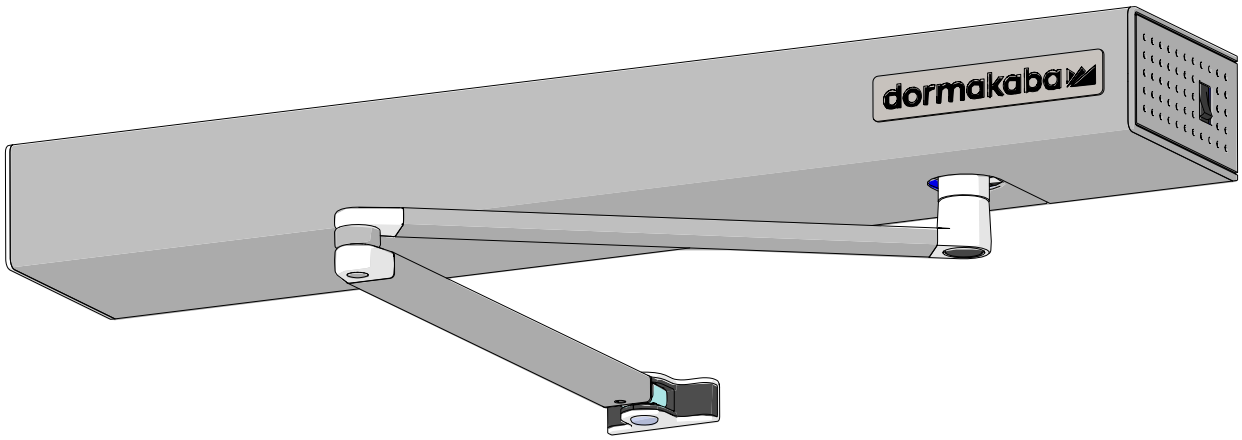


ED900

Low energy swing door operator

Installation Instructions

08125370 – 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 operators with fine covers used in single 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 (").

1.1.6 Building codes and standards.

ED900 installation: observe applicable national and local building codes.

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

NOTICE

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

1.1.6 Symbols used in these instructions.

⚠ WARNING

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

CAUTION

This symbol warns of a potentially unsafe procedure or situation.

NOTICE

Draws attention to important information presented in this document.

TIPS AND RECOMMENDATIONS

Clarifies instructions or other information presented in this document.

2 Product description

2.1 Product description

2.1.1 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.
- The brake is used during door hold open time.

⚠ WARNING

To reduce risk of injury to persons, use the 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.

2.1.3 ED900 door specifications.

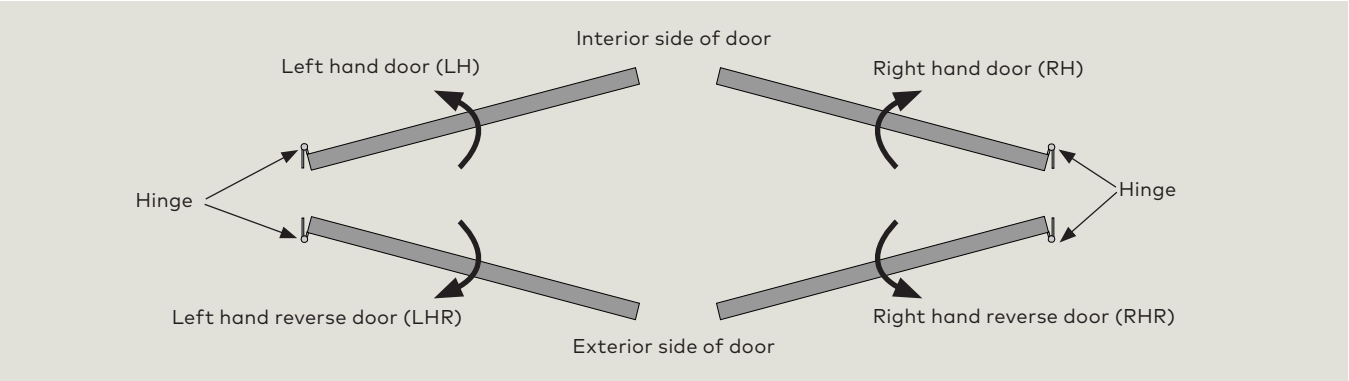
Reference Para. 6.2, Operating specifications.

2.1.4 ED900 hardware as shipped.

Reference Chapter 5 for ED900 hardware overview.

2.2 Handing of door

2.2.1 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!

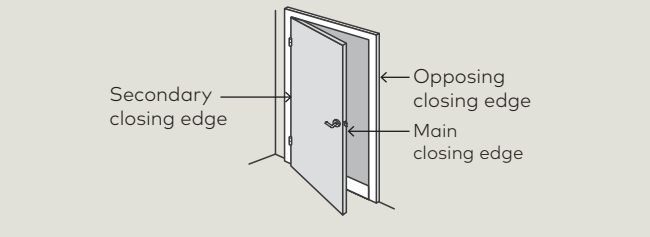
⚠ WARNING

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!

Fig. 3.2 Push arm

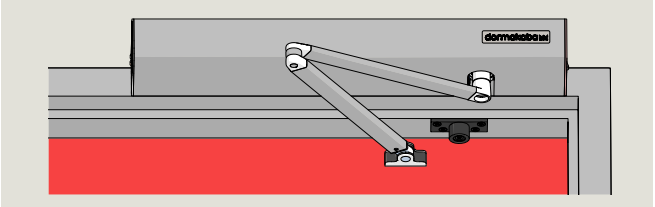
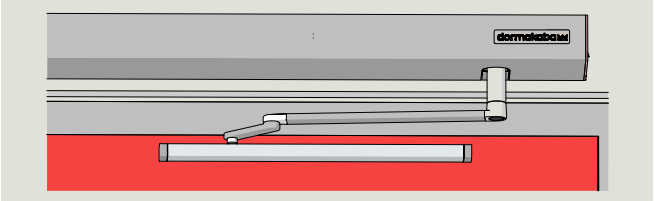


Fig. 3.3 Pull arm with CPD lever and track

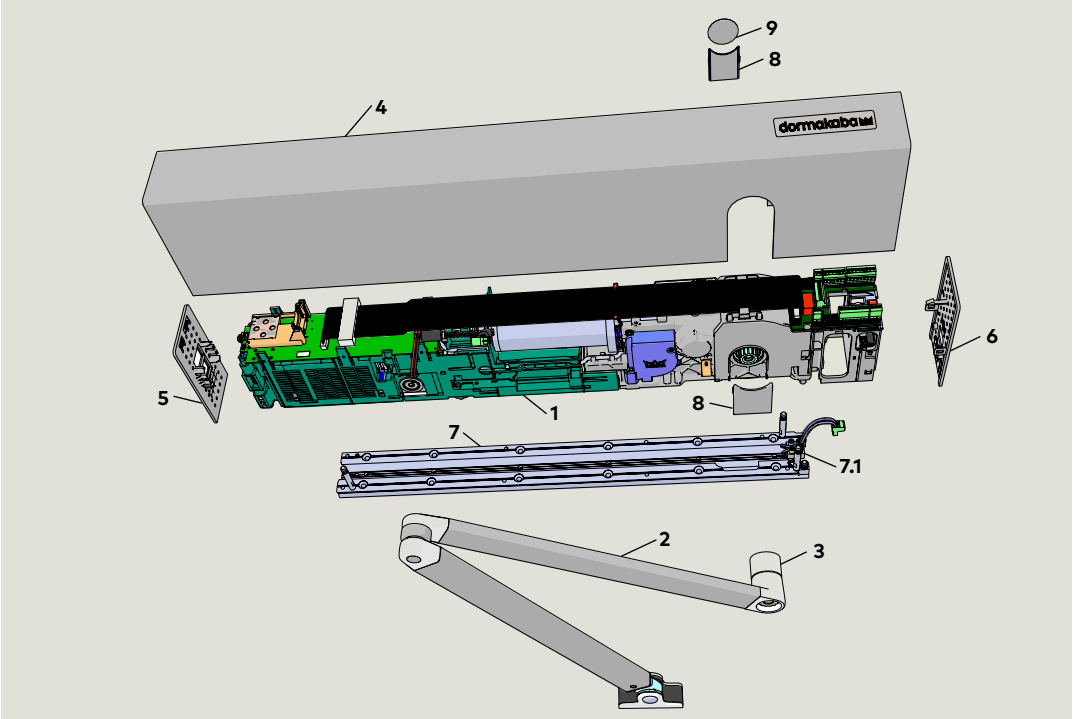


4 ED900 Product overview

4.1 ED900 push arm system

1 ED900 operator
2 J/pull arm assembly
3 Axle extension
4 Standard cover
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

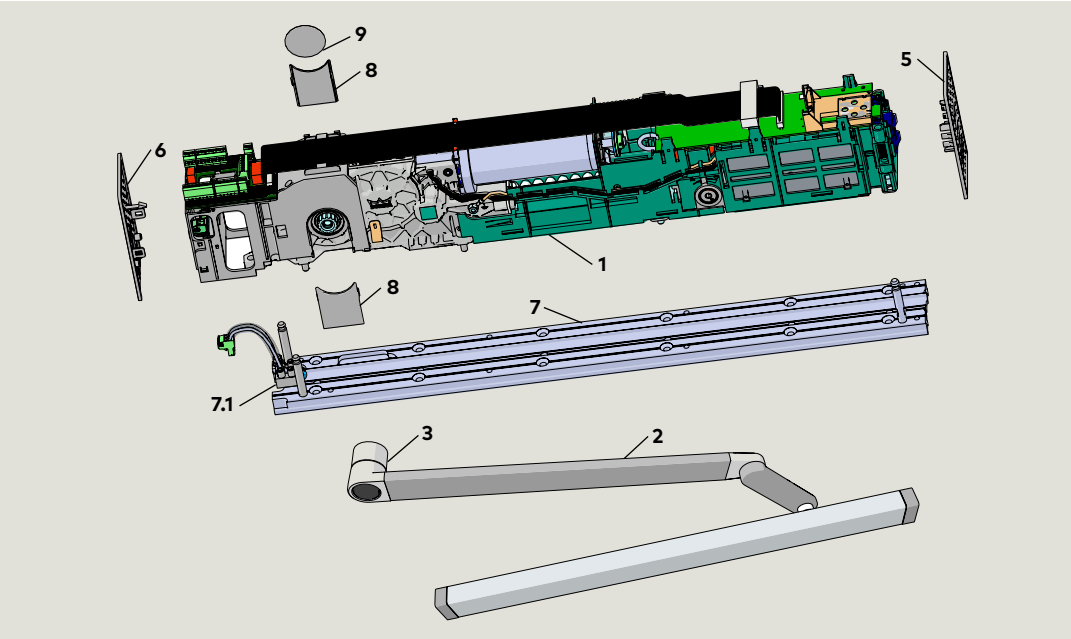
Fig. 4.1.1 RH push arm system example



4.2 ED900 pull arm system

1 ED900 operator
2 T275/track/arm assembly
3 Axle extension
4 Standard cover
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

Fig. 4.2.1 RH pull arm with CPD lever system example



4.3 Single door configuration examples

Fig. 4.3.1 LH push

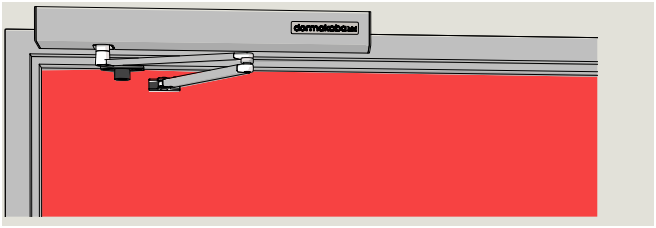


Fig. 4.3.2 LH deep pull

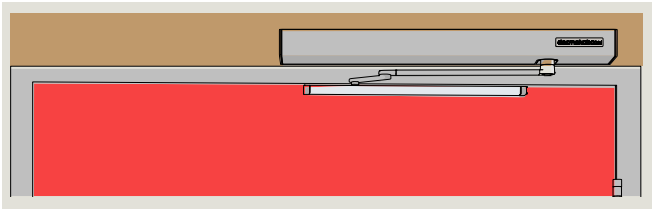


Fig. 4.3.3 LH pull as a push

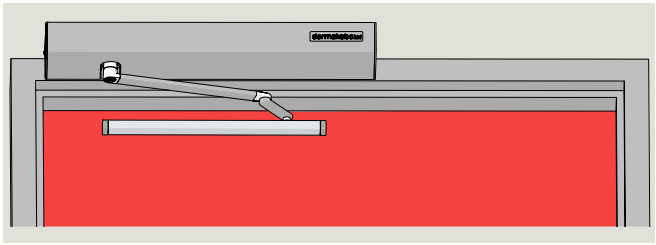


Fig. 4.3.4 RH push

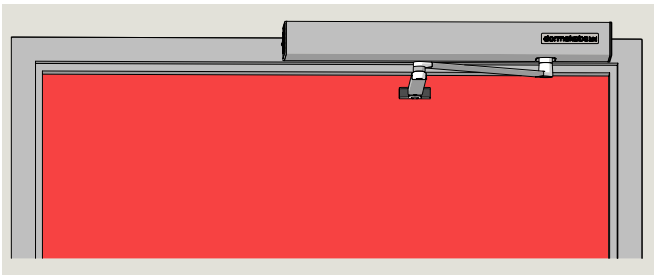


Fig. 4.3.5 RH deep pull

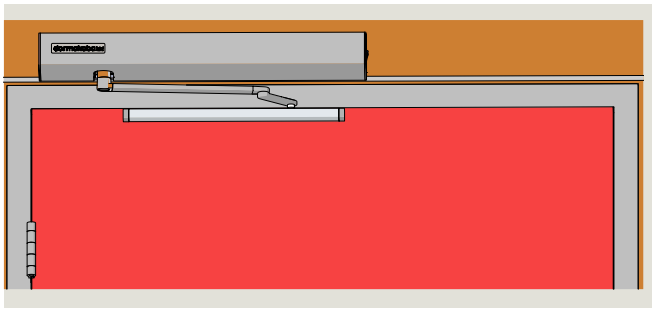
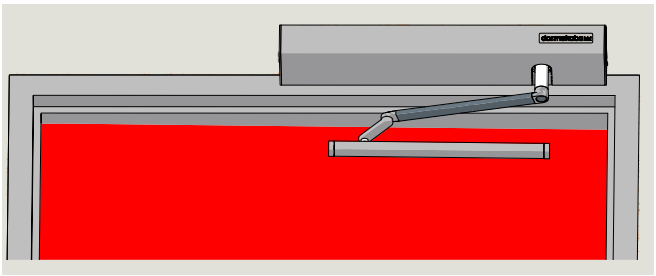


Fig. 4.3.6 RH pull as a push



4.4 Double door configuration examples

Fig. 4.4.1 Push

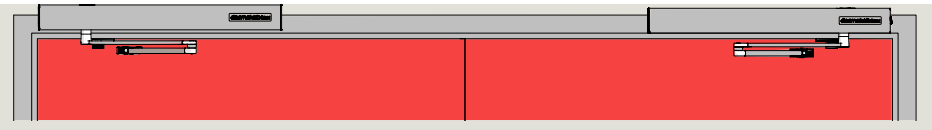


Fig. 4.4.2 Deep pull

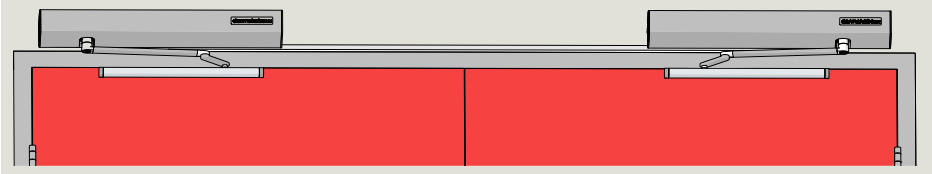
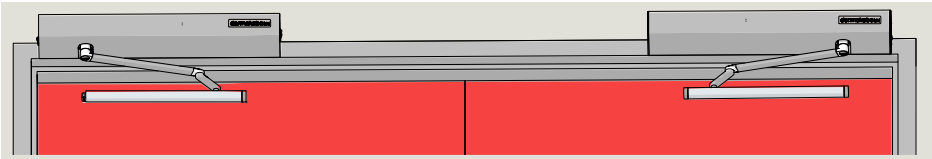


Fig. 4.4.3 Pull as push



4.5 Double egress door configurations

Fig. 4.5.1 LH double egress

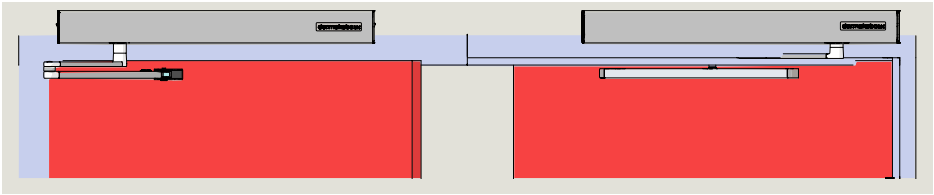
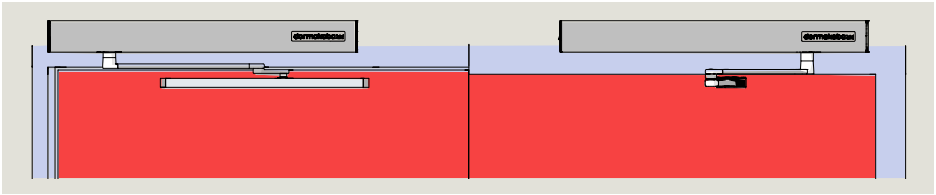


Fig. 4.5.2 RH double egress



4.6 Single door full length cover options

Fig. 4.6.1 LH pull

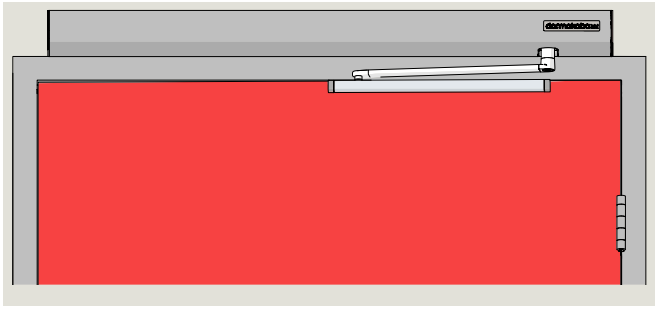


Fig. 4.6.2 RH pull

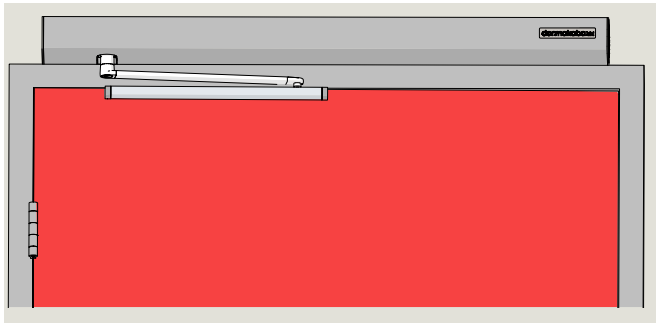


Fig. 4.6.3 RH deep pull

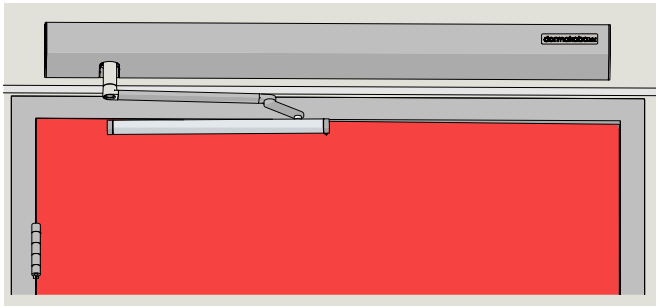


Fig. 4.6.4 LH deep pull

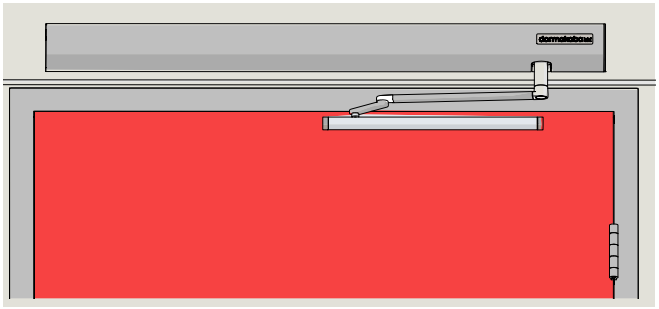


Fig. 4.6.5 LH pull as push

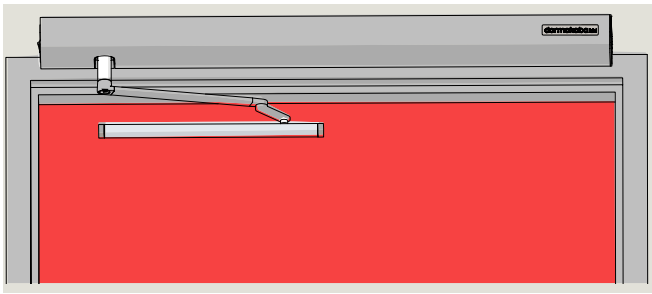


Fig. 4.6.6 LH push

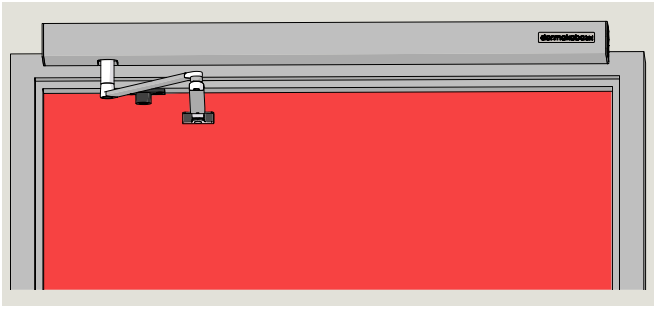


Fig. 4.6.7 RH push

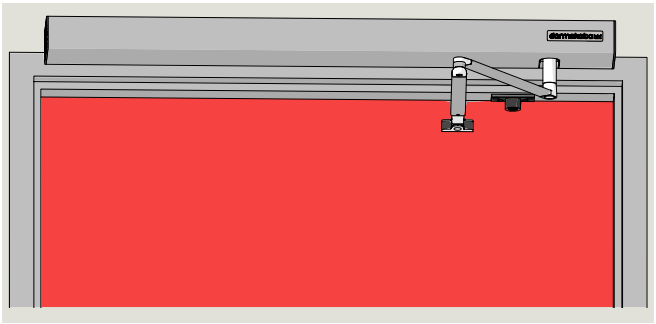


Fig. 4.6.8 RH deep push

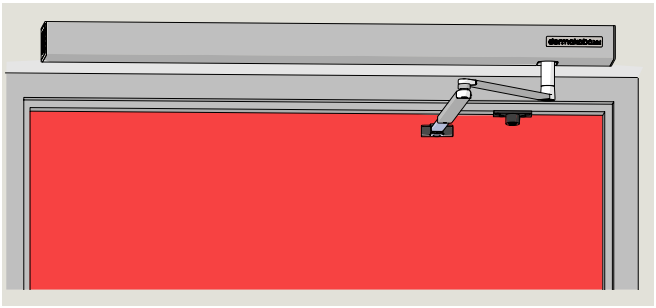


Fig. 4.6.9 LH deep push

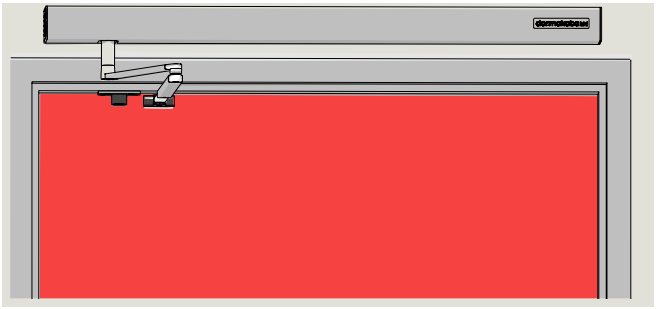
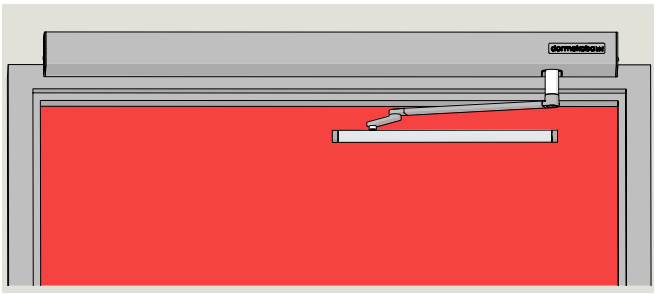


Fig. 4.6.10 RH pull as push



4.7 Double door full length cover options

Fig. 4.7.1 Pair pull – track mount installation

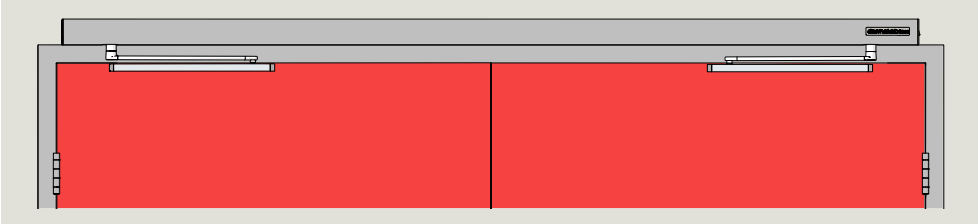


Fig. 4.7.2 Pair deep pull

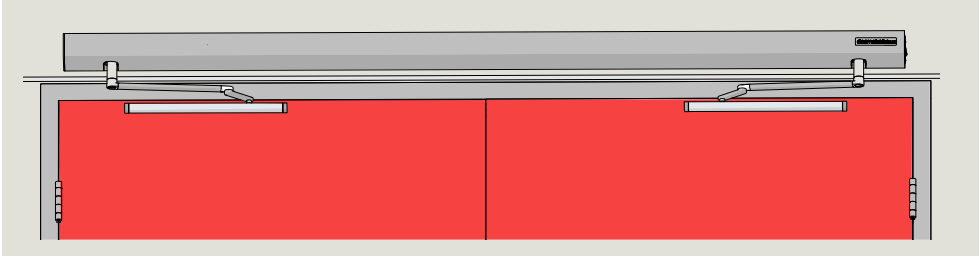


Fig. 4.7.3 Pair push

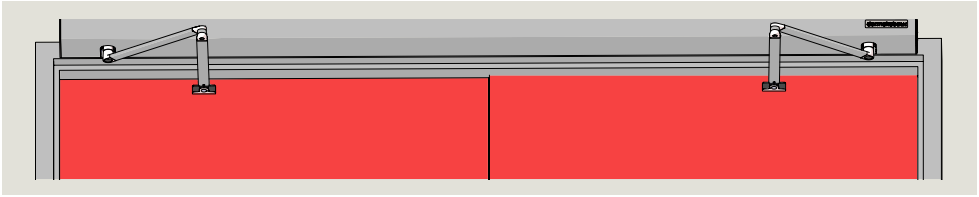


Fig. 4.7.4 Pair deep push

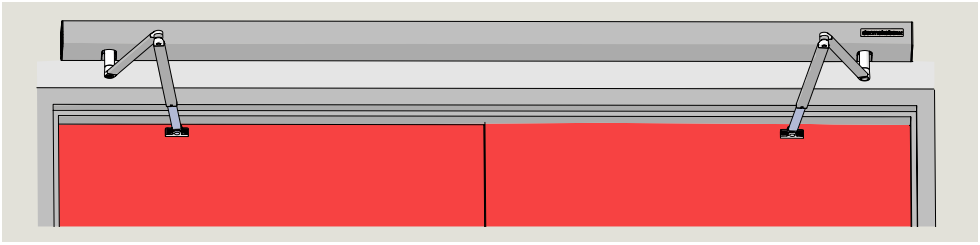


Fig. 4.7.5 Pair pull as push

4.8 Double egress door full length cover options

Fig. 4.8.1 LH double egress

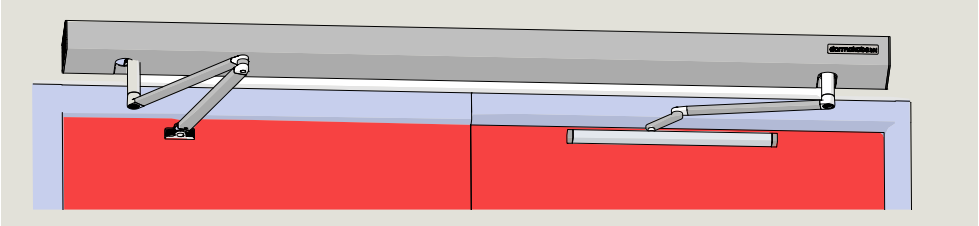
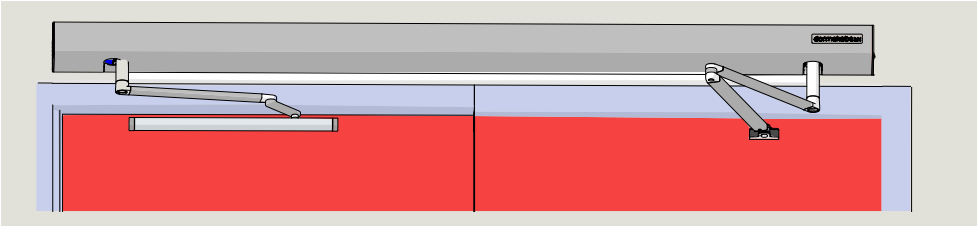


Fig. 4.8.2 RH double egress



5 ED900 hardware

5.1 ED900 operator and mounting plate

Fig. 5.1.1 ED900 operator and mounting plate

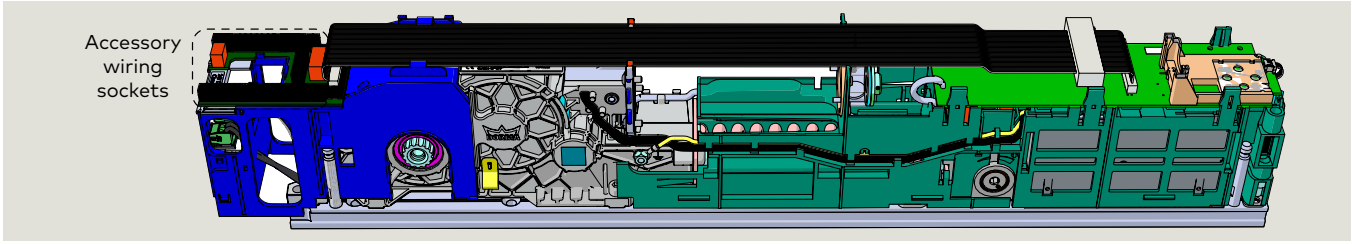
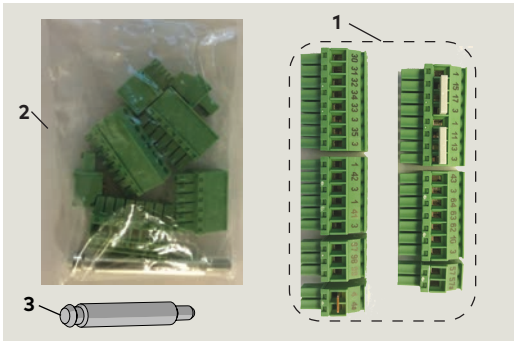


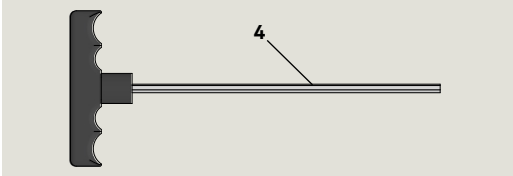
Fig. 5.1.2 Accessory connectors



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

* Included with operator

Fig. 5.1.3 5 mm T-handle hex key



TIPS AND RECOMMENDATIONS

Connectors for accessory wiring.

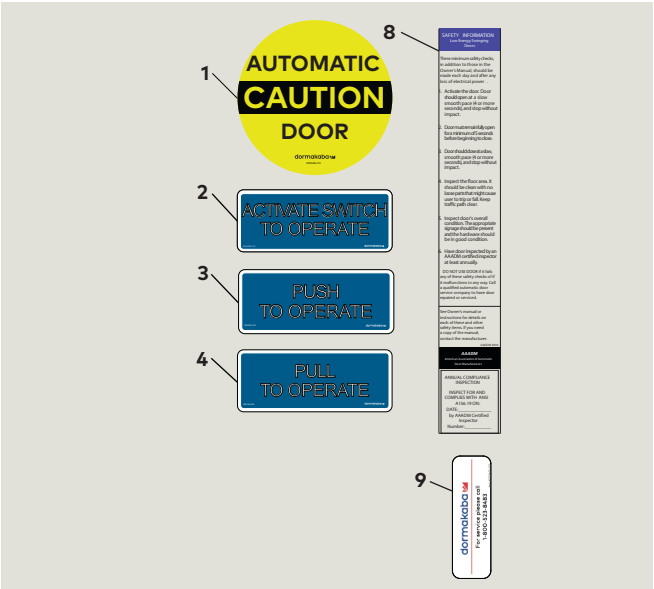
- Reference Chapter 7, ED900 terminal board interfaces, for connector wiring.

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

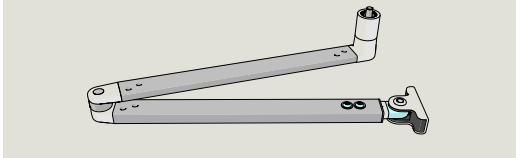
Assembly #	Item #	Quantity
HK3137-010 Single door low energy (LE) decal kit	9	1
	8	1
	4	1
	3	1
	2	1
	1	2
Assembly #	Item #	Quantity
HK3137-030 Pair door low energy (LE) decal kit	9	2
	8	1
	4	2
	3	2
	2	4
	1	4

Fig. 5.2.1 Kit, ED operator label low energy



5.3 Arm assemblies

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



1 Drive arm
2.1 Adjustment shaft tube, 225 mm
2.2 Adjustment shaft, 225 mm
3 Shoe
4 Axle extension
5.1 Adjustment shaft tube, 450 mm
5.2 Adjustment shaft, 450 mm

Fig. 5.3.2 J12 – Splined push arm assembly, 300 mm, 8" - 12" reveal

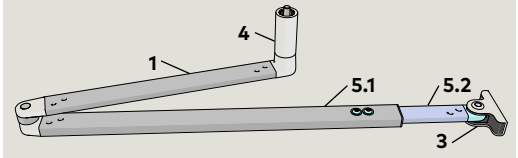
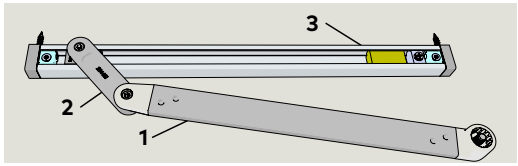
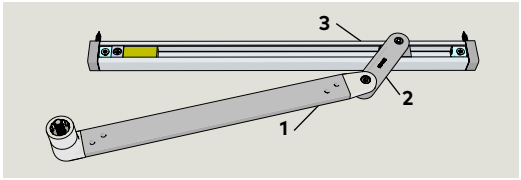


Fig. 5.3.3 T275 – Splined pull arm assembly, LH, 1 - 2 3/4" reveal



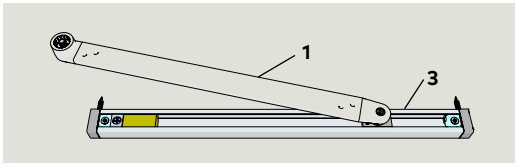
1 Drive arm
2 CPD lever
3 Track

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



1 Drive arm
2 CPD lever
3 Track

Fig. 5.3.5 T – Splined pull arm assembly, 0 - 1" reveal



5.4 ED900 axle extension kits

Fig. 5.4.1 [20 mm] HC4679-001

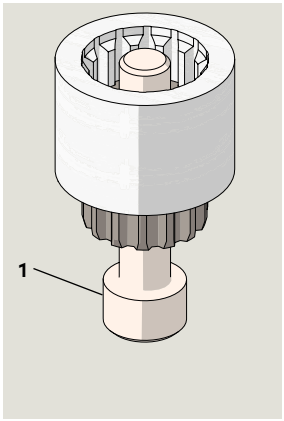


Fig. 5.4.2 [30 mm] HC4679-002

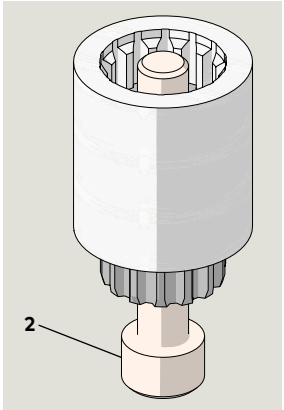
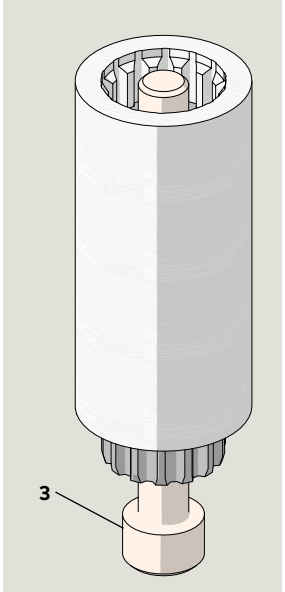


Fig. 5.4.3 [60 mm] HC4679-003



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

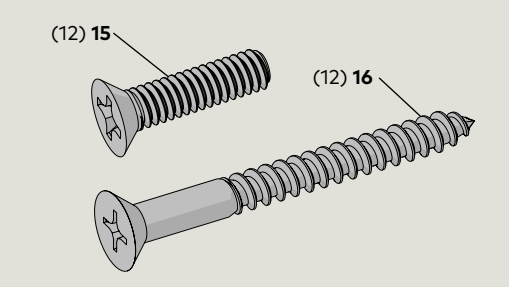
5.5 ED900 mounting plate screw kit

Fig. 5.5.1 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



5.6 ED900 arm mounting screw packs

Fig. 5.6.1 Two sets -Push arm screw pack

9 Push arm screw kit 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

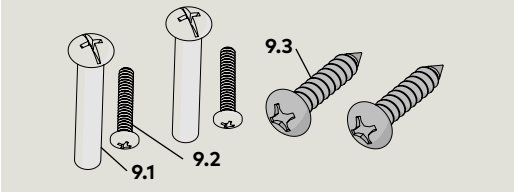


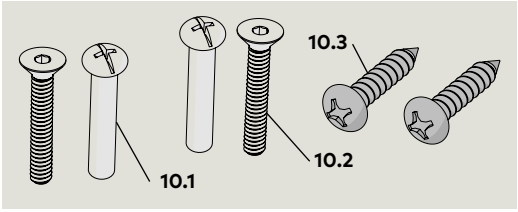
Fig. 5.6.2 Two sets -Pull arm screw pack

10 Pull arm screw kit 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

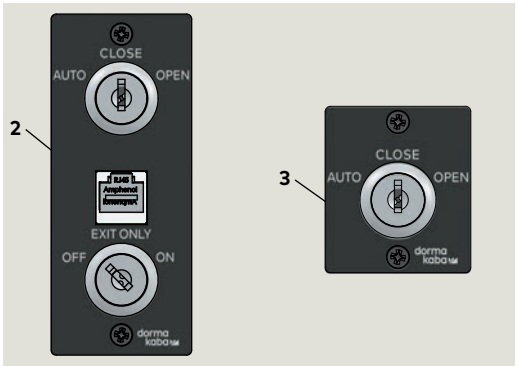


5.7 Optional key switch panels

Fig. 5.7.1 Key switch panels

2 Key switch panel, RJ45, HX4604-21C

3 Key switch panel HX4604-11C

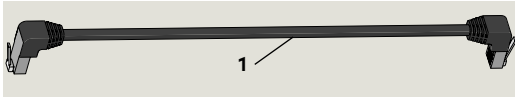


TIPS AND RECOMMENDATIONS

- 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. 5.7.2 Communication cable, 90 degree RJ45



1 Comm cable HX4662-00X

5.8 ED900 fine cover kits

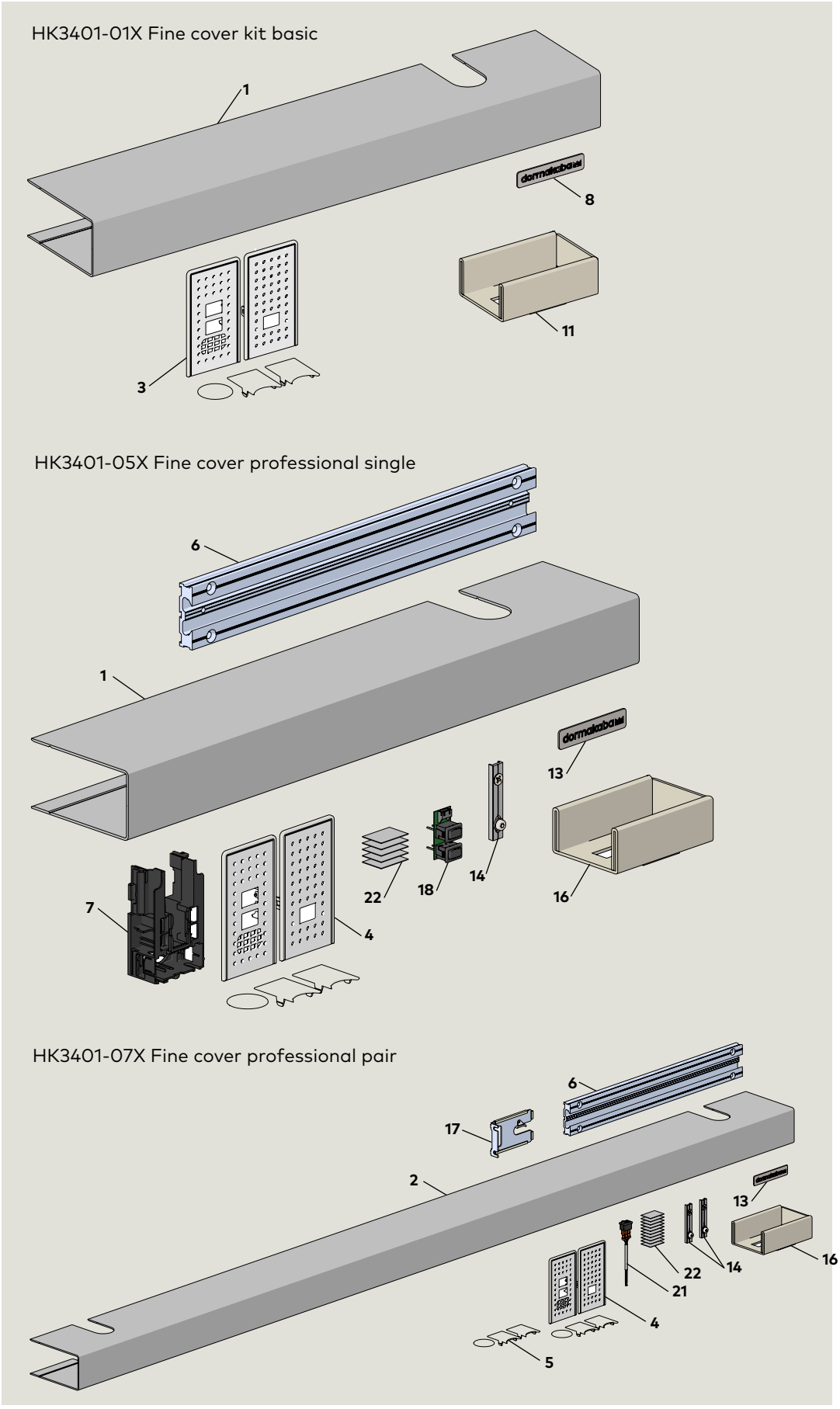
5.8.1 Fine cover kits.

- HK3401-01X Fine cover kit basic.
- HK3401-05X Fine cover professional single.
- HK3401-07X Fine cover professional pair.

Table 5.8.1 Fine cover kit part numbers

No.	Part number and description		Quantity		
			HK3401-01X	HK3401-05X	HK3401-07X
1	HC3459-01X	Fine cover single	1	1	
2	HC3459-03X	Fine cover pair			1
3	HC3466-01X	ED100/ED250 end cap set	1		
4	HC3466-01X	ED100/ED250 end cap set		1	1
5	HC3466-02X	Spindle cover set		1	1
6	HC3468-010	Backplate, ED operator, FC ext.		1	1
7	HC3481-010	ED100/ED250 professional cover bracket		1	
8	HD4613-020	Logo plate dormakaba ED swing	1	1	1
9					
10	DL4613-001	ED FC logo template instructions	1		
10	HC3494-010	ED100/ED250 cable tie			2
11	HP4613-001	ED FC logo placement template	1		
12	HL4613-001	ED FC logo template instructions - not shown	1	1	
13	HD4613-020	Logo plate dormakaba ED swing		1	1
14	HK3491-001	Backplate connect kit		1	2
15	DL4613-001	ED FC logo template instructions		1	1
16	HP4613-001	ED FC logo placement template		1	1
17	HS3487-010	ED between support assembly			1
18	HX3482-010	ED100/ED250 mode switch		121	
19	HX3484-030	ED power connect cable, 3400 mm			1
20	HX3485-030	ED sync cable, 2030 mm			1
21	HX3486-030	ED Mode switch 3 position			1

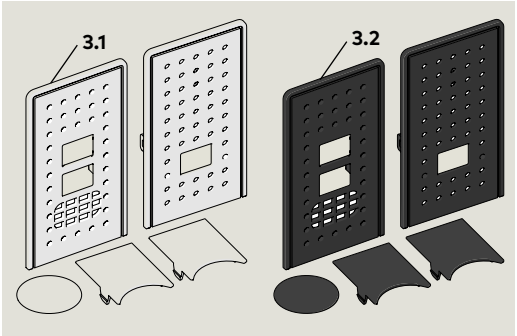
Fig. 5.8.1 Fine cover kit, basic HK3401-01X



5.9 Fine cover kit hardware

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 End cap sets



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. 5.9.2 Cover bracket

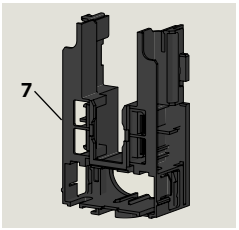
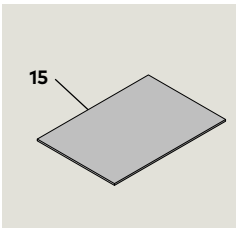
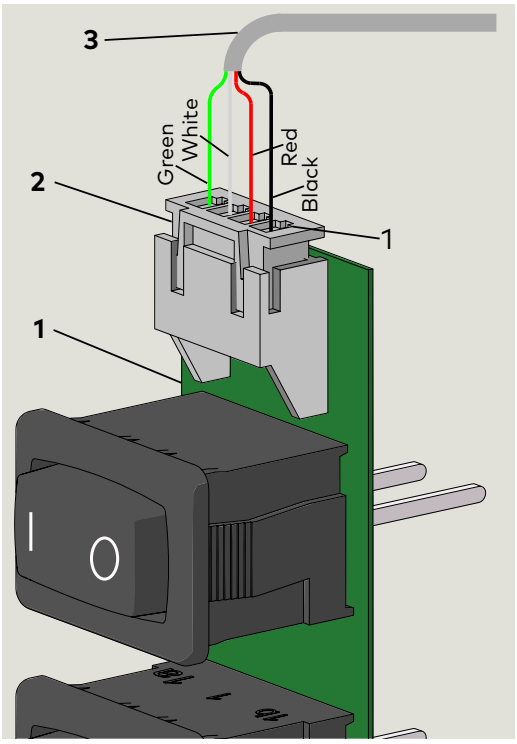


Fig. 5.9.3 Wire retainer



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

Fig. 5.9.4 Mode switch



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. 5.9.5 Backplate connect kit HK3491-001

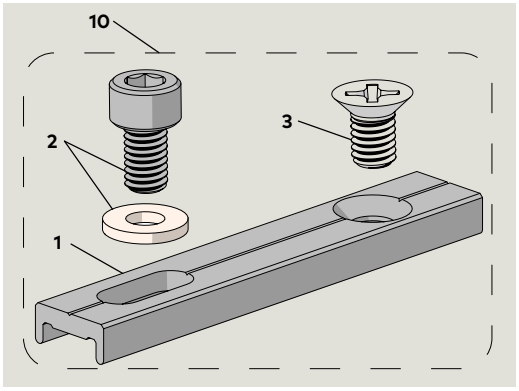


Fig. 5.9.6 Spindle cap sets

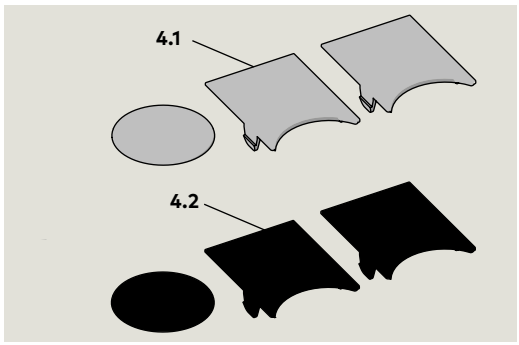


Fig. 5.9.7 dormakaba logo plate

5.10 Conduit box and wiring kit – options

Fig. 5.10.1 Conduit box

4 Conduit box
HX3501-001

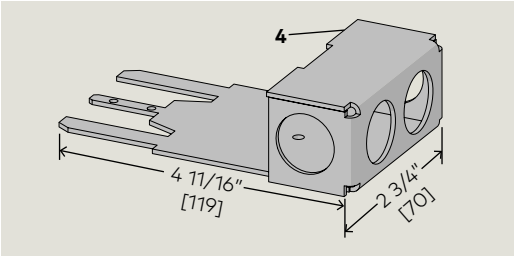
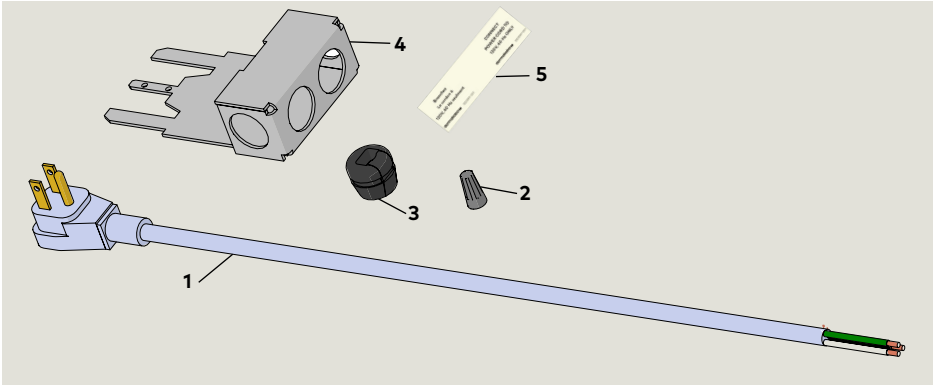


Fig. 5.10.2 Power cord wiring kit HK3597-010

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



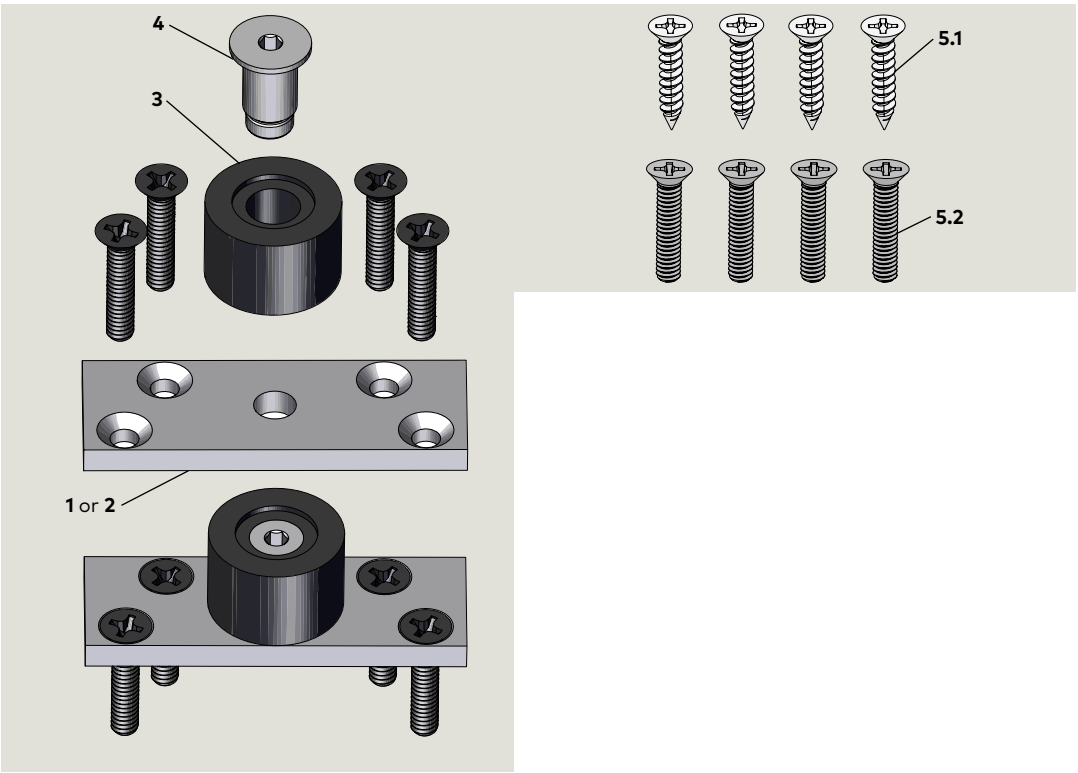
5.11 Push arm door stop - option

Fig. 5.11.1 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 7, Terminal board interfaces

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
Mode 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 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	1 3/16"
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"

7 ED900 terminal board interfaces

TIPS AND RECOMMENDATIONS

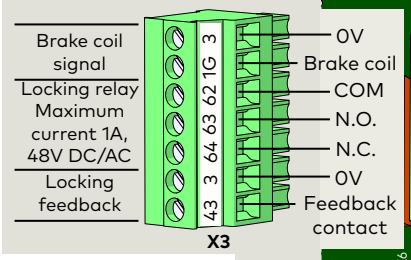
Electrical connectors are shipped in a bag with the ED900 operator.
Reference Chapter 5, Para. 5.1

NOTICE

X5 connector, with 2 jumpers installed, must be inserted into its socket.
- Remove jumpers if safety sensors are used.

X6 connector, with jumper installed, must be inserted into its socket.
- Remove jumper if Emergency close is used.

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



Reference Chapter 24.7, Fig. 24.7.8 for brake coil wiring.

Fig. 7.1 Terminal board electrical connections

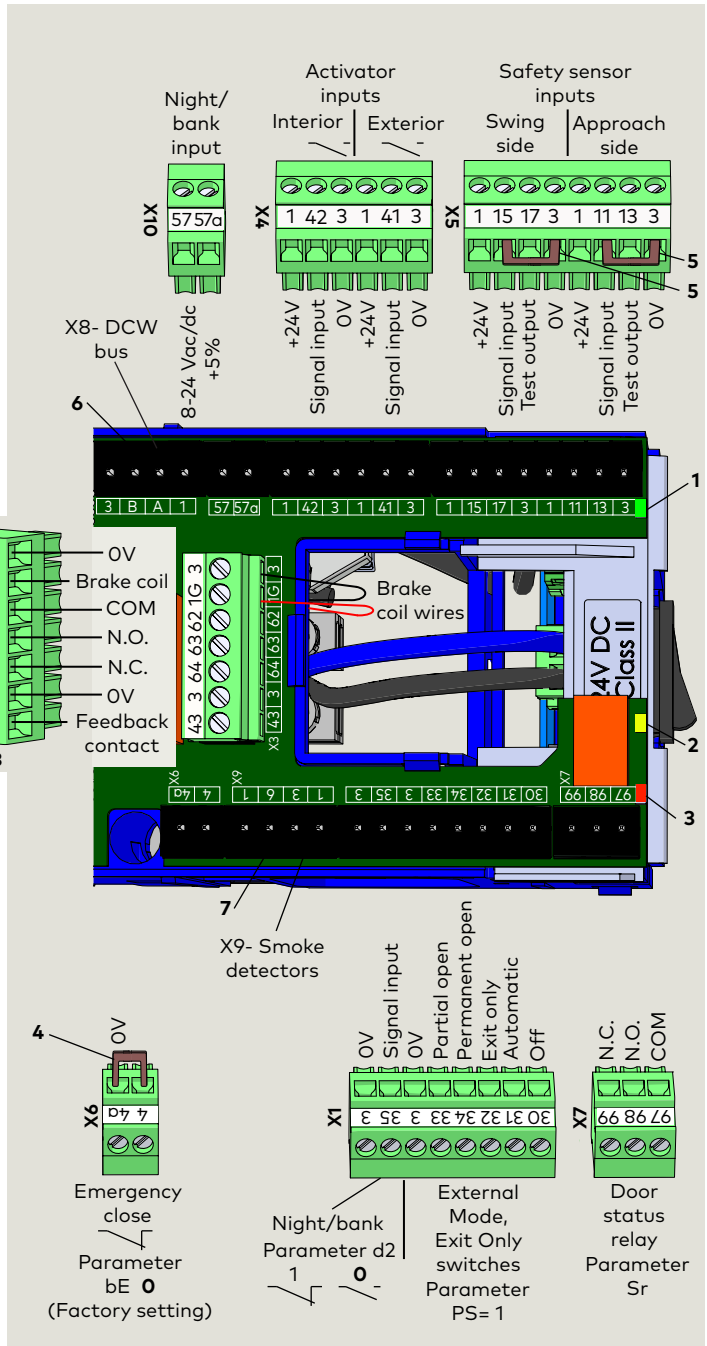
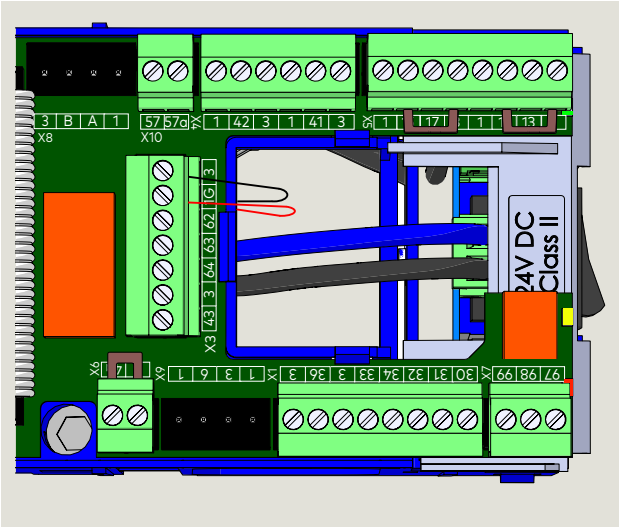


Fig. 7.2 Connector installation on ED900 terminal board



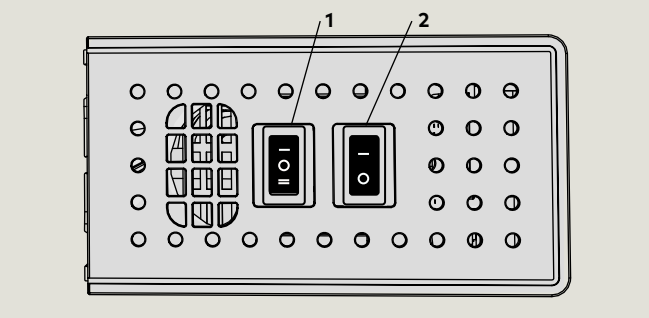
TIPS AND RECOMMENDATIONS

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

8 Mode, Exit Only switch panel

8.1 Mode switch and Exit Only switch panel

Fig. 8.1.1 ED operator fine cover



1 Mode switch, 3 position

2 Exit Only switch, 2 position

8.1.1 Mode switch positions.

Fig. 8.1.2 Auto

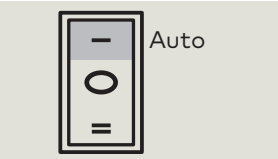
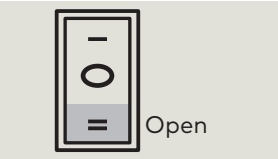


Fig. 8.1.3 Close

Fig. 8.1.4 Open



8.1.2 Exit Only switch positions.

Fig. 8.1.5 On

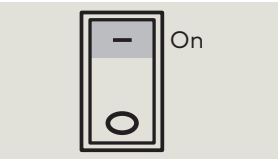


Fig. 8.1.6 Off

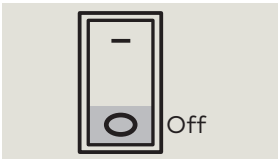


Fig. 8.1.7 Optional key switch panels

8.1.3 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. 3.4.2).
   Door will remain at full open position for not less than 5 seconds.
3. With push/pull actuation of door (Para. 7.2.4).
   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.

8.1.4 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.

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".

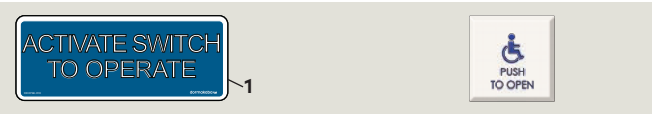
10.1.4 Push/Pull used to initiate door operation.

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.

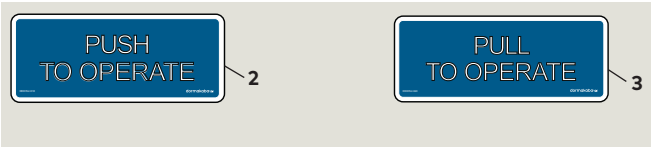
Fig. 10.1.1 AUTOMATIC CAUTION DOOR decal

Fig. 10.1.2 ACTIVATE SWITCH TO OPERATE decal



1 Activate Switch to Operate

Fig. 10.1.3 PUSH TO OPERATE, PULL TO OPERATE decals

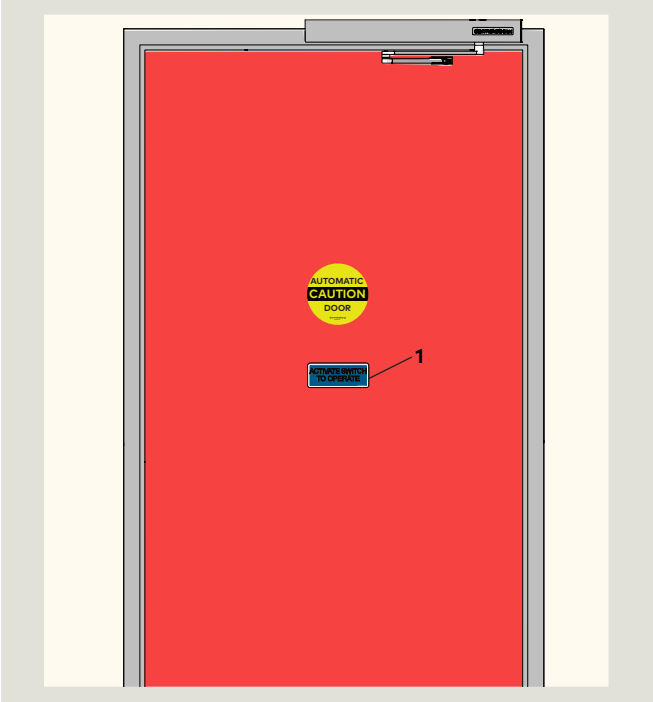


2 Push to Operate

3 Pull to Operate

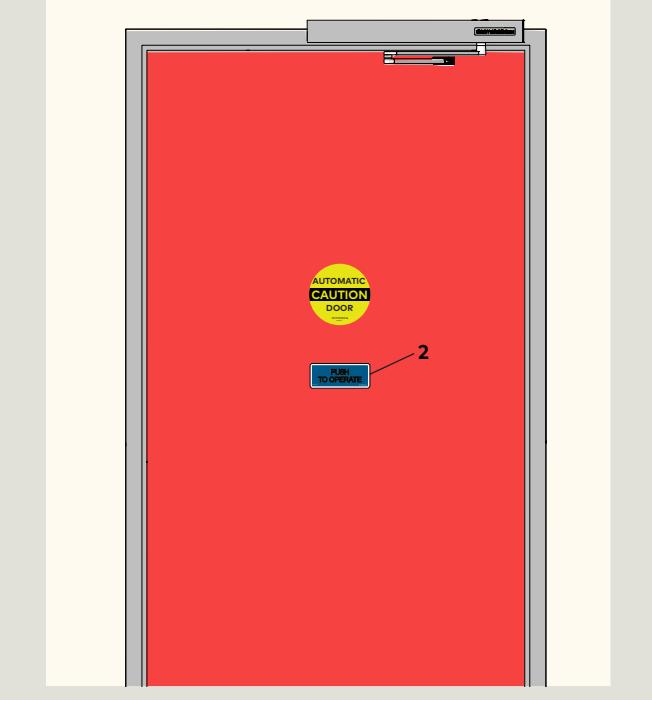
10.2 Door signage, low energy single swing door

Fig. 10.2.1 Knowing act device initiation of door operation



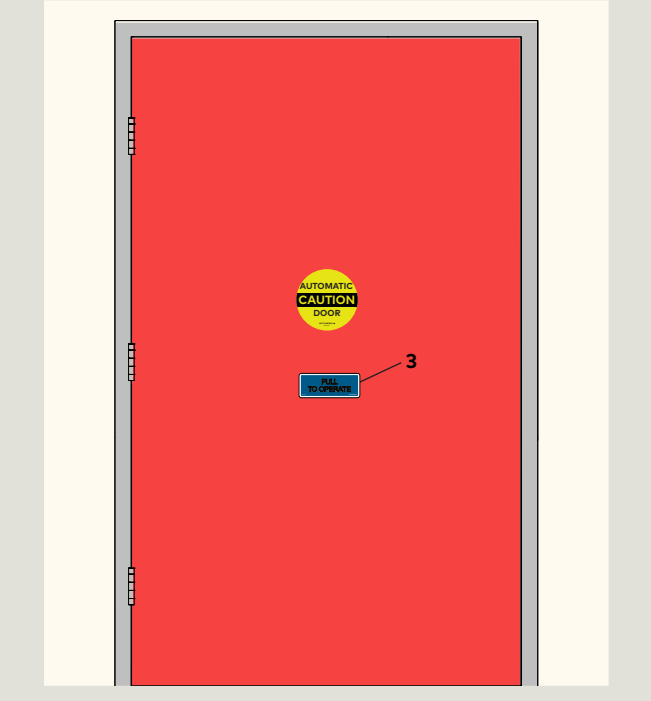
1 Activate Switch to Operate

Fig. 10.2.2 Push/Pull initiation of door operation Push to Operate



2 Push to Operate

Fig. 10.2.3 Push/Pull initiation of door operation Pull to Operate

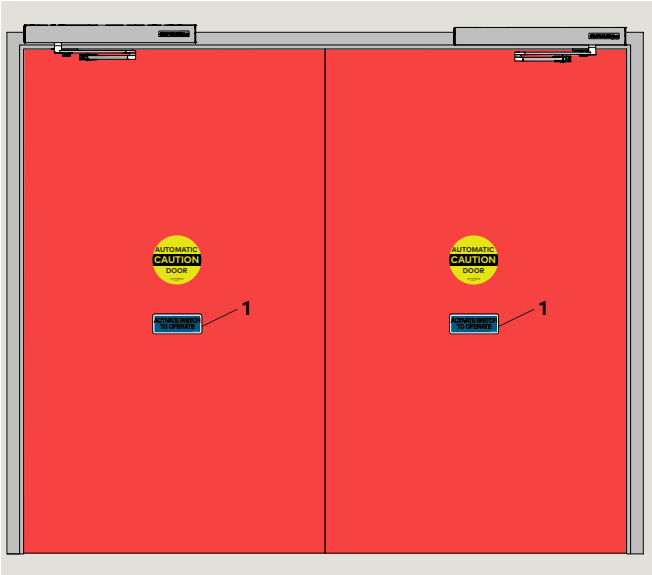


3 Pull to Operate

10.3 Door signage, low energy double swing door

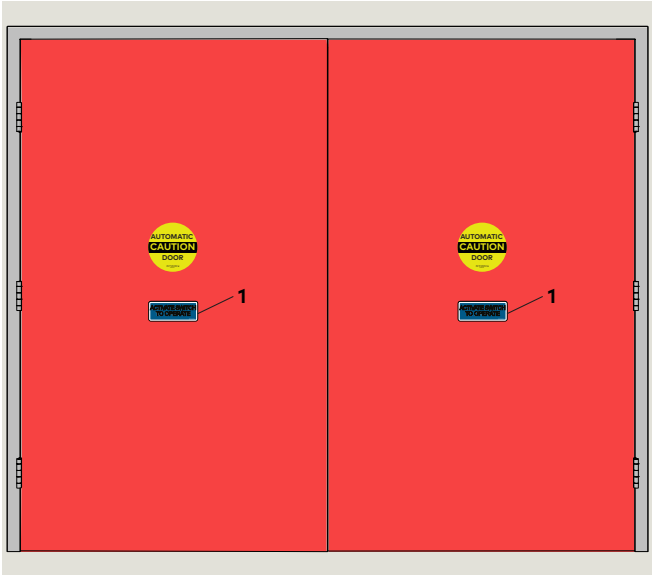
10.3.1 Knowing act switch used to initiate door operation.

Fig. 10.3.1 Door push side



1 Activate Switch to Operate

Fig. 10.3.2 Door swing side



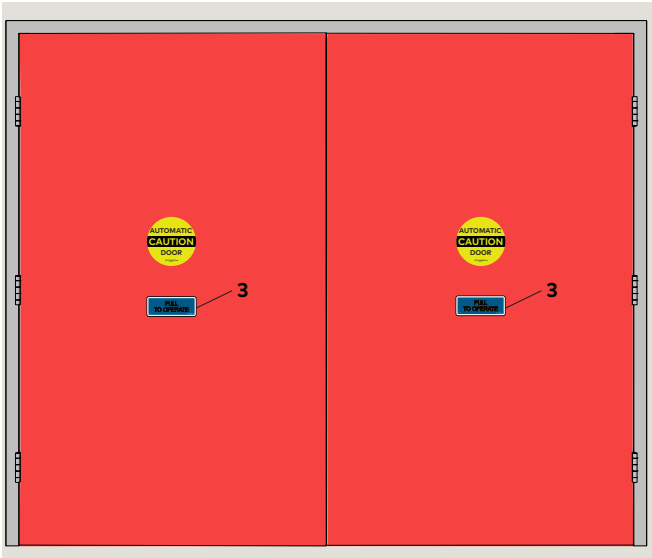
1 Activate Switch to Operate

10.3.2 Push/Pull used to initiate door operation.

Fig. 10.3.3 Door push side

2 Push to Operate

Fig. 10.3.4 Door swing side

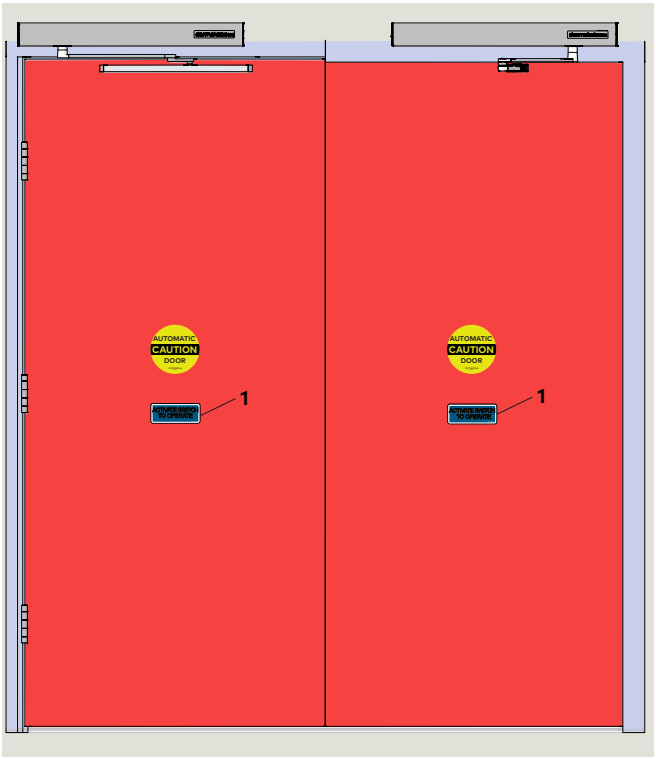


3 Pull to Operate

10.4 Door signage, low energy double egress swing door

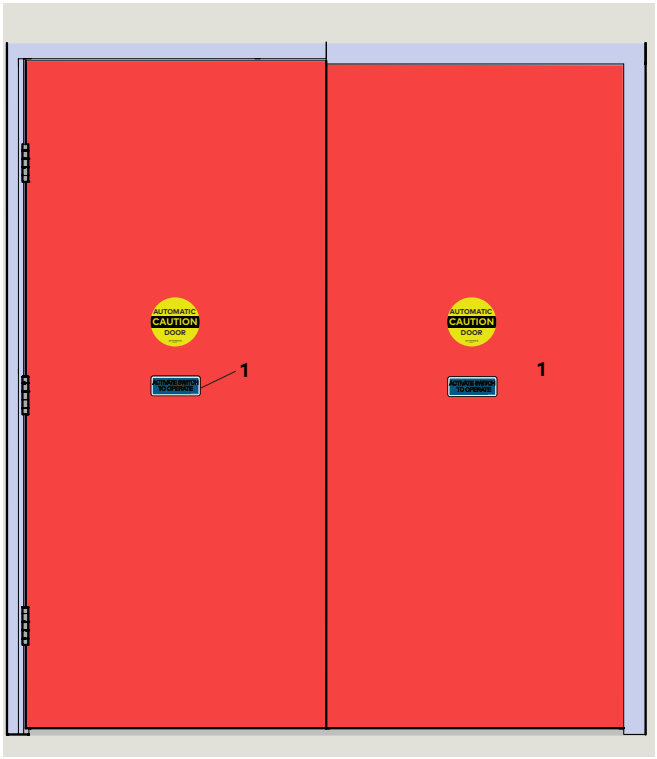
10.4.1 Knowing act switch used to initiate door operation.

Fig. 10.4.1 RH approach side



1 Activate Switch to Operate

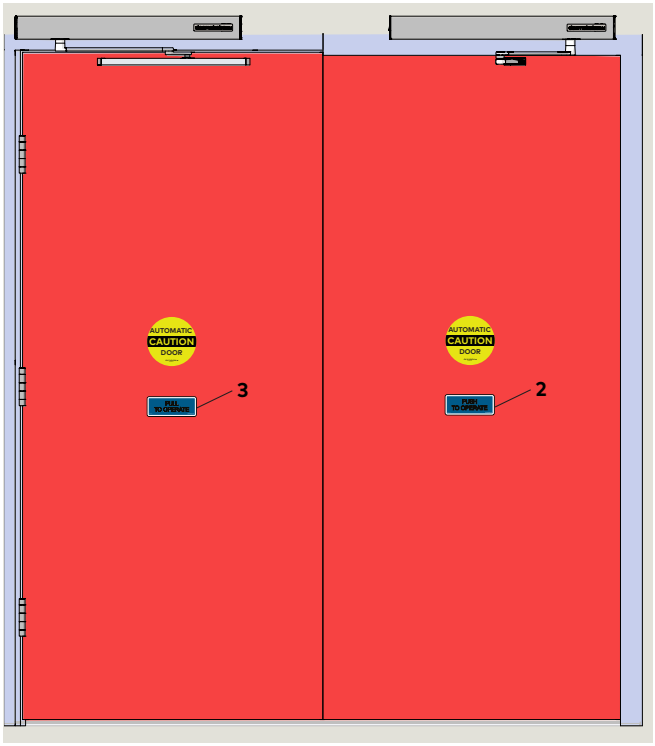
Fig. 10.4.2 RH swing side



1 Activate Switch to Operate

10.4.2 Push /pull used to initiate door operation.

Fig. 10.4.3 RH approach side



3 Pull to Operate **2** Push to Operate

Fig. 10.4.4 RH swing side

3 Pull to Operate **2** Push to Operate

10.5 Safety Information label, low energy swing doors

10.5.1 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.

10.5.2 Safety information label location.

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

10.5.3 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.

10.5.4 Additional annual compliance inspection labels.

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

Fig. 10.5.1 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. 10.5.2 Annual compliance inspection label

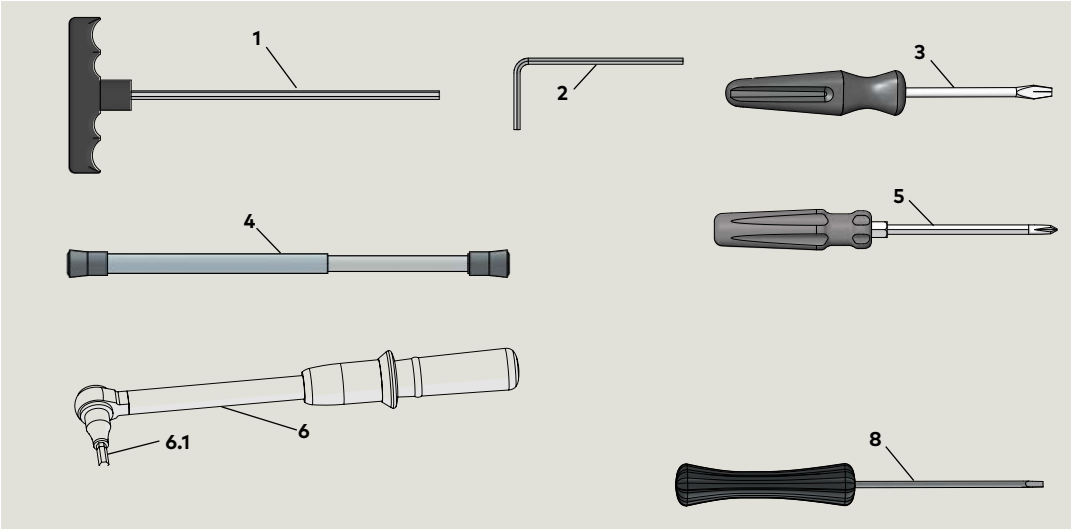
ANNUAL COMPLIANCE INSPECTION

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 overview

12.1 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.

12.1.1 Door frame and door.

CAUTION

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

12.1.2 Accessories

1. Verify accessories planned for or in place for the door.

TIPS AND RECOMMENDATIONS

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

12.1.3 ED900 mounting plate installation preparation.

CAUTION

Using applicable ED900 installation template (Chapter 13), 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.

12.1.4 ED900 mounting plate extension used with optional full door width cover.

TIPS AND RECOMMENDATIONS

Mounting plate extension is included for full width cover installation.

- Reference Chapters 15 and 17.

12.1.5 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.

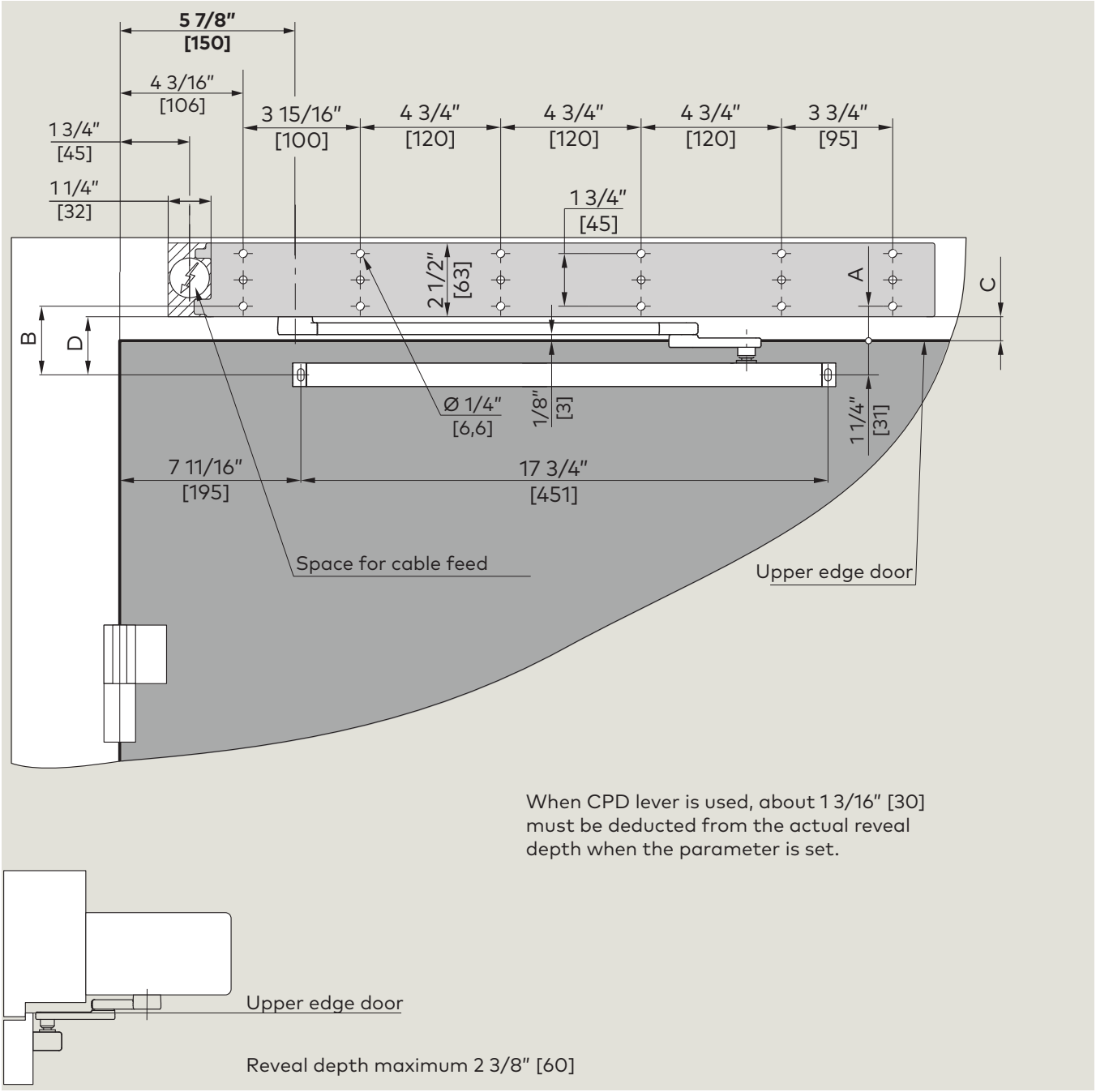
⚠ WARNING

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

13 ED900 installation templates

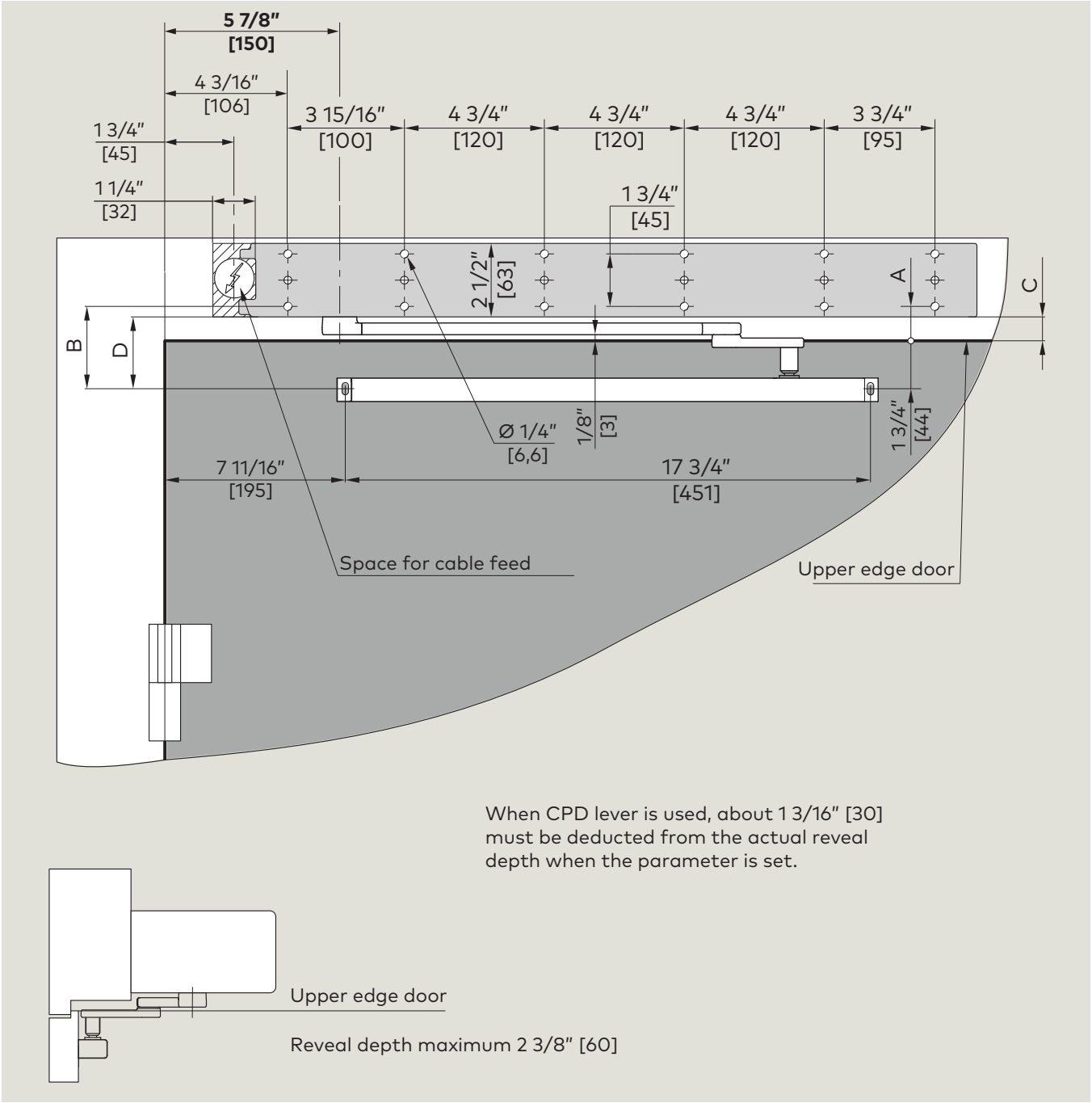
13.1 Installation templates – pull arm

Fig. 13.1.1 Assembly on hinge side, pull version with slide channel CPD and short pivot pin



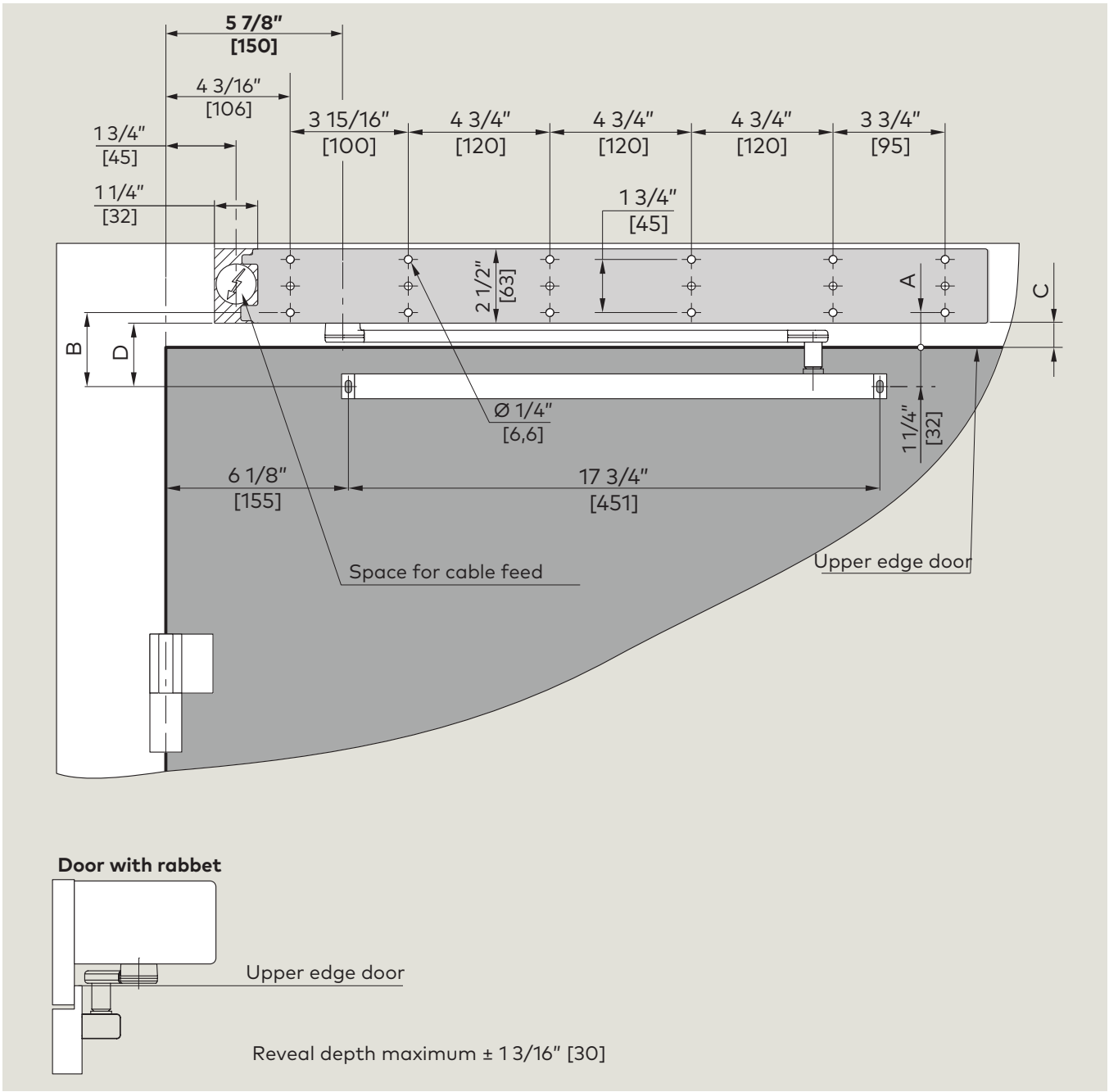
Axle extension		ED900	A		B		C		D	
			Inches	mm	Inches	mm	Inches	mm	Inches	mm
Standard		●	11/16	18	2	51	11/32	9	1 21/32	42
3/4"	[20]	●	1 1/2	38	2 13/16	71	1 1/8	29	2 7/16	62
1 3/16"	[30]	●	1 7/8	48	3 3/16	81	1 13/32	39	2 13/16	72
2 3/8"	[60]	●	3 1/16	78	4 3/8	111	2 23/32	69	4	102

Fig. 13.1.2 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 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

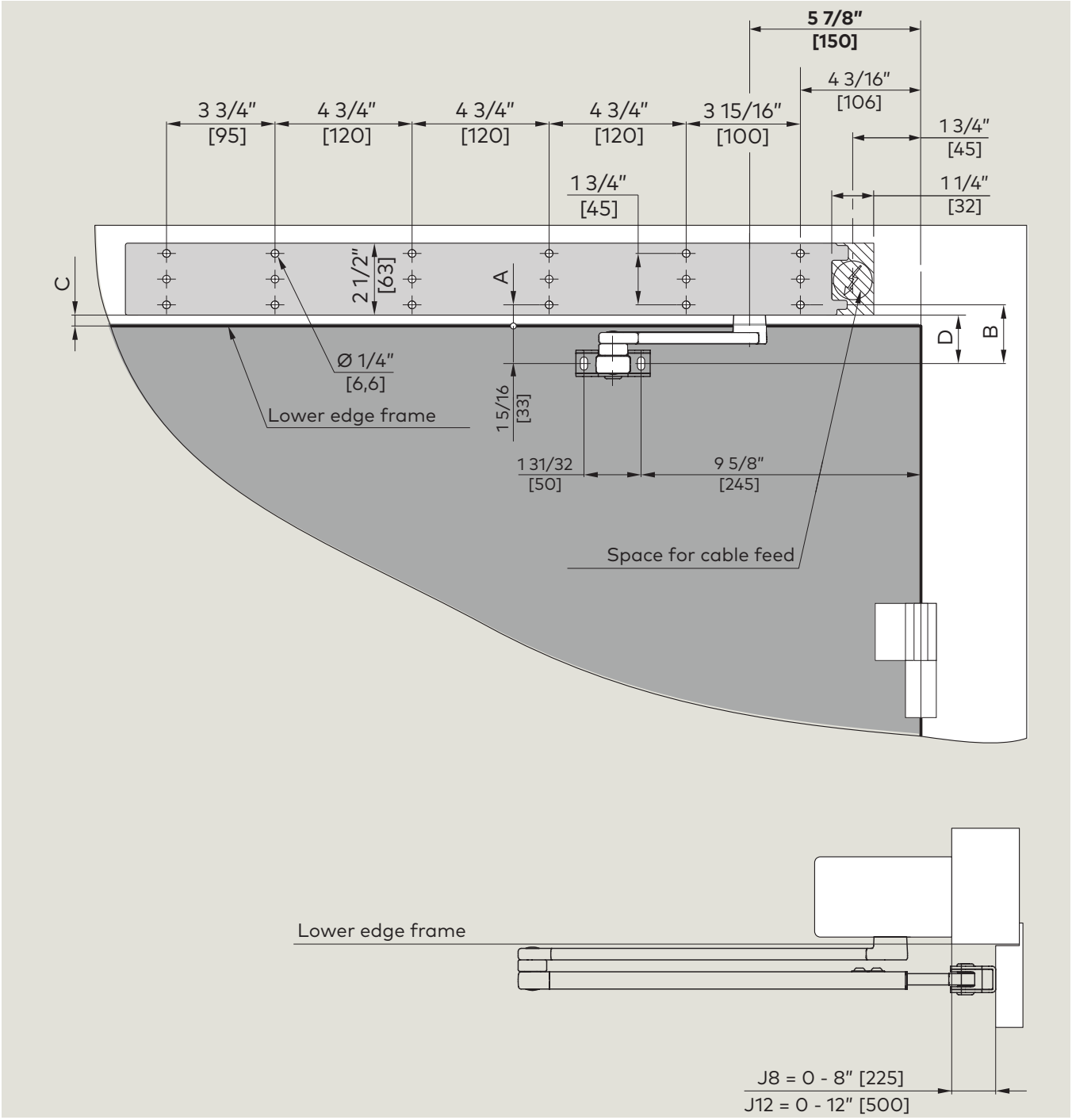
Fig. 13.1.3 Assembly on hinge side, pull version with slide channel and long pivot pin



Axle extension		ED900	A		B		C		D	
			Inches	mm	Inches	mm	Inches	mm	Inches	mm
Standard		●	1 7/32	31	2 1/2	63	7/8	22	2 1/8	54
3/4"	[20]	●	2	51	3 1/4	83	1 21/32	42	2 29/32	74
1 3/16"	[30]	●	2 13/32	61	3 21/32	93	2 1/16	52	3 5/16	84
2 3/8"	[60]	●	3 9/16	91	4 27/32	123	3 7/32	82	4 1/2	114

13.2 Installation template – push arm

Fig. 13.2.1 Assembly on opposite hinge side, push version with J/arm assembly

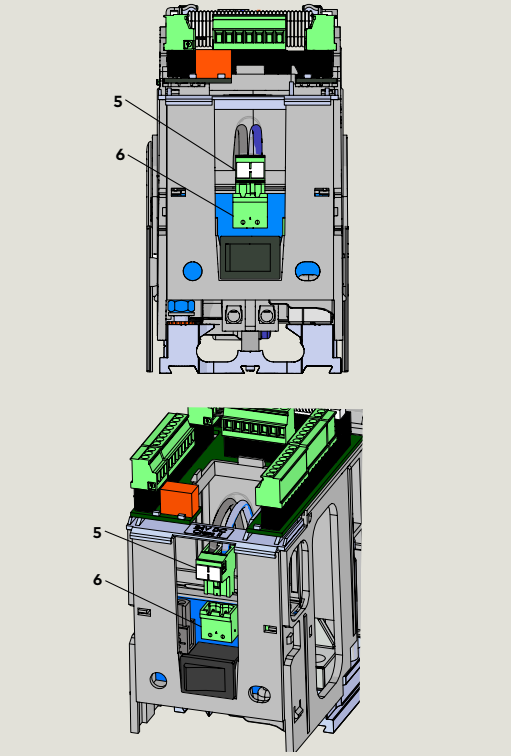


Axle extension		ED900	A		B		C		D	
			Inches	mm	Inches	mm	Inches	mm	Inches	mm
Standard		●	11/16	18	2	51	11/32	9	1 21/32	42
3/4"	[20]	●	1 1/2	38	2 13/16	71	1 1/8	29	2 7/16	62
1 3/16"	[30]	●	1 7/8	48	3 3/16	81	1 13/32	39	2 13/16	72
2 3/8"	[60]	●	3 1/16	78	4 3/8	111	2 23/32	69	4	102

14 ED900 operator and mounting plate preparation

14.1 Remove mounting plate from ED900 operator

Fig. 14.1.1 115 Vac plug removal



5 115 Vac plug
6 115 Vac socket

14.1.1 Remove 115 Vac plug from receptacle.

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

14.1.2 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

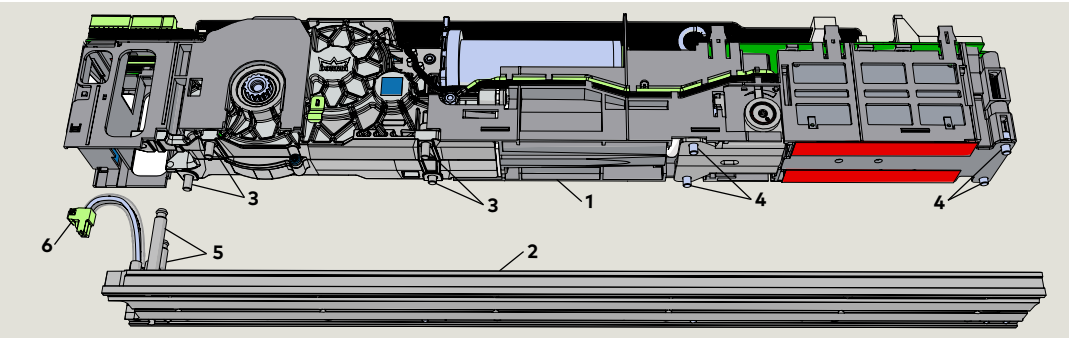
Insure all eight fasteners are free of the mounting plate.

2. Remove operator from mounting plate.

TIPS AND RECOMMENDATIONS

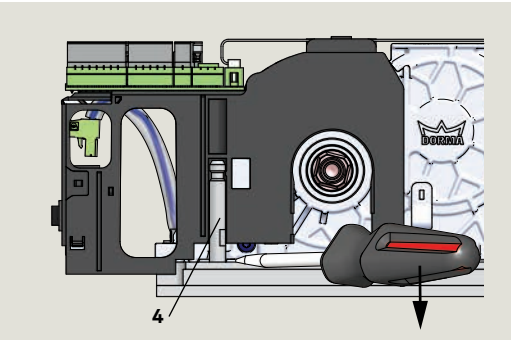
Guide pin resistance may require screwdriver to start operator removal from end of mounting plate (Fig. 14.1.3).

Fig. 14.1.2 Mounting plate removed from ED900 operator



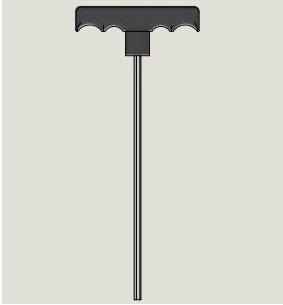
1 ED900 operator
2 Mounting base
3 M6 x 20 SHCS
4 M6 x 10 SHCS
5 Guide pin
6 115 Vac plug

Fig. 14.1.3 Mounting plate removal



4 Guide pin

Fig. 14.1.4 5 mm T-handle hex key



14.2 Double door – assign active door and inactive door type

Table 14.2.1 dL door type parameter

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

14.2.1 ED900 active and inactive door assignments.

1. Position ED900 operators on a flat surface.
2. Determine ED900 active and inactive door assignments.

TIPS AND RECOMMENDATIONS

Active and inactive door assignments.
Fig. 14.3.1 and 14.4.1 show examples of active and inactive door assignments.
Door assignments may be reversed.

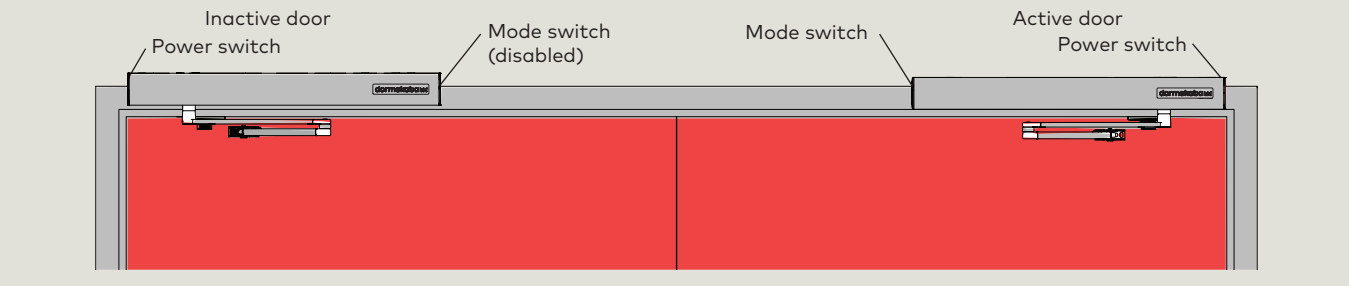
- Use **dL** door type parameter to assist in determining ED900 active and inactive door assignments

TIPS AND RECOMMENDATIONS

dL door type parameter.
dL parameter is set during double door setup.

14.3 Double door ED900 operator installation with standard covers

Fig. 14.3.1 ED900 standard cover installation for double door operation



14.4 Double door ED900 operator installation with full width cover (option)

Fig. 14.4.1 ED900 full width cover installation for double door operation

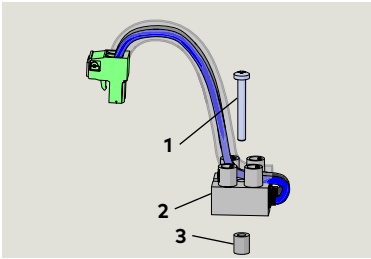
14.5 Double door – mounting plate 115 Vac terminal blocks

14.5.1 ED900 installation with standard covers

(Fig. 14.3.1)

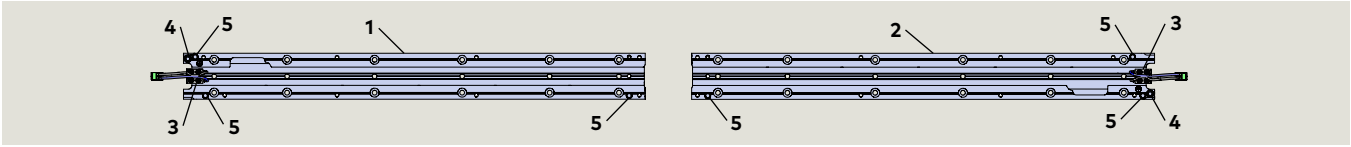
1. Customer 115 Vac is connected to terminal block and ground stud on each ED900 mounting plate.

Fig. 14.5.1 115 Vac terminal block assembly HX3672-010



1 M3 x 5 screw
2 115 Vac terminal block
3 Spacer

Fig. 14.5.2 ED900 mounting plates – installation with standard covers



1 Inactive door mounting plate
2 Active door mounting plate
3 115 VAC terminal block
4 Ground terminal
5 Guide pin

14.5.2 ED900 installation with full width cover option

(Fig. 14.5.3)

1. Customer 115 Vac is connected to inactive door terminal block and ground stud.

14.5.3 Remove 115 Vac terminal block on inactive door mounting plate.

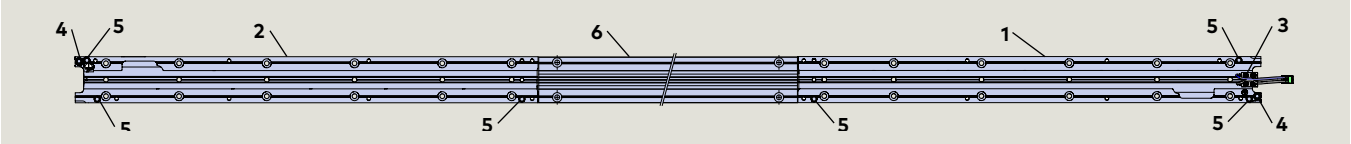
1. Remove M3 x 5 screw securing 115 Vac terminal block assembly to mounting plate.
2. Remove 115 Vac terminal block assembly.

TIPS AND RECOMMENDATIONS

Removing 115 Vac terminal block on inactive door mounting plate is optional.

- Wiring between mounting plates is facilitated by removing terminal block.

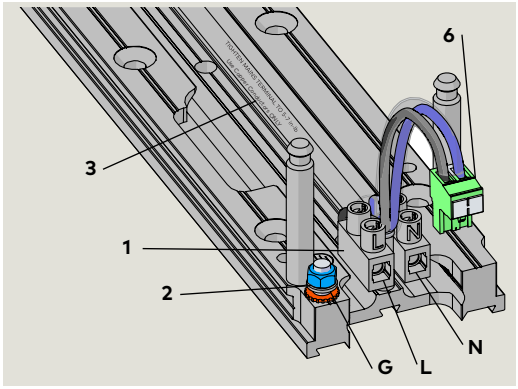
Fig. 14.5.3 ED900 mounting plates – installation with optional full width cover example



1 Inactive door mounting plate
2 Active door mounting plate
3 115 VAC terminal block
4 Ground terminal
5 Guide pin
6 Mounting plate extension

14.6 Options – customer 115 Vac connection to terminal blocks

Fig. 14.6.1 115 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. 14.6.2 Mains terminal torque and wire label

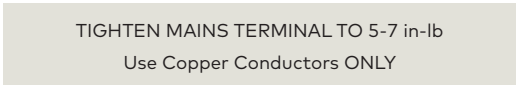
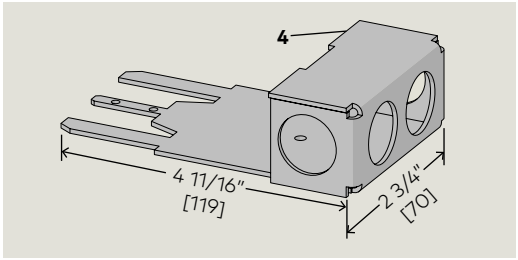
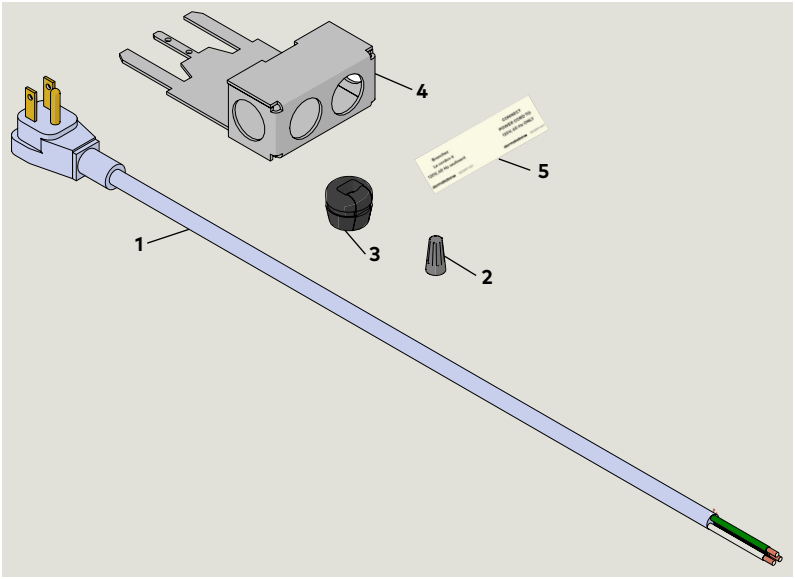


Fig. 14.6.3 Conduit box



4 Conduit box HX3501-001

Fig. 14.6.4 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!

14.6.1 Conduit box.

1. Conduit box (Fig. 14.6.3).

- U/L approved conduit box accessory; provides 115 Vac surface wiring to ED900.
- Reference Para. 14.6.6 for conduit box installation.

14.6.2 Power cord wiring kit.

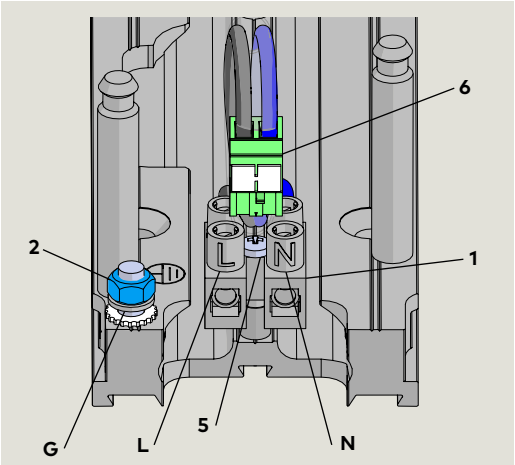
1. Power cord wiring kit (Fig. 14.6.4).

- 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

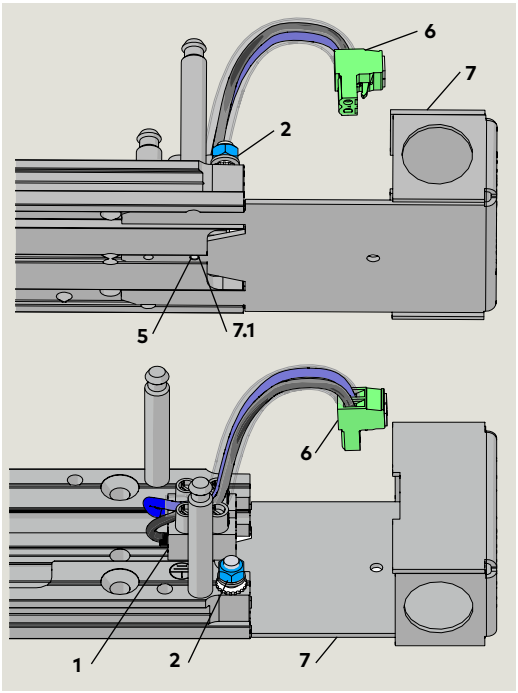
Insure power cord installation conforms to local and national electrical codes.

Fig. 14.6.5 115 Vac terminal block mounting



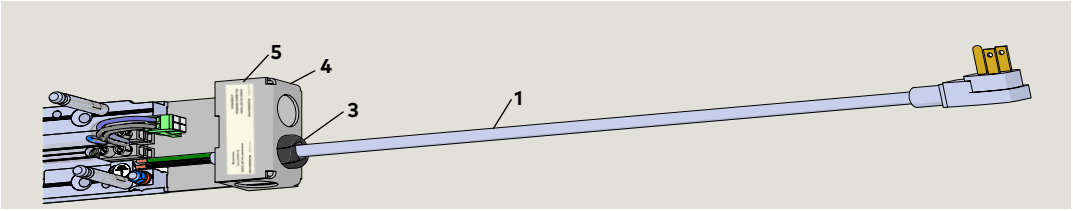
1 115 VAC terminal block
2 Ground terminal
5 M3.5 screw
6 115 Vac plug to operator
L 115 Vac
N Neutral
G Ground

Fig. 14.6.6 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. 14.6.7 Power cord wiring kit assembly (option)



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

14.6.3 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

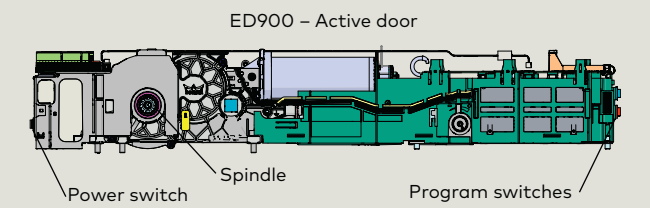
Terminal block M3 screw torque.
Tighten M3 screw to a torque of 5 - 7 in-lb.

- Insure screw is threaded into conduit box mounting hole.

4. Mounting plate assembly is ready for installation.

14.7 Double door full width cover option – ED900 operator preparation and mounting plate assembly

Fig. 14.7.1 ED900 active door operator



TIPS AND RECOMMENDATIONS

Reference Para. 14.2 for active, inactive door assignments.

TIPS AND RECOMMENDATIONS

Power switch on active door operator will be replaced with single program switch (Para. 15.8).

14.7.1 Remove terminal board from active door ED900.

1. Press in 3 tabs (**2**) that secure terminal board (**1**) to ED900, lift up terminal board and swing away from end of housing.

14.7.2 Remove ED900 115 Vac plug.

1. Swing open upper bracket (**3**).
2. Remove ED900 115 Vac plug (**5**) from power supply circuit board socket (**6**).

14.7.3 Remove power supply circuit board.

1. Remove power supply circuit board (**4**) from its slot in ED900.

Fig. 14.7.2 ED900 active door power switch removal

1 Terminal board
2 Tabs
3 Upper bracket
4 Power supply circuit board
5 ED900 115 Vac plug

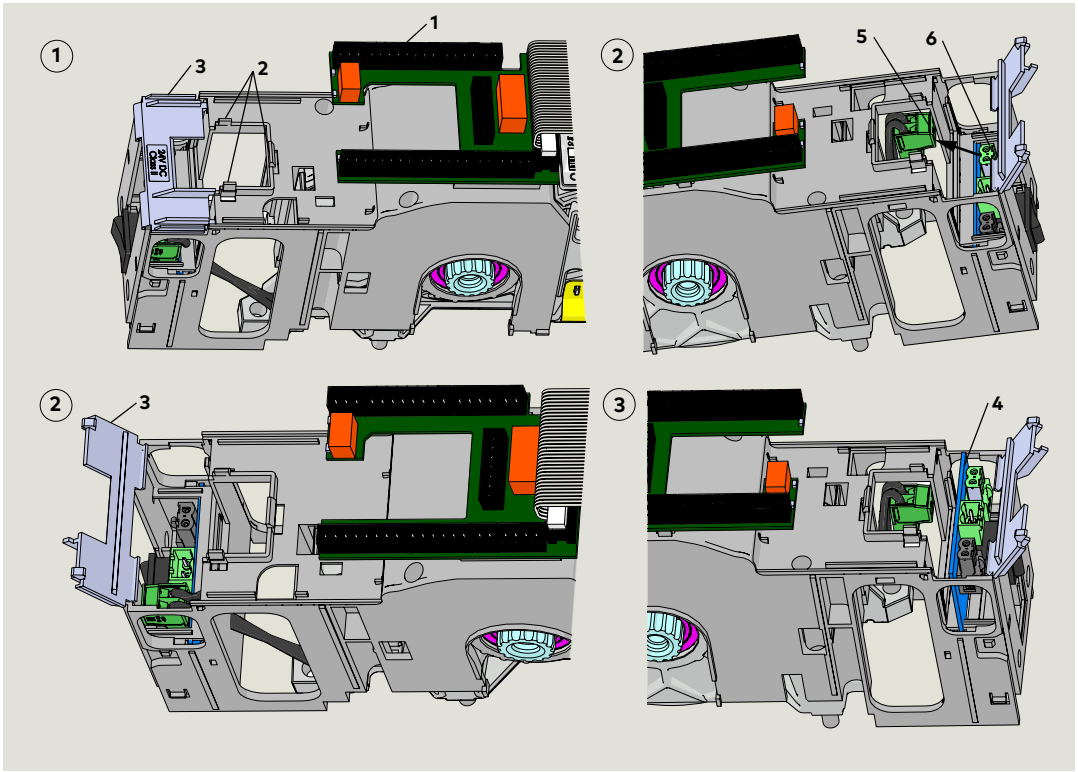
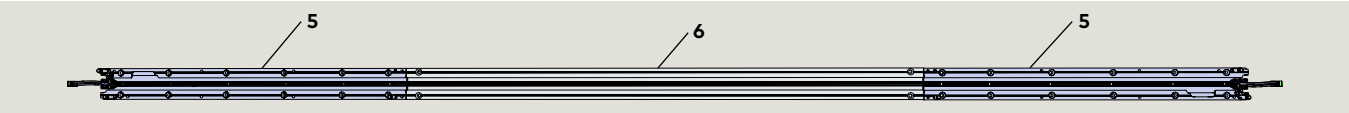
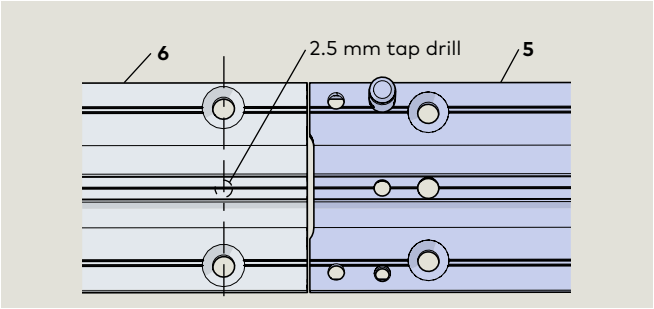


Fig. 14.7.3 Mounting plate assembly



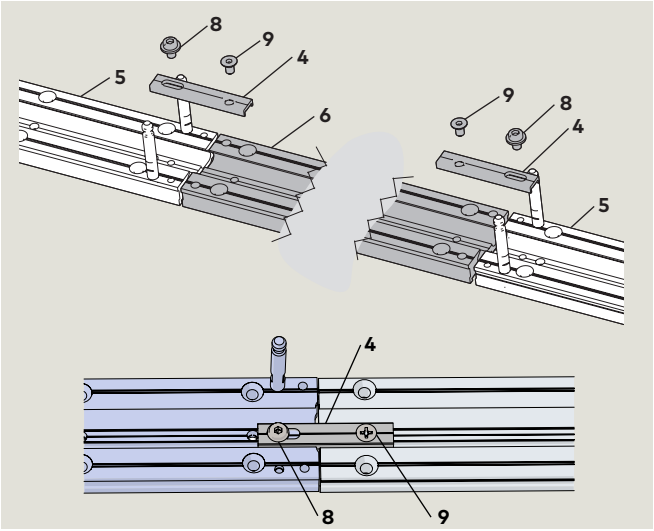
5 Mounting plate, operator
6 Mounting plate, pair

Fig. 14.7.4 Pair mounting plate hole for M6 fastener



5 Mounting plate, operator
6 Mounting plate, pair

Fig. 14.7.5 Mounting plate connectors and fasteners



4 Mounting plate connectors HK3491-001
6 Front cover extension HC3468-010
7 dormakaba logo plate HD4613-020
8 M6 x 10 mm SHS with washer
9 M6 x 10 mm PFHS

14.7.4 Drill two holes in pair mounting plate for M6 fastener.

1. Drill hole in each end of pair mounting plate for M6 x 10 mm PFHS (Fig. 14.7.4).

14.7.5 Assemble mounting plates.

1. Place the three mounting plates on a flat surface (Fig. 14.7.3).

CAUTION

Verify mounting plate assembly dimensions with installation template (Chapter 13).

2. Secure the operator mounting plates to the front cover extension (**6**) using:

- (2) mounting plate connectors (**4**)
- (2) M6 x 10 mm SHS with washer (**8**)
- (2) M6 x 10 mm PFHS (**9**)

Do not tighten screws.

14.7.6 Check cover fit over ED operators.

1. Place the ED operators onto their mounting plates.
2. Place end caps (2) at end of each operator.
3. Place cover over end caps and ED operator.
4. Adjust mounting plates as necessary for cover fit over end caps.
5. Remove end caps and operators.
6. Tighten mounting plate connector fasteners.

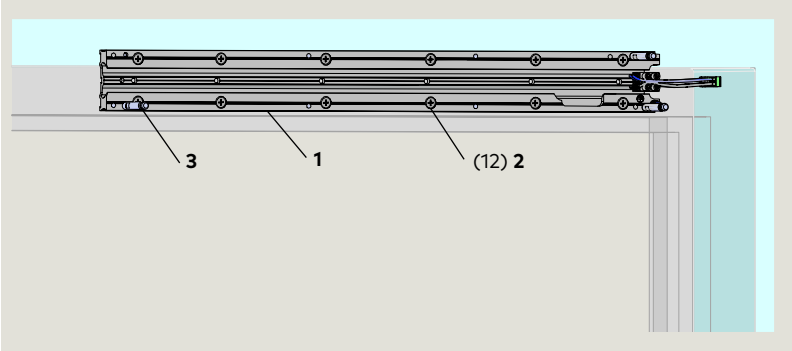
14.7.7 Double door mounting plate installation.

1. Reference Chapter 17.

15 ED900 mounting plate and operator installation - Single door

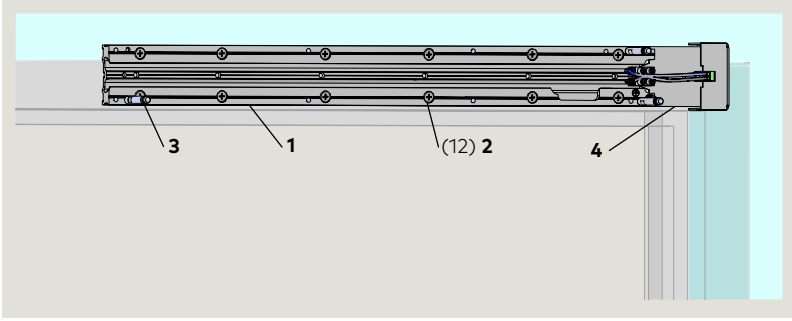
15.1 Mounting plate attachment to jamb or wall

Fig. 15.1.1 Mounting plate installation



1 ED900 mounting plate
2 Mounting hole
3 Guide pin

Fig. 15.1.2 Mounting plate installation with conduit box



1 ED900 mounting plate
2 Mounting hole
3 Guide pin
4 **CB** conduit box

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. 15.1.3 Mounting plate fasteners

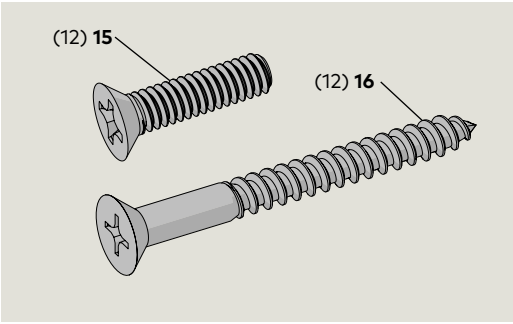
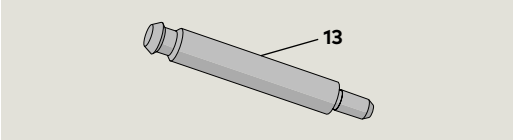


Fig. 15.1.4 Guide pin



13 Guide pin

NOTICE

Installation templates
Mounting plate installation location based on selected installation template.
- Reference Chapter 13 for installation templates.

CAUTION

Optional full width cover installation.
Reference Para. 15.5 for mounting plate extension installation.

15.1.1 Fasten mounting plate to jamb and/or wall.

CAUTION

ED900 conduit box (if used):
- Insure ED900 conduit box or plate 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 selected template as a guide, prepare twelve mounting holes for mounting plate fasteners (Fig. 15.1.3).

CAUTION

- Select fasteners based on door frame and wall material.
- Use fasteners provided with ED900 (Chapter 5).

2. Fasten mounting plate to door frame and/or wall.

12.7.2 Install third guide pin.

1. Install third guide pin (Fig; 15.1.2/**3**) in mounting plate.
- Use 3 mm hex T-handle or hex key.

15.2 Connect customer 115 Vac to ED900 mounting plate terminal block

4 115 Vac terminal block
5 Ground post

Fig. 15.2.1 115 Vac wiring example

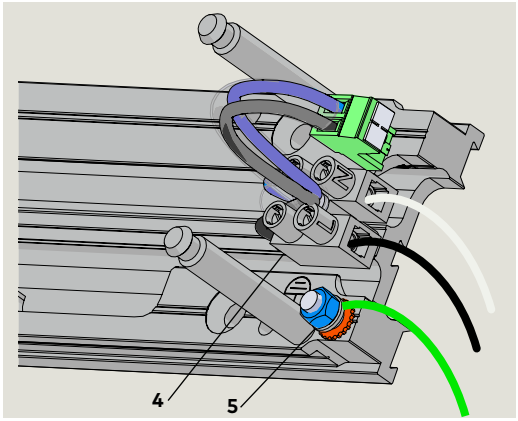


Fig. 15.2.2 Conduit box installation

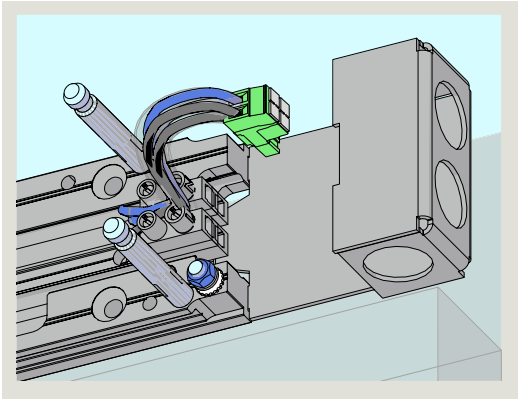
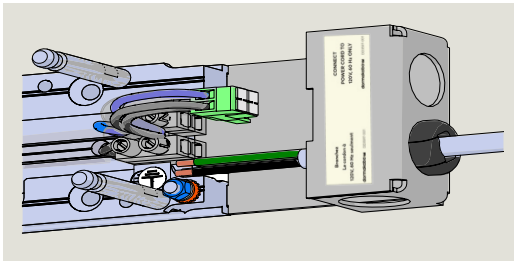


Fig. 15.2.3 PC power cord, conduit box installation



15.2.1 Connect customer 115 Vac wiring.

WARNING

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

1. Route wiring to 115 Vac terminal block.

CAUTION

115 Vac wiring.
Use copper conductors only!

1. Connect 115 Vac wiring to terminal block.

- Terminal block screw tightening torque.

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

2. Connect earth ground to ground post.

15.3 Route accessory wiring to mounting plate

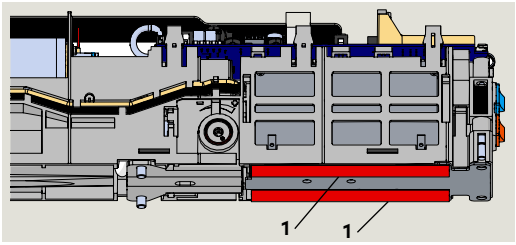
Fig. 15.3.1 Mounting plate slots for accessory wiring

15.31 Route accessory wiring to mounting plate.

1. Route wiring to 115 Vac terminal block side of mounting plate (Fig. 15.2.1).
2. Accessory wiring opposite door hinge side: route wiring into mounting plate track (Fig. 15.3.1) to 115 Vac terminal block side of mounting plate.

15.4 Remove protective film strips from operator

Fig. 15.4.1 Operator heat conductive pads



1 Operator heat conductive pads

15.4.1 Remove protective film strips.

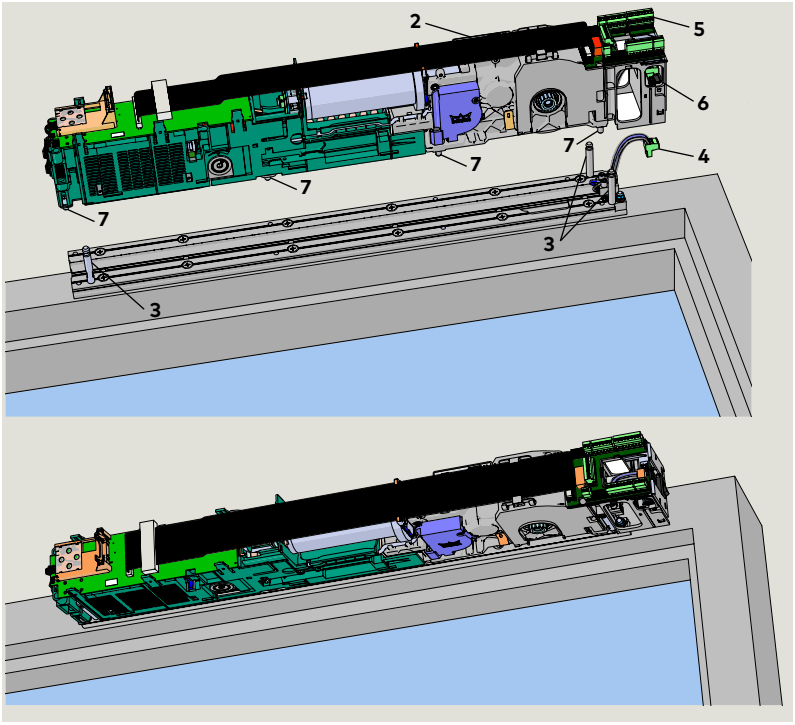
1. Remove two protective film strips from operator heat conductive pads.

CAUTION

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

15.5 Install ED900 operator onto mounting plate

Fig. 15.5.1 Installation of ED900 on mounting plate



1 ED900 mounting plate
2 ED900 operator
3 Guide pin
4 115 Vac plug
5 Accessory wiring terminal connectors
6 115 Vac socket
7 M6 x 10 SHCS

15.5.1 Install ED900 operator onto mounting plate.

CAUTION

Protective film strip removal.
Insure two protective film strips have been removed from operator heat conductive pads (Para. 15.4).

1. Slide ED900 operator over the three mounting plate guide pins and onto mounting plate.
   - Guide 115 Vac plug (4) into ED900 housing adjacent to socket (6).
2. Thread the eight captive ED900 M6 SHCS (7) into their mounting plate holes using 5 mm hex T-handle.
3. Tighten the eight M5 SHCS.

15.5.2 Insert 115 Vac plug into socket.

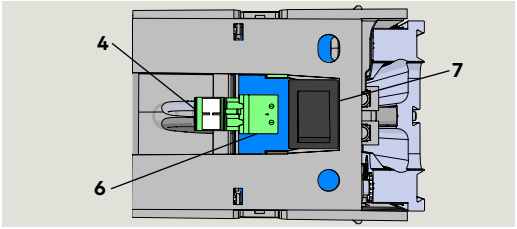
1. Insert 115 Vac plug from mounting plate 115 Vac terminal block into ED900 socket (Fig. 15.5.2).

15.5.3 Full width cover option.

CAUTION

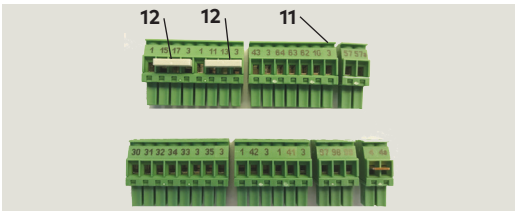
Program switch wiring.
Reference Para. 15.6 for program switch wiring terminal connections.

Fig. 15.5.2 ED900 115Vac plug and socket



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

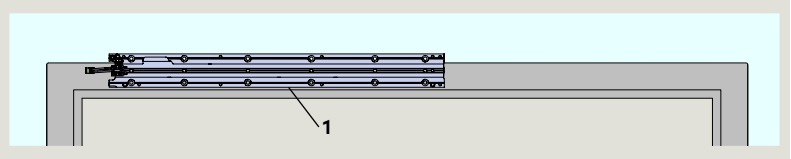
Fig. 15.5.3 ED900 terminal connectors



11 Connectors
12 Jumpers

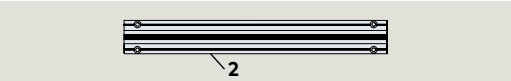
15.6 Full width cover (option) installation instructions

Fig. 15.6.1 Mounting plate



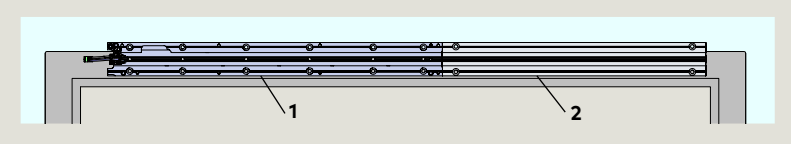
1 Mounting plate

Fig. 15.6.2 Mounting plate extension



2 Mounting plate extension

Fig. 15.6.3 Mounting plate extension installation



1 Mounting plate

2 Mounting plate extension

15.6.1 Install ED900 mounting plate.

Mounting plate installation:

- Reference Chapter 13 for installation templates.

15.6.2 Secure mounting plate extension to door frame and/or wall.

1. Align mounting plate extension with mounting plate.
2. Mark mounting plate extension hole locations in frame and/or wall. Drill four holes for selected fasteners.

CAUTION

Use fasteners provided with ED900. Ref. Chapter 5.

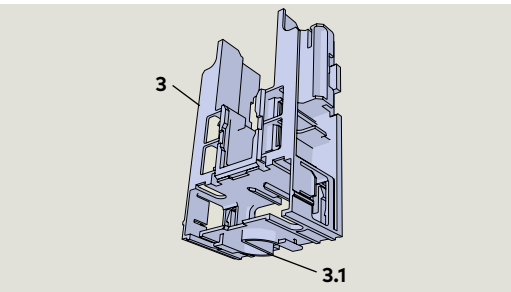
3. Secure mounting plate extension to door frame or wall with No. 14 wood screws or 1/4-20 machine screws.

15.6.3 Mounting plate installation checks.

CAUTION

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

Fig. 15.6.4 Professional cover bracket



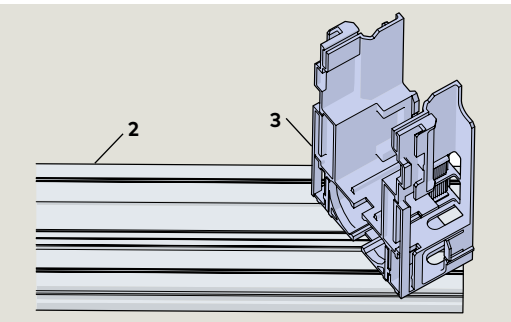
3 Professional cover bracket HC3481-010

3.1 Bracket collar

15.6.4 Install cover bracket.

1. Insert cover bracket collar into mounting plate groove at an angle (Fig.15.6.5)
2. Rotate cover bracket parallel to mounting plate extension.
3. Position bracket under set of M6 screws and washers at end of extension.

Fig. 15.6.5 Install cover bracket



2 Mounting plate extension HC3468-010

3 Professional cover bracket

Fig. 15.6.6 Cover bracket installed

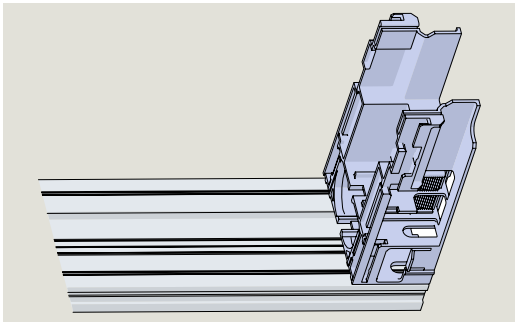


Fig. 15.6.7 Mode switch kit

4 Mode switch kit HX3482-010

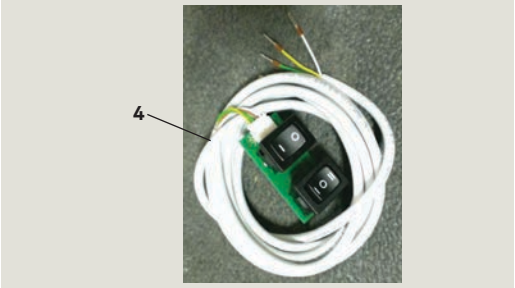
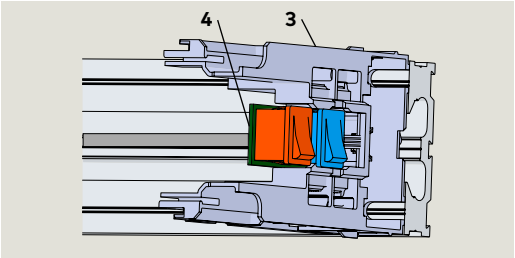


Fig. 15.6.8 Mode switch installation

3 Professional cover bracket HC3481-010

4 Mode switch kit HX3482-010



15.6.5 Install Mode,Exit Only switches.

1. Install Mode, Exit Only switch assembly; slide switch board into cover bracket slot.

15.6.6 Secure switch cable.

1. Place switch cable in mounting plate groove and secure with 1.5 x 1" wire retainers.
2. Coil any remaining cable and secure to mounting plate with cable ties.

NOTICE

Program switch wiring.
Once ED900 operator is installed, program switch wires will be connected to terminal board (Fig. 15.6.10).

Fig. 15.6.9 ED900 installation with mounting plate extension

3 Professional cover bracket DC3481-010

4 Program switch kit DC3482-010

4.1 Program switch cable

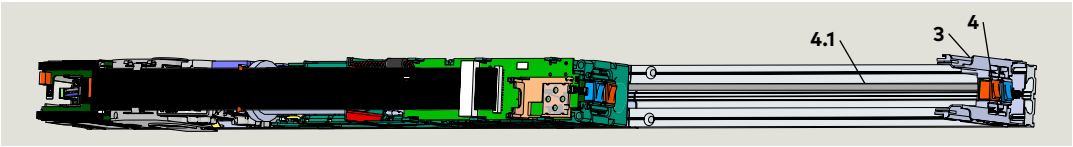
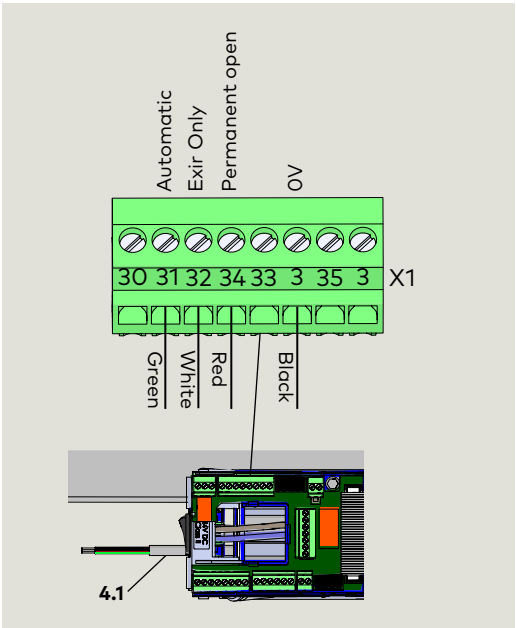


Fig. 15.6.10 ED900 program switch wiring

4.1 Mode switch cable DX3482-010



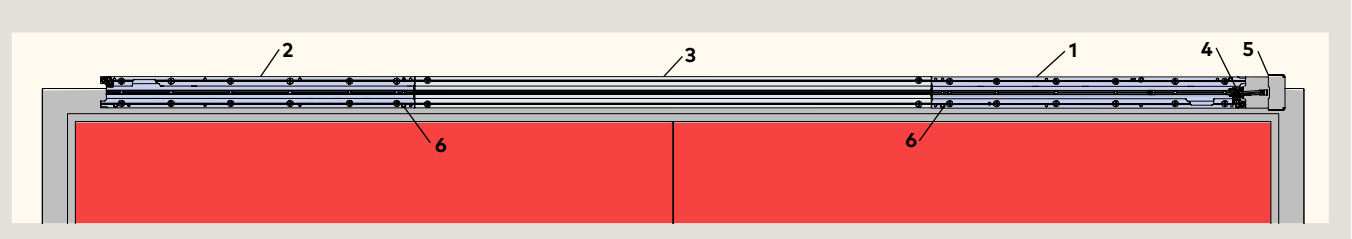
17 ED900 mounting plate and operator installation – double door

17.1 ED900 mounting plate attachment to jamb and/or wall examples

Fig. 17.1.1 Double door mounting plate installation – standard covers example

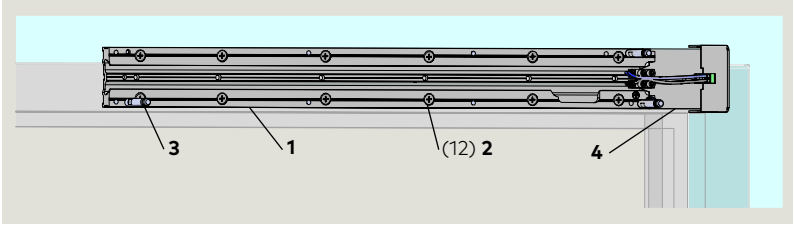
1 ED900 mounting plate
2 115 Vac terminal block
3 Third guide pin

Fig. 17.1.2 Double door mounting plate installation – optional full width cover example



1 ED900 mounting plate - inactive door
2 ED900 mounting plate - active door
3 Mounting plate extension
4 115 Vac terminal block
5 Conduit box (option)
6 Third guide pin

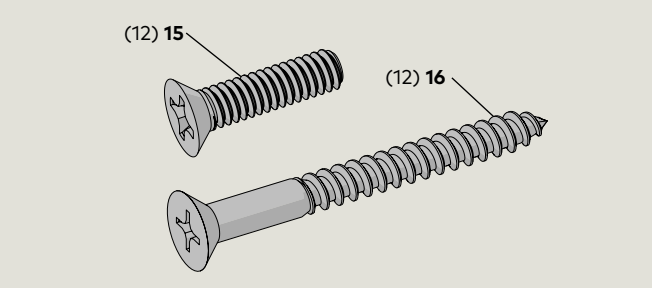
Fig. 17.1.3 Mounting plate installation with conduit box



1 ED900 mounting plate
2 Mounting hole
3 Guide pin
4 Conduit box (option)

17.2 Install ED900 mounting plates to jamb and/or wall

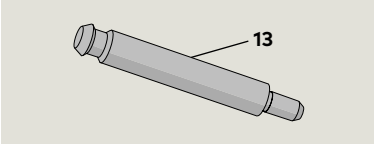
Fig. 17.2.1 Mounting plate fasteners HK4053-010



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

16 No. 14 x 1 "FH wood screw

Fig. 17.2.2 Guide pin



13 Guide pin

CAUTION

Select fasteners based on door frame and wall material.

CAUTION

Use fasteners provided with ED900 (Fig. 17.2.1).

17.2.1 Select installation template.

1. Select applicable installation template.

NOTICE

Installation templates: Reference Chapter 13.

17.2.2 Fasten mounting plates to jamb and/or wall.

CAUTION

Install shims between mounting plates and wall as required.

CAUTION

ED900 conduit box (if used):

- Insure ED900 conduit box (Para. 14.2) is prepared with applicable conduit fitting or cord grip.
- Insure jamb or wall is prepared for wiring to each ED900 conduit fitting or cord grip.

1. Using template as a guide, prepare twelve mounting holes at first mounting plate location for mounting plate fasteners.
2. Install first plate.
3. Full width cover option: Using mounting plate extension as a guide, mark four mounting holes for extension.
4. Using template as a guide, prepare twelve mounting holes at second mounting plate location for mounting plate fasteners.
5. Install second mounting plate.
6. Full width cover option: Install mounting plate extension.

17.2.3 Mounting plate installation checks.

CAUTION

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

15.2.5 Install third guide pin.

1. Install third guide pin (Fig. 17.2.2) in each mounting plate (Fig. 17.1.1).

- Use 3 mm hex T-handle or hex key.

17.3 ED900 operators – 115 Vac customer wiring

17.3.1 ED900 installation with standard covers (Fig. 17.1.1)

1. 115 Vac customer power is wired to each ED900 operator. Reference Para.14.2.
- Power to each operator is controlled by its power switch.

12.4.2 ED900 installation with full width cover option. (Fig. 17.1.2)

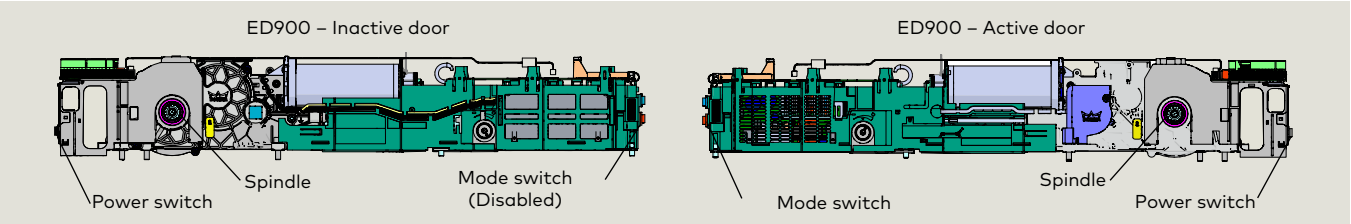
1. 115 Vac customer power is wired to active door ED900. Reference Para.14.2.
- Power to both operators is controlled by the active door operator's power switch.

17.4 ED900 operators – Mode switch installation

17.4.1 ED900 installation with standard covers (Fig. 17.4.1)

- Inactive door Mode switch is disabled in double door operation.
- Active door ED900 Mode switches control operation of both ED900 controllers.

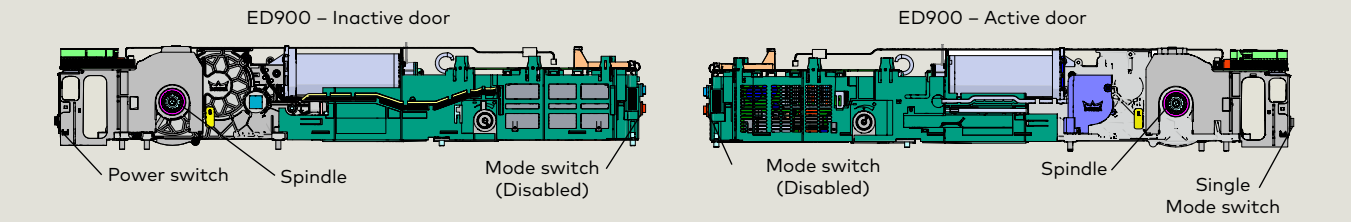
Fig. 17.4.1 ED900 installation with standard covers



17.4.2 ED900 installation with optional full width covers (Fig. 17.4.2)

- Single Mode switch installed on active door ED900 controls operation of both ED900 controllers.
- Standard Mode switch is disabled in double door operation.
- Reference Para.15.8 for single Mode switch installation.

Fig. 17.4.2 ED900 installation with optional full width cover



17.5 Interconnecting cables

17.5.1 ED900 installation with standard covers.

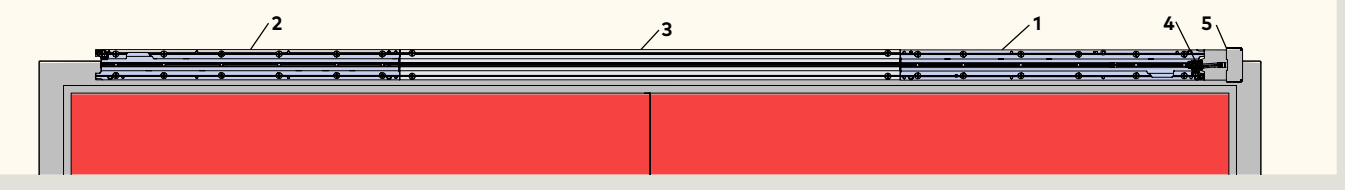
1. Communication cable Para. 5.3.

17.5.2 ED900 installation with full width cover option.

1. Communication cable Para. 5.3.
2. 115 Vac power cable, Para. 5.9
3. Single program switch and cable, Para. 5.9.

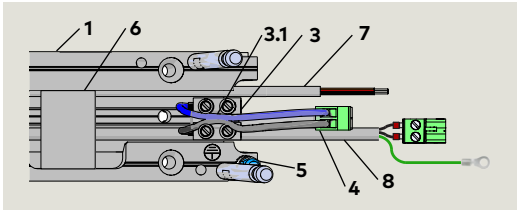
17.6 Full width cover option – Install cables between mounting plates

Fig. 17.6.1 Double door mounting plate installation – optional full width cover



1 Mounting plate, inactive door
2 Mounting plate, active door
3 Mounting plate extension
4 115 Vac terminal block
5 Conduit box (option)

Fig. 17.6.2 ED900 cables at inactive door



1 Mounting plate, active door
2 Mounting plate, inactive door
3 115 Vac terminal block
3.1 M3 x 5 screw
4 115 Vac plug
5 Ground stud
6 Wire retainer
7 Mode switch and cable
8 115 Vac power cable

Fig. 17.6.3 ED900 cables at active door

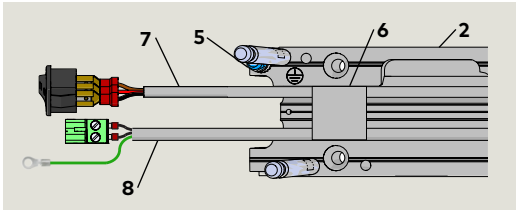
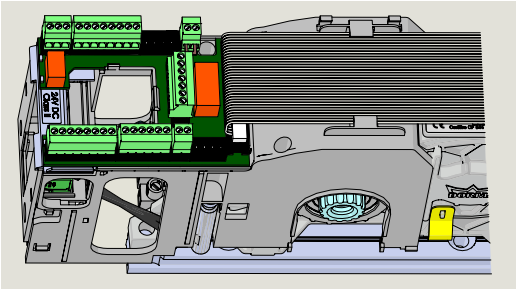


Fig. 17.6.4 ED900 housing and terminals, active door



TIPS AND RECOMMENDATIONS

Active/inactive door orientation.
May be reversed from Fig. 17.6.1 orientation.

NOTICE

Installer responsibilities.
Installer responsible for routing and securing all wiring between ED900 operators.

TIPS AND RECOMMENDATIONS

Cable length options.
Reference Para. 4.12 for cable length options for:

- Mode switch cable
- 115 Vac power cable

17.3.1 Install Mode switch cable.

1. Locate single Mode switch (Fig. 17.3.5) at end of active door mounting plate (Fig.17.3.3).
2. Route Mode switch cable to active door 115 Vac terminal block end of mounting plate (Fig. 17.3.4).

17.3.2 Install 115 Vac power connect cable in mounting plate channels.

1. Route 115 Vac power connect cable (Fig. 17.3.6)between mounting plates using mounting plate channels.

15.3.3 Install wire retainers to secure cables.

1. Install wire retainers (Fig. 17.3.7) to secure cables.

Fig. 17.6.5 Single Mode switch HX3486

1 3 position Mode switch
2 3 conductor cable

Fig. 17.6.6 115 Vac power connect cable HX3484

1 3 conductor cable
3 Ring lug
5 Connector

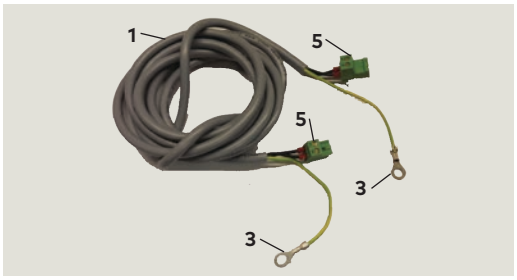


Fig. 17.6.7 Wire retainer

3 Wire retainer

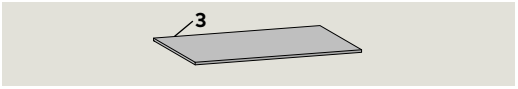


Fig. 17.6.8 Inactive door – 115 Vac cable ground wire

1 Active door mounting plate
5 Ground stud
8 115 Vac power cable
8.1 Ground wire

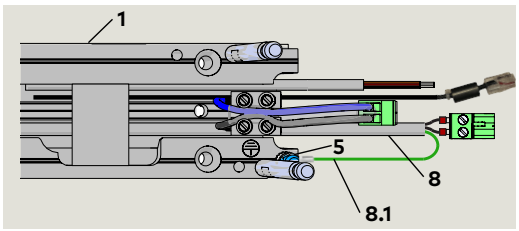


Fig. 17.6.9 Active door – 115 Vac cable ground wire

2 Inactive door mounting plate
5 Ground stud
8 115 Vac power cable HX3484
8.1 Ground wire

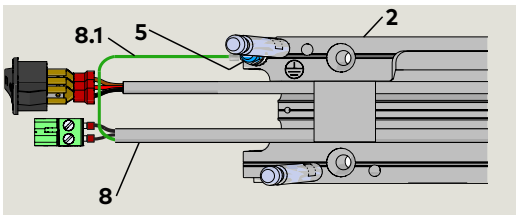
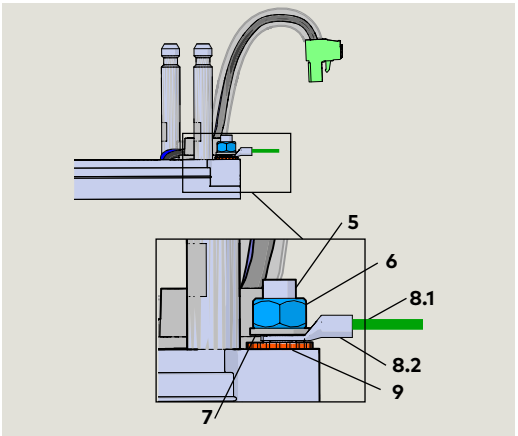


Fig. 17.6.10 Ground stud wiring

5 Ground stud
6 M5 nut
7 Flat washer
8.1 115 Vac power cable ground wire
8.2 Ground wire ring lug
9 External tooth lock washer



17.6.4 Fasten 115 Vac cable ground wires to mounting plate ground studs.

1. Inactive door mounting plate – fasten ground wire ring lug to mounting plate ground stud (Fig. 17.6.8).
2. Active door mounting plate – fasten ground wire ring lug to mounting plate ground stud (Fig. 17.6.9).

TIPS AND RECOMMENDATIONS

Reference Fig. 17.7.10 for ground stud wiring detail.

- Ground wire ring lug placed between external tooth lockwasher and flat washer.

17.7 Customer 115 Vac connection to ED900 mounting plate terminal block

17.7.1 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's must be Off prior to start of electrical installation.

WARNING

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

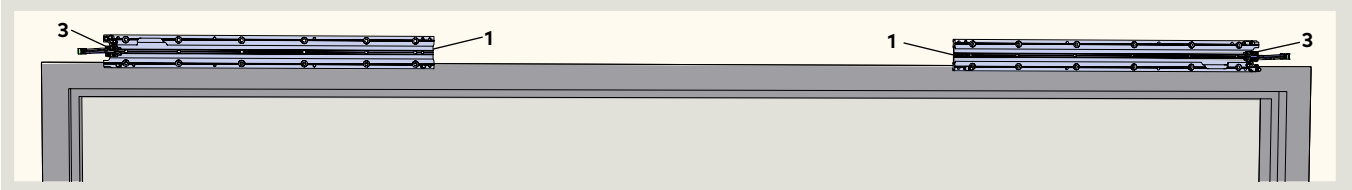
17.7.2 ED900 installation with standard covers.

- Customer 115 Vac power wiring required to terminal block (3) on each mounting plate (Fig. 17.7.1).

17.7.3 ED900 installation with full width cover option.

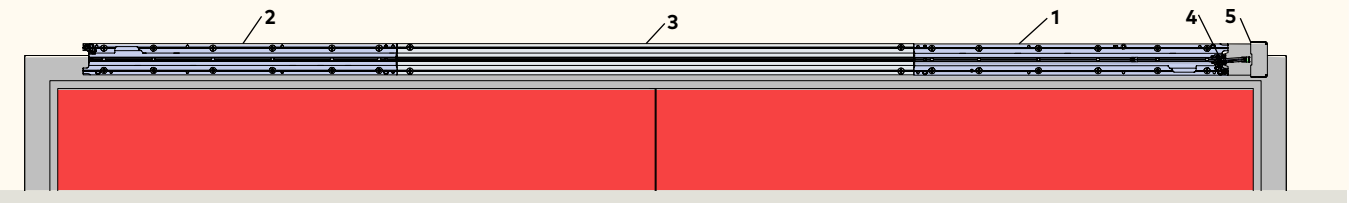
- Customer 115 Vac power wiring required at terminal block (3) on inactive door mounting plate (Fig. 17.7.2).
- Active and inactive door assignments may be reversed from Fig. 17.7.2).

Fig. 17.7.1 Double door mounting plate installation with standard covers



1 ED900 mounting plate
3 115 Vac terminal block

Fig. 17.7.2 Double door mounting plate installation – optional full width cover



1 ED900 mounting plate, inactive door
2 ED900 mounting plate, active door
3 ED900 mounting plate extension
4 115 Vac terminal block
5 Conduit box (option)

4 115 Vac terminal block
5 Ground post

Fig. 17.7.3 115 Vac wiring example

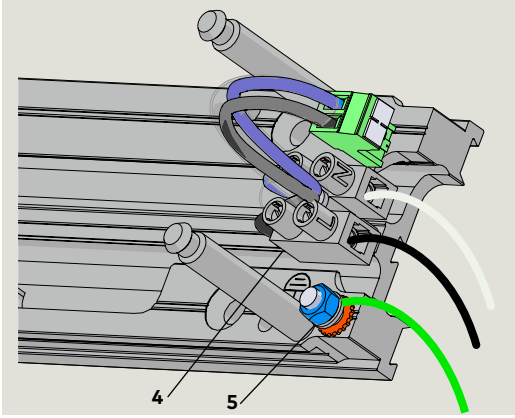


Fig. 17.7.4 Conduit box installation

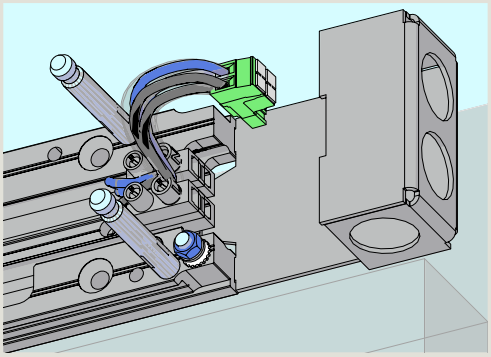
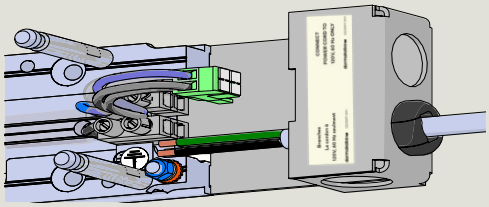


Fig. 17.7.5 PC power cord, conduit box installation



17.7.4 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.
- Standard cover installation; two 115 Vac connections required.
- Full width cover installation (optional); one 115 Vac connection required.

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 (s).

17.8 Route accessory wiring to active door mounting plate

17.8.1 Route accessory wiring (Chapter 9) to active door mounting plate.

1. Route wiring to active door 115 Vac terminal block side of mounting plate (Fig. 14.2.1).

TIPS AND RECOMMENDATIONS

Active/inactive door assignments.
Reference Chapter 12, Para. 12.1 for active/inactive door assignments.

Fig. 17.8.1 Mounting plate slots for accessory wiring

2. Accessory wiring, inactive door hinge side: route wiring to active door 115 Vac terminal block side of mounting plate.

TIPS AND RECOMMENDATIONS

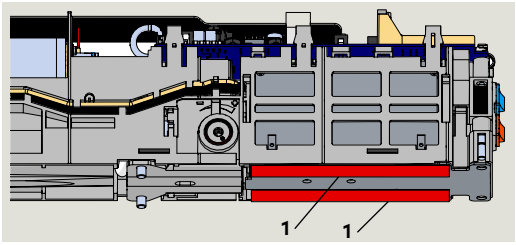
Accessory wiring will terminate at ED900 terminal board (Chapter 7).

NOTICE

Installer responsibilities.
Installer responsible for routing and securing all wiring between ED900 operators.

17.9 Remove protective film strips from each ED900 operator

Fig. 17.9.1 Operator protective film strips



1 Heat conductive pads

17.9.1 Remove protective film strips.

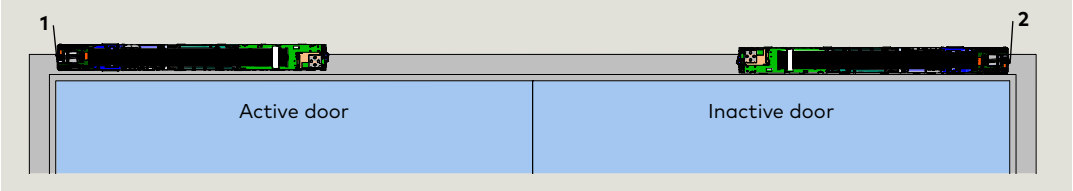
1. Remove two protective film strips from each operator's heat conductive pads.

CAUTION

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

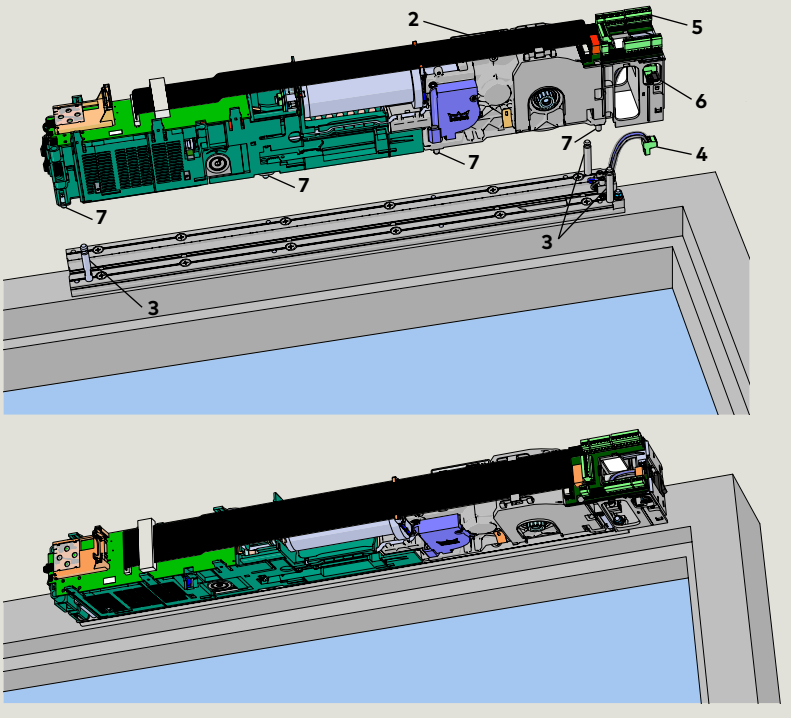
17.10 Install each ED900 operator onto its mounting plate

Fig. 17.10.1 ED900 installation



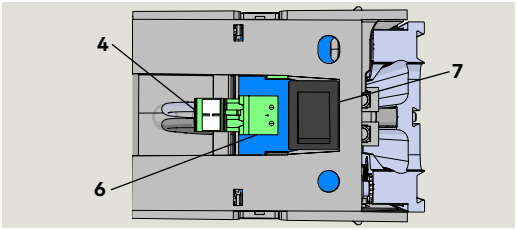
1 Single Mode switch
2 Power switch

Fig. 17.10.2 Installation of ED900 on mounting plate



1 ED900 mounting plate
2 ED900 operator
3 Guide pin
4 115 Vac plug
5 Accessory wiring terminal connectors
6 115 Vac socket
7 M6 x 10 SHCS

Fig. 17.10.3 ED900 115Vac plug and socket



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

17.10.1 Active door – Install ED900 operator onto its mounting plate.

CAUTION

Protective film strip removal.
Insure two protective film strips have been removed from operator heat conductive pads (Para. 17.9).

1. Slide ED900 operator over the three mounting plate guide pins and onto mounting plate.
   - Guide 115 Vac plug (4) into ED900 housing adjacent to socket (6).
2. Thread the eight captive ED900 M6 SHCS (7) into their mounting plate holes using 5 mm hex T-handle.
3. Tighten the eight M5 SHCS.

17.10.2 Insert 115 Vac plug into socket.

1. Insert 115 Vac plug from mounting plate 115 Vac terminal block into ED900 socket (Fig. 17.7.2).

17.10.3 Inactive door.

1. Repeat steps in 17.7.1 and 17.7.2.

CAUTION

Full width cover option, single program switch and cable.
As ED900 operator is lowered onto mounting plate, route Mode switch and cable into ED900 housing.
Reference Para. 17.11.

17.11 Full width cover option – Install Mode switch, active door ED900

Fig. 17.11.1 Mode switch installation on active door

1 Single Mode switch
2 Power switch

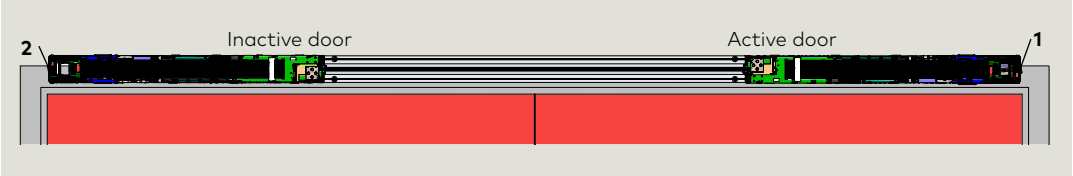


Fig. 17.11.2 Mode switch and cable

7 Mode switch and cable
10 Mode switch terminals

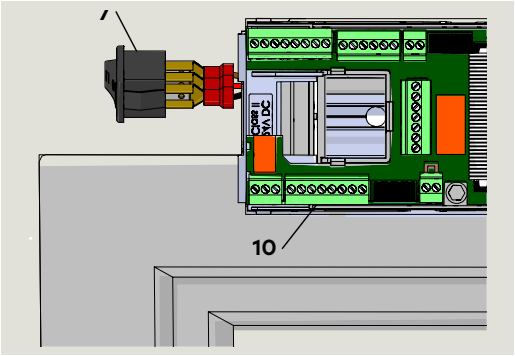


Fig. 17.11.3 Mode switch installation

6 Slots for switch
7 Mode switch and cable

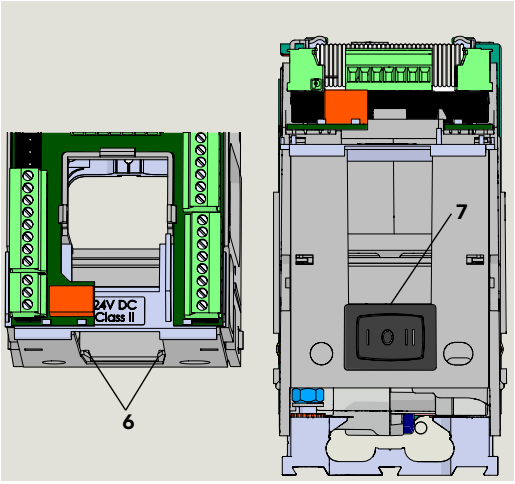
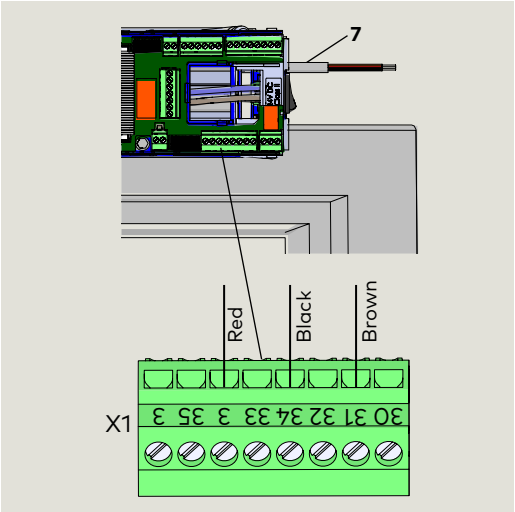


Fig. 17.11.4 Mode switch cable installation, active door ED900

7 Mode switch cable



TIPS AND RECOMMENDATIONS

Active/inactive door orientation.
May be reversed from Fig. 17.11.1 orientation.

17.11.1 Install Mode switch.

1. Route Mode switch and cable into active door ED900 housing.
2. Slide switch into slots in ED900 housing.

- Note orientation of switch in housing (Fig. 17.8.3).

17.11.2 Connect Mode switch cable wires to active door ED900 operator.

1. Connect Mode switch cable wires to X1 terminal connector (Table 17.11.1)

Table 17.11.1 Mode switch installation

Terminal	Wire color	Function
31	Brown	Automatic
34	Black	Permanent open
3	Red	0V

17.12 Full width cover option – 115 Vac pair power cable connections

17.12.1 Inactive door

1. Insert 115 Vac interconnecting cable plug (**5**) into ED900 power supply circuit board socket (**4**) (Fig.17.12.2).

1 Inactive door mounting plate
3 115 Vac interconnect cable plug, male connection

Fig. 17.12.1 Inactive door cables

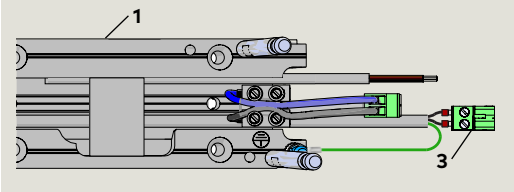
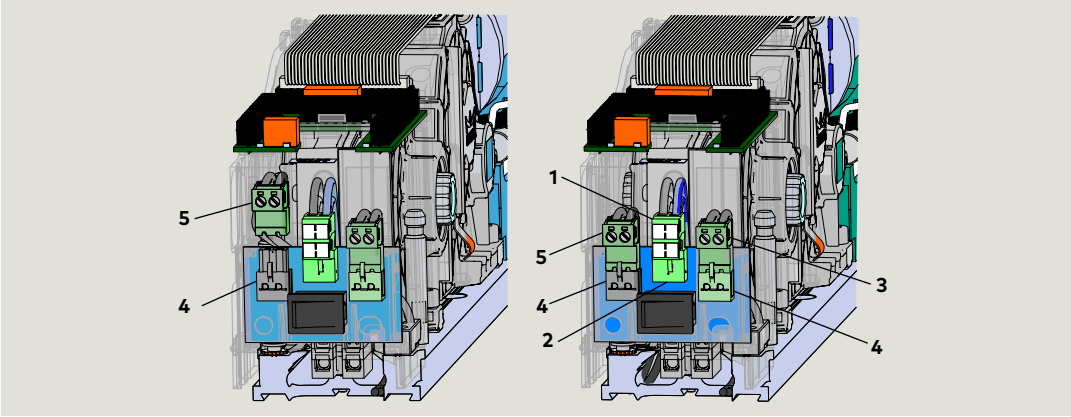


Fig. 17.12.2 ED900 115 Vac pair power cable – inactive door



1 ED900 115 Vac plug from 115 Vac socket, female connection
2 ED900 power supply circuit board socket, male connection
3 ED900 power supply 115 Vac plug, male connection
4 ED900 power printed circuit board socket, female connection.
5 115 Vac pair power cable plug, male connection

17.12.2 Active door.

1. Insert 115 Vac interconnecting cable plug (**7**) into ED900 power cord socket **(6)** (Fig.17.9.4).

7 115 Vac pair power cable plug, female connection

Fig. 17.12.3 Active door cables

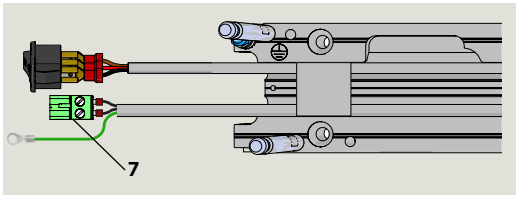
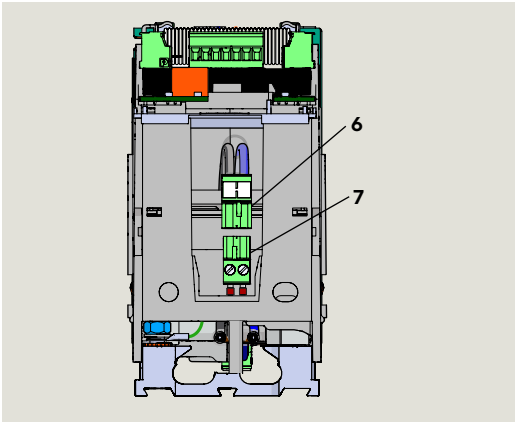


Fig. 17.12.4 ED900 115Vac pair power cable – active door



6 ED900 power cord, male connection
7 115 Vac pair power cable plug, female connection

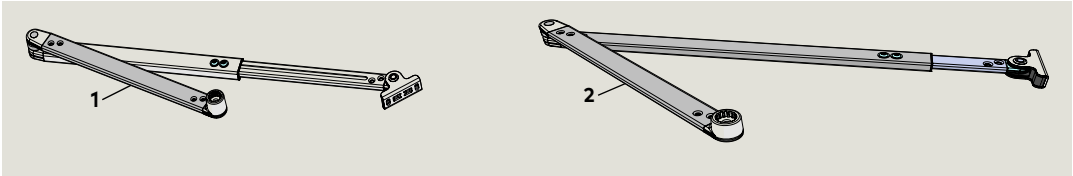
18 J/Push arm installation

18.1 Push arm installation templates

NOTICE

Reference Chapter 13 for push arm installation templates.

Fig. 18.1.1 Push arm assemblies

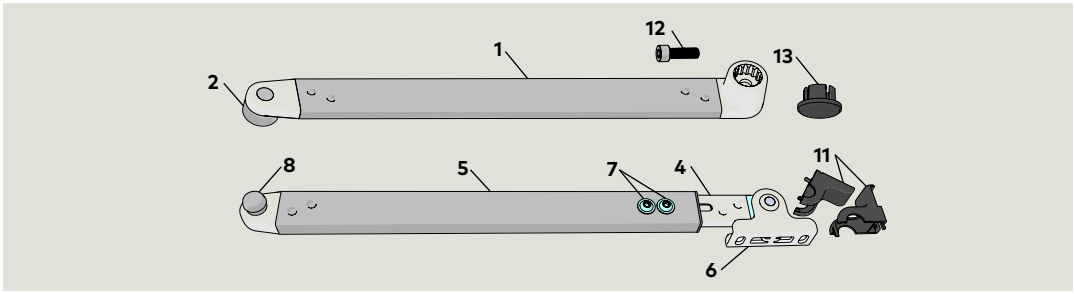


1 J8/Standard push arm, reveal depths 0 - 8" maximum

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

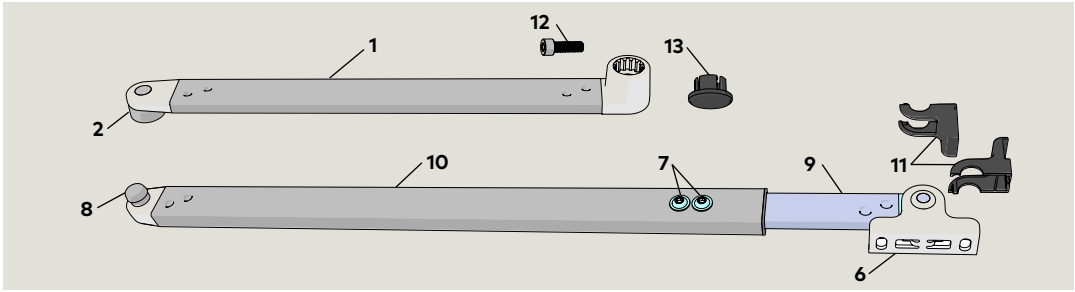
18.2 Push arm installation

Fig. 18.2.1 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. 18.2.2 J12/Splined push arm assembly, 12 [300]



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. 18.2.3 Drive arm

1 Drive arm
2 Socket
3 Arm axle sleeve

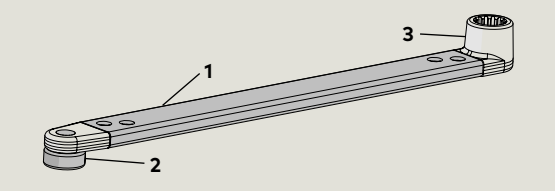
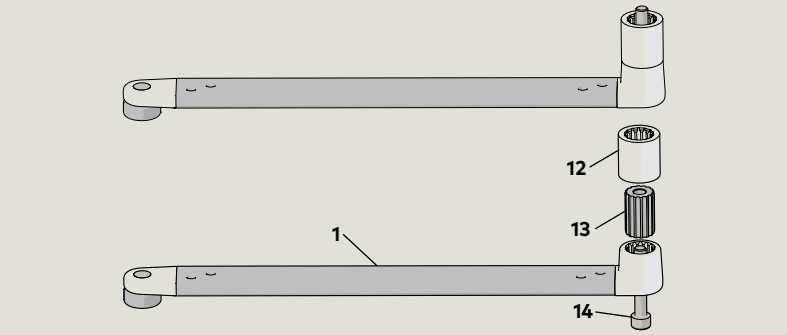
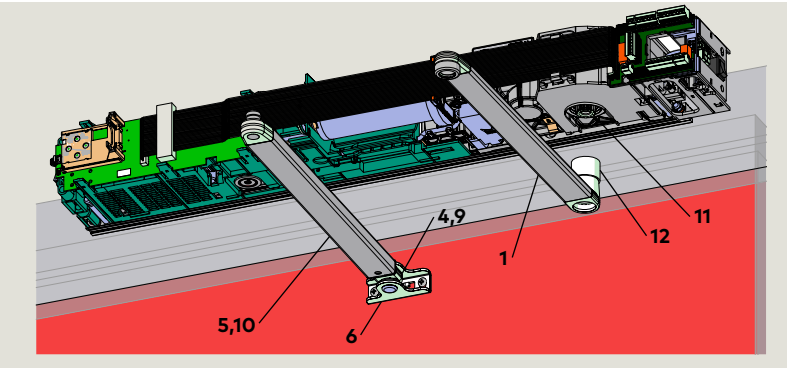


Fig. 18.2.4 Drive arm axle extension installation



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

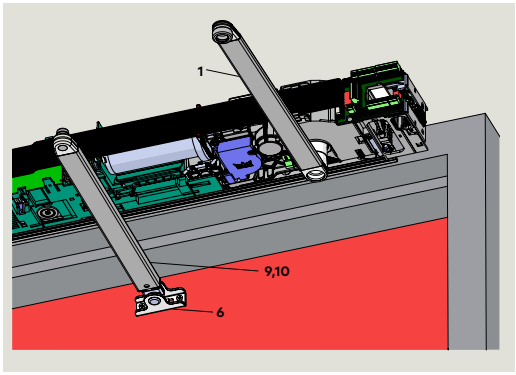
Fig. 18.2.5 Push arm assemblies for installation



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. 18.2.6 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]



18.2.1 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 20, 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]

18.2.2 Drill two holes in door for adjustment arm shoe.

Installation templates (Chapter 13) document location of shoe on door.

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

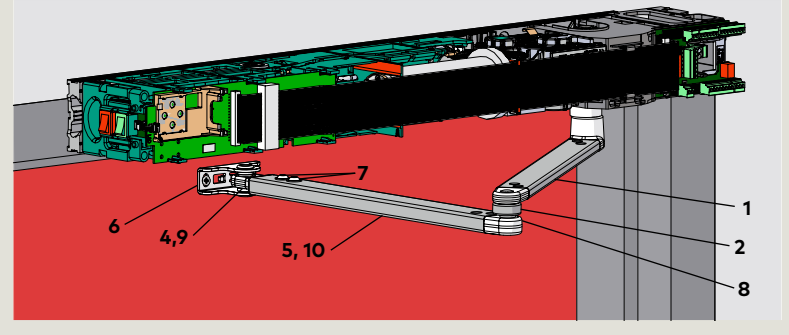
TIPS AND RECOMMENDATIONS

Reference Chapter 5, Accessory kits, for arm fasteners.

18.2.3 Secure adjustment arm assembly to door.

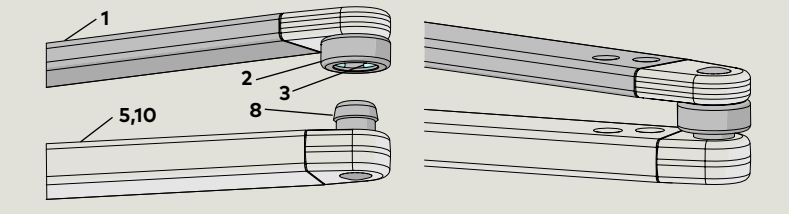
1. Fasten adjustment arm assembly to door (Fig. 18.2.6).

Fig. 18.2.7 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. 18.2.8 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. 18.2.9 Adjustment arm M6 x 10 screws

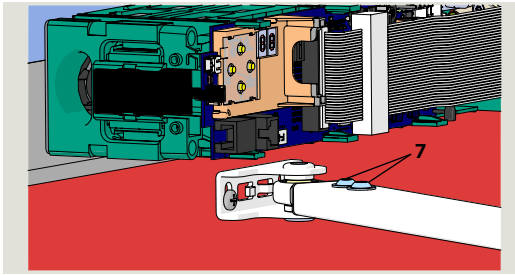
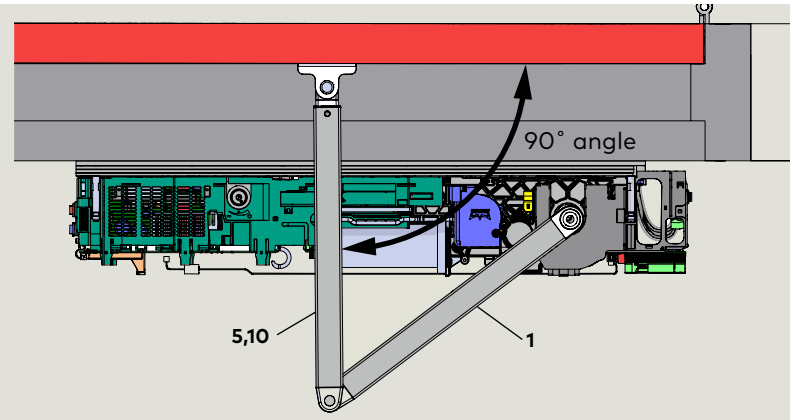


Fig. 18.2.10 Adjustment arm at 90° angle to door



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

18.2.4 Connect adjustment arm to drive arm.

1. Loosen the two adjustment M6 x 10 mm flanged button head screws (Fig. 18.2.9).

1. Using square, position adjustment arm assembly at 90° angle to door (Fig. 18.2.10).

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.

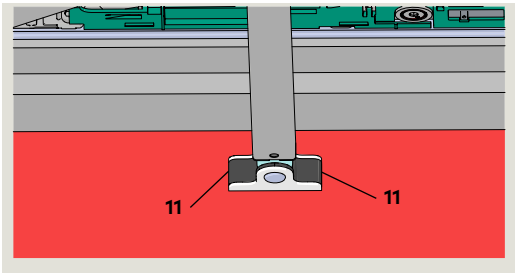
4. Secure adjustment arm position by tightening the two M6 x 10 mm flanged button head screws.

CAUTION

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

5. Install shoe screw covers.

Fig. 18.2.11 Shoe screw covers



11 Shoe screw covers

19 Arm with track mount installation

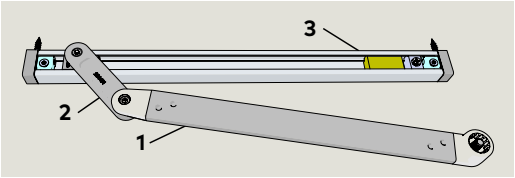
19.1 Arm with track installation

NOTICE

Reference Chapter 13 for pull arm and pull arm as push installation templates.

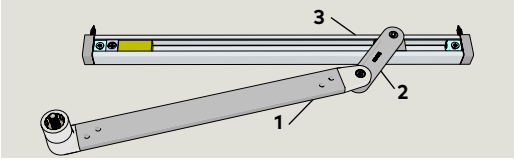
19.2 Splined arm and track assemblies

Fig. 19.2.1 T275/Splined arm with CPD lever and track assembly, LH



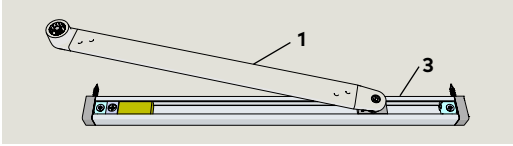
1 Drive arm
2 CPD
3 Track

Fig. 19.2.2 T275/Splined arm with CPD lever and track assembly, RH



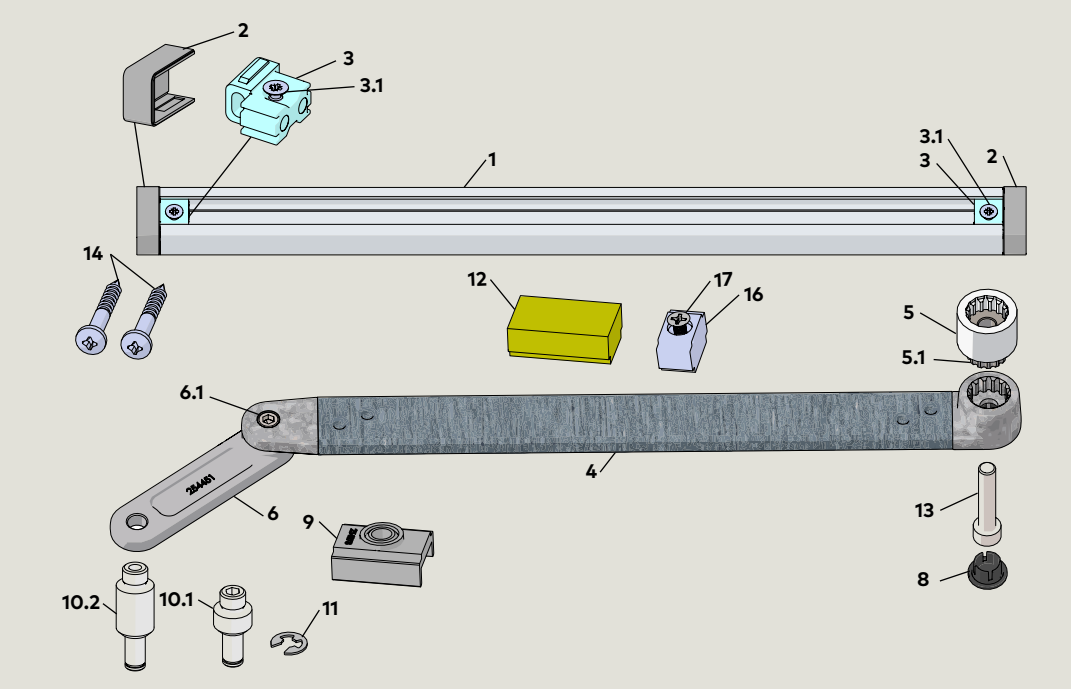
1 Drive arm
2 CPD
3 Track

Fig. 19.2.3 T/Splined arm and track assembly



19.3 Splined arm and track hardware

Fig. 19.3.1 Track assembly

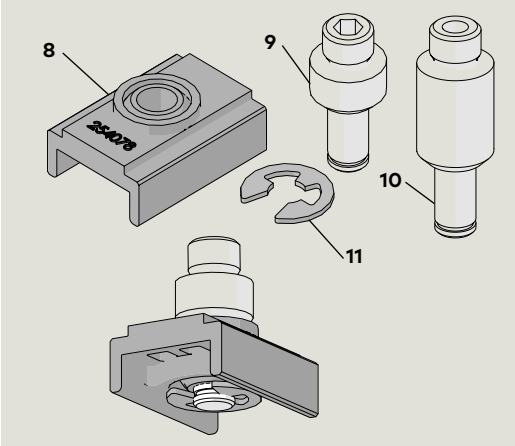


1 Track
2 End cap
3 Fixing piece
3.1 M5 x 15 Phillips FHS
4 Pull arm
5 20 mm axle extension
5.1 Splined sleeve
6 CPD lever
6.1 M6 x 10 SHCS
7 Slotted spring pin
8 Pull arm cap
9 Slide shoe
10 Pivot pin
11 Retaining ring
12 Bumper
13 M8 x 1.25 x 40 SHCS
14 Wood screws
15 Machine screws
16 Bumper stop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

19.4 Slide shoe assembly

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

Fig. 19.4.1 Slide shoe and pivot pin

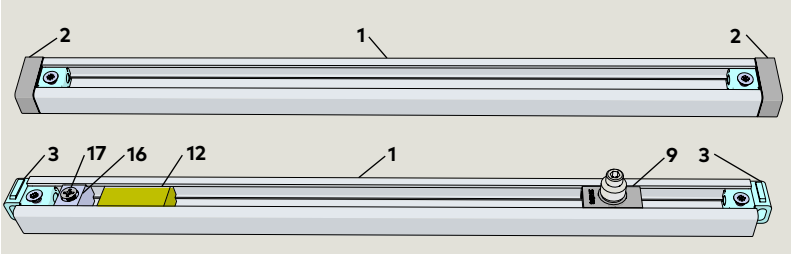


19.4.1 Install pivot pin into slide shoe.

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

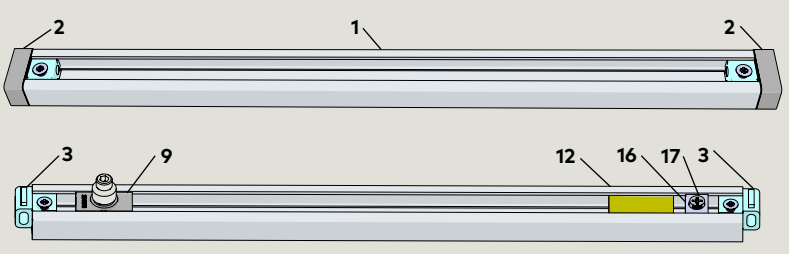
19.5 Install hardware into track

Fig. 19.5.1 RH track assembly



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

Fig. 19.5.2 LH track assembly



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

19.5.1 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).

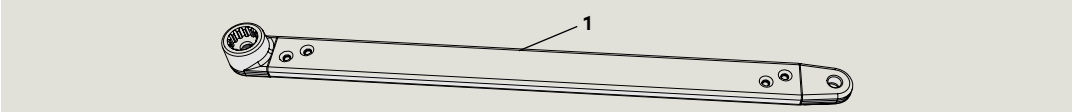
2. Secure fixing piece to end of track with M5 x 15 screw (3.1).

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

19.6 Arm assembly

Fig. 19.6.1 Arm assembly

1 Arm



19.7 Arm assembly with CPD lever

6.1 M6 x 10 SHCS
11 Slotted spring pin

Fig. 19.7.1 Slotted spring pin

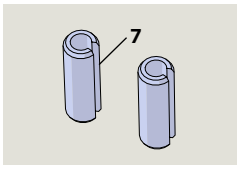
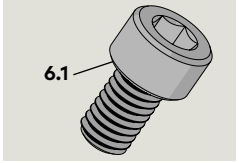
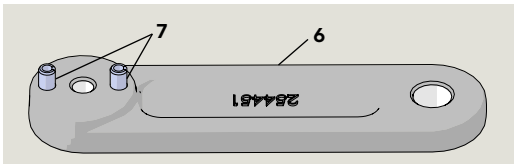


Fig. 19.7.2 M6 x 10 SHCS for CPD



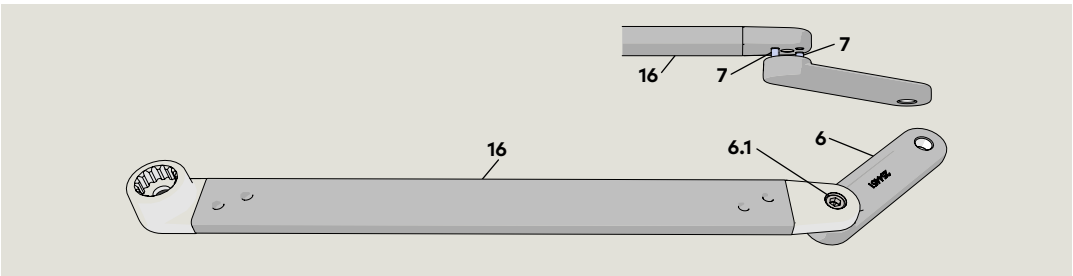
6 CPD lever
7 Slotted spring pin

Fig. 19.7.3 CPD lever and slotted spring pins



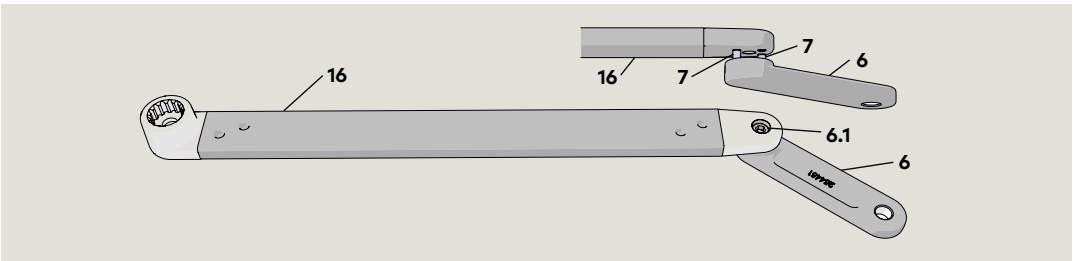
6 CPD lever
6.1 M6 x 10 SHCS
7 Slotted spring pin
16 Arm

Fig. 19.7.4 Arm assembly, RH pull, LH push



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

Fig. 19.7.5 Arm assembly, LH pull, RH push



19.7.1 Arm with CPD lever assembly.

CAUTION

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

1. Press CPD lever slotted spring pins into corresponding holes in arm.
2. Secure CPD lever to arm with M6 x 10 SHCS.

19.8 Deep pull arm installation

Fig. 19.8.1 Deep pull arm parallel to door

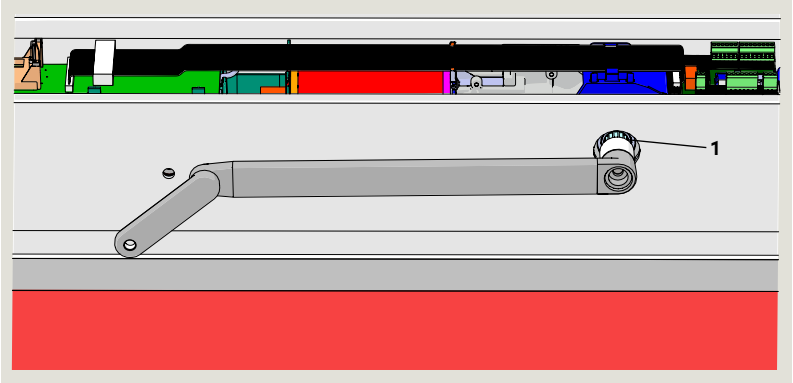
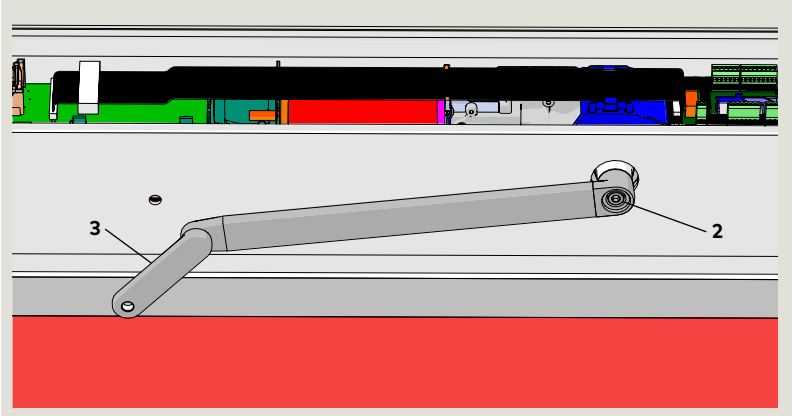


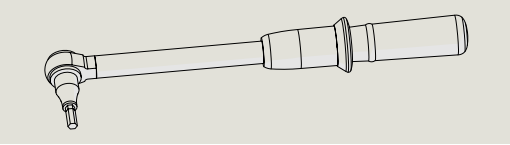
Fig. 19.8.2 Deep pull arm installed on spindle



2 M8 SHCS

3 CPD lever

Fig. 19.8.3 Torque wrench, 5 mm hex key



19.8.1 Mount drive arm to operator.

WARNING

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

CAUTION

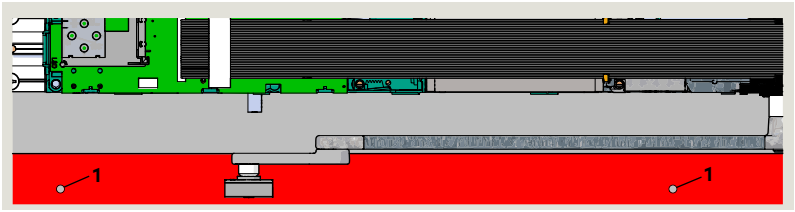
ED900 operator axle zero position.
In order to mount the drive arm in the correct position, the spindle must be at the zero position.

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. 19.8.2).
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

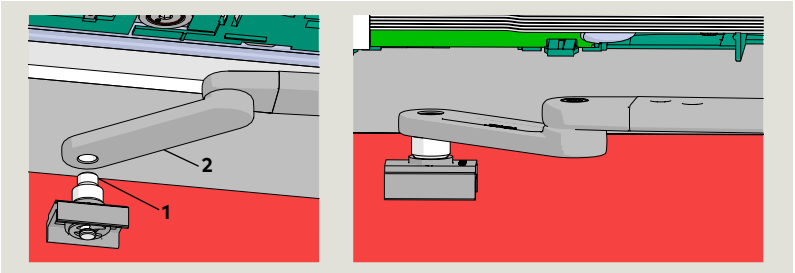
Use torque wrench with hex key socket to tighten M8 screw to 26 ft-lb [35.3 Nm].

Fig. 19.8.4 Track mounting holes in door



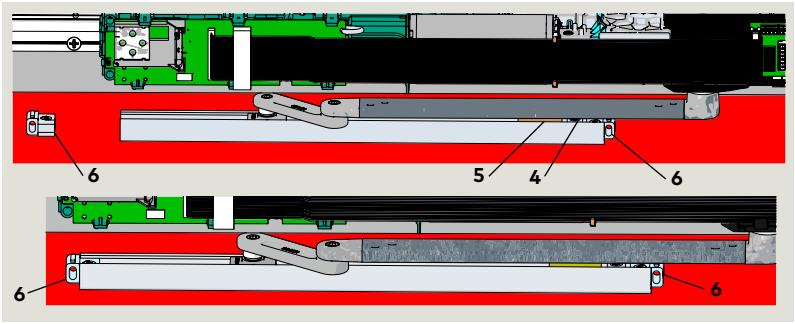
1 Track mounting holes

Fig. 19.8.5 Slide shoe installation on drive arm CPD lever



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

Fig. 19.8.6 Track assembly installed onto slide shoe



3 Shoe **5** Bumper
4 Bumper stop **6** Fixing piece

Fig. 19.8.7 Track assembly secured to door

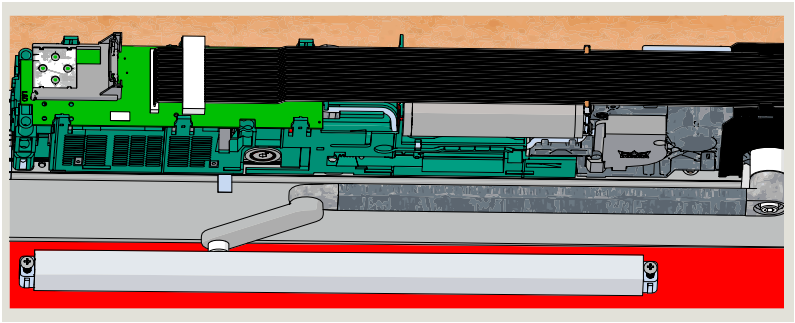
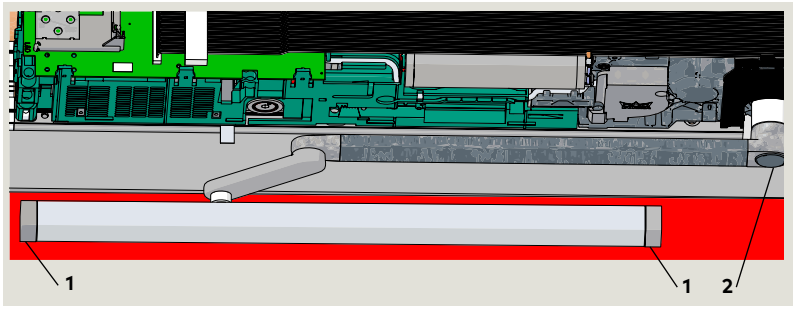


Fig. 19.8.8 End caps and spindle cap installed



1 End cap **2** Spindle cap

19.8.2 Locate and drill track mounting holes.

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

19.8.3 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. 19.8.5).
2. Use 6 mm hex key to tighten.

19.8.4 Track assembly.

1. Insure track components and deep pull arm are assembled based on hand of door (Para. 19.7).

19.8.5 Install track assembly onto slide shoe.

1. With fixing piece removed from track on opposite end from bumper, slide track assembly onto shoe (Fig. 19.8.6).
2. Install second fixing piece onto track.

19.8.6 Secure track assembly to door.

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

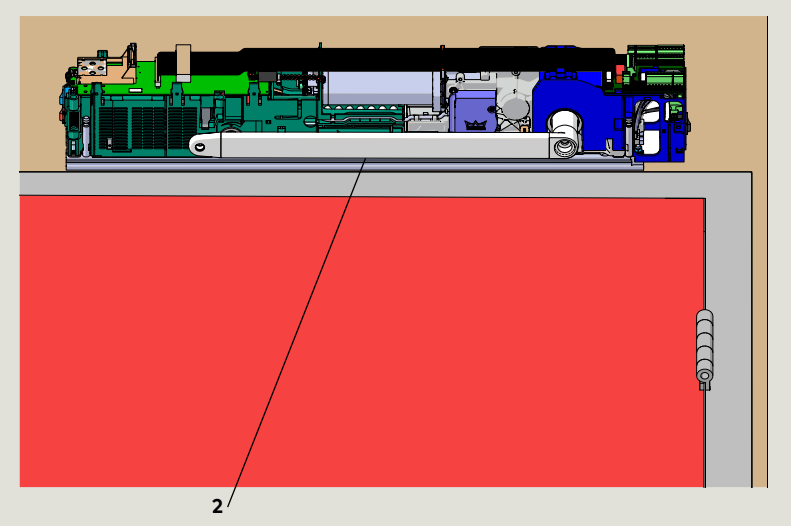
- Insure track is level as fasteners are tightened.

19.8.7 Install end caps and spindle caps.

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

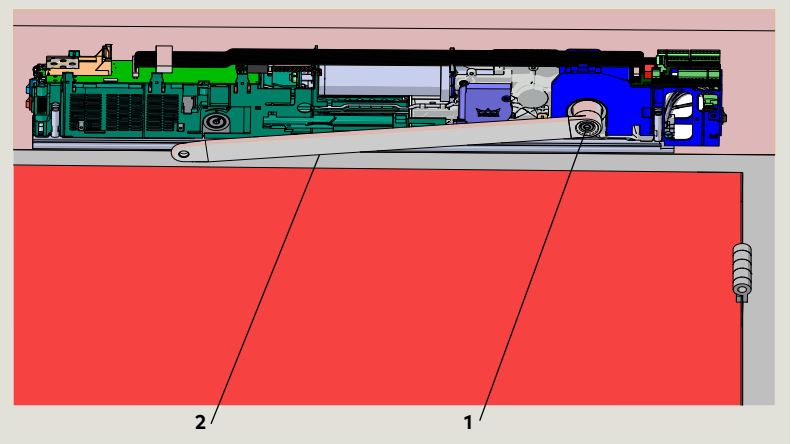
19.9 Standard pull arm installation

Fig. 19.9.1 Drive arm parallel to door



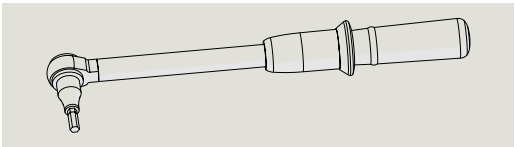
2 Drive arm

Fig. 19.9.2 Drive arm installed on spindle



1 M8 SHCS
2 Drive arm

Fig. 19.9.3 Torque wrench, 5 mm hex key



19.9.1 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 closed position.

1. Set ED900 operator spring tension based on door width.
   Reference Chapter 20.
2. Position drive arm with axle extension against operator spindle and parallel to door.
3. Rotate drive arm one spindle tooth in direction of door.
   - Depending on door reveal, this arm position may be more than one spindle tooth from the arm parallel to door position (step 2).
4. Install drive arm with axle extension onto spindle.
5. Thread the M8 x ___ mm SHCS (length determined by axle extension) into spindle and tighten SHCS.

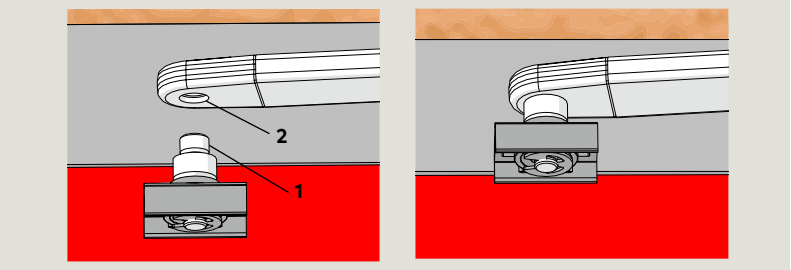
CAUTION

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

Fig. 19.9.4 Track mounting holes in door

1 Track mounting holes

Fig. 19.9.5 Slide shoe installation on drive arm



1 Pivot pin M8 SHCS **2** Drive arm M8 mounting hole

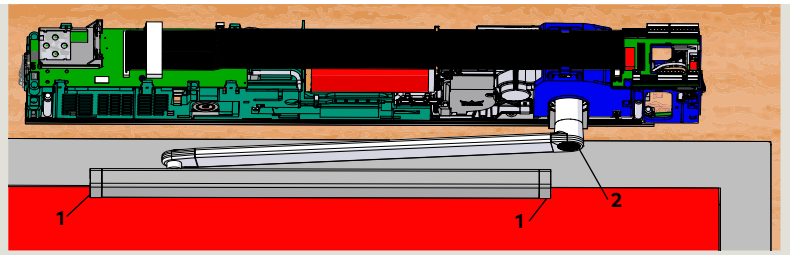
Fig. 19.9.6 Track assembly installed onto slide shoe

1 Mounting hole
2 Fixing piece

Fig. 19.9.7 Track assembly secured to door

1 Mounting hole
2 Fixing piece

Fig. 19.9.8 End caps and spindle cap installed



1 End cap
2 Spindle cap

19.9.2 Locate and drill track mounting holes.

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

19.9.3 Install slide shoe assembly onto drive arm.

1. Thread pivot pin M8 SHCS into drive arm mounting hole (Fig. 19.9.5).
- Use 6 mm hex key to tighten.

19.9.4 Track assembly.

1. Insure track components are assembled based on hand of door (Para. 19.5).

19.9.5 Install track assembly onto slide shoe.

1. With fixing piece removed from track on opposite end from bumper, slide track assembly onto shoe (Fig. 19.9.6).
2. Install second fixing piece onto track.

19.9.6 Secure track assembly to door.

1. Attach track fixing pieces to door using selected fasteners.
- Insure track is level as fasteners are tightened.

19.9.7 Install end caps and spindle caps.

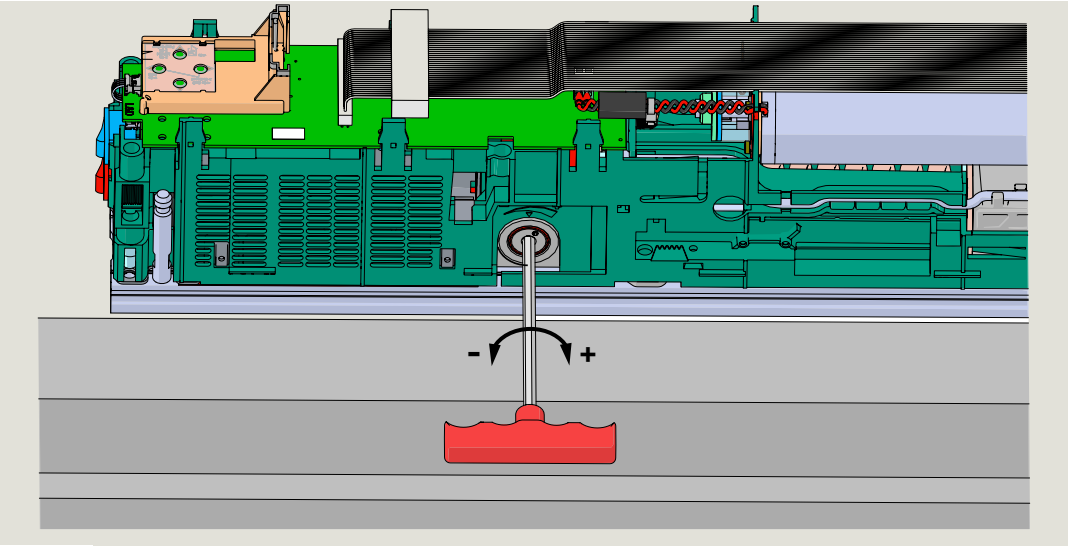
1. Install two end caps on track and the spindle cap.

20 Operator spring tension

20.1 Set ED900 operator spring tension

1 Spring tension adjustment

Fig. 20.1.1 Spring tension adjustment



20.1.1 Spring tension setting revolutions.

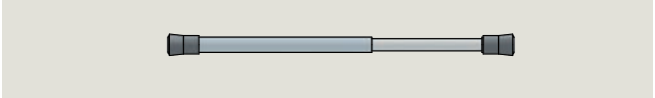
Door width				
Inches	32	36	42	48
mm	813	914	1067	1219
Spring setting revolutions				
ED900	10	14	16	18

TIPS AND RECOMMENDATIONS

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

Fig. 20.1.2 5 mm T-handle hex key

Fig. 20.1.3 Door pressure gauge



20.1.2 Operator spring tension function.

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

20.1.3 Spring tension adjustment.

1. Spring tension adjustment is factory set fully CCW, no spring tension.
2. Spring must be pretensioned per Para. 20.1.1.

- Use 5 mm T-handle hex key (Fig. 20.1.2).

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)!

20.1.4 Check door closing force.

1. Para. 20.1.1 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 21, ANSI/BHMA standards for door closing forces.

21 ANSI/BHMA standards

21.1 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.

21.1.1 Door measurements, low energy power operated door.

ED900 Parameter					A156.19 standard	
Parameter		Function	Factory setting	Adjustment range	Para.	Requirement
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 Chapter 14 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.

21.1.2 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).					

21.1.3 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.		

21.1.4 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.

22 Install door signage

22.1 Install door signage

22.1.1 Install door signage.

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

23 Fine cover, end caps and spindle caps

23.1 Fine cover end cap and spindle installation

23.1.1 Cover and end cap installation.

Fine cover and end caps will be installed after ED900 operator setup is completed.

- Reference ED900 Setup and Troubleshooting Manual 08125380.

23.1.2 Install Service Call label.

1. Install Service Call label at convenient location. Service call label included in Low Energy label kit HK3137-010.

Fig. A.1.11 Label, service call

1 Label, Service call, DD3425-010

24 Maintenance

24.1 Safety label, low energy swing doors

24.1.1 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.

24.1.2 Safety information label location

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

24.1.3 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.

24.1.4 Additional annual compliance inspection labels

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

Fig. 24.1.1 Safety information label

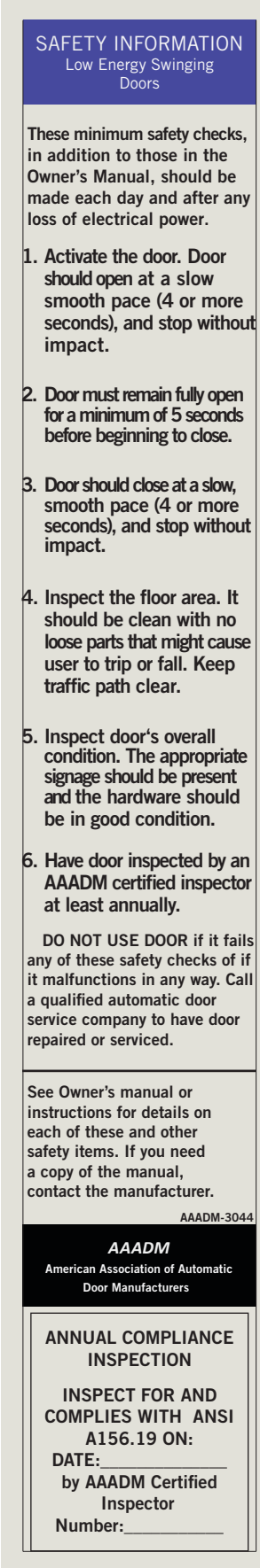
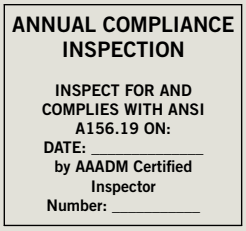


Fig. 24.1.2 Annual compliance inspection label

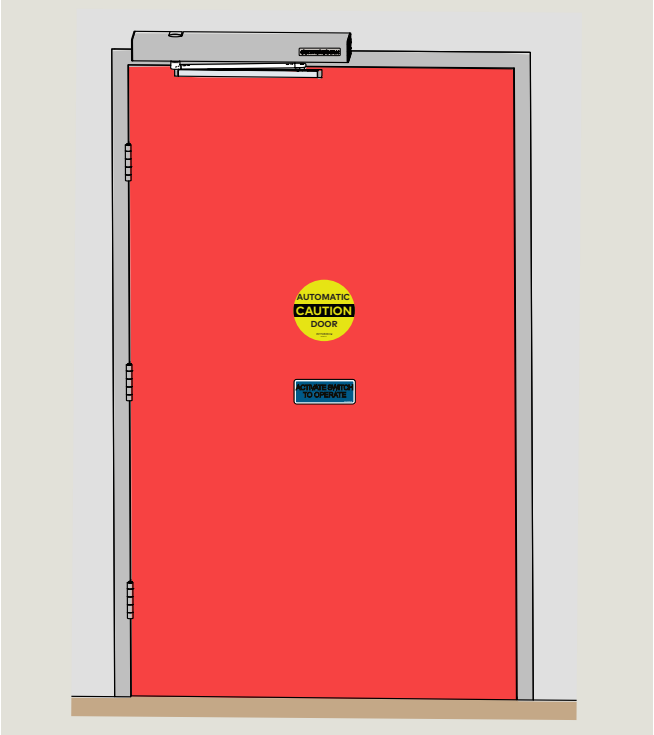


24.2 ED900 environment and cleaning

Table 24.2.1 Operator environmental requirements.

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

Fig. 24.2.1 ED900 low energy installation



24.2.1 ED900 environmental requirements.

ED900 assembly is designed to operate on an interior application only under the specifications shown in Table 24.2.1.

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

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

24.2.3 Cleaning

⚠ WARNING

Cleaning of ED900 cover surfaces should be done with Mode switch in Close position!

ED900 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.

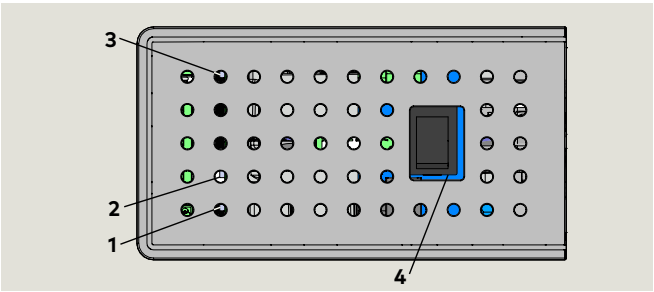
24.2.4 Water and other liquids.

⚠ WARNING

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

24.3 ED900 Operator LEDs

Fig. 24.3.1 ED900 LEDs



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

24.3.1 Power On indicator.

Green LED.

24.3.2 Service level indicator.

Yellow LED.
ED900 should be scheduled for service when yellow LED is first illuminated, or annually, whichever comes first.

24.3.3 Fault, In codes.

Red LED.
Displays blinking codes for:

- Certain **In** information.
- **E** error codes.

TIPS AND RECOMMENDATIONS

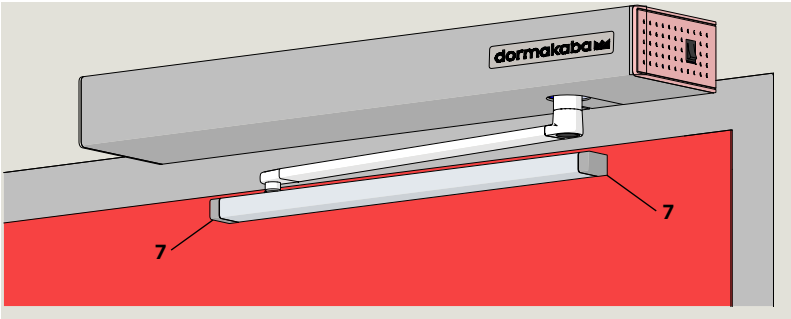
08125380 Setup and Troubleshooting Manual.
Appendix A. Yellow LED (Maintenance).

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

Appendix B. Red LED (fault and In codes):

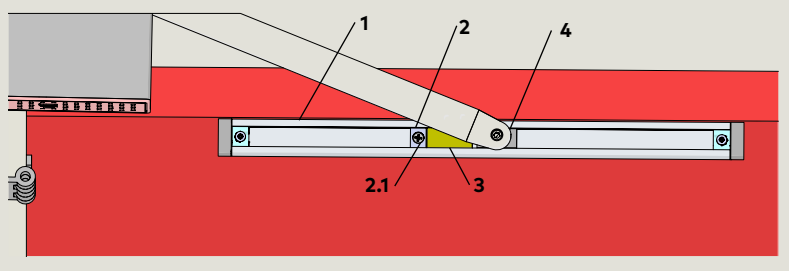
24.4 Pull arm maintenance

Fig. 32.4.1 Arm and track assembly



7 End cap

Fig. 24.4.2 Arm and track assembly



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

Fig. 24.4.3 Track, slide shoe, pivot pin

1 Track
2 Slide shoe
3 Pivot pin
6 Arm

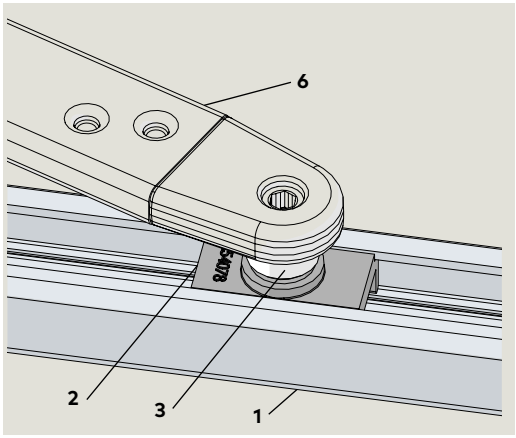
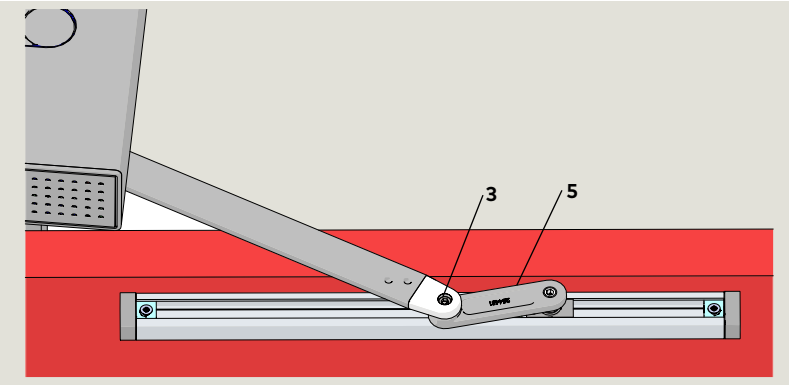


Fig. 24.4.4 CPD lever M6 socket head screw



3 M6 socket head cap screw
5 CPD lever

Fig. 24.4.5 Mode switch

24.4.1 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.

24.4.2 Track maintenance.

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

24.4.3 CPD lever.

1. Check tightness of M6 SHCS.

24.5 Arm fasteners – torque requirements

Fig. 24.5.1 Arm M8 SHCS cap

8 Cap

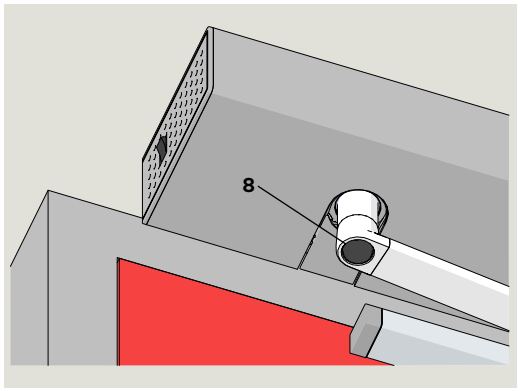


Fig. 24.5.2 M8 SHCS

5 M8 x __ SHCS

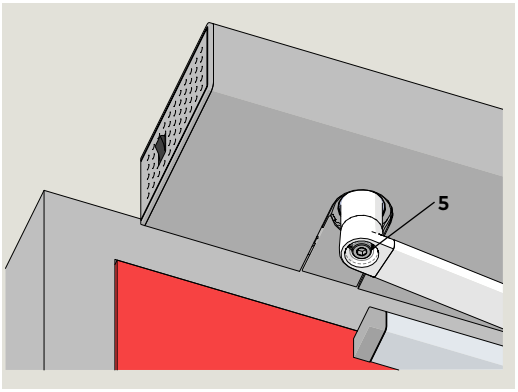
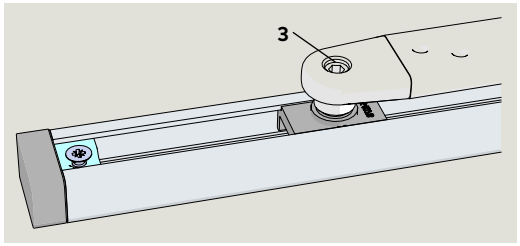


Fig. 24.5.3 Pivot pin M8 socket head

3 Pivot pin M8 socket head



24.5.1 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].

32.5.2 Check pivot pin M8 socket head torque.

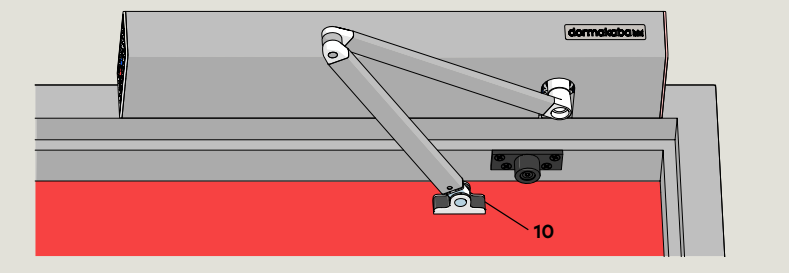
1. Check torque.

CAUTION

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

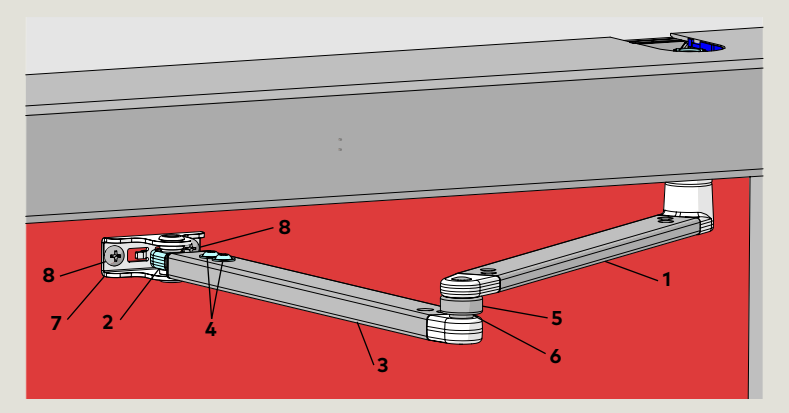
24.6 Push arm maintenance

Fig. 24.6.1 Push arm assembly



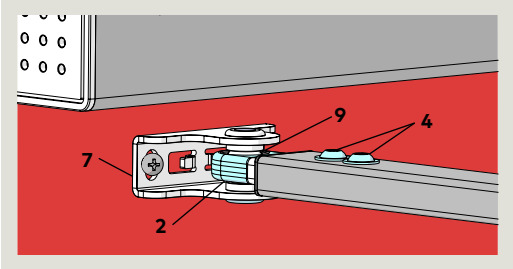
10 Screw cover caps

Fig. 24.6.2 Push arm assembly hardware



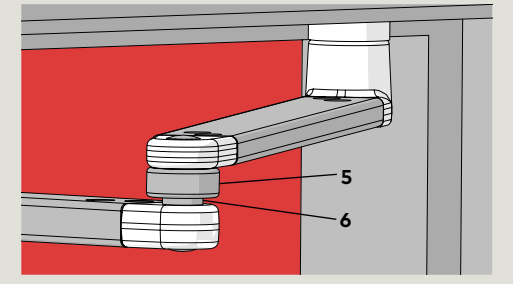
1 Drive arm
2 Adjustment arm
3 Adjustment arm tube
4 M6 x 10 button head screws
5 Drive arm socket
6 Adjustment arm ball head
7 Shoe
8 Shoe mounting screws (2)

Fig. 24.6.3 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. 24.6.4 Arm socket and ball head



5 Socket
6 Ball head

24.6.1 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. 24.6.2).

2. Shoe and adjustment arm assembly:
- Check for wear or damage at shoe bearing (Fig. 24.6.3).

3. Adjustment arm socket and ball head (Fig. 24.6.4).
- Check for wear or damage.

24.6.2 Shoe door mounting screws .

1. Remove screw cover caps (Fig. 24.6.1).
2. Check for tightness of mounting screws (Fig. 24.6.3).
3. Replace screw cover caps.

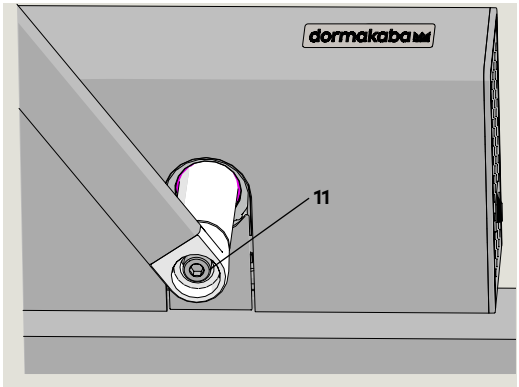
24.6.3 Drive arm to ED900 spindle.

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

CAUTION

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

Fig. 24.6.5 Spindle M8 SHCS



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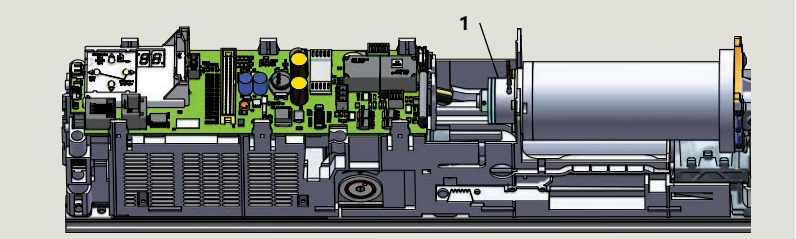
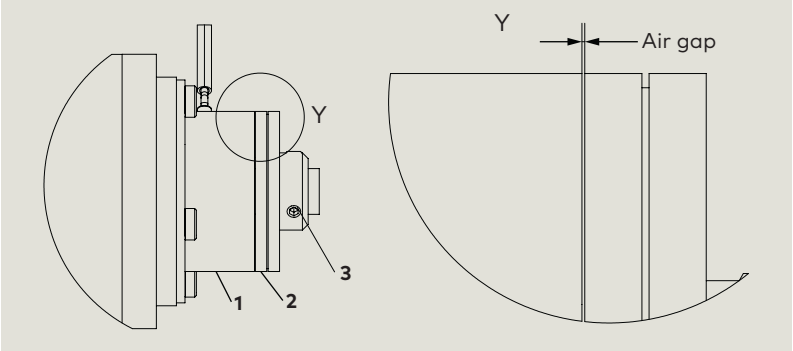
24.7 ED900 brake maintenance

Fig. 24.7.1 ED900 operator



1 Brake assembly

Fig. 24.7.2 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. 24.7.3 Brake assembly

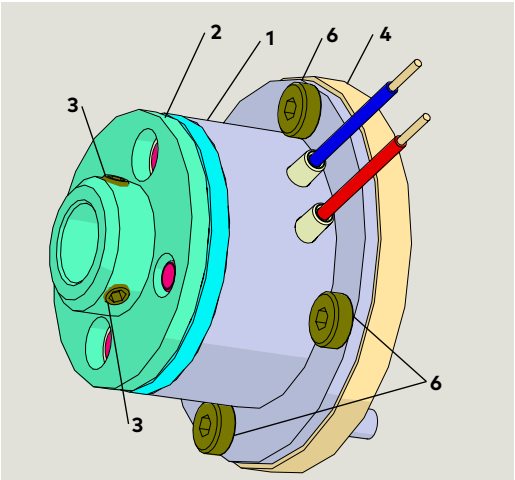


Fig. 24.7.4 Feeler gauge set

24.7.1 Adjustment of air gap: brake to brake disc (Fig. 32.7.2).

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

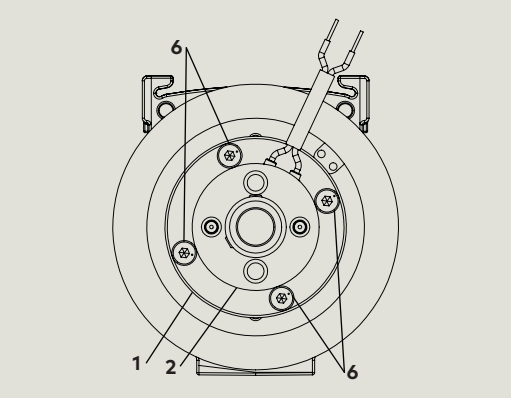
M3 x3 SHCS torque setting:
5.3 in-lb + 0.9 in-lb [0.6 Nm +0.1 Nm].

TIPS AND RECOMMENDATIONS

Paper stock thickness:
approximately 0.003"

Fig. 24.7.5 M3 x 5 SHCS

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



24.7.2 Torque setting of M3 x 5 SHCS.

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

Fig. 24.7.6 Brake disc assembly removed from brake

1 Brake assembly
2 Brake disc assembly
5 Motor shaft

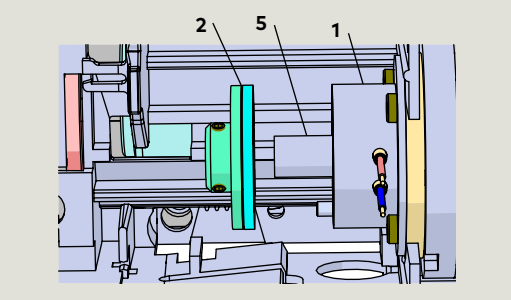


Fig. 24.7.7 Brake and brake disc assemblies

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

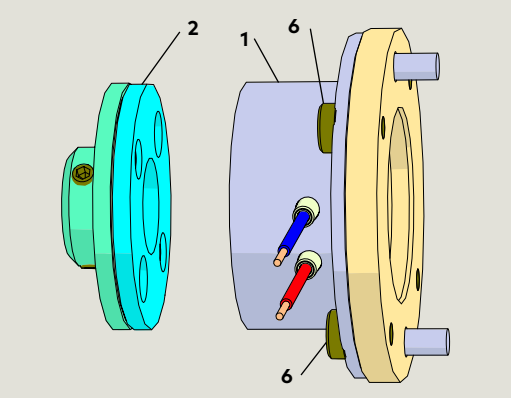
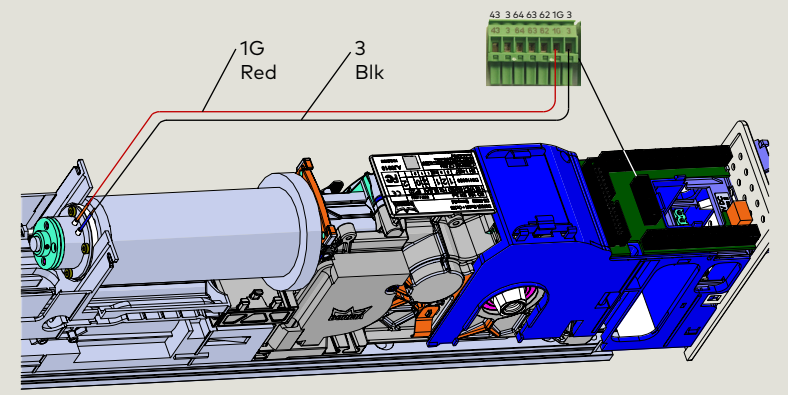


Fig. 24.7.8 Brake coil wiring



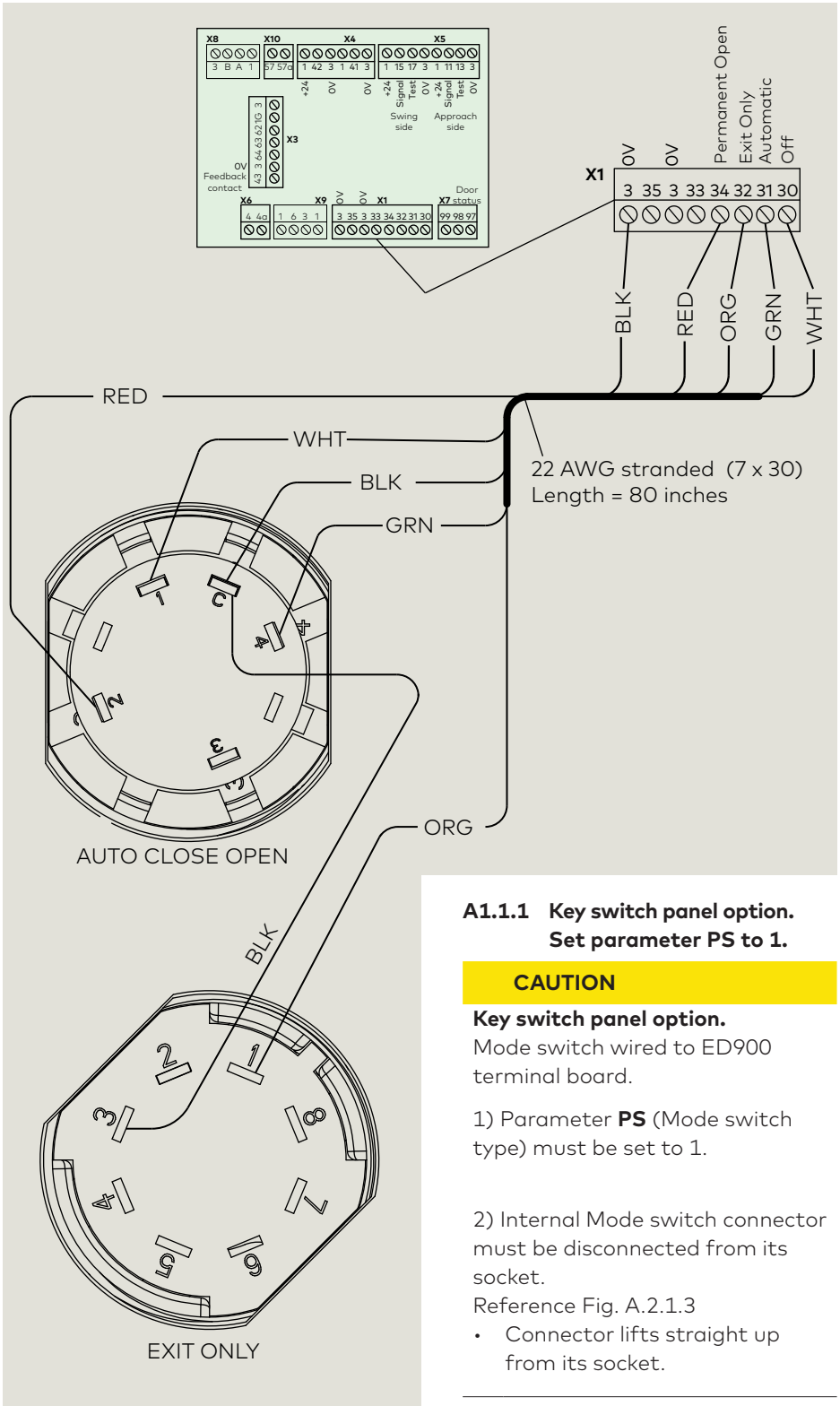
Appendix A - Wiring diagrams

A1.1 Key Switch Panel with RJ45 connector

Fig. A1.1.1 Key switch panel

Reference Appendix C.1 for RJ45 comm cable connection.

Fig. A1.1.2 Key switch panel wiring diagram



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

CAUTION

Key switch panel option.
Mode switch wired to 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

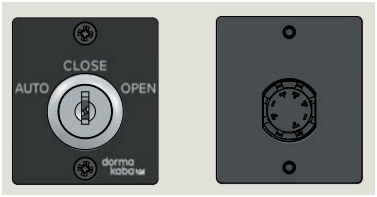
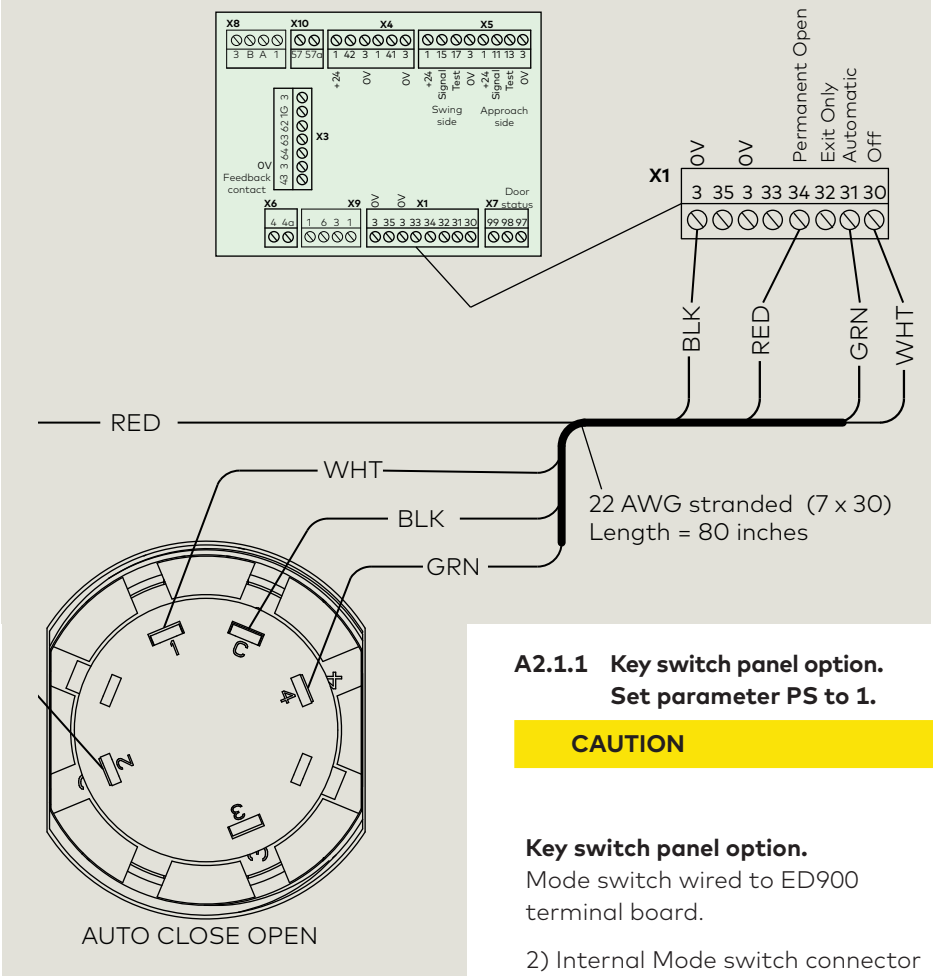


Fig. A2.1.2 Key switch panel wiring diagram



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

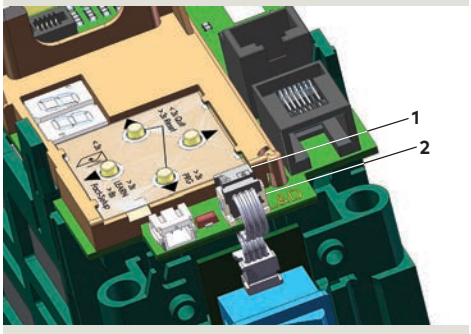
CAUTION

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

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 Mode switch connector and socket



1 Mode switch cable connector

2 Mode switch socket

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