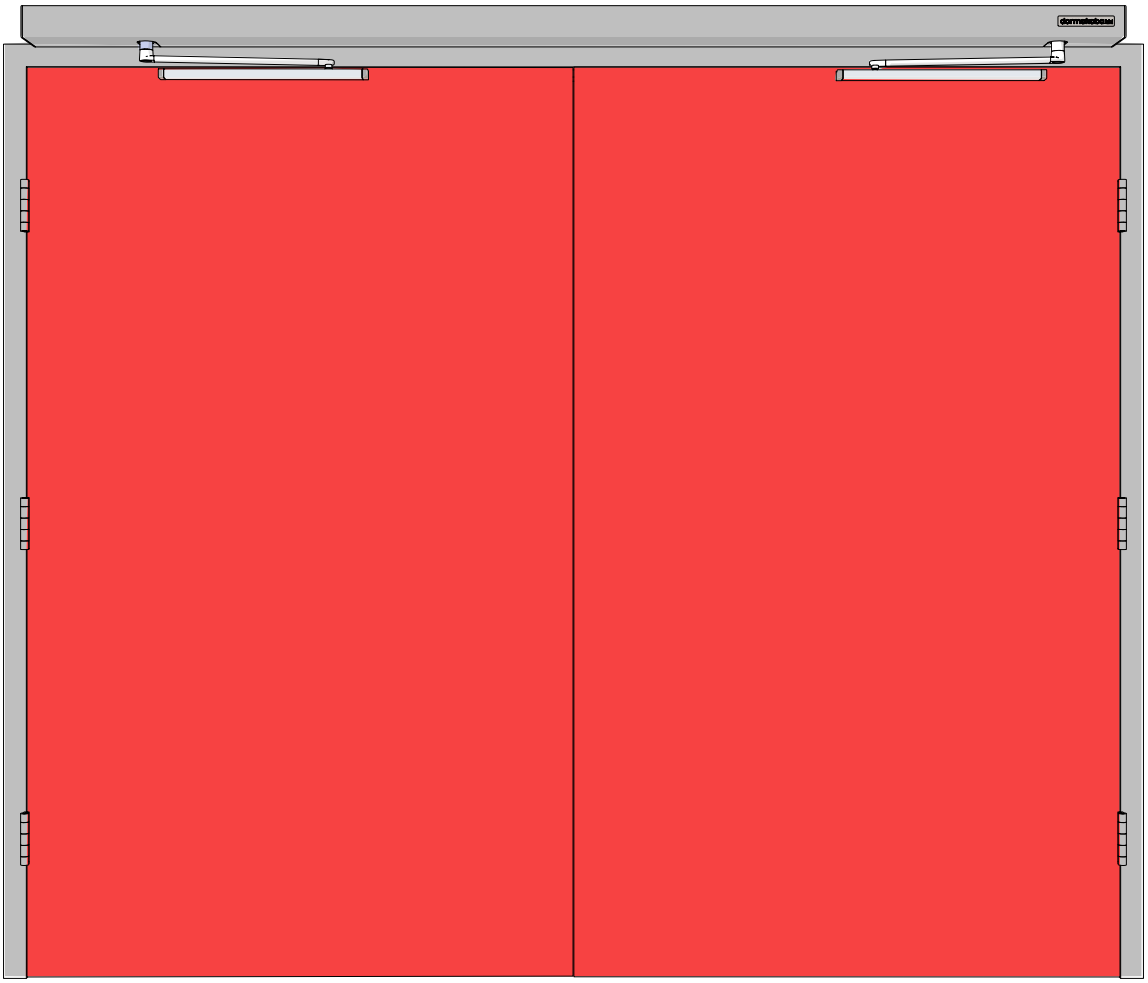


ED900

Low Energy Swing Door Operator
Companion door

Installation Instructions

08125340 – 06-2023

| EN |

dormakaba

Table of contents

1 General information

1.1 General information

1.1.1 Installation Instructions

This manual provides installation instructions for ED900 low energy swing door operator and 8616 door closer with fine cover used in companion door installations.

1.1.2 ED900 with fine cover installation.

NOTICE

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

1.1.3 Manual storage

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

1.1.4 dormakaba.us website

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

1.1.5 Dimensions

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

1.1.6 Building codes and standards

ED900 installation: observe applicable national and local building codes.

NOTICE

ED900 Setup and Troubleshooting.
Reference ED900 Setup and Troubleshooting Manual 08125380

1.1.7 Symbols used in these instructions.

⚠ WARNING

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

CAUTION

This symbol warns of a potentially unsafe procedure or situation.

NOTICE

Draws attention to important information presented in this document.

TIPS AND RECOMMENDATIONS

Clarifies instructions or other information presented in this document.

1.2 ED900 Arm configurations

1.2.1 Arm configurations.

ED900 is suitable for installation using the following arm configurations:

- **J8** – Standard push arm, 0 - 8" reveal
- **J12** – Deep reveal push arm, 8" - 12" reveal
- **T275** – Deep reveal arm and track, 1" - 2 3/4" reveal

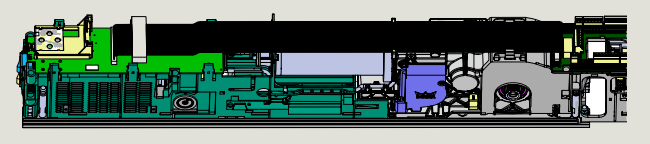
2 Product description

2.1 Product description: ED900

2.1.1 ED900 Intended use.

The ED900 is a low energy electromechanical operator used exclusively for opening and closing interior swing doors.

Fig. 2.1.1 ED900 operator



2.1.2 Low energy operator.

ED900 is supplied only as a low energy operator.

- The operator is supplied with a reduced power motor and a brake (Para. 4.4 - component view).
- The brake is used during door hold open time.

2.1.3 ED900 maximum door specifications.

Reference Para. 6.2, Operating specifications.

2.1.4 ED900 hardware.

Reference Chapter 5 for ED900 hardware overview.

⚠ WARNING

To reduce risk of injury to persons, use this ED900 operator only with a swing door for which the ED900 is designed for.

- Reference Chapter 6, Technical data.

TIPS AND RECOMMENDATIONS

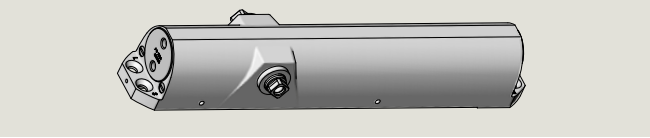
Insure operator door configuration is qualified for use on the respective smoke or fire rated door.

2.2 Product description: 8616 door closer

2.2.1 8616 intended use.

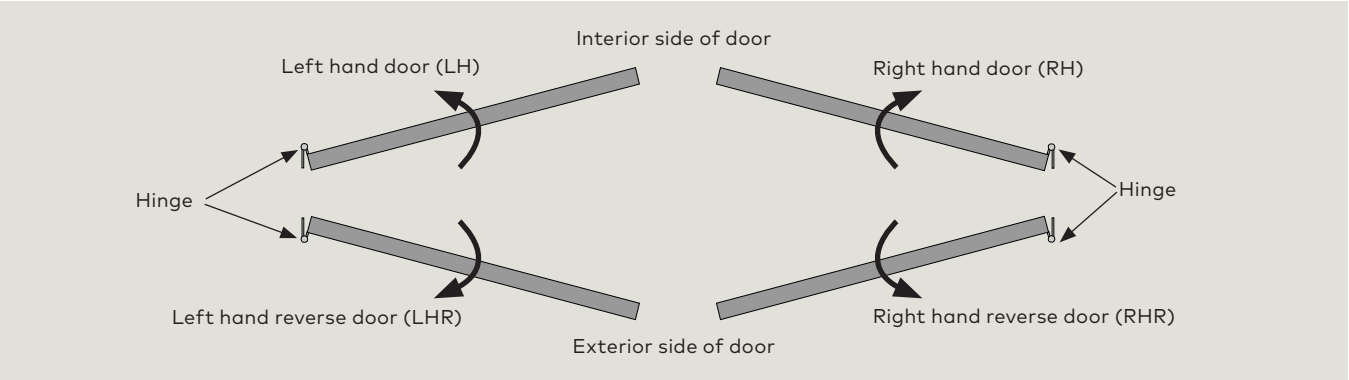
The 8616 series door closer is a non-handed surface applied door closer with adjustable spring power and backcheck positioning adjustments.

Fig. 2.2.1 8616 door closer



2.3 Handing of door

2.3.1 Handing of door.



3 Safety information

3.1 Safety instructions.

This document contains important instructions for installation of the ED900 swing door operator. Review these instructions thoroughly prior to installation, and follow them carefully during installation, commissioning, troubleshooting and maintenance.

3.2 Door signage requirements.

Proper signs and labels, per ANSI/BHMA A156.19 Standard for Power Assist and Low Energy Power Operated Doors, shall be applied and maintained on the door controlled by the ED900 swing door operator.

- Reference Chapter 10, ED900 Door Signage.

3.3 Safety warnings.

⚠ WARNING

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

⚠ WARNING

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

⚠ WARNING

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

⚠ WARNING

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

⚠ WARNING

Metallic doors must be grounded per national and local codes!

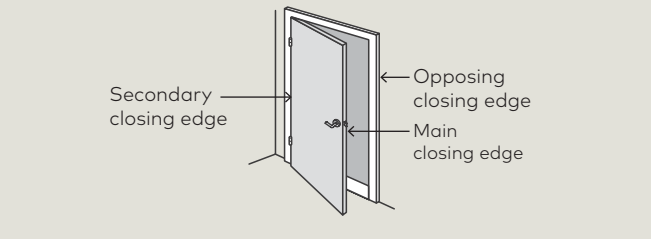
⚠ WARNING

Hand pinch point and crushing hazards at door closing edges!

⚠ WARNING

Crushing hazards at door closing edges!

Fig. 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.

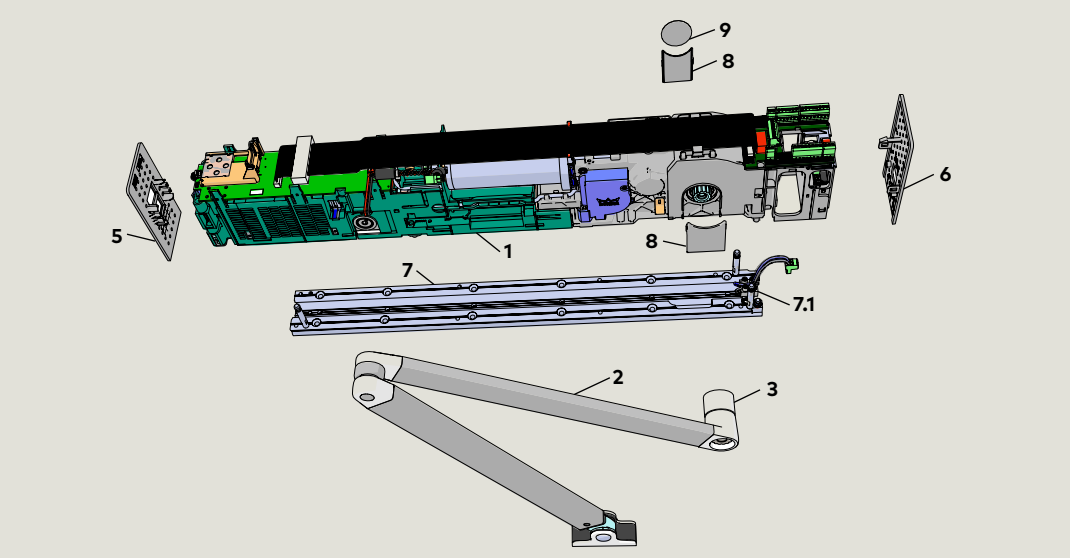
⚠ WARNING

Hand pinch point and crushing hazards at push arm and arm and track!

4 ED900 Product overview

4.1 ED900 push arm system

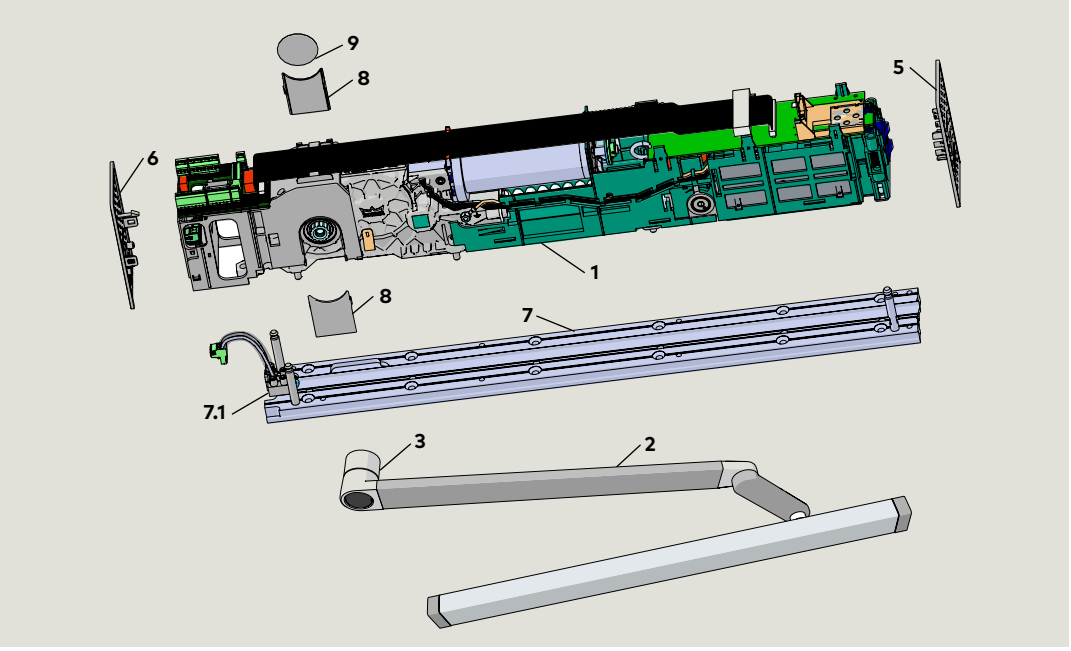
Fig. 4.1.1 ED900 RH push arm system example



1 ED900 operator
2 J/push arm assembly
3 Axle extension
5 End cap, Mode switch
6 End cap, power switch
7 Mounting plate
7.1 115 Vac terminal block
8 Spindle cap
9 Spindle cap

4.2 ED900 deep pull arm system

Fig. 4.2.1 ED900 RH deep pull arm system example



1 ED900 operator
2 T275/track/arm assembly
3 Axle extension
5 End cap, Mode switch
6 End cap, power switch
7 Mounting plate
7.1 115 Vac terminal block
8 Spindle cap
9 Spindle cap

4.3 ED900 – companion door configuration examples

Fig. 4.3.1 Push installation with fine cover

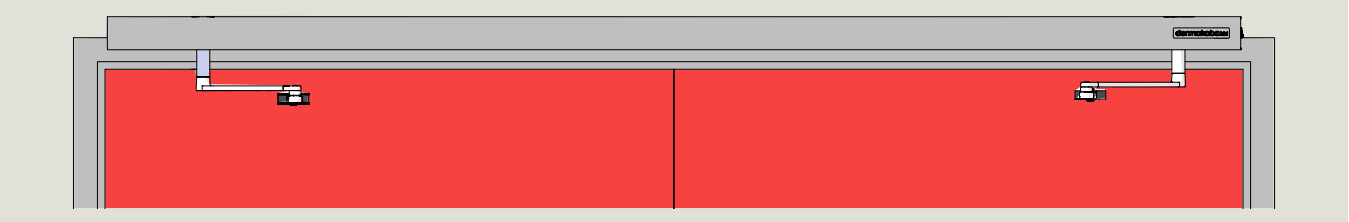


Fig. 4.3.2 LH push without fine cover

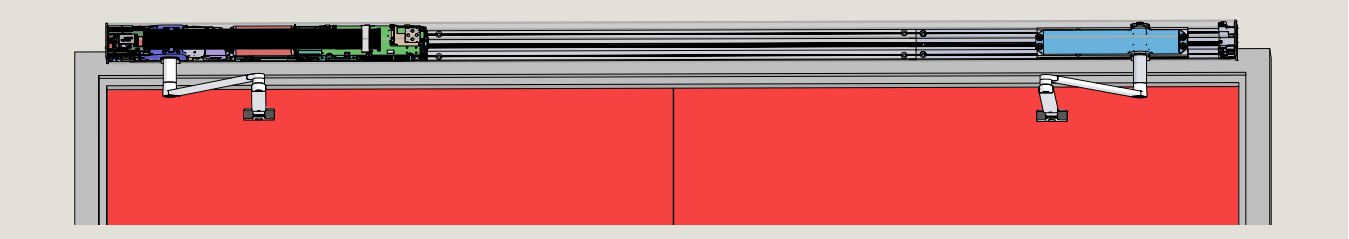


Fig. 4.3.3 Deep pull installation with fine cover

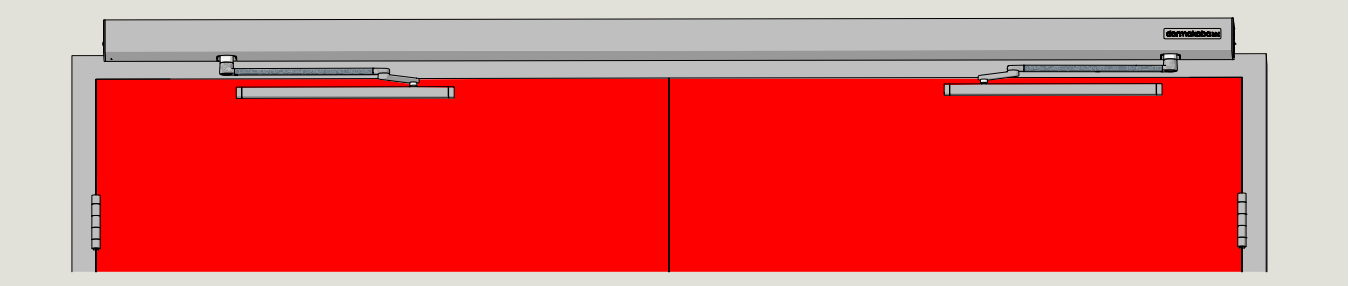
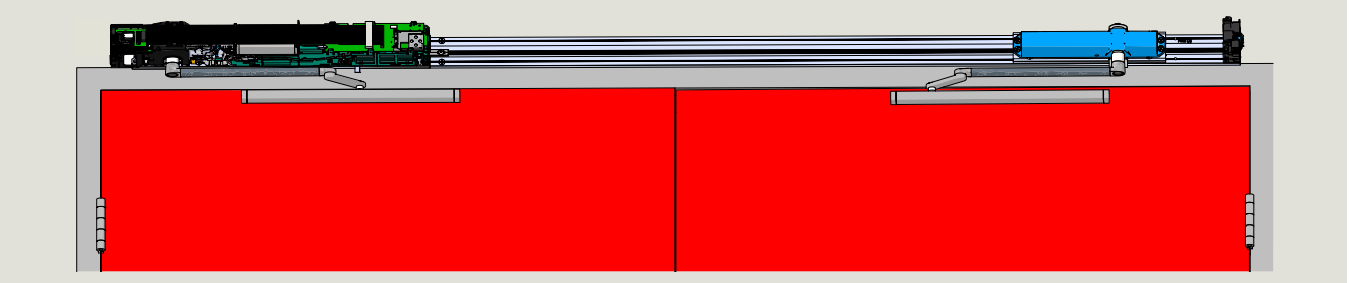


Fig. 4.3.4 Deep RH pull installation without fine cover



4.4 ED900 operator component views

1 Power switch
2 120 Vac cable
4 Splined shaft spindle
5 Operator (motor, gear, spring)
6 Spring tension adjustment, closing force
7 Program switches
8 4 button user interface
9 Information display
11 Potentiometer, power fail closing speed adjustment
12 Terminal jumper socket, push or pull mounting
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
28 Motor brake

Fig. 4.4.1 ED900 component view 1

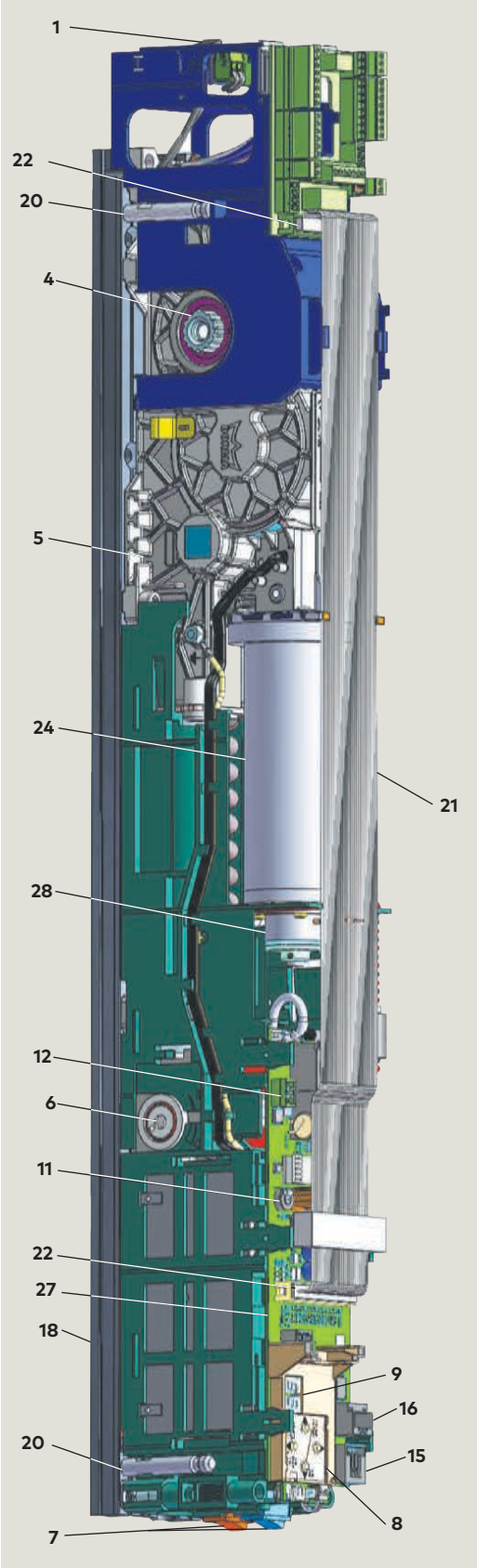
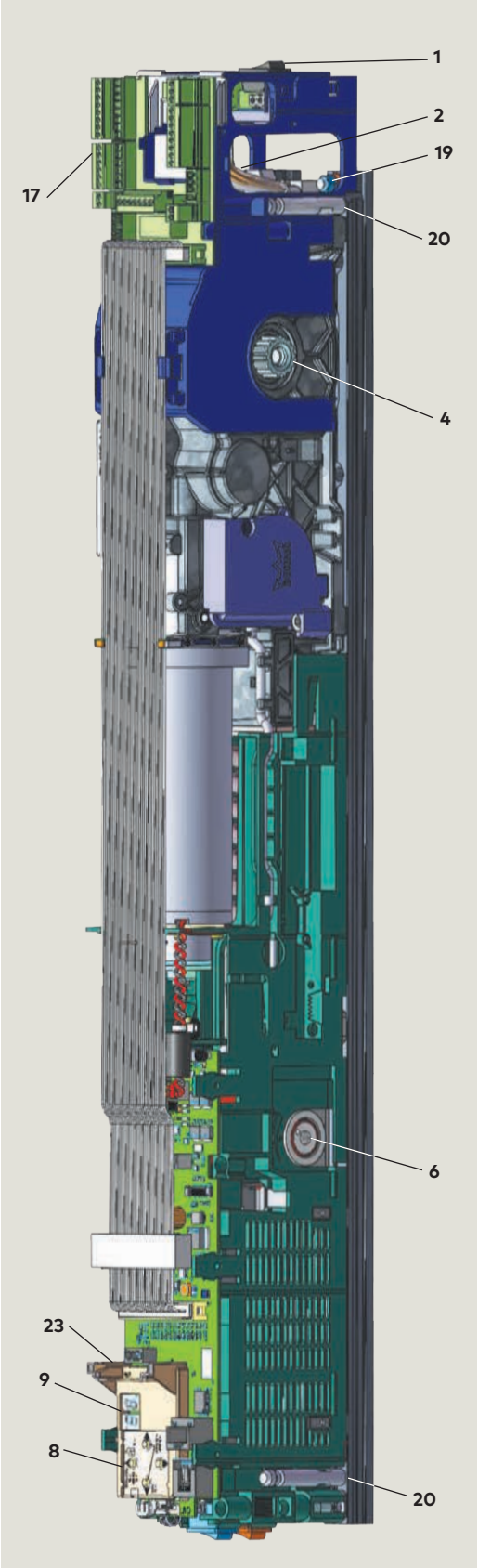
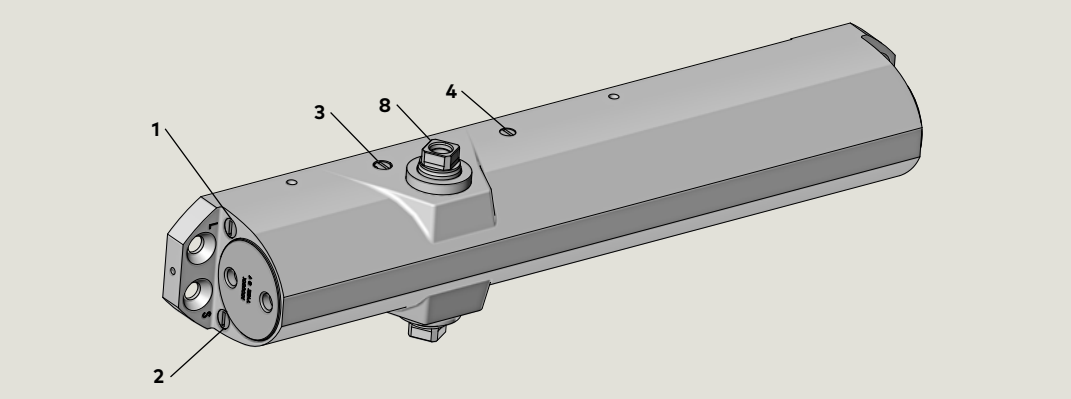


Fig. 4.4.2 ED900 component view 2



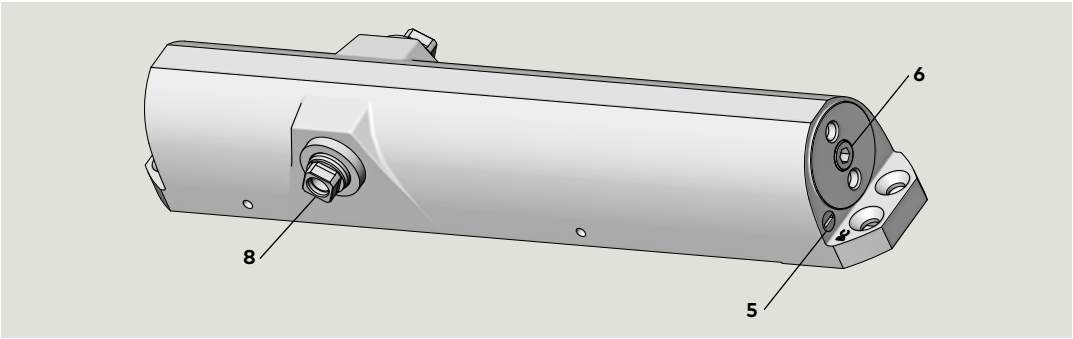
4.5 8616 closer views

Fig. 4.5.1 8616 component view 1



1 Latch speed adjustment (L)
2 Sweep (closing speed) adjustment (S)
3 Delayed action
4 Backcheck positioning
8 Pinion screw

Fig. 4.5.2 8616 component view 2



5 Backcheck (BC)
6 Spring force adjustment
8 Pinion screw

5 Hardware – companion door

5.1 ED900 operator and mounting plate

Fig. 5.1.1 ED900 operator and mounting plate

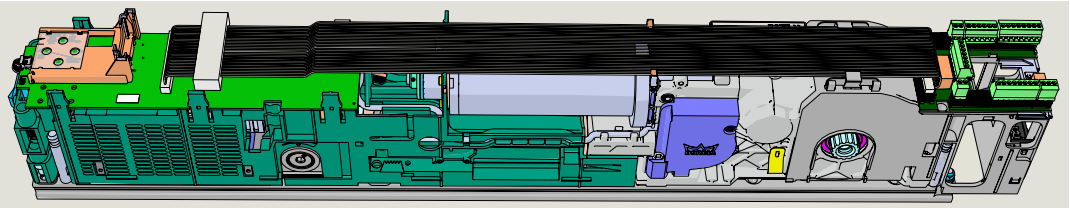


Fig. 5.1.2 Accessory terminals and guide pin

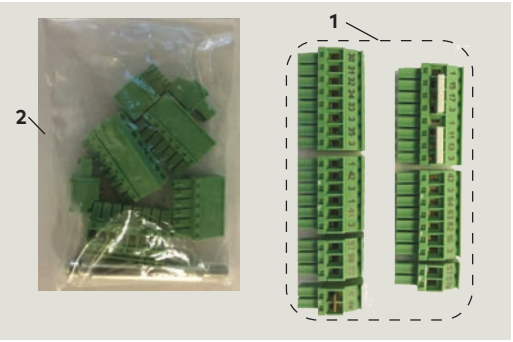
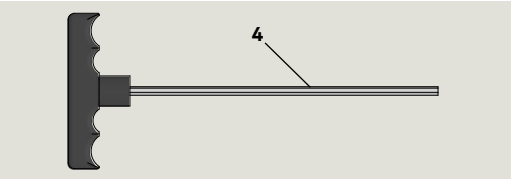


Fig. 5.1.3 5 mm T-handle hex key



1 Terminals for accessory wiring
2 Bag containing terminals and third guide pin*
3 Guide pin
4 5 mm T-handle hex key 08120720

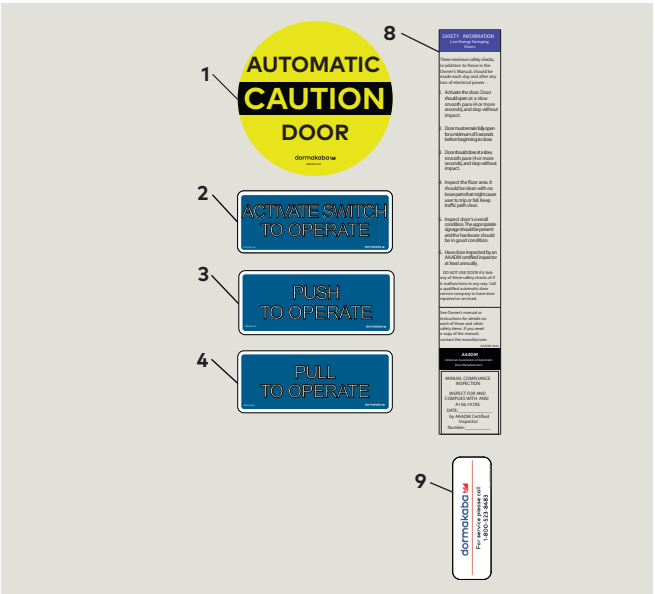
* Included with operator

5.2 Kit, ED operator labels

9 Label, Service call DD3425-010
8 Safety Information label, low energy DD1269-040
4 DD0762-020 Decal, Pull to Operate
3 DD0762-010 Decal, Push to Operate
2 DD0758-010 Decal, Activate Switch to Operate
1 DD0586-010 Decal, Automatic Caution Door

Assembly #	Item #	Quantity
HK3137-010 Single door low energy (LE) decal kit	9	1
	8	1
	4	1
	3	1
	2	1
	1	2

Fig. 5.2.1 Decal kit, low energy



5.3 Arm assemblies

1 Drive arm
3 Shoe
4 Axle extension
5.1 Adjustment shaft tube, 450 mm
5.2 Adjustment shaft, 450 mm

Fig. 5.3.1 J8 – Splined push arm assembly, 225 mm, 0 - 8" reveal

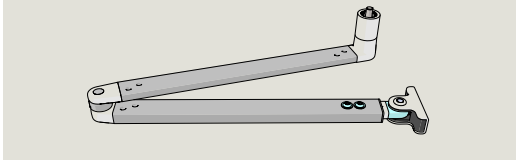
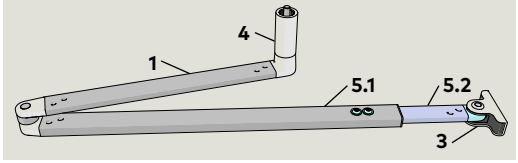


Fig. 5.3.2 J12 – Splined push arm assembly, 500 mm, 8" - 12" reveal



1 Drive arm
2 CPD lever
3 Track

Fig. 5.3.3 T275 – Splined pull arm assembly, LH, 1 - 2 3/4" reveal

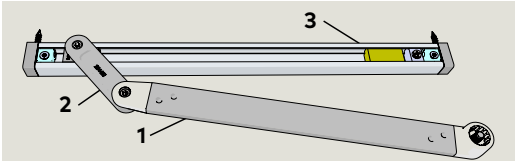
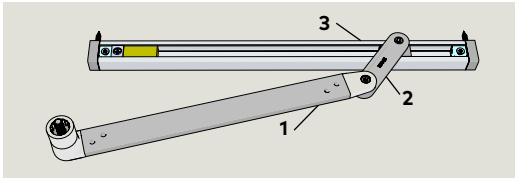


Fig. 5.3.4 T275 – Splined pull arm assembly, RH, 1 - 2 3/4" reveal



5.4 ED900 axle extensions

1 M8 x 1.25 x 40 SHCS
2 M8 x 1.25 x 50 SHCS
3 M8 x 1.25 x 80 SHCS

Fig. 5.4.1 [20 mm] HC4679-001

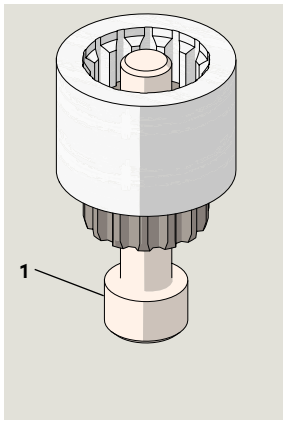


Fig. 5.4.2 [30 mm] HC4679-002

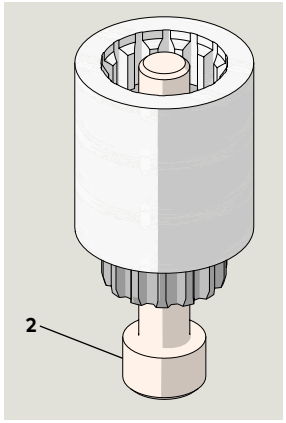
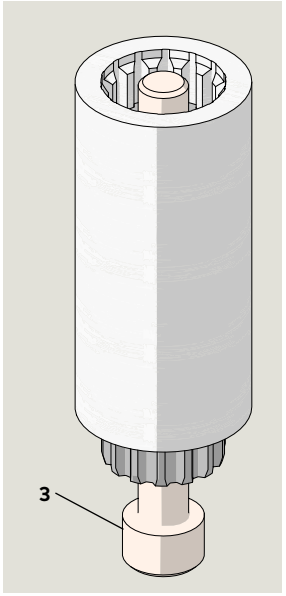


Fig. 5.4.3 [60 mm] HC4679-003



5.5 8816 closer axle extensions

1 20 mm axle extension HC4680-001
2 60 mm axle extension HC4680-002

Fig. 5.5.1 [20 mm]

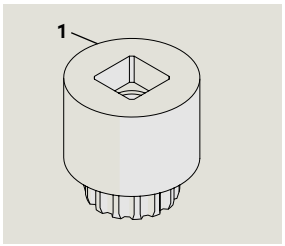
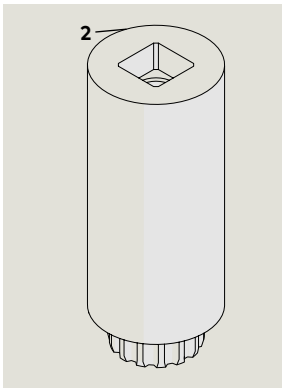


Fig. 5.5.2 [60 mm]



5.6 Mounting plate fasteners

Fig. 5.6.1 Two sets - Mounting plate fasteners

15,16 Mounting plate fastener kit
HK4053-010

15 1/4-20 x 1" FH machine screw

16 No. 14 x 2 1/2" FH wood screw

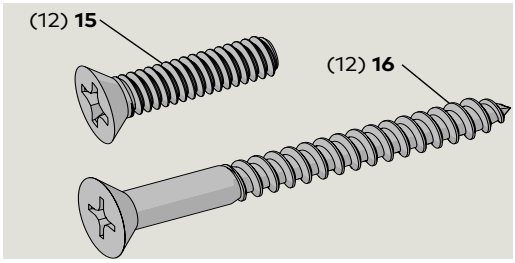
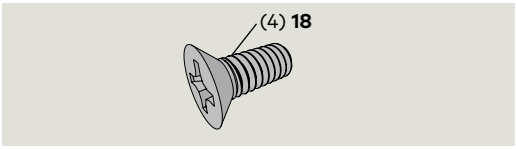


Fig. 5.6.2 8816 adaptor fastener

8816 adaptor fastener kit
HK4607-001

18 (4) 1/4-20 x 5/8" FH machine screw



5.7 Arm mounting screw packs

Fig. 5.7.1 Two sets -Push arm screw pack

9 Push arm screw pack HK2719-010

9.1 10-24 x 1 1/2" barrel nut

9.2 10-24 x 1" PPHMS

9.3 #14 x 1 1/4" pan head wood screw

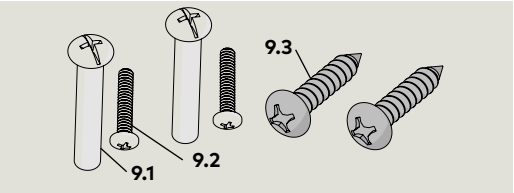


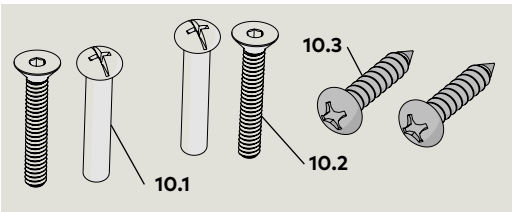
Fig. 5.7.2 Two sets -Pull arm screw pack

10 Pull arm screw pack HK2719-020

10.1 10-24 x 1 1/2" barrel nut

10.2 10-24 x 1 1/4" FHSCS (flat head socket screw

10.3 #14 x 1 1/4" pan head wood screw



5.8 ED900 companion door full width cover kits

Table 5.8.1 Fine cover kit companion door part numbers

No.	Part number and description		Quantity	
			HK3401-08X	HK3401-09X
1	HC3459-05X	Fine cover companion pull	1	
2	HC3459-05X	Fine cover companion push		1
3	HC3466-01X	ED100/ED250 end cap set	1	1
4	HC3466-02X	Spindle cover kit	1	1
5	HC3468-050	Backplate, ED operator companion	1	1
6	HC3468-070	Companion closer adapter	1	1
7	HC3481-010	ED100/ED250 professional cover bracket	1	1
8	HD4613-020	Logo plate dormakaba ED swing	1	1
9	HF3101-01X	1/4-20 x 1" FHMS Ph undercut head	8	8
10	HK3491-001	Backplate connect kit	1	1
11	HK4607-001	8816 closer screw pack	1	1
12	HL4613-001	ED FC logo template instructions - not shown	1	1
13	HP4613-001	ED FC logo placement template	1	1
14	HX3482-010	ED100/ED250 mode switch	1	1
15	HX3493-010	ED100/ED250 wire retainer	10	10

Fig. 5.8.1 HK3401-08X Fine cover kit companion pull

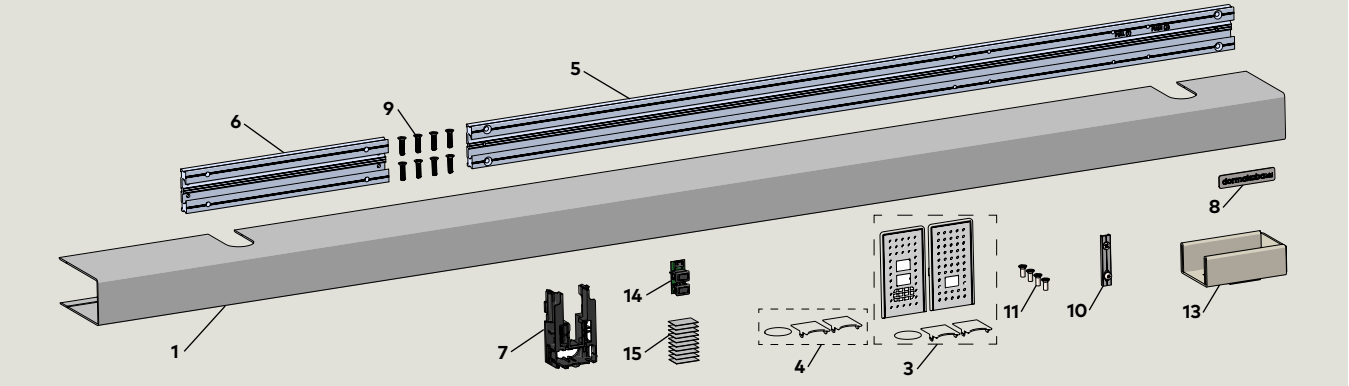
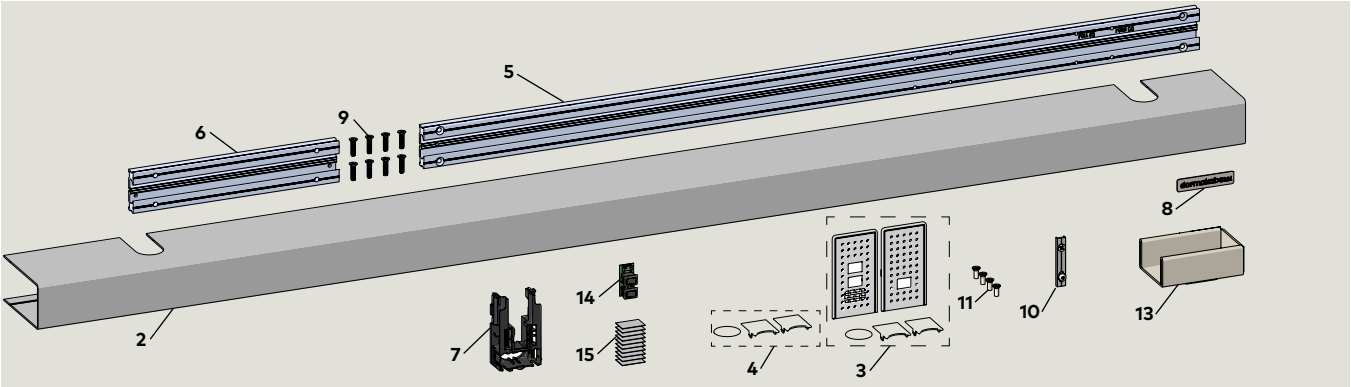


Fig. 5.8.2 HK3401-09X Fine cover kit companion push



5.9 Companion door full width cover kit hardware

11 1/4-20 x 5/8" PFHMS HF0399-00G
1 Mounting, extr. connector HC3491-010
2 M6 x 10 mm SHCS and washer HF3495-01Z
3 M6 x 10 mm PFHS HF3496-01Z

Fig. 5.9.1 8816 closer screw pack HK4607-001

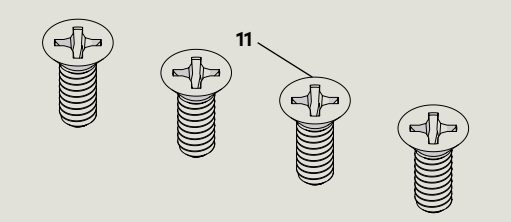
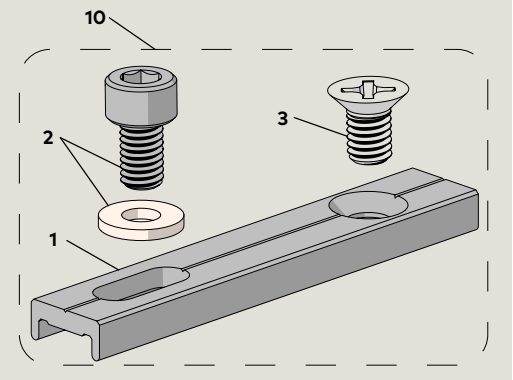


Fig. 5.9.2 Backplate connect kit HK3491-001



3.1 End cap set, silver, HC3466-01A
3.2 End cap set, black, HC3466-01C
4.1 Spindle cap set, silver HC3466-02A
4.2 Spindle cap set, black HC3466-02B

Fig. 5.9.3 End cap sets

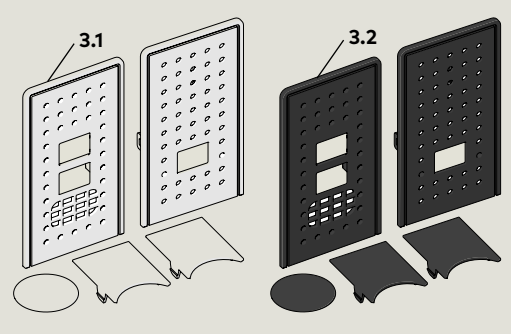
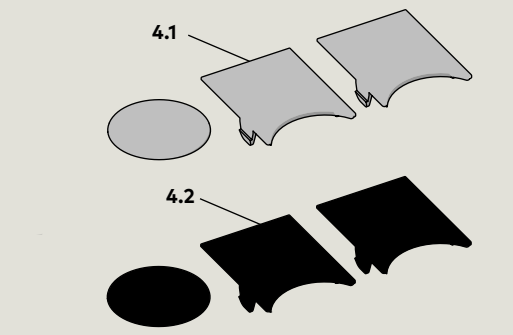


Fig. 5.9.4 Spindle cap sets



7 Cover bracket HC3481-010
8 dormakaba logo plate HD4613-020
15 Wire retainer HX3493

Fig. 5.9.5 Cover bracket

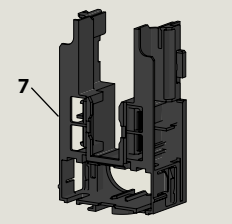


Fig. 5.9.6 Wire retainer

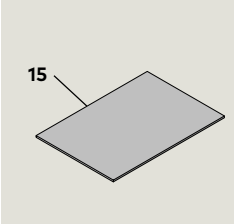


Fig. 5.9.8 dormakaba logo plate

14 Mode switch HX3482-010
1 ED900 mode switch
2 JST HXP 4 pin connector
3 Alpha 1174C 4 conductor 22 AWG cable, 73" long

Fig. 5.9.7 Mode switch

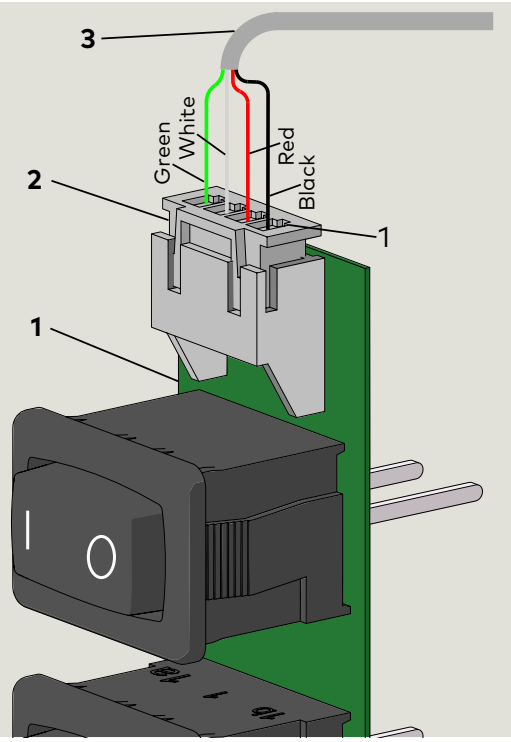
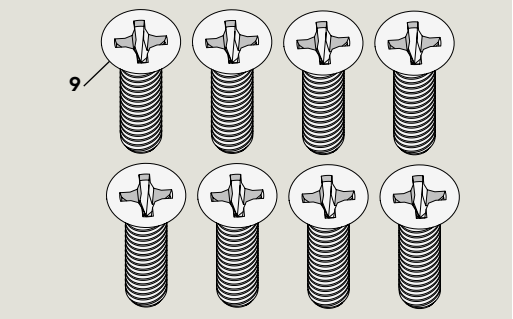


Fig. 5.9.9 Closer backplate and adapter fastener



9 1/4-20 x 1" Phillips FHMS undercut HF3101-01

5.10 Conduit box and wiring kit – options

Fig. 5.10.1 Conduit box

4 Conduit box
HX3501-001

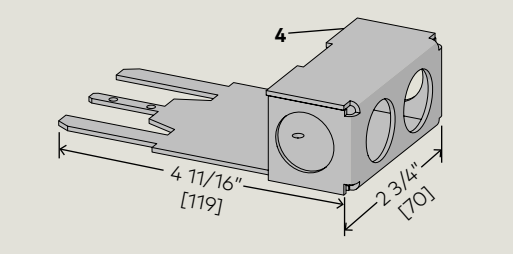
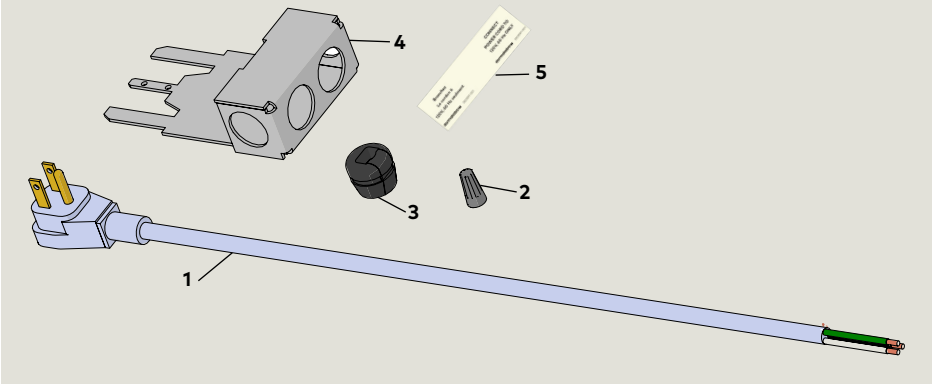


Fig. 5.10.2 Power cord wiring kit HK3597-010

1 Power cord
HX3500-001
2 Wire nut
3 Cord grip
HX3502-001
4 Conduit box
HX3501-001
5 120 Vac label
HD3597-001

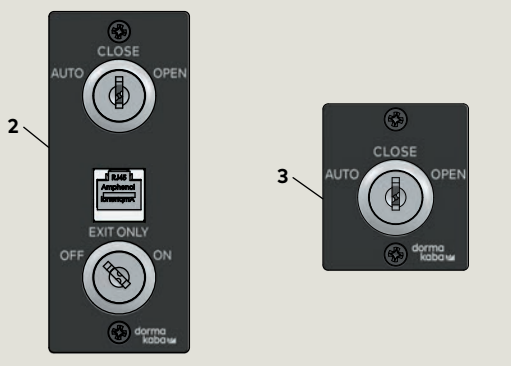


5.11 Optional key switch panels

Fig. 5.11.1 Key switch panels

2 Key switch panel, RJ45, HX4604-21C

3 Key switch panel HX4604-11C

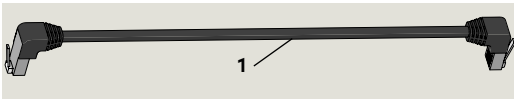


TIPS AND RECOMMENDATIONS

- Wiring diagrams; reference Appendix C.

Communication cable 90 degree RJ45	Length		Item #
HX4662-001	3'	[914 mm]	1
HX4662-002	10'	[3048 mm]	1
HX4662-003	20'	[6096 mm]	1

Fig. 5.11.2 Communication cable, 90 degree RJ45



5.13 Push arm door stop - option

Fig. 5.13.1 Door stop assembly

Door stop assembly 1/4" thick plate HS4633-001

Door stop assembly 1/2" thick plate HS4633-002

1 Plate, bumper mounting, 1/4" thick HC4633-001

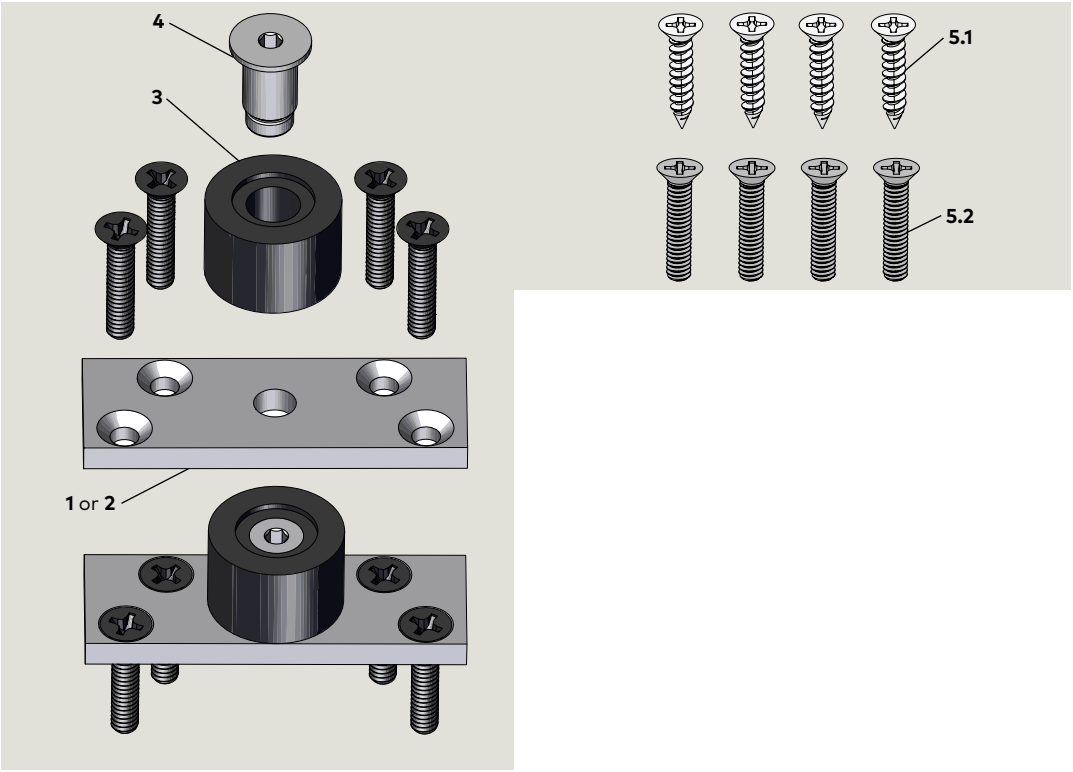
2 Plate, bumper mounting, 1/2" thick HC4633-002

3 Rubber bumper HC4633-003

4 Shoulder bolt HC4633-004

5.1 #14 x 1 1/4" Phillips FHWS, black

5.2 1/4-20 x 1 1/4" Phillips FHMS, black



6 Technical data

6.1 ED900 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 maximum
Operating noise	Maximum 50 db(A)

6.1.2 General specifications.

Operator dimensions (W x H x D)	27" standard cover 27" x 2 3/4 x 5 1/8", [685 x 70 x 130 mm]
Operator weight	26.5 lb [12 kg]
Maximum door opening angle	95 to 110° depending on installation type

6.1.3 Inputs

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

TIPS AND RECOMMENDATIONS

- ***X4**: terminal board numbers, reference Chapter 9.

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 Door open Door closed, locked	Com, N.O., N.C. contacts

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		Adjustable with potentiometer
LED status indicators Chapter 8	Green Red Yellow	24 Vdc power Error codes Service interval
Program and Exit Only switches	Chapter 8	Auto, Close, Open Exit only; Off, On
User interface	Chapter 8	4 button keypad, 2 digit display
Firmware update		Firmware update
TMP, temperature management program	Overload protection	
IDC, initial drive control	Driving phase optimization	
Cycle counter	**CC** parameter	0 to 1,000,000
Power assist function	**hA, hF, hS** parameters	Drive support for manual opening of door
Push & go function	**PG** parameter	Auto opening of door at 4° open

6.2 ED900 Operating specifications

6.2.1 ED900

Maximum power consumption	120 watt	
Opening force N (lbf) **Fo** parameter	Minimum 20 (4.5)	Maximum 60 (13.5.5)
Manual closing force N (lbf) **Fc** parameter	Minimum 20 (4.5)	Maximum 60 (13.5)
Maximum door weight, pounds	220 at 48" door width	Depending on door width and application
Door width	Minimum 28"	Maximum 48"
Maximum opening speed, °/s	27	May be limited by door weight after learning cycle.
Maximum closing speed, °/s	27	

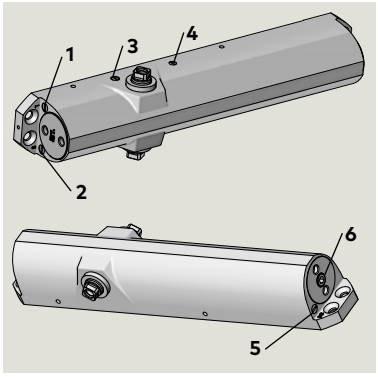
Axle extensions, [mm] inches	[20] 13/16" [30] 1 3/16" [60] 2 3/8"
Reveal depth for pull arm and CPD lever	2 1/4"
Reveal depth for standard push arm	0 to 8 3/4"
Reveal depth for deep push arm	8" minimum to 11 13/16"

6.3 8616 Door closer data

6.3.1 8816 adjustments.

Adjustments				
		Spring force adjustment	Adjustable	From size 1 to size 6
1	L	Latch speed	Adjustable	
2	S	Sweep speed	Adjustable	Door should close in 3 to 6 seconds
5	BC	Backcheck	Off, On	Must be turned ON for parallel arm applications. Backcheck position will advance approximately 15º.
4		Backcheck positioning	Adjustable	Adjustable hydraulic backcheck will take effect at approximately 70º.
3	DEL	Delayed action	Adjustable	Delays door closing to allow unobstructed passage through the opening.

Fig. 6.3.1 8816 door closer



6.3.2 8816 spring size selection, regular and top jamb closers.

		Door width maximum size		Maximum door weight
Closer size	Spring Full turns	Interior	Exterior	
1		28"		
2	-19 CCW	34"	28"	
3	-11 CCW	38"	30"	
4	0 turns	48"	36"	
5	+5 CW	54"	42"	
6	+13 CW			

6.3.3 8816 spring size selection, parallel arm.

		Door width maximum size		Maximum door weight
Closer size	Spring Full turns	Interior	Exterior	
1		28"		
2	-19 CCW	34"	28"	
3	-11 CCW	38"	30"	
4	0 turns	48"	36"	
5	+5 CW	54"	42"	

7 Operational mode overview

7.1 ED900 door closer modes

7.1.1 Automatic mode.
Door closer mode parameter **hd**=0.
Door opens automatically following pulse generation by a knowing act device or by push/pull.

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

TIPS AND RECOMMENDATIONS

Parameter descriptions can be found in Chapter 22; Parameters.

7.1.3 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.

7.2 Low energy product

7.2.1 ANSI/BHMA 156.19.
ED900 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.

7.2.2 Low energy power operated door.
A manual 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:

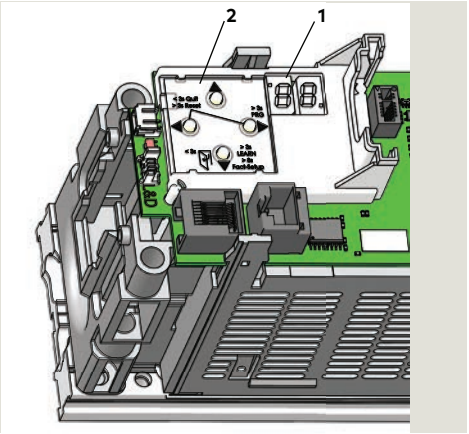
- Reduced dynamic door panel contact forces
- Reduced static door panel contact forces
- Low driving speeds
- Force limitation

8 User interface

8.1 Overview

1 2 digit display
2 4 button keypad

Fig. 8.1.1 Operator keypad and display



8.1.1 Operator user interfaces.

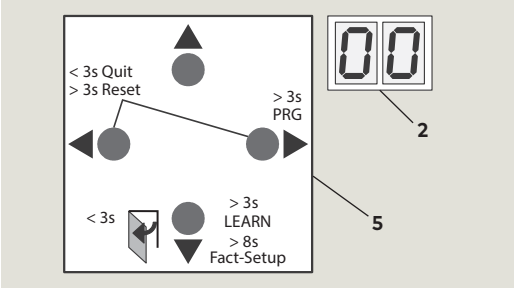
1. 4 button keypad and 2 digit display.

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

8.2 4 button keypad and display

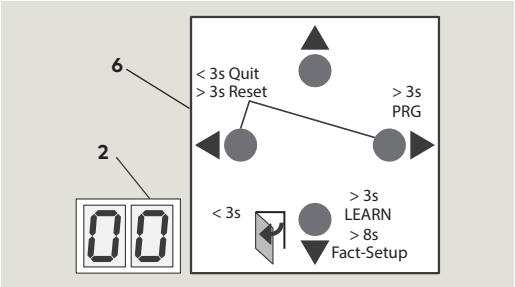
2 2 digit display
5 Button legend

Fig. 8.2.1 Door hinge side on right



2 2 digit display
6 Button legend rotated 180°

Fig. 8.2.2 Door hinge side on left



TIPS AND RECOMMENDATIONS

Symbols

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

8.2.1 4 button keypad.

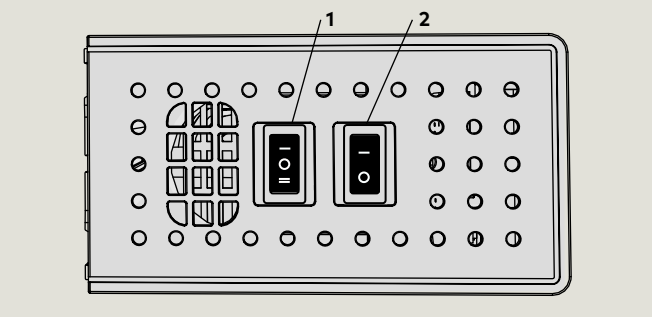
4 button legend is orientated so buttons have same function and position regardless of operator orientation. Button legend can be removed and rotated.

8.2.2 4 button keypad functions.

▶	Right button	1. Access parameter menu, press button > 3 seconds. 2. Edit selected parameter. 3. Save changed value.
◀	Left button	1. Reset, > 3s 2. Quit process, < 3 s.
◀▶	Both buttons together	1. Acknowledge errors, press both buttons < 3 s. 2. Reset, press both buttons > 3 s.
▲	Up button	1. Scroll through parameters and error messages. 2. Increase parameter value.
▼	Down button	1. Scroll through parameters and error messages. 2. Reduce parameter value. 3. Opening pulse, press button < 3 s. 4. Learning cycle, press button > 3 s. 5. Reset with factory setting, press button > 8 s (program switches off). 6. Identify operator orientation for display

8.3 Mode switch and Exit Only switch panel

Fig. 8.3.1 Fine cover



1 Mode switch, 3 position

2 Exit Only switch, 2 position

8.3.1 Mode switch positions.

Fig. 8.3.2 Auto

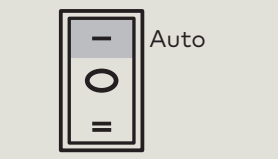


Fig. 8.3.3 Close

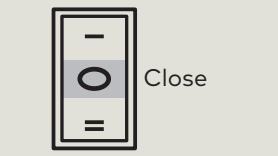
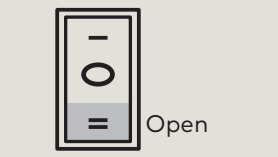


Fig. 8.3.4 Open



8.3.2 Exit Only switch positions.

Fig. 8.3.5 On

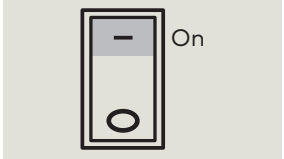


Fig. 8.3.6 Off

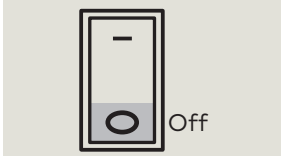
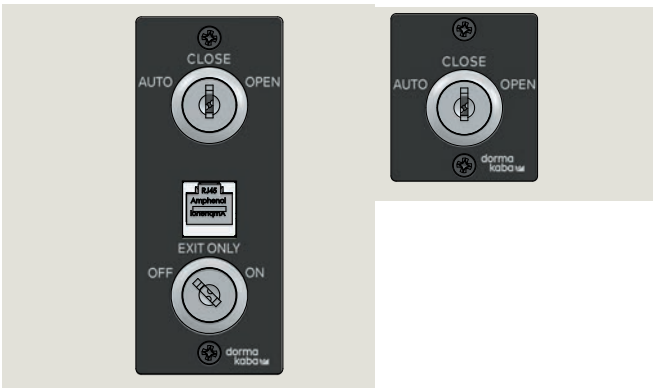


Fig. 8.3.7 Optional key switch panels



8.3.3 Mode switch position descriptions.

Auto

1. Door opens automatically when one of the activators is actuated or triggered.
   Door closes on expiration of adjustable hold open time with no activators or actuators triggered.
2. With knowing act device actuation (Para. 8.3.5).
   Door will remain at full open position for not less than 5 seconds.
3. With push/pull actuation of door (Para. 10.1).
   Door will remain at full open position for not less than 3 seconds.

Close

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

Open

1. Door opens automatically and remains open.

8.3.4 Exit Only switch position descriptions.

On

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

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

Off

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

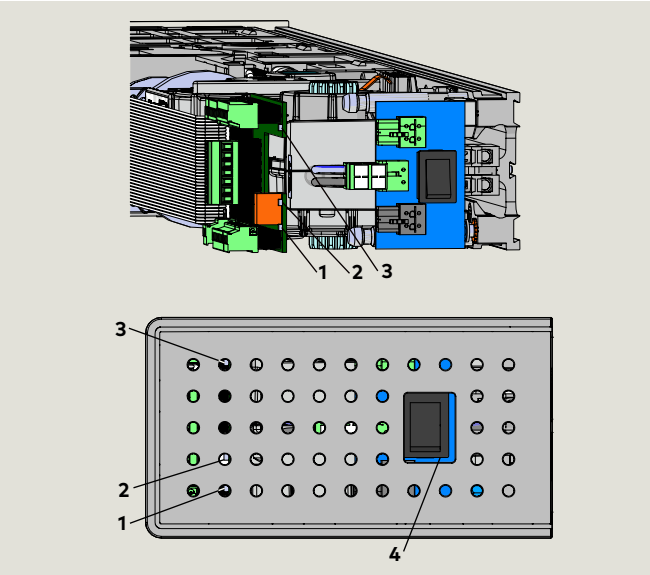
8.3.5 Knowing act: ANSI/BHMA standard A159.19 definition.

Consciously initiating the powered opening of a low energy door using acceptable methods including:

- Push plates.
- Fixed non-contact switches.
- Action of manually opening (pushing or pulling) a door.
- Controlled access devices such as keypads, card readers, and key switches.

8.4 Operator status LEDs

Fig. 8.4.1 Operator status LEDs



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

8.4.1 Operator status LEDs.

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

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

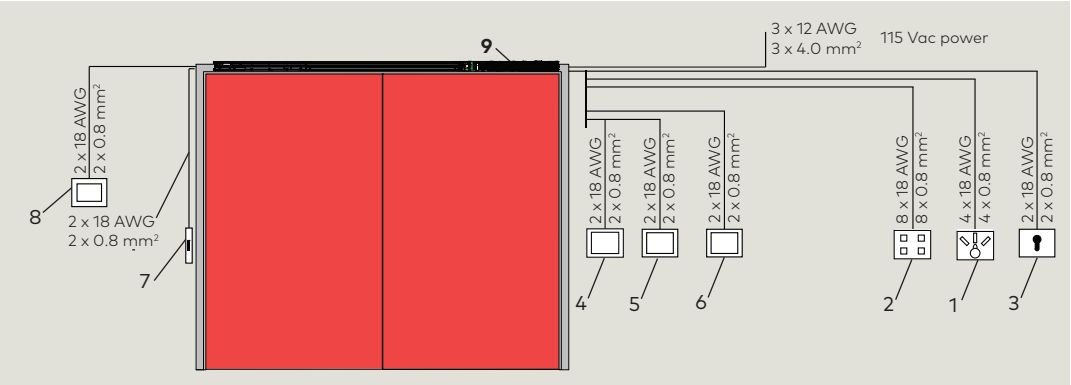
TIPS AND RECOMMENDATIONS

Information on LED status codes and maintenance intervals can be found in E900 Setup and Troubleshooting Manual 08125380.

9 System accessories

9.1 System accessory electrical connections

Fig. 9.1.1 Electrical connections, companion door



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

9.2 System accessories

9.2.1 Overview

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

9.2.2 Accessory electrical installation.

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

9.2.3 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.

⚠ WARNING

Damage to operator or to connected device is also possible!

9.2.4 Power for accessories.

External DC power supply is required for external consumers
(Para 9.2.5, 9.2.6).

9.2.5 Activators

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

TIPS AND RECOMMENDATIONS

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

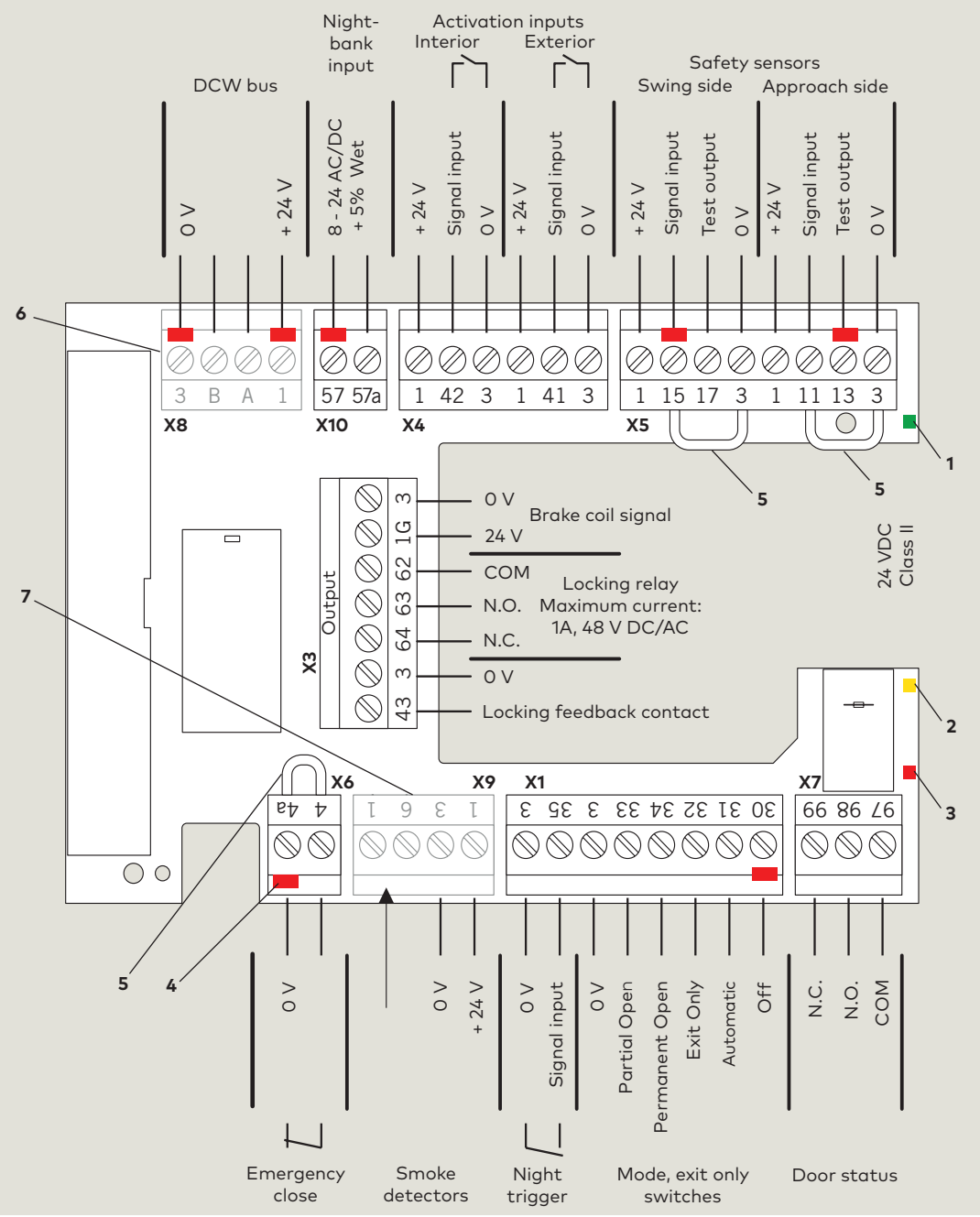
9.2.6 Locking devices

Typical locking devices:
1. Electric strike plates
2. Electromagnetic locks
3. Electric locks

To insure that operator and locking device work safely when connected together, locking device mus comply with following:
1. Operating voltage, external power supply, 48 Vdc/ Vac maximum.
2. Locking device relay contact, maximum load, 1 A.
3. Electric strike plate duty factor, 30% minimum.
4. Motor lock duty factor, 100%.

9.3 ED900 terminal board interfaces

Fig. 9.3.1 Terminal board electrical connections



1 Green LED (Para. 8.4)
2 Yellow LED (Para. 8.4)
3 Red LED (Para. 8.4)
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
7 Fire protection upgrade card plug

TIPS AND RECOMMENDATIONS

Do not connect system accessories to board until operator has been commissioned and learning cycle performed. Reference Chapter 25.

10 ED900 door signage

10.1 Low energy operator

10.1.1 Overview

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

10.1.2 All low energy doors.

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.

10.1.3 Knowing act switch used to initiate door operation.

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".

10.1.4 Push/Pull used to initiate door operation.

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.

10.1.5 Knowing act: ANSI/BHMA standard A159.19 definition.

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

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

Fig. 10.1.1 AUTOMATIC CAUTION DOOR decal

Fig. 10.1.2 ACTIVATE SWITCH TO OPERATE decal

DD0758-010

1 Activate Switch to Operate

Fig. 10.1.3 PUSH TO OPERATE, PULL TO OPERATE decals

DD0762-010

DD0762-020

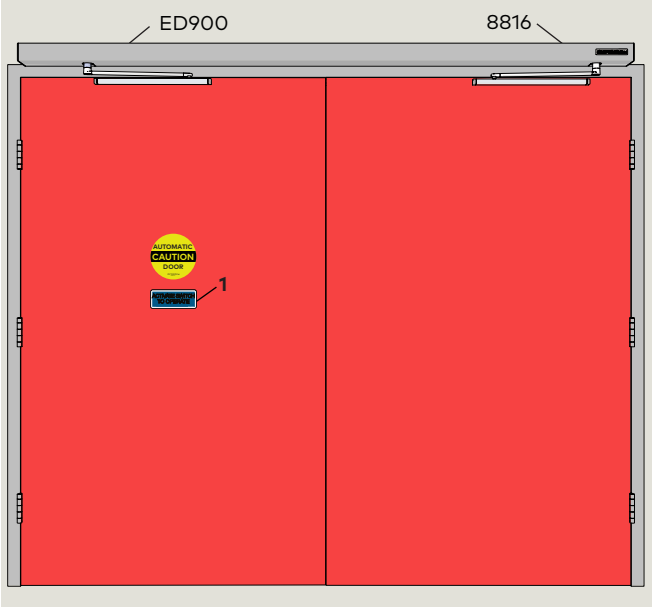
2 Push to Operate

3 Pull to Operate

10.2 Door signage, low energy double swing door

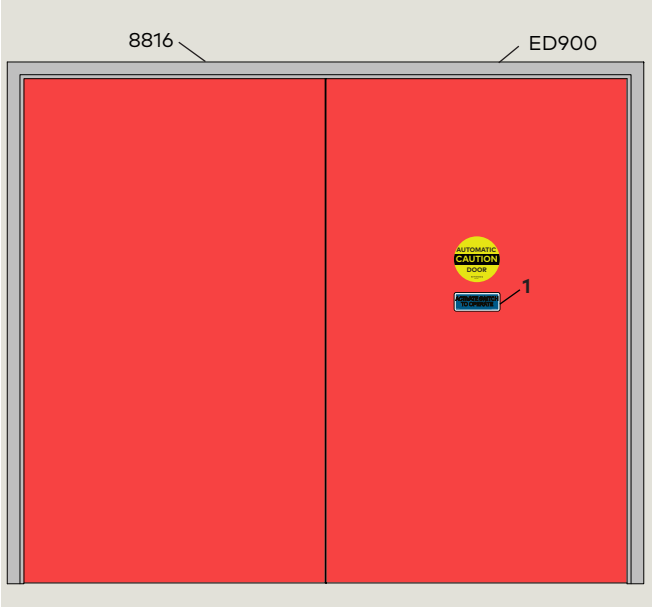
10.2.1 Knowing act switch used to initiate door operation.

Fig. 10.2.1 Door pull side



1 Activate Switch to Operate

Fig. 10.2.2 Door approach side



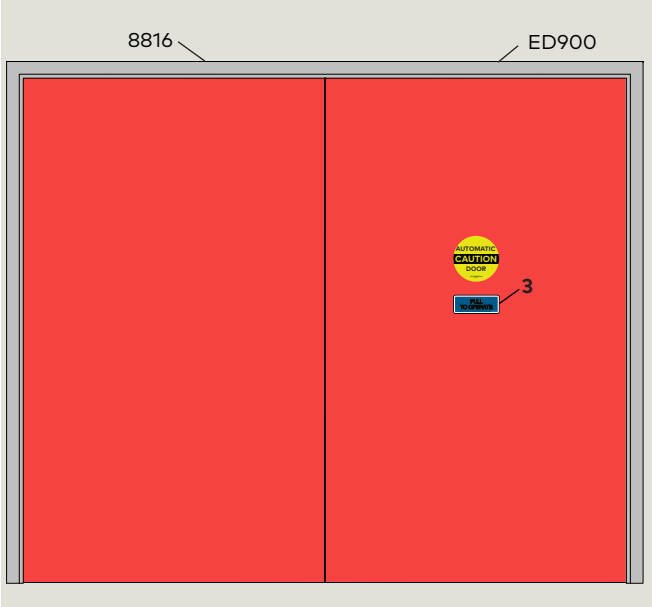
1 Activate Switch to Operate

10.2.2 Push/Pull used to initiate door operation.

Fig. 10.2.1 Door push side

2 Push to Operate

Fig. 10.2.2 Door swing (pull) side



3 Pull to Operate

10.3 Safety Information label, low energy swing doors

10.3.1 Low energy swinging door safety information label.

This AAADM label outlines safety checks that should be performed daily on a swinging door controlled by an ED900 low energy operator.

10.3.2 Safety information label location.

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

10.3.3 Annual compliance section of label.

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

10.3.4 Additional annual compliance inspection labels.

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

Fig. 10.3.1 Safety information label

SAFETY INFORMATION
Low Energy Swinging Doors

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

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

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

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

AAADM-3044

AAADM
American Association of Automatic Door Manufacturers

ANNUAL COMPLIANCE INSPECTION

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

Fig. 10.3.2 Annual compliance inspection label

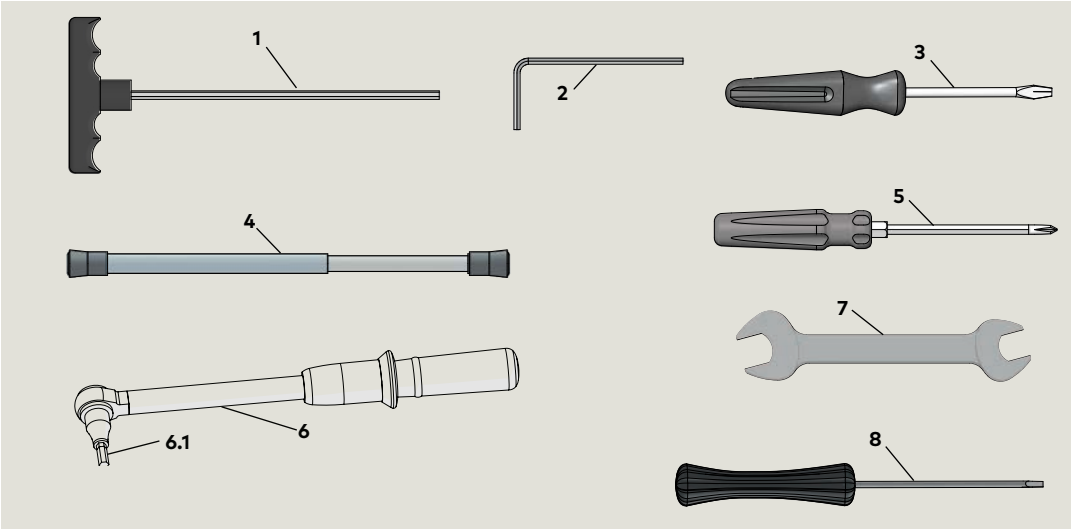
ANNUAL COMPLIANCE INSPECTION

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

11 Recommended tools and torque chart

11.1 Recommended tools

Fig. 11.1.1 Recommended tools



1 T-handle hex key, 5 mm
Supplied with ED900

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")

11.2 Standard tightening torque

11.2.1 Standard tightening torque

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

11.3 Drill bits

11.3.1 Drill bit sizes for fasteners

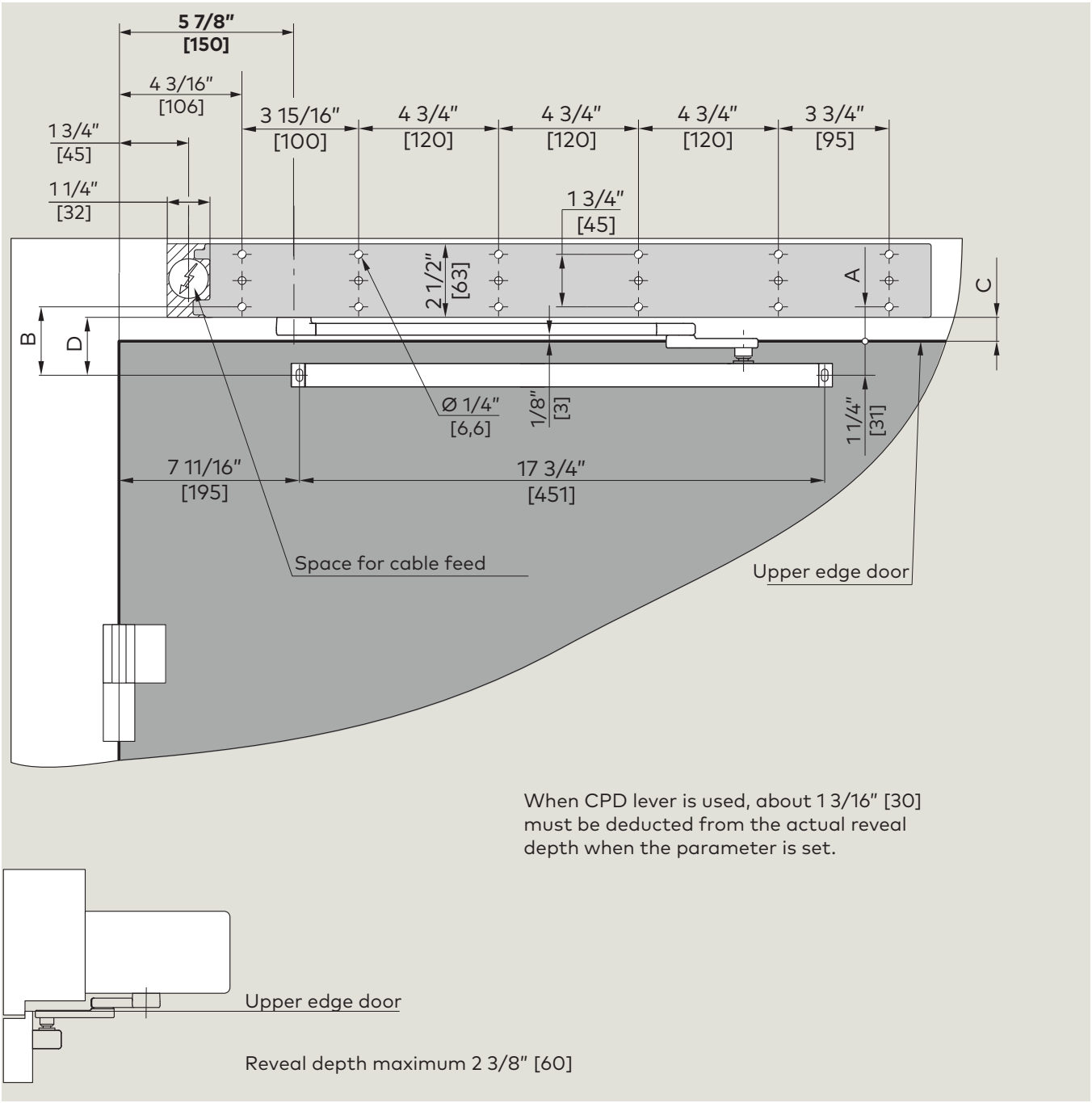
Fastener	Drill bit size	
#10 wood screw	Hardwood 9/64"	Softwood 1/8"
#12 wood screw	Hardwood 5/32"	Softwood 9/64"
#14 wood screw	Hardwood 11/64"	Softwood 5/32"
1/4 -20 metal self tapping screw	7/32"	
10-24 barrel nut	5/32"	

Fig. 11.3.1 Drill bit

12 ED900 installation templates

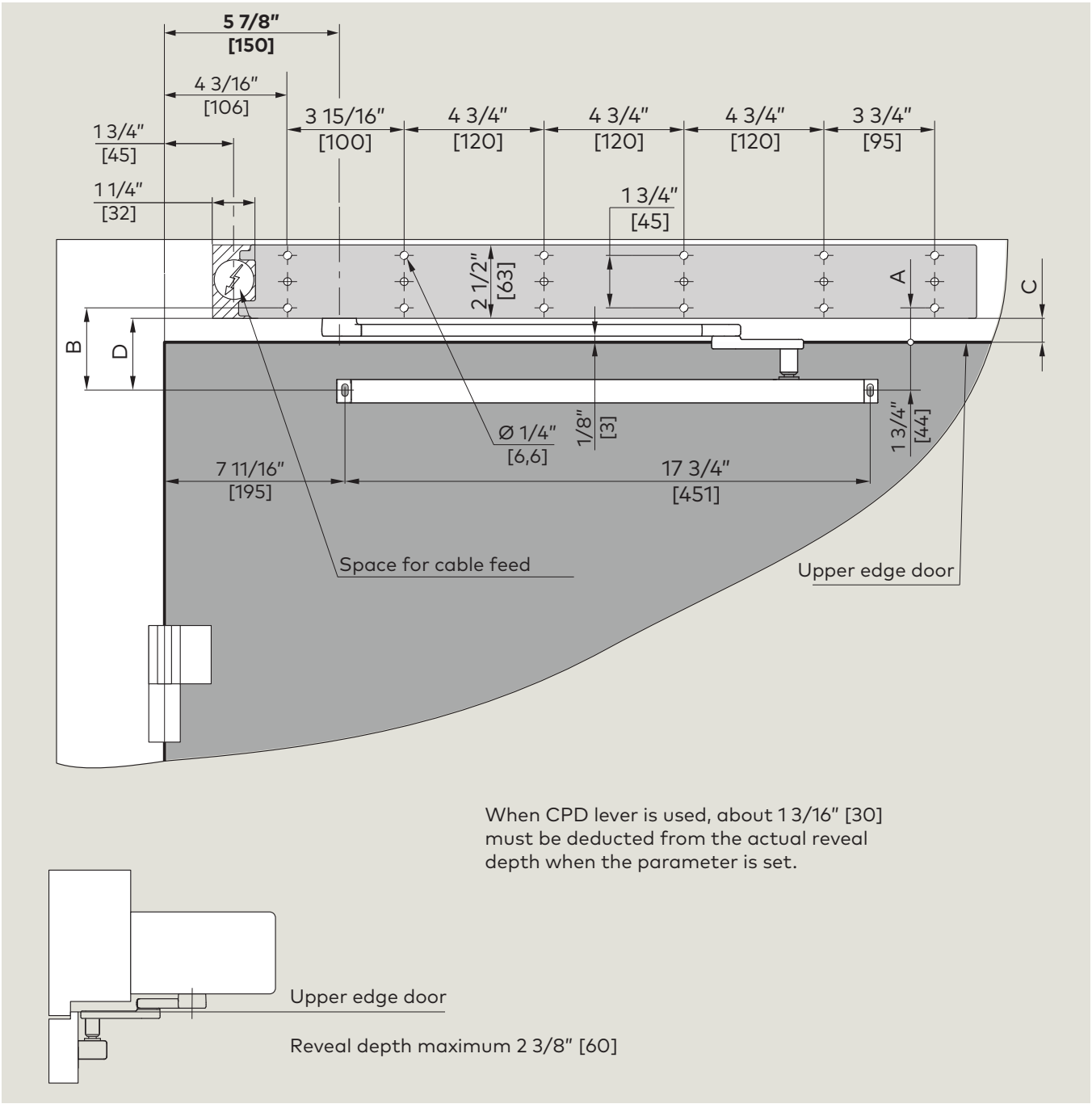
12.1 Installation templates – pull arm

Fig. 12.1.1 Assembly on hinge side, pull version with slide channel CPD and short pivot pin



Axle extension	ED900	A		B		C		D	
		Inches	mm	Inches	mm	Inches	mm	Inches	mm
Standard	●	1 7/32	31	2 7/16	62	7/8	22	2 3/32	53
3/4" [20]	●	2	51	3 7/32	82	1 21/32	42	2 7/8	73
1 3/16" [30]	●	2 13/32	61	3 5/8	92	2 1/16	52	3 1/4	83
2 3/8" [60]	●	3 9/16	91	4 13/16	122	3 7/32	82	4 7/16	113

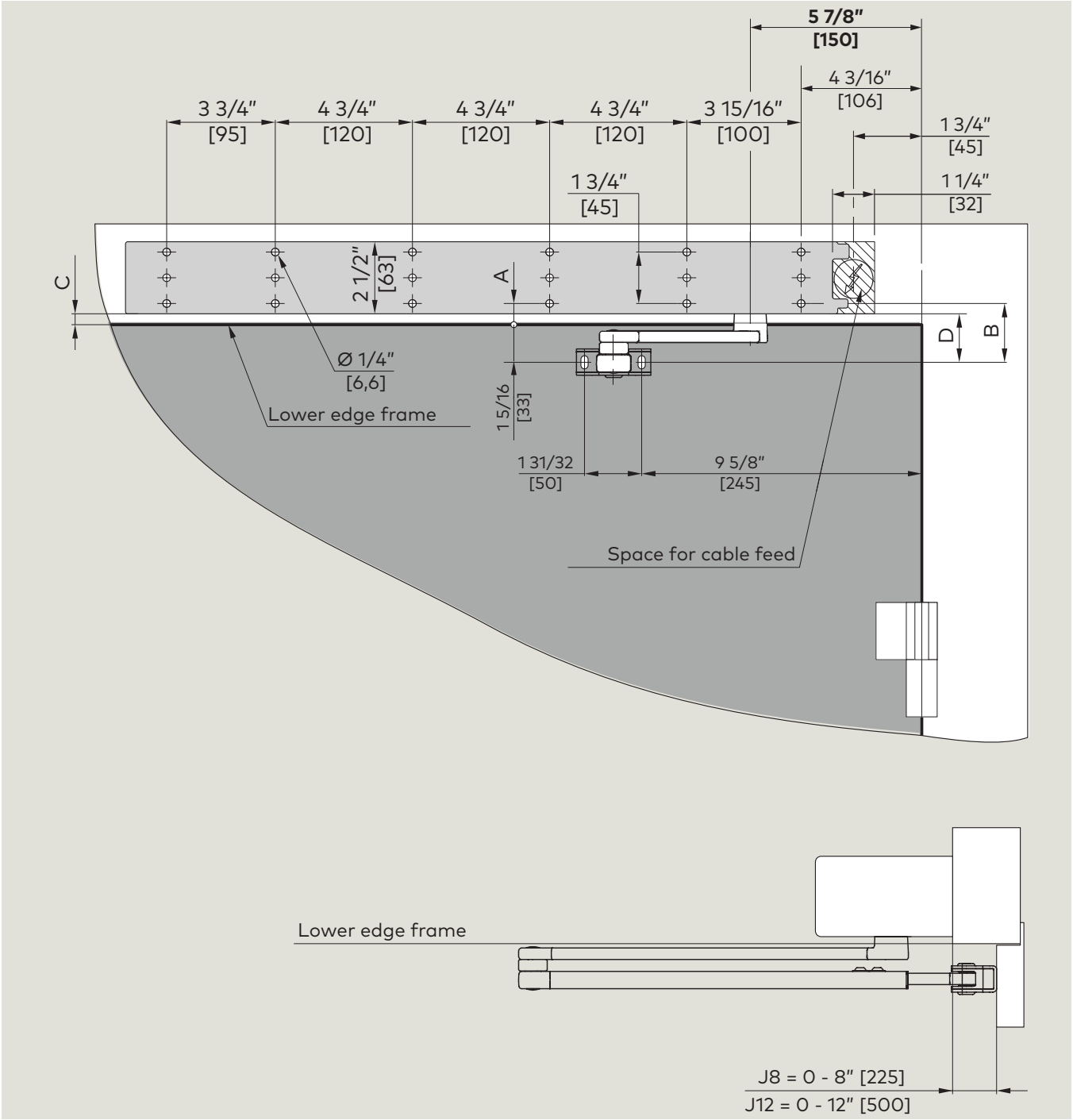
Fig. 12.1.2 Assembly on hinge side, pull version with slide channel CPD and long pivot pin



Axle extension		ED900	A		B		C		D	
			Inches	mm	Inches	mm	Inches	mm	Inches	mm
Standard		●	1 7/32	31	2 15/16	75	7/8	22	2 19/32	66
3/4"	[20]	●	2	51	3 3/4	95	1 21/32	42	3 3/8	86
1 3/16"	[30]	●	2 13/32	61	4 1/8	105	2 1/16	52	3 25/32	96
2 3/8"	[60]	●	3 9/16	91	5 5/16	135	3 7/32	82	4 31/32	126

12.2 Installation templates – push arm

Fig. 12.2.1 Assembly on opposite hinge side, push version with J/arm assembly



Axle extension		ED900	A		B		C		D	
			Inches	mm	Inches	mm	Inches	mm	Inches	mm
Standard		●	11/16	18	2	51	11/32	9	1 21/32	42
3/4"	[20]	●	1 1/2	38	2 13/16	71	1 1/8	29	2 7/16	62
1 3/16"	[30]	●	1 7/8	48	3 3/16	81	1 13/32	39	2 13/16	72
2 3/8"	[60]	●	3 1/16	78	4 3/8	111	2 23/32	69	4	102

12.3 Installation templates – 8816 door closer

Fig. 12.3.1 8816 closer with T275 pull arm/slide channel

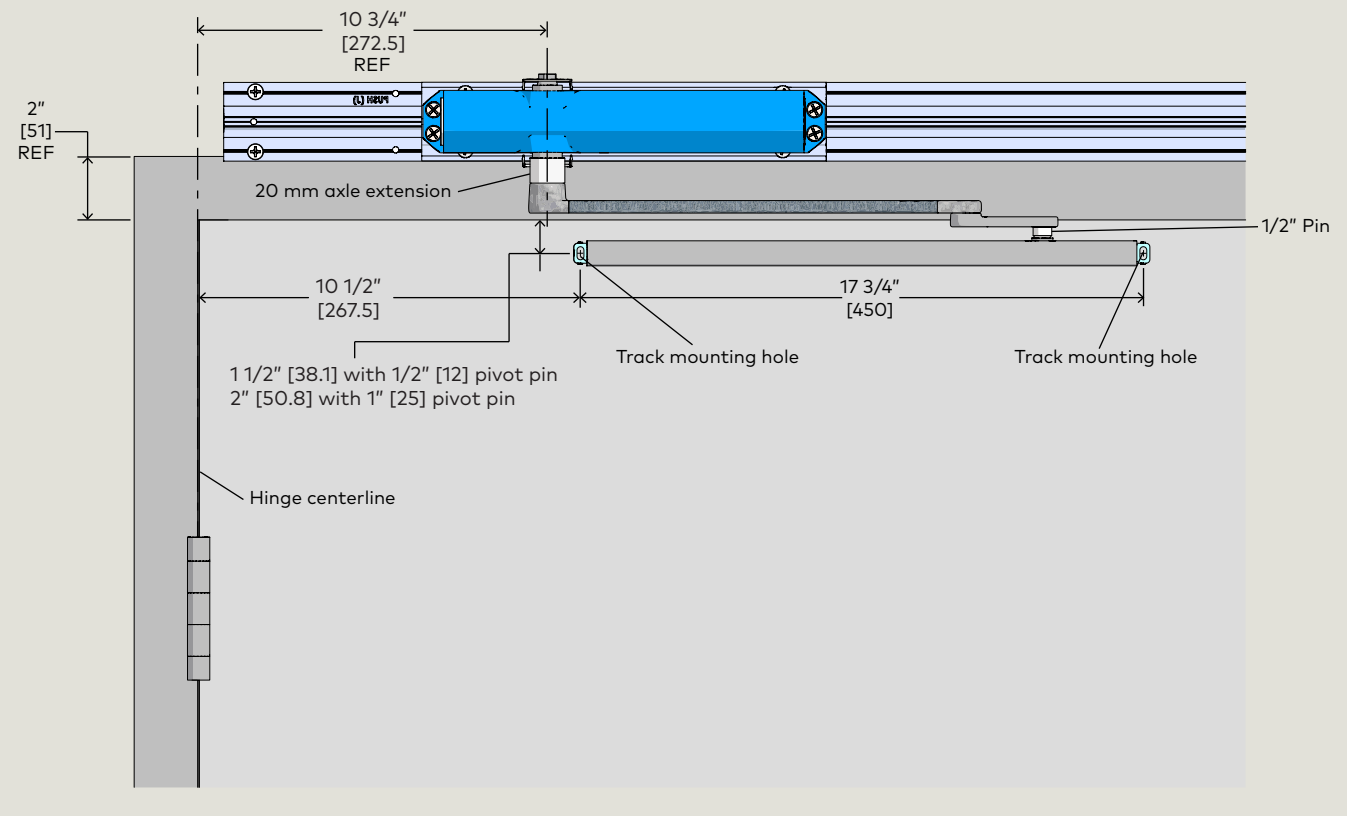
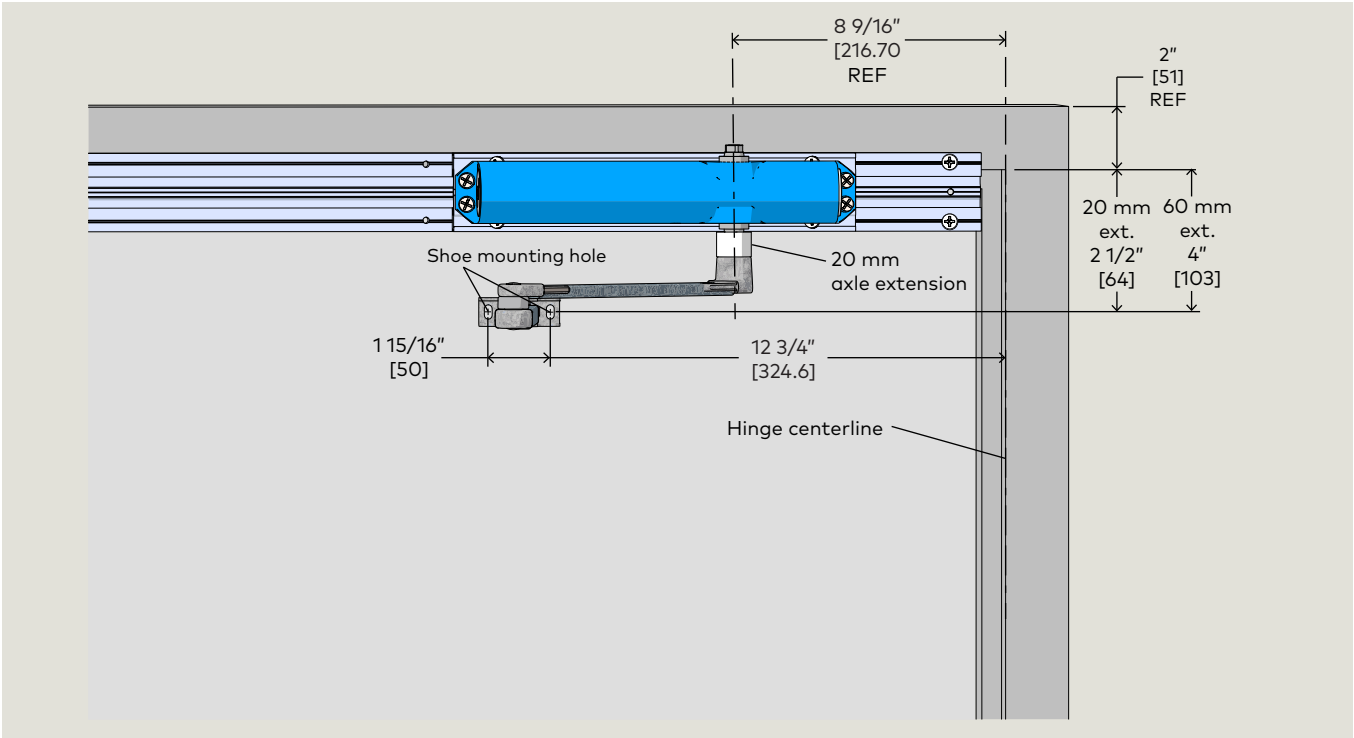


Fig. 12.3.2 8816 closer with J8/J12 push arm



This page left intentionally blank.

13 ED900 operator and mounting plate preparation

13.1 Installation preparation

NOTICE

Installation steps listed in Chapter 14 through 17 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

ED900 system should be installed by trained and knowledgeable installers experienced in installation and commissioning of swing door operators.
The installer should be familiar with all applicable local and national building code requirements, and with requirements of current ANSI/BHMA standard A156.19, Power Assist and Low Energy Power Operated Doors.

13.1.1 dormakaba USA, Inc. ED900 hardware.

1. Locate shipping boxes for ED900 operator, door closer, and hardware.

13.1.2 Door frame and door.

CAUTION

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 9, system accessories, list typical accessory types for ED900 operators.

TIPS AND RECOMMENDATIONS

Accessory wiring to ED900 operator should be planned for prior to operator installation.

13.1.4 ED900 mounting plate installation preparation.

CAUTION

Using applicable ED900 installation template (Chapter 12), holes for mounting plate fasteners must be located and drilled into door frame, wall or substructure prior to mounting plate installation.

CAUTION

Mounting plate installation must be orientated with 115 Vac connection towards door hinge side.

13.1.5 ED900 mounting plate extension used with full door width cover.

TIPS AND RECOMMENDATIONS

Mounting plate extension is included for full width cover installation.
- Reference Chapter 14.

13.1.6 ED900 115 Vac electrical installation.

⚠ WARNING

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

⚠ WARNING

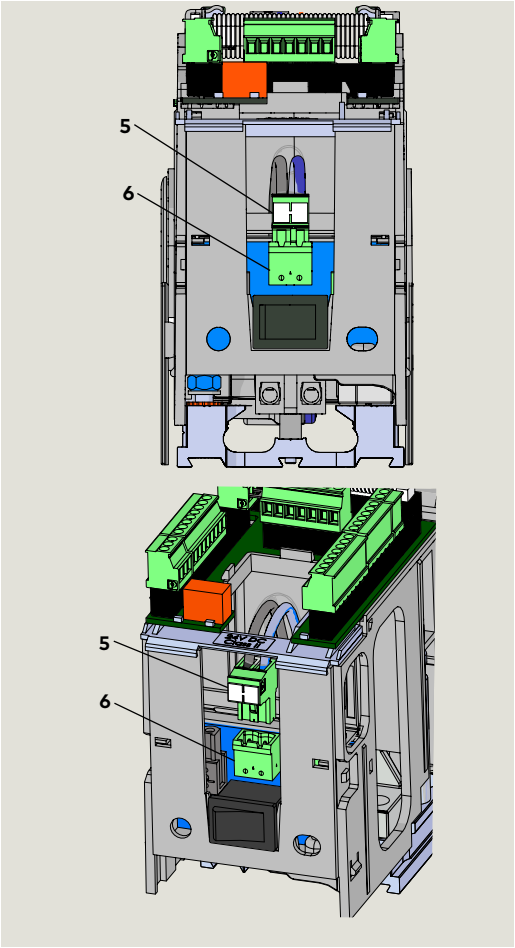
Electrical shock hazard! 115 Vac branch circuit disconnect for ED900 must be Off prior to start of electrical installation.

⚠ WARNING

115 Vac wiring to ED900 operator must conform to local and national electrical codes.

13.2 Remove backplate from ED900 operator

Fig. 13.2.1 115 Vac plug removal



5 115 Vac plug
6 115 Vac socket

13.2.1 Remove 115 Vac plug from receptacle.

1. Remove 115 Vac plug (**5**) from its receptacle (**6**).

13.2.2 Remove mounting plate from ED900 operator.

1. Loosen all eight captive ED900 M6 socket head cap screws (SHCS) using a 5 mm hex T-handle.

TIPS AND RECOMMENDATIONS

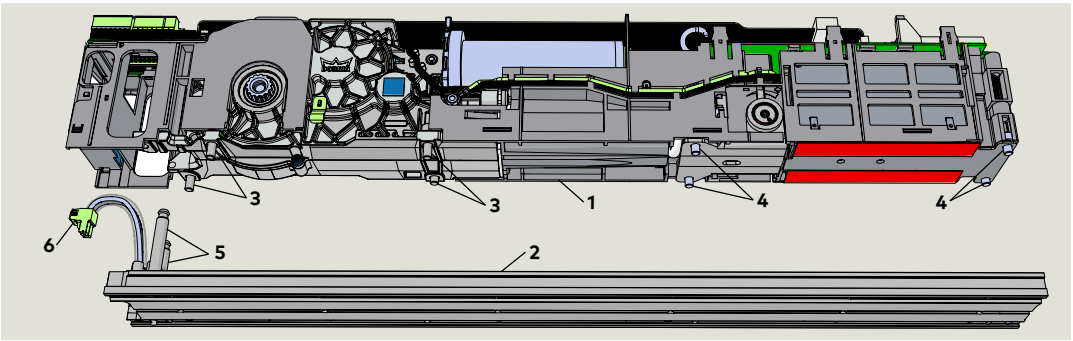
Insure all eight fasteners are free of the mounting plate.

2. Remove operator from mounting plate.

TIPS AND RECOMMENDATIONS

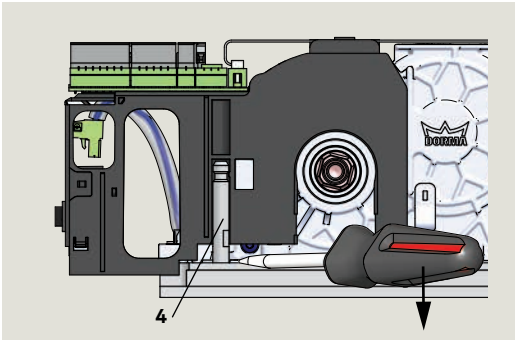
Guide pin resistance may require screwdriver to start operator removal from end of mounting plate (Fig. 13.2.3).

Fig. 13.2.2 Mounting plate removed from ED900 operator



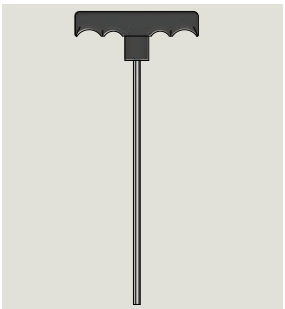
1 ED900 operator
2 Mounting base
3 M6 x 20 SHCS
4 M6 x 10 SHCS
5 Guide pin
6 115 Vac plug

Fig. 13.2.3 Mounting plate removal



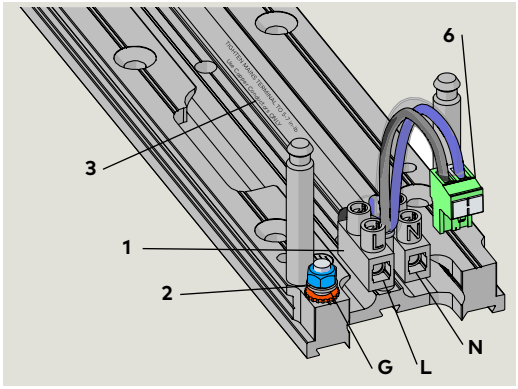
4 Guide pin

Fig. 13.24 5 mm T-handle hex key



13.3 Options – Customer 115 Vac connection to terminal block

Fig. 13.3.1 115 Vac terminal block

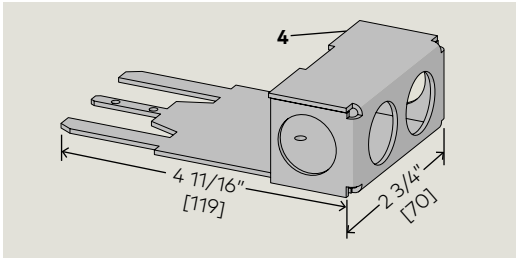


1 115 VAC terminal block
2 Ground terminal
3 Mains terminal torque and wire label
5 M3.5 screw
6 115 Vac plug to operator
L 115 Vac
N Neutral
G Ground

Fig. 13.3.2 Mains terminal torque and wire label

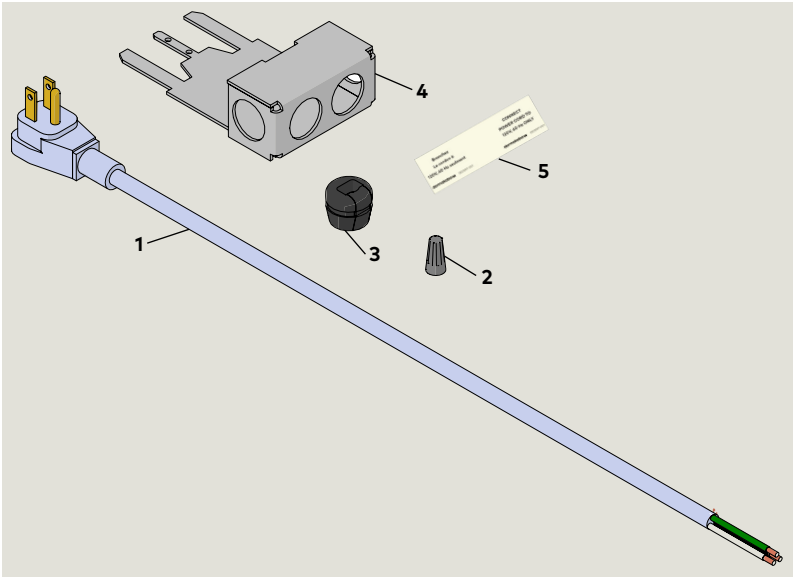
TIGHTEN MAINS TERMINAL TO 5-7 in-lb
Use Copper Conductors ONLY

Fig. 13.3.3 Conduit box



4 Conduit box HX3501-001

Fig. 14.3.4 Power cord wiring kit HK3597-010



1 Power cord
2 Wire nut
3 Cord grip
4 Conduit box
5 120 Vac label

WARNING

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

13.3.1 Conduit box.

1. Conduit box (Fig. 13.3.3).

- U/L approved conduit box accessory; provides 115 Vac surface wiring to ED900.
- Reference Para. 14.3.6 for conduit box installation.

13.3.2 Power cord wiring kit.

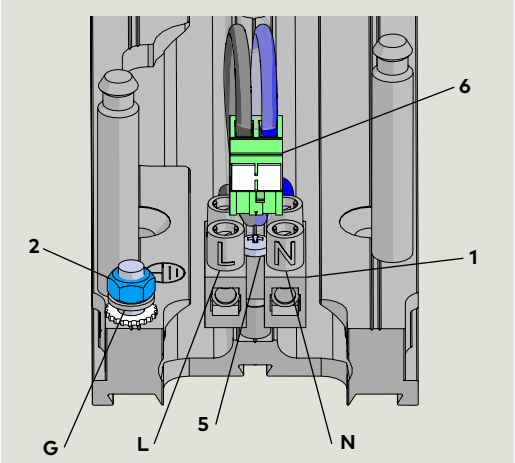
1. Power cord wiring kit (Fig. 13.3.4).

- Eliminates need for hard wiring. Permits ED900 to plug directly into 115 Vac receptacle.
- Power cord length: 15" from end of conduit box to center of plug.

CAUTION

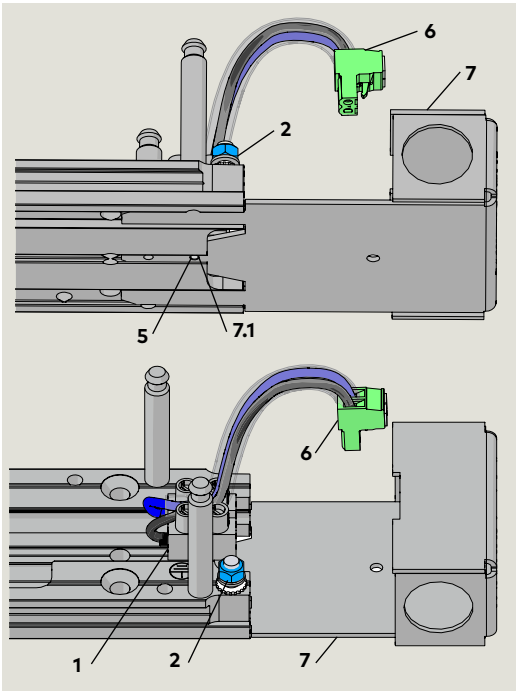
Insure power cord installation conforms to local and national electrical codes.

Fig. 14.3.5 115 Vac terminal block mounting



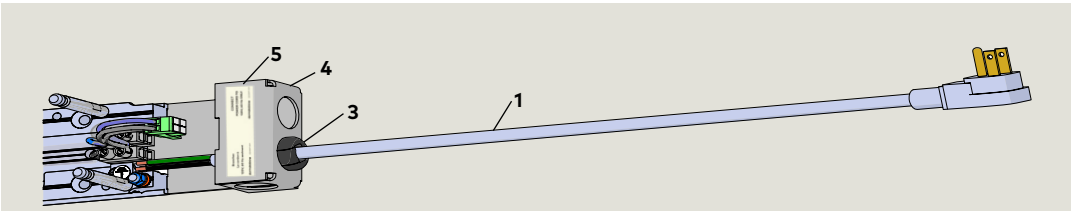
1 115 VAC terminal block
2 Ground terminal
5 M3.5 screw
6 115 Vac plug to operator
L 115 Vac
N Neutral
G Ground

Fig. 14.3.6 Conduit box installed on mounting plate



1 115 VAC terminal block
2 Ground terminal
5 M3.5 screw
6 115 Vac plug to operator
7 Conduit box
7.1 Conduit box mounting hole

Fig. 14.3.7 Power cord wiring kit assembly (option)



1 Power cord
3 Cord grip
4 Conduit box
5 120 Vac label

14.3.3 Install conduit box (option).

TIPS AND RECOMMENDATIONS

115 Vac terminal block is secured to mounting plate by M3 x 25 Phillips head screw.

- Screw must be loosened to allow conduit box tabs to slide into mounting plate slots.
- Screw is then threaded into conduit box mounting hole and tightened.

1. Loosen M3 x 25 Phillips head screw.
2. Slide conduit box tabs into slots in bottom of mounting plate until hole in conduit box lines up with hole in mounting plate.
3. Thread M3 Phillips head screw into conduit box mounting hole and tighten screw.

CAUTION

Terminal block M3 screw torque.
Tighten M3 screw to a torque of 5 - 7 in-lb.

- Insure screw is threaded into conduit box mounting hole.

4. Mounting plate assembly is ready for installation.

4 Conduit box (option)

14 ED900 and 8816 closer installation

14.1 Install ED900 and closer backplates to jamb and/or wall

14.1.1 Select ED900 installation template.

1. Select applicable ED900 installation template.

NOTICE

Installation templates: Reference Chapter 12.

14.1.2 Fasten ED900 backplate to jamb and/or wall.

CAUTION

Install shims between backplates and wall as required.

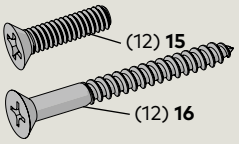
CAUTION

ED900 conduit box (if used):

- Insure ED900 conduit box (Para. 13.3) is prepared with applicable conduit fitting or cord grip.
- Insure jamb or wall is prepared for wiring to ED900 conduit fitting or cord grip.

1. Using template as a guide, prepare twelve mounting holes at ED900 backplate for backplate fasteners (Fig. 14.1.1).
- Check for level.
2. Install ED900 backplate.
- Install third guide pin (Fig. 14.1.2).
- Fasten backplate to frame / wall using selected fasteners.
- Check for level and alignment.

Fig. 14.1.1 ED900 backplate fasteners

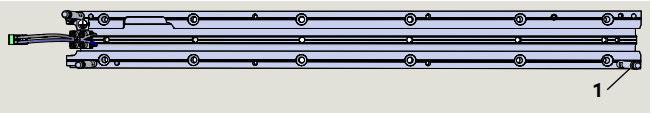


15,16 Mounting plate fastener kit HK4053-010

15 1/4-20 x 1" FH machine screw

16 No. 14 x 2 1/2" FH wood screw

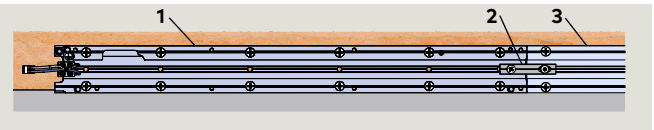
Fig. 14.1.2 ED900 backplate assembly



1 Third guide pin

Fig. 14.1.2 Complete companion door pull backplate assembly installation example

Fig. 14.1.3 ED900 backplate installation



1 ED900 backplate with 12 fasteners installed

2 Backplate connect kit HK3491

3 Companion closer backplate HC3468-050

14.1.3. 8816 closer backplate installation.

CAUTION

- 8816 companion backplate and adapter plate hardware based on pull or push installation.
- Reference Fig. 14.1.5.

1. Place companion backplate (3) next to ED900 backplate and mark four mounting holes.
2. Install companion backplate using four fasteners (Fig. 14.1.7).

- Check for level and alignment.
- Check spindle to hinge centerline distance.

3. Install backplate connector (10) using hardware provided with kit (Fig. 14.1.8).
4. Install closer adaptor plate (2) on backplate (3) using 1-4-20 x 1" FHMS (Fig. 14.1.6).

NOTICE

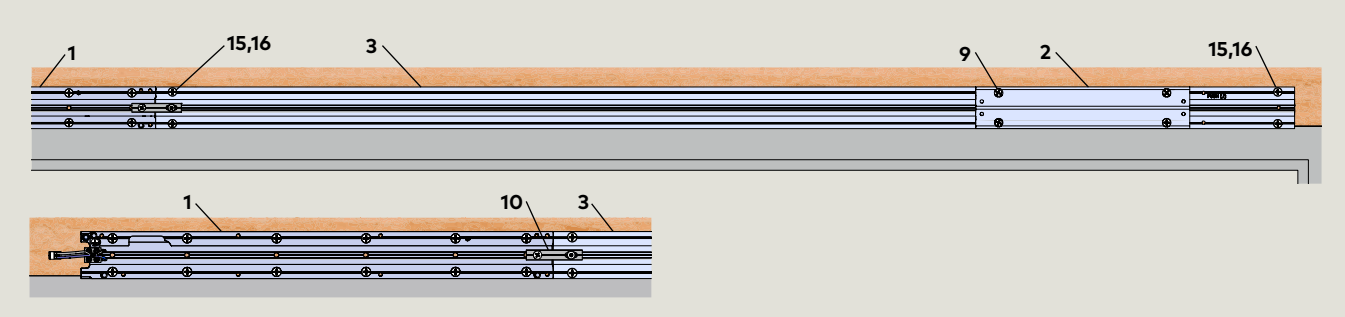
Closer adapter plate installation.
Use adapter plate pull arm or push arm mounting holes locations (Fig. 14.1.5) based on arm used with closer.

14.1.4 Mounting plate installation checks.

CAUTION

- Check level.
- Check spindle to hinge centerline distance.
- Check mounting plate alignment.

Fig. 14.1.4 Closer backplate assembly pull installation example



1 ED900 backplate
2 Companion closer adapter HC3468-070
3 Companion closer backplate HC3468-050
9 1/4-20 x 1" Phillips FHMS undercut HF3101-01
10 Backplate connect kit HK3491
15 1/4-20 x 1" FH machine screw
16 No. 14 x 2 1/2" FH wood screw

Fig. 14.1.5 8816 backplate and adapter - pull mounting location example

2 Companion closer adapter HC3468-070
3 Companion closer backplate HC3468-050

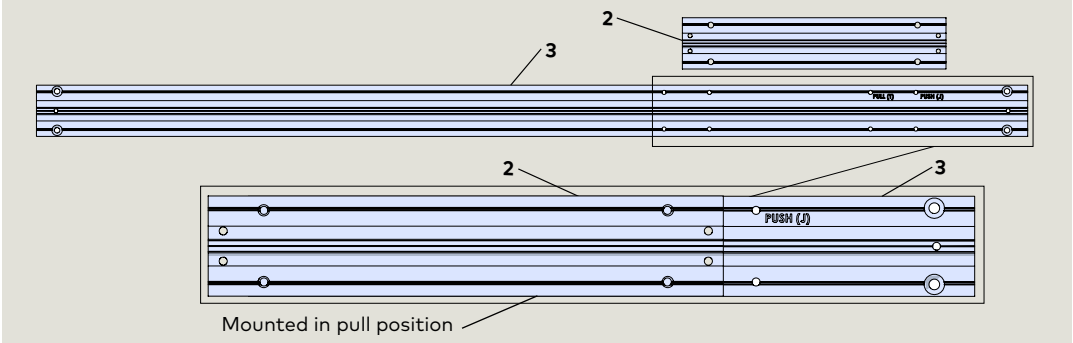


Fig. 14.1.6 Closer backplate and adapter fastener

9 1/4-20 x 1" Phillips FHMS undercut HF3101-01

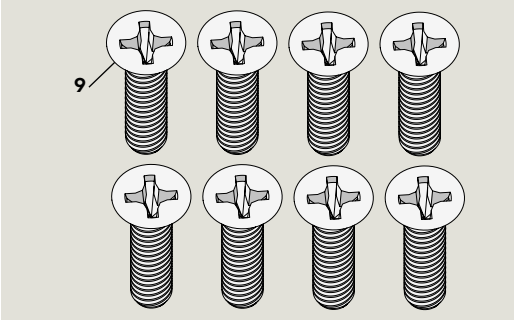


Fig. 14.1.7 Mounting plate fasteners

15,16 Mounting plate fastener kit HK4053-010

15 1/4-20 x 1" FH machine screw

16 No. 14 x 2 1/2" FH wood screw

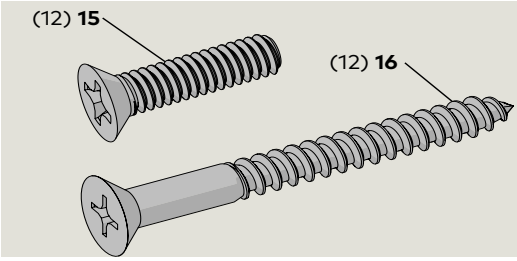


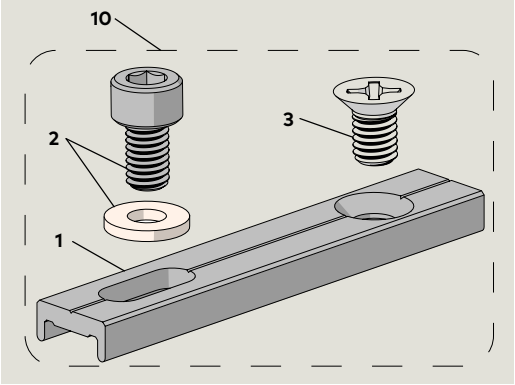
Fig. 14.1.8 Backplate connect kit

10 Backplate connect kit HK3491

1 Mounting, extr. connector HC3491-010

2 M6 x 10 mm SHCS and washer HF3495-01Z

3 M6 x 10 mm PFHS HF3496-01Z

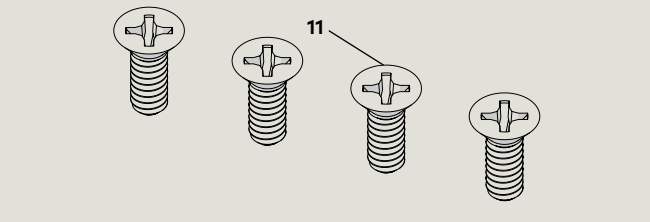


14.2 Install 8816 closer

14.2.1 Install 8816 closer on adapter plate.

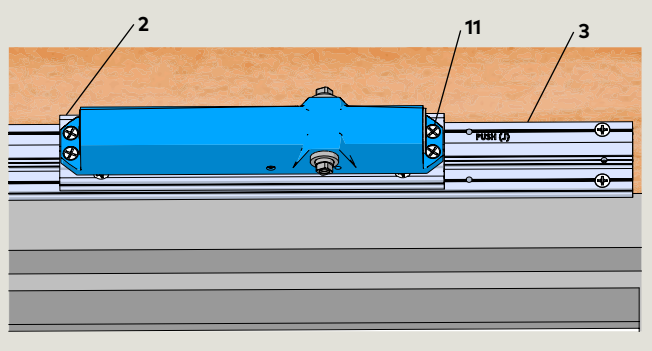
1. Install 8816 closer using four 1/4-20 x 5/8" FHMS (Fig. 14.2.1).

Fig. 14.2.1 Closer screw pack HK4607-001



11 1/4-20 x 5/8"
PFHMS
HF0399-00G

Fig. 14.2.2 8816 closer installation, pull example



2 Companion closer adapter
HC3468-070

3 Companion closer backplate
HC3468-050

11 1/4-20 x 5/8" PFHMS
HF0399-00G

14.3 Connect customer 115 Vac to ED900 backplate terminal block

14.3.1 ED900 115 Vac electrical installation.

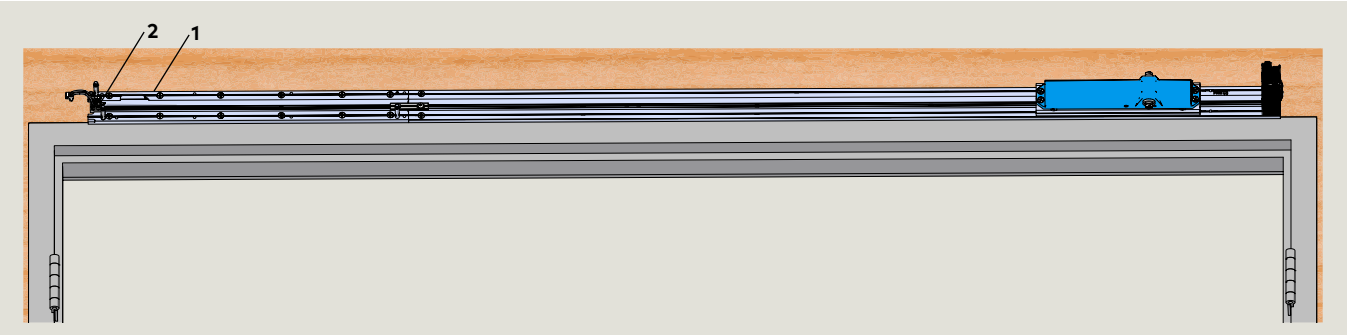
⚠ WARNING

115 Vac wiring to ED900 operators must conform to local and national electrical codes.

14.3.2 ED900 115 Vac customer connection.

- Customer 115 Vac power wiring required at terminal block (2).

Fig. 14.3.1 Companion door backplate installation, ED900 115 Vac terminal block



1 ED900 backplate

2 ED900 115 Vac terminal block

4 115 Vac terminal block
5 Ground post

Fig. 14.3.2 115 Vac wiring example

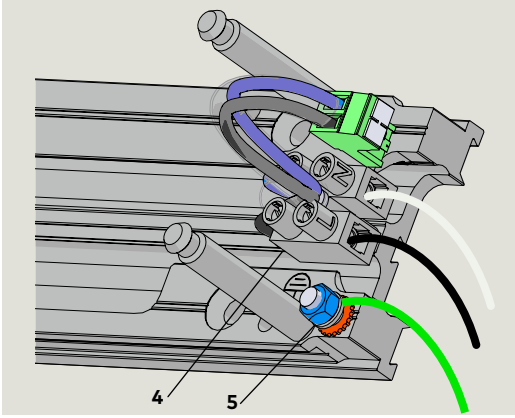


Fig. 14.3.3 Conduit box installation (option)

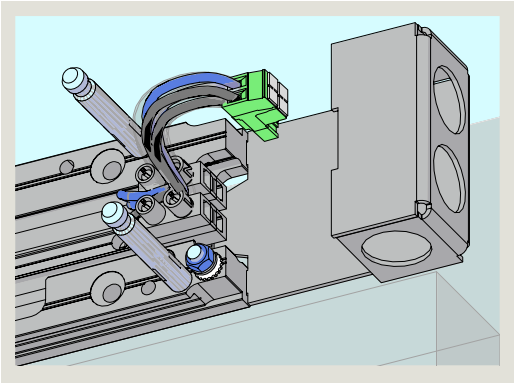
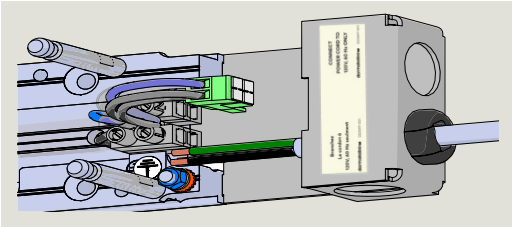


Fig. 14.3.4 PC power cord, conduit box installation (option)



14.3.3 Connect customer 115 Vac wiring.

WARNING

Routing and connection of 115 Vac wiring to ED900 must be performed by a qualified person!

WARNING

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

1. Route customer wiring to mounting plate 115 Vac terminal block.

CAUTION

115 Vac wiring.
Use copper conductors only!

1. Connect 115 Vac wiring to each terminal block.

- Terminal block screw tightening torque.

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

2. Connect earth ground to mounting plate ground post.

14.4 Route accessory wiring to ED900 mounting plate

14.4.1 Route accessory wiring (Chapter 9)to ED900 backplate.

1. Route wiring to ED900 115 Vac terminal block side of backplate (Fig. 14.3.1).

TIPS AND RECOMMENDATIONS

Accessory wiring will terminate at ED900 terminal board (Chapter 9).

NOTICE

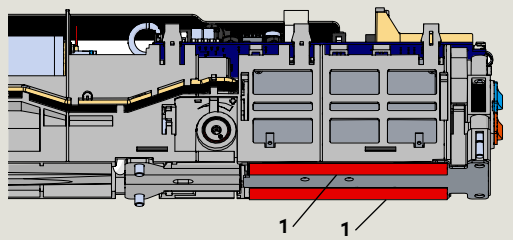
Installer responsibilities.
Installer responsible for routing and securing all wiring to ED900 operator.

Fig. 14.4.1 Backplate slots for accessory wiring

14.5 Remove protective film strips from ED900 operator

1 Heat conductive pads

Fig. 14.5.1 Operator protective film strips



14.5.1 Remove protective film strips.

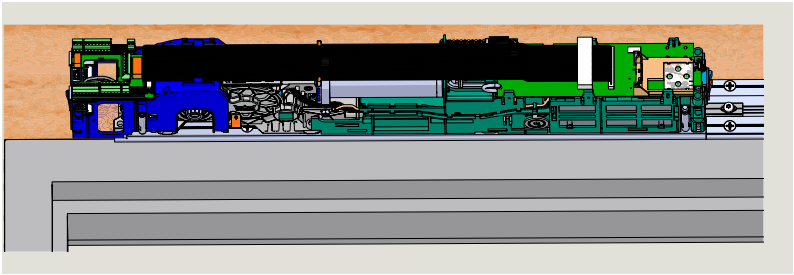
1. Remove two protective film strips from each operator's heat conductive pads.

CAUTION

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

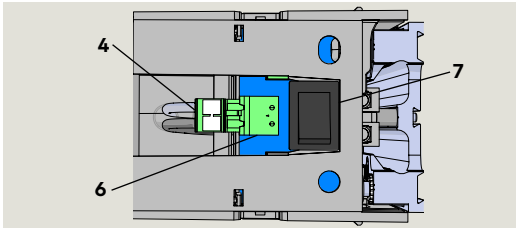
14.6 Install ED900 operator onto backplate

Fig. 14.6.1 ED900 installed on backplate



4 115 Vac plug
6 115 Vac socket
7 Power off/on switch

Fig. 14.6.2 ED900 115Vac plug and socket



14.6.1 Install ED900 operator onto backplate.

CAUTION

Protective film strip removal.
Insure two protective film strips have been removed from operator heat conductive pads (Para. 14.5).

1. Slide ED900 operator over the three guide pins and onto backplate.
- Guide 115 Vac plug (4) into ED900 housing adjacent to socket (6).

2. Thread the eight captive ED900 M6 SHCS (7) into their backplate holes using 5 mm hex T-handle (Ref. Para. 13.2 for operator views.)

3. Tighten the eight M5 SHCS.

14.6.2 Insert 115 Vac plug into socket.

1. Insert 115 Vac plug from backplate 115 Vac terminal block into ED900 socket (Fig. 14.6.2).

14.7 Install full cover bracket with Mode switch assembly

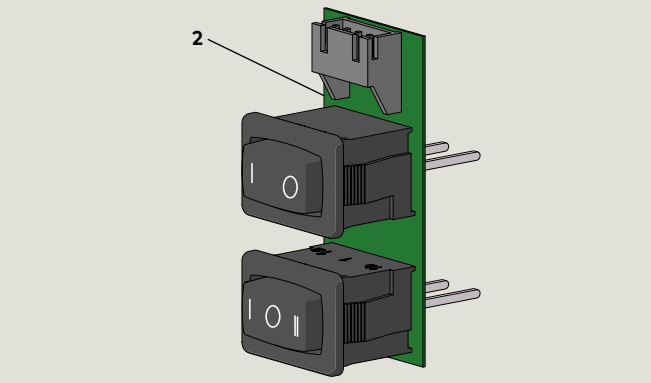
14.7.1 Install full cover bracket into closer backplate.

1. Insert cover bracket collar into backplate groove at an angle (Fig.14.6.3)
2. Rotate cover bracket parallel to backplate.
3. Position bracket at end of backplate..

14.7.2 Install Mode switch PCB into cover bracket.

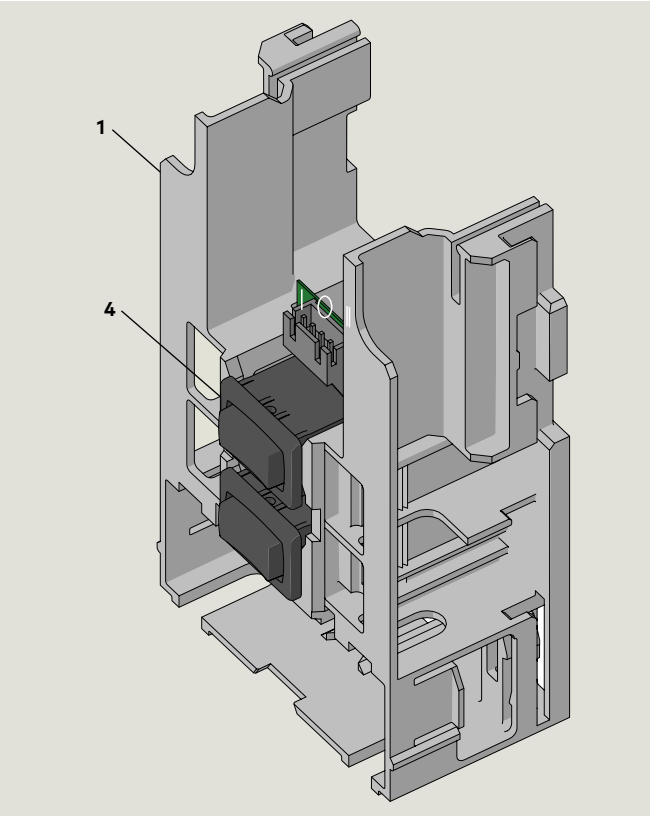
4. Install Mode switch PCB into cover bracket.

Fig. 14.7.1 Mode switch PCB assembly



2 Mode switch PCB
HX3482-010

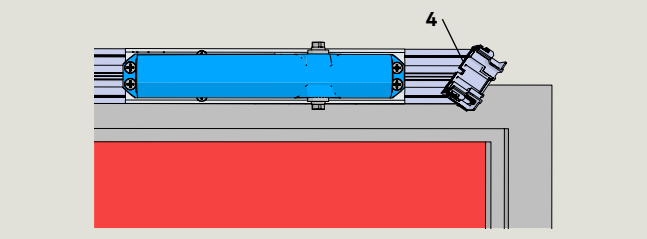
Fig. 14.7.2 Cover bracket with Mode switch assembly



2 Mode switch PCB
HX3482-010

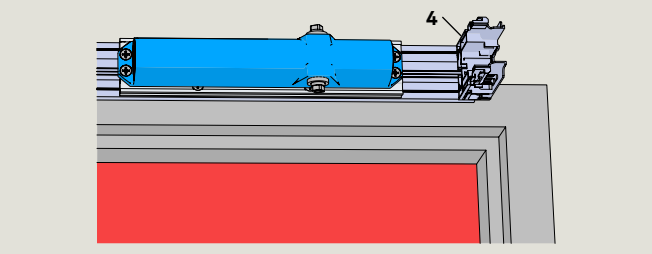
4 Full cover bracket
HC3481-010

Fig. 14.7.3 Cover bracket installation



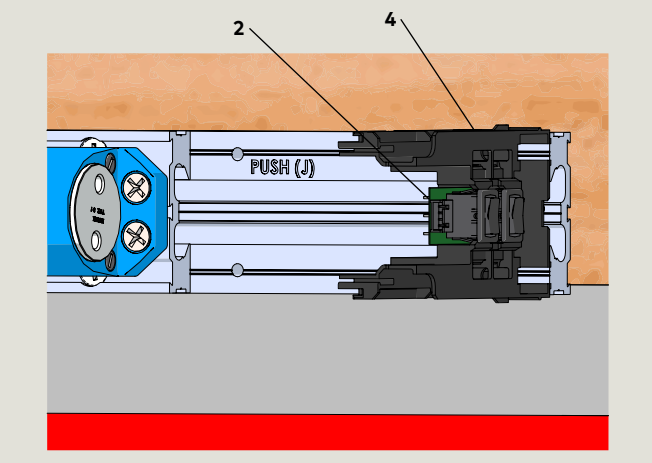
4 Full cover bracket
HC3481-010

Fig. 14.7.4 Cover bracket installed



4 Full cover bracket
HC3481-010

Fig. 14.7.5 Mode switch PCB installed



2 Mode switch PCB
HX3482-010

4 Full cover bracket
HC3481-010

14.8 Install Mode switch cable

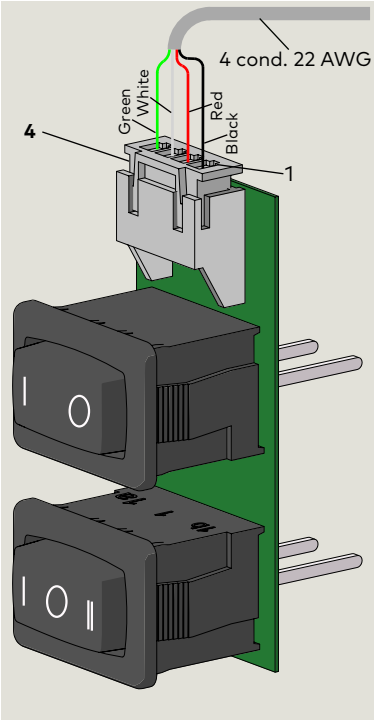
14.8.1 Install single Mode switch cable.

1. Insert Mode switch plug (part of HX3482-010 assembly) into connector..
2. Route Mode switch cable to ED900 Mode switch terminals on terminal interface board.

- Secure cable to mounting plate channels using wire retainers.

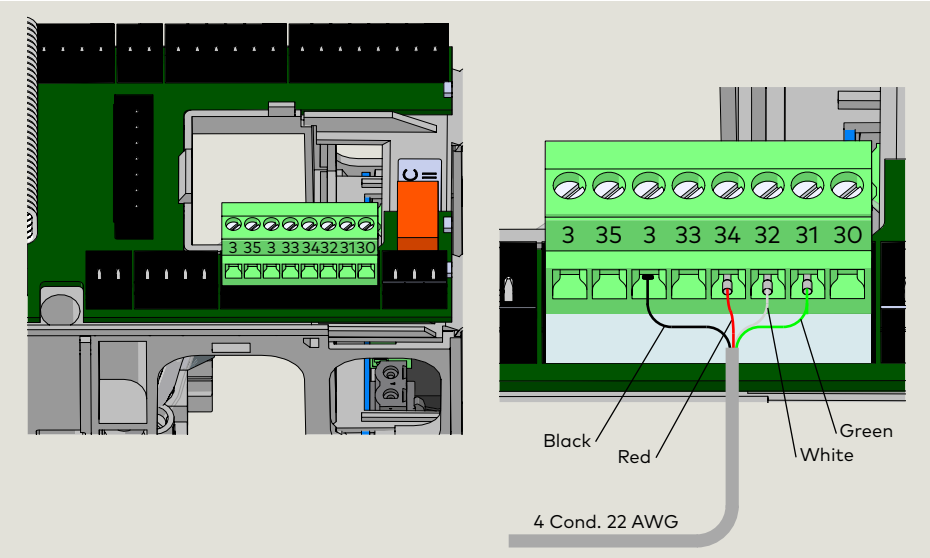
3. Terminate cable wires at terminal strip X1 as shown in Fig. 14.8.2.

Fig. 14.8.1 Mode switch wiring



4 4 pin plug and 4 conductor cable assembly (part of HX3482-010)

Fig. 14.8.2 Mode switch wiring at ED900 terminal board



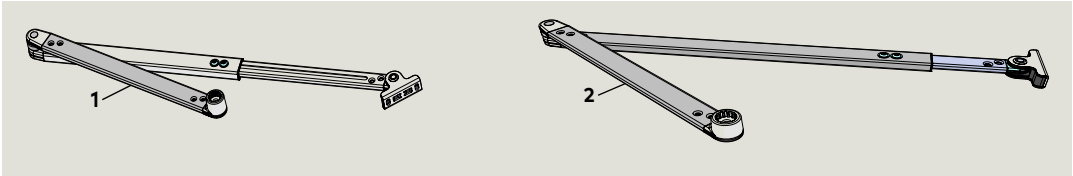
16 J/Push arm installation

16.1 Push arm installation templates

NOTICE

Reference Chapter 12 for push arm installation templates.

Fig. 16.1.1 Push arm assemblies

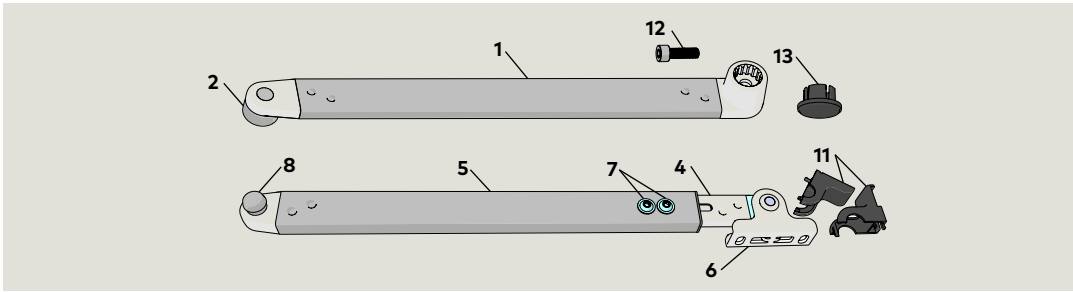


1 J8/Standard push arm, reveal depths 0 - 8" maximum

2 J12/Deep push arm reveal depths 8 - 12" maximum

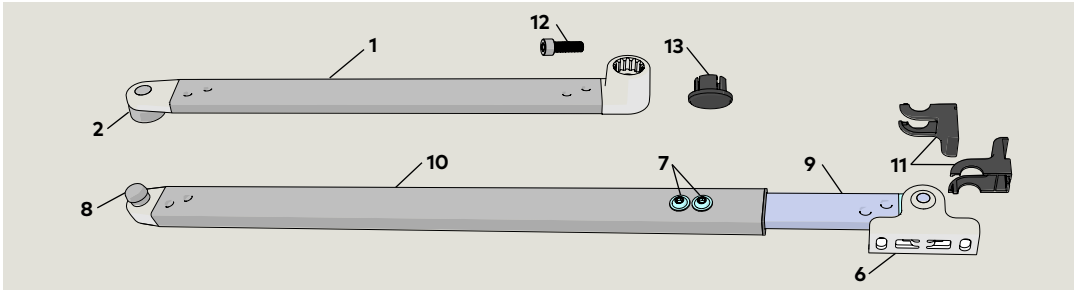
16.2 Push arm installation

Fig. 16.2.1 J8/Splined push arm assembly, 8 7/8" [225]



1 Splined drive arm
2 Socket
4 Adjustment arm 11 1/4"[285]
5 Adjustment arm tube 12 1/4" [311]
6 Shoe
7 M6 x 10 mm flanged button head screw
8 Ball head
11 Shoe screw cover
12 M8 x ___ SHCS
13 Cap

Fig. 16.2.2 J12/Splined push arm assembly, 19 11/16" [500]



1 Splined drive arm
2 Socket
6 Shoe
7 M6 x 10 mm flanged button head screw
8 Ball head
9 Adjustment arm, 17 3/4" [450]
10 Adjustment arm tube, 17 3/4" [450]
11 Shoe screw cover
12 M8 x ___ SHCS
13 Cap

Fig. 16.2.3 Drive arm

1 Drive arm
2 Socket
3 Arm axle sleeve

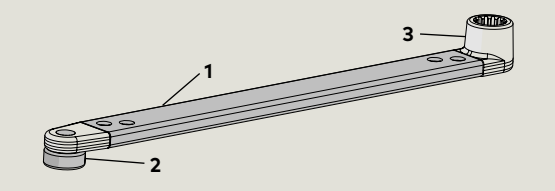
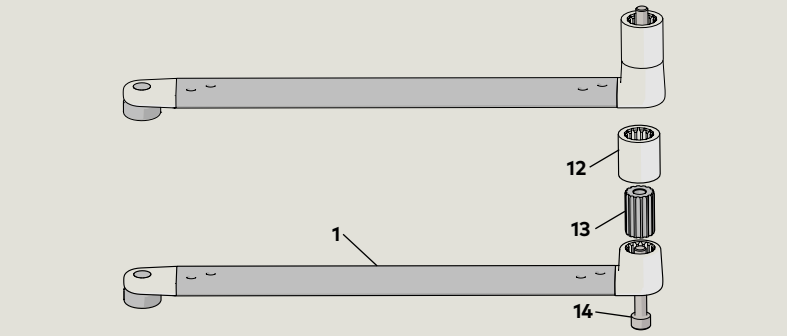
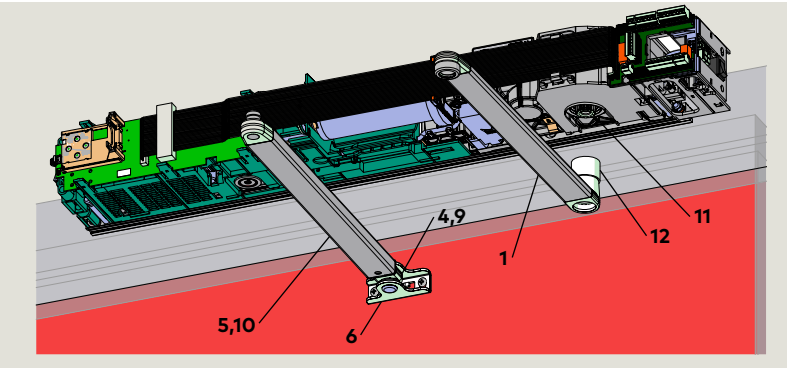


Fig. 16.2.4 Drive arm axle extension installation



1 Drive arm
12 Axle extension sleeve
13 Axle extension
14 M8 x ___ SHCS

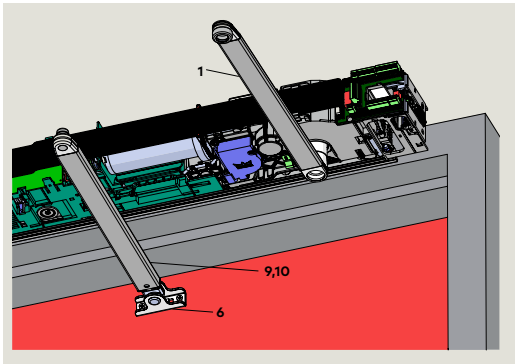
Fig. 16.2.5 Push arm assemblies for installation



1 Drive arm
4 Adjustment arm 11 1/4"[285]
5 Adjustment arm tube 12 1/4" [311]
6 Shoe
7 M6 x 10 mm flanged button head screw
8 Ball head
9 Adjustment arm, 17 3/4" [450]
10 Adjustment arm tube, 17 3/4" [450]
11 ED900 spindle
12 Axle extension sleeve

Fig. 16.2.6 Arm assemblies attached to door and ED900

1 Drive arm
6 Shoe
9 Adjustment arm, 17 3/4" [450]
10 Adjustment arm tube, 17 3/4" [450]



16.2.1 Attach drive arm to operator.

CAUTION

Door must be fully closed!

WARNING

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

CAUTION

ED operator axle zero position.
In order to mount the drive arm in the correct position, the axle must be brought to the zero position.

1. Set ED operator spring preload to approximately ten clockwise rotations.
• Axle rotates to the zero position.

TIPS AND RECOMMENDATIONS

Reference Chapter 19, Operator spring tension.

2. Insert axle extension into drive arm.
3. Move arm to ED900, inserting arm into operator spindle at a 90º angle (Fig. 16.2.5).
4. Insert M8 SHCS through drive arm and axle extension. Thread SHCS into ED900 spindle and tighten.

CAUTION

Use torque wrench with hex key socket to tighten SHCS to 26 ft-lb [35.3 Nm]

16.2.2 Drill two holes in door for adjustment arm shoe.

Installation templates (Chapter 12) document location of shoe on door.

1. Drill two holes in door for adjustment arm shoe.
• Fastener type based on door material.

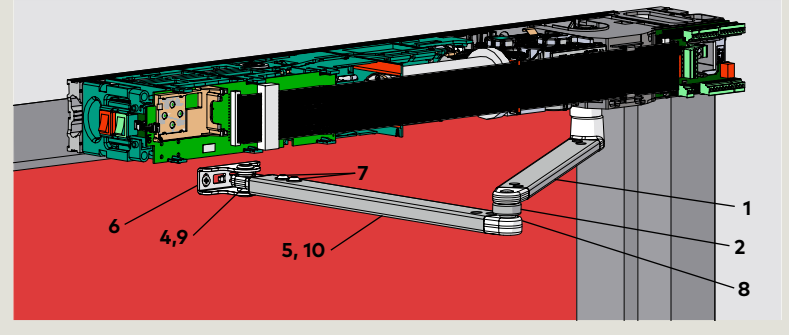
TIPS AND RECOMMENDATIONS

Reference Chapter 5, Accessory kits, for arm fasteners.

16.2.3 Secure adjustment arm assembly to door.

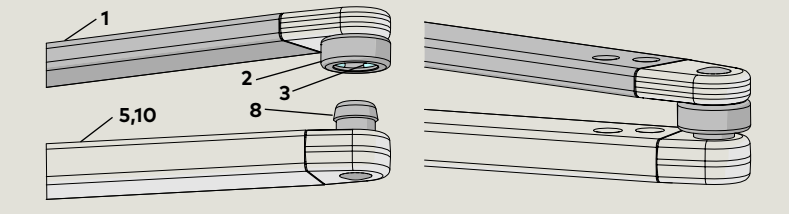
1. Fasten adjustment arm assembly to door (Fig. 16.2.6).

Fig. 16.2.7 Arm assemblies attached to door and ED900



1	Drive Arm	**5**	Adjustment arm tube 12 1/4" [311]	**8**	Ball head
2	Socket	**6**	Shoe	**9**	Adjustment arm, 17 3/4" [450]
4	Adjustment arm 11 1/4"[285]	**7**	M6 x 10 mm flanged button head screw		

Fig. 16.2.8 Drive arm, adjustment arm connection



1	Drive arm	**5**	Adjustment arm tube 12 1/4" [311]	**8**	Ball head
2	Socket	**10**	Adjustment arm tube, 17 3/4" [450]		
3	Spring				
7	M6 x 10 mm flanged button head screw				

Fig. 16.2.9 Adjustment arm M6 x 10 screws

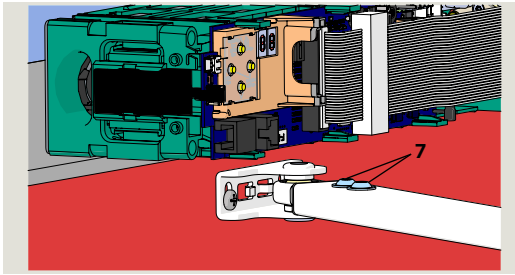
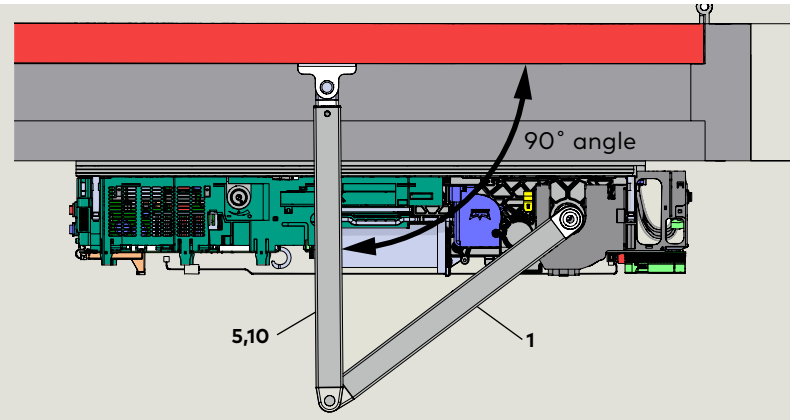


Fig. 16.2.10 Adjustment arm at 90° angle to door



1	Drive Arm	**5**	Adjustment arm tube 12 1/4" [311]	**10**	Adjustment arm tube, 17 3/4" [450]

16.2.4 Connect adjustment arm to drive arm.

1. Loosen the two adjustment M6 x 10 mm flanged button head screws (Fig. 16.2.9).

1. Using square, position adjustment arm assembly at 90° angle to door (Fig. 16.2.10).

2. Rotate drive arm and adjust length of adjustment arm until drive arm ball head (8) is aligned with adjustment arm socket (2).

CAUTION

Maintain adjustment arm assembly at a 90° angle to door.

3. Insert adjustment arm ball head (8) into drive arm socket (2).
- Spring in socket will retain ball head in socket.

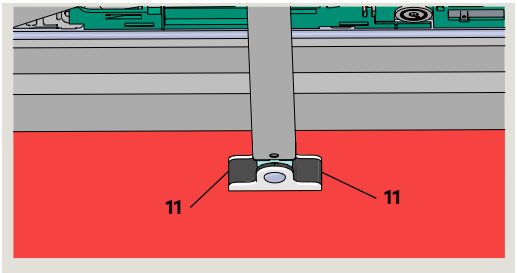
4. Secure adjustment arm position by tightening the two M6 x 10 mm flanged button head screws.

CAUTION

Recheck that adjustment arm is at 90° angle to door.

5. Install shoe screw covers.

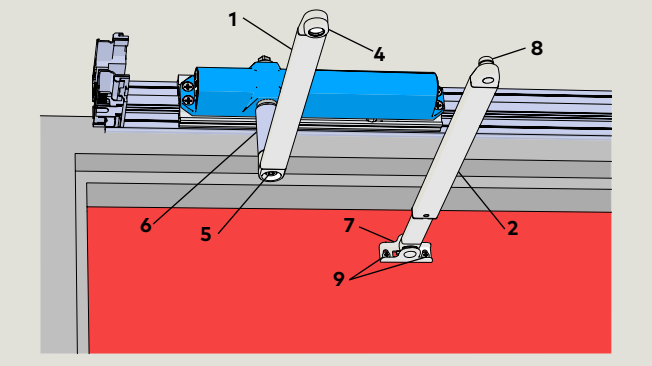
Fig. 16.2.11 Shoe screw covers



11 Shoe screw covers

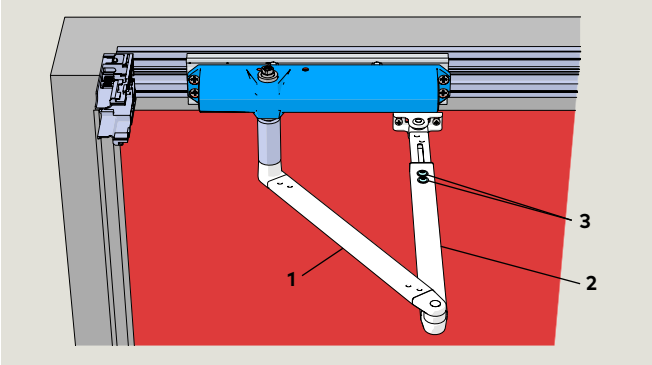
16.3 Push arm installation: 8816 door closer

Fig. 16.3.1 Drive arm and adjustment arm installation



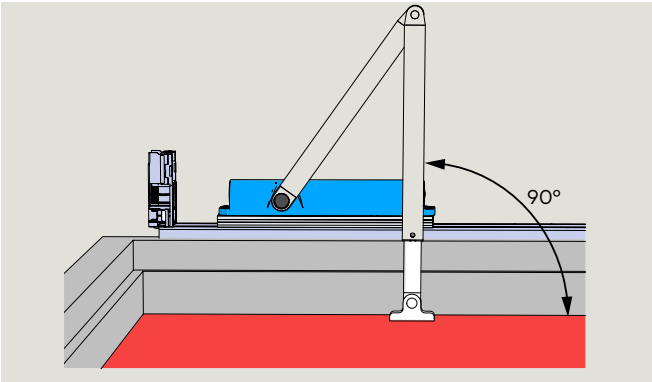
1	Drive arm	**6**	Extension
2	Adjustment arm	**7**	Shoe
4	Socket	**8**	B all head
5	M8 x _ SHCS	**9**	Shoe fasteners

Fig. 16.3.2 Adjustment arm button head screws



1	Drive arm
2	Adjustment arm
3	M6 x 10 mm flanged button head screw

Fig. 16.3.3 Adjustment arm at 90 degrees



16.3.1 Attach drive arm to operator.

CAUTION

Door must be fully closed!

WARNING

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

1. Insert axle extension into drive arm.
2. Move arm to closer, inserting arm into 8816 pinion at a 90º angle (Fig. 16.3.1).
3. Insert M8 SHCS through drive arm and axle extension. Thread SHCS into 8816 pinion and tighten.

16.3.2 Drill two holes in door for adjustment arm shoe.

Installation templates (Chapter 12) document location of shoe on door.

1. Drill two holes in door for adjustment arm shoe.

- Fastener type based on door material.

TIPS AND RECOMMENDATIONS

Reference Chapter 5, Accessory kits, for arm fasteners.

16.3.3 Secure adjustment arm assembly to door.

1. Fasten adjustment arm assembly to door (Fig. 16.3.1).

16.3.4 Connect adjustment arm to drive arm.

1. Loosen the two adjustment M6 x 10 mm flanged button head screws (Fig. 16.3.2).

1. Using square, position adjustment arm assembly at 90º angle to door (Fig. 16.3.3).
2. Rotate drive arm and adjust length of adjustment arm until drive arm ball head (8) is aligned with adjustment arm socket (4).

CAUTION

Maintain adjustment arm assembly at a 90º angle to door.

3. Insert adjustment arm ball head (8) into drive arm socket (2).

- Spring in socket will retain ball head in socket (Fig. 16.2.8)

4. Secure adjustment arm position by tightening the two M6 x 10 mm flanged button head screws.

CAUTION

Recheck that adjustment arm is at 90º angle to door.

5. Install shoe screw covers (Fig. 16.2.11).

16.4 8816 door closer adjustments

16.4.1 8816 closer manual adjustments.

CAUTION

Confirm closer spring size prior to making any closer speed adjustments.

CAUTION

Do not back valves out beyond closer casting.

CAUTION

Maximum door opening angle: 175º.

CAUTION

Door should close in 3 to 6 seconds from 90º.

CAUTION

Door should close in 3 to 6 seconds from 90º.

NOTICE

Closer supplied with a size 2 spring setting.

16.4.2 Barrier free openings, spring force adjustment.

1. 8816 meets 5 pound interior barrier-free requirement. If required, adjust spring force (6) to meet the barrier free requirement. If required, adjust spring force and test pull forces until proper forces are obtained.

- Decrease force: turn CCW 5 times (maximum).
- Increase force: turn CW 12 times maximum.

16.4.3 Sweep speed (1) adjustment.

1. Adjust sweep speed for door area from 70º to 0º.

- Increase speed: Turn sweep valve CCW.
- Decrease speed: Turn sweep valve CW.

16.4.4 Latch speed (2)adjustment.

1. Adjust latch speed for door area from 7º to 0º.

- Increase speed: Turn sweep valve CCW.
- Decrease speed: Turn sweep valve CW.

16.4.5 Backcheck (3) adjustment.

1. Adjust backcheck for door area from 110º to 70º.

- Increase resistance: Turn valve CW.
- Decrease resistance: Turn valve CCW.

16.4.6 Backcheck positioning (5)adjustment.

Backcheck positioning MUST be turned ON for arm and track applications.

1. Backcheck position will advance approximately 15º in the ON position.

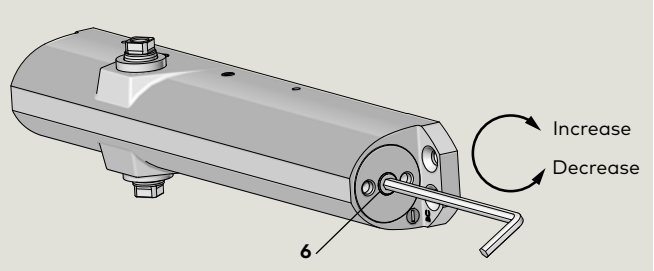
- Turn OFF: Turn valve CCW.
- Turn ON: Rotate valve CW.

16.4.7 8816 delayed action (4)adjustment.

1. Adjust delayed action for door area from 180º to 70º.

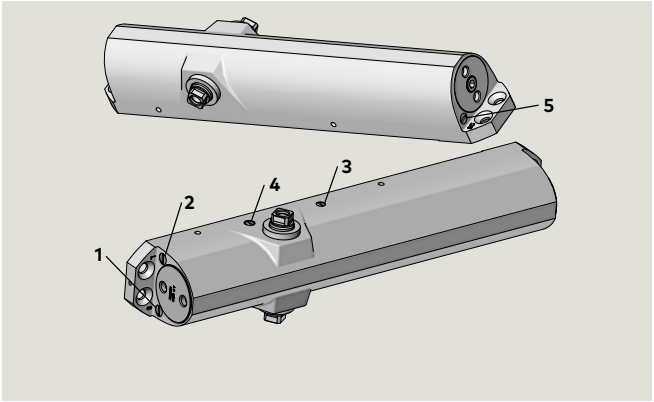
- Increase delayed action: Turn valve CW.
- Decrease delayed action: Turn valve CCW.

Fig. 16.4.1 8816 spring force adjustment



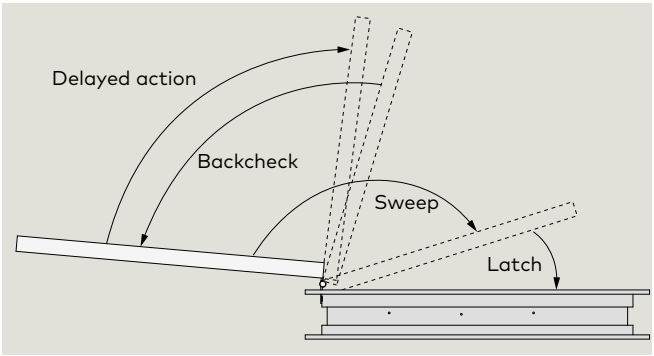
6 Spring force adjustment

Fig. 16.4.2 8816 closer adjustments



1 Sweep
2 Latch
3 Backcheck positioning
4 Delayed action
5 Backcheck

Fig. 16.4.3 8816 closer adjustment diagram



17 T275 pull arm installation

17.1 Installation templates

NOTICE

Reference Chapter 12 for installation templates.

17.2 T275 arm and track assemblies

Fig. 17.2.1 T275/Splined arm with CPD lever and track assembly, LH

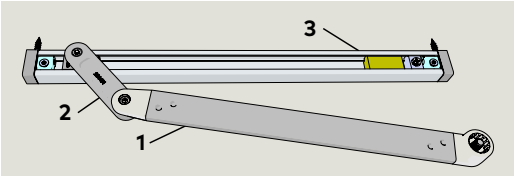
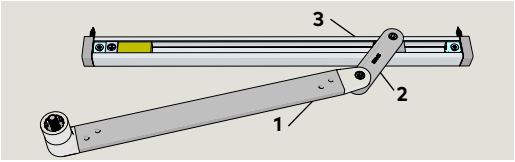


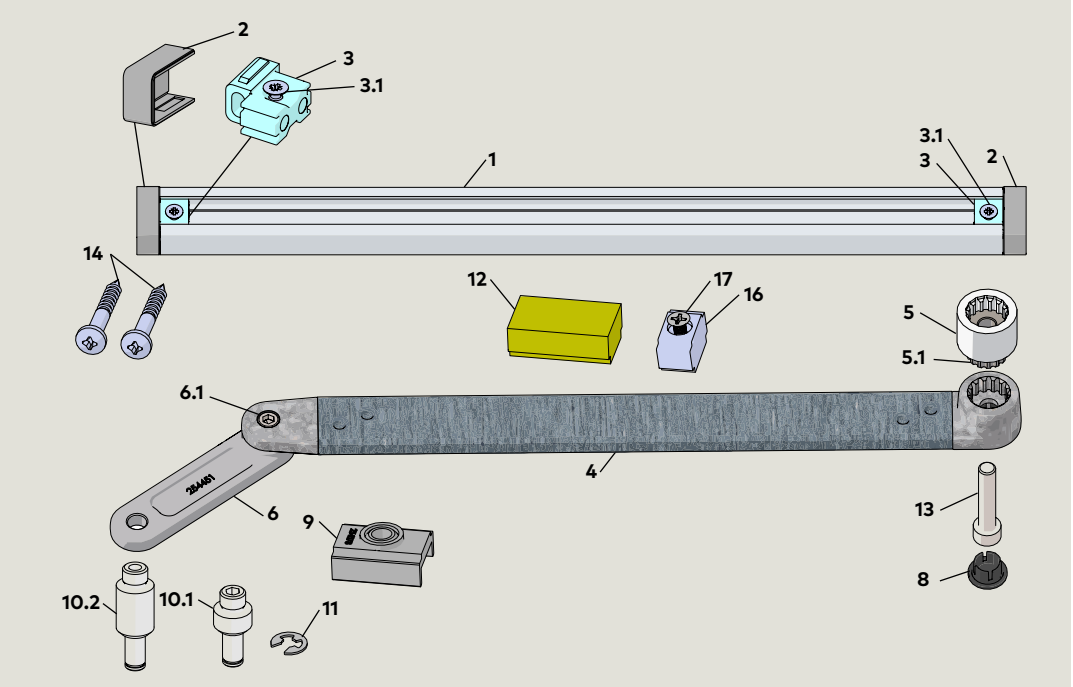
Fig. 17.2.2 T275/Splined arm with CPD lever and track assembly, RH



1 Drive arm
2 CPD
3 Track

17.3 Pull arm and track hardware

Fig. 17.3.1 Track assembly

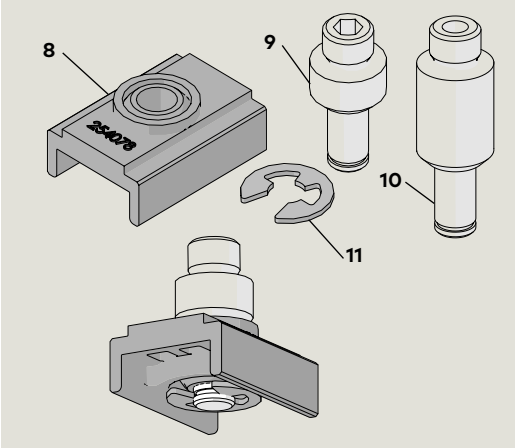


1 Track
2 End cap
3 Fixing piece
3.1 M5 x 15 Phillips FHS
4 Pull arm
5 20 mm axle extension
5.1 Splined sleeve
6 CPD lever
6.1 M6 x 10 SHCS
8 Pull arm cap
9 Slide shoe
10.1 1/2" pivot pin
10.2 1" pivot pin
11 Retaining ring
12 Bumper
13 M8 x 1.25 x 40 SHCS
14 Wood screws
15 Machine screws
16 Bumper stop
17 M5 x 13 FHMS cross recessed

17.4 Slide shoe assembly

8 Slide shoe
9 1/2" pivot pin
10 1" Pivot pin
11 Retaining ring

Fig. 17.4.1 Slide shoe and pivot pin

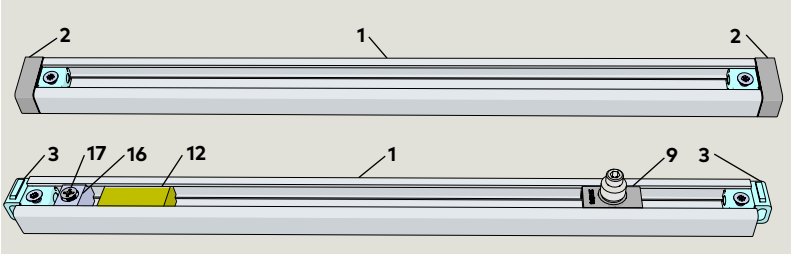


17.4.1 Install pivot pin into slide shoe.

1. Insert pivot pin into slide shoe.
2. Install spring clip into pivot pin slot.

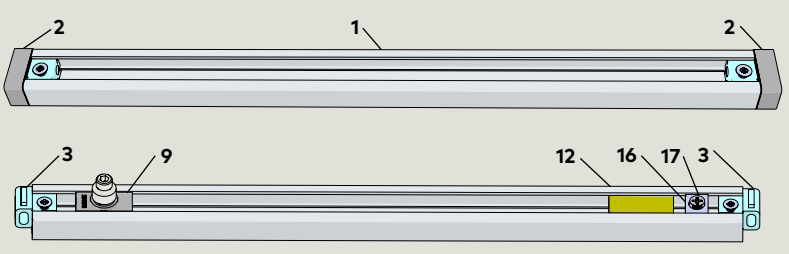
17.5 Install hardware into track

Fig. 17.5.1 RH track assembly



1 Track
3 Fixing piece
9 Slide shoe
12 Bumper
16 Bumper stop
17 M5 x 13 FHMS cross recessed

Fig. 17.5.2 LH track assembly



1 Track
3 Fixing piece
9 Slide shoe
12 Bumper
16 Bumper stop
17 M5 x 13 FHMS cross recessed

17.5.1 Track assembly.

CAUTION

Assemble track hardware based on RH or LH installation.

1. Remove both end caps (2) and one fixing piece (3) from track.

1. Slide bumper stop (16), bumper (12) and slide shoe assembly (9) into track.

- Do not tighten bumper stop M5 screw (17).

2. Secure fixing piece to end of track with M5 x 15 screw (3.1).

- Use No. 2 Phillips, do not over-tighten.

17.7 Arm assembly with CPD lever

6.1 M6 x 10 SHCS
11 Slotted spring pin

Fig. 17.7.1 Slotted spring pin

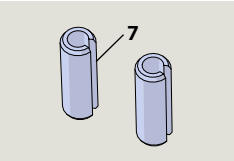
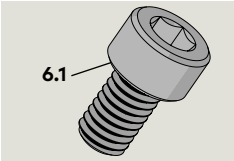
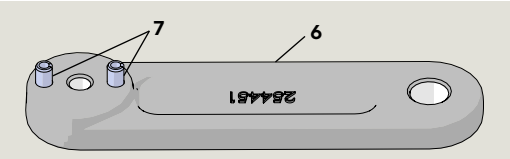


Fig. 17.7.2 M6 x 10 SHCS for CPD



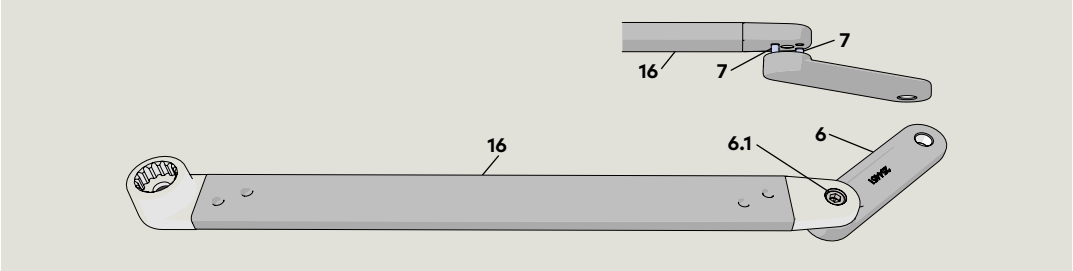
6 CPD lever
7 Slotted spring pin

Fig. 17.7.3 CPD lever and slotted spring pins



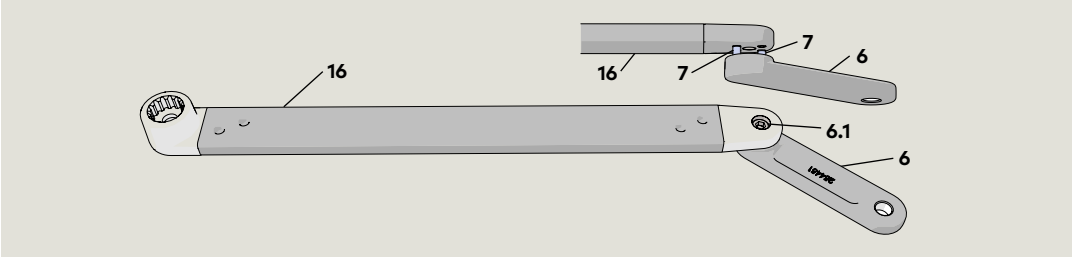
6 CPD lever
6.1 M6 x 10 SHCS
7 Slotted spring pin
16 Arm

Fig. 17.7.4 Arm assembly, RH pull, LH push



6 CPD lever
6.1 M6 x 10 SHCS
7 Slotted spring pin
16 Arm

Fig. 17.7.5 Arm assembly, LH pull, RH push



17.7.1 Arm with CPD lever assembly.

CAUTION

Assemble arm and CPD lever based on RH or LH pull or push.

1. Secure CPD lever to arm with M6 x 10 SHCS.

17.8 Deep pull arm installation

Fig. 17.8.1 Deep pull arm parallel to door

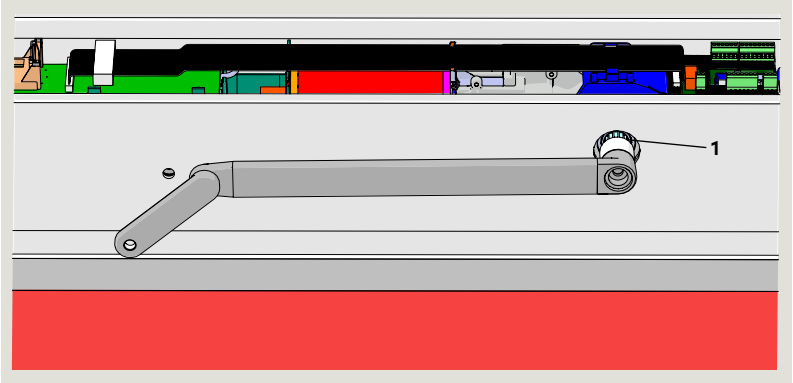
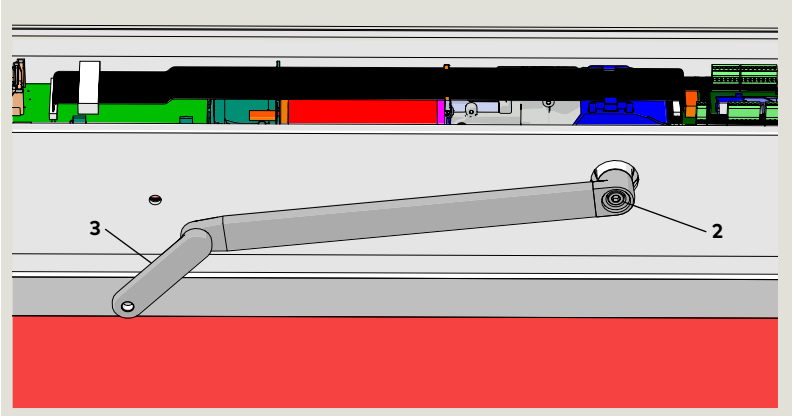


Fig. 17.8.2 Deep pull arm installed on spindle

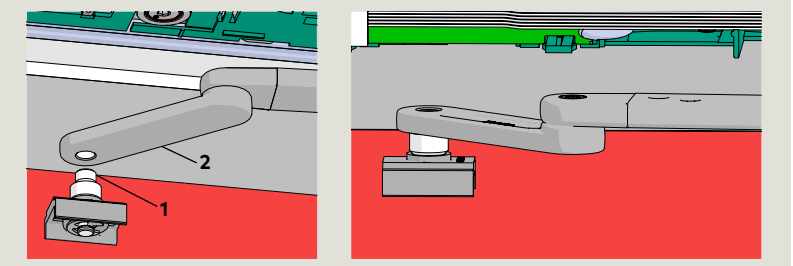


2 M8 SHCS
3 CPD lever

Fig. 17.8.3 Track mounting holes in door

1 Track mounting holes

Fig. 17.8.4 Slide shoe installation on drive arm CPD lever



1 Pivot pin M8 SHCS **2** CPD lever

17.8.1 Mount drive arm to operator.

⚠ WARNING

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

CAUTION

ED900 operator axle zero position.
In order to mount the drive arm in the correct position, the spindle must be at the zero position.

1. Set ED900 operator spring tension based on door width.
   Reference Chapter 11.
2. Position drive arm with axle extension against spindle and parallel to door.
3. Rotate drive arm until edge of CPD lever is adjacent to surface of door. (Fig. 17.8.2).
4. Install drive arm with axle extension onto spindle, aligning axle extension to nearest spindle tooth.
   - Depending on door reveal, this arm position may be more than one spindle tooth from the arm parallel to door position (step 2).
5. Push the axle extension onto spindle.
6. Thread the M8 x ___ mm SHCS (length determined by axle extension) into spindle and tighten SHCS.

CAUTION

Use torque wrench with hex key socket to tighten M8 screw to 26 ft-lb [35.3 Nm].

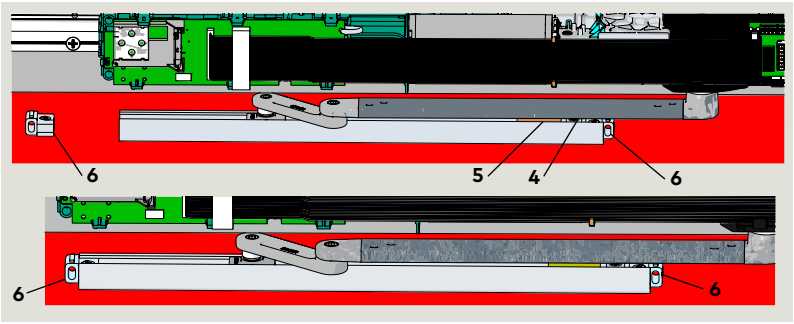
17.8.2 Locate and drill track mounting holes.

1. Using applicable template, locate and drill mounting holes for track.

17.8.3 Install slide shoe assembly onto CPD lever M8 mounting hole.

1. Thread pivot pin M8 SHCS into standard arm or CPD lever mounting hole (Fig. 17.8.4).
2. Use 6 mm hex key to tighten.

Fig. 17.8.5 Track assembly installed onto slide shoe



3 Shoe
4 Bumper stop
5 Bumper
6 Fixing piece

Fig. 17.8.6 Track assembly secured to door

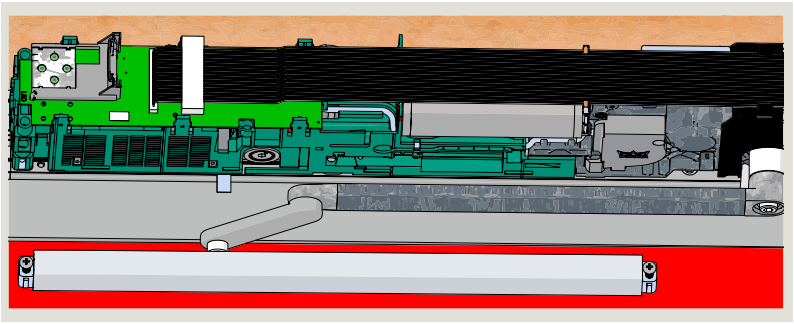
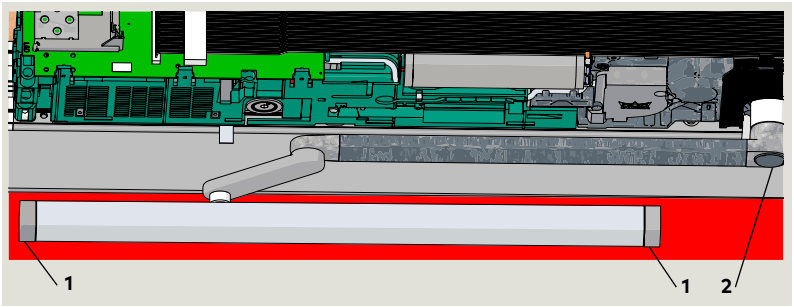


Fig. 17.8.7 End caps and spindle cap installed



1 End cap
2 Spindle cap

17.8.4 Track assembly.

1. Insure track components and deep pull arm are assembled based on hand of door (Para. 17.5).

17.8.5 Install track assembly onto slide shoe.

1. With fixing piece removed from track on opposite end from bumper, slide track assembly onto shoe (Fig. 17.8.5).
2. Install second fixing piece onto track.

17.8.6 Secure track assembly to door.

1. Attach track fixing pieces to door using selected fasteners.

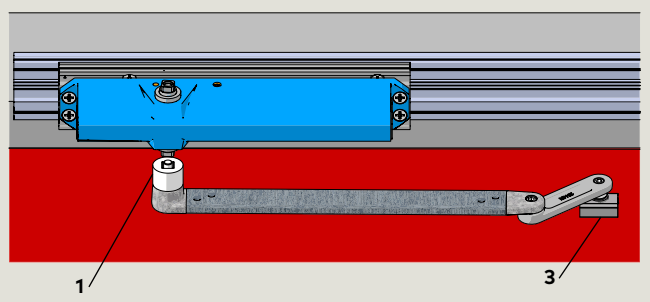
- Insure track is level as fasteners are tightened.

17.8.7 Install end caps and spindle caps.

1. Install two end caps on track and the spindle cap.

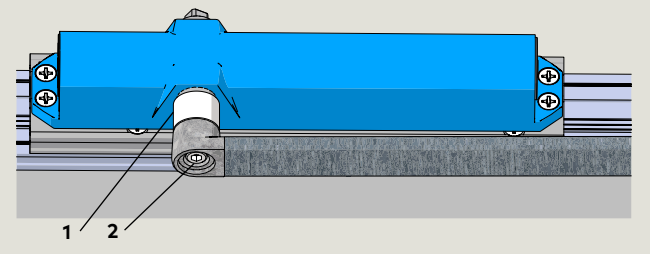
17.10 Deep pull arm installation 8816 door closer

Fig. 17.10.1 Drive arm installation



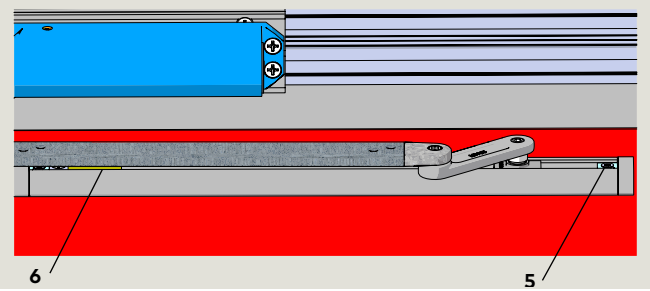
1 Axle extension **3** Shoe

Fig. 17.10.2 Axle extension SHCS



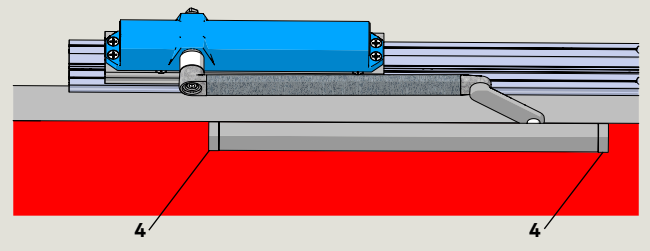
1 Axle extension
2 M8 SHCS

Fig. 17.10.3 Track assembly bumper and fixing piece



5 Fixing piece
6 Bumper

Fig. 17.10.4 Arm and track assembly installed



4 End cap

17.10.1 Install drive arm assembly.

1. Push the drive arm / axle extension onto the 8816 pinion (Fig. 17.10.2).

CAUTION

Insure drive arm and CPD lever is assembled for hand of door (Para. 17.7).

2. Thread M8 x ___ mm SHCS (length determined by axle extension) into the 8816 pinion and tighten SHCS.

CAUTION

Use torque wrench with hex key socket to tighten M8 screw to
17 ft-lb [23 Nm].

17.10.2 Drill holes for track assembly.

1. Use applicable template (Chapter 12) to locate two track mounting holes on door.

CAUTION

Fastener type:

- Select fastener based on door material.

2. Drill holes in door, hole size based on selected screw or fastener (Ref. Chapter 5, Accessory kits).

17.10.3 Install track assembly onto slide shoe.

1. With fixing piece removed from track on opposite end from bumper (Fig. 17.10.3), slide track assembly onto shoe.

CAUTION

Insure track hardware is assembled for hand of door (Para. 17.5).

2. Install second fixing piece onto track.

17.10.4 Secure track assembly to door.

1. Attach track fixing pieces to door using selected fasteners.

CAUTION

Check track for level when tightening fasteners.

17.10.5 Install end caps and spindle caps.

1. Install two end caps on track and the spindle cap.

17.10.6 Install track end caps.

1. Install track end caps over fixing pieces.

17.10.7 8816 closer adjustments.

Reference Para. 16.4.

19 Operator spring tension

19.1 Set ED900 operator spring tension

1 Spring tension adjustment

Fig. 19.1.1 Spring tension adjustment

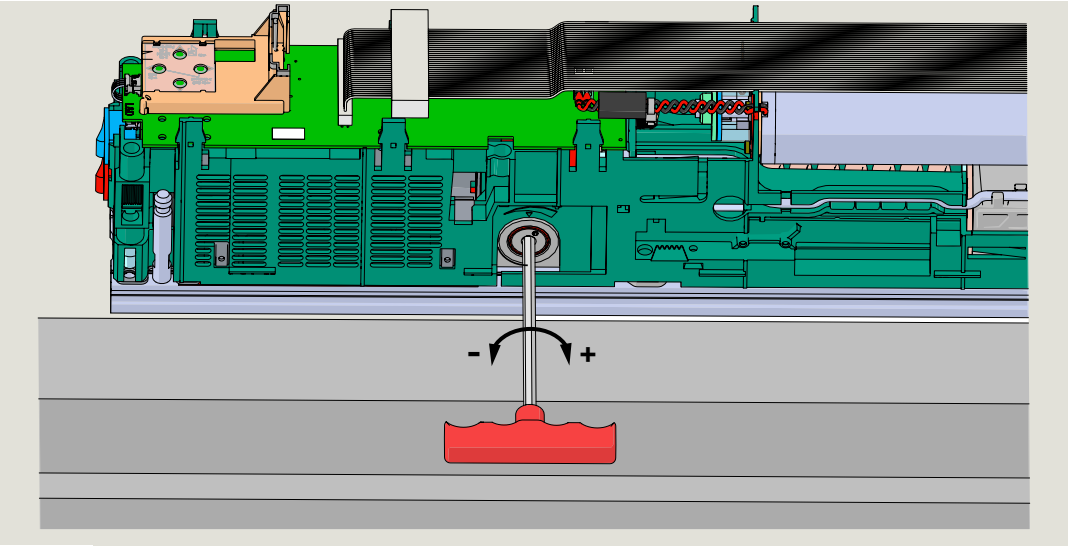


Table 19.1.1 Spring tension setting revolutions

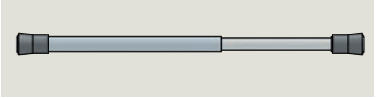
Door width				
Inches	32	36	42	48
mm	813	914	1067	1219
Spring setting revolutions				
ED900	10	14	16	18

TIPS AND RECOMMENDATIONS

System checks spring tension during learning cycle (Chapter 23).
Learning cycle will be canceled if spring is insufficiently tensioned; door will stop and display will show a rotating "0" and an "F".

Fig. 19.1.2 5 mm T-handle hex key

Fig. 19.1.3 Door pressure gauge



19.1.1 Operator spring tension function.

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

19.1.2 Spring tension adjustment.

1. Spring tension adjustment is factory set fully CCW, no spring tension.
2. Spring must be pretensioned per Table 19.1.1.

- Use 5 mm T-handle hex key (Fig. 19.1.2).

Clockwise - increases spring tension.
Counterclockwise - decreases spring tension.

CAUTION

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

CAUTION

Any change to spring tension setting requires a new learning cycle (Chapter 23)!

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.

TIPS AND RECOMMENDATIONS

Reference Chapter 30, ANSI/BHMA standards for door closing forces.

20 ANSI/BHMA standards

20.1 A156.19 Low energy power operated doors

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

20.1.1 Door measurements, low energy power operated door

ED900 Parameter					A156.19 standard	
Parameter		Function	Factory setting	Adjustment range	Para..	
So	Opening speed	Swing door opening speed.	17⅞ Note 1	8⅞ - 27⅞ 27⅞ max. L.E. mode	4.2	Opening Doors shall open from closed to back check or 80°, whichever occurs first, in 3 seconds or longer as required in Table I. Total opening time to 90° shall be as in Table II. If door opens at more than 90°, iit shall continue at the same rate as back check speed.
bc	Back check	Checking or slowing down of door speed before door being fully opened.	10°	5° - 40°	4.2	Back check shall not occur before 60° opening.
Sc	Closing speed	Swing door closing speed, automatic mode.	17⅞ Note 1	8⅞ - 27⅞ 27⅞ max. L.E. mode	4.4	Closing: Doors shall close from 90° to 10° in 3 seconds or longer as required in Table I. Doors shall close from 10° to fully closed in not less than 1.5 seconds.
dd	Hold open time	Hold open time.	5 s	5 s - 30 s	4.3	Time delay: When powered open, the door shall remain open at the fully opened position for not less than 5 seconds. Exception: when push-pull activation is used, the door shall remain at the fully opened position for not less than 3 seconds.
hS	Reference Appendix A for parameter detail.	Support for manual mode in door closed position.			4.5	Doors shall open with a manual force: • Not to exceed 15 lbf [67 N]to release a latch if equipped with a latch. • To set a door in motion 30 lbf [133 N]. • To fully open the door 15 lbf [67 N]. Forces shall be measured 1" [25.5] from latch edge of door.
hA		Adjustment, door activation angle.				
hF		Power assist function.				
Fo	Static force in opening direction	Static force on door closing edge in opening direction.	13.5 lb f [60 N]	4.5 lb f [20 N] - 15 lb f [67 N]	4.5	Force required to prevent a stopped door from opening or closing shall not exceed 15 lb f [67 N] measured 1" [25.4] from latch edge of door at any point during opening or closing.
Fc	Static force in closing direction	Static force on door closing edge in closing direction.	13.5 lb f [60 N]	4.5 lb f [20 N] - 15 lb f [67 N]	4.5	

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

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

"D" door width, inches [mm]	"W" door weight, pounds [kg]				
	100 [45.4]	125 [56.7]	150 [68]	175 [79.4]	200 [90.7]
30 [762]	3.0	3.0	3.0	3.0	3.5
36 [914]	3.0 s	3.5 s	3.5 s	3.0 s	3.0 s
Minimum opening time to back check or 80 degrees (whichever occurs first). Minimum closing time from 90 degrees to latch check or 10 degrees (whichever occurs first).					

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

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

20.1.4 Other door weights and widths

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

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

21 Install door signage

21.1 Install door signage

21.1.1 Install door signage based on type of door operation.

Install applicable door signage as outlined in Chapter 10, ED900 door signage.

22 Install cover, end caps and spindle caps

22.1 Install cover and end caps

TIPS AND RECOMMENDATIONS

Installation of cover and end caps can be done after setup of ED900 operator.
Reference: ED900 Setup and Troubleshooting Manual 08125380.

22.1.1 Install full width cover.

1. Align cover with operator and cover bracket at 8816 closer, press inward until cover snaps into place.

CAUTION

Insure that all cables are in place and secured as necessary.

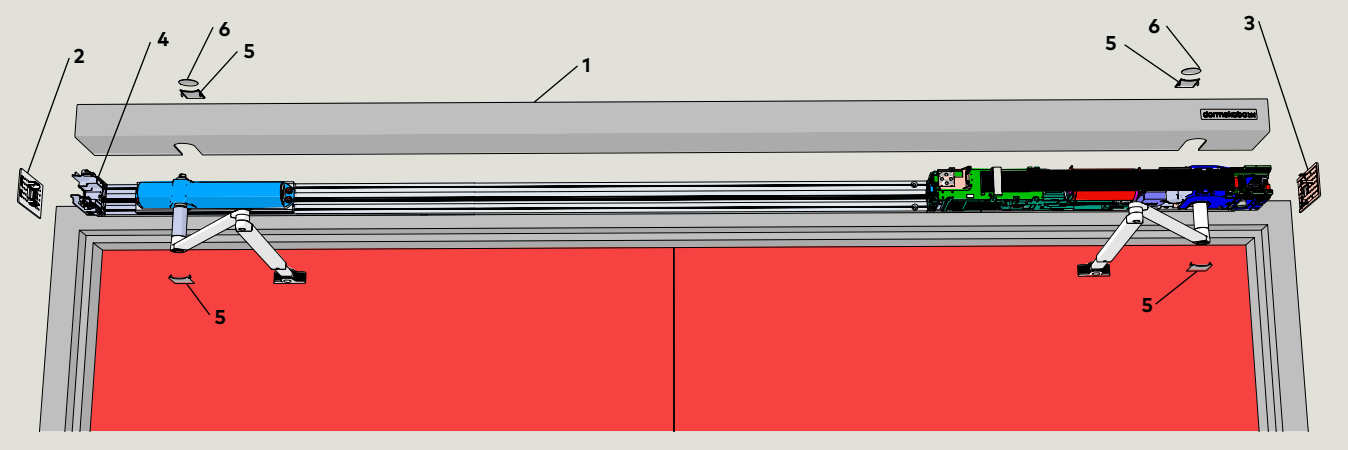
22.1.2 Install end caps.

1. Install ED900 operator end cap for power switch
2. Install end cap for Mode switch at cover bracket next to 8816 closer.

TIPS AND RECOMMENDATIONS

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

Fig. 22.1.1 Cover, end cap installation



1 Full width cover
2 End cap, Mode switch
3 End cap, power switch
5 Spindle cap
6 Spindle cap

22.2 Install spindle caps, fine cover

Fig. 22.2.1 Spindle caps

4 Spindle cap
5 Spindle cap

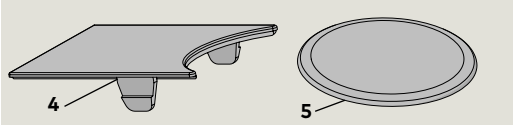


Fig. 22.2.2 Spindle cap installation

4 Spindle cap
5 Spindle cap

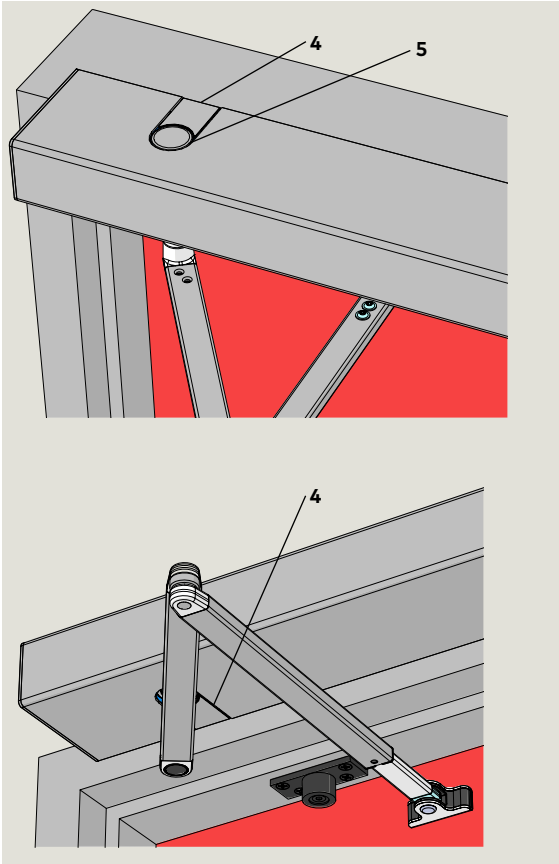
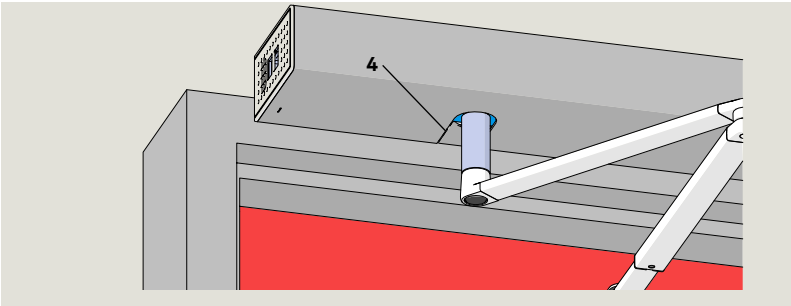


Fig. 22.2.3 Spindle cap installation, cover bottom, 8816 side



4 Spindle cap

22.2.1 Install spindle caps.

1. Install spindle caps on cover.

23 Maintenance

23.1 Safety label, low energy swing doors

23.1.1 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 ED900 operator.

23.1.2 Safety information label location

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

23.1.3 Annual compliance section of label

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

23.1.4 Additional annual compliance inspection labels

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

Fig. 23.1.1 Safety information label

SAFETY INFORMATION
Low Energy Swinging Doors

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

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

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

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

AAADM-3044

AAADM
American Association of Automatic Door Manufacturers

ANNUAL COMPLIANCE INSPECTION

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

Fig. 23.1.2 Annual compliance inspection label

ANNUAL COMPLIANCE INSPECTION

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

23.2 ED900 environment and cleaning

Table 32.2.1 Operator environmental requirements.

Ambient temperature	5 to 122 °F	[-15 to 50° C]

Fig. 23.2.1 Companion door installation

23.2.1 ED900 environmental requirements.

ED900 assembly is designed to operate on an interior application only under the specifications shown in Table 31.2.1.

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

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

23.2.3 Cleaning

⚠ WARNING

Cleaning of ED900 and 8816 cover surfaces should be done with program switches in Close position!

ED900 and 8816 cover can be cleaned with a damp cloth and commercial cleaning agents.

TIPS AND RECOMMENDATIONS

Abrasive (scouring) agents should not be used as they may damage cover surface.

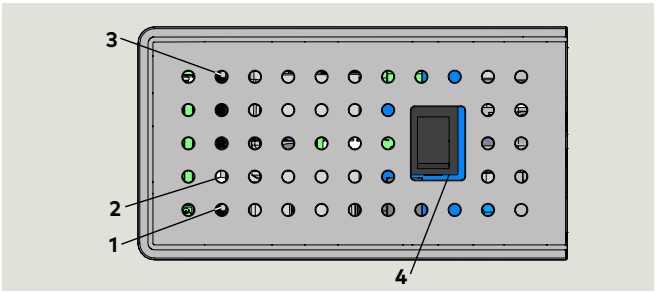
23.2.4 Water and other liquids.

⚠ WARNING

No water or other liquids must be sprayed or spilled on ED900 and 8816 cover!

23.3 Yellow LED, service level

Fig. 23.3.1 Service level indicator



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

23.3.1 Service level indicator

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

23.4 Pull arm maintenance

23.4.1 Track mounting screws.

1. Set Mode switch to CLOSE.
2. Remove track end caps.
3. Check tightness of track mounting screws.
4. Replace end caps.

23.4.2 Track maintenance.

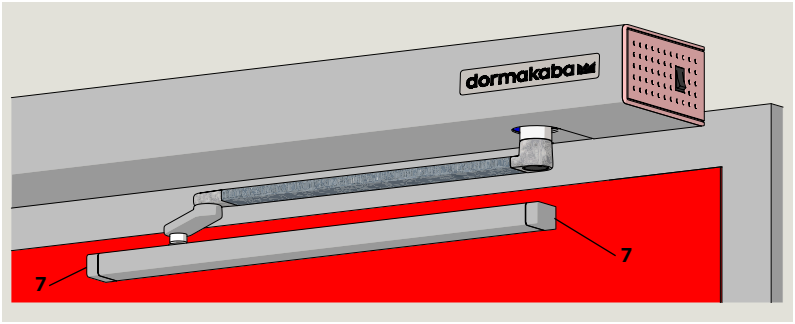
1. Track.
- Check for wear or damage.
2. Slide shoe and pivot pin.
- Check for wear or damage
3. Set Mode switch to OPEN.
4. Bumper stop M6 screw.
- Check bumper stop position (bumper location approximately 1/8" from slide shoe)
- Check tightness of screw.

23.4.3 CPD lever.

1. Check tightness of M6 SHCS.

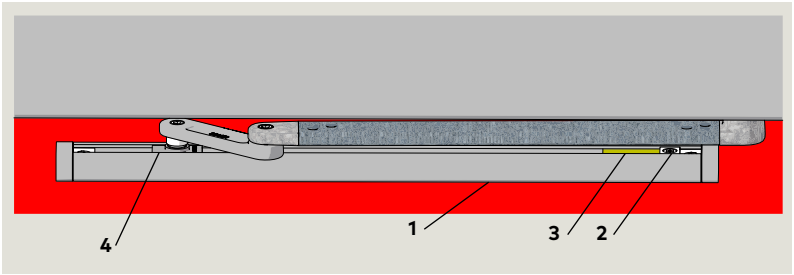
Fig. 23.4.5 Mode switch

Fig. 23.4.1 Arm and track assembly



7 End cap

Fig. 23.4.2 Arm and track assembly



1 Track
2 Bumper stop and M6 FHMS
3 Bumper
4 Slide shoe, pivot pin

23.5 Arm fasteners – torque requirements

23.5.1 Check drive arm M8 SHCS torque.

1. Set Mode switch to CLOSE.
2. Remove cap over M8 SHCS.
3. Check torque.
4. Replace cap.

CAUTION

Using torque wrench with 6 mm hex key socket, check M8 SHCS torque.26 ft-lb [35.3 Nm].

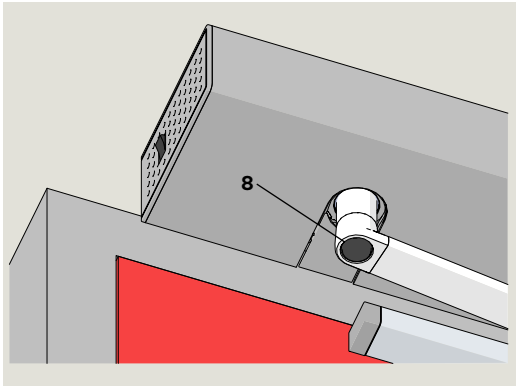
23.5.2 Check pivot pin M8 socket head torque.

1. Check torque.

CAUTION

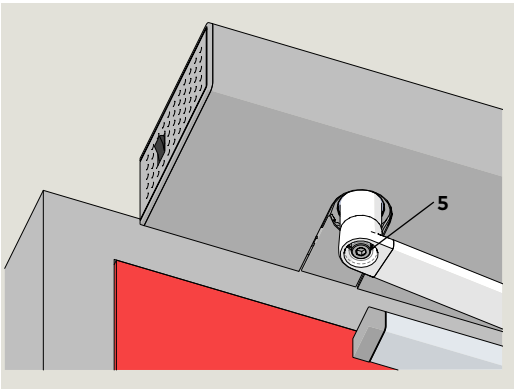
Use torque wrench with hex key socket. M8 screw torque:
5.9 - 7.4 ft-lb [8 - 10 Nm].

Fig. 23.5.1 Arm M8 SHCS cap



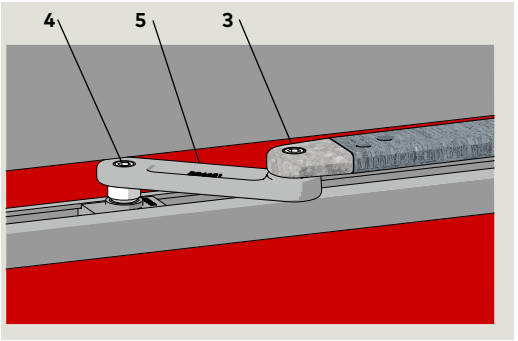
8 Cap

Fig. 23.5.2 M8 SHCS



5 M8 x __ SHCS

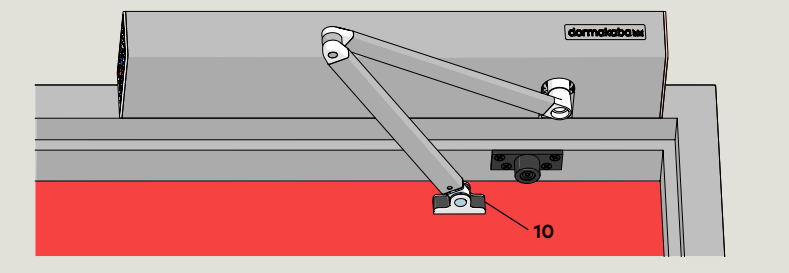
Fig. 23.5.3 Pivot pin M8 socket head, CPD lever M^ SHCS



3 M6 socket head cap screw
4 Pivot pin M8 socket head
5 CPD lever
5 CPD lever

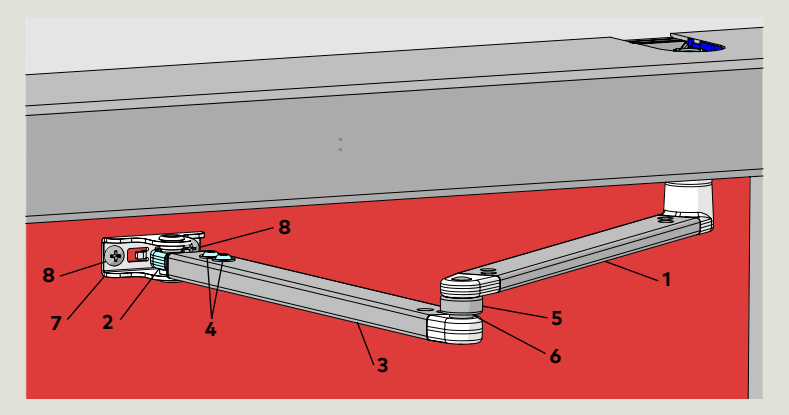
23.6 Push arm maintenance

Fig. 23.6.1 Push arm assembly



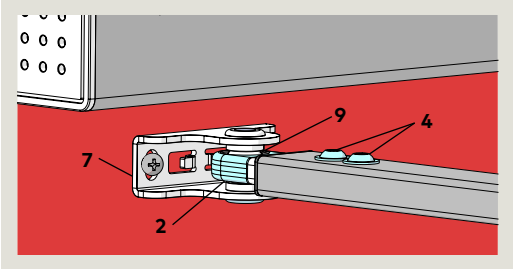
10 Screw cover caps

Fig. 23.6.2 Push arm assembly hardware



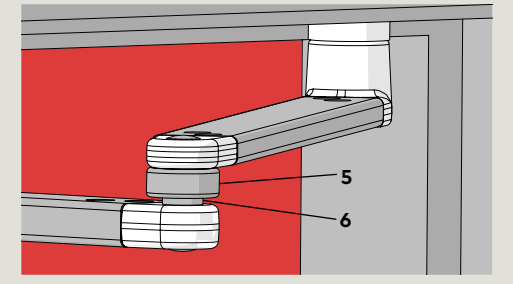
1 Drive arm
2 Adjustment arm
3 Adjustment arm tube
4 M6 x 10 button head screws
5 Drive arm socket
6 Adjustment arm ball head
7 Shoe
8 Shoe mounting screws (2)

Fig. 23.6.3 Shoe bearing



2 Adjustment arm
3 Adjustment arm tube
4 M6 x 10 mm flanged button head screw
7 Shoe
9 Articulated bearing
11 M8 SHCS

Fig. 23.6.4 Arm socket and ball head



5 Socket
6 Ball head

23.6.1 Push arm maintenance.

⚠ WARNING

Set Mode switch to CLOSE before performing maintenance!

1. Adjustment arm.
- Check for wear or damage.
- Check tightness of M6 x 10 flanged button head screws (Fig. 23.6.2).

2. Shoe and adjustment arm assembly:
- Check for wear or damage at shoe bearing (Fig. 23.6.3).

3. Adjustment arm socket and ball head (Fig. 23.6.4).
- Check for wear or damage.

23.6.2 Shoe door mounting screws .

1. Remove screw cover caps (Fig. 23.6.1).
2. Check for tightness of mounting screws (Fig. 23.6.3).
3. Replace screw cover caps.

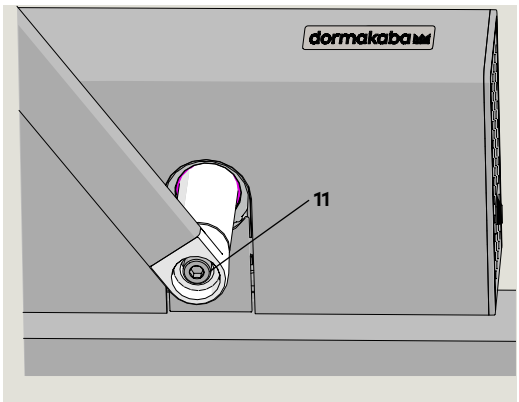
31.6.3 Drive arm to ED900 spindle.

1. Remove spindle cap.
2. Check tightness of M8 SHCS.

CAUTION

Using torque wrench with 6 mm hex key socket, torque M8 SHCS to 26ft-lb [35.3 Nm].

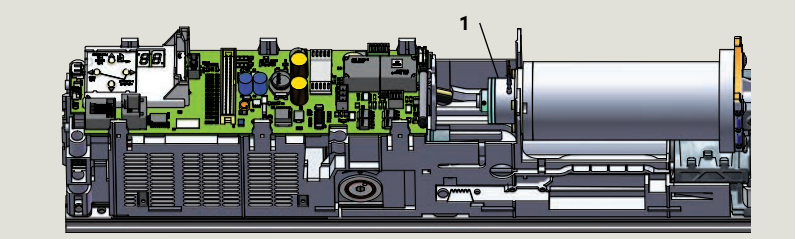
Fig. 23.6.5 Spindle M8 SHCS



This page left intentionally blank.

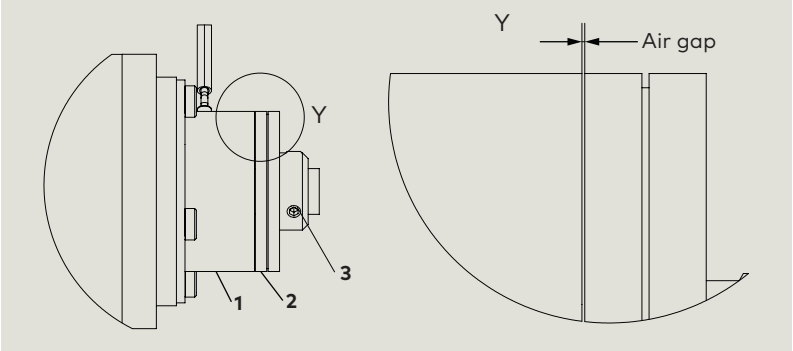
23.7 ED900 brake maintenance

Fig. 23.7.1 ED900 operator



1 Brake assembly

Fig. 23.7.2 Brake to brake disc air gap



1 Brake assembly
2 Brake disc assembly
3 M3 x 3 SHCS

1 Brake assembly
2 Brake disc assembly
3 M3 x 3 set screw
4 Brake motor flange
6 M3 x 5 SHCS

Fig. 23.7.3 Brake assembly

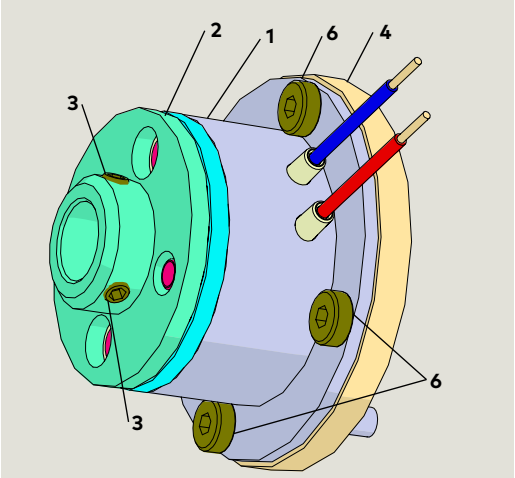


Fig. 23.7.4 Feeler gauge set

23.7.1 Adjustment of air gap: brake to brake disc (Fig. 23.7.2).

TIPS AND RECOMMENDATIONS

Reference drawing:
254197-01-50

⚠ WARNING

Set Mode switch to CLOSE before performing maintenance!

CAUTION

Air gap setting between brake and brake disc:
0.1 mm to 0.3 mm
(0.004" to 0.012")

1. Using 2.5 mm hex key, loosen three M3 x 3 set screws securing brake disc to motor shaft.
2. Insert feeler gauge [air gap setting for sizing] between brake disc and brake.
3. Move brake disc against shim(s).
4. Screw M3 x 3 set screws against motor shaft but do not tighten.
5. Remove feeler gauge.
6. Tighten M3 x 3 set screws.

CAUTION

M3 x3 SHCS torque setting:
5.3 in-lb + 0.9 in-lb [0.6 Nm +0.1 Nm].

TIPS AND RECOMMENDATIONS

Paper stock thickness:
approximately 0.003"

Fig. 23.7.5 M3 x 5 SHCS

1 Brake assembly
2 Brake disc assembly
6 M3 x 5 SHCS

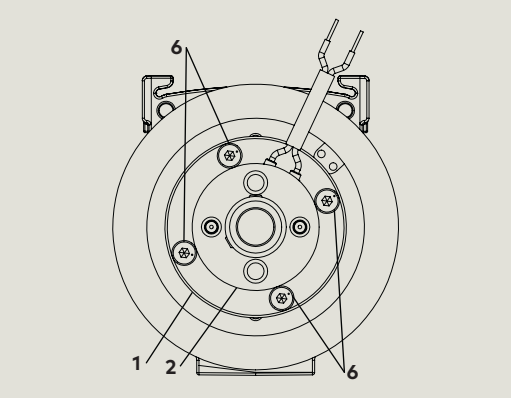


Fig. 23.7.6 Brake disc assembly removed from brake

1 Brake assembly
2 Brake disc assembly
5 Motor shaft

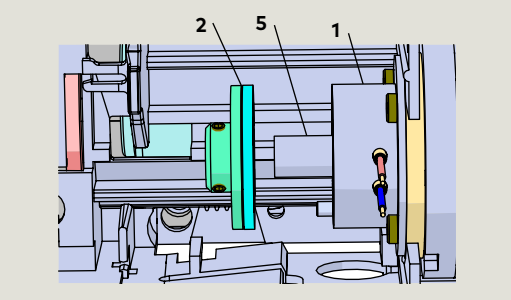


Fig. 23.7.7 Brake and brake disc assemblies

1 Brake assembly
2 Brake disc assembly
6 M3 x 5 SHCS

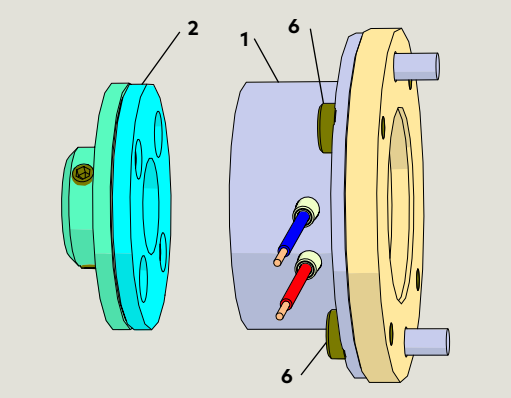
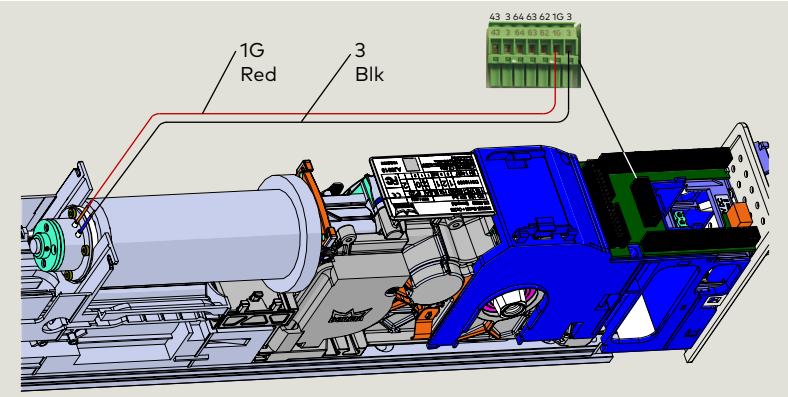


Fig. 23.7.8 Brake coil wiring



23.7.2 Torque setting of M3 x 5 SHCS.

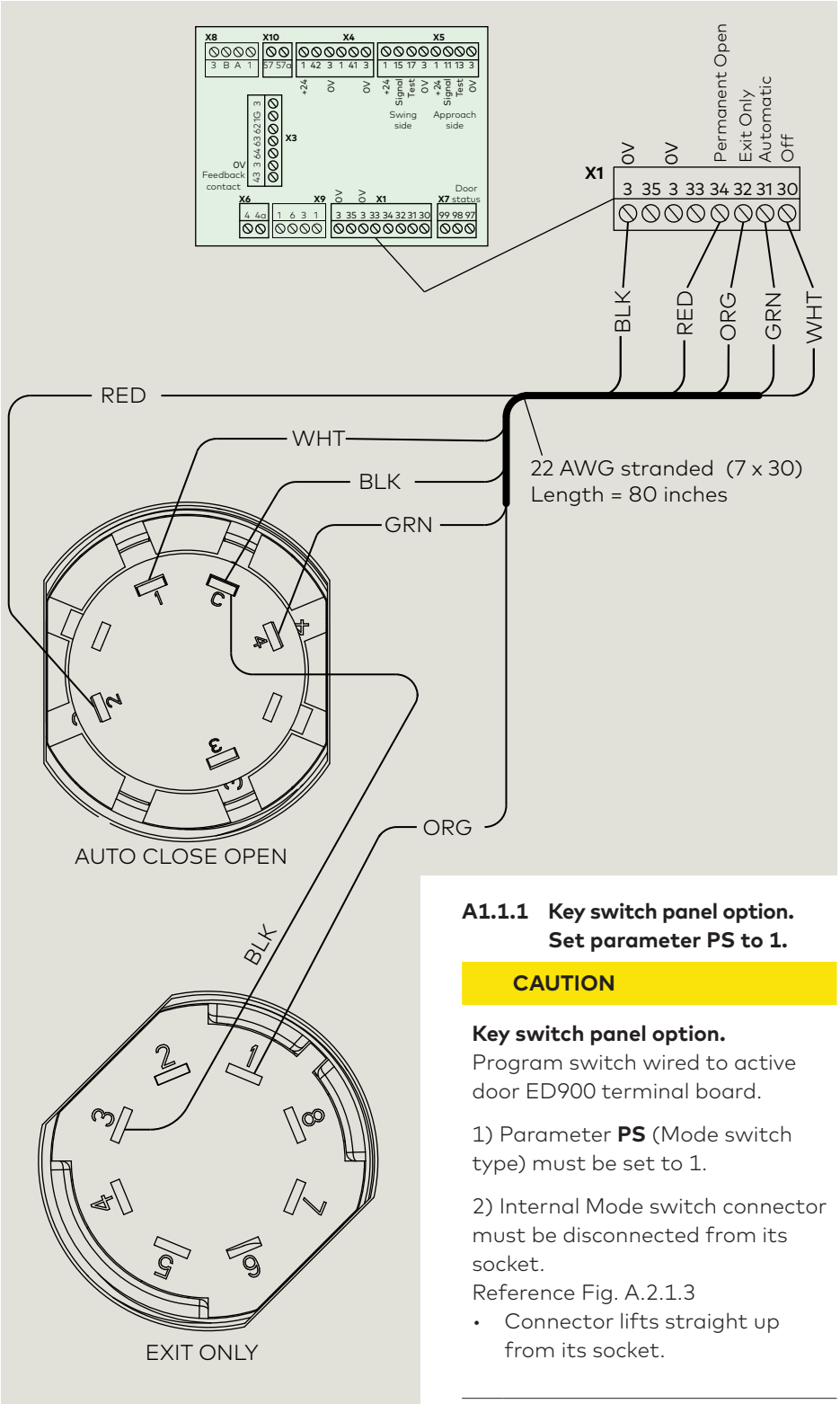
- 5.3 in-lb + 0.9 in-lb [0.6 Nm +0.1 Nm]

Appendix A - Wiring diagrams

A1.1 Key Switch Panel with RJ45 connector

Fig. A1.1.1 Key switch panel

Fig. A1.1.2 Key switch panel wiring diagram, active door



A1.1.1 Key switch panel option. Set parameter PS to 1.

CAUTION

Key switch panel option.
Program switch wired to active door ED900 terminal board.

1) Parameter **PS** (Mode switch type) must be set to 1.

2) Internal Mode switch connector must be disconnected from its socket.
Reference Fig. A.2.1.3

- Connector lifts straight up from its socket.

A2.1 Key Switch Panel

Fig. A2.1.1 Key switch panel

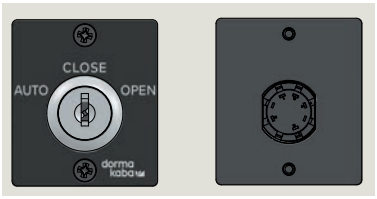
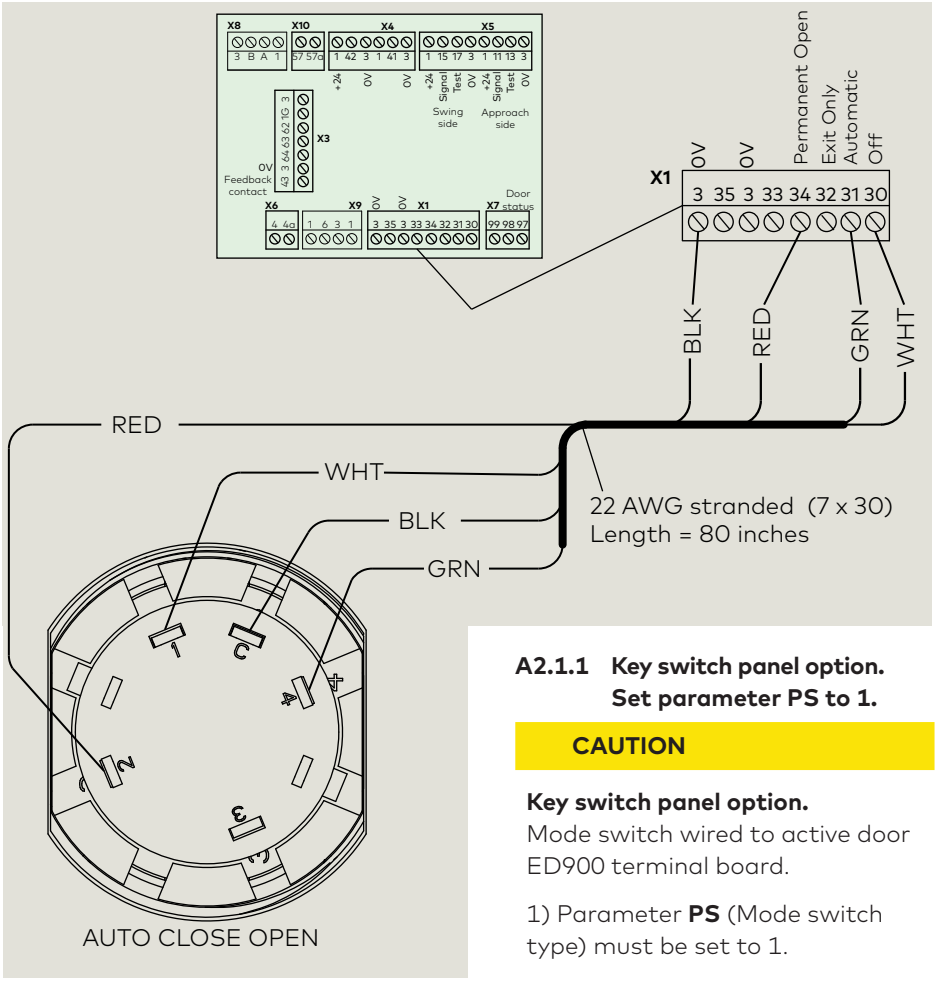


Fig. A2.1.2 Key switch panel wiring diagram, active door



A2.1.1 Key switch panel option. Set parameter PS to 1.

CAUTION

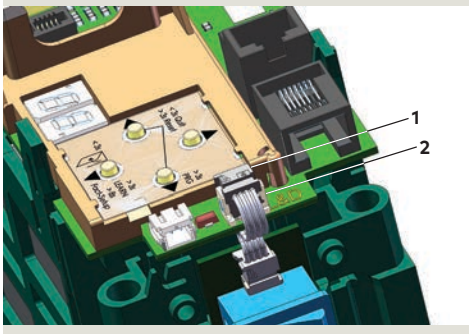
Key switch panel option.
Mode switch wired to active door ED900 terminal board.

1) Parameter **PS** (Mode switch type) must be set to 1.

2) Internal Mode switch connector must be disconnected from its socket.
Reference Fig. A.2.1.3

- Connector lifts straight up from its socket.

Fig. A.2.1.3 Program switch connector and socket



1 Program switch cable connector

2 Program switch socket

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