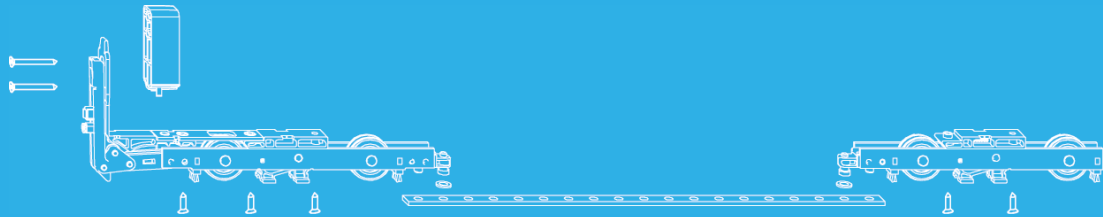
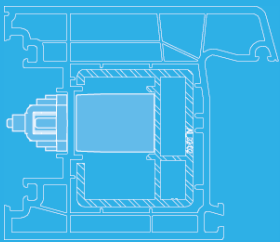


TECHNOLOGY IN MOTION



MACO RAIL-SYSTEMS

SLIDING HARDWARE



L&S Aluplast 85

ASSEMBLY INSTRUCTIONS
PVC



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Key



L&S Lift&slide unit



FH Sash height



FB Sash width



RAB Frame outer width



RAH Frame outer height



L Total length



GM Handle height

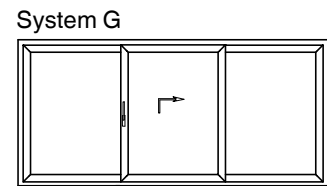
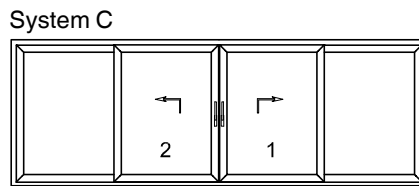
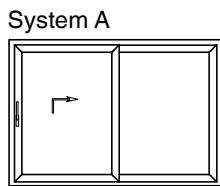
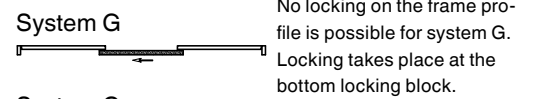
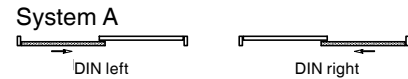
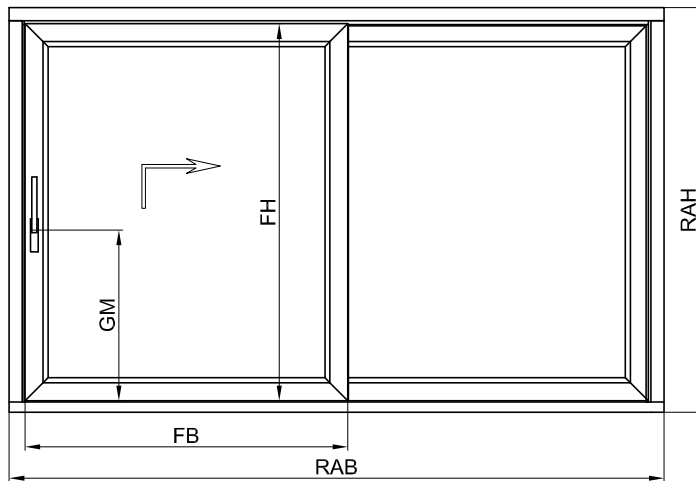


DM Backset drive gear



O Optional

Design and application range



Application range

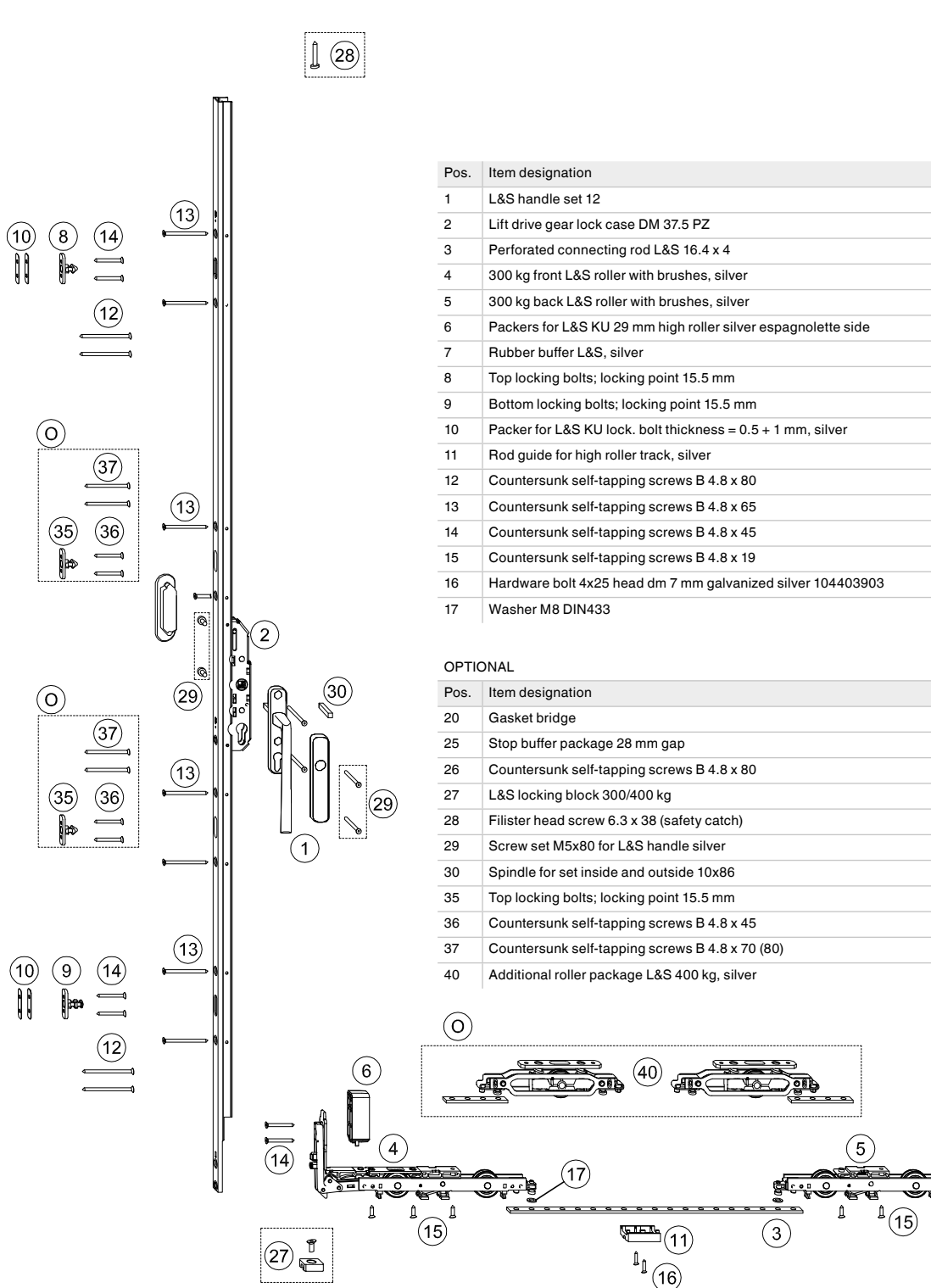
The application ranges stated in the table apply for Maco L&S 300.

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		



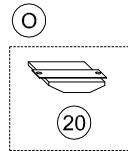
Hardware combination



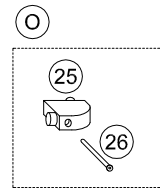
Pos.	Item designation
1	L&S handle set 12
2	Lift drive gear lock case DM 37.5 PZ
3	Perforated connecting rod L&S 16.4 x 4
4	300 kg front L&S roller with brushes, silver
5	300 kg back L&S roller with brushes, silver
6	Packers for L&S KU 29 mm high roller silver espagnolette side
7	Rubber buffer L&S, silver
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

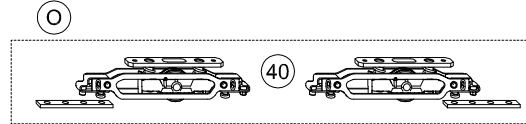
Pos.	Item designation
20	Gasket bridge
25	Stop buffer package 28 mm gap
26	Countersunk self-tapping screws B 4.8 x 80
27	L&S locking block 300/400 kg
28	Filister head screw 6.3 x 38 (safety catch)
29	Screw set M5x80 for L&S handle silver
30	Spindle for set inside and outside 10x86
35	Top locking bolts;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



7
D



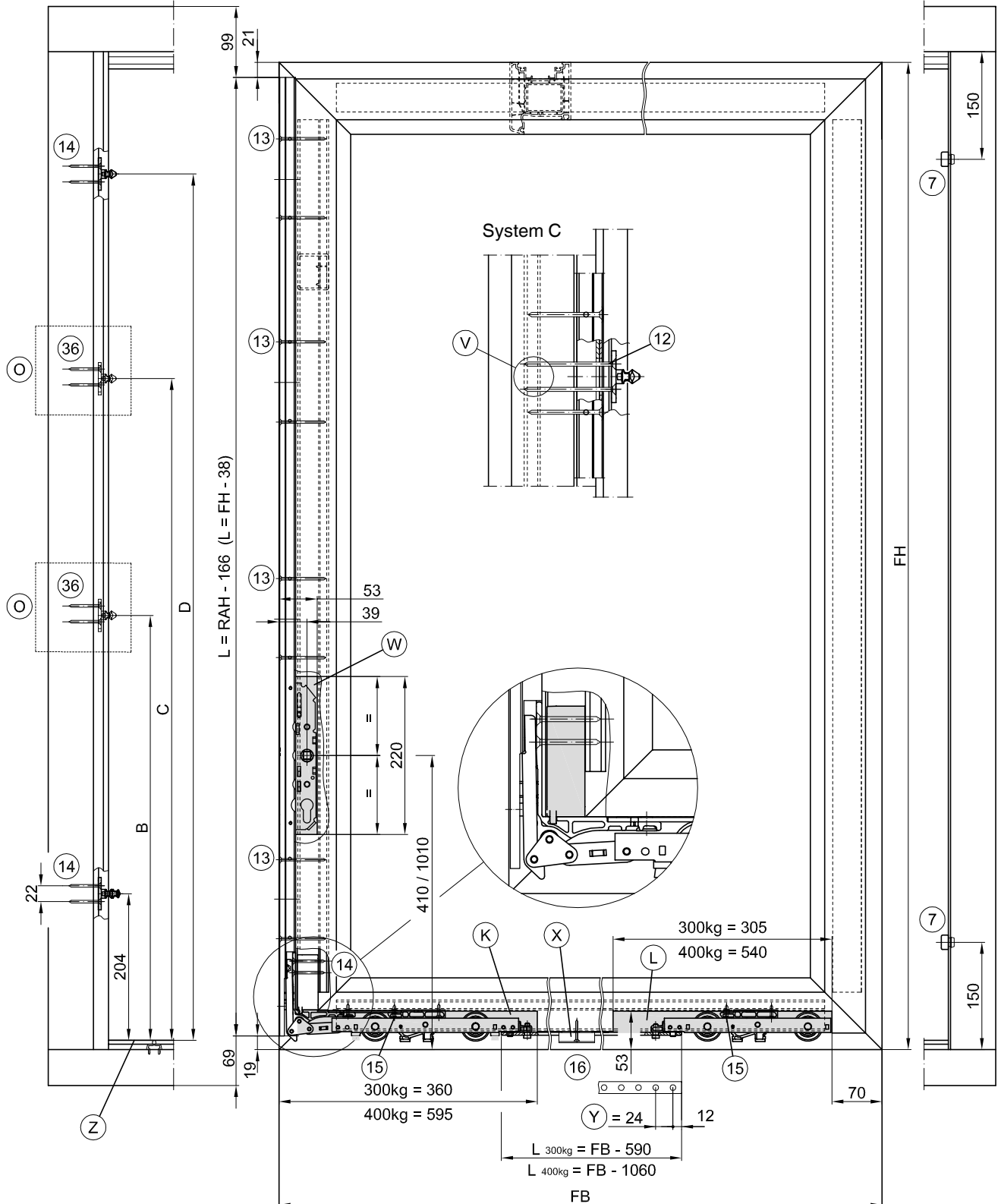
7
D



7
D



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

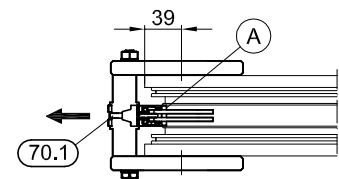


Drilling and milling on the casement

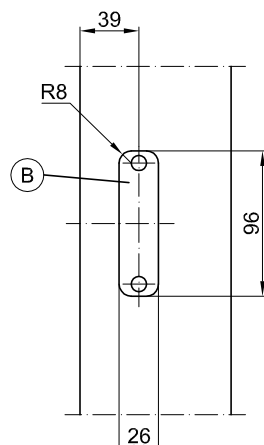
1. Mill the routings for the lift drive gear lock case and roller as shown on the drawing.
2. Set the jig stop, system A DIN left or DIN right and for second sash, system C.
 - a. Raise the latching bolt (70.1), pull the connecting rod (70.2) out of the guide.
 - b. Turn the connecting rod 180° and reinsert 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 $\varnothing 20$ at the handle position, and 2 x $\varnothing 10$ holes for the handle fixing screw.
6. Mill the routing for the finger pull on the outside of the casement.
7. Drill $\varnothing 20$ holes for profile cylinder using a bi-metal hole saw. Move the drilling jig down 16 mm and fix it using a $\varnothing 10$ mm mandrel. Drill second $\varnothing 20$ holes for the profile cylinder.

(A) = Stop edge jig

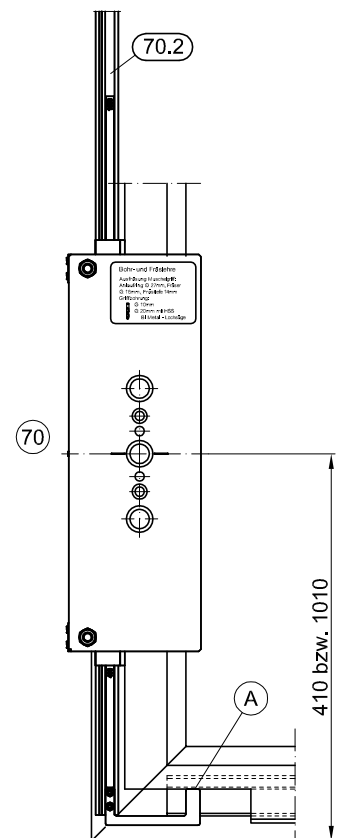
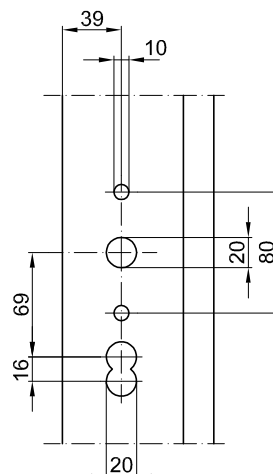
(B) = Routing with drilling and milling jig (70),
 $\varnothing 27$ guide ring, $\varnothing 16$ milling cutter,
14 mm milling depth



Outside of sliding sash
Routing for finger pull
short shown



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



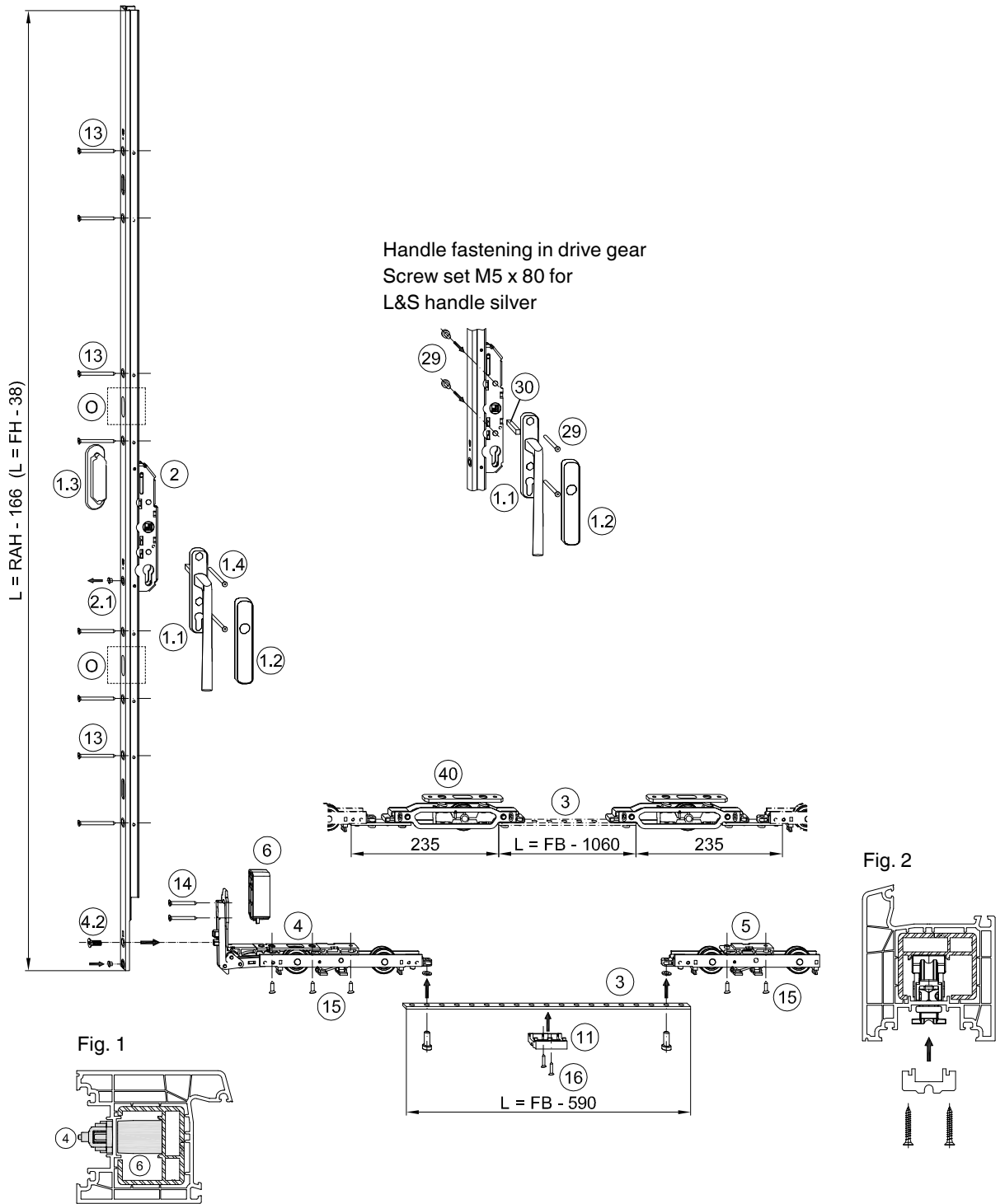


Notes

A large rectangular area filled with a fine grid pattern, intended for taking notes or technical drawings.



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:

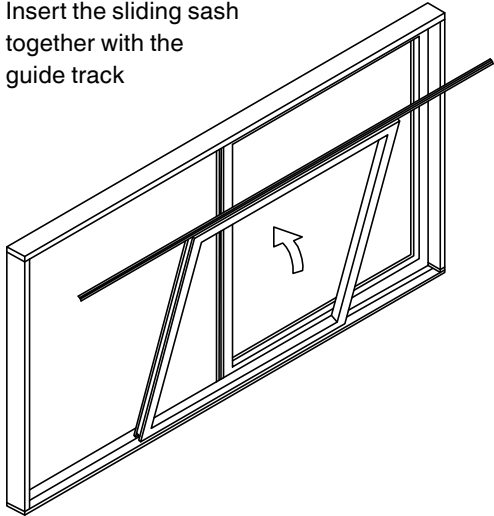
For L&S handle 12 without cover plate, M6 x 80 screw set (29) and spindle (30) must be ordered.



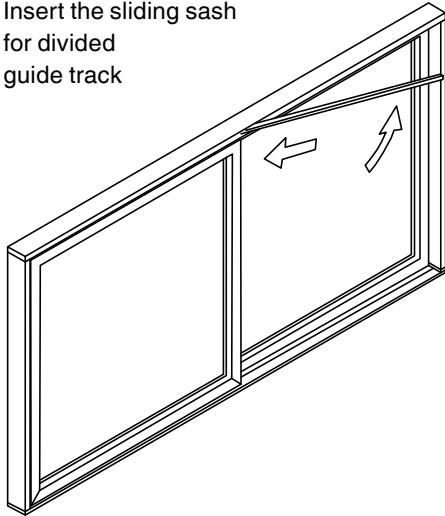
Frame installation

Installing the sliding sash

Insert the sliding sash together with the guide track



Insert the sliding sash for divided guide track

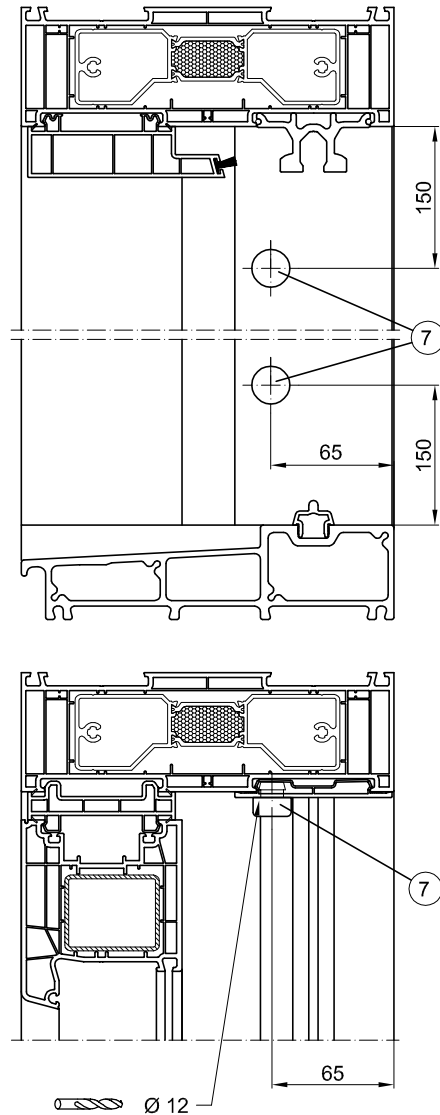




Frame installation

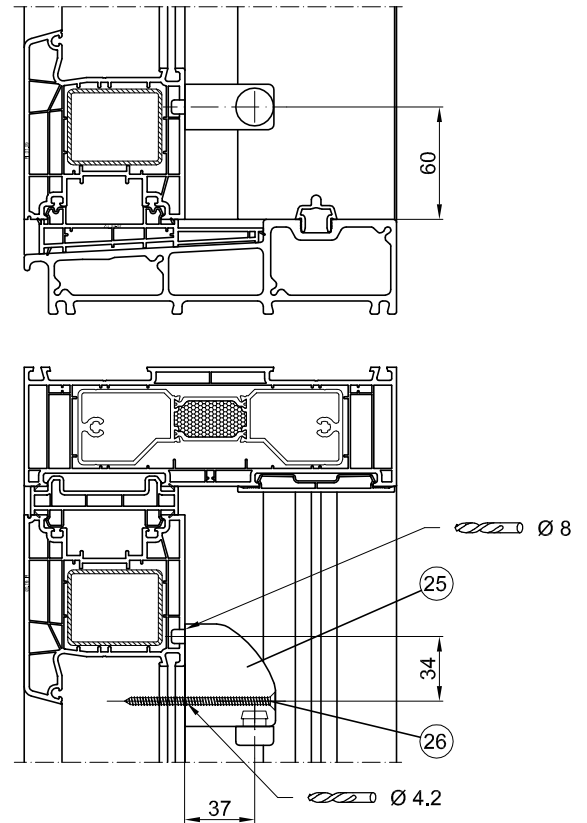
Installing the L&S rubber buffer (systems A, C and G)

1. Mark the holes for the L&S rubber buffer (7) on the frame, pre-drill with $\varnothing 5$ and rebore with $\varnothing 12$.
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 $\varnothing 4.2$ or $\varnothing 8$.
2. Place the stop buffer onto the sash and screw in place with B 4.8 x 80 counter-sunk self-tapping screws (26).



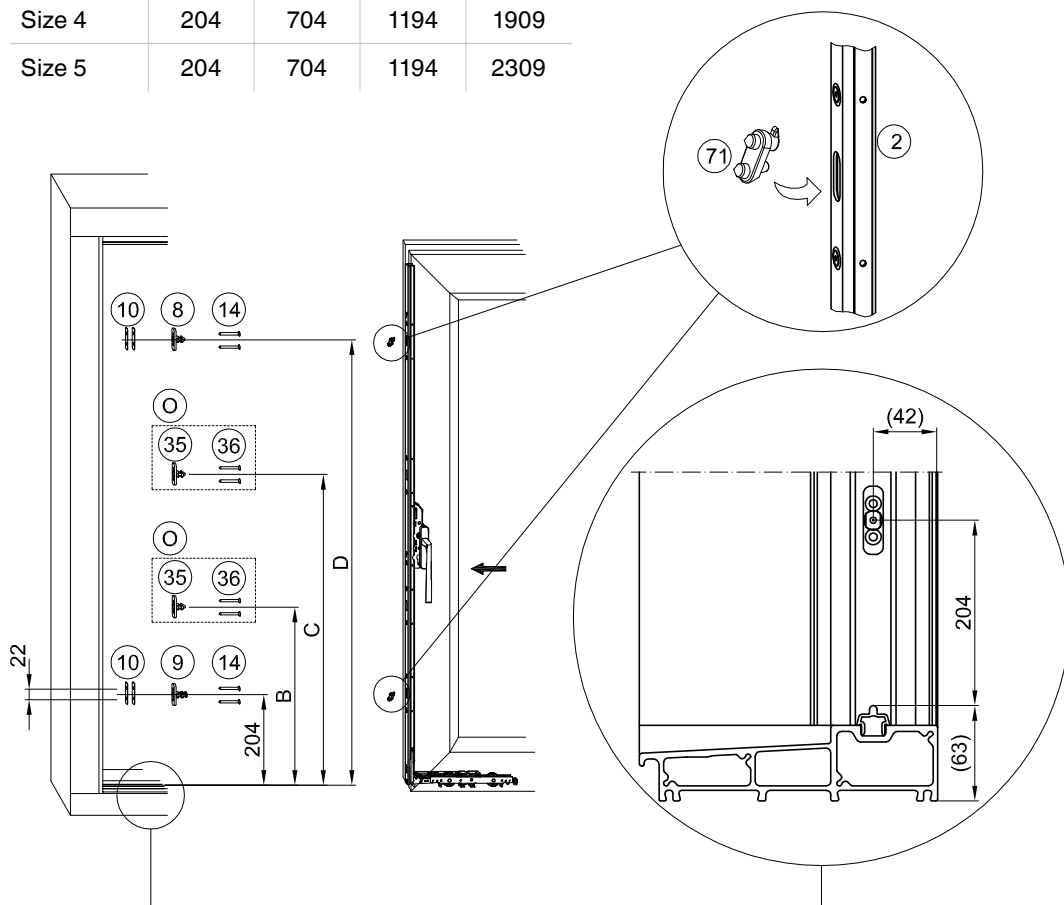


Installing on the frame

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 $\varnothing 4.2$ 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	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





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 $\varnothing 4.2$ -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).

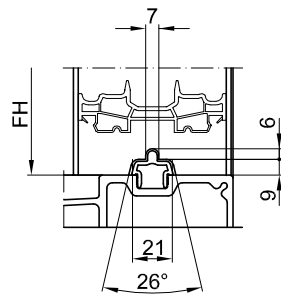
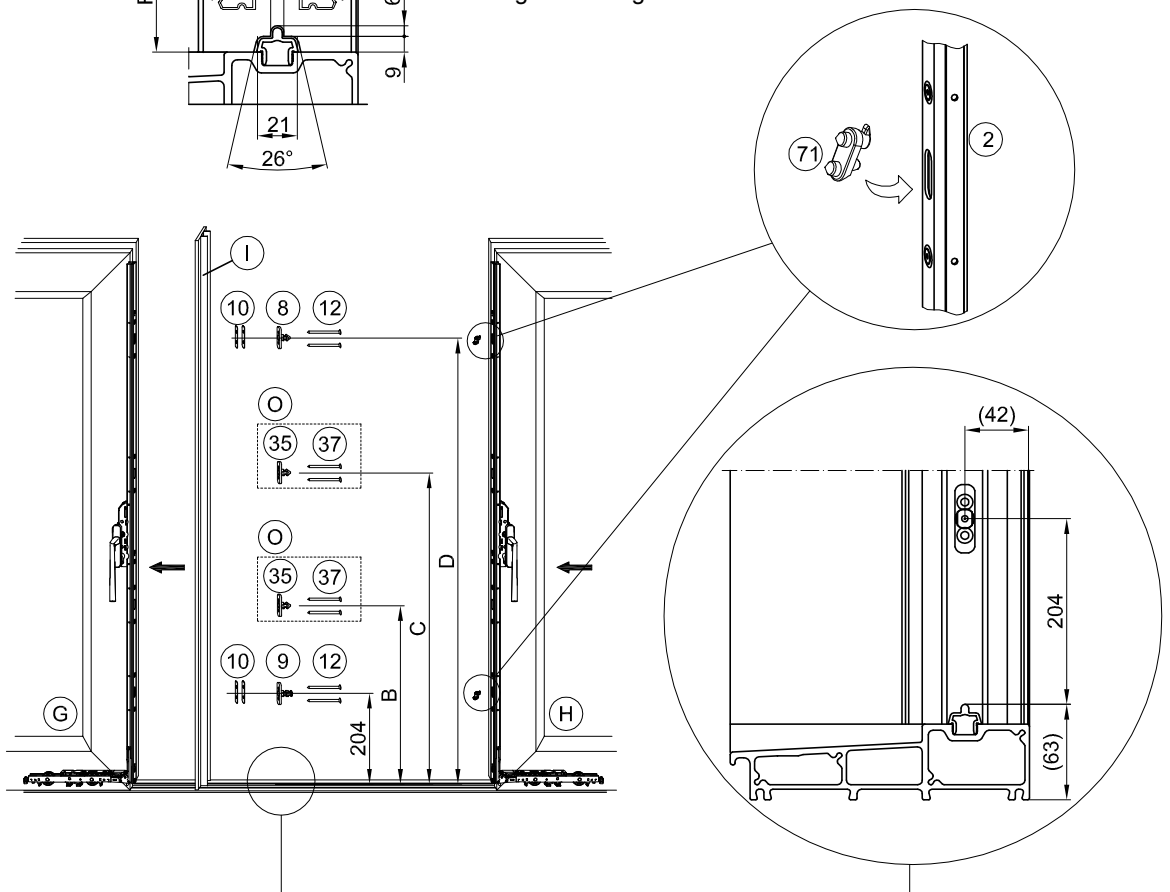


Fig. 3
Remove stop profile
(I) in lower area
according to drawing





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 $\varnothing 3$.
 - 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.

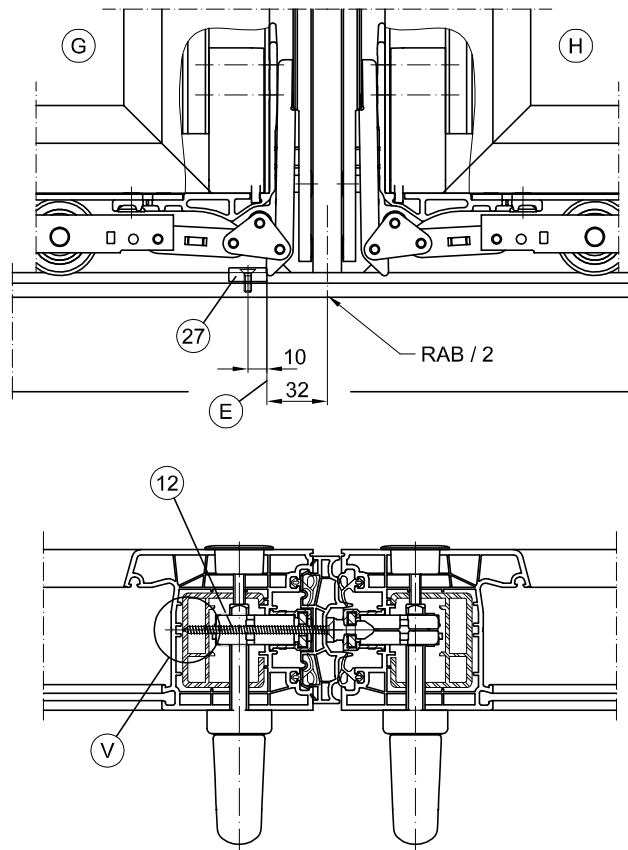
Open: the first sash first
followed by the second sash

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 $\varnothing 3$.
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 $\varnothing 5.5$.

(E) = Front edge of locking block

(F) = Front edge of drive gear faceplate

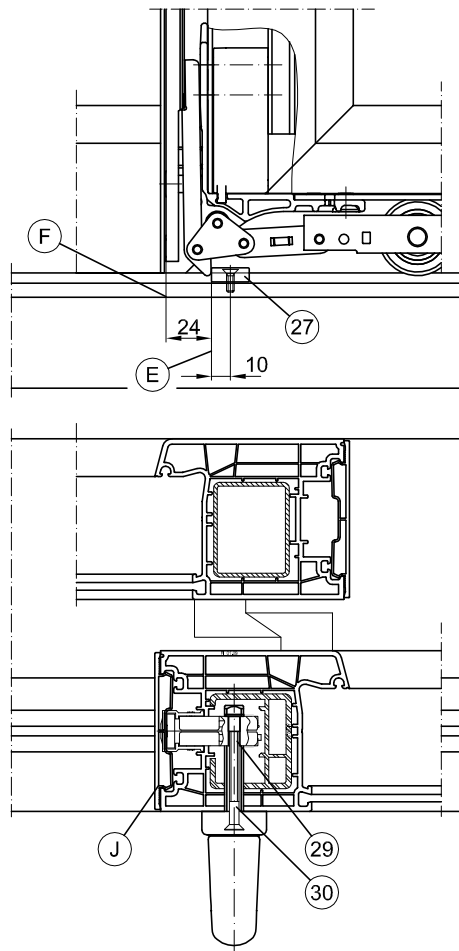
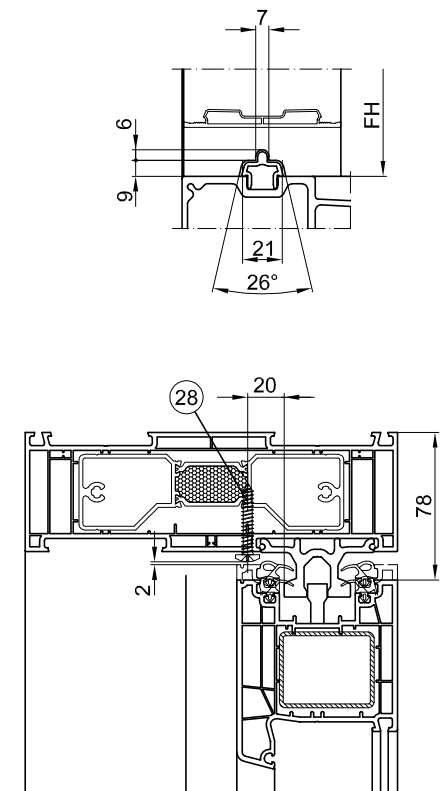


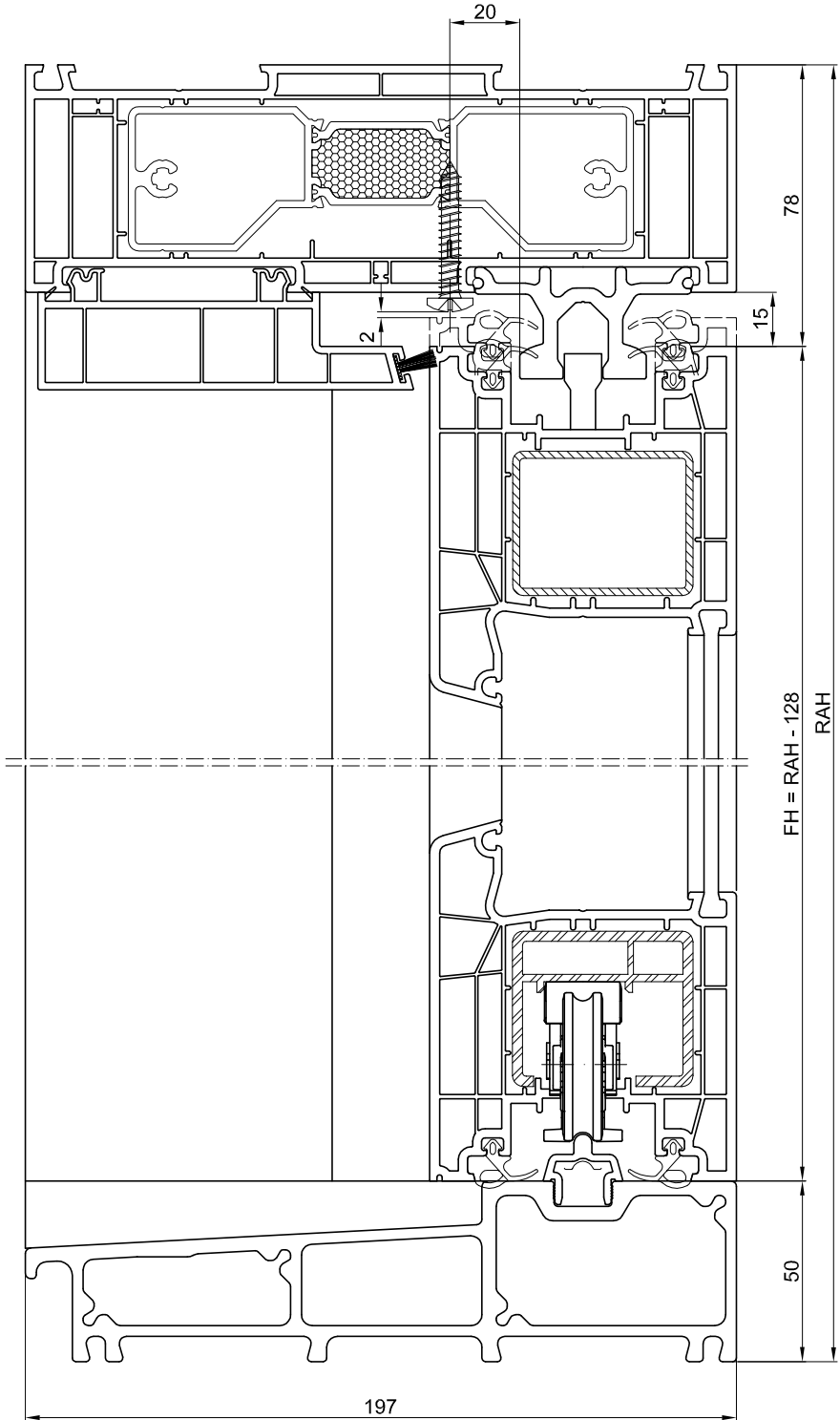
Fig. 4
Remove cover strip (J)
in lower area according to
drawing





Vertical section

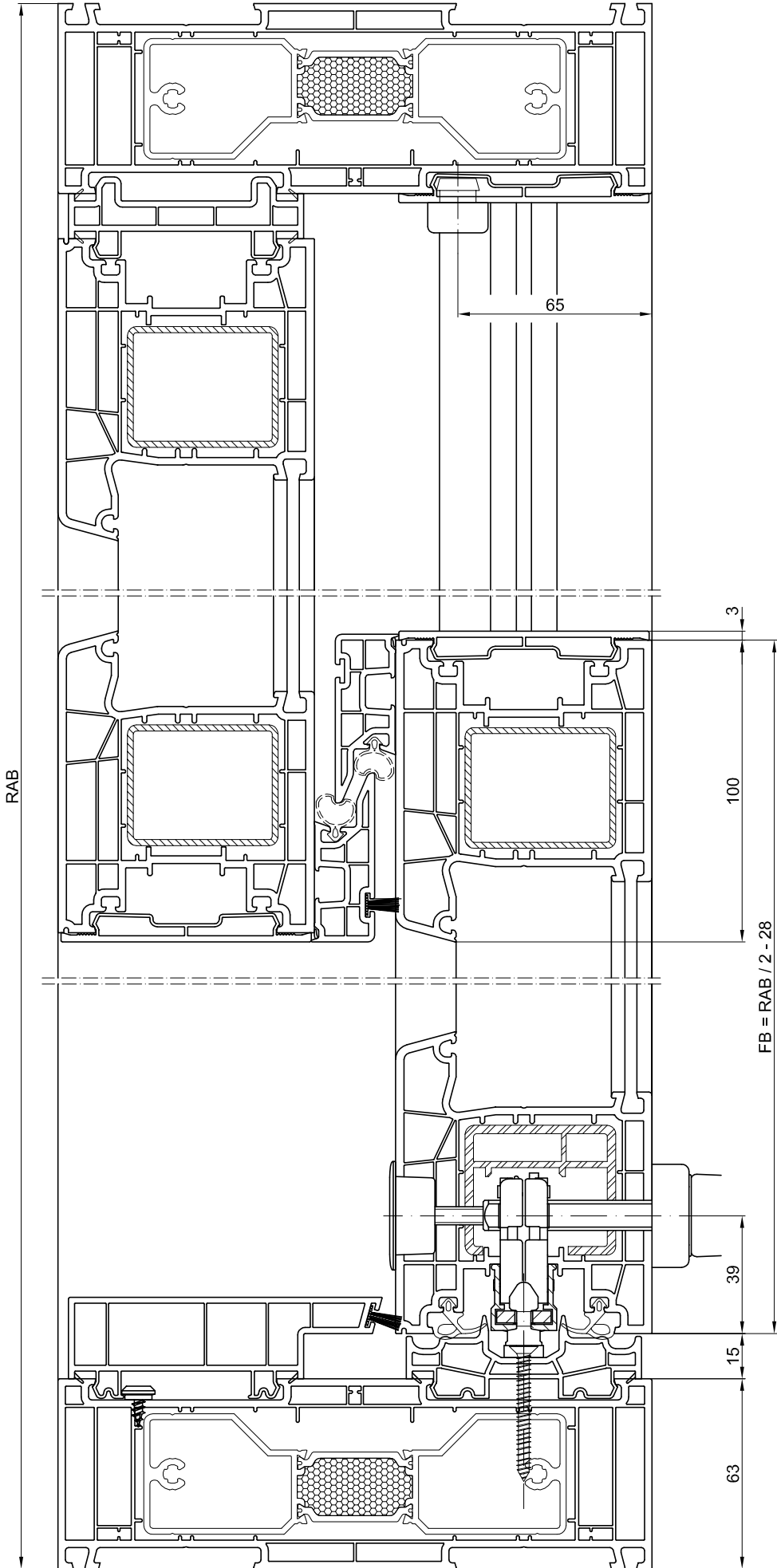
M 1:2



**MACO
RAIL-SYSTEMS**

Horizontal section

M 1:2





Important information

- For MACO L&S lift&slide door fittings, the application ranges stated on page 4 must not be exceeded. In addition, the Aluplast specifications, in particular for possible restrictions for sash dimensions and sash weight shall apply to the lift&slide door fittings. If special production regulations or processing guidelines exist, these must be observed. Specifications for screw in speeds and torques must be observed.
- The fittings described in these assembly instructions are made of non-corrosive material or of steel that has been galvanised and passivated and sealed according to DIN EN 12329. They must not be used in environments that contain aggressive, corrosion-promoting air.
- Make the entire hardware only from MACO fittings and the specified accessories from Aluplast. Failure to do so can result in damage for which we cannot accept any liability whatsoever.
- Mount all fittings properly as described in these instructions and observe all safety instructions.
- Use the screw sizes specified.
- Insert the screws straight (if not otherwise specified) and do not over-tighten them, since this would otherwise adversely affect the smooth running of the hardware.
- Fasten the screws of load-bearing components (e.g. roller, roller track and guide track) into the reinforcement profile.
- Make sure there is a positive transfer of pressure forces onto the reinforcement profile in the area of the roller.
- The surfaces of the lift&slide units may only be treated prior to installation of the hardware components. Later surface treatment can limit the functionality of the hardware components. In this case, all warranty claims against the hardware manufacturer shall become void
- When blocking glazing units, observe Technical Guideline No. 3 of the Glass Trade "Klotzung von Verglasungseinheiten" (Blocking of glazing units).
- Do not use cross-linked acidic sealing compounds, since these can cause corrosion in the hardware components.
- Keep the cusps of the roller track and/or the threshold and all rebates free from deposits and contamination, particularly cement or plaster residue. Avoid direct humidity on the hardware and contact with acidic cleaning agents.
- Observe the "Guideline/advice on the product and on liability (VHBE)"



Important information

- Attach the operation sticker so that it is easily visible on the installed lift&slide sash. The operation sticker can be found in the basic pack.
- Do not make any structural changes to the hardware components.
- If the L&S fittings are subjected to excessive loads or not operated properly, the sash can pop out of its guide, fall out and thereby cause severe injuries. If excessive loads on the L&S unit are to be expected in special circumstances (in schools, nursery schools, etc.), suitable measures must be adopted to prevent this.

For example

- Moving the stop buffer to reduce the opening width or
- Installing a profile cylinder to prevent unauthorized use.

If in doubt, please ask your MACO contact person.

Liability exclusion

We shall not be liable for malfunctions and damage to the fittings and/or to Lift&Slide units equipped with these, if this has been caused by inadequate tendering procedures, non-compliance with these installation instructions, or physical force applied to the fittings (e.g. due to improper use).



Notes

A large rectangular area filled with a fine grid pattern, intended for taking notes. The grid consists of small, uniform squares.



Notes

A large rectangular area filled with a fine grid pattern, intended for taking notes or technical drawings.

**MACO
RAIL-SYSTEMS**



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