



ED 100
ED 250

Technical Documentation

Read this manual carefully
before starting the
installation.

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1. For your safety

This documentation contains important information regarding the mounting and the safe operation of the door system. Read these instructions carefully before operating the **ED 100/250**.

It is important for your personal safety to abide by all enclosed instructions.

An incorrectly performed installation might cause serious injuries.

Using control elements, making adjustments or performing procedures that are not described in this documentation might cause electric shocks, danger caused by electric voltage/current and/or danger due to mechanical incidents. Please keep these documents for further reference and hand them over to the person in charge in case the system is transferred to another party.

Explanation of symbols

- | | | |
|-------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------------------|
|  | NOTE | This symbol underlines important information that may facilitate your work. |
|  | REMARK | This symbol warns you of possible system damage and explains how to avoid this damage. |
|  | WARNING | This symbol indicates dangers that might cause personal or material damage or even kill people. |

Intended application

As electromechanical swing door operators, the **ED 100** and the **ED 250** are only designed to open and close swing doors with a door-leaf weight of up to 220 and 550 lbs [100 and 250 kg] respectively.

Simply select the suitable version according to your door-leaf width and weight.

Both operators are suitable for installation as pull-version with ED slide channel set and as push-version with the ED standard arm.

The closing force paths have been optimized for the respective ways of mounting and comply with the requirements of DIN 18263 part 4.

Please ensure that the system is approved for installation at the respective door before installing the system at a fire or smoke door.

Before you start with the installation of the system, please ensure that your operator is suitable for the door situation as explained in the technical specifications in chapter 2 and that the door is equipped with adequate hinges for operation with an automatic operator.

The maximum cable length for external components must not exceed 98' 5" [30 m].

Limitation of liability

The **ED 100/250** may only be used according to their specified intended application. **DORMA GmbH + Co. KG will not accept any liability for damage resulting from unauthorized modifications of the ED 100/250. Furthermore components/accessories that have not been approved by DORMA are exempted from liability.**

Safety instructions

 **Work on electrical equipment may only be performed by properly qualified staff (electricians).**

- Do not allow children to play with the **ED 100/250** or its rigidly mounted adjustment and control devices.
- Keep remote controls out of reach of children.
- Never stick metal objects into the openings of the **ED 100/250**; otherwise you might sustain an electric shock.
- If the **ED 100/250** is mounted onto a metal door leaf, you have to ground the door leaf properly.
- Always use safety glass when mounting glass door panels.
- Only operate the mains switch at the header profile while the door stands still or is permanently open.

- No pushbuttons/switches, pictures etc. must be located within the door's movement range.
- Switch must be located so that door operation can be observed by person operating the switch.
- Your door system must be maintained in compliance with the standards of the industry, BHMA/ANSI.
- Proper decals and labels be applied, per BHMA/ANSI Standards, and maintained on your doors. If decals are removed, or cannot be read, request labels to be replaced when calling for service.

Standards, laws, codes and regulations

The latest versions of the common and country-specific standards, laws, codes and regulations have to be observed.

Formation/provisions regarding the application of the ED 100/250 at fire and smoke doors:

- Please consider the technical bulletin for the application of hold-open devices.

Low-energy product

The ED 100/250 may be adjusted so that it meets the requirements of a low-energy application (low-energy operator) to DIN 18650, ANSI 156.19 and BS 7036-4. During commissioning, the operator has to be adjusted in accordance with the appropriate standard and then verified after installation is complete. Compliance to these low energy standards has not been evaluated by UL.

The required system safety is ensured by the following means:

- Reduced dynamic force at door leaf/contact force
- Low driving speed
- Reduced static force at door leaf/contact force
- Force limitation

The application of additional safety sensors to protect the swing path is not explicitly stipulated but should be considered as an option if the individual risk assessment reveals that further sensors are required. The protection of the secondary closing edge has to be assessed individually.

Risk assessment on the part of the installer

Due to special spatial conditions and the expected user groups of the door, the application of safety sensors may, however, also be reasonable for a low-energy operator. Therefore the manufacturer, i.e. the installer of the system, has to perform an individual risk assessment during the planning of the door system in order to decide whether additional safety equipment is required or not.

Please refer to our homepage www.dorma-usa.com

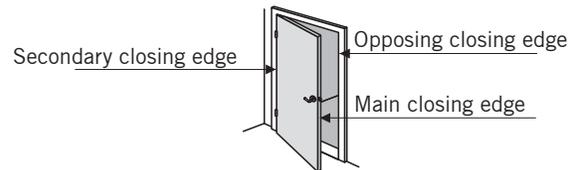
Special requirements regarding the protection of people in need of protection

In case the risk assessment reveals that there is a health risk or risk of injury caused by the door hitting a person using the door with an unacceptable force, an additional protection with the aid of appropriate safety equipment (connection of a safety sensor) is required.

This is especially necessary when people in need of protection (children, elderly people or disabled people) use the door.

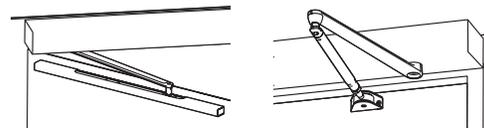
Dangers at closing edges

 Automatic doors may cause hazards by crushing, shearing, hitting and drawing-in at the different closing edges.



Dangers caused by slide channel and arm

 The slide channel and the arm may cause hazards by crushing and shearing.



Residual risk

Depending on the structural conditions, the door version and the available safety equipment, residual risks (such as crushing and hitting – with limited force) cannot be excluded. All people using a door are generally aware of the danger spot at the secondary closing edge of every swing door (also at manually operated doors). This danger spot cannot be influenced by the manufacturer of the operator and a protection of this closing edge often cannot be realized due to its construction and technical function. A suitable clamping protection (like a rubber or textile cover) is available in the specialized trade and not part of the scope of delivery.

Recycling and disposal

Both the ED 100/250 and its packing mainly consist of recyclable raw material. The ED 100/250 and the respective accessories must not be disposed of as domestic waste.

 Please ensure that the old appliance and the respective accessories (if available) are properly disposed of.

Abide by the prevailing national statutory provisions!

Safety during mounting

- The door is designed to be installed by trained and knowledgeable installers. The installation technician should be experienced in the installation of automatic entrances. They should know all local code requirements and be familiar with the requirements of the current ANSI A156.10 & 156.19 Standards for Power Operated Pedestrian Doors.
- The working area has to be secured against unauthorized access from other people. Falling items or tools might cause injuries.
- **The ED 100/250 has to be secured against water and other liquids.**
- In any case, the way of mounting and the mounting equipment, like for example screws and wall plugs, have to be adequate with regard to the structural conditions (steel structure, wood, concrete etc.).
- **Before mounting the ED 100/250, the door leaf has to be checked with respect to proper mechanical condition and smooth running.**
- **The mounting of the ED 100/250 described herein is only an example.**
Structural or local conditions, available tools or other conditions might suggest a different approach.
- Following the successful installation of the system, the settings and the proper function of the **ED 100/250 and the safety equipment have to be checked.**
- Only specially qualified staff may open the power supply housing.
- **Disconnect the ED 100/250 from power supply (de-energize the system) before removing the cover of the power supply housing.**
- After installation, the door must be adjusted to conform to **DORMA** recommendations and all code requirements. Carefully study the requirements in these instructions.
- After installation and adjustment, the installer's final responsibility is to properly instruct the owner in the safe use of the door. He must also present the owner with the manual.
- Each step of the installation, adjustment and instructions are important for proper and safe use of the door being installed. If there are any questions about any items contained in these instructions, call the **DORMA** Technical Assistance Group for assistance.

Safety during commissioning

- Only specially qualified staff may open the power supply housing.
- The protective earth conductor has to be connected.
- Separately supplied components such as the program switch, the EMERGENCY OFF pushbutton and activators (radar motion detectors, NIGHT-/BANK key switches) have to be mounted and connected.
- Ensure that the door leaves run smoothly.
- The operator and the door leaf must be properly linked.

Inspection and system approval

Before the first commissioning and depending on requirements, however, at least once a year, the **ED 100/250 has to be inspected by a properly qualified technician and serviced if required.**

A person trained by DORMA has to perform the inspection and approve the system with the aid of the inspection book.

The respective results have to be documented and the facility operator has to keep these documents for at least one year.



We would recommend taking out a maintenance agreement with DORMA.

Briefing:

Following the adjustment, commissioning and functional testing of the door system, the operating instructions have to be handed over to the facility operator and a briefing has to be made.

Maintenance

The system has to be de-energized/disconnected from power supply before any kind of maintenance work is performed (switch off fuse).

Please consider the leaflet regarding the application of hold-open devices for further information and instructions regarding the application of the **ED 100/250 at fire and smoke doors.**

Care

The system has to be de-energized (disconnected from power supply) before cleaning the system.

Remove power plug or, with permanent power supply, switch off fuse.

You may clean the **ED 100/250 with a damp cloth and standard commercial detergents.**

You should not use scouring agents for cleaning purposes as they might damage the surface finish.

Pay attention that no water or other liquids drop on or into the **ED 100/250.**

Never stick metal objects into the openings of the **ED 100/250; otherwise you might sustain an electric shock.**

Wear

The following wear parts have to be inspected once a year and replaced if required:

- Arm
- Slide shoe
- Slide channel

Only use original replacement parts.

2. Technical specifications

The following technical specifications will help you to check additionally if the system fulfills the requirements. You can start mounting if the system complies with the parameters.

Required operating conditions

Ambient temperature	5 to 122° F [-15 to 50° C]
Only suitable for dry environments	relative humidity max. 93% non-condensing
Power supply	115 V AC +/- 10% 50/60 Hz 6.6 A max.
Class of protection	IP 20
Branch circuit protection (by others)	15 A
Power cable type	14 AWG
Max. operating noise	50 db (A)

General specifications

Dimensions (WxHxD)	27 x 2 3/4 x 5 1/8" [685 x 70 130 mm]
Min. distance between hinges (double-leaf systems)	55 1/8" [1,400 mm]
Min. distance between hinges (double-leaf systems) with ESR (door coordinator)	57 1/8" [1,450 mm]
Min. distance between hinges (double-leaf systems) with VARIO Cover	59 1/16" [1,500 mm]
Operator weight	26.5 lb [12 kg]
Power supply for external accessories	24 V DC +/- 10%, 1.5 A
Opening angle	Max. 110°

Inputs

Connections	14 AWG Max. [2 mm ²]
Potential-free activator	Inside and outside (NO contact)
Night-/Bank (intercom system)	8 - 24 V DC / AC + 10%
Night-/Bank (key switch)	NO contact/NC contact
Safety sensor	Hinge side and opposite hinge side (NC contact)
Test signal for safety sensor	Hinge side and opposite hinge side
Deactivation of operator function (lock switch)	NC contact/NO contact

Outputs

Connections	14 AWG Max. [2 mm ²]
Potential-free status indicator	Door closed Door open Malfunction

Integrated functions

Latching action	Adjustable from 5° to 0°
Hold-open time	0 - 30 seconds
Night-/Bank hold-open time	0 - 30 seconds
Blocking behavior during closing cycle	Reversing / Door closer function
Delayed opening for locking mechanism (electric strike)	0 - 1 second/s
Locking feedback contact	Motor lock
Wind load control	up to 33,7 lbf [150 N]
Power failure speed control	Adjustable via potentiometer
Electronic latching action pulse	Force adjustable
LED status indicator	green - power supply available red - malfunction yellow - service interval indicator
Integrated program switch	OFF AUTOMATIC PERMANENT OPEN EXIT ONLY (only for single-leaf systems)
User interface with information display	Status indicator and settings display
Slot for DORMA Upgrade Cards	Extension of functional range
Update interface	Firmware update
TMP – Temperature Management Program	Overload protection
IDC – Initial Drive Control	Driving phase optimization
Cycle counter	0 – 1,000,000 (reasonably subdivided)
Power Assist Function	Servo-supported manual opening
Push & Go Function	The door opens when it is moved manually by 4°

ED 100

Max. steady state power consumption	120 Watts
Max. door-leaf weight for lintel depths of up to 11 3/4" [300 mm]	220.4 lbs [100 kg]
Door-leaf width	27 9/16" to 43 1/4" [700 to 1,100 mm]
Max. opening speed	**50° (27°*)/second
Max. closing speed	**50° (27°*)/second
Axle extension	5/16" [9mm] 3/4" [20 mm] 1 3/16" [30 mm] 2 3/8" [60 mm]
Lintel depth for slide channel	+/- 1 3/16" [30 mm]
Lintel depth for standard arm	0" to 11 13/16" [0-300 mm]

* The values in brackets indicate the maximum speed in Low-Energy Mode without Full-Energy or Fire Protection Upgrade Cards.

** Depending on the door-leaf weight automatically limited according to DIN 18650, BS 7036-4 and ANSI 156.19.

Automatic-Power-Assist Function

The Automatic-Power-Assist Function may be activated while the door is in door closer mode (parameter Hd = 1). As soon as a user opens the door manually by some degrees, the servo-function supports the manual opening cycle. The servo support automatically adapts to the adjusted size of the door closer. The level of servo support is adjustable in order to meet the requirements of DIN 18040, DIN Spec 1104, CEN/TR 15894, BS 8300/2100 and document "M", even up to class EN 6. The smallest adjustable opening torque amounts to 17 ft-lbf [23 Nm], unless the hold-open device is triggered or in the event of a power failure. With the aid of the Automatic-Power-Assist Function, the system meets the requirements of the European standard EN 1154 and provides barrier-free access during standard operation. However, it is not possible to use the system in conjunction with the Push & Go Function or the wind load control as these functions may affect the easy manual opening.

ED 250

Max. steady state power consumption	240 Watts
Max. door-leaf weight for lintel depths of up to 11 3/4" [300 mm]	551.1 lbs [250 kg] for door-leaf widths of up to 55" [1,400 mm] 418.8 lbs [190 kg] for door-leaf widths of up to 63" [1,600 mm]
Max. door-leaf weight for lintel depths from 11 3/4" to 19 5/8" [301 to 500mm]	352.7 lbs [160 kg]
Door-leaf width	27 9/16" to 63" [700 to 1,600 mm]
Door-leaf width for fire protection doors	27 9/16" to 55" [700 to 1,400 mm]
Max. opening speed	**60° (27°*)/second
Max. closing speed	**60° (27°*)/second
Axle extension	5/16" [9mm] 3/4" [20 mm] 1 3/16" [30 mm] 2 3/8" [60 mm] 3 1/2" [90 mm]
Lintel depth for slide channel	+/- 1 3/16" [30 mm]
Lintel depth for standard arm	0" to 19 11/16" [0 to 500 mm]

Door closer mode & Automatic mode

Users may choose between two operation modes: door closer and Automatic mode. While adjusted to door closer mode (parameter hd = 1), the system is optimized for manual operation. With its optional Automatic-Power-Assist Function, the door closer mode is tailored to predominantly manually-operated doors where a door closer function is desired. The Automatic mode (parameter hd = 0) in turn is especially suitable for mainly automatic access via motion detector or pushbutton. In addition, the door reverses as soon as it runs into an obstruction while closing. On activation of the Automatic mode, also the wind load control is available. However, the doors are still ready for manual access. In this case we would recommend the Push & Go function.

Wind load control

ED 100 and ED 250 operators are especially suitable for application at exterior doors that are subject to varying wind loads and for interior doors separating rooms where different pressure prevails. While the system is in AUTOMATIC mode, the wind load control monitors the actual driving speed and adjusts the speed correspondingly if it does not correspond to the adjusted value. In conjunction with the Full-Energy Upgrade Card, the operator provides a force of up to 33.7 lbf [150 N] at the main closing edge – which is then used to compensate environmental influences. The electronic latching action is activated during the last 5° of the closing cycle in order to support the closing action.

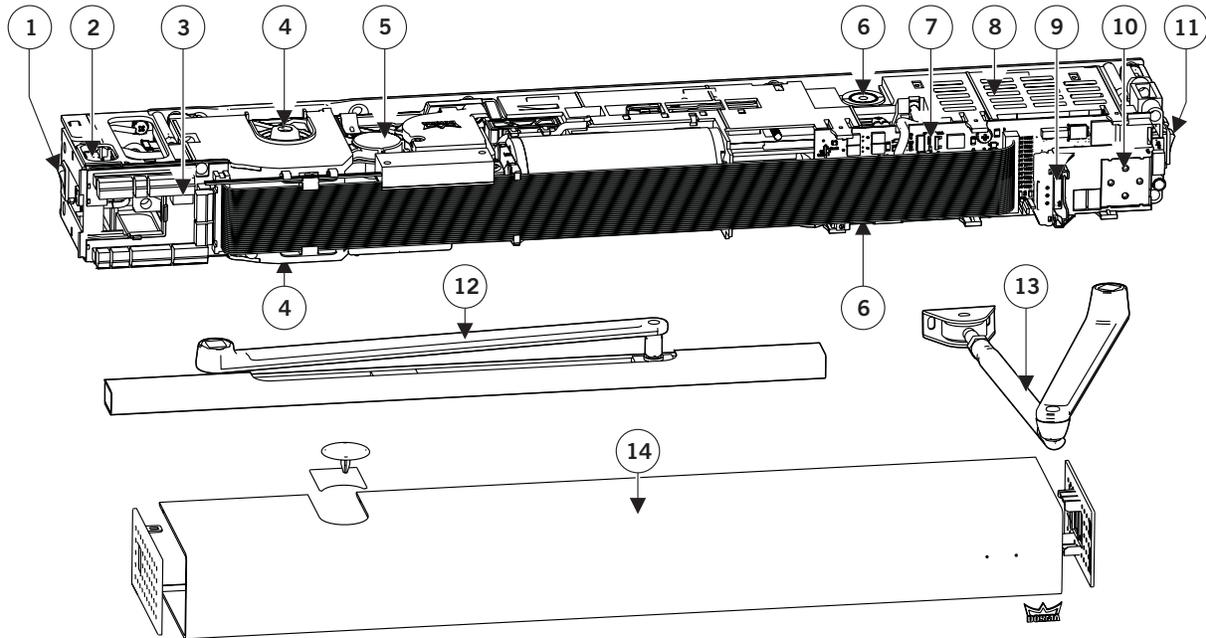
3. System setup

Operator system

The operator system comprises all core components.

Select the system in accordance with the door-leaf width and the door-leaf weight.

- | | |
|--------------------------------------|---------------------------------------------|
| 1. Power switch | 8. Switching power supply unit |
| 2. Mains connection | 9. Slot for DORMA Upgrade Cards |
| 3. Connection unit | 10. User interface with information display |
| 4. Axle connection on both sides | 11. Internal program switches |
| 5. Drive system (motor/gear/ spring) | 12. Slide channel pull arm assembly |
| 6. Adjustment of closing force | 13. Standard push arm assembly |
| 7. Control unit | 14. Cover assembly |



Functions of Internal Program Switches

- OFF** The door opens automatically when the Night-/Bank activator is triggered and closes on expiry of the Night-/Bank hold-open time.
- AUTOMATIC** The door opens automatically when one of the activators is triggered and closes on expiry of the adjusted hold-open time.
- PERMANENT OPEN** The door opens automatically and remains open until the function is deactivated.
- EXIT ONLY** The door only opens automatically after the internal activator or the Night-/Bank activator has been activated. The door closes on expiry of the adjusted hold-open time.

Selection of functions

Activate the desired function by pushing the respective key on the external program switch (see picture at the bottom of the left column).

When performing adjustments with the aid of the internal program switch, you have to adjust both switches in a certain combination:

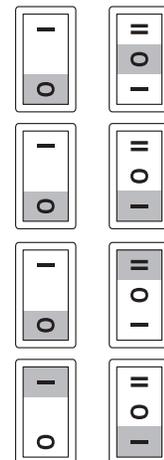
The front switch is only adjusted to "I" if you want to adjust the EXIT ONLY function.

OFF
Adjust both switches to "O".

AUTOMATIC
Adjust the front switch to "O", and the other switch to "I".

PERMANENT OPEN
Adjust the front switch to "O", and the other switch to "II".

EXIT ONLY
Adjust the front switch to "I", and the other switch to "I".



4. Accessories

Electrical connection

Apart from the broad range of **DORMA** accessories, other manufacturers offer various activators, locking devices, safety sensors and further accessories that are compatible with **ED 100** and **ED 250** operators.

External activation device

In general external activation devices need to be normally open dry contact.

Minimum requirements

Operating voltage with power supply via operator:

24 V DC +/- 10%

Pulse width:

min. 200 ms

Potential-free output

(When installed at internal signal input, external detector or Night-/Bank)

Energized output (telephone systems):

8 - 24 V DC / AC + 10%

Locking device

Motor locks without a feedback contact can be directly connected to the operator as long as the delayed opening for the locking mechanism amounts to less than 4 seconds. In order to ensure that the operator and the locking device work together properly, the locking device has to comply with the following specifications:

Minimum requirements

Operating voltage with power supply via operator:

24 V DC +/- 10%

Operating voltage with external power supply:

max. 48 V DC/AC

Current load for relay contact of locking device:

max. 1 A

Rated for continuous duty: electric strike:

min. 30%

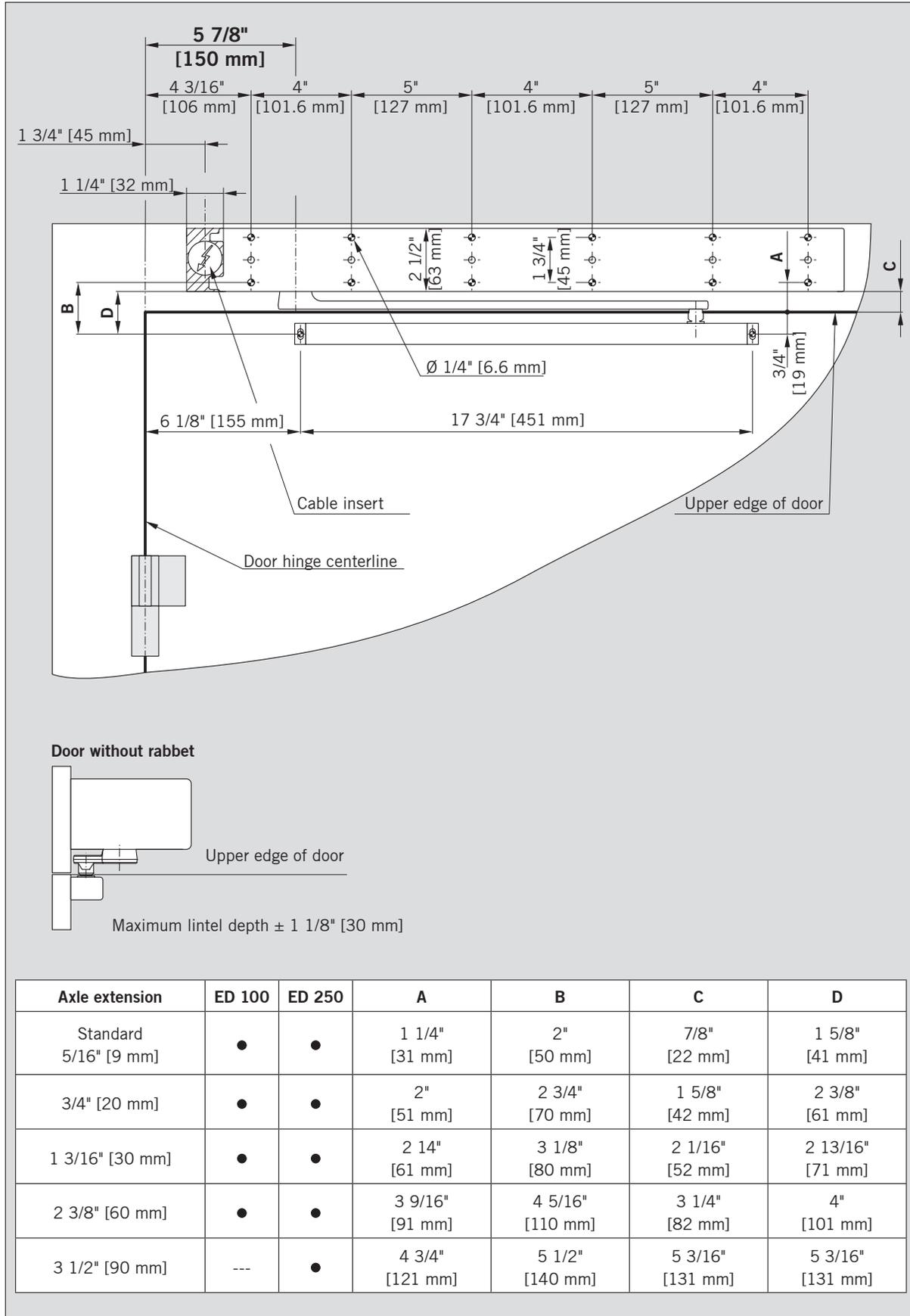
Rated for continuous duty: motor lock:

100 %

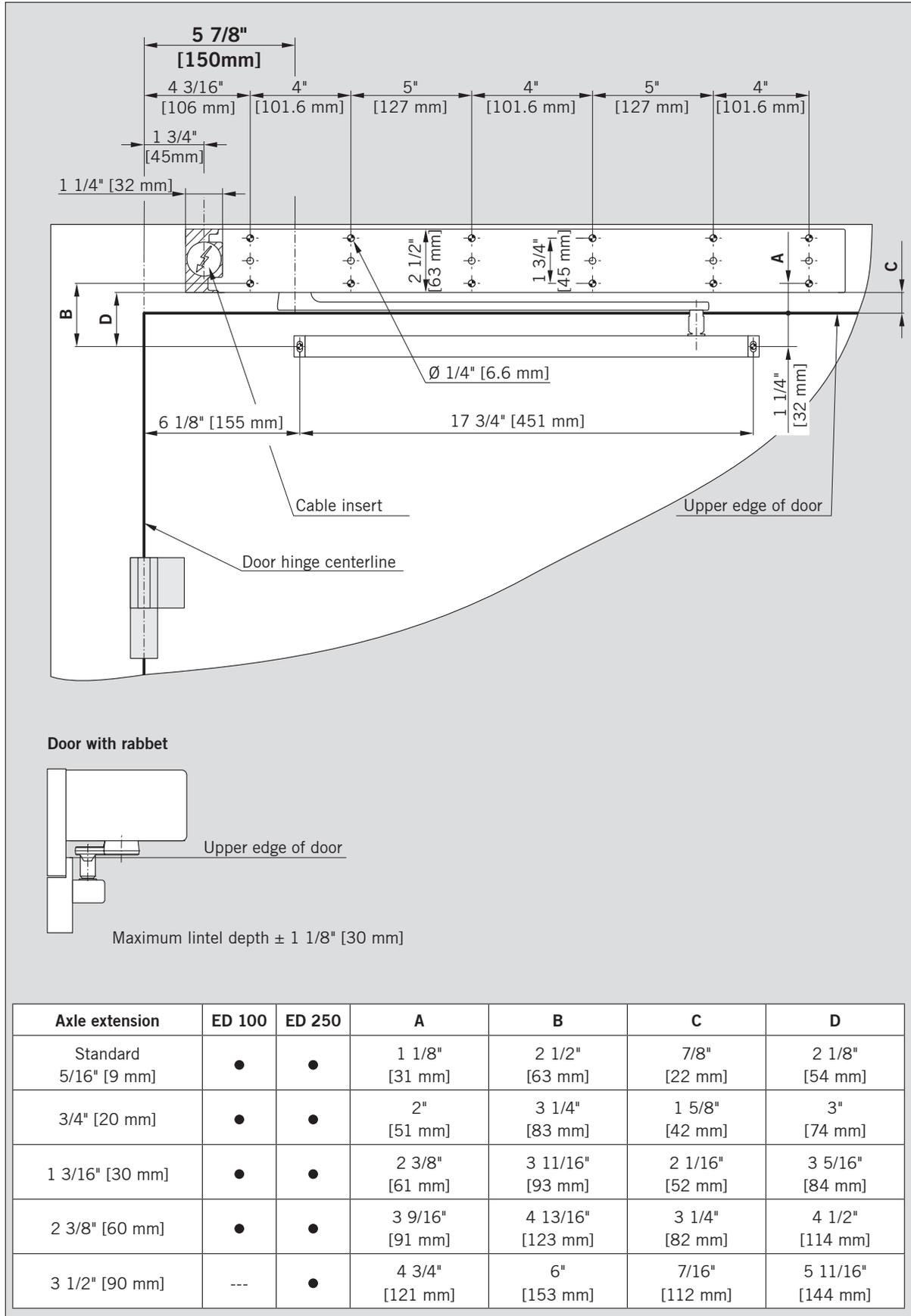
Power consumption for accessories:

The operator may provide a maximum of 1.5 A at 24 V DC for external accessories. In case you need more power (even if only for a short period of time), an external power supply unit is required in order to avoid malfunctions.

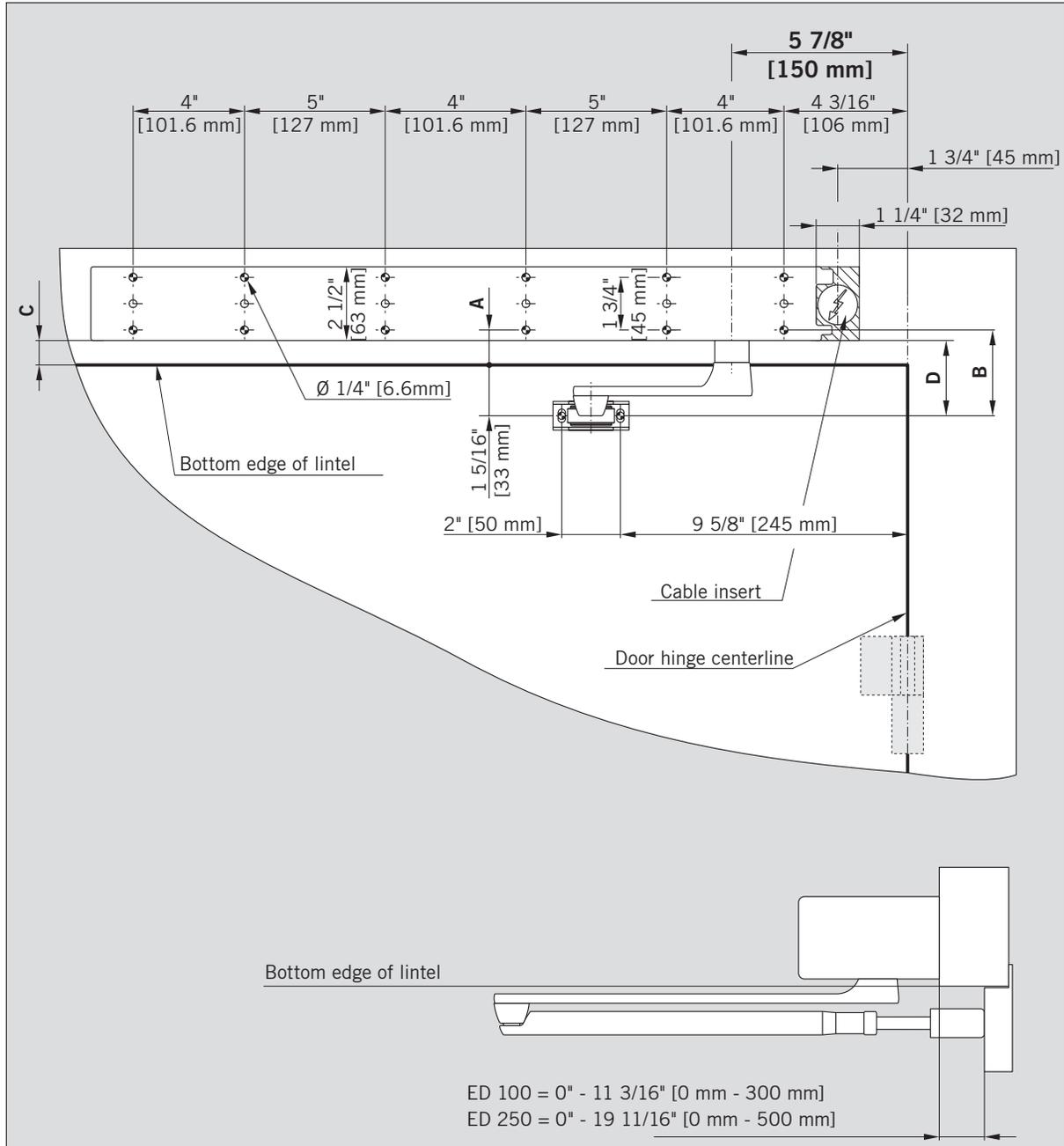
5. Pull arm mounting with 1/2" [12.5 mm] mm pivot pin



6. Pull arm mounting with 1" [25 mm] pivot pin



7. Push arm mounting

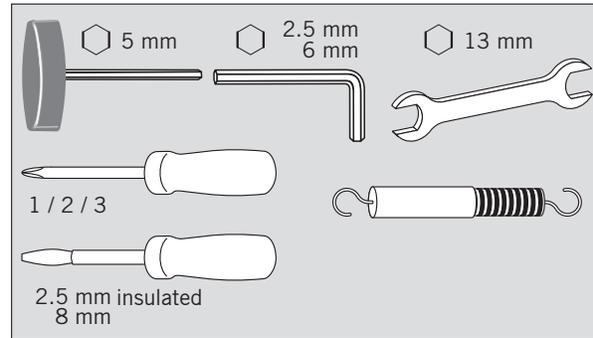


ED 100 = 0" - 11 3/16" [0 mm - 300 mm]
 ED 250 = 0" - 19 11/16" [0 mm - 500 mm]

Axle extension	ED 100	ED 250	A	B	C	D
5/16" [9 mm]	●	●	3/4" [19 mm]	2" [51 mm]	5/16" [9 mm]	1 5/8" [42 mm]
Standard 3/4" [20 mm]	●	●	1 9/16" [39 mm]	2 13/16" [71 mm]	1 1/16" [29 mm]	2 7/16" [62 mm]
1 3/16" [30 mm]	●	●	1 15/16" [49 mm]	3 3/16" [81 mm]	1 9/16" [39 mm]	2 13/16" [72 mm]
2 3/8" [60 mm]	●	●	3 1/8" [79 mm]	4 3/8" [111 mm]	2 11/16" [69 mm]	2 11/16" [69 mm]
3 1/2" [90 mm]	---	●	4 5/16" [109 mm]	5 9/16" [141 mm]	3 7/8" [99 mm]	5 3/16" [132 mm]

8. Installation instructions

Required tools

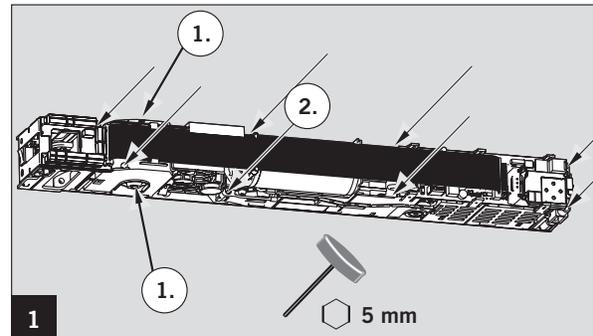


1. Remove the two transport safety screws and the cardboard.

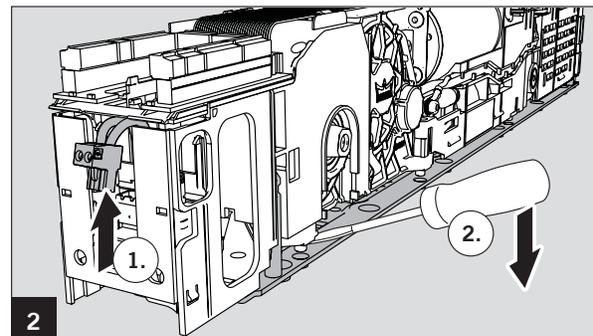


The transport screws are not self-locking screws; therefore they must not be used to attach the arm.

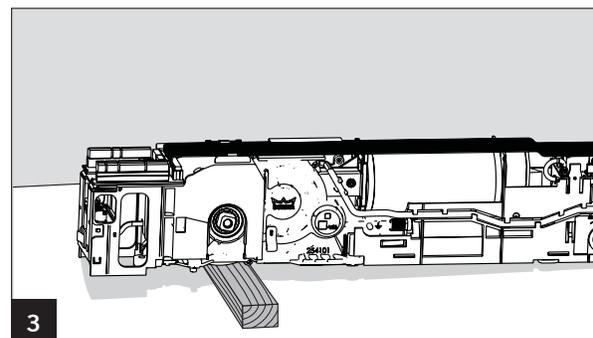
2. Loosen the 8 screws to loosen the mounting plate from the operator body.



1. Remove 115 V plug.
2. Remove operator from mounting plate.
If needed, carefully use a screwdriver to pry the operator off the base plate.



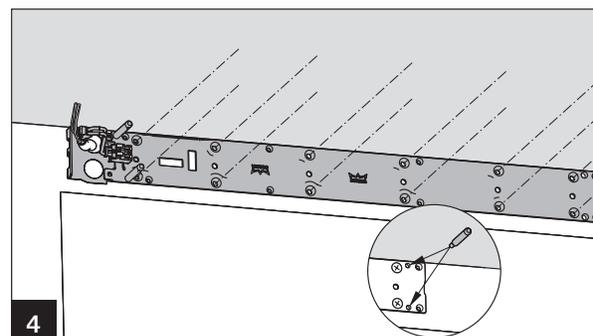
Prop the unit up with a wooden block or similar (see picture 3) so that the operator does not start to disassemble.



1. Install the mounting plate and conduit bracket with 12 screws through the provided holes.

Use adequate inserts and fasteners in accordance with the substructure to attach the mounting plate.

2. Screw the provided retaining pin into one of the two tapped holes.



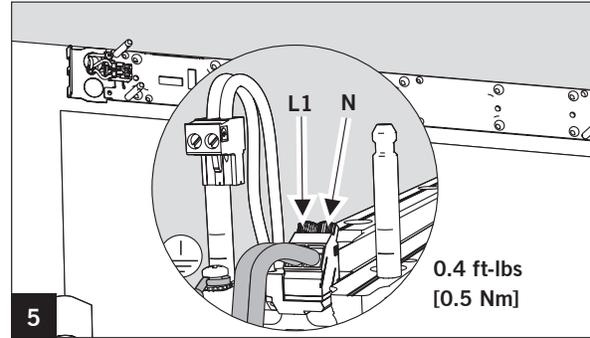
Connect the 115 V power supply.

Work on electrical equipment may only be performed by properly qualified staff (electricians).

Connect grounding cable. Form a loop of the end of the cable.

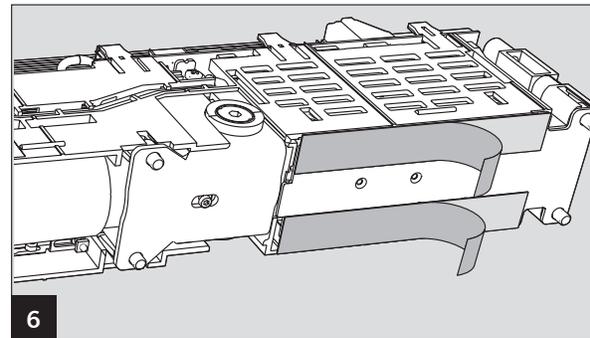


Tighten mains terminal to 0.4 ft-lbs



Remove the protective foil from the heat conductive pads at the bottom of the power supply unit.

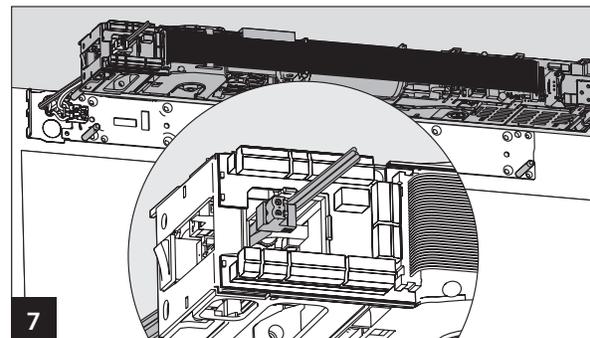
The heat conductive pads must remain clean.



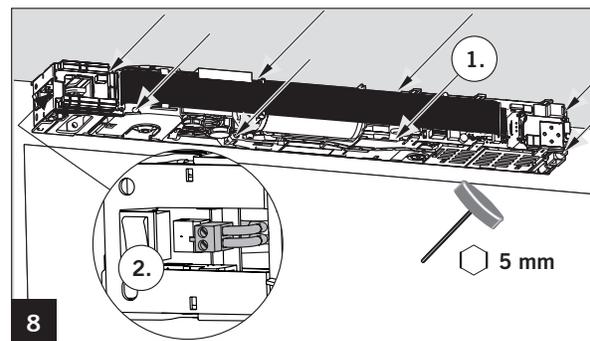
Attach the operator to the bolts on the base plate.

Lay the connection cables through the housing.

Press against the operator until you hear it lock in position.

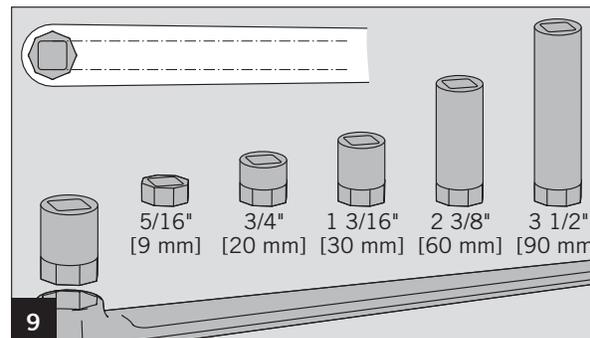


1. Screw down the 8 screws thoroughly.
2. Plug in mains connection.



Drive the axle extension into the arm.

Turn the square end so that its mounting position corresponds to the picture.

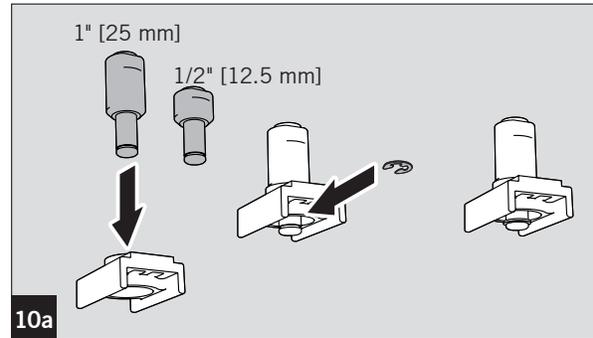


a Mounting of slide channel (hinge side)

Assemble slide shoe.

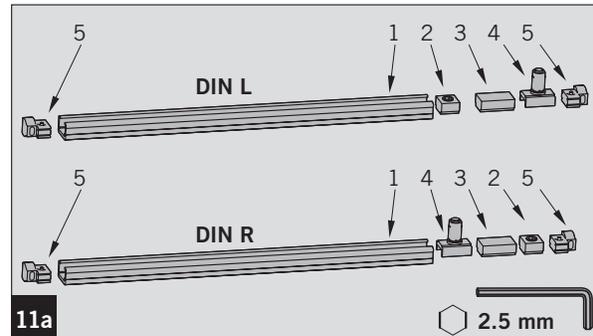
Insert the pivot pin in the slide shoe (1/2" [12.5 mm] or 1" [25 mm]) and secure with lock washer.

Use the short pin for doors without rabbet.



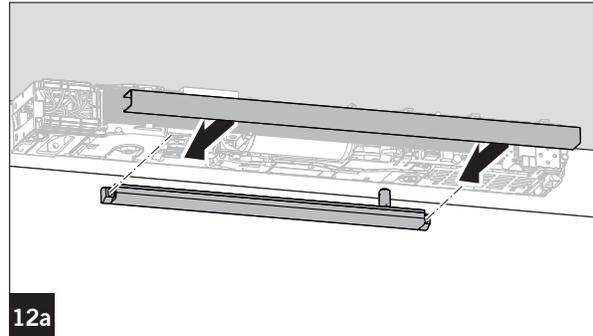
Position the individual components inside the slide channel and screw down the fittings.

- 1 - Slide channel
- 2 - End stop
- 3 - Buffer
- 4 - Slide shoe
- 5 - Fitting



Install the slide channel with 2 screws through the provided holes.

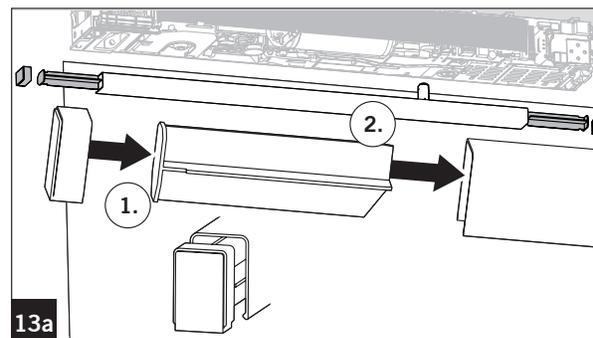
Mount the slide channel cover.



1. Assemble the end caps onto the spacers.
2. Insert both components into the cover.

Ensure that the mounting position is correct. Install the spacers and end caps as indicated on the picture.

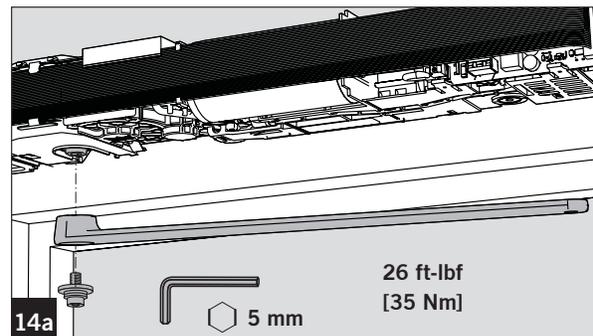
Align the system so that the end caps are flush with the cover on both sides.



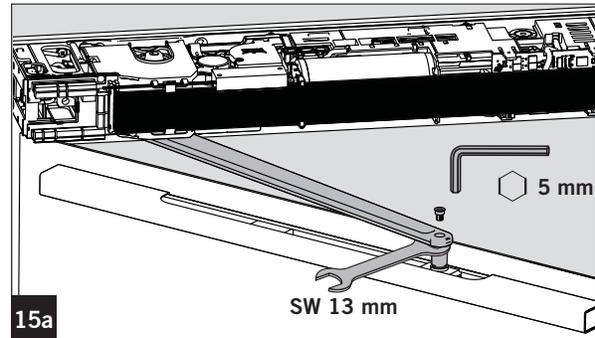
Use a high torque (26 ft-lbf [35 Nm]) to attach the arm to the operator axle.



Only use the provided self-locking screw. In case the screw has to be removed during repair or maintenance work, it has to be replaced by a new self-locking screw.



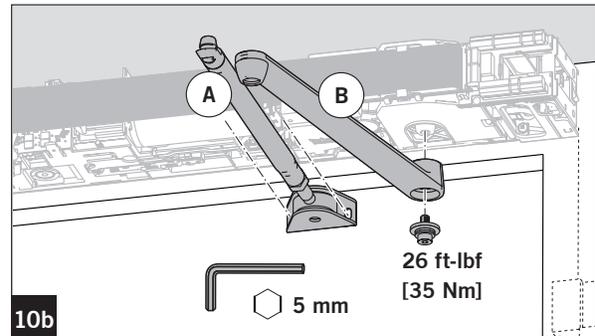
Install arm to slide channel.



b Standard arm (opposite hinge side)

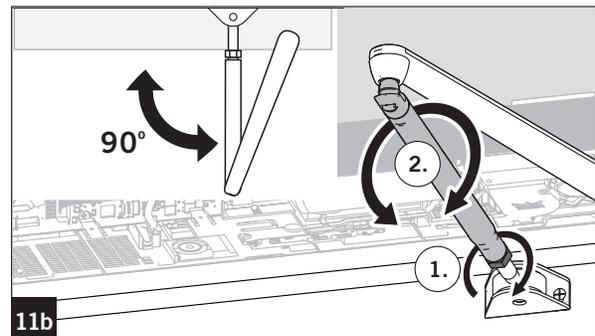
Install the adjustment screw (A) with 2 screws through the provided holes. Use a high torque (26 ft-lbf [35 Nm]) to attach the arm (B) to the operator axle.

 Only use the provided self-locking screw. In case the screw has to be removed during repair or maintenance work, it has to be replaced by a new self-locking screw.

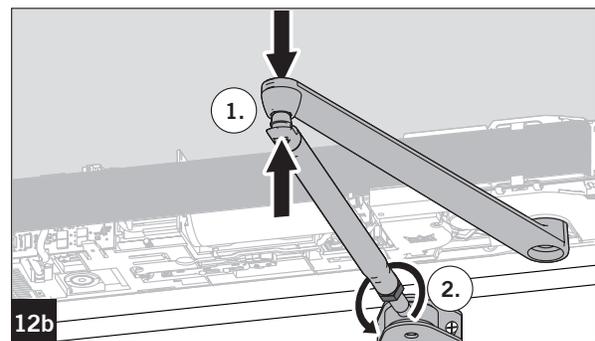


The adjustment screw must be positioned at right angles to the door leaf.

1. Loosen the counter nut at the adjustment screw.
2. Turn the adjustment screw so that it is at right angles to the door leaf when the arm is clipped together.



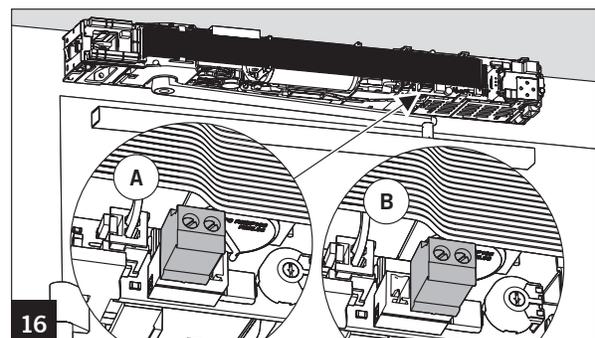
1. Press the ball head of the adjustment screw into the provided hole inside the arm.
2. Secure the adjustment screw with the aid of the hexagon nut.



Adjustment of braking circuit

1. Ensure that the power supply is switched off!
2. Insert double jumper according to the respective way of mounting.
(A) = Mounting with arm.
(B) = Mounting with slide channel.

 The brake circuit will not work if the jumper is improperly connected. The door might close at high speed and be difficult to open.



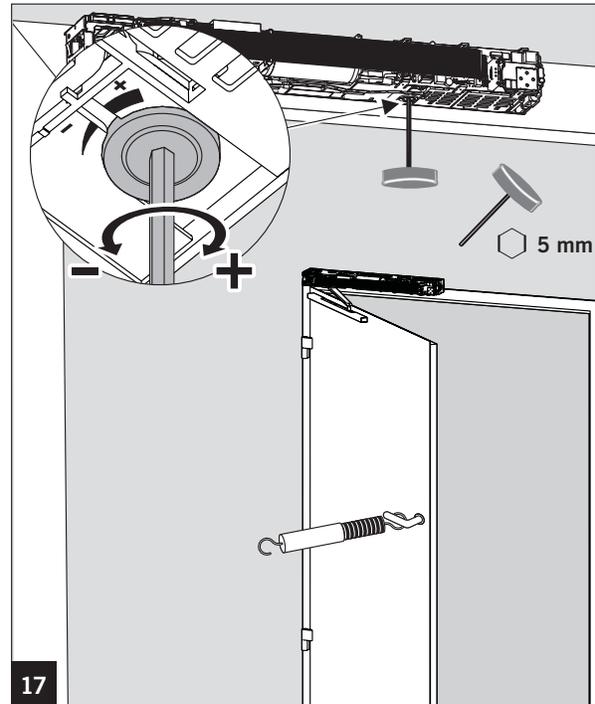
Adjustment of spring force

When the system is delivered, the spring tension needs to be lowered all the way first.

Then the spring has to be pre-tensioned - at least 10 revolutions are required to operate the system.

The system checks the spring adjustment during the learning cycle; the cycle will be interrupted if the spring is insufficiently tensioned.

A learning cycle has to be performed whenever the spring is readjusted.

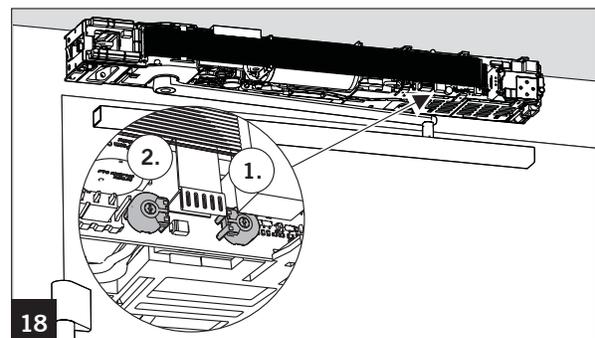


Adjustment of closing speed under power failure conditions

1. Adjust speed for area from $\sim 7^\circ$ - 0° (Latching action).
2. Adjust closing speed for area from 110° - $\sim 7^\circ$.

 **Strictly abide by the indicated order, as the adjustments depend on each other.**

 The speeds have to be adjusted in any case!
If the door requires less than 3 seconds to close, error message 73 (braking circuit test) will be emitted.



Adjustment of latching action (point of activation) while the system is de-energized (disconnected system from power supply)

By moving the micro switch, you may change the angle at which the system switches from one closing speed to the other.

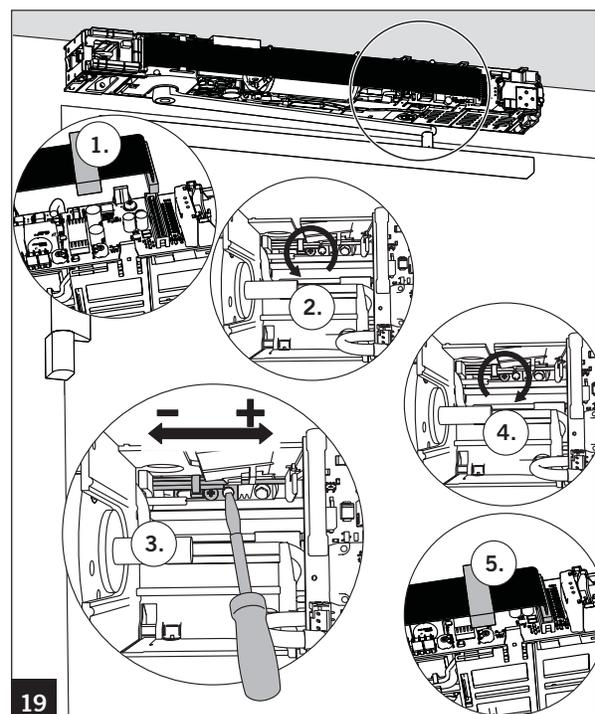
Prior to this setting, the two speeds have to be adjusted with the aid of potentiometer 1 and 2 – see picture 18.

1. Remove ribbon cable
2. Loosen screw
3. Use a screwdriver to move the plate into the desired direction.

Move the lever away from the control unit to increase the angle at which potentiometer 1 determines the speed (picture 18).

4. Tighten the screw
5. Re-connect ribbon cable

 In some cases the door has to be slowed down instead of being accelerated. In this case the plug with the red leads (coming from the micro switch for the angle recognition) has to be removed from the control unit and must be replaced by the plug with the black leads.



9. Connection diagram

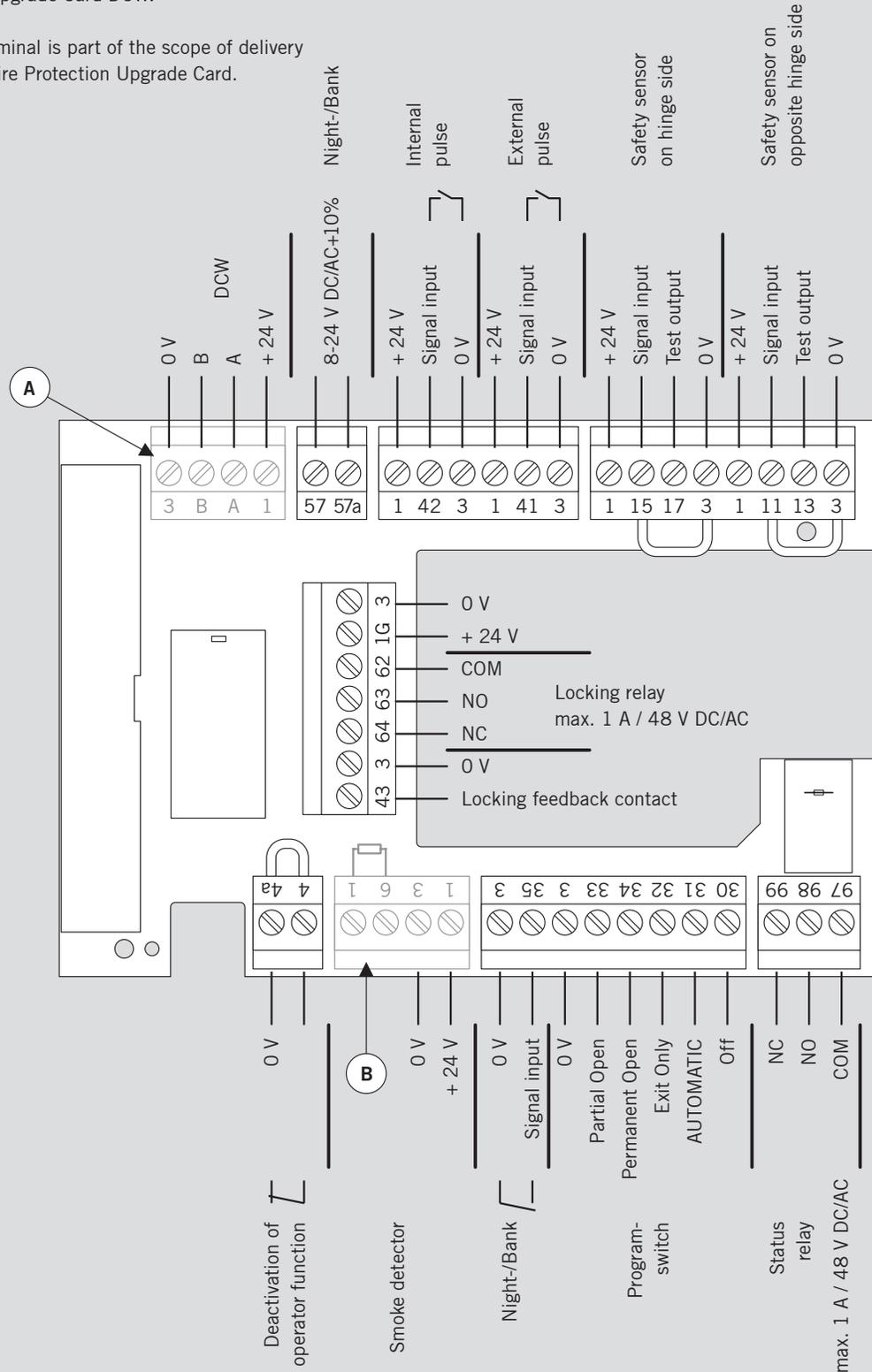
Connect the cables to the connection terminals and attach them to the PCB.

The maximum current load at terminal 1, 1G and 3 amounts to 1.5 A.

The cable length must not exceed 98' 5" [30 m] when using J-Y (ST) Y 1/32" [0.8 mm].

A This terminal is part of the scope of delivery of the Upgrade Card DCW.

B This terminal is part of the scope of delivery of the Fire Protection Upgrade Card.



10. Commissioning

The DORMA ED 100 and ED 250 are electromechanical operators. Only if the motor gear unit and the control unit work together properly, can the door open and close automatically. Thus the control unit requires certain parameters in order to achieve the best possible operating behavior.

The control unit is equipped with a user interface and an information display. With the aid of this equipment you can perform all adjustments that are stipulated on the settings list.

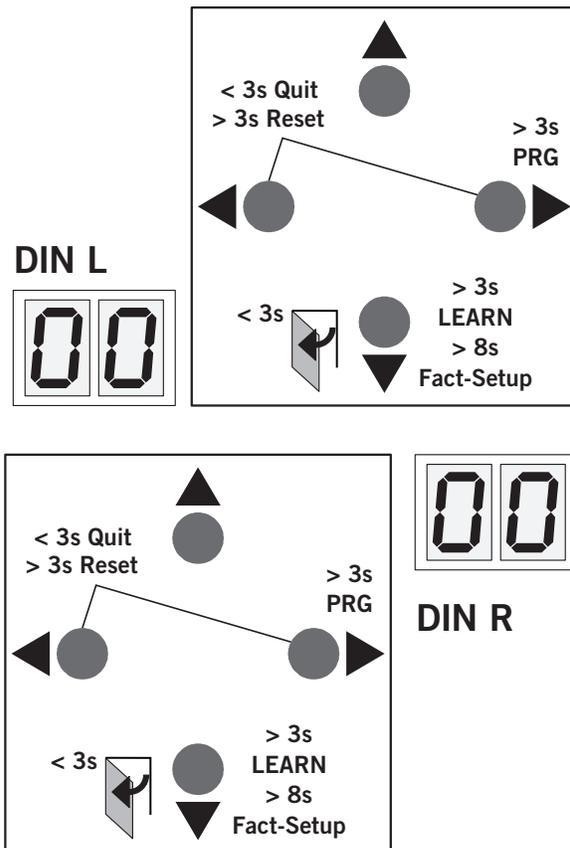
Information display

The information display is a two-digit display. It is configured during commissioning so that the display will indicate the figures and numbers correctly no matter in which direction the system is mounted.

User interface

Use the four keys to enter information. Among others, also the function of the keys is adapted to the mounting direction during commissioning. This ensures that the keys are always allocated in the same way.

You can remove and turn the key designation.



Use the keys to activate the following functions:

▼ Key at bottom

- Adjustment of mounting direction following a power reset
- Scrolling through parameters and error messages
- Reducing the parameter value Opening pulse - Activate the key for less than 3 seconds
- Learning cycle - Activate the key for more than 3 seconds (PGS Off)
- To reset system to factory settings - Activate the key for more than 8 seconds (PGS Off)

▲ Key at TOP

- Scrolling through parameters and error messages
- Increasing the parameter value

▶ Right key

- Opening the parameter menu - Activate the key for more than 3 seconds
- Changing the selected parameters
- Saving the changed parameter value

◀ Left key

- Cancelling the parameter adjustment
- Quitting the parameter menu

◀ ▶ Left and right key simultaneously

- Error acknowledgement - Activate the key for less than 3 seconds
- Reset - Activate the key for more than 3 seconds

First commissioning or after the system has been reset to factory settings

When starting with the commissioning, the operator must be completely installed and the door must be closed.

The motor needs to be cold during the subsequent learning cycle.

Switch on power supply: The display will indicate a sequence of symbols to indicate the current status.

Meaning

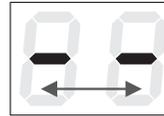
The system is being checked.

Display

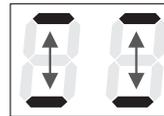
What to do



Two moving segments in the middle of the display indicate that the control unit is waiting for internal signals (max. 1 second).



Two underscores that move up and down indicate that it is now time to enter the mounting position. In case your entry was incorrect, the symbols will be displayed upside down.



Activate the key at the bottom (only required during first commissioning).



The device code "runs" through the display. ED 100 or ED 250 and the firmware version (shown by **XX XX**)

A small, rotating "o" and a "P" indicate that the system requires a further settings. (Only during first commissioning or following the system has been reset to factory settings).



The following parameters have to be adjusted: Way of mounting (AS), lintel depth (rd) and door-leaf width (Tb)

Changing the parameters

- | | | | | | |
|-------------------------------|----------|---|----|---|----------------------------------|
| 1. Open parameter menu | with key | ▲ | or | ▲ | Press and hold key for 3 seconds |
| 2. Select desired parameter | with key | ▼ | or | ▲ | |
| 3. Show parameter value | with key | ▶ | | | |
| 4. Select the value to change | with key | ▶ | | | => the value blinks |
| 5. Adjust desired value | with key | ▼ | or | ▲ | |
| 6. Store new value | with key | ▶ | | | |
| 7. Return to parameter menu | with key | ◀ | or | ▲ | |
| 8. Select next parameter | with key | ▼ | or | ▲ | |

Parameters/Display	Range	Unit factory setting = bold print	Explanation
Configuration			
Way of mounting 	0 to 1	0	Lintel mounting on hinge side with slide channel, pull-version
		1	Lintel mounting on opposite hinge side with standard arm, push-version
Lintel depth 	ED 100: -3 to 30 ED 250: -3 to 50	0	The lintel depth is indicated in steps of 25/64" [10 mm]. Consider the installation drawings to find the required dimension.
Door-leaf width 	ED 100: 7 to 11 ED 250: 7 to 15	10	The rabbet is included in the door-leaf width. The door width is indicated in steps of 3 15/16" [100 mm].

After leaving the settings mode, the display shows a small, rotating "o" and "O".



Start learning cycle.

Learning cycle

The door must be closed and the program switch has to be set to **OFF** before you start the learning cycle.

The following three parameters must have been adjusted:

Way of mounting (arm or slide channel), lintel depth and door width (See page 18 "First commissioning").



The learning cycle has to be performed while the motor is cold. You must not move the door leaf manually or hold the door open during the learning cycle; otherwise the control unit cannot determine the parameters correctly.

Safety sensors and activators are switched off during the learning cycle to ensure that the cycle is not interrupted. The movement range of the door leaf must be safeguarded manually.

Smoke detectors are activated and the operator functions are deactivated (deactivation of operator function).

Meaning

A small rotating "o" and "0" indicate that a learning cycle is required.



Display

What to do

Press and hold the lower key ▼ for 3 seconds.

The door performs several movements and the display shows a sequence of symbols.

You must not interrupt the movements of the door leaf.

The door stands at an angle of 70° and waits for the opening width to be adjusted.



Move the door to the desired "open" position and press the lower key ▼

The door performs several movements and the display shows a sequence of symbols.

You must not interrupt the movements of the door leaf.

In case the spring force is insufficient, the display will show a small rotating "o" and "F".



Increase spring force and restart learning cycle.

The door is ready for operation.



11. Upgrade Cards

DORMA Upgrade Cards are designed to improve the functional range of ED 100 and ED 250 swing door operators. During the installation of Upgrade Cards, the control unit and the Upgrade Card will exchange information and the respective Upgrade Card will be allocated to the control unit. The system can perform the desired function as long as the Upgrade Card remains installed in the operator system.

As the cards offer different functions, they are of different color so that you can distinguish one card from the other.

Possible combinations

Upgrade Card	Color	ED 100	ED 250
Full-Energy	blue	X	
Full-Energy	transparent blue		X
Fire protection	red	X	
Fire protection	transparent red		X
Professional	green	X	X
DCW	yellow	X	X

Upgrade Card Full-Energy – blue / transparent blue

As soon as the card has been activated, the complete adjustable opening and closing speed range as well as the full opening and closing force range is available.

Upgrade Card Fire Protection – red / transparent red

Following the activation of the card, the drive unit may be used as hold-open device. In addition, the Full-Energy Function is activated.

The hold-open device operates as follows:

Triggering

- The system is triggered via the DORMA RM-ED detector input with line monitoring.
- Manual triggering of hold-open device by moving the door leaf (by 10°).
- Triggering via failure of supply voltage

Display

- The red LED at the end cap on the hinge side indicates that the system has been triggered.
- The display of the system shows message In 11.

Reset

- Reset via program switch: set switch form X position to OFF.
- Reset via door leaf: open the door manually to the adjusted opening angle minus 5°.
- Reset via internal user interface: press and hold L and R key for > 3 seconds.

Upgrade Card Professional - green

You can select the following functions as soon as the card has been activated:

- Nurse-Bed Function
- Partial Open Function for double-leaf systems
- Extended hold-open time 0- 180 seconds
- Alternate action (toggle mode)

Upgrade Card DCW – yellow

You can select the following functions as soon as the card has been activated:

- External key switch ST 32x DCW
- SVP DCW motor lock function
- DCW program switch

Installation of Upgrade Cards

Please install the Upgrade Cards after the operator has been fully installed and the learning cycle has been completed successfully.

The power supply must be switched on.

Adjust program switch to OFF in order to avoid an undesired activation of the system.

The information display indicates that the system is in stand-by mode.



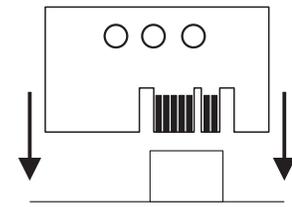
Installation of first Upgrade Card

Insert the Upgrade Card into the provided slot (see No. 9 on page 7).

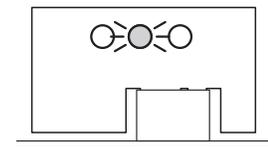
The yellow LED blinks once while you insert the card, then the green LED blinks slowly - this indicates that the two modules communicate properly.

The first Upgrade Card becomes a Container module and the green LED blinks slowly. The corresponding function is now available and ready for activation (see page 27, parameter F1 to F8).

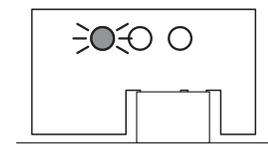
1. Remove new Upgrade Card



2. Data transfer in progress



3. System ready - the function is ready for activation.



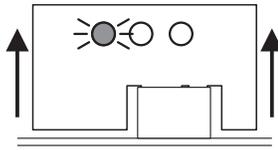
Installation of further Upgrade Cards

You can now install further Upgrade Cards.

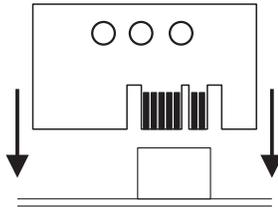
The first Upgrade Card was installed becomes the Container Module. All desired functions are available as long as the **Container Module is installed in the operator system.**

Remove Container Module and insert the next, additional Upgrade Card. The function of the card is copied into the operator system and the Upgrade Card becomes invalid. The yellow LED indicates that the procedure is complete. Then remove the Upgrade Card and plug in the Container Module. The control unit will recognize the Container Module and store the new functions on the Container Module. The system works properly if the green LED blinks slowly.

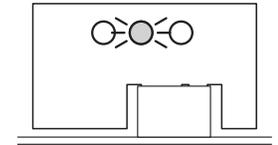
1. Remove Container Module



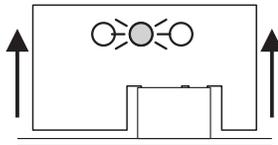
2. Insert new Upgrade Card



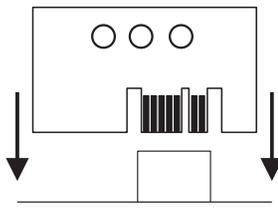
3. The Upgrade Card is now invalid



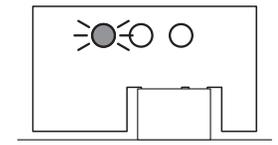
4. Remove Upgrade Card



5. Plug in Container Module



6. System ready - the function is ready for activation.



Handling of Upgrade Cards

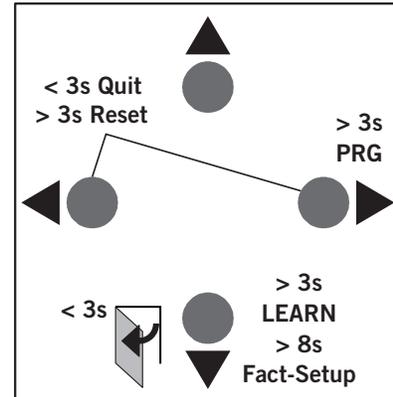
- Every control unit has only a single Container Module. This module provides all available functions.
- If the Container Module is removed, all activated functions will be deactivated after a certain period of time.
- In case the control unit has to be replaced just unplug the Container Module from the control unit and insert it into the new one. The new control unit and the Container Module will synchronize so that all functions are available.
- The system does not accept Upgrade Cards that have already been allocated to another system. The yellow LED will blink fast to indicate this error. In this case the module does not become invalid.
- If a Container Module that has been allocated to another control is connected, the system will not accept the module. The yellow and green LED will blink quickly to indicate this error. You can only synchronize a module with one control unit. You have to activate the extended factory settings to reinstall the card.
- In case the Container Module is defective, you have to use a new set of function modules.
- Three integrated LED indicate the status of the Upgrade Card. The red LED will light up as soon as DCW systems have been registered (for systems with DCW Upgrade Card) to show that DCW telegrams are being exchanged.

Application in double-leaf systems

- Professional:** If required, the Upgrade Card "Professional" is only installed at the active-leaf operator.
- Fire protection:** The Upgrade Card "Fire Protection" must be installed at both operators.
- Full-Energy:** The Upgrade Card "Full-Energy" may be installed at one operator or at both operators.
- DCW:** The Upgrade Card "DCW" is only installed at the operator where the respective DCW components are connected.
- Exception:** As soon as a DCW locking device is installed, a "DCW" Upgrade Card has to be installed at both operators.

12. Settings / Service

The operator is ready for operation with basic parameters as soon as the learning cycle has been performed successfully. The system also enables you to adapt the driving parameters to the installation conditions and to activate extended functions. It is advisable to adapt these parameters to the customer's requirements during the commissioning of the system.



Parameters/Display	Range	Unit factory setting = bold print	Explanation
Configuration			
Way of mounting 	0 to 1	0	Lintel mounting on hinge side with slide channel, pull-version
		1	Lintel mounting on opposite hinge side with standard arm, push-version
Lintel depth 	ED 100: -3 to 30 ED 250: -3 to 50	0	The lintel depth is adjusted in steps of 3/8" [10 mm]. Consider the installation drawings to find the required dimension.
Door-leaf width 	ED 100: 7 to 11 ED 250: 7 to 15	10	The rabbet is included in the door-leaf width. The door width is indicated in steps of 4" [100 mm].
Door type 	0 to 4	0	Single-leaf door
		1	Double-leaf door, active leaf, with rabbet (overlapping)
		2	Double-leaf door, passive leaf, with rabbet (overlapping)
		3	Double-leaf door, active leaf, without rabbet
		4	Double-leaf door, passive leaf, without rabbet
Driving parameters and functions			
Opening speed 	ED 100: 8 to 50 ED 250: 8 to 60 (in Low-Energy Mode reduced to 25°/sec. respectively)	Degrees / Second 25	The opening speed refers to Automatic mode. Abide by country-specific limits and check after adjustment. The full adjustable range is only available when the Upgrade Card Full-Energy is installed. You can also adjust the speed via this parameter. An internal monitoring function checks if the selected adjustments are admissible. In case the adjusted parameter exceeds the admissible value, the adjusted and the operative value are displayed alternately.
Closing speed 	ED 100: 8 to 50 ED 250: 8 to 60 (in Low-Energy Mode reduced to 25°/sec. respectively)	Degrees / Second 25	The closing speed refers to Automatic mode. Abide by country-specific limits and check after adjustment. The full adjustable range is only available when the Upgrade Card Full-Energy is installed. Also the speed can be adjusted via this parameter. An internal monitoring function checks if the selected adjustments are admissible. In case the adjusted value exceeds the admissible value, the adjusted and the operative value are displayed alternately.

Parameters/Display	Range	Unit factory setting = bold print	Explanation
Hold-open time 	0 to 30 (default setting for Low-Energy Function = min. 5 s) 0 to 180 with Upgrade Card Professional	Seconds 5	Adjust the hold-open time so that users have sufficient time to pass the door system. In case you would like to extend the hold-open time, you may adjust the time to 180 s with the aid of the Upgrade Card Professional. The hold-open time starts as soon as the contact / voltage at the following activator inputs opens / drops: internal and external activator, safety, Push & Go. The signal may be retriggered. A minimum hold-open time of 5 s is required when the system is operated in Low-Energy Mode. Values from 0 - 30 seconds are adjustable in steps of 1 second; values above 30 seconds are adjustable in steps of 5 seconds.
Night-/Bank hold-open time 	0 to 30	Seconds 10	The Night-/Bank hold-open time (key switch) can be adjusted separately. The Night-/Bank hold-open time starts when the contact at the Night-/Bank activator input is being opened and the door is open. The signal may be retriggered.
Wall blanking on hinge side 	60 to 99 99 = disabled	Degrees 80	When the door reaches the adjusted angle, the system will ignore incoming signals from the safety sensor on the hinge side. The wall blanking is required if the door opens against an obstacle. The larger the detection range of the installed sensor, the bigger the area where the system has to ignore the emitted signal. In order to ensure user safety, we would recommend selecting this area as small as possible. If the door exceeds the angle of the wall blanking while opening, a fast blinking dot will appear in the upper left corner of the display at the control unit. The display goes out as soon as the door is within the required angle.
Safety sensor test 	0 to 6	0 1 2 3 4 5 6 7	Test off: The safety sensors will not be tested. Required for systems with IRS-2 safety sensor. In combination with safety sensors complying with DIN 18650, you have to select one of the parameters from 1 to 6. The test level (low and high active) depends on the sensor and the sensor has to be adjusted to the same value. 1 Sensor test on hinge side – level: high active 2 Sensor test on opposite hinge side – level: high active 3 Sensor test on hinge side & opposite hinge side – level: high active 4 Sensor test on hinge side – level: low active 5 Sensor test on opposite hinge side – level: low active 6 Sensor test on hinge side & opposite hinge side – level: low active 7 Header mounted sensor with data line (USA) - lock monitoring not available
Activation via safety sensor on opposite hinge side 	0 to 1	0 1	The system will ignore incoming signals from the safety sensor as soon as the door is closed. 1 The safety sensor can trigger an opening pulse while the door is closed.
Delayed opening for locking mechanism 	0 to 40	100 ms 4	The delay starts as soon as the system has been activated. The door opens on expiration of the adjusted time. When the parameter is adjusted to "0" and the input for the locking feedback contact is bridged, the door will not perform the "pulling before opening" function before the system unlocks. Depending on the installed locking device and feedback contact the procedure might change.

Parameters/Display	Range	Unit factory setting = bold print	Explanation
Ease of preload prior to unlocking 	0 to 9	0	The ease of preload prior to unlocking is the force with which the door is pushed in closing direction before it opens. The respective delay for the function is determined with the aid of the parameter "Delayed opening for locking mechanism". It may be reasonable to push the door in closing direction in order to release the electric strike (if available) and thus to ensure that it opens. The higher the adjusted force, the higher is the strain on the fitting of the arm; therefore you should adjust the force as low as possible in order to ensure that the system remains operable in the long run.
Static force in opening direction (basic parameter for wind load control) 	2 to 15 (reduced correspondingly with Low-Energy Mode)	2.25 lbf [10 N] 6	You can adjust the forces that impact on the closing edge via this parameter. An internal monitoring function checks if the selected adjustments are admissible. In case the adjusted parameter exceeds the admissible value, the adjusted and the operative value are displayed alternately. Due to system tolerances, the actual force at the door leaf has to be measured and changed (if required) following the automatic learning cycle in order to ensure compliance with local standards and regulations.
Static force in closing direction (basic parameter for wind load control) 	2 to 15 (reduced correspondingly with Low-Energy Mode)	2.25 lbf [10 N] 6	You can adjust the forces that impact on the closing edge via this parameter. An internal monitoring function checks if the selected adjustments are admissible. In case the adjusted parameter exceeds the admissible value, the adjusted and the operative value are displayed alternately. Due to system tolerances, the actual force at the door leaf has to be measured and changed (if required) following the automatic learning cycle in order to ensure compliance with local standards and regulations.
Latching action 	0 to 9	0	Apart from the mechanical latching action, the Automatic function also offers a motor-driven latching action. The motor-driven latching action is designed to overcome door seals or locking devices. Adjust a low parameter value and increase the value step by step in order to avoid damage to the door system. You must ensure that the door itself as well as the arm and the slide channel fitting are suitable for the additional permanent forces. In case you are not sure, we would suggest selecting the lowest possible adjustment.
Angle of latching action 	2 to 10	Degrees 3	The angle of the latching action determines the opening angle at which the motor-driven latching action is activated.
Keep-closed force 	0 to 9	0 = off 1 to 9 = on	The keep-closed force is always adjusted after the latching action and designed to keep the door in its "closed" position – even if wind acts on the door. The keep-closed force (parameter FH) is adjustable from 0 (off) to 9 (maximum).
Push & Go 	0 to 1	0 = off 1 = on	When the function is activated, an automatic opening cycle is triggered as soon as the door is moved manually by 4° from its "closed" position into opening direction. In order to activate this function, also the "hd" value (see page 27) has to be adjusted to 0.
Program switch type 	0 to 2	0	The internal program switch is activated.
		1	An external program switch is connected to the PCB. You have to remove the connection of the internal program switch.
		2	An external DCW program switch is connected to the PCB. You have to remove the connection of the internal program switch.

Parameters/Display	Range	Unit factory setting = bold print	Explanation
EPS DCW Behavior following a power reset 	0 to 1	0	In the event of a power failure or if the operator is switched off deliberately, the program switch will automatically switch to the previously adjusted function as soon as the power supply returns. Please note that the time when the power supply returns might not be within the business hours and thus has an influence on the insurance compliant locking.
		1	In the event of a power failure or if the operator is switched off deliberately, the program switch is automatically adjusted to OFF position as soon as the power supply is available. This function is to be used if an insurance-compliant locking is required.
Internal program switch – delayed activation 	0 to 1	0	The operator will perform the function of the internal program switch as soon as the switch has been moved.
		1	After the internal program switch has been moved, the system will perform the adjusted function with a 10-second delay. This function is reasonable if the user has to pass the door and the connected standard detectors after the function has been adjusted. An additional Night-/Bank activator is not required.
Unlocking during business hours 	0 to 1	0	The door is always locked while it is in "closed" position.
		1	The door does not lock when the door reaches "closed" position while the system is adjusted to Automatic Function. The locking feedback contact remains permanently switched. This achieves faster opening features when the system is equipped with motor locks. The electric strike must be rated for continuous duty of 100% in order to avoid damage.
Function of status relay 	0 to 3	0	The status relay is deactivated.
		1	The status relay is switched as soon as the door has reached the adjusted "closed" position.
		2	The status relay is switched as soon as the door has reached the adjusted "open" position.
		3	Malfunction: All malfunctions displayed as messages on the internal display will be emitted via the output of the status relay.
Triggering the hold- open function by closing the door leaf 	0 to 1	1	Function activated: If the operator is used as a hold-open device, moving the door leaf manually by 10° (+/- 2°) in closing direction from the taught hold-open position may trigger the hold-open function. No manual release pushbutton is required.
		0	Function de-activated: If the operator is used as a hold-open device, a manual release pushbutton must be installed to trigger the function.
De-activation of operator depending on contact setting (NO/NC) 	0 to 1	0	NC contact The operator is de-activated while the contact is open. This contact setting is required for lock switches with changeover or NC contact.
		1	NO contact The operator is de-activated while the contact is closed. This setting is required for lock switches with NO contact.
Night-/Bank Function depending on contact setting (NO/NC) 	0 to 1	0	NO contact The Night-/Bank Function is triggered while the contact is closed. DORMA suggests this contact setting for systems with a key switch or access control system.
		1	NC contact The Night-/Bank Function is triggered while the contact is open. This contact setting is frequently used to control systems with smoke and heat extraction systems or building management systems.

Parameters/Display	Range	Unit factory setting = bold print	Explanation
Diagnosis			
Cycle counter 	0 to 99	10,000 cycles	The number of cycles is displayed in steps of 10,000 cycles. For example: Display shows 4 = 40,000 cycles, display shows 53 = 530,000 cycles. You can read out the exact number of cycles with the aid of the DORMA hand-held terminal. A value of 99 on the internal display means that the actual number of cycles amounts to 990,000 or beyond.
Deletion of error log 	0 to 1	0	No function
		1	The error log is being deleted. Then the parameter is automatically adjusted to 0.
Reset of service interval display (yellow LED) 	0 to 1	0	No function
		1	The service cycle counter and the elapsed-time meter are reset to 200,000 cycles and 12 month. You require the DORMA hand-held terminal to adjust another value. (also see function of Service-LED)
Level of factory settings 	1 to 2	1	Standard Factory Settings: All parameters are reset to factory (original) settings; already installed Upgrade Cards remain valid and do not require reinstallation.
		2	Extended Factory Settings: During the next reset to factory (original) settings, not only the standard settings but also the installed Upgrade Cards are deleted from the control unit. Reset power supply to start the control unit. Now the control unit and the Upgrade Card may be used independently (delivery status). Then the parameter is automatically reset to 1.
Opening angle 	0 to 110	Degrees	Here the system displays the opening angle that has been adjusted during the learning cycle. This setting can only be adjusted via a learning cycle. Due to mounting and parameter tolerances, the display may vary from the actual position of the door.
Door closer/ Automatic Mode 	0 to 1	0	The Automatic function is especially suitable whenever the door is mainly opened automatically and where motion detectors are installed. In case the door is blocked during a closing cycle, the operator will reverse automatically. The driving phase is optimized to ensure reliable closing cycles. Wind load control and Push & Go Function are only available in AUTOMATIC mode.
		1	The door closer mode is especially suitable whenever the door is mainly used manually and only rarely opened automatically. In case the door is blocked during a closing cycle, it will stop at its current position. The door's driving phase is optimized for manual opening cycles. Power Assist Function is only available in door closer mode.
Activation angle for Power Assist Function 	1 to 5	Degrees 3	Adjustment of activation angle for Power Assist Function: The lower the value the more sensitive the Power Assist Function will respond.
Power Assist Function (force adjustment) 	0 to 10	0	Force adjustment for Power Assist Function: The higher the adjusted value, the easier it is to open the door manually. The function is de-activated when the value is adjusted to 0. The Power Assist Function is only available while the door is in door closer mode (hd = 1). Please note that the door may open unintentionally, if the Power Assist support is adjusted too high.

Parameters/Display	Range	Unit factory setting = bold print	Explanation
Upgrade Cards			
Upgrade Card fire protection 	0 to 3		
Upgrade Card Full-Energy 			
Upgrade Card PROFESSIONAL d 			
Extended hold-open time 			
Nurse-Bed- Function 			
Upgrade Card "restroom for the handicapped" 			
Upgrade Card DCW 			
0			
1	available, but not activated		
2	activated		
3	Upgrade Card has been removed, therefore the function is no longer available.		
Miscellaneous			
Configuration of COM1 interface (see connector) 	0 to 2	0	Operation via hand-held The interface is programmed for communication with the DORMA hand-held.
		1	DORMA debugging service (internal analysis module)
		2	DORMA remote service (internal test module)
Backcheck when the door is opened by hand 	5 to 20	10°	Enter the angle from which the door will be decelerated when it is opened by hand. The stipulated value is deducted from the adjusted opening angle. For example: Opening angle: 90° Backcheck parameter (bc): 12° => Backcheck starts at 78°
Thickness of door 	0 to 80	0"... 1 3/8"... 3 19/128" [0... 35... 80 mm]	The thickness of the door also has an influence on the measured opening angle. If a more detailed value is required, you may enter the exact thickness of the door.
Castor angle for double-leaf doors 	0 to 30	0...30°	Here you can adjust the angle the active leaf must have reached before the passive leaf starts its opening cycle.
Hinge clearance 	+5 to -5	3	The hinge clearance determines the door angle. Although this only has little effect, the clearance may be adjusted to increase the accuracy in extreme cases. The original setting of parameter HS is "3" for 1 3/16" [30 mm]. With center-pivoted doors, the setting must be changed to a negative value. Then you have to perform a learning cycle as the system creates a table with the respective angles, which is based on the adjusted parameters.

13. Diagnosis / Troubleshooting

DORMA operators meet high safety standards and fulfill all required technical rules and requirements. The system monitors internal as well as external safety circuits that are governed by the operator.

While the operator is in use, certain situations might cause error messages. The operator tries to find the reason for the error and responds accordingly. The reaction depends on how severe the error was and may vary from a simple notification to the deactivation of the Automatic Function. In this case the operator will switch to emergency operation and act like a door closer. Users may access the door manually. Information "In" and error messages "E0"... "E9" are displayed on the user interface display and by the red LED at the internal program switch. The LED emits a blink code that is to be found in the error code table.

Error messages "E0" ... "E9" are stored in the error log and can be read out at the user interface display or with the aid of the DORMA hand-held terminal. The current (latest) error message is always stored as error message E0.

As soon as another error occurs or after the error has been acknowledged, the former error will become error E1.

Thus a total of not more than 9 errors can be stored in error memory E1 – E9. If the same error occurs several times in a row, it will not be stored anew.

Press ► for a short time in order to select error messages E0 ... E9.

Handling "In" information

The provided information is designed to enhance the service friendliness of the operator and indicates faulty system statuses as well as operating statuses that interrupt the Automatic Function of the operator.

For example:

In08 -> The Emergency Off pushbutton has been activated and thus the operator does not perform Automatic functions.

In01 -> The system is blocked and the operator continues operation.

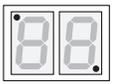
If an info message occurs several times, it might be modulated into an error message.

Handling error messages "E0" ... "E9"

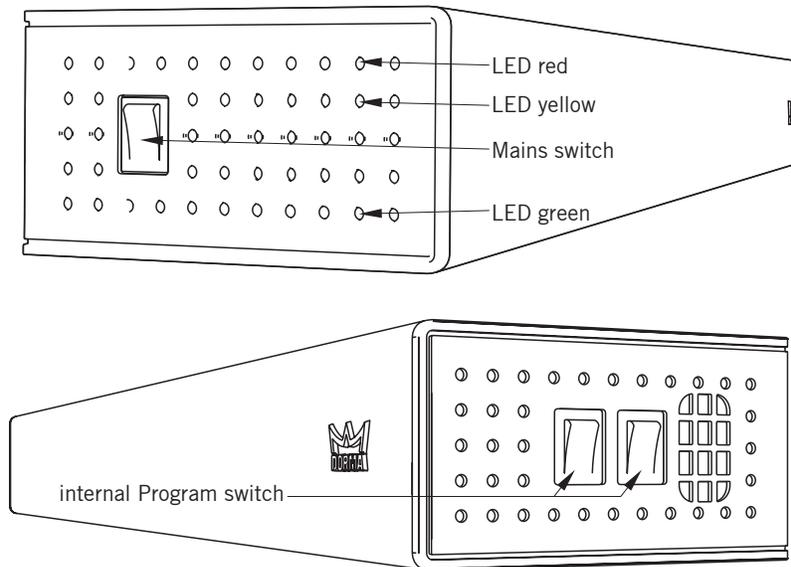
Error messages are an indicator for defective hardware. However, improper mounting and the manual use of the door system during safety tests may cause error messages so that the system switches to emergency operation. You have the following options to reset errors:

1. Set program switch to OFF or reset the system via the Reset button of the user interface while the cover is open.
2. Power reset. Switch off mains switch then wait ten seconds before you switch it on again.

Always analyze and remove the cause for the malfunction before you acknowledge the respective error message. The following table is designed for your assistance.

Malfunction	Possible reason	Remedy
The door can only be used manually or the door does not open automatically after an opening pulse has been emitted.	Check the green LED. In case the green LED is not on, there is a problem with the power supply.	The mains switch must be switched on. Check and restore power supply if required. In case the power supply is properly connected and activated and no 24 V DC power supply is available, the power supply unit has to be replaced.
	Check the red LED. In case the red LED at the main switch blinks, the control unit has detected a malfunction and the system now operates in emergency mode.	You will find troubleshooting instructions in the following list: Information and error messages.
	The program switch is adjusted to OFF or EXIT ONLY.	Adjust program switch to AUTOMATIC or PERMANENT OPEN.
	The safety sensor on the hinge side has emitted a signal and thus the door does not open.	The signals of the safety sensors are indicated via the two decimal points on the LED display of the user interface. The respective decimal point illuminates if the sensor has detected something. Check the wiring and the sensor for proper functioning. If the LED in the upper left corner blinks, the wall blanking is activated – the blinking does not indicate an error. 
During installation: It is extremely difficult to open the door manually and the door closes at high speed.	The jumper of the braking circuit is positioned incorrectly.	The jumper has to be positioned according to the correct type of arm. See picture 16 on page 15.

Malfunction	Possible reason	Remedy
The system does not start the learning cycle.	The program switch is adjusted to the wrong position.	Set program switch to OFF.
	Signal 4/4a (deactivation of operator function) is activated.	Check cabling of smoke detector or interrupt signal at 4/4a.
The internal/external program switch does not work properly or faulty.	The parameter for the program switch type is adjusted incorrectly.	Adjust the parameter for the installed program switch type properly.
	The cable of the internal program switch is not connected.	Check and connect cable if required.
	Faulty connection/defective switch.	Check the wiring and the function of the switch.
The door opens automatically, however, it does not respond at all or only after a sustained period of time.	The hold-open time is adjusted too long.	Reduce corresponding parameter.
	The program switch is adjusted to PERMANENT OPEN.	Change program switch position.
	The safety sensor on the opposite hinge side has emitted a signal and thus the door does not close.	The signals of the safety sensors are indicated via the two decimal points on the LED display of the user interface. The respective decimal point illuminates if the sensor has detected something. Check the wiring and the sensor for proper functioning. If the LED in the upper left corner blinks, the wall blanking is activated – the blinking does not indicate an error.
	One of the connected activators emits a signal so that the door cannot close.	Check the wiring of the connected activators. A NO contact has to be installed. Signal input 57/57a may be operated with external voltage. Signal input 35, 57, 42 and 41 must be removed one after the other in order to localize the error.
The driving speeds vary heavily from the adjusted parameters.	The learning cycle has been performed while the motor was hot, therefore the system has calculated an incorrect door-leaf weight.	Restart learning cycle while the motor is cold.



14. Error messages

Display	LED indicator	Meaning / Cause	Troubleshooting
In 01	none	<p>Obstruction</p> <p>The door is obstructed by an obstacle and the operator-driven door cycle has been stopped.</p>	<p>Check the movement of the door while the system is de-energized and remove cause for unsmooth running. If a defective door is operated over a sustained period of time, the operator might be damaged. Users who access the door system are often the reason for blockings. This may be due to the fact that the detection range of the sensors does not fit to the opening speed of the operator and thus users will always get in contact with the door while they pass the door system. In this case you should increase the detection range of the sensors and/or the opening speed of the operator. Test/prove system efficiency by using the door system.</p>
In 03	none	<p>Temperature Management Program activated</p> <p>The TMP is designed to prevent the operator system from overheating. It responds to an overload of the operator system in different ways: It may reduce the driving dynamics if the nominal load is exceeded, increase the hold-open time or switch on the integrated fan if the system is heavily used.</p>	<p>Check and improve heat transmission if required. Avoid direct sunlight. Make sure that there is sufficient space between the system and external heat sources, air curtains and hot water pipes. Check if the heat conductive pads have been removed during the mounting of the system (see picture 6 on page 13).</p>
In 08	none	<p>Deactivation of operator function</p> <p>Contact 4/4a is open. The operator switches to emergency operation and the door can only be accessed manually.</p>	<p>An emergency pushbutton, a lock switch or another safety system may be connected via the input. Either this system has actually triggered a signal or it is defective. Reset the activation. The operator will automatically start operation. If this is not the case, please check the cabling and the systems that have caused the malfunction.</p>
In 09	none	<p>Signal error of Upgrade Card</p> <p>The installed Upgrade Card has been removed or in case of two Upgrade Cards, the one that has been installed first (Container Module) has not been plugged in again.</p>	<p>Installed Upgrade Cards have to remain connected to the control unit permanently and must not be removed. If several Upgrade Cards are installed, the first Upgrade Card that was plugged in will become the Container Module. This card finally has to be reconnected to the control unit. See chapter Upgrade Cards.</p>
In 11	The red LED illuminates	<p>Triggering of hold-open device</p> <p>The hold-open device has been triggered.</p>	<p>The hold-open device can be triggered automatically via the smoke detector or manually via a manual release pushbutton or by moving the door leaf. According to DIN 18263-4, the system must be reactivated via an active process. Depending on the configuration of the system, the device is reactivated if the door is opened manually to the learned opening angle, the PGS is switched to OFF, or if the system is reset via the keys ◀ and ▶ the internal control panel. Pay attention that the smoke detector has not triggered a signal. In case the reset was not successful, the smoke detector connection might be defective and the system requires inspection by qualified staff.</p>

Display	LED indicator	Meaning / Cause	Troubleshooting
In 23	none	Door locked signal The door is blocked while in “closed“ position. The door cannot be opened.	This error mainly occurs because the door is locked. You can avoid this error by installing a lock switch. The lock switch recognizes the switching status of the lock bolt and will switch the operator off if required. We recommend installing a lock switch as the operator or the door might be damaged if the operator permanently tries to open the door although it is locked.
In 61	none	Communication error of double-leaf systems The two operators do not communicate properly as their communication is interrupted.	Check the linking cable of the two operators. First perform a visual inspection; then check if the suitable control unit interface is used.
In 72	none	Current measuring circuit The system could not successfully perform the cyclical test of the internal current measuring circuit.	System tolerances and environmental conditions affect the current measuring. Thus the test is not always successful at first try. In this case the system displays an information message. The test might for example fail if someone uses the door manually while the test is in progress. In this event the test will be repeated automatically.
In 73	none	Braking circuit test The cyclical test (performed every 24 hours) of the internal braking circuit has failed.	System tolerances and environmental conditions may affect the braking circuit test. Thus the test is not always successful at first attempt. In this case the system displays an information message. The test might for example fail if someone uses the door manually while the test is in progress. In case the test fails 10 times in a row, the system will emit error message E 73.
In 91	none	DCW communication At least one of the registered DCW devices is missing.	Reconnect the respective DCW device. In case this is not possible, a restart has to be performed. Press and hold both the ◀ and the ▶ key at the internal control panel for at least 3 seconds.
E 02	2 blinks	Error of locking device The operator tries to open or close a locking device with feedback contact or a DCW locking device. An error has occurred during this process.	In this case it is likely that the locking device is defective or that the wiring has been performed incorrectly. The locking feedback contact must be checked and replaced if required.
E 04	4 blinks	Safety sensor test error The test of the moving safety sensors failed. The system sends a test signal to the corresponding sensor before every opening or closing cycle and waits a certain period of time for the sensor to respond.	First you have to check if the parameter for the “safety sensor test“ has been adjusted according to the respective equipment. Then check if the test has also been activated at the sensors and has the same level. The test is switched off when the sensors are delivered.
E 10	10 blinks	Interruption of motor connection The door closer mode is not available as the system cannot brake due to the interruption.	The error may be due to a defective motor or short-circuit in the electric circuit of the locking device. Always replace the motor-gear unit when the motor is defective.
E 12	12 blinks	EEPROM error The internal memory test failed. The operator is in door closer mode.	You can try to upload the current firmware in order to re-initialize the system. Replace control unit if this fails.
E 13	13 blinks	Overcurrent recognition More current is withdrawn than the power supply unit can provide.	The motor consumes too much current or the control amplifier is defective. In case this error message appears frequently, the components of the motor gear unit and/or control unit must be replaced.
E 15	15 blinks	Faulty learning cycle The system could not complete the learning cycle.	This error may occur if the learning cycle has been interrupted, for example if the door has been manipulated during the testing process. The learning cycle has to be restarted.

Display	LED indicator	Meaning / Cause	Troubleshooting
E 51 E 52 E 53	5 blinks	Incremental encoder error The monitoring feature of the incremental encoder has detected a faulty status.	In the event of an error, always check the plug connection at the incremental encoder and the motor and make sure there is no short-circuit at the electrical circuit of the locking device. Replace the motor-gear unit if you cannot detect any of the above-mentioned errors.
E 62	6 blinks	The firmware version of the second system is not suitable for double-leaf operation.	Install the same firmware version at both control units.
E 63	6 blinks	The fire protection setting of the second system is not compatible.	Both control units of a double-leaf system require installation of a Fire Protection Upgrade Card.
E 71	7 blinks	System error 1 (2. shutdown option) In order to be able to deactivate the operator safely at any time several control elements are required. These elements will be tested at cyclical intervals for proper functioning.	In case the test fails permanently, the control unit has to be replaced.
E 72	7 blinks	System error 2 (current measuring circuit) The current measuring circuit is part of the safety equipment and will be tested in cyclical intervals for proper functioning. The operator is in emergency mode.	In case the test fails permanently, the control unit has to be replaced.
E 73	7 blinks	System error 3 (braking circuit) As safety system, the braking circuit is tested in cyclical intervals. It is activated while the system is in door closer mode. Test procedure: the motor is switched off during the closing cycle and the door moves until it has reached an adjusted angle. The test might be noticeable as a short jerk on the door leaf and is no reason for complaint.	The door closes too fast (within less than 3 seconds) while the system is de-energized (disconnected from power supply). Check and decrease closing speed, if required (see page 16, picture 18: potentiometer adjustment). In case the test fails permanently, although the closing speed is properly adjusted, the control unit has to be replaced.

15. Mounting continued

End stop adjustment for systems with slide channel

The end stop has to be adjusted so that the adjusted opening angle cannot be exceeded when the door is pushed manually in opening direction.

1. Set program switch to PERMANENT OPEN.
 - The door opens until it has reached the adjusted opening width.
2. Move the buffer and the end stop until they are located $3/16"$ [5 mm] from the sliding shoe.
3. Fix end stop thoroughly with screws.

We would recommend to install a door stop.



A door stop must be installed when the system is operated with standard arm.

Position operator cover and push until you can hear it snapping in.

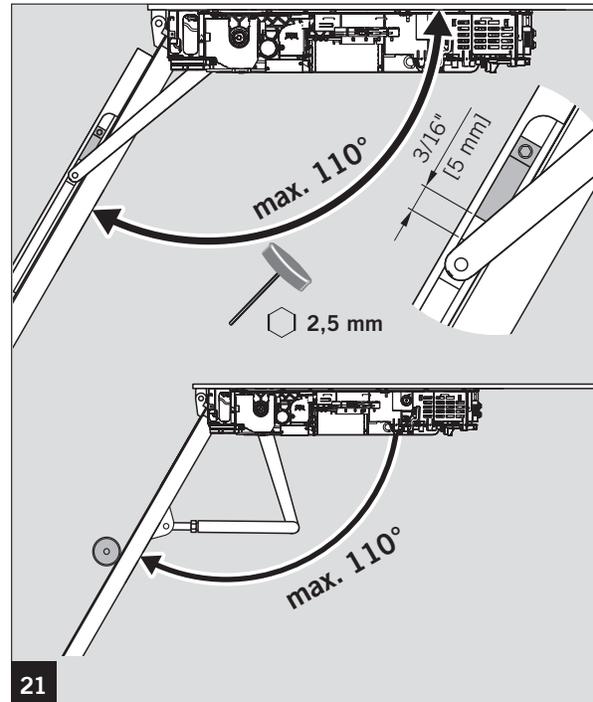


Pay attention not to pinch any cables.

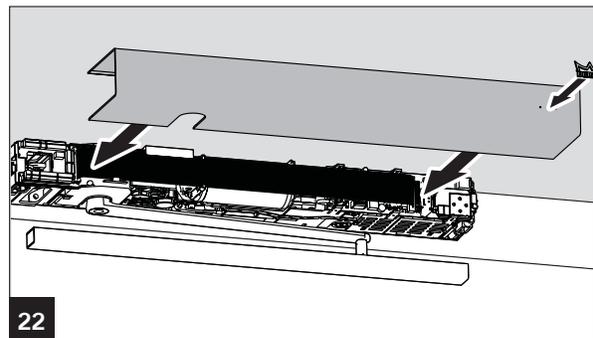
Install axle cover.

Install end caps.

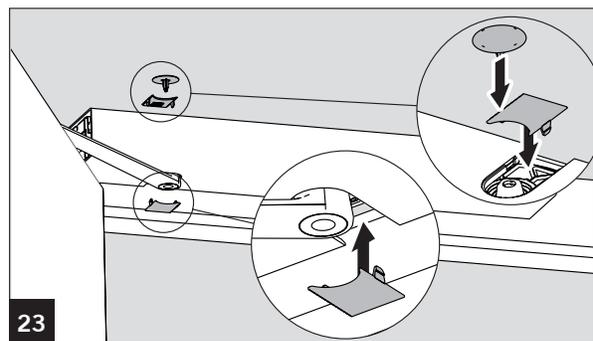
On the side of the program switch, the depth is variable via notches in order to compensate minor length tolerances of the cover.



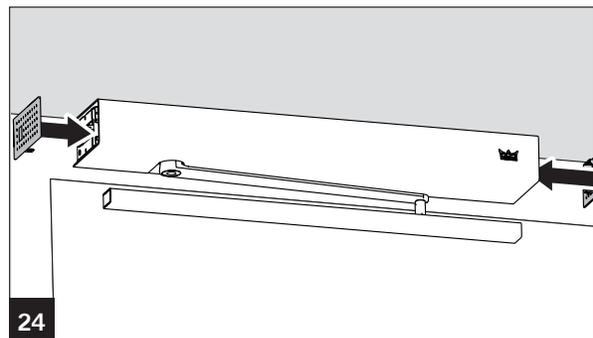
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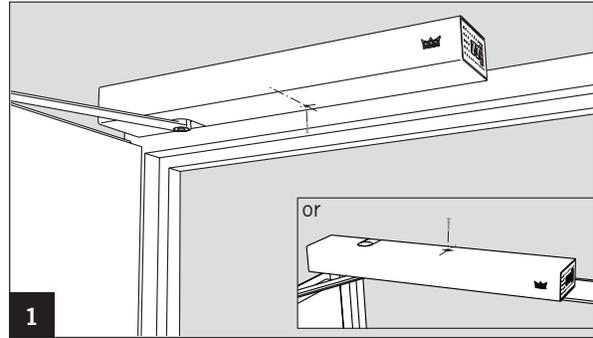


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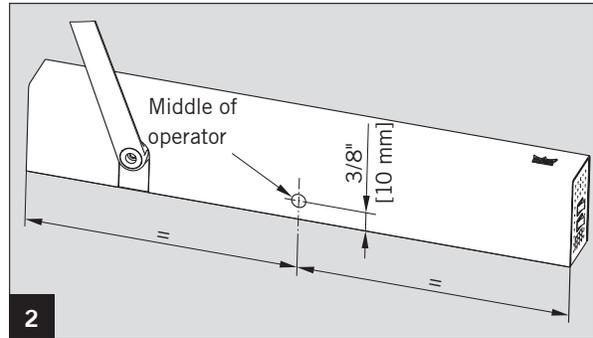
16. Cover and end cap securing screws

The cover and power side end cap must be secured with a fastener to be compliant to UL 325 and CSA C22.2 No. 247.

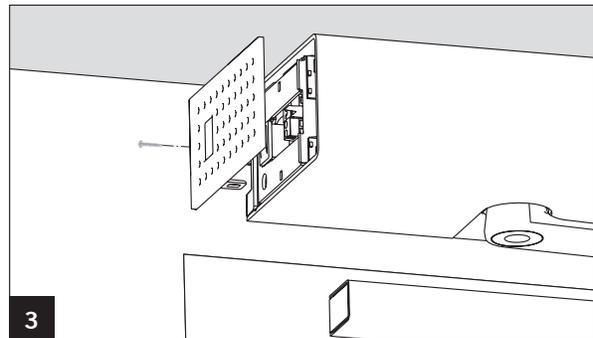
Drill for self threading screw with pan head
drill size 31 (0.12")



1



2



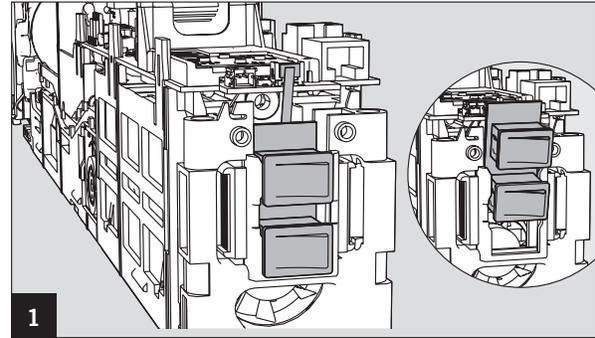
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17. Option: Double-leaf door

The following steps have to be performed in addition to the information mentioned in the mounting instructions:

Remove the PCBs with the internal program switches from both operators.

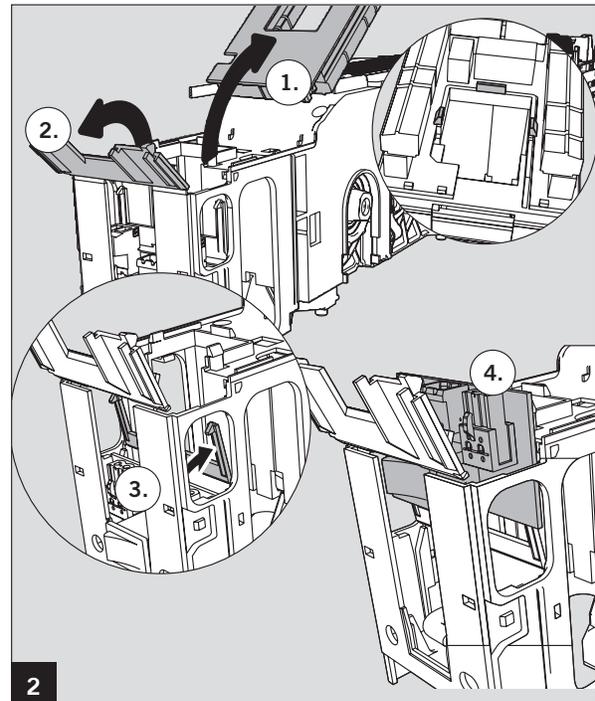
First remove the connection cable, then move the PCB upwards and pull it out.



Remove the mains switch from the operator that is not installed at the side where the power supply is connected.

1. Push the 3 brackets inwards in order to remove the connection unit.
- 2-3. Then open the two covers above the mains supply PCB and remove the connectors.
4. Pull out the mains supply PCB.

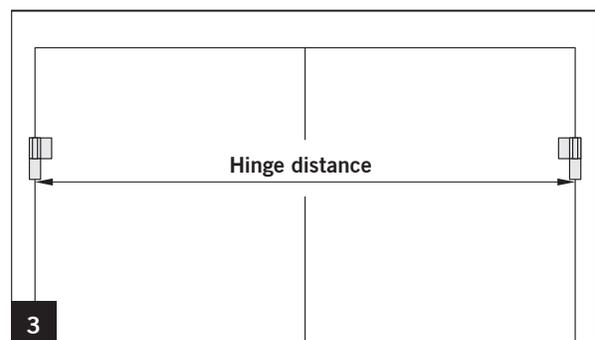
Close the two covers and connect the connection unit.



Assembly of mounting plates

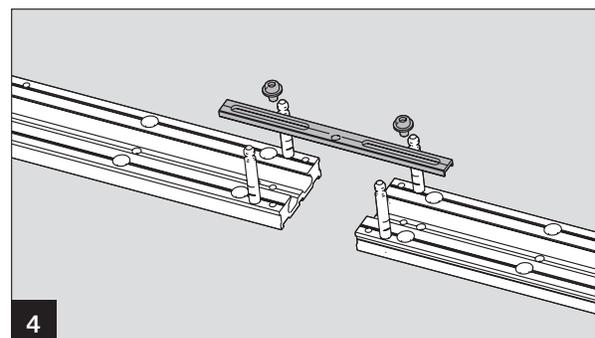
There are 3 ways to connect the mounting plates. The suitable way of mounting depends on the prevailing distance between the hinges.

Hinge distance:	connection version
55 1/8" to 55 11/16" [1,400 to 1,415 mm]	"A"
55 3/4" to 58" [1,416 to 1,475 mm]	"B"
more than 58" [1,476 mm]	"C"



Connection version "A"

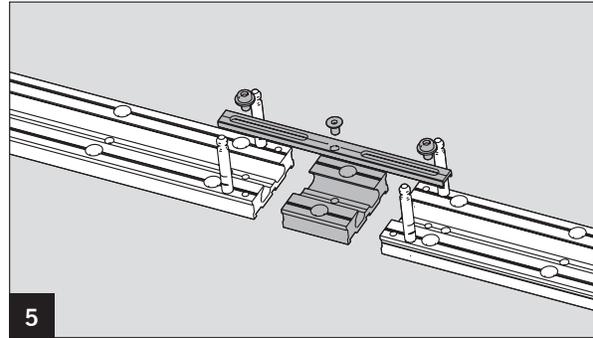
Hinge distance: 55 1/8" to 55 11/16" [1,400 to 1,415 mm]
Use the long connection piece.



Connection version "B"

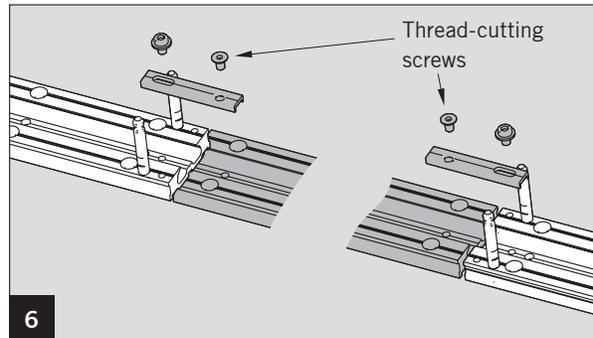
Hinge distance: 55 3/4" to 58" [1,416 to 1,475 mm]

Use the long connection piece and the small intermediate plate.

**Connection version "C"**

Hinge distance: more than 58" [1,476 mm]

Use the two short connection pieces and the intermediate plate (cut to the proper length).

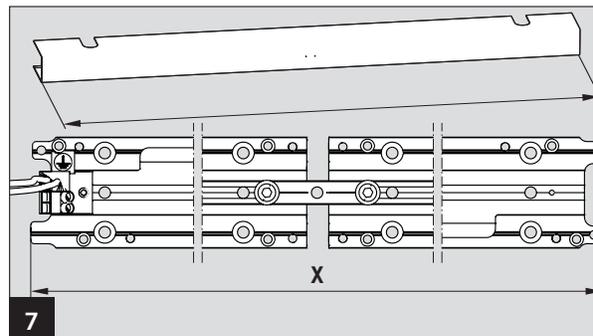


Assemble and align the mounting plates and the intermediate plate on a level surface.

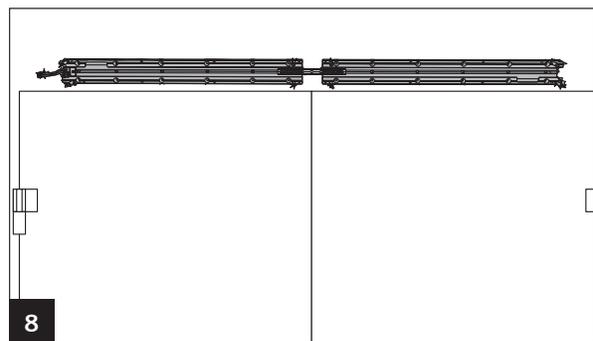
Measure the length of the cover and determine the total length for the assembled mounting plates with the aid of the following formula:

Length of cover - 91 = X (see picture)

HINT: First assemble the mounting plates, then mount the operators and check if the cover fits.

**Mounting of mounting plates**

1. Use the respective drilling template to drill the required attachment holes (see pages 9-11)
2. Install both mounting plates with at least 12 screws through the provided holes.
Use adequate inserts and fasteners in accordance with the substructure to attach the mounting plate.
3. Connect the 115 V power supply (See picture 5 on page 13).

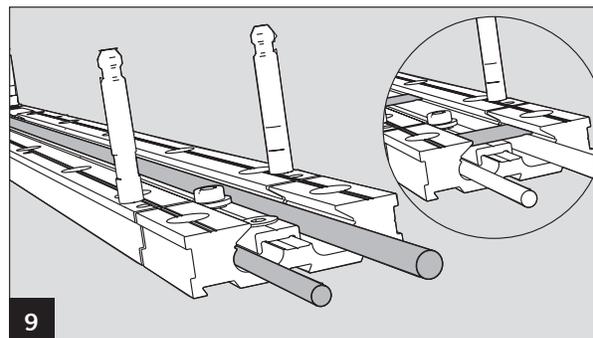


Lay the mains cable for the second operator and, if required, the program switch cable inside the groove of the mounting plates and route the cables with the provided small plastic pads.

If you want to equip your system with an ESR, you have to install it at this point (see installation instructions ED100/250 ESR WN 057380-45532).

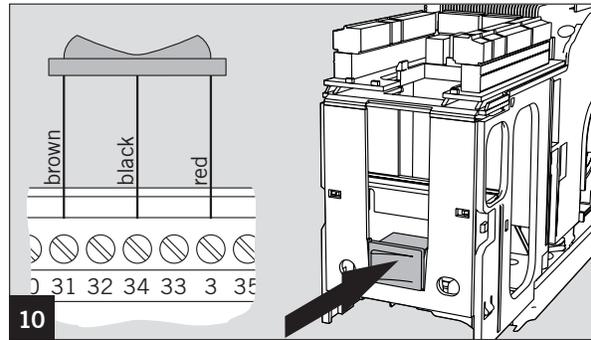
Mount both operators.

See "Mounting instructions" starting on page 13.

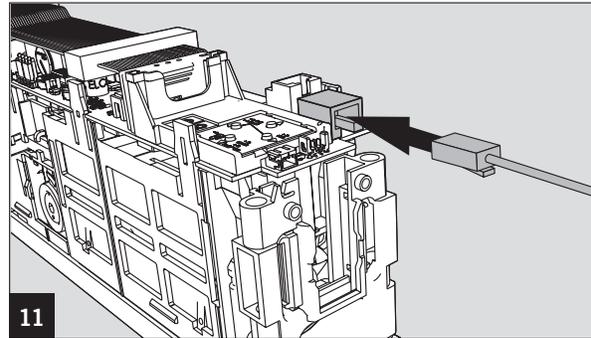


Insert (clip) the new program switch into the provided slot where you have removed the mains switch.
Connect the program switch to the passive-leaf operator.
It is connected at the connection unit. Use the terminals for the external program switch.

If the program switch is installed on the passive-leaf operator, the connection cable has to be cut to length (shortened).
In this case install ring connectors at the ends of the cables.



Connect the enclosed linking cable to the two "horizontal" connectors on the control unit.



Connect the mains cable of the second operator.
1. At the active leaf.



2. At the passive leaf.



Commissioning of a double-leaf system

1. Put the active leaf into operation. (See "Commissioning instructions" starting on page 18.)
2. Following the learning cycle, adjust the program switch to PERMANENT OPEN.
3. Put the passive leaf into operation. (See "commissioning instructions" starting on page 18.)
4. Additional settings:
 - At active leaf:
Adjust parameter >dL< (Door type) to "1".
Adjust parameter >Ad< (Castor angle) to the desired value.
 - At passive leaf:
Adjust parameter >dL< to "2".



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DL 3463-010

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