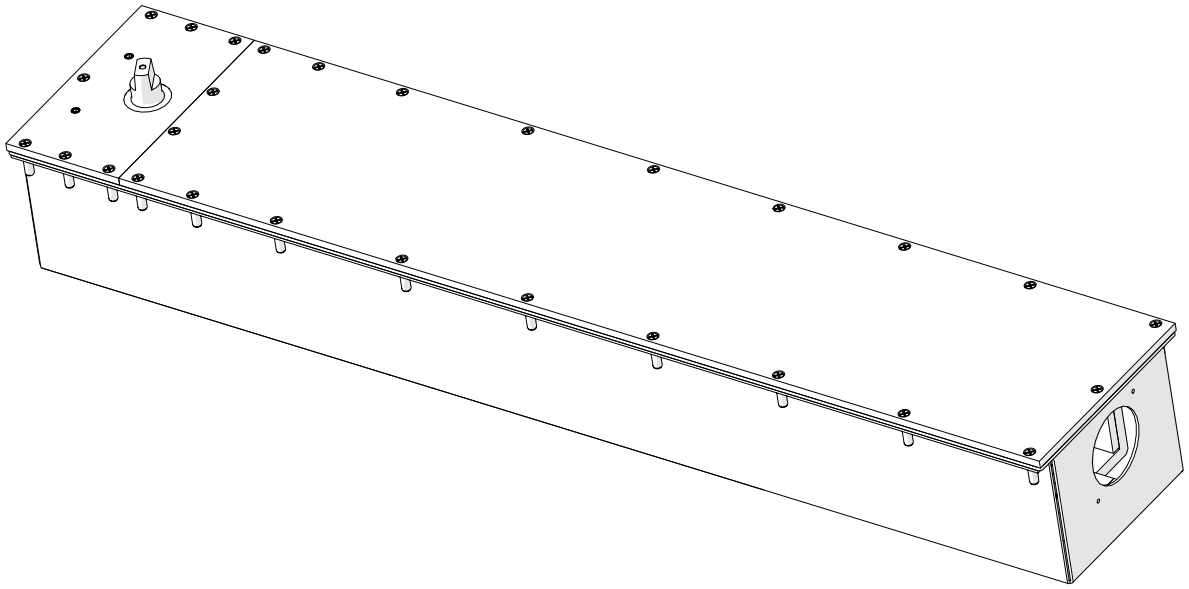

ED250

Installation in In-ground Case

Installation Instructions

DL4614-070 – 08-2018

| EN |

dormakaba

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Warranty guidelines

1 Installation guidelines affecting warranty

1.1 Opcon cement case enclosure.

Opcon cement case enclosure is listed and labeled as a NEMA 4 water resistant enclosure under UL 50, Enclosures for electrical equipment, non-environmental considerations, and CSA 22.2, Special purpose electrical enclosures industrial products.

Conformance with the following installation and service procedures must be maintained to assure a proper installation and to maintain the Opcon warranty.

1. Enclosure penetrations: The cement case must only be penetrated to install electric power service and low voltage signal wires.

   Liquidtight fittings: Opcon approved liquidtight fittings shall be used (Ref. Chapter 15) at all electrical case penetrations. The liquidtight fittings may only be placed as outlined in Chapter 15 of this manual.
   Use of liquidtight fittings is a National Electrical Code requirement and is also an Opcon specification.
   Cement case cover: Attachments to the cement case cover are not permitted.

2. Drain system.

In certain exterior conditions (downgrade elevation, openings with direct contact to precipitation, extreme humidity, or other similar conditions) a drain system or provision from the cement case is recommended.

CAUTION

Drain system penetration into case will void NEMA 4 enclosure rating.

2.1 Seals

All seals provided with the Opcon system must be installed including the following:

1. Spindle seal cement case cover Ref. Chapter 16.
2. Spindle seal at threshold, Ref. Chapter 26.
3. Perimeter gasket between cement case and cover.
4. Double door connector PVC conduit fittings and PVC conduit at cement case are sealed with a special silicone. Ref. Chapter 16. Any damage to the silicone seal in these areas must be repaired.

SPECIAL NOTE ON SEALS. ANY SEAL FOUND TO BE DAMAGED OR WORN MUST BE REPLACED IMMEDIATELY TO MAINTAIN THE UL AND CSA LISTINGS AS WELL AS OPCON SPECIFICATIONS AND WARRANTY.

3.1 Floor covers (thresholds)

Reference Chapter 26.

1. All floor covers must be manufactured by Opcon or manufactured to Opcon specifications.
2. Floor covers must be:

- Manufactured to accept all seals.
- Removable for future service.
- Attached to the surrounding floor without penetrating the cement case or cement case cover.

3. All floor covers must have a perimeter seal of silicone or a similar water proofing sealant applied to keep water from encroaching between the cement case cover and the floor cover.

4.1 Technicians

1. dormakaba USA Inc. and Opcon must certify installation and service technicians.
2. Technicians must also be certified by American Association of Door Manufacturers (AAADM).
3. Installation or servicing the Opcon system or automatic equipment using non-certified technicians will void this warranty.

5.1 Pressure washing.

1. Pressure washing is **never** permitted at or near the Opcon installation.

Table of contents

1 General information

1.1 Installation instructions

This manual provides installation instructions for ED250 in ground cement case used in single door and pair door installations.

1.2 Manual storage

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

1.3 dormakaba.com website

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

1.4 Symbols used in these instructions

⚠ WARNING

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

NOTICE

Draws attention to important information presented in this document.

CAUTION

This symbol warns of a potentially unsafe procedure or situation.

TIPS AND RECOMMENDATIONS

Clarifies instructions or other information presented in this document.

1.5 Dimensions

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

1.6 Building codes and standards

ED250 in ground installation: observe applicable national and local building codes.

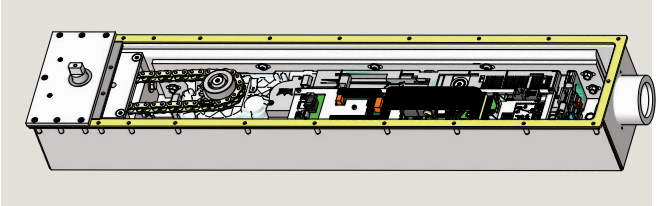
2 Product description

2.1 Intended use.

The ED250 is an electromechanical operator used exclusively for opening and closing interior or exterior swing doors.

The ED250 operator is packaged in a cement case for in-ground floor installations.
For double swing doors, two cement cases are supplied.

Fig. 2.1.1 In-ground case with ED250 operator



2.2 ED250 low energy operator.

CAUTION

ED250 in-ground is configured as a low energy operator from factory.

2.3 Arm configurations.

Fig. 2.3.1 Center hung

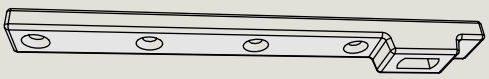


Fig. 2.3.2 Offset pivot

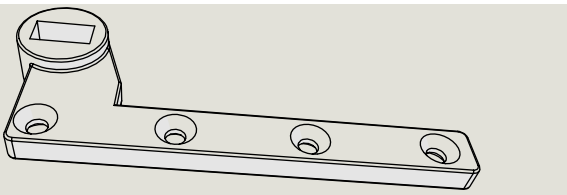
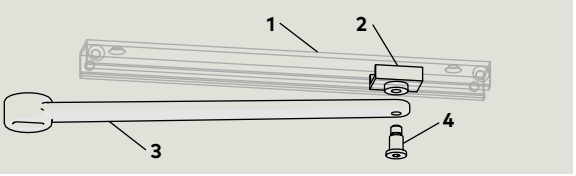


Fig. 2.3.3 Arm and track assembly (track in door)



1	Track	**3**	Arm
2	Slide	**4**	M8 shoulder screw

2.4 Maximum door weights.

Door width			
		ED250	
Inches	mm	Pounds	kg
28	711.2	700	340
32	812.8	700	340
36	914.4	700	340
39	990.6	700	340
42	1067	700	340
48	1219	700	340

TIPS AND RECOMMENDATIONS

Insure operator is qualified for use at the respective smoke or fire-rated door.

2.5 Cement case enclosure.

The cement case enclosure is listed and labeled to:

- UL50, NEMA 4 water resistant enclosure..
- CSA 22.2

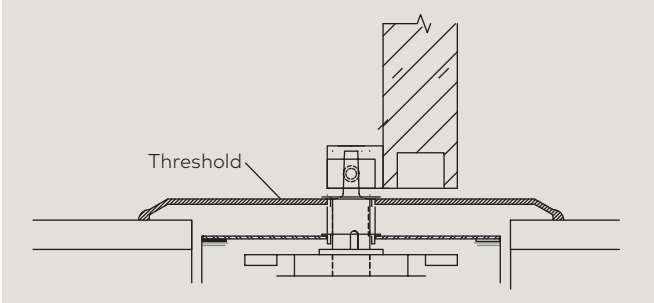
2.6 Hardware packages.

1. Refer to Chapter 5 for details of hardware contained in each in ground package.

2.7 Floor threshold.

1. Threshold to cover cement case is not supplied with the ED250 in-ground package. Refer to Chapter 26 for threshold installation instructions..

Fig. 2.3.4 Floor threshold



3 Safety information

3.1 Safety instructions

This document contains important instructions for installation of the ED250 in ground operator.
Review these instructions thoroughly prior to installation, and follow them carefully during installation, commissioning, troubleshooting and maintenance.

3.2 Door signage requirements

Proper signs and labels shall be applied and maintained on the door controlled by the ED250 in-ground operator as referenced in:

- ANSI/BHMA A156.19: Standard for power assist and low energy power operated doors.
- Reference Chapter 12, Door signage.

3.3 Safety warnings

⚠ WARNING

Damage to equipment or incorrect equipment operation may result from an incorrect installation.

⚠ 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 performed only by qualified personnel!

⚠ WARNING

Metallic doors must be grounded per national and local codes!

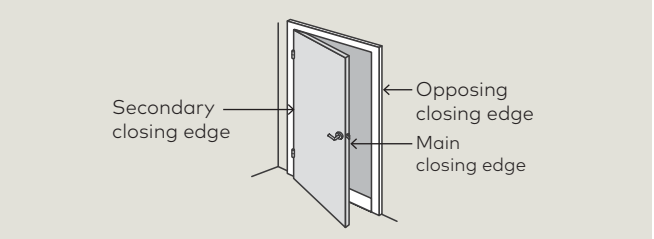
⚠ WARNING

Hand pinch point and crushing hazards at door closing edges!

⚠ WARNING

Crushing hazards at door closing edges!

Fig. 3.1 Door closing edges



3.4 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.

4 ED250 in-ground door configurations

TIPS AND RECOMMENDATIONS

Door frames and doors are shown transparent to provide hinge views.

TIPS AND RECOMMENDATIONS

Door thresholds are not shown to provide in ground cement case and arm views.

4.1 ED250 in-ground single swing door with offset pivot arm

Fig. 4.1.1 RH door with offset pivot arm

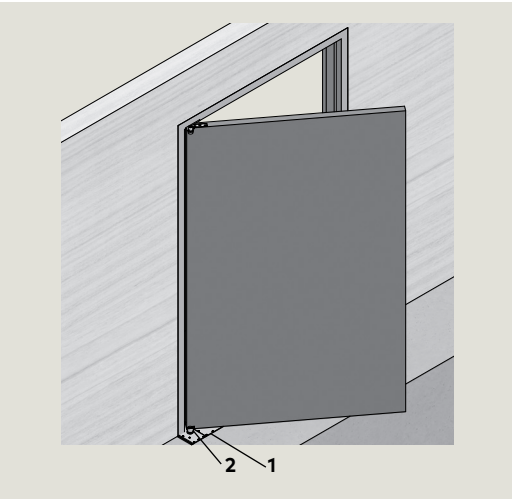
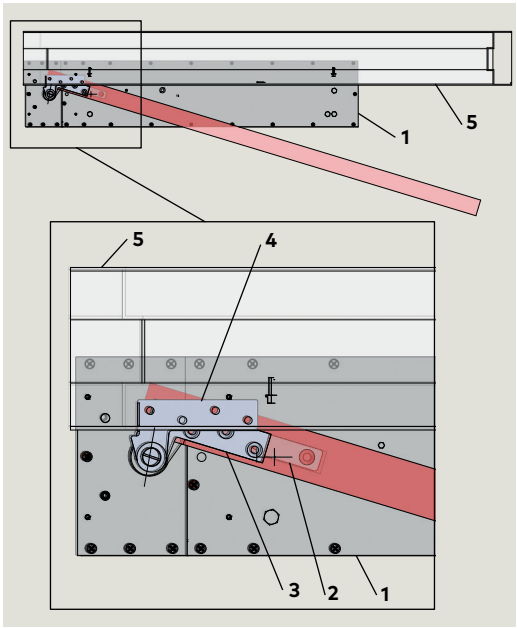


Fig. 4.1.1.1 Overhead view



1 ED250 in-ground cement case
2 Offset pivot arm
3 Door pivot (by others)
4 Door frame pivot (By others)
5 Door frame
6 Blockout
- Threshold not shown
- Door transparent for hardware views

Fig. 4.1.2 LH door with offset pivot arm

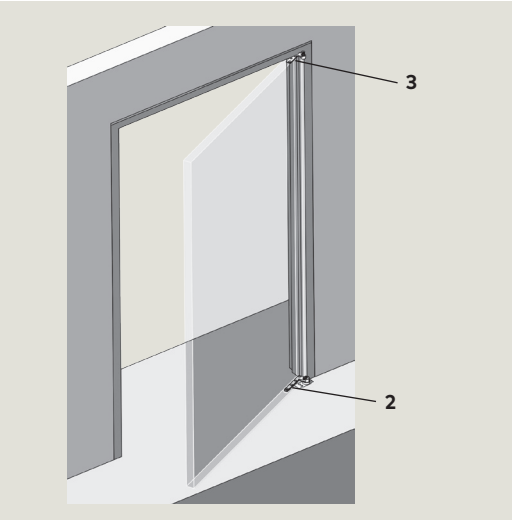
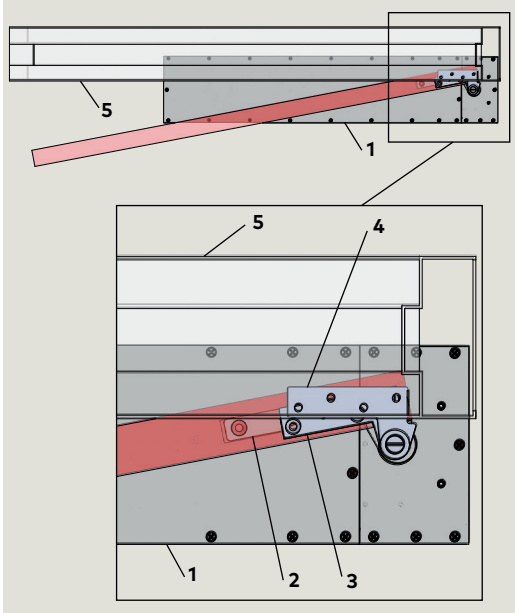


Fig. 4.1.2.1 Overhead view



1 ED250 in-ground cement case
2 Offset pivot arm
3 Door pivot (by others)
4 Door frame pivot (By others)
5 Door frame
6 Blockout
- Threshold not shown
- Door transparent for hardware views

4.2 ED250 in-ground single swing door with center hung arm

Fig. 4.2.1 Door with center hung arm

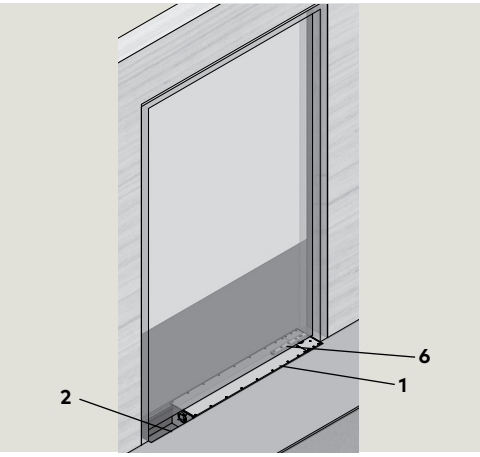
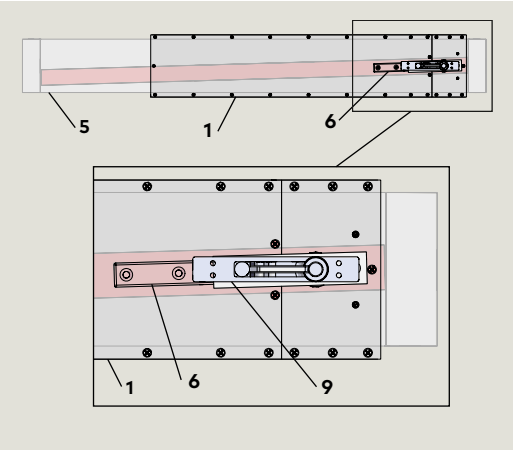


Fig. 4.2.1.1 Overhead view



1 ED250 in-ground cement case
2 Blockout
5 Door frame
6 Center hung arm
9 Top of door and door frame hardware (by others)

Threshold not shown

4.3 ED250 in-ground single swing door with arm and track

Fig. 4.3.1 LH door with arm and track

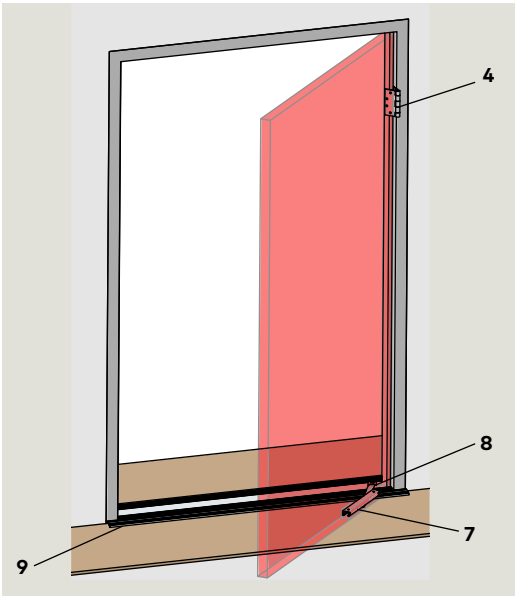


Fig. 4.3.1.1 Overhead view, door closed

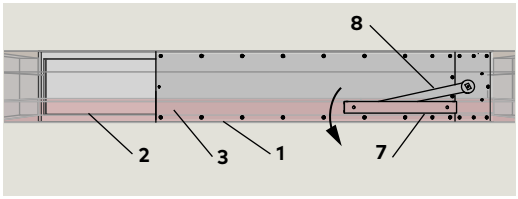
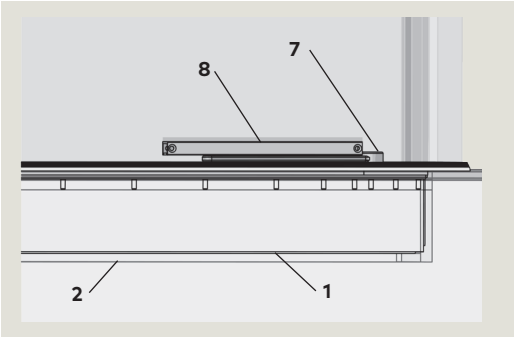


Fig. 4.3.1.2 Front view



1 ED250 in-ground cement case
2 Blockout
3 Door
4 Butt hinge (by others)
7 Track
8 Arm
9 Threshold (by others)

Fig. 4.3.2 RH door with arm and track

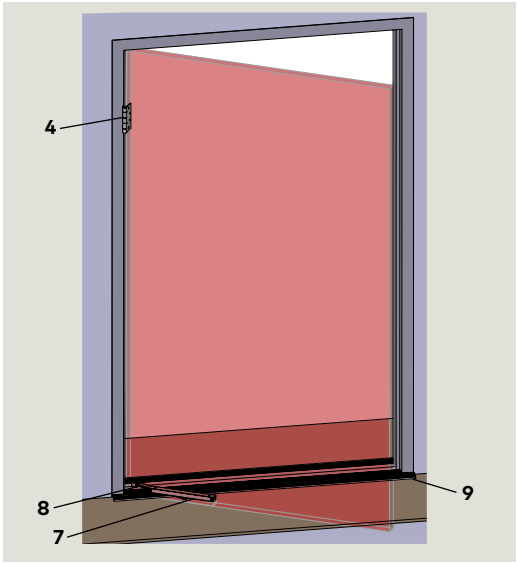


Fig. 4.3.2.1 Overhead view, door closed

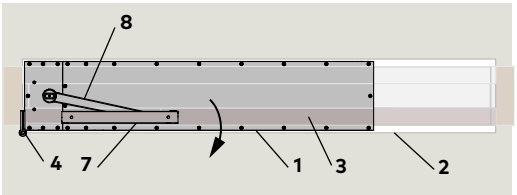
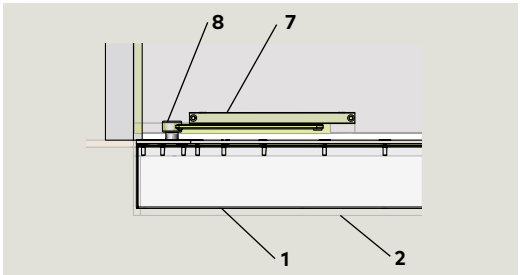


Fig. 4.3.2.2 Front view



1 ED250 in-ground cement case
2 Blockout
3 Door
4 Butt hinge (by others)
7 Track
8 Arm
9 Threshold (by others)

4.4 ED250 in-ground double swing doors

Fig. 4.4.1 Double doors with offset pivot arms

1 ED250 in-ground cement case
2 Offset pivot arm

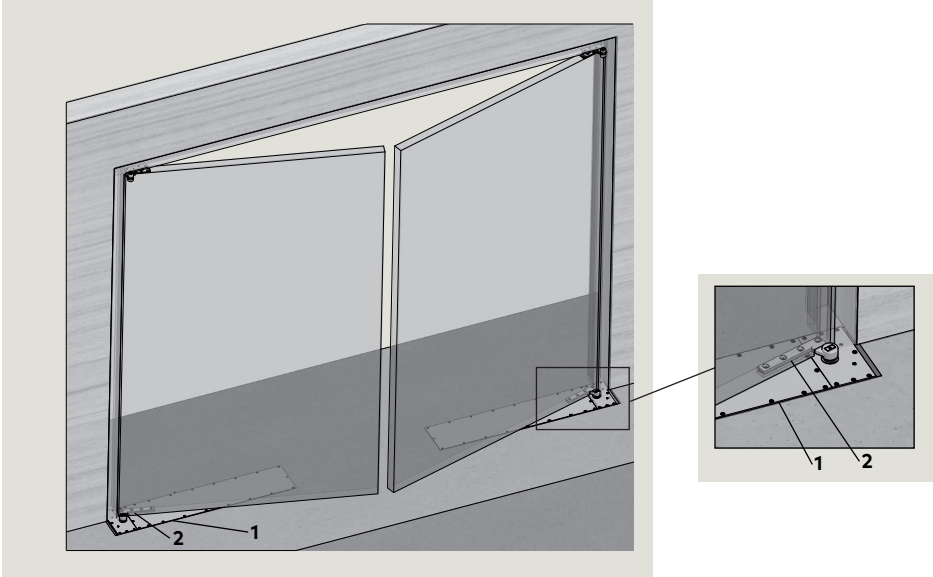


Fig. 4.4.2 Double doors with center hung arms

1 ED250 in-ground cement case
6 Center hung arm

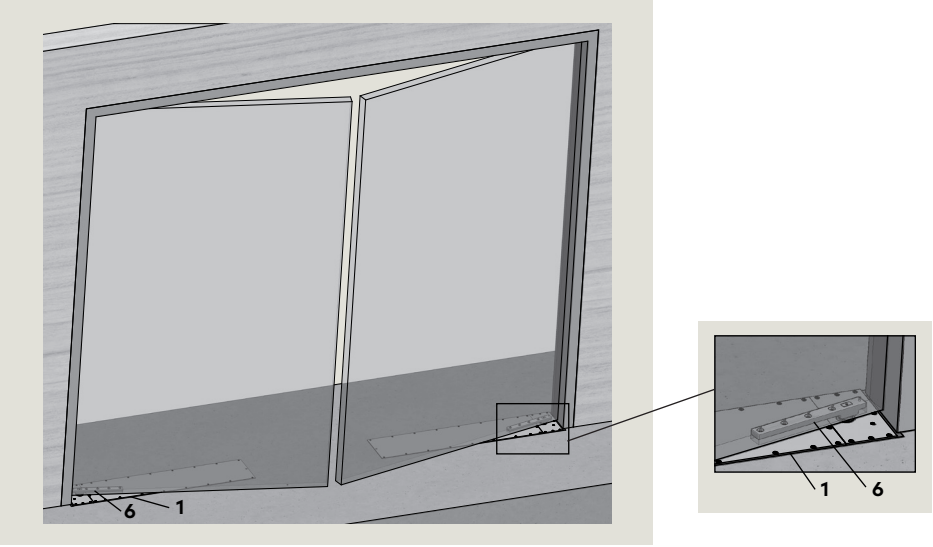
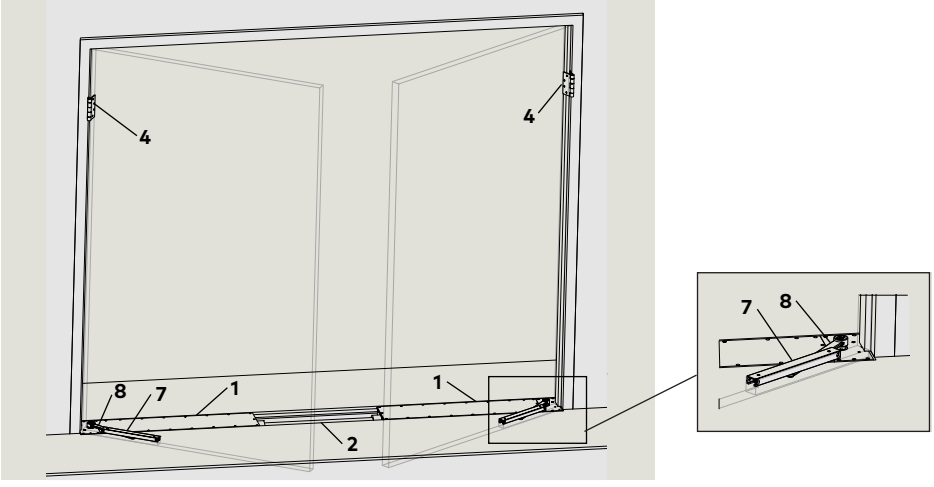


Fig. 4.4.3 Double doors with arm and track

1 ED250 in-ground cement case
2 Blockout
4 Butt hinge
7 Track
8 Arm



5 ED250 in-ground packages

5.1 Center hung single door

Fig. 5.1.1 ED250 in-ground cement case assembly

1 ED250 in-ground cement case

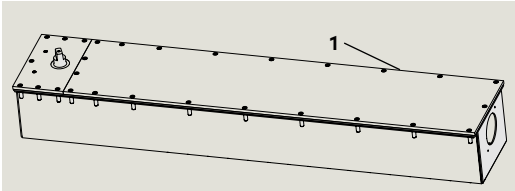


Fig. 5.1.2 Decals, low energy DK3137-010

1 DD0586-010
2 DD0758-010
3 DD0762-010
4 DD0762-020
8 Safety Information label, low energy

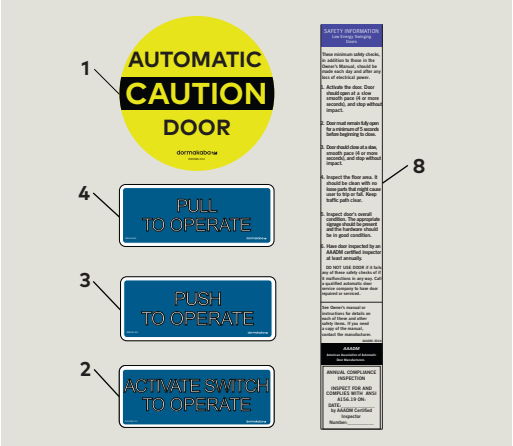


Fig. 5.1.3 Program switch panel

1 Program switch panel DX4604-020
1.1 Program switch
1.2 Comm. port for dormakaba handheld
1.3 Exit only switch,
5 Cable, 10'
6 RJ45 communication cable,10', DX4607-020
6.1 RJ45 port
8 Key switch panel, RJ45, DX4604-21C
9 Key switch panel DX4604-11C

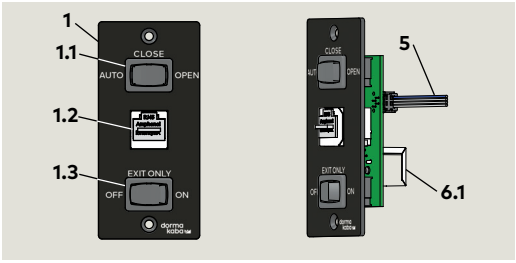


Fig. 5.1.4 Optional key switch panels

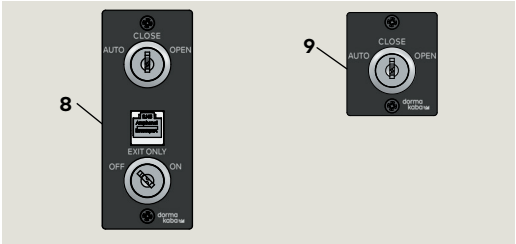
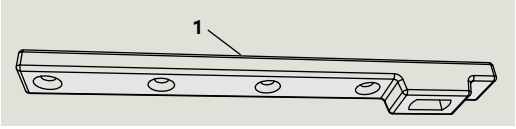


Fig. 5.1.5 Center hung arm

1 Center hung arm
2 PVC reducer coupling for case 2 3/8" hole, 1 1/2" PVC pipe



Mounting screws supplied with arm.

Fig. 5.1.6 RJ45 communication cable

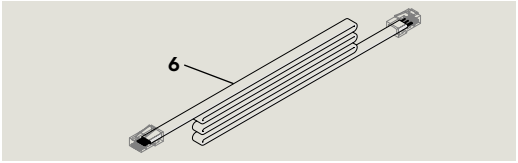
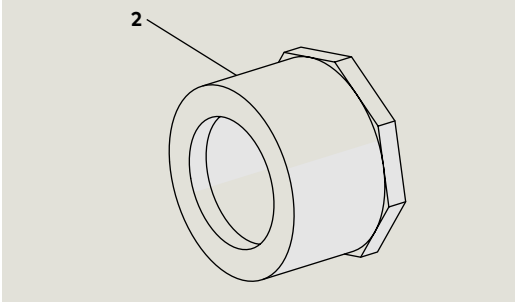


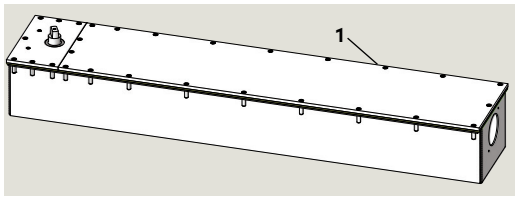
Fig. 5.1.7 PVC reducer coupling



5.2 Center hung double door

Fig. 5.2.1 ED250 in-ground cement case assemblies

1 ED250 in-ground cement case



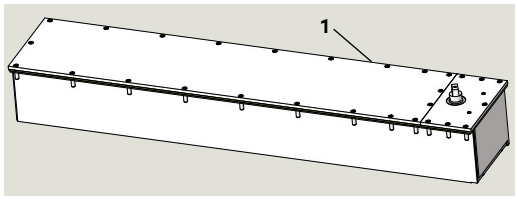


Fig. 5.2.2 Decals, low energy, DK3137-030 2 sets

1 DD0586-010
2 DD0758-010
3 DD0762-010
4 DD0762-020
8 Safety Information label, low energy

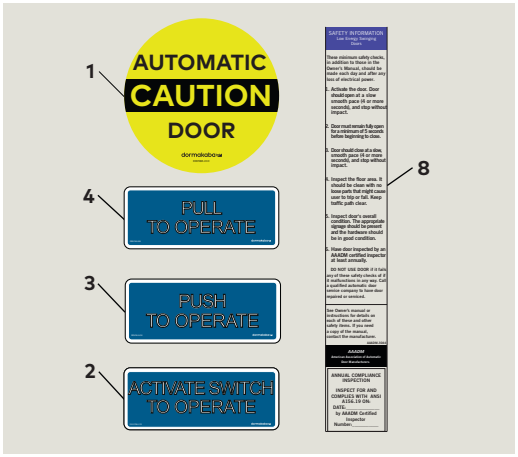


Fig. 5.2.3 Program switch, RJ45 panels

1 Program switch panel DX4604
1.1 Program switch,
1.2 Comm. port for dormakaba handheld
1.3 Exit only switch
5 Cable, 10'
6 RJ45 communication cable, 10', DX4607-020
6.1 RJ45 port

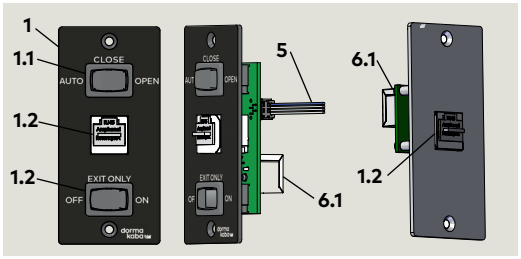
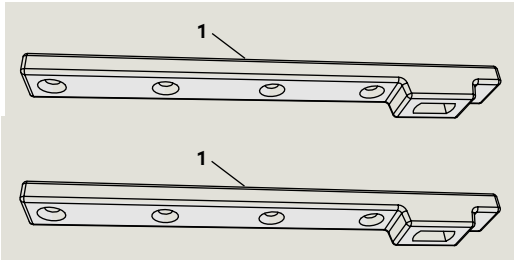


Fig. 5.2.4 Center hung arms

1 Center hung arm
Double doors:
2 1 1/2" PVC pipe, 2 feet long
3 PVC reducer coupling for 2 3/8" case hole



Mounting screws supplied with arms.

Fig. 5.2.5 115 Vac power and communication cables

1 115 Vac power cable ,11', DX3484-030
2 Communication cable, 80" DX3485-030
3 RJ45 plug
6 RJ45 communication cable, 10', DX4607-020
7 RJ45 plate assembly DX4604-31C

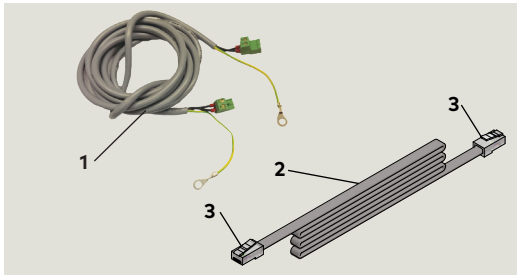


Fig. 5.2.6 RJ45 communication cable

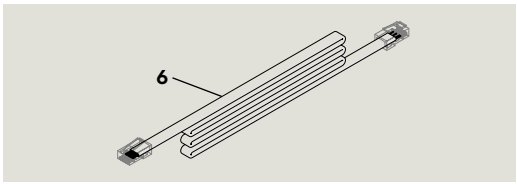


Fig. 5.2.7 In ground pair conduit install kit

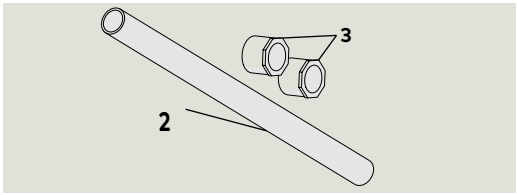


Fig. 5.2.8 Comm. cable for dormakaba handheld

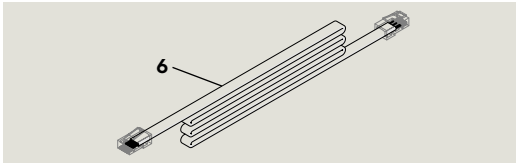
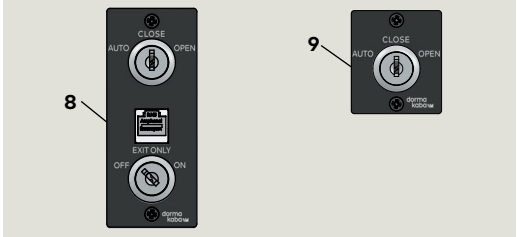


Fig. 5.2.9 Optional key switch panels



5.3 Offset pivot single door

Fig. 5.3.1 ED250 in-ground cement case assembly

1 ED250 in-ground cement case

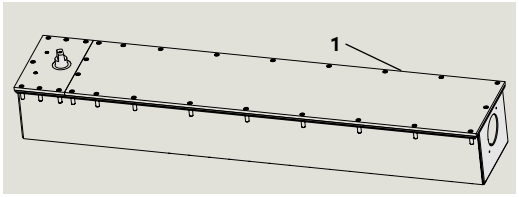


Fig. 5.3.2 Decals, low energy DK3137-010

1 DD0586-010
2 DD0758-010
3 DD0762-010
4 DD0762-020
8 Safety Information label, low energy

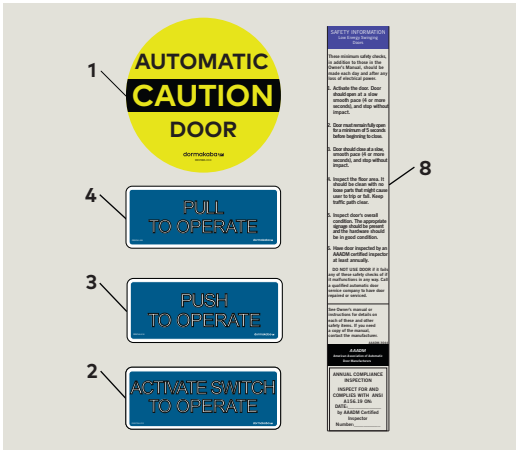


Fig. 5.3.3 Program switch panel

1 Program switch panel DX4604-020
1.1 Program switch
1.2 Comm. port for dormakaba handheld
1.3 Exit only switch,
5 Cable, 10'
6 RJ45 communication cable,10', DX4607-020
6.1 RJ45 port
8 Key switch panel, RJ45, DX4604-21C
9 Key switch panel DX4604-11C

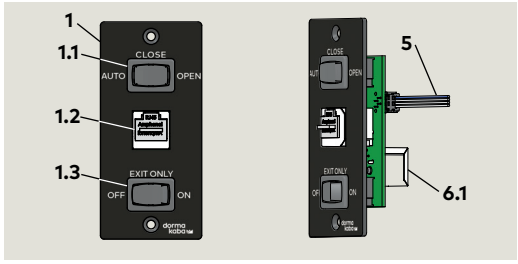


Fig. 5.3.4 Optional key switch panels

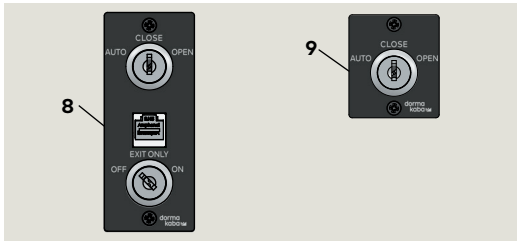
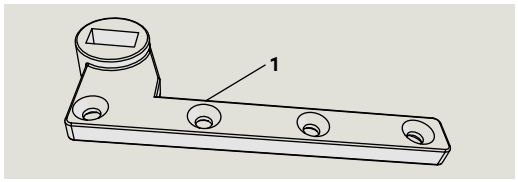


Fig. 5.3.5 Offset pivot arm

1 Offset pivot arm
2 PVC reducer coupling 2 3/8" hole, 1 1/2" PVC pipe



Mounting screws supplied with arm.

Fig. 5.3.6 RJ45 communication cable

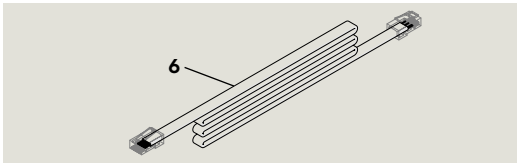
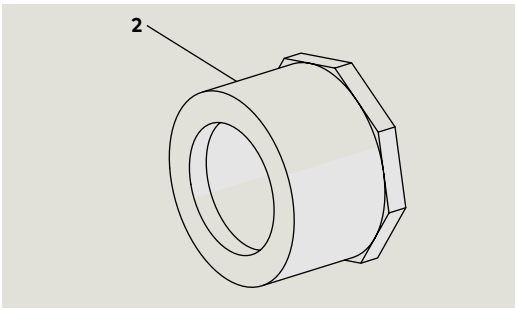


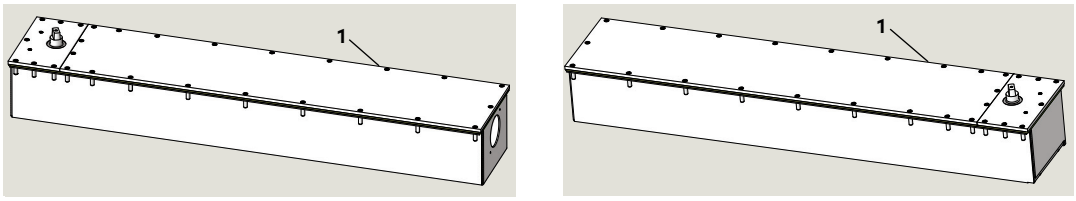
Fig. 5.3.7 PVC reducer coupling



5.4 Offset pivot double door

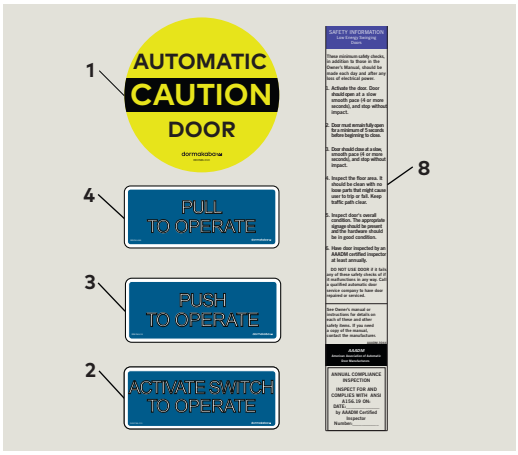
1 ED250 in ground cement case

Fig. 5.4.1 ED250 In ground cement case assemblies



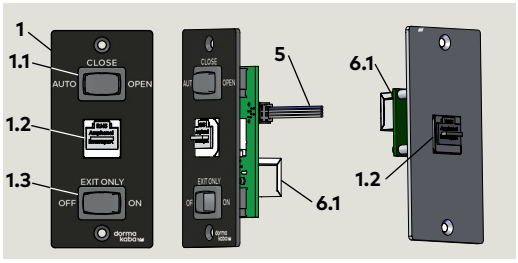
1 DD0586-010
2 DD0758-010
3 DD0762-010
4 DD0762-020
8 Safety Information label, low energy

Fig. 5.4.2 Decals, low energy, DK3137-030, 2 sets



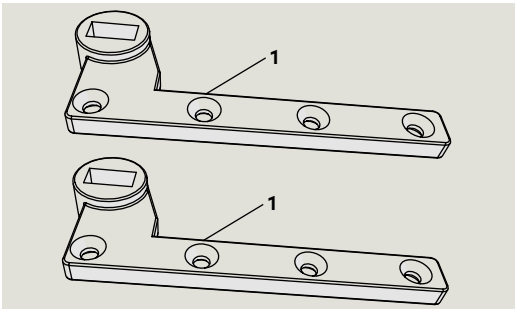
1 Program switch panel DX4604-02C
1.1 Program switch,
1.2 Comm. port for dormakaba handheld
1.3 Exit only switch
5 Cable, 10'
6 RJ45 communication cable, 10', DX4607-020
6.1 RJ 45 port

Fig. 5.4.3 Program switch, RJ45 panels



1 Offset pivot arm Double doors:
2 1 1/2" PVC pipe, 2 feet long
3 PVC reducer coupling for 2 3/8" case hole

Fig. 5.4.4 Offset pivot arms



Mounting screws supplied with arms.

1 115 Vac power cable ,11', DX3484-030
2 Communication cable, 80" DX3485-030
3 RJ45 plug
6 RJ45 communication cable, 10', DX4607-020
8 Key switch panel, RJ45, DX4604-21C
9 Key switch panel DX4604-11C

Fig. 5.4.5 115 Vac power and communication cables

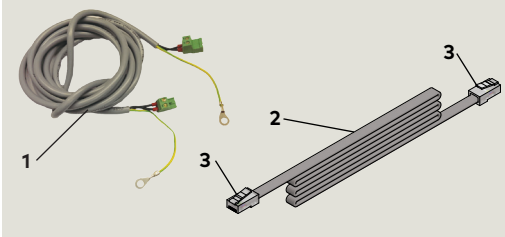


Fig. 5.4.6 RJ45 communication cable

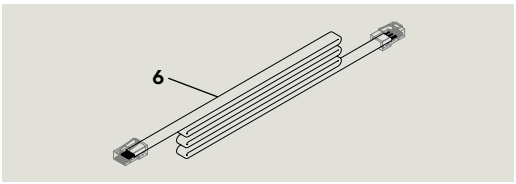


Fig. 5.4.7 In ground pair conduit install kit

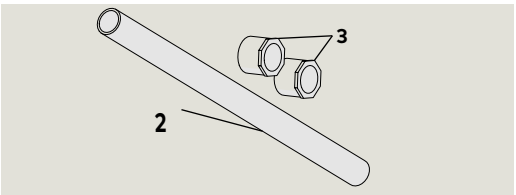


Fig. 5.4.8 Comm. cable for dormakaba handheld

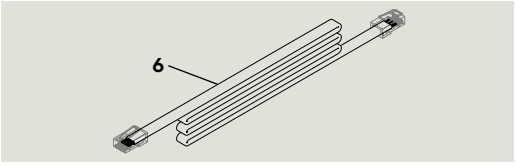
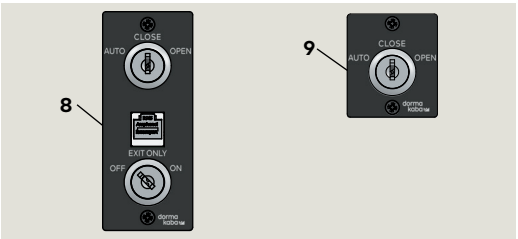


Fig. 5.4.9 Optional key switch panels



5.5 Arm and track single door

Fig. 5.5.1 ED250 in-ground cement case assembly

1 ED250 in-ground cement case

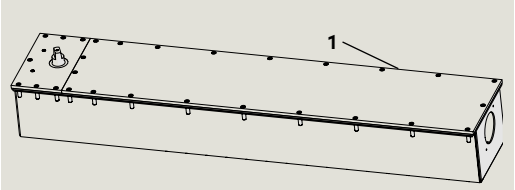


Fig. 5.5.2 Decals, low energy, DK3137-010

1 DD0586-010
2 DD0758-010
3 DD0762-010
4 DD0762-020
8 Safety Information label, low energy

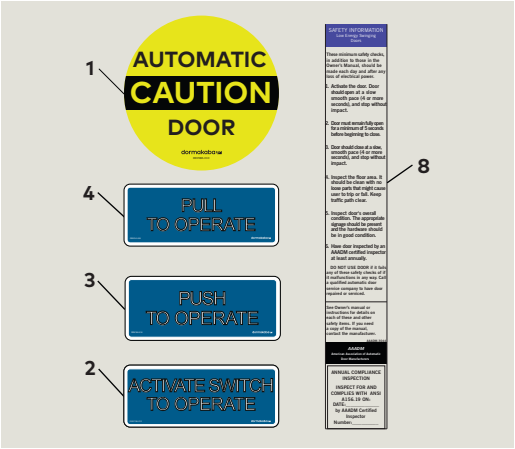


Fig. 5.5.3 Program switch panel

1 Program switch panel DX4604-020
1.1 Program switch,
1.2 Comm port for dormakaba handheld
3 Exit only switch,
5 Cable, 10'
6 RJ45 communication cable,10', DX4607-020
8 Key switch panel, RJ45, DX4604-21C
9 Key switch panel DX4604-11C

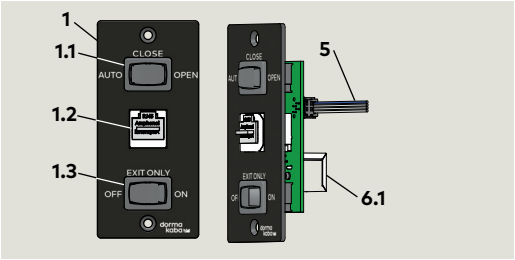


Fig. 5.5.4 Optional key switch panels

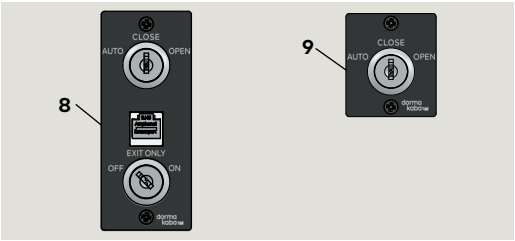
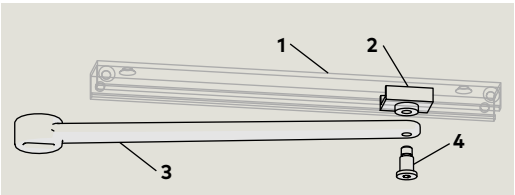


Fig. 5.5.5 Arm and track

1 Track
2 Slide
3 Arm
4 M8 shoulder screw
5 PVC reducer coupling for case 2 3/8" hole, 1 1/2" PVC pipe



Mounting screws supplied with track and arm.

Fig. 5.5.6 RJ45 communication cable

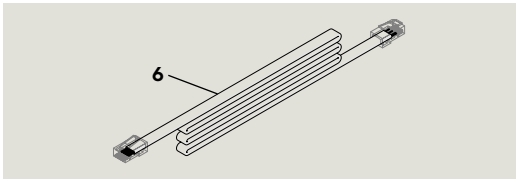
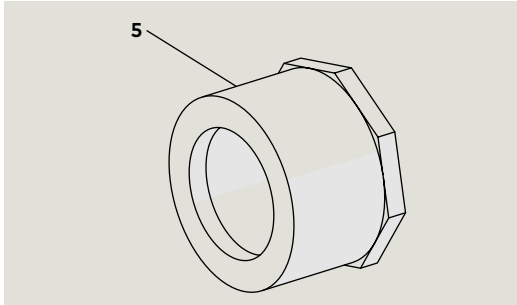


Fig. 5.5.7 PVC reducer coupling



5.6 Arm and track double door

Fig. 5.6.1 ED250 in-ground cement case assemblies

1 ED250 in-ground cement case

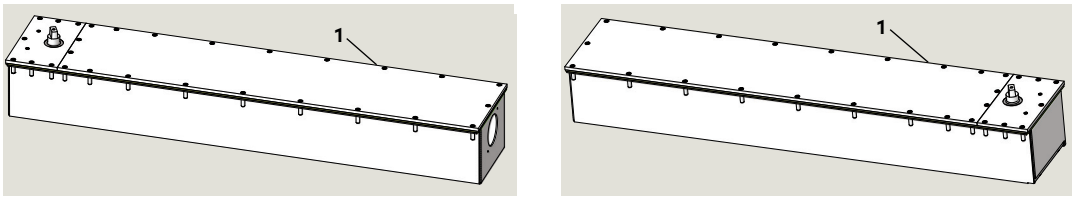
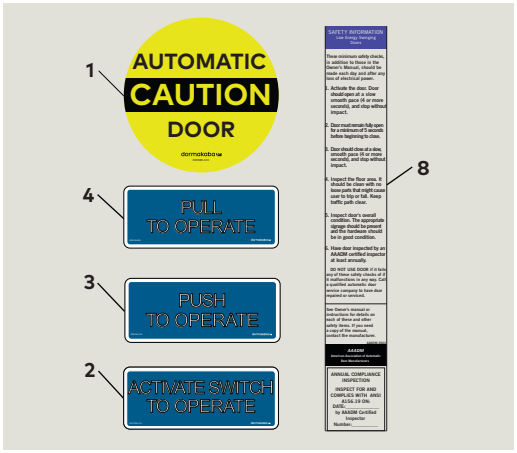


Fig. 5.6.2 Decals, low energy, DK3137-030 2 sets

1 DD0586-010
2 DD0758-010
3 DD0762-010
4 DD0762-020
8 Safety Information label, low energy



1 Program switch panel DX4604-02C
1.1 Program switch
1.2 Comm. port for dormakaba handheld
1.3 Exit only switch
5 Cable, 10'
6 RJ45 communication cable, 10', DX4607-020
6.1 RJ45 comm. port

Fig. 5.4.3 Program switch, RJ45 panels

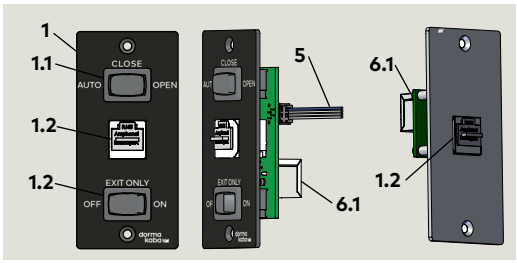
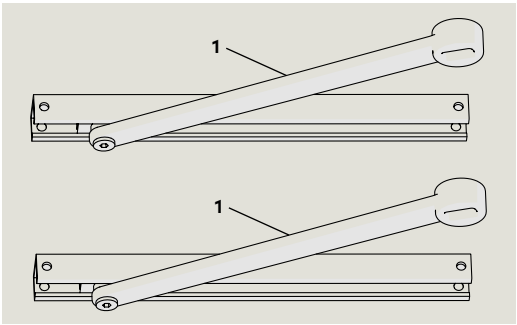


Fig. 5.6.4 Arm and track

1 Offset pivot arm Double doors:
2 1 1/2" PVC pipe, 2 feet long
3 PVC reducer coupling for 2 3/8" case hole



Mounting screws supplied with track.

Fig. 5.6.9 115 Vac power and communication cables

1 115 Vac power cable ,11', DX3484-030
2 Communication cable, 80" DX3485-030
3 RJ45 plug
6 RJ45 communication cable, 10', DX4607-020
8 Key switch panel, RJ45, DX4604-21C
9 Key switch panel DX4604-11C

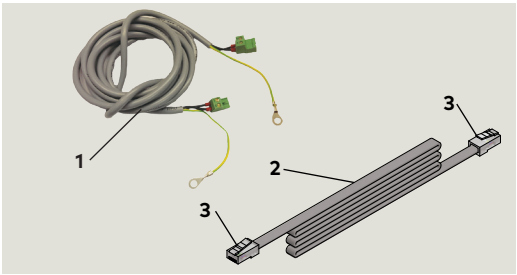


Fig. 5.6.5 RJ45 communication cable

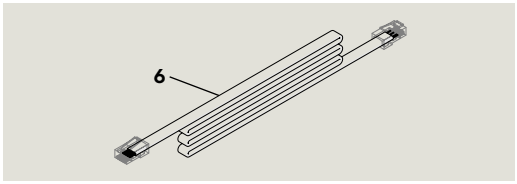


Fig. 5.6.6 In ground pair conduit install kit

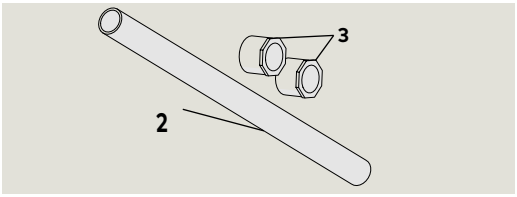


Fig. 5.6.7 Comm. cable for dormakaba handheld

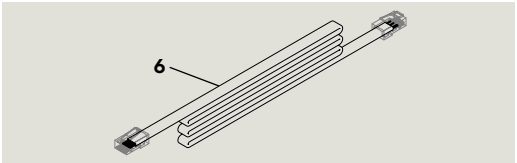
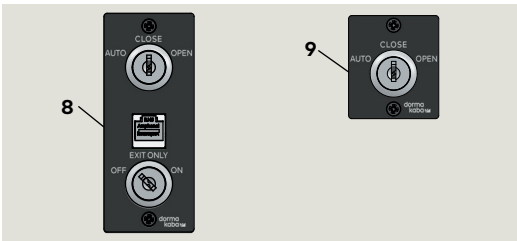


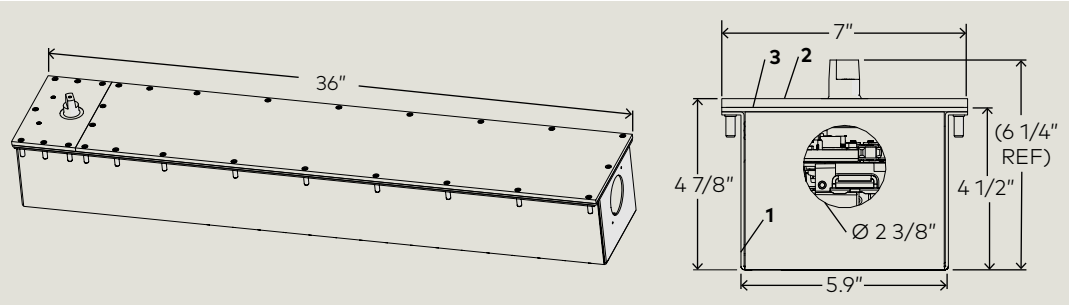
Fig. 5.6.10 Optional key switch panels



6 ED250 in-ground cement case assembly

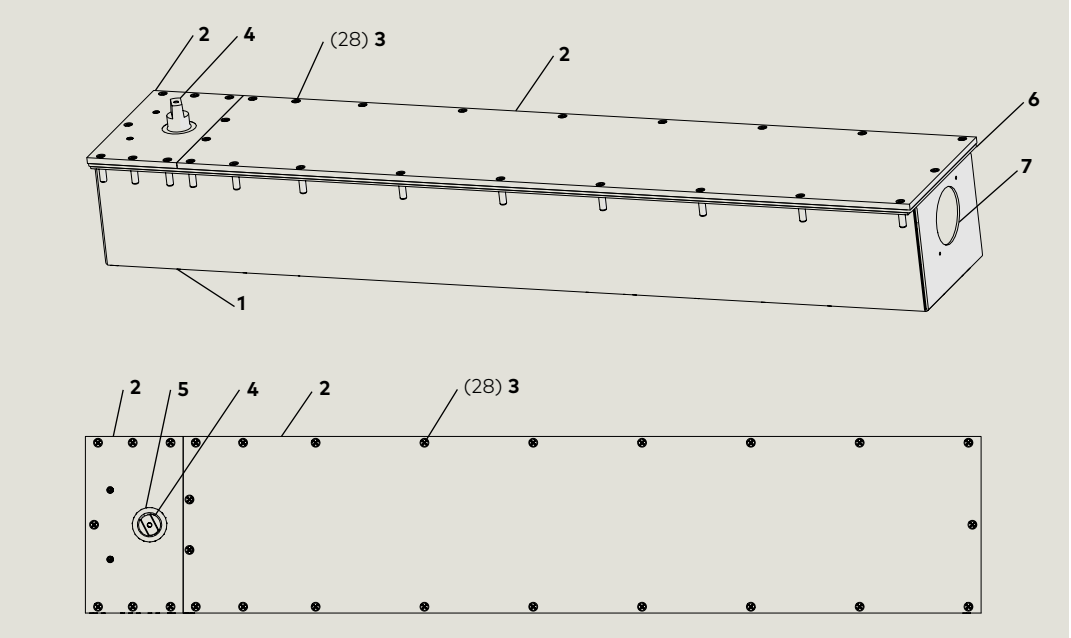
6.1 ED250 in-ground cement case overall assembly

Fig. 6.1.1 ED250 in-ground case dimensions



1 Cement case
2 Cover
3 Gasket

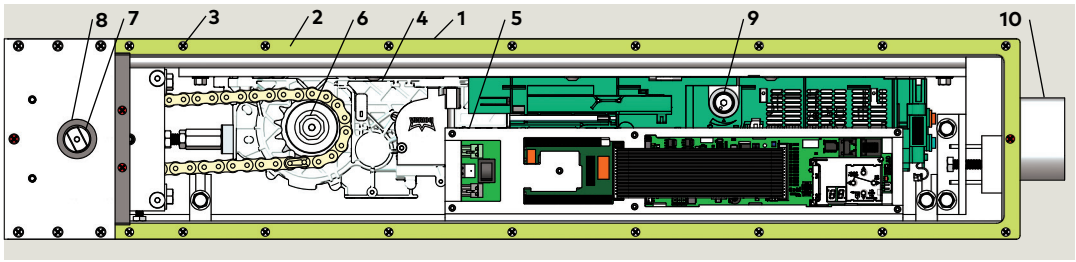
Fig. 6.1.2 ED250 in-ground case cover and fasteners



1 In-ground case
2 Covers
3 8-32 x 3/4" PFHMS (Philips flat head machine screw)
4 Center bearing shaft, ED250-IG
5 Shaft seal
6 Gasket, 1/8" thick
7 2 3/8" hole for PVC reducer coupling

6.2 ED250 in-ground cement case internal assembly

Fig. 6.2.1 ED250 in-ground case component view



1 ED250 in-ground case
2 Gasket, 1/8" thick
3 8-32 x 3/4" FHMSPH (flat head machine screw, Phillips)
4 ED250 operator
5 PCB bracket assembly
6 Operator drive axle
7 Center bearing shaft
8 Shaft seal
9 Spring tension adjustment
10 PVC reducer fitting

Fig. 6.2.2 ED250 operator

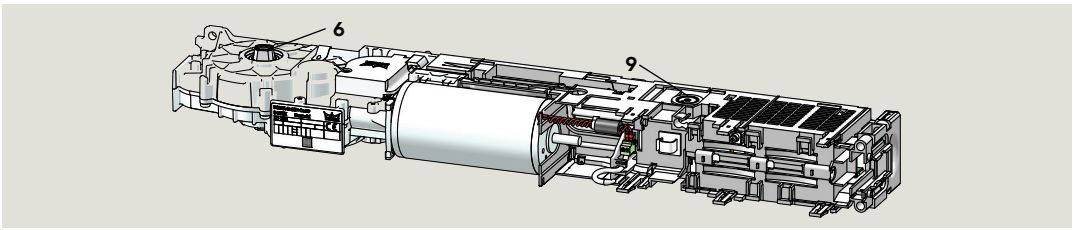
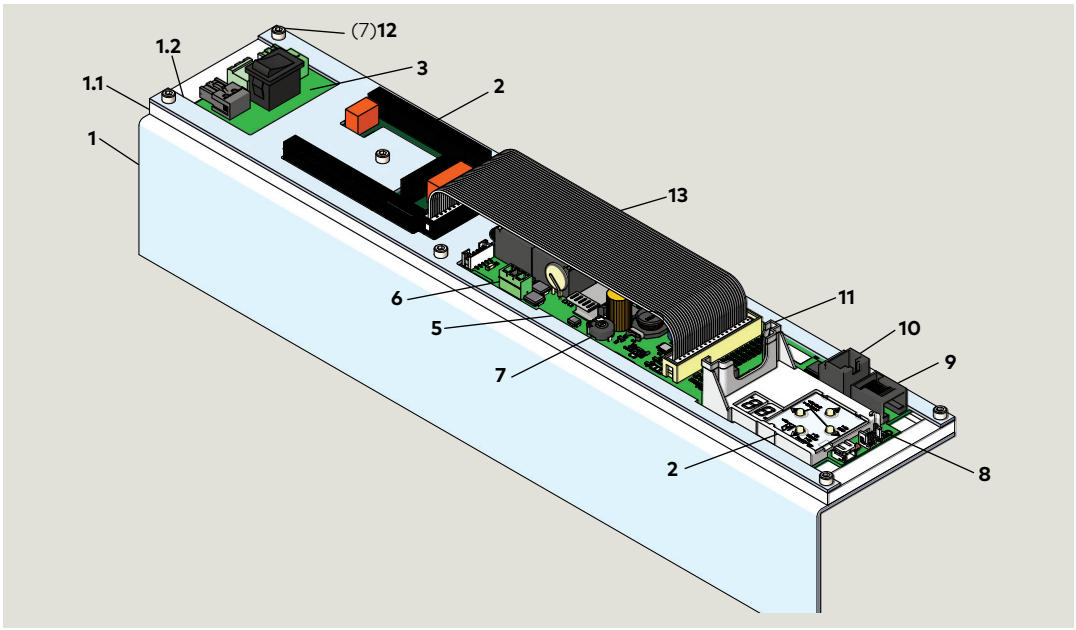


Fig. 6.2.3 ED250 PCB bracket assembly



1 PCB bracket
1.1 PCB plate
1.2 PCB plate cover
2 Accessory connection terminal board
3 Power off/on switch and 115 Vac connection board
3.1 115 Vac terminal block and connection board
4 Keypad and 2 digit display
5 Circuit board
6 Braking circuit plug receptacle
7 Power fail closing speed potentiometer
8 Program switch connector
9 Double door operator to operator communication cable port
10 dormakaba handheld communication port
11 Upgrade card slot
11.1 Upgrade card socket
12 1/4 x 1/2" x 1/2" SHCS
13 Ribbon cable

Fig. 6.2.4 Operator communication connectors, upgrade card slot

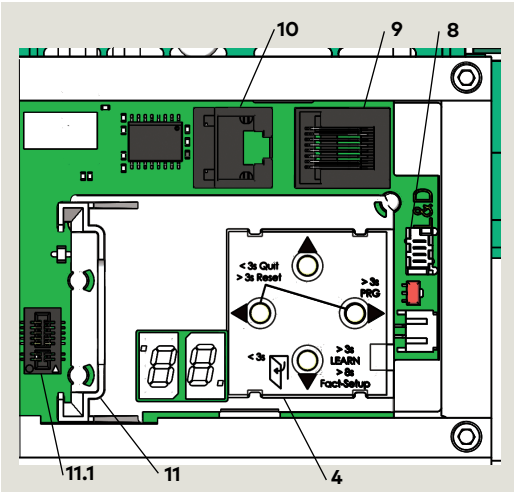
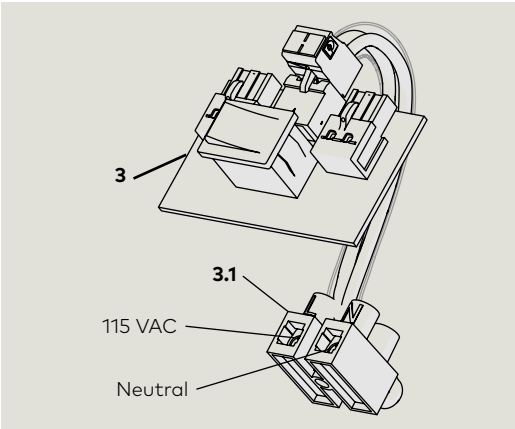


Fig. 6.2.5 115 Vac terminal block and wire harness assembly



7 Technical data

7.1 ED250 Technical data

7.1.1 Required operating conditions

Ambient temperature	5 to 122 °F
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
Power wiring: black, white, bare copper (ground)	12 AWG
Operating noise	Maximum 50 db(A)

7.1.2 General specifications

In ground cement case (W x H x D)	36" x 4 7/8" x 7"
Internal power supply available for external accessories	24 Vdc ± 5%, 1.5 A
Maximum door opening angle	95 to 110° depending on installation type

7.1.3 Inputs

Maximum wire size Connector plug screw size		16 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 11. Parameters, reference Chapter 20.

7.1.4 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

7.1.5 Integrated functions

Hold open time:		
Automatic opening	**dd** parameter	0 to 30 s
NIght / bank	**dn** parameter	0 to 30 s
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	Motor lock	
Wind load control, maximum	**Fo, Fc** parameters	33.7 lb f 150 N
Power fail closing speed	Chapter 19	Adjustable with potentiometer
LED status indicators Service manual	Green Red Yellow	24 VDC power Error codes Service interval
Program and Exit Only switches	Chapter 10	Auto, Close, Open Exit only; Off, On
User interface	Chapter 10	4 button keypad, 2 digit display
Slot for dormakaba upgrade cards	Chapter 26	Extension of range of functions
Interface update Service manual	Firmware update	
TMP, temperature management program Service manual	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

7.2 Operating specifications

7.2.1 ED250 configured for low energy

Maximum power consumption	120 watt	
Automatic closing torque, lbf · ft	Minimum 14.8	Maximum 49
Manual closing torque, lbf · ft	Minimum 9.6	Maximum 27.3
Maximum door weight	700 pounds at a maximum door width of 48 inches.	
Door width	27 9/16" to 48"	
Door width for fire protection	27 9/16" to 48"	
Maximum opening speed, °/s Note 1	LE: 27	
Maximum closing speed, °/s Note 1	LE: 27	

Note 1
Speeds automatically limited depending on door weight, set during learn cycle.

8 Operational mode overview

8.1 ED250 door closer modes

8.1.1 Automatic mode

Door closer mode parameter **hd**=0.
Designed for automatic access following pulse generation by a motion detector or pushbutton.

8.1.2 Manual mode

Door closer mode parameter **hd**=1.
Designed for doors primarily accessed manually.

8.1.3 Power assist

- Available only in door closer 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 values greater than 0 provides additional opening force.
- Parameter **hS**, power assist function support for door in closed position.

TIPS AND RECOMMENDATIONS

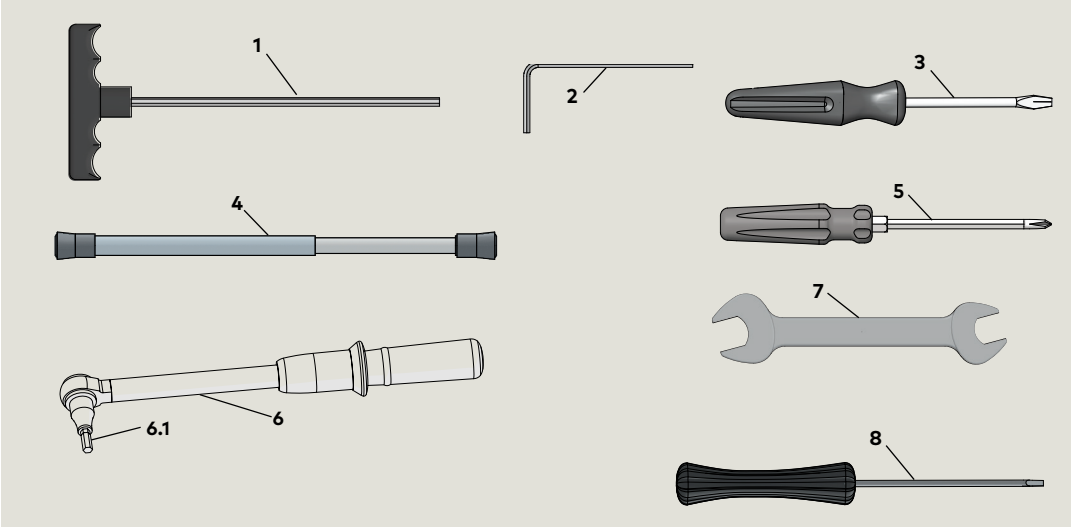
Parameter descriptions can be found in Chapter 20, Parameters and in ED250 Service Manual, Chapter 17.

9 Recommended tools and torque chart

9.1 Recommended tools

1 T-handle hex key, 5 mm
2 Hex keys, 2.5 mm, 3 mm, 5 mm, 5/32"
3 Screwdriver, flat blade
4 Door pressure gauge, 0 to 35 ft - lbf
5 Screwdriver, Phillips, #2, #3
6 Torque wrench, 3 to 50 ft lb min.
6.1 Metric hex key sockets
7 Open end wrench, 13 mm
8 Screwdriver, flat blade, M2 (1/16 to 3/32")

Fig. 9.1.1 Recommended tools



9.2 Standard tightening torque

9.2.1 Standard tightening torque

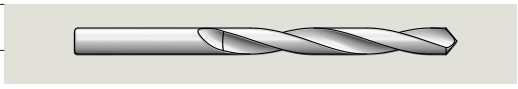
Fastener size	ft lb
M5	3.7
M6	7
M8	17
M10	34
M12	58

9.3 Drill bits

9.3.1 Drill bit sizes for fasteners

Fastener	Drill bit size	
#10 wood screw	Hardwood 9/64"	Softwood 1/8"
#12 wood screw	Hardwood 5/32"	Softwood 9/64"
#14 wood screw	Hardwood 11/64"	Softwood 5/32"
1/4 -20 metal self tapping screw	7/32"	
10-24 barrel nut	5/32"	

Fig. 9.3.1 Drill bit

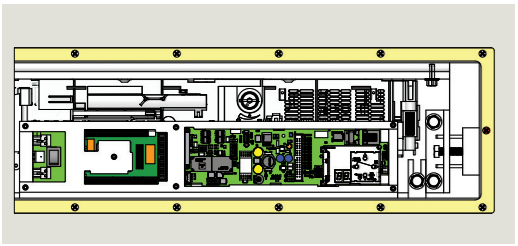


10 User interface

10.1 Overview

1 2 digit display
2 4 button keypad
3 PCB assembly

Fig. 10.1.1 ED250 in-ground cement case

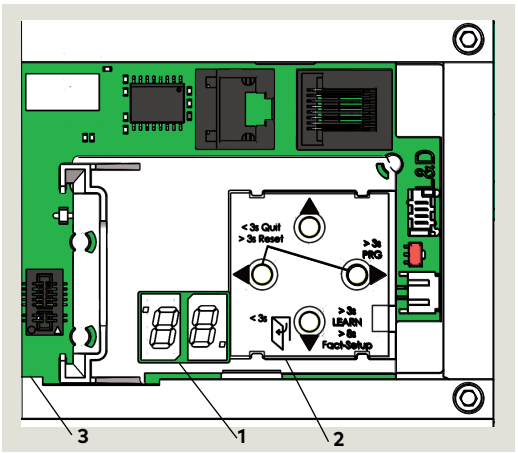


10.1.1 Operator user interfaces

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.

Fig. 10.1.2 Operator keypad and display



10.2 4 button keypad and display

2 2 digit display
6 Button legend

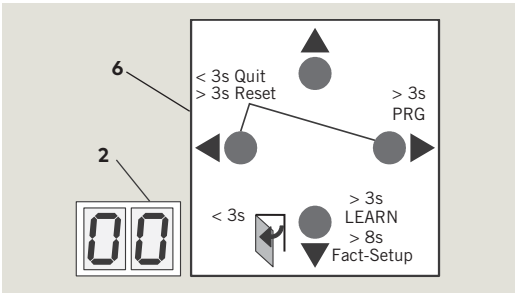
10.2.1 4 button keypad

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

10.2.2 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. Cancel parameter edit process. 2. Exit parameter menu, press button < 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 switch CLOSE). 6. Identify operator orientation for display.

Fig. 10.2.1 Keypad and display



TIPS AND RECOMMENDATIONS

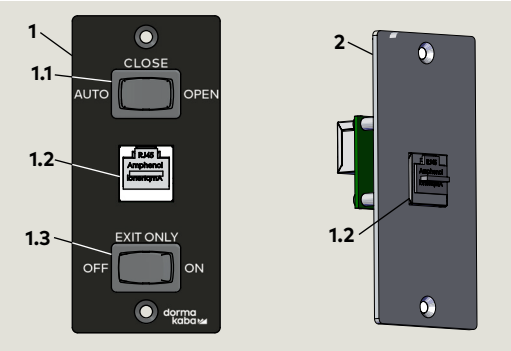
Keypad arrow symbols
<, "less than" symbol
>, "greater than" symbol

<3s: momentarily press button.
>3s: Press button greater than 3 seconds.

10.3 Program switch, RJ45 panels

Fig. 10.3.1 Program switch, RJ45 panels

1 Program switch panel
1.1 Program switch, 3 position
1.3 Exit Only switch, 2 position
1.2 Comm port for Dorma Handheld
2 RJ45 panel



10.3.1 Program switch control modes.

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

10.3.2 Exit only switch modes.

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

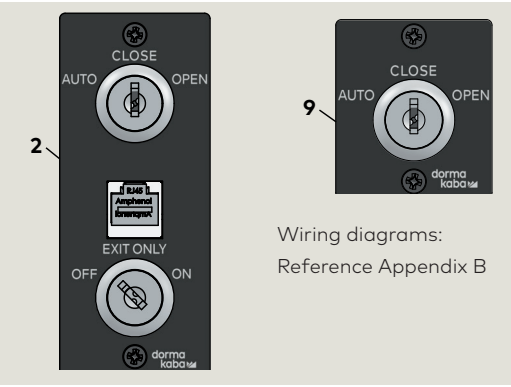
10.3.3 RJ45 panel

- Supplied on double door installations.
- RJ45 cable connects panel to second ED250 in-ground operator for dormakaba handheld connection.

10.4 Optional key switch panels

Fig. 10.4.1 Optional key switch panels

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



Wiring diagrams:
Reference Appendix B

10.5 Operator status LEDs

Fig. 10.5.1 ED250 in ground case assembly

5 Accessory terminal board

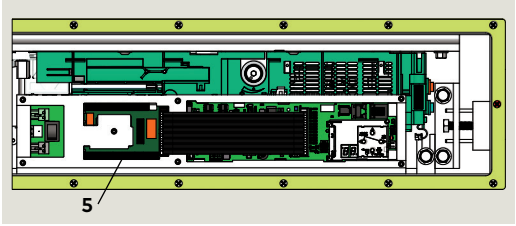
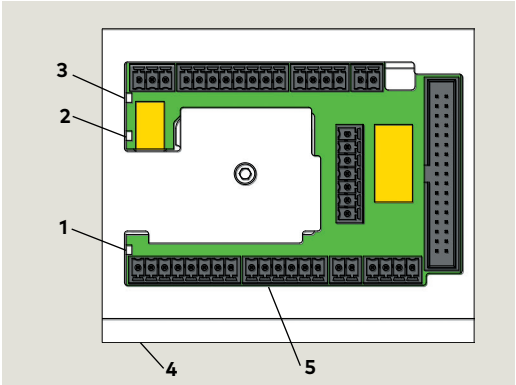


Fig. 10.5.2 Operator status LEDs

1 Red LED
2 Yellow LED
3 Green LED
4 PCB assembly
5 Accessory terminal board



10.5.1 Operator status LEDs

In ground case cover must be opened to view LEDs.

1. Red LED
   Blinking codes are used to indicate "In__" information (system status or operating conditions) or certain error codes "E__".
2. Yellow LED
   Maintenance interval indicator. When illuminated, an indication the operator system has to be serviced.
3. Green LED

- On, internal 24 Vdc power is On.
- Off, internal 24 Vdc power is Off.

TIPS AND RECOMMENDATIONS

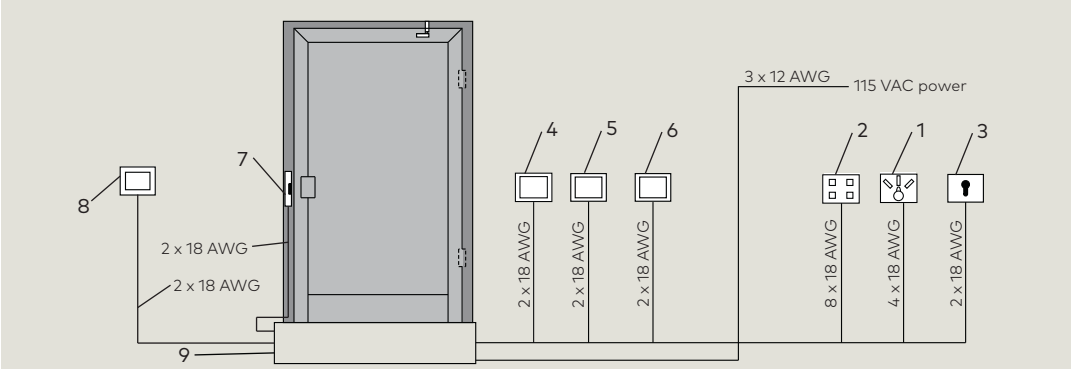
Details on LED status codes and maintenance intervals can be found in ED250 In ground Service Manual, Chapter 18, troubleshooting chart.

11 System accessories

11.1 System accessory electrical connections, in-ground cement case

1 External program switch, mechanical
2 External program switch, electronic
3 Key switch
4 Pushbutton, night / bank
5 Pushbutton, interior
6 Pushbutton, exterior
7 Door locking device
8 Manual release switch
9 ED250 in-ground cement case

Fig. 11.1.1 Electrical connections, single door



11.2 System accessories

11.2.1 Overview

ED250 operators are normally used with system accessories available from dormakaba USA, Inc. or other manufacturers.

11.2.2 Accessory electrical installation

Electrical interfaces from system accessories used with ED250 in ground operator must be planned for. This includes routing of wiring from accessories to in-ground cement case.

11.2.3 System accessories, other manufacturers

dormakabakaba USA, Inc. 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 devices may not work properly.

⚠ WARNING

Damage to ED250 operator or to connected device is also possible!

11.2.4 Power for accessories

24 Vdc, 1.5 A (36 watts) is available from the operator for external devices and accessories. This supply has overcurrent protection. If additional power is required an external power supply must be used.

11.2.5 Miscellaneous accessories

1. Door status display, red, green.

11.2.6 Activators

Typical activators:

1. Pushbuttons, key switches
2. Radio systems
3. Smoke detectors
4. Access control systems
5. Telephone systems
6. Intercoms

TIPS AND RECOMMENDATIONS

Refer to Paragraph 7, Technical data for electrical interface requirements.

11.2.7 Locking devices

Typical locking devices:

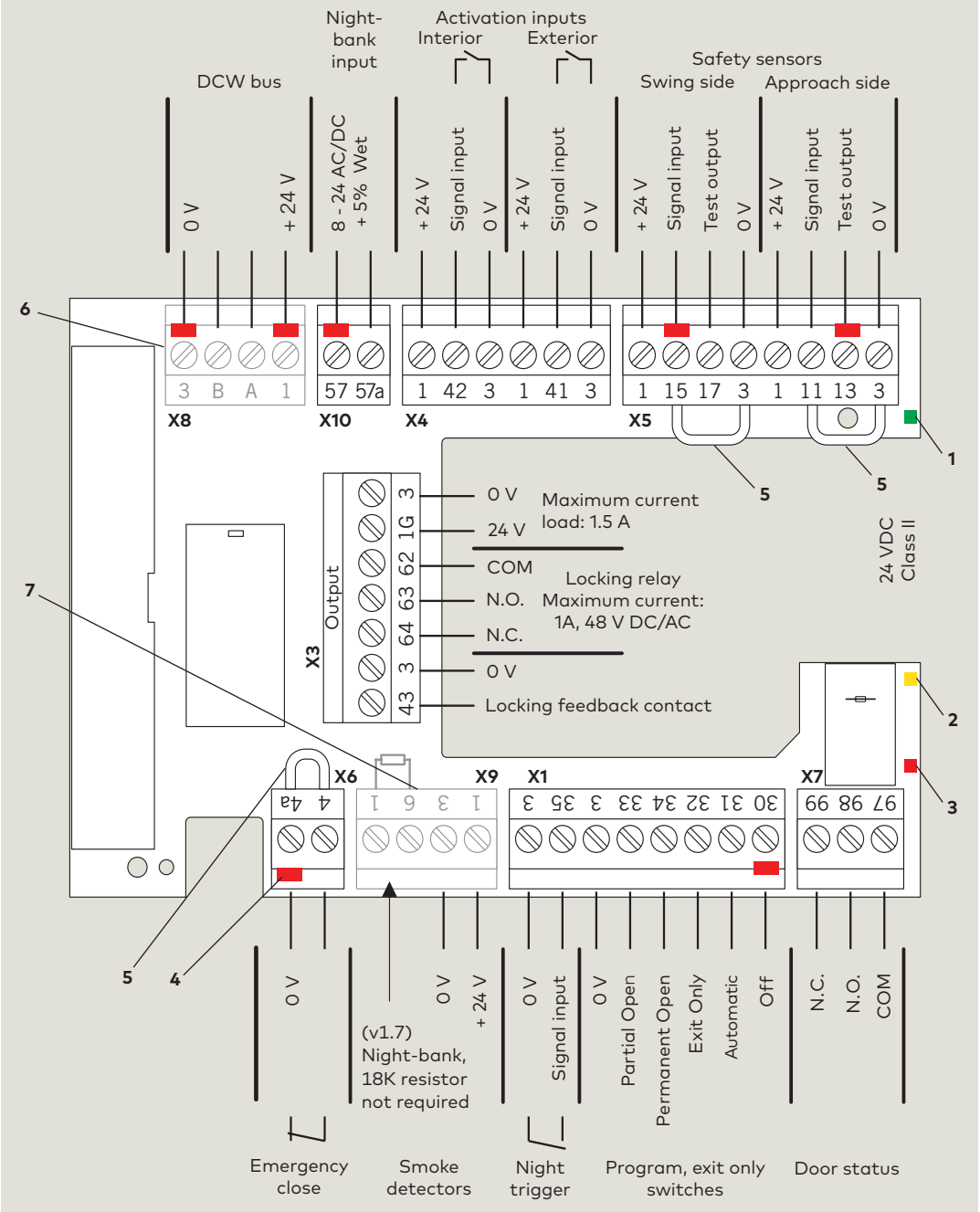
1. Electric strike plates
2. Electromagnetic locks
3. Electric locks

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

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

11.3 ED250 terminal board interfaces

Fig. 11.3.1 Terminal board electrical connections



1 Green LED (Para. 10.4)
2 Yellow LED (Para. 10.4)
3 Red LED (Para. 10.4)
4 Key (red insert) location in socket. Assigned plug has tab in same location broken off.
5 Jumpers, factory installed at following terminals:
- 4 and 4a
- 15 and 3*
- 11 and 3*

* Remove jumpers if safety sensors installed.

6 DCW upgrade card plug included in card scope of delivery.
7 Fire protection upgrade card plug included in card scope of delivery.

WARNING

ED250 115 VAC branch circuit disconnect must be Off while making accessory connections!

TIPS AND RECOMMENDATIONS

- Use documentation provided with each device for electrical installation.
- It is recommended that system accessory wiring connections to terminal board be made after ED250 operator is commissioned.

12 ED250 door signage

12.1 Low energy operator

12.1.1 Overview

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

12.1.2 All low energy doors

Fig. 12.1.1 AUTOMATIC CAUTION DOOR decal

DD0586-010

1. AUTOMATIC CAUTION DOOR decal.

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

12.1.3 Knowing act switch used to initiate door operation.

Fig. 12.1.2 ACTIVATE SWITCH TO OPERATE decal

DD0758-010

1. ACTIVATE SWITCH TO OPERATE decal.

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

12.1.4 Push/Pull used to initiate door operation.

Fig. 12.1.3 PUSH TO OPERATE, PULL TO OPERATE decals

DD0762-010

DD0762-020

1. PUSH TO OPERATE, PULL TO OPERATE decals.

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

12.2 Door signage, low energy swing doors, initiation of door operation

12.2.1 Single door

Fig. 12.2.1 Activate Switch To Operate

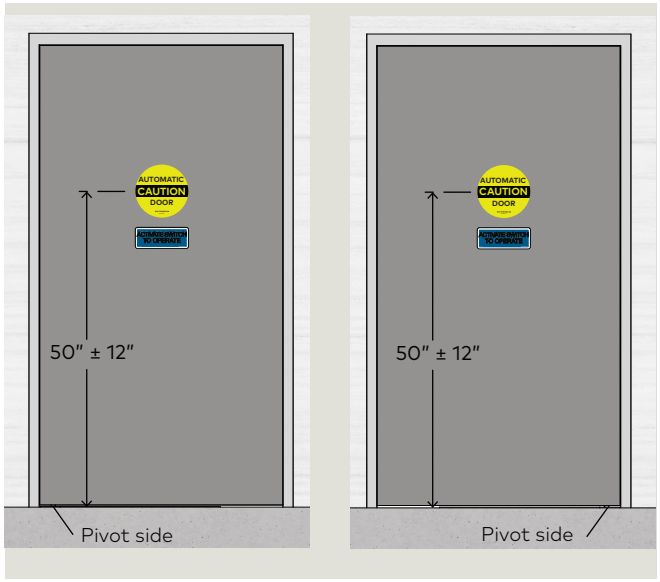
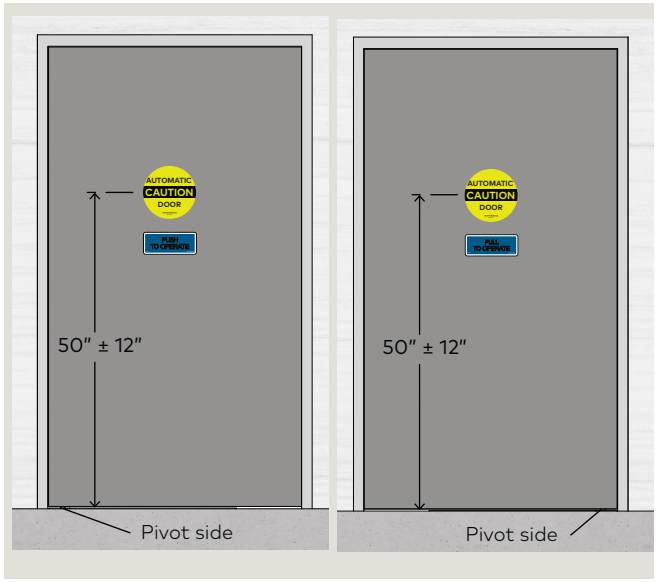


Fig. 12.2.2 Push/Pull

Push To Operate Pull To Operate



12.2.2 Double doors

Fig. 12.2.1 Activate Switch to Operate

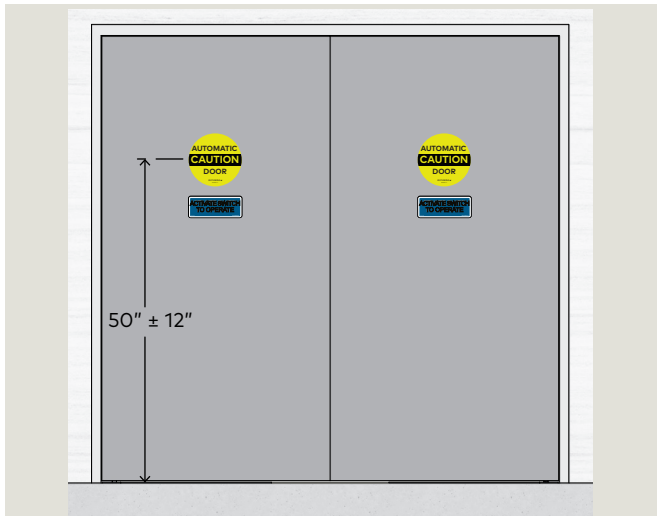


Fig. 12.2.2 Opposite side, no device

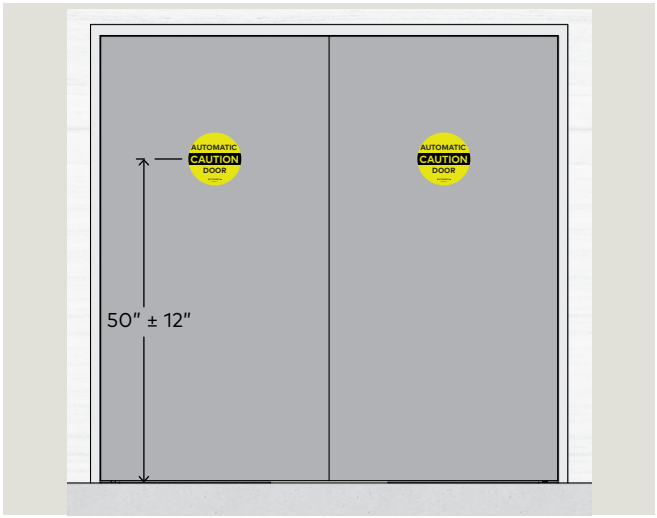


Fig. 12.2.3 Push/Pull, Pull side

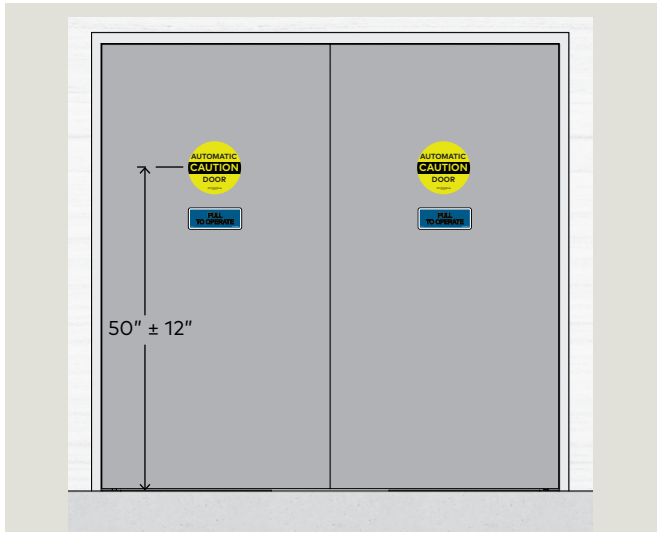
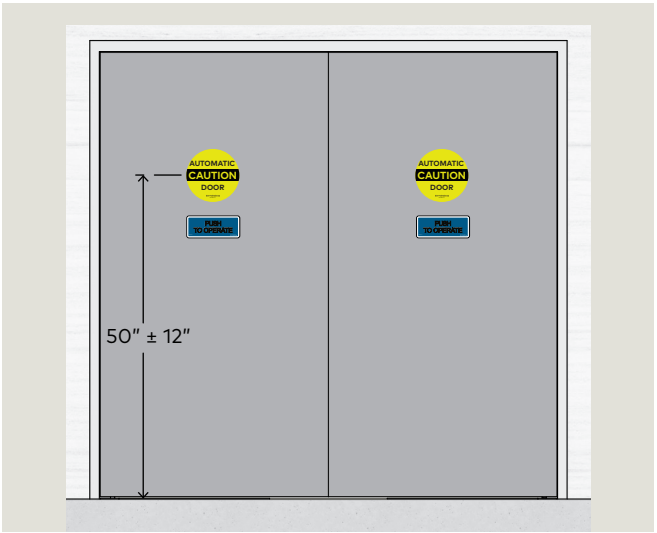


Fig. 12.2.4 Push/Pull, Push side



12.3 Safety information label, low energy swing doors

12.3.1 Low energy swinging door safety information label

This AAADM label (Fig. 12.7.2) outlines safety checks that should be performed daily on automatic swing door controlled by an ED250 in ground operator configured for low energy operation.

12.3.2 Safety information label location

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

12.3.3 Annual compliance section of label

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

12.3.4 Additional annual compliance inspection labels

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

Fig. 12.3.1 Annual compliance label, low energy

ANNUAL COMPLIANCE INSPECTION

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

12.3.2 Safety information labels

Fig. 12.3.2 Low energy

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.

AADM-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:_____

13 ED250 in ground installation templates

13.1 Center hung door

Fig. 13.1.1 Single door center hung

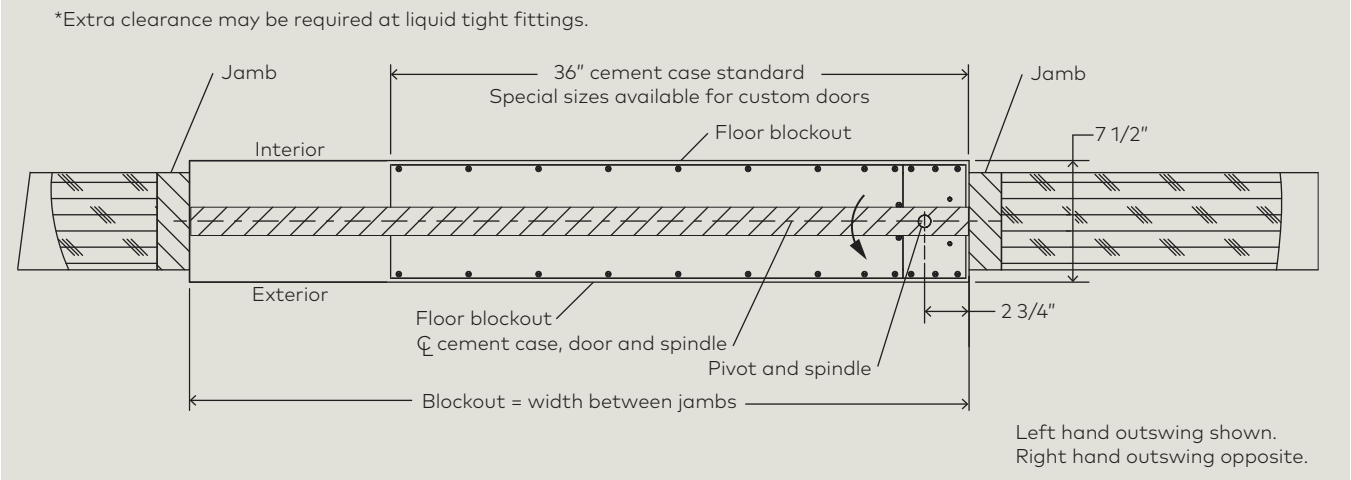


Fig. 13.1.2 Single door center hung front view

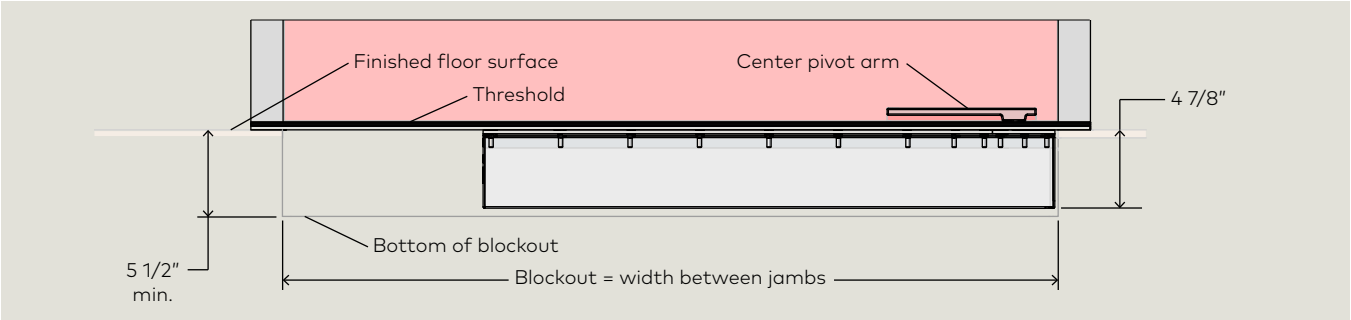
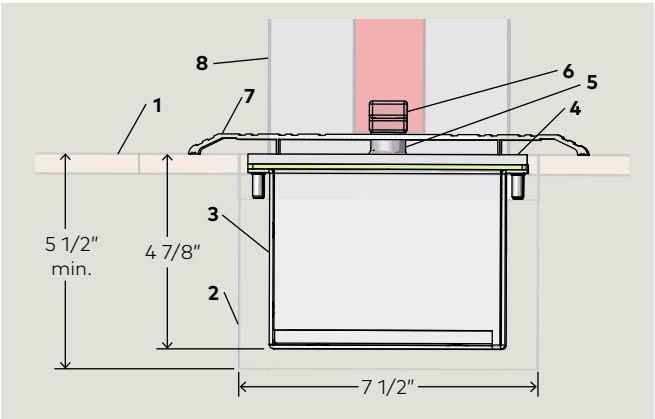


Fig. 13.1.3 Center hung door side view



1 Finished floor surface
2 Blockout
3 Cement case
4 Cement case cover
5 Spindle
6 Center pivot arm
7 Threshold (by others)
8 Jamb

Notes

1. Refer to manufacturer's template for door leaf and bottom arm preparation.
2. Depth of excavation is 5 1/2" minimum below finished floor.
3. Spindle center must be plumb with top pivot.

Fig. 13.1.4 Double door center hung

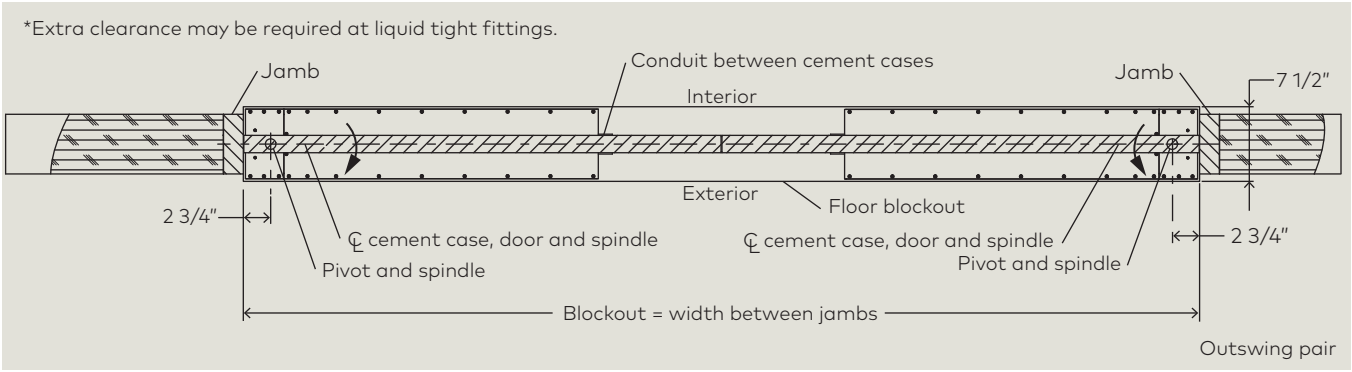
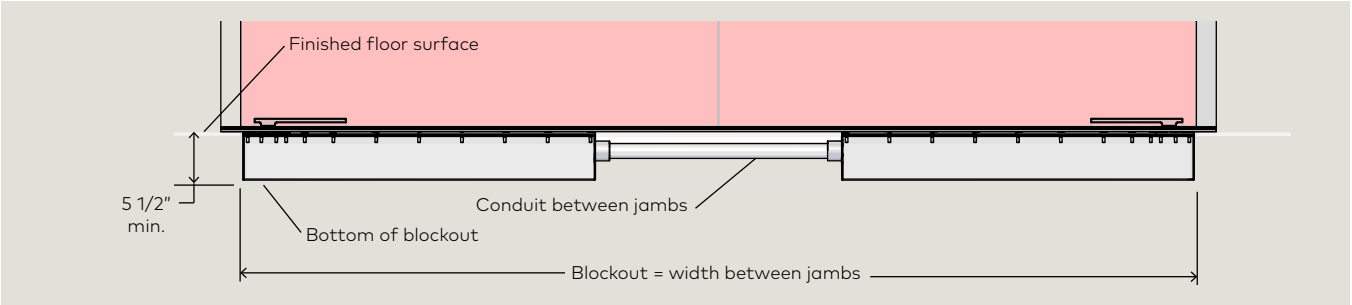


Fig. 13.1.5 Double door center hung front view



13.2 3/4" offset pivot door

Fig. 13.2.1 Single 3/4" offset pivot door overhead view

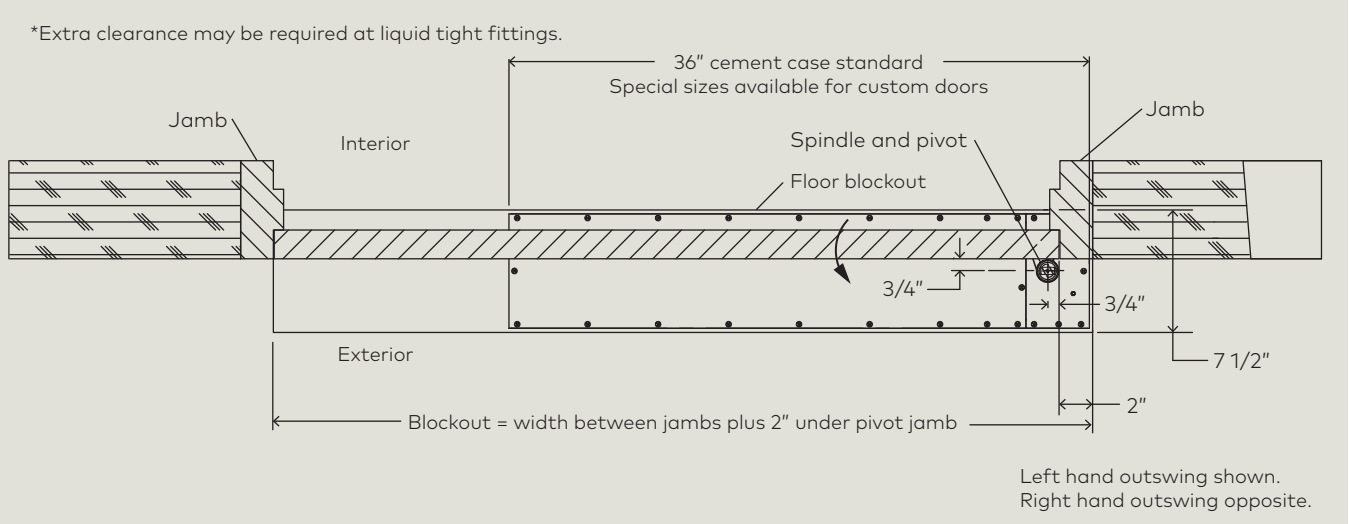


Fig. 13.2.2 Single 3/4" offset pivot door front view

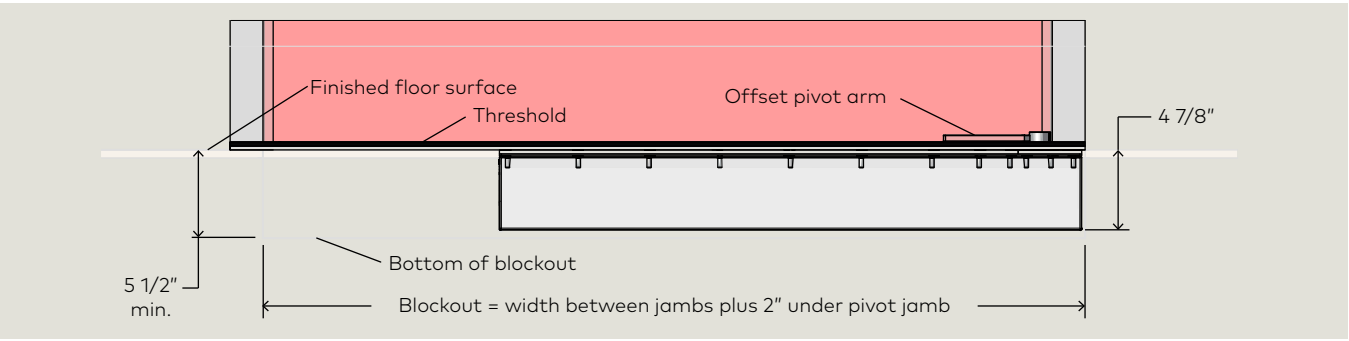
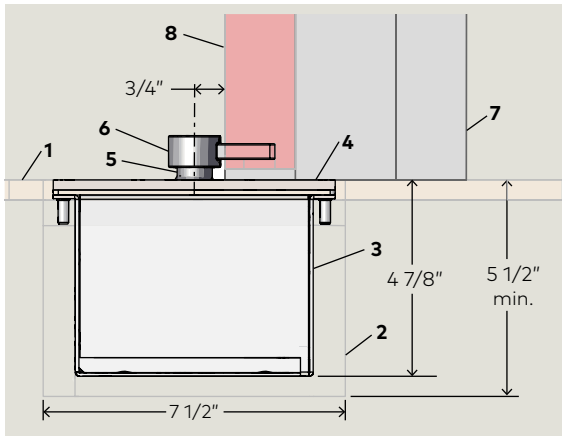


Fig. 13.2.3 Offset pivot door side view



1. Finished floor surface
2. Blockout
3. Cement case
4. Cement case cover
5. Spindle
6. Offset pivot arm
7. Jamb
8. Door
9. Threshold (by others)

Notes

1. 3/4" offset pivot using standard bottom arms only.
2. Depth of excavation is 5 1/2" minimum below finished floor.
3. Spindle center must be plumb with top pivot.

Fig. 13.2.4 Double door 3/4" offset pivot

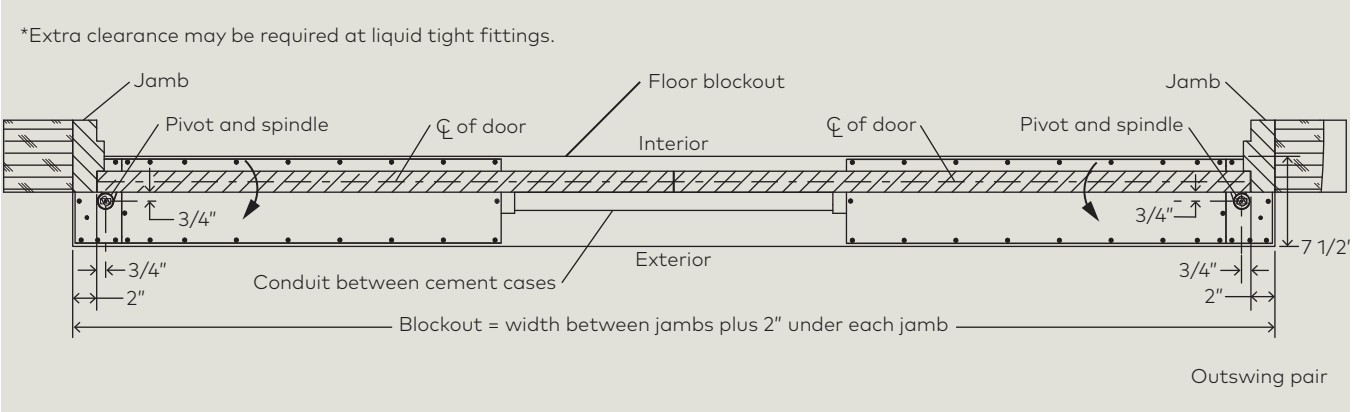
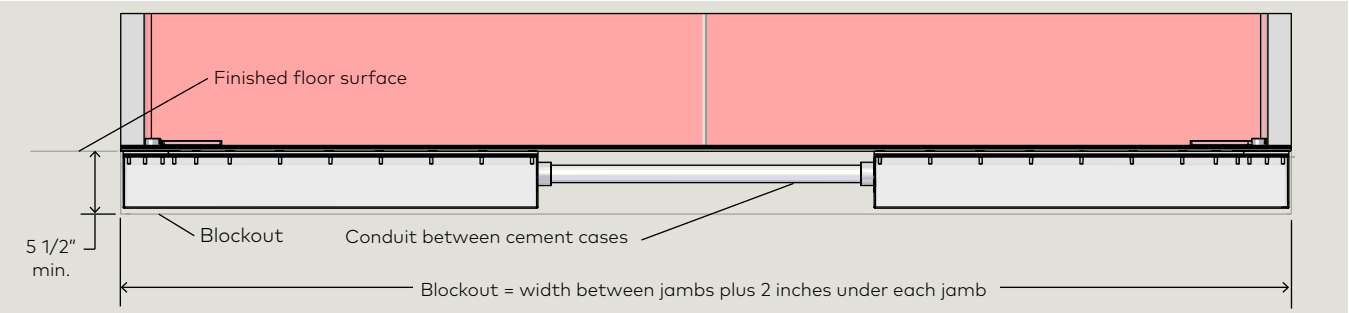


Fig. 13.2.5 Double door 3/4" offset pivot front view



13.3 Bottom arm and track

Fig. 13.3.1 Arm and track single door

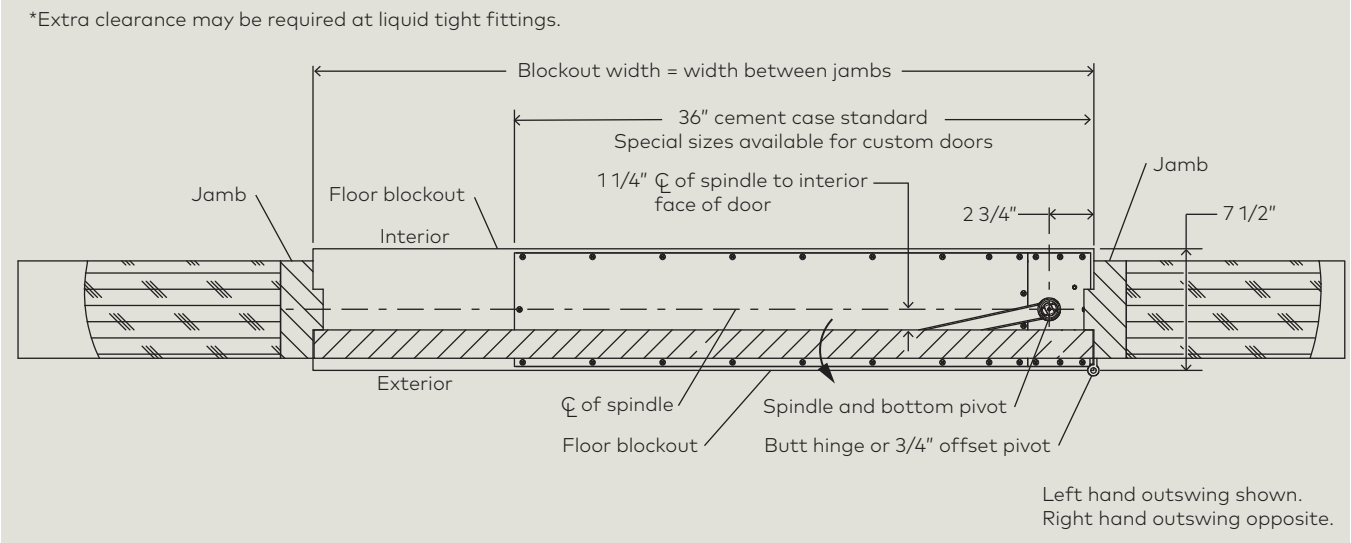


Fig. 13.3.2 Arm and track single door front view

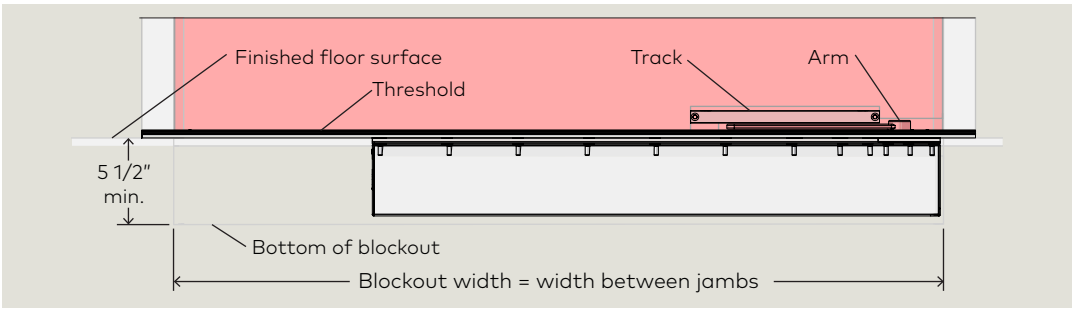
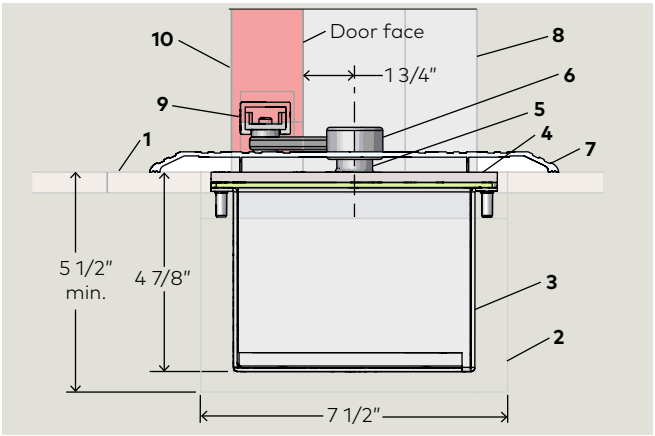


Fig. 13.3.3 Arm and track installation



1 Finished floor surface
2 Blockout
3 Cement case
4 Cement case cover
5 Spindle
6 Center pivot arm
7 Threshold (by others)
8 Jamb
9 Track
10 Door

Notes

1. Butt hung (hinged) and 3/4" offset pivot doors using Dorma bottom arm and slide track.
2. Dimensions are for 1 3/4" door thickness.
3. Hold 1 3/4" dimension from face of any door to centerline of spindle. Spindle may not be at centerline of jamb.
4. Jamb widths vary. Placement dimensions are from face of jamb to centerline of spindle.
5. Depth of excavation is 5 1/2" minimum below finished floor.
6. Spindle center must be plumb with top pivot.

Fig. 13.3.4 Arm and track double door

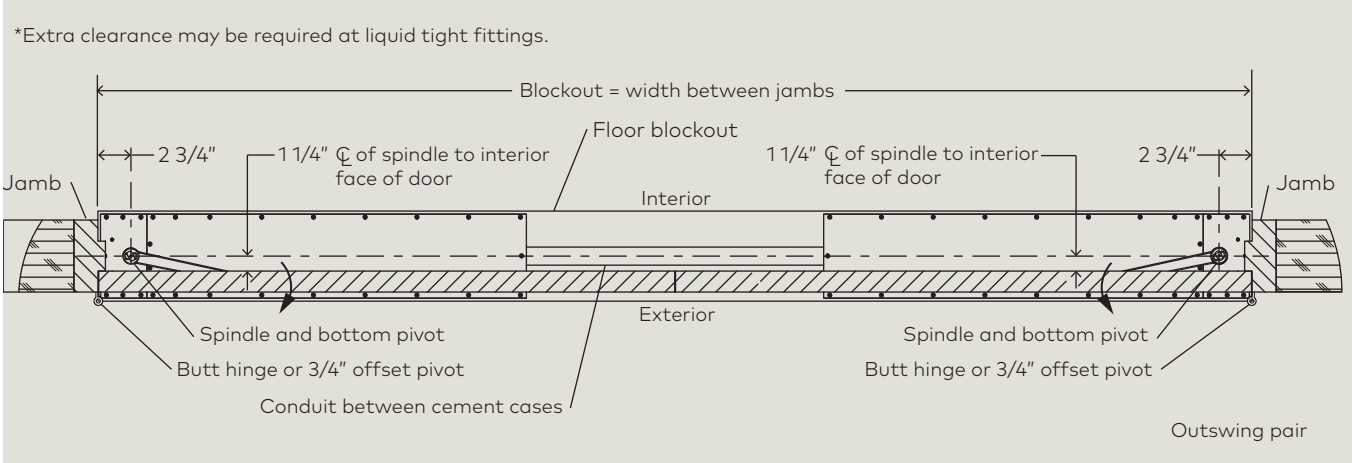
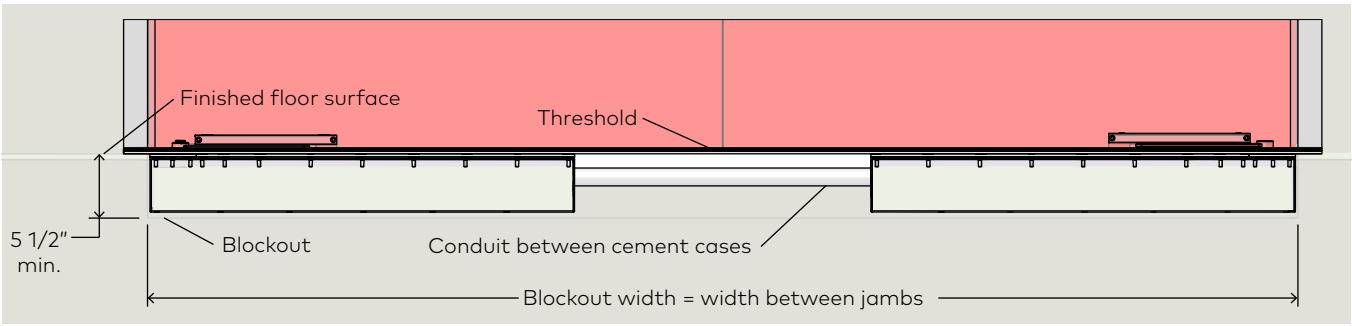


Fig. 13.3.5 Arm and track double door front view



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14 Door frame and door preparation

14.1 Install offset hung pivot in top of door frame

1 LH offset pivot bracket.

Fig. 14.1.1 Offset pivot, LH door

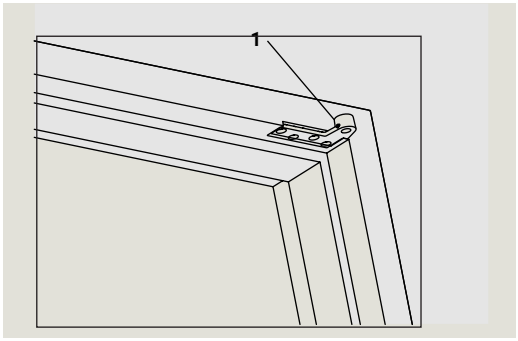
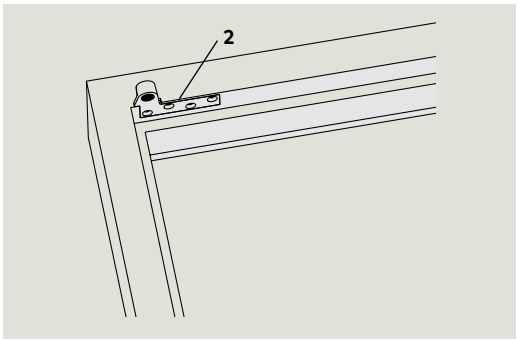


Fig. 14.1.2 Offset pivot, RH door

2 RH offset pivot bracket.



TIPS AND RECOMMENDATIONS

Refer to Chapter 13 installation templates.

14.1.1 Install offset pivot in door frame.

1. Install offset pivot in top of door frame per installation instruction supplied with pivot arm.

14.2 Install center hung pivot in top of door frame

1 LH center hung pivot

Fig. 14.2.1 Center hung pivot, LH door

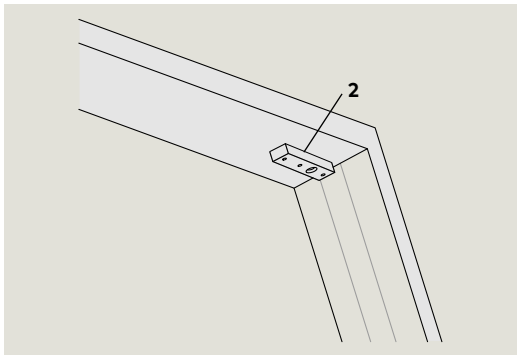
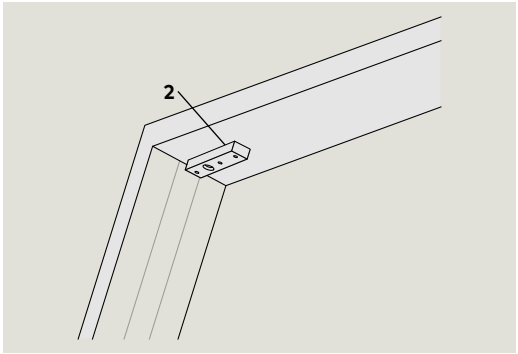


Fig. 14.2.2 Center hung pivot, RH door

2 RH center hung pivot



TIPS AND RECOMMENDATIONS

Refer to Chapter 13 installation templates.

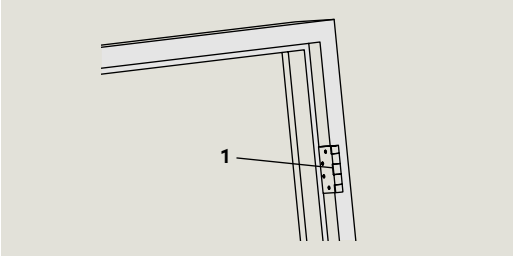
14.2.1 Install center hung pivot in door frame.

1. Install center hung pivot in top of door frame per instructions supplied with pivot.

14.3 Install butt hinge in side of door frame, slide track door

1 Upper butt hinge.

Fig. 14.3.1 Butt hinge, slide track door



TIPS AND RECOMMENDATIONS

Refer to Chapter 13 installation templates.

14.3.1 Install butt hinge.

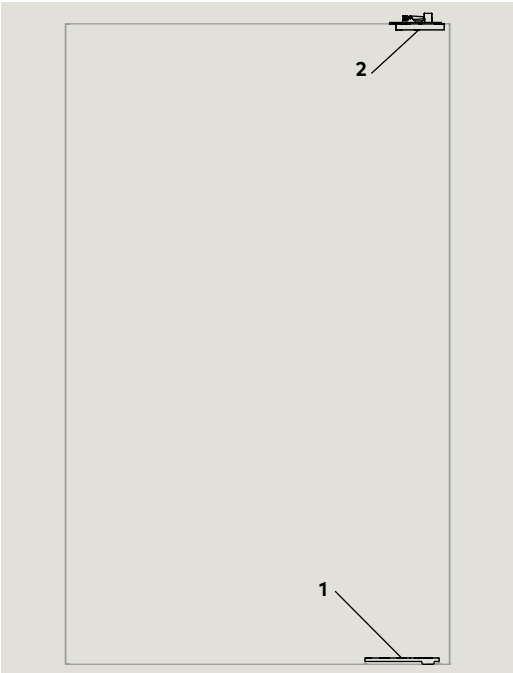
1. Install butt hinge in door frame per installation instruction supplied with hinge.

14.4 Install door swing hardware

Fig. 14.4.1 Center hung door

1 Bottom center hung pivot arm

2 Top of door center hung hardware



TIPS AND RECOMMENDATIONS

Center pivot arm may be used in place of butt hinge.

TIPS AND RECOMMENDATIONS

Refer to Chapter 13 installation templates.

14.4.1 Install door swing hardware

2. Install door swing hardware for applicable door swing configuration. Refer to installation instructions supplied with hardware.

Fig. 14.4.2 Offset pivot door

3 Bottom offset pivot arm (LH shown)

4 Top of door offset pivot arm hardware (LH shown)

5 Slide track and arm (RH shown)

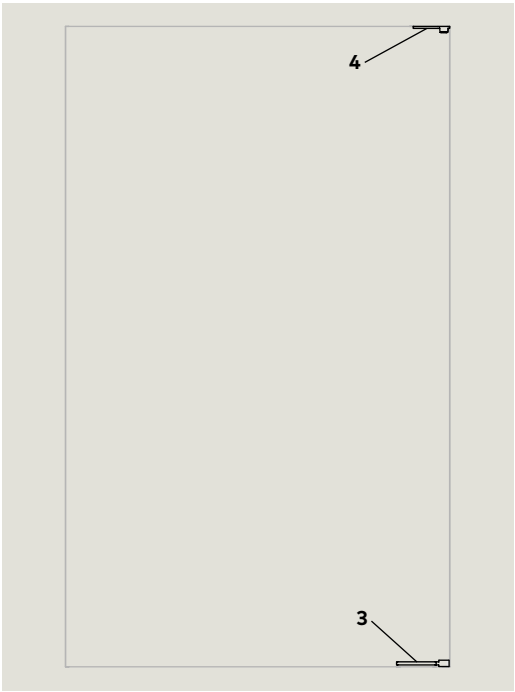
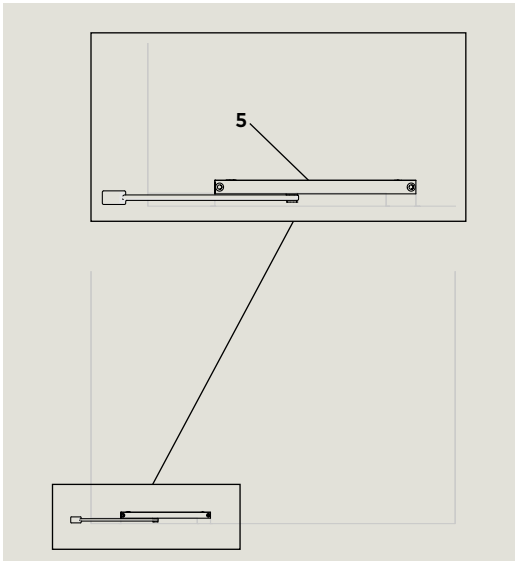


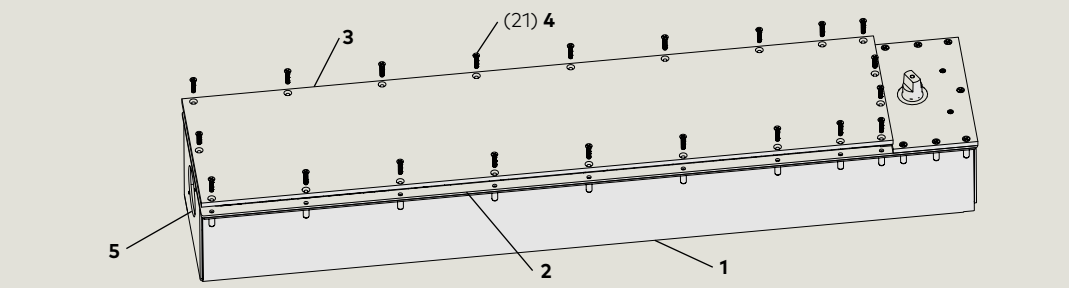
Fig. 14.4.3 Slide track in door



15 Prepare cement case for installation

15.1 Remove cement case cover

Fig. 15.1.1 ED250 cement case, screws removed from cover

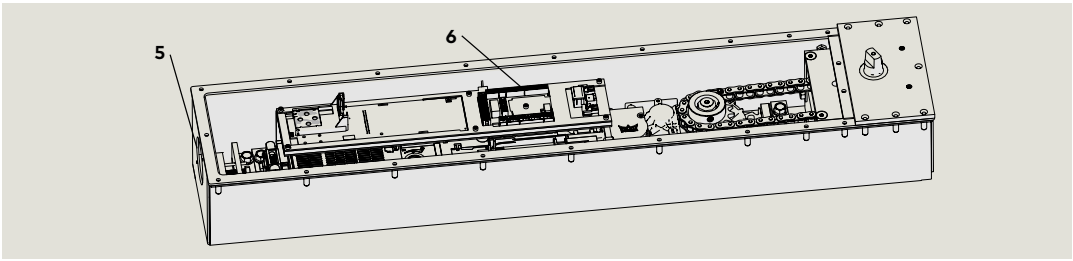


1 ED250 cement case
2 1/8" thick gasket
3 Cover
4 8-32 x 3/4" Phillips flat head machine screws (PFHMS)
5 2 3/8" dia. hole for PVC reducer fitting

15.1.1 Loosen cover screws.

1. Using No. 2 Phillips, loosen and remove twenty one 8-32 x 3/4" PFHMS securing cover to cement case and set aside.

Fig. 15.1.2 ED250 cement case cover removed.



5 2 3/8" dia. hole for PVC reducer fitting
6 ED250 accessory terminal board

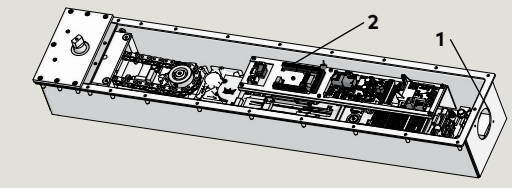
15.1.2 Remove cement case cover.

1. Remove cement case cover and set aside.

15.2 System accessory wiring into cement case, single door

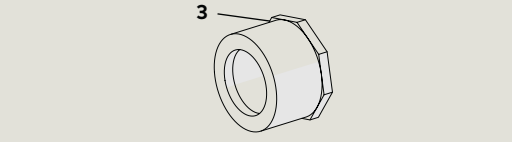
1 2 3/8" hole for PVC reducer coupling
2 Terminal board for system accessory wiring

Fig. 15.2.1 ED250 cement case accessory wiring



3 PVC reducer coupling for 1 1/2" PVC pipe

Fig. 15.2.1 PVC reducer coupling



CAUTION

PVC coupling and PVC pipe installation should be done by qualified personnel.

TIPS AND RECOMMENDATIONS

Refer to Para. 15.7 if additional conduits are required for accessory wiring into cement case.

15.2.1 System accessory wiring.

TIPS AND RECOMMENDATIONS

Reference Chapter 11 for system accessory examples.

15.2.2 Accessory wiring into cement case.

1. Accessory wiring should enter cement case through PVC reducer coupling and PVC pipe installed in 2 3/8" hole at cement case end opposite spindle drive.

15.2.3 PVC reducer coupling

1. PVC reducer coupling is supplied for cement case 2 3/8" hole, reference Chapter 5, in-ground packages.
2. Coupling is sized for 1 1/2" PVC pipe.

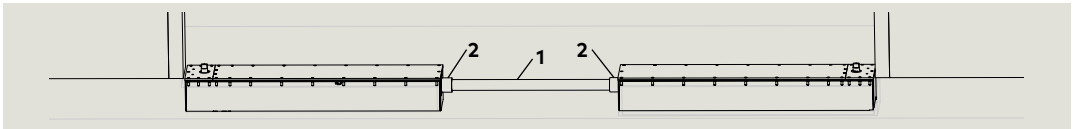
15.2.4 PVC reducer coupling and PVC pipe installation into cement case.

1. PVC coupling and PVC pipe will be installed in cement case after first anchoring cement pour (Para. 16.7). This includes sealing coupling at cement case 2 3/8" hole.

15.3 System accessory wiring into cement cases, double door

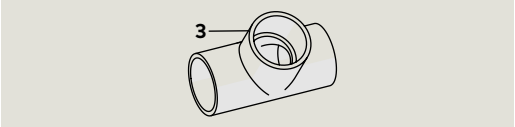
1 PVC pipe, 2 feet long
2 PVC reducer coupling

Fig. 15.3.1 Double door cement cases electrical installation kit



3 1 1/2" PVC tee connector (not supplied)

Fig. 15.3.2 PVC tee connector



15.3.1 Electrical installation kit

1. Electrical installation kit, which includes two PVC reducer couplings and two feet of PVC pipe, is included for double door installations. Reference Chapter 5, in-ground packages.

CAUTION

PVC couplings and PVC pipe installation should be done by qualified personnel.

15.3.2 Accessory wiring access to 1 1/2" PVC pipe.

1. Use 1 1/2" PVC tee connectors (not supplied) in PVC pipe for routing accessory wiring into PVC pipe.

15.3.3 PVC reducer coupling and PVC pipe installation into cement cases.

1. PVC couplings and PVC pipe will be installed in cement cases after first anchoring cement pour (Para. 16.7). This includes sealing couplings at cement case 2 3/8" holes.

TIPS AND RECOMMENDATIONS

Refer to Para. 15.7 if additional conduits are required for accessory wiring into cement cases.

15.4 Liquidtight conduit entry locations into cement case

Fig. 15.4.1 Cement case sides, areas for conduit entry

1 Main extrusion, operator mounting
2 Angle iron
3 Spacer, operator mounting

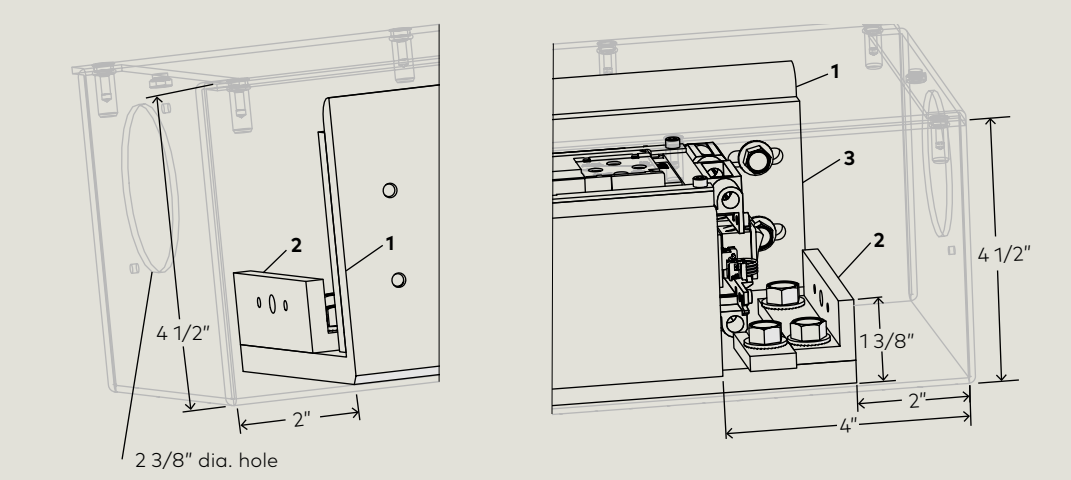
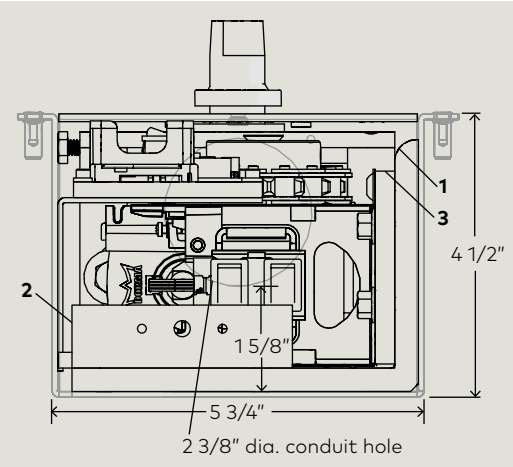


Fig. 15.4.2 Cement case end (opposite spindle side) areas for conduit entry

1 Main extrusion, operator mounting
2 Angle iron
3 Spacer, operator mounting



15.4.1 Determine conduit hole locations in cement case

TIPS AND RECOMMENDATIONS

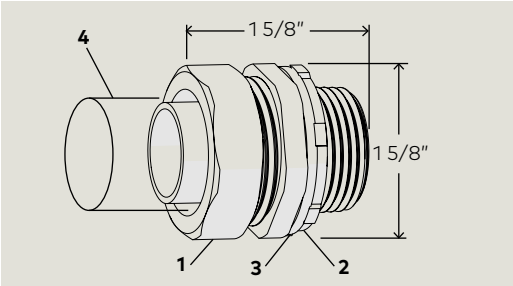
Wiring entry into cement case. Note orientation of cement case in concrete floor blockout.

1. Figures 15.4.1 and .2 show areas on the cement case end on strike side of door for conduit entry. 2 3/8" conduit hole in cement case is predrilled.

15.5 Liquidtight conduit and conduit fitting requirements

Fig. 15.5.1 LT7 3/4" liquidtight fitting

1 Arlington LT7 3/4" liquid tight fitting
2 Lock nut
3 Sealing ring
4 3/4" liquid tight non metallic conduit, Type B



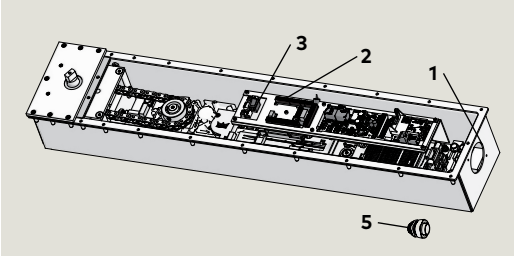
15.5.1 Liquidtight conduit and conduit fittings.

CAUTION

1. Conduit to case connections must use non-metallic liquid-tight conduit, Type B only.
2. Conduit fittings installed in cement case must be liquid-tight fittings. **Use only Arlington #LT7 3/4" liquid-tight fittings.** Other fittings have not been tested or approved.

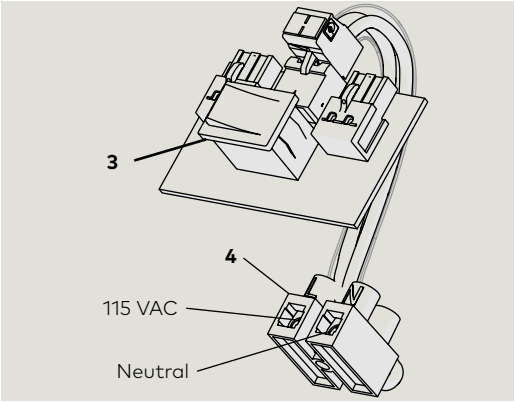
15.6 115 Vac wiring into cement case

Fig. 15.6.1 Cement case 115 Vac entry



1 2 3/8" hole for accessory wiring
2 Terminal board for accessory wiring
3 Power off/on switch board
5 Liquidtight fitting for 115 Vac wiring

Fig. 15.6.2 Cement case 115 Vac entry



3 Power off/on switch board
4 115 Vac terminal block

15.6.1 115 Vac wiring into cement case.

1. 115 Vac will terminate at 115 Vac terminal block inside cement case.

CAUTION

Liquidtight conduit and fitting (not supplied) must be used to route 115 Vac wiring into cement case. Ref. Para. 15.5.

⚠ WARNING

Installation and termination of 115 Vac liquidtight conduit, fitting and wiring must be done by qualified personnel.

15.6.2 Hole in case for 115 Vac liquidtight conduit fitting.

1. Determine hole location in case for liquidtight conduit fitting.
2. Punch hole in case location using drill and knockout punch.

15.6.3 Double door system, 115 Vac power feed.

TIPS AND RECOMMENDATIONS

Double door installations:
Only one 115 Vac power feed is required for the system. Select one of the two cement cases for the liquidtight conduit fitting.

15.6.4 115 Vac liquidtight conduit and fitting installation into cement cases.

1. Liquidtight conduit and fitting will be installed in cement cases after first anchoring cement pour (Para. 16.6).

15.7 Additional accessory wiring into cement case

15.7.1 Additional accessory wiring into cement case.

1. If additional accessory wiring to cement case is required that cannot be routed in the 1 1/2" PVC pipe (Para. 15.2, 15.3), locate hole(s) for required liquidtight fittings in side or end of cement case (Para. 15.4).
2. Punch hole(s) in case locations using drill and knockout punch.

CAUTION

Liquidtight conduit and fittings (not supplied) must be used for additional accessory wiring into case not using 1 1/2" PVC pipe. Ref. Para. 15.5.

15.8 Internal cement case checks

Fig. 15.8.1 ED250 cement case, internal view

1 PCB bracket assembly

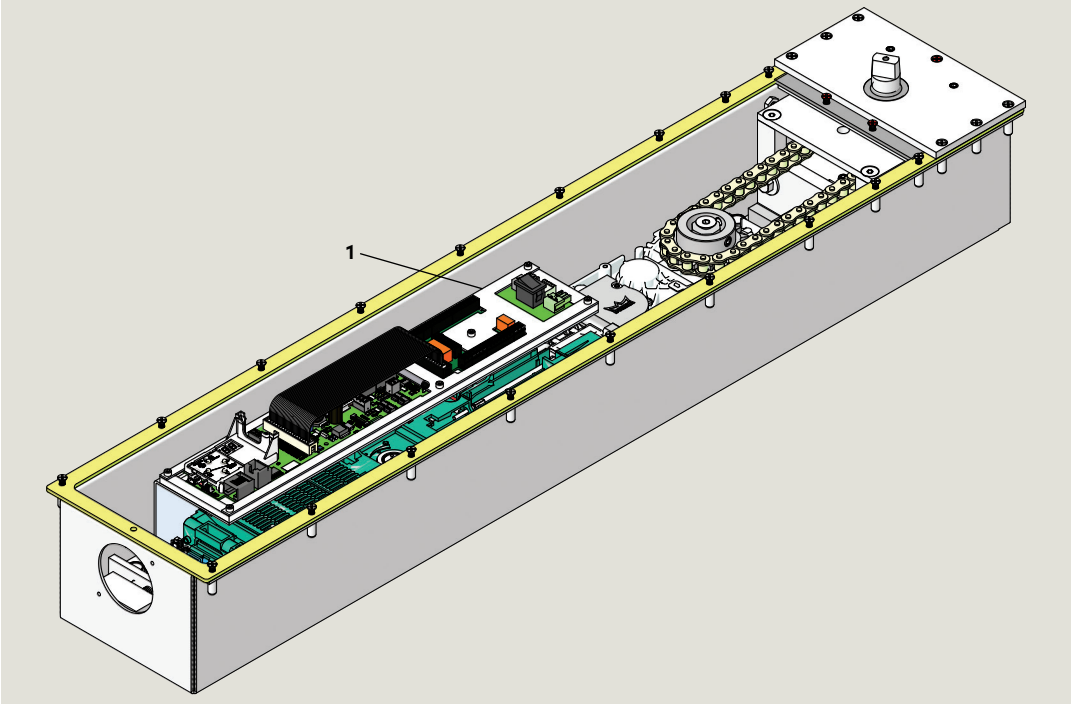
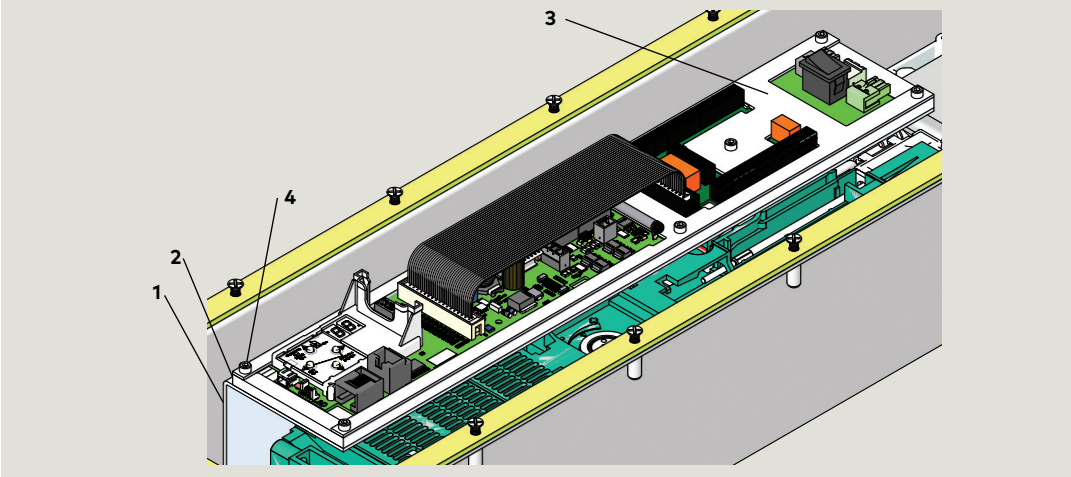


Fig. 15.8.2 PCB bracket assembly

1 PCB bracket
2 PCB plate
3 PCB plate cover
4 (7) 1/4-20 x 1/2" SHCS



15.8.1 Cement case checks.

1. PCB bracket assembly:

- Alignment of board assemblies on PCB plate and PCB bracket.

CAUTION

Board assemblies; no contact with any metal.

- Tightness of seven 1/4-20 SHCS.

2. Clean internal case of any foreign objects or debris.

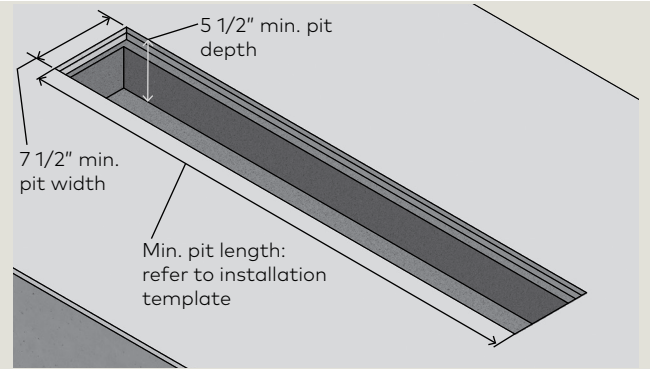
16 In-ground case installation

NOTICE

Installation site may require modification of steps referenced in Chapter 16.

16.1 Verify concrete floor blockout

Fig. 16.1.1 Minimum blockout dimensions



16.1.1 Verify blockout for ED250 in ground case.
Using applicable ED250 in-ground installation template (Chapter 13) to verify:

1. Concrete floor blockout dimensions. Reference Fig. 16.1.1 for minimum blockout dimensions.
2. Blockout location referencing door jambs.
3. Cement case orientation in blockout. Electrical wiring at end of case opposite pivot (double doors, center of blockout).

16.2 Install cement case, single door

Fig. 16.2.1 End view, strike side

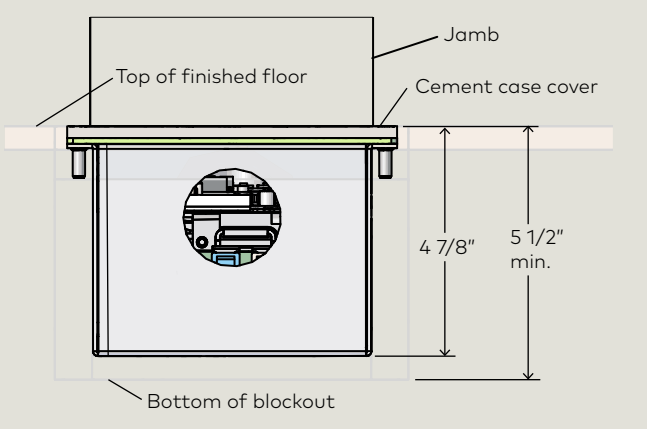
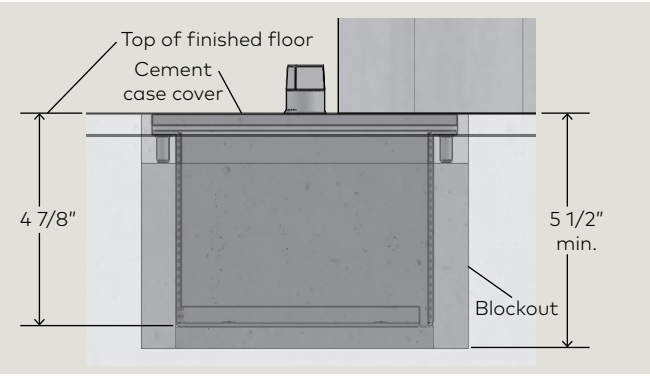


Fig. 16.2.2 End view, door pivot side (offset pivot door)



16.2.1 Set cement case into blockout

NOTICE

Reference applicable installation template (Chapter 13) and contractor and/or architect documentation to position cement case spindle in blockout.

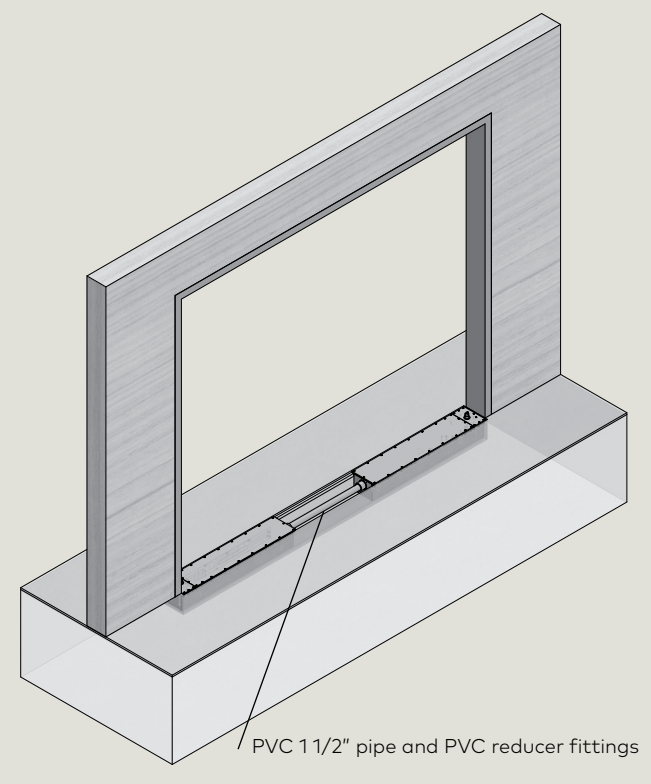
WARNING

Hand pinch point and crushing hazards!

1. Lower cement case into blockout and shim case into position.

16.3 Install cement cases, double door

Fig. 16.3.1 Cement cases installed in blockout



16.3.1 Set cement case into blockout

NOTICE

Reference applicable installation template (Chapter 13) and contractor and/or architect documentation to position cement case spindles in blockout.

WARNING

Hand pinch point and crushing hazards!

1. Lower each cement case into blockout and shim case into position.

TIPS AND RECOMMENDATIONS

PVC pipe and reducer fittings installed after first anchoring cement pour in blockout (Para. 16.6)

16.4 Locate center of cement case spindle

Refer to Chapter 13, installation templates.

CAUTION

After centering spindle:

- Level and plumb cement case in all directions.
- Cement case must be parallel with door header.
- Secure cement case in position.

16.4.1 Offset and center hung arms; align top door pivot with spindle.

1. Verify cement case spindle location referencing door jambs with contractor or customer drawings.
2. Using laser or plumb bob, center cement case spindle with center of top door offset pivot.

Fig. 16.4.1 LH offset pivot door, alignment of spindle with top pivot

1 Cement case spindle
2 Top door pivot in frame
3 Door header
4 Cement case
5 Blockout

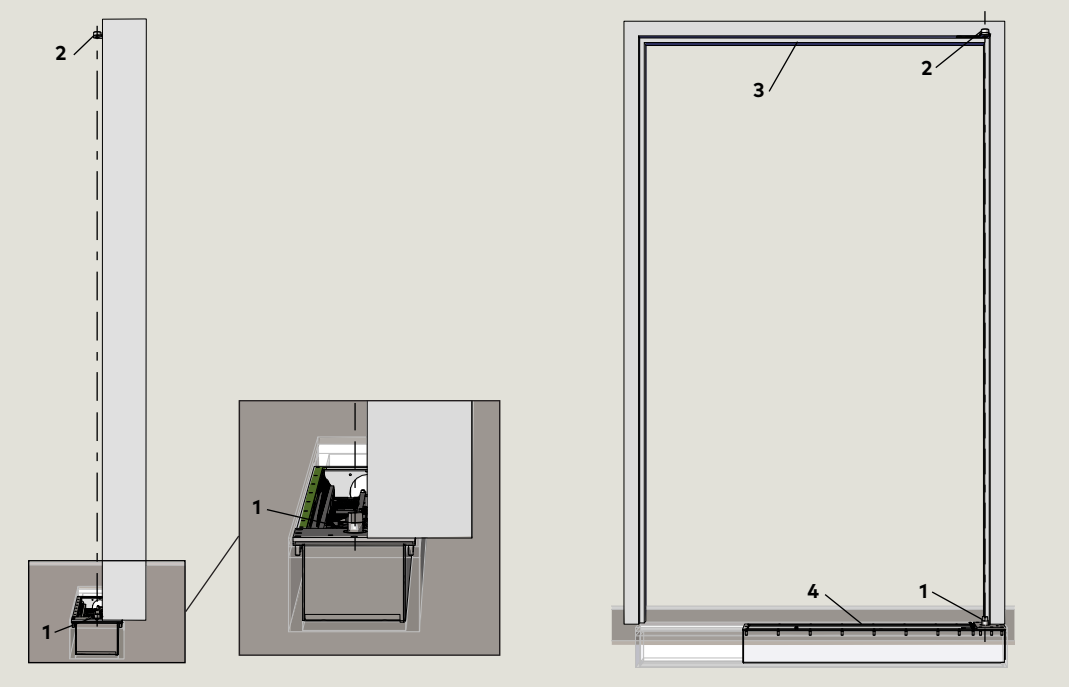
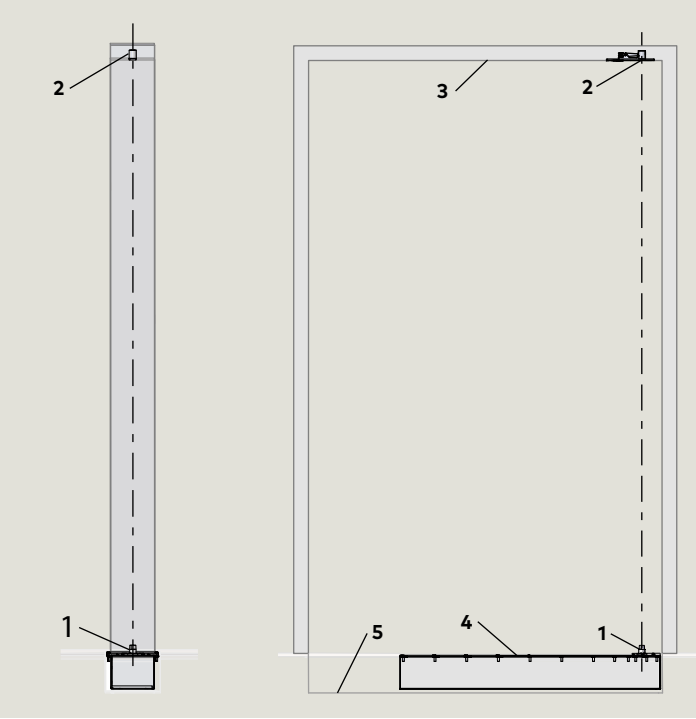


Fig. 16.4.2 LH center hung door, alignment of spindle with top pivot

1 Cement case spindle
2 Top door pivot in frame
3 Door header
4 Cement case
5 Blockout



16.4.2 Slide arm and track; locate center of cement case spindle

1. Referencing contractor or customer drawings, establish location of interior door face .
2. Locate center of cement case spindle 1 3/4" from door face for any door thickness and 2 3/4" from face of jamb.

CAUTION

After establishing spindle location:

- Level and plumb cement case in all directions.
- Cement case must be parallel with door header.
- Secure cement case in position.

TIPS AND RECOMMENDATIONS

1. Para. 16.4.2 is for butt hinge and 3/4" offset pivot doors using Dorma bottom arms and slide track.
2. Spindle may not be at centerline of jamb.
3. Jamb widths vary. Cement case placement dimensions are from face of jamb to centerline of spindle.

Fig. 16.4.3 LH slide arm and track, alignment of spindle with face of door

1 Cement case spindle
2 Bottom arm
3 Slide track
4 Jamb

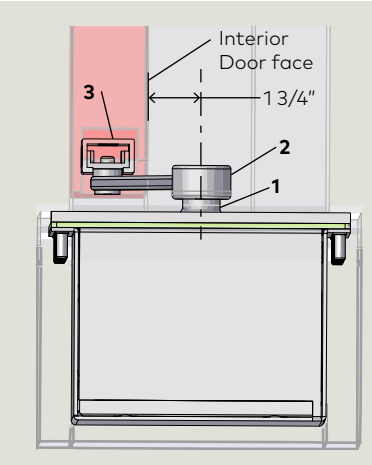


Fig. 16.4.4 LH slide arm and track, alignment of spindle with door face front view

1 Cement case spindle
2 Bottom arm
3 Slide track
4 Jamb

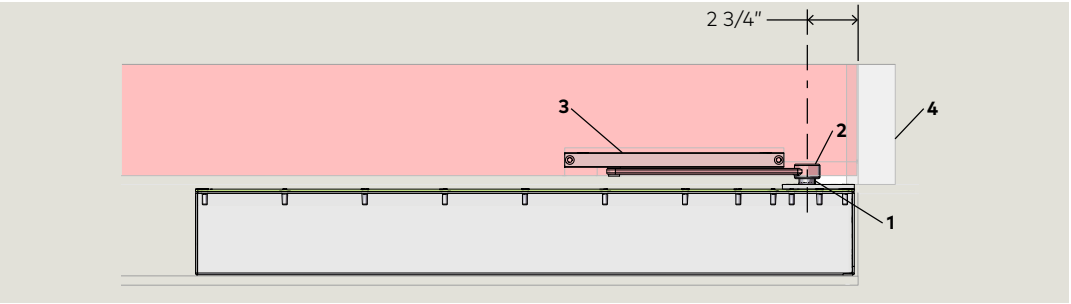
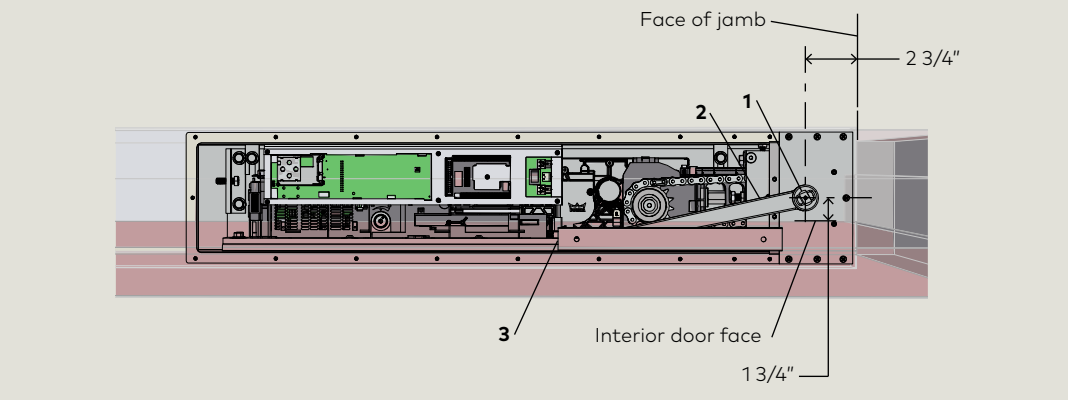


Fig. 16.4.5 LH slide arm and track, alignment of spindle with door face overhead view

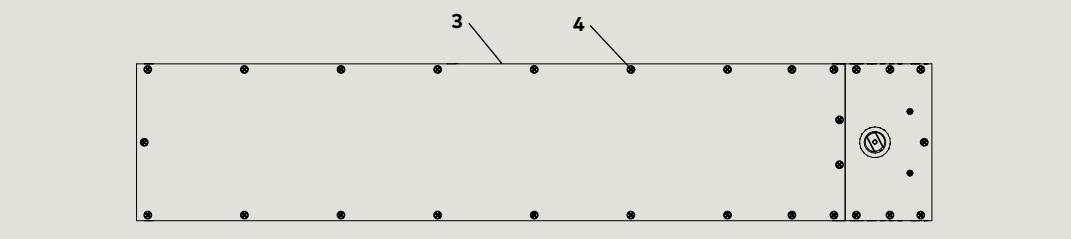
1 Cement case spindle
2 Bottom arm
3 Slide track
4 Jamb



16.5 Reinstall cement case cover

Fig. 16.5.1 ED250 cement case with cover installed.

3 Cover
4 (21) 8-32 x 3/4" PFHMS (Phillips flat head machine screws)



16.5.1 Install case cover, single door.

1. Insure gasket is clean, then place cover over gasket.
2. Use a Phillips No. 2 bit to install twenty one 8-32 x 3/4" PFHMS securing the cover to the cement case.

16.5.2 Install case cover, double doors

1. Install covers on both cement cases per Para. 16.5.1.

CAUTION

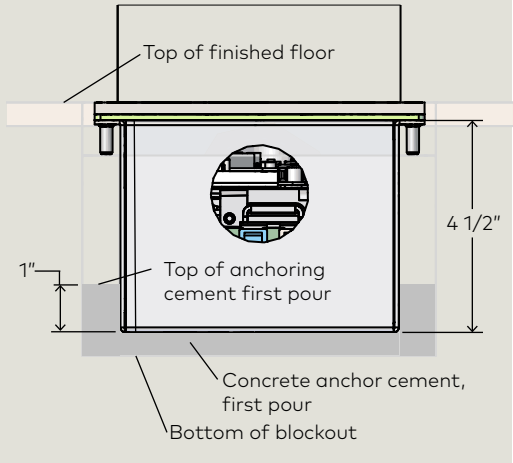
Use only a Phillips screwdriver to hand tighten the screws!

CAUTION

Cover(s) must be installed on cement case(s) before anchoring cement poured in concrete blockout.

16.6 Anchoring cement pour in blockout around bottom one inch of cement case

Fig. 16.6.1 ED250 cement case end view, first anchoring cement pour



16.6.1 First anchoring cement pour.

CAUTION

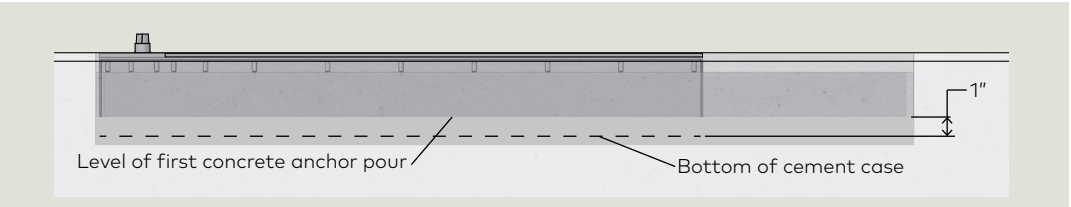
Cement case cover must be installed prior to anchoring cement pour (Para. 16.5).

1. Pour anchoring cement in blockout to a level one inch above bottom off cement case.

CAUTION

Allow anchoring cement to set for time period referenced in manufacturer's instructions.

Fig. 16.6.2 ED250 cement case front view, first anchoring cement pour

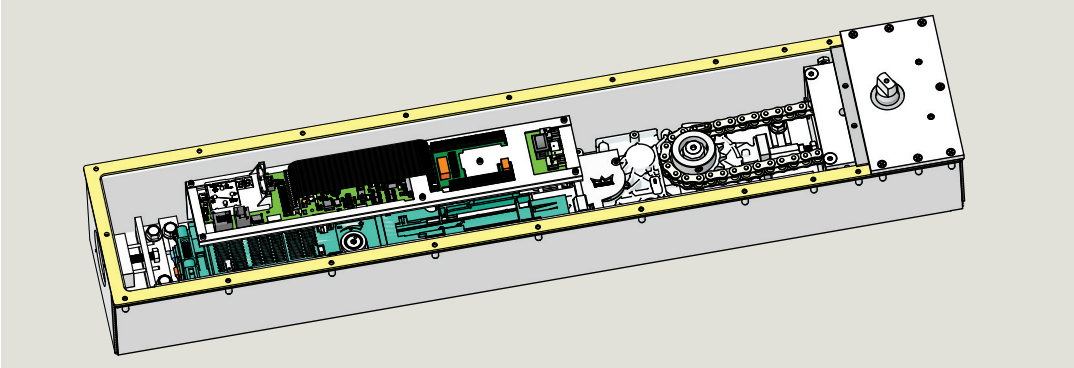


16.6.2 First anchoring cement pour, double doors.

1. Pour anchoring cement in blockout to a level one inch above bottom of both cement cases.

16.7 Remove cement case cover.

Fig. 16.7.1 Cement case cover removed



16.7.1 Remove cement case cover.

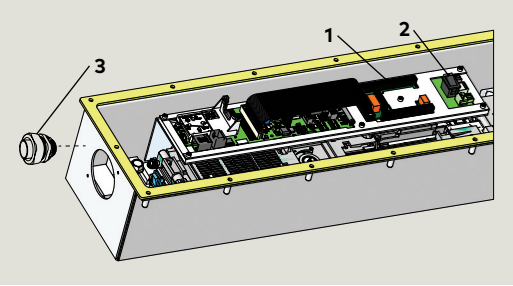
1. Remove the twenty one 8-32 x 3/4" PFHMS securing the cover to the cement case.
2. Remove cover to access ED250 operator.

16.7.2 Double doors

1. Remove the twenty one 8-32 x 3/4" PFHMS securing the cover to each cement case.
2. Remove covers to access ED250 operators.

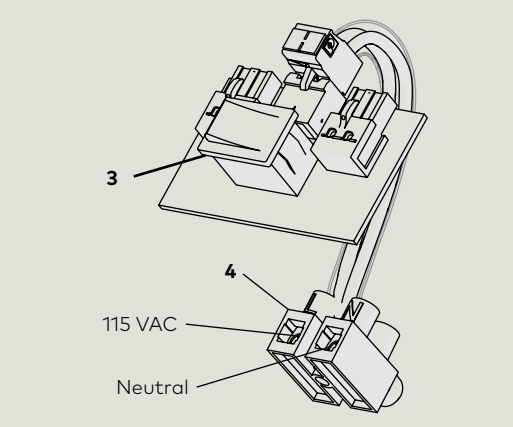
16.8 Single door, install and terminate 115 Vac liquidtight conduit and wiring

Fig. 16.8.1 Cement case 115 Vac fitting



1 Accessory terminal blocks
2 Power off/on switch
3 115 Vac liquidtight fitting (by others)

Fig. 16.8.2 115 Vac terminal block



3 Power off/on switch, power connection board
4 115 Vac terminal block

16.8.1 Installation of 115 Vac conduit from blockout to cement case.

1. Install 115 Vac liquidtight conduit and conduit fitting into cement case.

WARNING

Installation of 115 Vac conduit and fitting and termination of wiring must be done by qualified personnel.

WARNING

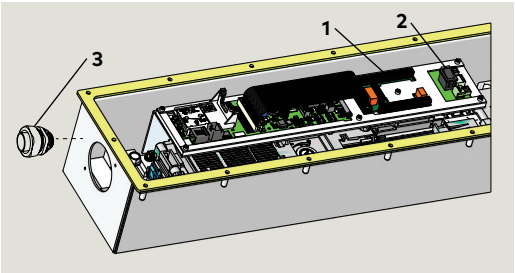
115 Vac power source for ED250 must be OFF!

16.8.2 Route 115 Vac wiring into cement case and terminate wiring.

1. Terminate 115 Vac and neutral wires at 115 VAC terminal block located near power off/on switch
2. Terminate ground (green) wire at one of the ED250 operator mounting screws. Use suitably sized ring lug to terminate wire at mounting screw.

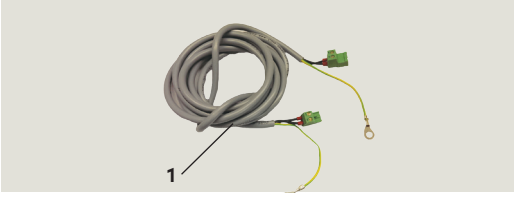
16.9 Double doors, install and terminate 115 Vac liquidtight conduit and wiring

Fig. 16.9.1 Cement case 115 Vac liquidtight fitting



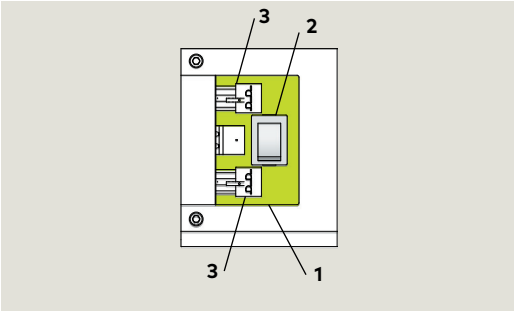
1 Accessory wiring terminal board
2 Power off/on switch
3 115 Vac liquidtight fitting (by others)

Fig. 16.9.2 Double door 115 Vac power cable



1 ED250 115 Vac power cable ‚11' DX3484-030

Fig. 16.9.3 Power connection board



1 115 Vac power connection board
2 Power off/on switch
3 Socket for 115 Vac power connection cable

16.9.1 Installation of 115 Vac conduit from blockout to cement case.

NOTICE

- Only one cement case requires 115 Vac liquidtight conduit and wiring from blockout.
- 115 Vac cable connects the two ED250 operators (Fig. 16.9.2).
- Reference Para. 16.14 for installation.

⚠ WARNING

Installation of 115 Vac conduit and fitting and termination of wiring must be done by qualified personnel.

⚠ WARNING

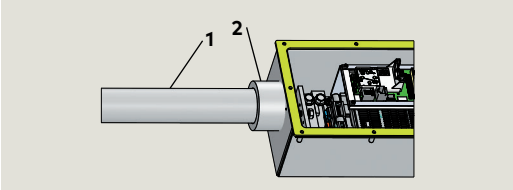
115 Vac power source for ED250 must be OFF!

1. Install 115 Vac conduit and wiring into selected cement case per Para. 16.8.
2. Route 115 Vac wiring into cement case and terminate per Para, 16.8.

16.10 Single door, install PVC reducer fitting and PVC pipe

1 PVC pipe (by others)
2 PVC reducer coupling

Fig. 16.10.1 Cement case PVC reducer fitting and PVC pipe



16.10.1 Installation of PVC reducer fitting and PVC conduit from blockout to cement case.

1. Insert PVC reducer fitting into cement case 2 3/8" hole, install PVC conduit into fitting.

CAUTION

PVC coupling and PVC pipe installation should be done by qualified personnel.

CAUTION

Seal PVC reducer coupling both inside and outside of cement case 2 3/8" hole with Permatex No. 2 sealant.

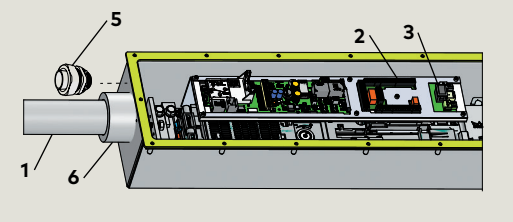
16.10.2 Additional liquidtight conduit and fittings for accessory wiring.

1. Install any additional liquidtight conduit and fittings that are required for accessory wiring.

16.11 Single door, route accessory wiring into cement case

1 PVC pipe (by others)
2 Accessory wiring terminal block
3 Power off/on switch
5 115 Vac liquidtight fitting
6 PVC reducer fitting

Fig. 16.11.1 Accessory wiring terminal block



16.11.1 Route accessory wiring into cement case.

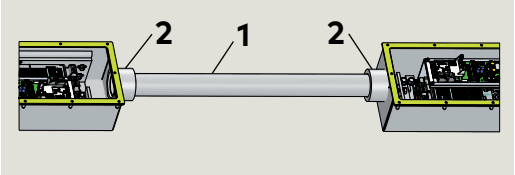
1. Route accessory wiring into cement case through PVC pipe and reducer fitting and any additional accessory wiring liquidtight conduits and fittings.

TIPS AND RECOMMENDATIONS

It is recommended not to terminate accessory wiring at accessory wiring terminal board until after ED250 has been commissioned (Para. 21). Reference Chapter 23.

16.12 Double doors, install PVC reducer fittings and PVC pipe

Fig. 16.12.1 Double door electrical installation kit



1 PVC pipe
2 PVC reducer coupling

16.12.1 Install PVC reducer fittings and PVC pipe.

1. Install PVC reducer fittings and PVC pipe between the cement cases. Also install any required tee fittings (by others) in PVC pipe.

CAUTION

PVC couplings and PVC pipe installation should be done by qualified personnel.

CAUTION

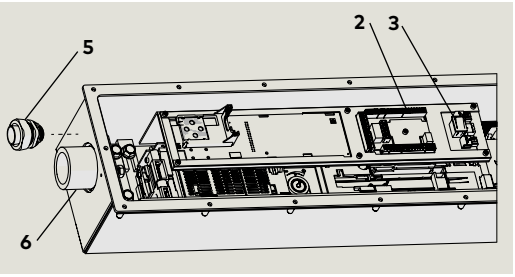
Seal PVC reducer couplings both inside and outside of cement case 2 3/8" holes with Permatex No. 2 sealant.

16.12.2 Additional liquidtight conduit and fittings for accessory wiring.

1. Install any additional liquidtight conduit and fittings into cement cases that are required for accessory wiring.

16.13 Double doors, route accessory wiring into cement cases

Fig. 16.13.1 Accessory wiring terminal block



2 Accessory wiring terminal block
3 Power off/on switch
5 115 Vac liquidtight fitting
6 PVC reducer fitting

16.13.1 Route accessory wiring into cement case.

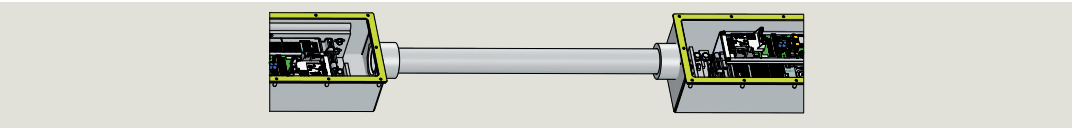
1. Route accessory wiring into cement cases through PVC pipe and reducer fittings and any additional accessory wiring liquidtight conduits and fittings.

TIPS AND RECOMMENDATIONS

It is recommended not to terminate accessory wiring at accessory wiring terminal boards until after ED250s have been commissioned (Para. 21). Reference Chapter 23.

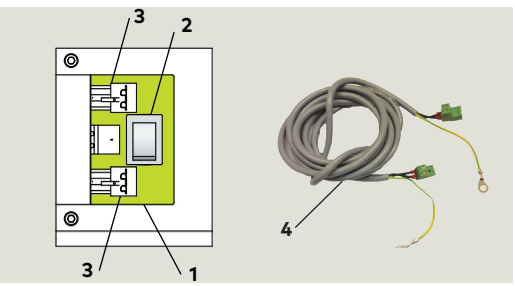
16.14 Double doors, install case to case 115 Vac cable

Fig. 16.14.1 Double door 115 Vac power cable case to case connection



1 115 Vac power connection board

Fig. 16.14.2 Power connection board and 115 Vac power cable



1 115 Vac power connection board
2 Power off/on switch
3 Socket for 115 Vac power connection cable
4 ED250 115 Vac power cable ,11' DX3484-030,

16.14.1 Install 115 Vac power cable, case to case.

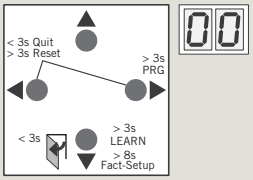
1. Install 115 Vac power cable (Fig. 16.14.2) from cement case with 115 Vac power wiring to other case.
2. Connect cable to socket on each power connection board (Fig. 16.14.2).

16.15 Rotate cement case spindle to enable door hanging

TIPS AND RECOMMENDATIONS

Partial learning cycle (Para. 16.15.3) will be used to rotate spindle.

Fig. 16.15.1 Keypad and display



16.15.1 Set braking circuit plug position

Fig. 16.15.1.1 ED250 PCB bracket assembly

1 Power switch
2 Braking circuit 3 pin socket

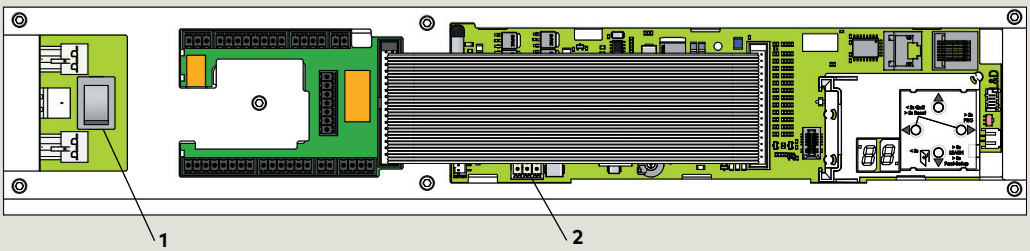


Fig. 16.15.1.2 Plug position, pull

1 Braking circuit plug
2 Braking circuit 3 pin socket

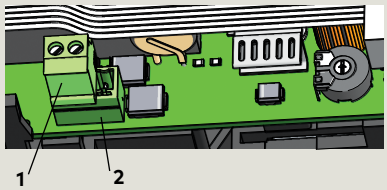
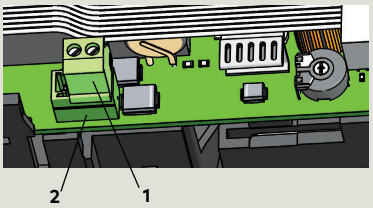


Fig. 16.15.1.3 Plug position, push

1 Braking circuit plug
2 Braking circuit 3 pin socket



16.15.1.1 Braking circuit plug

Braking circuit plug is positioned in its 3 pin socket for either a door pull or push configuration.

- **Braking circuit plug is factory installed in the left 2 pins, the pull position.** (Fig. 16.15.1.2).

NOTICE

Refer to Para. 16.15.2, configuration parameter **AS** (installation type) for door push and pull configurations.

⚠ 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!

16.15.1.2 Change braking circuit plug position.

To change plug position for push door application, install plug in right 2 pins, toward user interface (Fig. 16.15.1.3).

⚠ WARNING

Insure power switch is OFF before changing plug position!

16.15.2 Set AS installation type parameter

16.15.2.1 Power up ED250 controller.

	Set power switch to ON.
	After power on sequence, rotating "0" and a P indicate operator is ready for further settings.

16.15.2.2 Set AS, installation type parameter.

Step 1 Press ▶		Press and hold right button greater than 3 s to enter parameter mode; AS parameter displayed.
Step 2 Press ▶		Displays "00" , factory setting.
Step 3 Press ▶		"00" starts flashing.
Step 4 Press ▲▼		Scroll to select parameter value. "1" shown as example.
Step 5 Press ▶		Saves value entered. Display stops flashing.
Step 6 Press ◀		Returns to Installation type parameter.
Step 7 Press ◀		Exits parameter mode.

Table 16.15.2.1 AS parameter

	**Installation type, in-ground (IG)**
Parameter value	Parameter description
0*	IG - Arm and track, LH push
1	IG - Arm and track, RH pull
2	IG - N/A
3	Overhead concealed (OHC) RH In-ground cement case: Offset pivot arm, LH pull Center hung arm, pivot at right jamb, LH pull/in Center hung arm, pivot at left jamb, LH push/out
4	OHC, LH In-ground cement case: Offset pivot arm, RH pull Center hung arm, pivot at right jamb, RH push/out Center hung arm, pivot at left jamb, RH pull/in
*	Factory setting

Fig. 16.15.2.1 Arm and track, LH (push)

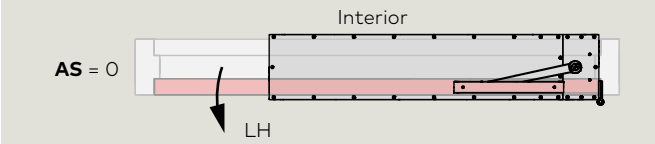


Fig. 16.15.2.2 Arm and track, RH (pull)

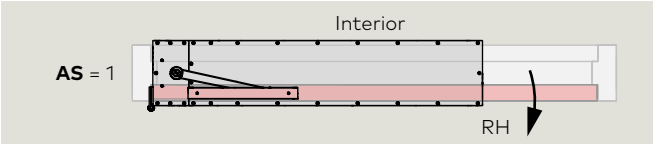


Fig. 16.15.2.3 Offset pivot arm, RH pull

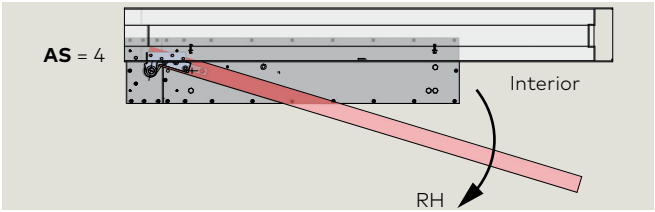


Fig. 16.15.2.4 Offset pivot arm, LH pull

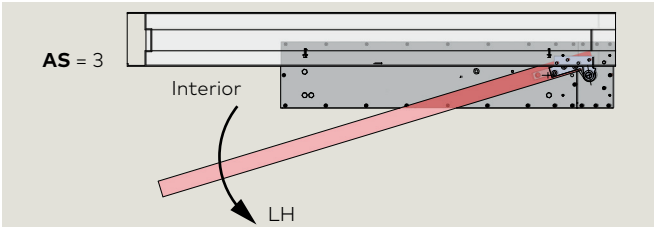


Fig. 16.15.2.5 Center hung arm, pivot at right jamb

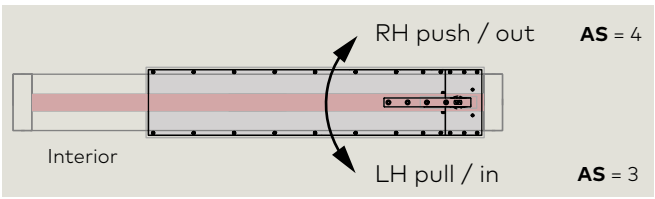
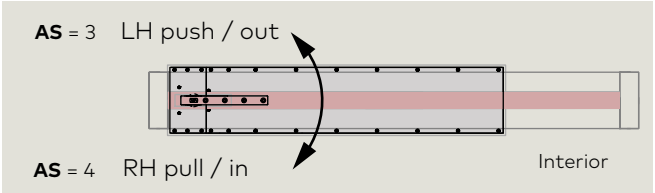
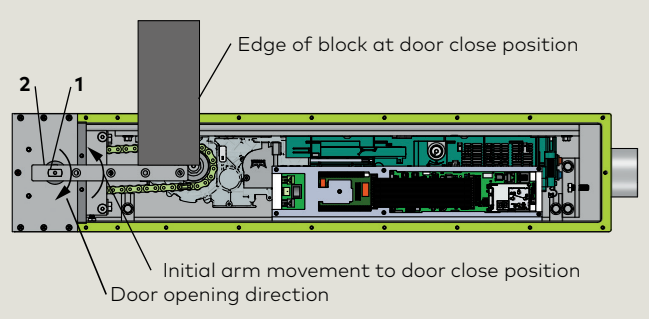


Fig. 16.15.2.6 Center hung arm, pivot at left jamb



16.15.3 Initiate learning cycle to rotate spindle to door hanging position

Fig. 16.15.3.1 Arm and cement case cover installed; center hung arm RH pull example



1 Spindle
2 Pivot arm (center hung arm shown as example)

Fig. 16.15.3.2 Center hung arm

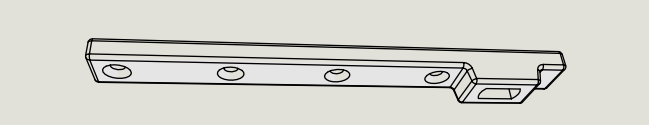


Fig. 16.15.3.3 Offset pivot arm

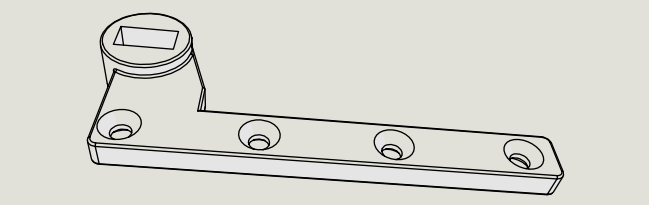


Fig. 16.15.3.4 Arm for slide track

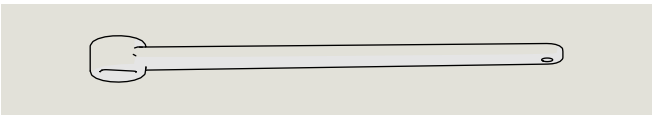
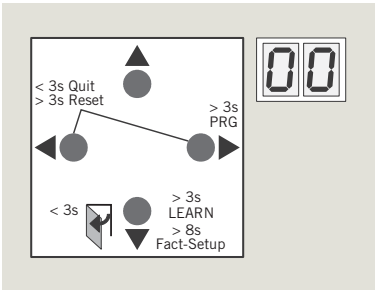


Fig. 16.15.3.5 User interface



CAUTION

Do not turn off power!
System is ready for door installation.

16.15.3.1 Install cement case cover and arm on spindle.

TIPS AND RECOMMENDATIONS

- Temporary installation of arm on spindle is required for learning cycle.
- When learning cycle is initiated, spindle first rotates to find door closed location. Since the door is not installed, a block (wood or other material) must be placed at the door closed location.

1. Secure arm to spindle with supplied hardware.
2. Place block on floor with edge of block in door closed location.

CAUTION

Block must be placed against arm in the arm door closing direction.

3. Block must not contact cement case gasket!

16.15.3.2 Initiate learning cycle to rotate spindle.

CAUTION

Braking circuit plug (Para. 16.15.1) and **AS** parameter (Para. 16.15.2) must be set before initiating partial learning cycle.

CAUTION

Temporary block must be secured or held in place at door closed location during learning cycle. Stay clear of arm travel path during learning cycle!

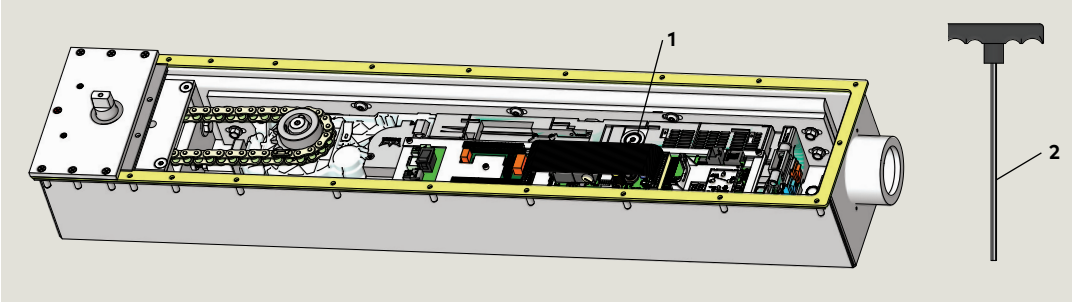
Step 1 Press ▼	Press and hold down button until display changes. • Spindle first rotates to door closed location. Display shows a sequence of symbols. • Spindle will start to rotate in door open direction.
Step 2 	• Spindle stops. • Display indicates spindle is at 70° position for hanging door.

16.15.3.3 Remove block.
16.15.3.4 Remove arm.

16.16 Set operator spring tension

1 Spring tension adjustment
2 T handle hex key, 5 mm

Fig. 16.16.1 Spring tension adjustment



16.16.1 Spring tension setting revolutions

Door width			
Inches	36	42	48
mm	914	1067	1219
Spring setting revolutions			
ED250	14	14	18

16.16.2 Operator spring tension function

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

16.16.3 Spring tension adjustment factory setting

1. Spring tension adjustment is factory set fully CCW, no spring tension.
2. Spring has to be pretensioned per Para. 16.16.1. Use 5 mm T handle hex key.

CAUTION

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

16.17 Install program switch panel Install RJ45 plate assembly (double doors only)

8 Program switch connector
9 Double door operator to operator communication cable
10 Dorma Handheld communication port

Fig. 16.17.1 Operator communication ports

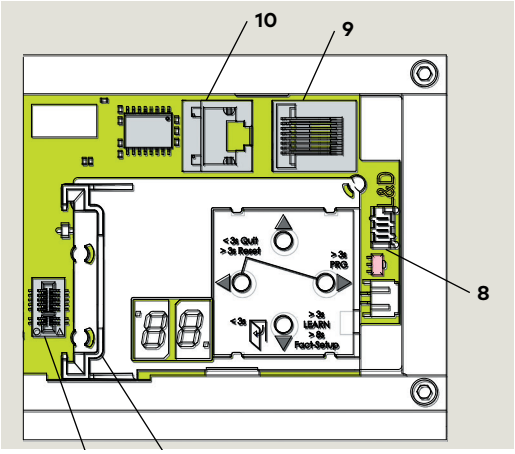
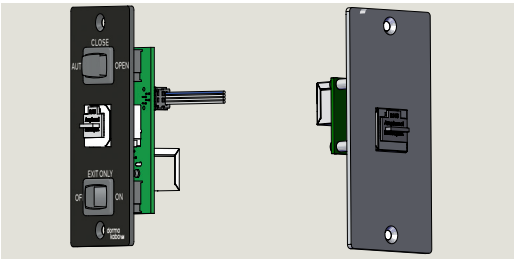


Fig. 16.17.2 Program switch panel and RJ 45 plate assembly



16.17.1 Program switch installation.

1. Install program switch at customer or contractor specified location.
2. Program switch panel and cables, Ref Chapter 5, Accessory mounting kits
   - Program switch
   - RJ 45 communication cable
3. Program switch and RJ45 communication cable must be routed to cement case accessory wiring conduit.

16.17.2 Double door program switch and RJ 45 panel installation

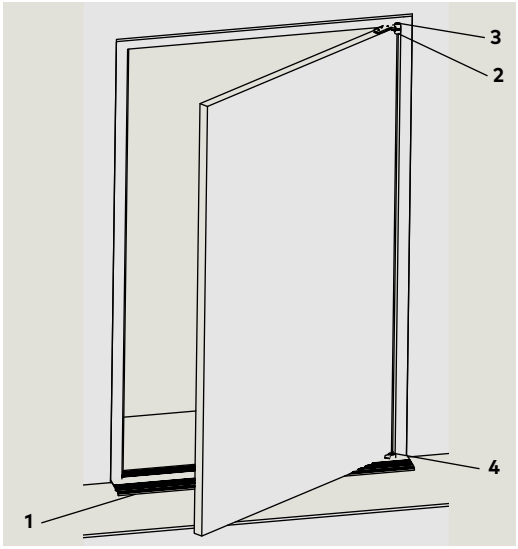
1. Install program switch at customer or contractor specified location.
2. Program switch panel and cable, Ref Chapter 5, Accessory mounting kits.
   - Program switch
   - RJ45 communication cable
3. Install RJ45 plate assembly at customer or contractor specified location.
4. RJ45 plate assembly and cable, Ref Chapter 5, Accessory mounting kits;
   - RJ plate assembly.
   - RJ 45 communication cable

16.17.3 Optional key switch panels.

Reference Appendix B for key switch panel wiring.

16.18 Hang door

Fig. 16.18.1 LH offset pivot door



1 Threshold
2 Door pivot hardware (by others)
3 Door frame pivot hardware (by others)
4 Offset pivot arm
5 Center hung arm

Note
Door and frame shown transparent for hardware views.

Fig. 16.18.2 LH center hung door

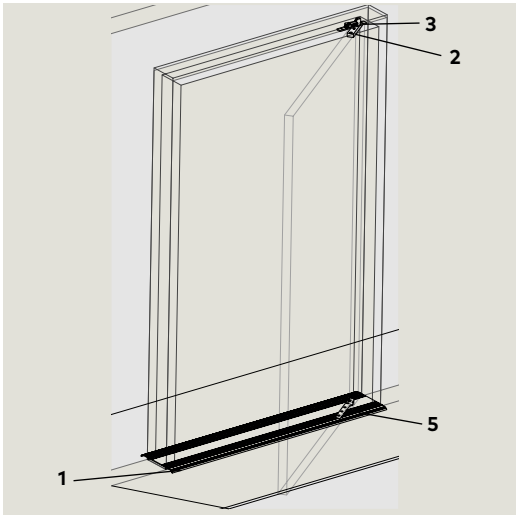
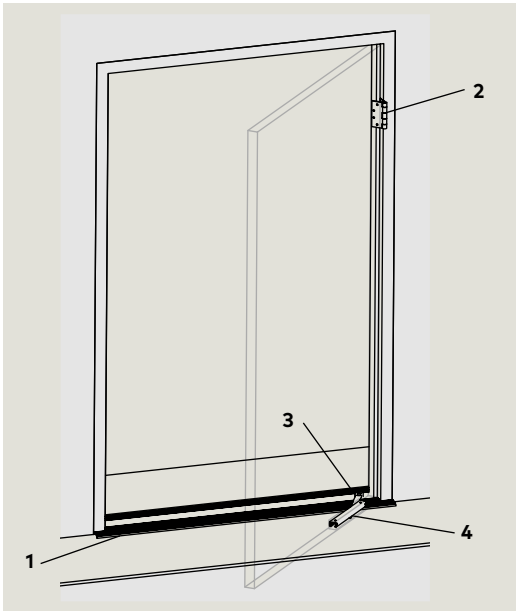


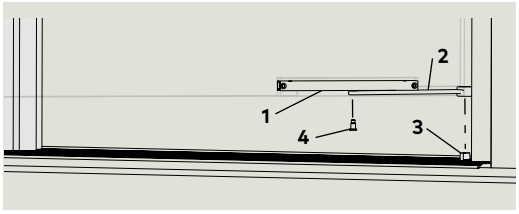
Fig. 16.18.3 LH slide arm and track door



1 Threshold
2 Butt hinge
3 Arm
4 Track

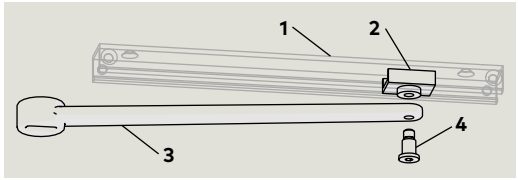
Note
Door and frame shown transparent for hardware views.

Fig. 16.18.4 Mounting track arm to spindle



1 Track
2 Arm
3 Spindle
4 Shoulder screw

Fig. 16.18.5 Arm and track assembly



1 Track
2 Slide
3 Arm
4 M8 shoulder screw

16.18.1 Door with pivot arm or center hung arm.

WARNING

Hand pinch point and crushing hazards!

TIPS AND RECOMMENDATIONS

Figures 16.18.1, 2 and 3 are shown as examples.

1. Tools; set of pry bars recommended.
2. Spindle rotated to 70 degrees (Para. 16.15.3).
3. Install arm on door bottom.
4. Hang door.
5. Fasten arm to spindle.
6. Insure door is parallel to jamb.

16.18.2 Double doors

1. Hang each door per Para. 16.18.1.

16.18.3 Door with track, installing door.

1. Mount arm to track slide in door using M8 shoulder screw. Using torque wrench with 5 mm hex key, torque screw to 12 ft-lb.
2. Insert arm slot into spindle as door is being installed.
3. Fasten arm to spindle.
4. Insure door is parallel to jamb.

16.14.4 Door threshold

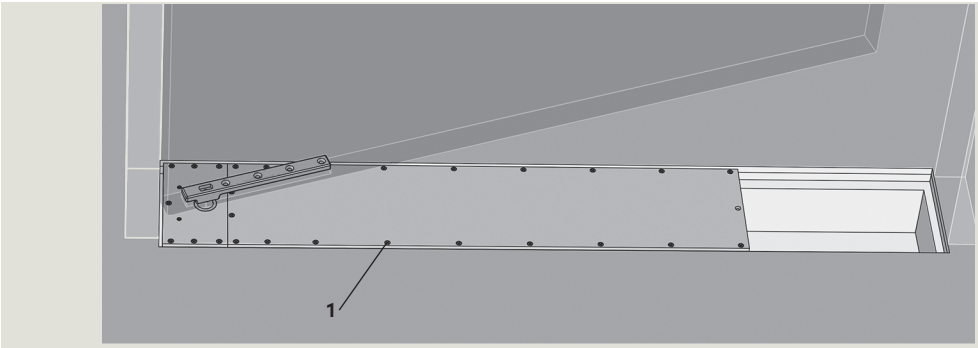
TIPS AND RECOMMENDATIONS

It is recommended to place door threshold over blockout and cement case to check door clearance before proceeding.

16.19 Reinstall cement case cover

Fig. 16.19.1 ED250 cement case with cover installed.

1 (21) 8-32 x 3/4" PFHMS (Phillips flat head machine screws)



CAUTION

Cover must be installed on cement case before final anchoring cement poured in concrete blockout.

16.19.1 Install cover.

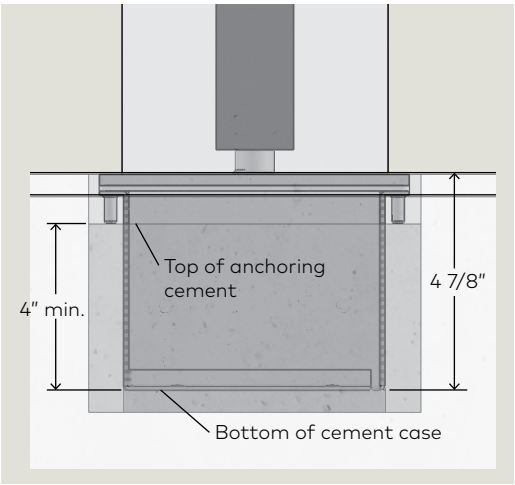
1. Insure gasket is clean, then place cover over gasket.
2. Install the twenty one 8-32 x 3/4"PFHMS securing the cover to the cement case. Hand tighten with No. 2 Phillips screwdriver.

CAUTION

Do not over tighten screws!

16.20 Final anchoring cement pour

Fig. 16.20.1 ED250 cement case end view, final anchoring cement pour



16.20.1 Final anchoring cement pour.

Center hung door shown as reference.

1. Door must be hung and in its final position.
2. Pour anchoring cement into blockout to a minimum depth of four inches from bottom of cement case.

CAUTION

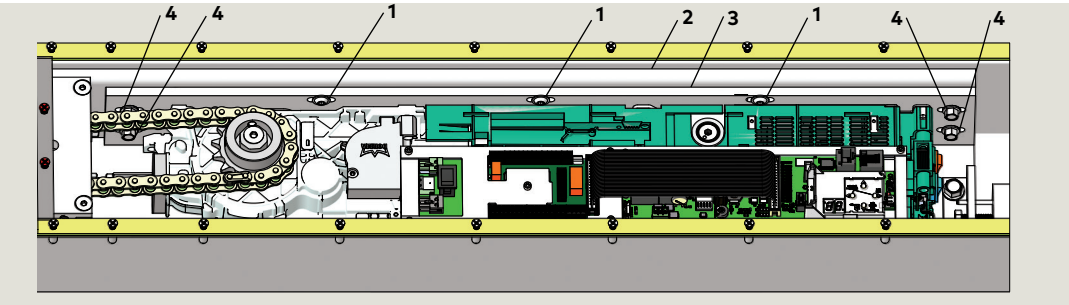
Allow cement to set for time period referenced in manufacturer's instructions.

16.21 Remove cement case cover for ED250 commissioning

16.21.1 Remove cement case cover.

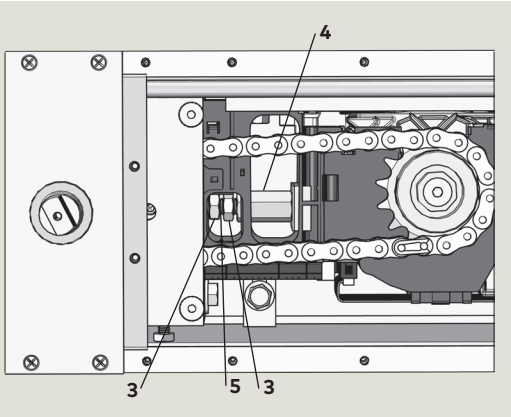
16.22 Cement case chain tension

Fig. 16.22.1 Operator mounting screws



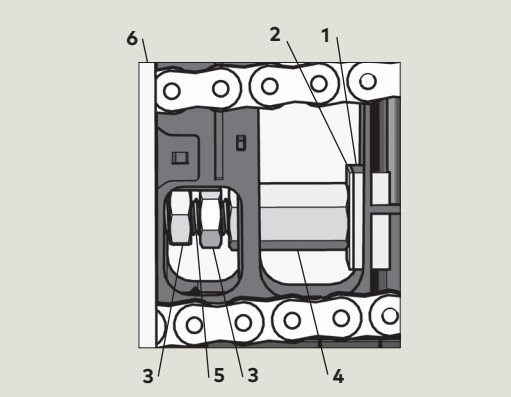
1 BHSCS (Flanged button head socket cap screw)
2 Operator mounting main extrusion
3 Spacer plate
4 1/4" x 5/8" FHCS (flanged head cap screw and washer)

Fig. 16.22.2 Chain tensioning adjustment



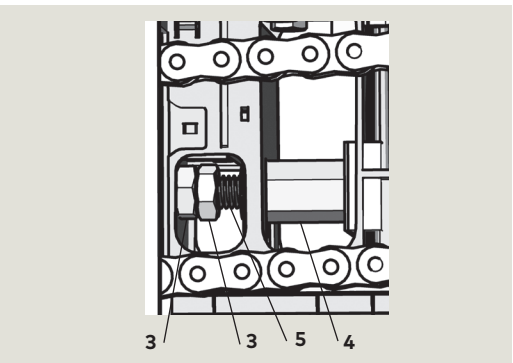
3 3/8" hex nut
4 Chain tension nut (3/8" x 1 1/4" hex standoff)
5 3/8" x 2" long threaded stud

Fig. 16.22.3 Hex nuts loosened for chain tensioning



1 3/8" thick pad
2 Plate for pad
3 3/8" hex nut
4 Chain tension nut (3/8" x 1 1/4" hex standoff)
5 3/8" x 2" long threaded stud
6 Gearbox side

Fig. 16.22.4 Hex nuts tightened after adjustment



3 3/8" hex nut
4 3/8" x 1 1/4" hex standoff (chain tension nut)
5 3/8" x 2" long threaded stud

16.22.1 Check chain tension.

Chain tension is set for a 3/8" deflection in chain when squeezed together.
Chain tension adjustment is accomplished by adjusting chain tension nut (**4**) on a threaded stud. This moves ED250 operator toward or away from spindle drive, loosening or tightening chain.

16.22.2 Chain tension adjustment procedure.

1. Loosen four 1/4" x 5/8" FHCS (**4**) and three BHSCS (**1**) that secure operator to spacer plate (Fig. 16.22.1).
2. Loosen both 3/8" hex nuts (**3**) on threaded stud (Fig. 16.22.3).
3. Adjust chain tension nut **(4**) CCW to tighten chain or CW to loosen chain until 3/8" deflection in chain when squeezed together (Fig. 16.22.3).
4. Tighten both 3/8" nuts (**3**) against gearbox side (Fig. 16.22.4).
5. Retighten operator mounting screws loosened in step 1 to secure operator against spacer plate.

16.23 Cement case spindle height adjustment

4 5/16" x 2" cup point set screw
5 5/16" x 5 1/2" cap screw
6 Adjustable plate
8 Spindle

Fig. 16.23.1 Height adjustment set screws

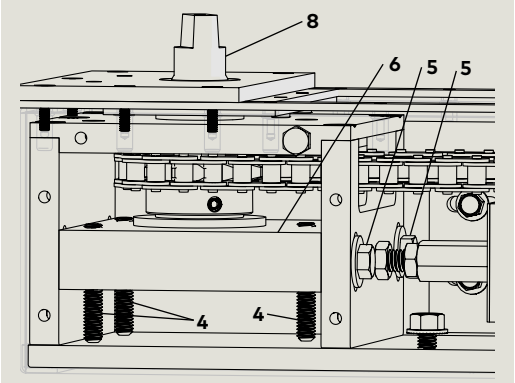


Fig. 16.23.2 Threaded post adjustment holes, 5/16" x 5 1/2" cap screws

1 Gearbox cover access hole for set screw
2 Top gearbox plate access hole for set screw
5 5/16" x 5 1/2" cap screw
6 Adjustable plate
7 Cement case cover
8 Spindle
9 Top gearbox plate

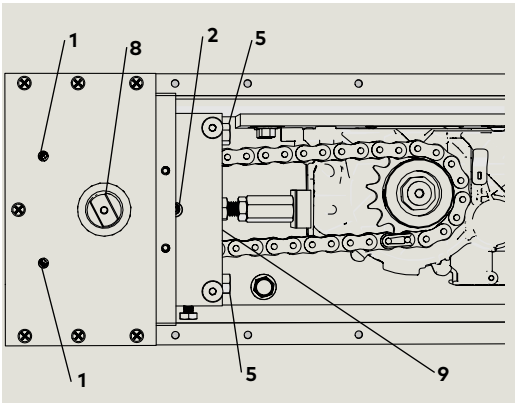
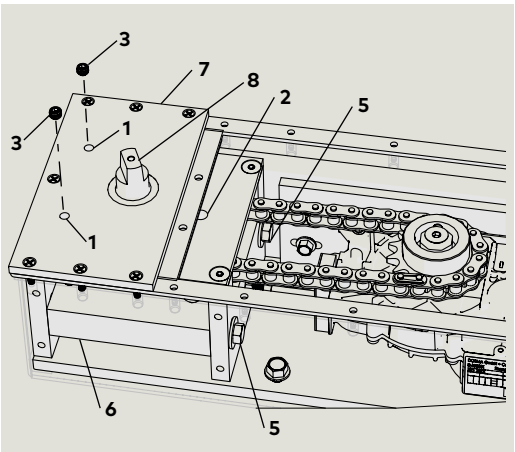


Fig. 16.23.3 Set screw removal

1 Cover access hole; set screw
2 Top gearbox plate access hole; set screw
3 Access hole set screw
5 5/16" x 5 1/2" cap screw
6 Adjustable plate
7 Cement case cover
8 Spindle



16.23.1 Spindle height adjustment.

Spindle bearing is mounted to adjustable plate (6).
Two 5/16" x 5 1/2: cap screws (**5**) secure the adjustable plate and spindle height in position.
Spindle height adjustment is accomplished by turning three 5/16" x 2" set screws (**4**) clockwise to raise the adjustable plate and counter clockwise to lower the adjustable plate.

16.23.2 Access holes for set screws.

1. Gearbox cover contains access holes **(1)** for two set screws (Fig. 16.23.2).
2. Top gearbox plate (9) contains access hole (**2**) for one set screw (Fig. 16.23.2).

16.23.3 Adjusting spindle height.

1. Remove two set screws (**3**) from gearbox cover access holes (1) using 5/32" T-handle hex key (Fig. 16.23.3).
2. Slightly loosen two 5/16" x 5 1/2" cap screws (**5**) using 9/16" socket.
3. Rotate the three cup point set screws (**4**) (Fig. 16.19.1) clockwise to raise spindle height and counter clockwise to lower height. Use 5/32" T-handle hex key.

- Turn each set screw an equal amount when adjusting spindle height.

16.23.4 Spindle height adjustment completed.

1. Tighten two 5/16" x 5 1/2" cap screws (**5**) using 9/16" socket (Fig. 16.23.3).
2. Reinstall two set screws (**3**) in cover access holes (Fig. 16.23.3).

16.24 Spindle centering

1 Spindle
1.1 Spindle gearbox
2 5/16" x 3/8" flange head cap screw
3 Slide mounting plate
4 1/4" x 3/4" cap screw
5 Gearbox top
6 5/16" x 1" cap screw
7 Block, operator mounting
8 Operator mounting main extrusion
9 Angle iron with threaded hole for (6)
10 Pad, operator mounting
12 Cement case

Fig. 16.24.1 Spindle centering hardware

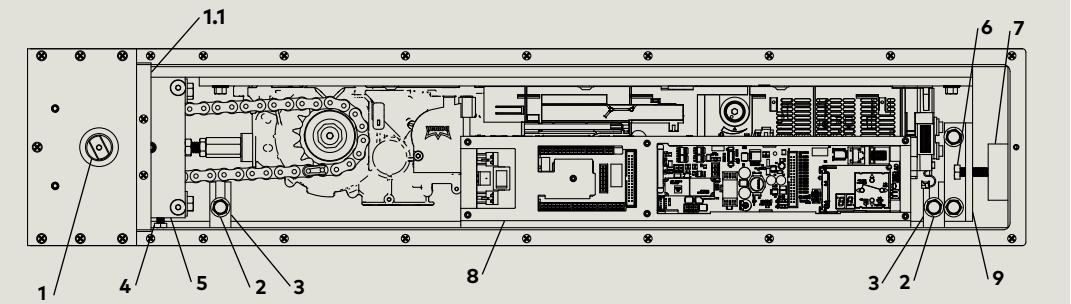
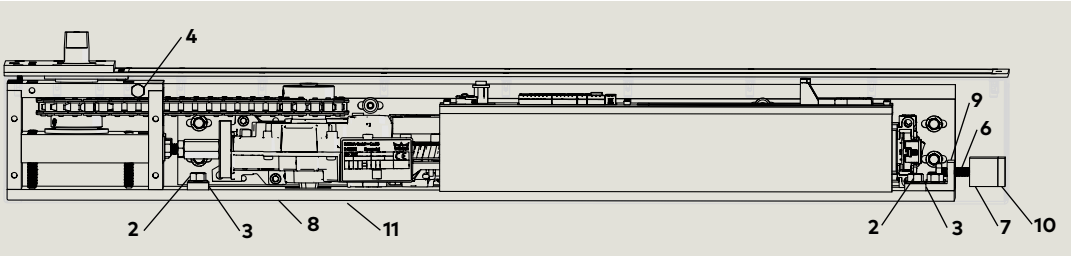


Fig. 16.24.2 Spindle centering hardware, cement case side view



CAUTION

Cement case adjustments include:
- Spindle height (Para. 16.23)
- Chain tension (Para. 16.22)

Para. 16.24 is reference information for establishing spindle center at factory.

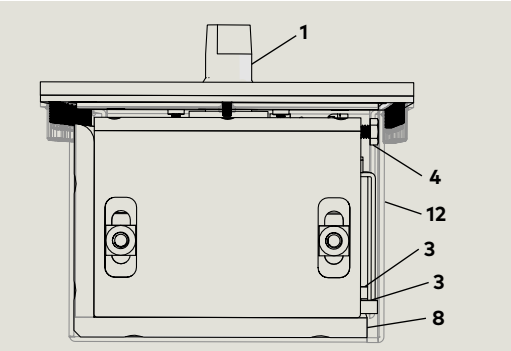
TIPS AND RECOMMENDATIONS

Cement case shown transparent for internal case views.

16.24.1 Spindle centering in cement case.
Spindle gearbox (Fig. 16.24.2, item 1.1) is secured to operator mounting main extrusion (Fig. 16.24.1 item 8).
Main extrusion location is set at factory against cement case sidewalls using adjustments in Para. 16.24.2 and .3.

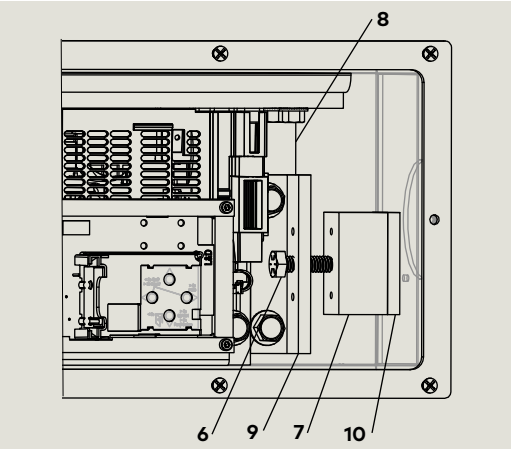
1 Spindle
2 5/16" x 3/8" flange head cap screw
3 Slide mounting plate
4 1/4" x 3/4" cap screw
8 Main extrusion, operator mounting
12 Cement case

Fig. 16.24.3 Spindle side adjustment



6 5/16" x 1" cap screw
7 Block, operator mounting
8 Operator mounting main extrusion
9 Angle iron with threaded hole for (6)
10 Pad, operator mounting
12 Cement case

Fig. 16.24.4 Spindle lateral adjustment



16.24.2 Operator mounting main extrusion side position against cement case.

1. Two side mounting plates (Fig. 16.24.3, item 3) are used as spacers holding extrusion against opposite cement case wall.

16.24.2.1 Main extrusion side position adjustment.

1. 1/4" x 3/4" cap screw (Fig. 16.24.3, item 4) is used to move extrusion against opposite cement case wall (factory adjustment).

16.24.3 Main extrusion lateral position.

1. 5/16" x 1" cap screw and operator mounting block and pad (Fig. 16.24.4, item 6,7 and 10).
2. Cap screw is adjusted against block and pad to hold position of main extrusion against end of cement case (factory adjustment).

17 Measure door width, set reveal depth

17.1 Door width parameter Tb

17.1.1 Door width parameter

Door width is set in increments of 100 mm (4"),
Measured width of 1000 mm (39.4") = **Tb** value of "10".
ED250: [914- 1219 mm] 36" - 48"

17.1.2 Record door width

Parameter Tb value	Door width measurement

17.2 Tb parameter values

17.2.1 ED250 IG door widths

Door width measurement			
Inches	[mm]	**Tb**	Width inches
36 to 39 15/16	[914] to [1014]	9	36
40 to 43 15/16	[1016] to [1116]	**10***	40

Door width measurement			
Inches	[mm]	**Tb**	Width inches
44 to 47 15/16	[1118] to [1218]	11	44
48 to 51 15/16	[1219] to [1319]	12	48

18 Set reveal depth

18.1 Reveal depth parameter rd

Parameter			Description	Reference paragraph
2	rd	rd	Reveal depth	Para. 17.2

18.1.1 Reveal depth parameter.

1. Reveal depth is set in increments of 10 mm (approximately 3/8").

18.1.2 Reveal depth parameter, center hung door.

1. Reveal depth: 0, **rd** = 0

18.1.3 Reveal depth parameter, offset pivot door.

1. Reveal depth: 3/4", **rd** = 2

18.1.4 Reveal depth parameter, arm and track.

1. Reveal depth: 1", **rd** = 3

18.2 rd parameter values

18.2.1 ED250 reveal depths, rd parameter

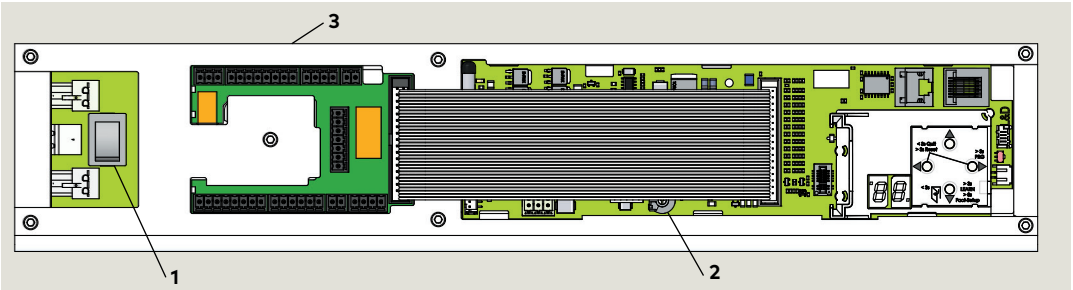
Reveal measurement		
ED250		
Inches	[mm]	**rd**
0	**0***	0
3/8	10	1
3/4	20	2
1 1/8	30	3

19 Power fail closing speed

19.1 Set power fail closing speed

Fig. 19.1.1 Power fail closing speed potentiometer

1 Power switch
2 Power fail closing speed potentiometer
3 PCB bracket assembly



19.1.1 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.

19.1.2 Setting door closing speed upon power failure.

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

TIPS AND RECOMMENDATIONS

Total door closing time from full open to fully closed should not be less than 5 seconds.

NOTICE

It is imperative that this door closing time be set.
If door closes in less than three seconds, error message **E 73** (System error 3, braking circuit) will be displayed.
Reference Service manual, Chapter 18, Troubleshooting.

20 Parameters

20.1 Parameters

20.1.1 Firmware version

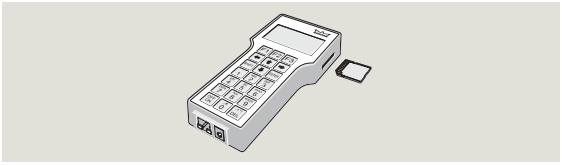
TIPS AND RECOMMENDATIONS

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

20.1.2 Firmware version and updates.

- Operator firmware version is displayed during first commissioning. Reference Chapter 21.
- dormakaba handheld can be used to check operator firmware version and to perform firmware updates. Reference Service Manual Chapter 20, dormakaba handheld, or dormakaba handheld manual.

Fig. 20.1.1 dormakaba handheld



20.1.3 Configuration parameters

Configuration parameters (Para. 20.1.6) are set during first commissioning.

- Parameter AS, installation type is set in initial spindle rotation. Reference para.16.15.2.
- Refer to Para. 20.1.8 for configuration parameter detail.

20.1.4 Driving parameters

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

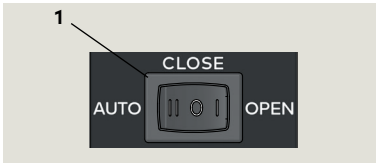
- Reference Para. 20.1.7 for a list of driving parameters.
- Reference ED250 Service Manual Chapter 17 for details on each driving parameter.

20.1.5 Changing parameter values

1. Set program switch in CLOSE position (or no program switch).

Fig. 20.1.2 Program switch

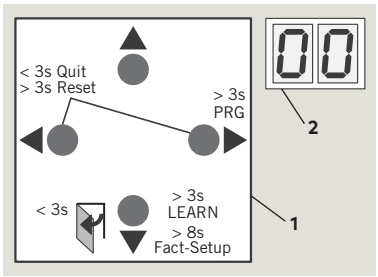
1 Program switch, 3 position



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

Fig. 20.1.3 4 button keypad, 2 digit display

1 4 button keypad
2 2 digit display



Step 1 ▶	Press and hold 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.

20.1.6 Configuration parameters

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

20.1.7 Driving parameters

Reference Service Manual, Chapter 17 for parameter details.

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 (v1.9)
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		Keep closed force
22	PG		Push and Go
23	PS		Program switch type
24	S1		DCW® EPS, electronic program switch behavior following a power reset
25	S2		Internal program switch, switch function on delay
26	du		Door unlocking during business hours
27	Sr		Status relay function, terminal block X7

Driving parameter			Description
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
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 (v1.9)
38	F1		Upgrade card, fire protection
39	F2		This paragraph left intentionally blank.
40	F3		Professional upgrade card, flip flop function, night/bank
41	F4		Professional upgrade card, extended hold open time
42	F5		Professional upgrade card, nurse-bed function (double doors only)
43	F7		Upgrade card, barrier free toilet
44	F8		Upgrade card, DCW I/O module
45	C1		Configuration of COM 1 interface
46	bc		Backcheck angle when door opened manually
47	Td		Door thickness [mm]
48	d1		Deactivation of drive, emergency pushbutton at X4, 4 and 4a, trigger type (v1.7)
49	d2		Night/bank function, trigger type (v1.7)
50	FC		Hold open system release by manually closing door, trigger type (v1.7)
51	Ad		Active door with astragal caster angle. The angle door must reach before passive door starts to open
52	HS		Hinge clearance
53	S3		Overhead concealed mode (OHC); permanent open via night-bank input (v2.1)..
54	S4		OHC mode; manual force overload drive release (v2.1). I

20.1.8 Configuration parameters, detail

Parameter and value range, factory setting = **bold**.	Parameter description
1  0 - 4 **0**	**Installation type** Reference Para. 16.15.2 for AS parameter detail.
2  ED250 -3 to 50 **0**	**Reveal depth** **0** Reveal is set in increments of 10 mm (3/8"). Reference Chapter 17, reveal depth.
3  Tb ED250 7 to 12 **10**	**Door width** **10** Door width is set in increments of 100 mm (4"), "10" = 1000 mm (39.4"). Reference Chapter 17, door width.
4  0 to 4 **0**	**Door type** **0** Single door 1 Double door • Overlapping door (with astragal) • Active door operator. 2 Double door • Overlapping door (with astragal) • Passive door operator. 3 Double door • Edgeless door (no astragal) • Active door operator. 4 Double door • Edgeless door (no astragal) • Passive door operator.

20.1.9 Driving parameters - adjustments for low energy operation, detail.

TIPS AND RECOMMENDATIONS

Reference Chapter 36, ANSI/BHMA Standards, Para. 36.2 for ANSI/BHMA A156.19 low energy power operated door requirements.

Parameter and value range, factory setting = **bold**.	Parameter description
1  8 to 60 **25**	**Opening speed, automatic mode** **25** Parameter adjustment is in °/sec. **Maximum opening speed is 27°/s in low energy mode.**
2  8 to 60 **25**	**Closing speed, automatic mode** **25** Parameter adjustment is in °/sec. **Maximum closing speed is 27°/s in low energy mode.**
2  Newtons 2 to 15 N: *10 **6** lb-f: .45 to 3.4 *10 **1.35**	**Static force in opening direction** **6** Static force is set in Newtons. Display value multiplied by 10 for actual force. 1 Newton = .22 lbf. 60 Newtons = 13.5 lbf **Maximum static force is 15 lbf in low energy mode measured 1" from latch edge of door at any point in during opening or closing.**
3  Newtons 2 to 15 N: *10 **6** lb-f: .45 to 3.4 *10 **1.35**	**Static force in closing direction** **6** Static force is set in Newtons. Display value multiplied by 10 for actual force. 1 Newton = .22 lbf. 60 Newtons = 13.5 lbf **Maximum static force is 15 lbf in low energy mode measured 1" from latch edge of door at any point in during opening or closing.**

21 Single door first commissioning

21.1 First commissioning

Fig. 21.1.1 Program switch

1 Program switch, 3 position

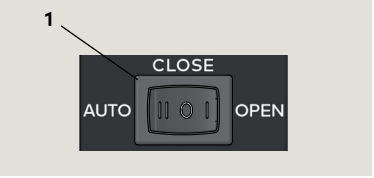


Fig. 21.1.2 Power switch

2 Power switch

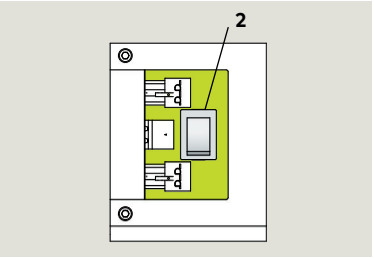


Fig. 21.1.3 4 button keypad, 2 digit display

3 Four button keypad
4 Two digit display

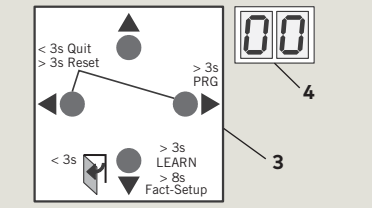


Fig. 21.1.4 2 digit displays on power up

Two digit displays
5 System check
6 Self check
7 Horizontal dashes up and down

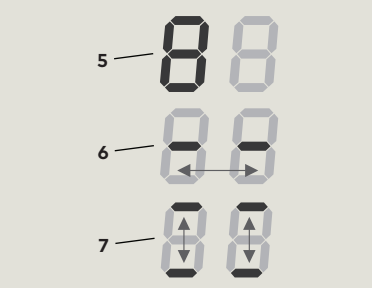


Fig. 21.1.5 Device ID, firmware version display

8 Device ID, firmware version display

Fig. 21.1.6 Program mode

9 Program mode display

21.1.1 Conditions prior to commissioning.

1. Door installed.
2. 115 Vac branch circuit to operator is energized.
3. Operator motor is cold.

CAUTION

Motor must be cold for commissioning!

21.1.2 Program switch to CLOSE position.

1. Set program switch (**1**) to CLOSE position (or no program switch).

21.1.3 Power switch to ON position.

1. Set power switch (**2**) to ON position.

- System check, series of letters and numbers rapidly displayed (**5**).
- Control unit self check, two segments jumping back and forth (**6**).
- Horizontal dashes move up and down (**7**).

21.1.4 4 button keypad down button

1. Press four button keypad down button:

- While 2 digit display segments move up and down (**7**), letters and numbers will change if required to display correct orientation.

2. Display scrolls (**8**):

- Device ID (Ed 250)
- Firmware version (format F x x x x)

3. Program mode display:

- Program mode (**9**) will be displayed indicating system requires further parameter settings.

TIPS AND RECOMMENDATIONS

If pressing down button (Para. 21.1.4) does not result in desired display orientation, return to Para. 21.1.2, turn power button off, then on to repeat commissioning steps.

21.2 Set configuration parameter

21.2.1 Parameter AS, installation type.

Parameter AS set during initial spindle rotation for hanging door (Para. 16.15.2).

21.2.2 Set parameter rd, reveal depth.

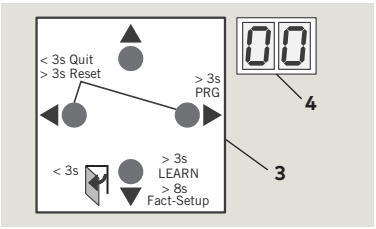
Step 1 Press ▶	AS	Press and hold right button greater than 3 sec. to enter parameter mode; AS parameter displayed.
Step 2 Press ▼	rd	Scroll to **rd** parameter.
Step 3 Press ▶	00	Displays "00" , factory setting.
Step 4 Press ▶	00	"00" starts flashing.
Step 5 Press ▲▼	00	If required, scroll to select parameter different parameter value.
Step 6 Press ▶	00	Saves value entered. Display stops flashing.
Step 7 Press ◀	rd	Returns to reveal depth parameter.

TIPS AND RECOMMENDATIONS

Reference Chapter 18 for reveal depth parameter values.

Fig. 21.2.1 4 button keypad, 2 digit display

3 Four button keypad
4 Two digit display



21.2.3 Set parameter Tb, door width.

Step 8 Press ▼	rb	Scroll to **Tb** parameter.
Step 9 Press ▶	10	Displays "10" , factory setting.
Step 10 Press ▶	10	"10" starts flashing.
Step 11 Press ▲▼	12	Scroll to select parameter value. "7" shown as example.
Step 12 Press ▶	12	Saves value entered. Display stops flashing.
Step 13 Press ◀	rb	Returns to door width parameter. If single door, exit program mode (Step 14).
Step 14 Press ◀	0	Exits parameter mode. Display indicates "ready for learning cycle".

TIPS AND RECOMMENDATIONS

Reference Chapter 17 for door width parameter values.

21.2.4 Parameter dL, door type.

TIPS AND RECOMMENDATIONS

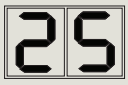
Parameter **dL** factory setting is 0, single door. Reference Chapter 22 for double door commissioning.

21.3 Verify driving parameters for low energy operation

⚠ WARNING

Parameters for ED250 In-ground must be configured for low energy operation!

21.2.2 Verify driving parameter factory settings for low energy operation.

Step 1 Press ▶		Press and hold right button greater than 3 sec. to enter parameter mode; AS parameter displayed.
Step 2 Press ▼		Scroll to **So** parameter. Opening speed, automatic mode.
Step 3 Press ▶		Displays "25" , factory setting. **Maximum parameter value in low energy mode is 27**
Step 4 Press ◀		Returns to So parameter.
Step 5 Press ▼		Scroll to **Sc** parameter. Closing speed, automatic mode.
Step 6 Press ▶		Displays "25" , factory setting. **Maximum parameter value in low energy mode is 27**
Step 7 Press ◀		Returns to Sc parameter.
Step 8 Press ▼		Scroll to **Fo** parameter. Static force in opening direction.
Step 9 Press ▶		Displays "06" , factory setting. **Maximum parameter value in low energy mode is 6 Newtons (15 lbf)**
Step 10 Press ◀		Returns to So parameter.
Step 11 Press ▼		Scroll to **Fc** parameter. Static force in closing direction.
Step 12 Press ▶		Displays "06" , factory setting. **Maximum parameter value in low energy mode is 6 Newtons (15 lbf)**
Step 13 Press ◀		Returns to Fc parameter.
Step 14 Press ◀		Exits parameter mode. Display indicates "ready for learning cycle".

TIPS AND RECOMMENDATIONS

Adjustments to these and other driving parameters can be made once door learning cycle has been completed.

21.3 Perform learning cycle

CAUTION

Learning cycle must be performed while motor is cold!

CAUTION

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

CAUTION

Verify that the following parameters have been set (Para. 20.1.6):

- **AS**, Installation type
- **rd**, Reveal depth
- **Tb**, Door width
- **dL**, Door type (double doors only)

TIPS AND RECOMMENDATIONS

During learning cycle:
- Operator functions are deactivated.

Step 1	Secure motion range of door.

WARNING

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

Step 2 	Set program switch to CLOSE position.
	Rotating "0" and an O indicate operator is ready for learning cycle.
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 maximum opening angle (maximum door angle: 110°).
Step 5 Press ▼	Momentarily press down button to continue learning cycle.

CAUTION

Insure there are no obstacles to door movement!

	• Door performs several movements and display shows a sequence of symbols. • Movements of door must not be interrupted!
	• Spring tension is too low if door stops and display shows a small rotating "o" and an "F".
Step 6	If spring tension is too low:: • Turn off power and push or let door close. • Increase spring tension (Para. 16.16), turn on power and restart learning cycle (Step 3).
	Door will complete learning cycle. • Display with two horizontal bars indicate operator is ready for operation.
Step 7 Press ▼	Momentarily press down button to cycle door.
Step 8	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 24.
Step 9 	Set program switch to Auto.

22 Double door first commissioning

22.1 Separately commission active and passive doors

22.1.1 Commission active door first.
Refer to Chapter 21, Single Door First Commissioning.

22.1.2 Commission passive door.
Refer to Chapter 21, Single Door First Commissioning.

22.2 Set operator parameters for double door operation

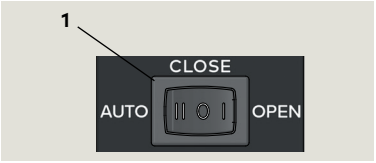
22.2.1 Active door, set parameters dL and Ad.

1. Set program switch to CLOSE.
2. Set parameters dL (door type) and Ad (castor angle) for active door.

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

Fig. 22.1.1 Program switch

1 Program switch, 3 position



Step 1 Press ▶	AS	Press and hold right button greater than 3 s to enter program mode, AS parameter displayed.
Step 2 Press ◀	dL	Scroll to **dL** parameter.
Step 3 Press ▶	00	Displays "00" , factory setting.
Step 4 Press ▶	00	"00" starts flashing.
Step 5 Press ▲▼	01	Scroll to select parameter value ("1" as an example).
Step 6 Press ▶	01	Saves value entered. Display stops flashing.
Step 7 Press ◀	dL	Returns to door type parameter.
Step 8 Press ▼	Ad	Scroll to Ad parameter.

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

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

22.2.2 Passive door, set parameter dL.

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

Step 1 Press ▶	AS	Press and hold right button to enter program mode, AS parameter displayed.
Step 2 Press ▼	dL	Scroll to **dL** parameter.
Step 3 Press ▶	00	Displays "00" , factory setting.
Step 4 Press ▶	00	"00" starts flashing.
Step 5 Press ▲▼	03	Scroll to select parameter value ("3" as an example).
Step 6 Press ▶	03	Saves value entered. Display stops flashing.
Step 7 Press ◀	dL	Returns to door type parameter.
Step 25 Press ◀	- -	Exits program mode. Operator is ready for operation.

22.3 Connect communication cable between operators

1 RJ45 jack (horizontal) for communication cable

Fig. 22.3.1 Double door operators, RJ45 jack for communication cable

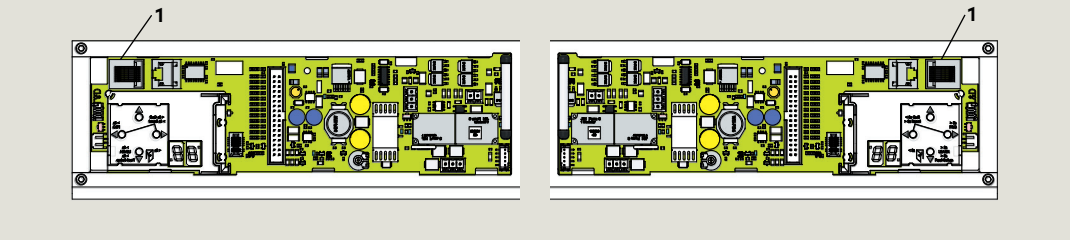


Fig. 22.3.2 Communication cable

2 Communication cable, 10' long DX4607-020

3 RJ45 plug

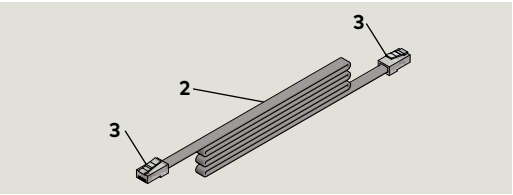
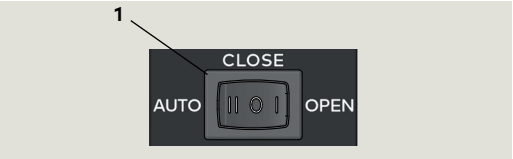


Fig. 22.3.3 Program switch

1 Program switch, 3 position



24.3.1 Install communication cable

1. Set program switch to CLOSE.
2. Install and route communication cable between the two cement cases using the PVC conduit.
3. Connect communication cable to active and inactive operator RJ45 horizontal jacks.
4. Secure cable inside each cement case.

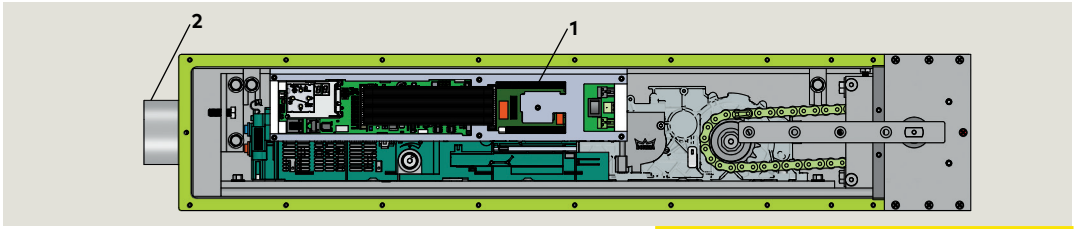
24.3.2 Test door operation

1. Set program switch to AUTO.
2. Test double door operation.

23 Connect accessory wiring

23.1 Connect accessory wiring, single door

Fig. 23.1.1 Accessory wiring terminal board



1 Accessory wiring terminal board
2 Accessory wiring PVC reducer fitting

23.1.1 Connect accessory wiring.

TIPS AND RECOMMENDATIONS

- Reference Chapter 11, System Accessories.

1. Terminate all accessory wiring at ED250 terminal board.
2. Secure all accessory wiring in cement case away from ED250 operator, gearbox, and chain.

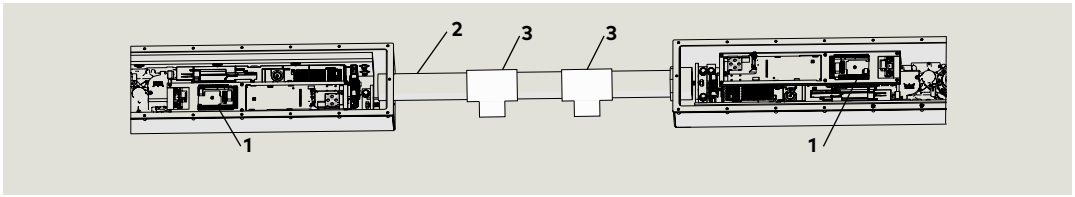
CAUTION

All accessory wiring to ED250 operator must be completed, and accessories tested, before cement case cover is installed (Chapter 25).

23.1.2 Test system accessories.
Test functionality of all accessories.

23.2 Connect accessory wiring, double doors

Fig. 23.2.1 Accessory wiring terminal boards, double door



1 Accessory wiring terminal board
2 Accessory wiring PVC pipe
3 Tee fittings (by others)

23.2.1 Connect accessory wiring.

TIPS AND RECOMMENDATIONS

- Reference Chapter 11, System Accessories.

1. Terminate all accessory wiring at ED250 terminal boards in both cement cases.
2. Secure all accessory wiring in cement cases away from ED250 operator, gearbox, and chain.

CAUTION

All accessory wiring to ED250 operators must be completed, and accessories tested, before cement case covers are installed (Chapter 25).

23.2.2 Test system accessories.
Test functionality of all accessories.

24 ANSI/BHMA standards

24.1 A156.19 Low energy power operated doors

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

Reference ED250 service manual for additional parameter detail.

24.1.1 Door measurements, low energy power operated door

ED250 Parameter					A156.19 standard	
Parameter		Function	Factory setting	Adjustment range	Para.	Requirement
So	Opening speed	Swing door opening speed	25°/s Note 1	ED250 8°/s - 27°/s	4.2	Opening Doors shall open from closed to back check or 80°, whichever occurs first, in 3 seconds or longer as required in Table I. Total opening time to 90° shall be as in Table II (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°	4.2	Backcheck shall not occur before 60° opening.
Sc	Closing speed	Swing door closing speed, automatic mode.	25°/s Note 1	ED250 8°/s - 27°/s	4.4	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	4.3	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 ED250 service manual for parameter detail.	Support for manual mode in door closed position.			4.5	Doors shall open: • With a manual force not to exceed 15 lb f to release a latch if equipped with a latch. • To set a door in motion 30 lb f. • To fully open the door 15 lb f. • Forces shall be measured 1" from latch edge of door.
hA		Adjustment, door activation angle.				
hF		Power assist function.				
Fo	Static force in opening direction	Static force on door closing edge in opening direction.	13.5 lb f	4.5 lb f - 15 lb f	4.5	The force required to prevent a stopped door from opening or closing shall not exceed 15 lb f 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.	13.5 lb f	4.5 lb f - 15 lb f	4.5	

Note 1: Speed may be slower after learning cycle completed.
Note 2: Speed limited to 27°/s in low energy mode.

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

"D" door width, inches	"W" door weight, pounds				
	100	125	150	175	200
36	3.0 s	3.5 s	3.5 s	3.0 s	3.0 s
42	3.5 s	4.0 s	4.0 s	4.5 s	4.5 s
48	4.0 s	4.5 s	4.5 s	5.0 s	5.5 s
Minimum opening time to backcheck or 80 degrees (whichever occurs first). Minimum closing time from 90 degrees to latchcheck or 10 degrees (whichever occurs first).					

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

Backcheck at 60°	Backcheck at 70°	Backcheck 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.		
Backcheck occurring at a point between positions shall use lowest setting.		

24.1.4 Other door weights and widths

Closing time $T = (D \sqrt{W})/188$

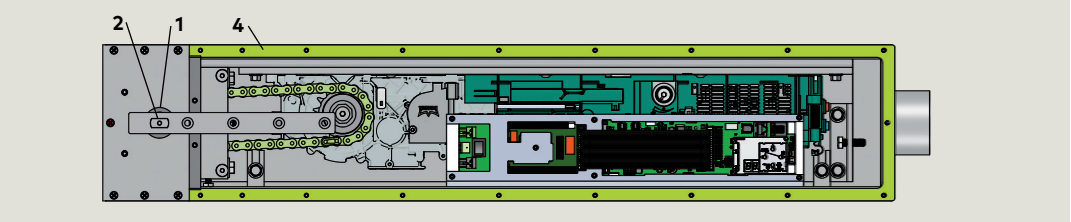
D = Width of door in inches.

W = Weight of door in pounds.

T = Closing time to latch check in seconds.

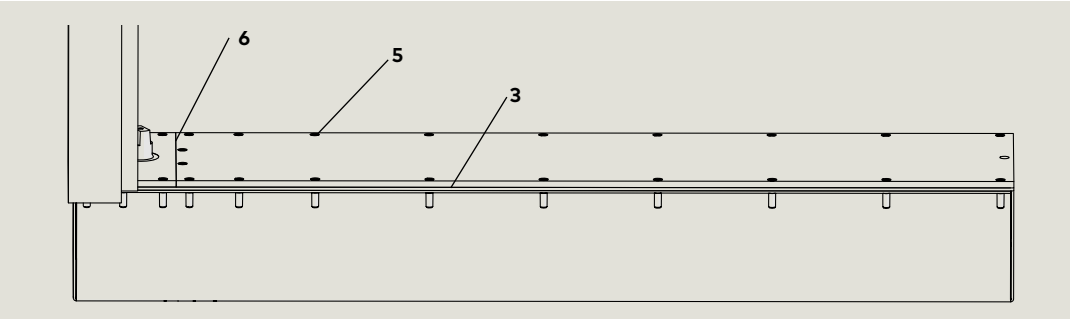
25 Install cement case cover

Fig. 25.1.1 Cement case with cover off



1 Spindle shaft seal
2 Spindle
4 Cement case gasket

Fig. 25.1.2 Cement case with cover on



3 Cement case gasket
5 8-32 x 3/4" PFHMS
6 Cover seam

25.1 Install cement case cover

25.1.1 Cement case checks

Program switch in Open position.

1. Check spindle seal installation.
2. Clean cement case of all debris.
3. Check roller chain tightness for 3/4" deflection when chain squeezed together.
4. All case penetrations other than liquidtight conduit fittings sealed with Permatex No. 2.
5. All accessory wiring secured. No wiring adjacent to or in contact with moving parts.
6. 115 Vac wiring secured. No wiring adjacent to or in contact with moving parts.
7.

25.1.2 Clean and align gasket

1. Clean gasket
2. Align gasket with cement case mounting holes.

25.1.3 Install cover

1. Place cover on cement case gasket
2. Install and tighten the twenty one 8-32 x 3/4" PFHMS securing the cover to the cement case.
3. Use a Phillips No. 2 screwdriver to tighten the screws.

CAUTION

Do not over tighten screws!

25.1.4 Seal seam between spindle and cement case covers.

1. Seal cover seam with Permatex No. 2.

26 Install door threshold

26.1 Install door threshold

Fig. 26.1.1 Threshold example for ED250 in-ground

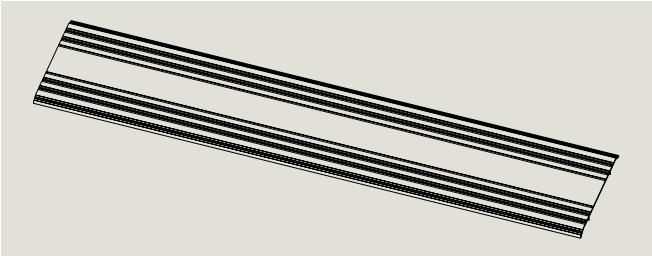


Fig. 26.1.2 Threshold installed example for ED250 in-ground

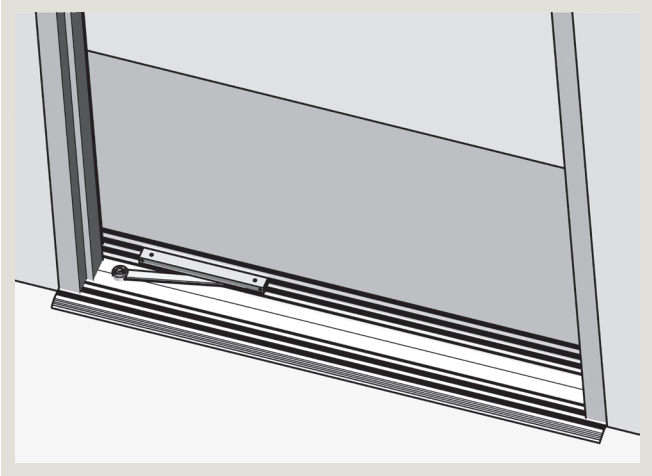
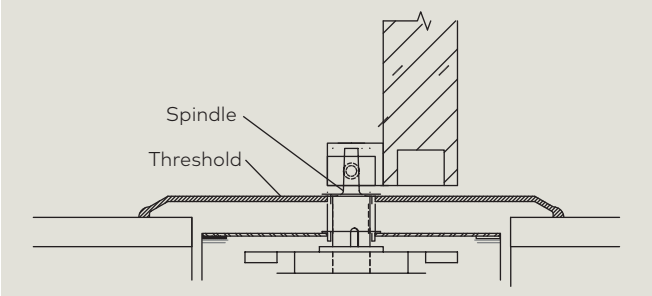


Fig. 26.1.3 Threshold installed end view example



NOTICE

- Threshold supplied by customer / contractor.
- Customer / contractor installation responsibility.

NOTICE

Refer to Warranty Guidelines, page 3 for threshold manufacturing and installation requirements.

CAUTION

- Cement case cover must be installed and sealed (Chapter 24).
- Blockout should be free of debris.

26.1.1 Install threshold over blockout and cement case.

CAUTION

Threshold fasteners cannot contact cement case or cement case covers.

26.1.2 Threshold seal at spindle.

CAUTION

Spindle opening at threshold must be sealed with an O-ring or similar device.

26.1.2.1 Seal perimeter of threshold.

1. Seal entire perimeter of threshold with silicone sealant.

27 Install door signage

27.1 Install door signage

27.1.1 Install door signage based on type of door installation.

Install applicable door signage as outlined in Chapter 12, ED250 door signage.

28 Upgrade cards

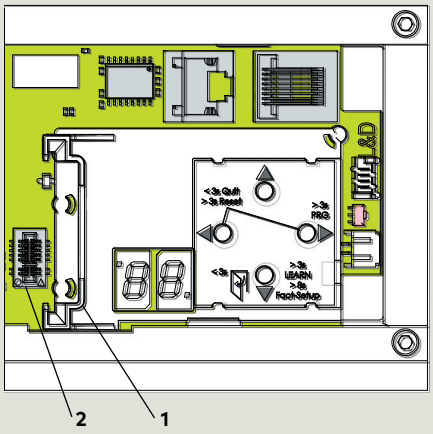
28.1 Upgrade cards

28.1.1 Upgrade card installation

dormakaba USA Inc. upgrade cards can be used to expand the range of functions of the ED250 operator.
When upgrade cards are installed, information is exchanged between and permanently allocated to both the operator control unit and the upgrade card.

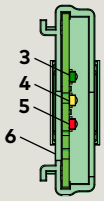
Fig. 28.1.1 Upgrade card slot and socket

1 Upgrade card slot
2 Upgrade card socket



Status LEDs
3 Green LED
4 Yellow LED
5 Red LED
6 Upgrade card professional (green)

Fig. 28.1.2 Upgrade card status LEDs



28.1.2 Upgrade cards

Upgrade card		Upgrade card color
Fire protection	ED250	Transparent red
Professional	ED250	Green
DCW®	ED250	Yellow
Barrier free toilet	ED250	

28.2 Container module

28.2.1 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.

28.2.2 Container module removal

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

28.2.3 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.

28.2.4 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.

28.2.5 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.

28.2.6 Container module defective

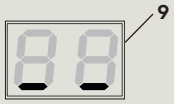
- Upgrade cards that were installed after the container module must be reinstalled.

28.3 Installing upgrade cards

28.3.1 Set program switch to CLOSE.

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

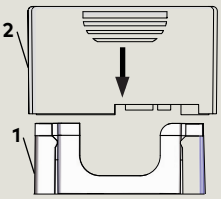
Set program switch to Close.



Horizontal bars indicate controller in stand by mode.

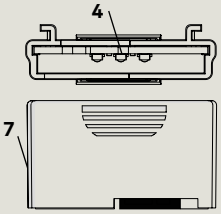
28.3.2 Installing first upgrade card

1 Upgrade card slot
2 First upgrade card



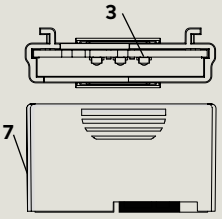
1. Insert first upgrade card into upgrade card slot.
2. This card will become container module.

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.

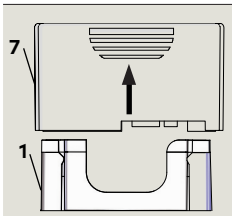
- Upgrade card function is now available.

3 Green LED
7 Container module

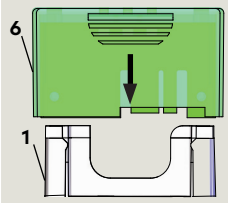
TIPS AND RECOMMENDATIONS

Container module can be configured using applicable parameter (F1 - F8) for card. Reference ED250 Service Manual, Chapter 17.

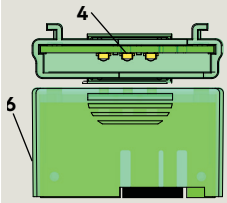
28.3.3 Installing additional upgrade cards



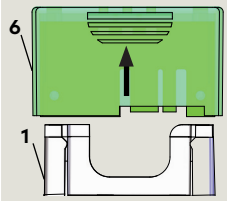
1. Remove container module from upgrade card slot.



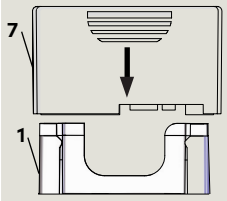
2. Insert next upgrade card into upgrade card slot.



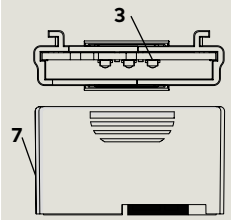
- Card function is copied to control module; upgrade card is then invalidated.
- Yellow LED indicates procedure is complete.



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.

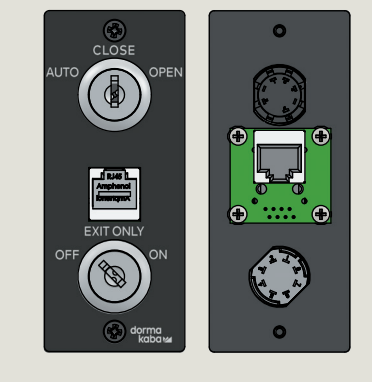
TIPS AND RECOMMENDATIONS

New upgrade card can be configured using applicable parameter (F1 - F8) for card. Reference ED250 Service Manual, Chapter 17.

Appendix A - Wiring diagrams

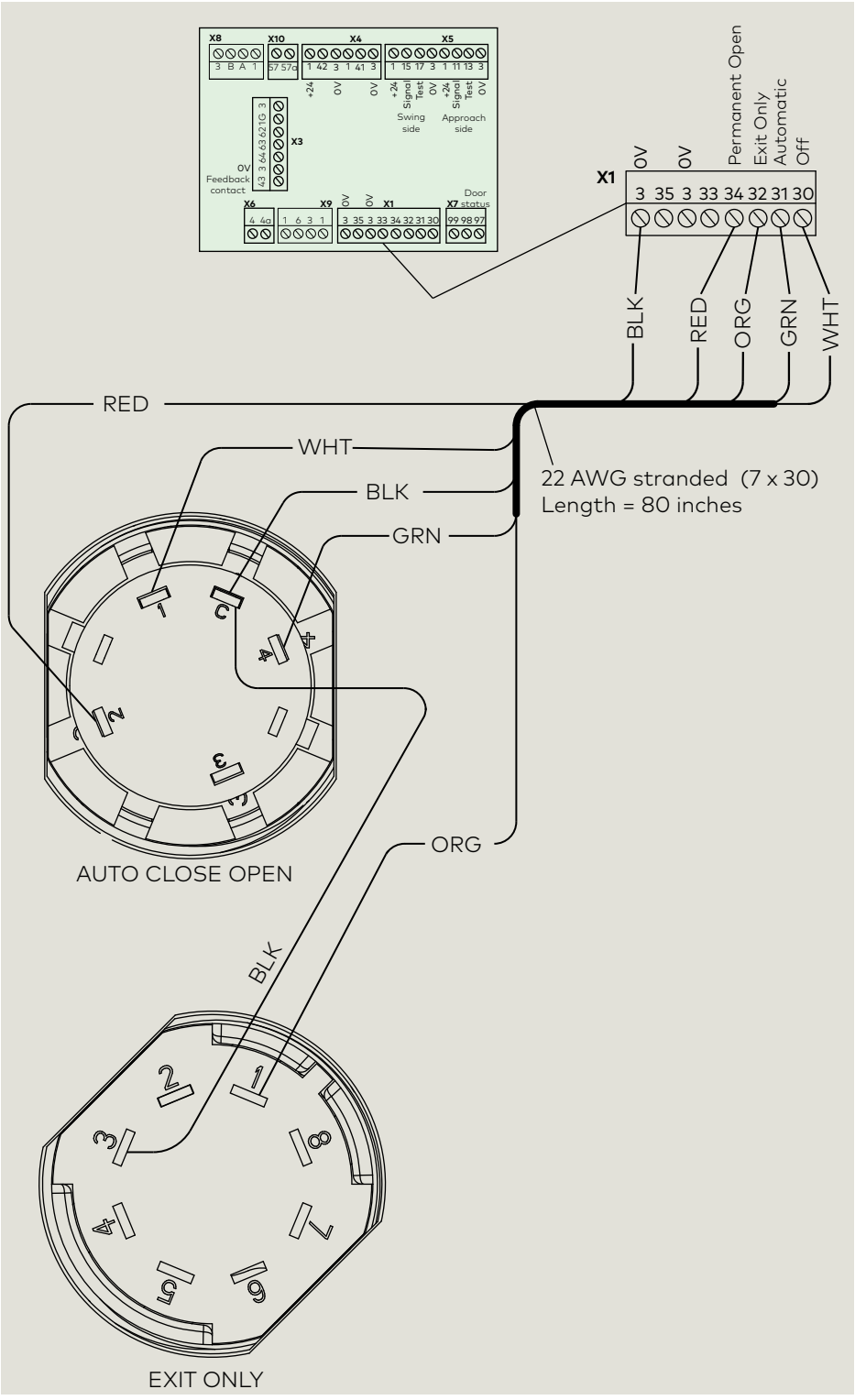
A1.1 DX4604-21C Key Switch Panel with RJ45 connector

Fig. A1.1 Key switch panel DX4604-21C



Reference Para. 16.17 for RJ45 cable connection.

Fig. A1.2 Key switch panel wiring diagram



A2.1 DX4604-11C Key Switch Panel

Fig. A2.1 Key switch panel DX4604-11C

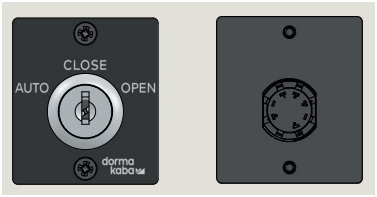
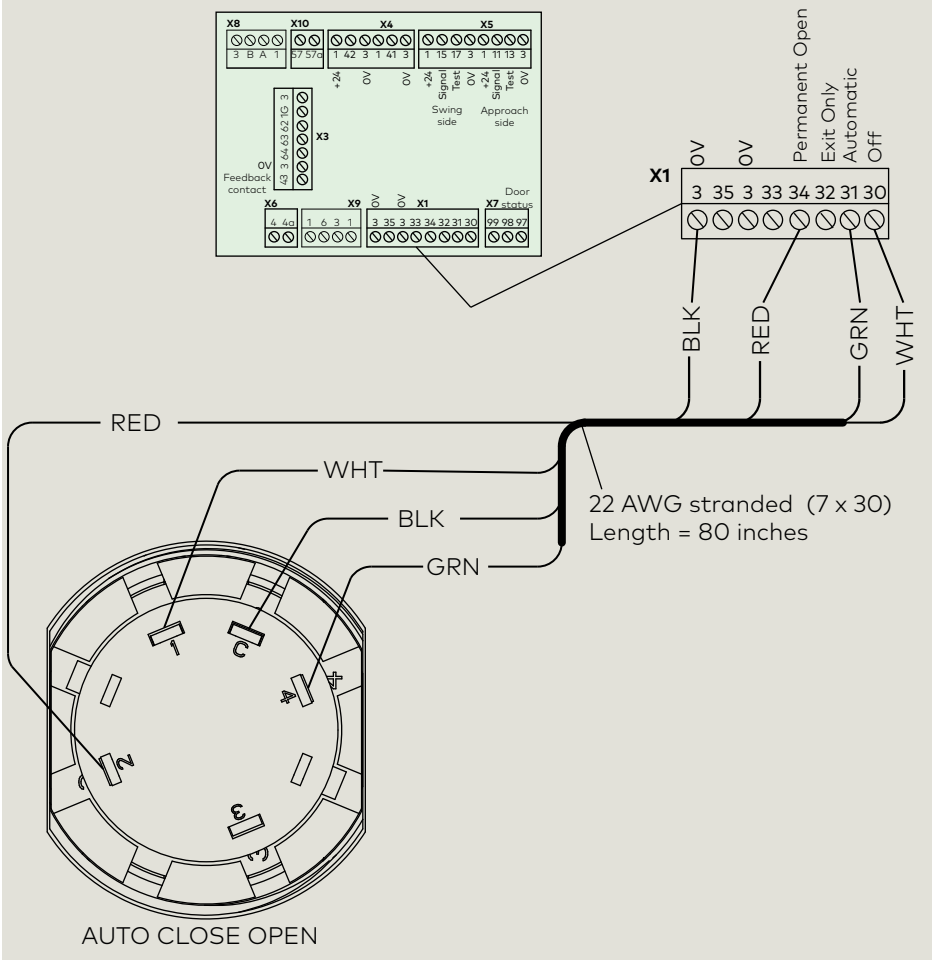


Fig. A2.2 Key switch panel wiring diagram



www.dormakaba.com

dormakaba USA Inc.
1 Dorma Drive, Drawer AC
Reamstown, PA 17567
USA
T: 717-336-3881
F: 717-336-2106