

ED100/ED250

Automatic Swing Door Operators
Installation in Surface Applied Header

Installation Instructions

DL4614-010 – 08-2018

| EN |

dormakaba 

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1 General information

1.1 Installation Instructions

This manual provides installation instructions for ED100/ED250 automatic swing door operators 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

ED100/ED250 installation: observe applicable national and local building codes.

2 Product description

2.1 Intended use.

The ED100 and ED250 are electromechanical operators used exclusively for opening and closing interior or exterior swing doors.

The ED250 or ED100 operator is installed in a surface mount header at customer site. The header must be installed on an interior building surface.

For double swing doors, both operators are installed in a single header.

2.2 Low energy operator and full energy operator.

2.2.1 ED100

- Supplied as a low energy operator (ANSI/BHMA A156.19).
- Configured as a full energy operator using parameter adjustment (ANSI/BHMA A156.10).

2.2.2 ED250

- Supplied as a full energy operator (ANSI/BHMA A156.10).
- Configured as a low energy operator using parameter adjustment (ANSI/BHMA A156.19).



WARNING

For low energy applications, ED100/ED250 parameter settings must meet ANSI/BHMA A156.19 specifications. Reference:

- Service Manual; Parameters
- Chapter 29, ANSI/BHMA standards



WARNING

To reduce risk of injury to persons, use this ED100/ED250 operator only with automatic swing doors that the operator is designed for. Reference Chapter 6, Technical data.

2.3 Arm configurations.

ED100 and ED250 are both suitable for installation using:

- ED push arm
- ED pull arm with track
- ED push arm with track [application specific]*

*Does not qualify for use on a smoke or fire-rated door.



TIPS AND RECOMMENDATIONS

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

2.5 Maximum door weights*.

- ED100: 220 pounds [99.8 kg] at 48" door width.
- ED250: 700 pounds [400 kilograms]

*Based on prevailing conditions at the door opening.

2.5.1 Maximum door weights based on door width.

Door width		Door weight			
		ED100		ED250	
Inches	mm	Pounds	kg	Pounds	kg
28	711.2	353	160	700	317.5
32	812.8	353	160	700	317.5
36	914.4	298	135.2	700	317.5
39	990.6	265	120.2	700	317.5
42	1067	220	99.8	700	317.5
48	1219	220	99.8	700	317.5

2.6 Hardware as shipped.

2.6.1 Single swing door

1. Box containing surface mount header assembly for one ED100/ED250 operator. Included inside header:
 - Accessory installation kit, either full energy or low energy (Chapter 5).
 - Program switch panel (Chapter 4).
 - Box containing push arm or pull arm kit.
2. Box containing ED100 or ED250 operator with attached mounting base.

2.6.2 Double swing doors

1. Box containing surface mount header assembly for two ED100/ED250 operators. Included inside header:
 - Two accessory installation kits, either full energy or low energy (Chapter 5).
 - Program switch panel (Chapter 4).
 - Two boxes, each containing a push arm or pull arm kit.
 - ED100/ED250 operator connection cables (Para. 5.5).
2. Two boxes, each containing an ED100 or ED250 operator with attached mounting base.

3 Safety information

3.1 Safety instructions

This document contains important instructions for installation of the ED100/ED250 swing door operators. Review these instructions thoroughly prior to installation, and follow them carefully during installation, commissioning, troubleshooting and maintenance.

3.2 Door signage requirements, reference Chapter 11

Proper signs and labels shall be applied and maintained on the door controlled by the ED250/ED100 automatic swing door operator:

- Full power: ANSI/BHMA A156.10: Standard for power operated doors.
- Low Power: ANSI/BHMA A156.19: Standard for power assist and low energy power operated doors.

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

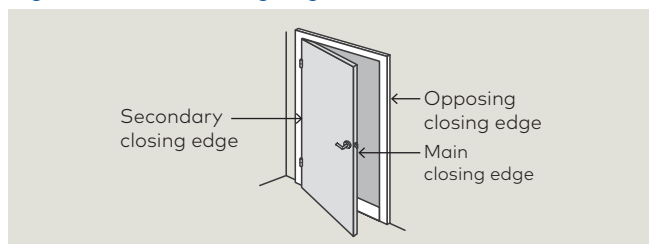
Hand pinch point and crushing hazards at door closing edges!



WARNING

Crushing hazards at door closing edges!

Fig. 3.1 Door closing edges



3.4 Residual hazards



WARNING

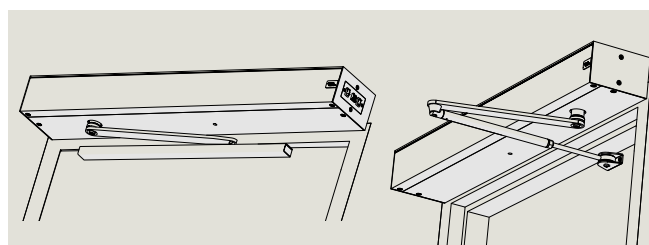
After installation, hazards such as minor crushing, impact with limited force, and risk to unsupervised children may exist depending on structural design of door area, type of door, and any safeguards that have been implemented.



WARNING

Hand pinch point and crushing hazards at arm and track!

Fig. 3.2 Hazards at arm and track
Pull arm and track Push arm



4 ED100/ED250 Product overview

4.1 ED100/ED250 single swing door

- 1 ED100/ED250 4" x 6" header
- 2 Header cover
- 3 Cover screws
- 4 Program switch panel mounting surface
- 5 Jamb brackets
- 6 4" x 6" header track
- 7 Hole for drive axle
- 8 ED100/ED250 operator
- 9 Hole for spring tension adjustment

Fig. 4.1.1 Header assembly with cover

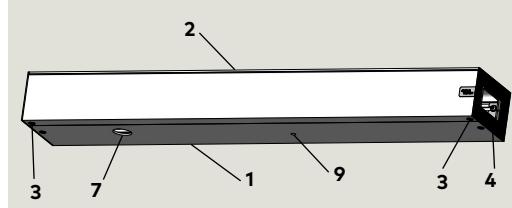


Fig. 4.1.2 Header without operator

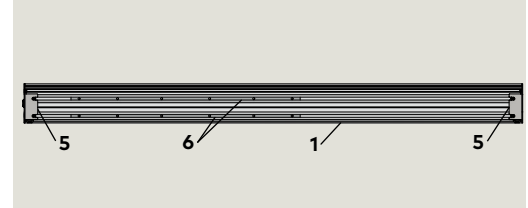


Fig. 4.1.3 Header with ED100/ED250 operator

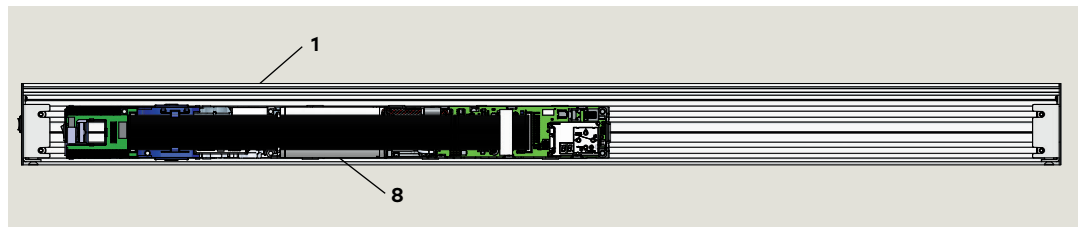


Fig. 4.1.4 ED100/ED250 operator

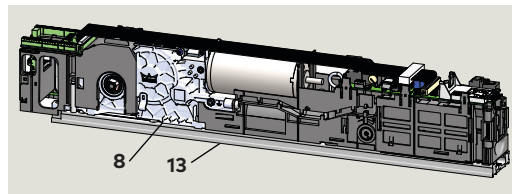
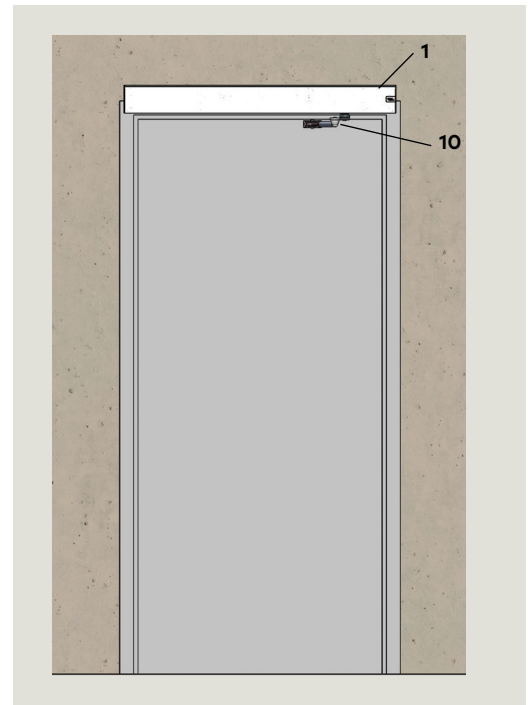


Fig. 4.1.5 Header with push arm



- 1 ED100/ED250 header
 - 8 ED100/ED250 operator
 - 10 Push arm
 - 11 Terminals for accessory wiring
 - 12 Bag containing terminals and third guide pin*
 - 13 Mounting plate
- * Included with operator

Fig. 4.1.6 Accessory terminals, guide pin

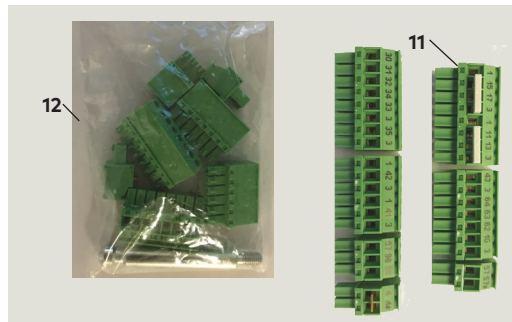
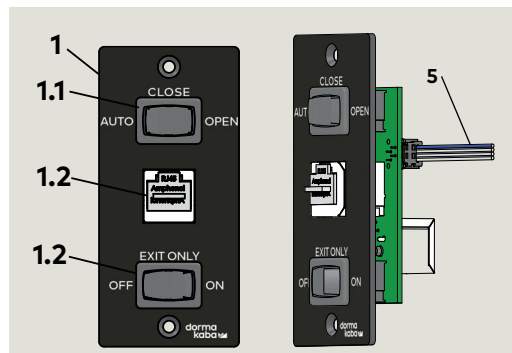


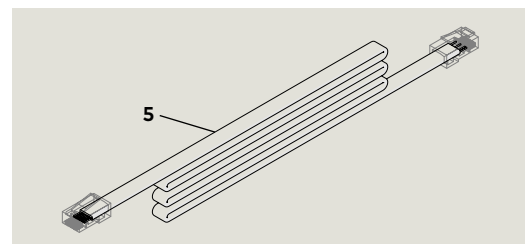
Fig. 4.1.7 Program switch panel

- 1 Program switch panel DX4604 -01C, 3 ft. cable -02C, 10 ft. cable
- 2 Program switch, 3 position
- 3 Exit only switch, 2 position
- 4 Comm port for dormakaba handheld
- 5 RJ45 comm. cable



Reference Para. 5.6 for Key Switch Panel options.

Fig. 4.1.8 RJ45 communication cable



4.2 ED100/ED250 pair swing doors

- 1 Double header
- 2 Header cover
- 3 Cover screws
- 4 Program switch panel
- 5 Hole for drive axle
- 6 Header track
- 7 Hole for spring tension adjustment

Fig. 4.2.1 Double header

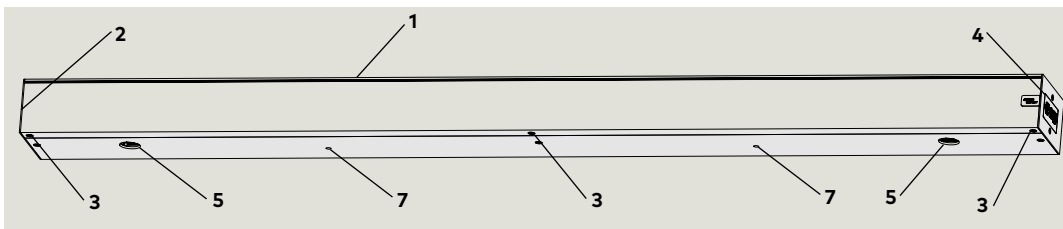


Fig. 4.2.2 Double header without operators

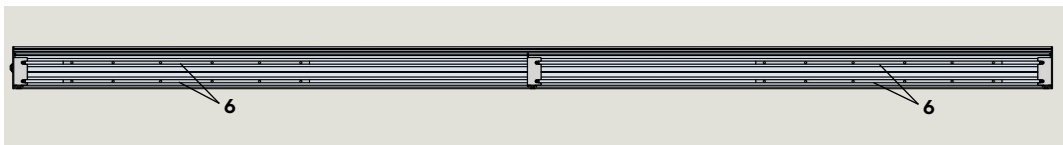


Fig. 4.2.3 Double header with operators

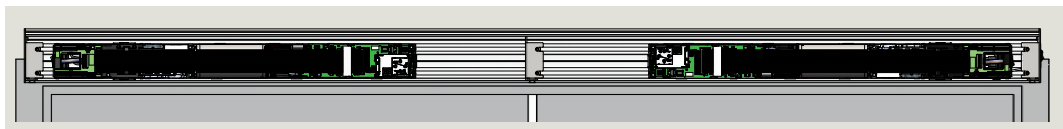
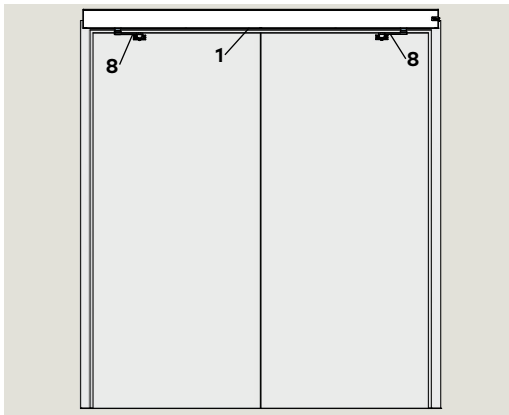
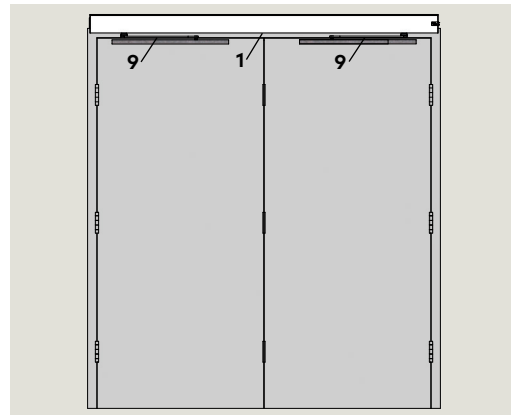


Fig. 4.2.4 Double header with push arms



- 1 Double header
- 8 Push arm
- 9 Pull arm with track

Fig. 4.2.5 Double header with pull arms



4.3 Arm configurations

4.3.1 Arm configurations

- Push arm
- Deep push arm
- Pull arm with track
- CPD pull arm with track
- CPD push arm with track

[application specific]*

*Does not qualify for use on a smoke or fire-rated door.



TIPS AND RECOMMENDATIONS

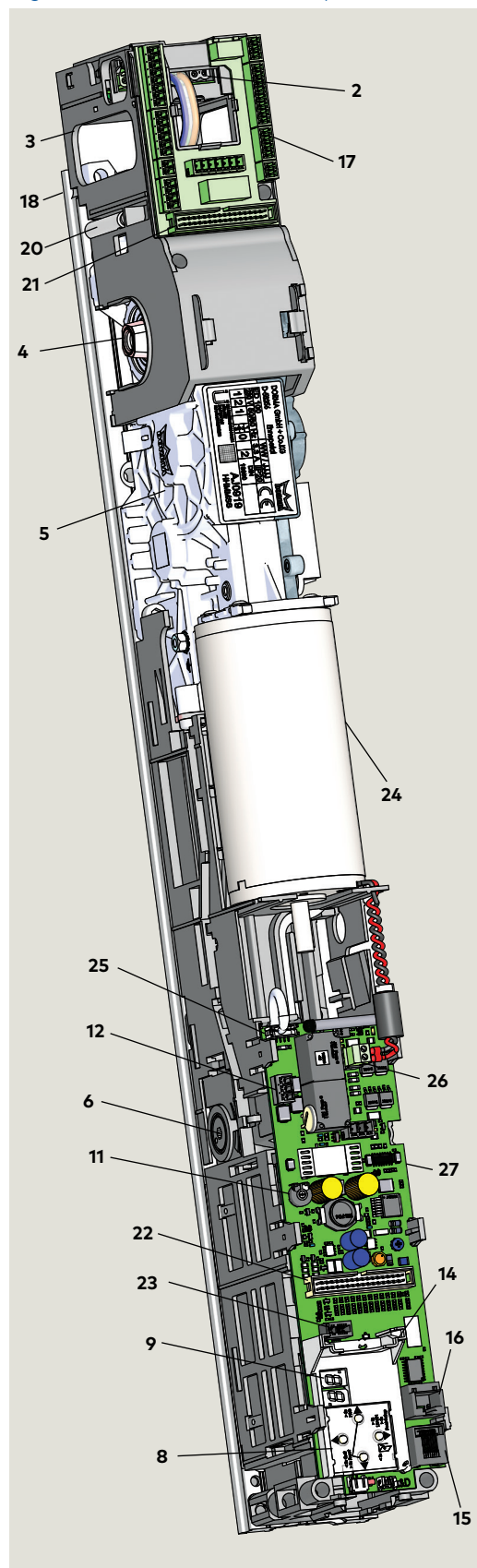
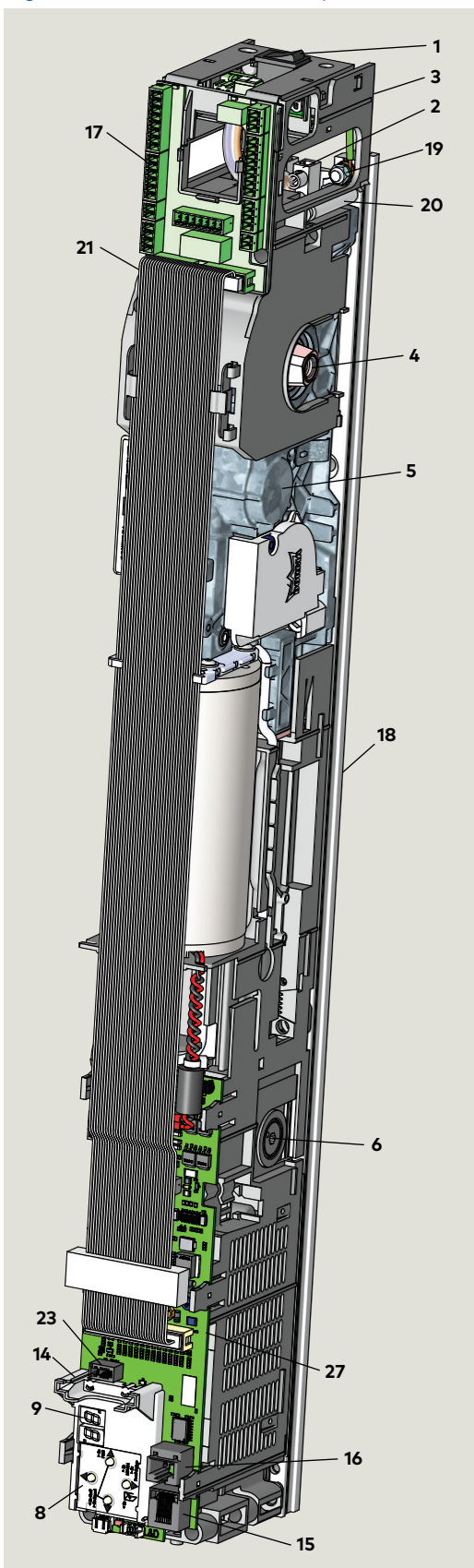
Reference Chapter 12 for arm configuration detail.

4.3 ED100/ED250 operator component view

Fig. 4.3.1 ED100/ED250 component view 1

Fig. 4.3.2 ED100/ED250 component view 2

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



5 Accessory kits, axle extension kits

5.1 ED250 and ED100 configured for full energy accessory kit

- 1 DD0586-010
- 2 DD0758-010
- 3 DD0762-010
- 4 DD0762-020
- 6 Side 2, DD0739-010
- 6.1 Side 1, DD0739-010
- 7 Safety Information label, full energy
- 8 Safety Information label, low energy
- 9 Side 1, DD0756-010
- 9.1 Side 2, DD0756-010

Fig. 5.1.1 Decal kit, low energy

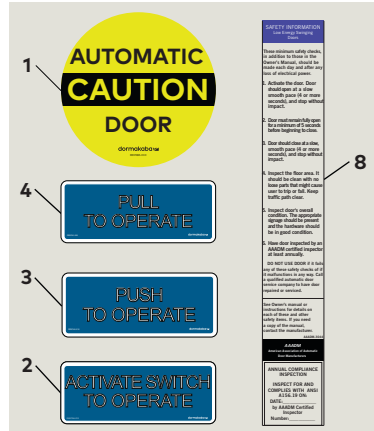
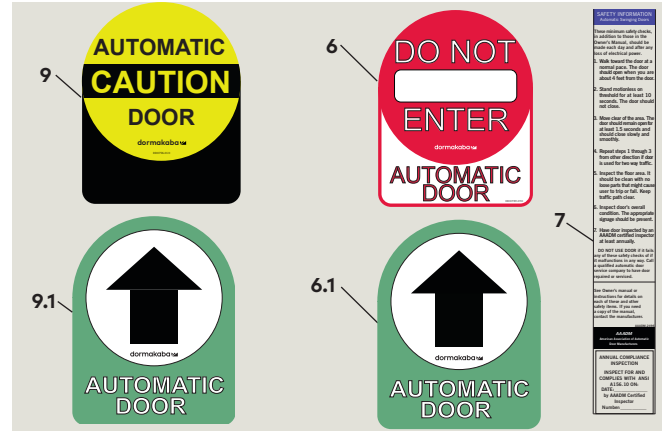


Fig. 5.1.2 Decals, full energy



- 8 Header mounting screw pack DK4608-010
- 8.1 #12 x 2.5 RHWSP
- 8.2 1/4-20 x 1.5 PHSLFP
- 9 Push arm screw kit DK2719-010
- 9.1 10-24 x 11/2" barrel nut
- 9.2 10-24 x 1" PPHMS
- 10 Pull arm screw kit DK2719-020
- 10.1 10-24 x 11/2" barrel nut
- 10.2 10-24 x 11/4" FHSC

Fig. 5.1.3 Header mounting screw pack

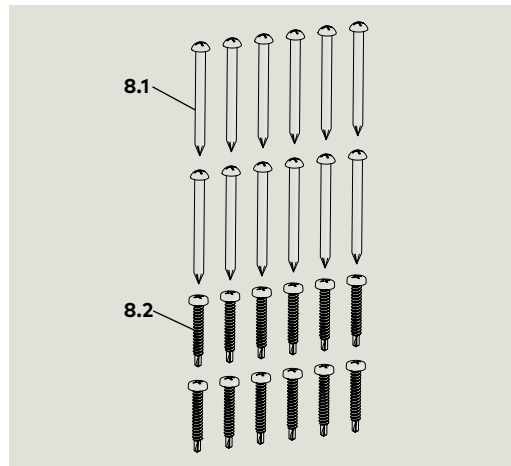


Fig. 5.1.4 Push arm screw kit

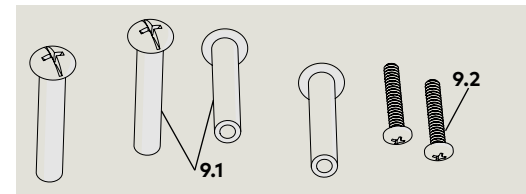
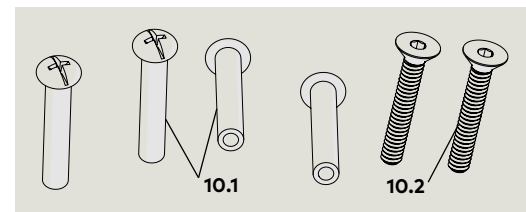


Fig. 5.1.5 Pull arm screw kit

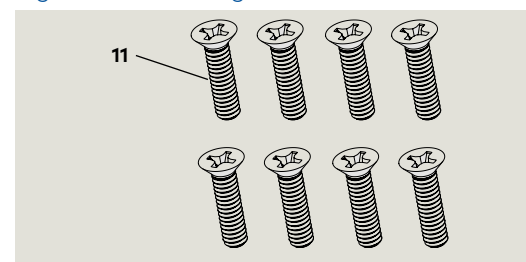


- 11 1/4-20 x 1" FHMSF
- 12 1 1/2" hole plug
- 13 3/8" [10 mm] hole plug

Fig. 5.1.6 Hole plug kit



Fig. 5.1.7 Mounting base screw kit



- 14 Communication cable DX4607 for program switch panel
- 15 Program switch panel DX4604

Fig. 5.1.8 Program switch panel

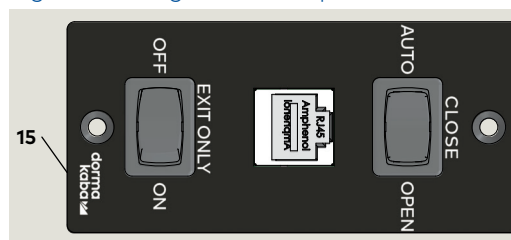
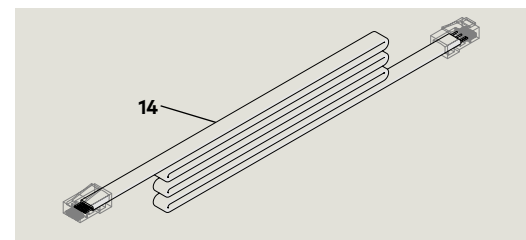


Fig. 5.1.9 Communication cable



Reference Para. 5.6 for optional key switch panels.

5.2 ED100 low energy accessory kit

- 1 DD0586-010
- 2 DD0758-010
- 3 DD0762-010
- 4 DD0762-020
- 5 Safety Information label, low energy
- 8 Header mounting screw pack DK4608-010
- 8.1 #12 x 2.5 RHWSP (round head wood screw, Phillips)
- 8.2 1/4-20 x 1.5 PHSLFP (pan head self tapping, Phillips)
- 9 Push arm screw kit DK2719-010
- 9.1 10-24 x 1 1/2" barrel nut
- 9.2 10-24 x 1" PPHMS (Phillips pan head machine screw)
- 10 Pull arm screw kit DK2719-020
- 10.1 10-24 x 1 1/2" barrel nut
- 10.2 10-24 x 1 1/4" FHSCS (flat head socket screw)
- 11 1/4-20 x 1" FHMS (flat head machine screw, Phillips)
- 12 1 1/2" hole plug
- 13 3/8" [10 mm] hole plug
- 14 Communication cable DX4607 for program switch panel
- 15 Program switch panel DX4604
- Manuals not shown.
- 16 Installation manual
- 17 Service manual
- 18 Owner's manual

Fig. 5.2.1 Decal kit, low energy

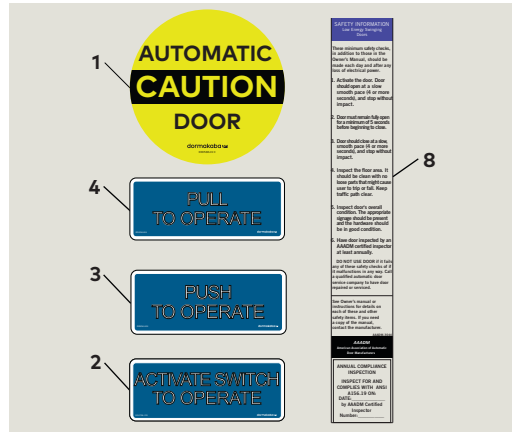


Fig. 5.2.4 Header mounting screw pack

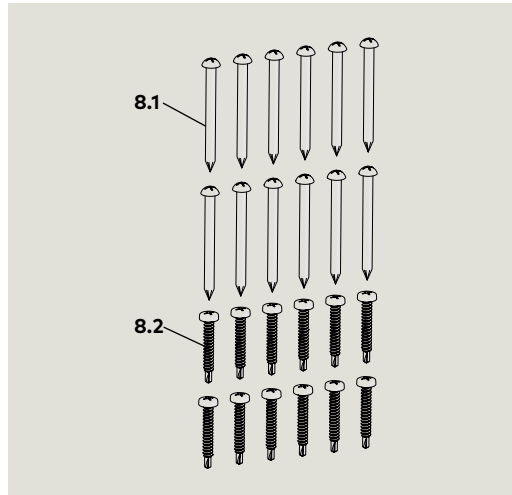


Fig. 5.2.7 Hole plug kit

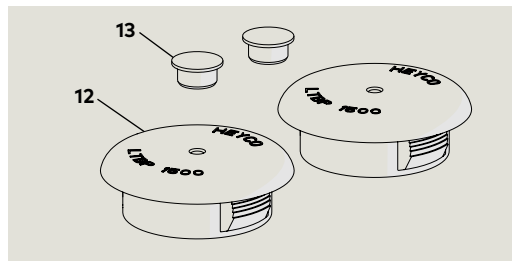


Fig. 5.2.2 Push arm screw kit

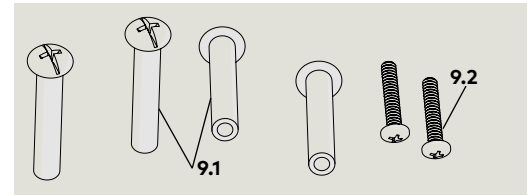


Fig. 5.2.3 Pull arm screw kit

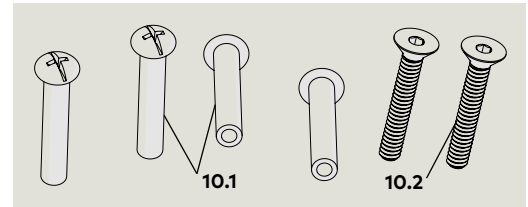


Fig. 5.2.5 Mounting base screw kit

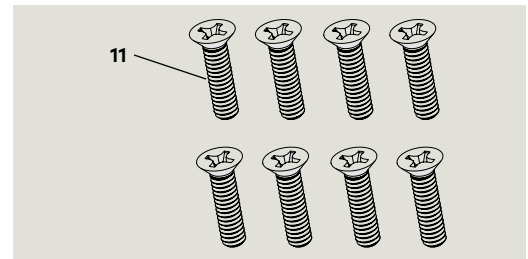


Fig. 5.2.6 Communication cable

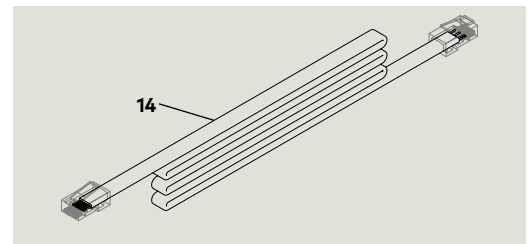
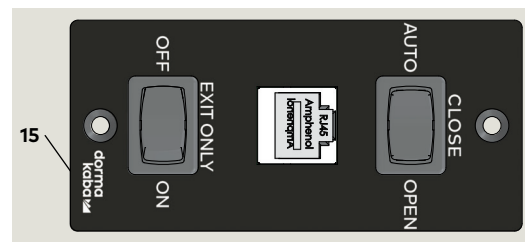


Fig. 5.2.8 Program switch panel



Reference Para. 5.6 for optional key switch panels.

5.4 Axle extension kits

- 1 Flat washer
- 2 Conical spring
- 3 O-ring
- 4 M8 SHCS
- 5.2 20 mm (13/16") extension
- 5.3 30 mm (1 3/16") extension
- 5.4 60 mm (2 3/8") extension
- 5.5 90 mm (3 9/16") extension

Fig. 5.4.1 90 mm

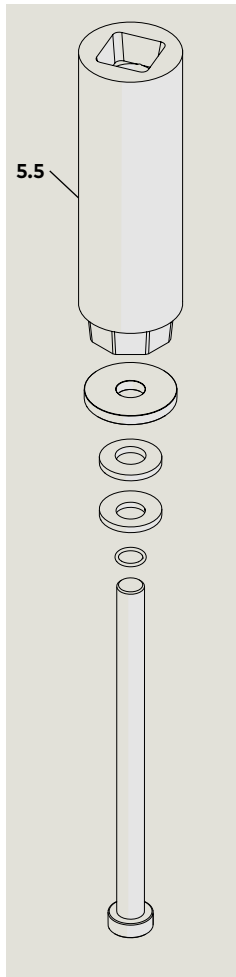


Fig. 5.4.2 20 mm

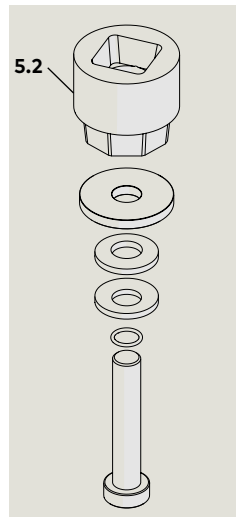


Fig. 5.4.3 30 mm

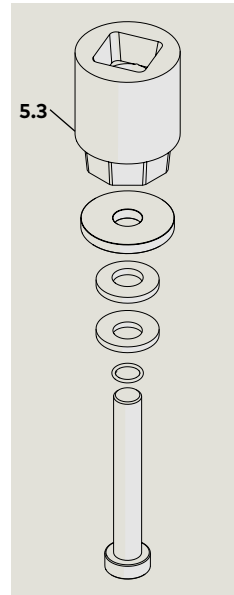
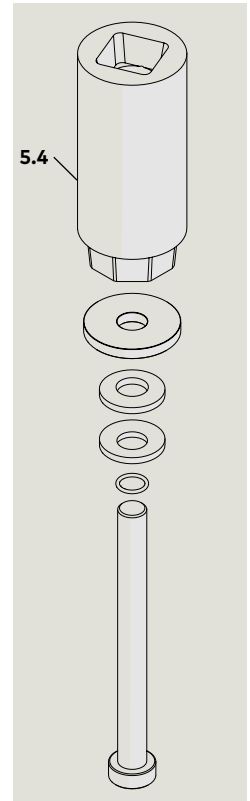


Fig. 5.4.4 60 mm



5.5 Double door ED100/ED250 operator connection cables

- 1** Communication cable
DX3485-010,
250 mm, 9 7/8"
DX3485-020,
1030 mm, 40 1/2"
DX3485-030,
2030 mm, 80"
- 2** RJ45 plug
- 3** 115 VAC power cable
DX3484-010,
69" long
DX3484-020,
95" long
DX3484-030,
134" long

Fig. 5.5.1 Communication cable

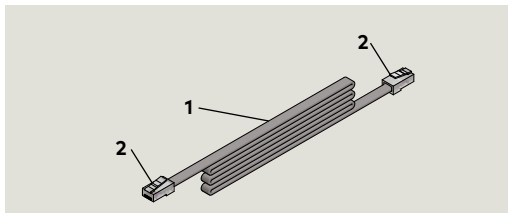
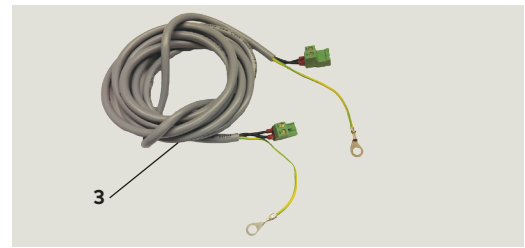


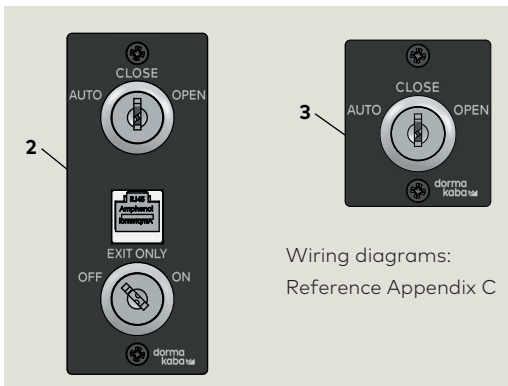
Fig. 5.5.2 115 VAC power cable



5.6 Optional key switch panels

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

Fig. 5.6.1 Key switch panels



6 Technical data

6.1 ED100/ED250 Technical data

6.1.1 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)

6.1.2 General specifications

Operator dimensions (W x H x D)	26 3/4" x 2 3/4 x 5 3/4"
Operator weight	26.5 lb
Internal power supply available for external customers	24 Vdc ± 5%, 1.5 A
Maximum door opening angle	95 to 110° depending on installation type

6.1.3 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



TIPS AND RECOMMENDATIONS

- ***X4:** terminal board numbers, reference Chapter 10, System accessories.
- Parameters, reference Chapter 21.

6.1.4 Outputs

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

6.1.5 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
Voltage independent braking circuit	Chapter 18 Adjustable with potentiometer
LED status indicators Service manual	Green 24 VDC power Red Error codes Yellow Service interval
Program and Exit Only switches	Chapter 9 Auto, Close, Open Exit only; Off, On
User interface	Chapter 9 4 button keypad, 2 digit display
Slot for dormakaba upgrade cards	Chapter 22 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

6.2 Operating specifications

6.2.1 ED100

Maximum power consumption	120 watt	
Automatic closing torque, lbf·ft, Note 3	Minimum 14.8	Maximum F.E. 110.6 L.E. 49
Manual closing torque, lbf·ft, Note 3	Minimum 9.6	Maximum 27.3
Maximum door weight	220 lb at a maximum door width of 48"	
Door width	Minimum 28"	Maximum 48"
Maximum opening speed, %s, Note 2	F.E. 50 L.E. 27	
Maximum closing speed, %s, Note 2	F.E. 50 L.E. 27	
Axle extensions	[20 mm] 13/16" [30 mm] 1 3/16" [60 mm] 2 3/8"	
Reveal depth for pull arm with track	1 3/16"	
Maximum reveal depth for pull arm with CPD lever and track	2 1/4"	
Reveal depth for standard push arm	0 to 11 13/16"	
Reveal depth for deep push arm	8" minimum to 19 11/16"	

Note 1

Full energy / low energy

- F.E.: ED100 configured for full energy
- L.E.: ED100 configured for low energy

Note 2

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

Note 3

In push version of slide channel with track installation type, forces are reduced by approximately 33%.

6.2.2 ED250

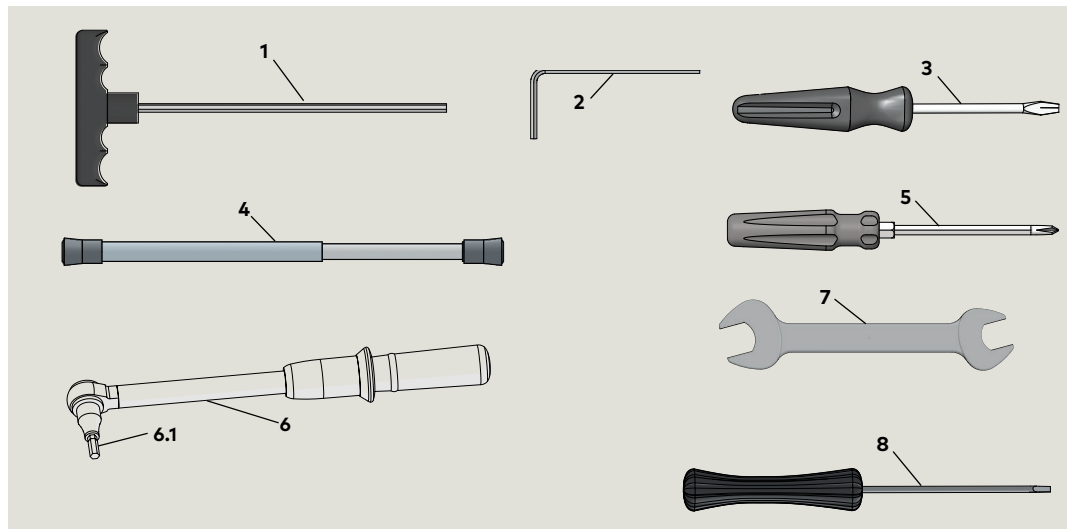
Maximum power consumption	240 watt	
Automatic closing torque, lbf·ft, Note 3	Minimum 14.8	Maximum 110.6
Manual closing torque, lbf·ft, Note 3	Minimum 9.6	Maximum 27.3
Maximum door weight	700 lb at a maximum door width of 48"	
Door width	Minimum 28"	Maximum 48"
Door width for fire protection	27 9/16" to 55"	
Maximum opening speed, %s	60	
Maximum closing speed, %s	60	
Axle extensions	[20 mm] 13/16" [30 mm] 1 3/16" [60 mm] 2 3/8" [90 mm] 3 9/16"	
Reveal depth for pull arm with track	1 3/16"	
Maximum reveal depth for pull arm with CPD lever and track	2 1/4"	
Reveal depth for standard push arm	0 to 11 13/16"	
Reveal depth for deep push arm	8" minimum to 19 11/16"	

7 Recommended tools and torque chart

7.1 Recommended tools

- 1 T-handle hex key, 5 mm
- 2 Hex keys, 2.5 mm, 3 mm, 6 mm
- 3 Screwdriver, flat blade
- 4 Door pressure gauge, 0 to 35 ft - lbf
- 5 Screwdriver, Phillips, #2, #3
- 6 Torque wrench, 3 to 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. 7.1.1 Recommended tools



7.2 Standard tightening torque

7.2.1 Standard tightening torque

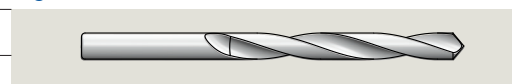
Fastener size	ft lb
M5	3.7
M6	7
M8	17
M10	34
M12	58

7.3 Drill bits

7.3.1 Drill bit sizes for fasteners

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

Fig. 7.3.1 Drill bit



8 Operational mode overview

8.1 ED100/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 21; Parameters and in ED100/ED250 Service Manual, Chapter 15.

8.2 Low energy product

8.2.1 ANSI/BHMA 156.19

ED100 operator is configured to meet requirements of a low energy application per ANSI/BHMA A156.19, U.S. Standard for Power Assist and Low Energy Power Operated Doors.

ED100 operator can be configured for full energy operation using a full energy upgrade card.

8.2.2 Low energy power operated door

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

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

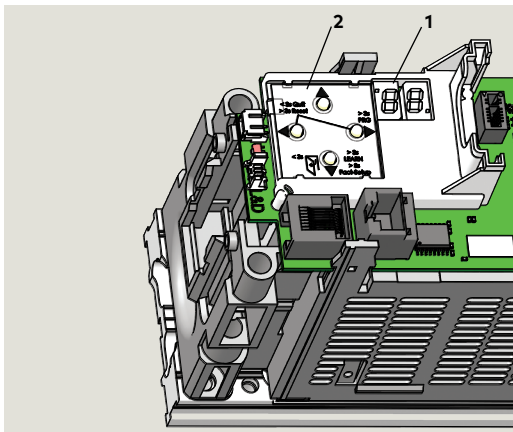
- Reduced dynamic door panel contact forces
- Reduced static door panel contact forces
- Low driving speeds
- Force limitation

9 User interface

9.1 Overview

- 1 2 digit display
- 2 4 button keypad

Fig. 9.1.1 Operator keypad and display



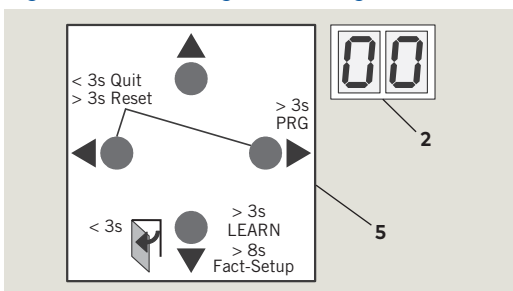
9.1.1 Operator user interfaces

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

9.2 4 button keypad and display

- 2 2 digit display
- 5 Button legend

Fig. 9.2.1 Door hinge side on right



9.2.1 4 button keypad

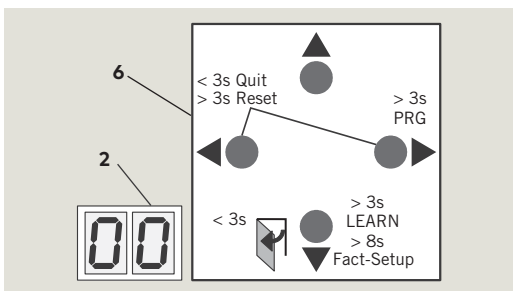
4 button legend is orientated so buttons have same function and position regardless of operator orientation. Button legend can be removed and rotated.

9.2.2 4 button keypad functions

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

- 2 2 digit display
- 6 Button legend rotated 180°

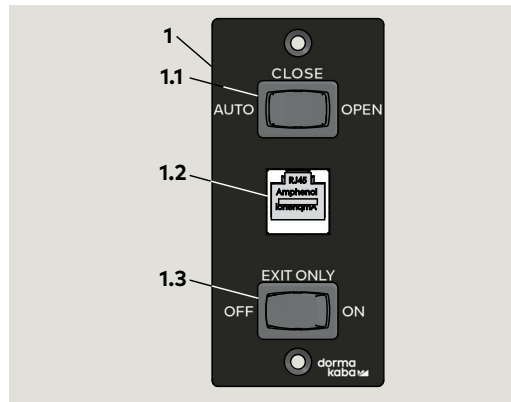
Fig. 9.2.2 Door hinge side on left



9.3 Program switch panel, optional key switch panels

Fig. 9.3.1 Program switch panel

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



9.3.1 Program switch control modes

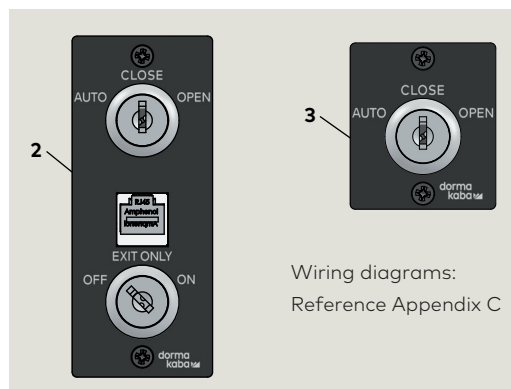
- Auto, door opens automatically when one of the activators is actuated or triggered and closes on expiration of adjustable hold open time with no activators or actuators triggered.
- Close, door closes automatically, or remains closed until program switch position changed.
- Open, door opens automatically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

9.3.2 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.

Fig. 9.3.2 Optional key switch panels

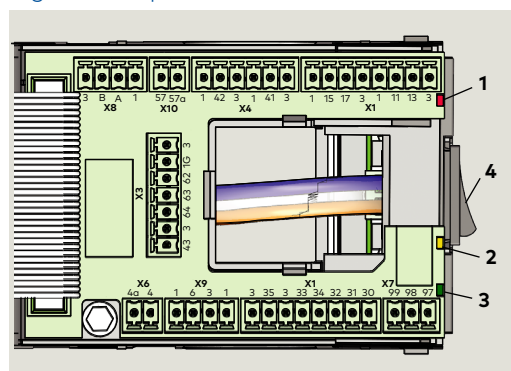
- 2 Key switch panel, RJ45, DX4604-21C
- 3 Key switch panel DX4604-11C



9.4 Operator status LEDs

Fig. 9.4.1 Operator status LEDs

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



9.4.1 Operator status LEDs

Header cover must be opened to view LEDs.

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



TIPS AND RECOMMENDATIONS

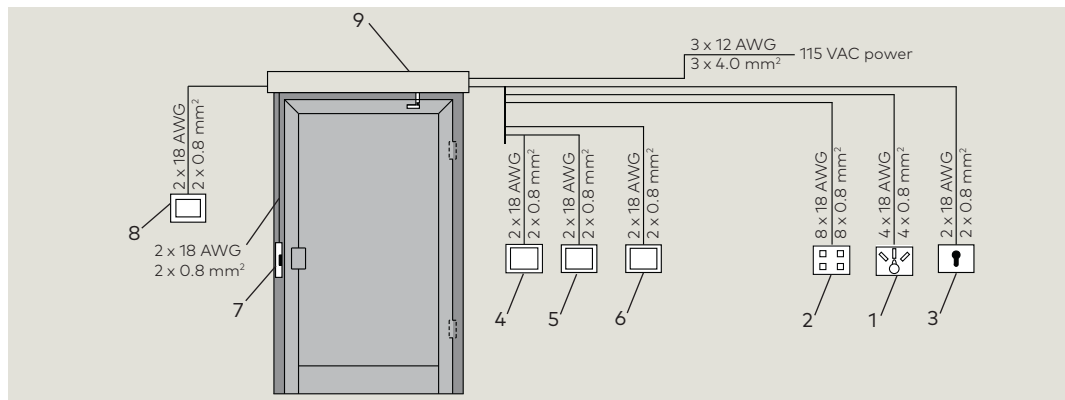
Details on LED status codes and maintenance intervals can be found in ED100/ED250 Service Manual, Chapter 16, troubleshooting chart.

10 System accessories

10.1 System accessory electrical connections

Fig. 10.1.1 Electrical connections, single door

- 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 ED100/ED250 header



10.2 System accessories

10.2.1 Overview

ED100/ED250 operators are normally used with system accessories available from dormakaba USA, Inc. or other manufacturers.

10.2.2 Accessory electrical installation

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

10.2.3 System accessories, other manufacturers

dormakaba 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 accessories may not work properly.

10.2.6 Activators

Typical activators:

- 1. Motion detectors
- 2. Infrared safety sensors
- 3. Pushbuttons, key switches
- 4. Radio systems
- 5. Smoke detectors
- 6. Access control systems
- 7. Telephone systems
- 8. Intercoms

TIPS AND RECOMMENDATIONS

Refer to Paragraph 6, Technical data for electrical interface requirements.



WARNING

Damage to operator or to connected device is also possible!

10.2.4 Power for accessories

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

10.2.5 Miscellaneous accessories

- 1. Door status display, red, green.

10.2.7 Locking devices

Typical locking devices:

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

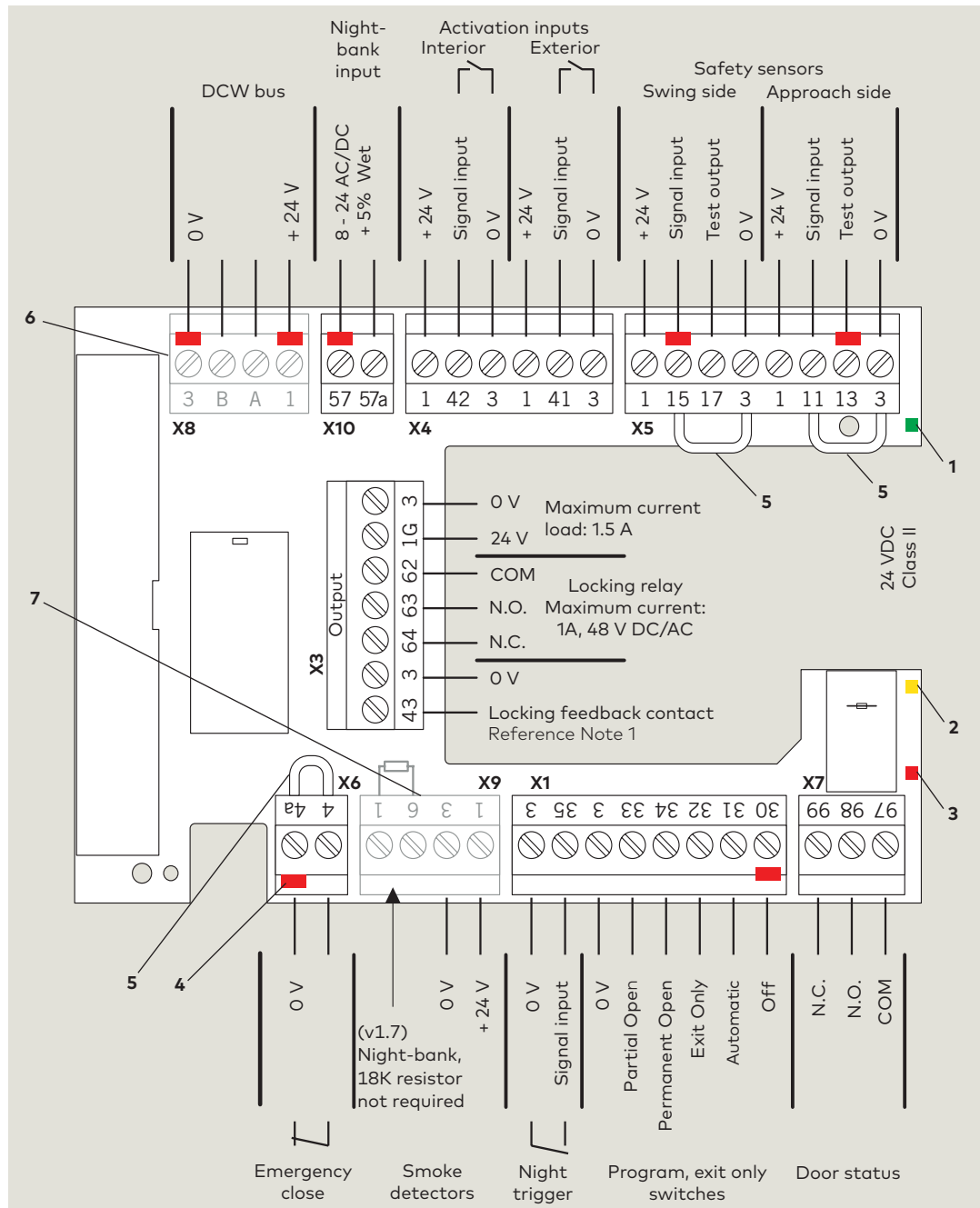
To insure that operator and locking device work safely when connected together, locking device must comply with following:

- 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%.

10.3 ED100/ED250 terminal board interfaces

Fig. 10.3.1 Terminal board electrical connections

- 1 Green LED (Para. 9.4)
- 2 Yellow LED (Para. 9.4)
- 3 Red LED (Para. 9.4)
- 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

ED100/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.
- Do not connect system accessories to board until operator has been commissioned and learning cycle performed (Chapter 22).

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

11 ED100/ED250 door signage

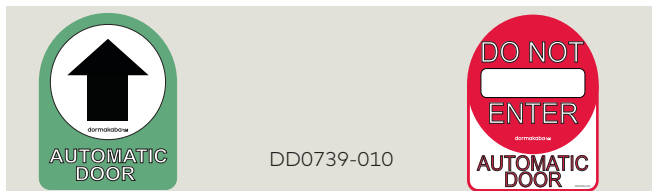
11.1 Full energy operator

11.1.1 Overview

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

11.1.1.2 Door, one way traffic

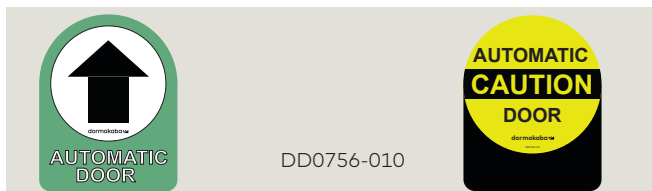
Fig. 11.1.1 One decal, approach, non-approach



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

11.1.1.3 Door, two way traffic

Fig. 11.1.2 One decal, non-swing side, swing side



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

11.1.1.4 Knowing act door

Fig. 11.1.3 ACTIVATE SWITCH TO OPERATE decal



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

11.2 Low energy operator

11.2.1 Overview

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

11.2.2 All low energy doors.

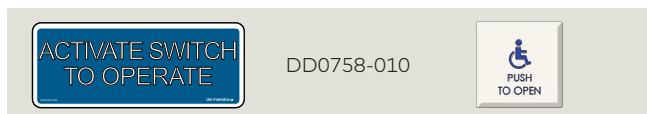
Fig. 11.2.1 AUTOMATIC CAUTION DOOR decal



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

11.2.3 Knowing act switch used to initiate door operation.

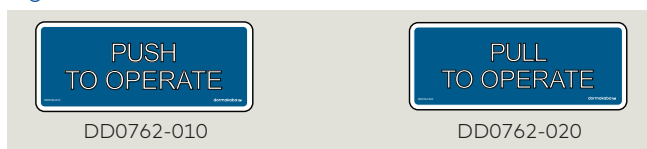
Fig. 11.2.2 ACTIVATE SWITCH TO OPERATE decal



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

11.2.4 Push/Pull used to initiate door operation.

Fig. 11.2.3 PUSH TO OPERATE, PULL TO OPERATE decals



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

11.3 Door signage, full energy single swing door

Fig. 11.3.1 One decal, one way traffic
Approach



Fig. 11.3.2 One decal, two way traffic
Non-swing side Swing side



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

Fig. 11.4.1 Knowing act device

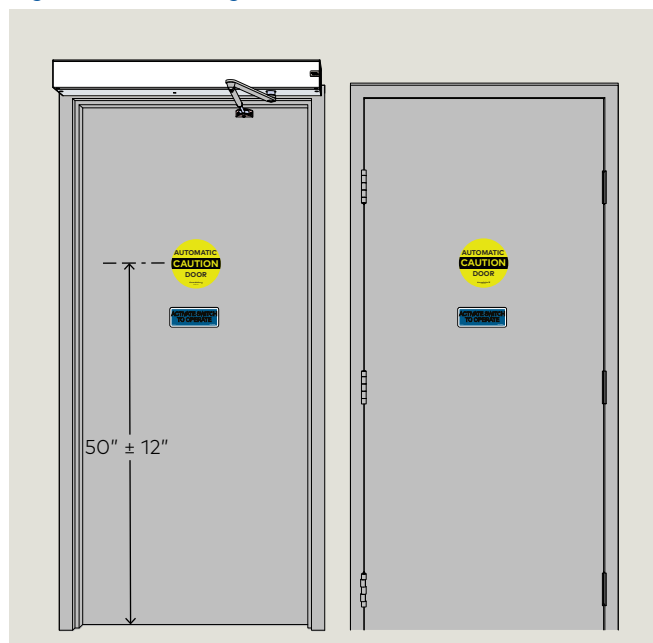
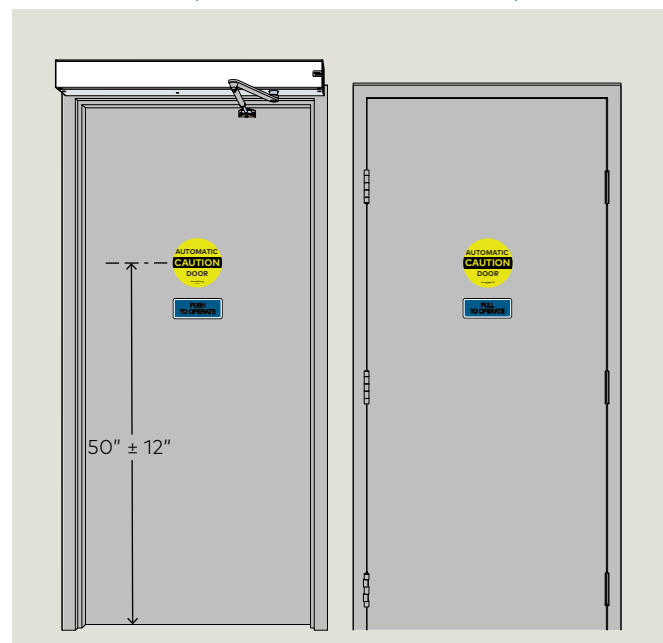


Fig. 11.4.2 Push/Pull
Push To Operate Pull To Operate



11.5 Door signage, full energy double swing doors

Fig. 11.5.1 One way traffic, approach side

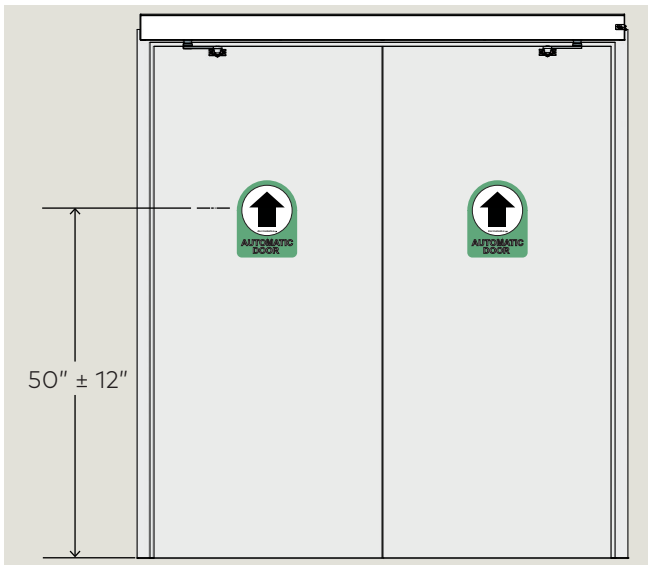


Fig. 11.5.2 One way traffic, non-approach side

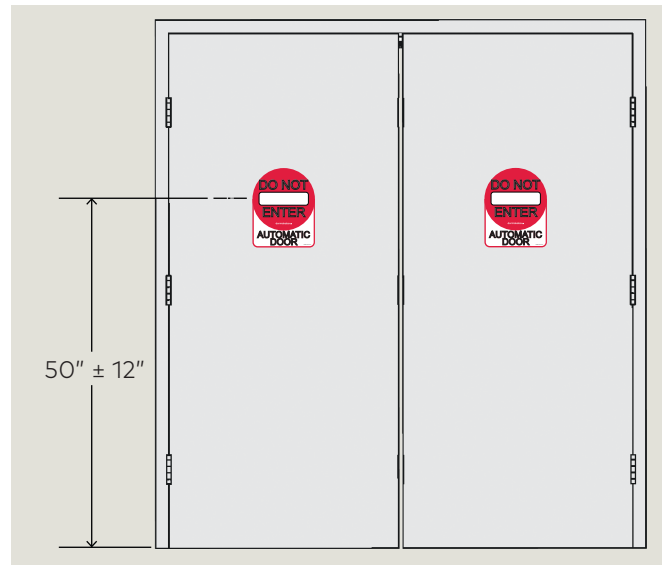


Fig. 11.5.3 Two way traffic, non-swing side

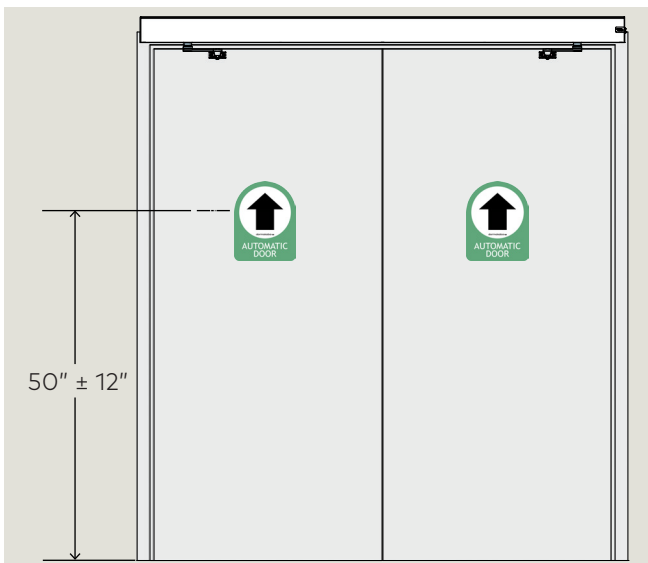


Fig. 11.5.4 Two way traffic, swing side

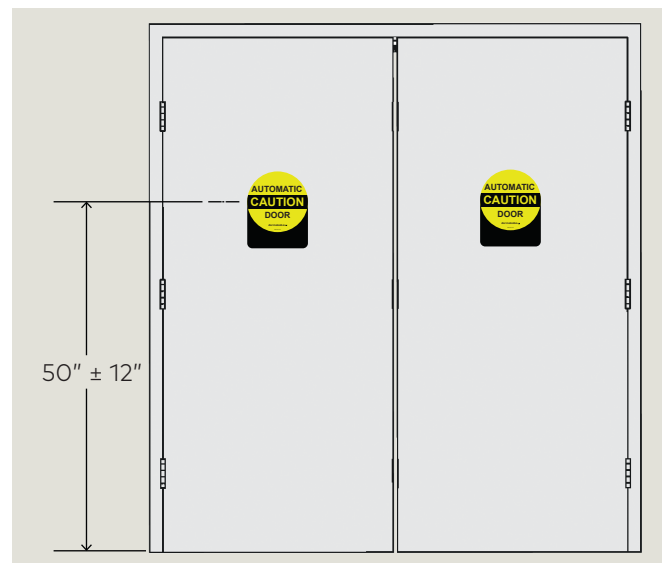


Fig. 11.5.5 One way traffic, knowing act, approach side

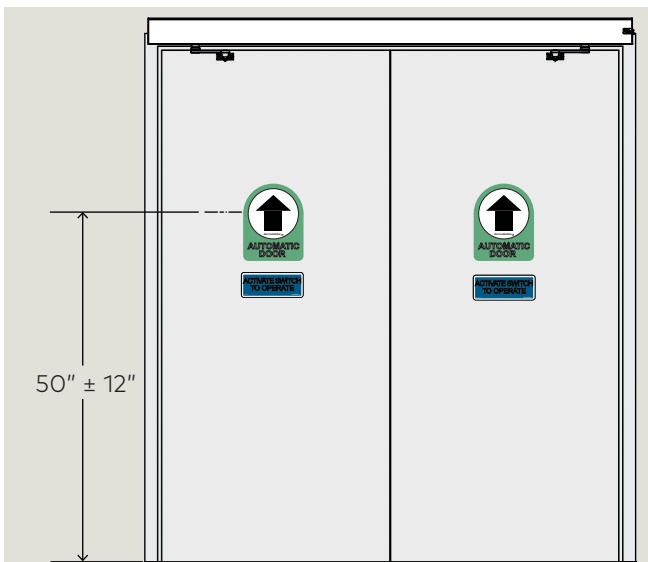


Fig. 11.5.6 One way traffic, knowing act, non-approach side

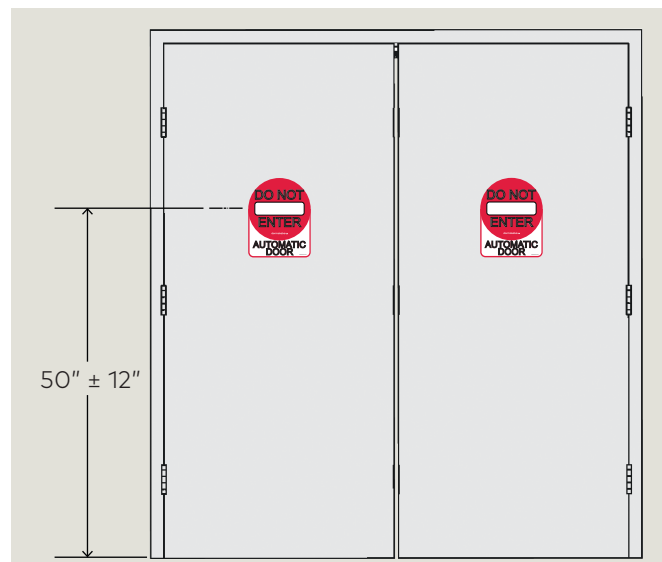


Fig. 11.5.7 Double egress, RH, one way traffic, interior

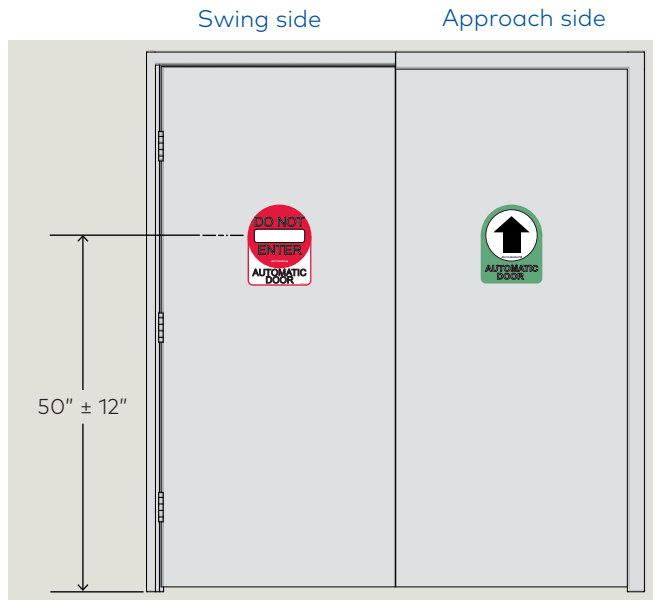


Fig. 11.5.8 Double egress, RH, one way traffic, exterior

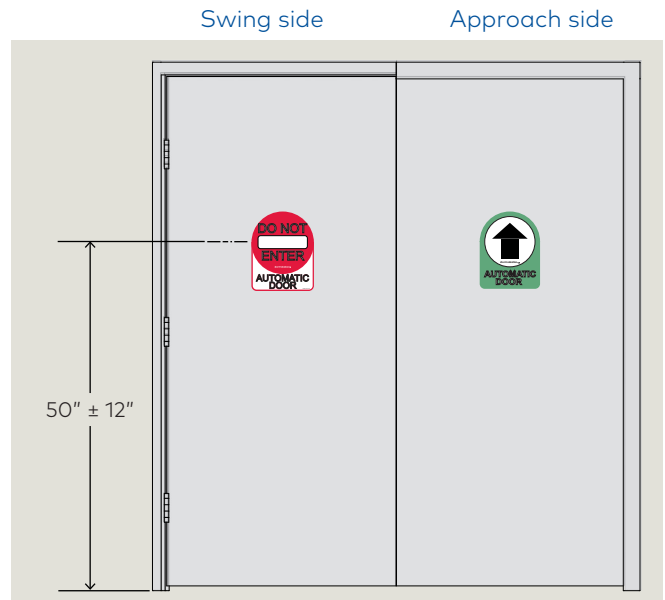


Fig. 11.5.9 Double egress, LH, two way traffic, interior

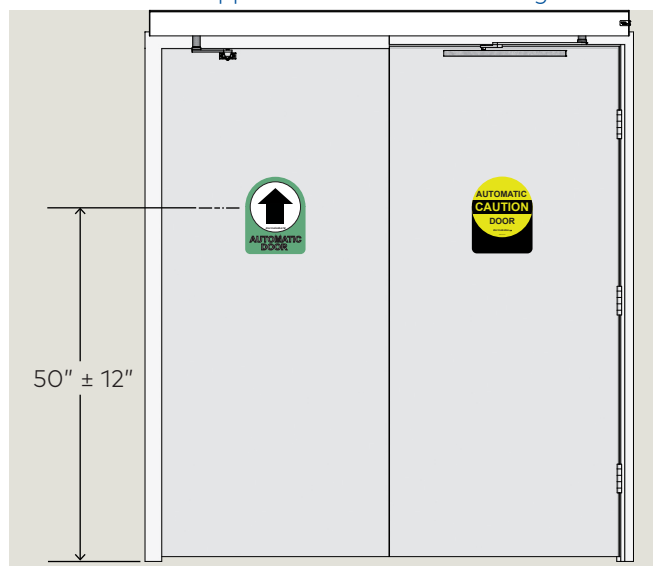
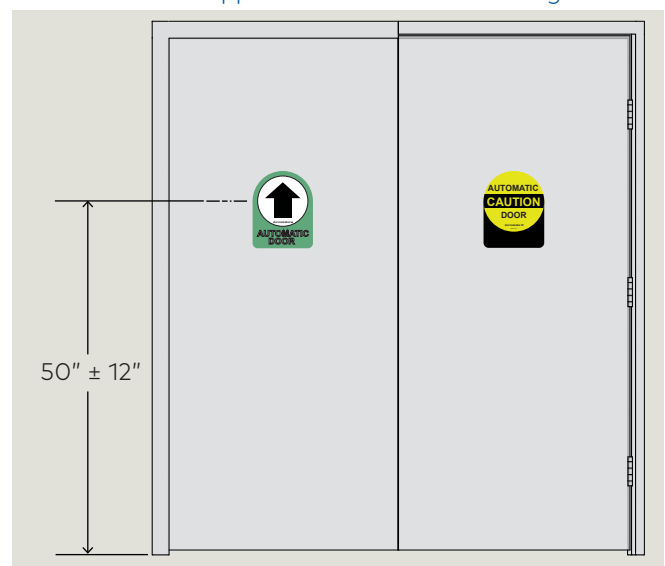


Fig. 11.5.10 Double egress, LH, two way traffic, exterior



11.6 Door signage, low energy double swing doors

Fig. 11.6.1 Knowing act, non-hinge side

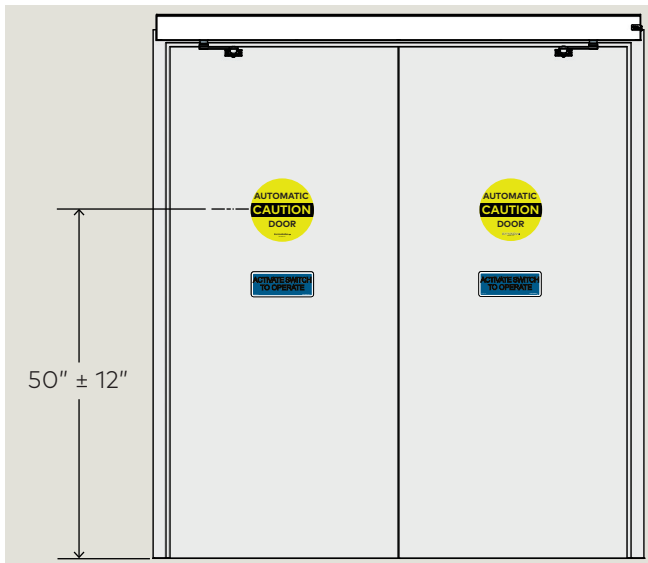


Fig. 11.6.2 Knowing act, hinge side

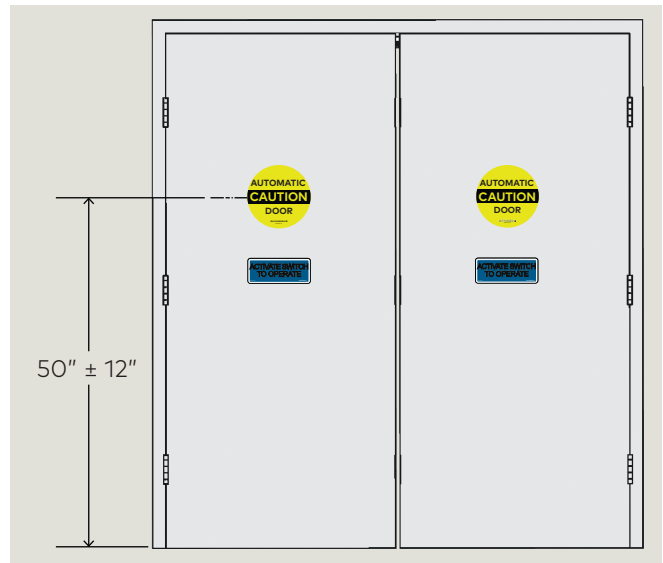


Fig. 11.6.3 Push/Pull, push to operate



Fig. 11.6.4 Push/Pull, pull to operate

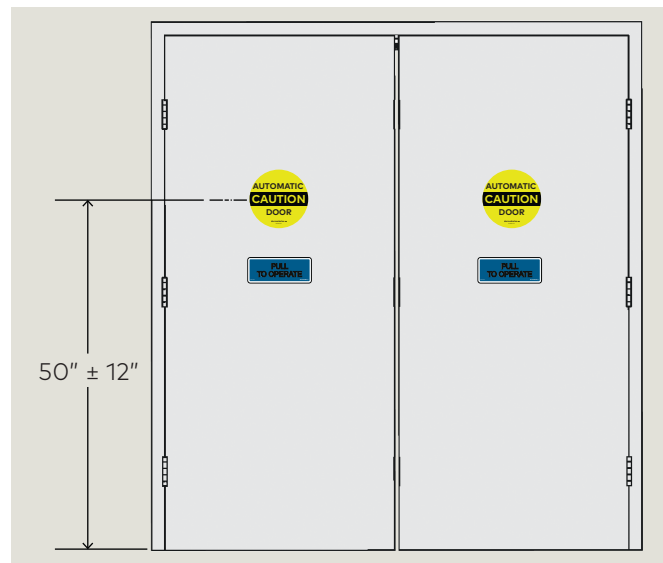


Fig. 11.6.5 Double egress, RH, knowing act

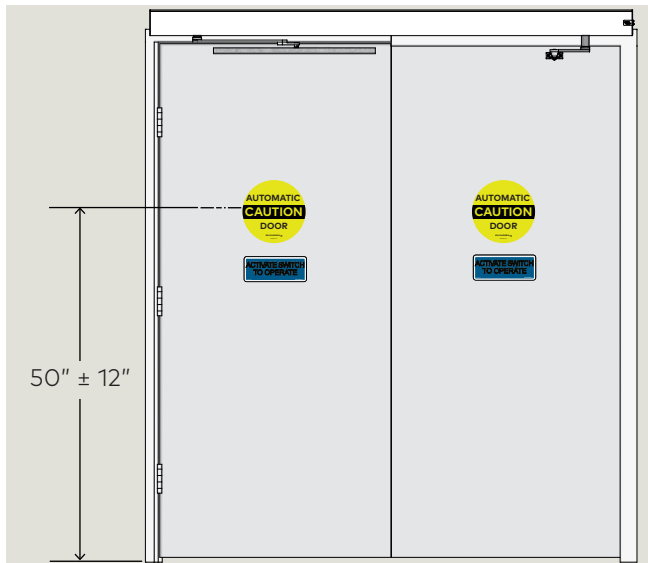
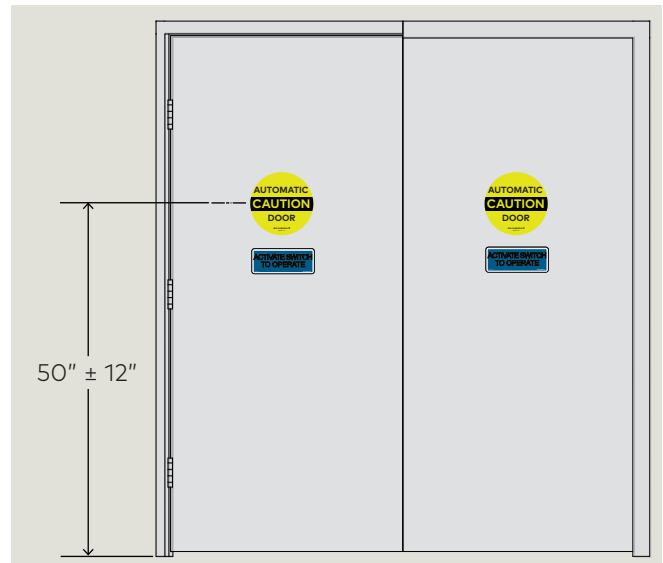


Fig. 11.6.6 Double egress, RH, knowing act



11.7 Safety label, automatic swing doors

11.7.1 Automatic swinging door safety information label

This AAADM label outlines safety checks that should be performed daily on automatic swinging door controlled by an ED100 or ED250 operator configured for full energy mode.

11.7.2 Safety information label location

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

11.7.3 Annual compliance section of label

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

11.7.4 Additional annual compliance inspection labels

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

11.8 Safety label, low energy swing doors

11.8.1 Low energy swinging door safety information label

This AAADM label outlines safety checks that should be performed daily on low energy swinging door controlled by an ED100 or ED250 operator configured for the low energy mode.

11.8.2 Safety information label location

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

11.8.3 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.

11.8.4 Additional annual compliance inspection labels

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

Fig. 11.7.1 Safety information labels

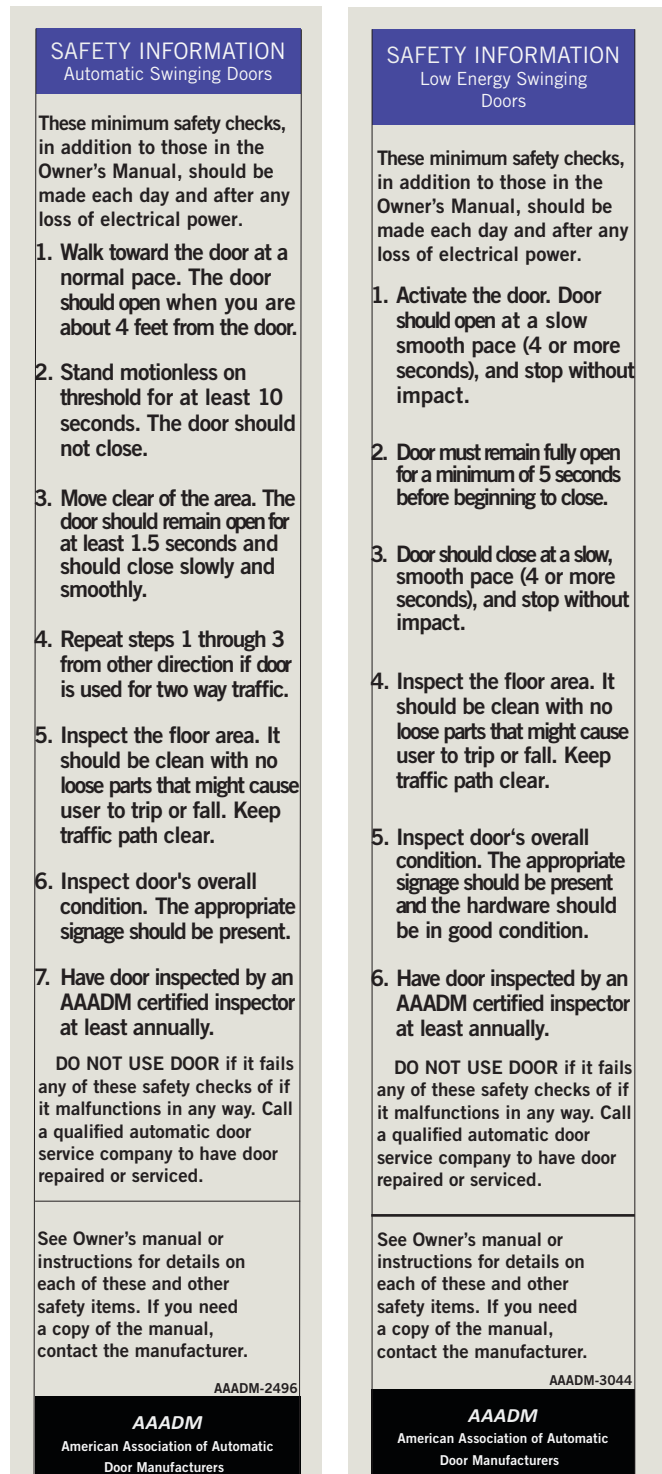
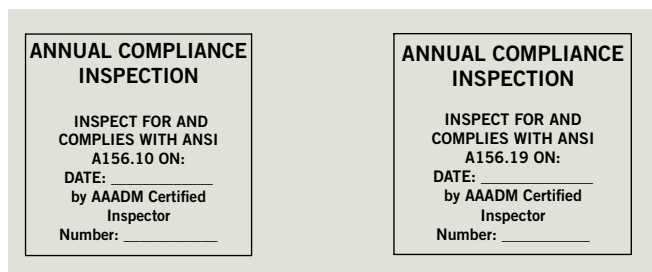


Fig. 11.7.2 Annual compliance inspection labels



12 ED100/ED250 arm configurations

12.1 Single swing door arm configurations

Fig. 12.1.1 Pull arm with track, butt hinge

- 1 Pull arm
- 2 Track
- 3 Pivot pin, 1/2" or 1"
- 4 Program switch panel

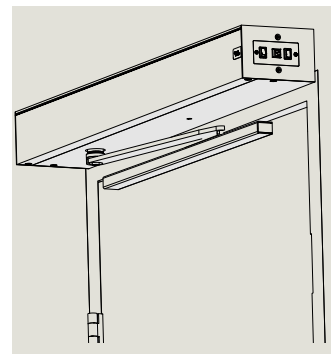
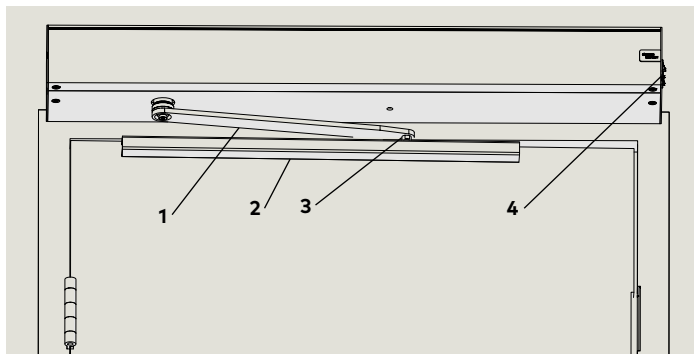


Fig. 12.1.2 CPD pull arm with CPD lever and track, butt hinge

- 2 Track
- 3 Pivot pin, 1/2" or 1"
- 4 Program switch panel
- 5 CPD pull arm
- 6 CPD lever

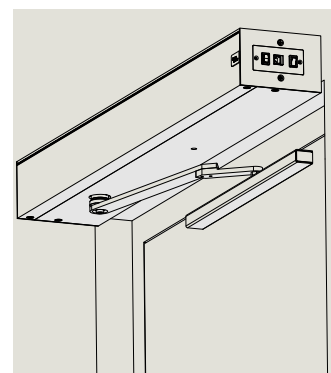
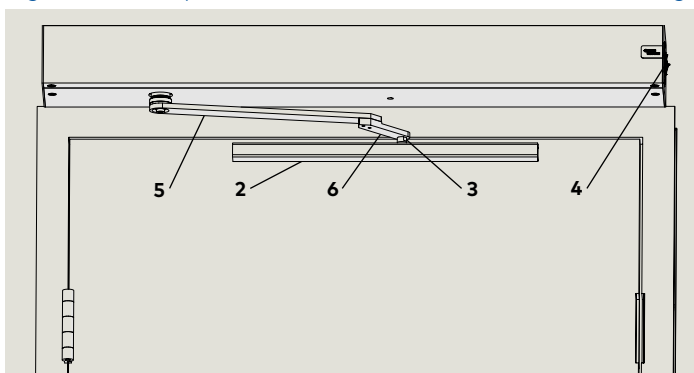


Fig. 12.1.3 Push arm, butt hinge

- 1 Arm
- 2 Adjustment screw
- 3 Connecting rod
- 4 Shoe
- 5 Program switch panel
- 6 Door hinge side

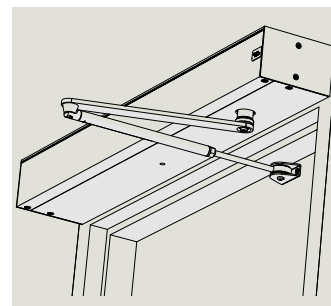
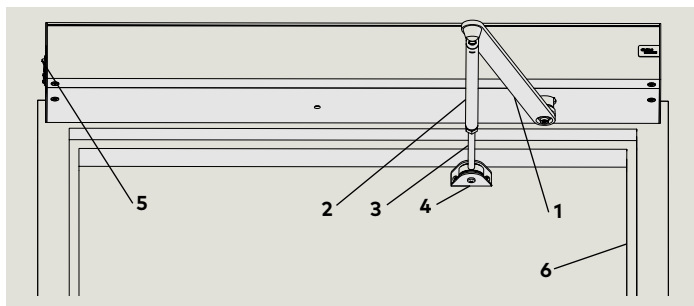


Fig. 12.1.4 Deep push arm, butt hinge

- 1 Arm
- 2 Adjustment screw
- 3 Connecting rod, extended length
- 4 Shoe
- 5 Program switch panel
- 6 Door hinge side

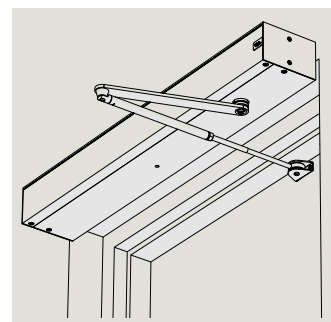
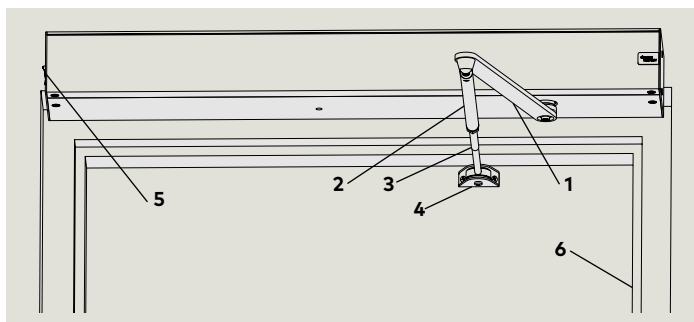
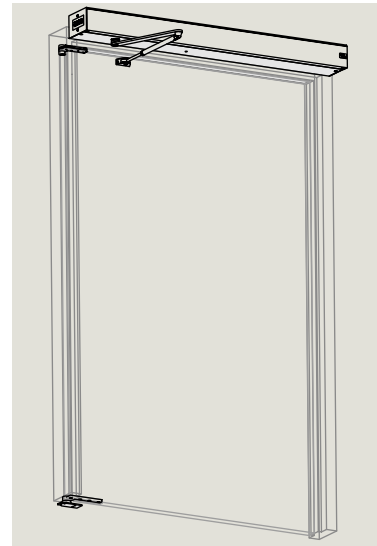
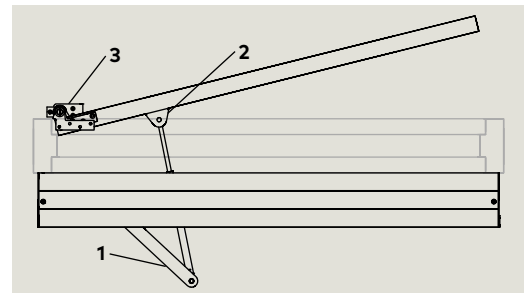


Fig. 12.1.5 LH offset pivot door, surface applied header, push arm

- 1 Push arm
- 2 Shoe
- 3 Top of door offset pivot hardware (by others)
- 5 Bottom of door offset pivot hardware (by others)



- 1 Push arm
- 2 Shoe
- 3 Top of door offset pivot hardware (by others)
- 5 Bottom of door offset pivot hardware (by others)

Fig. 12.1.6 RH center hung door, surface applied header, push arm

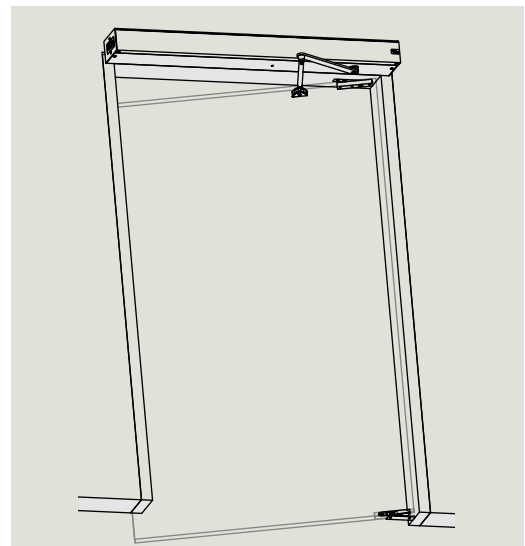
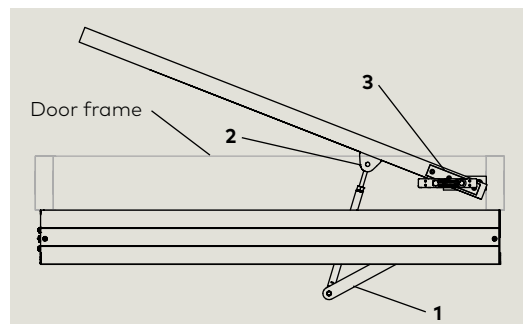


Fig. 12.1.7 LH center hung door, surface applied header, CPD pull arm as push

- 1 CPD pull arm
- 2 CPD lever
- 3 Pivot pin, 1/2" or 1"
- 4 Track
- 5 Top of door center hung hardware (by others)
- 6 Bottom of door center hung hardware (by others)

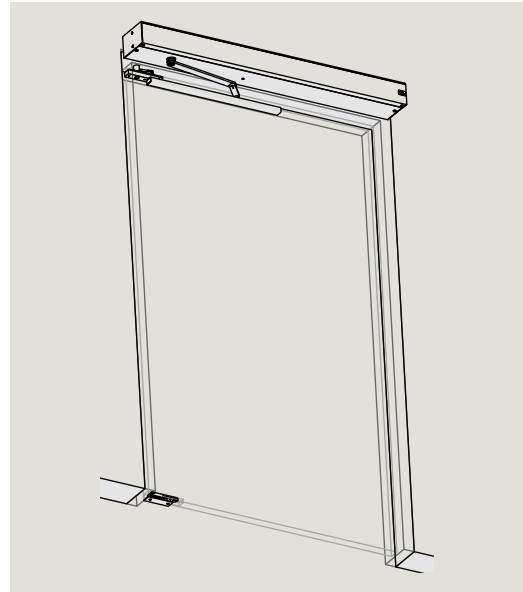
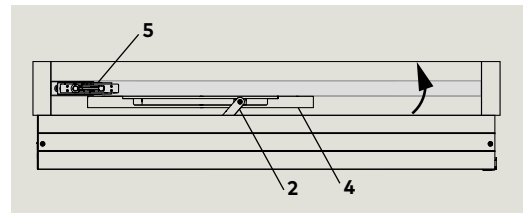
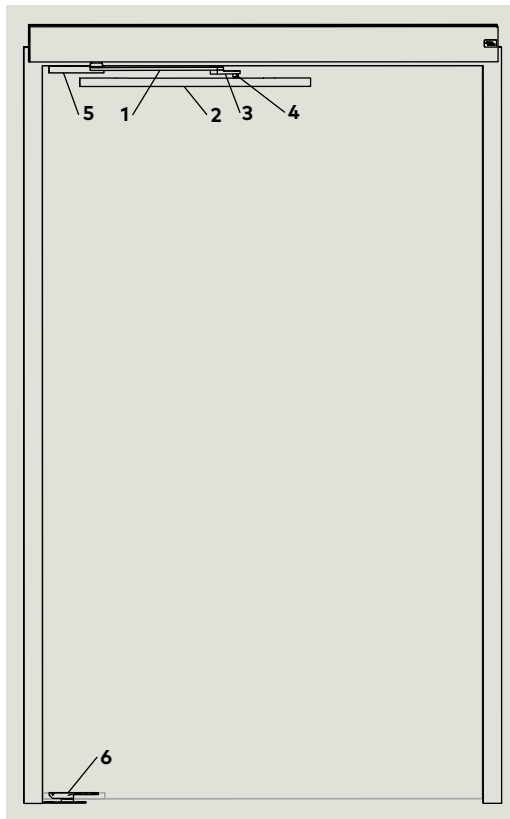
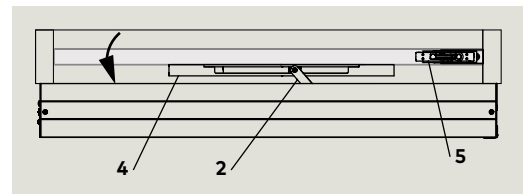
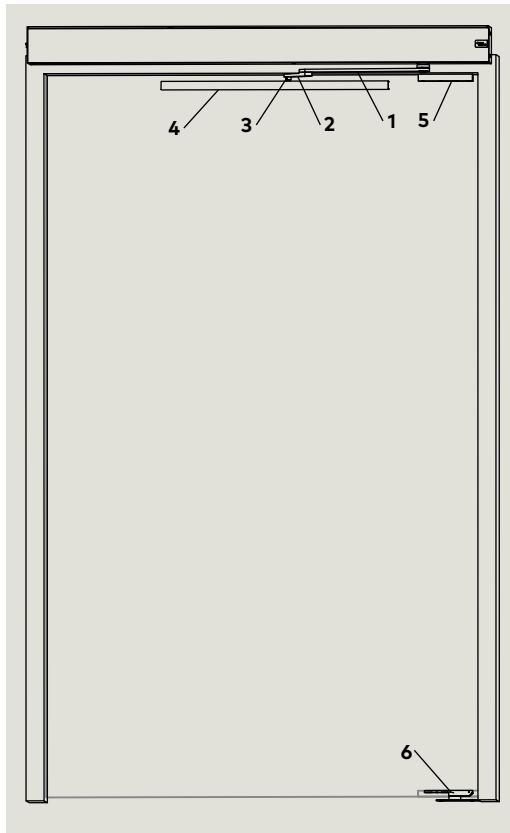


Fig. 12.1.8 LH center hung door, surface applied header, CPD pull arm

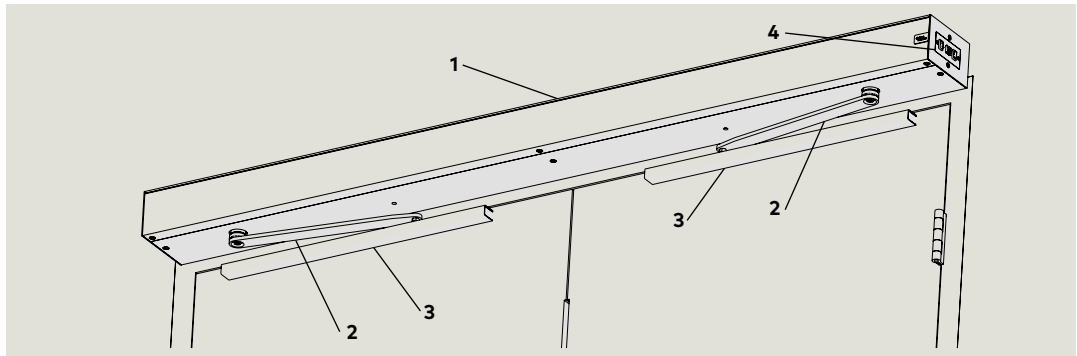
- 1 CPD pull arm
- 2 CPD lever
- 3 Pivot pin, 1/2" or 1"
- 4 Track
- 5 Top of door center hung hardware (by others)
- 6 Bottom of door center hung hardware (by others)



12.2 Double swing door arm configurations

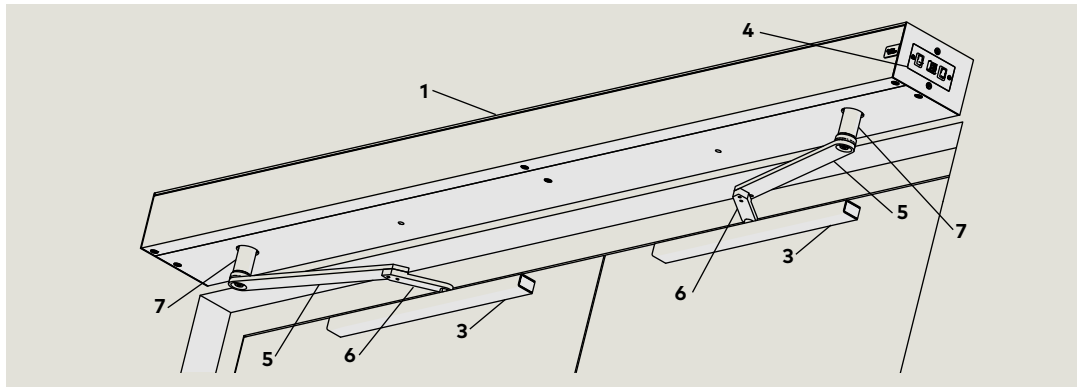
- 1 Double header
- 2 Pull arm
- 3 Track
- 4 Program switch panel

Fig. 12.2.1 Double door pull arm with track



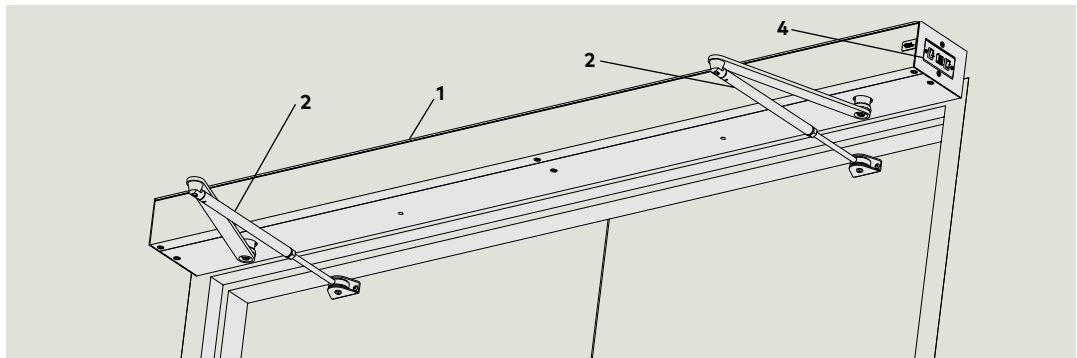
- 1 Double header
- 3 Track
- 4 Program switch panel
- 5 CPD pull arm
- 6 CPD lever
- 7 Axle extension

Fig. 12.2.2 Double door CPD pull arm with track



- 1 Double header
- 2 Push arm
- 4 Program switch panel

Fig. 12.2.3 Double door push arm



- 1 Double header
- 2 Push arm
- 3 Track
- 4 Program switch panel
- 5 CPD pull arm
- 6 CPD lever
- 7 Axle extension

Fig. 12.2.4 Double egress, LH

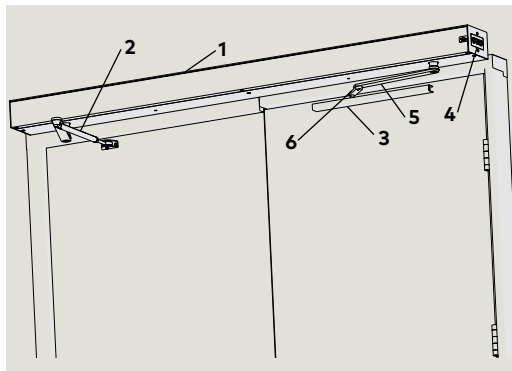
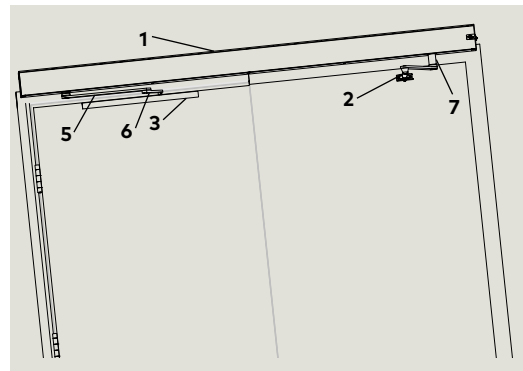


Fig. 12.3.5 Double egress, RH



13 Header installation

13.1 Installation preparation

NOTICE

Installation steps listed in Chapter 13 are a recommendation. Structural, local conditions, available tools, or other factors or circumstances may require modification to these steps.



WARNING

Review safety information in Chapter 3!



WARNING

ED100/ED250 header assembly should be installed by trained and knowledgeable installers experienced in installation and commissioning of automatic door closers. The installer should be familiar with all applicable local and national building code requirements, and with requirements of current ANSI/BHMA standards:

- A156.10, Power operated pedestrian doors
- A156.19, Power assist and low energy power operated doors

NOTICE

Installation templates: Refer to paragraphs starting with 13.7.



WARNING

Operator 115 Vac branch circuit disconnect must be OFF at start of installation!

13.1.1 dormakaba USA, Inc. hardware

Locate shipping containers for header assembly and ED100/ED250 operator.

13.1.2 Door frame and door

1. Insure area around door frame, adjacent walls and door is readily accessible and free of objects and debris.

13.1.3 Accessories

1. Verify accessories planned for or in place for the door. Chapter 10, accessories, list typical accessory types for ED100/ED250 operators.



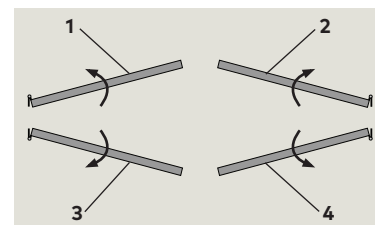
TIPS AND RECOMMENDATIONS

Accessory wiring to header should be planned for prior to header installation.

13.1.4 Handing of door

- 1 Left hand in, push
- 2 Right hand in, push
- 3 Right hand out, pull (Left hand reverse)
- 4 Left hand out, pull (Right hand reverse)

Fig. 13.1.1 Handing of door



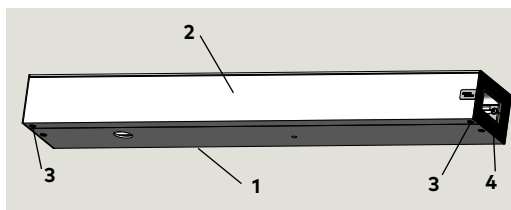
TIPS AND RECOMMENDATIONS

Handing of door, with back to door frame.

13.2 Unpack header assembly

- 1 ED100/ED250 4" x 6" single door header
- 2 Header cover
- 3 Cover screws
- 4 Program switch panel mounting surface

Fig. 13.2.1 Single door header



13.2.1 Unpack contents from header.

1. Remove header assembly from package.
2. Open cover secured by two screws (three for double door header) and remove cover.
3. Remove contents from header.

13.2.2 Single door header contents.

- Accessory installation kit, either low energy or full energy (Chapter 5).
- Program switch panel assembly (Chapter 5).
- Box containing pull arm or push arm kit.

13.2.3 Double door header content additions to Para. 13.2.2.

- Accessory installation kit, either low energy or full energy.
- Box containing pull arm or push arm kit.
- 115 VAC power connecting cable (Para. 5.5).
- Communication cable (Para. 5.5).

13.3 Remove operator from mounting plate

- 1 M6 x 10 SHCS
- 2 115 VAC operator to mounting plate cable

Fig. 13.3.1 Operator top view, M6 x 10 SHCS locations

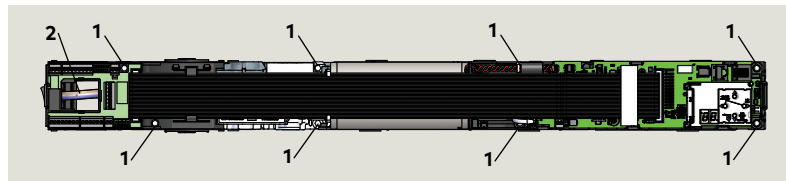
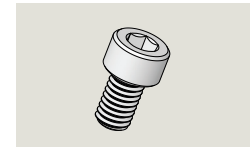


Fig. 13.3.2 M6 x 10 SHCS



- 3 Guide pin
- 4 115 VAC operator to mounting base connector
- 9 Mounting plate

Fig. 13.3.3 Operator side view, retaining pin

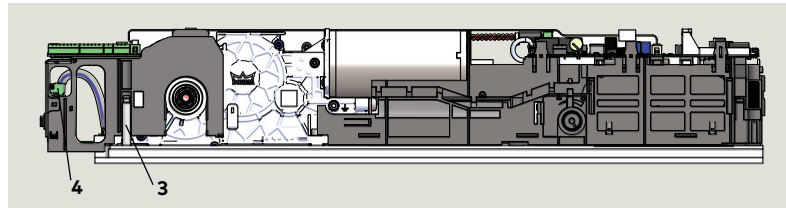
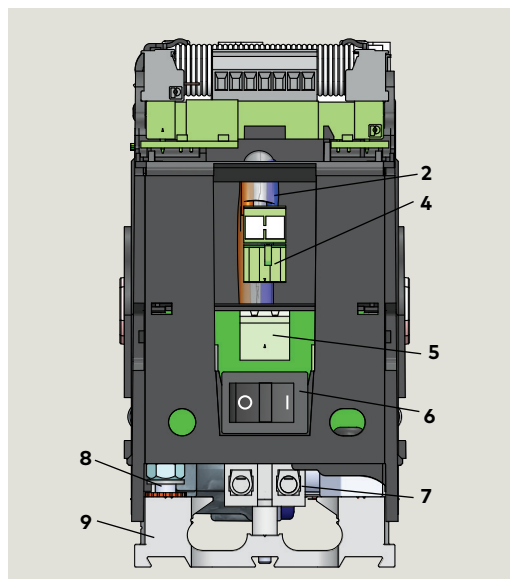


Fig. 13.3.4 Operator power switch side view

- 1.1 M6 x 10 SHCS mounting hole
- 2 115 VAC operator to mounting plate cable
- 3 Guide pin
- 4 115 VAC operator to mounting plate plug
- 5 115 VAC socket
- 6 Power switch
- 7 115 VAC terminal block
- 8 Ground terminal
- 9 Mounting plate



13.3.1 Remove 115 Vac plug from socket.

1. Unplug 115 Vac plug (4) from its socket (5) above power switch.

13.3.2 Remove operator from mounting plate.

2. Use 5 mm hex T-handle to loosen eight M6 x 10 SHCS (1).



TIPS AND RECOMMENDATIONS

Insure all eight fasteners are free of the mounting plate.

3. Place screwdriver blade in gap between operator drive unit and mounting plate; carefully move operator up from mounting plate.

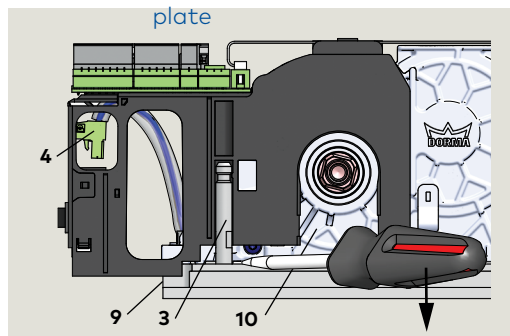


TIPS AND RECOMMENDATIONS

Guide pin resistance requires screwdriver to start operator removal from mounting base.

Fig. 13.3.5 Lift operator from mounting plate

- 3 Guide pin
- 4 115 VAC operator to mounting plate plug
- 9 Mounting plate
- 10 Operator drive unit



4. Lift operator from mounting plate and set aside.

13.4 Single header installation

13.4.1 Single header installation preparation

1. Door frame installed.
2. Confirm header width.
 - Header width equals door frame width plus three inches.
3. Confirm handing of door with header.
4. Determine type of door frame or header mounting surface.
5. Determine type and location of studs, or wall material, above door frame.
6. Mark stud locations on wall above door frame.
7. Select header mounting screws (Chapter 5, Accessory kits).

Fig. 13.4.1 Door frame width

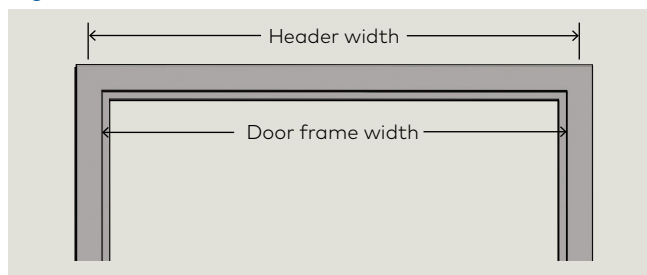
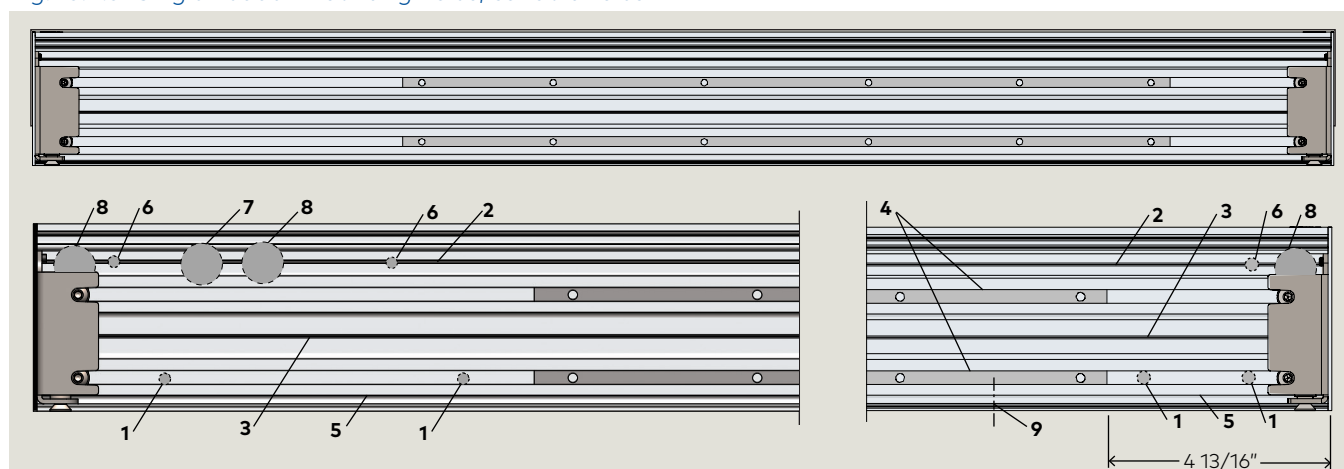


Fig. 13.4.2 Header width



Fig. 13.4.3 Single header mounting holes, conduit holes



- 1 Bottom mounting hole
- 2 Top V-groove
- 3 Bottom V-groove in header center channel
- 4 Header track
- 5 Bottom slide channel
- 6 Top mounting hole, locate on stud centerline (locations shown are for illustration only)
- 7 Low voltage wiring
- 8 115 VAC wiring
- 9 Operator axle centerline

13.4.2 Drill holes in header.

1. Drill four 1/4" holes in header bottom slide channel, two on header axle side and two on header door strike side.
2. Drill two holes in header on door strike side for 115 Vac and low voltage wiring.



TIPS AND RECOMMENDATIONS

If 115 Vac wiring is located on door swing side, drill hole for wiring on header axle side.

13.4.3 Install program switch panel.

1. Install program switch panel in header (Para. 13.5).

13.4.4 Mount header to door frame.

1. Using applicable installation template for reference, locate header on door frame.
2. Drill holes into door frame using header bottom slide channel 1/4" hole locations.
3. Fasten header to wall.
 - Use shims as required to make header square to door frame.

CAUTION

Header must be square to door frame!

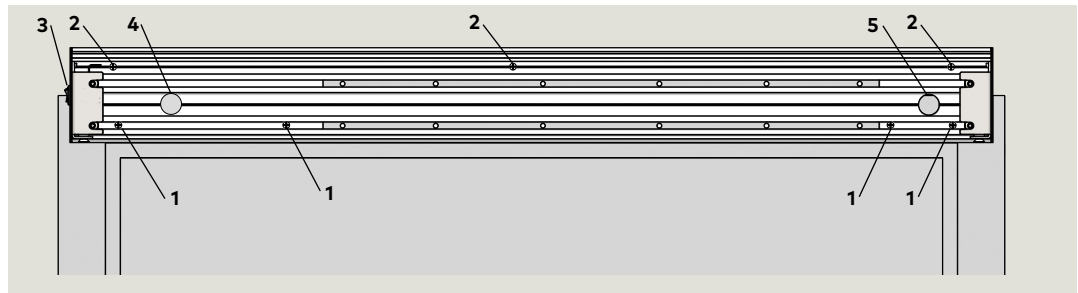
4. Drill 1/4" holes in header top V-groove on centerline of marked stud locations and secure header to wall with selected screw.

CAUTION

After drilling holes, clean all metal debris from header!

Fig. 13.4.4 Header located on door frame

- 1 Screws in bottom slide channel
- 2 Screws in top V-groove (located on stud centerlines)
- 3 Program switch panel (may be in different location)
- 4 Low voltage wiring
- 5 115 VAC wiring (may be in different location)



13.5 Install program switch panel in header

Fig. 13.5.1 Program switch panel installed in header

- 1 Program switch panel
- 2 1/8-32 x 1/4 FHMS
- 3 Hole for operator axle

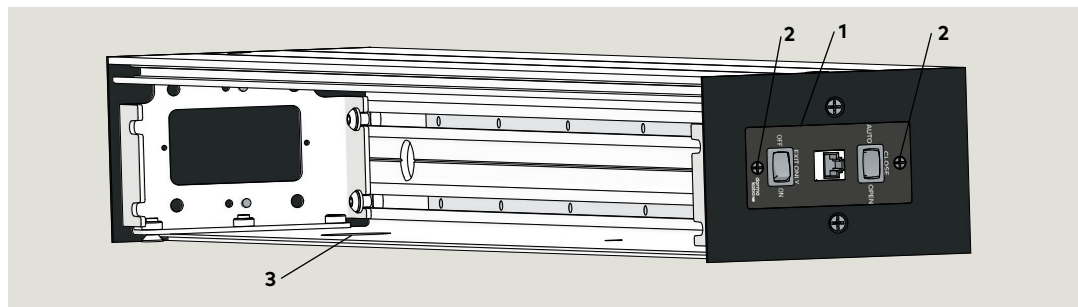
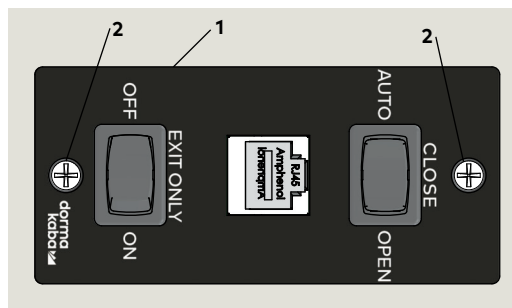


Fig. 13.5.2 Program switch panel

- 1 Program switch panel
- 2 1/8-32 x 1/4 FHMS



13.5.1 Fasten program switch panel to header door strike side.

1. Fasten program switch panel to header using two 1/8-32 x 1/4 FHMS supplied with program switch panel assembly.



TIPS AND RECOMMENDATIONS

Lack of adequate space between side of header and door frame may require program switch panel to be installed at another location on header or door frame.

- Program switch panel cable length is 36". Refer to Para. 14.7.

13.6 Double header installation

13.6.1 Double header installation preparation

1. Door frame installed.
2. Confirm header width.
 - Header width equals door frame width plus three inches.
3. Determine type and location of studs, or wall material, above door frame.
4. Mark stud locations on wall above door frame.
5. Select header mounting screws (Chapter 5, Accessory kits).

Fig. 13.6.1 Header and door frame width

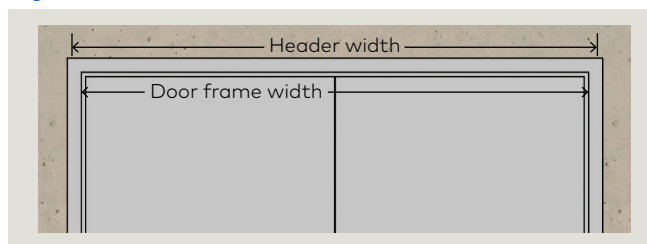
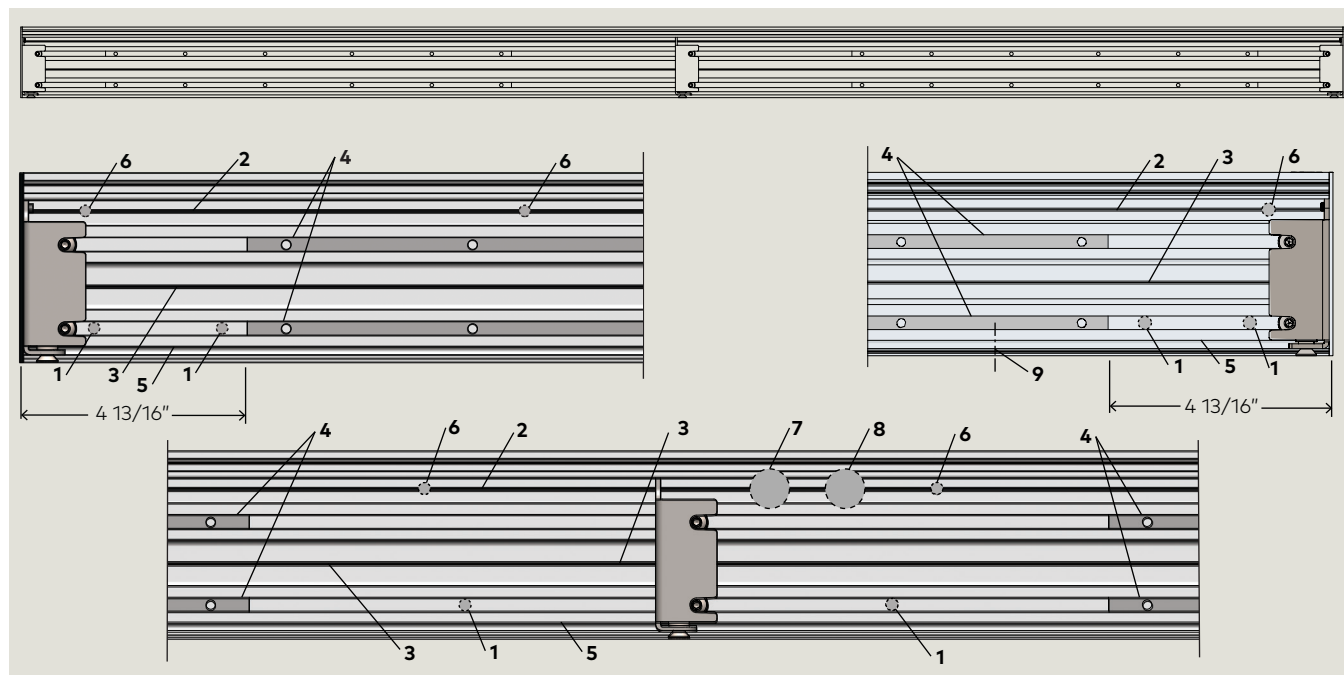


Fig. 13.6.2 Double header mounting holes, conduit holes



- 1 Bottom mounting hole
- 2 Top V-groove
- 3 Bottom V-groove
- 4 Header track
- 5 Bottom slide channel
- 6 Top mounting hole located on stud centerline
- 7 Low voltage wiring (location may change)
- 8 115 VAC wiring (Location may change)

13.6.2 Drill holes in header.

1. Drill six 1/4" holes in header bottom slide channel, two on each side and two in middle of header.
2. Drill two holes in middle of header for 115 VAC and low voltage wiring.



TIPS AND RECOMMENDATIONS

If 115 VAC wiring is located on a door swing side, drill hole for wiring on that side.

13.6.3 Install program switch panel.

1. Install program switch panel in header (Para. 13.5) on active door side.

13.6.4 Mount header to door frame.

1. Using applicable installation template for reference, locate header on door frame.

2. Drill holes into door frame using header bottom slide channel 1/4" hole locations.
3. Fasten header to wall.
 - Use shims as required to make header square to door frame.

CAUTION

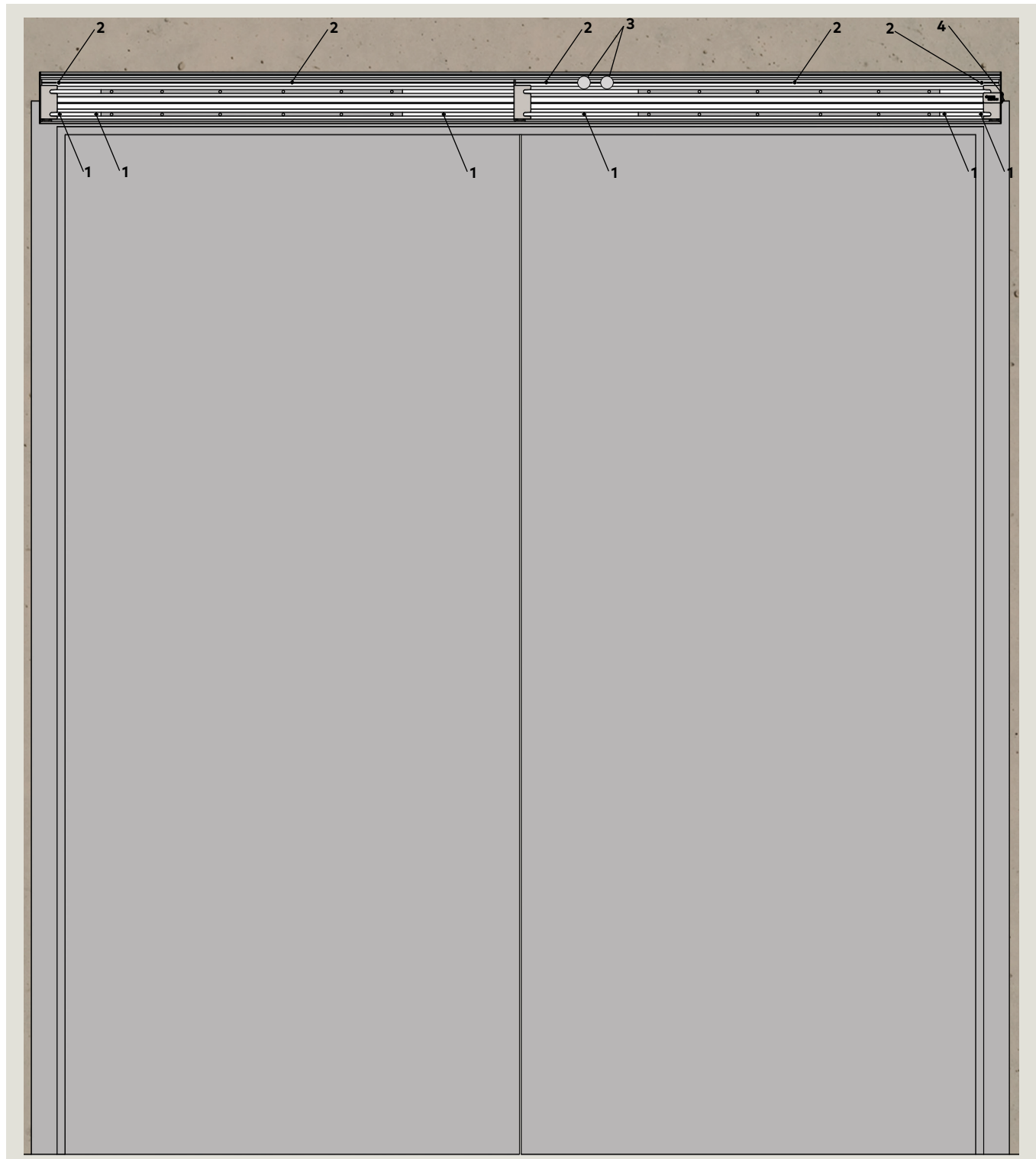
Header must be plumb and level to door frame!

4. Drill 1/4" holes in header top V-groove on centerline of marked stud locations and secure header to wall using selected screw.

CAUTION

After drilling holes, clean all metal debris from header!

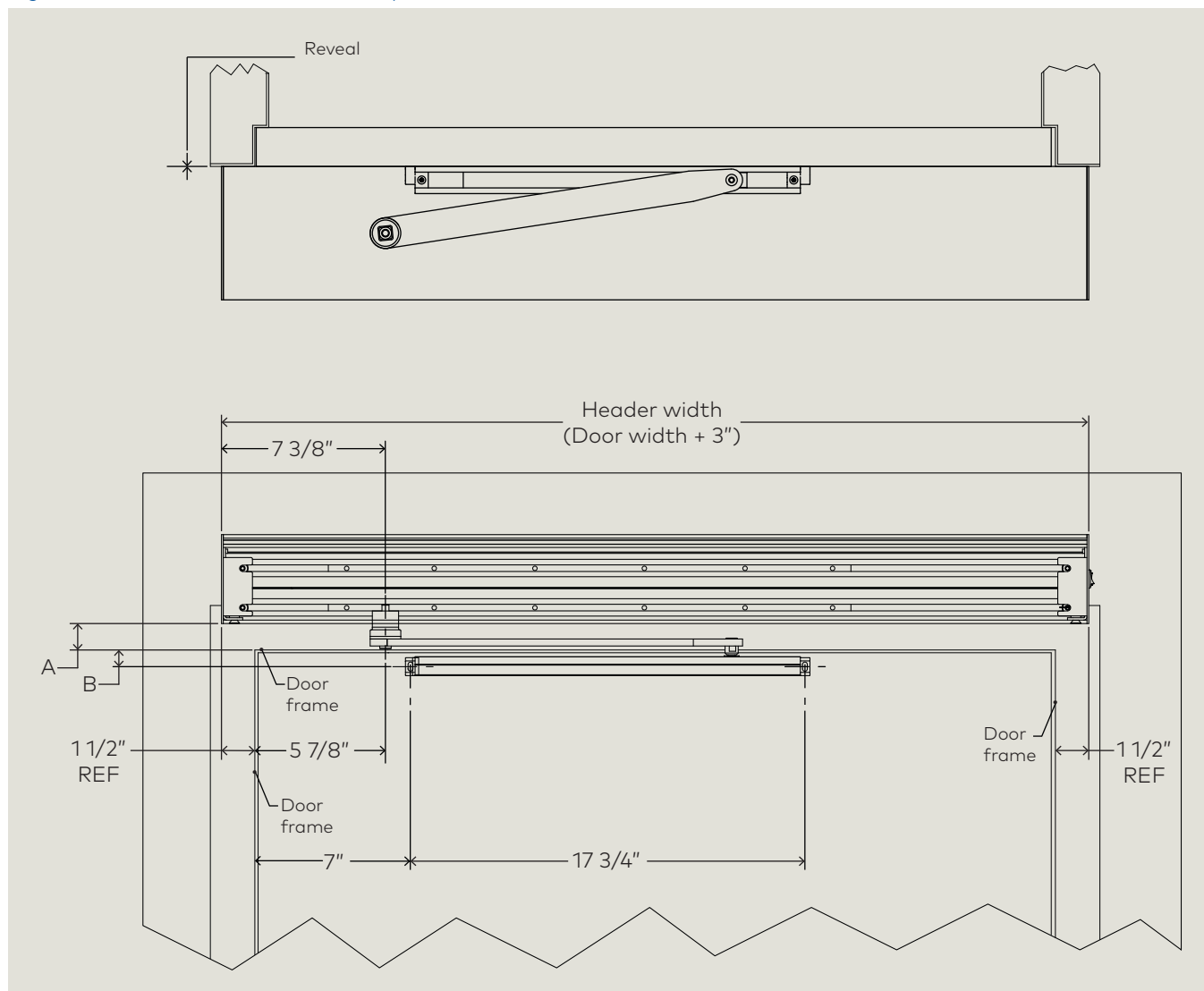
Fig. 13.6.3 Header located on door frame/wall



- | | |
|---|---|
| <p>1 Screws in bottom slide channel</p> <p>2 Screws in top V-groove (located on stud centerlines)</p> | <p>3 Low voltage and 115 VAC wiring (may be in different location)</p> <p>4 Program switch panel (may be in different location)</p> |
|---|---|

13.7 Pull arm installation template, butt hinge

Fig. 13.7.1 Pull arm installation template



13.7.1 Axle distance "A"

Bottom of header to bottom edge of door frame.

Axle extension		A
mm	Inches	
20 mm	25/32	1 3/16"
30 mm	1 3/16	1 9/16"
60 mm	2 3/8	2 3/4"
90 mm	3 9/16	3 15/16"

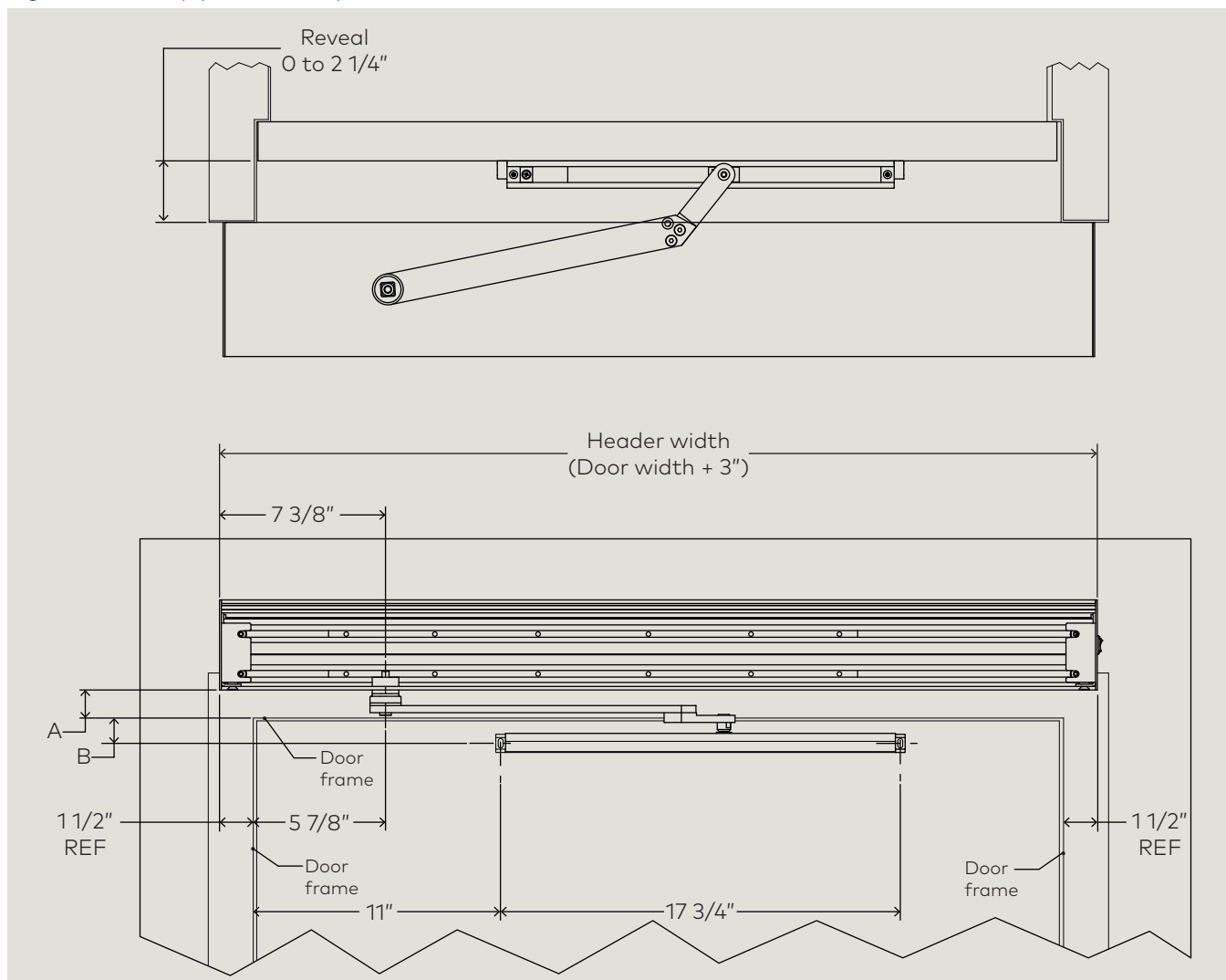
13.7.2 Track height "B"

Track centerline to bottom edge of door frame.

Pivot pin length	B
1/2"	3/4"
1"	1 1/2"

13.8 Deep pull arm installation template, butt hinge

Fig. 13.8.1 Deep pull arm template



13.8.1 Axle distance "A"

Bottom of header to bottom edge of door frame.

Axle extension		A
mm	Inches	
20 mm	25/32	1 1/4"
30 mm	1 3/16	1 5/8"
60 mm	2 3/8	2 13/16"
90 mm	3 9/16	4"

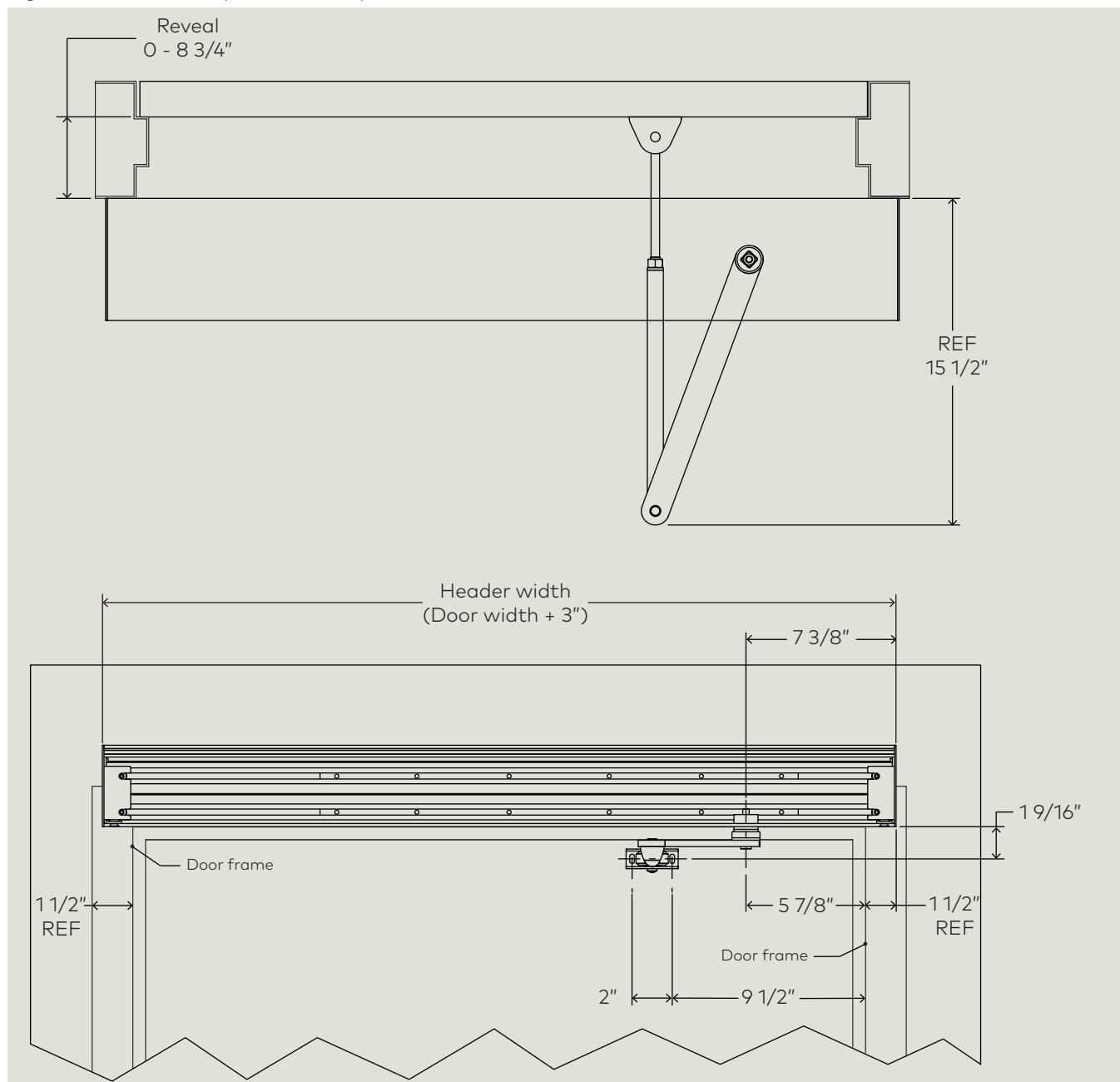
13.8.2 Track height "B"

Track centerline to bottom edge of door frame.

Pivot pin length	B
1/2"	1 1/8"
1"	1 5/8"

13.9 Push arm installation template, butt hinge

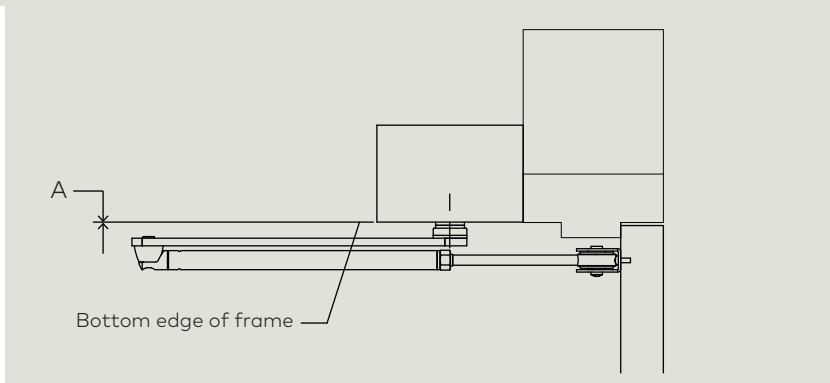
Fig. 13.9.1 Standard push arm template



13.9.1 Axle distance "A"

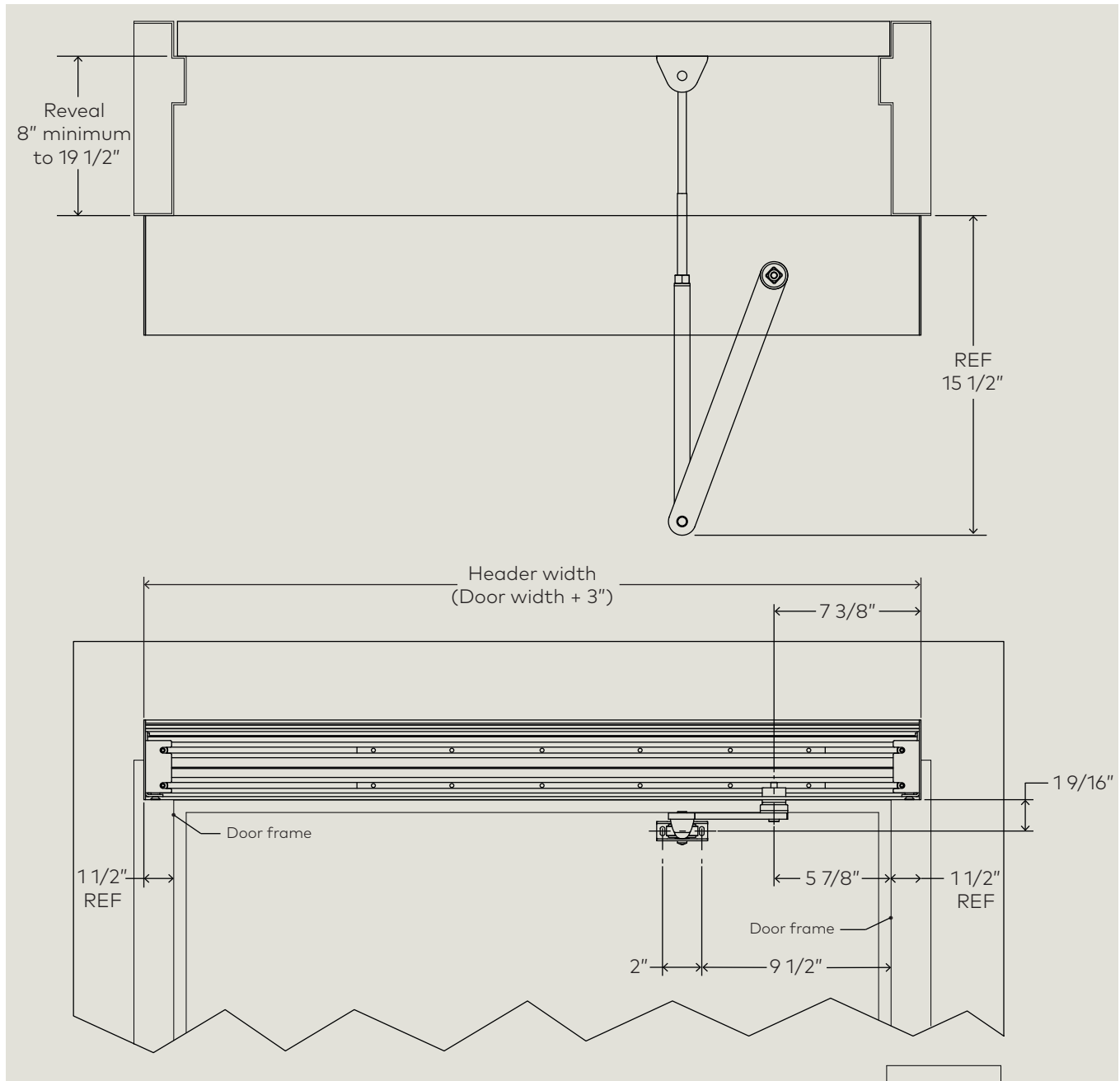
Bottom of header to bottom edge of door frame.

Axle extension		A
20 mm	25/32"	0
30 mm	1 3/16"	7/16"
60 mm	2 3/8"	1 9/16"
90 mm	3 9/16"	2 3/4"



13.10 Deep push arm installation template, butt hinge

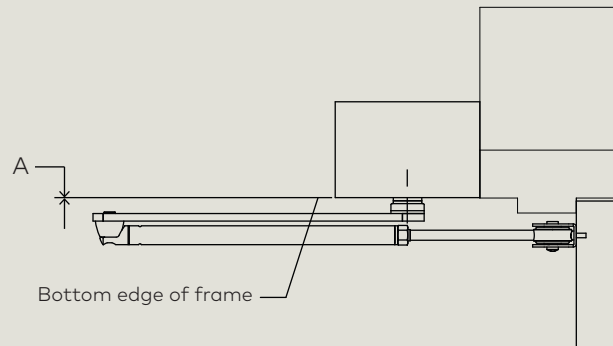
Fig. 13.10.1 Deep push arm template



13.10.1 Axle distance "A"

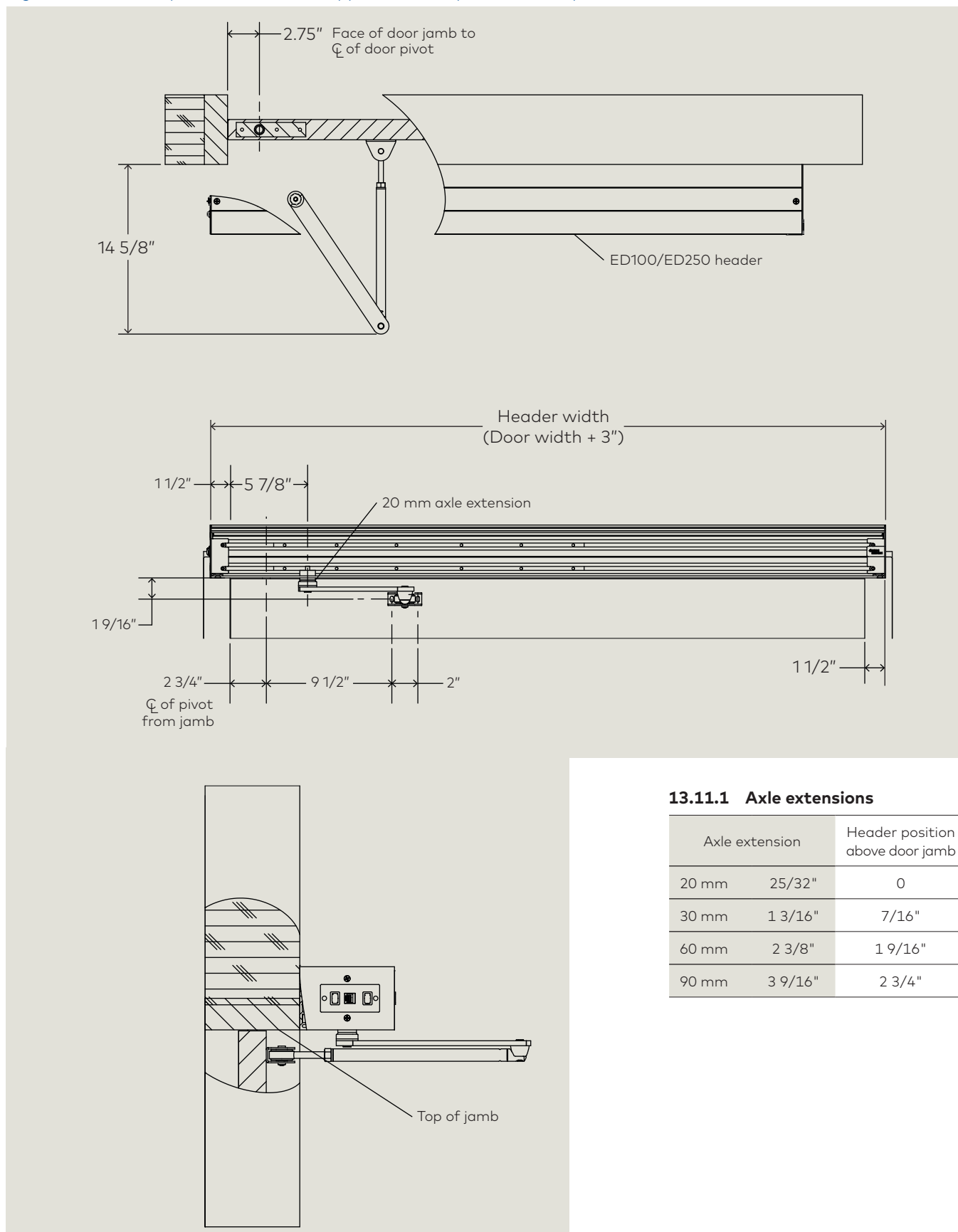
Bottom of header to bottom edge of door frame.

Axle extension		A
20 mm	25/32"	0
30 mm	1 3/16"	7/16"
60 mm	2 3/8"	1 9/16"
90 mm	3 9/16"	2 3/4"



13.11 Center pivot door, surface applied header, push arm template

Fig. 13.11.1 Center pivot door, surface applied header, push arm template

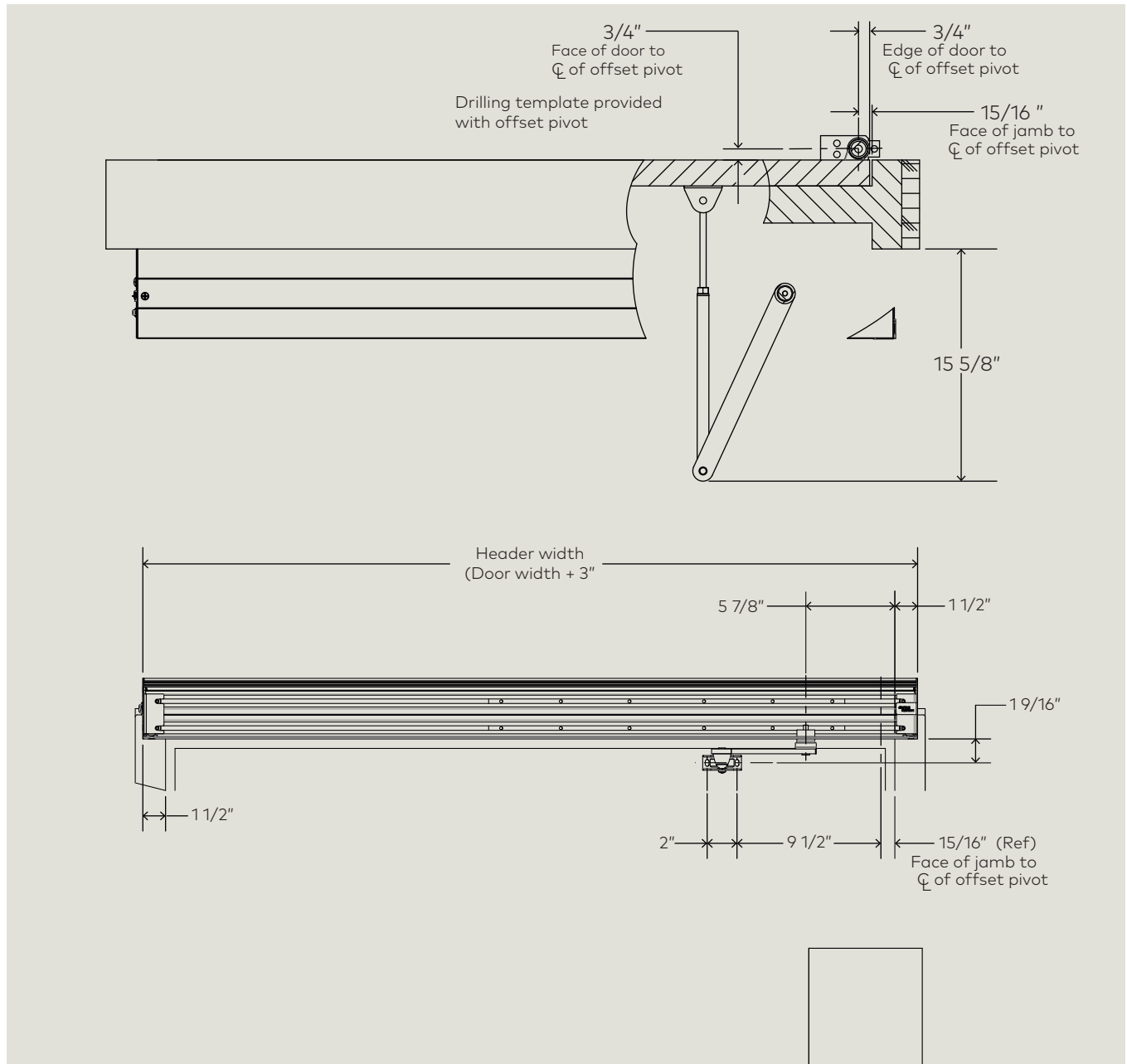


13.11.1 Axle extensions

Axle extension	Header position above door jamb
20 mm	25/32" 0
30 mm	1 3/16" 7/16"
60 mm	2 3/8" 1 9/16"
90 mm	3 9/16" 2 3/4"

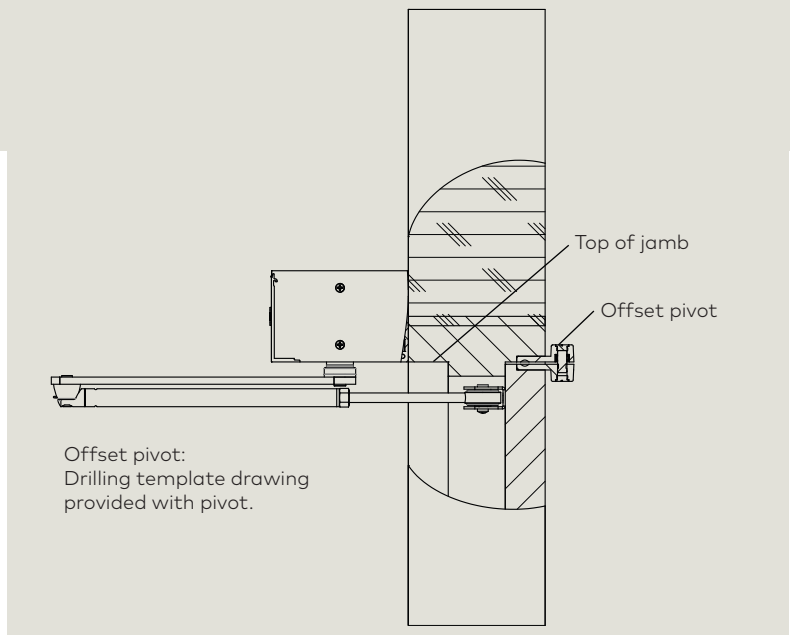
13.12 Offset pivot door, surface applied header, push arm template

Fig. 13.12.1 Offset pivot door, surface applied header, push arm template



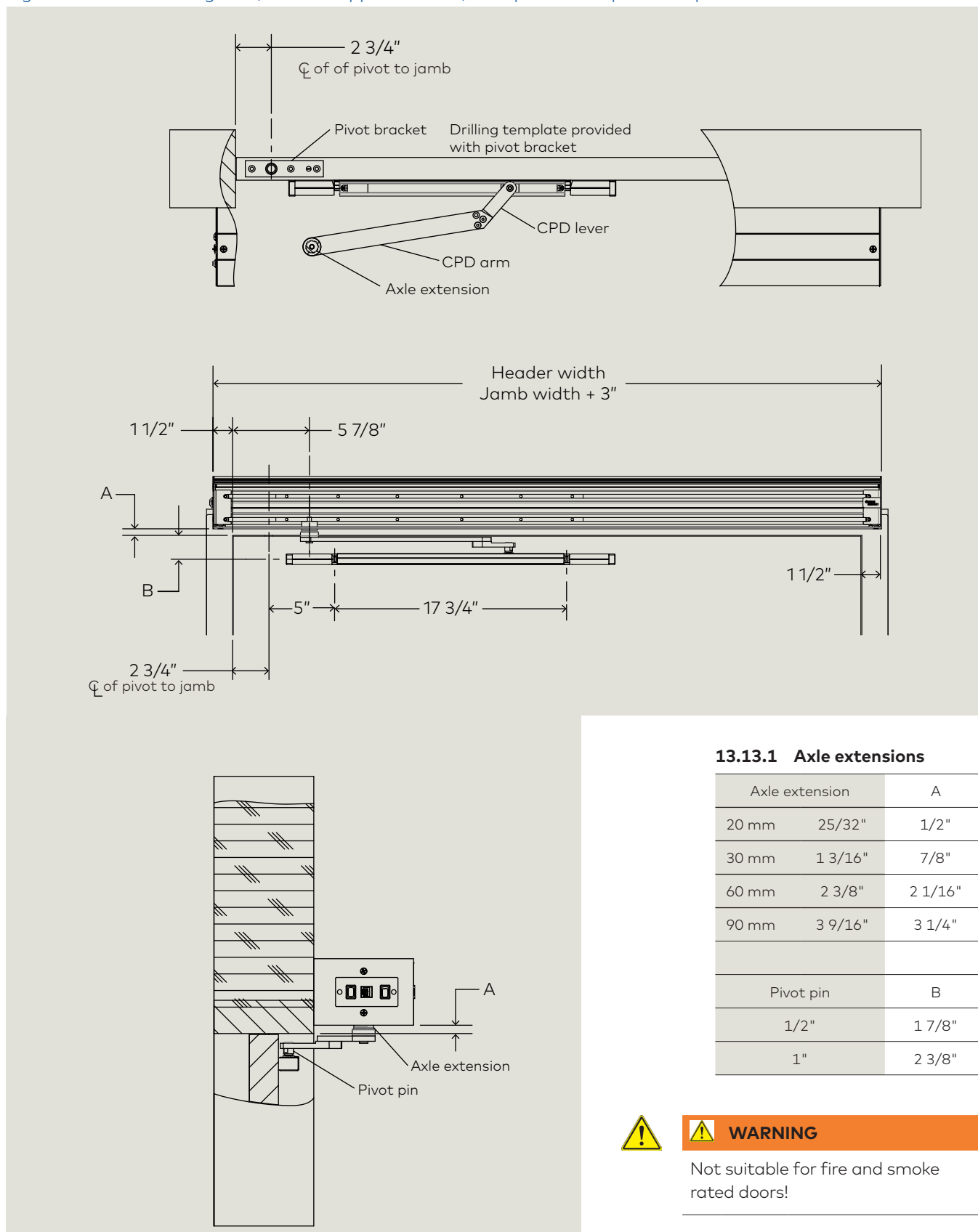
13.12.1 Axle extensions

Axle extension		Header position above top of door jamb
20 mm	25/32"	0
30 mm	1 3/16"	7/16"
60 mm	2 3/8"	1 9/16"
90 mm	3 9/16"	2 3/4"



13.13 Center hung door, SA header, CPD pull arm as push template

Fig. 13.13.1 Center hung door, surface applied header, CPD pull arm as push template



13.13.1 Axle extensions

Axle extension		A
20 mm	25/32"	1/2"
30 mm	1 3/16"	7/8"
60 mm	2 3/8"	2 1/16"
90 mm	3 9/16"	3 1/4"
Pivot pin		B
1/2"		1 7/8"
1"		2 3/8"

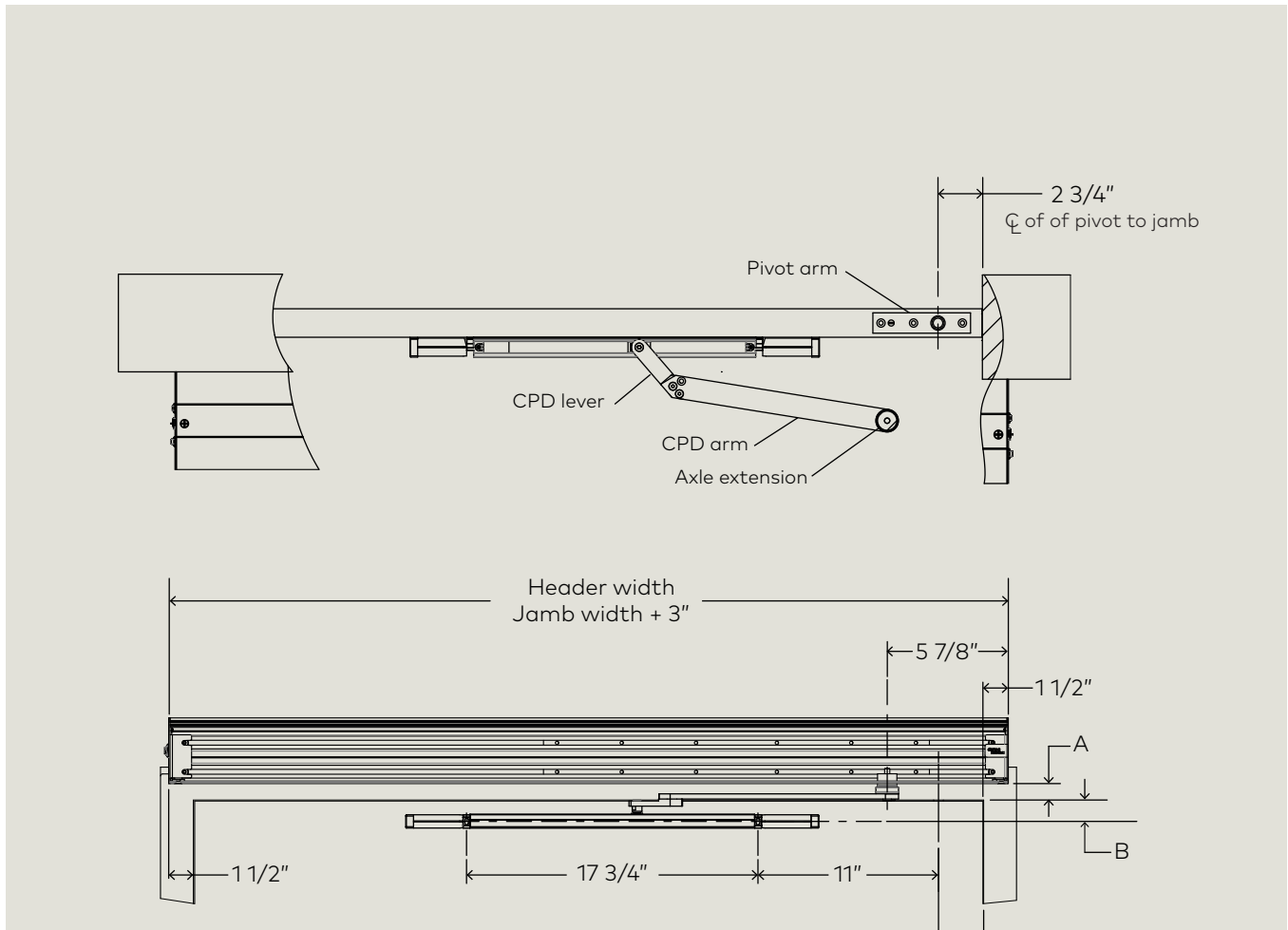


WARNING

Not suitable for fire and smoke rated doors!

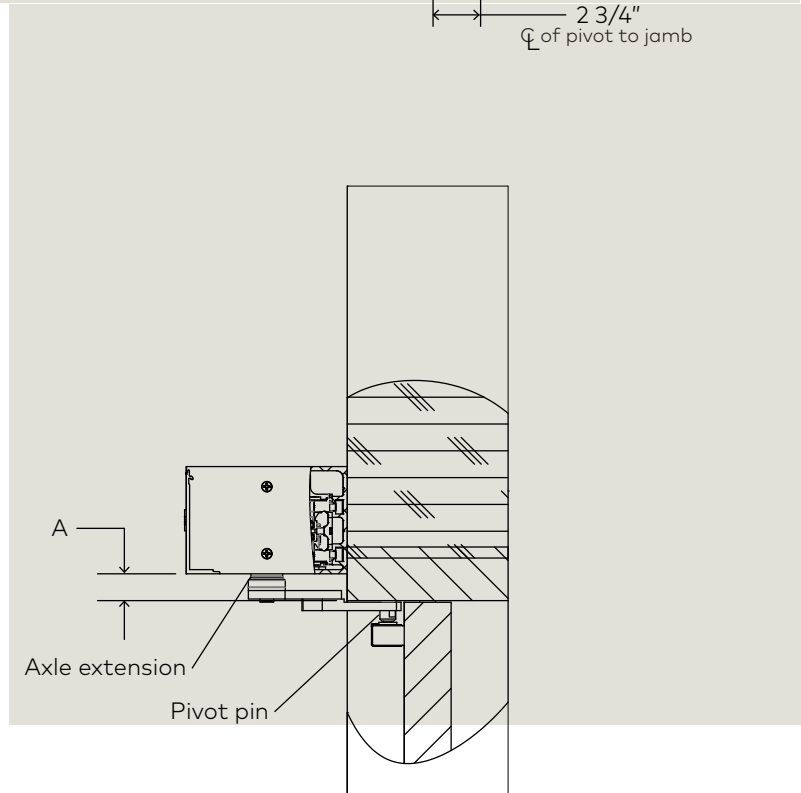
13.14 Center hung door, surface applied header, CPD pull arm template

Fig. 13.14.1 Center hung door, surface applied header, CPD pull arm template



13.14.1 Axle extensions

Axle extension		A
20 mm	25/32"	1"
30 mm	1 3/16"	1 3/8"
60 mm	2 3/8"	2 9/16"
90 mm	3 9/16"	3 1/4"
Pivot pin		B
1/2"		1 5/16"
1"		1 13/16"



14 ED100/ED250 operator installation

14.1 Single header mounting plate installation

- 4 Header track
- 9 Operator axle hole
- 12 Program switch panel

Fig. 14.1.1 Header with header tracks

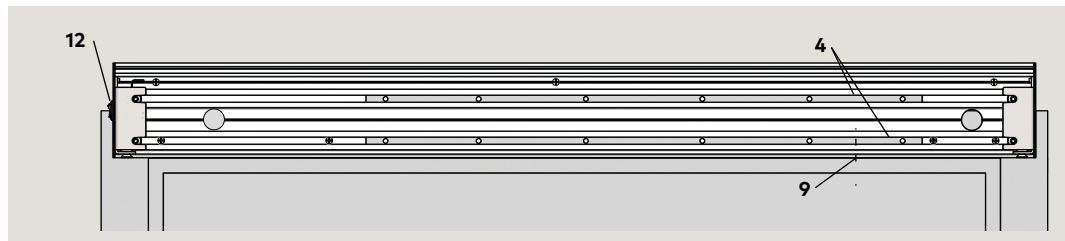


Fig. 14.1.2 Mounting plate

- 1 Mounting plate
- 2 1/4 x 20 UNC hole
- 3 115 VAC terminal block
- 11 1/4-20 x 1" PHFS DK4617-010

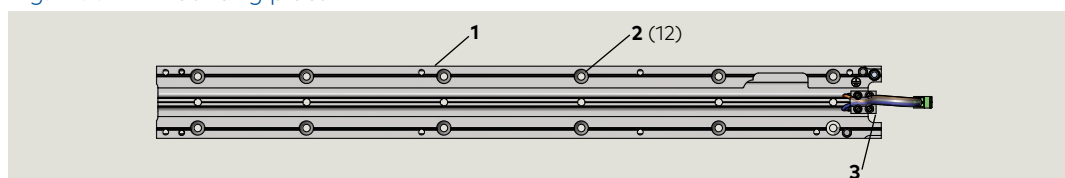


Fig. 14.1.3 Header with mounting plate installed

- 3 115 VAC terminal block
- 5 Guide pin
- 6 Third guide pin
- 7 1/4-20 x 1" FHMSF
- 9 Operator axle centerline

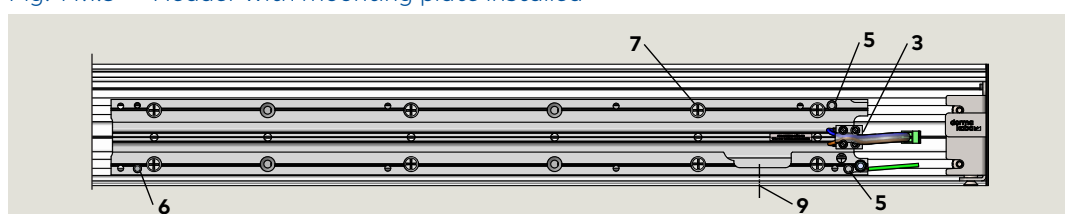


Fig. 14.1.4 Mounting plate location in header

- 1 Inside edge of jamb bracket
- 2 Edge of mounting base

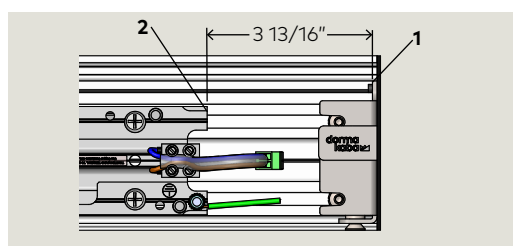


Fig. 14.1.5 1/4-20 x 1" PHFS

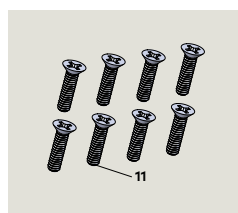
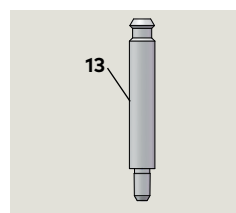


Fig. 14.1.6 Guide pin



14.1.1 Position header tracks.

1. Slide header tracks (7) to side of header with operator axle hole.

14.1.2 Fasten mounting plate to header tracks.

1. Place mounting plate on header tracks, aligning holes in header track with 1/4 x 20 UNC mounting plate holes.
2. Thread eight 1/4-20 x 1" FHMSF into mounting plate hole locations (Fig. 14.1.3). Do not tighten screws.

14.1.3 Fix location of mounting plate in and secure to header.

1. Slide mounting plate to dimension shown between inside edge of jamb bracket and edge of mounting plate (Fig. 14.1.4).
2. Tighten all eight screws using No. 3 Phillips screwdriver. Recheck dimension in step 1.

14.2.4 Install third guide pin.

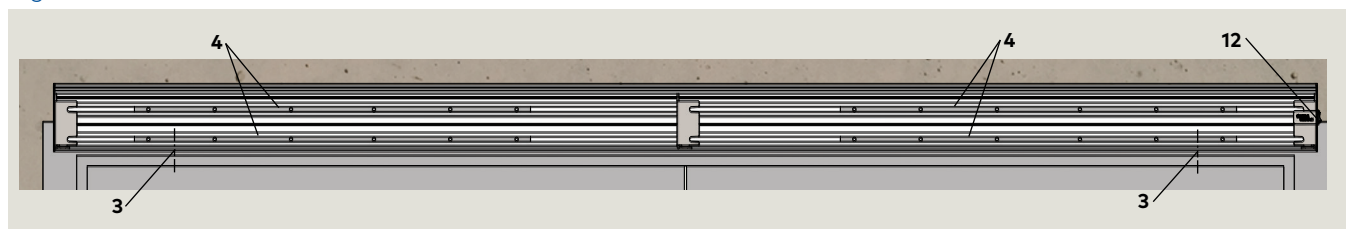
1. Install third guide pin (6).

CAUTION

Tighten screws to torque of

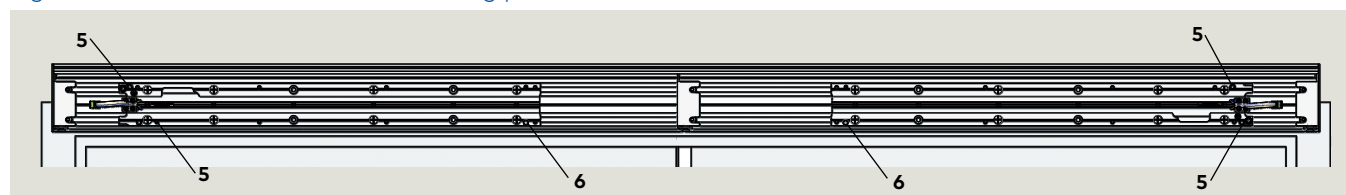
14.2 Double header mounting plate installation

Fig. 14.2.1 Double header with header tracks



- 3 Axle centerline
- 4 Header track
- 12 Program switch panel

Fig. 14.2.2 Double header with mounting plates installed



- 5 Guide pin
- 6 Third guide pin

Fig. 14.2.3 115 VAC power cable

- 8 115 VAC power cable
DX3484-010, 5.8 ft.
DX3484-020, 7.9 ft.
DX3484-030, 11 ft..

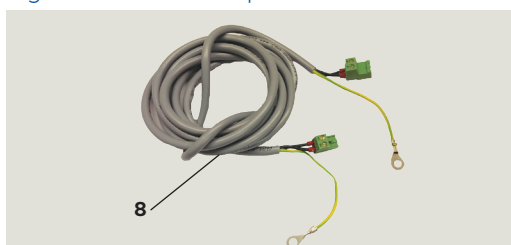
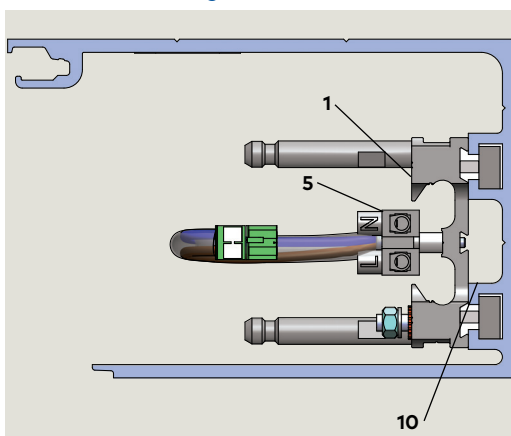


Fig. 14.2.4 Header and mounting plate wiring channels

- 1 Mounting plate channel
- 5 115 VAC terminal block
- 10 Header center channel



14.2.1 Install mounting plates in double header.

1. Refer to Para. 14.1, install mounting plates in header.

14.2.2 Install 115 VAC power cable.

1. Route 115 VAC power cable through both mounting plate channels.



TIPS AND RECOMMENDATIONS

Cable will connect 115 VAC between the two operators (Ref. Para. 14.6).

14.2.3 Install third guide pin.

1. Install third guide pin in each mounting plate (Fig. 14.2.2).



TIPS AND RECOMMENDATIONS

Use header center channel for low voltage wiring.

14.3 Customer 115 Vac connection to mounting plate terminal block

Fig. 14.3.1 Mounting plate power connection side

- 1 115 Vac terminal block
- 2 Ground terminal
- 3 Terminal block screw torque label
- 4 Preferred 115 Vac wiring entry point

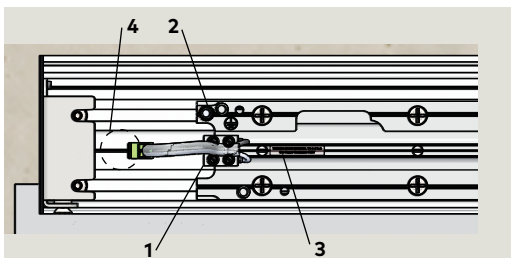


Fig. 14.3.2 115 Vac connections

- 1 115 Vac terminal block
- 2 Ground terminal
- 3 Mains terminal torque and wire label
- 5 M3.5 screw
- 6 115 Vac plug to operator
- L 115 Vac
- N Neutral
- G Ground

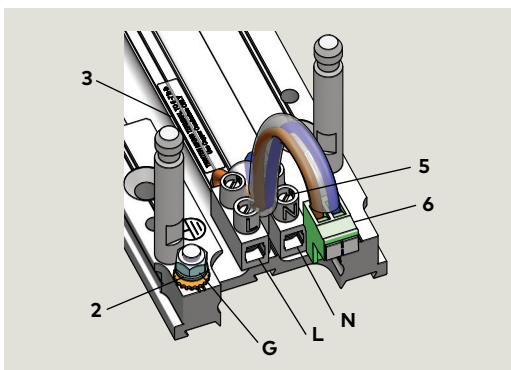


Fig. 14.3.3 Mains terminal torque and wire label

TIGHTEN MAINS TERMINAL TO 5-7 in-lb
Use Copper Conductors ONLY



TIPS AND RECOMMENDATIONS

Install label in header with panelboard and circuit breaker number supplying 115 Vac to header.

14.3.1 Connect 115 VAC wiring



WARNING

Routing and connection of 115 Vac wiring to ED100/ED250 must be performed by a qualified person!



WARNING

115 Vac branch circuit disconnect or circuit breaker must be OFF!

1. Route wiring into header, use appropriate fitting to secure conduit or wiring to header, and route wiring to 115 Vac terminal block.

CAUTION

Use copper conductors only!

2. Terminate 115 Vac wiring at terminal block.



TIPS AND RECOMMENDATIONS

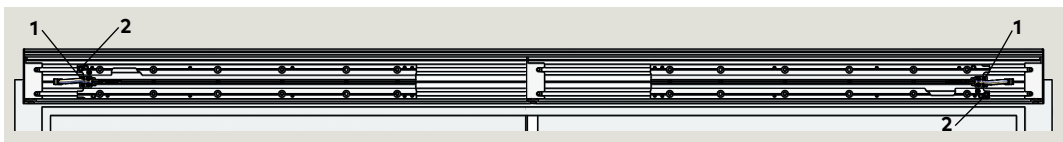
- Maximum wire strip length, 1/4".
- Tighten terminal screws to torque referenced in Fig. 14.3.3.
- Leave service loop in wiring at terminal block for maintenance.

3. Terminate ground wire at ground terminal. Remove nut and washer on ground terminal, bend ground wire around terminal, replace washer and nut and tighten. Leave service loop in ground wire.
 - Use 5/16" [8 mm] socket for nut.

14.4 Double door header 115 Vac mounting plate connection

Fig. 14.4.1 Double door header 115 VAC connection

- 1 115 Vac terminal block
- 2 Ground stud



NOTICE

A 115 Vac power cable connects the two operators together (Para. 14.6).

14.4.1 115 Vac connection to double door header.

1. Customer 115 Vac can connect to either mounting plate 115 Vac terminal block and ground stud.

14.4 Remove protective film strips from operator

1 Protective film strip

Fig. 14.4.1 Operator protective film strips

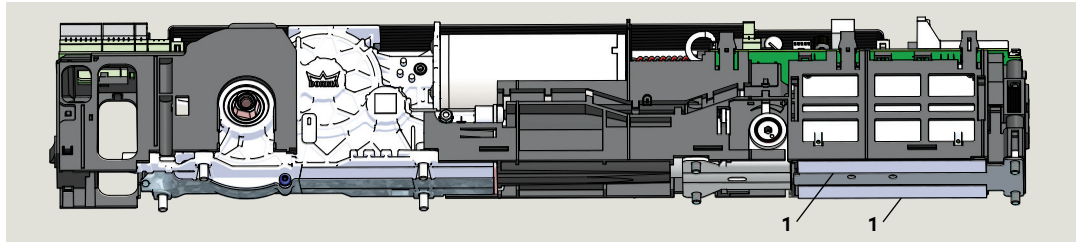
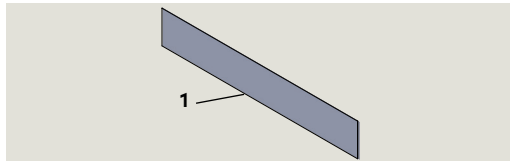
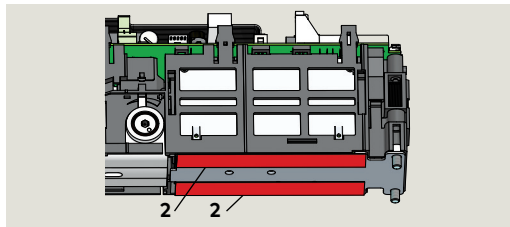


Fig. 14.4.2 Protective film strip



2 Heat conductive pad

Fig. 14.4.3 Heat conductive pads



14.4.1 Remove protective film strips.

1. Remove two protective film strips from operator heat conductive pads.

CAUTION

Heat conductive pads must remain clean once protective film strips are removed!

14.5 Install ED100/ED250 operator on mounting plate in header

Fig. 14.5.1 Header with mounting plate installed

- 3 Guide pin
- 4 Mounting plate
- 5 115 VAC plug
- 6 M6 x 10 SHCS
- 7 mounting hole
- 8 Program switch

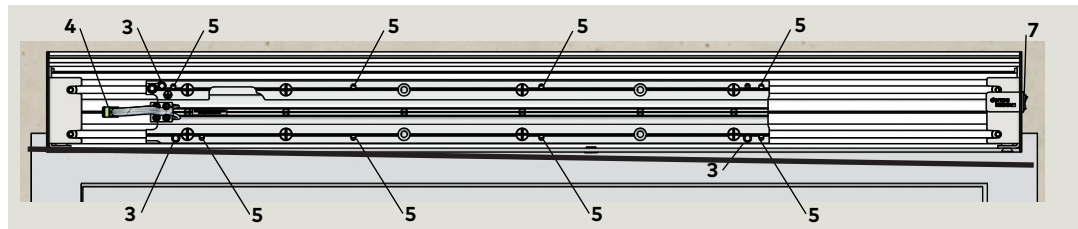


Fig. 14.5.2 Installing operator on mounting plate

- 1 M6 x 10 SHCS
- 2 Operator housing
- 3 Guide pin
- 4 Mounting plate
- 5 115 VAC plug
- 6 M6 x 10 SHCS
- 7 mounting hole
- 8 115 VAC terminal block

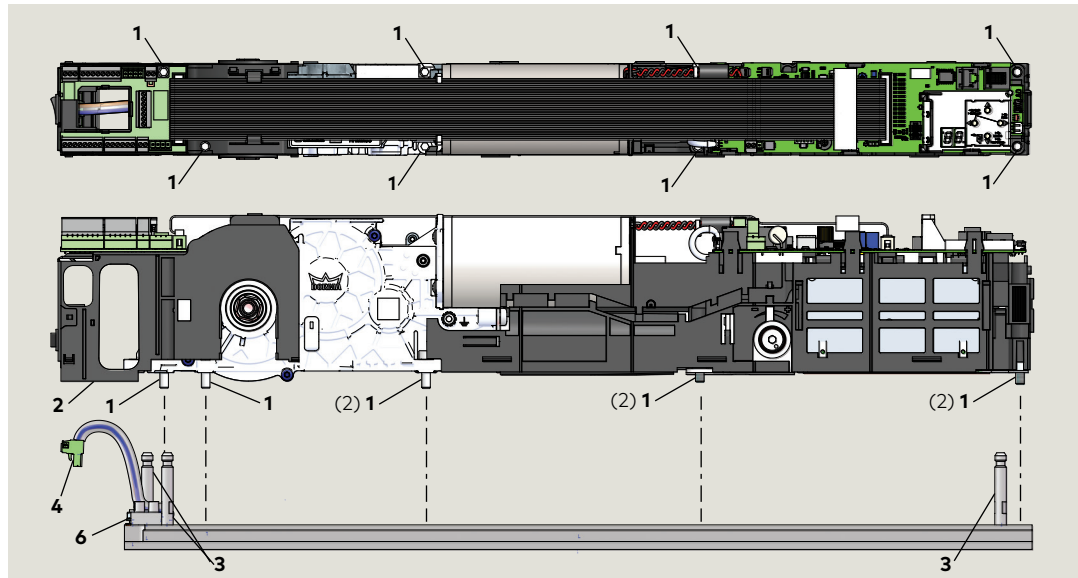
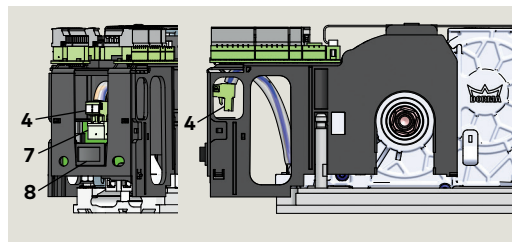


Fig. 14.5.3 115 VAC plug connection

- 4 Mounting plate
- 5 115 Vac plug
- 7 Operator 115 Vac socket
- 8 Power on switch



NOTICE

Customer 115 Vac wiring (Para. 14.3) not shown for clarity.

14.5.1 Install operator on mounting plate.

1. Place operator over the three mounting plate guide pins.
2. Move operator in toward mounting plate, guiding all wiring into operator housing.
3. Once operator is placed flush against mounting plate, use a 5 mm T handle hex key to thread eight M6x10 SHCS into mounting plate.
4. Tighten all eight SHCSs.
5. Insert 115 Vac mounting plate plug into operator 115 Vac socket.

Fig. 14.5.4 Operator and mounting plate assembly

- 2 Operator housing
- 3 Guide pin
- 4 Mounting plate
- 5 115 Vac plug
- 8 Power switch

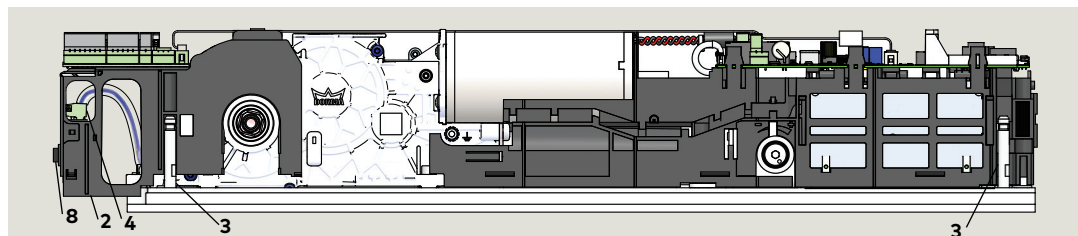


Fig. 14.5.5 Header with operator installed



14.6 Double header ED100/ED250 operator installation

Fig. 14.6.1 Double header with operators installed

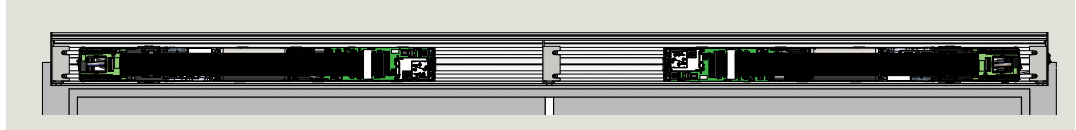


Fig. 14.6.2 115 Vac power cable installed on operator with 115 VAC customer connection

- 1 Power switch
- 2 Power cable 115 VAC plug
- 3 115 VAC cable to terminal block
- 4 Power cable ground wire and ring terminal
- 5 Customer 115 Vac power
- 6 Power switch board
- 7 Ground stud nut

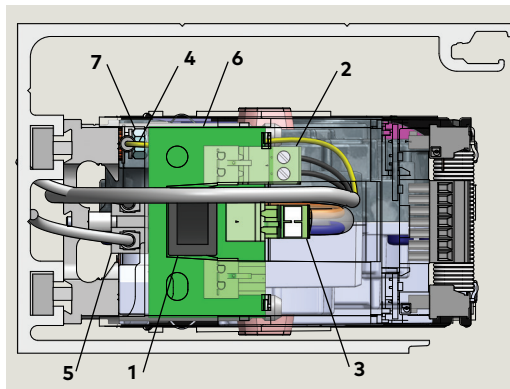
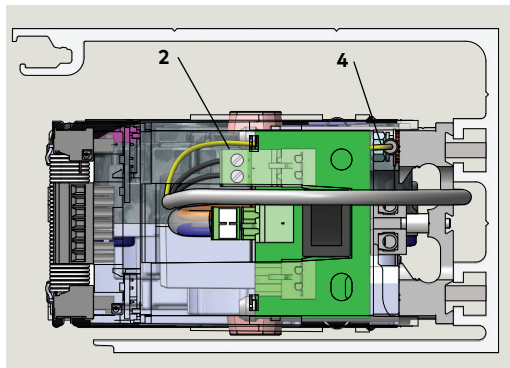
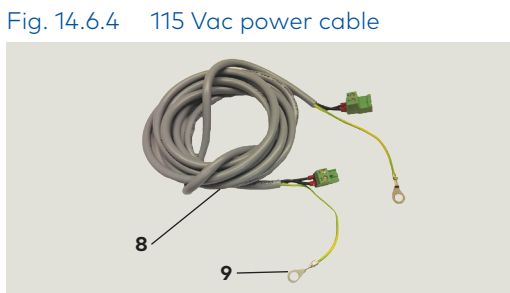


Fig. 14.6.3 115 VAC power cable installed on second operator



- 8 115 VAC power cable DX3484-0x0
- 9 Ground wire ring terminal



14.6.1 Install operators on mounting plates.

1. Refer to Para. 14.5 for installation of ED100/ED250 operators.

14.6.2 Connect 115 Vac power cable to both operators.

Refer to Para. 14.2.1 for installation of power cable in mounting plates.

1. Insert power cable 115 Vac plug into socket on power switch board.
 - Remove ground stud nut (5/16" [8 mm] socket) and washer.
2. Insert power cable ground wire ring terminal on ground stud.
3. Replace washer, install ground stud nut and tighten.



TIPS AND RECOMMENDATIONS

Customer 115 Vac power connection may be on opposite operator.

14.7 Connect cables to ED100/ED250 operator

- 1 Program switch panel
- 3 Header for program switch cable
- 5 COM 1 service connector

Fig. 14.7.1 Header with ED100/ED250 operator



Fig. 14.7.2 Cable installation on operator

- 1 Program switch panel
- 2 Program switch cable with connector 36" long
- 3 Header for program switch cable
- 4 RJ 45 connector, double door synchronization
- 5 COM 1 service connector
- 6 RJ 45 connector for program switch panel cable

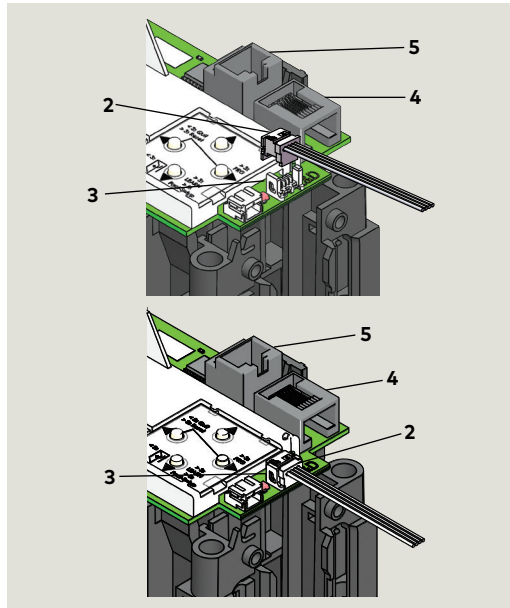


Fig. 14.7.4 RJ45 comm cable

- 6 RJ45 comm cable, 36" long DX4607

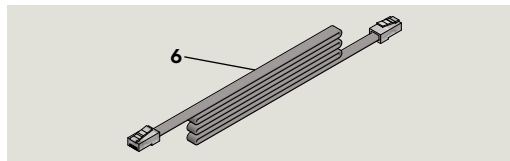
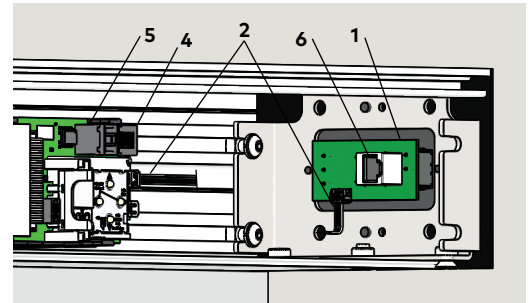


Fig. 14.7.3 Program switch panel



14.7.1 Connect program switch cable to operator

1. Carefully insert cable connector into header connector on operator.

CAUTION

Connector inserts vertically into header connector.

14.7.2 Install RJ45 program switch comm cable

1. Connect one end of cable to program switch panel RJ45 connector.
2. Connect other end of cable to COM 1 service connector on operator.

14.8 Double header operator legend plate

- 1 Program switch panel
- 3 Header for program switch cable
- 5 COM 1 connector
- 7 User interface legend plate

Fig. 14.8.1 Double header with operators installed

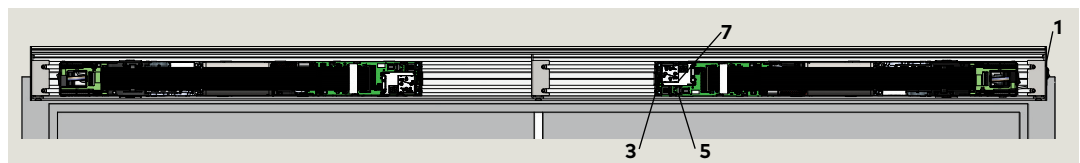
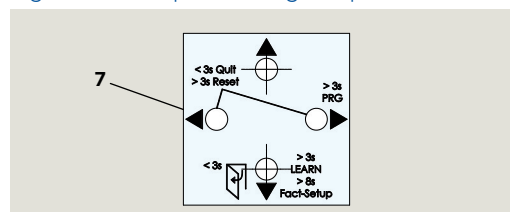


Fig. 14.8.2 Operator legend plate



14.8.1 Reverse legend plate orientation.

1. Remove and reverse orientation of legend plate on RH operator so that letters face upward.
2. Reinstall legend plate.

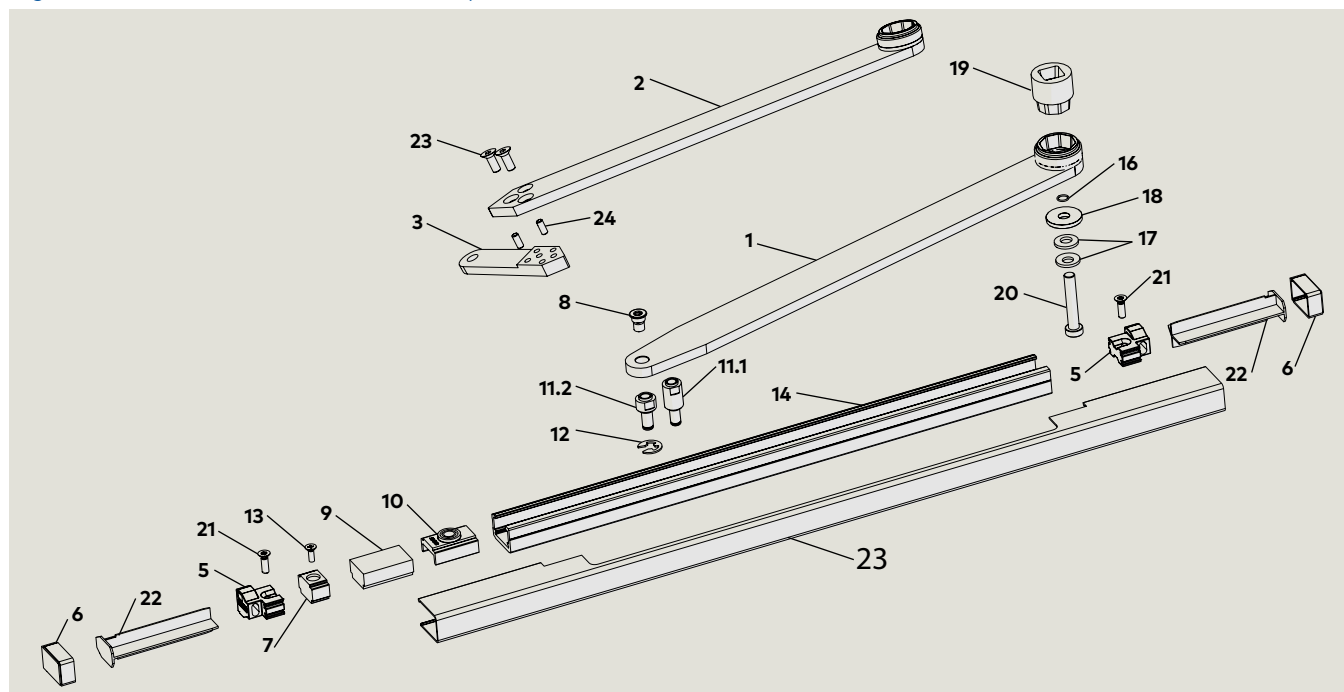
15 Pull arm installation

15.1 Hardware

15.1.1 Hardware

Hardware is shipped in separate bag for assembly based on hand of door.

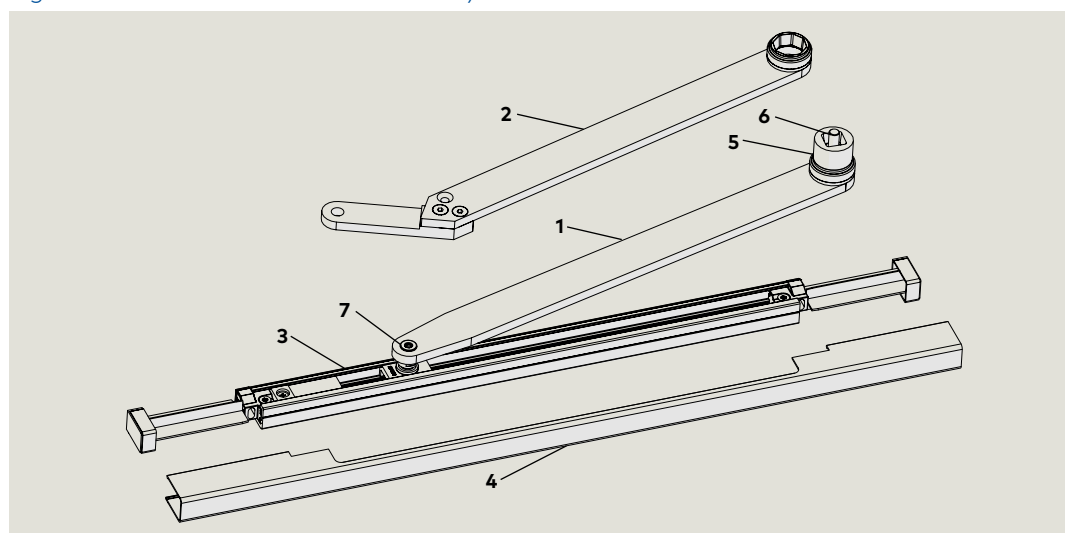
Fig. 15.1.1 Pull arm and track assembly hardware



- | | | | | |
|------------------------------|---------------------------------|---------------------|-------------------------|-----------------|
| 1 Standard pull arm | 6 End cap | 11.1 1" pivot pin | 17 Conical spring | 22 Spacer block |
| 2 Pull arm for CPD extension | 7 End stop | 11.2 1/2" pivot pin | 18 Flat washer | 23 Cover |
| 3 CPD extension lever | 8 Limit arm screw M8-1 x 0.587" | 12 Retaining ring | 19 Axle extension | 24 Guide pin |
| 4 Screw, M6 x 10.9 | 9 Buffer DF0113-010 | 13 Screw, M4 x 12 | 20 Screw, M8 x 1 custom | |
| 5 Fixing piece | 10 Slide shoe | 14 Track | 21 Screw, M5 x 16 | |

Fig. 15.1.2 Pull arm and track assembly

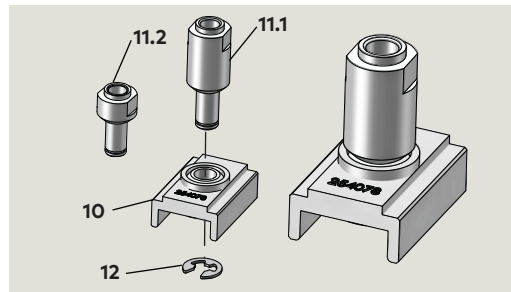
- | |
|----------------------------------|
| 1 Standard pull arm |
| 2 Pull arm with CPD lever |
| 3 Track assembly |
| 4 Track cover |
| 5 Arm Extension |
| 6 M8 screw (custom) and hardware |
| 7 M8 screw, pivot pin |



15.2 Track assembly

- 10 Slide shoe
- 11.1 1" pivot pin
- 11.2 1/2" pivot pin
- 12 Retaining ring

Fig. 15.2.1 Slide shoe and pivot pin



15.2.1 Slide shoe assembly

1. Insert selected pivot pin into slide shoe and secure with retaining ring.

- 3 Spacer
- 4 Fixing piece
- 5 Screw, M8 x 1 thread, 0.201 hex head
- 6 End cap
- 7 End stop
- 8 M5 shoulder screw, for pivot pin
- 9 Buffer
- 10 Slide shoe
- 11.1 1" pivot pin
- 11.2 1/2" pivot pin
- 12 Retaining ring
- 13 M4 x 12 countersunk FH cross recess screw
- 14 Track
- 22
- 23 Operator axle centerline

Fig. 15.2.1 Track assembly, door hinge side left of track

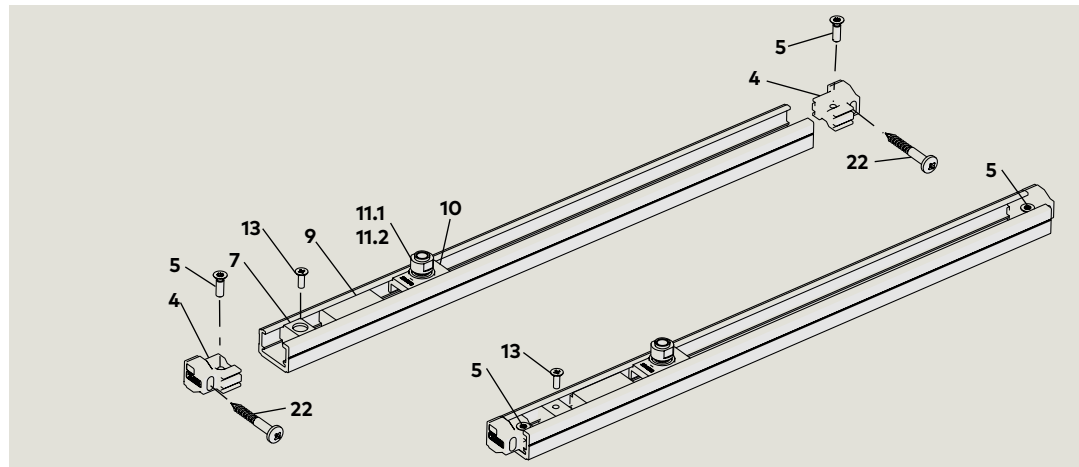
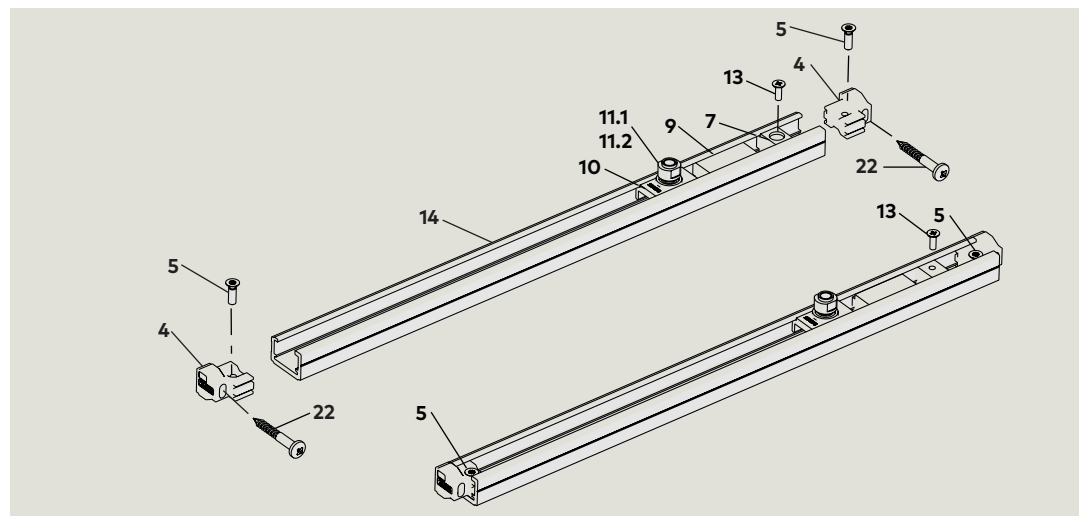


Fig. 15.2.2 Track assembly, door hinge side right of track



15.2.2 Track assembly

CAUTION

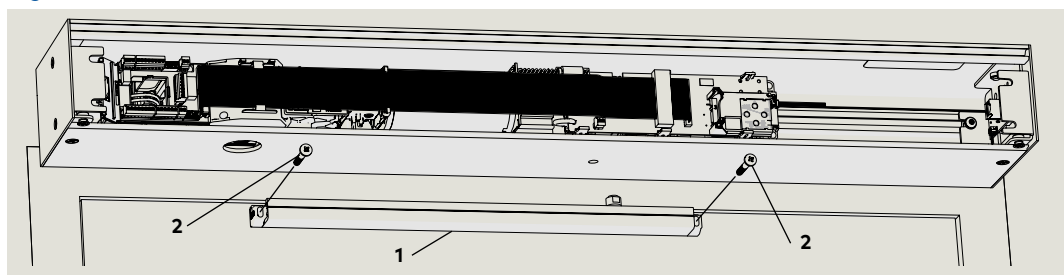
Hardware must be assembled in track based on hand of door.

1. Assemble hardware in track. Installation order and position of end stop (7) and buffer (9) based on hand of door.
2. Secure two fixing pieces to end of track with M4 x 12 screws (5). Use No. 3 Phillips, do not overtighten.
3. Thread M4 x 12 screw (13) into end stop but do not tighten.

15.3 Install track and pull arm assembly

- 1 Track assembly
- 2 Screw or fastener

Fig. 15.3.1 Pull arm track installation on door



15.3.1 Mount track assembly on door.

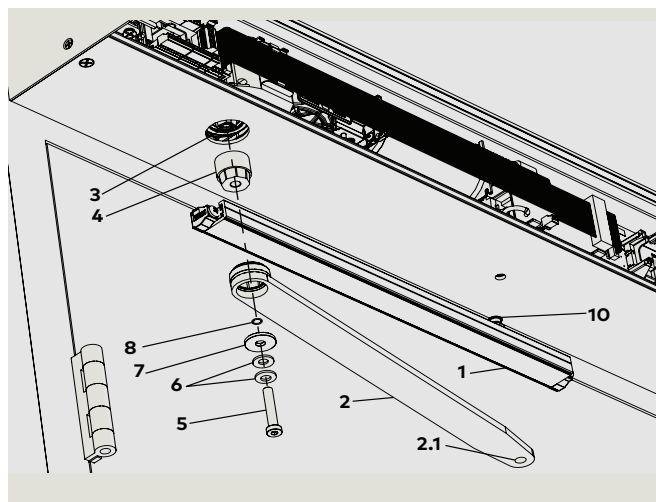
1. Use applicable template (Para. 13.2, 13.3) to locate two mounting holes on door.
2. Drill holes in door, hole size based on selected screw or fastener.

3. Mount track to door and fasten.

CAUTION

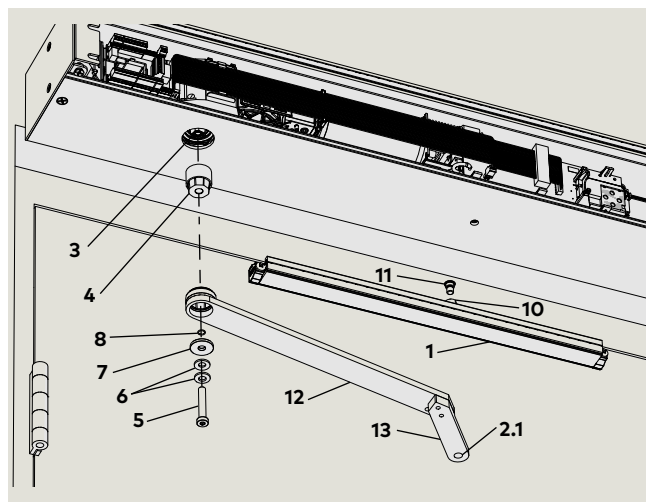
Insure track hardware is assembled for hand of door.

Fig. 15.3.2 Pull arm installation



- | | | |
|------------------------------|------------------------------|--------------------|
| 1 Track assembly | 3 Operator drive axle | 7 Flat washer |
| 2 Arm | 4 Axle extension (Chapter 5) | 8 O ring |
| 2.1 Arm pivot pin screw hole | 5 M8 SHCS (custom) | 10 Pivot pin |
| | 6 Conical spring | 11 M8 x .587 screw |

Fig. 15.3.3 CPD pull arm installation



- | |
|--------------|
| 12 CPD arm |
| 13 CPD lever |

15.3.2 Install pull arm and axle extension.

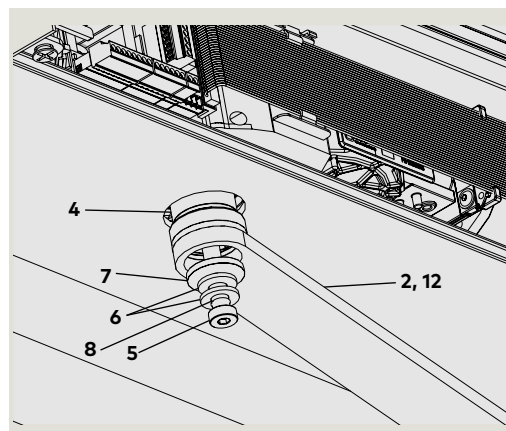


TIPS AND RECOMMENDATIONS

CPD arm and lever must be assembled, Ref. Para. 15.3.5.

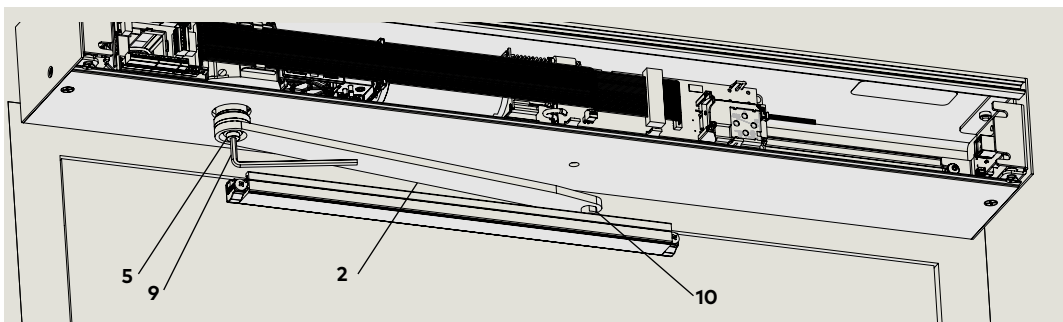
1. Door must be closed.
2. Assemble hardware on M8 SHCS.
3. Position arm so that arm pivot pin hole is above pivot pin, place axle extension in pull arm and insert extension into operator drive axle.
4. Thread M8 SHCS into operator axle.

Fig. 15.3.4 M8 SHCS assembly into axle



- 2 Standard pull arm
- 5 M8 SHCS (custom)
- 9 5 mm hex key
- 10 Pivot pin

Fig. 15.3.3 Arm M8 SHCS



15.3.3 Tighten M8 screw.

1. Tighten M8 SHCS into operator axle with 5 mm hex key.

CAUTION

Torque wrench with 5 mm hex key socket must be used to tighten M8 SHCS to 26 ft-lb.

CAUTION

Insure washers are seated properly as M8 SHCS is tightened!

Fig. 15.3.4 Torque wrench, 5 mm hex key

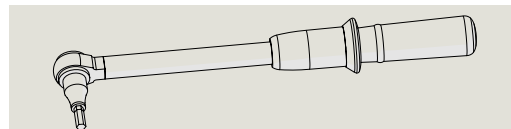
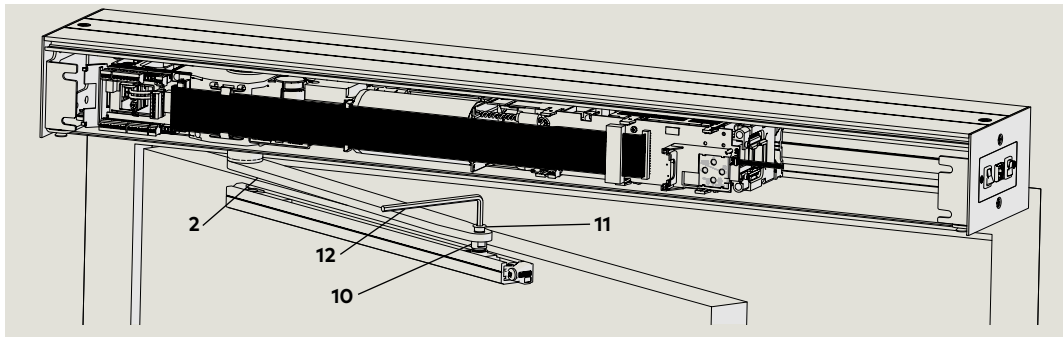


Fig. 15.3.5 Fasten arm to pivot pin

- 2 Pull arm
- 10 Pivot pin
- 11 M8 x .587 screw

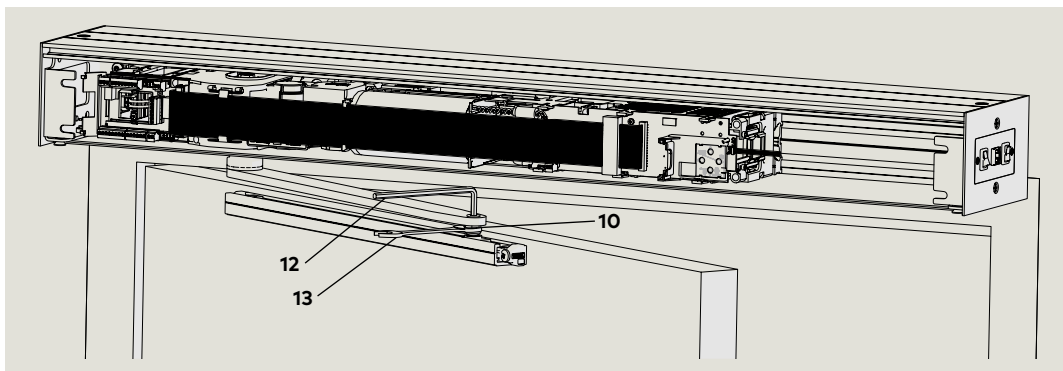


15.3.4 Fasten arm to pivot pin.

1. Move end of arm on top of pivot pin.
2. Thread M8 screw into pivot pin using a 5 mm hex key.

Fig. 15.3.6 Tighten M8 screw

- 2 Pull arm
- 10 Pivot pin
- 11 M8 x .587 screw
- 12 5 mm hex key
- 13 13 mm open end wrench



15.3.5 Tighten M8 screw

1. Holding pivot pin with 13 mm open end wrench, tighten M8 screw using a 5 mm hex key. Complete tightening using torque wrench.

CAUTION

Torque wrench with 5 mm hex key socket must be used to tighten M8 screw to 26 ft-lb.

15.3.6 CPD arm assembly

1. Assemble CPD arm hardware according to hand of door.
2. Tighten M6 screws using a No. 5 hex key.

Fig. 15.3.7 Hinge side, LH pull

- 1 CPD arm
- 2 CPD lever
- 3 M6x16-10.9 FHSCS
- 4 Guide pin

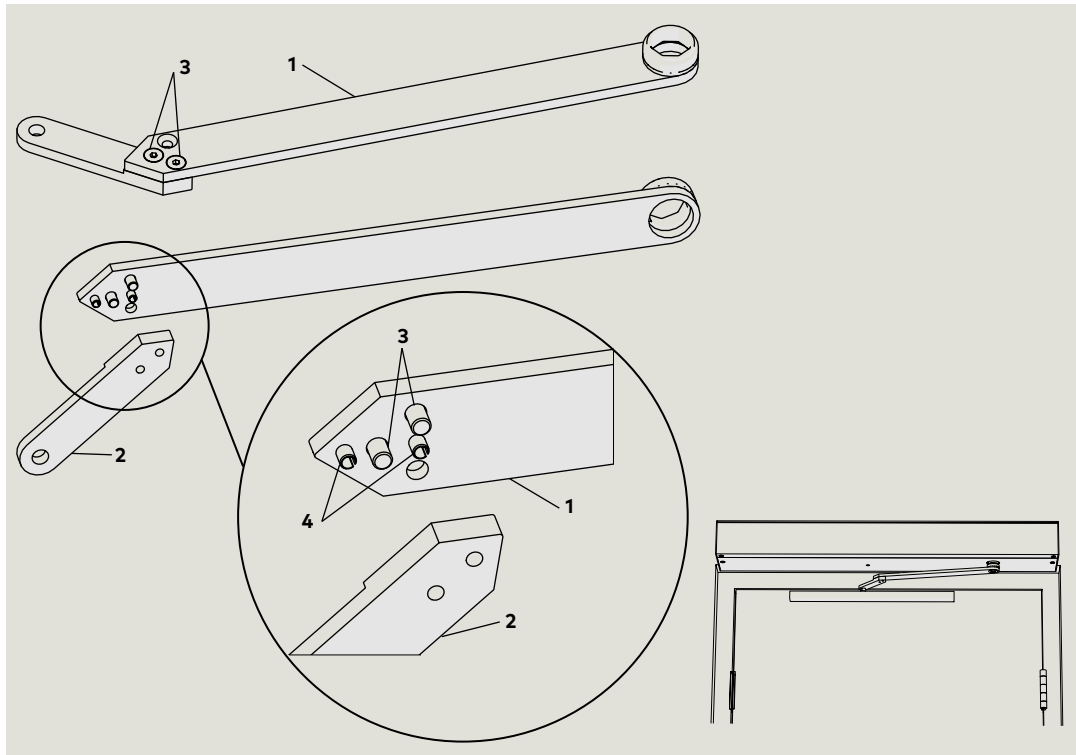
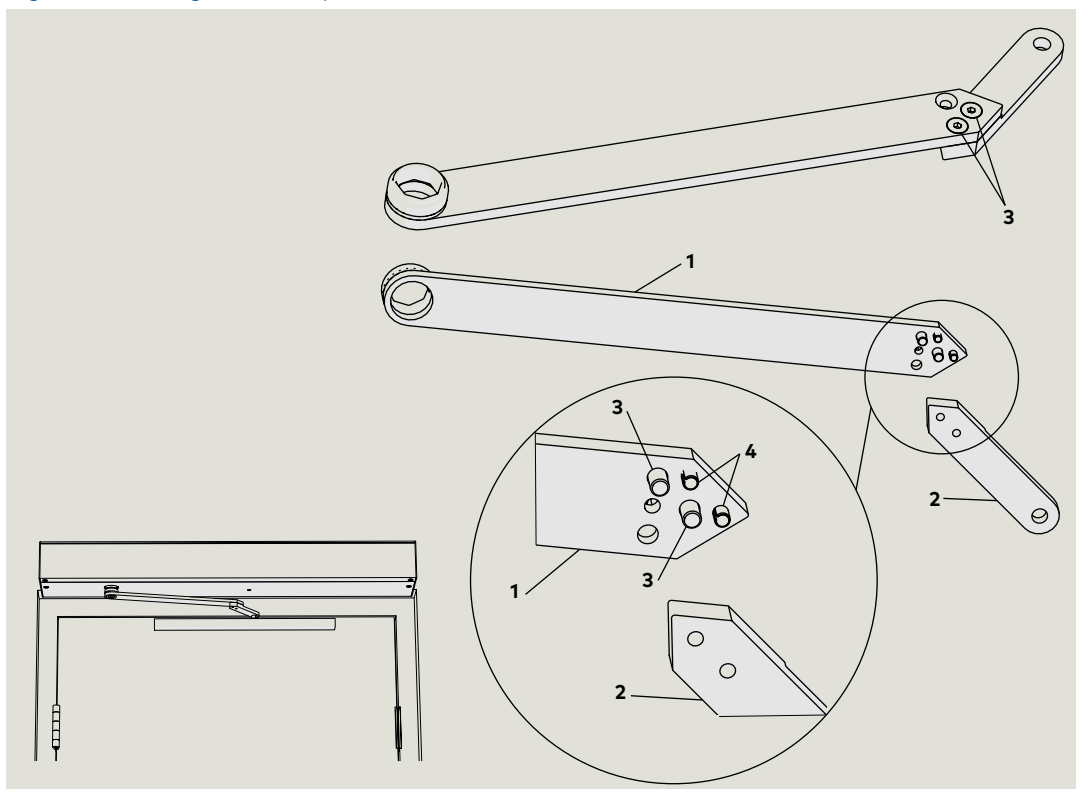


Fig. 15.3.8 Hinge side, RH pull

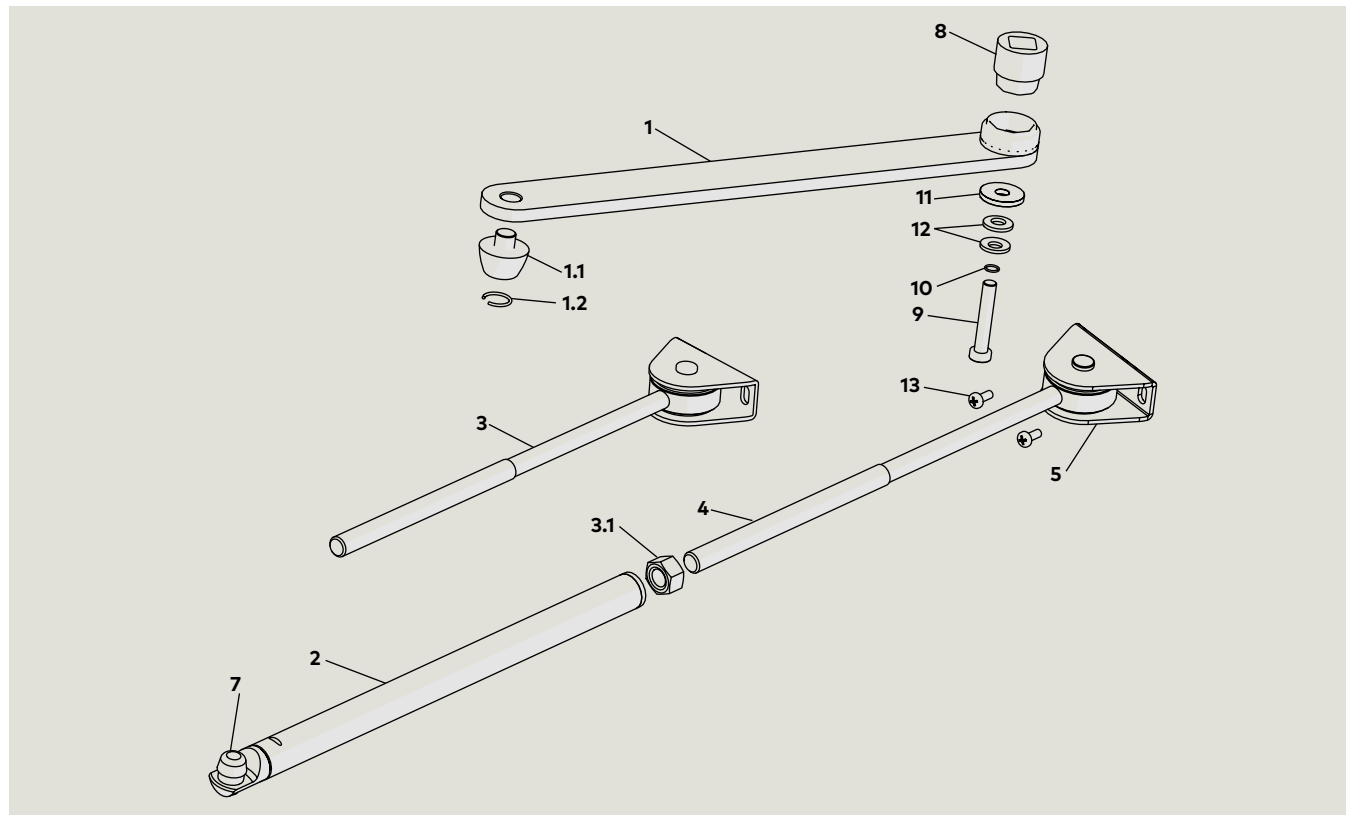
- 1 CPD arm
- 2 CPD lever
- 3 M6x16-10.9 FHSCS
- 4 Guide pin



16 Push arm installation

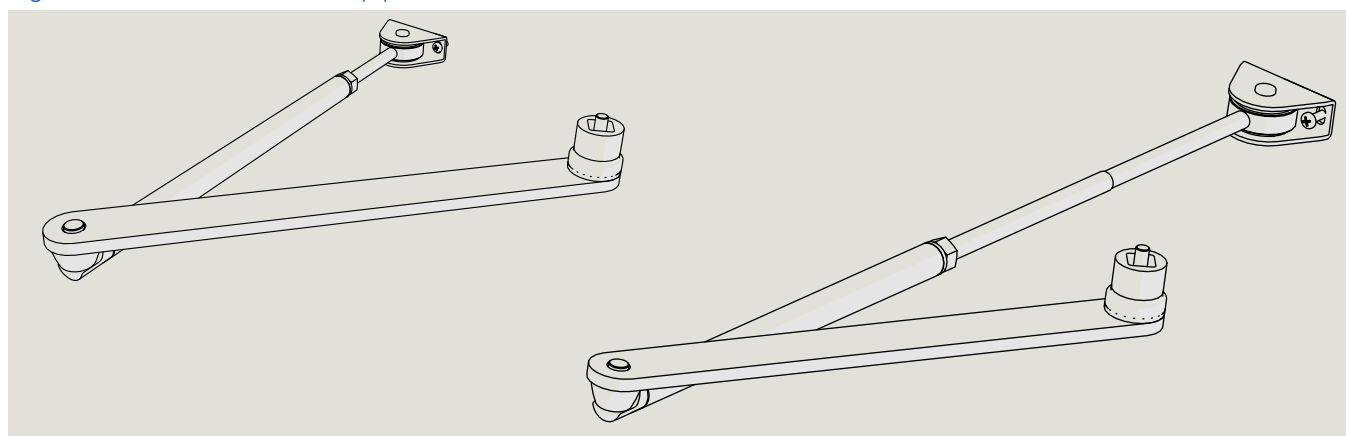
16.1 Hardware

Fig. 16.1.1 Push arm assembly hardware



- | | | | |
|---------------------------|------------------------------|--|-----------------------------|
| 1 Arm | 3.1 Nut | 8 Axle extension
(Chapter 5) | 12 Conical spring |
| 1.1 Arm socket | 4 Deep connecting rod | 9 M8 SHCS, (custom) | 13 Screw or fastener |
| 1.2 Retaining ring | 5 Shoe | 10 O ring | 14 Operator axle |
| 2 Adjustment screw | 7 Ball head | 11 Flat washer | |
| 3 Connecting rod | | | |

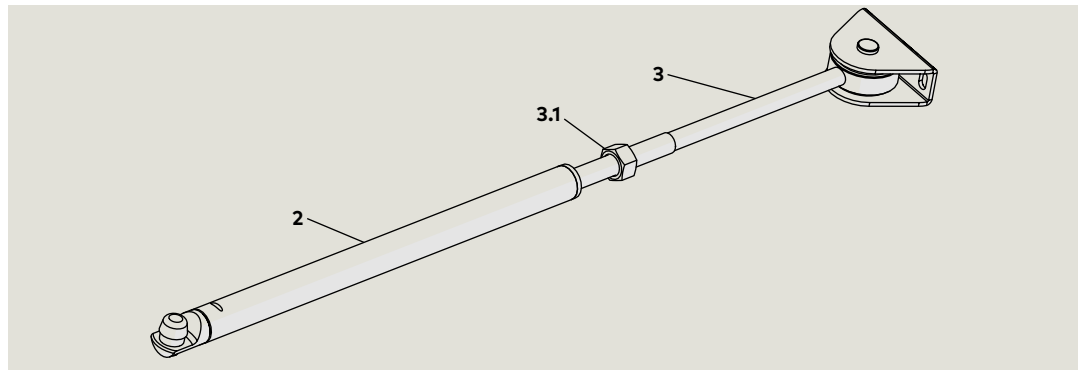
Fig. 16.1.2 Standard and deep push arm assemblies



16.2 Assemble adjustment screw to connecting rod.

Fig. 16.2.1 Adjustment screw and connecting rod

- 2 Adjustment screw
- 3 Connecting rod assembly
- 3.1 Nut



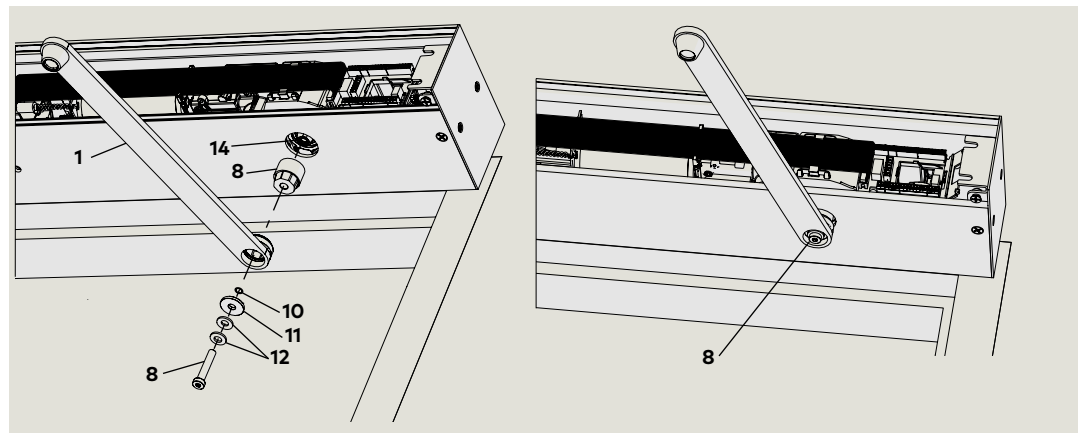
16.2.1 Assemble adjustment screw to connecting rod assembly

1. Thread nut onto connecting rod assembly.
2. Thread adjustment screw onto connecting rod assembly.

16.3 Assemble drive arm to operator

Fig. 16.3.1 Drive arm assembly to operator axle

- 1 Drive arm
- 8 Axle extension (Chapter 5)
- 9 M8 SHCS (custom)
- 10 O ring
- 11 Flat washer
- 12 Conical spring
- 13 Screw
- 14 Operator axle



16.3.1 Attach drive arm to operator

1. Assemble hardware onto M8 SHCS.
2. Position arm as shown in Fig. 16.3.1, place axle extension in arm and insert extension into operator drive axle.
3. Thread M8 SHCS into operator.

16.3.2 Tighten M8 SHCS

1. Tighten M8 SHCS into operator axle with 5 mm hex key.

CAUTION

Insure washers are seated properly as M8 screw is tightened!

2. Use torque wrench with 5 mm hex key socket to tighten M8 screw to 26 ft-lb.



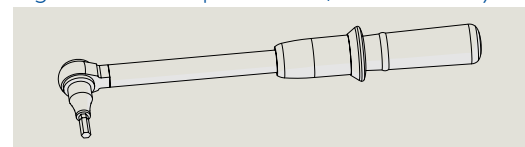
WARNING

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

CAUTION

Use torque wrench with hex key socket to tighten M8 screw to 26 ft-lb.

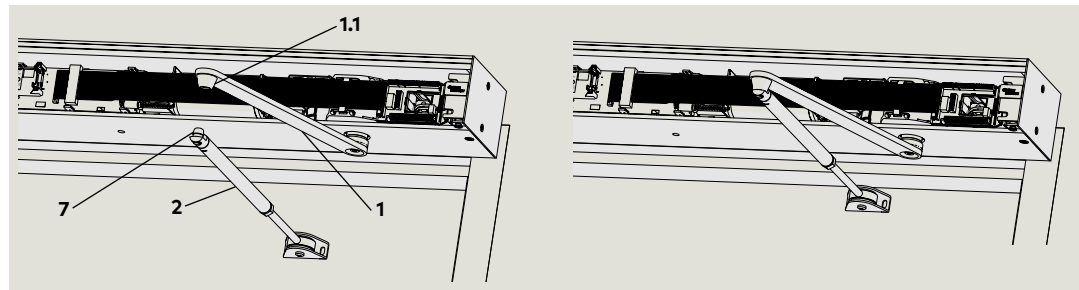
Fig. 16.3.2 Torque wrench, 5 mm hex key



16.4 Insert adjustment screw ball head into arm socket

- 1 Arm
- 1.1 Arm socket
- 2 Adjustment screw
- 7 Adjustment screw ball head

Fig. 16.4.1 Fastening arm and adjustment screw



16.4.1 Door must be closed.

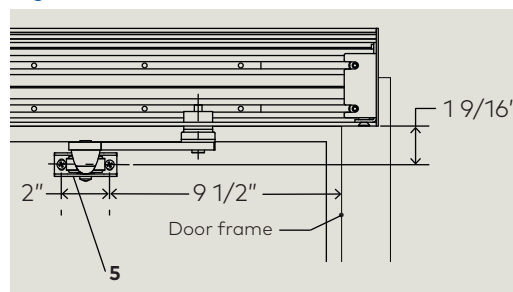
16.4.2 Connect arm to adjustment screw

1. Insert adjustment screw ball head into arm socket. Spring in socket will retain ball head in socket.

16.5 Fasten connecting rod shoe to door

- 5 Shoe

Fig. 16.5.1 Shoe location on door



16.5.1 Push arm templates

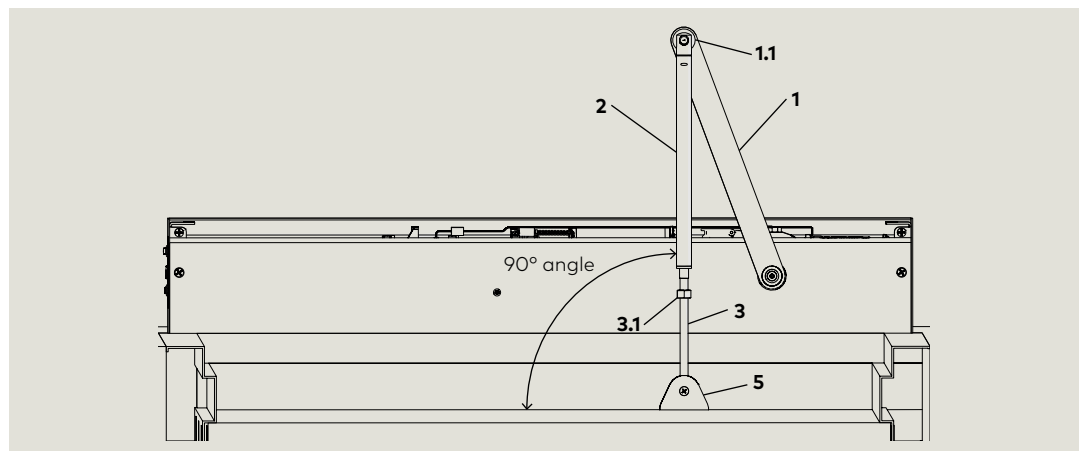
Push arm templates (Para. 13.4, 13.5) document location of push arm shoe on door.

CAUTION

The horizontal location of the shoe from edge of door frame is determined based on exact shoe location with push arm at right angle to door (Para. 16.5.2).

Fig. 16.5.2 Connecting rod assembly at right angle to door

- 1 Arm
- 1.1 Arm socket
- 2 Adjustment screw
- 3 Connecting rod
- 3.1 Nut
- 5 Shoe

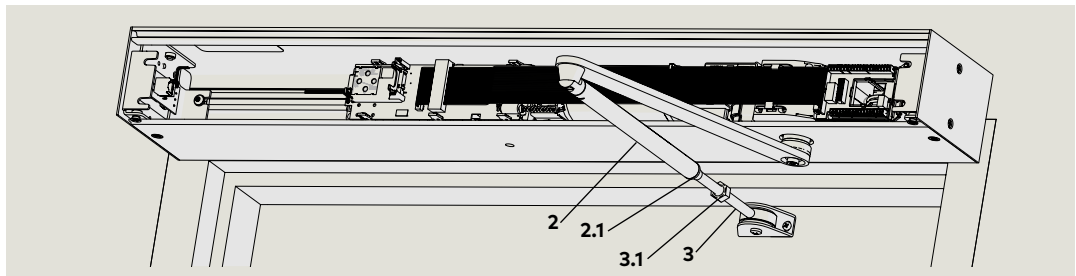


16.5.2 Secure connecting rod shoe to door.

1. Door must be fully closed.
2. Select screw or fastener for shoe mounting (Ref. Chapter 5, accessory kits, push arm mounting).
3. Loosen lock nut on connecting rod.
4. Using square, position adjustment screw connecting rod assembly at right angle to door.
5. With shoe against door, mark the two shoe mounting hole locations on door.
6. Drill holes in door, hole size based on selected screw or fastener.
7. Fasten shoe to door using selected screw or fastener.

- 2 Adjustment screw
- 2.1 Socket
- 3 Connecting rod assembly
- 3.1 Nut
- 8 M8 SHCS (custom)

Fig. 16.5.3 Adjustment screw and nut

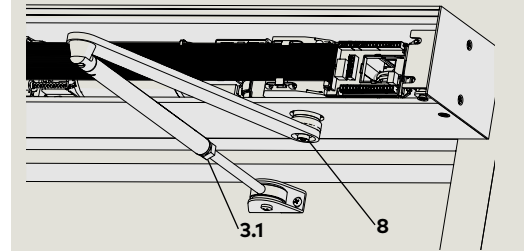


16.5.3 Secure adjustment screw position.

1. Rotate nut counterclockwise until it is against face of adjustment screw socket and tighten nut.

CAUTION

After tightening nut, check that connecting rod assembly is at 90 degrees to door with door closed. If not, redo procedure.

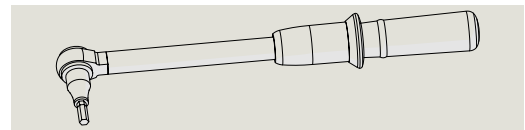


2. Open and close door several times, then retorque M8 SHCS.

CAUTION



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

Fig. 16.5.4 Torque wrench, 5 mm hex key



17 Measure reveal depth, door width

17.1 Reveal depth parameter rd

Parameter	Description	Reference paragraph
2  	Reveal depth	Para. 20.1.9

17.1.1 Reveal depth parameter.

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

17.2 Record reveal depth measurement, rd value

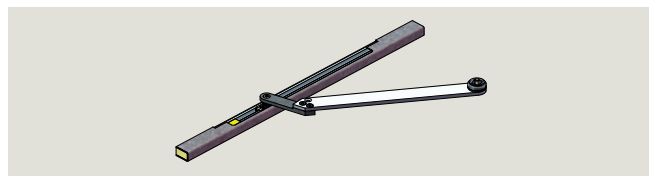
Parameter rd value	Reveal measurement

17.3 rd parameter values

17.3.1 ED100/ED250 reveal depths, rd parameter

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

Fig. 17.1.1 CPD pull arm and lever with track



TIPS AND RECOMMENDATIONS

Use of CPD pull arm and lever (Fig. 17.1.1): Value of parameter **rd** must be reduced by 3/16" [30].

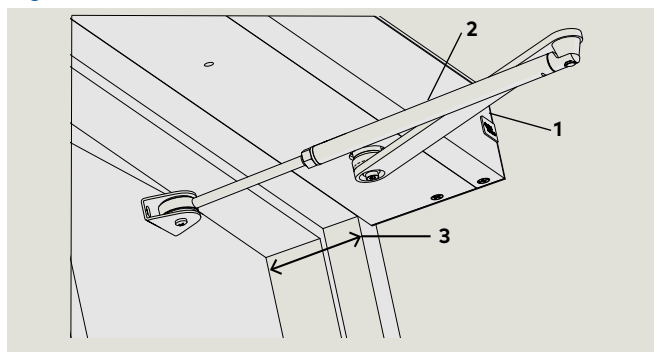
- Example: ED250 with CPD pull arm and lever in pull installation with reveal of 30 mm (1 1/8"). Parameter **rd** setting = 0 (Reveal of 30 mm - 30 mm).

17.3.2 ED250 additional reveal depths, rd parameter

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

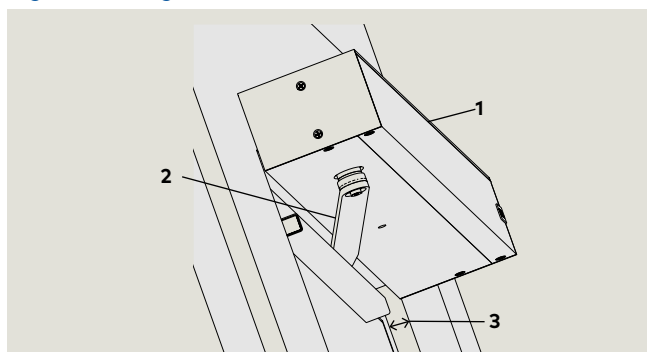
*Factory setting

Fig. 17.1.2 Positive reveal



- 1 ED100/ED250 header
- 2 Push arm
- 3 Positive reveal

Fig. 17.1.3 Negative reveal



- 1 ED100/ED250 header
- 2 Pull arm
- 3 Negative reveal

17.4 Door width parameter Tb

Parameter	Description	Reference paragraph, parameters
2 Tb rb	Door width	Para. 20.1.9

17.4.1 Door width parameter

Door width is set in increments of 100 mm (4"),
 Measured width of 1000 mm (39.4") = **Tb** value of "10".
 ED100: [700- 1219 mm] 28" - 48"
 ED250: [700- 1219 mm] 28" - 48"

17.5 Record door width measurement, Tb value

Parameter Tb value	Door width measurement

17.6 Tb parameter values

17.6.1 ED100/ED250 door widths

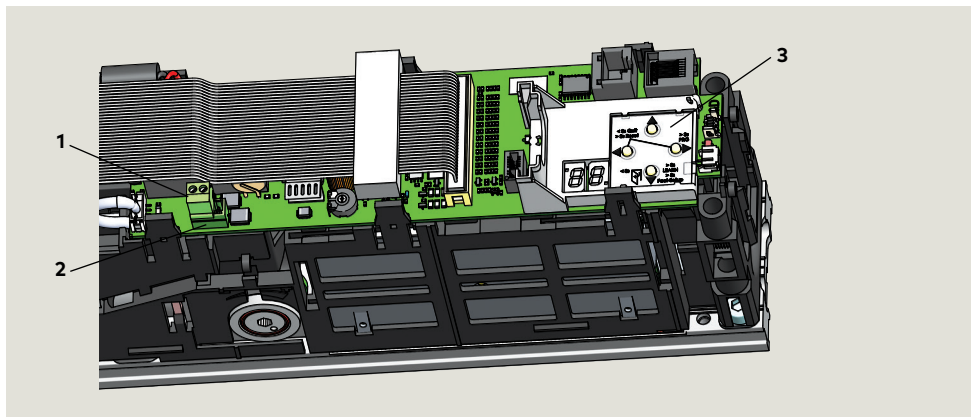
Door width measurement				Door width measurement			
Inches	[mm]	Tb	Width inches	Inches	[mm]	Tb	Width inches
28 to 31 15/16	[711] to [811]	7	28	44 to 47 15/16	[1118] to [1218]	11	44
32 to 35 15/16	[813] to [912]	8	32	48 to 51 15/16	[1219] to [1319]	12	48
36 to 39 15/16	[914] to [1014]	9	36				
40 to 43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

18 Braking circuit plug

18.1 Braking circuit plug position

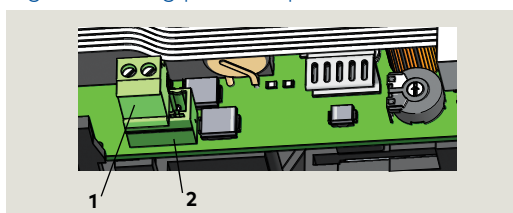
- 1 Braking circuit plug
- 2 Braking circuit 3 pin socket
- 3 User interface

Fig. 18.1.1 Braking circuit socket and plug, plug factory installed in pull arm location



- 1 Braking circuit plug
- 2 Braking circuit 3 pin socket

Fig. 18.1.2 Plug position, pull arm



18.1.1 Braking circuit plug

Operator braking circuit plug is positioned in its 3 pin socket for a push arm or pull arm (Figs. 18.1.5 and 18.1.6).

- **Braking circuit plug is factory installed in the left 2 pins, the pull arm position** (Fig. 18.1.1 and Fig. 18.1.2).

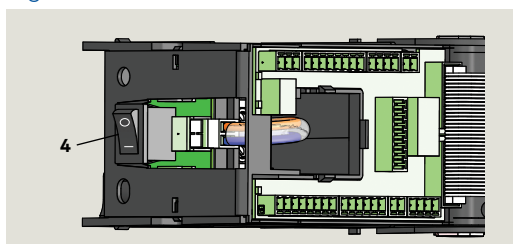


WARNING

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!

- 4 Power switch (shown ON)

Fig. 18.1.3 Power switch

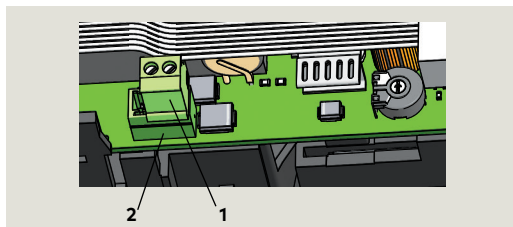


18.1.2 Change braking circuit plug position

To change plug position for push arm, install plug in right 2 pins, toward user interface (Fig. 18.1.4).

- 1 Braking circuit plug
- 2 Braking circuit 3 pin socket

Fig. 18.1.4 Plug position, push arm



WARNING

Insure power switch is OFF before changing plug position!

Fig. 18.1.5 Push arm

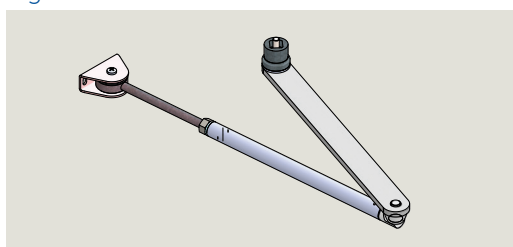
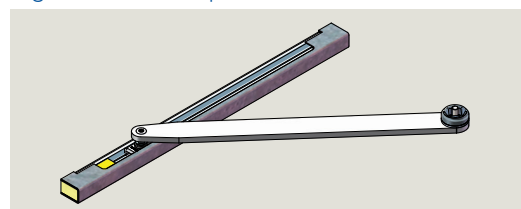


Fig. 18.1.6 Pull or push arm with track

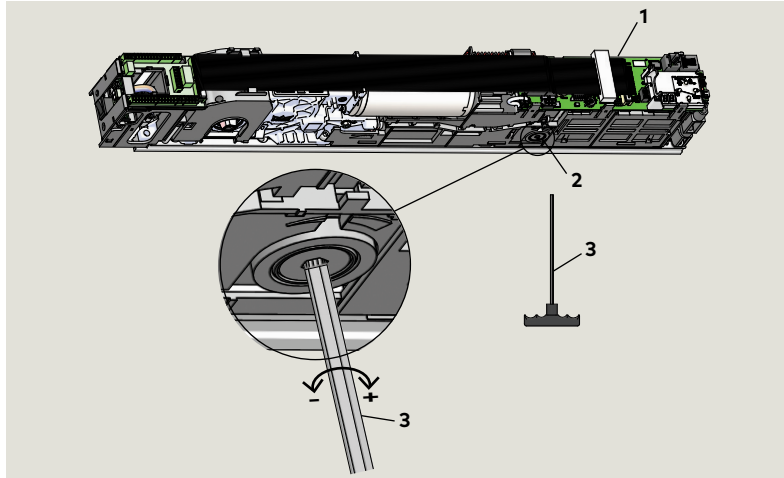


19 Operator spring tension

19.1 Set operator spring tension

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

Fig. 19.1.1 Spring tension adjustment



19.1.1 Spring tension setting revolutions

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

19.1.2 Operator spring tension function

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

19.1.3 Spring tension adjustment factory setting

1. Spring tension adjustment is factory set fully CCW, no spring tension.
2. Spring has to be pretensioned per Para. 19.1.1.

CAUTION

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

CAUTION

Any change to spring tension setting requires a new learning cycle (Chapter 22)!

TIPS AND RECOMMENDATIONS

System checks spring tension during learning cycle (Chapter 22).

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



19.1.4 Check door closing force

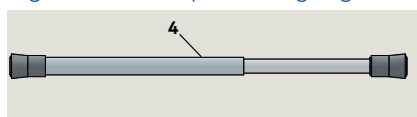
1. Table 19.1.1 lists approximate spring tension settings.
2. Use pressure gauge to check door closing force at 2° and adjust tension setting if necessary.
3. For reveals greater than 11 5/16" [300 mm] check minimum closing force between 88° and 92°.

TIPS AND RECOMMENDATIONS

Reference Chapter 29, ANSI/BHMA standards for closing forces.

- 5 Door pressure gauge

Fig. 19.1.2 Door pressure gauge

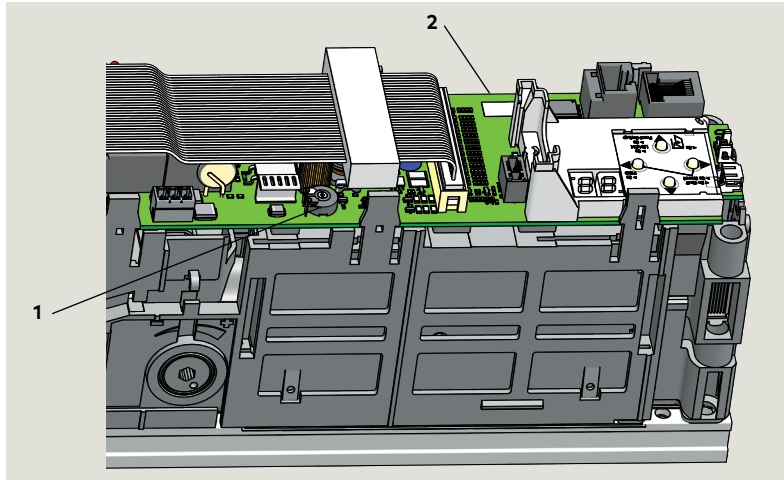


20 Power fail closing speed

20.1 Set power fail closing speed

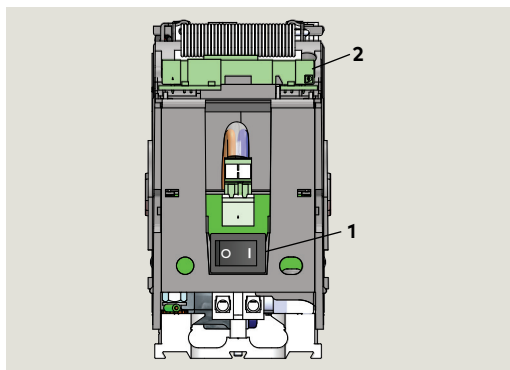
- 1 Power fail closing speed potentiometer
- 2 Control board

Fig. 20.1.1 Power fail closing speed potentiometer



- 1 Power on switch
- 2 Terminal board

Fig. 20.1.2 Power on switch



TIPS AND RECOMMENDATIONS

Power fail closing speed potentiometer:

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

20.1.1 Setting door closing speed upon power failure.

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

NOTICE

It is imperative that this door closing time be set. If door closes in less than 3 seconds, error message **E 73** (System error 3, braking circuit) will be displayed. Reference ED100/ED250 Service manual, Troubleshooting.

21 Parameters

21.1 Parameters

21.1.1 Firmware version



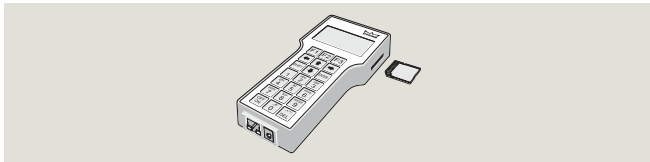
TIPS AND RECOMMENDATIONS

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

15.1.2 Firmware version and updates.

- Operator firmware version is displayed during first commissioning. Reference Chapter 22.
- dormakaba handheld can be used to check operator firmware version and to perform firmware updates.
- Reference Service Manual Chapter 18, dormakaba handheld, or dormakaba handheld manual.

Fig. 21.1.1 dormakaba handheld terminal



21.1.3 Configuration parameters

Configuration parameters (Para. 21.1.6) are set during first commissioning (Chapter 22).

21.1.4 Driving parameters

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

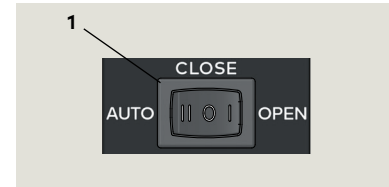
- Reference Para. 21.1.7 for a list of driving parameters.
- Reference ED100/ED250 service manual Chapter 15 for details on each driving parameter.

21.1.5 Changing parameter values

- Set program switch to the CLOSE position

Fig. 21.1.2 Program switch

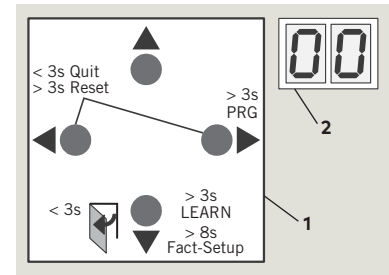
- Program switch, 3 position



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





Fig. 21.1.3 4 button keypad, 2 digit display

- 4 button keypad
- 2 digit display


























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




























21.1.6 Configuration parameters

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



21.1.7 Driving parameters

Reference Service manual, Chapter 15 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, 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 	Upgrade card, full energy
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: castor angle, angle door must reach before passive door starts to open
52	HS 	Hinge clearance
53	S3 	OHC mode; permanent open via night-bank input (v2.1)
54	S4 	OHC manual force overload drive release (v2.1)

21.1.8 Configuration parameters, detail

Parameter and value range, factory setting = bold .	Parameter description
Installation type	
1  0 - 4 0	<ul style="list-style-type: none"> Pull arm with track, wall mounting on swing (hinge) side (Fig. 21.1.4).
	<ul style="list-style-type: none"> Pull arm and CPD lever with track, wall mounting on swing (hinge) side (Fig. 21.1.5). Reference Para. 21.1.10 for door reveal detail.
	<ul style="list-style-type: none"> Standard push arm, wall mounting on approach (non-hinge) side (Fig. 21.1.6).
	<ul style="list-style-type: none"> Push arm with track, wall mounting on approach (non-hinge) side. Application specific
	<ul style="list-style-type: none"> Overhead concealed (OHC), right hand (v2.1)
<ul style="list-style-type: none"> OHC, left hand (v2.1) 	
Reveal depth	
2  ED100 -3 to 30 ED250 -3 to 50 0	Reveal is set in increments of 10 mm (3/8"), "3" = 30 mm (1 1/8"). <ul style="list-style-type: none"> ED100: [-30 to 300mm] -13/16" to 11 13/16" ED250: [-30 to 500mm] -13/16" to 19 11/16" If using CPD lever (Fig. 20.1.9.1), approximately 3/16" [30 mm] must be deducted from actual reveal (Para. 20.1.10).

21.1.10 CPD pull arm and lever; rd parameter adjustment.

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




		Door width
3  ED100 7 to 11  ED250 7 to 16 10	Door width is set in increments of 100 mm (4"), "10" = 1000 mm (39.4").	
	<ul style="list-style-type: none"> ED100: [711 - 1219 mm] 28" - 48" ED250: [711- 1219 mm] 28" - 48" 	
		Door type
4  0 to 4 0	0	Single door
	1	Double door <ul style="list-style-type: none"> Overlapping door (with astragal) Active door operator.
	2	Double door <ul style="list-style-type: none"> Overlapping door (with astragal) Passive door operator.
	3	Double door <ul style="list-style-type: none"> Edgeless door (no astragal) Active door operator.
	4	Double door <ul style="list-style-type: none"> Edgeless door (no astragal) Passive door operator.

Fig. 21.1.4 Pull arm with track

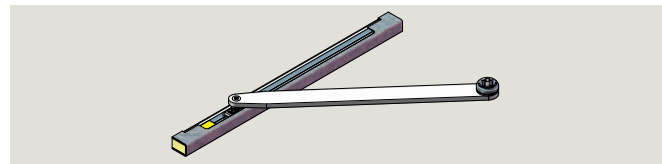
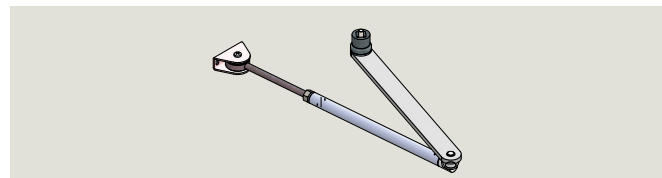


Fig. 21.1.5 CPD pull arm and lever with track



Fig. 21.1.6 Standard push arm



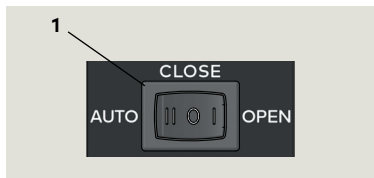
21.1.11 Push arm with track; reveal and installation detail [Application specific].

22 Single door first commissioning

22.1 First commissioning

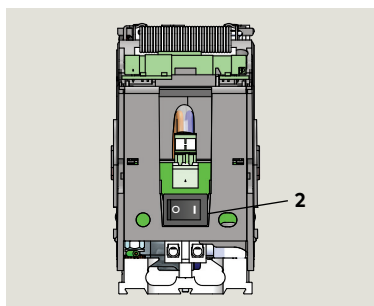
- 1 Program switch, 3 position

Fig. 22.1.1 Program switch



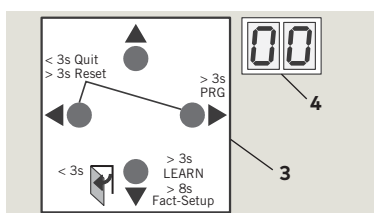
- 2 Power switch

Fig. 22.1.2 Power switch



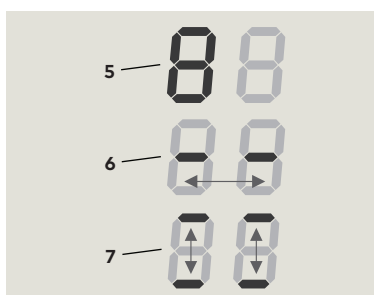
- 3 Four button keypad
- 4 Two digit display

Fig. 22.1.3 4 button keypad, 2 digit display



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

Fig. 22.1.4 2 digit displays on power up



- 8 Device ID, firmware version display

Fig. 22.1.5 Device ID, firmware version display



- 9 Program mode display

Fig. 22.1.6 Program mode



22.1.1 Conditions prior to commissioning.

1. Header with operator is installed.
2. Push arm or pull arm with track is installed.
3. Activators, key switches, and other separately supplied hardware are installed and connected to operator.
4. 115 Vac branch circuit to operator is energized.
5. Operator motor is cold.

CAUTION

Motor must be cold for commissioning!

22.1.2 Program switch to CLOSE position.

1. Set program switch (1) to CLOSE position.

22.1.3 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).

22.1.4 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 100 or 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. 22.1.4) does not result in desired display orientation, return to Para. 22.1.2, turn power button off, then on to repeat commissioning steps.

22.2 Set configuration parameters

22.2.1 Set parameter AS, installation type.

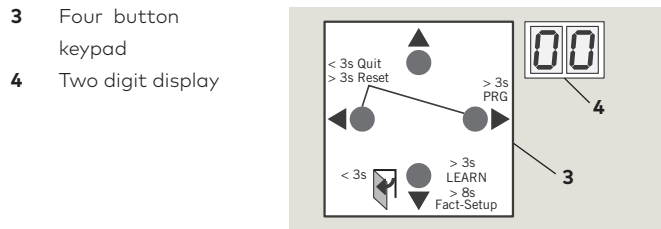
Step 1 Press		Press and hold PRG > 3 s to enter program mode, AS parameter displayed. If no change required, go to step 7.
Step 2 Press		Displays "00", factory setting.
Step 3 Press		"00" starts flashing.
Step 4 Press		Scroll to select parameter value. "1" shown as example.
Step 5 Press		Saves value entered. Display stops flashing.
Step 6 Press		Returns to Installation type parameter.


22.2.2 Set parameter rd, reveal depth.

Step 7 Press		Scroll to rd parameter.
Step 8 Press		Displays "00", factory setting.
Step 9 Press		"00" starts flashing.
Step 10 Press		Scroll to select parameter value. "6" shown as example.
Step 11 Press		Saves value entered. Display stops flashing.
Step 12 Press		Returns to reveal depth parameter.

Configuration parameter settings continue on next page..

Fig. 22.2.1 4 button keypad, 2 digit display

















	Installation type
Parameter value	Parameter description
0*	Pull arm with track, wall mounting on swing (hinge) side.
1	Push arm, wall mounting on approach (opposite hinge) side.
2	Push arm with track, wall mounting on approach (opposite hinge) side.
3	Overhead concealed (OHC) RH
4	OHC LH
*	Factory setting



TIPS AND RECOMMENDATIONS

Reference Chapter 17 for reveal depth parameter values.

22.2.3 Set parameter Tb, door width.

<p>Step 13 Press</p> 		<p>Scroll to Tb parameter.</p>
<p>Step 14 Press</p> 		<p>Displays "10", factory setting.</p>
<p>Step 15 Press</p> 		<p>"10" starts flashing.</p>
<p>Step 16 Press</p> 		<p>Scroll to select parameter value. "7" shown as example.</p>
<p>Step 17 Press</p> 		<p>Saves value entered. Display stops flashing.</p>
<p>Step 18 Press</p> 		<p>Returns to door width parameter. If single door, exit program mode (Step 25).</p>
<p>Step 19 Press</p> 		<p>Exits program mode. Display indicates "ready for learning cycle".</p>

22.2.4 Parameter dL, door type.

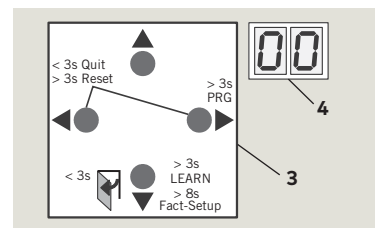


TIPS AND RECOMMENDATIONS

Parameter **dL** factory setting is 0, single door. Reference Chapter 23 for double door commissioning.

Fig. 22.2.2 4 button keypad, 2 digit display

- 3 Four button keypad
- 4 Two digit display



TIPS AND RECOMMENDATIONS

Reference Chapter 17 for door width parameter values.

22.3 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. 22.2):

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



TIPS AND RECOMMENDATIONS









During learning cycle:

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



WARNING

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

Step 1	Secure motion range of door.
Step 2	 <p>Set program switch to CLOSE position.</p>
	 <p>Rotating "o" and a "0" indicates operator learning cycle is required.</p>
Step 3 Press ▼	 <p>Press and hold down button until display changes.</p> <ul style="list-style-type: none"> • Door performs several movements and display shows a sequence of symbols. • Movements of door must not be interrupted!
	 <p>Display indicates door is at 70° position and is waiting for door opening angle to be set.</p>
Step 4	<ul style="list-style-type: none"> • Manually move door to desired opening angle. • Maximum door angle is 110°.
Step 5 Press ▼	 <p>Momentarily press down button to continue learning cycle.</p> <ul style="list-style-type: none"> • Door performs several movements and display shows a sequence of symbols. • Movements of door must not be interrupted!
	 <p>Operator spring tension too low.</p> <ul style="list-style-type: none"> • Display with small rotating "o" and an "F" during learn cycle indicates spring tension is too low. • Door will close. <ol style="list-style-type: none"> 1. Increase spring tension (Chapter 19). 2. Restart learning cycle (Step 3).
	 <p>Door completes learning cycle.</p> <ul style="list-style-type: none"> • Display with two horizontal bars indicate operator is ready for operation.
Step 6 Press ▼	Momentarily press down button to cycle door.
Step 7	Following automatic learning cycle, actual forces on door, and door opening and closing times must be measured and changed if necessary to insure compliance with ANSI/BHMA standards, reference Chapter 30.
Step 9	 <p>Set program switch to Auto.</p>

23 Double door first commissioning

23.1 Separately commission active and inactive doors

23.1.1 Commission active door first.

1. Refer to Para.22.1 and commission active door.

23.1.2 Commission inactive door.

1. Refer to Para.22.1 and commission inactive door.

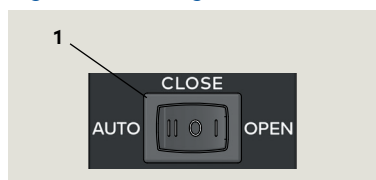
23.2 Set operator parameters for double door operation

23.2.1 Active door, set parameters dL and Ad.

1. Set program switch to CLOSE.
2. Set parameters dL (door type) and Ad (caster angle) for active door.
 - Caster angle sets opening angle of active door before inactive door starts to open. Factory setting is 30°.

Fig. 23.1.1 Program switch

1 Program switch, 3 position




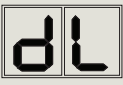




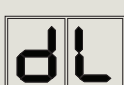

Step 1 Press		Press and hold PRG > 3 s to enter program mode, AS parameter displayed.
Step 2 Press		Scroll to dL parameter.
Step 3 Press		Displays "00", factory setting.
Step 4 Press		"00" starts flashing.
Step 5 Press		Scroll to select parameter value ("1" as an example).
Step 6 Press		Saves value entered.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

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

23.2.2 Inactive door, set parameter dL.

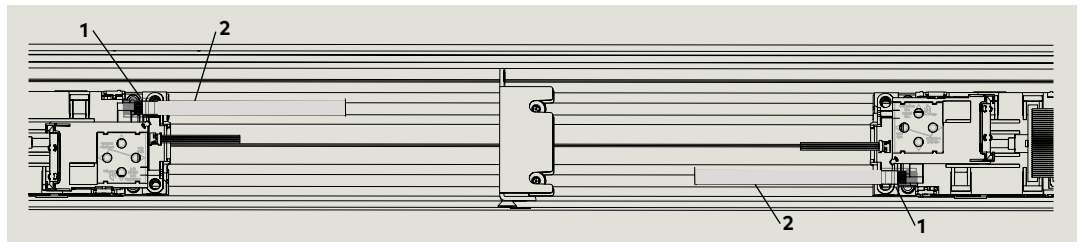
1. Set program switch to CLOSE.
2. Set parameter dL (door type) for inactive door.

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

23.3 Connect communication cable between operators

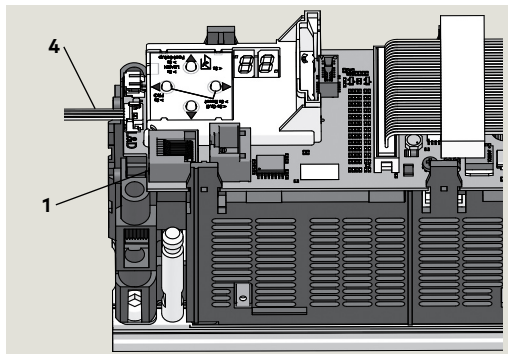
- 1 RJ45 jack (horizontal) for communication cable

Fig. 23.3.1 Double door operators, RJ45 jack for communication cable



- 1 RJ45 jack
- 4 Program switch cable

Fig. 23.3.2 RJ45 jack



23.3.1 Install communication cable

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

23.3.2 Test door operation

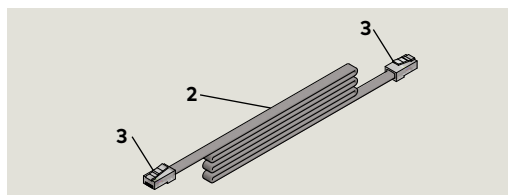
1. Set program switch to AUTO.
2. Test double door operation.

TIPS AND RECOMMENDATIONS

In sensors have not been connected, set program switch to OPEN, and after doors have opened set back to CLOSE.

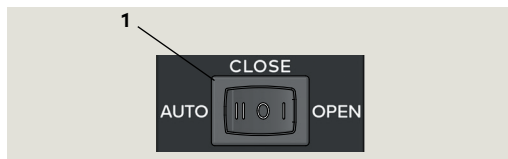
- 2 Communication cable, 36" long DX4607
- 3 RJ45 plug

Fig. 23.3.2 Communication cable



- 1 Program switch, 3 position

Fig. 23.3.3 Program switch



24 Connect accessory wiring

24.1 Connect accessory wiring

24.1.1 Connect accessory wiring.



TIPS AND RECOMMENDATIONS

- Reference Chapter 10, System Accessories.
- Reference ED100/ED250 Sensors Installation and Wiring Instructions Manual.

1. Terminate all accessory wiring at ED100/ED250 terminal board.
2. Secure all accessory wiring.

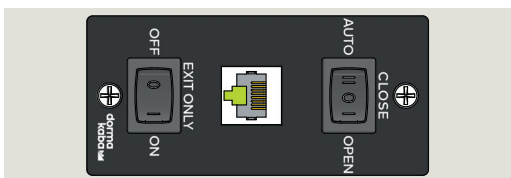
24.1.2 Test system accessories.

Test functionality of all accessories.

25 Set pull arm end stop

25.1 Set pull arm end stop position

Fig. 25.1.1 Program switch panel



25.1.1 Set end stop position.

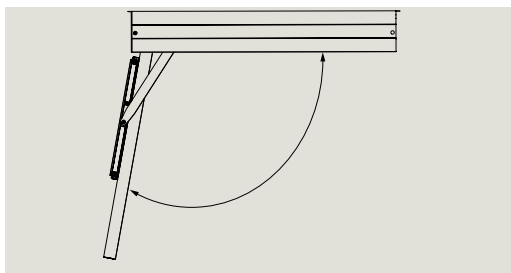
1. Set program switch to OPEN.
2. Door moves to set opening angle.



WARNING

Use caution when working in proximity of door and track.

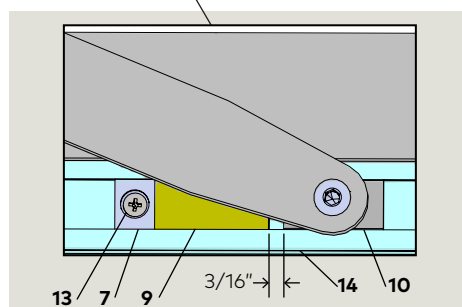
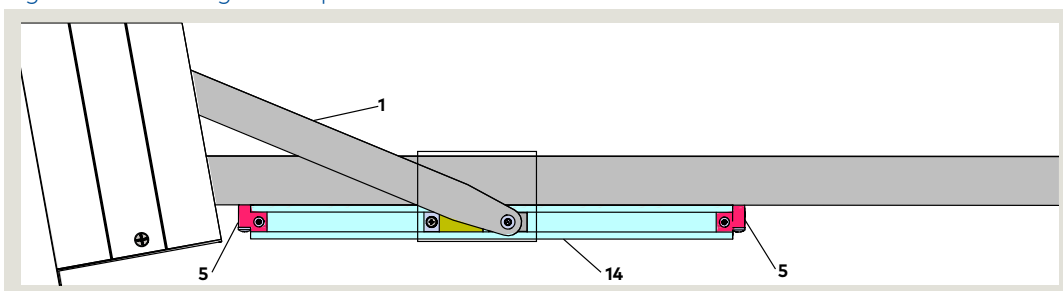
Fig. 25.1.2 Door at set opening angle



3. Slide end stop and buffer toward slide shoe until buffer is 3/16" from edge of slide shoe (Fig. 24.1.3).
4. Tighten end stop M4 screw with #2 Phillips. Do not over tighten!

Fig. 25.1.3 Setting end stop location

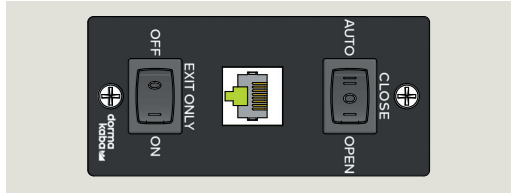
- 1 Arm
- 5 Fixing piece
- 7 End stop
- 9 Buffer
- 10 Slide shoe
- 13 M4 x20 FHS
- 14 Track



26 Install pull arm track cover

26.1 Install track cover, spacer blocks and end caps

Fig. 26.1.1 Program switch panel



26.1.1 Install track cover.

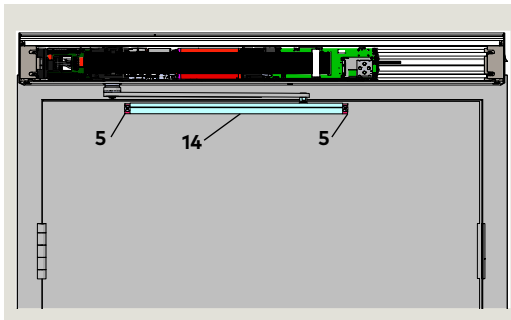
1. Set program switch to CLOSE.
2. Door will move to CLOSE position or remain in CLOSE position.



WARNING

Use caution when working in proximity of door and track.

Fig. 26.1.2 Door closed



- 5 Fixing piece
- 14 Track

3. Slide track cover over track.

26.1.2 Install spacer blocks and end caps.

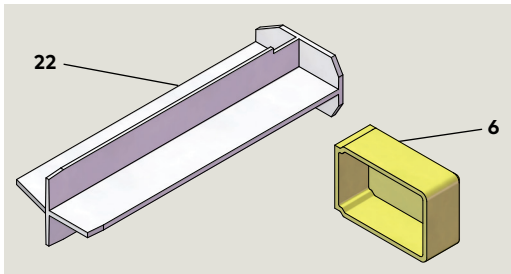
1. Place end caps on end of spacer blocks.



TIPS AND RECOMMENDATIONS

Refer to Figure 26.1.5 for spacer block and end cap orientation into track cover.

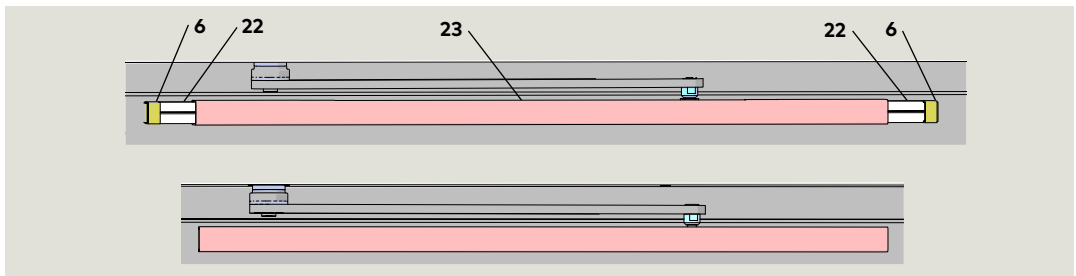
Fig. 26.1.3 Spacer block and end cap



- 6 End cap
- 22 Spacer block

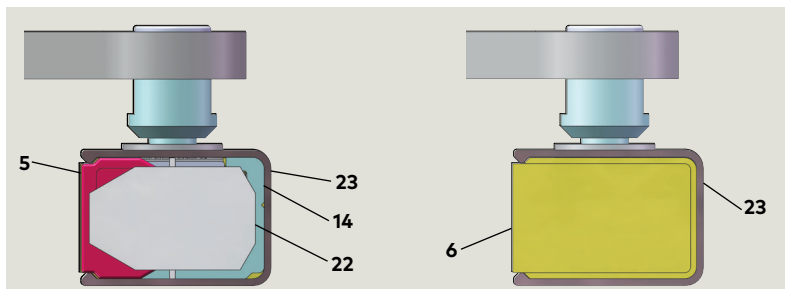
2. Slide spacer blocks into ends of track cover.
3. Adjust track cover position so both end caps are flush with end of track.

Fig. 26.1.4 Track cover, spacer block and end cap installation



- 6 End cap
- 22 Spacer block
- 23 Track cover

Fig. 26.1.5 Spacer block and end cap orientation in track



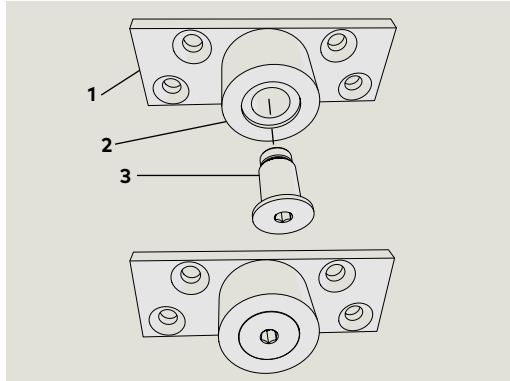
- 5 Fixing piece
- 6 End cap
- 14 Track
- 22 Spacer block
- 23 Track cover

27 Install push arm door stop

27.1 Install push arm bumper stop (optional assembly)

- 1 Bumper mounting plate
- 2 Bumper
- 3 1/2" shoulder screw with 5 mm hex

Fig. 27.1.1 Bumper stop assembly



TIPS AND RECOMMENDATIONS

Contact local dormakaba USA, Inc. distributor for bumper stop assembly 08104230.

27.1.1 Assemble bumper stop.

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

27.1.2 Open door.

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



WARNING

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

Fig. 27.1.2 Program switch panel

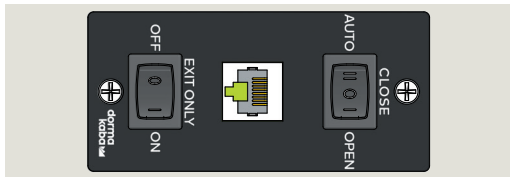
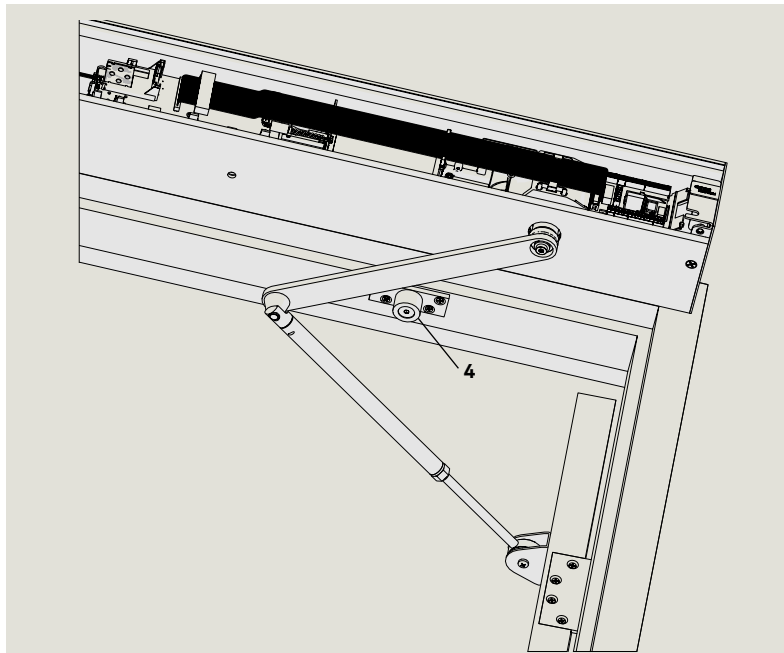


Fig. 27.1.3 Bumper stop installed

- 4 Bumper stop assembly



26.1.3 Locate bumper stop on door frame.

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

4. Attach bumper stop to door frame.

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

26.1.4 Place program switch in AUTO.

28 Install header cover

28.1 Install header cover

- 1 Header cover
- 2 Flat head screw

Fig. 28.1.1 Single door header with cover installation

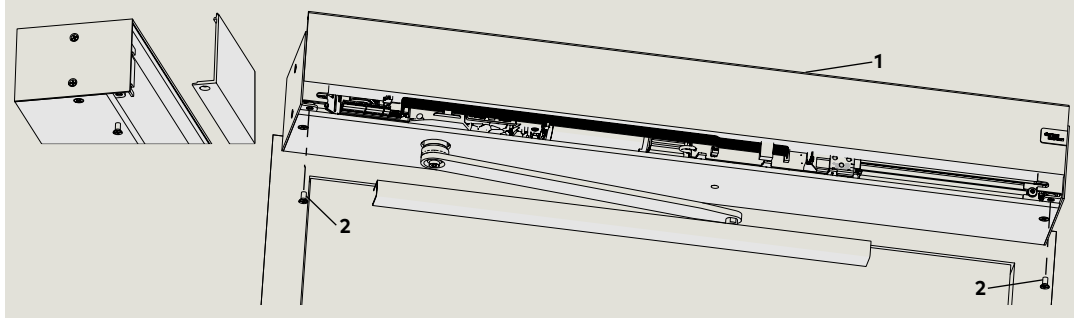
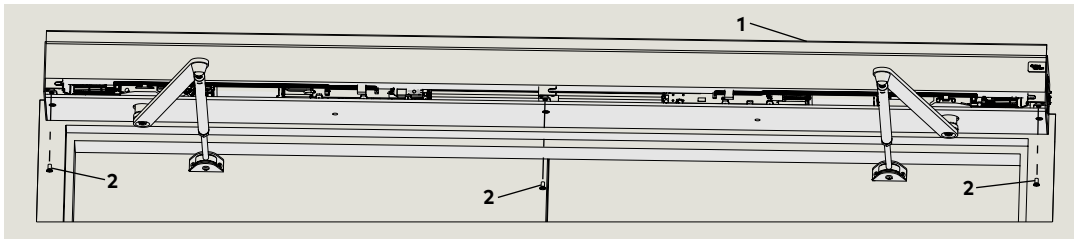


Fig. 28.1.2 Double door header with cover installation



28.1.1 Install header cover.

CAUTION

Before installing cover, check header assembly:

- All wiring secured.
- No pinched wiring.
- Remove any debris in header; assembly must be clean.

1. Install header cover on header and secure with supplied flat head screws.

Note: single header with pull arm shown as an example.

29 Install door signage

29.1 Install door signage

29.1.1 Install door signage based on type of door and ED100/ED250 operator.

Install applicable door signage as outlined in Chapter 11, ED100/ED250 door signage.

30 ANSI/BHMA standards

30.1 A156.10 Power operated pedestrian doors

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

Reference ED100/ED250 service manual for additional parameter detail.

30.1.1 Door measurements, power operated swing door

ED100/ED250 Parameter				A156.10 standard		
Parameter	Function	Factory setting	Adjustment range	Para.	Requirement	
So	Opening speed automatic mode	Swing door opening speed, automatic mode.	25%/s	ED100 8%/s - 50%/s ED250 8%/s - 60%/s	10.2.1	Swing door opening time to 80°, not less than 1.5 s.
Sc	Closing speed automatic mode	Swing door closing speed, automatic mode.	25%/s	ED100 8%/s - 50%/s ED250 8%/s - 60%/s	10.2.5	Swing door closing time to latch check. Reference 28.1.2.
Fo	Static force in opening direction	Static force on door closing edge in opening direction.	13.5 lb f [60 N]	4.5 lb f - 33.7 lb f Reduced in low energy mode.	10.2.2	Not to exceed 30 lb f measured 1" from lock edge of door.
Fc	Static force in closing direction	Static force on door closing edge in closing direction.	13.5 lb f [60 N]	4.5 lb f - 33.7 lb f Reduced in low energy mode	10.2.7	Not to exceed 30 lb f measured 1" from lock edge of door at any point in closing cycle.
bc	Back check	Checking or slowing down of door speed before door being fully opened.	10°	5° - 40°	10.2.3	Shall occur at no less than 10° of full open position.
dd	Hold open time	Open time for swing doors using sensors or control mats upon loss of detection.	5 s	0 s - 30 s 0 s - 180 s (professional upgrade card)	10.2.4	Minimum of 1.5 seconds after loss of detection.
	Latch check	Checking or slowing down of door speed before door being fully closed.		Not adjustable	10.2.6	Not less than 10° from closed position. The door will not close through the final 10° in less than 1.5 s.
hS	Reference ED100/ED250 service manual for parameter detail.	Support for manual mode in door closed position.			10.2.8	Manual opening force in event of power failure. Not greater than 30 lb f applied 1" from edge of lock stile to open.
hA		Adjustment, door activation angle.				
hF		Power assist function.				

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

"D" door width, minimum (inches)	"W" door weight, maximum (pounds)	"T" closing time, minimum, to latch check (seconds)
36 or less	100	2.0
36	140	2.3
42	110	2.3
42	150	2.7
48	120	2.8
48	160	3.2

28.1.3 Other door weights and widths

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

30.2 A156.19 Low energy power operated doors

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

Reference ED100/ED250 service manual for additional parameter detail.

30.2.1 Door measurements, low energy power operated door

ED100 Parameter				A156.19 standard		
Parameter	Function	Factory setting	Adjustment range	Para.	Requirement	
So	Opening speed	Swing door opening speed	19%/s Note 1	ED100 8%/s - 60%/s ED250 8%/s - 60%/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	Back check	Checking or slowing down of door speed before door being fully opened.	10°	5° - 40°	4.2	Back check shall not occur before 60° opening.
Sc	Closing speed	Swing door closing speed, automatic mode.	19%/s Note 1	ED100 8/s - 50%/s ED250 28/s - 60%/s	4.4	Closing Doors shall close from 90° to 10° in 3 seconds or longer as required in Table I (next page). Doors shall close from 10° to fully closed in not less than 1.5 seconds.
dd	Hold open time	Hold open time	5 s	5 s - 30 s	4.3	Time delay When powered open, the door shall remain open at the fully opened position for not less than 5 seconds. Exception: when push-pull activation is used, the door shall remain at the fully opened position for not less than 3 seconds.
hS	Reference ED100/ED250 service manual for parameter detail.	Support for manual mode in door closed position.			4.5	Doors shall open: <ul style="list-style-type: none"> • 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 - 33.7 lb f Reduced in low energy mode.	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 33.7 lb f Reduced in low energy mode.	4.5	

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

30.2.2 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).

30.2.3 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.		

30.2.4 Other door weights and widths

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

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31 Upgrade cards

31.1 Upgrade cards

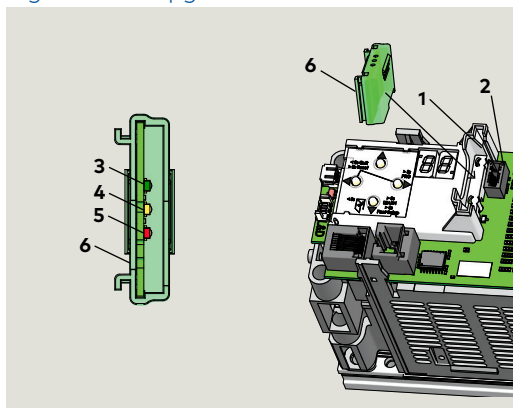
31.1.1 Upgrade card installation

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

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

Fig. 31.1.1 Upgrade card slot

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



31.1.2 Upgrade cards

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

31.1.3 ED100 operator

ED100 is supplied as a low energy operator. It can be configured for a full energy operator. Reference Para.

- Full energy mode enables the full range of door opening and closing speeds.
- Door swing path must be monitored by safety sensors when configured for the full energy mode.

31.2 Container module

31.2.1 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.

31.2.2 Container module removal

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

31.2.3 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.

31.2.4 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.

31.2.5 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.

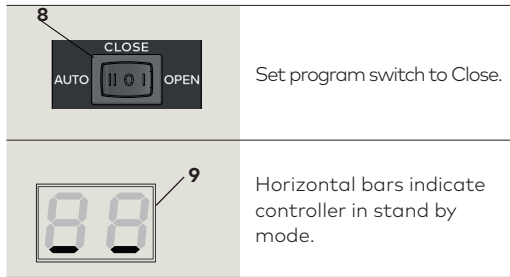
31.2.6 Container module defective

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

31.3 Installing upgrade cards

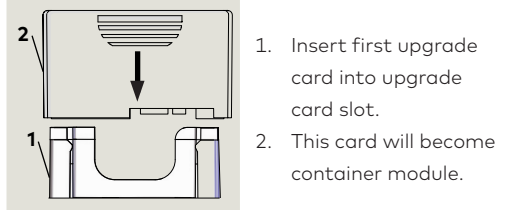
31.3.1 Set program switch to CLOSE.

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



31.3.2 Installing first upgrade card

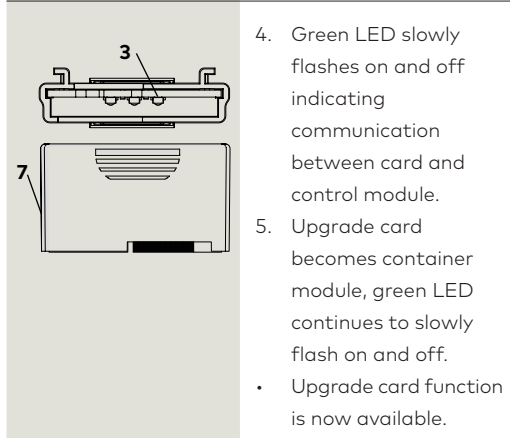
- 1 Upgrade card slot
- 2 First upgrade card



- 4 Yellow LED
- 7 Container module



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



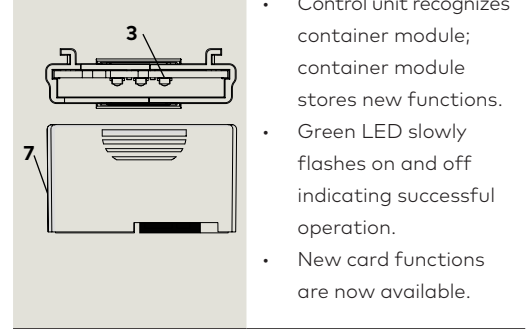
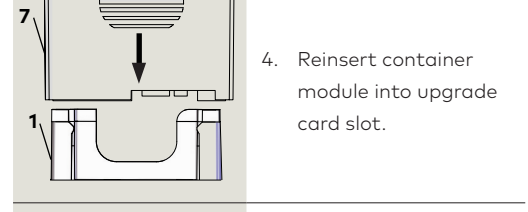
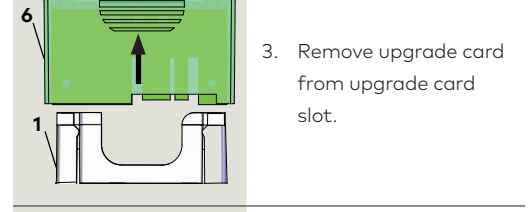
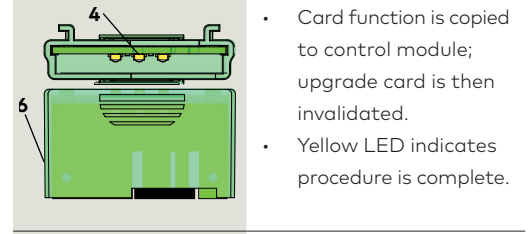
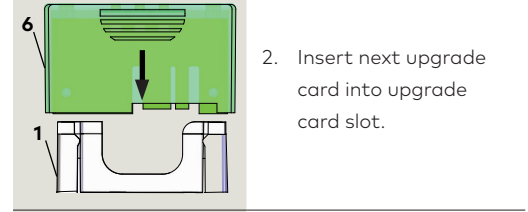
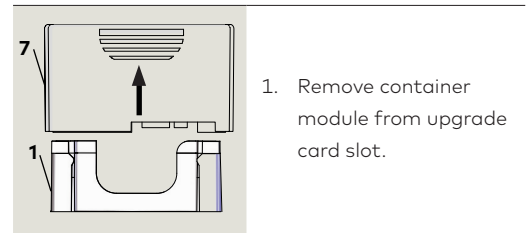
- 3 Green LED
- 7 Container module



TIPS AND RECOMMENDATIONS

Container module can be configured using applicable parameter (F1 - F8) for card. Reference ED100/ED250 Service Manual, Chapter 17.

31.3.3 Installing additional upgrade cards



TIPS AND RECOMMENDATIONS

New upgrade card can be configured using applicable parameter (F1 - F8) for card. Reference ED100/ED250 Service Manual, Chapter 17.

Appendix A: Header hole preparation

A.1.1 Header, no preparation

Fig. A1.1.1 Header with no hole preparation

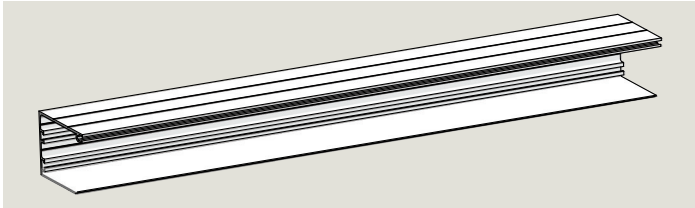
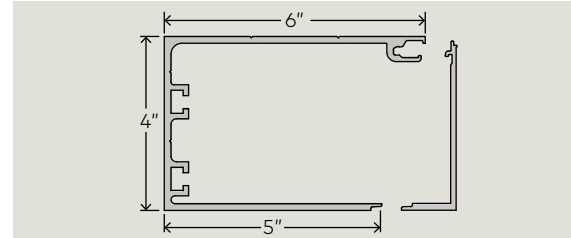


Fig. A1.1.2 Header and cover side view



A.1.2 Single LH header

Fig. A1.2.1 LH single header

- 1 1 1/2" dia. drive axle hole
- 2 3/8" dia. spring tension hole
- 3 17/64" dia. jamb bracket mounting hole

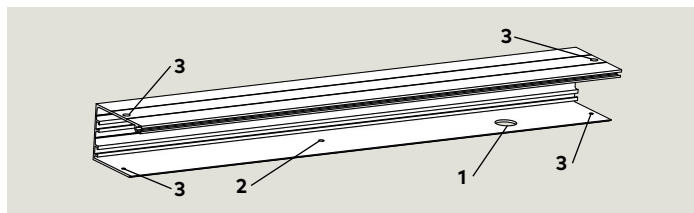


Fig. A1.2.2 LH single header top view

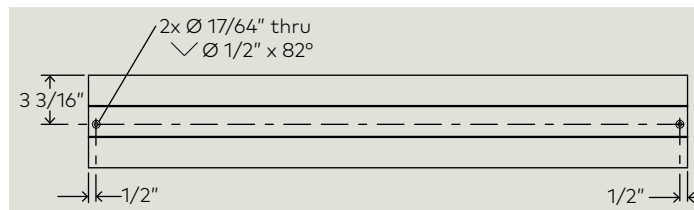


Fig. A1.2.2.1 17/64" dia. thru hole

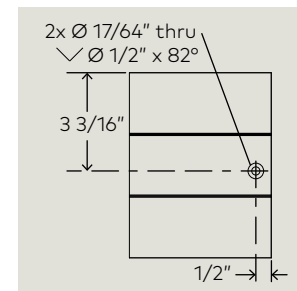
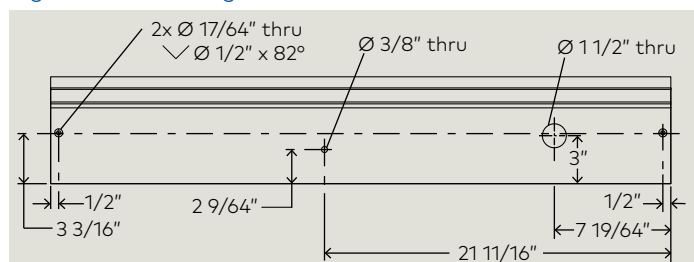
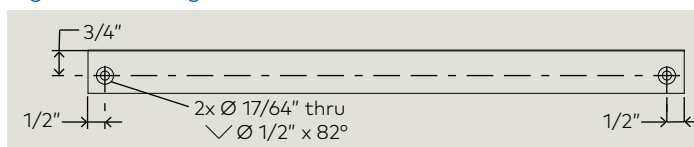


Fig. A1.2.3 LH single header bottom view



A.1.3 Single header cover bottom view

Fig. A1.3.1 Single header cover bottom view



A.1.4 Single RH header

- 1 1 1/2" dia. drive axle hole
- 2 3/8" dia. spring tension hole
- 3 17/64" dia. jamb bracket mounting hole

Fig. A1.4.1 RH single header

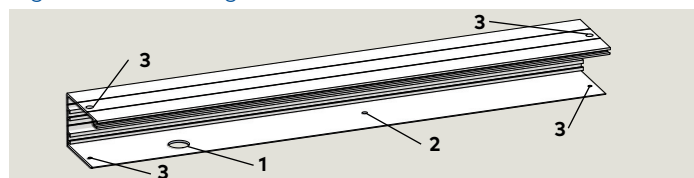


Fig. A1.4.2 RH single header top view

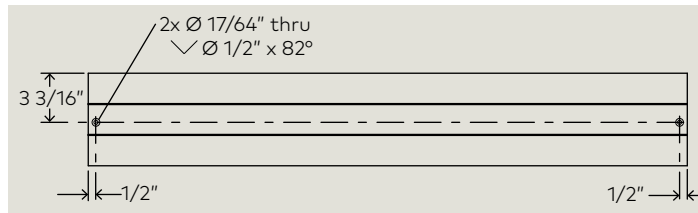
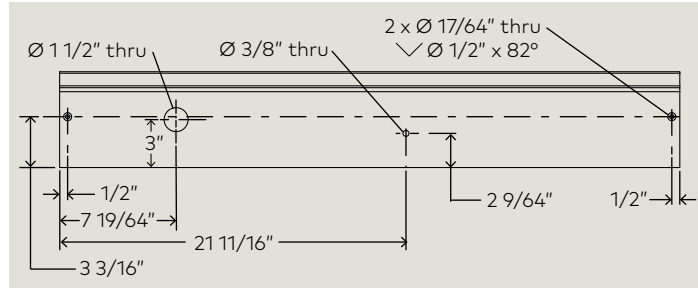
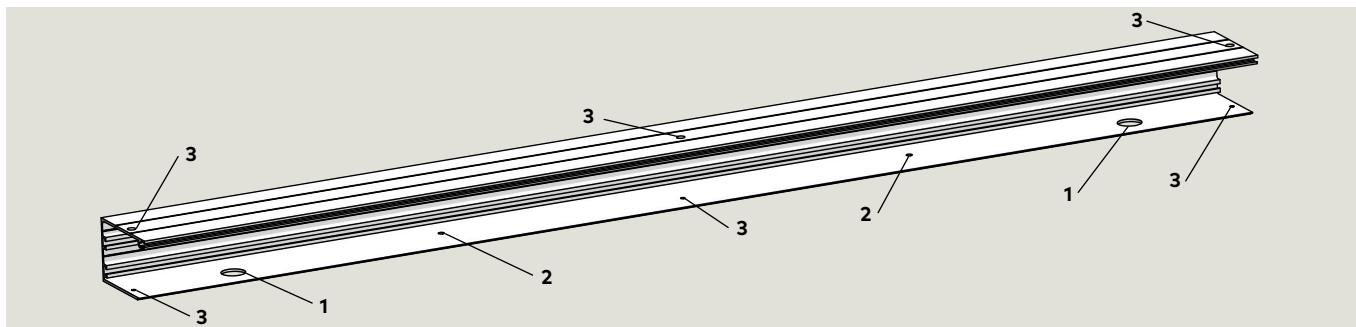


Fig. A1.4.3 RH single header bottom view



A.1.5 Double header

Fig. A1.5.1 Double header



- 1 1 1/2" dia. drive axle hole
- 2 3/8" dia. spring tension hole
- 3 17/64" dia. jamb bracket mounting hole

Fig. A1.5.2 Double header top view

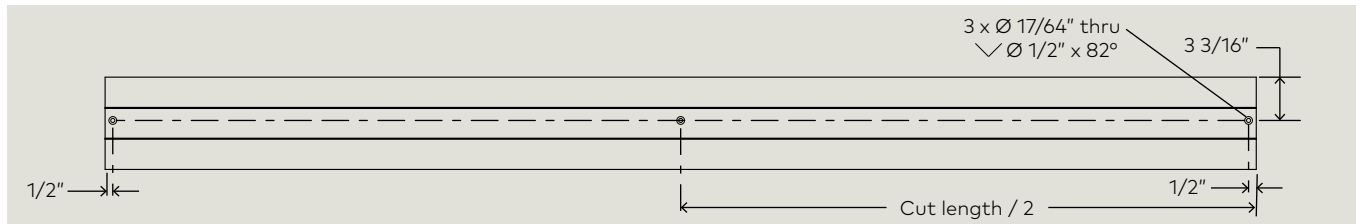


Fig. A1.5.3 Double header bottom view

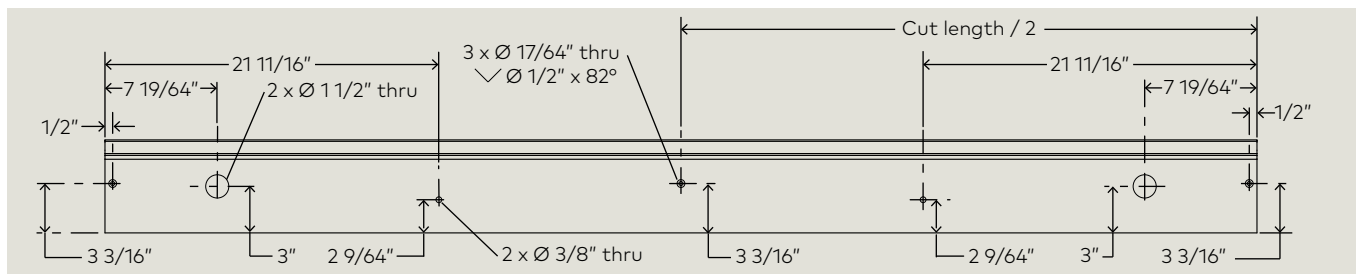
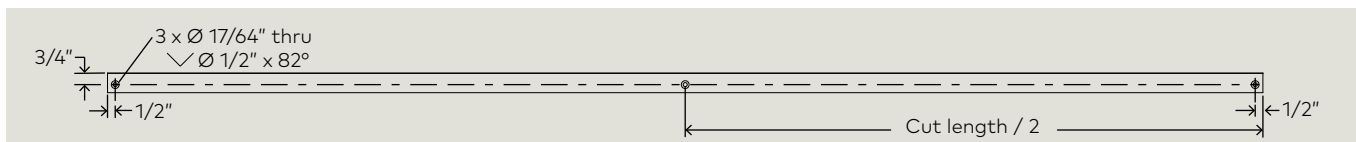


Fig. A1.5.4 Double header cover bottom view



Appendix B - Wiring diagrams

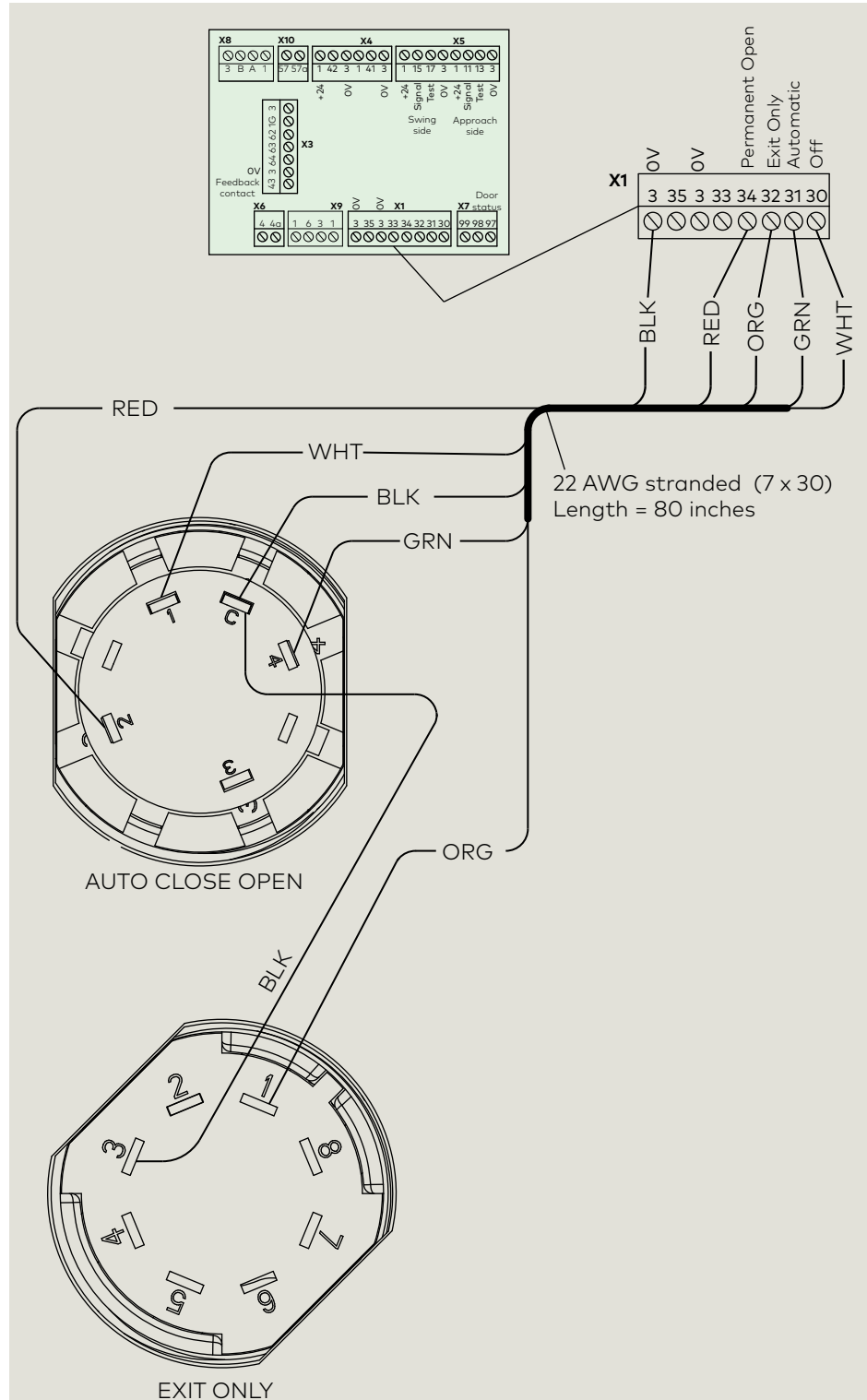
B1.1 DX4604-21C Key Switch Panel with RJ45 connector

Fig. B1.1 Key switch panel DX4604-21C



Reference Para. 14.7 for RJ45 cable connection.

Fig. B1.2 Key switch panel wiring diagram



B2.1 DX4604-11C Key Switch Panel

Fig. B2.1 Key switch panel DX4604-11C

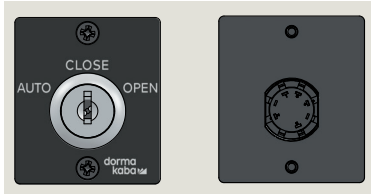


Fig. B2.2 Key switch panel wiring diagram

