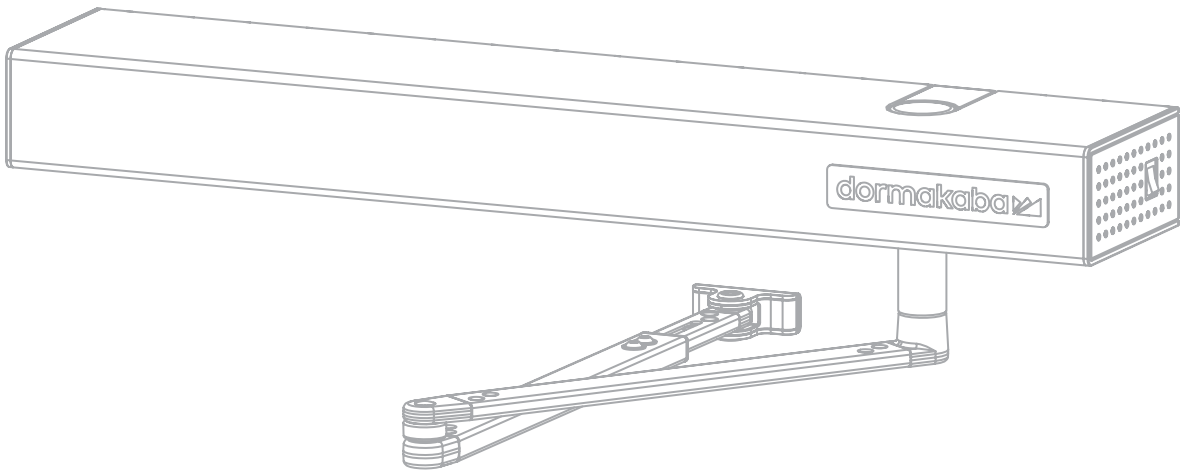
dormakaba

ED900

Low energy swing door operator with fine cover

Setup and Troubleshooting Manual



08125380 - 06/2026
Original document

EN

Table of contents

1 General information 3
1.1 General information 3
2 Safety information 4
3 Technical data 5
3.1 ED900 technical data 5
3.2 Operating specifications; ED900 operators 6
4 Operational mode overview 6
4.1 ED900 manual and automatic modes 6
4.2 Low energy product 6
5 User interface 7
5.1 Overview 7
5.2 4 button keypad and display 7
5.3 Mode switch and Exit Only switch panels 8
5.4 Operator status LEDs 9
6 System accessories 10
6.1 System accessory electrical connections 10
6.2 System accessories 10
6.3 Terminal board interfaces 11
7 ED900 door signage 12
7.1 Low energy operator, ANSI/BHMA A156.19 12
7.2 Door signage, low energy single swing door, ANSI/BHMA A156.19 13
7.3 Door signage, low energy pair swing doors, ANSI/BHMA A156.19 13
8 AAADM Safety information label 15
8.1 Safety information label, low energy power operated doors 15
9 Parameters 16
9.1 ED900 – viewing and changing parameters 16
9.2 Configuration parameters 16
9.3 Driving parameters 16
10 System setup for single door installation 18
10.1 Set ED900 operator spring tension 18
10.2 Set braking circuit plug position 19
10.3 Power on 20
10.4 Set installation type parameter **AS** **21**
10.5 Set door width parameter **Tb** **22**
10.6 Set reveal depth parameter **rd** **23**
10.7 Set door type parameter **dL** **25**
10.8 Perform learning cycle 26
10.9 Set power fail closing speed 27
11 Initial setup – pair doors 28
11.1 Separately setup active and inactive doors 28
11.2 Set operator parameters for pair door operation 28
11.3 Connect sync cable between operators 29
12 Set track bumper stop 30
12.1 Set track bumper stop position 30
13 Install push arm door stop 31
13.1 Install push arm door stop (optional assembly) 31
14 Check door signage 32
14.1 Check door signage 32
15 Install cover, end caps and spindle caps 32
15.1 Install fine cover and end caps 32
15.2 Install spindle caps, fine cover 33
16 Upgrade cards 34
16.1 Upgrade cards 34
16.2 Container module 34
16.3 Installing upgrade cards 35
17 ANSI/BHMA standards 36
17.1 Low energy power operated doors (ANSI/BHMA A156.19) 36
Appendix A - Driving parameters 38
A.1 Driving parameters – detail 38
Appendix B - Troubleshooting 47
B.1 Information and error codes 47
B.2 Red LED status codes 48
B.3 Troubleshooting chart, "In" codes 49
B.4 Troubleshooting chart, "E" codes 50

1 General information

1.1 General information

1.1.1 Installation Instructions.

This manual provides setup and troubleshooting instructions for ED900 low energy swing door operators used in single, double, double egress and companion door installations.

1.1.2 ED900 fine cover installation.

NOTICE

Installation on an interior building surface.

The ED900 with fine cover must be installed on an interior building surface.

1.1.3 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.

1.1.4 dormakaba.us website.

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

1.1.5 Dimensions

Unless otherwise specified, all dimensions are given in both inches (“) and [mm].

1.1.6 Symbols used in these instructions.



⚠ WARNING

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

CAUTION

This symbol warns of a potentially unsafe procedure or situation.

NOTICE

Draws attention to important information presented in this document.



TIPS AND RECOMMENDATIONS

Clarifies instructions or other information presented in this document.

2 Safety information

2.1 Safety instructions.

This document contains important instructions for setup and troubleshooting instructions for ED900 fine cover swing door operators.
Review these instructions thoroughly prior to setup, and follow them carefully during installation, setup, troubleshooting and maintenance.

2.2 Door signage requirements.

Proper signs and labels shall be applied and maintained on the door controlled by an ED900 fine cover swing door operator.

- Reference ED900 Installation Instructions.

2.3 Safety warnings.

⚠ WARNING

An incorrect installation may result in damage to equipment or incorrect equipment operation.

⚠ 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 installation must be only be performed by qualified personnel!

⚠ WARNING

Metallic doors must be grounded per national and local codes!

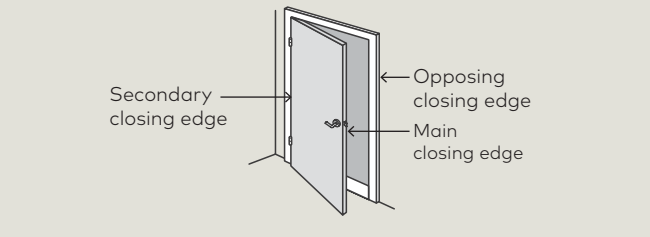
⚠ WARNING

Hand pinch point and crushing hazards at door closing edges!

⚠ WARNING

Crushing hazards at door closing edges!

Fig. 2.1 Door closing edges



2.4 Residual hazards.

⚠ WARNING

After installation, hazards such as minor crushing, impact with limited force, and risk to unsupervised children may exist depending on structural design of door area, type of door, and any safeguards that have been implemented.

⚠ WARNING

Hand pinch point and crushing hazards at arm and track!

Fig. 2.2 Push arm

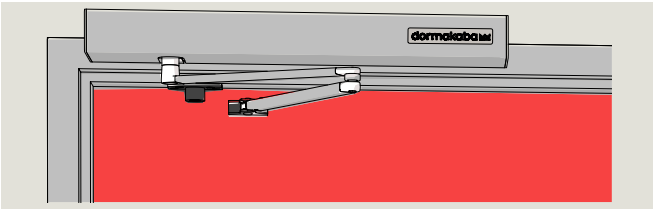
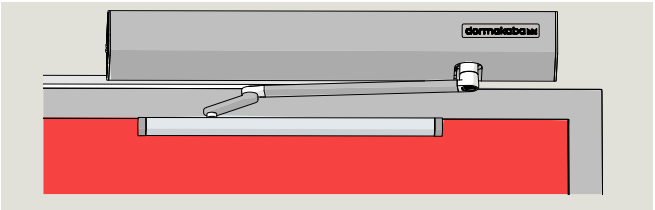


Fig. 2.3 Pull arm



3 Technical data

3.1 ED900 technical data

3.1.1 Required operating conditions.

Ambient temperature	5 to 122°F [-15 to 50°C]
Suitable for dry rooms only	Relative air humidity: 93% maximum, non-condensing
Power supply	115 Vac ±10%, 50/60 Hz 6.6 A maximum
Branch circuit protection (provided by others)	15 A maximum, dedicated branch circuit
Protection class	NEMA 1 [IP20]
Power wiring: black, white, bare copper (ground)	12 AWG maximum
Operating noise	Maximum 50 db(A)

3.1.2 General specifications.

Operator dimensions (W x H x D)	27" x 2 3/4 x 5 1/8" [685 x 70 x 130 mm] 27" cover standard
Operator weight	21.8 lb [9.9 kg]
ED900 power supply for accessories	External power supply must be supplied.
Maximum door opening angle	95 to 110° depending on installation type

3.1.3 Inputs

Wire size Connector plug screw size		14 AWG 1/16"	
Activation inputs	**X4***	Interior, exterior	N. O. contact
Safety sensors	**X5**	Swing, approach sides.	
Night-bank (intercom system)	**X10** 57, 57a	8-24 Vdc/Vac +5%	
Night-bank (key switch)	**X1** 35, 3	**d2** parameter	Configure for N.O. or N.C. contact
Deactivation of drive function	**X6** 4, 4a	**d1** parameter	Configure for N.O. or N.C. contact

*__X4__: terminal board numbers, reference Chapter 6, System accessories.

3.1.4 Outputs

Maximum wire size Connector plug screw size		16 AWG 1/16"	
Door status	**X7** 97,98,99	**Sr** parameter Door closed Door open Door closed, locked	Com, N.O., N.C. contacts

3.1.5 Integrated functions.

Hold open time Automatic opening	**dd** parameter	0 to 30 s Optional 0 - 180 s.
Hold open time NIght / bank	**dn** parameter	0 to 30 s
Hold open time Manual opening	**do** parameter	0 to 30 s
Door blocking behavior	**hd** parameter	Automatic, manual door modes
Electric strike delayed opening for locking mechanism	**Ud** parameter	0 to 4 s
Locking device feedback **X3** 43, 3	Para. 6.3	Motor lock
Wind load control, maximum	**Fo, Fc** parameters	33.7 lb f 150 N
Voltage independent braking circuit	Para. 10.9	Adjustable with potentiometer
LED status indicators Green, Red, Yellow	Chapter 5	24 Vdc power Error codes Service interval
Mode and Exit Only switches		Auto, Close, Open Exit only; Off, On
User interface		4 button keypad, 2 digit display
Slot for upgrade cards	Not used.	Extension of functional range.
Firmware update		Firmware update
TMP, temperature management program	Overload protection	
IDC, initial drive control	Driving phase optimization	
Cycle counter	**CC** parameter	0 to 1,000,000
Power assist function	**hA, hF, hS** parameters	Drive support for manual opening of door
Push & go function	**PG** parameter	Auto opening of door at 4° open

3.2 Operating specifications; ED900 operators

3.2.1 ED900

Maximum power consumption	120 watts	
Opening force lbf - N **Fo** parameter	Minimum 4.5 [20]	Maximum 13.5 [60]
Manual closing force lbf - N **Fc** parameter	Minimum 4.5 [20]	Maximum 13.5 [60]
Maximum door weight, lb [kg]	220 [100 kg)	Depending on door width and application.
Door width	Minimum 28"	Maximum 48"

Maximum opening speed, °/s	27	May be limited by door weight after learning cycle.
Maximum closing speed, °/s	27	
Axle extensions	13/16" [20 mm] 1 3/16" [30 mm] 2 3/8" [60 mm]	
Reveal depth for pull arm with CPD lever	0 to 2 1/4" [0 to 57.1 mm]	
Reveal depth for standard J8 push arm	0 to 8" [0 to 200 mm]	

4 Operational mode overview

4.1 ED900 manual and automatic modes

4.1.1 Automatic mode.

Manual mode/automatic mode parameter **hd**=0. Designed if door is preferably opened automatically following pulse generation by a knowing act device.

4.1.2 Manual mode.

Manual mode/automatic mode parameter **hd**=1. Designed if door is opened manually most of the time and only rarely automatically.

4.1.3 Power assist.

- Available only in manual mode (**hd**=1), manual opening. Drive support is automatically adjusted to operator size.
- Parameter **hA** sets door activation angle for power assist function. Once angle reached, drive support provides easier manual opening of the door.
- Parameter **hF,** power assist function. Parameter decreases the amount of force required to open the door.
- Parameter **hS**, power assist function support for door in closed position.

TIPS AND RECOMMENDATIONS

Parameter descriptions can be found in Appendix A, Parameters.

4.2 Low energy product

4.2.1 ANSI/BHMA 156.19.

ED900 operators are configured to meet requirements of a low energy application per ANSI/BHMA A156.19, Standard for Power Assist and Low Energy Power Operated Swinging Doors.

4.2.2 Low energy power operated door.

A door with a power mechanism that opens the door upon receipt of a knowing act activating signal, does not generate more kinetic energy than specified in ANSI 156.19, and is closed by a power mechanism or by other means.

Required system safety, as a low energy application, is achieved utilizing the following design factors:

- Reduced dynamic door panel contact forces
- Reduced static door panel contact forces
- Low driving speeds
- Force limitation

4.2.3 Knowing act definition.

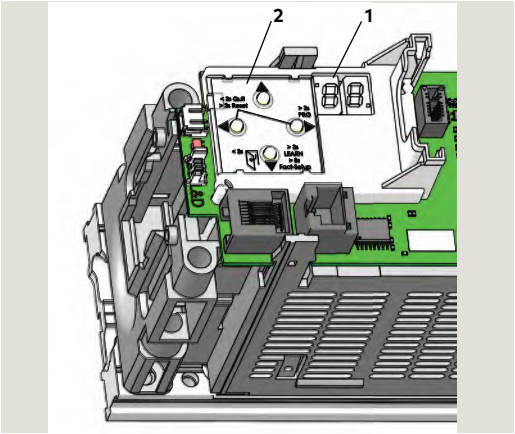
Any conscious action with the expected result of opening a door. This includes but is not limited to:

- Wall or jamb mounted contact or non contact switches such as pushplates.
- The action of of manually opening (pushing or pulling) a door.
- Controlled access devices such as keypads, card readers, wireless transmitters and key switches.

5 User interface

5.1 Overview

Fig. 5.1.1 Operator keypad and display



1 2 digit display
2 4 button keypad

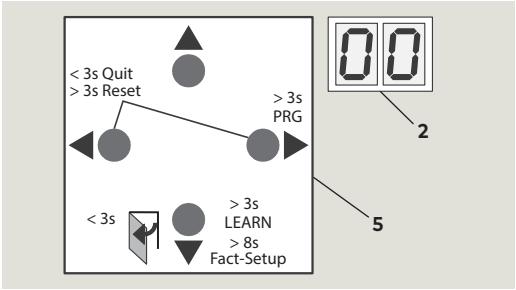
5.1.1 Operator user interfaces.

1. 4 button keypad and 2 digit display.

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

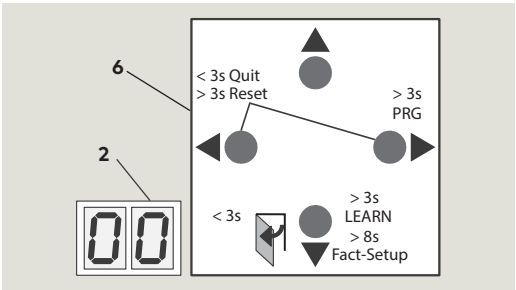
5.2 4 button keypad and display

Fig. 5.2.1 Door hinge side on right



2 2 digit display
5 Button legend

Fig. 5.2.2 Door hinge side on left



2 2 digit display
6 Button legend rotated 180°

TIPS AND RECOMMENDATIONS

Symbols

- "<", Less than
- ">", Greater than

5.2.1 4 button keypad.

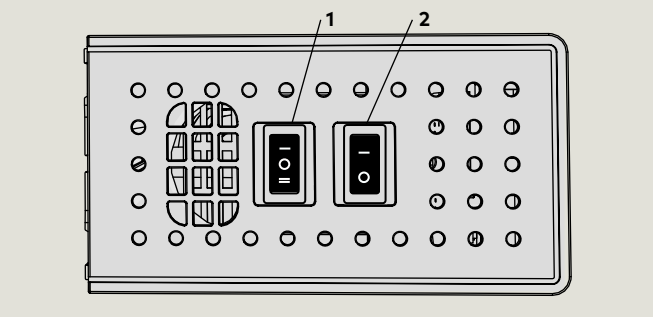
4 button legend is orientated so buttons have same function and position regardless of operator orientation. Button legend can be removed and rotated.

5.2.2 4 button keypad functions.

▶	Right button	1. Access parameter menu, press button > 3 seconds. 2. Edit selected parameter. 3. Save changed value.
◀	Left button	1. Reset, > 3s 2. Quit process, < 3 s.
◀▶	Both buttons together	1. Acknowledge errors, press both buttons < 3 s. 2. Reset, press both buttons > 3 s.
▲	Up button	1. Scroll through parameters and error messages. 2. Increase parameter value.
▼	Down button	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 > 8 s (program switches off). 6. Identify operator orientation for display

5.3 Mode switch and Exit Only switch panels

Fig. 5.3.1 Fine cover



1 Mode switch, 3 position

2 Exit Only switch, 2 position

5.3.1 Mode switch positions.

Fig. 5.3.2 Auto

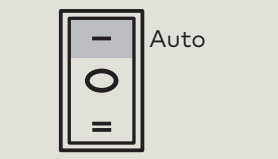
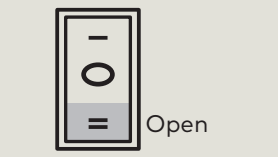


Fig. 5.3.3 Close



Fig. 5.3.4 Open



5.3.2 Exit Only switch positions.

Fig. 5.3.5 On

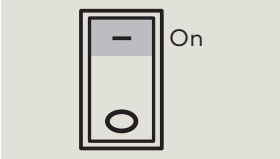


Fig. 5.3.6 Off

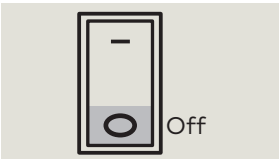


Fig. 5.3.7 Optional key switch panels



5.3.3 Mode switch position descriptions.

Auto

1. Door opens automatically when one of the activators is actuated or triggered.
   Door closes on expiration of adjustable hold open time with no activators or actuators triggered.
2. With knowing act device actuation (Para. 4.2.3).
   Door will remain at full open position for not less than 5 seconds.
3. With push/pull actuation of door (Para. 7.2).
   Door will remain at full open position for not less than 3 seconds.

Close

1. Door will remain closed, or if door is open door will close.

Open

1. Door opens automatically and remains open.

5.3.4 Exit Only switch position descriptions.

On

1. Exterior activation sensor or knowing act device disabled when door fully closed.

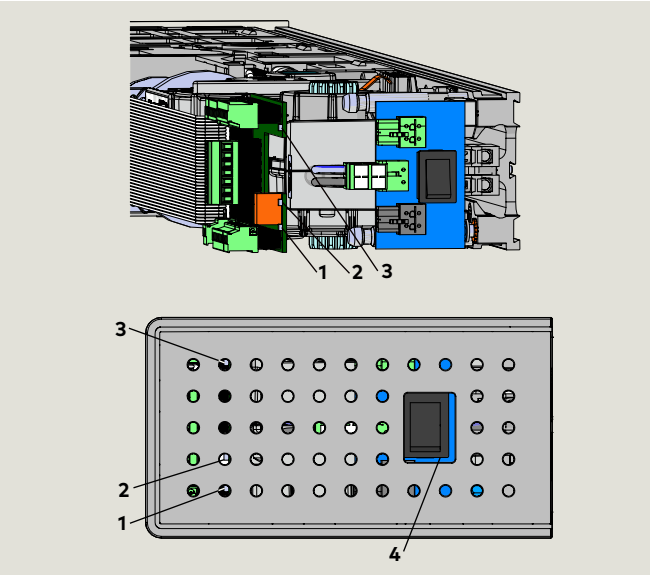
- Only interior activation sensor or knowing act device will enable door opening.

Off

1. Both interior and exterior activation sensors or knowing act devices will enable door opening.

5.4 Operator status LEDs

Fig. 5.4.1 Operator status LEDs



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

5.4.1 Operator status 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

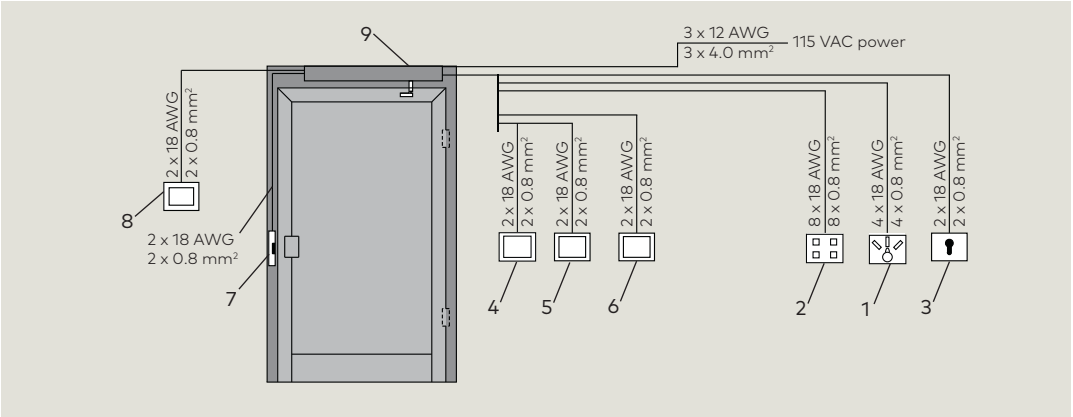
Information on LED status codes and maintenance intervals can be found in Appendix B, Troubleshooting.

6 System accessories

6.1 System accessory electrical connections

Fig. 6.1.1 Electrical connections, single door

1 External Mode switch, mechanical
2 External Mode switch, electronic
3 Key switch
4 Pushbutton, night / bank
5 Pushbutton, interior
6 Pushbutton, exterior
7 Door locking device
8 Manual release switch
9 ED900



6.2 System accessories

6.2.1 Overview

ED900 operators are normally used with system accessories available from dormakaba USA, Inc. or other manufacturers.

6.2.2 Accessory electrical installation.

Electrical interfaces from system accessories used with operator must be planned for. This includes routing of wiring from accessories to operator.

6.2.3 System accessories, other manufacturers.

dormakaba USA cannot guarantee compatibility for other manufacturer's accessories. If any of these accessories are used despite this caution, the operator's full range of functions may be unavailable, or the accessories may not function properly.

⚠ WARNING

Damage to operator or to connected device is also possible!

6.2.4 Power for accessories.

An external power supply must be used for accessories.

6.2.5 Activators

Typical activators:

1. Pushbuttons, key switches
2. Access control systems
3. Telephone systems
4. Intercoms

TIPS AND RECOMMENDATIONS

Refer to Chapter 3, Technical data for electrical interface requirements.

6.2.6 Locking devices.

Typical locking devices:

1. Electric strike plates
2. Electromagnetic locks
3. Electric locks

To insure that operator and locking device work safely when connected together, locking device mus comply with following:

1. Operating voltage, power supply from operator, 24 Vdc, ± 5 %.
2. Operating voltage, external power supply, 48 Vdc/ Vac maximum.
3. Locking device relay contact, maximum load, 1 A.
4. Electric strike plate duty factor, 30% minimum.
5. Motor lock duty factor, 100%.

6.3 Terminal board interfaces

TIPS AND RECOMMENDATIONS

Electrical connectors are shipped in a bag with the ED900 operator.

NOTICE

X5 connector, with 2 jumpers installed, must be inserted into its socket.

- Remove jumpers if safety sensors are used.

X6 connector, with jumper installed, must be inserted into its socket.

- Remove jumper if Emergency close is used.

1	Green LED (Power on)
2	Yellow LED (Maintenance)
3	Red LED (Fault, In codes)
4	X6 Jumper, factory installed
5	X5 Jumpers, factory installed
6	Socket for DCW upgrade card connector (N/A)
7	Socket for Fire Protection upgrade card connector

Fig. 6.3.1 Terminal board electrical connections

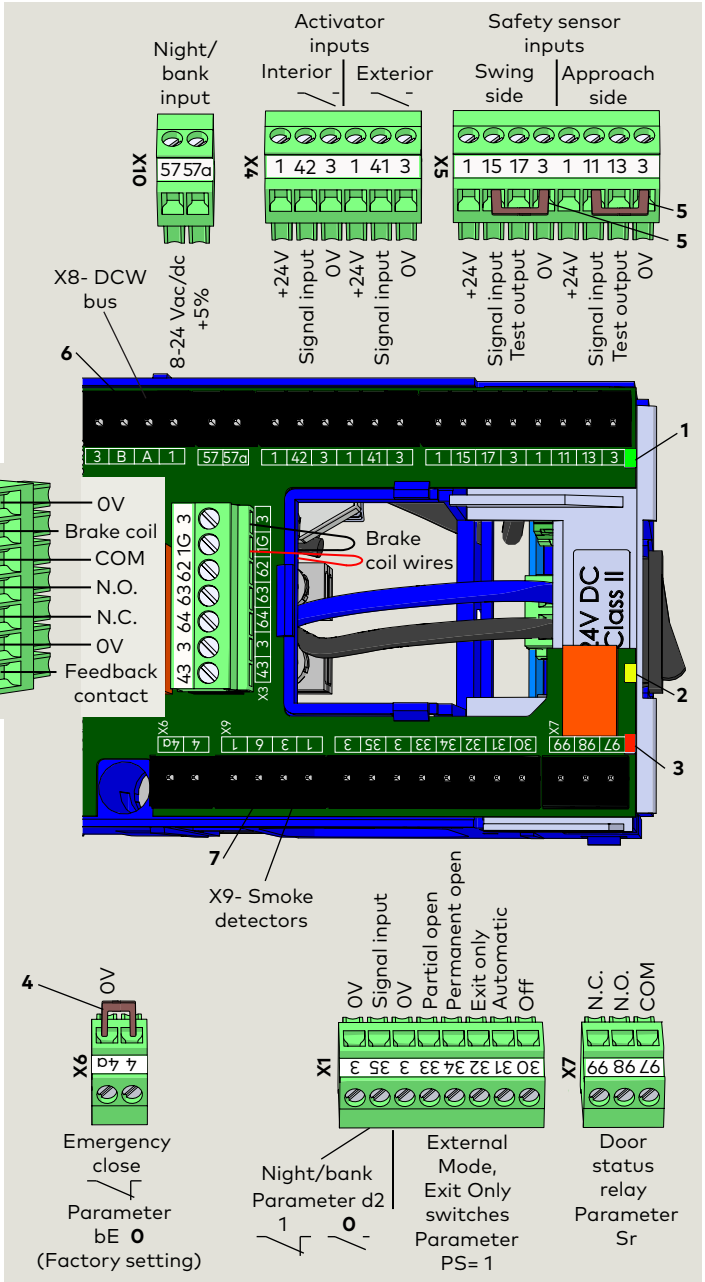
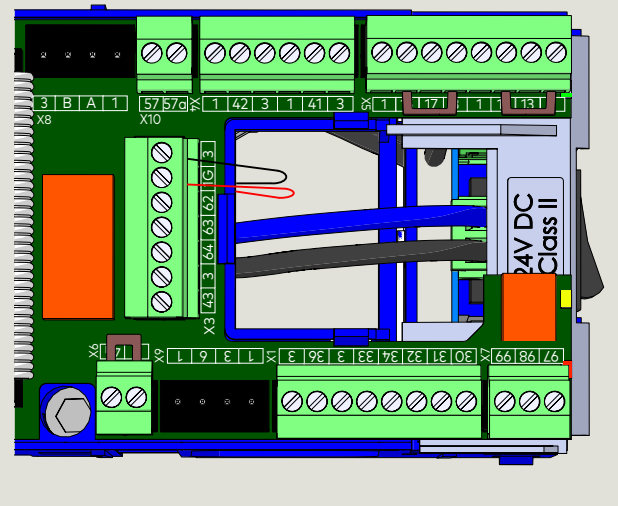


Fig. 6.3.2 Connector installation on ED900 terminal board



TIPS AND RECOMMENDATIONS

- Use documentation provided with each device for electrical installation.
- Do not connect system accessories to board until after operator has been setup and learning cycle performed.

7 ED900 door signage

7.1 Low energy operator, ANSI/BHMA A156.19

7.1.1 Overview

Signage and warnings are specified in ANSI /BHMA A156.19, American National Standard for Low Energy Power Operated Swinging Doors.

7.1.2 All low energy doors.

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.

7.1.3 Knowing act used to initiate door operation.

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".

7.1.4 Push/Pull used to initiate door operation.

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.

Fig. 7.1.1 AUTOMATIC CAUTION DOOR decal



DD0586-010

Fig. 7.1.2 ACTIVATE SWITCH TO OPERATE decal



DD0758-010



Fig. 7.1.3 PUSH/PULL TO OPERATE decals



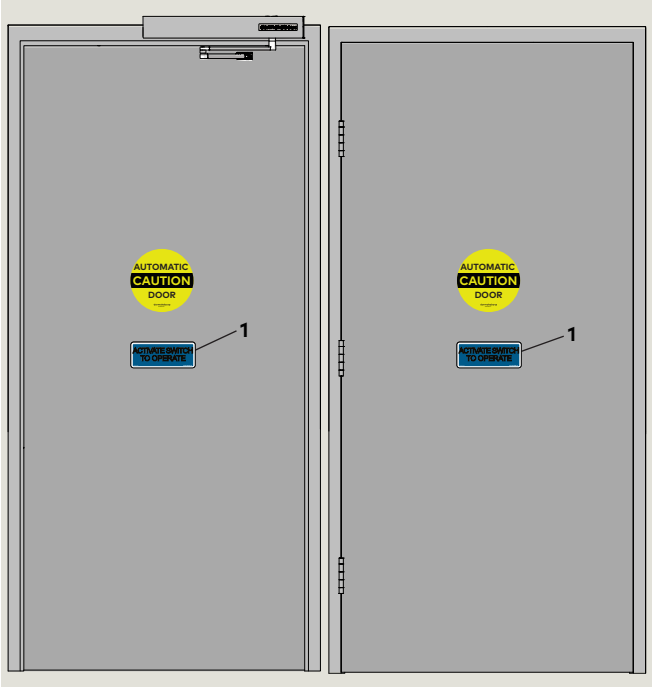
DD0762-010



DD0762-020

7.2 Door signage, low energy single swing door, ANSI/BHMA A156.19

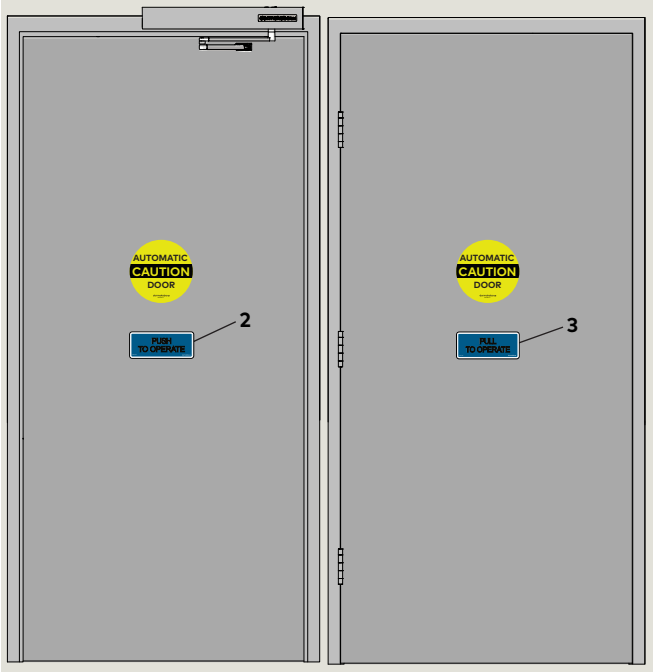
Fig. 7.2.1 Knowing act device initiation of door operation



1 Activate Switch to Operate DD0758-010

Fig. 7.2.2 Push / Pull initiation of door operation

Push to Operate Pull to Operate

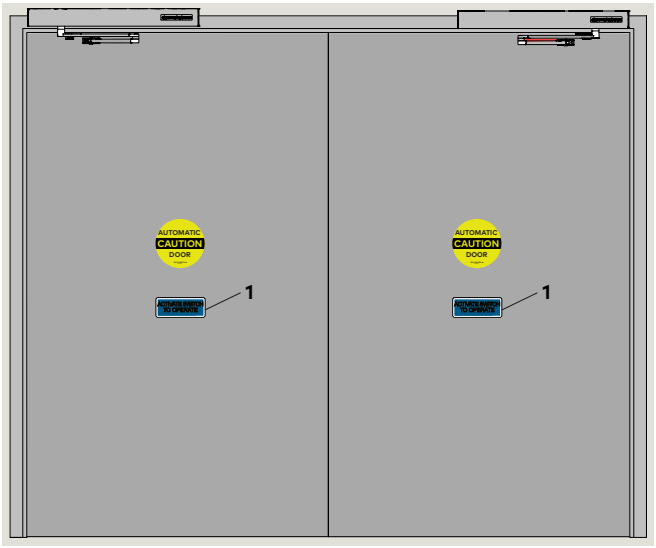


2 Push to Operate DD0762-010

3 Pull to Operate DD0762-020

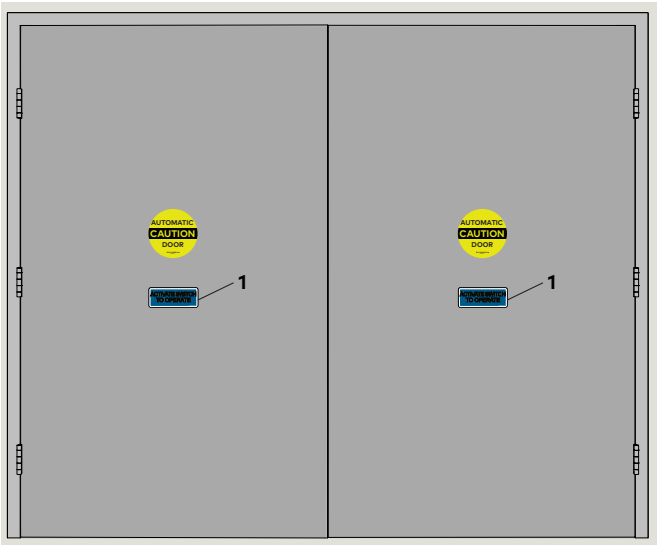
7.3 Door signage, low energy pair swing doors, ANSI/BHMA A156.19

Fig. 7.3.1 Knowing act, non-hinge side



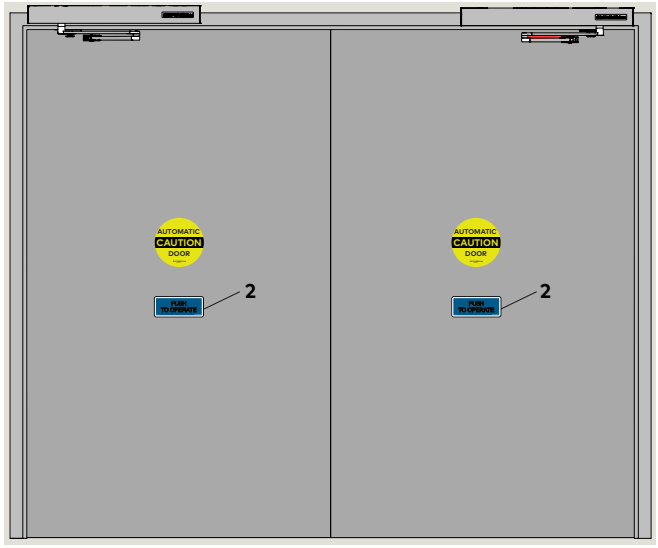
1 Activate Switch to Operate DD0758-010

Fig. 7.3.2 Knowing act, hinge side



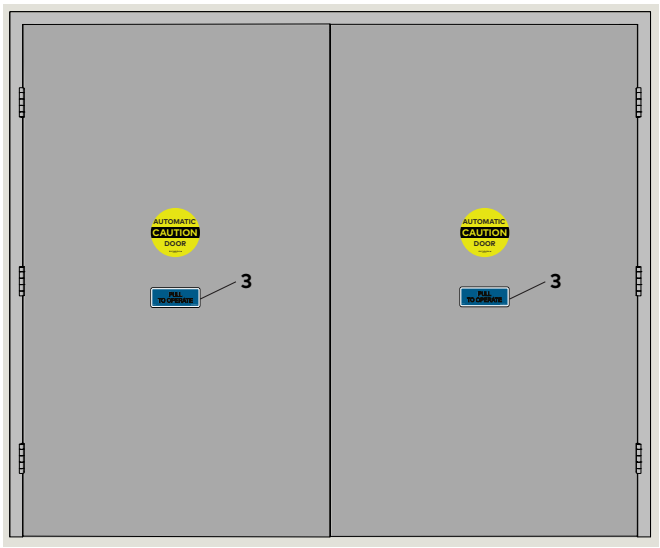
1 Activate Switch to Operate DD0758-010

Fig. 7.3.3 Push / Pull, push to operate



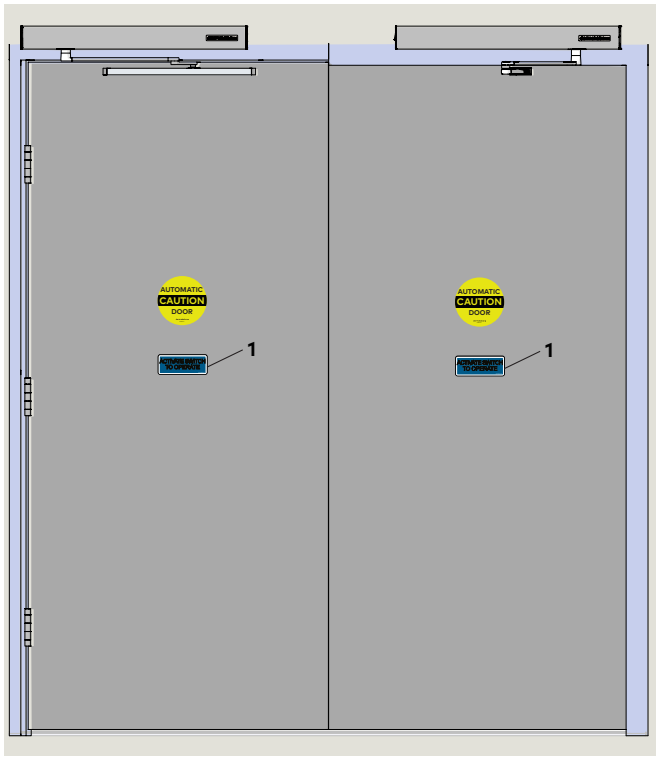
2 Push to Operate
DD0762-010

Fig. 7.3.4 Push / Pull, pull to operate



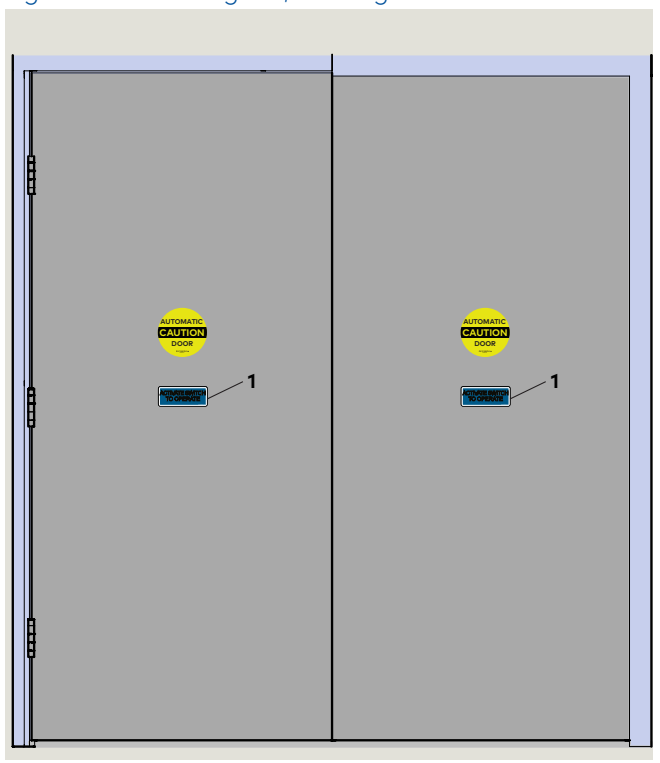
3 Pull to Operate
DD0762-020

Fig. 7.3.5 Double egress, knowing act



1 Activate Switch to
Operate DD0758-010

Fig. 7.3.6 Double egress, knowing act



1 Activate Switch to
Operate DD0758-010

8 AAADM Safety information label

8.1 Safety information label, low energy power operated doors

8.1.1 Low energy swing door safety information label.
This AAADM label outlines safety checks that should be performed daily on swing door controlled by an ED900 operator.

8.1.2 Safety information label location.
Place label in a protected, visible location on door frame, near program switch panel if possible.

8.1.3 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 for Low Energy Power Operated Swinging Doors and pass inspection by a AAADM certified dormakaba USA, Inc. technician.

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

Fig. 8.1.1 Safety Information and Annual Compliance Inspection labels

SAFETY INFORMATION
Low Energy Swinging Doors

These minimum safety checks, in addition to those in the Owner's Manual, should be made each day and after any loss of electrical power.

1. Activate the door. Door should open at a slow smooth pace (4 or more seconds), and stop without impact.
2. Door must remain fully open for a minimum of 5 seconds before beginning to close.
3. Door should close at a slow, smooth pace (4 or more seconds), and stop without impact.
4. Inspect the floor area. It should be clean with no loose parts that might cause user to trip or fall. Keep traffic path clear.
5. Inspect door's overall condition. The appropriate signage should be present and the hardware should be in good condition.
6. Have door inspected by an AAADM certified inspector at least annually.

DO NOT USE DOOR if it fails any of these safety checks of if it malfunctions in any way. Call a qualified automatic door service company to have door repaired or serviced.

See Owner's manual or instructions for details on each of these and other safety items. If you need a copy of the manual, contact the manufacturer.

AAADM-3044

AAADM
American Association of Automatic Door Manufacturers

ANNUAL COMPLIANCE INSPECTION

INSPECT FOR AND COMPLIES WITH ANSI A156.19 ON:
DATE:_____
by AAADM Certified Inspector
Number:_____

ANNUAL COMPLIANCE INSPECTION

INSPECT FOR AND COMPLIES WITH ANSI A156.19 ON:
DATE: _____
by AAADM Certified Inspector
Number: _____

9 Parameters

9.1 ED900 – viewing and changing parameters

9.1.1 Changing parameter values.

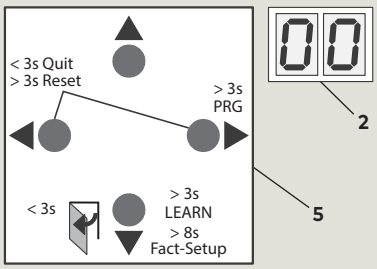
1. Set Mode switch to the CLOSE position.

Fig. 9.1.1 Mode switch



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

Fig. 9.1.2 4 button keypad, 2 digit display



2 2 digit display

5 4 button keypad

Step 1 ▶	Press right button greater than 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.

9.2 Configuration parameters

9.2.1 Configuration parameters.

Configuration parameters (Table 9.2.1) are set during operator initial setup. Reference Chapter 10.

Table 9.2.1 Configuration parameters

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

9.3 Driving parameters

9.3.1 Driving parameters.

Driving parameters (Table 9.3.1) can be set once initial setup (Chapter 10) has been completed.

- Reference Appendix A for driving parameter detail.

Table 9.3.1 Driving parameters

Driving parameter			Description
5	So		Opening speed, automatic mode
6	Sc		Closing speed, automatic mode
7	dd		Hold open time, automatic mode
8	dn		Hold open time, night/bank
9	do		Hold open time, manual opening of door
10	Sb		Wall masking on door swing (hinge) side
11	ST		Safety sensor test
12	SA		Activation by safety sensor on approach (opposite hinge) side
13	SP		Suppression of safety sensor on swing hinge) side during initial movement
14	Ud		Locking mechanism delayed opening time
15	Pu		Door preload prior to unlocking
16	TS		PR (Power reserve) module test
17	Fo		Static force on door closing edge in opening direction (wind load control)
18	Fc		Static force on door closing edge in closing direction (wind load control)
19	EP		Motor driven latching action, automatic mode
20	EA		Door opening angle at which motor driven latching action is activated
21	FH		Locking force
22	PG		Push and Go
23	PS		Mode (program) switch type
24	S1		DCW EPS, electronic program switch behavior following a power reset
25	S2		Internal Mode switch; switch function on delay
26	du		Door unlocking during business hours
27	Sr		Status relay function, terminal block X7
28	bE		Input 4/4a and X3, 1G 24V locking device output configuration
29	CC		Cycle counter, number displayed * 10000
30	EC		Delete error log

NOTICE

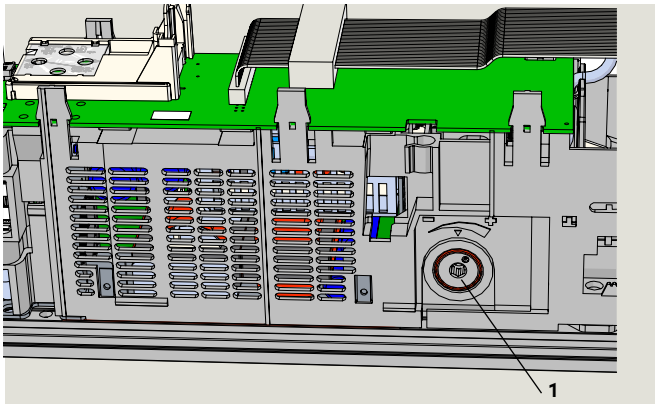
Driving parameters - detail.
Reference Appendix A.

Driving parameter			Description
31	CS		Reset service interval display (yellow LED)
32	SL		Factory setting level (Fact Setup button)
33	OA		Opening angle, set during learning cycle
34	hd		Door closer mode, automatic or manual
35	hA		Power assist function activation angle
36	hF		Power assist function force adjustment
37	hS		Power assist function support for manual mode in door closed position
38	F1		Upgrade card, fire protection
39	F2		Not used
40	F3		Not used
41	F4		Not used
42	F5		Not used
43	F7		Upgrade card, barrier free lavatory
44	F8		Upgrade card, DCW I/O module
45	C1		Configuration of COM 1 interface
46	bc		Back check angle when door opened manually
47	Td		Door thickness (mm)
48	d1		Deactivation of drive, emergency pushbutton at X4, 4 and 4a, trigger type
49	d2		Night/bank function, trigger type
50	FC		Hold open system release by manually closing door, trigger type
51	Ad		Active door with astragal, caster angle; angle door must reach before passive door starts to open
52	HS		Hinge clearance

10 System setup for single door installation

10.1 Set ED900 operator spring tension

Fig. 10.1.1 Spring tension adjustment



1 Spring tension adjustment

TIPS AND RECOMMENDATIONS

System checks spring tension during learning cycle (Chapter 10).

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



Fig. 10.1.2 5 mm T-handle hex key



Fig. 10.1.3 Door pressure gauge

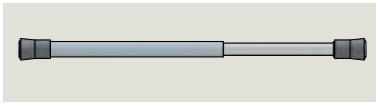


Table 10.1.1 Spring tension adjustment revolutions

Door width					
Inches	28	32	36	42	48
mm	711	813	914	1067	1219
Spring setting revolutions					
ED900	10	10	14	16	18

Final spring tension setting dependent on door weight and door width.

10.1.1 Operator spring tension function.

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

10.1.2 Set spring tension.

1. Using 5 mm T-handle hex ky, set spring tension per Table 10.1.1.
   Clockwise - increases spring tension.
   Counterclockwise - decreases spring tension.

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!

10.1.3 Check door closing force.

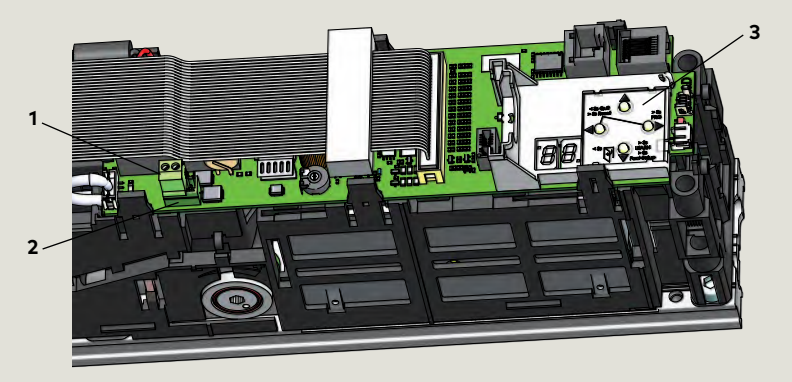
1. Table 10.1.1 lists approximate spring tension settings.
2. Use pressure gauge to check door closing force at 2° and adjust tension setting if necessary.

TIPS AND RECOMMENDATIONS

Reference Chapter 16 for ANSI/BHMA standards for door closing forces.

10.2 Set braking circuit plug position

Fig. 10.2.1 Braking circuit socket and plug, plug factory installed in pull installation location



1 Braking circuit plug
2 Braking circuit 3 pin socket
3 User interface

Fig. 10.2.2 Plug position, pull installation

1 Braking circuit plug
2 Braking circuit 3 pin socket

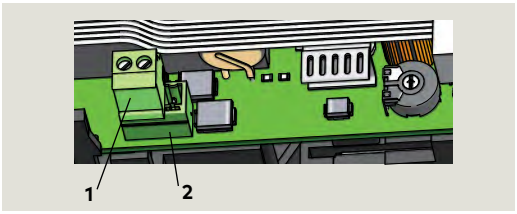


Fig. 10.2.3 Power switch

4 Power switch (shown ON)

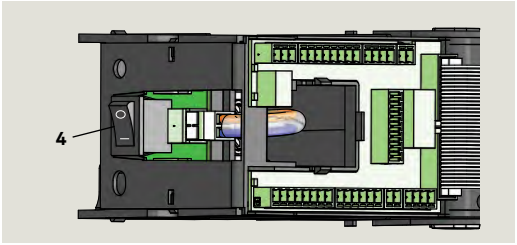
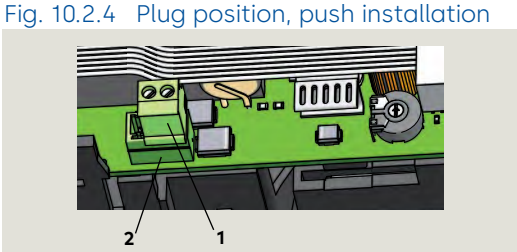


Fig. 10.2.4 Plug position, push installation

1 Braking circuit plug
2 Braking circuit 3 pin socket



10.2.1 Set braking circuit plug.

Operator braking circuit plug is positioned in its 3 pin socket for a push or pull installation.

⚠ WARNING

Braking circuit will not work correctly if braking circuit plug is improperly positioned, or if an incorrect plug is used!
Door may close at high speed and/or be difficult to open!

10.2.2 Factory-installed plug position.

Braking circuit plug is factory installed in the left two pins, the pull installation position
(Fig. 10.2.1 and Fig. 10.2.2).

10.2.3 Change braking circuit plug position to push installation.

To change plug position for push installation, install plug in right two pins, toward user interface (Fig. 10.2.4).

⚠ WARNING

Insure power switch is OFF before changing plug position!

10.3 Power on

Fig. 10.3.1 Mode switch

1 Mode switch, 3 position

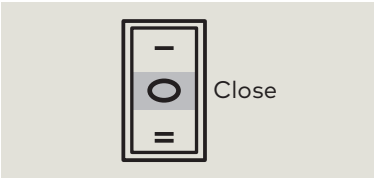


Fig. 10.3.2 Power switch

2 Power switch

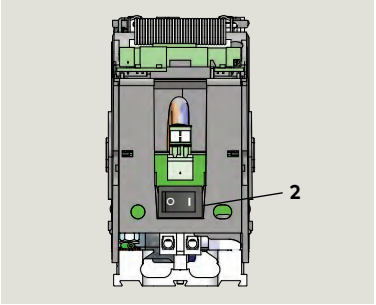
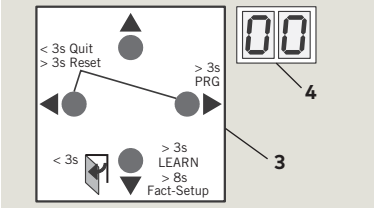


Fig. 10.3.3 4 button keypad, 2 digit display

3 Four button keypad

4 Two digit display



TIPS AND RECOMMENDATIONS

If pressing down button (Step 3) does not result in desired display orientation, return to Step 2, turn power button off, then on to repeat commissioning steps.

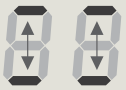
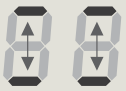
Conditions prior to power on.

1. ED900 operator is installed.
2. Standard push arm or arm with track is installed.
3. Key switches and other separately supplied hardware are installed and connected to operator.
4. 115 Vac branch circuit to operator is energized.
5. Operator motor is cold.

CAUTION

Motor must be cold for commissioning!

10.3.1 Power On.

Step 1	Mode switch to CLOSE position.
Step 2	Power switch to ON position.
	System check. • Series of letters and numbers rapidly displayed.
	Control unit self check. • Two segments jumping back and forth.
	Horizontal dashes move up and down.
Step 3	Press 4 button keypad down button ▼.
	While 2 digit display segments move up and down, letters and numbers will change if required to display correct orientation.
	Display scrolls: • Device ID (Ed 50) as example. • Firmware version (format F x x x x)
	Program mode display. Program mode will be displayed indicating system requires further parameter settings.

10.4 Set installation type parameter **AS**

Table 10.4.1 AS parameter values.

AS	**Installation type.**
Parameter value	**Parameter description.**
0*	**Pull** • Pull arm with CPD lever. Wall mounting on swing (hinge) side.
1	**Push** • Standard push arm. • Deep push arm. Wall mounting on approach (non-hinge) side.
2	**Pull as push.** • Pull arm with CPD lever. Wall mounting on approach (non-hinge) side.

AS factory setting = 0.

10.4.1 Set AS parameter value.

NOTICE

1. **If pull installation is required, set AS = 0.**
- "0" is **AS** factory setting.
- **For system to recognize AS = 0, steps in Para. 10.4.2 must be followed.**
2. **Set AS** parameter to value other than 0.
- Follow steps in Para. 10.4.3

10.4.2 Set parameter AS value to 0.

Step 1 Press ▶	AS	Press **PRG** greater than 3 s to enter program mode, **AS** parameter displayed.
Step 2 Press ▶	00	Displays "00" , factory setting.
Step 3 Press ▶	00	"00" starts flashing.
Step 4 Press ▲▼	01	Scroll to "1".
Step 5 Press ▲▼	00	Scroll to "0".
Step 6 Press ▶	00	Saves "0" value for Pull. Display stops flashing.
Step 7 Press ◀	AS	Returns to Installation type parameter.
Step 7		**Go to Para. 10.5, set door width parameter Tb.**

10.4.3 Set parameter AS to value other than 0.

Step 1 Press ▶	AS	Press **PRG** greater than 3 s to enter program mode, **AS** parameter displayed.
Step 2 Press ▶	00	Displays "00" , factory setting.
Step 3 Press ▶	00	"00" starts flashing.
Step 4 Press ▲▼	01	Scroll to "1" (push as example).
Step 5 Press ▶	01	Saves "1" value for Push. Display stops flashing.
Step 6 Press ◀	AS	Returns to Installation type parameter.
Step 7		**Go to Para. 10.5, set door width parameter Tb.**

10.5 Set door width parameter **Tb**

Table 10.5.1 ED900 door widths and Tb parameter values.

	Door width	
Door width measurement		
Inches	[mm]	**Tb**
28 - 31 15/16	[711] - [811]	7
32 - 35 15/16	[813] - [912]	8
36 - 39 15/16	[914] - [1014]	9
40 - 43 15/16	[1016] - [1116]	**10***
44 - 47 15/16	[1118] - [1218]	11
48 - 51 15/16	[1219] - [1319]	12

Tb factory setting = 10.

10.5.1 Measure door width.

1. Measure door width in inches or mm

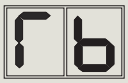
10.5.2 Set Tb door width parameter value.

NOTICE

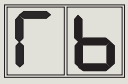
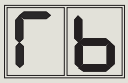
1. **If door width = 40 - 43 15/16", Set Tb = 10.**
- "10" is **Tb** factory setting.
- **For system to recognize Tb = 10, steps in Para. 10.5.3 must be followed.**

2. **Set TB** parameter to value other than 10.
- Follow steps in Para. 10.5.4

10.5.3 Set parameter TB value = 10.

Step 8 Press ▼		Scroll to **Tb** parameter.
Step 9 Press ▶		Displays "10", factory setting.
Step 10 Press ▶		"10" starts flashing.
Step 11 Press ▲▼		Scroll to 11
Step 12 Press ▲▼		Scroll to 10
Step 13 Press ▶		Saves value. Display stops flashing.
Step 13 Press ◀		Returns to door width parameter.
Step 14		**Go to Para. 10.6, Set reveal depth rd.**

10.5.4 Set parameter TB to value other than 10.

Step 8 Press ▼		Scroll to **Tb** parameter.
Step 9 Press ▶		Displays "10", factory setting.
Step 10 Press ▶		"10" starts flashing.
Step 11 Press ▲▼		Scroll to 11 (Door width = 44 - 47 15/16" as example)
Step 12 Press ▶		Saves value entered. Display stops flashing.
Step 13 Press ◀		Returns to door width parameter.
Step 14		**Go to Para. 10.6, Set reveal depth parameter rd.**

10.6 Set reveal depth parameter **rd**

Fig. 10.6.1 Reveal depth parameter rd

2	rd		Reveal depth

rd factory setting = 0.

10.6.1 Measure reveal depth.

1. Measure and record reveal depth.

- Reveal depth is set in increments of 10 mm (approximately 3/8"). Reference Table 10.6.1.

TIPS AND RECOMMENDATIONS

Use of pull arm with CPD lever.
Value of parameter **rd** must be reduced by 3/16" [30].

- Example: ED900 installation with reveal of 30 mm (1 1/8").
  Parameter rd setting = 0
  (Reveal of 30 mm - 30 mm).

10.6.2 Set rd reveal depth parameter value.

NOTICE

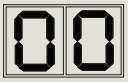
1. **If reveal depth = 0, set rd = 0**.

- "0" is **rd** factory setting.
- **For system to recognize rd = 0, steps in Para. 10.6.3 must be followed.**

2. **Set rd** parameter to value other than 0.

- Follow steps in Para. 10.6.4

10.6.3 Set parameter rd, reveal depth = 0.

Step 15 Press ▼		Scroll to **rd** parameter.
Step 16 Press ▶		Displays "00", factory setting.
Step 17 Press ▶		"00" starts flashing.
Step 18 Press ▲▼		Scroll to "01".
Step 19 Press ▲▼		Scroll to "00".
Step 20 Press ▶		Saves value. Display stops flashing.
Step 21 Press ◀		Returns to reveal depth parameter.
Step 21		**Go to Para. 10.7, Set door type parameter dL.**

10.6.4 Set parameter rd to value other than 0.

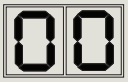
Step 15 Press ▼		Scroll to **rd** parameter.
Step 16 Press ▶		Displays "00", factory setting.
Step 17 Press ▶		"00" starts flashing.
Step 18 Press ▲▼		Scroll to new value ("10" as example).
Step 19 Press ▶		Saves value. Display stops flashing.
Step 20 Press ◀		Returns to reveal depth parameter.
Step 21		**Go to Para. 10.7, Set door type parameter dL.**

Table 10.6.1 Reveal measurement and parameter rd values.

Reveal measurement		
Inches	[mm]	**rd**
-2 3/8"	-60	-6
-1 3/16	-30	-3
-3/4	-20	-2
-3/8	-10	-1
0*	0	0
3/8	10	1
3/4	20	2
1 1/8	30	3
1 9/16	40	4
1 15/16	50	5
2 3/8	60	6
2 3/4	70	7
3 1/8	80	8
3 1/2	90	9
3 15/16	100	10
4 5/16	110	11
4 3/4	120	12
5 1/8	130	13

Reveal measurement		
Inches	[mm]	**rd**
5 1/2	140	14
5 7/8	150	15
6 5/16	160	16
6 11/16	170	17
7	180	18
7 1/2	190	19
7 7/8	200	20
8 1/4	210	21
8 5/8	220	22
9	230	23
9 7/16	240	24
9 13/16	250	25
10 1/4	260	26
10 5/8	270	27
11	280	28
11 7/16	290	29
11 13/16	300	30

***rd** factory setting = 0.

Fig. 10.6.2 Fine cover positive reveal

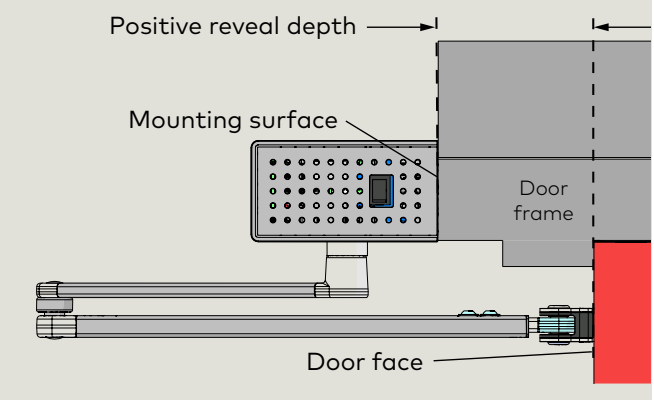
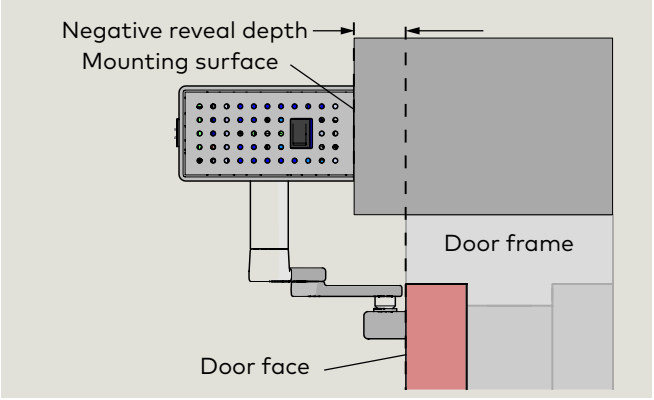


Fig. 10.6.3 Fine cover negative reveal



10.7 Set door type parameter **dL**

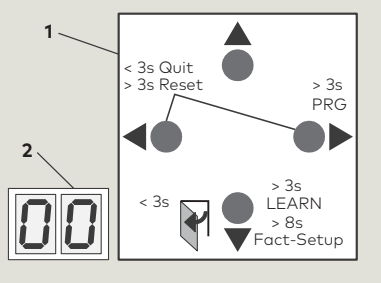
Table 10.7.1 Door type parameter dL values.

	**Door type**
Parameter value	Parameter description
0*	Single door
1	Pair doors, with astragal. Active door operator, door opens first.
2	Pair doors, with astragal. Inactive door operator.
3	Pair doors, without astragal. Active door operator. Both doors open simultaneously.
4	Pair doors, without astragal. Inactive door operator. Both doors open simultaneously.

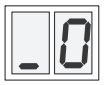
***dL** factory setting = 0.

Fig. 10.7.1 4 button keypad, 2 digit display

1 4 button keypad
2 2 digit display



TIPS AND RECOMMENDATIONS

If display shows  after basic parameters have been set:

- Press ▼ for 3 seconds.
-  will be displayed.

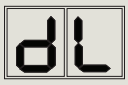
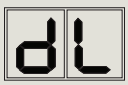
10.7.2 Set dL door type parameter value.

NOTICE

1. **Set dL = 0** (single door =0).
- "0" is **dL** factory setting.
- **For system to recognize dL**= 0, **steps in Para. 10.7.3 must be followed.**

dL must be set to "0" for single door commissioning.

10.7.3 Set parameter dL, door type = 0.

Step 22 Press ▼		Scroll to **dL** parameter.
Step 23 Press ▶		Displays "00" , factory setting.
Step 24 Press ▶		"00" starts flashing.
Step 18 Press ▲▼		Scroll to "01".
Step 18 Press ▲▼		Scroll to "00".
Step 25 Press ▶		Saves value. Display stops flashing.
Step 26 Press ◀		Returns to door type parameter.
Step 27 Press ◀		Exits program mode.

10.8 Perform learning cycle

Fig. 10.8.1 Mode switch



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. 12.2):

- **AS**, Installation type, Para. 10.4
- **rd**, Reveal depth, Para. 10.6
- **Tb**, Door width, Para. 10.5
- **dL**, Door type, Para. 10.7

TIPS AND RECOMMENDATIONS

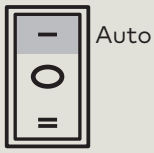
During learning cycle:

- Operator functions are deactivated.

WARNING

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

Fig. 10.8.2 Mode switch



Step 1		Secure motion range of door.
Step 2		Set Mode switch to CLOSE position (Fig. 10.8.1).
		Rotating "o" and a "0" indicates operator learning cycle is required.
Step 3 Press ▼		Press and hold down button until display changes. • 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		• Manually move door to desired opening angle. Maximum door angle is 110°.
Step 5 Press ▼		Momentarily press down button to continue learning cycle. • Door performs several movements and display shows a sequence of symbols. • Movements of door must not be interrupted!
		**Operator spring tension too low.** • Display with small rotating "o" and an "F" during learn cycle indicates spring tension is too low. • Door will close. 1. Increase spring tension (Para. 10.1). 2. Restart learning cycle (Step 3).
		Door completes learning cycle. • 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 16.
Step 9		Set Mode switch to Auto (Fig. 10.8.2).

10.9 Set power fail closing speed

Fig. 10.9.1 Power fail closing speed potentiometer

1 Power fail closing speed potentiometer
2 Control board

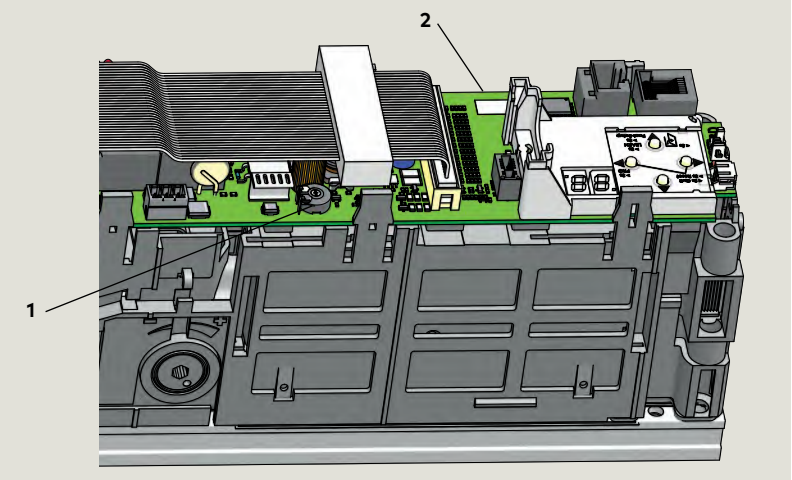
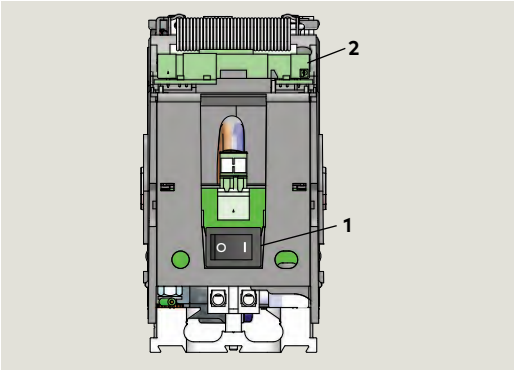


Fig. 10.9.2 Power on switch

1 Power on switch
2 Terminal board



NOTICE

Error message E73:
If door closes in less than three seconds, error message **E 73** (System error 3, braking circuit) will be displayed.
Reference: Appendix B, Troubleshooting.

10.9.1 Power fail closing speed potentiometer.

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

10.9.2 Setting door closing speed upon power failure.

1. Turn power switch OFF.
2. Manually open door to 90° angle and let it close.
3. If door closes in less than 5 seconds, turn potentiometer 1/4 turn CW and retry test.
4. Continue retrying test after potentiometer adjustment until the door closing time is a minimum of 5 seconds.

TIPS AND RECOMMENDATIONS

Minimum 5 second closing time is required to meet requirements of:
- A117.1, Accessible and Usable Buildings and Facilities, Section 404.2.7.
- 2010 ADA Standards for Accessible Design, Section 404.2.8.

11 Initial setup – pair doors

11.1 Separately setup active and inactive doors

11.1.1 Setup active door first.

1. Refer to Chapter 10 and setup active door.

11.1.2 Setup inactive door.

1. Refer to Chapter 10 and setup inactive door.

11.2 Set operator parameters for pair door operation

11.2.1 Active door, set parameters dL and Ad.

1. Set active door Mode switch to CLOSE.
2. Set parameters **dL** (door type) and **Ad** (caster angle)for active door.

- Castor angle sets opening angle of active door before inactive door starts to open. Factory setting is 30°.

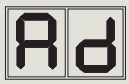
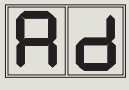
CAUTION

Full width cover option.
Single program switch located on inactive door.

Step 1 Press ▶		Press and hold PRG > 3 s to enter program mode, AS parameter displayed.
Step 2 Press ▼		Scroll to **dL** parameter.
Step 3 Press ▶		Displays "00" , factory setting.
Step 4 Press ▶		"00" starts flashing.
Step 5 Press ▲▼		Scroll to select parameter value ("1" as an example).
Step 6 Press ▶		Saves value entered. Display stops flashing.
Step 7 Press ◀		Returns to door type parameter.

Table 11.2.1 Door type parameter dL values.

	**Door type**
Parameter value	Parameter description
0*	Single door
1	Pair door, with astragal. Active door operator, door opens first.
2	Pair door, with astragal. Inactive door operator.
3	Pair door, without astragal. Active door operator. Both doors open simultaneously.
4	Pair door, without astragal. Inactive door operator. Both doors open simultaneously.
*	Factory setting

Step 8 Press ▼		Scroll to Ad parameter.
Step 9 Press ▶		Displays "30", factory setting.
Step 10 Press ▲▼		Scroll to select parameter value (10° as an example).
Step 11 Press ▶		Saves value entered. Display stops flashing.
Step 12 Press ◀		Returns to caster angle parameter.
Step 13 Press ◀		Exits program mode. Operator is ready for operation.

11.2.2 Inactive door, set parameter dL.

1. Set program switch to CLOSE.
2. Set parameter dL (door type) for inactive door.

Step 1 Press ▶		Press and hold PRG > 3 s to enter program mode, AS parameter displayed.
Step 2 Press ▼		Scroll to **dL** parameter.
Step 3 Press ▶		Displays "00" , factory setting.
Step 4 Press ▶		"00" starts flashing.

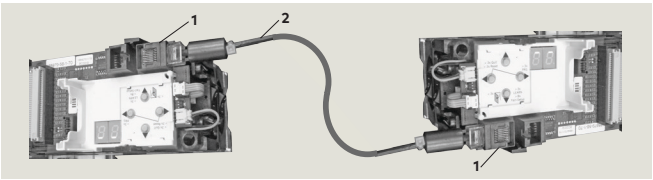
NOTICE

Pairs must be:
- 1 (active) and 2 (inactive) or
- 3 (active) and 4 (inactive).

Step 5 Press ▲▼		Scroll to select parameter value ("2" as an example).
Step 6 Press ▶		Saves value entered. Display stops flashing.
Step 7 Press ◀		Returns to door type parameter.
Step 8 Press ◀		Exits program mode. Operator is ready for operation.

11.3 Connect sync cable between operators

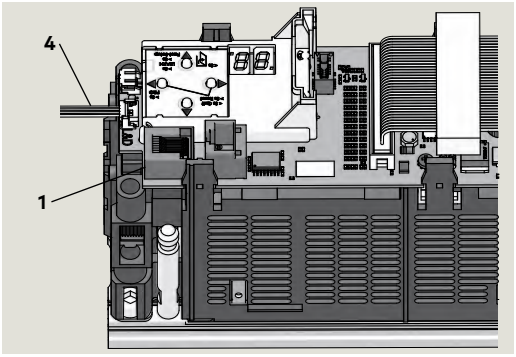
Fig. 11.3.1 Pair door operators, sync cable



1 RJ45 jack (horizontal) for Sync cable

2 Sync cable DX3485-0X0

Fig. 11.3.2 RJ45 jack



1 RJ45 jack

4 Mode switch cable

11.3.1 Install Sync cable.

1. Set Mode switch to CLOSE.
2. Connect sync cable to active and inactive operator RJ45 jacks.
3. Secure cable to header.

13.3.2 Test door operation.

1. Set Mode switch to AUTO.
2. Test double door operation.
- Use knowing act device.

Fig. 11.3.3 Mode switch, Close position

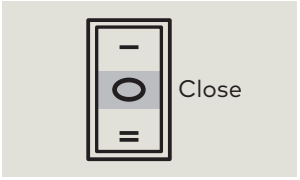
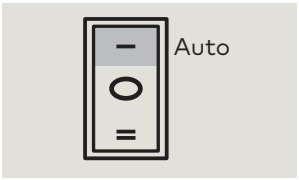


Fig. 11.3.4 Mode switch, AUTO position



11.3.3 Sync cable lengths.

Sync cable	Length	Item #	Quantity
HX3485-030	80" [2030 mm]	1	1
Optional			
HX3485-010	9 7/8" [250 mm]	1	0
HX3485-020	40 1/2" [1030 mm]	1	0

Fig. 11.3.5 Sync cable



12 Set track bumper stop

12.1 Set track bumper stop position

Fig. 12.1.1 Mode switch



12.1.1 Set bumper stop position.

1. Set Mode switch to OPEN.
2. Door moves to set opening angle.

WARNING

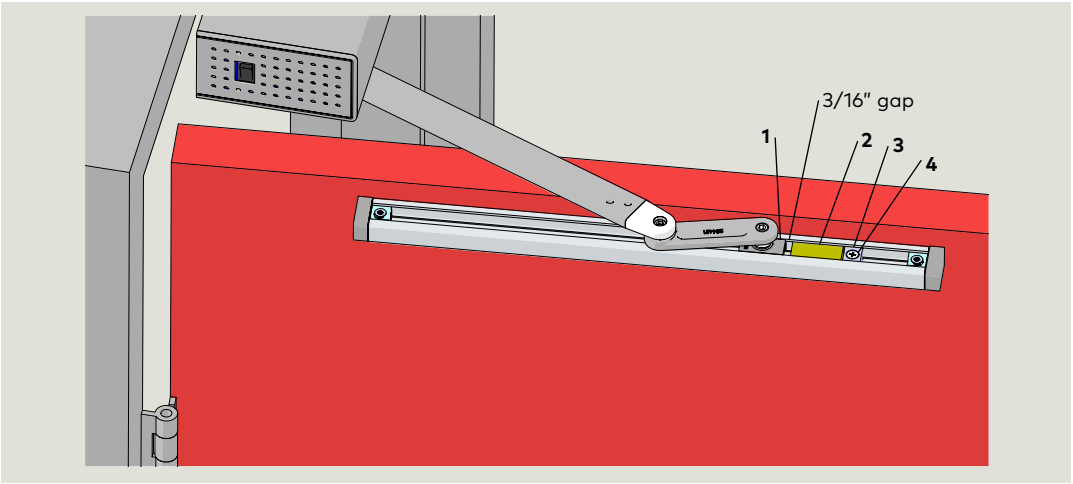
Use caution when working in proximity of door and track.

3. Slide bumper and bumper stop toward slide shoe until bumper is 3/16" from edge of slide shoe (Fig. 12.1.2).
4. Tighten bumper stop M5 screw. Do not overtighten.

CAUTION

Using Mode switch, close then open door to verify gap between bumper and slide shoe with door at full open position.

Fig. 12.1.2 Setting bumper stop location

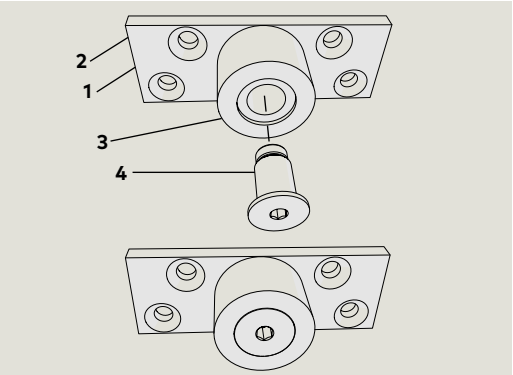


1 Slide shoe
2 Bumper
3 Bumper stop
4 M5 x 13 FHMS cross recessed

13 Install push arm door stop

13.1 Install push arm door stop (optional assembly)

Fig. 13.1.1 Door stop assembly HS4633-001



1 1/2" thick base plate HC4633-002
2 1/4" thick base plate HC4633-001
3 Rubber bumper HC4633-003
4 Shoulder screw HC4633-004

Fig. 13.1.2 Mode switch

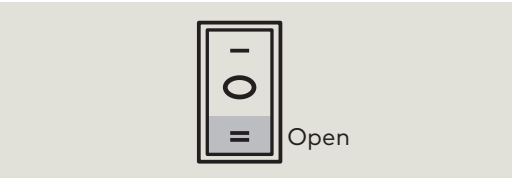
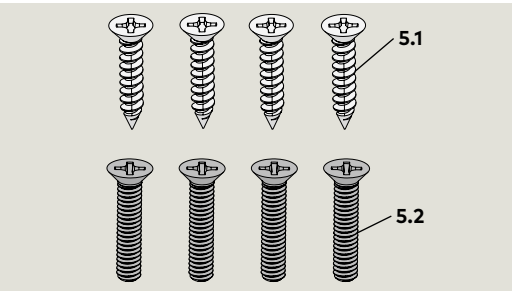
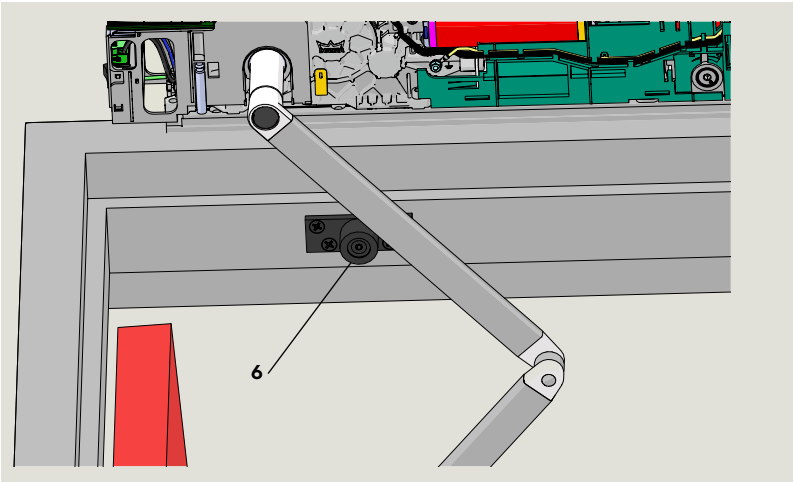


Fig. 13.1.3 Door stop fasteners



5 Mounting screw kit HC4633-005
5.1 1/4 x 1 1/4" Phillips FHS, black oxide, SS

Fig. 13.1.4 Door stop installation



4 Bumper stop assembly

TIPS AND RECOMMENDATIONS

Contact local dormakaba USA, Inc. company for door stop assembly HS4633-001.

13.1.1 Assemble bumper stop.

1. Attach bumper to bumper mounting plate with 1/2" shoulder screw.
- Use 5 mm hex key.

13.1.2 Open door.

1. Set Mode switch to OPEN position.
2. Door moves to set opening angle.

WARNING

Use caution when working in proximity of door and push arm!.

13.1.3 Bumper stop installation.

1. With door at its full open position locate door stop assembly bumper on door frame 1/8" beyond arm.
2. Mark mounting plate hole locations on frame.
- Plate hole diameter is 1/4".
3. Select fasteners based on door frame material.
4. Attach door stop assembly to frame.

CAUTION

Using Mode switch, close then open door to verify arm does not contact door stop with door at full open position.

14 Check door signage

14.1 Check door signage

14.1.1 Check door signage.

TIPS AND RECOMMENDATIONS

Reference Chapter 7, ED900 door signage.

15 Install cover, end caps and spindle caps

15.1 Install fine cover and end caps

Fig. 15.1.1 ED900 standard cover

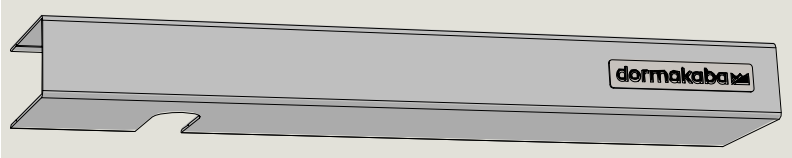
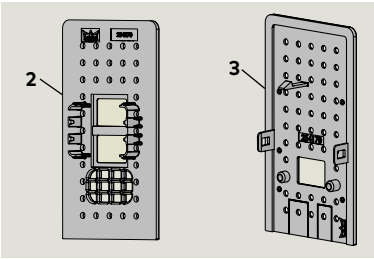


Fig. 15.1.2 Operator end caps



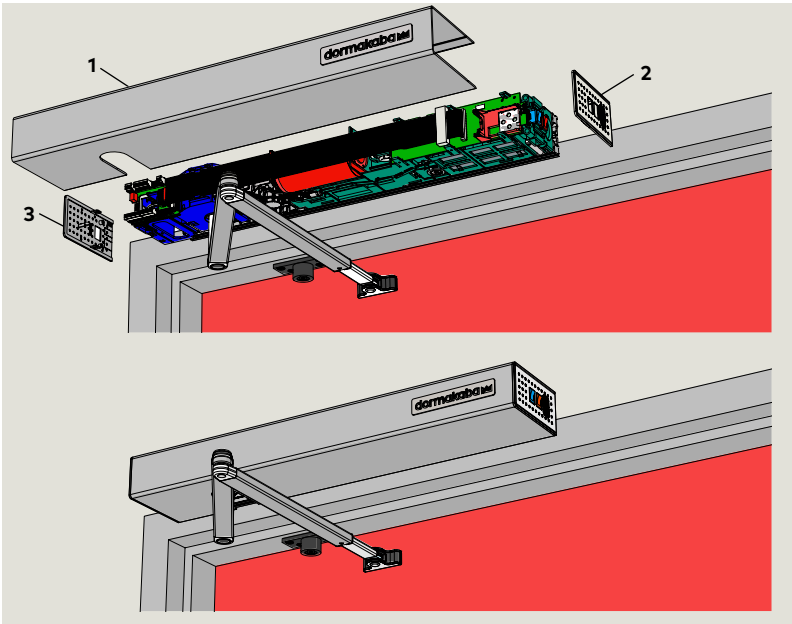
2 Mode, Exit Only switches **3** Power switch

Fig. 15.1.3 Service Call label



4 Service Call label DD3425-010

Fig. 15.1.4 Cover and end cap installation



1 ED900 standard cover **2** End cap, Mode and Exit Only switches **3** End cap, power switch

15.1.1 Install Service Call label.

1. Install Service Call label (Fig. 15.1.3) at convenient location.

15.1.2 Install cover.

1. Align cover with operator, press inward until cover snaps into place.

CAUTION

Insure that all cables are in place and secured.

TIPS AND RECOMMENDATIONS

For optional full width cover installation, go to ED900 Installation Instructions.

15.1.3 Install end caps.

1. Install operator end caps.

TIPS AND RECOMMENDATIONS

Mode switch end cap; insertion depth is adjustable to compensate for minor tolerances is length of operator cover.

15.2 Install spindle caps, fine cover

Fig. 15.2.1 Spindle caps

4 Spindle cap
5 Spindle cap

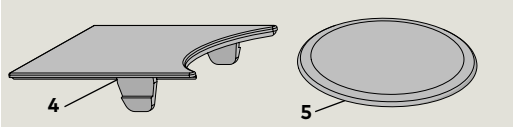
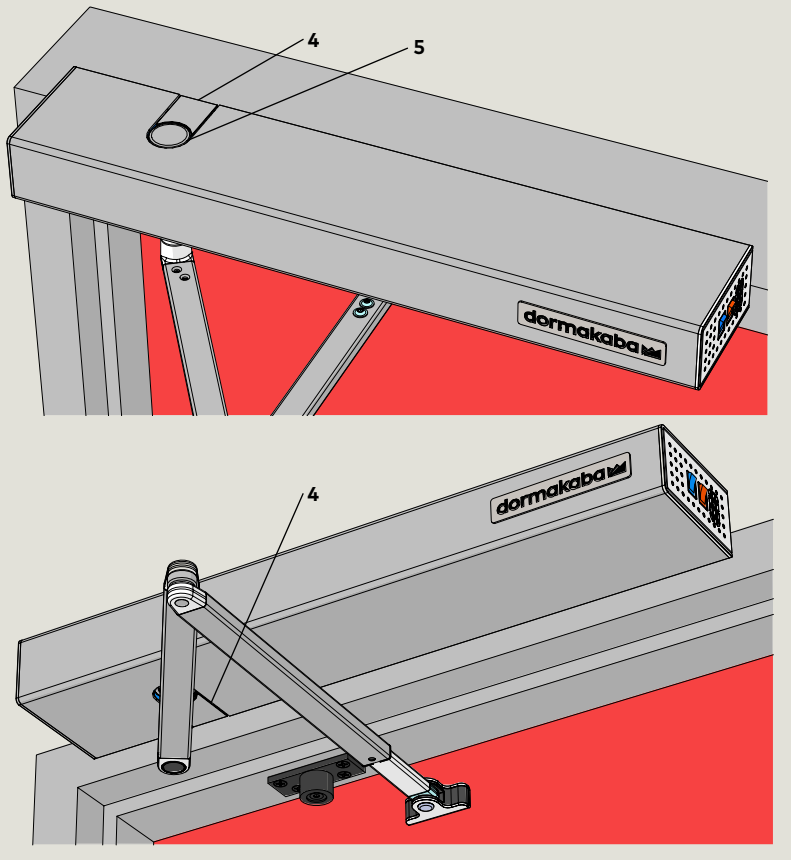


Fig. 15.2.2 Spindle cap installation



4 Spindle cap **5** Spindle cap

15.2.1 Install spindle caps.

1. Install spindle caps on cover.

16 Upgrade cards

16.1 Upgrade cards

16.1.1 Upgrade card installation.

dormakaba upgrade cards can be used to expand the range of functions of ED900 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

Fig. 16.1.1 Upgrade card slot

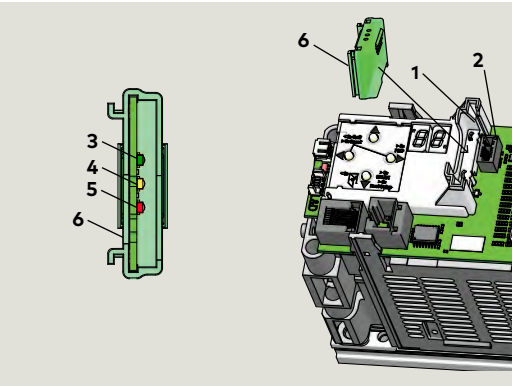


Table 16.1.1 Upgrade cards

Upgrade card		Part No.	Color
Fire protection	ED900	DX3461-003	Red
DCW	ED900	DX3461-007	Yellow
Barrier free lavatory	ED900	DX3461-006	Dark green

16.2 Container module

16.2.1 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.

16.2.2 Container module removal.

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

16.2.3 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.

16.2.4 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.

16.2.5 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.

16.2.6 Container module defective.

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

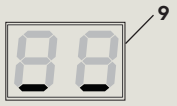
16.3 Installing upgrade cards

16.3.1 Set Mode switch to CLOSE.

1 Upgrade card slot
6 Barrier free lavatory upgrade card
7 Container module
8 Mode switch
9 2 digit display with horizontal bars



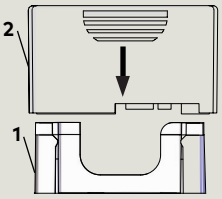
Set Mode switch to Close.



Horizontal bars indicate controller in stand by mode.

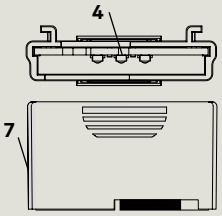
16.3.2 Installing first upgrade card.

1 Upgrade card slot
2 First upgrade card



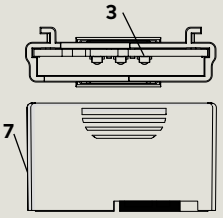
1. Insert first upgrade card into upgrade card slot.
2. This card will become container module.

4 Yellow LED
7 Container module



3. Yellow LED flashes on and off once during card insertion.

1 Upgrade card slot
3 Green LED
7 Container module



4. Green LED slowly flashes on and off indicating communication between card and control module.
5. Upgrade card becomes container module, green LED continues to slowly flash on and off.

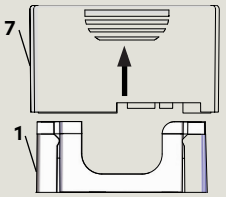
- Upgrade card function is now available.

3 Green LED
7 Container module

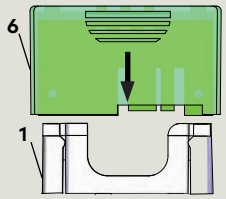
TIPS AND RECOMMENDATIONS

Container module can be configured using applicable parameter (F1 - F8) for card. Reference Chapter 9, Parameters.

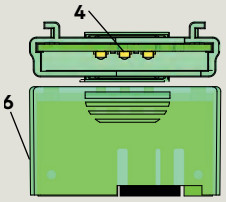
16.3.3 Installing additional upgrade cards.



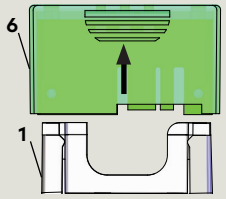
1. Remove container module from upgrade card slot.



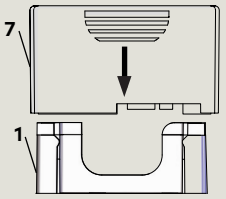
2. Insert next upgrade card into upgrade card slot.



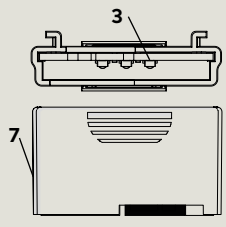
- Card function is copied to control module; upgrade card is then invalidated.
- Yellow LED indicates procedure is complete.



3. Remove upgrade card from upgrade card slot.



4. Reinsert container module into upgrade card slot.



- Control unit recognizes container module; container module stores new functions.
- Green LED slowly flashes on and off indicating successful operation.
- New card functions are now available.

TIPS AND RECOMMENDATIONS

New upgrade card can be configured using applicable parameter (F1 - F8) for card. Reference Chapter 9, Parameters.

17 ANSI/BHMA standards

17.1 Low energy power operated doors (ANSI/BHMA A156.19)

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.

17.1.1 Door measurements, low energy power operated door.

ED900 parameter						ANSI/BHMA A156.19
Parameter		Function	Factory setting	Adjustment range	Para.	
So	Opening speed	Swing door opening speed, automatic mode.	25°/s	8°/s - 27/s	4.3	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 (next page) If door opens at more than 90°, it shall continue at the same rate as backcheck speed.
bc	Backcheck	Checking or slowing down of door speed before door being fully opened.	10°	5° - 40°	4.3	Backcheck shall not occur before 60° opening.
Sc	Closing speed	Swing door closing speed, automatic mode.	19°/s	8°/s - 27/s	4.5	Closing Doors shall close from 90° to 10° in 3 s or longer as required in Table I (next page). Doors shall close from 10° to fully closed in not less than 1.5 s.
dd	Hold open time	Hold open time	5 s	5 s - 30 s	4.4	Time delay When powered open, the door shall remain open at the fully opened position for not less than 5 s. Exception: when push-pull activation is used, the door shall remain at the fully opened position for not less than 3 s.
hS	Reference Appendix A for parameter detail.	Support for manual mode in door closed position.			4.6	Reference ANSI/BHMA A156.19, Para. 4.6, Force and Kinetic Energy.
hA		Adjustment, door activation angle.				
hF		Power assist function.				
Fo	Static force in opening direction	Static force on door closing edge in opening direction.	Parameter setting *10 60 N 13.5 lb f	Parameter setting *10 20 N - 60 N 4.5 lb f - 13.5 lb f	4.6	The force required to prevent a stopped door from opening or closing shall not exceed 15 lb f [67 N] measured 1" from latch edge of the door at any point during opening or closing.
Fc	Static force in closing direction	Static force on door closing edge in closing direction.	Parameter setting *10 60 N (*10) 13.5 lb f	Parameter setting *10 20 N - 60 N (*10) 4.5 lb f - 13.5 lb f	4.6	

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

17.1.2 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]
30 [762]	3.0	3.0	3.0	3.0	3.5
36 [914]	3.0 s	3.5 s	3.5 s	3.0 s	3.0 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).					

17.1.3 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 backcheck speed.		
Back check occurring at a point between positions shall use lowest setting.		

17.1.4 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.

Appendix A - Driving parameters

A.1 Driving parameters – detail

A.1.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
Opening speed, automatic mode.				1. Opening speed refers to automatic mode, speed can be adjusted using this parameter. 2. Internal monitoring system checks if parameter setting is admissible. If setting exceeds admissible value, the setting is alternately displayed with the permissible value. 3. After parameter set, verify setting meets ANSI/BHMA A156.19 (low energy) standards. See Chapter 16. *Maximum opening speed 27°/s in low energy mode.
5 	8 - 27*	°/s	**25**	
Closing speed, automatic mode.				1. Closing speed refers to automatic mode, speed can be adjusted using this parameter. 2. Internal monitoring system checks if parameter setting is admissible. If setting exceeds admissible value, the setting is alternately displayed with the permissible value. 3. After parameter set, verify setting meets ANSI/BHMA A156.19 (low energy) standards. See Chapter 16. *Maximum closing speed 27°/s in low energy mode.
6 	2 - 27*	°/s	**25**	
Hold open time, automatic mode.				1. 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. 2. Hold open time values from 0 to 30 are set in increments of 1 second. 3. Hold open time values greater than 30 seconds are set in increments of 5 seconds. 4. In low energy mode, a minimum hold open time of 5 seconds is required. 5. Hold open time can be re-triggered.
7 	0 - 30	s	**5**	
Night-bank hold open time.				1. Night-bank (key switch) hold open time is set using this parameter. 2. Night-bank Hold open time starts once contact on night-bank activator input is opened and door is in an open position. 3. Night-bank hold open time can be re-triggered.
8 	0 - 30	s	**10**	
Hold open time, manual opening.				1. Default hold open time of 1 second that follows every manual opening of door can be adjusted using parameter **do**. 2. Hold open time starts when door is released.
9 	0 - 30	s	**1**	
Wall masking on door hinge side.				1. Wall masking required if door opens against an obstacle. 2. When door reaches set wall masking angle, system will ignore signal from safety sensor on door swing (hinge) side. 3. 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. 4. 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. 5. Rapidly flashing dot disappears when door angle drops below set wall masking angle.
10 	60 - 99	°	**80**	

A.1.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
Safety sensor test.				
11  	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, Appendix B. 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.
Activation by safety sensor on approach (opposite hinge) side.				
12 	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.				
13 	0 - 1		**0**	0 Safety sensor on swing side is active during an initialization drive after a power on reset. 1 1. With SP set to 1, operator will disregard swing side safety sensor during initialization drive. 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.				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.
14 	0 - 40 * 100	ms	**3** *100	
Door preload prior to unlocking.				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 	0 - 9		**0**	

A.1.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
Power reserve module SVP-PR 12 test.				
16 rS TS	0 - 1		**0**	0 Test off 1 1. 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: • Unlocking is not performed and no automatic door movements are initiated. • Error code **E 25** is displayed, See Appendix B, troubleshooting error codes. 2. SVP-PR 12 power reserve module can be used but must be tested on a regular basis if using: • SVP-2000 DCW emergency escape motor lock with automatic latching action. • M-SVP 2000 DCW emergency escape lock. 3. 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.				1. Static force in opening direction (basic parameter for wind load control). Static force on door closing edge can be changed using this parameter. 2. Internal monitoring system checks if parameter setting is admissible. If setting exceeds admissible value, the setting is alternately displayed with the permissible value. 3. After parameter set, verify setting meets ANSI/BHMA standard A156.19 (low energy). See Chapter 16.
17 Fo	Parameter setting *10 20 N - 60 N 4.5 lbf - 13.5 lbf		**6**	
Static force in closing direction.				1. Static force in closing direction (basic parameter for wind load control). Static force on door closing edge can be changed using this parameter. 2. Internal monitoring system checks if parameter setting is admissible. If setting exceeds admissible value, the setting is alternately displayed with the permissible value. 3. After parameter set, verify setting meets ANSI/BHMA standard A156.19 (low energy). See Chapter 16.
18 Fc	Parameter setting *10 20 N - 60 N 4.5 lbf - 13.5 lbf		**6** *10	
Motor driven latching action, automatic mode.				1. System offers a motor driven latching action in automatic mode in addition to mechanical latching action. 2. The **EP** parameter setting is designed to increase static force on door to insure proper closing despite resistance caused by door seals or locking devices. 3. Setting should be increased step by step from a low setting so as to avoid damage to the system. Use the lowest possible setting. 4. Ensure that both the door itself and the arm or track installation are suitable for the additional, permanent forces.
19 EP	0 - 9		**0**	
Motor driven latching action angle.				Door opening angle at which motor driven latching action **EP** is activated. • Starting angle of the latching angle adjustable from 10°.
20 EA	2 -10	°	**3**	
Keep closed force.				
21 FH	0 - 9		**0**	0 Off 1 to 9 1. Keep closed force is: • Permanently applied following motor drive latching action. • Designed to keep door in closed position even if wind acts on door. 2. Keep closed force can be set from 0 (off) to 9, maximum force.

A1.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description	
Push & Go.					
22 PG	0 - 1		**0**	0	Off
				1	1. Parameter is activated. 2. Automatic opening of door is started when door is manually moved 4° out of the closed position. 3. Door close mode parameter **hd** must be set to "0" (automatic) to enable this function.
Mode switch type.					
23 PS	0 - 4		**0**	**0**	Internal, operator mounted Mode switch is active.
				1	External mechanical Mode switch with contacts is connected to operator terminal board. Internal Mode switch connector must be removed.
				2	External DCW electronic Mode switch (EPS) is connected to operator terminal board. Internal Mode switch connector must be removed.
				3	Program switch control by TMS Soft control software.
				4	1. DCW electronic Mode switch (EPS) is installed, and operator is also connected by the building management system to TMS Soft control software. 2. When **PS** is set to 4, the Mode switch functions can be changed from DCW (EPS) to TMS Soft..
Not used.					
24 S1	0 - 1		**0**	0	Not used.
				1	
Internal Mode switch, switch on delay.					
25 S2	0 - 1		**0**	0	Operator will perform function of new switch setting as soon as internal Mode switch is moved.
				1	1. Operator will perform function of new switch setting after a delay of 10 seconds from when internal Mode switch is moved. 2. This function is useful if user has to pass through door and its connected detectors and sensors after Mode switch is set to new function.
Unlocking during business hours.					
26 du	0 - 1		**0**	0	Door is always locked when it reaches closed position.
				1	1. 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. 2. If an electric strike opener is used, it must be suitable for 100% continuous duty factor to avoid possibility of damage.

A.1.1 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.
				6	1. Status relay activated when door is opened further than opening angle parameter **OA**, set during learning cycle. 2. 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 6.	
28 	0 - 1		**0**	0	Locking device output terminal X3, 1G (24V) is independent of Input X6, 4/4a.
				1	1. Locking device output terminal X3, 1G (24V) is turned on as soon as contact at X6, 4/4a is opened.. 2. 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. 3. 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. • 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.					
30 	0 - 1		**0**	0	No function.
				1	1. When "1" entered, Error log is deleted. 2. Parameter is then automatically reset to "0".
Reset service interval display, operator yellow LED.					
31 	0 - 1		**0**	0	No function.
				1	1. When "1" entered: • Service cycle counter is reset to 200,000. • Service interval is reset to 12 months. • Yellow LED not illuminated. 2. Parameter is then automatically reset to "0". 3. Values other than default values must be set using dormakaba USA, Inc. handheld: • Maintenance interval • Maintenance cycles

A.1.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
Factory setting level.				Parameter **SL** is used to determine what data will be reset during factory setting process.
32 SL	1 - 2		**1**	1 **Standard factory settings.** 1. Mode switch: CLOSE. • Door closed. 2. Press 4 button keypad down button ▼ for greater than 8 s. • All parameters reset to factory settings. • Procedure completed when "8" on 2 digit displays blinks twice. • Installed upgrade cards remain valid and do not require reinstallation. 3. Learning cycle required.
				2 **Extended factory settings.** 1. Mode switch: CLOSE. • Door closed. 2. Set SL=2 3. Press 4 button keypad down button ▼ for greater than 8 s. • All parameters reset to factory settings. • Installed upgrade cards deleted from operator memory • Procedure completed when "8" on 2 digit displays blinks twice. • Parameter **SL** automatically reset to 1. 4. Control unit and upgrade cards can be used independently (delivery status). 5. Learning cycle required..
Opening angle.				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.
33 OA	0 - 110	°		
Automatic / manual door closer mode				
34 hd	0 - 1		**1**	0 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.
				1 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				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.
35 hA	1 - 5	°	**3**	

A.1.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
Power assist function.				1. Force setting for Power assist function. 2. Power assist function only available with **hd** parameter = 1, manual mode. 3. "0"; power assist function OFF; power assist function enabled for available values greater than 0. 4. Power assist function enabled when power assist activation angle **hA** reached. 5. The greater the value of **hF**, the easier the door can be manually opened from power assist activation angle **hA**. 6. If power assist set too high, door can open automatically. 7. Power assist function is not available • If operator is switched off • A smoke detector or emergency button has been triggered.
36 hF	0 - 10		**0**	
Additional power assist function support from 00.				1. Setting for additional power assist function support with door at 00. 2. Power assist function only available with **hd** parameter = 1, manual mode. 3. The greater the value of **hS**, the easier the door can be manually opened from the **closed** position.
37 hS / hS	0 - 10		**0**	
A1.1.1 Upgrade card units codes.				
	0-3	- - -	**0**	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.
Upgrade card fire protection				1. Activate function by installing upgrade card, parameter value will automatically change to 2 (upgrade card function installed, fire protection function activated). • 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. • Plug for terminal board X9 socket included with upgrade card.
38 F1	Available upgrade card codes (Para. A1.1.1) 0, 2, 3		**0**	
39 F2				Not used.
40 F3			**0**	Not used.
41 F4			**0**	Not used.
42 F5			**0**	Not used.

A.1.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
Upgrade card, barrier free lavatory.				1. Once upgrade card installed, parameter value will automatically change to 1 (upgrade card installed, function not activated). 2. Activate function by changing parameter **F7** to 2. 3. 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.
43 F7	Available upgrade card codes (Para. A1.1.1) 0, 1, 2, 3		**0**	
Upgrade card DCW.				1. Activate function by installing upgrade card, 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: • Mode 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)
44 F8	Available upgrade card codes (Para. A1.1.1) 0, 2, 3		**0**	
COM 1 configuration interface.				
45 C1	0 - 1		**0**	0 Interface programmed for communication with dormakaba handheld. 1 Interface programmed for use with dormakaba TMS Soft control software.
Backcheck when door opened manually.				1. Angle after which door is braked when manually opened. 2. 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** Entered value is subtracted from set opening angle **OA**. 3. Example • Opening angle, 90° • Parameter **bc**, 12° • Door back check starts at 78°.
46 bc	5 - 40 (v1.9)	°	**10**	
Door thickness.				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.
47 rd	0 - 99	mm	**35**	
Td	0 - 3 7/8"		1 3/8"	
Deactivation of drive; X6, 4 and 4a, trigger type.				
48 d1	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.

A.1.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
Night-bank contact X1; 3 and 35, trigger type.				
49 d2	0 - 1		**0**	0: 1. NO contact, night-bank function is triggered when NO contact is closed. 2. Typically used when using a key switch or an access control system.
				1: 1. NC contact, night-bank function is triggered when NC contact is opened. 2. Typically used when connected to building management system to trigger doors (signal normally present).
Release of hold-open system.				
50 FC	0 - 1		**1**	1: 1. Upgrade care Fire Protection installed, users may release hold-open by manually moving door in closed direction. 2. A manual release button is not required.
				0: 1. Hold-open release by manually moving door in closed direction is deactivated. 2. A manual release button is required.
Castor angle for double doors.				Primary door with astragal, angle active door must open before secondary door opens.
51 Ad	0 - 30	°	**30**	
Hinge clearance				1. Clearance between hinges is critical for the calculated door angle. 2. It may only have a small effect but the clearance can be adjusted in extreme cases to improve accuracy. 3. Factory setting is 3 * 10, 30 mm, 1 3/16". 4. 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.
52 HS	± 5 *10	mm	**3** *10	
	±3/16 *10	inches		
Overhead concealed mode (OHC): Activation of permanent open via night-bank input.				
53 S3	0 - 1		**0**	0: Function disabled.
				1: If night-bank signal is longer than 3 seconds, operator changes to permanent open mode.
Overhead concealed mode (OHC): Adjustable behavior after blockage / hold open.				
53 S4	0 - 1		**0**	0: Standard behavior (3 x restart).
				1: Manual mode after blockage.
Reversing after trigger of approach side safety sensor / opposite hinge side in operating mode hd=1.				
55 S5	0 - 1		**0**	0: Standard behavior, stop.
				1: Reversing

Appendix B - Troubleshooting

B.1 Information and error codes

Fig. B.1.1 User interface

1 4 button keypad
2 2 digit display

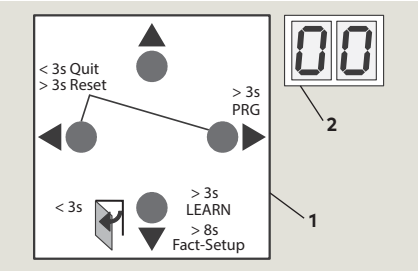


Fig. B.1.2 Operator LEDs

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

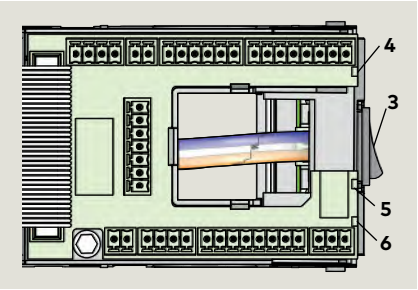
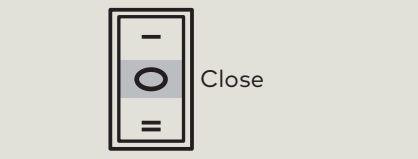


Fig. B.1.3 Mode switch:



TIPS AND RECOMMENDATIONS

Para. B.3, Information codes
Para. B.4, Error codes

B.1.1 Overview

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

B.1.2 Error and information messages.

1. With operator in use, certain conditions 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.

B.1.3 User information display.

User interface display, or or dormakaba handheld displays:
- Information **In** codes
- Error message **E** codes

B.1.4 Viewing error messages.

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

B.1.5 Red LED on operator .

Red LED adjacent to operator power switch displays blinking codes for:
- Certain **In** information
- **E** error codes (Para. B.2)

B.1.6 Resetting error codes.

Options for resetting error codes:
1. Set Mode switch in Close (off) position.
2. User interface Reset buttons:
- Press both left ◀ and right ▶ buttons >3s to reset system.
- 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. B.3,.4) are intended as a guide for diagnosing errors.

B.1.7 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.

B.2 Red LED status codes

B.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.
	E26	ED50LE braking error
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

B.3 Troubleshooting chart, "In" codes

B.3.1 Troubleshooting chart, information messages.

No.	Display	Red LED	Description	Troubleshooting information messages
	In 01	Off	**Obstruction** Door obstructed by an obstacle or person; door movement stopped by operator.	Sustained operation on a door with an obstruction can result in damage to drive. 1. Object or person obstructing door movement. • Check door movement while system is deenergized. • Remove cause of anything obstructing door movement. 2. Sensor detection range too small. • 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. 3. Test system operation after cause of obstruction found.
2	In 08	Off	**Deactivation of drive function.** • Contact at X6, 4 and 4a is opened. • Operator switched to emergency mode, door can only be used manually.	An emergency close switch, lock switch, or other system safety device may be connected to the X6 input. 1. One of the activators connected to X6 may have opened, or a defect is present. 2. Reset the applicable activator. Operator should start operation automatically. 3. If In 08 still present, check activators or system wiring.
3	In 09	Off	**Upgrade card error.** • 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.	1. Installed upgrade card cannot be removed. 2. If more than one upgrade card is installed, the first card installed becomes the container module. • The container module must be installed last, after all other Upgrade cards are installed. 3. If container module is defective, first upgrade card (container module) must be replaced and all other upgrade cards must be reinstalled.
4	In 11	On	**Hold-open system triggered.**	1. Hold-open system can be triggered: • Automatically by smoke detector or building interface system. • Manually by a manual release button. • Manually moving door. 2. The system must be reactivated by a deliberate action. 3. Depending on system's configuration, reactivation can be done by: • Manually moving door to taught opening angle. • Switching program switch to Close (off). • Pressing both 4 button keypad left ◀ and right ▶ buttons greater than 3s. 4. It must be ensured that a smoke detector or building interface has not been triggered. 5. If reactivation is unsuccessful, there may be a defect in the smoke detector or building interface system or its connections.
5	In 23	Off	**Locking alarm.** • Door is blocked while in the closed position.	1. Most common cause of this error is the drive unit attempting to open a locked door. 2. To eliminate the occurrence of this error, install a lock status switch. • Lock switch detects the lock pin's switching status and switches the drive unit off if necessary. 3. 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.

B.3.1 Troubleshooting chart, information messages.

No.	Display	Red LED	Description	Troubleshooting information messages
6	In 61	Off	**Communication error, double door system.** • No communication between the two operators.	1. Check communication cable connection at the two operators. • Cable connects to the horizontal RJ 45 connector next to the user interface. Check communication cable.
7	In 72	Off	**Current measuring circuit.** • System could not successfully perform internal current measuring test , performed once every 24 hours.	1. The initial current measuring test my not always be successfully completed due to system tolerances and environmental conditions. 2. 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.** • System could not successfully perform internal braking circuit test , performed once every 24 hours.	1. The initial braking circuit test my not always be successfully completed due to system tolerances and environmental conditions. 2. The test also may fail, as an example, if someone uses the door manually while the test is in progress. 3. If the cyclical test fails ten times in a row, error message **In 73** will be displayed.
9	In 91	Off	**DCW communication.** • At least one registered DCW device is missing.	1. Reconnect the corresponding DCW device. 2. If this is not possible, reactivate the drive. Reactivation can be done by: • Switching program switch to Close (off). • Pressing both 4 button keypad left ◀ and right ▶ buttons greater than 3s.

B.4 Troubleshooting chart, "E" codes

B.4.1 Troubleshooting chart, "E" codes.

No.	Display	Red LED	• Description	Troubleshooting error codes
1	E 02	Flashing 2 x	**Locking device error.** • Operator is attempting to open or close a locking device with feedback, or a DCW locking device. An error has occurred during this process.	1. Probable causes are a defective locking device or wiring defect. • Check the locking device and feedback system.
2	E 03	Flashing 3 x	**DCW program switch is missing.**	1. Check the DCW program switch and its connections.
3	E 04	Flashing 4 x	**Safety sensor test error.** • Test of moving safety sensors was unsuccessful.	1. Factory setting level of "safety sensor test" parameter **ST** is 0, test off (Appendix A, Parameter detail). 2. 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. 3. Check whether parameter **ST** has been configured to the installed safety sensors and their active-high or active-low signal level. 4. Check for activation of the test at the safety sensors.

B.4.1 Troubleshooting chart, "E" codes.

No.	Display	Red LED	• Description	Troubleshooting error codes
4	E 12	Flashing 12 x	**EEPROM error.** • Internal memory check could not be completed. • Drive unit works in door closer mode.	1. Using dormakaba handheld, reload current firmware to reinitialize system. 2. If the error is still present, the control unit must be replaced.
5	E 13	Flashing 13 x	**Overcurrent detection.** Motor is consuming more current than drive unit can provide.	1. Motor is consuming too much power, check for any external causes. 2. Drive unit or control unit is defective. 3. If error repeats, operator must be replaced.
6	E 15	Flashing 15 x	**Faulty learning cycle.** Learning cycle could not be completed (Chapter 10).	1. Error may occur if learning cycle has been interrupted, for example if door movement has been interrupted during the learning cycle. 2. Learning cycle must be repeated.
7	E 25	Flashing 5 x	**SVP-PR 12 power reserve module test negative.**	1. See Appendix A, parameter **TS**, Power reserve module test. 2. Check power reserve module and its wiring.
8	E 26		**ED50LE brake error.**	Reference ED50LE/ED100LE Installation Manual, Chapter 15, Maintenance, Para. 15.3 Brake maintenance. 1. Brake error during learning cycle. • Check brake wire connections on X3 terminal strip. Verify wire insulation has been properly stripped from end of wires and wires are secured under terminals. • Red wire terminated on 1G, black wire on 3. Reference Figure 15.7.8, brake wiring. 2. Verify that the only wiring on X3 terminals 1G and 3 are the brake wires. 3. Brake air gap tolerance issue. • Brake air gap adjustment. Reference adjustment of air gap. Brake power (1G: +27 Vdc, 3: 0V). • ON when door is in fully opened position. • OFF when hold-open time expires.
9	E 51 E 52 E 53	Flashing 5 x	**Incremental encoder error.** • Motor gear unit encoder monitoring detected a faulty state.	1. Check encoder plug connection at operator. • Secure connection. • Wiring terminations • Short circuits. 2. Check locking device for short circuits. 3. Error can be caused by defective motor or short circuit in locking device. 4. Motor gear unit must be replaced in event of defective motor.
10	E 62	Flashing 6 x	**Incompatible firmware version,** double door system, second system.	1. Equip both operators with same firmware version.

B.4.1 Troubleshooting chart, "E" codes.

No.	Display	Red LED	• Description	Troubleshooting error codes
11	E 63	Flashing 6 x	**Incompatible fire protection setting**. double door system.	1. For double door systems, the Upgrade card fire protection must be installed in both control units.
12	E 71	Flashing 7 x	**System error 1, 2nd shutdown option.**	1. In order to reliably switch off the drive unit, several switching elements are used and their functions are tested periodically. 2. If the function test always results in the error code, the control unit must be replaced.
13	E 72	Flashing 7 x	**System error 2, current measurement circuit.**	1. The current measurement circuit is part of the safety mechanisms and its function is tested periodically. 2. If the function test always results in the error code, the control unit must be replaced.
14	E 73	Flashing 7 x	**System error 3, braking circuit.**	1. The braking circuit is a safety element in the closer mode and will be tested every 24 hours. • During the test the motor is shut down during door closing and the door closes at a set angle in emergency mode. • Test can be noticed as a short jerk on the door and is normal. 2. Error can be due to door closing in the deenergized state too fast (under 3 seconds). See Chapter 9, Power fail closing speed. 3. Check the closing speed and reduce if necessary.
15	PF		**Short circuit of 24 V supply voltage.**	1. Eliminate short circuit.
16	- 1		**Energy management.** • Motor is too hot (for example, too high an ambient temperature) • System responds automatically.	1. Movement dynamics in the closed direction will be reduced.
	- 2			2 Movement dynamics in both the open and closed directions will be reduced.
	- 3			3 System shuts down for 3 minutes (door closer mode).
	- 4			4 Hold-open time will be extended.

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