ASSEMBLY INSTRUCTIONS

Lift&slide hardware
System A, C, G, K
Timber

ONLY FOR CERTIFIED SPECIALISTS!
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Important information

**Target group**
This documentation is intended exclusively for specialist companies and certified specialists. The work described may only be carried out by specialist personnel.

**Instructions for use and safety**
Assemble all hardware parts professionally as described in this manual and observe all safety instructions.

Overloading or improper operation of the lift and slide hardware may cause the sash to jump out of its guide, fall out and cause serious injury. If overloading of the lift and slide hardware is expected under special circumstances, such as in Schools, Kindergartens etc., this must be prevented using the appropriate measures, e.g.

- Adjustment of the buffer stop to reduce the opening width, or
- Installation of a profile cylinder to prevent improper use.

Please observe the terms of our functional warranty (https://www.maco.eu/assets/757752) as well as the conditions of our surface warranty for MACO TRICOAT-PLUS hardware (https://www.maco.eu/assets/757779).

Observe the “Guidelines and Instructions on Product and Liability (GIPL)” of the Quality Association of Locks and Hardware. This policy describes all safety-related issues for end-users for window and balcony door topics. (Download available on the website of the Quality Association of Locks and Hardware).

For MACO lift and slide hardware HS, the application ranges given on page 6 must not be exceeded. In addition, specifications for the lift and slide door hardware, in particular on possible restrictions on sash dimensions and sash weight, must be strictly adhered to.

Assemble the complete hardware only from MACO hardware parts and the required accessories.

When using Accoya (registered trademark of Titan Wood Limited) and acid-treated woods (e.g. Oak, Teak, Larch), use only the TRICOAT-PLUS fittings.

Use the specified screw sizes as specified in this guide.

Turn the screws straight (unless otherwise stated) and do not over-tighten, otherwise smooth operation of the hardware may be impaired.

Fix the screws of the supporting components (e.g. rollers, running rail and guide rail) in the reinforcement profile.

Around the rollers, ensure a positive transfer of the compressive forces onto the reinforcement profile!

With the spacer-block setting, observe the technical guideline No. 3 of the glazier trade “Blocking of glazing units”.

Do not use acid-curing sealants, as these can lead to corrosion of the hardware parts.
Keep the runner of the roller track, the threshold and all folds free of deposits and dirt, and in particular of cement or plaster residues. Avoid direct moisture on the hardware and contact of the hardware with acidic cleaning agents.

Attach the operating label in a clearly visible manner to the built-in lift and slide sash. The operating label can be found in the base carton.

Do not make any constructive changes to the hardware parts.

If you are not sure, please ask your MACO contact person for advice.

**Certification**

The MACO hardware mentioned in the assembly instructions are tested and regularly monitored in standardised tests in accordance with EN 13126. The achieved standards Class H3 does not refer to the individual element system. Due to a wide range of influencing factors, individual element systems may experience minor deviations from standardised testing, such as:

- the influence of processing tolerances
- the effect of assembly tolerances after the installation of the element in the building
- the use of accessories (e.g. weather seals, sealing rails, handles, etc.)
- the use of additional equipment (e.g. sliding damper, swing-check damper, operating force reduction, etc.) and/or attachments (e.g. Aluminium shells, sun protection on the sash, insect protection)
- external environmental influences (e.g. humidity, sunlight, high or low temperatures, temperature fluctuations, etc.) or
- room-side influences (moisture, aggressive cleaning agents, etc.)
Key

- **HS** Lift&slide unit
- **FH** Sash height
- **FB** Sash width
- **RAB** Frame outer width
- **RAH** Frame outer height
- **L** Total length
- **GM** Handle height
- **DM** Backset drive gear

Dimensions in [mm]: All dimensions without units are specified in [mm]
Application ranges

Warning!
GRP threshold must be lined so that it is pressure resistant!

Statics warning!
The window manufacturer is responsible for the static dimensioning as well as the lining of the GRP threshold based on the profile design and the wood type!

<table>
<thead>
<tr>
<th>Code</th>
<th>Designation</th>
<th>Unit</th>
<th>150 kg</th>
<th>300 kg</th>
<th>400 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>FB</td>
<td>Sash width</td>
<td>[mm]</td>
<td>630 - 2200</td>
<td>720 - 3385</td>
<td>1200 - 3385</td>
</tr>
<tr>
<td>FH</td>
<td>Sash height</td>
<td>[mm]</td>
<td>745 - 2860*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FB : FH</td>
<td>Sash ratio</td>
<td>-</td>
<td>1 : 2,5 max.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DM</td>
<td>Backset</td>
<td>[mm]</td>
<td>27.5 / 37.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GM</td>
<td>Handle height (drive gear size 1-2)</td>
<td>[mm]</td>
<td>410</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tall roller track</td>
<td>[mm]</td>
<td>410</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flat roller track</td>
<td>[mm]</td>
<td>400</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Handle height (drive gear size 3-5)</td>
<td>[mm]</td>
<td>1010</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tall roller track</td>
<td>[mm]</td>
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</tr>
<tr>
<td></td>
<td>Flat roller track</td>
<td>[mm]</td>
<td>1000</td>
<td></td>
<td></td>
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</table>

* in special cases up to 3860 mm is possible
Calculation formulae for system A

\[
L = (R_{AB} - 112 - R) / 2
\]

\[
I = (R_{AB} - 117 - R) / 2
\]

\[
V = 88.5 \quad V = 65
\]

\[
Z = 0 \quad Z = 34
\]
Calculation formulae for system C

\[ FB = \frac{(RAB - 127 + 2xR)}{4} \]

\[ I = \frac{RAB}{2} - 58.5 - R \]

\[ V = 88.5 \quad V = 65 \]

\[ Z = 0 \quad Z = 34 \]
Calculation formulae for system G

\[
V = 88.5 \quad V = 65
\]

\[
Z = 0 \quad Z = 34
\]
Calculation formulae for system K

\[ I = \frac{R_{AB} - 102 - 2xR}{4} \]

\[ F_B = \frac{R_{AB} - 122 + 2xR}{4} \]

\[ V = 88.5 \quad V = 65 \]

\[ Z = 34 \quad Z = 0 \]
Sash height calculation formulae

\[ FH = RAH - W \]
Sash height calculation formulae

<table>
<thead>
<tr>
<th>W</th>
<th>circuits 1</th>
<th>circuits 2</th>
<th>circuits 3</th>
<th>circuits 4</th>
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<td>133</td>
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<tr>
<td></td>
<td>97</td>
<td>97</td>
<td>112</td>
<td>100</td>
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</table>
Sash hardware overview

1. Front roller
2. Rear roller
3. Rod guide and groove support-brace
4. Connecting rod
5. Roller casing with rubber buffer
6. Drive gear
7. Locks
8. Handle
9. Finger pull
Frame hardware overview

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
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<tbody>
<tr>
<td>10</td>
<td>Sash gasket</td>
</tr>
<tr>
<td>11</td>
<td>Top guide espagnolette side</td>
</tr>
<tr>
<td>12</td>
<td>Top guide hinge-side with rubber buffer</td>
</tr>
<tr>
<td>13</td>
<td>Gasket track</td>
</tr>
<tr>
<td>14</td>
<td>Bubble gasket</td>
</tr>
<tr>
<td>15</td>
<td>Sealing strip</td>
</tr>
<tr>
<td>16</td>
<td>Guide track</td>
</tr>
<tr>
<td>17</td>
<td>Seal for guide track</td>
</tr>
<tr>
<td>18</td>
<td>Threshold</td>
</tr>
<tr>
<td>19</td>
<td>Gasket track flat</td>
</tr>
</tbody>
</table>
Frame installation

Connecting plates drilling-hole pattern
Frame installation

Croppable connecting plates drilling-hole pattern
Frame installation

Screw fixing version 1
Frame installation

Screw fixing version 2
Frame installation

Overlap gasket and connection strips, bottom
Frame installation

Overlap gasket and connection strips, top
Frame installation
Frame assembly
Frame installation

Rubber seals
Frame installation
Gasket tracks

\[ L = FB + 45 + K - R \]

\[ L = FB + J - R + Q \]
Frame installation

Gasket tracks
Frame installation

Gasket tracks
Sash installation

Drilling and routing pattern for HS handles and drive gear
Sash installation
Drilling and milling jig for HS handle

© 2023 MACO
Sash installation

Hook casing routing pattern

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gr. 1</td>
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<td>166</td>
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<td>Gr. 6</td>
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<td>1366</td>
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<td>Gr. 7</td>
<td>166</td>
<td>1366</td>
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<table>
<thead>
<tr>
<th>X</th>
<th>200 kg</th>
<th>300 kg</th>
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<td>35</td>
<td>46</td>
</tr>
<tr>
<td>5</td>
<td>45</td>
<td>56</td>
</tr>
</tbody>
</table>
Sash installation

Roller installation 200 kg + 300 kg

FB < 2000 = 2 x
FB 2000 - 3000 = 3 x
FB > 3000 = 4 x

200 kg
L 96  630 - 650
L 692  650 - 1235
L 1196  1160 - 1740
L 1700  1675 - 2200

300 kg
L 96  700 - 720
L 692  720 - 1300
L 1196  1225 - 1800
L 1700  1730 - 2305
L 2204  2235 - 2810
L 2708  2740 - 3385
Sash installation

Roller installation 400 kg

FB < 2000 = 2 x
FB 2000 - 3000 = 3 x
FB > 3000 = 4 x

max. 130
min. 80

400 kg

L = FB - 1080

L 692
1200 - 1770

L 1196
1700 - 2275

L 1700
2200 - 2780

L 2204
2705 - 3280

L 2708
3210 - 3385

WINDOWS · DOORS · SLIDING DOORS
Sash installation

Roller installation for narrow casements
Sash installation
Roller installation for narrow casements

L = FB - 595

1. Ø5x40
2. M5x16
3. Ø4x25
4. M5x16
5. 137
6. Ø5x40
7. 199

WINDOWS · DOORS · SLIDING DOORS
Sash installation

Drive gear assembly
Sash installation

Drive gear assembly

<table>
<thead>
<tr>
<th></th>
<th>T = 50</th>
<th>T = 60</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U = 10</td>
<td>60</td>
<td>70</td>
</tr>
<tr>
<td>U = 20</td>
<td>70</td>
<td>80</td>
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</tbody>
</table>

Handle fastening on drive gear with counter nut
Sash installation

Drive gear damper

Warning!
If a damper is used, the application range is reduced by around 145 mm!
This item is recommended with sash weights over 200 kg.

Warning!
Distance piece provided by customer.
Sash installation

Drive gear damper

Warning!

A  If locking monitoring is used, the application range is reduced by around 60 mm!
B  If locking monitoring and a damper is used, the application range is reduced by around 190 mm!

Warning!
Distance piece provided by customer.
Sash installation

Handle fitting

1. 2. 3.

4. 5. 6. 7.

0-3mm
Sash installation

Sash gasket
Sash installation

Gasket tracks

L = FB - G
L = FB - F

L = FH - M
L = FH - N

A-A

B-B

G

F

27 49 16
9 59 24

45°
Sash installation

Gasket tracks
Sash installation

Gasket tracks

Timber

PVC

10x2

23 25

16

7

300

49

300

45°

20

29

20

29

Ø3 x 16

Ø4x...

WINDOWS · DOORS · SLIDING DOORS
Sash installation

Gasket tracks
Sash installation

Foamed rubber and overlap gasket strip system C
Sash and frame installation

Guide tracks and sash installation
Sash and frame installation

Guide tracks and sash installation
Sash and frame installation

Locking bolt

System C

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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<td>202</td>
<td>702</td>
<td>1192</td>
<td>2307</td>
<td>3107</td>
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</table>
Sash and frame installation

Locking bolt system C

Ø 3

Ø 4 x...

Nº 363159
Sash and frame installation

Striker plate for hook gear system

⚠️ **Warning!**
The installation length must always be selected so that the MACO logo is positioned at the top!

⚠️ **Warning!**
Turn the striker plate by 180°! If the striker plates are set too high, there is a risk that the handle will be tilted, the production tolerance can be compensated by turning the striker plate (dimension Z).

### System A

### System C

---

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gr. 1</td>
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<td>Gr. 2-3</td>
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<td>Gr. 4</td>
<td>145</td>
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<td>Gr. 5</td>
<td>145</td>
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<td>2045</td>
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<td>Gr. 6</td>
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<td>2445</td>
</tr>
<tr>
<td>Gr. 7</td>
<td>145</td>
<td>1345</td>
<td>2445</td>
</tr>
</tbody>
</table>
Sash and frame installation

Grease hook drive gear

Grease for hardware:
Lubricant with PTFE in spray form, for example, OKS 3751 or equivalent
Sash and frame installation

Striker plate for hook gear system C
Installation of accessories

Standard buffer stop
Installation of accessories

Guide and roller track buffer stop

Ø4.2 Ø8

No 217332
Installation of accessories

Locking block

200 kg

300/400 kg

200 kg

300/400 kg

55
Installation of accessories

Low threshold tread board walkway area

\[ L = FB + 61 - R - Z + V \]

V 88,5 65

Ø4 x 12

Installation of accessories
Low threshold tread board walkway area

\[ L = FB + 61 - R + Z + V \]

V 88,5 65

Ø4 x 12
Installation of accessories

Fixed sash low threshold tread board

\[ L = F B + 61 - Z - V \]
Lower sliding sash in opened position!