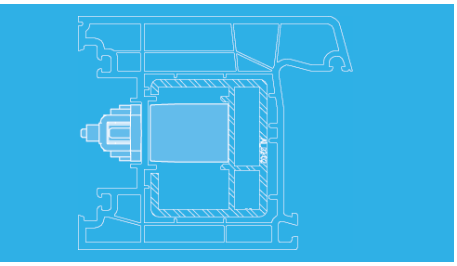
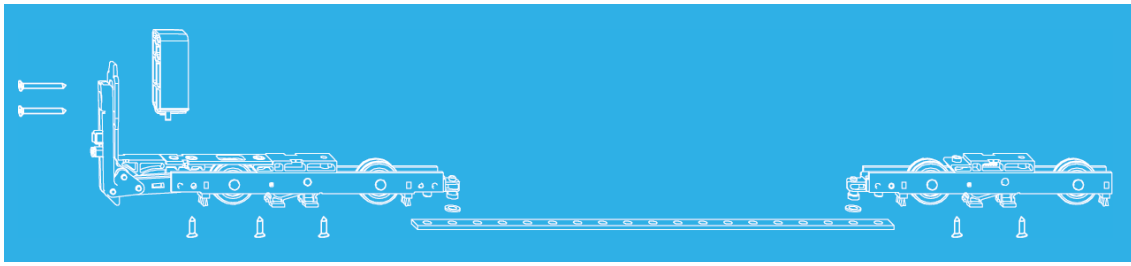
TECHNOLOGY IN MOTION

MACO RAIL-SYSTEMS

SLIDING HARDWARE





L&S Aluplast 85

ASSEMBLY INSTRUCTIONS
PVC

MACO
RAIL-SYSTEMS

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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/757813) as well as the conditions of our surface warranty for MACO TRICOAT-PLUS hardware (https://www.maco.eu/assets/757713).

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, ALUPLAST‘s 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 ALUPLAST 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



L&S Lift&slide unit



FH Sash height



FB Sash width



RAB Frame outer width



RAH Frame outer height

L **L** Total length



GM Handle height



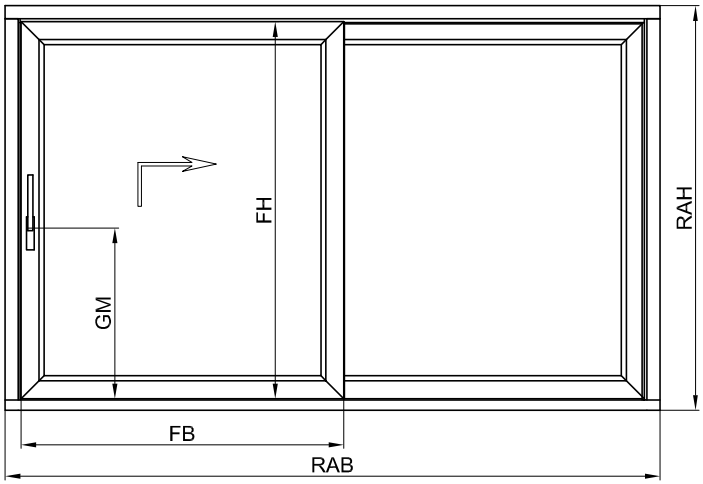
DM Backset drive gear



O Optional

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

Design and application range



System A



System D

System G



No locking on the frame profile is possible for system G. Locking takes place at the bottom locking block.

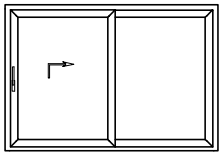
System C



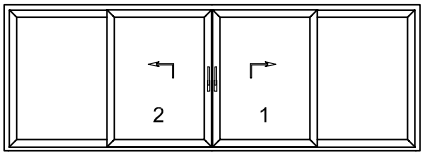
System F



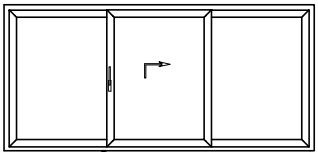
System A



System C



System G

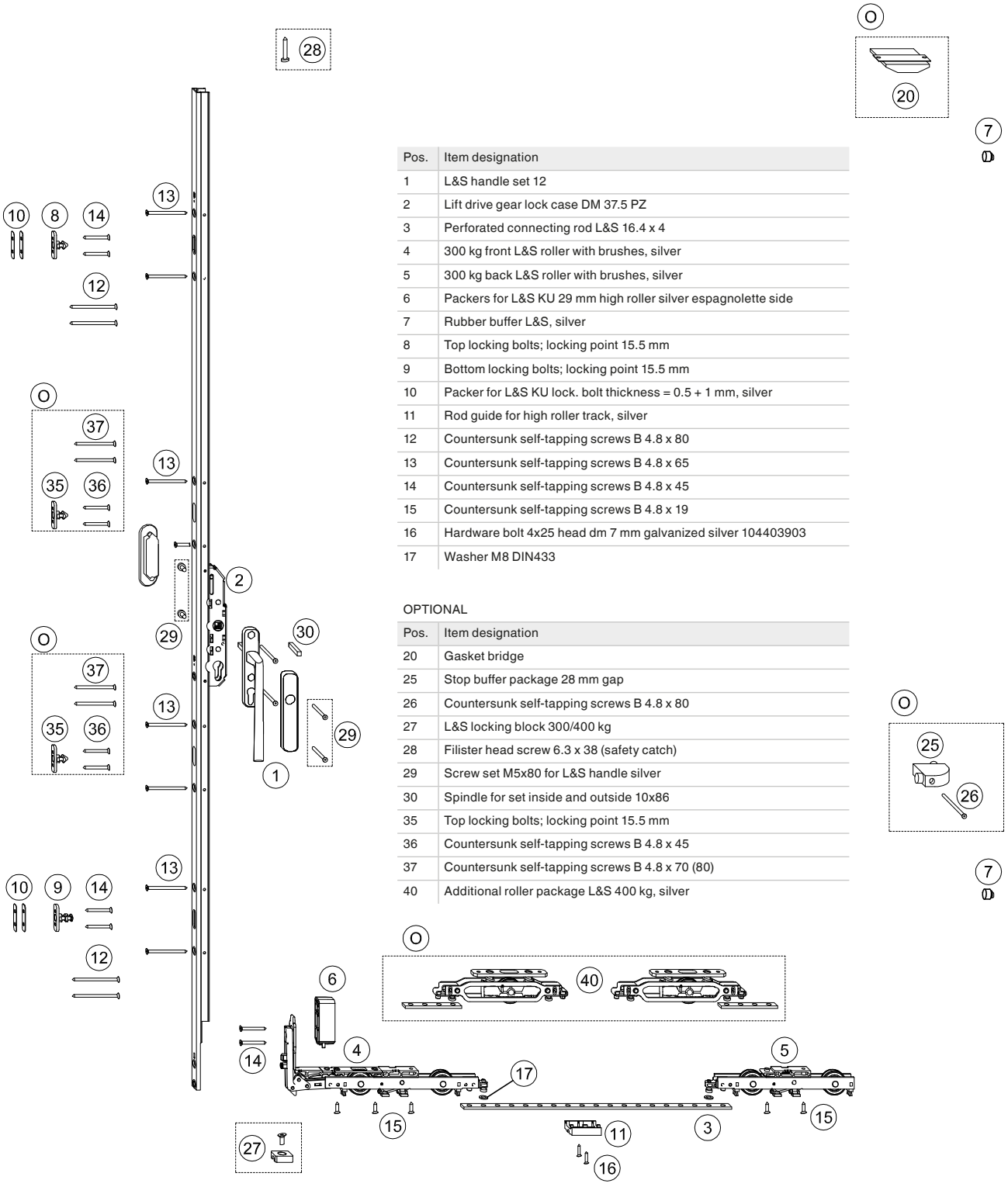


Application range

The application ranges stated in the table apply for Maco L&S 300.
The maximum application ranges and weights specified by the profile manufacturer apply when processing the profile and must be observed.

Designation	Unit	Department
FB	[mm]	705 - 3300
FH	[mm]	730 - 2840
RAB	[mm]	acc. to profile manufacturer's specifications
RAH	[mm]	860 - 2970
Weight of sliding sash	[kg]	300 (400)[1)]
DM	[mm]	39
GM drive gear size 1 - 2	[mm]	410
GM drive gear size 3 - 5	[mm]	1010
[1)] with additional roller		

Hardware combination

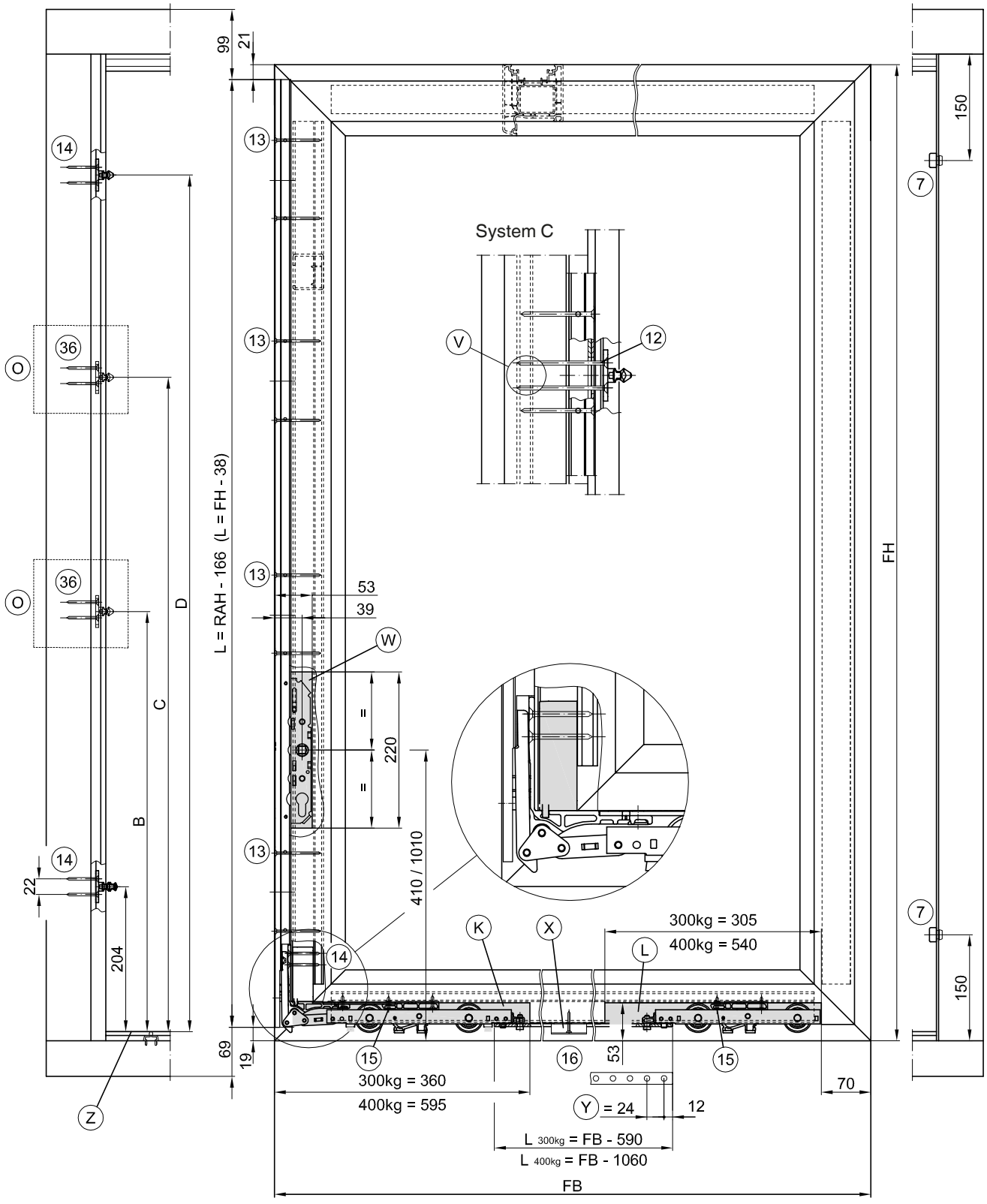


Pos.	Item designation
1	L&S handle set 12
2	Lift drive gear lock case DM 37.5 PZ
3	Perforated connecting rod L&S 16.4 x 4
4	300 kg front L&S roller with brushes, silver
5	300 kg back L&S roller with brushes, silver
6	Packers for L&S KU 29 mm high roller silver espagnolette side
7	Rubber buffer L&S, silver
8	Top locking bolts; locking point 15.5 mm
9	Bottom locking bolts; locking point 15.5 mm
10	Packer for L&S KU lock. bolt thickness = 0.5 + 1 mm, silver
11	Rod guide for high roller track, silver
12	Countersunk self-tapping screws B 4.8 x 80
13	Countersunk self-tapping screws B 4.8 x 65
14	Countersunk self-tapping screws B 4.8 x 45
15	Countersunk self-tapping screws B 4.8 x 19
16	Hardware bolt 4x25 head dm 7 mm galvanized silver 104403903
17	Washer M8 DIN433

OPTIONAL

Pos.	Item designation
20	Gasket bridge
25	Stop buffer package 28 mm gap
26	Countersunk self-tapping screws B 4.8 x 80
27	L&S locking block 300/400 kg
28	Filister head screw 6.3 x 38 (safety catch)
29	Screw set M5x80 for L&S handle silver
30	Spindle for set inside and outside 10x86
35	Top locking bolts; locking point 15.5 mm
36	Countersunk self-tapping screws B 4.8 x 45
37	Countersunk self-tapping screws B 4.8 x 70 (80)
40	Additional roller package L&S 400 kg, silver

Preparation



Preparation

Assemble the frame and sash according to Aluplast instructions. Drill all holes and mill all routings in the frame and sash.
The B4.8 DIN 7982 fixing screws for the fittings are generally pre-drilled with a Ø 4.2 drill in the area of the reinforcements.

Ⓥ = Drill through both reinforcement webs

Ⓦ = Gearbox routing 220 x 22 x 53 (L x W x D)

Ⓚ = L&S front roller routing 360 x 22 x 53 (L x W x D)

Ⓛ = L&S back roller routing 305 x 22 x 53 (L x W x D)

Ⓧ = Installation for SW sliding sash > 1,800, 1 x centred

Ⓨ = Hole spacing

Ⓩ = Top edge of roller track

Pos.	Item designation
12	Countersunk self-tapping screws B 4.8 x 80
13	Countersunk self-tapping screws B 4.8 x 65
14	Countersunk self-tapping screws B 4.8 x 45
15	Countersunk self-tapping screws B 4.8 x 19
16	Hardware bolt 4x25 head dm 7 mm galvanized silver
36	Countersunk self-tapping screws B 4.8 x 45

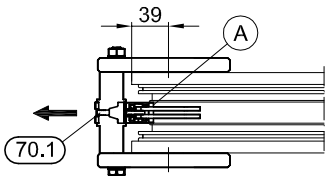
Drive gear	A	B	C	D
Size 1	204	-	-	594
Size 2	204	594	-	1109
Size 3	204	704	1194	1509
Size 4	204	704	1194	1909
Size 5	204	704	1194	2309

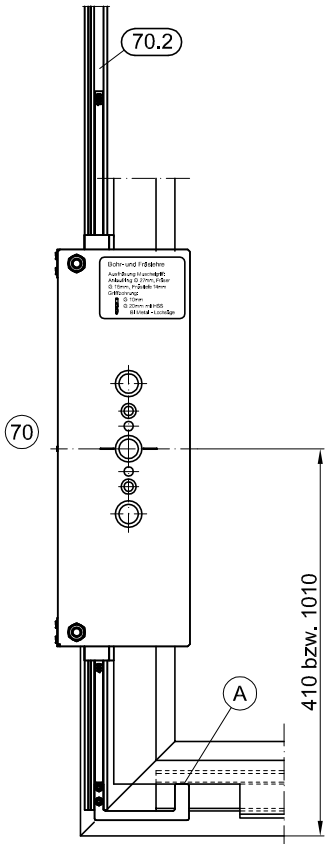
Drilling and milling on the casement

1. Mill the routings for the lift drive gear lock case and roller as shown on the drawing.
2. Set the jig stop, system A DIN left or DIN right and for second sash, system C.
   a. Raise the latching bolt (70.1) , pull the connecting rod (70.2) out of the guide.
   b. Turn the connecting rod 180° and reinsert it until the latching bolt engages.
3. Use the latching bolt to set the handle height (handle height 410 mm or 1010 mm).
4. Place the drilling and milling jig (70) onto the casement and fasten with clamps; stop on the base of the fitting groove.
5. Drill holes with Ø 20 at the handle position, and 2 x Ø 10 holes for the handle fixing screw.
6. Mill the routing for the finger pull on the outside of the casement.
7. Drill Ø 20 holes for profile cylinder using a bi-metal hole saw. Move the drilling jig down 16 mm and fix it using a Ø 10 mm mandrel. Drill second Ø 20 holes for the profile cylinder.

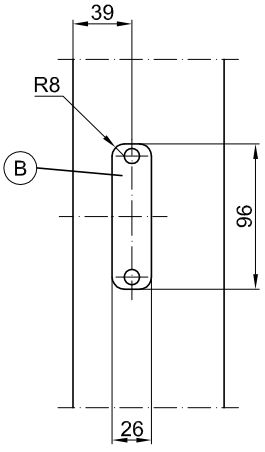
(A) = Stop edge jig

(B) = Routing with drilling and milling jig (70),
Ø 27 guide ring, Ø 16 milling cutter,
14 mm milling depth

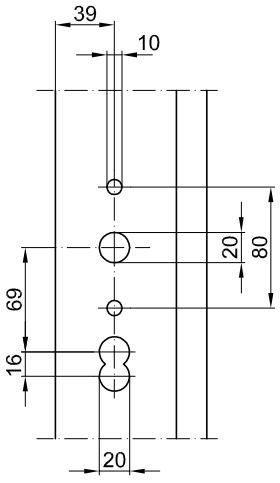




Outside of sliding sash
Routing for finger pull
short shown

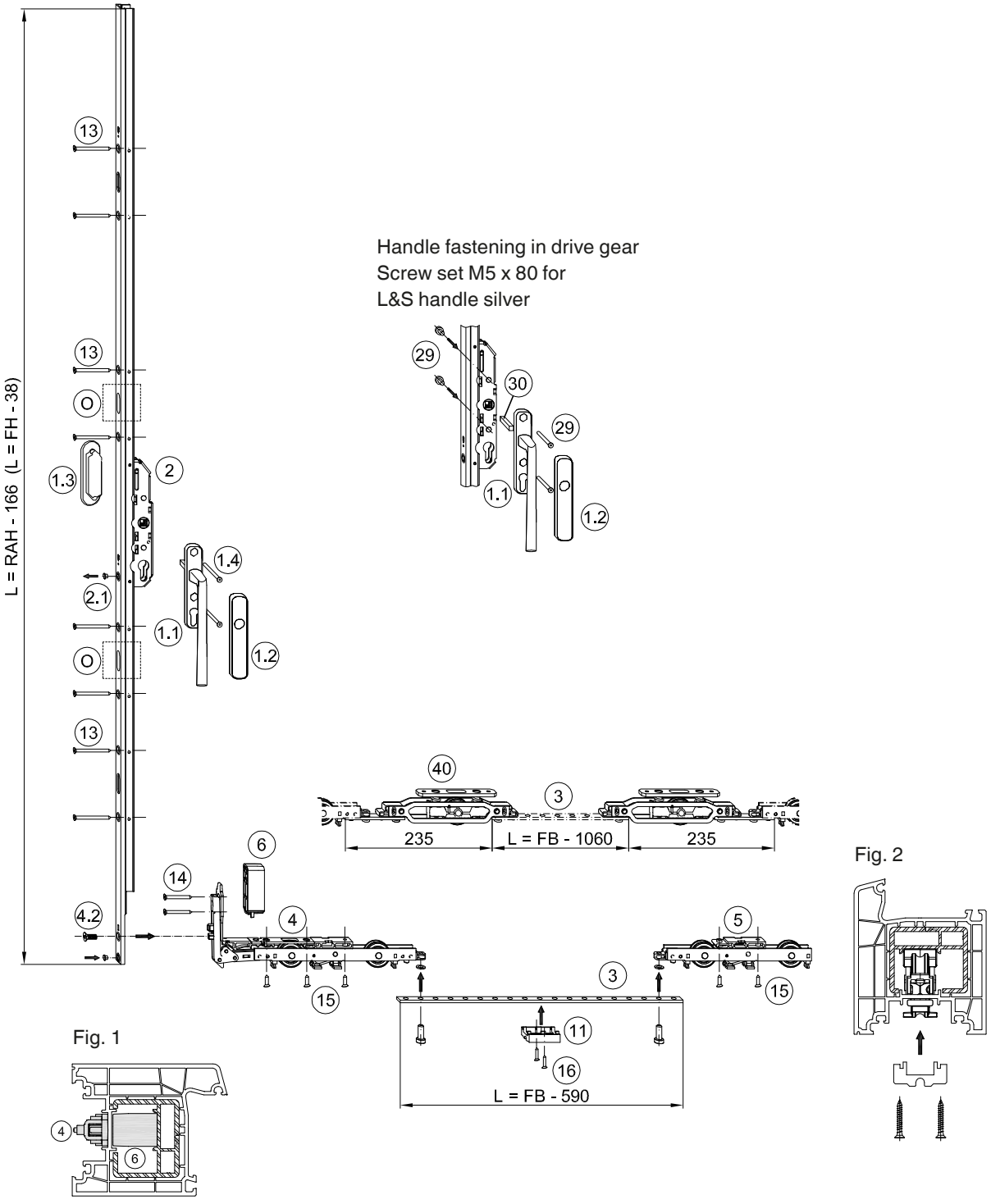


Inside of sliding sash
holes for L&S handle 08 with
profile cylinder shown



Notes

Casement installation



Casement installation

Step 1,
Installing the roller

1. Snap on the packer for L&S drive gear roller (6) from the back onto the roller at the front (4).
2. Cut the roller connecting rod to size (3) (L = FB - 590) in 24-mm lengths.
3. Connect the front roller (4) to the connecting rod and back roller (5).
4. Insert the complete roller unit, as shown in Fig. 1.
5. First screw the front roller in place (4) with B4.8 x 19 countersunk self-tapping screw (15) and then with
   B 4.8 x 45 (14). Fasten the back roller using B4.8 x 19 countersunk self-tapping screws (15).
6. From a sash width of 1.8 m, a centred silver rod guide for roller track (11) in the same length is to be used. Insert the rod guide into the fitting groove (Fig. 2) and fasten with 4 x 25 hardware bolt (16).

Step 2,
Installing the drive gear

1. Cut the lift drive gear lock case (2) to length (RAH - 166 / FH - 38) and bring to the locked position (handle up).
   For handle fastening in drive gear, press both counter nuts for the L&S handle (29) into the sleeves of the drive gear.
2. Remove the M5x10 countersunk head screw (4.2) from the front roller (4).
3. Insert the drive gear into the sash Eurogroove and couple to the corner element of the front roller, and fasten below with M5x10 countersunk head screw (4.2) . Fasten the drive gear in the area of the locking bolts using B4.8 x 65 countersunk self-tapping screws (13).

Step 3
Installing the top slider

Installation according to profile manufacturer's specifications, slider is part of the Aluplast scope of supply.

Step 4
Installing the L&S handle 12 with cover plate and short finger pull

1. Cut the countersunk screw and spindle to 90 mm length. Connect the L&S finger pull short (1.3)and handle back plate (1.1) using a M6 x 90 countersunk screw (1.4).
2. Clip the cover plate (1.2) onto the handle back plate.

Installing the L&S handle 12 with cover plate

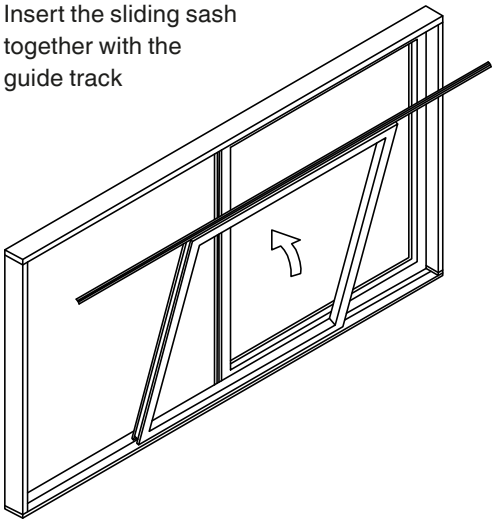
The handle is fastened directly to the drive gear using an M6 countersunk head screw (29). To do this, cut the screws to 60 mm length.

Caution:
For L&S handle 12 without cover plate, M6 x 80 screw set (29) and spindle (30)must be ordered.

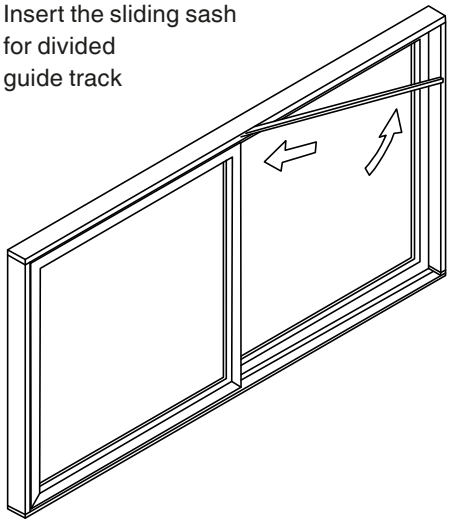
Frame installation

Installing the sliding sash

Insert the sliding sash
together with the
guide track



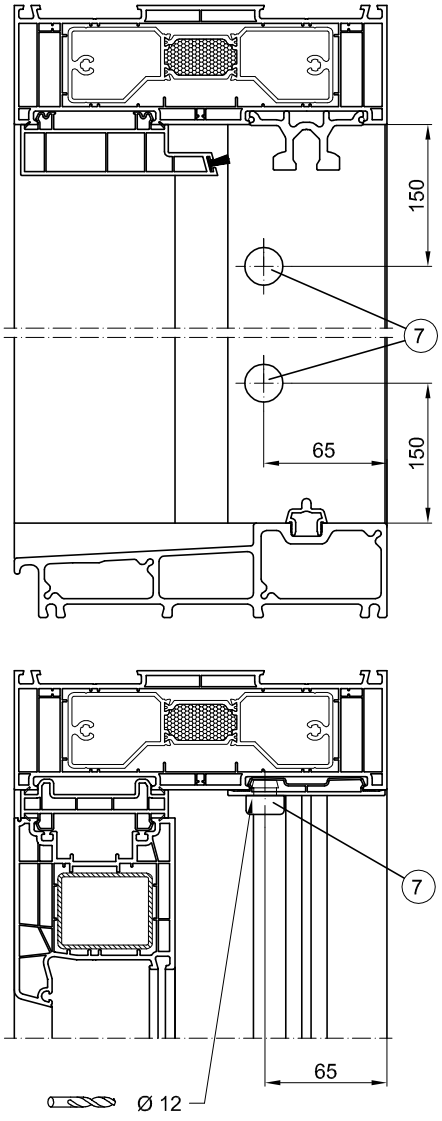
Insert the sliding sash
for divided
guide track



Frame installation

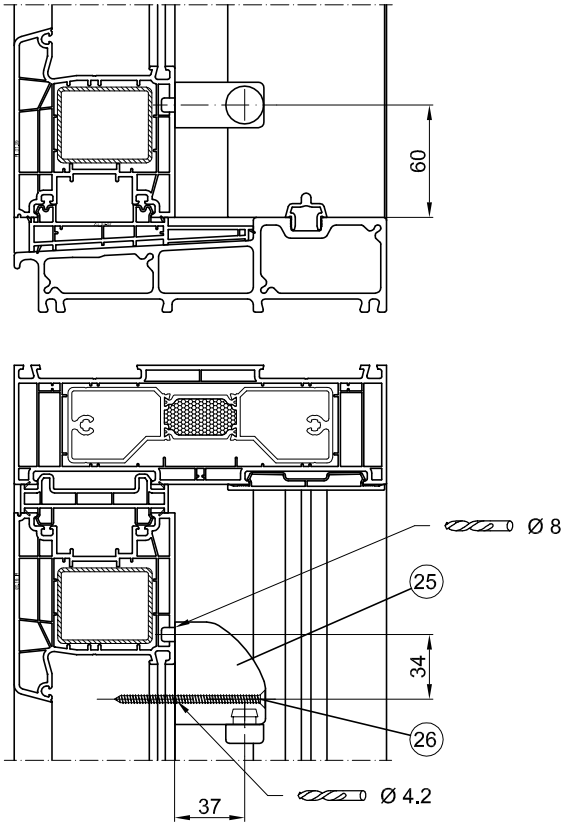
Installing the L&S rubber buffer (systems A, C and G)

1. Mark the holes for the L&S rubber buffer (7) on the frame, pre-drill with Ø 5 and rebore with Ø 12.
2. Press the L&S rubber buffer into the hole.



Installing the 28 mm stop buffer

1. Mark the holes for the 28 mm stop buffer (25) on the sash and drill with Ø 4.2 or Ø 8.
2. Place the stop buffer onto the sash and screw in place with B 4.8 x 80 countersunk self-tapping screws (26).

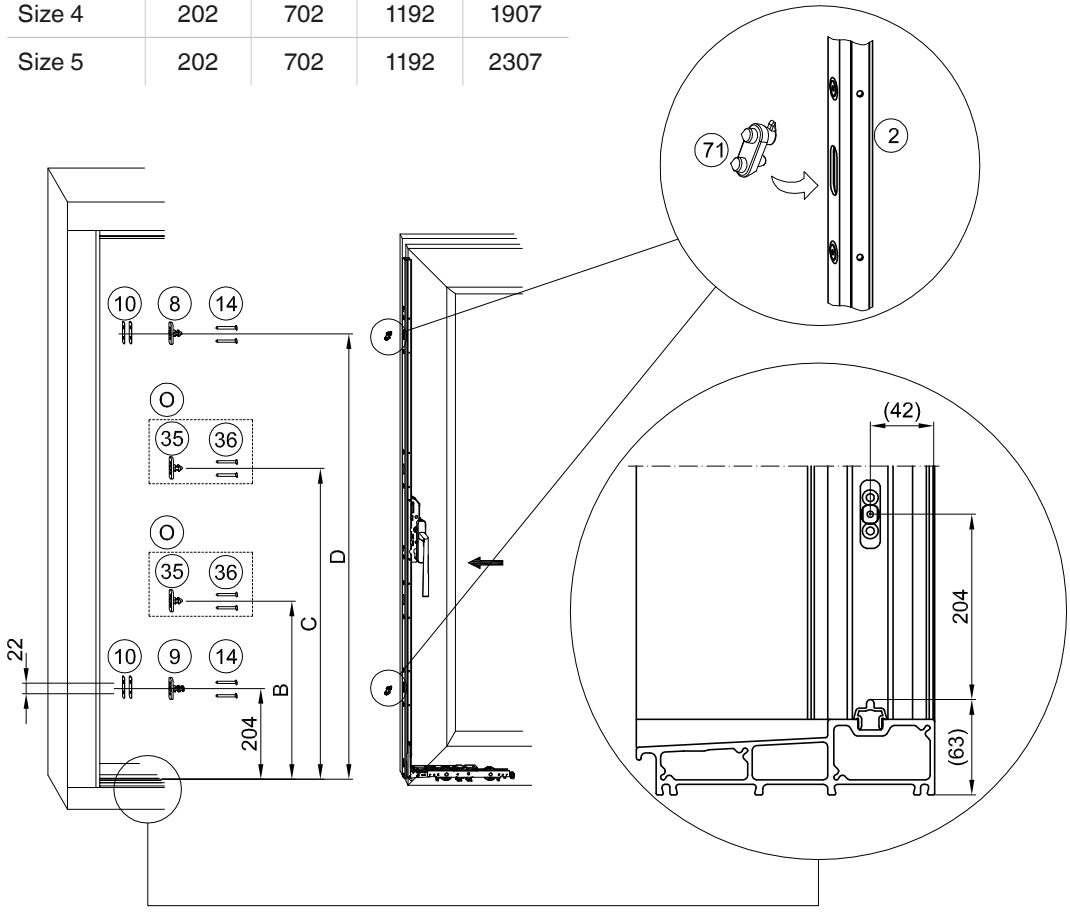


Installing on the frame

Installing the locking bolts, systems A and D

1. Bring the sash into the sliding position (handle down).
2. Insert the marking punch (71) into the latch points of the drive gear (2).
   Optional: For more than two locking points, remove the pre-stamped cover sheet from the drive gear faceplate.
3. Slide the sliding sash against the frame and press against the punch of the fixing screw position.
4. Drill the holes at the punch mark using a Ø 4.2 drill.
5. Fasten the locking bolts (8) and (9) with B4.8 x 45 countersunk self-tapping screws (14).
   The gasket compression of the seal can be adapted using packers for locking bolts (10).

Drive gear	A	B	C	D
Size 1	202	-	-	592
Size 2	202	592	-	1107
Size 3	202	702	1192	1507
Size 4	202	702	1192	1907
Size 5	202	702	1192	2307



Frame installation

Installing the locking bolts for sash 2, systems C and F

1. Bring the sash (G) into the sliding position (handle down).
2. Cut the profile strip (I) (scope of supply of the profile manufacturer) to length according to the profile manufacturer's specifications, detach as shown in Fig. 3 and attach to the sash (G).
3. Bring the drive gear from the sash (H) into the sliding position (handle down).
   Insert the marking punch (71) into the latch points of the drive gear.
   Optional: For more than two locking points, remove the pre-stamped cover sheet from the drive gear faceplate.
4. Slide the sliding sash (H) against the sash (G) and press against the punch of the catch bolt hole.
5. Drill the holes at the punch mark using a Ø 4.2-mm drill through the profile strip and the sash reinforcement (G).
6. Screw the locking bolts (8) and (9) with B4.8 x 80 countersunk head screws (12) through the profile strip and drive gear into the reinforcement. The gasket compression of the seal can be adapted using packers for locking bolts (10).

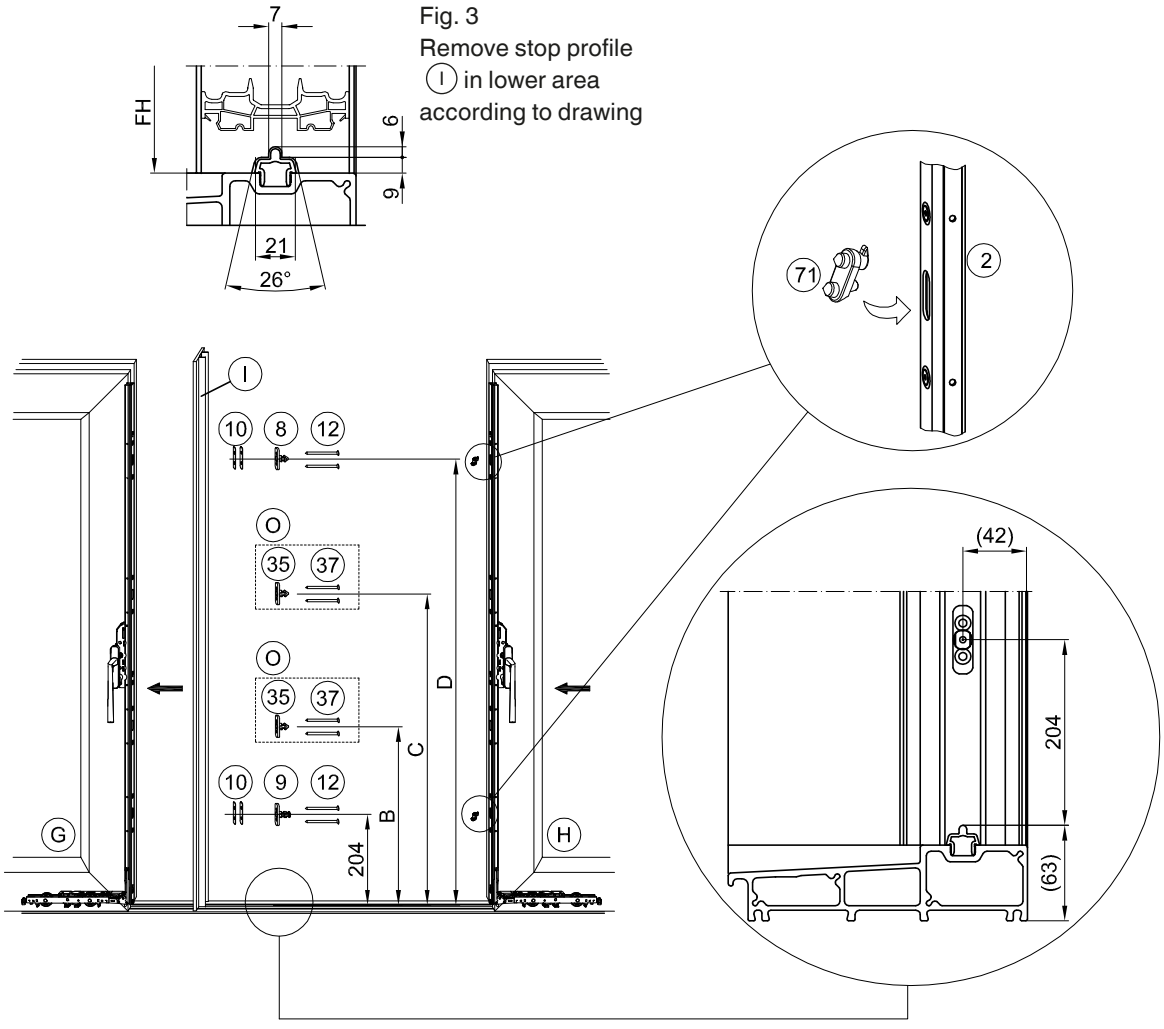


Fig. 3
Remove stop profile (I) in lower area according to drawing

Installing on the frame

7. Installation of L&S locking block
   a. Mark the frame centre (RAB/2)
   b. Position the locking block (27) on the roller track (32 mm), and drill with Ø 3.
   c. Fasten the locking block to the roller track using an M4x12 countersunk head screw.
8. The first and second sash must be marked to prevent mishandling.

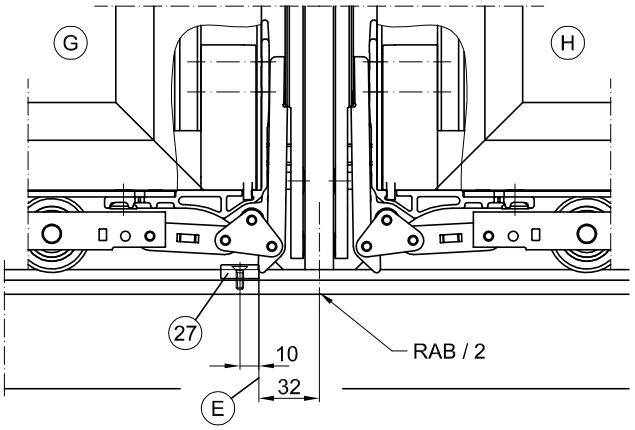
   Open: the first sash first
   followed by the second sash

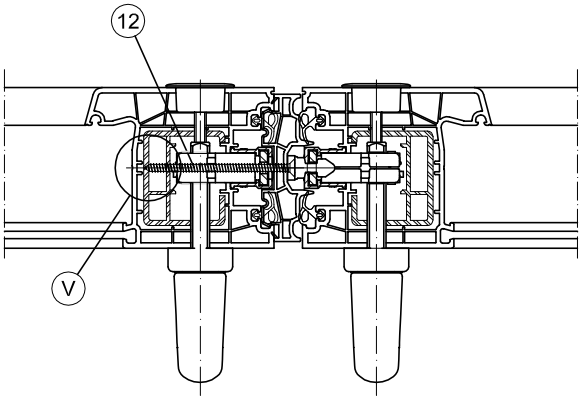
   Close: in the reverse order

   The operation sticker is included in the package

(E) = Front edge of locking block

(V) = Drill through both reinforcement webs





Installing on the frame

Locking, system G

1. Close the sash
2. Transfer the 24 mm from the front edge of the drive gear faceplate to roller track
3. Place the locking block (27) onto the roller track and drill with Ø 3.
4. Fasten the locking block to the roller track using an M4x12 countersunk head screw.
5. Cut the cover strip (J) (scope of supply of the profile manufacturer) to length according to the profile manufacturer's specifications, detach as shown in Fig. 4 and attach to the sash.
6. Drill the safety catch B6.3 x 38 filister head screw (28) approx. 50 mm from front edge of sash on the frame and screw with Ø 5.5.

(E) = Front edge of locking block

(F) = Front edge of drive gear faceplate

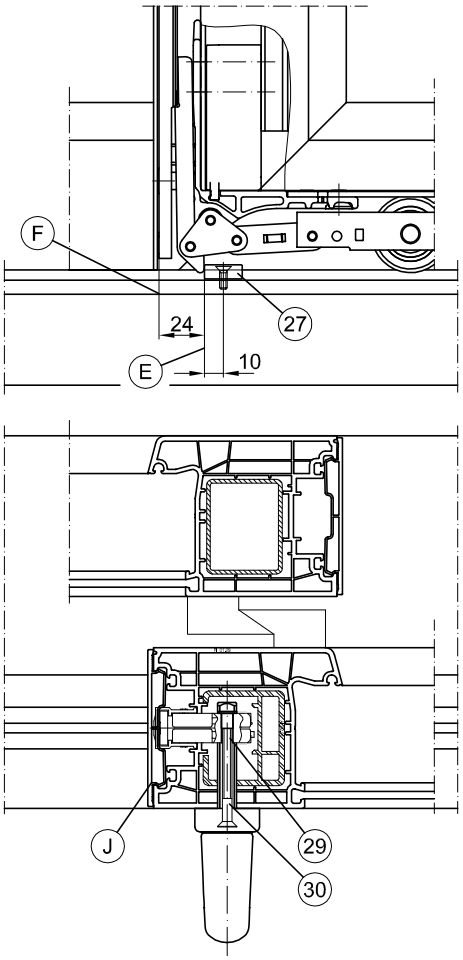
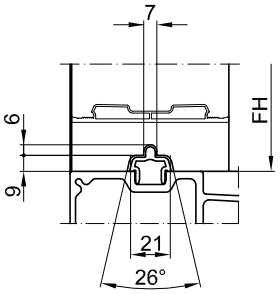
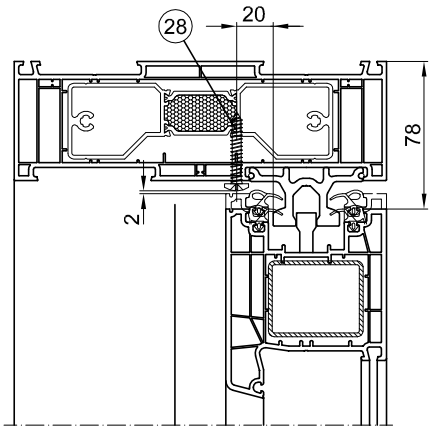


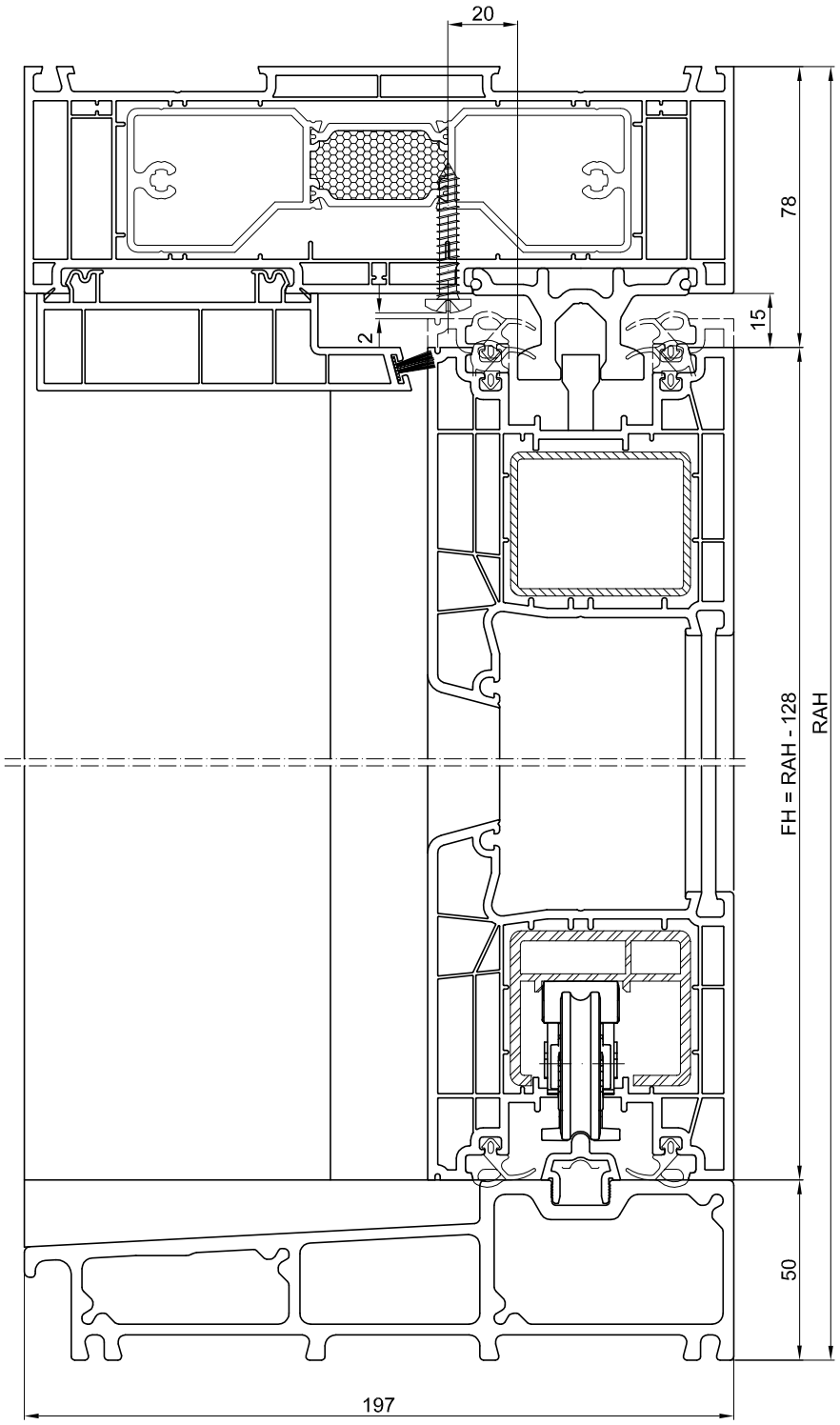
Fig. 4
Remove cover strip (J)
in lower area according to drawing





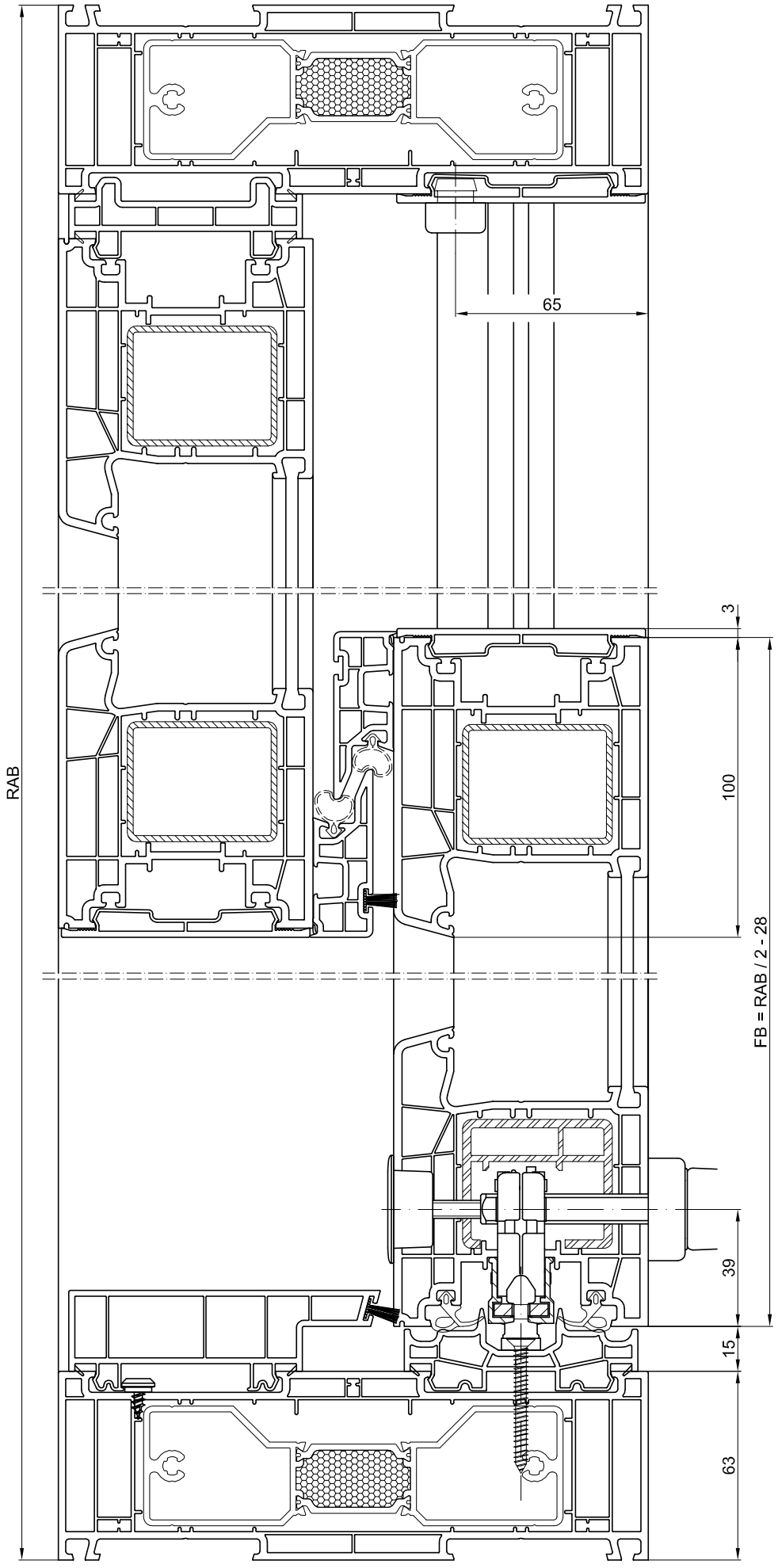
Vertical section

M 1:2



Horizontal section

M 1:2



Notes

Notes

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