

ED100/ED250

Automatic Swing Door Operators
Installation in Surface Applied Header

Service Manual

DL4614-050 – 08-2018

| EN |

dormakaba 

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1 General information

1.1 Service Manual

This manual provides service information for ED100/ED250 automatic swing door operators.

1.2 Manual storage

This document must be kept in a secure place, and accessible for reference as required. If the door system should be transferred to another facility, insure that this document is transferred as well.

1.3 dormakaba.com website

Manuals are available for review, download, and printing on dormakaba.com/us website.

1.4 Dimensions

Unless otherwise specified, all dimensions are given in inches (").

1.5 Symbols used in these instructions.



WARNING

Electric shock hazard!



WARNING

Hand pinch point and crushing hazards!



WARNING

Crushing hazards!

1.5 Symbols used in these instructions.



WARNING

This symbol warns of hazards which could result in personal injury or threat to health.

NOTICE

Draws attention to important information presented in this document.

CAUTION

This symbol warns of a potentially unsafe procedure or situation.



TIPS AND RECOMMENDATIONS

Clarifies instructions or other information presented in this document.

2 Product Description

2.1 Intended use

- ED100/ED250 automatic swing door operators are designed to be installed on an interior building surface.
- These operators are used for opening and closing interior or exterior swing doors.
- Maximum door weight depends on the operator and door width.

ED100

- Maximum door width of 48 inches at 220 pounds.

ED250

- Maximum door width of 48 inches at 700 pounds.

Fig.2.1 ED100/ED250 header

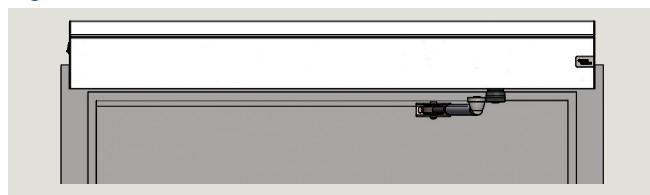
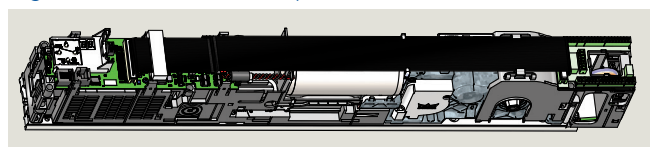


Fig.2.2 ED100/ED250 operator



3 Safety information

3.1 Safety instructions

This document contains important information for servicing ED100/ED250 swing door operators. Review applicable information thoroughly prior to operator troubleshooting and maintenance.

3.2 Door signage requirements

Proper signs and labels shall be applied and maintained on the door controlled by the ED100/ED250 swing door operator per one of the following ANSI/BHMA standards:

- ANSI/BHMA A156.10-2011, Standard for power operated doors, paragraph 11, signage.
- ANSI/BHMA A156.19-2013, Standard for power assist and low energy power operated doors, paragraph 6, signage.

3.3 Safety warnings



WARNING

Hazard to mechanical processes by use of control settings, elements, or procedures not documented in this manual!



WARNING

Electric shock hazard!
 • By use of control elements, settings, or procedures not documented in this manual!



WARNING

Work on electrical equipment and 115 Vac wiring must be performed only by qualified personnel!



WARNING

Hand pinch point and crushing hazards at door closing edges!

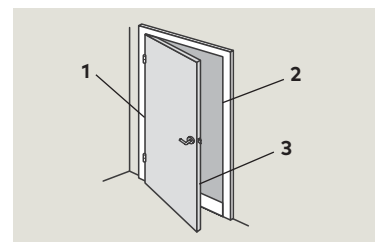


WARNING

Crushing hazards at door closing edges!

- 1 Secondary closing edge
- 2 Opposing closing edge
- 3 Main closing edge

Fig. 3.1 Door closing edges



WARNING

Hand pinch point and crushing hazards!
 • Pull arm and track
 • Push arm

Fig. 3.2 Pull arm and track

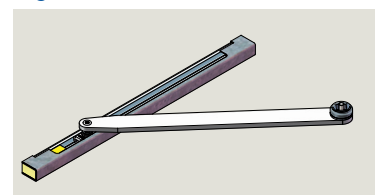
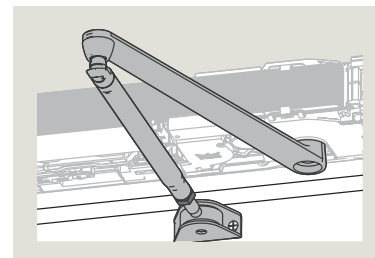


Fig. 3.3 Push arm



4 ED100/ED250

4.1 Operator component view

Fig. 4.1.7 ED100/ED250 components view 1

- 1 Power switch
- 2 120 Vac terminals
- 3 Housing unit
- 4 Drive axle connection
- 5 Operator (motor, gear, spring)
- 6 Spring tension adjustment, closing force
- 8 4 button user interface
- 9 Information display
- 10 Slot for internal program switches
- 11 Potentiometer, power fail closing speed
- 12 Terminal jumper socket, push or pull mounting
- 14 Slot for upgrade cards
- 15 RJ45 socket for communication cable between two operators, double door system
- 16 Com 1 service connector
- 17 Accessories terminal board
- 18 Mounting plate
- 19 Customer ground terminal
- 20 Guide pin
- 21 Ribbon cable
- 22 Ribbon cable socket
- 23 Upgrade card socket
- 24 Motor
- 25 Encoder socket and cable
- 26 Motor socket and cable

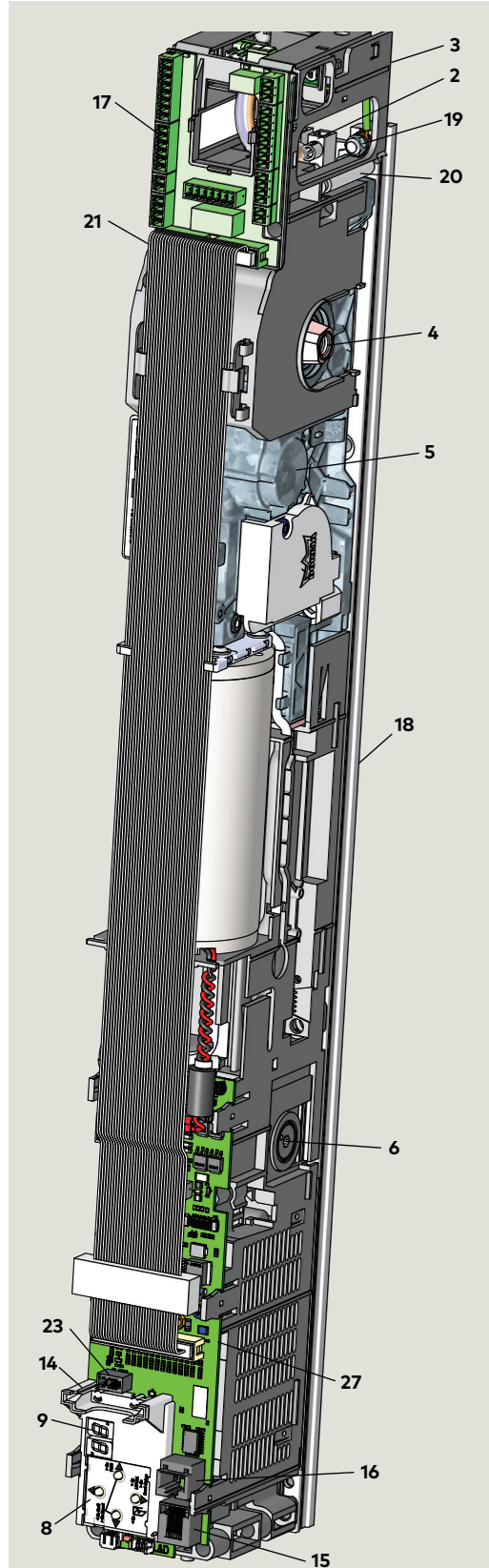
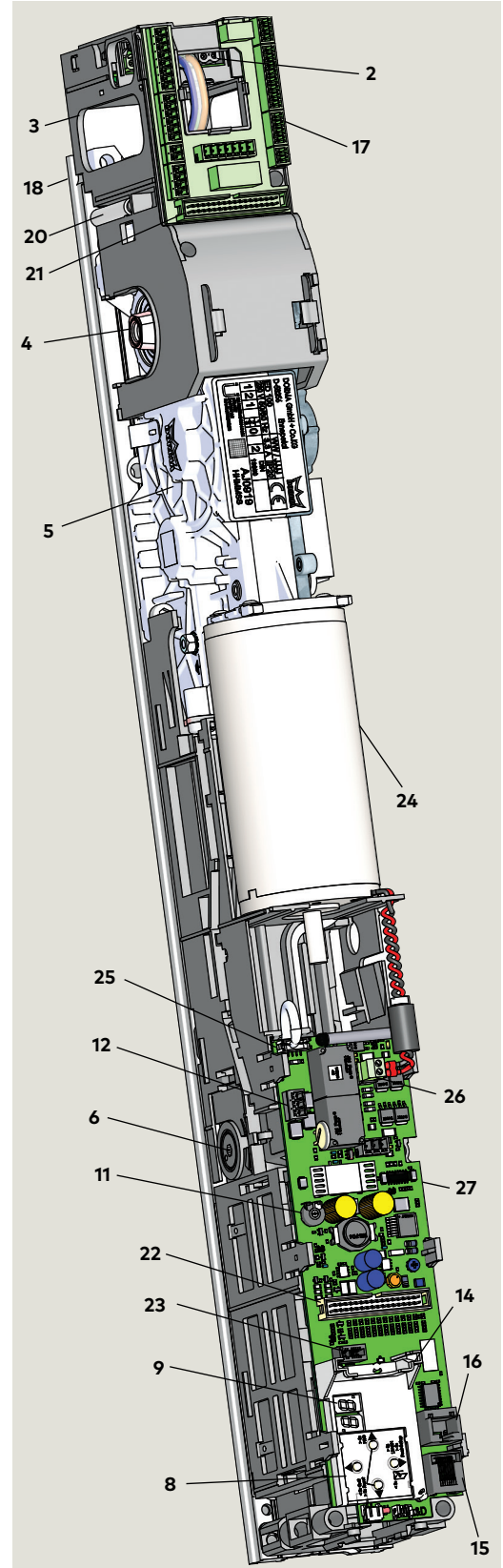


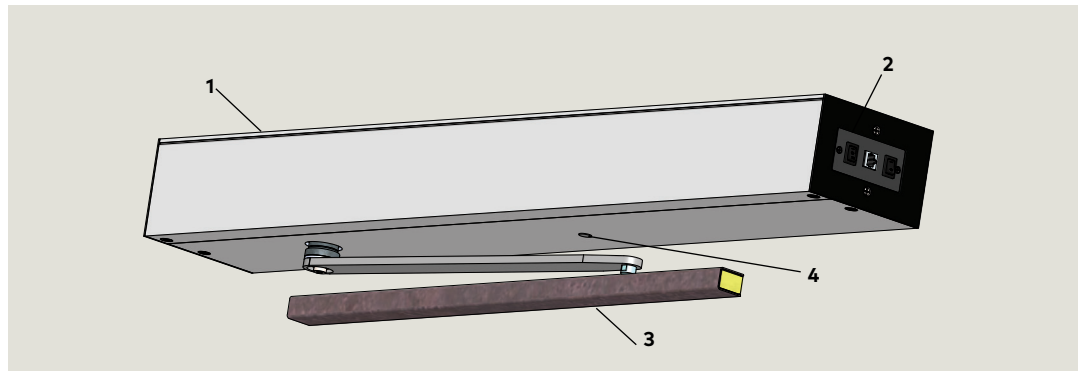
Fig. 4.1.8 ED100/ED250 components view 2



4.2 Header assembly

Fig. 4.2.1 ED100/ED250 header assembly

- 1 Header
- 2 Program switch panel
- 3 Pull arm with track
- 4 Access hole for spring tension

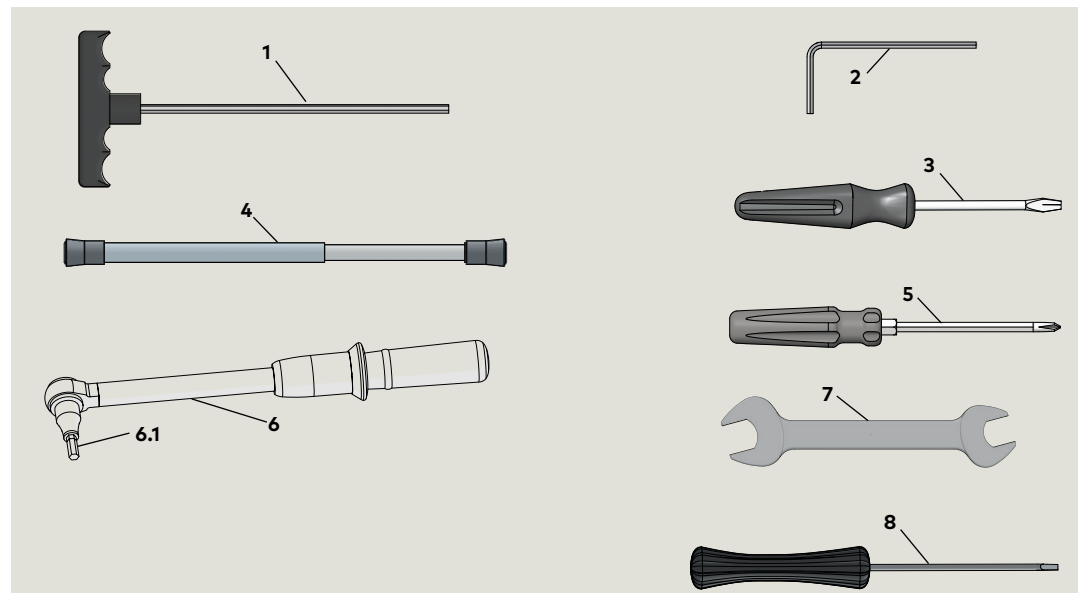


5 Recommended tools, tightening torque

5.1 Recommended tools

Fig. 7.1.1 Recommended tools

- 1 T-handle hex key, 5 mm
- 2 Hex keys, 2.5 mm, 3 mm, 6 mm
- 3 Screwdriver, flat blade
- 4 Door pressure gauge, 0 to 35 ft - lbf
- 5 Screwdriver, Phillips, #2, #3
- 6 Torque wrench, 3 to 35 ft lb
- 6.1 5 mm hex key socket
- 7 Open end wrench, 13 mm
- 8 Screwdriver, flat blade., M2 (1/16 to 3/32")



5.2 Standard tightening torque

5.2.1 Standard tightening torque

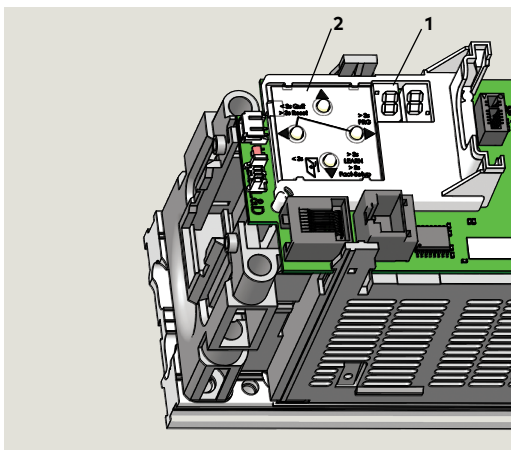
Fastener size	ft lb	N m
M5	3.7	5
M6	7	9.5
M8	17	23
M10	34	34
M12	58	58

6 User interface

6.1 Overview

- 1 2 digit display
- 2 4 button keypad

Fig. 6.1.1 Operator display and keypad



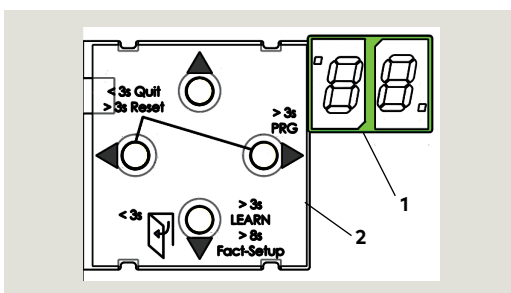
6.1.1 Operator user interfaces

1. 4 button keypad and 2 digit display.
 - 4 button keypad; to input and adjust door parameter values.
 - 2 digit display; parameter values, error and information codes.

6.2 4 button keypad and display

- 1 2 digit display
- 2 4 button keypad

Fig. 6.2.1 4 button keypad and display



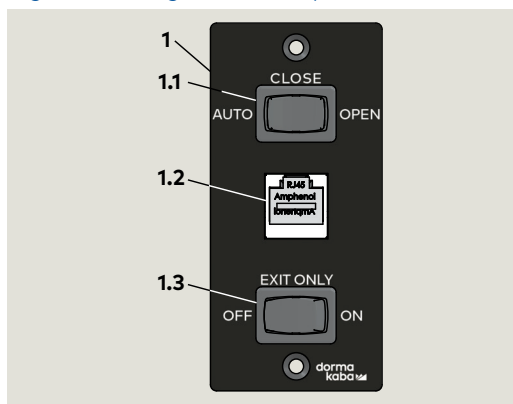
6.2.1 button keypad functions

▶	Right button	<ol style="list-style-type: none"> 1. Access parameter menu, press button > 3 seconds. 2. Edit selected parameter. 3. Save changed value.
◀	Left button	<ol style="list-style-type: none"> 1. Cancel parameter edit process. 2. Exit parameter menu, press button < 3 s.
◀▶	Both buttons together	<ol style="list-style-type: none"> 1. Acknowledge errors, press both buttons < 3 s. 2. Reset, press both buttons > 3 s.
▲	Up button	<ol style="list-style-type: none"> 1. Scroll through parameters and error messages. 2. Increase parameter value.
▼	Down button	<ol style="list-style-type: none"> 1. Scroll through parameters and error messages. 2. Reduce parameter value. 3. Opening pulse, press button < 3 s. 4. Learning cycle, press button > 3 s. 5. Reset with factory setting, press button > 8s (program switch Close position). 6. Identify operator orientation for display.

6.3 Program switch panel, optional key switch panels

Fig. 6.3.1 Program switch panel

- 1 Program switch panel
- 2 Program switch, 3 position
- 3 Exit Only switch, 2 position
- 4 Comm port for dormakaba handheld

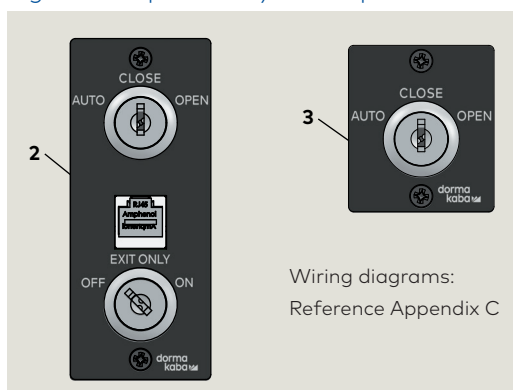


6.3.1 Program switch control modes

- Auto, door opens automatically when one of the activators is actuated or triggered and closes on expiration of adjustable hold open time with no activators or actuators triggered.
- Close, door closes automatically, or remains closed until program switch position changed.
- Open, door opens automatically and remains open until program switch position changed.

Fig. 6.3.2 Optional key switch panels

- 2 Key switch panel, RJ45, DX4604-21C
- 3 Key switch panel DX4604-11C



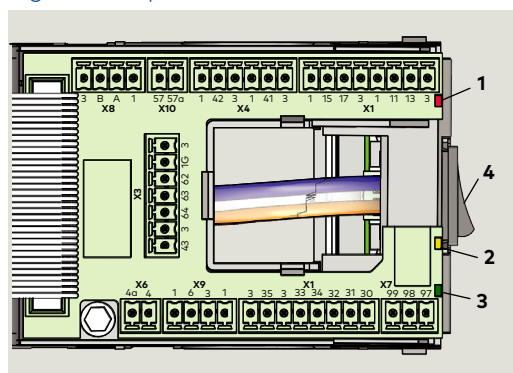
6.3.2 Exit only switch modes

- Off, Interior and exterior activation sensors both active.
- On, exterior activation sensor disabled when door fully closed. Only interior activation sensor will enable door opening.

6.4 Operator status LEDs

Fig. 6.4.1 Operator status LEDs

- 1 Red LED
- 2 Yellow LED
- 3 Green LED
- 4 Power switch



6.4.1 Operator status LEDs

Header cover must be opened to view LEDs.

1. Red LED
Blinking codes are used to indicate "In_" information (system status or operating conditions) or certain error codes "E_".
2. Yellow LED
Maintenance interval indicator. When illuminated, an indication the operator system has to be serviced.
3. Green LED
 - On, internal 24 VDC power is On.
 - Off, internal 24 VDC power is Off.



TIPS AND RECOMMENDATIONS

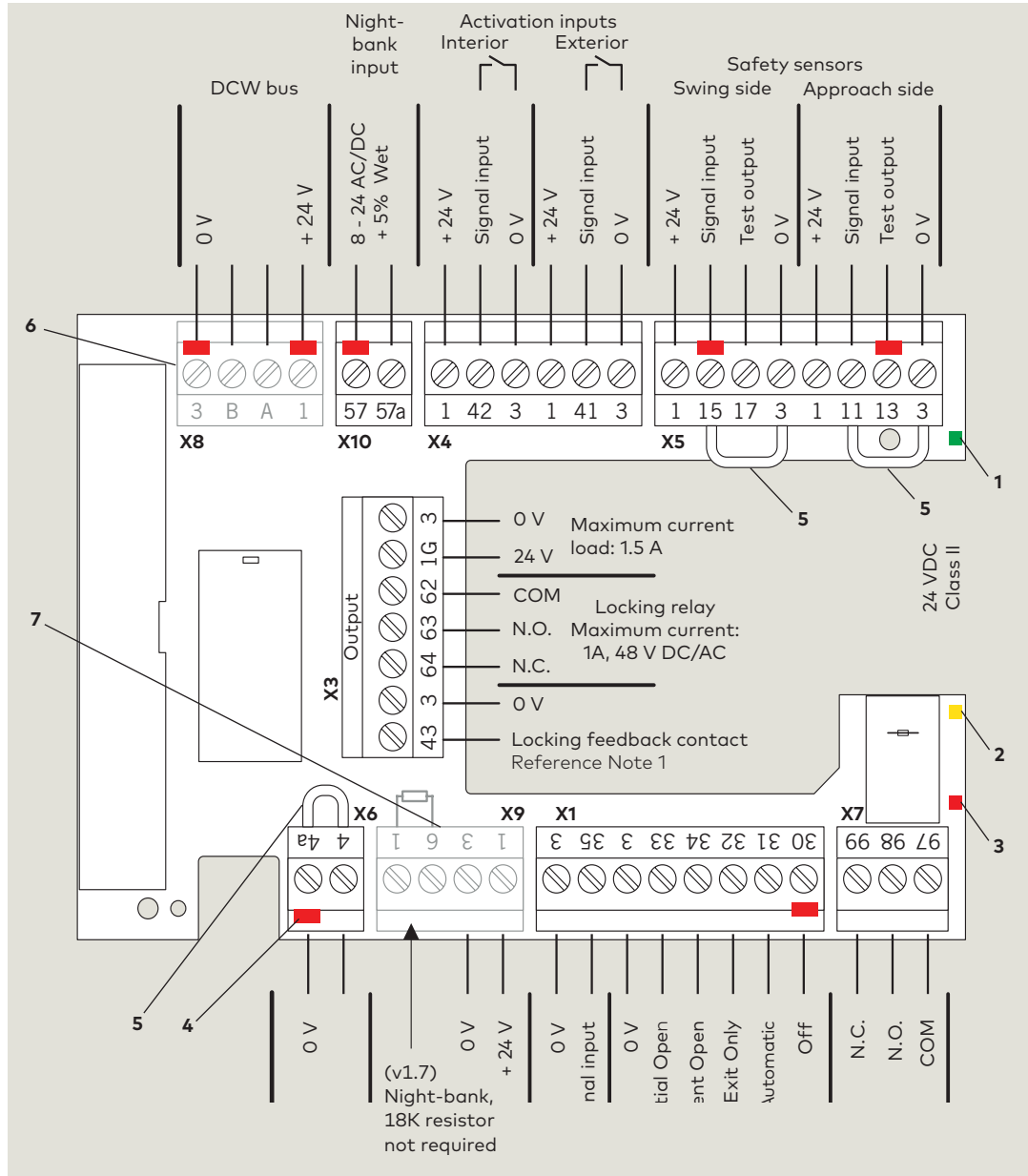
Details on LED status codes and maintenance intervals can be found in ED100/ED250 Service Manual, Chapter 16, troubleshooting chart.

7 Terminal board accessory interfaces

7.1 ED100/ED250 terminal board accessory interfaces

Fig. 7.1.1 Terminal board electrical connections

- 1 Green LED (Para. 6.4)
- 2 Yellow LED (Para. 6.4)
- 3 Red LED (Para. 6.4)
- 4 Key (red insert) location in socket. Assigned plug has tab broken off in same location.
- 5 Jumpers, factory installed at following terminals:
 - 4 and 4a
 - 15 and 3*
 - 11 and 3*
 * Remove jumpers if safety sensors installed.
- 6 DCW® upgrade card plug included in scope of delivery.
- 7 Fire protection upgrade card plug included in scope of delivery.



Note 1: Terminals 3 and 43 also used for swing side overhead presence sensor input when Parameter ST is set to 7 or 8. Reference Chapter 15, Parameters.

8 ED100/ED250 door signage

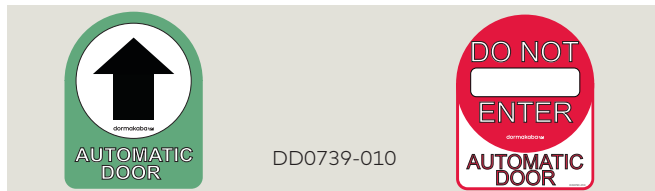
8.1 Full energy operator

8.1.1 Overview

Signage and warnings are specified in ANSI /BHMA A156.10, American National Standard for power operated pedestrian doors, paragraph 11.

8.1.2 Door, one way traffic

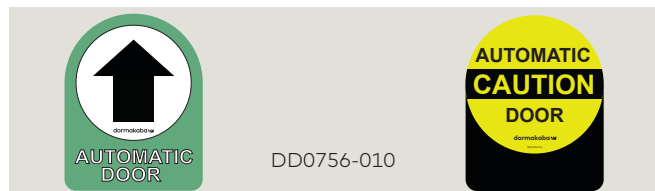
Fig. 8.1.1 One decal, approach, non-approach



1. Arrow and AUTOMATIC DOOR, one side of decal.
 - Shall be visible from approach side of a swinging door, mounted on door at a height of 50" ± 12" from floor to centerline of sign.
2. DO NOT ENTER and AUTOMATIC DOOR, one side of decal (or separate decal for solid doors).
 - Shall be visible from non-approach side of door that swings towards pedestrians attempting to travel in wrong direction.

8.1.3 Door, two way traffic

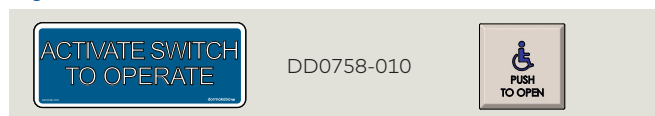
Fig. 8.1.2 One decal, non-swing side, swing side



1. Arrow and AUTOMATIC DOOR, one side of decal.
 - Shall be visible from approach side of a swinging door, mounted on door at a height of 50" ± 12" from floor to centerline of sign.
2. CAUTION AUTOMATIC DOOR, one side of decal.
 - Swinging doors serving both egress and ingress shall have a "CAUTION AUTOMATIC DOOR" sign visible from swing side of door.
 - Sign shall be mounted on door at a height of 50 ± 12" from floor to centerline of sign.

8.1.4 Knowing act door

Fig. 8.1.3 ACTIVATE SWITCH TO OPERATE decal



1. ACTIVATE SWITCH TO OPERATE decal.
 - Knowing act doors shall have signage stating "ACTIVATE SWITCH TO OPERATE" on side of door having knowing act switch or other knowing act device.

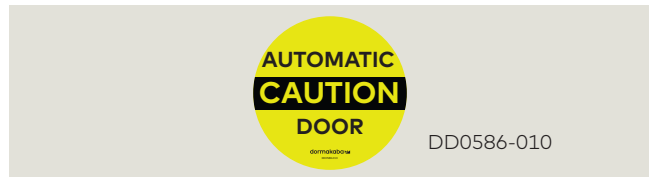
8.2 Low energy operator

8.2.1 Overview

Signage and warnings are specified in ANSI /BHMA A156.19, American National Standard for power assist and low energy power operated doors.

8.2.2 All low energy doors.

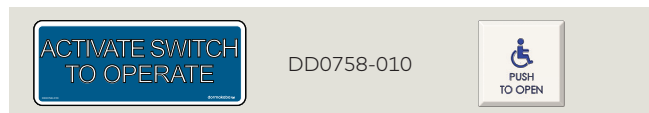
Fig. 8.2.1 AUTOMATIC CAUTION DOOR decal



1. AUTOMATIC CAUTION DOOR decal.
 - All low energy doors shall be marked with signage visible from both side of door with the words "AUTOMATIC CAUTION DOOR".
 - Signs shall be mounted 50" ± 12" from floor to centerline of sign.

8.2.3 Knowing act switch used to initiate door operation.

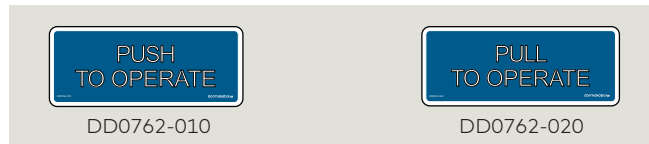
Fig. 8.2.2 ACTIVATE SWITCH TO OPERATE decal



1. ACTIVATE SWITCH TO OPERATE decal.
 - When a knowing act device is used to initiate operation of door operator, door shall be provided with sign on each side of door where switch is operated with message "ACTIVATE SWITCH TO OPERATE".

8.2.4 Push/Pull used to initiate door operation.

Fig. 8.2.3 PUSH TO OPERATE, PULL TO OPERATE decals



1. PUSH TO OPERATE, PULL TO OPERATE decals.
 - When push/pull is used to initiate operation of door operator, doors shall be provided with the message "PUSH TO OPERATE" on push side of door and "PULL TO OPERATE" on pull side of door.

8.3 Door signage, full energy single swing door

Fig. 8.3.1 One decal, one way traffic
Approach Non-approach



Fig. 8.3.2 One decal, two way traffic
Non-swing side Swing side



8.4 Door signage, low energy single swing doors, initiation of door operation

Fig. 8.4.1 Knowing act device

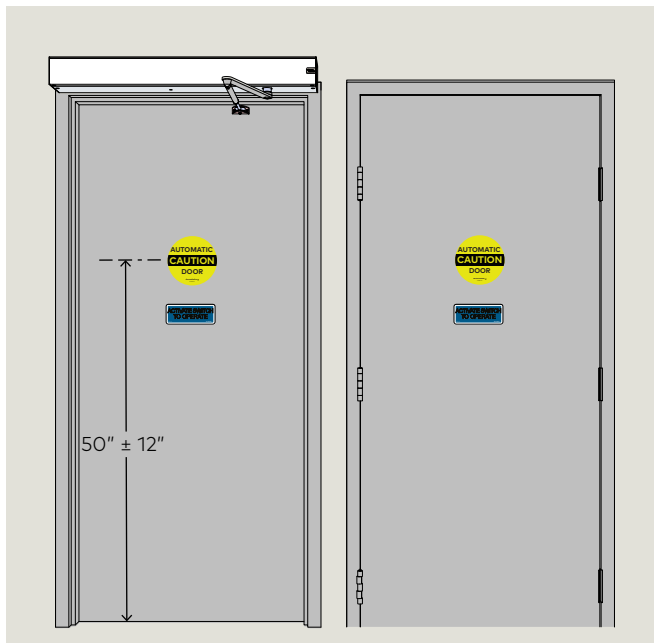
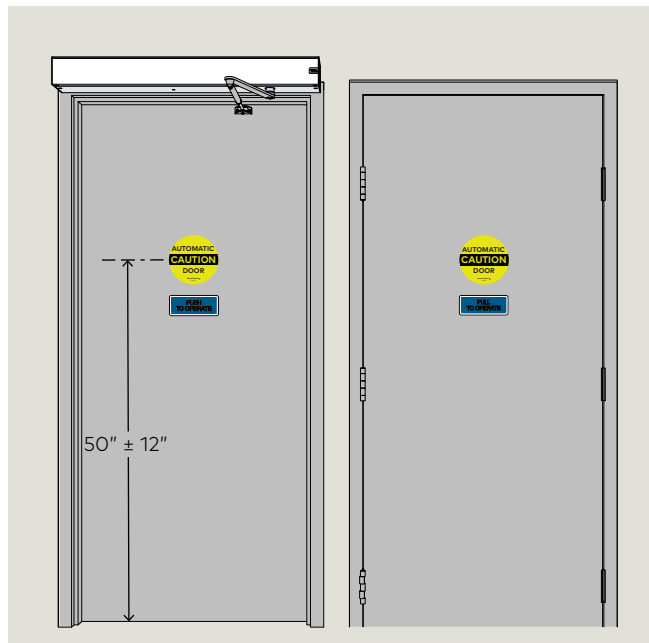


Fig. 8.4.2 Push/Pull
Push To Operate Pull To Operate



8.5 Door signage, full energy double swing doors

Fig. 8.5.1 One way traffic, approach side

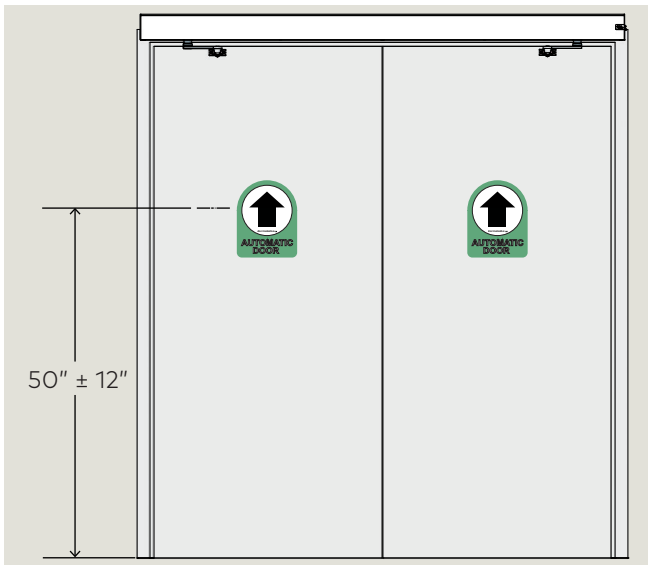


Fig. 8.5.2 One way traffic, non-approach side

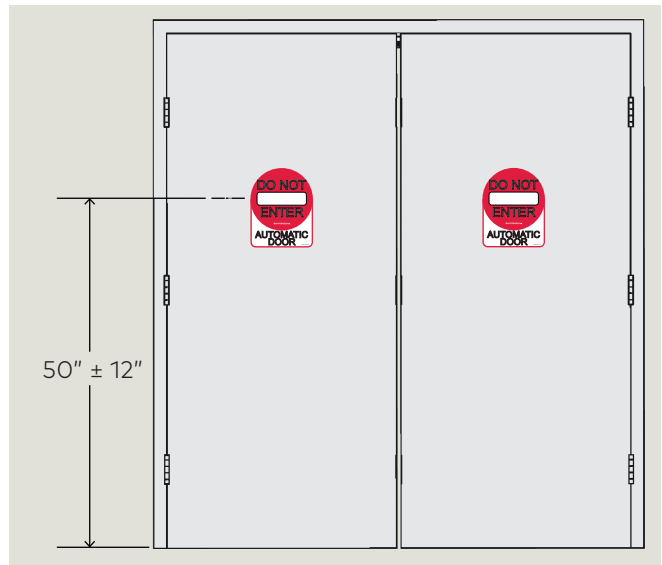


Fig. 8.5.3 Two way traffic, non-swing side

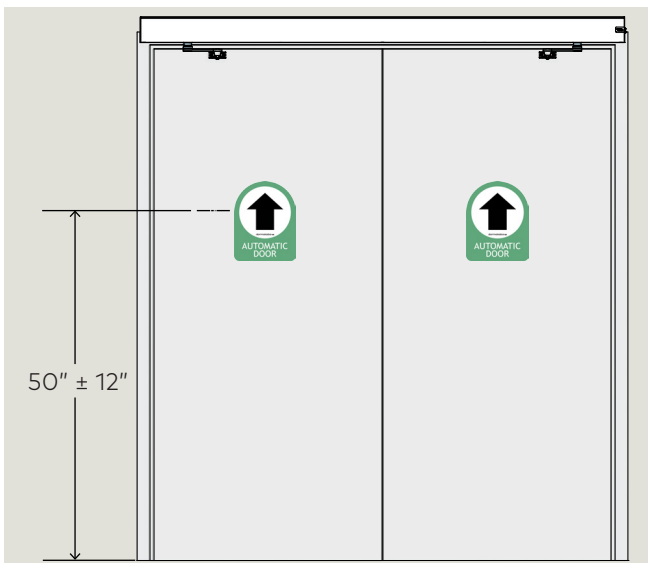


Fig. 8.5.4 Two way traffic, swing side

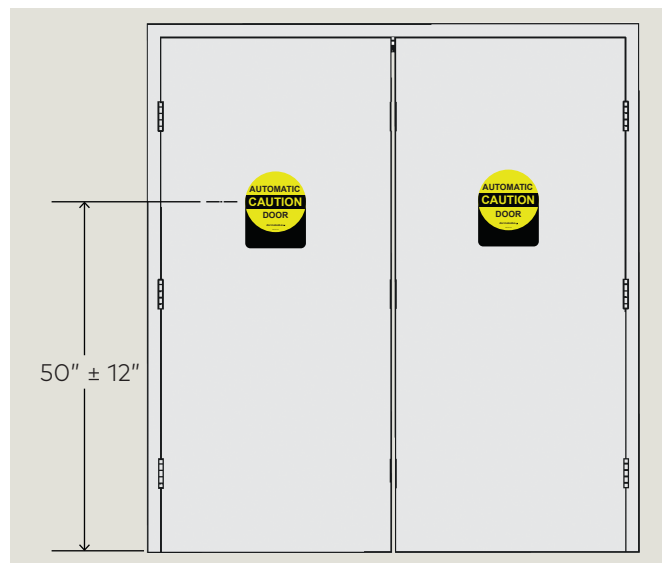


Fig. 8.5.5 One way traffic, knowing act, approach side

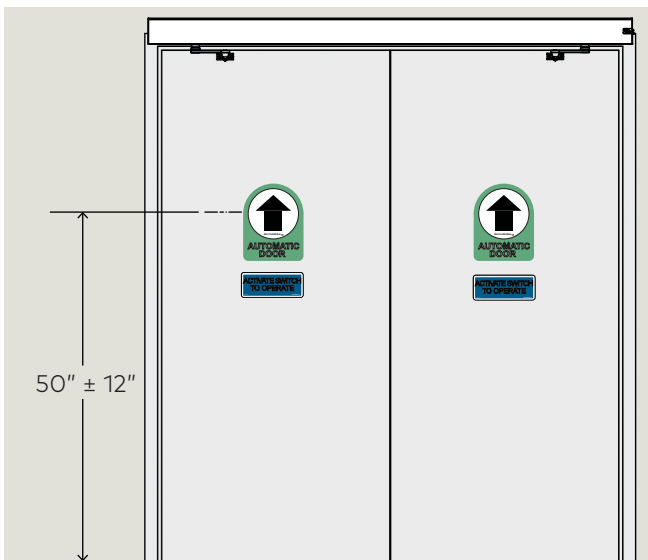


Fig. 8.5.6 One way traffic, knowing act, non-approach side

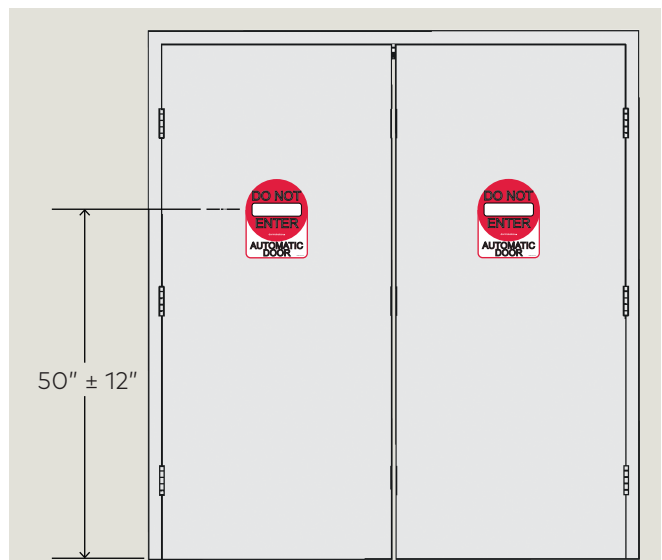


Fig. 8.5.7 Double egress, RH, one way traffic, interior

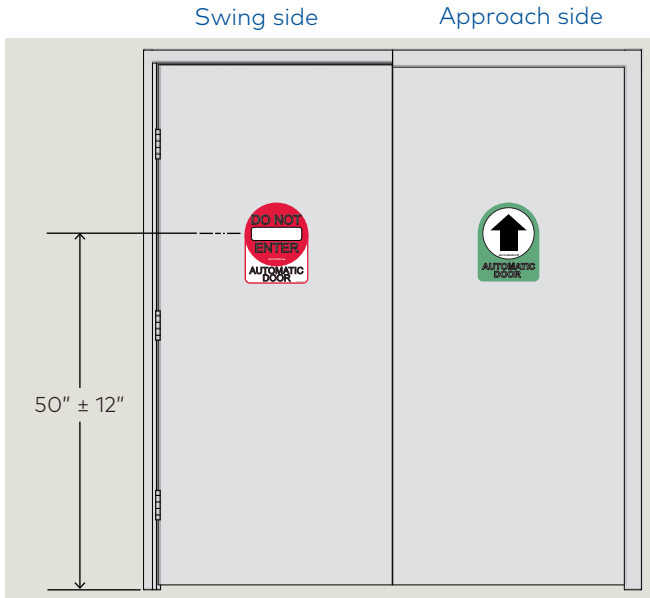


Fig. 8.5.8 Double egress, RH, one way traffic, exterior

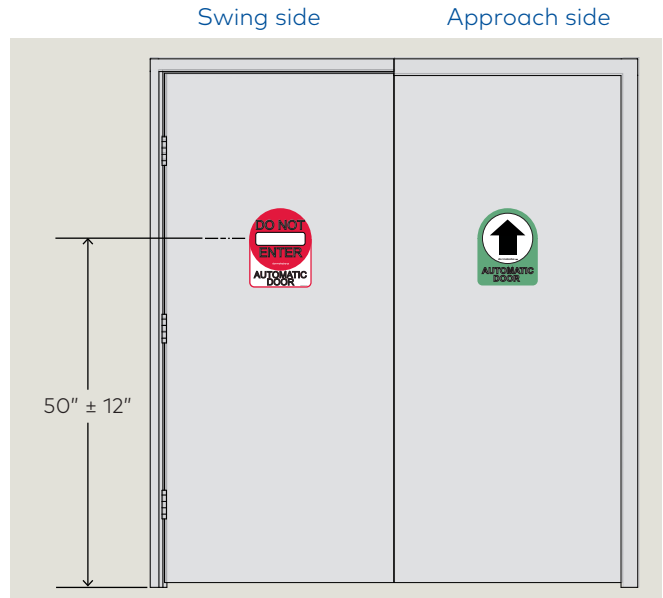


Fig. 8.5.9 Double egress, LH, two way traffic, interior

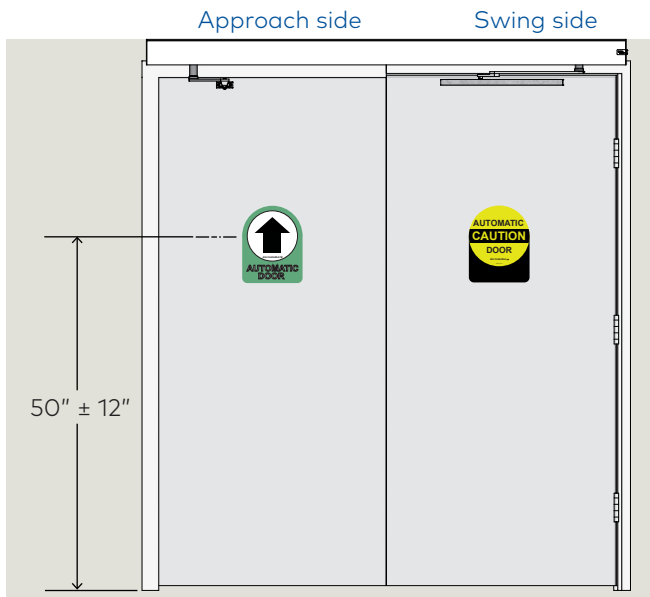
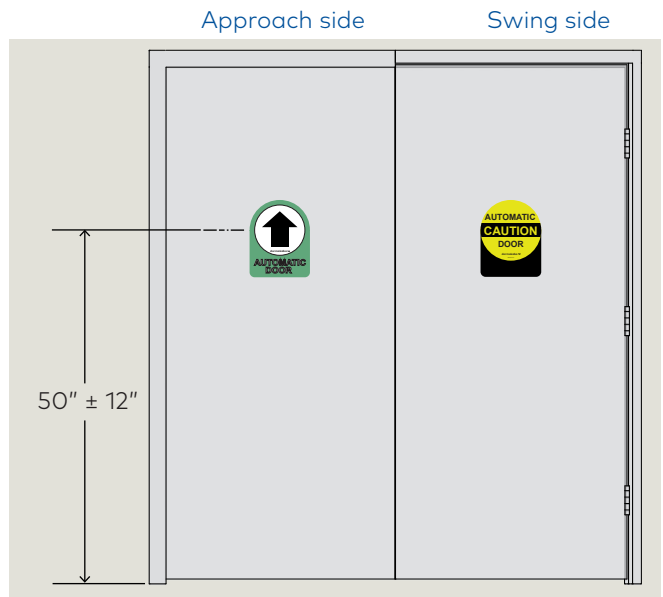


Fig. 8.5.10 Double egress, LH, two way traffic, exterior



8.6 Door signage, low energy double swing doors

Fig. 8.6.1 Knowing act, non-hinge side



Fig. 8.6.2 Knowing act, hinge side

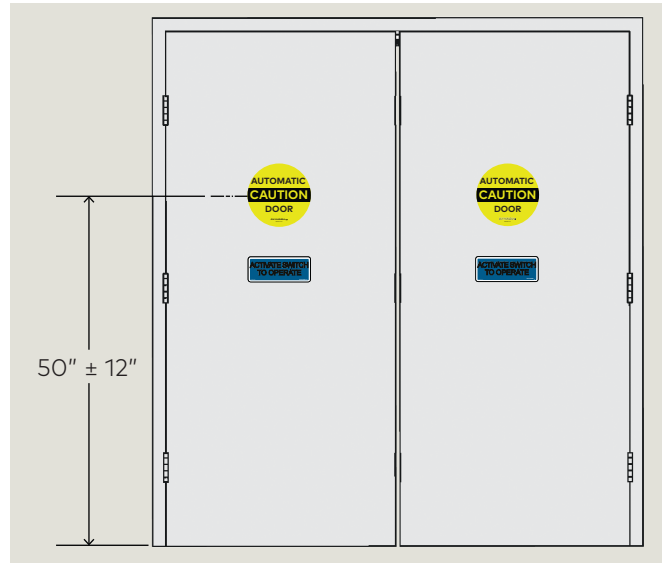


Fig. 8.6.3 Push/Pull, push to operate



Fig. 8.6.4 Push/Pull, pull to operate

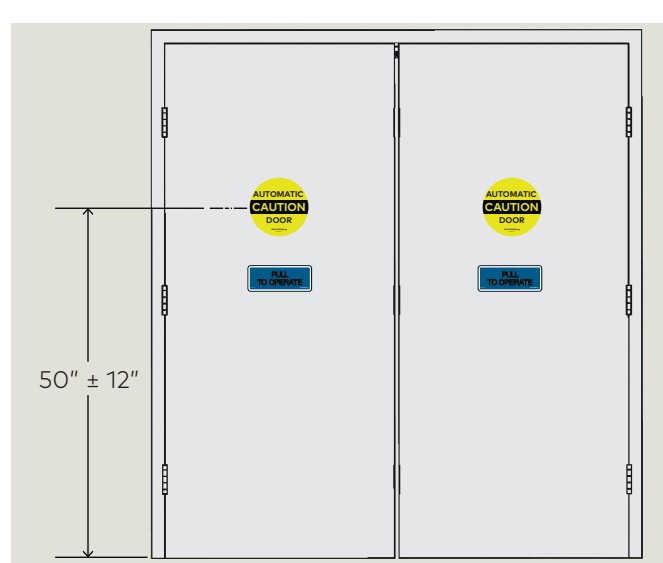


Fig. 8.6.5 Double egress, RH, knowing act

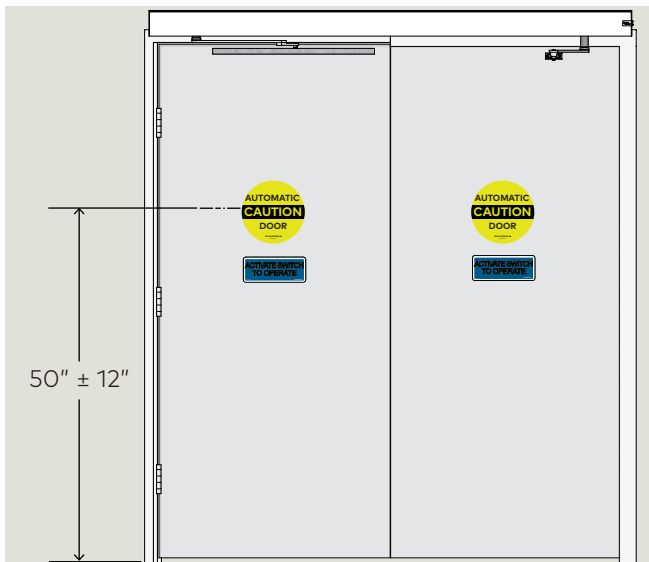
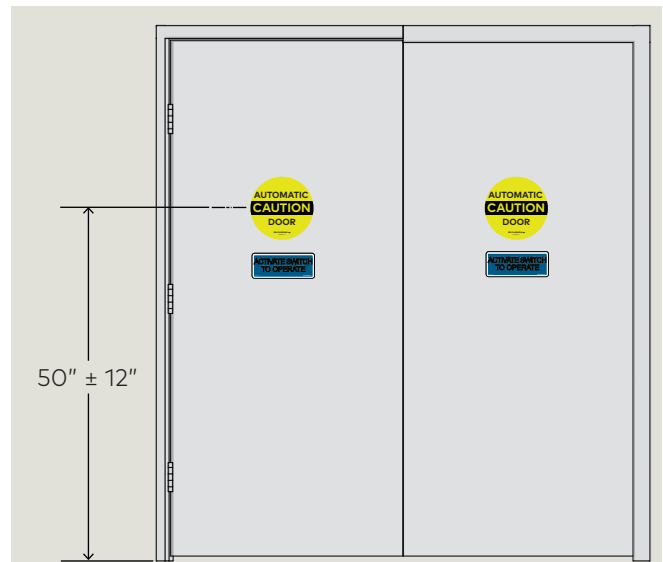


Fig. 8.6.6 Double egress, RH, knowing act



9 Maintenance

9.1 Safety label, automatic swing doors

9.1.1 Automatic swinging door safety information label

This AAADM label outlines safety checks that should be performed daily on full power automatic swinging door controlled by an:

- ED100 operator
- ED250 operator

9.1.2 Annual compliance section of label

This section of label is only completed on automatic swing doors that comply with ANSI/BHMA A156.10 standard and pass inspection by a AAADM certified dormakaba USA, Inc. technician.

9.1.3 Additional annual compliance inspection labels

Place additional labels over annual compliance inspection section of safety information label.

9.2 Safety label, low energy swinging doors

9.2.1 Low energy swinging door safety information label

This AAADM label outlines safety checks that should be performed daily on low energy swinging door controlled by an:

- ED100 operator
- ED250 operator

9.2.2 Safety information label location

Place label in a protected, visible location on door frame, near operator power switch if possible.

9.2.3 Annual compliance section of label

This section of label is only completed on low energy swing doors that comply with ANSI/BHMA A156.19 standard and pass inspection by a AAADM certified dormakaba USA, Inc. technician.

9.2.4 Additional annual compliance inspection labels

Place additional labels over annual compliance inspection section of safety information label.

Fig. 9.1.2 Safety information labels

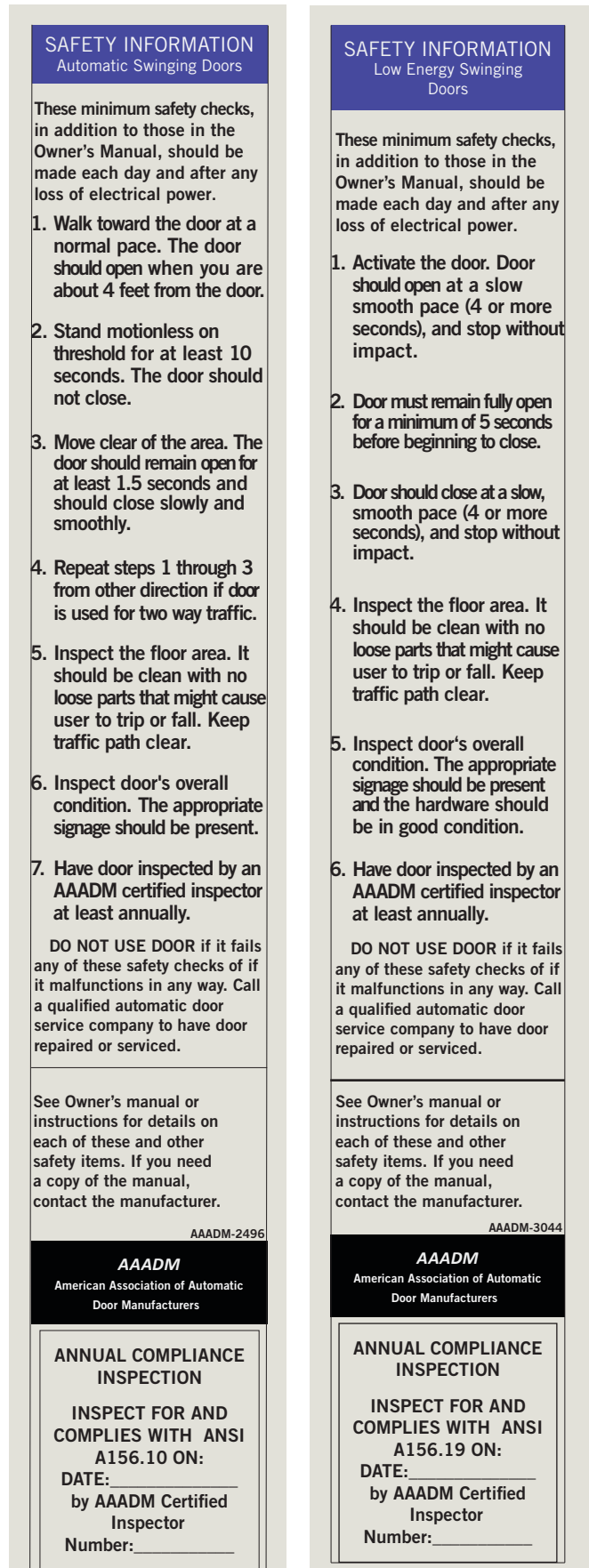
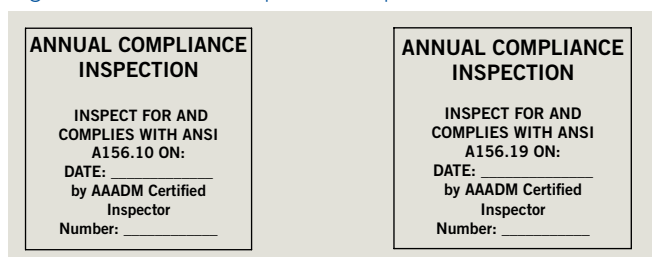


Fig. 9.1.1 Annual compliance inspection labels

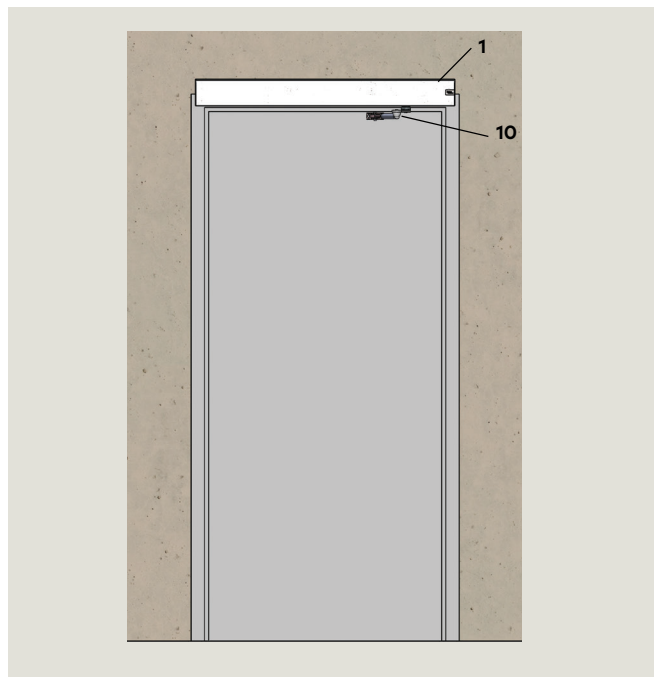


9.3 ED100/ED250 environment and cleaning

Table 9.3.1 Operator environmental requirements

Ambient temperature	5 to 122 °F
Suitable for dry rooms only	Relative air humidity: 93% maximum, non-condensing

Fig. 9.3.1 ED100/ED250 header



9.3.1 ED100/ED250 environmental requirements.

ED100/ED250 header assembly is designed to operate on an interior building surface under the specifications shown in Table 9.3.1.

9.3.2 Areas around door(s) and door swing radius.

Areas around doors and door swing radius must be kept clear of all obstacles.

9.3.3 Cleaning



WARNING

Cleaning of header surfaces must be done with program switch in Close position!

External surfaces of the header can be cleaned with a damp cloth and commercial cleaning agents.



TIPS AND RECOMMENDATIONS

Abrasive (scouring) agents should not be used as they may damage external surfaces.

9.3.4 Water and other liquids.

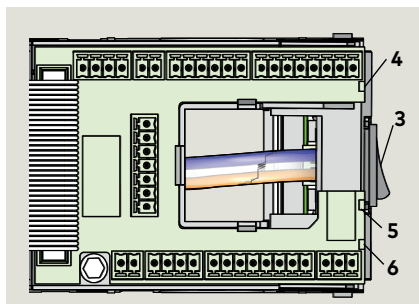
CAUTION

No water or other liquids must be sprayed or spilled on ED100/ED250 header!

9.4 Yellow LED, service level

Fig. 9.4.1 Service level indicator

- 3 Power switch
- 4 Red LED
- 5 Yellow LED
- 6 Green LED



9.4.1 Service level indicator

Header cover must be opened to view operator LEDs.

Yellow LED on operator power switch side is service level indicator. Operator system should be scheduled for service when yellow LED is first illuminated, or annually, whichever comes first.



TIPS AND RECOMMENDATIONS

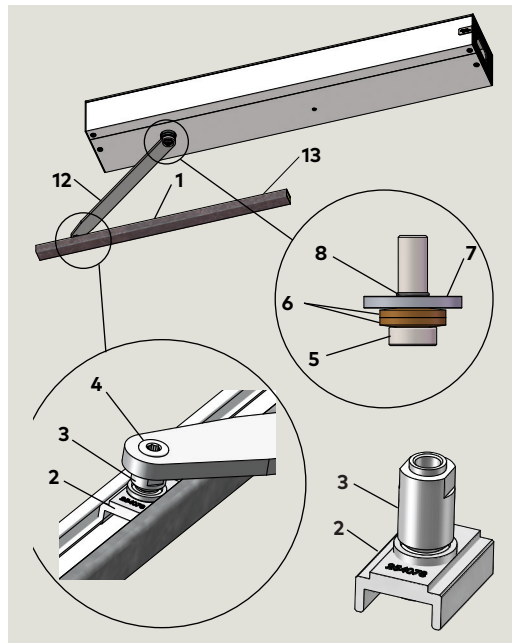
Reference Chapter 14, parameters for information on:

- Parameter CS, reset service interval display.
- Parameter CC, cycle counter.

9.5 Pull arm maintenance

- 1 Track
- 2 Slide shoe
- 3 Pivot pin
- 4 Shoulder screw, 5 mm hex key
- 5 M8 SHCS*
*custom SHCS
- 6 Conical spring
- 7 Flat washer
- 8 O ring
- 12 Pull arm
- 13 Cover

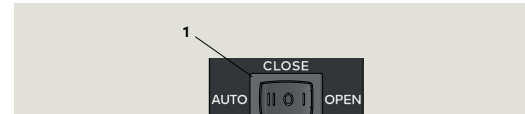
Fig. 9.5.1 Pull arm with track assembly



WARNING

Set program switch to CLOSE before performing maintenance!

Fig. 9.5.2 Program switch

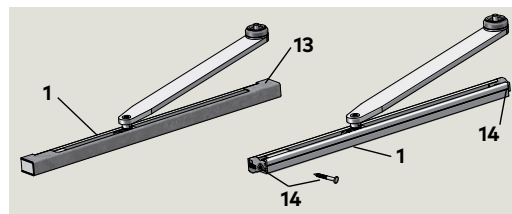


9.5.1 Pull arm and track maintenance.

1. Track
 - Check for wear or damage.
2. Slide shoe and pivot pin
 - Check for wear or damage.

Fig. 9.5.3 Track mounting screws

- 1 Track
- 13 Cover
- 14 Mounting screws.



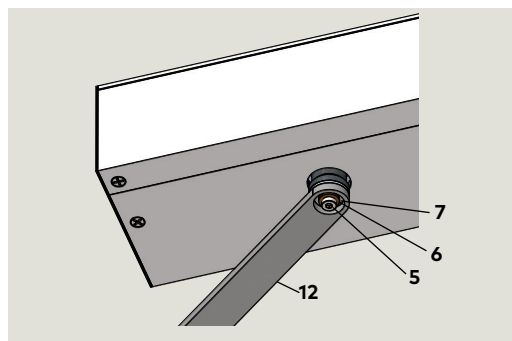
9.5.2 Track mounting screws

1. Remove cover from track.
2. Check tightness of track mounting screws.

9.5.1 Pull arm torque requirements

Fig. 9.5.1.1 Pinion bolt torque

- 5 M8 SHCS*
*custom SHCS
- 6 Conical spring
- 7 Flat washer
- 12 Pull arm



9.5.1.1 Check pinion bolt (5) torque.

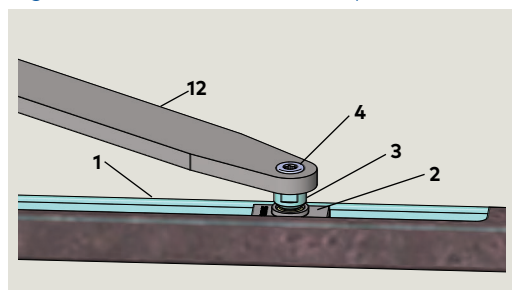
1. Insure M8 SHCS, conical spring and washer are properly seated in pull arm.

CAUTION

Using torque wrench with 5 mm hex key socket, torque M8 SHCS to 26 ft-lb.

Fig. 9.5.1.2 Shoulder screw torque

- 1 Track
- 2 Slide shoe
- 3 Pivot pin
- 4 Shoulder screw, 5 mm hex key
- 12 Pull arm



9.5.1.2 Check shoulder screw (4) torque.

1. Hold pivot pin with 13 mm open end wrench and use torque wrench with 5mm hex key to check for 26 ft lb. Adjust if necessary.

CAUTION

Using torque wrench with 5 mm hex key socket, torque M8 SHCS to 26 ft-lb.

9.6 Push arm maintenance

- 1 Adjustment screw
- 2 Push arm
- 3 Connecting rod assembly
- 3.1 Nut
- 4 M8 SHCS*
*custom SHCS
- 5 Shoe
- 5.1 Shoe mounting screws (2)
- 6 Arm socket
- 7 Adjustment screw ball head

Fig. 9.6.1 Push arm assembly

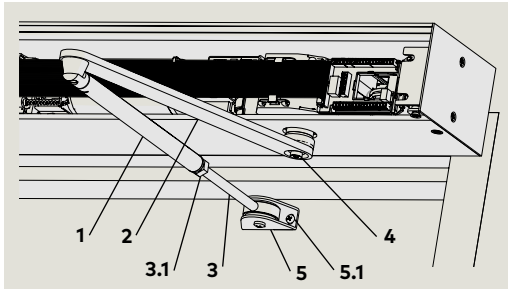
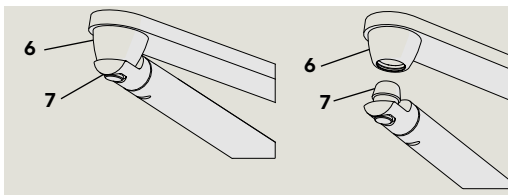


Fig. 9.6.3 Arm socket and ball head



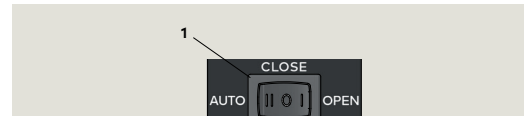
Note: Exploded view shown for reference.



WARNING

Set program switch to CLOSE before performing maintenance!

Fig. 9.6.2 Program switch



9.6.1 Push arm maintenance.

1. Push arm socket and adjustment screw ball head:
 - Check for wear or damage.
2. Shoe and connecting rod assembly:
 - Check for wear or damage.
3. Connecting rod nut:
 - Check for tightness of nut against adjustment screw.

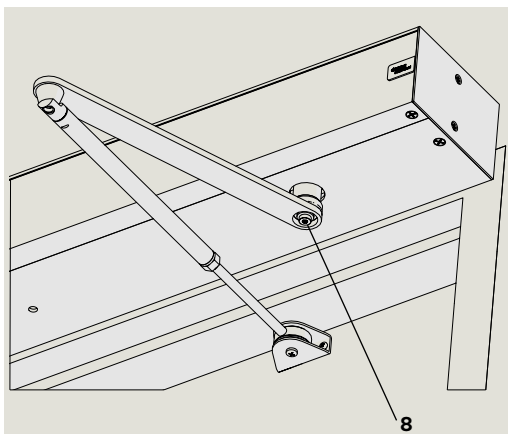
9.6.2 Shoe mounting screws to door.

1. Check for tightness of mounting screws.

9.7 Push arm torque requirements

- 8 M8 SHCS (custom)

Fig. 9.7.1 Push arm M8 SHCS





9.7.1 M8 SHCS torque

CAUTION

Using torque wrench with 5 mm hex key socket, torque M8 SHCS to 26 ft-lb.

10 Measure reveal depth, parameter rd

10.1 Reveal depth parameter rd

Parameter	Description
2  	Reveal depth

10.1.1 Reveal depth parameter.

1. Reveal depth is set in increments of 10 mm (approximately 3/8").
2. Measured reveal depth of 30 mm (approximately 1 3/16") equals **rd** parameter value of 3.

10.2 Record reveal depth measurement, rd value

Parameter rd value	Reveal measurement

10.3 rd parameter values

10.3.1 ED100/ED250 reveal depths, rd parameter

-1 3/16	-30	-3	Reveal measurement		
-3/4	-20	-2	ED100/ED250		
-3/8	-10	-1	Inches	[mm]	rd
0	0*	0	6 5/16	160	16
3/8	10	1	6 11/16	170	17
3/4	20	2	7	180	18
1 1/8	30	3	7 1/2	190	19
1 9/16	40	4	7 7/8	200	20
1 15/16	50	5	8 1/4	210	21
2 3/8	60	6	8 5/8	220	22
2 3/4	70	7	9	230	23
3 1/8	80	8	9 7/16	240	24
3 1/2	90	9	9 13/16	250	25
3 15/16	100	10	10 1/4	260	26
4 5/16	110	11	10 5/8	270	27
4 3/4	120	12	11	280	28
5 1/8	130	13	11 7/16	290	29
5 1/2	140	14	11 13/16	300	30
5 7/8	150	15			

Fig. 10.1.1 CPD pull arm and lever with track



TIPS AND RECOMMENDATIONS

Use of CPD pull arm and lever (Fig. 10.1.1): Value of parameter **rd** must be reduced by 3/16" [30].

- Example: ED250 with CPD pull arm and lever in pull installation with reveal of 30 mm (1 1/8"). Parameter **rd** setting = 0 (Reveal of 30 mm - 30 mm).

10.3.2 ED250 additional reveal depths, rd parameter

12 3/16	310	31	Reveal measurement		
12 5/8	320	32	ED250		
13	330	33	Inches	[mm]	rd
13 3/8	340	34	17 5/16	440	44
13 3/4	350	35	17 3/4	450	45
14 3/16	360	36	18 1/8	460	46
14 9/16	370	37	18 1/2	470	47
15	380	38	18 7/8	480	48
15 3/8	390	39	19 1/4	490	49
15 3/4	400	40	19 11/16	500	50
16 1/8	410	41			
16 9/16	420	42			
16 15/16	430	43			

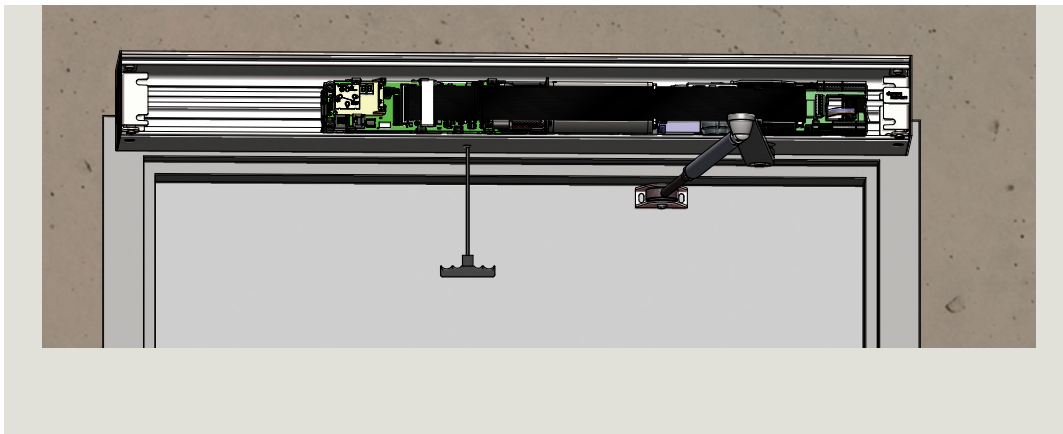
*Factory setting

11 Operator spring tension

11.1 Set operator spring tension

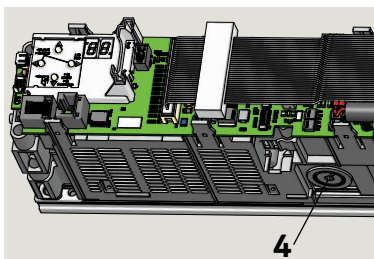
- 1 ED100/ED250 operator
- 2 Spring tension adjustment access hole in header
- 3 T handle hex key, 5 mm

Fig. 11.1.1 Spring tension adjustment



- 4 Spring tension adjustment

Fig. 11.1.2 Spring tension



11.1.2 Operator spring tension function

- 1. Spring tension sets closing force on door.
- 2. Required spring tension is based on door width.

11.1.3 Spring tension adjustment factory setting

- 1. Spring tension adjustment is factory set fully CCW, no spring tension.
- 2. Spring has to be pretensioned per Para. 11.1.1.

CAUTION

A minimum of ten spring tension revolutions are required to operate system.

CAUTION

Any change to spring tension setting requires a new learning cycle (Chapter 13)!

11.1.1 Spring tension setting revolutions

Door width				
Inches	32	36	42	48
mm	813	914	1067	1219
Spring setting revolutions				
ED100	10	14	16	18
ED250	10	10	14	18



TIPS AND RECOMMENDATIONS

System checks spring tension during learning cycle.
 Learning cycle will be canceled if spring is insufficiently tensioned; door will stop and display will show a rotating "0" and an "F".

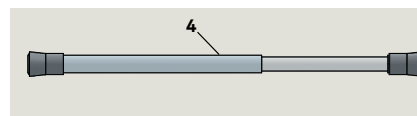


11.1.4 Check door closing force

- 1. Para. 11.1.1 table lists approximate spring tension settings.
- 2. Use pressure gauge to check door closing force at 2° and adjust tension setting if necessary.
- 3. For reveals greater than 11 5/16" [300 mm] check minimum closing force between 88° and 92°.

- 5 Door pressure gauge

Fig. 11.1.2 Door pressure gauge

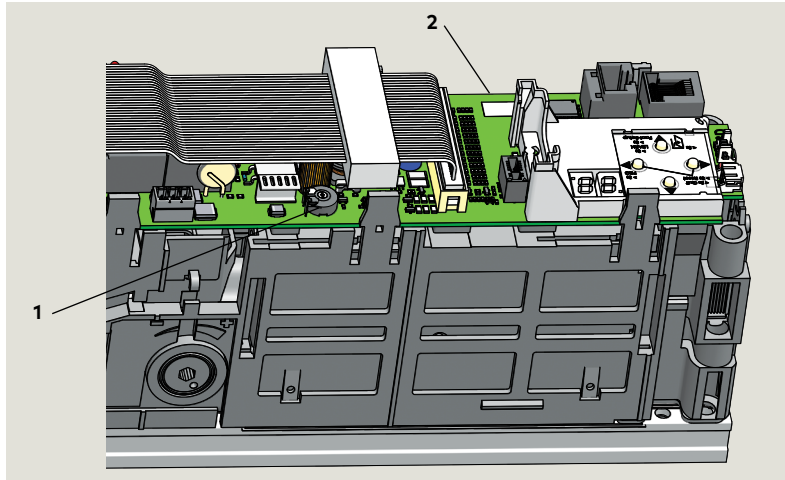


12 Power fail closing speed

12.1 Set power fail closing speed

- 1 Power fail closing speed potentiometer
- 2 Control board

Fig. 12.1.1 Power fail closing speed potentiometer



TIPS AND RECOMMENDATIONS

Power fail closing speed potentiometer:

- Single turn
- Factory setting fully CCW.
- CCW increases closing speed.
- CW decreases closing speed.
- Terminal flat blade screwdriver required
3/32" [2 - 3 mm].

12.1.1 Setting door closing speed upon power failure.

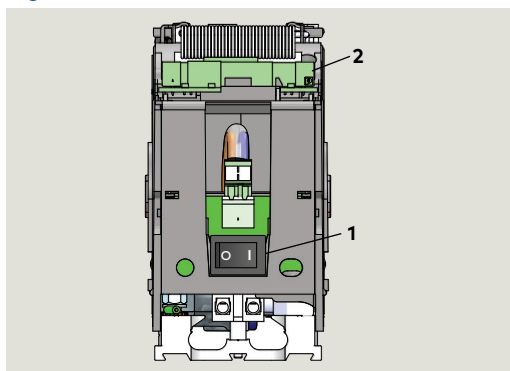
1. Turn ED100/ED250 power switch OFF.
2. Manually open door to 90° angle and let it close.
3. If door closes in less than 3 seconds, turn potentiometer 1/4 turn CW and retry test.
4. Adjust as necessary to obtain closing time greater than 3 seconds.

NOTICE

It is imperative that door closing speed be set. If door closes in less than 3 seconds, error message **E 73** (System error 3, braking circuit) will be displayed. See Troubleshooting, Chapter 16.4.

- 1 Power on switch
- 2 Terminal board

Fig. 12.1.2 Power on switch



13 Perform learning cycle

13.1 Perform learning cycle

CAUTION

Learning cycle must be performed while motor is cold!

CAUTION

Door must not be manually moved or held in position during the learning cycle!

CAUTION

Verify that the following parameters have been set (Para 15.1.8):

- **AS**, Installation type
- **rd**, Reveal depth
- **Tb**, Door width



TIPS AND RECOMMENDATIONS

During learning cycle:

- Safety sensors and activators, are switched off to insure learning cycle sequence is not interrupted.
- Operator functions are deactivated.



WARNING

No personnel or objects must be in range of door motion during learn cycle!

Step 1	Secure motion range of door.
Step 2	Set program switch to CLOSE position.
	Rotating "o" and a "0" indicates operator learning cycle is required.

Step 3 Press ▼		Press and hold down button until display changes. <ul style="list-style-type: none"> • Door performs several movements and display shows a sequence of symbols. • Movements of door must not be interrupted!
		Display indicates door is at 70° position and is waiting for door opening angle to be set.
Step 4		<ul style="list-style-type: none"> • Manually move door to desired opening angle. • Maximum door angle is 110°.
Step 5 Press ▼		Momentarily press down button to continue learning cycle. <ul style="list-style-type: none"> • Door performs several movements and display shows a sequence of symbols. • Movements of door must not be interrupted!
		<p>Operator spring tension too low.</p> <ul style="list-style-type: none"> • Display with small rotating "o" and an "F" during learn cycle indicates spring tension is too low. • Door will close. <ol style="list-style-type: none"> 1. Increase spring tension (Chapter 11). 2. Restart learning cycle (Step 3).
		Door completes learning cycle. <ul style="list-style-type: none"> • Display with two horizontal bars indicate operator is ready for operation.
Step 6 Press ▼		Momentarily press down button to cycle door.
Step 7		Following automatic learning cycle, actual forces on door, and door opening and closing times must be measured and changed if necessary to insure compliance with ANSI/BHMA standards, reference Chapter 14.
Step 9		Set program switch to Auto.

14 ANSI/BHMA standards

14.1 A156.10 Power operated pedestrian doors

The following table references portions of content from ANSI/BHMA A156.10. Refer to the standard, available through ANSI or BHMA for additional information. Standard material reprinted with BHMA permission.

14.1.1 Door measurements, power operated swing door

ED100/ED250 Parameter				A156.10 standard		
Parameter	Function	Factory setting	Adjustment range	Para.	Requirement	
So	Opening speed automatic mode	Swing door opening speed, automatic mode.	25%/s	ED100 8%/s - 50%/s ED250 8%/s - 60%/s	10.2.1	Swing door opening time to 80°, not less than 1.5 s.
Sc	Closing speed automatic mode	Swing door closing speed, automatic mode.	25%/s	ED100 8%/s - 50%/s ED250 8%/s - 60%/s	10.2.5	Swing door closing time to latch check. Reference Para. 13.1.2.
Fo	Static force in opening direction	Static force on door closing edge in opening direction.	13.5 lb f [60 N]	4.5 lb f [20 N] - 33.7 lb f [150 N] Reduced in low energy mode.	10.2.2	Not to exceed 30 lb f [133 N] measured 1" [25.4] from lead edge of door.
Fc	Static force in closing direction	Static force on door closing edge in closing direction.	13.5 lb f [60 N]	4.5 lb f [20 N] - 33.7 lb f [150 N] Reduced in low energy mode	10.2.7	Not to exceed 30 lb f [133 N] measured 1" [25.4] from lead edge of door at any point in closing cycle.
bc	Back check	Checking or slowing down of door speed before door being fully opened.	10°	5° - 40°	10.2.3	Shall occur at not less than 10° of full open position.
dd	Hold open time	Open time for swing doors using sensors or control mats upon loss of detection.	5 s	0 s - 30 s 0 s - 180 s (professional upgrade card)	10.2.4	Minimum of 1.5 seconds after loss of detection.
	Latch check	Checking or slowing down of door speed before door being fully closed.		Not adjustable	10.2.6	Not less than 10° from closed position. The door will not close through the final 10° in less than 1.5 s.
hS		Support for manual mode in door closed position.				
hA		Adjustment, door activation angle.			10.2.8	Manual opening force in event of power failure. Not greater than 30 lb f [133 N] applied 1" [25.4] from lead edge to open.
hF		Power assist function.				

14.1.2 A156.10, 10.2.5: swing door closing time to latch check

"D" door width, minimum inches [mm]	"W" door weight, maximum pounds [kg]	"T" closing time, minimum, to latch check (seconds)
36 or less	100 [45]	2.0
36 [914]	140 [64]	2.3
42 [1067]	110 [50]	2.3
42 [1067]	150 [68]	2.7
48 [1219]	120 [55]	2.8
48 [1219]	160 [73]	3.2

14.1.3 Other door weights and widths

Closing time $T = (D \sqrt{W}) / 188$
 D = Width of door in inches.
 W = Weight of door in pounds.
 T = Closing time to latch check in seconds.

SI (metric) units
 Closing time $T = (D \sqrt{W}) / 2260$
 D = Width of door in mm.
 W = Weight of door in kg.
 T = Closing time to latch check in seconds.

14.2 A156.19 Low energy power operated doors

The following table references portions of content from ANSI/BHMA A156.19. Refer to the standard, available through ANSI or BHMA for additional information. Standard material reprinted with BHMA permission.

14.2.1 Door measurements, low energy power operated door

ED100/ED250 Parameter				A156.19 standard		
Parameter	Function	Factory setting	Adjustment range	Para.	Requirement	
So	Opening speed	Swing door opening speed, automatic mode. Note 1	19%/s	ED100 8%/s - 50%/s ED250 8%/s - 60%/s 27%/s max. L.E. mode	4.2	Opening Doors shall open from closed to back check or 80°, whichever occurs first, in 3 seconds or longer as required in Table I. Total opening time to 90° shall be as in Table II. If door opens at more than 90°, it shall continue at the same rate as back check speed.
bc	Back check	Checking or slowing down of door speed before door being fully opened.	10°	5° - 40°	4.2	Back check shall not occur before 60° opening.
Sc	Closing speed	Swing door closing speed, automatic mode. Note 1	19%/s	ED100 8%/s - 50%/s ED250 8%/s - 60%/s 27%/s max. L.E. mode	4.4	Closing: Doors shall close from 90° to 10° in 3 seconds or longer as required in Table I. Doors shall close from 10° to fully closed in not less than 1.5 seconds.
dd	Hold open time	Hold open time.	5 s	5 s - 30 s	4.3	Time delay: When powered open, the door shall remain open at the fully opened position for not less than 5 seconds. Exception: when push-pull activation is used, the door shall remain at the fully opened position for not less than 3 seconds.
hS	Reference Chapter 15 for parameter detail.	Support for manual mode in door closed position.			4.5	Doors shall open with a manual force: <ul style="list-style-type: none"> • Not to exceed 15 lbf [67 N] to release a latch if equipped with a latch. • To set a door in motion 30 lbf [133 N]. • To fully open the door 15 lbf [67 N]. Forces shall be measured 1" [25.5] from latch edge of door.
hA		Adjustment, door activation angle.				
hF		Power assist function.				
Fo	Static force in opening direction	Static force on door closing edge in opening direction.	13.5 lb f [60 N]	4.5 lb f [20 N] - 33.7 lb f [150 N] Reduced in low energy mode.	4.5	Force required to prevent a stopped door from opening or closing shall not exceed 15 lb f [67 N] measured 1" [25.4] from latch edge of door at any point during opening or closing.
Fc	Static force in closing direction	Static force on door closing edge in closing direction.	13.5 lb f [60 N]	4.5 lb f [20 N] - 33.7 lb f [150 N] Reduced in low energy mode.	4.5	

Note 1: Speed may be slower after learning cycle completed.

14.2.2 A156.19, Table I: Minimum opening and closing times.

"D" door width, inches [mm]	"W" door weight, pounds [kg]				
	100 [45.4]	125 [56.7]	150 [68]	175 [79.4]	200 [90.7]
36 [914]	3.0 s	3.5 s	3.5 s	3.0 s	3.0 s
42 [1067]	3.5 s	4.0 s	4.0 s	4.5 s	4.5 s
48 [1219]	4.0 s	4.5 s	4.5 s	5.0 s	5.5 s

Minimum opening time to back check or 80 degrees (whichever occurs first).
 Minimum closing time from 90 degrees to latch check or 10 degrees (whichever occurs first).

14.2.3 A156.19, Table II: Total opening time to 90 degrees.

Back check at 60°	Back check at 70°	Back check at 80°
Table I plus 2 s	Table I plus 1.5 s	Table I plus 1 s
If door opens more than 90°; it shall continue at the same rate as back check speed.		
Back check occurring at a point between positions shall use lowest setting.		

14.2.4 Other door weights and widths

Closing time $T = (D \sqrt{W}) / 188$
 D = Width of door in inches.
 W = Weight of door in pounds.
 T = Closing time to latch check in seconds.

SI (metric) units
 Closing time $T = (D \sqrt{W}) / 2260$
 D = Width of door in mm.
 W = Weight of door in kg.
 T = Closing time to latch check in seconds.

15 Parameters

15.1 Parameters

15.1.1 Firmware version



TIPS AND RECOMMENDATIONS

- Parameters descriptions incorporate firmware versions v1.7 through v2.1.
- Version numbers are noted next to each applicable parameter description.

15.1.2 Firmware version and updates.

- Operator firmware version is displayed during first commissioning. Reference ED100/ED250 installation manual Chapter 22.
- dormakaba USA, Inc. handheld can be used to check operator firmware version and to perform firmware updates.
- Reference Chapter 18, dormakaba handheld, or dormakaba handheld manual.

Fig. 15.1.1 dormakaba USA, Inc. handheld terminal



15.1.3 Configuration parameters

Configuration parameters (Para. 15.1.7) are set during first commissioning, reference ED100/ED250 installation manual Chapter 22.

15.1.4 Driving parameters

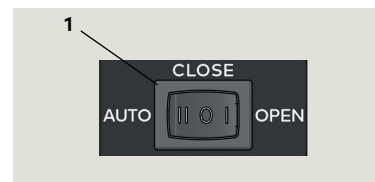
Driving parameters can be set once first commissioning has been completed.

- Reference Para. 15.1.8 for a list of driving parameters.
- Reference Para. 15.2 for details on each driving parameter.

15.1.5 Changing parameter values.

- Set program switch to the CLOSE position

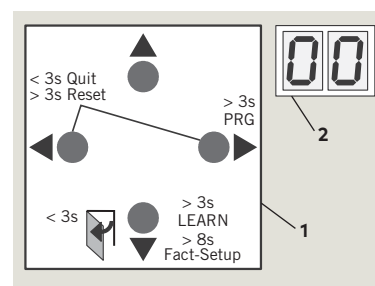
Fig. 15.1.2 Program switch



- Program switch, 3 position

- Use 4 button keypad as outlined in Steps 1 through 8 to view or change parameter values.

Fig. 15.1.3 4 button keypad, 2 digit display



- 4 button keypad
- 2 digit display

Step 1 ▶	Press and hold right button > 3 s to enter program mode.
Step 2 ◄	Press up or down button to scroll through parameters until desired parameter is displayed.
Step 3 ▶	Press right button to display current parameter value.
Step 4 ▶	Press right button again to enable editing of value, display will start flashing.
Step 4 ◄	Press up or down button to select desired parameter value.
Step 5 ▶	Press right button to save selected value. Display stops flashing.
Step 6 ◀	Press left button to return to selected parameter.
Step 7 ◄	Press up or down button to scroll through parameters until next desired parameter is displayed.
Step 8 ◀	Press left button for a minimum of 3 s to exit program mode.

15.1.6 Configuration parameters

Parameter		Description
1	AS AS	Installation type
2	rd rd	Reveal depth
3	Tb rb	Door width
4	dL dL	Door type



15.1.7 Driving parameters

Reference Para. 15.2 for parameter details.

Driving parameter		Description
5	So So	Opening speed, automatic mode
6	Sc Sc	Closing speed, automatic mode
7	dd dd	Hold open time, automatic mode
8	dn dn	Hold open time, night/bank
9	do do	Hold open time, manual opening of door
10	Sb Sb	Wall masking on door swing (hinge) side
11	ST ST	Safety sensor test
12	SA SA	Activation by safety sensor on approach (opposite hinge) side
13	SP SP	Suppression of safety sensor on swing (hinge) side during initial movement (v1.9)
14	Ud Ud	Locking mechanism delayed opening time
15	Pu Pu	Door preload prior to unlocking
16	TS TS	PR (Power reserve) module test
17	Fo Fo	Static force on door closing edge in opening direction (wind load control)
18	Fc Fc	Static force on door closing edge in closing direction (wind load control)
19	EP EP	Motor driven latching action, automatic mode
20	EA EA	Door opening angle at which motor driven latching action is activated
21	FH FH	Keep closed force
22	PG PG	Push and Go
23	PS PS	Program switch type
24	S1 S1	DCW EPS, electronic program switch behavior following a power reset
25	S2 S2	Internal program switch; switch function on delay
26	du du	Door unlocking during business hours
27	Sr Sr	Status relay function, terminal block X7

Driving parameter		Description
28	bE bE	Input 4/4a and X3, 1G 24V locking device output configuration
29	CC CC	Cycle counter, number displayed * 10000
30	EC EC	Delete error log
31	CS CS	Reset service interval display (yellow LED)
32	SL SL	Factory setting level (Fact Setup button)
33	OA OA	Opening angle, set during learning cycle
34	hd hd	Door closer mode, automatic or manual
35	hA hA	Power assist function activation angle
36	hF hF	Power assist function force adjustment
37	hS hS	Power assist function support for manual mode in door closed position (v1.9)
38	F1 F1	Upgrade card, fire protection
39	F2 F2	This paragraph left intentionally blank.
40	F3 F3	Professional upgrade card, flip flop function, night/bank
41	F4 F4	Professional upgrade card, extended hold open time
42	F5 F5	Professional upgrade card, nurse-bed function (double doors only)
43	F7 F7	Upgrade card, barrier free toilet
44	F8 F8	Upgrade card, DCW I/O module
45	C1 C1	Configuration of COM 1 interface
46	bc bc	Back check angle when door opened manually
47	Td Td	Door thickness [mm]
48	d1 d1	Deactivation of drive, emergency pushbutton at X4, 4 and 4a, trigger type (v1.7)
49	d2 d2	Night/bank function, trigger type (v1.7)
50	FC FC	Hold open system release by manually closing door, trigger type (v1.7)
51	Ad Ad	Active door with astragal: caster angle, angle door must reach before passive door starts to open
52	HS HS	Hinge clearance
53	S3 S3	OHC mode; permanent open via night-bank input (v2.1)
54	S4 S4	OHC mode; manual force overload drive release (v2.1)

15.1.8 Configuration parameters, detail

Parameter and value range, factory setting = bold .	Parameter description	
1  0 - 4 0	Installation type <ul style="list-style-type: none"> 0 <ul style="list-style-type: none"> Pull arm with track, wall mounting on swing (hinge) side (Fig. 21.1.4). Pull arm and CPD lever with track, wall mounting on swing (hinge) side (Fig. 21.1.5). Reference Para. 21.1.10 for door reveal detail. 1 <ul style="list-style-type: none"> Standard push arm, wall mounting on approach (non-hinge) side (Fig. 21.1.6). 2 <ul style="list-style-type: none"> Push arm with track, wall mounting on approach (non-hinge) side. Application specific 3 <ul style="list-style-type: none"> Overhead concealed (OHC), right hand (v2.1) 4 <ul style="list-style-type: none"> OHC, left hand (v2.1) 	
	Reveal depth <p>Reveal is set in increments of 10 mm (3/8"), "3" = 30 mm (1 1/8").</p> <ul style="list-style-type: none"> ED100 [-3 to 300mm] <ul style="list-style-type: none"> -13/16" to 11 13/16" ED250 [-30 to 500mm] <ul style="list-style-type: none"> -13/16" to 19 11/16" CPD lever, reference Para. 15.1.9. 	
	2  ED100 -3 to 30 ED250 -3 to 50 0	

15.1.9 CPD pull arm and lever rd parameter adjustment.

- Value of parameter **rd** must be reduced by 3/16" [30] when using the CPD pull arm in a pull installation.
- Example: ED250 with CPD pull arm and lever in pull installation with reveal of 30 mm (1 1/8"). Parameter rd setting = 0 (Reveal of 30 mm - 30 mm).




3   ED100 7 to 12 ED250 7 to 12 10	Door width <p>Door width is set in increments of 100 mm (4"), "10" = 1000 mm (39.4").</p> <ul style="list-style-type: none"> ED100: [700-1200mm] 28" - 48" ED250: [700-1500mm] 28" - 48"
	Door type <ul style="list-style-type: none"> 0 Single door <ul style="list-style-type: none"> Double door 1 <ul style="list-style-type: none"> Overlapping door (with astragal) Active door operator. 2 <ul style="list-style-type: none"> Double door Overlapping door (with astragal) Passive door operator. 3 <ul style="list-style-type: none"> Double door Edgeless door (no astragal) Active door operator. 4 <ul style="list-style-type: none"> Double door Edgeless door (no astragal) Passive door operator.
4  0 to 4 0	

Fig. 15.1.4 Pull arm with track

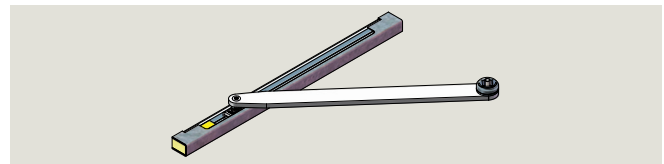


Fig. 15.1.5 CPD pull arm and lever with track

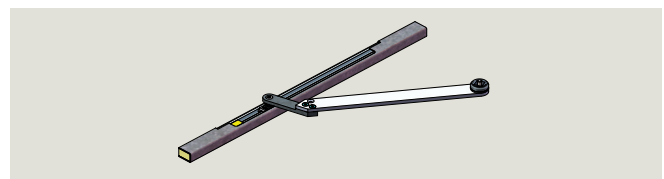
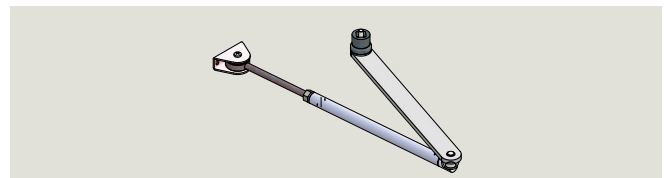









Fig. 15.1.6 Standard push arm









15.1.10 Push arm with track; reveal and installation detail [Application specific].

15.2 Driving parameters detail

15.2.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
Opening speed, automatic mode				
5	 ED100 8 - 50* ED250 8 - 60	%s	25	<ol style="list-style-type: none"> Opening speed refers to automatic mode, speed can be adjusted using this parameter. Internal monitoring system checks if parameter setting is admissible. If setting exceeds admissible value, the setting is alternately displayed with the permissible value. After parameter set, verify setting meets ANSI/BHMA standards A156.10 (full energy) or A156.19 (low energy) standards. See Chapter 13. Full adjustable range of opening speeds available only when full energy upgrade card installed. *ED100, maximum opening speed reduced to 27%/s in low energy mode.
Closing speed, automatic mode				
6	 ED100 2 - 50* (v2.0) ED250 2 - 60 (v2.0)	%s	25	<ol style="list-style-type: none"> Closing speed refers to automatic mode, speed can be adjusted using this parameter. Internal monitoring system checks if parameter setting is admissible. If setting exceeds admissible value, the setting is alternately displayed with the permissible value. After parameter set, verify setting meets ANSI/BHMA standards A156.10 (full energy) or A156.19 (low energy) standards. See Chapter 14. Full adjustable range of opening speeds available only when full energy upgrade card installed. *ED100, maximum closing speed reduced to 27%/s in low energy mode.
Hold open time, automatic mode				
7	 0 - 30 0 - 180*	s	5	<ol style="list-style-type: none"> Hold open time starts once all internal, external, safety and push and go inputs have been opened or dropped, and door is in an open position. Hold open time values from 0 to 30 are set in increments of 1 second. Hold open time values greater than 30 seconds are set in increments of 5 seconds. In low energy mode, a minimum hold open time of 5 seconds is required. Hold open time can be re-triggered. *If hold open times greater than 30 seconds are desired, professional upgrade card extends maximum hold open time to 180 seconds.
Night-bank hold open time				
8	 0 - 30	s	10	<ol style="list-style-type: none"> Night-bank (key switch) hold open time is set using this parameter. Night-bank Hold open time starts once contact on night-bank activator input is opened and door is in an open position. Night-bank hold open time can be re-triggered.
Hold open time, manual opening				
9	 0 - 30	s	1	<ol style="list-style-type: none"> Default hold open time of 1 second that follows every manual opening of door can be adjusted using parameter do (v1.9). Hold open time starts when door is released.
Wall masking on door hinge side				
10	  60 - 99	°	80	<ol style="list-style-type: none"> Wall masking required if door opens against an obstacle. When door reaches set wall masking angle, system will ignore signal from safety sensor on door swing (hinge) side. The wider the detection range of safety sensor used, the greater the area must be in which system has to ignore sensor's emitted signal. To insure personnel safety, it is advised to keep this range as small as possible. If set wall masking angle is exceeded when door is being opened, a rapidly flashing dot appears in top left hand corner of 2 digit display. Rapidly flashing dot disappears when door angle drops below set wall masking angle.






15.2.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description	
Safety sensor test					
 	0 - 8		0	Safety sensor parameter ST must be set to sensors used and if they are active-high or active-low. See E 04 safety sensor test error, Para. 15.4.	
				0	Sensor test off.
				1	Sensor test on swing (hinge) side. Active-high
				2	Sensor test on swing and approach sides. Active-high
				3	Sensor test on swing and approach sides. Active-high
				4	Sensor test on swing side. Active-low
				5	Sensor test on approach side. Active-low
				6	Sensor test on swing and approach sides. Active-low
				7	Wall mounted sensor with data line. Lock monitoring not available.
8	Sensor test, overhead sensor type Bodyguard III or Premier T with monitoring input. (v2.1)				
Activation by safety sensor on approach (opposite hinge) side					
	0 - 1		0	0 Safety sensor's input is disregarded as soon as door is closed.	
				1	Safety sensor can trigger an opening pulse while door is closed.
Suppression of safety sensor on swing (hinge) side during initialization drive					
	0 - 1		0	0 Safety sensor on swing side is active during an initialization drive after a power on reset.	
				1	<ul style="list-style-type: none"> 1. With SP set to 1, operator will disregard swing side safety sensor during initialization drive (v1.9). • After a power on reset, operator starts an initialization drive at slow speed. The initialization drive cannot be completed if safety sensor on hinge side is, or has been triggered.
Delayed opening time for locking mechanism					
	0 - 40 * 100	ms	3 *100	<ol style="list-style-type: none"> 1. Delayed opening time delay starts as soon as door opening pulse has been generated. 2. Door opens on expiration of time delay. 3. If parameter is set to "0" and input for locking feedback contact is closed, door will not perform a preload Pu before door unlocks. 4. Since various motor locks do not have feedback contacts, a delay of up to 4 seconds is possible (v1.7). 	
Door preload prior to unlocking					
	0 - 9		0	<ol style="list-style-type: none"> 1. Door preload prior to unlocking; force with which door is pushed in the "closed" direction before door is opened. 2. The door may need to be pushed in closing direction (preload) in order to release electric strike to insure door opens. 3. Preload time is set by parameter Ud, delayed opening time for locking mechanism. 4. To maintain long service life, set preload force only as high as necessary. 	






15.2.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
Power reserve module SVP-PR 12 test				
16	0 - 1		0	<p>0 Test off</p> <p>1</p> <ol style="list-style-type: none"> SVP-PR 12 power reserve module test is performed once every 24 hours, or 10 minutes after AC power has been turned on. In event of an error: <ul style="list-style-type: none"> Unlocking is not performed and no automatic door movements are initiated. Error code E 25 is displayed, See Chapter 15, Para. 15.4, troubleshooting error codes. SVP-PR 12 power reserve module can be used but must be tested on a regular basis if using: <ul style="list-style-type: none"> SVP-2000 DCW® emergency escape motor lock with automatic latching action. M-SVP 2000 DCW® emergency escape lock, v1.5 or later. Test is automatically activated if a fire protection module is recognized in conjunction with SVP-2000 DCW® or M-SVP 2000 DCW locks.
Static force in opening direction				
17	2- 15 *10	N	6 *10	<ol style="list-style-type: none"> Static force in opening direction (basic parameter for wind load control). Static force on door closing edge can be changed using this parameter. Internal monitoring system checks if parameter setting is admissible. If setting exceeds admissible value, the setting is alternately displayed with the permissible value. After parameter set, verify setting meets ANSI/BHMA standards A156.10 (full energy) or A156.19 (low energy) standards. See Chapter 14. ED100, static force range is reduced with Low Energy mode. See Chapter 13.
	.45- 3.4 *10	lbf	1.35 *10	
Static force in closing direction				
18	2- 15 *10	N	6 *10	<ol style="list-style-type: none"> Static force in closing direction (basic parameter for wind load control). Static force on door closing edge can be changed using this parameter. Internal monitoring system checks if parameter setting is admissible. If setting exceeds admissible value, the setting is alternately displayed with the permissible value. After parameter set, verify setting meets ANSI/BHMA standards A156.10 (full energy) or A156.19 (low energy) standards. See Chapter 14. ED100, static force range is reduced with Low Energy mode. See Chapter 14.
	.45- 3.4 *10	lbf	1.35 *10	
Motor driven latching action, automatic mode				
19	0 - 9		0	<ol style="list-style-type: none"> System offers a motor driven latching action in automatic mode in addition to mechanical latching action. The EP parameter setting (v1.7) is designed to increase static force on door to insure proper closing despite resistance caused by door seals or locking devices. Setting should be increased step by step from a low setting so as to avoid damage to the system. Use the lowest possible setting. Ensure that both the door itself and the arm or track installation are suitable for the additional, permanent forces.
Motor driven latching action angle (v1.7)				
20	2 -10	°	3	<p>Door opening angle at which motor driven latching action EP is activated.</p> <ul style="list-style-type: none"> Starting angle of the latching angle adjustable from 10°. (v1.7).
Keep closed force				
21	0 - 9		0	<p>0 Off</p> <p>1 to 9</p> <ol style="list-style-type: none"> Keep closed force is: <ul style="list-style-type: none"> Permanently applied following motor drive latching action. Designed to keep door in closed position even if wind acts on door. Keep closed force can be set from 0 (off) to 9, maximum force.





15.2.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
Push & Go				
22		0 - 1	0	0 Off
				1 <ol style="list-style-type: none"> Parameter is activated. Automatic opening of door is started when door is manually moved 4° out of the closed position. Door close mode parameter hd must be set to "0" (manual) to enable this function.
Program switch type				
23		0 - 4	0	0 Internal, operator mounted program switches are active.
				1 External mechanical program switch with contacts is connected to operator terminal board. Internal program switch connector must be removed.
				2 External DCW® electronic program switch (EPS) is connected to operator terminal board. Internal program switch connector must be removed.
				3 Program switch control by TMS Soft control software.
4 <ol style="list-style-type: none"> DCW® electronic program switch (EPS) is installed, and operator is also connected by the building management system to TMS Soft control software. When PS is set to 4, the program switch functions can be changed from DCW (EPS) to TMS Soft (v1.9). 				
DCW Electronic program switch (EPS) behavior following power reset				
24		0 - 1	0	0 <ol style="list-style-type: none"> In event of power failure, or if operator is deliberately switched off, EPS will automatically switch to last known position when power returns. Important: The time at which power returns might not be during business hours and may affect insurance-compliant door locking requirements.
				1 <ol style="list-style-type: none"> In event of power failure, or if operator is deliberately switched off, EPS will automatically switched to OFF position when power returns. This function should be used if insurance compliant locking is required.
Internal program switches, switch on delay				
25		0 - 1	0	0 Operator will perform function of new switch setting as soon as internal program switch is moved.
				1 <ol style="list-style-type: none"> Operator will perform function of new switch setting after a delay of 10 seconds from when internal program switch is moved. This function is useful if user has to pass through door and its connected detectors and sensors after program switch is set to new function.
Unlocking during business hours				
26		0 - 1	0	0 Door is always locked when it reaches closed position.
				1 <ol style="list-style-type: none"> In automatic mode, door will not lock when it reaches closed position. This achieves faster door opening when system is equipped with motor driven locks. If an electric strike opener is used, it must be suitable for 100% continuous duty factor to avoid possibility of damage.







15.2.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
Status relay function, X7 terminals				0 Status relay is deactivated.
27		0 - 6	1	1 Status relay activated as soon as door reaches door "closed" position.
				2 Status relay activated as soon as door reaches door "open" position.
				3 Status relay activated when error codes are displayed on 2 digit operator display.
				4 "Door closed and locked" activates status relay.
				5 Status relay activated when information or error codes are displayed on 2 digit operator display (v1.9).
				6 <ol style="list-style-type: none"> Status relay activated when door is opened further than opening angle parameter OA, set during learning cycle. Parameter OA value can only be changed using dormakaba handheld or by performing another learning cycle.
Locking device output configuration; output X3, 1G (24V) and input X6, 4/4a				Reference Chapter 7
28		0 - 1	0	0 Locking device output terminal X3, 1G (24V) is independent of Input X6, 4/4a.
				1 <ol style="list-style-type: none"> Locking device output terminal X3, 1G (24V) is turned on as soon as contact at X6, 4/4a is opened (v1.9). Terminal X3, 1G 24V output is on for as long as contact at X6, 4/4a is open, motor lock with a 100% duty factor is required. This function is not available for DCW motor locks.
Cycle counter				1. Total number of opening and closing cycles displayed is shown in increments of 10000. <ul style="list-style-type: none"> Display value, "4", 40,000 cycles. Display value, "53", 530,000 cycles. 2. Total number of cycles can be displayed on dormakaba handheld. 3. A display value of "99" means 990,000 cycles or greater.
29		0 - 99 * 10000	cycles	
Delete error log				0 No function.
30		0 - 1	0	1 <ol style="list-style-type: none"> When "1" entered, Error log is deleted. Parameter is then automatically reset to "0".
Reset service interval display, operator yellow LED				0 No function.
31		0 - 1	0	1 <ol style="list-style-type: none"> When "1" entered: <ul style="list-style-type: none"> Service cycle counter is reset to 200,000. Service interval is reset to 12 months. Yellow LED not illuminated. Parameter is then automatically reset to "0". Values other than default values must be set using dormakaba handheld: <ul style="list-style-type: none"> Maintenance interval Maintenance cycles







15.2.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
Factory setting level				
32	 1 - 2		1	<p>Parameter SL is used to determine what data will be reset during factory setting process.</p> <p>Standard factory settings</p> <ul style="list-style-type: none"> • Program switches OFF. • Door closed. <p>1</p> <ul style="list-style-type: none"> • Press 4 button keypad down button ▼ for > 8 s. <ol style="list-style-type: none"> 1. All parameters reset to factory settings. 2. Procedure completed when "8" on 2 digit displays blinks twice. 3. Installed upgrade cards remain valid and do not require reinstallation. 4. Learning cycle required.
				<p>Extended factory settings</p> <ul style="list-style-type: none"> • Program switches OFF. • Door closed. • Press 4 button keypad down button ▼ for > 8 s. <p>2</p> <ol style="list-style-type: none"> 2. Procedure completed when "8" on 2 digit displays blinks twice. 3. Installed upgrade cards deleted from operator memory. 4. Parameter SL automatically reset to 1. 5. Control unit and upgrade cards can be used independently (delivery status). 6. Learning cycle required..
Opening angle				
33	 0 - 110	°		<ol style="list-style-type: none"> 1. Door opening angle set during learning cycle is displayed. 2. Opening angle can only be changed during learning cycle. 3. Due to installation and parameter tolerances, display value may not match actual door position.
Door closer mode				
34	 0 - 1		1	<p>0</p> <ol style="list-style-type: none"> 1. Automatic mode. This mode is applicable whenever door is mainly opened automatically and where motion detectors are installed. 2. Mode is optimized for high frequency use. 3. Full energy upgrade card provides for higher door opening and closing speeds. 4. In case door is blocked during a closing cycle, operator reverses automatically. 5. Driving phase is optimized to provide reliable closing cycles. 6. Keep closed force (wind load control) parameter FH and Push & Go function parameter PG are only available in automatic mode. <p>1</p> <ol style="list-style-type: none"> 1. Manual mode. This mode is applicable whenever door is mainly used manually and only rarely automatically. 2. In case door is blocked during a closing cycle, door will stop at its current position. 3. Driving phase optimized for manual opening cycles. 4. Power assist function parameter hf is only available in manual mode.
Power assist activation angle (v1.7)				
35	 1 - 5	°	3	<ol style="list-style-type: none"> 1. Setting of door activation angle for Power assist function (hF). 2. Higher settings of hA result in better spring force compensation for easier manual opening. 3. Power assist function is more sensitive the smaller the activation angle.










15.2.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description								
Power assist function (v1.7)												
36		0 - 10	0	<ol style="list-style-type: none"> Force setting for Power assist function. Power assist function only available with hd parameter = 1, manual mode. "0"; power assist function OFF; power assist function enabled for available values greater than 0. Power assist function enabled when power assist activation angle hA reached. The greater the value of hF, the easier the door can be manually opened from power assist activation angle hA. If power assist set too high, door can open automatically. Power assist function is not available <ul style="list-style-type: none"> If operator is switched off A smoke detector or emergency button has been triggered. 								
Power assist function support for manual mode in door closed position (v1.9)												
37	 	0 - 10	0	<ol style="list-style-type: none"> Setting for power assist function support with door in closed position. Power assist function only available with hd parameter = 1, manual mode. The greater the value of hS, the easier the door can be manually opened from the closed position. 								
F1, F3-F8 Upgrade card parameter values F2, ED100 full/low energy mode												
				<table border="1"> <tr> <td>0</td> <td>Upgrade card not installed, function not available.</td> </tr> <tr> <td>1</td> <td>Upgrade card installed, function not activated.</td> </tr> <tr> <td>2</td> <td>Upgrade card installed, function activated.</td> </tr> <tr> <td>3</td> <td>Upgrade card has been removed, function no longer available.</td> </tr> </table>	0	Upgrade card not installed, function not available.	1	Upgrade card installed, function not activated.	2	Upgrade card installed, function activated.	3	Upgrade card has been removed, function no longer available.
0	Upgrade card not installed, function not available.											
1	Upgrade card installed, function not activated.											
2	Upgrade card installed, function activated.											
3	Upgrade card has been removed, function no longer available.											
		0 - 3	0									
Upgrade card, fire protection												
38		0, 2, 3	0	<ol style="list-style-type: none"> Once upgrade card installed, parameter value will automatically change to 2. Following activation, drive may be used as a electrically controlled hold-open system according to EN 14637, Building hardware-Electrically controlled hold-open systems for fire/smoke door assemblies, or similar standards. Full energy function is automatically activated. Plug for terminal board X9 socket included with upgrade card. 								
39				This paragraph left intentionally blank.								
Upgrade card professional, impulse relay												
40		0, 1, 2, 3	0	<ol style="list-style-type: none"> Once upgrade card installed, parameter value will automatically change to 1. Function must be activated by changing parameter F3 to 2. Door can be controlled with a pushbutton connected to Night-bank input without a door hold open time: <ul style="list-style-type: none"> Door opens with first pulse and remains open. The hold open time is not limited. Door closes only with second pulse of pushbutton. Pushbutton in 3. must be connected to terminal board Night-bank input: <ul style="list-style-type: none"> X1, 3 and 35 (dry) X10, 57 and 57a (wet) Standard hold-open time dd is available when door is opened using other internal and external detectors. 								

15.2.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
Upgrade card professional, extended hold-open time				
41	 0, 2, 3		0	<ol style="list-style-type: none"> Once upgrade card installed, parameter value will automatically change to 2. Setting range of dd, hold -open time is extended from 0 - 30 s to 0 - 180 s.
Upgrade card professional, nurse - bed function (double doors only)				
42	 0, 1, 2, 3		0	<ol style="list-style-type: none"> Once upgrade card installed, parameter value will automatically change to 1. Function must be activated by changing parameter F5 to 2. For double doors, this function enables: <ul style="list-style-type: none"> Separate door opening (only active door, nurse) Both doors open (active, inactive doors, bed) Permanent opening? The activator connected to the external detector (terminal board X4, 41 and 3) controls the active door (nurse function). Only the active door will open. The activator connected to the internal detector (terminal board X4, 42 and 1) controls the both active and inactive doors (bed function), both doors will open. If Push & Go function PG is activated, only the active door will open in the event of a manual opening. Night-bank inputs will only cause the active door to open. Exit only program switch function is not available with F5 activated.
Upgrade card barrier free toilet				
43	 0, 1, 2, 3		0	<ol style="list-style-type: none"> Once upgrade card installed, parameter value will automatically change to 1. Function must be activated by changing parameter F7 to 2. Operator power reset is required; turn power switch off, wait 10 s and turn power back on. Upgrade card assigns inputs and outputs of the control unit with functions which are required for this application.
Upgrade card DCW®				
44	 0, 2, 3		0	<ol style="list-style-type: none"> Once upgrade card installed, parameter value will automatically change to 2. Upgrade card provides operator with DCW® bus connection. Plug for terminal board X8 socket included with upgrade card. DCW® bus enables connection of: <ul style="list-style-type: none"> Program switch EPS DCW® (max. 2) Motor lock controls SVP-S 2x DCW® (max. 2) Motor lock SVP 2000 (max. 1) RM-ED lintel mounted smoke detector Key switch button ST 32 DCW® (max. 2) I/O module DCW (max. 1)
COM 1 configuration interface				
45	 0 - 1		0	<ol style="list-style-type: none"> 0 Interface programmed for communication with dormakaba handheld. 1 Interface programmed for use with Dorma TMS Soft control software.
Back check when door opened manually				
46	 5 - 40 (v1.9)	°	10	<ol style="list-style-type: none"> Angle after which door is braked when manually opened. Back check level is automatically optimized during manual door opening cycles. This function improves door braking behavior in end position so door does not move beyond set opening angle OA (v1.7). Entered value is subtracted from set opening angle OA. Example <ul style="list-style-type: none"> Opening angle, 90° Parameter bc, 12° Door back check starts at 78°

15.2.1 Driving parameters detail.

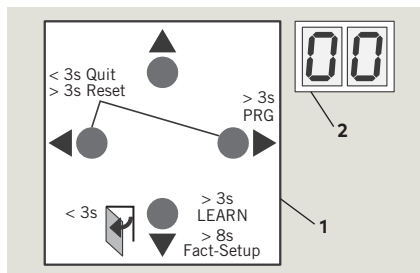
Parameter	Value range	Units	Factory setting	Description	
Door thickness					
47	 0 - 99	mm	35	1. Parameter is entered in mm. 2. Door thickness affects measured door opening angle. 3. Parameter Td enables a more accurate door width to be entered, if required.	
	 0 - 3 7/8"		1 3/8"		
Deactivation of drive; X6, 4 and 4a, trigger type (v1.7)					
48		0 - 1	0	0 NC contact, drive function is deactivated when NC contact is open.	
				1 NO contact, drive function is deactivated when NO contact is closed.	
Night-bank contact X1; 3 and 35, trigger type (v1.7)					
49		0 - 1	0	0 <ol style="list-style-type: none"> NO contact, night-bank function is triggered when NO contact is closed. Typically used when using a key switch or an access control system. 	
				1 <ol style="list-style-type: none"> NC contact, night-bank function is triggered when NC contact is opened. Typically used when connected to building management system to trigger doors (signal normally present). 	
Release of hold-open system (v1.7)					
50		0 - 1	1	1 <ol style="list-style-type: none"> Upgrade care Fire Protection installed, users may release hold-open by manually moving door in closed direction. A manual release button is not required. 	
				0 <ol style="list-style-type: none"> Hold-open release by manually moving door in closed direction is deactivated. A manual release button is required. 	
Castor angle for double doors					
51		0 - 30	°	30	Active door with astragal, angle active door must open before passive door opens.
Hinge clearance					
52		± 5	mm	3	<ol style="list-style-type: none"> Clearance between hinges is critical for the calculated door angle. It may only have a small effect but the clearance can be adjusted in extreme cases to improve accuracy. Factory setting is 3 * 10, 30 mm, 1 3/16". With CPD doors, setting must be changed to a negative value. A learning cycle is then required as system creates an angle table as a function of the set parameters.
		*10			
		±3/16	inches	*10	
Overhead concealed (OHC) mode, permanent open via night-bank input (v2.1)					
53		0 - 1	0	0 Function disabled.	
				1 If night-bank is triggered > 5 s, operator changes to permanent open mode. The function is canceled by repeated impulse.	
Overhead concealed (OHC) mode, manual force overload drive release (v2.1)					
53		0 - 1	0	0 Function disabled.	
				1 If door is manually moved against the direction of operator motor rotation, this is detected and the motor driving force is released to avoid damage to the operator mechanics.	

16 Troubleshooting

16.1 Information and error codes

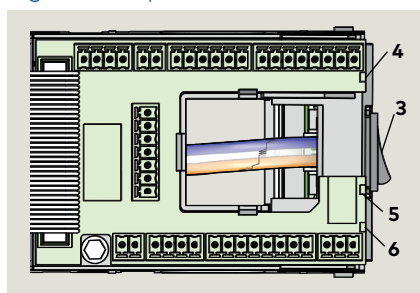
- 1 4 button keypad
- 2 2 digit display

Fig. 16.1.1 User interface



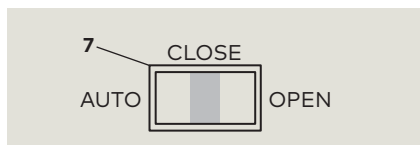
- 3 Power switch
- 4 Red LED
- 5 Yellow LED
- 6 Green LED

Fig. 16.1.2 Operator LEDs



- 7 Program switch, Close position

Fig. 16.1.3 Program switch



TIPS AND RECOMMENDATIONS

Para. 16.3, Information codes
 Para. 16.4, Error codes

16.1.1 Overview

Operator monitors internal circuits and external safety circuits managed by the operator.

16.1.2 Error and information messages

1. With operator in use, certain situations may develop resulting in error or information messages.
2. Operator attempts to identify the cause and respond accordingly.
3. Response depends on the severity of the error:
 - Information message (**In**)
 - Error message (**E**)
 - Deactivating the operator's automatic function; operator will switch to emergency mode. Users can then access door manually.

16.1.3 User information display.

User interface display, or dormakaba handheld displays:

- Information **In** codes
- Error message **E** codes

16.1.4 Viewing error messages.

To access and view error messages, briefly press the right button on the 4 button keypad.

16.1.5 Red LED on operator .

Red LED adjacent to operator power switch displays blinking codes for:

- Certain **In** information
- **E** status codes (Para. 16.2)

16.1.6 Resetting error codes.

Options for resetting error codes:

1. Set program switch in Close (off) position.
2. User interface Reset buttons:
 - Press both left and right buttons >3s to reset system (v1.8).
 - Header cover must be opened to access user interface.
3. Power reset:
 - Turn power switch OFF.
 - Turn power switch back on after 10 seconds.

CAUTION

Always analyze and remove cause for error before resetting error message!
 Troubleshooting charts (Para. 16.3, 4) are intended as a guide for diagnosing errors.

16.1.6 Error message memory.

1. There are ten error message memory locations; E 0 through E 9.
2. The latest error message is always stored in error memory location E 0:
 - As soon as another error occurs, the existing error stored in E 0 will be moved to E 1 and the latest error will be stored in E 0.
3. A maximum of 9 errors can be stored in memory locations E1 through E9.
4. Identical error messages occurring one after another are not stored again.

16.2 Red LED status codes

16.2.1 Red LED status codes

Red LED status	Display	Description
Steady flashing		Control unit has detected error, emergency mode activated.
On steady	In 11	Hold-open device triggered.
Flashing 2 times	E 02	Locking device error.
Flashing 4 times	E 04	Safety sensor test error.
Flashing 5 times	E 25	SVP PR DCW module test negative.
Flashing 5 times	E 51 E 52 E 53	Incremental encoder error.
Flashing 6 times	E 62	Double door operation, 2nd system has incompatible firmware version.
Flashing 6 times	E 63	Double door operation, 2nd system has incompatible fire protection setting.
Flashing 7 times	E 71	System error 1 (test), second shutdown option.
Flashing 7 times	E 72	System error 2 (test), current measuring circuit.
Flashing 7 times	E 73	System error 3 (test), braking circuit
Flashing 12 times	E 12	EEPROM error
Flashing 13 times	E 13	Motor overcurrent
Flashing 15 times	E 15	Faulty learning cycle

16.3 Troubleshooting chart, "In" codes

16.3.1 Troubleshooting chart, information messages.

No.	Display	Red LED	Description	Troubleshooting information messages
	In 01	Off	<p>Obstruction Door obstructed by an obstacle or person; door movement stopped by operator.</p>	<p>Sustained operation on a door with an obstruction can result in damage to drive.</p> <ol style="list-style-type: none"> Object or person obstructing door movement. <ul style="list-style-type: none"> Check door movement while system is deenergized. Remove cause of anything obstructing door movement. Sensor detection range too small. <ul style="list-style-type: none"> Obstructions are often caused by people using door due to sensor's detection range not matching operator's opening speed. Door is unavoidably contacted by person using door. Sensors detection range should be increased and/or operator's opening speed should be increased. Test system operation after cause of obstruction found.
2	In 08	Off	<p>Deactivation of drive function</p> <ul style="list-style-type: none"> Contact at X6, 4 and 4a is opened. Operator switched to emergency mode, door can only be used manually. 	<p>An emergency close switch, lock switch, or other system safety device may be connected to the X6 input.</p> <ol style="list-style-type: none"> One of the activators connected to X6 may have opened, or a defect is present. Reset the applicable activator. Operator should start operation automatically. If In 08 still present, check activators or system wiring.
3	In 09	Off	<p>Upgrade card error</p> <ul style="list-style-type: none"> Installed upgrade card has been removed. If two upgrade cards were installed, the upgrade card installed first (container module) has not been reinstalled or is defective. 	<ol style="list-style-type: none"> Installed Upgrade card may not be removed from operator. If more than one upgrade card is installed, the first card installed becomes the container module. <ul style="list-style-type: none"> Reference chapter 17 for Upgrade card installation. The container module must be installed last, after all other Upgrade cards are installed. If container module defective, first upgrade card (container module) must be replaced and all other upgrade cards must be reinstalled,
4	In 11	On	<p>Hold-open system triggered.</p>	<ol style="list-style-type: none"> Hold-open system can be triggered: <ul style="list-style-type: none"> Automatically by smoke detector or building interface system. Manually by a manual release button. Manually moving door. The system must be reactivated by a deliberate action. Depending on system's configuration, reactivation can be done by: <ul style="list-style-type: none"> Manually moving door to taught opening angle. Switching program switch to Close (off). Pressing both 4 button keypad left ◀ and right ▶ buttons >3s. It must be ensured that a smoke detector or building interface has not been triggered. If reactivation is unsuccessful, there may be a defect in the smoke detector or building interface system or its connections.
5	In 23	Off	<p>Locking alarm</p> <ul style="list-style-type: none"> Door is blocked while in the closed position. 	<ol style="list-style-type: none"> Most common cause of this error is the drive unit attempting to open a locked door. To eliminate the occurrence of this error, install a lock status switch. <ul style="list-style-type: none"> Lock switch detects the lock pin's switching status and switches the drive unit off if necessary. It is recommended to use a lock status switch, as repeated attempts to open a locked door may damage the drive unit or the door.

16.3.1 Troubleshooting chart, information messages.

No.	Display	Red LED	Description	Troubleshooting information messages
6	In 61	Off	Communication error, double door system <ul style="list-style-type: none"> No communication between the two operators. 	<ol style="list-style-type: none"> Check communication cable connection at the two operators. <ul style="list-style-type: none"> Cable connects to the horizontal RJ 45 connector next to the user interface (Chapter 4). Check communication cable.
7	In 72	Off	Current measuring circuit <ul style="list-style-type: none"> System could not successfully perform internal current measuring test, performed once every 24 hours. 	<ol style="list-style-type: none"> The initial current measuring test may not always be successfully completed due to system tolerances and environmental conditions. The test may also fail, as an example, if someone uses the door while the test is in progress.
8	In 73	Off	Braking circuit test <ul style="list-style-type: none"> System could not successfully perform internal braking circuit test, performed once every 24 hours. 	<ol style="list-style-type: none"> The initial braking circuit test may not always be successfully completed due to system tolerances and environmental conditions. The test also may fail, as an example, if someone uses the door manually while the test is in progress. If the cyclical test fails ten times in a row, error message In 73 will be displayed.
9	In 91	Off	DCW® communication <ul style="list-style-type: none"> At least one registered DCW® device is missing. 	<ol style="list-style-type: none"> Reconnect the corresponding DCW® device. If this is not possible, reactivate the drive. Reactivation can be done by: <ul style="list-style-type: none"> Switching program switch to Close (off). Pressing both 4 button keypad left ◀ and right ▶ buttons >3s.

16.4 Troubleshooting chart, "E" codes

16.4.1 Troubleshooting chart, "E" codes.

No.	Display	Red LED	Description	Troubleshooting error codes
1	E 02	Flashing 2 x	Locking device error <ul style="list-style-type: none"> Operator is attempting to open or close a locking device with feedback, or a DCW® locking device. An error has occurred during this process. 	<ol style="list-style-type: none"> Probable causes are a defective locking device or wiring defect. <ul style="list-style-type: none"> Check the locking device and feedback system.
2	E 03	Flashing 3 x	DCW® program switch is missing.	<ol style="list-style-type: none"> Check the DCW® program switch and its connections.
3	E 04	Flashing 4 x	Safety sensor test error <ul style="list-style-type: none"> Test of moving safety sensors was unsuccessful. 	<ol style="list-style-type: none"> Factory setting level of "safety sensor test" parameter ST is 0, test off (Chapter 15, Parameters). When ST is configured to installed safety sensors, a test signal is sent to the sensors before each door opening or closing cycle. Operator waits for a response within a certain time window. Check whether parameter ST has been configured to the installed safety sensors and their active-high or active-low signal level. Check for activation of the test at the safety sensors.
4	E 12	Flashing 12 x	EEPROM error <ul style="list-style-type: none"> Internal memory check could not be completed. Drive unit works in door closer mode. 	<ol style="list-style-type: none"> Using dormakaba handheld, reload current firmware to reinitialize system. If the error is still present, the control unit must be replaced.

16.4.1 Troubleshooting chart, "E" codes.

No.	Display	Red LED	Description	Troubleshooting error codes
5	E 13	Flashing 13 x	<p>Overcurrent detection</p> <ul style="list-style-type: none"> Motor is consuming more current than drive unit can provide. 	<ol style="list-style-type: none"> Motor is consuming too much power, check for any external causes. Drive unit or control unit is defective. If error repeats, operator must be replaced.
6	E 15	Flashing 15 x	<p>Faulty learning cycle.</p> <ul style="list-style-type: none"> Learning cycle could not be completed (Chapter 12). 	<ol style="list-style-type: none"> Error may occur if learning cycle has been interrupted, for example if door movement has been interrupted during the learning cycle. Learning cycle must be repeated.
7	E 25	Flashing 5 x	<p>SVP-PR 12 power reserve module test negative</p>	<ol style="list-style-type: none"> See Chapter 14, parameter TS, Power reserve module test. Check power reserve module and its wiring.
8	E 51 E 52 E 53	Flashing 5 x	<p>Incremental encoder error</p> <ul style="list-style-type: none"> Motor gear unit encoder monitoring detected a faulty state. 	<ol style="list-style-type: none"> Check encoder plug connection at operator: Ref. Chapter 4. <ul style="list-style-type: none"> Secure connection. Wiring terminations Short circuits. Check locking device for short circuits. Error can be caused by defective motor or short circuit in locking device. Motor gear unit must be replaced in event of defective motor.
9	E 62	Flashing 6 x	<p>Incompatible firmware version, double door system, second system.</p>	<ol style="list-style-type: none"> Equip both operators with same firmware version.
10	E 63	Flashing 6 x	<p>Incompatible fire protection setting, double door system.</p>	<ol style="list-style-type: none"> For double door systems, the Upgrade card fire protection must be installed in both control units.
11	E 71	Flashing 7 x	<p>System error 1, 2nd shutdown option</p>	<ol style="list-style-type: none"> In order to reliably switch off the drive unit, several switching elements are used and their functions are tested periodically. If the function test always results in the error code, the control unit must be replaced.
12	E 72	Flashing 7 x	<p>System error 2, current measurement circuit</p>	<ol style="list-style-type: none"> The current measurement circuit is part of the safety mechanisms and its function is tested periodically. If the function test always results in the error code, the control unit must be replaced.
13	E 73	Flashing 7 x	<p>System error 2, current measurement circuit</p>	<ol style="list-style-type: none"> The braking circuit is a safety element in the closer mode and will be tested every 24 hours. <ul style="list-style-type: none"> During the test the motor is shut down during door closing and when the door closes at a set angle in emergency mode. Test can be noticed as a short jerk on the door and is normal. Error can be due to door closing in the deenergized state too fast (under 3 seconds). See Chapter 12. Check the closing speed and reduce if necessary.
14			<p>Energy management</p> <ul style="list-style-type: none"> Motor is too hot (for example, too high an ambient temperature) System responds automatically. 	<ol style="list-style-type: none"> Movement dynamics in the closed direction will be reduced. Movement dynamics in both the open and closed directions will be reduced. System shuts down for 3 minutes (door closer mode). Hold-open time will be extended.

17 Upgrade cards

17.1 Upgrade cards

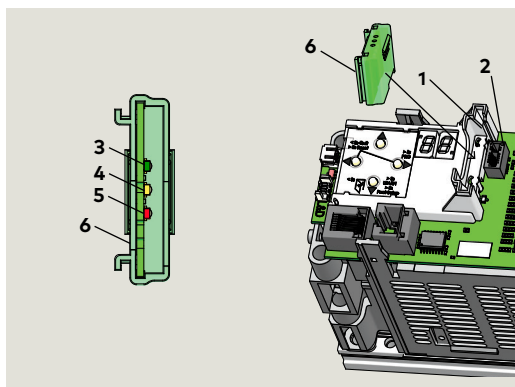
17.1.1 Upgrade card installation.

dormakaba upgrade cards can be used to expand the range of functions of ED100/ED250 operators.

When upgrade cards are installed, information is exchanged between and permanently allocated to both the operator control unit and the upgrade card.

- 1 Upgrade card slot
- 2 Upgrade card socket
- Status LEDs
- 3 Green LED
- 4 Yellow LED
- 5 Red LED
- 6 Upgrade card professional (green)

Fig. 17.1.1 Upgrade card slot



17.1.2 Upgrade cards

Upgrade card	EDxxx	Upgrade card color	Paragraph
Fire protection	ED100	Red	
	ED250	Transparent red	
Professional	ED100/ ED250	Green	
DCW	ED100/ ED250	Yellow	
Barrier free toilet	ED100/ ED250		

17.2 Container module

17.2.1 Container module

- The first upgrade card installed becomes the container module.
- Every operator control unit has only one container module.
- Functions of upgrade cards installed after the first upgrade card are saved in the container module.

17.2.2 Container module removal.

- If the container module is removed, all previously enabled functions will be deactivated **after a certain time**.

17.2.3 Operator control unit replacement.

- If the control unit is replaced, the container module is removed from the old control unit and inserted into the new control unit.
- The new control unit synchronizes with the container module and all upgrade card functions are available.

17.2.4 Inserting an upgrade card that has already been activated.

- Rapidly flashing yellow LED on upgrade card indicates card is rejected.
- Card's functions in operator control unit are still valid.

17.2.5 Inserted a container module from third party control unit.

- Rapidly flashing yellow and green LEDs on container module indicates module is rejected.
- Container module can only be synchronized with one control unit.

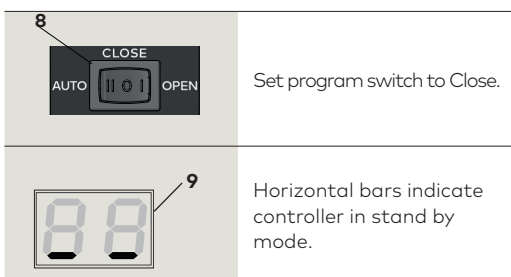
17.2.6 Container module defective.

- Upgrade cards that were installed after the container module must be reinstalled.

17.3 Installing upgrade cards

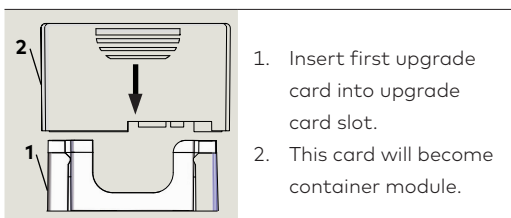
17.3.1 Set program switch to CLOSE.

- 1 Upgrade card slot
- 6 Professional upgrade card
- 7 Container module
- 8 Program switch
- 9 2 digit display with horizontal bars

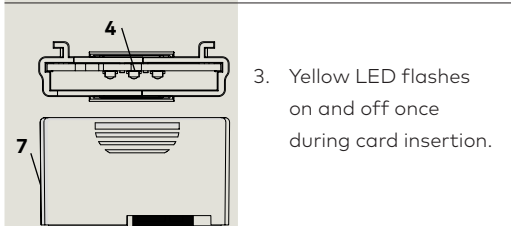


17.3.2 Installing first upgrade card

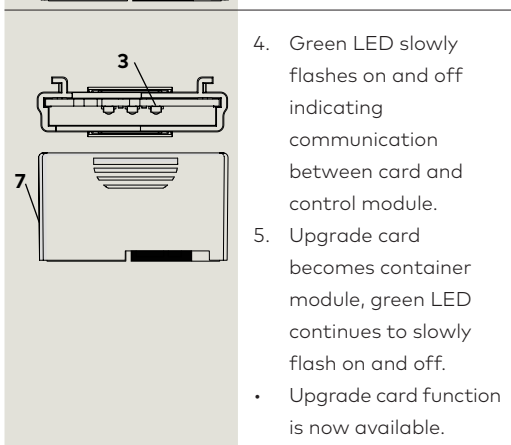
- 1 Upgrade card slot
- 2 First upgrade card



- 4 Yellow LED
- 7 Container module



- 1 Upgrade card slot
- 3 Green LED
- 7 Container module



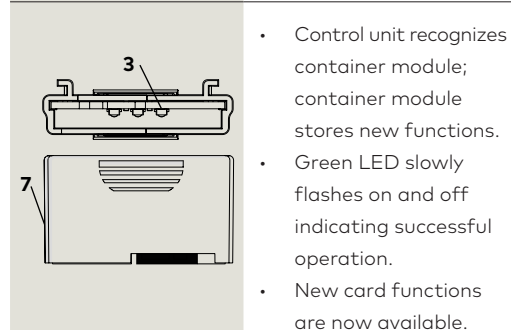
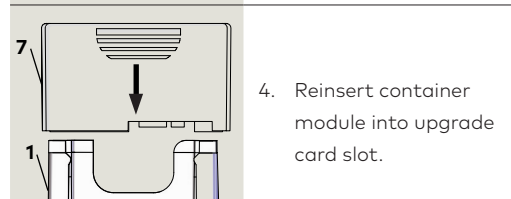
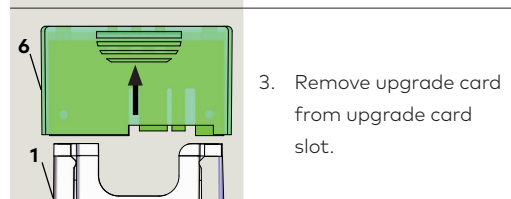
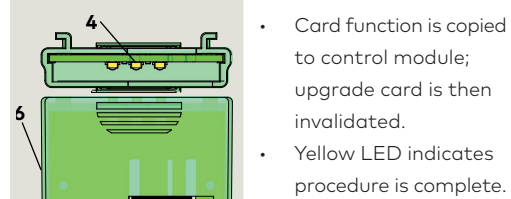
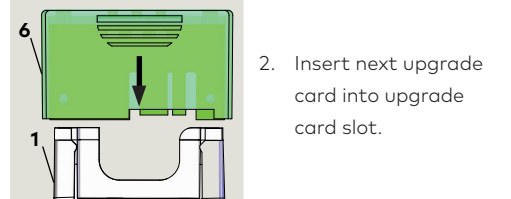
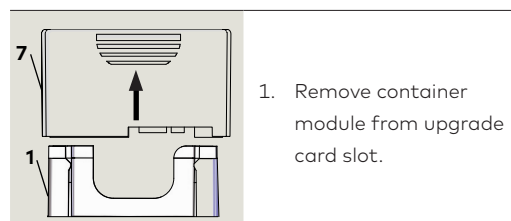
- 3 Green LED
- 7 Container module



TIPS AND RECOMMENDATIONS

Container module can be configured using applicable parameter (F1 - F8) for card. Reference Chapter 15, Parameters.

17.3.3 Installing additional upgrade cards



TIPS AND RECOMMENDATIONS

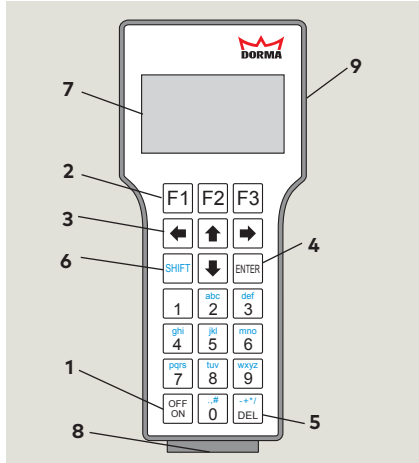
New upgrade card can be configured using applicable parameter (F1 - F8) for card. Reference Chapter 15, Parameters.

18 dormakaba handheld

18.1 dormakaba handheld terminal

Fig. 18.1.1 dormakaba handheld

- 1 Off/On key
- 2 Function keys
- 3 Arrow keys
- 4 ENTER key
- 5 DEL key
- 6 SHIFT key
- 7 Alpha numeric keyboard
- 8 LED, recharging battery status (Off when batteries fully charged)
- 9 SD card slot



18.1.1 Interface cable

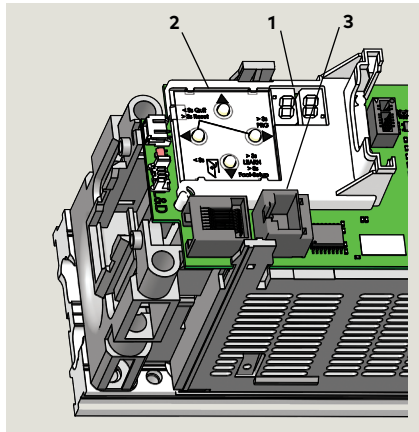
Use dormakaba interface cable (Article No. 16596101170) to connect dormakaba handheld to operator Com 1 interface.

CAUTION

Never use conventional network cable with RJ45 plug! Using conventional cable may result in permanent damage to operator!

Fig. 18.1.2 Com 1 interface

- 1 2 digit display
- 2 4 button keypad
- 3 Com 1 interface



18.1.2 Handheld key functions.

1. OFF ON, switches Handheld on or off.
2. Function keys F1 - F3, trigger functions shown in bottom line of display (e.g., "RPT" for repeat, "UP" and "DOWN" to switch lines, "UpDoLd" for file up and download, "CHANGE" to change values, "OPEN" to trigger opening pulses).
3. Arrow keys, allow navigation within the display. Use left arrow to get back to previous screen.
4. ENTER, selects individual menu items and confirms changes of values and settings.
5. DEL, deletes figures or letters.
6. SHIFT, switch between figures and letters or small and capital letters. Current function is indicated on display (n: numeral, A: capital letters, a: small letters).
7. Alpha numeric keyboard, allows entering values and file names in small and capital letters. There are several special characters (dot, comma, hash key, plus, minus, asterisk and diagonal slash).

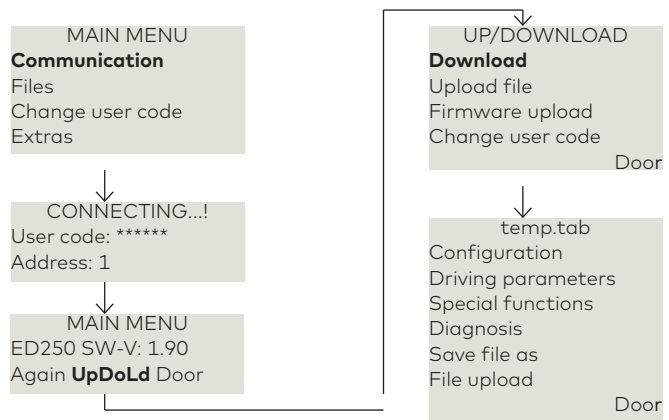
17.1.3 Handheld startup.

1. Press OFF ON to turn on Handheld terminal.
2. Screen displays Current version, creation date and name of data base. Handheld is ready for operation.
3. Select "COMMUNICATION" and enter user code (dormakaba original setting: 123456).
4. Handheld displays current software version of the connected operator (e.g., ED250 SW- V1.90).

18.1.4 Downloading current parameters.

1. Press function key F2 "UpDoLd" to access menu "UP/DOWNLOAD".
2. Select "Download" to download current adjustments and parameters. System stores this data as temporary file under file name "temp.tab".
3. Every change in configuration, parameter setting or special functions confirmed with the "ENTER" key automatically uploads to the operator.
4. The Handheld does **not** automatically save the changes. The Handheld will prompt you to save the changes when quitting the menu.

18.1.5 Menu structure



NOTICE

Parameters and detail may change depending on firmware version.

18.2 dormakaba handheld; configuration parameters

"#" refers to reference numbers in Parameter list, Chapter 15.

18.2.1 Configuration parameters

#	Parameter and default	Description / Selections
1	Installation *	Pull arm
		Push arm
		Gleit BGS (Track w push arm)
		cm Inches
2	Reveal depth 0	ED100 -3 ... 30 -1 3/16 ... 11 13/16
		ED250 -3 ... 50 -1 3/16 ... 19 11/16
3	Door width (steps of 4") 100	ED100 70 ... 110 28 ... 43.3
		ED250 70 ... 160 28 ... 63
4	Door type *	single*
		1. leaf
		2. leaf
		Master
		Slave
11	Sensor test 0	0 off
		1 Pull side high active
		2 Push side high active
		3 Both sides high active
		4 Pull side low active
		5 Push side low active
		6 Both sides low active
7 Bodyguard		

#	Parameter and default	Description / Selections
12	Start safety push side *	Off* Signal ignored once door closed
		On Sensor can trigger pulse with door closed
14	Lock delay 3	Delayed opening time for locking mechanism (0 ... 3) *100 msec
15	Unlock force 0	Preload prior to unlocking 0 ... 9
12	Test PR module *	0* Test off
		1* Test once every 24 hrs.
23	Program switch *	Internal*
		External
		DCW
24	PGS power up (DCW) *	Last*
		Off
25	PGS delay *	Off*
		On
26	Daytime unlock *	Off*
		On Locking device remains permanently unlocked while door is in closed position.
27	Door status (Status relay function, X7 terminals) *	Off Relay off
		Open* Door reaches closed position
		Close Door reaches open position
		Error Any error message
		Door closed and locked
		Information or error codes displayed
		Door opened further than opening angle

18.2.1 Configuration parameters

#	Parameter and default	Description / Selections
34	Manual mode On	On* Manual mode on.
		Off Manual mode disabled.
35	Power assist winkel (angle) 3	Activation angle for power assist function (0 ... 5)
36	Power assist kraft (force) 0	Force adjustment for power assist. 0 ... 10
21	Keep closed force 0	Force activated after latching action 0 ... 9
50	Manual release On	Off; function deactivated. Manual release button required to deactivate hold open function.
		On; function activated. Moving door manually in closing direction from hold open position deactivates hold open function.
48	Input enable operator *	Normal* NC contact, operator deactivated when contact is open
		Inverse NO contact, operator deactivated when contact is closed

#	Parameter and default	Description / Selections
49	Input Night-bank	Normal* NO contact; night-bank function triggered while contact closed.
		Inverse NC contact; Night-bank function triggered while contact open.
47	Door depth 35	0 ... 99 mm 0 ... 7/8"
52	Hinge clearance 3	-5 ... +5 mm -3/16 ... +3/16"
	I04 Out 1	
	I04 Out 1	
	I04 Out 1	
	I04 Out 1	

18.3 dormakaba handheld; driving parameters

18.3.1 Driving parameters

#	Parameter and default	Description / Selections
		%/s %/s
5	Speed open 25	ED100 8 ... 50 27 max. L.E.mode
		ED250 8 ... 60
6	Speed close 25	ED100 8 ... 50 27 max. L.E.mode
		ED250 2 ... 60
17	Limit force open 60	Static force in opening direction (wind load control) (20 ... 150) N
18	Limit force close 60	Static force in closing direction (wind load control) (20 ... 150) N
7	Hold-open time 5	Hold-open time automatic mode (0 ... 180) s (ED250)
8	Nurse bed function 10	Hold-open time nurse bed function (0 ... 180) s

#	Parameter and default	Description / Selections
5	Offenhaltezeit man. 1	Hold-open time manual mode (0 ... 30 s)
10	Wall blanking 80	Angle when system ignores safety sensor on hinge side (60 ... 99)°
19	Latching action 0	Motor-driven latching action, automatic mode (0 ... 9)
20	Latching angle 3	Opening angle, motor-driven latching angle activated. (2 ... 10)°
46	Back check angle 10	Back check angle for manual opening cycles. (5 ... 40)°
51	Coord. offset angle 30	Starting angle for second door of two door system. (0 ... 30)°

18.4 dormakaba handheld; special functions (Upgrade cards)

18.4.1 Special functions (upgrade cards)

#	Parameter and default	Description / Selection
	Upgrade card status codes	<ul style="list-style-type: none"> locked: not available unlocked: available, not active activ or active: activated fehlt: upgrade card missing
40	Flip-flop func.	locked unlocked active fehlt Upgrade card professional
41	extend HOT (extended hold-open time) r/o	locked unlocked active fehlt Upgrade card professional
42	Nurse-Bed func.	locked unlocked active fehlt Upgrade card professional
38	Fire protection r/o	locked unlocked active fehlt Upgrade card fire protection

#	Parameter and default	Description / Selection
39	Full energy r/o	locked unlocked active fehlt Upgrade card full energy
44	DCW r/o	locked unlocked active fehlt Upgrade card DCW
43	Disabled restr r/o	Upgrade card Barrier-free toilet
22	Push & Go *	Off* On Door opens automatically when moved manually by 4° from closed position. Only available when "manual operation" is turned "off".

18.5 dormakaba handheld; diagnostics

18.5.1 Diagnostics

Parameter name	Description	Setting
FW vers BM r/o	Displays firmware (FW) version of basic module	x.x y y (e.g., 0190 v 1.9.0)
Rev FW version r/o		0 ... zzz
FW version SK r/o	Displays firmware version of Service Key	x x.y y (e.g., 01.00 = v 1.0.0)
FW bootloader		x x y y
Current error r/o	Displays current error	(...)
Error log 1		(...)
Error log 2		(...)
Error log 3		(...)
Error log 4		(...)
Error log 5		(...)
Error log 6		(...)
Error log 7		(...)
Error log 8		(...)
Error log 9		(...)
Current information	Displays current error	(...)
Delete errors	Press "ENTER" to delete error log.	Cmd ->
Installation dat r/o	Displays date of installation (month / yr)	mmyy (e.g., 1110 November 2010)
Hours counter r/o	Displays number of operating hours	(..) h
Service time interval	Enter maintenance interval	(6 .. 24) months 12
Service cycle interval	Enter number of opening and closing cycles until next maintenance	(200 .. 1000)* 1000 200

Parameter name	Description	Setting
Wartungs datum	Maintenance data	x x y y (month, year)
Cycles total r/o	Displays total opening and closing cycles	(..)
Zyklen max h r/o	Displays maximum number of cycles in one hour	(..) h
Zyklen / h r/o	Displays number of cycles in previous hour	(..) h
Zyklen / h akt.	Displays number of cycles in current hour	(..) h
Learning cycle	Press "ENTER" to start learning cycle.	Cmd->
Learn cycle stat. r/o	Indicates status of learning cycle	(..)
Factory reset	Press "ENTER" to reset system to original settings	Cmd ->
Latching action p/u		(...) kg
Setup level (Ref. parameter SL, no. 28)	- Level 1, standard original settings. - Level 2, extended original settings	- Level 1 - Level 2
DCW® list r/o	Displays DCW® list	List ->
DCW® reset		Cmd ->
Function mode r/o	Displays program switch setting	(..)

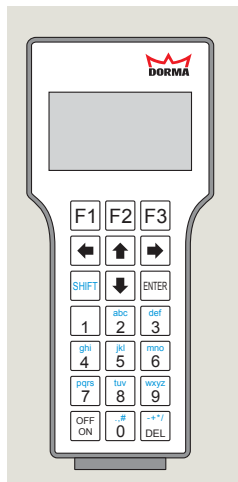
18.5.1 Diagnostics

Parameter name	Description	Setting
Setting code		0, low active (function on) 1, function off
Inp. Night - bank r/o	Status of Night -bank input X9, 6 and 1	0 1
Inp. OPEN r/o	Status of program switch permanent OPEN input X1, 34	0 1
Inp. PART OPEN r/o	Status of program switch PARTIAL OPEN input X1, 33	0 1
Inp. EXIT ONLY r/o	Status of program switch EXIT ONLY input X1, 32	0 1
Inp. AUTO r/o	Status of program switch AUTO input X1, 31	0 1
Inp. OFF r/o	Status of program switch OFF input X1, 30	0 1
Inp. Sfty pull side r/o	Status of safety sensor, hinge side input X5, 15	0 1
Inp. Sfty push side r/o	Status of safety sensor, opposite hinge side X5, 11	0 1
Inp. Activ extern r/o	Status of external activation sensor X6, 41	0 1
Inp. Activ intern r/o	Status of internal activation sensor X6, 42	0 1
Inp enable operator r/o	Status of Emergency close input X6, 4 and 4a	0 1
Inp. smoke detector r/o	Status of smoke detector input X9, 3 and 1	0 1
Inp. lock status r/o	Status of locking device input X3, 43 and 3	0 1
Locking status		locked

Parameter name	Description	Setting
Klemme 1G	Clamp X3, 1G and 3, 24 V out	
Opening width r/o	Displays opening angle	(..) °
Cur. door position r/o	Displays current door angle	(..) °
Amb. temp. r/o	Displays ambient temperature	(..) °C
Amb. max r/o	Displays maximum ambient temperature	(..) °C
Motor temp. r/o	Displays motor temperature	(..) °C
Motor temp max. r/o	Displays maximum motor temperature	(..) °C
Com 1 r/o	Com 1 connection	(..)

18.6 New dormakaba handheld; language change to English

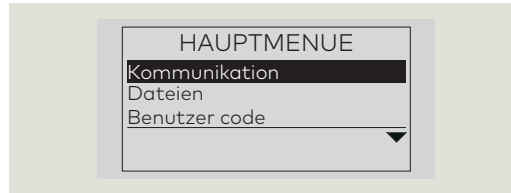
Fig. 18.6.1 dormakaba handheld



18.6.1 New dormakaba handheld; language change.

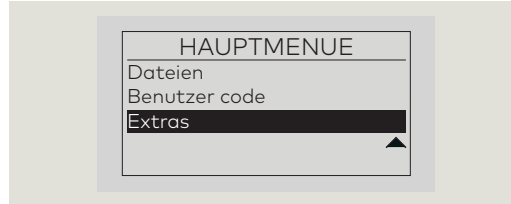
If German language is displayed on screen when handheld is first turned on (Fig. 18.7.1, handheld power on sequence), use following steps to change to English.

Fig. 18.6.2 HAUPTMENUE (main menu)



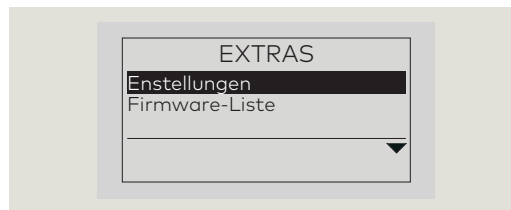
1. Scroll down Main Menu to EXTRAS:
 - Press **↓** 3 times to highlight EXTRAS.

Fig. 18.6.3 Main Menu; EXTRAS highlighted.



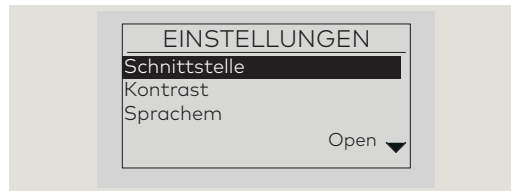
2. Press **ENTER** to select EXTRAS menu.

Fig. 18.6.4 EXTRAS menu



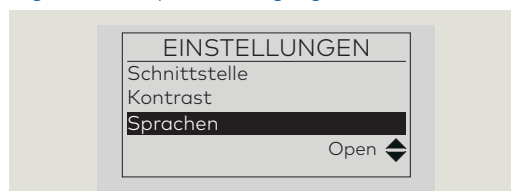
3. Press **ENTER** to select EINSTELLUNGEN (Settings) menu.

Fig. 18.6.5 EINSTELLUNGEN menu



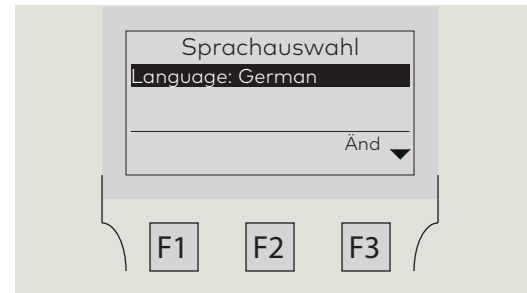
4. Scroll down EINSTELLUNGEN Menu to Sprachen (Languages):
 - Press **↓** twice to highlight Sprachen.

Fig. 18.6.6 Sprachen highlighted



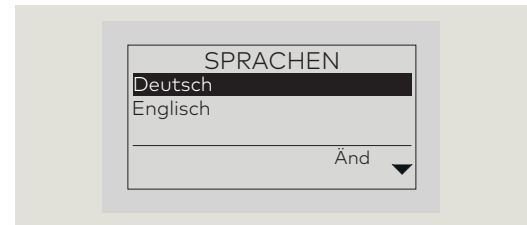
5. Press **ENTER** to select Sprachen (Fig. 18.6.6).

Fig. 18.6.7 Sprachauswahl (Language Selection) menu



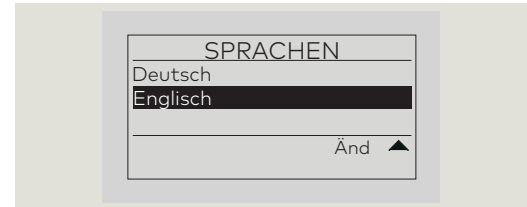
6. Press **F3** to select Änd (Amendments).

Fig. 18.6.8 SPRACHEN menu



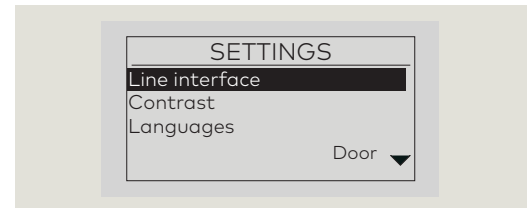
7. Scroll down SPRACHEN menu to Englisch: Press **↓** once to highlight "Englisch"

Fig. 18.6.9 Englisch highlighted



8. Press **ENTER** to select Englisch.

Fig. 18.6.10 SETTINGS menu



TIPS AND RECOMMENDATIONS

Handheld programmer will retain English setting when unit is turned off. Change to English only required the first time the programmer is turned on "out of the box".

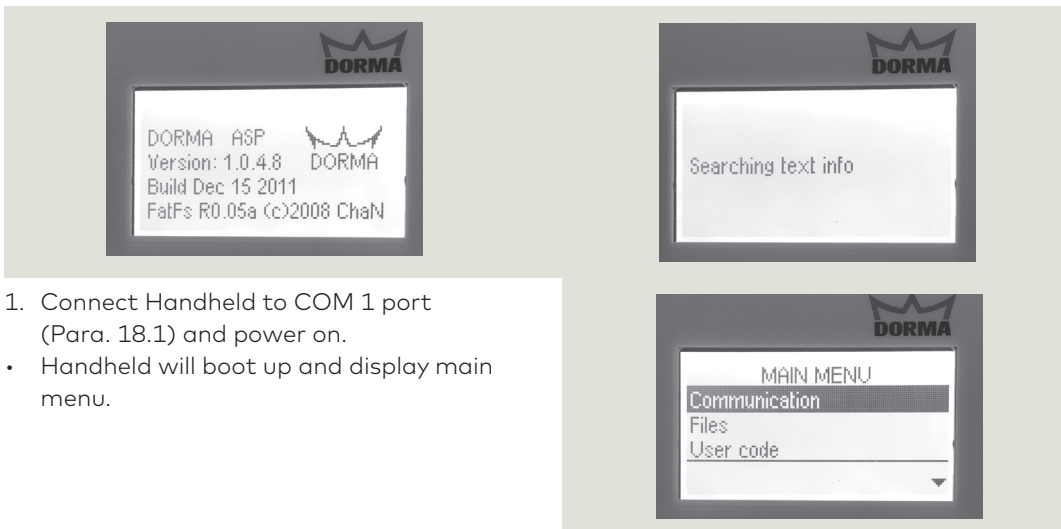
18.7 dormakaba handheld; firmware update

18.7.1 Firmware update procedure

CAUTION

For all firmware changes, set program switch to CLOSE and allow door to close completely before any updates are made!

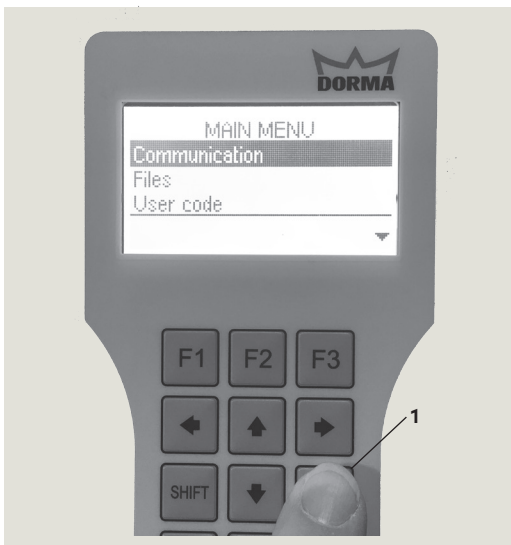
Fig. 18.7.1 Handheld power on sequence



1. Connect Handheld to COM 1 port (Para. 18.1) and power on.
- Handheld will boot up and display main menu.

Fig. 18.7.2 Select communication menu

1 ENTER button



2. With Communication highlighted, press ENTER.

Fig. 18.7.3 Enter Handheld user code



3. Enter Handheld user code and press ENTER.

- 1 ENTER button
- 2 F2 button
- 3 Up/down arrows

Fig. 18.7.4 Select UpDoLd



4. Press F2 to select UpDoLd.

Fig. 18.7.5 Select Firmware upload



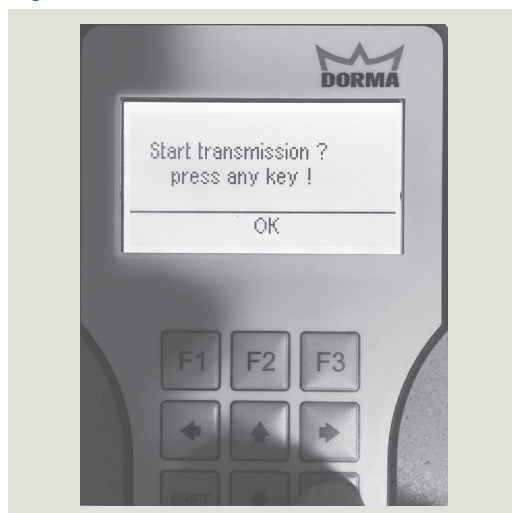
5. Use Up and Down arrows to select Firmware upload and press ENTER.

Fig. 18.7.6 Select Firmware version



6. Use Up and Down arrows to select firmware version and press ENTER.

Fig. 18.7.7 Start transmission



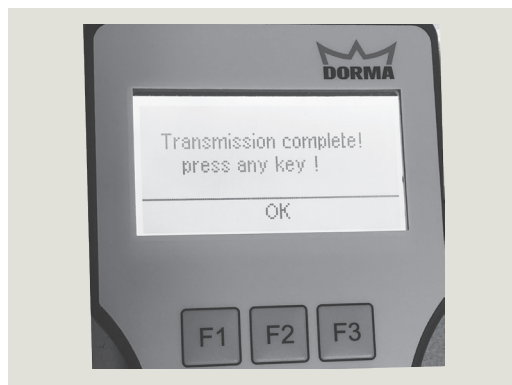
7. Press any key to start firmware transmission.

Fig. 18.6.8 Firmware uploading



8. Firmware uploading to controller. Wait time of 3 to 5 minutes to upload.

Fig. 18.6.9 Complete firmware update



9. Press any key to complete firmware update.

