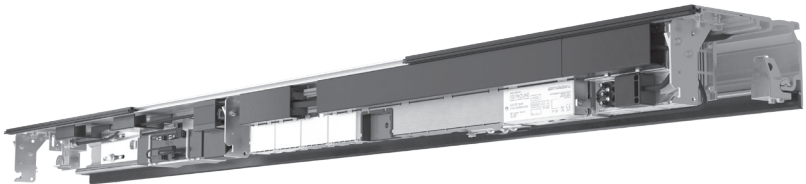


# ES 250 PRO/ES 250 PRO FST ES 400 PRO/ES 400 PRO FST

Mounting instructions  
Original document



0059677-45532/17533 – 11/2023

**EN**

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## 1 About this document

### 1.1 Contents and purpose

The purpose of this manual is the safe and efficient mounting and commissioning of the ES PROLINE sliding door operators (hereinafter also called "operator"). Before commencing any work, personnel must have carefully read through and understood this manual. Complying with all safety instructions and action steps provided in this manual is the basic prerequisite for safe working. The figures serve to provide a general understanding and may differ from the model of the sliding door that is actually delivered.

### 1.2 Target group

This manual is designed for use by qualified assembling technicians. Thanks to their professional training and experience, as well as their knowledge of technical terminology and the relevant standards and regulations, a qualified assembling technician is able to mount and commission the operator and to independently detect and avert possible dangers. The assembling technician has knowledge and experience in the following areas:

- Industrial safety, operational safety, and accident prevention regulations
- Using ladders and scaffolding
- Handling and transport of long, heavy parts
- Using tools and machinery
- Attachment of fixing materials
- Assessment of the building fabric

### 1.3 Other applicable documents

- Documentation for the profile system used
- Documentation for accessories used
- Inspection log for power-operated doors
- The risk assessment for the project

### 1.4 Documents storage

This manual and the applicable documents must be kept during the service life of the product and must be passed on with the product.

### 1.5 Abbreviations

#### **Dimensions:**

OL	Operator length
CH	Clear height
CW	Clear width

#### **Location information:**

MCE	Main closing edge
SCE	Secondary closing edge



**Parts:**

- EM I/O Input/Output extension module
- EM BAS Operating mode switch extension module
- EM SIAK Safety and activation extension module
- CIN Communication interface

## 1.6 Symbols used

### 1.6.1 Hazard categories



#### **WARNING**

This signal word indicates a possible hazardous situation that may result in death or serious injury if not averted.

---



#### **CAUTION**

This signal word indicates a possible hazardous situation that may result in minor or slight injury if not averted.

---



#### **ATTENTION**

This signal word indicates a possible hazardous situation that may result in damage to property or the environment if not averted.

---

### 1.6.2 More symbols



#### **Note**

This signal word indicates useful information for efficient and trouble-free operation.

---



Step-by-step graphics

---



Position numbers of parts

---

## 2 Safety

### 2.1 Intended use

ES PROLINE sliding door operators are suitable for use in dry environments. The escape route variant is suitable for use on escape and emergency routes.

### 2.2 Improper use

The use of control elements, settings or procedures not described in this documentation may cause electric shocks, hazards posed by electrical voltages/ currents, and/or hazards posed by mechanical processes.

### 2.3 Reasonably foreseeable misuse

Any mounting above and beyond the correct mounting is considered to be incorrect mounting.

### 2.4 Risk assessment

The assembling technician ensures that the results of the risk assessment are complied with. The assembling technician carries out their own inspection and flags up any unresolved hazards.

#### 2.4.1 Special protection requirements with regard to particularly vulnerable people

Insofar as the risk assessment results in an unacceptable impact for a door user, in terms of a health risk or a risk of injury, protection must be added in the form of a safety device (connecting a safety sensor or mounting a protective panel). This is to be taken into special consideration if particularly vulnerable persons (e.g. children, elderly people or disabled people) use the door area.

### 2.5 Basic warnings



#### **WARNING**

##### **Risk of injury due to heat generation, explosion, and fire**

Improper handling of batteries (e.g. overheating, destruction, recharging, use of the battery in other products) can cause heat generation, explosion, and fire. This poses a risk of injury.

- Only use the battery types recommended and approved by dormakaba.
  - Observe warnings on the batteries.
  - Only use batteries as intended.
  - Keep out of reach of children.
-

### 3 Product description

#### 3.1 Overview

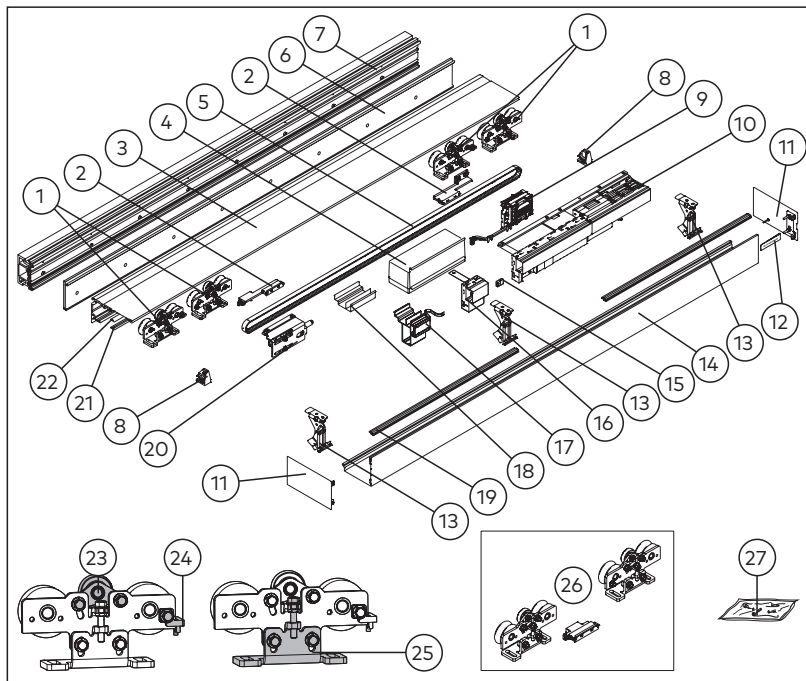


Fig. 1

- |  |  |
|--|--|
| (1) Carriers   | (16) Extension module                                |
| (2) Engaging unit  | (17) CIN (option)                                    |
| (3) Operator profile   | (18) Cable duct                                      |
| (4) Battery  | (19) Hinge profile                                   |
| (5) Toothed belt   | (20) Deflection device                               |
| (6) Mounting profile   | (21) Rubber strip                                    |
| (7) LM girder  | (22) Track profile                                   |
| (8) End stop   | (23) Counter roller                                  |
| (9) Locking device   | (24) Anti-static brush                               |
| (10) DRIVE UNIT  | (25) Adjustable brackets                             |
| (11) End plate   | (26) Carriers with engaging unit for<br>1-leaf units |
| (12) Logo clip   | (27) Bag of screws:                                  |
| (13) Cover holders   | 17508901150 for 2-leaf units                         |
| (14) Internal cover  | 17509001150 for 1-leaf units                         |
| (15) Connector between the<br>control unit and the extension<br>module |  |

## 3.2 Operating elements

The control unit has a user interface with 4 keys and a 2-digit display.

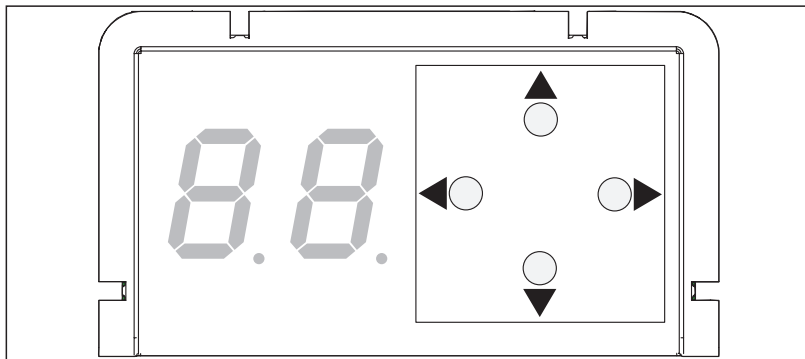


Fig. 2

The following functions can be executed by pressing the keys:

- |  |  |
|--|--|
| <p>▶ <b>Right key</b></p> <ul style="list-style-type: none"><li>• Open parameters menu</li><li>• Display parameter value</li><li>• Select parameter to be changed</li><li>• Save changed parameter value</li><li>• Open error menu</li></ul> | <p>▼ <b>Bottom key</b></p> <ul style="list-style-type: none"><li>• Scroll through parameters and error messages</li><li>• Decrease the parameter value</li><li>• Opening impulse</li><li>• Teach-in run (press for 3 secs)</li><li>• Factory reset (Fact-Setup) (press for 8 secs)</li></ul> |
| <p>◀ <b>Left key</b></p> <ul style="list-style-type: none"><li>• Close change parameters</li><li>• Close parameters menu</li><li>• Close error menu</li><li>• Stop service mode (press for 3 secs)</li></ul>                                 | <p>▲ <b>Top key</b></p> <ul style="list-style-type: none"><li>• Scroll through parameters and error messages</li><li>• Increase the parameter value</li></ul>  |
| <p>◀ ▶ <b>Press left and right key at the same time</b></p> <ul style="list-style-type: none"><li>• Error acknowledgement</li><li>• Reset (press for 3 secs)</li></ul>   |  |

### 3.3 Parts included

The parts included are stated on the delivery note. Fixing materials such as dowels and screws are not included.

### 3.4 Technical data

Connection voltage:	230 V 50 Hz +10%/-15%
Fuse supplied by the customer:	10 A
Protection class:	IP 20
Permissible humidity:	93% relative humidity, non-condensing
Operating temperature:	↕ -20°C to ↕ +60°C
Power supply for external devices	
- for mains operation:	24 V DC/max. 2 A short-circuit-proof
- in the event of a mains failure in battery mode:	21-27 V DC/max. 2 A short-circuit-proof
Multiport inputs	24 V ±15%

### 3.5 Closing edge protection



**Warning**

Only safety sensors with type approval according to EN 16005 may be used!

### 3.6 Secondary closing edge protection

If the distance of the opened door leaf to a stationary obstacle (e.g. a wall) is smaller than 200 mm, the secondary closing edge must be protected, for example with safety sensors or a protective panel.

## 4 Mounting

This manual describes the mounting of a 2-leaf unit. The same procedure should be carried out for a 1-leaf unit.

### 4.1 Safety during mounting



#### WARNING

##### **Danger of injury from falling objects!**

Falling parts or tools can cause injury.

- Secure objects against falling.
  - Do not leave objects carelessly lying around.
  - Secure workplace against unauthorized entry.
- 



#### WARNING

##### **Incorrect mounting is dangerous!**

Mounting the door unit incorrectly can result in dangerous situations.

- Do not mount the door unit in rooms where chemicals (e.g. chlorine) are used.
  - Do not make unauthorized changes, additions, or modifications to the door unit.
  - Only install intact parts.
  - Only use materials intended for mounting the door unit.
- 



#### ATTENTION

##### **Danger due to contamination!**

Drilling chips or similar contamination may damage the rollers.

- Keep the operator and running profile clean at all times.
- 

### 4.2 Requirements for mounting

#### 4.2.1 Temperature range



#### Note

Before starting mounting, make sure that the location of use meets the specifications for operating temperature.

---

## 4.2.2 Requirements for the on-site electrical installation



### WARNING

#### **Danger of death due to electric current!**

Touching live parts will result in death or serious injury from electric shock.

- Work on electrical units must only be carried out by qualified electricians.
- Before starting work on electrical units and equipment, establish a voltage-free state and maintain this state for the entire duration of the work.
- Do not touch live parts or cables.
- Suitable personal protective equipment must always be worn when working with the product.
- Lay the mains cable in the cable ducts to protect it from external influences (e.g. hot temperatures) or fasten it with cable clamps.

A 230 V/50-60 Hz connection with a cross-section of 3 x 1.5 mm<sup>2</sup> and a protection of 10 A is available at the door location.

## 4.2.3 Additionally required material

- Fixing materials
- Wooden blocks in various thicknesses
- Seal material

## 4.2.4 Standard tightening torques

<b>Screw size</b>	<b>Standard tightening torque</b>
M 5	5 Nm
M 6	9.5 Nm
M 8	23 Nm
M 10	46 Nm
M 12	79 Nm

## 4.3 Mounting the operator

The procedure described here is an example. Structural or local conditions, existing aids or other circumstances may make a different approach sensible.

### 4.3.1 The mounting positions of the operator pulley and the guide pulley

The illustrations show the door in the closed position.

The arrows indicate the opening direction.

2-leaf unit

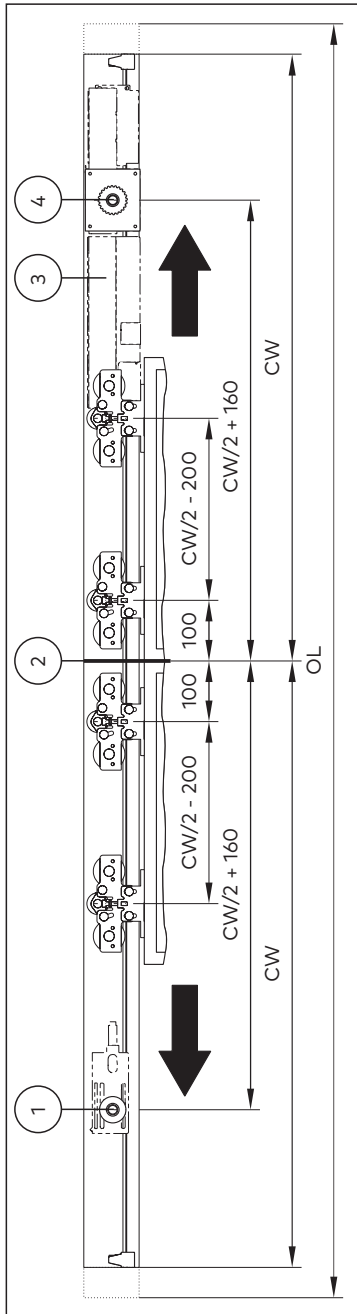


Fig. 3

1-leaf, left-opening unit

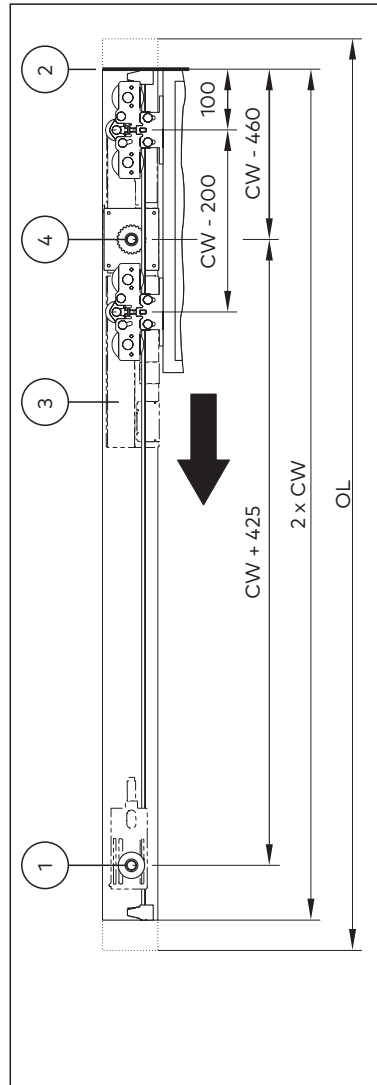


Fig. 4

- (1) Center of the guide pulley
- (2) Main closing edge
- (3) DRIVE UNIT
- (4) Center of the operator wheel
- OL Operator length
- CW Clear width



**1-leaf, right-opening unit**

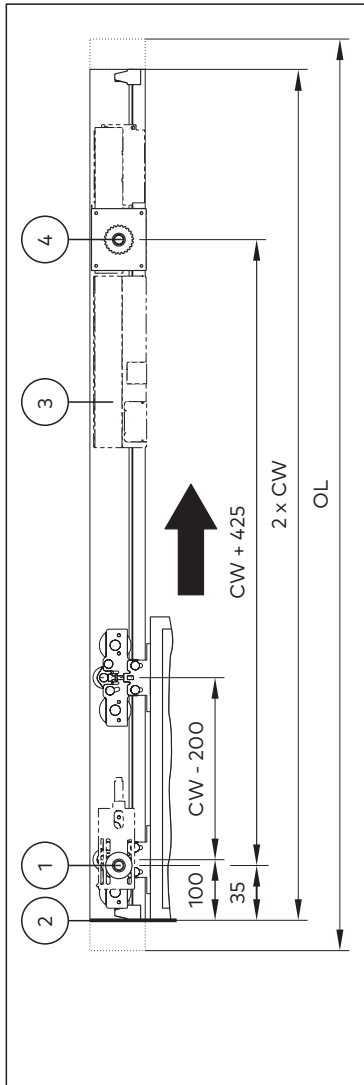


Fig. 5

- (1) Center of the guide pulley
  - (2) Main closing edge
  - (3) DRIVE UNIT
  - (4) Center of the operator wheel
- OL Operator length  
CW Clear width

### 4.3.2 Prepare the operator profile

1. Push the attachment strip for the DRIVE UNIT into the slot in the operator profile from the right.

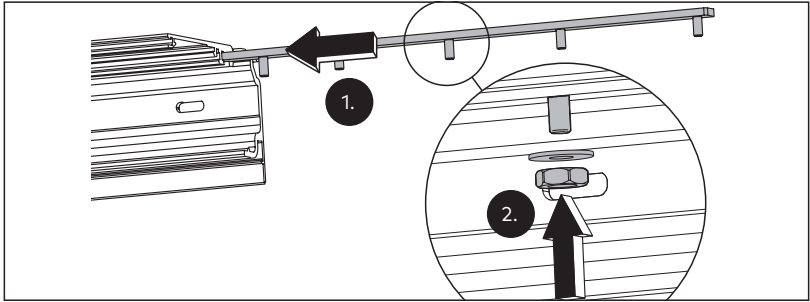


Fig. 6

2. Screw the enclosed washer and nut onto the middle threaded bolt.
3. Position the attachment strip so that the middle threaded bolt is on the position for the center of the operator wheel, see Fig. 3, Fig. 4 and Fig. 5.

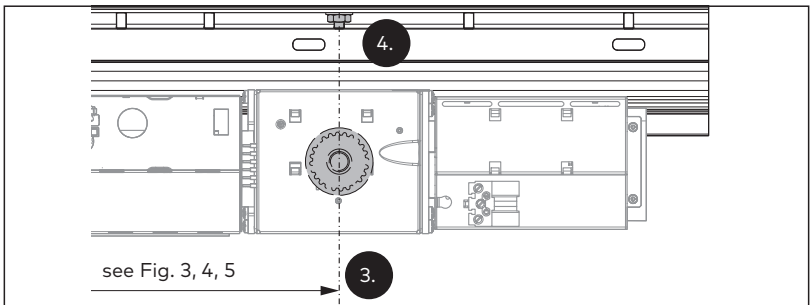


Fig. 7

4. Screw the attachment strip tight.

5. Push the attachment strip for the deflection device into the slot in the operator profile from the left.

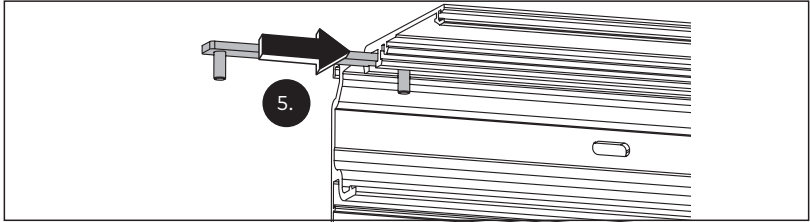


Fig. 8

6. Remove the adhesive strip protector from the rubber strip.

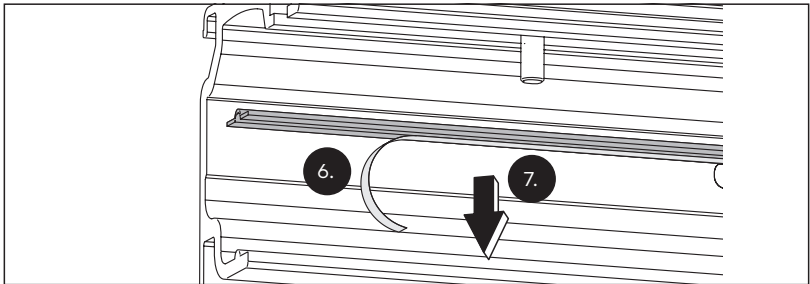


Fig. 9

7. Stick the rubber strip into the track profile with the adhesive strip to the rear of the operator.
8. Place the track profile on the rubber strip.

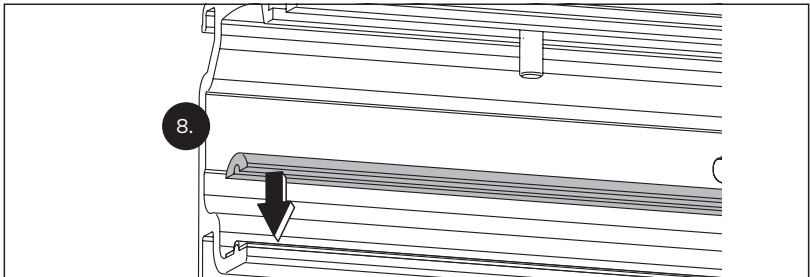


Fig. 10

9. Push both end stops onto the track profile from the outside and tighten them slightly.

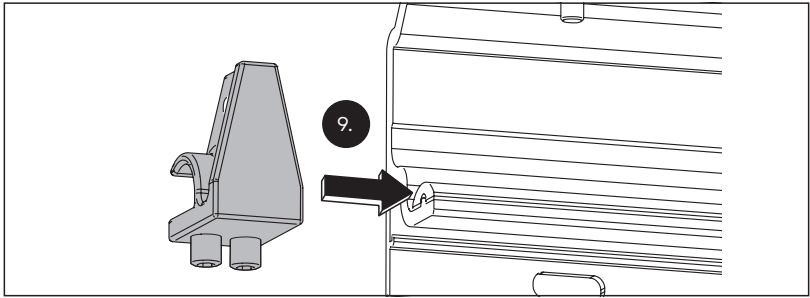


Fig. 11

10. Attach the clip to the center of the track profile (2-leaf units only).

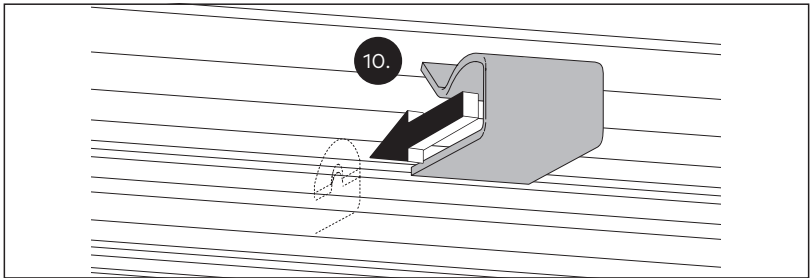


Fig. 12

### 4.3.3 Mount the operator profile on the wall

1. Determine the highest point of the floor in the leaves' area of travel.



#### Note

Use a leveling device.

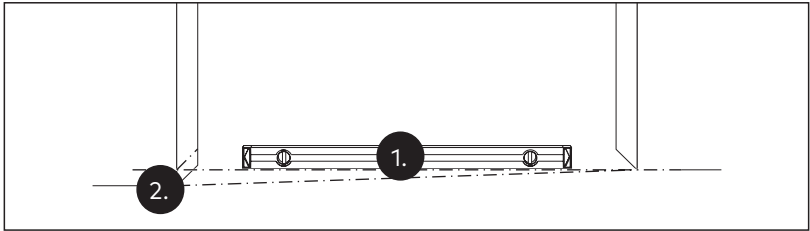


Fig. 13

2. Transfer the highest point of the floor to the wall.
3. The clear height (CH) can be found in the planning documents.
4. Mark the distance from the floor to the lower edge of the mounting plate.  
If the internal cover with a height of 100 mm is being used, the distance X from the floor to the lower edge of the mounting plate = **CH**.  
If the internal cover with a height of 150 mm is being used, the distance X from the floor to the lower edge of the mounting plate = **CH + 50 mm**.  
The clear height must be adhered to.

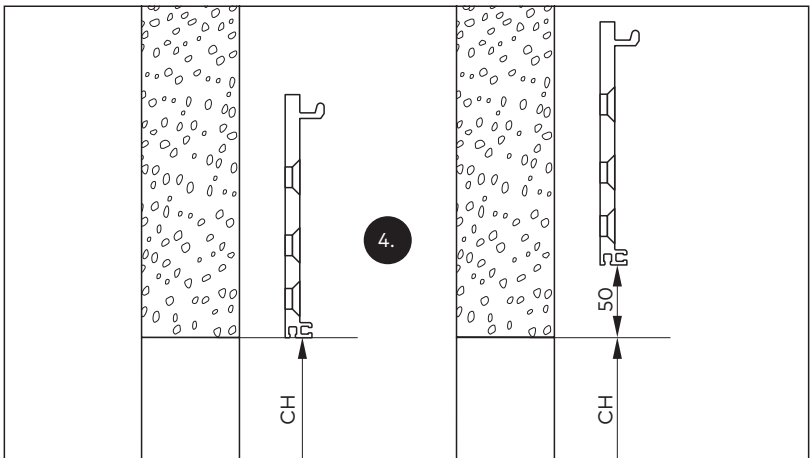


Fig. 14

5. Position the mounting plate centrally above the passage and mark the drill holes.

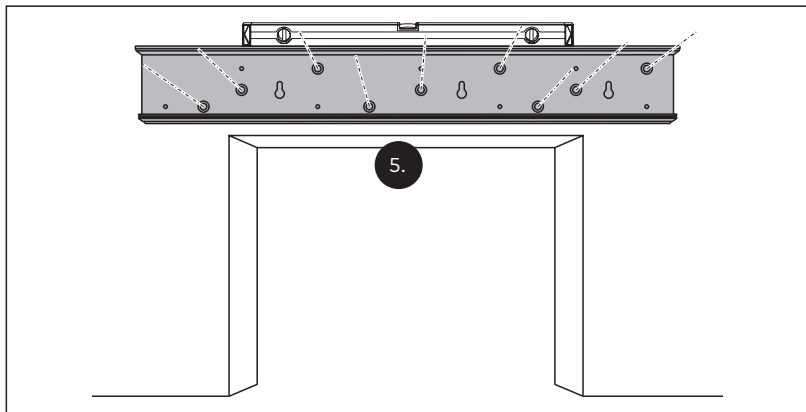


Fig. 15



#### WARNING

##### **Risk of injury due to incorrect fixing materials!**

If unsuitable fixing materials are used, there is a risk that parts may tear out.

- Use dowels and screws that are suitable for the existing structure and the weight of the door unit.

6. Drill the holes.
7. Screw the mounting plate to the wall.

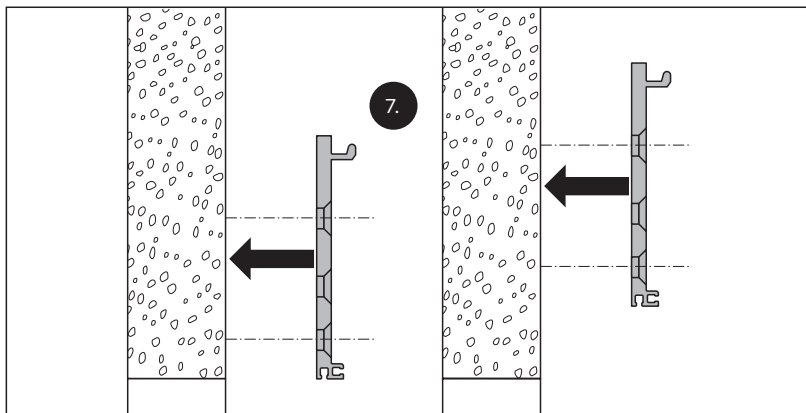


Fig. 16

- 8.** Hook in the drive profile.

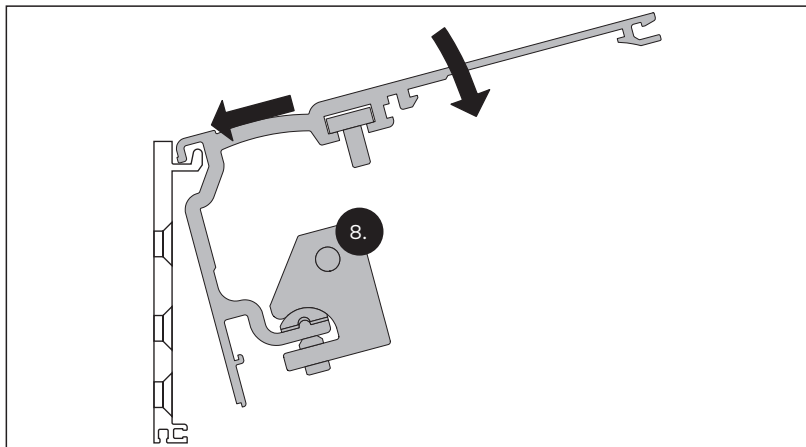


Fig. 17

- 9.** Use the thread-forming screws provided to screw the operator profile to the mounting plate. To prevent noise during operation, screw the operator profile through all slots.

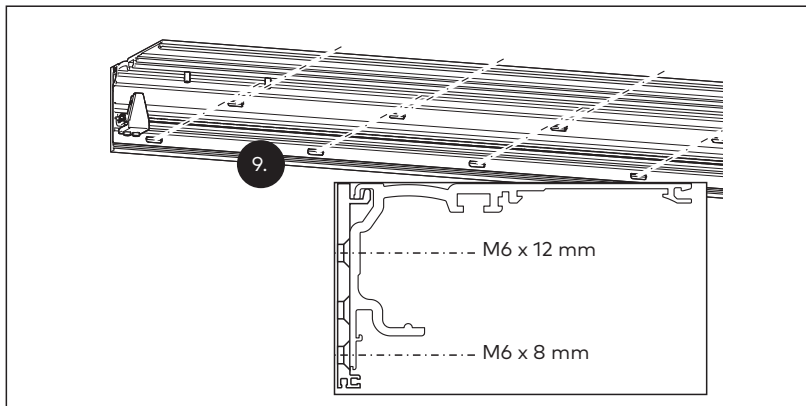


Fig. 18

- 10.** Clean the operator profile and running profile.

#### 4.3.4 Mount the operator profile in the passage

1. Determine the highest point of the floor in the leaves' area of travel.



#### Note

Use a leveling device.

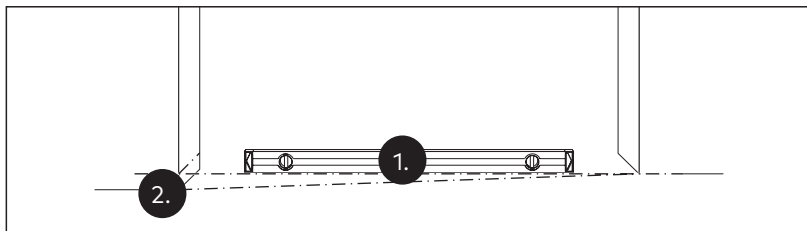


Fig. 19

2. Transfer the highest point of the floor to the wall.
3. The clear height (CH) can be found in the planning documents.
4. Mark and drill the two lower holes on the left side. Mark and drill the two upper holes on the right side:  
if the internal cover with a height of 100 mm is being used, the distance from the floor to the center of the lower drill hole on the wall mounting  
**= CH + 28 mm.**  
If the internal cover with a height of 150 mm is being used, the distance from the floor to the center of the lower drill hole on the wall mounting  
**= CH + 78 mm.**  
The clear height must be adhered to.

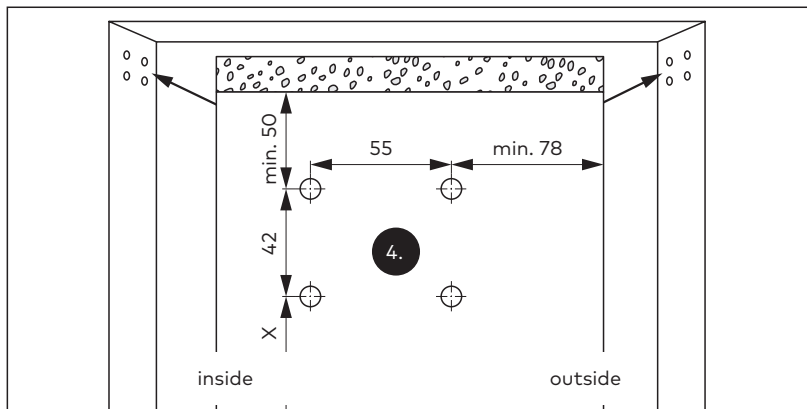


Fig. 20





**WARNING**

**Risk of injury due to incorrect fixing materials!**

If unsuitable fixing materials are used, there is a risk that parts may tear out.

- Use dowels and screws that are suitable for the existing structure and the weight of the door unit.

5. Screw both wall brackets to the wall through the slots with 2 screws and washers each.

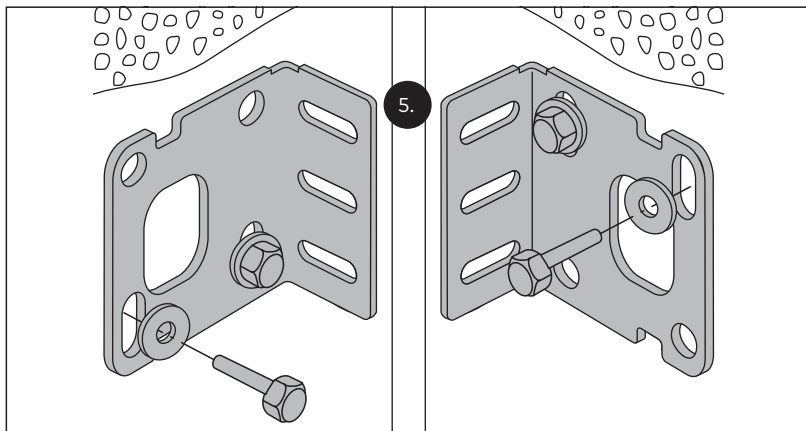


Fig. 21

6. Push 1 square nut into each of the 3 profile channels on both sides of the LM girder.

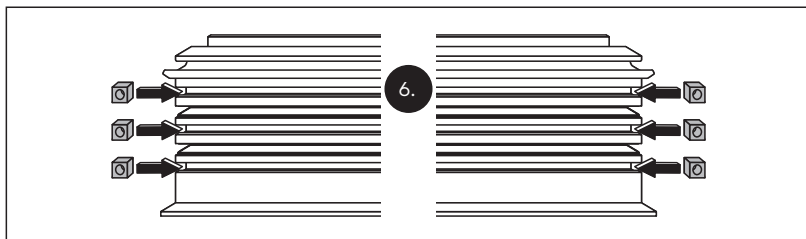


Fig. 22

- Hook the LM girder into the wall brackets. The required distance of the LM girder from the wall can be found in the manual for the relevant profile system.

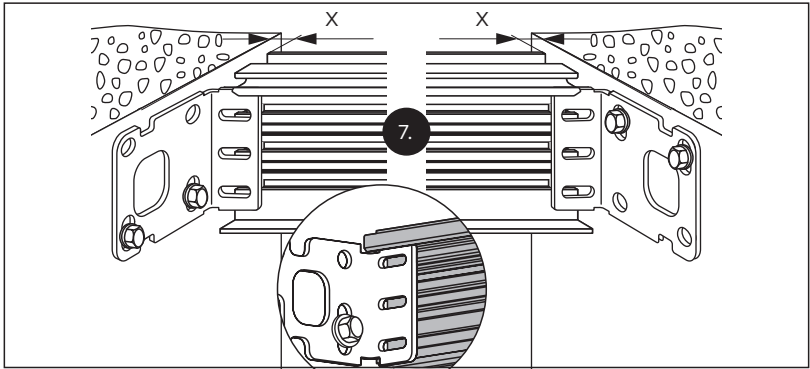


Fig. 23

- Screw the LM girder onto the wall brackets.

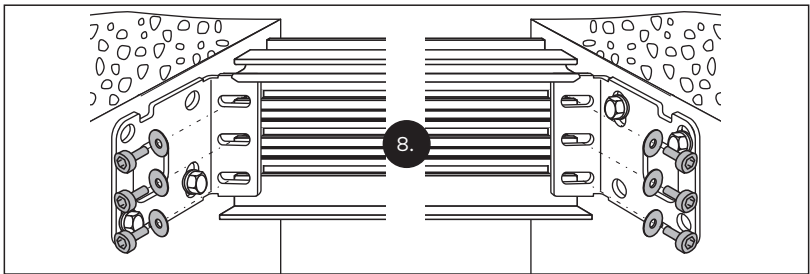


Fig. 24

- Align the LM girder horizontally and vertically. The clear height must be adhered to.

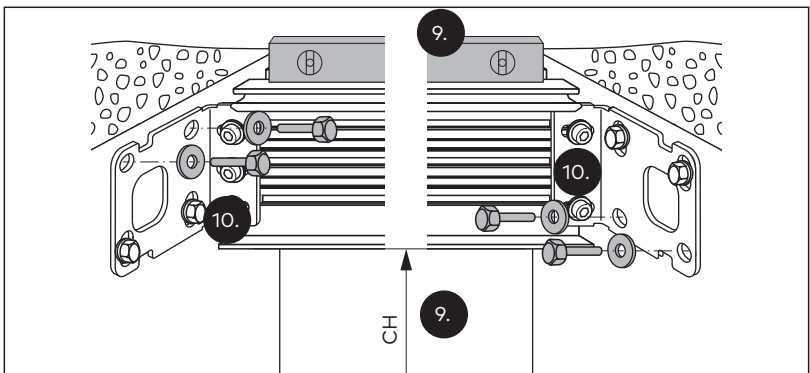


Fig. 25

- Drill through the remaining holes in the two wall brackets. Screw on the wall brackets with 2 additional screws and washers each.

**11.** Hook in the drive profile.

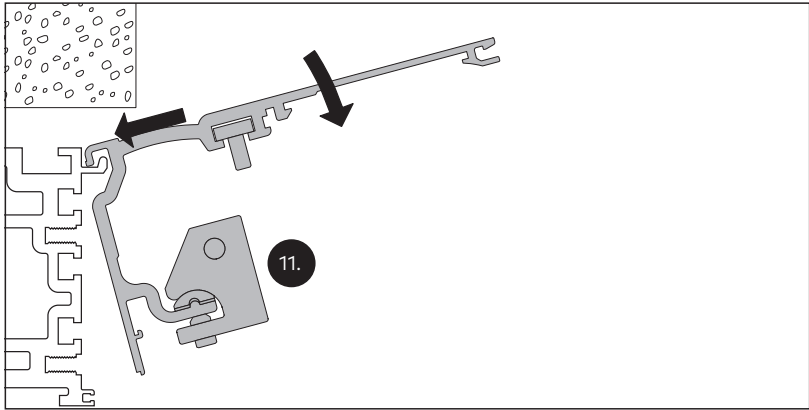


Fig. 26

**12.** Align the operator profile centrally between the wall mountings.

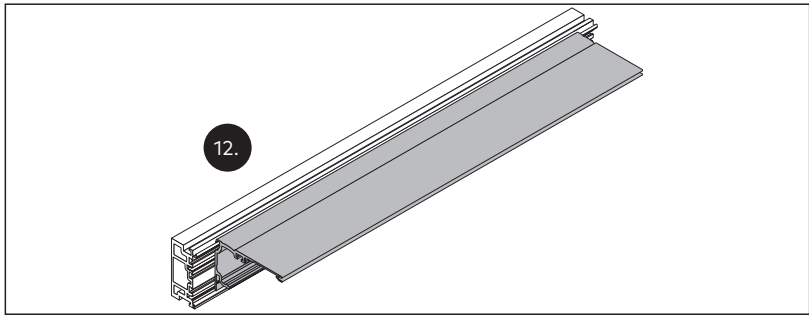


Fig. 27

**13.** Use the cylinder head screws provided to screw the operator profile onto the LM girder. To prevent noise during operation, screw the operator profile through all slots.

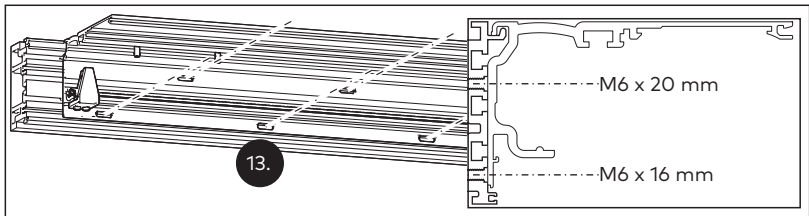


Fig. 28

**14.** Clean the operator profile and running profile.

#### 4.4 Mount the optional side panels

1. Mount the wall connection profiles and the side panels according to the profile system manual.

#### 4.5 Mount the optional anti-static brushes

1. Screw 1 anti-static brush onto each of the carriers.



#### ATTENTION

**Risk of damage to the anti-static brushes and the end stops!**

The anti-static brushes and the end stops may be damaged by a collision.

- Mount the anti-static brushes so that they do not collide with an end stop.

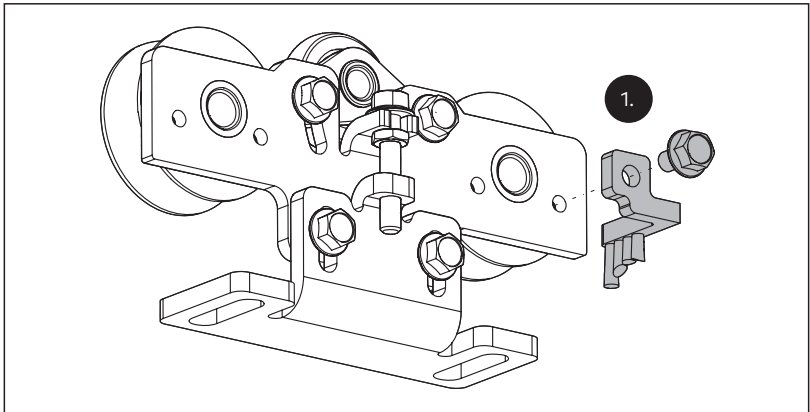


Fig. 29

#### 4.6 Mount the carriers

1. Mount the carriers on the door leaves according to the profile system manual.

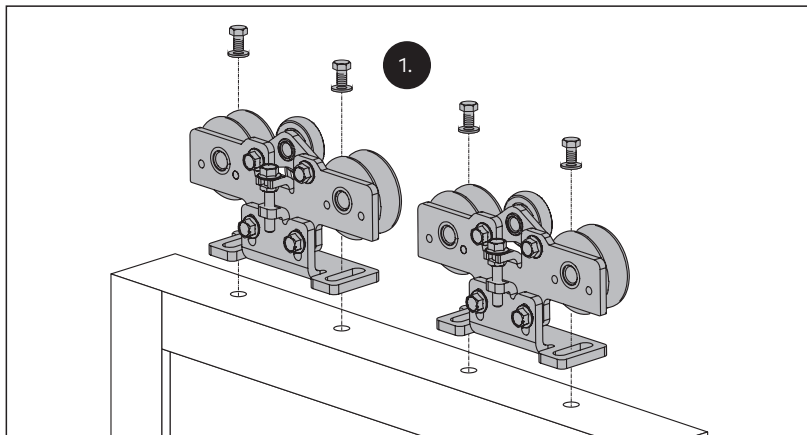


Fig. 30

#### 4.7 Hook in the door leaf



#### WARNING

##### Risk of injury from heavy parts!

Lifting heavy parts can lead to injury.

- Heavy parts should be lifted and transported by at least 2 people.

1. On all carriers, loosen the 2 screws on the counter rollers.

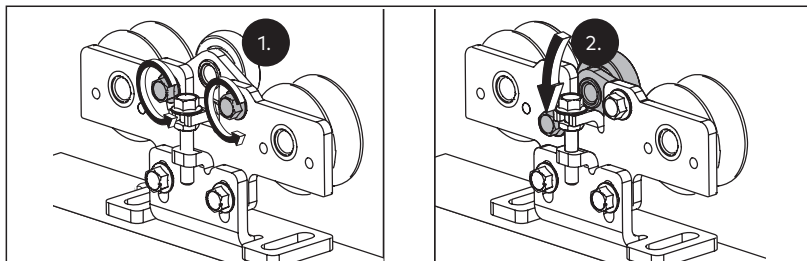


Fig. 31

2. Press the counter roller on the left screw downward.

- 3.



#### Attention

Before installing the carriers, ensure that the operator profile and the track rail are clean!

4. Guide the door leaves with the carriers above the track rail into the operator profile.

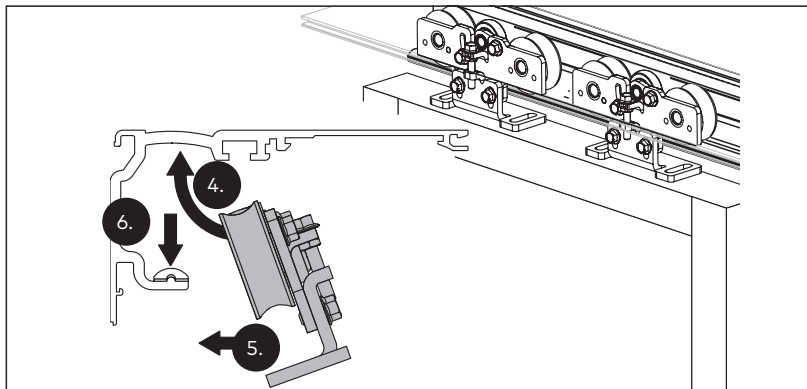


Fig. 32

5. Swivel the door leaves under the operator.
6. Place the track rollers on the track profile.
7. Adjust the counter roller on all carriers so that the wheel assembly is 0.5 mm away from the operator profile.

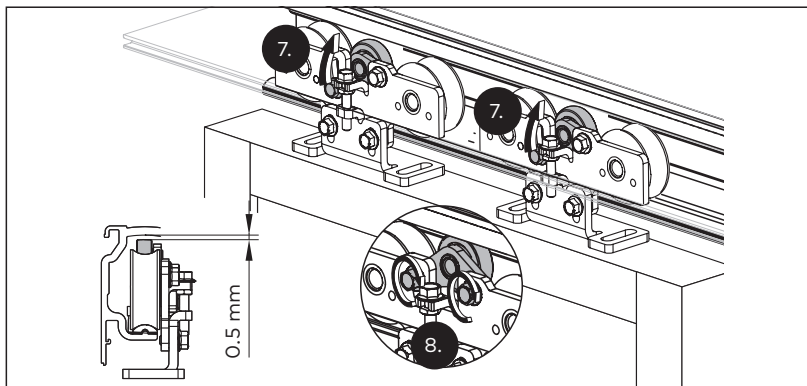


Fig. 33

8. Tighten the screws.
9. Check that the door leaves move easily.

#### 4.8 Mount the floor guides

1. Mount the floor guides according to the accompanying manual.

## 4.9 Align the door leaves

1. Loosen the screws on the adjustable brackets.

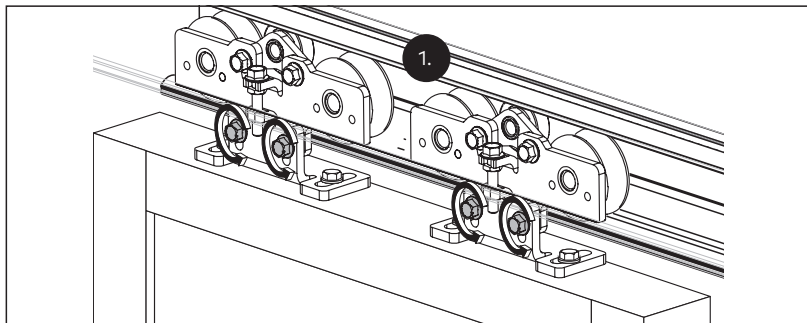


Fig. 34

2. Align the door leaves by turning the adjusting screws so that the distance between the door leaves and the floor is 6 mm, and when the door is closed the center seals are parallel.

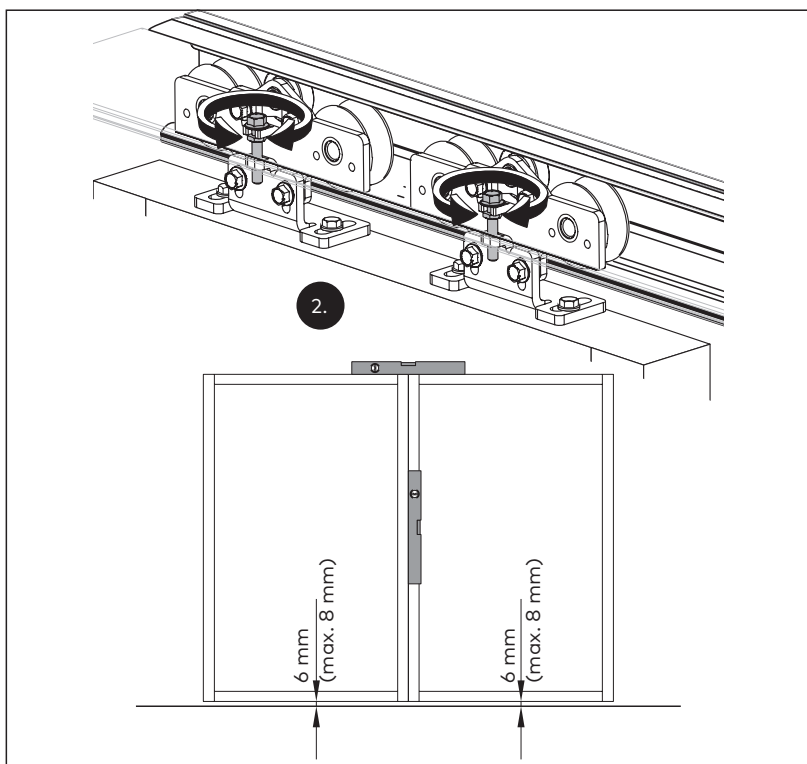


Fig. 35

3. Tighten the adjustable brackets on the carrier.

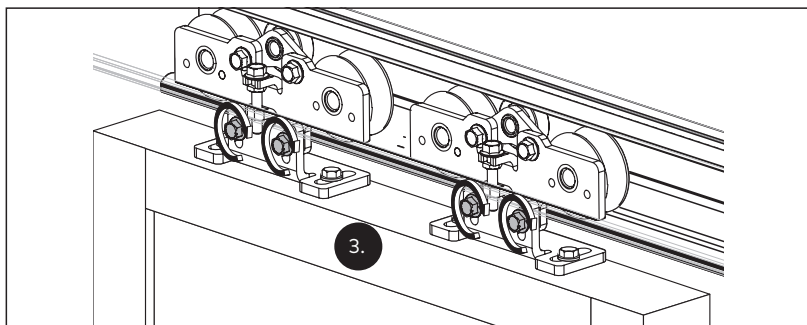


Fig. 36

4. Loosen the screws on the adjustable brackets.

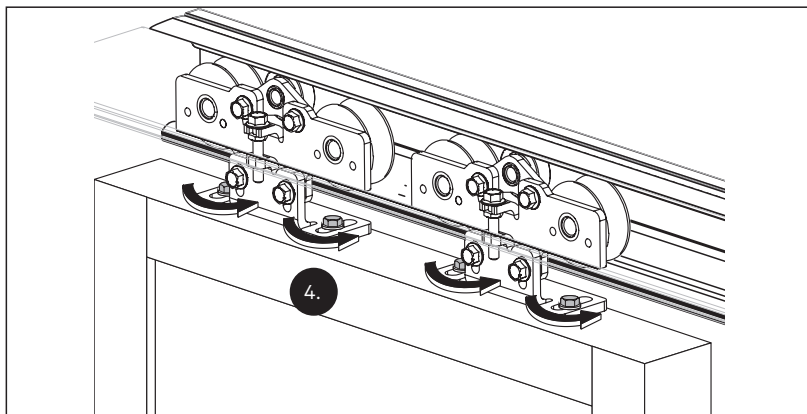


Fig. 37



5. Position the door leaves so that they are aligned and the distance between door leaf and wall/side panel is a maximum of 8 mm.

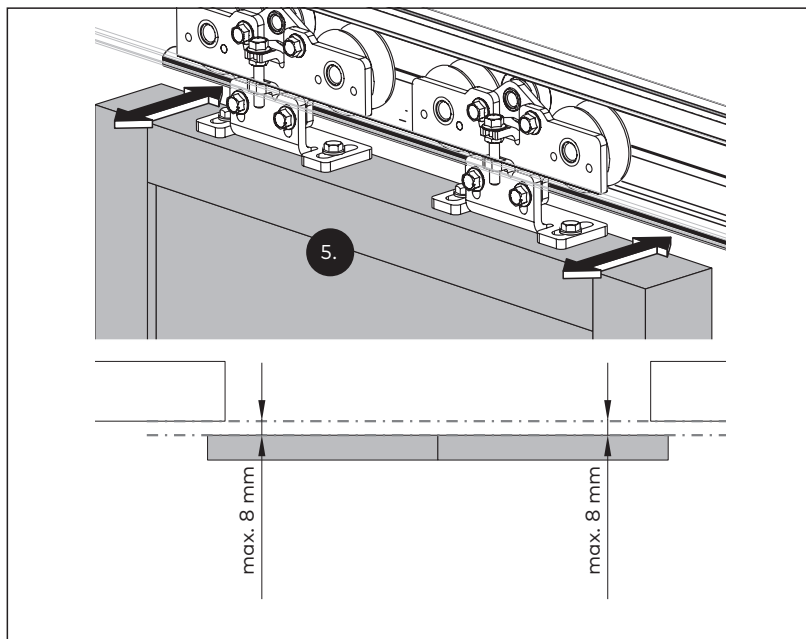


Fig. 38

6. Screw the adjustable brackets tightly to the door leaf.

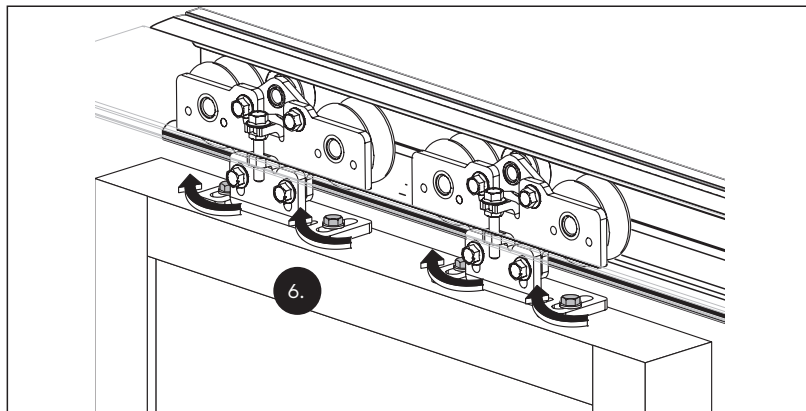


Fig. 39

#### 4.10 Adjust the opening width

1. Slide the door leaves to the full opening width.
2. Push the end stops onto the carriers.

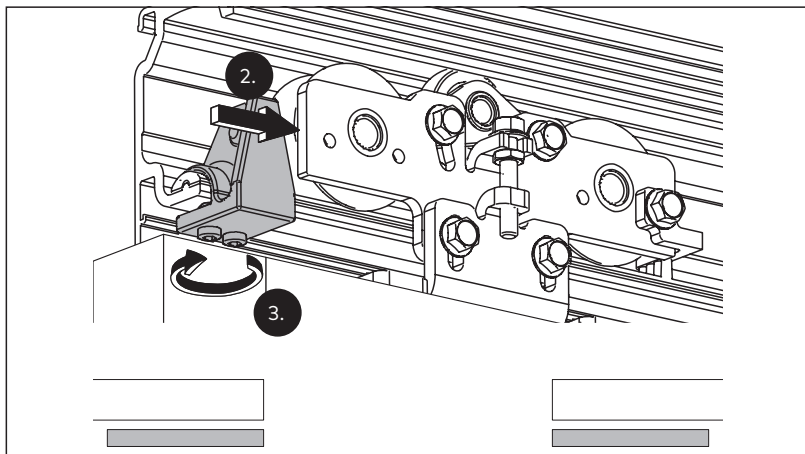


Fig. 40

3. Tighten the end stops to 4 Nm.

#### 4.11 Mount the toothed belt engaging units

##### 4.11.1 On 2-leaf units

1. Screw each toothed belt engaging unit to the carrier on the side of the main closing edge.

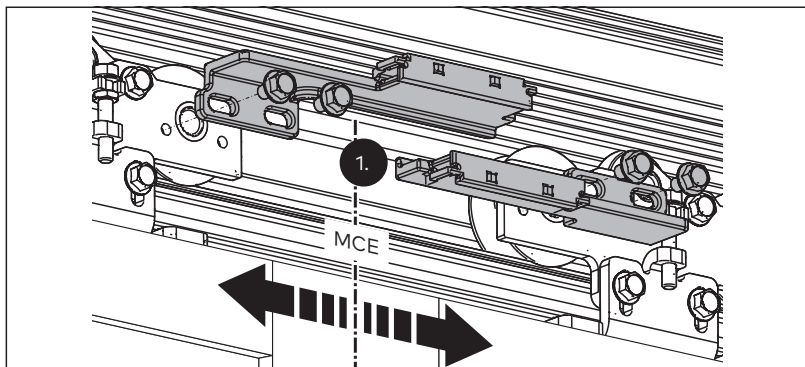


Fig. 41

#### 4.11.2 On 1-leaf, left-opening units

1. Screw the toothed belt engaging unit onto the carrier.

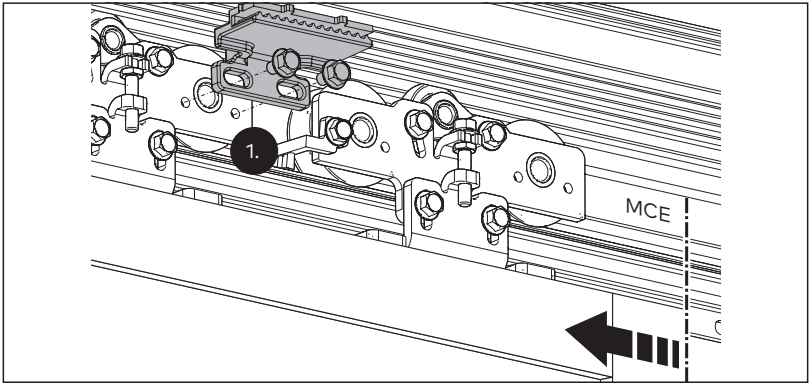


Fig. 42

#### 4.11.3 On 1-leaf, left-opening units if space is required for a protective panel or manual release

1. Screw the toothed belt engaging unit onto the carrier.

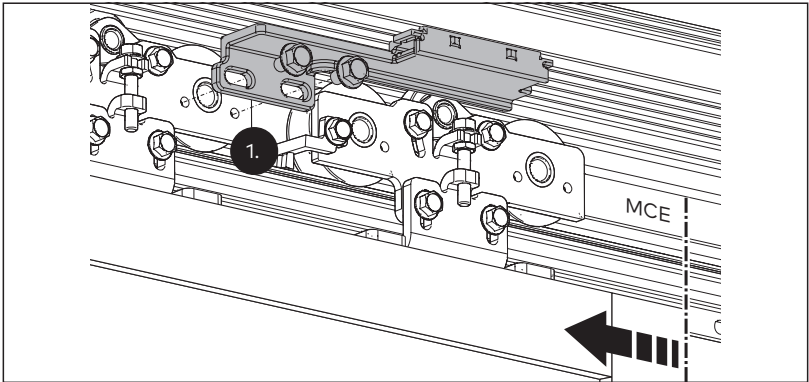


Fig. 43

#### 4.11.4 On 1-leaf, right-opening units

1. Screw the toothed belt engaging unit onto the carrier.

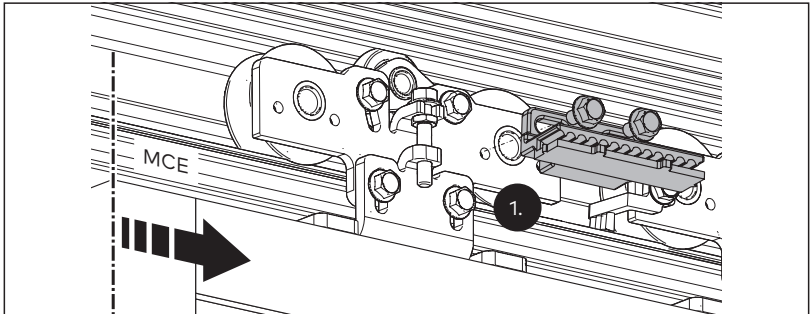


Fig. 44

#### 4.12 Mount the optional locking device

Mount the locking device according to the accompanying manual.

#### 4.13 Mount the DRIVE UNIT

1. Remove the protective film from the heat conducting pads.

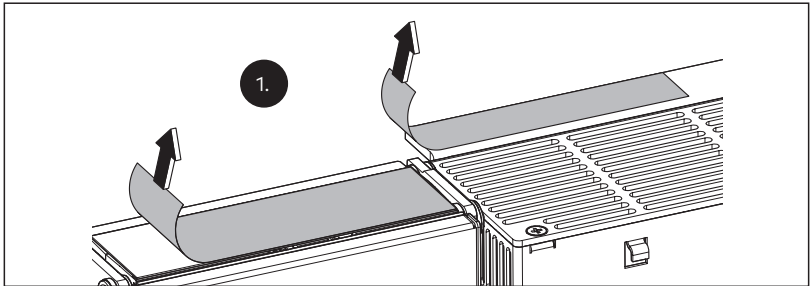


Fig. 45

2. Loosely screw the hammer head screws in the bracket.

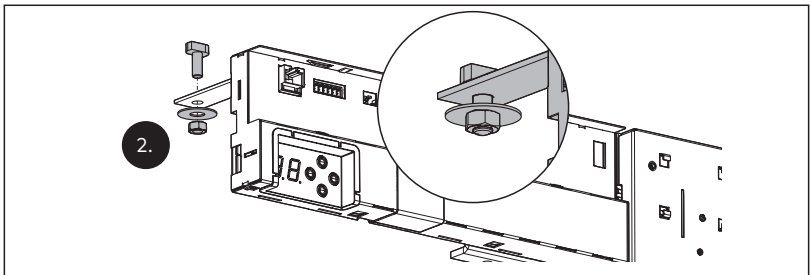


Fig. 46

3. Place the DRIVE UNIT on the threaded bolts on the attachment strip.

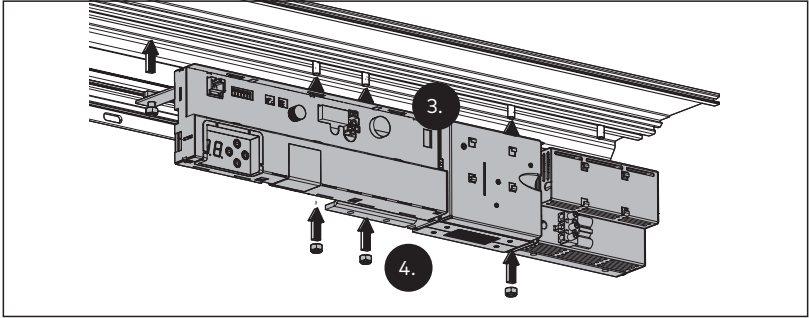


Fig. 47

4. Tighten the DRIVE UNIT with the nuts and the hammerhead screw. Do not screw the rightmost nut onto the bolt yet.
5. Screw the protective conductor onto the right-hand bolt.

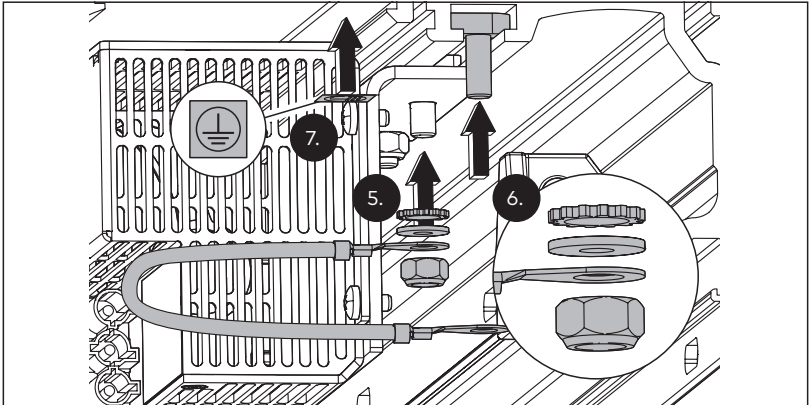


Fig. 48

6. Screw the protective conductor onto the track profile.
7. Stick the protective conductor label onto the track profile.

#### 4.14 Mount the tensioning device

1. Place the tensioning device on the threaded bolts on the attachment strip.

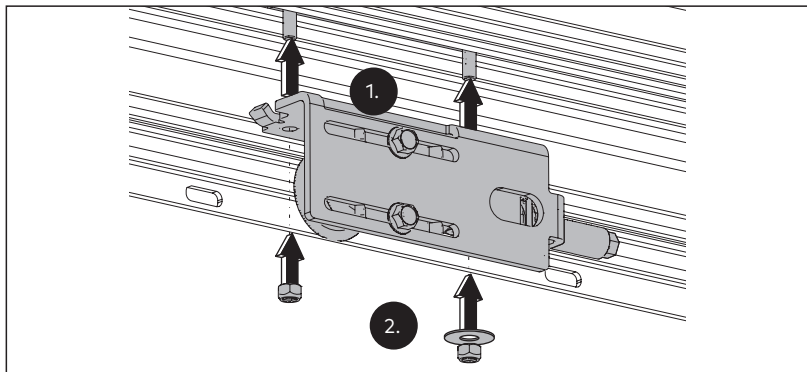


Fig. 49

2. Loosely screw the nuts and washer onto the bolts.
3. Position the tensioning device, see Fig. 3, Fig. 4 and Fig. 5.

##### 4.14.1 On 1-leaf, left-opening units if space is required for protective panels or manual release

1. If space is required for the protective panel or manual release, slide the tensioning device 50 mm in the direction of the MCE.

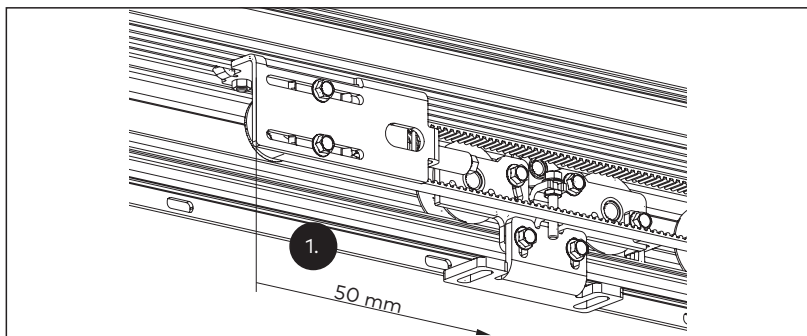


Fig. 50

#### 4.15 Cut the toothed belt to size

1. Cut the toothed belt to size using the following formula:  
Toothed belt length =  $2 \times CW + 725$ .

## 4.16 Mount the toothed belt

1. Remove the caps from the toothed belt engaging units.

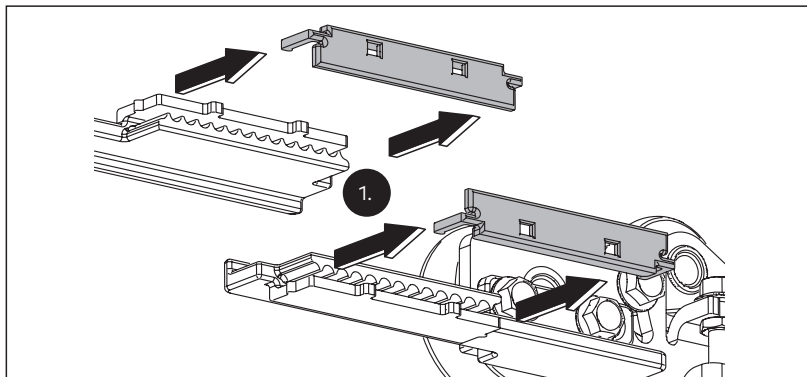


Fig. 51

2. Place the toothed belt around the operator wheel on the DRIVE UNIT and the guide pulley on the tensioning device. If there is a locking device, guide the toothed belt through the open locking device.

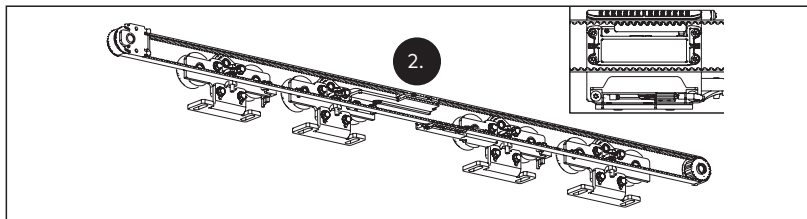


Fig. 52

3. Insert both ends of the toothed belt into the upper toothed belt engaging unit in such a way that both ends reach the center of the toothed belt engaging unit.

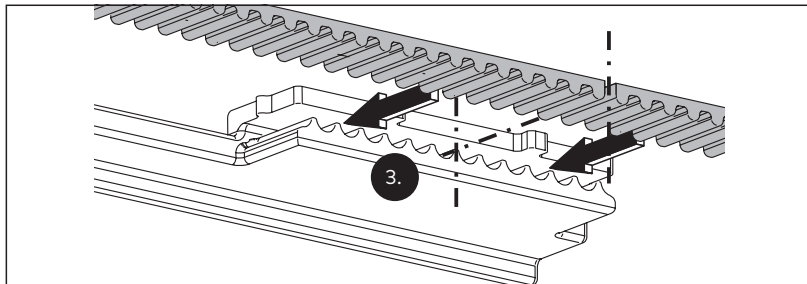


Fig. 53

- Put the cap on.

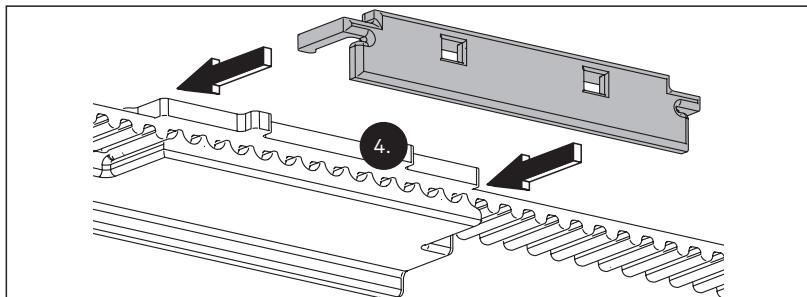


Fig. 54

- Press the tensioning device firmly outward in order to pre-tension the toothed belt.

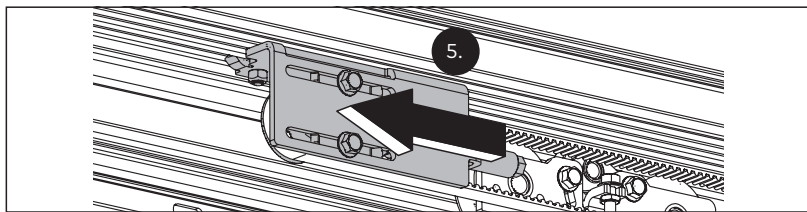


Fig. 55

- Align the tensioning device parallel to the operator profile.

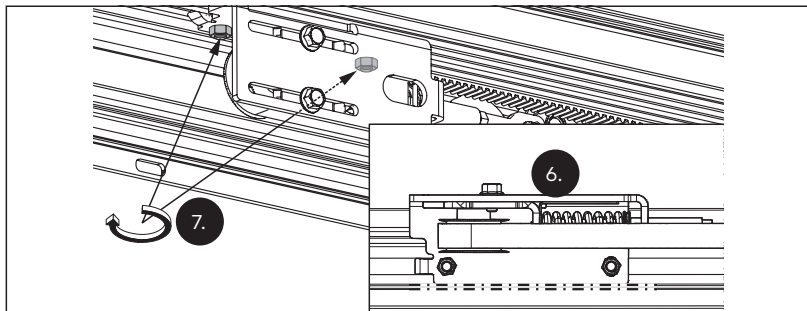


Fig. 56

- Screw the tensioning device tight.
- Push the door leaf into the closed position.

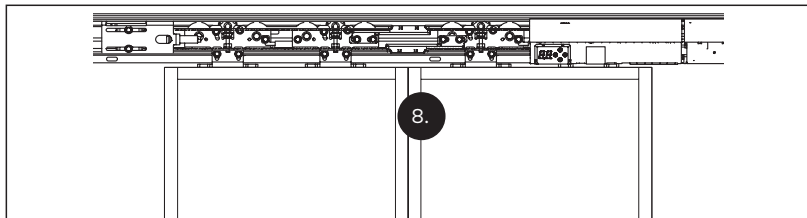


Fig. 57



9. Insert the toothed belt into the lower toothed belt engaging unit.

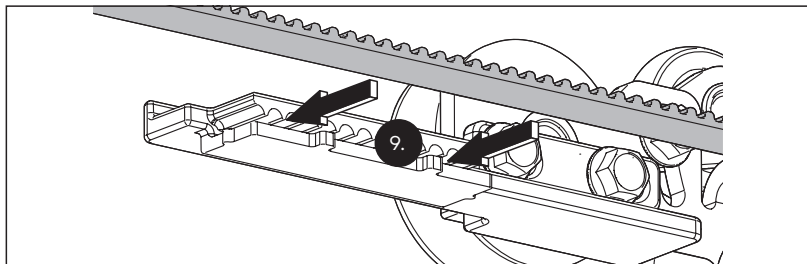


Fig. 58

10. Put the cap on.

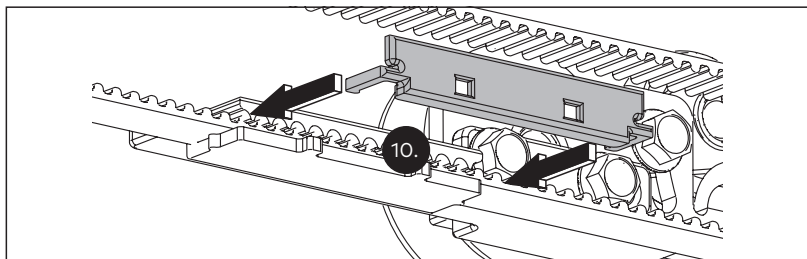


Fig. 59

11. Loosen the screws on the tensioning device.

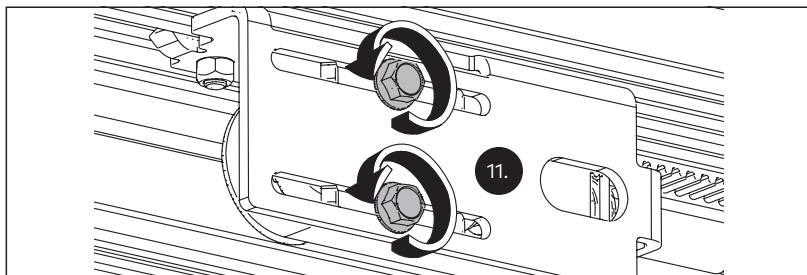


Fig. 60

12. Turn the screw on the tensioning device until the red ring is in the center of the viewing window.

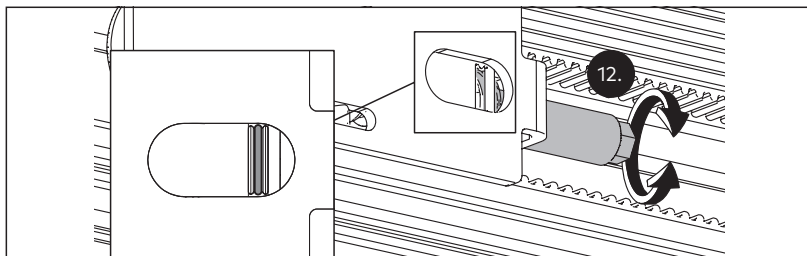


Fig. 61

**13.** Tighten the screws on the tensioning device.

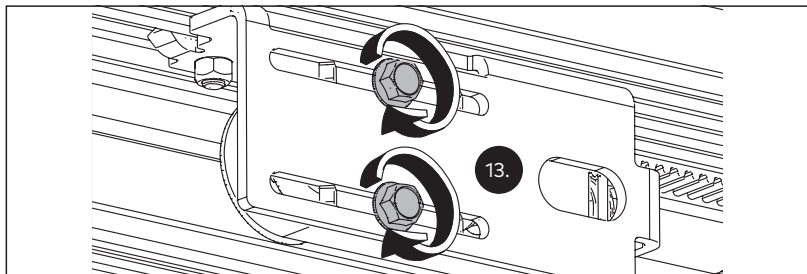


Fig. 62

**4.17** Adjust the tensioning device

1. Slide the door leaf along the entire travel path. Check whether the toothed belt is running centrally on the wheel assembly of the tensioning device. If the toothed belt is not running centrally on the wheel assembly, the tensioning device must be adjusted.

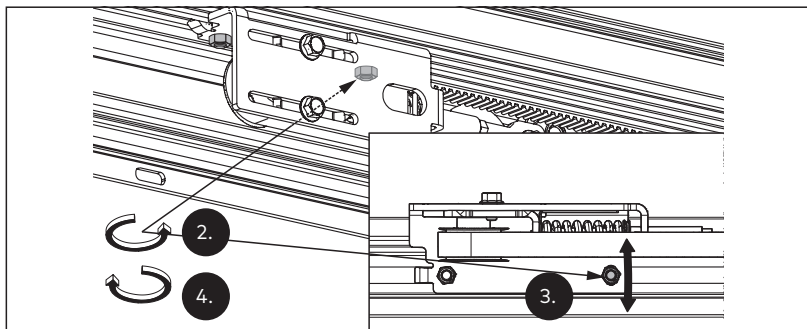


Fig. 63

2. Loosen the nut.
3. Adjust the tensioning device.
4. Tighten the nut.

#### 4.18 Position the main closing edge

1. Loosen the screws on the toothed belt engaging units.

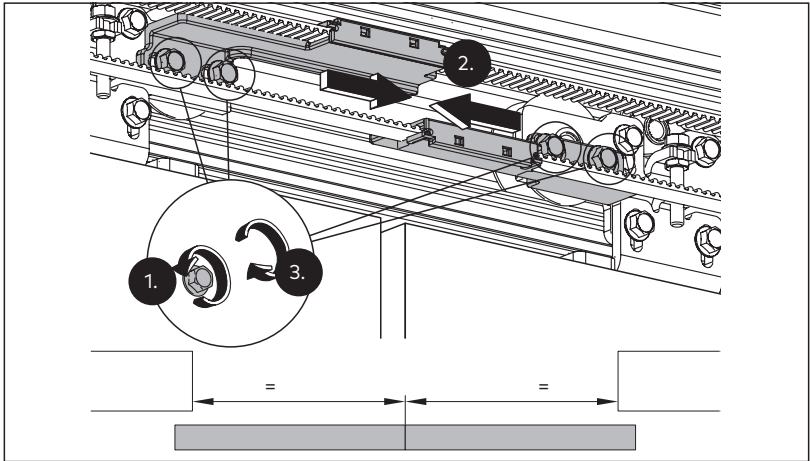


Fig. 64

2. Position the main closing edge in the middle of the opening width.
3. Tighten the screws on the toothed belt engaging units.

#### 4.19 Mount the optional extension modules

If the main closing edge and secondary closing edge sensors are connected to the SiAK extension module, 2 SiAK extension modules are required. The DIP switch is used to determine whether the main closing edge or secondary closing edge sensor is connected via the corresponding SiAK extension module.

During commissioning, bridge terminals 5 and 6 on terminal blocks 1 and 2 respectively.

1. Mount the extension modules according to the accompanying manual.

#### 4.20 Mount the cable ducts

1. Clip the cable ducts into the operator profile from below.

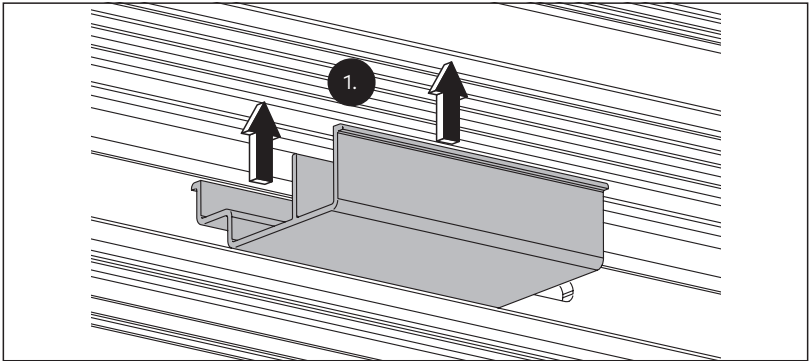


Fig. 65

#### 4.21 Mount the cover holders

Mount 1 cover holder on both ends and in the middle of the operator profile.

1. Insert the cover holders into the operator profile from below.

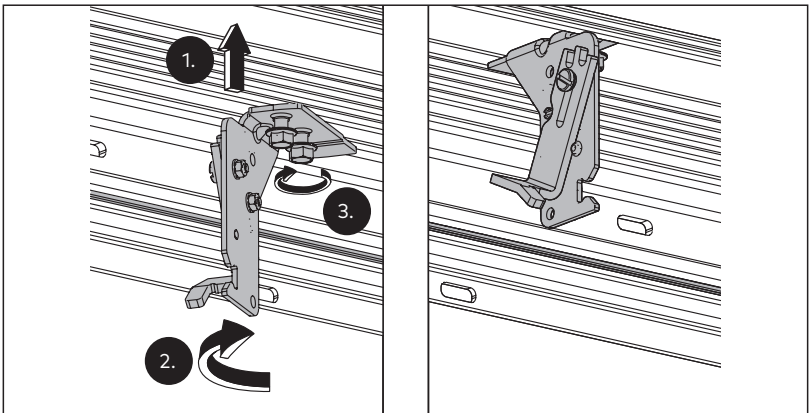


Fig. 66

2. Turn the cover holders so that the mounting bracket is perpendicular to the profile.
3. Tighten the cover holders with both hexagon screws.



#### Note

For an operator length of more than 4.50 m, mount 2 additional cover holders.

## 4.22 Prepare the internal cover

1. Slide the square nut into the groove.

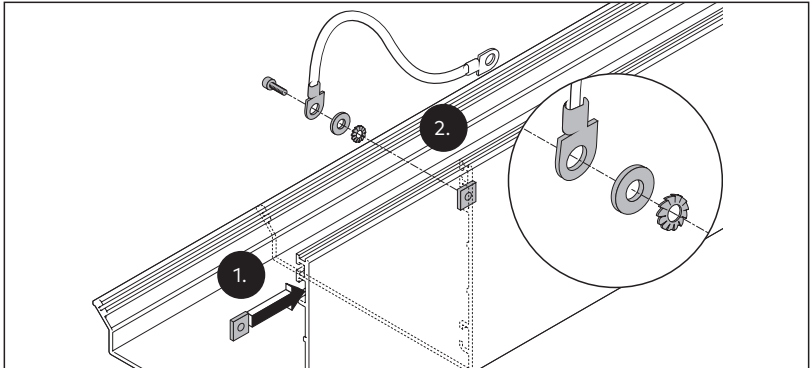


Fig. 67



### Attention

Do not mount the protective conductor in the area of movement!

2. Screw the protective conductor into the internal cover at the desired place.



### Note

Do not position the hinge profile in the area of the cover holders.

3. Clip the hinge profiles evenly over the length of the cladding.

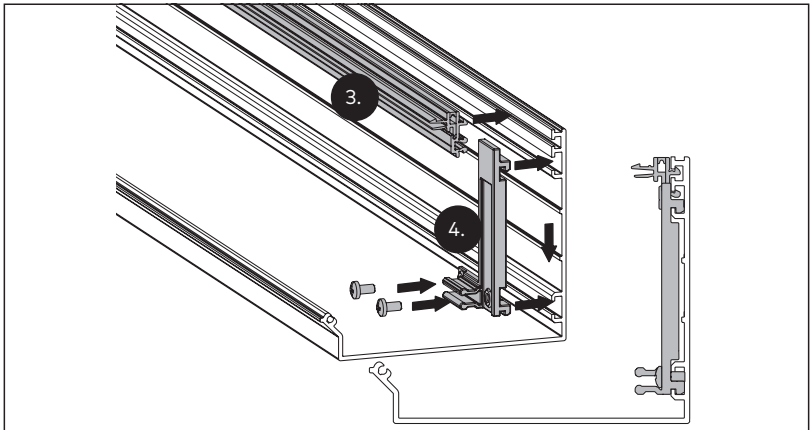


Fig. 68

4. Clip 1 holder each into the cladding in the same position as the cover holders.

- If the distance between the outer holder and the outer edge of the cladding is more than 80 mm, an additional piece of the hinge profile must be cut to length and mounted.

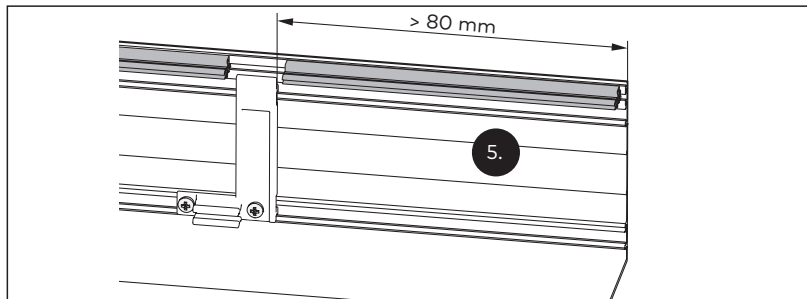


Fig. 69

- Attach the dormakaba logo

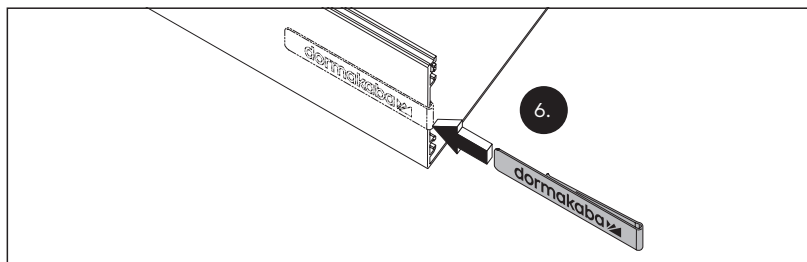


Fig. 70

- Mount the end plates according to the accompanying manual.

#### 4.23 Mount the internal cover



**Caution**

Risk of injury due to careless working on a ladder!

- Attach the internal cover by lightly tapping the palm of the hand on the operator profile.

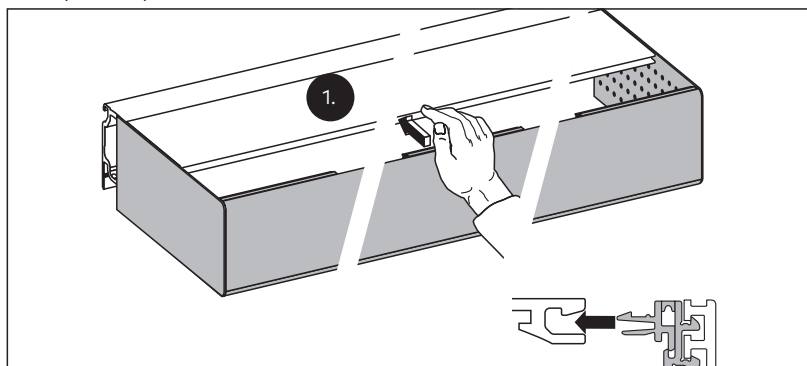


Fig. 71

2. Open the internal cover, always holding the center of the cladding.
3. Slide the holders for the internal cover so they match the position of the cover holders.

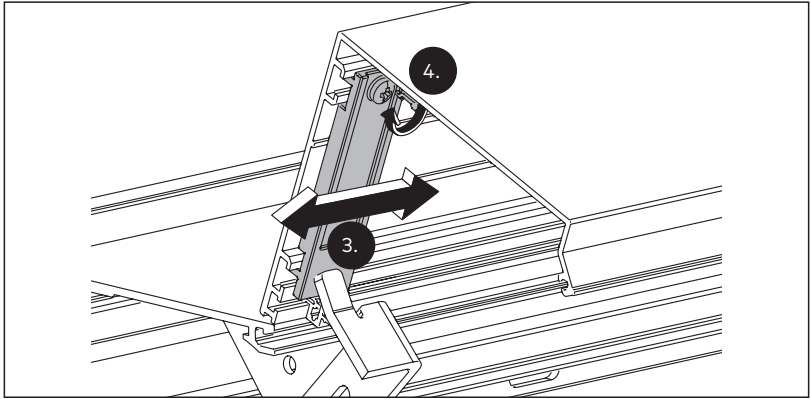


Fig. 72

4. Secure the holders for the internal cover with the screws.
5. Secure the internal cover with the cover holders.

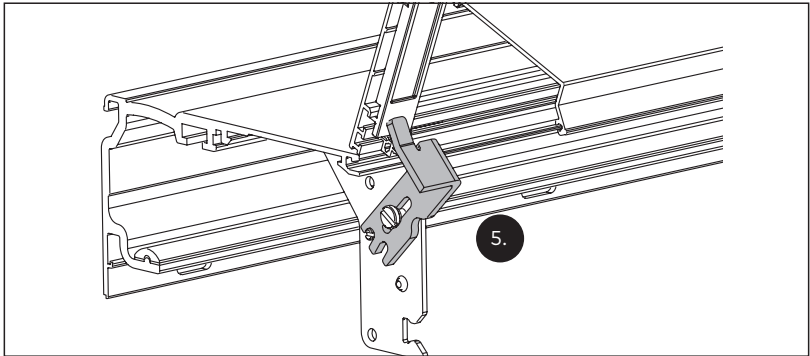


Fig. 73

Depending on the position of the supports, several opening angles are possible.

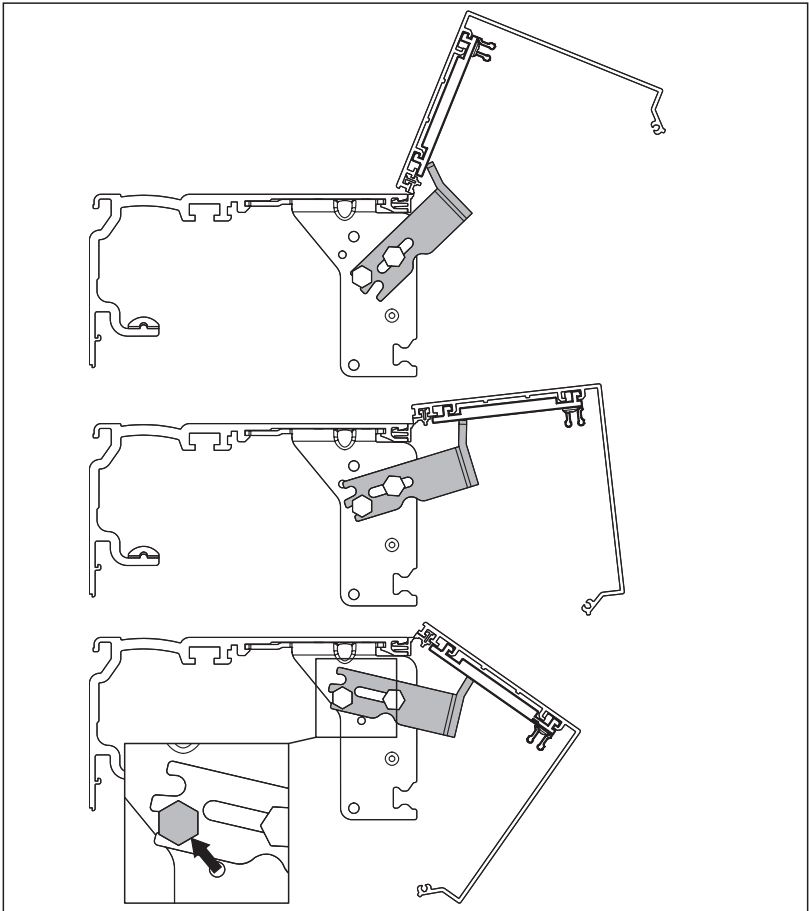


Fig. 74





**Attention**

Do not mount the protective conductor in the area of movement!

6. Mount the protective conductor in the operator profile.

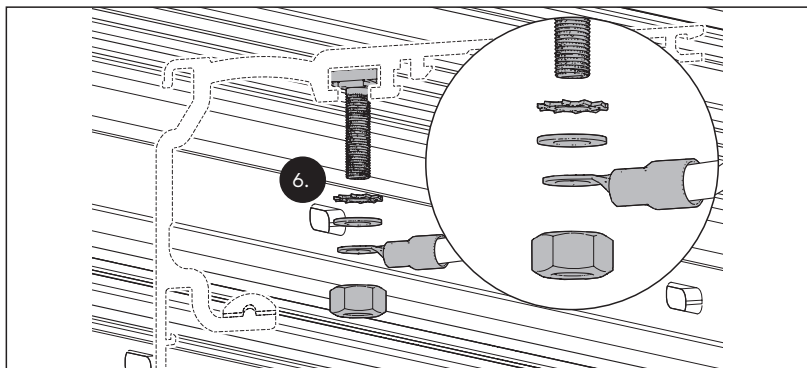


Fig. 75

#### 4.24 Mount and connect the accessories



**Attention**

The total output currents of all the components connected to the operator must not exceed 2 amps!



**Attention**

Connect the accessories in a de-energized state!



**Attention**

Lay all cables in the cable ducts or fasten them with cable clamps to protect them from external influences (e.g. hot temperatures or collisions)!

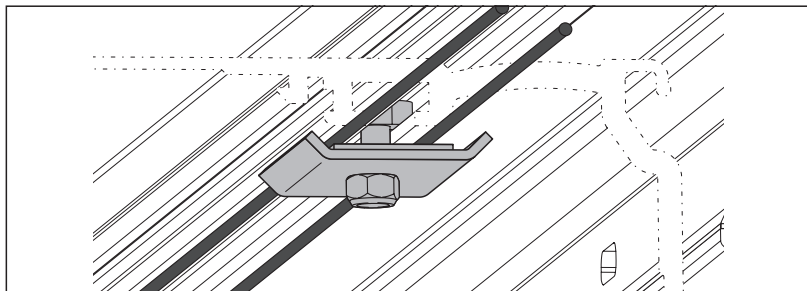


Fig. 76



**Note**

The emergency stop button does not work on FST doors.



**Note**

A battery must be installed in FST doors. The battery pack only reaches its full capacity after 12 hours of charging time. The battery pack must be fully charged to ensure emergency operation.



**Note**

An escape route program switch is required for FST doors.



**Note**

An IXIO-D-CAN (DIP 0-2) or an EM SIAK (DIP 0) is required for FST doors.



**Note**

If a synchronization cable CAN is used, all CAN components must be connected to the master control unit.

1. Mount and connect the accessories according to the accompanying manuals. The holes in the operator profile must be drilled with  $\varnothing$  8 mm and then deburred.
2. Clean the operator profile and running profile.

#### 4.25 Position the sensors



**Note**

Only sensors with a valid type approval according to EN 16005 may be used.



**Note**

The use of light barriers to secure the passage area of sliding doors does not conform to EN 16005.

The size of the detection field depends on the mounting height and the settings of the sensor (see sensor manual). According to EN 16005, the test piece CA must be detected anywhere in the sliding door's passage area. The size of the detection zone depends on the mounting height and the settings of the sensor (see sensor manual). Set the sensors' detection zone in such a way that the doors do not run into the test object.

Large opening widths may require several sensors.

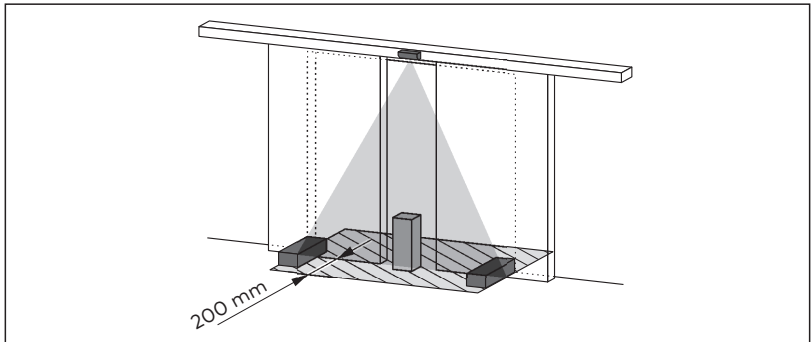


Fig. 77

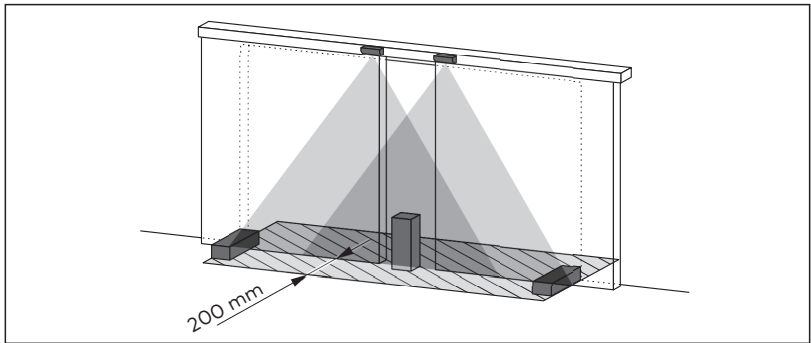


Fig. 78














**Note**

Further information can be found on the sensor manufacturers' websites.

- [beasensors.com](http://beasensors.com)
- [bircher.com](http://bircher.com)

## 5 CAN BUS system

### 5.1 CAN BUS components

Articles	Article number	Max. number/system FST/Standard
 EPS CAN 44 x 50 mm	16712401150	2/2
 EPS CAN 55 x 55 mm	16712501150	2/2
 CAN key switch	16715801150	2/2
 CAN emergency stop button (red)	16718501150	-/2
 CAN emergency open button (green)	16718502150	2/-
 CAN sensors	8680005x	8/8
 ST PRO multi-point locking system		1/1
 CAN terminating resistors, 10 pieces	16730001175	
CAN BUS cable, 0.15 m	16723501175	
CAN BUS cable, 3.4 m	16723101175	
 CAN BUS cable, 6 m	16723301175	
 CAN BUS synchronization cable, 6 m	16723701175	
CAN BUS extension, 3 m	16730601175	
 CAN BUS adapter, 2 pieces	16723801175	
CAN BUS Y-adapter	16727601175	5/5

## 5.2 Properties of CAN BUS systems

- The CAN BUS is a 4-wire bus, comprising + 24 V, GND and 2 data cables (CAN-L and CAN-H).
- Because the connectors on the CAN BUS cables are very small, a housing is sometimes mounted on the connectors. The housing makes it easier to connect the connectors in hard-to-reach places.

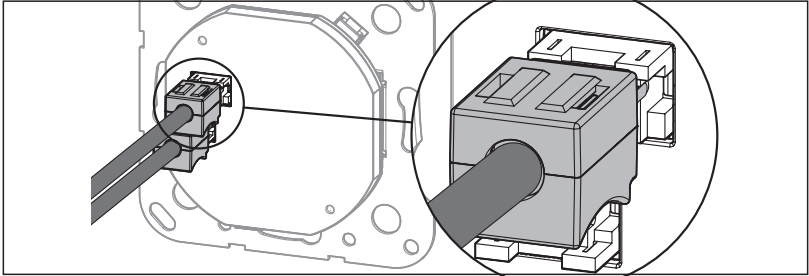


Fig. 79

- The CAN BUS components are automatically detected by the control unit.
- The function (combined function/safety secondary closing edge) and position (inside/outside) of the sensors must be set (DIP switches 1-4).

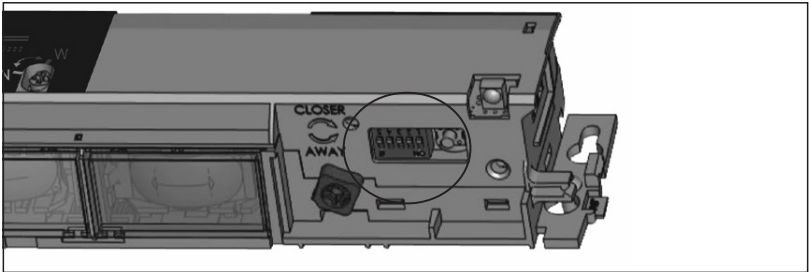


Fig. 80

- If a CAN BUS component is replaced or removed from the network, a CAN BUS reset must be carried out.

### 5.2.1 CAN BUS Y-adapter

- A CAN BUS Y-adapter is used to install branches in a CAN BUS system.
- Only 1 CAN BUS component may be connected to a branch.
- Up to 5 branches may be installed in a CAN BUS system.
- The cable length on a branch may be no more than 10 m.

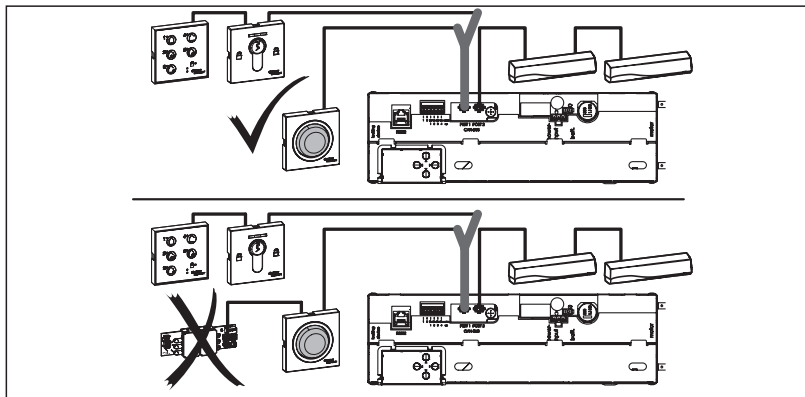


Fig. 81

### 5.2.2 ST PRO multi-point locking system

The ST PRO multi-point locking system interrupts the CAN BUS connection during operation. Therefore, the ST PRO multi-point locking system must be connected to the CAN BUS system using a CAN BUS Y-adapter.



#### Attention

The extension cable may not be used for the ST PRO multi-point locking system!

### 5.2.3 Terminating resistors

- A CAN BUS system always requires 2 terminating resistors.
- The 2 CAN BUS components furthest away from the control unit, measured by cable length, are fitted with the terminating resistors.
- The CAN BUS components either have a switchable terminating resistor (DIP switch 5 on the sensors) or the terminating resistors are connected to the free CAN BUS connection.

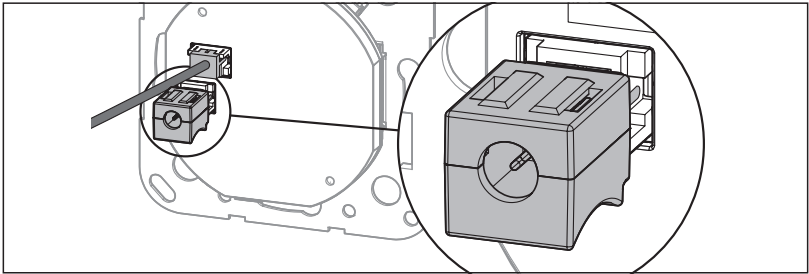


Fig. 82

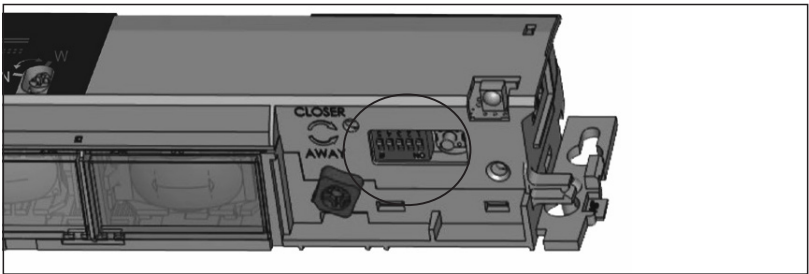


Fig. 83

- The total length of the cables between the two terminating resistors must not exceed 30 m.

### 5.2.4 DIP switches on the sensors



#### Warning

For escape route sliding doors, a combination detector must always be connected to the inside of the MCE with the DIP switch position MCE inside 1!

The various addresses (function/position) are set on the DIP switches 1-4. The terminating resistor is activated on DIP switch 5.



MCE inside 1



MCE inside 2



MCE inside 3



MCE outside 1



MCE outside 2



MCE outside 2



SCE 1



SCE 2



Terminating resistor  
is activated

### 5.3 Structure of a CAN BUS system



#### Attention

The CAN BUS components must not be connected under live voltage!

1. Remove the terminating resistor from the required CAN BUS connections on the operator control unit and retain.
2. Connect the CAN BUS components in any order to the CAN BUS cables.
3. Drill the holes for carrying out the CAN BUS cable with  $\varnothing$  8 mm and then deburr.
4. Clean the operator profile and running profile.
5. In both CAN BUS components furthest away from the control unit, measured by cable length, connect 1 terminating resistor or activate the switchable terminating resistor (sensors).



### 5.3.1 Schematic examples of wiring

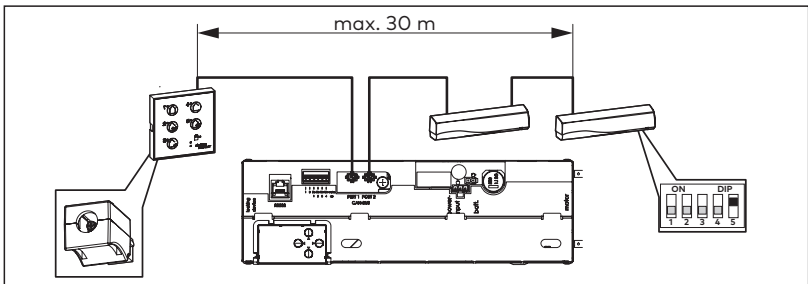


Fig. 84

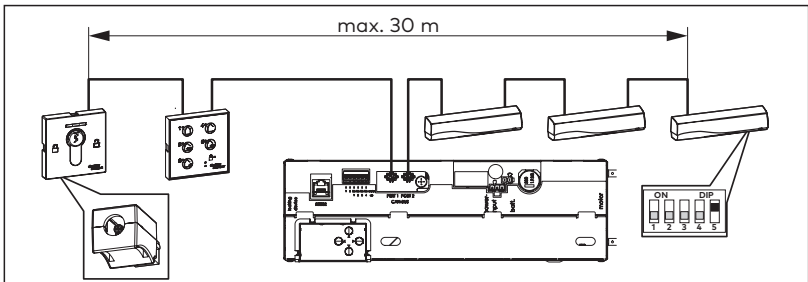


Fig. 85

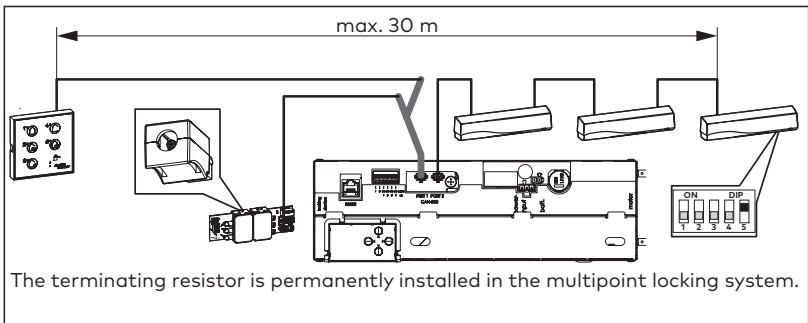


Fig. 86

— CAN BUS cable



CAN BUS Y-adapter

## 6 Terminal layout

### 6.1 Terminal layout of the control board

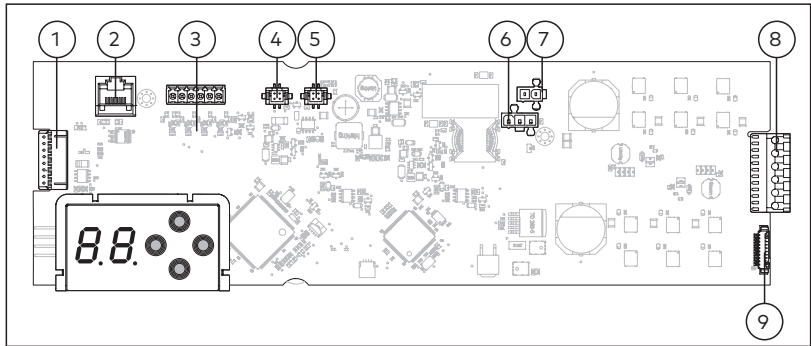


Fig. 87

- |  |                                   |
|--|-----------------------------------|
| (1) Operator locking device connection | (6) Power supply connection       |
| (2) RS232 connection                   | (7) Battery pack connection       |
| (3) Multiport Fig. 88                  | (8) Drive connection              |
| (4) CAN BUS port 1                     | (9) Hall effect sensor connection |
| (5) CAN BUS port 2                     |                                   |

### 6.2 Multiports

The multiports are used to connect components that are not CAN BUS-compatible to the control unit.

There are 3 pre-installed configurations, which are sufficient for most application scenarios.

If the pre-installed configurations are not sufficient, the multiports can be configured individually via the OSI as an input (high-/low-active, normally open/normally closed) or as an output (open collector).

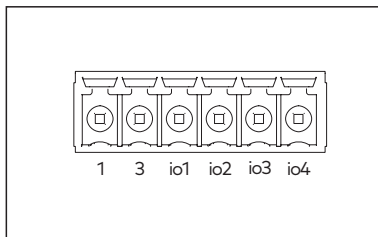


Fig. 88

#### Terminal Connection

- |       |                          |
|-------|--------------------------|
| 1     | + 24 V                   |
| 3     | GND (ground)             |
| I/O 1 | Multiport 1              |
| I/O 2 | Multiport 2              |
| I/O 3 | Multiport 3              |
| I/O 4 | Multiport 4 and Wake-Up* |

\* In battery mode, the control unit switches to energy-saving mode. The control unit can only be activated via multiport 4.

### 6.2.1 Multiport default settings

The keys on the control unit can be used to select one of the following configurations (Parameter "FF").

Configuration	Multiport	Function	Input activation level	
Standard (1)	1	Exit	Status "Door closed"	
	2	Exit	Doorbell contact	
	3	Input	Emergency stop/ emergency open	Low active/normally open
	4	Input	Night/bank	Low active/normally open
Status (2)	1	Exit	Status "Door closed"	
	2	Exit	Doorbell contact	
	3	Exit	Info or malfunction	
	4	Exit	Status "Door open"	
Pharmacy (3)	1	Exit	Status "Door closed and locked"	
	2	Exit	Doorbell contact	
	3	Exit	Info or malfunction	
	4	Input	Pharmacy	Low active/normally open

### 6.2.2 Possible functions

The following functions can be configured via the OSI.

Exit	<ul style="list-style-type: none"> <li>• Status "Door closed"</li> <li>• Status "Door open"</li> <li>• Malfunction</li> <li>• Status "Door closed and locked"</li> <li>• Info and malfunction</li> <li>• Position greater</li> </ul>	<ul style="list-style-type: none"> <li>• Lock alarm</li> <li>• Doorbell contact</li> <li>• Status "No faults in unit"</li> <li>• Lock interlock</li> <li>• Interlock impulse transmission</li> </ul>
Input	<ul style="list-style-type: none"> <li>• Pharmacy</li> <li>• Panic lock</li> <li>• Night/bank</li> <li>• Key switch 1 left</li> <li>• Key switch 1 right</li> <li>• Fire brigade switch</li> <li>• Close dead man's switch</li> <li>• Open dead man's switch</li> <li>• Opening impulse via key</li> </ul>	<ul style="list-style-type: none"> <li>• Emergency stop</li> <li>• Emergency open</li> <li>• Soft reset</li> <li>• Lock interlock</li> <li>• Interlock impulse transmission</li> <li>• Inside detector</li> <li>• Outside detector</li> <li>• Fire protection closures</li> </ul>



#### Note

The panic lock, emergency stop, interlock and inside detector inputs are not available on FST units.



#### Note

The interlock functions are only available via the I/O.

### 6.2.3 Connection on the multiports

For multiport default setting  
 "Standard"

#### 24 V DC doorbell connection

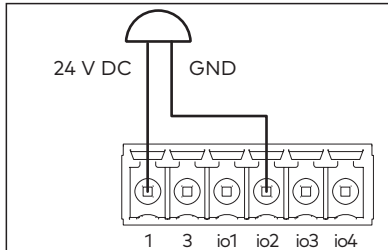


Fig. 89

#### Doorbell connection with separate power supply unit

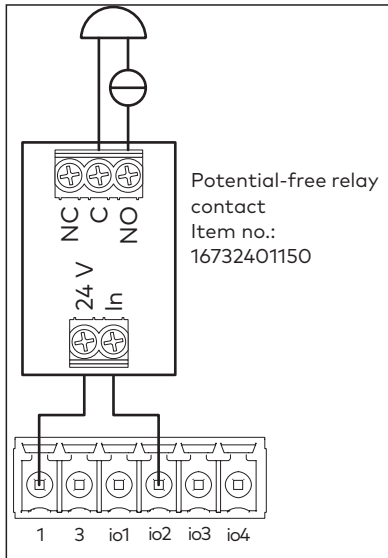


Fig. 90

#### Connection for "Door closed" message 24 V DC

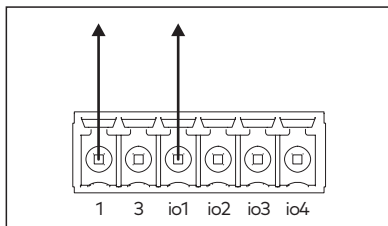


Fig. 91

#### Connection for "Door closed" message potential-free

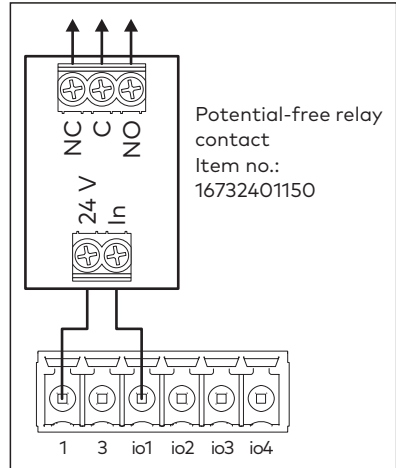


Fig. 92

#### Emergency stop/emergency open connection

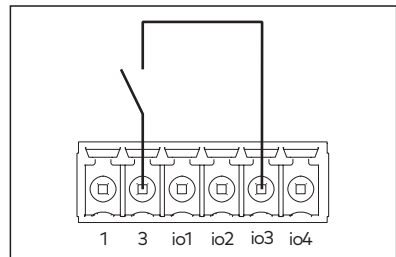


Fig. 93

#### Night/bank connection

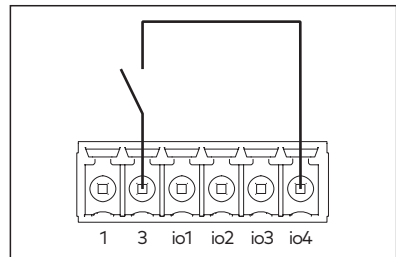


Fig. 94

## 6.3 Connection as an interlock

### 6.3.1 Standard interlock

The standard interlock can be set up as a 2- or 3-way interlock.

The inputs and outputs must be configured as follows for 2-way and 3-way interlocks:

- Input 1 (Terminal 11): Lock interlock - Input
- Output 1 (Terminal o1): Lock interlock - Exit

#### 2-door standard interlock

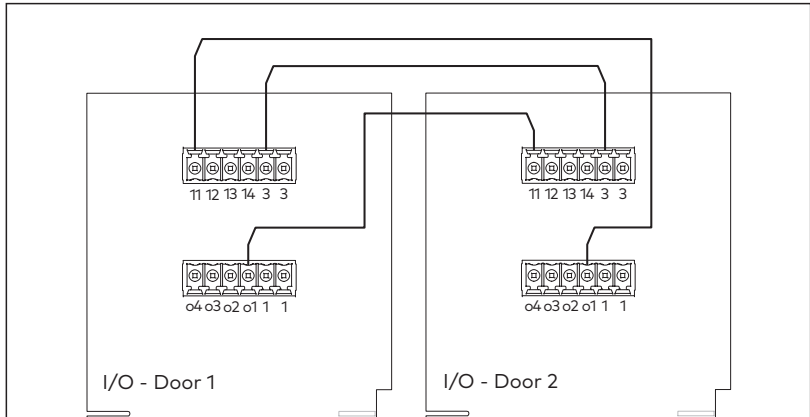


Fig. 95

#### 3-door standard interlock

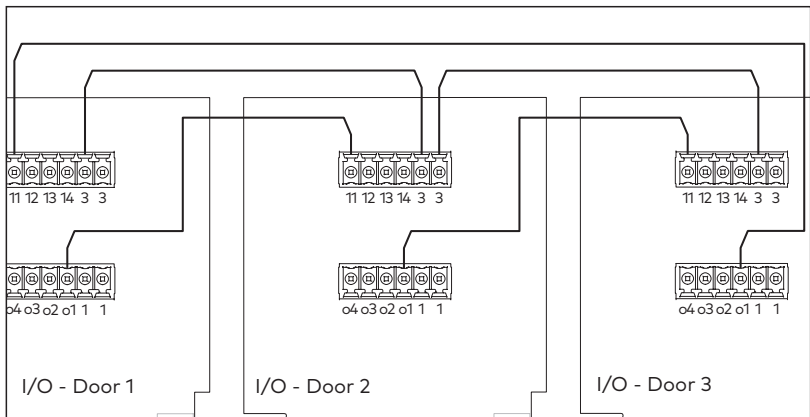


Fig. 96

### 6.3.2 Time interlock

The inputs and outputs must be configured as follows for 2-way and 3-way interlocks:

- Input 1 (Terminal 11): Interlock pulse forwarding - Input
- Output 1 (Terminal o1): Interlock pulse forwarding - Output

#### Time interlock

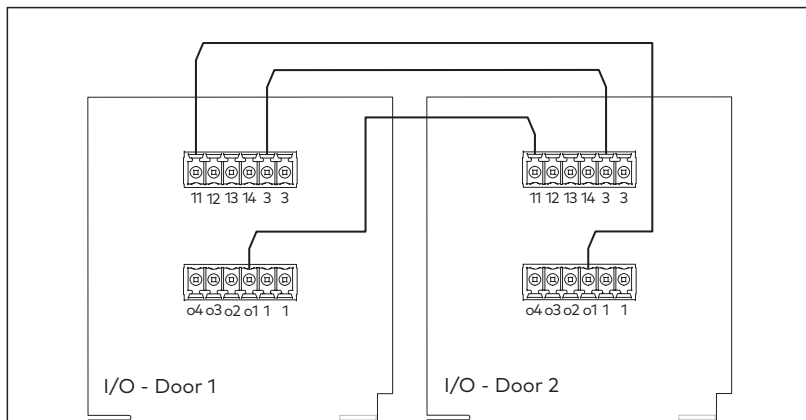


Fig. 97

### 6.3.3 Interlock with impulse transmission

The inputs and outputs must be configured as follows for 2-way and 3-way interlocks:

- Input 1 (Terminal 11): Lock interlock - Input
- Input 2 (Terminal 12): Interlock pulse forwarding - Input
- Output 1 (Terminal o1): Lock interlock - Exit
- Output 2 (Terminal o2): Interlock pulse forwarding - Output

#### Interlock with impulse transmission

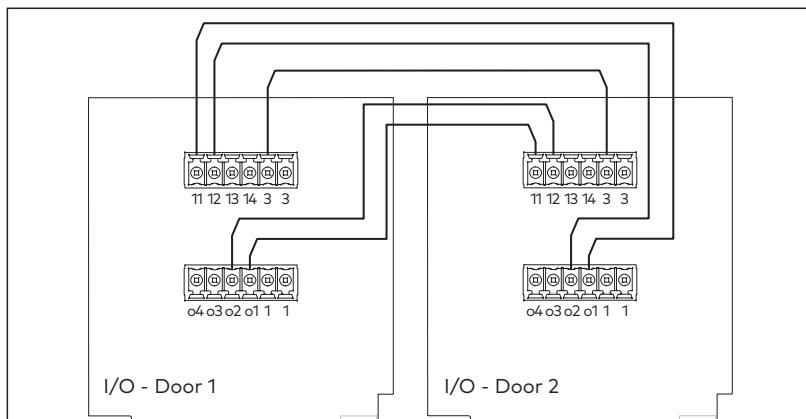


Fig. 98

## 7 Commissioning

### 7.1 Requirements

- The operator is mounted correctly, mechanically and electrically.
- The area of movement of the door leaf is free from obstacles.
- The door is in the half-open position.
- The connections for the safety sensors on the extension module SiAK (optional) are bridged.
- The operating mode switch is in Off mode.
- An emergency stop or emergency open button, if present, is not pressed.

### 7.2 Safety during commissioning



#### CAUTION

##### **Danger of injury from moving parts!**

During commissioning there is a risk of crushing in the operator and risk of being hit by the door leaves.

- During commissioning, do not touch the moving parts in the operator.
  - Before commencing commissioning, ensure that nobody is in the area of movement of the door leaves.
- 

### 7.3 Commission the operator



#### WARNING

##### **Danger of death due to electric current!**

Touching live parts will result in death or serious injury from electric shock.

- Work on electrical units must only be carried out by qualified electricians.
  - Do not touch live parts or cables.
  - Suitable personal protective equipment must always be worn when working with the product.
-

### 7.3.1 Service Mode

In Service Mode 1, the sensors are not evaluated by the control unit.

In Service Mode 2, the CAN components are not evaluated by the control unit.

If a Service Mode is activated, all errors are acknowledged and the closing movements run at crawl speed.

#### Display

1. Plug in the mains plug to the power supply unit

2. If present, connect the battery.

- ▶ The control unit carries out a self-test.



- ▶ The device detection is shown on the 2-digit display. "ES" followed by the "control unit" (represented by XXX) and the "firmware version".

ES XXX F 1 0 000

Control unit:

FST = escape route control unit

STd = standard control unit

- ▶ The CAN BUS is initialized.



- ▶ The small, spinning "o" and the "P" show that parametrization is required.



- ▶ The control unit switches to Service Mode 2.



#### Note

If a CAN synchronization cable is used, replace steps 3-7 with the commissioning instructions for the CAN synchronization cable.

3. Press  for 3 seconds to open the parameters menu.

4. Set the parameters "L1", "dL" and "Pr", see "11 Parameterization".

5. If a mechanical operating mode switch is used, set the parameter "PS" to the value 0.



## Display

6. ◀ Press to exit the parameters menu.

- ▶ The small, spinning "o" and the "O" show that a teach-in run is required.



7. ▼ Press for 3 seconds.

- ▶ The door moves in closing direction to determine the closed position.



- ▶ The door carries out a teach-in run.
- ▶ The door closes.



- ▶ The door is pushed into closed position.
- ▶ An existing interlock is taught in.



- ▶ The door leaf weight is calculated.



- ▶ The door moves at crawl speed in opening direction.



- ▶ The opening width and the door leaf weight are saved.




- ▶ The operator moves into closed position.
- ▶ The teach-in run is finished, the control unit switches to Service Mode 1.



8. ◀ Press for 3 seconds to exit Service Mode 1.

→ **Commissioning is complete, the operator is ready for operation.**

9. If safety sensors are to be connected to the SiAK extension module, then connect the safety sensors and adjust the parameters  accordingly.

## 8 Interlock mode

The activation of an interlock mode automatically changes the configuration of the EW I/O to a corresponding interlock preset.

An interlock participant must be parameterized as a master.

To set up an interlock, the following parameters must be set via the Operator Service Interface (OSI):

- Interlock type
- Interlock time (only for the time interlock)
- Interlock pulse extension  
(only for the interlock with impulse transmission or for the time interlock)
- Interlock pulse extension max. Duration
- Interlock participants
- Interlock blocking time

If a night/bank opening pulse is received, the 'lock interlock' input is ignored and the door is opened.

### 8.1 Interlock via EW I/O

If one of the two doors receives an opening impulse, it opens and the other door is locked. When the first door is back in CLOSED position, the lock is released.

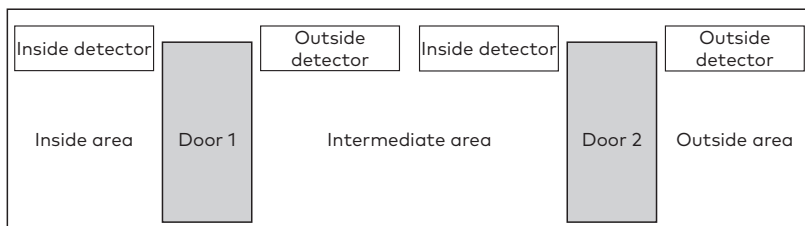


Fig. 99

### 8.2 Interlock with impulse transmission via EW I/O

If one of the two doors receives an opening impulse, it opens and the other door is locked. When the 1st door is in the CLOSED position again, the 2nd door is unlocked and the 2nd door is opened automatically (impulse transmission). The 1st door is locked at the same time.

The interlock pulse delay parameter can output the pulse transmission signal with a delay.

### 8.3 Time interlock via EW I/O

If one of the two doors receives an opening impulse, it opens and the other door is locked. When the set interlock time (impulse forwarding time) has elapsed, the 2nd door is unlocked and the 2nd door is opened automatically. At the same time, the 1st door is locked.

### 8.4 Interlock pulse extension



#### Note

This function is only available for "Interlock with impulse transmission" or "Time interlock".

If the parameter "Interlock pulse extension" is set to deactivated (0), then the duration of the interlock opening pulse is 1 second.

The duration of the opening pulse can be changed manually during an opening phase. For this purpose, the time in which there is a manually activated opening pulse is measured. The longer the opening pulse is applied, the longer the duration of the interlock pulse.

## 9 Functional parameterization sticker

1. Label the functional parameterization sticker.

<input type="checkbox"/> H	<input type="checkbox"/> L	<input type="checkbox"/> NC	<input type="checkbox"/> NO	MP1: _____	<input type="checkbox"/> I1:	_____	O1: _____	KS short L: _____
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MP2: _____	<input type="checkbox"/> I2:	_____	O2: _____	KS long L: _____
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MP3: _____	<input type="checkbox"/> I3:	_____	O3: _____	KS short R: _____
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MP4 (NB): _____	<input type="checkbox"/> I4:	_____	O4: _____	KS long R: _____
<input type="checkbox"/> edge <input type="checkbox"/> status <input type="checkbox"/> latch				<b>FUNCTION PARAMETERIZATION</b>				

Fig. 100

H	High active	KS short L	Key switch short left
L	Low active	KS long L	Key switch long left
NC	Normally closed	KS short R	Key switch short right
NO	Normally open	KS long R	Key switch long right
MP1-MP3	Multiport 1-3	edge	rising/falling edge
MP4 (NB)	Multiport 4 (night/bank)	status	Level analysis
I1-I4	Input 1-4	latch	Current pulse
O1-O4	Output 1-4		

2. Stick the functional parameterization sticker onto the control unit.

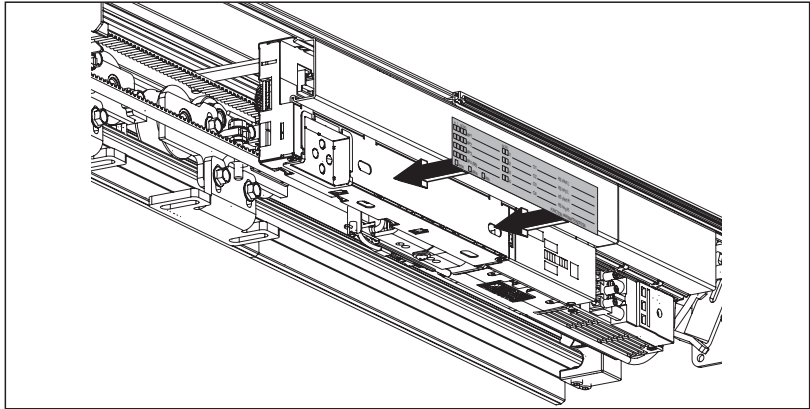


Fig. 101

## 10 Fire protection function

The fire protection function enables the sliding door to close safely in case of fire. The function is controlled externally, e.g. via fire alarm systems or building management systems. A rechargeable battery is required for the function.



### Note

The fire protection function is not available for the FST operator.

### 10.1 Activate the fire protection function

1. Connect the external control unit for the fire protection function to the multiport or the EM I/O.
2. Activate the fire protection function via the "P" parameter.
3. Configure the multiport for fire protection.

When the parameter "P" is set to the fire protection function, the following functions/parameters are changed:

Parameter	Is changed to	Can be changed subsequently
Obstacles in Open	5	yes
Obstacles in Closed	5	yes
Blocking function	Door stops	yes
Night/bank configuration	Edge	no
Battery mode	Emergency operation	no
Power saving mode	is ignored	no
Emergency switch CAN function	momentary function	no
Waiting time at the obstacle in closing direction	5 seconds	no

When the fire protection function is triggered, the door closes and is locked.

The door moves at creep speed due to the deactivated sensor system.

The following functions are no longer possible:

- Opening the door via the sensor system
- Change of the operating mode
- Fire brigade functionality
- Panic lock
- Close dead man's switch
- Open dead man's switch
- Pharmacy functionality

Opening the door is now only possible via emergency opening or the night/bank impulse.

## 11 Parameterization

After carrying out a teach-in run, the operator can be operated with the basic parameters.

The system offers the option to adapt the travel parameters to the actual conditions as well as to activate advanced functions. These parameters should be set during commissioning according to the customer's wishes.

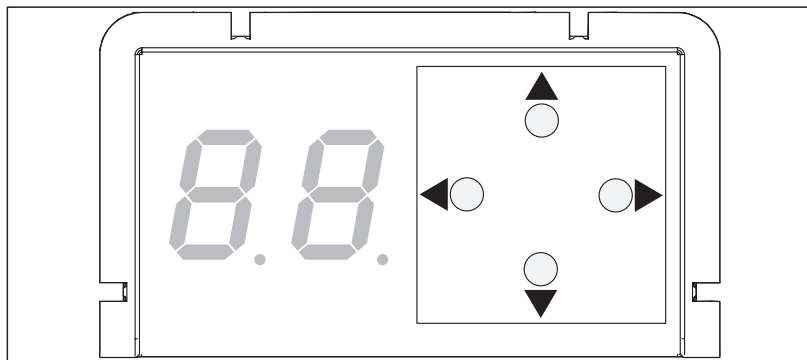


Fig. 102

### 11.1 Change parameters

1. Press **▶** for 3 seconds to open the parameters menu.
2. Use **▲** or **▼** to select the parameter to be changed.
3. Press **▶** to display the parameter value.
4. Press **▶** to select the parameter value to be changed.
  - ▶ The value flashes.
5. **▲** Or press **▼** to change the parameter value.
6. Press **▶** to save the changed parameter value.
7. Press **◀** to return to the parameters menu.
8. Repeat steps **2-7** to change more parameters.
9. If all parameters have been set, press **◀** to exit the parameters menu.

### 11.2 Parameter overview

The parameters described here can be set via the keypad on the control unit.

Further settings can be activated via the OSI or TMS-Soft.

If a parameter only applies to certain operator systems (Standard, CO 48 or FST operator), the parameter is labelled accordingly in the table.

Parameter	Display	Value range/ unit	Values (default = bold)	Explanation
Number of door leaves	<b>DL</b>	1-2	1	1-leaf
			<b>2</b>	2-leaf
Power supply type	<b>Pr</b>	1-2	1	180 W power supply unit
			2	130 W power supply unit
Operator locking device <b>Standard and CO48 operator</b>	<b>Li</b>	0/1/4/5	0	None
			<b>1</b>	Standard locking device
			4	Fail-safe locking
			5	Fail-secure locking
			0	None
Operator locking device <b>FST operator</b>	<b>Li</b>	0-2	<b>1</b>	Standard locking device
			2	FIA locking device
Door lock	<b>L2</b>	0-2	<b>0</b>	None
			1	Combination lock
RC3 locking device			2	RC3 locking device
			<b>0</b>	Standard
Program mode <b>Standard and CO 48 operator</b>	<b>P</b>	0-2	1	CO48-connect
			2	Fire protection function
Program Mode <b>FST operator</b>	<b>P</b>	0-1	<b>0</b>	FST
			1	FIA
Operating mode switch type	<b>PS</b>	0-4	0	Conventional PGS
			1	EPS-CAN
			2	TMS Soft only
			3	DPI/OSI only
Battery mode	<b>A</b>	0-3	<b>4</b>	EPS-CAN/TMS-Soft/DPI/OSI
			<b>0</b>	No battery
			1	Emergency close
			2	Emergency open
			3	Emergency operation

Parameter	Display	Value range/ unit	Values (default = bold)	Explanation
Acceleration in open direction	<b>A0</b>	0-9	<b>7</b>	Adjusting the acceleration in open direction
Opening speed <b>Standard and CO48 operator</b>	<b>S0</b>	10-90 cm/second	<b>50</b>	Setting the opening speed
Opening speed <b>FST operator</b>	<b>S0</b>	*)-90 cm/second	<b>65</b>	Setting the opening speed *) depends on door leaf weight and size
Force limitation in open	<b>F0</b>	5-31 10 N	<b>15</b>	Setting the force limitation in opening direction
Hold-open time	<b>dd</b>	0-180 seconds	<b>1</b>	Setting the hold-open time
Night/bank hold-open time	<b>dn</b>	0-180 seconds	<b>0</b>	Setting the hold-open time for night/bank
Closing speed	<b>Sc</b>	10-90 cm/second	<b>25</b>	Setting the closing speed
Force limitation in closed position	<b>Fc</b>	5-31 10 N	<b>15</b>	Setting the force limitation in the closing direction
Sensitivity of the collision detection when the threshold value is undershot	<b>cd</b>	0-2	0	Low sensitivity
			<b>1</b>	Medium sensitivity
			2	High sensitivity
Sensitivity of the collision detection when the threshold value is exceeded	<b>cd</b>	0-2	0	Low sensitivity
			<b>1</b>	Medium sensitivity
			2	High sensitivity
Locking force	<b>pl</b>	0-9 10 N	<b>6</b>	Setting the locking force



Parameter	Display	Value range/ unit	Values (default = bold)	Explanation
SIK sensor test	<b>5f</b>	0-8	<b>0</b>	Off
			1	SCE (high active)
			2	MCE (high active)
			3	SCE + MCE (high active)
			4	SCE (low active)
			5	MCE (low active)
			6	SCE + MCE (low active)
			7	SCE (high active) + MCE (low active)
Multiport default setting	<b>ff</b>	0-4	0	User configuration
			1	Standard configuration
			2	Status configuration
			3	Pharmacy configuration
Synchronous operation	<b>5b</b>	0-2	0	Off
			1	Master
Operating module	<b>5</b>	0-1	0	Operating module disabled
			1	Operating module active
COM 1	<b>ci</b>	0-3	0	Off
			1	DPI/OSI
			2	TMS
COM 2 (only with COM Port Expander)	<b>ci</b>	0-3	3	Data logger
			0	Off
			1	DPI/OSI
			2	TMS
			3	Data logger

Parameter	Display	Value range/ unit	Values (default = bold)	Explanation
Factory settings setup	<b>SL</b>	1-3	1	Reset configuration and travel parameters
			2	Level 1 and special functions
			3	Level 2 and passwords, operating data, CAN and historical data
CAN reset	<b>cr</b>	0-1	0	Activation
			1	Set value for execution to 1
Sensors' parameter transfers  If a sensor is replaced, the data stored in the control unit can be transferred.	<b>PU</b>	0-9	<b>0</b>	-
			1	Sensor 1 - Write parameters to sensor
			2	Sensor 2 - Write parameters to sensor
			3	Sensor 3 - Write parameters to sensor
			4	Sensor 4 - Write parameters to sensor
			5	Sensor 5 - Write parameters to sensor
			6	Sensor 6 - Write parameters to sensor
			7	Sensor 7 - Write parameters to sensor
			8	Sensor 8 - Write parameters to sensor
9	Write all parameters from the sensor to the operator control unit			
Door pilot reset	<b>dr</b>	0-1	0	Activation
			1	Set value for execution to 1
Door weight	<b>Pa</b>			Shows the taught-in door weight in kg
Maintenance date via the control panel	<b>CS</b>	0-1	0	Activation
			1	Maintenance is reset
Delete error memories	<b>EC</b>	0-1	0	
			1	Set value for deletion to 1
Service mode	<b>SE</b>	0-2	0	Not active
			1	Service Mode 1
			2	Service Mode 2

## 12 Information and error display

The information (In) and errors (E) are displayed on the 7-segment display on the DRIVE CUBE. The information and errors can be read out using the Operator Service Interface or on a computer using the "TMS-Soft" software. The data is transmitted with RS232 via the RJ45 bushing on the control unit.

Display	Meaning/cause	Troubleshooting/possible causes
In 01	Obstacle in opening direction	Remove obstacle Check floor guide Check toothed belt
In 02	Obstacle in closing direction	Adjust obstacle detection and force limitation settings Check mechanics and electronics of locking device/drive
In 04	Maximum FST opening time exceeded (ES 250/400 PRO FST only)	Check wiring Check the DIP switch settings on the EM SIAK Check the DIP switch settings on the CAN sensors if applicable, replace SIAK extension module if applicable, replace CAN sensors
In 09	Door weight too high	Check door weight Check structure of the door system for stiffness Repeat teach-in run
In 18	Output stage IC has overheated and switched itself off	Check control unit for overheating
In 23	Lock alarm floor locks locked	Check lock
In 24	Door lock sabotage detected	Check door lock for sabotage/break-in
In 30	No power supply	Check power supply
In 35	The emergency open button was pressed (ES 250/400 PRO FST only)	Press the emergency open button again
In 36	The emergency stop button was pressed (ES 250/400 PRO only)	Press the emergency stop button again

<b>Display</b>	<b>Meaning/cause</b>	<b>Troubleshooting/possible causes</b>
In 53	The toothed belt has jumped	Check toothed belt tension Replace toothed belt if necessary Carry out a teach-in run afterwards
In 60	Panic lock active	Deactivate panic lock
In 61	Fire brigade function active	Acknowledge fire brigade function
In 62	Synchronous operation not working	Check wiring Check second operator for correct parametrization
In 63	Interlock mode not working (ES 250/400 PRO only)	Check wiring Check parametrization of the other door units
In 64	Fire protection closures	Check fire alarm systems
In 67	Sabotage warning CAN key switch	Check CAN key switch for sabotage Replace CAN key switch if necessary
In 68	Firmware download error	Re-download firmware
In 89	Battery is charging	Battery is not functional in the event of a power failure Reset the control unit
In 97	Error I/O extension module	Check the wiring of the I/O extension module Replace I/O extension module if necessary
In 99	Unknown CAN device detected	Check the settings of all CAN devices (DIP switches) to check whether third-party hardware is connected, perform CAN reset if necessary

<b>Display</b>	<b>Meaning/cause</b>	<b>Troubleshooting/possible causes</b>
E0 00	Control unit is error-free	
E0 01	Door jammed in opening direction	<p>Incorrect zeroing</p> <p>Remove obstacle</p> <p>Check floor guide</p> <p>Check toothed belt</p> <p>Adjust obstacle detection and force limitation settings</p> <p>Check mechanics and electronics of locking device/drive</p>
E0 02	Door jammed in closing direction	<p>End stopper moved</p> <p>Remove obstacle</p> <p>Check floor guide</p> <p>Check toothed belt</p> <p>Adjust obstacle detection and force limitation settings</p> <p>Check mechanics and electronics of locking device/drive</p>
E0 03	Firmware versions do not match (ES 250/400 PRO FST only)	<p>Check firmware version and WN of the control unit</p> <p>Update firmware if necessary</p>
E0 04	Inside detector error (ES 250/400 PRO FST only)	<p>Check wiring</p> <p>Check the DIP switch settings on the EM SIAK</p> <p>Check the DIP switch settings on the CAN sensors if applicable, replace SIAK extension module if applicable, replace CAN sensors</p>
E0 05	Device identifier incorrect	<p>Perform network reset*</p> <p>If the error occurs again, replace the control unit</p>
E0 06	Emergency open button not detected (on FIA locking device only)	<p>Mount emergency open button (CAN)</p> <p>Check emergency open button (CAN) if necessary</p>
E0 07	24 V controller overvoltage/undervoltage	<p>Perform network reset*</p> <p>If the error occurs again, replace the control unit</p>

<b>Display</b>	<b>Meaning/cause</b>	<b>Troubleshooting/possible causes</b>
E0 08	Ballast circuit	Perform network reset* If the error occurs again, replace the control unit
E0 09	Teach-in run not completed	Repeat teach-in run
E0 10	Drive	Check drive wiring Replace drive or control unit
E0 12	High-side switch	Perform network reset* Carrying out a teach-in run If the error occurs again, replace the control unit
E0 13	Overcurrent	Check drive wiring Replace drive or control unit if necessary
E0 14	Drive pulse pattern	Perform network reset* If the error occurs again, replace the control unit
E0 16	Error in second drive half (ES 250/400 PRO FST only)	Check battery voltage Replace battery if necessary
E0 17	No drive undervoltage power supply	Check power supply or power supply unit
E0 18	IC drive output stage	Replace control unit
E0 19	Drive overvoltage (ES 250/400 PRO FST only)	Check power supply or power supply unit
E0 20	Locking device test (ES 250/400 PRO FST only)	Check control unit Check function of the locking device contact using a measuring device Check the function of the locking device Replace control unit, locking device contact or locking device if necessary
E0 21	Unlocked operator locking device	Locking device type adjusted correctly? Locking device correctly adjusted mechanically?
E0 22	Lock operator locking device	Check wiring
E0 23	Lock alarm	Check lock Door locked?

<b>Display</b>	<b>Meaning/cause</b>	<b>Troubleshooting/possible causes</b>
E0 24	Unlock door lock	
E0 25	Lock the door lock	Locking device type adjusted correctly? Locking device correctly adjusted mechanically? Check wiring
E0 26	Multi-point locking system	
E0 27	General locking device error	
E0 31	Operating mode switch	
E0 32	FST operating mode switch (ES 250/400 PRO FST only)	Check wiring and function of the operating mode switch Replace operating mode switch if necessary
E0 34	EPS-CAN	
E0 41	Sensor SCE 1	
E0 42	Sensor SCE 2	
E0 43	Sensor MCE 1	Check sensor wiring Check sensor parameters
E0 44	Sensor MCE 2	Replace sensor if necessary
E0 49	CAN sensor	
E0 51	Hall effect sensor	Check drive wiring Replace drive if necessary
E0 52	Door position incorrect (ES 250/400 PRO FST only)	Perform network reset* Carrying out a teach-in run
E0 53	Toothed belt	Incorrect zeroing End stopper moved Check toothed belt tension Replace toothed belt if necessary Carry out a teach-in run afterwards
E0 54	Zero point detection failed	Check sensors and teach in again if necessary Perform network reset*

<b>Display</b>	<b>Meaning/cause</b>	<b>Troubleshooting/possible causes</b>
E0 69	Firmware update	Install firmware via Operator Service Interface Replace control unit if necessary
E0 71	EEProm memory check failed	Select factory setting Replace control unit if necessary
E0 72	Second shutdown path CPU 1	
E0 73	Second shutdown path CPU 2 (ES 250/400 PRO FST only)	
E0 74	Watchdog CPU 1	Replace control unit
E0 75	Watchdog CPU 2 (ES 250/400 PRO FST only)	
E0 80	Charge battery	Checking the setting for battery operation Is the battery connected correctly? Is the battery sufficiently charged? Measure battery voltage Check wiring Replace battery if necessary
E0 81	Battery undervoltage	Check wiring Charge battery Replace battery if necessary
E0 82	Battery overvoltage	Check battery charging voltage Replace control unit if necessary
E0 83	Battery test run failed (ES 250/400 PRO FST only)	Check battery Replace battery if necessary
E0 84	Battery charging circuit	Replace control unit if necessary
E0 85	Battery missing	Check battery Check wiring Replace battery if necessary



<b>Display</b>	<b>Meaning/cause</b>	<b>Troubleshooting/possible causes</b>
E0 86	Battery test failed (ES 250/400 PRO only)	Check battery Replace battery if necessary
E0 90	Communication logic	Perform network reset* Carrying out a teach-in run If the error occurs again, replace the control unit
E0 91	CAN BUS communication is disrupted	Check connectors and wiring of the CAN participants Perform network reset* If the error occurs again, perform a CAN reset Check firmware version for latest version Replace control unit or CAN participant
E0 92	Drive communication	Perform network reset* Carrying out a teach-in run If the error occurs again, replace the control unit
E0 93	CAN key switch	Check wiring and function of the key switch Replace key switch if necessary
E0 94	Emergency stop button CAN	Check wiring and function of the CAN emergency stop button Replace emergency stop button CAN if necessary
E0 95	Activation Safety EW module	Check plug connection
E0 96	EW module operating mode circuit	Perform network reset* If error persists, replace EW module or control unit
E0 98	CAN emergency open button	Check wiring and function of the CAN emergency open button Replace emergency open button CAN if necessary
E0 99	A device was detected on the CAN bus that cannot be assigned to the stored device table. The table of devices that cannot be assigned is full and no more devices can be stored	Perform control unit reset Perform CAN reset if this occurs repeatedly

### Perform network reset

1. Switch off the power supply
2. Remove the battery (if present)
3. Connect the battery (if present)
4. Switch on the power supply

## 13 Replace the battery



### WARNING

#### Risk of injury due to heat generation, explosion, and fire

Improper handling of batteries (e.g. overheating, destruction, recharging, use of the battery in other products) can cause heat generation, explosion, and fire. This poses a risk of injury.

- Only use the battery types recommended and approved by dormakaba.
- Observe warnings on the batteries.
- Only use batteries as intended.
- Keep out of reach of children.

1. Remove the battery from the battery holder on the underside of the DRIVE UNIT.

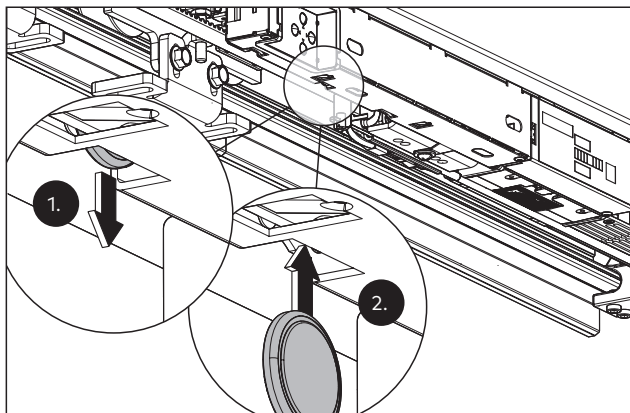


Fig. 103

2. Insert a new CR 1220 button cell battery into the battery holder.
3. If the battery was replaced while the control unit was in a de-energized state, the real time clock must be reset via the OSI.



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