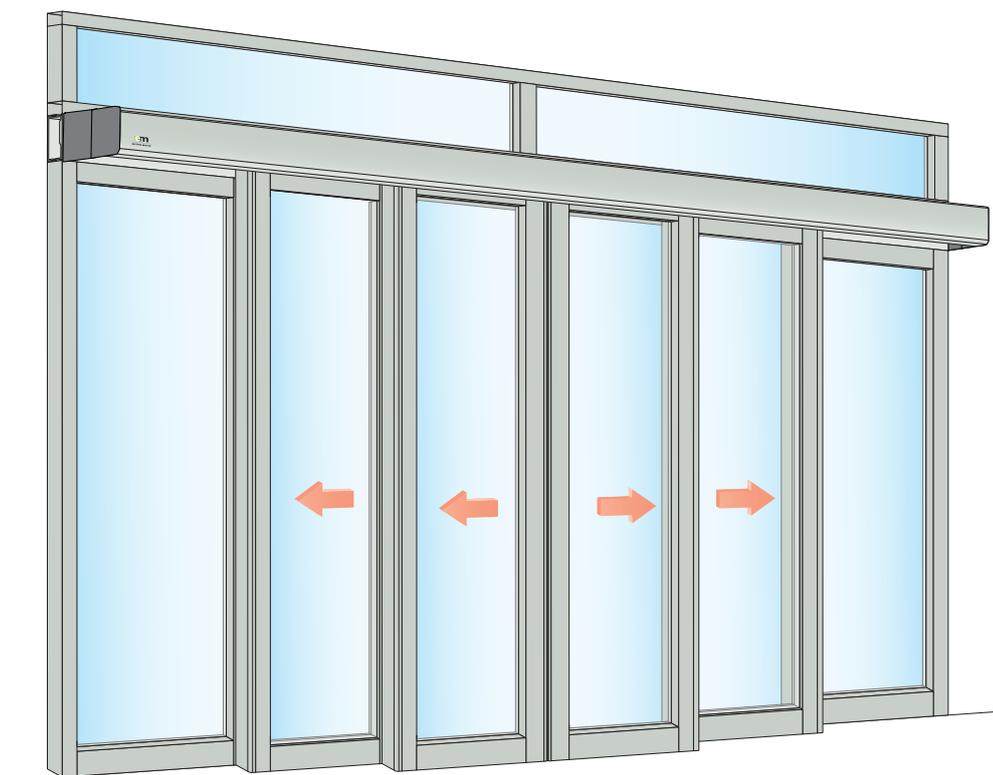


Sliding Door Operator EM PSL150-T



Installation and Service Manual Original instructions

© All rights in and to this material are the sole property of Entrematic Nordic AB. Copying, scanning, alterations or modifications are expressly forbidden without the prior written consent of Entrematic Nordic AB. Rights reserved for changes without prior notice.

Backtrack information: folder:Workspace Main, version:a469, Date:2018-06-27 time:14:05:50, state: Frozen

CONTENTS - Original instructions

1	Revision	6
2	Instructions for safe operation	7
3	Important information	8
3.1	Intended use	8
3.2	Safety precautions	8
3.3	Electronic equipment reception interference	8
3.4	Environmental requirements	9
1	About this manual	10
1.1	Software releases with included software versions	10
5	Technical specification	11
5.1	Door weight in relation to performance level	12
5.2	Classification to DIN 18650-1	13
6	Design and function description	14
6.1	Design	14
6.2	Function	14
6.3	Safety functions integrated in the operator	14
6.4	Microprocessor for precise control	14
6.5	Emergency escape	14
7	Models	15
8	Part identification	17
9	Space required	18
10	Pre-installation	19
10.1	General tips/Safety concerns	19
11	Mechanical installation	20
11.1	Checking	20
11.2	Installation examples to consider during installation	22
11.3	Installing/removing the cover, standard cover lock	24
11.4	Installing/removing the cover, optional cover lock	26
11.5	Installing the door adapter on top of the door leaf (frame doors by others)	28
11.6	Installation of support beam	29
11.7	Mount the secondary track onto the slow moving door	31
11.8	Installing the door holders on the door adapter (frame doors by others)	32
11.8.1	Slow moving door	32
11.8.2	Fast moving door	32
11.9	Hanging and mounting the slow moving door leaves	35
11.10	Height adjust the slow moving doors	36
11.11	Installation of telescopic wire	37
11.12	Install the fast moving doors	40
11.13	Installation of Entrematic Nordic floor guides (frame doors by others)	41
11.14	Depth adjustment of the door leaves	43
11.15	Connect the fast moving door to the slow moving door	44
11.16	Installation of components and electrical wiring	48
11.17	Installation of tension wheel assembly	50
11.18	Placement of the transmission bracket	51
11.19	Attachment of tooth belt fitting	52
11.20	Checking and adjusting the belt tension	53
11.21	Bi-parting operators	54
11.22	Mount the doorstop	55
11.23	Route the cables and attach the plastic cable holders, see illustrations below	57
11.24	Attachment of slack reducer	58
11.25	Attachment of product label	59
12	Electrical connections	60
12.1	Mains connection	60

12.2	Electrical units	61
12.2.1	Power supply unit (PSU 75/PSU 150)	61
12.2.2	Drive unit (HDD/DD)	61
12.2.3	Main control unit (MCU/MCU-ER)	62
12.2.4	Additional electronic units can be connected for extra functionality	63
12.2.4.1	Battery unit 12 V (EEU 12)	63
12.2.4.2	Battery unit 24 V (EEU 24)	63
12.2.4.3	I/O unit (IOU)	64
12.2.5	Connection of electrical units	65
12.3	Connection of activation and safety units	67
12.4	Connection of presence activation units	68
12.5	Connection of accessories	69
13	Start-Up	70
13.1	Adjustments and selection of special operating functions	71
13.2	The Learn function can be one of three different types	73
13.3	Display test and configuring of parameters	74
13.4	Status indication on the display	75
13.5	Configuration parameters (sorted after functionality)	76
13.6	Description of parameters	81
14	Signage	97
15	Accessories	98
15.1	Interconnection of operators	98
15.1.1	Interconnection cable	98
15.1.2	Hardware configuration for interconnection	99
15.1.3	Parameter configuration for interconnection	99
15.2	Interlock	99
15.3	Synchronization	100
15.4	Operation mode selectors (OMS)	101
15.4.1	Types	101
15.4.2	Operation mode selector (OMS) functionality	102
15.5	Replacement of secondary track	105
15.5.1	Shortening of secondary track	105
15.5.2	Shortening the bar	105
15.5.3	Shortening the L-profile	105
15.5.4	Shortening the shim	105
15.5.5	Shortening the tube	106
15.5.6	Shortening and creating new holes in the secondary track	106
15.5.7	Assemble the secondary track	107
15.6	Lock	110
15.6.1	Mounting the lock	110
15.7	Cover	113
15.8	Motion sensor and presence sensors	113
15.9	Manual Opening Lock device, MOLD	113
15.10	Limit switch kit, LSK	115
15.11	Lock indication switch, LIS	115
15.12	Locked door indicator, LDI	116
15.13	Quick connectors	117
15.13.1	2x10 to 1x10 converter	117
15.13.2	8 to 10 converter	117
15.14	Cover latch, alternative	118
15.15	Electrical emergency unit with batteries	118
15.16	Electrical emergency unit with batteries and two motors	118
15.17	Emergency closing with repeated closing	118
15.18	Break-out unit PSB	119
15.19	Convenience battery UPS	119
15.20	External error indication	119
15.21	Key switches (flush and/or surface mounted)	119
15.22	Push button	119
15.23	Upgrades	119
15.24	Open / Close function	120
15.25	Fire alarm connection	120
15.26	Nurse function	120

15.27	Remote Exit mode	120
15.28	Emergency open impulse	120
16	Troubleshooting	121
16.1	After remedy or replacement the operator has to be checked as follows:	126
17	Service/Maintenance	127
17.1	Service	128

1 Revision

Following pages have been revised:

Page	Revision 3.0 → 4.0
	Updated manual to software version 5.0.
31	Improved Mount the secondary track onto the slow moving door.
87	Changed parameter 49.
87	Changed parameter 4A.
87	Changed parameter 50.
105	Improved Replacement of secondary track.
119	Added requirements in Escape route according to EN16005 and DIN 18650.
125	Added error E6:47.

2 Instructions for safe operation



- Failure to observe the information in this manual may result in personal injury or damage to equipment.
- To reduce the risk of injury of persons - use this operator only with pedestrian doors.
- Do not use the equipment if repair or adjustment is necessary.
- Disconnect supply when cleaning or other maintenance is to be carried out.
- The operator can be used by children over 8 years of age if they have been instructed by a person in charge of their safety.
- The operator can be used by children 8 years of age or younger if they are supervised by a person responsible for their safety.
- The operator can be used by persons with impaired physical, sensory or mental capacity if they have been instructed by a person in charge of their safety.
- Cleaning and user maintenance shall not be made by children.
- Do not let anyone climb on or play with the door or the fixed/remote controls.
- In all instances, where work is being done, the area is to be secured from pedestrian traffic, and the power removed to prevent injury.
- Installer must properly ground door package! Improper grounding can lead to risk of personal injury.
- The mains connection must remain isolated until the wiring is completed. Then connect to the supply unit.
- The doorset can be operated automatically by sensors or manually by activators.

3 Important information

3.1 Intended use

The EM PSL150-T is an automatic sliding door operator developed to facilitate entrances to buildings and within buildings.

The EM PSL150-T is designed to be surface-mounted to the wall or a beam. It is easy to install for both new construction and retrofit application, and it can be adapted to a wide range of door requirements. It is to be installed indoors where it is suitable for almost all types of external and internal sliding doors.

The door is designed to offer continuous use, a high degree of safety and maximum lifetime. The system is self-adjusting to the effects caused by normal variations in the weather conditions and to minor friction changes caused by e.g. dust and dirt.

In emergency situations the doorset is opened and remains open automatically. It may also be equipped with break-out function, in which case the door leaf is pushed manually open in the escape direction.

Dual batteries and motors are used in escape routes as indicated in associated certificates. See "Electrical emergency unit with batteries" on page 118 and "Electrical emergency unit with batteries and two motors" on page 118. For manual break-out see "Break-out unit PSB" on page 119.

This manual contains the necessary details and instructions for the installation, maintenance and service of the Sliding Door Operator EM PSL150-T.

For use see User manual 1016696.

Save these instructions for future reference.

3.2 Safety precautions

Be sure to complete a risk assessment and site acceptance test before taking the door into operation.

To avoid bodily injury, material damage and malfunction of the product, the instructions contained in this manual must be strictly observed during installation, adjustment, repairs and service etc. Training is needed to carry out these tasks safely. Only Entrematic Nordic-trained technicians should be allowed to carry out these operations.

3.3 Electronic equipment reception interference

The equipment may generate and use radio frequency energy and if not installed and used properly, it may cause interference to radio, television reception or other radio frequency type systems.

If other equipment does not fully comply with immunity requirements interference may occur.

There is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient the receiving antenna.
- Relocate the receiver with respect to the equipment.
- Move the receiver away from the equipment.
- Plug the receiver into a different outlet so that equipment and receiver are on different branch circuits.
- Check that protective earth (PE) is connected.

If necessary, the user should consult the dealer or an experienced electronics technician for additional suggestions.

3.4 Environmental requirements

Entrematic Nordic products are equipped with electronics and may also be equipped with batteries containing materials which are hazardous to the environment. Disconnect power before removing electronics and battery and make sure it is disposed of properly according to local regulations (how and where) as was done with the packaging material.

1 About this manual

This manual describes functions of the EMPSL150-T Sliding Door Operator and for software release 5.0.

1.1 Software releases with included software versions

Release	Versions					
SW 3.0	MCB 7.4.9.2	MC 8.4.9.2	ER 1.1.9.2	IOU 3.5.9.2	OMS 4.2.9.2	
SW 3.1	MCB 8.4.12.2	MC 9.4.12.2	ER 1.1.12.2	IOU 4.5.12.2	OMS 4.2.9.2	
SW 3.1.1	MCB 9.4.14.2	MC 10.4.14.2	ER 1.1.14.2	IOU 5.5.14.2	OMS 4.2.9.2	
SW 3.2	MCB 10.4.16.2	MC 11.4.16.2	ER 1.1.16.2	IOU 6.5.16.3	OMS 5.2.16.2	
SW 4.0	MCB 11.4.17.2	MC 12.4.17.2	ER 1.1.17.2	IOU 7.5.17.2	OMS 6.2.17.2	
SW 5.0	MCB 12.4.17.3	MC 13.4.17.2	ER 1.1.17.3	IOU 8.5.17.2	OMS B 7.2.17.2	OMS S 1.3.17.2

5 Technical specification

Manufacturer:	Entrematic Nordic AB
Address:	Lodjursgatan 10, SE-261 44 Landskrona, Sweden
Type:	EM PSL150-T
Mains power supply:	100 V AC -10% to 240 V AC +10%, 50/60 Hz, fuse 10 AT (building installation) Note! The mains power supply shall be installed with protection and an all-pole mains switch with isolating capability of Category III, at least 3 mm between contacts, shall be installed according to local regulations. These articles are not provided with the door.
Power consumption:	Max. 250 W
Degree of protection:	IP20
Degree of protection, control actuators:	IP54
Auxiliary voltage:	24 V DC High performance 0.64 A Exceptional performance 1 A
Recommended max. door weight:	Bi-parting without break-out: EM PSL150-T-2: 80 kg/leaf Single Slide without break-out: EM PSL150-T-R/L: 80 kg/leaf For low energy movement: 75 kg/leaf
Clear opening:	Bi-parting: EM PSL150-T-2: 1720 – 3000 mm Single Slide: EM PSL150-T-R/L: 900 – 3000 mm
Opening and closing speed:	Variable up to approx. (EM PSL150-T-2): High performance 1.4 m/s Exceptional performance 1.7 m/s
Hold open time:	0-60 s
Ambient temperature:	-20 °C to +50 °C
Relative humidity (non-condensing):	Max. 85%
Operator weight:	11 to 25 kg, dependent on configuration and clear opening width
Approvals:	Third party approvals from established certification organizations valid for safety in use, see Declaration of Incorporation.
For indoor use only	

5.1 Door weight in relation to performance level

Plastic wheels

Performance level	Main control	Sealing type	Door weight [kg]	
			Single	Bi-parting
High performance	Escape	Normal seal	2 x 45	4 x 45
		Tight seal	2 x 35	4 x 45
	Non-escape	Normal seal	2 x 45	4 x 45
		Tight seal	2 x 45	4 x 45
Exceptional performance	Escape	Normal seal	2 x 45	4 x 45
		Tight seal	2 x 45	4 x 45
	Non-escape	Normal seal	2 x 45	4 x 45
		Tight seal	2 x 45	4 x 45

Steel wheels

Performance level	Main control	Sealing type	Door weight [kg]	
			Single	Bi-parting
High performance	Escape	Normal seal	2 x 75	4 x 80
		Tight seal	2 x 35	4 x 60
	Non-escape	Normal seal	2 x 80	4 x 80
		Tight seal	2 x 45	4 x 60
Exceptional performance	Escape	Normal seal	2 x 80	4 x 80
		Tight seal	2 x 80	4 x 65
	Non-escape	Normal seal	2 x 80	4 x 80
		Tight seal	2 x 80	4 x 65

5.2 Classification to DIN 18650-1

Classification to DIN 18650-1							
Digit 1	Digit 2	Digit 3	Digit 4	Digit 5	Digit 6	Digit 7	Digit 8
2	3	2	0	1,2,3	1,2	1,2,4	4
Type of drive, digit 1.			2	sliding door drive			
Drive durability, digit 2.			3	1 000 000 test cycles, at 4 000 cycles/day			
Type of door leaf, digit 3.			2	sliding door			
Suitability for use as a fire protection door, digit. 4			0	not suitable for use as a fire protection door			
Drive safety devices, digit 5.			1	force limitation			
			2	connection for external safety systems			
			3	low energy			
Special requirements for drives/functions/fittings, digit 6.			1	in escape routes with a break-out system			
			2	in escape routes without a break-out system			
Safety at door leaf or leaves, digit 7			1	with sufficiently dimensioned safety distances			
			2	with protection to prevent fingers being crushed, shorn off or drawn in			
			4	with presence sensor			
Ambient temperature, digit 8			4	temperature range as specified by the manufacturer			

6 Design and function description

6.1 Design

The sliding door operator EM PSL150-T works electromechanically. The motor, control unit, transmission – and optional emergency unit and electromechanical locking device – are all assembled in a support beam with an integrated cover. The motor and gear box transmit movement to the door leaves by means of a tooth belt. The door leaf is fitted to a door adapter/carriage wheel fitting and hangs on a sliding track. Movement of the bottom of the door leaf is controlled by the floor guides.

6.2 Function

Opening

When an OPENING IMPULSE is received by the control unit the motor starts and transmits movement to the door leaves, which move to the open position.

Closing

The closing starts when no OPENING IMPULSE is received and the HOLD OPEN TIME has run out.

6.3 Safety functions integrated in the operator

To permit safe passage between closing doors, the doors immediately reverse if an obstruction is detected, then resume their interrupted movement at low speed to check whether the obstruction has disappeared or not. If an obstruction is detected while the door is opening, the doors immediately stop and then close after a time delay.

6.4 Microprocessor for precise control

The microprocessor has a routine for self-monitoring, which detects any interference or faulty signals in door operation. If an input signal does not correspond to the preprogramming, the microprocessor automatically takes necessary actions to ensure safe door operation.

6.5 Emergency escape

The EM PSL150-T can be combined with an emergency unit that automatically opens or closes the doors in the event of a power failure and can also be interfaced with the fire alarm or smoke detector. Safety can be further reinforced by incorporating a break-out fitting. This enables the doors and side screens to swing outwards in an emergency situation by applying a defined pressure at the front edge.

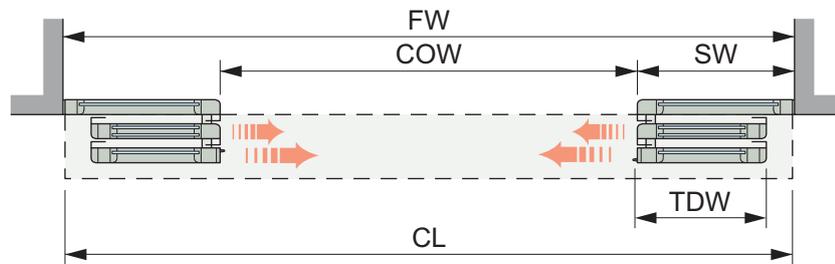
Doors used for emergency escape in buildings such as hospitals and homes for elderly people may not be locked or put in programme selection OFF.

7 Models

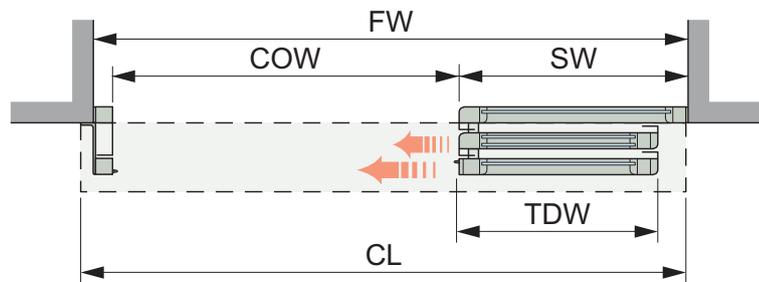
Two main models are available:

- **EM PSL150-T-2;** for bi-parting doors, consisting of two pairs of door leaves which are sliding away from each other to form a common door opening.
- **EM PSL150-T-1;** for single sliding doors with a pair of sliding door leaves.

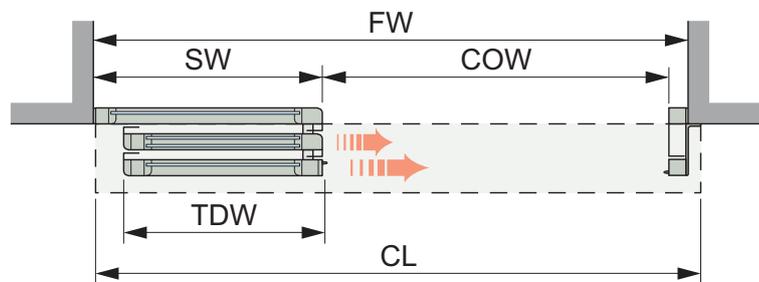
EM PSL150-T-2 (bi-parting)



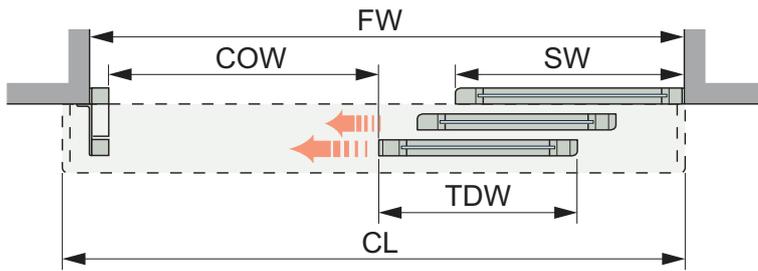
EM PSL150-T-1 (single sliding, right opening)



EM PSL150-T-1 (single sliding, left opening)



Third party door systems



FW = Frame width

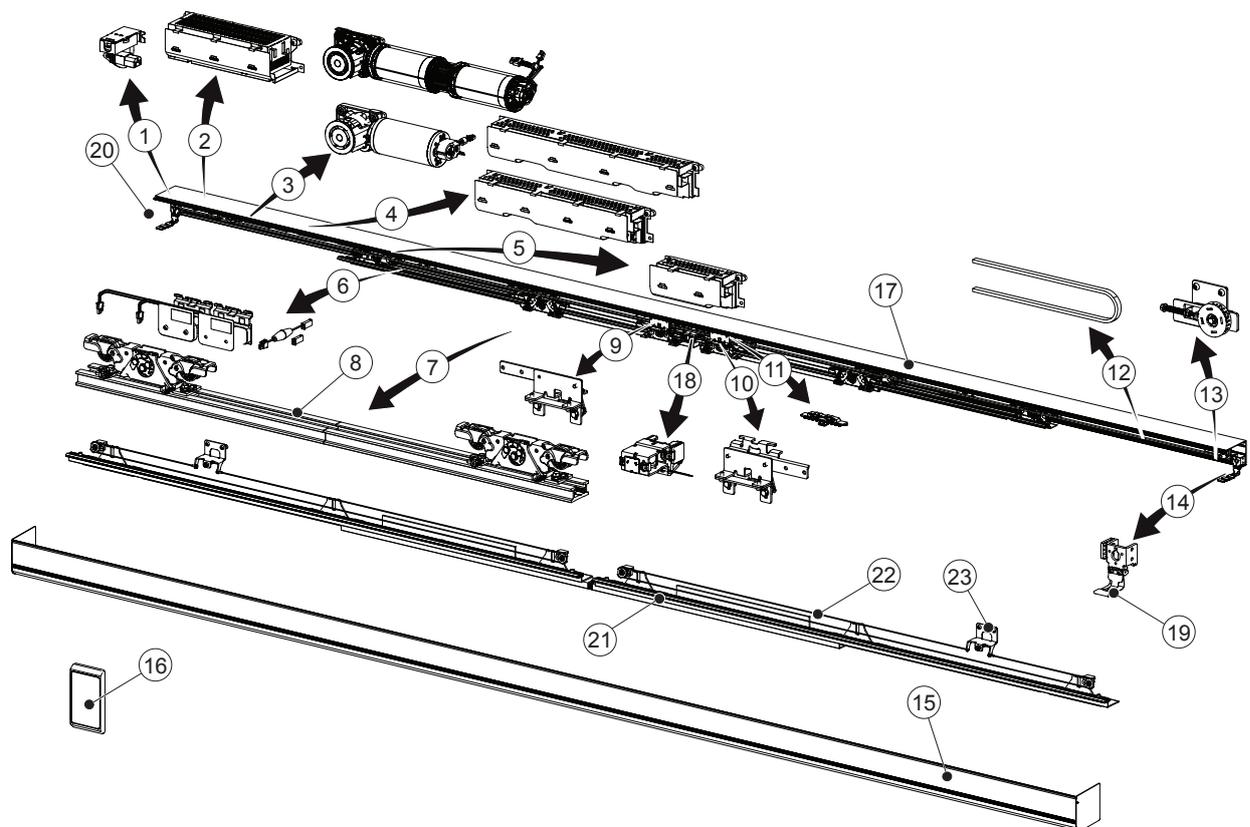
CL = Cover length (incl. end plates, 2 x 2 mm)

COW = Clear opening width

SW = Side screen width

TDW = Telescopic door leaf width

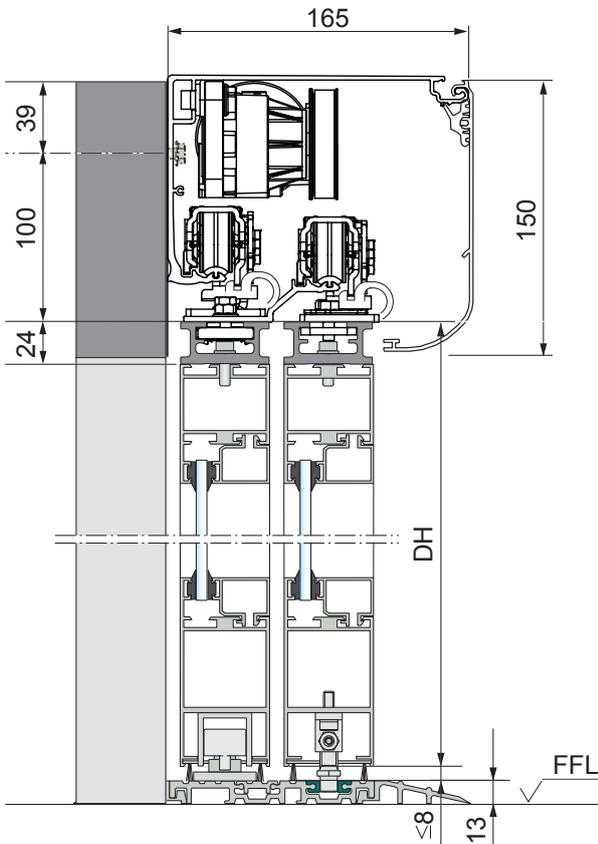
8 Part identification



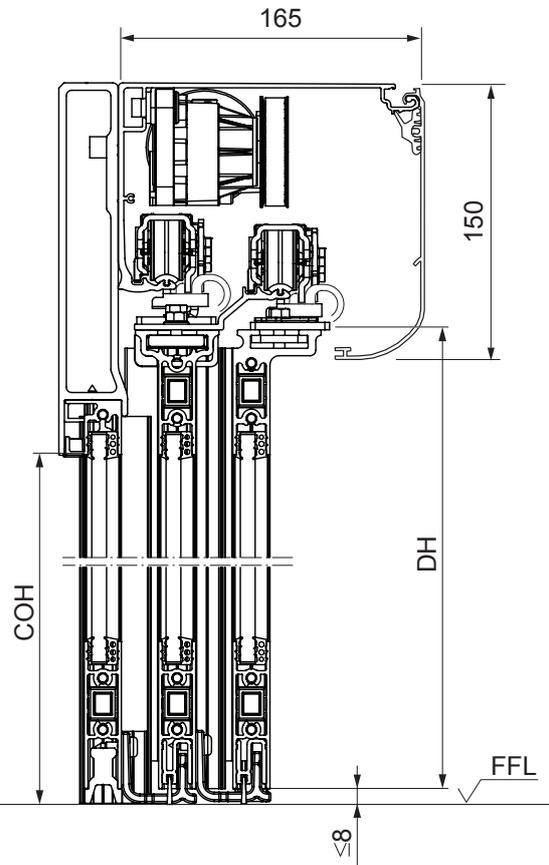
No.	Description	No.	Description
1	Mains connection	13	Tension wheel
2	Power supply unit (PSU 75/PSU 150)	14	Door stop
3	Drive unit (HDD/DD)	15	Cover
4	Main control unit (MCU/MCU-ER)	16	Operation mode selector (OMS)
5	I/O Unit (IOU)	17	Support beam
6	Battery (EEU 12/EEU 24)	18	Lock
7	Door carriage	19	Cover lock
8	Door adapter	20	Cable inlet
9	Transmission bracket (high)	21	Track
10	Transmission bracket (low)	22	Steel wire
11	Belt clamp	23	Fixed stay
12	Tooth belt		

9 Space required

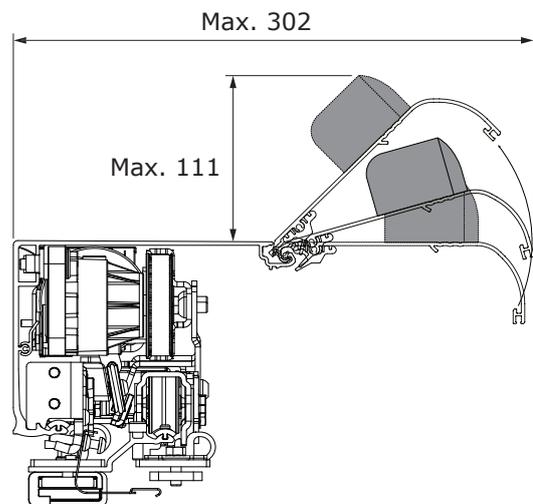
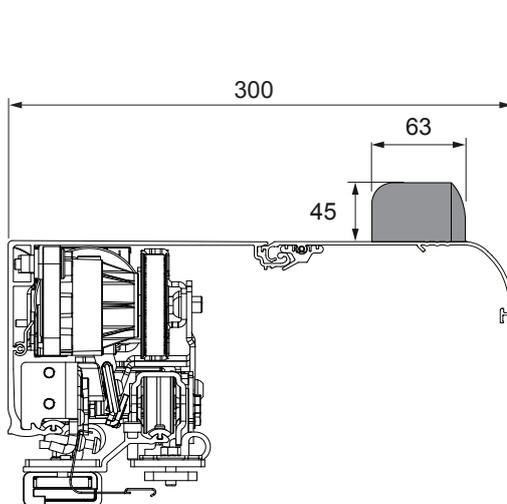
Frame doors by others



EM Slim



- COH = Clear opening height
- DH = Door height (incl. door adapter)
- FFL = Finished floor level



10 Pre-installation

10.1 General tips/Safety concerns



In all instances, where work is being done, the area is to be secured from pedestrian traffic, and the power removed to prevent injury.

- If there are sharp edges after drilling the cable outlets, chamfer the edges to avoid damage to the cables.
- For enhanced security and vandalism protection, always mount the operator access in the interior of a building whenever possible.
- Make sure the ambient temperature is in the range specified in section *Technical specification*.
- Make sure that the power is off before installing.
- Make sure that the door leaf and the wall are properly reinforced at the installation points.
- Unpack the operator and make sure that all parts are delivered in accordance with the packing note and that the operator is in good mechanical condition.
- Ensure proper material is being used for the door leaves and that there are no sharp edges. Projecting parts shall not create any potential hazards. If glass is used bare glass edges shall not come in contact with other glass. Toughened or laminated glass are suitable glasses.
- For support beam length over 5 m, remove the wheel holders and motor, or two technicians are needed.
- Ensure that entrapment between the driven part and the surrounding fixed parts due to the opening movement of the driven part is avoided. The following distances are considered sufficient to avoid entrapments for the parts of the body identified;
 - for fingers, a distance greater than 25 mm or less than 8 mm
 - for feet, a distance greater than 50 mm
 - for heads, a distance greater than 200 mm
 - and for the whole body, a distance greater than 500 mm
- Danger points shall be safe guarded up to a height of 2.5 m from the floor level.
- The operator shall not be used with a doorset incorporating a wicket door.



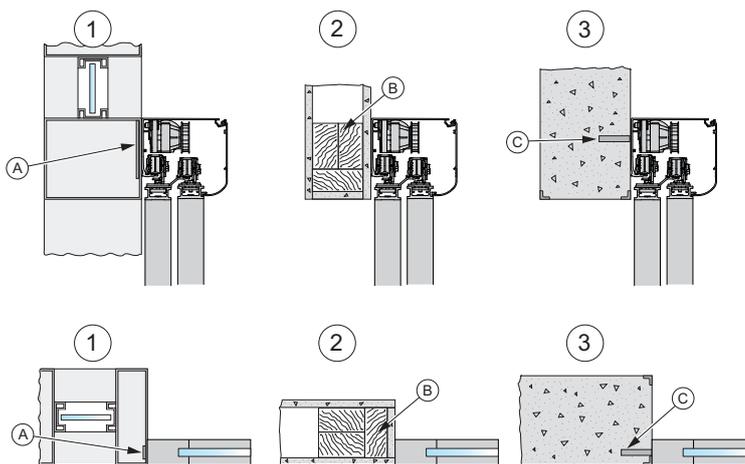
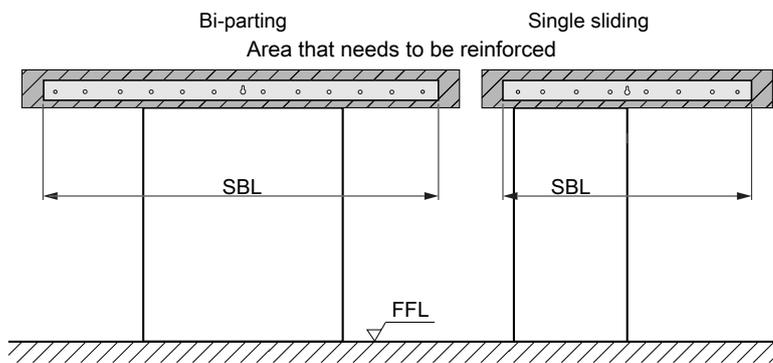
It is not possible to replace an EM operator component with a component from a different brand.

11 Mechanical installation

11.1 Checking

Check that the fixing material and the upper part of the door leaf have the necessary reinforcements and that the floor is level and smooth.

The beam/wall used to fix the support beam must be flat and smooth. If necessary use Entrematic Nordic mounting spacers behind the support beam to keep its straightness.



- 1 Aluminium profile system
- 2 Plasterboard wall
- 3 Reinforced concrete wall and brick wall

- A Steel or aluminium reinforcement or rivet nut
- B Wood reinforcement
- C Expansion-shell bolt (for brick wall min. M6x85, UP-AT PSEA B10/25)

Base material	Minimum requirements of wall profile*
Steel	5 mm**
Aluminium	6 mm**
Reinforced concrete	min. 50 mm from the underside
Wood	50 mm
Brick wall	Expansion shell bolt, min. M6x85, UPAT PSEA B10/25 min. 50 mm from the underside

* Entrematic Nordic minimum recommended requirements. Building Codes may give different specifications.

** Thinner wall profiles, not less than 2mm, must be reinforced with rivet nuts.

Tools required

- Set of metric box spanners and wrenches (2 x 10mm wrench)
- Spirit level
- Tape measuring tool
- Power drill and set of drill bits, Hammer drill
- Cone cutter drill (step drill)
- Screw driver Torx (T10, T20, T25 and T30)
- Small flat blade screw driver for wire connection
- Phillips screw driver
- Centre punch
- Wire stripper
- Side cutter (for wire cutting)
- Torque wrench
- Cable strap tightener
- Steel wire (for pulling cables)
- Pencil (for marking)
- Cloth or brush (for cleaning)

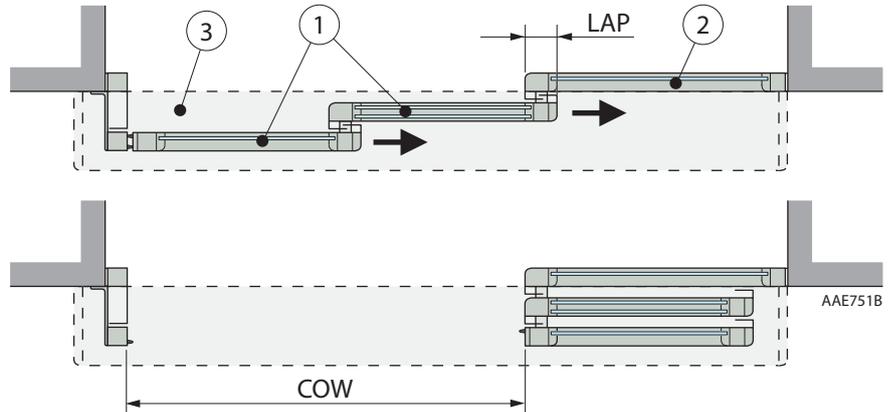
11.2 Installation examples to consider during installation

Note! See the local building regulations for each country, with regards to the permissible minimum opening width, that **shall** be followed.

Recommended installation (EM PS)

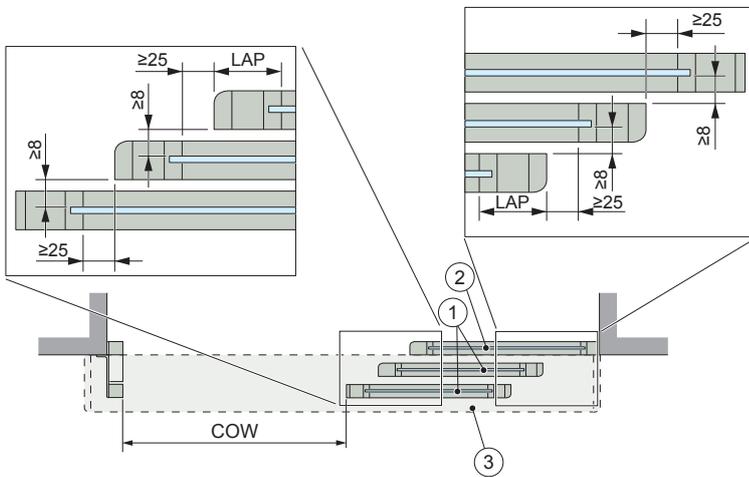
To reduce the risk for shearing of finger the jamb is used as door stop for closing and labyrinth sealings are used between door leaf (1) and fixed screen (2). The door leaf (1) can be opened fully and aligns with the fixed screen (2) if the side light is 100 mm wider than the door.

- 1 Door leaf
 - 2 Fixed screen
 - 3 Operator
- COW = Clear opening width
LAP = Overlap (profile width)



Alternative installation of door system (by others than EM PS)

The distance measured between the glass pane of the door leaf (1) and the profile of the fixed screen (2) shall not exceed 8 mm. If the distance is more than 8 mm the leading edge of the door leaf (1) must not pass the mullion of the fixed screen (2) but stop at least 25 mm before.

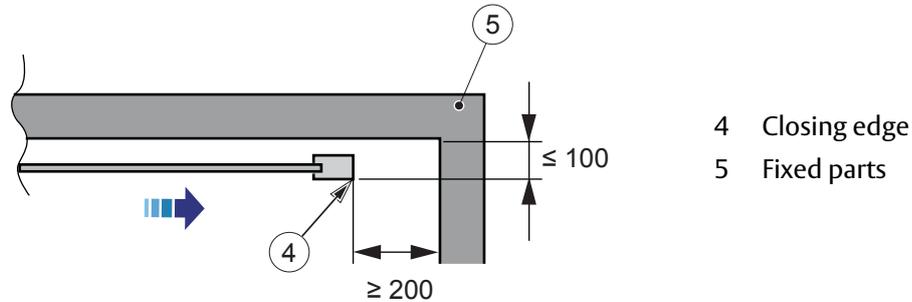


- 1 Door leaf
 - 2 Fixed screen
 - 3 Operator
- COW = Clear opening width
LAP = Overlap (profile width)

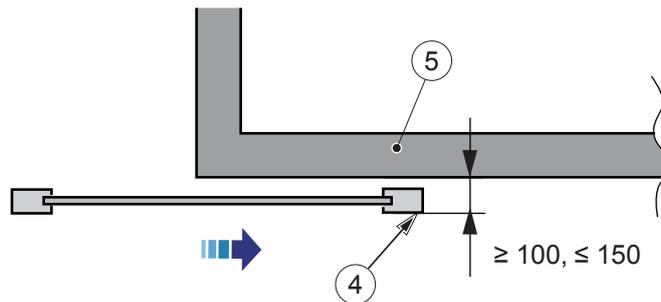
The safety distances measured between the secondary closing edge (4) and surrounding fixed parts (5) are shown in the illustrations below.

If the distance between the door and wall/side light is 100 mm or less, there shall be at least 200 mm between the door and a opposing surface when the door is in full open position. Safety distance for head or equip the operator with side presence sensors or pocket screens.

If the distance is more than 100 mm between the door and wall/side light, there shall be at least 500 mm between the door and a opposing surface when the door is in full open position. Safety distance for body or equip the operator with side presence sensors or pocket screens.



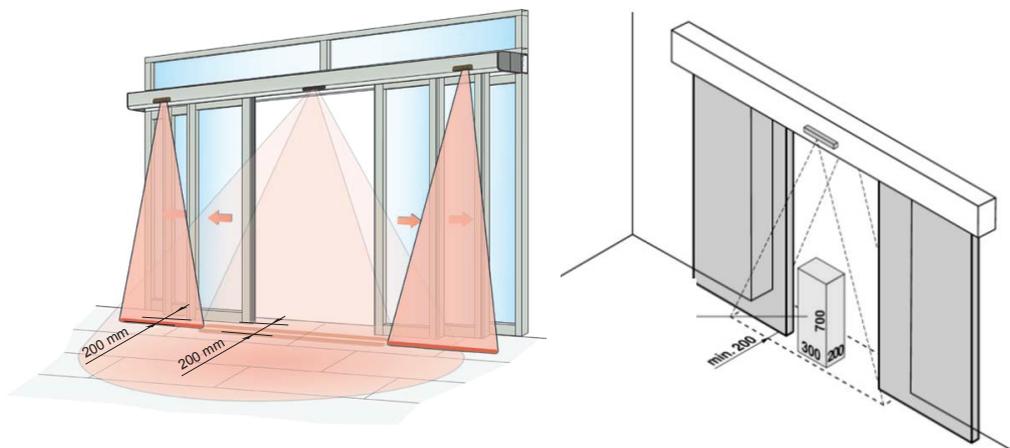
If the distance is more than 100 mm but less than 150 mm between the door and the wall the speed of the door has to be reduced according to PRA-0004 or equip the operator with side presence sensors or pocket screens.



Sensor adjustment

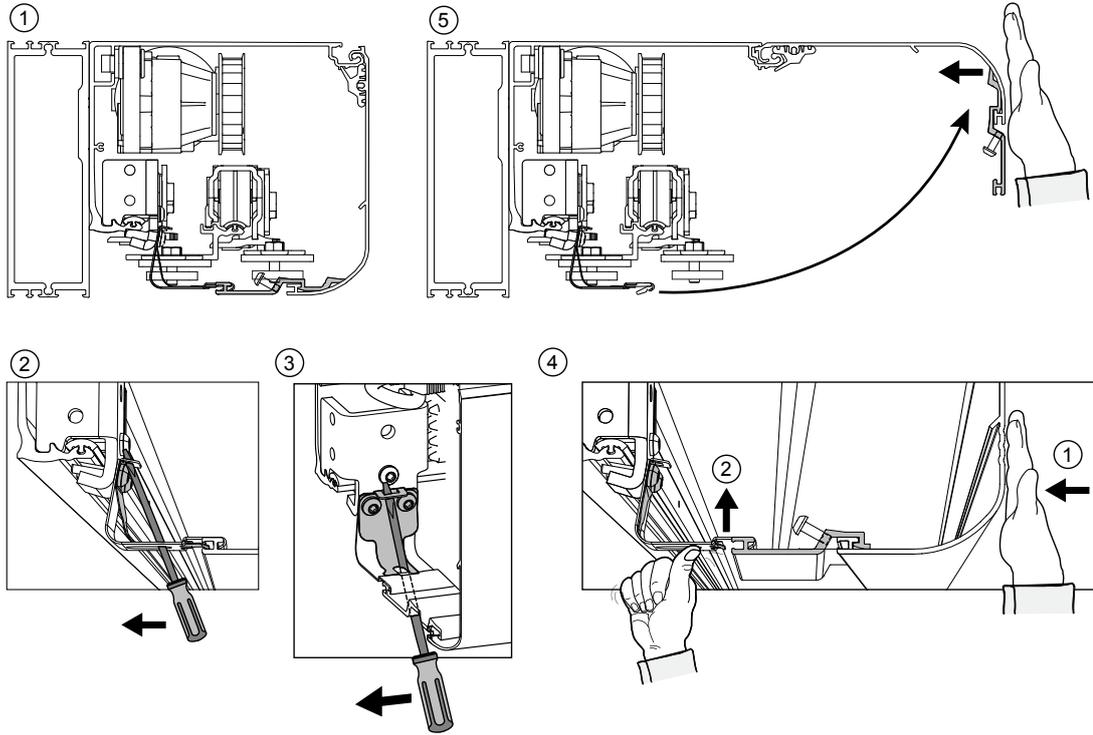
This is an example of how the mounted sensors shall be adjusted.

This is how the presence field of the sensor is tested to fulfil the standards according to EN 16005 and DIN 18650.



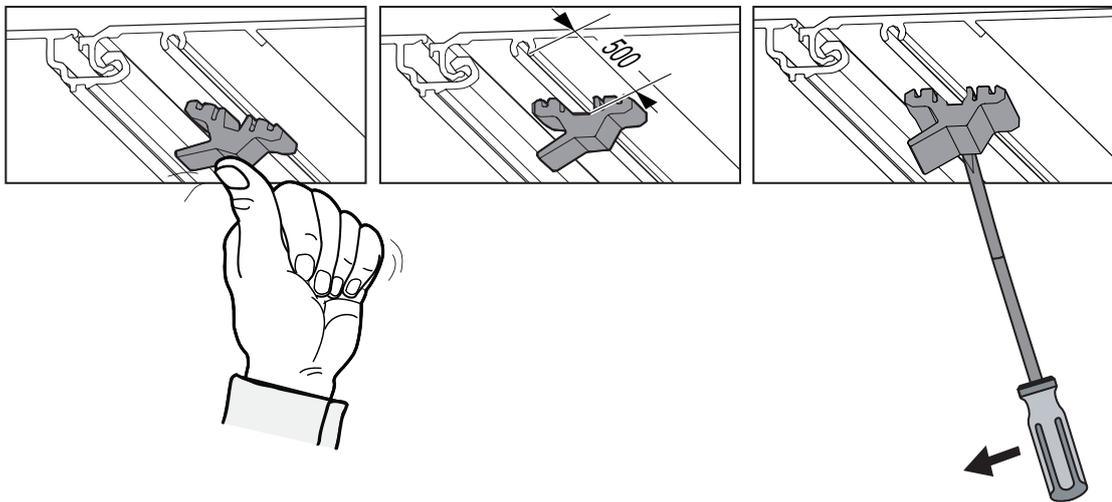
11.3 Installing/removing the cover, standard cover lock

Open cover

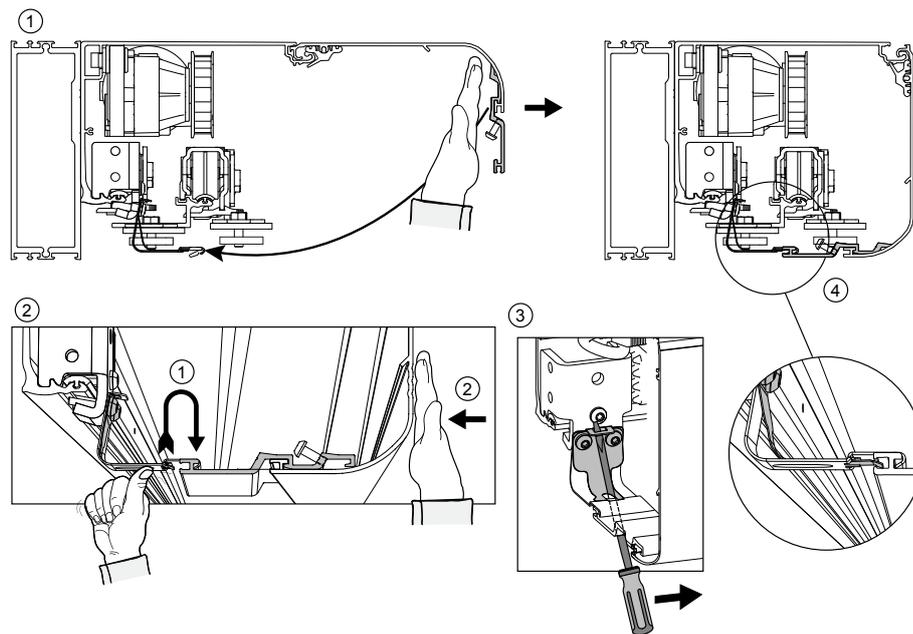


Secure and unsecure cover

Secure and unsecure the open cover as shown below.

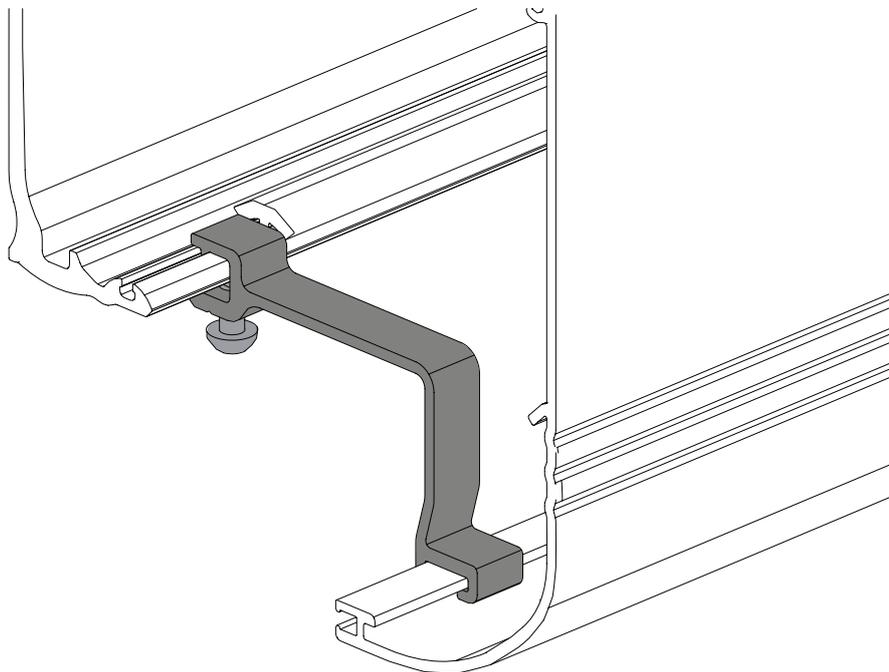


Close cover



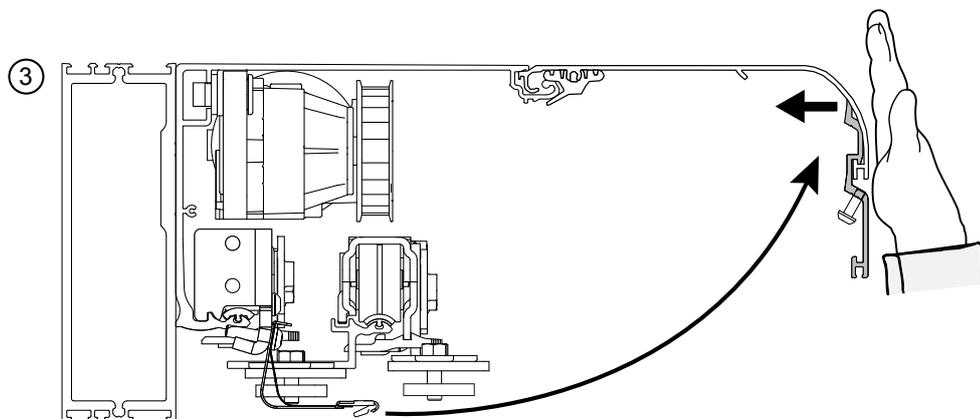
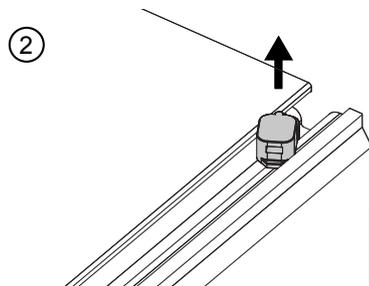
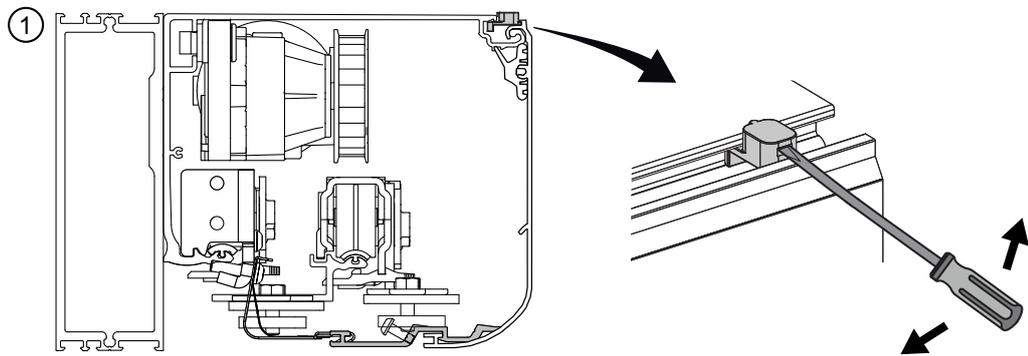
New cover latch

In the illustrations above the old cover latch is used. The illustration below shows the new cover latch and how it is attached.

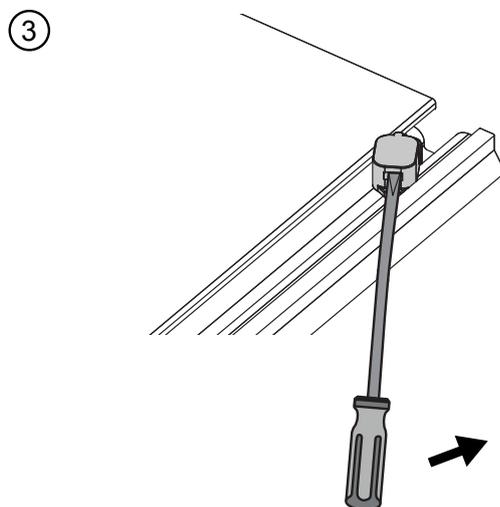
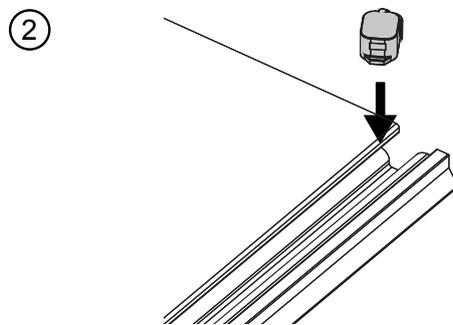
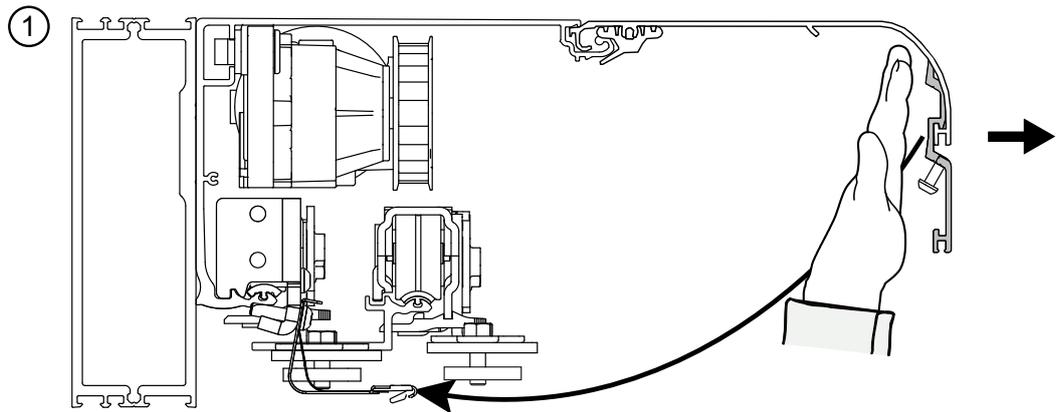


11.4 Installing/removing the cover, optional cover lock

Open cover



Close cover



11.6 Installation of support beam

Marking and fixing

Determine the installation height from the **highest point** of the finished floor:

- a Measure the door leaf height **inclusive the door adapter**.
- b Add **108 mm** or **121 mm** if a 13 mm surface mounted threshold/floor guide track is installed.
- c Mark the installation height on the wall as determined under items a) and b) as shown in the picture below.
- d Drill the hole, tap or plug for the key hole screw.
- e Hang up the support beam in the keyhole and tighten gently.
- f **Make sure that the support beam is level** and compensate for possible sag in the ends. Mark the rest of the fixing holes. (Note that some holes can be covered by other components that first must be removed or slid to the side.)
- g Tilt or remove the support beam.
- h Drill the holes, tap or plug them.
- i If the wall is uneven, compensate by hanging spacers around the bolts before they are tightened.
- j Fix the support beam using bolts.
- k Make sure to clean the support beam and sliding track thoroughly.

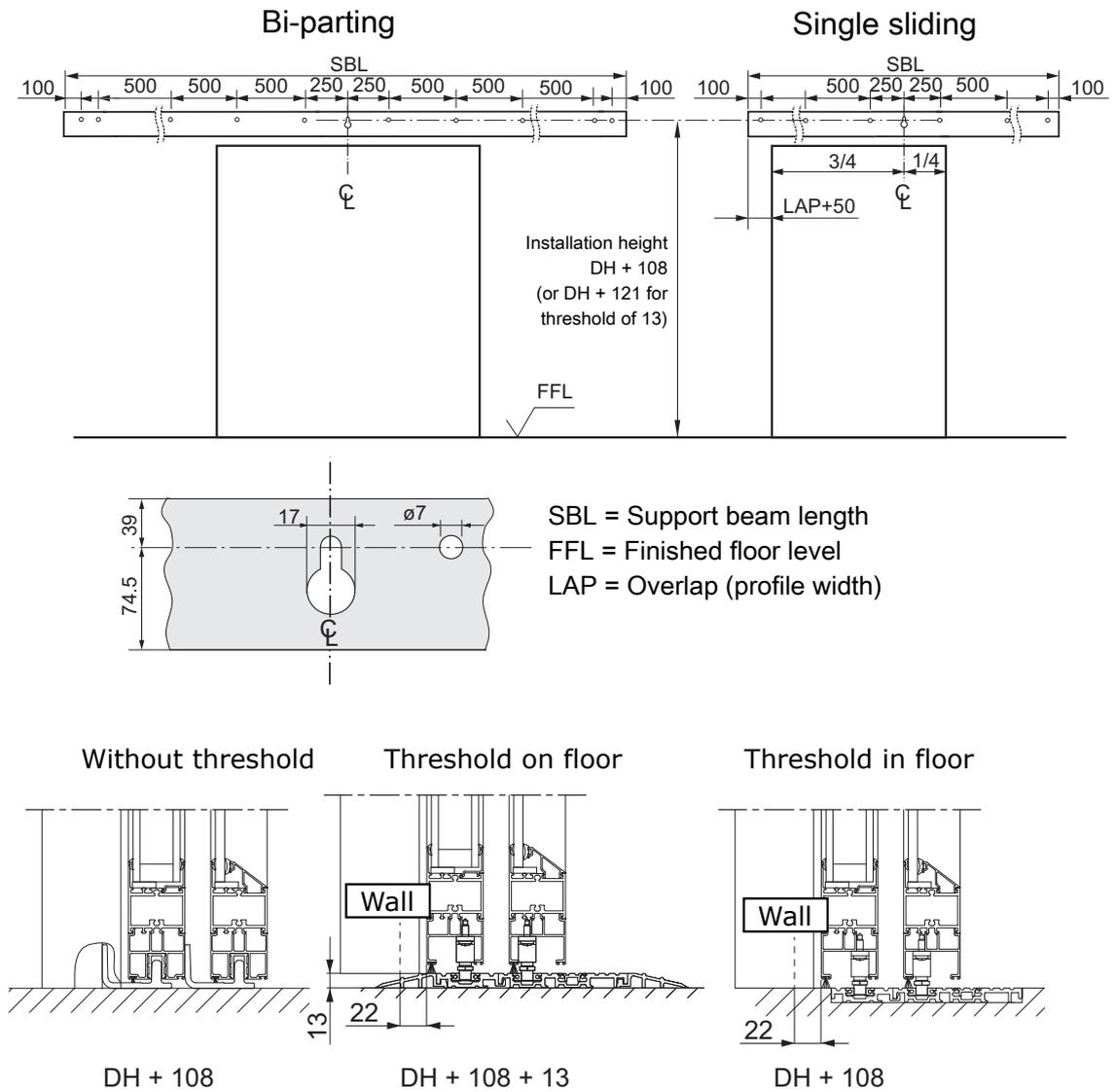
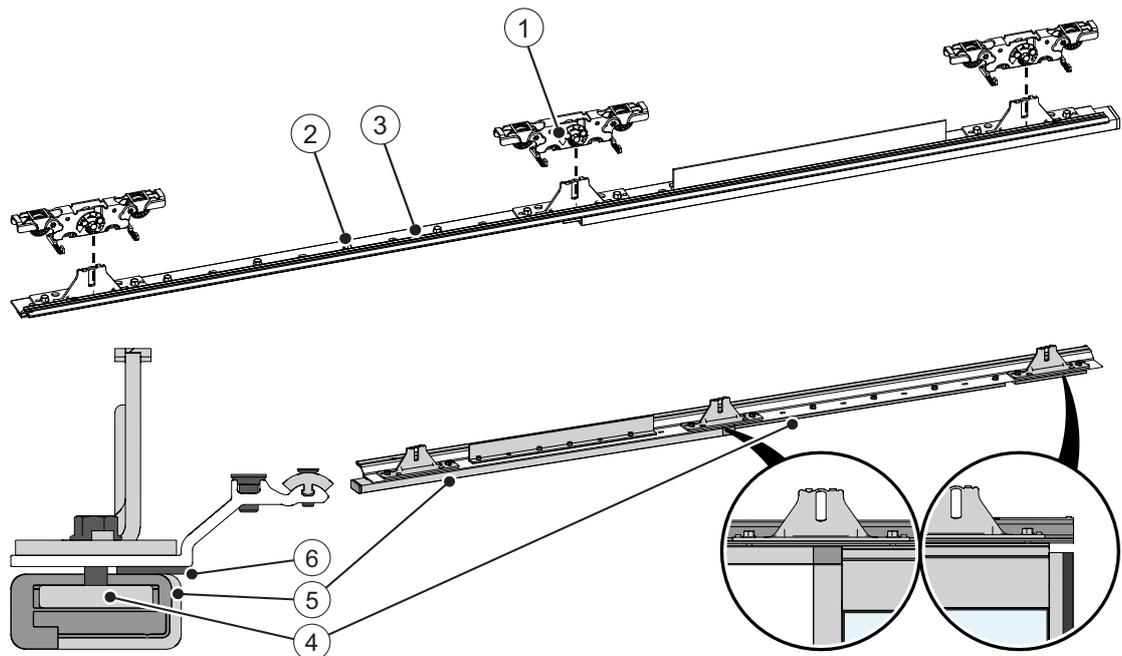


Figure 1: Installation height

Also see page 18.

11.7 Mount the secondary track onto the slow moving door

- a Remove the wheel holders (1).
- b Loosen all the screws (2) on the secondary track (3) so the bar (4) is loose.
- c Slide the bar (4) into the door adapter on the slow moving door until the tube (5) docks towards the door.
- d Make sure that the door holder and secondary track is completely in line with the door leaf.
- e Tighten all the screws (2) with 8 Nm.



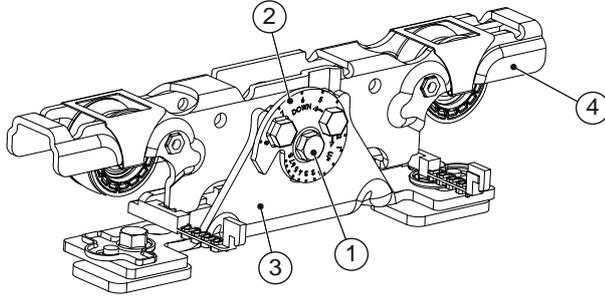
- 1 Wheel holder
- 2 Screw
- 3 Secondary track
- 4 Bar
- 5 Tube
- 6 Shim

For more information on the secondary track see Replacement of secondary track on page 105.

11.8 Installing the door holders on the door adapter (frame doors by others)

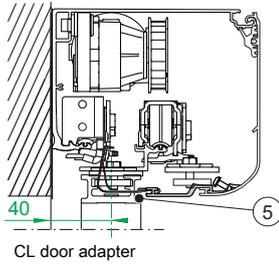
11.8.1 Slow moving door

- a Remove the height adjustment fastening screw (1) and the height adjustment cam (2). Remove the wheel holder (4) from the door holder (3).

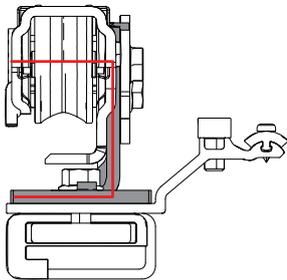


- 1 Height adjustment fastening screw
- 2 Height adjustment cam
- 3 Door holder
- 4 Wheel holder

- b Maximum distance between the side light/wall and the centerline of the door adapter (5) on the slow moving door leaf is 40 mm.



- 5 Door adapter



11.8.2 Fast moving door

- a The door holder for the fast moving door shall be rotated in the same way as for the slow moving door.

- b Fasten the door holder (3a) at a distance A from the trailing edge of door leaf (6), see picture below.

Note! If a lock is to be mounted, the distance B is necessary. For more information about installing a lock, see Mounting the lock on page 110.

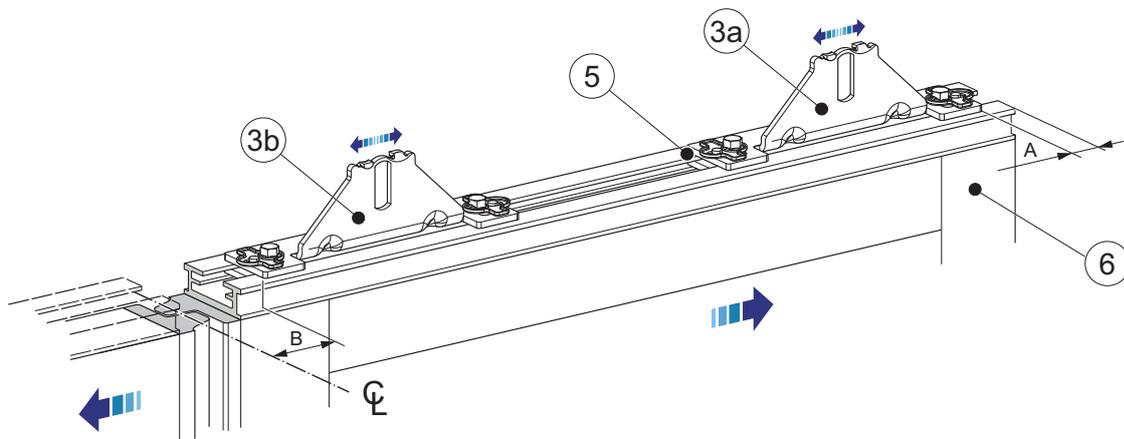
c **Bi-parting door:**

Fasten the door holder (3b), on the fast moving door, at a distance B from the estimated centre line \varnothing between the doors.

Single door:

Fasten the door holder (3b), on the fast moving door, at a distance B from the estimated centre line \varnothing between the door leaf (6) and the slam post.

Note! Make sure that the door holders (3) are completely in line with the door adapter (5).



- 3 Door holder
5 Door adapter
6 Door leaf

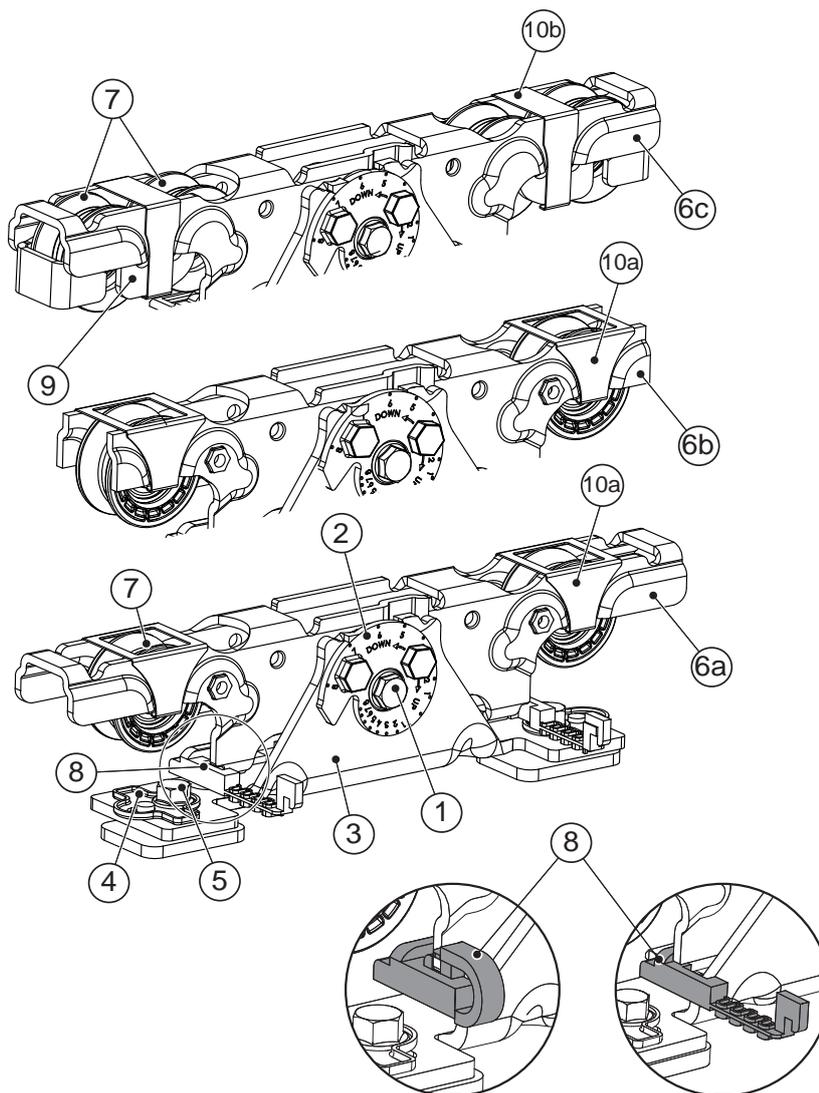
LD, LDP, LDB	A (mm)	B* (mm)	Max distance** (mm)
Normal Wheelholder	31	66	9
Normal Wheelholder	31	73	2
Short Wheelholder	11	46	9
Short Wheelholder	11	53	2

*Bx2 between the door holders on a biparting door.

CL is the estimated center line between the doors or door and door post.

**Max distance = the distance a door leaf can move when the door is in locked position.

Part identification door carrier



- | | | | |
|----|-----------------------------------|-----|----------------------------------|
| 1 | Height adjustment fastening screw | 7 | Carriage wheel |
| 2 | Height adjustment cam | 8 | Anti-riser device |
| 3 | Door holder | | • left illustration, Engaged |
| 4 | Depth adjustment | | • right illustration, Disengaged |
| 5 | Door holder fastening screw | 9 | Secondary bogie |
| 6a | 2-Wheel holder | 10a | Clips, single wheel |
| 6b | 2-Wheel holder, short | 10b | Clips, bogie wheels |
| 6c | 4-Wheel holder | | |

Note! If the door width is less than 540 mm, the operator will be equipped with a short wheel holder.

Wheels	Door weight, bogie	Door weight, double bogie
Plastic	0-45 kg/leaf	-
Steel	45-60 kg/leaf	60-80 kg/leaf

Note! If door height / door width ratio (DH/DW) for the fast moving door is more than 3.5, double bogie wheels will be delivered. If the door is equipped with short wheel holder, single bogie steel wheels will be delivered.

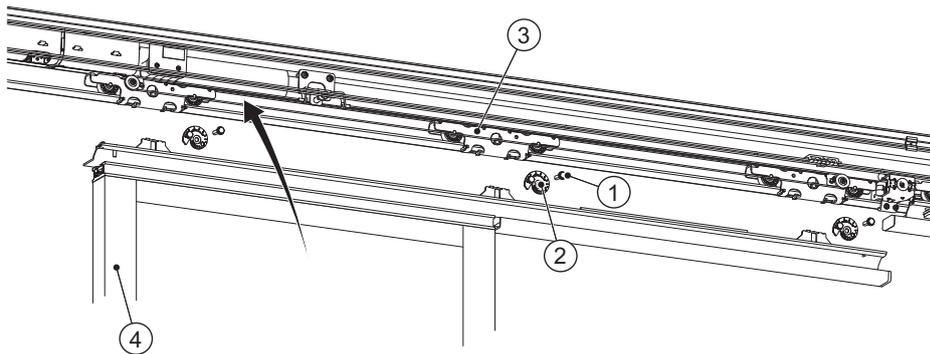
DH/DW ratio does not apply to the slow moving door.

11.9 Hanging and mounting the slow moving door leaves

- a Loosen and remove the height adjustment fastening screw (1) and the height adjustment cam (2) from the wheel holders (3).

Note! The anti-riser devices shall be engaged on the wheel holder (3). See page 34.

- b Raise the door leaf (4) and place it carefully over the floor guide, if installed.
- c Slide the wheel holders (3) sideways, in the beam, until they are aligning with the door holders.
- d Reinstall the height adjustment fastening screw (1) and the height adjustment cam (2) into the door holders and tighten gently.



- 1 Height adjustment fastening screw
- 2 Height adjustment cam
- 3 Wheel holders
- 4 Door leaf

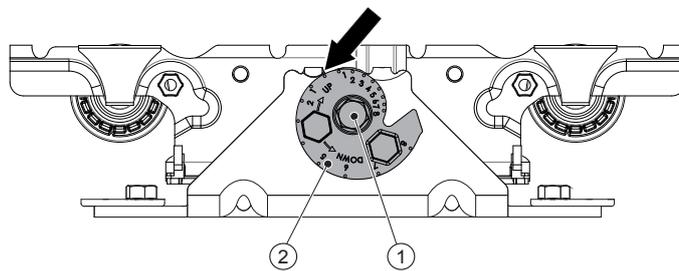
11.10 Height adjust the slow moving doors

The door can be height adjusted +/- 8 mm by turning the height adjustment cam (2).

- a Indication on the cam show what height the door is adjusted to (in mm).

Note! The illustration below shows a zero adjusted cam.

- b Adjust all cams to the same value on the slow moving doors.
- c Check that the door(s) is hanging horizontally. It is very important that the door leaves are parallel with the fixed panel.
- d To increase the height of the door turn the cam in the direction shown by the arrow UP on the cam.
- e When the door leaf is 6-8 mm above the highest point of the Finished Floor Level (FFL), the door is properly adjusted. Tighten the height adjustment fastening screw (1) with 18Nm.

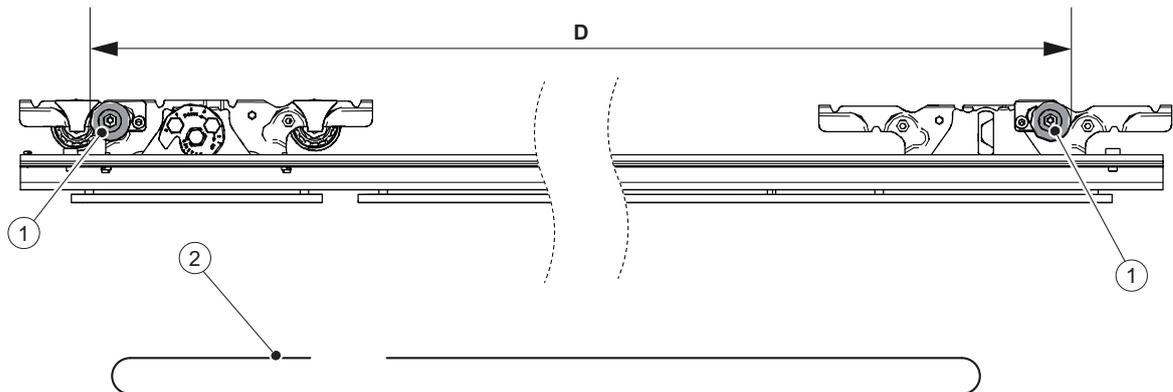


- 1 Height adjustment fastening screw
- 2 Height adjustment cam

11.11 Installation of telescopic wire

Cutting the wire length

- Measure the distance D between the outmost point of the two wire pulley wheels (1).
- Calculate the total length L of the wire (2) with the formula below.
- Cut the wire (2) at the total length L .



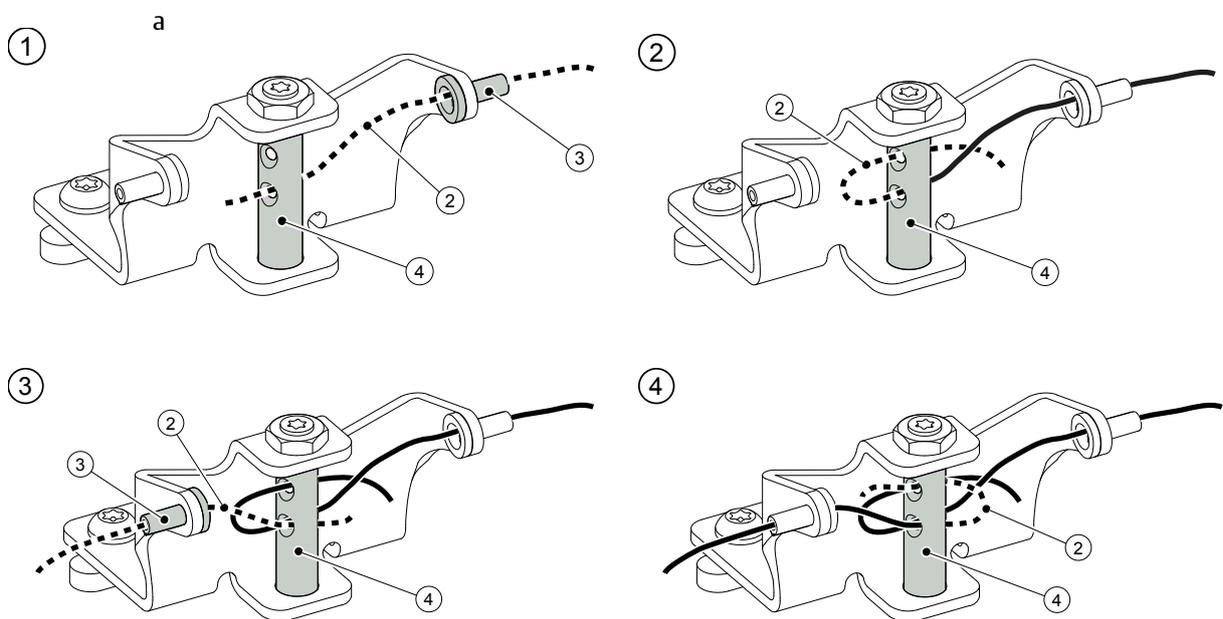
L = Total length of wire

$$L = D \times 2 + 200 \text{ mm}$$

1 Pulley wheel

2 Wire

Threading the wire

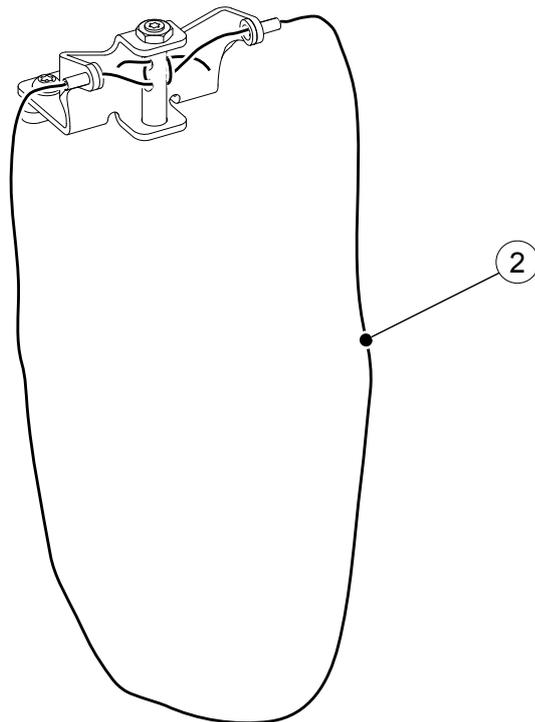


2 Wire

3 Grommet

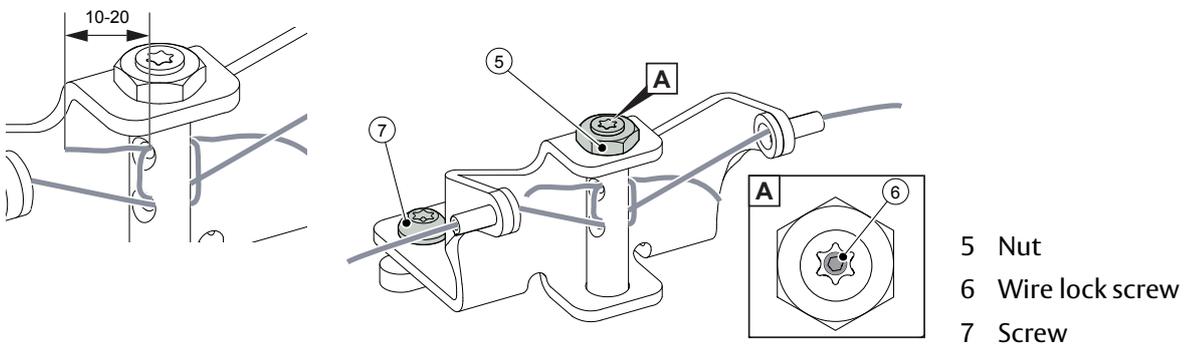
4 Reel

b Check that the wire (2) is not twisted and tangled.



2 Wire

c Tighten the nut (5) and then the wire lock screw (6), located inside the torx screw.

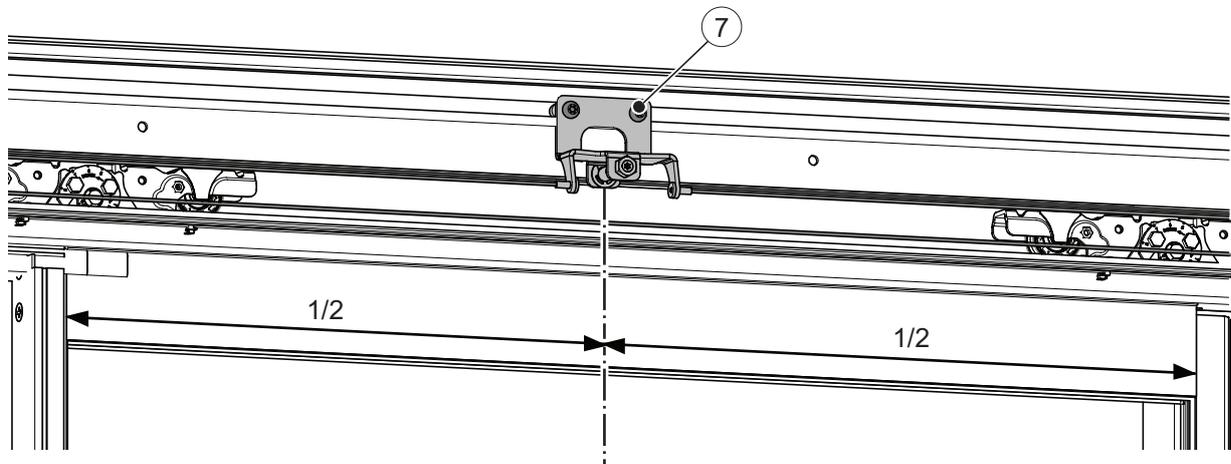


d Loosen the nut (5), after tensioning the wire lock screw (6).

e Cut of the excess length of the cable.

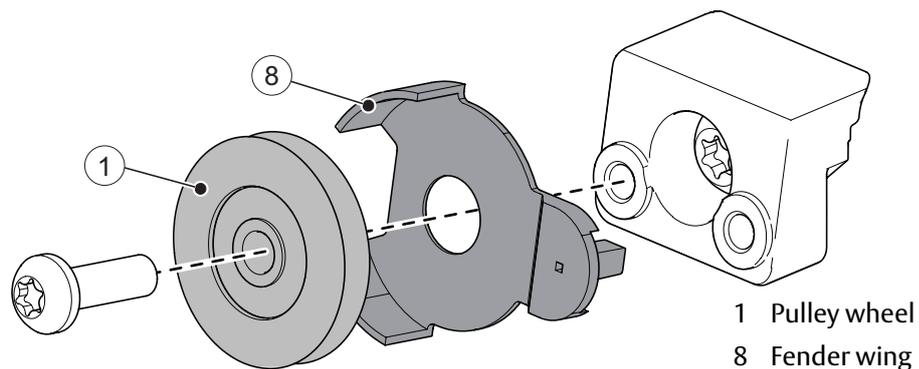
- f With the doors in closed position, mount the wire holder bracket in the C-track, centered over the slow moving door leaf and tighten the screws (7) with a torque of **10 Nm**.

Note! If any part of the control system is in the way of the wire holder bracket, move it and connect with supplied extension cables.



7 Screw

- g Pull the wire (2) around the pulley wheels (1) and click the wire inside the fender wings (8).



- h
- i Tighten the wire (2) with a torque of **2 Nm** by turning the wire reel (4) **clockwise** with a Torx screwdriver.
- j Tighten the nut (5).

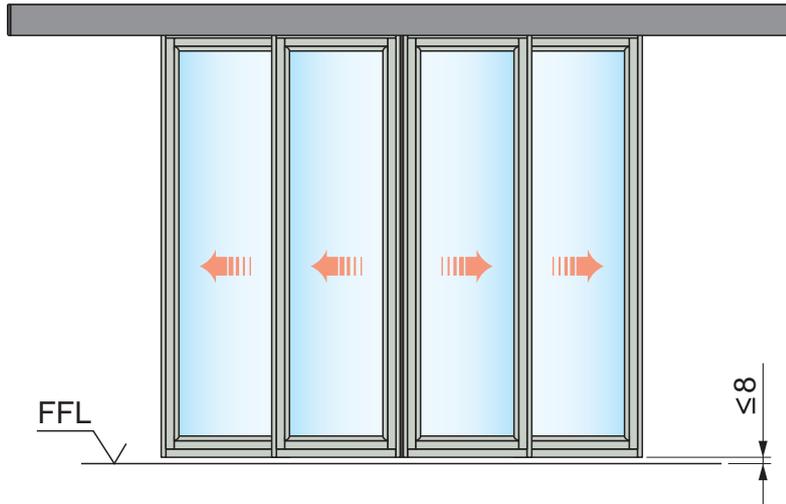
11.12 Install the fast moving doors

- a Height adjust all cams on the fast moving doors. All cams, on the fast moving doors, shall be adjusted to the same value and be align with the slow moving doors.

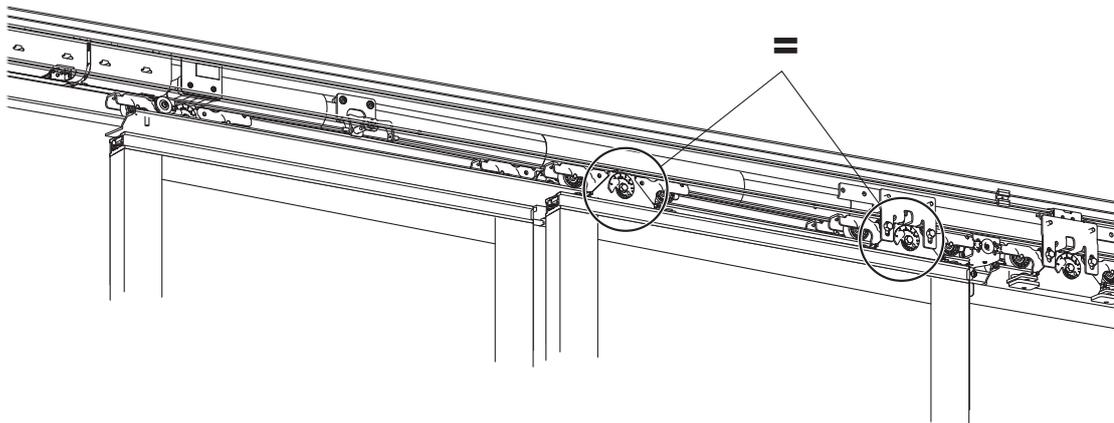
Note! The cams on the slow moving doors and the cams on the fast moving doors will always differ.

Note! When the cam on the fast moving door is adjusted to +5 mm, the door is level with the slow moving door.

- b Put the doors in closed position.
- c Check that the door leaf is parallel (no gap at the top or bottom).



FFL = Finished floor level



11.13 Installation of Entrematic Nordic floor guides (frame doors by others)

The floor guides can be adjusted depthwise about ± 4 mm after being installed, using the eccentric nut underneath the plastic block.

Note! Before installing the floor guide make sure that the plastic block is adjusted to the middle position to ensure full adjustability (± 4 mm).

Installation

a Bi-parting doors

Push the fast moving outer doors together and slide them until their meeting point is aligned with the centre of the clear opening width.

Single sliding doors

Slide the fast moving outer door leaf to closed position.

Fast moving outer door leaf

The door guides are fitted on the underside of the door leaf. The door leaf can be adjusted ± 1.5 mm horizontally by turning the eccentric pin (4) 180° . For vertical adjustment, turn the pin complete turns.

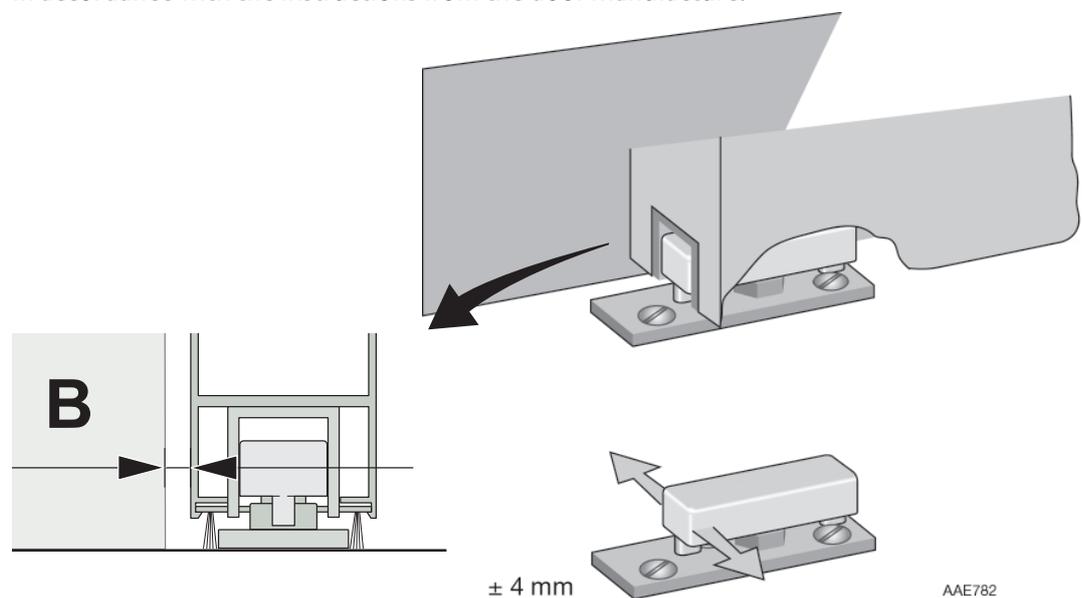
Tighten the lock screw (5) after the adjustment of the door leaf, to secure the setting.

Slow moving inner door leaf

The floor guides can be adjusted depthwise about ± 4 mm after being installed, using the eccentric nut underneath the plastic block (1).

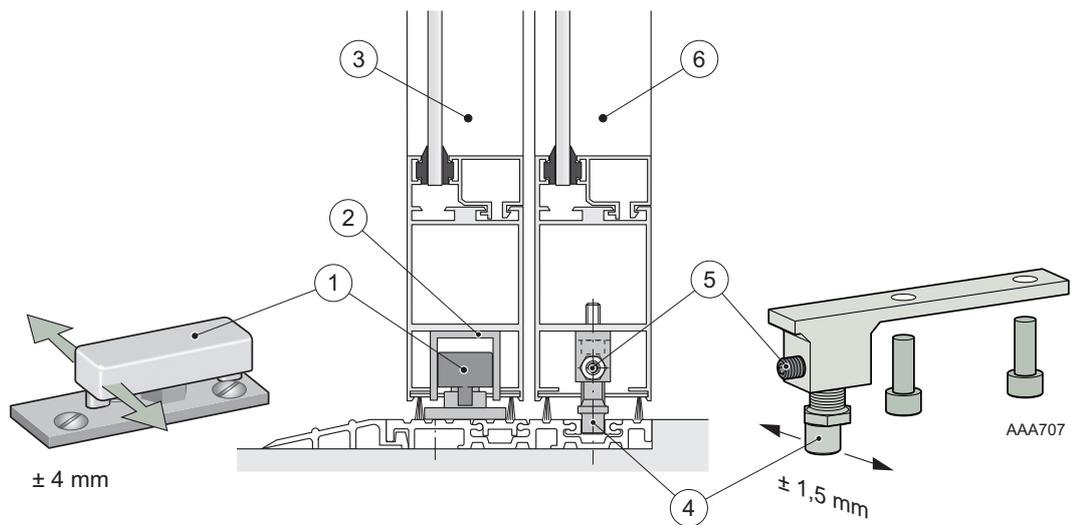
Before installing the floor guide make sure that the plastic block (1) is adjusted to the middle position to ensure full adjustability (± 4 mm).

- b Fit the floor guide so that the **plastic block** is in line with the **trailing edge** of the door leaf when in the **closed** position as shown in the illustration below, and depthwise (the B measurement) in accordance with the instructions from the door manufacture.



- c Mark the position for the floor guide.
d Push the door leaf sideways to clear the space.

e Mark, drill and plug the three holes and fasten the floor guide.



- | | | | |
|---|-----------------------|---|-----------------------|
| 1 | Plastic block | 4 | Eccentric pin |
| 2 | Door guide track | 5 | Lock screw |
| 3 | Slow moving door leaf | 6 | Fast moving door leaf |

f Check that the door runs freely over the floor guide without friction.

g If a weather brush is used on the lower edge of the door leaf, it should only lightly touch the floor.

11.14 Depth adjustment of the door leaves

- a The distance **A**, between the top of the door leaf and the fixed screen, and the distance **B**, between the door leaves, are to be adjusted by loosening the two screws connecting the door holder (1) to the door adapter (2).
- b The holes in the door holder (1) are slotted and the door leaf/adapter (2) can be adjusted ± 7 mm.
- c The distances **A** and **B** shall be 22 mm for third party doors and 20 mm for EM Slim System.
- d For frame doors made by others the distances **A** and **B** are supplied by the manufacture. The distances depends on the door leaf thickness and draught excluders. When a draught excluder is used between the door leaf and the fixed screen, it should seal equally for the total vertical height.

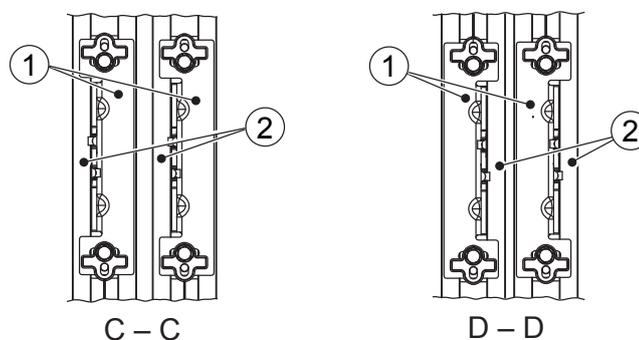
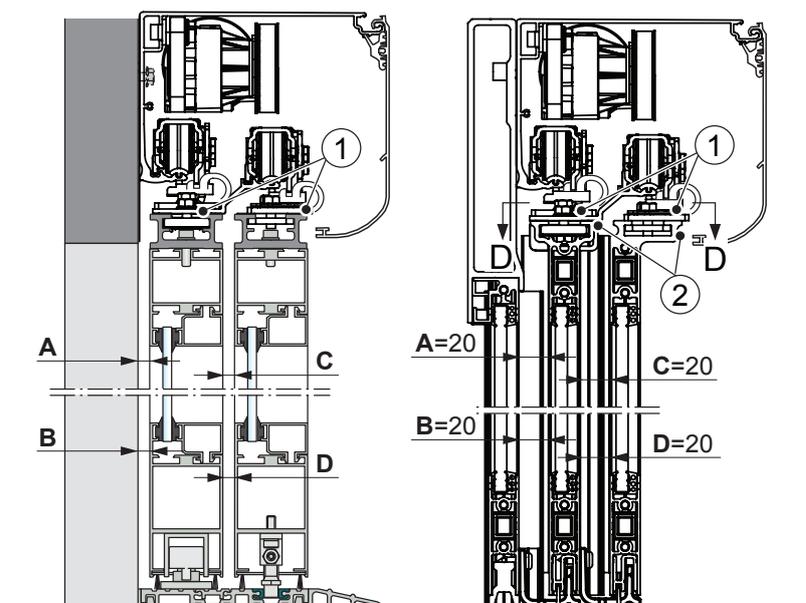
Note! Make sure that the door holder (1) is completely in line with the door adapter (2).

Note! The door holders (1) can be turned depending on door type. See illustration below.

- e The distance **C** shall be equal to **A** and distance **D** equal to **B**. With EM floor guide series, FGB or GS on frame doors made by others, the distance **C** can be adjusted ± 4 mm with the eccentric nut on the floor guide and the distance **D** can be adjusted ± 1.5 mm with the eccentric pin.

Frame doors by others

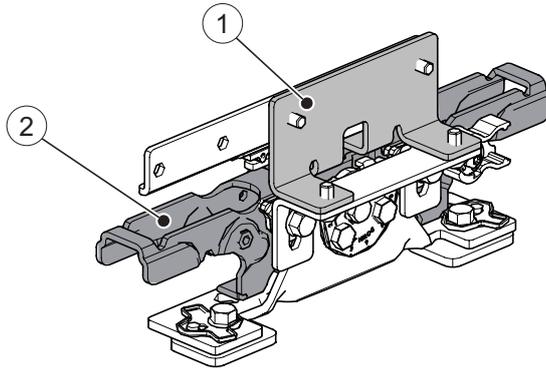
EM Slim System



- 1 Door holder
- 2 Door adapter (integrated in the door leaf for EM Slim System)

11.15 Connect the fast moving door to the slow moving door

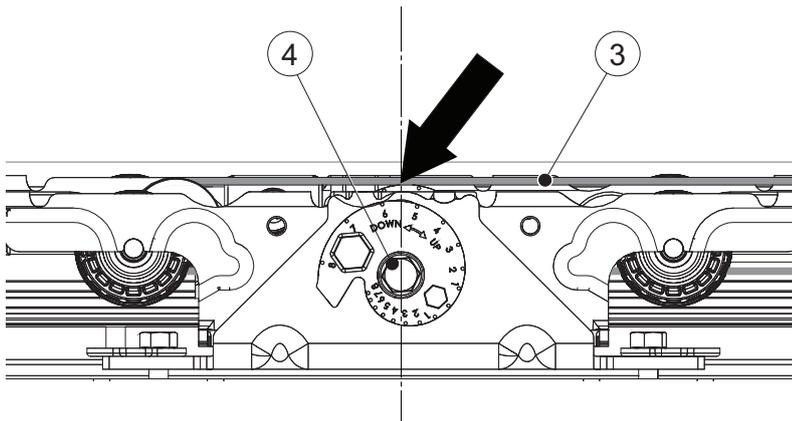
- a Remove the upper part of the transmission bracket (1) from the wheel holder (2).



- 1 Upper part of the transmission bracket
- 2 Wheel holder

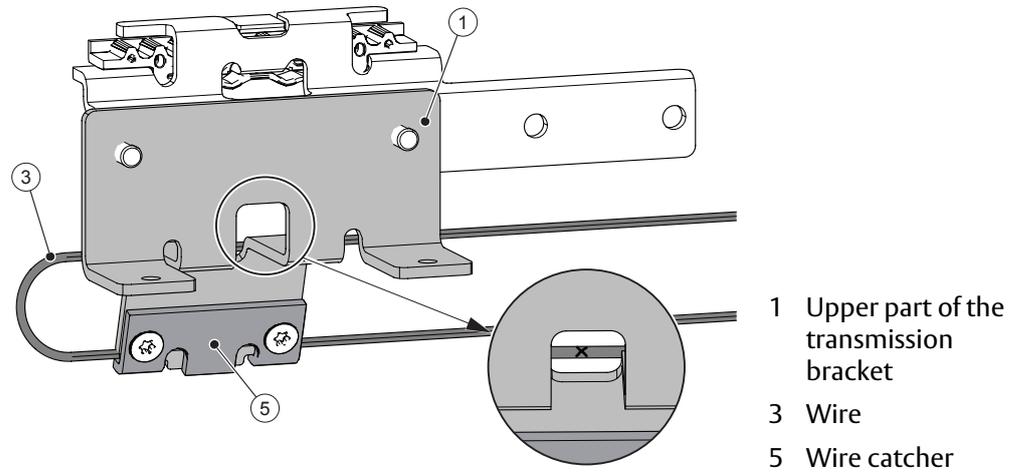
- b Position both door leaves in closed position.
 c Put a mark on the wire (3) in line with the height adjustment fastening screw (4) of the fast moving door.

Note! The wheel holder, where the above mentioned height adjustment fastening screw (4) is located, is on the leading edge on an double door and a single left opening door, or on the trailing edge on a single right opening door.

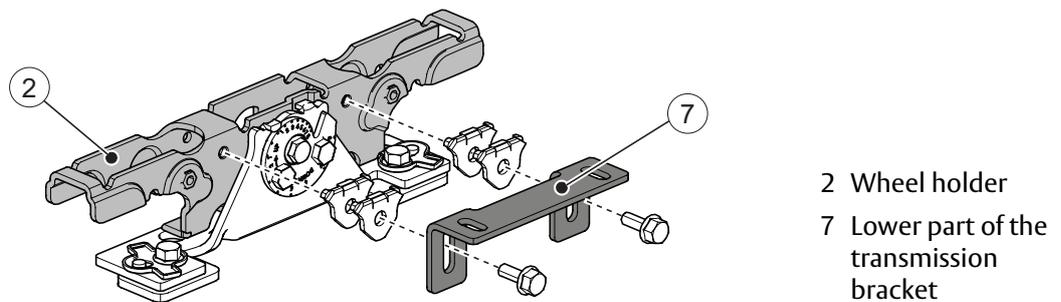


- 3 Wire
- 4 Height adjustment fastening screw

- d Move the fast moving door leaf out of the way without changing the slow moving door position. Attach the wire catcher (5) on the lower wire (3), centered over the mark on the upper wire (3). The mark can be seen through the slot in the bracket, see the illustration below.



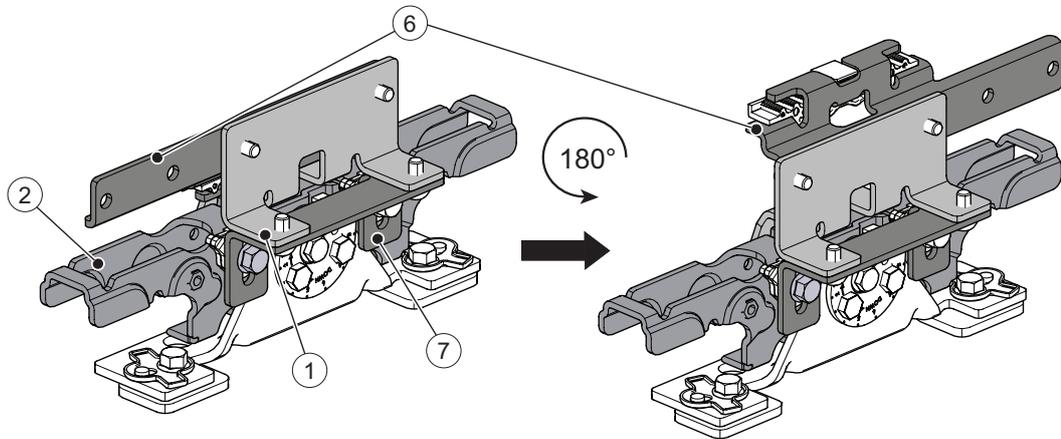
- e Fasten the lower part of the transmission bracket (7) on the wheel holder (2).



f For bi-parting and single left opening doors:

- Fasten the upper part of the transmission bracket (1) on the lower part of the transmission bracket (7) placed on the wheel holder (2) in the leading edge.

Note! For bi-parting doors turn the right belt holder bracket (6) 180°. The right belt holder bracket shall catch the upper belt.

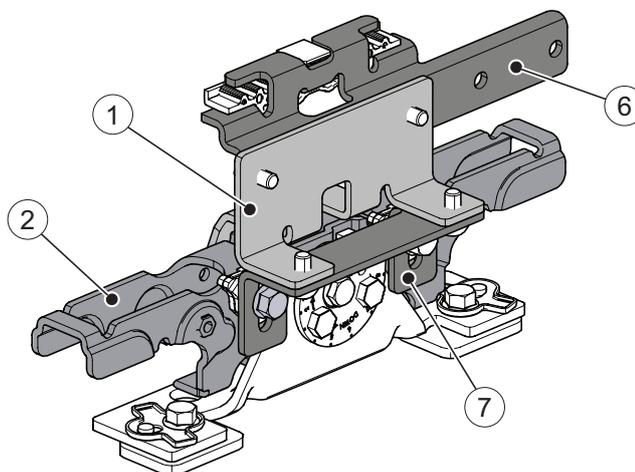


- 1 Upper part of the transmission bracket
2 Wheel holder

- 6 Beltholder bracket, universal
7 Lower part of the transmission bracket

For single right opening doors:

- Fasten the upper part of the transmission bracket (1) on the lower part of the transmission bracket (7) placed on the wheel holder (2) in the trailing edge.

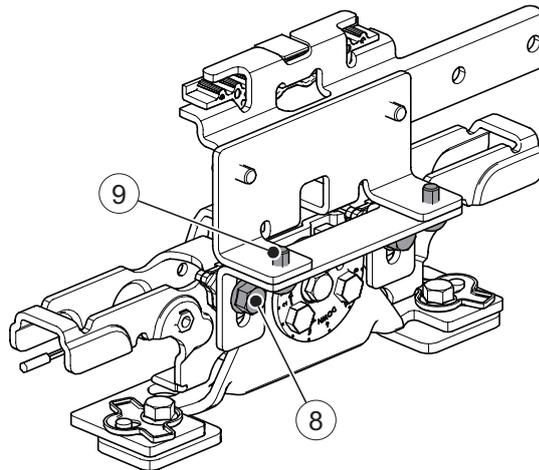


- 1 Upper part of the transmission bracket
2 Wheel holder
6 Beltholder bracket, universal
7 Lower part of the transmission bracket

g For double slider, repeat the steps (a to e) with the other door leaf.

h Move the door to closed position.

- i Loosen the height adjustment screws (8) and the depth adjustment screws (9).

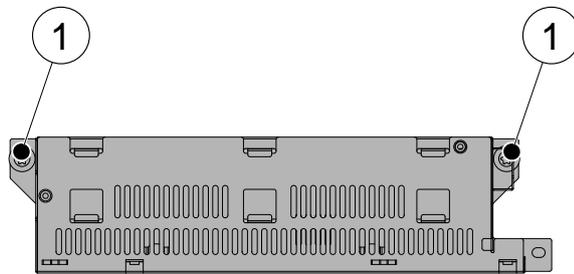
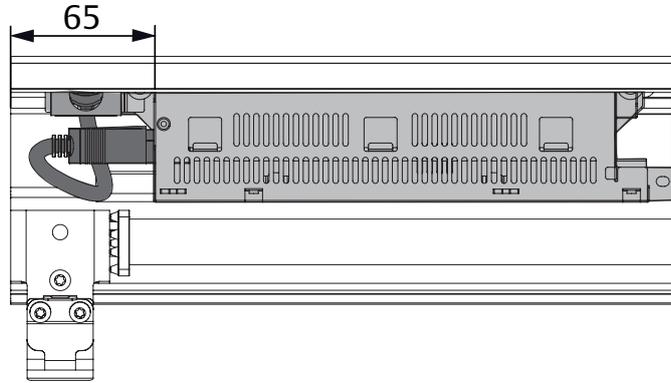


8 Height adjustment screw
9 Depth adjustment screw

- j Adjust the transmission brackets height and depth towards the wire.
- k Tighten the height adjustment screws (8) and the depth adjustment screws (9), on the transmission bracket.
- l Put the door in open position. Check that the wire catcher is not pulling the wire when moving the door.
- m Check that the door can be opened to the right position. Adjust if necessary by loosen the fixed stay so it can slide in the C-track and adjust the doors in open position according to EN 16005, see page 22.

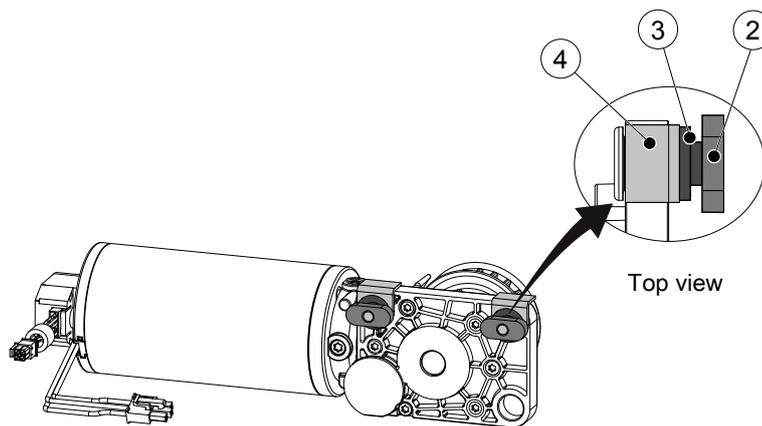
11.16 Installation of components and electrical wiring

- a Start from the left side of the operator, loosen and slide the mains connection and the power supply sideways to obtain 65 mm from the left side of the support beam to the left side of the power supply. Tighten the two fixing screws (1).



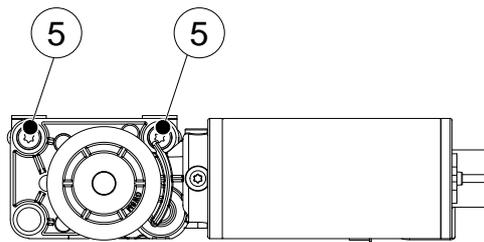
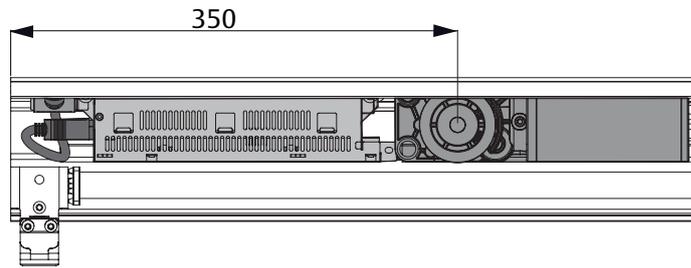
1 Fixing screw

- b Tighten the nuts (2) on the drive unit by hand. No space between the nut (2), plastic washers (3) and the damper (4).



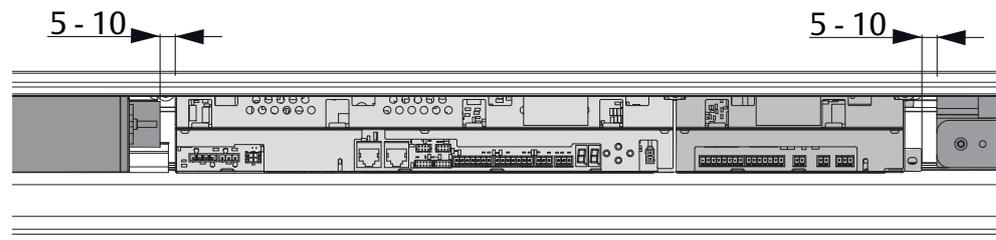
2 Nut
3 Plastic washer
4 Damper

- c Install the drive unit with its outgoing shaft 350 mm from the left side of the support beam.
Tighten the screws (5) with a force of **10 Nm**.
Start with the right screw and ensure that the drive unit is fixed in the beam. Continue with the left screw and visually ensure that this screw also is securely tightened in the beam.



5 Fixing screw

- d Continue with the main control unit MCU or MCU-ER and keep a distance of 5-10 mm to the drive unit.

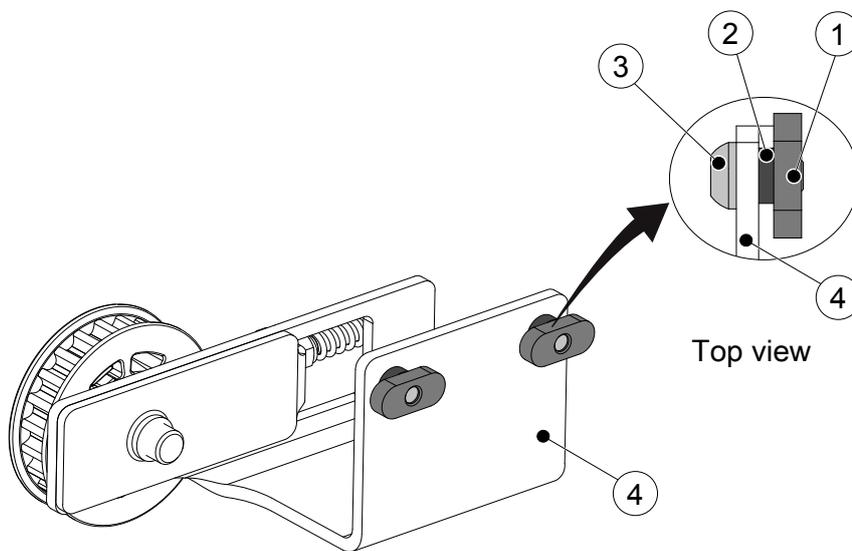


- e If an I/O unit (IOU) shall be used make sure that the connector is fully connected to the MCU/MCU-ER.
f Fix the batteries, if fitted.

Note! Extension cables are available as accessories if MCU/MCU-ER, IOU or batteries must be installed with greater distances.

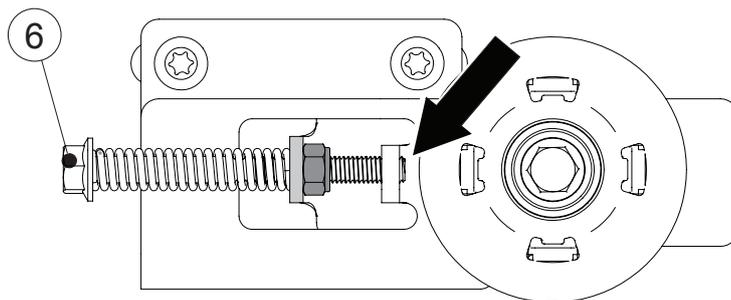
11.17 Installation of tension wheel assembly

- a Tighten the nuts (1) on the belt tension by hand. No space between the nut (1), plastic washer (2), screw (3) and the tension frame (4).



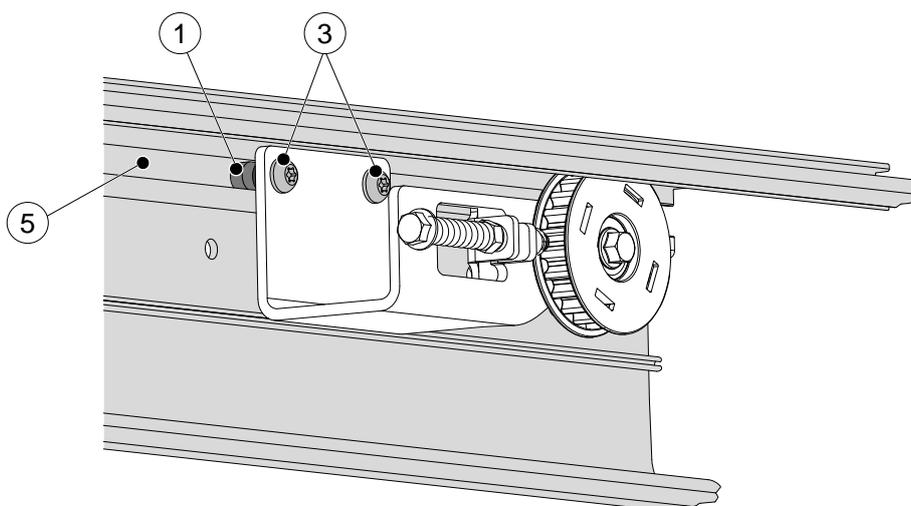
- 1 Nut
- 2 Plastic washer
- 3 Screw
- 4 Tension frame

- b Starting position of the adjustment screw (6).



- 6 Adjustment screw

- c Put the belt tension with the nuts (1) in the C-track (5). Tighten the screws (3) gently. It shall be possible to slide the tension wheel assembly side ways in the C-track (5).



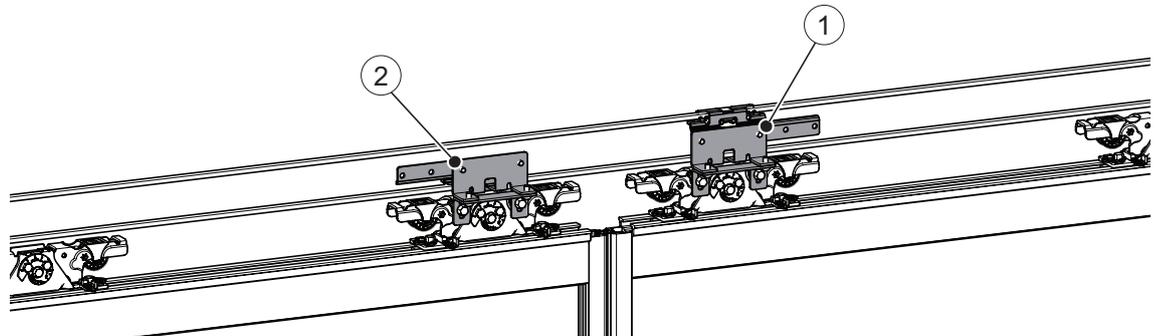
- 1 Nut
- 3 Screw
- 5 C-track

11.18 Placement of the transmission bracket

For bi-parting and single left opening doors

The upper transmission bracket shall be attached to the carriage wheel holder on the leading edge of the right door.

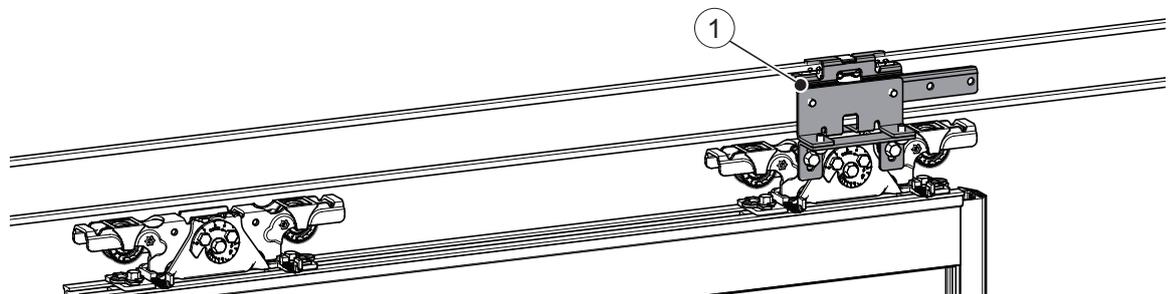
The lower transmission bracket shall be attached to the carriage wheel holder on the leading edge of the left door.



- 1 Upper transmission bracket
- 2 Lower transmission bracket

For single right opening doors

The upper transmission bracket shall be attached to the carriage wheel holder on the trailing edge of the door.

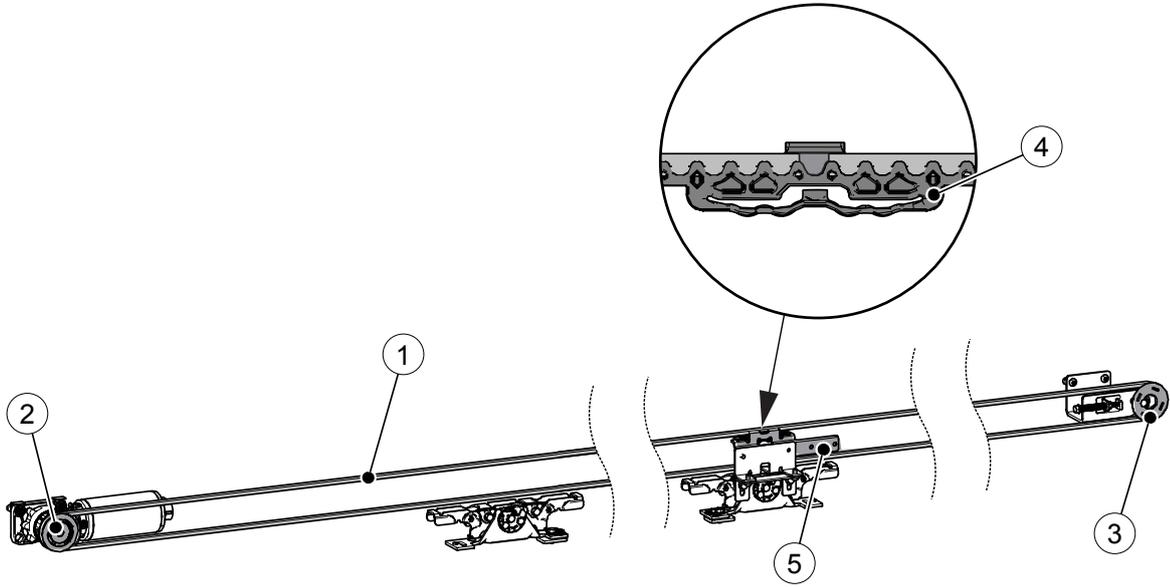


- 1 Upper transmission bracket

Note! Tighten with a maximum force of 7 Nm.

11.19 Attachment of tooth belt fitting

- a The tooth belt (1) is delivered separately and is pre-cut to the right length. Route the belt (1) around the drive unit pulley (2) and around the tension wheel (3).
- b For bi-parting and single right opening doors the belt ends are joined with the belt clamp (4) in the upper part of the belt. Single left opening door is joined in the lower.
- c Click the belt clamp (4) into position in the upper transmission bracket (5).



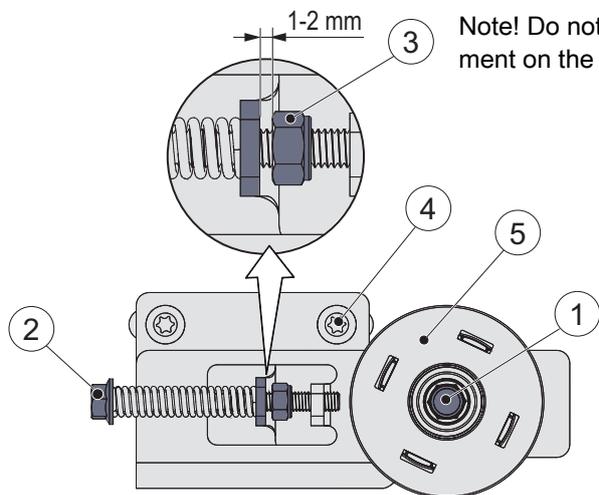
- | | |
|---------------------|------------------------------|
| 1 Tooth belt | 4 Belt clamp |
| 2 Drive unit pulley | 5 Upper transmission bracket |
| 3 Tension wheel | |

11.20 Checking and adjusting the belt tension

If the belt tension has to be corrected, proceed as follows:

- a Remove the slack reducer, if fitted.
- b Loosen the fixing screw (1) in the middle of the tension wheel (5) without removing it.
- c Screw the adjustment screw (2) to its outmost position.
- d Loosen the tension wheel assembly fixing screws (4).
- e Tension the belt by pulling the tension wheel assembly by hand.
- f Tighten the tension wheel assembly fixing screws (4) with a **torque of 10 Nm**.
- g Tighten the belt tension adjustment screw (2) until there is a gap of approx. 1-2 mm between the lock nut (3) and the bracket according to illustration below, but not further. Be sure not to overtighten, otherwise the adjustment screw (2) might damage the tension wheel (5).
- h Retighten the fixing screw (1) in the middle of the tension wheel (5) with a **torque of 30 Nm**.

Note! Do not make any adjustment on the lock nut (3).

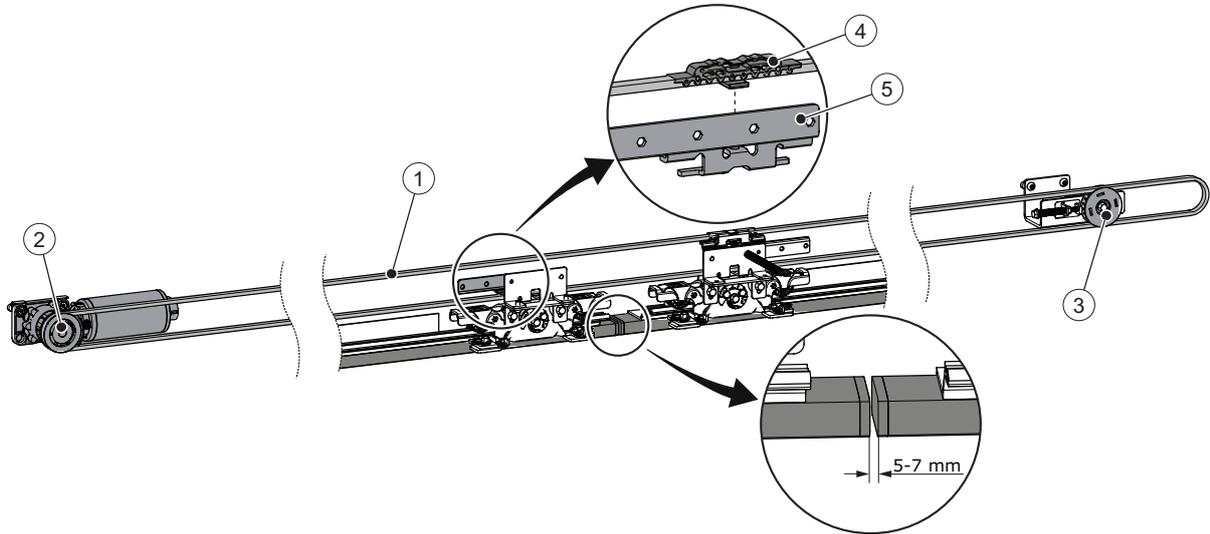


Note! Do not make any adjustment on the lock nut (3).

- 1 Fixing screw
- 2 Adjustment screw
- 3 Lock nut
- 4 Tension wheel assembly fixing screw
- 5 Tension wheel

11.21 Bi-parting operators

- a Put doors in fully closed position. Make sure that the doors trailing edge is align with the side light.
- b Put the belt clamp (4) centered over the lower transmission bracket (5).
- c When centered snap the belt clamp (4) in place.
- d Check door panels for proper centering in the fully closed and opened positions.

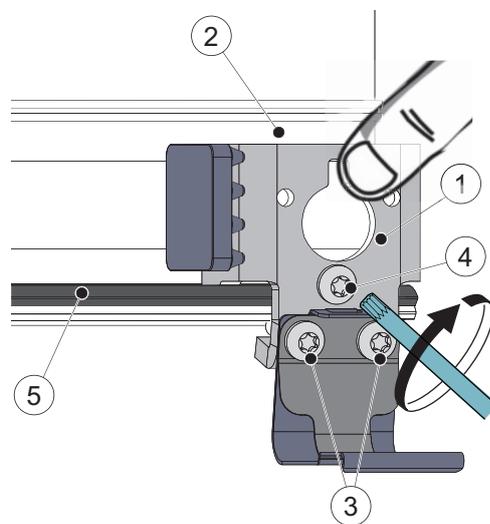


- 1 Tooth belt
- 2 Drive unit pulley
- 3 Tension wheel
- 4 Belt clamp
- 5 Lower transmission bracket

Note! There shall be a distance of 5-7 mm between the tubes on the slow moving doors.

11.22 Mount the doorstop

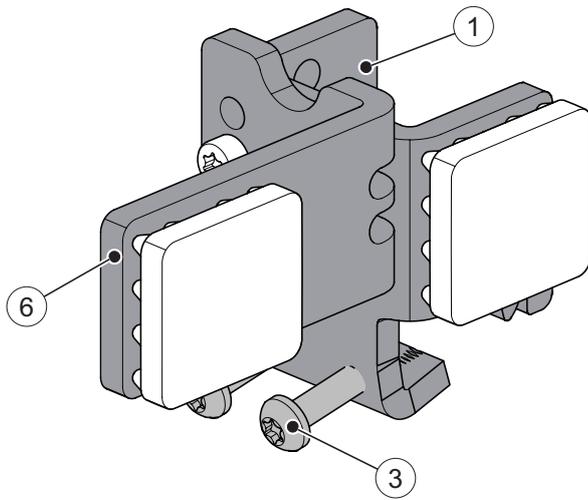
- a Push the doors by hand to the desired opening.
- b For EM Automatic Door Systems the door leaf can be fully open.
For single doors, shearing of finger is reduced by using a jamb as a door stop in closed position. Labyrinth sealing is used between the trailing edge on the door leaf and the fixed side screen to prevent a finger trap.
See Alternative installation of door system (by others than EM PS) on page 22 for required measurements.
- c Loosen the door stops (1), move them in against the wheel holders, and hold the door stop in position against the beam (2) then tighten screws (3) firmly.
- d Tighten the screw (4) on **one** of the door stops (1) to secure the plastic track (5). If there is a screw (4) on the other door stop remove it.
- e Check that the required opening and finger protection is achieved, see page 22.



- 1 Door stop
- 2 Beam
- 3 Door stop fastening screw
- 4 Screw (to secure the plastic track)
- 5 Plastic track

f If the doors shall be aligned in open position:

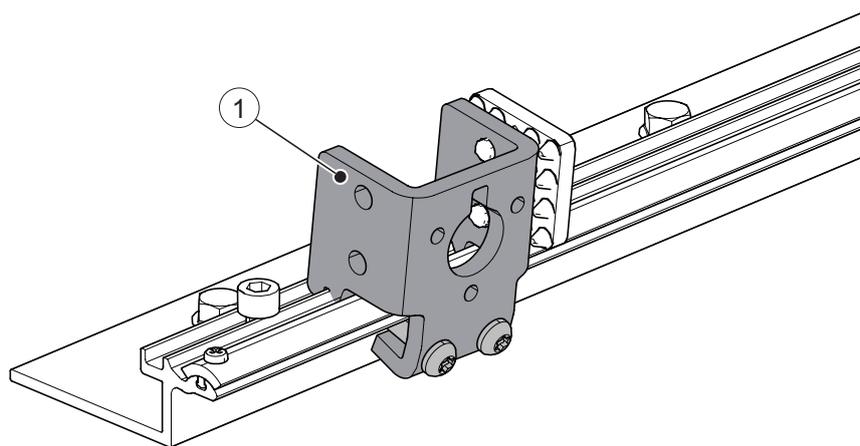
- Mount the L-Bracket (6) on existing door stop (1) in the beam.



- 1 Door stop
- 3 Door stop fastening screw
- 6 L-bracket

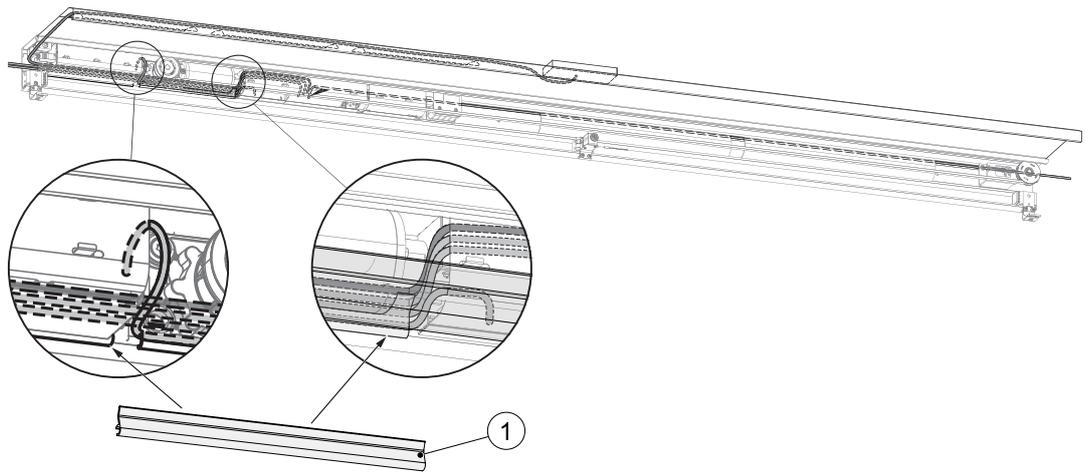
If the doors are not required to be aligned:

- Mount the extra door stop (1) on the secondary track to achieve required finger protection, see page 22.

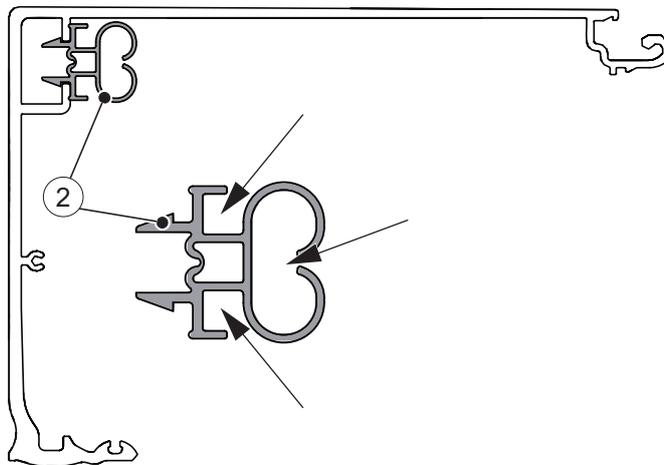


- 1 Door stop

11.23 Route the cables and attach the plastic cable holders, see illustrations below



1 Cable holder



2 Cable holder

11.24 Attachment of slack reducer

Attach the slack reducer between the eighth and ninth belt tooth on each side of the low transmission bracket. If two slack reducers are needed put the second slack reducer in the same way under the upper transmissions bracket.

Note! If needed, the operators will be delivered with slack reducer springs.

Single doors

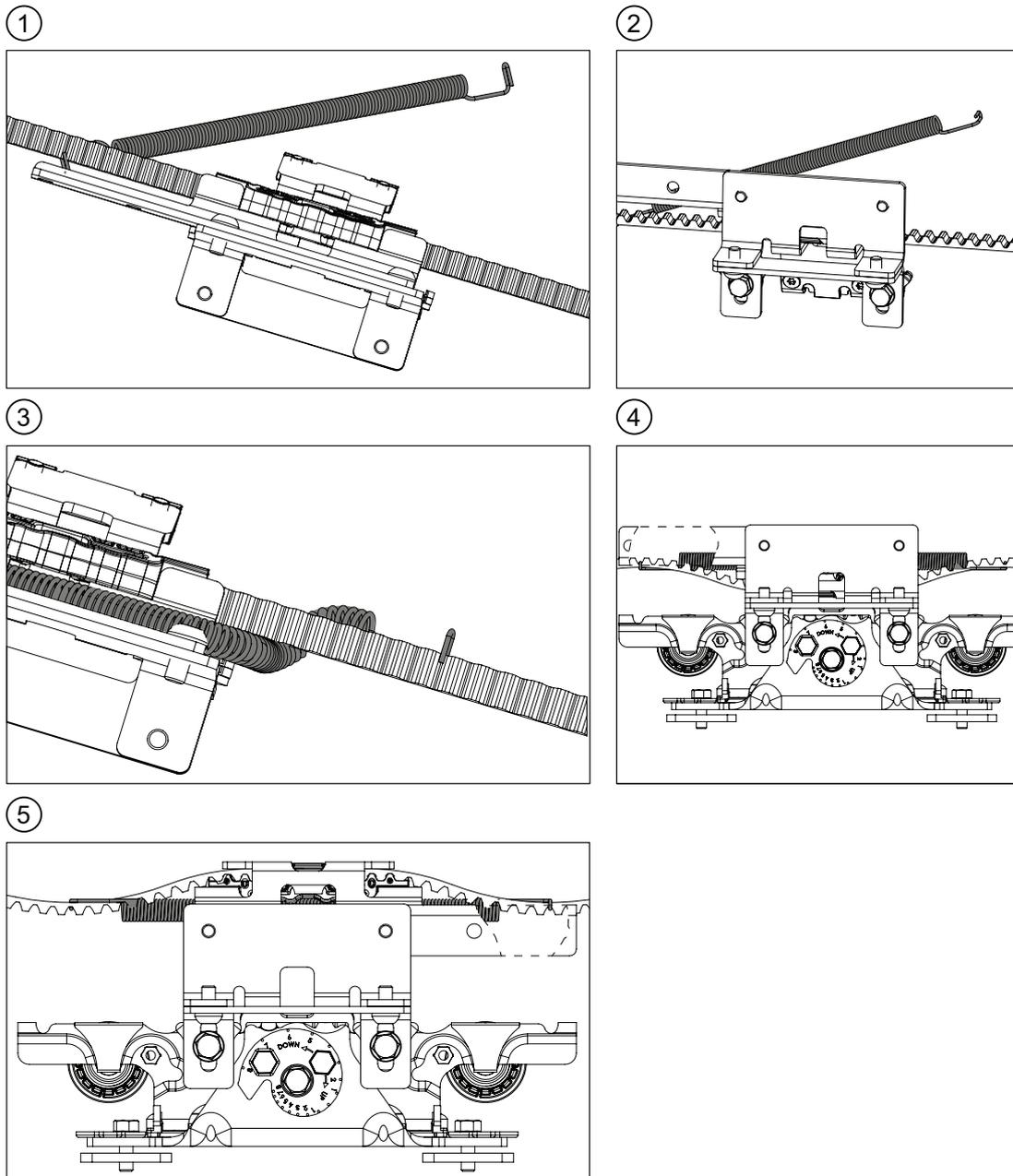
If the belt length is more than 4700 mm, there shall be one slack reducer.

Double doors

If the belt length is more than 5700 mm, there shall be two slack reducers.

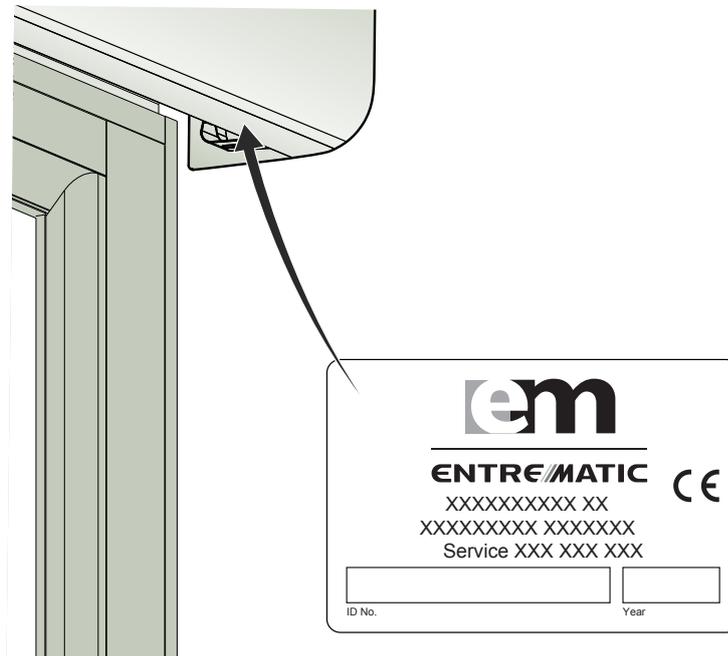
In all other cases

In all other cases, then above, there will not be any slack reducers in the operator.



11.25 Attachment of product label

When properly installed and adjusted, attach the local product label on the right side of the lower part of the operator cover.



12 Electrical connections

Note! During any work with the electrical connections the **mains power** and the **electrical emergency unit must be disconnected**.

- Place the electric switch easily accessible from the operator. If a plug contact is used in the installation the wall socket shall be placed easily accessible from the operator.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

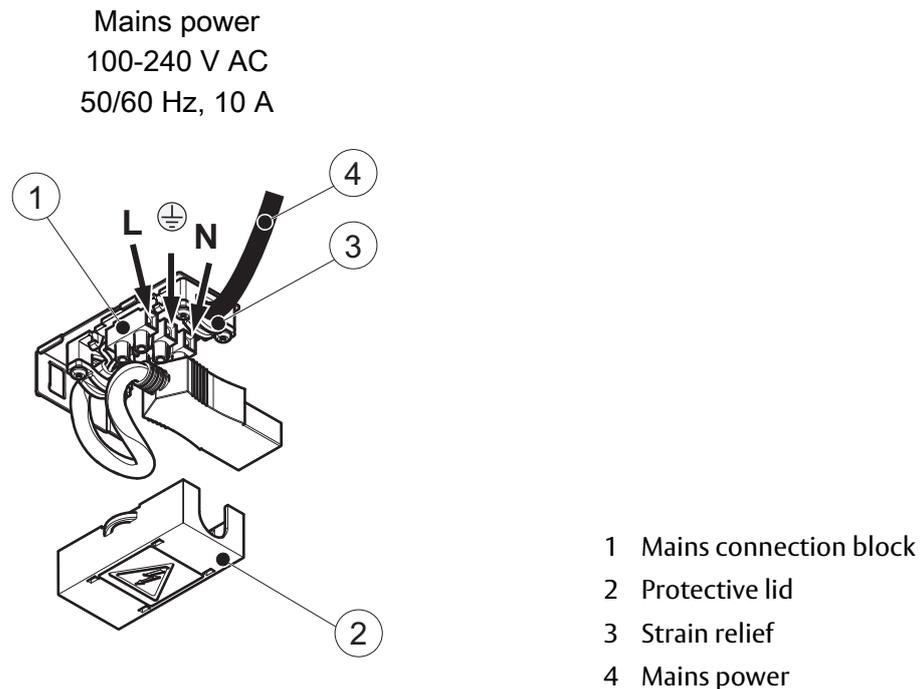
12.1 Mains connection

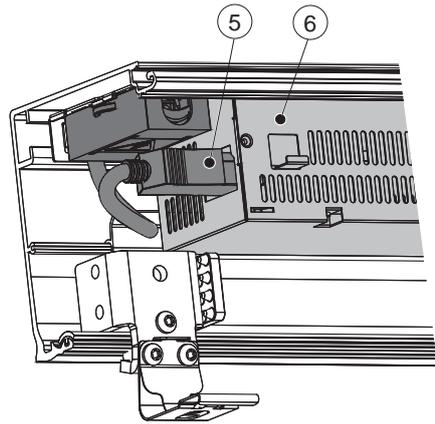
The incoming mains, which is a single phase 50/60 Hz AC voltage between 100 V -10% and 240 V +10% fuse 10 AT, is connected in the mains connection unit.

- Remove the protective lid (2).
- Connect the incoming mains power (4) through the strain relief (3) to the connection block (1) as shown in the illustration below.
- Put the protective lid (2) back in place.



Installer must properly ground door package! Improper grounding can lead to risk of personal injury.





The mains connection (5) must remain unconnected until the wiring is completed. Then connect to the supply unit (6).

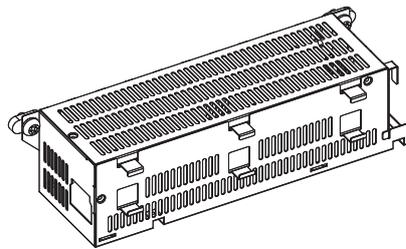
- 5 Connection cable
- 6 Power supply unit

12.2 Electrical units

12.2.1 Power supply unit (PSU 75/PSU 150)

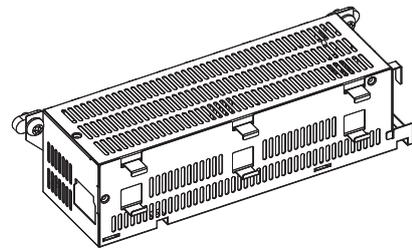
Two different main power supplies are available, 75 W and 150 W.

PSU 75



(Marked with yellow label)

PSU 150

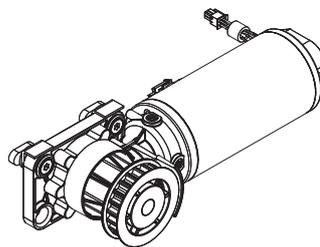


(Marked with green label)

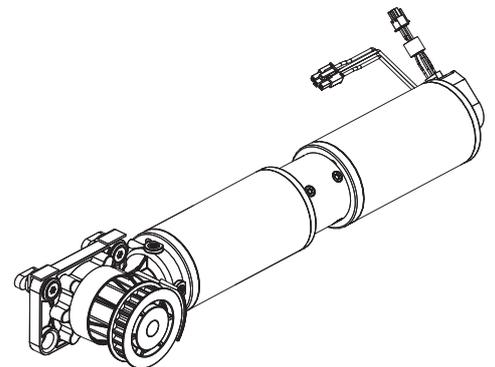
12.2.2 Drive unit (HDD/DD)

The drive unit is available in different versions:

Heavy duty drive (HDD) GR 63X55



Dual drive (DD) 2 X GR 63X55

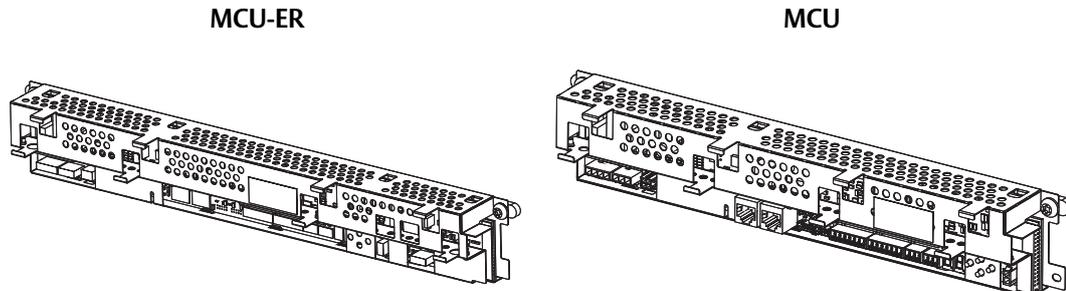


12.2.3 Main control unit (MCU/MCU-ER)

The main control unit has the connection for the power supply, drive unit, operation mode selector, activation units, electromechanical lock and batteries. An installer interface with a two digit display and four push buttons is used for function selection, adjustments and for troubleshooting. See page 71 for details.

The main control is available in two different versions.

- MCU-ER - used in escape routes where EN16005 and DIN18650 applies
- MCU - used in all other applications

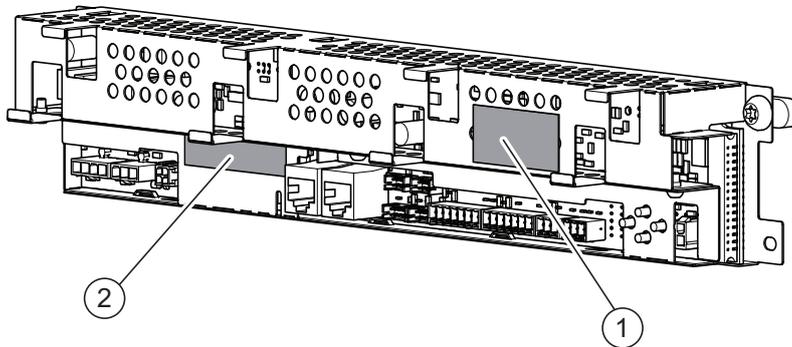


The MCU/MCU-ER has two labels, a Hardware label (1) and a Software label (2).

The hardware label states revision of the MCU/MCU-ER and applies to PCB or hardware changes.

The software label states the software version. In the MCU there are two different software versions. and in the MCU-ER there are three different software versions.

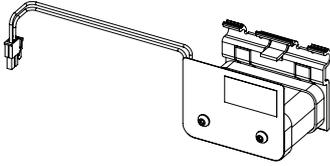
Note! Newer MCU/MCU-ER's will not have all software versions stated. Instead the software release version is stated.



- 1 Hardware label
- 2 Software label

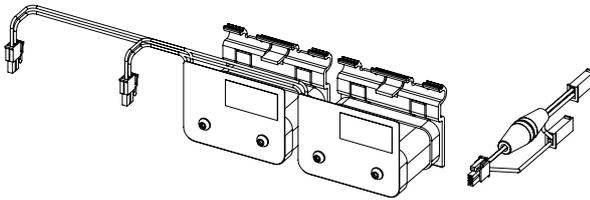
12.2.4 Additional electronic units can be connected for extra functionality

Battery unit 12 V (EEU 12)



For opening or for fire closing a 12 V battery can be connected that automatically opens or closes the door in the event of a power failure. For higher speed, the 24 V battery below is recommended and is also a demand to conform with authority demands for escape routes.

Battery unit 24 V (EEU 24)



For emergency opening or for fire closing a 24 V battery can be connected that automatically opens or closes the door in the event of a power failure. This battery can also be used for continued normal operation during short power failures (convenience mode). The fuse in the cable harness is 10 AT.

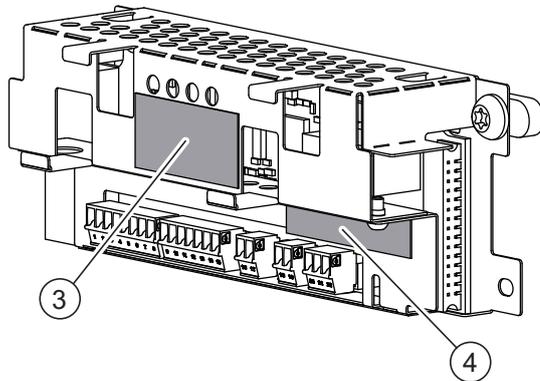
I/O unit (IOU)

The IOU has two labels, a Hardware label (3) and a Software label (4).

The hardware label states revision of the IOU and applies to PCB or hardware changes.

The software label states the software version.

Note! Newer IOU's will not have the software version stated. Instead the software release version is stated.



- 3 Hardware label
- 4 Software label

For extra functionality like

- close or robbery impulse
- nurse impulse
- open/close impulse
- emergency open impulse (fireman's opening)
- bi-stable lock
- espangolette lock
- connection of optional operation mode selector
- fire impulse
- sustainable function off
- relay output for external error or status indication, maximum 15W, 42VAC / 30 VDC (SELV), resistive load only
- interlock off (interconnected operators)
- interlocking
- second monitored inner impulse
- repeated fire closing
- pharmacy impulse 1 and 2
- mode selector disable impulse

MCU/MCU-ER

20		Lock delay LD belt lock only
19		Lock
18		(+) Lock
17		(+) 24 V DC
16		Inner impulse
15		(-) 0 V DC
14		(+) 24 V DC
13		Presence + stop monitoring *
12		Key impulse **
11		Presence impulse 2
10		C-switch or inner/outer impulse monitoring
9		Presence impulse 1
8		(-) 0 V DC
7		(+) 24 V DC
6		Side presence monitoring
5		Outer impulse
4		Side presence impulse 2
3		Stop impulse
2		Side presence impulse 1
1		(-) 0 V DC

IOU

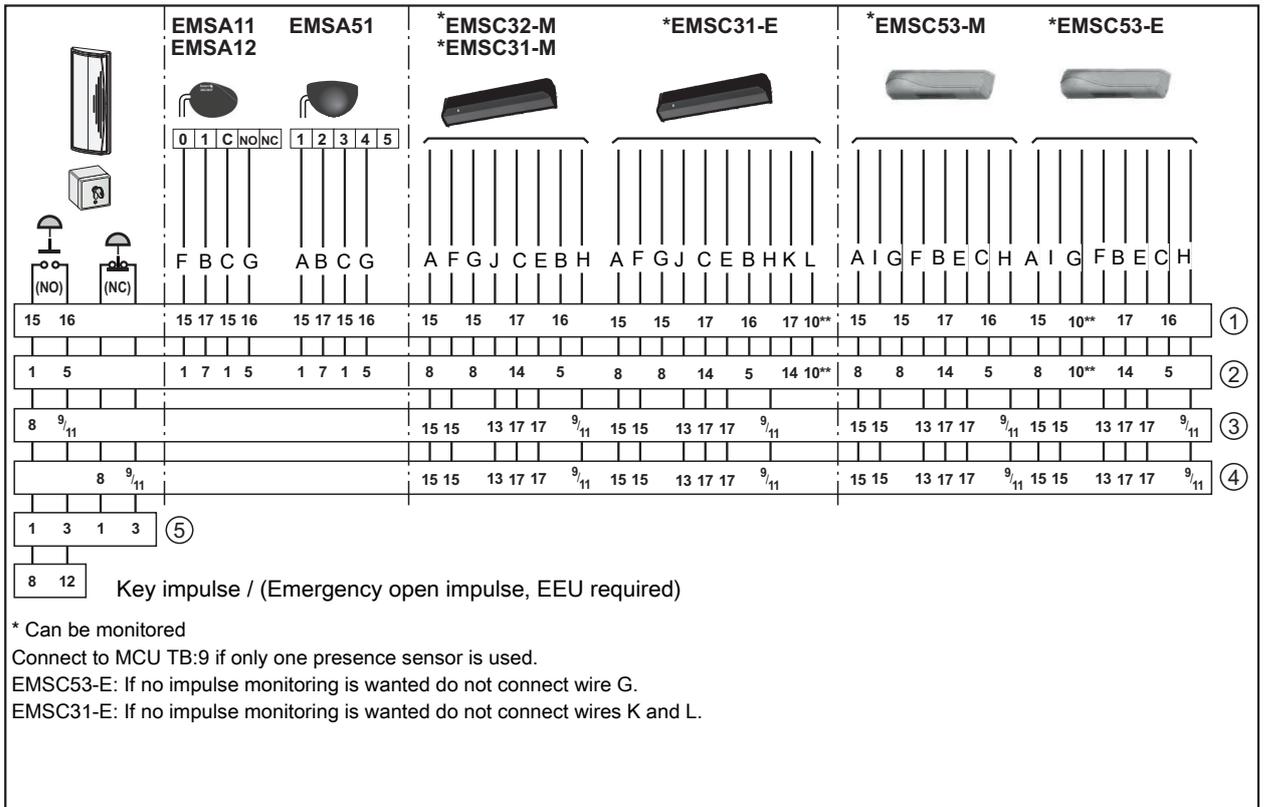
22		Error/Status NC	} max. 15W 42 V AC / 30 V DC (SELV) resistive load only
21		Error/Status COM	
20		Error/Status NO	
19		Fire	} External alarm loop 12-24 V DC
18		Fire	
17		Lock	} Bistable or Espagnolette lock only
16		Lock	
15		(+) 24 V DC	
14		Open	
13		Auto partial/Pharmacy impulse 2	
12		Exit/Pharmacy impulse 1	
11		Off	
10		Reset	
9		(-) 0 V DC	
8		(+) 24 V DC	
7		Battery wake up	
6		Function Select TB:6 Sustainable drive mode OFF/Mode selector enable	
5		Emergency open	
4		Function Select TB:4 Open/Close impulse/Interlock OFF/Inner imp. 2 monit./Interlock in	
3		Function Select TB:3 Nurse function/LDE up/Interlock out	
2		Function Select TB:2 Close or robbery impulse/LDE down/Inner impulse 2	
1		0 V	

* 1 wire monitoring = Presence, stop, inner (and/or) outer impulse monitoring

** Key impulse can generate a battery wake up if mains power is off and battery is fitted. The door can open or open/close

12.3 Connection of activation and safety units

See sensor manuals for mounting and adjustments. Protective device shall comply with EN 12978.



- A = Brown
 - B = Green
 - C = White
 - D = Orange
 - E = Red
 - F = Blue
 - G = Yellow
 - H = Pink
 - I = Grey
 - J = Black
 - K = Grey/Pink
 - L = Red/Blue
- ① Inner impulse
 - ② Outer impulse
 - ③ Presence impulse NO
 - ④ Presence impulse NC
 - ⑤ Stop impulse

Common dip switch setting for inner sensors, dip switches shown are set to ON :

EMSC32-M: 1, 3, 5, 12, (11=NO)

EMSC31-M: 1, 3, 5, 8, 9, (7=NO), (15=Lookback)

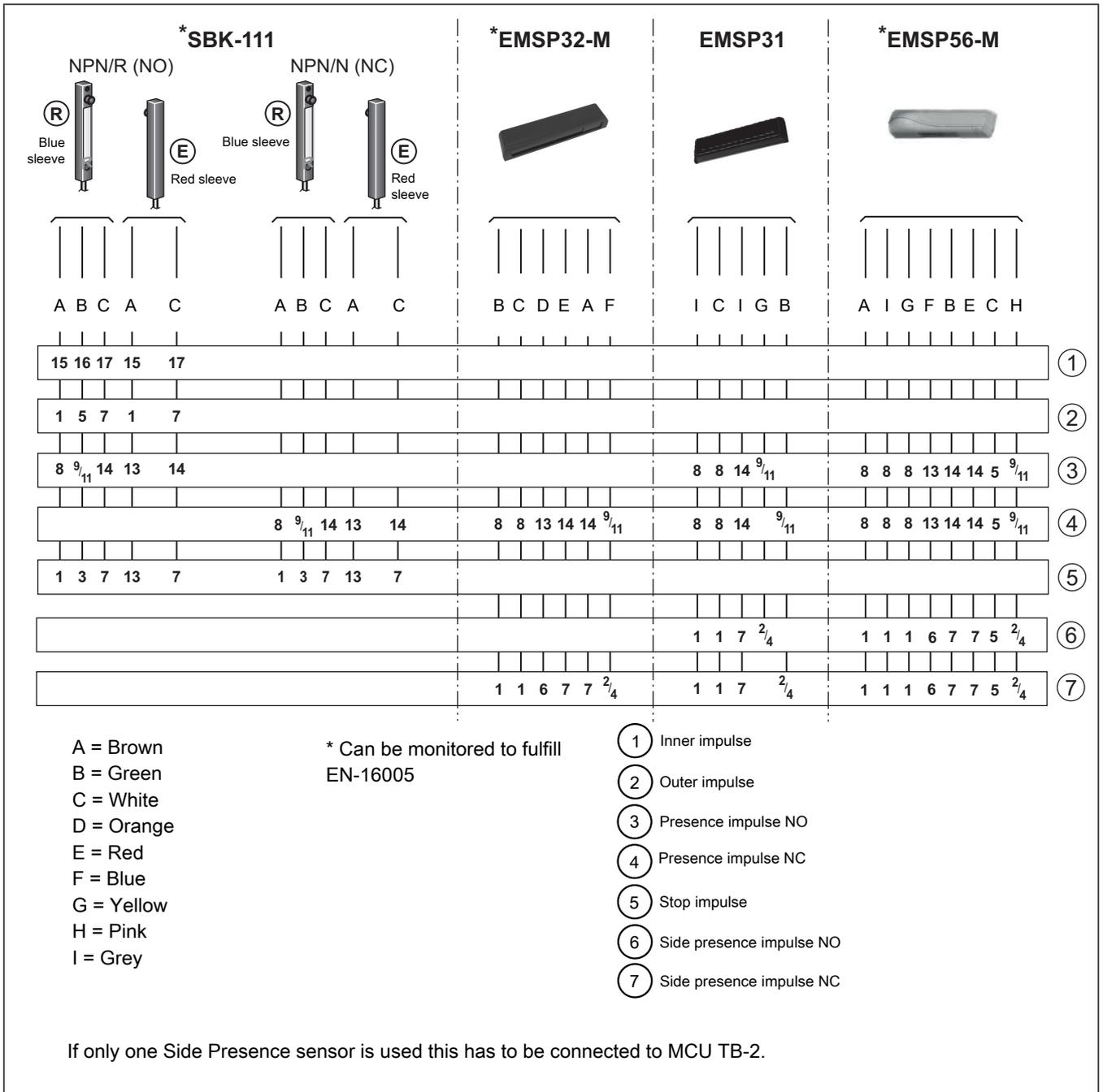
Common dip switch setting for outer sensors, dip switches shown are set to ON :

EMSC32-M: 1, 3, 12, (11=NO)

EMSC31-M: 1, 3, 8, 9, (7=NO), (15=Lookback)

EMSC31-E: 1, 3, 8, 9, (7=NO), (15=Lookback)

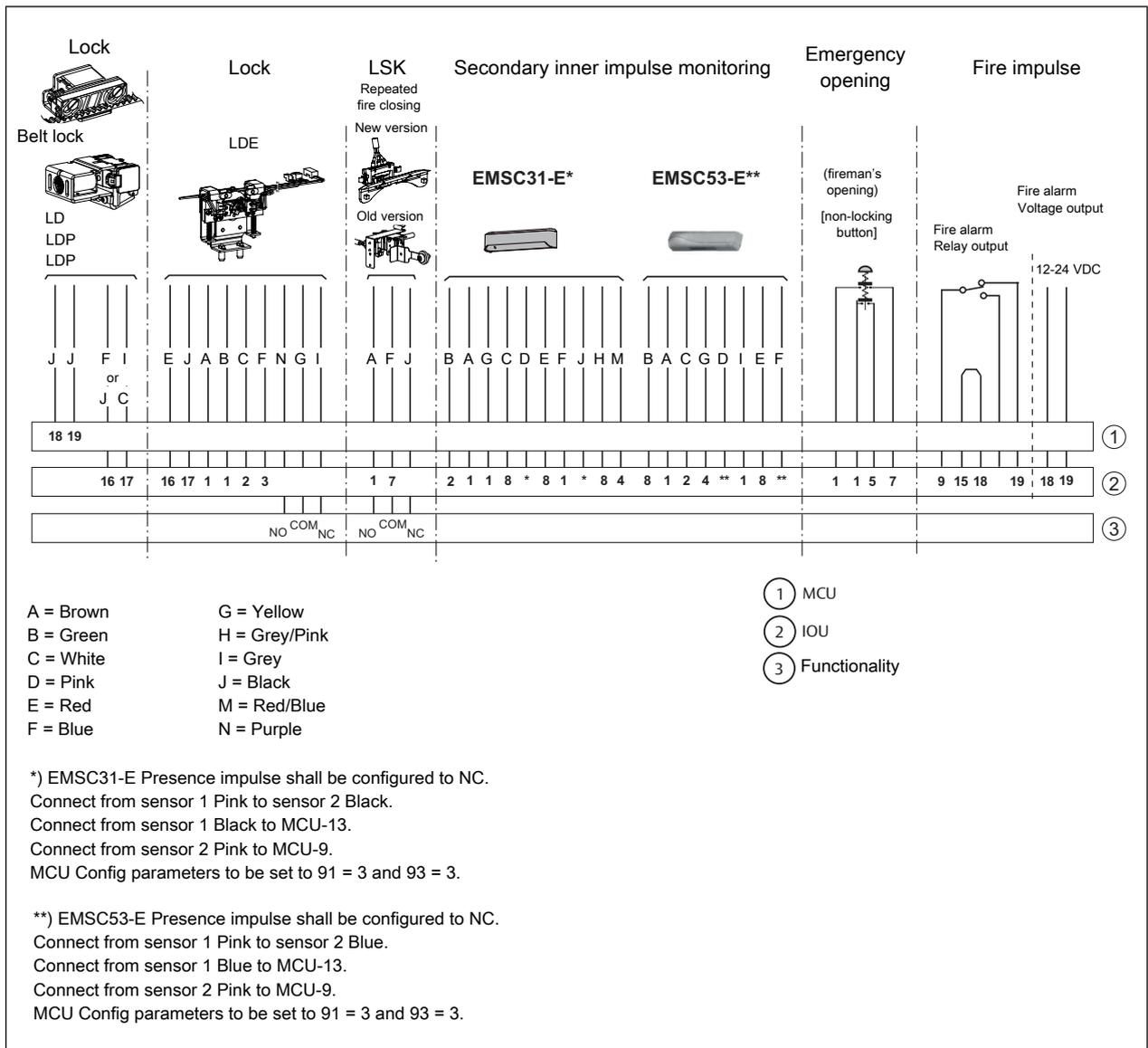
12.4 Connection of presence activation units



Common dip switch setting for side presence sensors, dip switches shown are set to ON:

EMSP32-M: 1, 3, 10

12.5 Connection of accessories



13 Start-Up

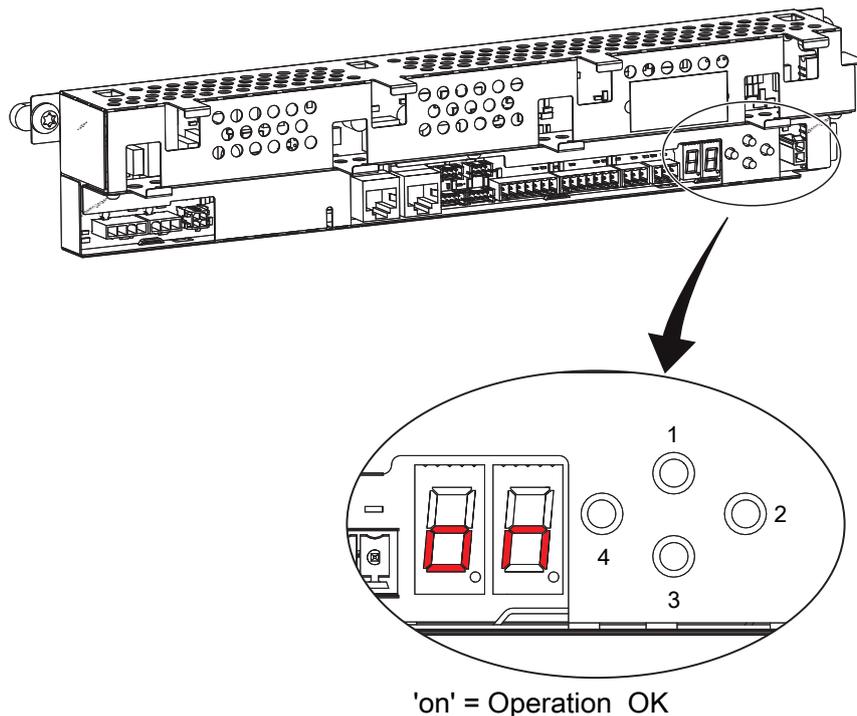
Start-up and adjustment must be carried out in the following order when the operator is installed.

- a Only connect PSU, motor, lock, battery and operation mode selector.
- b Connect the mains plug to the control unit.
- c Push and hold the learn button for 2 seconds. Release the learn button when there is a flashing "L" in the display.
- d The learn cycle starts 2 seconds after the learn button is released.
- e When the learn is finished the display can show different parameters that could not be set automatically during the learn cycle. These parameters shall be entered by the installer. See page 73.
- f Give a Push And Go and see that the door runs as expected.
- g Disconnect the power and connect all accessories such as well adjusted sensors and breakout switches.
- h Connect the mains plug to the control unit.
- i Check that the sensors are in standby mode, deactivated, and there is no traffic in the door opening.
- j Push the Learn button and make a learn. In the second learn all the accessories and sensors shall be learned into the control unit.
- k Check the door movement by giving an impulse on the operator.
- l If necessary adjust the door speed parameters to the required speeds.
- m Check that the installation complies with valid regulations and requirements from the authorities, see page 22.
- n For parameters that shall be adjusted to comply with EN 16005 and DIN 18650 see page 119, Escape route according to EN16005 or DIN 18650.

13.1 Adjustments and selection of special operating functions

The main control unit has a two-digit display that shows text and/or digits. On the right side of the display are four push buttons. The display can show 4 different modes:

- Parameter mode. In Parameter mode the display shows parameters from 00 to C6. A parameter control different behavior in the operator.
- Value mode. In Value mode the display shows values from 00 - 99. A value sets how a parameter shall act.
- Error mode. Error mode shows what error group and error code that is active.
- Status mode. Status mode shows what impulses that are active in to the MCU.



- Up (to step up in parameter or value menu)
- Select (enters into parameter or value menu and program a value into memory)
- Down (to step down in parameter or value menu)
- Learn/Exit (Learn has 3 functions, 1 quick learn, 2 Normal learn, 3 default setting, Exit jumps out from value menu without saving or parameter menu)

Up and Down buttons steps between the different parameters or values.

Select steps from the standby mode into the parameter mode or steps from the parameter mode into the value change mode. In the value change mode, pushing Select, will program the selected value into the selected parameter and step back to the parameter mode.

Learn/Exit button initiate a learn of the control unit if the MCU is in the standby mode. Learn/Exit button will exit the value programming mode and enter the parameter mode without saving the value. Learn/Exit button will exit the parameter mode and enter the standby mode.



Fingers may be trapped by the belt transmission bracket. Set the operation mode selector (OMS) to OPEN before doing any configurations with the buttons.

Active error

E1 = flashing letter E followed by a digit displays an active error (1-9). The digit shows the main type of error. The display switches between this main error and a two digit number to specify the error.

If several errors are active they are displayed in a sequence. Errors are cleared by a RESET from the operation mode selector (OMS) or by turning off and on the mains power. For a detailed description of errors, see Troubleshooting on page 121.

13.2 The Learn function can be one of three different types

- 1 Push and hold the Learn/Exit button for **more than one and less than two** seconds, then each connected electronic module is recognized.
- 2 Push and hold the Learn/Exit button for **more than two seconds** and the display flashes L. A complete Learn cycle will start after 2 seconds when the Learn/Exit button is released. The complete learn cycle includes the learn in point no. 1.

The door will first close, start to open a **short** distance and close again. It will sense if an electromechanical lock is installed and also find out of which type it is. It will then open the door and during the opening it will calculate the friction in the system. It will stop in the fully open position and register the clear opening width. It will also register connected sensors and can judge whether they are monitored or not. After a 4-10 seconds delay it will close again. During the closing it will automatically calculate the door weight and adjust the closing speed accordingly.

The following accessories/parameters are automatically detected and set during the learn cycle.

Accessory/Parameter	Parameter number
Adjustment of closing speed according to ANSI/BHMA A156.10 standard.	02
Electromechanical lock and which type	05, 06, 98
Controlling of connected sensors output, NO/NC	07, 08, 27, 28, 46
If the sensors are monitored or not	09, 16, 29, 66, 91
Battery and battery size	41
Measuring of clear opening width	59
Power supply type	64
Door type	67
Calculation of door weight	68
Calculation of friction in the system.	69
Second inner impulse	93

When the learn cycle has ended the door will stay closed. If there are some parameters that couldn't be configured automatically during the learn cycle the door will open. The display will show first a "P" and then what parameter that couldn't be auto configured, e.g. whether the door is bi-parting or single sliding (parameter 67 Door Type). These parameters has to be configured by the installer.

- 1 Push the right button, Select, to start editing parameters.
 - 2 Push the Select button once again and the value of this parameter is shown while flashing.
 - 3 Push the Up or Down buttons to select the right value.
 - 4 Push the Select button to confirm and program the selected value.
 - 5 Continue to configure the rest of the unlearned parameters.
 - 6 Push and hold the Learn/Exit button for more than two seconds and the display shows 'on'. After two seconds delay the door closes and is ready for operation or for further adjustments.
- 3 Push and hold the Learn/Exit button for more than **ten seconds** and the operator returns to default factory set parameters.
After 2 seconds the display starts to flash a L. After another 8 seconds the display shows de (de for default) and the control unit is factory set. 2 seconds after the button is released the display goes back to show what it showed before the start of the default setting.

13.3 Display test and configuring of parameters

- a When the display shows "on", push the Select button and each of the two display windows make a rotating test pattern.
- b Verify that all seven segments of the two display windows are lit during the test. If not there is a risk of misjudgment of the digits shown in a defective display.
- c When the display test is finalized the display shows two steady digits indicating the first parameter.
- d Push the Up or Down buttons to select the parameter to adjust.
- e Push the Select button again to show the value of the selected parameter. The value is shown as two flashing digits.
- f Push the Up or Down buttons to adjust the value in the allowed range.
- g When the correct value is selected push the Select button again and the value will be programmed into the MCU memory.
- h Push the Exit button once and leave the value editing **without** making any changes.
- i Push the Exit button once again to leave parameter menu. The display shows 'on'.
It is also possible to return to normal operation 'on' by waiting three minutes without pushing any button.

Note! The value is programmed into the MCU when pushing Select regardless if the value is changed or not. When a value is programmed into the MCU that parameter is excluded from the learn cycle. If a new learn is made the programmed parameter will remain unchanged.

To have the parameters included in the learn cycle again you have to make a default setting of the MCU, (see above).

Below is the available characters in the display. Observe 5 and S are the same.

Display	Character								
	0		5		A		e		S
	1		6		b		F		t
	2		7		C		n		
	3		8		d		o		
	4		9		E		P		

13.4 Status indication on the display

Select status indication by setting parameter 5E = 01.

The display shows the different impulses that are active. The status viewing starts with showing St as for Status, then one or many numbers representing the different active impulses in to the operator.

The different impulses are:

- 00 = Key Impulse
- 01 = Inner impulse
- 02 = Outer impulse
- 03 = Synchronisation impulse
- 04 = Interlock in impulse
- 05 = Presence impulse 1
- 06 = Presence impulse 2
- 07 = Side Presence impulse 1
- 08 = Side Presence impulse 2
- 09 = Stop impulse
- 10 = Emergency open impulse
- 13 = Close command
- 14 = Nurse impulse
- 24 = Push and Go impulse
- 25 = Open-Close impulse
- 28 = Fire impulse
- 47 = Interlock Disable

13.5 Configuration parameters (sorted after functionality)

Note! Some of the parameters below are not accessible, depending of different options installed.
For further explanations of parameters below, see page 81.

FUNCTION parameters		
Param. ID	Description	Range
MCU 5E	Status indication. Off(00) / On(01)	00-01
MCU 5F	Default programming. Off(00) / On(01)	00-01
IOU 9C	Pharmacy function. Off(00) / On(01)	00-01
MCU 12	Opening direction. CW(00) / CCW(01)	00-01
MCU 13	Hold Force	00-60 N
MCU 2A	Side Presence Function. Safe Speed(00) / Stop Door(01)	00-01
MCU 32	Active Brake on Stop. Off(00) / On(01)	00-01
MCU 33	Push & Go in EXIT Mode Selection. Off(00) / On(01)	00-01
MCU 34	Hold Force in EXIT and OFF Mode Selection. Off(00) / On(01)	00-01
MCU 35	Toggle Operation Mode Selector after Stop. Off(00) / On(01)	00-01
MCU 47	C-Switch Configuration. NO(00) / NC(01)	00-01
MCU 53	Operator Type. Slider(00)	00
MCU 54	Service Needed Operating Hours	00-60 h x1000
MCU 55	Service Needed Opening Cycles	00-50 cycles x100.000
MCU 56	Service Needed Locking Cycles	00-50 cycles x10.000
MCU 60	Learn. Off(00) / On(01)	00-01
MCU 61	Auto Width. Off(00) / On(01)	00-01
MCU 62	Partial Function. Opened(00)/ Closed(01)	00-01
MCU 6A	Interlock Function. Off(00) / On(01)	00-01
MCU 6b	Synchronizing Function. Off(00) / On(01)	00-01
MCU 6C	External Bus Device ID	01-99
MCU 6d	Extended Hold Open Time Function. Off(00) / On(01)	00-01
MCU 6E	MMI Access code. 1 push(00), 4 push(01)	00-01
MCU 65	Sustainable Drive Mode. Off(00) / On(01)	00-01
MCU 67	Door Type. Single sliding(00) / Biparting(01)	00-01
IOU 90	Function Select TB:3. No function(00) / Nurse function(01) / LDE up(02) / Interlock out(03)	00-03
IOU 91	Function Select TB:4. No function(00) / Open/Close function(01) / Interlock disable (02) / Inner impulse 2 monitoring(03) / Interlock in(04)	00-04
IOU 93	Function Select TB:2. No function(00) / Close function(01) / LDE down(02) / Inner impulse 2(03)	00-03
IOU 99	Function Select TB:6. No function(00) / Sustainable Disable (01) / Mode Selector Disable (02)	00-02

DRIVE parameters		
Param. ID	Description	Range
MCU-ER A0	Escape Route Motor Configuration. 1-motor(01) / 2-motor(02)	01-02

DRIVE parameters		
Param. ID	Description	Range
MCU 15	Run Program. Smooth(01) to Max Performance(05)	01-05
MCU 49	Opening Max Force	02-23 N x10
MCU 4A	Close Kick Force	02-23 N x10
MCU 50	Closing Max Force	02-23 N x10
MCU 64	Power Supply Type. 150 W(01) / 75 W(02)	01-02
MCU 68	Door Weight	01-40 kg x10
MCU 69	Friction	00-99 N
MCU 70	Motor Type. Heavy Duty(01)	01
MCU 71	Max Motor Power	03-15 W x10

EMERGENCY parameters		
Param. ID	Description	Range
MCU 10	Emergency Unit Monitoring. Off(00) / Convenience Monitoring(01) / Redundant Monitoring(02)	00-02
MCU 36	Emergency Action. Closing(00) / Opening(01)	00-01
MCU 37	Emergency Action in OFF Mode. Off(00) / On(01)	00-01
MCU 38	Convenience Battery. Off(00) / On(01)	00-01
MCU 39	Battery Wake-up. Open(00) / Open/Close(01)	00-01
MCU 3A	Lock Door After Fire Closing. Follow Mode Selector(00) / Always Un-lock(01) / Always Lock(02)	00-02
MCU 40	Emergency Unit Test Interval	04-23 hours
MCU 41	Battery Type. No battery(00) / 12V(01) / 24V(02)	00-02
IOU 94	Fire Impulse Function (I/O unit). Off(00) / On(01)	00-01
IOU 95	Emergency Open Impulse Function (I/O unit). Off(00) / On(01)	00-01
IOU 96	Emergency Button Configuration (I/O unit). NO(00) / NC(01)	00-01

OPERATION MODE SELECTOR parameters		
Param. ID	Description	Range
OMS B0	Operation Mode Selector Variant, OMS-1. 3 buttons with EXIT(01) / 3 buttons with AUTO(02) / 4 buttons(03) / 5 buttons(04)	01-04
OMS B1	Operation Mode Selector Key Lock, OMS-1. Off(00) / Hold for two sec(01) / Passcode(02) /	00-02
OMS B2	Operation Mode Selector Service Indication, OMS-1. Off(00) / On(01)	00-01
OMS B3	Choose Priority of the operation mode selector, OMS-1. The lower the number the higher the priority.	25-99
OMS B4	Choose group of the operation mode selector, OMS-1.	00-10
OMS B5	Choose display mode of the operation mode selector, OMS-1. Show system mode(00) / Show local mode(01)	00-01
OMS B6	Choose Terminal mode of the operation mode selector, OMS-1. The buttons on OMS is disabled(00) / The OMS adapts to system mode(01) / The OMS is setting the operation mode(02)	00-02
OMS B7	Mode Selector, Self Service Indication, OMS-1. Off(00) / On(01)	00-01
OMS B8	Mode Selector, Key Impulse, OMS-1. Disabled(00) / Login Required(01) / Enabled(02)	00-02
OMS C0	Operation Mode Selector Variant, OMS-2. 3 buttons with EXIT(01) / 3 buttons with AUTO(02) / 4 buttons(03) / 5 buttons(04)	01-04
OMS C1	Operation Mode Selector Key Lock, OMS-1. Off(00) / Hold for two sec(01) / Passcode(02) /	00-02
OMS C2	Operation Mode Selector Service Indication, OMS-2. Off(00) / On(01)	00-01
OMS C3	Choose Priority of the operation mode selector, OMS-2. The lower the number the higher the priority.	25-99
OMS C4	Choose group of the operation mode selector, OMS-2.	00-10
OMS C5	Choose display mode of the operation mode selector, OMS-2. Show system mode(00) / Show local mode(01)	00-01
OMS C6	Choose Terminal mode of the operation mode selector, OMS-2. The buttons on OMS is disabled(00) / The OMS adapts to system mode(01) / The OMS is setting the operation mode(02)	00-02
OMS C7	Mode Selector, Self Service Indication, OMS-2. Off(00) / On(01)	00-01
OMS C8	Mode Selector, Key Impulse, OMS-2. Disabled(00) / Login Required(01) / Enabled(02)	00-02
MCU 6F	Choose group of the I/O operation mode selector	01-10
IOU 97	Operation Mode Selector Function (I/O unit). Off(00) / On(01)	00-01
IOU 9A	Priority of the I/O operation mode selector.	25-99
IOU 9B	Choose group of the I/O operation mode selector.	00-10

ELECTROMECHANICAL LOCK parameters		
Param. ID	Description	Range
MCU 05	Lock Configuration (main control). No lock(00) / LDP(01) / LD(02) / LDP Low Energy(03) / LD Low Energy(04) / Not to be used(05)	00-05
MCU 06	Lock Release. Off(00) / On(01)	00-01
MCU 42	Remain Locked at Stop. Off(00) / On(01)	00-01
MCU 43	Opening Delay for Lock	00-99 sec x 0.1
MCU 44	Exit Lock. Off(00) / On(01)	00-01
MCU 51	Push & Close. Off(00) / On(01)	00-01
MCU 52	Push & Close Timeout	00-99 sec x10
IOU 98	Lock Configuration (I/O unit). No lock(00) / LDB(01) / LDE(02) / LDB EMSL(03)	00-03

SENSOR parameters		
Param. ID	Description	Range
MCU 07	Presence Impulse 1 Configuration. NO(00) / NC(01)	00-01
MCU 08	Presence Impulse 2 Configuration. NO(00) / NC(01)	00-01
MCU 09	Presence Impulse Monitoring	00-02 units
MCU 16	Inner Impulse (motion) Monitoring. Off(00) / On(01)	00-01
MCU 17	Outer Impulse (motion) Monitoring. Off(00) / On(01)	00-01
MCU 27	Side Presence Input 1 Configuration. NO(00) / NC(01)	00-01
MCU 28	Side Presence Input 2 Configuration. NO(00) / NC(01)	00-01
MCU 29	Side Presence Impulse Monitoring	00-02 units
MCU 30	Side Presence Activation Distance	00-99 dm
MCU 31	Sensor Type. 1-wire(00) / 2-wire(01) Monitoring	00-01
MCU 45	Stop Function. Off(00) / On(01)	00-01
MCU 46	Stop Configuration. NO(00) / NC(01)	00-01
MCU 66	Stop Impulse Monitoring. Off(00) / On(01)	00-01
IOU 91	Inner impulse 2 monitoring, see page 76	03
IOU 93	Inner impulse 2, see page 76	03

TIME parameters		
Param. ID	Description	Range
MCU 03	Hold Open Time	00-60 sec
MCU 04	Key Hold Open Time	00-60 sec
MCU 20	Partial Hold Open Time	00-60 sec
MCU 21	Push & Go Hold Open Time	00-60 sec
MCU 22	Auto Width Activation Time	00-60 sec
MCU 23	Auto Width Resume Time	00-60 sec
MCU 24	Jam Hold Time	00-10 sec
MCU 25	Interlock Disable Time	00-60 sec
MCU 26	Presence Hold Open Time	00-60 sec
IOU 92	Open/Close Timeout (I/O unit)	00-60 min

SPEED parameters		
Param. ID	Description	Range
MCU 00	High Speed Opening	10-70 cm/sec
MCU 01	Low Speed	05-70 cm/sec
MCU 02	High Speed Closing	10-70 cm/sec

POSITION parameters		
Param. ID	Description	Range
MCU 5C	Pharmacy open 1 position	00-99 cm
MCU 5D	Pharmacy open 2 position	00-99 cm
MCU 11	Partial Open Position	00-99 %
MCU 48	C-Switch Activation Distance	00-99 dm
MCU 57	Low Speed Distance, Opening	00-99 cm
MCU 58	Low Speed Distance, Closing	00-99 cm
MCU 59	Open Position	00-99 dm
MCU 63	Partial Closed Position	00-30 cm

13.6 Description of parameters

Main control board parameters			
No.	Parameter Name	Value	Description
00	High Speed Opening		Sets the maximum opening speed. Unit cm/s.
01	Low Speed		The low speed is self adjusting to optimal operation if this parameter is set to max. Depending on authority or installation requirements the low speed, low speed distance opening and/or closing can be further reduced. Unit cm/s
02	High Speed Closing		Sets the maximum closing speed. Unit cm/s.
03	Hold Open Time		The general hold open time for Inner and Outer impulses. Unit seconds.
04	Key Hold Open Time		Hold open time for Key impulse. Unit seconds.
05	Lock Configuration (main control)		Europe = Low Energy locks Never LD in escape routes! LDP = locked with power (fail safe) LD = locked without power (fail secure)
	No lock	00	No lock
	LDP	01	LDP = Locked with power. Only used with US lock or belt lock.
	LD	02	LD = Locked without power. Only used with US lock or belt lock.
	LDP LE	03	LDP LE = Locked with power low energy. Used with EU lock.
	LD LE	04	LD LE = Locked without power low energy. Used with EU lock.
06	Lock release		If "Lock Release" is On, the door will apply force in the closing direction when the lock is unlocking. This is made to prevent a lock from being stuck in locked position when opening. Should be set to On when an electromechanical lock is installed.
	Off	00	
	On	01	
07	Presence Impulse 1 Configuration		This parameter determines if a presence impulse is normally open (NO) or normally closed (NC).
	NO	00	Normally open
	NC	01	Normally closed
08	Presence Impulse 2 Configuration		This parameter determines if a presence impulse is normally open (NO) or normally closed (NC).
	NO	00	Normally open
	NC	01	Normally closed

Main control board parameters			
No.	Parameter Name	Value	Description
09	Presence Impulse Monitoring		Presence impulse monitoring is a demand to be activated according to EN 16005 or DIN 18650 if the door travels faster than adjusted according to PRA-0004.
	No monitoring of presence impulse	00	Set to "00" if no monitoring of Presence impulse sensors is required or if no presence impulse sensors are installed.
	Presence impulse 1	01	Set to "01" if one Presence impulse sensor shall be monitored (if only one sensor is used this sensor has to be connected to MCU TB:9, Presence impulse 1).
	Presence impulse 1 and 2	02	Set to "02" if two Presence impulse sensors shall be monitored.
10	Emergency Unit Monitoring		<p>The emergency unit will be tested by shutting of the power to the MCU and open the door with the emergency unit. The test is never done in operation mode selection OPEN and normally not in OFF, unless parameter 37 "Emergency Action In OFF Mode" is set to On, see below.</p> <p>Authorities can demand that the emergency unit is monitored on a regular basis, see parameter 40 "Emergency Unit Test Interval" below. Half an hour before this time has elapsed the following outer impulse generates an emergency opening test. If there is no outer impulse within the next half hour, the operator control unit generates the opening impulse by itself ("ghost impulse").</p> <p>The test is also always performed after a Reset and after changing operation mode selection from a position where a test is not done to a position where the test is made.</p>
	Off	00	
	Convenience Monitoring	01	(01) is a simpler one-channel monitoring, this can be done with both MCU and MCU-ER. Convenience monitoring can also be used when monitoring the Convenience battery parameter 38. It will only indicate empty battery.
	Redundant monitoring	02	(02) is a redundant two-channel monitoring that is a demand for escape route according to: EN 16005 or DIN 18650. The redundant two-channel monitoring requires the MCU-ER control unit.
11	Partial Open Position	00-99 %	<p>Sets the "winter opening" size.</p> <p>Note! A building is certified for a certain COW. Depending on how many people that is allowed to be in the specific area there also has to be a certain COW. Partial open position must be set to 80% of the certified distance in escape routes. Unit % of COW.</p>
12	Opening Direction	00-01	
	CW	00	
	CCW	01	The tension wheel lock can only work in one opening direction, CW and cannot be used in CCW.
13	Hold Force	00-60 N	<p>Adjustment of the force used to keep the door in closed position (ND motor max 30 N, HD and DD motor max 60 N).</p> <p>Unit N.</p>

Main control board parameters			
No.	Parameter Name	Value	Description
15	Run Program	01-05	Performance adjustment. Sets how fast or slow the door shall accelerate or break.
	Smooth	01	For light doors.
	Max Performance	05	For heavy doors.
16	Inner Impulse (motion) Monitoring	00-01	According to EN 16005 or DIN 18650 it is a demand to have Inner impulse monitoring = On in escape routes. When inner impulse monitoring is selected C-switch is disabled.
	Off	00	Disables monitoring
	On	01	Enables monitoring
17	Outer Impulse (motion) Monitoring	00-01	If the escape route is in the direction of the outer sensor it is a demand to have outer impulse monitored according to EN 16005 or DIN 18650. When outer impulse monitoring is selected C-switch is disabled.
	Off	00	Disables monitoring
	On	01	Enables monitoring
20	Partial Hold Open Time	00-60	Hold open time for Inner & Outer impulses with operation mode selection PARTIAL and for the Nurse impulse. Unit seconds.
21	Push & Go Hold Open Time	00-60	Hold open time after a Push & Go. Unit seconds.
22	Auto Width Activation Time	00-60	Auto width activation time is available if parameter 61=01 "Auto Width" is selected. If the door has not closed during the auto width activation time and the door is open or opening the door will open to full open door. Unit seconds.
23	Auto Width Resume Time	00-60	When the door have been closed during the auto width resume time, the next opening impulse will open the door to partial open position. Only available if parameter "Auto Width" 61=01. Unit seconds.
24	Jam Hold Time	00-10	Sets how long time the door shall be stopped when a jam is detected during opening and also the time until the door can restart after a Stop impulse. Unit seconds.
25	Interlock Disable Time	00-60	The parameter controls the time that interlock is valid. Only active if "Interlock Function" parameter 6A = 01. See how interlock works in page 13.6.
		00	If the time is set to 00, interlock is always active.
		01-60	The "Interlock Disable Time" starts to count down the moment a valid opening impulse is made on the first door. If the first door does not close during the "Interlock Disable Time" the second door is not interlocked any more and will also open. When both doors are closed Interlock Disable Time will be reset. Unit seconds.

Main control board parameters				
No.	Parameter Name	Value	Description	
26	Presence Hold Open Time	00-60	Hold open time for Presence impulses 1 & 2. At least 2 sec to meet ANSI demand. Unit seconds.	
27	Side Presence Input 1 Configuration	00-01	This parameter determines if a side presence impulse is normally open (NO) or normally closed (NC).	
	NO	00	Normally open	
	NC	01	Normally closed	
28	Side Presence Input 2 Configuration	00-01	This parameter determines if a side presence impulse is normally open (NO) or normally closed (NC).	
	NO	00	Normally open	
	NC	01	Normally closed	
29	Side Presence Impulse monitoring		Side presence impulse monitoring is a demand to be activated according to EN 16005 or DIN 18650 if the door travels faster than adjusted according to PRA-0004.	
	No monitoring of Side Presence impulse	00	Set to "00" if no monitoring of Side Presence impulse sensors is required or if no Side Presence impulse sensors are installed.	
	Side Presence impulse 1	01	Set to "01" if one Side Presence impulse sensor shall be monitored (if only one sensor, it has to be connected to MCU TB:2, Side Presence impulse 1).	
	Side Presence impulse 1 and 2	02	Set to "02" if two Side Presence impulse sensors shall be monitored.	
2A	Side Presence Function	00-01		SW 4.0
	Safe Speed	00	If a Side Presence Impulse is activated during opening, the door shall continue to open with a safe speed (0,1 m/s).	
	Stop Door	01	If a Side Presence Impulse is activated during opening, the door shall stop and be stopped during the set Presence Hold Open Time (see parameter 26).	
30	Side Presence Activation Distance	00-99	This is an inhibit signal for side presence. The door will act according to the value entered in parameter 2A. The value has to be according to local legislation. In an escape route the door has to open to 80% of the certified distance (see parameter 11 on page 82) within 3 sec. after an inner impulse.	
		00	If value 00 is selected side presence impulse is valid from fully closed to fully open position.	
		01-99	The distance is counted from open position. During opening, the side presence impulse is inhibited until the door reaches the entered value in the parameter. Unit dm.	

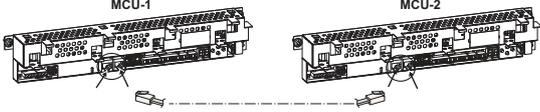
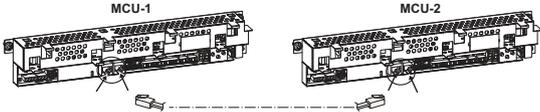
Main control board parameters			
No.	Parameter Name	Value	Description
31	Sensor Type	00-01	Select type of monitoring for the combined sensors. Choose between 1-wire (00) or 2-wire (01) monitoring.
	1-wire monitoring	00	1-wire monitoring is used when combined sensors have only one monitoring input for both presence and impulse field.
	2-wire monitoring	01	2-wire monitoring is used when a sensor has separate monitoring inputs for both presence and impulse field. If 2-wire monitoring and inner/outer impulse monitoring are selected, the C-Switch function is switched to inner/outer impulse monitoring (see parameters 16 and 17 on page 83).
32	Active Brake on Stop	00-01	
	Off	00	The door will freewheel until it stops.
	On	01	The operator will brake the doors actively during 1 sec. on a Stop impulse.
33	Push & Go in EXIT Mode Selection	00-01	
	Off	00	Push & GO is not active in OFF and EXIT mode selection.
	On	01	Push & GO is active in OFF and EXIT mode selection.
34	Hold Force in EXIT and OFF Mode Selection	00-01	With an electromechanical lock this hold force can be unnecessary.
	Off	00	
	On	01	
35	Toggle Operation Mode Selector after Stop	00-01	In operation mode selection OFF the mode must be changed before normal operation after a Stop impulse.
	Off	00	
	On	01	
36	Emergency Action	00-01	Fire closing or Emergency opening.
	Closing	00	The door will close on fire impulse or power failure.
	Opening	01	The door will open on fire impulse or power failure.
37	Emergency Action in OFF Mode	00-01	Decides if "Emergency Action" shall be performed also in mode selection OFF (= opens also in the middle of the night).
	Off	00	
	On	01	
38	Convenience battery	00-01	When this parameter is set to On (01), with a 24V (UPS) battery the operator will continue its normal operation in case of mains power failure. Monitoring will be made if parameter 10 is set to Convenience Monitoring (01). Not approved in escape routes!
	Off	00	
	On	01	

Main control board parameters			
No.	Parameter Name	Value	Description
39	Battery Wake-up	00-01	The parameter controls how the door is acting on Key impulse or Battery wake up in mode selection OFF without mains power. The parameter "Emergency Action In OFF Mode" (37) must also be set to Off (00).
	Open	00	If "Battery Wakeup" is set to Open (39 = 00) the impulse is opening the door fully and stop there.
	Open/Close	01	If "Battery Wakeup" is set to Open/Close (01) and parameter "Emergency Action" (36) is set to Opening (01) the impulse is opening the door fully, remains open for the time set by parameter "Key Hold Open Time" (04) and will then close, lock and disconnect the battery.
3A	Lock Door After Fire Closing		The parameter sets how the lock will react when a active fire closing impulse is activated.
	Follow Mode Selector	00	
	Always Unlock	01	
	Always Lock	02	
			SW 3.2
40	Emergency Unit Test Interval	04-23	The time set in this parameter controls the maximum time until the next automatic test of the emergency unit is performed. Unit hours.
41	Battery Type	00-02	What type of battery that is mounted in the operator is identified during the Learn.
	No battery	00	
	12V	01	
	24V	02	
42	Remain Locked at Stop	00-01	The parameter sets how the lock shall act when Stop impulse is activated (for example break-out).
	Off	00	The locked door will be unlocked when Stop impulse is activated.
	On	01	The locked door remains locked when Stop impulse is activated.
43	Opening Delay For Lock	00-99	The time the opening is delayed (0.0-9.9 sec) after an opening impulse is given in operation mode selections OFF and EXIT. Unit seconds x0.1.
44	Exit Lock	00-01	This parameter controls the electro-mechanical lock in the operation mode selector setting EXIT.
	Off	00	The electromechanical lock is not locked in EXIT.
	On	01	The electromechanical lock is locked in EXIT.
45	Stop Function	00-01	When this parameter is set to On (01) the Stop impulse is enabled, otherwise it is disabled.
	Off	00	Stop impulse disabled.
	On	01	Stop impulse enabled.
46	Stop Configuration	00-01	Configuration of the Stop impulse. Choose between normally open (NO) or normally closed (NC) Stop impulse.
	NO	00	Normally open
	NC	01	Normally closed

Main control board parameters				
No.	Parameter Name	Value	Description	
47	C-Switch Configuration	00-01	Configuration of "C-Switch" (electronic limit switch) output, NO (00) or NC (01).	
	NO	00	Normally open	
	NC	01	Normally closed	
48	C-Switch Activation Distance	00-99	The C-Switch is an open collector output. The value in the parameter decides how far one door leaf shall travel from closed position before the c-switch change state. Unit dm.	
49	Opening Max Force	02-23	The force applied from the operator to the door leaf during opening. See also parameters 50 Closing Max Force, 64 Power Supply Type, and 71 Max Motor Power. The lowest value adjusted in parameters above will be used. Heavy Duty: Max force 190 N. Unit N x10.	
4A	Close Kick Force	02-23	The force applied from the operator to the door leaf during the close kick. Heavy Duty: Max force 190 N. Unit N x10.	SW 3.2
50	Closing Max Force	02-23	The force applied from the operator to the door leaf during closing. See also parameters 49 Opening Max Force, 64 Power Supply Type, and 71 Max Motor Power. The lowest value adjusted in parameters above will be used. Heavy Duty: Max force 190 N. Unit N x10.	
51	Push & Close	00-01	When this parameter is set to On (01) the motor will in operation mode selections OFF or EXIT try to close the door with the force selected by parameter 50 "Closing Max Force", if someone tries to open it manually. Push & Close is also known as "poor man's lock".	
	Off	00		
	On	01		
52	Push & Close Timeout	00-99	Adjustable time for how long time the door will continue to "fight back" when someone is trying to force it open. Unit seconds x10.	
53	Operator Type			
	Slider	00		
54	Service needed Operating Hours	00-60	Set time before yellow LED in operation mode selector will start flashing. To clear the service needed indication you have to push both up and down arrow on the MMI at the same time for 5 seconds when the display shows on. After 5 s the display will show SE during another 5 s, release the up and down buttons. While the display shows SE pres Select button and the counters Operating hours and Operating cycles will be set to zero. Unit hour X 1000.	

Main control board parameters				
No.	Parameter Name	Value	Description	
55	Service Needed Opening Cycles	00-50	Set number of openings before yellow LED in operation mode selector will start flashing. To clear the service needed indication you have to push both up and down arrow on the MMI at the same time for 5 seconds when the display shows on. After 5 s the display will show SE during another 5 s, release the up and down buttons. While the display shows SE pres Select button and the counters Operating hours and Operating cycles will be set to zero. Unit cycles X 100.000.	
56	Service Needed Locking Cycles	00-50	Set number of lockings before yellow LED in operation mode selector will start flashing. This parameter can not be zeroed by MMI interface. The parameter has to be increased to the next level of service interval. Unit cycles X 10.000.	
57	Low Speed Distance, Opening	00-99	"Creep speed" distance during opening. Unit cm.	
58	Low Speed Distance, Closing	00-99	"Creep speed" distance during closing. Unit cm.	
59	Open Position	00-99	Opening width of one door leaf. The parameter shall be set automatically by performing a Learn cycle. Unit dm.	
5C	Pharmacy open 1 position	00-99	Lock for pharmacy functionality is not yet available. The door will open the configured distance when a Pharmacy impulse 1 is given. The distance is calculated on one door leaf. This parameter is active when parameter "Pharmacy Function" (9C) is set to On. Unit cm.	
5D	Pharmacy open 2 position	00-99	Lock for pharmacy functionality is not yet available. The door will open the configured distance when a Pharmacy impulse 2 is given. The distance is calculated on one door leaf. This parameter is active when parameter "Pharmacy Function" (9C) is set to On. Unit cm.	
5E	Status indication	00-01	The operator shows the status indication on the LED display of the MCU. See page 75 for more information.	
	Off	00		
	On	01		
5F	Default programming	00-01	Default programming sets the parameters to the factory default values.	SW 3.2
	Off	00	It is not possible to perform a default programming from the MMI.	
	On	01	It is possible to perform a default programming from the MMI.	

Main control board parameters			
No.	Parameter Name	Value	Description
60	Learn	00-01	Sets the possibility to perform a learn cycle.
	Off	00	It is not possible to perform a learn cycle from MMI.
	On	01	It is possible to perform a learn cycle from MMI.
61	Auto Width	00-01	If this function is selected (01) and the operation mode selection is AUTO PARTIAL, the door will open from partial open width to full open width, if an opening impulse is given and the door has not closed during the time selected in parameter 22 "Auto Width Activation Time". Must not be used in escape routes.
	Off	00	Partial Open.
	On	01	Auto Width.
62	Partial Function	00-01	With this function the door can be selected to be partially opened or partially closed (see below 63 "Partial Closed Position").
	Opened	00	Partial Open or Auto Width.
	Closed	01	Partial Closed Position, (Auto Airing).
63	Partial Closed Position	00-30	"Partial closed position" (Auto airing function) can be obtained by selecting "Partial Function" (62) Closed (01). An airing position of the door can be set between 0-30 cm measured from the closed position on one door leaf. The operation mode selector is to be set to AUTO PARTIAL and the closed position of the doors will then be the "Partial Closed Position" . Unit cm.
64	Power Supply Type	01-02	150 / 75 W power supply. The power supply selected to the operator depends on the desired performance level. See also parameters 49 Opening Max Force, 50 Closing Max Force, and 71 Max Motor Power. The lowest value adjusted in parameters above will be used.
	150W	01	
	75W	02	
65	Sustainable Drive Mode	00-01	The electromechanical lock will never lock in Exit mode selection even if parameter 44 is set to On (01). The (+) 24 V DC to accessories like sensors is turned off when the mode selector is in Off and the door is closed. Motor power is limited to 75 W even if parameter 71 is set to a higher value.
	Off	00	
	On	01	
66	Stop Impulse Monitoring	00-01	Monitoring enables (01) or disables (00) monitoring of the Stop impulse. Stop impulse is not allowed in escape route, unless break out system is used.
	Off	00	
	On	01	
67	Door Type	00-01	To be able to adapt closing speeds according to UL regulation door type has to be selected.
	Single sliding	00	
	Biparting	01	

Main control board parameters			
No.	Parameter Name	Value	Description
68	Door weight	01-40	Will be estimated during the Learn but can also be altered manually. Unit kg x 10.
69	Friction	00-99	The friction when moving the door is automatically measured during a Learn. The friction for the different performance levels are: Standard not more than 30N. High not more than 50N. Exceptional not more than 70N. Unit N.
6A	Interlock Function	00-01	Interconnection cable or IOU needed. Interconnection of operators  Maximum cable length 500 m. Length over 30 m, use a straight-through shielded twisted pair (STP/FTP) cable, see page 99 Interlock.
	Off	00	
	On	01	
6b	Synchronizing Function	00-01	Interconnection cable needed. Interconnection of operators  Maximum cable length 500 m. Length over 30 m, use a straight-through shielded twisted pair (STP/FTP) cable, see page 100.
	Off	00	
	On	01	
6C	External Bus Device ID	01-99	In a chain of interconnected operators one of them has to be the main operator. This operator shall have the value 01. Up to two operation mode selectors can be connected to the chain of interconnected operators. Both of the operation mode selectors are configured in the main MCU. All other interconnected operators shall have different values in this parameter. This to make every operator unique.
6d	Extended Hold Open Time Function	00-01	+ 5 sec. hold open time on doors often reopening during closing.
	Off	00	
	On	01	

Main control board parameters			
No.	Parameter Name	Value	Description
6E	MMI access code	00-01	If this parameter is set to single push (00) the parameters are not locked and when set to the four pushes code (01) the possibility to adjust parameters call for a special enabling code (select, learn/exit, learn/exit, select) before altering parameters into the MCU / MCU-ER will be possible.
	One push	00	
	Four pushes	01	
6F	MCU-OMS group	01-10	This parameter groups MCU with OMS. Units with the same value are in the same group. Units in the same group listens to each other.

Motor control parameters			
No.	Parameter Name	Value	Description
70	Motor Type	01	Depending on desired performance.
	Heavy Duty	01	
71	Max Motor Power	03-15	The max amount of power the motor can be supplied with. See also parameters 49 Opening Max Force, 50 Closing Max Force, and 64 Power Supply Type. The lowest value adjusted in parameters above will be used. Unit W x 10.

I/O Board parameters			
No.	Parameter Name	Value	Description
90	Function Select IOU-TB:3	00-03	
	No function	00	
	Nurse function	01	The door will open to partial opening in operation mode selections EXIT, AUTO and AUTO PARTIAL.
	LDE up	02	Espagnolette lock. Sets input to LDE lock up.
	Interlock out	03	When configuring for interlock also set parameter 6A = 01
91	Function Select IOU-TB:4	00-04	
	No function	00	
	Open/Close Function	01	One impulse opens the door the next impulse closes the door. Available in OMS mode EXIT, AUTO, PARTIAL.
	Interlock disable function	02	Disables interlock, both doors can be open at the same time.
	Inner impulse 2 monitoring	03	Sets inner impulse 2 monitoring for the second inner impulse on the IO unit. Set also parameter 93 = 3.
	Interlock in	04	When configuring for interlock also set parameter 6A = 01.
92	Open/Close Timeout	00-60	The time set in this parameter controls when a door shall start closing automatically if left open by an Open/Close impulse. 00 min = no automatic closing. Unit minutes.
93	Function Select IOU-TB:2	00-03	
	No function	00	
	Close function	01	Close impulse is selected. This impulse will immediately close the door, even during opening, and remain closed as long as the Close impulse is active. The electro-mechanical lock will lock the closed door. May not be used on an escape route door.
	LDE down	02	Espagnolette lock. Sets input to LDE lock down.
	Inner impulse 2	03	When two inner impulses are to be used. Sets input to inner impulse 2.
94	Fire Impulse Function	00-01	Depending on configuration in Emergency Action (36), the door will open or close on fire impulse. Fire impulse override presence impulse. At closing, the door will not reopen on jam.
	Off	00	Fire impulse disabled.
	On	01	Fire impulse enabled.
95	Emergency Open Impulse Function	00-01	Fireman's opening.
	Off	00	
	On	01	
96	Emergency Open Impulse Configuration	00-01	Configures the button used for Fireman's opening.
	NO	00	Normally open
	NC	01	Normally closed
97	Operation Mode Selector Function	00-01	Switch / timer / relay / "old" operation mode selector (5-wire).
	Off	00	
	On	01	Not allowed in escape route, according to EN 16005 and DIN 18650.

I/O Board parameters			
No.	Parameter Name	Value	Description
98	Lock Configuration	00-03	LDB = locked with power and bistable, LDE = espagnolette lock.
	No lock	00	No lock
	Bi-stable lock	01	LDB = locked with power and bistable
	Espagnolette lock	02	LDE = espagnolette lock
	Bi-stable lock EMSL	03	LDB = locked with power and bistable
99	Function Select IOU-TB:6		Possibility to disable Sustainable drive mode or to enable Mode Selector with this function through IOU-TB:6.
	No function	00	
	Sustainable Disable	01	Disables Sustainable drive mode. It is possible to disable sustainable drive mode. As long as TB:6 is active the operator will run with full power.
	Mode Selector Enable	02	Enable the Mode Selector with an external key. IOU mode selector and PS-6 are not affected by this parameter. When parameter is set to value 02 the OMS is locked. If an impulse is given on IOU TB:6 the indication LED on OMS will be steady red during 15 seconds and it is possible to change mode selection (set parameter b1/C1 = 00).
9A	Priority of the I/O operation mode selector	25-99	The lower the number is the higher the priority.
9B	Choose group of the I/O operation mode selector	00-10	This controls which MCU that looks at which OMS. It is possible to group different OMS to different MCU. MCU and OMS with same group number listens to each other. If value 00 is selected the IOU mode selector controls all operators.
9C	Pharmacy function	00-01	Lock for pharmacy functionality is not yet available.
	Off	00	
	On	01	

SW
3.2

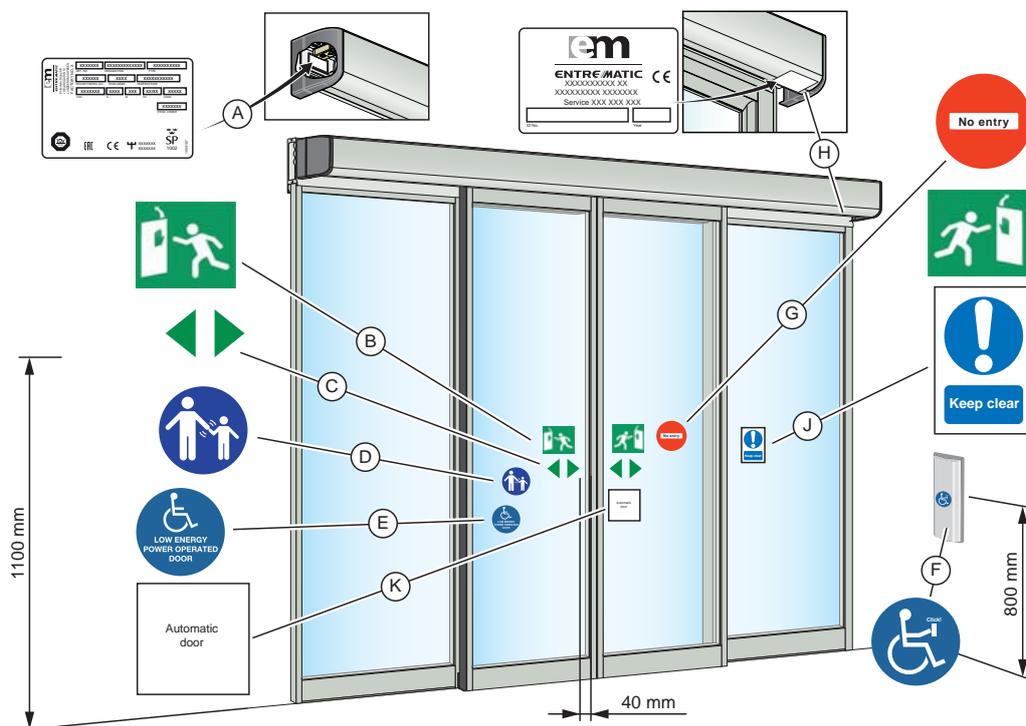
Escape route parameters			
No.	Parameter Name	Value	Description
A0	Escape Route Motor Configuration	01-02	Single motor or double motor depending on authority demand.
	1-motor	01	
	2-motor	02	

Operation mode selector parameters			
No.	Parameter Name	Value	Description
b0	Operation Mode Selector Variant, OMS-1	01-04	Europe = 5 buttons (04).
	3 buttons with EXIT	01	
	3 buttons with AUTO	02	
	4 buttons	03	
	5 buttons	04	
b1	Operation Mode Selector Key Lock, OMS-1	00-02	There are three different levels of access code choices for the operation mode selector:
	Off	00	No access code.
	Hold for two sec	01	Access is obtained by pushing an arrow symbol pointing up or down for 2 seconds.
	Passcode	02	An optional passcode can be selected where the access is obtained by briefly pushing in turn the arrow up symbol, followed by the arrow down symbol, followed by the arrow down symbol again and at last the arrow up. The entire code must be entered within 3 seconds. Pass code = $E_{MM}E$.
b2	Operation Mode Selector Service Indication, OMS-1	00-01	Yellow flashing service LED. Service indication on operation mode selector. No service indication (00). Indicate service (01).
	Off	00	
	On	01	
b3	Choose Priority of the operation mode selector, OMS-1	25-99	The lower the number the higher the priority.
b4	Choose group of the operation mode selector, OMS-1	00-10	This controls which MCU that looks at which OMS. It is possible to group different OMS to different MCU. MCU and OMS with same group number listens to each other. If a OMS is set to 0 this OMS controls all operators that is connected in that loop.
b5	Choose display mode of the operation mode selector, OMS-1.	00-01	In Show local mode the OMS shows the last setting made on the OMS. In Show system mode the OMS shows the setting that the operator is put to. It is shown with one flash every 5 s. When the OMS is flashing every 5 s it is not possible to change the mode on the OMS.
	Show system mode	00	
	Show local mode	01	
b6	Choose Terminal mode of the operation mode selector, OMS-1	00-02	
	The buttons on OMS are disabled	00	
	The OMS-1 adapts to system mode	01	
	The OMS-1 keeps its selected mode.	02	

Operation mode selector parameters				
No.	Parameter Name	Value	Description	
b7	Mode Selector, Self Service Indication, OMS-1	00-01	Orange flashing service LED. Self service indication on operation mode selector.	SW 3.2
	Off	00	No self service indication.	
	On	01	Indicate self service.	
b8	Mode Selector Key Impulse, OMS-1	00-02	Key impulse to the operator can be made in the following ways by pushing the symbol below. OMS Basic - 	SW 3.2
	Disabled	00	Disables the possibility to give key impulse.	
	Login Required	01	Login required on the OMS to enable the possibility to give key impulse. The login is configured through parameter 99 and b1.	
	Enabled	02	Enables the possibility to always give key impulse.	
C0	Operation Mode Selector Variant, OMS-2	01-04	Europe = 5 buttons(04).	
	3 buttons with EXIT	01		
	3 buttons with AUTO	02		
	4 buttons	03		
	5 buttons	04		
C1	Operation Mode Selector Key Lock, OMS-2	00-02	There are three different levels of access code choices for the operation mode selector:	
	Off	00	No access code.	
	Hold for two sec	01	Access is obtained by pushing an arrow symbol pointing up or down for 2 seconds.	
	Passcode	02	An optional passcode can be selected where the access is obtained by briefly pushing in turn the arrow up symbol, followed by the arrow down symbol, followed by the arrow down symbol again and at last the arrow up. The entire code must be entered within 3 seconds. Pass code = $E_{MM}E$.	
C2	Operation Mode Selector Service Indication, OMS-2	00-01	Yellow flashing service LED. Service indication on operation mode selector. No service indication (00). Indicate service (01).	
	Off	00		
	On	01		
C3	Choose Priority of the operation mode selector, OMS-2	25-99	Selectable between 25 - 99 The lower the number the higher the priority.	
C4	Choose group of the operation mode selector, OMS-2	00-10	Selectable between 00 - 10 This controls which MCU that looks at which OMS. It is possible to group different OMS to different MCU. MCU and OMS with same group number listens to each other. If a OMS is set to 0 this OMS controls all operators that is connected in that loop.	

Operation mode selector parameters				
No.	Parameter Name	Value	Description	
C5	Choose display mode of the operation mode selector, OMS-2.	00-01	In Show local mode the OMS shows the last setting made on the OMS. In Show system mode the OMS shows the setting that the operator is put to. It is shown with one flash every 5 s. When the OMS is flashing every 5 s it is not possible to change the mode on the OMS.	
	Show system mode	00		
	Show local mode	01		
C6	Choose Terminal mode of the operation mode selector, OMS-2	00-02		
	The buttons on OMS-2 are disabled	00		
	The OMS-2 adapts to system mode	01		
	The OMS-2 keeps its selected mode.	02		
C7	Mode Selector, Self Service Indication, OMS-2	00-01	Orange flashing service LED.	SW 3.2
	Off	00	No self service indication.	
	On	01	Indicate self service.	
C8	Mode Selector Key Impulse, OMS-2	00-02	Key impulse to the operator can be made in the following ways by pushing the symbol below. OMS Basic - 	SW 3.2
	Disabled	00	Disables the possibility to give key impulse.	
	Login Required	01	Login required on the OMS to enable the possibility to give key impulse. The login is configured through parameter 99 and b1.	
	Enabled	02	Enables the possibility to always give key impulse.	

14 Signage



Check that all required signage is applied and intact. Mandatory indicates that the signage is required by European directives and equivalent national legislation outside the European Union.

(A)	Product label: Mandatory
(B)	Emergency break-out: Mandatory, if approved for escape route.
(C)	Entrematic Nordic door sticker: Mandatory according to Entrematic Nordic brand instructions, European directives and equivalent national legislation outside the European Union, to highlight the presence of the glass.
(D)	Supervision of child (applied to both sides of the door): Mandatory according to national regulations. Recommended, if the risk analysis shows use by children.
(E)	Operator designed for disabled people: Recommended, if applicable (applied to both sides of the door).
(F)	Activation by disabled people: Recommended, if applicable.
(G)	No entry, identifying one-way traffic: Mandatory in GB and US, if applicable, not included in the product.
(H)	Local product label
(J)	Keep clear
(K)	Automatic door

15 Accessories

15.1 Interconnection of operators

15.1.1 Interconnection cable

Interconnection cable is used for controlling several operators with one or more operation mode selectors (OMS) and for interlocking or synchronization.

Operators can communicate with each other by connecting an interconnection cable between the operators.

Cable connection:

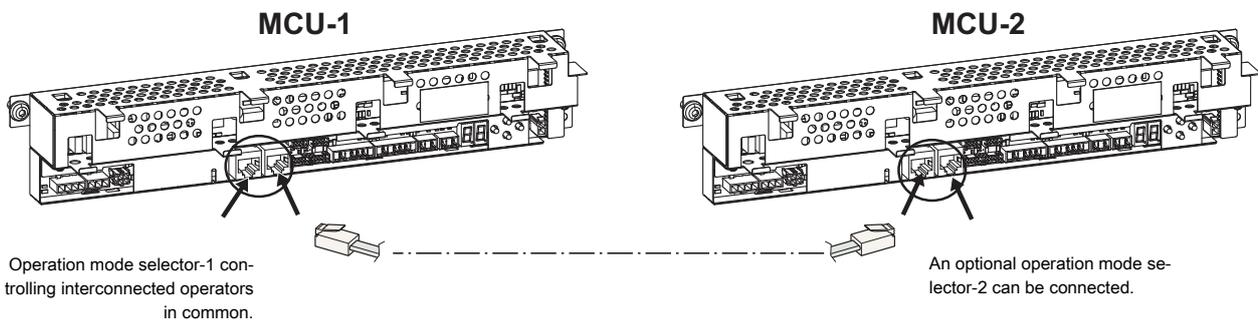


Pin 1 to pin 1

.....

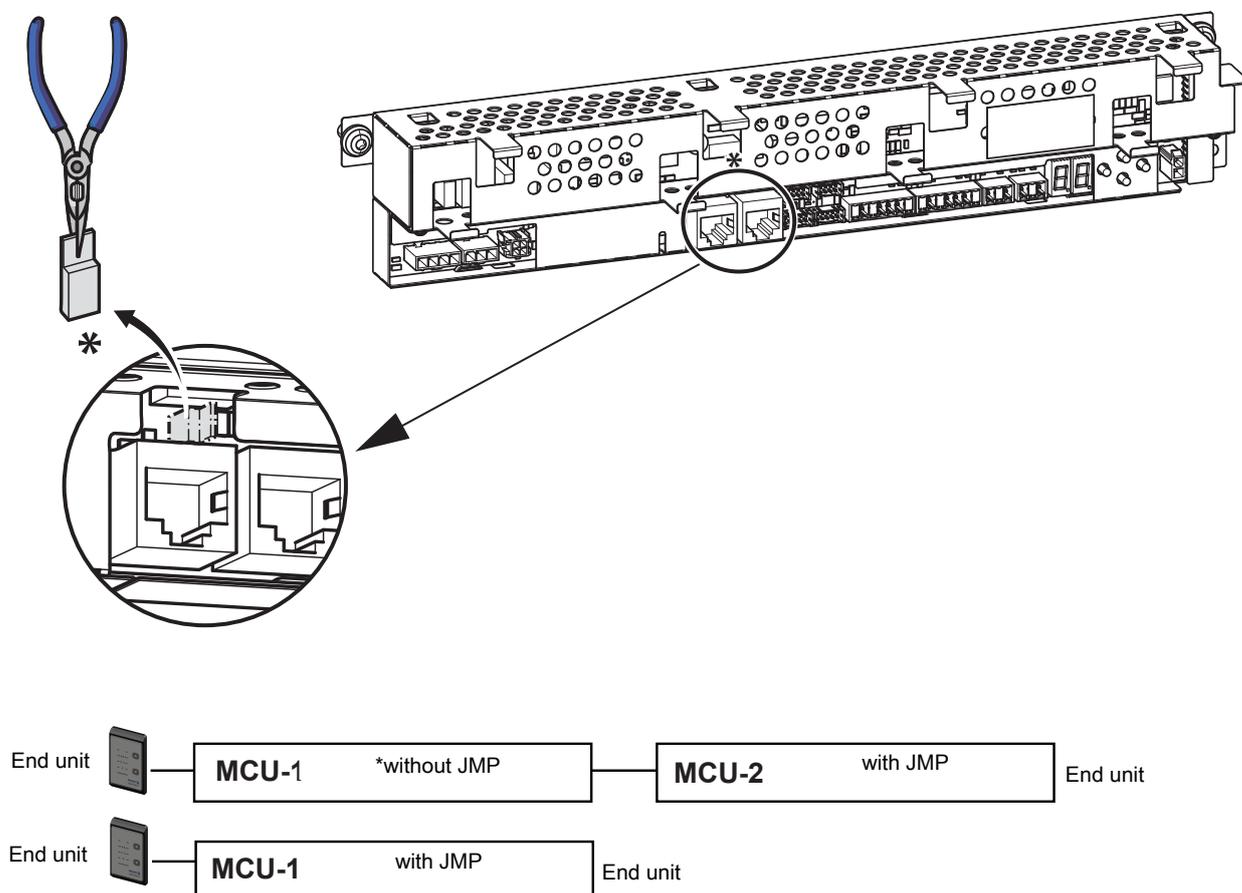
.....

Pin 8 to pin 8



15.1.2 Hardware configuration for interconnection

When interconnecting more than two units (MCU and/or operation mode selectors (OMS)) to the external bus, only the two end units must be terminated. To make this, the jumper JMP shall be removed from the middle MCU(s). When the jumper is removed the termination is removed. Maximum 2 MCU can be interconnected together with 1 OMS.



Total maximum cable length is 500 m.

Use a straight-through shielded twisted pair (STP/FTP) CAT5/CAT5e cable if the length exceeds 30 m or is in electrically disturbing environment.

15.1.3 Parameter configuration for interconnection

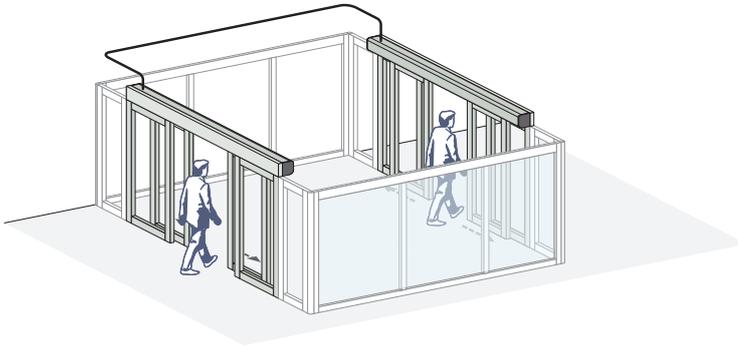
Note! Do not connect any operation mode selector (OMS) before the configuration of 6C is done on all MCUs.

One of the operators has to be the main MCU (MCU-1). The main MCU shall have the value 01 in parameter 6C. All the other interconnected operators shall have ascending values in parameter 6C. When the configuration is done break the power on all the interconnected operators. Connect all OMS, turn on the power. The main MCU is the control unit that holds the parameters to the operation mode selectors (OMS-1, OMS-2).

15.2 Interlock

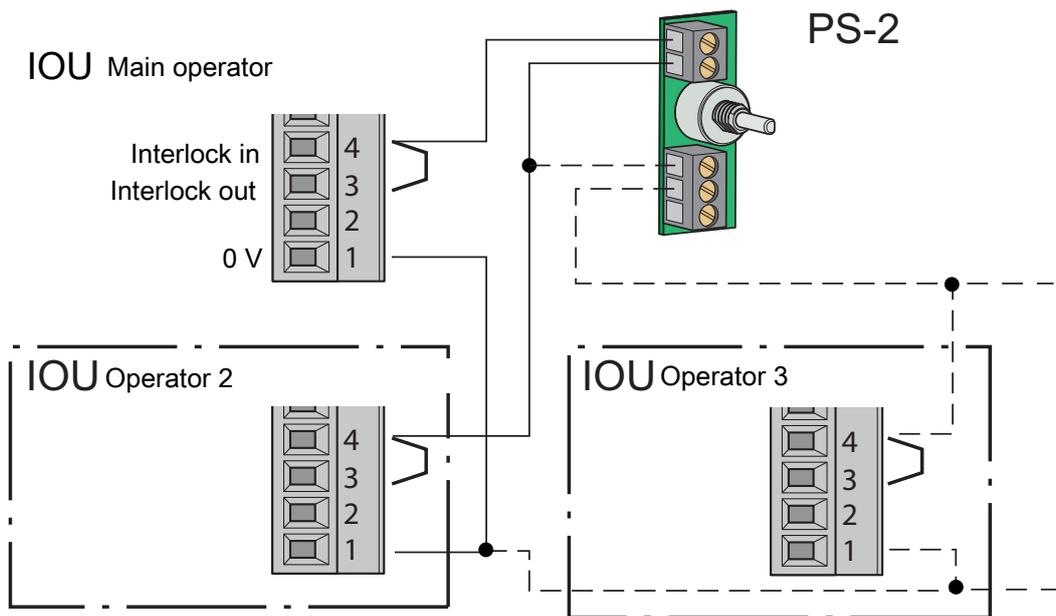
When operators are interlocked only one door can open at the time. The open door must close before the other door can open. For instance from the start: both doors are closed. If door 1 gets an impulse this door opens. If door 2 also gets an impulse before door 1 has closed, door 2 will stay

closed. When door 1 has closed door 2 will open. It is not necessary for door 2 to get another impulse for the door to open, the first impulse is remembered and will open the door. A typical use of this function is an air lock to reduce draft and energy loss in an entrances. It is not used for security reason.



The following alternative is how to make an interlocking.

- 1 Interlock the operator through the IOU, this is compatible with EMSL interlock.
It is possible to interlock many operators. Set the following parameters in all MCUs:
6A = 01 Interlock function
90 = 03 Interlock out
91 = 04 Interlock in
Connect the IOU according to the picture below.



15.3 Synchronization

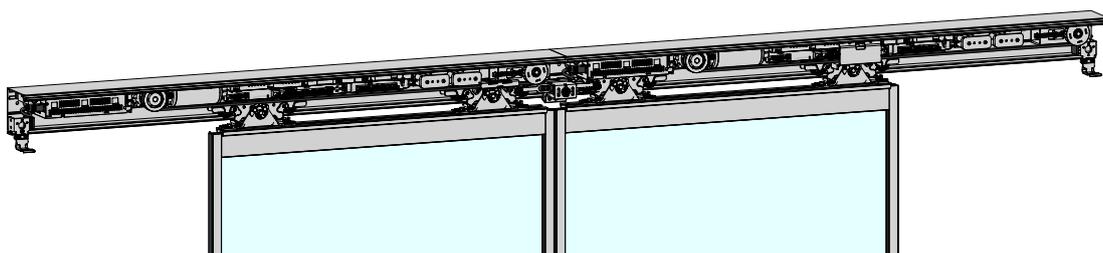
Synchronization is when two operators work together. The doors opens and closes at the same time. A typical use is when two big single sliders are put together to get one big clear opening width. Synchronized can only be done between two operators, not more.

See chapter 15.1.1, 15.1.2 and 15.1.3 on how to connect the operators together, interconnection of operators, and follow the instruction.

For synchronization set parameter 6b = 01 on all MCUs.

Make a reset after adjustment.

For further configuration examples about operation mode selector (OMS), see page 101.



15.4 Operation mode selectors (OMS)

15.4.1 Types

For the mode selector there are a couple of alternatives:

- OMS Basic, a narrow version, WxH 44x80 mm with 5 selections.
- OMS Basic, two square versions, WxH 80x80 or 55x55 mm with 5 selections.
- PS-6, a 2-wire analog mode selector connected to the MCU.

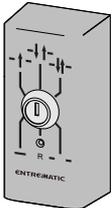
The operation mode selectors (OMS Basic) can be flush mounted in profiles or in electrical wall boxes. The operation mode selectors (OMS Basic) can also be installed surface applied in wall boxes.

Note! Do not use PS-6 in combination with operation mode selector (OMS).

If PS-6 is used together with an IOU it is necessary to set parameter 97 = 00 to disable IOU mode selector.

PS-6 cannot be used in an interconnected system.

Only one PS-6 can be connected to the MCU.

Surface mounted OMS Basic 44x80 mm	Flush mounted OMS Basic 44x80 mm
	
Flush mounted OMS Basic 80x80 mm	Flush mounted OMS Basic 55x55 mm
	
Surface mounted PS-6	
	

15.4.2 Operation mode selector (OMS) functionality

Check how to install interconnected units before configuring the operation mode selector (OMS). See section 15.1.1 on page 98.

All functionality is programmed through the MMI on the main MCU-1 (has parameter 6C = 01).

There are mainly three (3) different types of configurations for MCU and OMS. But there are a lot of different choices and combinations that are possible. The most common options are listed below.

The "configure parameter" shows which parameter to change from the default setting to obtain the function described, the parameters in the parenthesis shall represent the default values.

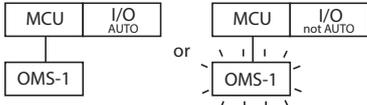
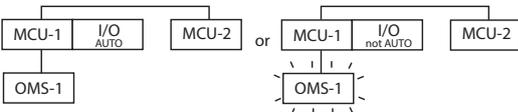
Grouping operators

When connecting several MCU together they might need to be grouped together. MCUs are grouped by entering the same value in the group parameter, MCU 6F, IOU 9B, OMS-1 B4, OMS-2 C4. The units that are grouped together will operate together. If OMS or IOU has the value 00 in the group parameter these units will control all interconnected MCUs regardless of group value.

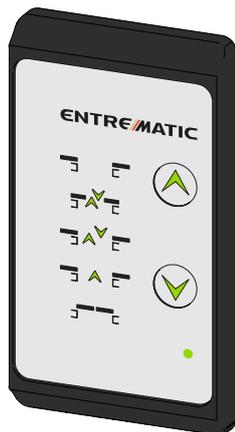
Priority of operation mode selectors (OMS)

The priority of the operation mode selectors (OMS) determine which operation mode selector (OMS) that shall decide the mode selection on the MCU. The lower the number is in parameter Priority of the mode selector the higher priority it has.

If two mode selectors have the same value in Parameter Priority, the mode selector pushed last is the one that will control the MCU.

1	<p>Single control</p> 	<p>One MCU and one OMS-1. MCU is controlled by the OMS-1. No configuration needed. Configure parameter MCU, b5=0, b6=1 (6F=01, b3=40, b4=01).</p>
2	<p>Single control with I/O unit override</p> 	<p>One MCU with IOU and one OMS-1. OMS-1 controls MCU when IOU is in AUTO. When IOU is not in AUTO, IOU controls MCU and OMS-1 shows active mode selection. OMS-1 is flashing once every 5 second to show that it is remotely overridden. When the OMS-1 is remotely overridden it is not possible to change its mode. Configure parameter MCU, b5=0, b6=1 (6F=01, 97=01, 9A=30, 9b=01, b3=40, b4=01).</p>
3	<p>Local paired, single control with I/O unit override</p> 	<p>Two MCU, one OMS-1 and one IOU connected to MCU-1. OMS-1 controls MCU-1 and MCU-2 when IOU is in AUTO. When IOU is not in AUTO, IOU controls both MCU-1 and MCU-2. OMS-1 is flashing once every 5 second to show that it is remotely overridden. When the OMS-1 is remotely overridden it is not possible to change its mode. Configure parameter MCU-1, b5=0, b6=1 (6C=1, 6F=01, 97=01, 9A=30, 9b=1, b3=40, b4=01). Configure parameter MCU-2 6C=2, (6F=1).</p>

Operation of operation mode selector (OMS)



The different operation modes are selected by pushing the arrow symbols pointing upwards or downwards. When a button is pushed a buzzer will sound. The present selection is indicated by a blue light to the left of the function symbol.

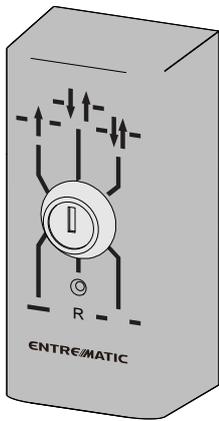
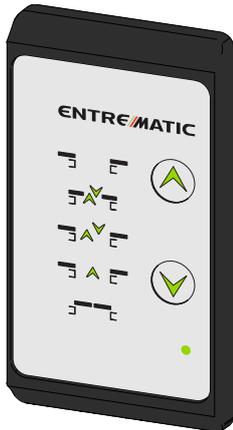
When an arrow symbol has not been pushed for 5 seconds the access will be locked.

In the upper right corner a flashing light can be displayed.

- A red light every other second indicates an error in the door operator MCU. If the error remains after a RESET a service visit is required. See also page 121.
- If the red light is quickly flashing 4 times per second it is indicating an internal error in the operation mode selector (OMS).
- An orange light every other second is indicating a status or condition that can be cleared by the owner e.g. a break-out door is standing open.
- A yellow light every other second is indicating that maintenance is due.

The operation mode selectors are available with 5 selections (plus RESET).

With 5 selections OPEN, AUTO PARTIAL, AUTO, EXIT and OFF functions can be obtained.

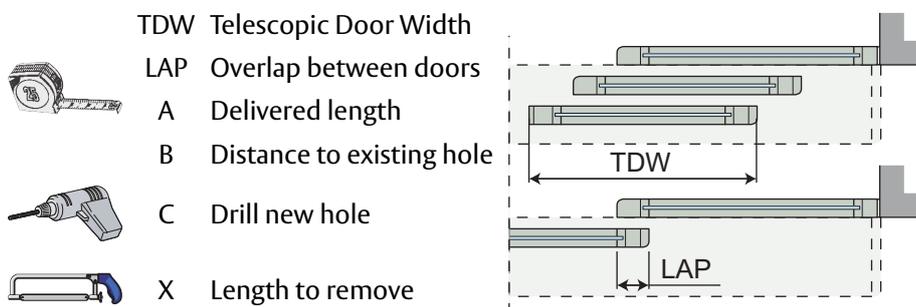


Symbol	Text	Function
	OPEN	The door is permanently open. The door can be moved by hand e.g. for window cleaning. All activation units except for the emergency push button (if fitted) are disconnected.
	AUTO PARTIAL	Two-way traffic, AUTO PARTIAL is obtained. The door can be opened partially with the inner and outer activation units and with a key switch (if fitted). With an emergency push-button the door opens fully.
	AUTO	Two-way traffic, normal operation of the door. The door can be opened with the inner and outer activation units and with a key switch/emergency push-button (if fitted).
	EXIT	Passage from inside only. The door is normally locked if an electromechanical locking device has been fitted. The door can only be opened with the inner activation unit or with a key switch/emergency push-button (if fitted).
	OFF	This function is only used on emergency escape doors after it is certain that all people have left the building. The door cannot be opened with inner or outer activation units. The door is locked if an electromechanical locking device has been fitted. The door can be opened partially with a key switch (if fitted). The door can be opened fully with an emergency pushbutton (if fitted). The door can also be opened partially from the operation mode selector if the arrow down button is held for 2 seconds. No access code is necessary for this and the key impulse is indicated by briefly showing a blue light to the left of the OPEN symbol and then a flashing blue light to the left of the OFF symbol for another 15 seconds.
	RESET	By briefly pushing the dot, placed in the lower right corner of the operation mode selector, with a narrow object, the door operator will make a RESET function with a system test. The door will then be ready for normal operation.
	RESET	Turn the key clockwise to the position "R" (six o'clock) and insert a narrow object in the small hole on the operation mode selector and push briefly. Then turn the key counter-clockwise back to the requested setting and the door operator will make a RESET function with a system test. The door will return to the closed position (if not in operation mode selection OPEN or if an error is present) and is then ready for normal operation. Note! The key cannot be removed in the "R" position.

15.5 Replacement of secondary track

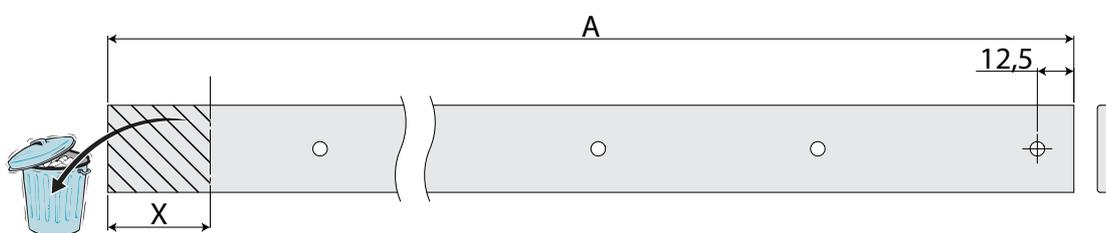
15.5.1 Shortening of secondary track

It is necessary to adapt the secondary track according to the door size in each installation according to the instructions that follows.



15.5.2 Shortening the bar

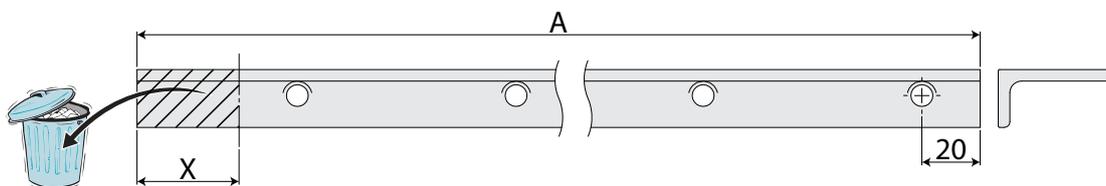
$X = A - (2 \times \text{TDW} - \text{LAP} - 300) \text{ mm}$



15.5.3 Shortening the L-profile

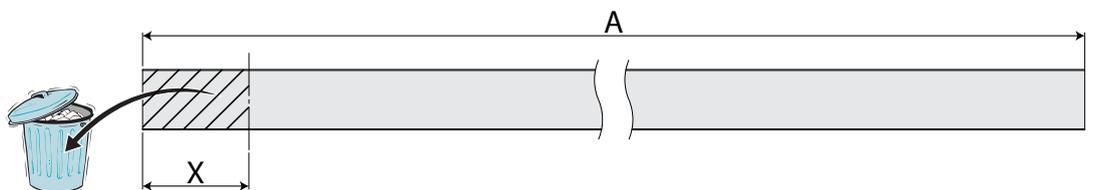
Note! The L-profile will only be delivered when the door width is more than 730 mm.

$X = A - (\text{TDW} - \text{LAP} - 445) \text{ mm}$



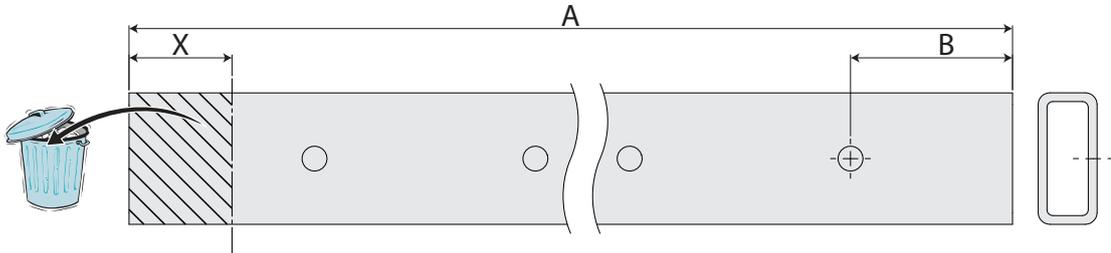
15.5.4 Shortening the shim

$X = A - (2 \times \text{TDW} - \text{LAP} - 34) \text{ mm}$

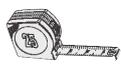


15.5.5 Shortening the tube

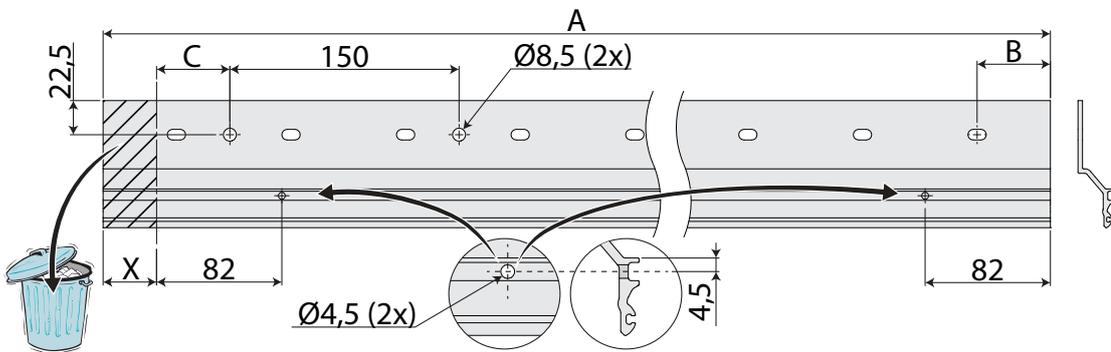
-  B = 55 mm (when using short wheel holder) 
- B = 75 mm (when using normal wheel holder)  or 
-  X = A - (TDW - LAP - 7) mm



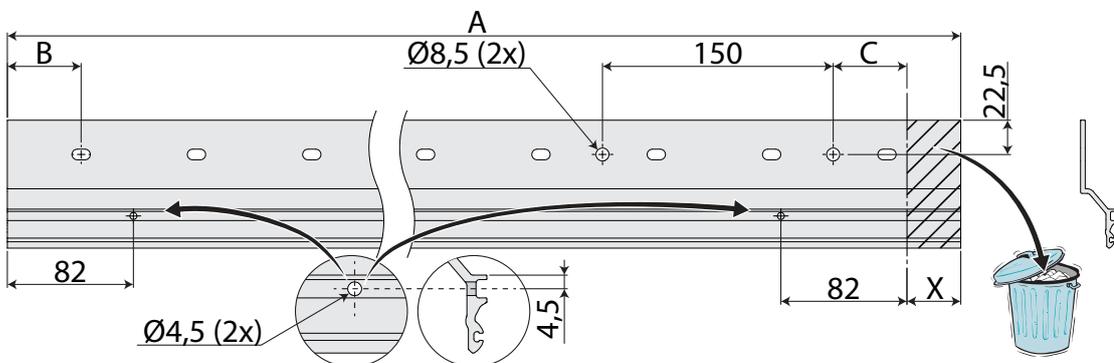
15.5.6 Shortening and creating new holes in the secondary track

-  B = 28 mm (when using short wheel holder) 
- B = 48 mm (when using normal wheel holder)  or 
- C = 28 mm (when using short wheel holder) 
-  C = 48 mm (when using normal wheel holder)  or 
- Ø4,5 2 new holes
-  X = A - (2 x TDW - LAP - 34) mm

Left opening door leaf, EM Slim

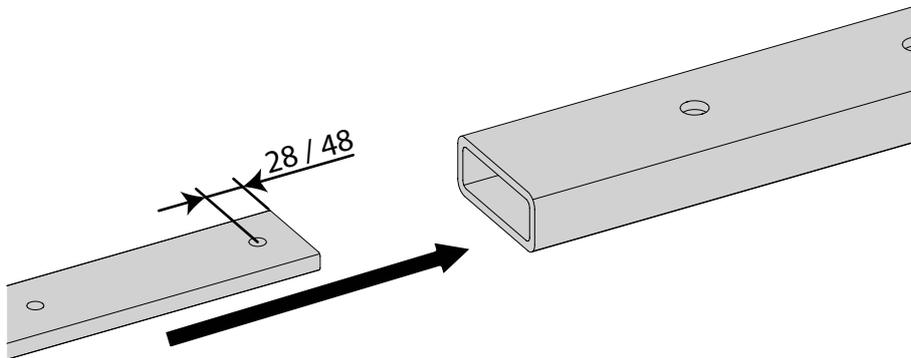


Right opening door leaf, EM Slim

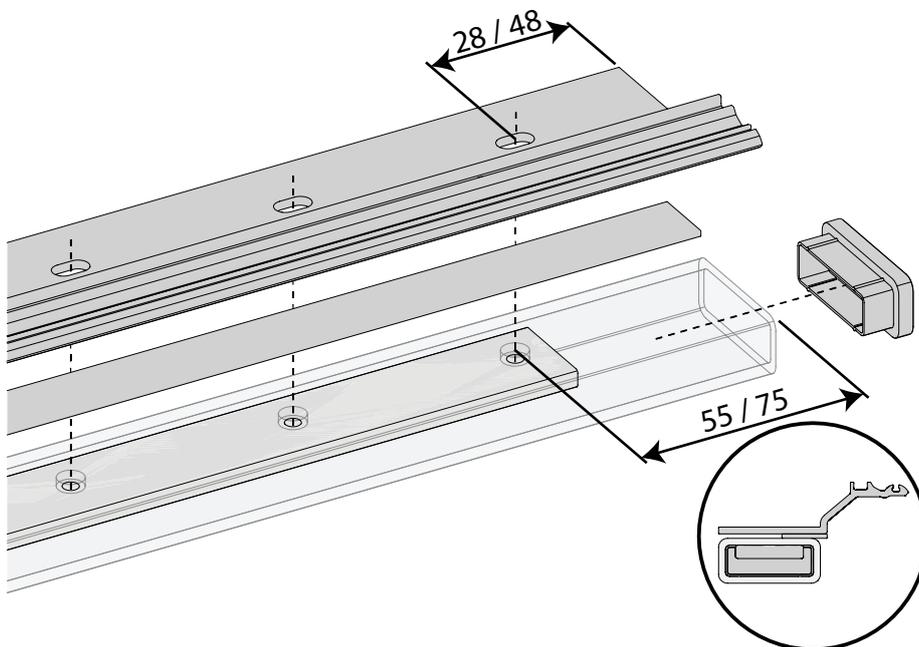


15.5.7 Assemble the secondary track

The following illustrations show the secondary track for left opening door.
Insert the bar into the tube.

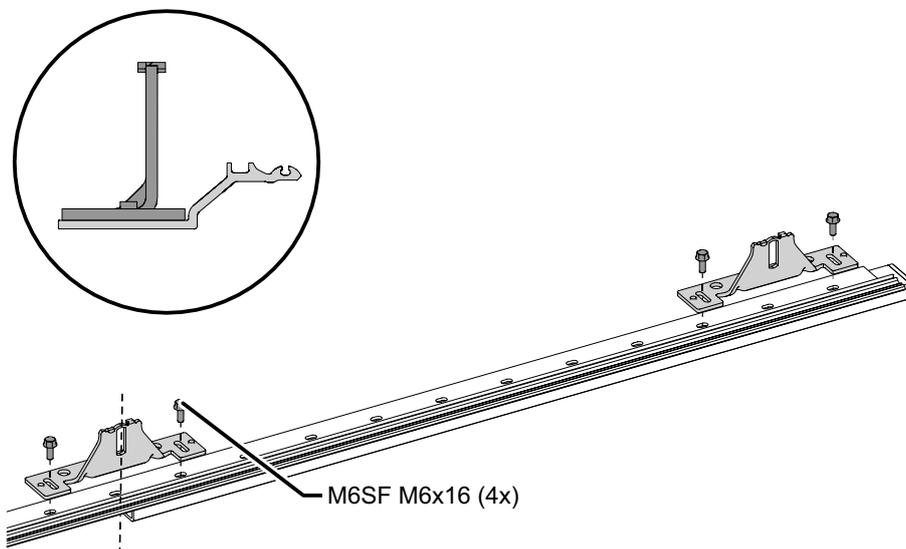


Place the secondary track on the tube with the shim inbetween. Insert the end cap.



Place two door holders and attach them with screws.

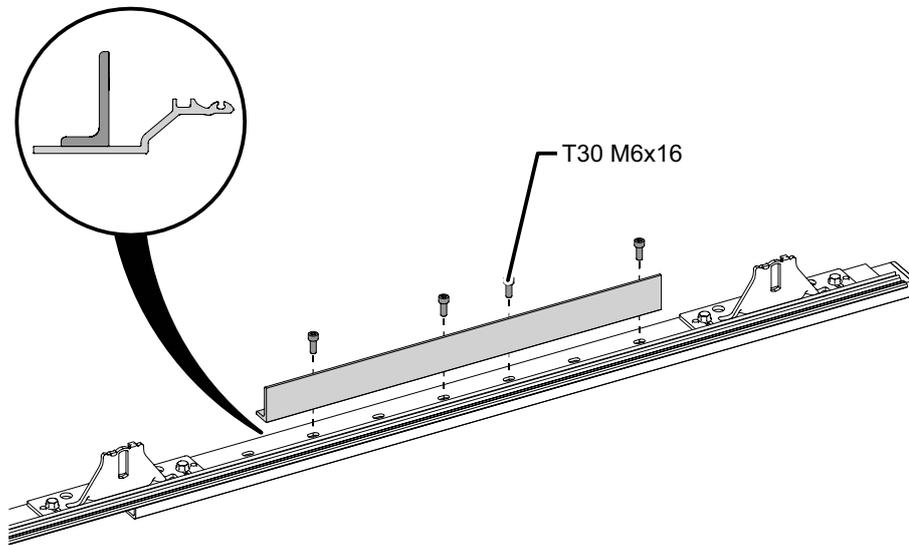
Note! The middle door holder shall be placed as centered as possible over the end of the tube.



Place the L-profile and attach it with screws, placed in every other hole starting from both ends.

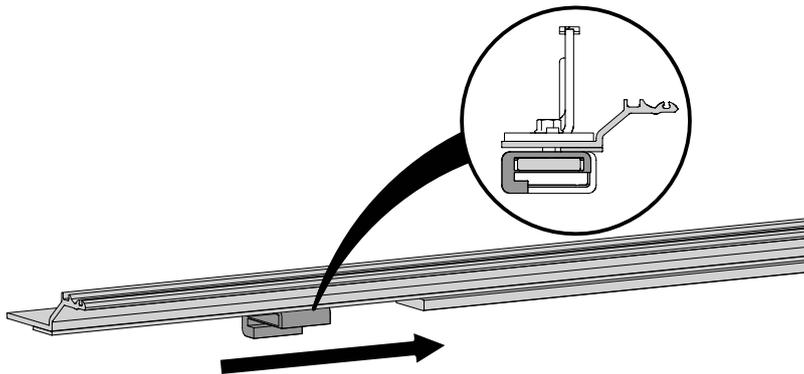
Note! Never leave two holes next to each other empty.

Note! The L-profile will only be delivered when the door width (TDW) is more than 730 mm.

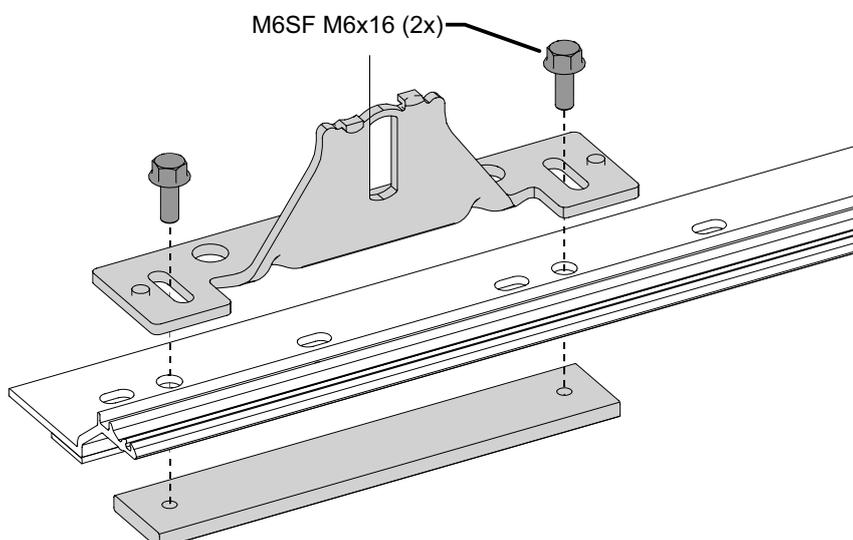


Slide the plastic cover onto the bar, until it reaches the tube.

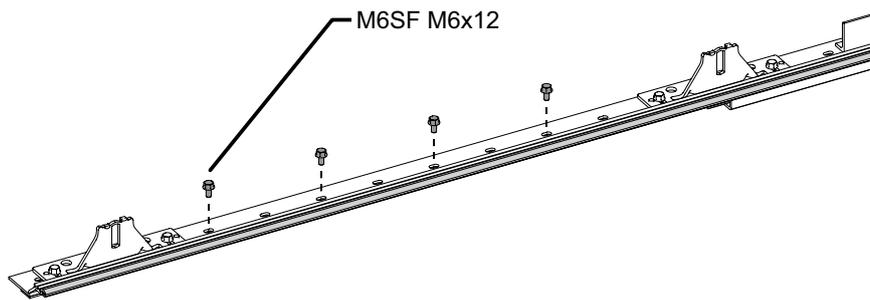
Note! The plastic cover shall cover the gap over the leading edge of the slow moving door in the EM Slim system. In any other system it shall be removed.



Attach the trailing door holder with screws loosely to the short bar.

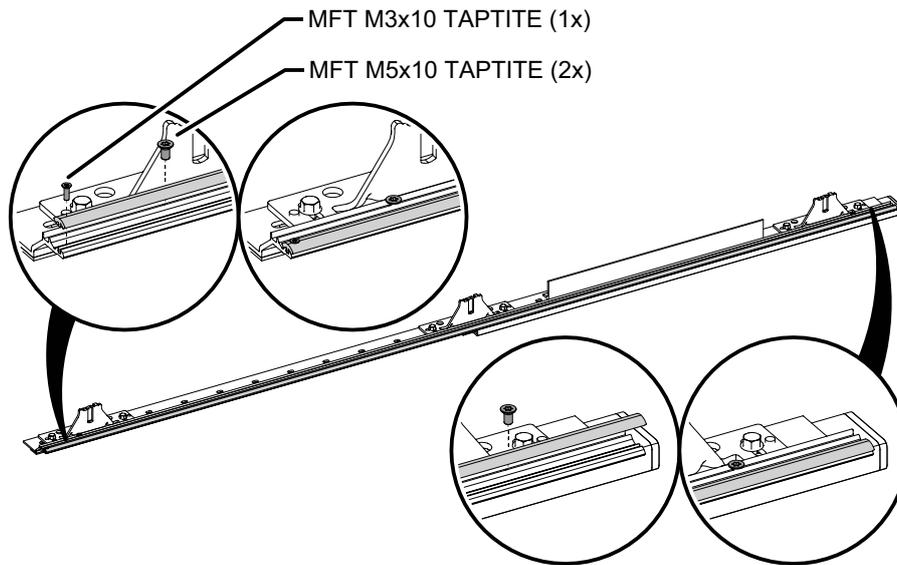


Attach the track to the bar with the screws loosely.



Add the plastic track and attach it with one screw in the trailing edge.

Attach two screws as door stops.



Mount the secondary track according to page 31.

15.6 Lock

Electromechanical lock

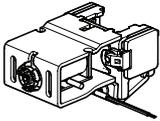
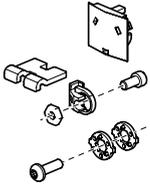
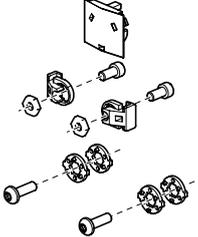
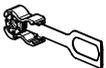
The following locks are available to the operator:

- Locked with power (LDP), fail safe
- Locked without power (LD), fail secure
- Bistable lock (LDB)

Note! The espagnolette lock is at the moment not allowed to mount in escape routs.

15.6.1 Mounting the lock

Lock kit

Part	Part description	Single	Bi-parting
	Lock	x 1	x 1
	Telescopic ramp kit	x 1	
	Telescopic ramp kit		x 1
	Screw	x 1	x 2
	Adjustment washer	x 1	x 1
	U-plate	x 1	x 1
	Spring latch	x 2	x 4
	Spring latch, short	x 2	x 4

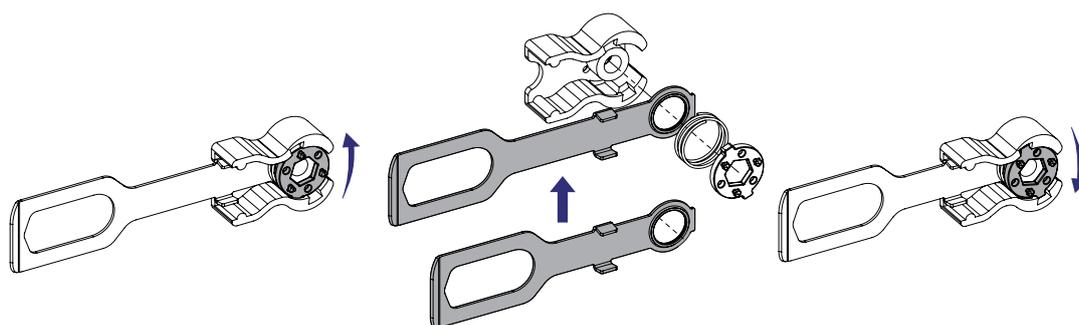
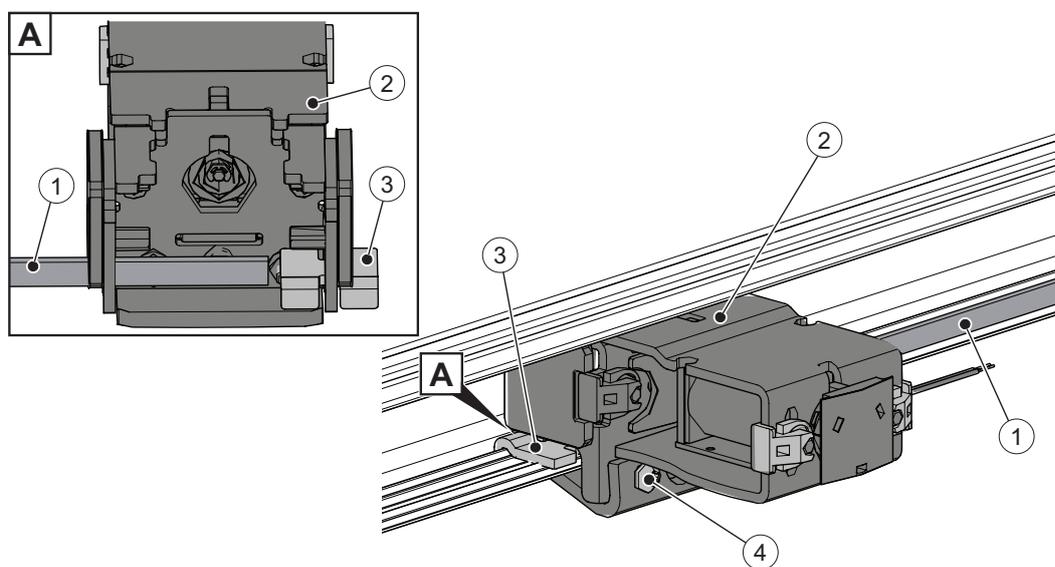


Figure 2: Switch to short spring latch

For single sliding doors

Note! The hook (3) shall reinforce the lock for single sliders. To be able to fit the hook under the lock the track needs to be removed.

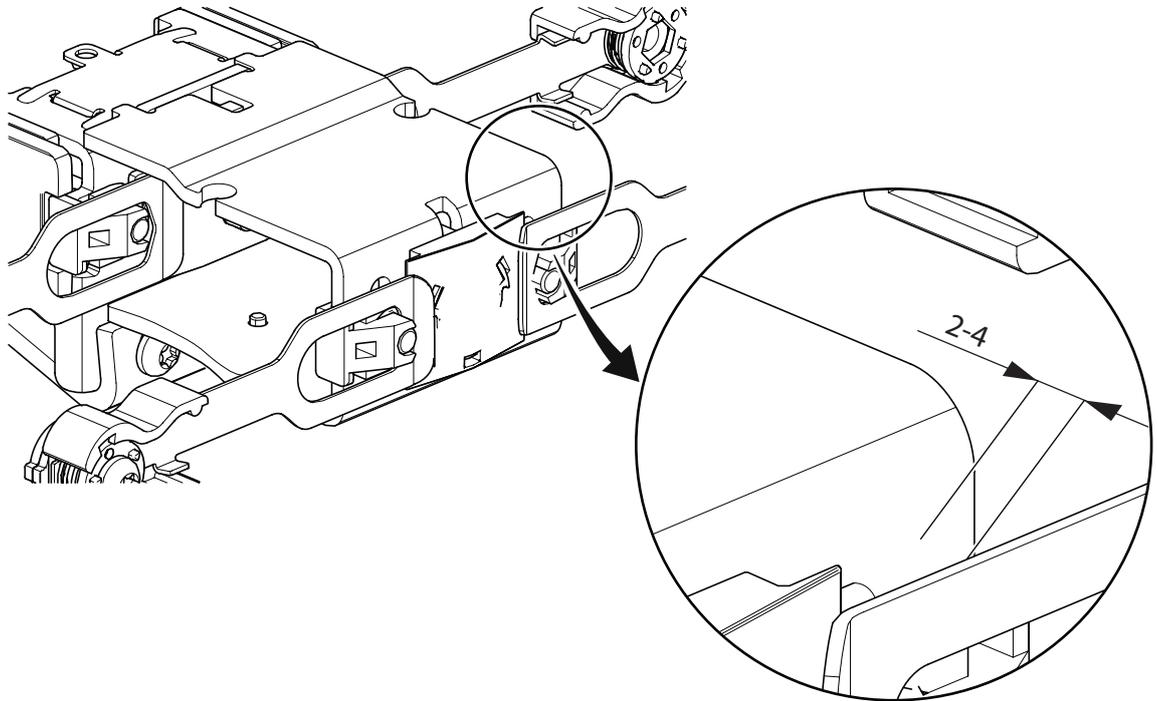
- a Push the doors to closed position.
- b Put the lock (2) in place for measurement on where to cut the plastic track (1).
- c On the opposite side of the door, under the lock (2), cut and take out the plastic track (1) with a length of $\frac{3}{4}$ of the width of the lock.
- d Put the hook (3) on the support beam where the plastic track (1) has been cut off.
- e Mount the lock (2) over the hook (3) and tighten the two outer screws (4).
- f When the lock (2) is in the right position, tighten the mid screw.



- 1 Plastic track
- 2 Lock
- 3 Hook (only for single doors)
- 4 Screw

For bi-parting doors

- a If needed, adjust the wheel holders (5) on the fast moving door so the spring latch (6) has a good grip in the lock, see page 33.
- b The spring latch (6) shall be mounted with a distance of 2-4 mm from the lock body. Use the washers (7) to depth adjust the spring latches to the right distance.



Note! Washers (7) **not** used between the spring latch and the wheel holder must be placed between the spring latch (6) and the screw (8), otherwise the screw will interfere with the wheels inside the wheel holder.

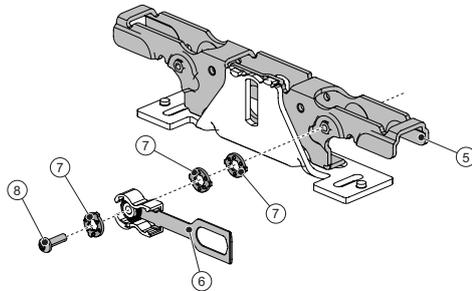


Figure 3: Maximum depth adjustment

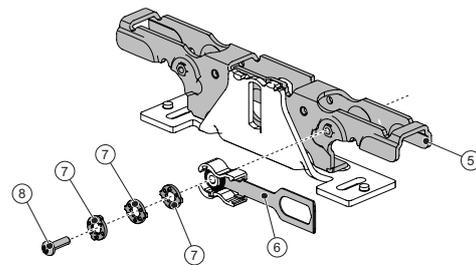
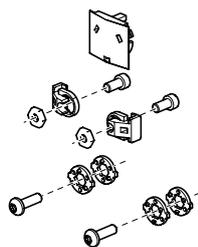


Figure 4: Minimum depth adjustment

- | | |
|----------------|----------|
| 1 Wheel holder | 3 Washer |
| 2 Spring latch | 4 Screw |

- c Push the doors to closed position. Place the lock (2) over the plastic track (1) in the beam at the leading edge of the doors. Tighten the screws (4) gently.

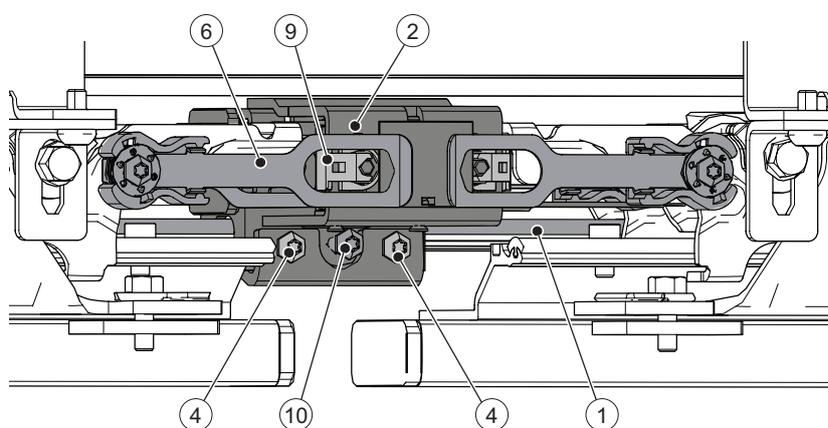
d Mount the telescopic ramp kit.



e Adjust the plastic ramps (9) so they are centered in the spring latches (6).

f Make sure the lock (2) is centered between the doors by locking the lock (2) and pulling the doors apart.

g Tighten the screws (4) and the middle screw (10).



- 1 Plastic track
- 2 Lock
- 4 Screw
- 6 Spring latch
- 9 Plastic ramp for fast moving door
- 10 Middle screw

Connection

Big coil on LD, LDP, LDB, connects to;

Black to MCU:18

Black to MCU:19

Bi-stable lock small coil;

Blue to IOU:16

Gray to IOU:17

15.7 Cover

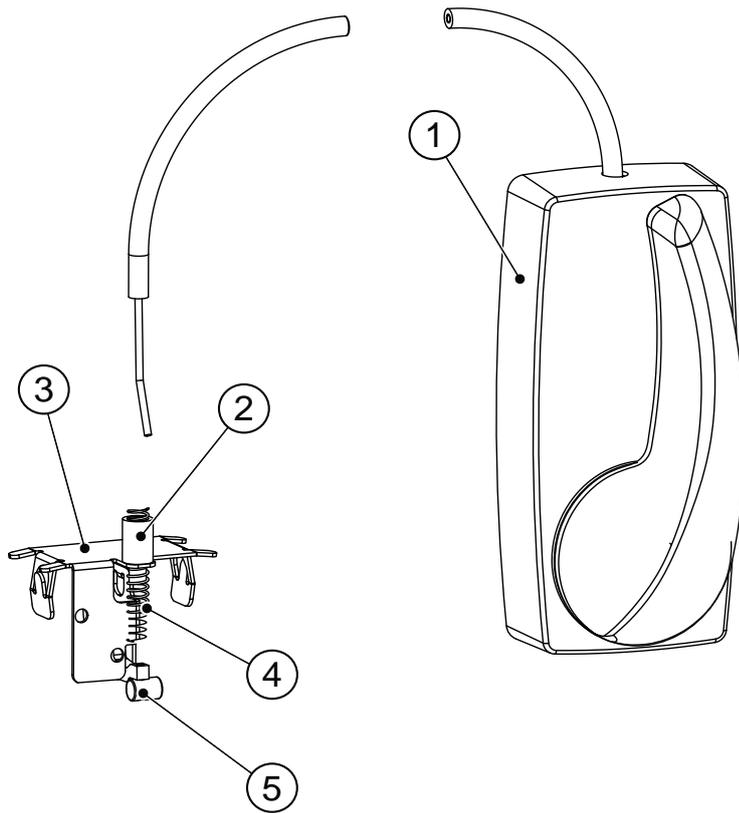
Made in clear anodized aluminium as standard. Paint finished in RAL colours or anodizing optional.

15.8 Motion sensor and presence sensors

Motion and presence sensors, see separate manuals or installation drawings on pages 67, 68 and 69.

15.9 Manual Opening Lock device, MOLD

For manual unlocking of the electrical lock (LD), locked without power (fail safe).

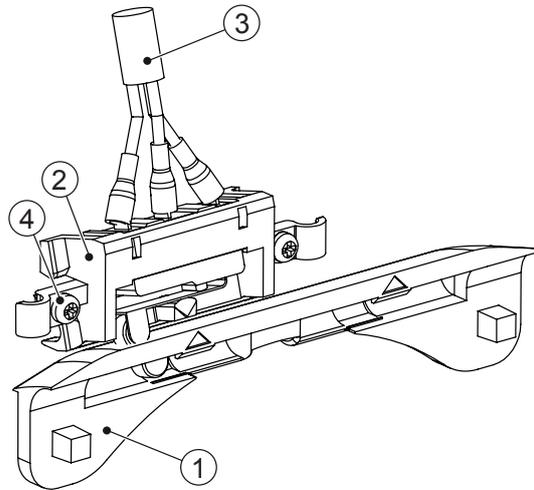


- 1 Supplementary lock release
- 2 Bending protection
- 3 Lock release kit
- 4 Compression spring
- 5 Wire lock

See separate installation drawing 1013736.

15.10 Limit switch kit, LSK

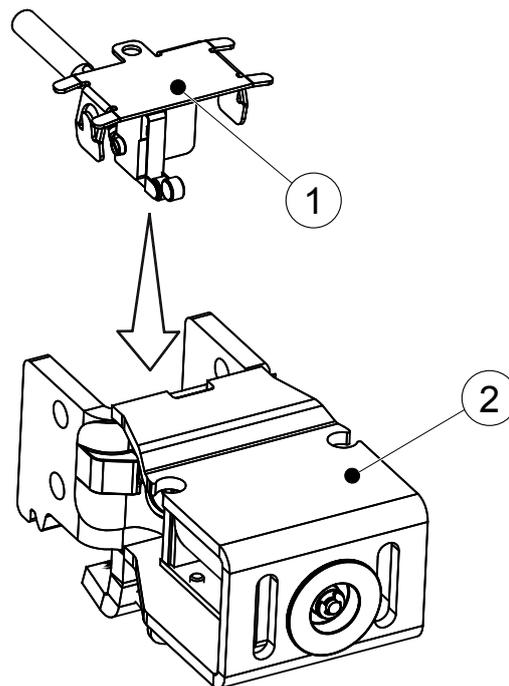
For more information, see installation drawing 1013640.



- 1 Activator
- 2 Holder
- 3 Micro Switch
- 4 Screw

15.11 Lock indication switch, LIS

For more information, see installation drawing 1013640.

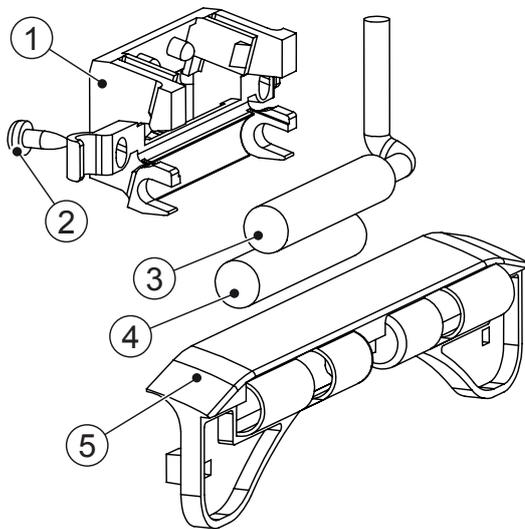


- 1 Lock indication switch (LIS)
- 2 Lock

15.12 Locked door indicator, LDI

For indication of locked lock and closed door for connection to alarm system.

See separate installation drawing 1013640.



- 1 Holder
- 2 Screw
- 3 Magnetic switch
- 4 Magnet
- 5 Activator

15.13 Quick connectors

15.13.1 2x10 to 1x10 converter

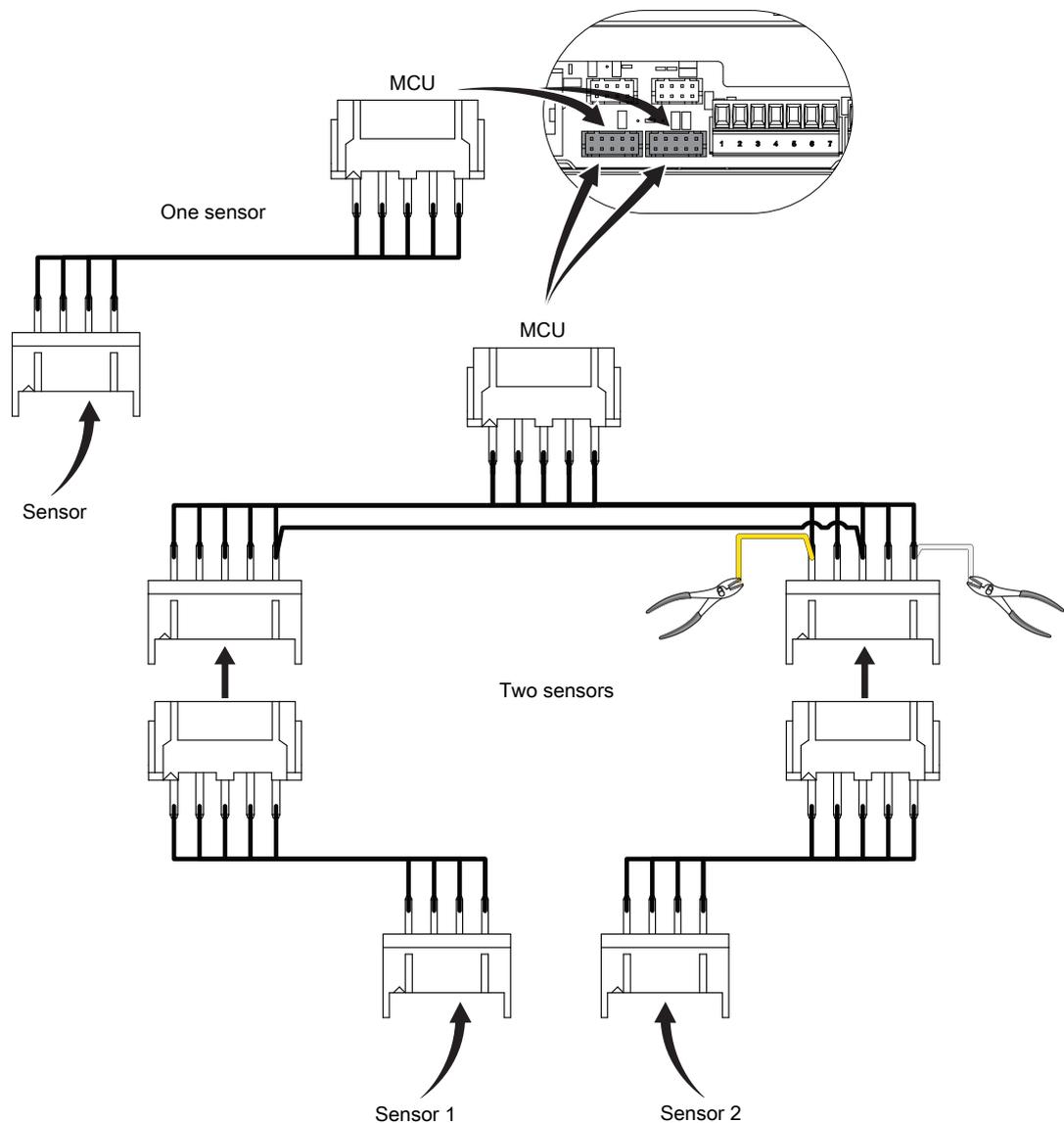
See separate installation drawing 1016751 for how to

- 1 Connect 2 monitored inner impulses
- 2 Connect 2 inner impulses, inner impulse shall not be monitored
- 3 Connect 2 monitored outer impulses
- 4 Connect 2 outer impulses, outer impulse shall not be monitored

15.13.2 8 to 10 converter

Convert side presence sensor(s) to presence impulse(s).

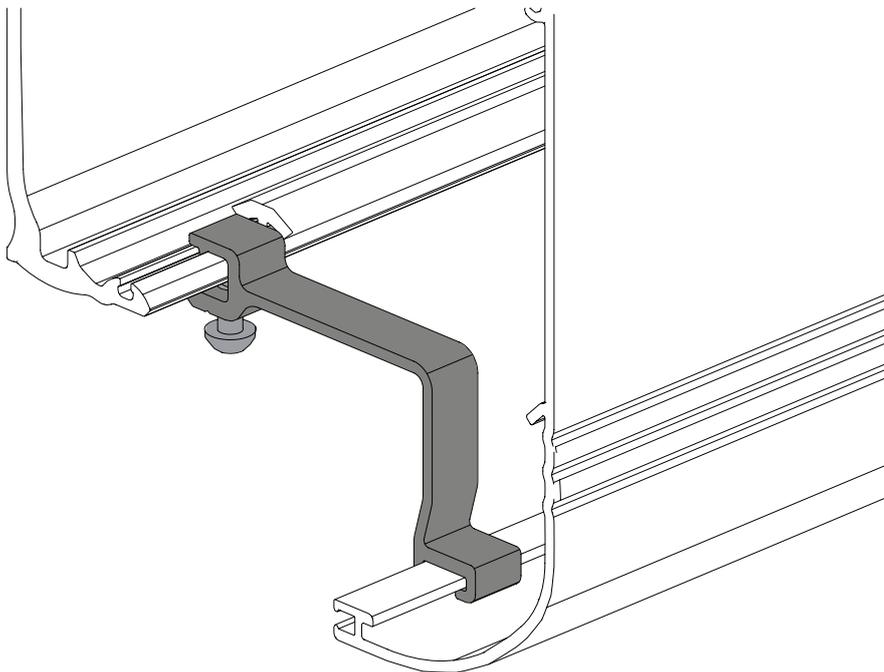
Combine 8 to 10 and 2x10 to 1x10 converters to allow 1-4 sensors to be converted from side presence to presence impulse.



Parameter No.	Value
07	00 (NO) or 01 (NC)
08	00 (NO) or 01 (NC)
09	01 one side, 02 two sides

15.14 Cover latch, alternative

The alternative cover latch is available as a spare part, 330000480 (one piece).



15.15 Electrical emergency unit with batteries

Used if a door is required to be opened or closed by means of a rechargeable battery unit and remain in this position in the event of power failure. Authorities can demand that the emergency units are monitored on a regular time basis. Half an hour before this time has elapsed the following opening impulse generates an emergency opening test. If there is no opening impulse within the next half hour, the operator control unit generates the opening impulse itself.

If the battery opens the door within the limited time the test is successful and the door resumes the function set by the operation mode selector.

Note! The test is never performed in operation mode selection OPEN. In OFF mode it can be selected. The test is always performed after a RESET and after changing operation mode selection, from a position where a test is not done to a position where the test is a demand.

15.16 Electrical emergency unit with batteries and two motors

Used if a door is required to be opened by means of a rechargeable battery unit and remain in this position in the event of power failure. Authorities can demand that the emergency unit is monitored on a regular time basis. Half an hour before this time has elapsed the following opening impulse generates an emergency opening test. If there is no opening impulse within half an hour, the operator control unit generates the opening impulse itself.

If the battery opens the door within the limited time the test is successful and the door resumes the function set by the operation mode selector.

Note! The test is never performed in operation mode selector setting OPEN. In setting OFF it can be selected. The test is always performed after a RESET and after changing operation mode selection, from a position where a test is not done to a position where the test is a demand.

15.17 Emergency closing with repeated closing

If the door is opened by hand after an electrical emergency closing, it will close again.

-
- 15.18 **Break-out unit PSB**
- Enables door/side screens to be broken outwards in case of emergency.
See page 14 and separate installation drawing 1003658.
- 15.19 **Convenience battery UPS**
- Stand-by supply which gives continued operation during short power failure.
24 V Battery is required.
- 15.20 **External error indication**
- Obtained if a lamp or a buzzer is connected. IOU required.
- 15.21 **Key switches (flush and/or surface mounted)**
- Used to give opening impulse to the door in any operation mode selector setting. The key switch can also open the door when power is switched off, if a battery is fitted.
- 15.22 **Push button**
- Used to give opening impulse to the door.
See separate installation drawing 656005.
- 15.23 **Upgrades**
- Exceptional performance:
- Install 150 W power supply
- Escape route according to EN16005 and DIN 18650:
- Requires:**
- MCU-ER board and 24 V battery. Monitored presence sensors, and inner impulse monitoring. Only 1 OMS is allowed.
- For DIN 18650 countries also Double motor.
- Configure parameters:**
- 9 = 2 Monitored presence impulse
 - 10 = 2 Monitored emergency unit
 - 11 = Partial open position must be set to 80% of the certified distance in escape routes.
 - 16 = 1 Monitored inner impulse
 - 29 = 2 If applicable Monitored side presence impulse
 - 30 = calculate the distance to 80% of COW. Side presence activation distance.
 - 40 = 23 hours
 - 44 = 0 The electromechanical lock **is not** locked in EXIT.
 - 45 = 0 Stop Function disabled, if door system is other than break-out.
 - 97 = 0 Operation Mode Selector Function (I/O unit) disabled.
 - b1 = 2 Passcode or b1 = 3 Key
- For DIN 18650 countries also A0 = 2

Extra functionality that requires an I/O-unit (IOU):

15.24 Open / Close function

One button impulse, will alternate between Open and Close. The door will stand open until next impulse or can after an adjustable time delay automatically start to close even if a new impulse is not received.

15.25 Fire alarm connection

Used to emergency open or fire close the door with mains power on.

15.26 Nurse function

Used mostly in combination as a Nurse - Bed function. Nurse opens the door to partial open position, and bed (connected to inner or outer impulse) opens to full open position.

Nurse works in operation mode selections Exit, Auto.

The Nurse impulse has the same hold open time as partial open.

15.27 Remote Exit mode

Remotely put door into Exit via an remote system, like timer. Requires a N/O contact.

15.28 Emergency open impulse

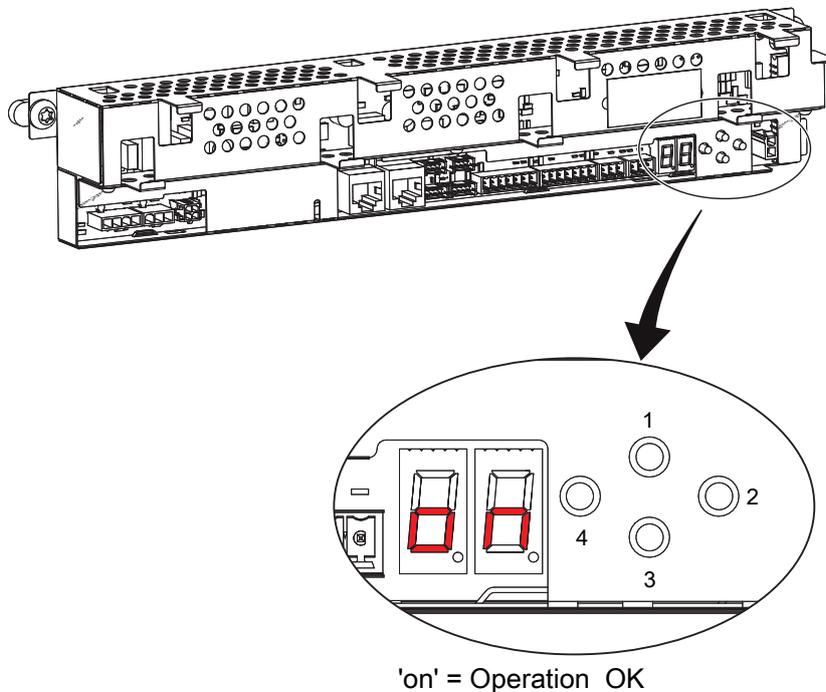
Used to give opening (fireman's opening) impulse to the door in any operation mode selector setting. With electrical emergency unit also during power failure.

16 Troubleshooting

Before starting the troubleshooting, check that the operation mode is correctly selected. Start the troubleshooting by checking the mechanical and electrical parts of the operator in the order listed below.

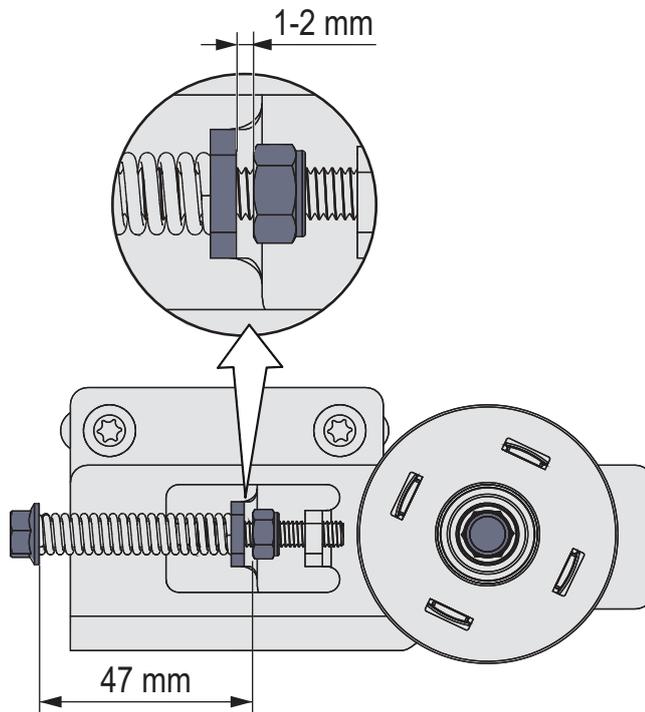
The electromechanical parts are fixed in the support beam. To replace these components, the complete unit has to be loosened and replaced.

- a The main control unit is equipped with a two digit display for error indication.
- During normal operation the display shows 'on'.
 - If all segments are off in the display check the mains power, power supply cable or perform a RESET. If the problem remains replace the main control unit or the power supply.
 - When an error is active the display is alternating between an error type e.g. E4 (Motor / Encoder Error) and a second two digit number specifying the error more in detail e.g. 03 (encoder error). If several errors are active they will be displayed in sequence. On each electronic unit there is also a green light emitting diode (LED). If the LED is off or flashing it is indicating that this unit is failing.



- 1 Up (to step up in parameter or value menu)
 - 2 Select (enters into parameter or value menu and program a value into memory)
 - 3 Down (to step down in parameter or value menu)
 - 4 Learn/Exit (Learn has 3 functions, 1 quick learn, 2 Normal learn, 3 default setting, Exit jumps out from value menu without saving or parameter menu)
- b Disconnect the mains power and batteries, if fitted. Unlock all mechanical locks. Pull the door leaf manually and check that the door can be easily moved over the complete sliding track/floor guide. If the door leaf stops or is hard to move, the reason may be sand, stones, rubbish etc. in the floor guide.
- The door leaf may also be jamming on the floor or on the weather proofing brush strips. Clean the floor guide, adjust the door leaf height/depth or take other necessary measures e.g. replacement of worn parts until the door leaf is running smoothly when manually operated.

- c If the belt is making noise against the beam or cover check that there is the right belt tension. On the Tension wheel assembly, measure the distance between the adjustment screw and the nut. The distance shall be 47 mm. Remove the slack reducers and release the fixing nut in the center of the tension wheel and check that the distance is 1-2mm between the nut and the adjacent plate.



Main error: Power Supply		
Detailed error	Reason	Remedy
-- Not enough power	There is not enough power to the MCU.	Check that the power does not drop from the PSU, check cables. Replace the PSU.

Main error: E1 Sensor Error		
Detailed error	Reason	Remedy
19 Inner Impulse Error	The control unit does not get a test answer from the activation unit.	Make sure that the monitoring output is connected and the connections are OK. Replace the monitored inner activation unit.
20 Fire Impulse Error	The control unit does not get a test answer from the fire alarm.	Make sure that the fire alarm connections are OK.
28 IOU Inner impulse 2 error	The control unit does not get a test answer from the activation unit.	Make sure that the monitoring output is connected and the connections are OK. Replace the monitored inner activation unit.
29 Outer Impulse Error	The control unit does not get a test answer from the activation unit.	Make sure that the monitoring output is connected and the connections are OK. Replace the monitored outer activation unit.
30 Stop Impulse Error	The control unit does not get a test answer from the stop impulse.	Make sure that the monitoring output is connected and the connections are OK.
31 Side Presence Impulse Error	The control unit does not get a test answer from the activation unit.	Make sure that the monitoring output is connected and the connections are OK. Replace the side presence activation unit.
32 Presence Impulse Error	The control unit does not get a test answer from the activation unit.	Make sure that the monitoring output is connected and the connections are OK. Replace the presence activation unit.

Main error: E2 Emergency Unit Error		
Detailed error	Reason	Remedy
21 Emergency Unit Error	The battery voltage drops due to low capacity during EEU test. The battery voltage measurement is wrong.	Charge or replace the battery. Replace the escape route unit (if present), otherwise replace the main control unit.
25 Battery Error	The battery is disconnected, short circuited or the internal thermal fuse in the battery is defective. The charging current is out of specification.	Make sure that the cables are OK and connected. Charge or replace the battery. Replace the main control unit.
26 Emergency Action Timeout	The door is prevented its emergency unit test within a stated time, due to high friction or jammed door.	Make sure that the door can open to the fully open position.

Main error: E3 Electronic Unit Error		
Detailed error	Reason	Remedy
00 RAM Error	Internal RAM memory error.	RESET, and if the problem remains, replace the electronic unit having a flashing or extinguished LED.
01 ROM Error	Internal ROM memory error.	RESET, and if the problem remains, replace the electronic unit having a flashing or extinguished LED.
02 EEPROM Error	Serious internal EEPROM memory error.	RESET Download a Default parameter set and perform a RESET. If the problem remains, replace the main control unit?

Main error: E3 Electronic Unit Error		
Detailed error	Reason	Remedy
05 Ambient Temperature Error	Ambient temperature measurement is wrong.	RESET, and if the problem remains, replace the main control unit.
06 Brake Chopper Error	Not possible to activate brake chopper.	RESET, and if the problem remains, replace the main control unit.
08 A/D Converter Error	The internal A/D converter is broken.	RESET, and if the problem remains, replace the electronic unit having a flashing or extinguished LED.
10 Register Error	Internal register error.	RESET, and if the problem remains, replace the electronic unit having a flashing or extinguished LED.
11 OS Error	Internal program error.	RESET, and if the problem remains, replace the electronic unit having a flashing or extinguished LED.
14 Lock Current Error	The lock is defective.	Check that the right lock is installed, and if the problem remains, replace the lock.
		RESET, and if the problem remains, replace the main control unit.
17 Hardware Watchdog Error	It is not possible to disable the motor bridge.	RESET, and if the problem remains, replace the main control unit.
18 EEPROM Critical Write Error	Internal write EEPROM memory error. This error mainly occurs when it is impossible to change a configuration parameter.	RESET, and if the problem remains, replace the main control unit.
22 24 V Over Current Error	The auxiliary 24 V output is overloaded.	RESET, and if the problem remains, check the connected sensors and other 24 V accessories.
		RESET, and if the problem remains, replace the electronic unit having a flashing or extinguished LED.
23 Lock Circuit Error	It is not possible to disconnect the lock with the lock relay.	RESET, and if the problem remains, replace the main control unit.
24 Learn Error	The Learn cycle has timed out.	Make sure that the door can make a full open/close cycle. Check for high friction or jammed door and then make a new Learn.
27 LDB/LDE Lock Error	The LDB or LDE lock is defective.	Check that the right lock is installed; the limit switches are working and if the problem remains, replace the lock.
33 Flash Code Error	Serious internal programming error.	RESET, and if the problem remains, replace the main control unit.
34 Output Enable Error	Test of safety related circuits failing.	RESET, and if the problem remains, replace the main control unit.
35 Link Voltage Error	The internal link voltage measurement is wrong.	RESET, and if the problem remains, replace the main control unit.
46 OMS Standard Internal Error	Internal error in the OMS Standard.	RESET, and if the problem remains, replace the OMS Standard. Added in SW 5.0.

Main error: E4 Motor / Encoder Error		
Detailed error	Reason	Remedy
03 Encoder Error	The encoder, encoder cable, or motor cable is damaged.	Make sure that the encoder cable and the motor cable are connected.
	Wrong motor type is selected.	Check Motor Type configuration.
04 Motor Current Error	The motor cable or the encoder cable is damaged.	Make sure that the encoder cable and the motor cable are connected.
	Wrong motor type is selected.	Check Motor Type configuration.
09 Encoder Cable Error	The encoder cable is damaged.	Make sure that the encoder cable is connected, otherwise replace the encoder cable.

Main error: E5 Lock Error		
Detailed error	Reason	Remedy
07 Lock Failure	The lock or something else was preventing the door from opening the first 14 mm from closed position.	Make sure that the lock is operating without friction. Make sure that Hold Force and Lock Release parameters are set correctly.

Main error: E6 Communication Error		
Detailed error	Reason	Remedy
12 Motor Control Communication Error	Motor control processor disconnected from the internal bus.	RESET, and if the problem remains, replace the main control unit.
13 Door Control Communication Error	Door control processor disconnected from the internal bus.	RESET, and if the problem remains, replace the main control unit.
36 Escape Route Communication Error	Escape route unit processor disconnected from the internal bus.	RESET, and if the problem remains, replace the escape route control unit.
37 I/O Communication Error	I/O control unit disconnected from the internal bus.	RESET, and if the problem remains, replace the I/O control unit.
38 I/O Brand Mismatch Error	The I/O control unit is not of the brand EM.	Replace the I/O control unit with a I/O control unit of the brand EM. Added in SW 3.2.
39 OMS Brand Mismatch Error	The Operation mode selector (OMS) is not of the brand EM.	Replace the Operation mode selector (OMS) with a OMS of the brand EM. Added in SW 3.2.
47 OMS Communication Error	Corrupted communication with the OMS when selecting operation mode.	RESET, and if the problems remains change the OMS. If the problem still remains after changing the OMS change the MCB or MCB-ER. Added in SW 5.0.
51 Web Communication Error	Web control unit disconnected from the internal bus.	RESET, and if the problem remains, replace the Web control unit.
52 Hi-O Communication Error	Web Hi-O unit disconnected from the internal bus.	RESET, and if the problem remains, replace the Hi-O control unit.
53 Operation Mode Selector Communication Error	Operation mode selector (OMS) disconnected from the external bus.	RESET, check connections, and if the problem remains, replace the operation mode selector (OMS).
54 External Communication Error	The external bus is malfunctioning.	RESET, and if the problem remains, replace the main control unit.
55 CTI Brand Mismatch Error	The Configuration Tool Interface (CTI) or the MCU is not of the brand EM.	Check that the operator is a EM operator . Added in SW 3.2.



It is not possible to replace an EM operator component with a component from a different brand.

Main error: E7 Motor Temperature High		
Detailed error	Reason	Remedy
16 Motor Temperature High	The duty cycle of the door is too high for the current Speed settings and Hold Open Time.	If the motor is warm, put the door in operation mode OPEN and wait for at least 1 minute. Reduce Speeds and increase Hold Open Time parameters.
	The heavy-duty motor is replaced by a normal duty motor.	Put the door in operation mode selection OPEN and wait for at least 5 minutes.

Main error: E8 Non-critical Error		
Detailed error	Reason	Remedy
49 EEPROM Non-critical Write Error	The main control unit cannot write error log or event log information to the EEPROM memory.	RESET, and if the problem remains, replace the main control unit if it is important to read logged information.
50 EEPROM Access Error	The EEPROM queue is full.	Too many Events to log. Reduce the number of events to log in the Event Log configuration.

OMS Basic Error Codes		
Detailed error	Reason	Remedy
Red light every 2 seconds	Error in door operator MCU.	RESET, and if the problem remains a service visit is required. See also page 121.
Red light 4 times per second	Internal error in the OMS Basic.	Replace the OMS Basic.
Steady red light	When an impulse is given on IOU TB:6 (Mode Select or Enable) the indication LED on OMS Basic will be steady red for 15 seconds.	-

16.1 After remedy or replacement the operator has to be checked as follows:

- a Study the door movement and adjust the functions to the values required for a smooth door operation and make sure to complete with local regulations.
- b Check that correct functions and values have been selected for the installed accessories and that the installation complies with valid regulations and requirements from the authorities.
- c Clean the cover and the doors.

17 Service/Maintenance

Regular inspections shall be made according to national regulations and product documentation by an Entrematic Nordic-trained and qualified technician. The number of service occasions should be in accordance with national requirements and product documentation. This is especially important when the installation concerns a fire-approved door or a door with an emergency opening function.

As with all other technical products, an automatic door needs maintenance and service. It is essential to know the importance of maintenance to have a reliable and safe product.

Service and adjustments will ensure a safe and proper operation of an automatic door unit.

The "Service Log Book" shall be used together with the "Site Acceptance Test and Risk Assessment" document provided. Keep both documents available for maintenance and service records.

The table below shows the recommended interval in months, when to replace parts during preventive maintenance.

Part	Part number	Cycles/hour in operation			Abusive Environment
		<10	<100	>100	
		Low traffic	Medium traffic	High traffic	
Electrical emergency unit battery	330000419	24	24	24	24
Floor guide shoe		24	12	6	6
Standard	33830064				
Felt padded	33831622				
Break-out	830792				
Door carriage		36	24	12	12
Plastic wheels	330000381				
Steel wheels	330000382				
Anti-riser device	330000434				
Sliding track	330000466	36	36	36	24
Tooth belt	330000464	48	48	48	36
Drive unit damper kit	330000377	60	60	60	60
Lock ramp	330000661	60	60	60	60
Belt clamp	330000430	60	48	36	24
Plastic protector center shaft kit	330000393	60	60	60	48
Door stop rubber kit	330000440	24	24	24	24
Tension wheel assembly	330000447	36	36	36	36
Detachment guard	331012777	60	60	60	60
Brush/sealing		12	12	12	12
Slim, Slim Thermo	33716223				
Frame, Slim, Slim Thermo	33738789				

Check that all required signage, see page 97, is applied and intact. Also check other consumable parts, such as brushes, door stops and glazing rubbers.

17.1 Service

- a Remove dust and dirt from the operator. Dirt on the sliding track should be removed with methylated spirits. If necessary replace the sliding track.
- b None of the parts need lubrication.
- c The tooth belt must be kept dry and clean. Check the belt tension.
- d Check that all nuts and bolts are tightened well.
- e Check the status of the door wheels, sliding track, belt, floor guides and all the other consumables, and change them if needed or if they have completed the life cycle period according to the described in chapter .
- f Check the correct functionality of the Program Selector in all the different positions.
- g Adjust, if necessary, the door leaf speed, the HOLD OPEN TIME and the door leaf position to comply with valid regulations and requirements.
- h Check, and re-adjust if needed, door leaves height and tilt to secure a proper and smooth sliding, opening and closing.
- i Check, re-adjust or exchange if needed, brushes, rubber sealings etc to secure proper closing and efficient energy saving by helping to prevent energy waste.
- j Check that all the safety distances required by applicable norms to prevent accidents by crushing, shearing, drawing-in, etc. are kept and respected. Re-adjust or exchange or suggest additional protection if needed.
- k Check all the safety sensors, activation units, the emergency escape functionality if applicable, and the emergency opening function under Power Failure situation. Adjust or exchange if needed to secure that all the safety works properly according to applicable norms.
- l If an electromechanical lock is installed check the function as follows:
 - Set the operation mode selector to EXIT. The lock shall open after an inner impulse. When the lock opens there is a clicking sound from the lock. If the operator is placed as an escape route the door should open and close without any sound from the lock. The lock shall remain unlocked.
 - Set the operation mode selector to OFF. Make sure the door can not be opened by pulling the door leaf in the opening direction.
 - When the operation mode selector is set back to EXIT, two clicking sounds (bi-stable) or one clicking sound (locked with power) indicate that the lock is unlocked. The door should then open and close as mentioned above.

ENTRE//MATIC

Entrematic Nordic AB, Lodjursgatan 10, SE-261 44 Landskrona, Sweden

Tel: +46 10 47 48 300

www.entrematic.com • info.em@entrematic.com