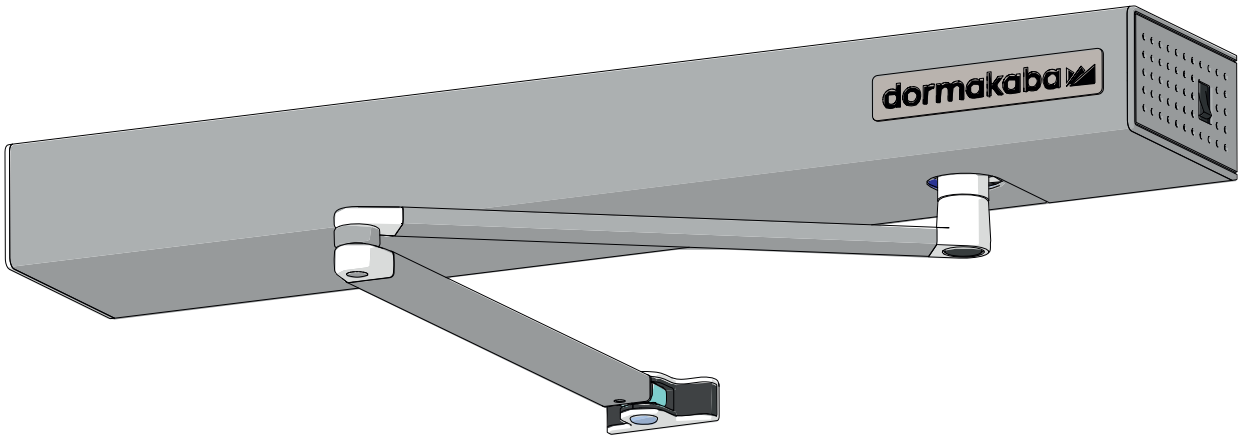

ED50LE

Low energy swing door operator

Installation Instructions

DL4616-002 – 11-2022

| EN |

dormakaba

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1 General information

1.1 General information

1.1.1 Installation Instructions.

This manual provides installation instructions for the following ED50LE door configurations.
Reference Para. 2.2 for illustrations.

Single doors.

1. RH and LH pull.
2. RH and LH push.

Double doors.

1. Pull
2. Push
3. Double egress

NOTICE

ED50LE Setup and Troubleshooting.
Reference ED50LE-ED100LE Setup and Troubleshooting Manual DL4617-001.

1.1.2 dormakaba.us website.

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

1.1.3 Dimensions

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

1.1.4 Building codes and standards.

ED50LE installation: observe applicable national and local building codes.

1.1.5 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 overview

2.1 ED50LE maximum door weights and door installation

2.1.1 ED50LE maximum door weight.

Table 2.1.1 ED50LE maximum door weight

Exterior and Interior applications Prevailing conditions at opening must be considered		
Maximum door width	Pounds	kg
48" [1219]	220	[100]

2.1.2 Interior building surface installation.

NOTICE

Installation on an interior building surface.

The ED50LE with fine cover must be installed on an interior building surface.

2.1.3 ED50LE exterior door Installation.

NOTICE

Exterior door use.
To insure proper suitability for exterior door use, the following topics must be addressed in the context of the door application setting.

- For site-specific use factors such as high wind conditions and/or building pressure consult the factory.
- Door width, height, weight, and usage patterns.
- Observable prevailing conditions at the opening under which the operator is expected to perform. In some instances, this may require increased force settings to counteract these conditions.
- Door mounted presence sensors.
  When attempting to overcome these forces, it is strongly suggested that door mounted presence sensors be employed to enhance pedestrian safety through the opening.

2.2 Single door configuration examples

Fig. 2.2.1 LH push

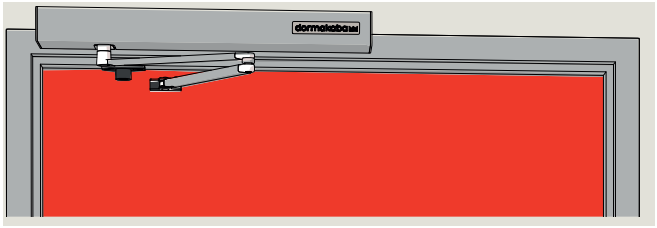
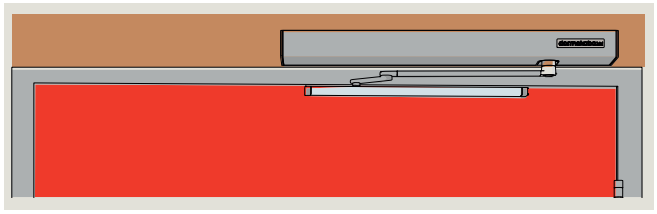


Fig. 2.2.2 LH pull



2.3 Double door configuration examples

Fig. 2.3.1 Push

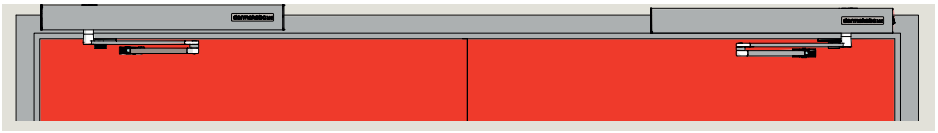


Fig. 2.3.2 Pull

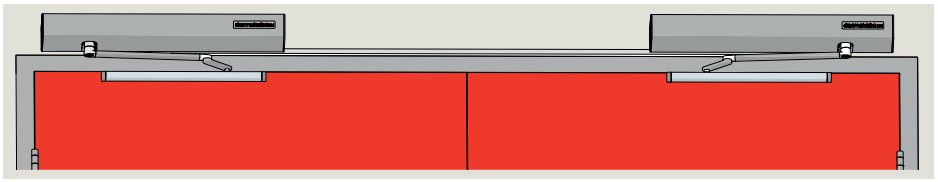
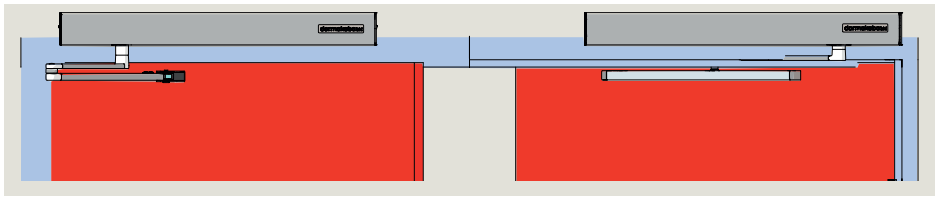


Fig. 2.3.3 Double egress



2.4 ED50LE low energy operator

Fig. 2.4.1 ED50LE operator HX4680-010

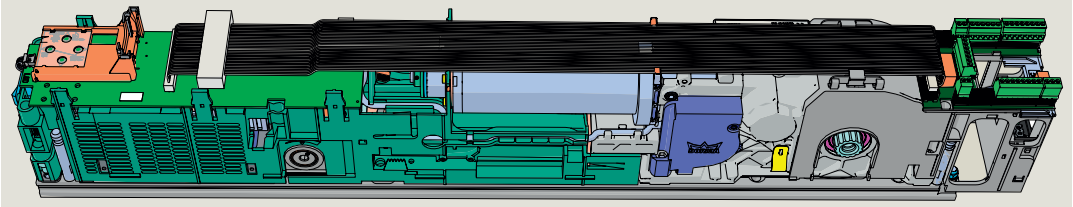
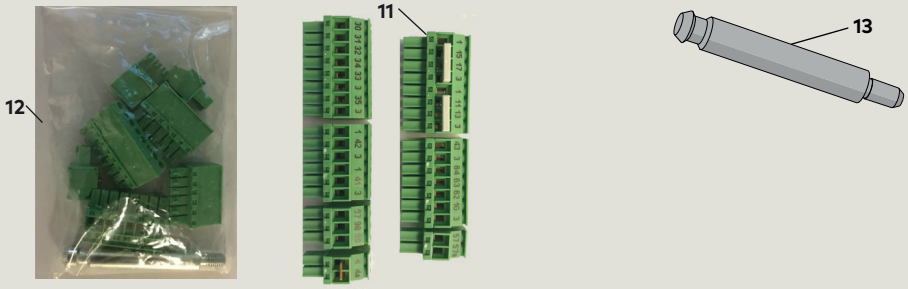
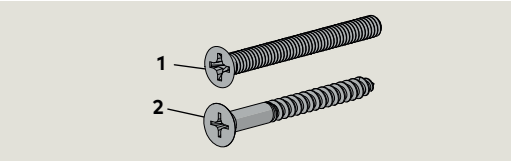


Fig. 2.4.2 Accessory terminals, guide pin



11 Terminals for accessory wiring
12 Bag containing terminals and third guide pin*
13 Guide pin
* Included with operator

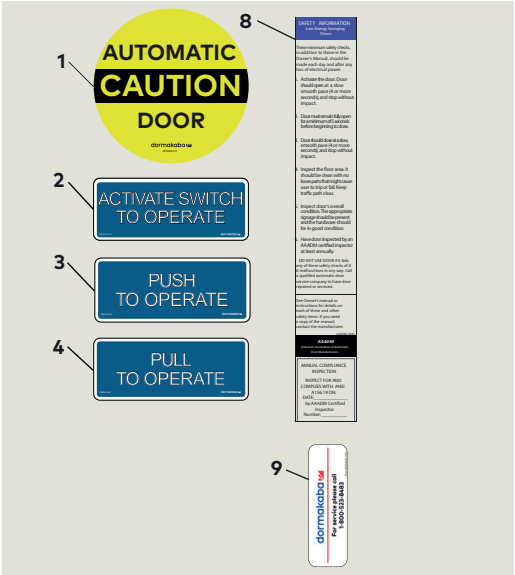
Fig. 2.4.3 ED50LE backplate plate screw kit HK4053-010



1 #12 x 2 1/2" Phillips FHWS DF0670 000
2 1/4-20 x 1 1/2" PFHMS DF0671-000

Assembly #	Item #	Quantity
HK4953-010 Screw kit	1	12
	2	12

Fig. 2.4.4 Decal kit, low energy HK3137-0X0



1 DD0586-010
2 DD0758-010
3 DD0762-010
4 DD0762-020
8 Safety Information label, low energy DD1269-040
9 Label, Service Call DD3425-010

Assembly #	Item #	Quantity
HK3137-010 Single door decal kit	1	2
	2	1
	3	1
	4	1
	8	1
	9	1

Assembly #	Item #	Quantity
HK3137-030 Double door decal kit	1	4
	2	4
	3	2
	4	2
	8	1
	9	1

2.5 ED50LE fine cover kits

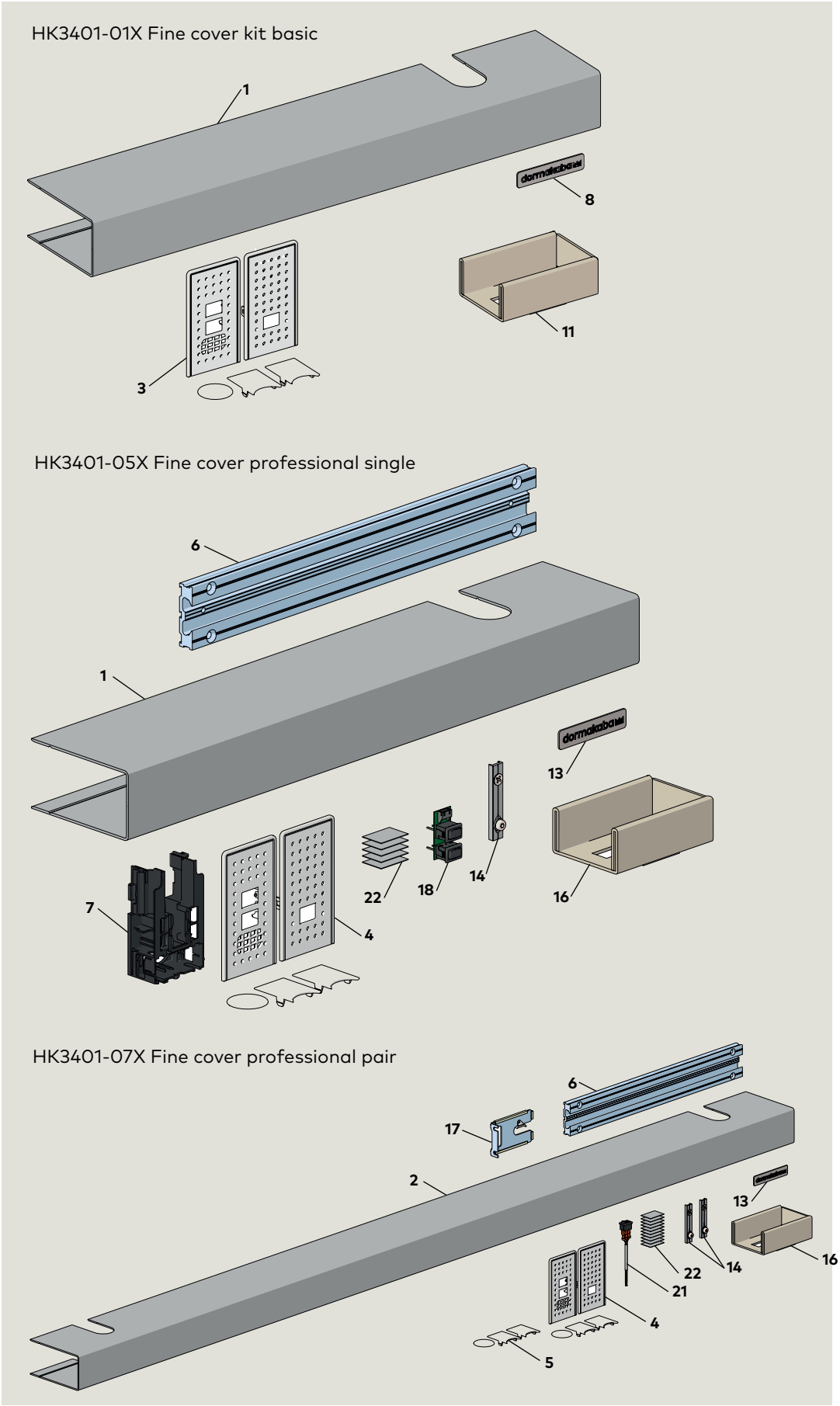
2.5.1 Fine cover kits.

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

Table 2.5.1 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

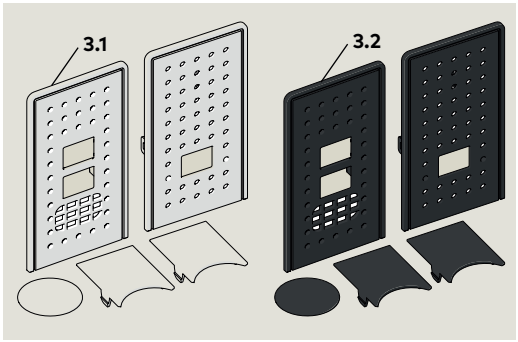
Fig. 2.5.1 Fine cover kits



2.6 Fine cover kit hardware

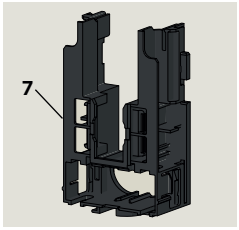
1 Mounting, extr. connector HC3491-010
2 M6 x 10 mm SHCS and washer HF3495-01Z
3 M6 x 10 mm PFHS HF3496-01Z

Fig. 2.6.1 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. 2.6.2 Cover bracket



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

Fig. 2.6.3 Wire retainer

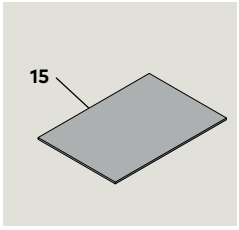
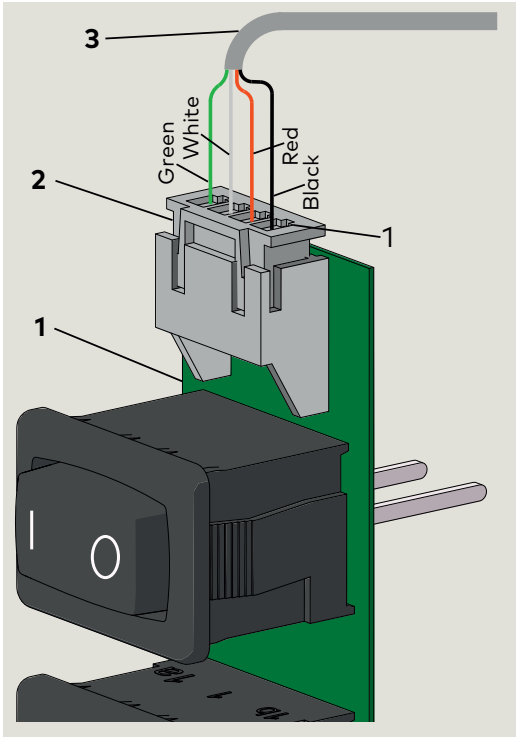


Fig. 2.6.4 Mode switch



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

Fig. 2.6.5 Backplate connect kit HK3491-001

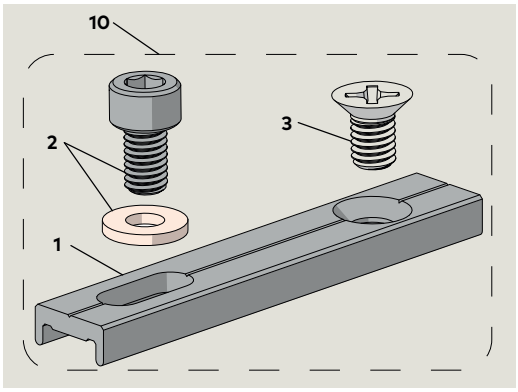


Fig. 2.6.6 Spindle cap sets

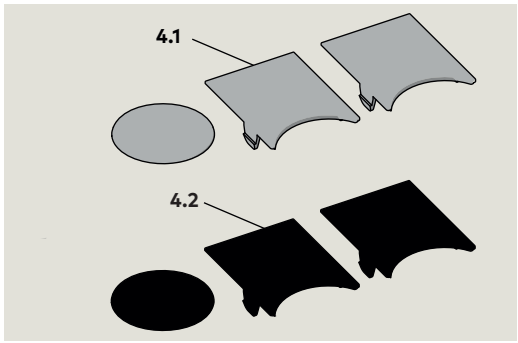


Fig. 2.6.7 dormakaba logo plate

2.7 Pull and push arm kits

Fig. 2.7.1 Push arm kit, 8.75" reveal HK4709-01X

1 Standard push arm, 8.75" reveal DC4677-01X
3 Screw kit, HK2719-010

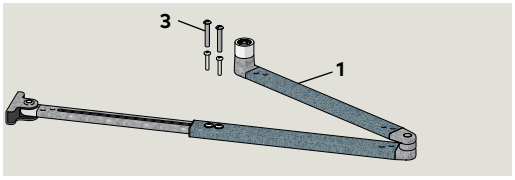
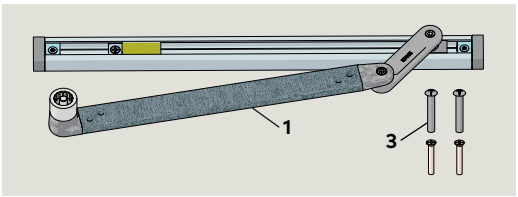


Fig. 2.7.2 Deep pull arm kit, HK4709-12X

1 Deep pull arm DC4678-02X
3 Screw kit, HK2719-020



2.8 Arm screw kits

9.1 10-24 x 1 1/2" barrel nut DF2718-01Z
9.2 10-24 x 1/2" PPHMS DF3278-01Z
10.1 10-24 x 1 1/2" barrel nut DF2718-01Z
10.2 10-24 x 1 1/4" FHSCS DF2717-01Z

Fig. 2.8.1 Push arm screw kit HK2719-010

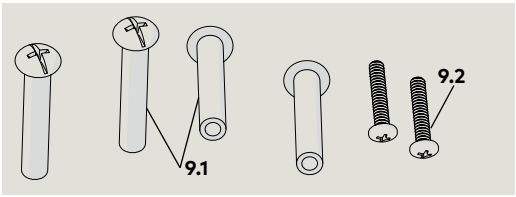
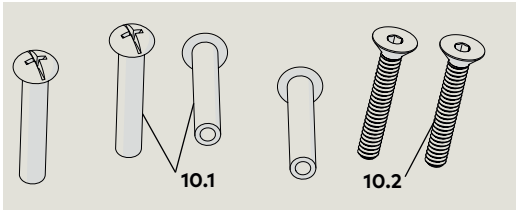


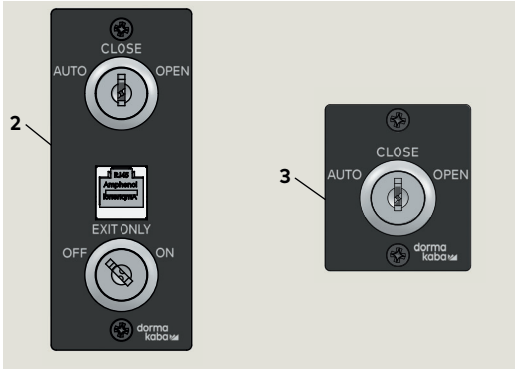
Fig. 2.8.2 Pull arm screw kit HK2719-020



2.9 Optional key switch panels

2 Key switch panel, RJ45, HX4604-21C
3 Key switch panel HX4604-11C

Fig. 2.9.1 Key switch panels

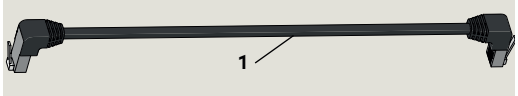


TIPS AND RECOMMENDATIONS

- Wiring diagrams; reference Appendix B.

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. 2.9.2 Communication cable, 90 degree RJ45



2.10 ED50LE axle extension kits

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

Fig. 2.10.1 [20 mm] HC4679-001

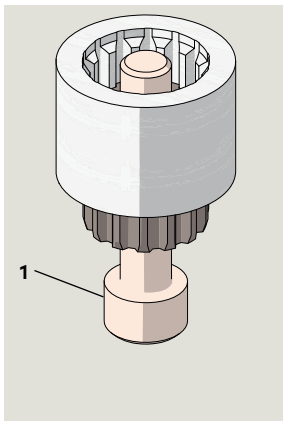


Fig. 2.10.2 [30 mm] HC4679-002

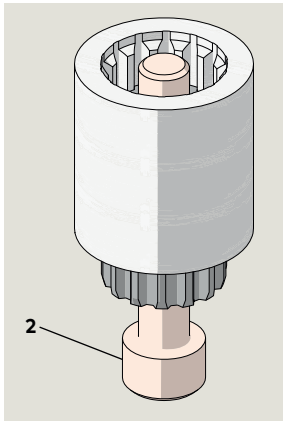
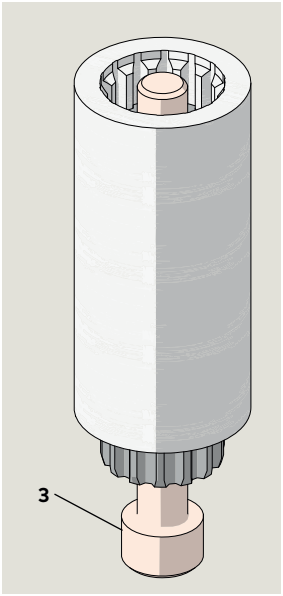


Fig. 2.10.3 [60 mm] HC4679-003



2.11 Push arm door stop - option

2 1/4" thick base plate DC4633-001
3 Rubber bumper DC4633-003
4 Shoulder screw DC4633-004
5.1 1/4 x 1 1/4" Phillips FHS, black oxide, SS
5.2 No. 14 x 1 1/4" Phillips FHS for sheet metal, zinc plated steel

Fig. 2.11.1 Door stop assembly HS4633-001

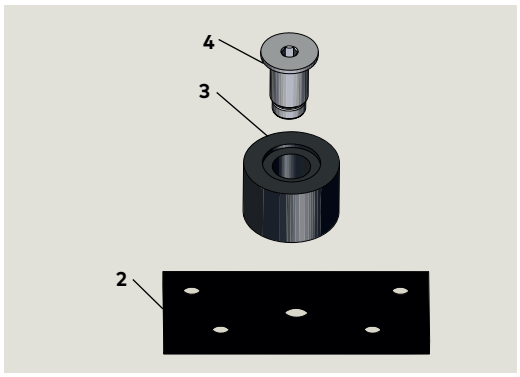
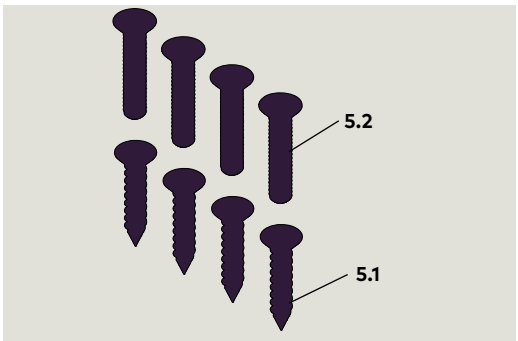


Fig. 2.11.2 Mounting screw kit HC4633-005



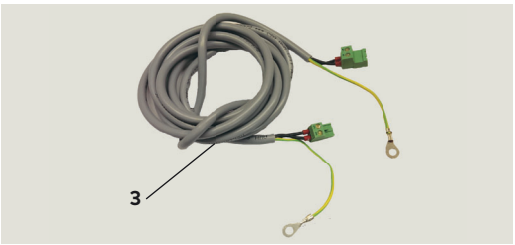
2.12 Double door ED50LE operator connection cables

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

Fig. 2.12.1 Communication (sync) cable

Connect cable	Length		Item #	Quantity
HX3484-030	119 5/8"	[3400 mm]	3	1
Optional				
HX3484-010	68 7/8"	[1750 mm]	3	0
HX3484-020	94 1/2"	[2400 mm]	3	0

Fig. 2.12.2 Connect cable



3 Technical data

3.1 ED50LE operator technical data

Technical data continued on page 10.

3.1.1 Operating conditions.

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

3.1.2 General specifications.

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

TIPS AND RECOMMENDATIONS

- *__X4__ terminal board numbers, reference Chapter 4.

3.1.3 Inputs

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

3.1.4 Outputs

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

3.1.5 Integrated functions

Hold open time Automatic opening	**dd** parameter	0 to 30 s Optional 0 - 180 s.
Hold open time NIght / bank	**dn** parameter	0 to 30 s
Hold open time Manual opening	**do** parameter	0 to 30 s
Door blocking behavior	**hd** parameter	Automatic, manual door modes
Electric strike delayed opening for locking mechanism	**Ud** parameter	0 to 4 s
Locking device feedback **X3** 43, 3	Chapter 4	Motor lock
Wind load control, maximum	**Fo, Fc** parameters	33.7 lb f 150 N
Voltage independent braking circuit	Reference: Setup and Troubleshooting Instructions	Adjustable with potentiometer
LED status indicators Green, Red, Yellow		24 Vdc power Error codes Service interval
Program and Exit Only switches		Auto, Close, Open Exit only; Off, On
User interface		4 button keypad, 2 digit display
Slot for upgrade cards		Extension of functional range.
Firmware update		Firmware update

TMP, temperature management program	Overload protection	
IDC, initial drive control	Driving phase optimization	
Cycle counter	**CC** parameter	0 to 1,000,000
Power assist function	**hA, hF, hS** parameters	Drive support for manual opening of door
Push & go function	**PG** parameter	Auto opening of door at 4° open

TIPS AND RECOMMENDATIONS

- **Parameters**, reference Setup and Troubleshooting Instructions Manual.

3.2 ED50LE operating specifications

3.2.1 ED50LE

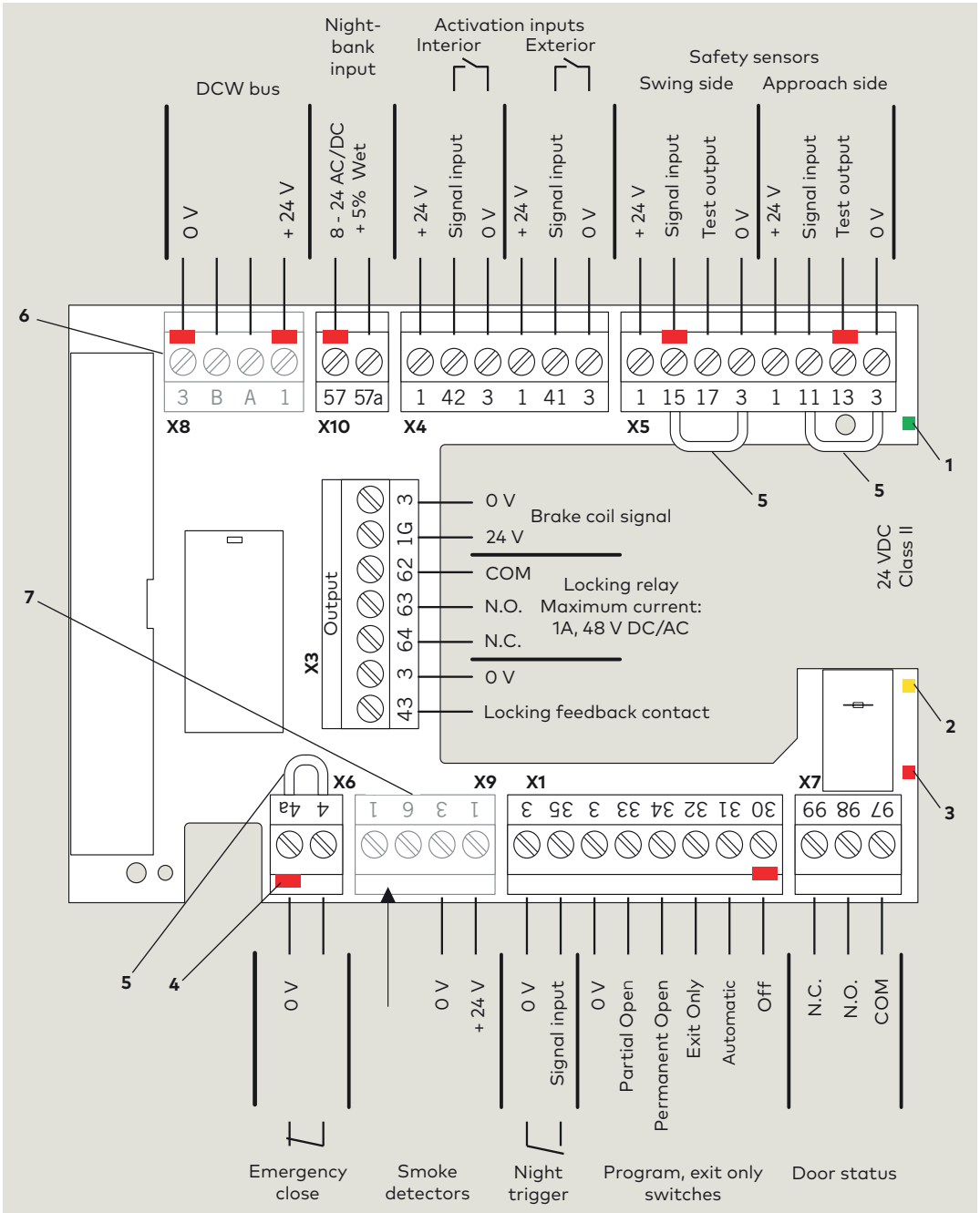
Maximum power consumption	120 watts	
Opening force lbf - N **Fo** parameter	Minimum 4.5 [20]	Maximum 13.5 [60]
Manual closing force lbf - N **Fc** parameter	Minimum 4.5 [20]	Maximum 13.5 [60]
Maximum door weight, lb [kg]	220 [100 kg)	Depending on door width and application.
Door width	Minimum 28"	Maximum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

Maximum opening speed, °/s	27	May be limited by door weight after learning cycle.
Maximum closing speed, °/s	27	
Axle extensions	13/16" [20 mm] 2 3/8" [60 mm]	
Reveal depth for pull arm with CPD lever	0 to 2 1/4" [0 to 57.1 mm]	
Reveal depth for standard push arm	0 to 11 13/16" [0 to 300 mm]	
Reveal depth for deep push arm	0 to 19 11/16" [0 to 500 mm].	

4 ED50LE terminal board interfaces

4.1 ED50LE terminal board interfaces

Fig. 4.1.1 Terminal board electrical connections



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

6 DCW upgrade card plug Not used.
7 Fire protection upgrade card plug. Not used.

TIPS AND RECOMMENDATIONS

- Use documentation provided with each device for electrical installation.

TIPS AND RECOMMENDATIONS

- Do not connect system accessories to board until operator has been commissioned and learning cycle performed (Setup and Troubleshooting Manual).

5 ED50LE door signage

5.1 Low energy operator

5.1.1 Overview

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

5.1.2 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.

5.1.3 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".

5.1.4 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. 5.1.1 AUTOMATIC CAUTION DOOR decal

DD0586-010

Fig. 5.1.2 ACTIVATE SWITCH TO OPERATE decal

DD0758-010

1 Activate Switch to Operate DD0758-010

Fig. 5.1.3 PUSH TO OPERATE, PULL TO OPERATE decals

DD0762-010

DD0762-020

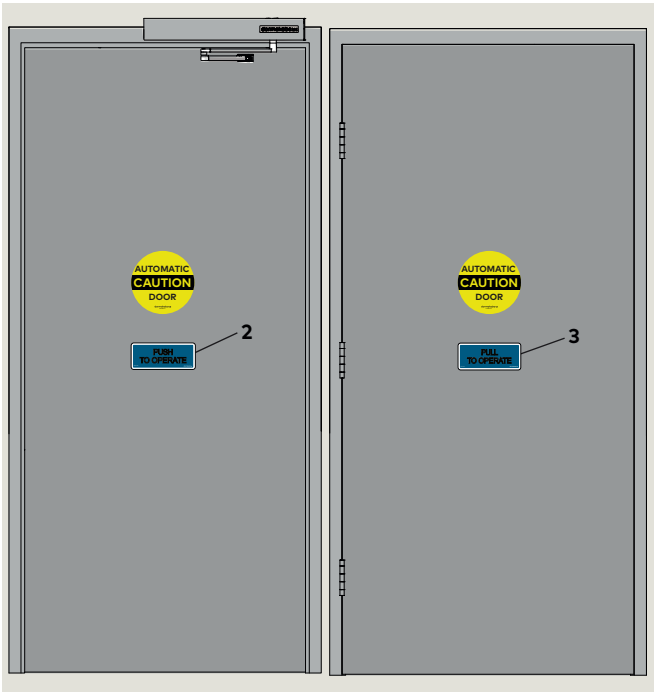
2 Push to Operate DD0762-010

3 Pull to Operate DD0762-020

5.2 Door signage, low energy swing door per ANSI/BHMA A156.19

Fig. 5.2.1 Push / Pull initiation of door operation

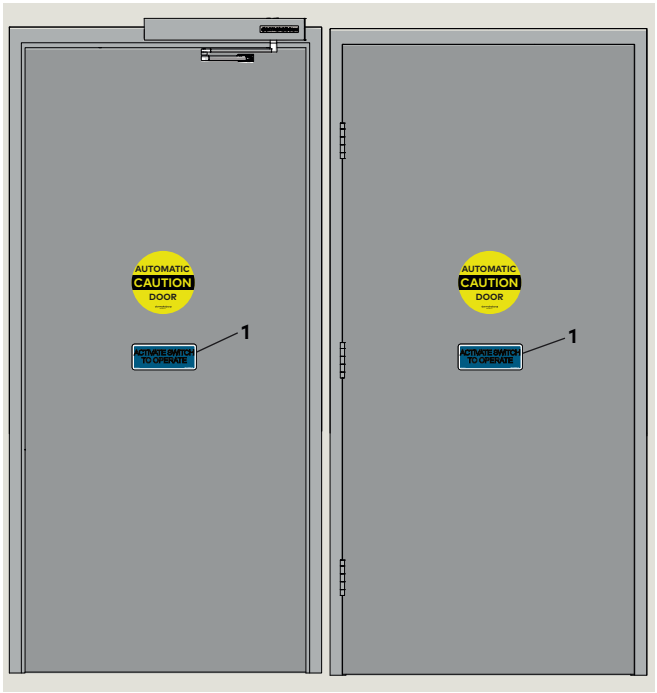
Push to Operate Pull to Operate



2 Push to Operate DD0762-010

3 Pull to Operate DD0762-020

Fig. 5.2.2 Knowing act device initiation of door operation



1 Activate Switch to Operate DD0758-010

Fig. 5.2.3 Double door, Push / Pull, push to operate

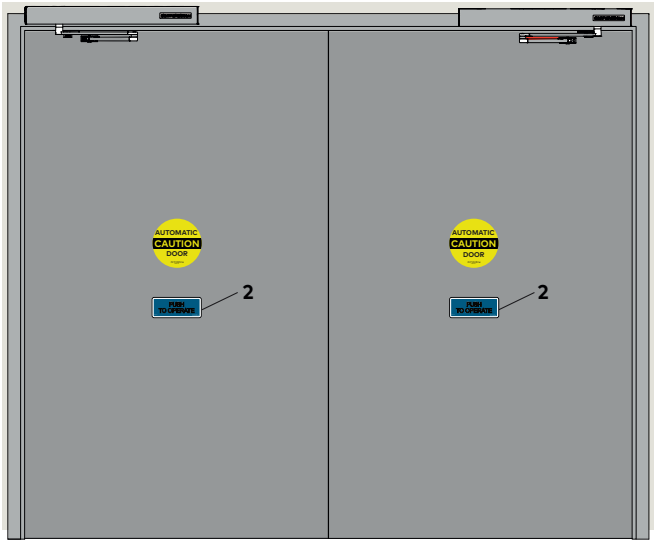
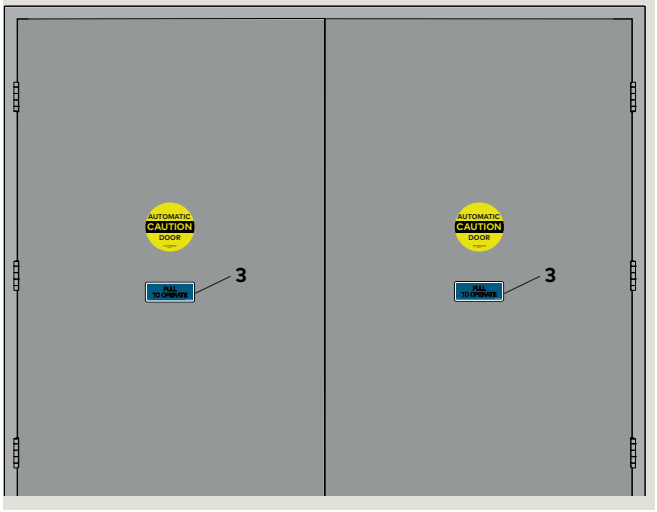


Fig. 5.2.4 Double door, Push / Pull, pull to operate



2 Push to Operate DD0762-010

3 Pull to Operate DD0762-020

5.3 Safety label, low energy swing doors

5.3.1 Low energy swinging door safety information label (Fig. 5.3.1)**.**
This AAADM label outlines safety checks that should be performed daily on low energy swinging door controlled by an ED50LE operator.

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

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

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

Fig. 5.3.1 Safety information label DD1269-040

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. 5.3.2 Annual compliance inspection label

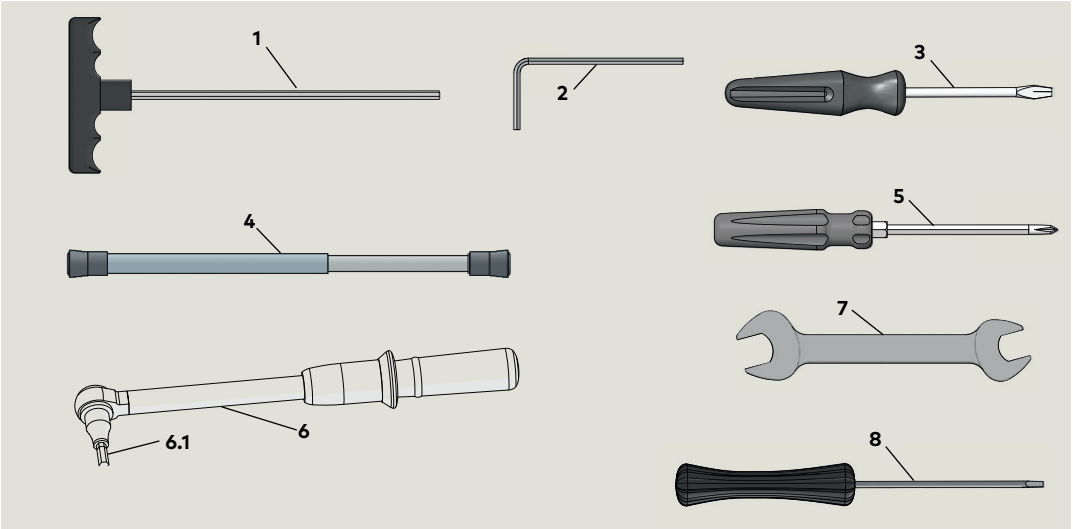
ANNUAL COMPLIANCE INSPECTION

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

6 Recommended tools and torque chart

6.1 Recommended tools

Fig. 6.1.1 Recommended tools



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

6.2 Standard tightening torque

6.2.1 Standard tightening torque

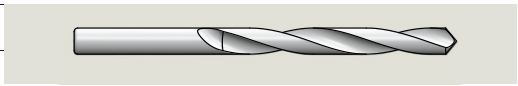
Fastener size	ft lb
M5	3.7
M6	7
M8	17
M10	34
M12	58

6.3 Drill bits

6.3.1 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"	

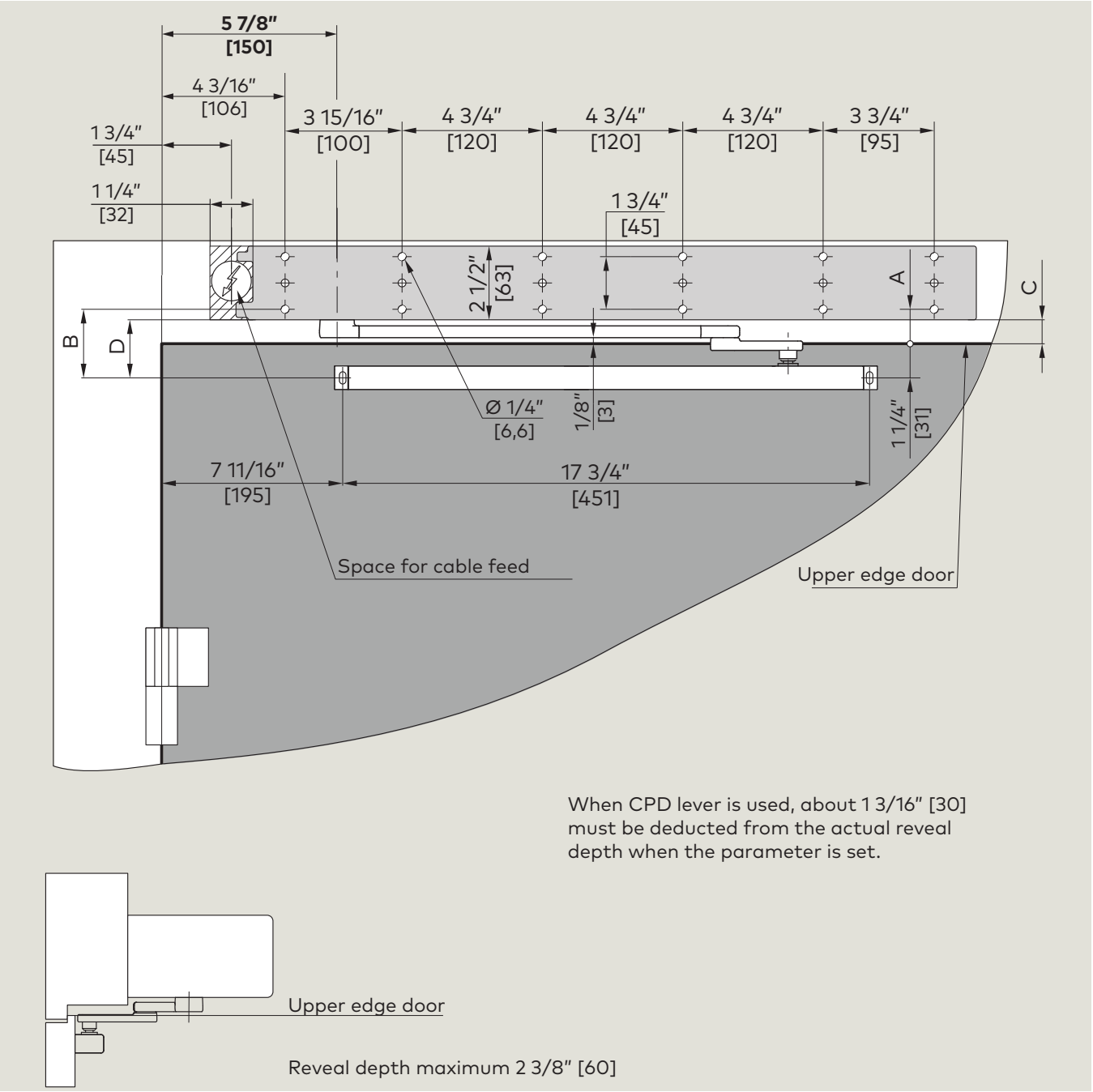
Fig. 6.3.1 Drill bit



7 ED50LE operator installation templates

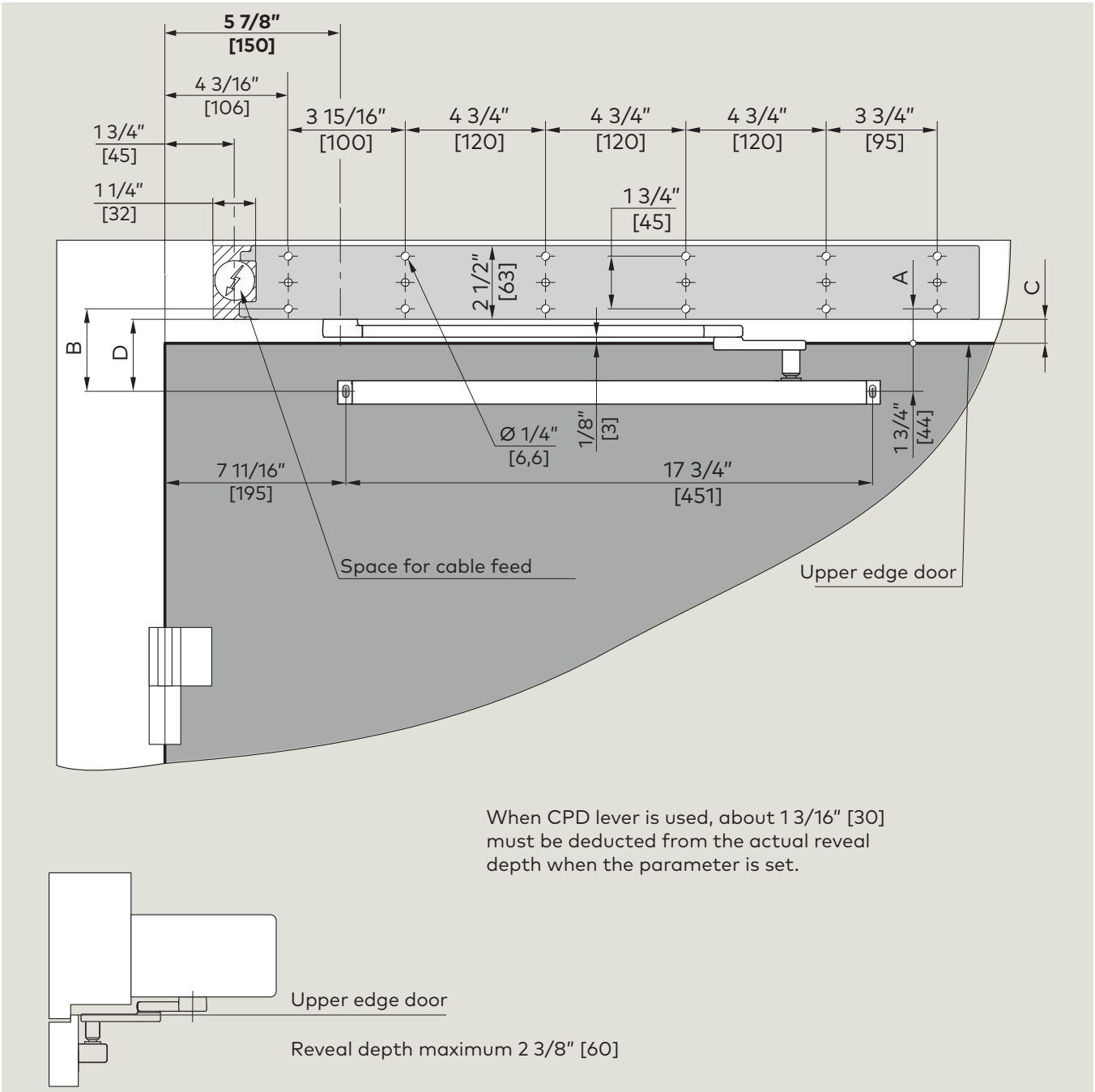
7.1 ED50LE installation templates

Fig. 7.1.1 Assembly on hinge side, pull version with slide channel CPD and 1/2" [25] pivot pin



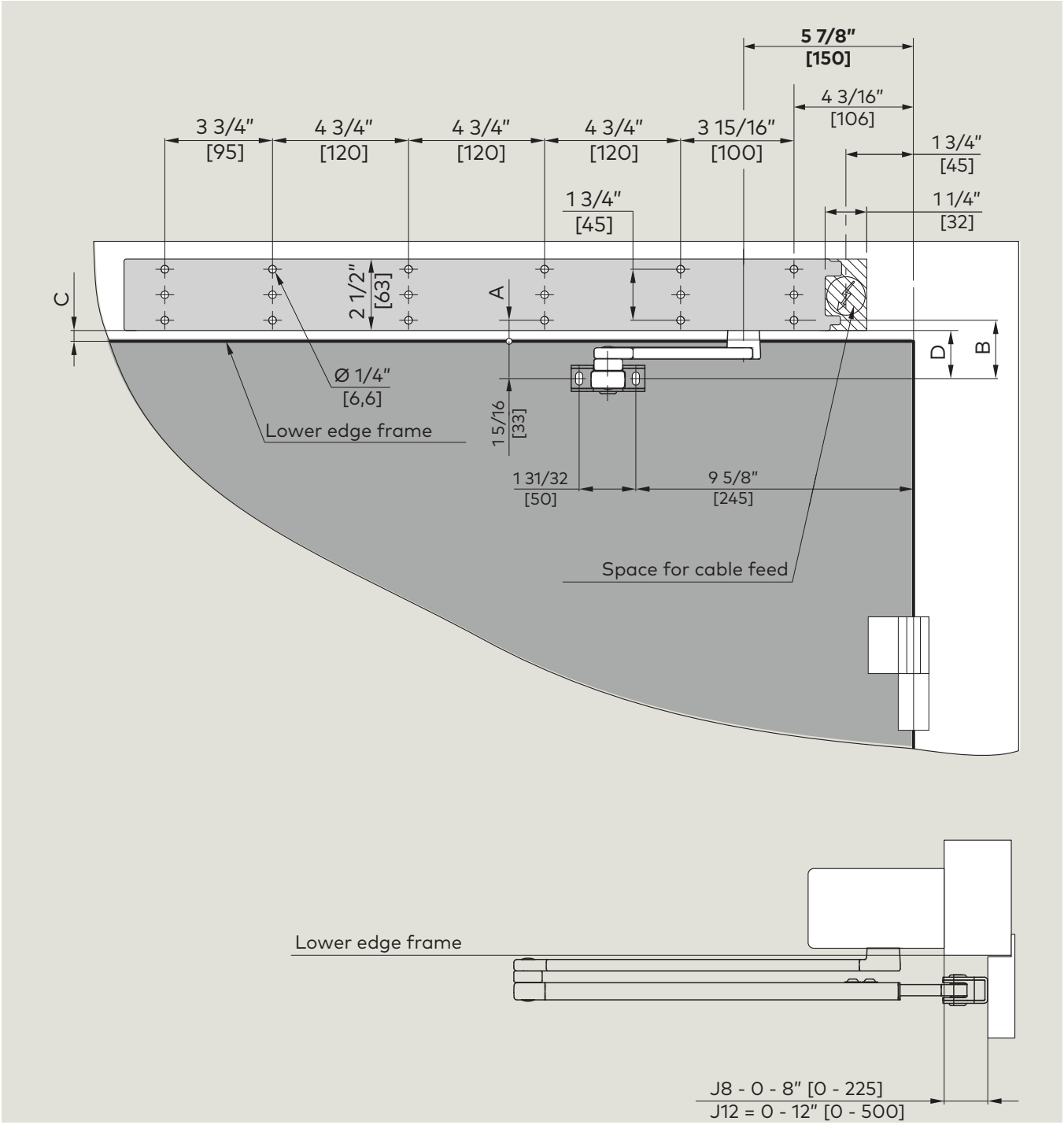
Axle extension		ED50LE	A		B		C		D	
			Inches	mm	Inches	mm	Inches	mm	Inches	mm
Standard		●	11/16	18	2	51	11/32	9	1 21/32	42
3/4"	[20]	●	1 1/2	38	2 13/16	71	1 1/8	29	2 7/16	62
1 3/16"	[30]	●	1 7/8	48	3 3/16	81	1 13/32	39	2 13/16	72
2 3/8"	[60]	●	3 1/16	78	4 3/8	111	2 23/32	69	4	102

Fig. 7.1.2 Assembly on hinge side, pull version with slide channel CPD and 1" [50] pivot pin



Axle extension		ED50LE	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. 7.1.3 Assembly on opposite hinge side, with push arm assembly



Axle extension		ED50LE	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

8 ED50LE operator installation

NOTICE

Double door Installation:
Repeat steps in Chapter 8 for each ED50LE operator

8.1 Installation preparation

TIPS AND RECOMMENDATIONS

ED50LE installation.
The ED50LE must be installed on an interior door.

NOTICE

Installation steps listed in Chapter 8 through 11 are a recommendation. Structural, local conditions, available tools, or other factors or circumstances may require modification to these steps.

⚠ WARNING

ED50LE 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.

8.1.1 Door frame and door.

CAUTION

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

8.1.2 Knowing act devices.

1. Verify knowing act devices planned for or in place for the door.

TIPS AND RECOMMENDATIONS

Knowing act device wiring should be planned for prior to operator installation.

8.1.3 ED50LE mounting plate installation preparation.

CAUTION

Using applicable ED50LE installation template (Chapter 7), 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.

8.1.4 ED50LE mounting plate extension used with optional full door width cover.

TIPS AND RECOMMENDATIONS

Mounting plate extension is included for full width cover installation.

- Reference Appendix A for mounting plate extension and full width cover installation.

8.1.5 ED50LE 115 Vac electrical installation.

⚠ WARNING

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

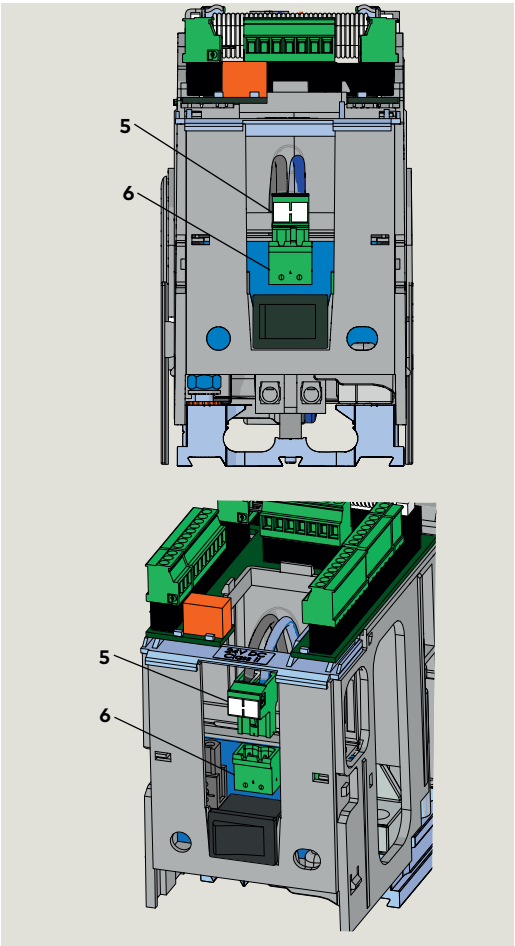
⚠ WARNING

115 Vac wiring to ED50LE operator must conform to local and national electrical codes.

8.2 Remove mounting plate from ED50LE operator

Fig. 8.2.1 115 Vac plug removal

5 115 Vac plug
6 115 Vac socket



8.2.1 Remove 115 Vac plug from receptacle.

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

8.2.2 Remove mounting plate from operator.

1. Loosen all eight captive 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. 8.2.3).

Fig. 8.2.2 Mounting plate removed from ED50LE operator

1 ED50 operator
2 Mounting base
3 M6 X 20 SHCS
4 M6 X 10 SHCS
5 Guide pin
6 115 Vac plug

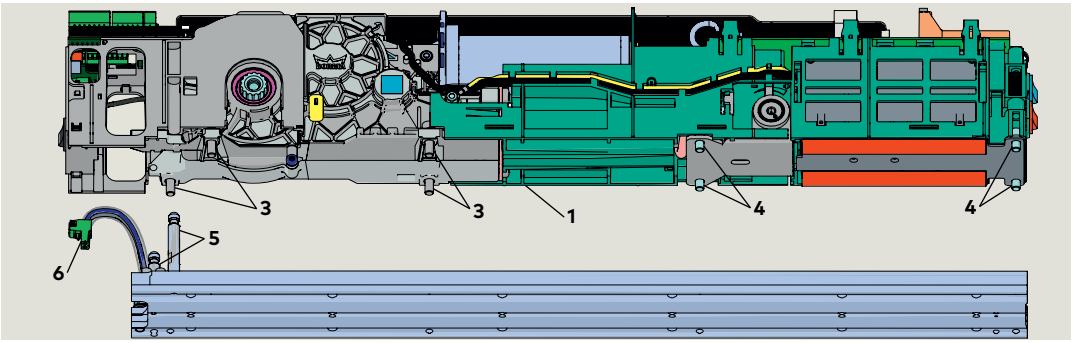


Fig. 8.2.3 Mounting plate removal

5 Guide pin

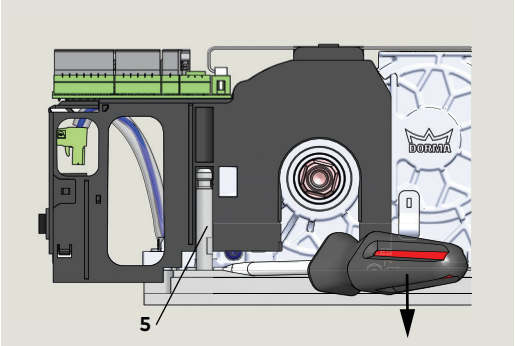
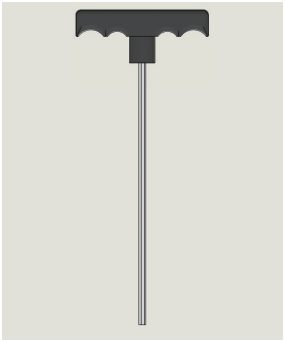
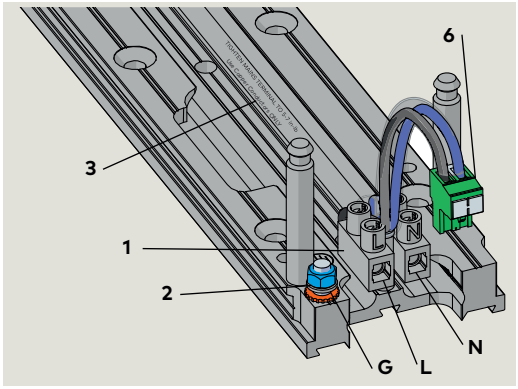


Fig. 8.2.4 5 mm T-handle hex key



8.3 Customer 115 Vac connection to mounting plate terminal block

Fig. 8.3.1 115 VAC terminal block

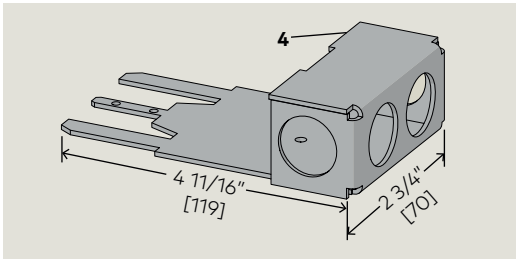


1 115 VAC terminal block
2 Ground terminal
3 Mains terminal torque and wire label
5 M3.5 screw
6 115 Vac plug to operator
L 115 Vac
N Neutral
G Ground

Fig. 8.3.2 Mains terminal torque and wire label

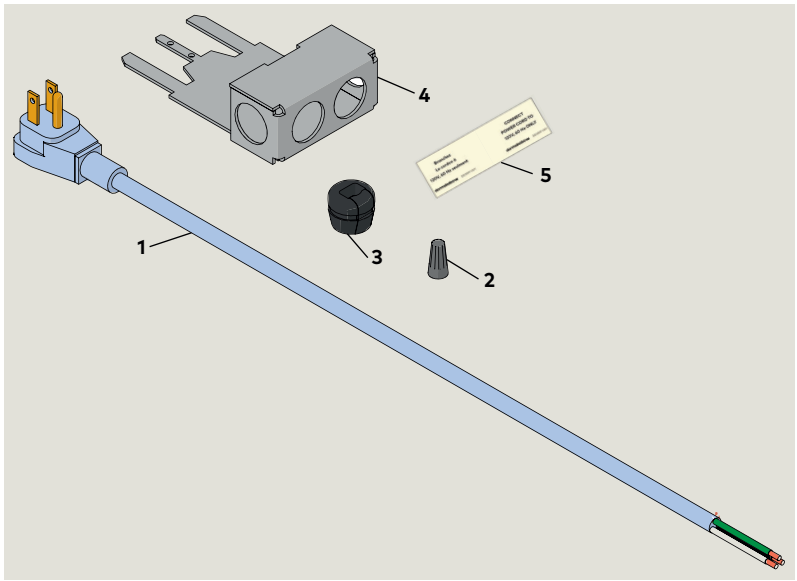
TIGHTEN MAINS TERMINAL TO 5-7 in-lb
Use Copper Conductors ONLY

Fig. 8.3.3 **CB** conduit box



4 Conduit box HX3501-001

Fig. 8.3.4 **PC** wiring kit HK3597-010



1 Power cord HX3500-001
2 Wire nut HX1429-010
3 Cord grip HX3502-001
4 Conduit box HX3501-001
5 120 Vac label DD3597-001
Instruction manual, power cord kit DL3597-001

8.3.1 Customer 115 Vac wiring.

WARNING

Routing and connection of 115 Vac wiring to ED50LE must be performed by a qualified person!

WARNING

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

CAUTION

Use copper conductors only!

8.3.2 ED50LE wiring options.

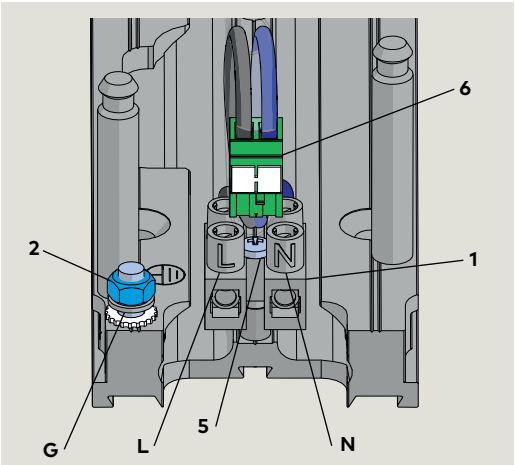
1. Conduit box **CB** (Fig. 8.3.3).
- U/L approved conduit box accessory; provides 115 Vac surface wiring to ED50.
- Reference Para. 8.3.3 for **CB** box installation.

2. Power cord wiring kit **PC** (Fig. 8.3.4).
- Eliminates need for hard wiring. Permits ED50LE to plug directly into 115 Vac receptacle.
- Power cord length: 15" from end of conduit box to center of plug.

CAUTION

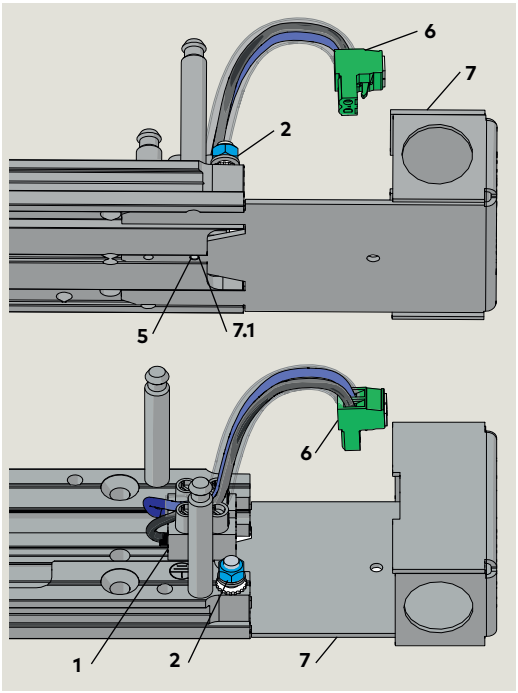
Insure **PC** installation conforms to local and national electrical codes.

Fig. 8.3.5 115 Vac terminal block mounting



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

Fig. 8.3.6 Conduit box installed on mounting plate



1 115 VAC terminal block
2 Ground terminal
5 M3.5 screw
6 115 Vac plug to operator
7 Conduit box DX3501
7.1 Conduit box mounting hole

8.3.3 Install conduit box (option).

TIPS AND RECOMMENDATIONS

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

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

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

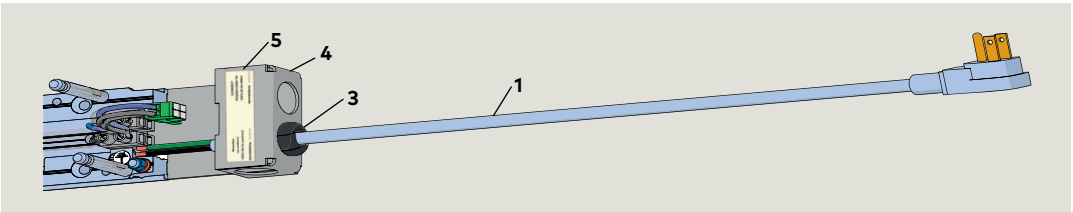
CAUTION

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

- Insure screw is threaded into conduit box mounting hole.

4. Mounting plate assembly is ready for installation.

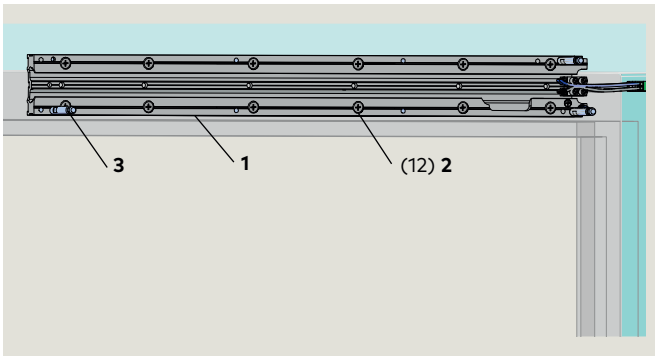
Fig. 8.3.7 PC power cord wiring kit assembly (option)



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

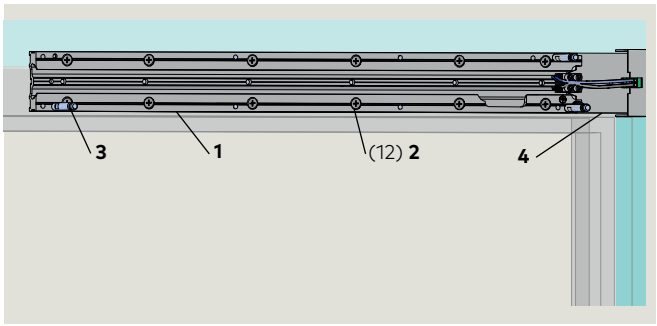
8.4 Mounting plate attachment to jamb or wall

Fig. 8.4.1 Mounting plate installation



1 ED50 mounting plate
2 Mounting hole
3 Guide pin

Fig. 8.4.2 Mounting plate installation with conduit box



1 ED100 mounting plate
2 Mounting hole
3 Guide pin
4 **CB** conduit box

Fig. 8.4.3 ED50LE mounting plate screw pack HK4053-010

7 #12 x 2 1/2" Phillips FHWS DF0670 000 Quantity 12
8 1/4-20 x 1 1/2" PFHMS DF0671-000 Quantity 12

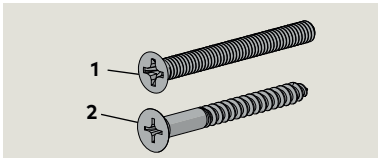
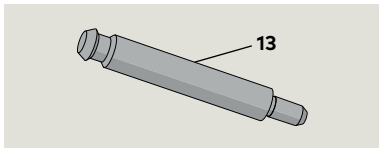


Fig. 8.4.4 Guide pin

13 Guide pin



NOTICE

Optional full width cover installation.
Reference Appendix A for mounting plate extension installation.

8.4.1 Fasten mounting plate to jamb and/or wall.

CAUTION

Conduit box (if used):
- Insure conduit box or plate is prepared with applicable conduit fitting or cord grip.
- Insure jamb or wall is prepared for wiring to conduit fitting or cord grip.

1. Select applicable installation template.

NOTICE

Installation templates.
- Reference Chapter 7 – Installation Templates.

2. Using template as a guide, locate mounting plate on door frame/wall and prepare twelve mounting holes for mounting plate fasteners.

CAUTION

- Select fasteners based on door frame and wall material.
- Use fasteners provided with ED50LE (Fig. 8.4.3).
- Use appropriate wall anchors if required.

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

8.4.2 Mounting plate installation checks.

NOTICE

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

8.4.3 Install third guide pin.

1. Install third guide pin (Fig. 8.4.1, 8.4.4) in mounting plate.
- Use 3 mm hex T-handle or hex key.

8.5 Connect customer 115 Vac to mounting plate terminal block

4 115 Vac terminal block
5 Ground post

Fig. 8.5.1 115 Vac wiring example

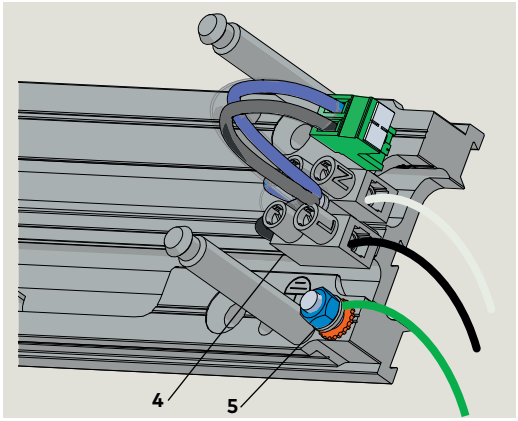


Fig. 8.5.2 Conduit box installation

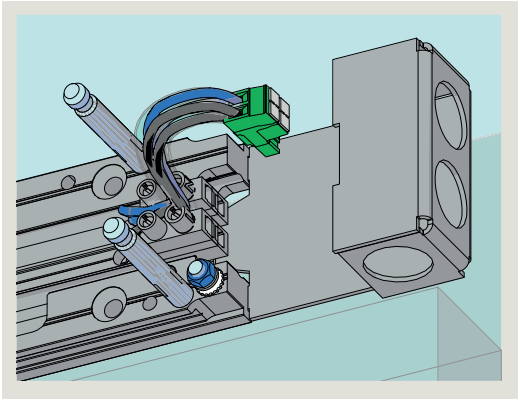
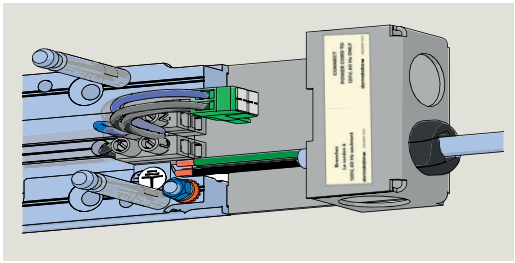


Fig. 8.5.3 PC power cord, conduit box installation



8.5.1 Connect customer 115 Vac wiring.

WARNING

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

WARNING

Insure disconnect supplying power to ED50LE operator is OFF before connecting power!

1. Route wiring to 115 Vac terminal block.

CAUTION

115 Vac wiring.
Use copper conductors only!

2. Connect 115 Vac wiring to terminal block.

- Terminal block screw tightening torque.

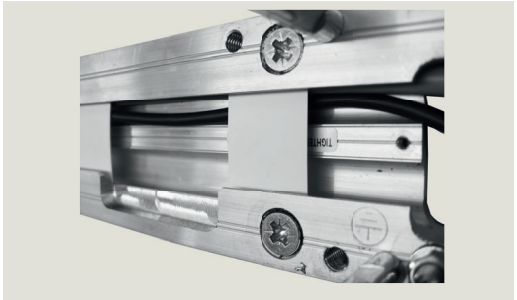
CAUTION

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

3. Connect earth ground to ground post.

8.6 Route accessory wiring to mounting plate

Fig. 8.6.1 Mounting plate slots for accessory wiring



8.6.1 Route accessory wiring to mounting plate.

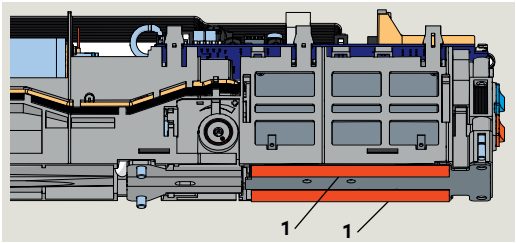
1. Route wiring to 115 Vac terminal block side of mounting plate (Fig. 8.5.1).
2. Accessory wiring opposite door hinge side: route wiring into mounting plate track (Fig. 8.6.1) to 115 Vac terminal block side of mounting plate.

TIPS AND RECOMMENDATIONS

Accessory wiring will terminate at ED50LE terminal board (Chapter 4).

8.7 Remove protective film strips from operator

Fig. 8.7.1 Operator heat conductive pads



1 Heat conductive pad

8.7.1 Remove protective film strips.

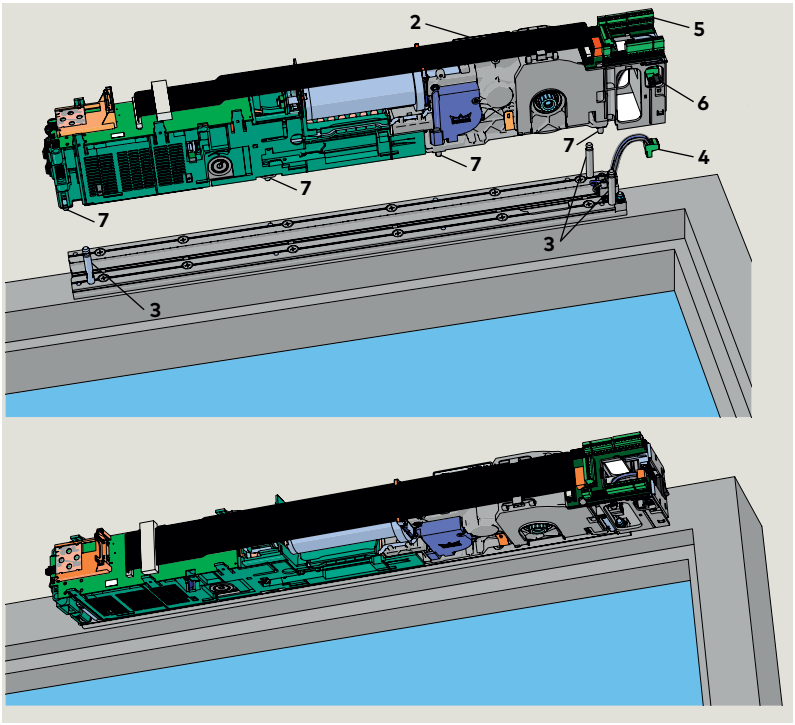
1. Remove two protective film strips from operator heat conductive pads.

CAUTION

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

8.8 Install ED50LE operator onto mounting plate

Fig. 8.8.1 ED50LE operator mounting plate installation



1 ED50 mounting plate
2 ED50 operator
3 Guide pin
4 115 Vac plug
5 Accessory wiring terminal connectors
6 115 Vac socket
7 M6 x 10 SHCS

8.8.1 Install operator onto mounting plate.

CAUTION

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

1. Slide ED50LE operator over the three mounting plate guide pins and onto mounting plate.
   - Guide 115 Vac plug (4) into housing adjacent to socket (6).
2. Thread the eight captive M6 SHCS (7) into their mounting plate holes using 5 mm hex T-handle.
3. Tighten the eight M6 SHCS.

8.8.2 Insert 115 Vac plug into socket.

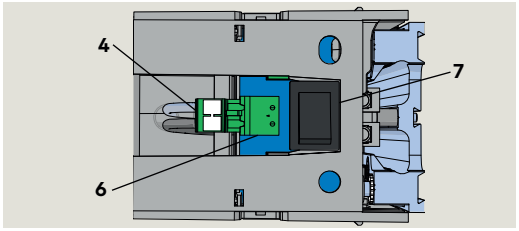
1. Insert 115 Vac plug from mounting plate 115 Vac terminal block into socket (Fig. 8.8.2).

8.8.3 Full width cover option.

CAUTION

Program switch wiring.
Reference Appendix A for program switch wiring terminal connections.

Fig. 8.8.2 115Vac plug and socket



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

9 Push arm installation

9.1 Push arm installation templates

NOTICE

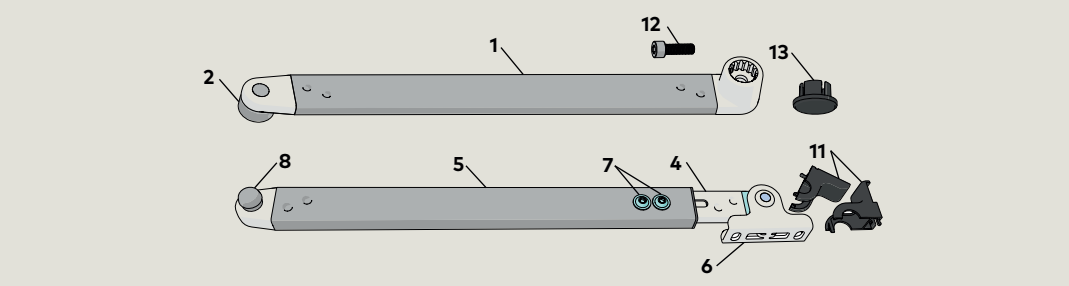
Reference Chapter 7 – Installation templates.

NOTICE

Double door push arm installation.
Repeat steps in Chapter 9 for each push arm installation.

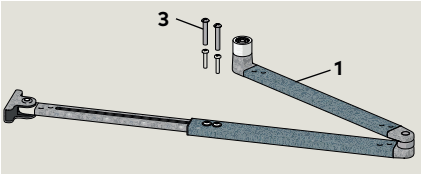
9.2 Push arm installation

Fig. 9.2.1 Splined push arm assembly, 8 7/8" [225] DC4677-01X



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. 9.2.2 Push arm kit, 8.75" reveal HK4709-01X



1 Standard push arm, 8.75" reveal DC4677-01X
3 Screw kit, HK2719-010

Fig. 9.2.3 Drive arm

1 Drive arm
2 Socket
3 Arm axle sleeve

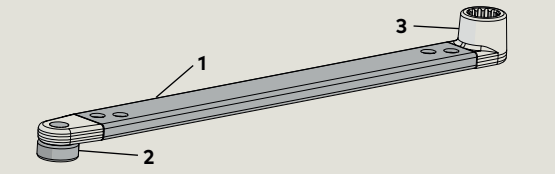
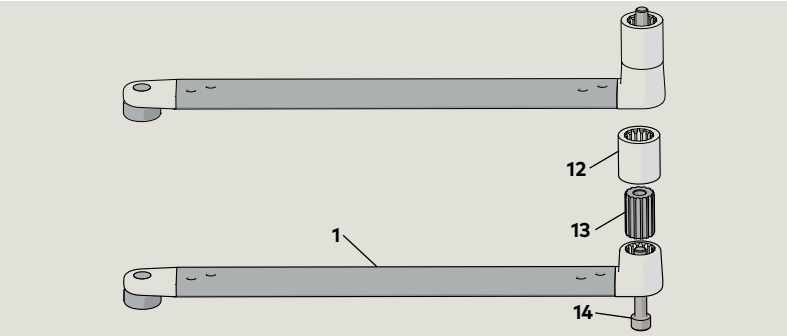
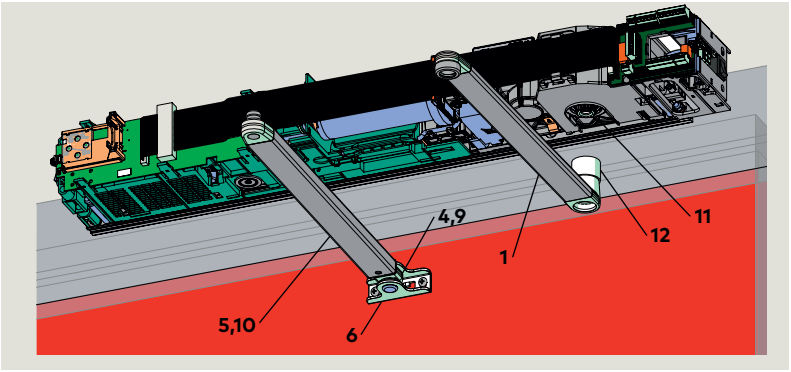


Fig. 9.2.4 Drive arm extension installation



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

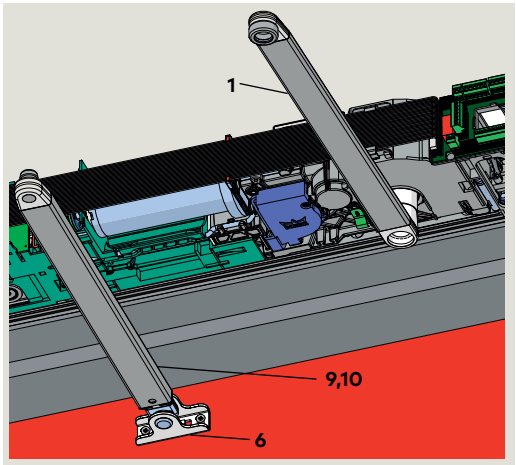
Fig. 9.2.5 Push arm assemblies for installation



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 Spindle
12 Axle extension sleeve

Fig. 9.2.6 Arm assemblies attached to door and ED50LE

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



9.2.1 Attach drive arm to operator.

CAUTION

Door must be fully closed!

WARNING

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

CAUTION

ED50LE 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 ED50LE operator spring preload to approximately ten clockwise rotations.
- Axle rotates to the zero position.

TIPS AND RECOMMENDATIONS

Reference Chapter 11, Set operator spring tension.

2. Insert axle extension into drive arm.
3. Move arm to ED50LE, inserting arm into operator spindle at a 90º angle (Fig. 9.2.5).
4. Insert M8 SHCS through drive arm and axle extension. Thread SHCS into ED50LE spindle and tighten.

CAUTION

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

9.2.2 Drill two holes in door for adjustment arm shoe.

Installation templates (Chapter 7) document location of shoe on door.

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

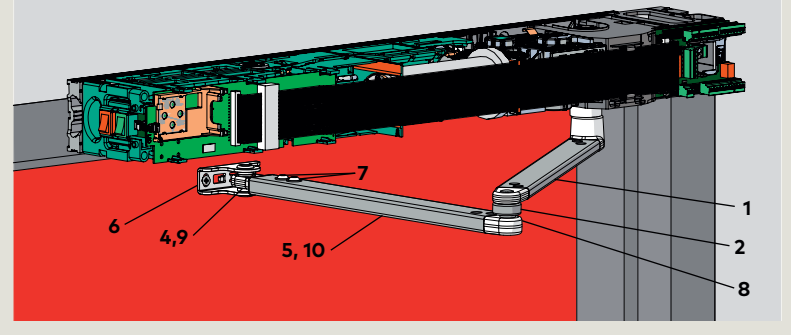
TIPS AND RECOMMENDATIONS

Reference Chapter 2 for arm fasteners.

9.2.3 Secure adjustment arm assembly to door.

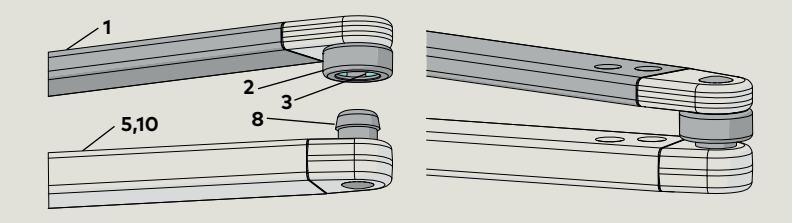
1. Fasten adjustment arm assembly to door (Fig. 9.2.6).

Fig. 9.2.7 Arm assemblies attached to door and ED50LE



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. 9.2.8 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. 9.2.9 Adjustment arm M6 x 10 screws

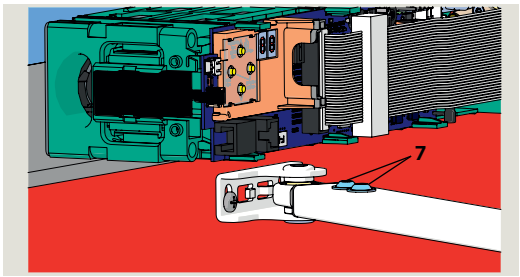
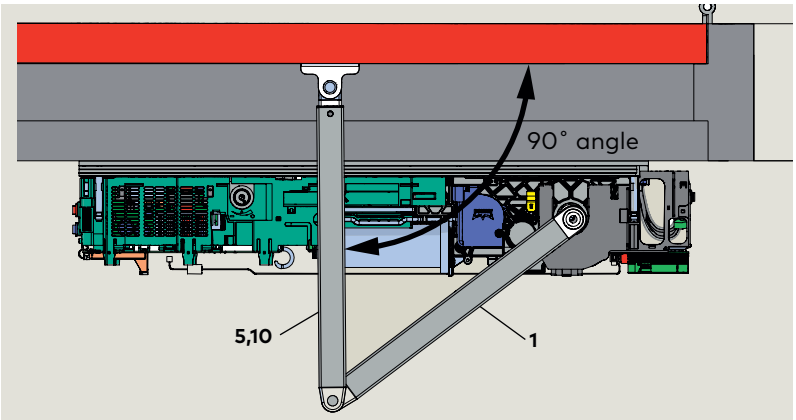


Fig. 9.2.10 Adjustment arm at 90° angle to door



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

9.2.4 Connect adjustment arm to drive arm.

1. Loosen the two adjustment M6 x 10 mm flanged button head screws (Fig. 9.2.9).

1. Using square, position adjustment arm assembly at 90° angle to door (Fig. 9.2.10).

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.

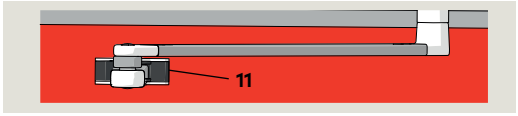
CAUTION

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

9.2.5 Install shoe fastener covers.

1. Install two shoe fastener covers.

Fig.9.2.11 Shoe fastener covers



11 Shoe screw cover

10 Pull arm installation

10.1 Pull arm installation

NOTICE

Reference Chapter 7 – Installation templates.

NOTICE

Double door pull arm installation.
Double door pull as a push installation.
Repeat steps in Chapter 10 for each pull arm installation.

10.2 Pull arm assemblies

1 Drive arm
2 CPD
3 Track

Fig. 10.2.1 Arm with CPD lever and track assembly, LH

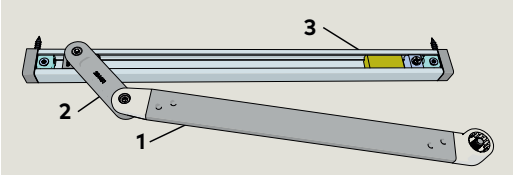
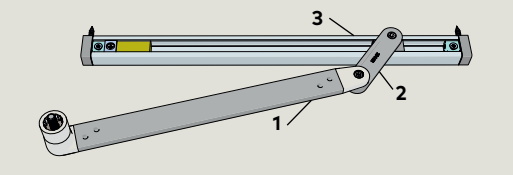
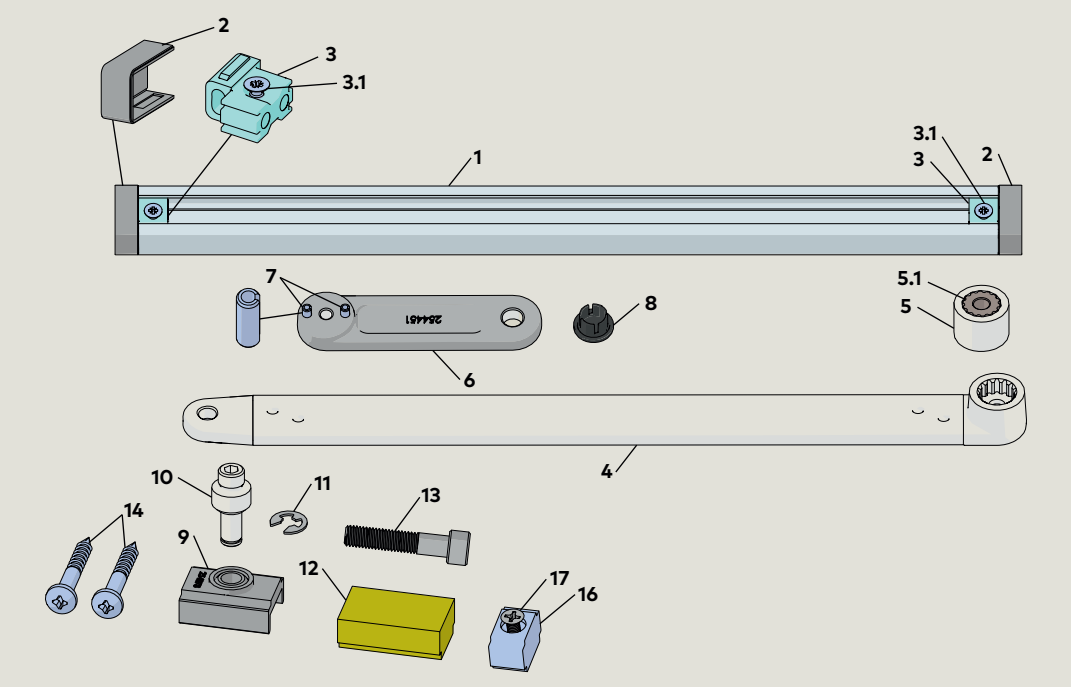


Fig. 10.2.2 Arm with CPD lever and track assembly, RH



10.3 Pull arm hardware

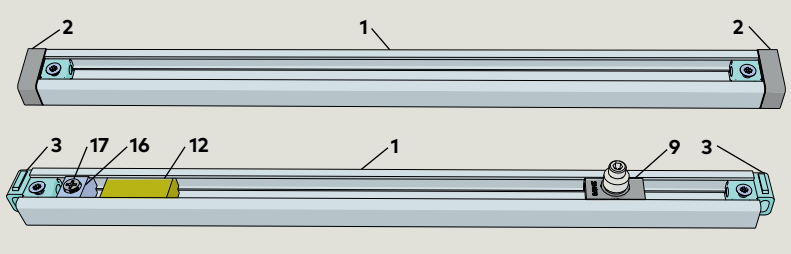
Fig. 10.3.1 Pull arm assembly HK4709-12X



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
6 CPD lever
6.1 M6 x 10 SHCS
7 Slotted spring pin
8 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

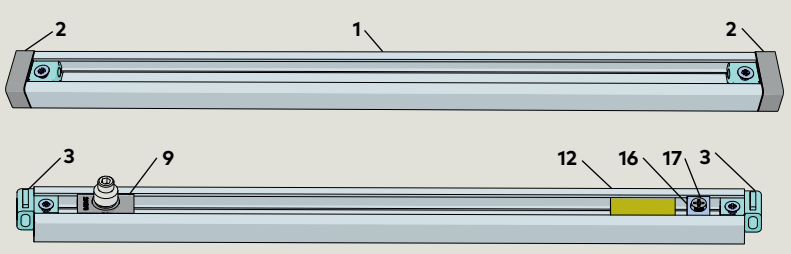
10.4 Install hardware into track

Fig. 10.4.1 RH track assembly



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

Fig. 10.4.2 LH track assembly



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

10.4.1 Assemble track.

CAUTION

Assemble track hardware based on RH or LH installation.

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

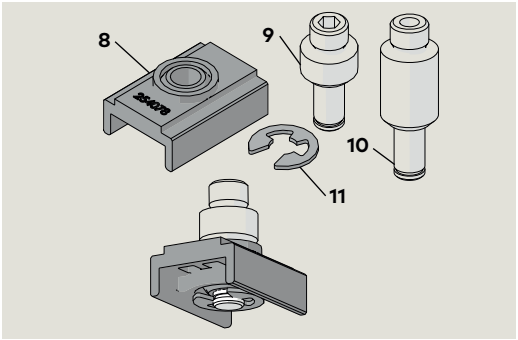
1. Slide bumper stop (16), bumper (12) and slide shoe assembly (9) into track.
- Do not tighten bumper stop M5 screw (17).

2. Secure fixing piece to end of track with M5 x 15 screw (3.1).
- Use No. 2 Phillips, do not over-tighten.

10.5 Assemble slide shoe

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

Fig. 10.5.1 Slide shoe and pivot pin



10.5.1 Assemble slide shoe.

1. Insert pivot pin into slide shoe.

2. Install spring clip into pivot pin slot.

10.6 Assemble drive arm and CPD lever

Fig. 10.6.1 Slotted spring pin

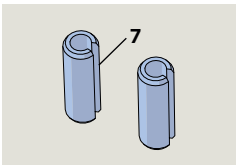
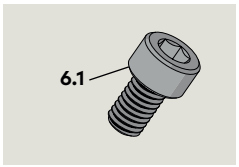
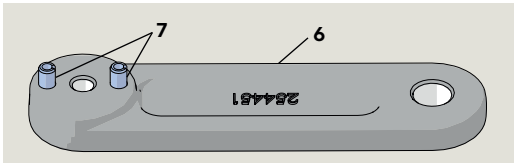


Fig. 10.6.2 M6 x 10 SHCS for CPD



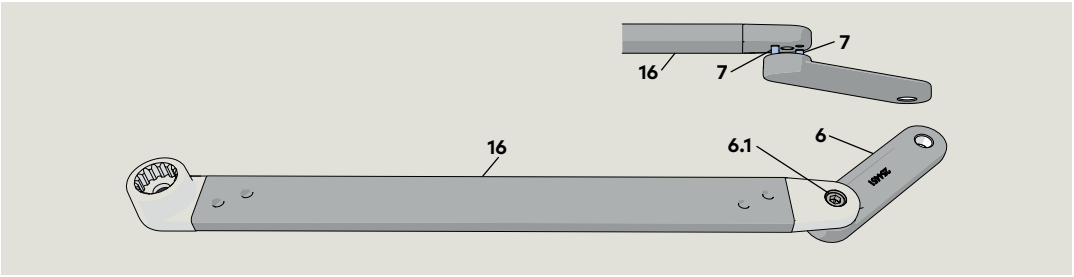
6.1 M6 x 10 SHCS
7 Slotted spring pin

Fig. 10.6.3 CPD lever and slotted spring pins



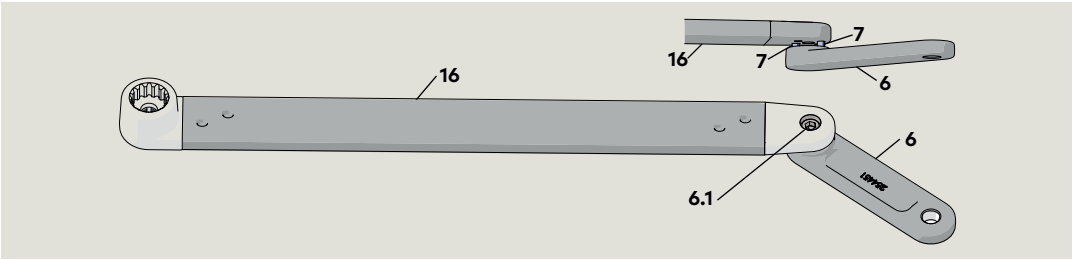
6 CPD lever
7 Slotted spring pin

Fig. 10.6.4 Arm assembly, RH pull



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

Fig. 10.6.5 Arm assembly, LH pull



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

10.6.1 Assemble drive arm and CPD lever assembly.

CAUTION

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

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

10.7 Fasten drive arm to ED50LE operator

Fig. 10.7.1 Mount drive arm to operator at 12 degrees

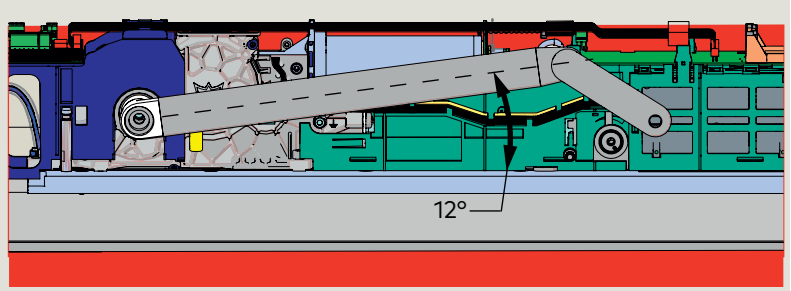


Fig. 10.7.2 Rotate drive arm 10 degrees in door opening direction

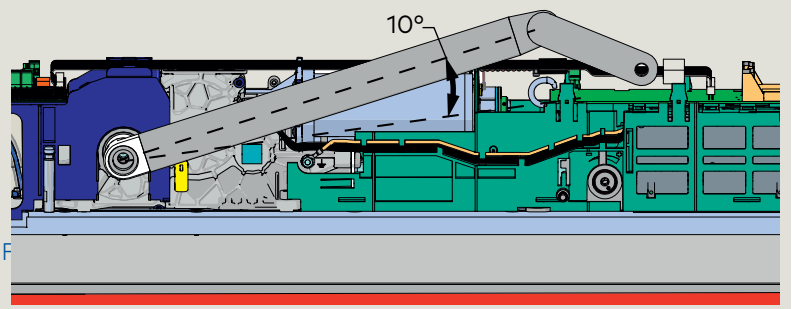


Fig. 10.7.3 Remove drive arm from ED50LE spindle

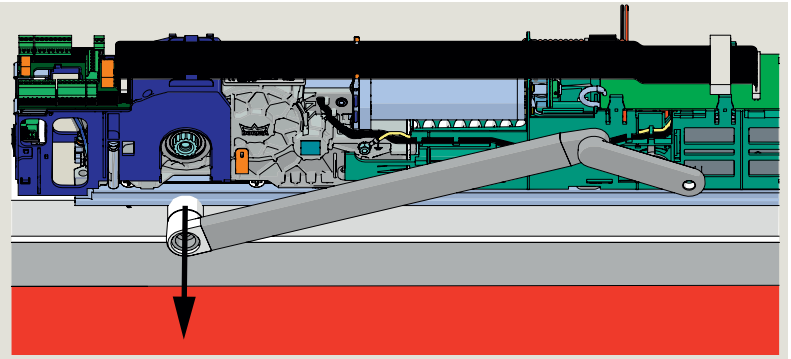
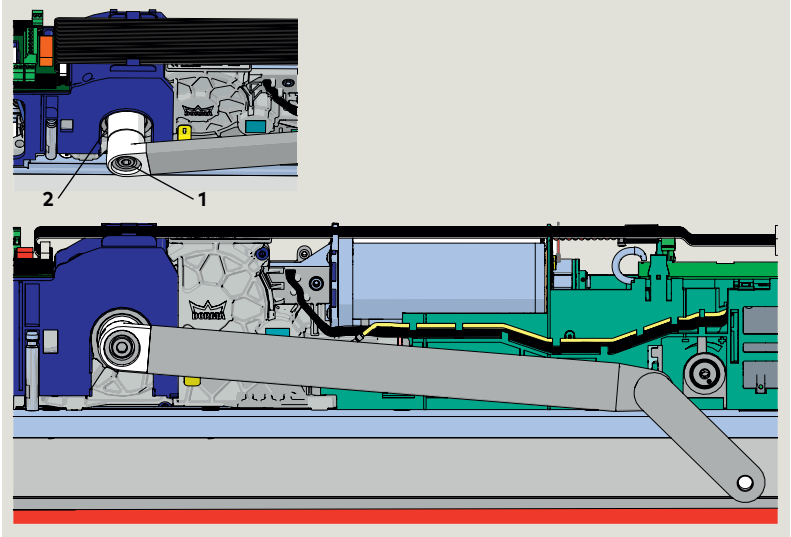


Fig. 10.7.4 Install drive arm and extension onto ED50LE spindle



1 M8 SHCS **2** Axle extension

10.7.1 Mount drive arm to operator.

WARNING

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

CAUTION

ED50LE operator axle zero position.
In order to mount the drive arm in the correct position, the spindle must be brought to the zero position.

1. Set ED50LE operator spring preload to approximately ten clockwise rotations.

- Axle rotates to the zero position.

TIPS AND RECOMMENDATIONS

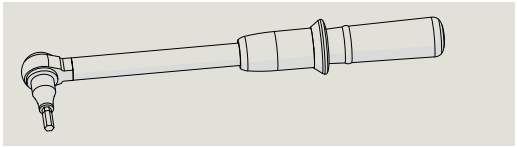
Reference Chapter 11, Operator spring tension.

2. Turn the spring preload back to zero rotations (fully CCW).
3. Push the drive arm onto spindle at an angle of approximately 12º to the ED50LE operator (Fig. 10.7.1).
4. Rotate drive arm/spindle approximately 10º in the door's opening direction (Fig. 10.7.2).
5. Remove the drive arm from spindle (Fig. 10.7.3).
6. Position drive arm with axle extension one tooth in door's closing direction (Fig. 10.7.4).
7. Push the axle extension onto spindle
8. Thread M8 x ___ mm SHCS (length determined by axle extension) into the spindle and tighten SHCS (Fig. 10.7.4).

CAUTION

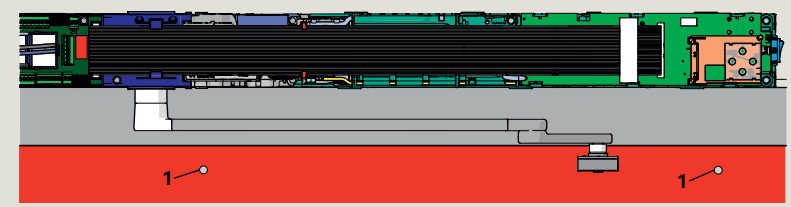
Use torque wrench with hex key socket to tighten M8 screw to 17 ft-lb [23 Nm].

Fig. 10.7.5 Torque wrench, 5 mm hex key



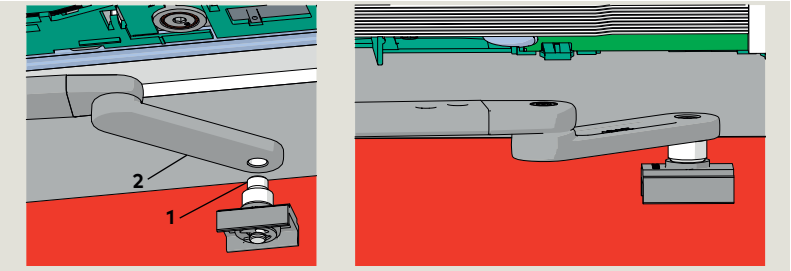
10.8 Install track assembly

Fig. 10.8.1 Track mounting holes in door



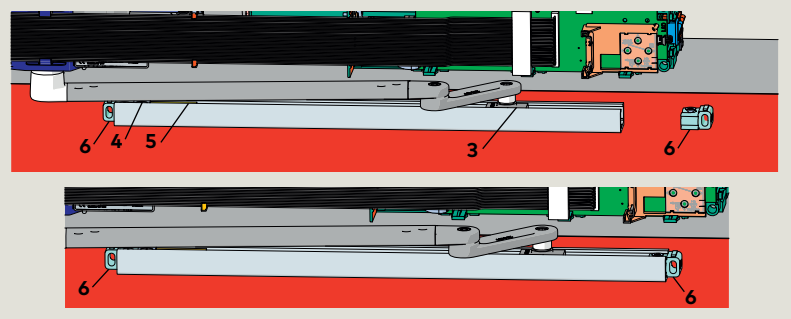
1 Track mounting holes

Fig. 10.8.2 Slide shoe installation on CPD lever



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

Fig. 10.8.3 Track assembly installed onto slide shoe



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

Fig. 10.8.4 Track assembly secured to door

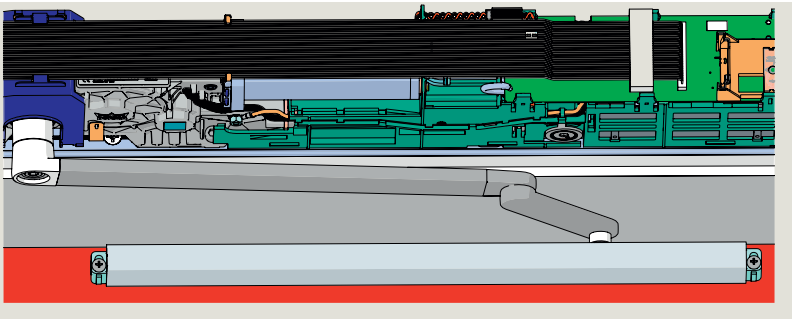
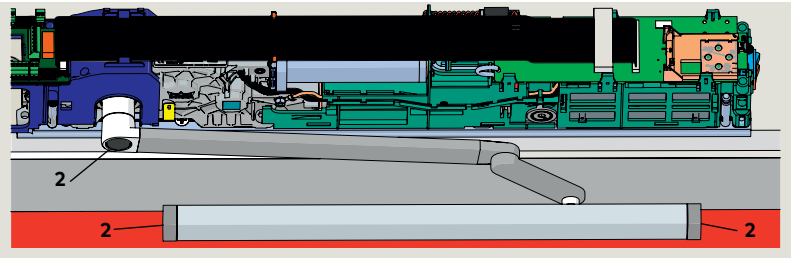


Fig. 10.8.5 End caps and spindle cap installed



1 End cap **2** Spindle cap

10.8.1 Locate and drill track mounting holes.

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

10.8.2 Install slide shoe assembly onto CPD lever.

1. Thread pivot pin M8 SHCS into CPD lever mounting hole.
2. Use 6 mm hex key to tighten.

10.8.3 Slide track assembly onto slide shoe.

1. Insure track components and CPD lever are assembled based on hand of door (Para. 10.4).
2. With fixing piece removed from track on opposite end from bumper, slide track assembly onto shoe (Fig. 10.8.3).
3. Install second fixing piece onto track.

10.8.4 Secure track assembly to door.

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

- Insure track is level as fasteners are tightened.

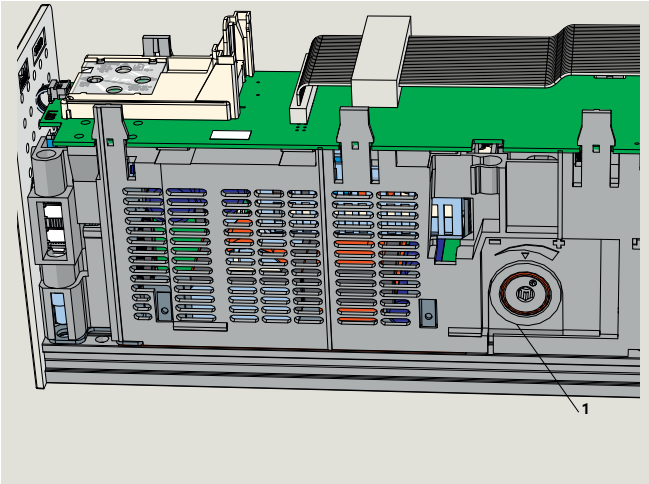
10.8.5 Install end caps and spindle caps.

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

11 ED50LE Operator spring tension

11.1 Set operator spring tension

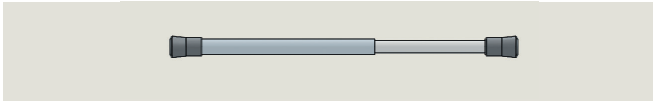
Fig. 11.1.1 Spring tension adjustment



1 Spring tension adjustment

Fig. 11.1.2 5 mm T-handle hex key

Fig. 11.1.3 Door pressure gauge



11.1.1 Spring tension setting revolutions.

Door width					
Inches	28	32	36	42	48
mm	711	813	914	1067	1219
Spring setting revolutions					
ED50LE	10	10	14	16	18

11.1.2 Operator spring tension function.

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

11.1.3 Spring tension adjustment.

1. Spring tension adjustment is factory set fully CCW, no spring tension.
2. Spring must be pretensioned per Para. 11.1.1.

- Use 5 mm T-handle hex key (Fig. 11.1.2).
  Clockwise - increases spring tension.
  Counterclockwise - decreases spring tension.

CAUTION

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

11.1.4 Check door closing force

1. Para. 11.1.1 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 12, ANSI/BHMA standards for door closing forces.

TIPS AND RECOMMENDATIONS

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

12 ANSI/BHMA standards

12.1 ANSI/BHMA A156.19 Low Energy Power Operated Swinging 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.

12.1.1 Door measurements, low energy power operated door.

ED50LE 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		Support for manual mode in door closed position.			4.5	
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.

12.1.2 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).					

12.1.3 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.		

12.1.4 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.

13 Install door signage, low energy door

13.1 Install door signage

13.1.1 Install door signage.

Install applicable door signage as outlined in Chapter 5, ED50LE door signage.

14 Cover, end caps and spindle caps

14.1 Cover end cap and spindle installation

14.1.1 Cover and end cap installation.

Cover and end caps will be installed after ED50LE operator setup is completed.

- Reference ED50LE/ED100LE Setup Manual.

15 Maintenance

15.1 Safety label, low energy swing doors

15.1.1 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 ED50LE operator.

15.1.2 Safety information label location.

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

15.1.3 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.

15.1.4 Additional annual compliance inspection labels.

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

Fig. 15.1.1 Safety information label

SAFETY INFORMATION
Low Energy Swinging Doors

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

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

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

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

AAADM-3044

AAADM
American Association of Automatic Door Manufacturers

ANNUAL COMPLIANCE INSPECTION

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

Fig. 15.1.2 Annual Compliance Inspection label

ANNUAL COMPLIANCE INSPECTION

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

15.2 Arm fasteners – torque requirements

Fig. 15.2.1 Arm M8 SHCS cap

8 Cap

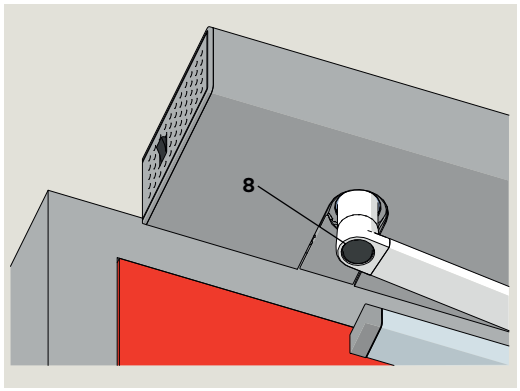


Fig. 15.2.2 M8 SHCS

5 M8 x __ SHCS

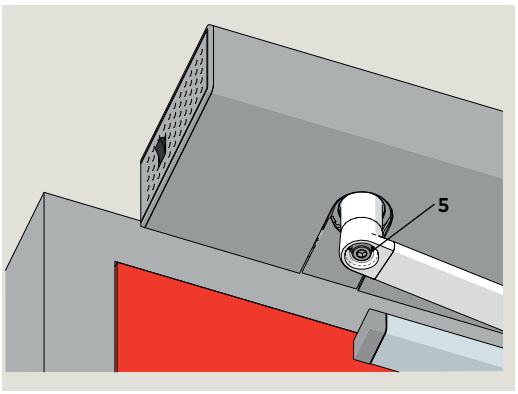
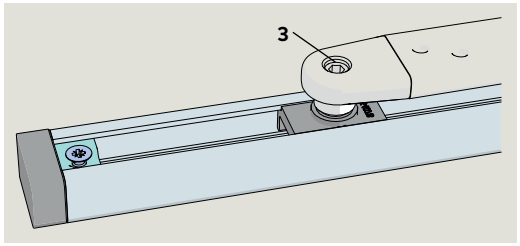


Fig. 15.2.3 Pivot pin M8 socket head

3 Pivot pin M8 socket head



15.2.1 Check drive arm M8 SHCS torque.

1. Set program 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: 17 ft-lb [23 Nm].

15.2.2 Check pivot pin M8 socket head torque.

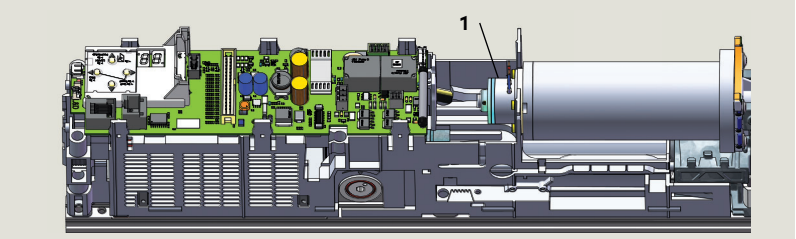
1. Check torque.

CAUTION

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

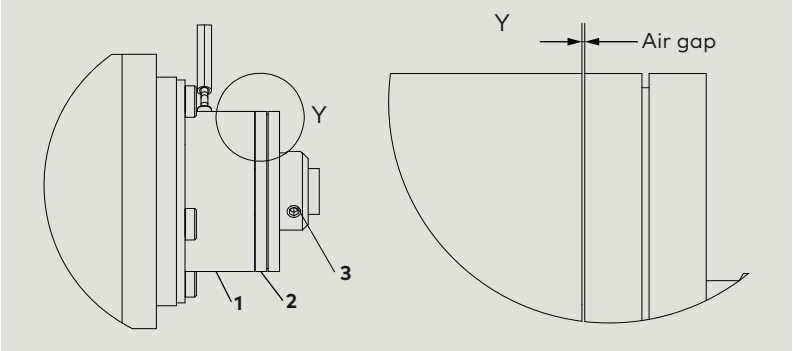
15.3 ED50LE brake maintenance

Fig. 15.3.1 ED50LE operator



1 Brake assembly

Fig. 15.3.2 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. 15.3.3 Brake assembly

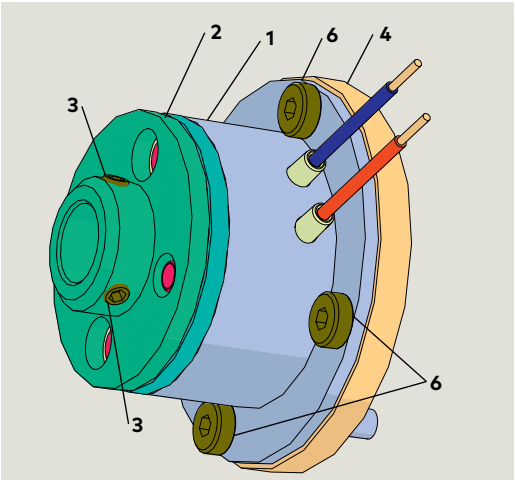


Fig. 15.3.4 Feeler gauge set

15.3.1 Adjustment of air gap: brake to brake disc (Fig. 15.3.2).

TIPS AND RECOMMENDATIONS

Reference drawing:
254197-01-50

⚠ WARNING

Set program 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

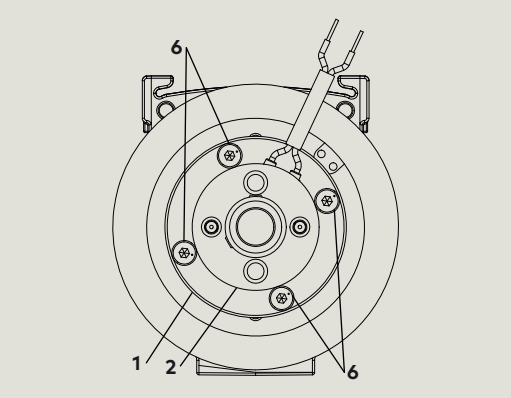
M3 x3 SHCS torque setting:
5.3 in-lb + 0.9 in-lb [0.6 Nm +0.1 Nm].

TIPS AND RECOMMENDATIONS

Paper stock thickness:
approximately 0.003"

Fig. 15.3.5 M3 x 5 SHCS

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



15.3.2 Torque setting of M3 x 5 SHCS.

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

Fig. 15.3.6 Brake disc assembly removed from brake

1 Brake assembly
2 Brake disc assembly
5 Motor shaft

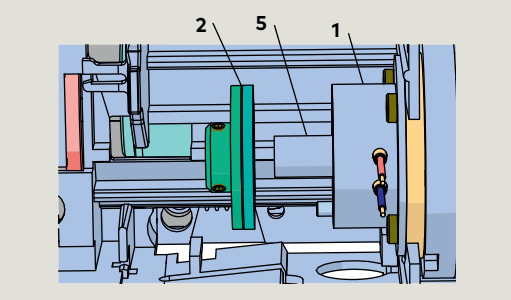


Fig. 15.3.7 Brake and brake disc assemblies

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

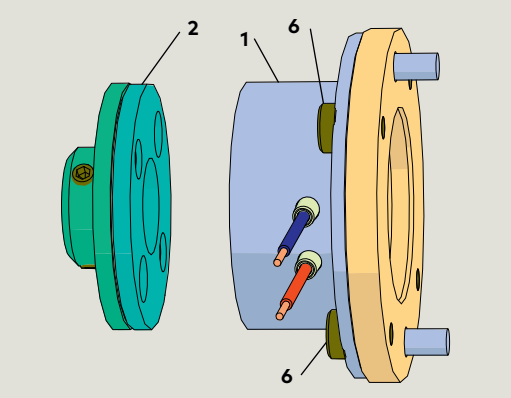
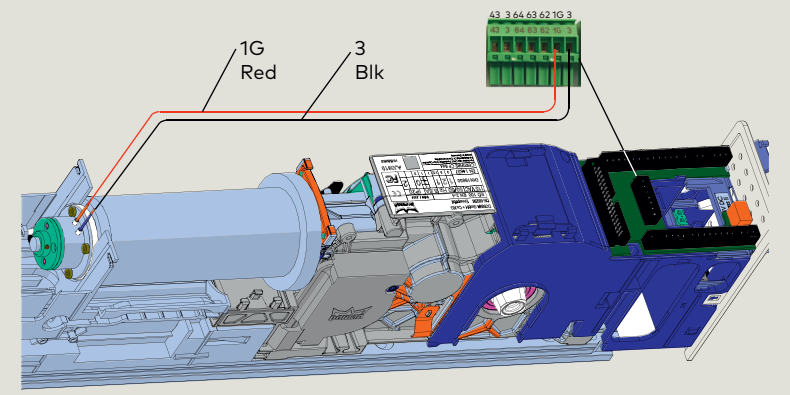


Fig. 15.3.8 Brake coil wiring

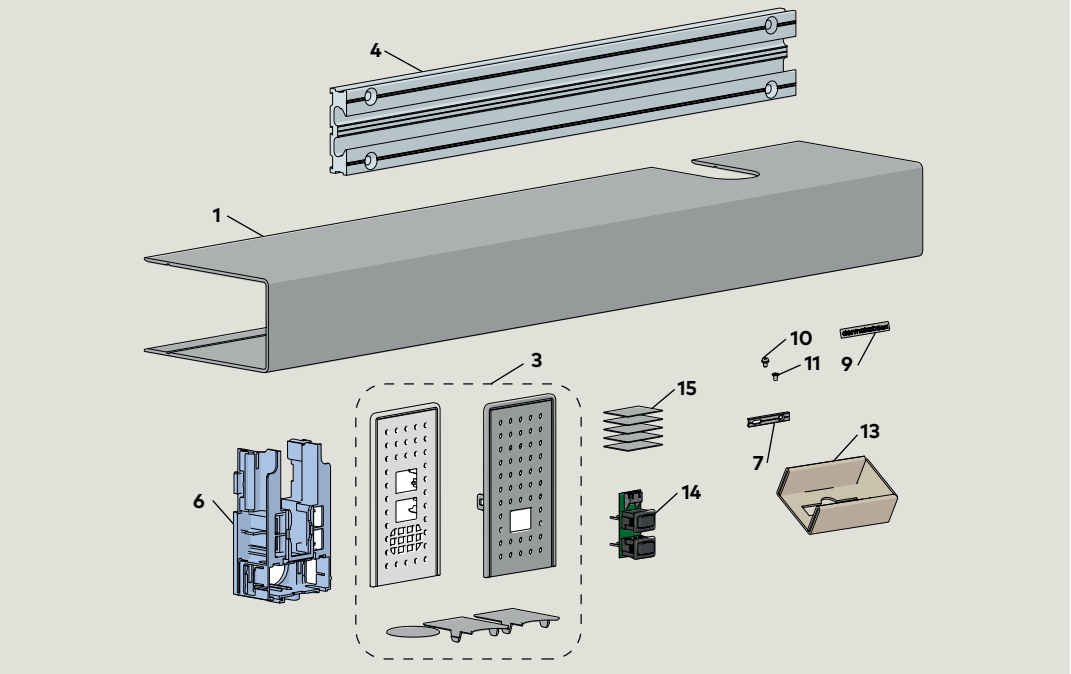


Appendix A - Fine cover professional cover kits

A.1 Professional cover kit HK3401-05X installation instructions – single door

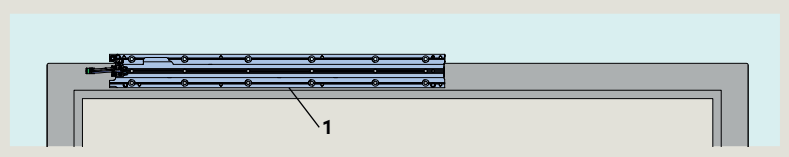
A1.1 Fine cover kit professional single, HK3401-05X.

Fig.A1.1 Fine cover kit professional single HK3401-05X



1 Fine cover single HC3459-01X
3 End cap set HC3466-01X
4 Backplate, ED oper FC Ext, HC3468-010
6 Cover bracket HC3481-010
7 Mtg, extr connector HC3491-010
9 dormakaba logo plate HD4613-010
10 M6 x 10 mm SHS with washer DF3495-01Z
11 M6 x 10 mm PFHS, HF3496-01Z
13 Logo placement template HP4613-001
14 Mode switch PCB with cable HX3482-010
15 Wire retainer HX3493-010

Fig. A.1.2 Mounting plate



1 ED50LE mounting plate

2 Mounting plate extension HC3614-010

Fig. A.1.3 Mounting plate extension

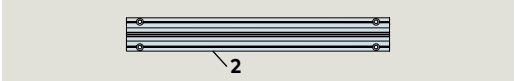
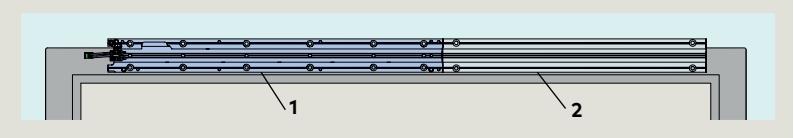


Fig. A.1.4 Mounting plate extension installation



1 ED50LE mounting plate

2 Mounting plate extension

A.1.1 Install ED50LE mounting plate.

Mounting plate installation:

- Reference Chapter 8, Para. 8.4 Mounting plate attachment to jamb or wall.

A.1.2 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 ED50LE. Ref. Chapter 2.

3. Secure mounting plate extension to door frame or wall.

A.1.3 Mounting plate installation checks.

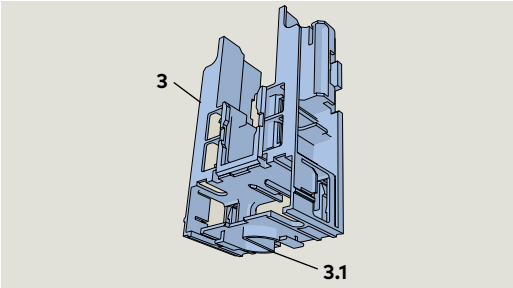
CAUTION

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

A.1.4 Install cover bracket.

1. Insert cover bracket collar into mounting plate groove at an angle (Fig. A1.5)
2. Rotate cover bracket parallel to mounting plate extension.
3. Position bracket at end of extension.

Fig. A.1.5 Professional cover bracket



2 Mounting plate extension
3 Professional cover bracket HC3481-010
3.1 Bracket collar

Fig. A.1.7 Cover bracket installed

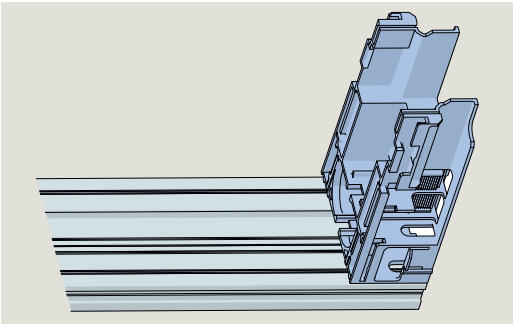
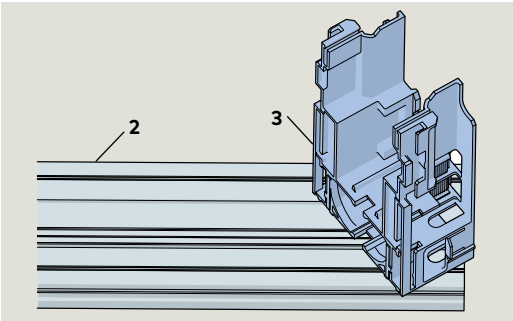


Fig. A.1.6 Install cover bracket

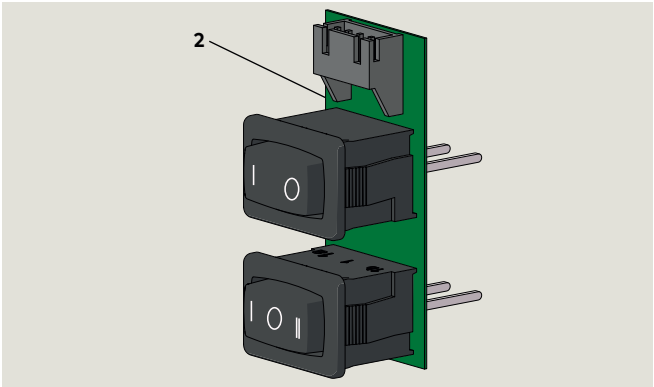


2 Mounting plate extension
3 Professional cover bracket HC3481-010

A1.5 Install Mode switch PCB into cover bracket.

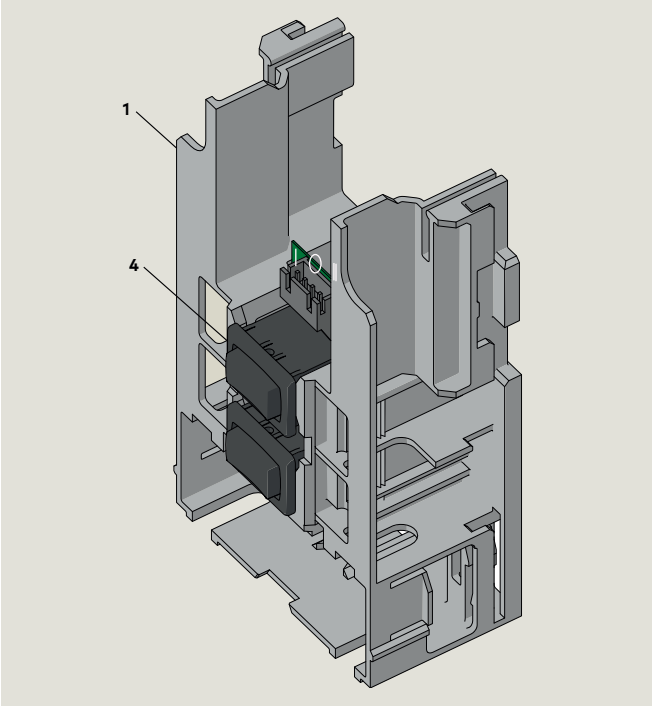
1. Install Mode switch PCB into cover bracket.

Fig. A1.8 Mode switch PCB assembly



2 Mode switch PCB HX3482-010

Fig. A1.9 Cover bracket with Mode switch assembly



2 Mode switch PCB HX3482-010
4 Full cover bracket HC3481-010

A1.6 Install Mode switch cable.

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

- Secure cable to mounting plate channels using wire retainers.

3. Terminate cable wires at terminal strip X1 as shown in Fig. A1.10.

Fig. A1.10 Mode switch wiring

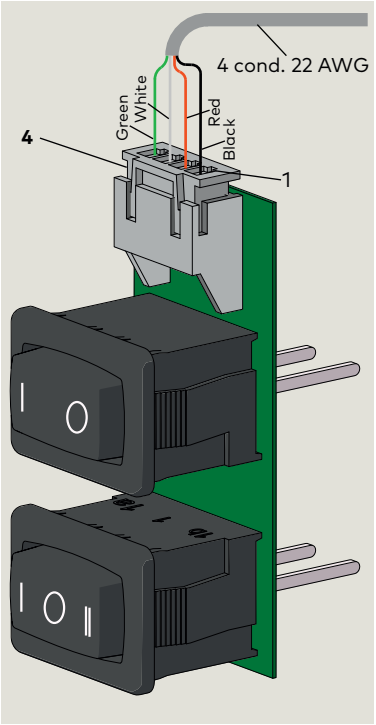
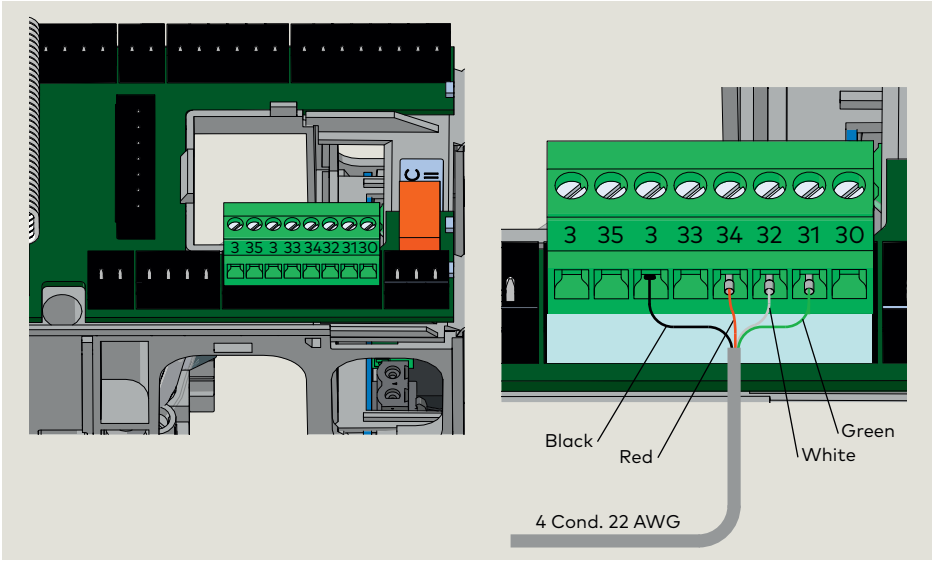


Fig. A1.11 Mode switch wiring at ED50LE terminal board

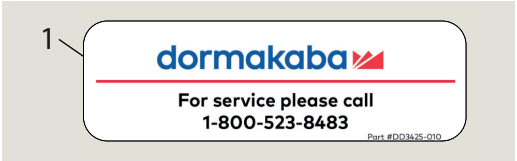


4 4 pin plug and 4 conductor cable assembly (part of HX3482-010)

A.1.7 Install Service Call label.

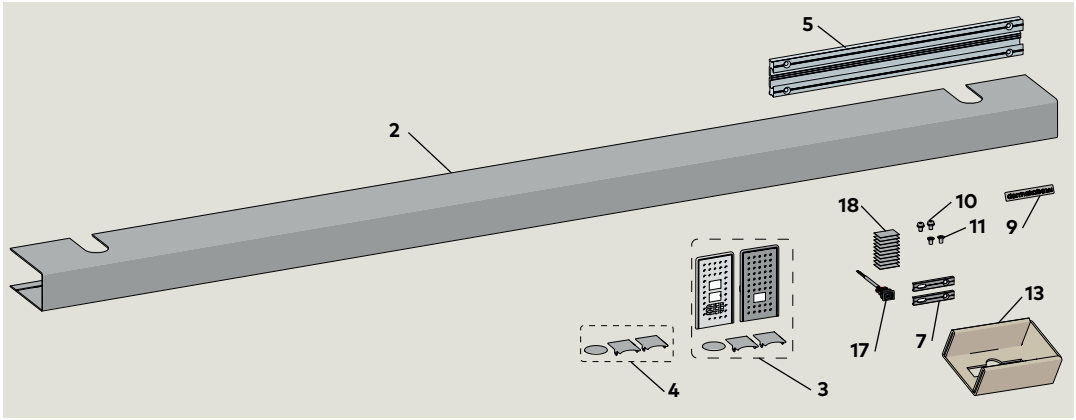
1. Install Service Call label at convenient location. Service call label included in Low Energy label kit HK3137-010.

Fig. A.1.12 Label, service call



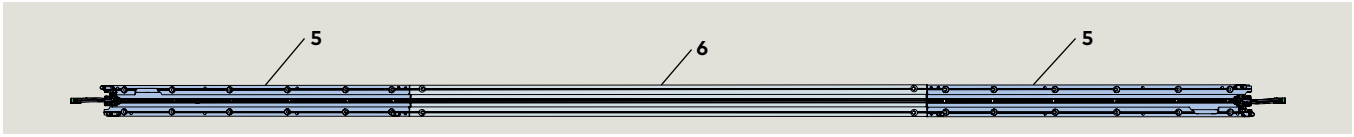
A.2.1 Professional cover kit HK3401-07X installation instructions – pair

Fig. A.2.1 Fine cover kit, professional pair HK3401-07X



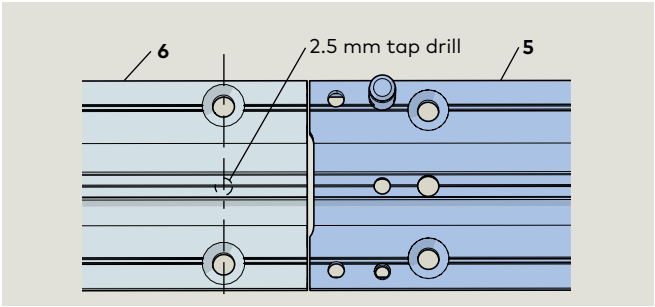
2 Fine cover, pair, HC3459-03X
3 End cap set, HC3466-01X
4 End cap set, HC3466-02X
5 Backplate, ED operator FC Ext HC3468-010
7 Mounting extr connector HC3491-010
9 dormakaba logoplate HD4613-020
10 M6 x 10 mm SHS with washer HF3495-01Z
11 M6 x 10 mm PFHS, HF3496-01Z
13 Logo placement template HP4613-001
17 Program switch, 3340 mm cable, HX3486-030
18 Wire retainer HX3493-010

Fig. A.2.2 Mounting plates positioned for assembly



5 Mounting plate, ED50LE operator
6 Mounting plate, FC extension HC3468-010

Fig. A.2.3 Pair mounting plate hole for M6 fastener



5 Mounting plate, ED100 operator
6 Mounting plate, FC extension HC3468-010

A.2.1 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. A.2.3).

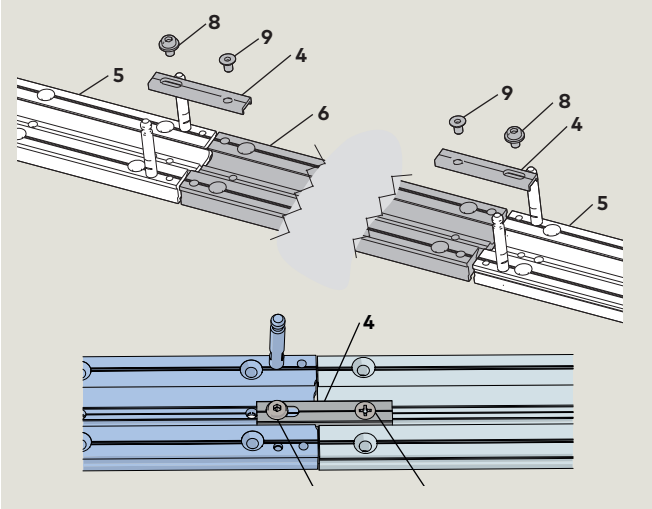
A.2.2 Assemble mounting plates.

1. Assemble the three mounting plates on a flat surface (Fig. A.2.2).

CAUTION

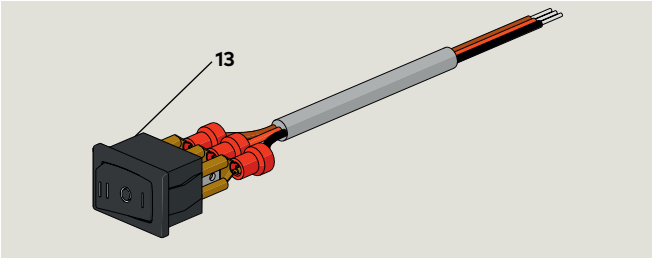
Verify mounting plate assembly dimensions with installation template (Para. 7.3).

Fig. A.2.4 Mounting plate connectors and fasteners



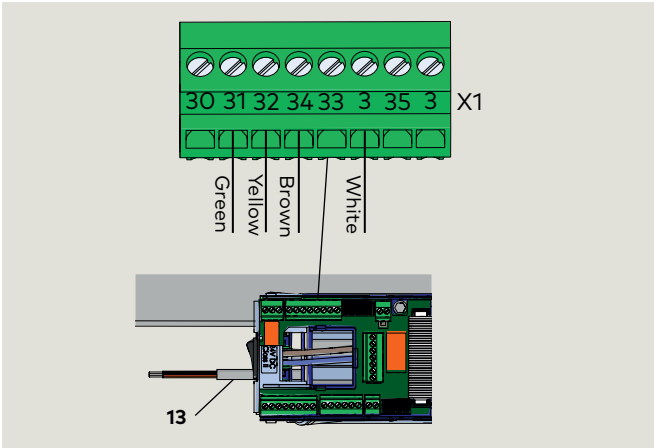
4 Mounting plate extr connector HC3491-010
5 ED50LE operator mounting plate
6 Backplate, ED operator FC Ext HC3468-010
8 M6 x 10 mm SHS with washer DF3495-01Z
9 M6 x 10 mm PFHS DF3496-01Z

Fig. A.2.5 Program switch and cable



13 Program switch HX3486-030

Fig. A.2.6 ED50LE program switch wiring



13 Program switch HX3486-030

2. Secure the operator mounting plates to the pair mounting plate (**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.

A.2.3 Check cover fit over ED operators.

1. Place the ED50LE operators onto their mounting plates (Para.)
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.

A.2.4 Mounting plate installation.

1. Reference Para. 8.4.

A.2.5 Install program switch.

1. Once header is installed, single program switch must be installed in fine cover end cap opposite the power switch.
2. Program switch wires to the active door operator (Fig. A.2.6).

A.2.6 Install Service Call label in cover.

1. Install Service Call label (Fig. A.2.7) on inside of cover.
- Service call label included in Low Energy label kit HK3137-030.

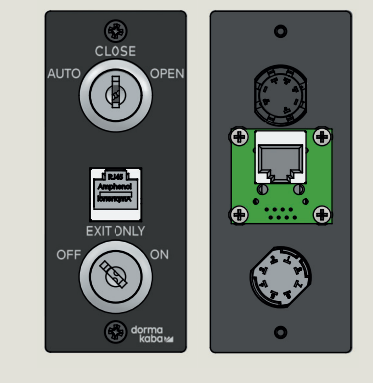
Fig. A.2.7 Label, Service Call

1 Label, Service call, DD3425-010

Appendix B - Key switch wiring diagrams

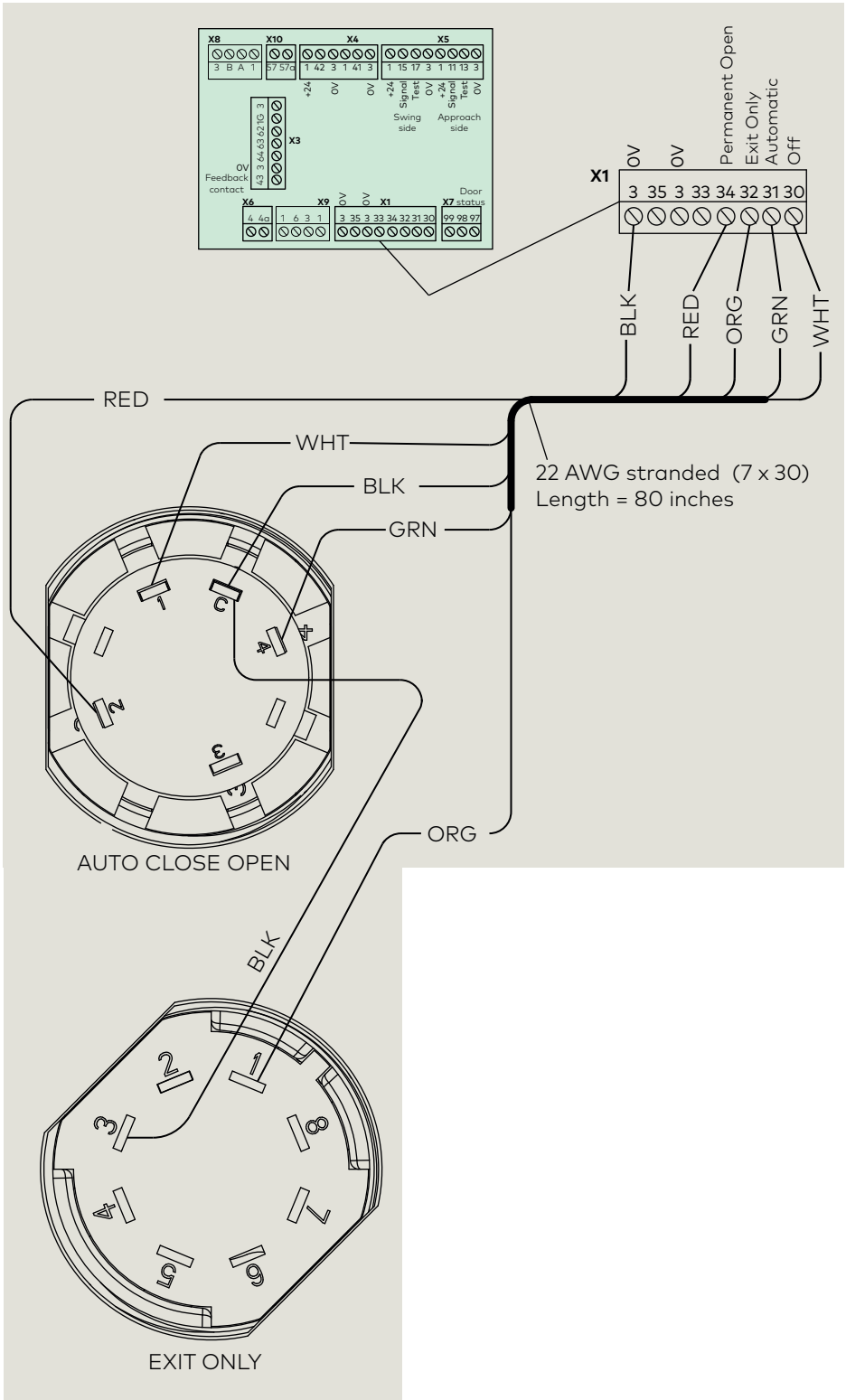
B1.1 DX4604-21C Key Switch Panel with RJ45 connector

Fig. B1.1.1 Key switch panel DX4604-21C



Reference Para. ___ for RJ45 cable connection.

Fig. B1.1.2 Key switch panel wiring diagram



B2.1 DX4604-11C Key Switch Panel

Fig. B2.1.1 Key switch panel DX4604-11C

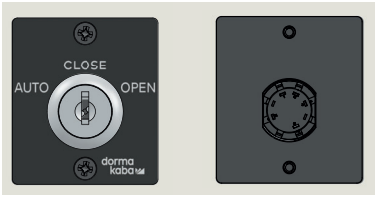
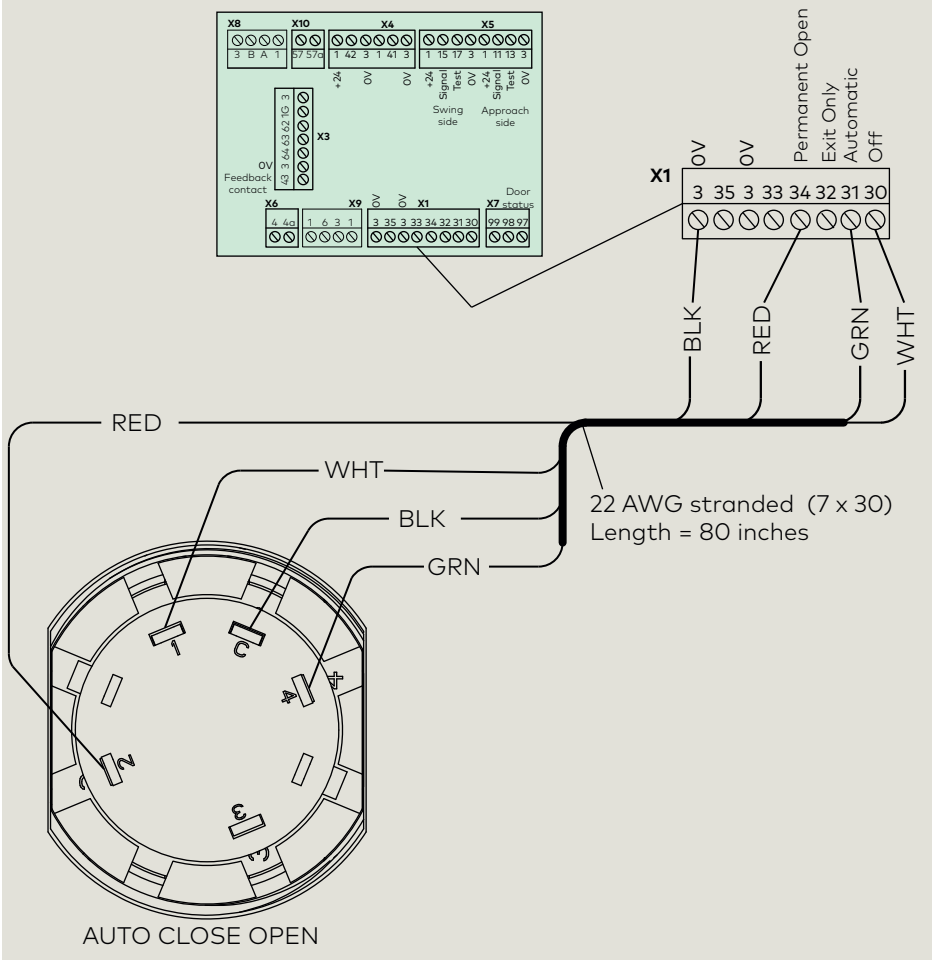


Fig. B2.1.2 Key switch panel wiring diagram



Appendix C - Knowing act switch wiring diagram

C1.1 Knowing act switches

Fig. C1.1.1 ACTIVATE SWITCH TO OPERATE decal

1 Activate Switch to Operate DD0758-010

C1.2 Knowing act switch wiring diagram

Fig. C1.2.1 ED operator terminal board activation inputs

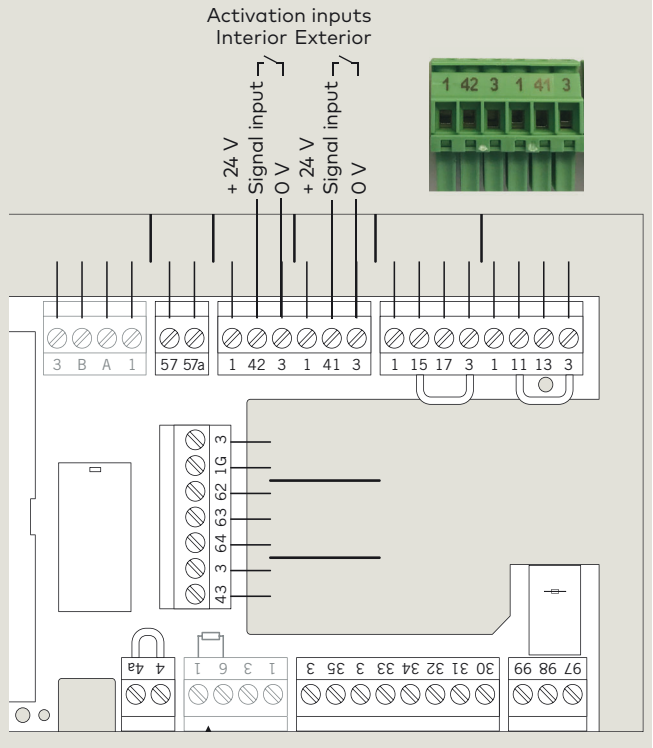
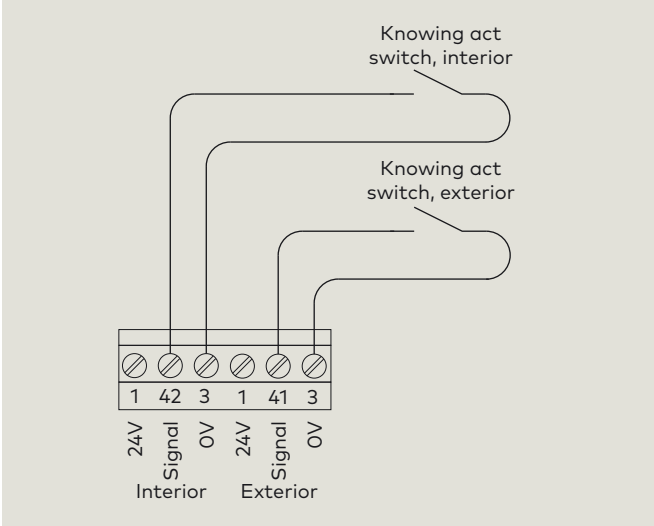


Fig. C1.2.2 Knowing act device wiring



External power supply required for illuminated knowing act devices.

NOTICE

Knowing act devices; i.e. card readers.
Refer to device wiring diagram.

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