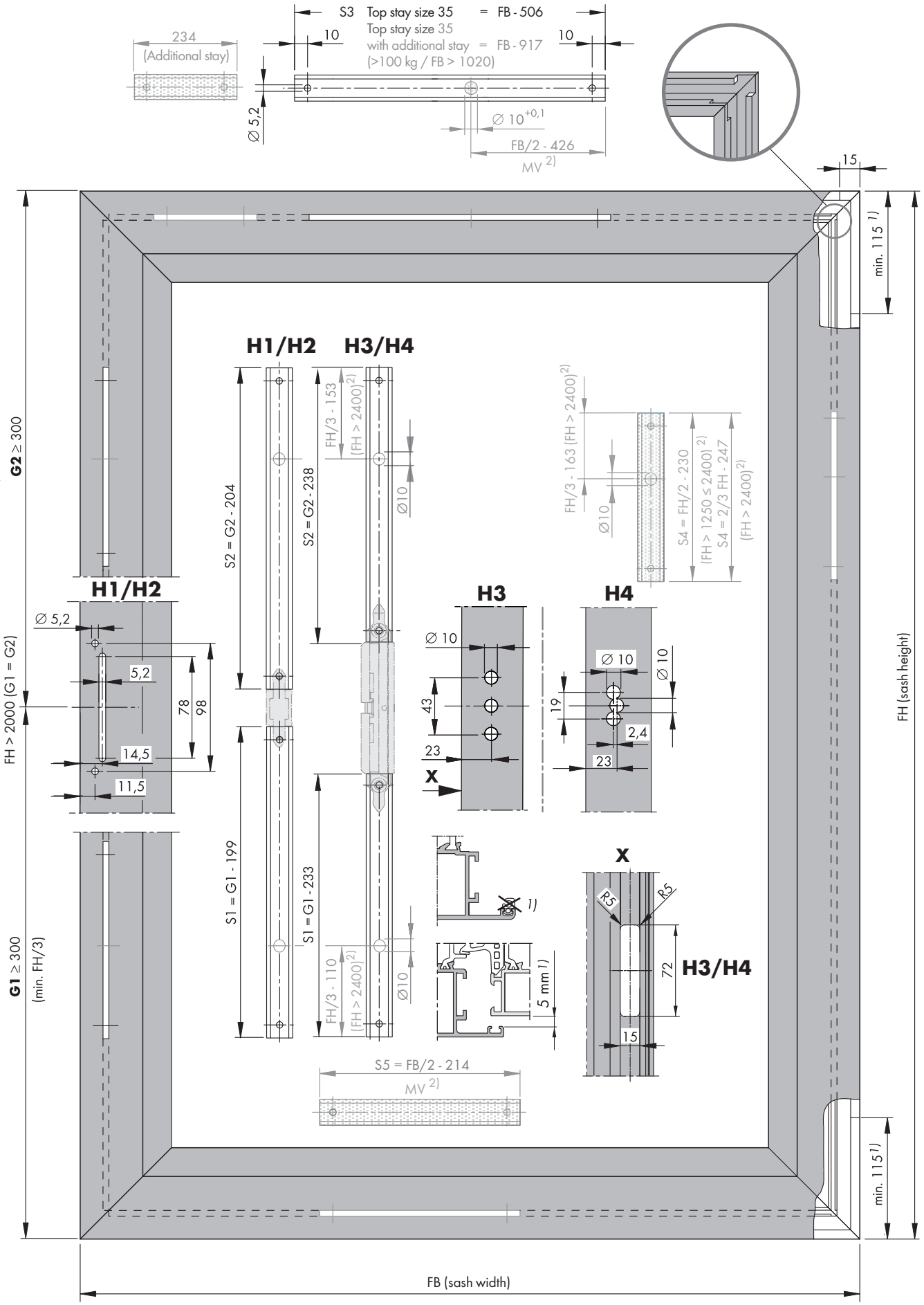
USH (mm)	Z (mm)	X ≤ 7 mm	X > 7 ≤ 8.5 mm
7 - 10	≤ 2	MFHA0010-100200	MFHA0010-100200
	> 2 ≤ 3		MFHA0020-100200
	> 3		-
12	-	MFHA0030-100200	-



Assembly settings and installation sequence ① to ④



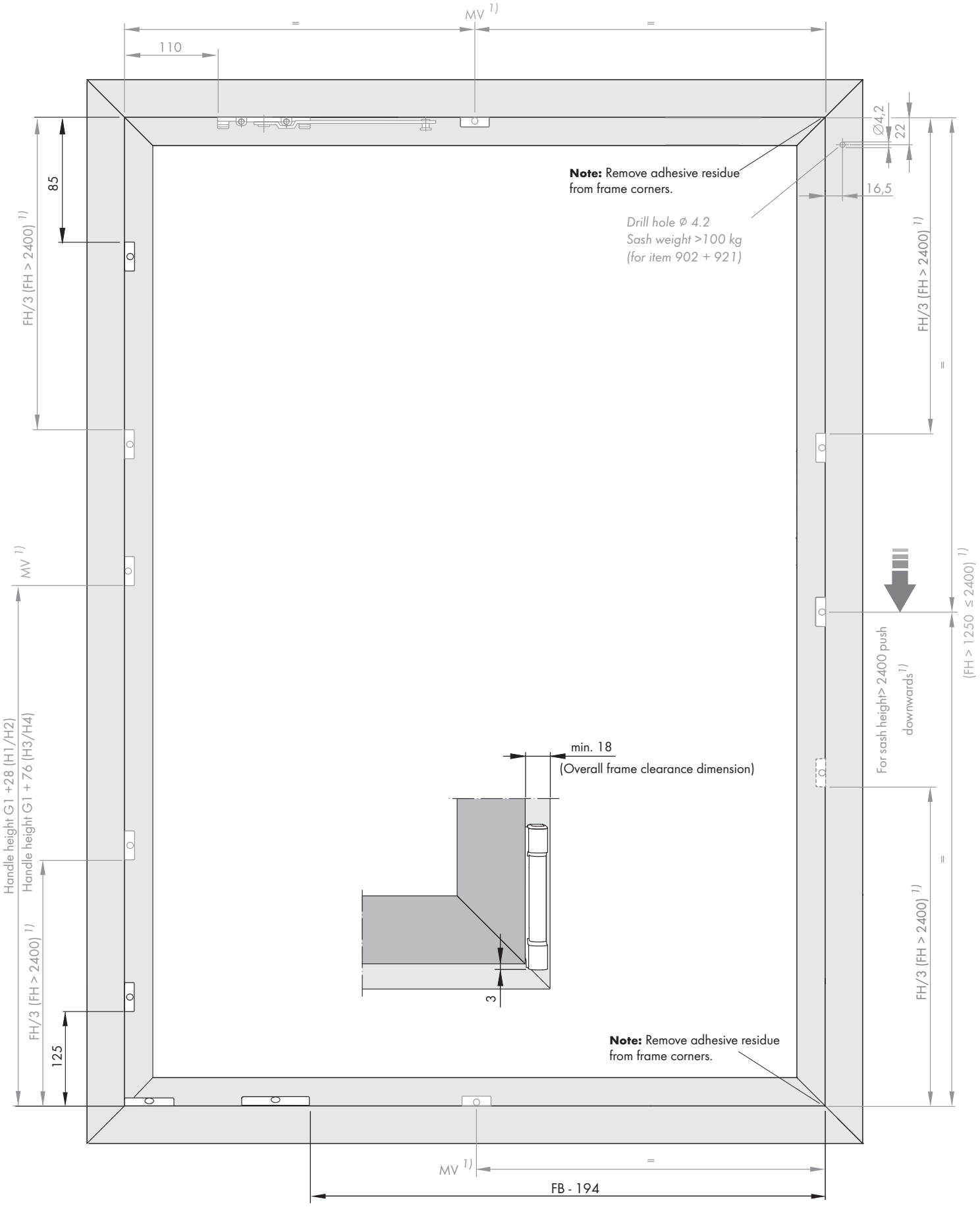
ALU 5200-TBT BD 5 KPW (FBS-EUL) 150 kg *Sash dimensions*



1) Remove the rebate seal in the hinge gap area (minimum hinge gap 5 mm).

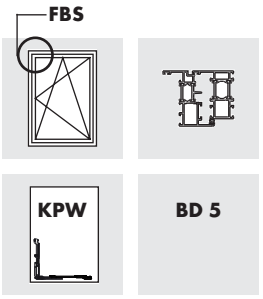
2) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-TBT BD 5 KPW (FBS-EUL) 150 kg *Frame dimensions*



1) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-TBT (170 kg)



Tilt-and-turn hardware for hinge clearance (BD) 5 mm with mishandling device (FBS) on the corner drive (EUL)

Tilt point horizontal (KPW)

Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	French doors max.
Sash width	(mm)	600 to 1600		1300
Sash height	(mm)	1100 to 2000		2600
Sash weight	(kg)	**max. 170**		**max. 170**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 170 kg: Document no. H58.AWDLMS006EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Maintenance und adjustment instructions:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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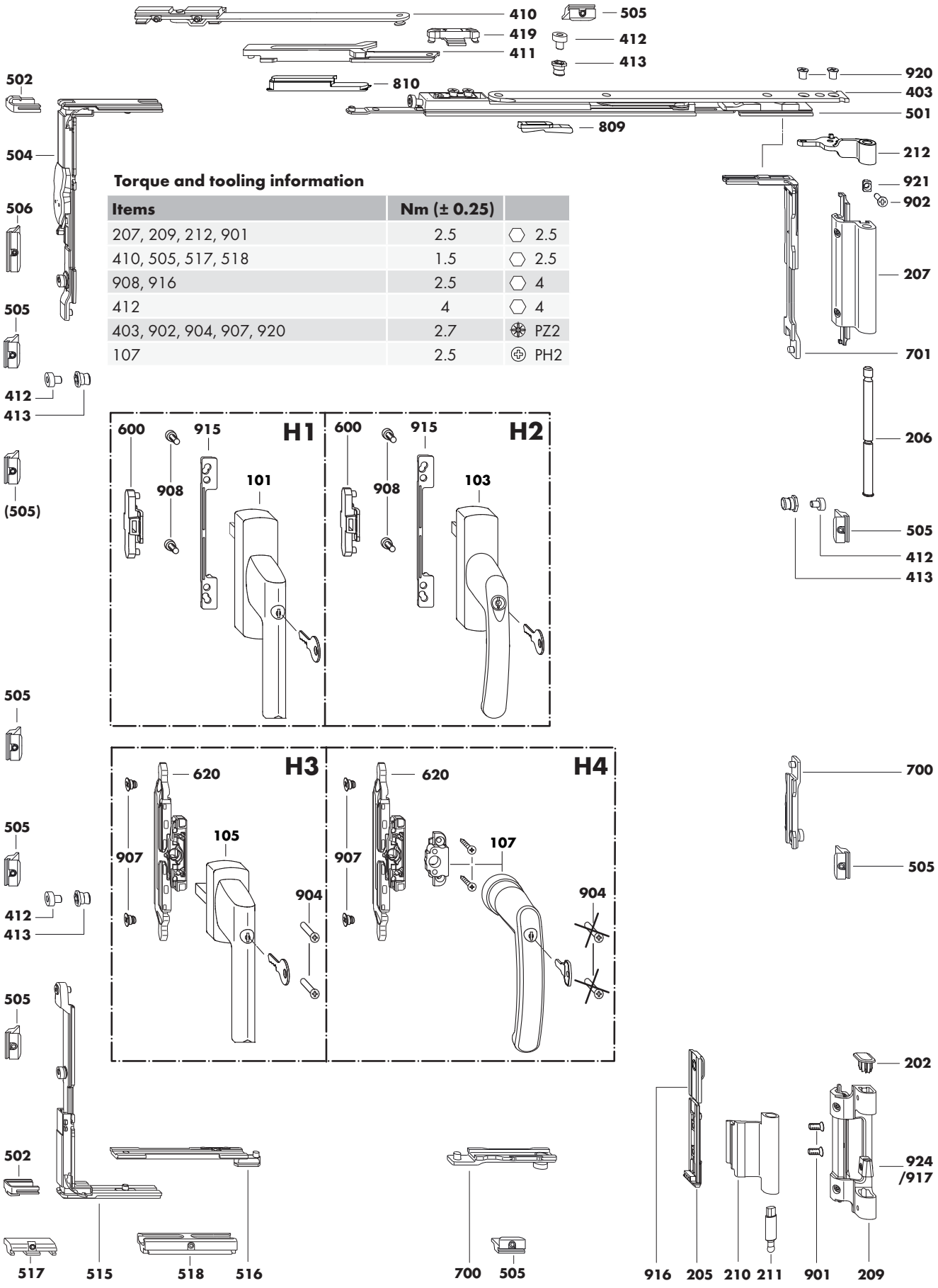


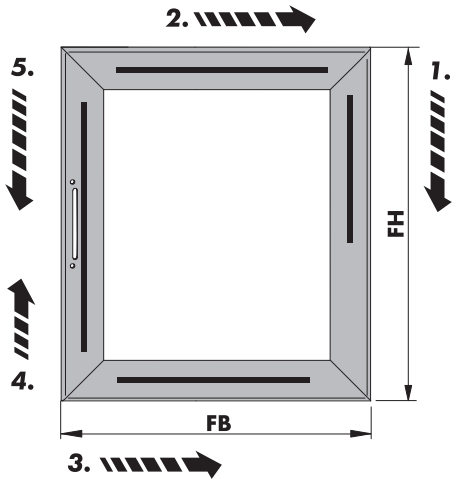
Torque and tooling information

Items	Nm (± 0.25)	
207, 209, 212, 901	2.5	⬡ 2.5
410, 505, 517, 518	1.5	⬡ 2.5
908, 916	2.5	⬡ 4
412	4	⬡ 4
403, 902, 904, 907, 920	2.7	✱ PZ2
107	2.5	⊕ PH2

ALU 5200-TBT BD 5 KPW (FBS-EUL) 170 kg *Hardware list*

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	**100**		**Handle ALU Si-line lockable/TBT**	*Only use in combination with coupling set*	*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
H2	**103**		**ALU Globe lockable /TBT**					
H3	**105**	**1**	**TITAN lockable/TBT**	*Only use in combination with gear set*	*□ 7 mm x 25, cam Ø 10 mm*			
H4	**107**		**ALU Globe RR lockable /TBT**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en*			
		1	**Hinge side ALU 5200-170 BD 5**	**silver**	**MMBS0240-525010**	**1**	**MMBS0240-525020**	**10**
				white *RAL 9016*	**MMBS0240-504010**	**1**	**MMBS0240-504020**	**10**
				black *RAL 9005*	**MMBS0240-523010**	**1**	**MMBS0240-523020**	**10**
				EV 1	**MMBS0240-524010**	**1**	**MMBS0240-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0240-500120**	**5**
	202	1	Cover cap					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	209	1	Bottom hinge ALU 5200-170					
	210	1	Corner hinge ALU 5200-170					
	211	1	Bottom hinge pin ALU 5200-170					
	212	1	Stay hinge ALU 5200-170					
	901	2	M5 x 8.5 countersunk screw	*(blue thread protection)*				
	902	1	M5 x 13 countersunk screw					
	916	1	Long stop					
	920	2	Countersunk screw M5 x 7 PZ2	*(green thread protection)*				
	921	1	Supporting piece					
	924	1	Adjusting piece S					
	403	**1**	**Top stay ALU-DK size 30**		**MSKK0020-000010**	**1**	**MSKK0020-000030**	**20**
depending on FB/kg		**0...1**	**Additional stay ALU**	*FB > 1020 > 100 kg*	**857076**	**1**	**247006**	**10**
	410	1	Additional stay					
	411	1	Striker plate					
	412	1	Locking cam					
	413	1	Eccentric rivet					
	419	**0...1**	**MV stay striker**	*FB > 1020 > 100 kg*	**MXSK0010-100010**	**1**	**MXSK0010-100030**	**20**
		1	**Locking side ALU TBT KPW (with FBS on corner drive)**		**MMVS0460-100010**	**1**	**MMVS0460-100030**	**20**
	501	1	Locking bolt TBT					
	502	2	EUL clamping piece					
	504	1	Corner drive, VSO-FBS					
	505	1	Striker					
	506	1	Striker EUL VSO					
	515	1	VSU corner drive					
	516	1	Tilt lock					
	517	1	Run-up block					
	518	1	Tilt locking part					
H1/H2		**0...1**	**Coupling set ALU (without FBS on gear)**	*Only use in combination with H1/H2*	**MMKL0060-100010**	**1**	**MMKL0060-100030**	**20**
	600	1	ALU coupling bracket					
	908	2	M5 x 12 cheese head screw					
H3/H4		**0...1**	**Gear set ALU (without FBS on gear)**	*Only use in combination with H3/H4 (see drawing no. H48.ZubhLS005en)*	**MMGI0090-100010**	**1**	**MMGI0090-100030**	**20**
	620	1	M6 ESG					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...1**	**MV ALU-DK/TBT**	*FH > 1250 (recommendation)*	**857045**	**1**	**246979**	**20**
	505	2	Striker					
	700	1	Slider					
	701	1	VSU/BSO corner drive					
		0...3	**Locking part ALU**	*FH > 2400 (recommendation)*	**-**	**-**	**317556**	**20**
	412	1	Locking cam					
	413	1	Eccentric rivet					
	505	1	Striker					
		0...1	**MV ALU slider**	*FB > 1250 (recommendation)*	**MMMV0070-100010**	**1**	**MMMV0070-100030**	**20**
	505	2	Striker					
	700	1	Slider					
Accessories	**809**	**0...1**	**Tilt restrictor top stay ALU**	*for top stay ALU-DK size 30*	**MFKB0010-023010**	**1**	**MFKB0010-023050**	**50**
	810	**0...1**	**Tilt restrictor additional stay**	*for additional stay ALU*	**MFKB0020-023010**	**1**	**MFKB0020-023050**	**50**
	915	**0...1**	**Handle support ALU**	*Only use in combination with H1/H2*	**-**	**-**	*See table on page 4*	**200**
	917	**0...1**	**AV adjusting piece**	*For compression + 0.5*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU-DK 200**	*for top stay size 30 (item 403) (see page 5)*	**MASB0010-500010**	**1**	**-**	**-**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

Observe assembly sequence

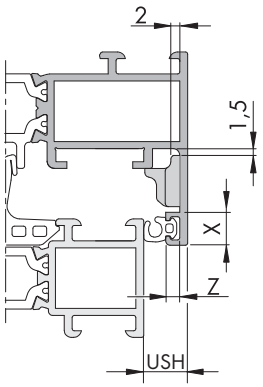


Sequence of installation in sash

- without centre lock (**2. - 3. - 4. - 5.**)
- with centre lock (**1. -2. - 3. - 4. - 5.**)

Design variations for handle support (item 915) (H1/H2)

USH (mm)	Z (mm)	X ≤ 7 mm	X > 7 ≤ 8.5 mm
7 - 10	≤ 2	MFHA0010-100200	MFHA0010-100200
	> 2 ≤ 3		MFHA0020-100200
	> 3		-
12	-	MFHA0030-100200	-



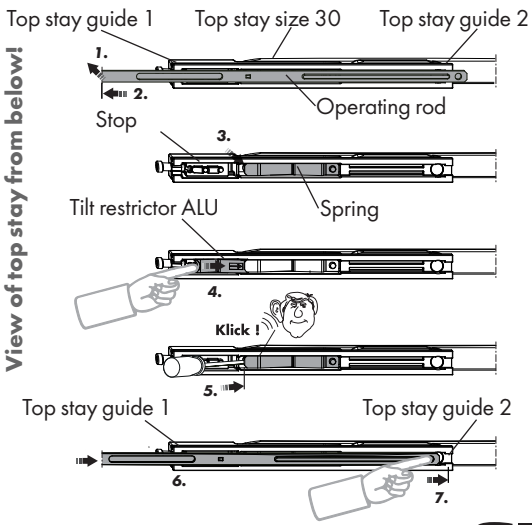
Installation of tilt restrictor ALU 1. to 7.

On requirement: Always mount the tilt restrictor ALU (809) **prior to** the installation and **not** with the top stay size 30 (403) in tilt position.

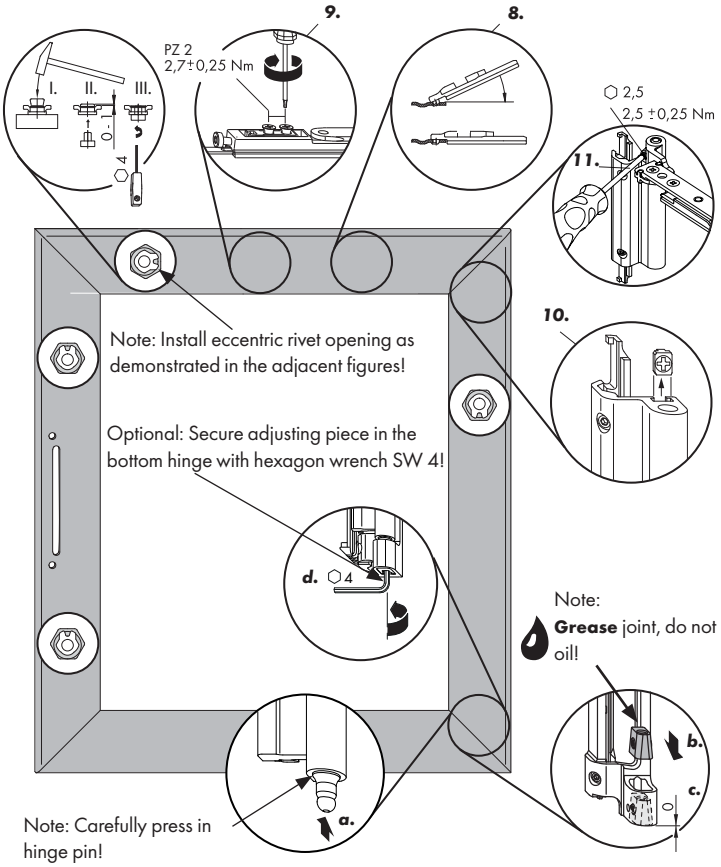
Installation view
Tilt restrictor ALU (809)

1. Bend the operating rod in the direction of the top stay. The bend of the operating rod must be positioned over the stop.
2. Pull the operating rod in the direction of the arrow out of the top stay guide 1 and 2.
3. Lift the spring minimally.
4. Slide the tilt restrictor ALU horizontally under the spring.
5. Slide the concealed tilt restrictor ALU with a screwdriver horizontally under the spring until it engages.
6. Slide the operating rod into the top stay guide 1.
7. Slide the operating rod as far as the top stay guide 2, press the end of the operating rod and then push the operating rod through the top stay guide 2.

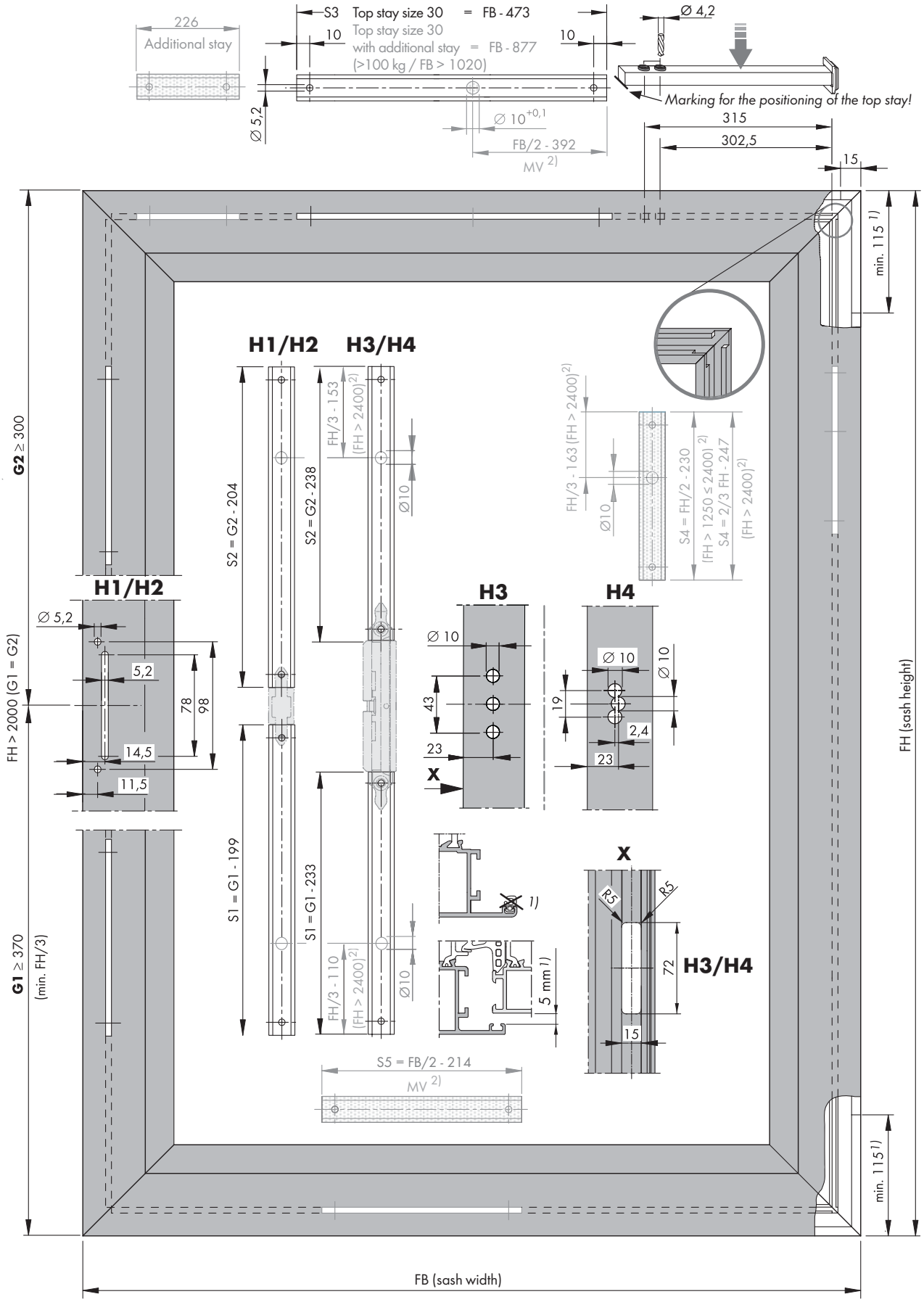
Note: Check whether the operating rod is seated in the top stay guides by moving the operating rod back and forth.



Assembly settings and installation sequence 8. to 11.



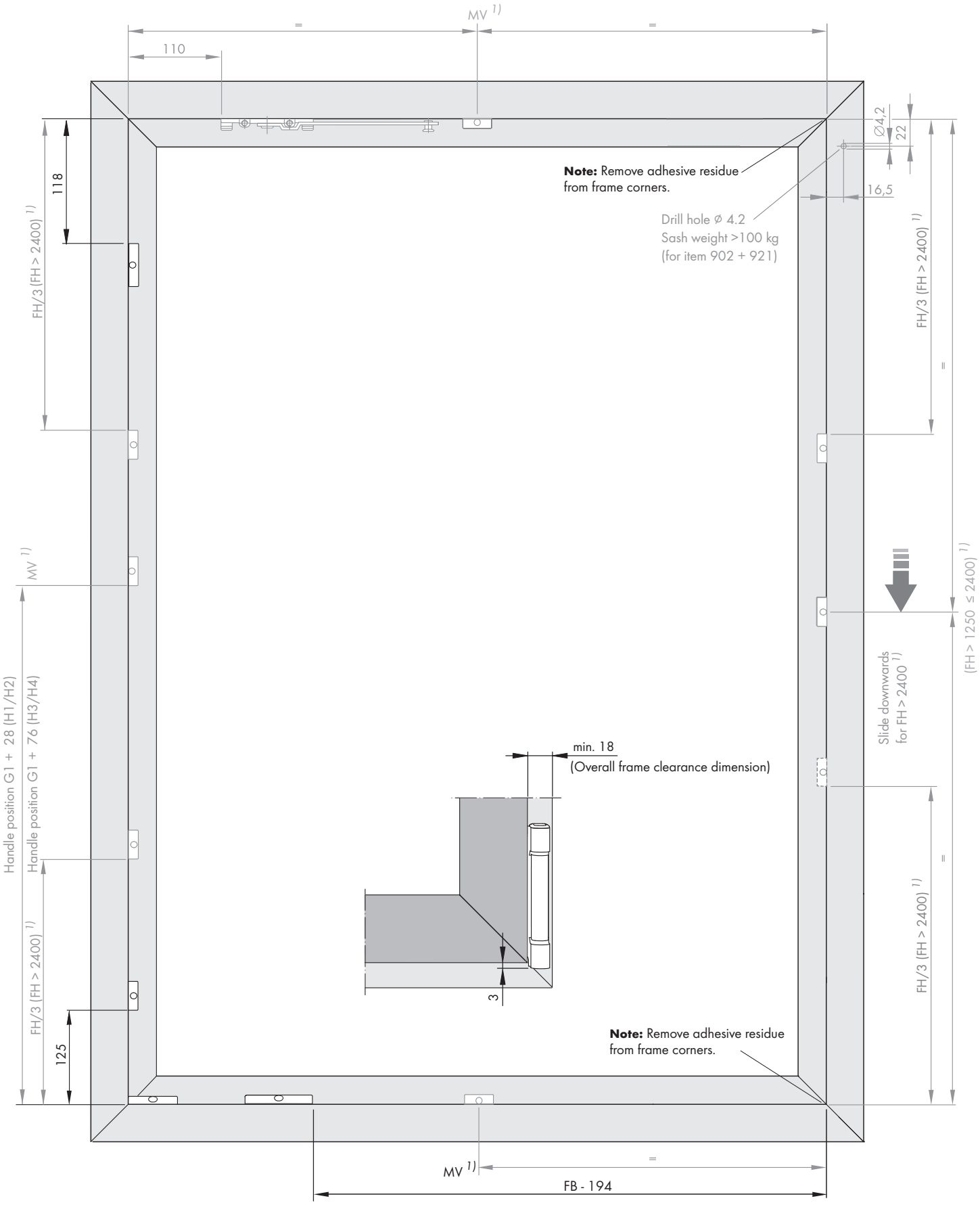
ALU 5200-TBT BD 5 KPW (FBS-EUL) 170 kg *Sash dimensions*



1) Remove the rebate seal in the hinge gap area (minimum hinge gap 5 mm).

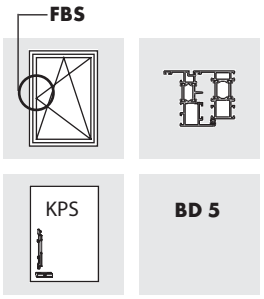
2) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-TBT BD 5 KPW (FBS-EUL) 170 kg *Frame dimensions*



1) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-TBT (130 kg)



Tilt-and-turn hardware for hinge clearance (BD) 5 mm with mishandling device (FBS) on the gear (G)

Tilt point vertical (KPS)

Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	Patio doors max.
Sash width	(mm)	365	1600	1300
Sash height	(mm)	550	2000	2400
Sash weight	(kg)		**max. 100/130**	**max. 100/130**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware (Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 100 kg: Document no. H58.AWDLMS003EN
- Sash weight up to max. 130 kg: Document no. H58.AWDLMS004EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Adjustment options:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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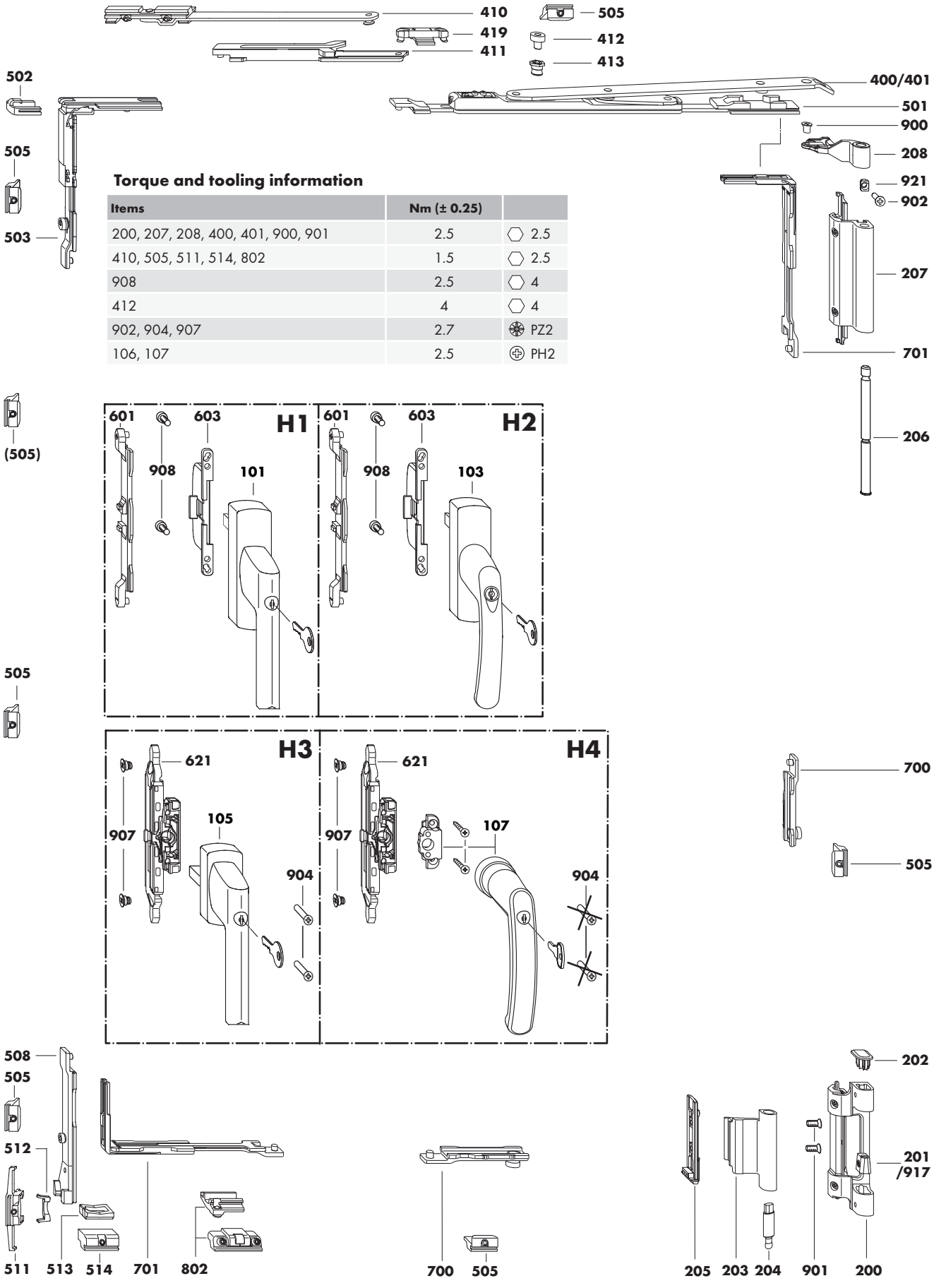


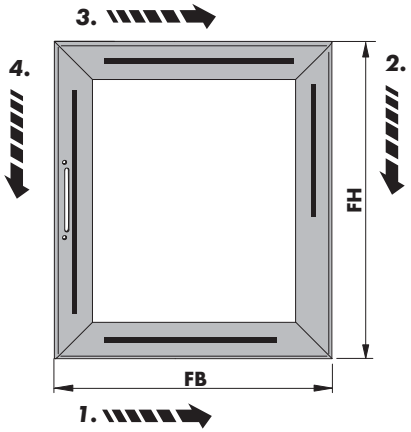
Torque and tooling information

Items	Nm (± 0.25)	
200, 207, 208, 400, 401, 900, 901	2.5	⬡ 2.5
410, 505, 511, 514, 802	1.5	⬡ 2.5
908	2.5	⬡ 4
412	4	⬡ 4
902, 904, 907	2.7	✱ PZ2
106, 107	2.5	⊕ PH2

ALU 5200-TBT BD 5 KPS (FBS-G) 130 kg *Hardware list*

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	**100**		**Handle ALU Si-line lockable/TBT**	*Only use in combination with coupling set*	*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
H2	**103**		**ALU Globe lockable /TBT**					
H3	**105**	**1**	**TITAN lockable/TBT**	*Only use in combination with gear set*	*□ 7 mm x 25, cam Ø 10 mm*			
H4	**107**		**ALU Globe RR lockable /TBT**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en*			
		1	**Hinge side ALU 5200 BD 5**	**silver**	**MMBS0230-525010**	**1**	**MMBS0230-525020**	**10**
				white *RAL 9016*	**MMBS0230-504010**	**1**	**MMBS0230-504020**	**10**
				black *RAL 9005*	**MMBS0230-523010**	**1**	**MMBS0230-523020**	**10**
				EV 1	**MMBS0230-524010**	**1**	**MMBS0230-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0230-500120**	**5**
	200	1	Bottom hinge					
	201	1	Adjusting piece					
	202	1	Cover cap					
	203	1	Corner hinge					
	204	1	Bottom hinge pin					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	208	1	Stay hinge					
	900	1	M5 x 7.5 countersunk screw					
	901	2	M5 x 8.5 countersunk screw					
	400	**0...1**	**Top stay ALU size 20**	*Sash width > 365 ≤ 600 weight ≤ 100 kg*	**884805**	**1**	**273098**	**20**
	401	**0...1**	**Top stay ALU size 35**	*Sash width > 600 ≤ 1600*	**884782**	**1**	**314203**	**20**
depending on FB/kg		**0...1**	**Additional stay ALU**	*Sash width > 1250 with top stay size 35 ≤ 100 kg* *Sash width > 1020 with top stay size 35 > 100 kg*	**857076**	**1**	**247006**	**10**
	410	1	Additional stay					
	411	1	Striker plate					
	412	1	Locking cam					
	413	1	Eccentric rivet					
	419	**0...1**	**MV stay striker**	*(FB > 1020 weight > 100 kg)* *(FB > 1250 weight ≤ 100 kg)*	**MXSK0010-100010**	**1**	**MXSK0010-100030**	**20**
depending on kg		**0...1**	**Accessories set ALU for 130 kg**	*> 100 kg*	**-**	**1**	**247037**	**20**
	902	1	M5 x 13 countersunk screw					
	921	1	Supporting piece					
		1	**Locking side ALU TBT (for FBS on gear) KPS**		**MMVS0270-100010**	**1**	**MMVS0270-100030**	**20**
	500	1	Locking bolt TBT					
	502	1	EUL clamping piece					
	503	1	Corner drive VSO					
	505	2	Striker					
	508	1	TBT tilt lock					
	511	1	TBT tilt locking part					
	512	1	Spring	*Colour grey FH > 550 ≤ 1100* *Colour black FH > 1100 ≤ 2400*				
	513	1	Run-up block					
	514	1	TBT run-up block					
H1/H2		**0...1**	**Coupling set ALU FBS (with FBS on gear)** **Y= 9 mm**	*Only use in combination with H1/H2 (For notes on rebate height (USH) and dimension Y see page 4)*	**MMKL0030-100010**	**1**	**MMKL0030-100030**	**20**
			Y=10 mm		**MMKL0010-100010**	**1**	**MMKL0010-100030**	**20**
			USH 12 mm		**MMKL0040-100010**	**1**	**MMKL0040-100030**	**20**
	601	1	ALU coupling bracket					
	603	1	Mishandling device					
	908	2	M5 x 12 cheese head screw					
H3/H4		**0...1**	**Gear set ALU FBS (with FBS on gear)**	*Only use in combination with H3/H4 (see drawing no. H48.ZubhLS005en)*	**MMGI0080-100010**	**1**	**MMGI0080-100030**	**20**
	621	1	ESG M6 FBS					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...2**	**MV ALU-DK/TBT**	*FB/FH > 1250 (recommendation)*	**857045**	**1**	**246979**	**20**
	505	2	Striker					
	700	1	Slider					
	701	1	VSU/BSO corner drive					
Accessories	**802**	**0...1**	**Sash lifter ALU**	*(see drawing no. H48.ZubhLS014en)*	**MMFH0010-100010**	**1**	**MMFH0010-100030**	**20**
	917	**0...1**	**AV adjusting piece**	*For compression + 0.5*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (> 100 kg; see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

Observe assembly sequence

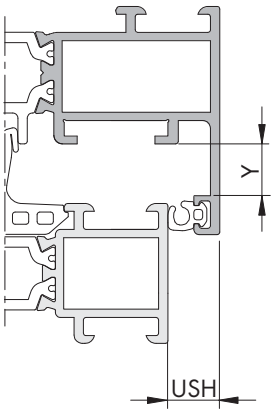


Sequence of installation in sash

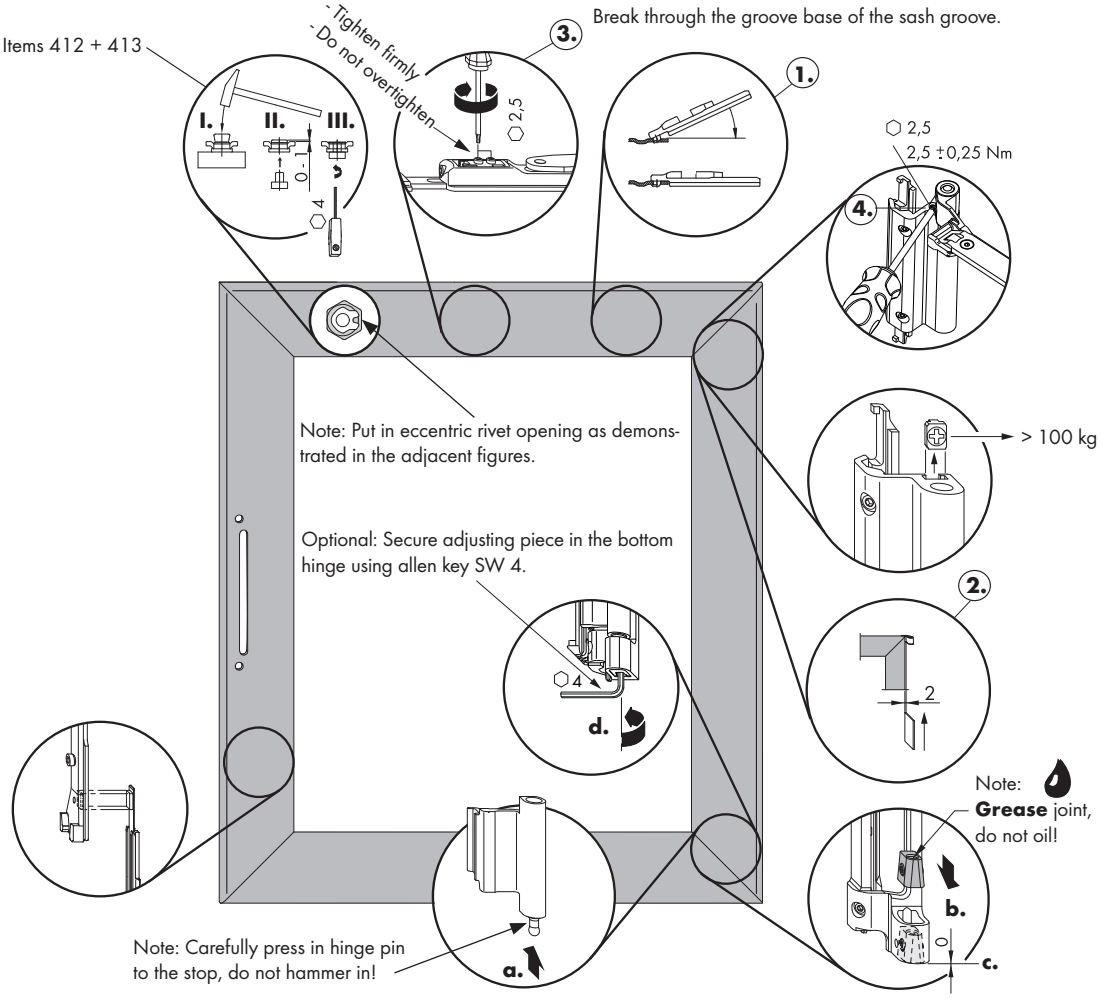
- without centre lock (**3. - 4.**)
- with centre lock (**1. - 2. - 3. - 4.**)

Design variations for coupling set (item 601-603-908) (H1/H2)

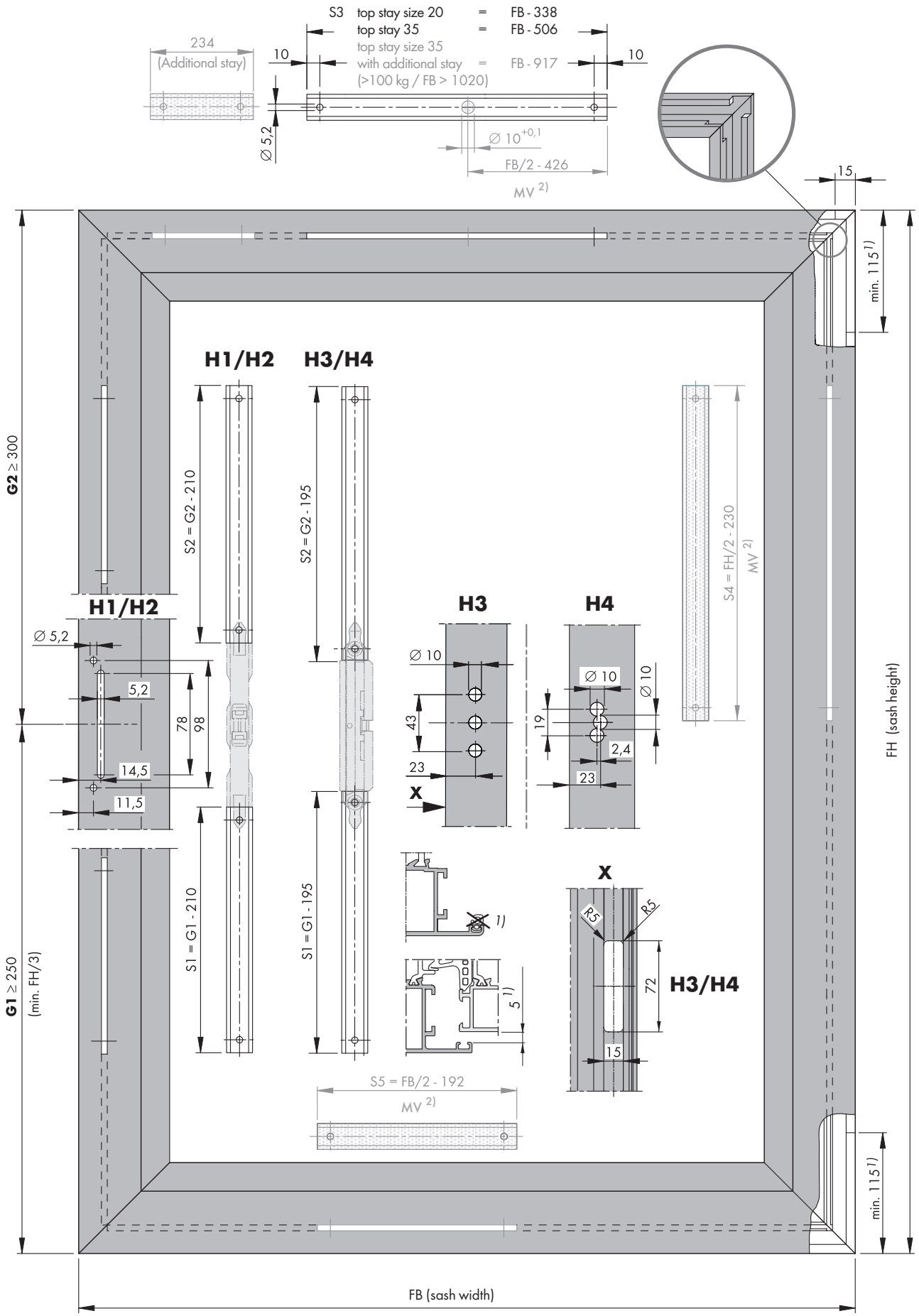
USH (mm)	Y (mm)	Material-Nr.
7 - 10	≥ 9 < 10	MMKL0030-100030
	≥ 10	MMKL0010-100030
12	-	MMKL0040-100030



Assembly settings and installation sequence ① to ④

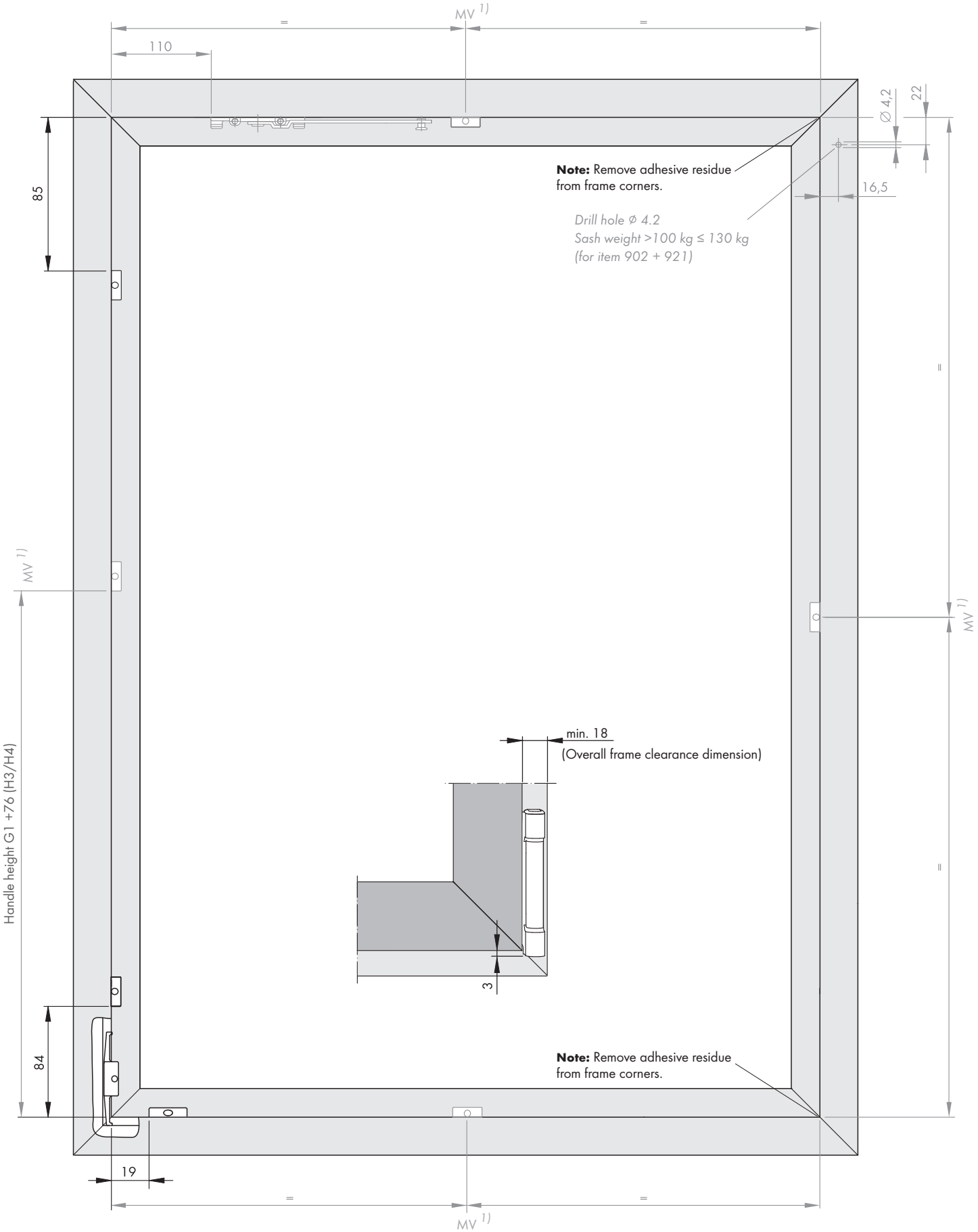


ALU 5200-TBT BD 5 KPS (FBS-G) 130 kg *Sash dimensions*



1) Remove the rebate seal in the hinge gap area (minimum hinge gap 5 mm).
2) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-TBT BD 5 KPS (FBS-G) 130 kg *Frame dimensions*



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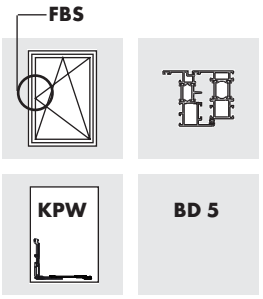
ALU 5200-TBT (150 kg)



Tilt-turn hardware for hinge clearance (BD) 5 mm with mishandling device (FBS) on the gear (G)

Tilt point horizontal (KPW)

Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	Patio doors max.
Sash width	(mm)	600	to 1600	1300
Sash height	(mm)	600	to 2000	2600
Sash weight	(kg)	**max. 100/150**		**max. 100/150**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 100 kg: Document no. H58.AWDLMS003EN
- Sash weight up to max. 150 kg: Document no. H58.AWDLMS005EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Adjustment options:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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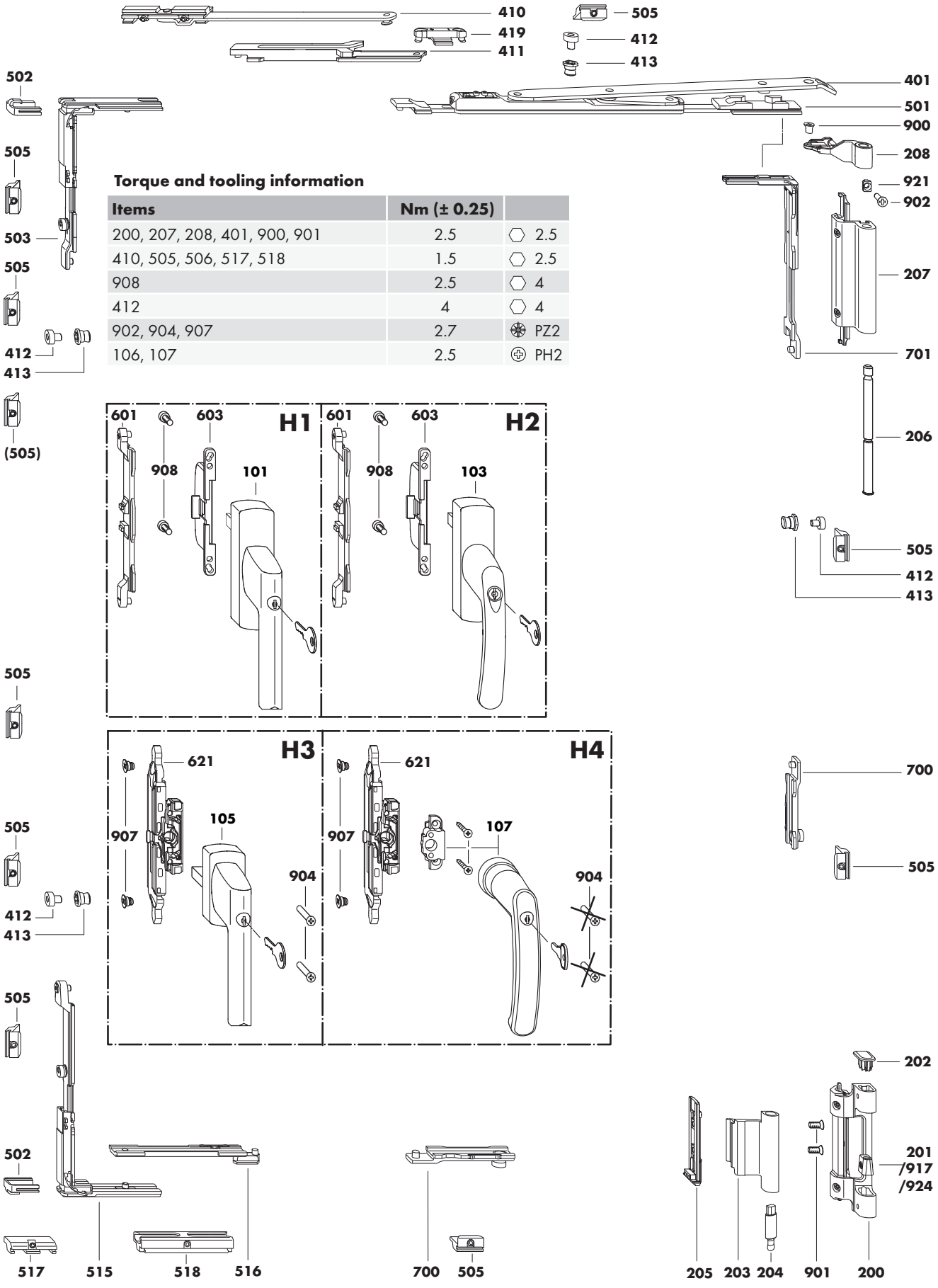


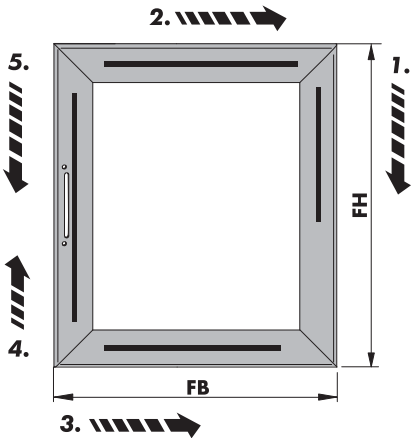
Torque and tooling information

Items	Nm (± 0.25)	
200, 207, 208, 401, 900, 901	2.5	⬡ 2.5
410, 505, 506, 517, 518	1.5	⬡ 2.5
908	2.5	⬡ 4
412	4	⬡ 4
902, 904, 907	2.7	✱ PZ2
106, 107	2.5	⊕ PH2

ALU 5200-TBT BD 5 KPW (FBS-G) 150 kg Hardware list

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	100	1	**Handle ALU Si-line lockable/TBT**	*Only use in combination with coupling set*	*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
H2	103		**ALU Globe lockable /TBT**					
H3	105		**TITAN lockable/TBT**	*Only use in combination with gear set*	*□ 7 mm x 25, cam Ø 10 mm*			
H4	107		**ALU Globe RR lockable /TBT**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en*			
		1	**Hinge side ALU 5200 BD 5**	**silver**	**MMBS0230-525010**	**1**	**MMBS0230-525020**	**10**
				white *RAL 9016*	**MMBS0230-504010**	**1**	**MMBS0230-504020**	**10**
				black *RAL 9005*	**MMBS0230-523010**	**1**	**MMBS0230-523020**	**10**
				EV 1	**MMBS0230-524010**	**1**	**MMBS0230-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0230-500120**	**5**
	200	1	Bottom hinge					
	201	1	Adjusting piece	*(replaced by item 924 with sash weight >100 kg)*				
	202	1	Cover cap					
	203	1	Corner hinge					
	204	1	Bottom hinge pin					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	208	1	Stay hinge					
	900	1	M5 x 7.5 countersunk screw					
	901	2	M5 x 8.5 countersunk screw					
	401	**1**	**Top stay ALU size 35**		**884782**	**1**	**314203**	**20**
depending on FB/kg		**0...1**	**Additional stay ALU**	*Sash width > 1250 with top stay size 35 ≤ 100 kg* *Sash width > 1020 with top stay size 35 > 100 kg*	**857076**	**1**	**247006**	**10**
	410	1	Additional stay					
	411	1	Striker plate					
	412	1	Locking cam					
	413	1	Eccentric rivet					
	419	**0...1**	**MV stay striker**	*(FB > 1020 weight > 100 kg)* *(FB > 1250 weight ≤ 100 kg)*	**MXSK0010-100010**	**1**	**MXSK0010-100030**	**20**
depending on kg		**1**	**Accessories set ALU BD 5 150 kg**	*> 100 kg*	**-**	**-**	**MZBS0110-000030**	**20**
	902	1	M5 x 13 countersunk screw					
	921	1	Supporting piece					
	924	1	Adjusting piece S					
		1	**Locking side ALU TBT KPW (for FBS on gear)**		**MMVS0480-100010**	**1**	**MMVS0480-100030**	**20**
	501	1	Locking bolt TBT					
	502	2	EUL clamping piece					
	503	1	Corner drive VSO					
	505	2	Striker					
	515	1	VSU corner drive					
	516	1	Tilt lock					
	517	1	Run-up block					
	518	1	Tilt locking part					
H1/H2		**0...1**	**Coupling set ALU FBS (with FBS on gear)** **Y= 9 mm**	*Only use in combination with H1/H2* *(For notes on rebate height (USH) and dimension Y see page 4)*	**MMKL0030-100010**	**1**	**MMKL0030-100030**	**20**
			Y=10 mm		**MMKL0010-100010**	**1**	**MMKL0010-100030**	**20**
			USH 12 mm		**MMKL0040-100010**	**1**	**MMKL0040-100030**	**20**
	601	1	ALU coupling bracket					
	603	1	Mishandling device					
	908	2	M5 x 12 cheese head screw					
H3/H4		**0...1**	**Gear set ALU FBS (with FBS on gear)**	*Only use in combination with H3/H4* *(see drawing no. H48.ZubhLS005en)*	**MMGI0080-100010**	**1**	**MMGI0080-100030**	**20**
	621	1	ESG M6 FBS					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...1**	**MV ALU-DK/TBT**	*FH > 1250 (recommendation)*	**857045**	**1**	**246979**	**20**
	505	2	Striker					
	700	1	Slider					
	701	1	VSU/BSO corner drive					
		0...3	**Locking part ALU**	*FH > 2400 (recommendation)*	**-**	**-**	**317556**	**20**
	412	1	Locking cam					
	413	1	Eccentric rivet					
	505	1	Striker					
		0...1	**MV ALU slider**	*FB > 1250 (recommendation)*	**MMMV0070-100010**	**1**	**MMMV0070-100030**	**20**
	505	2	Striker					
	700	1	Slider					
Accessories	**917**	**0...1**	**AV adjusting piece**	*For compression + 0.5*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (> 100 kg; see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

Observe assembly sequence

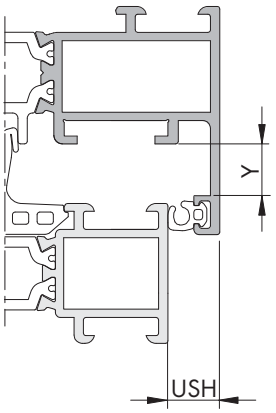


Sequence of installation in sash

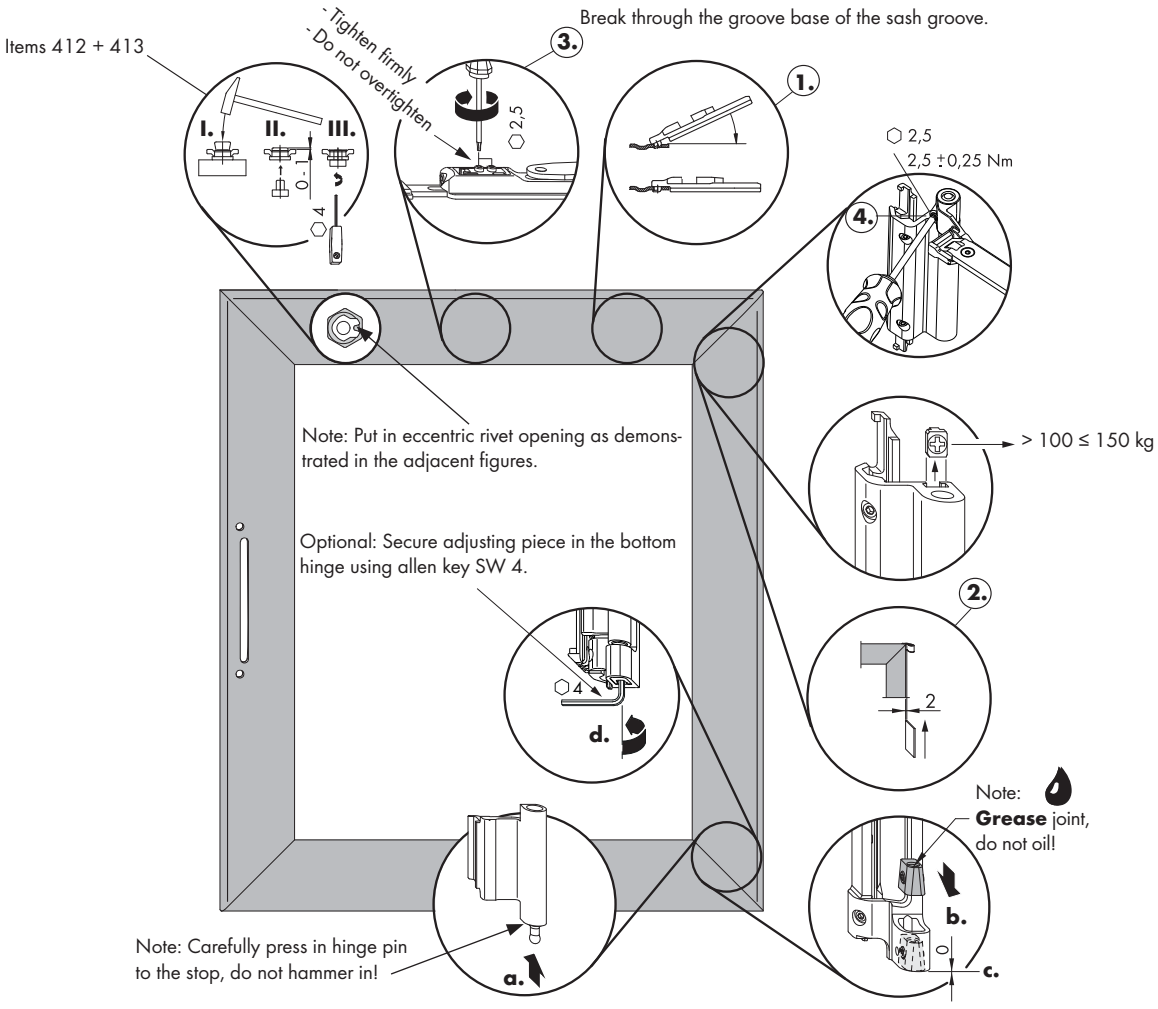
- without centre lock (**2. - 3. - 4. - 5.**)
- with centre lock (**1. - 2. - 3. - 4. - 5.**)

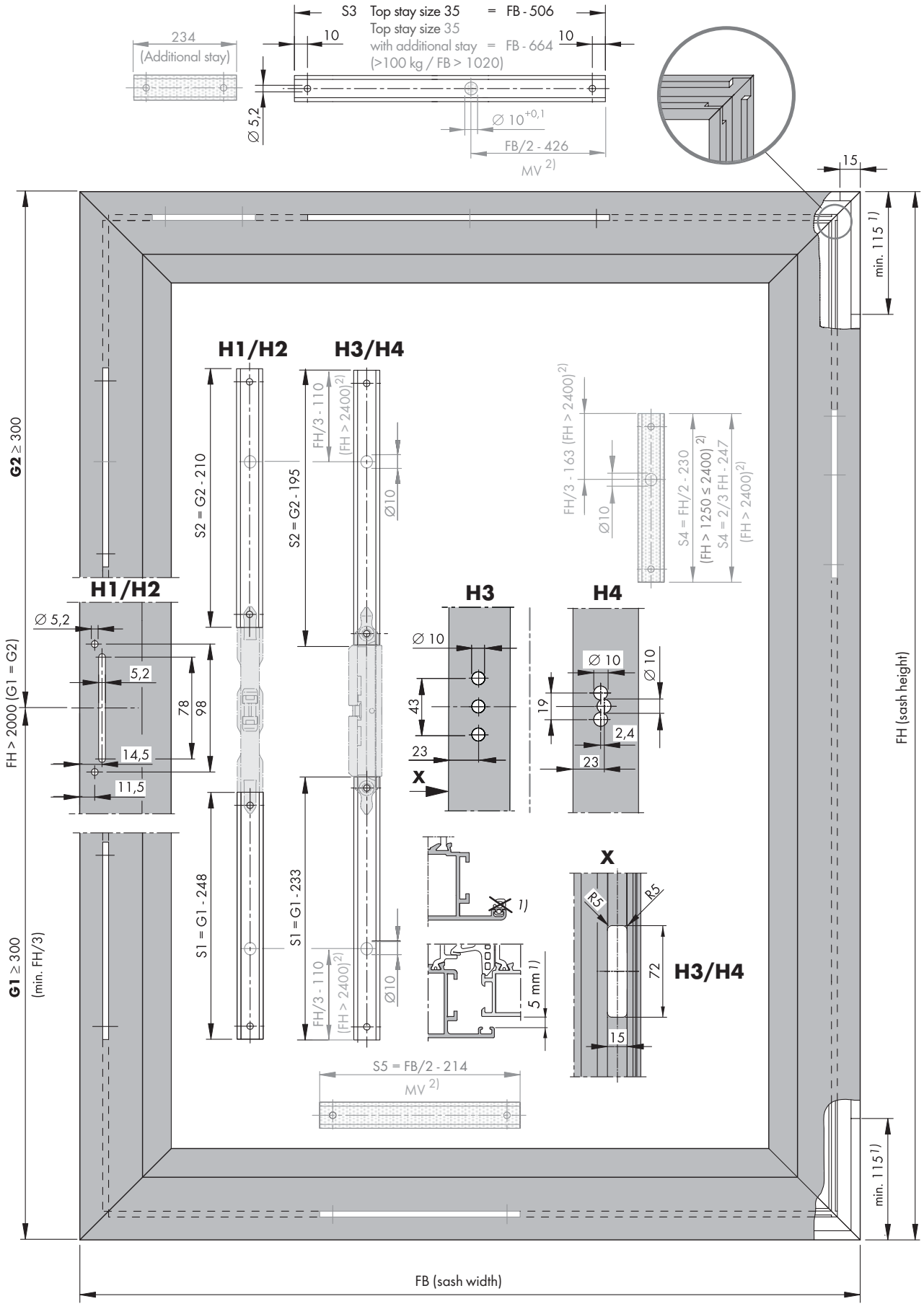
Design variations for coupling set (item 601-603-908) (H1/H2)

USH (mm)	Y (mm)	Material-Nr.
7 - 10	≥ 9 < 10	MMKL0030-100030
	≥ 10	MMKL0010-100030
12	-	MMKL0040-100030



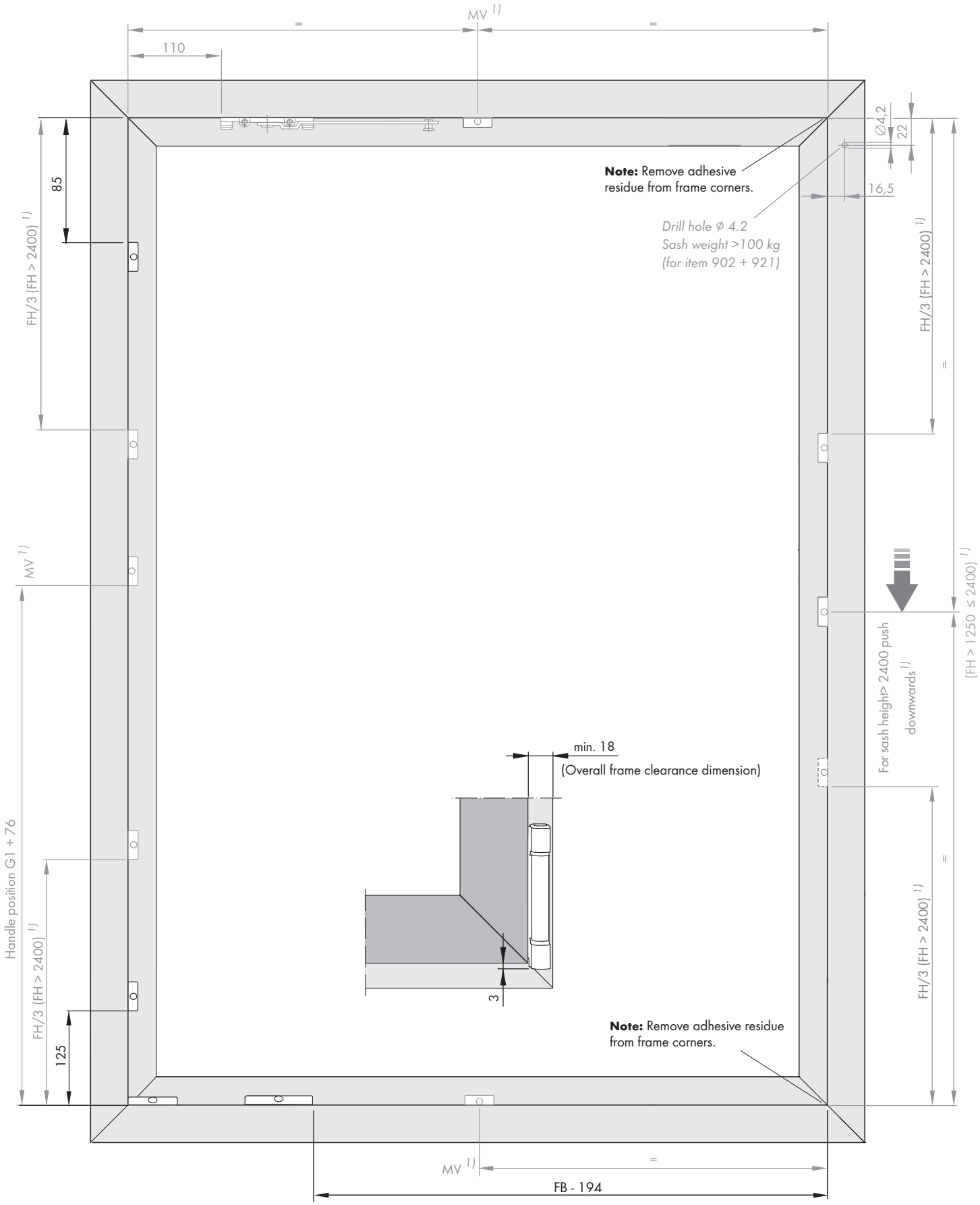
Assembly settings and installation sequence ① to ④





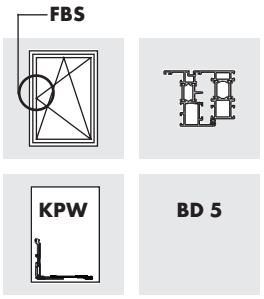
1) Remove the rebate seal in the hinge gap area (minimum hinge gap 5 mm).
2) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-TBT BD 5 KPW (FBS-G) 150 kg *Frame dimensions*



1) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-TBT (170 kg)



Tilt-turn hardware for hinge clearance (BD) 5 mm with mishandling device (FBS) on the gear (G)

Tilt point horizontal (KPW)

Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	French doors max.
Sash width	(mm)	600 to 1600		1300
Sash height	(mm)	1100 to 2000		2600
Sash weight	(kg)	**max. 170**		**max. 170**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 170 kg: Document no. H58.AWDLMS006EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Maintenance und adjustment instructions:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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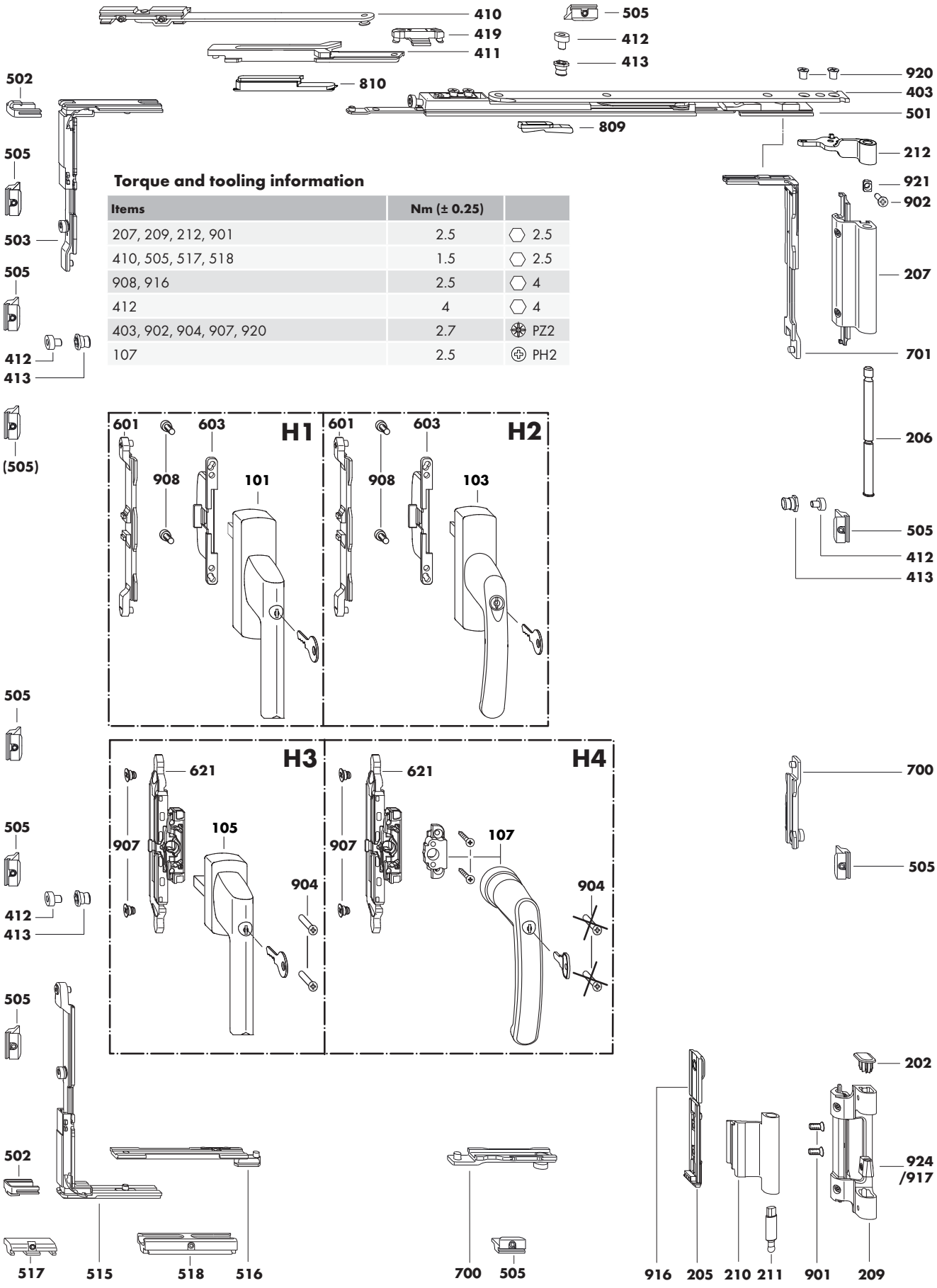


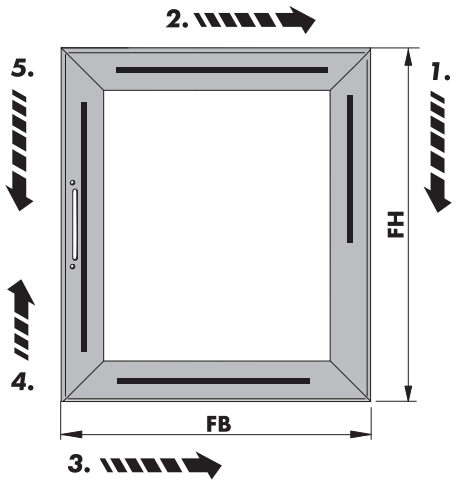
Torque and tooling information

Items	Nm (± 0.25)	
207, 209, 212, 901	2.5	⬡ 2.5
410, 505, 517, 518	1.5	⬡ 2.5
908, 916	2.5	⬡ 4
412	4	⬡ 4
403, 902, 904, 907, 920	2.7	✱ PZ2
107	2.5	⊕ PH2

ALU 5200-TBT BD 5 KPW (FBS-G) 170 kg *Hardware list*

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	**100**		**Handle ALU Si-line lockable/TBT**	*Only use in combination with coupling set*	*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
H2	**103**		**ALU Globe lockable /TBT**					
H3	**105**	**1**	**TITAN lockable/TBT**	*Only use in combination with gear set*	☐ *7 mm x 25, cam Ø 10 mm*			
H4	**107**		**ALU Globe RR lockable /TBT**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en*			
		1	**Hinge side ALU 5200-170 BD 5**	**silver**	**MMBS0240-525010**	**1**	**MMBS0240-525020**	**10**
				white *RAL 9016*	**MMBS0240-504010**	**1**	**MMBS0240-504020**	**10**
				black *RAL 9005*	**MMBS0240-523010**	**1**	**MMBS0240-523020**	**10**
				EV 1	**MMBS0240-524010**	**1**	**MMBS0240-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0240-500120**	**5**
	202	1	Cover cap					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	209	1	Bottom hinge ALU 5200-170					
	210	1	Corner hinge ALU 5200-170					
	211	1	Bottom hinge pin ALU 5200-170					
	212	1	Stay hinge ALU 5200-170					
	901	2	M5 x 8.5 countersunk screw	*(blue thread protection)*				
	902	1	M5 x 13 countersunk screw					
	916	1	Long stop					
	920	2	Countersunk screw M5 x 7 PZ2	*(green thread protection)*				
	921	1	Supporting piece					
	924	1	Adjusting piece S					
	403	**1**	**Top stay ALU-DK size 30**		**MSKK0020-000010**	**1**	**MSKK0020-000030**	**20**
depending on FB/kg		**0...1**	**Additional stay ALU**	*FB > 1020 > 100 kg*	**857076**	**1**	**247006**	**10**
	410	1	Additional stay					
	411	1	Striker plate					
	412	1	Locking cam					
	413	1	Eccentric rivet					
	419	**0...1**	**MV stay striker**	*FB > 1020 > 100 kg*	**MXSK0010-100010**	**1**	**MXSK0010-100030**	**20**
		1	**Locking side ALU TBT KPW (for FBS on gear)**		**MMVS0480-100010**	**1**	**MMVS0480-100030**	**20**
	501	1	Locking bolt TBT					
	502	2	EUL clamping piece					
	503	1	Corner drive VSO					
	505	2	Striker					
	515	1	VSU corner drive					
	516	1	Tilt lock					
	517	1	Run-up block					
	518	1	Tilt locking part					
H1/H2		**0...1**	**Coupling set ALU FBS (with FBS on gear)** **Y= 9 mm**	*Only use in combination with H1/H2 (For notes on rebate height (USH) and dimension Y see page 4)*	**MMKL0030-100010**	**1**	**MMKL0030-100030**	**20**
			Y=10 mm		**MMKL0010-100010**	**1**	**MMKL0010-100030**	**20**
			USH 12 mm		**MMKL0040-100010**	**1**	**MMKL0040-100030**	**20**
	601	1	ALU coupling bracket					
	603	1	Mishandling device					
	908	2	M5 x 12 cheese head screw					
H3/H4		**0...1**	**Gear set ALU FBS (with FBS on gear)**	*Only use in combination with H3/H4 (see drawing no. H48.ZubhLS005en)*	**MMGI0080-100010**	**1**	**MMGI0080-100030**	**20**
	621	1	ESG M6 FBS					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...1**	**MV ALU-DK/TBT**	*FH > 1250 (recommendation)*	**857045**	**1**	**246979**	**20**
	505	2	Striker					
	700	1	Slider					
	701	1	VSU/BSO corner drive					
		0...3	**Locking part ALU**	*FH > 2400 (recommendation)*	**-**	**-**	**317556**	**20**
	412	1	Locking cam					
	413	1	Eccentric rivet					
	505	1	Striker					
		0...1	**MV ALU slider**	*FB > 1250 (recommendation)*	**MMMV0070-100010**	**1**	**MMMV0070-100030**	**20**
	505	2	Striker					
	700	1	Slider					
	809	**0...1**	**Tilt restrictor top stay ALU**	*for top stay ALU-DK*	**MFKB0010-023010**	**1**	**MFKB0010-023050**	**50**
	810	**0...1**	**Tilt restrictor additional stay**	*for additional stay ALU*	**MFKB0020-023010**	**1**	**MFKB0020-023050**	**50**
	917	**0...1**	**AV adjusting piece**	*For compression + 0.5*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU-DK 200**	*for top stay size 30 (item 403) (see page 5)*	**MASB0010-500010**	**1**	**-**	**-**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

Observe assembly sequence

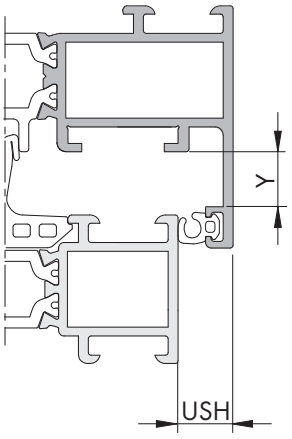


Sequence of installation in sash

- without centre lock (**2. - 3. - 4. - 5.**)
- with centre lock (**1. -2. - 3. - 4. - 5.**)

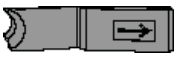
Design versions for coupling set (item 601-603-908) (H1/H2)

USH (mm)	Y (mm)	Material-Nr.
7 - 10	≥ 9 < 10	MMKL0030-100030
	≥ 10	MMKL0010-100030
12	-	MMKL0040-100030



Installation of tilt restrictor ALU 1. to 7.

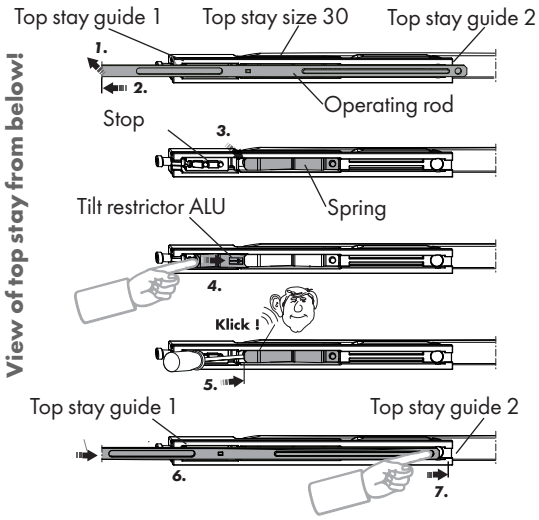
On requirement: Always mount the tilt restrictor ALU (809) **prior to** the installation and **not** with the top stay size 30 (403) in tilt position.



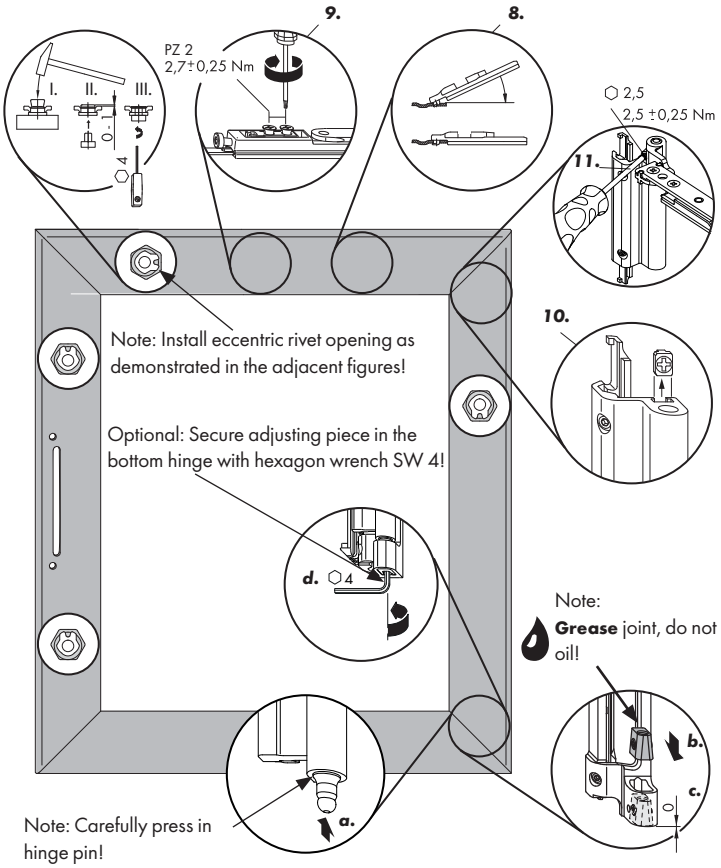
Installation view
Tilt restrictor ALU (809)

1. Bend the operating rod in the direction of the top stay. The bend of the operating rod must be positioned over the stop.
2. Pull the operating rod in the direction of the arrow out of the top stay guide 1 and 2.
3. Lift the spring minimally.
4. Slide the tilt restrictor ALU horizontally under the spring.
5. Slide the concealed tilt restrictor ALU with a screwdriver horizontally under the spring until it engages.
6. Slide the operating rod into the top stay guide 1.
7. Slide the operating rod as far as the top stay guide 2, press the end of the operating rod and then push the operating rod through the top stay guide 2.

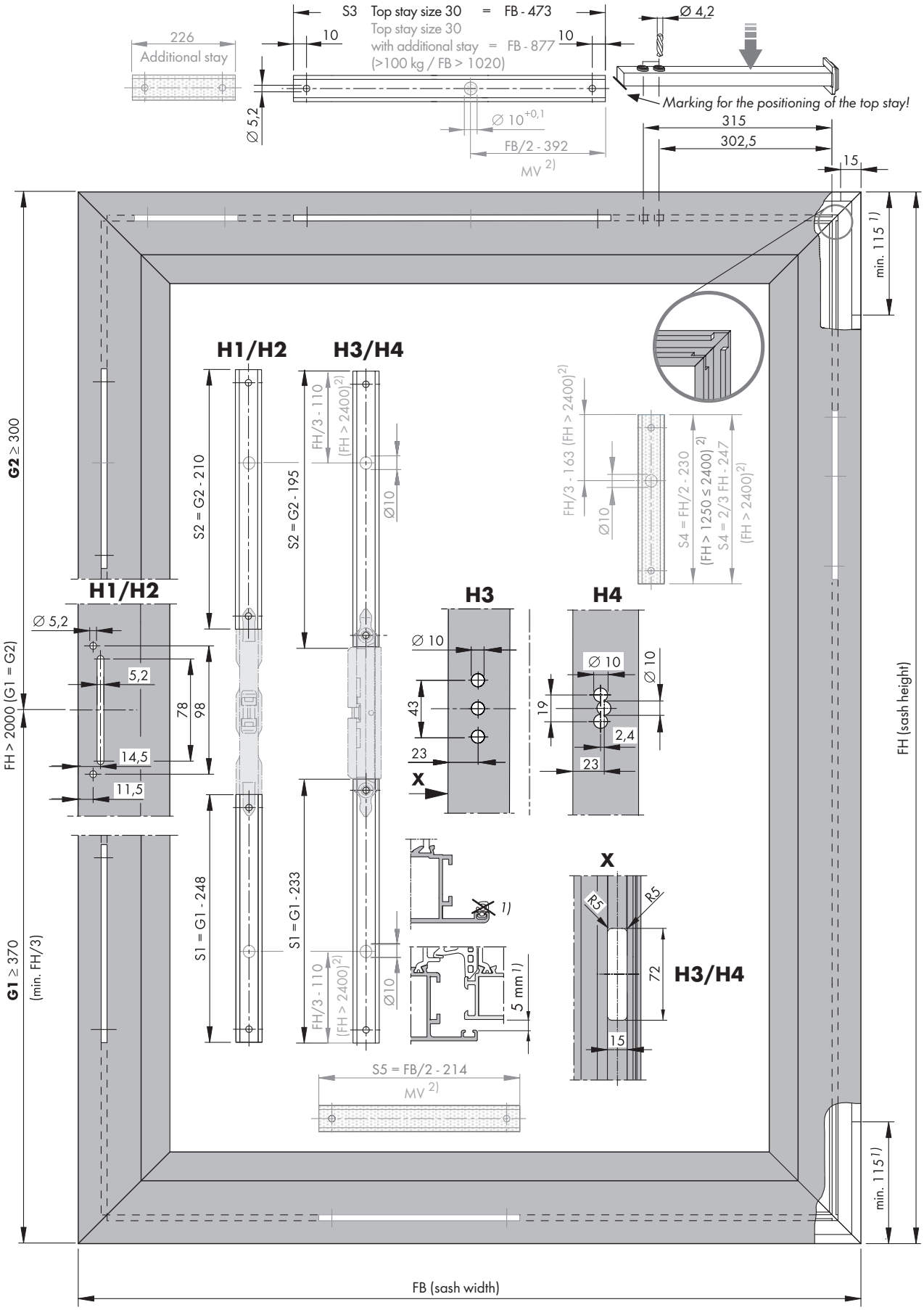
Note: Check whether the operating rod is seated in the top stay guides by moving the operating rod back and forth.



Assembly settings and installation sequence 8. to 11.



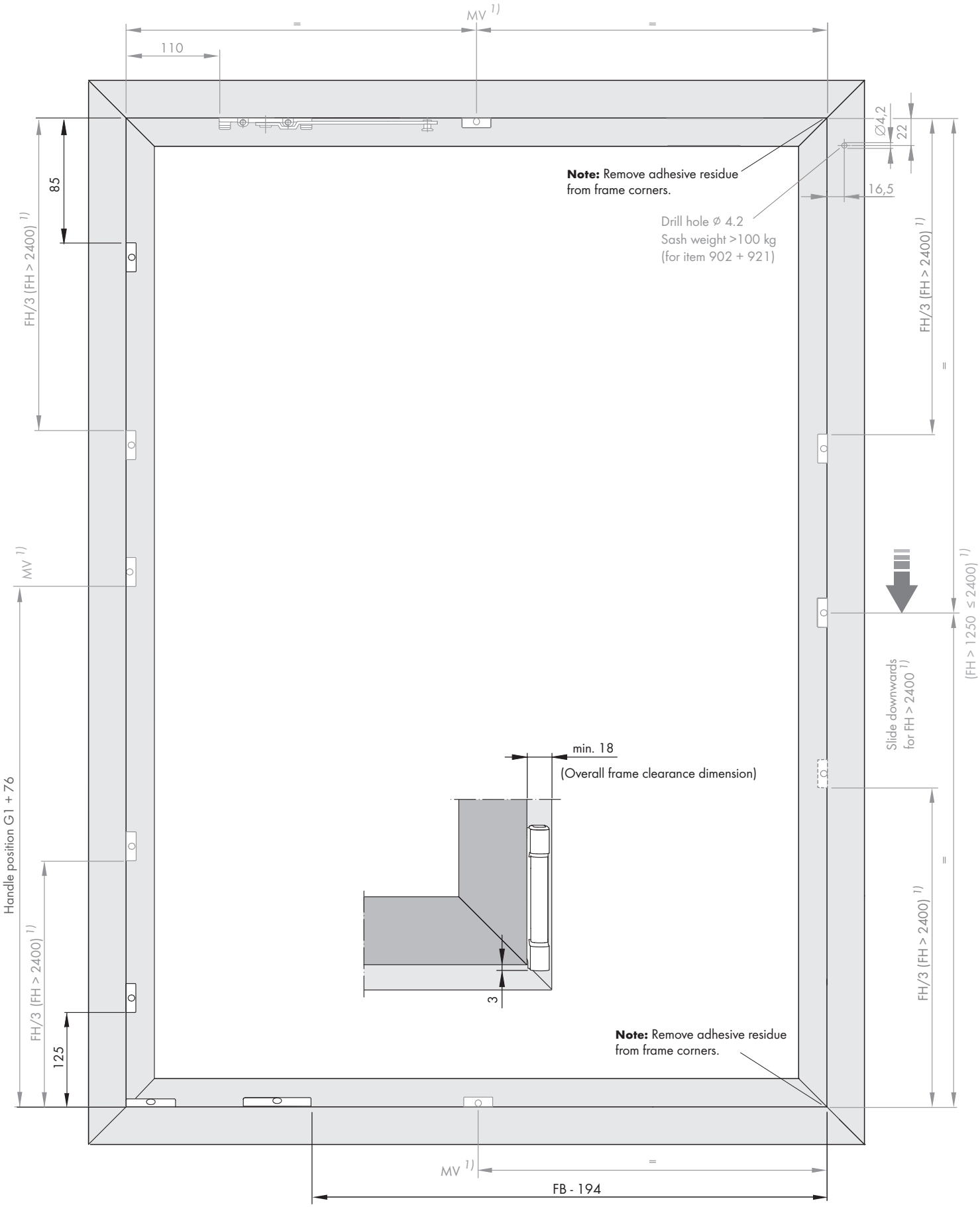
ALU 5200-TBT BD 5 KPW (FBS-G) 170 kg *Sash dimensions*



1) Remove the rebate seal in the hinge gap area (minimum hinge gap 5 mm).

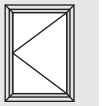
2) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-TBT BD 5 KPW (FBS-G) 170 kg *Frame dimensions*



1) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-D (130 kg)



BD 5

Turn only hardware for hinge clearance (BD) 5 mm

Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	Patio doors max.
Sash width	(mm)	365 to 1600		1300
Sash height	(mm)	550 to 2000		2400
Sash weight	(kg)	**max. 100/130**		**max. 100/130**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 100 kg: Document no. H58.AWDLMS003EN
- Sash weight up to max. 130 kg: Document no. H58.AWDLMS004EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Adjustment options:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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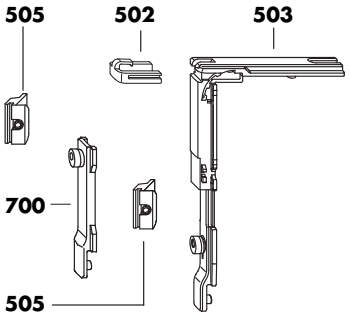
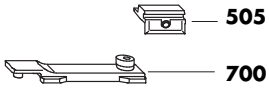
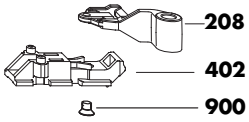
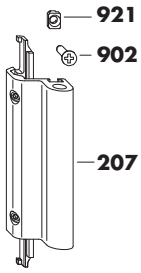
H48.5200LS010en

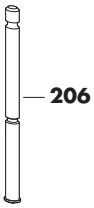
H48.5200LS010en/3





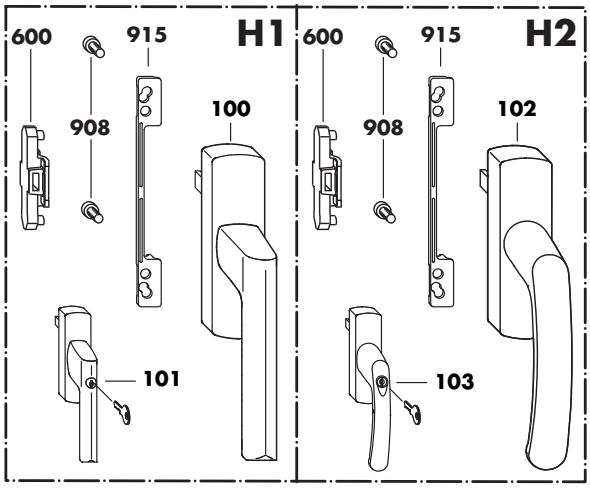


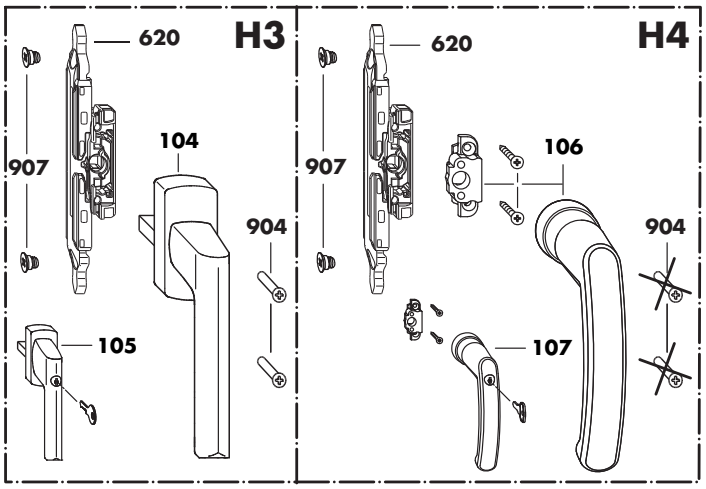


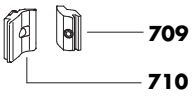


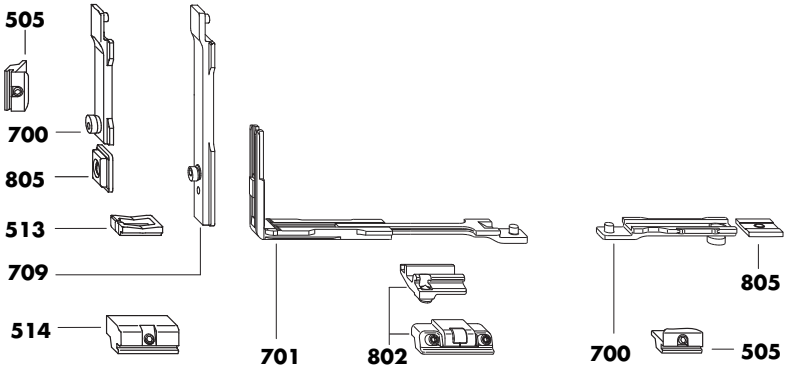
Torque and tooling information

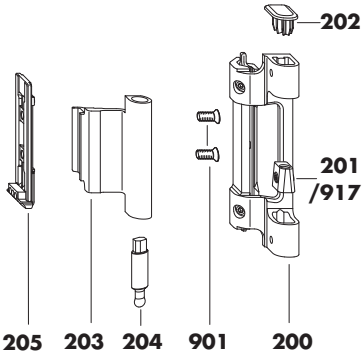
Items	Nm (± 0.25)	
200, 207, 208, 900, 901	2.5	2.5
505, 514, 709, 710, 802	1.5	2.5
805, 908	2.5	4
902, 904, 907	2.7	PZ2
106, 107	2.5	PH2







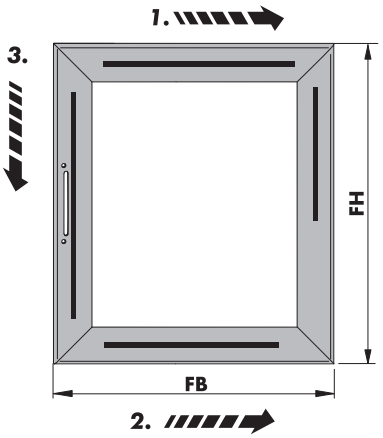




ALU 5200-D BD 5 130 kg *Hardware list*

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	100	1	**Handle ALU Si-line**	*Only use in combination with coupling set*	*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
	101		**ALU Si-line lockable**					
H2	102		**ALU Globe**					
	103		**ALU Globe lockable**					
H3	104		**TITAN**	*Only use in combination with gear set*	*□ 7 mm x 25, cam Ø 10 mm Only use in combination with gear set*			
	105		**TITAN lockable**					
H4	106		**ALU Globe RR**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en in ALU planning manual*			
	107		**ALU Globe RR lockable**					
		1	**Hinge side ALU 5200 BD 5**	**silver**	**MMBS0230-525010**	**1**	**MMBS0230-525020**	**10**
				white *RAL 9016*	**MMBS0230-504010**	**1**	**MMBS0230-504020**	**10**
				black *RAL 9005*	**MMBS0230-523010**	**1**	**MMBS0230-523020**	**10**
				EV 1	**MMBS0230-524010**	**1**	**MMBS0230-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0230-500120**	**5**
	200	1	Bottom hinge					
	201	1	Adjusting piece					
	202	1	Cover cap					
	203	1	Corner hinge					
	204	1	Bottom hinge pin					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	208	1	Stay hinge					
	900	1	M5 x 7.5 countersunk screw					
	901	2	M5 x 8.5 countersunk screw					
depending on kg		**0...1**	**Accessories set ALU for 130 kg**	*> 100 kg*	**-**	**1**	**247037**	**20**
	902	1	M5 x 13 countersunk screw					
	921	1	Supporting piece					
		1	**Locking side ALU-D SDF (with FBS on corner drive) KPS**		**MMVS0280-100010**	**1**	**MMVS0280-100030**	**20**
	402	1	Top stay ALU-D					
	505	2	Striker					
	513	1	Run-up block					
	514	1	TBT run-up block					
	700	2	Slider	*Horizontal installation for MV ALU-D VSU/VSO*				
H1/H2		**0...1**	**Coupling set ALU (without FBS on gear)**	*Only use in combination with H1/H2*	**MMKL0060-100010**	**1**	**MMKL0060-100030**	**20**
	600	1	ALU coupling bracket					
	908	2	M5 x 12 cheese head screw					
H3/H4		**0...1**	**Gear set ALU (without FBS on gear)**	*Only use in combination with H3/H4 (see drawing no. H48.ZubhLS005en)*	**MMGI0090-100010**	**1**	**MMGI0090-100030**	**20**
	620	1	M6 ESG					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...1**	**MV ALU-D VS/BS**	*FH > 1250 (recommendation)*	**857052**	**1**	**246986**	**20**
	505	1	Striker					
	709	1	Striker MV					
	710	1	Locking bolt					
		0...1	**MV ALU-D VSU/VSO**	*FB > 1250 (recommendation)*	**MMMV0040-100010**	**1**	**MMMV0040-100030**	**20**
	502	1	EUL clamping piece					
	503	1	Corner drive VSO					
	505	2	Striker					
	701	1	VSU/BSO corner drive					
	709	1	Locking bolt					
Accessories	**802**	**0...1**	**Sash lifter ALU**	*(see drawing no. H48.ZubhLK406en)*	**MMFH0010-100010**	**1**	**MMFH0010-100030**	**20**
	805	**0...1**	**Stop**	*for travel restriction (FB > 1250: install horizontally)*	**820544**	**1**	**222805**	**10**
	915	**0...1**	**Handle support ALU**	*Only use in combination with H1/H2*	**-**	**-**	*See table on page 4*	**200**
	917	**0...1**	**AV adjusting piece**	*for compression + 0.5*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (> 100 kg; see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

Observe assembly sequence

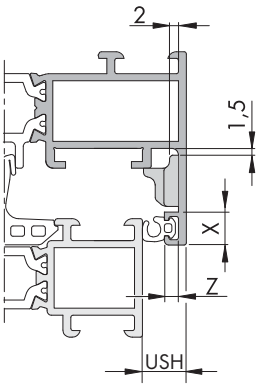


Sequence of installation in sash

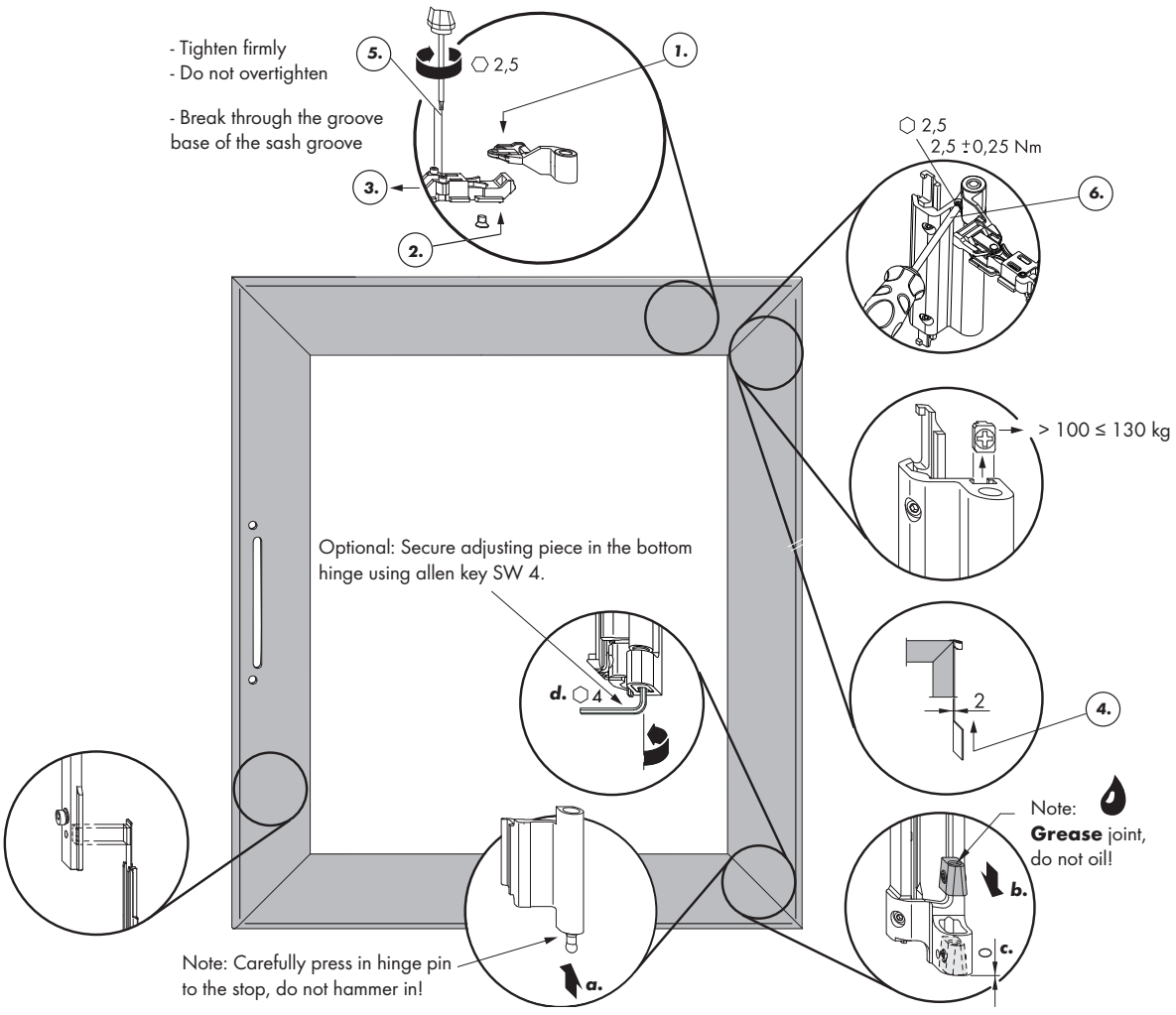
- without centre lock (**3.**)
- with centre lock (**1. - 2. - 3.**)

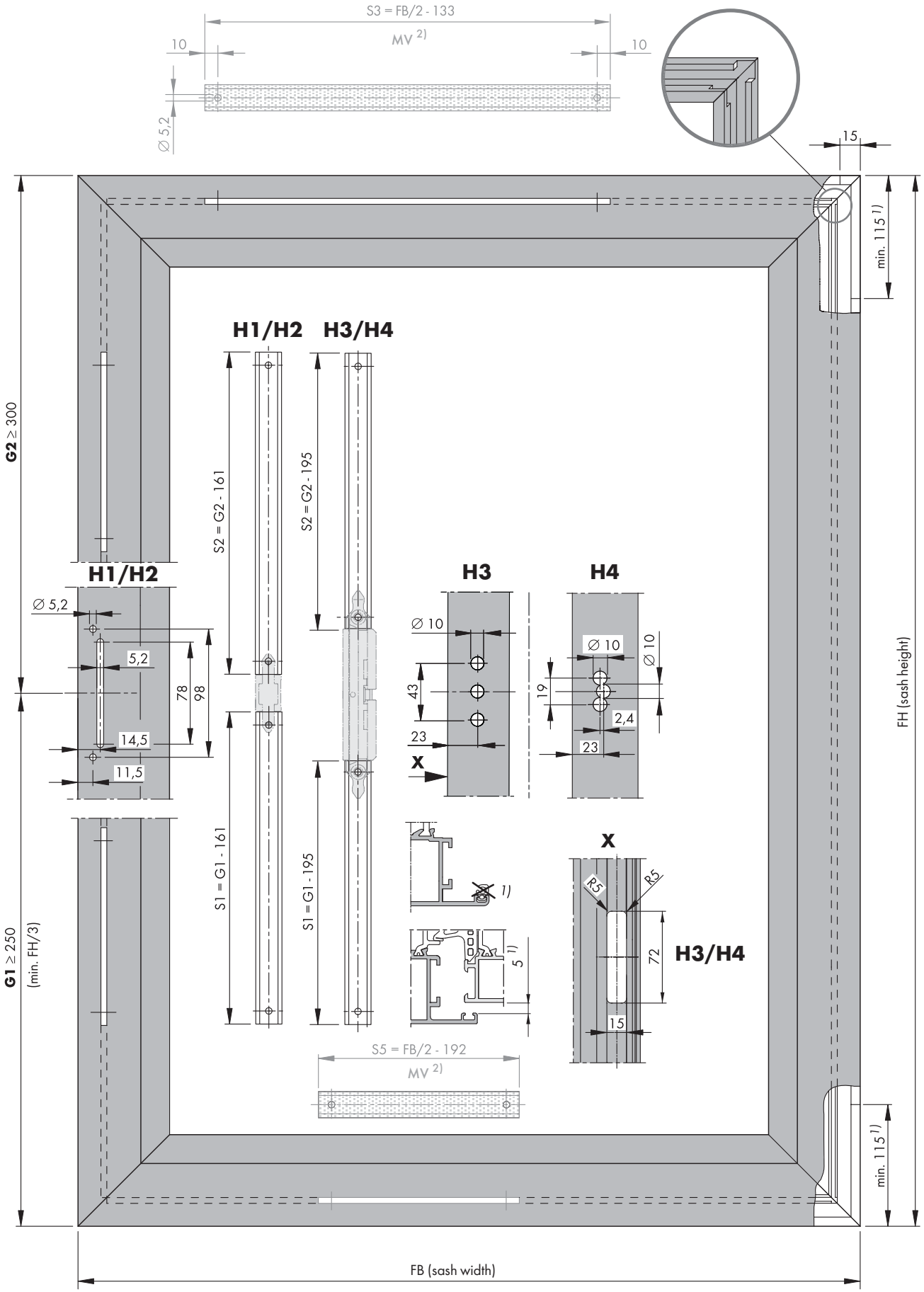
Design variations for handle support (item 915) (H1/H2)

USH (mm)	Z (mm)	X ≤ 7 mm	X > 7 ≤ 8.5 mm
7 - 10	≤ 2	MFHA0010-100200	MFHA0010-100200
	> 2 ≤ 3		MFHA0020-100200
	> 3		-
12	-	MFHA0030-100200	-



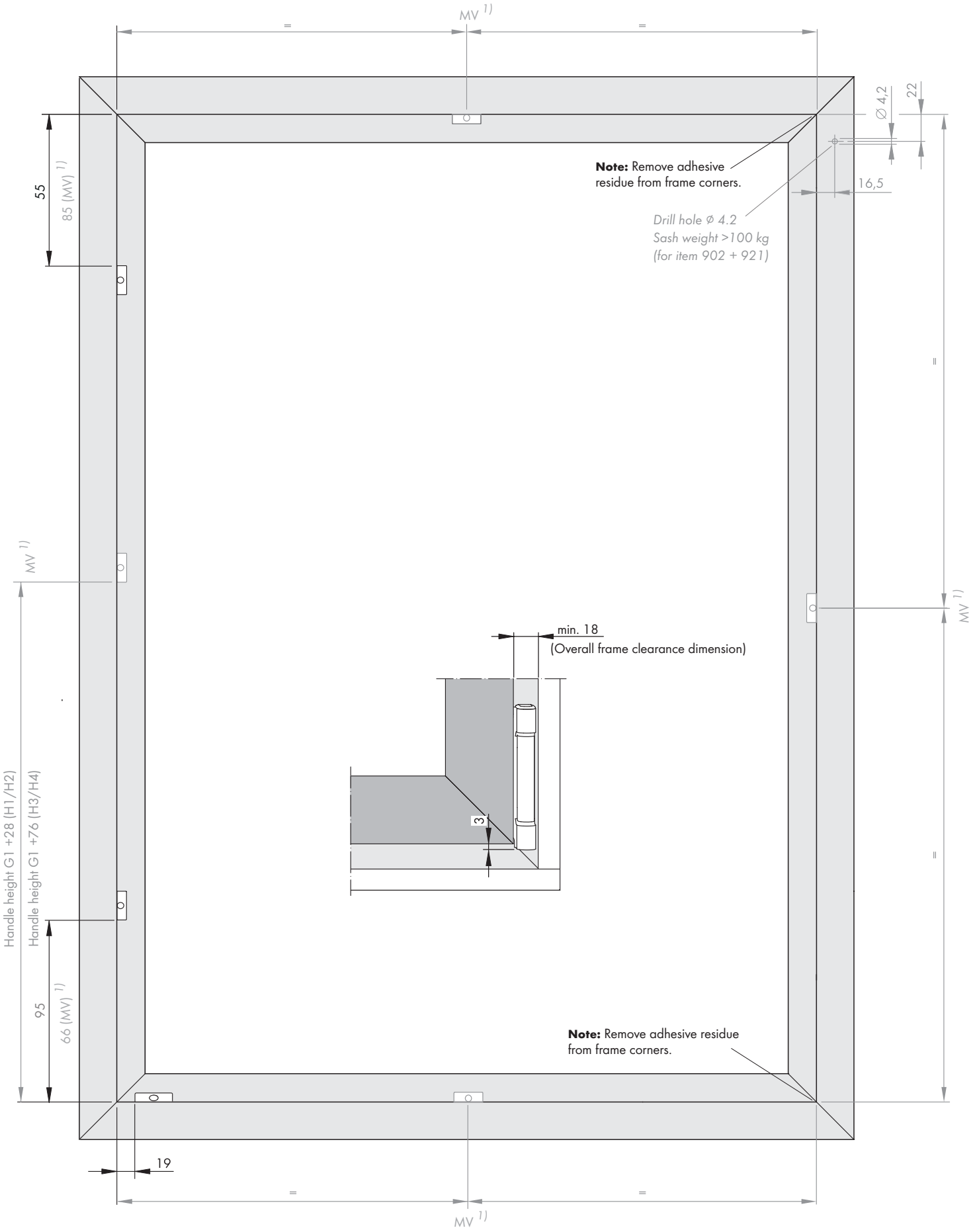
Assembly settings and installation sequence ① to ⑥





1) Remove the rebate seal in the hinge gap area (minimum hinge gap 5 mm).
2) For installation recommendation for the centre locks and additional locks see page 3.

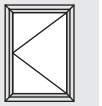
ALU 5200-D BD 5 130 kg *Frame dimensions*



1) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-D (150 kg)

Turn only hardware for hinge clearance (BD) 5 mm



BD 5

Size range (depends on hardware)

		Windows min.	Windows max.	Patio doors max.
Sash width	(mm)	600 to 1600		1300
Sash height	(mm)	550 to 2000		2600
Sash weight	(kg)	**max. 150**		**max. 150**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagram:
- Sash weight up to max. 150 kg: Document no. H58.AWDLMS005EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Adjustment options:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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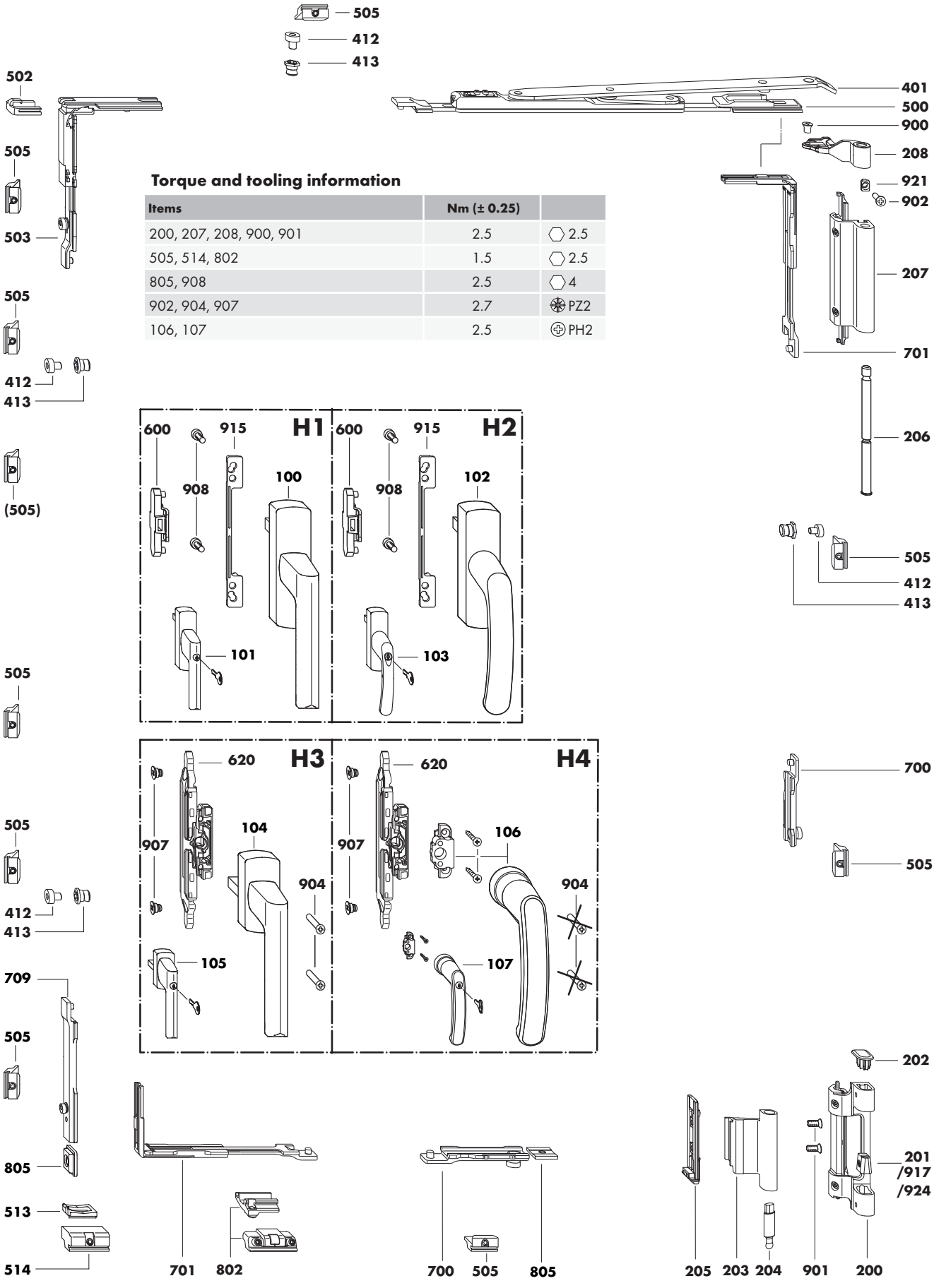


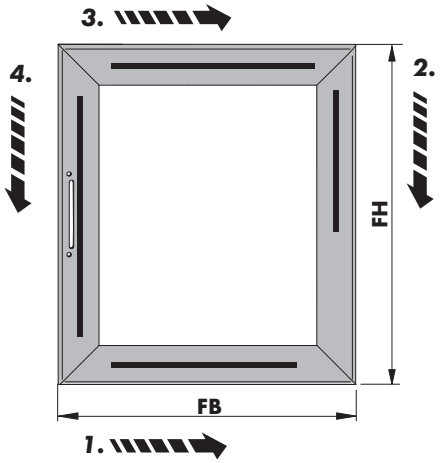
Torque and tooling information

Items	Nm (± 0.25)	
200, 207, 208, 900, 901	2.5	⬡ 2.5
505, 514, 802	1.5	⬡ 2.5
805, 908	2.5	⬡ 4
902, 904, 907	2.7	✱ PZ2
106, 107	2.5	⊕ PH2

ALU 5200-D BD 5 150 kg *Hardware list*

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	100	1	**Handle ALU Si-line**	*Only use in combination with coupling set*	*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
	101		**ALU Si-line lockable**					
H2	102		**ALU Globe**					
	103		**ALU Globe lockable**					
H3	104		**TITAN**	*Only use in combination with gear set*	*□ 7 mm x 25, cam Ø 10 mm Only use in combination with gear set*			
	105		**TITAN lockable**					
H4	106		**ALU Globe RR**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en in ALU planning manual*			
	107		**ALU Globe RR lockable**					
		1	**Hinge side ALU 5200 BD 5**	**silver**	**MMBS0230-525010**	**1**	**MMBS0230-525020**	**10**
				white *RAL 9016*	**MMBS0230-504010**	**1**	**MMBS0230-504020**	**10**
				black *RAL 9005*	**MMBS0230-523010**	**1**	**MMBS0230-523020**	**10**
				EV 1	**MMBS0230-524010**	**1**	**MMBS0230-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0230-500120**	**5**
	200	1	Bottom hinge					
	201	1	Adjusting piece	*(replaced by item 924 with sash weight >100 kg)*				
	202	1	Cover cap					
	203	1	Corner hinge					
	204	1	Bottom hinge pin					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	208	1	Stay hinge					
	900	1	M5 x 7.5 countersunk screw					
	901	2	M5 x 8.5 countersunk screw					
	401	**1**	**Top stay ALU size 35**		**884782**	**1**	**314203**	**20**
depending on kg		**1**	**Accessories set ALU BD 5 150 kg**	*> 100 kg*	**-**	**-**	**MZBS0110-000030**	**20**
	902	1	M5 x 13 countersunk screw					
	921	1	Supporting piece					
	924	1	Adjusting piece S					
H1/H2/H3/H4		**1**	**Locking side ALU-D Stop/corner drive VSO**	*The coupling bracket (600) and cheese head screws (908) are omitted for the installation of gear set ALU*	**MMVS0410-100010**	**1**	**MMVS0410-100030**	**20**
	500	1	DK locking bolt					
	502	1	EUL clamping piece					
	503	1	Corner drive VSO					
	505	2	Striker					
	513	1	Run-up block					
	514	1	TBT run-up block					
	709	1	Locking bolt					
	805	1	Stop	*for travel restriction (FB > 1250: install horizontally)*				
	600	1	Coupling bracket	*Only use in combination with H1/H2*				
	908	2	M5 x 12 cheese head screw	*Only use in combination with H1/H2*				
H3/H4		**0...1**	**Gear set ALU (without FBS on gear)**	*Only use in combination with H3/H4 (see drawing no. H48.ZubhLS005en)*	**MMGI0090-100010**	**1**	**MMGI0090-100030**	**20**
	620	1	M6 ESG					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...1**	**MV ALU-DK/TBT**	*FB/FH > 1250 (recommendation)*	**857045**	**1**	**246979**	**20**
	505	2	Striker					
	700	1	Slider					
	701	1	VSU/BSO corner drive					
		0...4	**Locking part ALU**	*FB > 1250 / FH > 2400 (recommendation)*	**-**	**-**	**317556**	**10**
	412	1	Locking cam					
	413	1	Eccentric rivet					
	505	1	Striker					
Accessories	**802**	**0...1**	**Sash lifter ALU**	*(see drawing no. H48.ZubhLS014en)*	**MMFH0010-100010**	**1**	**MMFH0010-100030**	**20**
	915	**0...1**	**Handle support ALU**	*Only use in combination with H1/H2*	**-**	**-**	*See table on page 4*	**200**
	917	**0...1**	**AV adjusting piece**	*for compression + 0.5*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (> 100 kg; see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

Observe assembly sequence

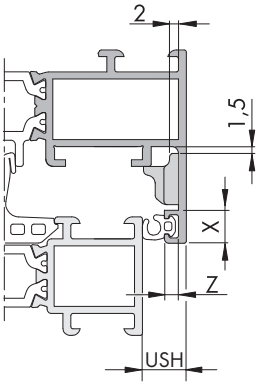


Sequence of installation in sash

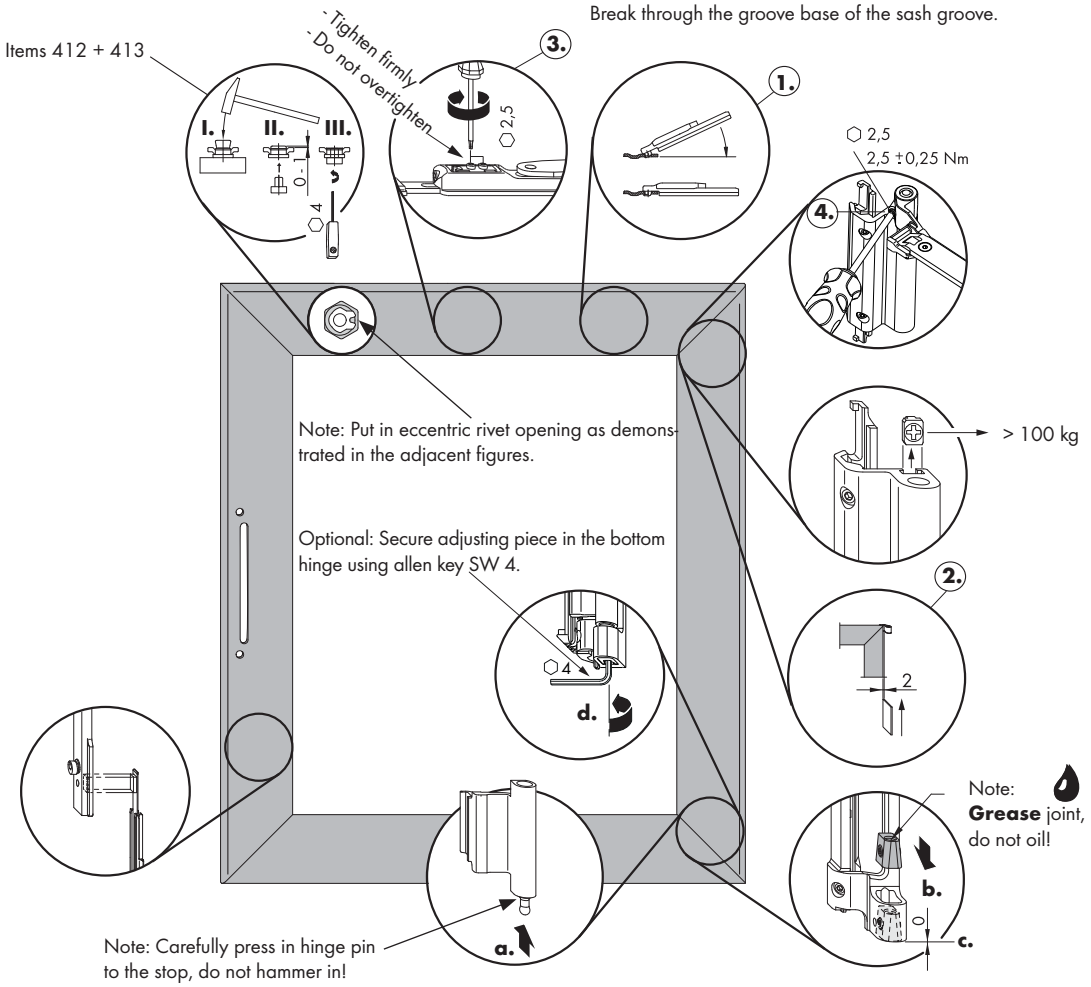
- without centre lock (**3. - 4.**)
- with centre lock (**1. - 2. - 3. - 4.**)

Design variations for handle support (item 915) (H1/H2)

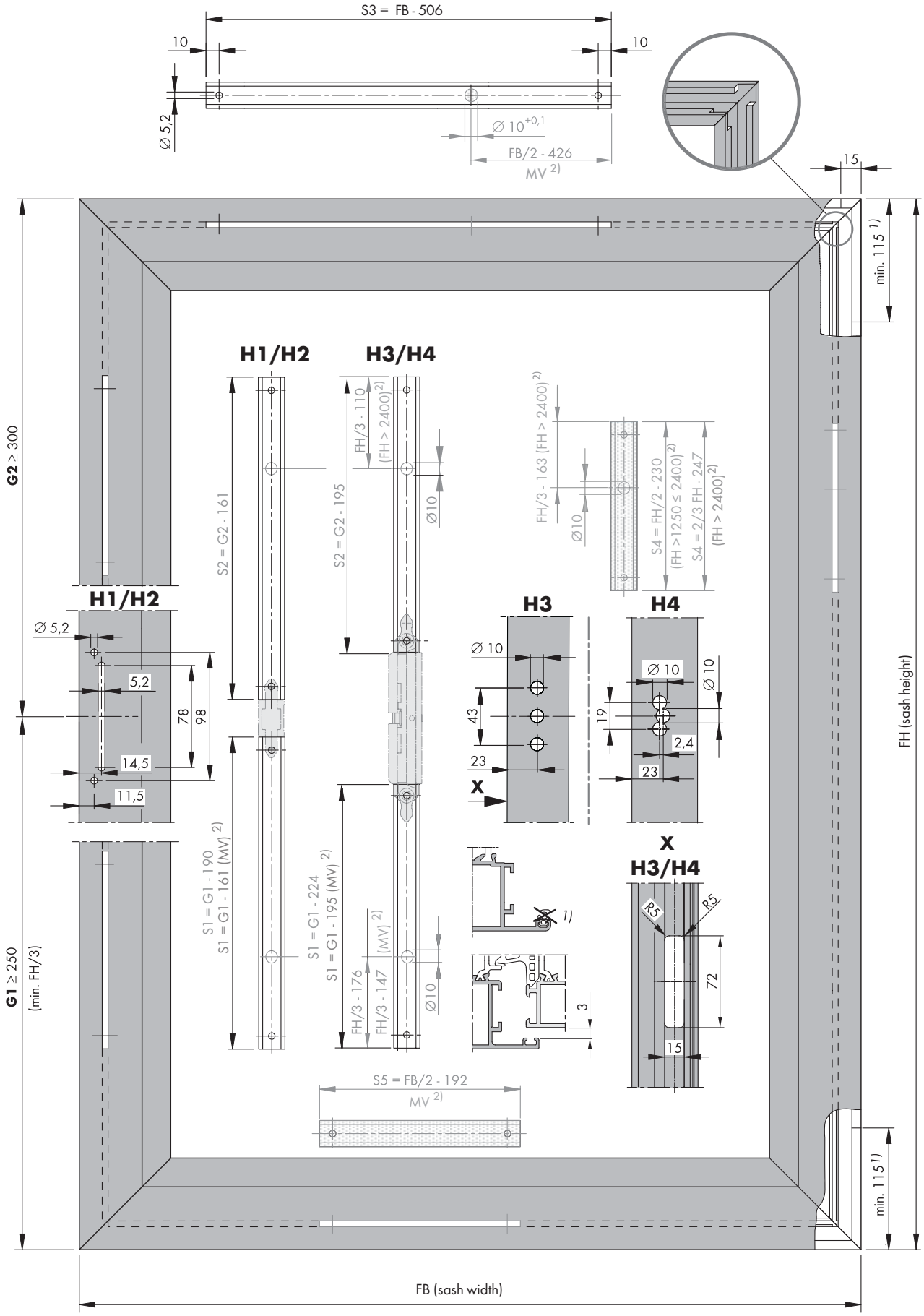
USH (mm)	Z (mm)	X ≤ 7 mm	X > 7 ≤ 8.5 mm
7 - 10	≤ 2		MFHA0010-100200
	> 2 ≤ 3	MFHA0010-100200	MFHA0020-100200
	> 3		-
12	-	MFHA0030-100200	-



Assembly settings and installation sequence ① to ④

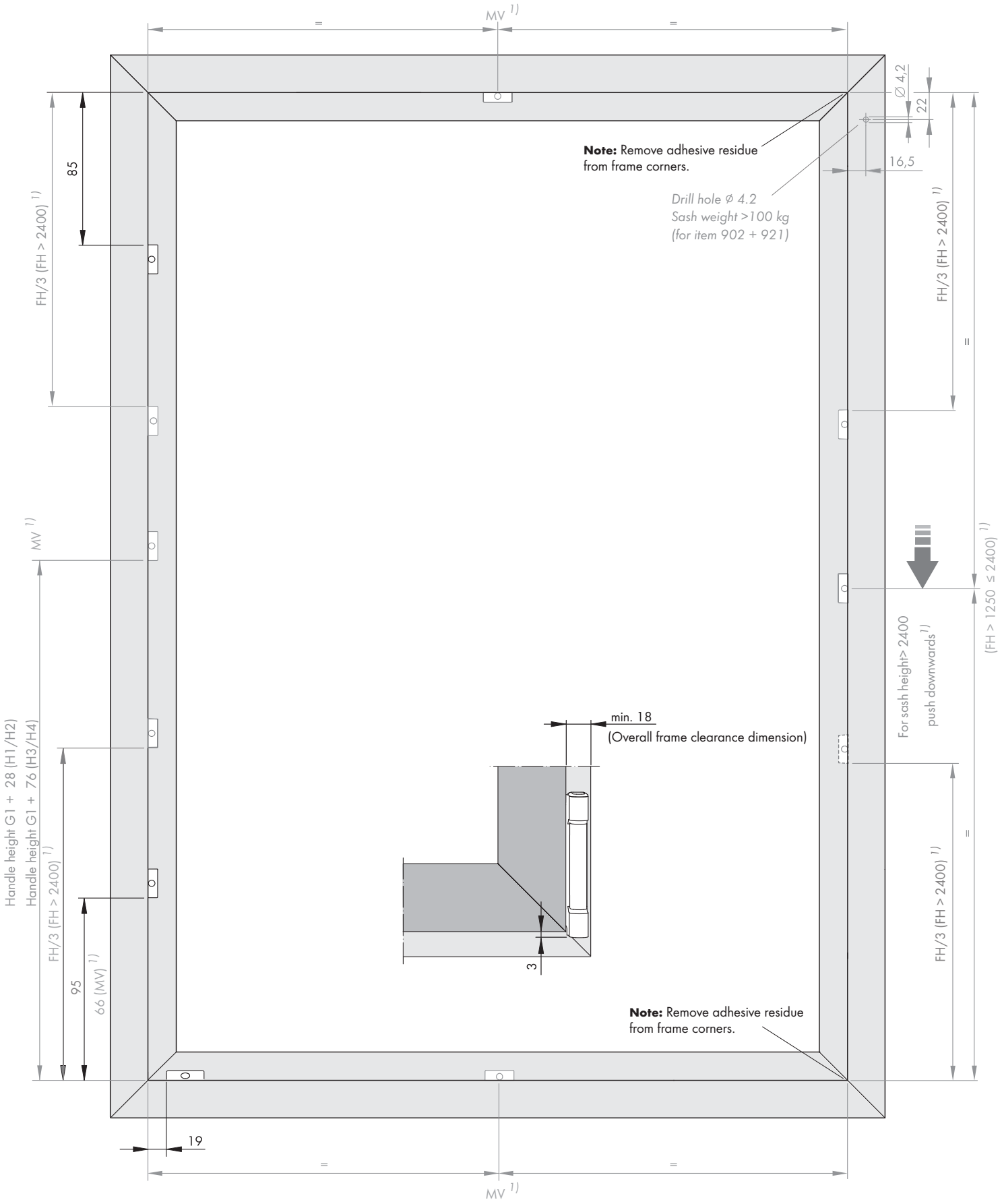


ALU 5200-D BD 5 150 kg *Sash dimensions*



1) Remove the rebate seal in the hinge gap area (minimum hinge gap 5 mm).
2) For installation recommendation for the centre locks and additional locks see page 3.

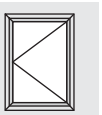
ALU 5200-D BD 5 150 kg *Frame dimensions*



1) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-D (170 kg)

Turn only hardware for hinge clearance (BD) 5 mm



BD 5

Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	French doors max.
Sash width	(mm)	600 to 1600		1300
Sash height	(mm)	1100 to 2000		2600
Sash weight	(kg)	**max. 170**		**max. 170**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 170 kg: Document no. H58.AWDLMS006EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Maintenance und adjustment instructions:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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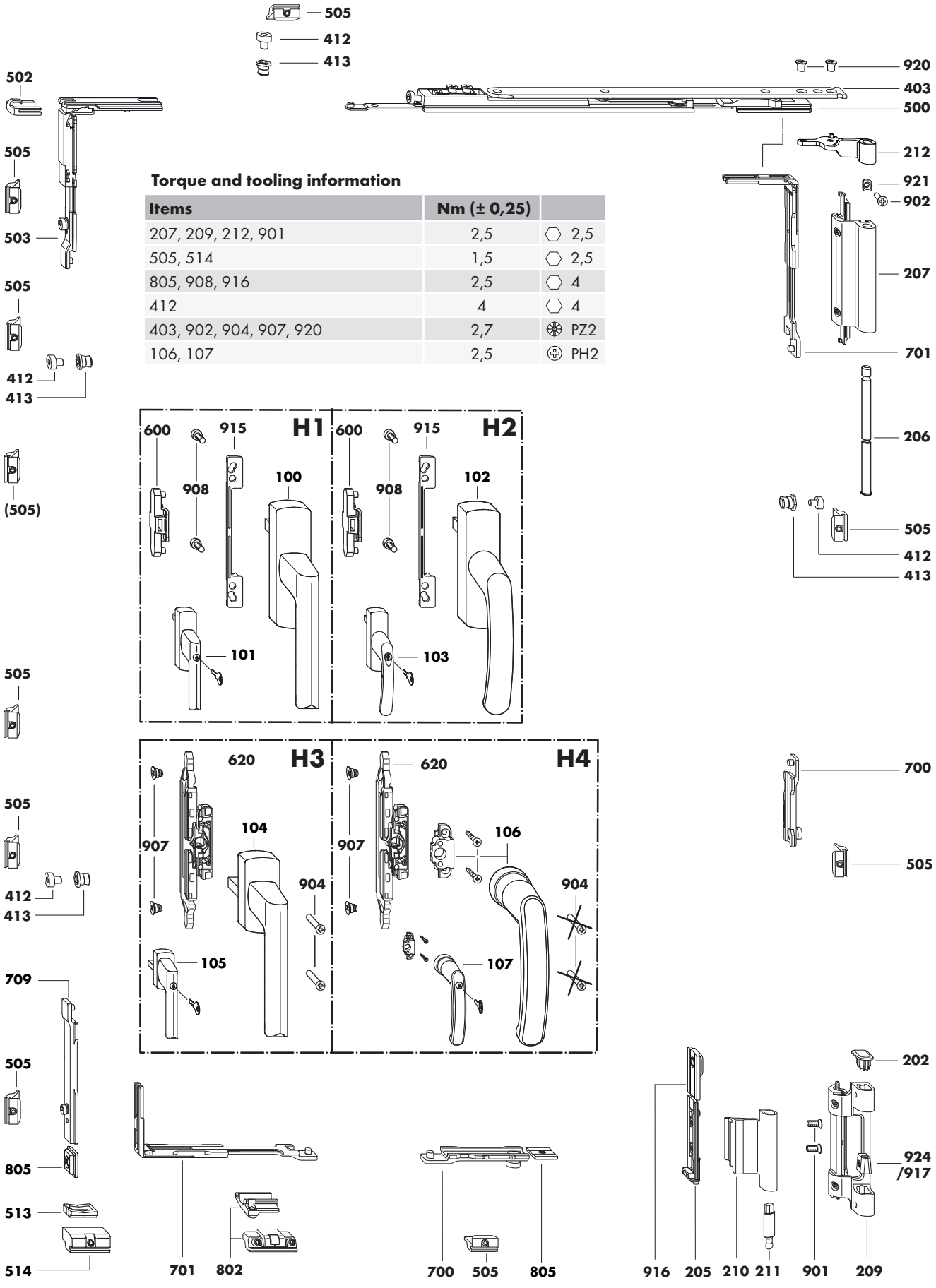
H48.5200LS023en

H48.5200LS023en/0



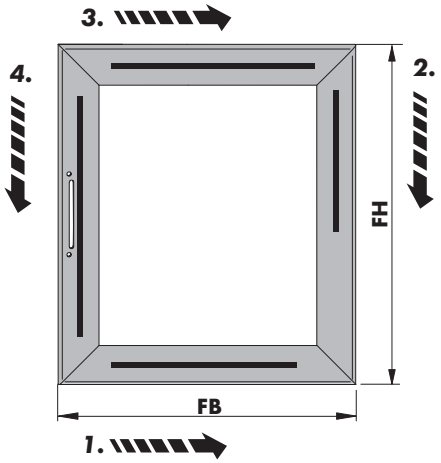
Torque and tooling information

Items	Nm (± 0,25)	
207, 209, 212, 901	2,5	⬡ 2,5
505, 514	1,5	⬡ 2,5
805, 908, 916	2,5	⬡ 4
412	4	⬡ 4
403, 902, 904, 907, 920	2,7	✱ PZ2
106, 107	2,5	⊕ PH2

ALU 5200-D BD 5 170 kg *Hardware list*

	Item	Piece	Designation		Material no.	VE	Material no.	VE
H1	**100**		**Handle ALU Si-line**		*See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual*			
	101		**ALU Si-line lockable**	*Only use in combination with coupling set*				
H2	**102**		**ALU Globe**					
	103	**1**	**ALU Globe lockable**					
H3	**104**		**TITAN**		□ *7 mm x 25, cam Ø 10 mm Only use in combination with gear set*			
	105		**TITAN lockable**	*Only use in combination with gear set*				
H4	**106**		**ALU Globe RR**		*See Handle ALU Globe RR, document no.: H48.ZubhLS006en in ALU planning manual*			
	107		**ALU Globe RR lockable**					
		1	**Hinge side ALU 5200 170 BD 5**	**silver**	**MMBS0240-525010**	**1**	**MMBS0240-525020**	**10**
				white *RAL 9016*	**MMBS0240-504010**	**1**	**MMBS0240-504020**	**10**
				black *RAL 9005*	**MMBS0240-523010**	**1**	**MMBS0240-523020**	**10**
				EV 1	**MMBS0240-524010**	**1**	**MMBS0240-524020**	**10**
				Mill finish	**-**	**1**	**MMBS0240-500120**	**5**
	202	1	Cover cap					
	205	1	Clamping piece E					
	206	1	Hinge pin					
	207	1	Top hinge					
	209	1	Bottom hinge ALU 5200-170					
	210	1	Corner hinge ALU 5200-170					
	211	1	Bottom hinge pin ALU 5200-170					
	212	1	Stay hinge ALU 5200-170					
	901	2	M5 x 8.5 countersunk screw	*(blue thread protection)*				
	902	1	M5 x 13 countersunk screw					
	916	1	Long stop					
	920	2	Countersunk screw M5 x 7 PZ2	*(green thread protection)*				
	921	1	Supporting piece					
	924	1	Adjusting piece S					
	403	**1**	**Top stay ALU-DK size 30**		**MSKK0020-000010**	**1**	**MSKK0020-000030**	**20**
H1/H2/H3/H4		**1**	**Locking side ALU-D Stop/corner drive VSO**	*The coupling bracket (600) and cheese head screws (908) are omitted for the installation of gear set ALU*	**MMVS0410-100010**	**1**	**MMVS0410-100030**	**20**
	500	1	DK locking bolt					
	502	1	EUL clamping piece					
	503	1	Corner drive VSO					
	505	2	Striker					
	513	1	Run-up block					
	514	1	TBT run-up block					
	709	1	Locking bolt					
	805	1	Stop	*for travel restriction (FB > 1250: install horizontally)*				
	600	1	Coupling bracket	*Only use in combination with H1/H2*				
	908	2	M5 x 12 cheese head screw	*Only use in combination with H1/H2*				
H3/H4		**0...1**	**Gear set ALU (without FBS on gear)**	*Only use in combination with H3/H4 (see drawing no. H48.ZubhLS005en)*	**MMGI0090-100010**	**1**	**MMGI0090-100030**	**20**
	620	1	M6 ESG					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
dependent on system		**0...2**	**MV ALU-DK/TBT**	*FB/FH > 1250 (recommendation)*	**857045**	**1**	**246979**	**20**
	505	2	Striker					
	700	1	Slider					
	701	1	VSU/BSO corner drive					
		0...4	**Locking part ALU**	*FB > 1250 / FH > 2400 (recommendation)*	**-**	**-**	**317556**	**10**
	412	1	Locking cam					
	413	1	Eccentric rivet					
	505	1	Striker					
Accessories	**802**	**0...1**	**Sash lifter ALU**	*(see drawing no. H48.ZubhLS014en)*	**MMFH0010-100010**	**1**	**MMFH0010-100030**	**20**
	915	**0...1**	**Handle support ALU**	*Only use in combination with H1/H2*	**-**	**-**	*See table on page 4*	**200**
	917	**0...1**	**AV adjusting piece**	*for compression + 0.5*	**MXBS0100-000010**	**1**	**MXBS0100-000030**	**20**
	-	**0...1**	**Jig ALU-DK 200**	*for top stay size 30 (item 403) (see page 5)*	**MASB0010-500010**	**1**	**-**	**-**
	-	**0...1**	**Jig ALU 5200 additional screw connection**	*for items 921 and 902 (see page 6)*	**MARB0050-000010**	**1**	**-**	**-**

Observe assembly sequence

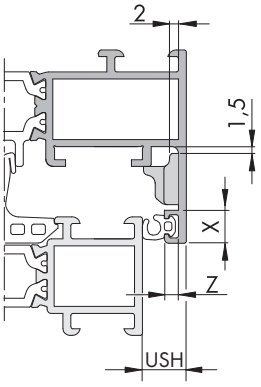


Sequence of installation in sash

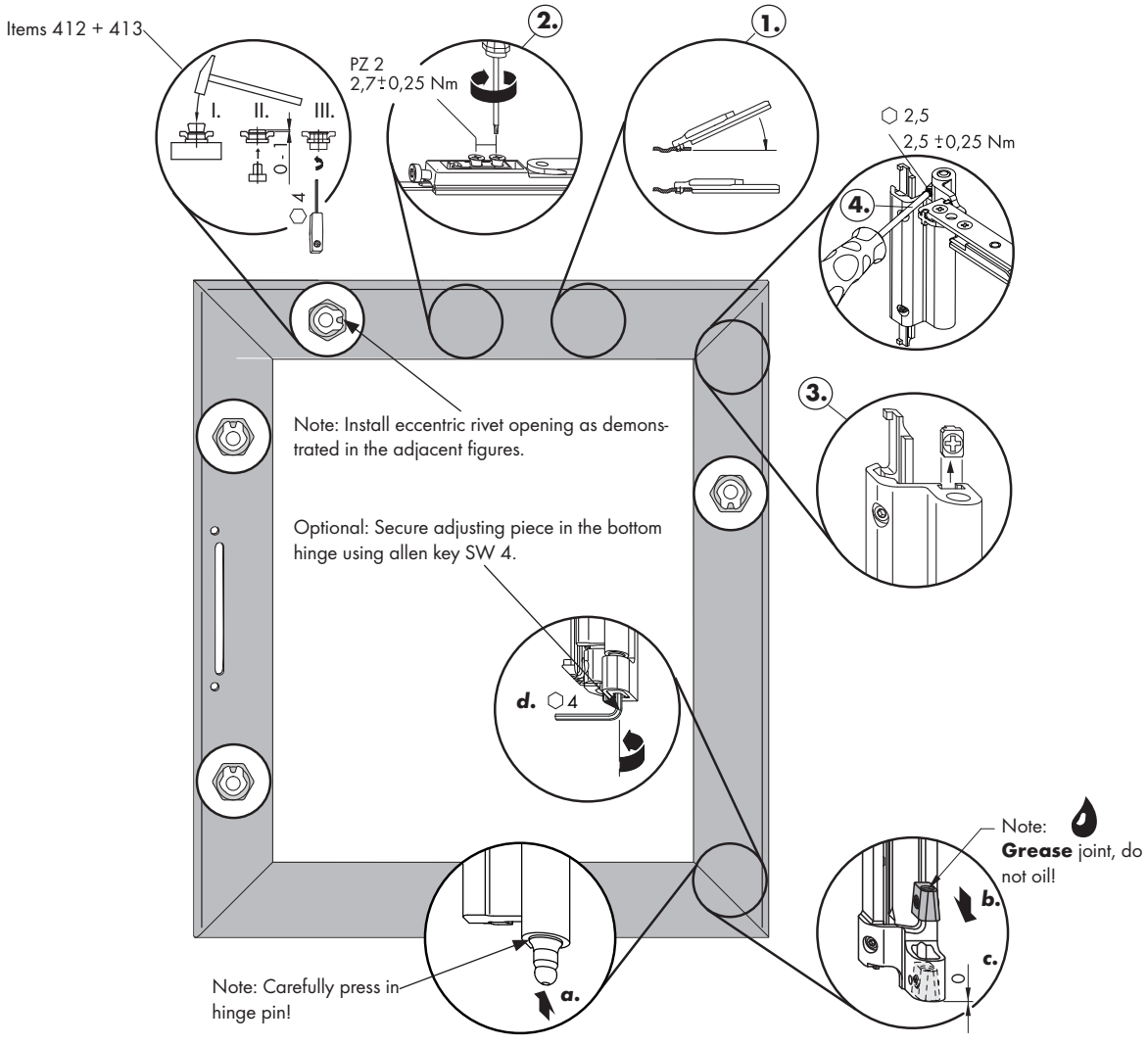
- without centre lock (**3. - 4.**)
- with centre lock (**1. - 2. - 3. - 4.**)

Design variations for handle support (item 915) (H1/H2)

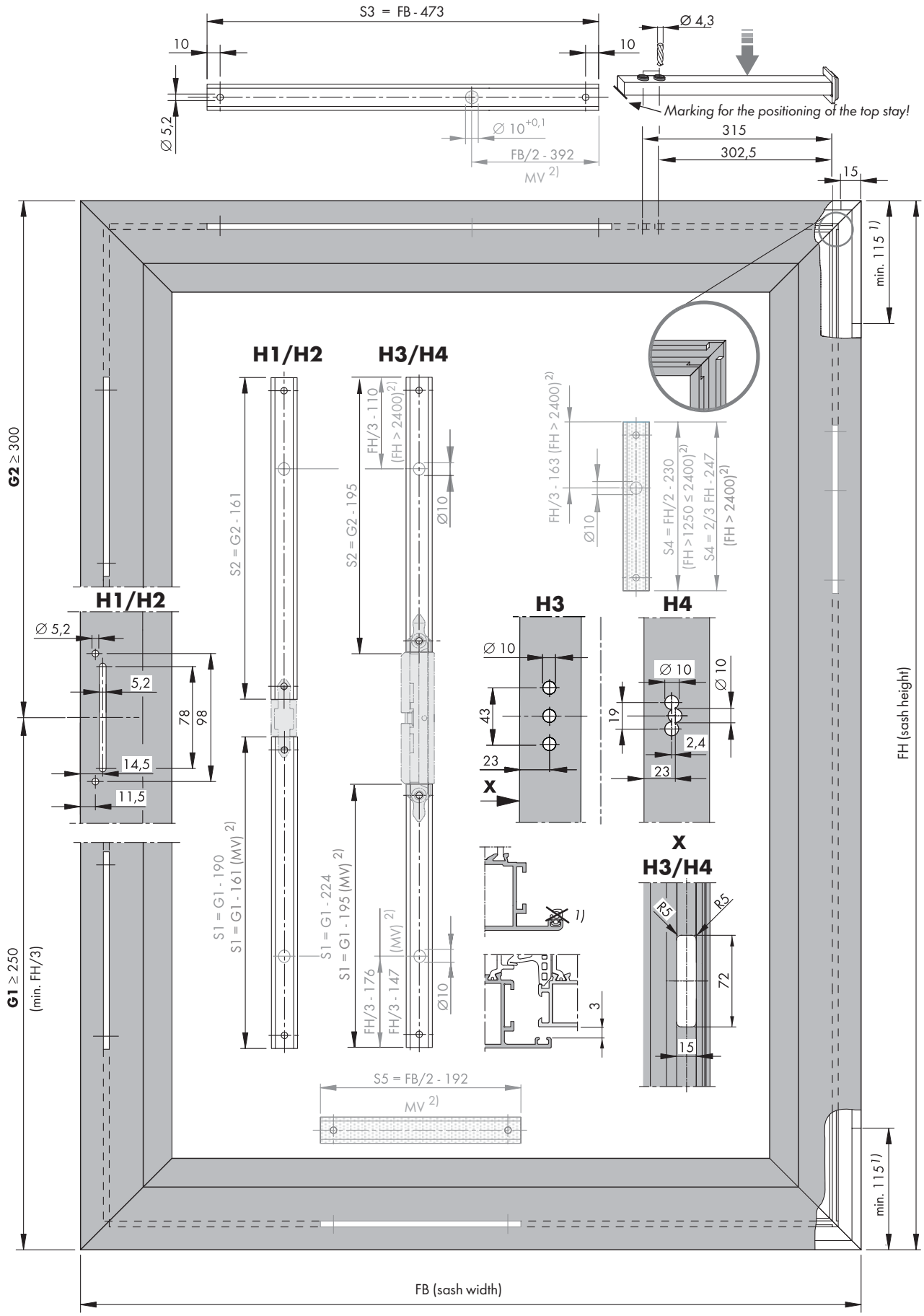
USH (mm)	Z (mm)	X ≤ 7 mm	X > 7 ≤ 8.5 mm
7 - 10	≤ 2		MFHA0010-100200
	> 2 ≤ 3	MFHA0010-100200	MFHA0020-100200
	> 3		-
12	-	MFHA0030-100200	-



Assembly settings and installation sequence ① to ④



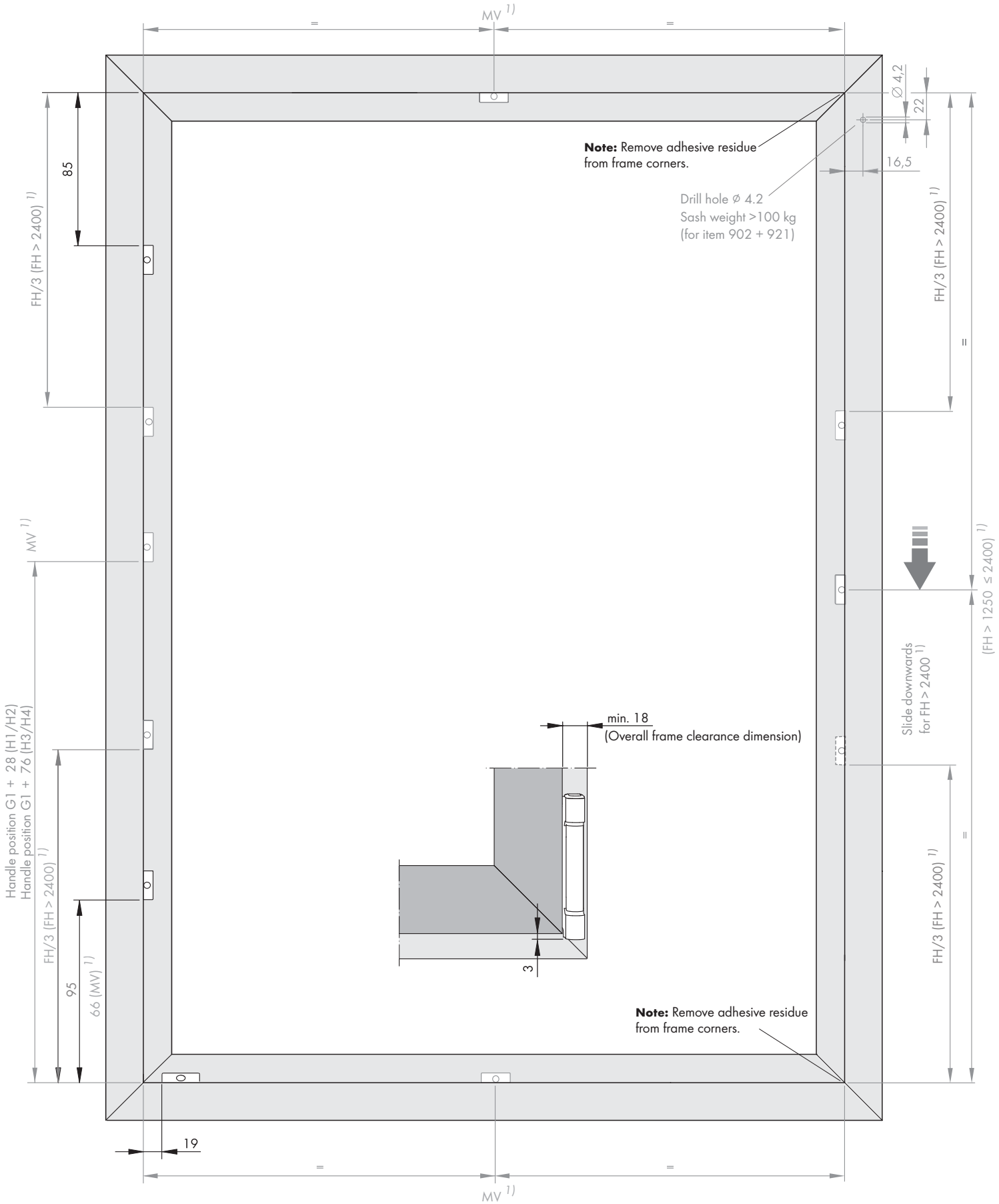
ALU 5200-D BD 5 170 kg *Sash dimensions*



1) Remove the rebate seal in the hinge gap area (minimum hinge gap 5 mm).

2) For installation recommendation for the centre locks and additional locks see page 3.

ALU 5200-D BD 5 170 kg *Frame dimensions*



1) For installation recommendation for the centre locks and additional locks see page 3.

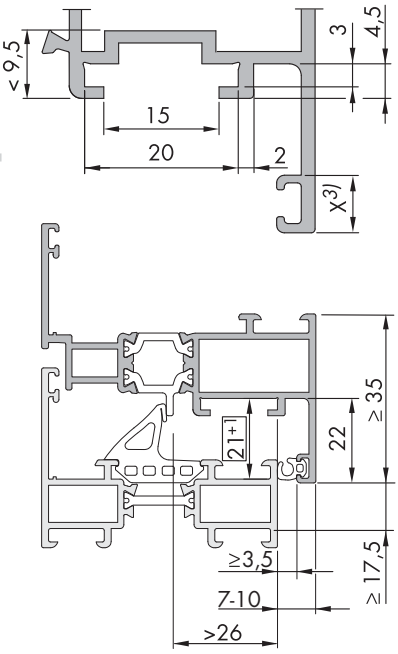
LM 4200-DK

Clampable rotating tilt fitting for
aluminium windows and portal doors
Hardware certified in accordance with ***QM 328***

Further details and specifications/information regarding the product and liability (guidelines: VHBH, TBDK and VHBE) can be found in the aluminium planning manual (H4006.3042EN) and ***must*** *be observed.*

All dimensions given are final dimensions after the surface of the sections has been treated (painted, power coated etc.).

Sash and frame dimensions

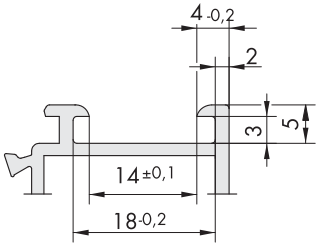


Correct use

Profile selection/alignment

Frame designs

A0004



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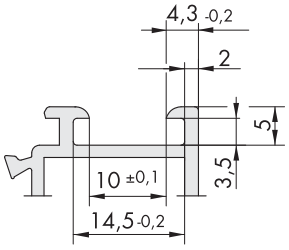

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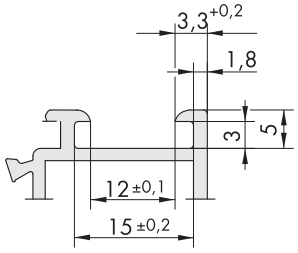
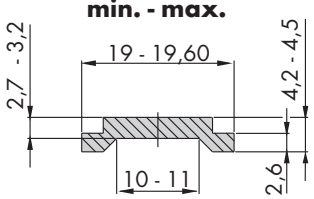


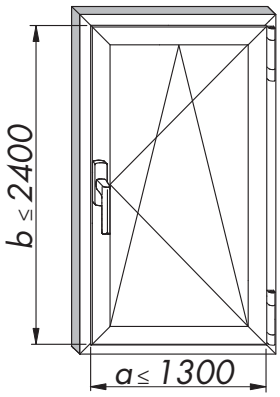
Operating rod dimensions min. - max.

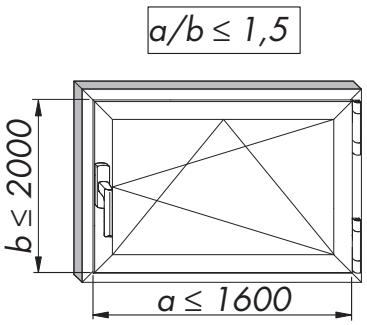


All dimensions in mm

Sash width [1]	(a)	min. 365 - max. 1600
Sash height [1]	(b)	min. 550 - max. 2400
Sash weight [1]	(⛁)	max. 100/130 kg [2]

1) See diagram on page 4.
2) Using bag "accessory LM 4200 130 kg" and "additional stay LM", a ≥ 1,020 mm.
3) See table on page 3.





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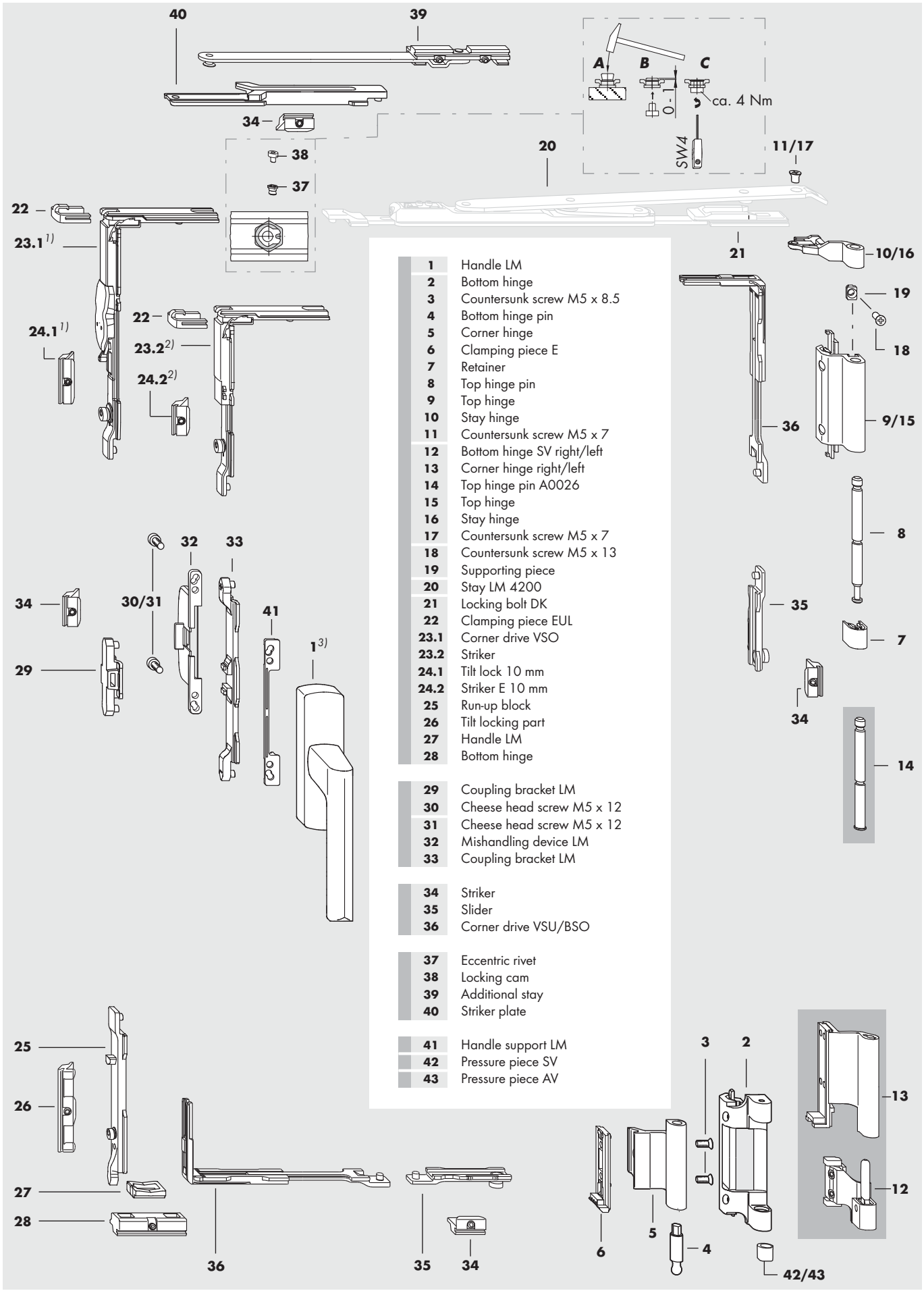
Assembly Instructions

H48.4200LS001en

Technical specifications and colours are subject to change

H48.4200LS001en_0_2012-07

LM 4200-DK *Hardware layout*



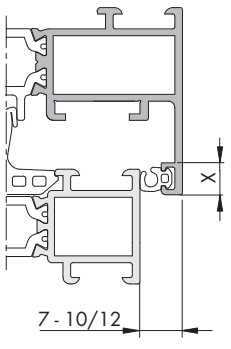
1	Handle LM
2	Bottom hinge
3	Countersunk screw M5 x 8.5
4	Bottom hinge pin
5	Corner hinge
6	Clamping piece E
7	Retainer
8	Top hinge pin
9	Top hinge
10	Stay hinge
11	Countersunk screw M5 x 7
12	Bottom hinge SV right/left
13	Corner hinge right/left
14	Top hinge pin A0026
15	Top hinge
16	Stay hinge
17	Countersunk screw M5 x 7
18	Countersunk screw M5 x 13
19	Supporting piece
20	Stay LM 4200
21	Locking bolt DK
22	Clamping piece EUL
23.1	Corner drive VSO
23.2	Striker
24.1	Tilt lock 10 mm
24.2	Striker E 10 mm
25	Run-up block
26	Tilt locking part
27	Handle LM
28	Bottom hinge
29	Coupling bracket LM
30	Cheese head screw M5 x 12
31	Cheese head screw M5 x 12
32	Mishandling device LM
33	Coupling bracket LM
34	Striker
35	Slider
36	Corner drive VSU/BSO
37	Eccentric rivet
38	Locking cam
39	Additional stay
40	Striker plate
41	Handle support LM
42	Pressure piece SV
43	Pressure piece AV

LM 4200-DK *Hardware list*

	Item	Design Left	Design Right	Description			Material no.		Material no.
Generally required	1	1		**Handle LM**			See handle overview LM	Drawing no.: LMen1337	
	2-11	1		**BS LM 4200**	**Silver**	1	**MMBS0010-525010**	10	**MMBS0010-525020**
		1			**Brown**	1	**MMBS0010-533010**	10	**MMBS0010-533020**
		1			**White** *RAL 9010*	1	**MMBS0010-503010**	10	**MMBS0010-503020**
		1			**White** *RAL 9016*	1	**MMBS0010-504010**	10	**MMBS0010-504020**
		1			**Black** *RAL 9005*	1	**MMBS0010-523010**	10	**MMBS0010-523020**
		1			**EV1**	1	**MMBS0010-524010**	10	**MMBS0010-524020**
		1			**Mill finish**	–	–	5	**246887**
	12-17	–	1	**BS LM 4200/SV right**	**Silver**	1	**MMBS0031-525011**	10	**MMBS0031-525021**
		–	1		**Brown**	1	**MMBS0031-533011**	10	**MMBS0031-533021**
		–	1		**White** *RAL 9016*	1	**MMBS0031-504011**	10	**MMBS0031-504021**
		–	1		**Black** *RAL 9005*	1	**MMBS0031-523011**	10	**MMBS0031-523021**
		1	–	**BS LM 4200/SV left**	**Silver**	1	**MMBS0032-525011**	10	**MMBS0032-525021**
		1	–		**Brown**	1	**MMBS0032-533011**	10	**MMBS0032-533021**
		1	–		**White** *RAL 9016*	1	**MMBS0032-504011**	10	**MMBS0032-504021**
		1	–		**Black** *RAL 9005*	1	**MMBS0032-523011**	10	**MMBS0032-523021**
	18-19	0...1		**Accessories LM 4200 130 kg**	*Sash weight 100 kg and up*	1	–	20	**247037**
	20	1		**Stay LM 4200** *1) up to max. 100 kg sash weight*	*Size* 20[1)]	*a (in mm)* 365 to 600	1	**884805**	20	**273098**
					35	601 to 1,250	1	**884782**	20	**314203**
				2) with additional stay LM	35[2)]	1,251 to 1,600	1	**884782**	20	**314203**
				3) 100 - 130 kg with additional stay LM	35[3)]	1,020 to 1,600	1	**884782**	20	**314203**
	21-28	0...1		**VS LM-DK FBS-EUL KPS**			1	**MMVS0310-100010**	20	**MMVS0310-100030**
		0...1		**VS LM-DK KPS**			1	**MMVS0250-100010**	20	**MMVS0250-100030**
	29-30	1		**Coupling set LM A0156**			1	**MMKL0060-100010**	20	**MMKL0060-100030**
	31-33	0...1		**Coupling set FBS-G** **9 mm**			1	**MMKL0030-100010**	20	**MMKL0030-100030**
		0...1		**10 mm**			1	**MMKL0010-100010**	20	**MMKL0010-100030**
		0...1		**USH 12 mm**			1	**MMKL0040-100010**	20	**MMKL0040-100030**
	34-36	0...2		**MV LM 4200-DK**	*a/b ≥ 1,250 mm*		1	**857045**	20	**246979**
	37-40	0...1		**Additional stay LM 4200**	*a ≥ 1,251 mm with stay SZ 35 (> 100 kg a ≥ 1,020 mm)*		1	**857076**	10	**247006**
	Accessories									
	41	0...1		**Handle support LM**	*Only for use with VS LM-DK FBS-EUL KPS*		–	–	200	*See table*
	42	0...1		**Pressure piece SV** *(only for BS LM 4200)*	*For width adjustment ± 0.8 mm*		1	**818138**	20	**222041**
	43	0...1		**Pressure piece AV** *(only for BS LM 4200)*	*For width pressure adjustment ± 0.5 mm*		1	**855133**	20	**249796**

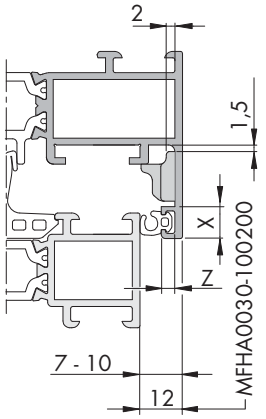
Design variations for coupling set FBS-G (31 - 33)

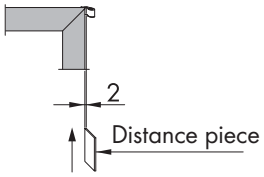
USH	X	Material no.
7 - 10 mm	≤ 8.5 mm	MMKL0030-100030
7 - 10 mm	≤ 7.5 mm	MMKL0010-100030
12 mm	≤ 7 mm	MMKL0040-100030



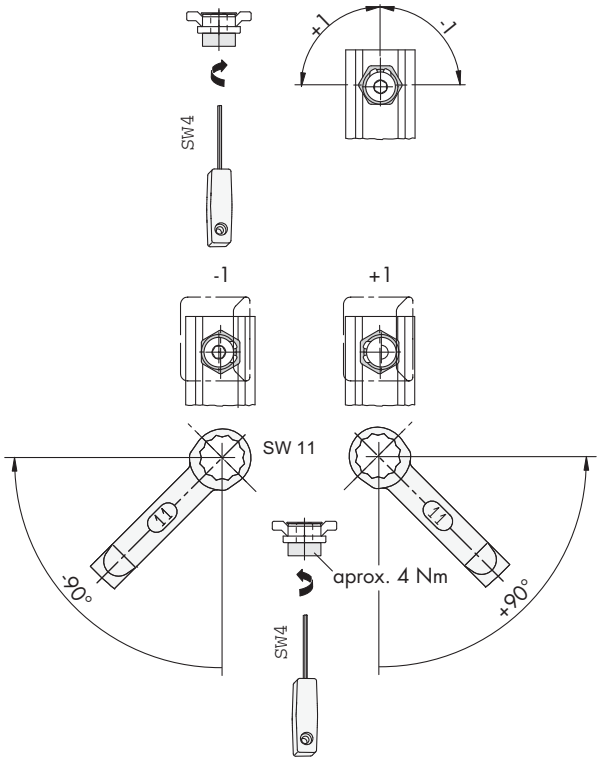
Design variations for handle support (41)

USH	Z	X _ < 7 mm	X 7.1 - 8.5 mm
7 - 10 mm	< 2 mm	MFHA0010-100200	MFHA0010-100200
7 - 10 mm	2.1 - 3 mm	MFHA0010-100200	MFHA0020-100200
7 - 10 mm	> 3 mm	MFHA0010-100200	-
12 mm	-	MFHA0030-100200	-





Description	
Assembly device for mounting stays	*Manufacture own suitable distance piece with 2 mm thickness and insert between sash frames and stay hinge. Fasten stay.*
Required tools	*See assembly instructions LMen1200*
Pressure adjustment approx. ±1	*For eccentric rivet (37) and locking cam (38)*



Further adjustment options	*See maintenance/care instructions Order no. 19748*

Abbreviations

The following abbreviations are used in these assembly instructions:

a	Sash width
AV	Pressure adjustment
b	Sash height
b1	Handle height, bottom
b2	Handle height, top
BS	Hinge side
BSO	Hinge side, top
BSU	Hinge side, bottom
EV1	Anodised
ESLG	Brushed stainless steel-look
FBS-G	Mishandling device on handle
FBS-EUL	Mishandling device in corner drive
KPS	Tilt point vertical
MV	Centre lock
Nm	Torque in Nm
SV	Side adjustment
SW	Key dimension
VS	Locking side
VSO	Locking side, top
VSU	Locking side, bottom
USH	Rebate height
S1	Operating rod, locking side bottom
S2	Operating rod, locking side top
S3	Operating rod, top horizontal
S4	Operating rod, hinge side
S5	Operating rod, bottom horizontal

Diagram for determining allowable sash size

For glass thicknesses less than 12 mm, all sash sizes which are within the size range and do not exceed a width to height ratio FB/FH of 1.5 are allowed.
Maximum allowable sash weight: 130 kg

Glass thickness (mm)	*Weight (kg/m^2)*
28	70
24	60
20	50
16	40
12	30

Example (—·—): Sash height = 1,800 mm
Glass thickness = 24 mm
Maximum allowable sash width = **1,205 mm**

All text passages marked with ">" are for sash width and sash height ≥ 1,250 mm.

Preparation

A Make punch out for handle LM (**1**).
B Open the operating rod guiding groove.
C Remove the rebate seal in the area through which the hinges pass and rework the sash profile according to the specifications on page 6.
D Rework operating rods S1 - S5 according to the specifications on page 6.
> E Install eccentric rivet (**37**) and locking cam (**38**) on S3 as shown (see page 2).

Sash

> A Insert slider (page 2: **35**) with operating rod S4 and corner drive VSU/BSO (**36**) vertically on the BSO.
B Insert slider DK (**21**), stay LM 4200 (**20**) and operating rod S3 horizontally on the VSO.
> C Insert locking bolt DK (**21**), stay LM 4200 (**20**), operating rod S3 and striker plate (**40**) horizontally on the VSO.
> D Couple locking bolt DK (**21**) with corner drive VSU/BSO (**36**). Make sure positioning of the coupling piece for corner drive VSU/BSO (**36**) is correct.
E Attach stay hinge (**10/16**) and stay LM 4200 (**20**) using countersunk screw M5 x 7 (**11/17**) (torque 2.5 ± 0.25 Nm).
F Position stay hinge (**10/16**) according to specifications on page 4 and fasten stay LM 4200 (**20**) with punching screws.
> G Insert slider (**35**) with operating rod S5 and corner drive VSU/BSO (**36**) vertically on the VSU.
H Insert tilt lock 10 mm (**25**), operating rod S1, coupling bracket LM (**29/33**), operating rod S2 and corner drive VSO (**23.1/23.2**) vertically on the VSO.
> I Couple tilt lock 10 mm (**25**) with corner drive VSU/BSO (**36**). Make sure positioning of coupling piece for corner drive VSU/BSO (**36**) is correct (Figure 1).
J Couple corner drive VSO (**23.1/23.2**) with operating rod S3 "**>**striking plate (**40**)" and secure with clamping piece EUL (**22**).
K Insert run-up block (**27**) horizontally on the VSU.
FBS-EUL ***L*** Attach handle LM (**1**) with cheese head screws M5 x 12 (**30**) (torque 2.5 ± 0.25 Nm). Make sure the handle catch closes into the coupling bracket LM (**29**).
FBS-G ***L*** Attach mishandling device LM on rebate (**32**) with cheese head screws M5 x 12 (**31**) to handle LM (**1**) (torque 2.5 ± 0.25 Nm). Make sure the handle catch closes into the coupling bracket LM (**33**).
BS LM 4200 ***L*** Press bottom hinge pin (**4**) into corner hinge (**5**) DIN right or DIN left.
BS LM 4200 ***M*** Insert clamping piece E (**6**) vertically on the BSU and attach corner hinge (**5**) using countersunk screws M5 x 8.5 (**3**) (torque 2.5 ± 0.25 Nm).
BS LM 4200/SV ***N*** Insert corner hinge right/left (**13**) into the sash groove and fasten with the pre-installed countersunk screws M5 x 8.5 (torque 2.5 ± 0.25 Nm).

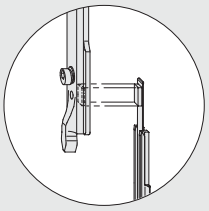


Figure 1

Frame

A For sashes weighing *more than 100 kg*, fasten the supporting piece (**19**) to the frame using countersunk screws M5 x 13 (**18**) (torque 2.5 ± 0.25 Nm) (see page 7).
BS LM 4200 ***B*** Position bottom hinge (**2**) and top hinge (**9**) and fix both in place by tightening the cheese head screws (torque 2.5 ± 0.25 Nm).
BS LM 4200/SV ***B*** Position bottom hinge SV right/left (**12**) and top hinge (**15**) and fix both in place by tightening the cheese head screws (torque 2.5 ± 0.25 Nm).
C Connect top hinge pin (**8**) with retainer (**7**) and insert into the top hinge (**9**) from underneath.
BS LM 4200 ***C*** Insert top hinge pin A0026 (**14**) into top hinge (**15**) from below.
BS LM 4200/SV ***D*** Position striker EUL-FBS (**24.1**)/striker (**24.2**), striker E 10 mm (**26**) and tilt locking part (**28**) according to specifications on page 7 and fix each in place using grub screws (torque 1.5 ± 0.25 Nm).
> E Position strikers (**34**) on the BS and VS according to specifications on page 7 and fix each in place with grub screws (torque 1.5 ± 0.25 Nm).
> F Position strikers (**34**) on the VSU and VSO according to specifications on page 7 and fix each in place with grub screws (torque 1.5 ± 0.25 Nm).
> G For sash widths from 1,251 mm to 1,600 mm and/or sash weights in excess of 100 kg (sash width min. 1,020 mm), use additional stay LM 4200 (**39**) and position according to specifications on page 7 (torque 2.5 ± 0.25 Nm).

Final installation

A Hinge the sash. Push top hinge pin (**8/14**) through and snap into place.
B Top hinge pin (**8/14**) **must** be secured in the stay hinge (**10/16**) with a grub screw (torque 2.5 ± 0.25 Nm) (see Figure 2).
C Check that the window works correctly.

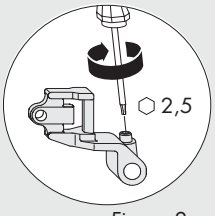


Figure 2

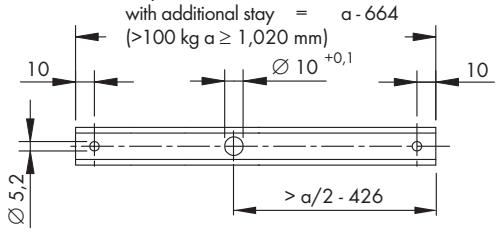
Making adjustments

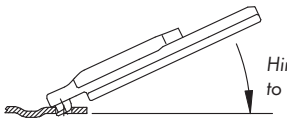
A Width adjustment:
continuous — using stay LM 4200 (**20**) +2 mm / - 3 mm
BS LM 4200 — using pressure piece SV (**42**) ±0.8 mm
BS LM 4200/SV continuous — using bottom hinge SV right/left (**12**) ±1 mm (make adjustment after glazing, under load and with the sash **open**)
B Height adjustment: after removal of the top pressure piece from the bottom hinge (**2**)
BS LM 4200 — using 4 mm hexagon socket screw in corner hinge (**5**) +1.5 / - 1 mm
for FH ≤ 1,600 mm in tilt position, for FH ≥ 1,600 mm in turn position
BS LM 4200/SV — using 4 mm hexagon socket screw in corner hinge right/left (**13**) +2 / -1 mm
C Pressure adjustment: using eccentric locking cam
BS LM 4200 — pressure piece AV (**43**) ±0.5 mm

LM 4200-DK *Sash dimensions*

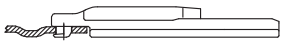
S3 Stay SZ 20 = a - 338
Stay SZ 35 = a - 506
> Stay SZ 35 with additional stay = a - 664
(>100 kg a ≥ 1,020 mm)

*All text passages marked with "**>**" are for sash width and sash height ≥ 1,250 mm.*

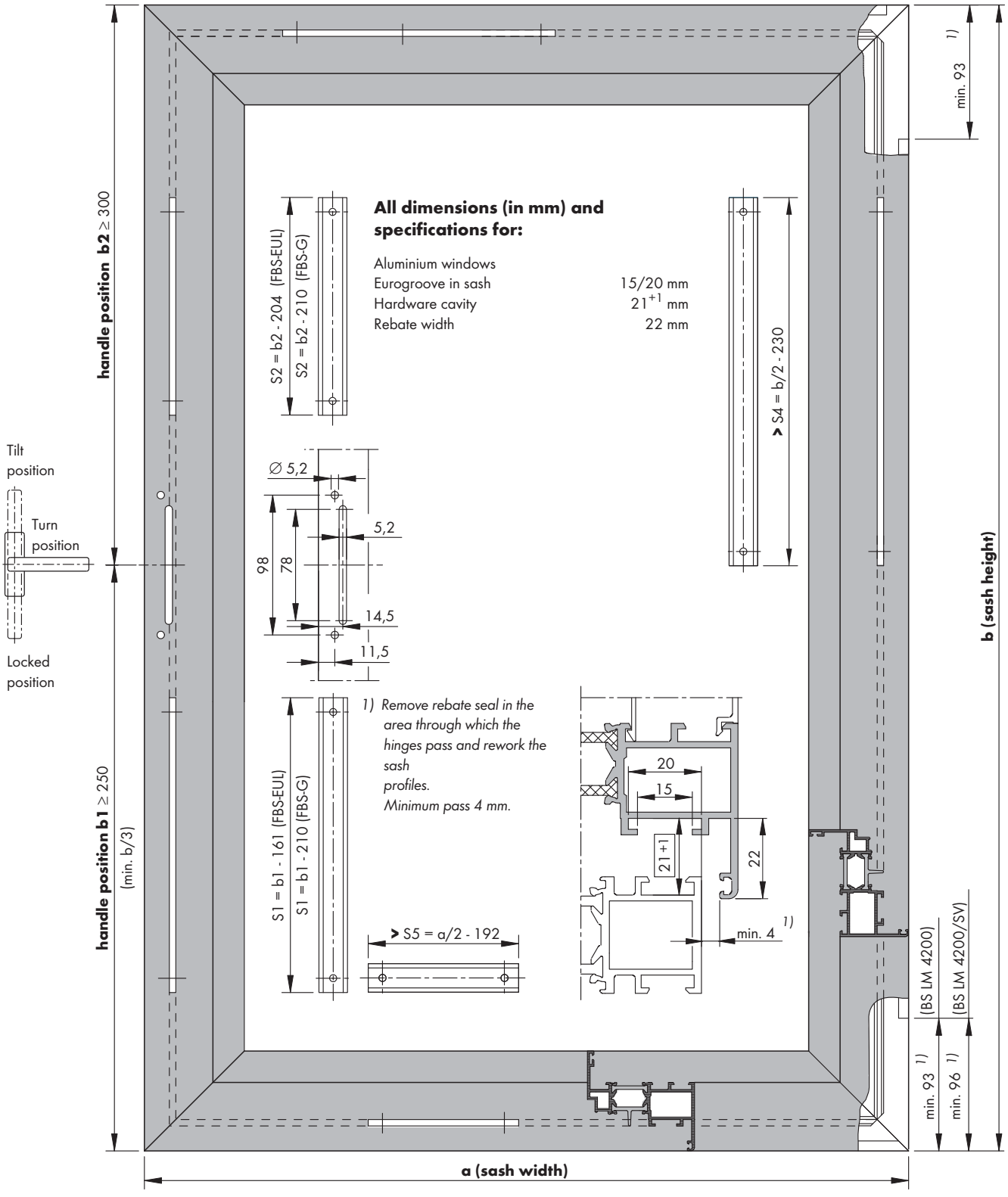




Hinge locking bolt DK (21) to the stay operating rod.



15 1)



All dimensions (in mm) and specifications for:

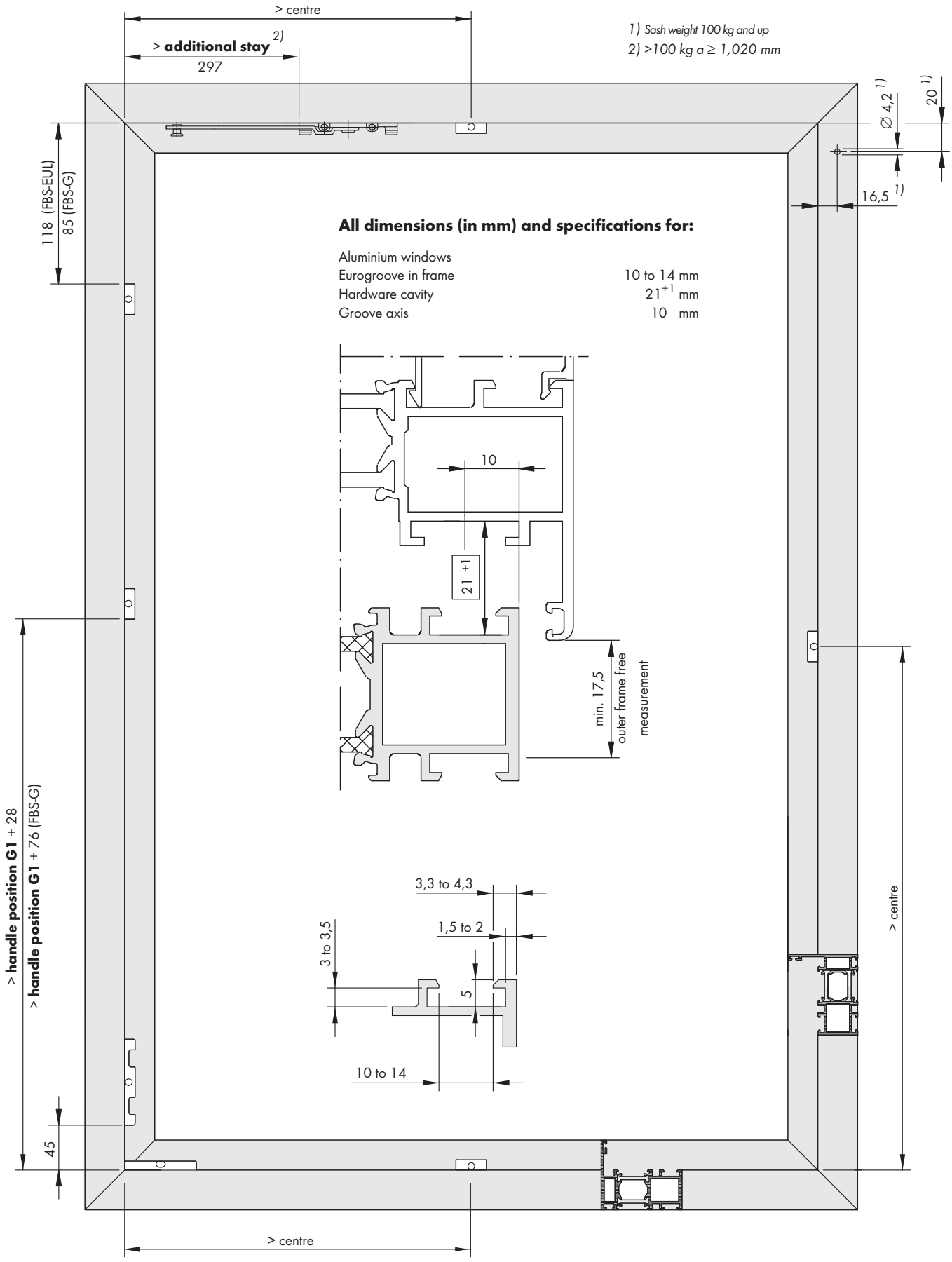
Aluminium windows	
Eurogroove in sash	15/20 mm
Hardware cavity	21^{+1} mm
Rebate width	22 mm

1) *Remove rebate seal in the area through which the hinges pass and rework the sash profiles. Minimum pass 4 mm.*

LM 4200-DK *Frame dimensions*

*All text passages marked with "**>**" are for sash width and sash height ≥ 1,250 mm.*

1) Sash weight 100 kg and up
2) >100 kg a ≥ 1,020 mm



Basic safety instructions

Correct use

The hardware described in this document is intended to be installed in an aluminium window frame by a certified window construction specialist in accordance with these instructions. The windows may only be installed vertically plumb.
The certified window construction specialist must ensure that the hardware is suitable for the application based on the specifications in these instructions and in other documents that are cited.

Avoid excessive strain.

Hinge parts may break if they are subject to excessive strain. This can cause the window sash to fall out, which may lead to serious injuries.

- If you anticipate that the hinge parts will be subject to excessive strain, limit the opening angle with an LM limit stay with friction.
  For example, excessive strain is to be expected in schools and kindergartens.

Do not mix hardware.

The hardware is technically matched. When you mix hardware from different systems or manufacturers in one window, the safe functioning of the hardware is not guaranteed. The hardware can break and cause accidents.

- Use only the hardware that is named in these instructions in combination in one window.

Treat the window surface before installation only.

- Treating the surface of the window after the hardware has been installed can reduce the functional capacity of the hardware.

Prevent damage caused by rust and deposits.

Corrosive substances, dirt and moisture can damage the hardware and cause hazards.

- Do **not** use acetic or acid cure sealants.
- Do **not** use the hardware in environments where the air contains aggressive or corrosive components.
- Keep the rebates free from deposits and dirt, especially from remnants of cement and plaster.
- Keep the hardware dry.

Always clean the hardware gently.

- Clean the hardware only with a soft cloth and mild, diluted pH-neutral cleaning agents.
- Keep the hardware from coming into contact with scouring agents or aggressive, acidic cleaning agents.
- Dry the hardware after cleaning it.

Pass the information on to the user of the window.

- Affix the user information (order no. 05083) to the installed window or door element in a place that can be seen easily.
- Provide the user with the following documents:
  - Maintenance/care instructions SI-AU order no. 19748
  - Operating instructions SI-AU order no. 05766

Disclaimer of liability

- We assume no liability for loss of function and damage to the hardware (and to the windows and portal doors that are equipped with these) resulting from insufficient tendering, failure to follow these assembly instructions or which result from force being applied to the hardware (e.g. through improper use).

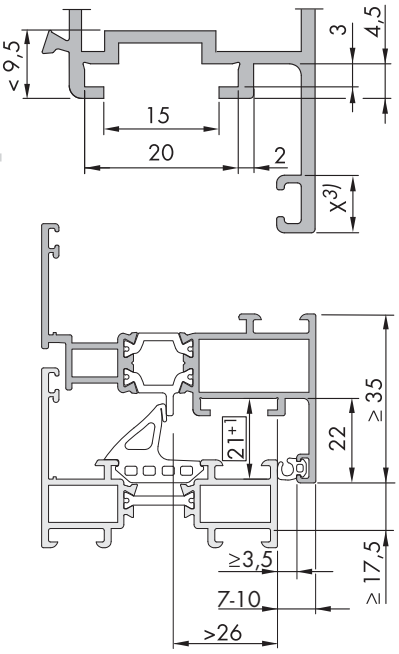
LM 4200-TBT

Clampable rotating tilt hardware for aluminium windows and portal doors (Operating sequence: tilt before turn)

Further details and specifications/information regarding the product and liability (guidelines: VHBH, TBDK and VHBE) can be found in the aluminium planning manual (H4006.3042EN) and ***must*** *be observed.*

All dimensions given are final dimensions after the surface of the sections has been treated (painted, power coated etc.).

Sash and frame dimensions



Correct use

Profile selection/alignment

Frame designs

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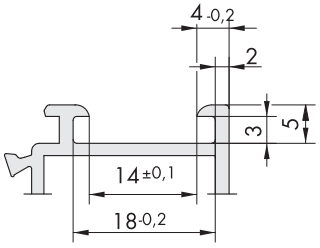

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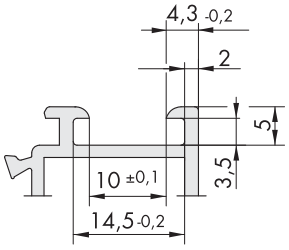

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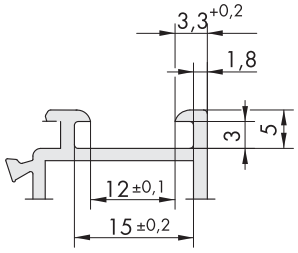
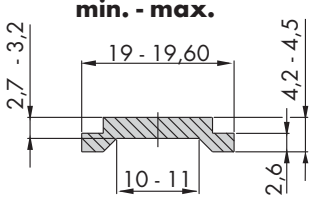


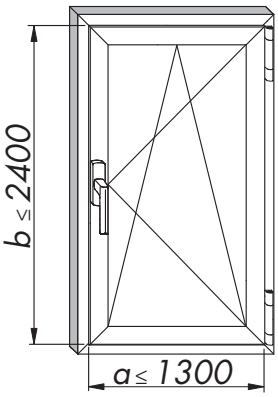
Operating rod dimensions min. - max.

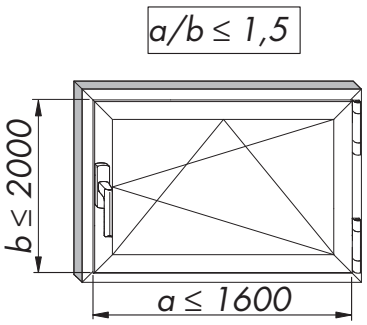


All dimensions in mm

Sash width [1]	(a)	min. 365 - max. 1600
Sash height [1]	(b)	min. 550 - max. 2400
Sash weight [1]	(🫙)	max. 100/130 kg [2]

1) See diagram on page 4.
2) Using bag "accessory LM 4200 130 kg" and "additional stay LM", a ≥ 1,020 mm.
3) See table on page 3.





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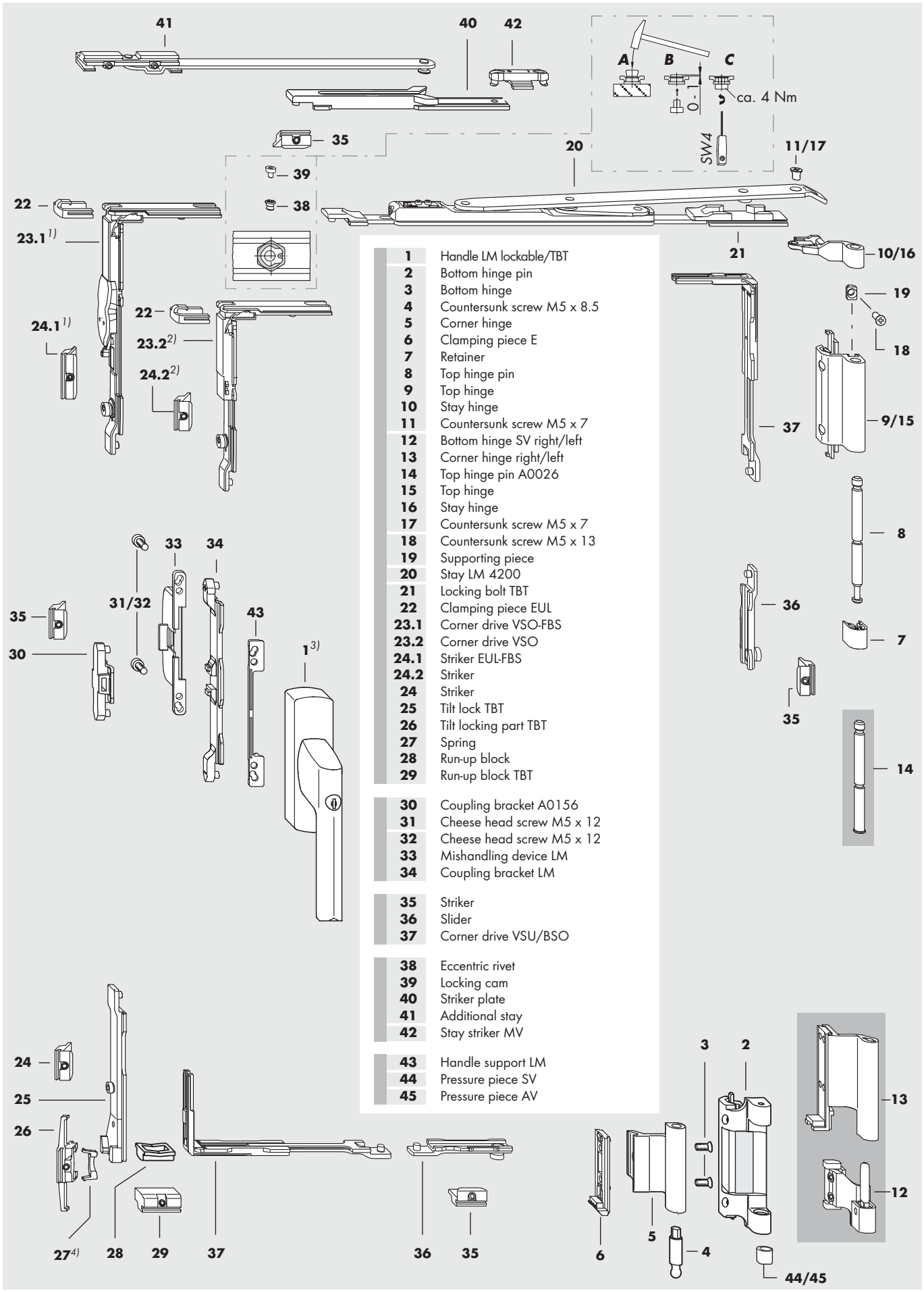
H48.4200LS002en

Technical specifications and colours are subject to change

H48.4200LS001en_0_2011-07



1	Handle LM lockable/TBT
2	Bottom hinge pin
3	Bottom hinge
4	Countersunk screw M5 x 8.5
5	Corner hinge
6	Clamping piece E
7	Retainer
8	Top hinge pin
9	Top hinge
10	Stay hinge
11	Countersunk screw M5 x 7
12	Bottom hinge SV right/left
13	Corner hinge right/left
14	Top hinge pin A0026
15	Top hinge
16	Stay hinge
17	Countersunk screw M5 x 7
18	Countersunk screw M5 x 13
19	Supporting piece
20	Stay LM 4200
21	Locking bolt TBT
22	Clamping piece EUL
23.1	Corner drive VSO-FBS
23.2	Corner drive VSO
24.1	Striker EUL-FBS
24.2	Striker
24	Striker
25	Tilt lock TBT
26	Tilt locking part TBT
27	Spring
28	Run-up block
29	Run-up block TBT
30	Coupling bracket A0156
31	Cheese head screw M5 x 12
32	Cheese head screw M5 x 12
33	Mishandling device LM
34	Coupling bracket LM
35	Striker
36	Slider
37	Corner drive VSU/BSO
38	Eccentric rivet
39	Locking cam
40	Striker plate
41	Additional stay
42	Stay striker MV
43	Handle support LM
44	Pressure piece SV
45	Pressure piece AV

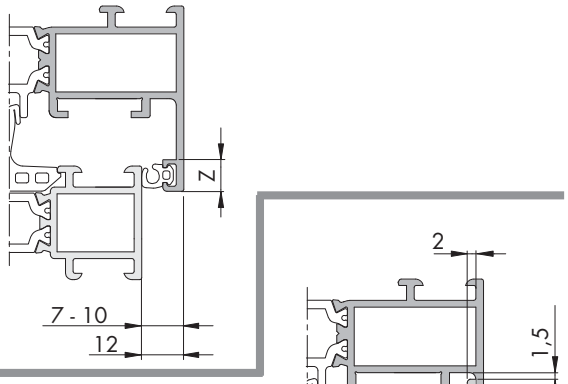
1) *VS LM-TBT FBS-EUL KPS*
2) *VS LM-TBT KPS*
3) *Window handle □ 7 mm see LMen1361*
4) *Spring (27) grey, from b 550 to 1,100*
Spring (27) black, from b 1,101 to 2,400

LM 4200-TBT *Hardware List*

	Item	Design Left	Design Right	Description			Material no.		Material no.
Generally required	1		1	**Handle LM lockable/TBT**			*See handle overview LM in aluminium planning manual* Drawing no.: LMen1337		
	2-11		1	**BS LM 4200**	**Silver**	1	**MMBS0010-525010**	10	**MMBS0010-525020**
			1		**Brown**	1	**MMBS0010-533010**	10	**MMBS0010-533020**
			1		**White** *RAL 9010*	1	**MMBS0010-503010**	10	**MMBS0010-503020**
			1		**White** *RAL 9016*	1	**MMBS0010-504010**	10	**MMBS0010-504020**
			1		**Black** *RAL 9005*	1	**MMBS0010-523010**	10	**MMBS0010-523020**
			1		**EV1**	1	**MMBS0010-524010**	10	**MMBS0010-524020**
			1		**Mill finish**	–	–	5	**246887**
	12-17	–	1	**BS LM 4200/SV right**	**Silver**	1	**MMBS0031-525011**	10	**MMBS0031-525021**
		–	1		**Brown**	1	**MMBS0031-533011**	10	**MMBS0031-533021**
		–	1		**White** *RAL 9016*	1	**MMBS0031-504011**	10	**MMBS0031-504021**
		–	1		**Black** *RAL 9005*	1	**MMBS0031-523011**	10	**MMBS0031-523021**
		1	–	**BS LM 4200/SV left**	**Silver**	1	**MMBS0032-525011**	10	**MMBS0032-525021**
		1	–		**Brown**	1	**MMBS0032-533011**	10	**MMBS0032-533021**
		1	–		**White** *RAL 9016*	1	**MMBS0032-504011**	10	**MMBS0032-504021**
		1	–		**Black** *RAL 9005*	1	**MMBS0032-523011**	10	**MMBS0032-523021**
	18-19	0...1		**Accessories LM 4200 130 kg**	*Sash weight 100 kg and up*	1	–	20	**247037**
	20	1		**Stay LM 4200** *1) up to max. 100 kg sash weight*	*Size* *a (in mm)* 20[1] 365 to 600	1	**884805**	20	**273098**
					35 601 to 1,250	1	**884782**	20	**314203**
				2) with additional stay LM	35[2] 1,251 to 1,600	1	**884782**	20	**314203**
				3) 100 - 130 kg with additional stay LM	35[3] 1,020 to 1,600	1	**884782**	20	**314203**
	21-29	0...1		**VS LM-TBT FBS-EUL KPS**		1	**MMVS0320-100010**	20	**MMVS0320-100030**
		0...1		**VS LM-TBT KPS**		1	**MMVS0270-100010**	20	**MMVS0270-100030**
	30-31	1		**Coupling set LM A0156**		1	**MMKL0060-100010**	20	**MMKL0060-100030**
	32-34	0...1		**Coupling set FBS-G 9 mm**		1	**MMKL0030-100010**	20	**MMKL0030-100030**
		0...1		**10 mm**		1	**MMKL0010-100010**	20	**MMKL0010-100030**
		0...1		**USH 12 mm**		1	**MMKL0040-100010**	20	**MMKL0040-100030**
	35-37	0...2		**MV LM 4200-DK**	*a/b ≥ 1,250 mm*	1	**857045**	20	**246979**
	38-41	0...1		**Additional stay LM 4200**	*a ≥ 1,250 mm with stay SZ 35 (> 100 kg a ≥ 1,020 mm)*	1	**857076**	10	**247006**
	42	0...1		**Stay striker MV**	*a ≥ 1,250 mm (> 100 kg a ≥ 1,020 mm)*	1	**MXSK0010-100010**	20	**MXSK0010-100030**
	Accessories								
	43	0...1		**Handle support LM**	*Only for use with VS LM-TBT FBS-EUL KPS*	–	–	200	*See table*
	44	0...1		**Pressure piece SV** *(BS LM 4200)*	*For width adjustment ± 0.8 mm*	1	**818138**	20	**222041**
	45	0...1		**Pressure piece AV** *(BS LM 4200)*	*For width pressure adjustment ± 0.5 mm*	1	**855133**	20	**249796**

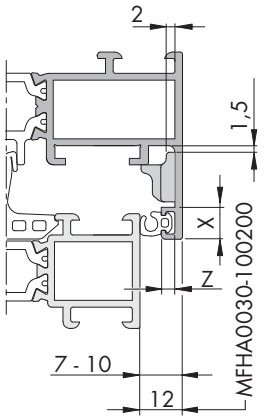
Design variations for coupling set FBS-G (32 - 34)

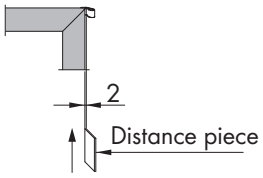
USH	X	Material no.
7 - 10 mm	≤ 8.5 mm	MMKL0030-100030
7 - 10 mm	≤ 7.5 mm	MMKL0010-100030
12 mm	≤ 7 mm	MMKL0040-100030



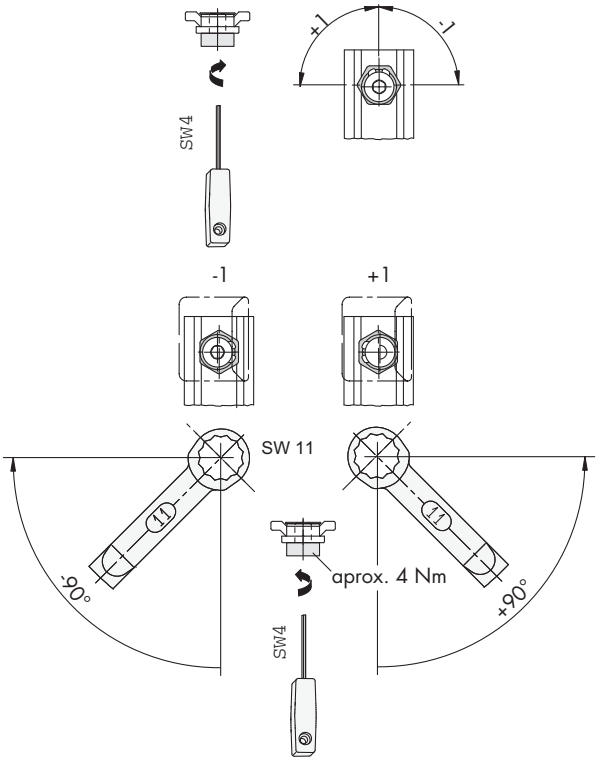
Design variations for handle support (43)

USH	Z	X ≤ 7 mm	X 7.1 - 8.5 mm
7 - 10 mm	< 2 mm	MFHA0010-100200	MFHA0010-100200
7 - 10 mm	2.1 - 3 mm	MFHA0010-100200	MFHA0020-100200
7 - 10 mm	> 3 mm	MFHA0010-100200	-
12 mm	-	MFHA0030-100200	-





Description	
Assembly device for mounting stays	*Manufacture own suitable distance piece with 2 mm thickness and insert between sash frames and stay hinge. Fasten stay.*
Required tools	*See assembly instructions LMen1200*
Pressure adjustment approx. ±1	*For eccentric rivet (38) and locking cam (39)*



Further adjustment options	*See maintenance/care instructions Order no. 19748*

Abbreviations

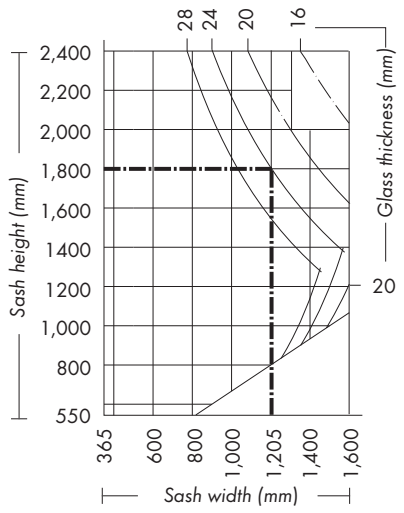
The following abbreviations are used in these assembly instructions:

a	Sash width
AV	Pressure adjustment
b	Sash height
b1	Handle height, bottom
b2	Handle height, top
BS	Hinge side
BSO	Hinge side, top
BSU	Hinge side, bottom
EV1	Anodised
ESLG	Brushed stainless steel-look
FBS-G	Mishandling device on handle
FBS-EUL	Mishandling device in corner drive
KPS	Tilt point vertical
MV	Centre lock
Nm	Torque in Nm
SV	Side adjustment
SW	Key dimension
TBT	Tilt before turn
VS	Locking side
VSO	Locking side, top
VSU	Locking side, bottom
USH	Rebate height
S1	Operating rod, locking side bottom
S2	Operating rod, locking side top
S3	Operating rod, top horizontal
S4	Operating rod, hinge side
S5	Operating rod, bottom horizontal

Diagram for determining allowable sash size

For glass thicknesses less than 12 mm, all sash sizes which are within the size range and do not exceed a width to height ratio FB/FH of 1.5 are allowed.
Maximum allowable sash weight:130 kg

Glass thickness (mm)	*Weight (kg/m^2)*
28	70
24	60
20	50
16	40
12	30



Example (—·—):
Sash height = 1,800 mm
Glass thickness = 24 mm
Maximum allowable sash width = **1,205 mm**

Assembly instructions

All text passages marked with ">" are for sash width and sash height ≥ 1,250 mm.

Preparation	***A***	Make punch out for handle LM lockable/TBT (**1**).
	B	Open the operating rod guiding groove.
	C	Remove the rebate seal in the area through which the hinges pass and rework the sash profile according to the specifications on page 6.
	D	Rework operating rods S1 - S5 according to the specifications on page 6.
	> E	Install eccentric rivet (**38**) and locking cam (**39**) on S3 as shown (see page 2).

Sash	***> A***	Insert slider (page 2: **36**) with operating rod S4 and corner drive VSU/BSO (**37**) vertically on the BSO.
	B	Insert locking bolt TBT (**21**), stay LM 4200 (**20**) and operating rod S3 horizontally on the VSO.
(>100 kg)	***> C***	Insert locking bolt TBT (**21**), stay LM 4200 (**20**) and operating rod S3, stay striker MV (**42**), striker plate (**40**) and **>**operating rod (length 234 mm) horizontally on the VSO.
	> D	Couple locking bolt TBT (**21**) with corner drive VSU/BSO (**37**). Make sure positioning of coupling piece for corner drive VSU/BSO (**37**) is correct.
	E	Attach stay hinge (**10/16**) to stay LM 4200 (**20**) using countersunk screw M5 x 7 (**11/17**) (torque 2.5 ± 0.25 Nm).
	> F	Position stay hinge (**10/16**) according to specifications on page 4 and fasten stay LM 4200 (**20**) with punching screws.
	> G	Insert slider (**36**) with operating rod S5 and corner drive VSU/BSO (**37**) vertically on the VSU.
	H	Insert tilt lock TBT (**25**), operating rod S1, coupling bracket LM (**30/34**), operating rod S2 and corner drive VSO (**23.1/23.2**) vertically on the VSO.
	> I	Couple tilt lock TBT (**25**) with corner drive VSU/BSO (**37**). Make sure positioning of coupling piece for corner drive VSU/BSO (**37**) is correct (Figure 1).
	J	Couple corner drive VSO (**23.1/23.2**) with operating rod S3 "**>**operating rod 234" and secure with clamping piece EUL (**22**).
	K	Insert run-up block (**28**) horizontally on the VSU (not applicable for MV on the VSU).
FBS-EUL 	***L***	Attach handle LM lockable/TBT (**1**) with cheese head screws M5 x 12 (**31**) (torque 2.5 ± 0.25 Nm). Make sure the handle catch closes into the coupling bracket (**30**).
FBS-G	***L***	Attach mishandling device LM on rebate (**33**) with cheese head screws M5 x 12 (**312**) to the handle LM (**1**) (torque 2.5 ± 0.25 Nm). Make sure the handle catch closes into the coupling bracket (**34**).
BS LM 4200	***M***	Press bottom hinge pin (**4**) into corner hinge (**5**) DIN right or DIN left.
BS LM 4200	***N***	Insert clamping piece E (**6**) vertically on the BSU and attach corner hinge (**5**) using countersunk screws M5 x 8.5 (**3**) (torque 2.5 ± 0.25 Nm).
BS LM 4200/SV	***O***	Insert corner hinge right/left (**13**) in the sash groove and fasten with the pre-installed countersunk screws M5 x 8.5 (torque 2.5 ± 0.25 Nm).

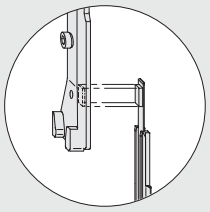


Figure 1

Frame	***A***	For sashes weighing *more than 100 kg* , fasten the supporting piece (**19**) to the frame using countersunk screws M5 x 13 (**18**).
BS LM 4200		(torque 2.5 ± 0.25 Nm) (see page 7).
	B	Position bottom hinge (**2**) and top hinge (**9**) and fix both in place by tightening the cheese head screws (torque 2.5
BS LM 4200/SV		± 0.25 Nm).
	B	Position bottom hinge SV right/left (**12**) and top hinge (**15**) and fix both in place by tightening the cheese head
BS LM 4200		screws (torque 2.5 ± 0.25 Nm).
BS LM 4200/SV	***C***	Connect top hinge pin (**8**) with retainer (**7**) and insert into the top hinge (**9**) from below.
	C	Insert top hinge pin A0026 (**14**) into top hinge (**15**) from below.
	D	Position striker EUL-FBS (**24.1**)/striker (**24.2**) (**24**), tilt locking part TBT (**26**) and run-up block TBT (**29**) according to specifications on page 7 and fix in place with grub screws (torque 1.5 ± 0.25 Nm).
	E	Press suitable spring (**27**) according to specifications on page 2 into tilt locking part TBT (**26**).
	> F	Position strikers (**35**) on the BS and VS according to specifications on page 7 and fix each in place with grub screws (torque 1.5 ± 0.25 Nm).
	> G	Position strikers (**35**) on the VSU and the VSO according to the specification on page 7 and fix in place with grub screws (torque 1.5 ± 0.25 Nm).
	> H	For sash widths from 1,250 mm to 1,600 mm and/or sash weights *in excess of 100 kg* (min. sash width 1,020 mm), use additional stay LM 4200.
Final	***A***	Hinge the sash. Push top hinge pin (**8/14**) through and snap into place.

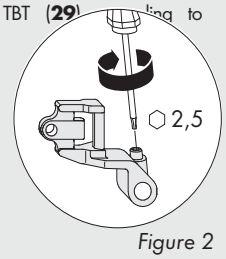
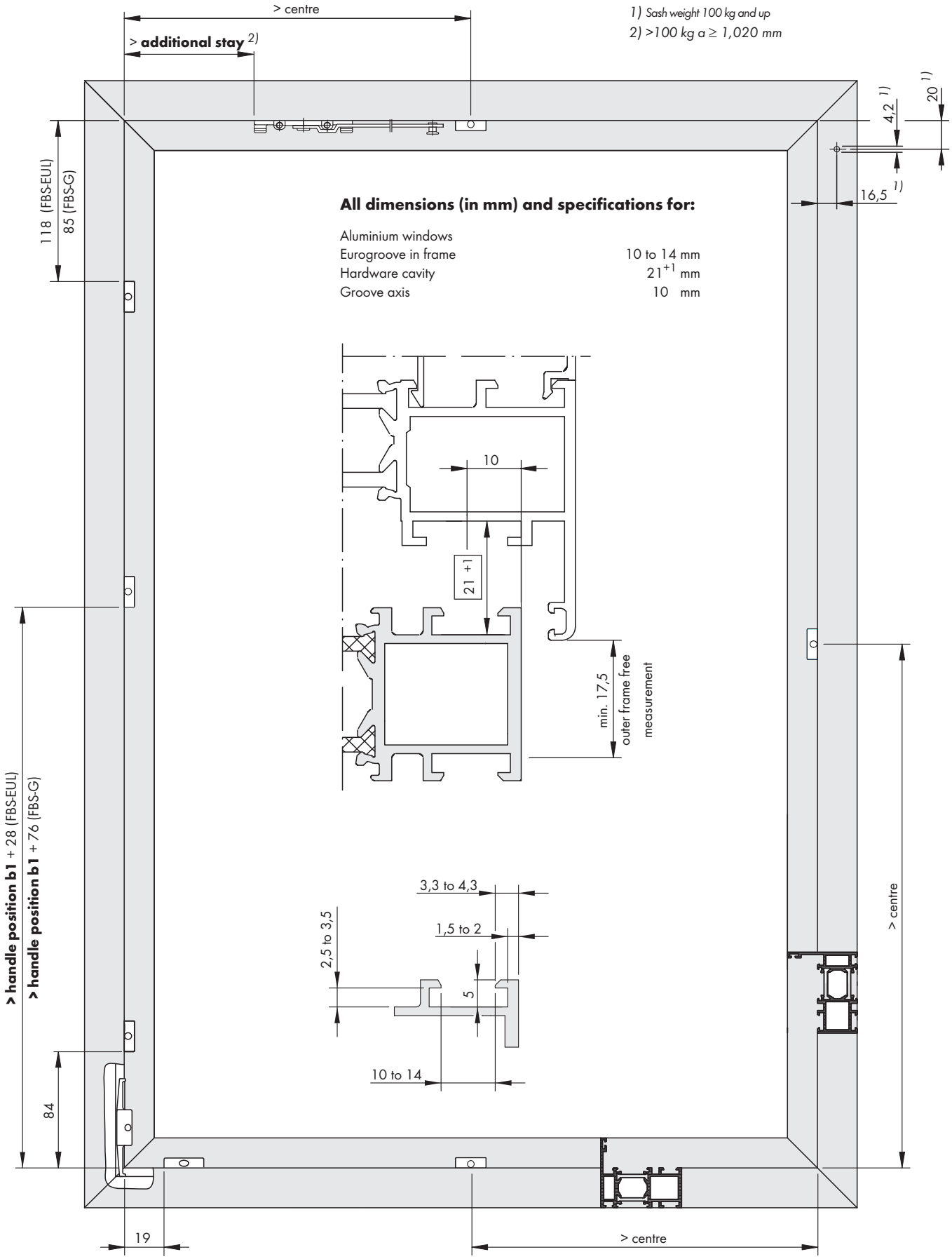


Figure 2

Making adjustments	***A***	Width adjustment:	
BS LM 4200		continuous	using stay LM 4200 (**20**)
			using pressure piece SV (**44**)
BS LM 4200/SV		continuous	using bottom hinge SV right/left (**12**) ±1 mm (make adjustment after glazing, under load and with the sash **open**)
BS LM 4200	***B***	Height adjustment:	after removal of the top pressure piece from the bottom hinge (**2**)
BS LM 4200			using 4 mm hexagon socket screw in corner hinge (**5**) +1.5 / - 1 mm
			for FH ≤ 1,600 mm in tilt position/for FH ≥ 1,600 mm in turn position
BS LM 4200/SV			using 4 mm hexagon socket screw in corner hinge right/left (**13**) +2 / -1 mm
	C	Pressure adjustment:	using eccentric locking cam
BS LM 4200			for pressure piece AV (**45**) ±0.5 mm

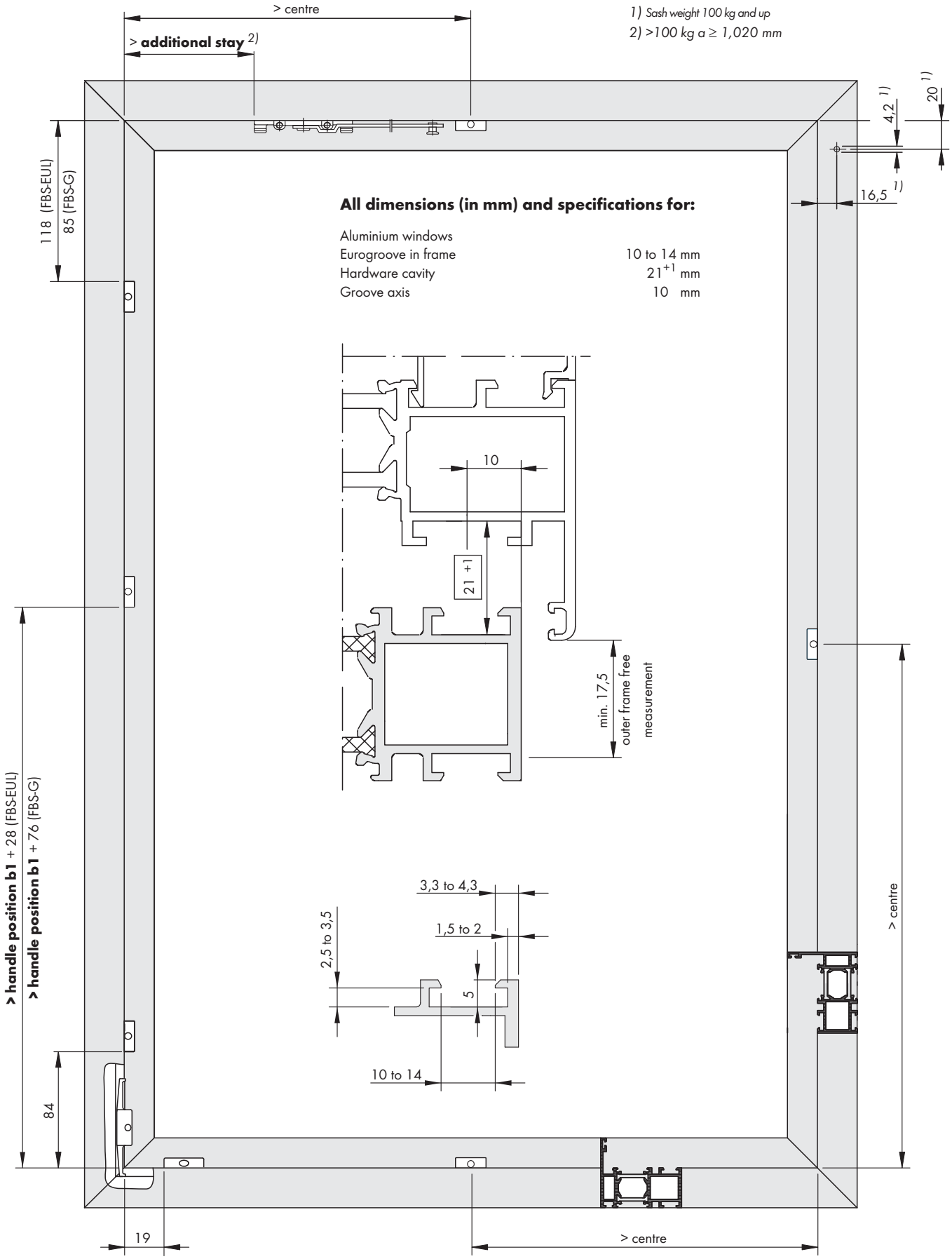
*All text passages marked with "**>**" are for sash width and sash height ≥ 1,250 mm.*

1) Sash weight 100 kg and up
2) >100 kg a ≥ 1,020 mm



*All text passages marked with "**>**" are for sash width and sash height ≥ 1,250 mm.*

1) Sash weight 100 kg and up
2) >100 kg a ≥ 1,020 mm



Basic safety instructions

Correct use

The hardware described in this document is intended to be installed in an aluminium window frame by a certified window construction specialist in accordance with these instructions. The windows may only be installed vertically plumb.
The certified window construction specialist must ensure that the hardware is suitable for the application based on the specifications in these instructions and in other documents that are cited.

Avoid excessive strain.

Hinge parts may break if they are subject to excessive strain. This can cause the window sash to fall out, which may lead to serious injuries.

- If you anticipate that the hinge parts will be subject to excessive strain, limit the opening angle with an LM limit stay with friction.
  For example, excessive strain is to be expected in schools and kindergartens.

Do not mix hardware.

The hardware is technically matched. When you mix hardware from different systems or manufacturers in one window, the safe functioning of the hardware is not guaranteed. The hardware can break and cause accidents.

- Use only the hardware that is named in these instructions in combination in one window.

Treat the window surface before installation only.

- Treating the surface of the window after the hardware has been installed can reduce the functional capacity of the hardware.

Prevent damage caused by rust and deposits.

Corrosive substances, dirt and moisture can damage the hardware and cause hazards.

- Do **not** use acetic or acid cure sealants.
- Do **not** use the hardware in environments where the air contains aggressive or corrosive components.
- Keep the rebates free from deposits and dirt, especially from remnants of cement and plaster.
- Keep the hardware dry.

Always clean the hardware gently.

- Clean the hardware only with a soft cloth and mild, diluted pH-neutral cleaning agents.
- Keep the hardware from coming into contact with scouring agents or aggressive, acidic cleaning agents.
- Dry the hardware after cleaning it.

Pass the information on to the user of the window.

- Affix the user information (order no. 05083) to the installed window or door element in a place that can be seen easily.
- Provide the user with the following documents:
  - Maintenance/care instructions SI-AU order no. 19748
  - Operating instructions SI-AU order no. 05766

Disclaimer of liability

- We assume no liability for loss of function and damage to the hardware (and to the windows and portal doors that are equipped with these) resulting from insufficient tendering, failure to follow these assembly instructions or which result from force being applied to the hardware (e.g. through improper use).

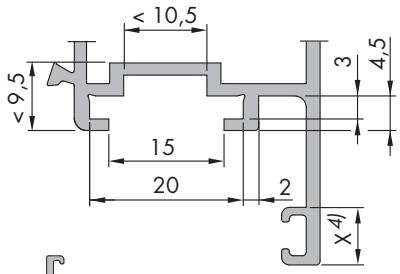
LM 4200-D

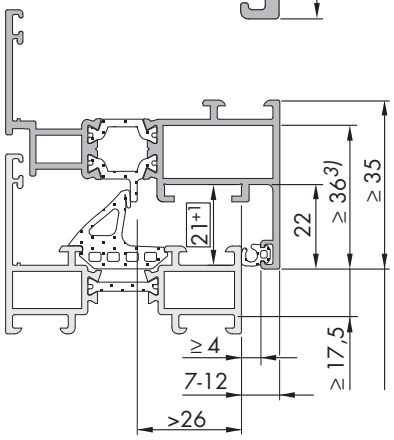
Clampable turning sash hardware for aluminium windows and portal doors

Further details and specifications/information regarding the product and liability (guidelines: VHBH, TBDK and VHBE) can be found in the aluminium planning manual (H4006.3042EN) and ***must*** *be observed.*

All dimensions given are final dimensions after the surface of the sections has been treated (painted, power coated etc.).

Sash and frame dimensions





Correct use

Profile selection/alignment

Frame designs

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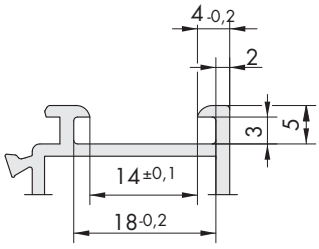

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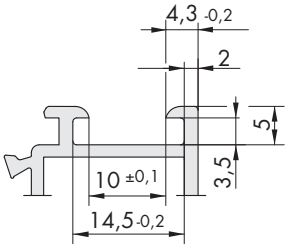

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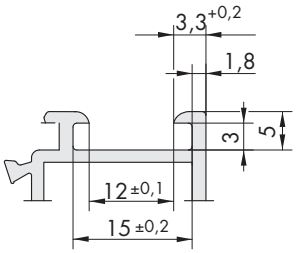
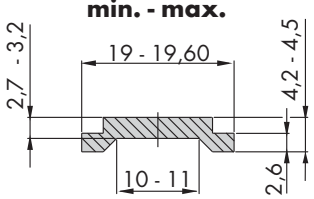


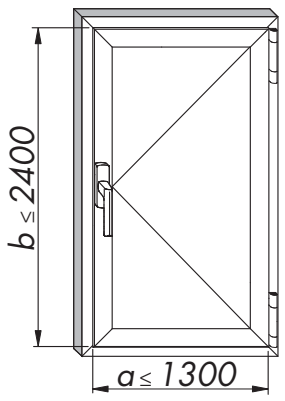
Operating rod dimensions min. - max.

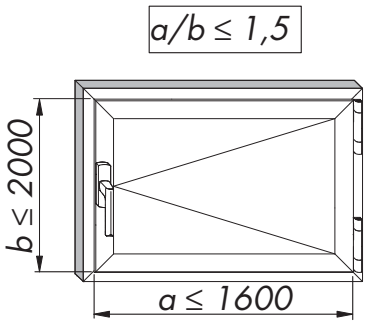


All dimensions in mm

Sash width [1]	(a)	min. 350 - max. 1600
Sash height [1]	(b)	min. 500 - max. 2400
Sash weight [1]	(🛍)	max. 100/130 kg [2]

1) See diagram on page 4.
2) With "Accessories Bag LM 4200 130 kg".
3) For gear set M6.
4) See table on page 3.





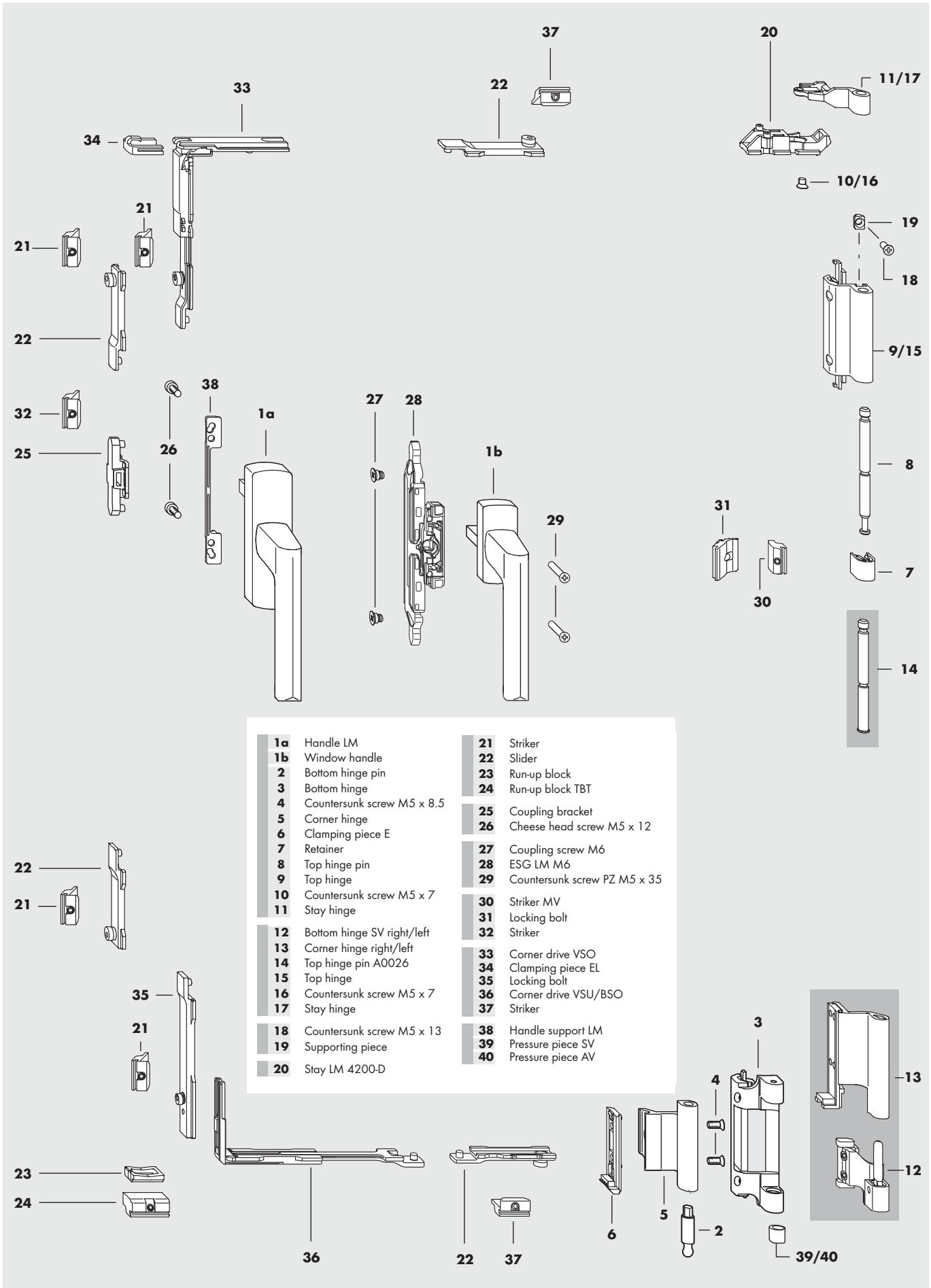
Contents

Assembly Instructions

H48.4200LS003en

Technical specifications and colours are subject to change

H48.4200LS003en_0_2011-07



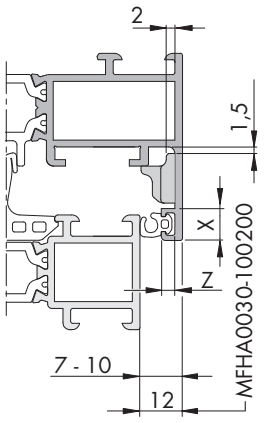
1a	Handle LM
1b	Window handle
2	Bottom hinge pin
3	Bottom hinge
4	Countersunk screw M5 x 8.5
5	Corner hinge
6	Clamping piece E
7	Retainer
8	Top hinge pin
9	Top hinge
10	Countersunk screw M5 x 7
11	Stay hinge
12	Bottom hinge SV right/left
13	Corner hinge right/left
14	Top hinge pin A0026
15	Top hinge
16	Countersunk screw M5 x 7
17	Stay hinge
18	Countersunk screw M5 x 13
19	Supporting piece
20	Stay LM 4200-D
21	Striker
22	Slider
23	Run-up block
24	Run-up block TBT
25	Coupling bracket
26	Cheese head screw M5 x 12
27	Coupling screw M6
28	ESG LM M6
29	Countersunk screw PZ M5 x 35
30	Striker MV
31	Locking bolt
32	Striker
33	Corner drive VSO
34	Clamping piece EL
35	Locking bolt
36	Corner drive VSU/BSO
37	Striker
38	Handle support LM
39	Pressure piece SV
40	Pressure piece AV

LM 4200-D *Hardware list*

	Item	Design Left	Design Right	Description			Material no.		Material no.
Generally required	**1a**	**0...1**		**Handle LM**			*See handle overview LM Drawing no.: LMen1337 in aluminium planning manual*		
	1b	**0...1**		**Window handle** (□ *7 mm x 25, cam ∅ 10 mm*)					
	2-11	**1**		**BS LM 4200**	**Silver**	**1**	**MMBS0010-525010**	**10**	**MMBS0010-525020**
		1			**Brown**	**1**	**MMBS0010-533010**	**10**	**MMBS0010-533020**
		1			**White** *RAL 9010*	**1**	**MMBS0010-503010**	**10**	**MMBS0010-503020**
		1			**White** *RAL 9016*	**1**	**MMBS0010-504010**	**10**	**MMBS0010-504020**
		1			**Black** *RAL 9005*	**1**	**MMBS0010-523010**	**10**	**MMBS0010-523020**
		1			**EV1**	**1**	**MMBS0010-524010**	**10**	**MMBS0010-524020**
		1			**Mill finish**	**–**	**–**	**5**	**246887**
	12-17	**–**	**1**	**BS LM 4200/SV right**	**Silver**	**1**	**MMBS0031-525011**	**10**	**MMBS0031-525021**
		–	**1**		**Brown**	**1**	**MMBS0031-533011**	**10**	**MMBS0031-533021**
		–	**1**		**White** *RAL 9016*	**1**	**MMBS0031-504011**	**10**	**MMBS0031-504021**
		–	**1**		**Black** *RAL 9005*	**1**	**MMBS0031-523011**	**10**	**MMBS0031-523021**
	1	**1**	**–**	**BS LM 4200/SV left**	**Silver**	**1**	**MMBS0032-525011**	**10**	**MMBS0032-525021**
	1	**1**	**–**		**Brown**	**1**	**MMBS0032-533011**	**10**	**MMBS0032-533021**
	1	**1**	**–**		**White** *RAL 9016*	**1**	**MMBS0032-504011**	**10**	**MMBS0032-504021**
	1	**1**	**–**		**Black** *RAL 9005*	**1**	**MMBS0032-523011**	**10**	**MMBS0032-523021**
	18-19	**0...1**		**Accessories LM 4200 130 kg**	*Sash weight 100 kg and up*	**1**	**–**	**20**	**247037**
	20-24	**1**		**VS LM-D SDF**		**1**	**MMVS0280-100010**	**20**	**MMVS0280-100030**
	25-26	**1**		**Coupling set LM A0156**	*For handle LM (1a)*	**1**	**MMKL0060-100010**	**20**	**MMKL0060-100030**
	27-29	**1**		**Gear set M6 Trial/RR**	*For window handle □7 x 25/ 10 mm cam (1b)*	**1**	**MMGI0090-100010**	**20**	**MMGI0090-100030**
	30-32	**0...1**		**MV LM 4200-D VS/BS**	*b ≥ 1,250 mm*	**1**	**857052**	**20**	**246986**
	33-37	**0...1**		**MV LM 4200/2200-D VSU/VSO**	*a ≥ 1,250 mm*	**1**	**MMMV0040-100010**	**20**	**MMMV0040-100030**
Accessories									
	38	**0...1**		**Handle support LM**	*For handle LM (1a)*	**–**	**–**	**200**	*See table*
	39	**0...1**		**Pressure piece SV** *(BS LM 4200)*	*For width adjustment ± 0.8 mm*	**1**	**818138**	**20**	**222041**
	40	**0...1**		**Pressure piece AV** *(BS LM 4200)*	*For width pressure adjustment ± 0.5 mm*	**1**	**855133**	**20**	**249796**

Design variations for handle support (38)

USH	Z	X < 7 mm	X 7.1 - 8.5 mm
7 - 10 mm	< 2 mm	MFHA0010-100200	MFHA0010-100200
7 - 10 mm	2.1 - 3 mm	MFHA0010-100200	MFHA0020-100200
7 - 10 mm	> 3 mm	MFHA0010-100200	-
12 mm	-	MFHA0030-100200	-



Description	
Required tools	*See assembly instructions* *LMen1200*
Further adjustment options	*See maintenance/care instructions* *Order no. 19748*

Abbreviations

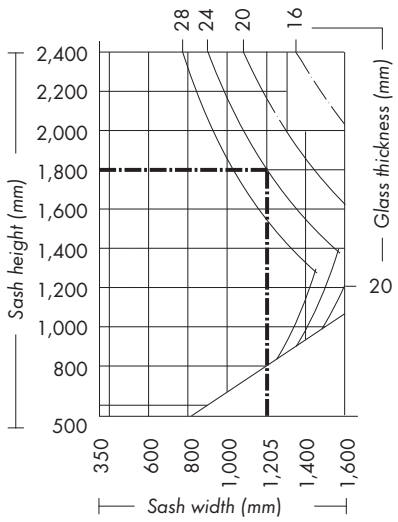
The following abbreviations are used in these assembly instructions:

a	Sash width
AV	Pressure adjustment
b	Sash height
b1	Handle height, bottom
b2	Handle height, top
BS	Hinge side
BSO	Hinge side, top
EV1	Anodised
ESLG	Brushed stainless steel-look
KPS	Tilt point vertical
MV	Centre lock
Nm	Torque in Nm
SV	Side adjustment
SW	Key dimension
VS	Locking side
VSO	Locking side, top
VSU	Locking side, bottom
USH	Rebate height
SDF	Stay turning sash
S1	Operating rod, locking side bottom
S2	Operating rod, locking side top
S3	Operating rod, top horizontal
S5	Operating rod, bottom horizontal

Diagram for determining allowable sash size

For glass thicknesses less than 12 mm, all sash sizes which are within the size range and do not exceed a width to height ratio FB/FH of 1.5 are allowed.
Maximum allowable sash weight:130 kg

Glass thickness (mm)	*Weight (kg/m^2)*
28	70
24	60
20	50
16	40
12	30



Example (—·—):
Sash height = 1,800 mm
Glass thickness = 24 mm
Maximum allowable sash width = **1,205 mm**

Assembly instructions

All text passages marked with ">" are for sash width and sash height ≥ 1,250 mm.

Preparation	***A***	Make punch out for handle LM (**1**), window handle (**1b**).
	B	Open the operating rod guiding groove.
	C	Remove the rebate seal in the area through which the hinges pass and rework the sash profiles according to the specifications on page 6.
	D	Rework operating rods S1 - S5 according to the specifications on page 6.

Sash	***> A***	Insert slider (page 2: **22**) with operating rod S5 and corner drive VSU/BSO (**36**) vertically on the VSU.
	> B	Insert slider (**22**) with operating rod S3 horizontally on the VSO.
	C	Insert slider (**22**), operating rod S1, coupling bracket (**25**), operating rod S2 and slider (**22**) vertically on the VSO.
Gear set M6	***C***	Insert slider (**22**), operating rod S1, operating rod S2 and slider (**22**) vertically on the VSO.
	> D	Insert slider (**35**), operating rod S1, coupling bracket (**25**), operating rod S2 and corner drive VSO (**33**) vertically on the VSO.
Gear set M6	***> D***	Insert slider (**35**), operating rod S1, operating rod S2 and corner drive VSO (**33**) vertically on the VSO.
Gear set M6	***E***	Connect ESG LM M6 (**28**) operating rods and place in opening provided (see page 6, Figure 3).
Gear set M6	***F***	Screw ESG LM M6 (**28**) and operating rods S1 and S2 together using coupling screw M6 (**27**) (PZ 2, torque 2.75 ± 0.25 Nm).
	> G	Couple corner drive VSU/BSO (**36**) with locking bolt (**35**). Make sure positioning of coupling piece for corner drive VSU/BSO (**36**) is correct (Figure 1).
	> H	Couple VSO (**33**) with operating rod S3 and secure using clamping piece EUL (**34**).
	I	Attach handle LM (**1a**) and handle support LM (**38**)with cheese head screw M5 x 12 (**26**) (torque 2.5 ± 0.25 Nm). Make sure the handle catch closes into the coupling bracket (**25**).
Gear set M6	***J***	Attach window handle (**1b**) to ESG LM M6 (**28**) using countersunk screw PZ M5 x 35 (**29**) (PZ 2, torque 2.5 ± 0.25 Nm).
	K	Screw stay hinge (**11/17**) and stay LM 4200-D (**20**) together using countersunk screw M5 x 7 (**10/16**) (torque 2.5 ± 0.25 Nm), press stay LM 4200-D (**20**) horizontally onto the BSO as far as it will go and fasten with punching screws (torque 2.5 ± 0.25 Nm).
BS LM 4200	***L***	Press bottom hinge pin (**2**) into corner hinge (**5**) DIN right or DIN left.
BS LM 4200	***M***	Insert clamping piece E (**6**) vertically on the BSU and attach corner hinge (**5**) using countersunk screws M5 x 8.5 (**4**) (torque 2.5 ± 0.25 Nm).
BS LM 4200/SV	***N***	Insert corner hinge right/left (**13**) in the sash groove and fasten with the pre-installed countersunk screws M5 x 8.5 (torque 2.5 ± 0.25 Nm).
	> O	Insert locking bolt (**31**) centrally on the BS and fix in place with grub screw (torque 1.5 ± 0.25 Nm).

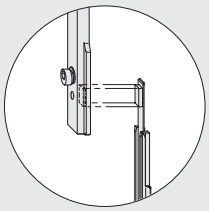


Figure 1

Frame	***A***	For sashes weighing *more than 100 kg*, fasten the supporting piece (**19**) to the frame using countersunk screws M5 x 13 (**18**) (torque 2.5 ± 0.25 Nm) (see page 7).
BS LM 4200	***B***	Position bottom hinge (**3**) and top hinge (**9**) and fix both in place by tightening the cheese head screws (torque 2.5 ± 0.25 Nm).
BS LM 4200/SV	***B***	Position bottom hinge SV right/left (**12**) and top hinge (**15**) and fix both in place by tightening the cheese head screws (torque 2.5 ± 0.25 Nm).
BS LM 4200	***C***	Connect top hinge pin (**8**) with retainer (**7**) and insert into the top hinge (**9**) from below.
BS LM 4200/SV	***C***	Insert top hinge pin A0026 (**14**) into top hinge (**15**) from below.
	D	Position strikers (**21**) and run-up block TBT (**24**) according to specifications on page 7 and fix each in place with grub screws (torque 1.5 ± 0.25 Nm).
	> E	Position striker MV (**30**) on the BS and striker (**32**) on the VS according to the specification on page 7 and fix in place with grub screws (torque 1.5 ± 0.25 Nm).
	> F	Position striker (**37**) on the VSU and VSO according to specifications on page 7 and fix each in place with grub screws (torque 1.5 ± 0.25 Nm).
Final installation	***A***	Hinge the sash. Push top hinge pin (**8/14**) through and snap into place.
	B	Top hinge pin (**8/14**) **must** be secured in the stay hinge (**11/17**) (torque 2.5 ± 0.25 Nm) (see Figure 2).
	C	Check that the window works correctly.

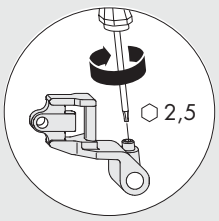
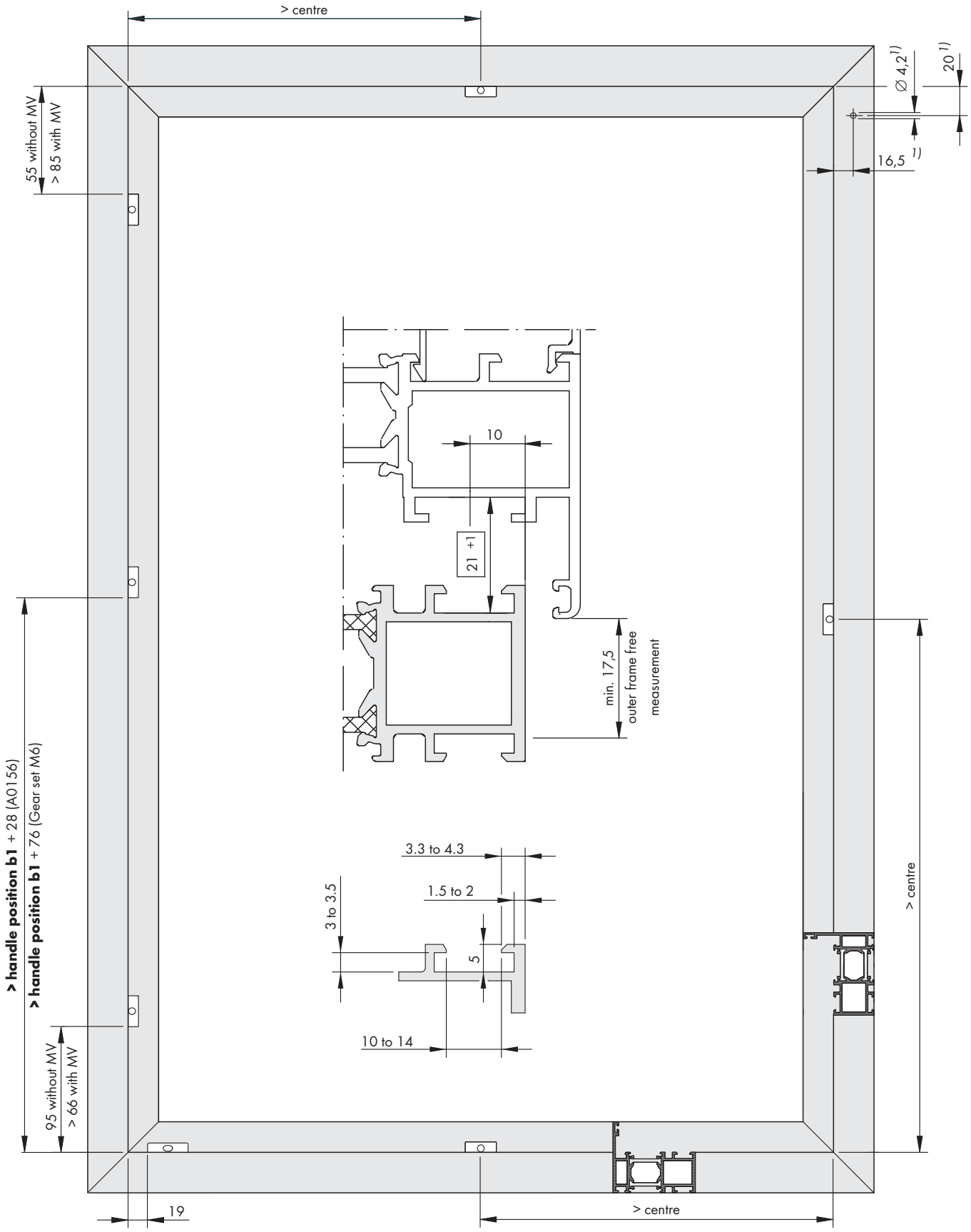


Figure 2

Making adjustments	***A***	Width adjustment:	
BS LM 4200		continuous	using stay LM 4200-D (**20**) +2 mm - 3 mm
BS LM 4200/SV			using pressure piece SV (**39**) ±0.8 mm
		continuous	using bottom hinge SV right/left (**12**) ±1 mm (make adjustment after glazing, under load and with the sash **open**)
BS LM 4200	***B***	Height adjustment:	after removal of the top pressure piece from the bottom hinge (**3**)
BS LM 4200			using 4 mm hexagon socket screw in corner hinge (**5**) +1.5 / - 1 mm
BS LM 4200/SV			using 4 mm hexagon socket screw in corner hinge right/left (**13**) +2/-1 mm
	D	Pressure adjustment:	using eccentric locking cam
BS LM 4200			pressure piece AV (**40**) ±0.5 mm

*All text passages marked with "**>**"*
are for sash width and sash height ≥ 1,250 mm.



1) Sash weight 100 kg and up

Basic safety instructions

Correct use

The hardware described in this document is intended to be installed in an aluminium window frame by a certified window construction specialist in accordance with these instructions. The windows may only be installed vertically plumb.
The certified window construction specialist must ensure that the hardware is suitable for the application based on the specifications in these instructions and in other documents that are cited.

Avoid excessive strain.

Hinge parts may break if they are subject to excessive strain. This can cause the window sash to fall out, which may lead to serious injuries.

- If you anticipate that the hinge parts will be subject to excessive strain, limit the opening angle with an LM limit stay with friction.
  For example, excessive strain is to be expected in schools and kindergartens.

Do not mix hardware.

The hardware is technically matched. When you mix hardware from different systems or manufacturers in one window, the safe functioning of the hardware is not guaranteed. The hardware can break and cause accidents.

- Use only the hardware that is named in these instructions in combination in one window.

Treat the window surface before installation only.

- Treating the surface of the window after the hardware has been installed can reduce the functional capacity of the hardware.

Prevent damage caused by rust and deposits.

Corrosive substances, dirt and moisture can damage the hardware and cause hazards.

- Do **not** use acetic or acid cure sealants.
- Do **not** use the hardware in environments where the air contains aggressive or corrosive components.
- Keep the rebates free from deposits and dirt, especially from remnants of cement and plaster.
- Keep the hardware dry.

Always clean the hardware gently.

- Clean the hardware only with a soft cloth and mild, diluted pH-neutral cleaning agents.
- Keep the hardware from coming into contact with scouring agents or aggressive, acidic cleaning agents.
- Dry the hardware after cleaning it.

Pass the information on to the user of the window.

- Affix the user information (order no. 05083) to the installed window or door element in a place that can be seen easily.
- Provide the user with the following documents:
  - Maintenance/care instructions SI-AU order no. 19748
  - Operating instructions SI-AU order no. 05766

Disclaimer of liability

- We assume no liability for loss of function and damage to the hardware (and to the windows and portal doors that are equipped with these) resulting from insufficient tendering, failure to follow these assembly instructions or which result from force being applied to the hardware (e.g. through improper use).

ALU 4200-K

Clampable tilt sash hardware for aluminium windows

*Further details and specifications/information regarding the product and liability (guidelines: VHBH, TBDK and VHBE) can be found in the aluminium planning manual (H4006.3042EN) and **must** be observed.*

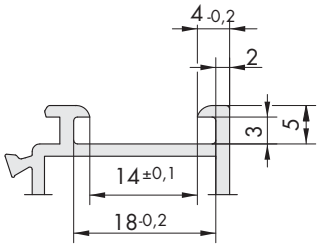
All dimensions given are final dimensions after the surface of the sections has been treated (painted, power coated etc.).

Correct use

Profile selection/alignment

Frame designs

A0004



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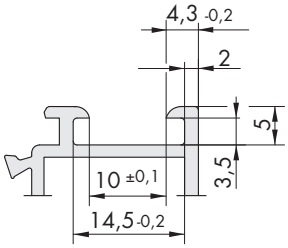

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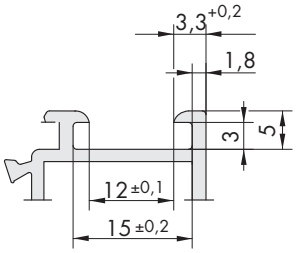

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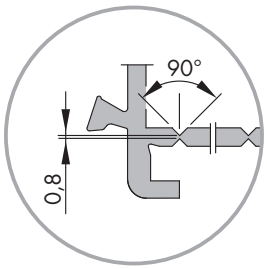
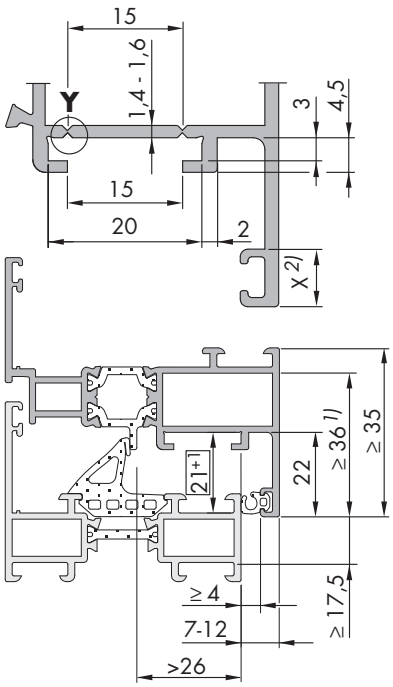
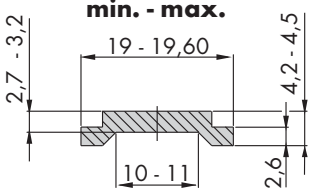


Sash and frame dimensions



Operating rod dimensions

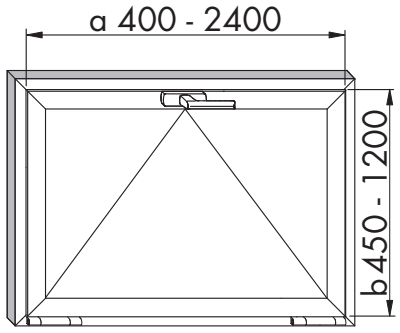
min. - max.



All dimensions in mm

1) For gear set M6.
2) See table on page 3.

		1 Tilt-only stay	2 Tilt-only stays
Sash width	(a)	min. 400 - max. 1,020	min. 1021 - max. 2,400
Sash height	(b)	min. 450 - max. 1,200	min. 450 - max. 1,200
Sash weight	(⚖)	max. 30 kg	max. 50 kg



Contents

Assembly Instructions

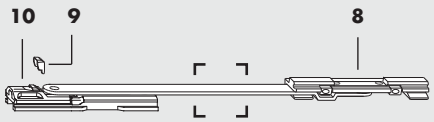
H48.4200LS004en

Technical specifications and colours are subject to change

H48.4200LS004en/1

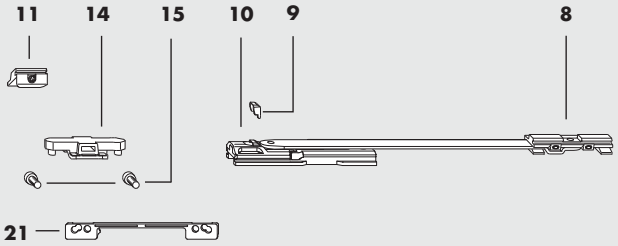
ALU 4200-K *Hardware layout*

a from 400 mm to 750 mm

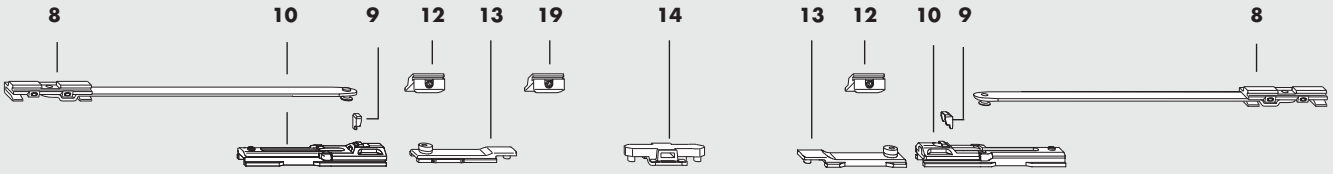


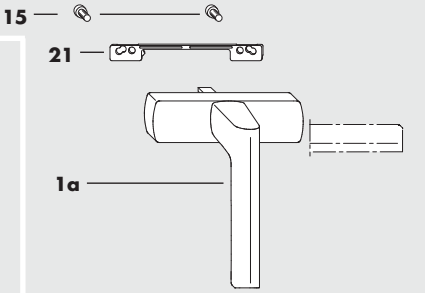
Commercially available sky-light snapper

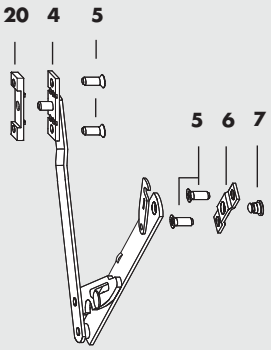
a from 751 mm to 1,020 mm

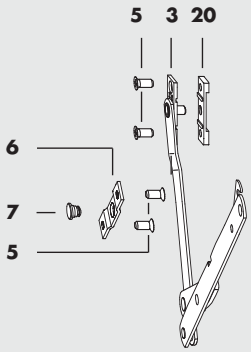


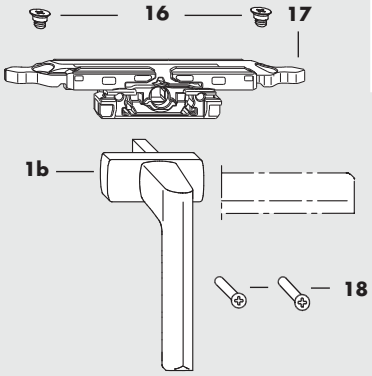
*a from 840 mm (**1b**) and 1021 mm (**1a**) to 2400 mm*



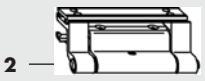


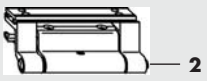






1a	Handle LM
1b	Window handle
2	Tilt only hinge LM 4200
3	Stay right
4	Stay left
5	Countersunk screw M5 x 13
6	Stop plate
7	Bolt
8	Tilt only stay LM
9	Barrier
10	Stop
11	Striker
12	Striker
13	Slider
14	Coupling bracket
15	Cheese head screw M5 x 12
16	Coupling screw M6
17	ESG LM M6
18	Countersunk screw M5 x 35
19	Striker
20	Packer A0004
21	Handle support LM





ALU 4200-K *Hardware list*

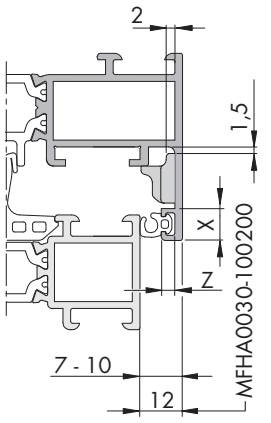
	Item	Quantity	Description			Material no.		Material no.
Generally required	1a	0...1	**Handle LM**	*Use for a 751 and up*		*See handle overview LM Drawing no.: LMen1337 in aluminium planning manual*		
	1b	0...1	**Window handle** (□ 7 mm x 25, cam ∅ 10 mm)	*Use for a 840 and up*				
	2	2...3[1]	**Tilt only hinge LM 4200**	**Silver**	1	MMKB0020-525010	20	MMKB0020-525030
				Brown	1	MMKB0020-533010	20	MMKB0020-533030
				White *RAL 9010*	1	MMKB0020-503010	20	MMKB0020-503030
				White *RAL 9016*	1	MMKB0020-504010	20	MMKB0020-504030
				Black *RAL 9005*	1	MMKB0020-523010	20	MMKB0020-523030
				EV1	1	MMKB0020-524010	20	MMKB0020-524030
				ESLG	1	MMKB0020-800010	20	MMKB0020-800030
				Mill finish	1	MMKB0020-500010	20	MMKB0020-500030
	3-7	0...1[2]	**Tilt only security stay size 1**	*From b 450 mm to 600 mm*	1	AMFP0010-100010	5	AMFP0010-100120
		0...1[2]	**Tilt only security stay size 2**	*From b 601 mm to 1,200 mm*	1	AMFP0020-100010	5	AMFP0020-100120
	8-10	1...2	**Tilt only stay LM**	*Use tilt only stays for a 1,021 mm and up*	1	848876	50	239155
	11	1	**Striker**	*From a 751 mm to 1,020 mm*	1	859322	20	265413
	12-13	1	**VS LM-K var. set**	*a 1,021 mm and up (1a or 1b)*	1	MMVS0330-100010	20	MMVS0330-100030
	14-15	0...1	**Coupling set LM A0156**	*For handle LM (1a)*	1	MMKL0060-100010	20	MMKL0060-100030
	16-18	0...1	**Gear set M6 Trial/RR** *(a > 840)*	*For window handle (1b) □ 7 x 25 /∅ 10 mm cam*	1	MMGI0090-100010	20	MMGI0090-100030
	19	0...1	**Striker**	*1,250 mm and up additionally as MV*	1	859322	20	265413
	20	0...2	**Packer**	*For A0004*	1	889220	200	303863
	21	0...1	**Handle support LM**	*For handle LM (1a)*	–	–	200	*See table*

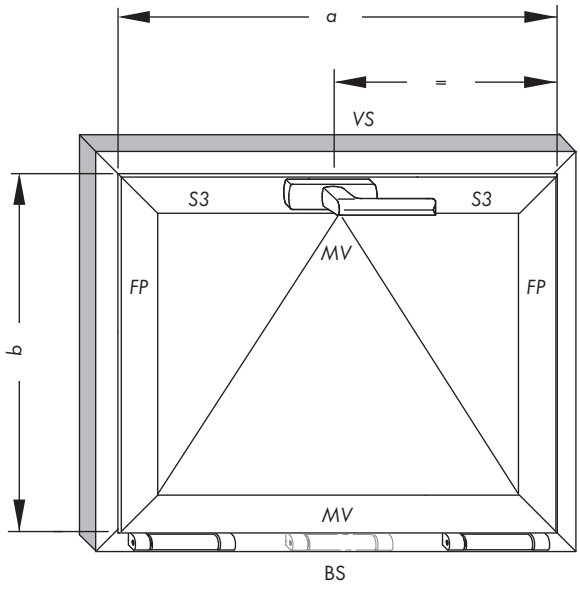
1) for FB 1201 mm and up, an additional tilt only hinge as MV is recommended

2) Contents of packing unit: 1 right and 1 left tilt only security stay

Design variations for handle support (21)

USH	Z	X < 7 mm	X 7.1 - 8.5 mm
7 - 10 mm	< 2 mm	MFHA0010-100200	MFHA0010-100200
7 - 10 mm	2.1 - 3 mm	MFHA0010-100200	MFHA0020-100200
7 - 10 mm	> 3 mm	MFHA0010-100200	-
12 mm	-	MFHA0030-100200	-





Abbreviations

The following abbreviations are used in these assembly instructions:

a	Sash width
b	Sash height
BS	Hinge side
EV1	Anodised
ESLG	Brushed stainless steel-look
FP	Tilt only security stay
MV	Centre lock
Nm	Torque in Nm
VS	Locking side
USH	Rebate height
S3	Operating rods, top horizontal

Preparation

A For a (sash width) of 751 mm and up, make punch out for handle LM (**1a**), window handle (**1b**) (see page 8).
B Open the operating rod guiding groove.
C Remove the rebate seal in the area through which the hinges pass and rework the sash profiles according to the specifications on page 8.
D For a 1021 mm and up, rework operating rods S3 according to specifications on page 8.

Sash

a from 400 - 2,400 mm
A Insert tilt only hinge LM 4200 (**2**) horizontally from below.
B Position tilt only hinge LM 4200 (**2**) according to specifications on page 8 and screw on with countersunk screws M5 x 7 (torque 2.5 ± 0.25 Nm).
C Position stop (**10**) according to dimensions on page 8 and lock it using punching screw (torque 2.5 ± 0.25 Nm).
a from 400 - 750 mm
D Fasten commercially available sky-light snapper (sash hardware).
a from 751 - 1,020 mm
E Insert coupling bracket (**14**) horizontally from above.
F Attach handle LM (**1a**) using cheese head screws M5 x 12 (**15**) (torque 2.5 ± 0.25 Nm).

For gear LM **a from 840 - 2,400 mm**
For gear LM **E** Operating rods horizontally from above.
For gear LM **F** Insert ESG LM M6 (**17**) in provided opening (see page 8 Figure 3).
For gear LM **G** Attach ESG LM M6 (**17**) to operating rods using coupling screws M6 (**16**) (PZ 2, torque 2.75 ± 0.25 Nm).
H Attach handle LM (**1a**) using cheese head screws M5 x 12 (**15**) (torque 2.5 ± 0.25 Nm).

For gear LM **a from 1,021 - 2,400 mm**
For gear LM **E** Insert slider (**13**) with operating rod S3, operating rod S3 and slider (**13**) horizontally from above.
For gear LM **F** Insert ESG LM M6 (**17**) in provided opening (see page 8 Figure 3).
G Attach ESG LM M6 (**17**) to operating rods S3 using coupling screws M6 (**16**) (PZ 2, torque 2.75 ± 0.25 Nm).
For gear LM **H** Attach window handle (**1b**) using countersunk screw M5 x 35 (**18**) (PZ 2, torque 2.5 ± 0.25 Nm).

Frame

a from 400 - 2,400 mm
A Position tilt only stays LM (**8**) according to specification on page 9 and fix each in place with grub screws (torque 2.5 ± 0.25 Nm).
a from 400 - 750 mm
B Fasten commercially available sky-light snapper (frame hardware).
a from 751 - 2,400 mm
C Position strikers (**11, 12, 19**) according to specification on page 9 and fix each in place with grub screws (torque 1.5 ± 0.25 Nm).

Final installation

A Insert sash in the frame.
B Align sash laterally.
C Open sash and tighten cheese head screws on top hinge (torque 2.5 ± 0.25 Nm).
D Check that the window works correctly.
E If necessary, adjust sash contact pressure using eccentric locking cam.

Hinging the tilt only stay

A Push back the anti-lift device of the stop (**10**) (Figure 1).
B Insert pan head rivet of the tilt only stay LM (**8**) in the provided guide (Figure 1).

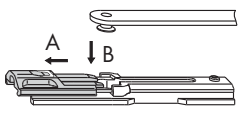


Figure 1

C Release the anti-lift device of the stop (**10**) (Figure 2).

D Insert barrier (**9**) in provided groove and snap into place (Figure 2).

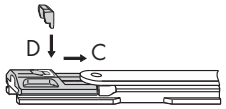


Figure 2

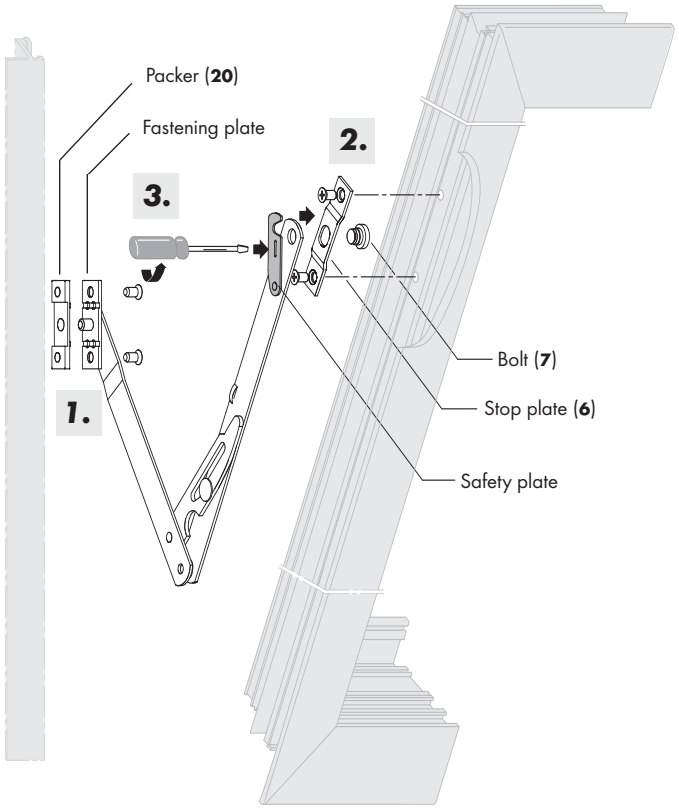
⚠ WARNING

Unsecured sash frames can pose a risk of injury.

- When being hinged into the frame, the unsecured sash frame can tilt downwards suddenly and lead to serious bodily injury.

Always have two people present when hinging or unhinging the tilt sash.

All rules and regulations regarding job safety must always be observed when working above the head, on ladders and at great heights.



Installing the tilt only security stay

Preparation
Drill holes for tilt only security stay according to specifications on pages 7, 8 and 9.

1. Apply fastening plate to frame groove and fasten using countersunk screws M5 x 13 (**5**) (torque 2.5 ± 0.25 Nm).

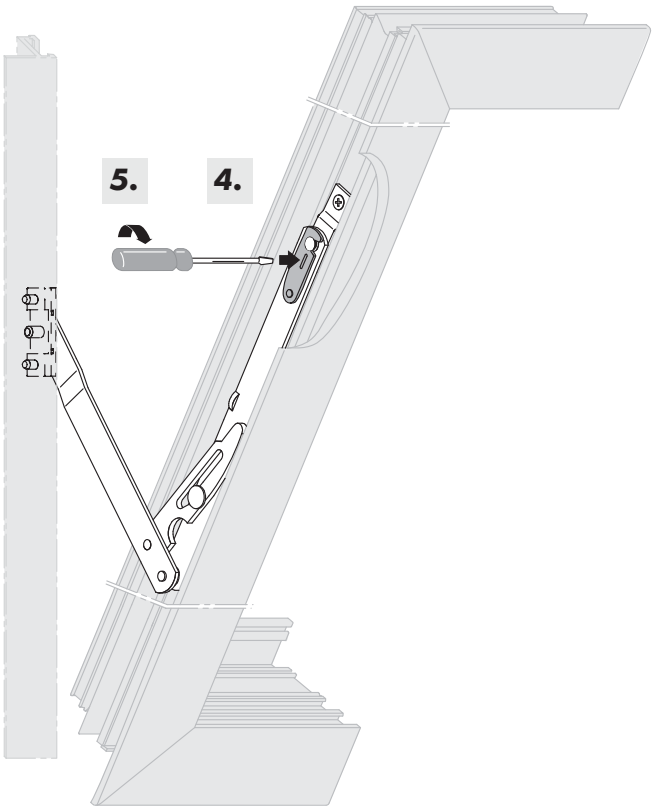
2. Insert stop plate (**6**) and bolt (**7**) in the guiding groove and fasten with countersunk screws M5 x 13 (**5**) (torque 2.5 ± 0.25 Nm).

3. Tilt up the safety plate of the tilt only security stay.

4. Hinge tilt only security stay into the installed bolts (**7**).

5. Tilt back the safety plate to the original position.

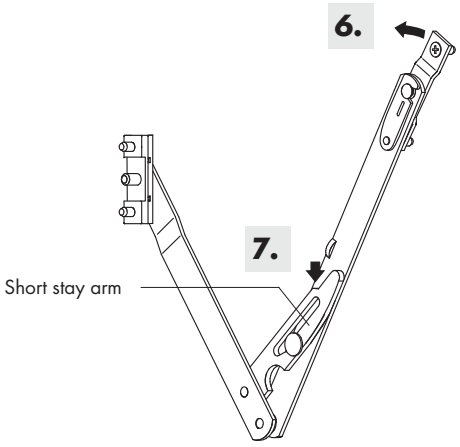
Unhinge it in the reverse order.



Stay in full tilt cleaning position

6. In tilt position, lift sash slightly.

7. Press short stay arm downward and lower sash into full tilt cleaning position.

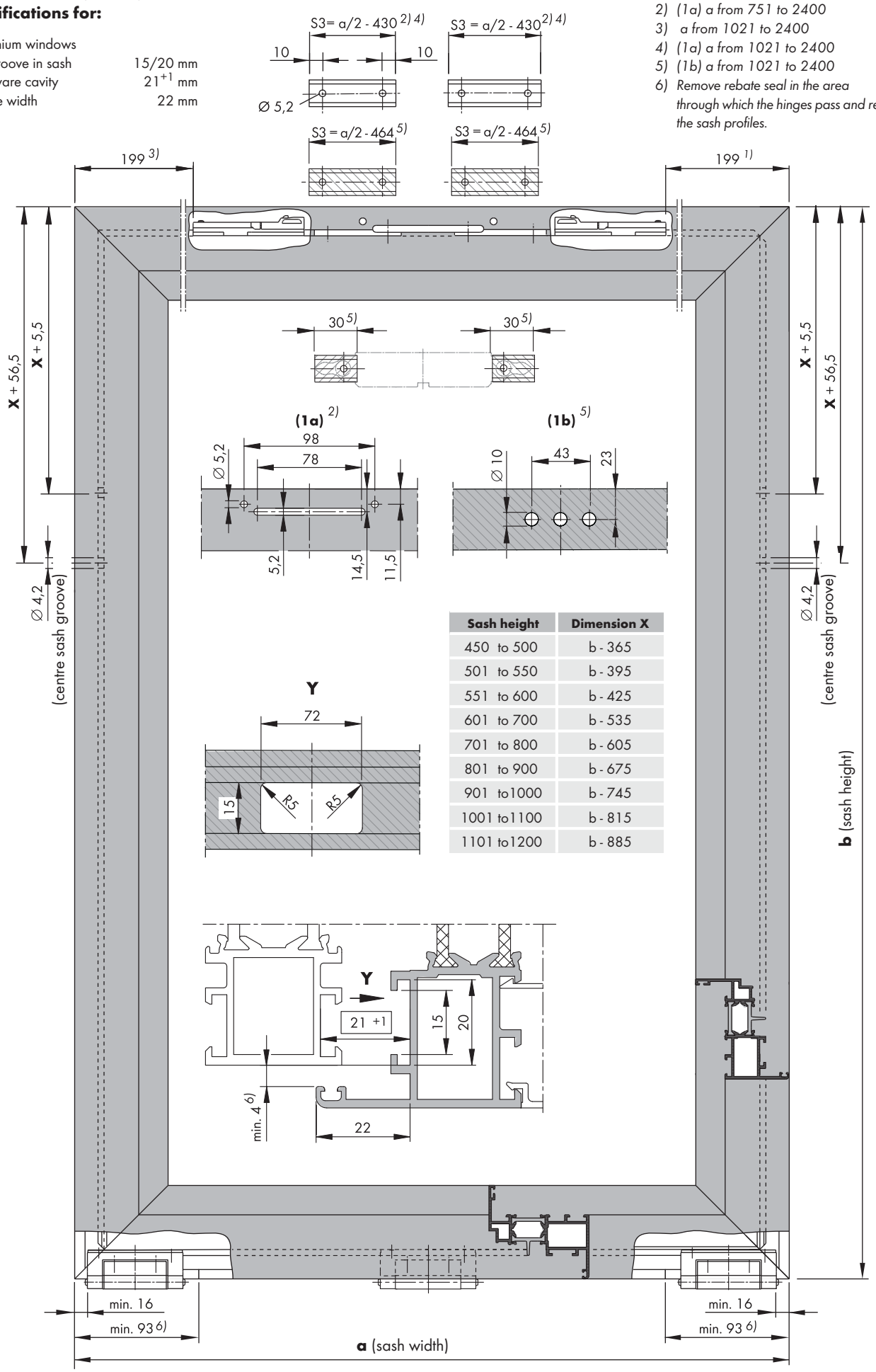


ALU 4200-K *Sash dimensions*

All dimensions (in mm) and specifications for:

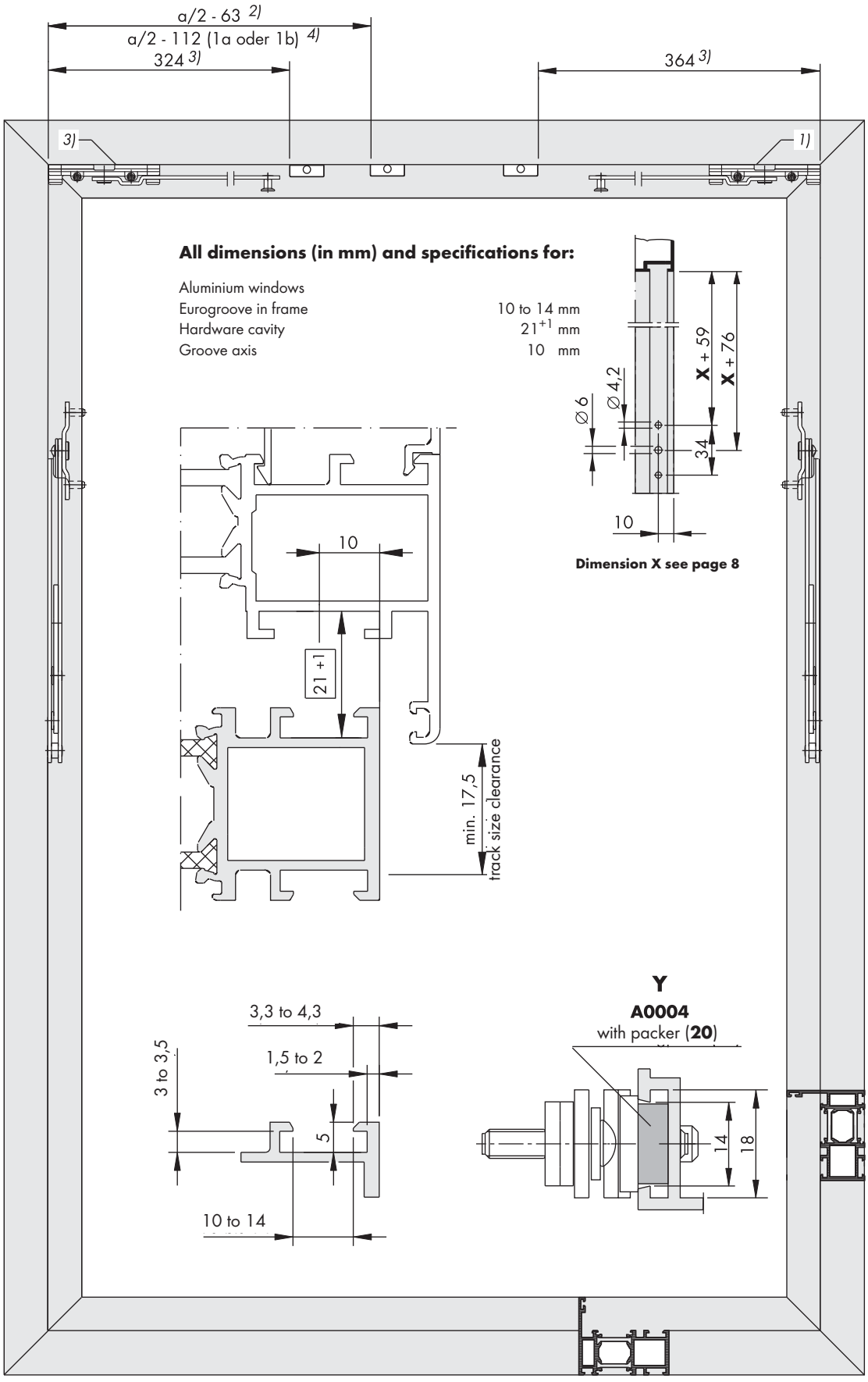
Aluminium windows	
Eurogroove in sash	15/20 mm
Hardware cavity	21^{+1} mm
Rebate width	22 mm

1) a from 400 to 2400
2) (1a) a from 751 to 2400
3) a from 1021 to 2400
4) (1a) a from 1021 to 2400
5) (1b) a from 1021 to 2400
6) Remove rebate seal in the area through which the hinges pass and rework the sash profiles.



Sash height	Dimension X
450 to 500	b - 365
501 to 550	b - 395
551 to 600	b - 425
601 to 700	b - 535
701 to 800	b - 605
801 to 900	b - 675
901 to1000	b - 745
1001 to1100	b - 815
1101 to1200	b - 885

1) FB from 400 to 2,400
2) FB from 751 to 1,020
3) FB from 1,021 to 2,400
4) FB from 1,251 to 2,400



Basic safety notes

Intended use

The hardware described in this document is intended to be installed in an aluminium window frame by a certified window construction specialist in accordance with these instructions. The windows must only be installed vertically.
The certified window construction specialist must ensure that the hardware is suitable for the application based on the specifications in these instructions and in the other documents specified.

Avoid excessive strain

Bearing components can break if they are exposed to excessive strain. If this happens, the window sash may fall out, leading to serious injuries. If the hinge parts may be subject to excessive strain under certain conditions (use in schools, nursery schools, etc.), appropriate measures must be taken to prevent this from happening, such as using turning locks or tilt-before-turn opening (TBT).

- If in any doubt, please contact your SIEGENIA sales consultant.

Do not mix hardware components

The hardware components are designed to work with one another. If they are mixed on a window with hardware components from other systems or manufacturers, it is not possible to guarantee that they will operate safely.
Hardware components may break and cause accidents.

- Only use the hardware components listed in these instructions together on a window.

Only treat window surfaces prior to assembly of hardware

- Treating window surfaces after assembling the hardware may affect the components' operational reliability.

Avoid damage caused by corrosion and debris

Corrosive materials, dirt and moisture may damage hardware components and cause hazards.

- Do **not** use acetic or acid-releasing sealants.
- Do **not** use the hardware components in environments where the air contains aggressive or corrosive components.
- Keep all rebates free of debris and dirt, especially cement and plaster residue.
- Keep the hardware dry.

Clean hardware gently

- Only clean the hardware with a soft cloth and mild, diluted pH-neutral cleaning agents.
- The hardware must not be exposed to abrasive cleaners or aggressive, acidic cleaning agents.
- Leave the hardware to dry after cleaning.

Pass on information to the user of the window

- Attach the user information order no. 05083 to the installed window or door element so that it can be seen easily.
- Pass on the following leaflets to the user:
  - Maintenance and cleaning instructions SI-AU order no. 17772
  - Operating instructions SI-AU order no. 05766

Exclusion of liability

- We assume no liability for functional disorders and damage to the hardware, or to the windows and French doors equipped with the hardware, where such malfunctions and damage are the result of insufficient tendering information, failure to follow these installation instructions or forceful impact (e.g. due to improper use).

ALU 4200-K/ZV

Clampable tilt-sash fitting for aluminium windows

*Further details and specifications/information regarding the product and liability (guidelines: VHBH, TBDK and VHBE) can be found in the aluminium planning manual (H4006.3042EN) and **must** be observed.*

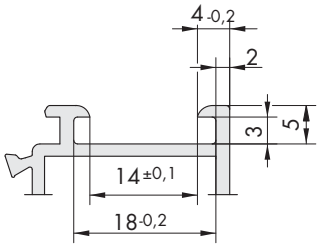
The specified dimensions are finished dimensions after the surface treatment of the profiles e.g. painting, powder coating etc.!

Intended use

Profile selection/alignment

Frame groove dimensions

A0004



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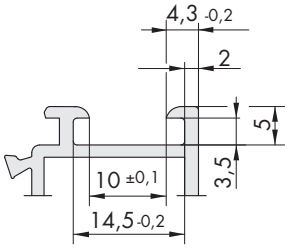

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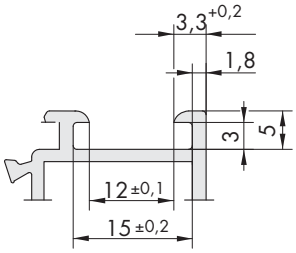
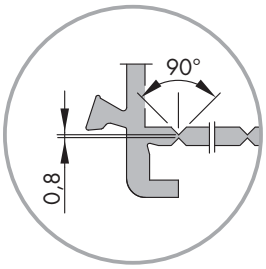
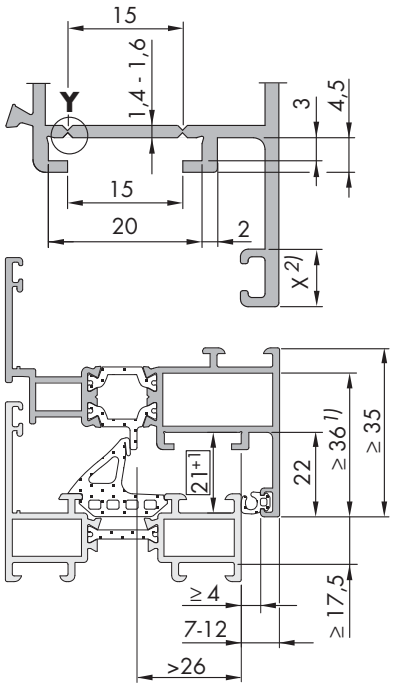


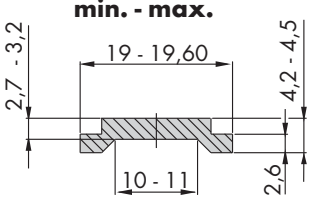
Y



Sash- and frame dimensions



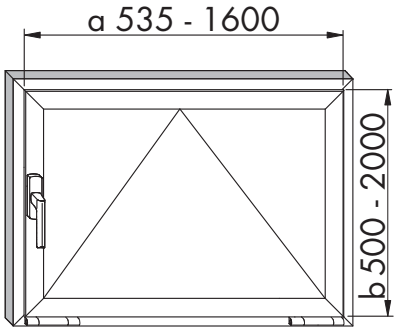
Operating rod dimensions min. - max.



All dimensions in mm

1) On gearbox M6
2) Refer to table on page 3

		1 tilt-sash stay	2 tilt-sash stays
sash width	(a)	min. 535 - max. 935	min. 936 - max. 1600
sash height	(b)	min. 500 - max. 2000	min. 500 - max. 2000
sash weight	(⚖)	max. 40 kg	max. 100 kg



Contents

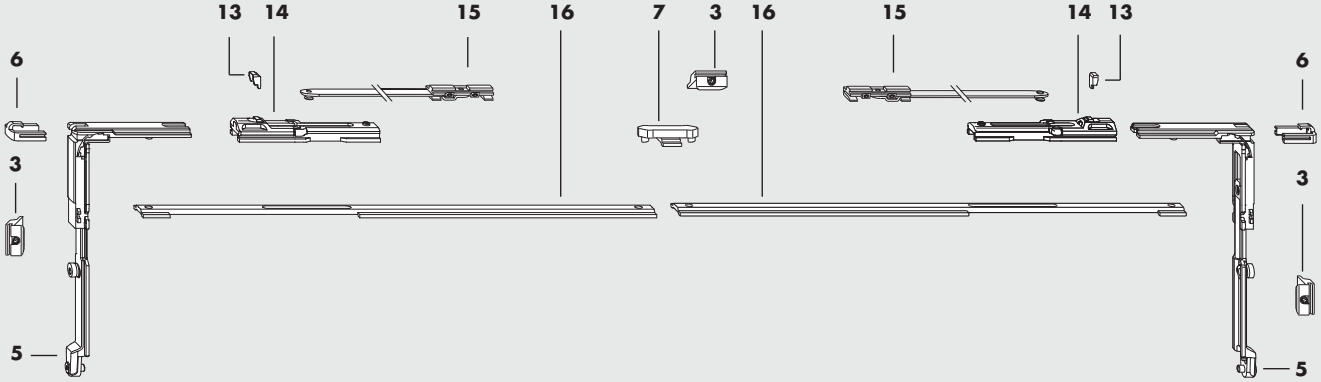
Installation instructions
H48.4200LS005en

Technical specifications and colours are subject to change

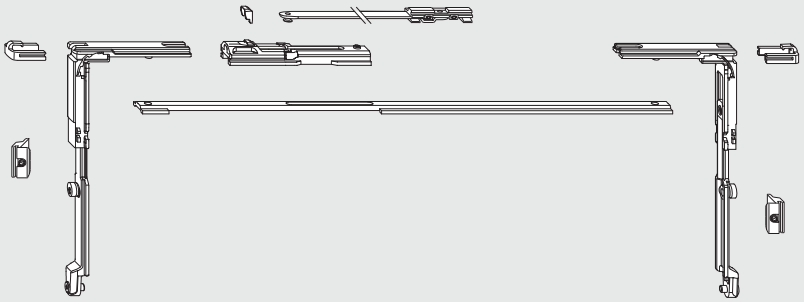
H48.4200LS005en/1

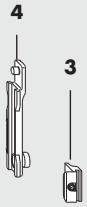
ALU 4200-K/ZV *Fittings Layout*

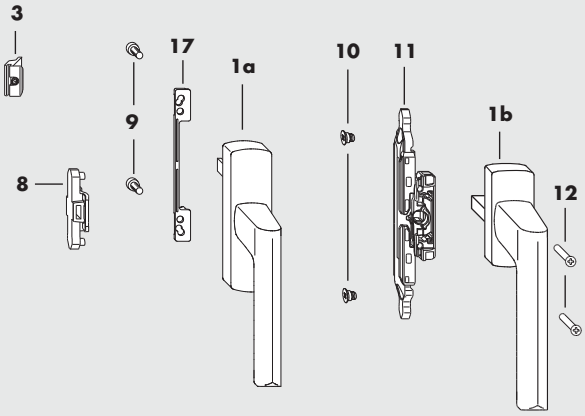
a from 936 mm to1600 mm



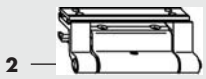
a from 535 mm to 935 mm

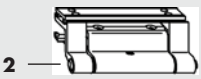






1a	Handle LM
1b	Window handle
2	Rebate hinge LM 4200
3	Striker
4	Slider
5	Corner drive VSU
6	Clamping piece
7	Coupling piece
8	Coupling bracket
9	Cheese head screw M5 x 12
10	Countersunk screw M6
11	ESG LM M6
12	Csk screw M5 x 35
13	Locking piece
14	Retainer
15	Tilt sash stay
16	Drive rod
17	Handle support LM





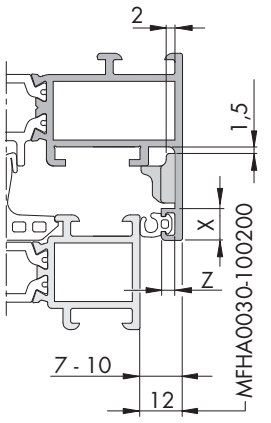
ALU 4200-K/ZV *Hardware list*

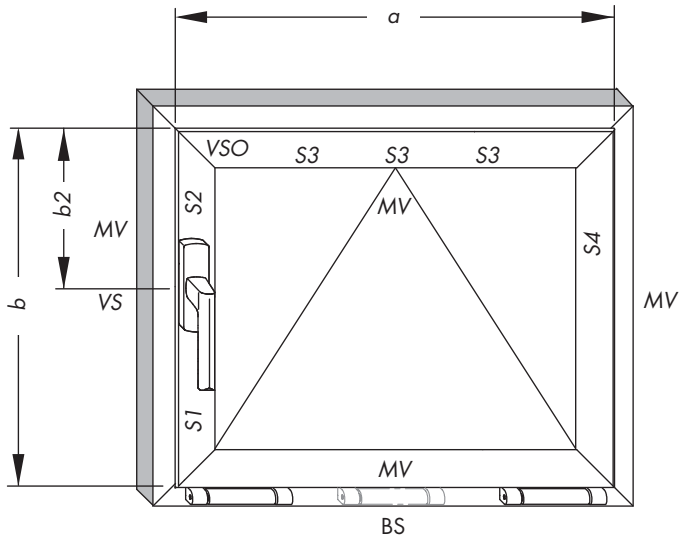
	Pos.	Qty.	Description			Material no.		Material no.
	1	**0...1**	**Handle LM**			*Refer to handle overview LM Drawing no.: LMen1337 in the Aluminium Specifiers Manual*		
	1	**0...1**	**Window handle** (□ 7mm x 25, lugs ∅ 10 mm)					
always necessary	**2**	**2...3**[1)]	**Rebate hinge LM 4200**	**silver**	**1**	**MMKB0020-525010**	**20**	**MMKB0020-525030**
				brown	**1**	**MMKB0020-533010**	**20**	**MMKB0020-533030**
				white *RAL 9010*	**1**	**MMKB0020-503010**	**20**	**MMKB0020-503030**
				white *RAL 9016*	**1**	**MMKB0020-504010**	**20**	**MMKB0020-504030**
				black *RAL 9005*	**1**	**MMKB0020-523010**	**20**	**MMKB0020-523030**
				EV1	**1**	**MMKB0020-524010**	**20**	**MMKB0020-524030**
				ESLG	**1**	**MMKB0020-800010**	**20**	**MMKB0020-800030**
				mill	**1**	**MMKB0020-500010**	**20**	**MMKB0020-500030**
	3-7	**1**	**ZV LM-K Var. Set**		**1**	**MMZV0030-100010**	**20**	**MMZV0030-100030**
	8-9	**0...1**	**Coupling set LM A0156**	*for 1a*	**1**	**MMKL0060-100010**	**20**	**MMKL0060-100030**
	10-12	**0...1**	**Gear set M6 Trial/RR**	*in conjunction with (**1b**)*	**1**	**MMGI0090-100010**	**20**	**MMGI0090-100030**
	13-15	**1...2**	**Tilt sash stay LM**	*from a 936 mm 2 tilt-sash stays LM*	**1**	**848876**	**50**	**239155**
	16	**1...2**	**Drive rod**	*from a 936 mm 2 drive rods*	**1**	**848913**	**20**	**239162**
	17	**0...1**	**Handle support LM**		**–**	**–**	**200**	*see table*

1) from a 1201 mm it is recommended to use an additional turn and rebate hinge LM 4200 as MV

Handle support versions (17)

USH	Z	X < 7 mm	X 7,1 - 8,5 mm
7 - 10 mm	< 2 mm	MFHA0010-100200	MFHA0010-100200
7 - 10 mm	2,1 - 3 mm	MFHA0010-100200	MFHA0020-100200
7 - 10 mm	> 3 mm	MFHA0010-100200	-
12 mm	-	MFHA0030-100200	-





Abbreviations

The following abbreviations are used in this installation instruction

a	sash width
b	sash height
BS	hinge side
ESG	routed-in gear
b2	upper handle position
MV	centre lock
VS	locking side
VSO	top locking side
S1	drive rod, top locking side (ESG)
S2	drive rod , top horizontal
S3	drive rod , top horizontal
S4	drive rod opposite to locking side

Installation Instructions

Preparation

A Prepare the handle LM (**1a**) / handle (**1b**) holes.
B Open the drive gear grooves.
C If neccesary remove the over rebate seals in the area of the hinges or re-work sash profiles according to the detail on page 6
D Prepare the drive rods S1 and S4 according to the details on page 6.

Sash

For sash width between **535 mm and 935 mm:**
A Slide in stop (**14**) using the drive rod S3 (**16**) horizontally at the top.
B Slide-in coupling bracket (**8**) with drive rod S2 and corner drive VSU (**5**) on the VS (locking side).
C Connect together the corner drive VSU (**5**) and drive rod S3 (**16**) and secure using clamping piece EUL (**6**).
D Position the stop (**14**) according to the dimensions on page 6 and lock in place with the punching screws (Torque 2.5 ± 0.25 Nm).
For LM gears ***E*** Insert ESG LM M6 (**11**) into the intended opening (See Page 6, figure 3).
For LM gears ***F*** Connect the ESG LM M6 (**11**) using the M6 coupling screws (**10**) to the S1 and S2 drive rods (PZ 2, Torque 2.75 ± 0.25 Nm).
For LM gears ***G*** Screw on handle (**1b**) using countersunk-head screws PZ M5 x 35 (**12**) (PH 2, Torque 2.5 ± 0.25 Nm).

For sash width between **936 mm to 1600 mm**:
C Insert stop (14) with drive rod S3 (**16**), locking bolt (**7**) and drive rod S3 (**16**) with stop (**14**) in the top horizontal.
D Slide in coupling bracket (**8**) with drive rod S2 and corner drive VSU (**5**) on the VS (locking side).
E Connect the corner drive VSU (**5**) with the drive rod S3 (**16**) and secure using clamping piece EUL (**6**).
For LM gears ***H*** Insert ESG LM M6 (**11**) into the intended opening.
For LM gears ***I*** Connect the ESG LM M6 (11) using the coupling screws M6 (10) to the S1 & S2 drive rods (PZ 2, Torque 2.75 ± 0.25 Nm).
For LM gears ***F*** Screw on handle (**1b**) using countersunk-head screw PZ M5 x 35 (**12**) (PZ 2, Torque 2.5 ± 0.25 Nm). Position the stop (**14**) according to the dimensions on page 6 and lock in place with the punching screws (Torque 2.5 ± 0.25 Nm).

For sash width between **535 mm to 1600 mm**:
J Connect the slider (**4**) with the drive rod S4 and corner drive VSU (**5**) and slide in opposite the VS (locking side), connect to drive rod S3 (**16**) and secure using clamping piece EUL (**6**).
K Screw on handle LM (**1a**) using cylinder-head screws M5 x12 (**9**) (Torque 2.5 ± 0.25 Nm).
L Position tilt-only hinge LM 4200 (**2**) according to the specifications on page 6 and fasten using countersunk-head screw M5 x 7 (Torque 2.5 ± 0.25 Nm).

Frame

Position strikers (**3**) as specified on page 7 and clamp each with grub screws (threaded pins) (Torque 1.5 ± 0.25 Nm).

Final assembly LM

A Insert sash into the frame.
B Insert hinge part into the frame groove.
C Laterally align sash. Open sash and tighten the cylinder-head screws on the top hinge (Torque 2,5 ± 0,25 Nm).
D Check window for operation.
E If necessary, adjust the closing pressure using the eccentric locking cams.

Hanging the tilt stay

A Slide back the retainer (**14**) as shown in figure 1.
B Attach the tilt sash stay (**15**), figure 1.

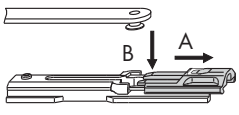


Figure 1

C Release the retainer (**14**) as shown in figure 2.
D Slide in locking piece (**13**), figure 2.

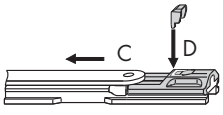
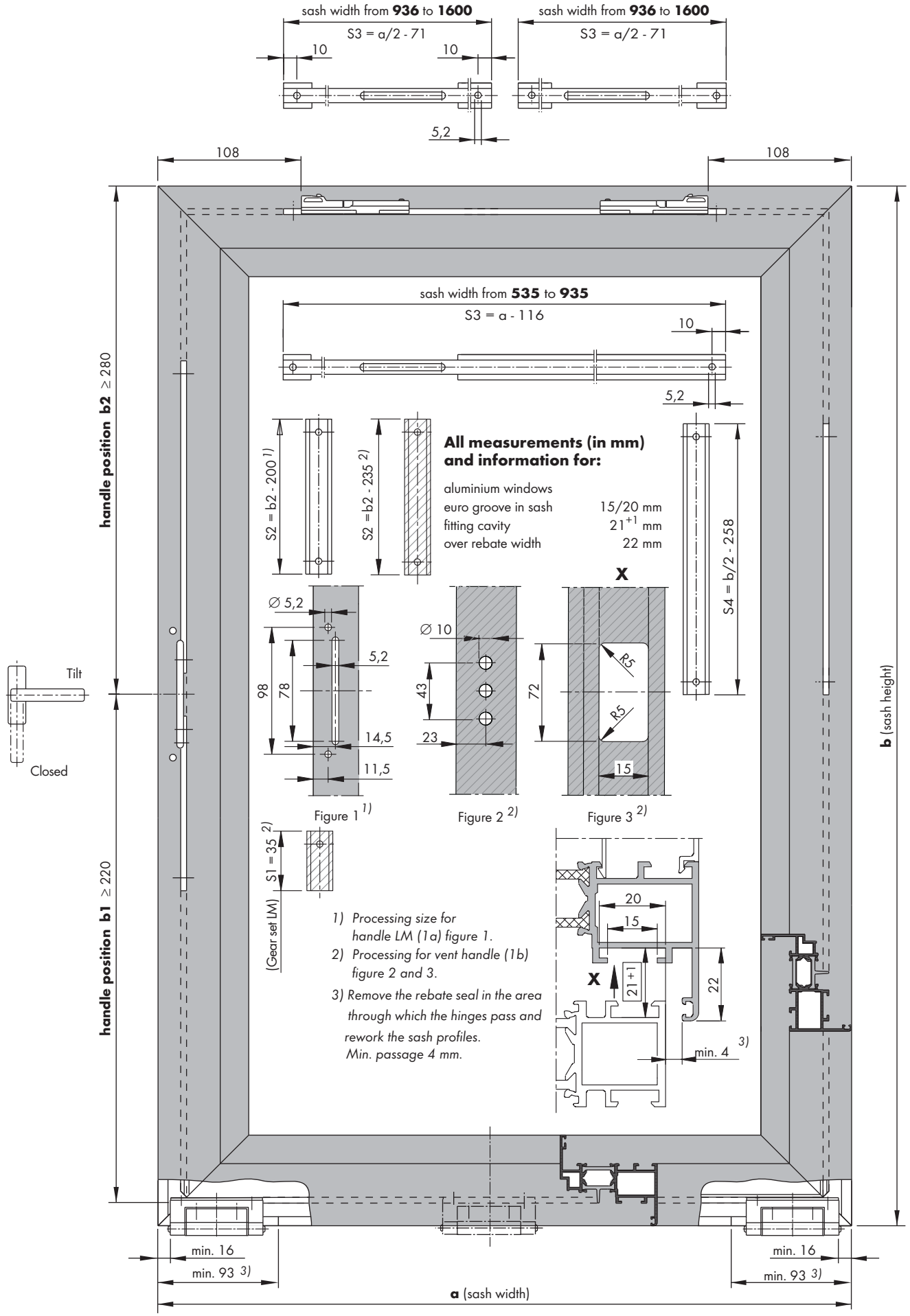
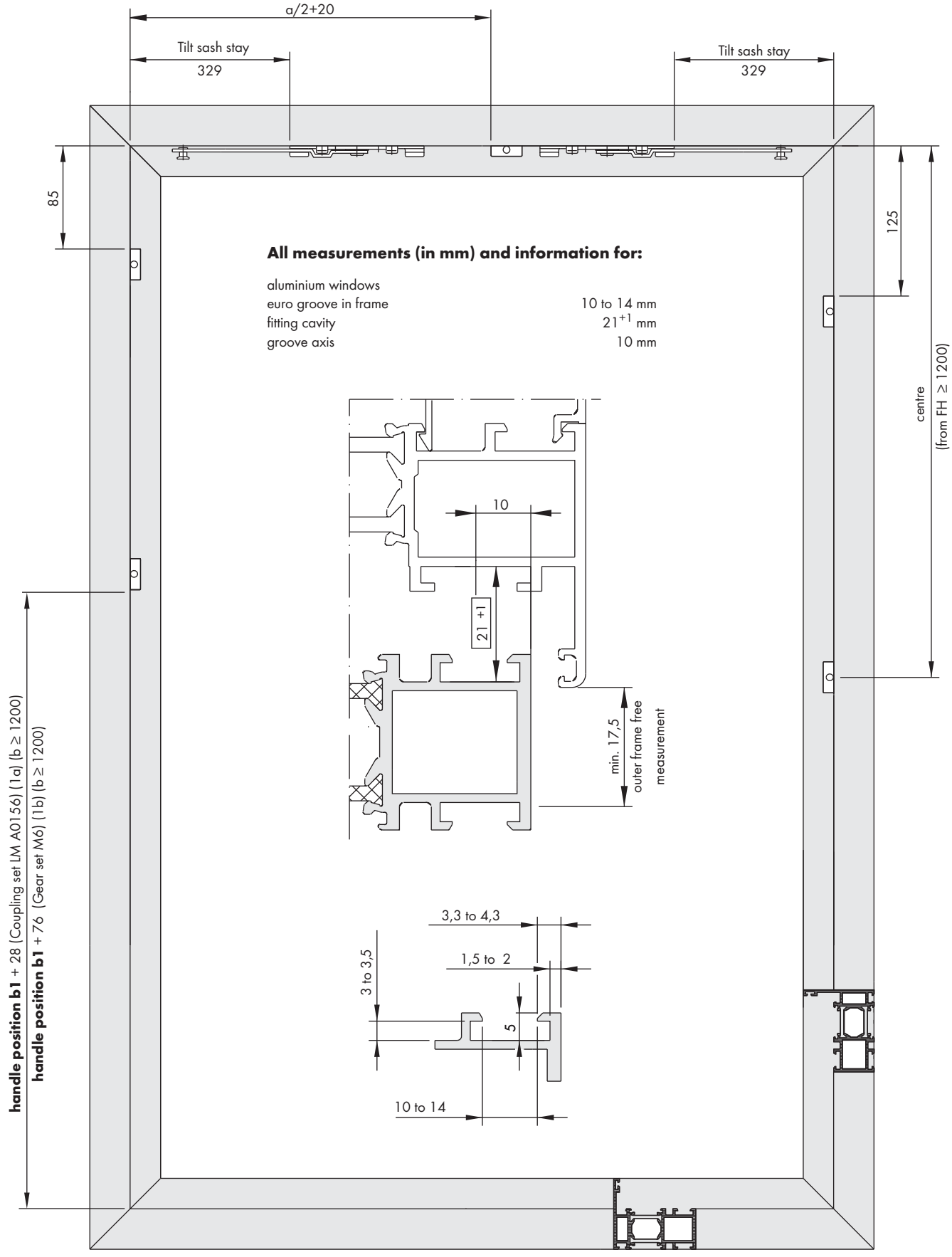


Figure 2


sash width from **936** to **1600**
S3 = a/2 - 71
10
10
5,2
sash width from **936** to **1600**
S3 = a/2 - 71
108
108
sash width from **535** to **935**
S3 = a - 116
10
5,2
handle position b2 ≥ 280
handle position b1 ≥ 220
Tilt
Closed
S2 = b2 - 200 1)
S2 = b2 - 235 2)
S4 = b/2 - 258
All measurements (in mm) and information for:
aluminium windows
euro groove in sash 15/20 mm
fitting cavity 21^{+1} mm
over rebate width 22 mm
Ø 5,2
98
78
5,2
14,5
11,5
Figure 1 1)
Ø 10
43
23
Figure 2 2)
X
72
R5
R5
15
Figure 3 2)
S1 = 35 2)
(Gear set LM)
1) Processing size for handle LM (1a) figure 1.
2) Processing for vent handle (1b) figure 2 and 3.
3) Remove the rebate seal in the area through which the hinges pass and rework the sash profiles. Min. passage 4 mm.
20
15
X
21+1
22
min. 4 3)
min. 16
min. 93 3)
min. 16
min. 93 3)
a (sash width)
b (sash height)


a/2+20
Tilt sash stay
329
Tilt sash stay
329
85
125
centre
(from FH ≥ 1200)
All measurements (in mm) and information for:
aluminium windows
euro groove in frame 10 to 14 mm
fitting cavity 21+1 mm
groove axis 10 mm
10
21 +1
min. 17,5
outer frame free
measurement
3,3 to 4,3
1,5 to 2
3 to 3,5
5
10 to 14
handle position b1 + 28 (Coupling set LM A0156) (1a) (b ≥ 1200)
handle position b1 + 76 (Gear set M6) (1b) (b ≥ 1200)

Basic safety notes

Intended use

The hardware described in this document is intended to be installed in an aluminium window frame by a certified window construction specialist in accordance with these instructions. The windows must only be installed vertically.
The certified window construction specialist must ensure that the hardware is suitable for the application based on the specifications in these instructions and in the other documents specified.

Avoid excessive strain

Bearing components can break if they are exposed to excessive strain. If this happens, the window sash may fall out, leading to serious injuries. If the hinge parts may be subject to excessive strain under certain conditions (use in schools, nursery schools, etc.), appropriate measures must be taken to prevent this from happening, such as using turning locks or tilt-before-turn opening (TBT).

- If in any doubt, please contact your SIEGENIA sales consultant.

Do not mix hardware components

The hardware components are designed to work with one another. If they are mixed on a window with hardware components from other systems or manufacturers, it is not possible to guarantee that they will operate safely.
Hardware components may break and cause accidents.

- Only use the hardware components listed in these instructions together on a window.

Only treat window surfaces prior to assembly of hardware

- Treating window surfaces after assembling the hardware may affect the components' operational reliability.

Avoid damage caused by corrosion and debris

Corrosive materials, dirt and moisture may damage hardware components and cause hazards.

- Do **not** use acetic or acid-releasing sealants.
- Do **not** use the hardware components in environments where the air contains aggressive or corrosive components.
- Keep all rebates free of debris and dirt, especially cement and plaster residue.
- Keep the hardware dry.

Clean hardware gently

- Only clean the hardware with a soft cloth and mild, diluted pH-neutral cleaning agents.
- The hardware must not be exposed to abrasive cleaners or aggressive, acidic cleaning agents.
- Leave the hardware to dry after cleaning.

Pass on information to the user of the window

- Attach the user information order no. 05083 to the installed window or door element so that it can be seen easily.
- Pass on the following leaflets to the user:
  - Maintenance and cleaning instructions SI-AU order no. 17772
  - Operating instructions SI-AU order no. 05766

Exclusion of liability

- We assume no liability for functional disorders and damage to the hardware, or to the windows and French doors equipped with the hardware, where such malfunctions and damage are the result of insufficient tendering information, failure to follow these installation instructions or forceful impact (e.g. due to improper use).

ALU axxent-DK/TBT

Concealed tilt sash hardware for aluminium windows and window frames

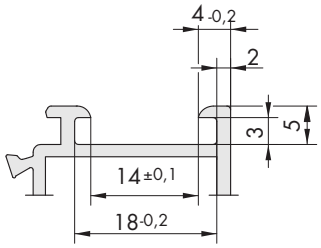
Further details and specifications/information regarding the product and liability (guidelines: VHBH, TBDK und VHBE) can be found in the aluminium planning manual (H4006.3042EN) and must be ***observed****. All dimensions given are final dimensions after the surface of the sections has been treated e.g. painted, powder coated etc.!*

Intended use

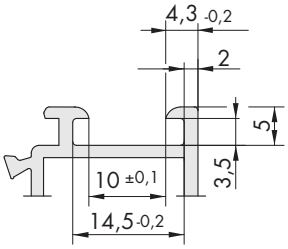
Profile selection/alignment

Frame designs

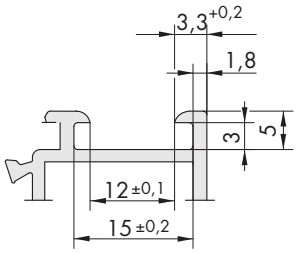
A0004



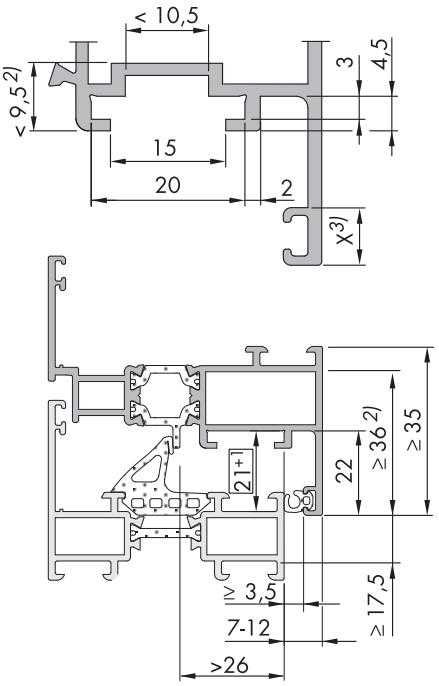
A0006 *4)*



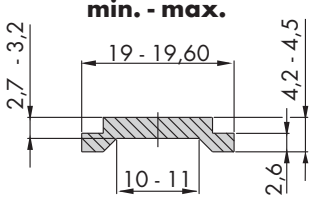
A0022 *4)*



Sash and frame dimensions



Push rod dimensions min. - max.



1) See diagram on page 6
2) Gear set M6
3) See tables 2, 3, 14 and 15
4) Profile machining see page 11

All dimensions in mm

Sash width *1)*	(a)	min. 450 - max. 1600
Sash height *1)*	(b)	min. 550 - max. 2400
Opening limit	(∠)	max. 110 °
Sash weight *1)*	(▯)	max. 130 kg

Table of Contents

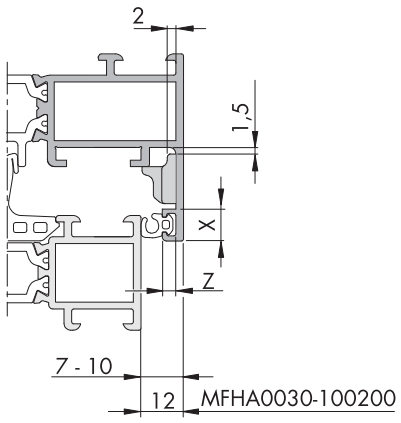
Assembly instructions
H48.axntLS002en

H48.axntLS002en_0_ 2014-06/0

	No.	Piece	Description			Material no.		Material no.
	14-20	1	VS LM-DK FBS-EUL KPS	*(For figure see page 7)*	1	MMVS0310-100010	20	MMVS0310-100030
	21-22	0...1	Coupling set LM A0156	*(1a)*	1	MMKL0060-100010	20	MMKL0060-100030
	24-26	0...1	Gear set M6 Trial/RR	*(1b)*	1	MMGI0090-100010	20	MMGI0090-100030
Accessories								
	39	1	Handle support LM	*(1a)*	-	-	200	-

Design variants of the handle support (39)

USH	Z	X < 7 mm	X 7.1 - 8.5 mm
7 - 10 mm	< 2 mm	MFHA0010-100200	MFHA0010-100200
7 - 10 mm	2.1 - 3 mm	MFHA0010-100200	MFHA0020-100200
7 - 10 mm	> 3 mm	MFHA0010-100200	-
12 mm	-	MFHA0030-100200	-



Hardware overview see page 7.

Basic safety notes

Intended use

The hardware described in this document is intended to be installed in an aluminium window frame by a certified window construction specialist in accordance with these instructions.
The windows must only be installed vertically.
The window construction specialist must determine the suitability of the hardware for its intended use by means of the information provided in these instructions and additional listed documents.

Overstrain

Bearing components can break if they are exposed to excessive strain. If this happens, the window sash may fall out, leading to serious injuries.
If the hinge parts are likely to be subject to excessive strain under certain conditions (use in schools, nursery schools, etc.), appropriate measures must be taken to prevent this from happening, such as using turning locks or tilt-before-turn opening types (TBT).

- If in any doubt, please contact your SIEGENIA sales consultant.

Do not mix hardware components

The hardware components are designed to work with one another. If they are mixed on a window with hardware components from other systems or manufacturers, it is not possible to guarantee that they will operate safely.
Hardware components can break and cause accidents.

- Only use the hardware components listed in these instructions together on a window.

Only treat window surfaces prior to assembling the hardware

- Any surface treatment applied to the window surfaces following assembly of the hardware components may limit their functionality.

Avoid damage caused by corrosion and debris

Corrosive materials, dirt and moisture may damage hardware components and cause hazards.

- Do **not** use acetic or acid-releasing sealants.
- Do **not** use the hardware components in environments where the air contains aggressive or corrosive components.
- Keep the rebates free from deposits and dirt, especially from cement or plaster residue.
- Keep the hardware dry.

Clean hardware gently

- Only clean the hardware with a soft cloth and mild, diluted pH-neutral cleaning agents.
- The hardware must not be exposed to abrasive cleaners or aggressive, acidic cleaning agents.
- Leave the hardware to dry after cleaning.

Pass on information to the user of the window

- Attach the user information sticker, order no. 05083, to the installed window or door element so that it can be seen easily.
- Provide the user with the following documents:
  - Maintenance and cleaning instructions, order no. 15750
  - Operating instructions, order no. 05766

Exclusion of liability

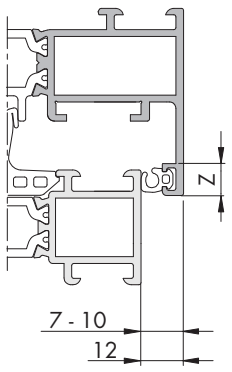
- We assume no liability for malfunctions and damage to the hardware, or to the windows and French doors equipped with the hardware, where such malfunctions and damage are the result of insufficient tendering information, failure to follow these installation instructions or forceful impact (e.g. due to improper use).

	No.	Piece L	Piece R	Description				Material no.		Material no.
	1a	0...1	0...1	**Handle Si-line LM / Handle LM Globe** (without illustration)				*See Handle overview LM drawing no.: H48.ZUBHLS007en in aluminium planning manual*		
	1b	0...1	0...1	**Window handle □ 7mm x 25 mm**		*cam dia.10 mm*				
	2-8	-	1	**BS axxent DK right size 1S**	< 100 kg		1	MMBS0191-100010	10	MMBS0191-100020
		1	-	**BS axxent DK left size 1S**	< 100 kg	*Size ranges*	1	MMBS0192-100010	10	MMBS0192-100020
	2-9	-	1	**BS axxent DK right size 2S**		*see page 6*	1	MMBS0171-100010	10	MMBS0171-100020
		1	-	**BS axxent DK left size 2 S**			1	MMBS0172-100010	10	MMBS0172-100020
	10-13	1	1	**Additional stay LM A0040**		*a ≥1250 mm (> 100 kg a ≥1020 mm)*	1	MMSZ0010-100010	20	MMSZ0010-100030
	14-20	1	1	**VS LM-DK KPS**			1	MMVS0250-100010	20	MMVS0250-100030
		0...1	0...1	**Coupling set FBS-G**	*9 MM*	*(1a)*	1	MMKL0030-100010	20	MMKL0030-100030
	21-23	0...1	0...1	**Coupling set FBS-G**	*10 MM*	*(1a)*	1	MMKL0010-100010	20	MMKL0010-100030
		0...1	0...1	**Coupling set FBS-G**	*USH 12 MM*	*(1a)*	1	MMKL0040-100010	20	MMKL0040-100030
	24-26	0...1	0...1	**Gear set FBS M6 Trial/RR**		*(1b)*	1	MMGI0080-100010	20	MMGI0080-100030
	27-29	1	1	**MV LM 4200-DK**		*a ≥1250 mm*	1	857045	20	246979
	30-34	1	1	**MV LM VS/BS A0040**		*b ≥250 mm*	1	MMMV0030-100010	20	MMMV0030-100030
Accessories										
	35 - 39	-	1	**Sashbrake ALU A0040** [1)]		*a 600 mm - 1000 mm*	1	MSBR0010-000011	50	MSBR0010-000051
		1	-	**Sashbrake ALU, long** [1)]		*a 1001 mm - 1600 mm*	1	MSBR0120-100010	50	MSBR0120-100050
	42	1	1	**Jig BS axxent 130 kg**		*(See fig. on page 10)*	1	MARB0030-023010	-	-
	43 - 47	-	1	**Accessories BS axxent right 130 kg** [1)]		*(See fig. on page 10)*	1	MZBS0061-100010	10	MZBS0061-100020
		1	-	**Accessories BS axxent left 130 kg** [1)]			1	MZBS0062-100010	10	MZBS0062-100020

*1) Contents of the packing unit: BSO A0040 mounting bracket (**43**), countersunk screws M5 x 13 (**44**), BSU A0040 right/left frame part (**45**), BSU A0040 rod (**46**) and BSU A0040 right/left sash part. (**47**).*

Design variants for coupling set FBS-G (21 - 23)

USH	X	Material no.
7 - 10 mm	≤ 8.5 mm	MMKL0030-100030
7 - 10 mm	≤ 7.5 mm	MMKL0010-100030
12 mm	≤ 7 mm	MMKL0040-100030



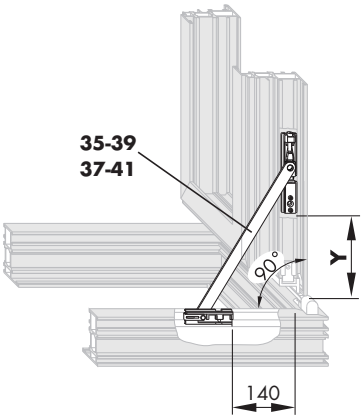
Hardware overview see page 8 and 9.

Installation dimensions for LM limit stay with brake

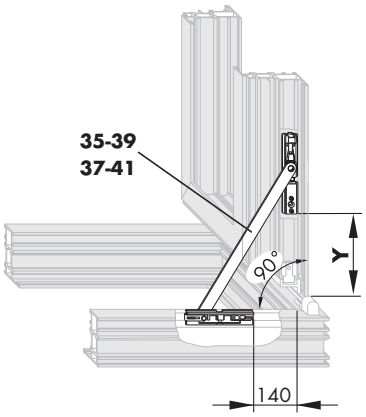
For assembly instructions see document no. H48.ZUBHLS017en

Opening angle (Measurements in mm)	90° Y
Sashbrake ALU A0040 (a 600 - 1000)	145
Sashbrake ALU, long (a 1001 - 1600)	215

Sashbrake ALU A0040



Sashbrake ALU long

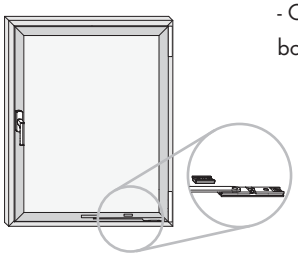


Assembly of the limit stay LM on the hinge side at the bottom (BSU)

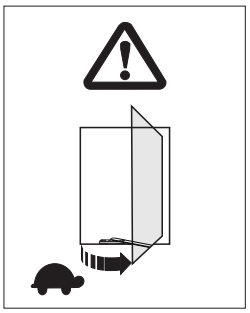
⚠ WARNING

There is a risk of injury if the window sash falls out!

- Only mount limit stay LM on the hinge side at the bottom.



Turn window sash into the end position of the limit stay LM



⚠ WARNING

Risk of injury and damage to property (hinge breakage) due to the sash falling out when opened improperly.

- Do not hit the frame or other sashes with the sash when opening.
- Slowly move the sash into its end position by hand
- Never let sashes swing open uncontrollably.

Hardware overview see page 8.

ALU axxent-DK/TBT

Diagram 130 kg for determining the permissible sash sizes; abbreviations

Glass thickness in mm without air gap

16 mm glass thickness (equivalent to **40** kg/m^2)

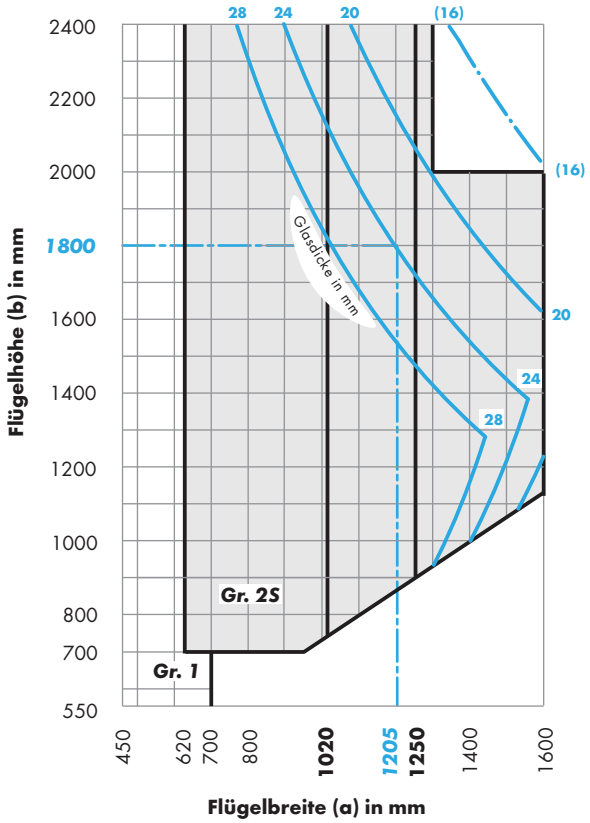
20 mm glass thickness (equivalent to **50** kg/m^2)

24 mm glass thickness (equivalent to **60** kg/m^2)

28 mm glass thickness (equivalent to **70** kg/m^2)

1 mm/m^2 glass thickness = 2.5 kg

Example (—·—):Sash height = 1800 mm
glass thickness = 24 mm
permissible
*sash width = **1205 mm***



For glass thickness of less than 16 mm, all sash sizes that lie within the size range and which do not exceed an aspect ratio a/b of 1.5 are permissible.

Maximum permissible sash weight: 130 kg

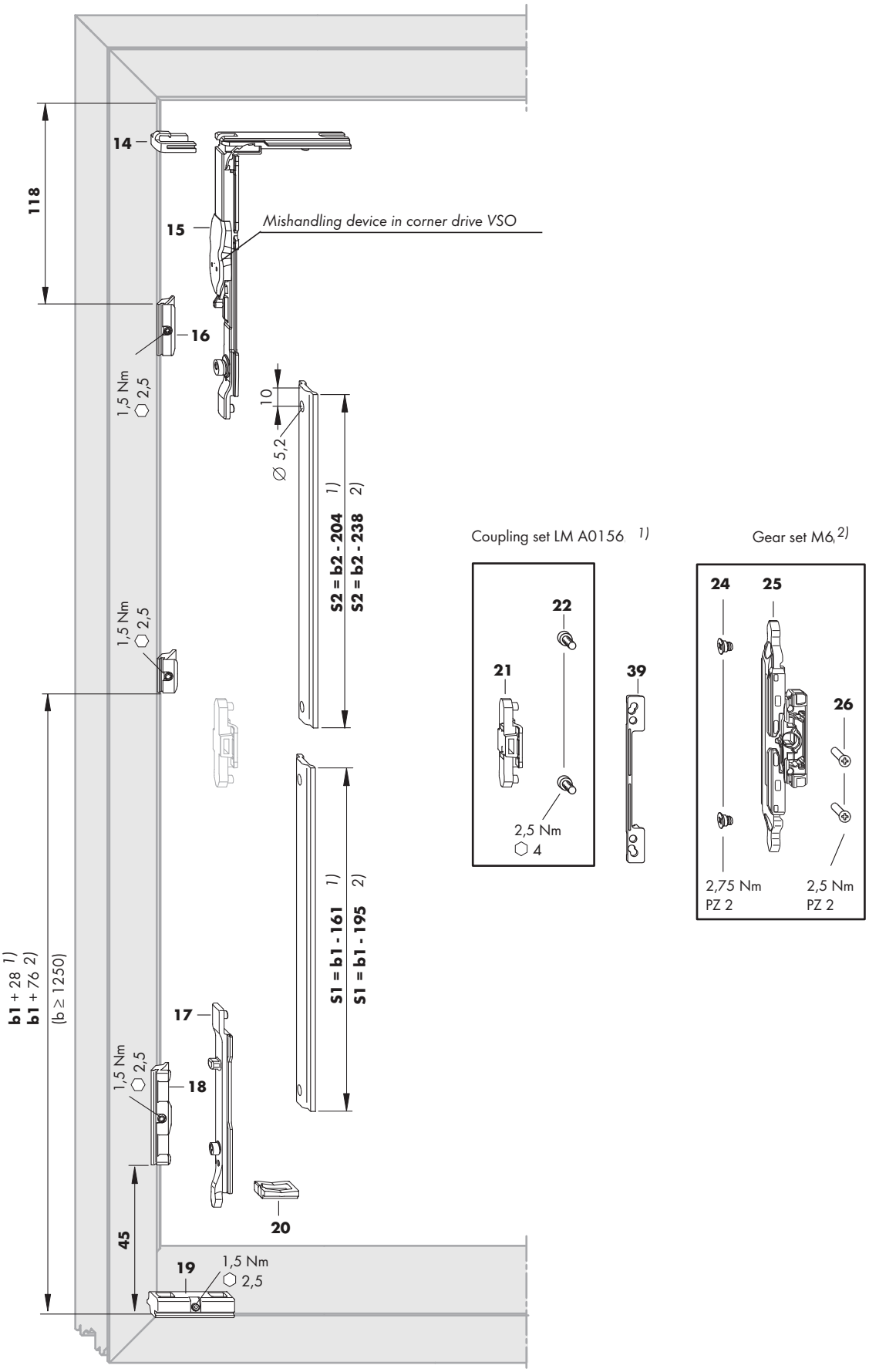
a ≥1250: size 2S + additional stay LM A0040

> 100 kg a ≥1020 size 2S + additional stay LM A0040

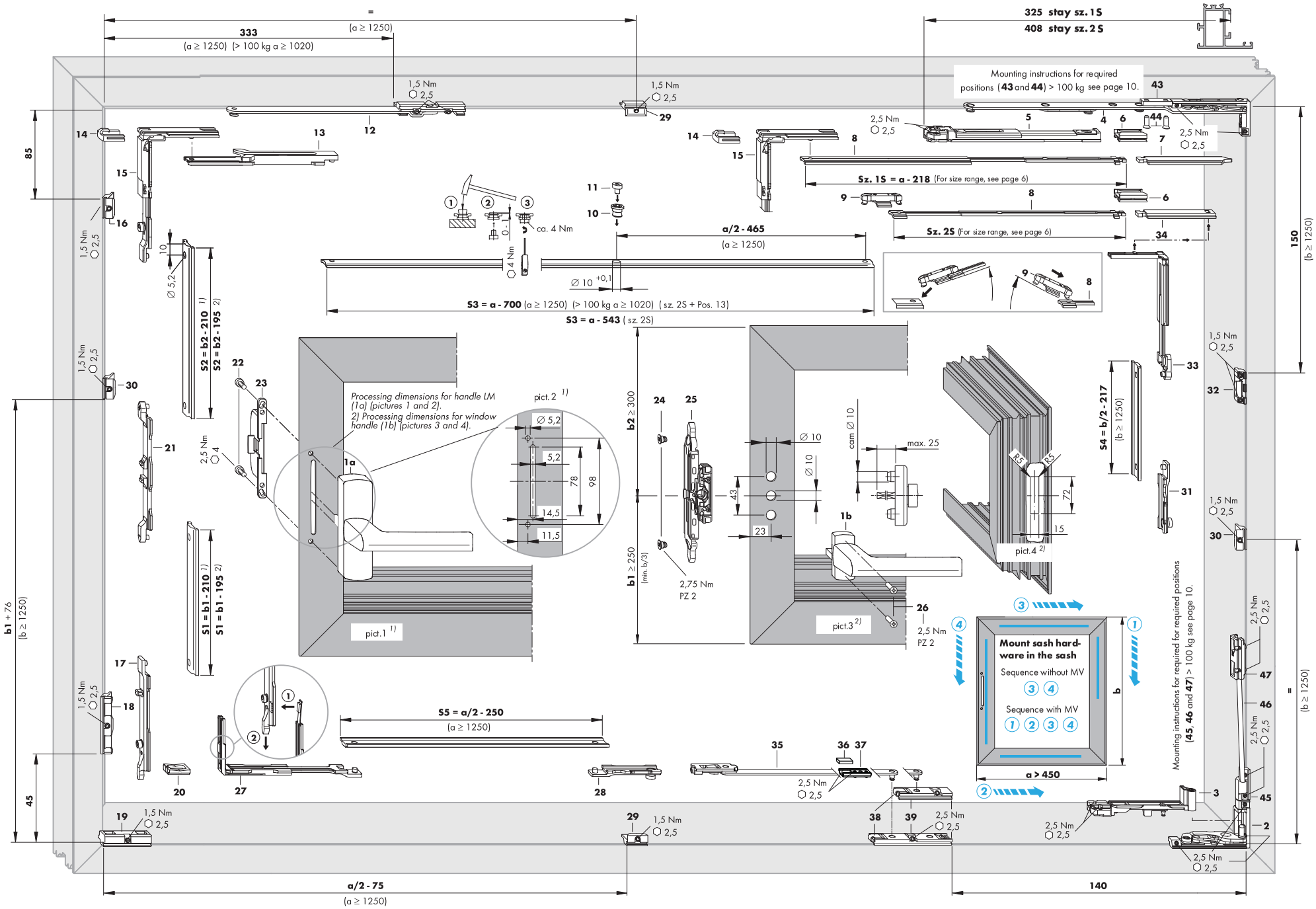
Abbreviations

The following abbreviations are used in these installation instructions:

AV	Compression setting
BS	Hinge side
BSO	Hinge side, top
BSU	Hinge side, bottom
a	Sash width
b	Sash height
b1	Handle height, bottom
b2	Handle height, top
ESG	routed-in drive gear
FBS-G	Tilt only safety stay on handle
FBS-EUL	Mishandling device in the corner drive
MV	Centre lock
Nm	Torque in Nm
SV	Side adjustment
SW	Wrench size
TBT	Tilt Before Turn
VS	Locking side
VSO	Locking side, top
VSU	Locking side, bottom
USH	Rebate height
S1	Operating rod, locking side bottom
S2	Operating rod, locking side top
S3	Operating rod, top horizontal
S4	Operating rod, hinge side
S5	Operating rod, bottom horizontal



See page 2 for hardware list.



See page 4 for hardware list.

ALU axxent-DK *Hardware overview and installation dimensions*

Fixing the BSO A0040 supporting piece

1. Insert the BS axxent 130 jig kg (**42**) on loosened stay, as shown in the adjacent diagram (fig. 1).
2. Drill holes Ø4.2 for mounting bracket BSO A0040 (**43**).
3. Insert the BSO A0040 supporting piece (**43**) into the frame groove, position it on the stay and fix it in place with M5 x 13 countersunk screws (**44**).
4. Tighten the M5x13 countersunk screws (**44**) with a torque of 2.5 ± 0.25 Nm.

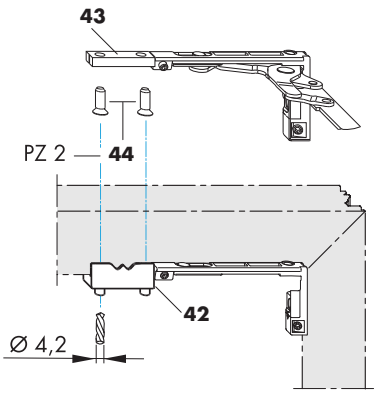


Fig. 1

Fixing the BSU A0040 right/left frame part

5. Insert frame part BSU A0040 right/left (**45**) into the frame groove and position it on the axxent bottom hinge as shown in the diagram (fig. 2).
6. Tighten the grub screws of frame part BSU A0040 right/left (**45**) with 2.5 ± 0.25 Nm torque.

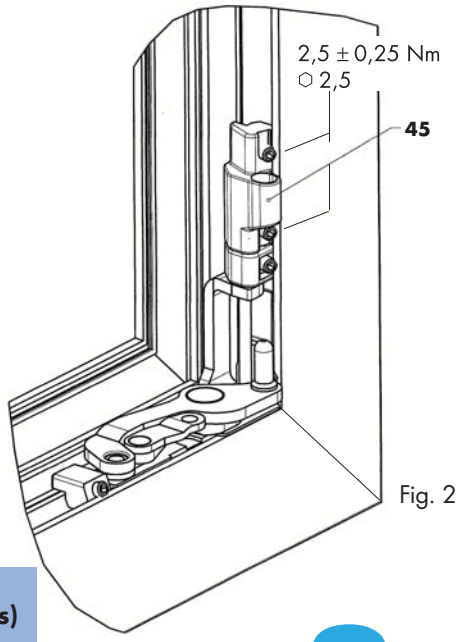


Fig. 2

Installing the BSU A0040 rod into the sash and frame (without the glass)

7. Insert sash part BSU A0040 right/left (**47**) into the sash groove and secure it (fig. 3).
8. Fit sash and open sash.
9. Insert the BSU A0040 rod (**46**) into the BSU A0040 right/left frame part (**45**) (fig. 4).
10. Insert the BSU A0040 rod (**46**) into the BSU A0040 right/left sash part (**47**) (fig. 4).
11. Position sash part BSU A0040 right/left (**47**) as shown in the adjacent diagram (fig. 3) and tighten with torque 2.5 ¬± 0.25 Nm.
12. By adjusting the grub screw in the sash part BSU A0040 right/left (**47**), reduce the play of the BSU rod (**46**) (fig. 4).
Note a: Make sure that the BSU A0040 rod (**46**) has no perceptible play.
Note b: If the tension of the BSU A0040 rod (**46**) is too high, the sash cannot be closed.
Note c: After making adjustments to the BSU, repeat the steps from notes **a** and **b**.

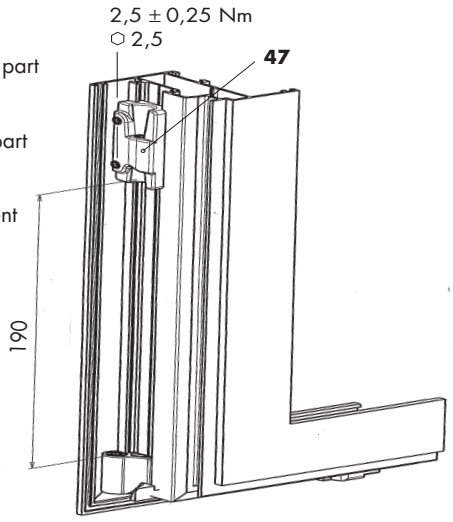


Fig. 3

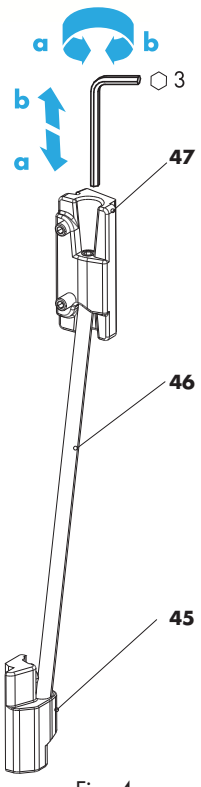
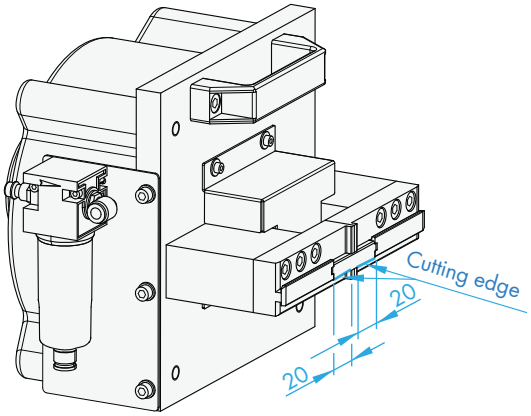


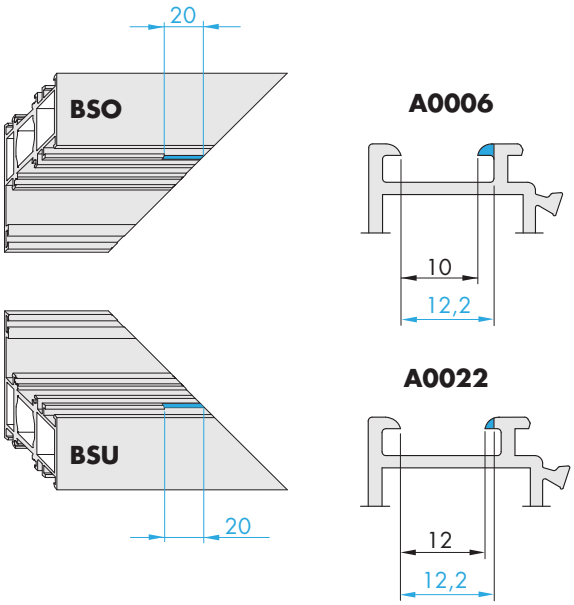
Fig. 4

See page 4 for hardware list.

Profile machining with punch BS axxent

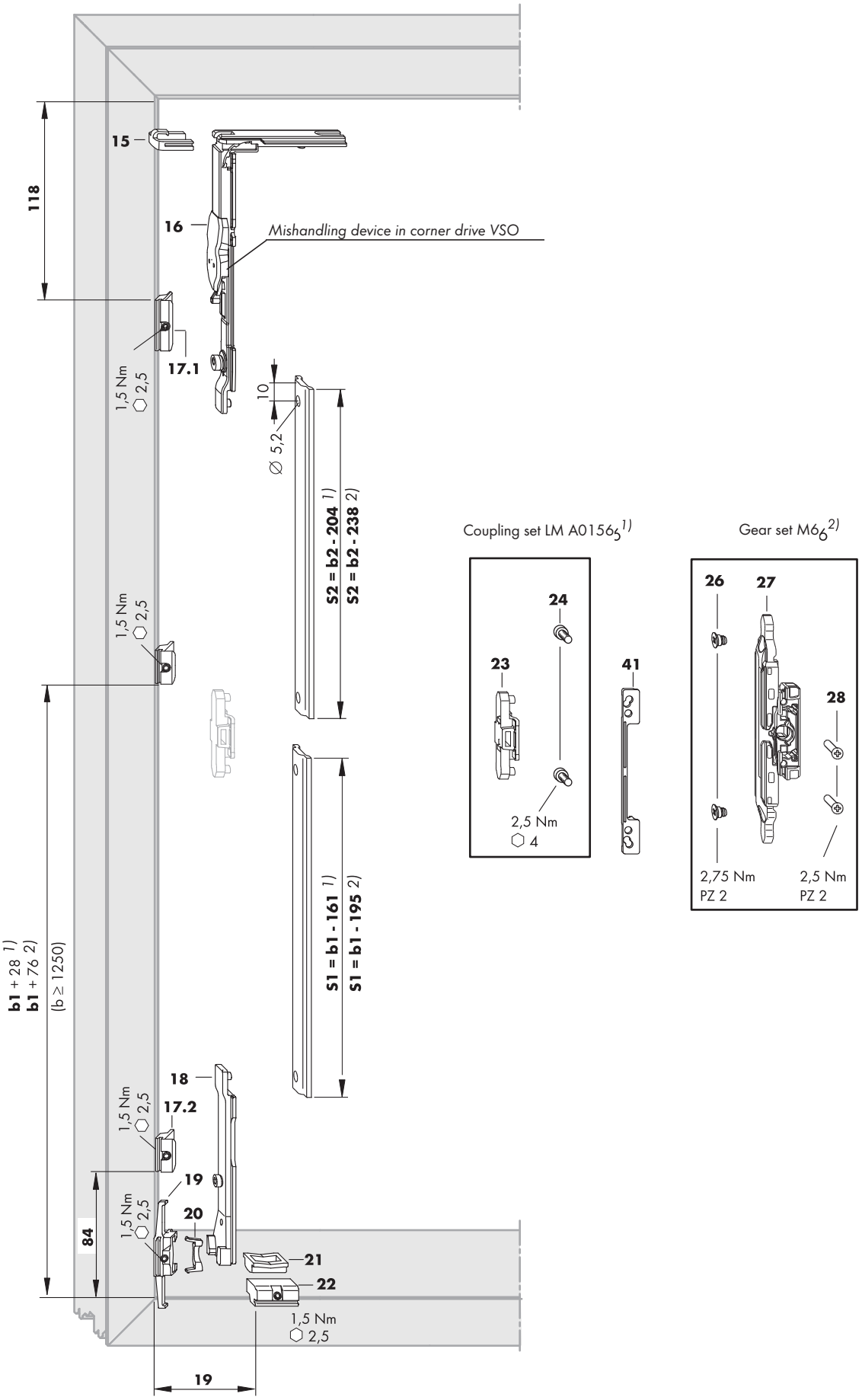


Profile reworking prior to welding DIN right



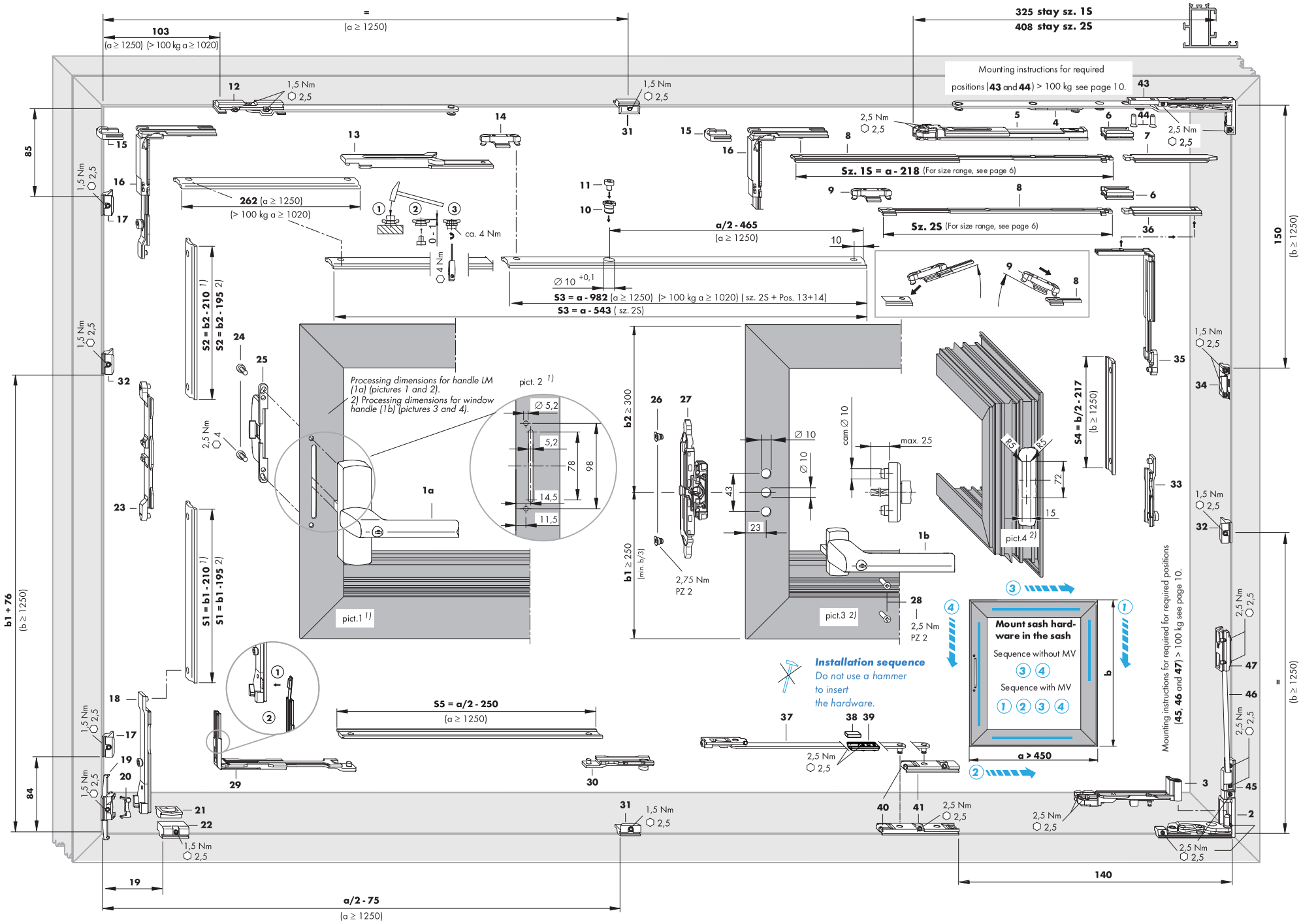
See aluminium planning manual for the necessary tools
Drawing no.: H48.ZUBHLS009en / H48.axntLS003en

Material description			Material no.
Punch axxent	*Punch out frame profile A0006/A0022*	**1**	**MART0010-000010**



See page 17 for hardware list.

ALU axxent-TBT *Hardware overview and*



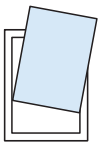
Hardware overview see page 19

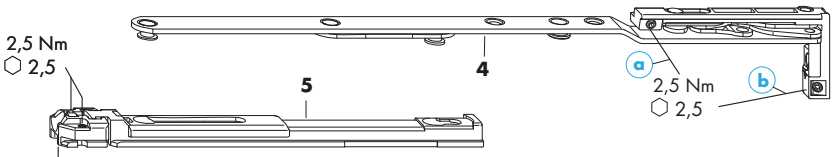
SIEGENIA

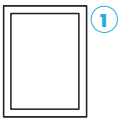
Assembly of axxent stay DK/TBT right/left size 1-2 (4) and axxent guide size 1-2 (5), axxent sash hinge right/left (3) and axxent bottom hinge right/left (2).[2]

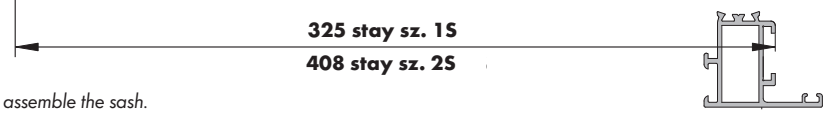
⚠ WARNING Observe the appropriate sequence **(a-b)** when tightening the grub screws!

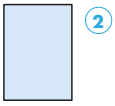
Observe the steps for positioning 1 - 15 !







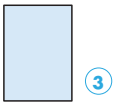


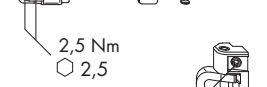


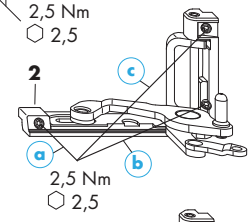
1) *At least 2 people are required to assemble the sash.*

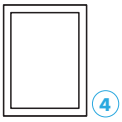
2) *Shown as mirror image, for hardware components, see the parts list on page 2 and 14.*

Description			Material no.
BS axxent jig	*requires 1 piece*		**MAEW0010-000010**

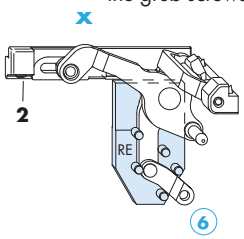


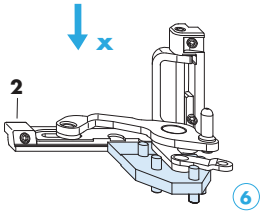


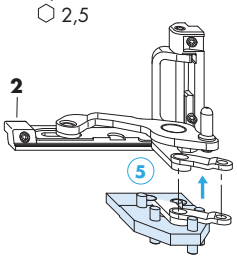


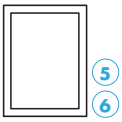


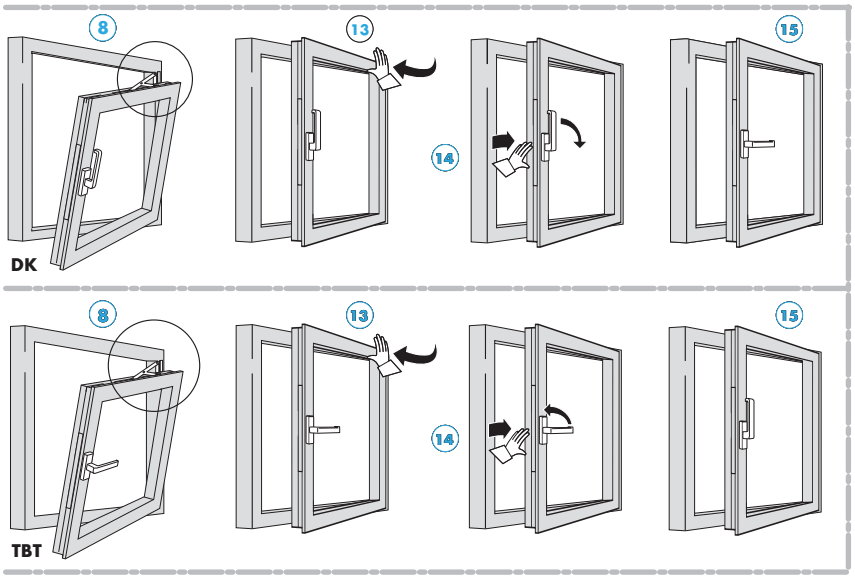
⚠ WARNING Observe the appropriate sequence **(a-b-c)** when tightening the grub screws!

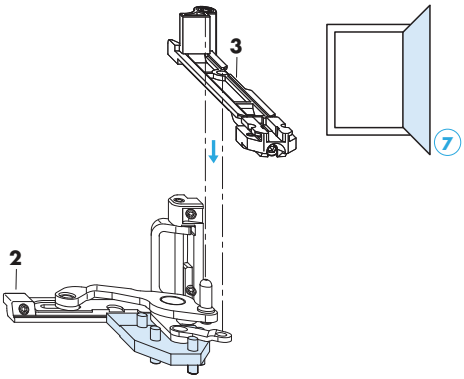


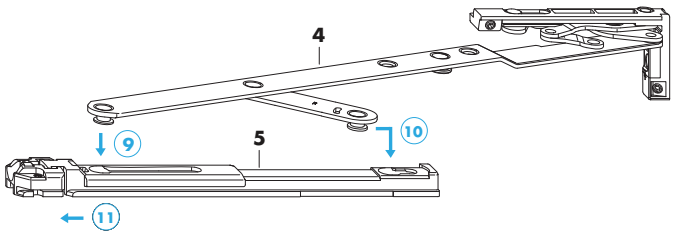


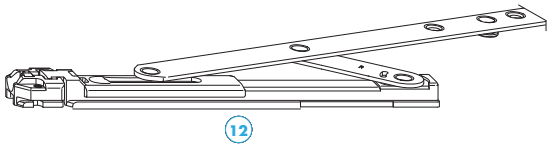


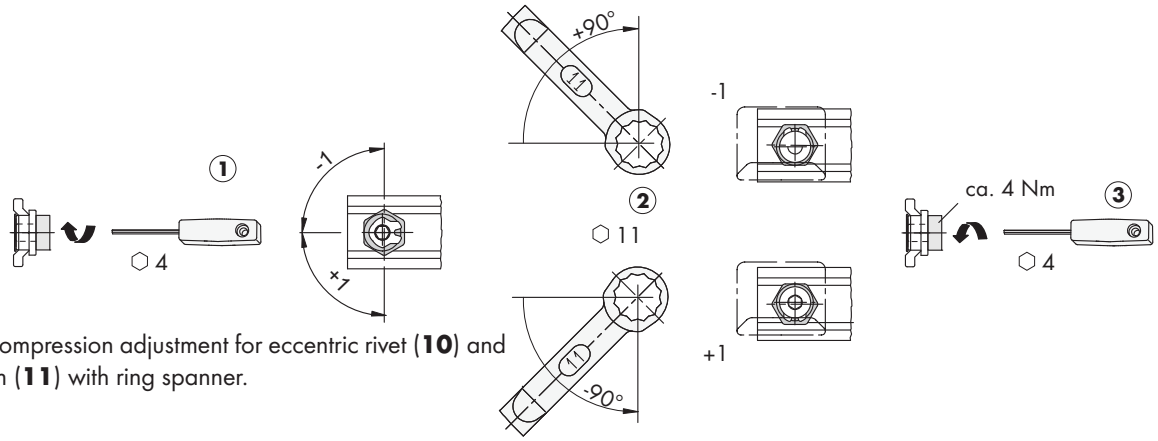












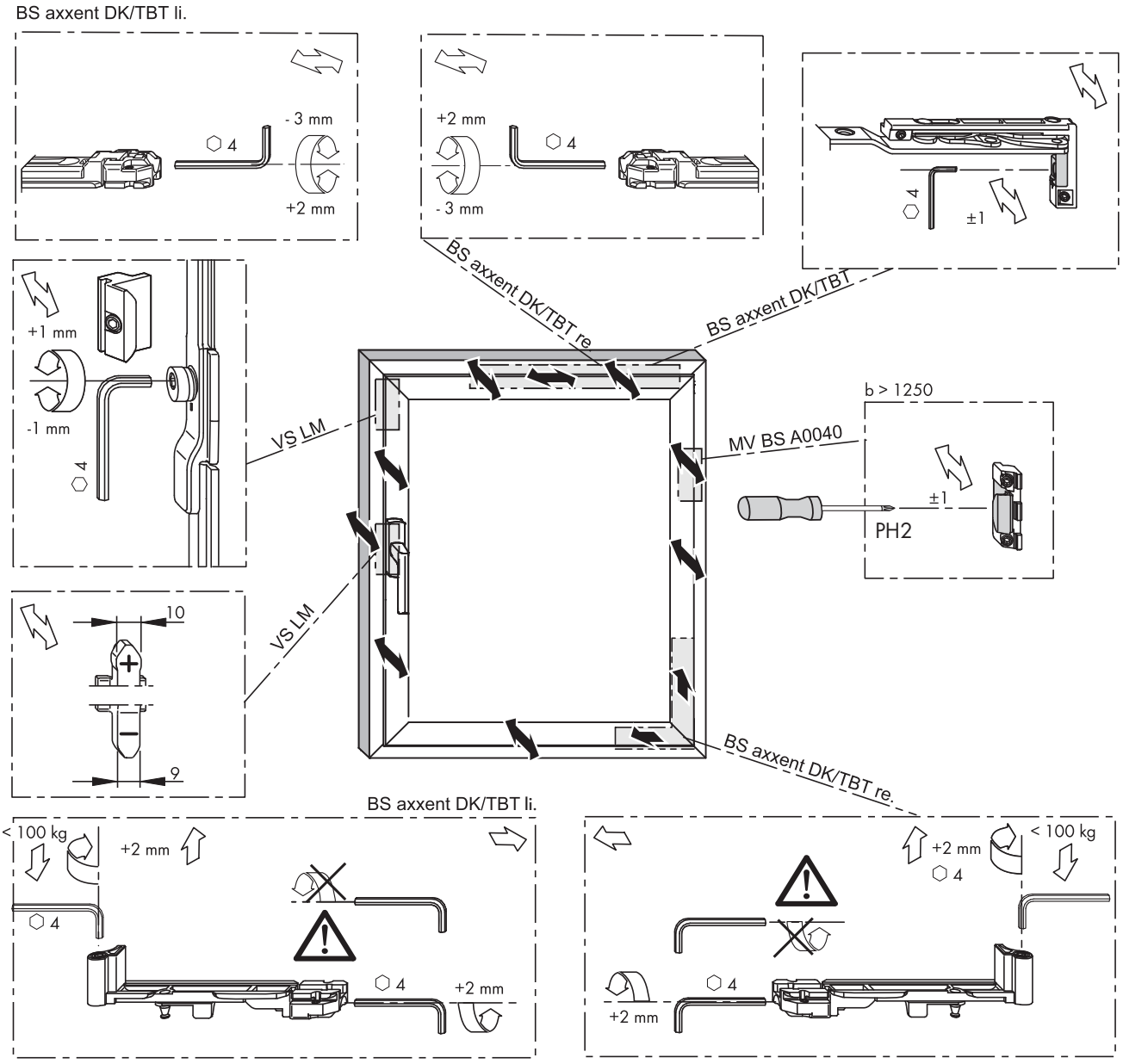
Carry out compression adjustment for eccentric rivet (**10**) and locking cam (**11**) with ring spanner.

Positioning axxent stay guide piece and axxent sash hinge

⚠ WARNING

There is a risk of injury if the window sash falls out.

- Turn the adjusting screws only in the direction shown.

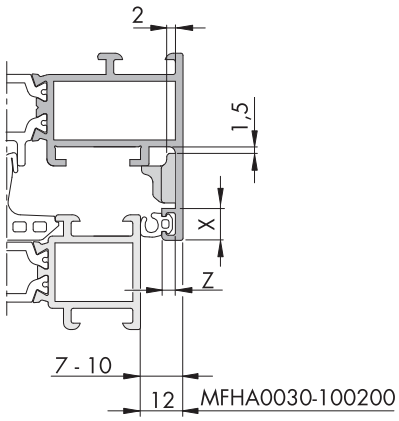


	No.	Piece	Description			Material no.		Material no.
	14-20	**1**	**VS LM-TBT FBS-EUL KPS**[1]	*(For figure see page 13)*	**1**	**MMVS0320-100010**	**20**	**MMVS0320-100030**
	23-24	**1**	**Coupling set LM A0156**	*(1a)*	**1**	**MMKL0060-100010**	**20**	**MMKL0060-100030**
	26-28	**1**	**Gear set M6**	*(1b)*	**1**	**MMGI0050-100010**	**20**	**MMGI0050-100030**
Accessories								
	41	**0...1**	**Handle support LM**	*(1a)*	**-**	**-**	**200**	**-**

1) Insertion of the spring, item20 in grey, from FH 550 - 1100
in black, 1100 - 2400 or more

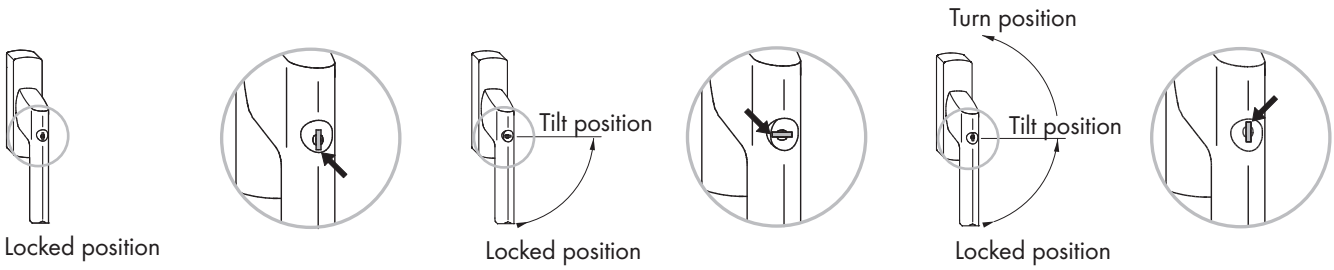
Design variants of the handle support (41)

USH	Z	X ≤ 7 mm	X 7.1 - 8.5 mm
7 - 10 mm	< 2 mm	MFHA0010-100200	MFHA0010-100200
7 - 10 mm	2.1 - 3 mm	MFHA0010-100200	MFHA0020-100200
7 - 10 mm	> 3 mm	MFHA0010-100200	-
12 mm	-	MFHA0030-100200	-



Hardware overview see page 12.

Instructions for handle, LM lockable TBT

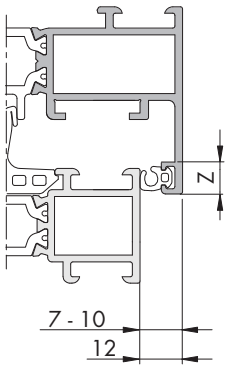


No.	Piece L	Piece R	Description		Material no.		Material no.
1a	0...1	0...1	**Handle Si-line LM lockable TBT/ Handle LM Globe lockable TBT** *(without illustration.)*	*See handle overview LM drawing no.: H48.ZUBHLS007en in aluminium planning manual*			
1b	0...1	0...1	**Window handle lockable □ 7 mm x 25 mm** *cam dia.10 mm*				
2-8	-	1	**BS axxent TBT right size 1S** < 100 kg		1	MMBS0201-100010	10	MMBS0201-100020
	1	-	**BS axxent TBT left size 1S** < 100 kg	*Size ranges*	1	MMBS0202-100010	10	MMBS0202-100020
2-9	-	1	**BS axxent TBT right size 2S**	*see page 6*	1	MMBS0181-100010	10	MMBS0181-100020
	1	-	**BS axxent TBT left size 2S**		1	MMBS0182-100010	10	MMBS0182-100020
10-13	1	1	**Additional stay LM A0040**	*a ≥1250 mm (> 100 kg a ≥1020 mm)*	1	MMSZ0010-100010	20	MMSZ0010-100030
14	1	1	**Stay striker MV**	*a ≥1250 mm (> 100 kg a ≥1020 mm)*	1	MXSK0010-100010	20	MXSK0010-100030
15-22	1	1	**VS LM-TBT KPS** [1)]		1	MMVS0270-100010	20	MMVS0270-100030
	0...1	0...1	**Coupling set FBS-G** *9 MM*	*(1a)*	1	MMKL0030-100010	20	MMKL0030-100030
23-25	0...1	0...1	**Coupling set FBS-G** *10 MM*	*(1a)*	1	MMKL0010-100010	20	MMKL0010-100030
	0...1	0...1	**Coupling set FBS-G** *USH 12 MM*	*(1a)*	1	MMKL0040-100010	20	MMKL0040-100030
26-28	0...1	0...1	**Gear set FBS M6 Trial/RR**	*(1b)*	1	MMGI0080-100010	20	MMGI0080-100030
29-31	1	1	**MV LM 4200-DK**	*a ≥1250 mm*	1	857045	20	246979
32-36	1	1	**MV LM VS/BS A0040**	*b ≥1250 mm*	1	MMMV0030-100010	20	MMMV0030-100030
Accessories								
37- 41	-	1	**Sashbrake ALU A0040** [1)]	*a 600 mm - 1000 mm*	1	MSBR0010-000011	50	MSBR0010-000051
	1	-	**Sashbrake ALU, long** [1)]	*a 1001 mm - 1600 mm*	1	MSBR0120-100010	50	MSBR0120-100050
42	1	1	**Jig BS axxent 130 kg**	*(See fig. on page 10)*	1	MARB0030-023010	-	-
43-47	-	1	**Accessories BS axxent right** [1)]	*(See fig. on page 10)*	1	MZBS0061-100010	10	MZBS0061-100020
	1	-	**Accessories BS axxent left** [1)]		1	MZBS0062-100010	10	MZBS0062-100020

*1)Contents of the packing unit: BSO A0040 mounting bracket (**43**), countersunk screws M5 x 13 (**44**), BSU A0040 right/left frame part (**45**), BSU A0040 rod (**46**) and BSU A0040 right/left sash part. (**47**).*

Design variants for coupling set FBS-G (23 - 25)

USH	X	Material no.
7 - 10 mm	≤ 8.5 mm	MMKL0030-100030
7 - 10 mm	≤ 7.5 mm	MMKL0010-100030
12 mm	≤ 7 mm	MMKL0040-100030

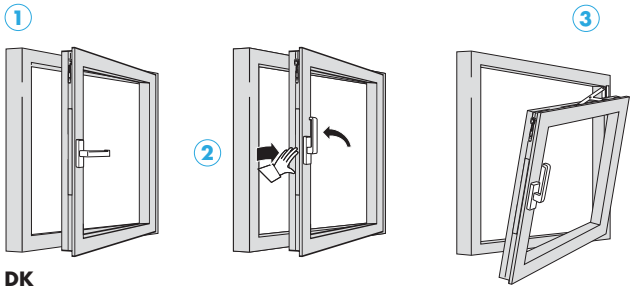


Hardware overview see page 13 and 14.

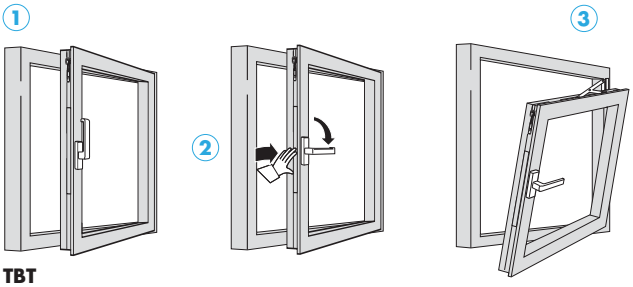
ALU axxent-DK/TBT Disassembly of axxent stay DK/TBT

Disassembly of axxent DK/TBT right stay size 1-2 (4) and axxent guide part size 1-2 (5)

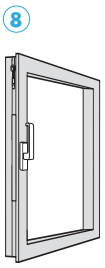
Observe the steps for positioning (1) - (8) !



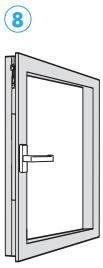
DK



TBT

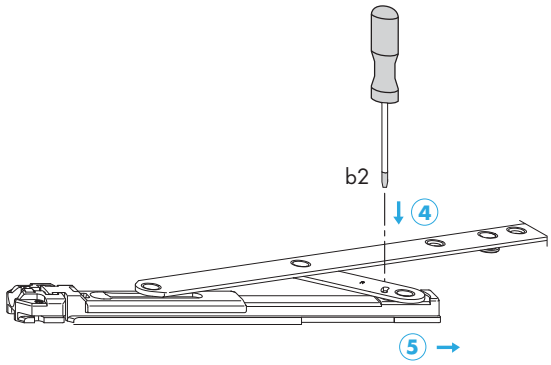


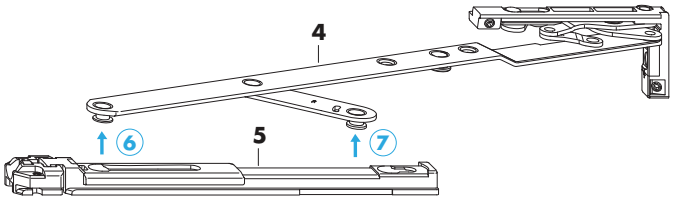
DK

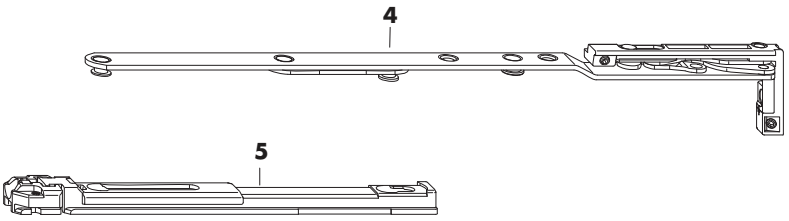


TBT

1) At least 2 people are required to disassemble the sash.







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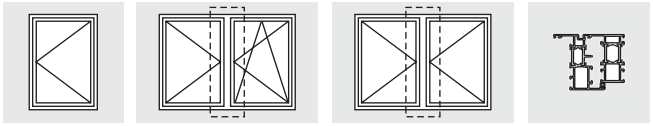
ALU axxent-D/DS

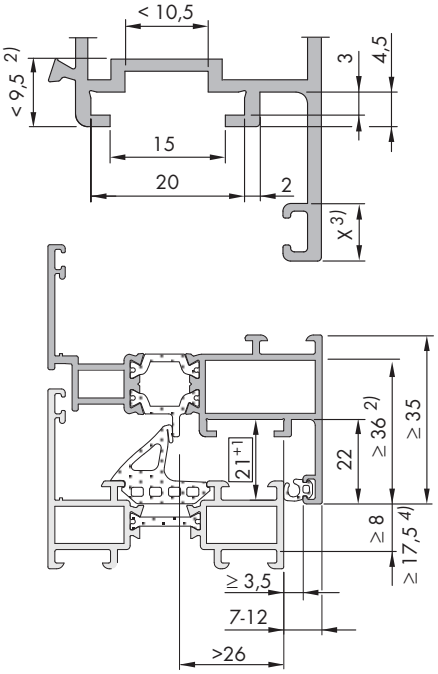
Concealed hardware for aluminium windows and French doors



***Always** check the planning manual on aluminium (H4006.3042EN) for further details and specifications/information regarding the product and liability (guidelines: VHBH, TBDK and VHBE).*

All dimensions given are final dimensions after the surface of the sections has been treated e.g. painted, powder coated, etc.

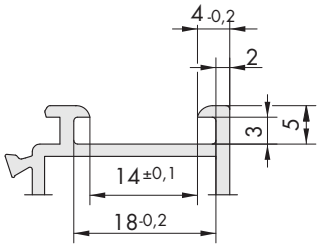
Sash and frame dimensions



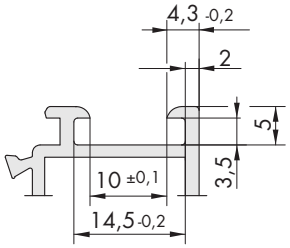
Intended use

Profile selection/alignment/Frame designs

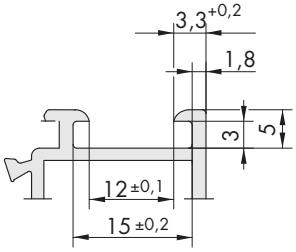
A0004



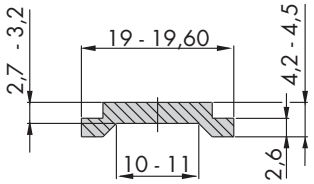
A0006 5)



A0022 5)



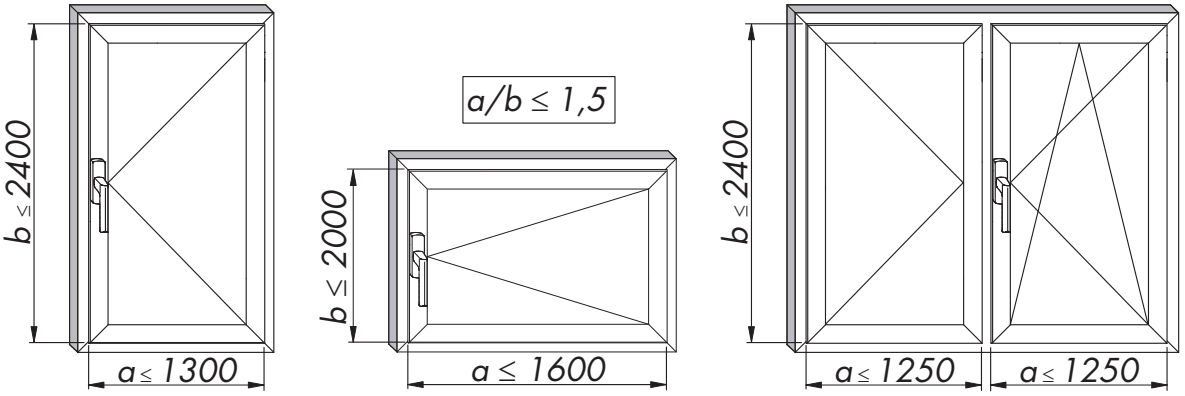
Operating rod dimensions min. - max.



All dimensions in mm

Sash width	(a)	min. 400 1)/620 4) - max. 1600
Sash height	(b)	min. 500 1) - max. 2400
Opening limit	(∠)	max. 110°
Sash weight	(⚖)	max. 100 kg 1)/130 kg 4)

1) See diagram on page 6
2) For gear set M6
3) Dimensions, see page 3
4) 100 kg - 130 kg (pages 14, 15, 19 and 20).
5) For subsequent work on the profile, see page 3



Assembly instructions

H48.axxentLS003en

Technical specifications and colours are subject to change

H48.axxentLS003en/0

Basic safety notes

Intended use

The hardware described in this document is intended to be installed in an aluminium window frame by a certified window construction specialist in accordance with these instructions. The windows must only be installed vertically.
The certified window construction specialist must ensure that the hardware is suitable for the application based on the specifications in these instructions and in the other documents that are cited.

Avoid excessive strain

Bearing components can break if they are exposed to excessive strain. If this happens, the window sash may fall out, leading to serious injuries. If the hinge parts are likely to be subject to excessive strain under certain conditions (use in schools, nursery schools, etc.), appropriate measures must be taken to prevent this from happening, such as using turning locks or tilt-before-turn opening types (TBT).

- If in any doubt, please contact your SIEGENIA sales consultant.

Do not mix hardware components

The hardware components are designed to work with one another. If they are mixed on a window with hardware components from other systems or manufacturers, it is not possible to guarantee that they will operate safely. Hardware components may break and cause accidents.

- Only use the hardware components listed in these instructions together on a window.

Only treat window surfaces prior to assembly of hardware

- Treating window surfaces after assembling the hardware may affect the components' operational reliability.

Avoid damage caused by corrosion and debris

Corrosive materials, dirt and moisture may damage hardware components and cause hazards.

- Do **not** use acetic or acid-releasing sealants.
- Do **not** use the hardware components in environments where the air contains aggressive or corrosive components.
- Keep all rebates free of debris and dirt, especially cement and plaster residue.
- Keep the hardware dry.

Clean hardware gently

- Only clean the hardware with a soft cloth and mild, diluted pH-neutral cleaning agents.
- The hardware must not be exposed to abrasive cleaners or aggressive, acidic cleaning agents.
- Leave the hardware to dry after cleaning.

Pass on information to the user of the window

- Attach the user information order no. 05083 to the installed window or door element so that it can be seen easily.
- Provide the user with the following documents:
  - Maintenance and cleaning instructions, order no. 15750
  - Operating instructions, order no. 05766

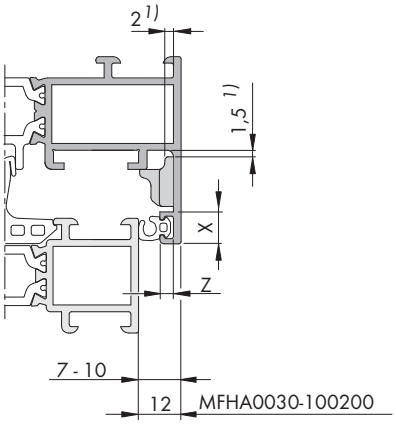
Exclusion of liability

- We assume no liability for malfunctions and damage to the hardware, or to the windows and French doors equipped with the hardware, where such malfunctions and damage are the result of insufficient tendering information, failure to follow these assembly instructions or forceful impact (e.g. due to improper use and handling).

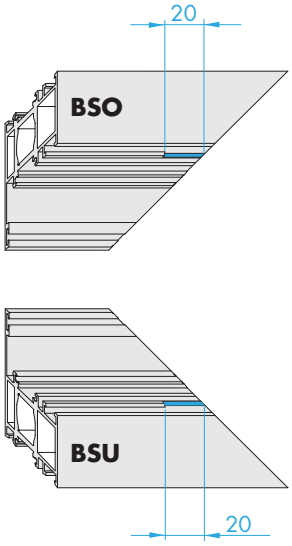
	No.	Pc.	Description			Material no.		Material no.
	1a	0...1	**Si-line LM handle/LM Globe handle (no illustr.)**		*See LM handle overview, drawing no.: H48.ZUBHLS007en in aluminium planning manual*			
	1b	0...1	**Window handle ☐ 7 mm x 25 mm**	*Cam ∅ 10 mm*				
	2-3	1	**BS axxent-D**		1	MMBS0110-100010	10	MMBS0110-100020
	4-8	1	**VS LM-D**		1	MMVS0240-100010	20	MMVS0240-100030
	9-10	0...1	**Coupling set LM A0156** *(1a)*		1	MMKL0060-100010	20	MMKL0060-100030
	11-13	0...1	**Gear set M6 Trial/RR** *(1b)*		1	MMGI0090-100010	20	MMGI0090-100030
	22-26	1	**MV LM 4200-D VS/BS**	*b ≥ 1250 mm*	1	857052	20	246986
	17-21	1	**MV LM 4200/2200-D VSU/VSO**	*a ≥ 1250 mm*	1	MSBR0120-100010	20	MSBR0120-100050
Accessories								
	22	1	**LM handle support** [1]	*(1a)*	–	–	200	*(see table)*
	23-27	1	**Sashbrake ALU A0040** [2]	*a 600 mm - 1000 mm*	1	MSBR0010-000011	50	MSBR0010-000051
		1	**Sashbrake ALU, long** [2]	*a 1001 mm - 1600 mm*	1	MSBR0120-100010	50	MSBR0120-100050
	no illus.	2	**BS axxent jig** *(see figures on pages 9-10)*		1	MAEW0010-000010		

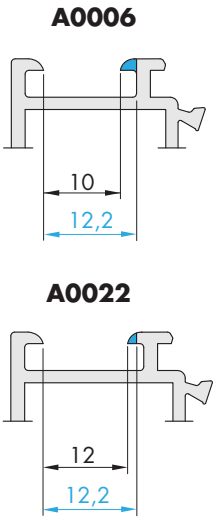
Design variations for handle support (22)

USH	Z	X ≤ 7 mm	X 7.1 - 8.5 mm
7 - 10 mm	< 2 mm	MFHA0010-100200	MFHA0010-100200
7 - 10 mm	2.1 - 3 mm	MFHA0010-100200	MFHA0020-100200
7 - 10 mm	> 3 mm	MFHA0010-100200	-
12 mm	-	MFHA0030-100200	-



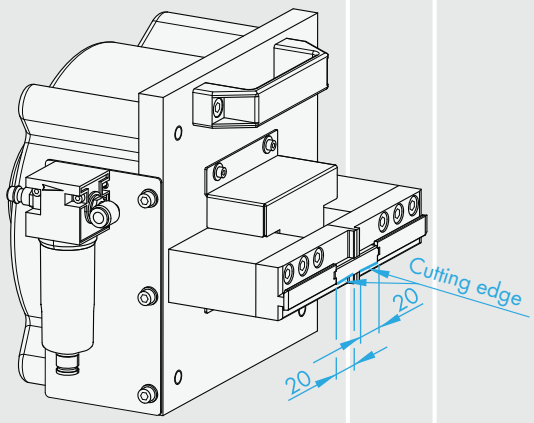
1) *Required space*
2) *See page 5 for the assembly instructions of the LM limit stay*





See aluminium planning manual for the necessary tools
Drawing no.: H48.ZUBHLS009en

Material description		Material no.
Punch axxent *Punch out frame profile A0006/A0022*	1	MART0010-000010

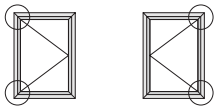


See pages 7 - 8 for hardware overview.

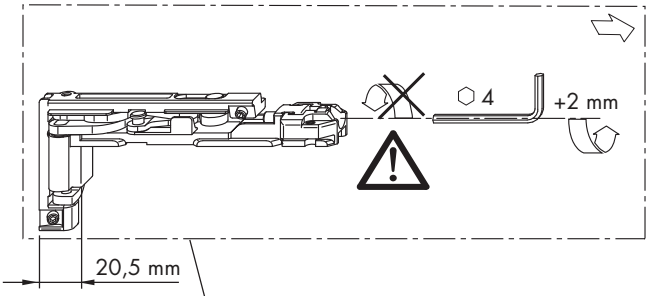
Adjusting the bottom hinge

⚠ WARNING **There is a risk of injury if the window sash falls out.**

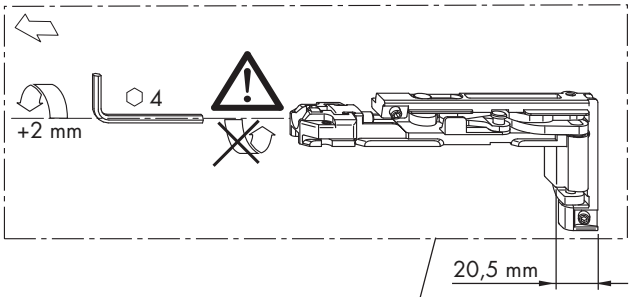
- Only turn adjusting screws indirection shown.

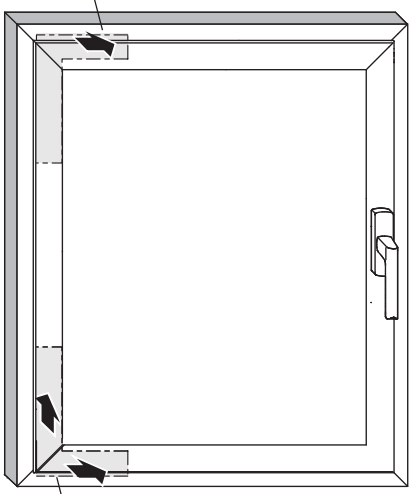


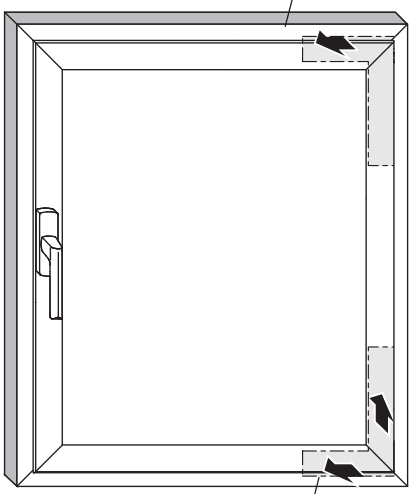
Right axxent-D bottom hinge



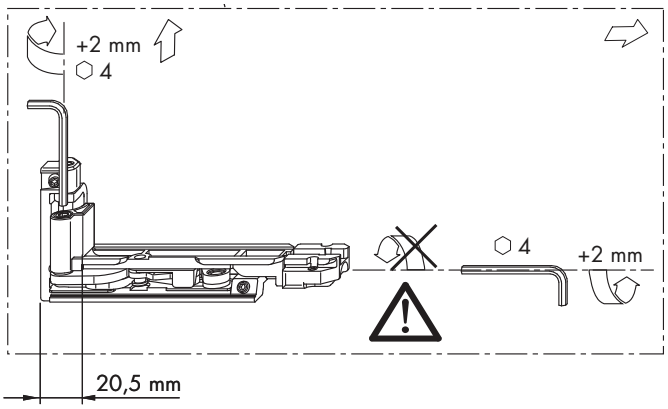
Left axxent-D bottom hinge



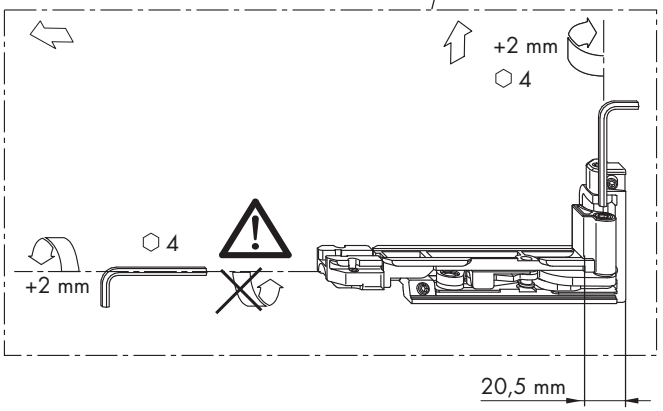




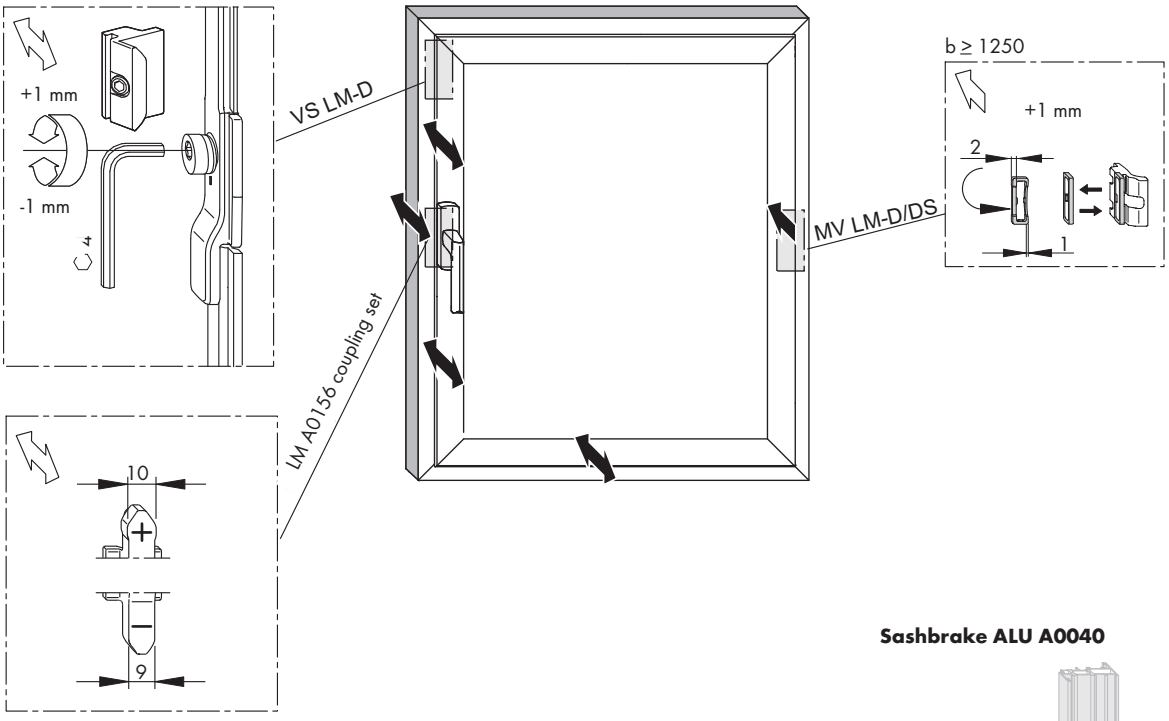
Right axxent-D bottom hinge



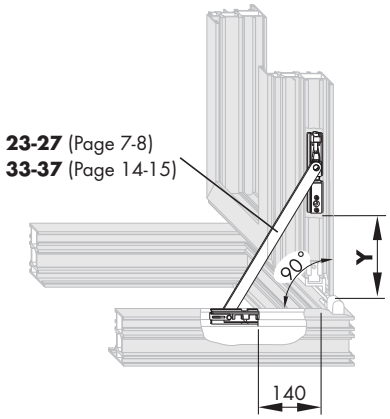
Left axxent-D bottom hinge



Adjustment options



Sashbrake ALU A0040

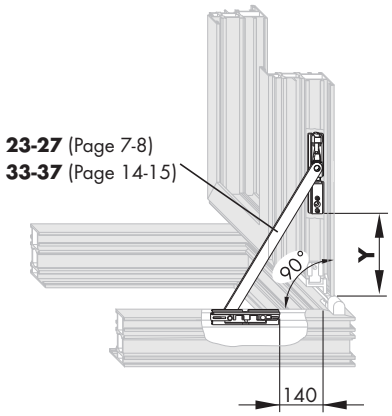


Installation dimensions for LM limit stay with brake

For assembly instructions see document no. H48.ZUBHLS017en

Opening angle (Measurements in mm)	90° Y
Sashbrake ALU A0040 (a 600 - 1000)	145
Sashbrake ALU, long (a 1001 - 1600)	215

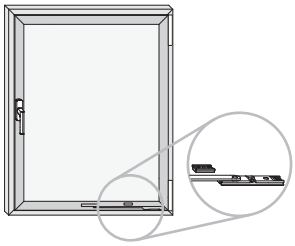
Sashbrake ALU long



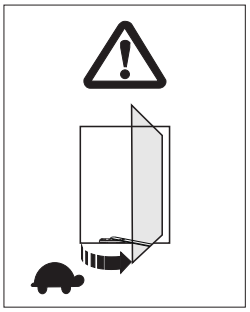
Assembly of the LM limit stay on the lower hinge side (BSU)

⚠ WARNING **Risk of injury if the window sash falls out!**

- Only fit LM limit stay on the lower hinge side.



Turn window sashes into final position of the LM limit stay



⚠ WARNING **Risk of injury and damage (bearing failure) due to sash falling out when opened incorrectly.**

- Avoid hitting the frame or other sash when opening one sash.
- Slowly move the sash into its end position by hand
- Never let sashes swing open uncontrollably.

Glass thickness in mm without air gap

12 mm glass thickness (equivalent to **30** kg/m²)

16 mm glass thickness (equivalent to **40** kg/m²)

20 mm glass thickness (equivalent to **50** kg/m²)

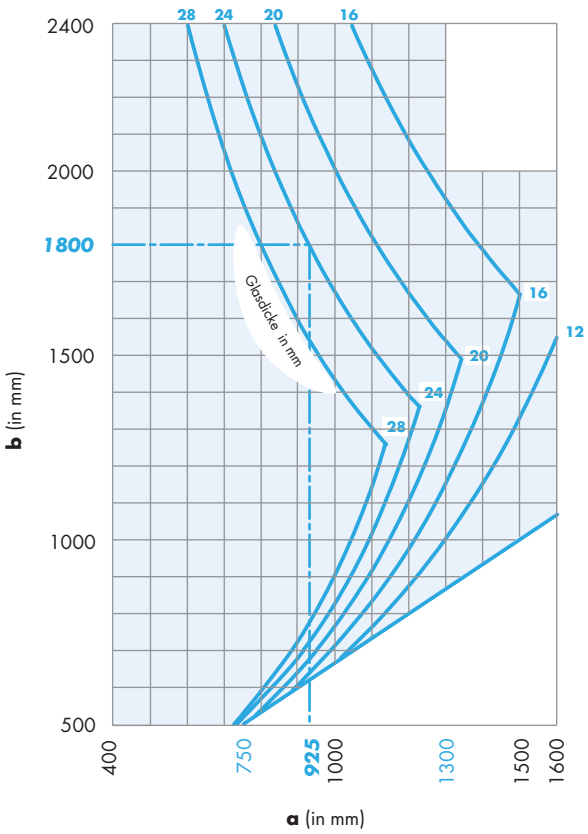
24 mm glass thickness (equivalent to **60** kg/m²)

28 mm glass thickness (equivalent to **70** kg/m²)

1 mm/m² glass thickness = 2.5 kg

Example (—·—):

sash height	=	*1800 mm*
glass thickness	=	*24 mm*
permissible sash width	=	***925 mm***



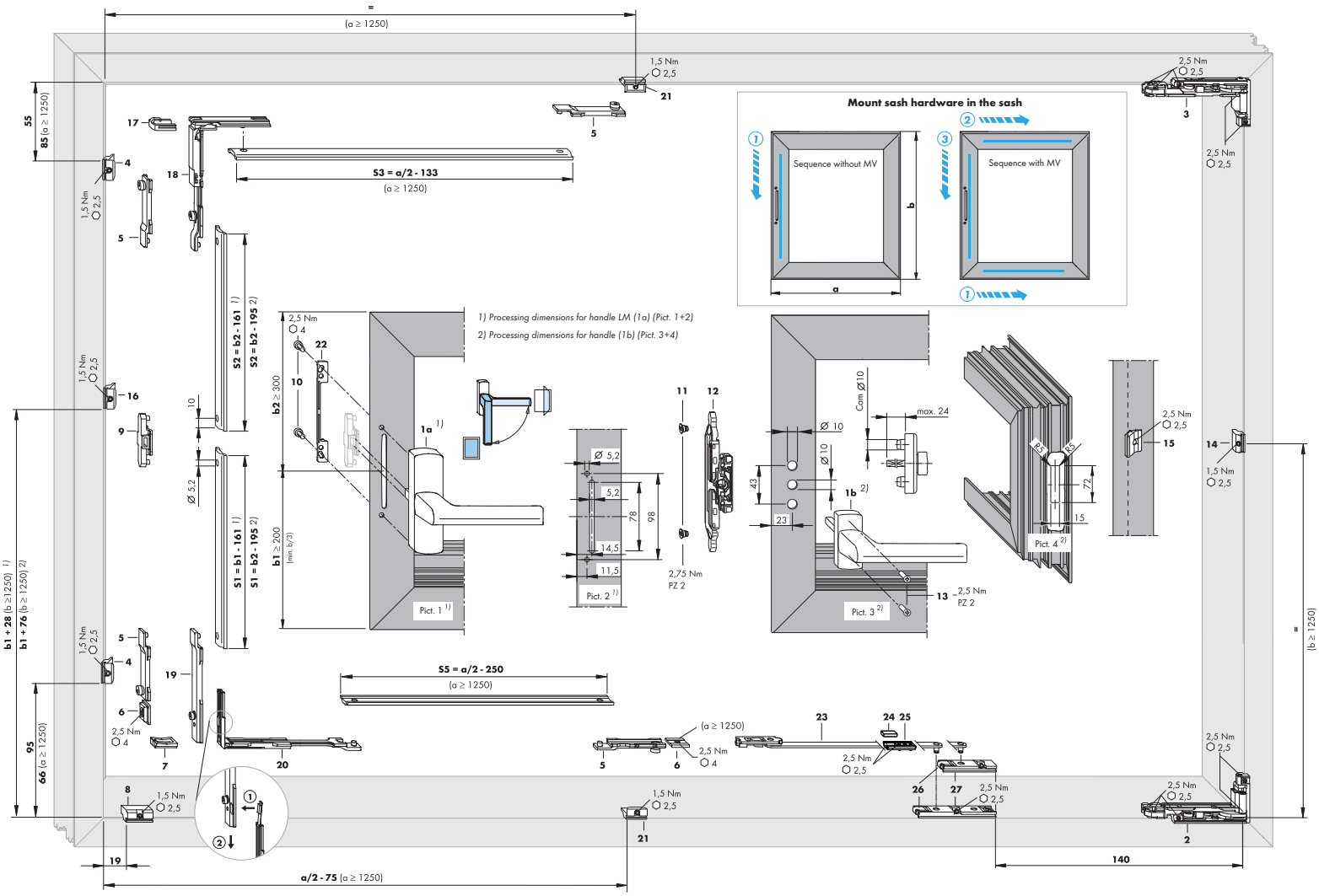
For glass thicknesses of less than 12 mm, all sash sizes that lie within the range of application and do not exceed an aspect ratio a/b of 1.5 are permissible.

Maximum permissible sash weight: 100 kg

Abbreviations

These assembly instructions contain the following abbreviations:

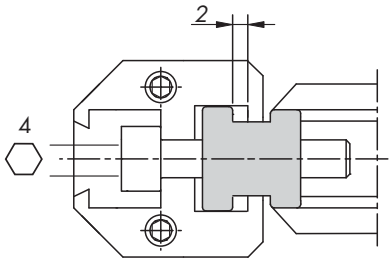
AV	Compression adjustment
BS	Hinge side
BSO	Hinge side, top
BSU	Hinge side bottom
a	Sash width
a1	Sash width of main sash
a2	Sash width of secondary sash
b	Sash height
b1	Handle height, bottom
b2	Handle height, top
D	Turn only sash
DK	Tilt and turn
DN	Turn only sash groove
DS	Turning secondary sash
ESG	Routed-in drive gear
FBS-G	Mishandling device on handle
MV	Centre lock
Nm	Torque in Nm
SV	Side adjustment
SW	Width across flat
VS	Locking side
VSO	Locking side, top
VSU	Locking side, bottom
USH	Rebate height
S1	Operating rod, locking side bottom
S2	Operating rod, locking side top
S3	Operating rod, top horizontal
S5	Operating rod, bottom horizontal
S6	Operating rod, locking side of secondary sash bottom
S7	Operating rod, locking side of secondary sash top
S8	Operating rod, locking side of secondary sash top



See page 3 for list of hardware.

ALU axxent-D *Hardware overview and installation dimensions*

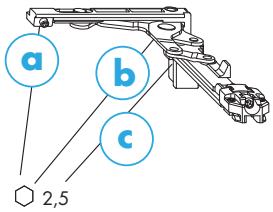
Preparation



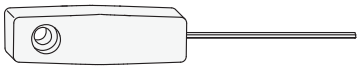
Home position for adjusting piece, with 2 mm clearance

1. Check whether the adjusting piece on the bottom hinge is in the home position (see figure "Home position for adjusting piece").
2. If necessary move adjusting piece to home position.
   Note: The bottom hinges cannot be adjusted if the adjusting pieces are not in the home position during installation.

Attaching the bottom hinge to the window frame



Tightening sequence (example: BSO)



Hexagon screwdriver *Hexagon 2.5 mm*

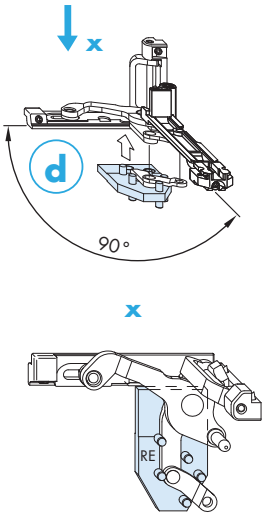
1. Open bottom hinge.

⚠ WARNING

Protruding grub screws will cause the bottom hinge to break when the window sash is closed.
Risk of injury if the window sash falls out!
-Screw in grub screws fully.

2. Screw in the grub screw **(a-b-c)** and tighten with a torque of 2.5 Nm.
3. The middle grub screw **(b)** can be reached with the SIEGENIA hexagon screwdriver (material no. 141274).

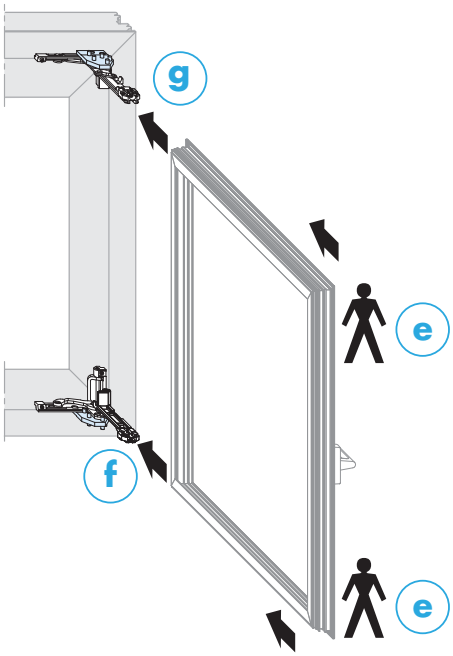
Slide the BS axxent jigs onto the bottom hinges



Installation of the jig and views of bottom hinge (example: BSU)

1. Open bottom hinge to 90°.
2. Slide on the jigs at the BSO and BSU **(d)**.
   Note: The jigs hold the bottom hinges in place and make it easier to slide the sash on.

Slide the window sash onto the bottom hinge



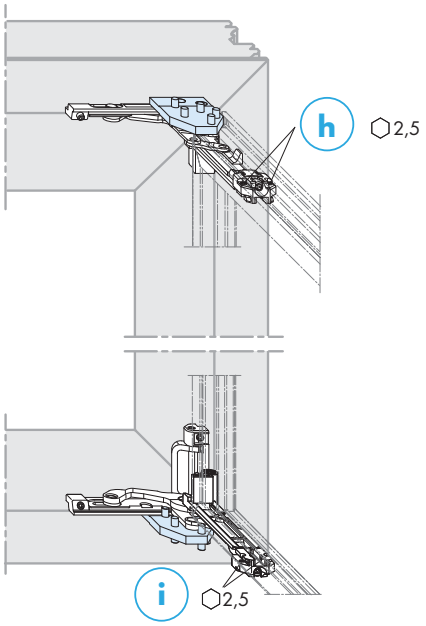
1. Because window sashes are heavy, they are installed without glazing.
2. Two persons **(e)** are needed to install the window sash.

⚠ WARNING **The bottom hinges can break if the window sash is tilted during installation steps. There is a risk of injury if the window sash falls out!**

> Slide the window sash in parallel to the two bottom hinges

3. Slide in the window sash at the hinge side, bottom (BSU) **(f)** and hinge side, top (BSO) **(g)**.

Attach the window sash to the bottom hinges

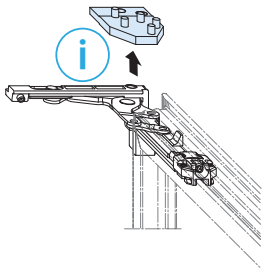


⚠ WARNING **Tilting the loose window may cause the bottom hinges to break. There is a risk of injury if the window sash falls out!**

- The first person prevents the window sash from tilting

1. The second person attaches the bottom hinges using the grub screws.
2. Tighten all grub screws **(h, i)** with a torque of 2.5 Nm.

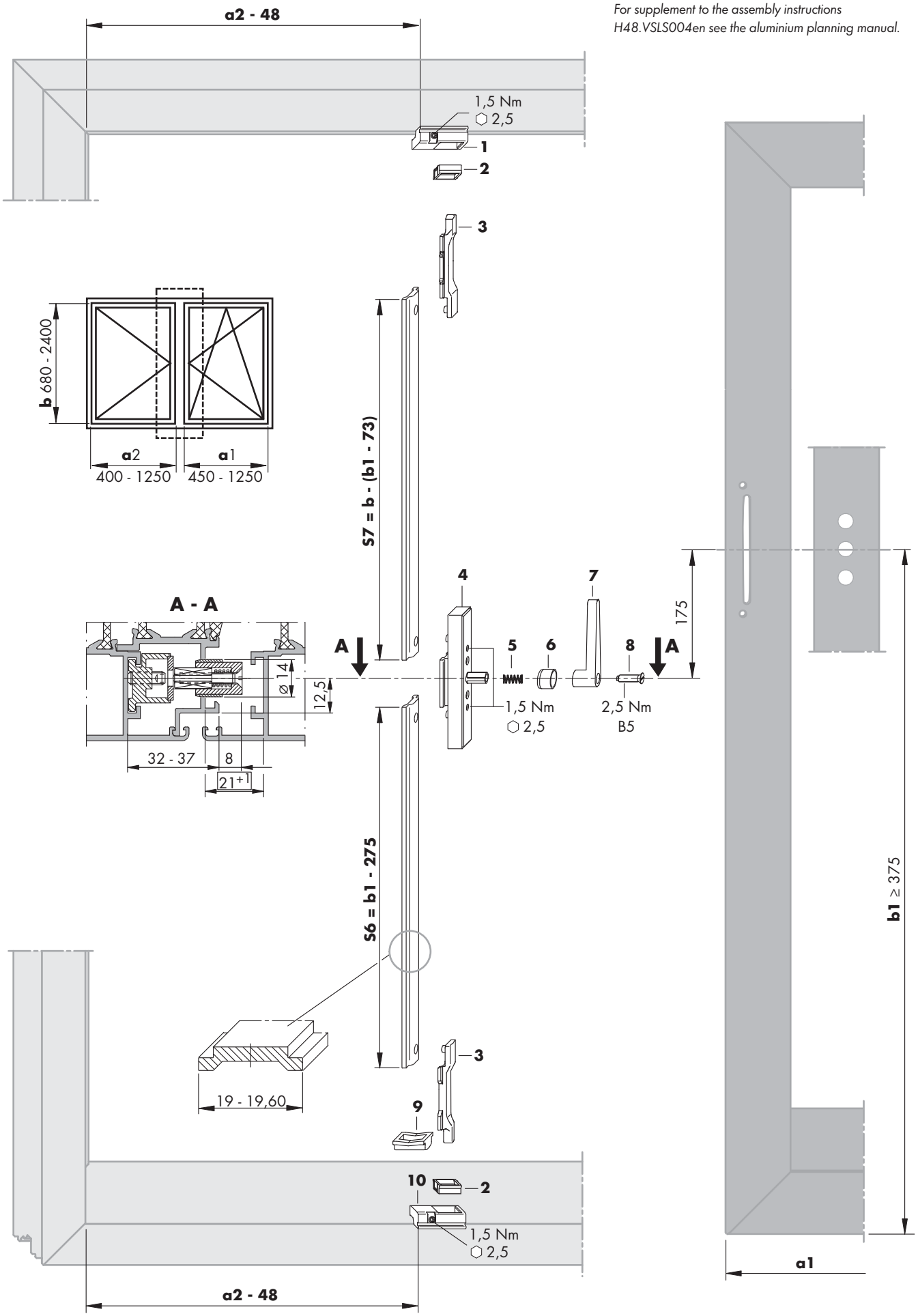
Remove the BS axxent jigs from the bottom hinges



Removing the jigs (Example: hinge side, top (BSO)

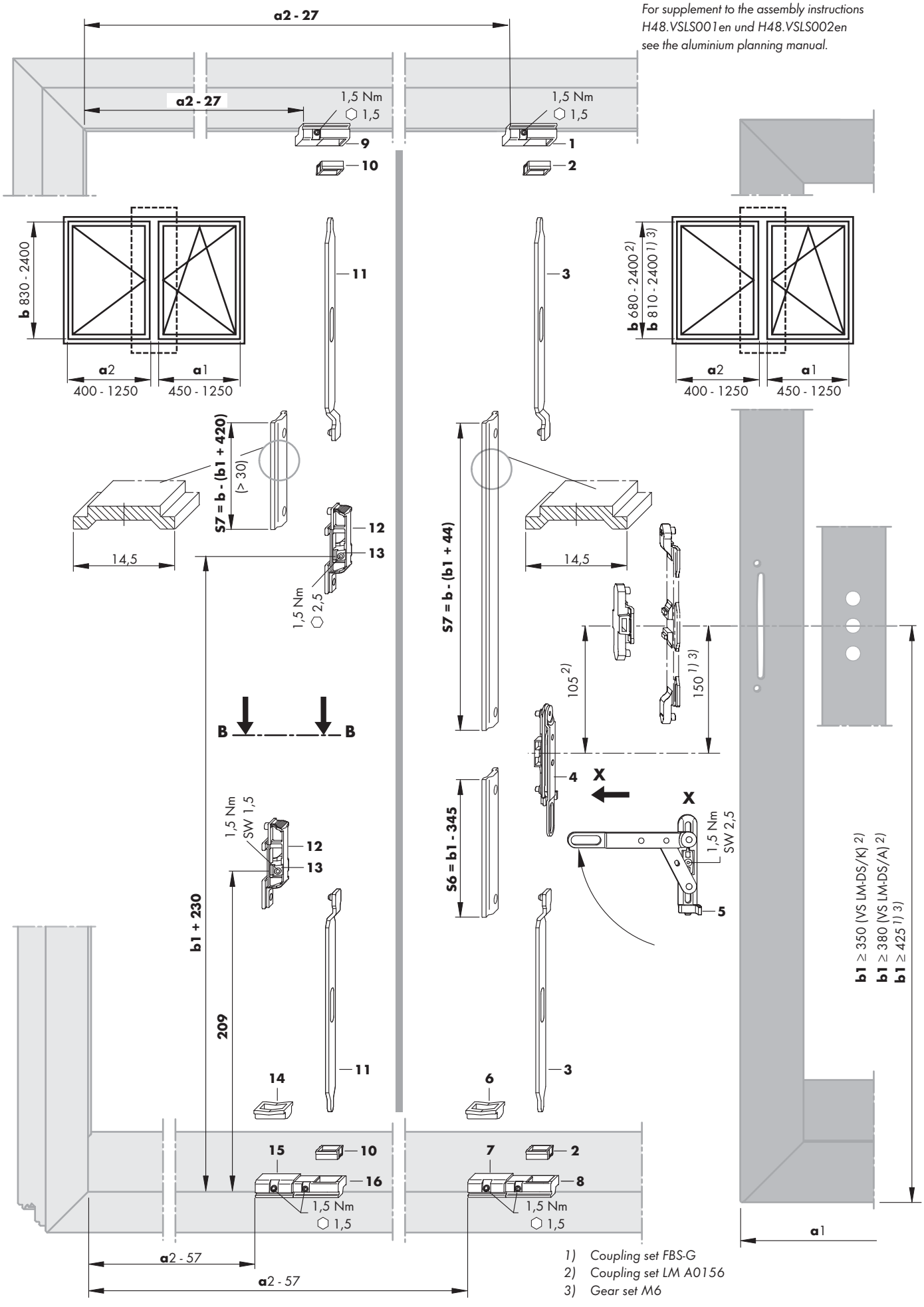
1. Remove all jigs from the BSO **(i)** and BSU
2. Close the window sash.

For supplement to the assembly instructions H48.VSLS004en see the aluminium planning manual.



For list of hardware, assembly instructions and compression adjustment, see page 16.

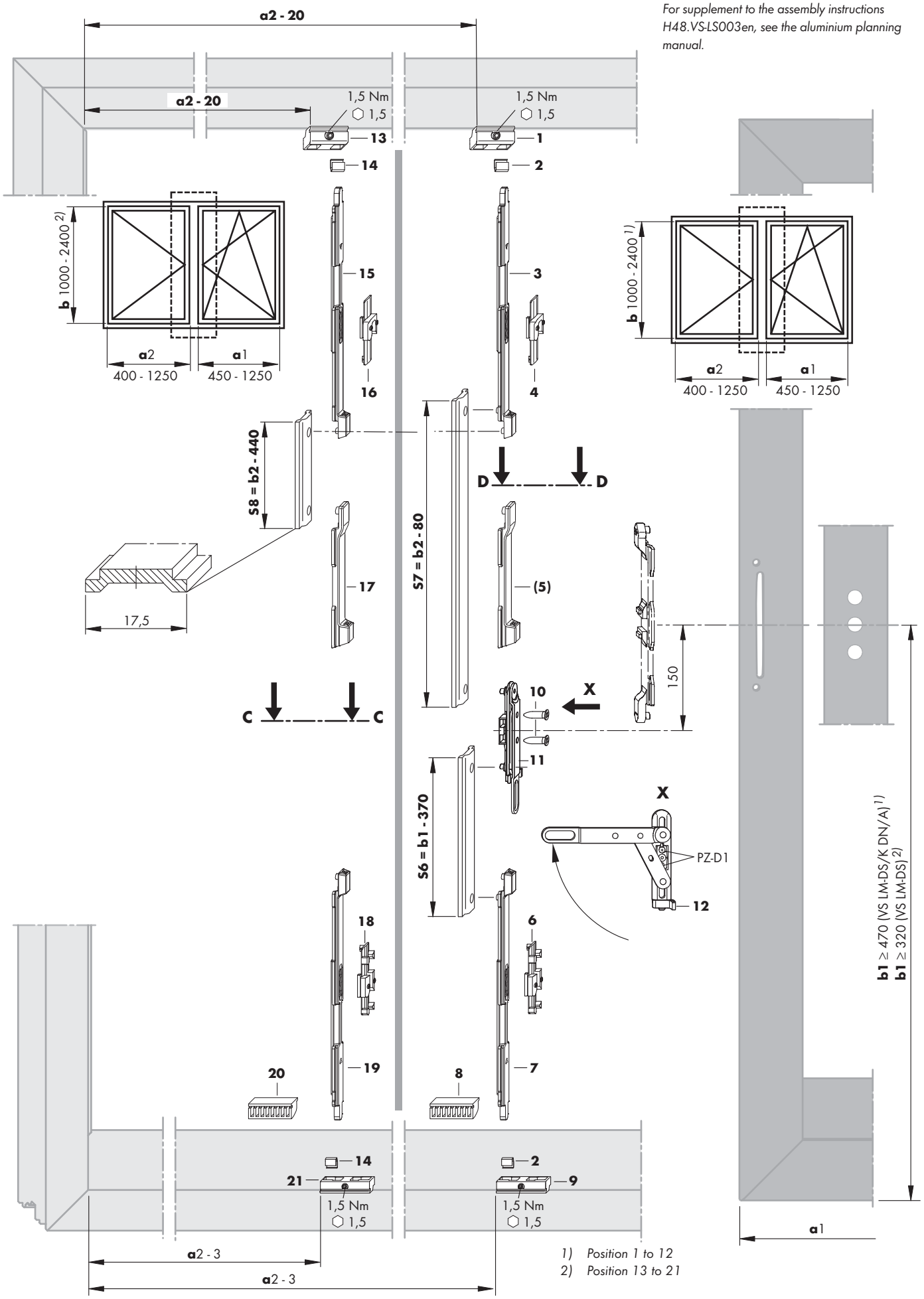
For supplement to the assembly instructions H48.VSLS001en und H48.VSLS002en see the aluminium planning manual.



1) Coupling set FBS-G
2) Coupling set LM A0156
3) Gear set M6

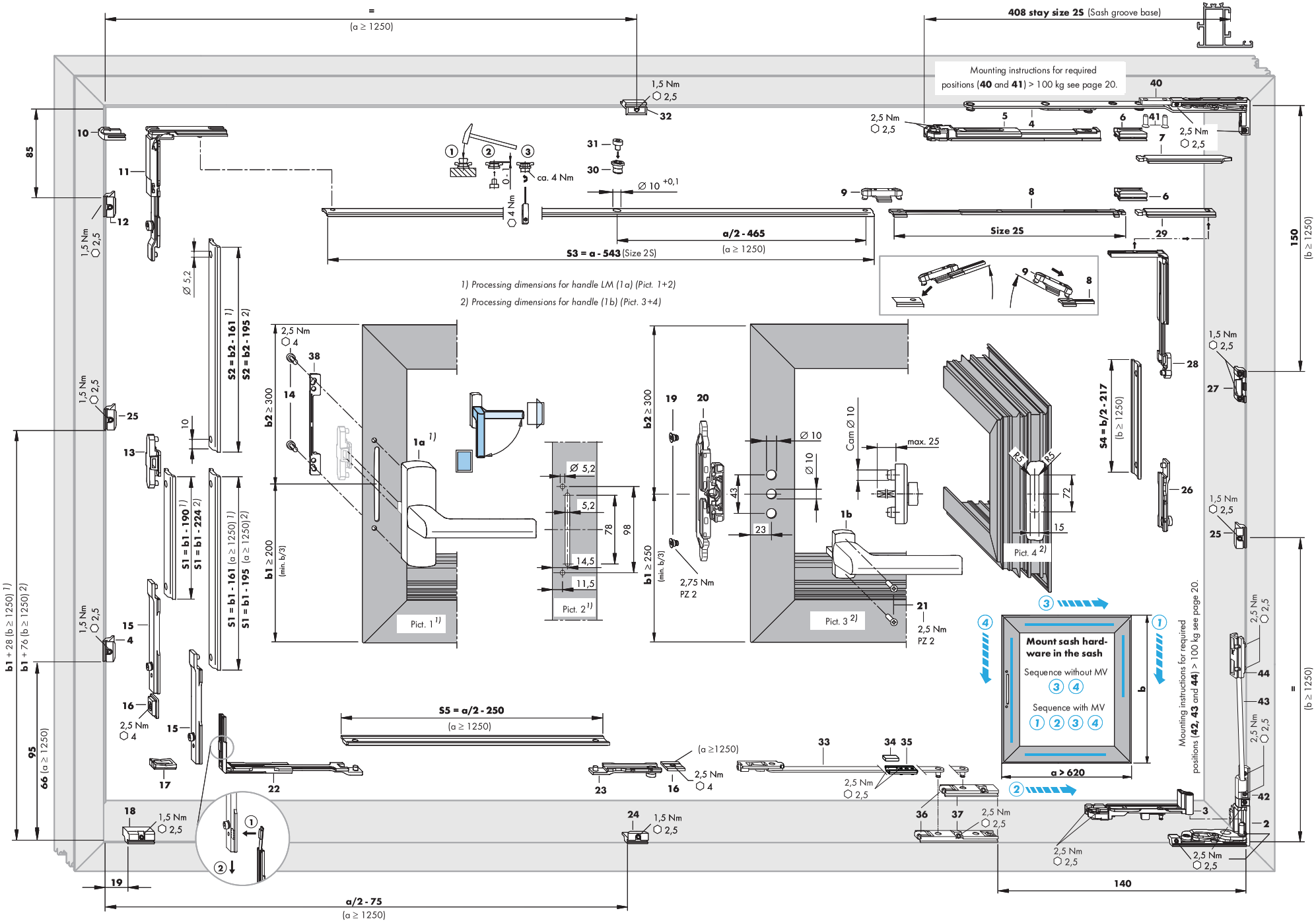
For list of hardware, assembly instructions and profile recommendation, see page 17.

For supplement to the assembly instructions H48.VS-LS003en, see the aluminium planning manual.



1) Position 1 to 12
2) Position 13 to 21

For list of hardware, assembly instructions and other information, see page 18.



For list of hardware, see page 19.

ALU axxent-D 130 kg *Hardware overview and installation dimensions*

	No.	Pc.	Description		Material no.		Material no.
	1-10	1	**VS LM 4200-DS A0109**	1	**879368**	20	**266885**
	–	1	**BS axxent-D** *(See fig. on page 8 items 2 - 3)*	1	**MMBS0110-100010**	10	**MMBS0110-100020**
	–	1	**MV LM 4200-D VS/BS** *b ≥ 1250 mm* *(See fig. on page 8 items 14 - 15)*	1	**857052**	20	**246986**

Assembly instructions

Preparation

- ***A*** Open the operating rod guide groove.
- ***B*** Prepare operating rods S6 - S7 according to specifications on page 11.
- ***C*** Prepare secondary sash profile according to the specifications on page 11 (∅ 14).
- ***D*** Insert run-up block (**9**) horizontally on the VSU.

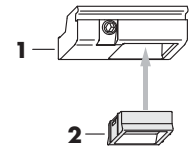
Sash

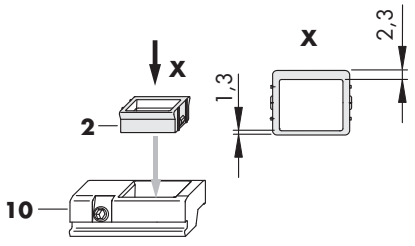
- ***A*** Insert locking bolt (**3**), operating rod S6, secondary sash gear (**4**), operating rod S7 and locking bolt (**3**) vertically on the VS.
- ***B*** Position secondary sash gear (**4**) and fix with grub screws (torque 2.5 ± 0.25 Nm).
- ***C*** Position the secondary sash profile and fix it in place.
- ***D*** Screw on compression spring (**5**), PVC bushing (**6**) and handle (**7**) with countersunk screw M4 x 16 (**8**) according to specifications on page 11.

Frame

- ***A*** Position strikers DS (**1** and **10**) DIN right or DIN left according to the specifications on page 11 and fix in place with grub screws (torque 1.5 ± 0.25 Nm).
- ***B*** Insert pressure pieces (**2**) into the strikers DS (**1** and **10**) according to the diagram on page 11.

Compression setting of the pressure pieces (2) +1 mm





For hardware overview, see page 11.

	No.	Pc.	Description			Material no.		Material no.
	1-8	1	**VS LM-DS/A A0026** *secondary sash*		1	864425	20	252192
		1	**VS LM-DS/A A0006** *secondary sash*		1	860823	20	249321
	9-16	1	**VS LM-DS/K** *secondary sash*		1	860830	20	249338
	–	1	**BS axxent-D**	*(See fig. on page 8 items 2 - 3)*	1	MMBS0110-100010	10	MMBS0110-100020
	–	1	**MV LM 4200-D VS/BS** *(b ≥ 1250 mm)*	*(See fig. on page 8 items 14 - 15)*	1	857052	20	246986

Assembly instructions

Preparation

- **A** Open the operating rod guide groove.
- **B** Prepare operating rods S6 – S7 according to specifications on page 12.
- **C** Insert run-up block (**6/14**) horizontally on the VSU.

Sash

VS LM-DS/A

- **A** Place the stop (**5**) DIN right or DIN left onto the secondary sash gear (**4**).
- **B** Insert shoot bolt (**3**) with operating rod S6 and operating rod S7 with shoot bolt (**3**) vertically on the VSO.
- **C** Attach the secondary sash gear (**4**) to the operating rods S6 and S7 and fix in place with countersunk screw (torque 1.5 ± 0.25 Nm).

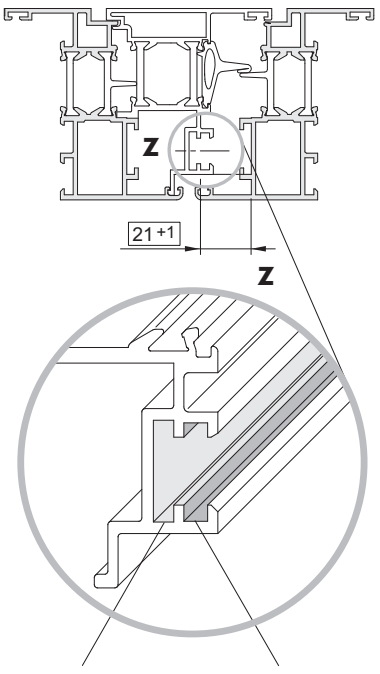
VS LM-DS/K

- **A** Slide in shoot bolt (**11**) with locking element (**12**) vertically on the VSU. Position clamping piece (**13**) according to the dimensions on page 12 and fix in place with grub screw (torque 1.5 ± 0.25 Nm).
- **B** Slide in locking part (**12**), operating rod S7 and shoot bolt (**11**) vertically on the VSO. Position clamping piece (**13**) according to the dimensions on page 12 and fix in place with grub screw (torque 1.5 ± 0.25 Nm).

Frame

- **A** Position strikers DS (**1/9** and **8/16**) DIN right or DIN left with run up block TBT (**7/15**) according to the specifications on page 12 and fix in place with grub screws (torque 1.5 ± 0.25 Nm).
- **B** Insert pressure pieces (**2/10**) into the strikers DS (**1/9** and **8/16**) according to the diagram on page 12.

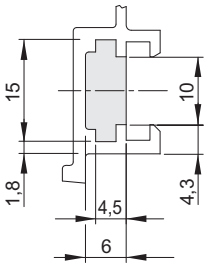
B - B



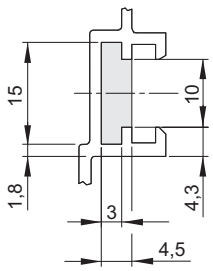
Groove for shoot bolt of the second sash

Groove for locking parts of the first sash

Z.1
Version A0026



Z.2
Version A0006



For compression adjustment of the pressure pieces (2/10) + 1 mm, see page 16.

For hardware overview, see page 12.

	No.	Pc.	Description			Material no.		Material no.
	1-9	1	**VS LM-DS/K DN A0004 Z5.0**	*Secondary sash*	1	MMVS380-100010	20	MMVS380-100030
	10-12	1	**Gear set DS/A DN A0004 Z5.0**	*Secondary sash*	1	MMGI0100-100010	20	MMGI0100-100030
	13-21	1	**VS LM-DS/K A0004**	*Secondary sash*	1	MMVS390-100010	20	MMVS390-100030
	–	1	**BS axxent-D**	*(See fig. on page 8 items 2 - 3)*	1	MMBS0110-100010	10	MMBS0110-100020
	–	1	**MV LM 4200-D VS/BS** *(b ≥ 1250 mm)*	*(See fig. on page 8 items 14 - 15)*	1	857052	20	246986
	–	1	**Striker jig LM A0004**	*(see below)*	1	879504	-	-

Assembly instructions

Preparation

A Open the operating rod guide groove.
B Prepare operating rods S6, S7, S8 according to specifications on page 13.
C Insert run-up block (**8/20**) horizontally on the VSU.

Sash profile section D-D

A Insert shoot bolt LM VSU/DN A0004 Z5.0 (**7**) with attached striker E (**6**) and operating rod S6 into the secondary sash profile from below.
B Insert shoot bolt LM VSO/DN A0004 Z5.0 (**3**) and operating rod S7 (for locking element (**5**), operating rod S8) with attached striker VSO (**4**) into the secondary sash profile from above.

Gear set DN (D-D)

C Place the stop (**12**) DIN right or DIN left onto the secondary sash gear DN (**11**).
D Attach the secondary sash gear DN (**11**) to the operating rods S6 and S7 and fix in place with taps 3.9 x 32 (**10**) (torque 1.5 ± 0.25 Nm).

Sash profile section C-C

E Insert shoot bolt LM VSU A0004 (**19**) with attached striker E (**18**) into the secondary sash profile from below.
F Insert shoot bolt LM VSO A0004 (**15**) with attached striker VSO (**16**), operating rod S8 and and locking element (**17**) into the secondary sash profile from above.
G Position striker E (**6/18**) with striker jig LM and fix in place with grub screws M5 (torque 2.5 ± 0.25 Nm) (Fig. 1).
H Position striker VSO (**4/16**) with striker jig LM and fix in place with grub screws M5. (Torque 2.5 ± 0.25 Nm) (Fig. 2).

Frame

Position tilt locking part (**9/21**) and top striker (**1/13**) according to the specifications on page 13 and fix each in place with grub screw M5 (torque 1.5 ± 0.25 Nm).

Position of striker jig LM

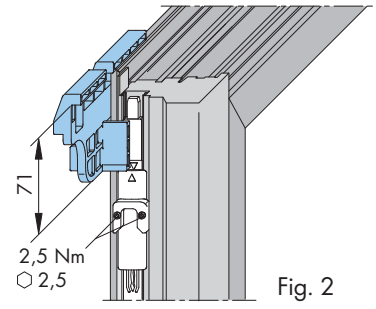


Fig. 2

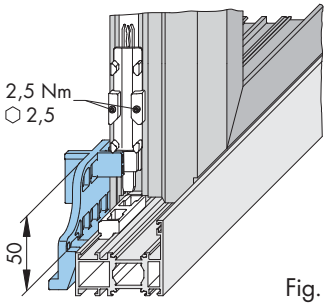
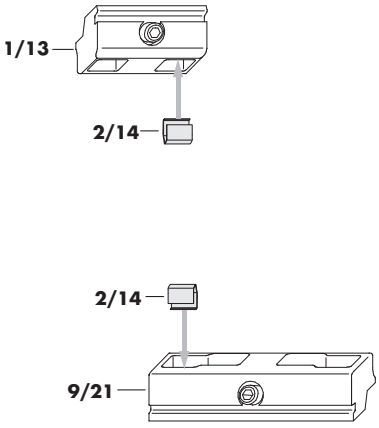
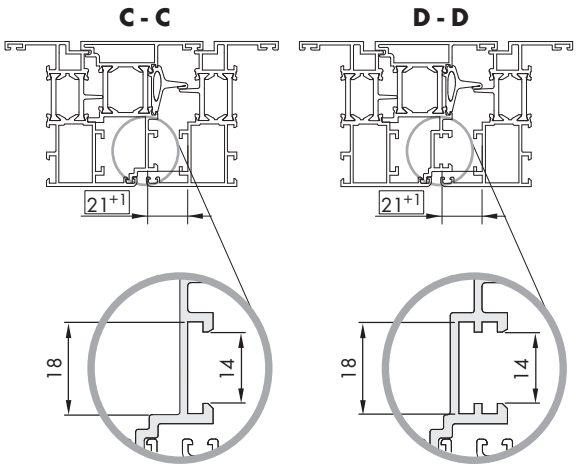


Fig. 1

Compression setting with pressure pieces (2) +0.5



Profile recommendation



For hardware overview, see page 13.

ALU axxent-D 130 kg *List of hardware and 130 kg diagram*

No.	Pc. LH	Pc. RH	Description			Material no.		Material no.
1a	0...1	0...1	Si-line LM handle/LM Globe handle (no illustr.)		1	*See LM handle overview, drawing no.: H48.ZUBHLS007en in aluminium planning manual*		
1b	0...1	0...1	Window handle ☐ 7 mm x 25 mm	*Cam ∅ 10 mm*	1			
2-9	-	1	BS axxent DK right, size 2S		1	MMBS0171-100010	10	MMBS0171-100020
–	1	-	BS axxent DK left, size 2S		1	MMBS0172-100010	10	MMBS0172-100020
10-18	1	1	VS LM-D stop/corner drive VSO *(1a)*		1	MMVS0410-100010	10	MMVS0410-100030
19-21	0...1	0...1	Gear set M6 Trial/RR *(1b)*		1	MMGI0090-100010	20	MMGI0090-100030
22-24	0...1	0...1	MV LM 4200-DK	*a ≥ 1250 mm*	1	857045	20	246979
25-29	0...1	0...1	MV LM VS/BS A0040	*b ≥ 1250 mm*	1	MMMV0030-100010	20	MMMV0030-100030
30-32	0...1	0...1	LM locking part	*a ≥ 1250 mm*	1	-	10	317556
33-37	0...1	0...1	Sashbrake ALU A0040	*a 600 mm - 1000 mm*	1	MSBR0010-000011	50	MSBR0010-000051
	0...1	0...1	Sashbrake ALU, long	*a 1001 mm - 1600 mm*	1	MSBR0010-000010	50	MSBR0010-000050
38	0...1	0...1	LM handle support	*(1a) Design variants, see page 3*	-	-	200	-
39	1	1	Jig BS axxent 130 kg	*(See fig. on page 20)*	1	MARB0030-023010	-	-
40-44	-	1	Accessories, BS axxent right, 130 kg[1)]	*(See fig. on page 20)*	1	MZBS0061-100010	10	MZBS0061-100020
	1	-	Accessories, BS axxent left, 130 kg[1)]		1	MZBS0062-100010	10	MZBS0062-100020

1) *Contents of the packing unit: BSO A0040 supporting piece (**40**), countersunk screws M5 x 13 (**41**), BSU A0040 right/left frame part (**42**), BSU A0040 rod (**43**) and BSU A0040 right/left frame part (**44**) (see page 20).*

Note: *For assembly and disassembly, compression settings and adjustment options, see H48.axntLS002en in the aluminium planning manual.*

Glass thickness in mm without air gap

16 mm glass thickness (equivalent to **40** kg/m²)

20 mm glass thickness (equivalent to **50** kg/m²)

24 mm glass thickness (equivalent to **60** kg/m²)

28 mm glass thickness (equivalent to **70** kg/m²)

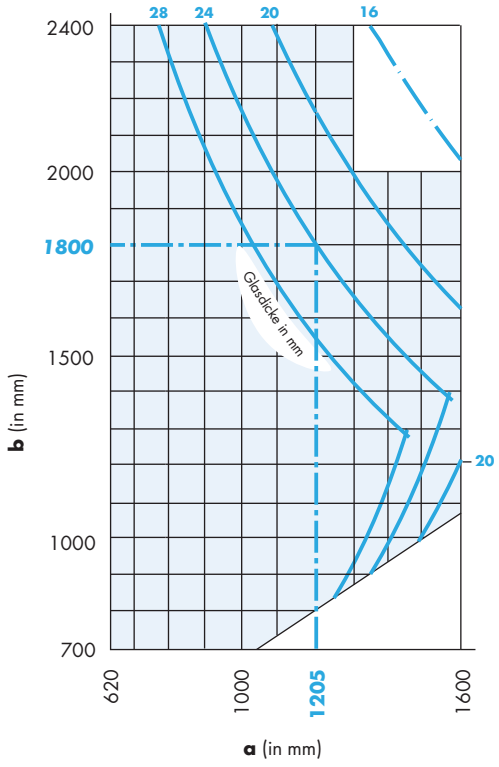
1 mm/m² glass thickness = 2.5 kg

Example (—·—):

sash height	=	*1800 mm*
glass thickness	=	*24 mm*
permissible sash width	=	***1205 mm***

For glass thicknesses of less than 16 mm, all sash sizes that lie within the range of application and do not exceed an aspect ratio a/b of 1.5 are permissible.

Maximum permissible sash weight: 130 kg



For hardware overview, see page 14.

1. Insert the BS axxent 130 kg jig (**39**) on loosened stay, as shown in the adjacent diagram (fig. 1).
2. Drill holes with ∅ 4.2 for the BSO A0040 supporting piece (39).
3. Insert the BSO A0040 supporting piece (**40**) into the frame groove, position it on the stay and fix it in place with M5 x 13 countersunk screws (**41**).
4. Tighten the M5 x 13 countersunk screws (**41**) with 2.5 ±0.25 Nm.

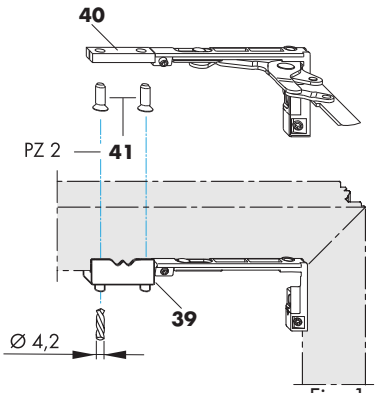


Fig. 1

Fixing the BSU A0040 right/left frame part

1. Insert BSU A0040 right/left frame part (**42**) into the frame groove and position it on the axxent bottom hinge as shown in the adjacent diagram (fig. 2).
2. Tighten the grub screws of the BSU A0040 right/left frame part (**42**) with 2.5 ± 0.25 Nm.

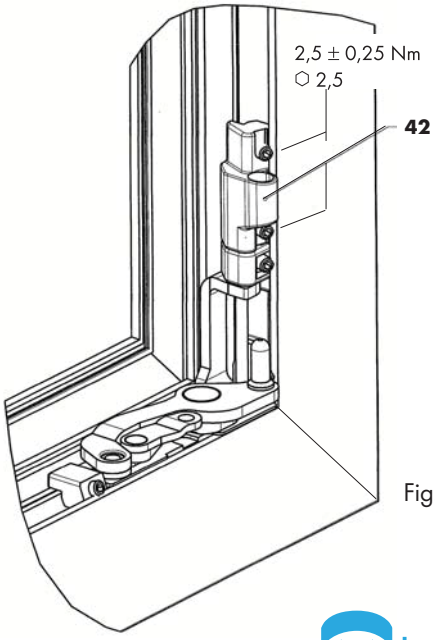


Fig. 2

Installing the BSU A0040 rod into the sash and frame (without the glass)

1. Insert BSU A0040 right/left sash part (**44**) into the sash groove and secure it (fig. 3).
2. Hang the sash (P 2 – 10) and open it.
3. Insert the BSU A0040 rod (**43**) into the BSU A0040 right/left frame part. (**42**) (fig. 4).
4. Insert the BSU A0040 rod (**43**) into the BSU A0040 right/left sash part (**44**) (fig. 4).
5. Position the BSU A0040 right/left sash part (**44**) as shown (fig. 3) and fix in place with 2.5 ±0.25 Nm.
6. Adjust the grub screw in the BSU A0040 right/left sash part (**44**) to reduce the play of the BSU rod (**43**) (fig. 4).

Note a: Make sure that the BSU A0040 rod (**43**) has no noticeable play.
Note b: If the tension of the BSU A0040 rod (**43**) is too high, the sash cannot be closed.
Note c: After making adjustments to the BSU, repeat the steps from notes **a** and **b**.

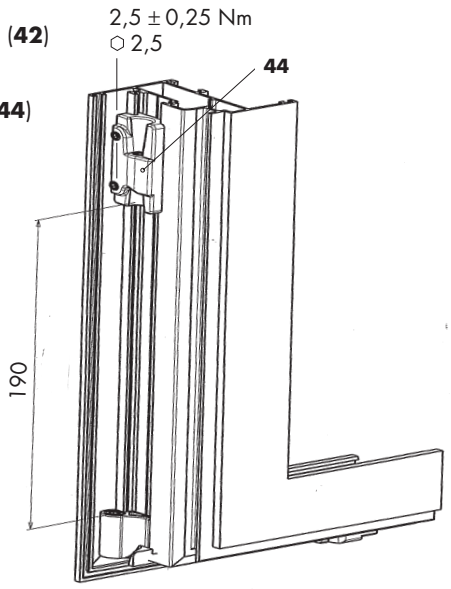


Fig. 3

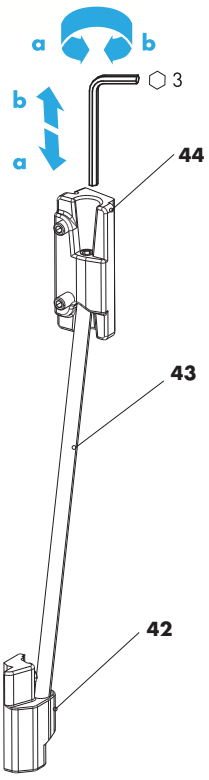


Fig. 4

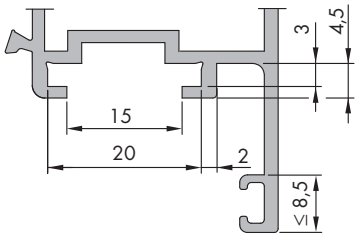
SIEGENIA-AUBI KG
Industriestraße 1-3, 57234 Wilnsdorf, Germany
Tel. +49 271 39 31-0 - Fax +49 271 39 31-3 33

LM 2200

The clampable hardware for
aluminium windows and portal doors
Hardware certified in accordance with ***QM 328***

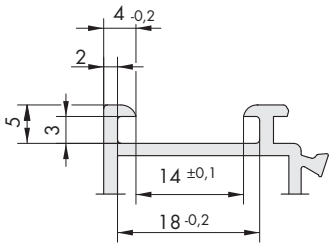
Further details and specifications/information regarding the product and liability (guidelines: VHBH, TBDK and VHBE) can be found in the aluminium planning manual (H4006.3042EN) and ***must*** *be observed.*

All dimensions given are final dimensions after the surface of the sections has been treated (painted, powder coated, etc.).

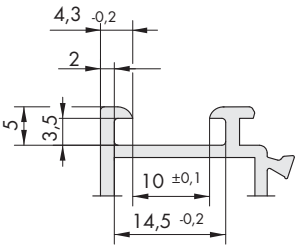


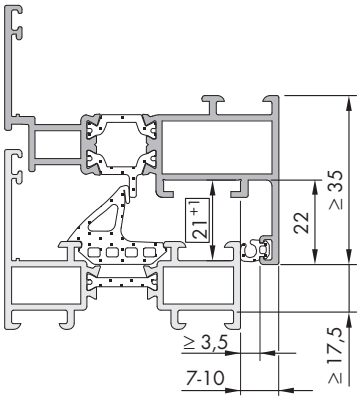
Frame groove size

A0004

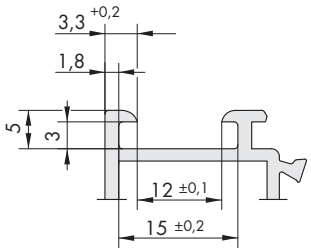


A0006

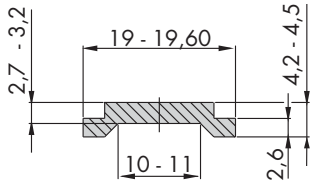




A0022

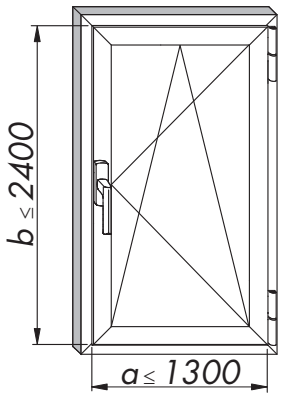


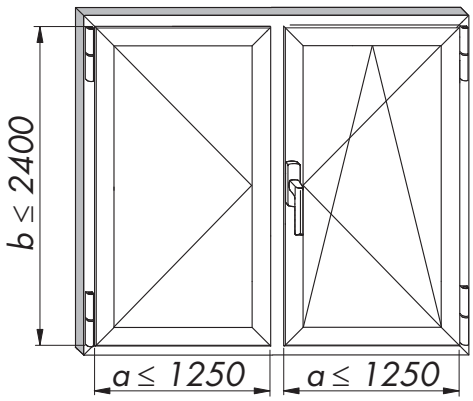
min. - max.

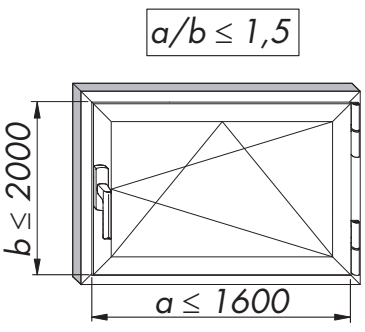


All dimensions in mm

Sash width	(a)	min. 375 - max. 1600
Sash height	(b)	min. 550 - max. 2400
Sash weight	(⍓)	max. 80 kg







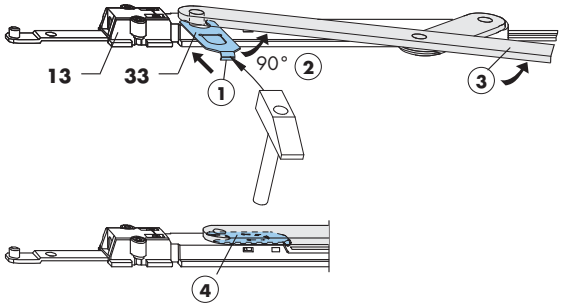
Assembly Instructions
H48.2200LS001en

Technical specifications and colours are subject to change

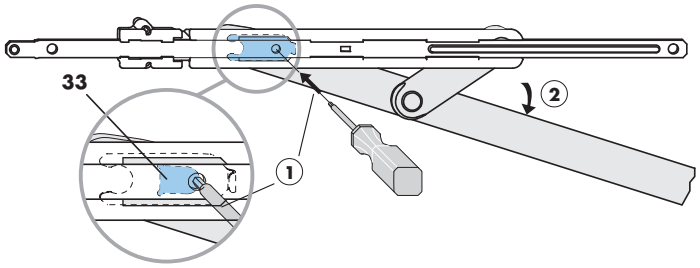
H48.2200LS001en_1_2013-02

	Item	Qty	Description				Material no.		Material no.
Generally required	1	1	**LM Globe handle**			*See handle overview LM*		*Drawing no.: H48.ZubhLS007de*	
	2-12	1	**BS LM 2200**	**Silver**		1	MMBS0060-525010	10	MMBS0060-525020
		1		**Brown**		1	MMBS0060-533010	10	MMBS0060-533020
		1		**White**	*RAL 9016*	1	MMBS0060-504010	10	MMBS0060-504020
		1		**Black**	*RAL 9005*	1	MMBS0060-523010	10	MMBS0060-523020
		1		**Mill finish**		–	–	10	MMBS0060-500020
	13	1	**Stay LM 2200**	*Size*	*a (in mm)*	1			
				20	375 - 600		MSKK0010-000010	20	MSKK0010-000030
				35	601 - 1,250	1	MSKK0210-000010	20	MSKK0210-000030
			1) with LM 4200 additional stay	35[1)]	1251 - 1,600	1	MSKK0210-000010	20	MSKK0210-000030
	14-17	1	**Additional stay LM 4200**	*a > 1,250 mm + stay 35*		1	857076	10	247006
	18-25	1	**VS LM-DK KPS**			1	MMVS0250-100010	20	MMVS0250-100030
	26-28	1	**Coupling set FBS-G 9 mm**			1	MMKL0030-100010	20	MMKL0030-100030
	29-31	2	**MV LM 4200-DK**	*a/b > 1,250 mm*		1	857045	20	246979
	29-31	2	**MV LM4200/2200-DK A0172**	*a/b > 1,250 mm (see fig.)*		1	MMMV0010-100010	20	MMMV0010-100030
	Accessories								
	32	1	**MV stay striker** *(a 601 – 1,600)*	*Stay size 35 only*		1	MXSK0010-100010	20	MXSK0010-100030
	33	1	**LM 2200 tilt restrictor** *(a 601 – 1,250)*	*Stay size 35 only*		1	MXSK0030-000010	200	MXSK0030-000200
	34	1	**Pressure piece SV right**	*Width adjustment: 0.8 mm*		1	MBDR0021-100010	100	MBDR0021-100060
	35	1	**Pressure piece SV left**	*Width adjustment: 0.8 mm*		1	MBDR0022-100010	100	MBDR0022-100060
	36	1	**Striker**	*Stay size 35 only*		1	859322	20	265413

Mounting the tilt restrictor (33)

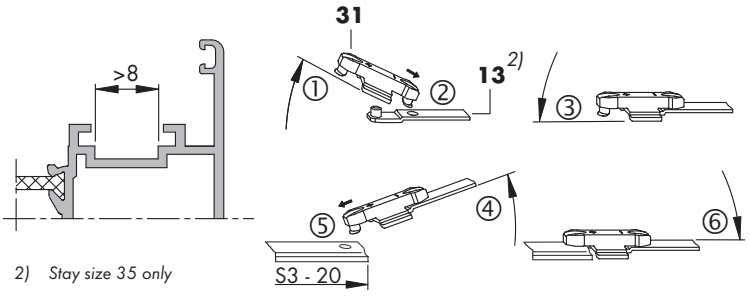


Removing the tilt restrictor (33)



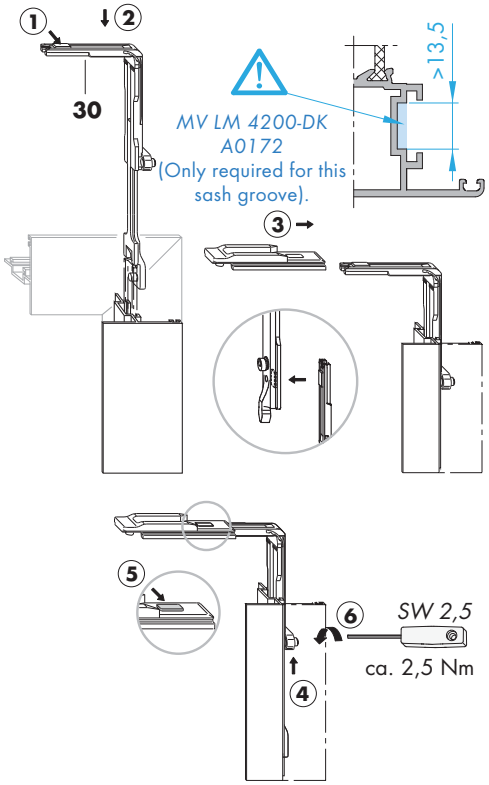
Installation instructions for items 32 and 18

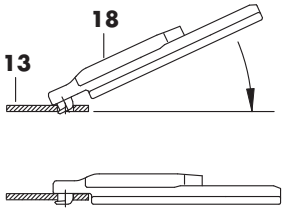
- If necessary, the MV stay striker (**32**) can be used as an additional locking point. Striker (**35**) must be ordered separately.
- MV stay striker (**32**) is required for the sash groove (see fig.).
- Shorten operating rod S3 by 20 mm.



2) *Stay size 35 only*

Instructions for installing the VSU/BSO corner drive (31) A0172

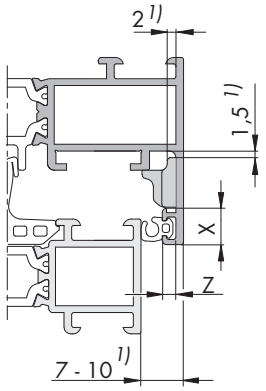




	Item	Qty	Description			Material no.		Material no.
Generally required	1	1	**LM Globe handle**		*See handle overview LM Drawing no.: H48.ZubhLS007de*			
	2-12	1	**BS LM 2200**	**Silver**	1	**MMBS0060-525010**	10	**MMBS0060-525020**
		1	*(See fig. on page 7)*	**Brown**	1	**MMBS0060-533010**	10	**MMBS0060-533020**
		1		**White** *RAL 9016*	1	**MMBS0060-504010**	10	**MMBS0060-504020**
		1		**Black** *RAL 9005*	1	**MMBS0060-523010**	10	**MMBS0060-523020**
		1		**Mill finish**	–	–	10	**MMBS0060-500020**
	13-14	1	**Accessories - LM 2200 turn-only stay**		1	**MZBS0040-000010**	20	**MZBS0040-000030**
	15-21	1	**VS LM 4200-D**		1	**857014**	20	**246948**
	22-24	1	**MV LM 4200-D VS/BS**	*b > 1250 mm*	1	**857052**	20	**246986**
	25-28	1	**MV LM4200/2200-D VSU/VSO**	*a > 1,250 mm*	1	**MMMV0040-100010**	20	**MMMV0040-100030**
	25-28	1	**MV LM4200/2200-D VSU/VSO A0172**	*a > 1250 mm (see fig.)*	1	**MMMV0020-100010**	20	**MMMV0020-100030**
	Accessories							
	29	1	**Handle support LM**		–	–	200	*(See table)*
	30	1	**Stop**		1	**820544**	10	**222805**
	34	1	**Pressure piece SV right** *(See fig. on page 7)*	*Width adjustment: 0.8 mm*	1	**MBDR0021-100010**	100	**MBDR0021-100060**
	35	1	**Pressure piece SV left** *(See fig. on page 7)*	*Width adjustment: 0.8 mm*	1	**MBDR0022-100010**	100	**MBDR0022-100060**

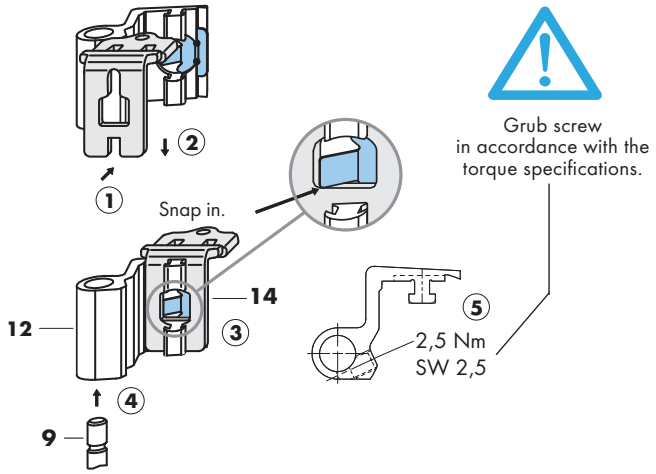
Design variations for handle support (29)

Z	X < 7 mm	X 7.1- 7.5 mm
< 2 mm	MFHA0010-100200	MFHA0010-100200
2.1 - 3 mm	MFHA0010-100200	MFHA0020-100200
> 3 mm	MFHA0010-100200	-

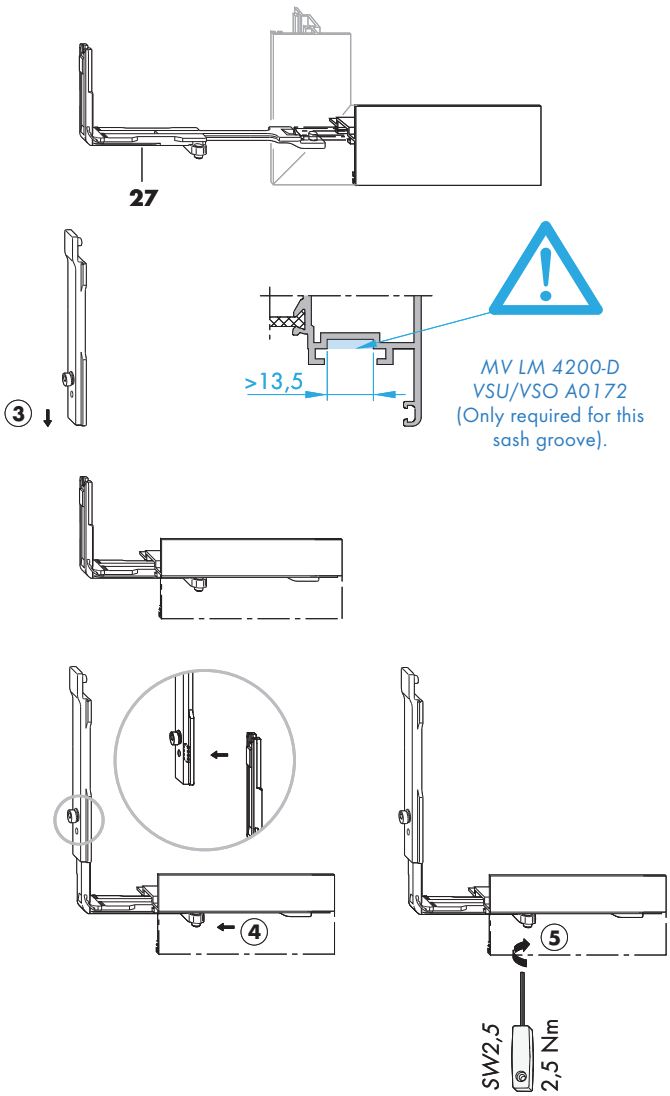


1) *Required space*

Instructions for installing the stay hinge (12), adapter (14) and top hinge pin (9).

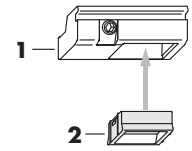


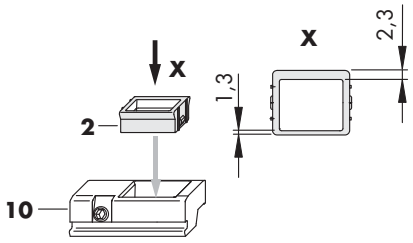
Instructions for installing the VSU/BSO corner drive (30) A0172



	Item	Qty	Description			Material no.		Material no.
	1-10	1	**VS LM 4200-DS A0109**		1	879368	20	266885
	11	1	**LM 4200/2200-D stay**	*Secondary sash*	1	MSKD0010-100010	100	MSKD0010-100060
	12-13	1	**Accessories - LM 2200 turn-only stay**		1	MZBS0040-000010	20	MZBS0040-000030
	–	1	**MV LM 4200-D VS/BS** *b > 1250 mm*	*(See fig. on page 8, items 22 - 23)*	1	857052	20	246986

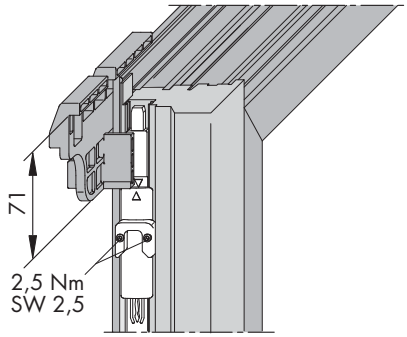
Pressure adjustment of the pressure pieces (2) + 1 mm

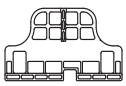




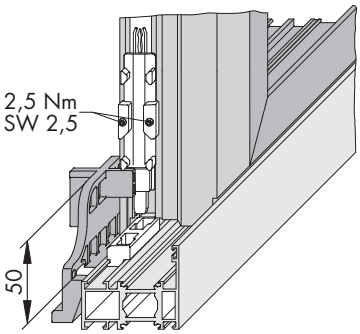
	Item	Qty	Description			Material no.		Material no.
	1-10	1	VS LM-DS/K DN A0004 Z5.0	*Secondary sash*	1	MMVS0380-100010	20	MMVS0380-100030
	11-13	1	Gear set DS/A DN A0004 Z5.0	*Secondary sash*	1	MMGI0100-100010	20	MMGI0100-100030
	14	1	LM 4200/2200-D stay	*Secondary sash*	1	MSKD0010-100010	20	MSKD0010-100030
	15-16	1	Accessories - LM 2200 turn-only stay	*Secondary sash*	1	MZBS0040-000010	20	MZBS0040-000030
	17-24	1	VS LM-DK FBS-G 9 MM A0172	*Main sash*	1	MMVS0360-100010	20	MMVS0360-100020

Instructions for positioning the LM striker jig on the secondary sash

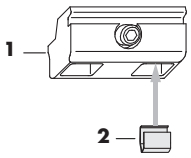


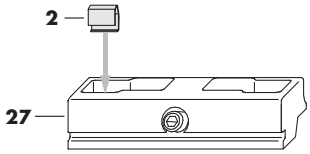


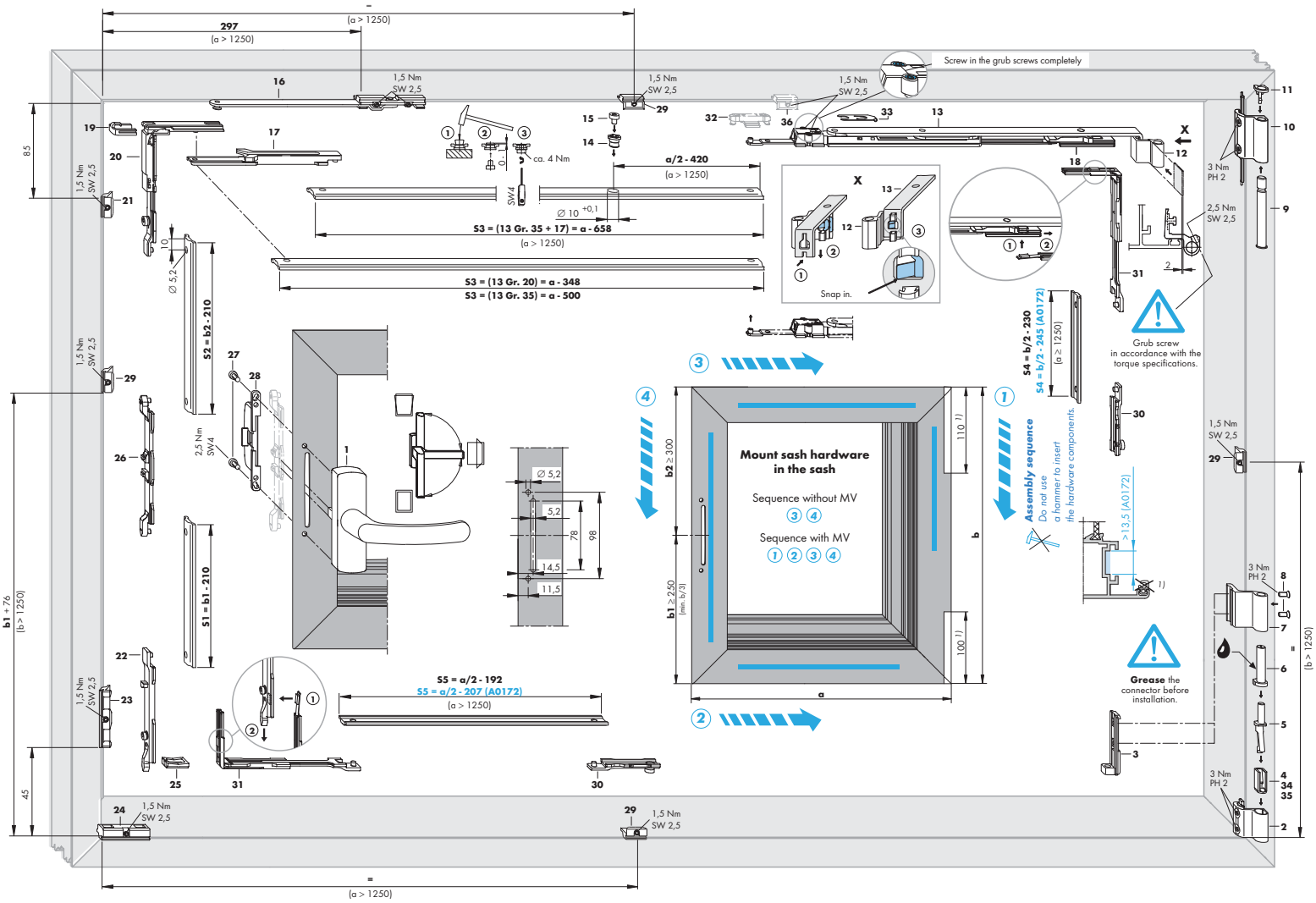
Description	Material no.
LM A0004 striker jig	879504



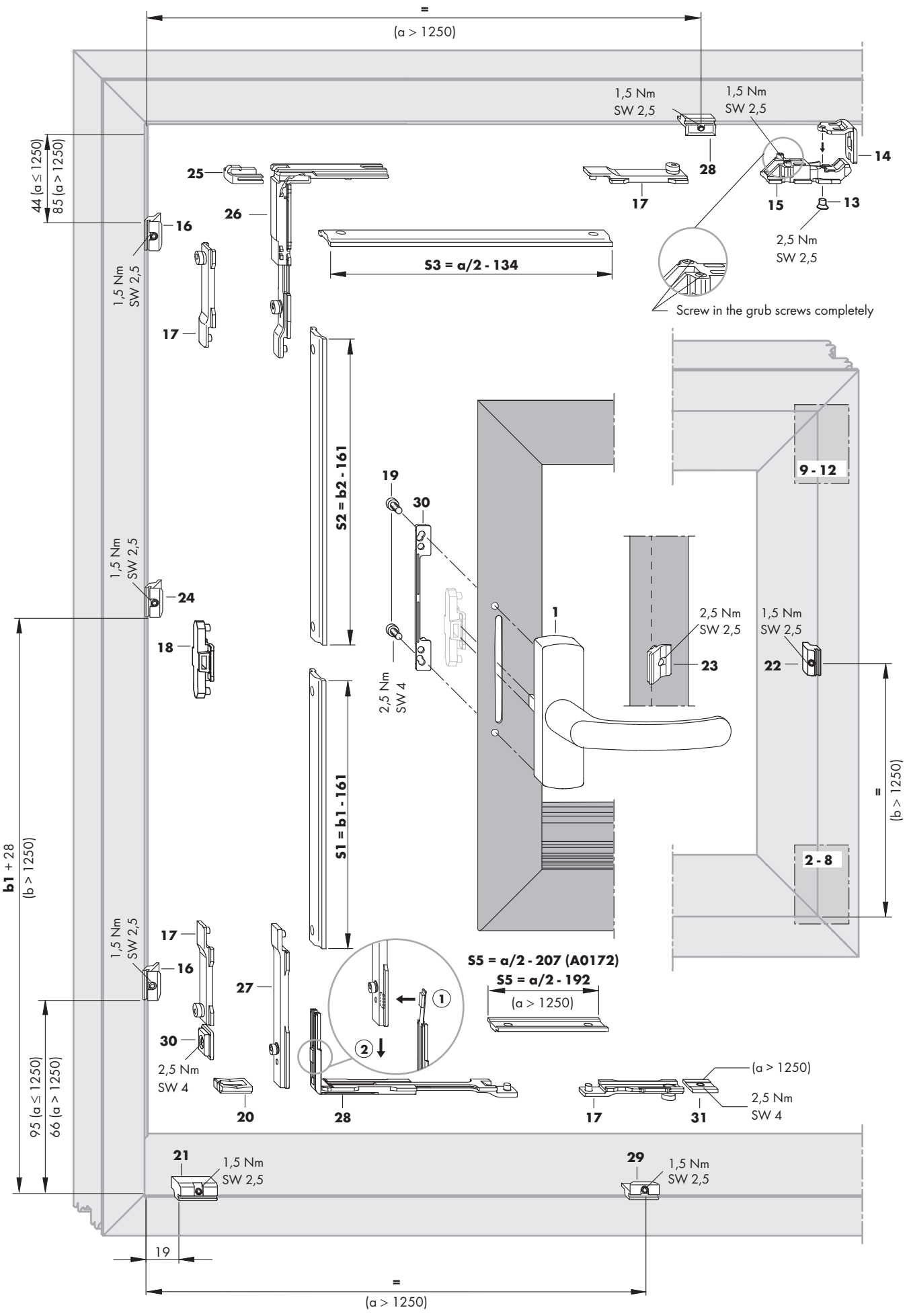
Contact pressure setting with stop springs (2) +0.5 mm

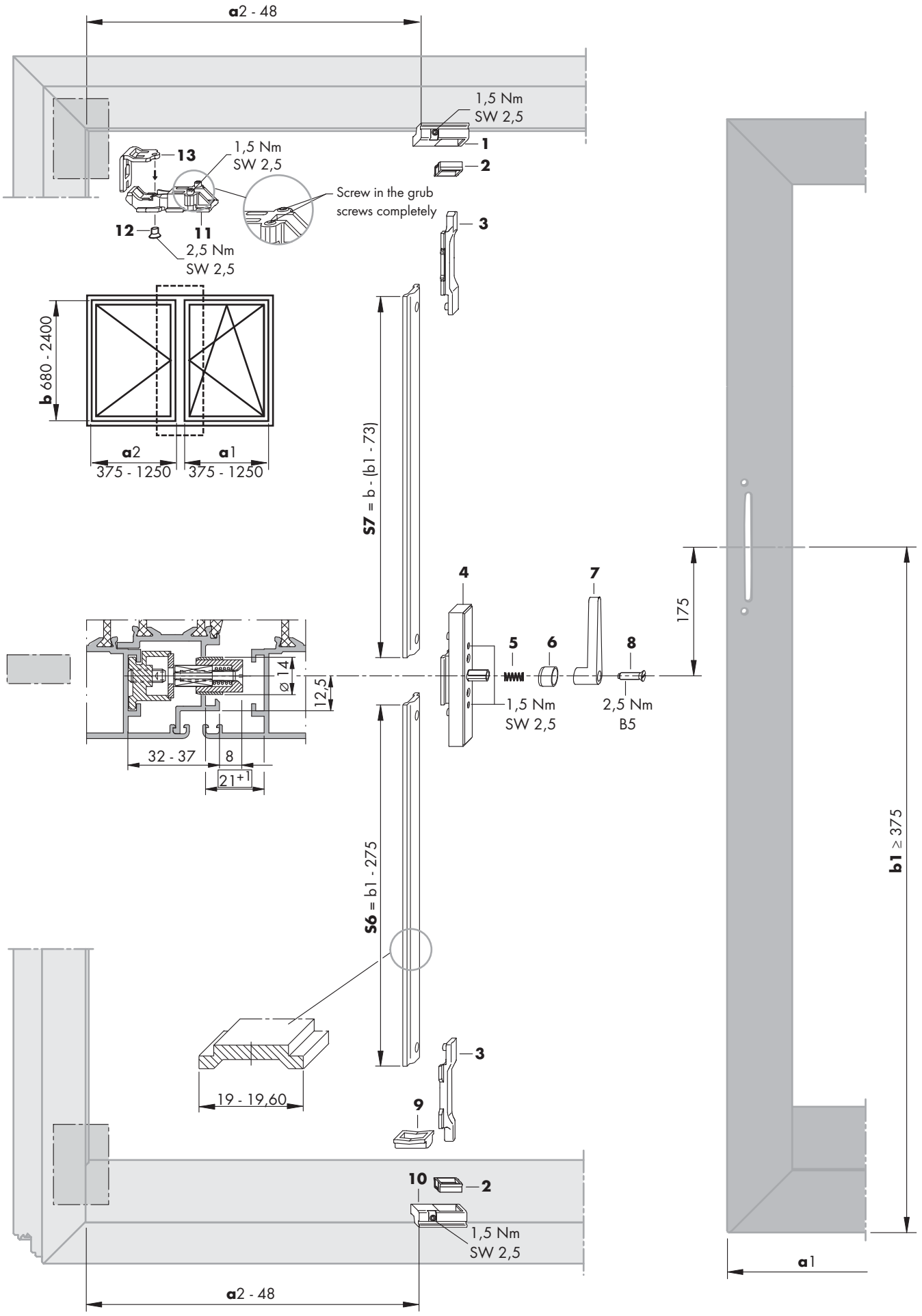


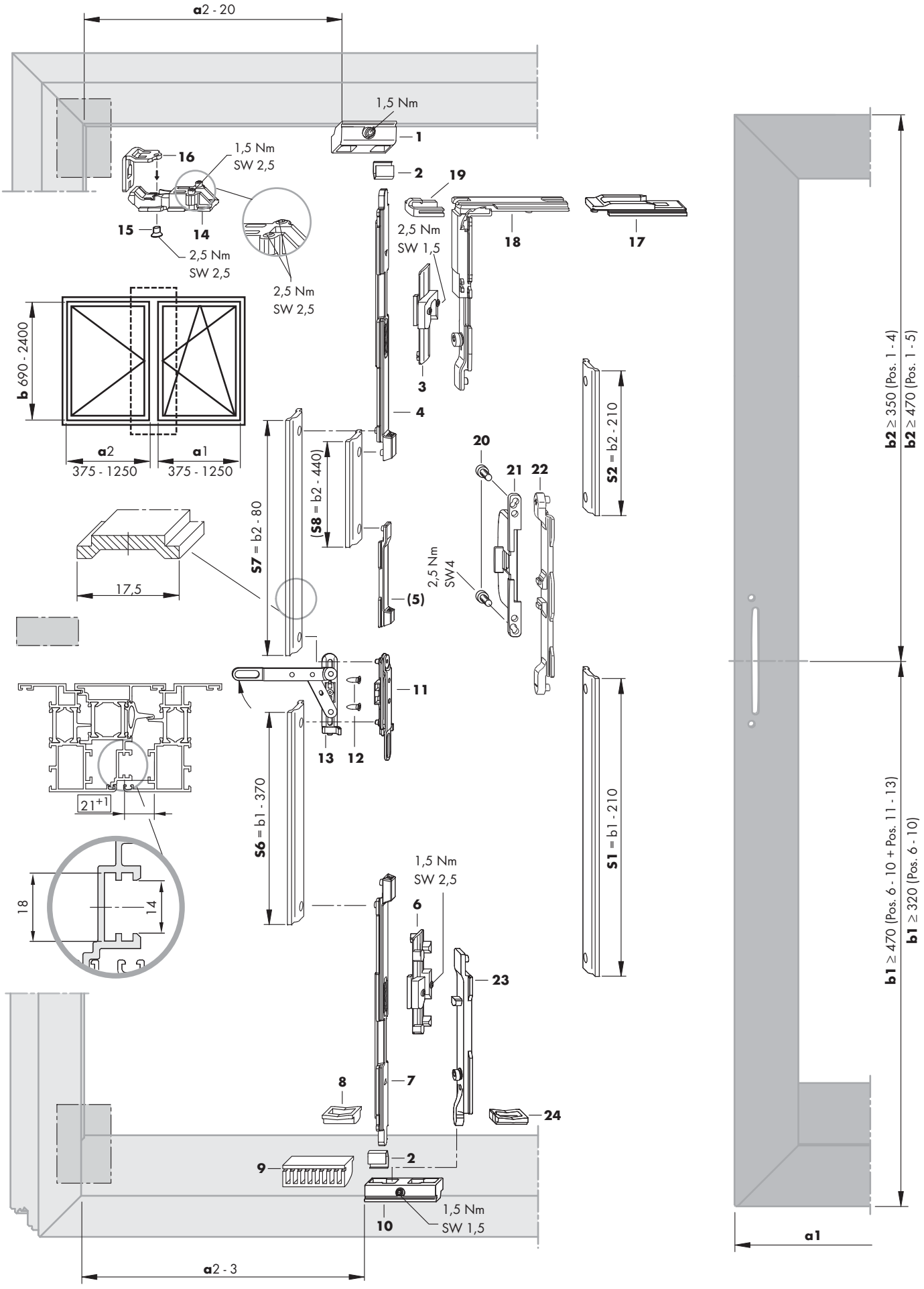


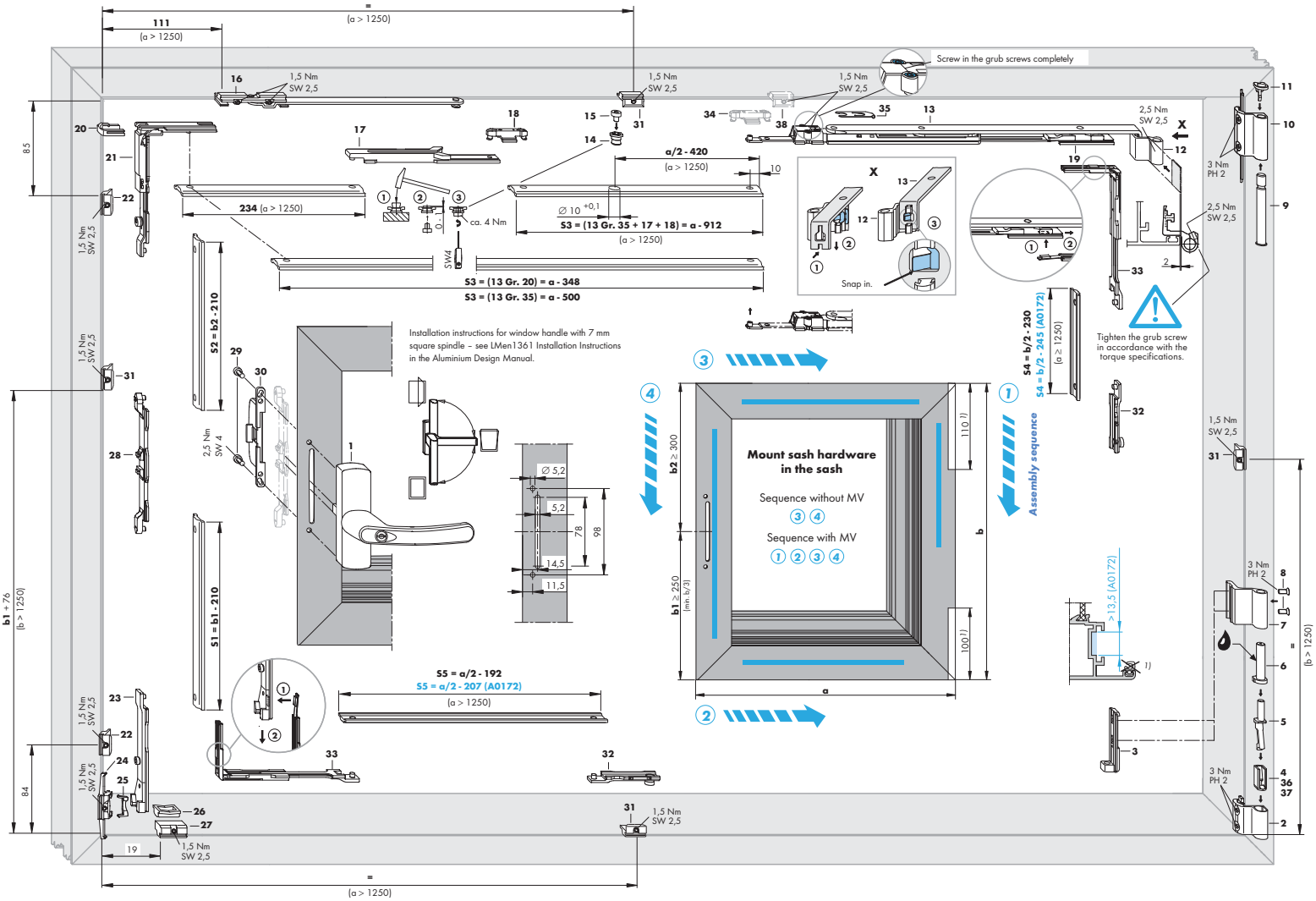


ALU 2200-DK *Hardware layout and installation dimensions*

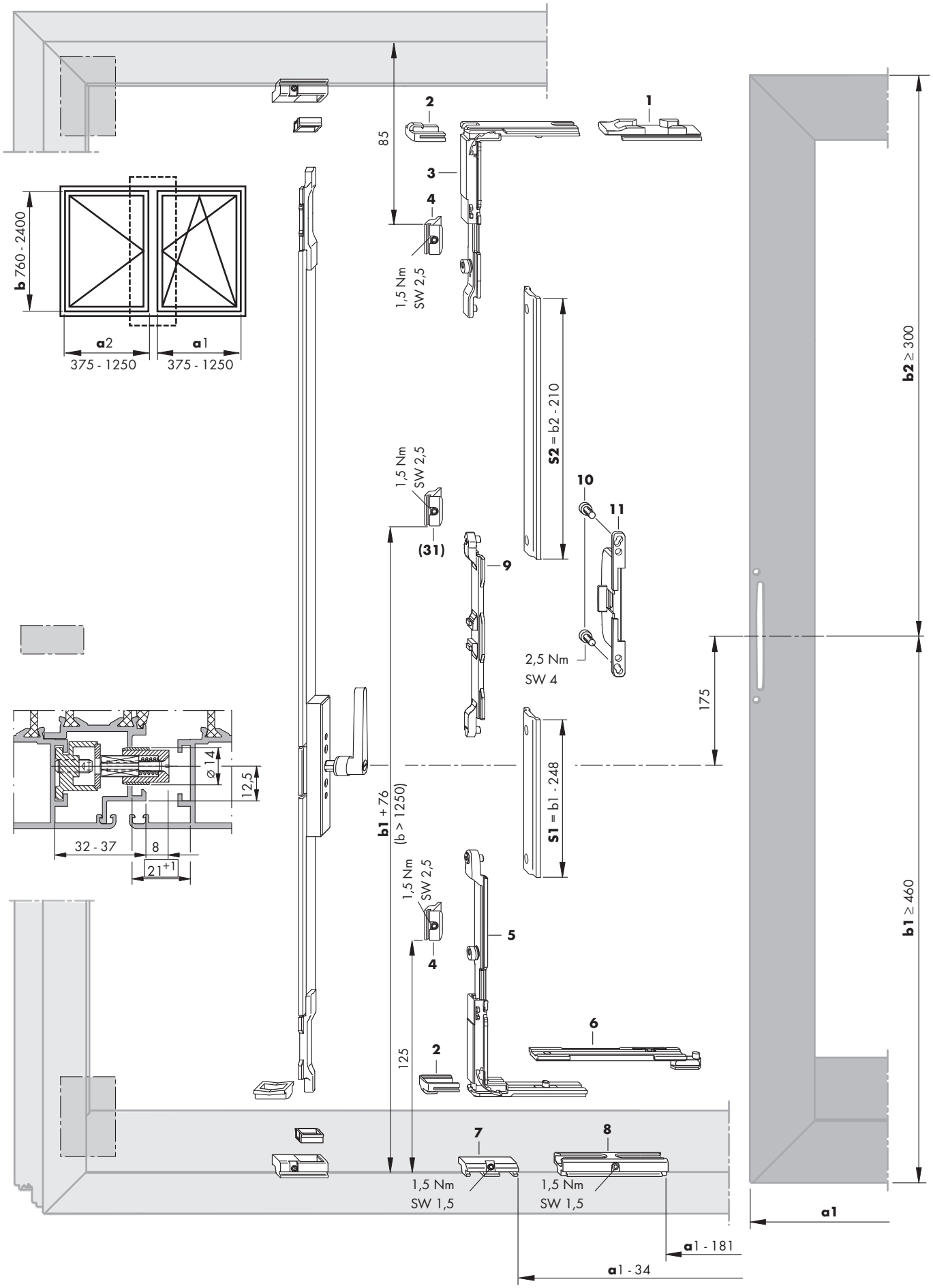

=
(a > 1250)
1,5 Nm
SW 2,5
1,5 Nm
SW 2,5
14
28
17
15
13
2,5 Nm
SW 2,5
44 (a ≤ 1250)
85 (a > 1250)
25
26
16
1,5 Nm
SW 2,5
17
S3 = a/2 - 134
Screw in the grub screws completely
S2 = b2 - 161
19
30
9 - 12
1,5 Nm
SW 2,5
24
18
1
2,5 Nm
SW 2,5
23
1,5 Nm
SW 2,5
22
2,5 Nm
SW 4
S1 = b1 - 161
= (b > 1250)
b1 + 28 (b > 1250)
2 - 8
17
1,5 Nm
SW 2,5
16
27
S5 = a/2 - 207 (A0172)
S5 = a/2 - 192
(a > 1250)
30
2,5 Nm
SW 4
95 (a ≤ 1250)
66 (a > 1250)
20
28
(a > 1250)
17
31
2,5 Nm
SW 4
21
1,5 Nm
SW 2,5
29
1,5 Nm
SW 2,5
19
=
(a > 1250)

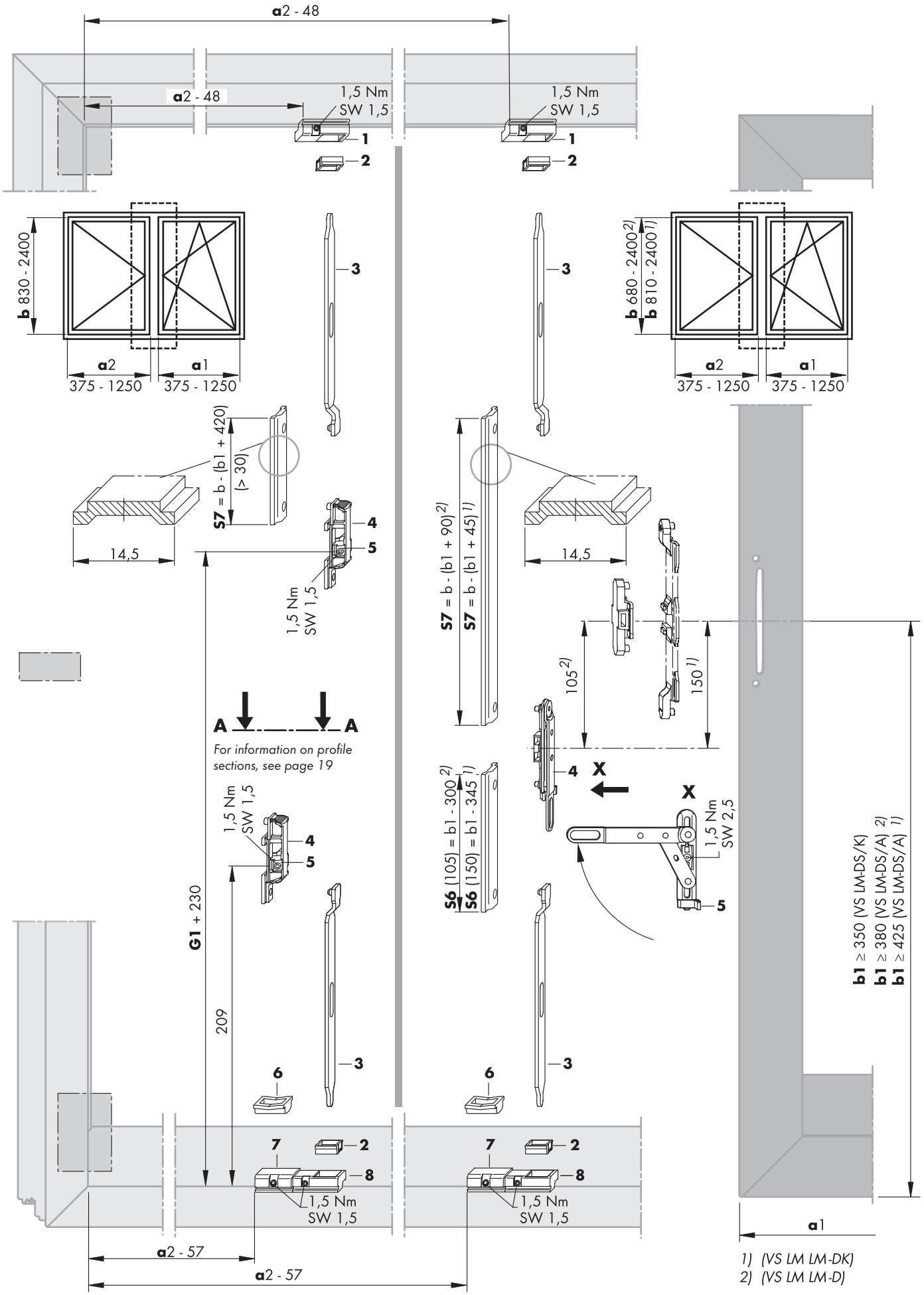

a2 - 48
1,5 Nm
SW 2,5
1
2
13
1,5 Nm
SW 2,5
Screw in the grub
screws completely
3
12
11
2,5 Nm
SW 2,5
b 680 - 2400
a2
375 - 1250
a1
375 - 1250
S7 = b - (b1 - 73)
4
7
5
6
8
175
ø 14
12,5
1,5 Nm
SW 2,5
2,5 Nm
B5
32 - 37
8
21+1
S6 = b1 - 275
b1 ≥ 375
19 - 19,60
3
9
10
2
1,5 Nm
SW 2,5
a2 - 48
a1


a2 - 20
1,5 Nm
1
16
1,5 Nm
SW 2,5
2
19
15
14
2,5 Nm
SW 2,5
2,5 Nm
SW 2,5
2,5 Nm
SW 1,5
18
17
b 690 - 2400
3
4
a2
375 - 1250
a1
375 - 1250
S2 = b2 - 210
20
21
22
S8 = b2 - 440
S7 = b2 - 80
17,5
(5)
2,5 Nm
SW4
11
13
12
21+1
S6 = b1 - 370
S1 = b1 - 210
18
14
1,5 Nm
SW 2,5
6
23
8
7
24
9
2
10
1,5 Nm
SW 1,5
a2 - 3
b2 ≥ 350 (Pos. 1 - 4)
b2 ≥ 470 (Pos. 1 - 5)
b1 ≥ 470 (Pos. 6 - 10 + Pos. 11 - 13)
b1 ≥ 320 (Pos. 6 - 10)
a1



ALU 2200-TBT *Hardware layout and installation dimensions*


85
2
1
3
4
1,5 Nm
SW 2,5
b 760 - 2400
a2
375 - 1250
a1
375 - 1250
S2 = b2 - 210
10
11
(31)
9
2,5 Nm
SW 4
175
b2 ≥ 300
ø 14
12,5
32 - 37
8
21+1
b1 + 76
(b > 1250)
S1 = b1 - 248
5
6
125
7
8
1,5 Nm
SW 1,5
b1 ≥ 460
a1
a1 - 181
a1 - 34



1) (VS LM LM-DK)
2) (VS LM LM-D)

Glass thickness in mm without air gap

12 mm glass thickness (equivalent to **30** kg/m^2)

16 mm glass thickness (equivalent to **40** kg/m^2)

20 mm glass thickness (equivalent to **50** kg/m^2)

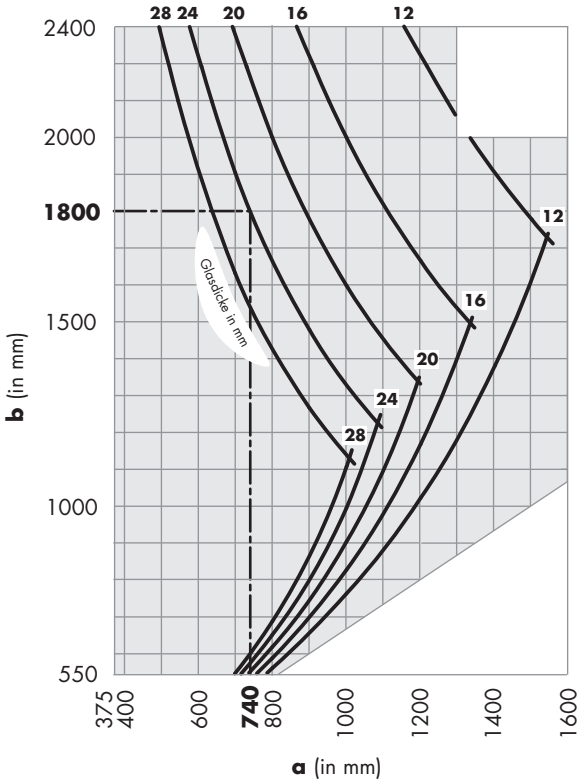
24 mm glass thickness (equivalent to **60** kg/m^2)

28 mm glass thickness (equivalent to **70** kg/m^2)

1 mm/m^2 glass thickness = 2.5 kg

Example (—·—):

sash height	=	*1,800 mm*
glass thickness	=	*24 mm*
maximum allowable sash width	=	***740 mm***



For glass thicknesses under 12 mm, all sash sizes can be used, as long as they are within the size range and do not exceed a width to height ratio of 1.5.

Abbreviations

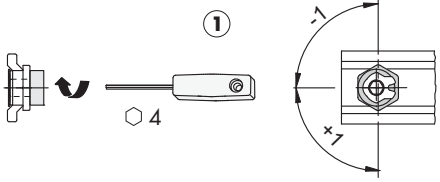
The following abbreviations are used in these assembly instructions:

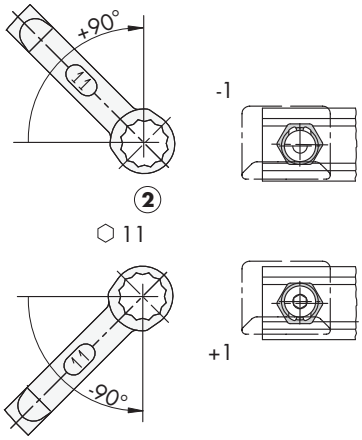
BS	Hinge side
BSO	Hinge side, top
a	Sash width
a1	Sash width of main sash
a2	Sash width of secondary sash
b	Sash height
b1	Handle height, bottom
b2	Handle height, top
FBS-G	Mishandling device on handle
MV	Centre lock
SV	Width adjustment
VS	Locking side
VSO	Locking side, top
VSU	Locking side, bottom

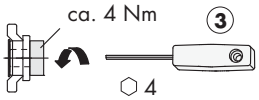
S1	Operating rod, locking side on bottom
S2	Operating rod, locking side on top
S3	Operating rod, top horizontal
S4	Operating rod, hinge side
S5	Operating rod, bottom horizontal
S6	Operating rod, secondary sash locking side on bottom
S7	Operating rod, secondary sash locking side on top

Pressure adjustment ±1 mm

(for items **14** and **15**)



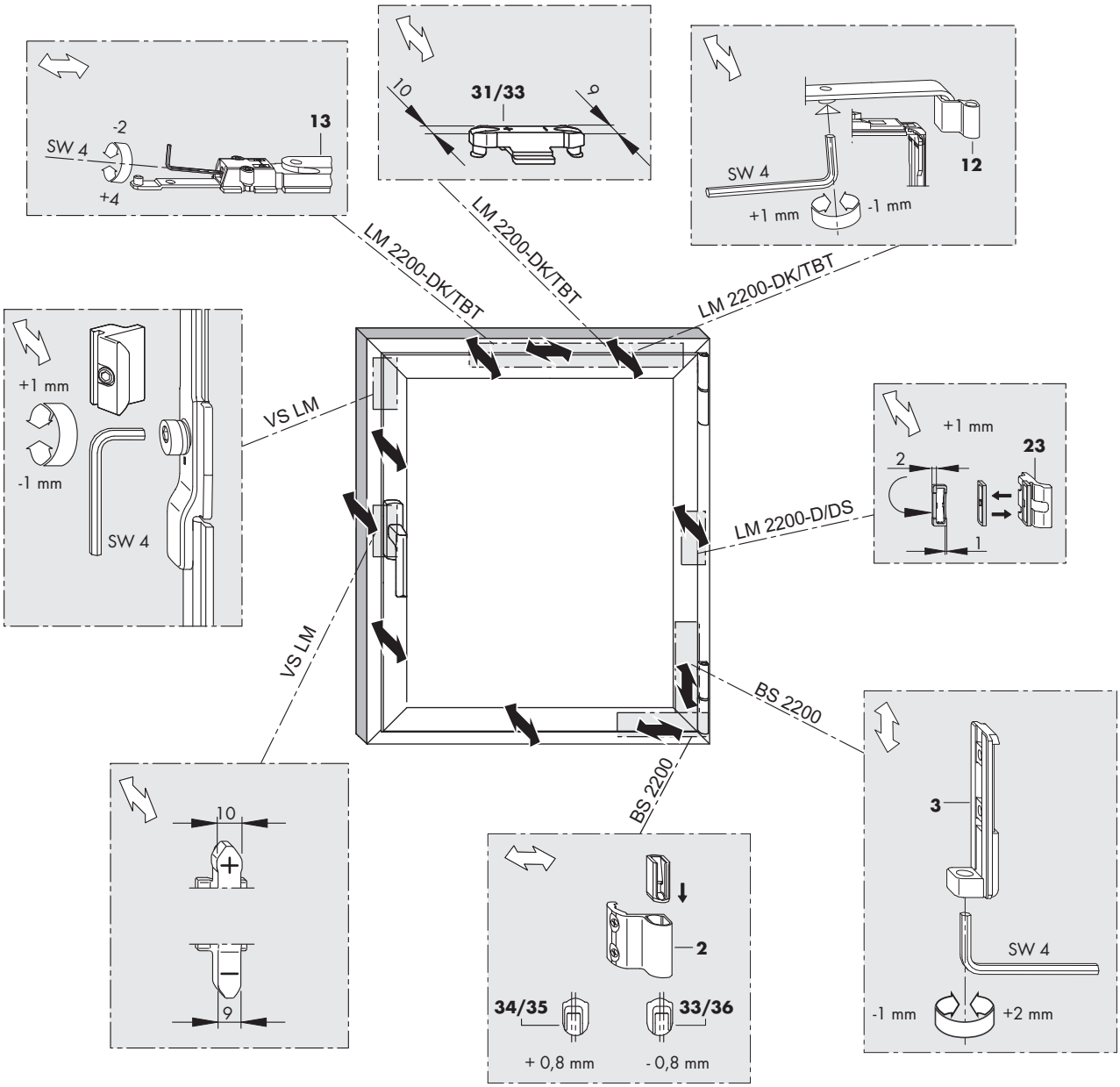




Perform pressure adjustment for eccentric rivet (**14**) and locking cam (**15**) with ring spanner.

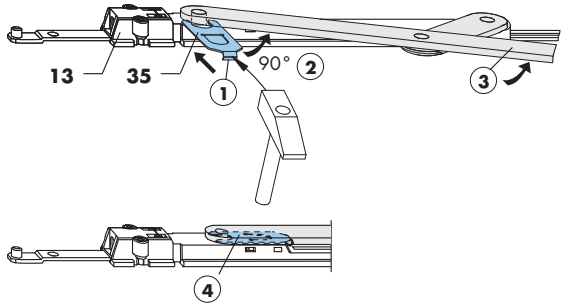
LM 2200 setting options

LM 4200-D stay, not pictured (key dimension 2.5)

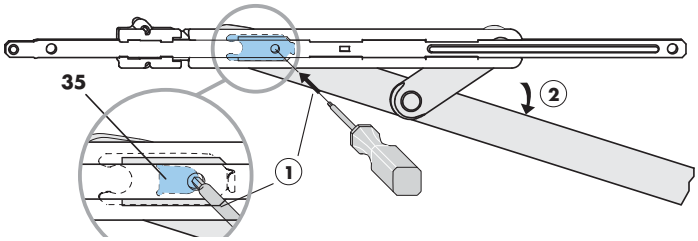


	Item	Qty	Description			Material no.		Material no.
	1	1	**LM Globe handle, lockable/TBT**		*See handle overview LM*	*Drawing no.: H48.ZubhLS007de*		
Generally required	2-12	1	**BS LM 2200**	**Silver**	1	**MMBS0060-525010**	10	**MMBS0060-525020**
		1		**Brown**	1	**MMBS0060-533010**	10	**MMBS0060-533020**
		1		**White** *RAL 9016*	1	**MMBS0060-504010**	10	**MMBS0060-504020**
		1		**Black** *RAL 9005*	1	**MMBS0060-523010**	10	**MMBS0060-523020**
		1		**Mill finish**	–	–	10	**MMBS0060-500020**
	13	1	**Stay LM 2200**	*Size a (in mm)* 20 375 - 600	1	**MSKK0010-000010**	20	**MSKK0010-000030**
				35 601 - 1,250	1	**MSKK0210-000010**	20	**MSKK0210-000030**
			1) with additional stay LM	35[1)] 1,251 - 1,600	1	**MSKK0210-000010**	20	**MSKK0210-000030**
	14-17	1	**Additional stay LM 4200**	*a > 1,250 mm + stay 35*	1	**857076**	10	**247006**
	18	1	**Stay striker MV**	*a > 1,250 mm*	1	**MXSK0010-100010**	20	**MXSK0010-100030**
	19-27	1	**VS LM-TBT KPS**		1	**MMVS0270-100010**	20	**MMVS0270-100030**
	28-30	1	**Coupling set FBS-G 9 mm**		1	**MMKL0030-100010**	20	**MMKL0030-100030**
	31-33	2	**MV LM 4200-DK**	*a/b > 1,250 mm*	1	**857045**	20	**246979**
	31-33	2	**MV LM 4200-DK A0172**	*a/b > 1,250 mm (see fig.)*	1	**MMMV0010-100010**	20	**MMMV0010-100030**
	Accessories							
	34	1	**MV stay striker** *(a 601 – 1,600)*	*Stay size 35 only*	1	*(see item 18).*	–	*(see item 18).*
	35	1	**LM 2200 tilt restrictor** *(a 601 – 1,250)*	*Stay size 35 only*	1	**MXSK0030-000010**	200	**MXSK0030-000200**
	36	1	**Pressure piece SV right**	*Width adjustment: 0.8 mm*	1	**MBDR0021-100010**	100	**MBDR0021-100060**
	37	1	**Pressure piece SV left**	*Width adjustment: 0.8 mm*	1	**MBDR0022-100010**	100	**MBDR0022-100060**
	38	1	**Striker**	*Stay size 35 only*	1	**859322**	20	**265413**

Mounting the tilt restrictor (35)

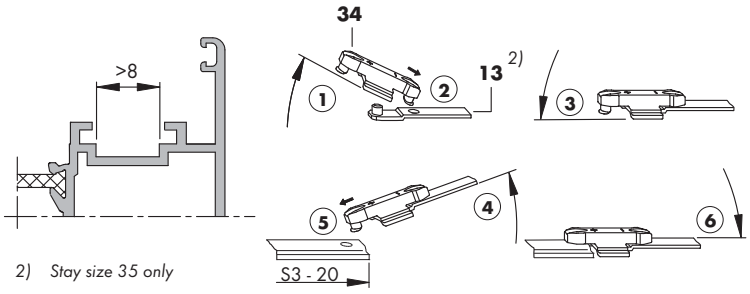


Removing the tilt restrictor (35)



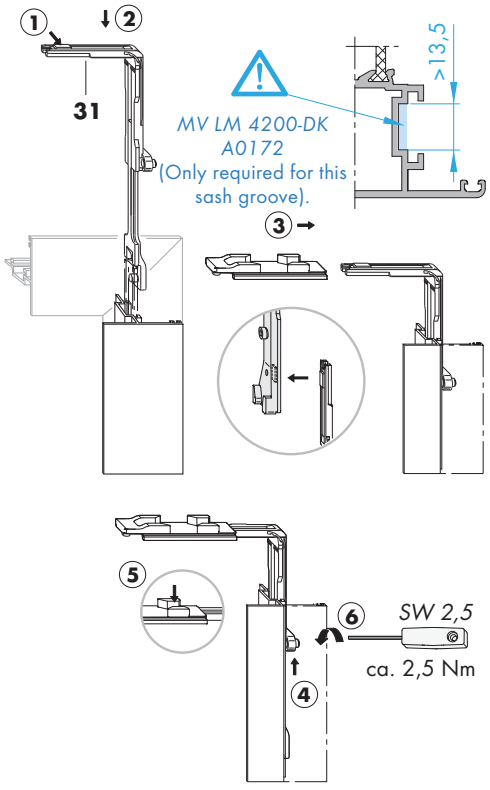
Installation instructions for items 34 and 19

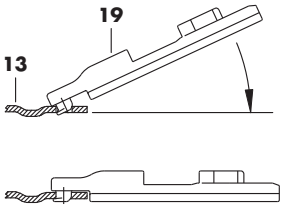
- If necessary, the MV stay striker (**34**) can be used as an additional locking point. Striker (**38**) must be ordered separately.
- Stay striker (**33**) is required for the sash groove (see fig.).
- Shorten operating rod S3 by 20 mm.



2) *Stay size 35 only*

Instructions for installing the VSU/BSO corner drive (31) A0172

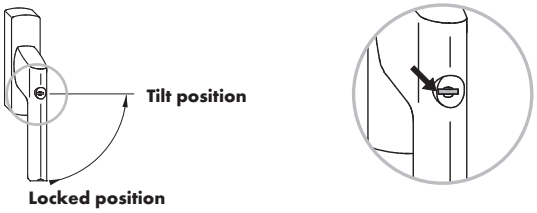


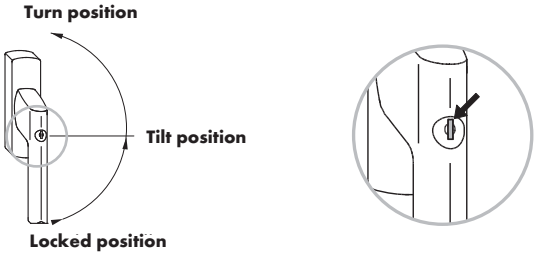


Item	Qty	Description				Material no.		Material no.
1-8	1	**VS LM-DK-TBT KPW**		*Main sash*	1	**MMVS0400-100010**	20	**MMVS0400-100030**
9-11	1	**LM FBS-G 9MM coupling set**		*Main sash*	1	**MMKL0030-100010**	20	**MMKL0030-100010**
–	1	**Stay LM 2200** *(See fig. on pages 11 - 12)*		*Size a (in mm)* 20 375 – 600	1	**MSKK0010-000010**	20	**MSKK0010-000030**
	1			35 601 – 1,250	1	**MSKK0210-000010**	20	**MSKK0210-000030**
–	0 to 1	**MV LM 4200-DK**	*b > 1,250 mm*	*(See fig. on page 12, items 31 - 33)*	1	**857045**	20	**246979**
–	0 to 1	**MV LM 4200/2200-DK A0172**	*b > 1,250 mm*	*(See fig. on page 12, items 31 - 33)*	1	**MMMV0010-100010**	20	**MMMV0010-100030**
–	0 to 1	**Stay striker MV**	*Stay size 35 only (a 601 - 1,250)*	*(See fig. on page 12, item 34)*	1	**MXSK0010-100010**	20	**MXSK0010-100030**
–	0 to 1	**LM 2200 tilt restrictor**	*Stay size 35 only (a 601 - 1,250)*	*For information on installation, see page 17 item 35)*	1	**MXSK0030-000010**	200	**MXSK0030-000200**

For information on the secondary sash, see pages 4 and 9

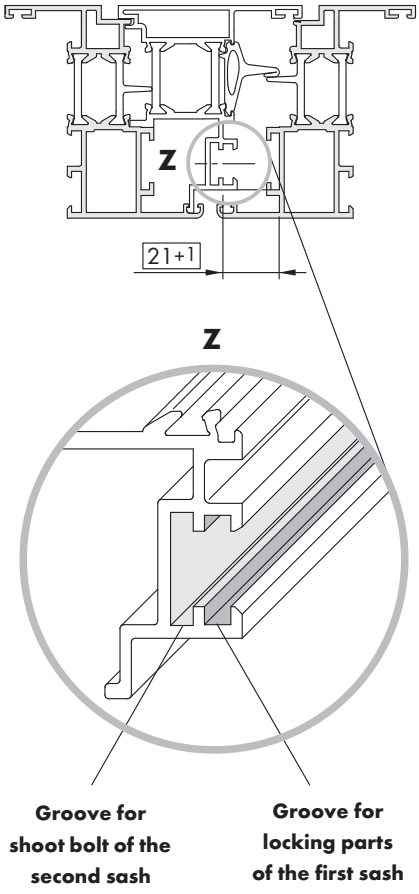
Function notes for handle, lockable/TBT

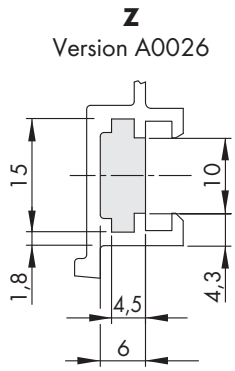


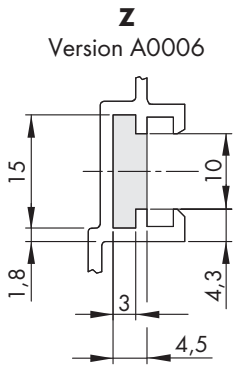


Item	Qty	Description			Material no.		Material no.
1-8	1	**VS LM-DS/K** *secondary sash*		1	860830	20	249338
1-8	1	**VS LM-DS/A A0026** *secondary sash*		1	864425	20	252192
	1	**VS LM-DS/A A0006** *secondary sash*		1	860823	20	249321
–	1	**LM 4200/2200-D stay**	*(See fig. on page 10, item 12)*	1	MSKD0010-100010	100	MSKD0010-100060
–	1	**Accessories - LM 2200 turn-only stay**	*(See fig. on page 10, items 13 - 14)*	1	MZBS0040-000010	20	MZBS0040-000030
–	1	**MV LM 4200-D VS/BS** *(b > 1,250 mm)*	*(See fig. on page 8, items 22 - 23)*	1	857052	20	246986

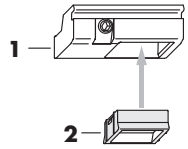
Suggested profiles for secondary sash

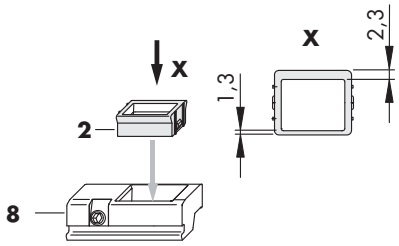






Pressure adjustment of the pressure pieces (2) + 1 mm





Basic safety instructions

Proper use

The hardware described in this document is intended to be installed in an aluminium window frame by a certified window construction specialist in accordance with these instructions. The windows may only be installed vertically plumb.

The certified window construction specialist must ensure that the hardware is suitable for the application based on the specifications in these instructions and in other documents that are cited.

Avoid excessive strain.

Hinge parts may break if they are subject to excessive strain. This can cause the window sash to fall out, which may lead to serious injuries.

- If you anticipate that the hinge parts will be subject to excessive strain, limit the opening angle with an LM limit stay with friction. For example, excessive strain is to be expected in schools and kindergartens.

Do not mix hardware.

The hardware is technically matched. When you mix hardware from different systems or manufacturers in one window, the safe functioning of the hardware is not guaranteed. The hardware can break and cause accidents.

- Use only the hardware that is named in these instructions in combination in one window.

Treat the window surface before installation only.

- Treating the surface of the window after the hardware has been installed can reduce the functional capacity of the hardware.

Prevent damage caused by rust and deposits.

Corrosive substances, dirt and moisture can damage the hardware and cause hazards.

- Do **not** use acetic or acid cure sealants.
- Do **not** use the hardware in environments where the air contains aggressive or corrosive components.
- Keep the rebates free from deposits and dirt, especially from remnants of cement and plaster.
- Keep the hardware dry.

Always clean the hardware gently.

- Clean the hardware only with a soft cloth and mild, diluted pH-neutral cleaning agents.
- Keep the hardware from coming into contact with scouring agents or aggressive, acidic cleaning agents.
- Dry the hardware after cleaning it.

Pass the information on to the user of the window.

- Affix the user information (order no. 05083) to the installed window or door element in a place that can be seen easily.
- Provide the user with the following documents:
  - Maintenance/care instructions SI-AU order no. 19748
  - Operating instructions SI-AU order no. 05766 (DK)
    order no. 05768 (TBT)

Disclaimer of liability

- We assume no liability for loss of function and damage to the hardware (and to the windows and portal doors that are equipped with these) resulting from insufficient tendering, failure to follow these assembly instructions or which result from force being applied to the hardware (e.g. through improper use).

ALU-D

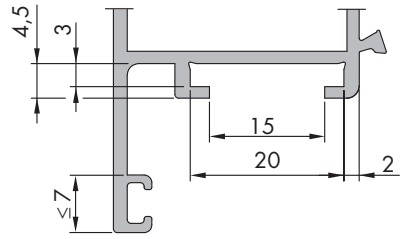
Drehflügelband mit Verschlussseiten für Aluminiumfenster /
Turn sash hinge with locking sides for aluminium windows

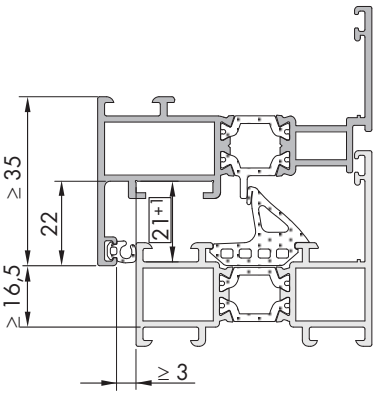
*Weitere Angaben und Vorgaben/Hinweise zum Produkt und Haftung (Richtlinien: VHBH, TBDK und VHBE) sind **unbedingt** dem Planungs-Handbuch Aluminium (H4006.3042DE) zu entnehmen.*

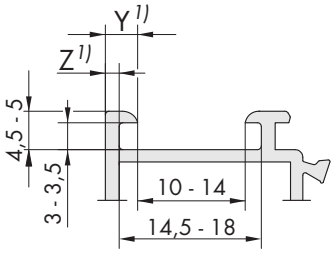
Die angegebenen Maße sind Fertigmaße nach der Oberflächenbehandlung der Profile z. B. Lackierung, Pulverbeschichtung etc.!

*Further details and specifications/information regarding the product and liability (guidelines: VHBH, TBDK and VHBE) can be found in the aluminium planning manual (H4006.3042EN) and **must** be observed.*

All dimensions given are final dimensions after the surface of the sections has been treated (painted, power coated etc.).



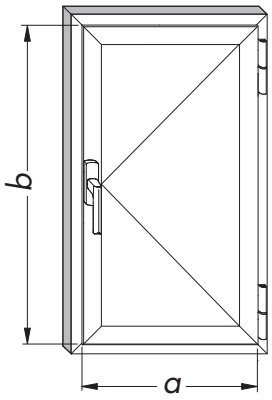


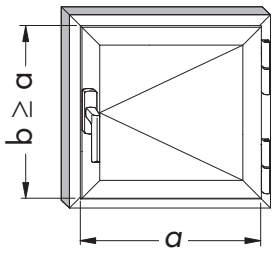


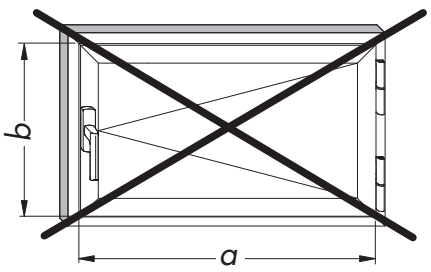
1) siehe Tabelle Ausführung Drehflügelband, auf Seite 4 „Flügel- und Rahmenmaße" / see Turn Sash Design table on Sash and Frame Dimensions sheet 4

Alle Maße in mm / All dimensions in mm

Flügelbreite/sash width	(a)	min. 300 - max. 1000
Flügelhöhe/sash height	(b)	min. 400 - max. 2000
Flügelgewicht/sash weight	(⍓)	max. 80 kg



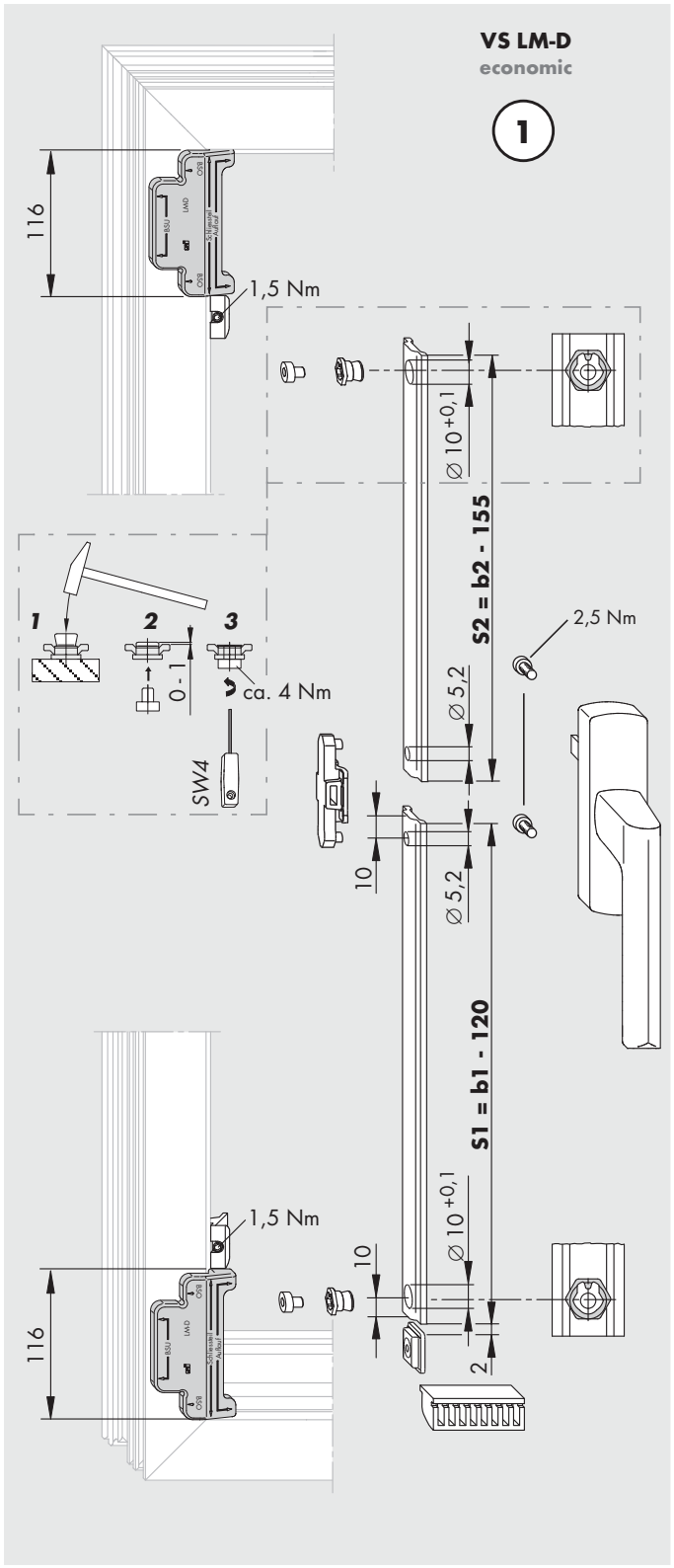


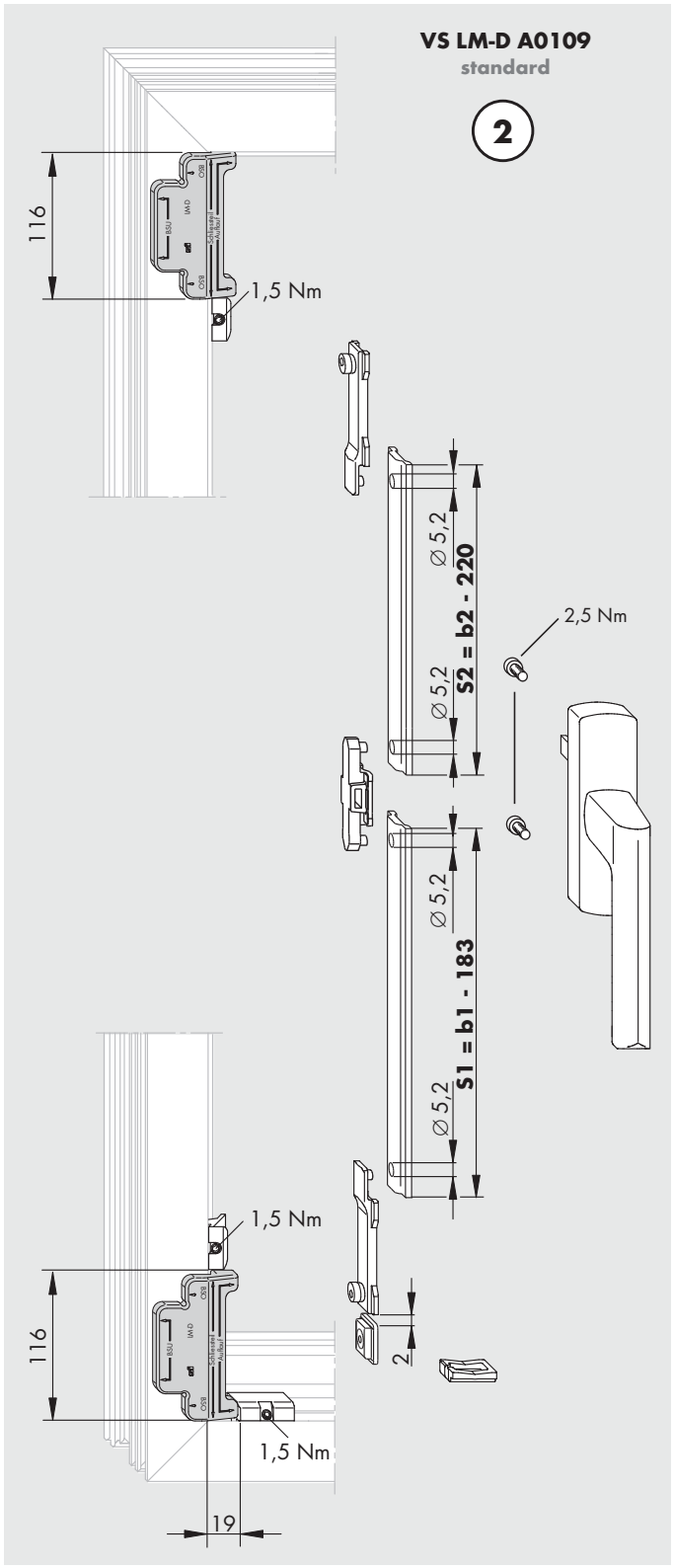


Anschlaganleitung/Installation Instructions
H48.2200LS002de

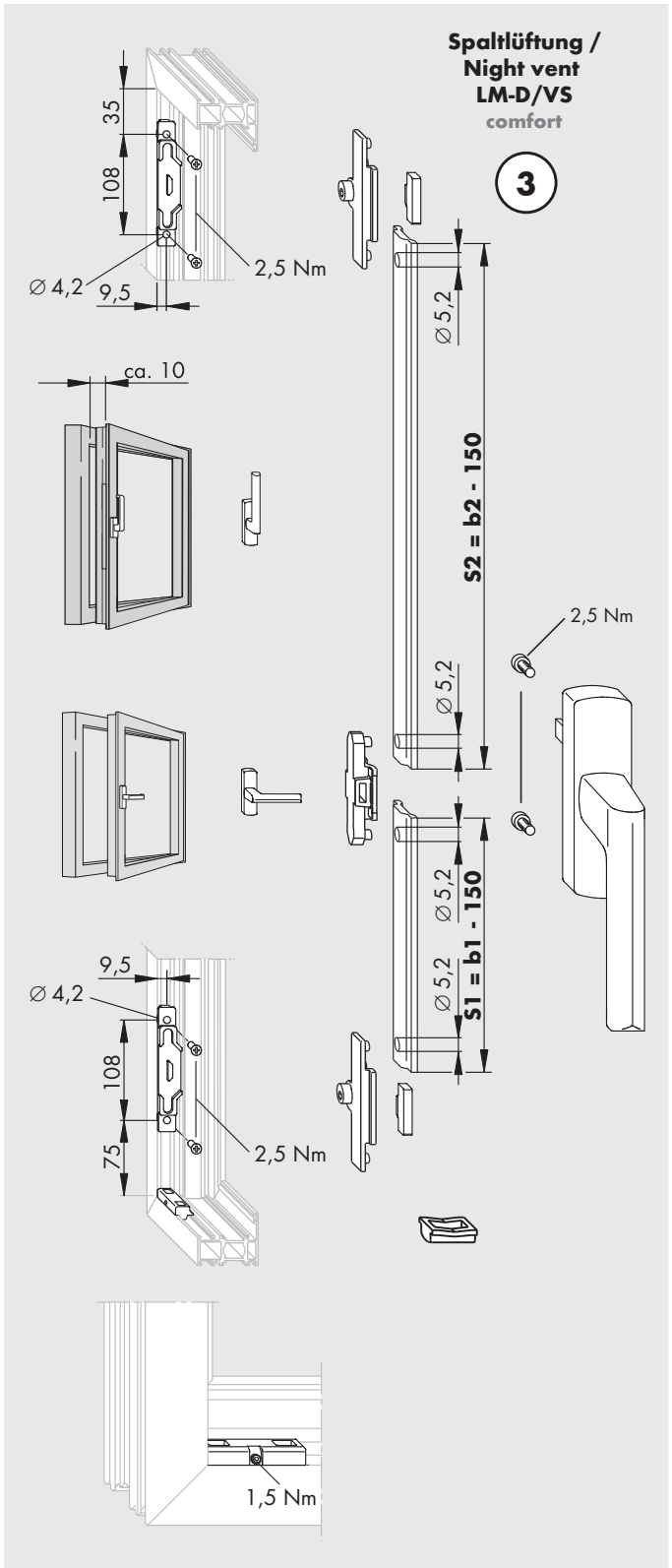
Technische und farbliche Änderungen vorbehalten

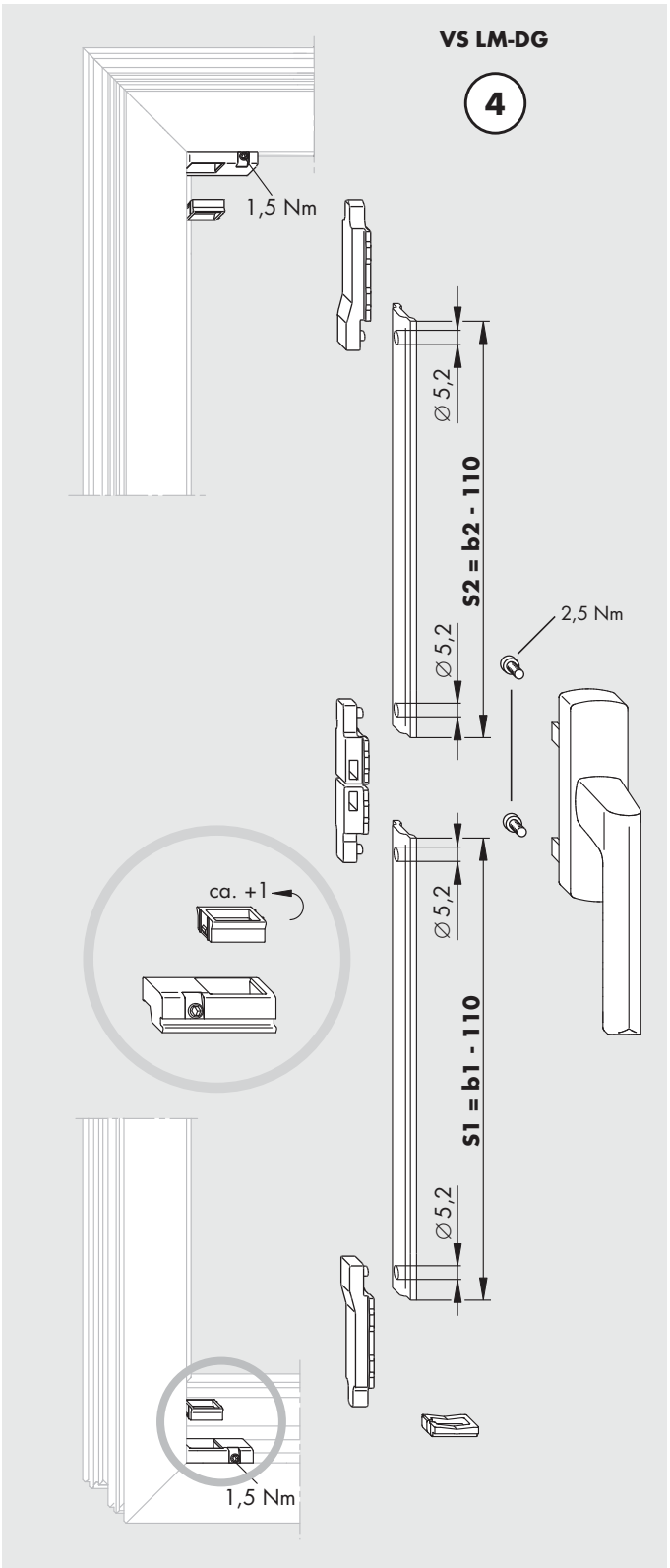
H48.2200LS002de/1



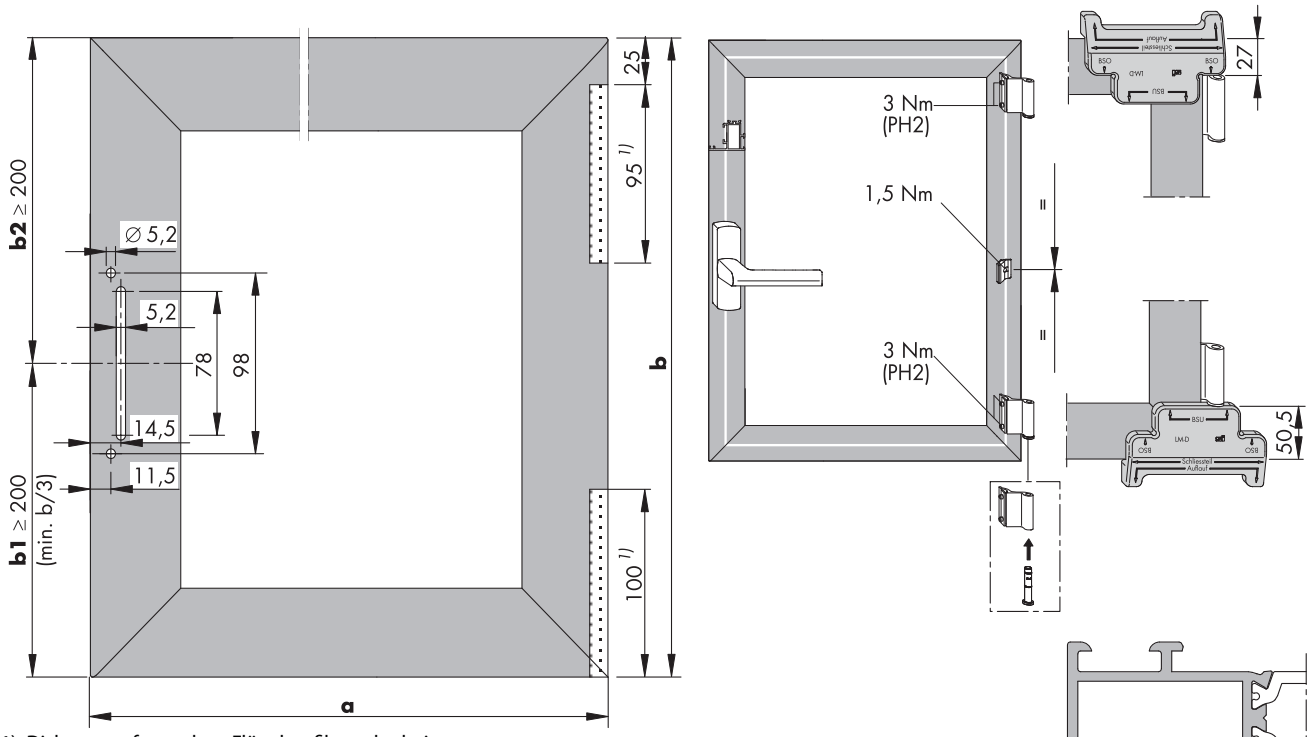


	VKE	Materialkurztext/Description	Material-Nr. silber/silver lack./painted	silber/silver elox./anodised	braun/brown	weiß/white RAL9010	weiß/white RAL9016	schwarz/black RAL9005	roh/mill
	10	**Hebel/Handle Si-line LM** ① ② ③	**253120**	**253137**	**253113**	**253144**	**253090**	**253106**	**253083**
①	50	**VS LM-D** economic	**314968**						
②	20	**VS LM-D A0109** standard	**261026**						
	10	**Anschlag/Stop**	**222805**						
	1	**Lehre/Jig LM-D**	**155035**						

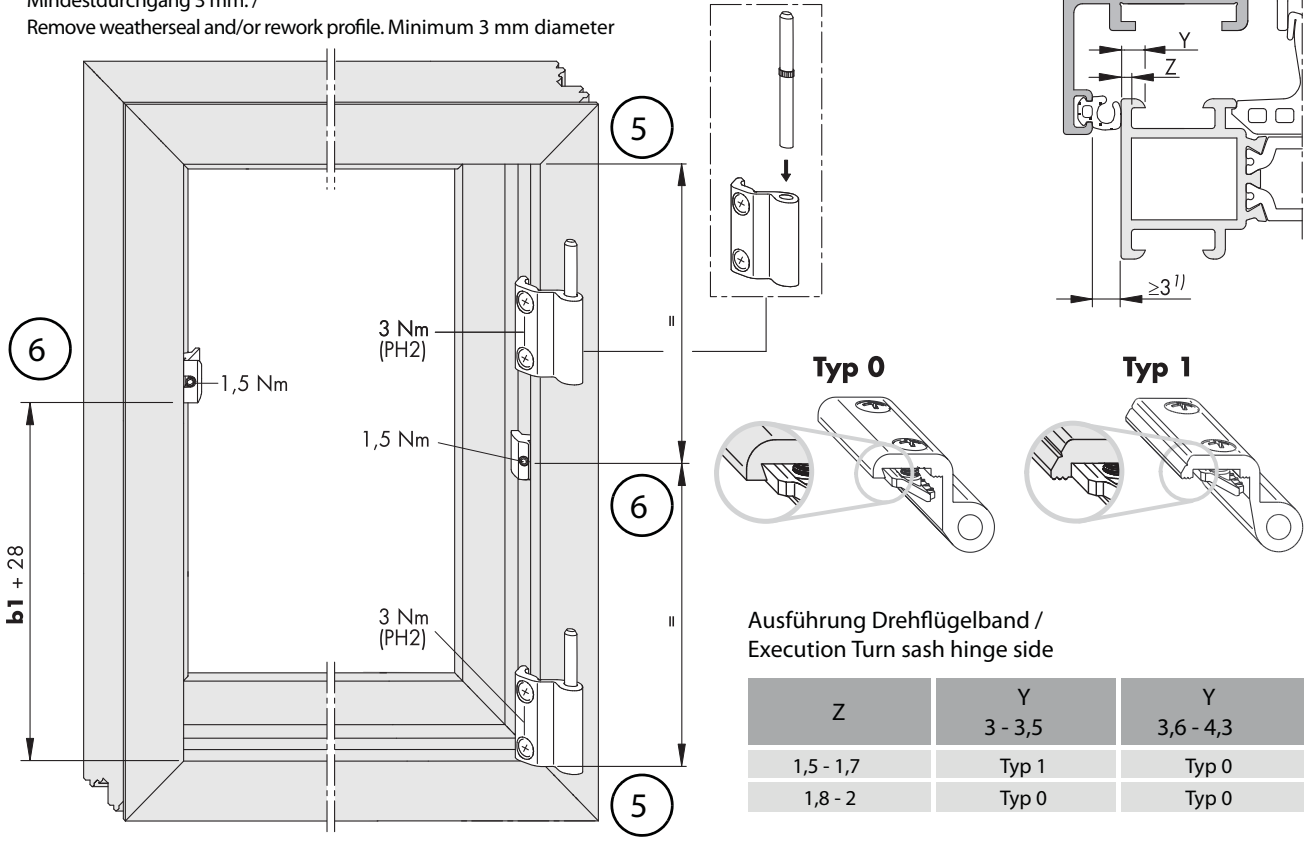




	VKE	Materialkurztext/Description	Material-Nr. silber/silver lack./painted	silber/silver elox./anodised	braun/brown	weiß/white RAL9010	weiß/white RAL9016	schwarz/black RAL9005	roh/mill
	10	**Hebel/Handle Si-line LM DG** (4)	**257296**	**-**	**257333**	**257319**	**257302**	**257326**	**257289**
(3)	20	**Spaltlüftung / Night vent LM-D/VS** comfort	**231746**						
(4)	20	**VS LM-DG**	**219706**						



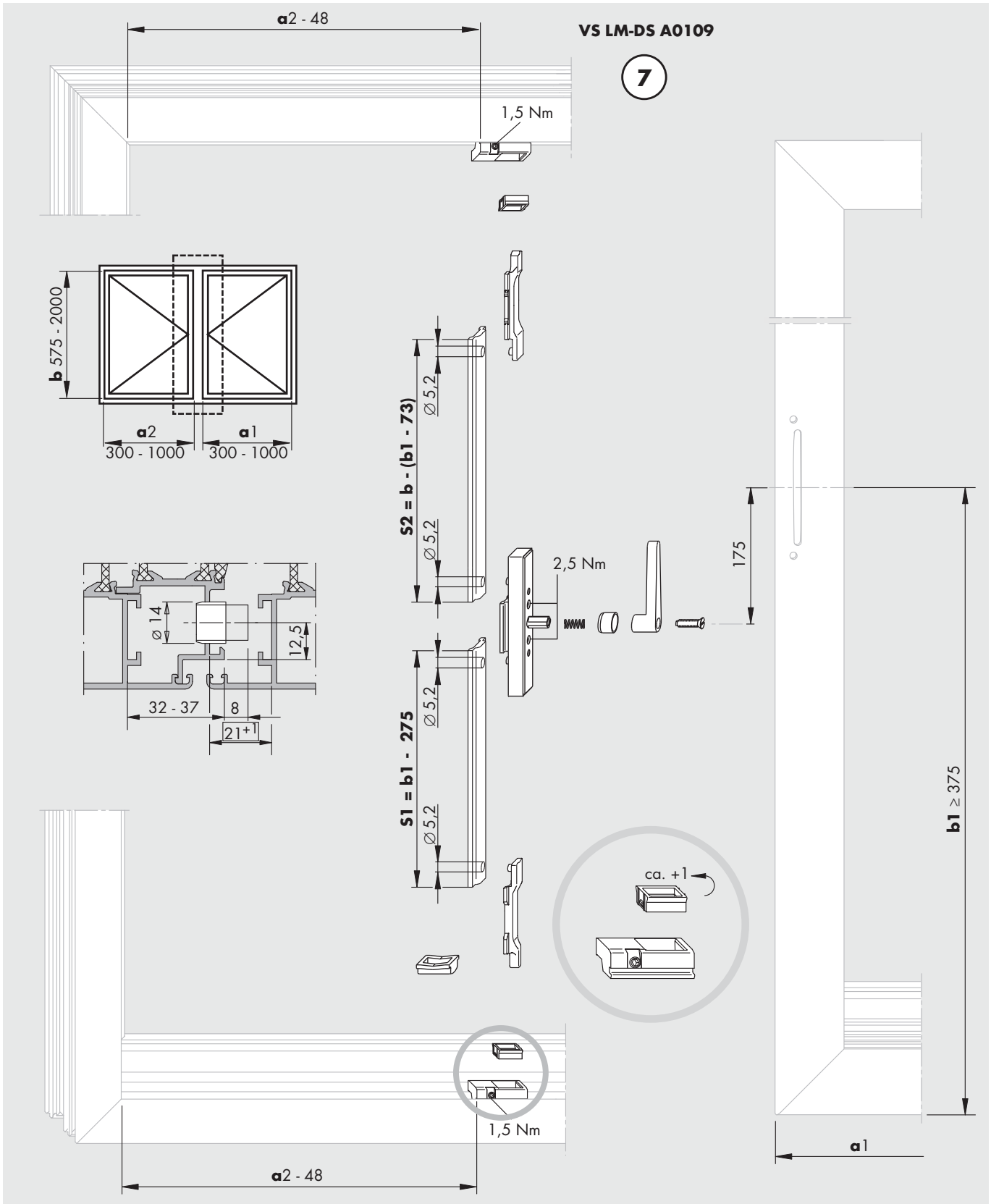
1) Dichtung enfernen bzw.Flügelprofile nacharbeiten.
Mindestdurchgang 3 mm. /
Remove weatherseal and/or rework profile. Minimum 3 mm diameter



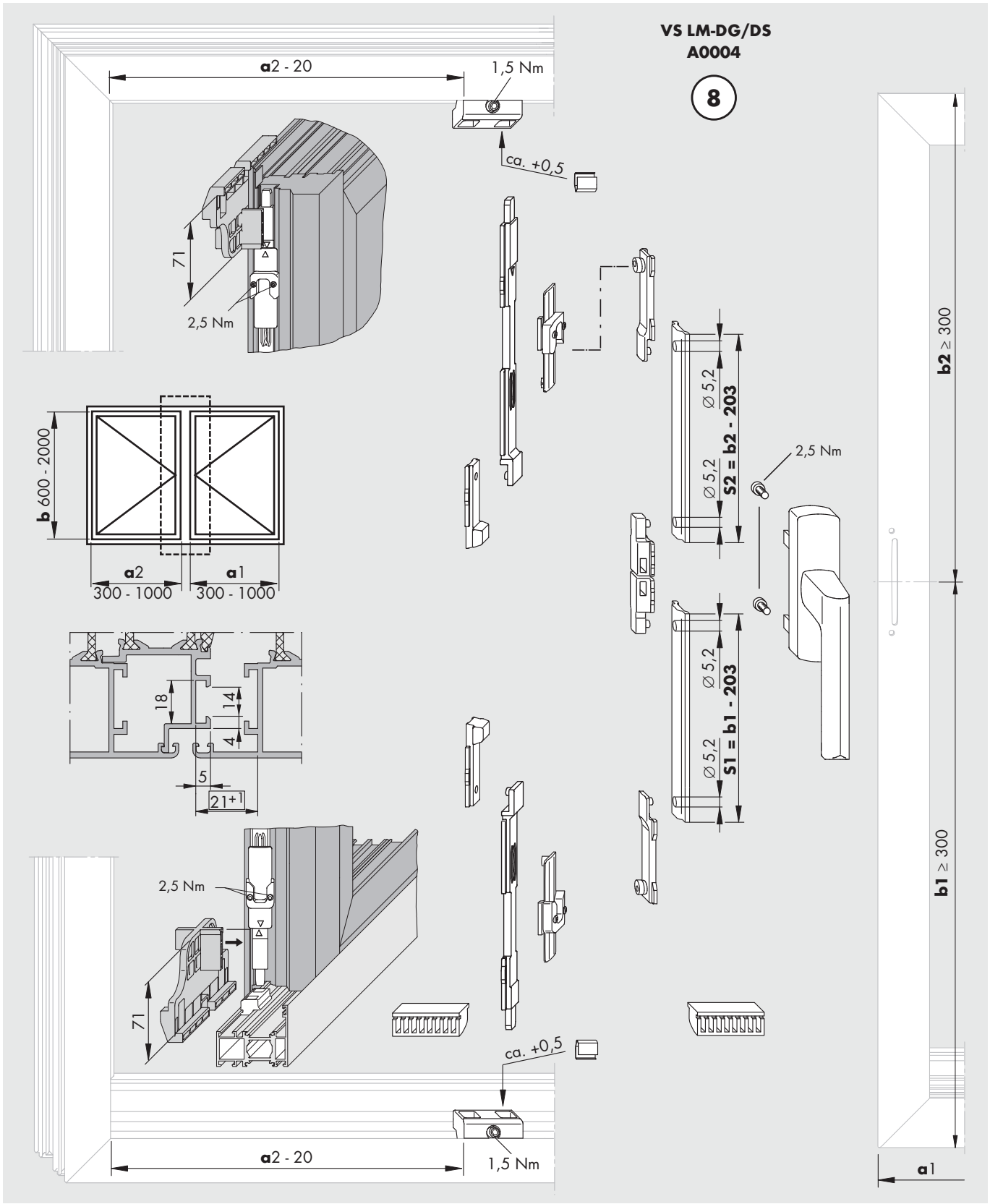
Ausführung Drehflügelband /
Execution Turn sash hinge side

Z	Y 3 - 3,5	Y 3,6 - 4,3
1,5 - 1,7	Typ 1	Typ 0
1,8 - 2	Typ 0	Typ 0

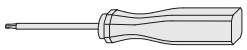
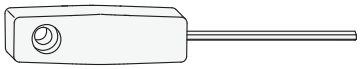
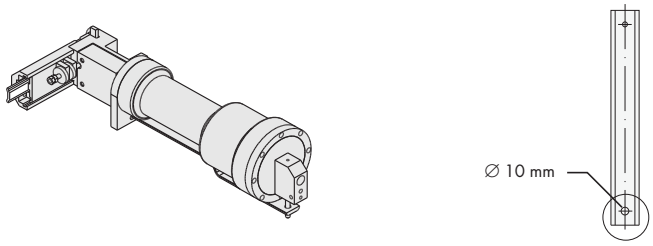
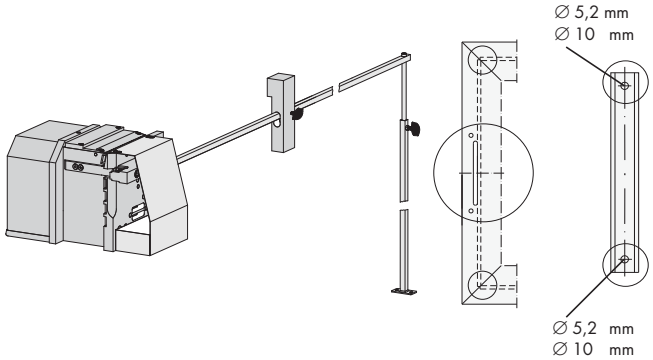
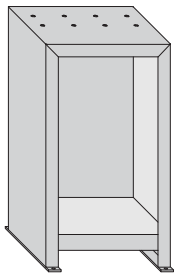
	VKE	Materialkurztext/Description		Material-Nr. silber/silver elox./anodised	braun/brown RAL8019	weiß/white RAL9010	weiß/white RAL9016	schwarz/black RAL9005	roh/mill
(5)	50	Drehflügelband / Turn sash hinge LM-D	Typ 0	313725	313756	313749	313732	313763	313770
		Drehflügelband / Turn sash hinge LM-D	Typ 1	313787	313817	313800	313794	313824	313831
(6)	20	MV LM-D VS/BS	≥ b 1200	246986					
	1	Lehre/Jig LM-D		155035					

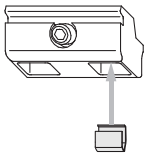


	VKE	Materialkurztext/Description	Material-Nr.
7	20	VS LM-DS A0109	266885



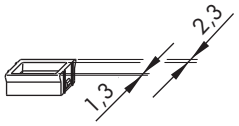
	VKE	Materialkurztext/Description	Material-Nr. silber/silver lack./painted	silber/silver elox./anodised	braun/brown	weiß/white RAL9010	weiß/white RAL9016	schwarz/black RAL9005	roh/mill
	10	**Hebel/Handle Si-line LM DG** (8)	**257296**	**-**	**257333**	**257319**	**257302**	**257326**	**257289**
(8)	25	**VS LM-DG/DS A0004**	**314975**						
	1	**Einlegelehre / Striker jpg LM A0004**	**879504**						

	Materialkurztext/Description		Material-Nr.
	**Sechskantschraubendreher Profi / Professional hex. screwdriver**	*Sechskant 2,5 mm gehärtet* *2.5 mm hexagon, hardened*	157947
	**Sechskantschraubendreher / Hex. screwdriver**	*Sechskant 4 mm* *4 mm hexagon*	139394
	**Multitool**		127629
	**Lehre LM / Jig LM** ∅ 10 mm	①	130001
	**Handstanze LM / Hand punch LM** ∅ 10 mm *6 - 7 bar*	①	130018
	**Kombistanze LM / Combination tool** ∅ 5,2 mm ∅ 10 mm *6 - 7 bar*	① ② ③ ④ ⑦ ⑧	157398
	**Stanztisch für Kombistanze LM / Punching table for combination tool**		157404



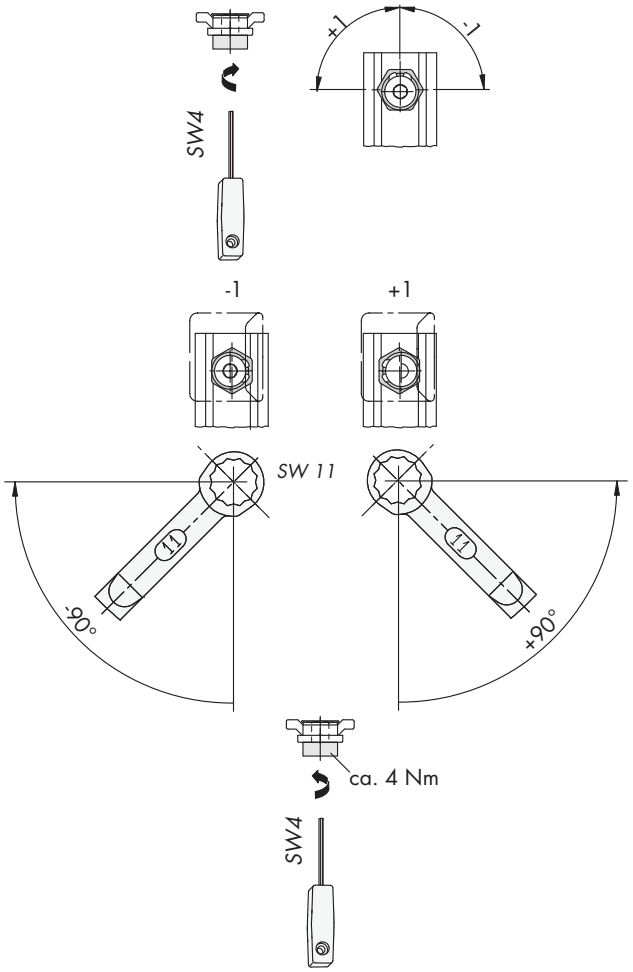
Andruckeinstellung mittels Rastfeder ca. +0,5 /
Contact pressure setting using stop spring, approx. +0.5

(8)



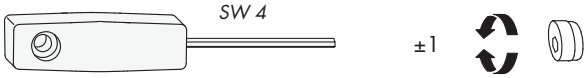
Andruckeinstellung mittels Druckstück ca. +1 /
Contact pressure setting using pressure piece, approx +1

(4) (7)



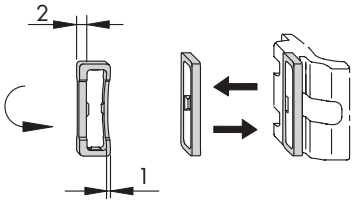
Andruckeinstellung ca. ±1 /
Contact pressure setting approx. ± 1

(1)



Andruckeinstellung ca. ±1
über Exzenterschließzapfen /
Contact pressure setting approx. ± 1
using eccentric locking cam

(2) (3) (8)



Andruckeinstellung ca. +1
über Stellstück im Schließer /
Contact pressure setting approx. + 1
using striker adjustment piece

(6)

SIEGENIA-AUBI KG
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ALU-DK/TBT 200

The screw-fixed tilt & turn hardware for aluminium windows and patio doors

Always check the planning manual on aluminium (H4006.3042EN) for further details and specifications/information regarding the product and liability (guidelines: VHBH, TBDK and VHBE).

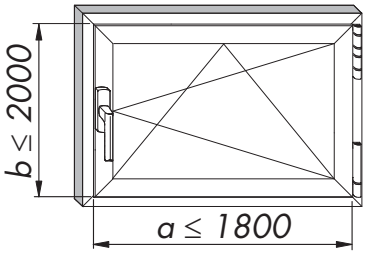
All dimensions given are final dimensions after the surface of the sections has been treated (painted, powder coated etc.)!

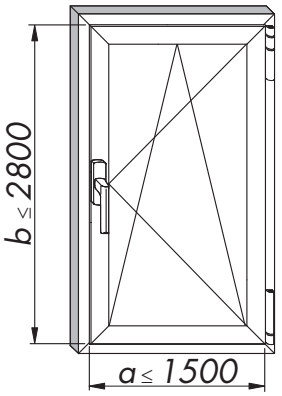
All dimensions in mm

Sash width	(a)	min. 550 – max. 1800
Sash height	(b)	min. 1100 - max. 2800
Sash weight	(⍓)	max. 200 kg

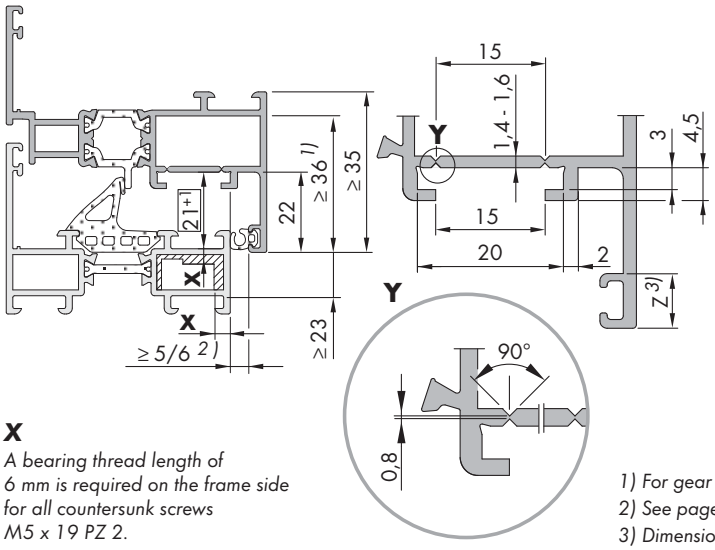
Sash dimensions

$a/b \leq 1,2$





Profile dimensions



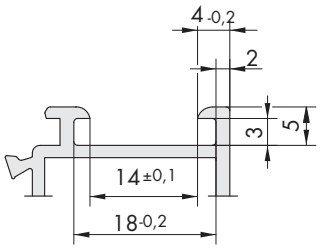
X

A bearing thread length of 6 mm is required on the frame side for all countersunk screws M5 x 19 PZ 2.

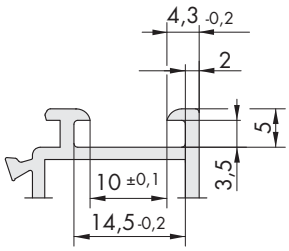
1) For gear M6
2) See page 4
3) Dimension Z, see table, page 15

Frame groove size

A0004



A0006



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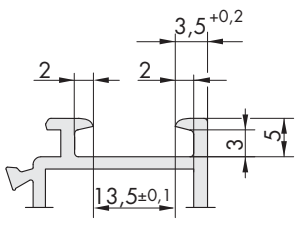

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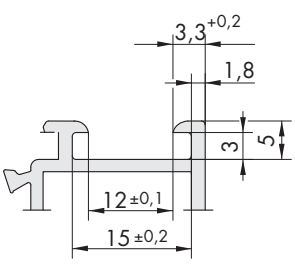


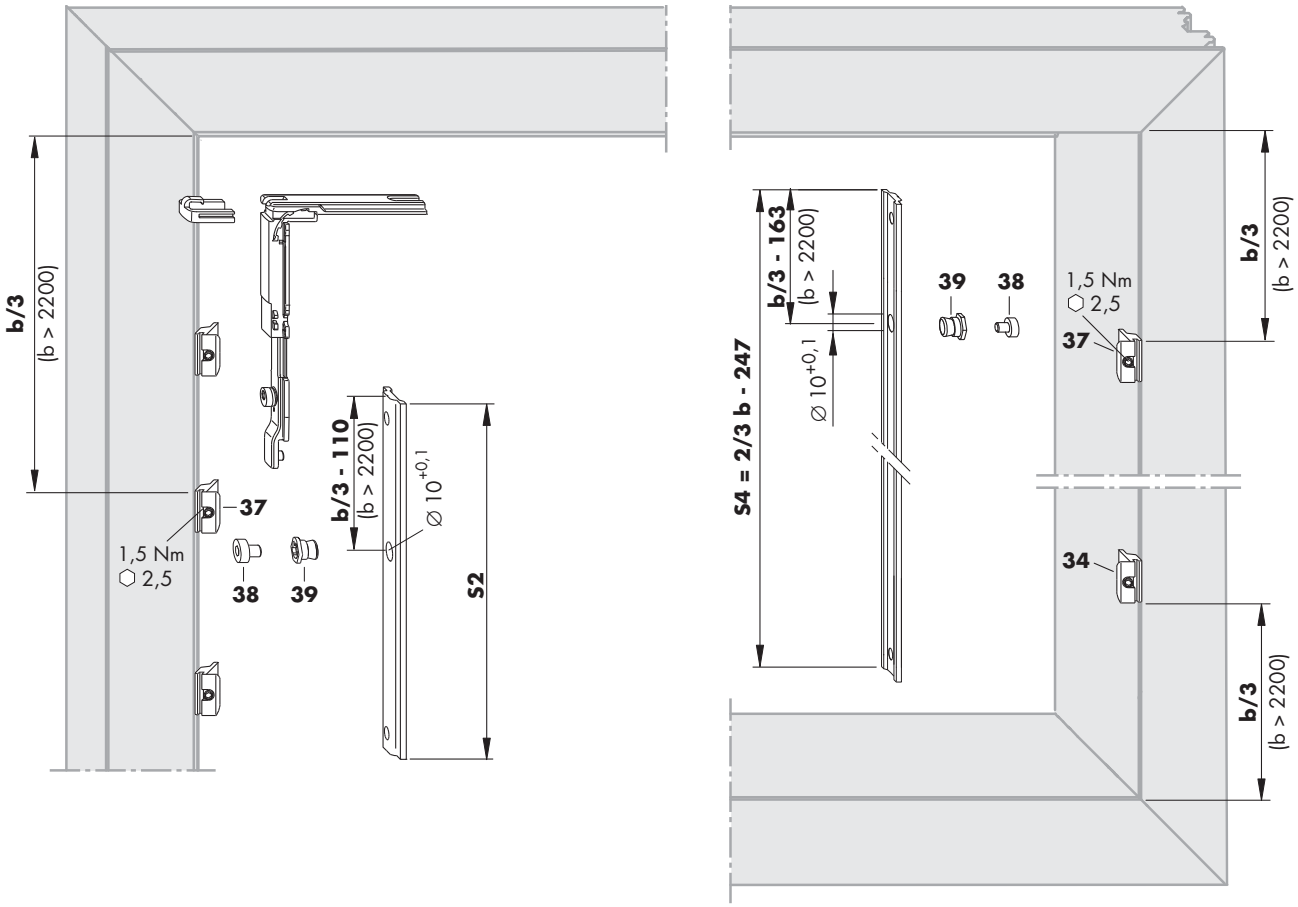
Table of contents

Assembly instructions
H48.200LS001en

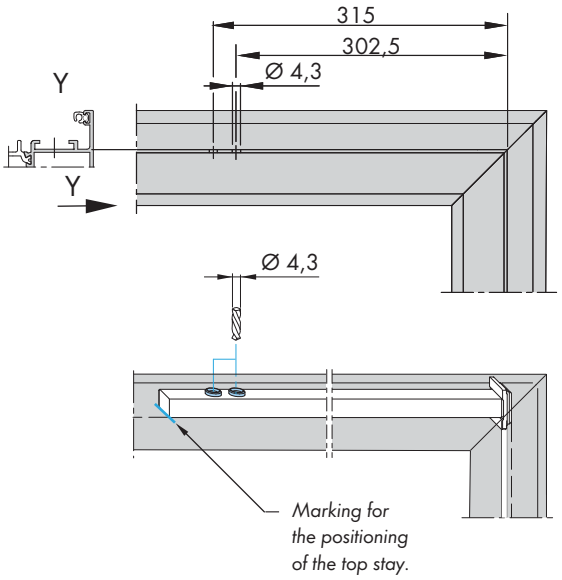
ALU-DK200 *List of hardware and additional calculated measurements b > 2200*

	No.	Piece	Material description			Material no.		Material no.
General requirements	1a	0...1	**Handle LM**			*See LM handle overview drawing. no.: H48.ZUBHLS007en in aluminium planning manual*		
	1b	0...1	**Window handle**	(□7mm x 25, cam ∅10 mm)				
	2-14	1	**BS LM-DK200 right**	**silver**	1	**MMBS0151-525010**	5	**MMBS0151-525120**
		1	**BS LM-DK200 left**	**silver**	1	**MMBS0152-525010**	5	**MMBS0152-525120**
		1	**BS LM-DK200 right**	**RAL 9016 white**	1	**MMBS0151-504010**	5	**MMBS0151-504120**
		1	**BS LM-DK200 left**	**RAL 9016 white**	1	**MMBS0152-504010**	5	**MMBS0152-504120**
		1	**BS LM-DK200 right**	**Mill finish**	1	**MMBS0151-500010**	5	**MMBS0151-500120**
		1	**BS LM-DK200 left**	**Mill finish**	1	**MMBS0152-500010**	5	**MMBS0152-500120**
	15	1	**Top stay LM-DK200 size 30**		1	**MSKK0020-000010**	20	**MSKK0020-000030**
	16-19	0...1	**Additional stay LM**	*a > 1100 mm + top stay 30*	1	**857076**	10	**247006**
	20-27	1	**VS LM-DK-TBT KPW**		1	**MMVS0400-100010**	20	**MMVS0400-100030**
	28-30	0...1	**Coupling set FBS G** **9 mm**	*Profile recommendation, see table on page 15*	1	**MMKL0030-100010**	20	**MMKL0030-100030**
		0...1	*In conjunction with* **(1a)** **10 mm**		1	**MMKL0010-100010**	20	**MMKL0010-100030**
		0...1	**USH 12 mm**		1	**MMKL0040-100010**	20	**MMKL0040-100030**
	31-33	0...1	**Gear set FBS M6 Trial/RR** *in conjunction with* **(1b)**	*Different components shaded in colour*	1	**MMGI0080-100010**	20	**MMGI0080-100030**
	34-36	0...1	**MV LM 4200-DK**	*b > 1250 mm*	1	**857045**	20	**246979**
	37-39	0...1	**LM locking part**	*b > 2200 mm*	1	**–**	20	**317556**
	40-42	0...1	**MV LM RB/SF**	*a > 1100 mm*	1	**894316**	20	**303917**

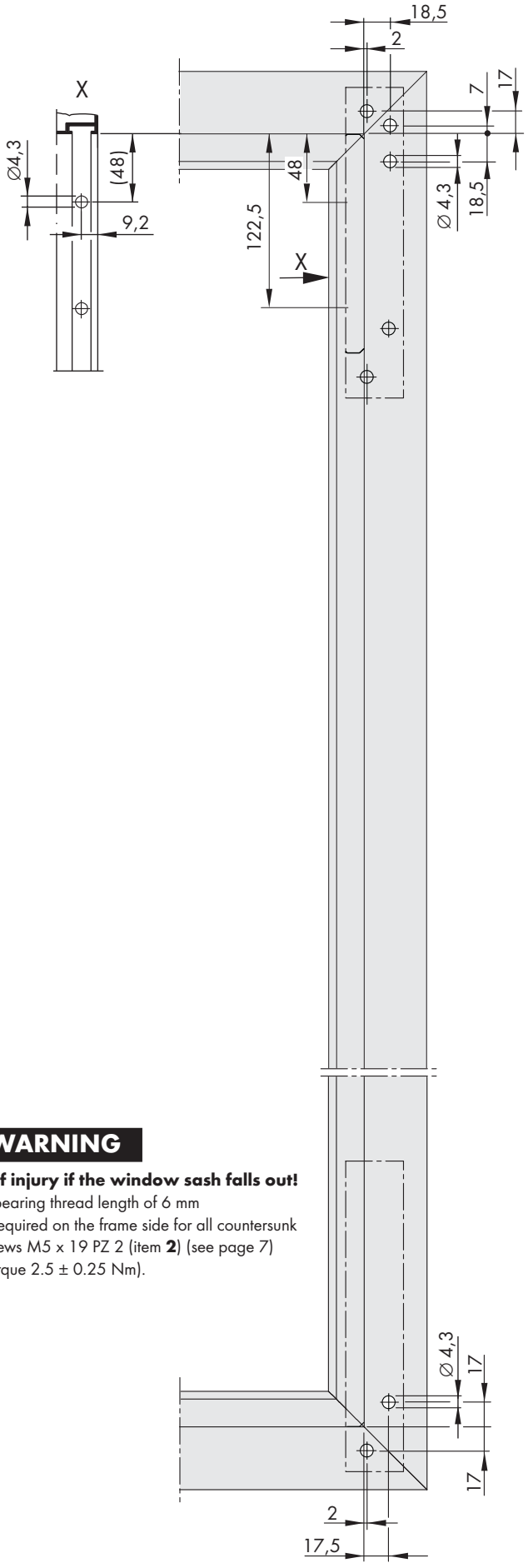
Additional LM locking part (item 37–39) for b > 2200



Drilling information for sash



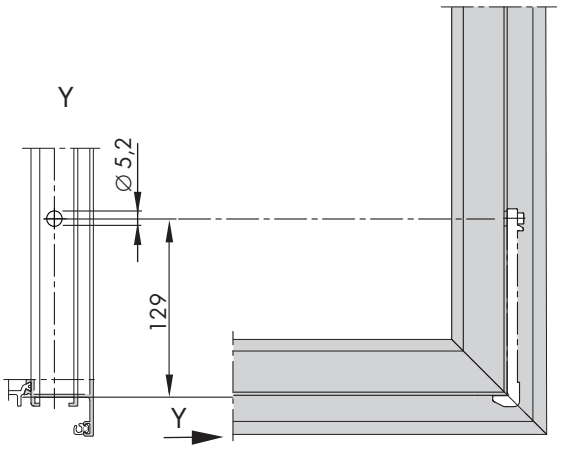
Drilling information for frame



⚠ WARNING

Risk of injury if the window sash falls out!

> For sash weights exceeding 160 kg coupling screw (item **8**) (see page 7 and 11) also screw into clamping piece E (item **10**) (torque 2.75 ± 0.25 Nm).



⚠ WARNING

Risk of injury if the window sash falls out!

> A bearing thread length of 6 mm is required on the frame side for all countersunk screws M5 x 19 PZ 2 (item **2**) (see page 7) (torque 2.5 ± 0.25 Nm).

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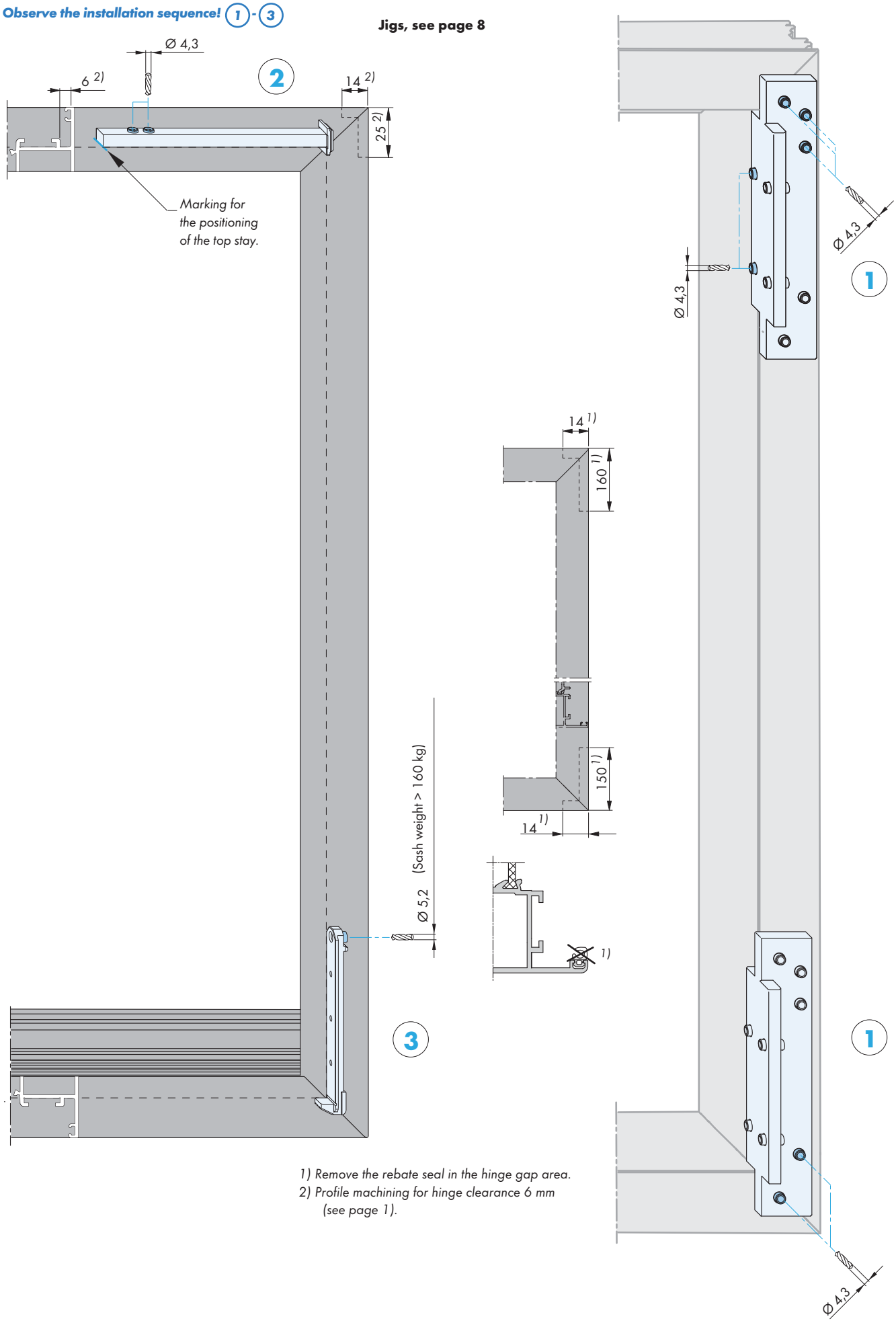
Observe the installation sequence! (1) - (3)

Jigs, see page 8



1) Remove the rebate seal in the hinge gap area.
2) Profile machining for hinge clearance 6 mm (see page 1).

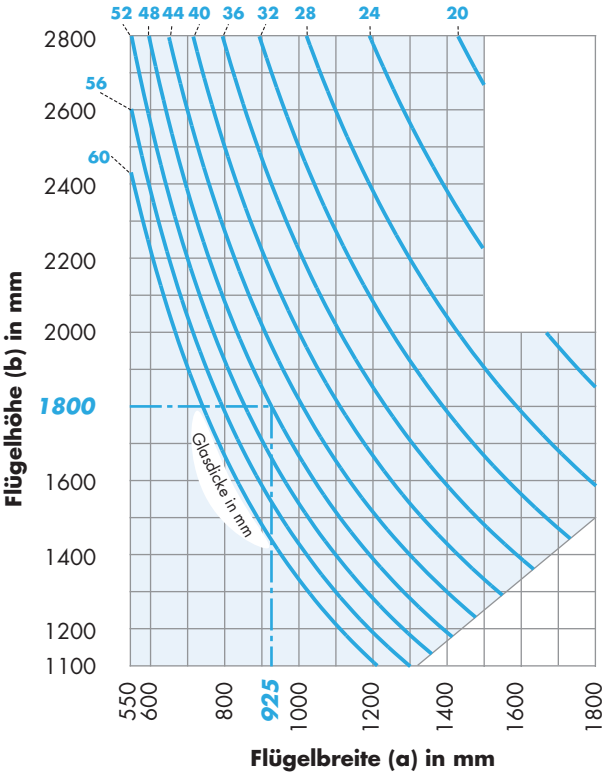
Glass thickness in mm without air gap

20 mm glass thickness (corresponds to **50** kg/m²)
24 mm glass thickness (corresponds to **60** kg/m²)
28 mm glass thickness (corresponds to **70** kg/m²)
32 mm glass thickness (corresponds to **80** kg/m²)
36 mm glass thickness (corresponds to **90** kg/m²)
40 mm glass thickness (corresponds to **100** kg/m²)
44 mm glass thickness (corresponds to **110** kg/m²)
48 mm glass thickness (corresponds to **120** kg/m²)
52 mm glass thickness (corresponds to **130** kg/m²)
56 mm glass thickness (corresponds to **140** kg/m²)
60 mm glass thickness (corresponds to **150** kg/m²)

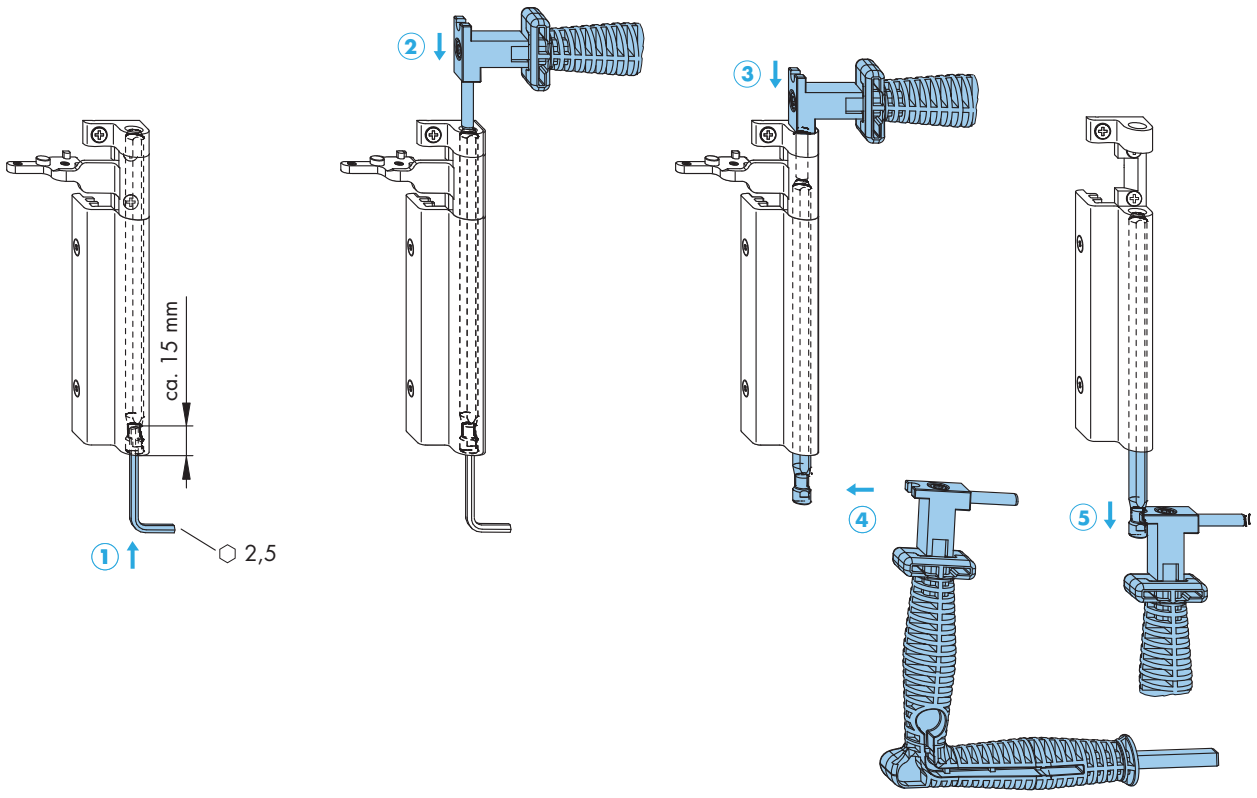
1 mm/m² glass thickness = 2.5 kg

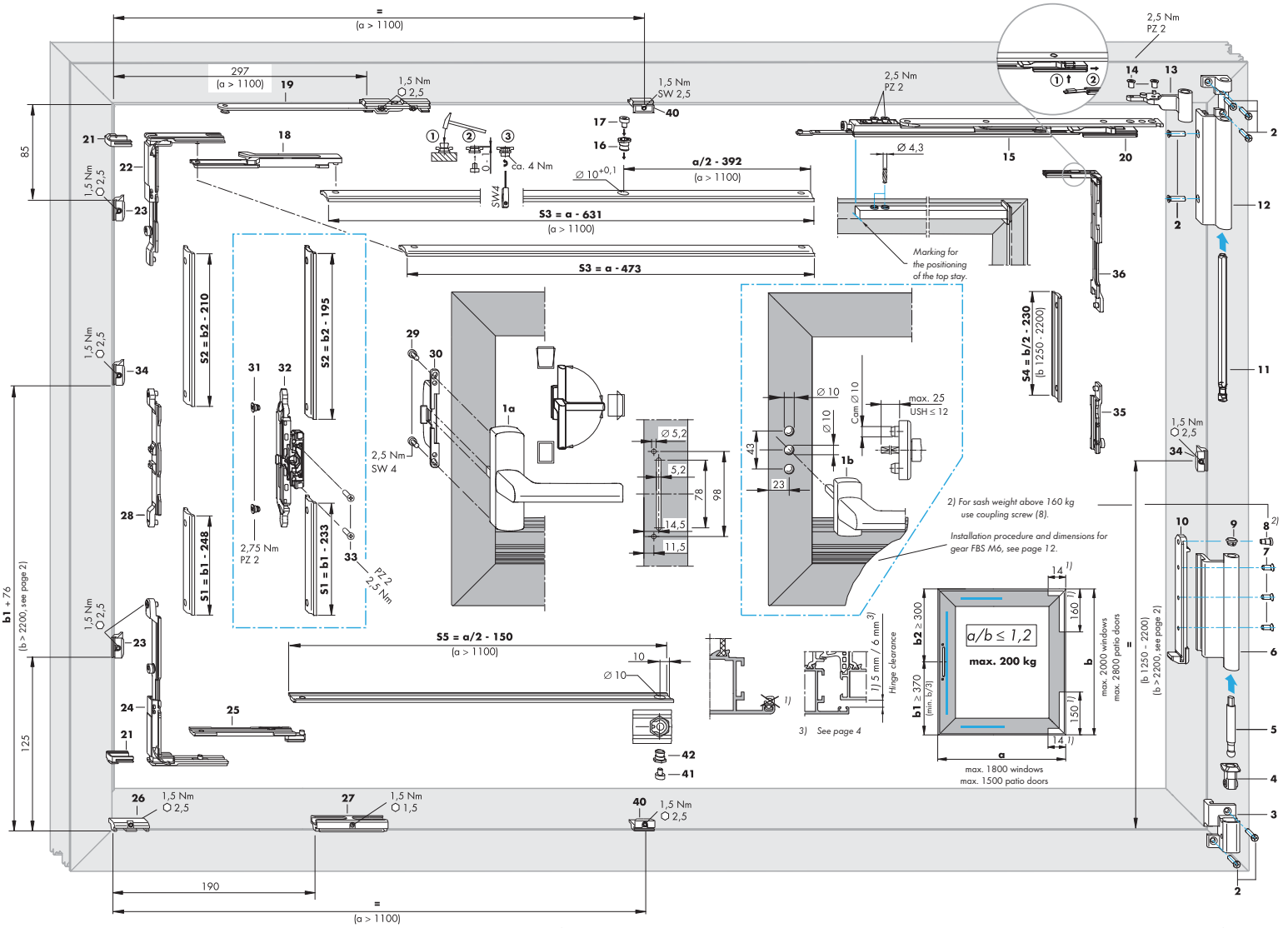
Example (—·—): sash height = *1800 mm*
glass thickness = *48 mm*
permissible sash width = ***925 mm***

For glass thicknesses of less than 20 mm, all sash sizes that lie within the range of application and do not exceed an aspect ratio a/b of 1.2 are permissible.



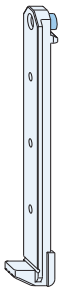
Hinge pin disassembly (item 11)
(ordering information for the jig, see page 8)

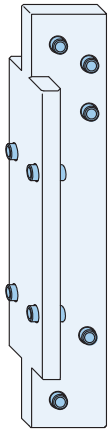


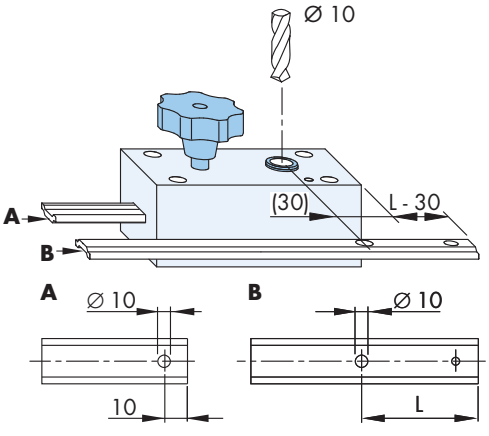


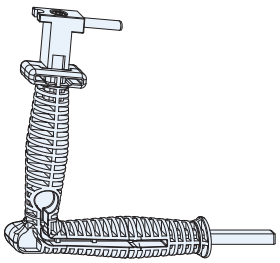
ALU-DK200 *Hardware overview and installation dimensions*

Material description			Material no.
Jig **LM-DK200** ∅ 4.3 mm	*for top stay size 30* *(Item 15)*	1	MASB0010-500010
Hinge side jig **LM-DK200 EB** ∅ 5.2 mm	*Sash weight > 160 kg* *for coupling screw* *(Item 8)*	1	MABB0020-100010
Hinge side jig **LM-DK200** **black** ∅ 4.3 mm	*for hinge (item 3)* *and top hinge (item 12)*	1	MABB0010-099010
Jig LM ∅ 10 mm	*for operating rod punch hole*	1	130001
Disassembly key **LM 200/300**	*Disassembly* *for hinge pins (item 11)*	1	MAEW0030-000010









Basic safety notes

Intended use

The hardware described in this document is intended to be installed in an aluminium window frame by a certified window construction specialist in accordance with these instructions. The windows must only be installed vertically.
The certified window construction specialist must ensure that the hardware is suitable for the application based on the specifications in these instructions and in the other documents specified.

Avoid excessive strain

Bearing components can break if they are exposed to excessive strain. If this happens, the window sash may fall out, leading to serious injuries.
If the hinge parts may be subject to excessive strain under certain conditions (use in schools, nursery schools, etc.), appropriate measures must be taken to prevent this from happening, such as using turning locks or tilt-before-turn opening (TBT).

- If in any doubt, please contact your SIEGENIA sales consultant.

Do not mix hardware components

The hardware components are designed to work with one another. If they are mixed on a window with hardware components from other systems or manufacturers, it is not possible to guarantee that they will operate safely.
Hardware components may break and cause accidents.

- Only use the hardware components listed in these instructions together on a window.

Only treat window surfaces prior to assembly of hardware

- Treating window surfaces after assembling the hardware may affect the components' operational reliability.

Avoid damage caused by corrosion and debris

Corrosive materials, dirt and moisture may damage hardware components and cause hazards.

- Do **not** use acetic or acid-releasing sealants.
- Do **not** use the hardware components in environments where the air contains aggressive or corrosive components.
- Keep all rebates free of debris and dirt, especially cement and plaster residue.
- Keep the hardware dry.

Clean hardware gently

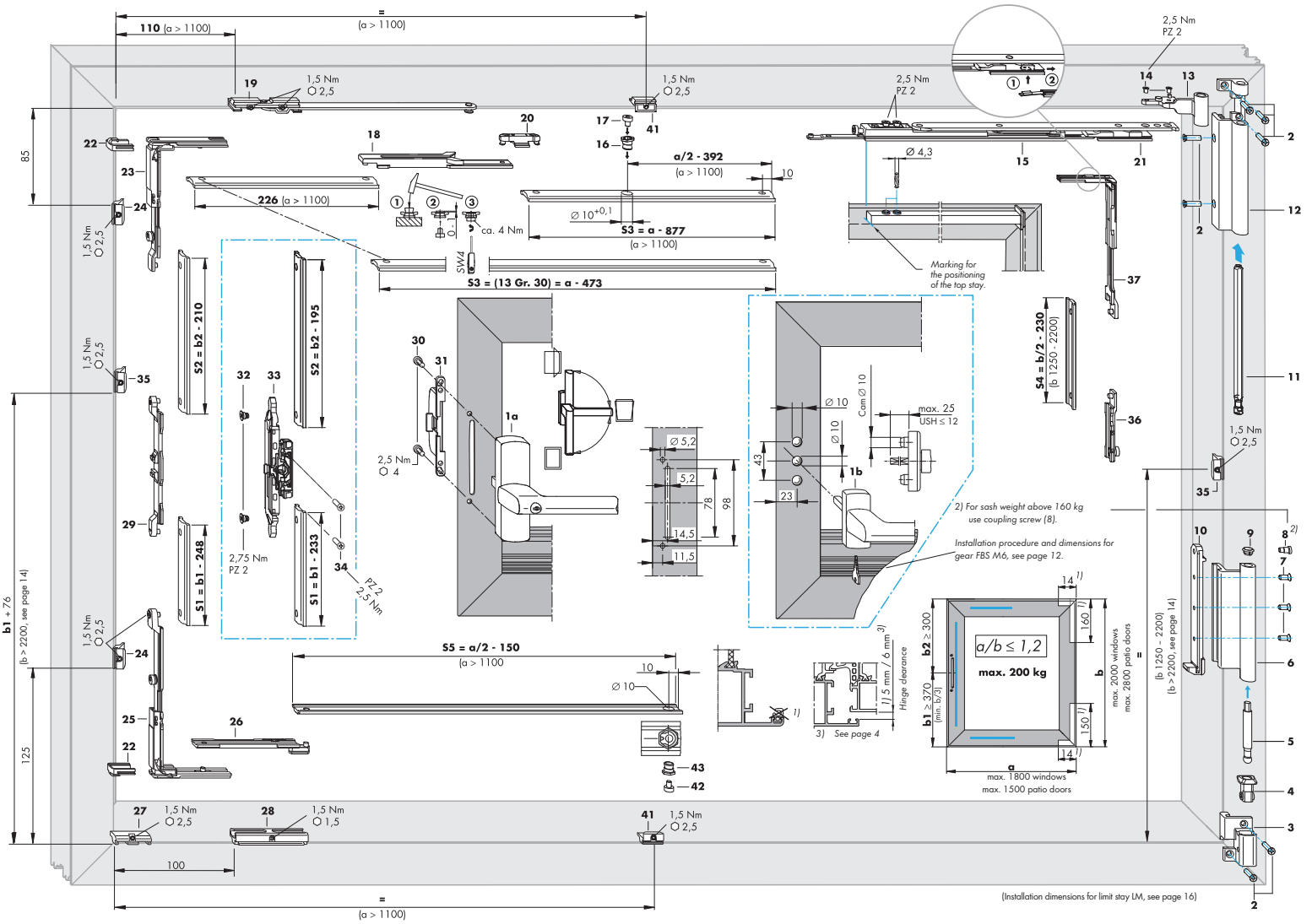
- Only clean the hardware with a soft cloth and mild, diluted pH-neutral cleaning agents.
- The hardware must not be exposed to abrasive cleaners or aggressive, acidic cleaning agents.
- Leave the hardware to dry after cleaning.

Pass on information to the user of the window

- Attach the user information order no. 05083 to the installed window or door element so that it can be seen easily.
- Pass on the following leaflets to the user:
  - Maintenance and cleaning instructions SI-AU order no. 17772
  - Operating instructions SI-AU order no. 05766

Exclusion of liability

- We assume no liability for functional disorders and damage to the hardware, or to the windows and French doors equipped with the hardware, where such malfunctions and damage are the result of insufficient tendering information, failure to follow these installation instructions or forceful impact (e.g. due to improper use).



ALU-TBT200 *Hardware overview and installation dimensions*

Preparation

1. Perform profile machining for window handle (item **1b)** (fig. 1+2).
2. Open guiding groove for operating rod (fig. 2).
3. Machine operating rods S1 and S2 according to instructions on pages 5–6 (DK) or 10–11 (TBT).

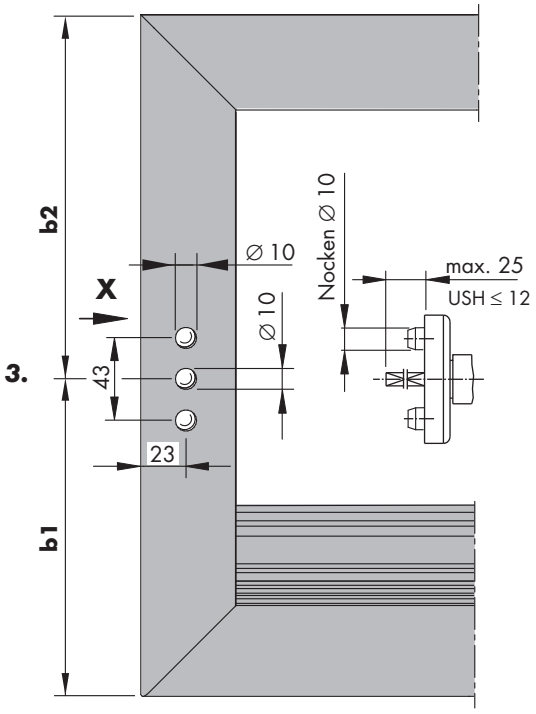


Fig. 1

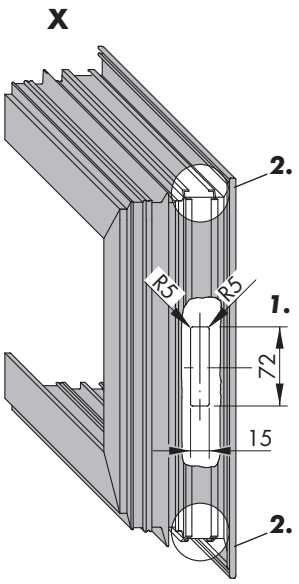


Fig. 2

Sash

4. Insert the ESG LM M6 (item **32/33**) into the profile machining 72 x 15 (Fig. 3).
5. Screw ESG LM M6 (item **32/33**) with coupling screw M6 (item **31/32**) into the operating rod punch hole ∅ 5.2 (PZ 2, torque 2.75 Nm ± 0.25 Nm) (fig. 3).
6. Screw on window handle (item **1b**) using countersunk screws M5 x 35 (item **33/34**) (PZ 2, torque 2.5 ± 0.25 Nm) (fig. 4).

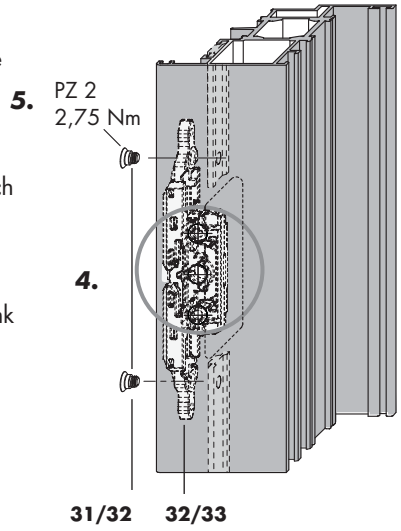


Fig. 3

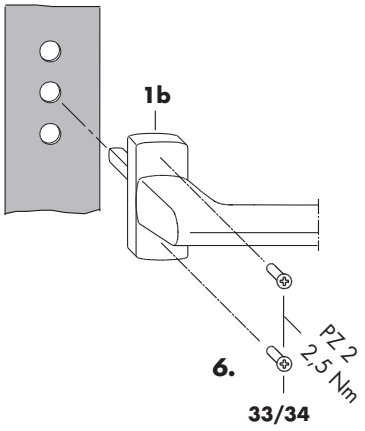


Fig. 4

Frame

7. For b > 1250 mm, position striker according to dimensions (fig. 5) and fix in place using grub screw (⬡ 2.5, torque 1.5 ± 0.25 Nm).

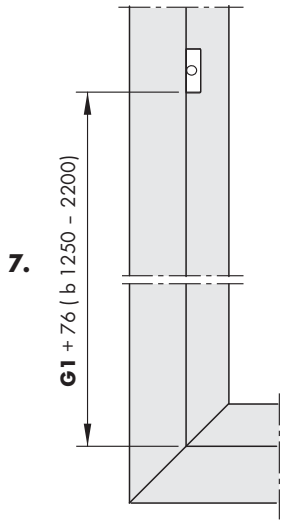
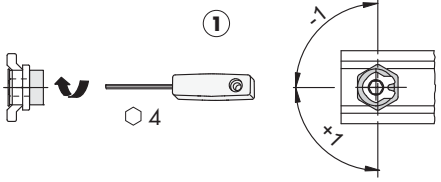


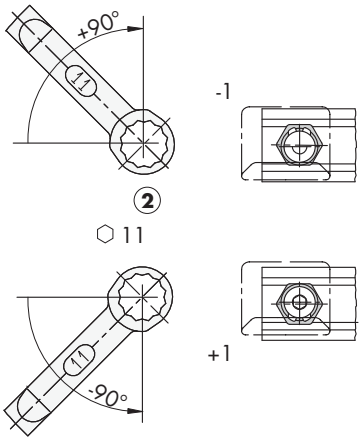
Fig. 5

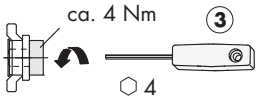
Note: For further machining notes, see drawing no.: H48.ZUBHLS005en in aluminium planning manual.

Pressure setting ±1 mm

(for item **16** and **17**)

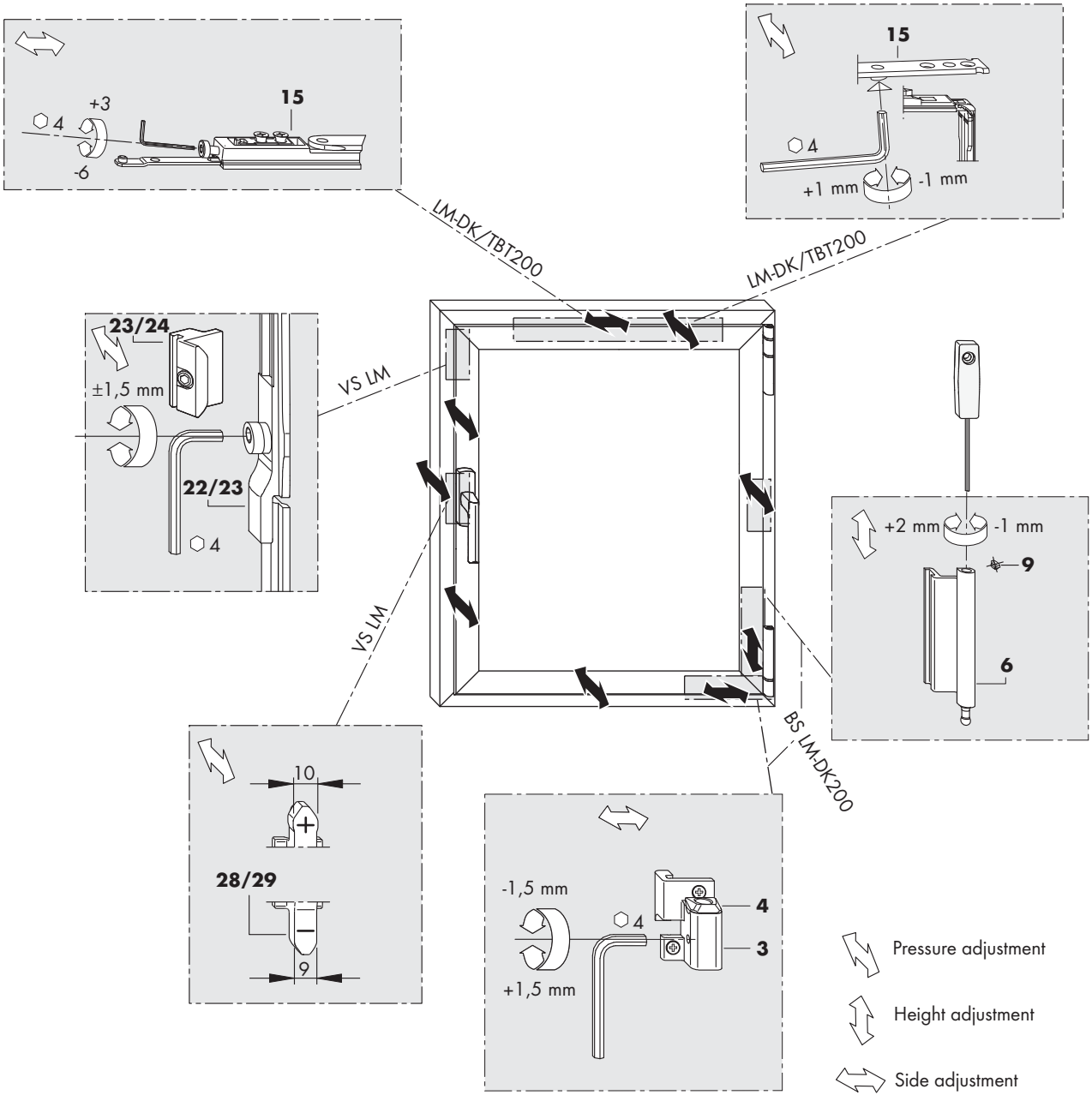






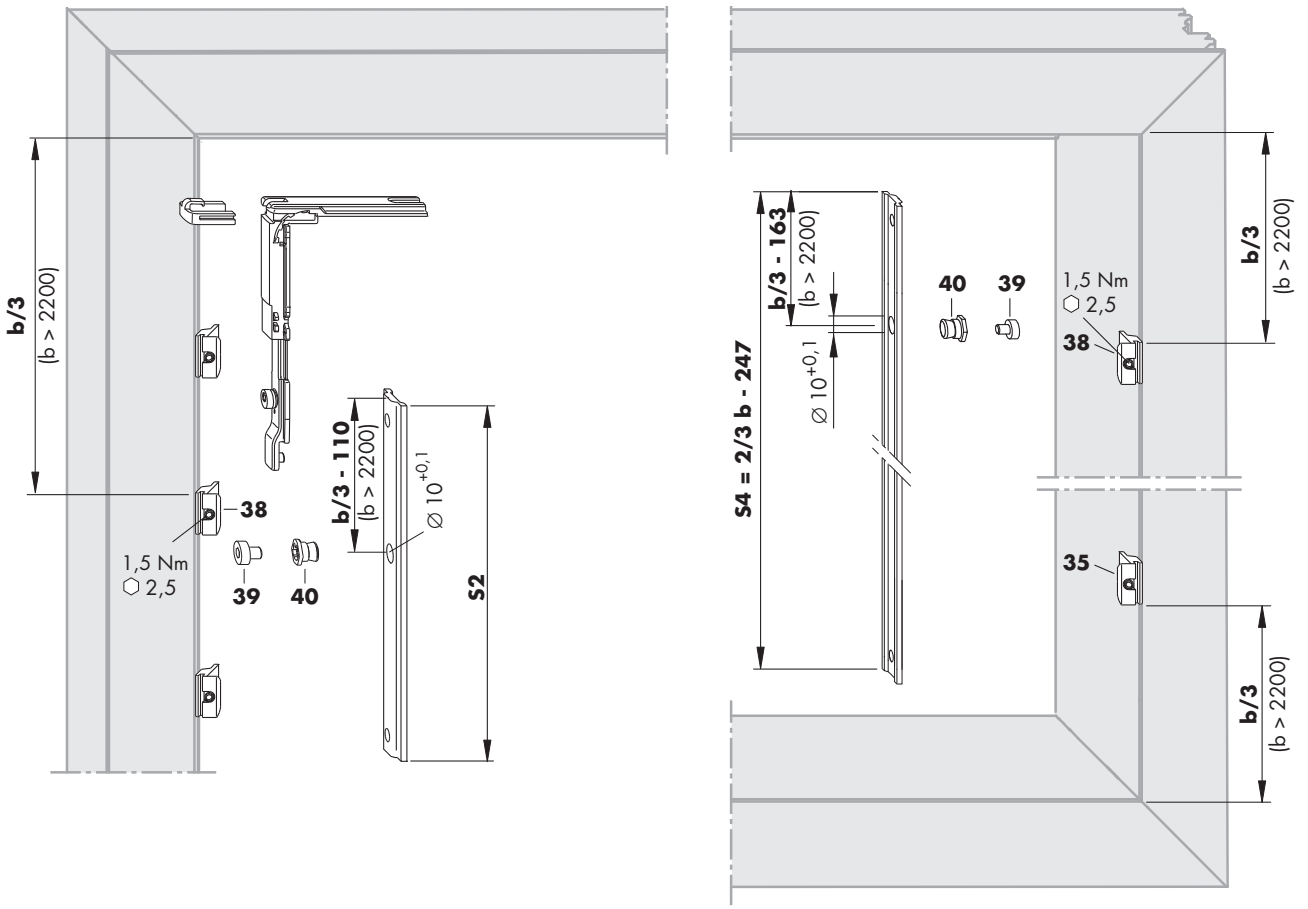
Perform pressure setting for eccentric rivet (item **16**) and locking cam (item **17**) with ring spanner**.**

Adjustment options



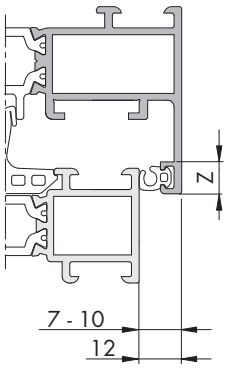
	No.	Piece	Material description			Material no.		Material no.
General requirements	1a	1	**Handle LM lockable/TBT**			*See LM handle overview drawing. no.: H48.ZUBHLS007en in aluminium planning manual*		
	1b	1	**Window handle lockable/TBT**	(□ 7mm x 25, cam ∅10 mm)				
	2-14	1	**BS LM-DK200 right**	**silver**	1	**MMBS0151-525010**	5	**MMBS0151-525120**
		1	**BS LM-DK200 left**	**silver**	1	**MMBS0152-525010**	5	**MMBS0152-525120**
		1	**BS LM-DK200 right**	**RAL 9016 white**	1	**MMBS0151-504010**	5	**MMBS0151-504120**
		1	**BS LM-DK200 left**	**RAL 9016 white**	1	**MMBS0152-504010**	5	**MMBS0152-504120**
		1	**BS LM-DK200 right**	**Mill finish**	1	**MMBS0151-500010**	5	**MMBS0151-500120**
		1	**BS LM-DK200 left**	**Mill finish**	1	**MMBS0152-500010**	5	**MMBS0152-500120**
	15	1	**Top stay LM-DK200 size 30**		1	**MSKK0020-000010**	20	**MSKK0020-000030**
	16-19	0...1	**Additional stay LM 4200**	*a > 1100 mm + top stay 30*	1	**857076**	10	**247006**
	20	0...1	**MV stay striker**	*a > 1100 mm*	1	**MXSK0010-100010**	20	**MXSK0010-100030**
	21-28	1	**VS LM-DK-TBT KPW**		1	**MMVS0400-100010**	20	**MMVS0400-100030**
	29-31	0...1	**Coupling set FBS G** **9 mm**	*Profile recommendation, see table on page 15*	1	**MMKL0030-100010**	20	**MMKL0030-100030**
		0...1	*In conjunction with* **(1a)** **10 mm**		1	**MMKL0010-100010**	20	**MMKL0010-100030**
		0...1	**USH 12 mm**		1	**MMKL0040-100010**	20	**MMKL0040-100030**
	32-34	0...1	**Gear set FBS M6 Trial/RR** *in conjunction with* **(1b)**	*Different components shaded in colour*	1	**MMGI0080-100010**	20	**MMGI0080-100030**
	35-37	0...1	**MV LM 4200-DK**	*b > 1250 mm*	1	**857045**	20	**246979**
	38-40	0...1	**LM locking part**	*b > 2200 mm*	1	**–**	20	**317556**
	41-43	0...1	**MV LM RB/SF**	*a > 1100 mm*	1	**894316**	20	**303917**

Additional LM locking part (item 38–40) for b > 2200



Design variations for coupling set FBS-G (28/29 – 30/31)

USH	Z	Material no.
7 - 10 mm	≤ 8.5 mm	MMKL0030-100030
7 - 10 mm	≤ 7.5 mm	MMKL0010-100030
12 mm	≤ 7 mm	MMKL0040-100030

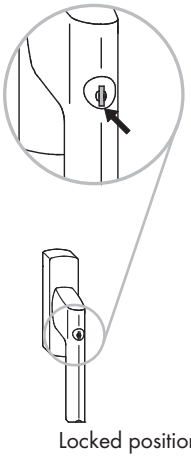


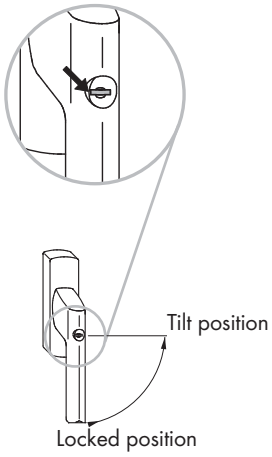
Abbreviations

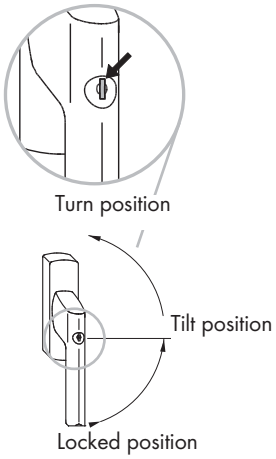
These assembly instructions contain the following abbreviations:

a	sash width
BS	hinge side
BSO	hinge side top
BSU	hinge side bottom
b	sash height
b1	handle height bottom
b2	handle height top
EB	notch hinge jig
ESG	routed-in drive gear
KPW	tilt point horizontal
MV	centre lock
Nm	torque in Nm
RB	arched head
SF	pitched windows
SW	width across flat
USH	rebate height
VS	locking side
S1	operating rod, locking side bottom
S2	operating rod, locking side top
S3	operating rod, top horizontal
S4	operating rod, hinge side
S5	operating rod, bottom horizontal

Functional notes for handle, lockable/TBT







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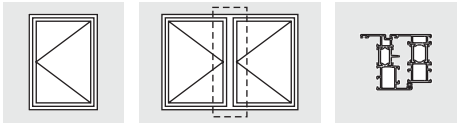
ALU-D300

The screw-fixed Turn-Only hardware for aluminium windows and balcony-doors



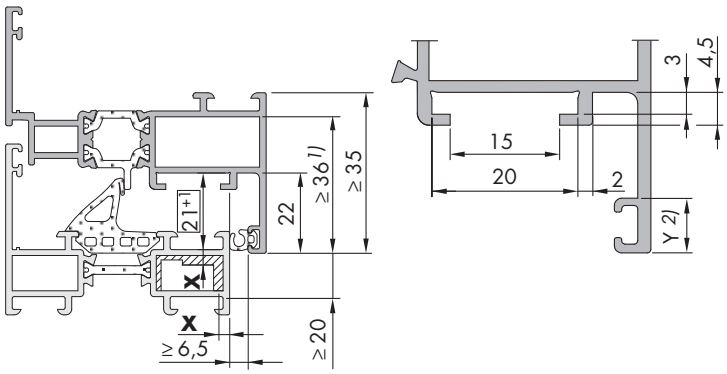
More details and specifications/guidelines on the product and on liability (Guidelines: 'VHBH, TBDK and VHBE') are to be checked without fail in the Aluminium Specifiers Manual (H4006.3042EN).

The specified dimensions are finished dimensions after the surface treatment of the profiles e.g. painting, powder coating etc.!

All dimensions in mm

Sash width	(a)	min. 350 - max. 1800
Sash height	(b)	min. 1100 - max. 2800
Sash weight	(⍓)	max. 300 kg

Profile dimensions

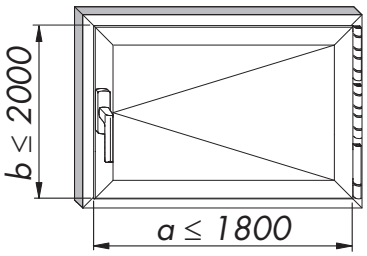


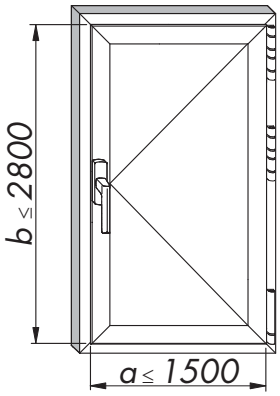
X

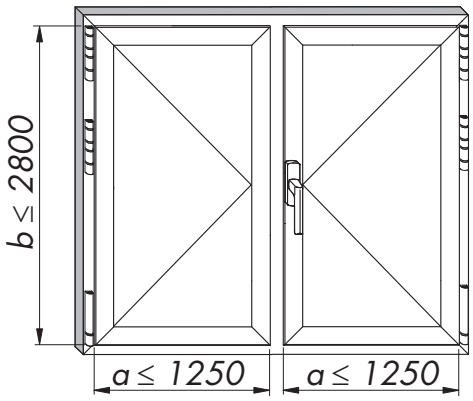
A load-bearing thread length of 6 mm is required on the frame for all countersunk M5 x 19 PZ 2 screws.

Sash dimensions

$a/b \leq 1,2$

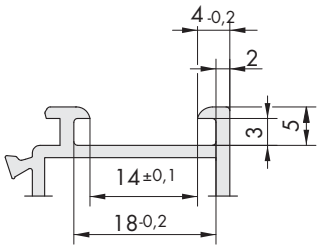






Frame groove dimensions

A0004



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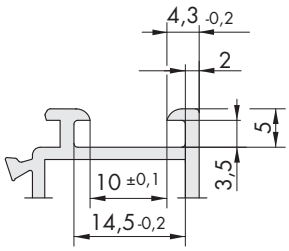

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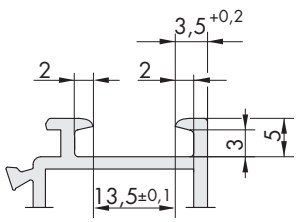


A0022

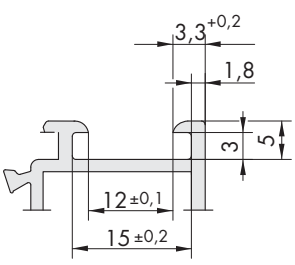


Table of contents

Installation instructions

H48.300LS001en

Technical specifications and colours are subject to change

H48.300LS001en/1

	Pos.	Qty.	Material short text			Material no.		Material no.
Generally required	1a	0...1	**Handle LM**			*Refer to handle overview LM Drawing no.: LMde1337 in the Aluminium Specifiers Manual*		
	1b	0...1	**Window handle**	(□7mm, lugs ∅ 10 mm)				
	2-12	1	**BS LM-D300 BD 6.5 right**	**silver**	1	**MMBS0141-525010**	5	**MMBS0141-525120**
		1	**BS LM-D300 BD 6.5 left**	**silver**	1	**MMBS0142-525010**	5	**MMBS0142-525120**
		1	**BS LM-D300 BD 6.5 right**	**white RAL 9016**	1	**MMBS0141-504010**	5	**MMBS0141-504120**
		1	**BS LM-D300 BD 6.5 left**	**white RAL 9016**	1	**MMBS0142-504010**	5	**MMBS0142-504120**
		1	**BS LM-D300 BD 6.5 right**	**unpainted**	1	**MMBS0141-500010**	5	**MMBS0141-500120**
		1	**BS LM-D300 BD 6.5 left**	**unpainted**	1	**MMBS0142-500010**	5	**MMBS0142-500120**
	13-17	1	**VS LM-D**		1	**MMVS0240-100010**	20	**MMVS0240-100030**
	18-19	0...1	**Coupling set LM-D** *in conjunction with (pos. 1a)*		1	**MMKL0020-100010**	20	**MMKL0020-100030**
	20-22	0...1	**Gear set M6** *in conjunction with (pos. 1b)*	*Different components coloured background*	1	**MMGI0050-100010**	20	**MMGI0050-100030**
	23-25	0...1	**MV LM 4200-D VS/BS**	*b > 1250 mm*	1	**857052**	20	**246986**
	26-30	0...1	**MV LM 4200/2200-D VSU/VSO**	*a > 1250 mm*	1	**MMMV0040-100010**	20	**MMMV0040-100030**
	31-32	0...1	**Locking point LM-MV**	*b > 2200 mm*	1	**MMVR0040-100010**	20	**MMVR0040-100030**
		0...1	**Hinge set LM Universal** *b > 2200 > 200 kg*	**silver**	1	**MMDB0050-525010**	5	**MMDB0050-525120**
	33-36	0...1	**Hinge set LM Universal** *b > 2200 > 200 kg*	**white RAL 9016**	1	**MMDB0050-504010**	5	**MMDB0050-504120**
		0...1	**Hinge set LM Universal** *b > 2200 > 200 kg*	**unpainted**	1	**MMDB0050-500010**	5	**MMDB0050-500120**
Accessories								
	37	0...1	**Connector Si-line LM 34 mm** *(pos. 1a)*	*OLH 13 - 21 mm*	1	**MHSM0010-100010**	–	–
	42	0...1	**Handle support LM** *(pos. 1a)*		–	–	200	*Refer to the table*
	43	0...1	**Pressure piece SV**	*For lateral adjustment ± 0.8 mm*	1	**818138**	20	**222041**
	44	0...1	**Pressure piece AV**	*For lateral compression ± 0.5 mm*	1	**855133**	20	**249796**

Handle support versions (pos. 42)

OLH	Z	Y < 7 mm	Y 7.1 - 8.5 mm
7 - 10 mm	< 2 mm	MFHA0010-100200	MFHA0010-100200
7 - 10 mm	2.1 - 3 mm	MFHA0010-100200	MFHA0020-100200
7 - 10 mm	> 3 mm	MFHA0010-100200	-
12 mm	-	MFHA0030-100200	-

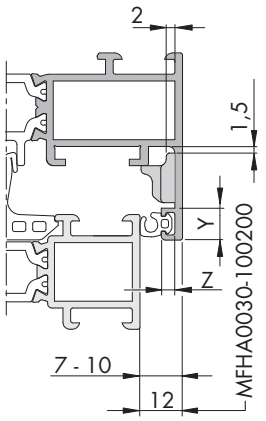


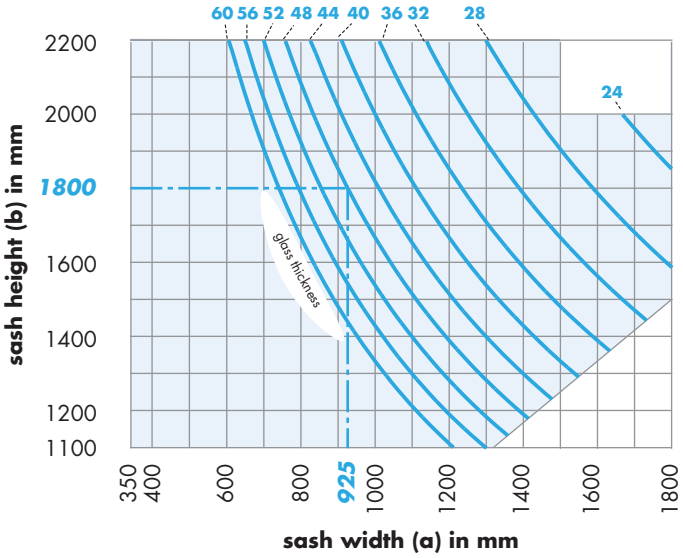
Diagram for 200 kg sash weight

(Glass thickness in mm without air space)

20 mm glass thickness (equal to **50** kg/m^2)
24 mm glass thickness (equal to **60** kg/m^2)
28 mm glass thickness (equal to **70** kg/m^2)
32 mm glass thickness (equal to **80** kg/m^2)
36 mm glass thickness (equal to **90** kg/m^2)
40 mm glass thickness (equal to **100** kg/m^2)
44 mm glass thickness (equal to **110** kg/m^2)
48 mm glass thickness (equal to **120** kg/m^2)
52 mm glass thickness (equal to **130** kg/m^2)
56 mm glass thickness (equal to **140** kg/m^2)
60 mm glass thickness (equal to **150** kg/m^2)

1mm/m^2 glass thickness = 2.5 kg

Example (—·—): Sash height= *1800 mm*
Glass thickness= *48 mm*
Permissible
sash width= ***925 mm***



In the case of glass thicknesses less than 20 mm, all sash sizes are permissible that lie within the application range and do not exceed a width-to-height ratio a/b of 1.2

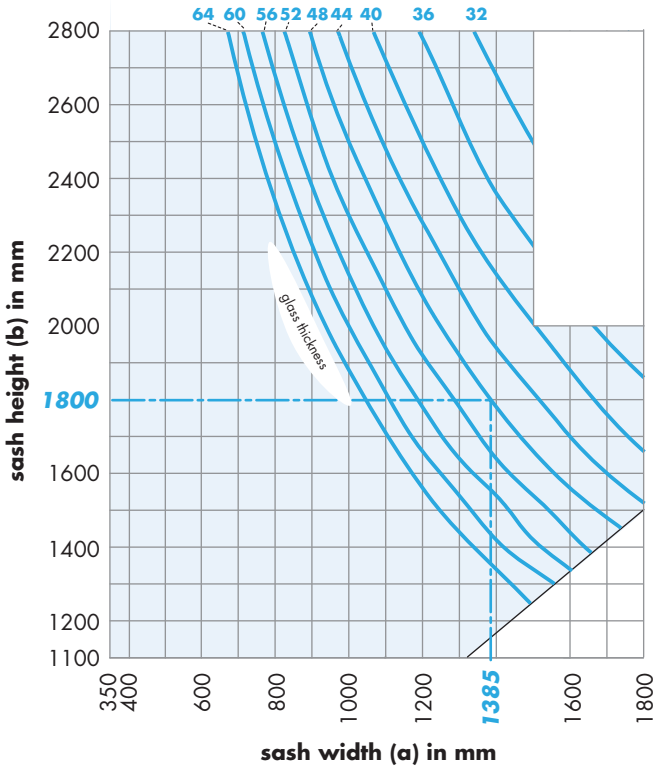
Diagram for 300 kg sash weight

(Glass thickness in mm without air space)

24 mm glass thickness (equal to 60 kg/m^2)
28 mm glass thickness (equal to 70 kg/m^2)
32 mm glass thickness (equal to 80 kg/m^2)
36 mm glass thickness (equal to 90 kg/m^2)
40 mm glass thickness (equal to 100 kg/m^2)
44 mm glass thickness (equal to 110 kg/m^2)
48 mm glass thickness (equal to 120 kg/m^2)
52 mm glass thickness (equal to 130 kg/m^2)
56 mm glass thickness (equal to 140 kg/m^2)
60 mm glass thickness (equal to 150 kg/m^2)
64 mm glass thickness (equal to 160 kg/m^2)

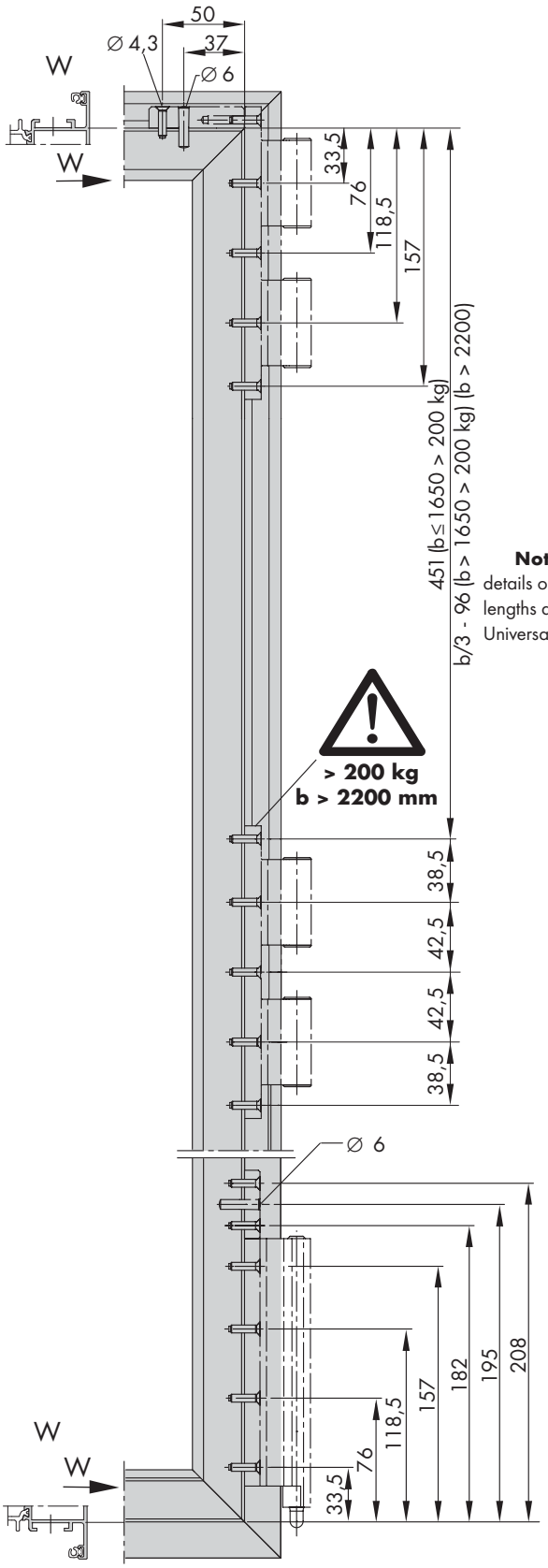
1mm/m^2 glass thickness = 2.5 kg

Example (—·—): Sash height = *1800 mm*
Glass thickness = *48 mm*
Permissible
sash width = ***1385 mm***



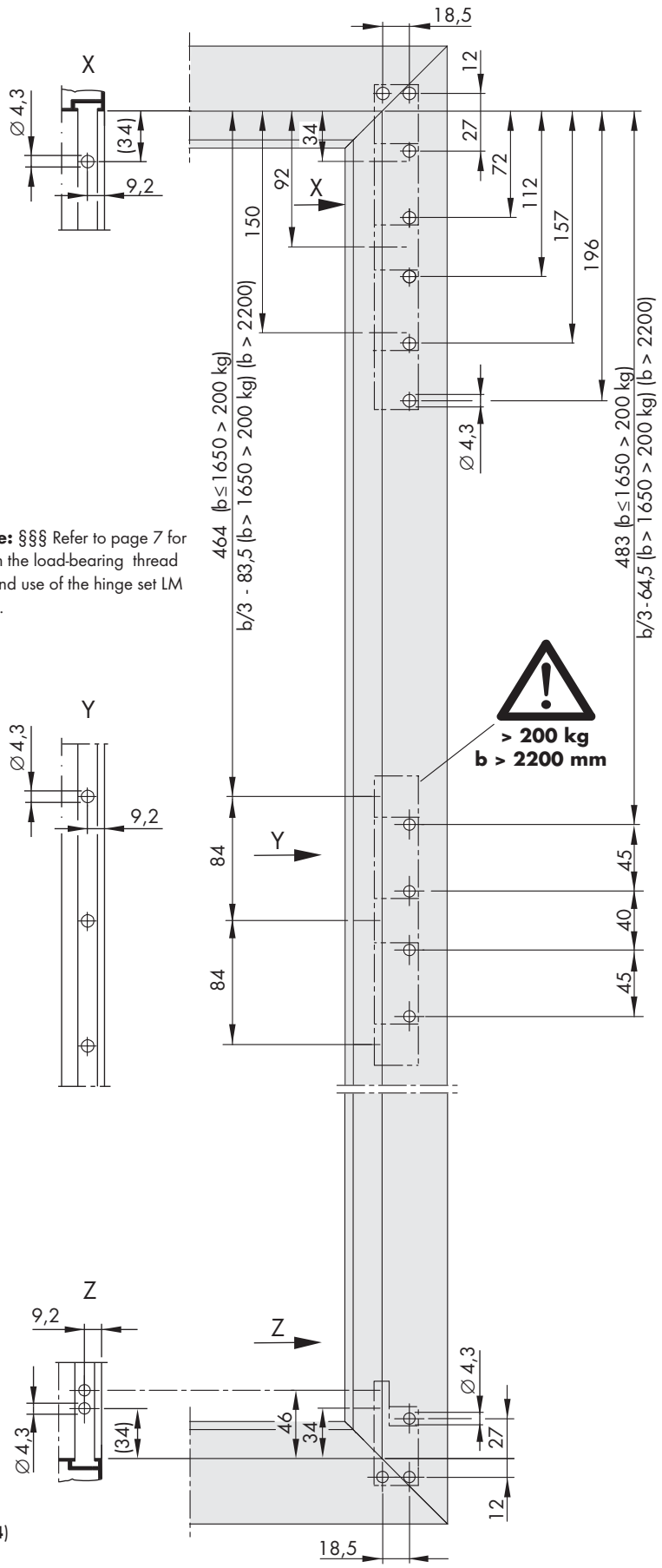
In the case of glass thicknesses less than 28 mm, all sash sizes are permissible that lie within the application range and do not exceed a width-to-height ratio a/b of 1.2

Sash drilling details

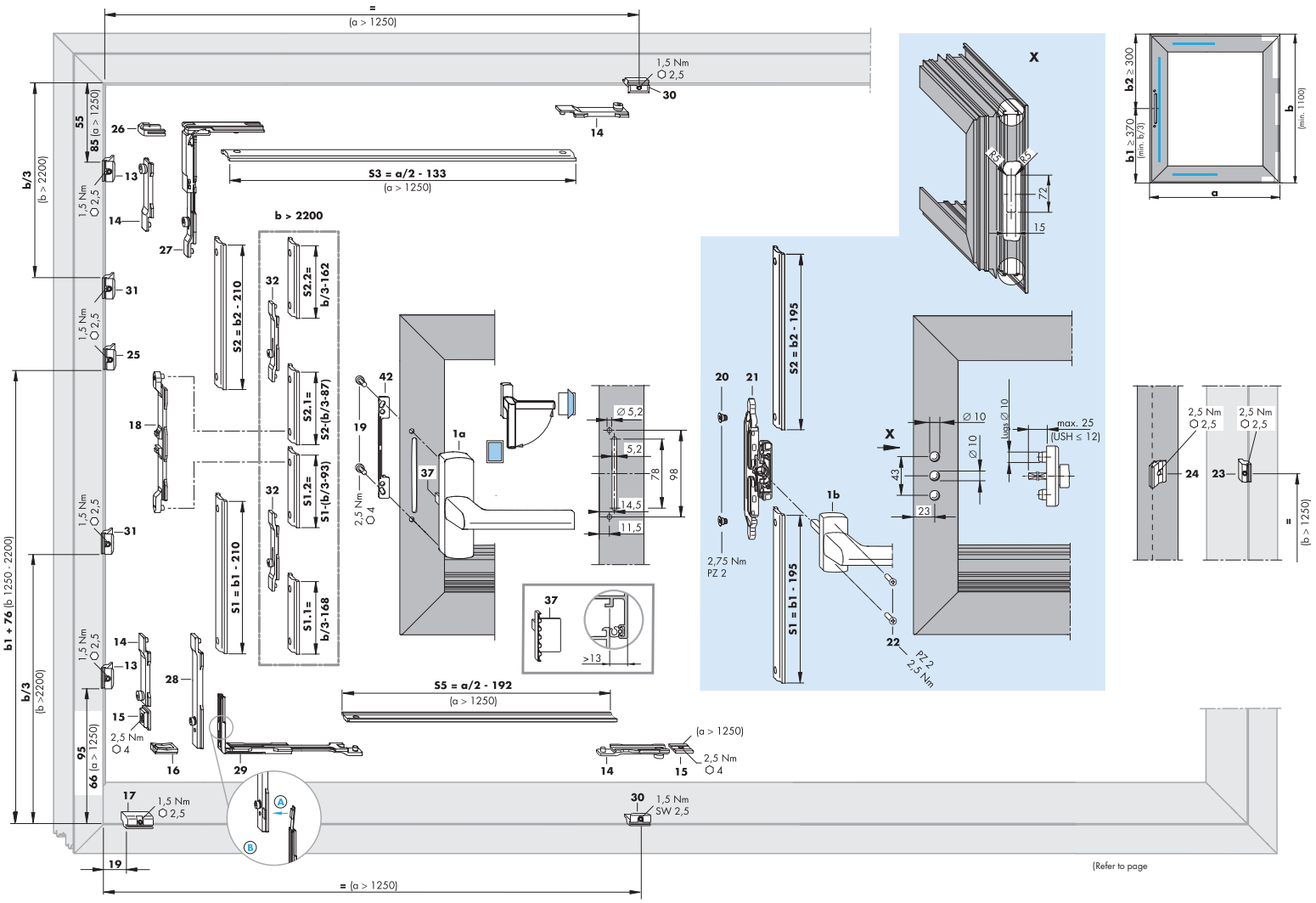


Note: §§§ Refer to page 7 for details on the load-bearing thread lengths and use of the hinge set LM Universal.

Frame drilling details

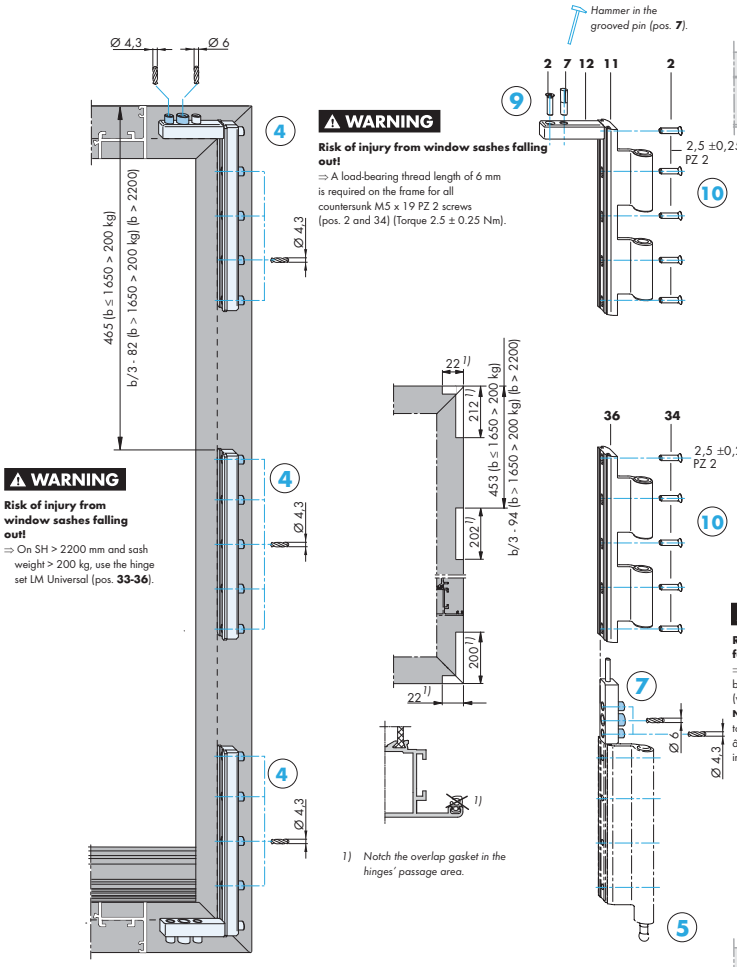


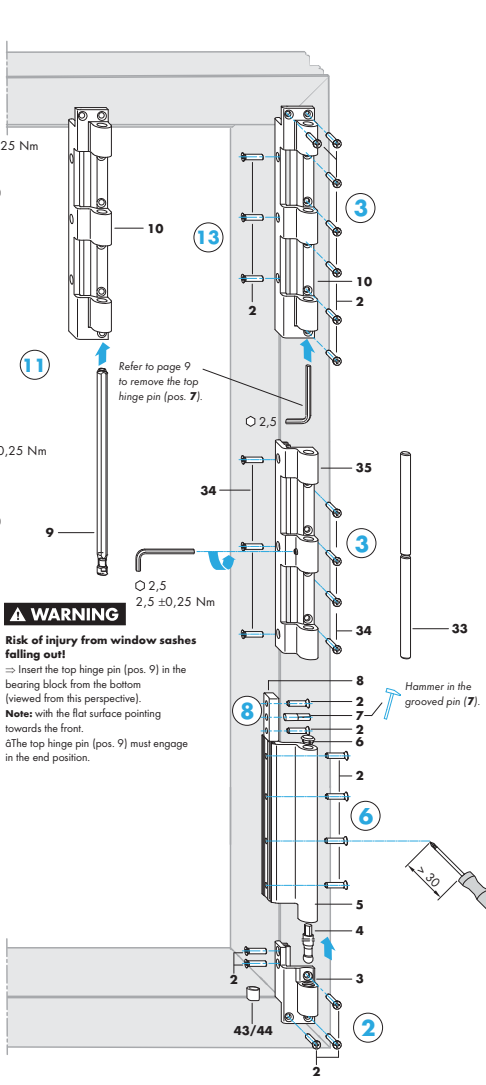
Note: Drill all drilling-holes for M5 x 19 countersunk screws (**2, 34**) with a 4.3 mm drill.

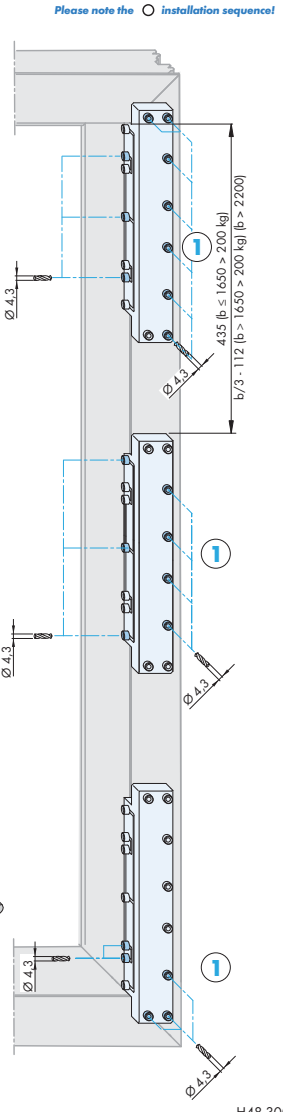


(Refer to page

ALU-D300 *Handle side hardware overview and installation dimensions*


Ø 4,3
Ø 6
4
Ø 4.3
465 (b ≤ 1650 > 200 kg) (b > 2200)
b/3 - 82 (b > 1650 > 200 kg) (b > 2200)
⚠ WARNING
Risk of injury from window sashes falling out!
⇒ On SH > 2200 mm and sash weight > 200 kg, use the hinge set LM Universal (pos. 33-36).
⚠ WARNING
Risk of injury from window sashes falling out!
⇒ A load-bearing thread length of 6 mm is required on the frame for all countersunk M5 x 19 PZ 2 screws (pos. 2 and 34) (Torque 2.5 ± 0.25 Nm).
Hammer in the grooved pin (pos. 7).
2 7 12 11 2
9
2,5 ±0,25 Nm PZ 2
10
22 1)
212 1)
453 (b ≤ 1650 > 200 kg) (b > 2200)
b/3 - 94 (b > 1650 > 200 kg) (b > 2200)
202 1)
200 1)
22 1)
1)
1) Notch the overlap gasket in the hinges' passage area.
36 34
2,5 ±0,25 Nm PZ 2
10
7
Ø 6
Ø 4.3
5


10
13
3
10
2
11
Refer to page 9 to remove the top hinge pin (pos. 7).
⬡ 2,5
9
35
34
3
⬡ 2,5
2,5 ±0,25 Nm
34
33
⚠ WARNING
Risk of injury from window sashes falling out!
⇒ Insert the top hinge pin (pos. 9) in the bearing block from the bottom (viewed from this perspective).
Note: with the flat surface pointing towards the front.
⇒ The top hinge pin (pos. 9) must engage in the end position.
8
2
7
2
6
Hammer in the grooved pin (7).
8
2
6
≥ 30
5
4
3
2
43/44
2


Please note the ○ installation sequence!
1
Ø 4.3
435 (b ≤ 1650 > 200 kg) (b > 2200)
b/3 - 112 (b > 1650 > 200 kg) (b > 2200)
Ø 4.3
1
Ø 4.3
Ø 4.3
1
Ø 4.3
Ø 4.3
1
Ø 4.3
Ø 4.3

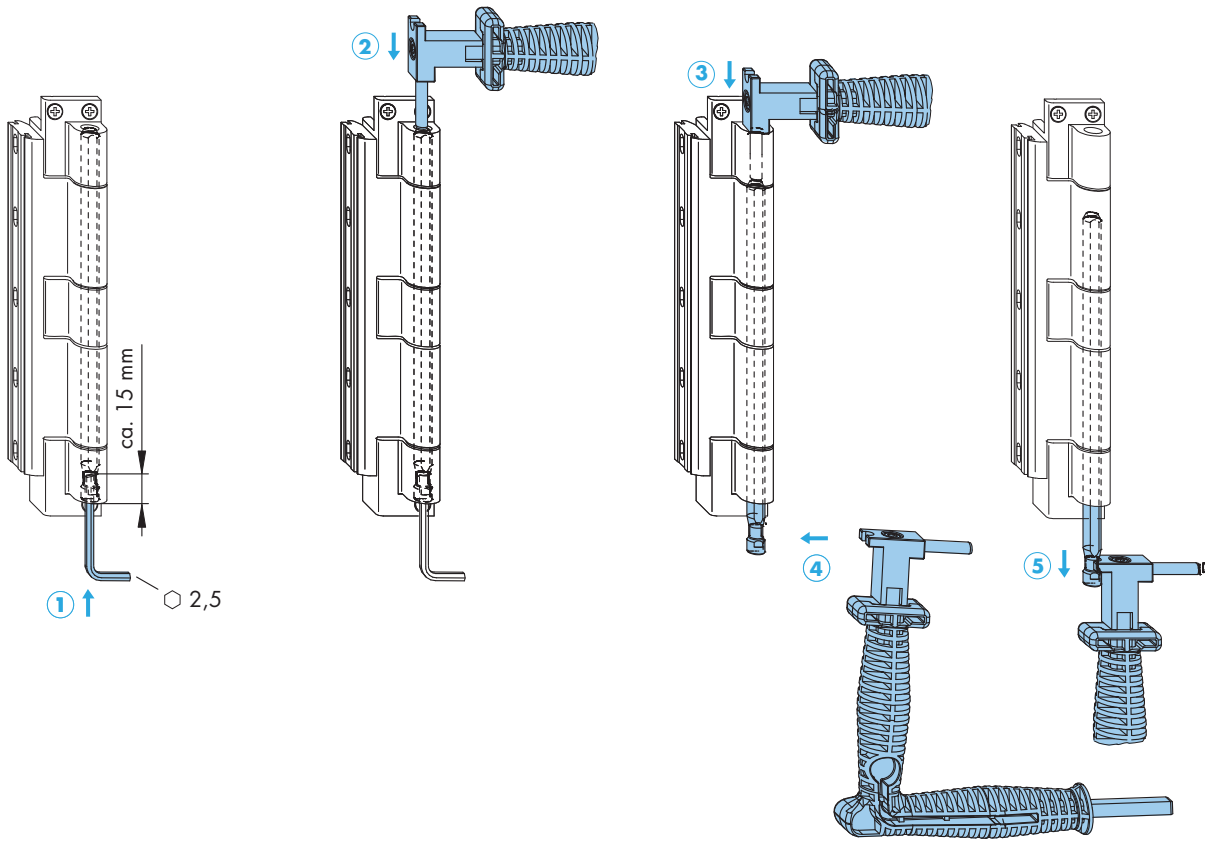
Abbreviations

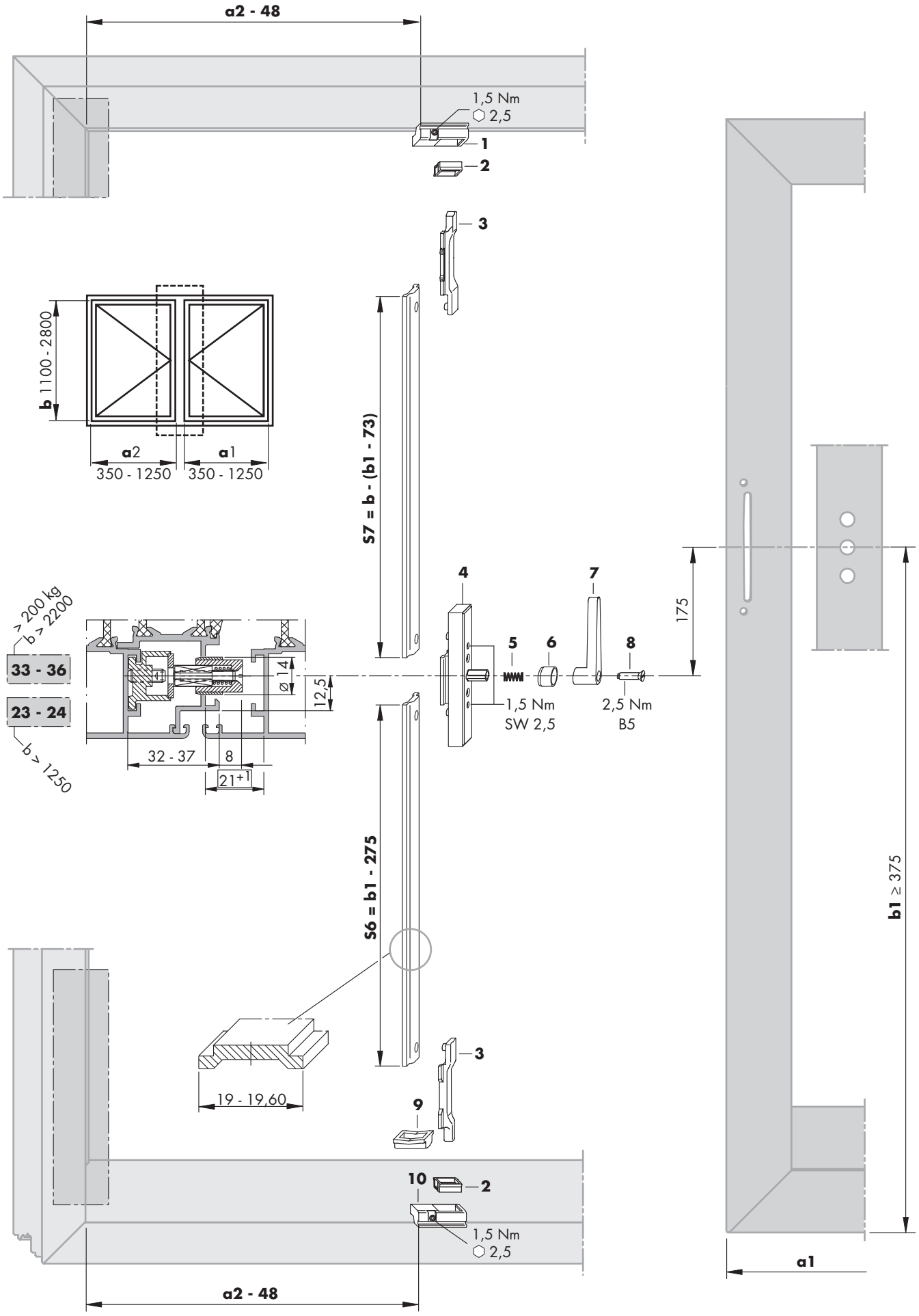
The following abbreviations are used
in these installation instructions:

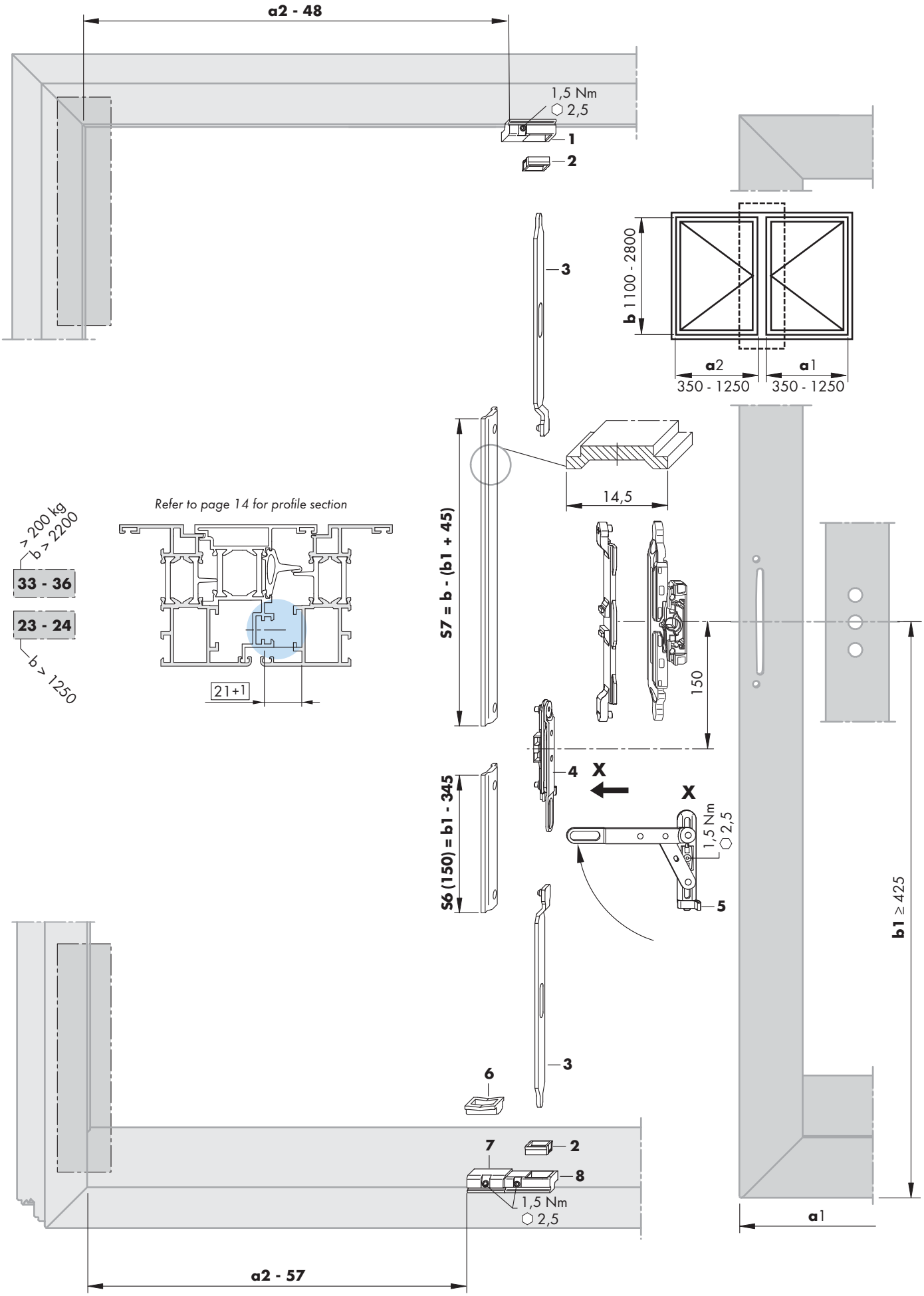
GCA	Gasket compression adjustment
H-S	Hinge-side
THS	Top hinge-side
BHS	Bottom hinge-side
a	Sash width
a1	Active sash width
a2	Passive sash width
b	Sash height
b1	Bottom handle position
b2	Top handle position
TU-ON	Turn-Only sash
TU-ON DM	Turn-Only dummy mullion
R-I DG	Routed-in drive gear
CL	Centre lock
Nm	Torque in Nm
LA	Lateral adjustment
SS	Spanner size
OLH	Overlap height
H.S	Handle side
THS	Top handle side
BHS	Bottom handle side

S1	Connecting rod, bottom handle side
S2	Connecting rod, top handle side
S3	Connecting rod, top horizontal
S5	Connecting rod, bottom horizontal
S6	Connecting rod, passive sash, bottom handle side
S7	Connecting rod, passive sash, top handle side

Removing the top hinge pin (pos. 9)




a2 - 48
1,5 Nm
2,5
1
2
3
b 1100 - 2800
a2
350 - 1250
a1
350 - 1250
S7 = b - (b1 - 73)
4
7
5
6
8
175
> 200 kg
b > 2200
33 - 36
23 - 24
b > 1250
ø 14
12,5
32 - 37
8
21+1
1,5 Nm
SW 2,5
2,5 Nm
B5
S6 = b1 - 275
19 - 19,60
3
9
10
2
1,5 Nm
2,5
a2 - 48
b1 ≥ 375
a1


a2 - 48
1,5 Nm
2,5
1
2
3
b 1100 - 2800
a2
350 - 1250
a1
350 - 1250
14,5
S7 = b - (b1 + 45)
150
4
X
X
1,5 Nm
2,5
5
S6 (150) = b1 - 345
b1 ≥ 425
3
6
7
2
8
1,5 Nm
2,5
a1
a2 - 57
> 200 kg
b > 2200
33 - 36
23 - 24
b > 1250
Refer to page 14 for profile section
21+1

Preparation

1. Carry out profile machining for window handle (pos. **1b**) (figure 1+2).
2. Open up the connecting rod's guide-groove (figure 2).
3. Machine the connecting rods S1 and S2 according to the pecifications the specifications on pages 5 - 6.

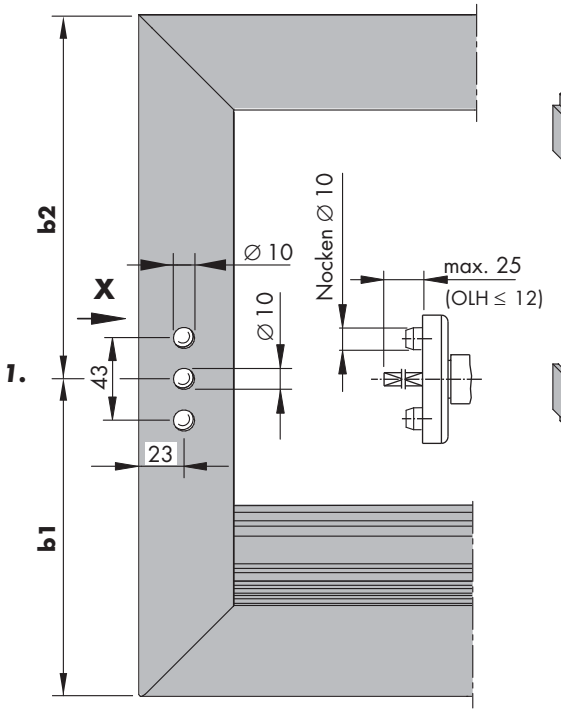


Figure 1

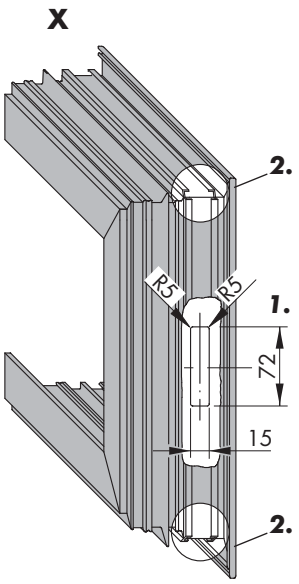


Figure 2

Sash

4. Insert the R-I DG LM M6 (pos. **21**) into the machined 72 x 15 profile recess strapping (figure 3).
5. Screw-fix the R-I DG LM M6 (pos. **21**) with coupling screw M6 (pos. **20**) into the connecting rod's ∅ 5.2 punched holes (PZ 2, torque 2.75 Nm ± 0.25 Nm) (figure 3).
6. Screw on the window handle (pos. **1b**) with countersunk screws M5 x 35 (pos. **22**) (PZ 2, torque 2.5 ± 0.25 Nm) (figure 4).

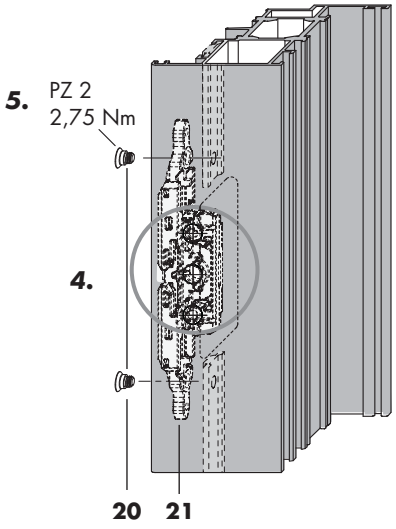


Figure 3

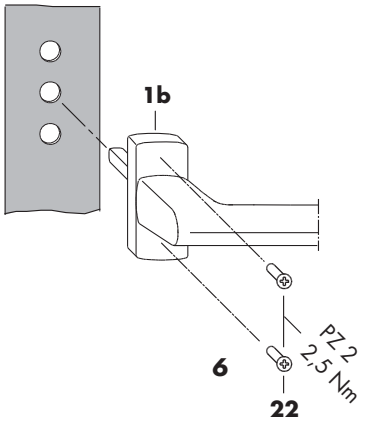


Figure 4

Frame

7. If b > 1250 mm position the striker in accordance with the specified dimension (figure 5) and clamp with grub screw (SS 2.5, torque 1.5 ± 0.25 Nm).

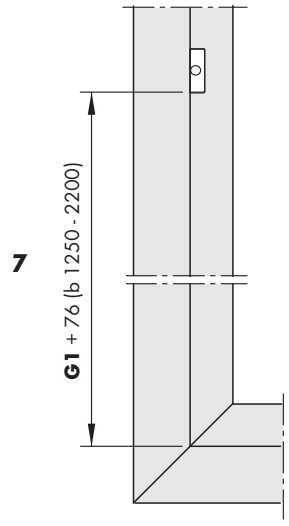
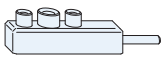
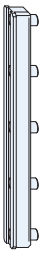


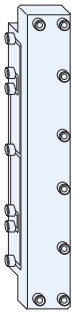
Figure 5

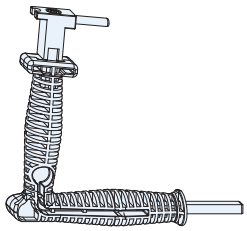
Note: For more machining instructions please refer to drawing no.: LMen1361 in the Aluminium Specifiers Manual

Material short text			Material no.
Jig supporting piece **BS LM-D300 grey** ∅ 4.3 mm ∅ 6 mm	*For supporting piece BHS (pos. 8) and supporting piece THS (pos. 12)*	1	MABB0040-097010
H-S sash jig **LM-D300 grey** ∅ 4.3 mm	*For BHS sash hinge (pos. 5) and sash hinge (pos. 11, pos. 36)*	1	MABB0030-097010
H-S frame jig **LM-D300 grey** ∅ 4.3 mm	*For pivot rest (pos. 3), bearing block (pos. 10) and bearing block M (pos. 35)*	1	MABB0050-097010
Pin removal tool **LM 200/300**	*For removing the top hinge pin (pos. 9, pos. 33)*	1	MAEW0030-000010

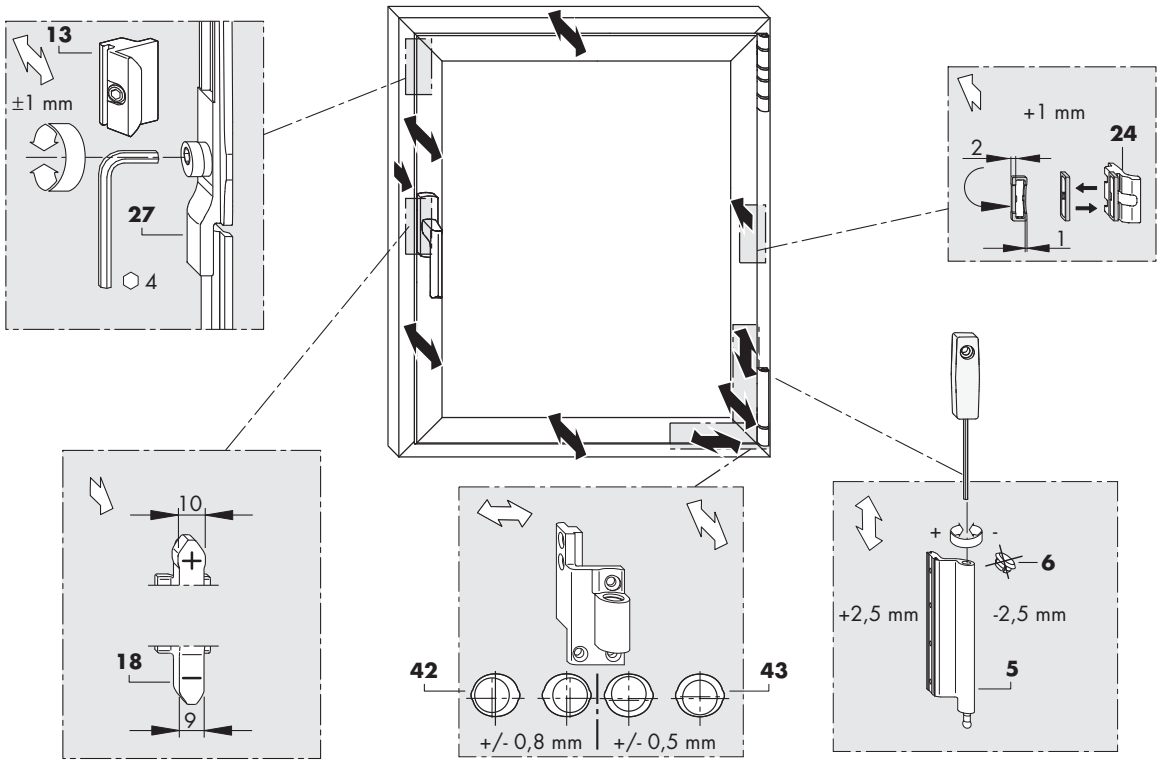








Adjustment possibilities



Pos.	Qty.	Material short text				Material no.		Material no.
1-10	1	**VS LM 4200-DS A0109**	*Passive sash*		1	**879368**	20	**266885**
–	1	**BS 300-D BD 6.5**		*(Refer to ill. on page 7 - 8)*		*(Refer to page 2 for material no.)*		
23-24	0...1	**MV LM 4200-D VS/BS**	*(b > 1250 mm)*	*(Refer to ill. on page 5 - 6)*	1	**857052**	20	**246986**
33-36	0...1	**Hinge set LM Universal**	*(b > 2200 mm) (> 200 kg)*	*(Refer to ill. on page 7 - 8)*		*(Refer to page 2 for material no.)*		

Basic safety advice

Stipulated use

The specified hardware in this document is intended for installation in aluminium window frames by a specialised fenestration company in accordance with these instructions. The windows may only be vertically installed.
The specialised fenestration company must ensure the suitability of the hardware for the intended purpose, based on the
specifications in both these instructions and in the other specified documents.

Avoid overstressing

Hinge components can break from overstressing. As a result, the sash can fall out and cause severe injuries.

- If a high level of stress is expected on the hinge components, limit the opening angle with a limit stay LM with brake.
  A high level of stress is to be expected for example in schools and kindergardens.

Do not mix hardware components

The hardware components are technically coordinated with each other. The secure function of the hardware is not warranted if hardware components from other systems or from other manufacturers are intermixed on a window. Hardware components can break and cause accidents.

- Only use the hardware components stated in these instructions together in one window.

Only apply the window's surface-finish prior to installation

- Surface treatment of the window after the installation of the hardware components can restrict the operational reliability of the hardware components.

Avoid damage caused by rust and deposits

Hardware components can be damaged by corrosion-promoting substances, dirt and wetness and can cause hazards.

- Do **not** use any acetic-acid or cross-linked acidic sealing compounds.
- Do **not** use the hardware components in environments where aggressive or corrosion-promoting constituent elements are in the air.
- Keep all rebates free from deposits and soiling, in particular from cement or plaster residue.
- Protect the hardware against moisture.

Clean the hardware carefully

- Clean the hardware only with a soft cloth and mild, pH-neutral cleaning agents in diluted form.
- Avoid having the hardware in contact with scouring agents or aggressive, acidiferous cleaning agents.
- Dry the hardware after cleaning.

Pass on all information to the window user

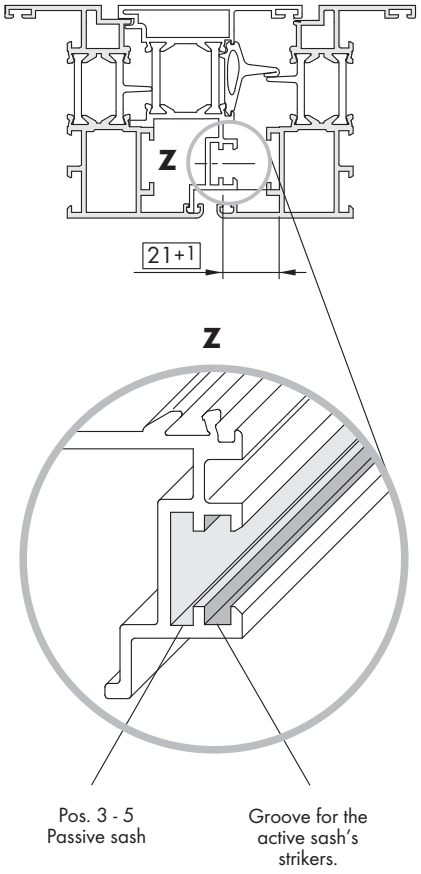
- Display the user information (order no. 05083) visibly on the installed window or door unit.
- Hand over the following printed material to the user:
  - Maintenance & care instructions SI-AU order no. 17772
  - Operating instructions SI-AU order no. 05766

Liability exclusion

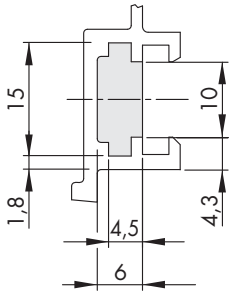
- We are not liable for malfunctions and damage to the hardware, as well as to the windows and balcony doors equipped with the same, if this has been caused by inadequate tendering procedures, non-compliance with these installation instructions, or physical effect of force on the hardware (e.g. due to non stipulated use).

Pos.	Qty.	Material short text				Material no.		Material no.
1-8	1	**VS LM-DS/A A0026**	*Passive sash*		1	**864425**	20	**252192**
	1	**VS LM-DS/A A0006**	*Passive sash*		1	**860823**	20	**249321**
–	1	**BS 300-D BD 6.5**		*(Refer to ill. on page 7 - 8)*	*(Refer to page 2 for material no.)*			
23-24	0...1	**MV LM 4200-D VS/BS**	*(b > 1250 mm)*	*(Refer to ill. on page 5 - 6)*	1	**857052**	20	**246986**
33-36	0...1	**Hinge set LM Universal**	*(b > 2200 mm) (> 200 kg)*	*(Refer to ill. on page 7 - 8)*	*(Refer to page 2 for material no.)*			

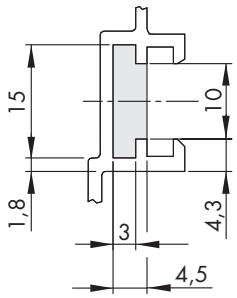
Profile suggestions for dummy mullion sash



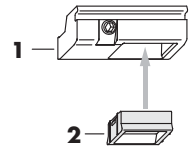
Z
Version A0026

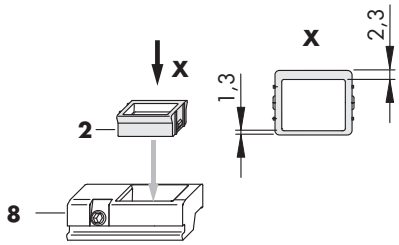


Z
Version A0006



Gasket compression adjustment of the pressure pieces (pos. 2) +1 mm





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ALU-RB

Turn-and-tilt hardware with mishandling device (FBS) on the gear (G) for round-arch /segmental-arch windows and patio doors

Size range (it is essential to observe the particulars of the system provider)

		min.	max.
Sash width	(mm)	500	1200
Sash height	(mm)	800	2200
Sash weight	(kg)	**max. 80**	

It is imperative that the information from the aluminium planning manual is adhered to:

Directives of the Trade Organisation for Locks and Fittings (Gütegemeinschaft Schlösser und Beschläge e. V.)
- Document no. H45.4200LS001EN

Application diagram intended use:
- Document no. H58.AWD_BG_EN

Basic safety notes
- Document no. H45.5200LS001EN

Abbreviations:
- Document no. H45.5200LS002EN

Setting possibilities
- Document no. H45.5200LS004EN

Profile recommendation:
- Document no. H48.ZubhLS008EN

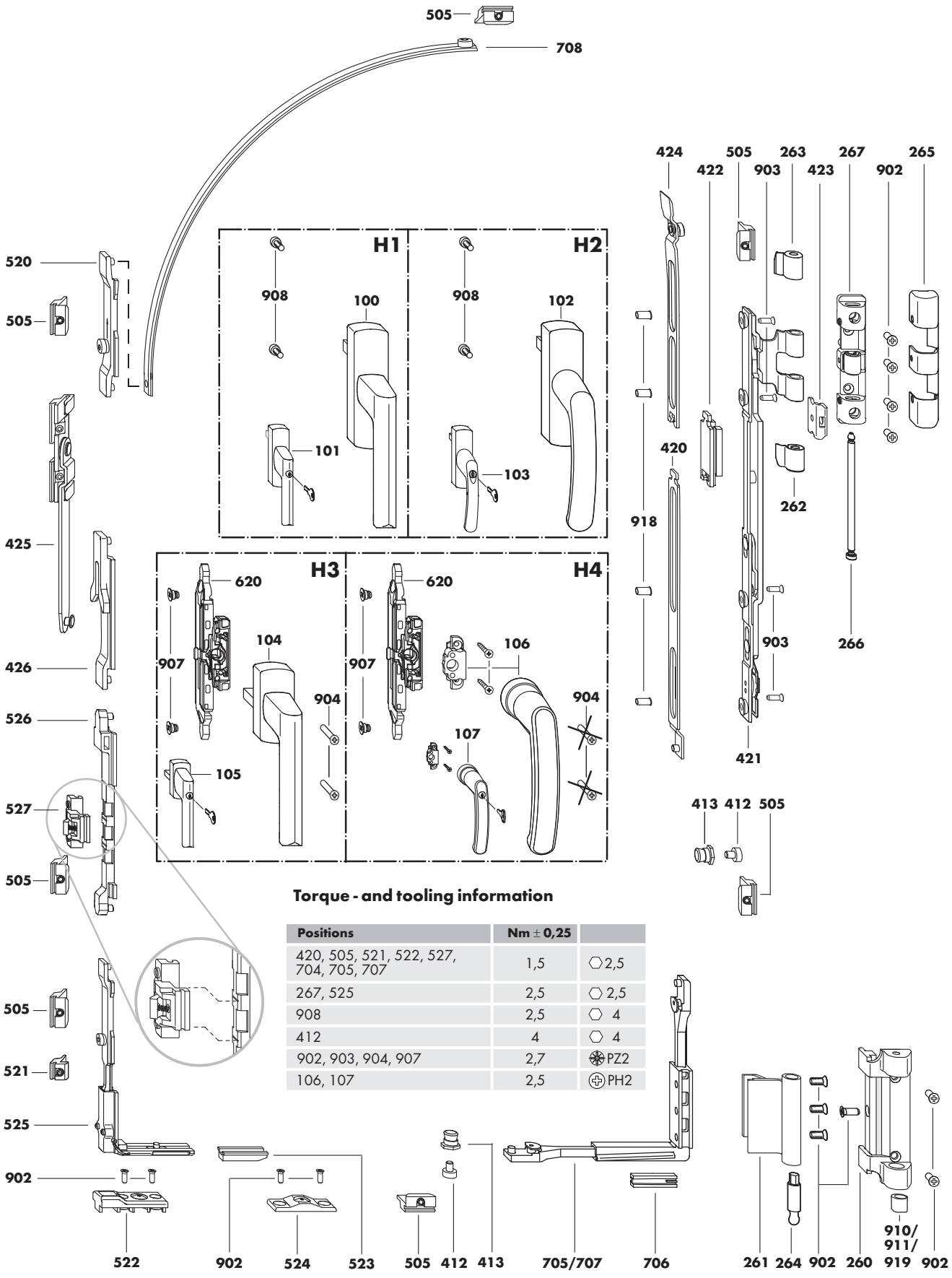
Updated directory of the documents:
- Document no. H45.5200LS005EN

Table of contents

Assembly instructions

H48.RBLS001en

H48.RBLS001en/0



Torque - and tooling information

Positions	Nm ± 0,25	
420, 505, 521, 522, 527, 704, 705, 707	1,5	⬡2,5
267, 525	2,5	⬡2,5
908	2,5	⬡ 4
412	4	⬡ 4
902, 903, 904, 907	2,7	PZ2
106, 107	2,5	PH2

	No.	Piece	Designation		Material no.	P/U	Material-No.	P/U
H1	100	1	**Handle LM**		**See ALU handle overview, document no.: H48.ZubhLS007en in planning manual ALU**			
	101		**Handle LM lockable**					
H2	102		**Handle LM Globe**					
	103		**Handle LM Globe lockable**					
H3	104		**Handle TITAN**	*Only use in combination with gear set (ESG)*	**(□ 7 mm x 25, cam ∅ 10 mm)**			
	105		**Handle TITAN lockable**					
H4	106		**Handle round rose**		**See Handle Globe RR, document no.: H48.ZubhLS006en in planning manual ALU**			
	107		**Handle round rose lockable**					
		1	**BS LM-RB/SF**	*Si-silver*	**MMBS0050-525010**	**1**	**MMBS0050-525020**	**10**
				SI-brown	**MMBS0050-533010**	**1**	**MMBS0050-533020**	**10**
				RAL 9010 white	**MMBS0050-503010**	**1**	**MMBS0050-503020**	**10**
				RAL 9016 white	**MMBS0050-504010**	**1**	**MMBS0050-504020**	**10**
				black	**MMBS0050-523010**	**1**	**MMBS0050-523020**	**10**
	260	1	Bottom hinge					
	261	1	Corner hinge					
	262	1	Cover cap WRB right					
	263	1	Cover cap WRB left					
	264	1	Bottom hinge pin					
	265	1	Cover cap S7					
	266	1	Top hinge pin					
	267	1	Top hinge					
	902	10	Countersunk screw M5 x 13					
	903	4	Countersunk screw M5 x 19					
	910	1	AV pressure piece	*For pressure setting ± 0.5 mm* } s. page 19				
	911	1	SV pressure piece	*For side adjustment ± 0.8 mm* }				
	918	4	Clinch nut					
	919	1	Pressure piece					
		1	**Top stay LM-RB/SF**		**894293**	**1**	**303894**	**20**
	420	1	Coupling piece					
	421	1	Top stay LM-RB/SF					
	422	1	Locking bolt					
	423	1	Supporting piece RB					
	424	1	Locking bolt					
H1/H2 H3/H4		1	**VS LM-RB/SF**		**894286**	**1**	**303887**	**20**
	505	3	Striker					
	520	1	Locking bolt MV					
	521	1	Striker RB					
	522	1	Tilt locking part RB					
	523	1	Run up block RB					
	524	1	Run-up VSU-RB					
	525	1	Corner drive VSU-RB					
	526	1	Coupling bracket	*Is omitted for gear set (ESG)*				
	527	1	Mishandling device	*Is omitted for gear set (ESG)*				
	902	4	Countersunk screw M5 x 13					
	908	2	Cheese head screw M5 x 12	*Is omitted for gear set (ESG)*				
H3/H4		0...1	**Gear set LM FBS (Routed-in drive gear with FBS)**	*Only use in combination with H3/H4, see page 14 and 16. For routed-in drive gear assembly (ESG), see document no. H48.ZubhLS005en*	**MMGI0080-100010**	**1**	**MMGI0080-100030**	**20**
	620	1	ESG LM FBS M6					
	904	2	Countersunk screw M5 x 35					
	907	2	Coupling screw M6					
		0...1	**Corner drive LM 3100-BSU** *DIN right*		**851357**	**1**	**241158**	**20**
	705	1	Corner drive right LM 3100					
	706	1	Clamping piece					
		0...1	**Corner drive LM 3100-BSU** *DIN left*		**851364**	**1**	**241165**	**20**
	707	1	Corner drive left LM 3100					
	706	1	Clamping piece					
depending on FB/FH		0...1	**Additional stay LM-RB/SF**	*See size ranges 2 - 7*	**894323**	**1**	**303924**	**10**
	425	1	Additional stay					
	426	1	Striker plate					
		0...2	**MV LM-RB/SF**	*See size ranges 3, 5, 6, 7*	**894316**	**1**	**303917**	**20**
	505	2	Striker					
	412	1	Locking cam					
	413	1	Eccentric rivet					
FB	708	0...1	**Centre lock operating rod**	*From FB 900 mm (not applicable for segmental arch!)*	**894309**	**1**	**303900**	**20**

Use of graphics

The graphics (pages 5-11) enable a classification in terms of the use of ZS, MVs and MVw dependent on ARb and FB.
This is based on the minimum bending radii of the profile to be used (for example see table below).

According to the size range (AWB 1-7) of the selected sash format, the sash can only be constructed on adherence to the defined requirements.
All formats, which do not fall within the scope of the described AWB, are therefore NOT CONSTRUCTABLE.

In these cases, please speak to your system provider in order to find an individual solution.

Abbreviations

(See document no. H45.5200LS002EN for further information):

ARb	begin round arch (in sash)
ASb	begin segmental arch (in sash)
AWB	size range
ESG	routed-in size gear
FB	sash width
FH	sash height
H1...H4	handle designs
MV	centre lock
MVs	centre lock vertical
MVw	centre lock horizontal
RB	round arch
ZS	additional stay
P/U	packaging unit

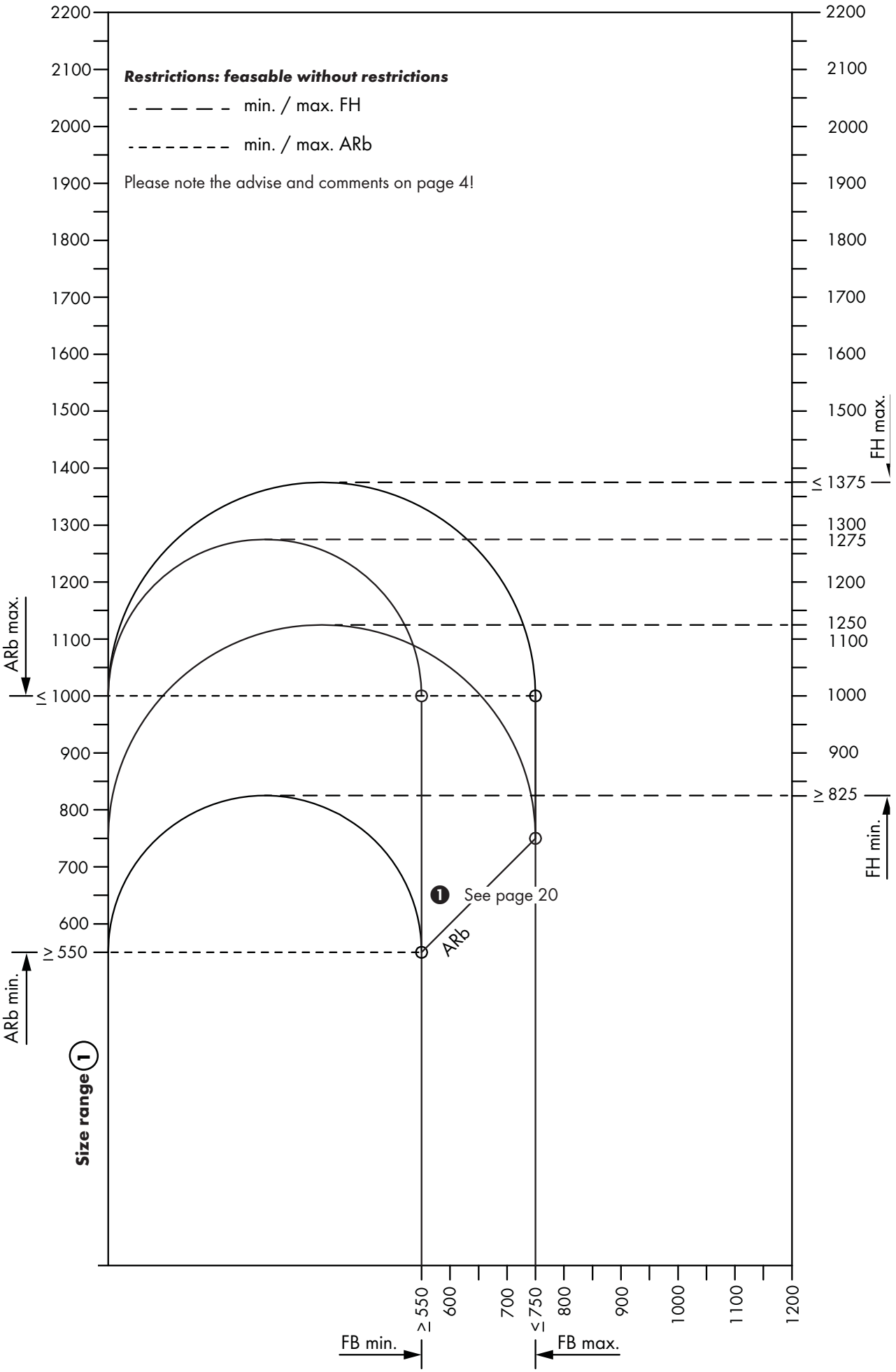
Note:

Centre lock vertical and centre lock horizontal are centre locks which must be employed in addition to the strikers (item 505) according to the sash width and height. The details for FH are approximate details and are dependent on the profiles used.
It is essential to adhere to the details of the system provider with regard to profiles and minimum bending radii.

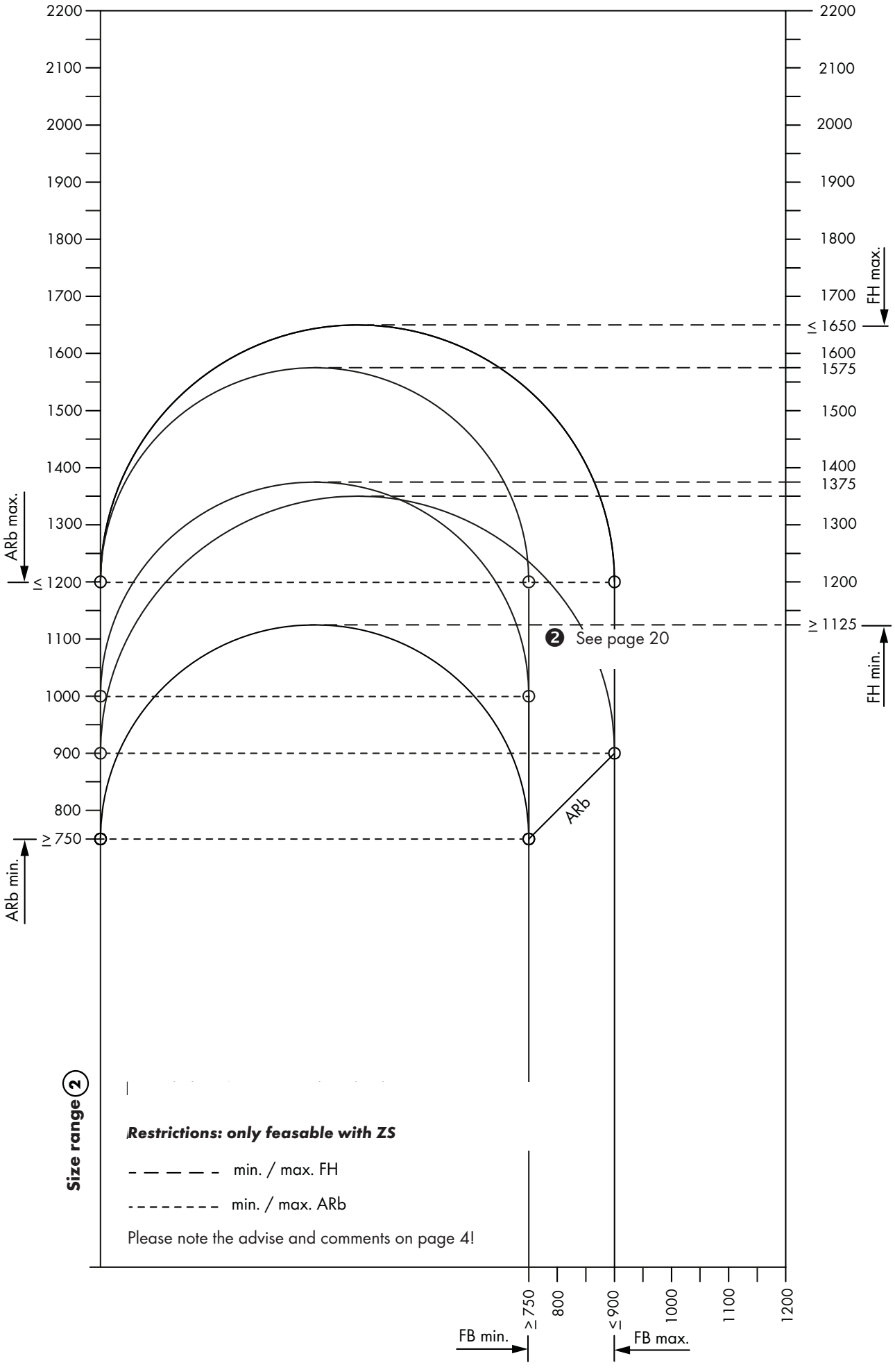
The represented sash formats and calculation dimensions represent the technically feasible framework conditions. In practice deviations could occur due to the profiles or bending radii employed. Hence always contact your system provider in case of inconclusive determination of the size ranges.

See page 20 for calculation values for handle dimensions G1 and G2 as well as for push rod dimensions S1 and S2 or S2a and S2b with gear with coupling bracket or routed-in drive gear (ESG) with examples of calculations. All measurements in mm.

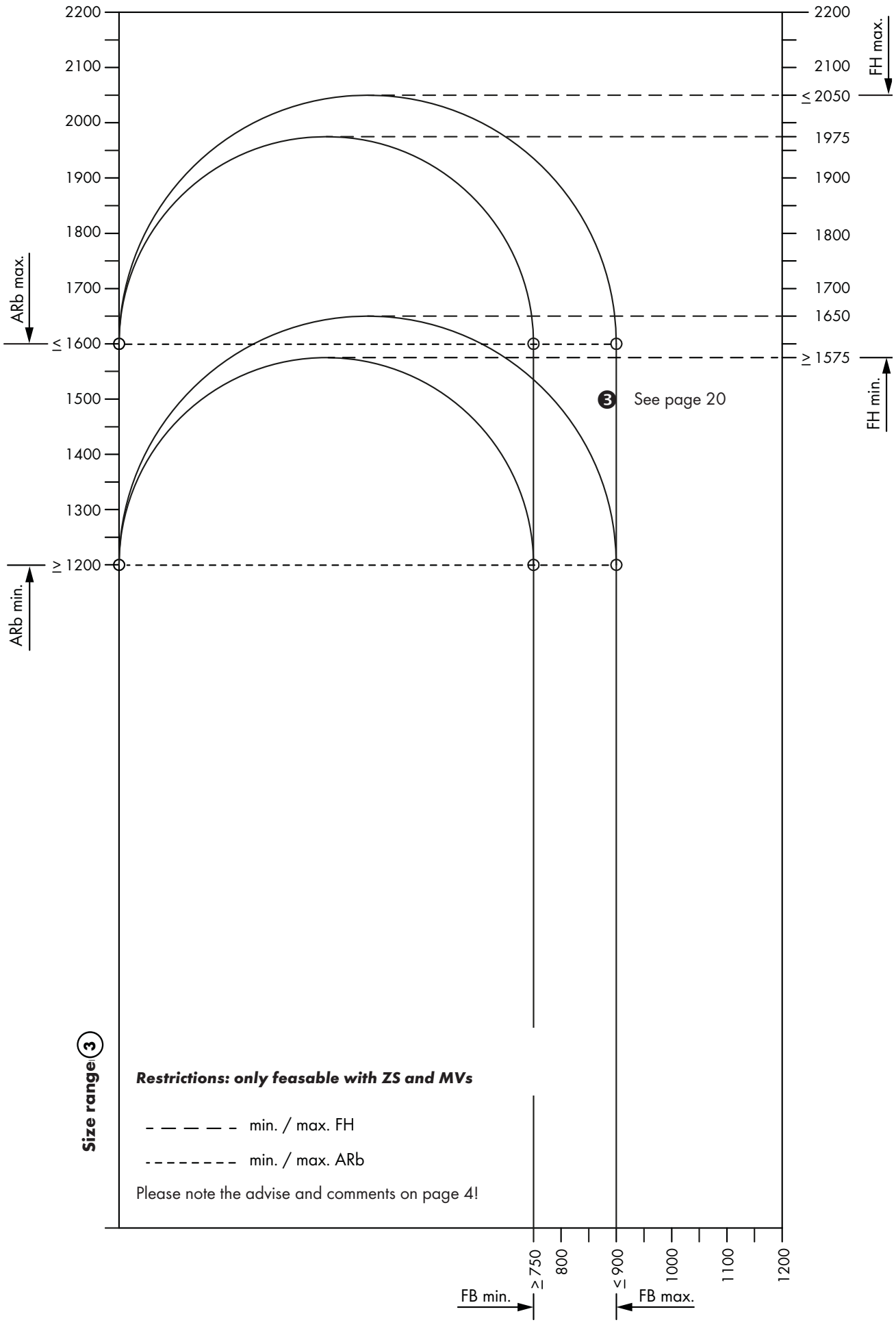
ALU-RB *Size range ① (handle H1/H2 with coupling bracket)*



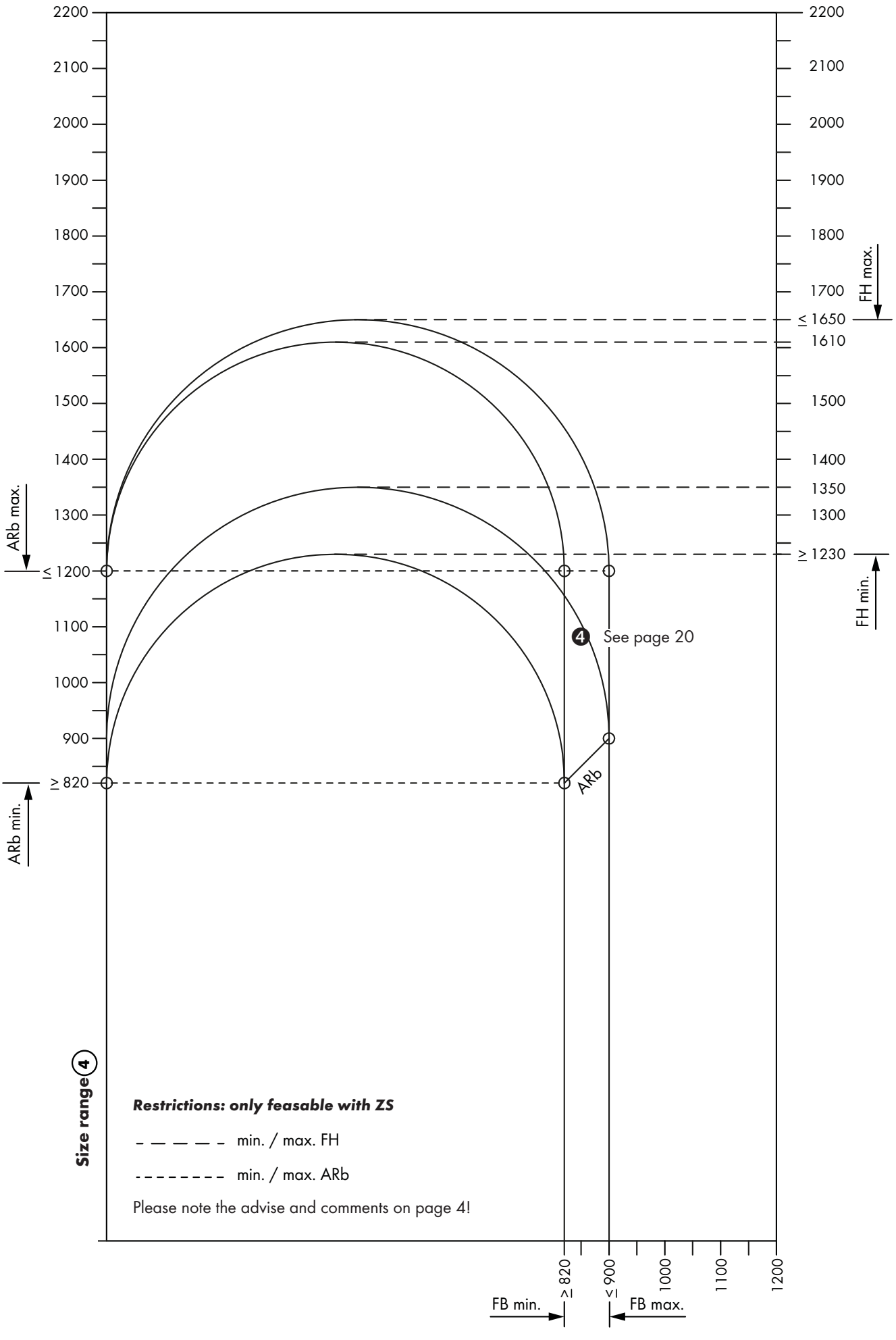
ALU-RB *Size range ② (handle H1/H2 with coupling bracket)*



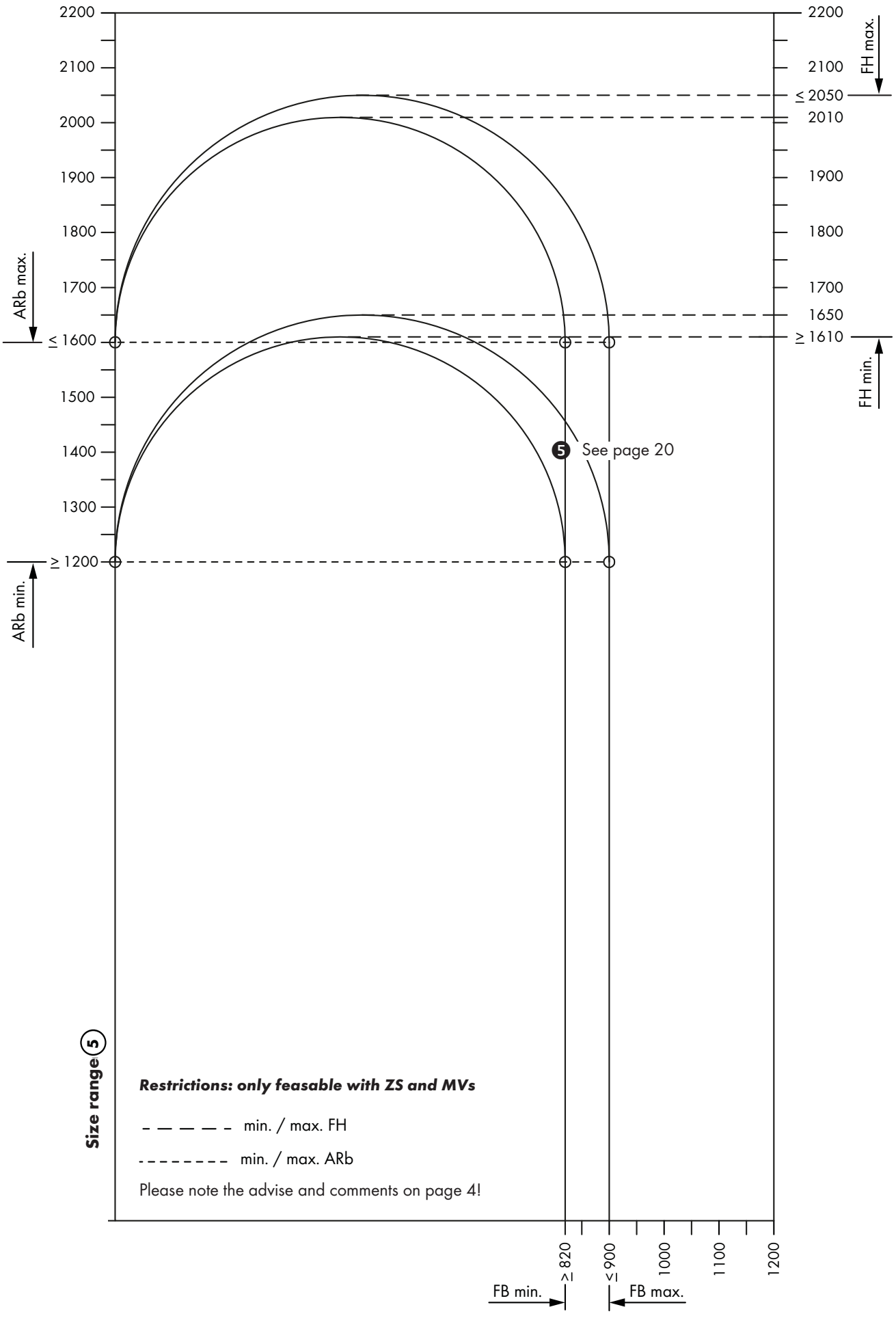
ALU-RB *Size range ③ (handle H1/H2 with coupling bracket)*



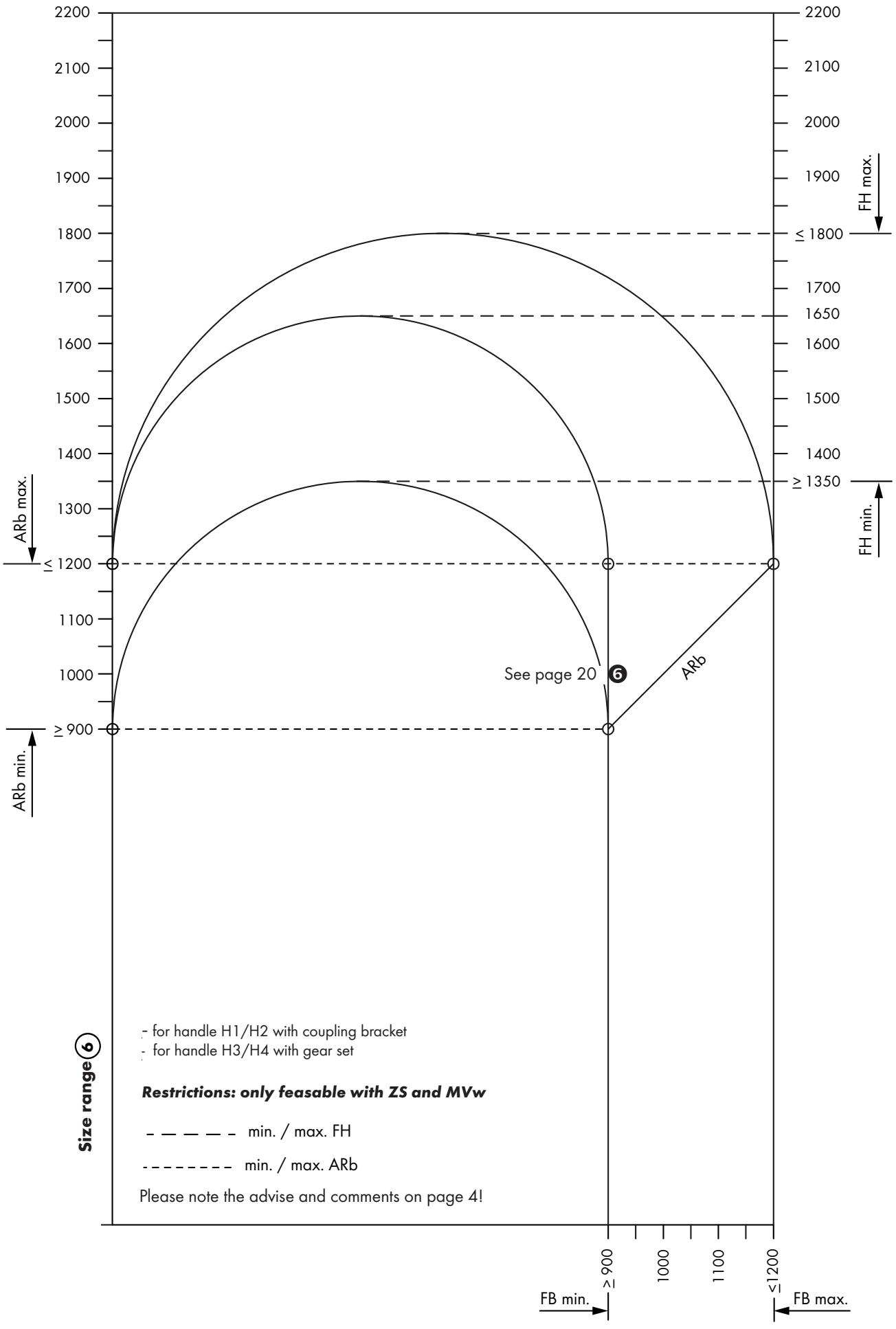
ALU-RB *Size range ④ (handle H3/H4 with gear set)*



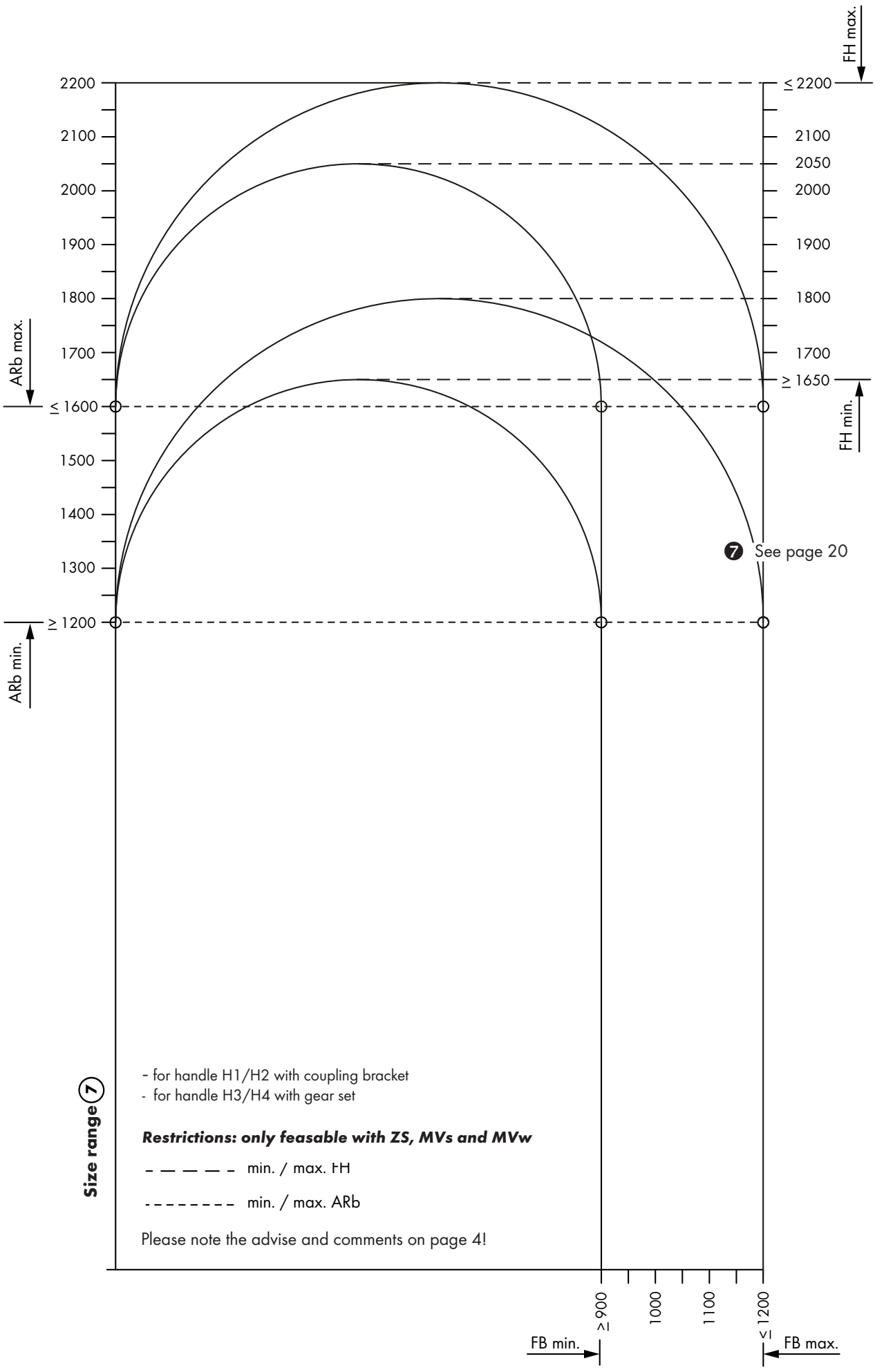
ALU-RB *Size range ⑤ (handle H3/H4 with gear set)*



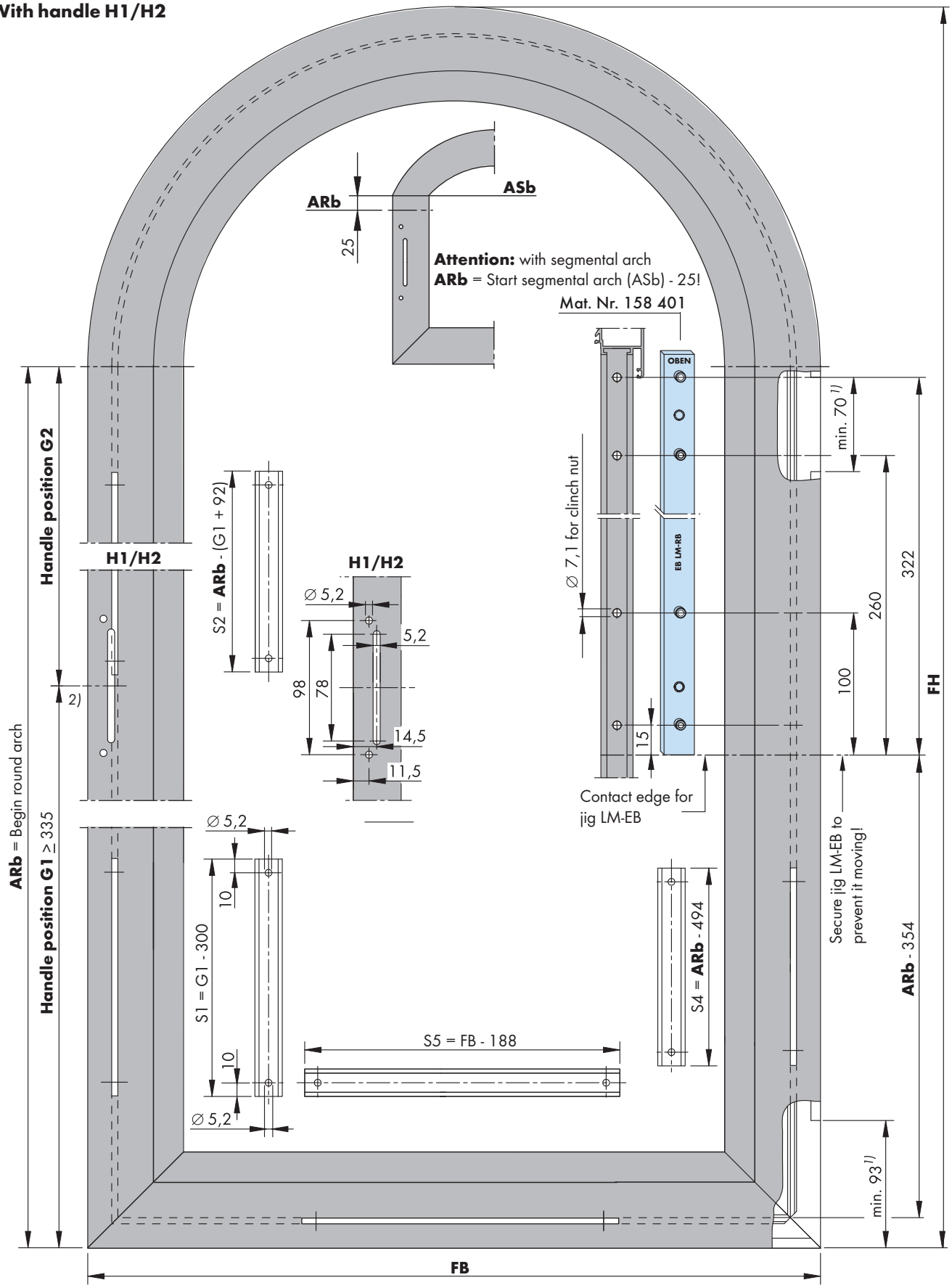
ALU-RB *Size range ⑥ (handle H1/H2 or H3/H4)*



ALU-RB *Size range ⑦ (Handle H1/H2 or H3/H4)*



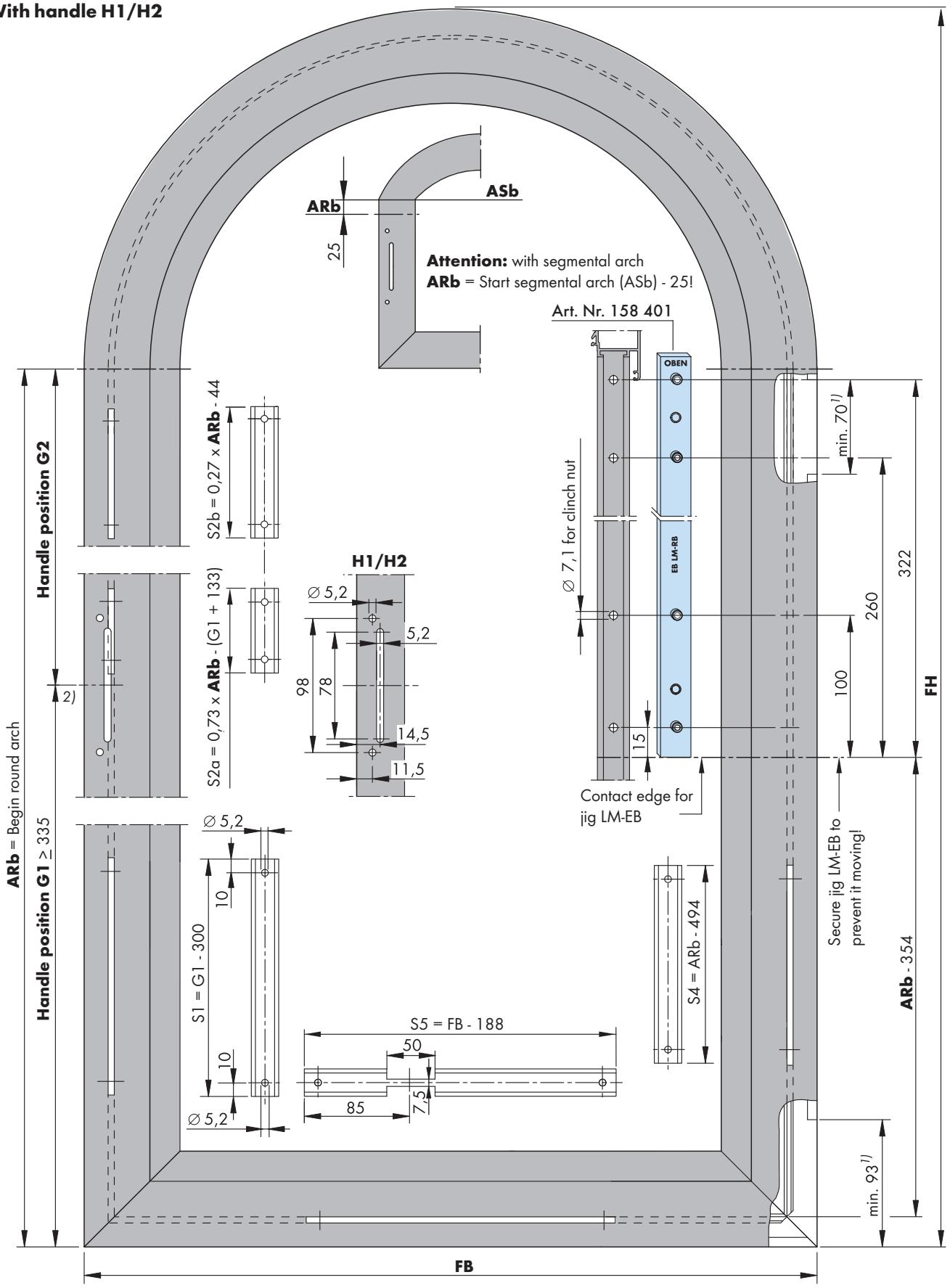
With handle H1/H2



1) Remove the rebate seal in the hinge gap area. Minimum gap 4 mm.

2) In the area of the tilt handle of the mishandling device (**527**)*, remove the stop clip of the inner seal or the stop ridge of the sash rebate. Check the function of the mishandling device (***527***) when mounting the hardware.*

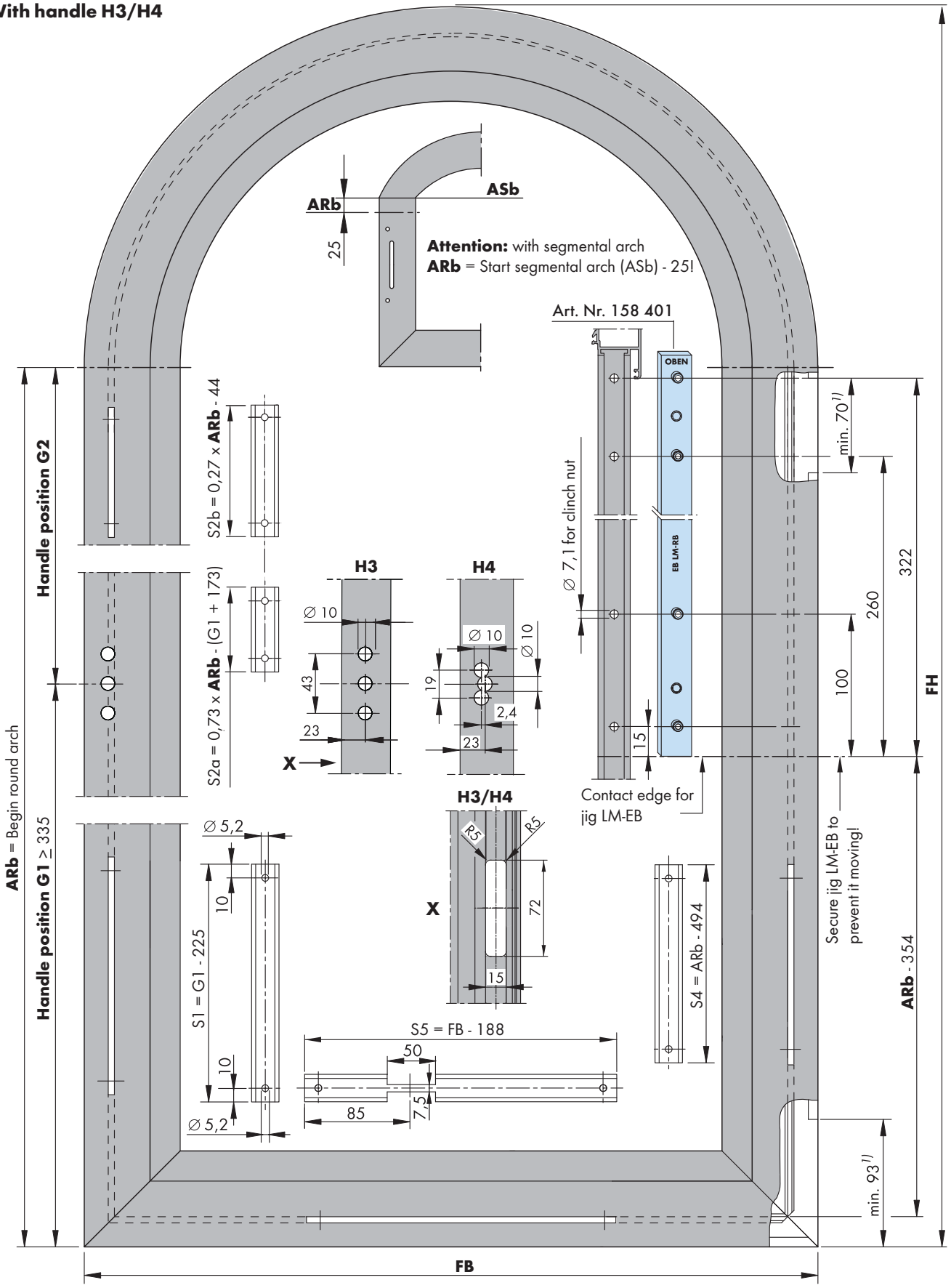
With handle H1/H2



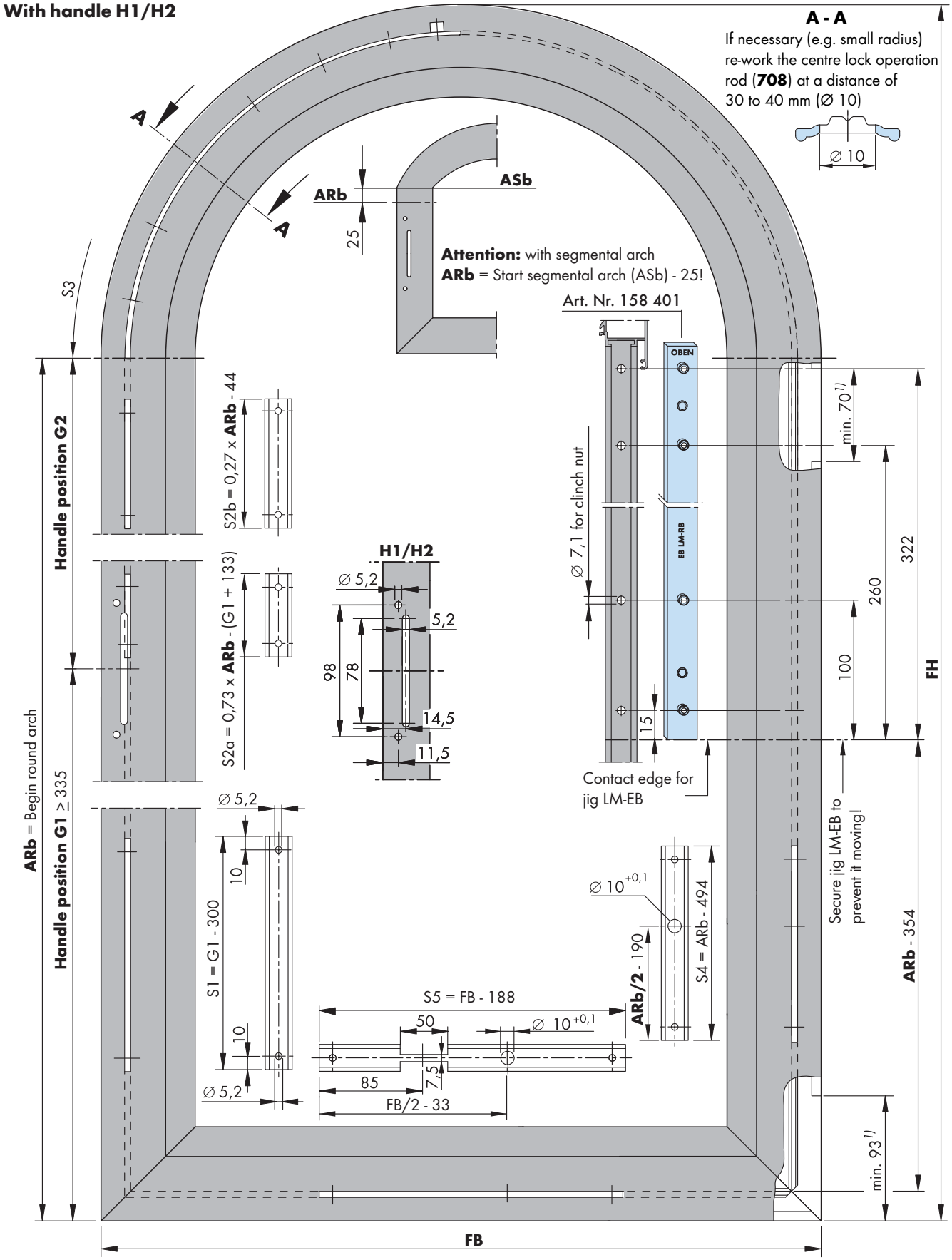
1) Remove the rebate seal in the hinge gap area. Minimum gap 4 mm.

2) In the tilt handle area of the mishandling device (**527**)*, remove the stop clip of the inner seal or the stop ridge of the sash rebate. Check the function of the mishandling device (***527***) when mounting the hardware.*

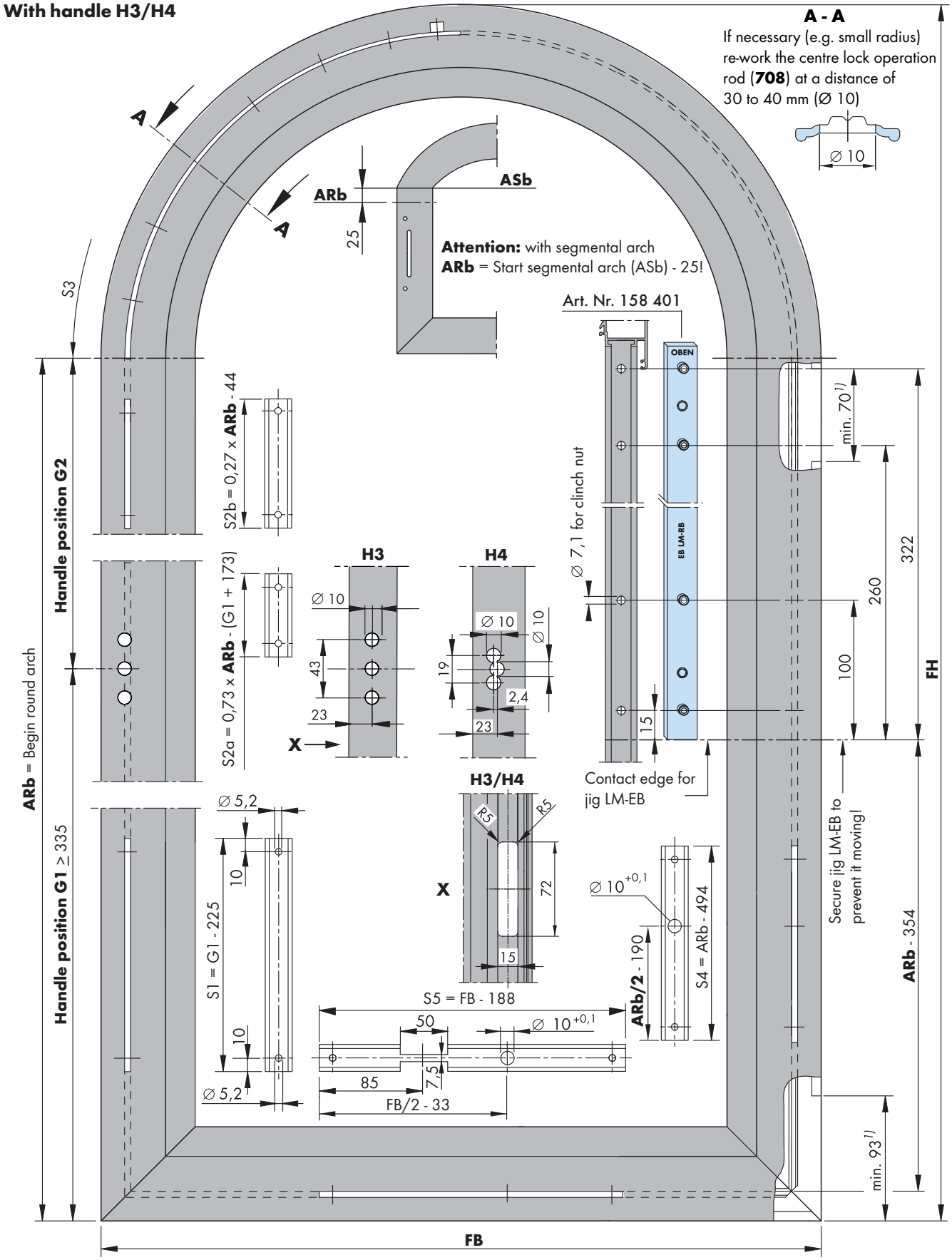
With handle H3/H4



1) Remove the rebate seal in the hinge gap area. Minimum gap 4 mm.



1) Remove the rebate seal in the hinge gap area. Minimum gap 4 mm.



1) Remove the rebate seal in the hinge gap area. Minimum gap 4 mm.

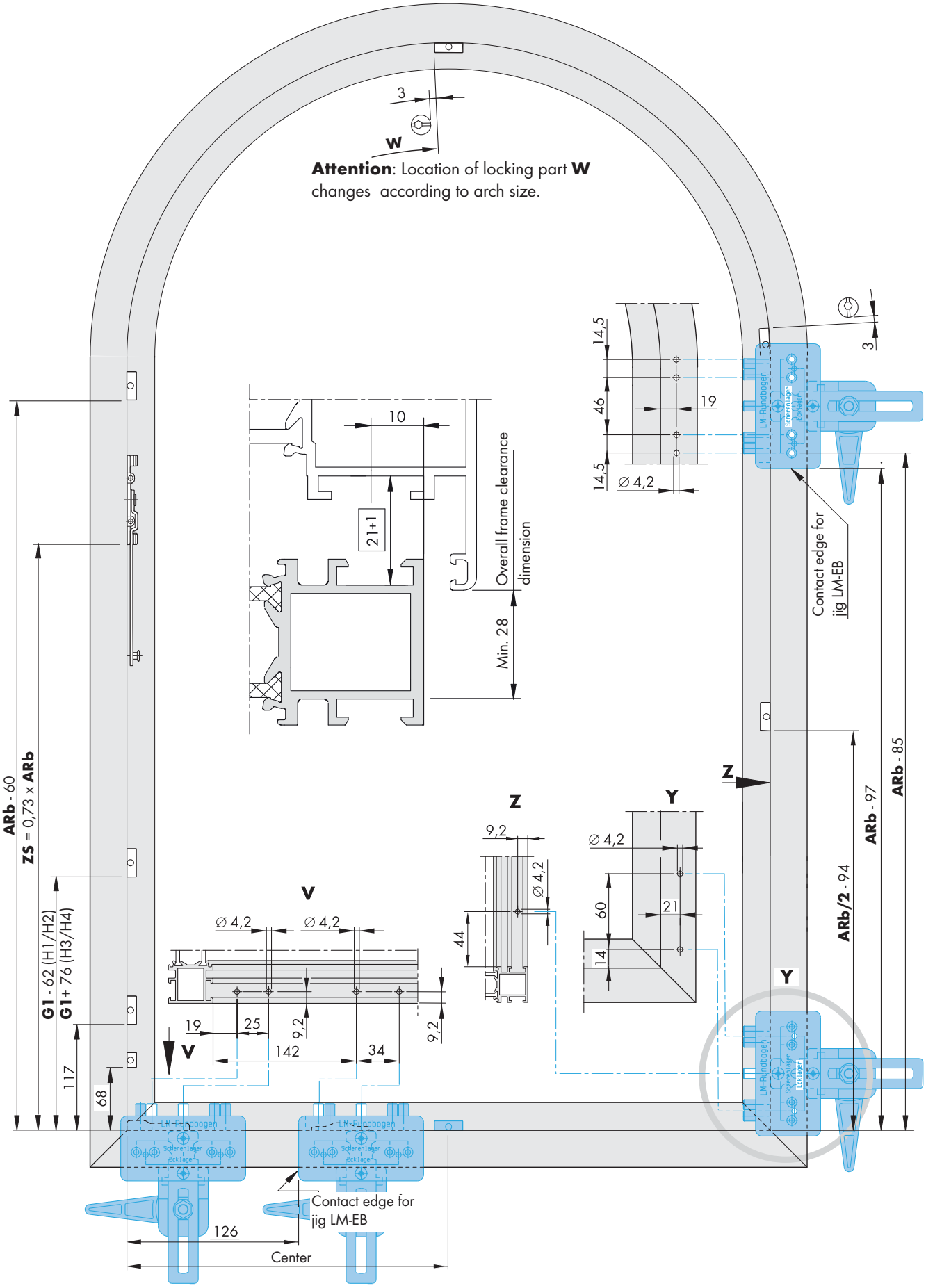
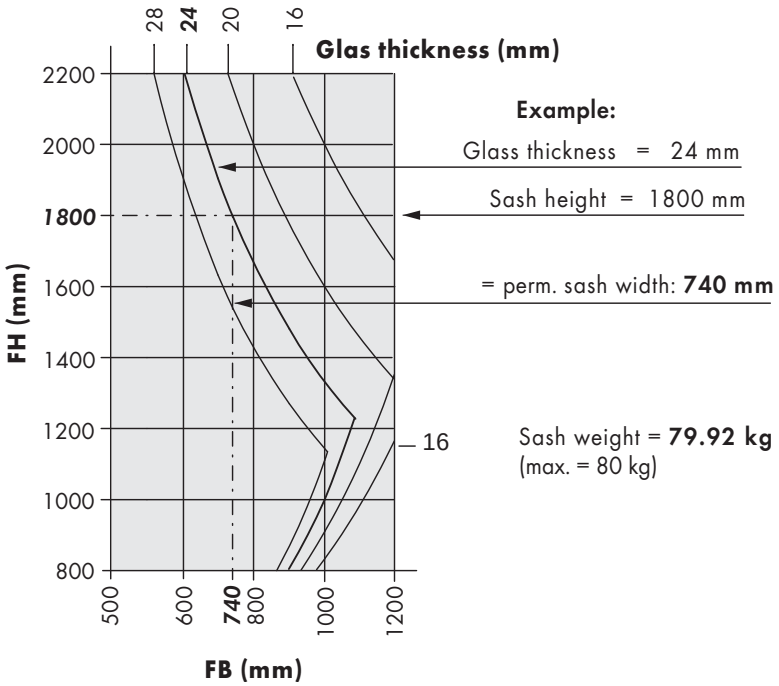

3
W
Attention: Location of locking part **W** changes according to arch size.
10
21+1
Overall frame clearance dimension
Min. 28
14,5
46
14,5
19
Ø 4,2
3
Contact edge for jig LM-EB
ARb - 60
ZS = 0,73 x **ARb**
G1 - 62 (H1/H2)
G1+ 76 (H3/H4)
117
68
V
Ø 4,2
Ø 4,2
19
25
9,2
142
34
9,2
V
Z
9,2
Ø 4,2
44
Y
Ø 4,2
60
21
14
Z
Y
ARb - 97
ARb/2 - 94
ARb - 85
LM-Rundbogen
Scherenlager
Ecklager
LM-Rundbogen
Scherenlager
Ecklager
Contact edge for jig LM-EB
126
Center

Table for determining the permissible sash weight



Glass-thickness (mm)	*Weight (kg/m^2)*
28	70
24	**60**
20	50
16	40
12	30

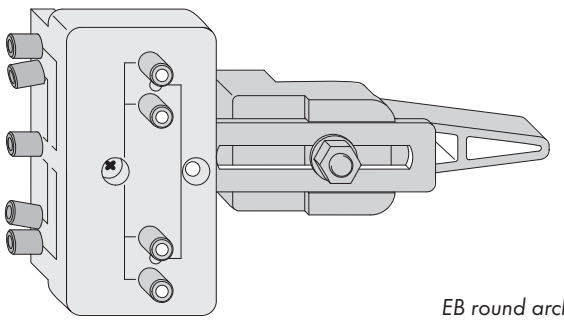
Sash weight = **79.92 kg** (1.8 m x 0.74 m x 60 kg)
(max. = 80 kg)

For glass thicknesses of less than 12 mm, all sash sizes that lie within the size range and do not exceed an aspect ratio FB/FH of 1.5 are permissible.

Maximum permissible sash weight: 80 kg

Jigs

Material description	Material no.
Jig LM RB/SF	**158 388**
Jig LM EB round arch	158 418
Jig LM EB round arch stay	158 401



EB round arch

Required Tools	See assembly instructions H48.ZubhLS009en

EB round arch stay

Installation of the supporting piece Rb (423)

Position supporting piece Rb (**423**) as DIN right or DIN left on intended stop radius and secure with countersunk screw M5 x 19 (**903**) (torque 2.7 ± 0.25 Nm), see fig. 1.

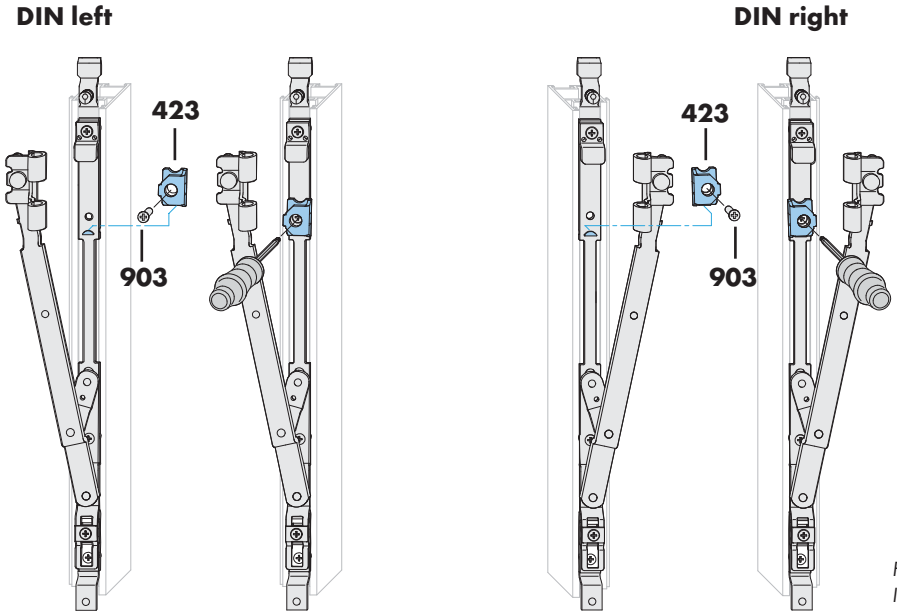


Fig. 1
Installation of the supporting piece Rb

Final assembly
(see overview of hardware page 2)

A Mounting the sash. Push the top hinge pin (**266**) from below into the top hinge (**267**).
Ensure that the top hinge pin (**266**) engages.

B Secure top hinge pin (**266**) with the grub screws of the top hinge (**267**) (hexagon screwdriver SW 2.5), see fig. 2.

C Check the functioning of the window.

D Attach cover cap S7 (**265**) to top hinge (**267**).

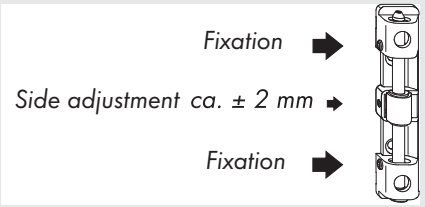


Fig. 2 *Fixation of the top hinge pin*

Adjustment possibilities
(see hardware overview page 2)

A Side adjustment: insert in hinge pin (**267**) approx. ± 2 mm
by means of pressure piece SV **(911)** approx. ± 0.8 mm, in bottom hinge (**260**)

B Height adjustment: via 4 mm head cap screw in corner hinge (**261**) approx. +1.5/-1 mm
integrated in tilt locking part Rb (**522**) approx. +1.5/-1 mm

C Pressure: via eccentric locking cam in sash hardware parts approx. ± 1 mm, by means of pressure piece AV **(910)** approx. ±0.5 mm, in bottom hinge (**260**)

D Tilt function: Extending and retracting adjustment via elevating adjustment in run-up VSU-RB (**524**) adjustable

Size ranges for handle H1/H2 (with coupling bracket):							**without ZS**	**with ZS**	
Size	**ARb (ARb min. > FB!)**	**FB**	**G1**	**G1 max.**	**G2**	**S1**	**S2**	**S2a min. > 48!**	**S2b**
Specific.	**≥ 550 ≤ 1000**	**≥ 550 ≤ 750**	**≥ 335**	**ARb - 150**	**ARb - G1**	**G1 - 300**	**ARb - (G1 + 92)**	**-**	**-**
Example ❶	*650*	*590*	*350*	*650 - 150* ***G1 max. = 500***	*650 - 350* ***G2 = 300***	*350 - 300* ***S1 = 50***	*650 - (350+92) =650 - 442* ***S2 = 208***	**-**	**-**
Specific.	**≥ 750 ≤ 1200**	**≥ 750 ≤ 900**	**≥ 335**	**(0,73 x ARb) - 166**	**ARb - G1**	**G1 - 300**	**-**	**0,73 x ARb - (G1 + 133)**	**0,27 x ARb - 44**
Example ❷	*1100*	*800*	*600*	*(0,73 x 1100) - 166 = 803 - 166* ***G1 max. =637***	*1100 - 600* ***G2 = 500***	*600 - 300* ***S1 = 300***	**-**	*0,73 x 1100 - (G1+ 133)= 803 - (600 + 133)=* ***S2a = 70***	*0,27 x ARb - 44= 0,27 x 1100= 297 - 44* ***S2b = 253***
Specific.	**≥ 1200 ≤ 1600**	**≥ 750 ≤ 900**	**≥ 335**	**(0,73 x ARb) - 166**	**ARb - G1**	**G1 - 300**	**-**	**0,73 x ARb - (G1 + 133)**	**0,27 x ARb - 44**
Example ❸	*1500*	*899*	*450*	*(0,73 x 1500) - 166 = 1095 - 166* ***G1 max. = 929***	*1500 - 450* ***G2 = 1050***	*450 - 300* ***S1 = 150***	**-**	*0,73 x 1500 - (G1+ 133)= 1095 - (600 + 133)=* ***S2a = 362***	*0,27 x ARb - 44= 0,27 x 1500= 405 - 44* ***S2b = 361***
Specific.	**≥ 1200 ≤ 1600**	**≥ 900 ≤ 1200**	**≥ 335**	**(0,73 x ARb) - 166**	**ARb - G1**	**G1 - 300**	**-**	**0,73 x ARb - (G1 + 133)**	**0,27 x ARb - 44**
Example [1] ❼	*1300*	*1100*	*340*	*(0,73 x 1300) - 166 = 949 - 166* ***G1 max. = 783***	*1300 - 340* ***G2 = 960***	*340 - 300* ***S1 = 40***	**-**	*0,73 x 1300 - (G1+ 133)= 949 - (340 + 133)=* ***S2a = 476***	*0,27 x ARb - 44= 0,27 x 1300= 351 - 44* ***S2b = 307***

Size ranges for handle H3/H4 (with gear set):							**without ZS**	**with ZS**	
Size	**ARb (ARb min. > FB!)**	**FB**	**G1**	**G1 max.**	**G2**	**S1**	**S2**	**S2a min. > 48!**	**S2b**
Specific.	**≥ 820 ≤ 1200**	**≥ 820 ≤ 900**	**≥ 335**	**(0,73 x ARb) - 228**	**ARb - G1**	**G1 - 225**	**-**	**0,73 x ARb - (G1 + 173)**	**0,27 x ARb - 44**
Example ❹	*1100*	*850*	*500*	*(0,73 x 1100) - 228 = 803 - 228* ***G1 max. = 575***	*1100 - 500* ***G2 = 600***	*500 - 225* ***S1 = 275***	**-**	*0,73 x 1100 - (G1+ 173)= 803 - (500 + 173)=* ***S2a = 130***	*0,27 x ARb - 44= 0,27 x 1100= 297 - 44* ***S2b = 253***
Specific.	**≥ 1200 ≤ 1600**	**≥ 820 ≤ 900**	**≥ 335**	**(0,73 x ARb) - 228**	**ARb - G1**	**G1 - 225**	**-**	**0,73 x ARb - (G1 + 173)**	**0,27 x ARb - 44**
Example ❺	*1400*	*820*	*350*	*(0,73 x 1400) - 228 = 1022 - 228* ***G1 max. = 794***	*1400 - 350* ***G2 = 1050***	*350 - 225* ***S1 = 125***	**-**	*0,73 x 1400 - (G1+ 173)= 1022 - (350 + 173)=* ***S2a = 499***	*0,27 x ARb - 44= 0,27 x 1400= 378 - 44* ***S2b = 334***
Specific.	**≥ 900 ≤ 1200**	**≥ 900 ≤ 1200**	**≥ 335**	**(0,73 x ARb) - 228**	**ARb - G1**	**G1 - 225**	**-**	**0,73 x ARb - (G1 + 173)**	**0,27 x ARb - 44**
Example [2] ❻	*1000*	*900*	*500*	*(0,73 x 1000) - 228 = 730 - 228* ***G1 max. = 502***	*1000 - 500* ***G2 = 500***	*500 - 225* ***S1 = 275***	**-**	*0,73 x 1000 - (G1+ 173)= 730 - (500 + 173)=* ***S2a = 57***	*0,27 x ARb - 44= 0,27 x 1000= 270 - 44* ***S2b = 226***

1) For example, AWB ❼ was calculated for handle H1/H2, but can also be calculated for H3/H4 with the formula values taken from the bottom section of the table.
2) For example, AWB ❻ was calculated for handle H3/H4, but can also be calculated for H1/H2 with the formula values taken from the top section of the table.

If the minimum dimension for S2a (> 48) cannot be achieved or negative results are calculated, the value for G1 must be adapted until the minimum dimension is reached. Consult your system provider in this case!
The resulting sash heights, dependent on the ARb and FB, are dependent on the profile and can be determined by the system provider.

For further information see pages 4 to 11. All dimensions rounded to full mm.

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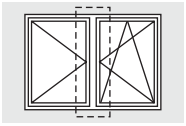
VS LM-DS/A

Locking side LM-DS/A for Aluminium windows



.... with decisive advantages:

- can be combined with BS LM 5200
  BS LM 2200
  BS axxent-D
  LM-D
- DIN right and DIN left can be used
- universally applicable module packing units

Size Range (dependant on fittings)

				Window min.	Window max.
Sash width, second sash	(FB2)	(mm)		350 to 1250[1)]	
Sash height	(FH)	(mm)		680 to 2400	
Sash height	(FH)	(mm)	*only with routed-in drive gear LM, internal*	725 to 2400	

1) N.B.: The sash width must not exceed 1.5 times the sash height!

The details for LM Euro-groove (Pages 5 and 6) with a chamber size of 21 mm (Aluminium profiles for windows and french doors) apply to the SIEGENIA locking side. In addition to this the details given by the system manufacturer must be complied with.
If the dimensions of windows or french doors differ from this please consult SIEGENIA.

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Installation Instructions
H48.VSLS001en

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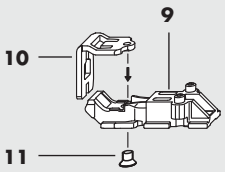
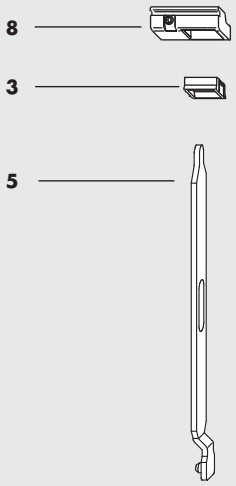
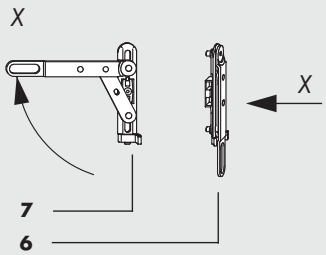
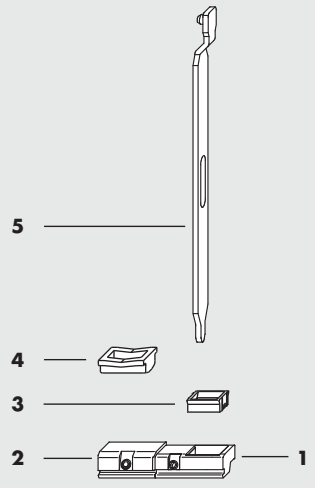




Second sash

1	Locking part DS l.h.
2	Run up block TBT
3	Pressure piece
4	Run up block
5	Shoot bolt
6	Slave sash gear
7	Stop
8	Locking part DS r.h.
9	Stay LM 4200/2200-D
10	Adapter LM 2200-D
11	Csk screw M5 x 7

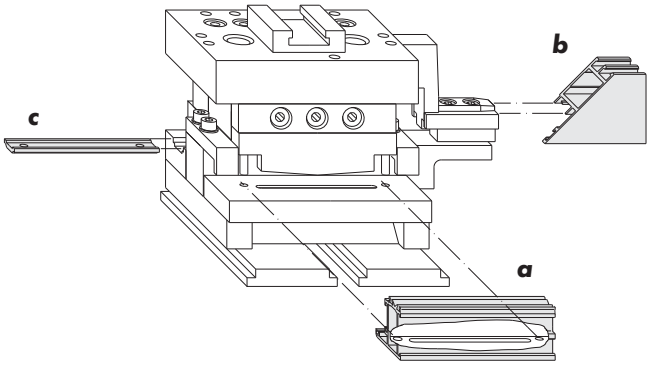




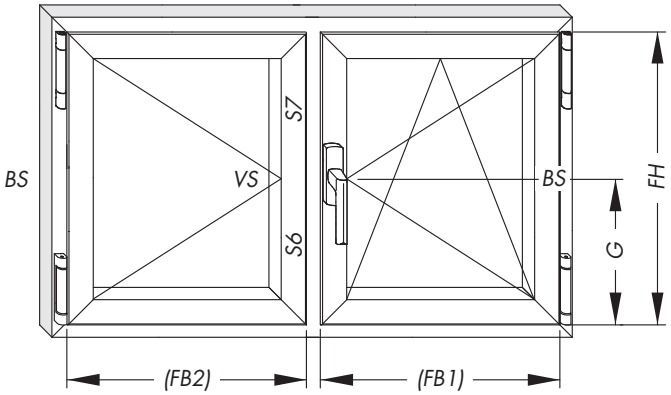
First sash

can be combined with
VS LM 4200-DK
(see grey contoured illust.)
VS LM 4200-D
VS LM-DK FBS-G A0040
VS LM-DK ESG-23 A0040
VS LM-D ESG-23 A0040
VS LM-D economic
VS LM-D A109

	Pos.	Qty A0026	Qty A0006	Description		Part code		Part code
	1 – 8	1	–	VS LM-DS/A A0026	1	864425	20	252192
		–	1	VS LM-DS/A A0006	1	860823	20	249321
	9	1	1	Stay LM 4200/2200-D	1	MSKD0010-100010	100	MSKD0010-100060
	10-11	1	1	Accessories - Turn sash stay LM 2200	1	MZBS0040-000010	20	MZBS0040-000030



Description		EAN 40 12453
Combi-tool	***a*** *Punching out - lever* ***b*** *Aperture for the operating rod guide groove* ***c*** *Operating rod perforation and cropping*	141243
suitable punching tool: BST 105 (15 mm stroke)		139295



Abbreviations

The following abbreviations are used in these fitting instructions:

BS	Hinge side
FB1	Sash width, first sash
FB2	Sash width, second sash
FH	Sash height
G	Handle position
VS	Lock side
S6	Operating rod, lock side, bottom
S7	Operating rod, lock side, top

Fitting Instructions

Preparation

A Open the operating rod guide groove.
B Machine operating rods S6 - S7 in accordance with details given on Page 5.

Sash

A Fit stop (**7**) DIN right or DIN left onto the slave sash gear (**6**).
B Push in shoot bolt (**5**) with operating rod S6 and operating rod S7 with shoot bolt (**5**) vertically on the lock side.
C Fit slave sash gear (**6**) onto the operating rods S6 and S7 and clamp with countersunk screw.
D Fit run up block (**4**).
E Fit stays LM 4200-D (**9**) in accordance with the details given in the- Fitting Instructions H48.4200LS003en or H48.2200LS001en.

Frame

A Position locking parts DS (**1** and **8**) DIN right or DIN left with run up block TBT (**2**) in accordance with details on Page 6 and lock with a grubscrew in each case (Torque 1.5 ± 0.25 Nm).
B Insert pressure pieces (**3**) into locking parts DS (**1** and **8**) as shown on Page 6.

Note

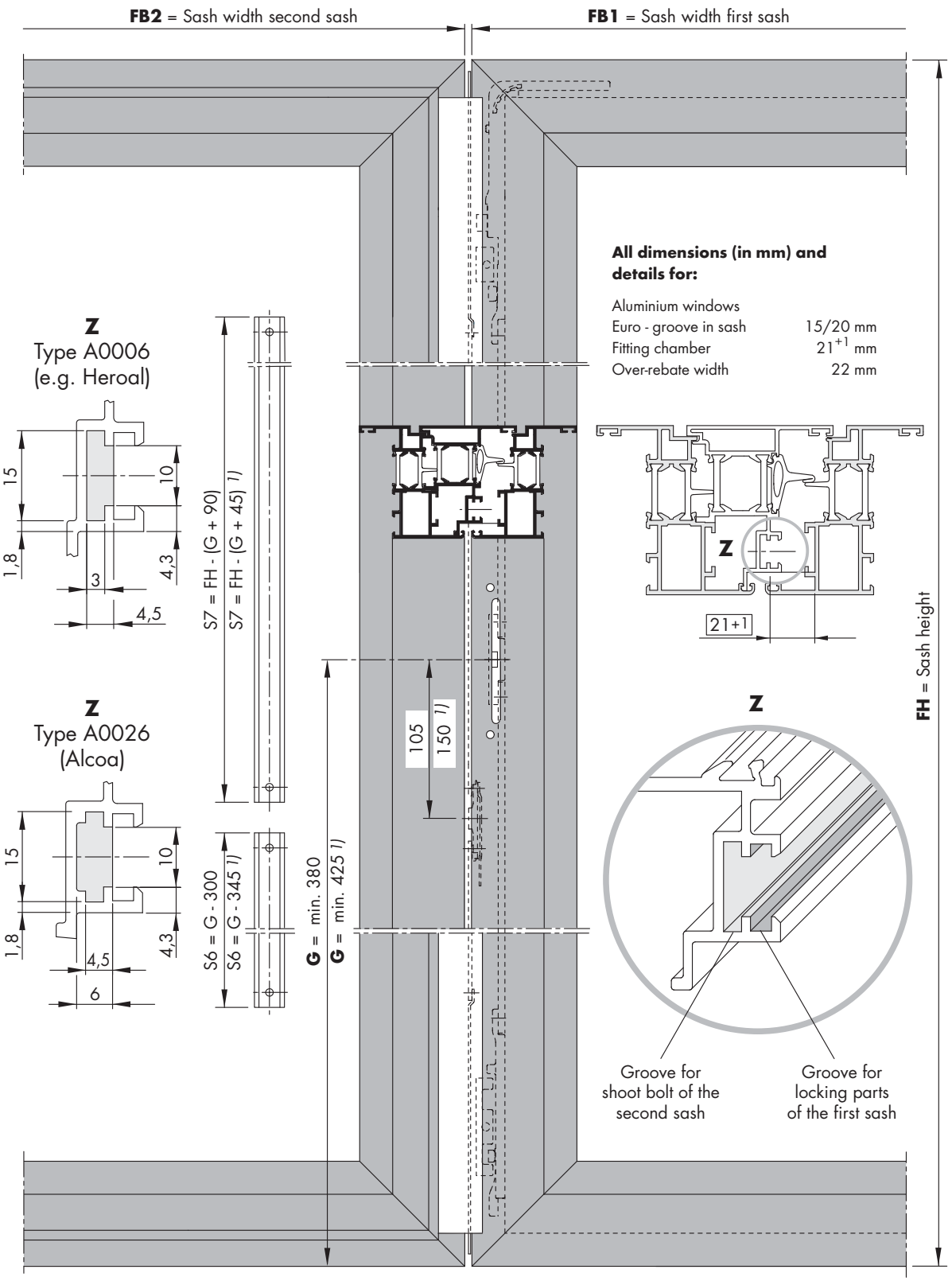
If repeating an installation shoot bolt (**5**) with operating rod S6, slave sash gear (**6**) and operating rod S7 with shoot bolt (**5**) must be pushed in vertically on the locking side

Important notes

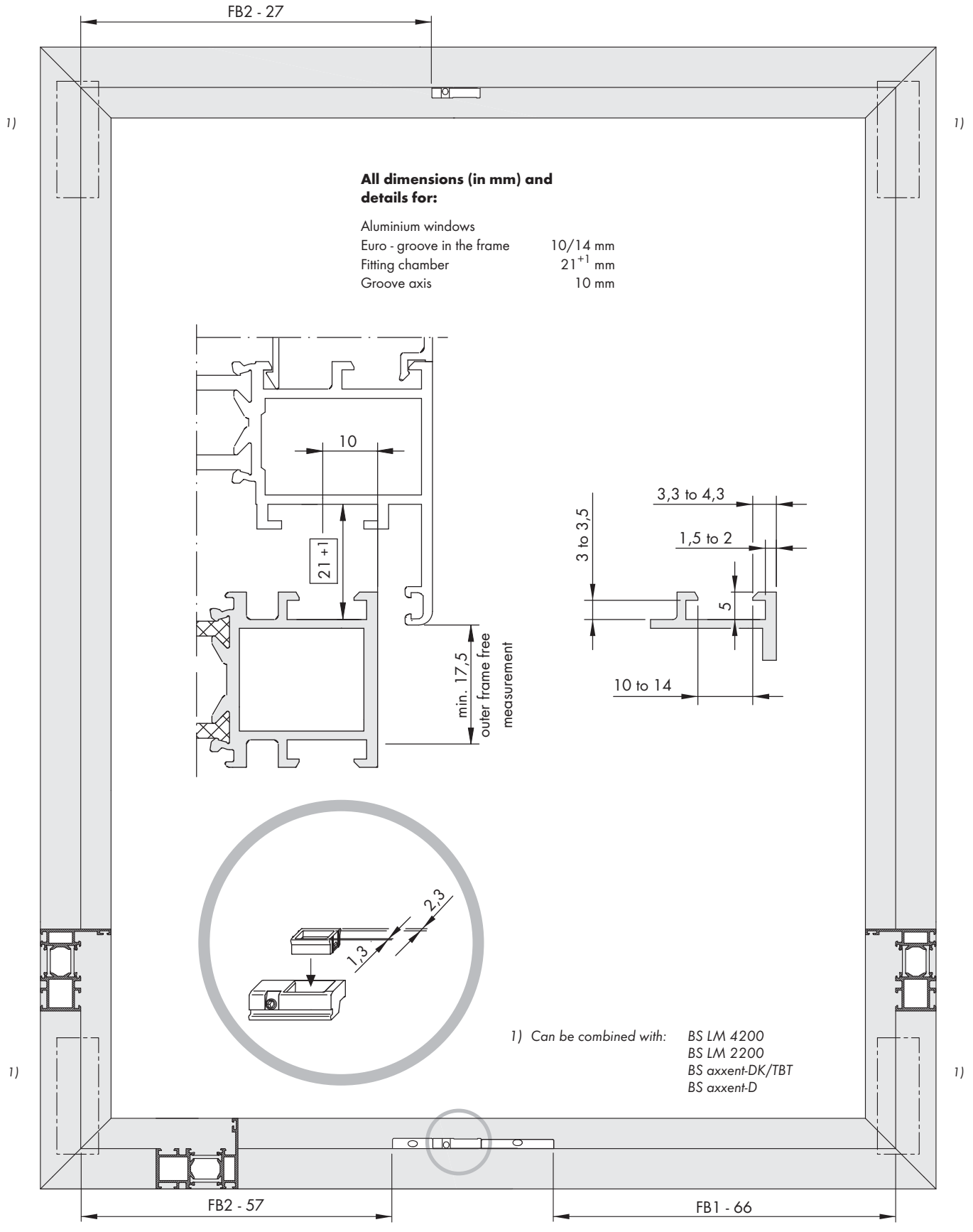
- Please consult our product information for tilt and turn fittings for windows and door height windows
- The information on profile sections is valid for the fittings described in these installation instructions. Please consult your SIEGENIA-AUBI representative if the dimensions of the windows are different.
- The hardware components described in this leaflet are made from non corroding material or have been galvanised to DIN 50 961. They must not be installed for use in aggressive, corrosion promoting air conditions
- We can accept no liability in respect of any damages or defects arising where the hardware assembly incorporates products not made by SIEGENIA.
- Install the hardware components correctly by following closely the instructions on this page.
- The surface treatment of windows and doors must be performed before the hardware is assembled on the window. Post treatment could adversely affect the effective functioning of the components, in which case we accept no liability for such consequence.
- Please follow the standard techniques for packing and wedge the sealed glazing units within the sash / frame.
- Do not use acid based sealing compounds because they may lead to corrosion of the hardware. Keep rebates free of dirt and debris - in particular cement and plaster. Keep hardware dry and avoid contact with cleaning agents.
- Keep all grooves and rebates free from dirt and debris - especially residues of cement or plaster. Avoid the direct effect of moisture on the hardware and contact of the hardware with cleaning agents.

Liability exclusions

We accept no liability in respect of any damages or malfunctions caused by the hardware or the windows and French doors fitted with them, as a result of incorrect and inappropriate specifications or other information provided by the customer, failure to follow these instructions, wilful damage or negligence or misuse or alteration or repair of or an exertion of excessive force to the hardware by the user or customer.



1) Only for routed in drive gear LM



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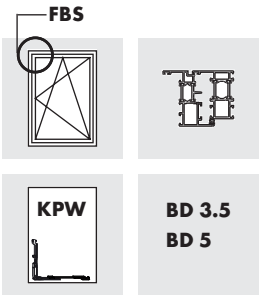
ALU 5200-DK E RC 2

The anti-intruder turn-and-tilt hardware for aluminium windows and French doors.

Application for electrical test according to DIN EN 1627ff RC 2, RC 2 N



Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	French doors max.
Sash width	(mm)	365	to 1600	1300
Sash height	(mm) ALU handle lockable (101/103)	730	to 2000	2400
Sash height	(mm) TITAN handle lockable (105)	795	to 2000	2400
Sash weight	(kg)	**max. 130/150**		**max. 130/150**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 100 kg: Document no. H58.AWDLMS003EN
- Sash weight up to max. 130 kg: Document no. H58.AWDLMS004EN
- Sash weight up to max. 150 kg: Document no. H58.AWDLMS005EN
Required documentation:
ALU 5200-DK FBS-EUL Sash weight up to max. 100 kg/130 kg
- Document no. H48.5200LS001EN / H48.5200LS014EN
ALU 5200-DK FBS-EUL Sash weight up to max. 150 kg
- Document no. H48.5200LS007EN
Gear set M6:
- Document no. H48.ZubhLS005EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Adjustment options:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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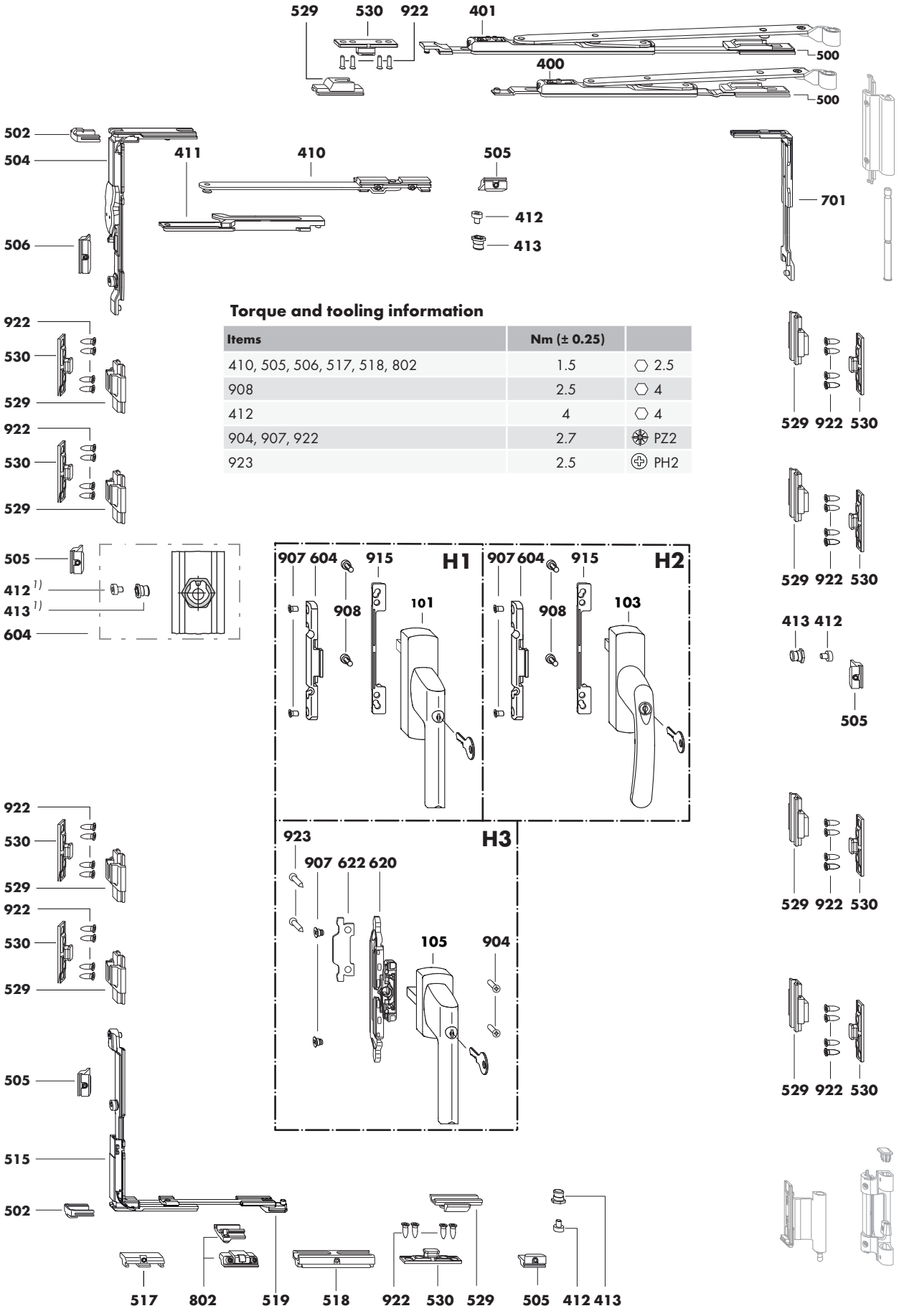
H48.5200LS024en/1



Torque and tooling information

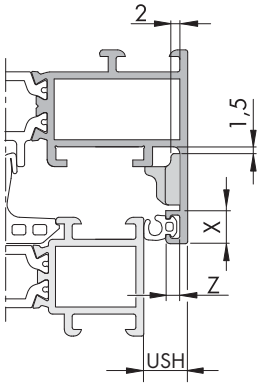
Items	Nm (± 0.25)	
410, 505, 506, 517, 518, 802	1.5	⬡ 2.5
908	2.5	⬡ 4
412	4	⬡ 4
904, 907, 922	2.7	✱ PZ2
923	2.5	⊕ PH2

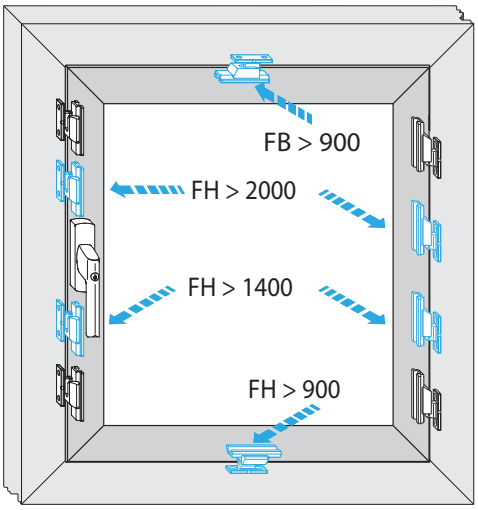
*1) Is omitted for ESG LM M6 (**620**)*

	Item	Piece	Designation		Material-No.	VE	Material-No.	VE
		1	Hinge side ALU 5200	Hinge side ALU 5200 without positioning				
H1	101	0...1	**Handle ALU Si-line lockable**	Only use in combination with coupling set ALU-E	**See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual**			
H2	103	0...1	**Handle ALU GLOBE, lockable**					
H3	105	0...1	**Handle TITAN lockable**	Only use in combination with ALU-E gear set (Torque min. 100 Nm)	**(□ 7mm x 25, cam ∅10 mm)**			
	701	1	**VSU/BSO corner drive**		859391	1	266076	20
depending on FB/kg	400	0...1	**Top stay ALU 5200 size 20**	FB > 365 ≤ 600 ≤100 kg	884805	1	273 098	20
	401	0...1	**Top stay ALU 5200 size 35**	FB > 600 ≤ 1600	884782	1	314 203	20
		0...1	**Additional stay LM**	FB > 1250 with top stay size. 35 ≤ 100 kg FB > 1020 with top stay size 35 > 100 kg	857076	1	247006	10
	410	1	Additional stay					
	411	1	Striker plate					
	412	1	Locking cam					
	413	1	Eccentric rivet					
		1	**VS ALU-DK FBS-EUL KPW**		MMVS0450-100010	1	MMVS0450-100030	20
	500	1	DK locking bolt					
	502	2	EUL clamping piece					
	504	1	VSO FBS corner drive					
	505	1	Striker					
	506	1	Striker EUL VSO					
	515	1	VSU corner drive					
	517	1	Run up block					
	518	1	Tilt locking part					
	519	1	Tilt lock DK					
H1/H2		0...1	**Coupling set ALU-E (without FBS on gear)**	Only use in combination with H1/H2	MMKL0070-100010	1	MMKL0070-100030	20
	604	1	Coupling bracket E M6					
	907	2	M6 coupling screw					
	908	2	M5 x 12 cheese head screw					
H3		0...1	**Gear set ALU-E (without FBS on gear)**	Only use in combination with H3	MMGI0060-100010	1	MMGI0060-100030	20
	620	1	ESG LM M6					
	622	1	Anti-drill guard					
	904	2	M5 x 35 countersunk screw					
	907	2	M6 coupling screw					
	923	2	Countersunk tapping screw B 3.9 x 13					
			Locking part ALU-E	A0004	MMVR0050-100010	1	MMVR0050-100030	20
		4...10	**Locking part ALU-E**	A0006	MMVR0060-100010	1	MMVR0060-100030	20
			Locking part ALU-E	A0022	MMVR0070-100010	1	MMVR0070-100030	20
	529	1	Locking part E					
	530	1	Striker E					
	922	2	Countersunk screw FDS M5 x 14.5					
dependent on system		0...2	**Locking part ALU**	FH > 1250 mm (recommendation)	-	1	317556	20
	412	1	Locking cam					
	413	1	Eccentric rivet					
	505	1	Striker					
		0...1	**MV ALU-RB/SF**	FB > 1250 mm (recommendation)	894316	1	303917	20
	412	1	Locking cam					
	413	1	Eccentric rivet					
	505	2	Striker					
				Accessories				
	802	0...1	**Sash lifter ALU**	(see drawing no. H48.ZubhLS014en)	MMFH0010-100010	1	MMFH0010-100030	20
	915	0...1	**Handle support ALU**	Only use in combination with H1/H2	-	-	(see below)	200

Design variations for handle support ALU (915)

USH	Z	X < 7 mm	X 7.1 - 8.5 mm
		Material-No.	Material-No.
7 - 10 mm	< 2 mm	MFHA0010-100200	MFHA0010-100200
	2.1 - 3 mm	MFHA0010-100200	MFHA0020-100200
	> 3 mm	MFHA0010-100200	-
12 mm	-	MFHA0030-100200	-

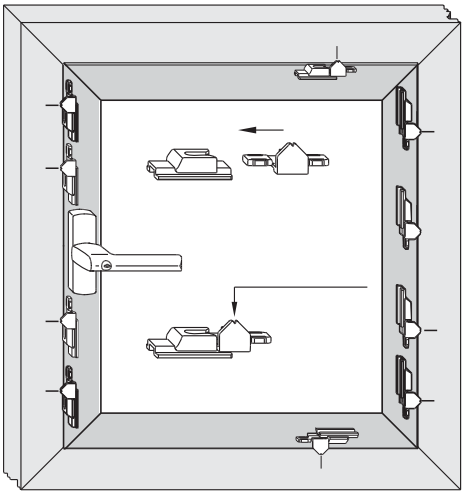




FH	FB 365 ≤ 900	FB > 900
> ...[1] ≤ 1400	**4**	**6**
> 1400 ≤ 2000	**6**	**8**
> 2000 – 2400	**8**	**10**

1) For size ranges, see table on page 1

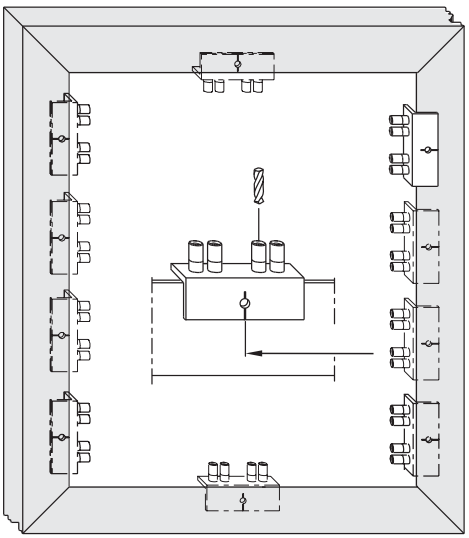
Designation		Material no.
1. Jig ALU-E-EL	for sash (max. 10 per sash)	**156926**
2.1 Jig ALU-EB-E (3.5 mm)	for frame (hole ∅ 3.5) (fig. 4)	**MARB0060-500010**
2.2 Jig ALU-EB-E (4.2 mm)	for frame (hole ∅ 4.2) (fig. 5)	**MARB0040-500010**



Installation of the jigs ALU-EL on the sash

1. Use on sash

- ***A*** Mounting and securing the sash.
- ***B*** Insert jig ALU-E-EL into locking parts E (**529**) (see fig. 1).
- ***C*** Switch gear vertically upwards (180°).
- ***D*** Switch gear horizontally
- ***E*** Close sash without changing handle position.
- ***F*** Make markings for jig ALU-EB-E on the frame (see fig. 2).
- ***G*** Open sash.
- ***H*** Remove jigs ALU-E EL.



Installation of the jigs ALU-EB-E to the frame

2.1/2.2 Use on frame

Position jigs ALU-EB-E and (see fig.3) and drill boreholes for strikers E (**530**) (see fig. 4) with ∅ 3.5 or (see fig. 5) with ∅ 4.2 (remove markings).

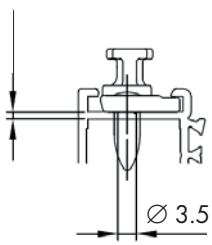


Fig. 4 (2,1)

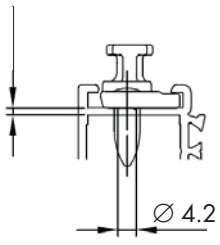
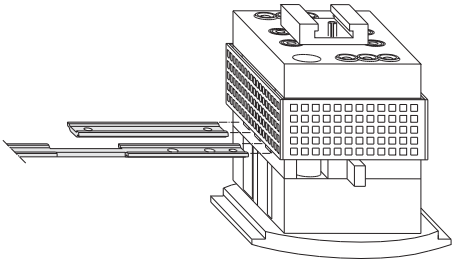
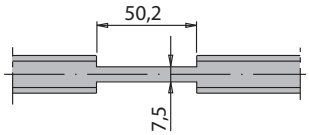


Fig. 5 (2.2)





Designation		Material no.
Punching tool E *Suitable drive:* BST 105 (15 mm travel)	– ∅ 5.2 operating rod punch hole – Cropping – Punching 50.2 – Punch hole for Locking parts E	**141267**
or		
Multi-purpose punching machine	– ∅ 5.2 operating rod punch hole – Cropping – Punching 50.2 – Punch hole for Locking parts E	**157398**

Installation dimensions for sash brake ALU

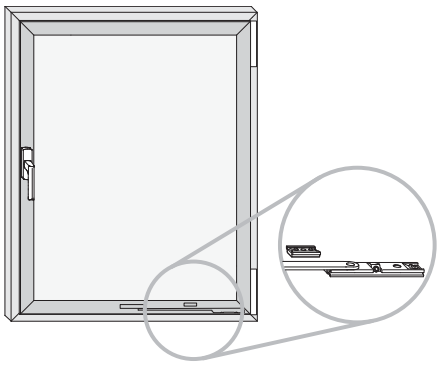
Opening angle			90°	
Measurements in mm			X	Y
Sash brake ALU short	sash width	800 - 1000	60	104
Sash brake ALU long	sash width	1001 - 1600	124	208

Installation of the sash brake ALU on the hinge side at the bottom (BSU)

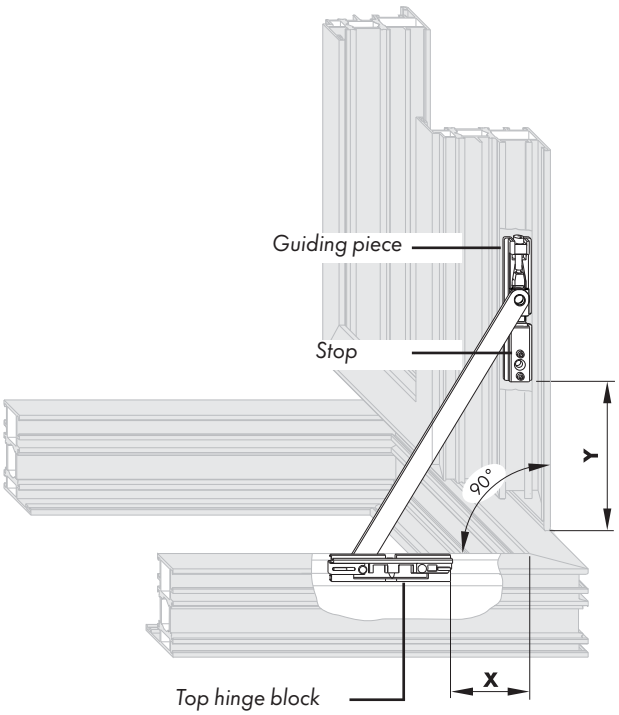
⚠ WARNING

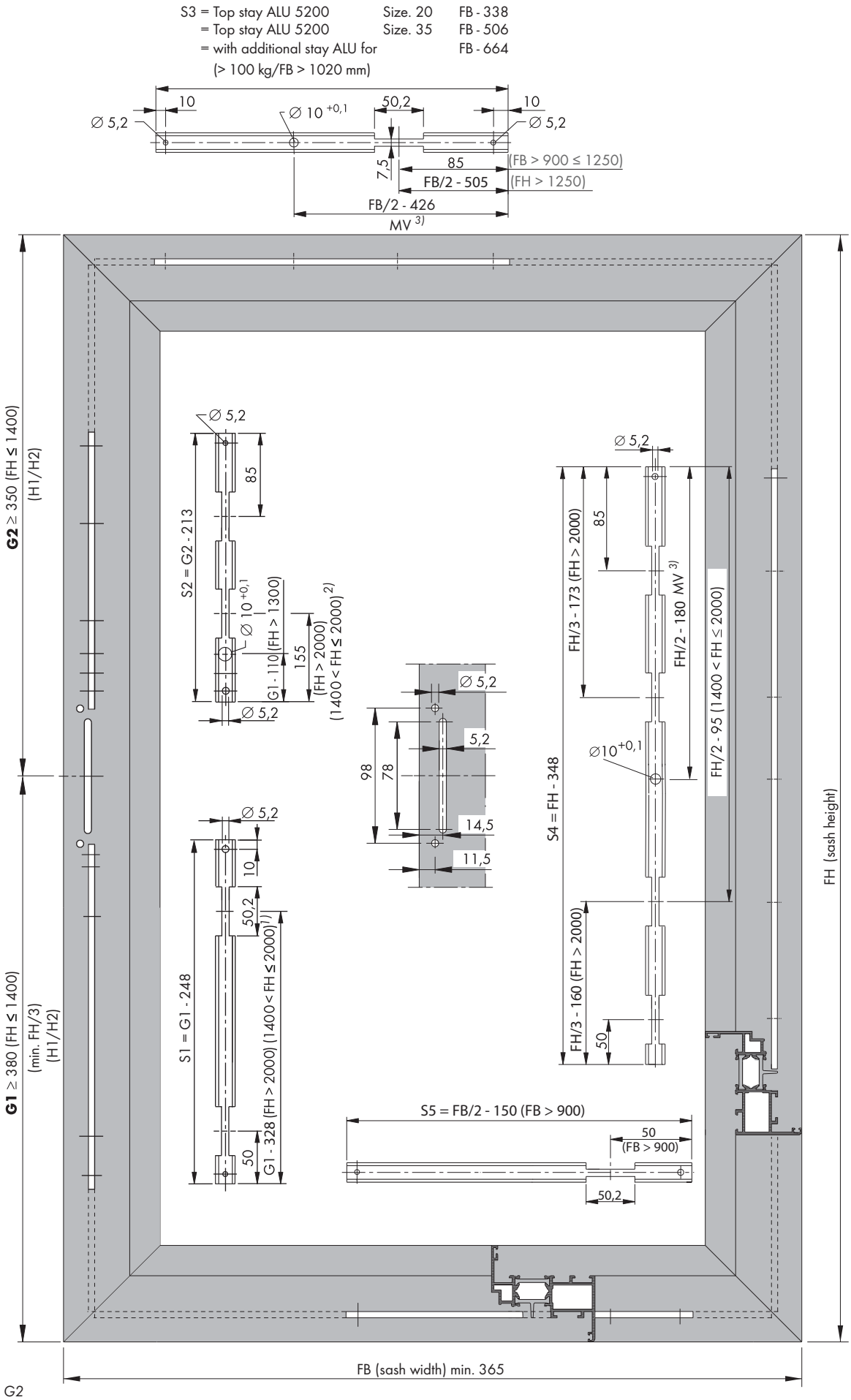
There is a risk of injury if the window sash falls out!

-The sash limiter ALU can only be installed on the hinge side, bottom.



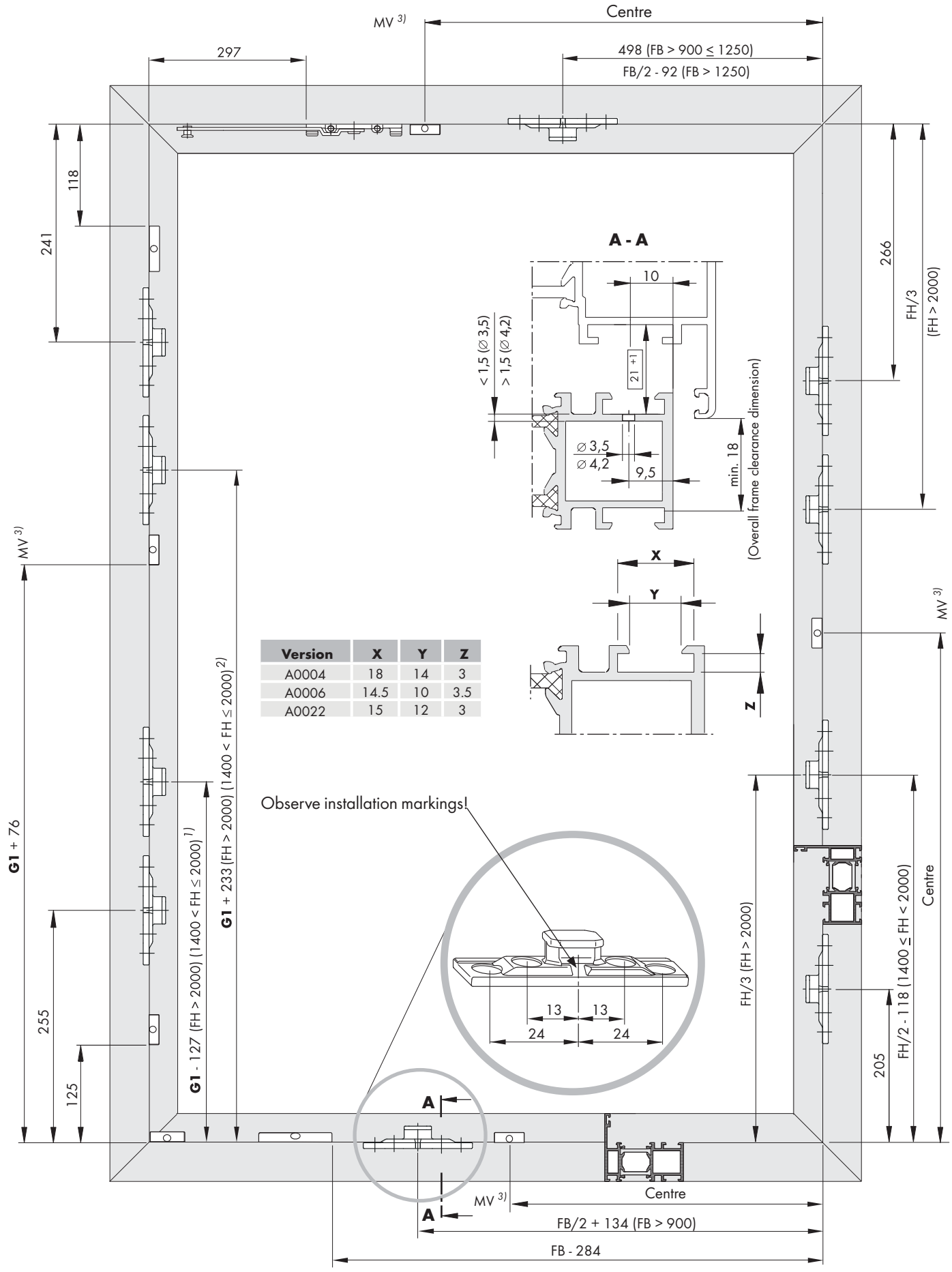
For missing details on the sash brake ALU, see aluminium planning manual under accessories drawing no. H48.ZubhLS017en





1) G1 ≤ G2
2) G1 < G2
3) Installation recommendation for the centre locks see page 3.

ALU 5200-DK E RC 2 *Frame dimensions*



1) G1 ≤ G2
2) G1 < G2
3) Installation recommendation for the centre locks see page 3.

Assembly instructions

Preparation	***A***	Rework lockable window handle (**105**) and ESG LM M6 (**620**) on sash according to dimensions (fig. 1 and 4).
	B	Adjust the length of the square spindle to the profile used. Shorten if necessary.
	C	Process operating rods S1 and S2 according to dimensions.
	D	Screw anti-drill guard (**622**) with countersunk tapping screw PH 3.9 (**923**) to ESG LM M6 (**620**) For positioning of locking parts E (**529**) see operating rods S1 and S2 (fig. 2+3).
Sash	***E***	ESG LM M6 (**620**) into the milling groove provided (fig. 4). Mount ESG LM M6 (**620**) with coupling screws M6 (**907**) to the operating rods.
	F	Mount lockable window handle (**105**) with countersunk screws M5 x 35 (**904**).
Frame		For FH > 1250 mm (recommendation), position striker (**505**) according to dimensions (fig. 5) and clamp into place with the grub screw.

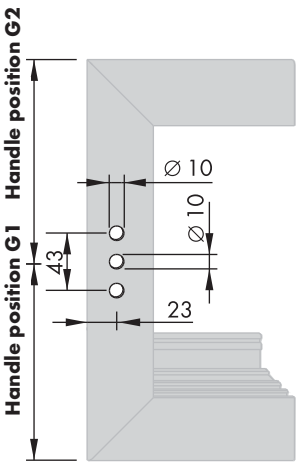


Fig. 1

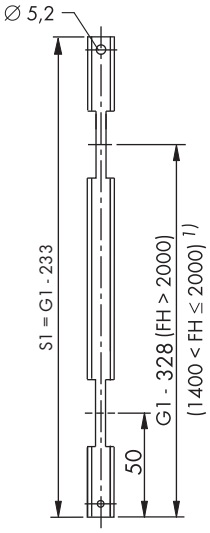


Fig. 2

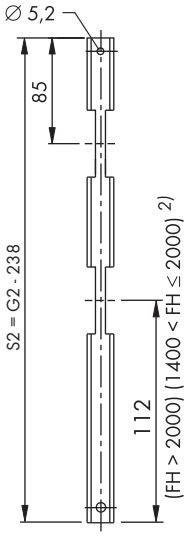


Fig. 3

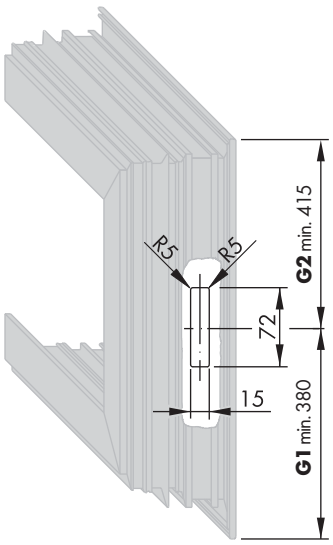


Fig. 4

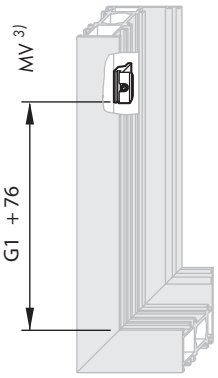


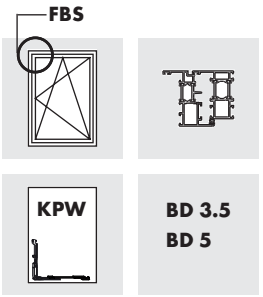
Fig. 5

1) G1 ≤ G2
2) G1 < G2
3) Installation recommendation for the centre locks see page 3.

ALU 5200-TBT E RC 2

The anti-intruder turn-and-tilt hardware for aluminium windows and French doors.

Application for electrical test according to DIN EN 1627ff RC 2, RC 2 N



Size range

It is essential to adhere to the details of the system provider.

		Windows min.	Windows max.	French doors max.
Sash width	(mm)	365	to 1600	1300
Sash height	(mm) ALU handle lockable (101/103)	730	to 2000	2400
Sash height	(mm) TITAN handle lockable (105)	795	to 2000	2400
Sash weight	(kg)	**max. 130/150**		**max. 130/150**

The following information from the aluminium planning manual must be observed:

Guidelines of the German quality association for locks and hardware
(Gütegemeinschaft Schlösser und Beschläge e. V)
- Document no. H45.4200LS001EN
Application diagrams:
- Sash weight up to max. 100 kg: Document no. H58.AWDLMS003EN
- Sash weight up to max. 130 kg: Document no. H58.AWDLMS004EN
- Sash weight up to max. 150 kg: Document no. H58.AWDLMS005EN
Required documentation:
ALU 5200-TBT FBS-EUL Sash weight up to max. 100 kg/130 kg
- Document no. H48.5200LS003EN / H48.5200LS016EN
ALU 5200-TBT FBS-EUL Sash weight up to max. 150 kg
- Document no. H48.5200LS009EN
Gear set M6:
- Document no. H48.ZubhLS005EN
Basic safety notes:
- Document no. H45.5200LS001EN
Abbreviations:
- Document no. H45.5200LS002EN
Adjustment options:
- Document no. H45.5200LS004EN
Profile recommendation:
- Document no. H48.ZubhLS008EN
Updated directory of the documents:
- Document no. H45.5200LS005EN

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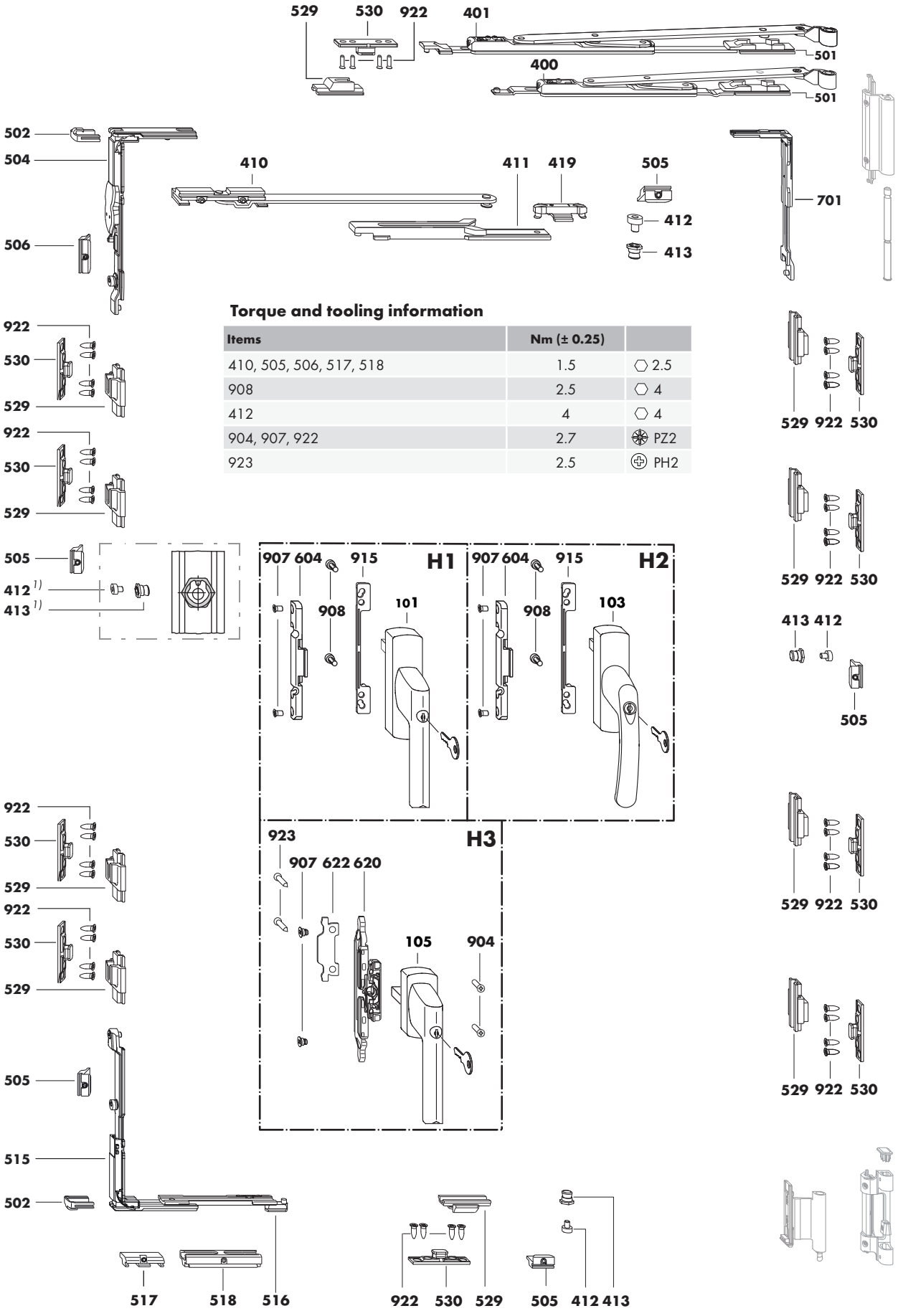
Assembly instructions
H48.5200LS025en

H48.5200LS025en/1



Torque and tooling information

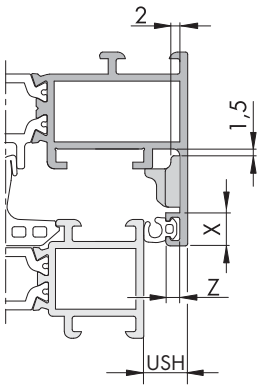
Items	Nm (± 0.25)	
410, 505, 506, 517, 518	1.5	⬡ 2.5
908	2.5	⬡ 4
412	4	⬡ 4
904, 907, 922	2.7	✱ PZ2
923	2.5	⊕ PH2

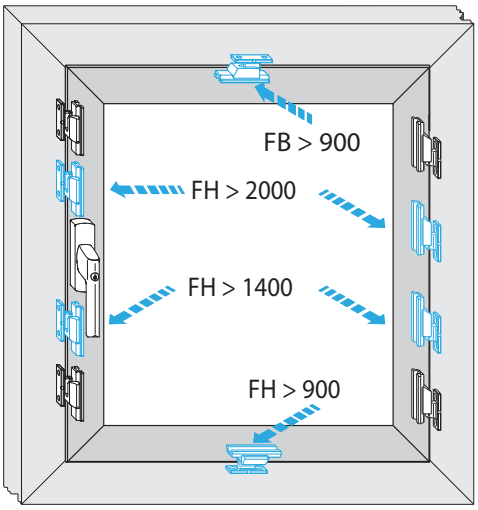
*1) Is omitted for ESG LM M6 (**620**)*

	Item	Piece	Designation		Material-No.	VE	Material-No.	VE
		1	**Hinge side ALU 5200**	*Hinge side ALU 5200 without positioning*				
H1	**101**	**0...1**	**Handle ALU Si-line lockable /TBT**	*Only use in combination with coupling set ALU-E*	**See ALU handle overview, document no.: H48.ZubhLS007en in ALU planning manual**			
H2	**103**	**0...1**	**Handle ALU Globe lockable/TBT**					
H3	**105**	**0...1**	**Handle TITAN lockable/TBT**	*Only use in combination with ALU-E gear set (Torque min. 100 Nm)*	**(□ 7mm x 25, cam ∅10 mm)**			
	701	**1**	**VSU/BSO corner drive**		**859391**	**1**	**266076**	**20**
depending on FB/kg	**400**	**0...1**	**Top stay ALU 5200 size 20**	*FB > 365 ≤ 600 ≤100 kg*	**884805**	**1**	**273 098**	**20**
	401	**0...1**	**Top stay ALU 5200 size 35**	*FB > 600 ≤ 1600*	**884782**	**1**	**314 203**	**20**
		0...1	**Additional stay LM**	*FB > 1250 with top stay size. 35 ≤ 100 kg FB > 1020 with top stay size 35 > 100 kg*	**857076**	**1**	**247006**	**10**
	410	**1**	Additional stay					
	411	**1**	Striker plate					
	412	**1**	Locking cam					
	413	**1**	Eccentric rivet					
	419	**0...1**	**MV stay striker**	*FB > 1250 ≤100 kg FB > 1020 > 100 kg*	**MXSK0010-100010**	**1**	**MXSK0010-100030**	**20**
		1	**VS ALU-TBT FBS-EUL KPW**		**MMVS0460-100010**	**1**	**MMVS0460-100030**	**20**
	501	**1**	Locking bolt TBT					
	502	**2**	EUL clamping piece					
	504	**1**	VSO FBS corner drive					
	505	**1**	Striker					
	506	**1**	Striker EUL VSO					
	515	**1**	VSU corner drive					
	516	**1**	Tilt lock					
	517	**1**	Run-up block					
	518	**1**	Tilt locking part					
H1/H2		**0...1**	**Coupling set ALU-E (without FBS on gear)**	*Only use in combination with H1/H2*	**MMKL0070-100010**	**1**	**MMKL0070-100030**	**20**
	604	**1**	Coupling bracket E M6					
	907	**2**	M6 coupling screw					
	908	**2**	M5 x 12 cheese head screw					
H3		**0...1**	**Gear set ALU-E (without FBS on gear)**	*Only use in combination with H3*	**MMGI0060-100010**	**1**	**MMGI0060-100030**	**20**
	620	**1**	ESG LM M6					
	622	**1**	Anti-drill guard					
	904	**2**	M5 x 35 countersunk screw					
	907	**2**	M6 coupling screw					
	923	**2**	Countersunk tapping screw B 3.9 x 13					
			Locking part ALU-E	A0004	**MMVR0050-100010**	**1**	**MMVR0050-100030**	**20**
		4...10	**Locking part ALU-E**	A0006	**MMVR0060-100010**	**1**	**MMVR0060-100030**	**20**
			Locking part ALU-E	A0022	**MMVR0070-100010**	**1**	**MMVR0070-100030**	**20**
	529	**1**	Locking part E					
	530	**1**	Striker E					
	922	**2**	Countersunk screw FDS M5 x 14.5					
dependent on system		**0...2**	**Locking part ALU**	*FH > 1250 mm (recommendation)*	**-**	**1**	**317556**	**20**
	412	**1**	Locking cam					
	413	**1**	Eccentric rivet					
	505	**1**	Striker					
		0...1	**MV ALU-RB/SF**	*FB > 1250 mm (recommendation)*	**894316**	**1**	**303917**	**20**
	412	**1**	Locking cam					
	413	**1**	Eccentric rivet					
	505	**2**	Striker					
			Accessories					
	915	**0...1**	**Handle support ALU**	*Only use in combination with H1/H2*	**-**	**-**	**(see below)**	**200**

Design variations for handle support ALU (915)

USH	Z	X < 7 mm	X 7.1 - 8.5 mm
		Material-No.	Material-No.
7 - 10 mm	< 2 mm	MFHA0010-100200	MFHA0010-100200
	2.1 - 3 mm	MFHA0010-100200	MFHA0020-100200
	> 3 mm	MFHA0010-100200	-
12 mm	-	MFHA0030-100200	-

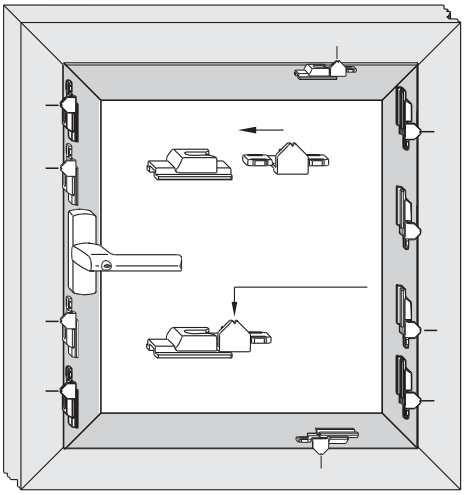




FH	FB 365 ≤ 900	FB > 900
> ...[1] ≤ 1400	**4**	**6**
> 1400 ≤ 2000	**6**	**8**
> 2000 – 2400	**8**	**10**

1) For size ranges, see table on page 1

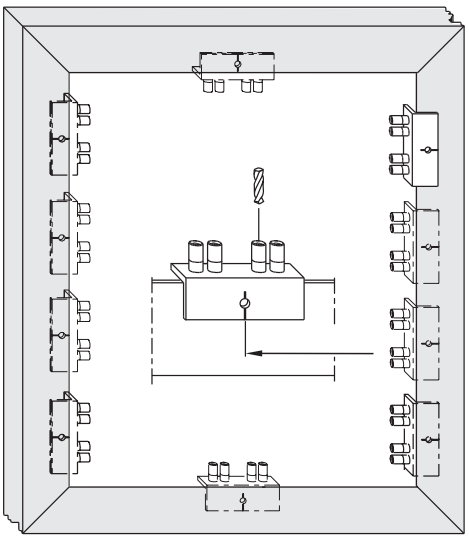
Designation		Material no.
1. Jig ALU-E-EL	for sash (max. 10 per sash)	**156926**
2.1 Jig ALU-EB-E (3.5 mm)	for frame (hole ∅ 3.5) (fig. 4)	**MARB0060-500010**
2.2 Jig ALU-EB-E (4.2 mm)	for frame (hole ∅ 4.2) (fig. 5)	**MARB0040-500010**



Installation of the jigs ALU-EL on the sash

1. Use on sash

- ***A*** Mount and secure the sash.
- ***B*** Insert jig ALU-E-EL into locking parts E (**529**) (see fig. 1).
- ***D*** Switch gear horizontally
- ***C*** Switch gear vertically upwards (180°).
- ***E*** Close sash without changing handle position.
- ***F*** Make markings for jig ALU-EB-E on the frame (see fig. 2).
- ***G*** Open sash.
- ***H*** Remove jigs ALU-E-EL.



Installation of the jigs ALU-EB-E to the frame

2.1/2.2 Use on frame

Position jigs ALU-EB-E (see fig.3) and drill boreholes for strikers E (**530**) (see fig. 4) with ∅ 3.5 or (see fig. 5) with ∅ 4.2 (remove markings).

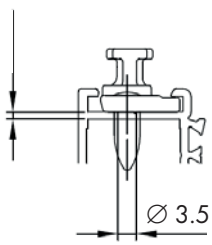


Fig. 4 (2.1)

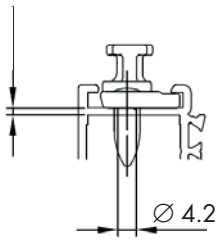
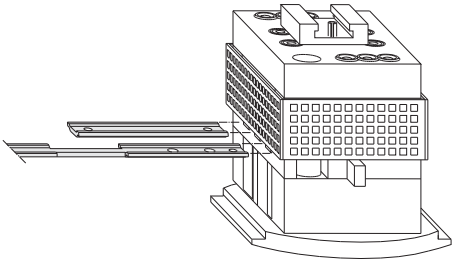
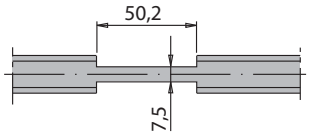


Fig. 5 (2.2)





Designation		Material no.
Punching tool E *Suitable drive:* BST 105 (15 mm travel) or	– ∅ 5.2 operating rod punch hole – Cropping – Punching 50.2 – Punch hole for Locking parts E	**141267**
Multi-purpose punching machine	– ∅ 5.2 operating rod punch hole – Cropping – Punching 50.2 – Punch hole for Locking parts E	**157398**

Installation dimensions for sash brake ALU

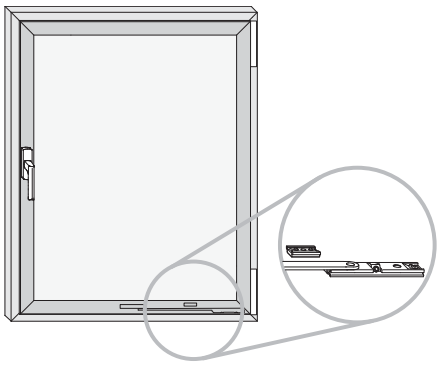
Opening angle			90°	
Measurements in mm			X	Y
Sash brake ALU short	sash width	800 - 1000	60	104
Sash brake ALU long	sash width	1001 - 1600	124	208

Installation of the sash brake ALU on the hinge side at the bottom (BSU)

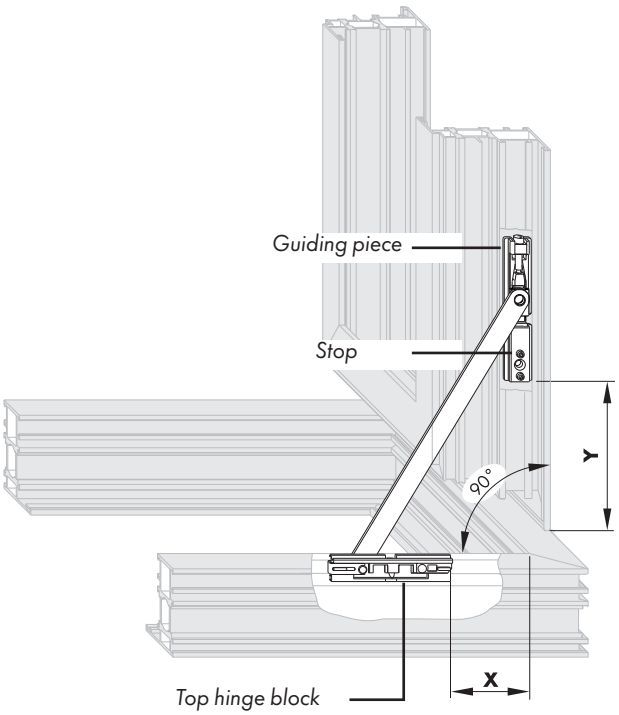
⚠ WARNING

There is a risk of injury if the window sash falls out!

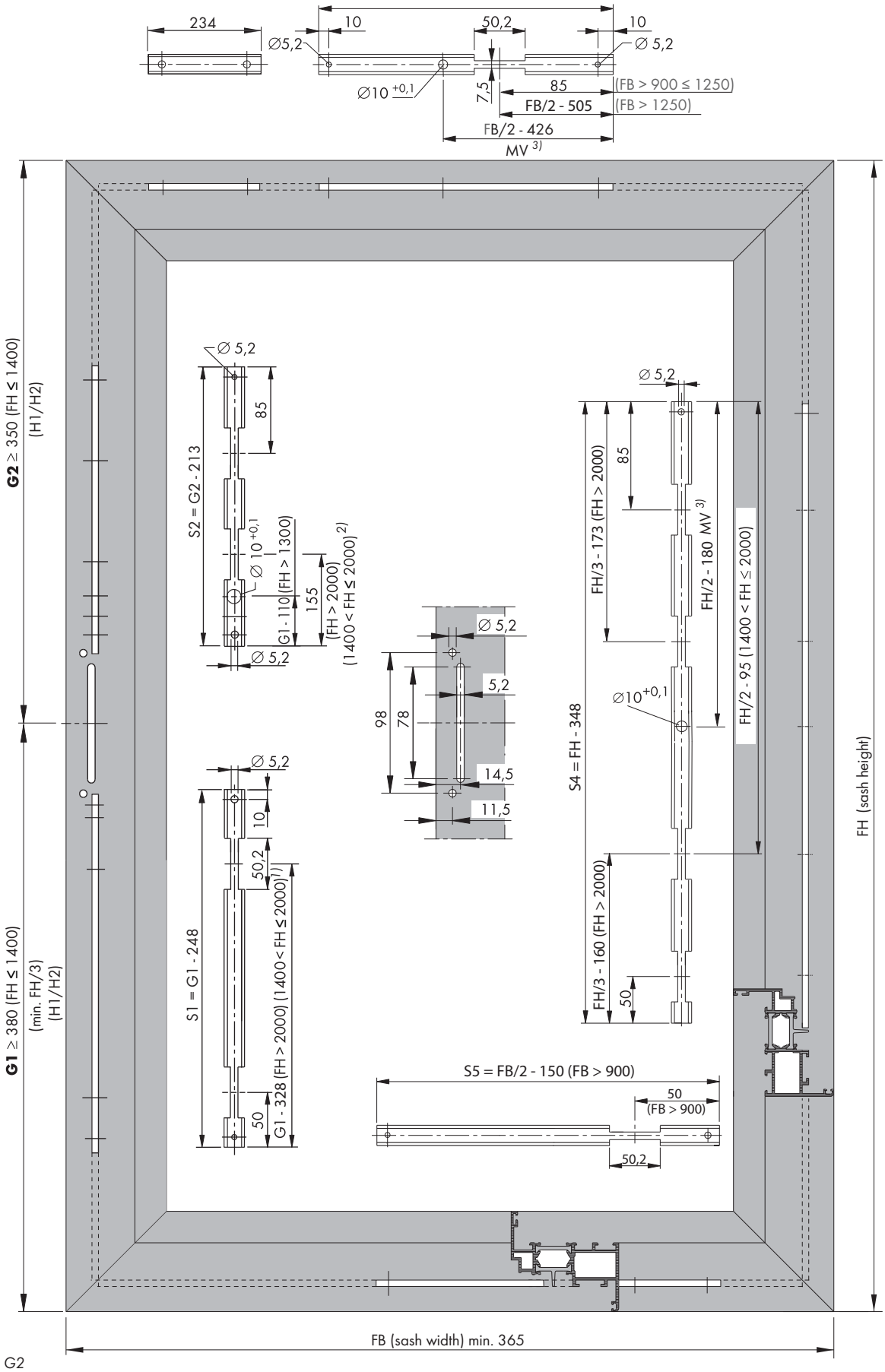
-The sash limiter ALU can only be installed on the hinge side, bottom.



For missing details on the sash brake ALU, see aluminium planning manual under accessories drawing no. H48.ZubhLS017en

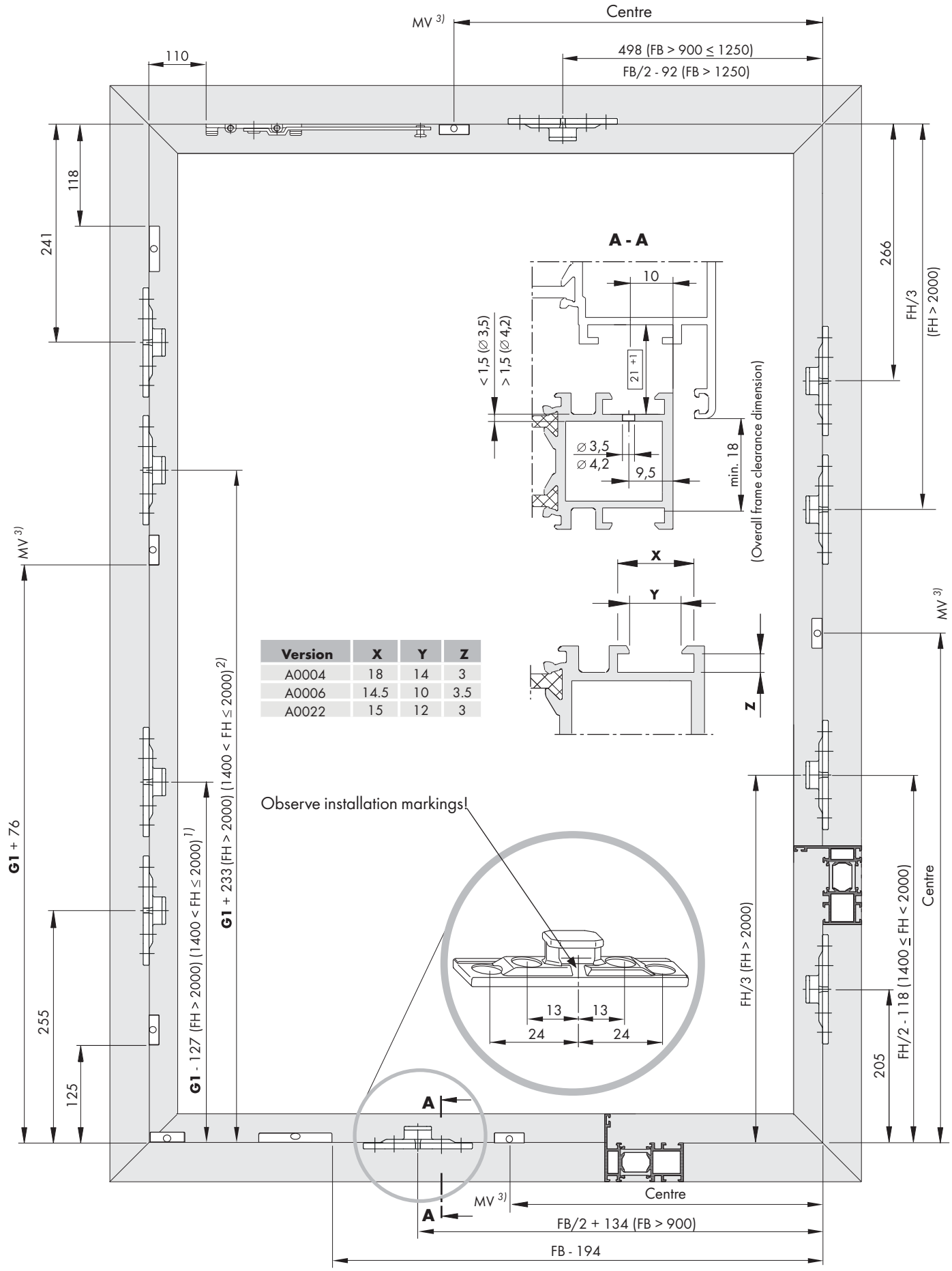


S3 = Top stay ALU 5200 Size. 20 FB - 338
= Top stay ALU 5200 Size. 35 FB - 506
= with additional stay ALU for FB - 917
(> 100 kg/FB > 1020 mm)



1) G1 ≤ G2
2) G1 < G2
3) Installation recommendation for the centre locks see page 3.

ALU 5200-TBT E RC 2 *Frame dimensions*



Version	X	Y	Z
A0004	18	14	3
A0006	14.5	10	3.5
A0022	15	12	3

1) G1 ≤ G2
2) G1 < G2
3) Installation recommendation for the centre locks see page 3.

Assembly instructions

Preparation	***A***	Rework lockable window handle (**105**) and ESG LM M6 (**620**) on sash according to dimensions (fig. 1 and 4).
	B	Adjust the length of the square spindle to the profile used. Shorten if necessary.
	C	Process operating rods S1 and S2 according to dimensions.
	D	Screw anti-drill guard (**622**) with countersunk tapping screw PH 3.9 (**923**) to ESG LM M6 (**620**) For positioning of locking parts E (**529**) see operating rods S1 and S2 (fig. 2+3).
Sash	***E***	Insert ESG LM M6 (**620**) into the milling groove provided (fig. 4). Mount ESG LM M6 (**620**) with coupling screws M6 (**907**) to the operating rods.
	F	Mount lockable window handle (**105**) with countersunk screws M5 x 35 (**904**).
Frame		For FH > 1250 mm (recommendation), position striker (**505**) according to dimensions (fig. 5) and clamp into place with the grub screw.

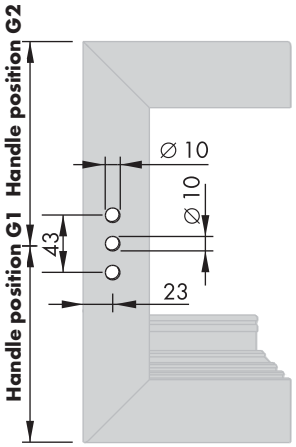


Fig. 1

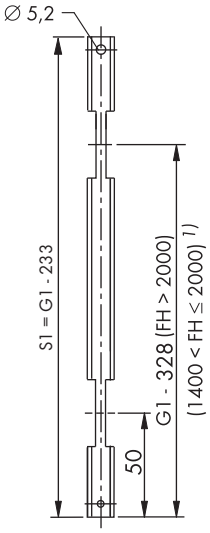


Fig. 2

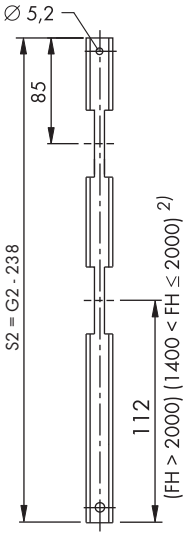


Fig. 3

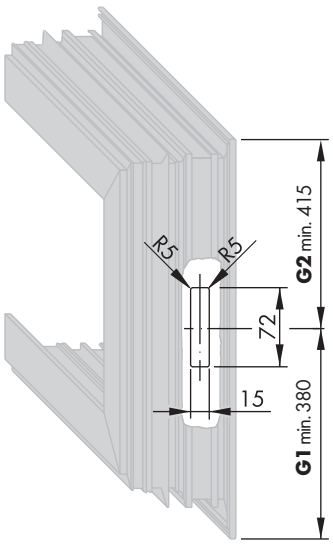


Fig. 4

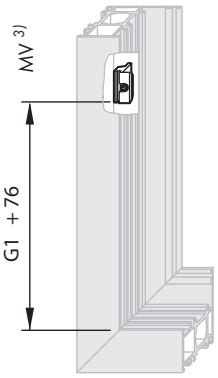


Fig. 5

1) G1 ≤ G2
2) G1 < G2
3) Installation recommendation for the centre locks see page 3.

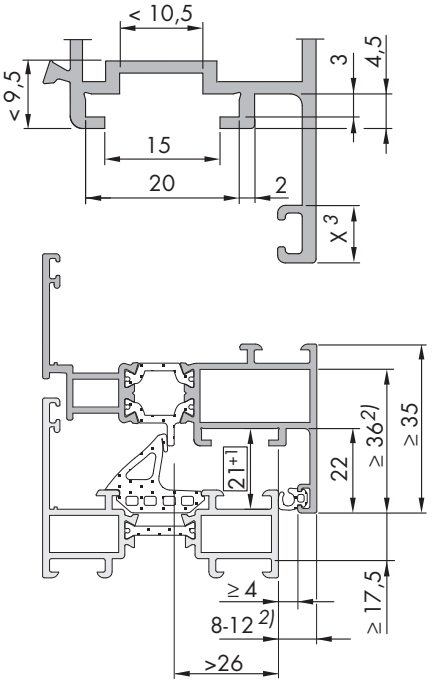
ALU 4200-E RC1+2

Anti-intruder hardware for aluminium windows and portal doors
Application for electrical test according to DIN V ENV 1627 for RC1 and RC2

Further details and specifications/information regarding the product and liability (guidelines: VHBH, TBDK and VHBE) can be found in the aluminium planning manual (H4006.3042EN) and ***must*** *be observed.*

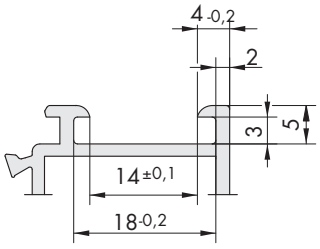
All dimensions given are final dimensions after the surface of the sections has been treated (painted, power coated etc.).

Sash and frame dimensions

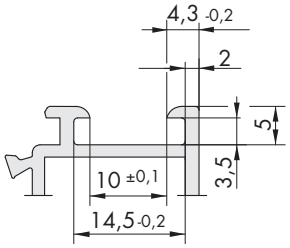


Correct use
Profile selection/alignment
Frame designs

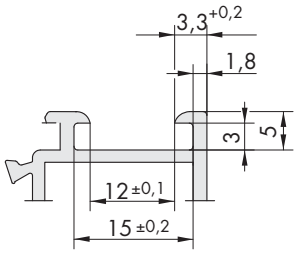
A0004



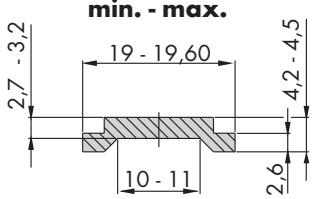
A0006



A0022



Operating rod dimensions
min. - max.



1) See diagram on page 2.
2) For gear set M6 LM-E.
3) See table on pages 3 and 16.

All dimensions in mm

Sash width 1)	*(1-sash)*	(a)	min. 365 - max. 1,600
Sash width 1)	*(2-sash)*	(a1+a2)	min. 565 - max. 1,250
Sash height 1)	*(handle LM lockable)*	(b)	min. 730 - max. 2,400 1)
Sash height 1)	*(window handle)*	(b)	min. 795 - max. 2,400 1)
Sash weight 1)	*(1-sash)*		max. 130 kg
Sash weight 1)	*(2-sash)*		max. 100 kg

The following assembly instructions are valid for:

H48.ZubhLS005en	*Gear M6*
H48.4200LS001en	*LM 4200-DK*
H48.4200LS002en	*LM 4200-TBT*

Contents

Assembly Instructions
H48.4200LS006en

H48.4200LS006en_0_2012-07

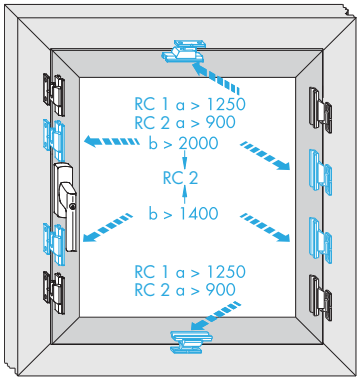
Number and position of locking parts LM-E on main and secondary sashes

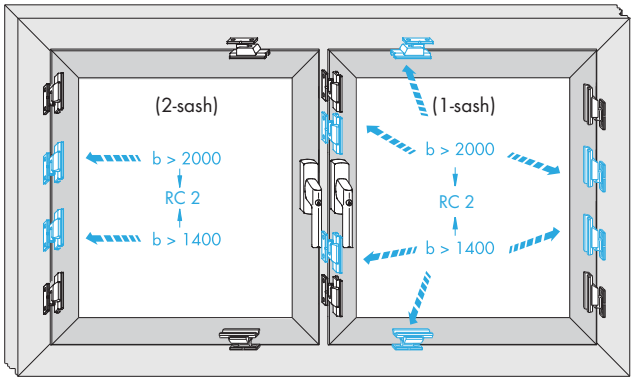
(1-sash)

b	WK1 a 365 - 900	WK 1 a > 1,250	WK 2 a 365 - 900	WK 2 a > 900
730 - 1,400	**4**	**6**	**4**	**6**
1,401 - 2,000	**4**	**6**	**6**	**8**
2,001 - 2,400	**4**	**6**	**8**	**10**

(2-sash)

b	WK 1 a 565 - 1,250	WK 2 a 565 - 1,250
730 - 1,400	**8**	**10**
1,401 - 2,000	**8**	**13**
2,001 - 2,400	**8**	**16**



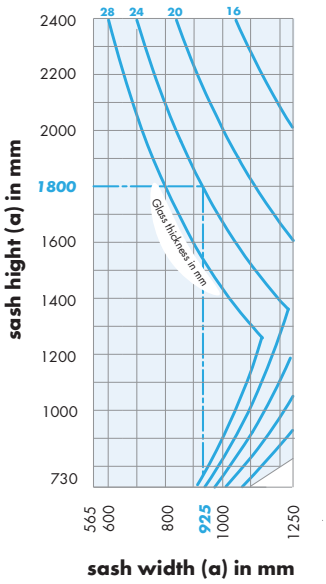


Diagrams for determining allowable sash size

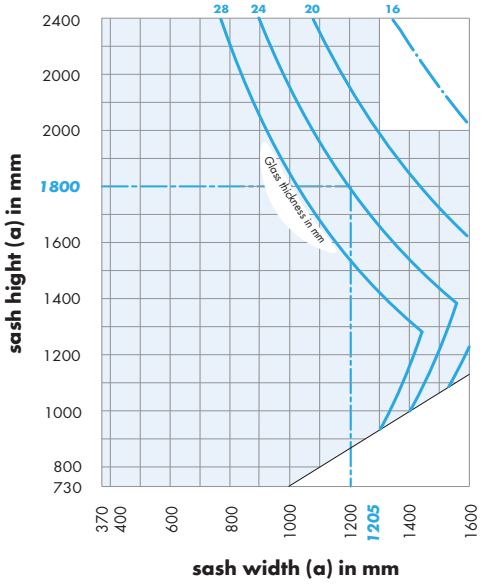
Glass thickness (mm)	*Weight (kg/m^2)*
28	70
24	60
20	50
16	40
12	30

For glass thicknesses less than 12 mm, all sash sizes which are within the size range and which do not exceed a width to height ratio a/b of 1/1.5 are allowed.
Maximum allowable sash weight:
2-sash 100 kg
1-sash 130 kg

Sash weight 100 kg
for 2-sash window



Sash weight 130 kg
for 1-sash window

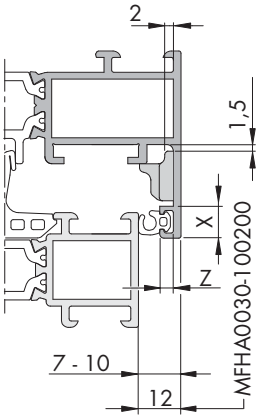


Example (—·—):	**100 kg**	**130 kg**
Sash height	= 1,800 mm	1,800 mm
Glass thickness =	24 kg	24 kg
Maximum allowable sash width	= **925 mm**	**1,205 mm**

Item	Quantity Secondary sash	Quantity Main sash	Description			Material no.		Material no.
1a	0...1	0...1	**Handle LM lockable**		See handle overview LM Drawing. no.: LMen1337 in aluminium planning manual			
1b	0...1	0...1	**Window handle lockable** (□ 7 mm x 25, cam ∅ 10 mm)		–			
2	1	1	**Corner drive VSU/BSO**		1	859391	20	266076
3-11	–	1	**VS LM-DK-TBT FBS-EUL KPW**		1	MMVS0340-100010	20	MMVS0340-100030
12-14	0...1	0...1	**Coupling set LM-E**	*Use handle LM lockable (1a)*	1	MMKL0070-100010	20	MMKL0070-100030
15-19	0...1	0...1	**Gear set M6 LM-E**	*Use window handle lockable (1b)*	1	MMGI0060-100010	20	MMGI0060-100030
20-22	4...6	4...10	**Locking part LM-E** (A0004)	*For number of locking parts see page 9*	1	838365	20	231708
			Locking part LM-E (A0006)		1	838372	20	231722
			Locking part LM-E (A0022)		1	MMVR0010-600010	20	MMVR0010-600030
23-25	0...1	0...2	**Locking part LM**	*b > 1,250*	1	–	20	317556
26	–	1	**Stay LM 4200**					
			Size a (1-sash) (in mm)	*Size a (2-sash) in mm)*				
			20 365 to 600	20 565 to 680	1	884805	20	273098
			35[1)] 601 to 1,250	35[1)] 681 to 1,250	1	884782	20	314203
			35[2)] 1,251 to 1,600		1	884782	20	314203
			1) up to max. 100 kg sash weight (1-2 sash) *2) with additional stay LM up to max. 130 kg (1-sash)*					
27-30	–	0...1	**Additional stay LM 4200**	*a 1,250 mm and up with stay size 35 and/or 100-130 kg sash weight*	1	857076	20	247006
31-33	–	0...1	**MV LM-RB/SF**	*a > 1,250*	1	894316	20	303917
34-35	–	0...1	**Accessories LM 4200 130 kg**	*Sash weight 100 kg and up*	1	–	20	247037
36	0...1	0...1	**Handle support LM**	*Use handle LM lockable (1a)*	–	–	200	*See table*
37-42	1	–	**VS LM-D-DS**		1	MMVS0350-100010	20	MMVS0350-100030

Design variations for handle support LM (36)

USH	Z	X < 7 mm	X 7.1 - 8.5 mm
7 - 10 mm	< 2 mm	MFHA0010-100200	MFHA0010-100200
7 - 10 mm	2.1 - 3 mm	MFHA0010-100200	MFHA0020-100200
7 - 10 mm	> 3 mm	MFHA0010-100200	-
12 mm	-	MFHA0030-100200	-



LM 4200-E WK 2 2-sash:
Size ranges for limit stay LM

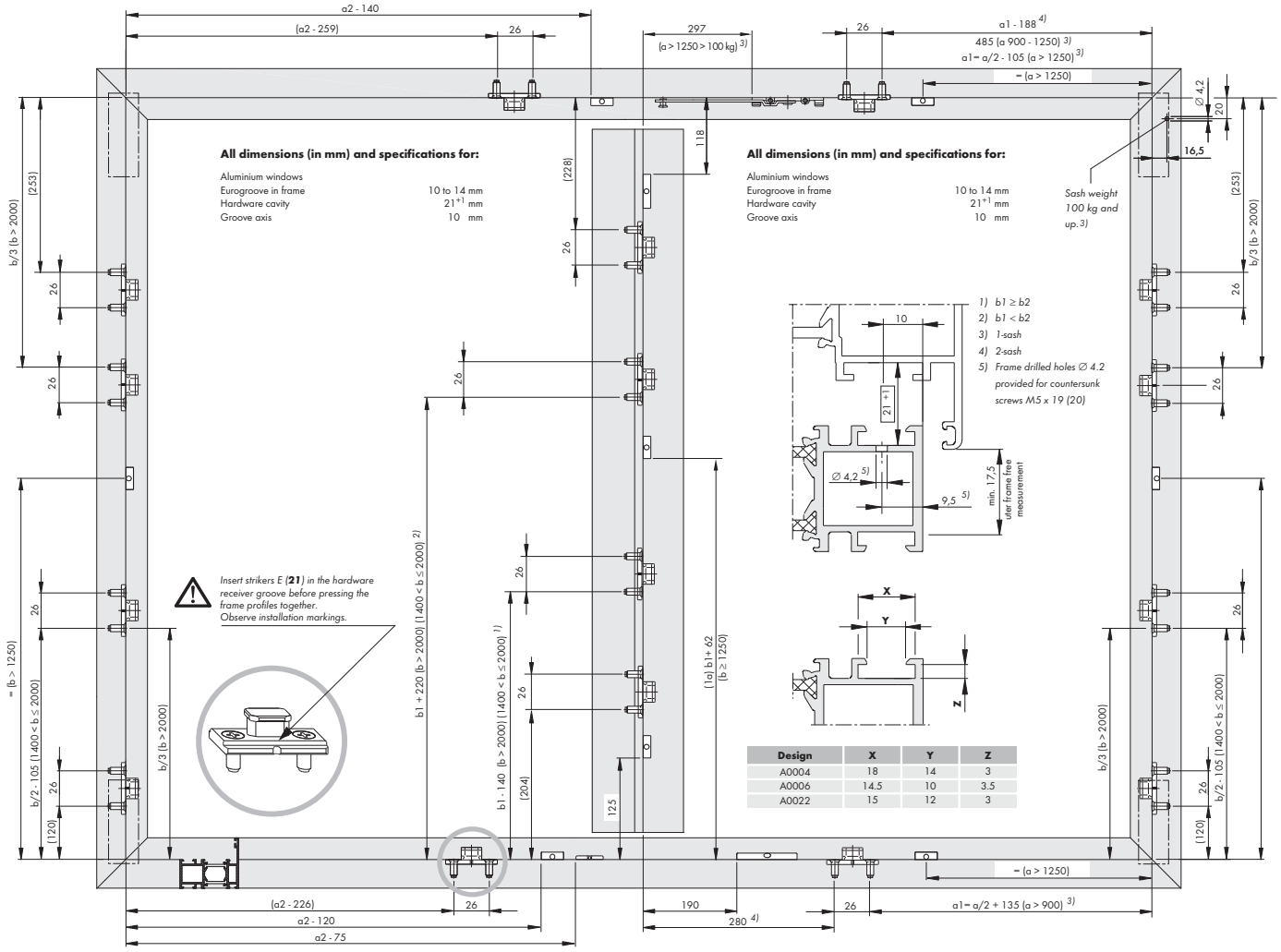
Dimensions in mm	
Limit stay LM with friction, short	(FB 800 - 1,000)
Limit stay LM with friction, long	(FB 1,001 - 1,250)

For further information see limit stay LM with friction,
Document no.: LMen1226 in aluminium planning manual.

See pages 7 - 8 for hardware layout.

LM 4200-DS-E RC1+2 *Frame dimensions of secondary main*

LM 4200-DK-E RC1+2 *Frame dimensions of main sash*



Basic safety instructions

Correct use

The hardware described in this document is intended to be installed in an aluminium window frame by a certified window construction specialist in accordance with these instructions. The windows may only be installed vertically plumb.
The certified window construction specialist must ensure that the hardware is suitable for the application based on the specifications in these instructions and in other documents that are cited.

Avoid excessive strain.

Hinge parts may break if they are subject to excessive strain. This can cause the window sash to fall out, which may lead to serious injuries.

- If you anticipate that the hinge parts will be subject to excessive strain, limit the opening angle with an LM limit stay with friction.
  For example, excessive strain is to be expected in schools and kindergartens.

Do not mix hardware.

The hardware is technically matched. When you mix hardware from different systems or manufacturers in one window, the safe functioning of the hardware is not guaranteed. The hardware can break and cause accidents.

- Use only the hardware that is named in these instructions in combination in one window.

Treat the window surface before installation only.

- Treating the surface of the window after the hardware has been installed can reduce the functional capacity of the hardware.

Prevent damage caused by rust and deposits.

Corrosive substances, dirt and moisture can damage the hardware and cause hazards.

- Do **not** use acetic or acid cure sealants.
- Do **not** use the hardware in environments where the air contains aggressive or corrosive components.
- Keep the rebates free from deposits and dirt, especially from remnants of cement and plaster.
- Keep the hardware dry.

Always clean the hardware gently.

- Clean the hardware only with a soft cloth and mild, diluted pH-neutral cleaning agents.
- Keep the hardware from coming into contact with scouring agents or aggressive, acidic cleaning agents.
- Dry the hardware after cleaning it.

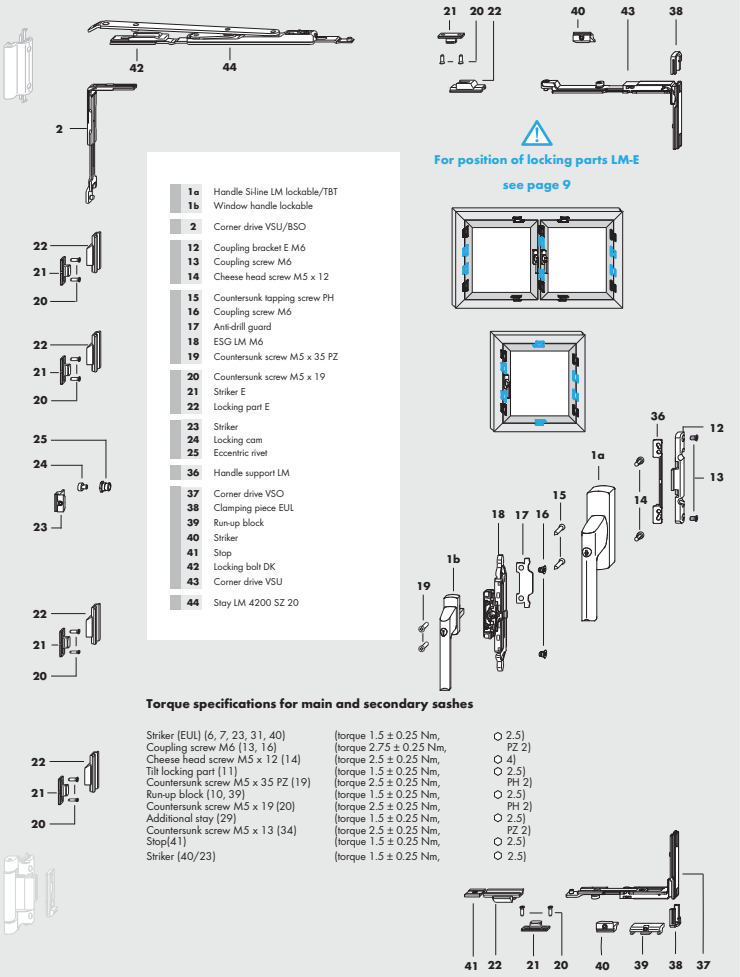
Pass the information on to the user of the window.

- Affix the user information (order no. 05083) to the installed window or door element in a place that can be seen easily.
- Provide the user with the following documents:
  - Maintenance/care instructions SI-AU order no. 19748
  - Operating instructions SI-AU order no. 05766

Disclaimer of liability

- We assume no liability for loss of function and damage to the hardware (and to the windows and portal doors that are equipped with these) resulting from insufficient tendering, failure to follow these assembly instructions or which result from force being applied to the hardware (e.g. through improper use).

LM 4200-DS-E RC1+2 *Hardware layout for secondary sash*



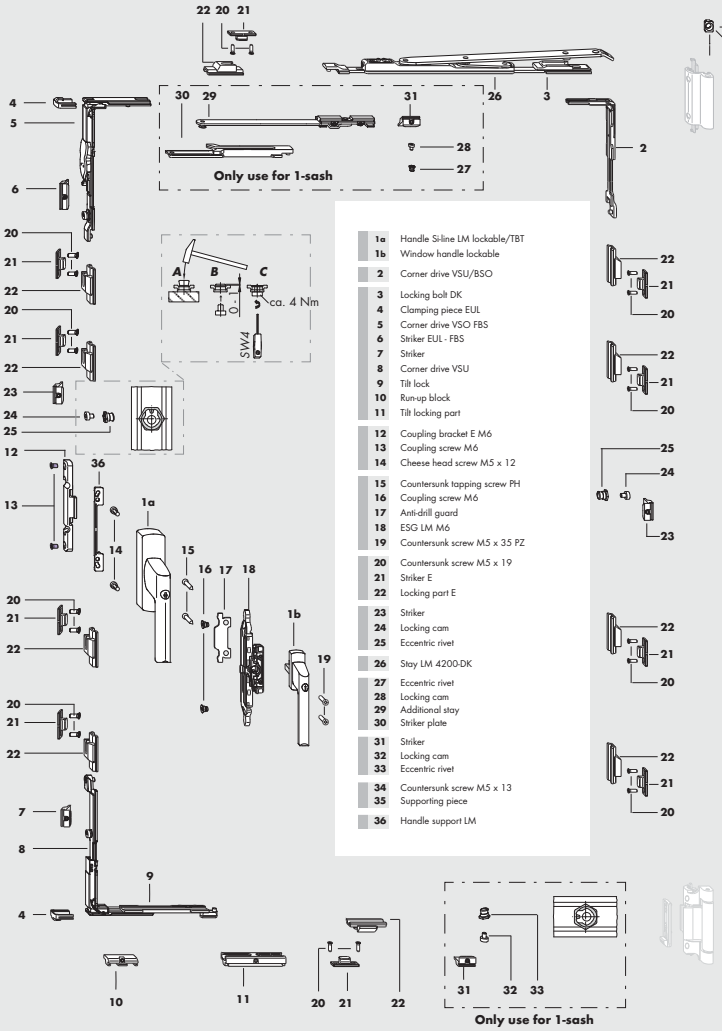
1a	Handle Si-line LM lockable/TBT
1b	Window handle lockable
2	Corner drive VSU/BSO
12	Coupling bracket E M6
13	Coupling screw M6
14	Cheese head screw M5 x 12
15	Countersunk tapping screw PH
16	Coupling screw M6
17	Anti-drill guard
18	ESG LM M6
19	Countersunk screw M5 x 35 PZ
20	Countersunk screw M5 x 19
21	Striker E
22	Locking part E
23	Striker
24	Locking cam
25	Eccentric rivet
36	Handle support LM
37	Corner drive VSO
38	Clamping piece EUL
39	Run-up block
40	Striker
41	Stop
42	Locking bolt DK
43	Corner drive VSU
44	Stay LM 4200 SZ 20

Torque specifications for main and secondary sashes

Striker (EUL) (6, 7, 23, 31, 40)	(torque 1.5 ± 0.25 Nm,	○ 2.5)
Coupling screw M6 (13, 16)	(torque 2.75 ± 0.25 Nm,	PZ 2)
Cheese head screw M5 x 12 (14)	(torque 2.5 ± 0.25 Nm,	○ 4)
Tilt locking part (11)	(torque 1.5 ± 0.25 Nm,	○ 2.5)
Countersunk screw M5 x 35 PZ (19)	(torque 2.5 ± 0.25 Nm,	PH 2)
Run-up block (10, 39)	(torque 1.5 ± 0.25 Nm,	○ 2.5)
Countersunk screw M5 x 19 (20)	(torque 2.5 ± 0.25 Nm,	PH 2)
Additional stay (29)	(torque 1.5 ± 0.25 Nm,	○ 2.5)
Countersunk screw M5 x 13 (34)	(torque 2.5 ± 0.25 Nm,	PZ 2)
Stop(41)	(torque 1.5 ± 0.25 Nm,	○ 2.5)
Striker (40/23)	(torque 1.5 ± 0.25 Nm,	○ 2.5)

See page 3 for hardware list.

LM 4200-DK-E RC1+2 *Hardware layout for main sash*

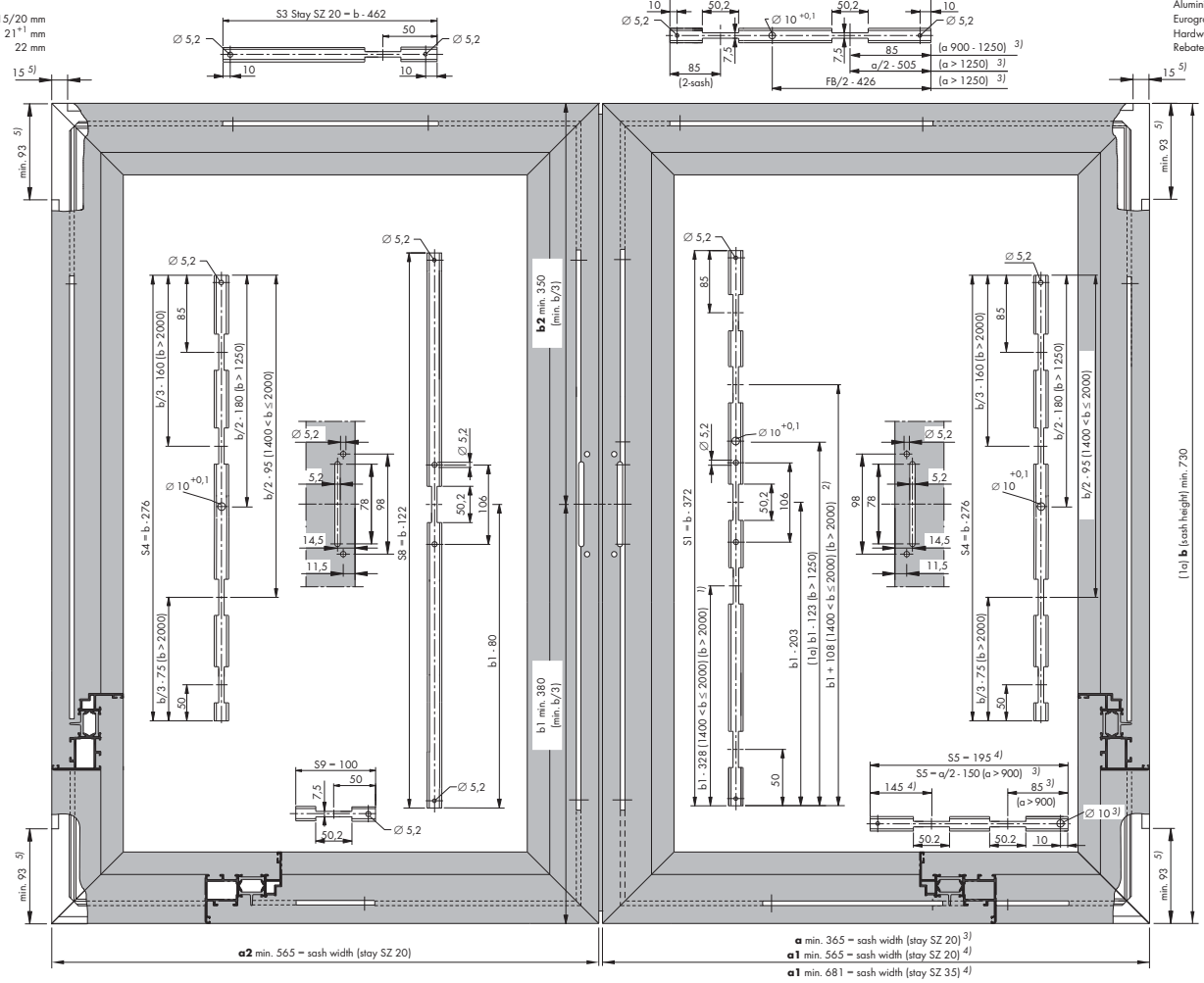


1a	Handle Si-line LM lockable/TBT
1b	Window handle lockable
2	Corner drive VSU/BSO
3	Locking bolt DK
4	Clamping piece EUL
5	Corner drive VSO FBS
6	Striker EUL - FBS
7	Striker
8	Corner drive VSU
9	Tilt lock
10	Run-up block
11	Tilt locking part
12	Coupling bracket E M6
13	Coupling screw M6
14	Cheese head screw M5 x 12
15	Countersunk tapping screw PH
16	Coupling screw M6
17	Anti-drill guard
18	ESG LM M6
19	Countersunk screw M5 x 35 PZ
20	Countersunk screw M5 x 19
21	Striker E
22	Locking part E
23	Striker
24	Locking cam
25	Eccentric rivet
26	Stay LM 4200-DK
27	Eccentric rivet
28	Locking cam
29	Additional stay
30	Striker plate
31	Striker
32	Locking cam
33	Eccentric rivet
34	Countersunk screw M5 x 13
35	Supporting piece
36	Handle support LM

LM 4200-DS-E RC1+2 *Sash dimensions for secondary sash*

All dimensions (in mm) and specifications for:

Aluminium windows	
Eurogroove in sash	15/20 mm
Hardware cavity	21^{+1} mm
Rebate width	22 mm

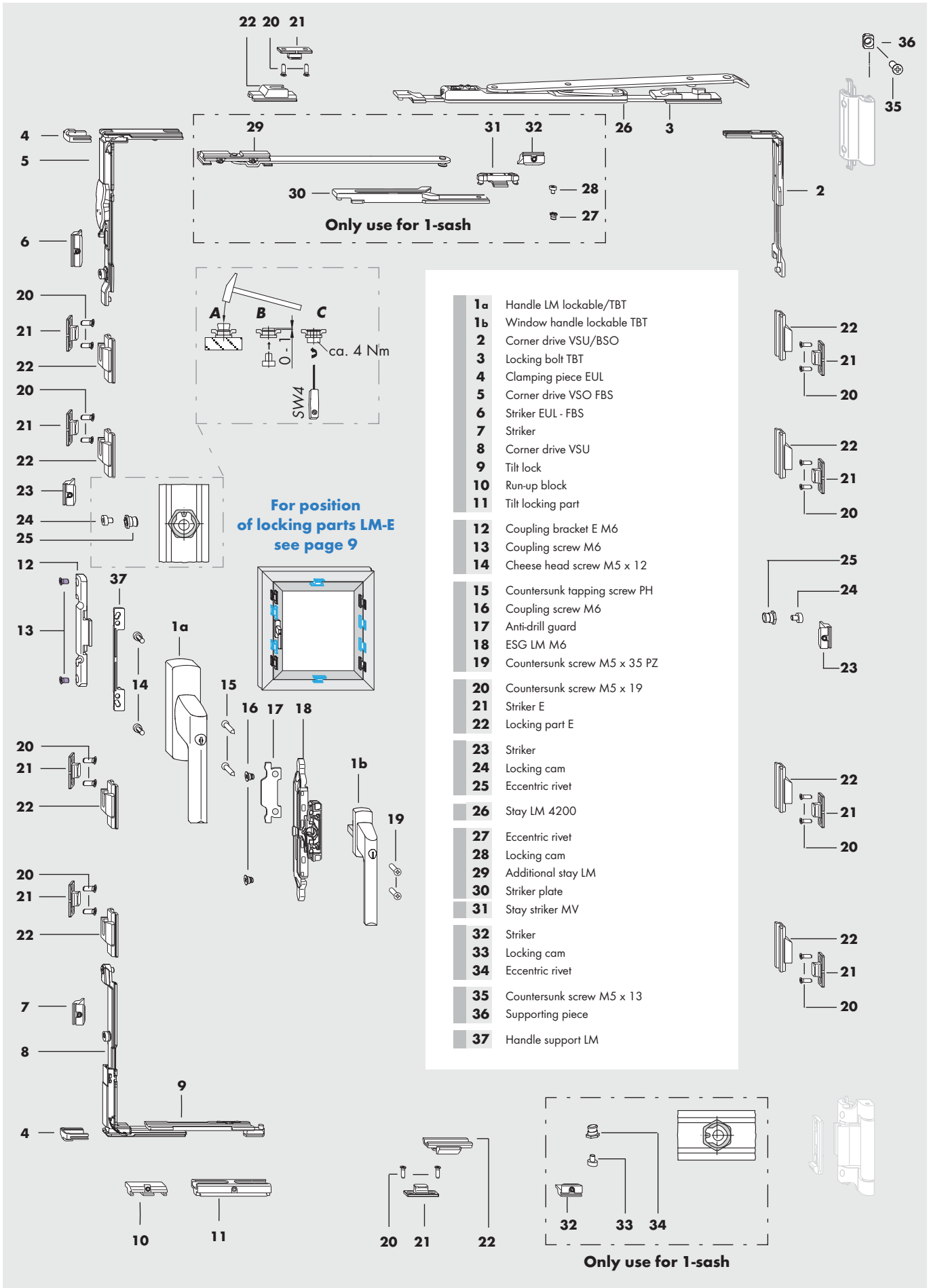


LM 4200-DK-E RC1+2 *Sash dimensions for main sash*

All dimensions (in mm) and specifications for:

Aluminium windows	
Eurogroove in sash	15/20 mm
Hardware cavity	21^{+1} mm
Rebate width	22 mm

1) *b1 ≥ b2*
2) *b1 < b2*
3) *1-sash*
4) *2-sash*
5) *Remove rebate seal in the area through which the hinges pass and rework the sash profiles. Minimum pass 4 mm.*

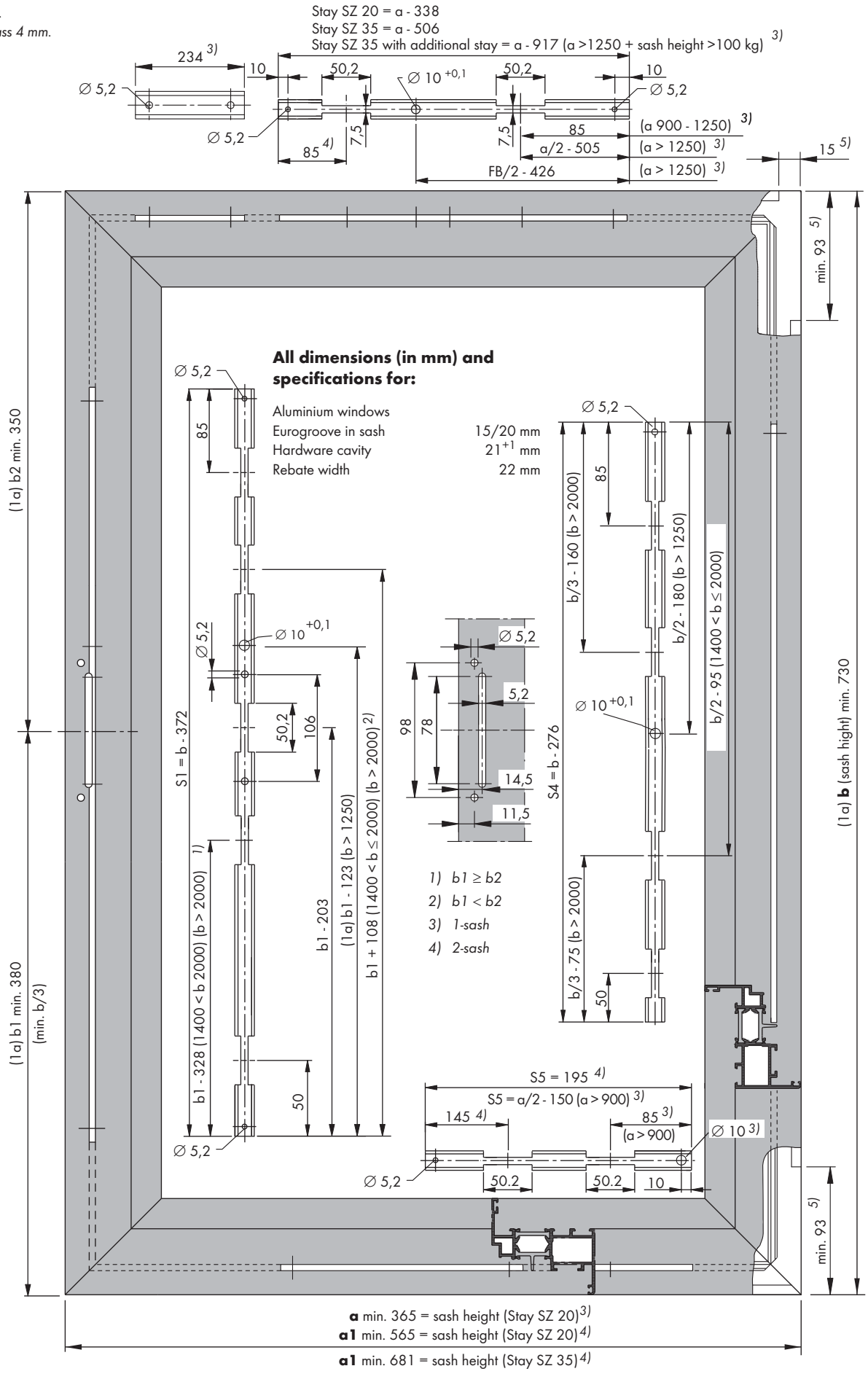


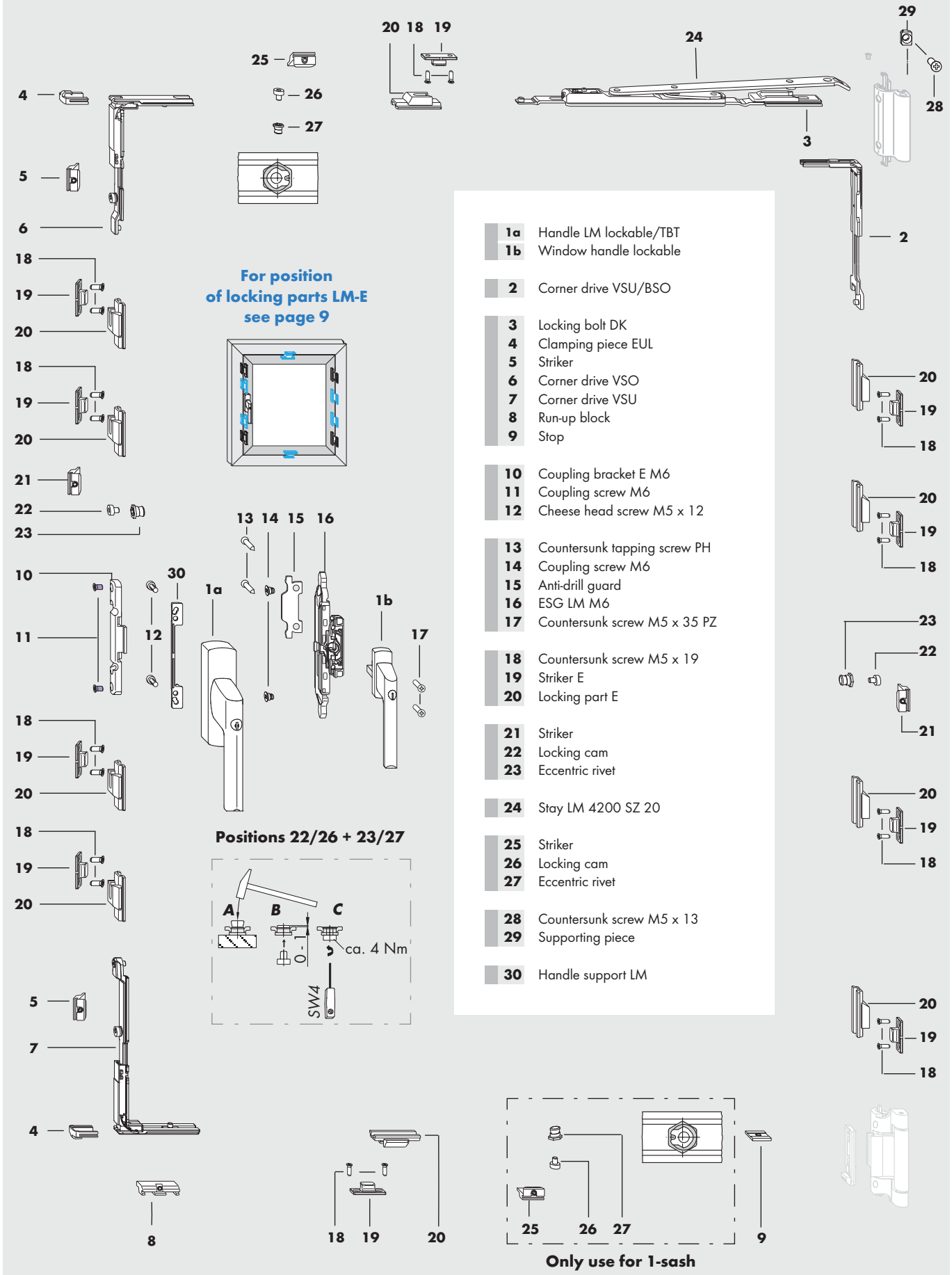
1a	Handle LM lockable/TBT
1b	Window handle lockable TBT
2	Corner drive VSU/BSO
3	Locking bolt TBT
4	Clamping piece EUL
5	Corner drive VSO FBS
6	Striker EUL - FBS
7	Striker
8	Corner drive VSU
9	Tilt lock
10	Run-up block
11	Tilt locking part
12	Coupling bracket E M6
13	Coupling screw M6
14	Cheese head screw M5 x 12
15	Countersunk tapping screw PH
16	Coupling screw M6
17	Anti-drill guard
18	ESG LM M6
19	Countersunk screw M5 x 35 PZ
20	Countersunk screw M5 x 19
21	Striker E
22	Locking part E
23	Striker
24	Locking cam
25	Eccentric rivet
26	Stay LM 4200
27	Eccentric rivet
28	Locking cam
29	Additional stay LM
30	Striker plate
31	Stay striker MV
32	Striker
33	Locking cam
34	Eccentric rivet
35	Countersunk screw M5 x 13
36	Supporting piece
37	Handle support LM

For torque specifications see page 5.

See page 16 for hardware list.

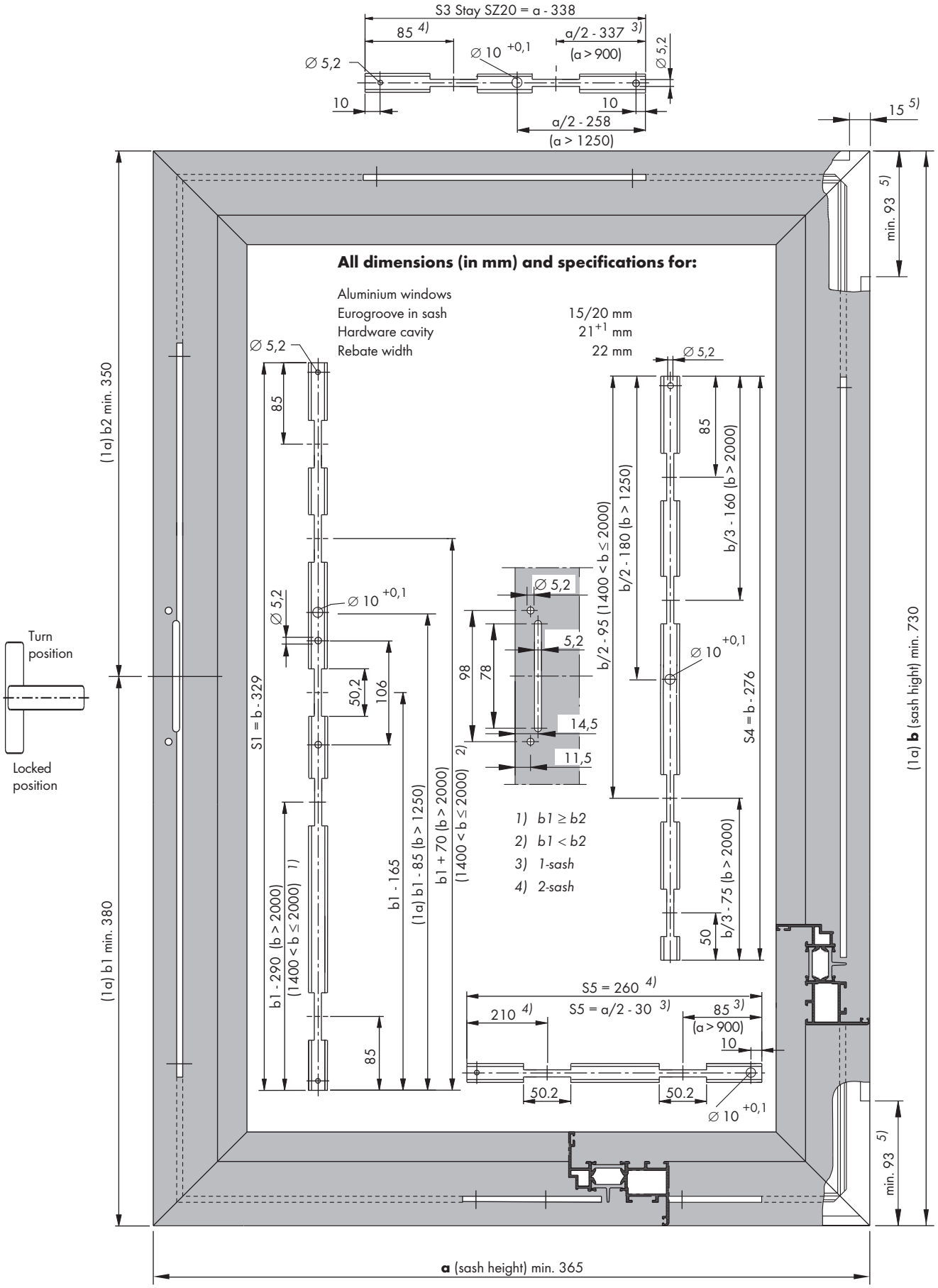
5) Remove rebate seal in the area through which the hinges pass and rework the sash profiles. Minimum pass 4 mm.





1a	Handle LM lockable/TBT
1b	Window handle lockable
2	Corner drive VSU/BSO
3	Locking bolt DK
4	Clamping piece EUL
5	Striker
6	Corner drive VSO
7	Corner drive VSU
8	Run-up block
9	Stop
10	Coupling bracket E M6
11	Coupling screw M6
12	Cheese head screw M5 x 12
13	Countersunk tapping screw PH
14	Coupling screw M6
15	Anti-drill guard
16	ESG LM M6
17	Countersunk screw M5 x 35 PZ
18	Countersunk screw M5 x 19
19	Striker E
20	Locking part E
21	Striker
22	Locking cam
23	Eccentric rivet
24	Stay LM 4200 SZ 20
25	Striker
26	Locking cam
27	Eccentric rivet
28	Countersunk screw M5 x 13
29	Supporting piece
30	Handle support LM

See page 18 for hardware list.



5) Remove the rebate seal in the area through which the hinges pass and rework the sash profiles. Minimum pass 4 mm.

Assembly instructions

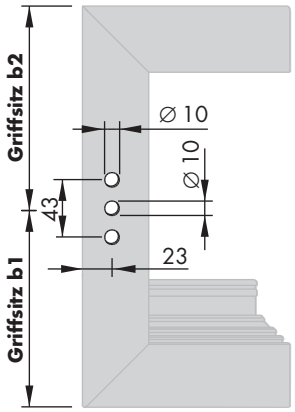
Preparation
A Rework window handle lockable (**1b**) and ESG LM M6 (**18**) on sash according to dimensions (Figures 1 and 4).
B Adjust the length of the square spindle to the profile used. Shorten if necessary.
C Process operating rods S1, S2, S6 and S7 according to dimensions (see table).
D Attach anti-drill guard (**17**) with countersunk tapping screw. PH (**15**) to ESG LM M6 (**18**) (torque 1.5 ± 0.25 Nm, PH1).
E For positioning of locking parts E (**22**) see operating rods S1 and S2 (Figures 2+3).

Sash
A Insert ESG LM M6 (**18**) into milling groove provided (Figure 4).
Attach ESG LM M6 (**18**) to operating rods using coupling screws M6 (**16**) (torque 2.75 ± 0.25 Nm, PZ).
B Attach window handle lockable (**1b**) using countersunk screw M5 x 35 PZ (**19**) (torque 2.5 ± 0.25 Nm, PZ 2).

Frame
For FH > 1,250 mm position striker (**23**) according to dimensions (Figure 5) and fix in place using grub screw (torque 1.5 ± 0.25 Nm, SW 2.5).

Note:
For position specifications see hardware layout on page 11, for example.

For further information see gear set M6 (FBS), document no.: LMen1361 in aluminium planning manual.



Figure

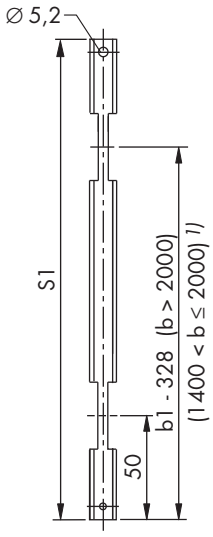


Figure 2

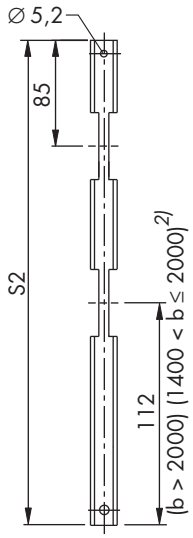


Figure 3

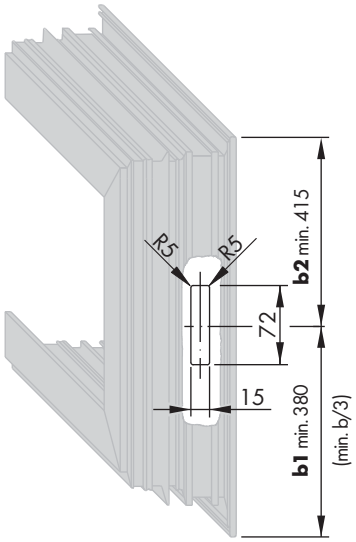


Figure 4

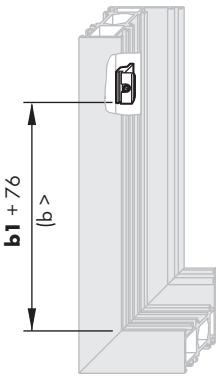


Figure 5

Table for cutting operating rods to length

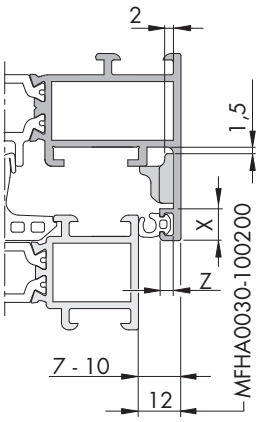
WK 1+2	**S1** (mm)	**S2** (mm)	**S6** (mm)	**S7** (mm)
DK/TBT	b1 - 233	b2 - 238	-	-
D	b1 - 233	b2 - 195	-	-
DS	-	-	b1 - 110	b2 - 110

1) b1 ≥ b2
2) b1 < b2

Item	Quantity Main sash	Description			Material no.		Material no.
1a	0...1	**Handle LM lockable TBT**			*See handle overview LM Drawing no.: LMen1337 in aluminium planning manual*		
1b	0...1	**Window handle, lockable** (□ 7 mm x 25, cam ∅ 10 mm)			–		
2	1	**Corner drive VSU/BSO**		1	859391	20	266076
3-11	1	**VS LM-DK-TBT FBS-EUL KPW**	*Main sash*	1	MMVS0340-100010	20	MMVS0340-100030
12-14	0...1	**Coupling set LM-E**	*Use handle LM lockable TBT (1a)*	1	MMKL0070-100010	20	MMKL0070-100030
15-19	0...1	**Gear set M6 LM-E**	*Use window handle lockable (1b)*	1	MMGI0060-100010	20	MMGI0060-100030
20-22	4...10	**Locking part LM-E** (A0004)	*For number of locking parts see page 9*	1	838365	20	231708
		Locking part LM-E (A0006)		1	838372	20	231722
		Locking part LM-E (A0022)		1	MMVR0010-600010	20	MMVR0010-600030
23-25	0...2	**Locking part LM**	*b > 1,250*	1	–	20	317556
26	1	**Stay LM 4200**					
		Size a (1-sash) (in mm)	*Size a (2-sash) in mm)*				
		20 365 to 600	20 565 to 680	1	884805	20	273098
		35[1)] 601 to 1,250	35[1)] 681 to 1,250	1	884782	20	314203
		35[2)] 1,251 to 1,600		1	884782	20	314203
		1) Up to max. 100 kg sash weight (1-2 sashes) *2) With additional stay LM up to max. 130 kg (1-sash)*					
27-30	0...1	**Additional stay LM 4200**	*FB 1,250 mm and up with stay SZ 35 and/or 100 - 130 kg sash weight*	1	857076	20	247006
31	0...1	**Stay striker MV**	*a > 1,250 mm*	1	MXSK0010-100010	20	MXSK0010-100030
32-34	0...1	**MV LM-RB/SF**	*(1-sash) a > 1,250*	1	894316	20	303917
35-36	0...1	**Accessories LM 4200 130 kg**	*Sash weight 100 kg and up*	1	–	20	247037
Accessories							
37	0...1	**Handle support LM**	*(1a)*	–	–	200	*See table*

Design variations for handle support LM (37) for turning (30)

USH	Z	X < 7 mm	X 7.1 - 8.5 mm
7 - 10 mm	< 2 mm	MFHA0010-100200	MFHA0010-100200
7 - 10 mm	2.1 - 3 mm	MFHA0010-100200	MFHA0020-100200
7 - 10 mm	> 3 mm	MFHA0010-100200	-
12 mm	-	MFHA0030-100200	-

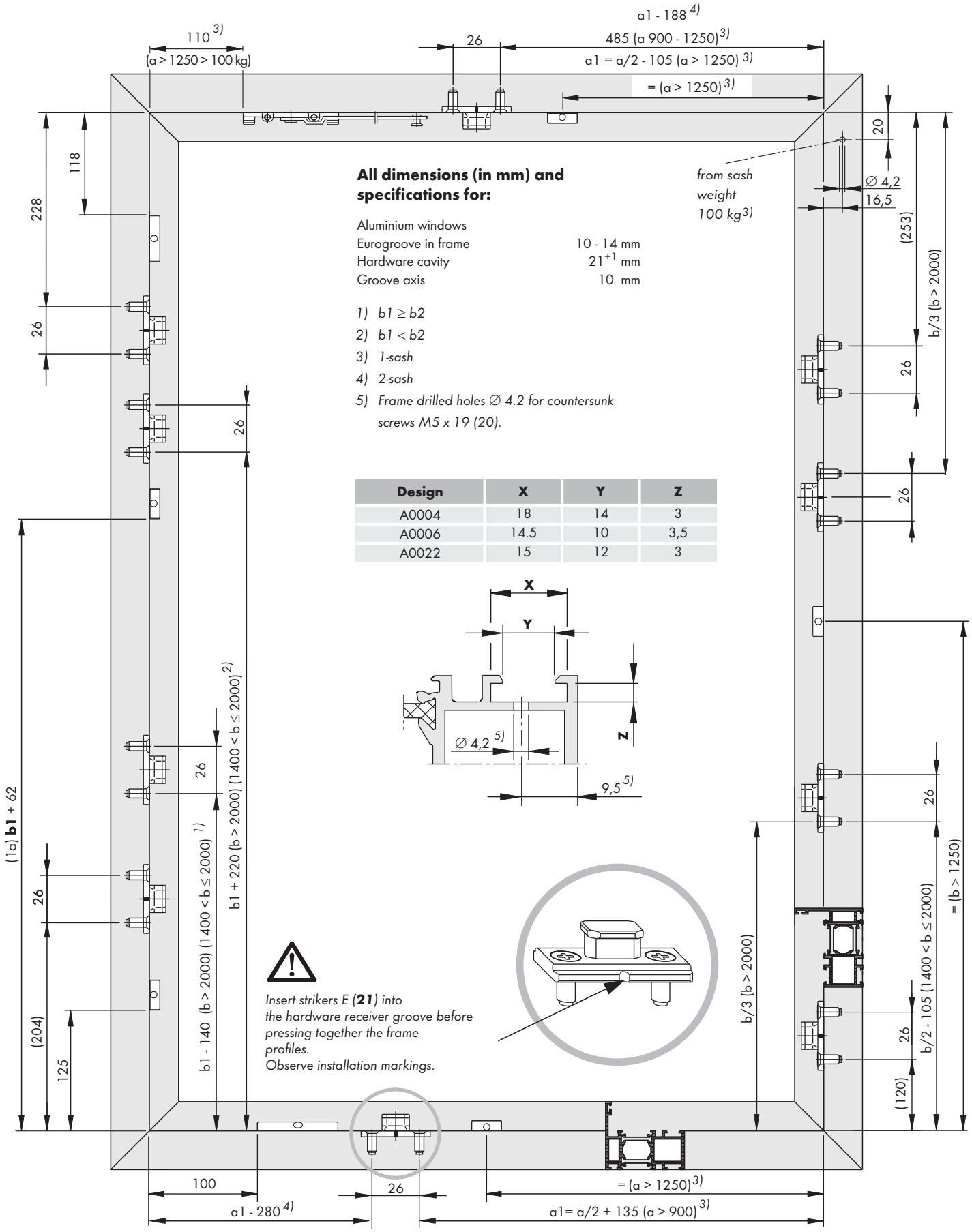


Abbreviations

The following abbreviations are used in these assembly instructions:

a	Sash width	MV	Centre lock
a 1	Sash width, main sash	USH	Rebate height
a 2	Sash width, secondary sash	VS	Locking side
b	Sash height	VSO	Locking side, top
b1	Handle height, bottom	VSU	Locking side, bottom
b2	Handle height, top	S2	Operating rod, locking side top
BSO	Hinge side, top	S2	Operating rod, locking side top
EUL	Corner drive	S3	Operating rod, top horizontal
ESG	Routed-in drive gear	S4	Operating rod, hinge side
FBS	Mishandling device	S5	Operating rod, bottom horizontal

For hardware layout see page 11.



All dimensions (in mm) and specifications for:

Aluminium windows	
Eurogroove in frame	10 - 14 mm
Hardware cavity	21^{+1} mm
Groove axis	10 mm

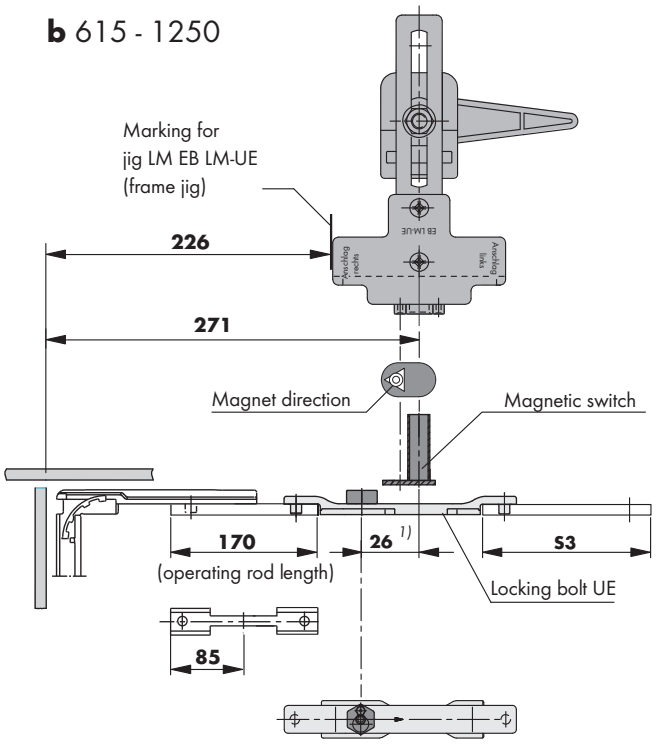
1) b1 ≥ b2
2) b1 < b2
3) 1-sash
4) 2-sash
5) Frame drilled holes ∅ 4.2 for countersunk screws M5 x 19 (20).

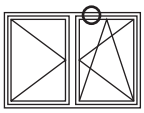
Design	X	Y	Z
A0004	18	14	3
A0006	14.5	10	3,5
A0022	15	12	3

*Insert strikers E (**21**) into the hardware receiver groove before pressing together the frame profiles.*
Observe installation markings.

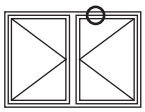
	Item	Quantity Main sash	Description			Material no.		Material no.
	1a	0...1	**Handle LM lockable/TBT**		See handle overview LM Drawing no.: LMen1337 in aluminium planning manual			
	1b	0...1	**Window handle, lockable** (□ 7 mm x 25, cam ∅ 10 mm)		–			
	2	1	**Corner drive VSU/BSO**		1	859391	20	266076
	3-9	1	**VS LM-D-DS**		1	MMVS0350-100010	20	MMVS0350-100030
	10-12	0...1	**Coupling set LM-E**	*Use handle LM lockable (1a)*	1	MMKL0070-100010	20	MMKL0070-100030
	13-17	0...1	**Gear set M6 LM-E**	*Use window handle lockable (1b)*	1	MMGI0060-100010	20	MMGI0060-100030
	18-20	4...10	**Locking part LM-E** (A0004)	*For number of locking parts see page 9*	1	838365	20	231708
			Locking part LM-E (A0006)		1	838372	20	231722
			Locking part LM-E (A0022)		1	MMVR0010-600010	20	MMVR0010-600030
	21-23	0...2	**Locking part LM**	*b > 1,250*	1	–	20	317556
	24	1	**Stay LM 4200**					
			Size a (1-sash) (in mm)	*Size a (1-2 sashes) in mm)*				
			20 365 to 1,600	20 565 to 1,250	1	884805	20	273098
	25-27	0...2	**Locking part LM**	*a > 1,250*	1	–	20	317556
	28-29	0...1	**Accessories LM 4200 130 kg**	*Sash weight 100 kg and up*	1	–	20	247037
	Accessories							
	30	0...1	**Handle support LM**	*Use handle LM lockable (1a) (for tables see 16)*	–	–	200	*See table*

LM 4200-E RC2 2-sash:
Magnetic switch types UMS001, UMS002, UMS003

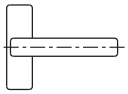




Stay	S3
size 20 a 615 - 785	**a - 583**
size 35 a 786 - 1,250	**a - 751**



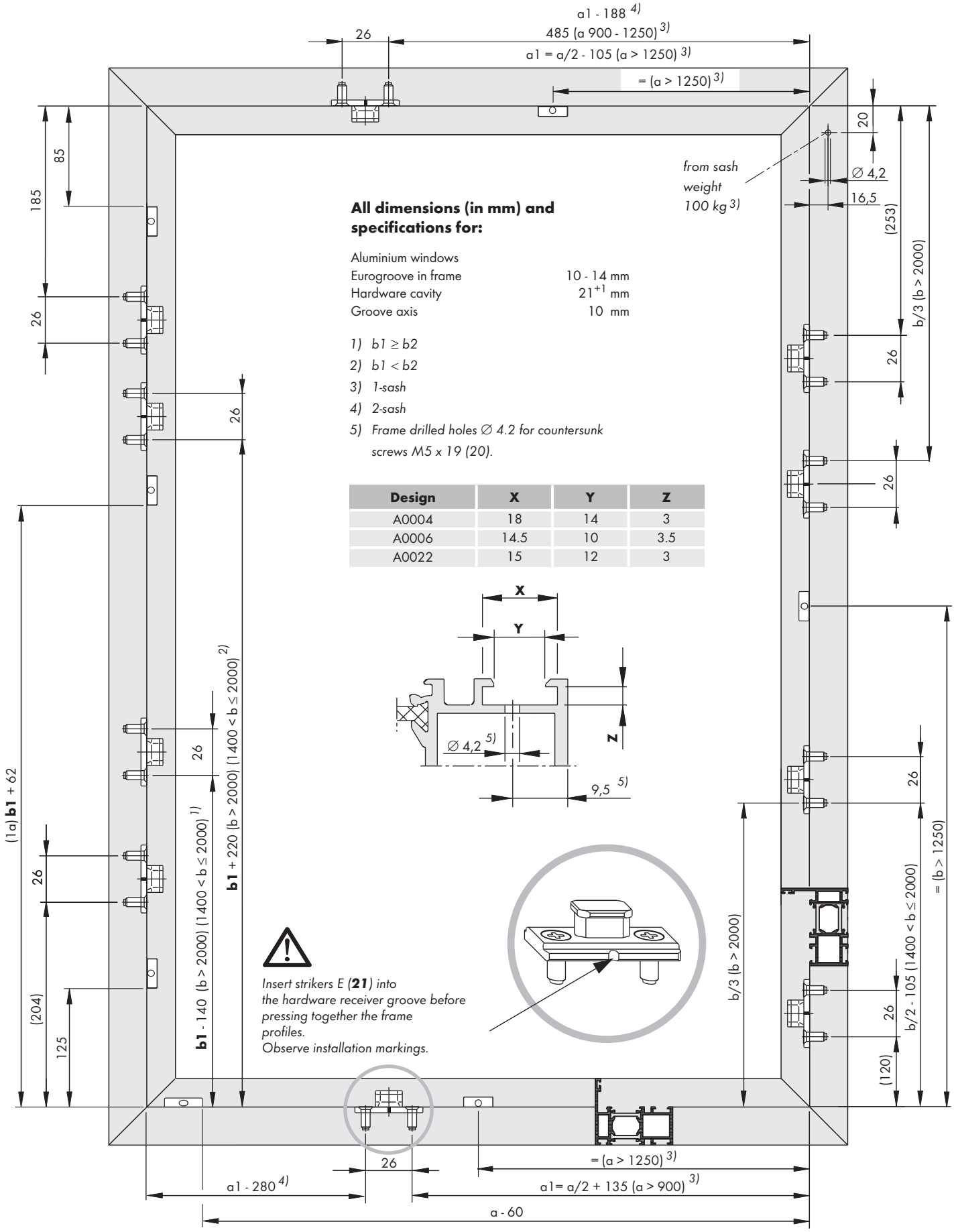
Stay	S3
size 20 a 615 - 1,250	**a - 583**



1) *Magnetic switch drilled hole dimensions (handle position as shown in figure opposite)*

For further information see AEROCONTROL LM,
Document no.: H4003.2921en_LM
in aluminium planning manual.

For hardware layout see page 13.

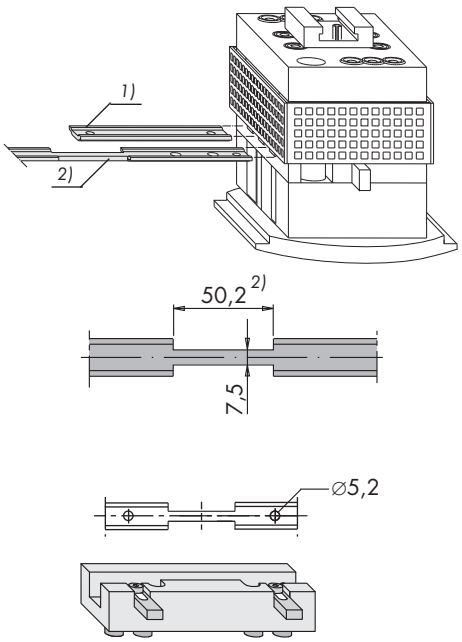


All dimensions (in mm) and specifications for:

Aluminium windows	
Eurogroove in frame	10 - 14 mm
Hardware cavity	21^{+1} mm
Groove axis	10 mm

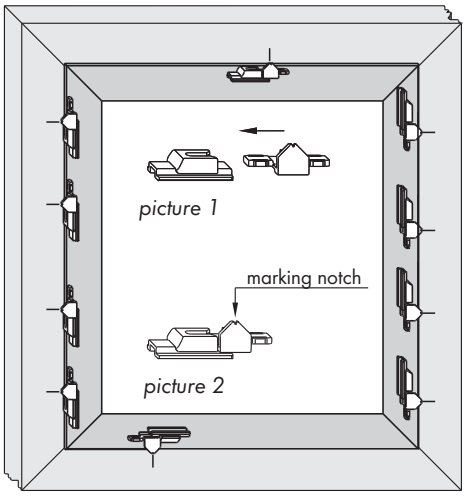
1) b1 ≥ b2
2) b1 < b2
3) 1-sash
4) 2-sash
5) Frame drilled holes ∅ 4.2 for countersunk screws M5 x 19 (20).

Design	X	Y	Z
A0004	18	14	3
A0006	14.5	10	3.5
A0022	15	12	3



Description		Material no.
Punching tool *Suitable punching machine:* BST 105 (15 mm travel)	*1) Operating rod punching and cropping* *2) Press cutting LM-E*	**141267**
Jig LM-E	*for coupling bracket E (13)* *⌀ 5.2 for operating rod S1*	**MAFB0020-000010**
Jig Trial LM-ESG*(top fig.)*	*For further information see LMen1361 page 4*	**MMAH0010-000010**

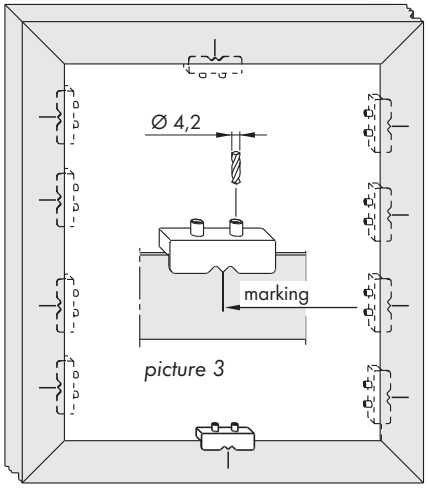
Jig LM-E			**863022**
Jig EL LM-E	*for sash*	*Contents:12 pieces*	156926
Jig EB LM-E	*for frame*	*Contents:1 piece*	156919



Use of the jigs EL LM-E LM-E on the sash

Installation on frame

- ***A*** Insert jigs EL LM-E into locking parts E (**22/20**) (see Figure 1).
- ***B1*** For DK-D-DS: move handle to turn position.
- ***B2*** Close sash without changing handle position.
- ***B3*** For TBT: close sash and move handle to tilt position.
- ***B4*** Place markings for jig EB LM-E on frame (see Figure 2).
- ***C*** Open sash.
- ***D*** Remove jigs EL LM-E.



Assembly of the jig EB LM-E on the frame

Installation on frame

- ***A*** Position jig EB LM-E and drill holes for strikers E (**21/19**) ∅ 4.2 (see Figure 3).

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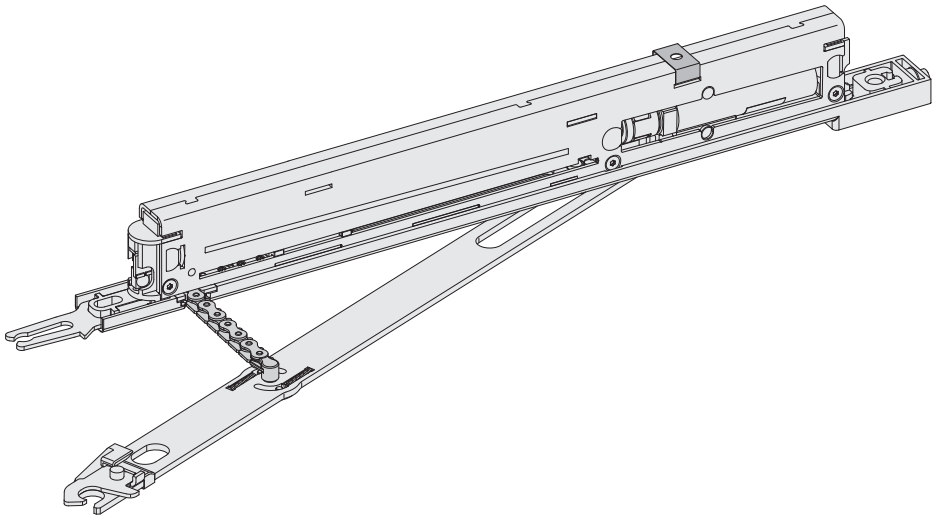
DRIVE axxent DK

Concealed drive

Technical data sheet



Application

- Suitable for rectangular tilt & turn windows made of timber, PVC or aluminium
- For installation at top in horizontal profile area
- Sash weight max. 130 kg, for permissible sash sizes please refer to the hardware application diagrams
- For timber and PVC profiles with an airgap of 12 +1 mm
- For aluminium profiles with LM eurogroove and a cavity of 21 +1 mm
- Fully integrated into the window profile

Function

- Motorised tilting and locking/unlocking
- Status display by LED

Features

- Opening width 120 mm or 150 mm
- Can be operated manually from the tilt and locked position
- Can be controlled by IR remote control, buttons or building control technology
- Available as a DIN right or DIN left variant

H40.MOTS002EN/2

ORIGINAL OPERATING INSTRUCTIONS

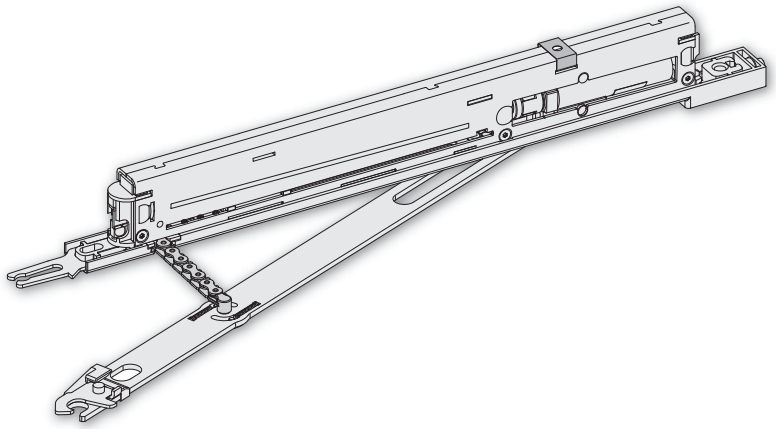
SIEGENIA®
brings spaces to life

DRIVE

DRIVE axxent DK

Concealed motion chain drive.

Window systems
Door systems
Comfort systems



Contents

1. Information

1.1 Safety information and hazard warnings

- Before installing and using the DRIVE axxent DK, please read these instructions carefully. Observe the warnings and specific hazard information.
- After the installation of the DRIVE axxent DK, these operating instructions must be handed over to the user, and the user/owner of the building must be briefed accordingly.
- All work in conjunction with the installation and commissioning of the DRIVE axxent DK is to be performed by experienced professionals with training and practice in the assembly, installation and maintenance of window hardware and motion chain drives and who are aware of the applicable accident prevention regulations and occupational safety directives. You must comply with the applicable regulations governing mechanical and electrical work and follow the safety instructions in our product documentation.
- This unit can be used by children aged 8 and above as well as by people with physical, sensory or mental difficulties or with a lack of experience and knowledge as long as they are supervised or have been instructed in how to use the unit safely and understand the resulting risks. Children must not play with the unit. Cleaning and user maintenance must not be carried out by children without supervision.

⚠ WARNING **Risk of injury or fatal injury! Hands, arms, legs and feet can get trapped and/or crushed in systems driven by an electric motor.**
To prevent personal injury or damage to property, always comply with the following instructions:

› If the window is installed in an accessible area, e.g. at a height of less than 2.5 m (lower window edge), the appropriate measures must be taken to ensure that no persons are put in danger if they accidentally find themselves in such areas. It is essential to ensure the following precautionary measures in case of automatic control of the window (storage operation in OFF-direction, weather automatic control etc.):

- Safety edges, contact hoses, light barriers which automatically stop the drive in case of crushing hazard.
- Grilles or other mechanical devices that prevent reaching into the hazardous zone.
- Operation via key button or key-operated push button by an authorised person with eye contact to the actuated window. See ASR-A1-6 guidelines for power-operated windows, doors and gates.

› For tilted sashes, a safety stay must be mounted in addition to the window drive, which secures the tilting of the window sash after the lift-off of the drive, e. g. for cleaning windows (arresting position), and secures the sash against tilting down. This arresting position must be somewhat larger than the opening width of the drive. The safety stay must be mounted before commencing the installation of the drive!

› Electrically actuated windows and flaps must be constructed in such a way that they do not protrude into access routes in buildings when either open or closed. Level-access openings must be secured against falling.

› If there is a hazard of falling glass, the glass used must be laminated safety glass (VSG).

› If the ventilation flaps could be exposed to heavy wind loads, the control centre must be connected to a wind sensor that ensures the automatic closing of the flaps.

› In automatic operation, the drive is stopped via the limit switch or overload cut-off device.

1.2 Intended use

- DRIVE axxent DK is a concealed motion chain drive that may only be used for the motorised tilting and the closing of turn/tilt windows from their tilted position.
- The drive can be controlled via a wall button or an optional remote control.

Commissioning

- DRIVE axxent DK is an incomplete machine that must not be commissioned until it has been incorporated in a power-operated window as a complete machine and has been approved in accordance with the manufacturer's specifications.

Installation location and suitable hardware and window systems

- DRIVE axxent DK is exclusively intended for installation in vertical turn/tilt windows made of timber, PVC or aluminium in fixed buildings. The device must be installed in the window frame at the top of the locking side by qualified professionals and in accordance with the installation instructions provided
- for timber and PVC profiles with an airgap of 12 +1 mm
- for aluminium profiles with LM eurogroove and a cavity of 21 +1mm
- Hardware systems SIEGENIA Titan AF and LM 4200:

  Sash outer dimensions (sash width):

Areas: timber and PVC TITAN AF (sash rebate)	min. 850 mm - max. 1560 mm
Area: aluminium LM 4200 top stay size 20 (sash width)	min. 835 mm - max. 980 mm
Area: aluminium LM 4200 top stay size 35 (sash width)	min. 981 mm - max. 1600 mm

  Top stay opening width:

Areas: timber and PVC TITAN AF	max. 150 mm
Area: aluminium top stay LM 4200 size 20	min. 120 mm
Area: aluminium top stay LM 4200 size 35	min. 150 mm

- Sash weights up to 130 kg (the application diagrams of the respective hinges must be observed)
- DRIVE axxent DK is only to be used if it is in a technically sound condition, and no modifications may be made to the unit and/or its components
- DRIVE axxent DK must only be used in conjunction with genuine accessories and hardware approved by SIEGENIA.
- DRIVE axxent DK is suitable only for installation in dry rooms (protection class IP20) and permissible operating temperatures of -20°C to +40°C
- In the event of a fault, have DRIVE axxent DK checked and repaired by experienced specialists only.
- The system is designed only for occasional manual operation.
- Any other use is considered as improper use.

1.3 Improper use

- DRIVE axxent DK may not be used as a drive of smoke and heat control systems in windows.
- DRIVE axxent DK may not be used in windows that are intended as emergency exits.
- Do not use levers with lock-in position, but use only removable levers of the Si-line with Si-line rose.
- Any use of this product that is not in accordance with its intended use, or any adaptation of or modification to the product and its associated components for which the express consent of SIEGENIA has not been obtained, is strictly prohibited. SIEGENIA accepts no liability whatsoever for any material losses or injury to people caused by failure to comply with this stipulation.

1.4 On-site risk analysis in the planning phase

Power window elements imply the risk of crushing and shearing. Depending on the individual property and conditions of use (e.g. in case of persons requiring special protection or commercial properties), you must carry out a risk and hazard analysis during the planning phase in accordance with VFF data sheet KB.01 and the current machinery directive or other applicable national regulations relating to the safety equipment and installation location. A risk analysis provides you with all the information needed to assess risks and make decisions concerning the safety of the window elements.

1.5 Instructions for assembly and installation

The applicable national and international regulations concerning mechanical and electrical work as well as the document provided by us must be observed when performing any installation and commissioning of the DRIVE axxent DK.

- Install DRIVE axxent DK in its intended installation position and in accordance with the installation directives applicable on site.
- During cable routing, avoid damage to the cables caused by pinching, bending or pulling.
- Lines for the DRIVE axxent DK routed in-wall must be connected in branch boxes (keep branch boxes accessible for maintenance)
- Protect DRIVE axxent DK against contamination by site material and humidity.
- All fittings must be mounted properly.
- Connect to the mains supply only after you have tested for proper mechanical function.
- Observe the applicable fabrication guidelines from the profile manufacturer
- Always observe all safety precautions provided in these instructions and make sure that these instructions are at accessible at all times.

Note: Due to its motion speed, the DRIVE axxent DK complies with the requirements of protection class 0 to 3 according to VFF data sheet KB.01 without any additional protection measures.

Dimensions

- All dimensions given in this documentation are in mm.

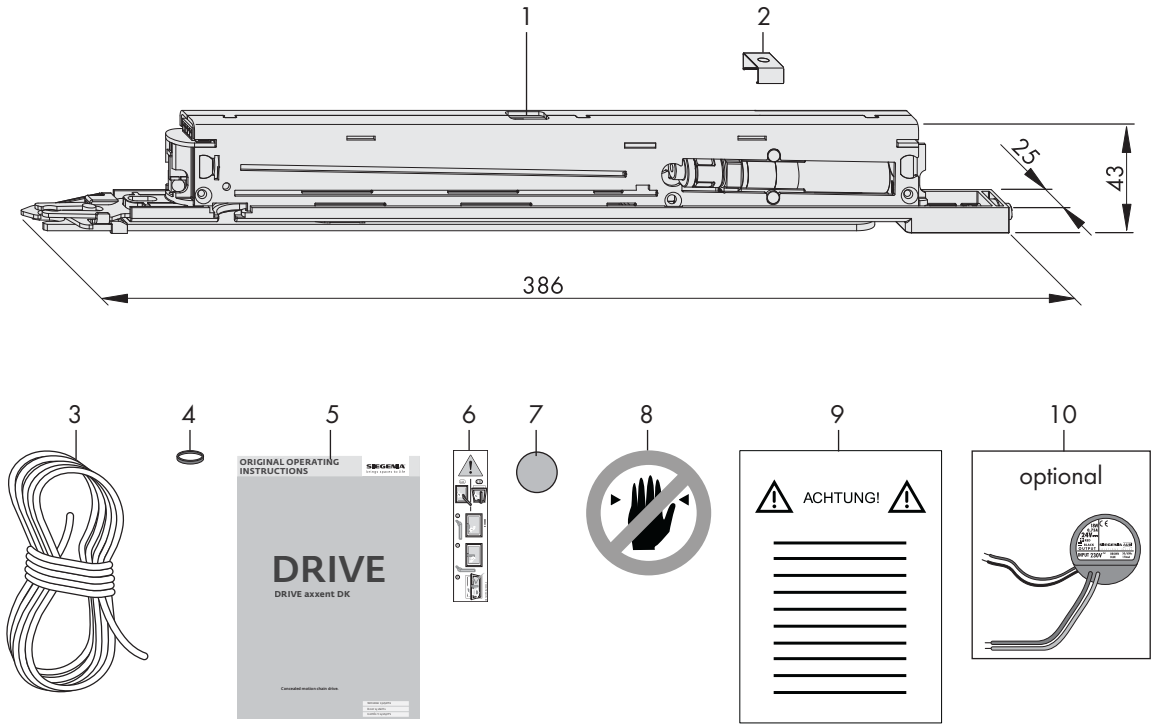
Illustrations

- All illustrations are shown in DIN right, DIN left is a mirror image.

Note concerning the infrared remote control function

- Intense solar radiation and light incidence can reduce the range of the infrared remote control.

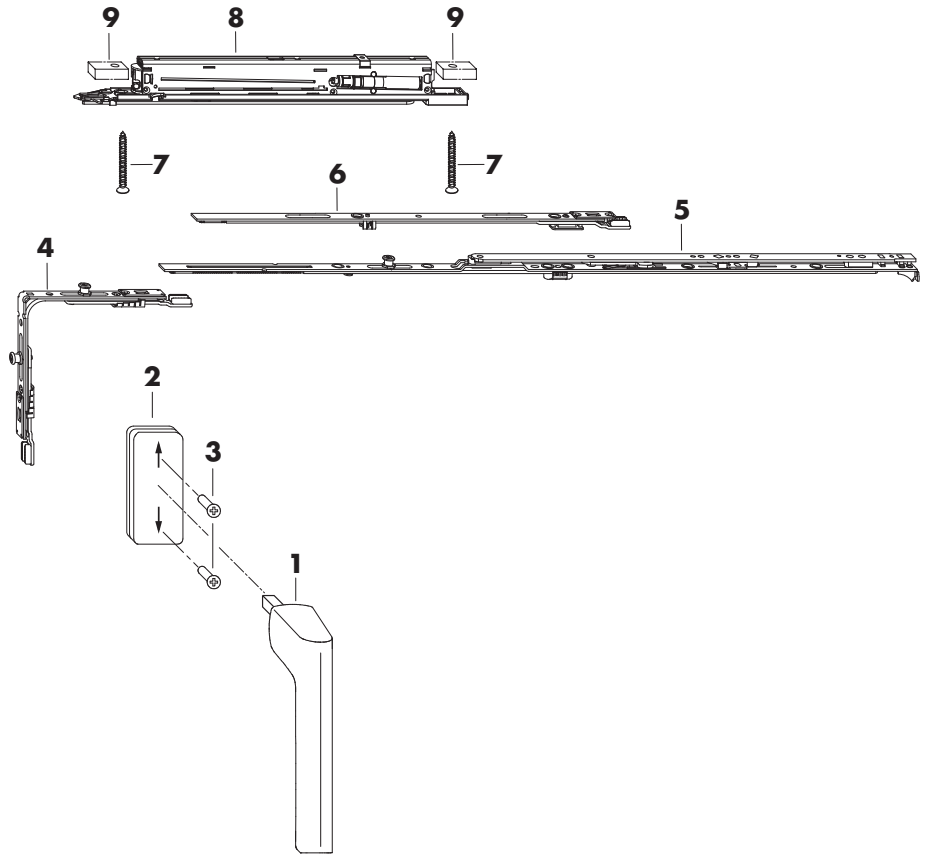
1.6 Scope of delivery



No.	Designation
1	DRIVE axxent DK
2	Clamping spring
3	Connecting line
4	Rubber ring
5	Translation of the original operating instructions
6	Warning sticker for window
7	Lens (status indicator)
8	Safety sticker The supplied sticker must be placed on a visible area on the frame of the power-operated window.
9	SAFETY NOTICE
10	Power supply (optional accessories)

2. Installation

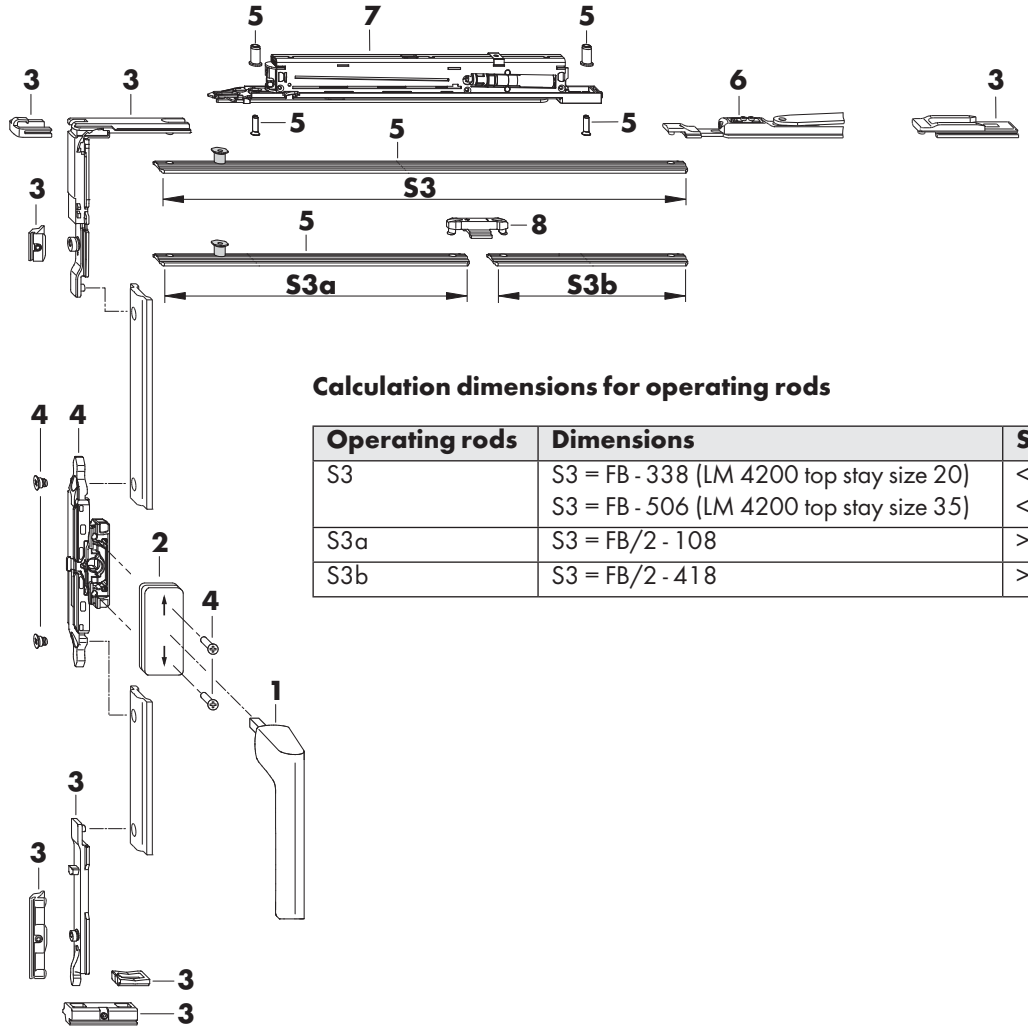
2.1 Hardware overview timber and PVC (TITAN AF, sash rebate width 850 - 1560 mm)



No.	Material description	Piece	Sash rebate width
1	Handle Si-line removable	1	-
2	Rose Si-line	1	-
3	Countersunk screw M5 x 40	2	-
4	Top corner AF VSO 2 RS A0055	1	-
5	Top stay AF size 2	1	850 - 1050
	Top stay AF size 3 1RS	1	1051 - 1250
	Top stay AF size 4 1RS	1	1251 - 1450
	Top stay AF size 4 1RS	1	1451 - 1560
6	Linkage AF size 1	1	850 - 1450
		2	1451 - 1560
7	Universal countersunk screw 4.5 x 40 (not included in scope of supply)	2	-
8	DRIVE axxent DK 150 RH	1	-
	DRIVE axxent DK 150 LH	1	-
9	Packer (to be provided by customer)	2	-

Note: For further information concerning components and the installation of the window hardware, please refer to our product catalogues for the TITAN AF system (document no. H4006.2943 for timber or H4006.2945 for PVC).

2.2 Hardware overview aluminium (LM 4200-DK, sash rebate width 835 - 1600 mm)



Calculation dimensions for operating rods

Operating rods	Dimensions	Sash width
S3	S3 = FB - 338 (LM 4200 top stay size 20) S3 = FB - 506 (LM 4200 top stay size 35)	< 1200 < 1200
S3a	S3 = FB/2 - 108	> 1201
S3b	S3 = FB/2 - 418	> 1201

No.	Material description	Piece	Sash rebate width
1	Handle Si-line removable	1	-
2	Rose Si-line	1	-
3	VS LM-DK KPS (vertical tilt point)	1	-
4	Gear set FBS M6 Trial/RR	1	-
5	LM accessories set DRIVE axxent DK	1	-
6	LM 4200 top stay size 20	1	835 - 980
	LM 4200 top stay size 35	1	981 - 1600
7	DRIVE axxent DK 120 RH (for LM 4200 top stay size 20)	1	-
	DRIVE axxent DK 120 LH (for LM 4200 top stay size 20)	1	-
	DRIVE axxent DK 150 RH (for LM 4200 top stay size 35)	1	-
	DRIVE axxent DK 150 RH (for LM 4200 top stay size 35)	1	-
8	Stay striker MV	1	1201 - 1600

Note: For further information concerning components and the installation of the window hardware, please refer to our planning manual for ALU systems (document no.: H4006.3042, drawing no.: LMen1362 and LMen1361).

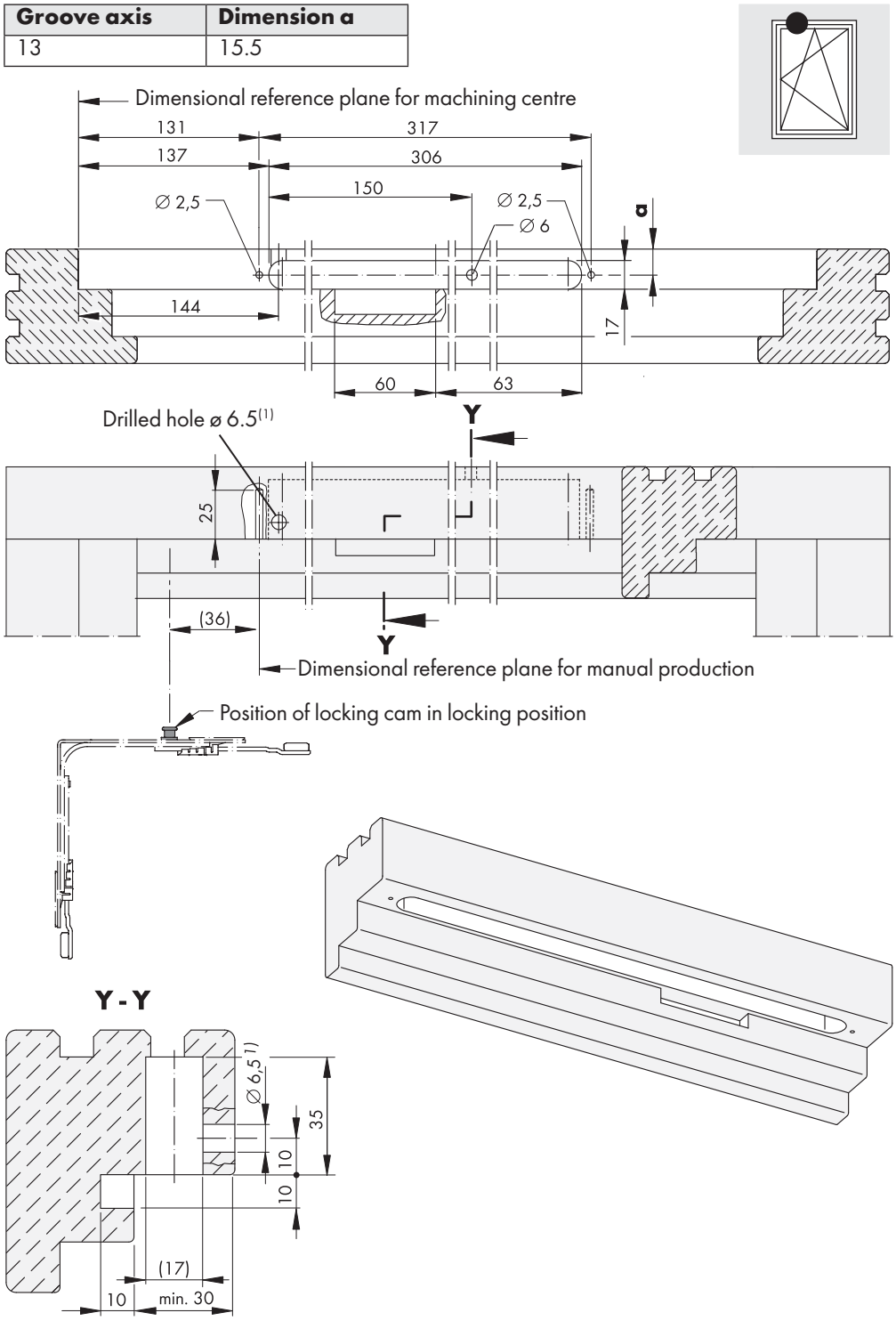
2.3 Profile machining

Milling and drilling the timber frame profile (lock side on top)

Important: Apply protective varnish after milling the routed pocket.

1 Machining centre
2 Manual production

Groove axis	Dimension a
13	15.5



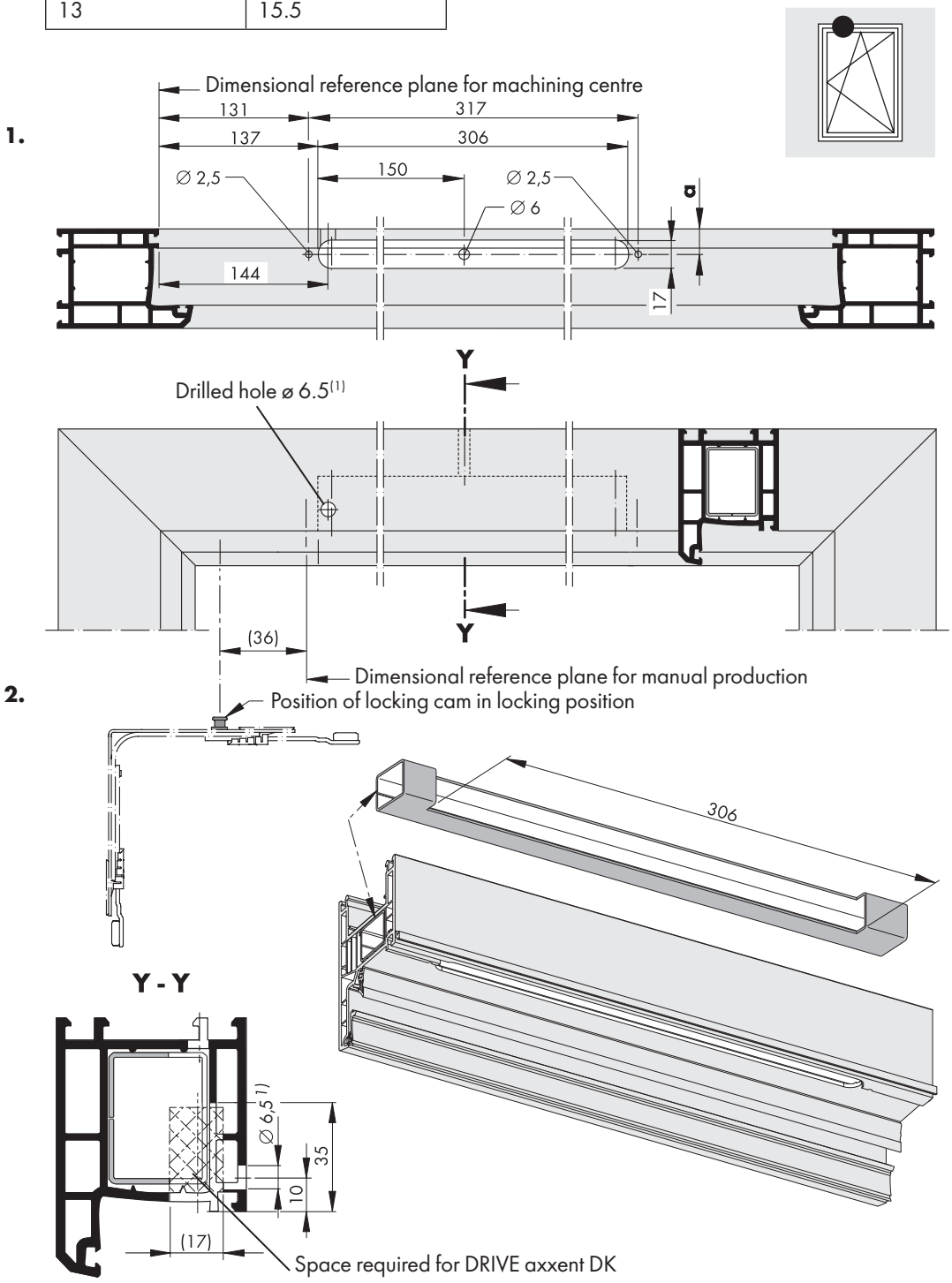
1) The status indicator and infrared remote control require a drilled hole of ø 6.5

Milling and drilling the PVC frame profile

Important: Unlatch the reinforcement before assembling the profiles.

1 Machining centre
2 Manual production

Groove axis	Dimension a
13	15.5

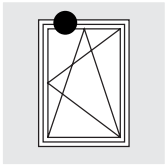


1) The status indicator and infrared remote control require a drilled hole of ø 6.5

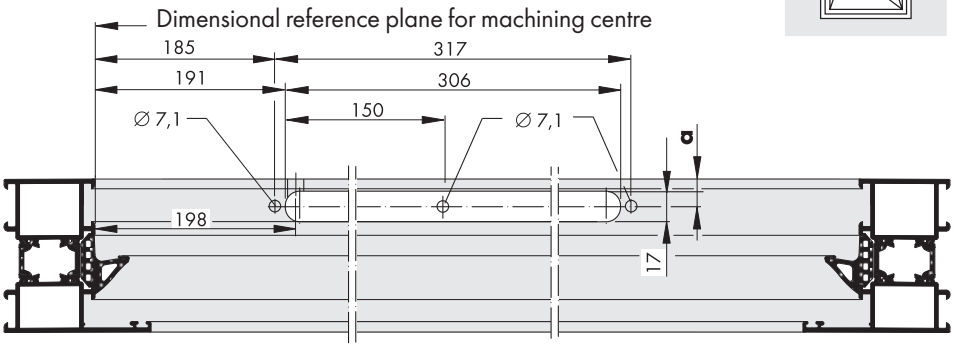
Milling and drilling the aluminium frame profile

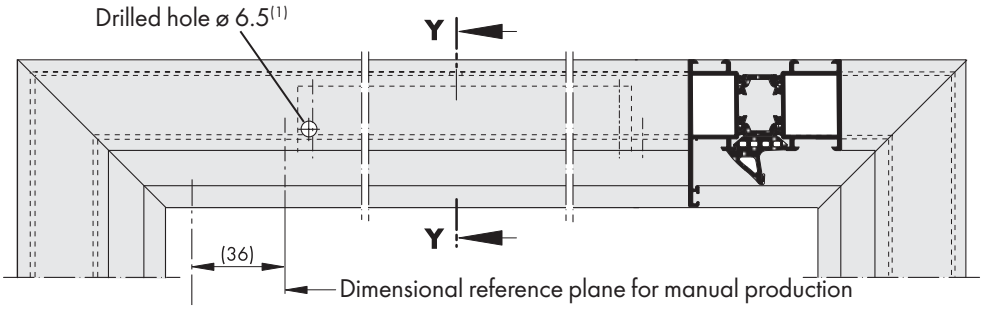
1 Machining centre
2 Manual production

Groove axis	Dimension a
10	12.5

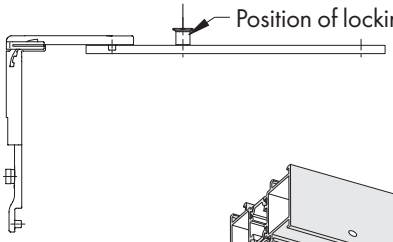


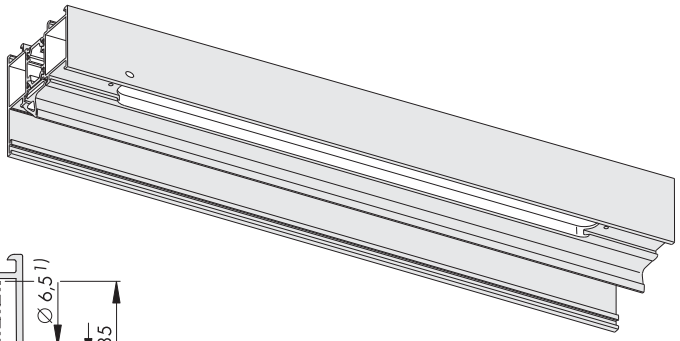
1.



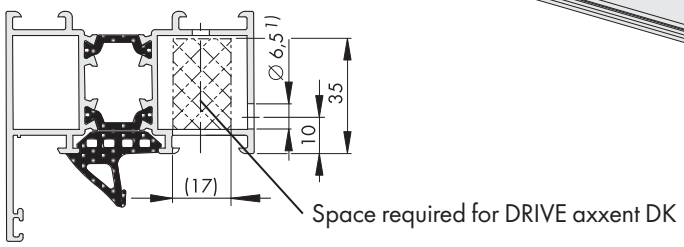


2.





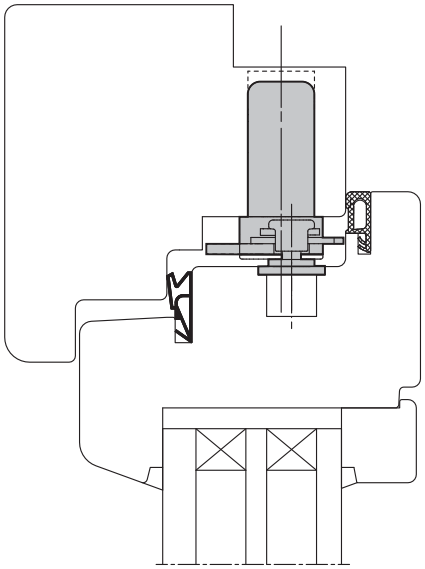
Y - Y



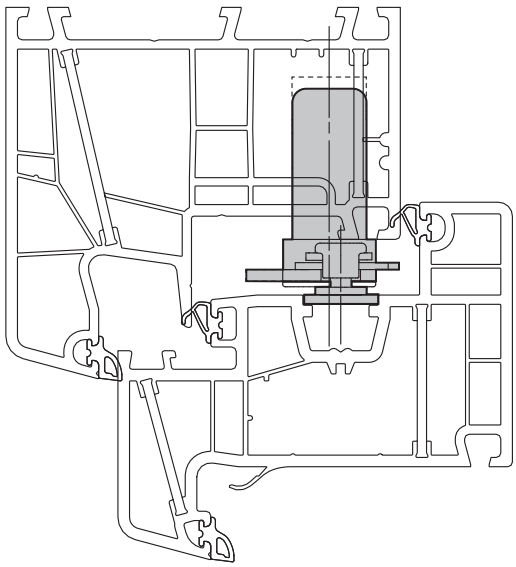
1) The status indicator and infrared remote control require a drilled hole of ø 6.5

2.4 Installation steps (example)

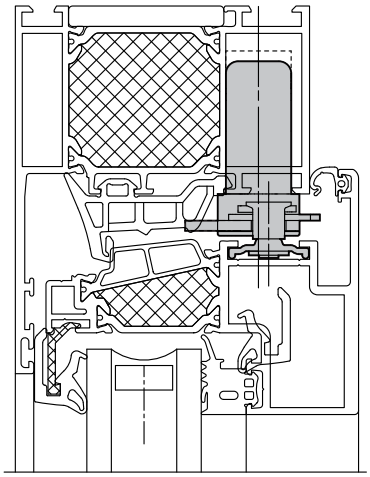
Timber



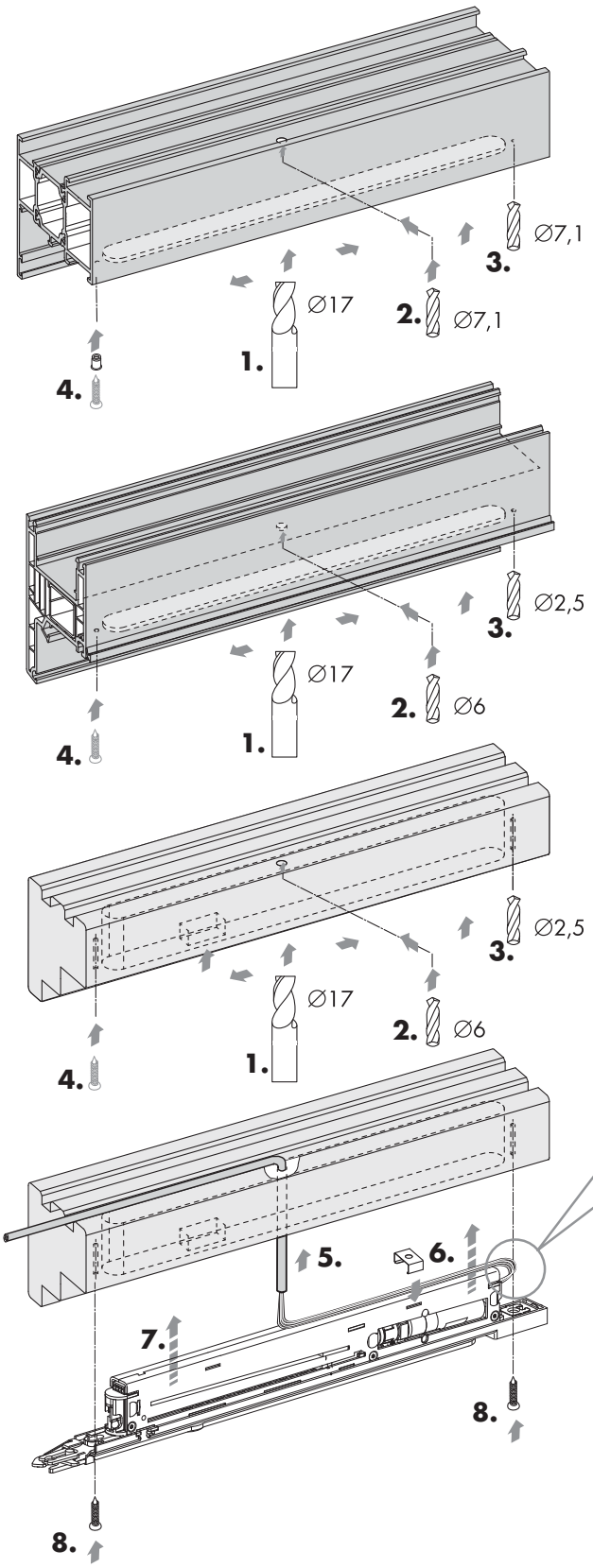
PVC

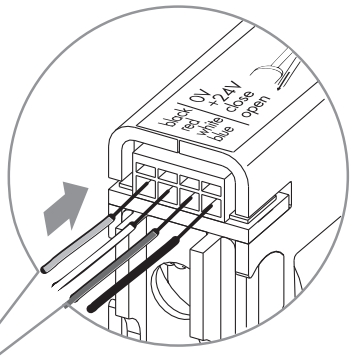


Aluminium

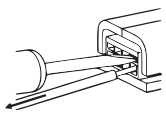


2.5 Installation and connection (timber, PVC and aluminium)



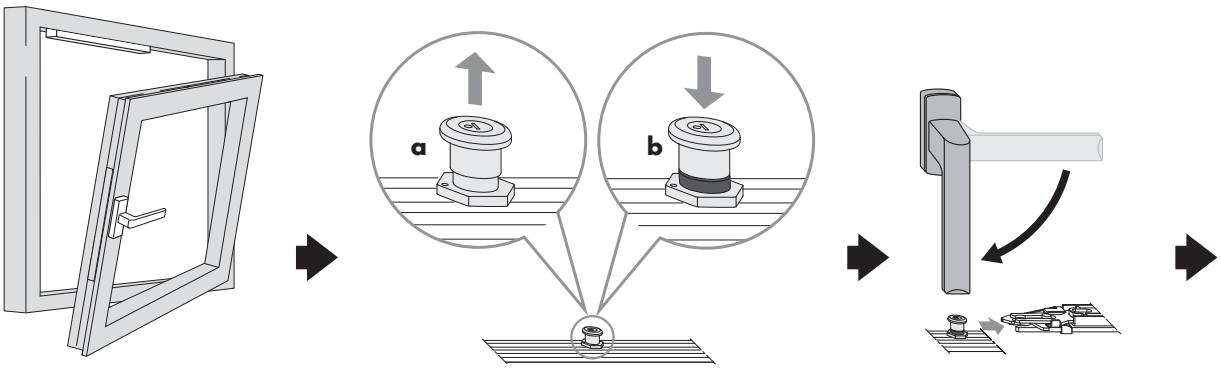


black	0V
red	+24V
white	close
blue	open



Attention!
The drive must be seated angularly in the profile and firmly bolted.

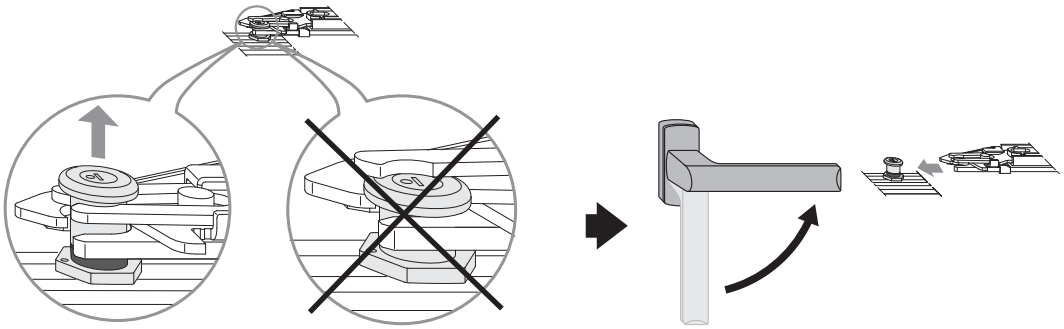
2.6 Install and connect window sash DRIVE axxent DK



1.
Install the window sash

2.
Comfort mushroom cam (if available)
a Lift
b Underlay rubber ring (scope of delivery)

3.
Turn hardware to locking position



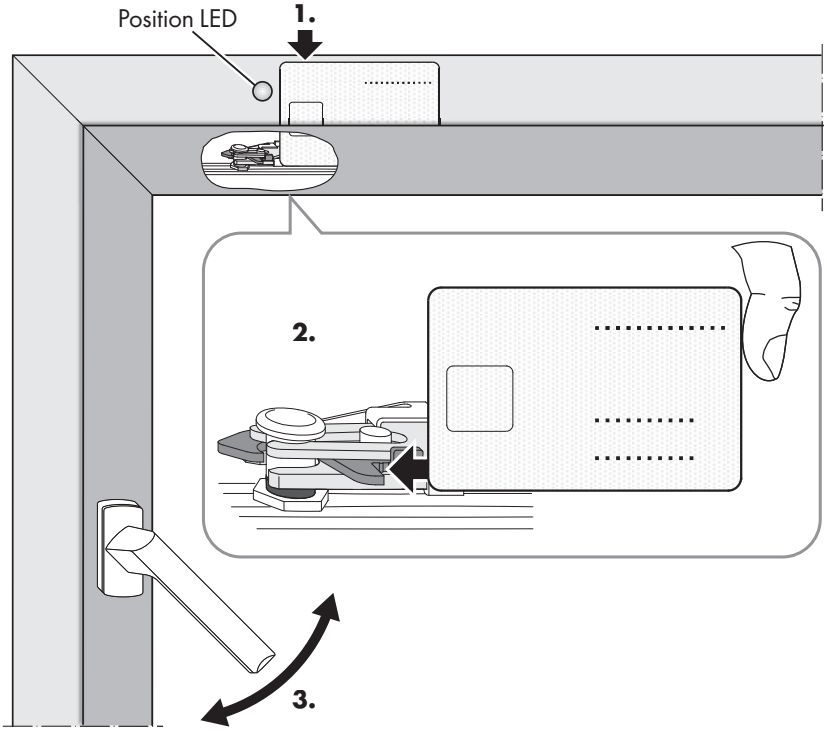
4.
Check the unlatching

5.
Move hardware to turn position

2.7 Release and adjustment

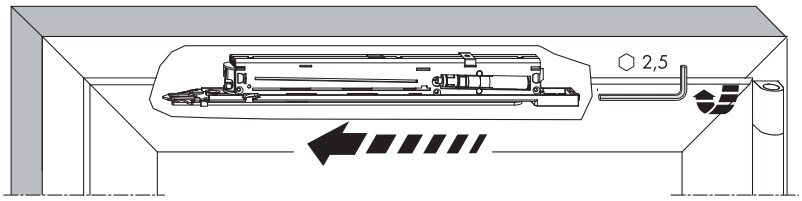
Release (emergency release)

1. Push the card between the frame and window sash according to the diagram
2. Push the card forwards (direction of handle)
3. Actuate handle

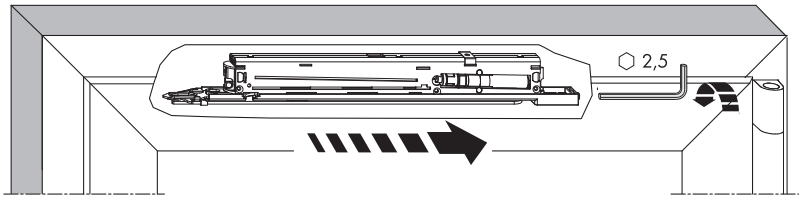


Adjustment

4. Adjust DRIVE axxent DK in direction of locking side or hinge side



If the lever cannot be switched into turn position (horizontal position), adjust DRIVE axxent DK as shown.



If the lever is not in a vertical position during manual operation, adjust DRIVE axxent DK as shown.

2.8 Mechanical functional test

Before making the electric connections, check the mechanical function of the DRIVE axxent DK as described above and adjust, if required.

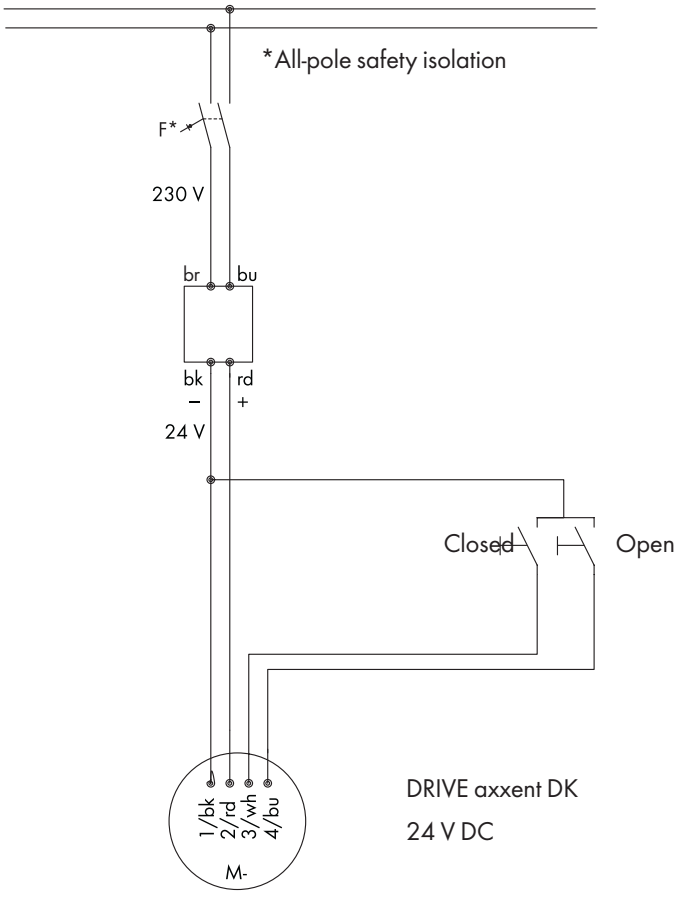
Attach window sticker and safety sticker to the window sash in a visible location above the rose. Hand over the safety notices to the user.

2.9 Connection of external button

Connect the power supply

› Wire the circuit according to the circuit diagram

Abbreviations	Colour
br	brown
bu	blue
bk	black
rd	red
wh	white



3. Commissioning

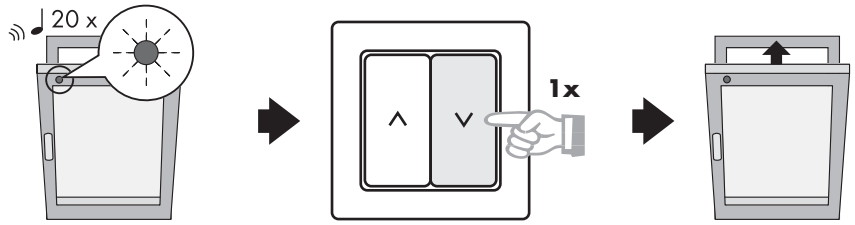
- The red LED of the DRIVE axxent DK flashes when the supply voltage is switched on.
- A referencing run must now be performed.
- Only perform reference run with the window open.

⚠ WARNING **Risk of injury during referencing run!**
The safety functions are disabled!

› Do not operate the DRIVE axxent DK if you do not have a clear view of the window.

› Ensure that other persons stay clear of the window.

3.1 Perform reference run



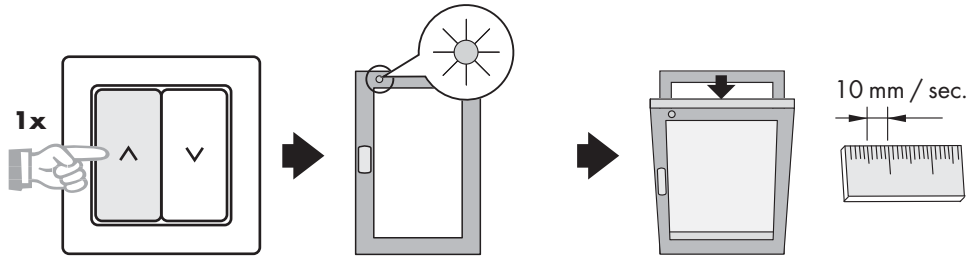
1.
LED flashes red

2.
Press "Close" button **1x**

3.
... reference run starts
Note: The reference run takes approx. 2 to 30 seconds (depending on the original position of the drive)

4. Operation

4.1 Opening the window

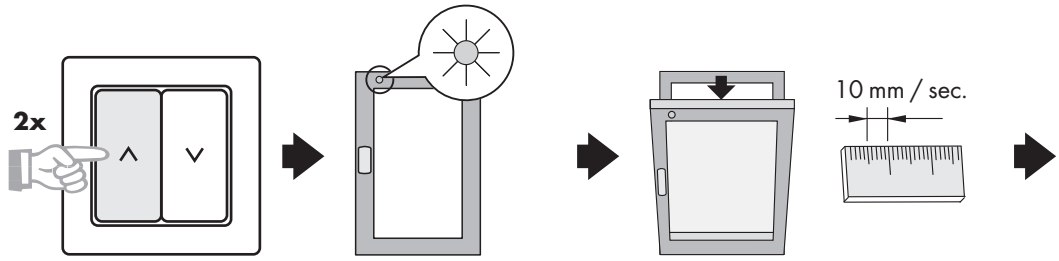


1.
Press "Open" button **1x**

2.
LED lights up green

3.
The window opens automatically

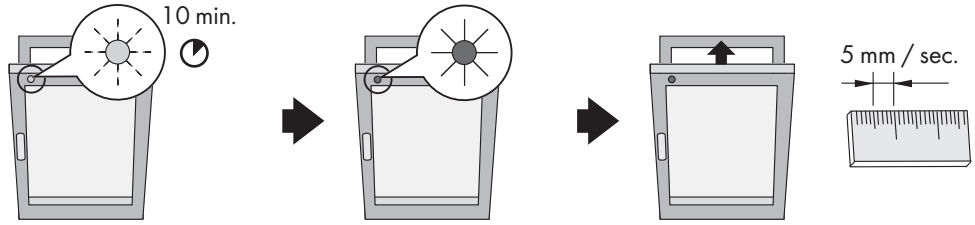
4.2 Opening the window for a 10 min. ventilation period



1.
Press "Open" button **2x**

2.
LED lights up green

3.
The window opens automatically

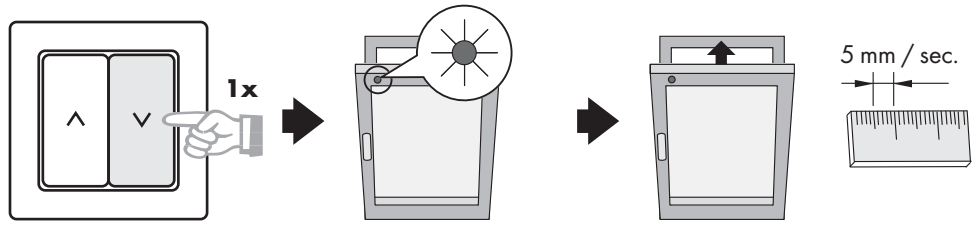


4.
LED flashes green

5.
LED lights up red

6.
The window closes automatically

4.3 Closing the window



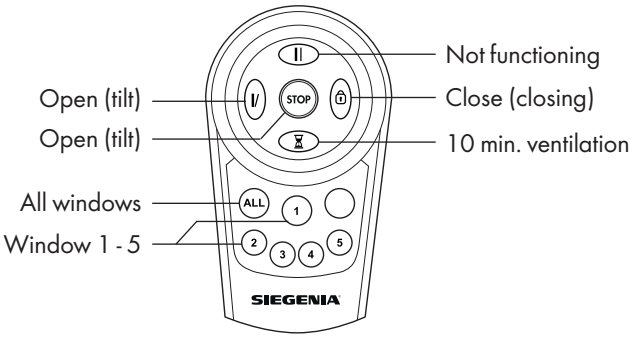
1.
Press "Close" button **1x**

2.
LED lights up red

3.
The window closes automatically

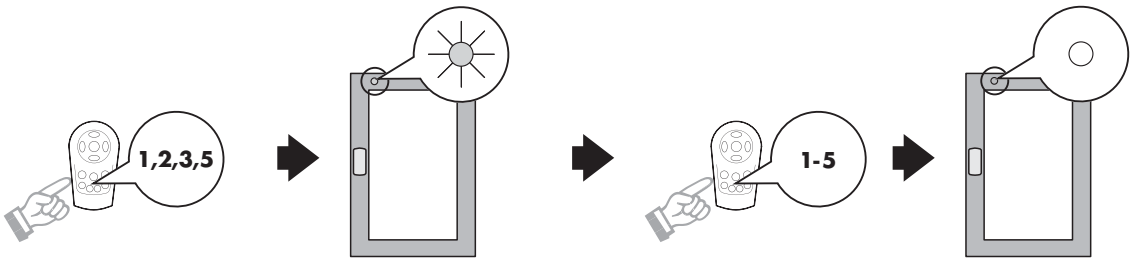
4.4 Remote control

Up to 5 windows with DRIVE axxent DK can be operated with one remote control.



Teach-in remote control

Buttons 1 to 5 can each be assigned to a window with DRIVE axxent DK.



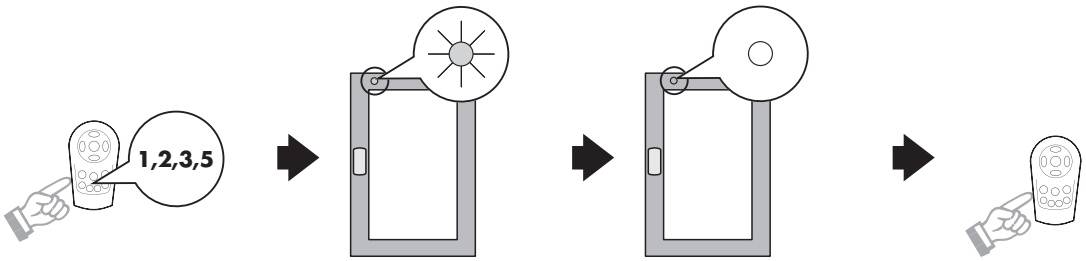
1.
Press buttons 1, 2, 3 and 5 within a period of 3 seconds

2.
LED lights up green

3.
Select window 1 to 5

4.
LED goes out after 10 seconds

Deleting windows from remote control



1.
Press buttons 1, 2, 3 and 5 within a period of 3 seconds

2.
LED lights up green

3.
Wait until LED goes out

4.
The remote control is now ready for a new teach-in procedure.

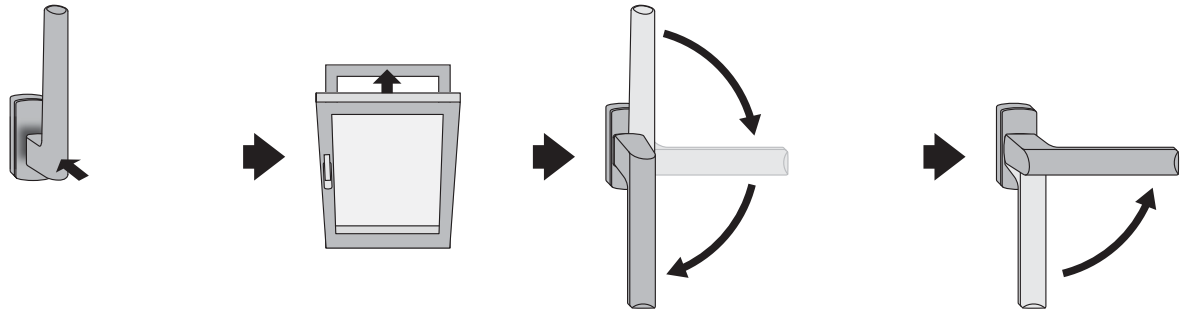
Safety functions

- If the maximum permissible force of 150 N is exceeded when closing, e.g. due to wind load, the drive will return to its starting position.
- The drive will attempt to close the window again after 60 seconds, with the LED flashing red/green. If the second attempt fails, the window will remain open with the LED flashing red.
- Check window for obstructions and remove them, if required. Press "Close" button again.

4.5 Manual operation

Ensure that you always observe this operating sequence!

With the window open



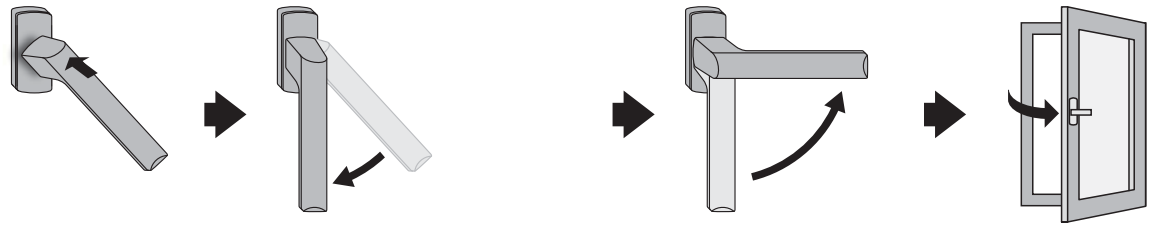
1.
Insert the handle into the rose. The handle must be in a vertical, upward position.

2.
Close window manually by pushing it into the closed position.

3.
Switch the handle of the window gear to the locking position. The handle must be in a vertical, downward position.

4.
Move the window lever into the turning position

With the window closed



1.
Insert the handle into the rose, the lever must be in a 45°-position.

2.
Switch the handle of the window completely into the locking position. **Attention!** The handle must be in a vertical, downward position. This is necessary because the drive must first be disconnected from the hardware.

3.
Move the window lever into the turning position

4.
Turn the handle back into the closed position after closing the window

- When the window is closed again and locked, the drive must be connected. Press "Close". button The drive is then reconnected. All functions are then available again.
- If the drive is not reconnected, the drive cannot be operated. When pressing button "Open" for 3 seconds, the drive will open and then return to its starting position.
- Remove handle and close the rose after manual operation.

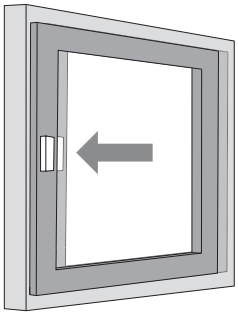
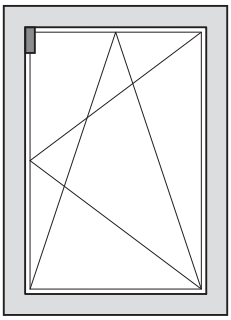
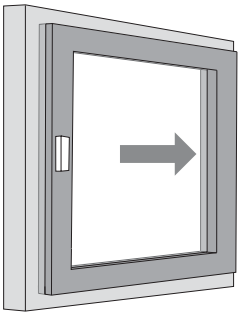
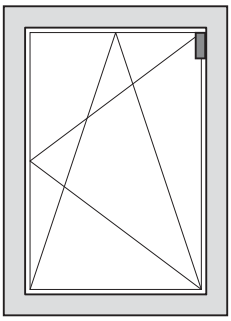
5. Maintenance

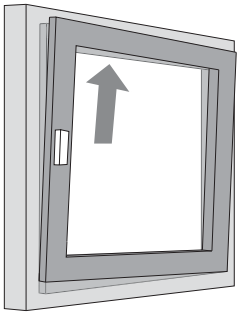
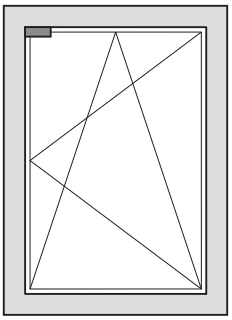
The maintenance and inspection of the DRIVE axxent DK and the hardware components in the window must be performed at least 1x per year by a qualified professional. The following features must be observed:

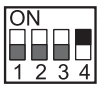
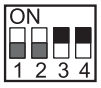
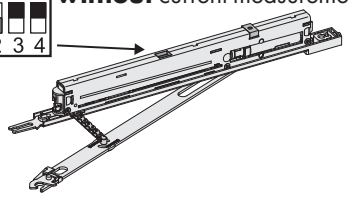
- Function of the DRIVE axxent DK
- Airgap
- Condition of packers and restrictor (if existent)
- Firm seating of the attachment screws
- Ease of movement of the hardware

6. Troubleshooting

In case of a malfunction, do not open the device or try to repair it under any circumstances.
If the problem is not listed in the table below, please contact your window specialist or SIEGENIA directly: Tel. +49 271 3931-0

Problem	Solution
The window sash is pushed in a horizontal direction for release 	Stabilise the window sash by means of a restrictor according to the diagram 
The window sash is pushed in a horizontal direction for locking 	Stabilise the window sash by means of a restrictor according to the diagram 
The window sash is elevated for locking	Stabilise the window sash by means of a restrictor according to the diagram

Problem	Solution
	

Problem	Possible cause	Solution
DRIVE axxent DK cannot be opened manually	Unlatching does not function	Perform emergency release (see page 23)
		Verify proper seating of the comfort mushroom cam
		Check the airgap
		Check milling dimensions if necessary (timber windows)
DRIVE axxent DK shows no reaction when key is pressed	No power supply	Check power supply
	Wiring wrong/defective or cable defective	Check the wiring (see page 23)
	Power supply wrong/defective	Measure the supply voltage Target values: Input 230 V AC; 50/60 Hz; 170 mA Output 24 V DC; 0.75 A; 18 W
	Remote control not taught-in	Teach in remote control (see page 23)
	Remote control battery is empty	Replace battery
DRIVE axxent DK does not move »OPEN« / »CLOSE«	No power supply	Check power supply
	Hardware is blocked or too stiff	Check manual function of window and rectify blocking if necessary
	Hardware is too easy-running	Increase the pressure
		If necessary, deactivate anti-mishandling device  **with** current measurement*  **without** current measurement 
	Drive is contaminated (due to sawdust etc.)	Check for contamination and clean if necessary
	Especially for »OPEN« motion: Drive is already in the »Open« position	Check position of the window sash and perform reference run if necessary (see page 23)
	Especially for »CLOSE« motion: Drive is already in the »Close« position	

Problem	Possible cause	Solution
DRIVE axxent DK beeps several times and stands still. LED flashes permanently	Strong wind pressure	Wait until the wind pressure subsides
	Draught	Rectify reason for the draught
	Hardware is blocked or too stiff	Check manual function of window and rectify blocking if necessary
	Power failure	Rectify the power failure and perform reference run
DRIVE axxent DK beeps several times and slowly attempts up to 3 times into the »Close« position (the drive stands still after the third attempt). LED flashes permanently	Strong wind pressure	Wait until the wind pressure subsides
	Draught	Rectify reason for the draught
	Hardware is blocked or too stiff	Check manual function of window and rectify blocking if necessary

* **Note:** A current measurement is carried out on the closed hardware in order to prevent operating errors when the window is open. If you issue an opening command while the window is open, the drive will detect that no hardware is coupled. The drive will reverse and return to the starting position.

7. Technical specifications

DRIVE axxent DK	Performance data
Window material	Timber, PVC or aluminium
Installation location in window	At top, horizontal
Sash weight	Max. 130 kg (observe the corresponding application range diagrams)
Supply voltage	24 V, 0.6 A
Electronic overload protection	
Power cable supplied	2 pieces: 2 x 0.8 mm, length 2.5 m
Opening speed	Approx. 10 mm per second
Duration of opening motion	Approx. 25 seconds
Closing speed	Max. 5 mm per second
Opening and closing force on drive rod	Max. 700 N (corresponds to approx. 8 Nm manual lever torque)
Closing force of tilt window sash (reduced)	Max. 150 N
Protection class	IP20 for dry locations
Permissible operating temperature	-20 °C to +40 °C
Tested with	30,000 operating cycles (double stroke including locking part)

8. Information concerning product liability

8.1 Intended use

Any use of this product that is not in accordance with its intended use, or any adaptation of or modification to the product and its associated components for which the express consent of SIEGENIA has not been obtained, is strictly prohibited. SIEGENIA accepts no liability whatsoever for any material losses or injury to people caused by failure to comply with this stipulation.

8.2 Product liability

Our products are guaranteed – subject to correct installation and proper use – for a period of one year from the date of receipt by a company (according to our general terms and conditions) or as otherwise agreed, and for a period of two years for end consumers, in accordance with statutory provisions. As part of our ongoing improvements, we reserve the right to replace individual components or entire products. Consequential losses resulting from defects are excluded from the warranty within the limits of the law. The warranty shall become void if modifications that are not authorised by us or have not been described in this documentation are performed on the product and/or individual components, or if the product and/or individual components is/are dismantled or partly dismantled, and the defect is due to the changes made.

8.3 Disclaimer of liability

The product and its components are subject to stringent quality controls. As a result, they function reliably and safely when used correctly.
Our liability for consequential losses and/or claims for damages is excluded, except in the case of wilful misconduct or gross negligence, or where we are responsible for injury to life, physical injury or damage to health. Strict liability under the German Product Liability Act (Produkthaftungsgesetz) remains unaffected. Liability for the culpable violation of significant contractual obligations also remains unaffected; liability in this case is limited to losses that are specific to the contract and that could have been foreseen. The above regulations do not imply a change in the burden of proof to the detriment of the consumer.

8.4 Environmental protection

Although our products do not fall within the scope of the German Electrical and Electronic Equipment Act, SIEGENIA will continue to meet the requirements of this Act and will endeavour to completely eliminate the use of substances that are hazardous to the environment as soon as this becomes technically feasible.
Electrical products should not be disposed of as household waste.

9. Feedback on documentation

We welcome your comments and suggestions on how to improve our documentation. Please email your comments to documentation@siegenia.com.

10. EC declaration of incorporation

Manufacturer:

SIEGENIA-AUBI KG
Hardware and ventilation technology
Duisburger Straße 8
57234 Wilnsdorf

declares that the product:

Concealed motion chain drive

Device type

DRIVE axxent DK

Type designation

meets the following fundamental requirements:

EC Machinery Directive	2006/42/EC
EMC Directive	2004/108/EC and 2006/95/EC
RoHS Directive	2011/65/EU
	EN 55014-1:2011 EN 55014-2:1997+A1 EN 61000-3-2:2006 EN 61000-3-3:1995+A1,A2 EN 62233:2008 EN 60335-1:2012 EN 60335-2-103:2010

This declaration is based on test reports from:

EMC TestHaus Dr. Schreiber GmbH - Test protocol 14/383

The machine may only be put into operation when incomplete if it has been ascertained, if applicable, that the machine into which it is to be installed conforms to the specifications of the Machinery Directive.

The specific technical documentation has been drafted in accordance with Annex VII Part B of the EC Machinery Directive 2006/42/EC.

We undertake to provide such documentation to market surveillance authorities in electronic format within a reasonable time upon reasoned request. The aforementioned technical documentation can be obtained from the manufacturer.

Siegen, 01.06.2015

ppa. S. Bauerdick (Works management)

This declaration certifies conformity with the directives cited but does not warrant properties in the legal sense.

The safety instructions in the product documentation supplied must be followed.

SIEGENIA®
brings spaces to life

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Germany Phone: +49 271 39310
Great Britain Phone: +44 2476 622000

Hungary Phone: +36 76 500810
Italy Phone: +39 02 9353601
Poland Phone: +48 77 4477700
Russia Phone: +7 495 7211762
South Korea Phone: +82 31 7985590
Switzerland Phone: +41 33 3461010
Turkey Phone: +90 216 5934151
Ukraine Phone: +380 44 4637979

Contact your dealer:

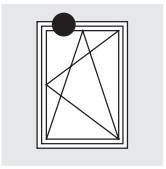
H47.MOTS002EN/3

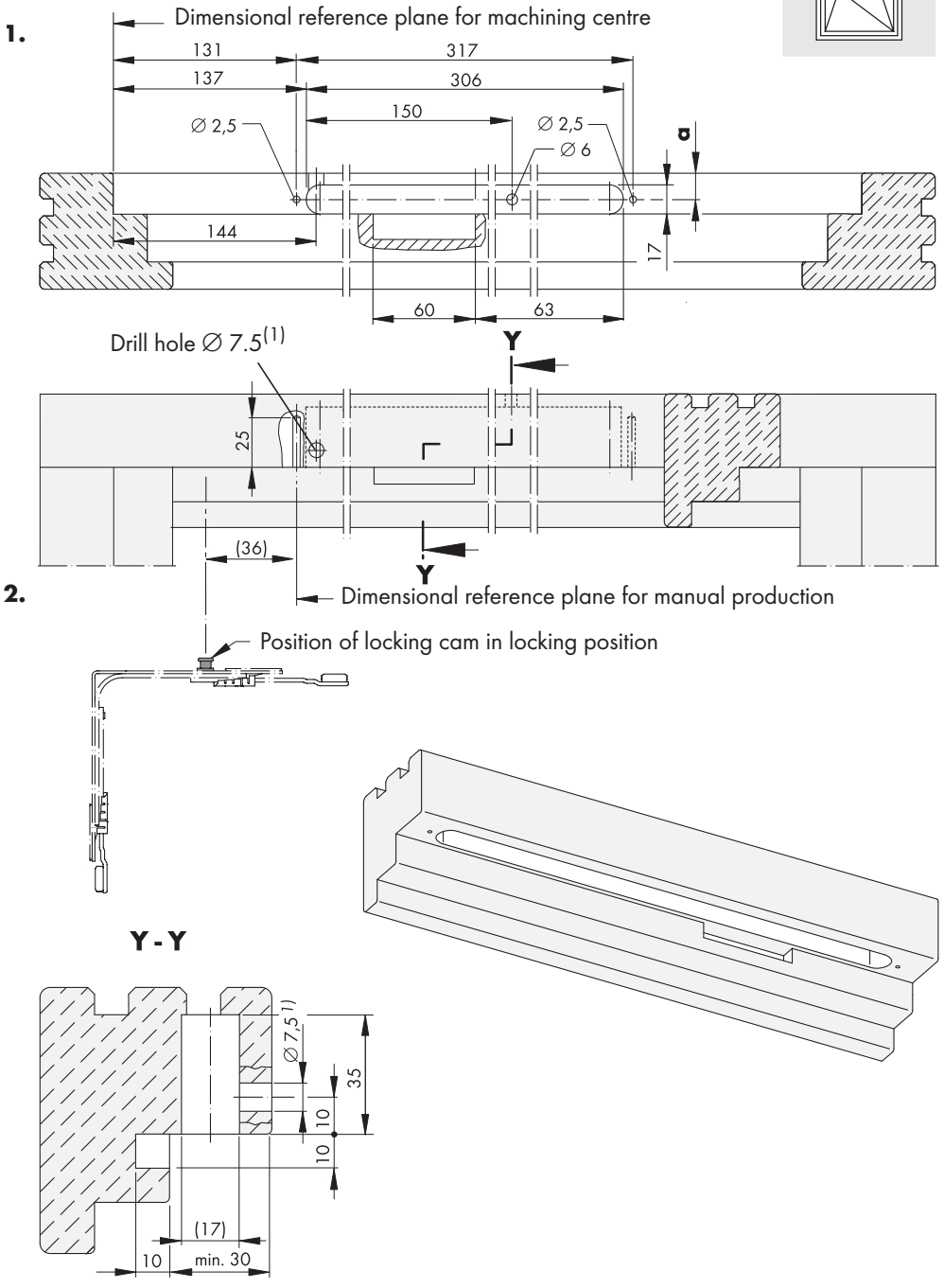
Installation in timber profile

All measurements are given in mm

1 Machining centre
2 Manual production

Groove axis	Dimension a
13	15.5





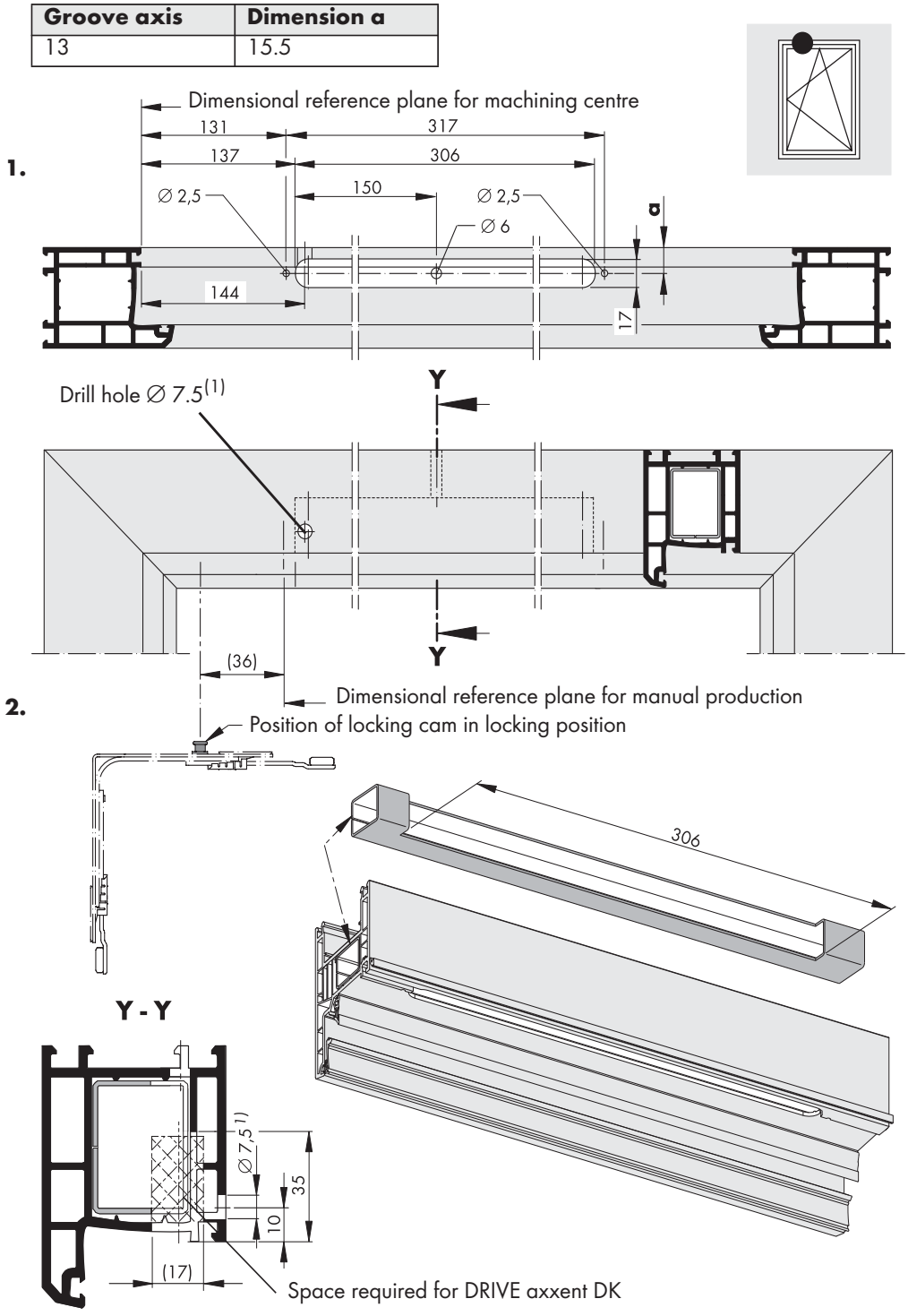
1) Status indicator and infrared remote control require a drill hole of ∅ 7.5

Installation in PVC profile

All measurements are given in mm

1 Machining centre
2 Manual production

Groove axis	Dimension a
13	15.5



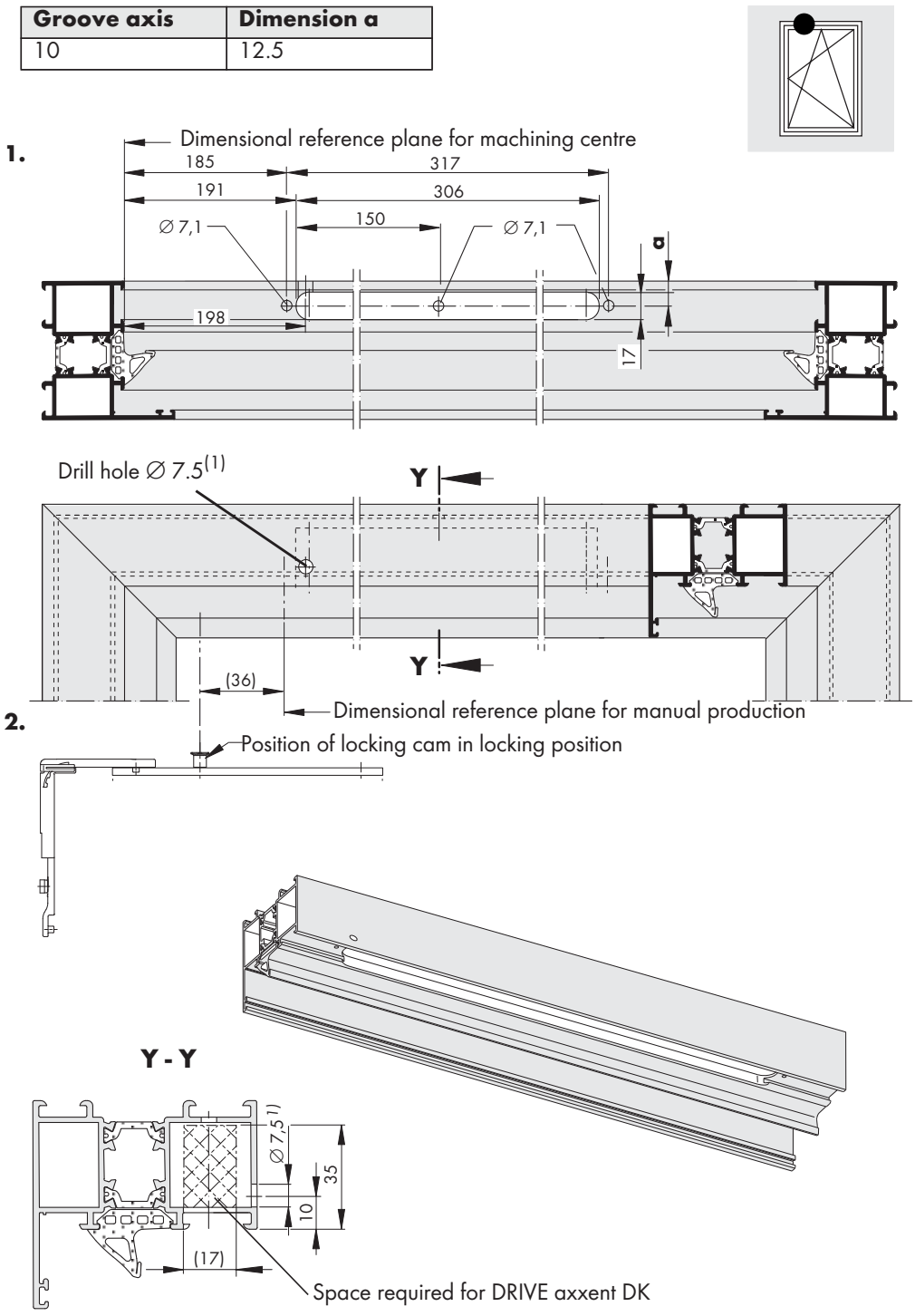
1) Status indicator and infrared remote control require a drill hole of Ø 7.5

Installation in aluminium profile with LM eurogroove

All measurements are given in mm

1 Machining centre
2 Manual production

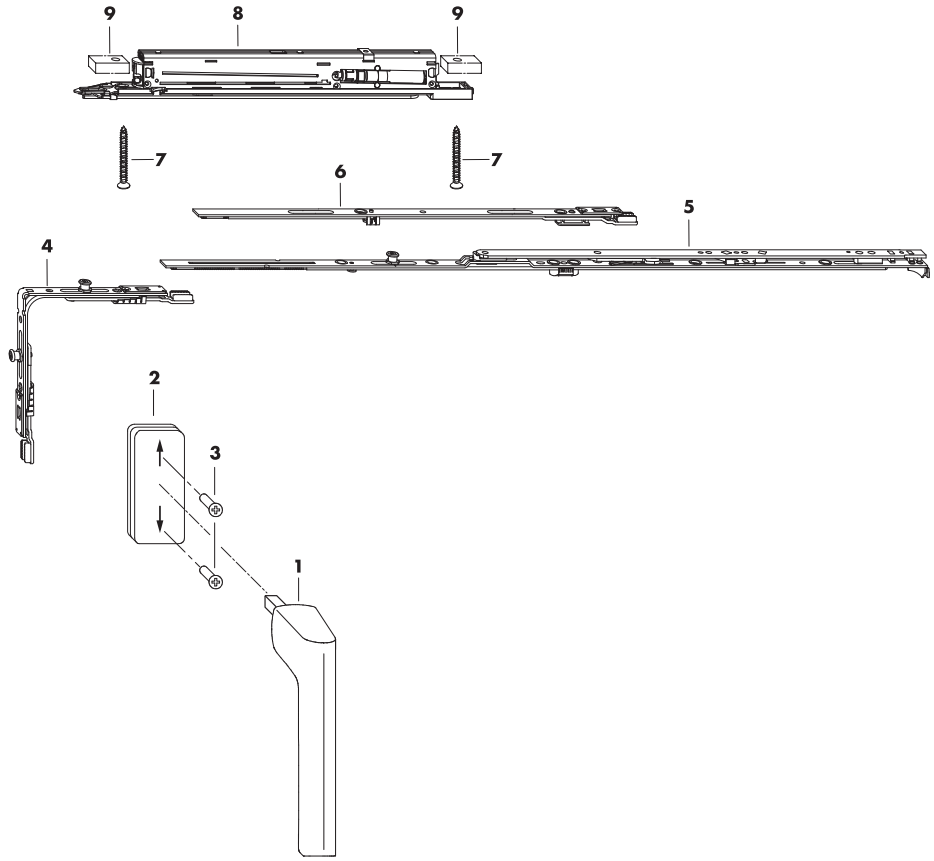
Groove axis	Dimension a
10	12.5



1) Status indicator and infrared remote control require a drill hole of Ø 7.5

Hardware overview TITAN AF (sash rebate width 850 - 1,560 mm)

Timber and PVC

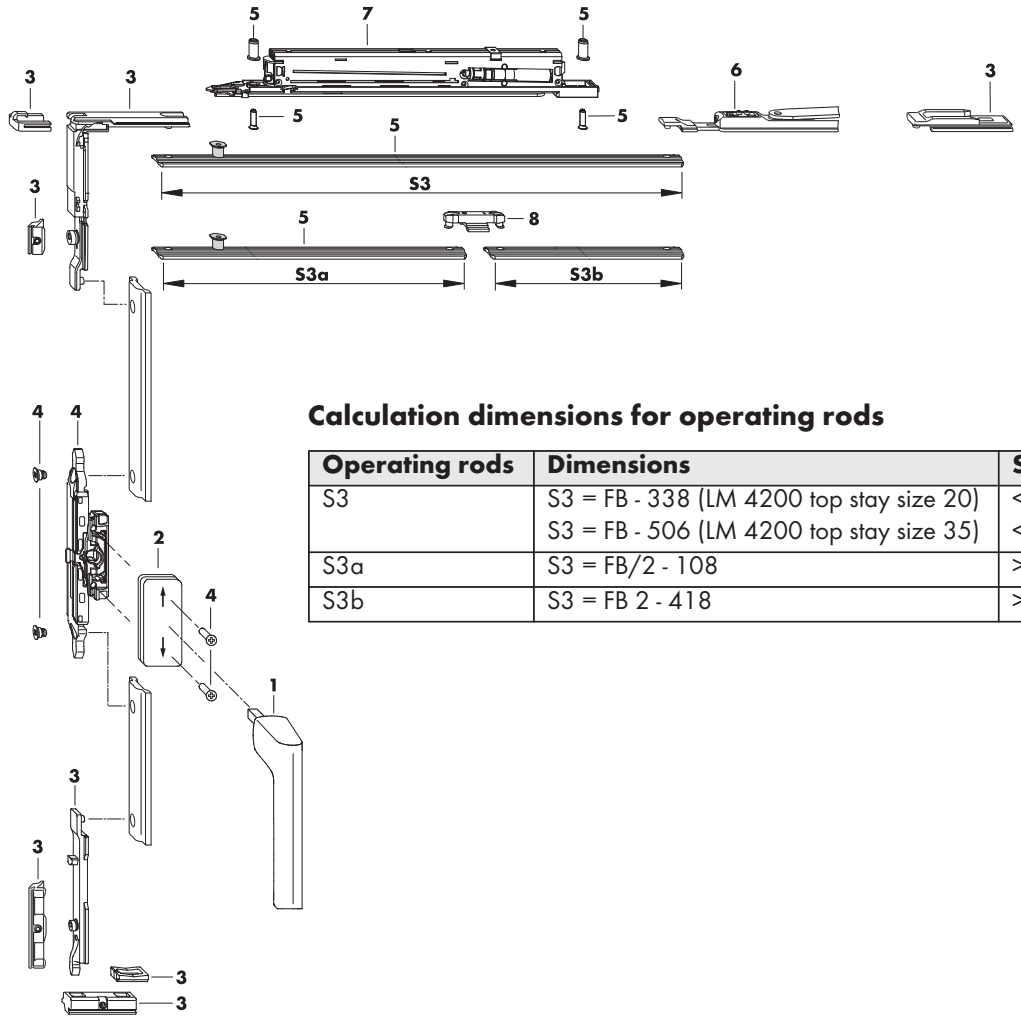


No.	Material description	Pc.	Sash rebate width
1	Handle Si-line removable	1	-
2	Rose Si-line	1	-
3	M5 x 40 countersunk screw	2	-
4	Corner drive AF VCO 2 RS A0055	1	-
5	Top stay AF size 2	1	850 - 1050
	Top stay AF size 3 1RS	1	1051 - 1250
	Top stay AF size 4 1RS	1	1251 - 1450
	Top stay AF size 4 1RS	1	1451 - 1560
6	Linkage AF size 1	1	850 - 1450
		2	1451 - 1560
7	Universal countersunk screw 4.5 x 40 (not included in scope of supply)	2	-
8	DRIVE axxent DK 150 RH	1	-
	DRIVE axxent DK 150 LH	1	-
9	Packer (to be provided by customer)	2	-

Note: For further information concerning components and the installation of the window hardware, please refer to our product catalogues for the TITAN AF system (document no. H4006.2943 for timber or H4006.2945 for PVC).

Hardware overview LM 4200-DK (sash width 835 - 1,600 mm)

Aluminium



Calculation dimensions for operating rods

Operating rods	Dimensions	Sash width
S3	S3 = FB - 338 (LM 4200 top stay size 20) S3 = FB - 506 (LM 4200 top stay size 35)	< 1200 < 1200
S3a	S3 = FB/2 - 108	> 1201
S3b	S3 = FB 2 - 418	> 1201

No.	Material description	Pc.	Sash rebate width
1	Handle Si-line removable	1	-
2	Rose Si-line	1	-
3	VS LM-DK KPS (vertical tilt point)	1	-
4	Gear set FBS M6 Trial/RR	1	-
5	LM accessories set DRIVE axxent DK	1	-
6	LM 4200 top stay size 20	1	835 - 980
	LM 4200 top stay size 35	1	981 - 1600
7	DRIVE axxent DK 120 RH (for LM 4200 top stay size 20)	1	-
	DRIVE axxent DK 120 LH (for LM 4200 top stay size 20)	1	-
	DRIVE axxent DK 150 RH (for LM 4200 top stay size 35)	1	-
	DRIVE axxent DK 150 RH (for LM 4200 top stay size 35)	1	-
8	MV stay striker	1	1201 - 1600

Note: For further information concerning components and the installation of the window hardware, please refer to our planning manual for aluminium systems (document no.: H4006.01250DE, register 3, drawing no.: LMde1362, register 8, drawing no.: LMde1361).

Technical data

Window material	Timber, PVC or aluminium
Installation location in window	At top, horizontal
Sash outer dimensions (sash rebate dimension) (sash width): Areas: timber and PVC TITAN AF (sash rebate) Area: aluminium LM 4200 top stay size 20 (sash width) Area: aluminium LM 4200 top stay size 35 (sash width)	 Min. 850 mm - max. 1,560 mm Min. 835 mm - max. 980 mm Min. 981 mm - max. 1,600 mm
Top stay opening width: Areas: timber and PVC TITAN AF Area: aluminium LM 4200 top stay size 20 Area: aluminium top stay LM 4200 size 35	 Max. 150 mm Max. 120 mm Max. 150 mm
Sash weight	Max. 130 kg (observe the corresponding application range diagrams)
Supply voltage	24 V, 0.6 A
Electronic overload protection	
Power cable supplied	2 pieces: 2 x 0.8 mm, length 2.5 m
Opening speed	Approx. 10 mm per second
Duration of opening motion	Approx. 25 seconds
Closing speed	Max. 5 mm per second
Opening and closing force on drive rod	Max. 700 N (corresponds to approx. 8 Nm manual lever torque)
Closing force of tilt window sash (reduced)	Max. 150 N
Protection class	IP20 for dry locations
Permissible operating temperature	-20 °C to +40 °C
Tested with	30,000 operating cycles (double stroke including locking)

Accessories

Name	Number of units per carton	Material number
IR-remote control	1	GZFB0010
Power supply DRIVE axxent DK	1	GANE0070-099010
Rose Si-line (silver EV1)	1	869826
	10	257401
Rose Si-line (white RAL 9003)	1	862605
	10	250495
Rose Si-line (black RAL 9005)	1	ZHSR0010-523010
	10	ZHSR0010-523020

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Hungary Phone: +36 76 500810
Italy Phone: +39 02 9353601
Poland Phone: +48 77 4477700
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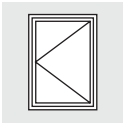
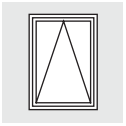
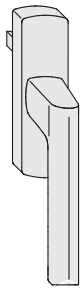
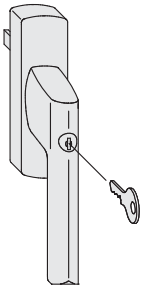
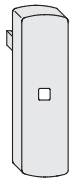
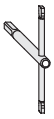
South Korea Phone: +82 31 7985590
Switzerland Phone: +41 33 3461010
Turkey Phone: +90 216 5934151
Ukraine Phone: +380 44 4637979

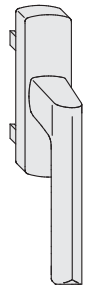
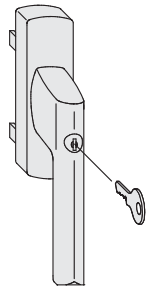
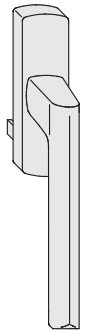
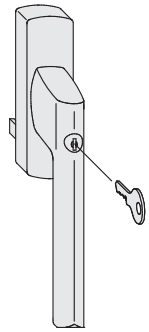
Contact your dealer:

Handle summary
Si-line LM / LM Globe

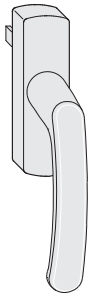
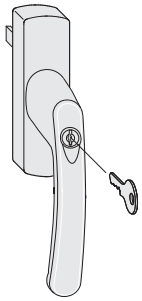
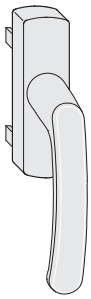
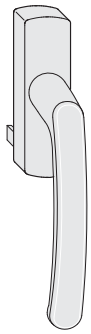
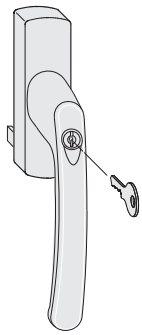




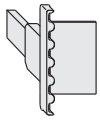

View	Material brief description			Material No.		Material No.
	**Handle Si-line LM**	*Si-silver*	**1**	**MHSS0010-525010**	**10**	**MHSS0010-525020**
		EV1	**1**	**865545**	**10**	**253137**
		Si-brown	**1**	**865521**	**10**	**253113**
		white RAL 9010	**1**	**865552**	**10**	**253144**
		white RAL 9016	**1**	**865507**	**10**	**253090**
		black RAL 9005	**1**	**865514**	**10**	**253106**
		mill finish	**1**	**875407**	**10**	**253083**
		INOX-look	**1**	**MHSS0010-800010**	**10**	**MHSS0010-800020**
	**Handle Si-line LM**	*Si-silver*	**1**	**MHSA0010-525010**	**10**	**MHSA0010-525020**
	lockable/TBT	*EV1*	**1**	**865484**	**10**	**253069**
	(inc. reversible key)	*Si-brown*	**1**	**865460**	**10**	**253045**
		white RAL 9010	**1**	**865491**	**10**	**253076**
		white RAL 9016	**1**	**865446**	**10**	**253021**
		black RAL 9005	**1**	**865453**	**10**	**253038**
		mill finish	**1**	**875414**	**10**	**253014**
		INOX-look	**1**	**MHSA0010-800010**	**10**	**MHSA0010-800020**
	**Rose Si-line LM**	*Si-silver*	**1**	**MHSR0010-525010**	**10**	**MHSR0010-525020**
		EV1	**1**	**869659**	**10**	**257234**
		Si-brown	**1**	**869697**	**10**	**257272**
		white RAL 9010	**1**	**869673**	**10**	**257258**
		white RAL 9016	**1**	**869666**	**10**	**257241**
		black RAL 9005	**1**	**869680**	**10**	**257265**
		mill finish	**1**	**869635**	**10**	**257210**
	**LM Rose socket wrench 7 mm**		**1**	**875544**	**–**	**–**
	7 mm square					

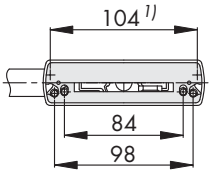
Handle summary Si-line LM

View	Material brief description			Material No.		Material No.
	**Handle Si-line LM DG**	*Si-silver*	**1**	**MHSS1000-525010**	**10**	**MHSS1000-525020**
		Si-brown	**1**	**869758**	**10**	**257333**
		white RAL 9010	**1**	**869734**	**10**	**257319**
		white RAL 9016	**1**	**869727**	**10**	**257302**
		black RAL 9005	**1**	**869741**	**10**	**257326**
		mill finish	**1**	**869703**	**10**	**257289**
	**Handle Si-line LM DG**	*Si-silver*	**1**	**MHSA1000-525010**	**10**	**MHSA1000-525020**
	lockable	*Si-brown*	**1**	**869819**	**10**	**257395**
	(inc. reversible key)	*white RAL 9010*	**1**	**869796**	**10**	**257371**
		white RAL 9016	**1**	**869789**	**10**	**257364**
		black RAL 9005	**1**	**869802**	**10**	**257388**
		mill finish	**1**	**869765**	**10**	**257340**
	**Handle Si-line PSK LM**	*Si-silver*	**1**	**MHSS2000-525010**	**10**	**MHSS2000-525020**
		Si-brown	**1**	**875476**	**10**	**262306**
		white RAL 9010	**1**	**875452**	**10**	**262283**
		white RAL 9016	**1**	**875445**	**10**	**262276**
		black RAL 9005	**1**	**875469**	**10**	**262290**
		mill finish	**1**	**875421**	**10**	**262252**
	**Handle Si-line PSK LM**	*Si-silver*	**1**	**MHSA2000-525010**	**10**	**MHSA2000-525020**
	lockable	*Si-brown*	**1**	**875537**	**10**	**262368**
	(inc. reversible key)	*white RAL 9010*	**1**	**875513**	**10**	**262344**
		white RAL 9016	**1**	**875506**	**10**	**262337**
		black RAL 9005	**1**	**875520**	**10**	**262351**
		mill finish	**1**	**875483**	**10**	**262313**

Handle summary LM Globe

View	Material brief description			Material No.		Material No.
	**Handle LM Globe**	*Si-silver*	1	**MHGS0010-525010**	10	**MHGS0010-525020**
		EV1	1	**MHGS0010-524010**	10	**MHGS0010-524020**
		Si-brown	1	**MHGS0010-533010**	10	**MHGS0010-533020**
		white RAL 9016	1	**MHGS0010-504010**	10	**MHGS0010-504020**
		black RAL 9005	1	**MHGS0010-523010**	10	**MHGS0010-523020**
		mill finish	1	**MHGS0010-500010**	10	**MHGS0010-500020**
		INOX-look	1	**MHGS0010-800010**	10	**MHGS0010-800020**
	**Handle LM Globe**	*Si-silver*	1	**MHGA0010-525010**	10	**MHGA0010-525020**
	lockable/TBT	*EV1*	1	**MHGA0010-524010**	10	**MHGA0010-524020**
	(inc. reversible key)	*Si-brown*	1	**MHGA0010-533010**	10	**MHGA0010-533020**
		white RAL 9016	1	**MHGA0010-504010**	10	**MHGA0010-504020**
		black RAL 9005	1	**MHGA0010-523010**	10	**MHGA0010-523020**
		INOX-look	1	**MHGA0010-800010**	10	**MHGA0010-800020**
	**Handle LM Globe DG**	*Si-silver*	1	**MHGS1000-525010**	10	**MHGS1000-525020**
		Si-brown	1	**MHGS1000-533010**	10	**MHGS1000-533020**
		white RAL 9016	1	**MHGS1000-504010**	10	**MHGS1000-504020**
		black RAL 9005	1	**MHGS1000-523010**	10	**MHGS1000-523020**
		mill finish	1	**MHGS1000-500010**	10	**MHGS1000-500020**
	**Handle LM Globe PSK**	*Si-silver*	1	**MHGS2000-525010**	10	**MHGS2000-525020**
	lockable/TBT	*Si-brown*	1	**MHGS2000-533010**	10	**MHGS2000-533020**
		white RAL 9016	1	**MHGS2000-504010**	10	**MHGS2000-504020**
		black RAL 9005	1	**MHGS2000-523010**	10	**MHGS2000-523020**
		mill finish	1	**MHGS2000-500010**	10	**MHGS2000-500020**
	**Handle LM Globe PSK**	*Si-silver*	1	**MHGA2000-525010**	10	**MHGA2000-525020**
	lockable/TBT	*Si-brown*	1	**MHGA2000-533010**	10	**MHGA2000-533020**
	(inc. reversible key)	*white RAL 9016*	1	**MHGA2000-504010**	10	**MHGA2000-504020**
		black RAL 9005	1	**MHGA2000-523010**	10	**MHGA2000-523020**
		mill finish	1	**MHGA2000-500010**	10	**MHGA2000-500020**

View	Material brief description			Material No..		Material No..
	**Catch 34**	*(for over-rebate height 13 - 23 mm)*	**1**	**MHSM0010-100010**	–	–
	Catch PSK *(no illustration)*	*(for opposing closing directions)*	**1**	**MHSM0030-100010**	–	–

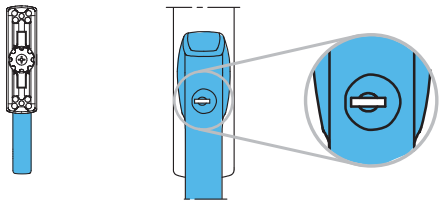


3 different drilling patterns are possible.

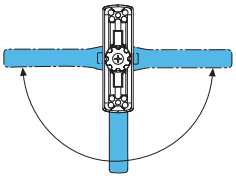
1) Dimension 104 does not apply for the lockable function, Handle Si-line PSK LM and Handle LM Globe PSK

When assembling the handle Si-line LM lockable/TBT and Handle LM Globe lockable/TBT, right hand or left hand, the following points are to be observed:

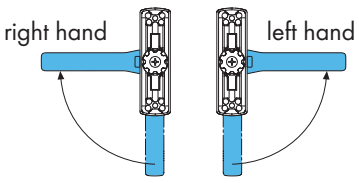
- Turn handle into locking position (see illustration)
- Turn lock cylinder with key into the position pictured (See illustration)



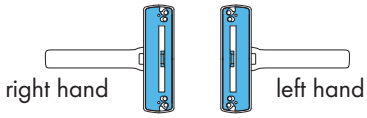
- Handle must be able to be turned 90° to both sides (see illustration)
  If the handle cannot be operated:
- Shift the key to the starting position
- Turn the rose through 180° and repeat the process



- Turn the handle 90° to the right or left (See illustration)



- Fit the catch and cover plate centrally (See illustration)



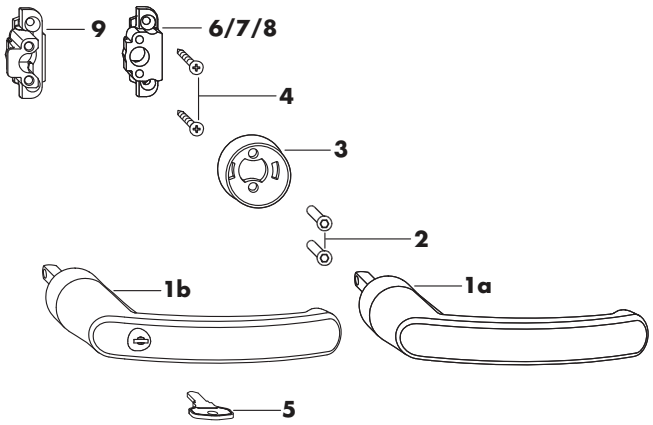
ALU Accessories

Handle Globe RR

Handle Globe RR lockable/TBT

***Always** check the planning manual on aluminium (H4006.3042EN) for further details and specifications/information regarding the product and liability (guidelines: VHBH, TBDK and VHBE).*

All dimensions given are final dimensions after the surface of the sections has been treated (painted, powder coated etc.).



Item	Quantity (smallest pakking unit)		Description			Material no.		Material no.
	•		**Handle Globe RR**	**Silver**	**1**	**MHGS0020-525010**	**10**	**MHGS0020-525020**
				White *RAL 9016*	**1**	**MHGS0020-504010**	**10**	**MHGS0020-504020**
				ESLG	**1**	**MHGS0020-800010**	**10**	**MHGS0020-800020**
				Mill finish	**1**	**MHGS0020-500010**	**10**	**MHGS0020-500020**
		•	**Handle Globe RR ABS.**	**Silver**	**1**	**MHGA0020-525010**	**10**	**MHGA0020-525020**
				White *RAL 9016*	**1**	**MHGA0020-504010**	**10**	**MHGA0020-504020**
				ESLG	**1**	**MHGA0020-800010**	**10**	**MHGA0020-800020**
				Mill finish	**1**	**MHGA0020-500010**	**10**	**MHGA0020-500020**
1a	1	-	Handle RR					
1b	-	1	Handle RR lockable/TBT					
2	2	2	Cheese head screw					
3	1	1	Rose RR					
4	2	2	Countersunk tapping screw PH 3.9 x 13					
5	-+	1	Key 2 W 145					
Hardware depending on profile								
	0...1	**0...1**	**AccessoriesHandle Globe RR USH-8 MM**	*(see page 2)*	**1**	**MZHG0010-100010**	**50**	**MZHG0010-100050**
6	1	1	Adapter 8 mm					
	0...1	**0...1**	**Accessories Handle Globe RR USH-9 MM**	*(see page 2)*	**1**	**MZHG0020-100010**	**50**	**MZHG0020-100050**
7	1	1	Adapter 9 mm					
	0...1	**0...1**	**Accessories Handle Globe RR USH10 MM**	*(see page 2)*	**1**	**MZHG0030-100010**	**50**	**MZHG0030-100050**
8	1	1	Adapter 10 mm					
	0...1	**0...1**	**Accessories Handle Globe RR USH12 MM**	*(see page 2)*	**1**	**MZHG0040-100010**	**50**	**MZHG0040-100050**
9	1	1	Adapter 12 mm					
Essential Hardware								
	0...1	**0...1**	**Gear set FBS M6 Trial/RR**	*(without illustration)*	**1**	**MMGI0080-100010**	**20**	**MMGI0080-100030**
	0...1	**0...1**	**Gear set M6 Trial/RR**	*(without illustration)*	**1**	**MMGI0090-100010**	**20**	**MMGI0090-100030**
Jig								
	-	**-**	**Disassembly device Handle RR**	*(see page 3)*	**1**	**MAEW0040-000010**	**10**	**MAEW0040-000020**

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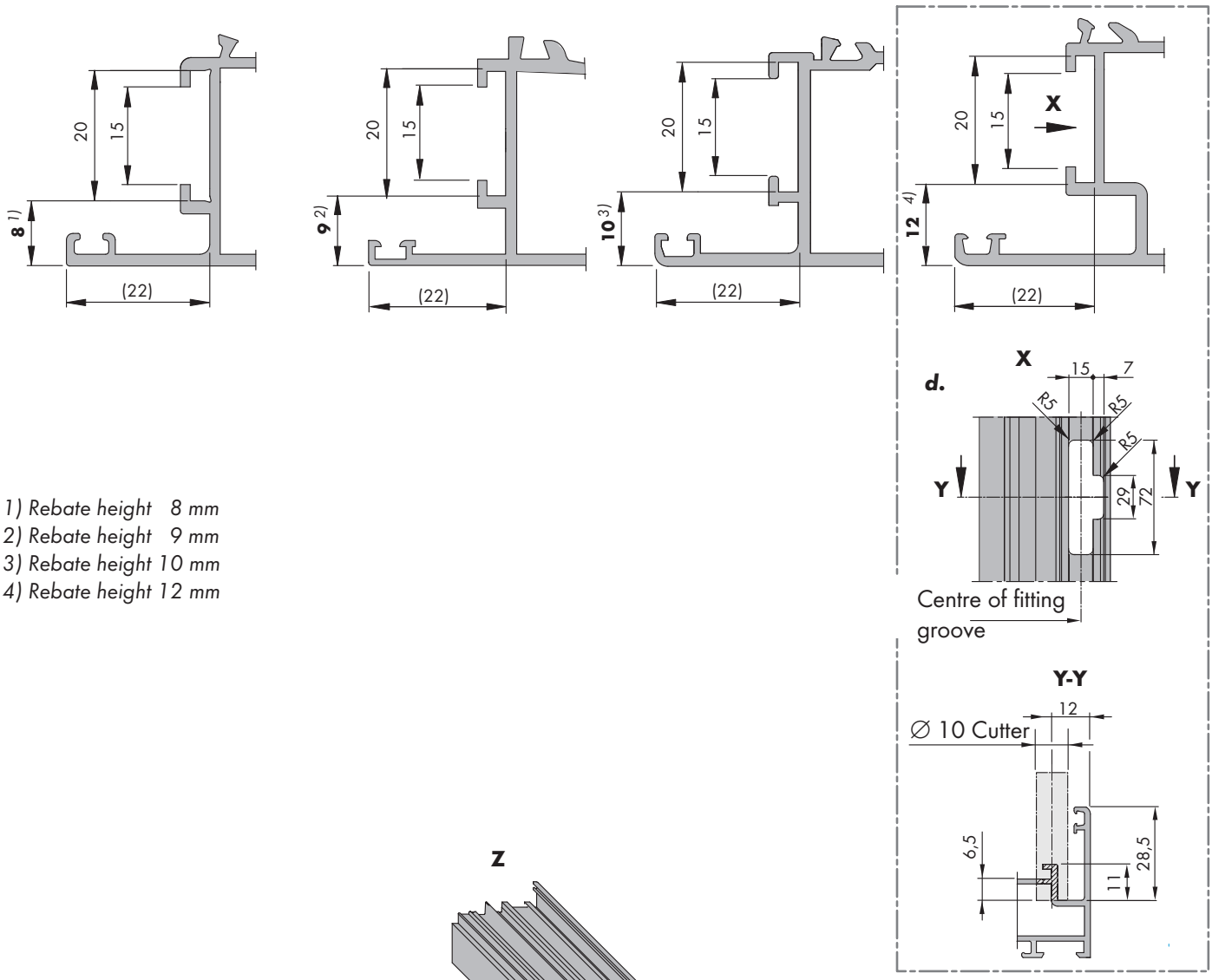
Technical specifications and colours are subject to change

Section suggestion for rebate heights 8, 9, 10 and 12 mm.



1) Rebate height 8 mm
2) Rebate height 9 mm
3) Rebate height 10 mm
4) Rebate height 12 mm

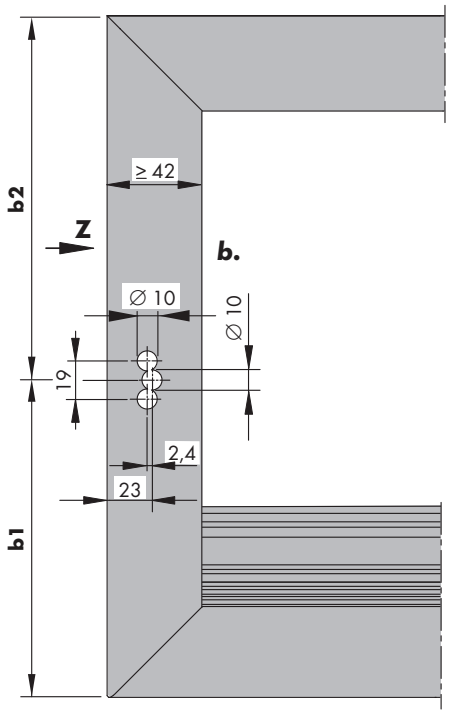


Figure 1

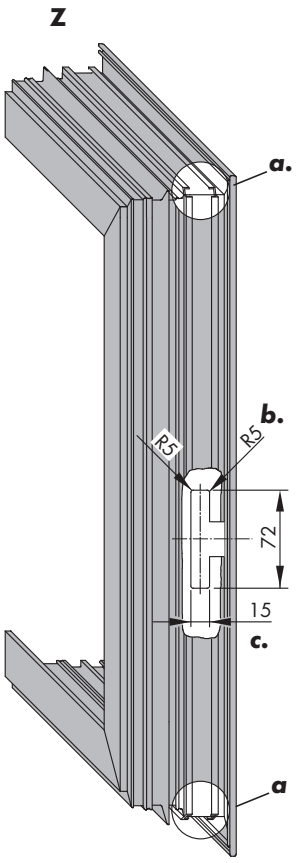


Figure 2

Sash preparation

a. Open operating rod guiding groove (Figure 2).

b. Perform section processing for handle Globe RR (Figures 1+2).

c. Processing for rebate heights 8 mm, 9 mm and 10 mm (Figure 2).

d. Processing for rebate height 12 mm (see view X).

e. Processing of operating rods S1 and S2 (see assembly instructions on page 1).

Note: A sash width of ≥ 42 mm is required to install the Globe RR handle and the RR Globe lockable handle.

Installation

a. Position adapter (**6/7**) on ESG LM M6/ESG LM FBS M6 (Figure 1).

b. Secure adapter (**6/7**) to ESG LM M6/ESG LM FBS M6 using countersunk tapping screws B3.9 x 13 (PZ 2, torque 2.5 Nm ± 0.25 Nm) (Figure 1).

c. Insert ESG LM M6/ESG LM FBS M6 into processed section 72 x 15 (Figure 2).

d. Insert operating rod S1 on the VSU and operating rod S2 on the VSO into the guiding canal (Figure 3).

e. Screw ESG LM M6/ESG LM FBS M6 in the operating rod punch hole ∅ 5.2 using coupling screw M6 (PZ 2, torque 2.75 Nm ± 0.25 Nm) (Figure 2).

f. Position rose (**3**) on the notch in the sash section as shown and tighten using cheese head screw M5 x 19 (**2**) (key dimension 2.5), torque 2.5 ± 0.25 Nm) (Figure 4).

g. Place handle RR/handle RR lockable (**1**) on the rose as shown. Ensure that the square spindle locks into place when inserted (Figure 5).

h. Check that handle RR/handle RR lockable (**1**) is secure (Figure 6).

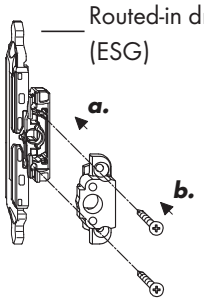
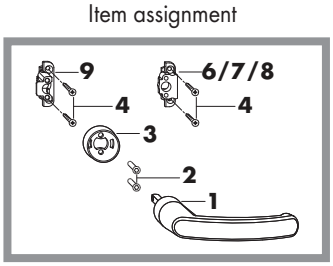


Figure 1



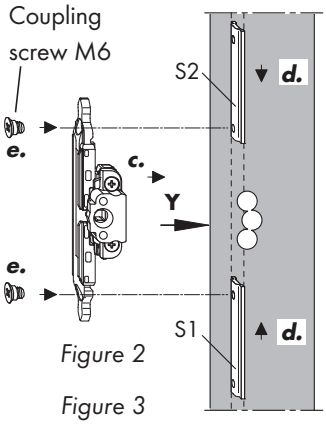


Figure 2

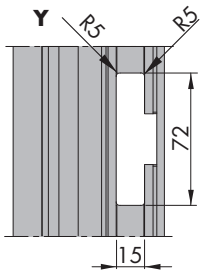


Figure 3

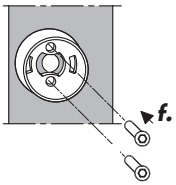


Figure 4

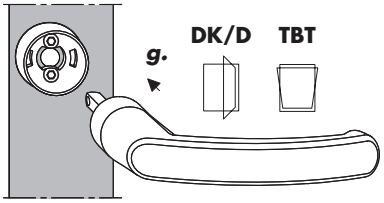


Figure 5

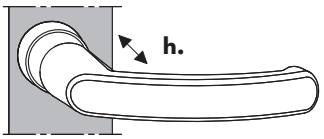


Figure 6

Disassembly

i. Insert the disassembly pin into the designated opening in ESG LM M6/ ESG LM FBS M6 as shown (Figure 7).

j. Remove handle RR/handle RR lockable(**1**) as shown (Figure 7).

k. Remove disassembly pin (Figure 7).

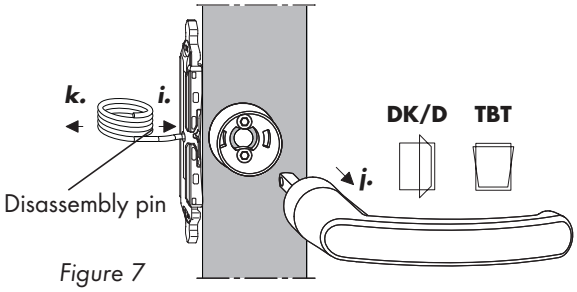
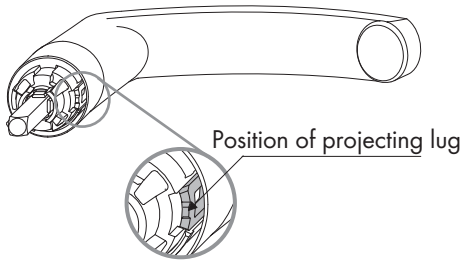


Figure 7

Condition of despatch:

Usage: -DK/-D right
-DK/-D left
-TBT right



Modification to:

Usage: -TBT left

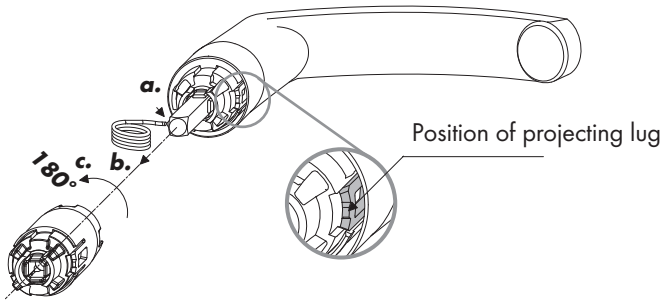
Disassembly

a. Insert the spring ball into the square spindle using the disassembly tool as shown in the figure opposite.

b. Pull cylindrical insert off over the square spindle.

c. Rotate cylinder by 180°.

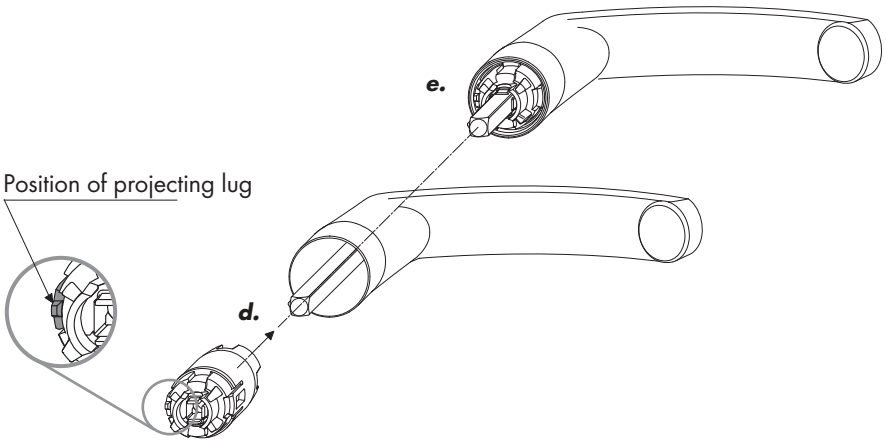
d. Position of projecting lug.



Installation

e. Slide the cylinder onto the square spindle as shown in the figure opposite.

f Handle RR lockable./TBT can nowbe used for TBT left application.



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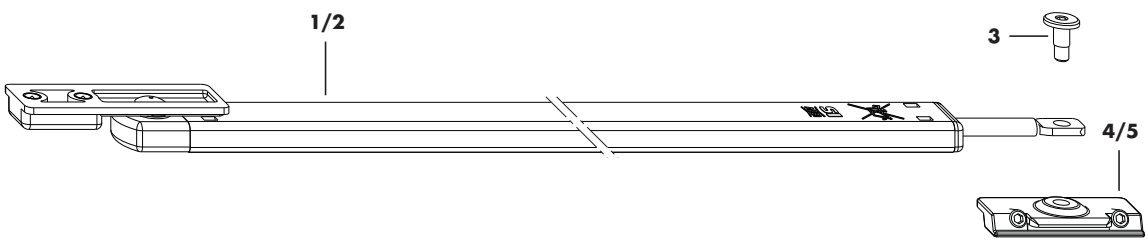
SIEGENIA®

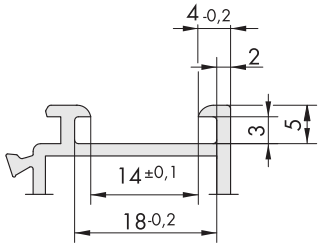
ALU accessories

Size 1 limiter with cushioning
Size 2 limiter with cushioning

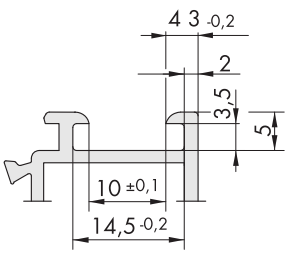


No.	Pc.	Description		Material no.		Material no.
	1	**Size 1 limiter with cushioning A 0006**	**1**	**MSBR0050-100010**	**10**	**MSBR0050-100020**
1	1	Size 1 cushioning				
3	1	Locking screw M4				
4	1	Top hinge block A0006				
	1	**Size 1 limiter with cushioning A 0004/A0022**	**1**	**MSBR0060-100010**	**10**	**MSBR0060-100020**
1	1	Size 1 cushioning				
3	1	Locking screwM4				
5	1	Top hinge block A0004/A0022				
	1	**Size 2 limiter with cushioning A 0006**	**1**	**MSBR0070-100010**	**10**	**MSBR0070-100020**
2	1	Size 2 cushioning				
3	1	Locking screw M4				
4	1	Top hinge block A0006				
	1	**Size 2 limiter with cushioning A 0004/A0022**	**1**	**MSBR0080-100010**	**10**	**MSBR0080-100020**
2	1	Size 2 cushioning				
3	1	Locking screw M4				
5	1	Top hinge block A0004/A0022				

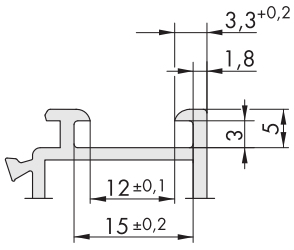
A0006



A0004



A0022



Scope of application (dependent on hardware)

(*only use limiter with cushioning in connection with a surface-mounted hinge side*)

			Windows/French doors min. max.	Sash weight max.
Sash width	(mm)	Size 1 limiter with cushioning	470 to 1000	100 kg
Sash width	(mm)	Size 2 limiter with cushioning	1001 to 1600	150 kg

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Basic safety notes

Intended use

The hardware described in this document is intended to be installed in an aluminium window frame by a certified window construction specialist in accordance with these instructions.
The windows must only be installed vertically.
The certified window construction specialist must ensure that the hardware is suitable for the application based on the specifications in these instructions and in the other documents specified.

Excessive strain

Bearing components can break if they are exposed to excessive strain. If this happens, the window sash may fall out, leading to serious injuries.
If the hinge parts may be subject to excessive strain under certain conditions (use in schools, nursery schools, etc.), appropriate measures must be taken to prevent this from happening,
such as using turning locks or tilt-before-turn opening types (TBT).

- If in any doubt, please contact your SIEGENIA sales consultant.

Do not mix hardware components

The hardware components are designed to work with one another. If they are mixed with hardware components from other systems or manufacturers on a window, it is not possible to guarantee that they will operate safely. Hardware components can break and cause accidents.

- Only use the hardware components listed in these instructions together on a window.

Only treat window surfaces prior to assembly of hardware

- Any surface treatment applied to the window surfaces after the assembly of the hardware components may limit their functionality.

Avoid damage caused by corrosion and debris

Corrosive materials, dirt and moisture may damage hardware components and cause hazards.

- Do **not** use acetic or acid-releasing sealants.
- Do **not** use the hardware components in environments where the air contains aggressive or corrosive components.
- Keep all rebates free of debris and dirt, especially cement and plaster residue.
- Keep the hardware dry.

Clean hardware gently

- Only clean the hardware with a soft cloth and mild, diluted pH-neutral cleaning agents.
- The hardware must not be exposed to abrasive cleaners or aggressive, acidic cleaning agents.
- Dry the hardware after cleaning.

Pass on information to the user of the window

- Attach the user information sticker to the installed window or door element so that it is easily visible. Provide the user with the following documents:
  - Maintenance and cleaning instructions
  - Operating instructions

Exclusion of liability

- We assume no liability for malfunctions and damage to the hardware, or to the windows and French doors equipped with the hardware, where such malfunctions and damage are the result of insufficient tendering information, failure to follow these installation instructions or forceful impact (e.g. due to improper use and handling).

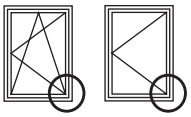
Assembly instructions

Sash ① ② Insert size 1/2 cushioning (**1/2**) below into the sash groove horizontally and position according to measurements (see Fig. 1).Secure grub screws (see Fig. 2) (torque 3 +0.5 Nm).

Frame ③ Insert top hinge block (**4/5**) into the frame groove and position according to measurements (see Fig. 1) and clamp using grub screws without any ends protruding (see Fig. 3) (torque 1.5 ± 0.25 Nm).

Note: Screw in the grub screws so there are no protruding ends (see figures on page 4).

Final assembly ④ Secure connecting rod on cushioning (**1/2**) on to top hinge block (**4/5**) using locking screw M4 (**3**) (see Fig. 4) (torque 2.5 + 0.25 Nm).



Observe the positioning steps ① - ④!

②

A-A "View rotated by 90°"

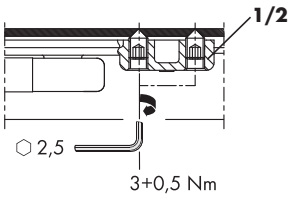


Fig. 2

③

X

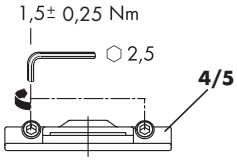


Fig. 3

④

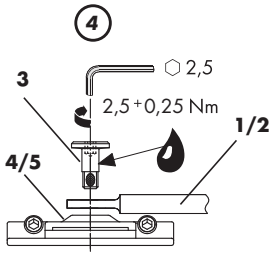


Fig. 4

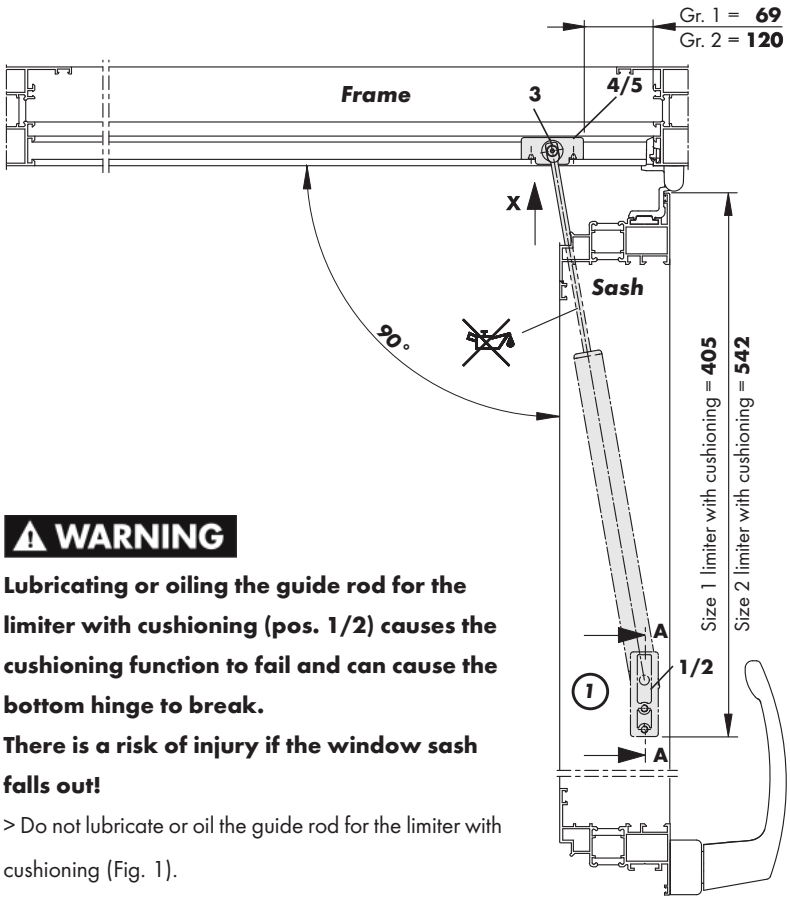


Fig. 1

⚠ WARNING

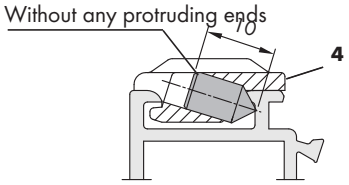
Lubricating or oiling the guide rod for the limiter with cushioning (pos. 1/2) causes the cushioning function to fail and can cause the bottom hinge to break.

There is a risk of injury if the window sash falls out!

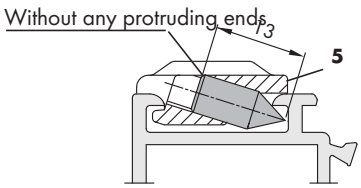
> Do not lubricate or oil the guide rod for the limiter with cushioning (Fig. 1).

Screwing the grub screws into the top hinge block (4/5)

A0006



A0004/A0022



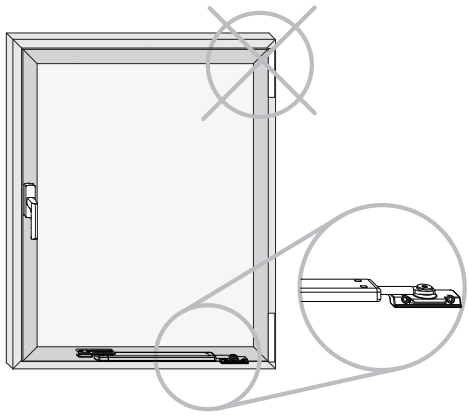
⚠ WARNING

Damage to the connecting rod prevents the limiter with cushioning from functioning correctly.

There is a risk of injury if the window sash falls out!

> Screw grub screws into the top hinge block (**4/5**) without any ends protruding, as shown in the figure opposite (torque 1.5 + 0.25 Nm).

Installation of the limiter with cushioning at the bottom of the hinge side (BSU)



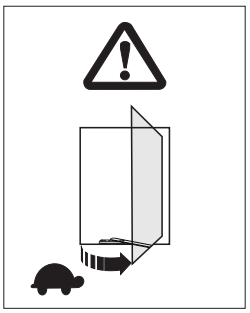
⚠ WARNING

Installation at the top of the hinge side will cause the hinge side to break.

There is a risk of injury if the window sash falls out!

> Only install the limiter with cushioning at the bottom of the hinge side, as shown in the figure opposite.

Opening the window sash



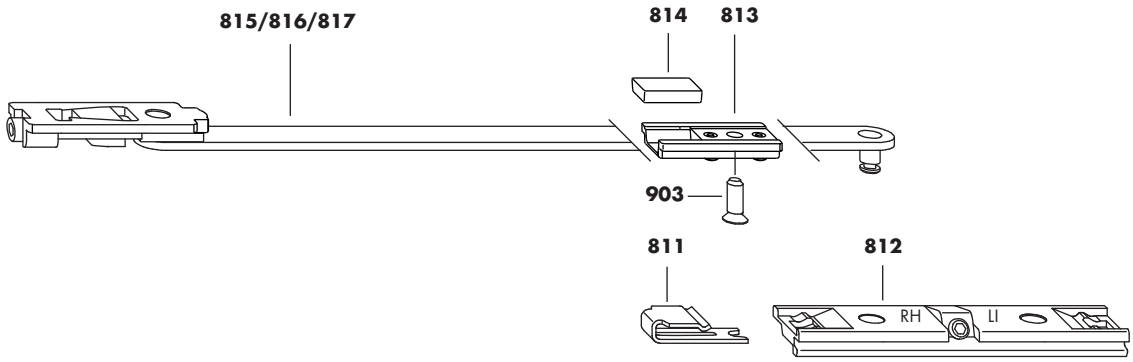
⚠ WARNING

Risk of injury and damage to property (hinge breakage) due to the sash falling out when opened incorrectly.

> Slowly move the sash into its end position by hand.
> Never let sashes swing open uncontrollably.

ALU accessories

Sash brake ALU with damping



No.	Piece	Material description		Material no.		Material no.
	1	**Sash brake ALU - short**	**1**	**MSBR0100-100010**	**50**	**MSBR0100-100050**
811	1	Spring				
812	1	Top hinge block				
813	1	Stop				
814	1	Filling piece for end position cushioning				
815	1	Sash brake ALU - short				
	1	**Sash brake ALU axxent short**	**1**	**MSBR0150-100010**	**50**	**MSBR0150-100050**
811	1	Spring				
812	1	Top hinge block				
813	1	Stop				
814	1	Filling piece end position damping				
816	1	Sash brake ALU axxent short				
	1	**Sash brake ALU - long**	**1**	**MSBR0120-100010**	**50**	**MSBR0120-100050**
811	1	Spring				
812	1	Top hinge block				
813	1	Stop				
814	1	Filling piece for end position cushioning				
817	1	Sash brake ALU - long				
903	**1**	**Countersunk screw M5 x 19** *Use for sash groove with recess (see Figure 1)*	**1**	**800867**	**40**	**257562**

Size range

(It is essential to adhere to the details from the system provider)

		Windows/Patio doors min.	max.
Sash width (mm)	sash brake ALU short	450 to 1000	
Sash width (mm)	sash brake ALU axxent short	600 to 1000	
Sash width (mm)	sash brake ALU long	1001 to 1600	

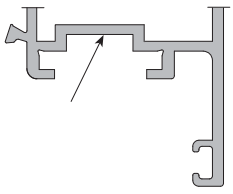


Fig. 1

Table of contents

Assembly instructions
H48.ZUBHLS017en

Technical specifications and colours are subject to change

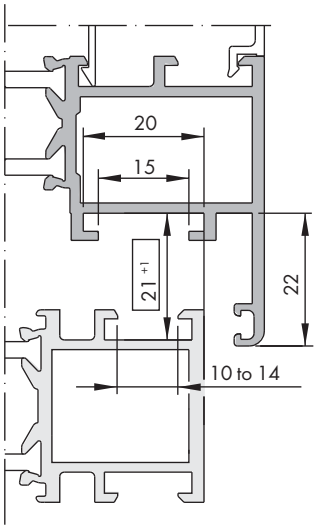
H48.ZUBHLS017en/1

Important information

- Please observe our product information "Tilt & turn hardware for windows and patio doors".
- The size range specifications on page 1 are binding for the hardware described in these assembly instructions. Please also observe the information in the assembly instructions listed below.
- The hardware components specified in these assembly instructions are made from rust-resistant material. They may not be used in environments with aggressive, corrosive air contents.
- Install all hardware components properly following the assembly instructions on pages 3 and 4.
- Window and door elements may only be surface treated before installing the hardware components. Subsequent surface treatment can impair the functionality of the hardware components. In this case, we shall assume no liability.
- When inserting blocks, be sure to observe technical guideline no. 3 published by the German Glazing Trade [Glaserhandwerk], "Blocking glazing units" [Klotzung von Verglasungseinheiten].
- Never use acetic or acid cure sealants as they can cause the hardware components to corrode.
- Keep all rebates free from deposits and dirt.

Exclusion of liability

We assume no liability for loss of function and damage to the hardware, as well as the windows and patio doors that are equipped with them, resulting from inadequate tendering, failure to follow these installation instructions or from force being applied to the hardware (e.g.



LM eurogroove

For details of accessories for SIEGENIA ALU hardware, please refer to the information on the LM eurogroove for aluminium profiles for windows and patio doors.

The system manufacturer's specifications should also be complied with.

Assembly instructions (example DIN right)

Sash

A Press filling piece with end position damping (**814**) into the stop (**813**) (see fig. 2).

B Push stop (**813**) at the bottom locking side into the sash groove, position accordingly (see table and fig. 4) and secure with punching screws. Pre-drill in the case of sash groove with recess Ø 4.2 and fix stop (**813**) with countersunk screw M5 x 19 (**903**) (PZ2) (torque 2.5 Nm). Line stop (**813**) on site.

C Push guiding piece of the sash brake ALU (**815/816/817**) at VSU horizontally into the sash groove (fig. 4).

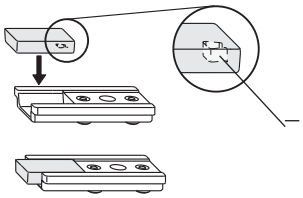


Fig. 2

*Note: The groove in the filling piece end position damping (**814**) must be pressed into the stop (**813**) as shown in the adjacent figure.*

Frame

A Clip spring (**811**) in pre-assembly position DIN right/left on top hinge block (**812**) (fig. 3).

B Insert top hinge block (**812**) into frame groove, position according to dimension X (see table and fig. 4) and clamp firmly with grub screw (torque 2.5 ± 0.25 Nm).

only with *axxent PLUS*

B Insert top hinge block (**812**) into frame groove and push against the bottom hinge right/left ALU axxent PLUS (not illustrated), then clamp firmly with grub screw (torque 2.5 ± 0.25 Nm).

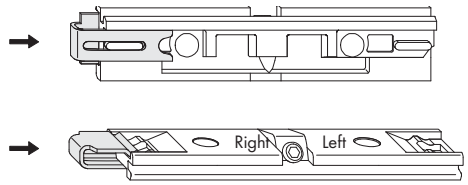


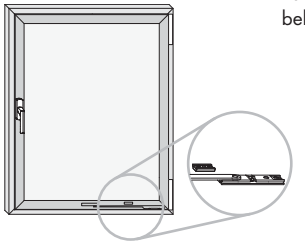
Fig. 3

Opening angle **Measurements in mm**		**90°** **ALU 2200/5200** **200/300**		**90°** **axxent ALU PLUS**	
		X	**Y**	**X**	**Y**
Sash brake ALU short	FB 450 - 1000	60	104	-	-
Sash brake ALU axxent short	FB 600 - 1000	-	-	(137)	156
Sash brake ALU long	FB 1001 - 1600	124	208	(137)	218

Assembly of the sash brake ALU on the hinge side at the bottom (BSU)

⚠ WARNING **Risk of injury due to window sash falling out!**

- Install ALU sash limiter only on the hinge side below.



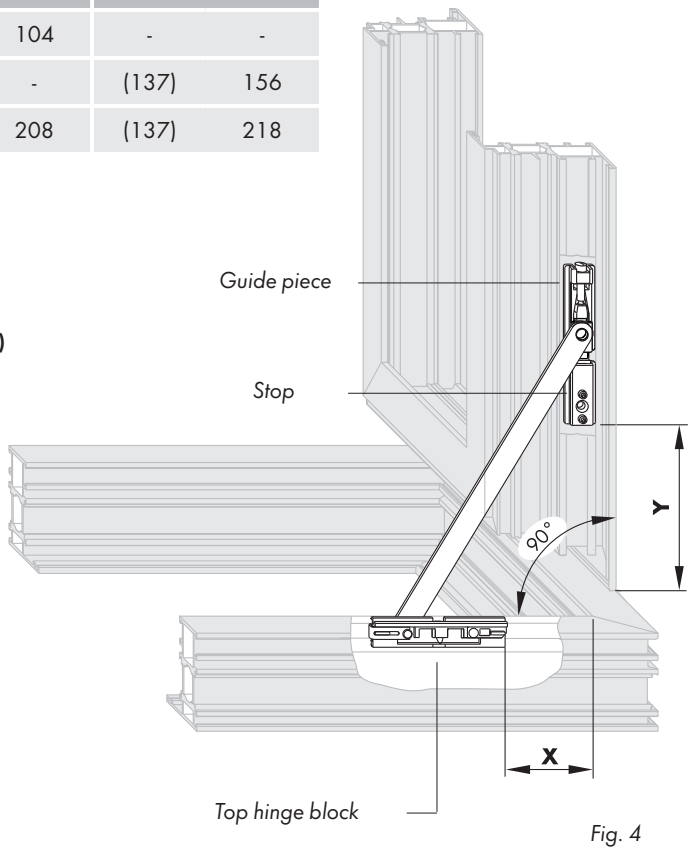


Fig. 4

Transit support

Sash

A Slide the stay arm of the sash brake ALU (**815/816/817**) on to the inserted filling piece for end position damping (**814**) in the stop (**813**) (fig. 6).

B Tighten the cheese head screw on the guiding piece to prevent shifting (fig. 5).

Fig. 5

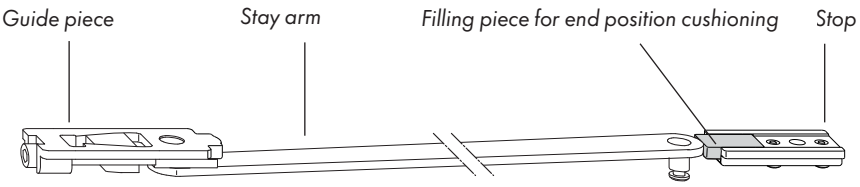


Fig. 6

Final assembly (example shows DIN right)

Attaching the sash limiter (fig. 7)

A Stop bolt of the sash brake ALU short/long (**815/816/817**) Insert into the intended drill hole DIN right/left of the top hinge block (**812**).

B Engage the spring (**811**) into its final position in the top hinge block (**812**).

C Make sure that the stop bolt of the sash limiter ALU short/long (**815/816/817**) is secured.

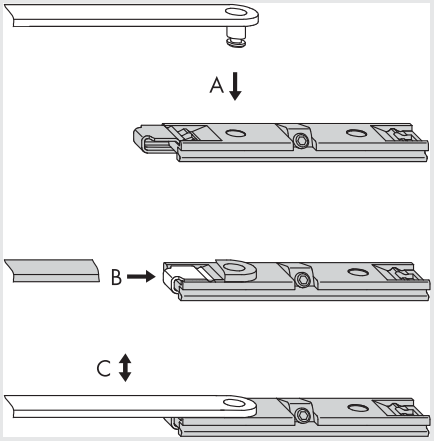


Fig. 7

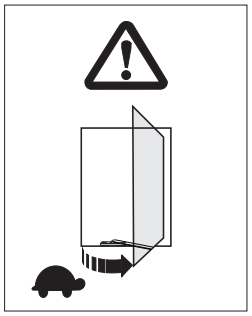
Adjustment

Adjust the cheese head screw on the guiding piece so that the sash has a noticeable turn resistance.

Braking reaction Adjust by screwing in or unscrewing the cheese head screw on the guiding piece (fig. 5).

Tool: Hexagon screwdriver ⬡ 4 mm.

Turning window sashes into end position



⚠ WARNING **Risk of injury and damage to property (hinge breakage) due to the sash falling out when opened incorrectly.**

-Avoid hitting the frame or other sash when opening one sash
-Slowly move the sash into its end position by hand
-Never let sashes swing open uncontrollably

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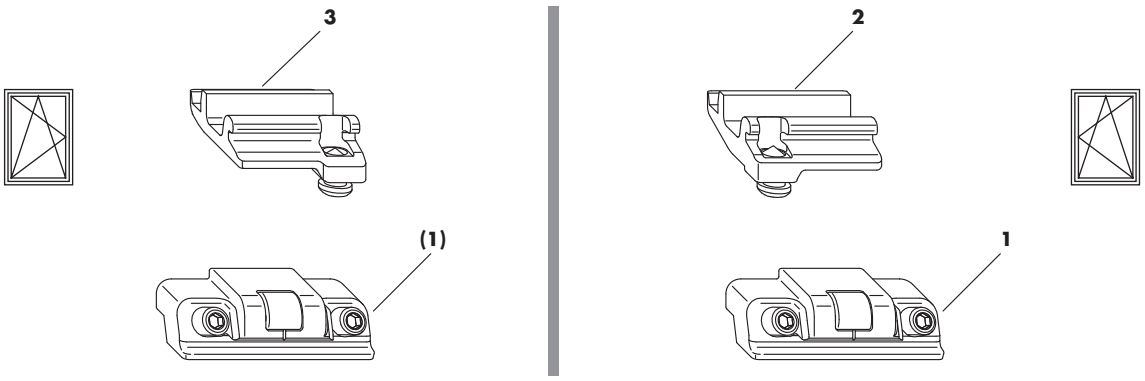
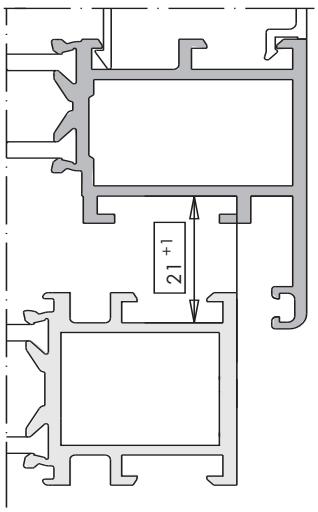
ALU accessory

ALU sash lift

***Always** check the planning manual on aluminium (H4006.3042DE) for further details and specifications/information regarding the product and liability (guidelines: VHBH, TBDK and VHBE).*



Item	Pcs.	Description		Material no.		Material no.
		LM sash lift	**1**	**MMFH0010-100010**	**20**	**MMFH0010-100030**
1	1	Sash lift with roller				
2	1	RH LM sash lift run-up block				
3	1	LH LM sash lift run-up block				



LM eurogroove

For details of accessories for Siegenia ALU hardware, please refer to the information on the LM eurogroove for aluminium profiles for windows and french windows.

The system manufacturer's specifications should also be observed.

Assembly instructions

H48.ZubhLS014en

H48.ZubhLS014en_0_2013-03

Preparation steps:

View from below: RH sash lift run-up block (**2**)

View from below: LH sash lift run-up block (**3**)

Vertical tilt point

Sash without cen. lock

Position RH/LH sash lift run-up block (**2/3**) in the sash groove as shown and fix with grub screw (torque 1.5 - 0.25 Nm, 2.5 mm AF) (Figs. 2 and 3).

with cen. lock

Position RH/LH sash lift run-up block (**2/3**) on the bottom locking side corner drive as shown and fix with grub screw (torque 1.5 - 0.25 Nm, 2.5 mm AF) (Figs. 1 and 3).

Frame

Position sash lift (**1**) on bottom locking side as shown (Fig. 6)
and fix with grub screws (torque 1.5 ± 0.25 Nm, 2.5 mm AF).

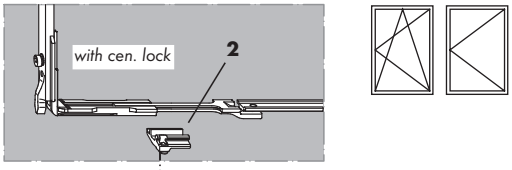


Fig. 1

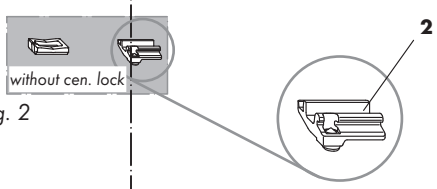


Fig. 2

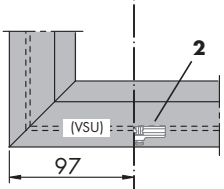


Fig. 3

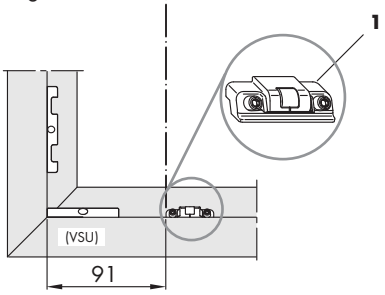


Fig. 4

Horizontal tilt point

Sash

Position RH/LH sash lift run-up block (**2/3**) on the tilt lock as shown and fix with grub screw (torque 1.5 - 0.25 Nm, 2.5 mm AF) (Figs. 5 and 6).

Frame

Position sash lift (**1**) on bottom locking side as shown (Fig. 7)
and fix with grub screws (torque 1.5 ± 0.25 Nm, 2.5 mm AF).

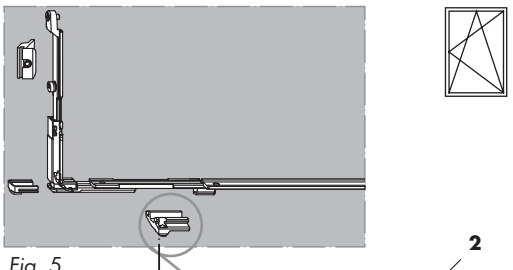


Fig. 5

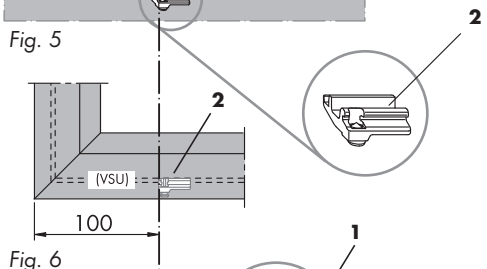


Fig. 6

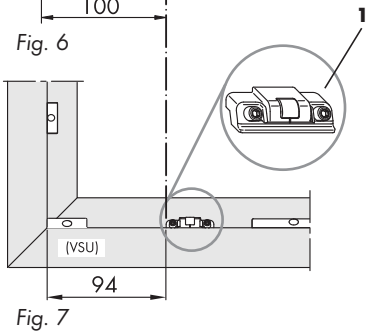


Fig. 7

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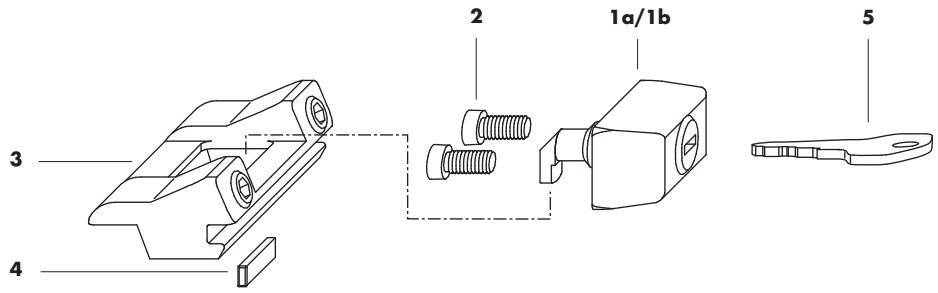
SIEGENIA®

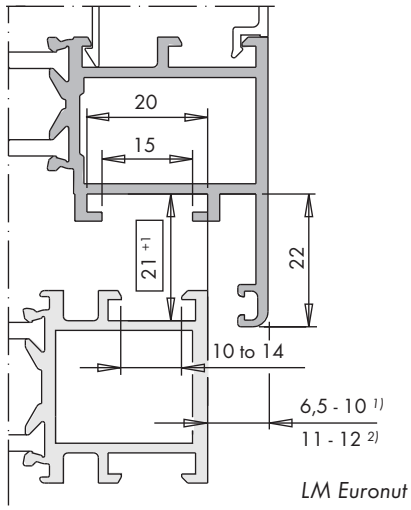
Accessories ALU

Turning Lock ALU



Pos.	Qty.		Description			Material no.		Material no.
	•		**turning Lock LM**[1]	**silver**	**1**	**MMDS0010-525010**	**50**	**MMDS0010-525050**
				brown	**1**	**882344**	**50**	**270585**
				white *RAL 9016*	**1**	**882320**	**50**	**270554**
				black	**1**	**882337**	**50**	**270578**
	•		**turning Lock LM USH 12MM**[2]	**silver**	**1**	**MMDS0040-525010**	**50**	**MMDS0040-525050**
				brown	**1**	**MMDS0040-533010**	**50**	**MMDS0040-533050**
				white *RAL 9016*	**1**	**MMDS0040-504010**	**50**	**MMDS0040-504050**
1a	1	-	turning Lock LM					
1b	-	1	turning Lock LM USH 12MM					
2	2	2	set screw M5 x 12					
3	1	1	lock					
4	1	-	packer [3]					
5	1	1	key 2W 145					

1) for profile upstands 6,5 to 10 mm deep
2) for profile upstands 11 to 12 mm deep
3) for profile upstands 6,5 to 7,5 mm deep



LM Euronut

This dimensional specification of the eurogroove for aluminium windows and doors is valid for the accessories to the SIEGENIA fittings.

In addition the system manufacturers specifications must be observed.

Installation Instructions
H48.ZUBHLS002en

Assembly Instructions

Preparation Pre drill the holes in the sash for the Turning Lock LM (**1**) (Figures 1 and 2) .

Sash Position the Turning Lock LM (**1**) in the corresponding holes ∅ 12,5 (Figure 1) and secure with the set screws (**2**) (Torque 2,5 ± 0,25 Nm).

Frame
A Fix the lock (**3**) in the frame once aligned with the turning lock (**1**) by tightening the grub screws.
B For profiles with an upstand from 6,5 to 7,5 mm insert the packer (**4**) in the groove on the underside of the lock (**3**).

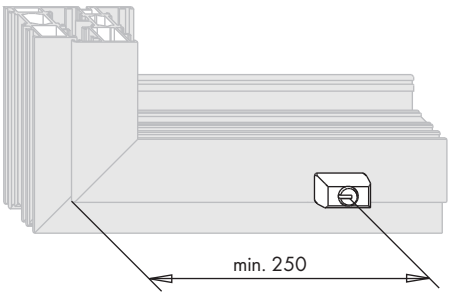


Figure 1

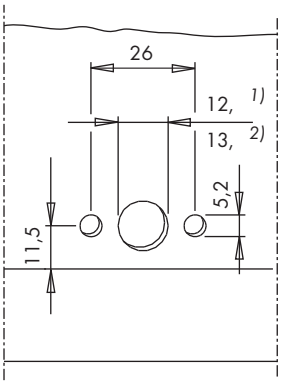


Figure 2 (Holes for turning lock LM)

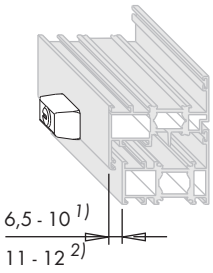


Figure 3

Important Notes

- Please take note of our Product information for windows and doors.
- The specifications for size range given in installation instructions are also valid for the components described in this document.
- The fittings described in this instruction are made of non corroding materials. They must not be installed for use in aggressive corrosion promoting air conditions.
- Do not use SIEGENIA-fittings with other parts; otherwise difficulties can arise for which we cannot be held responsible.
- Assemble the components as described in this installation leaflet.
- The surfaces of windows and doors should be treated (eg painted) prior to the assembly of the fittings.
- Post-treatment of the surfaces can be detrimental to the function of the fittings and in this instance we are released from the obligations of our guarantee .

Liability Exclusion

We accept no liability in respect of any damages or malfunctions caused by or to the hardware or the windows fitted with them, as a result of incorrect and inappropiate specifications or other information provided by the customer, failure to follow these instructions, wilful damage or negligence or misuse or alteration or repair of or an exertion of excessive force to the hardware by the user or customer.

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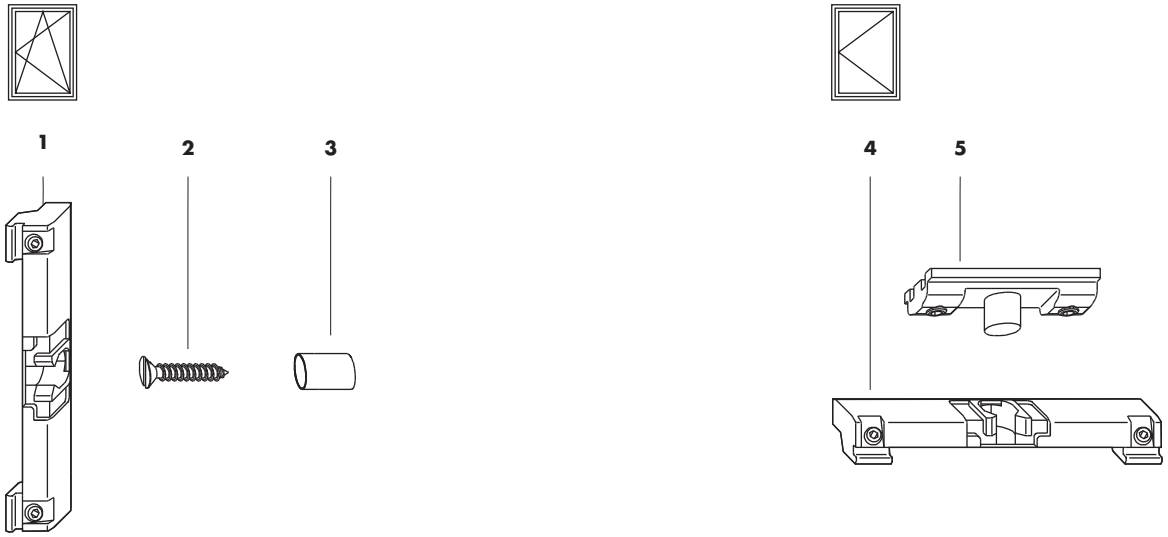
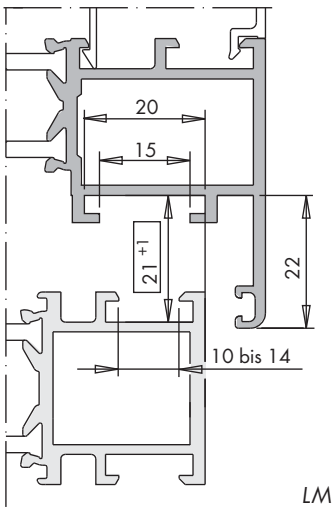
Accessories ALU

Snapper ALU

Snapper ALU - DS



Pos.	Qty.	Description		Material no.		Material no.
	1	**Snapper LM** (G1 min. 420)	**1**	**817957**	**50**	**219744**
1	1	snapper LM				
2	1	countersunk screw B4,2 x 22				
3	1	sleeve				
	1	**Snapper LM - DS**	**1**	**817940**	**50**	**219737**
4	1	snapper LM				
5	1	run up block				



LM euro-groove

For accessories to Siegenia ALU Fittings the information about LM euro-groove on aluminium profiles for windows and window-doors applies.

In addition, information from the system producers must be observed.

Installation Instruction
H48.ZUBHLS010en

Assembly instructions

Snapper ALU

Preparation — Machine recess for operating rod S1 as specified (fig. 1).

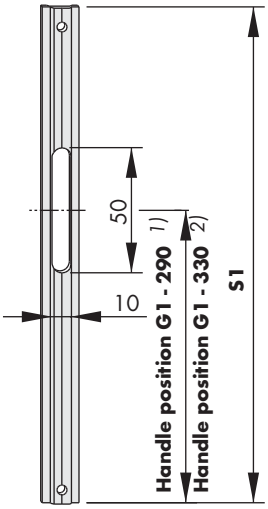
Sash — Attach the sleeve (**3**) to the sash using the countersunk tapping screw (**2**) (fig. 2) (torque 1.5 ± 0.25 Nm, B4).

Frame — Locate LM snapper (**1**) as shown (fig. 3) and clamp it using the grub screw (torque 1.5 ± 0.25 Nm, SW 2.5).

Snapper ALU-DS

Sash — Insert run-up block (**5**) horizontally on VSU, position in center and tighten with grub-screws (torque 1,5 ± 0,25 Nm).

Frame — Position snapper ALU-DS (**4**) horizontally and in the center of the VSU below run-up block (**5**) and tighten with grub-screws (torque 1,5 ± 0,25 Nm).



1) with locking side vertical tilt-point (KPS)
2) with locking side horizontal tilt-point (KPW)

fig. 1

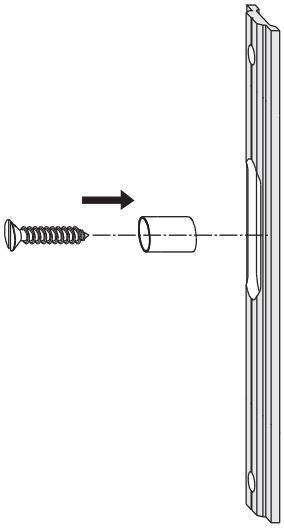


fig. 2

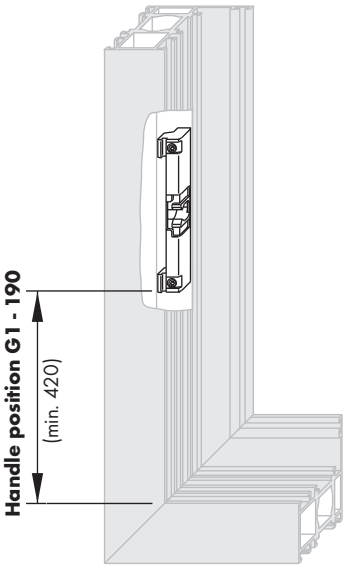


fig. 3

Important information

- Please observe our product information "Tilt & turn hardware for windows and patio doors".
- For the hardware described in these assembly instructions the information on applicable size ranges in the specific ALU-assembly instructions must be observed.
- The hardware components specified in these assembly instructions are made from rust-resistant material.
- Assemble window hardware **only** from SIEGENIA-components. We are not responsible for damages resulting from failure to follow this instruction.
- Install all hardware components properly following the assembly instructions on this page.
- Never use acetic or acid cure sealants as they can cause the hardware components to corrode.
- Window and door elements may only be surface treated **before** installing the hardware components. Treating these surfaces at a later stage can reduce the functional capacity of the hardware components.
  In such cases we are not obliged to honour any warranty.

Exclusion of liability

We assume no liability for loss of function and damage to the hardware (as well as the windows and patio doors that are equipped with them) resulting from inadequate tendering, failure to follow these installation instructions or from force being applied to the hardware (e.g. through improper use).

Montageanleitung

Vorbereitung

A Bohrungen ∅ 4,2 für Schließteile (**7**) nach Maßangaben (Bild 1) am Rahmen vornehmen.
B Schubstangen S1 - S2 nach Angaben (Bild 2) bearbeiten.

Flügel

A Bremsscheibe (**2**) in vorgesehende Nut eindrücken (Bild 3).
B Schubstangen S1 und S2 mit Kupplungslasche (**4**) und Verriegelung (**3**) an der VS einschieben.
C Auflaufbock (**1**) an der VSU waagerecht einschieben.

Rahmen

A Schließteile (**7**) nach Maßangaben (Bild1) positionieren und mit Senkschrauben M5 x 13 (**6**) befestigen (Drehmoment 2,5 ± 0,25 Nm).
B Kippschließteil (**8**) an der VSU in die Nut einlegen, bis Nutanfang schieben und mit Gewindestift festklemmen (Drehmoment 1,5 ± 0,25 Nm).

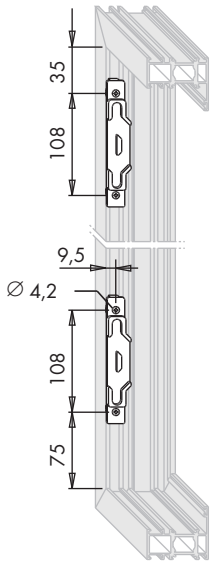


Bild 1

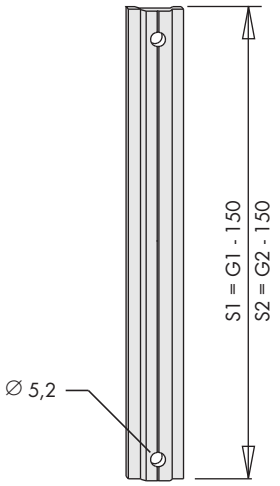


Bild 2

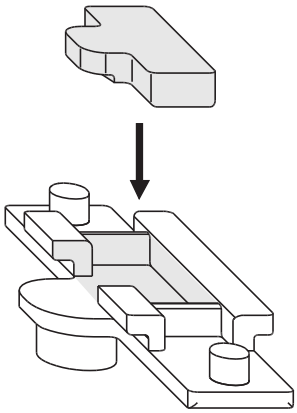


Bild 3

Hinweis:
Bei Spaltlüftungsstellung 90° (Bild 4) beträgt die Spaltbreite an der VS ca. 10 mm.

Bild 4

Wichtige Hinweise

- Beachten Sie unsere Produkt-Information „Drehkippbeschläge für Fenster- und Fenstertüren".
- Für den in dieser Anschlaganleitung beschriebenen Beschlag gelten verbindlich die Angaben der Anwendungsbereiche in den jeweils gültigen Anschlaganleitungen LM.
- Die in dieser Anschlaganleitung beschriebenen Beschlagteile sind aus nichtrostendem Werkstoff . Sie dürfen nicht in Umgebungen mit aggressiven, korrosionsfördernden Luftinhalten verwendet werden.
- Stellen Sie den Gesamtbeschlag **nur** aus SIEGENIA– Beschlagteilen zusammen. Andernfalls können Schäden auftreten, für die wir keine Haftung übernehmen.
- Verwenden Sie keine essig- oder säurevernetzenden Dichtstoffe, da diese zur Korrosion der Beschlagteile führen können.
- Montieren Sie alle Beschlagteile fachgerecht nach der Montageanleitung auf dieser Seite.

Haftungsausschluss

Wir haften nicht für Funktionsstörungen und Beschädigungen der Beschläge sowie der damit ausgestatteten Fenster- und Fenstertüren, die auf unzureichende Ausschreibung, Nichtbeachtung dieser Anschlaganleitung oder Gewalteinwirkung auf den Beschlag (z.B. durch nicht bestimmungsgemäßen Gebrauch) zurückzuführen sind.

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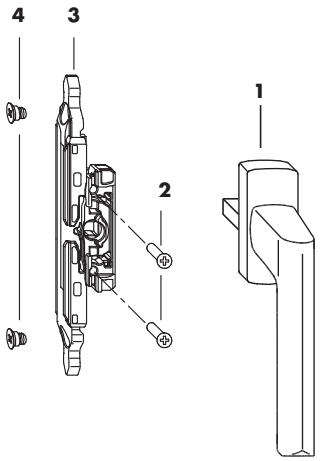
ALU Accessories

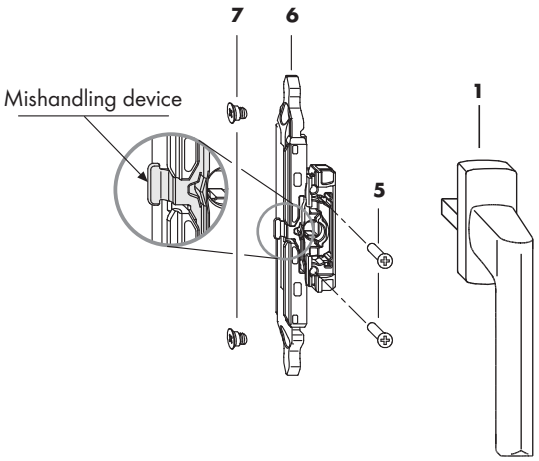
Gear set M6

Gear set FBS M6

***Always** check the planning manual on aluminium (H4006.3042EN) for further details and specifications/information regarding the product and liability (guidelines: VHBH, TBDK and VHBE).*

All dimensions given are final dimensions after the surface of the sections has been treated (painted, powder coated etc.).

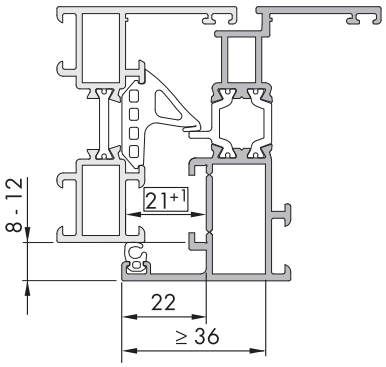


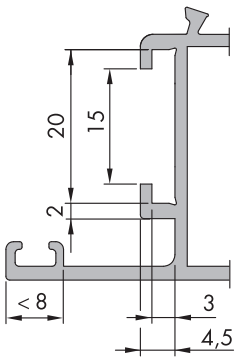


Item	Quantity	Description		Material no.		Material no.
1	**1**	**Window handle ☐ 7 mm x 25 mm** *(cam ∅ 10 mm)*				
	1	**Gear set M6 Trial/RR**	**1**	**MMGI0090-100010**	**20**	**MMGI0090-100030**
2	2	Countersunk screw M5 x 35		KDNA0230-000010		KDNA0230-000010
3	1	ESG LM M6		MGIL0120-100010		MGIL0120-100010
4	2	Coupling screw M6		KWNA0010-000010		KWNA0010-000010
	1	**Gear set FBS M6 Trial/RR**	**1**	**MMGI0080-100010**	**20**	**MMGI0080-100030**
5	2	Countersunk screw M5 x 35		KDNA0230-000010		KDNA0230-000010
6	1	ESG LM FBS M6		MGIL0110-100010		MGIL0110-100010
7	2	Coupling screw M6		KWNA0010-000010		KWNA0010-000010

Section suggestion

For section processing dimensions, see page 3





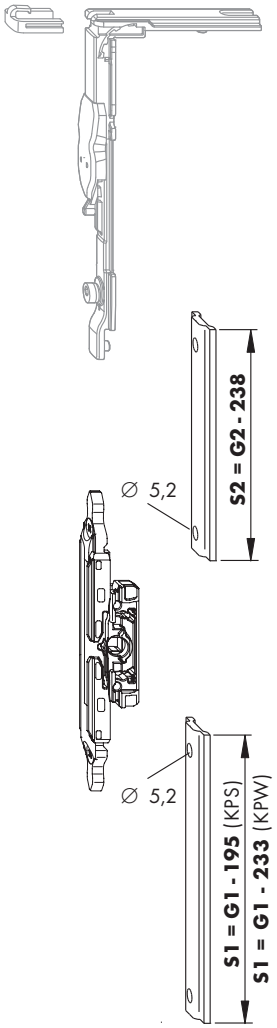
Contents

Assembly instructions
H48.ZUBHLS005en

H48.ZUBHLS005en_0_2012-07

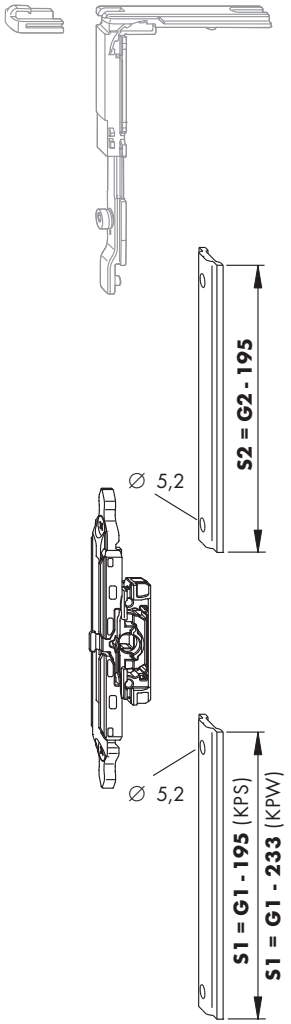
Gear set M6
(see items 2-4 on page 1)

Installation variants
VS LM-DK FBS-EUL KPS
VS LM-TBT FBS-EUL KPS
VS LM-DK-TBT FBS-EUL KPW



Gear set FBS M6
(see items 5-7 on page 1)

Installation variants
VS LM-DK FBS-G KPS
VS LM-TBT FBS-G KPS
VS LM-DK-TBT FBS-G KPW



Abbreviations

The following abbreviations are used in these assembly instructions:

b	Sash height
b1	Handle height, bottom
b2	Handle height, top
DK	Tilt and turn
FBS	Mishandling device
FBS-EUL	Mishandling device in corner drive
KPS	Tilt point vertical
MV	Centre lock
Nm	Torque in Nm
PZ	Screwdriver size
TBT	Tilt before turn
VSO	Locking side, top
VSU	Locking side, bottom
S1	Operating rod, locking side, bottom
S2	Operating rod, locking side, top

Preparation

a Perform section processing for window handle (**1**) (Figures 1+2).

b Open operating rod guiding groove.(Figure 2).

c Process operating rods S1 and S2 according to instructions on page 2.

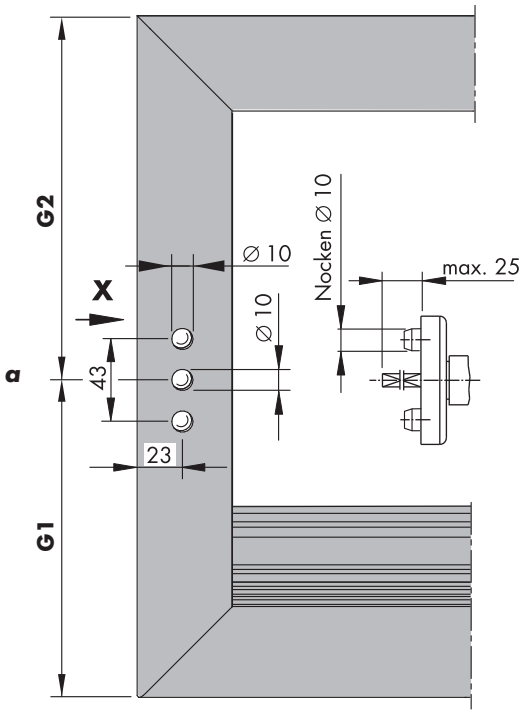


Figure 1

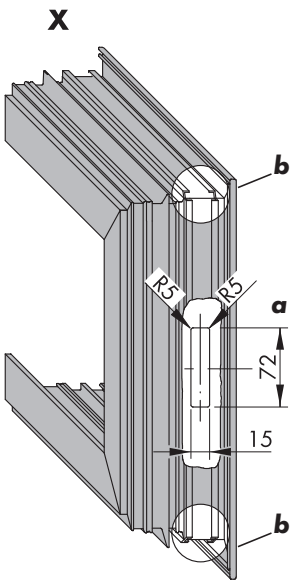


Figure 2

Sash

d Insert ESG LM M6 / ESG LM FBS M6 (**3/6**) into the processed section 72 x 15 (Figure 3).

e Screw SG LM M6 / ESG LM FBS M6 (**3/6**) in operating rod punch hole ∅ 5.2 using coupling screw M6 (**4/7**)(PZ 2, torque 2.75 Nm ± 0.25 Nm) (Figure 3).

f Screw on window handle (**1**) using countersunk screws M5 x 35 (**2/5**) (PZ 2, torque 2.5 ± 0.25 Nm) (Figure 4).

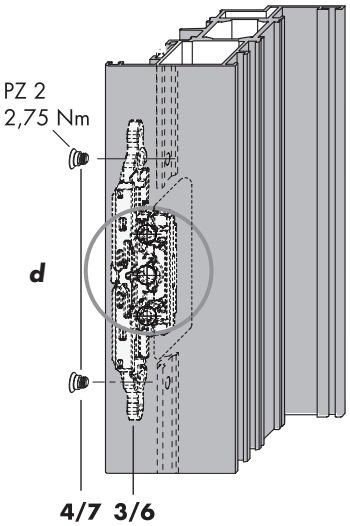


Figure 3

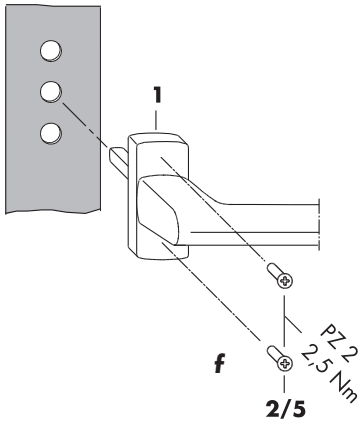


Figure 4

Frame

g At b > 1250 mm, position striker according to the dimensions (Figure 5) and fix in place using grub screws (key dimension 2.5, torque 1.5 ± 0.25 Nm).

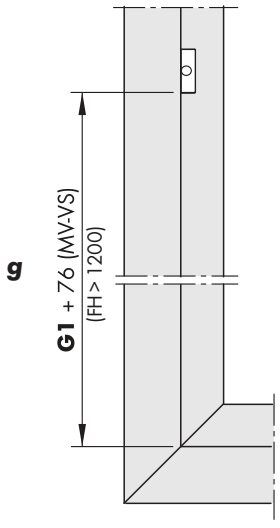


Figure 5

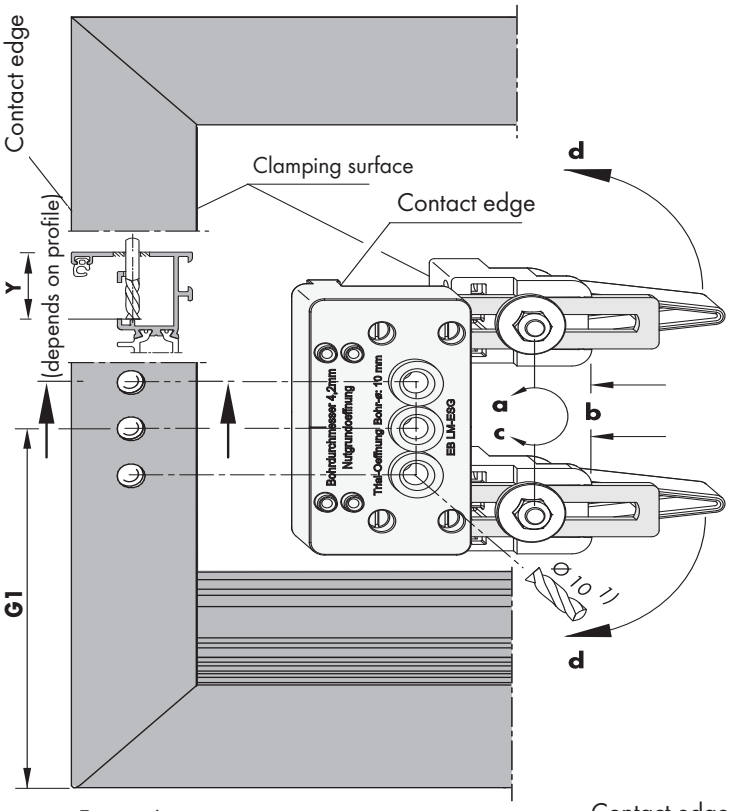


Figure 6

Description			Material no.
Jig Trial LM-ESG	*consisting of:*	**1**	**MMAH0010-000010**
• Jig EB Trial LM-ESG		**1**	
• Slot drill [1]	*∅ 10 mm*	**1**	ZAWE0050-000010

Installation procedure for jig Trial LM-ESG (Figures 6 + 7)

a Loosen nuts on the clamping devices.

b Position jig according to dimension b1 and slide clamping devices on to the sash section (take account of contact edge).

c Tighten nuts on the clamping devices.

d Turn and fix the handles on the clamping devices as shown in the following figures.

- Perform processing.
- After processing, release the handles on the clamping devices and remove jig.

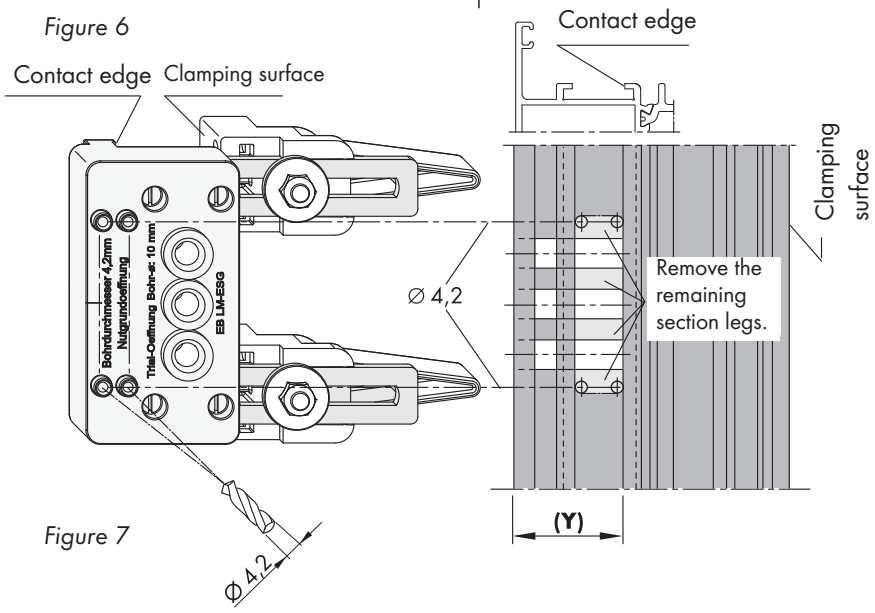
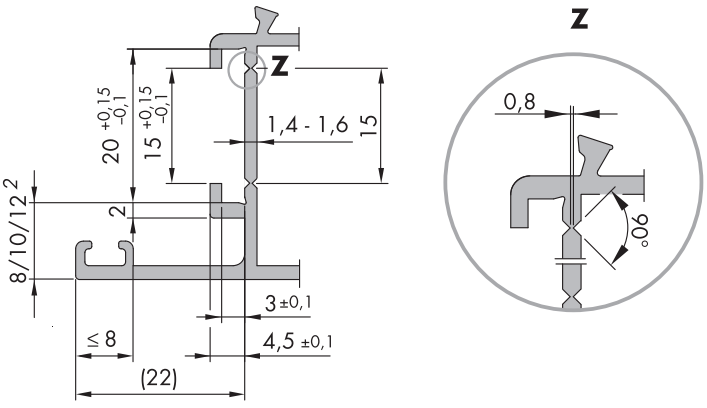


Figure 7

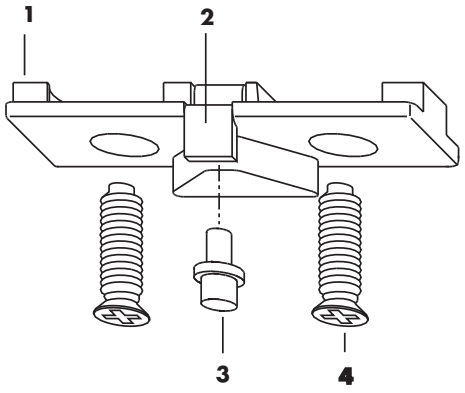
Section suggestion for press cut in the hollow cavity

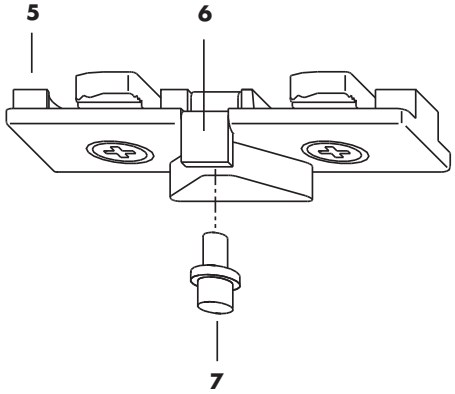


Punching machine[2] For 3 x ∅10 and ▭ 70 x 15 *(See Figures 1 and 2 on page 3)*	**1**	**on request**

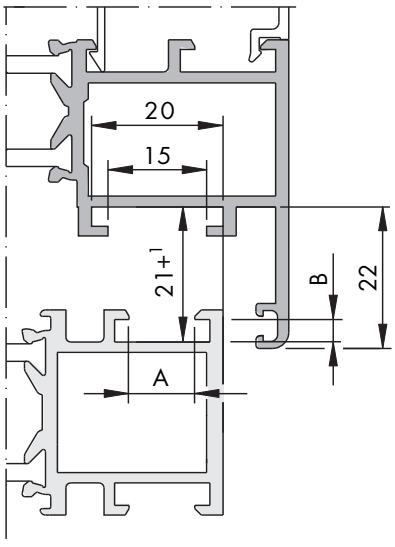
ALU accessories

Screwable night vent ALU A0004
Clampable night vent ALU A0006





Pos.	Qty.	Description	Material no.
	1	**Night vent ALU A0004**	**818848**
1	1	striker SP	833957
2	1	striker plate SP	819470
3	1	rivet	800836
4	2	countersunk screw M5 x 19	800867
	1	**Night vent ALU A0006**	**818855**
5	1	striker SP A0006	833940
6	1	striker plate SP	819470
7	1	rivet	800836



ALU-Euronut

Size range (depending on hardware)

sash width (mm)	stay ALU 5200/4200
430 - 630	20
631 - 1250	35
1251 - 1600	35 with addit. stay ALU

	meas. A	meas. B
A0004	14	3
A0006	10	3,5

This dimensional specification of the eurogroove for aluminium windows and doors is valid for the accessories to the SIEGENIA fittings.

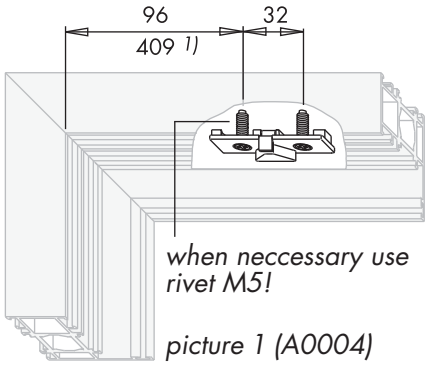
In addition the system manufacturers specifications must be observed.

Installation instructions
H48.ZUBHLS011en

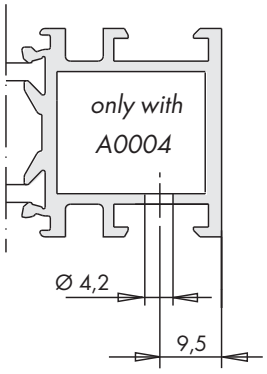
H48.ZUBHLS011en/1

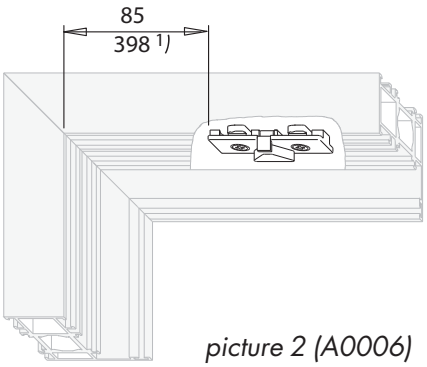
Installation instructions

Preparation	***A***	Drill holes for striker SP (**1**) A0006 on frame according to picture 1 (drill Ø 4,2).
	B	Drill hole in operating rod S3 (Ø 5,2) according to picture 4.
Sash		Press rivet (**3/7**) into the operating rod S3 (Ø 5,2) and rivet in place (picture 4).
Frame (A0004)	***A***	Insert striker plate SP (**2**) in groove of the striker SP (**1**), (picture 3).
	B	Position striker SP (**1**) on the frame (picture 1) and fix with countersunk screws M5 x 19 (4) (torque 2,5 ± 0,25 Nm).
	C	Bring handle into night vent position in order to check proper functioning of the fitting part (picture 5).
Frame (A0006)	***A***	Insert striker plate SP (**6**) into groove of the striker SP (**5**) (picture 3).
	B	Position striker SP (**5**) on the frame (picture 1) and fix.
	C	Bring handle into night vent position in order to check proper functioning of the fitting part (picture 5).

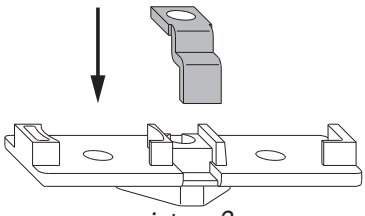


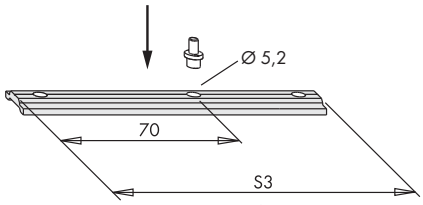
picture 1 (A0004)



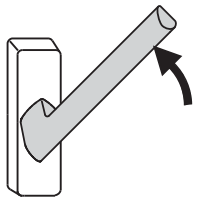


picture 2 (A0006)


picture 3



picture 4


picture 5

night vent position ca. 45°

1) with additional stay ALU

Important notes

- Please take note of our Product information for windows and doors.
- The specifications for size range given in installation instructions are also valid for the components described in this document.
- The fittings described in this instruction are made of non corroding materials.
  They must not be installed for use in aggressive corrosion promoting air conditions.
- Do not use SIEGENIA-fittings with other parts; otherwise difficulties can arise for which we cannot be held responsible.
- Assemble the components as described in this installation leaflet.
- The surfaces of windows and doors should be treated (i.e. painted) prior to the assembly of the fittings.
- Post-treatment of the surfaces can be detrimental to the function of the fittings.

  In this case we are released from the obligations of our guarantee.

Liability Exclusion

We accept no liability in respect of any damages or malfunctions caused by or to the hardware or the windows fitted with them, as a result of incorrect and inappropiate specifications or other information provided by the customer, failure to follow these instructions, wilful damage or negligence or misuse or alteration or repair of or an exertion of excessive force to the hardware by the user or customer.

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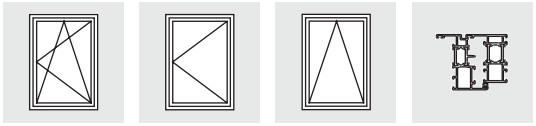
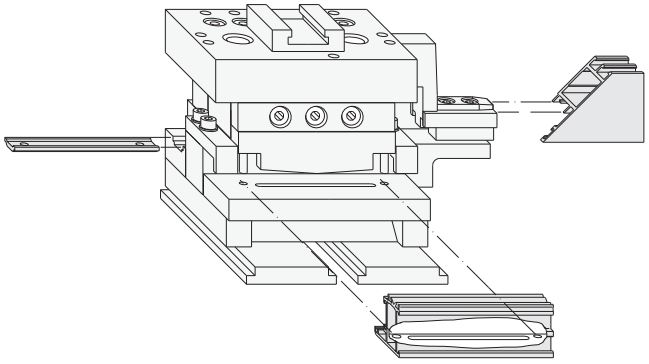
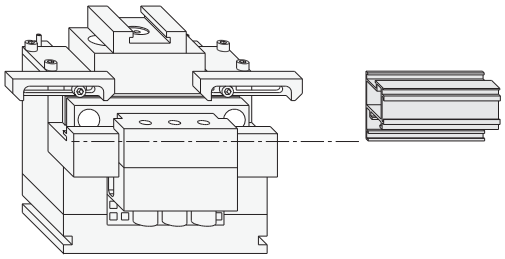
LM Range
Jigs and tools

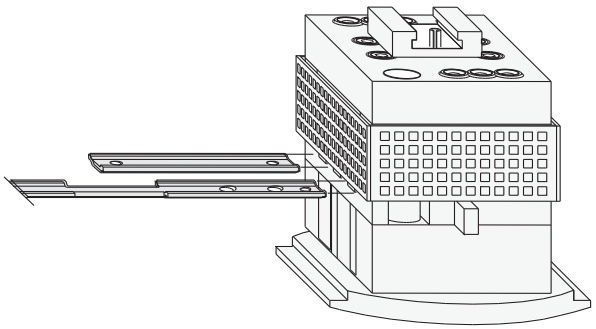




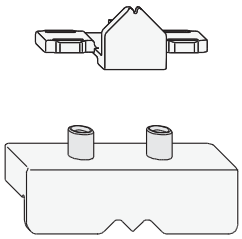
Description			part code
Combi tool *Suitable punch* BST 105 (15 mm stroke)	• *handle preparation* • *Opening of drive gear groove* • *drive gear hole punching and cropping to length*		141243



Punching tool 68 *(LM 3100)* *Suitable punch* BST 105 (15 mm stroke)	*Punching for hinge clearance*		141236



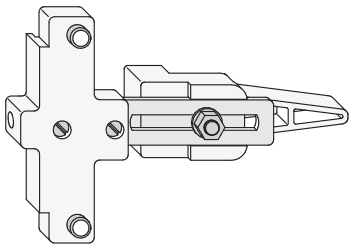
Punching tool E *Suitable punch machine* BST 105 (15 mm stroke)	*Drive gear hole punching*		141267

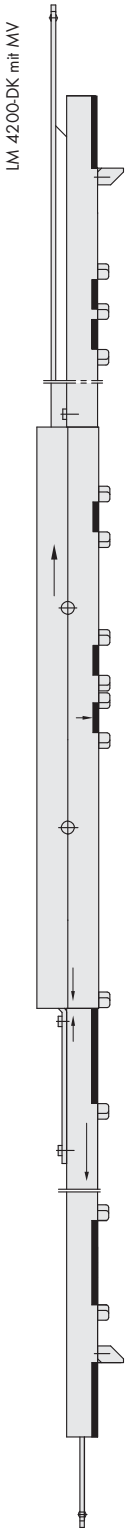


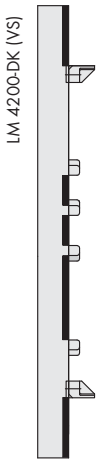
Jig LM-E	*consisting of:*		**863022**
Jig EL LM-E	*for sash*	*Contents:12 off*	156926
Jig EB LM-E	*for frame*	*Contents:1 off*	156919

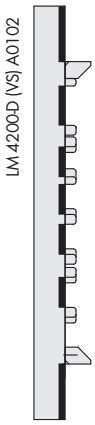
Jigs and tools LM

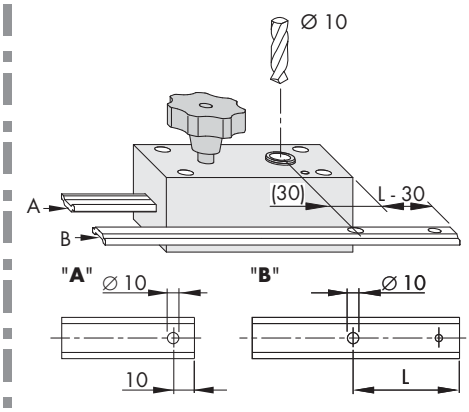
Description		part code
Jig LM *EB-LM 4200/BS*	from sash weights of 100 kg	157220
Striker jig LM **Locking Side** *LM 4200-DK mit MV*	*for strikers, striker E and auxiliary stay LM*	157435
Striker jig LM *LM 4200-DK (VS)*	*for striker and striker E*	157442
Striker jig LM *LM 4200-D (VS) A0102*	*for run-up block TBT and strikers*	157459
Jig LM *∅10 mm*		130001
Hand punching tool LM *∅10 mm* *6 - 7 bar*		130018

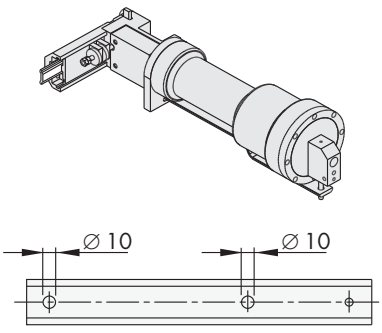




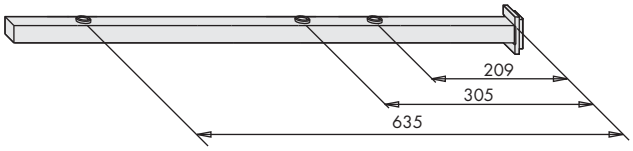
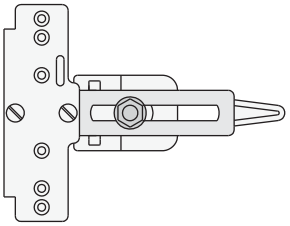
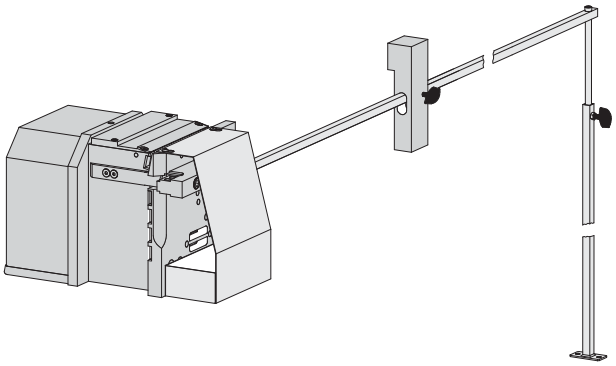
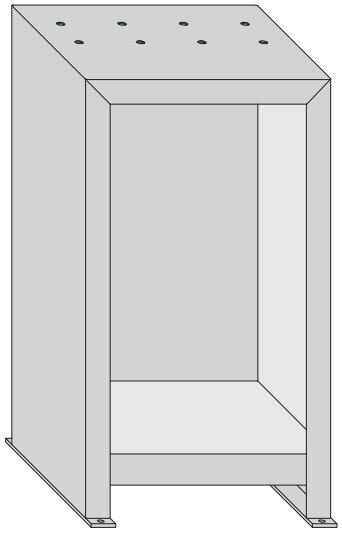


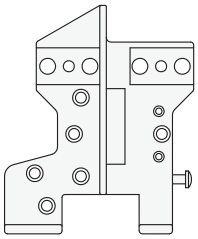
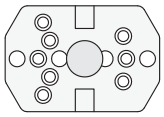
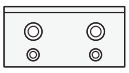
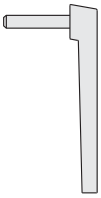
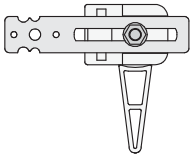
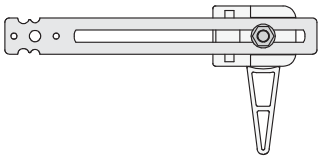


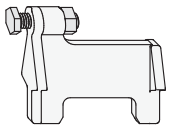
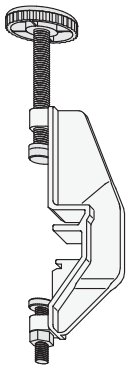
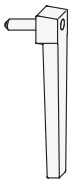
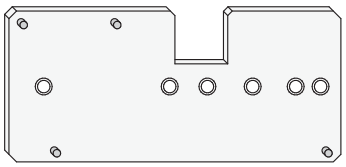
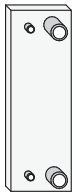
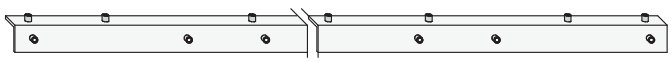


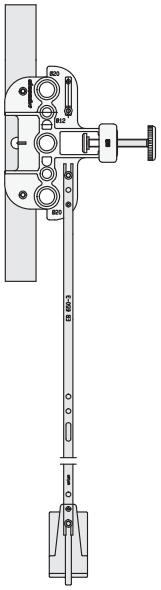
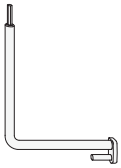
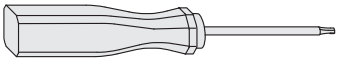
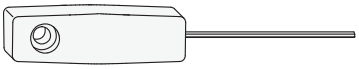
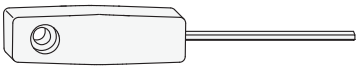


Jigs and tools LM

	Bezeichnung		EAN 40 12453
	*Jig LM* *(EB - stay)* *(LM 3100)*	*for stay LM 3100-DK* *(Size 20, 30 and 65)*	141151
	**Jig LM (BS)** *(LM 3100)*	*for bottom hinge HV and top hinge*	141182
	**Combi punching machine LM**	• *Handle preparation* • *Opening of drive gear groove* • *Cropping and punching both sides Ø 5.2 mm* • *Punching Ø 5.2 mm* • *Punching ∅10 mm* • *Punching ∅ 7,1 mm at a spacing of 24 mm and 50 mm (with EF2 for safety piece E)* • *Punching ∅ 7,1 mm at a spacing of 10 mm (with EF2 for coupling bracket E)* • *Punched hole for locking parts E*	157398
	*Punching table for* **Combi punching machine LM**	• *Supply unit (no illustration)* • *Barometer (no illustration)* • *Tool storage* • *Compressed air gun with connection (no illustration)*	157404

	Description		part code
	**Jig EB 645-1** Requirement: 2 off	*for bottom hinge*	143124
	**Jig EB 645-2** Requirement: 4 off	*for sash hinge*	143131
	**Jig EB 644-3** Requirement: 1 off	*for catches*	143087
	**Jig EB 644-4** Requirement: 1 off	*for drill centralization* *On the guide and running rail*	143094
	**Adjusting rod** Requirement: 2 off	*for EB 645-1 and EB 645-2*	143117
	**Stop** Requirement: 2 off	*for adjusting rod*	143100
	**Clamping device** Requirement: 9 off	*for EB 645-1 and EB 645-2*	139202
	**Clamping device A0089** Requirement: 3 off	*for EB 645-2 (exterior)*	139219
(No illustration)	**Countersunk screw M5x16** Requirement: 24 off	*for securing the* *Clamping device*	801147

	Description		part code
	**Striker jpg EL 640-2** Requirement: 1 off	*for locking part*	142967
	**Clamping jpg KL 640-4** Requirement: 3 off	*for guide rail and bottom rail*	142950
	**Drilling jig EB 640-4** Requirement: 1 off	*for drill holes on guide raild and bottom rail*	143001
	**Drilling jig EB 641-6** Requirement: 1 off	*for bogie wheels and support*	143032
	**Drilling jig PSK-PORTAL** Requirement: 1 off	*for Handle, Si-line PSK LM*	157503
	**Drilling jig EB 641-7** Requirement: 1 off	*for tilt stay and cover caps K.*	143049

	Description		part code
	**Jig EB 650-3** Requirement: 1 off	*for gear drillings*	157237
	Adjusting rod Requirement: 1 off	*for EB 650-3*	157237
	**Assembly key** (LM 3100)		139325
	**Multitool**		127629
	Bit	*Hexagon 2.5 mm hardened*	857113
	**Allen Key, Professional**	*Hexagon 2.5 mm hardened*	157947
	**Allen Key**	*Hexagon 2.5 mm*	141274
	**Allen Key**	*Hexagon 4 mm*	139394

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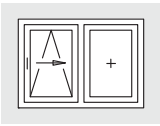
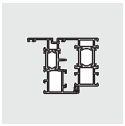
PSK PORTAL 160 PLUS LM

Parallel tilt & slide (PSK) hardware
For light metal profiles a cavity of 21 mm





Size range

Sash width	(mm)	700 to 1,650[1)]
Sash height	(mm)	850 to 2,400
Exterior width of frame	(mm)	Depends on the profile system, determined by the sash width, for scheme A: max. 3,460
Rebate thickness	(mm)	7 to 12
Sash weight	(kg)	**Max. 160**
Total frame to sash clearance	(mm)	118

1) For sash widths < 960 mm, the sash height must not be greater than 2.5x the sash width.

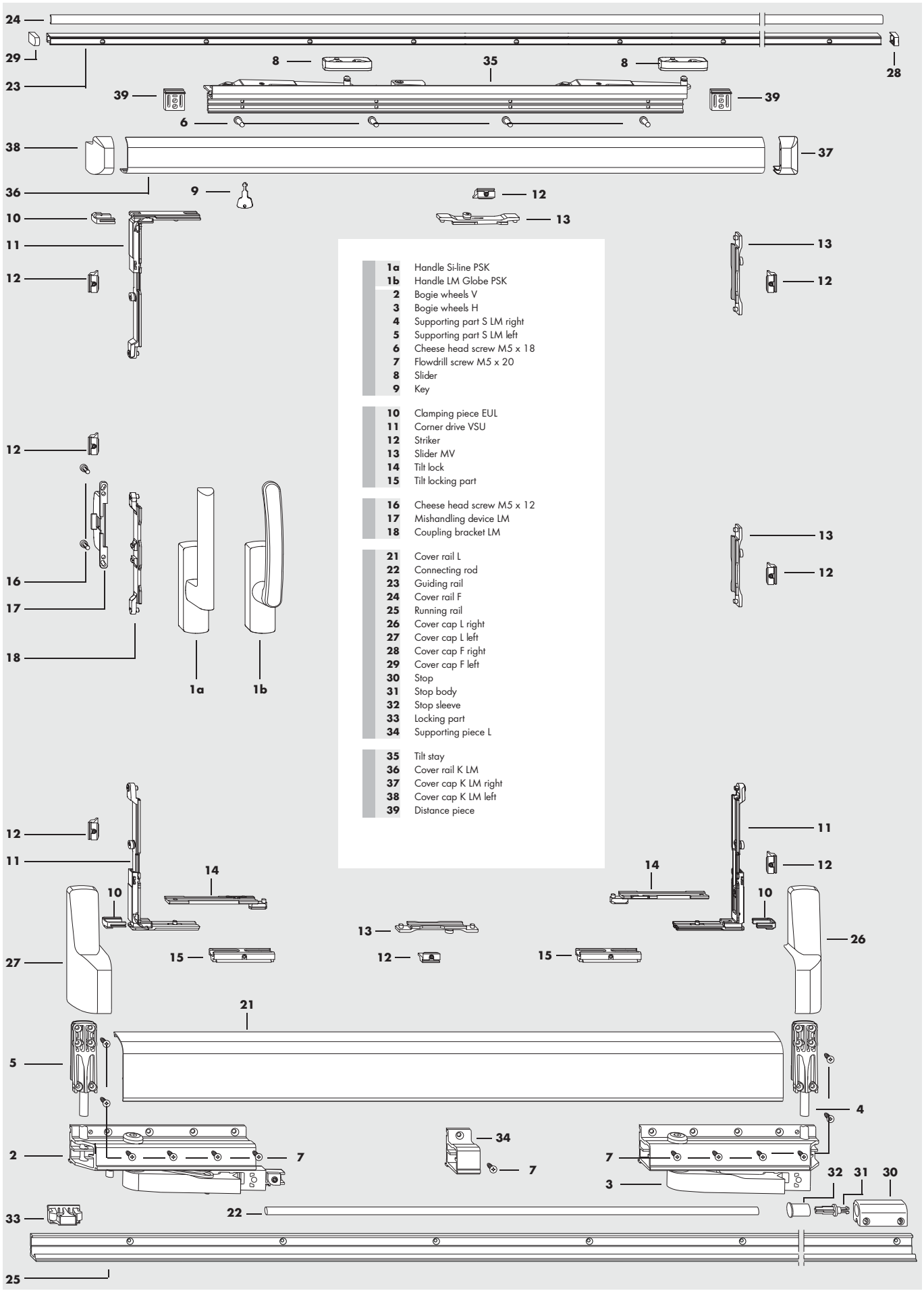
The size ranges mentioned above apply for the PSK-PORTAL 160 PLUS LM fitting from SIEGENIA.

Also effective are the specifications of the profile manufacturers or system owners, **especially** with regard to possible restrictions on sash dimensions, sash weight and lock spacing.
Observe any special manufacturing specifications or processing guidelines explicitly.

Table of contents

Assembly instructions
H48.PSKLMS001EN

PSK PORTAL 160 PLUS LM *Layout of fittings*



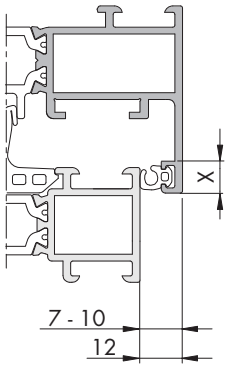
For list of fittings, see pages 3 and 4.

	Item	Quantity/Scheme A	G	C	K	Description			Material no. silver	white	brown
generally required	1	0...1	0...1	0...2	0...2	**Handle Si-line PSK LM**			**MHSS2000-52501_**	**875445**	**875476**
		0...1	0...1	0...2	0...2	**Handle LM Globe PSK**			**MHGS2000-52501_**	**MHGS2000-50401_**	**MHGS2000-53301_**
	no illus.	0...1	0...1	0...2	0...2	**Handle PSK lockable**			See LMde1337 in the Aluminium planning manual		
		1	**1**	**1**	**2**	**Crt. bg. wh. PSK 160 LM PLUS**	**right**		**PMKF7031-10001_**		
							left		**PMKF7032-10001_**		
	2	1	1	2	2	Bogie wheels V (PSK 160 Plus)	right	front			
							left	front			
	3	1	1	1	1	Bogie wheels H (PSK 160 Plus)	right	rear			
							left	rear			
	4	1	1	1	1	Supporting part S LM	right				
	5	1	1	1	1	Supporting part S LM	left				
	6	5	5	10	10	Cheese head screw M5 x 18					
	7	12	12	24	24	Flowdrill screw M5 x 20					
	no illus.	30	30	60	60	Flowdrill screw M4 x 20					
		1	1	2	2	Bag accessories PSK PORTAL					
	8	2	2	4	4	Slider					
	9	1	1	2	2	Key PORTAL					
		1	**1**	**2**	**2**	**ZV LM PSK VAR. SET**			**MMZV0040-10001_**		
	10	3	3	6	6	Clamping piece EUL					
	11	3	3	6	6	Corner drive VSU					
	12	8	8	16	16	Striker					
	13	4	4	8	8	Slider MV					
	14	2	2	4	4	Tilt lock					
	15	2	2	4	4	Tilt locking part					
		0...1	**0...1**	**0...1**	**0...2**	**Coupling set FBS-G**	**9 mm**		**MMKL0030-10001_**		
		0...1	**0...1**	**0...1**	**0...2**	**Coupling set FBS-G**	**10 mm**		**MMKL0010-10001_**		
		0...1	**0...1**	**0...1**	**0...2**	**Coupling set FBS-G**	**ORH 12 mm**		**MMKL0040-10001_**		
	16	2	2	2	2	Cheese head screw M5 x 12					
	17	1	1	1	1	Mishandling device LM					
	18	1	1	1	1	Coupling bracket					
		-	**-**	**1**	**-**	**Coupling set LM-D**			**MMKL0020-10001_**		
	19	-	-	2	-	Cheese head screw M5 x 12					
	20	-	-	1	-	Coupling bracket					

Design variations for coupling set

FBS-G (16 - 18)

ORH	X	Material no.
7 - 10 mm	≤ 8.5 mm	MMKL0030-10001_
7 - 10 mm	≤ 7.5 mm	MMKL0010-10001_
12 mm	≤ 7 mm	MMKL0040-10001_



For layout of fittings, see pages 2, 7 and 8.

	Item	Quantity/Scheme A	G[1]	C[2]	K[3]	Description	Material no. Basic Material no.	silver	RAL 9003 white	RAL 8022 brown
dependent on sash width (FB) and frame width (RAB)		**1**	**1**	**2**	**2**	**Profile set PSK LM PLUS** Size / Length (in mm) / FB (in mm) / RAB (in mm) **Sz. 87/200** 700 to 900 — to 2,000 **Sz. 107/240** 901 to 1,100 — 2,001 to 2,400 **Sz. 130/286** 1,101 to 1,300 — 2,401 to 2,860 **Sz. 160/346** 1,301 to 1,650 — 2,861 to 3,460	**PMPF7050** **PMPF7060** **PMPF7070** **PMPF7080**	**...-52501_**	**...-50201_**	**...-51201_**
	21	1	1	2	2	**Cover rail L** Sz. 87 865 Sz. 107 1,065 Sz. 130 1,295 Sz. 160 1,550				
	22	1	1	2	2	**Connecting rod** Sz. 87 585 Sz. 107 785 Sz. 130 1,015 Sz. 160 1,270				
	23	1	1	2	2	**Guiding rail** Sz. 200 2,000 Sz. 240 2,400 Sz. 286 2,860 Sz. 346 3,460				
	24	1	1	2	2	**Cover rail F** Sz. 200 2,000 Sz. 240 2,400 Sz. 286 2,860 Sz. 346 3,460				
	25	1	1	2	2	**Running rail** Sz. 200 2,000 Sz. 240 2,400 Sz. 286 2,860 Sz. 346 3,460				
		1	**1**	**2**	**2**	Bag Cover cap set PSK LM PLUS				
	26	1	1	2	2	Cover cap L — right				
	27	1	1	2	2	Cover cap L — left				
	28	1	1	2	2	Cover cap F — right				
	29	1	1	2	2	Cover cap F — left				
		1	**1**	**2**	**2**	**Bag accessories Running rail PSK PLUS**				
	30	1	1	2	2	Stop				
	31	1	1	2	2	Stop body				
	32	1	1	2	2	Stop sleeve				
	33	1	1	2	2	Locking part				
	34	1	1	2	2	Supporting piece L				
dependent on sash width (FB) and frame width (RAB)	**35**	**1**	**1**	**2**	**2**	**Tilt stay PSK 160** Size / Length (in mm) / FB (in mm) **87** 620 700 to 900 **107** 820 901 to 1,100 **130** 1,020 1,101 to 1,300 **160** 1,220 1,301 to 1,650	**716526** **716533** **716540** **716557**			
		1	**1**	**2**	**2**	**Bag cover rail K LM PSK 160** Size / FB (in mm) **87** 700 to 900 **107** 901 to 1,100 **130** 1,101 to 1,300 **160** 1,301 to 1,650	**PMPF7090** **PMPF7100** **PMPF7110** **PMPF7120**	**...-52501_**	**...-50201_**	**...-51201_**
	36	1	1	2	2	Cover rail K LM Sz. 87 940 Sz. 107 1,140 Sz. 130 1,370 Sz. 160 1,670				
	37	1	1	2	2	Cover cap K LM — right				
	38	1	1	2	2	Cover cap K LM — left				
	39	1	1	2	2	Distance piece K PSK LM				

1) For scheme G, design profile set only for 2/3 of total frame width
2) For scheme C, symmetrical design; point of separation must be between the sliding sashes
3) For scheme K, symmetrical design

For layout of fittings, see pages 2, 7 and 8.

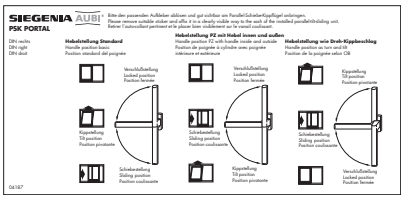
Important Instructions

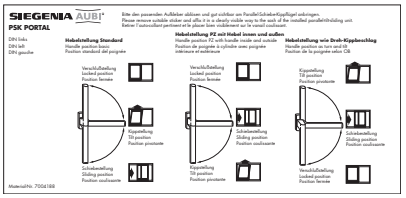
- Please pay attention to our "Hardware for Sliding Doors and Windows" product information.
- For the PSK PORTAL 160 Plus LM fitting from SIEGENIA the size ranges detailed on page 1 apply.
  Furthermore, the specifications provided by the profile manufacturers or system owners also apply, **especially** any information regarding possible restrictions on sash dimensions, sash weight and lock spacing.
  Observe any special manufacturing specifications or processing guidelines explicitly. The specifications given for screw-in speeds and torques must be adhered to.
- If the parallel tilt & slide element is subjected to excessive strain, the sash can, in the worst case, jump and fall out of its guide and, in doing so, cause serious injuries.
  If it is expected that the parallel tilt & slide element will be subject to excessive strain from being closed with force (use in schools, nursery schools, etc.), appropriate measures must be taken to prevent this from happening.
  For example:
  - move the stop to reduce the opening width or
  - install a lockable handle to prevent unauthorised use.

  In case of doubt, be sure to contact your SIEGENIA sales consultant.
- The fittings specified in these assembly instructions are electro-galvanised and finished using a special technique; they comply with DIN EN 1670. They must not be used in environments where the air contains aggressive or corrosive components, or salt.
- Select your complete set of fittings **only** from the SIEGENIA range of fittings. Damage could otherwise occur, for which we accept no liability.
- All fittings must be properly mounted as per the description on pages 10 to 20. **Do not overtighten the screws.**
- The parallel tilt & slide elements may be surface treated only **before** the fittings are assembled. Treating these surfaces at a later stage can reduce the functional capacity of the fittings. In such cases we are not obliged to provide a guarantee.
- When inserting blocks, be sure to observe technical guideline no. 3 published by the German Glazing Trade *[Glaserhandwerk]*, "Blocking glazing units" *[Klotzung von Verglasungseinheiten]*.
- Never use acid cure sealants as they may cause the fittings to corrode.
- Keep the sliding bump (on the running rail) and all rebates free from deposits and dirt, especially from remnants of cement and plaster. Avoid exposing the fittings directly to water and do not let cleaning agents come into contact with the fittings.

- Attach the instruction label (sliding direction DIN left or DIN right) to the integrated parallel tilt & slide sash in a clearly visible location.
  The instruction label is located in "Carton PSK 160 LM."

  Remove the applicable segment from the respective label and stick it to the window sash.





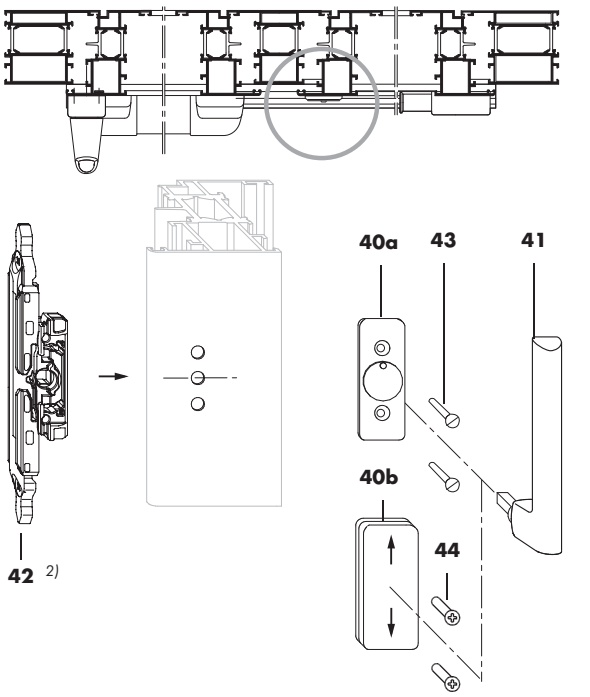
Disclaimer of liability

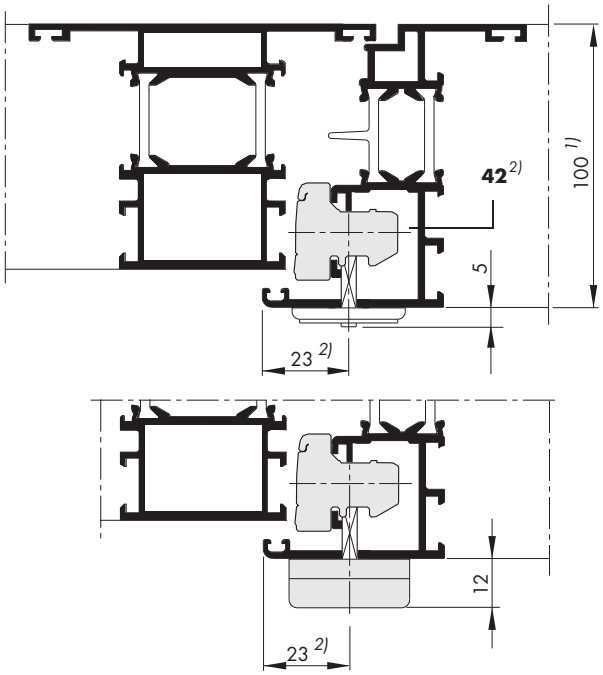
We assume no liability for loss of function of or damage to the fittings (or to the fitted parallel tilt & slide elements) resulting from insufficient tendering, failure to follow these assembly instructions or force being applied to the fittings (e.g. through improper use).

Abbreviations

The following abbreviations are used in these assembly instructions:

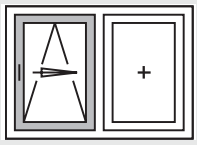
F	Guiding rail
FB	Sash width
FFB	Sash rebate width
FFH	Sash rebate height
FH	Sash height
G	Handle height
H	Rear
L	Bogie wheels
M	Middle
MV	Centre lock
OKFF	Finished floor level
PZ	Profile cylinder
RAB	Exterior width of frame
RAH	Exterior height of frame
RFB	Frame rebate width
S	Heavy version
S-ES	Steel-enhanced security
SW	Key dimension
ORH	Over rebate height
V	Front
VS	Locking side
VSU	Locking side, bottom
ZV	Central locking part

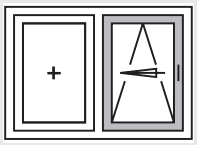




Scheme A

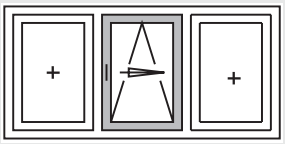
DIN left or ***DIN right***





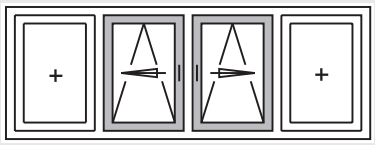
1 sliding sash/1 stationary sash*

Scheme G



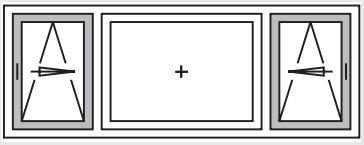
1 sliding sash/2 stationary sashes*

Scheme C



2 sliding sashes/2 stationary sashes*

Scheme K



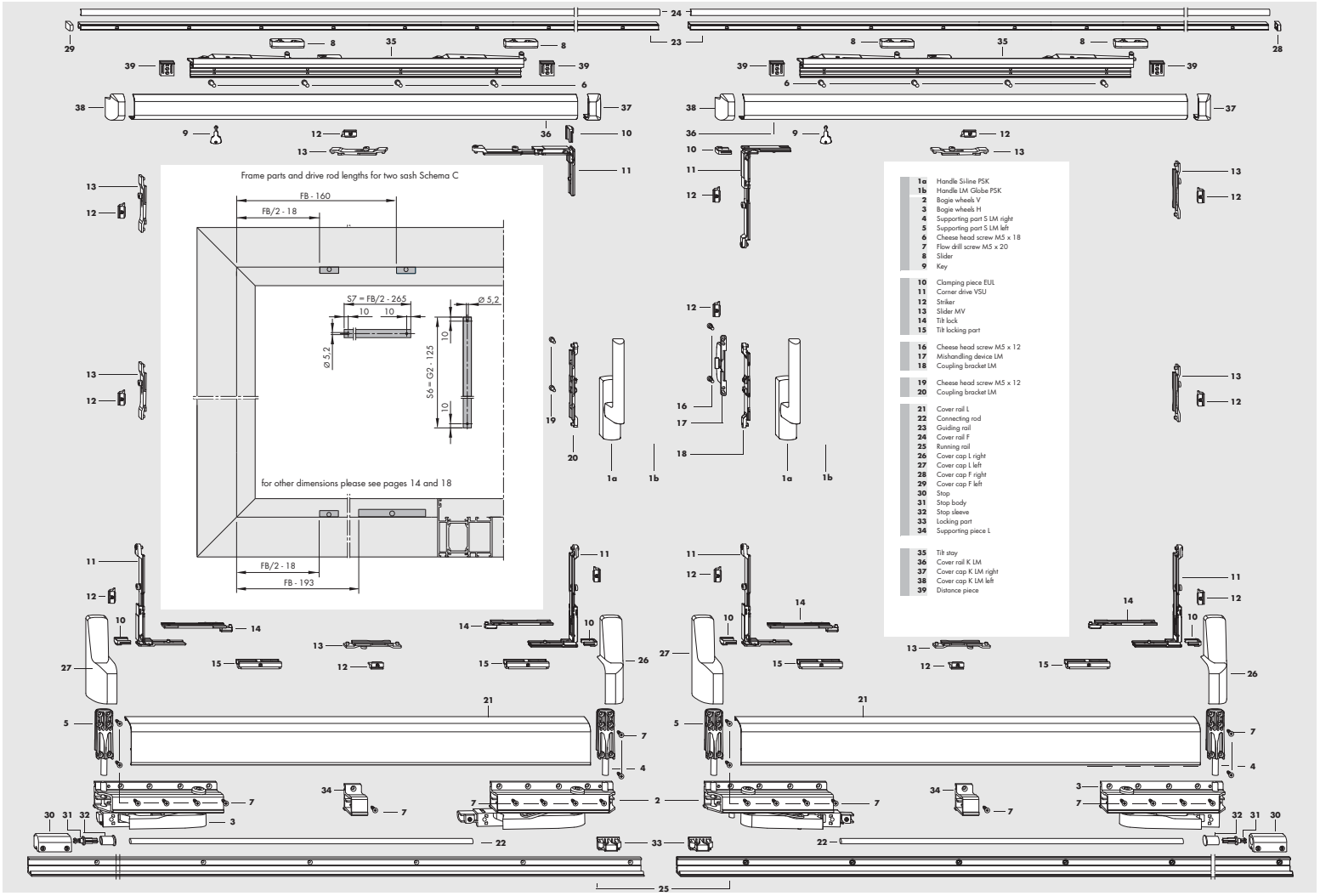
2 sliding sashes/1 stationary sash

*) *Instead of stationary sashes, turning sashes are also possible. Turning sashes are available only with rose PSK PORTAL EUROLINE (40a) or rose Si-line FAVORIT (40b) and* ***removable*** *handle (41).*

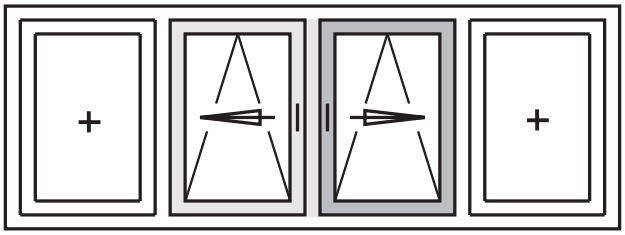
1) *For max. sash profile - installation depth* ***up to 100 mm*** *, use rose Si-line FAVORIT (40b).*
over 100 mm *, use rose PSK EUROLINE (40a).*

2) *For installation dimensions and ordering information, see assembly instructions LMde1361/LMde1364 in the Aluminium planning manual.*

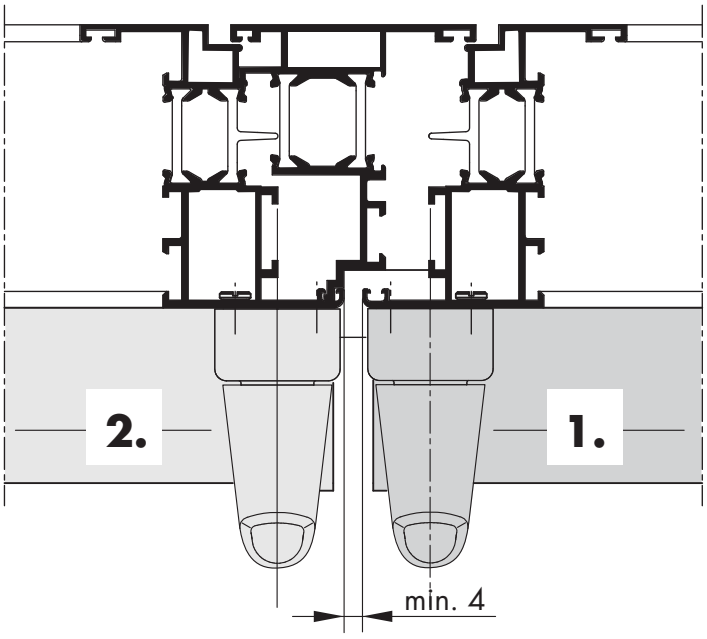
Item	Quantity	Description			Material no.
40a	**1**	**Rose PSK EUROLINE**	**silver**	*for profile installation depth over 73 mm*	**PHZE0010-52401_**
	1	**Rose PSK EUROLINE**	**brown** (RAL 8022)	*for profile installation depth over 73 mm*	**PHZE0010-51201_**
	1	**Rose PSK EUROLINE**	**white** (RAL 9003)	*for profile installation depth over 73 mm*	**PHZE0010-50201_**
40b	**1**	**Rose Si-line FAVORIT**		***silver****for profile installation depth up to 73 mm*	**869826**
	1	**Rose Si-line FAVORIT**	**dark bronze**	*for profile installation depth up to 73 mm*	**869833**
	1	**Rose Si-line FAVORIT**	**white**	*for profile installation depth up to 73 mm*	**862605**
41	**1**	Removable handle Si-line white	*for profile installation depth up to 73 mm*		**ZHAN0010-50201_**
42	**1**	**Gear set M6**			**MMGI0090-10003_**
43	**2**	**Oval head countersunk screw M5 x 40**		*shortened by customer*	**800829**
44	**2**	**Countersunk screw M5 x 35**		*included in pack unit gear M6*	**–**



For list of fittings, see pages 3 and 4.



2 sliding sashes/2 stationary sashes



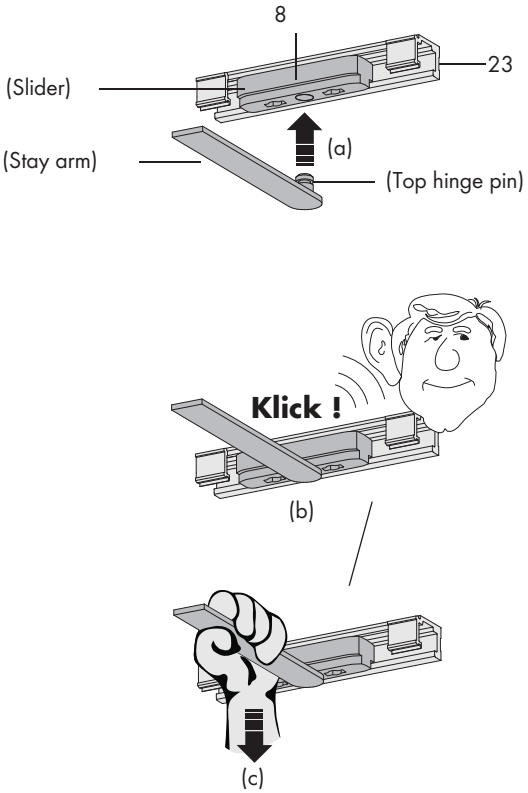
Important: Main and secondary sashes must be labelled accordingly to prevent faulty operation.

The sliding sashes may be operated **only** in the order specified below.

To open:	main sash first	[**1.**],
	then secondary sash	[**2.**]
To close:	secondary sash first	[**2.**],
	then main sash	[**1.**]

For layout of fittings, see pages 7 and 8.

Snap in stay arm of tilt stay (35) into slider (8).



Sequence for securing (hinging the stay arm)

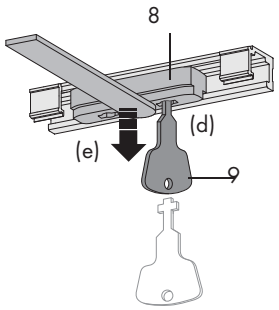
⚠ WARNUNG

If top hinge bolt is not locked in place,
there is a risk of injury from a falling window sash.

▲ Snap in top hinge pin on stay arm in slider (**8**).

1. Insert stay arm **(a)** into slider (**8**) as shown in illustration opposite.
2. Make sure you hear the top hinge pin **(b)** click into place in slider (**8**).
3. Pull gently on stay arm **(c)** to make sure that the top hinge pin is securely in place in slider.

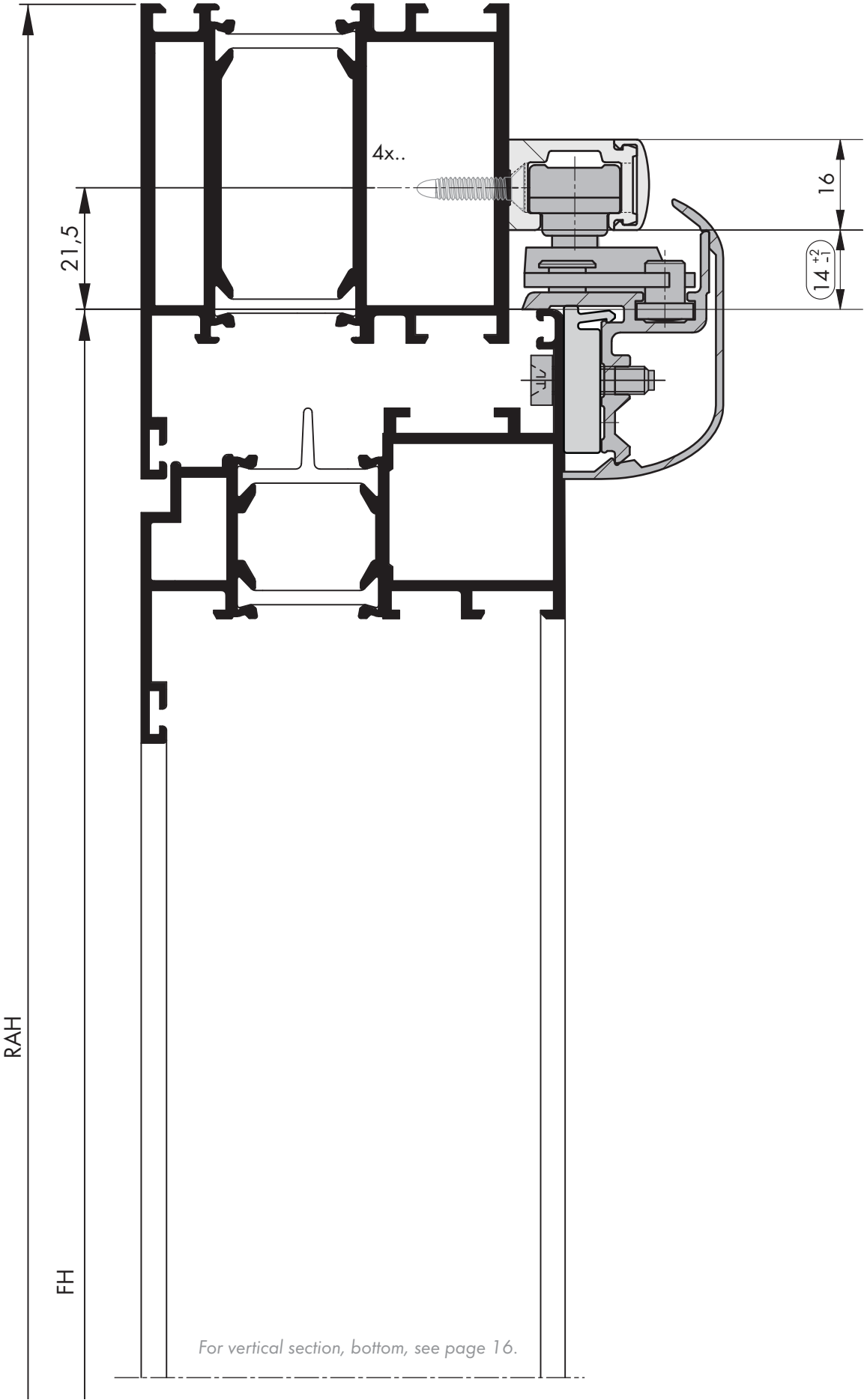
Unhinging the stay arms



Disassembling the stay arm

1. Insert key (**9**) into designated opening on slider (**8**) **(d)** and turn 90 degrees.
2. Pull stay arm down in direction of arrow **(e)**.
   Note: The stay arm safety device in the slider (**8**) may be opened only by using the SIEGENIA key (**9**).

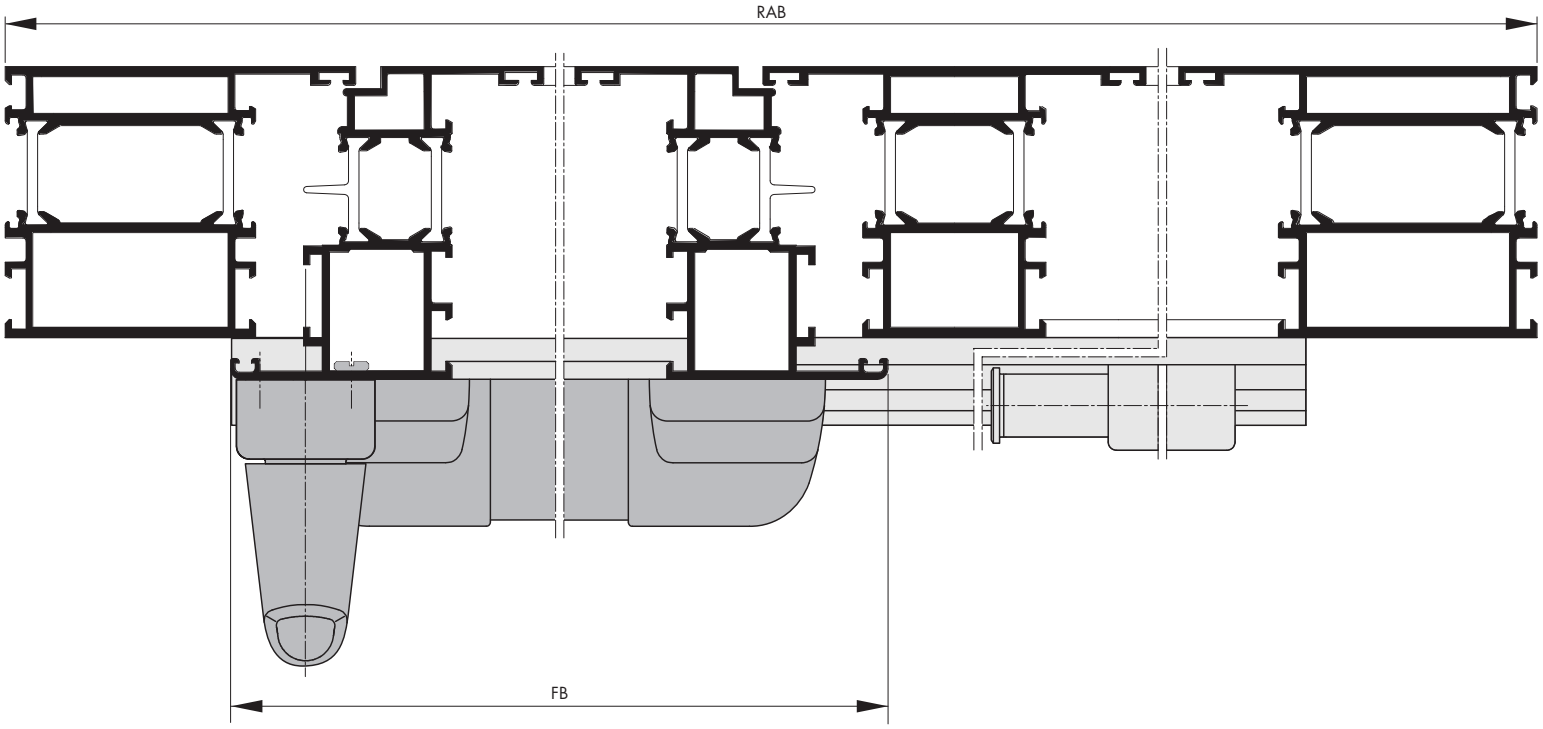
For inserting the sliding sashes, see page 20.



For vertical section, bottom, see page 16.

Scheme A

Illustration shows DIN left.
DIN right is a mirror image of this illustration.



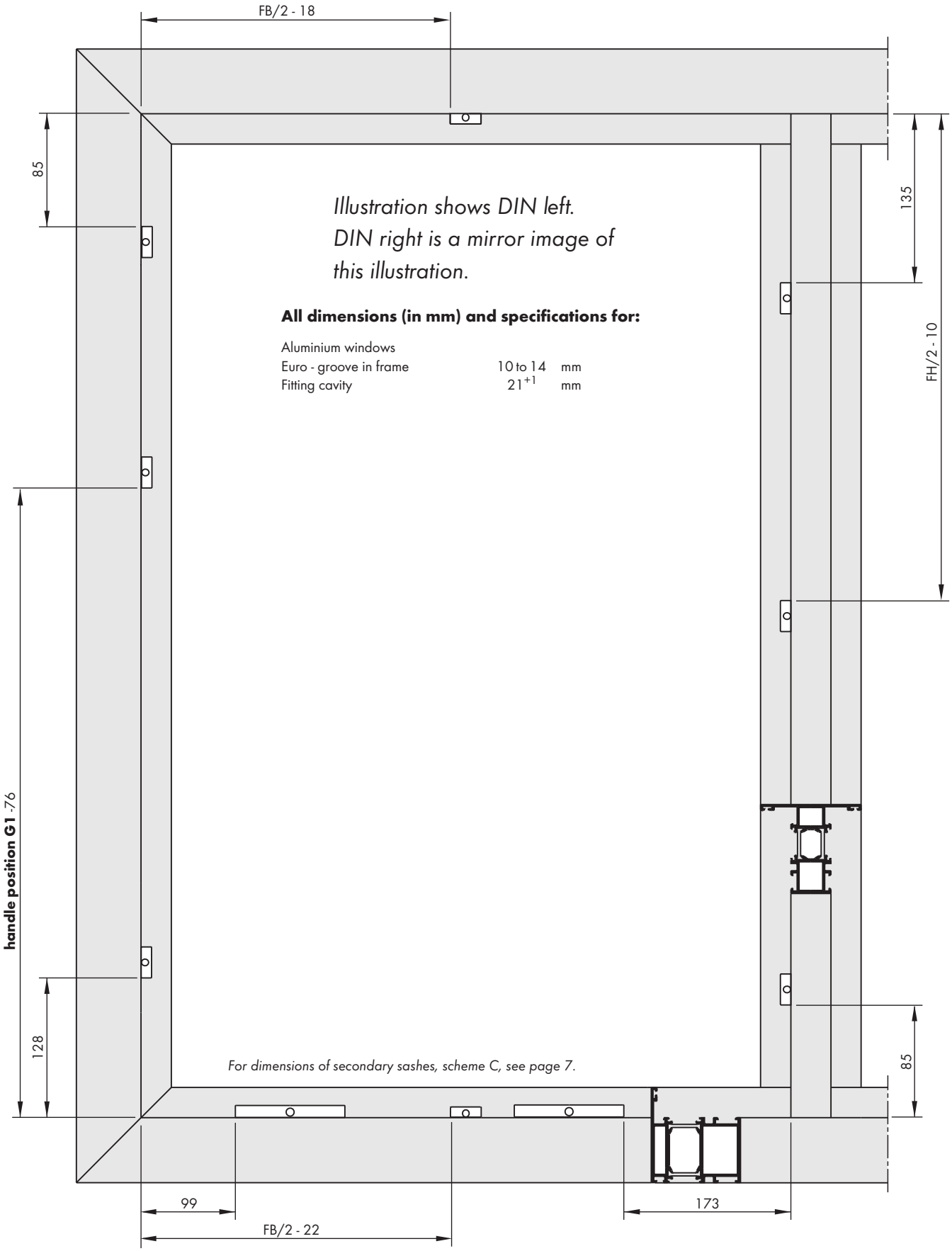
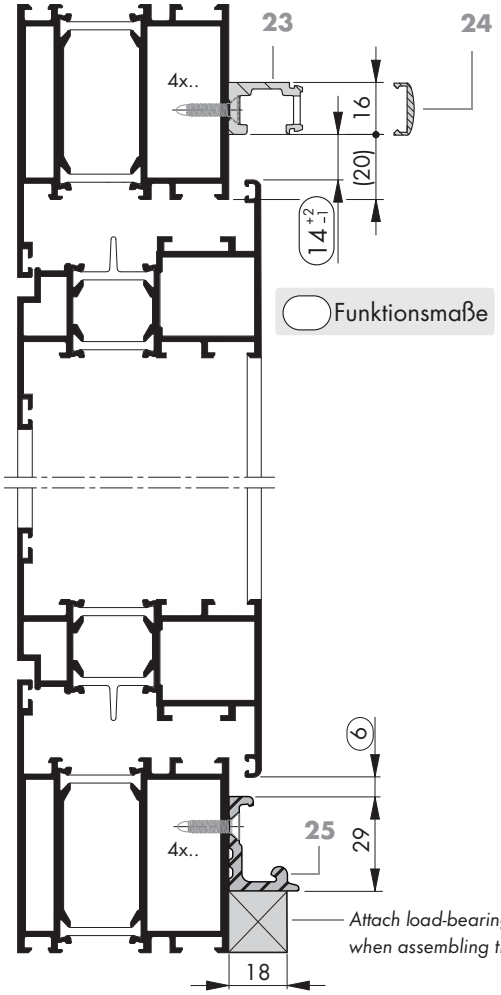


Illustration shows DIN left.
DIN right is a mirror image of this illustration.

All dimensions (in mm) and specifications for:

Aluminium windows		
Euro - groove in frame	10 to 14	mm
Fitting cavity	21^{+1}	mm

For dimensions of secondary sashes, scheme C, see page 7.



Mounting the running rail and guiding rail

A Cut guiding rail (**23**) and running rail (**25**) to length.

B Position and secure both parts as per the displayed dimensions.

C Push both sliders (**8**) into guiding rail (**23**).

D Cut cover rail F (**24**) to length and clip on.

E Put on lateral cover caps F (**28** and **29**).

F Place load-bearing, end-to-end support underneath running rail (**25**).
(See illustration opposite or illustration on page 16.)

G Position locking part (**33**) and tighten using SW 4 hexagon socket head wrench (torque 4 - 4.5 Nm).

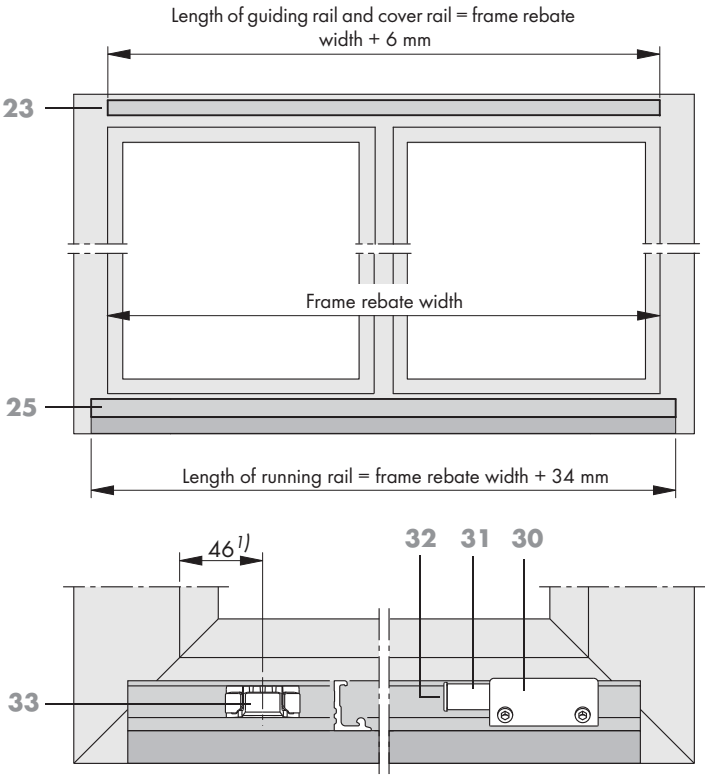
1) ***Note****: If dimension 16 mm (on page 19) is increased or decreased, dimension 46 increases or decreases accordingly.*

H Insert stop body (**31**) and stop sleeve (**32**) into stop (**30**) according to sliding direction DIN left or DIN right.

I Insert stop (**30**) into running rail (**25**) and tighten slightly.

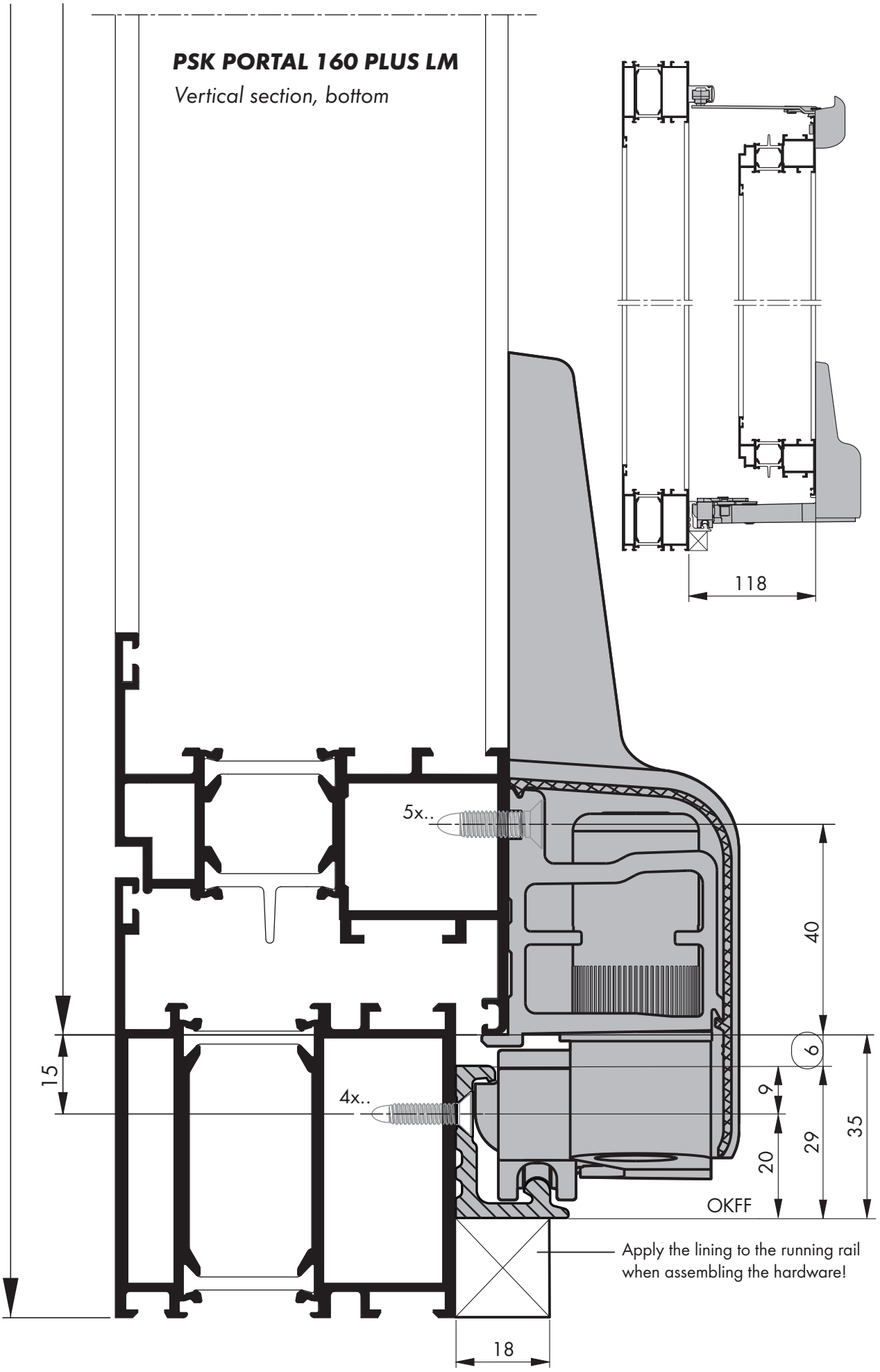
Note*:* Do not securely tighten stop (**30**) until sliding sash is inserted (see page 20).

Dimensions for 6-mm sash overlap on frame equates to being "flush with sash outer edge."

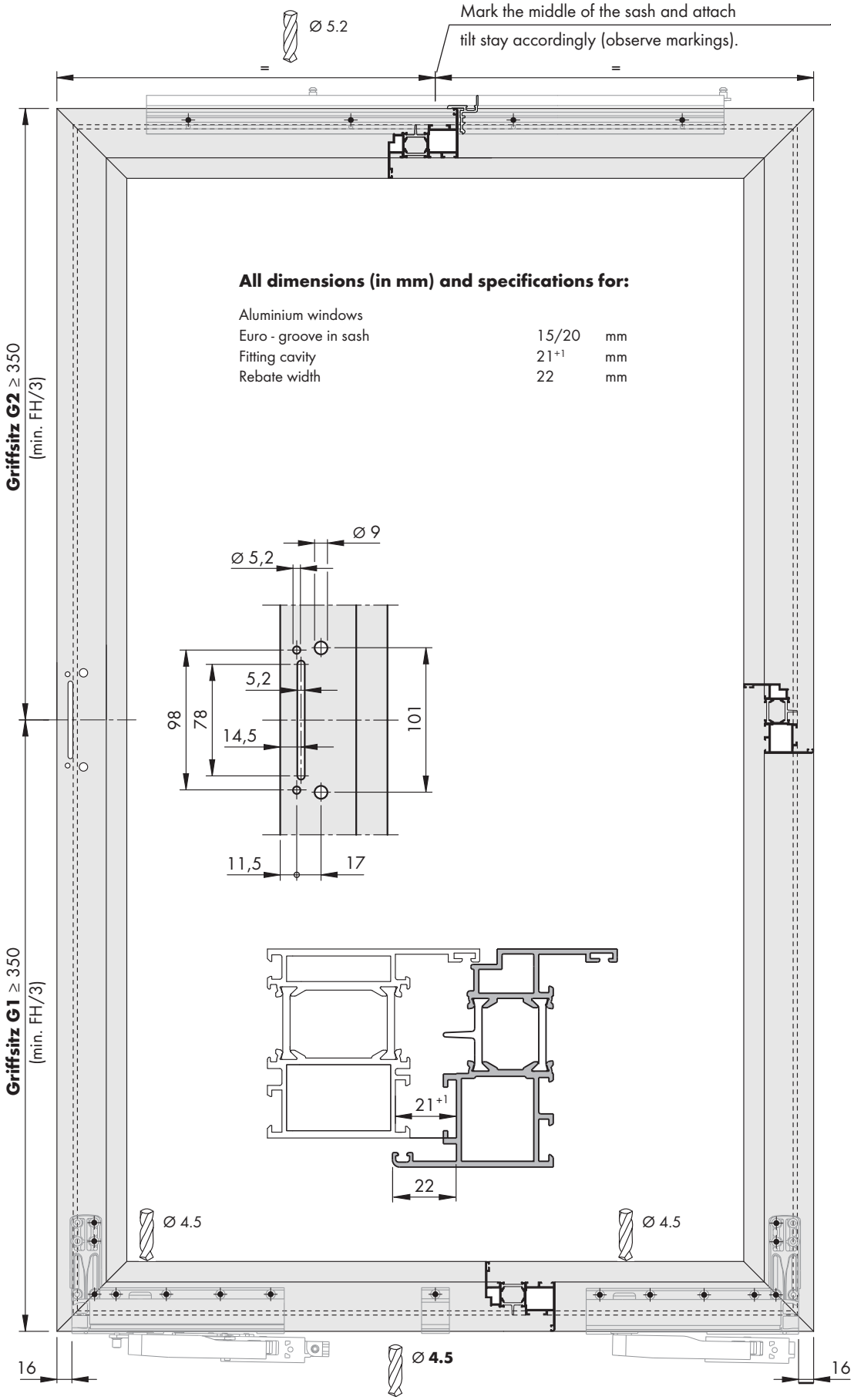


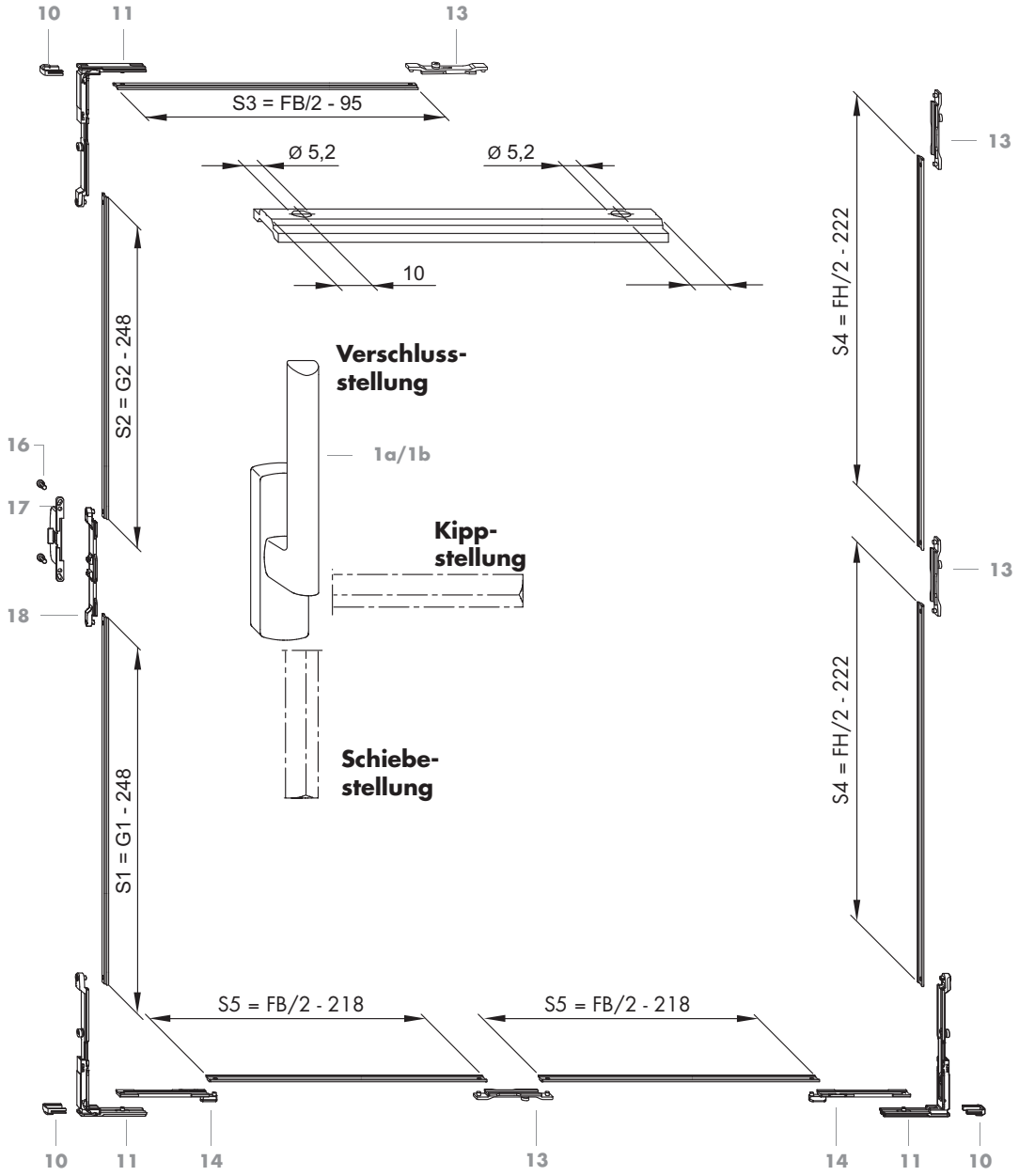
PSK PORTAL 160 PLUS LM

Vertical section, bottom



For vertical section, top, see page 11.


Ø 5.2
Mark the middle of the sash and attach
tilt stay accordingly (observe markings).
=
=
All dimensions (in mm) and specifications for:
Aluminium windows
Euro - groove in sash 15/20 mm
Fitting cavity 21+1 mm
Rebate width 22 mm
Griffsitz G2 ≥ 350
(min. FH/3)
Ø 9
Ø 5,2
5,2
98
78
14,5
101
11,5
17
Griffsitz G1 ≥ 350
(min. FH/3)
21+1
22
Ø 4.5
Ø 4.5
16
Ø **4.5**
16



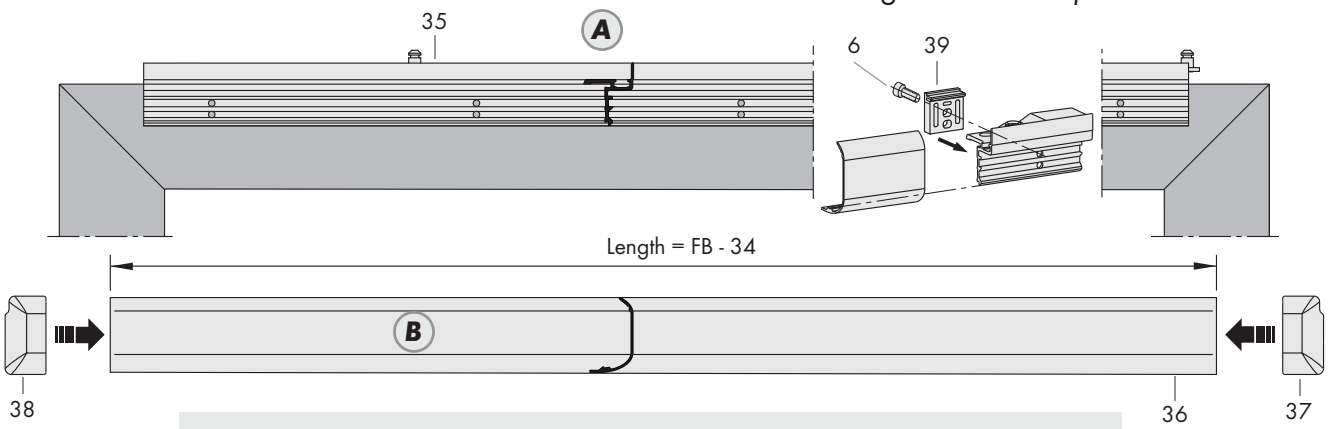
For dimensions of secondary sashes, scheme C, see page 7.

Mounting the central locking part on the sash

Torque 2.5 ± 0.25 Nm for grub screws, coupling screws and cheese head screws.

- ***A*** Rework operating rods S1 - S5 according to specifications and open operating rod guiding groove.
- ***B*** Slide in operating rod S3 with Schieber MV (**13**) horizontally from the top.
- ***C*** Slide in Kippriegel (**14**) operating rod S5 with Schieber MV (**13**), operating rod S5 and Kippriegel (**14**) horizontally from below.
- ***D*** Slide in operating rod S1, Kupplungslasche (**18**), operating rod S2 and Eckumlenkung VSU (**11**) vertically from the top. Couple Eckumlenkung VSU (**11**) with operating rod S3 and secure using clamping piece EUL (**10**).
- ***E*** Loosen coupling screw on Eckumlenkung VSU (**11**). Slide in Eckumlenkung VSU (**11**) vertically from below.
- ***F*** Couple Eckumlenkung VSU (**11**) with Kippriegel (**14**) and secure using clamping piece EUL (**10**).
- ***G*** Connect Eckumlenkung VSU (**11**) and operating rod S1 to coupling screw.
- ***H*** Slide in Schieber MV (**13**), operating rod S4, Schieber MV (**13**), operating rod S4 and Eckumlenkung VSU (**11**) from below.
- ***I*** Couple Eckumlenkung VSU (**11**) with Kippriegel (**14**) and secure using clamping piece EUL (**10**).
- ***J*** Screw mishandling device LM (**17**) on rebate using cheese head screws M5 x 12 (**16**) for the handle (**1a/1b**). Pay attention to inclusion of handle catch in Kupplungslasche (**18**).

For layout of fittings, see pages 2, 7 and 8.



Mounting the tilt stay

Torque 2.5 ± 0.25 Nm for cheese head screws and flow drill screws
*Fix distance pieces (**39**) in the correct screw positions by clipping them onto tilt stay (**35**). Screw tilt stay (**35**)*
*onto sash frame above the provided drilling mounting holes using cheese head screws M5 x 18 (**6**).*

B Cut cover rail K (**36**) to length, place onto tilt stay (**35**) from above and snap on. Slide on cover caps K (**37** and **38**) onto the side.

Mounting the bogie wheels

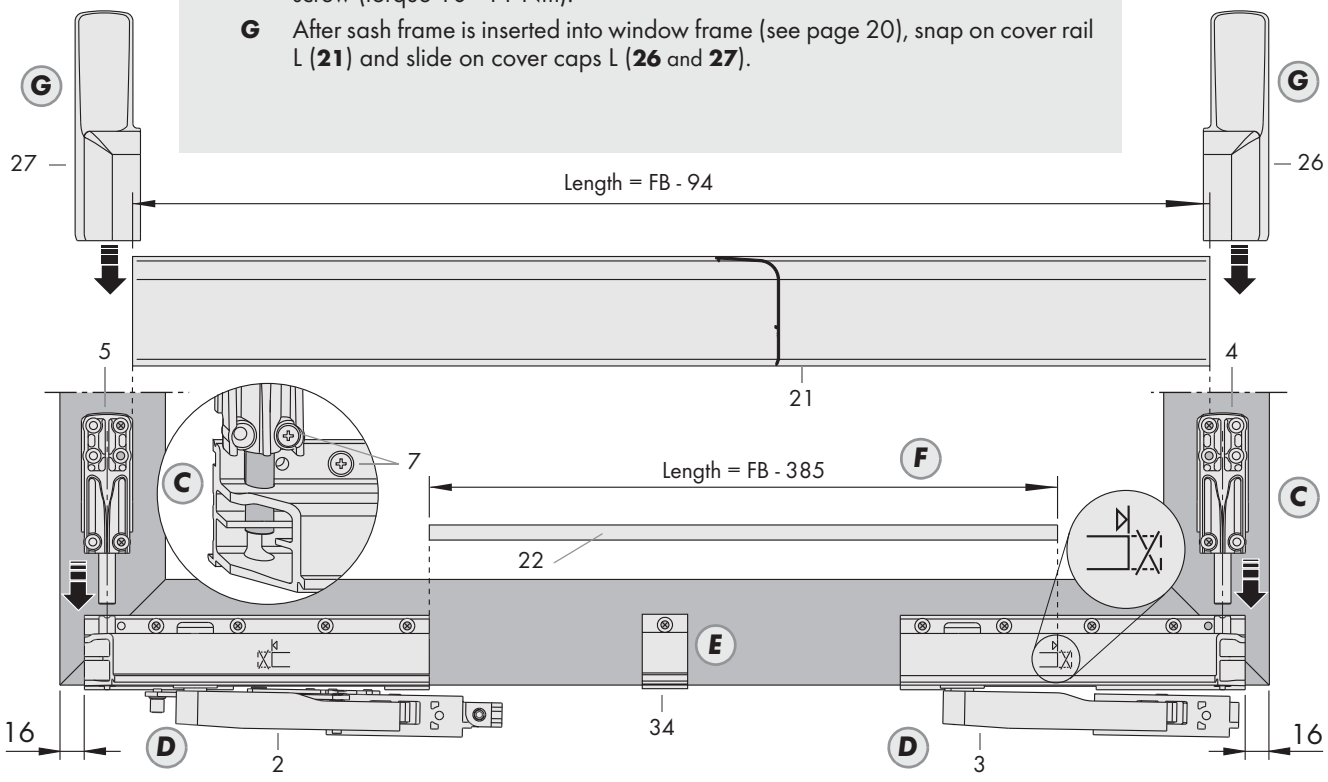
C Slide on supporting parts (**4** and **5**), according to their application DIN left or DIN right, into bogie wheels V (**2**) and bogie wheels H (**3**).

D Screw tight bogie wheels V (**2**) and bogie wheels H (**3**) using flow drill screws M5 x 20 (**7**).

E Centre supporting piece L (**34**) for cover rail L (**21**) and screw on.

F Attach connecting rod (**22**) on bogie wheels V (**2**), mark off on marking from bogie wheels H (**3**) and cut to length.
Insert connecting rod (**22**) into bogie wheels H (**3**) and secure using hexagon socket screw (torque 10 - 11 Nm).
For this use a SW 4 hexagon wrench.
Insert connecting rod (**22**) into bogie wheels V (**2**).
Fix (secure) bogie wheels H (**3**) into locking position. Ensure the parallel position of bogie wheels.
Secure connecting rod (**22**) into bogie wheels V (**2**) also using hexagon socket screw (torque 10 - 11 Nm).

G After sash frame is inserted into window frame (see page 20), snap on cover rail L (**21**) and slide on cover caps L (**26** and **27**).



Inserting the sliding sashes

A Place stay arms of tilt stay (**35**) into tilt position.
Place sash frame onto running rail (**25**) at an incline and snap coupling bolt of the stay arms into slider (**8**).
Confirm that the snapped-in coupling bolt is secure by pulling briefly on the stay arm.

B Secure stop (**30**). To do this, slide sash into the desired final position and screw tight stop (**30**) using SW 4 hexagon socket head wrench (torque of 4 - 4.5 Nm).

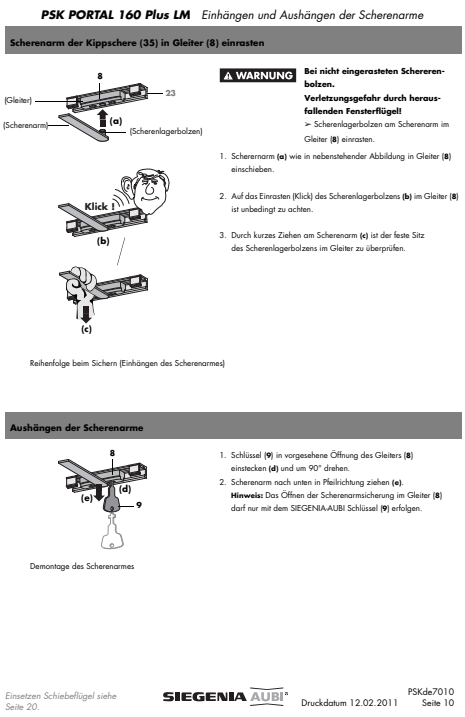
C Check that all fittings work.
Use the adjustments if necessary.

Adjustment possibilities

If necessary, the function of the tilt stay (**35**) and height of the parallel tilt & slide sash can be adjusted **after the glass pane is installed**.
The locking effect and pressing pressure of the tilt stay can be set using the SW 4 hexagon socket head wrench.
The height can be adjusted at the front (**2**) and rear (**3**) of bogie wheels using the SW 8 hexagon socket head wrench. The bogie wheel height adjustment (+4/–2 mm) is self-locking.

Note: Locking part (**33**) can be moved for a central sash run-in.

Note: For hinging and unhinging the stay arms, see page 10.



PSK PORTAL 160 Plus LM *Einhängen und Aushängen der Scherenarme*

Scherenarm der Kippschere (35) in Gleiter (8) einrasten

(Gleiter) 8 23 (Scherenarm) (a) (Scherenlagerbolzen)

⚠ WARNUNG **Bei nicht eingerasteten Scherenbolzen.**
Verletzungsgefahr durch herausfallenden Fensterflügel!
➢ Scherenlagerbolzen am Scherenarm im Gleiter (**8**) einrasten.

1. Scherenarm (**a**) wie in nebenstehender Abbildung in Gleiter (**8**) einschieben.
2. Auf das Einrasten (Klick) des Scherenlagerbolzens (**b**) im Gleiter (**8**) ist unbedingt zu achten.
3. Durch kurzes Ziehen am Scherenarm (**c**) ist der feste Sitz des Scherenlagerbolzens im Gleiter zu überprüfen.

Klick ! (b) (c)

Reihenfolge beim Sichern (Einhängen des Scherenarmes)

Aushängen der Scherenarme

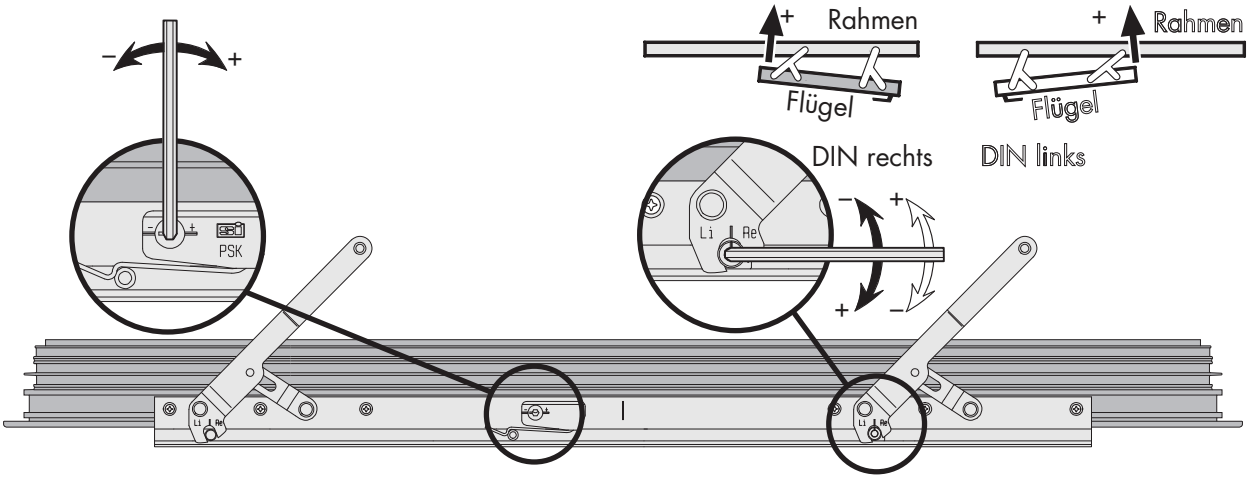
8 (d) (e) 9

1. Schlüssel (**9**) in vorgesehene Öffnung des Gleiters (**8**) einstecken (**d**) und um 90° drehen.
2. Scherenarm nach unten in Pfeilrichtung ziehen (**e**).
Hinweis: Das Öffnen der Scherenarmsicherung im Gleiter (**8**) darf nur mit dem SIEGENIA-AUBI Schlüssel (**9**) erfolgen.

Demontage des Scherenarmes

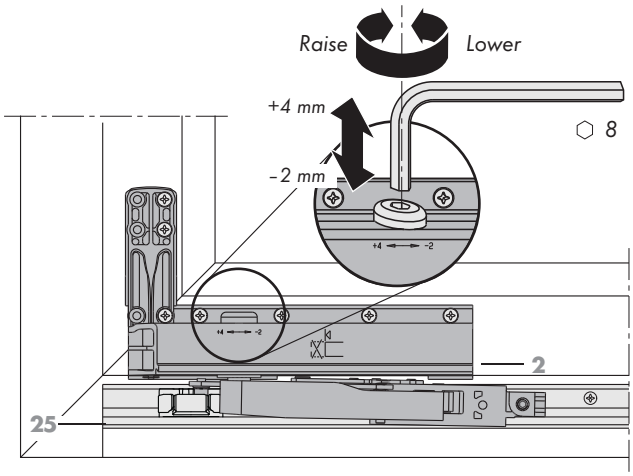
Einsetzen Schiebeflügel siehe Seite 20.

Setting the locking effect of the tilt stay



Setting the pressing pressure of the tilt stay

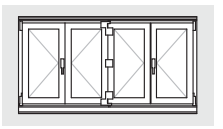
Adjusting the height on the bogie wheels



SIEGENIA KG – Hardware and ventilation technology
Am Fohlengarten 6 - 54411 Hermeskeil - Germany
Tel.: +49 6503 917-0 - Fax: +49 6503 917-100

PORTAL FS ALU

Falt-Schiebe-Türbeschlag
für Aluminiumelemente mit Euronut



... mit den entscheidenden Vorteilen:

- oben- oder untenlaufend mit gleichem Profilsatz
- stabile Laufschiene mit günstiger Schwellenhöhe
- vielfältige Regulierungsmöglichkeiten
- leichtgängiger Lauf durch 4-rollige, kugelgelagerte Laufwagen
- rationeller Anschlag

Anwendungsbereich

Flügelbreite	(mm)	330[1)] bis 900
Flügelhöhe	(mm)	850 bis 2400
Rahmenaußenbreite	(mm)	je nach Profilsystem und Schema von den Flügelbreiten ableiten
Flügelgewicht	(kg)	**max. 80**
Überschlaghöhe	(mm)	10 bis 16[2)]

1) Durchgangsflügel möglichst größer 600 mm!
2) 7 - 9 mm Übeschlaghöhen mit U-Platten FS-PORTAL LM auf Anfrage

Für den SIEGENIA PORTAL FS ALU gelten die oben angegeben Anwendungsbereiche.
Darüber hinaus gelten die Angaben der Profilhersteller bzw. Systeminhaber, **insbesondere** zu möglichen Einschränkungen bei Flügelabmessungen, max. Flügelanzahl pro Element, Flügelgewicht und Verriegelungsabstand.
Sofern besondere Fertigungsvorschriften oder Verarbeitungsrichtlinien bestehen, sind diese ausdrücklich zu beachten.

Hinweis auf Anschlaganleitungen :
- LMde1361 Getriebeset M6 / Getriebeset FBS M6
- LMde1362 LM4200-DK klemmbarer Drehkippbeschlag
- LMde1364 LM4200-D klemmbarer Drehflügelbeschlag

Anschlaghinweis:
Ist ein Wandanschluß 90° zur Anlage am Faltpaketende geplant, sollte ein breiterer Rahmen und ein Hebel LM, abnehmbar vorgesehen werden.

Anschlaganleitung
H48.FSLMS001DE

gedruckt auf chlorfrei gebleichtem Papier

H48.FSLMS001DE-01_07/2014

Schema 220*

2 Faltflügel
0 Durchgangsflügel[1)]

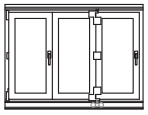
Hinweis: Sämtliche Schemata können auch spiegelbildlich ausgeführt werden.

1) Durchgang durch 1. Faltflügel
2) z. B. As = Punkt A spiegelbildlich usw.

Schema 321

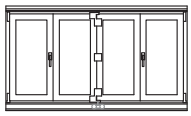
2 Faltflügel
1 Durchgangsflügel

Schema 330



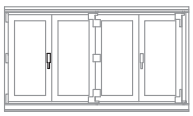
3 Faltflügel
0 Durchgangsflügel[1)]

Schema 431



3 Faltflügel
1 Durchgangsflügel

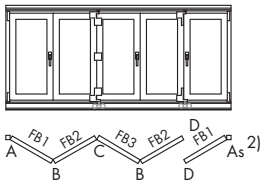
Schema 440*



4 Faltflügel
0 Durchgangsflügel[1)]

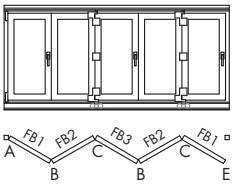
* **Ausführungshinweise der Anschlaganleitung FS-de1006 beachten.**

Schema 541



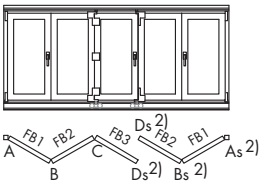
4 Faltflügel
1 Durchgangsflügel

Schema 550



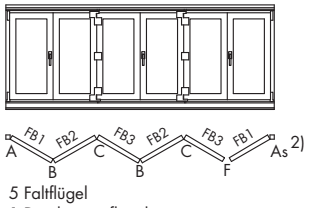
5 Faltflügel
0 Durchgangsflügel[1)]

Schema 532



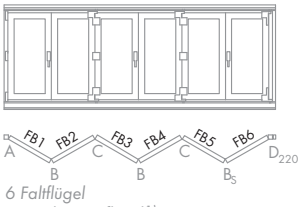
3+2 Faltflügel
0 Durchgangsflügel[1)]

Schema 651



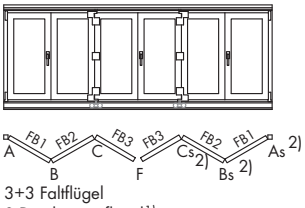
5 Faltflügel
1 Durchgangsflügel

Schema 660*



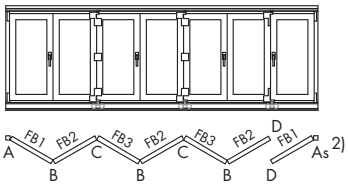
6 Faltflügel
0 Durchgangsflügel[1)]

Schema 633



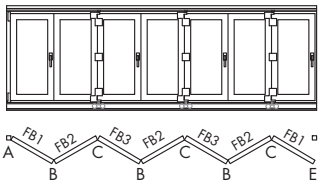
3+3 Faltflügel
0 Durchgangsflügel[1)]

Schema 761



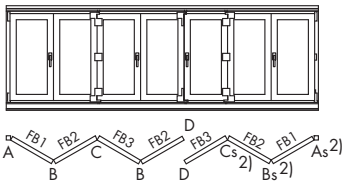
6 Faltflügel
1 Durchgangsflügel

Schema 770



7 Faltflügel
0 Durchgangsflügel[1)]

Schema 743



4+3 Faltflügel
0 Durchgangsflügel[1)]

Horizontalschnitt
Schema 431

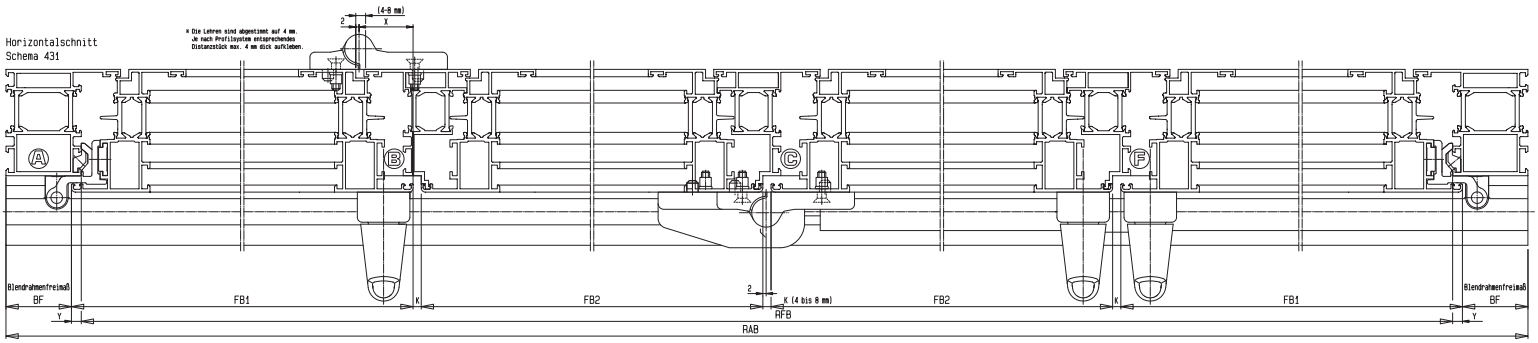


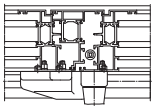
Tabelle zur Ermittlung der FB

Schema	
321,330	FB1 = RFB-(2-Y)-(2-K)-hA 3
431	FB1 = RFB-(2-Y)-(3-K)-(2-A) 4
541,550,532	FB1 = RFB-(2-Y)-(4-K)-(2-A)-12 5
651,633	FB1 = RFB-(2-Y)-(5-K)-(2-A)-24 6
761,770,743	FB1 = RFB-(2-Y)-(6-K)-(3-A)-24 7

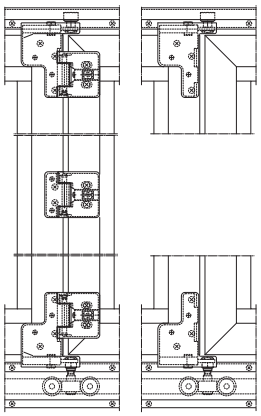
BF = Blendrahmenfreimaß
K = Flügelabstand

Achtung: Eingestellte Maße müssen eingehalten werden.
Ansonsten besteht Gefahr für den Benutzer oder die Gefahr der Beschädigung des Elementes!

A = (2·X) + K + 12
FB2 = FB1 - A
FB3 = FB1 - 12



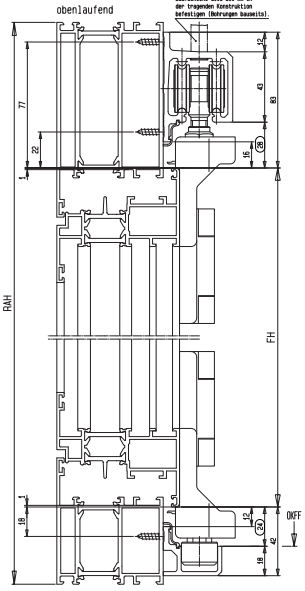
Schnittpunkt Ⓒ
untenlaufend



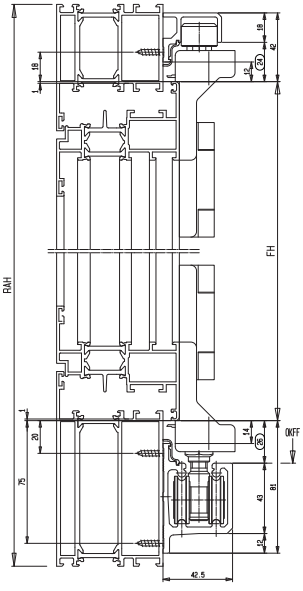
Schnittpunkt Ⓓ
untenlaufend

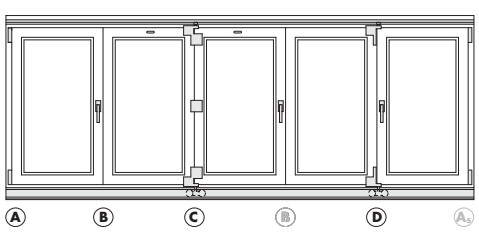
Vertikalschnitt
obenlaufend

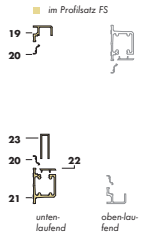
Laufschiene alle 500 mm in der tragenden Konstruktion befestigen (Bohrungen bauseits).

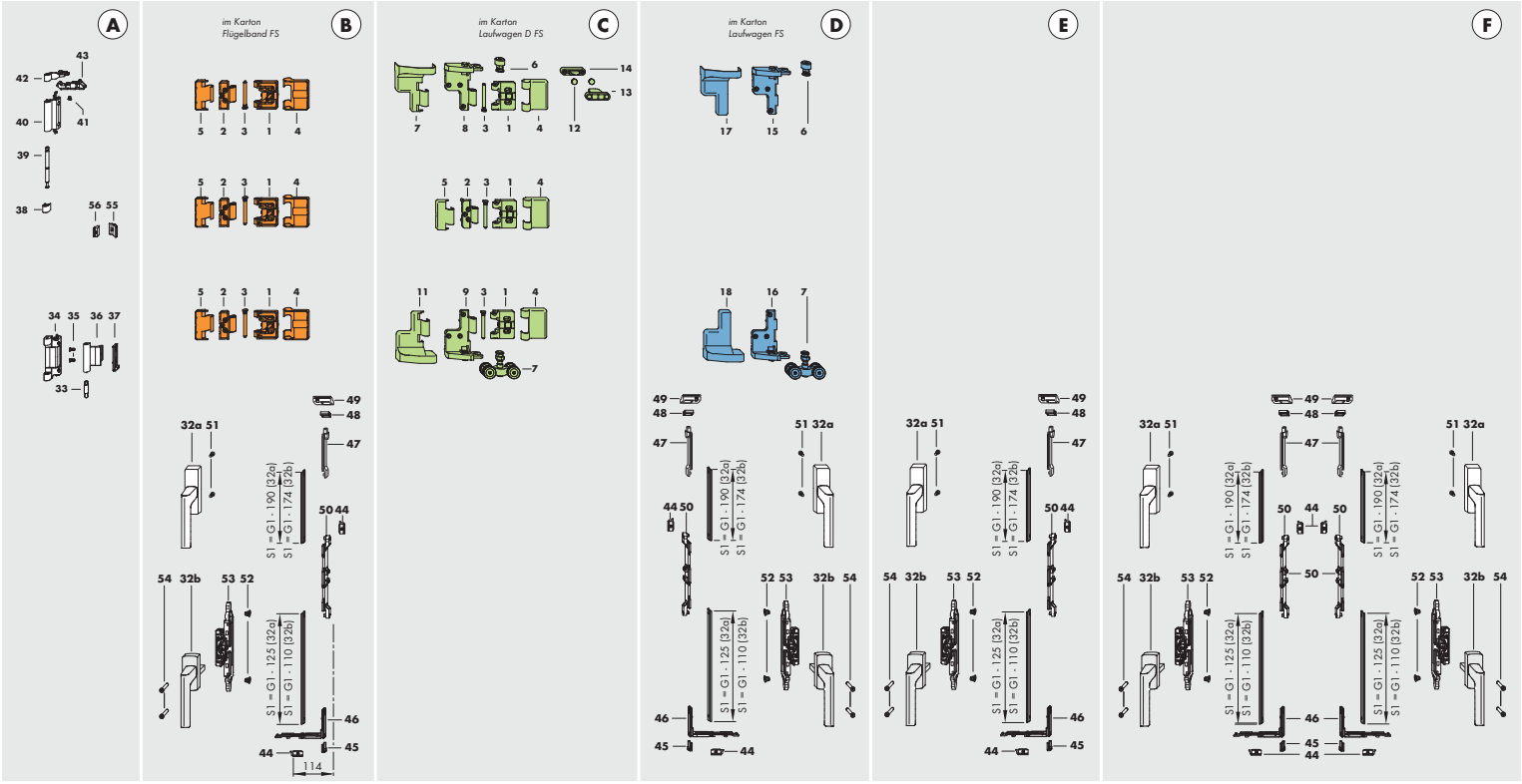


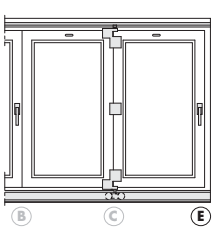
Vertikalschnitt
untenlaufend

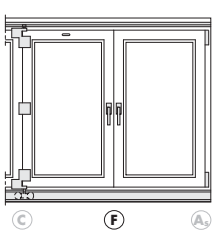



A
B
C
D


im Profilsatz FS
19
20
23
20
22
21
unten-laufend
oben-laufend


A
43
42
40
41
39
38
56 55
34 35 36 37
33
B
im Karton Flügelband FS
5 2 3 1 4
49
48
47
32a 51
50 44
S1 = G1 - 190 (32a)
S1 = G1 - 174 (32b)
54 32b 53 52
S1 = G1 - 125 (32a)
S1 = G1 - 110 (32b)
46
45
44
114
C
im Karton Laufwagen D FS
6
14
13
7 8 3 1 4 12
11 9 3 1 4 7
D
im Karton Laufwagen FS
17 15 6
18 16 7
E
F


B
C
E


C
F

PORTAL FS ALU *Beschlagliste (I)*

Pos.	Materialkurztext		Material-Nr. silber	Material-Nr. weiß	Material-Nr. dunkelbronze	Stück je Schema 321	330	431	541	550	532	651	633	761	770	743
FS-PORTAL-Bauteile																
1-3	**Karton Flügelband FS 17/38 LM TS**	Schnittpunkt B		**PMFH7000-10001_**		**1**	**1**	**1**	**2**	**2**	**2**	**2**	**2**	**3**	**3**	**3**
4, 5	**Btl. Abdeckkappen Flügelband 17/3**		**PMAG0010-02501_**	**PMAG0010-00201_**	**PMAG0010-01101_**	**1**	**1**	**1**	**2**		**2**	**2**	**2**	**3**	**3**	**3**
1-2, 6-9	**Karton Laufwagen D FS LM TS**	Schnittpunkt C		**PMLH7000-10001_**		-	**1**	**1**	**1**	**2**	**1**	**2**	**2**	**2**	**3**	**2**
4, 5, 10, 11	**Btl. Abdeckkappen Laufwagen D FS**		**PMAG0040-02501_**	**PMAG0040-00201_**	**PMAG0040-01101_**	-	**1**	**1**	**1**	**2**	**1**	**2**	**2**	**2**	**3**	**2**
12-14	**Beutel Halter FS**		**PMZG0020-02101_**	**PMZG0020-00201_**	**PMZG0020-01101_**	-	**1**	**1**	-	**1**	**1**	**1**	**2**	-	**1**	**1**
6, 7, 15-16	**Krt. Laufwagen FS-LM TS**	Schnittpunkt D		**PMLH7010-10001_**		**1**	-	-	**1**	-	**1**	-	-	**1**	-	**1**
17-18	**Btl. Abdeckkappen Laufwagen FS**		**PMAG0030-02501_**	**PMAG0030-00201_**	**PMAG0030-01101_**	**1**	-	-	**1**	-	**1**	-	-	**1**	-	**1**
19-23	**Profilsatz FS**	Größe / RAB (mm): 250 bis 2500	**PMPG0050-52501_**	**PMPG0050-50201_**	**PMPG0050-51101_**											
		350 / 2501 bis 3500	**PMPG0060-52501_**	**PMPG0060-50201_**	**PMPG0060-51101_**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
		450 / 3501 bis 4500	**PMPG0070-52501_**	**PMPG0070-50201_**	**PMPG0070-51101_**											
		700 / 4501 bis 6500	**PMPG0080-52501_**	**PMPG0080-50201_**	**PMPG0080-51101_**											
o. Abb.	**Btl. Senkblechschrauben B4,2 x 19**	Inhalt: 25 Stück				*Bedarf je nach Profilsatzgröße*[1]										
Grundbedarf	*Ausführung: D = Durchgangsflügel mit Drehflügel-Beschlag; DK = Durchgangsflügel mit Drehkipp-Beschlag*					**D** **DK**		**D** **DK**	**D** **DK**			**D** **DK**		**D** **DK**		
32a	**Hebel LM**		siehe Hebelübersicht LM im Planungshandbuch Aluminium Dokumenten-Nr. LMde1337			**0...2**	**0...2**	**0...3**	**0...3**	**0...3**	**0...3**	**0...4**	**0...4**	**0...4**	**0...4**	**0...4**
32b	**Fenstergriff** (□ 7mm x 25, Nocken ∅ 10 mm)					**0...2**	**0...2**	**0...3**	**0...3**	**0...3**	**0...3**	**0...4**	**0...4**	**0...4**	**0...4**	**0...4**
	BS LM 4200		**MMBS0010-52502_**	**MMBS0010-50402_**	**MMBS0010-53302_**	**2**	**1**	**2**	**2**	**1**	**2**	**2**	**2**	**2**	**1**	**2**
33	Ecklagerbolzen					2	1	2	2	1	2	2	2	2	1	2
34	Ecklager					2	1	2	2	1	2	2	2	2	1	2
35	Senkschraube M5 x 8,5					4	2	4	4	2	4	4	4	4	2	4
36	Eckband					2	1	2	2	1	2	2	2	2	1	2
37	Klemmstück E					2	1	2	2	1	2	2	2	2	1	2
38	Lagerbuchse					2	1	2	2	1	2	2	2	2	1	2
39	Lagerbolzen					2	1	2	2	1	2	2	2	2	1	2
40	Lagerbock					2	1	2	2	1	2	2	2	2	1	2
41	Senkschraube M5 x 7,5					2	1	2	2	1	2	2	2	2	1	2
42	Winkelbandlager					2	1	2	2	1	2	2	2	2	1	2
43	**Schere LM 4200-D**			**857106**		**2** **1**	**1**	**2** **1**	**2** **1**	**1**	**2**	**2** **1**	**2**	**2** **1**	**1**	**2**
o. Abb.	**Schere LM 4200-DK** Gr. 35			**884782**		- **1**	-	- **1**	- **1**	-	-	- **1**	-	- **1**	-	-
o. Abb.	**VS LM-DK KPS**	*siehe AA LM 4200-DK im Planungshandbuch ALu.*		**MMVS0250-10001_**		- **1**	-	- **1**	- **1**	-	-	- **1**	-	- **1**	-	-
	VS LM-D/FS			**MMVS0440-10001_**		**2** **1**	**2**	**3** **2**	**3** **2**	**3**	**3**	**4** **3**	**4**	**4** **3**	**4**	**4**
44	Schließteil					4 -	4	6 -	6 -	6	6	8 -	8	8 -	8	8
45	Klemmstück EUL					2 -	2	3 -	3 -	3	3	4 -	4	4 -	4	4
46	Eckumlenkung VSO					2 -	2	3 -	3 -	3	3	4 -	4	4 -	4	4
47	Riegel					2 -	2	3 -	3 -	3	3	4 -	4	4 -	4	4
48	Druckstück					2 -	2	3 -	3 -	3	3	4 -	4	4 -	4	4
49	Schließteil DS re.					2 -	2	3 -	3 -	3	3	4 -	4	4 -	4	4
o. Abb.	**Kupplungsset LM FBS-G 9 mm**	*für Hebel LM (32a)*		**MMKL0030-10001_**		- **0...1**	-	- **0...1**	- **0...1**	-	-	- **0...1**	-	- **0...1**	-	-
	10 mm	*Überschlaghöhe (UHS) siehe AA LM 4200-DK im Planungshandbuch ALu.*		**MMKL0010-10001_**		- **0...1**	-	- **0...1**	- **0...1**	-	-	- **0...1**	-	- **0...1**	-	-
	USH 12 mm			**MMKL0040-10001_**		- **0...1**	-	- **0...1**	- **0...1**	-	-	- **0...1**	-	- **0...1**	-	-
	Kupplungsset LM-D	*für Hebel Si-line LM (32a)*		**MMKL0020-10001_**		**0...2** **0...1**	**0...2**	**0...3** **0...2**	**0...3** **0...2**	**0...3**	**0...3**	**0...4** **0...3**	**0...4**	**0...4** **0...3**	**0...4**	**0...4**
50	Kupplungslasche LM					2 -	2	3 -	3 -	3	3	4 -	4	4 -	4	4
51	Zylinderschraube M5x12					4 -	4	6 -	6 -	6	6	8 -	8	8 -	8	8
o. Abb.	**Getriebeset FBS M6 Trial/RR**	*für Fenstergriff □ 7 x 25 /10 mm Nocken (32b)*		**MMGI0080-10001_**		- **0...1**	-	- **0...1**	- **0...1**	-	-	- **0...1**	-	- **0...1**	-	-
	Getriebeset M6 Trial/RR	*für Fenstergriff □ 7 x 25 /10 mm Nocken (32b)*		**MMGI0090-10001_**		**0...2** **0...1**	**0...2**	**0...3** **0...2**	**0...3** **0...2**	**0...3**	**0...3**	**0...4** **0...3**	**0...4**	**0...4** **0...3**	**0...4**	**0...4**
52	Kupplungsschraube M6					4 -	4	6 -	6 -	6	6	8 -	8	8 -	8	8
53	ESG LM M6					2 -	2	3 -	3 -	3	3	4 -	4	4 -	4	4
54	Senkschraube PZ M5x35					4 -	4	6 -	6 -	6	6	8 -	8	8 -	8	8
Bedarf nach FH																
	MV LM 4200-DK	*ab FH 1250 mm*		**857045**		- **1**	-	- **1**	- **1**	-	-	- **1**	-	- **1**	-	-
	MV LM 4200-D VS/BS	*ab FH 1250 mm*		**857052**		**2** **1**	**1**	**2** **1**	**2** **1**	**1**	**2**	**2** **1**	**2**	**2** **1**	**1**	**2**
55	Schließteil MV			859469		2 -	1	2 -	2 -	1	2	2 -	2	2 -	1	2
56	Schließer			859476		2 -	1	2 -	2 -	1	2	2 -	2	2 -	1	2

1) Bei Gr. 250 max. 30 Stück
Gr. 350 max. 39 Stück
Gr. 450 max. 48 Stück
Gr. 700 max. 72 Stück

PORTAL FS ALU *Beschlagliste (II)*

Pos.	Stück	Materialkurztext			Material-Nr. silber	weiß	dunkelbronze
	1	**Karton Flügelband FS 17/38 LM TS** *bestehend aus:*	Schnittpunkt B			**PMFH7000-10001_**	
1	3	Flügelband FS, breit 38					
2	3	Flügelband FS, schmal 17					
3	3	Lagerbolzen TS					
o. Abb.	12	Senkschraube M5 x 16	*für Pos.1 und 3*				
o. Abb.	12	Blindnietmutter	*für Senkschraube M5 x 16*				
	1	**Beutel Abdeckkappen Flügelband 17/38** *bestehend aus:*	Schnittpunkt B		**PMAG0010-02501_**	**PMAG0010-00201_**	**PMAG0010-01101_**
4	3	Abdeckkappe FB, breit 38					
5	3	Abdeckkappe FB, schmal 17					
	1	**Karton Laufwagen D FS LM TS** *bestehend aus:*	Schnittpunkt C			**PMLH7000-10001_**	
1	3	Flügelband FS, breit 38					
2		Flügelband FS, schmal 17					
6	1	Führung TS					
7	1	Laufwagen TS					
8	1	Ecklager D Rechts TS					
9	1	Ecklager D Links TS					
	1	**Beutel Abdeckkappen Laufwagen D FS** *bestehend aus:*	Schnittpunkt C		**PMAG0040-02501_**	**PMAG0040-00201_**	**PMAG0040-01101_**
4	3	Abdeckkappe FB breit 38					
5	1	Abdeckkappe FB schmal 17					
10	1	Abdeckkappe ED Rechts					
11	1	Abdeckkappe ED Links					
	1	**Beutel Halter FS** *bestehend aus:*	Schnittpunkt C		**PMZG0020-02101_**	**PMZG0020-00201_**	**PMZG0020-01101_**
12	2	Verschlusskappe					
13	1	Halter D					
14	1	Halter F					
	1	**Karton Laufwagen FS-LM TS** *bestehend aus:*	Schnittpunkt D			**PMLH7010-10001_**	
6	1	Führung TS					
7	1	Laufwagen TS					
15	1	Ecklager Rechts TS					
16	1	Ecklager Links TS					
	1	**Beutel Abdeckkappen Laufwagen FS** *bestehend aus:*	Schnittpunkt D		**PMAG0030-02501_**	**PMAG0030-00201_**	**PMAG0030-01101_**
17	3	Abdeckkappe E Rechts					
18	1	Abdeckkappe E Links					
	1	**Profilsatz FS**	*Größe* 250 350 450 700	*RAB (mm)* bis 2500 2501 bis 3500 3501 bis 4500 4501 bis 6500	**PMPG0050-52501_** **PMPG0060-52501_** **PMPG0070-52501_** **PMPG0080-52501_**	**PMPG0050-50201_** **PMPG0060-50201_** **PMPG0070-50201_** **PMPG0080-50201_**	**PMPG0050-51101_** **PMPG0060-51101_** **PMPG0070-51101_** **PMPG0080-51101_**
19	1	Führungschiene	*Größe* 250 350 450 700	*Länge (mm)* 2500 3500 4500 7000			
20	2	Abdeckschiene F	*Größe* 250 350 450 700	*Länge (mm)* 2500 3500 4500 7000			
21	1	Laufschiene	*Größe* 250 350 450 700	*Länge (mm)* 2500 3500 4500 7000			
22	1	Abdeckschiene L	*Größe* 200	*Länge (mm)* 2000			
23	1...2	Abdeckstreifen	*Größe* 170	*Länge (mm)* 1700			

Montageanleitung

Vorbereitung

Zur Bearbeitung und Montage der Flügel-, Rahmen- und Schubstangenprofile der
- Bandseiten für Schnittpunkte A
- Verschlußseiten für Schnittpunkte D, E und F

siehe Anschlaganleitungen für LM 4200-DK, LM 4200-D und LM 4200-DS.

Montage der Flügelrahmen

A Faltflügel entsprechend paarweise zusammenlegen und Bohrungen für Flügelbänder (**1** und **2**), Ecklager D (**8** und **9**) und Ecklager (**15** und **16**) vornehmen. Siehe dazu Vorderseite und FS-PORTAL LM Anschlaghilfen.

B Bei Elementen mit losem Faltflügel (Schnittpunkt F) Bohrungen für Halter D (**12**) und Halter F (**13**) vornehmen.

C Flügelbänder (**1** und **3**) sowie Ecklager D (**6** und **8**) und Ecklager (**13** und **14**) anschrauben.
Bei Flügelband, breit (**1**) auf senkrechte Ausrichtung achten.

D Bei Elementen mit losem Faltflügel (Schnittpunkt F) Halter D (**12**) und Halter F (**13**) anschrauben.
Halter D (**12**) und Halter F (**13**) leicht fetten.

Montage am Blendrahmen

A Führungsschiene (**19**), zwei Abdeckschienen F (**20**) und Laufschiene (**21**) zusschneiden (Länge = RAB).
Achtung: Laufschiene (**21**) an der entgegengesetzen Seite des Durchgangsflügel abschneiden.

B Führungsschiene (**19**) und Laufschiene (**21**) anschrauben.
Hinweis: Im Bereich des gefalteten Elementes (ca. 500 mm) alle Schrauben, danach nur jede 2. Schraube bzw. bei der Laufschiene im Wechsel oben und unten.

Endmontage

A Laufwagen (**7**) in Laufschiene einschieben.

B Faltflügel beginnend mit dem rahmenseitigen Flügel der Reihe nach montieren.
Zur Montage des Laufwagens (**7**) Distanzleisten (bauseits) als Montagehilfe in die Falznut legen. Laufwagen (**7**) in die Stützplatte am Ecklager D (**8**) und Ecklager (**15**) einschieben. Dazu Stellmutter in richtige Position bringen, siehe Bild 1. Lagerbolzen L des Laufwagens (**7**) mit Stiftschlüssel SW 5 festhalten und Klemmutter mit Gabelschlüssel SW 17 fest anziehen, siehe Bild 2.

C Führung (**6**) jeweils in die Stützplatte des Ecklager D (**8**) und Ecklager (**15**) schieben und mit Gabelschlüssel SW 13 fest anziehen, siehe Bild 3.

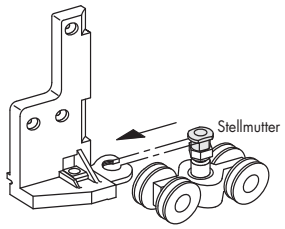


Bild 1 *Stellmutter in richtige Position bringen und Laufwagen einschieben*

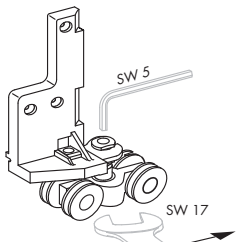


Bild 2 *Lagerbolzen L mit Stiftschlüssel SW 5 festhalten und Klemmutter mit Gabelschlüssel SW 17 fest anziehen*

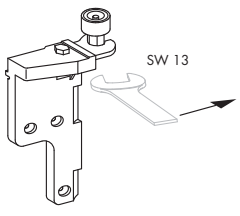


Bild 3 *Führung in Stützplatte einschieben und mit Gabelschlüssel SW 13 fest anziehen*

Endmontage *(Fortsetzung)*

D Alle Abdeckkappen aufklipsen. Abdeckschienen F (**20**) ablängen und aufklipsen.

E Abdeckschiene L (**22**) ablängen (Länge = Laufwagen bis Rahmenaußenkante). Abdeckschiene L (**22**) auf Laufschiene aufklipsen, siehe Bild 4.

F Zum Schutz vor Verschmutzung während der Bauzeit, z. B. beim Einputzen des Elementes, Abdeckstreifen (**23**) zwischen die einzelnen Faltelemente einsetzen, siehe Bild 4.

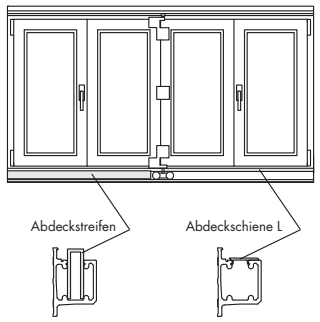


Bild 4 *Abdeckstreifen und Abdeckschiene L einsetzen*

Befestigung der Beschlagteile

Flügelbänder (**1** und **2**):	Senkschraube	M5 x 16[1)]
Ecklager D (**8** und **9**):	Senkschraube	M5 x 16
Halter D (**13**) und Halter F (**14**):	Senkschraube	M5 x 12
Ecklager (**15** und **16**):	Senkschraube	M5 x 16
Führungsschiene (**19**)	Senkblechschraube	B4,2 x 19
Laufschiene (**21**)	Senkblechschraube	B4,2 x 19

Befestigungsschrauben sind im Lieferumfang enthalten.

Hinweis: Bei schmalen Profilen bei denen die Blindnietmuttern beim Schnittpunkt B (Flügelbänder, außen) nicht eingesetzt werden können, kann die Befestigung alternativ mit selbstschneidenden Gewindeschneidschrauben M5 x 13 erfolgen. Dazu entsprechende Bohrbuchsen der Lehren EB 645-2 mit Bohrbuchsen ∅ 4,2 umrüsten.

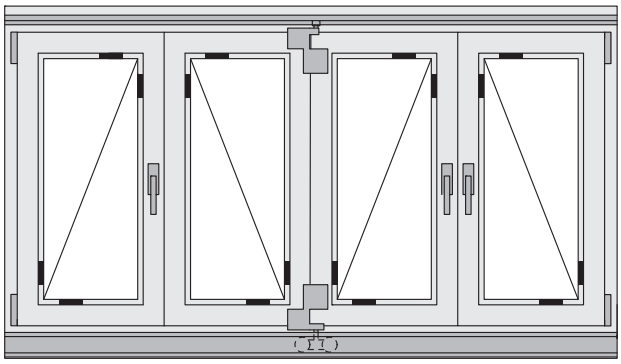
Material-Nr. für Bohrbuchse ∅ 4,2 151334

Material-Nr. für selbstschneidende Senkschraube M5 x 13 800850

1) bei Schnittpunkt C oben und unten mit Senkschraube M5 x 13

Verklotzung am Beispiel 431

Hinweis: Stets zur lastabtragenden Seite hin verklotzen, siehe Abbildung rechts

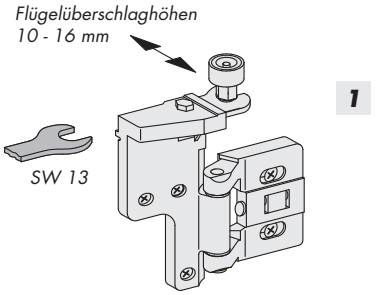


	Schnittpunkt D	**Schnittpunkt F**
Durchgangsflügel mit Dreh-Kipp-Beschlag möglich bei Schemata	321, 541 und 761	431 und 651

Regulierungsmöglichkeiten

Falls erforderlich, können untenstehende Regulierungsmöglichkeiten genutzt werden.
Für eine sinnvolle Regulierung empfiehlt sich:

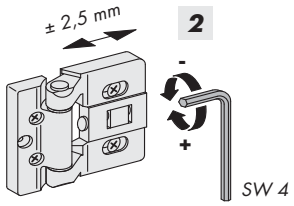
- erst nach Einbau der Glasscheiben zu regulieren
- das Falt-Schiebe-Element waagerecht und lotrecht festzuspannen oder erst nach Einbau ins Mauerwerk zu regulieren



1

Flügelandruckeinstellung der Ecklager

- **A** Klemmschraube SW13 am Ecklager lösen.
- **B** Flügel fest andrücken
- **C** Klemmschraube fest anziehen.

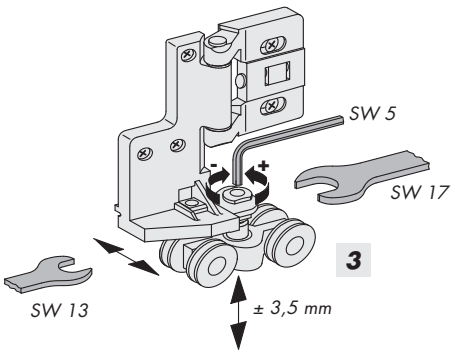


2

Breiteneinstellung der Flügelbänder

Hinweis: Flügelbänder nacheinander lösen, justieren und wieder anschrauben.

- **A** Beide Befestigungsschrauben leicht lösen.
- **B** Mit Sechskantstiftschlüssel SW 4 Spaltbreite regulieren.
- **C** Befestigungsschrauben wieder fest anziehen.



3

Höheneinstellung der Laufwagen

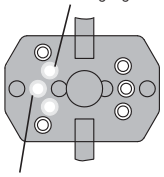
- **A** Klemmutter SW 17 am Laufwagen leicht lösen.
- **B** Flügel im Falz maßgenau unterfüttern und mit Sechskantstiftschlüssel SW 5 Höhe regulieren. Dabei Klemmutter mit Gabelschlüssel SW 17 festhalten.
- **C** Klemmutter SW 17 wieder fest anziehen, dabei Bolzen mit Sechskantstiftschlüssel SW 5 festhalten.

Einstellmöglichkeiten der LM-Bauteile

- Seitenverstellung: über Schere LM 4200-D (**43**)
- Höhenverstellung: nach Entfernung des oberen Druckstückes aus dem Ecklager (**34**)
  über 4-mm- Innensechskantschraube im Eckband (**36**) +1,5 / –1 mm
- Andruck: über Exzenterschließzapfen

siehe Wartungsanleitung LM.

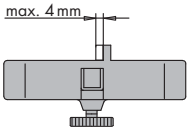
Standardbefestigung

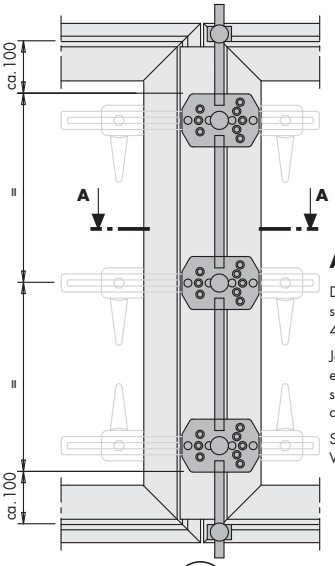


Alternativbefestigung
Wenn Standard profilbedingt nicht möglich.

Nicht benötigte Bohrbuchsen entfernen.

Schnitt A - A
nur Lehre EB 645-2 gezeichnet





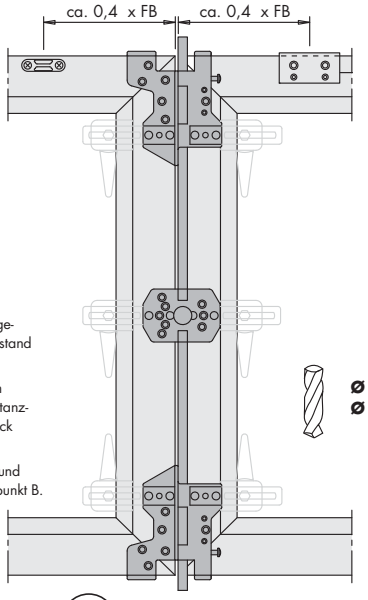
Schnittpunkt **B**
Außenansicht

Achtung:

Die Lehren sind abgestimmt auf Flügelabstand 4mm.

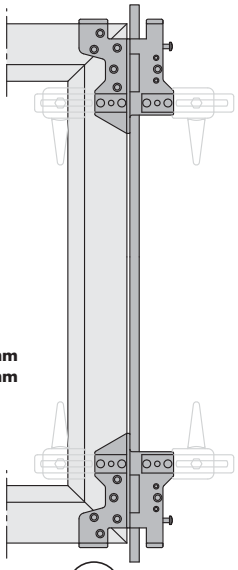
Je nach Profilsystem entsprechendes Distanzstück max. 4 mm dick aufkleben.

Siehe Schnitt A - A und Vorderseite Schnittpunkt B.

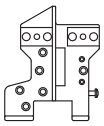


Ø 7,1 mm
Ø 4,2 mm

Schnittpunkt **C**
Innenansicht



Schnittpunkt **D**
Innenansicht



Lehre EB 645-1 — für Ecklager — **Material-Nr.**

Bedarf: 2 Stück — 143124

Bohrer: *Ø 7,1*
Ø 4,2

Lehre EB 645-2 — für Flügelband

Bedarf: 4 Stück — 143131

Bohrer: *Ø 7,1*

Lehre EB 644-3 — für Halter

Bedarf: 1 Stück — 143087

Bohrer: *Ø 7,1*

Lehre EB 644-4 — zur Bohrerzentrierung bei Führungs- und Laufschiene

Bedarf: 1 Stück — 143094

Bohrer: *Ø 3,5*

Stellstange — für EB 645-1 und EB 645-2

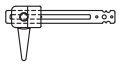
Bedarf: 2 Stück — 143117

Anschlag — für Stellstange

Bedarf: 2 Stück — 143100

Spannvorrichtung — für EB 645-1 und EB 645-2

Bedarf: 9 Stück — 139202



Spannvorrichtung A0089 — für EB 645-2 (außen)

Bedarf: 3 Stück — 139219

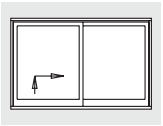
Senkschraube M5 x 16 — zur Befestigung der Spannvorrichtung

Bedarf: 24 Stück — 801147

ohne Abbildung

HS-PORTAL 200 LM

Lift and sliding hardware for aluminium doors
Hardware information for profile manufacturer



... with the following benefits:

- with integrated night vent
- profile cylinder accessories
- secure due to 4 locking points on the drive gear
- fixed wheels allow simple and easy assembly
- smooth operation

Size range

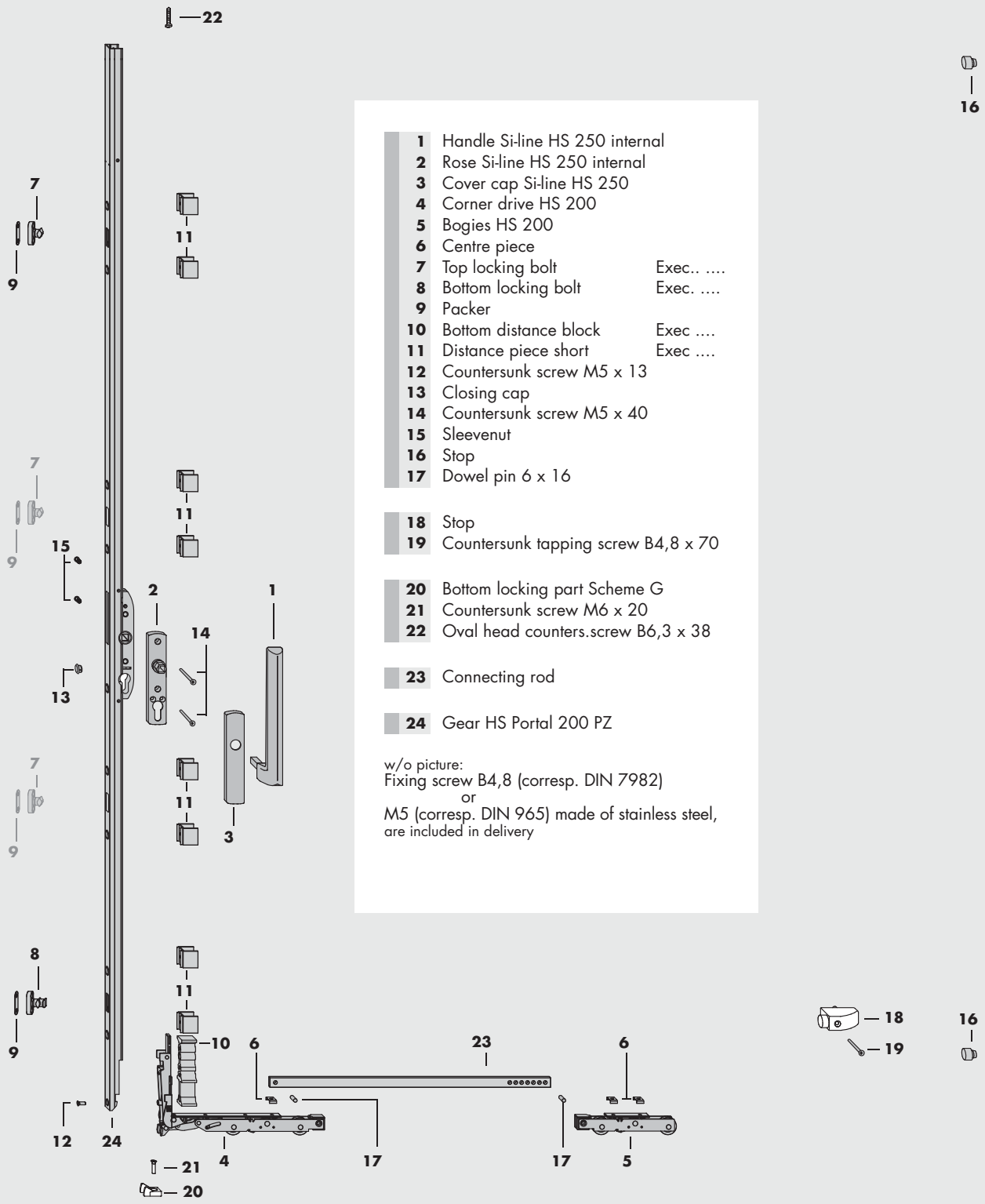
Sash width	(mm)	profile dependent max. 2485
Sash height *(Sliding sash)*	(mm)	profile dependent max. 2675
Frame width	(mm)	with Scheme A max. 5000
Frame height	(mm)	profile dependent
Sash weight	(kg)	**max. 200**
Backset *(Gear)*	(mm)	27,5
Handle position *(Window)*	(mm)	from top edge running rail 395
Handle position *(Door)*	(mm)	from top edge running rail 995

Contents

Assembly instruction
HSgb7019

gedruckt auf chlorfrei gebleichtem Papier

HSgb7019_3_2005-01/0



1	Handle Si-line HS 250 internal	
2	Rose Si-line HS 250 internal	
3	Cover cap Si-line HS 250	
4	Corner drive HS 200	
5	Bogies HS 200	
6	Centre piece	
7	Top locking bolt	Exec.. ....
8	Bottom locking bolt	Exec. ....
9	Packer	
10	Bottom distance block	Exec ....
11	Distance piece short	Exec ....
12	Countersunk screw M5 x 13	
13	Closing cap	
14	Countersunk screw M5 x 40	
15	Sleevenut	
16	Stop	
17	Dowel pin 6 x 16	
18	Stop	
19	Countersunk tapping screw B4,8 x 70	
20	Bottom locking part Scheme G	
21	Countersunk screw M6 x 20	
22	Oval head counters.screw B6,3 x 38	
23	Connecting rod	
24	Gear HS Portal 200 PZ	

w/o picture:
Fixing screw B4,8 (corresp. DIN 7982)
or
M5 (corresp. DIN 965) made of stainless steel,
are included in delivery

Flexible by optimized packing units

- Handle Si-line HS 250 internal (**1**) and Cover cap Si-line HS 250(**3**) available in white RAL 9016 – silver – si-brown
- Basic parts (**4** to**17**) in Carton HS-Portal 200 LM (profile dependent)
- Sash width dependent connecting rod size 150 to 335 (**23**)

Sash height dependent Gear HS-Portal 300 PZ size170, 220 and 260 (**24**)

HS-PORTAL 200 LM *Hardware Parts list*

	Pos.	Pieces A	D	G	C	F	Materialshorttext		Materialnumber RAL9016 white	silver	Si-brown
always required		**1**	**2**	**1**	**2**	**4**	**Carton Handle Si-line HS 250 internal**	**A0156**	**267226**	**267219**	**267240**
	1	1	2	1	2	4	Handle Si-line HS 250 internal	A0156			
	2						Rose Si-line HS 250 internal				
	3	1	2	1	2	4	Cover cap Si-line HS 250				
		1	2	1	2	4	**Carton HS-PORTAL 200 LM** *consisting of:*	**A....**		**....**	
	4	1	2	1	2	4	Corner drive HS 200	VSU HS TS		PEUB7010-100010	
	5	1	2	1	2	4	Bogie HS 200	HS TS		PLWB7010-100010	
	6	3	6	3	6	12	Centre piece			PLZB0010-096010	
		1	2	–[1]	1[1]	3[1]	Bag Locking parts HS-LM	A....			
	7	1	2	–[1]	1[1]	3[1]	Top locking parts	A.... *air gap dependent*		See page 7	
	8	1	2	–[1]	1[1]	3[1]	Bottom locking parts	A.... *air gap dependent*		See page 7	
	9						Packer	1 mm / 2 mm *airgap dependent*		See page 7	
		1	2	1	2	4	Bag sash parts HS-LM	A....			
	10	1	2	1	2	4	Lower distance block	A.... *profile dependent*		See page 7	
	11	8	16	8	16	32	Distance piece short	A.... *profile dependent*		See page 7	
	12	1	2	1	2	4	Countersunk screw M5 x 13			800850	
	13	1	2	1	2	4	Closing cap	grey		819708	
		1	2	1	2	4	Closing cap	brown		819869	
	14	2	4	2	4	8	Countersunk screw M5 x 40			801048	
	15	2	4	2	4	8	Sleeve nut			800287	
	16	2	4	–[1]	4	–[1]	Stop			824412	
		1	2	1	2	4	Bag screws HS-LM	A...			
	17	2	4	2	4	8	Dowel pin 6 x 16			823132	
							Screws	*profile dependent*			
		–	**1**	**1**	**–**	**2**	**Bag stop** *consisting of:*		**821237**	**860649**	**831922**
	18	–	1	1	–	2	Stop		800812	861004	855898
	19	–	1	1	–	2	Counter sunk screw B4,8 x 70		844090	844090	844090
		–	**–**	**1**	**1**	**1**	**Bag locking parts HS** *consisting of:*	**Scheme G**		**238691**	
	20	–	–	1	1	1	Locking part bottom Scheme G			848272	
	21	–	–	1	1	1	Countersunk screw M6 x 20			848289	
	22	–	–	1	1	1	Pan head tap. screw B6,3 x 38			848296	

sash width dep.	**23**	**1**	**2**	**1**	**2**	**4**	**Connecting rod**	*Size* / *Length (in mm)* / *FB (in mm)* 150 / 898 / 590 to 1450 200 / 1398 / 1451 to 1950 250 / 1898 / 1951 to 2450 335 / 2748 / 2451 to 2485		**719282** **719480** **719497** **719725**	
sash height dep.	**24**	**1**	**2**	**1**	**2**	**4**	**Gear HS-PORTAL 200 PZ**	*Size* / *Handle pos.(in mm)* / *FH (in mm)* 170 / 1190 to 1790 220 / 1791 to 2290 260 / 2291 to 2690	**PGKB0040-524010** **PGKB0050-524010** **PGKB0060-524010**	**PGKB0040-524010** **PGKB0050-524010** **PGKB0060-524010**	**PGKB0040-532010** **PGKB0050-532010** **PGKB0060-532010**

Accessories

Accessories	**25**	**0..1**	**0..2**	**0..1**	**0..2**	**0..4**	**Sliding grip Si-line**	*long*	**880869**	**880838**	**885239**
	26	**0..1**	**0..2**	**0..1**	**0..2**	**0..4**	**Rose Si-line außen**	*long*	**–**	**881569**	**–**
	27	**0..1**	**0..2**	**0..1**	**0..2**	**0..4**	**Handle Si-line HS 250, detachable**	*only in conn. with internal rose*	**891735**[2]	**–**	**–**
	28	**0..1**	**0..2**	**0..1**	**0..2**	**0..4**	**Rose Si-line internal**	*only in conn. with detachable handle*	**–**	**881613**	**–**

1) Actual need; delivery contains further parts.

2) Color RAL 9003 white

Distance block(**10**) and Distance piece, short(**11**)

	DIM F (mm)	Execution	Distance block Part number	Distance piece, short Part number
10	16	A0001	862711	PDZB0040-096010
	18	A0020	634.2341.5021.A0	PDZB0050-096010
	20	A0029	856000	PDZB0060-096010
	23	A0007	855997	PDZB0070-096010
	25	A0004	856161	PDZB0080-096010
	27	A0008	863282	PDZB0100-096010
	30	A0006	857465	PDZB0110-096010
11	31	A0018	897577	PDZB0120-096010
	32	A0015	849200	PDZB0130-096010
	35	A0002	859049	PDZB0140-096010

Locking bolts (**7** and **8**)

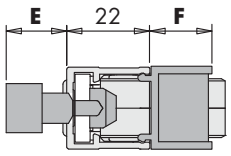
	DIM E[1] (mm)	Execution	Top locking bolt Part number	Bottom locking bolt Part number
	4	A0012	719398	719404
	7	A0020	719305	719312
	8	A0001	719190	634.2834.5004X60
	8,5	A0005	719206	719220
7	9	A0006	719213	719237
	14	A0009	719329	719343
8	16	A0013	719244	719268
	19,5	A0002	722220	719299
	20	A0004	719251	722534

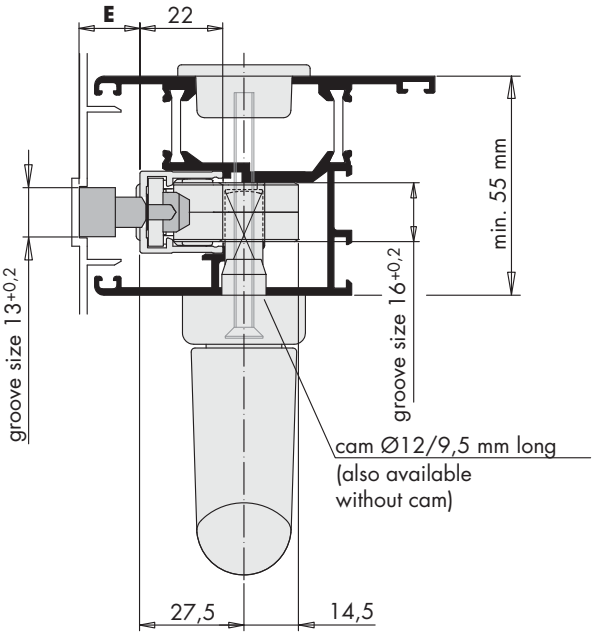
1) intermediate sizes with packes of 1 mm and 2 mm possible

Packers (**9**) *for locking bolts*

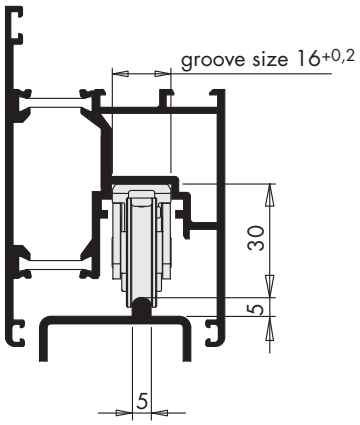
		Part number
9	1 mm	721285
	2 mm	721292

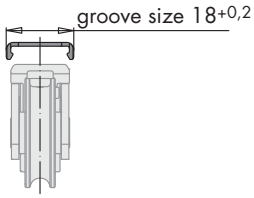
Cross section A-B



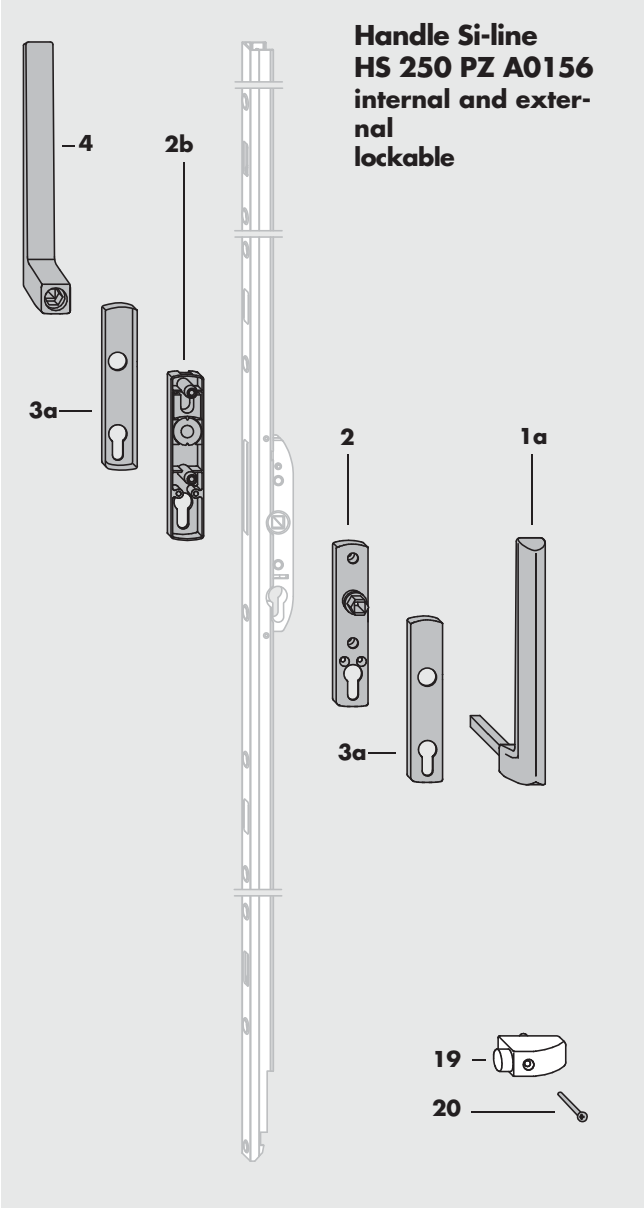


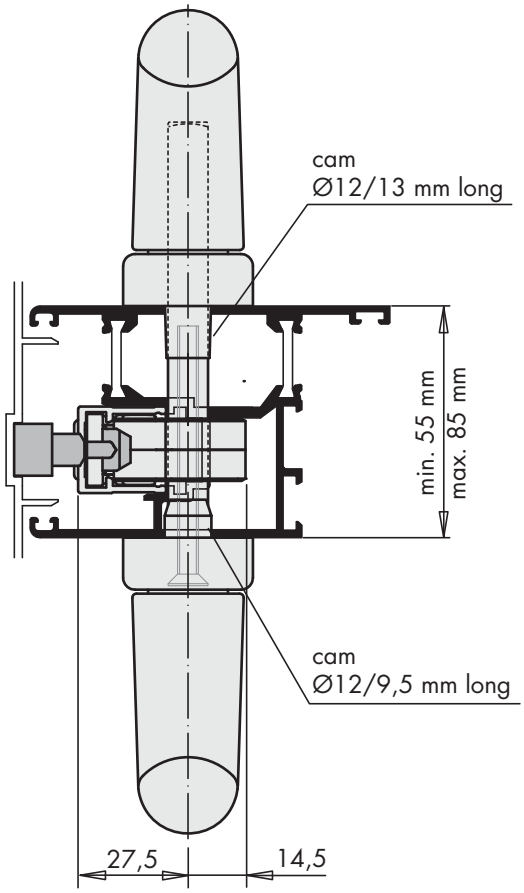
Cross section C-D



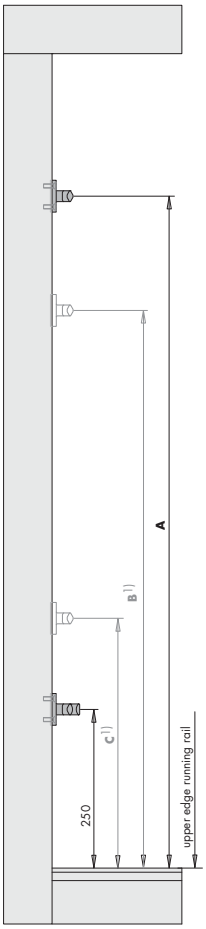


Centre piece (**6**) for groove size 18 mm

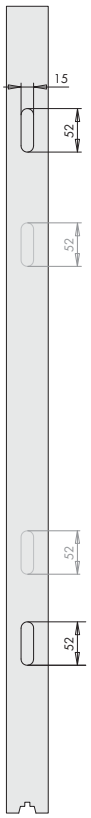




Pos.	Pcs per scheme A	D	G	C	F	Description		Part number RAL9016 white	silver	si-brown
	1	**2**	**–**	**1..2**	**3..4**	**Handle Si-line HS 250-PZ internal**	**A0156**	**272725**	**267264**	**267271**
	1	**2**	**–**	**1..2**	**3..4**	**(only in conn. with Si-line HS 250-PZ external)** *consisting of :*	**i. u. ex. lockable**			
1a	1	2	–	1..2	3..4	Handle Si-line HS 250 PZ internal	A0156			
2	1	2	–	1..2	3..4	Rose Si-line internal				
3a	2	2	–	2..4	6..8	Cover cap Si-line HS 250		884898	876602	876633
	1	**2**	**–**	**1..2**	**3..4**	**Handle Si-line HS 250-PZ external**	**A0156**	**272749**	**272732**	**272756**
	1	**2**	**–**	**1..2**	**3..4**	**(only in conn. with Si-line HS 250-PZ internal)** *consisting of :*	**i. u. ex. lockable**			
4	1	2	–	1..2	3..4	Handle Si-line HS 250 PZ external	A0156			
2b	1	2	–	1..2	3..4	Rose Si-line external				
3a	2	2	–	2..4	6..8	Cover cap Si-line HS 250		884898	876602	876633
	1	**2**	**–**	**1..2**	**3..4**	**Bag Stop**		**821237**	**860649**	**821244**
19	1	2	–	1..2	3..4	Stop				
20	1	2	–	1..2	3..4	Countersunk tap. screw B4,8 x 70				

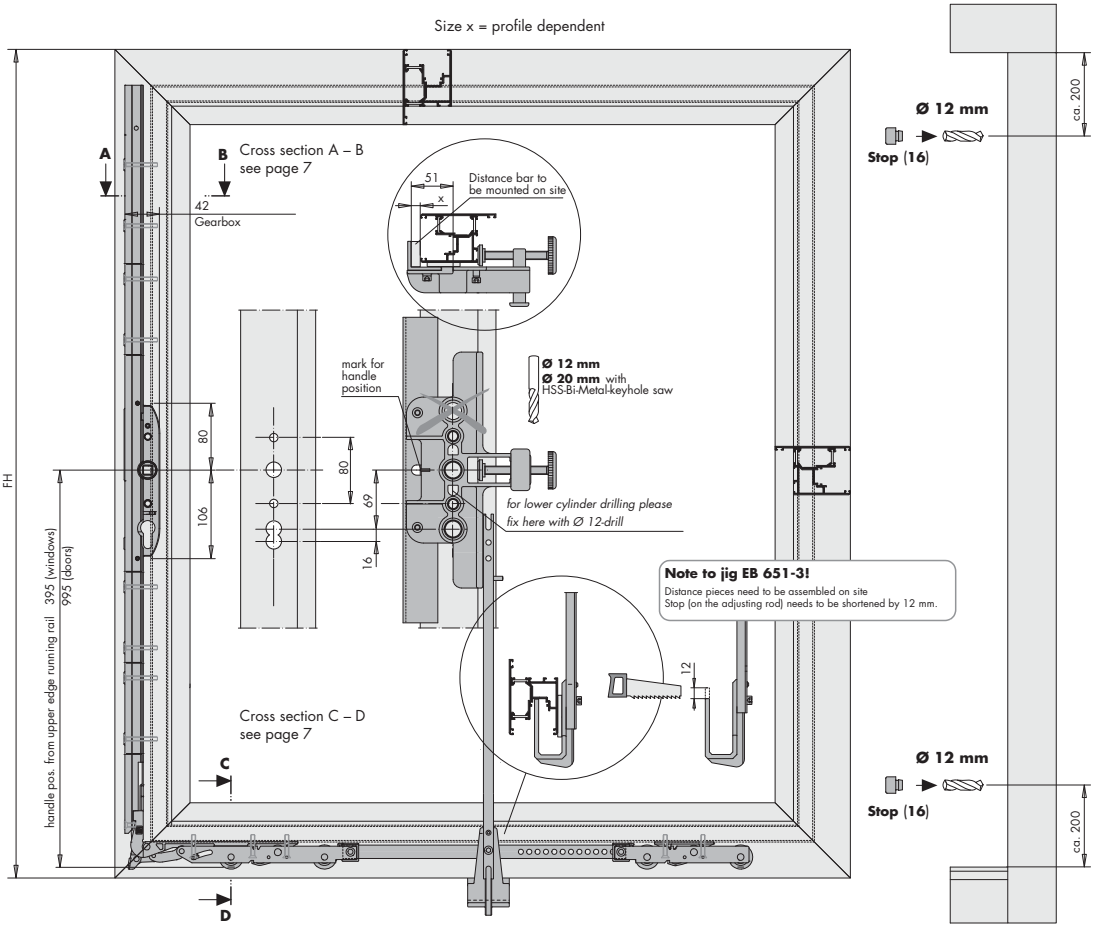


Sash cover plate
(profile dependent)



Gear	Size A	Size B 1)	Size C 1)	Sash height 2)
Gr. 170	1000	600	–	1175 - 1775
Gr. 220	1600	1200	750	1776 - 2275
Gr. 260	2200	1200	750	2276 - 2675

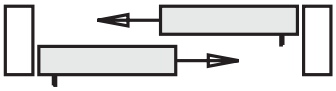
*1) If requested 2 pcs top locking bolts (**6**) can be used as additional centre lock. The locking points on Gear HS-Portal 300 PZ (**23**) must be opened.*
2) Small deviations possible (profile dependent)



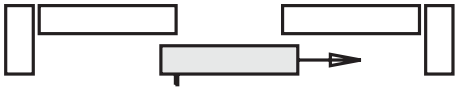
DIN left hand *or* ***DIN right hand***

Scheme A

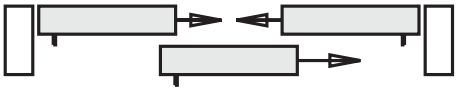
Scheme D



Scheme G



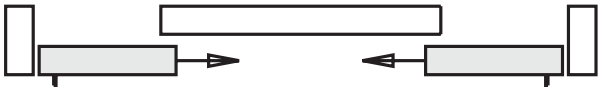
Scheme H

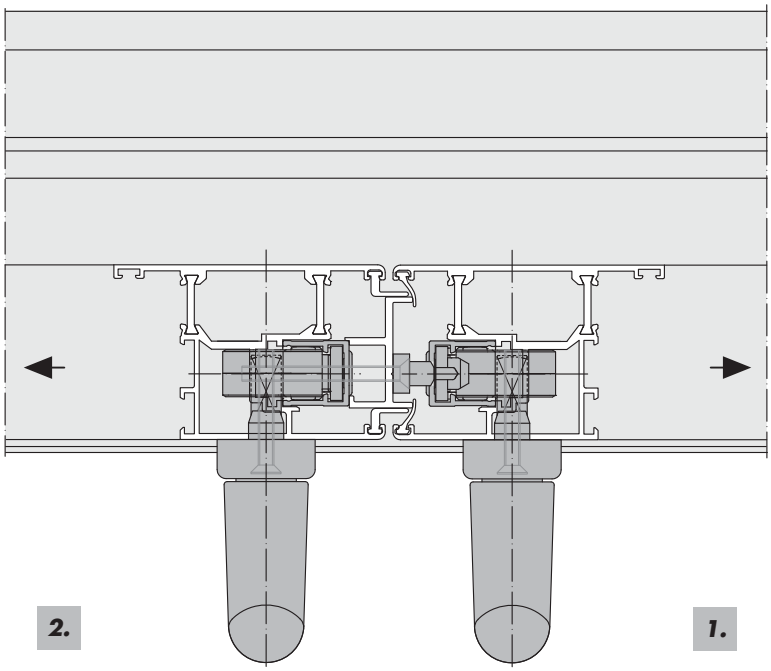


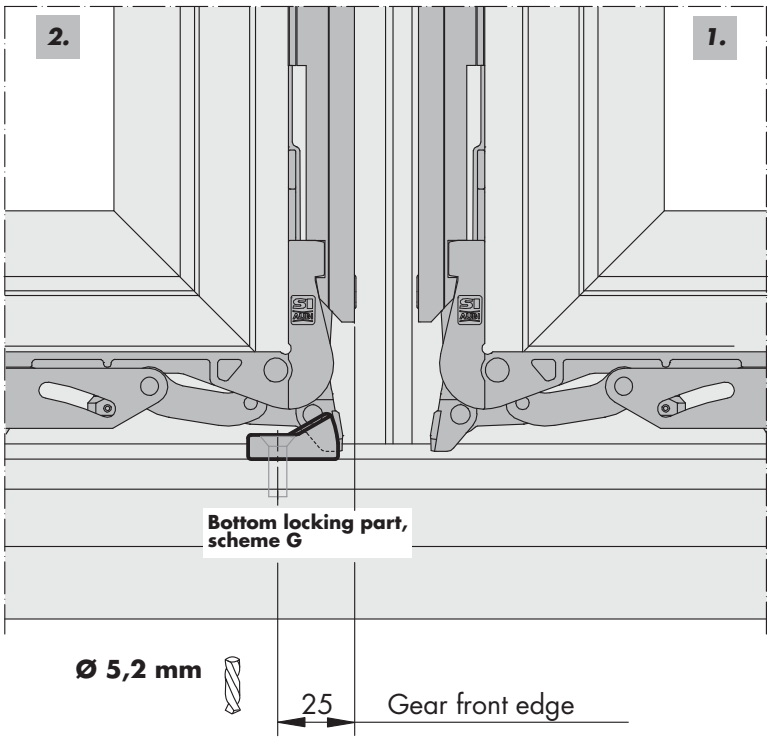
Scheme C

Scheme F

Scheme K







Notes for scheme C:

- The locking points are lowered by 4mm
  Reduce Dim A to C on page 14
  by 4 mm
- screw a self tapping screw B6,3 x 38 (**22**) into the frame ~ 50 mm from the sash leading edge above the slave sash
  [see also page 9]
- To avoid misoperation of the two leaves , the master and slave sashes should be clearly identified.

  The sliding doors should only be operated in the following sequence !

  Opening: first the master [**1.**],
  then the slave sash [**2.**]

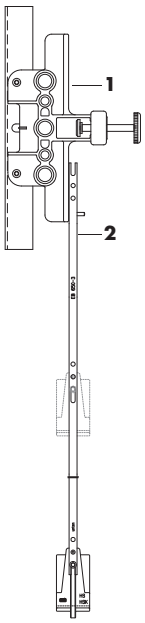
  Closing: first the slave sash [**2.**],
  and then the master[**1.**]

Fitting the locking parts , bottom, Scheme G

A Mark the running rail 25 mm behind the gear front edge
and ctr punch for a csk screw M6 x 20 (21).

B Pre drill with a Ø 5,2 mm drill.

C Screw in the locking part for Scheme G, bottom(**20**)

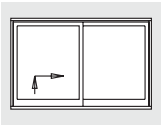


Materialshorttext		Tool		Materialnumber
Jig EB 651-3 *consisting of:*	*for gear drillings*			
Pos. 1 Bohrlehre EB 651-3*	*Jig has backset 51;* *According to profile dependent backset please use distance piece on site*	*Drill:*	*Ø 12 mm* *Ø 20 mm*	PABB0010-521010
Pos. 2 Adjusting rod (incl. lower stop)	*for EB 650-3 and EB 651-3* *Lower stop needs to be shortened by 12mm!* *See page 5 a. 6*			157244

Centre punch KF	*for ctr punching the hole for the locking part*			141892

HS-PORTAL 300 LM

Lift and slide hardware for aluminium doors
Hardware information for profile manufacturers



... with the following benefits:

- with integrated night vent
- profile cylinder accessories
- secure due to 4 locking points on the drive gear
- fixed wheels allow simple and easy assembly
- smooth operation even on heavier sashes

Size range

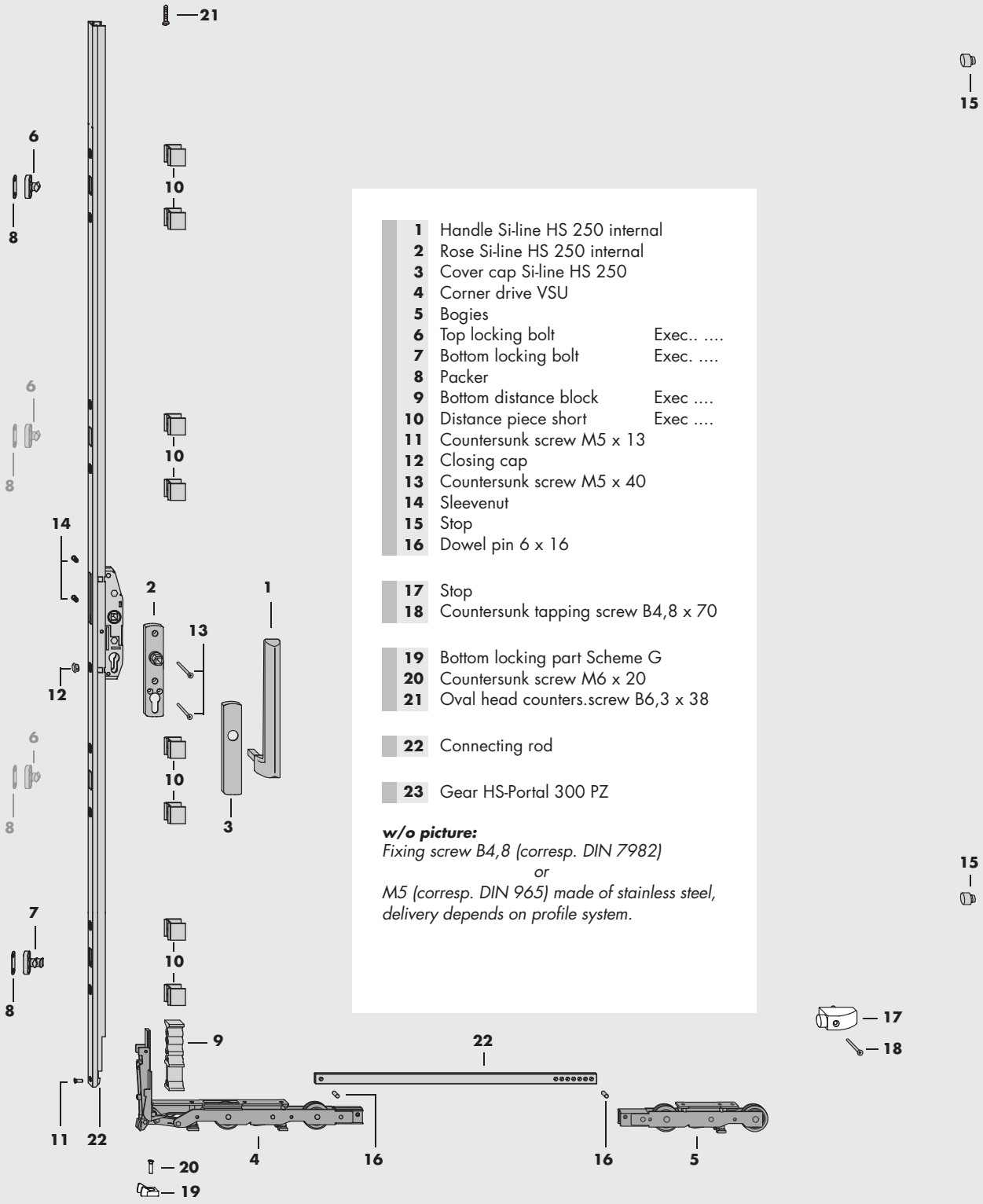
Sash width	(mm)	profile dependent max. 3350
Sash height *(Sliding sash)*	(mm)	profile dependent max. 2675
Frame width	(mm)	with scheme A max. 6700
Frame height	(mm)	depends on profile system
Sash weight	(kg)	**max. 300**
Backset *(Gear)*	(mm)	*37,5*
Handle position *(Window)*	(mm)	from top edge running rail 395
Handle position *(Door)*	(mm)	from top edge running rail 995

Contents

Assembly instruction
HSgb7005

gedruckt auf chlorfrei gebleichtem Papier

HSgb7005_3_2005-01/0



1	Handle Si-line HS 250 internal	
2	Rose Si-line HS 250 internal	
3	Cover cap Si-line HS 250	
4	Corner drive VSU	
5	Bogies	
6	Top locking bolt	Exec.. ....
7	Bottom locking bolt	Exec. ....
8	Packer	
9	Bottom distance block	Exec ....
10	Distance piece short	Exec ....
11	Countersunk screw M5 x 13	
12	Closing cap	
13	Countersunk screw M5 x 40	
14	Sleevenut	
15	Stop	
16	Dowel pin 6 x 16	
17	Stop	
18	Countersunk tapping screw B4,8 x 70	
19	Bottom locking part Scheme G	
20	Countersunk screw M6 x 20	
21	Oval head counters.screw B6,3 x 38	
22	Connecting rod	
23	Gear HS-Portal 300 PZ	

w/o picture:
Fixing screw B4,8 (corresp. DIN 7982)
or
M5 (corresp. DIN 965) made of stainless steel, delivery depends on profile system.

Flexible by optimized packing units

- Handle Si-line HS 250 internal (**1**) and Cover cap Si-line HS 250(**3**) available in white RAL 9016 – silver – si-brown
- Basic parts (**4** to**16**) in Carton HS-Portal 300 LM (profile dependent)
- Sash width dependent connecting rod size 150 to 335 (**22**)
- Sash height dependent Gear HS-Portal 300 PZ size170, 220 and 260 (**23**)

	Pos.	Qty A	D	G	C	F	Materialshorttext		Materialnumber RAL9016 white	silver	Si-brown
always required		**1**	**2**	**1**	**2**	**4**	**Carton Handle Si-line HS 250 internal**	**A0156**	**267226**	**267219**	**267240**
	1	1	2	1	2	4	Handle Si-line HS 250 internal	A0156			
	2						Rose Si-line HS 250 internal				
	3	1	2	1	2	4	Cover cap Si-line HS 250				
		1	2	1	2	4	**Carton HS-PORTAL 300 LM** *consisting of :*	**A....**		**....**	
	4	1	2	1	2	4	Corner drive VSU	HS		PEUB0010-100010	
	5	1	2	1	2	4	Bogies	HS		PLWB0020-100010	
		1	2	–[1]	1[1]	3[1]	Bag Locking parts HS-LM	A....			
	6	1	2	–[1]	1[1]	3[1]	Top locking parts	A.... *air gap dependent*		See page 7	
	7	1	2	–[1]	1[1]	3[1]	Bottom locking parts	A.... *air gap dependent*		See page 7	
	8						Packer	1 mm / 2 mm *airgap dependent*		See page 7	
		1	2	1	2	4	Bag sash parts HS-LM	A....			
	9	1	2	1	2	4	Lower distance block	A.... *profile dependent*		See page 7	
	10	8	16	8	16	32	Distance piece short	A.... *profile dependent*		See page 7	
	11	1	2	1	2	4	Countersunk screw M5 x 13			800850	
	12	1	2	1	2	4	Closing cap	grey		819708	
		1	2	1	2	4	Closing cap	brown		819869	
	13	2	4	2	4	8	Countersunk screw M5 x 40			801048	
	14	2	4	2	4	8	Sleeve nut			800287	
	15	2	4	–[1]	4	–[1]	Stop			824412	
		1	2	1	2	4	Bag screws HS-LM	A...			
	16	2	4	2	4	8	Dowel pin 6 x 16			823132	
							Screws	*profile dependent*			
		–	**1**	**1**	**–**	**2**	**Bag Stop** *consisting of:*		**821237**	**860649**	**831922**
	17	–	1	1	–	2	Stop		800812	861004	855898
	18	–	1	1	–	2	Countersunk tap. screwB4,8 x70		844090	844090	844090
		–	**–**	**1**	**1**	**1**	**Bag locking parts HS** *consisting of:*	**Scheme G**		**238691**	
	19	–	–	1	1	1	Locking part bottom Scheme G			848272	
	20	–	–	1	1	1	Countersunk screw M6 x 20			848289	
	21	–	–	1	1	1	Pan head tap. screw B6,3 x 38			848296	

sash width dep.	**22**	**1**	**2**	**1**	**2**	**4**	**Connecting rod**	*Size* *Length (in mm)* *FB (in mm)* 150 898 720 to 1500 200 1398 1501 to 2000 250 1898 2001 to 2500 335 2748 2501 to 3350		**719282** **719480** **719497** **719725**	
sash height dep.	**23**	**1**	**2**	**1**	**2**	**4**	**Gear HS-PORTAL 300 PZ**	*Size* *Handle pos. (in mm)* *FH (in mm)* 170 1190 to 1790 220 1791 to 2290 260 2291 to 2690	**PGKB0010-524010** **PGKB0020-524010** **PGKB0030-524010**	**PGKB0010-524010** **PGKB0020-524010** **PGKB0030-524010**	**PGKB0010-532010** **PGKB0020-532010** **PGKB0030-532010**

Accessories

Accessories	**24**	**0..1**	**0..2**	**0..1**	**0..2**	**0..4**	**Finger pullSi-line**	*long*	**880869**	**880838**	**885239**
	25	**0..1**	**0..2**	**0..1**	**0..2**	**0..4**	**Rose Si-line outwards**	*long*	**–**	**881569**	**–**
	26	**0..1**	**0..2**	**0..1**	**0..2**	**0..4**	**Handle Si-line HS 250, detachable**	*only in conn. with internal rose*	**891735**[2]	**–**	**–**
	27	**0..1**	**0..2**	**0..1**	**0..2**	**0..4**	**Rose Si-line internal**	*only in conn. with detachable handle*	**–**	**881613**	**–**

1) Actual need; delivery contains further parts.
2) Color RAL 9003 white

Distance block (**10**) and Distance piece, short(**11**)

	DIM F (mm)	Execution	Distance block Part number	Distance pc, short Part number
10	16	A0001	862711	PDZB0040-096010
	18	A0020	634.2341.5021.A0	PDZB0050-096010
	20	A0029	856000	PDZB0060-096010
	23	A0007	855997	PDZB0070-096010
	25	A0004	856161	PDZB0080-096010
	27	A0008	863282	PDZB0100-096010
	30	A0006	857465	PDZB0110-096010
11	31	A0018	897577	PDZB0120-096010
	32	A0015	849200	PDZB0130-096010
	35	A0002	859049	PDZB0140-096010

Locking bolts (**7** and **8**)

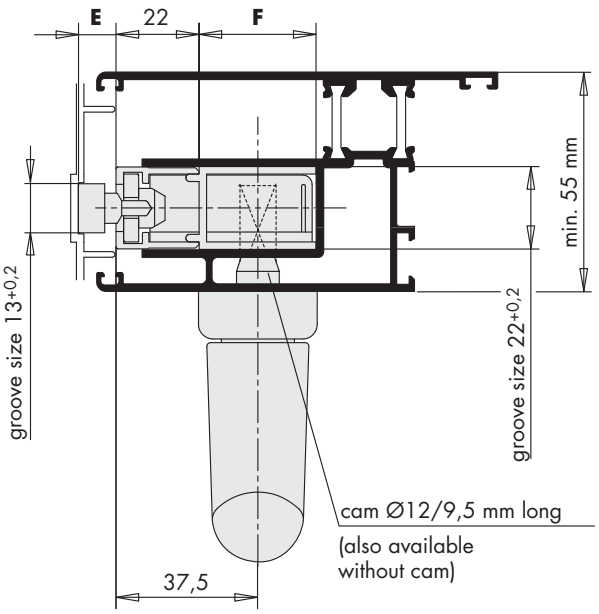
	DIM E[1] (mm)	Execution	Top locking bolt Part number	Bottom locking bolt Part number
	4	A0012	719398	719404
	7	A0020	719305	719312
	8	A0001	719190	634.2834.5004X60
	8,5	A0005	719206	719220
7	9	A0006	719213	719237
	14	A0009	719329	719343
8	16	A0013	719244	719268
	19,5	A0002	722220	719299
	20	A0004	719251	722534

1) intermediate sizes using packers of 1 mm and 2 mm possible

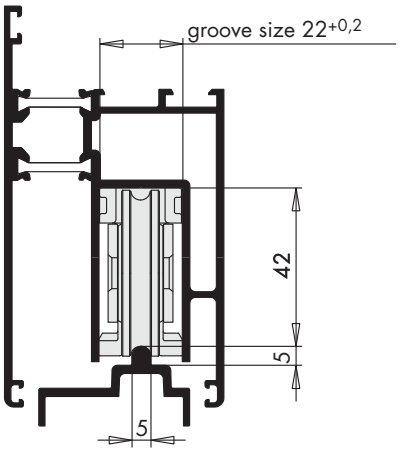
Packers (**9**) *for locking bolts*

		Part number
9	1 mm	721285
	2 mm	721292

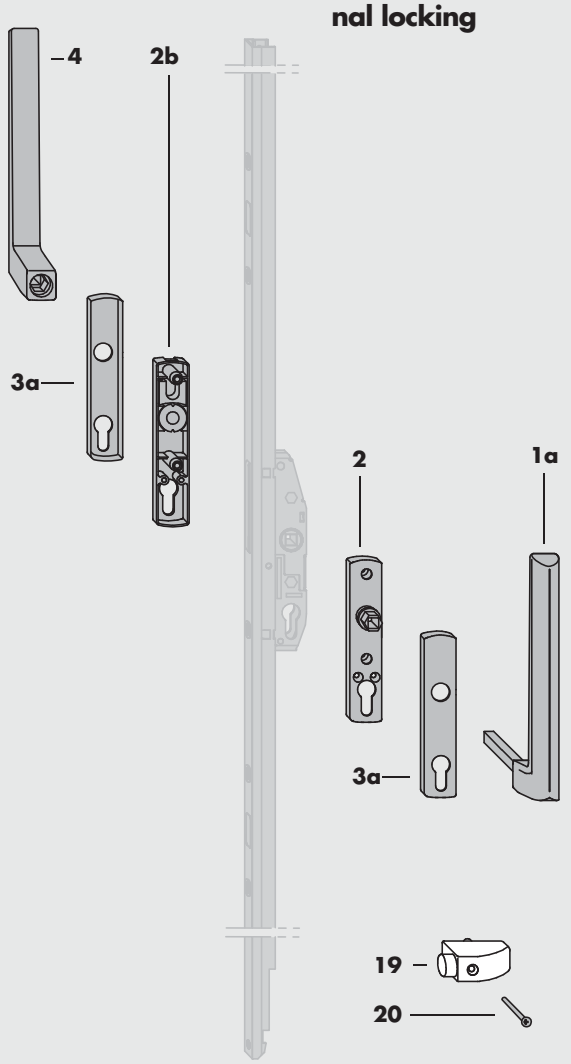
Cross section A-B

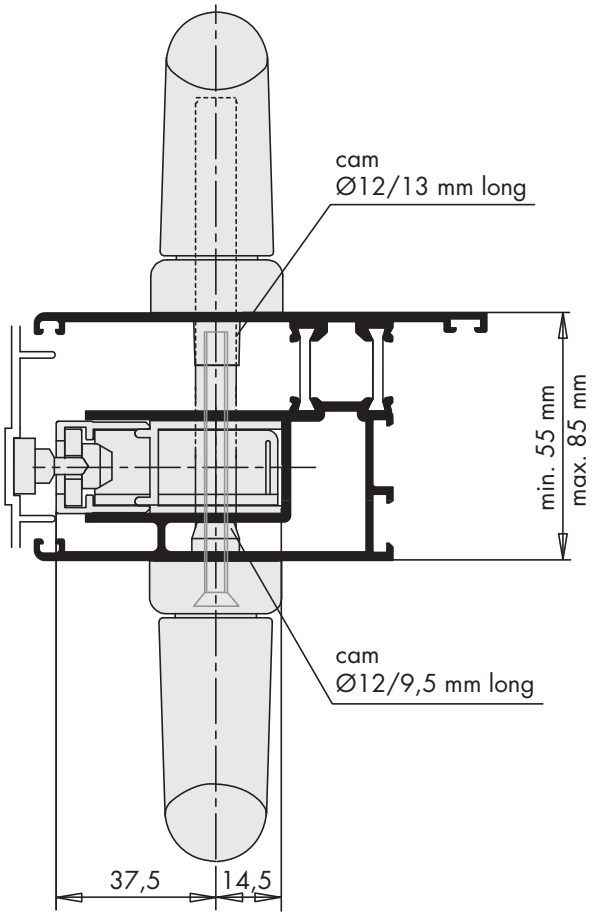


Cross section C-D

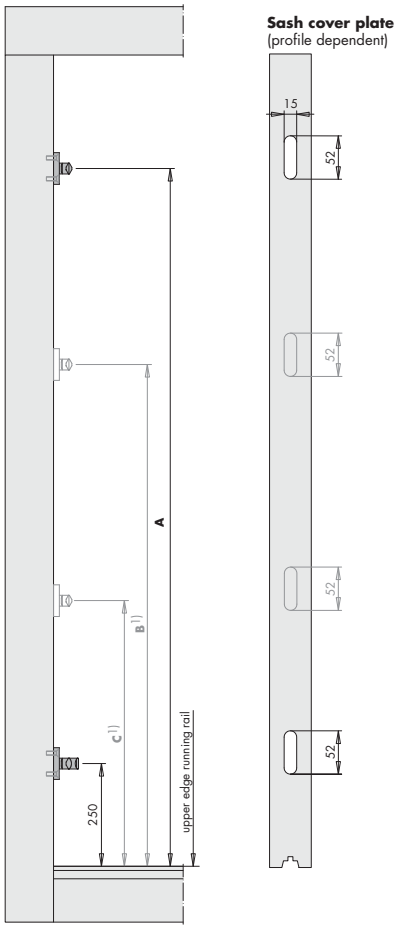


Handle Si-line HS 250 PZ A0156 internal and external locking



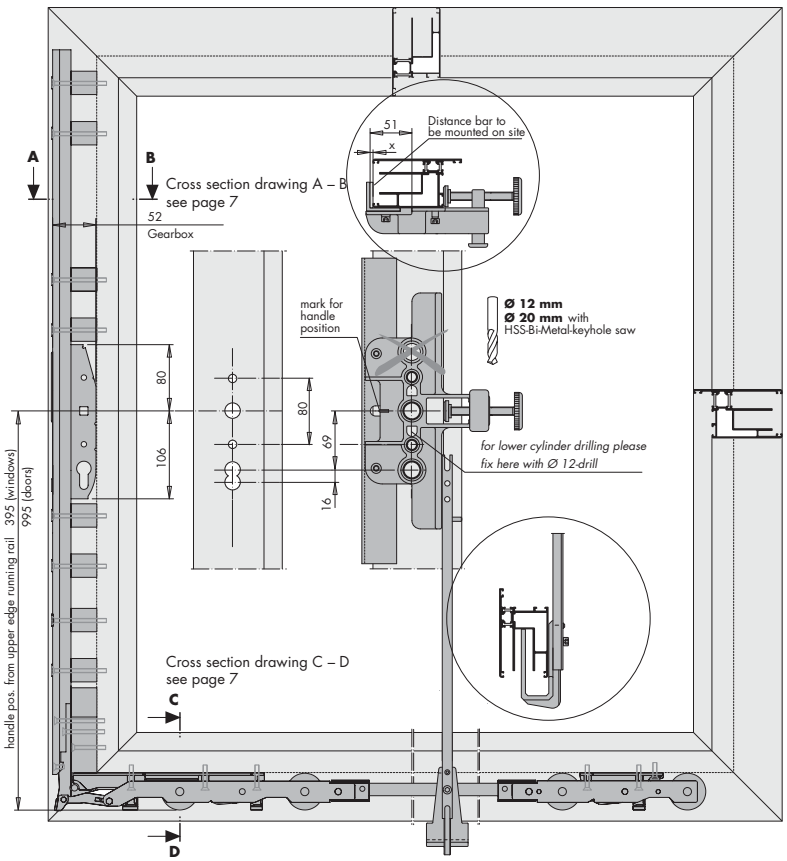


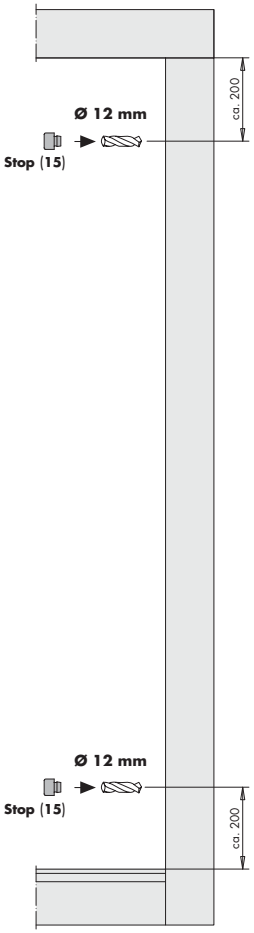
Pos.	Pcs per scheme A	D	G	C	F	Description		Part number RAL9016 white	silver	si-brown
	1	**2**	**–**	**1..2**	**3..4**	**Handle Si-line HS 250-PZ internal**	**A0156**	**272725**	**267264**	**267271**
	1	**2**	**–**	**1..2**	**3..4**	**(only in conn. with Si-line HS 250-PZ external)** *consisting of :*	**i. +. ex. locking**			
1a	1	2	–	1..2	3..4	Handle Si-line HS 250 PZ internal	A0156			
2	1	2	–	1..2	3..4	Rose Si-line internal				
3a	2	2	–	2..4	6..8	Cover cap Si-line HS 250		884898	876602	876633
	1	**2**	**–**	**1..2**	**3..4**	**Handle Si-line HS 250-PZ external**	**A0156**	**272749**	**272732**	**272756**
	1	**2**	**–**	**1..2**	**3..4**	**(only in conn. with Si-line HS 250-PZ internal)** *consisting of :*	**i. +. ex. locking**			
4	1	2	–	1..2	3..4	Handle Si-line HS 250 PZ external	A0156			
2b	1	2	–	1..2	3..4	Rose Si-line external				
3a	2	2	–	2..4	6..8	Cover cap Si-line HS 250		884898	876602	876633
	1	**2**	**–**	**1..2**	**3..4**	**Bag Stop**		**821237**	**860649**	**821244**
19	1	2	–	1..2	3..4	Stop				
20	1	2	–	1..2	3..4	Countersunk tap. screw B4,8 x 70				



Sash cover plate
(profile dependent)

Size x =profile dependent





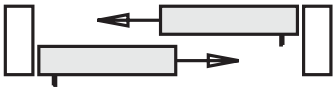
Gear	Size A	Size B 1)	Size C 1)	Sash height 2)
Sz 170	1000	600	–	1175 - 1775
Sz 220	1600	1200	750	1776 - 2275
Sz 260	2200	1200	750	2276 - 2675

*1) If requested 2 pcs top locking bolts (**6**) can be used as additional centre lock. The locking points on Gear HS-Portal 300 PZ (**23**) must be opened.*
2) Small deviations possible (profile dependent)

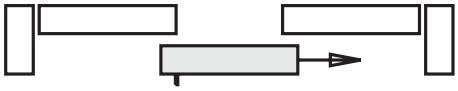
left hand *or* ***right hand***

Scheme A

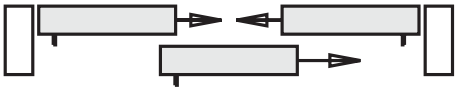
Scheme D



Scheme G



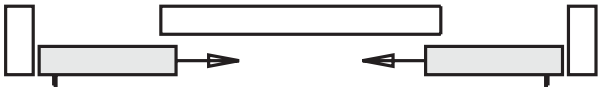
Scheme H

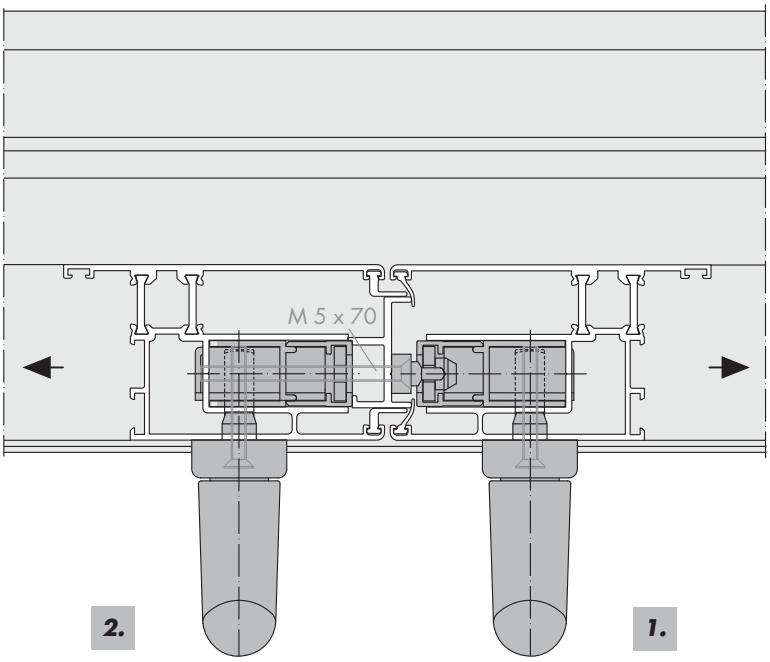


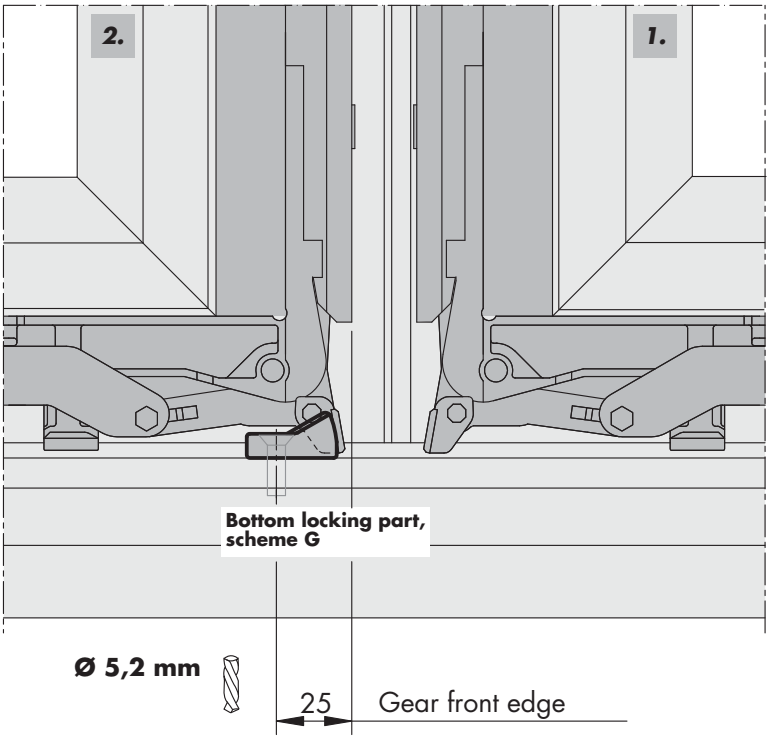
Scheme C

Scheme F

Scheme K







Notes for Scheme C:

- The locking points are lowered by 4mm
  Reduce Dim A to C on page 14
  by 4 mm
- screw a self tapping screw B6,3 x 38 (**21**) into the frame ~ 50 mm from the sash leading edge above the slave sash
  [see also page 9]
- To avoid misoperation of the two leaves , the master and slave sashes should be clearly identified.

  The sliding doors should only be operated in the following sequence !

  Opening: first the master [**1.**],
  then the slave sash [**2.**]

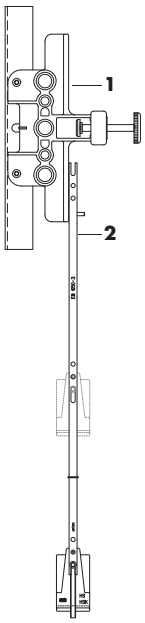
  Closing: first the slave sah l [**2.**],
  and then the master[**1.**]

Fitting the locking parts , Scheme G

A Mark the running rail 25 mm behind the gear front edge
and ctr punch for a csk screw M6 x 20 (20).

B Pre drill with a Ø 5,2 mm drill.

C Screw in the locking part for Scheme G (**19**) .



Materialshorttext		Tool		Materialnumber
Jig EB 651-3				
Consisting of:	*for gear drillings*			
Pos. 1 Jig EB 651-3*	*Jig has backset 51;* *According to profile dependent backset please use distance piece on site*	*Drill :*	*Ø 12 mm* *Ø 20 mm*	PABB0010-521010
Pos. 2 Adjusting rod (incl. lower stop)	*for EB 650-3 and EB 651-3*			157244

Centre punch KF	*for ctr punching the hole for the locking part*			141892