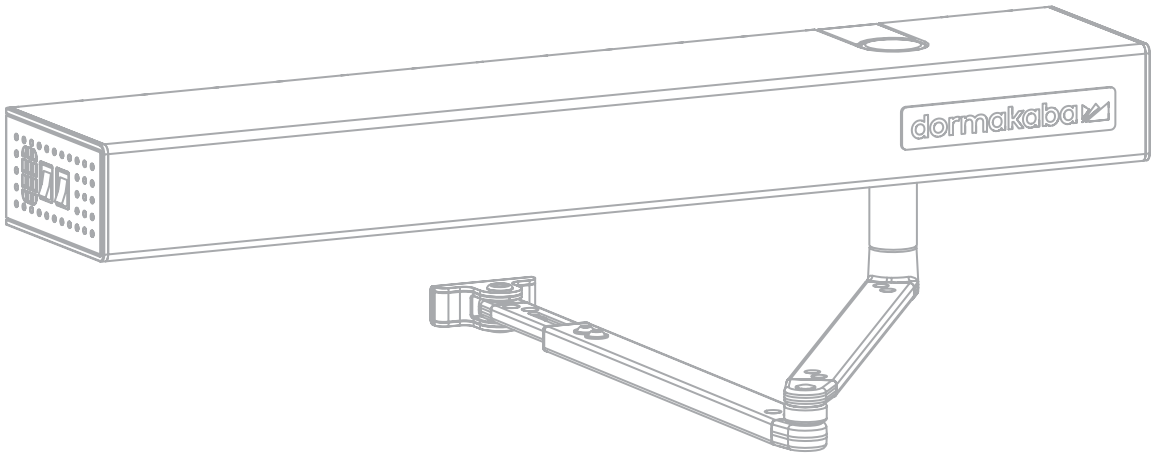
dormakaba

ED50/100/250

Surface applied swing door operator with fine cover

Installation Manual



DL4616-004 - 04/2026
Original document

EN

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1 General information

1.1 General information

1.1.1 Installation Instructions.

This manual provides installation instructions for the following ED50/ED100/ED250 (fine cover) door configurations. Reference Para. 2.2 and Para. 2.3 for illustrations.

Single doors

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

Double doors

1. Pull
2. Push
3. Pull as push.
4. Double egress.

Companion doors

1. Push
2. Pull

NOTICE

ED50/ED100/ED250 Fine Cover and Header Setup and Troubleshooting.
Reference ED50/ED100/ED250 Setup and Troubleshooting Manual DL4617-002.

1.1.2 dormakaba.us website.

Manuals are available for review, download, and printing on 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.

ED50/ED100/ED250 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 Maximum door weights and door installation

Table 2.1.1 ED50 low energy door panel

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

Table 2.1.2 ED100 low energy door panel

Exterior applications Prevailing conditions at opening must be considered		
Maximum door width	Pounds	kg
48" [1219]	220	[100]
Interior applications – Prevailing conditions at opening must be considered		
Maximum door width	Pounds	kg
48" [1219]	600	[272]

Table 2.1.3 ED100 full energy door panel

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

Table 2.1.4 ED250 low energy door panel

Exterior applications Prevailing conditions at opening must be considered		
Maximum door width	Pounds	kg
48" [1219]	600	[272]
Interior applications Prevailing conditions at opening must be considered		
Maximum door width	Pounds	kg
48" [1219]	800	[317]

Table 2.1.5 ED250 full energy door panel

Exterior and interior applications – Prevailing conditions at opening must be considered		
Maximum door width	Pounds	kg
48" [1219]	320	[272]

2.1.1 Interior building surface installation.

NOTICE

Installation on an interior building surface.

The ED50/ED100/ED250 with fine cover must be installed on an interior building surface.

2.1.2 ED50/ED100/ED250 (fine cover) 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

NOTE: For am configurations, reference Para. 2.12 (push arm kits) and Para 2.13 (pull arm kits).

Fig. 2.2.1 LH push

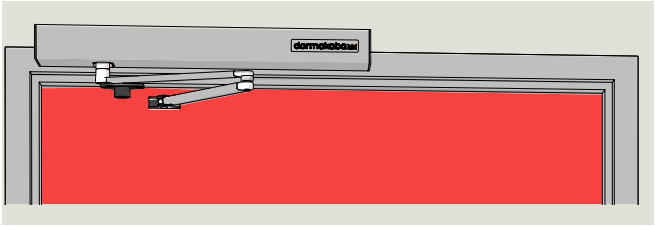


Fig. 2.2.2 LH deep pull

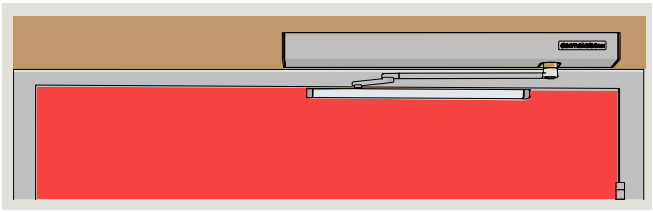


Fig. 2.2.3 LH pull as a push

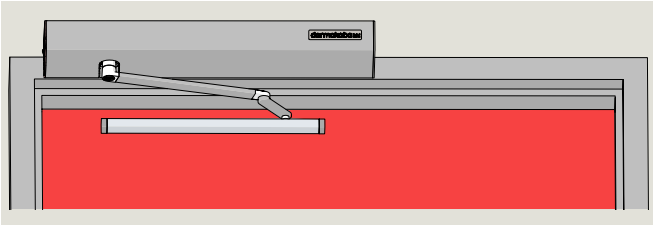


Fig. 2.2.4 LH pull

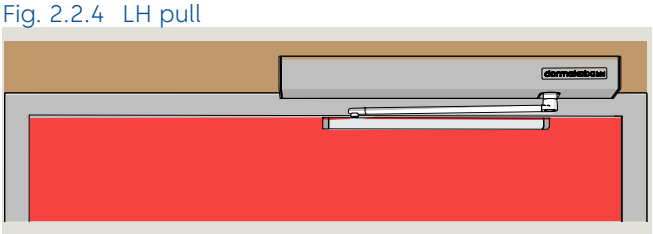
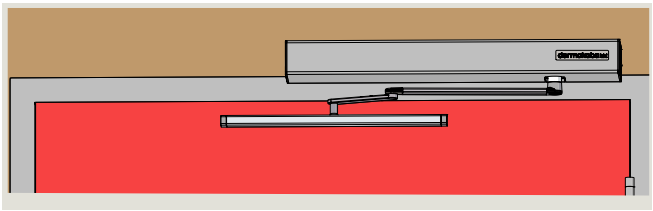


Fig. 2.2.5 LH deep reveal pull



2.3 Double door configuration examples

Fig. 2.3.1 Push

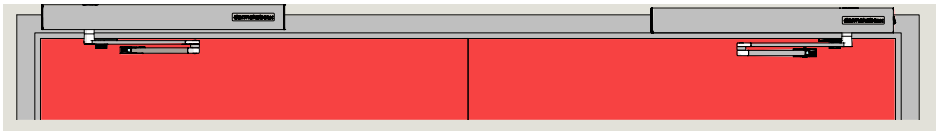


Fig. 2.3.2 Deep pull

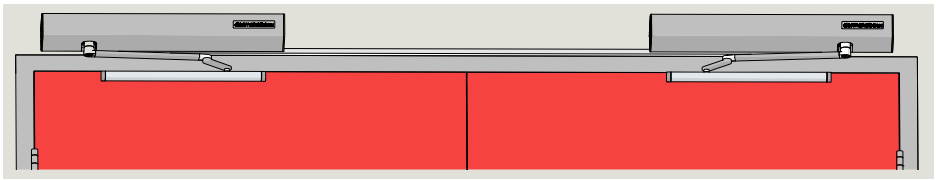


Fig. 2.3.3 Deep reveal pull

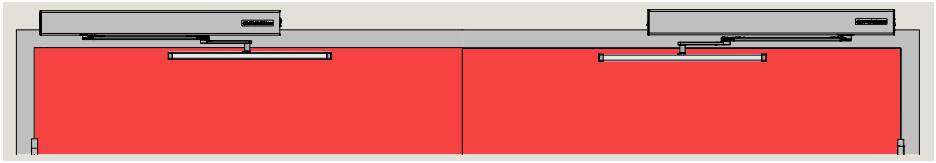


Fig. 2.3.4 Pull as push

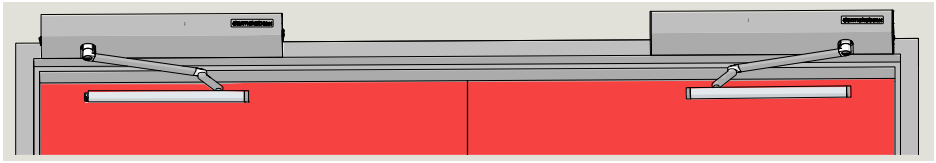


Fig. 2.3.5 LH double egress

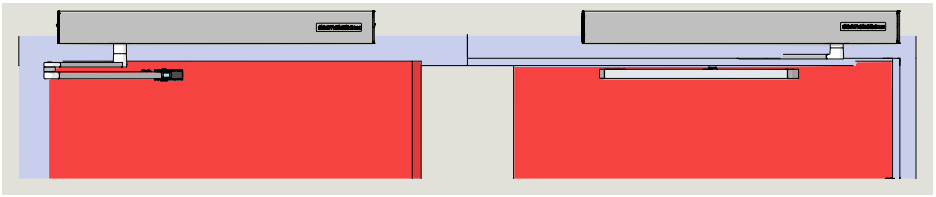


Fig. 2.3.6 Companion door, push without cover

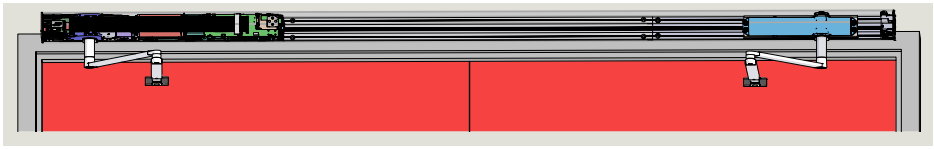
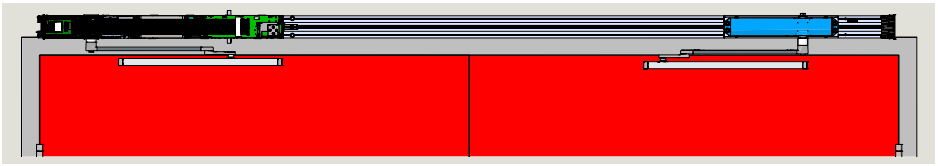
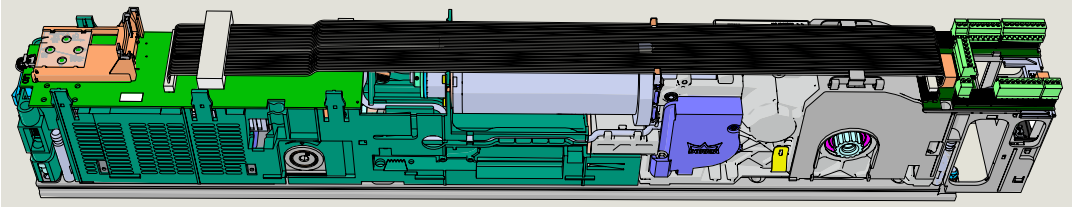


Fig. 2.3.7 Companion door, pull without cover



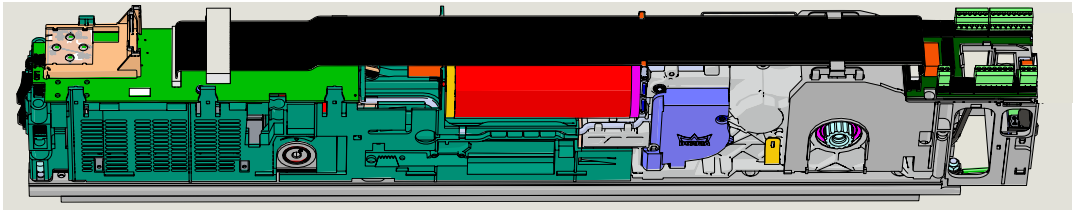
2.4 ED50 operator

Fig. 2.4.1 ED50 operator



2.5 ED100/ED250 operator

Fig. 2.5.1 ED100/ED250 operator



2.6 Accessory terminals, guide pin, backplate screw kit

Fig. 2.6.1 Accessory terminals, guide pin

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

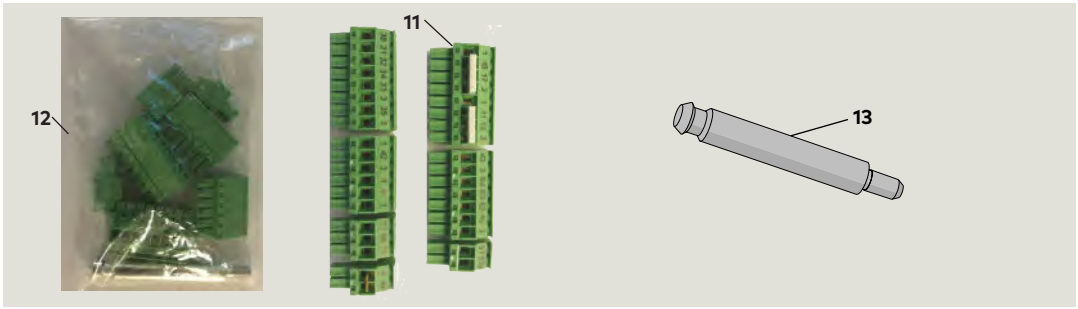
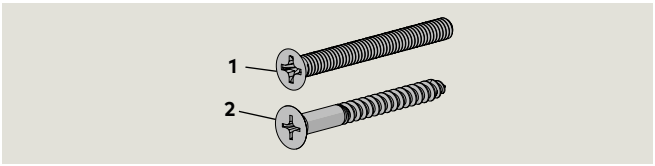


Fig. 2.6.2 ED100/ED250 backplate plate screw kit DK4053-010

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

Assembly #	Item #	Quantity
DK4953-010 Screw kit	1	12
	2	12



2.7 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
DK3137-010 Single door low energy (LE) decal kit	9	1
	8	1
	4	1
	3	1
	2	1
	1	2

Assembly #	Item #	Quantity
DK3137-030 Pair door low energy (LE) decal kit	9	1
	8	1
	4	2
	3	2
	2	4
	1	4

11 DD0756-010 Decal, Automatic Caution Door
10 DD0756-020 Decal, Automatic Door, Up Arrow
9 Decal, Service Call DD3425-010
8 Decal, AAADM Safety DD1269-020
7 Safety Information label, low energy DD1269-040
6 DD0762-020 Decal, Pull to Operate
5 DD0762-010 Decal, Push to Operate
4 DD0758-010 Decal, Activate Switch to Operate
3 DD0739-020 Decal, Do Not Enter
2 DD0739-010 Decal, Do Not Enter, Up Arrow
1 DD0586-010 Decal, Automatic Caution Door

Assembly #	Item #	Quantity
DK3137-110 Single door full energy (FE) decal kit	9	1
	8	1
	7	1
	6	1
	5	1
	4	2
	3	1
	2	1
	1	2

Assembly #	Item #	Quantity
DK3137-130 Pair door full energy (FE) decal kit	11	2
	10	2
	9	1
	8	1
	7	1
	6	2
	5	2
	4	4
	3	2
	2	2
	1	4

Fig. 2.7.1 Kit, ED Operator Label LE, DK3137-0X0

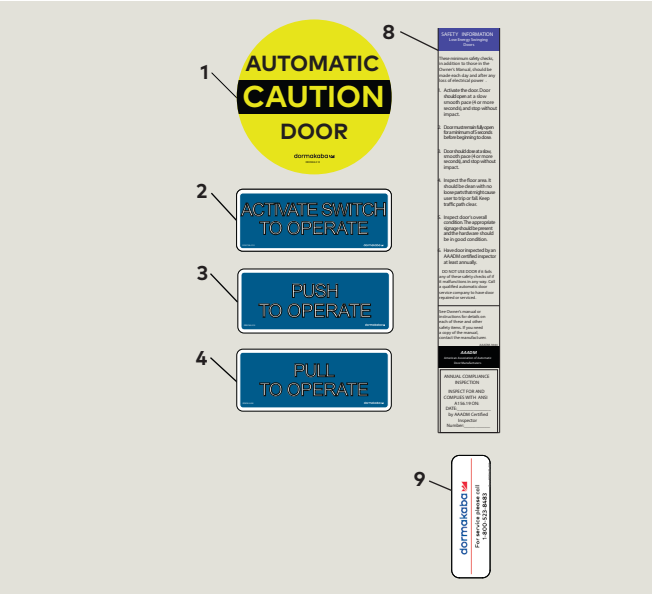
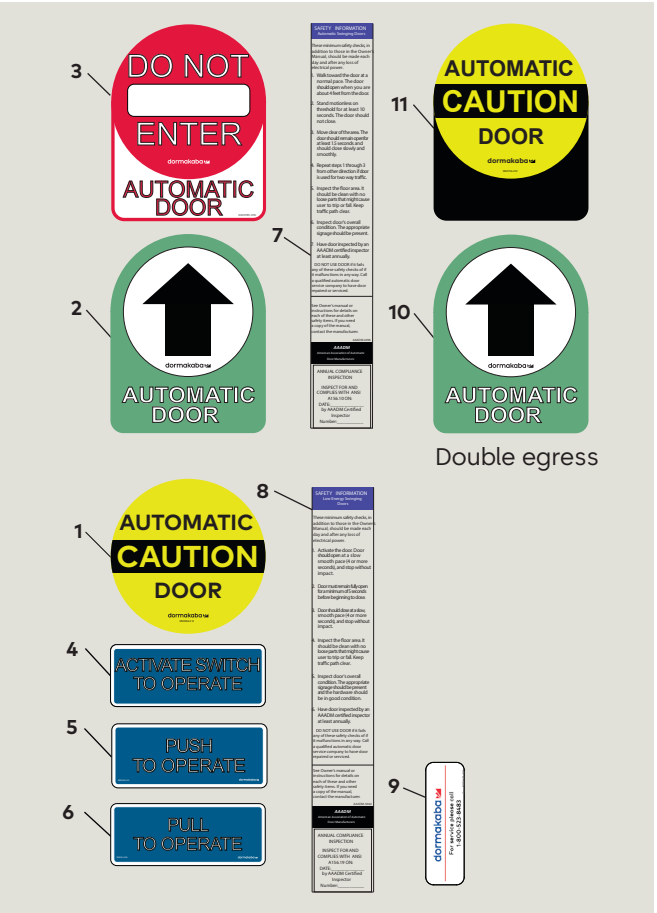


Fig. 2.7.2 Kit, ED Operator Label FE, DK3137-1X0



Double egress

2.8 Fine cover kits

2.8.1 Fine cover kits.

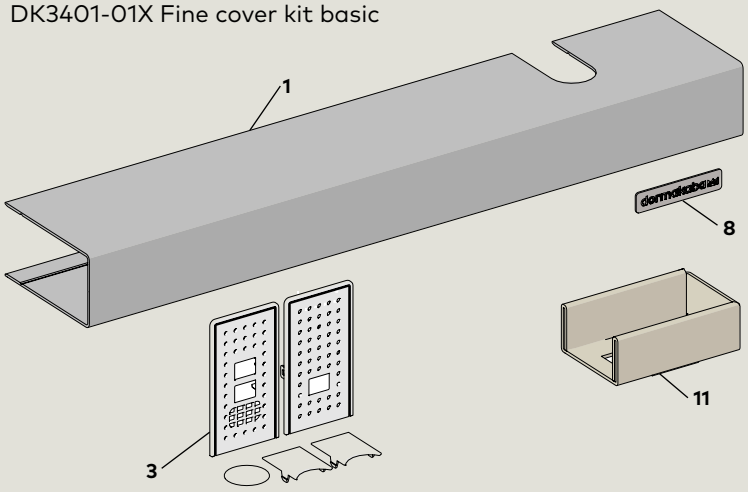
- DK3401-01X Fine cover kit basic.
- DK3401-05X Fine cover professional single.
- DK3401-07X Fine cover professional pair.

Table 2.8.1 Fine cover kit part numbers

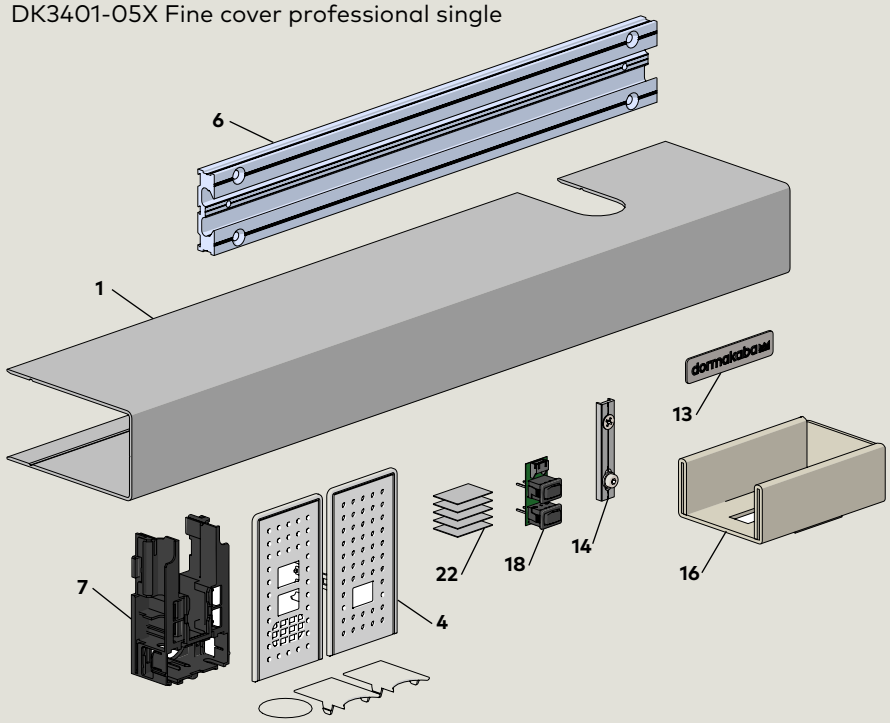
No.	Part number and description		Quantity		
			DK3401-01X	DK3401-05X	DK3401-07X
1	DC3459-01X	Fine cover single	1	1	
2	DC3459-03X	Fine cover pair			1
3	DC3466-01X	ED100/ED250 end cap set	1		
4	DC3466-01X	ED100/ED250 end cap set		1	1
5	DC3466-02X	Spindle cover set		1	1
6	DC3468-010	Backplate, ED operator, FC ext.		1	1
7	DC3481-010	ED100/ED250 professional cover bracket		1	
8	DD4613-020	Logo plate dormakaba ED swing	1	1	1
9					
10	DL4613-001	ED FC logo template instructions	1		
10	DC3494-010	ED100/ED250 cable tie			2
11	DP4613-001	ED FC logo placement template	1		
12	DL4613-001	ED FC logo template instructions - not shown	1	1	
13	DD4613-020	Logo plate dormakaba ED swing		1	1
14	DK3491-001	Backplate connect kit		1	2
15	DL4613-001	ED FC logo template instructions		1	1
16	DP4613-001	ED FC logo placement template		1	1
17	DS3487-010	ED between support assembly			1
18	DX3482-010	ED100/ED250 mode switch		121	
19	DX3484-030	ED power connect cable, 3400 mm			1
20	DX3485-030	ED sync cable, 2030 mm			1
21	DX3486-030	ED Mode switch 3 position			1

Fig. 2.8.1 Fine cover kits

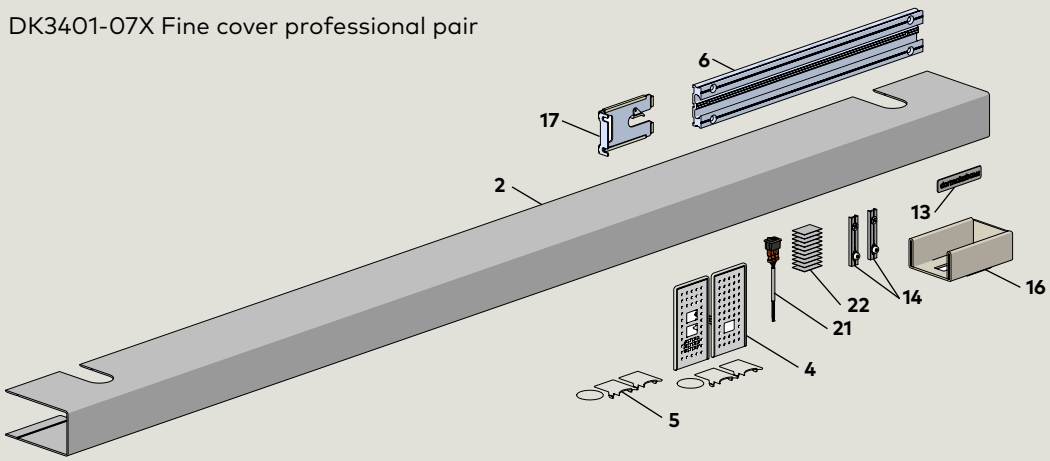
DK3401-01X Fine cover kit basic



DK3401-05X Fine cover professional single



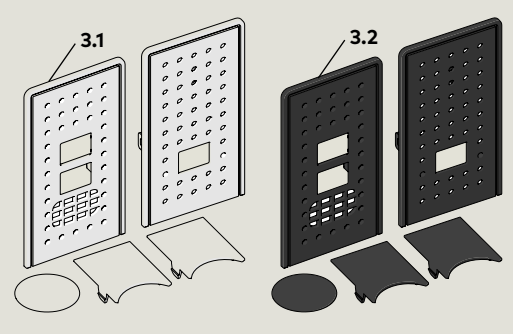
DK3401-07X Fine cover professional pair



2.9 Fine cover kit hardware

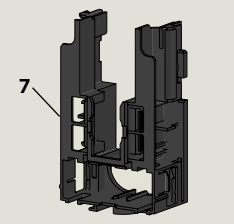
1 Mounting, extr. connector HC3491-010
2 M6 x 10 mm SHCS and washer DF3495-01Z
3 M6 x 10 mm PFHS HF3496-01Z

Fig. 2.9.1 End cap sets



3.1 End cap set, silver, DC3466-01A
3.2 End cap set, black, DC3466-01C
4.1 Spindle cap set, silver DC3466-02A
4.2 Spindle cap set, black DC3466-02B

Fig. 2.9.2 Cover bracket



7 Cover bracket DC3481-010
8 dormakaba logo plate DD4613-020
15 Wire retainer DX3493

Fig. 2.9.3 Wire retainer

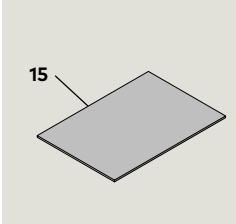
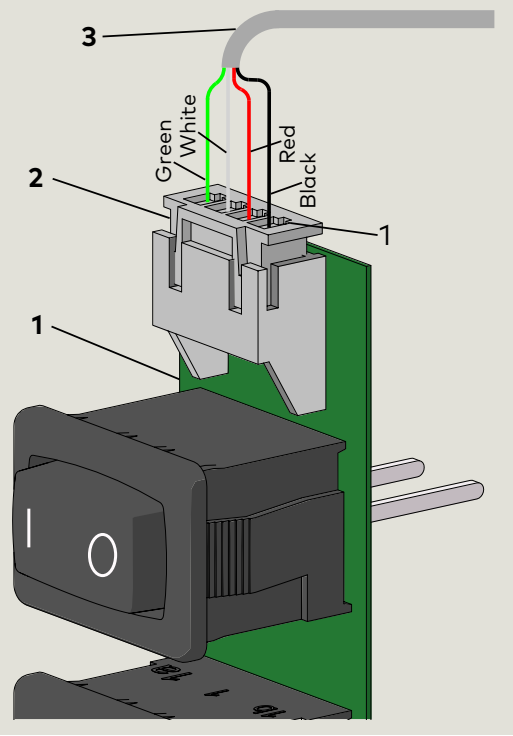


Fig. 2.9.4 Mode switch



14 Mode switch DX3482-010
1 Mode switch
2 JST HXP 4 pin connector
3 Alpha 1174C 4 conductor 22 AWG cable, 73" long

Fig. 2.9.5 Backplate connect kit HK3491-001

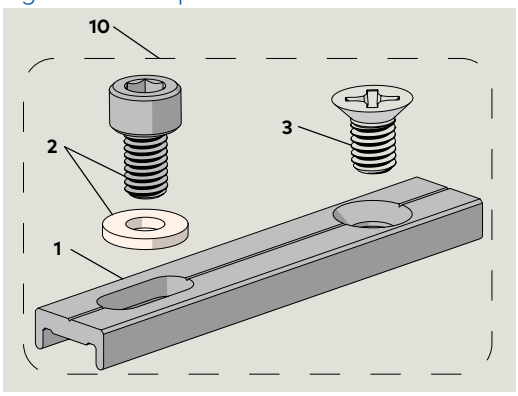


Fig. 2.9.6 Spindle cap sets

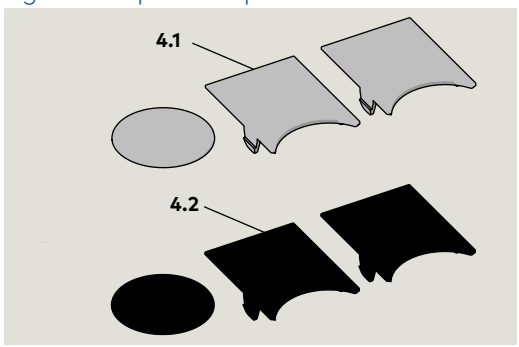


Fig. 2.9.7 dormakaba logo plate



2.10 Axle extensions, ED50/ED100/ED250

- **1** 20 mm axle extension DC4679-001
- **2** 30 mm axle extension DC4679-002
- **3** 60 mm axle extension DC4679-003
- **4** 90 mm axle extension DC4679-004

Fig. 2.10.1 [20 mm] 3/4"

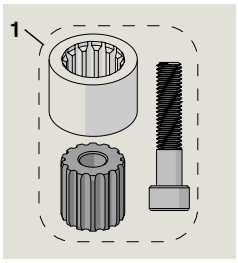


Fig. 2.10.2 [30 mm] 1 1/8"

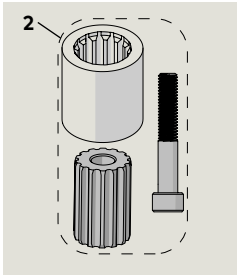


Fig. 2.10.3 [60 mm] 2 3/8""

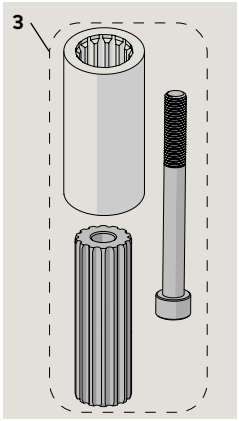
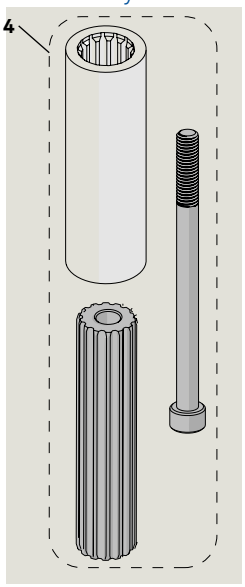


Fig. 2.10.4 [90 mm] 3 9/16"

ED250 only



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 DS4633-001

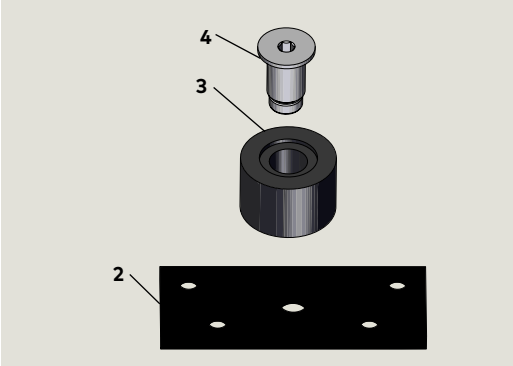
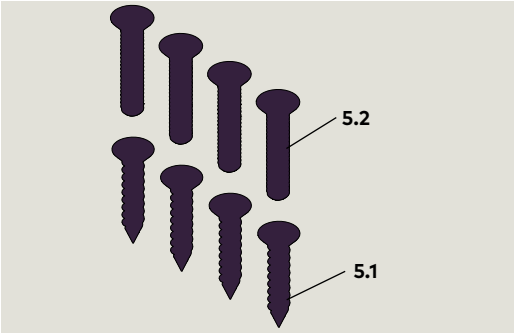


Fig. 2.11.2 Mounting screw kit DC4633-005



2.12 Push arm kits

1 Standard push arm DC4677-01X
2 Deep push arm, DC4677-02X
3 Screw kit, DK2719-010

Fig. 2.12.1 Push arm kit DK4709-01X

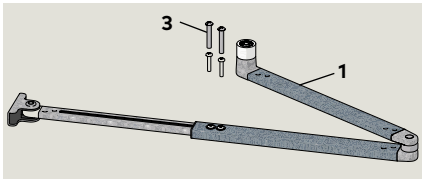
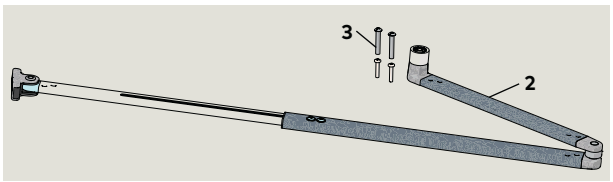


Fig. 2.12.2 Deep push arm kit DK4709-02X



2.13 Pull arm kits

1 Pull arm (1" reveal) DC4678-01X
2 Deep pull arm (2.75" reveal) DC4678-02X
3 Deep reveal pull arm (9.75" reveal) DC4678-03X
ED100/ED250 ONLY
4 Screw kit, DK2719-020

Fig. 2.13.1 Pull arm kit, DK4709-11X

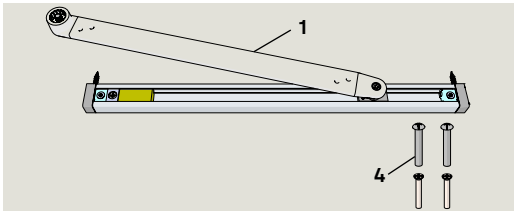


Fig. 2.13.2 Deep pull arm kit, DK4709-12X, RH

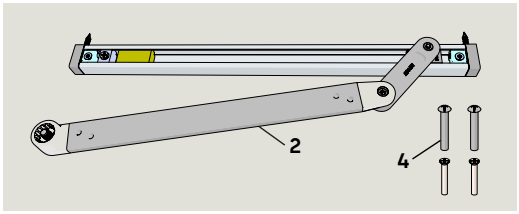


Fig. 2.13.2 Deep pull arm kit, DK4709-12X, LH

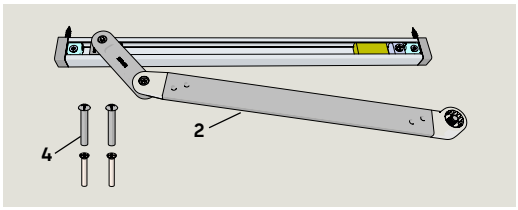


Fig. 2.13.3 Deep reveal pull arm kit, DK4709-13X, RH

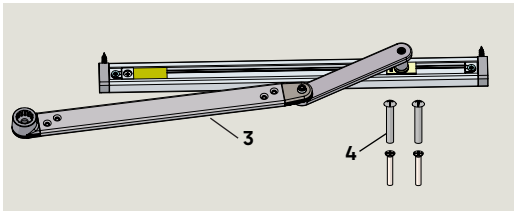
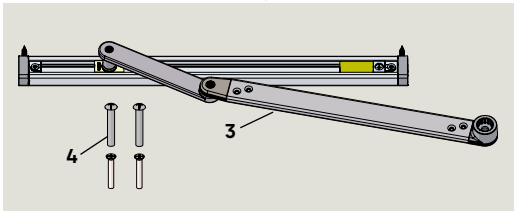


Fig. 2.13.4 Deep reveal pull arm kit, DK4709-13X, LH



2.14 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. 2.14.1 Push arm screw kit DK2719-010

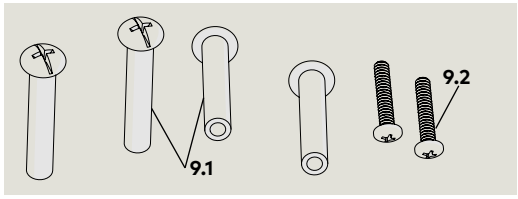
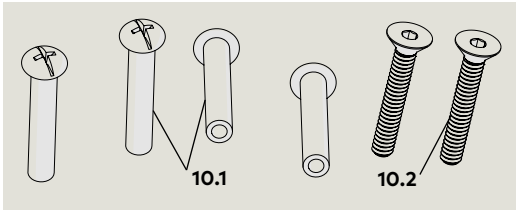


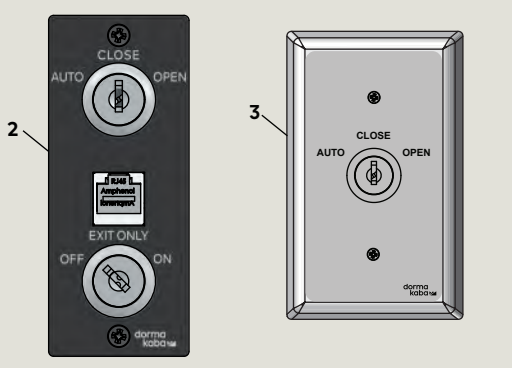
Fig. 2.14.2 Pull arm screw kit DK2719-020



2.15 Optional key switch panels

Fig. 2.15.1 Key switch panels

2 Key switch panel, RJ45, DX4604-21C
3 Key switch panel DX4604-07G

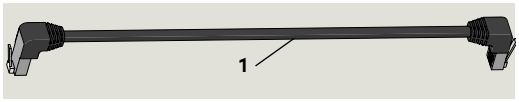


TIPS AND RECOMMENDATIONS

- Wiring diagrams; reference Appendix C.

Communication cable 90 degree RJ45	Length		Item #
DX4662-001	3'	[914 mm]	1
DX4662-002	10'	[3048 mm]	1
DX4662-003	20'	[6096 mm]	1

Fig. 2.15.2 Communication cable, 90 degree RJ45



2.16 Double door ED50/ED100/ED250 operator connection cables

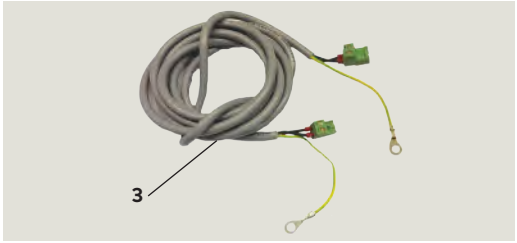
Sync cable	Length		Item #	Quantity
DX3485-030	80"	[2030 mm]	1	1
Optional				
DX3485-010	9 7/8"	[250 mm]	1	0
DX3485-020	40 1/2"	[1030 mm]	1	0

Fig. 2.16.1 Sync cable



Power connect cable	Length		Item #	Quantity
DX3484-030	119 5/8"	[3400 mm]	3	1
Optional				
DX3484-010	68 7/8"	[1750 mm]	3	0
DX3484-020	94 1/2"	[2400 mm]	3	0

Fig. 2.16.2 Power connect cable



3 Technical data

3.1 ED50/ED100/ED250 operator technical data

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]
ED100/ED250: Power supply for accessories	24 Vdc ± 5%, 1.5 A
ED50: power supply for accessories	Separate power supply required
Maximum door opening angle	95 to 110° depending on installation type

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

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

LED status indicators Green, Red, Yellow	Reference: Setup and Troubleshooting Instructions	24 Vdc power Error codes Service interval
Mode 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

3.2 Operating specifications – ED100/ED250

3.2.1 ED100	
Maximum power input	120 watt
Closing torque	
Maximum door weight	**FE:** 250 lb [113kg], depending on specific door application.
	LE: 600 lb [272kg], depending on specific door application.
Door width	28" - 55" [700 - 1400 mm]
Opening speed 0 - 90°	4* – 12 seconds
Closing speed 90 - 0°	5* – 21 seconds
Axle extensions	20/30/60 mm
Reveal depth, push arm	0 - 8 3/4" [0 - 222 mm]
Reveal depth, deep push arm	8 3/4" - 19 1/2" [222 - 500 mm]
Reveal depth, standard pull arm	± 1 3/16" [± 30 mm]
Reveal depth, deep pull arm	1 3/16" - 2 3/8" [30 - 60 mm]
Reveal depth, deep reveal pull arm	2 3/8" - 9 3/4" [60 - 250mm]

*Depending on door panel weight, automatically limited with low energy power operator doors (ANSI A156.19).
Maximum speeds will only be reached in full energy operating mode, low door panel weight, and a minimum learned opening angle of 95°.

3.2.2 ED250	
Maximum power input	240 watt
Closing torque	
Maximum door weight.	**FE:** 320 lb [145 kg] depending on specific door application.
	LE: 700 lb [318 kg] depending on specific door application.
Door width	28" - 63" [700 - 1600 mm]
Door width fire protection	28" - 55" [700 - 1400 mm]
Opening speed 0 - 90°	3* – 12 seconds
Closing speed 90 - 0°	4* – 21 seconds
Axle extensions	20/30/60/90 mm
Reveal depth, push arm	0 - 8 3/4" [0 - 222 mm]
Reveal depth, deep push arm	8 3/4" - 19 1/2" [222 - 500 mm]
Reveal depth, standard pull arm	± 1 3/16" [± 30 mm]
Reveal depth, deep pull arm	1 3/16" - 2 3/8" [30 - 60 mm]
Reveal depth, deep reveal pull arm	2 3/8" - 9 3/4" [60 - 250mm]

3.3 Operating specifications – ED50

3.3.1 ED50

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: ED50	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]	

3.4 Torque overview; ED100/ED250

	Mounting on hinge side, pull version of slide channel.			Mounting on opposite hinge side, push version of standard arm/ push version of slide channel		
3.4.1 ED100	Minimum	Maximum		Minimum	Maximum	
Closer size in accordance with EN1154	EN 2	EN 4		EN 2	EN 4	
Manual closing torque: ft lb [Nm]***	9.6 [13]	27.3 [37]		9.6 [13]	27.3 [37]	
Automatic closing force lb f [N]**	4.5 [20]	FE 34 [150]	LE 15 [67]	4.5 [20]	FE 34 [150]	LE 15 [67]
Manual opening torque: ft lb [Nm]	22 [30]	37 [50]		26 [35]	40.6 [55]	
Automatic opening force lb f [N]**	4.5 [20]	FE 34 [150]	LE 15 [67]	4.5 [20]	FE 34 [150]	LE 15 [67]
Opening force of manually activated power-assist function lb f [N]*	5.2 [23]	5.2 [23]		5.2 [23]	5.2 [23]	

3.4.2 ED250	Minimum	Maximum		Minimum	Maximum	
Closer size in accordance with EN1154	EN 4	EN 6		EN 4	EN 6	
Manual closing torque: ft lb [Nm]***	19 [26]	48 [65]		19 [26]	66 [90]	
Automatic closing force lb f [N]**	4.5 [20]	FE 34 [150]	LE 15 [67]	4.5 [20]	FE 34 [150]	LE 15 [67]
Manual opening torque: ft lb [Nm]	40.6 [55]	63 [85]		44 [60]	66 [90]	
Automatic opening force lb f [N]**	4.5 [20]	FE 34 [150]	LE 15 [67]	4.5 [20]	FE 34 [150]	LE 15 [67]
Opening force of manually activated power-assist function lb f [N]*	5.2 [23]	5.2 [23]		5.2 [23]	5.2 [23]	

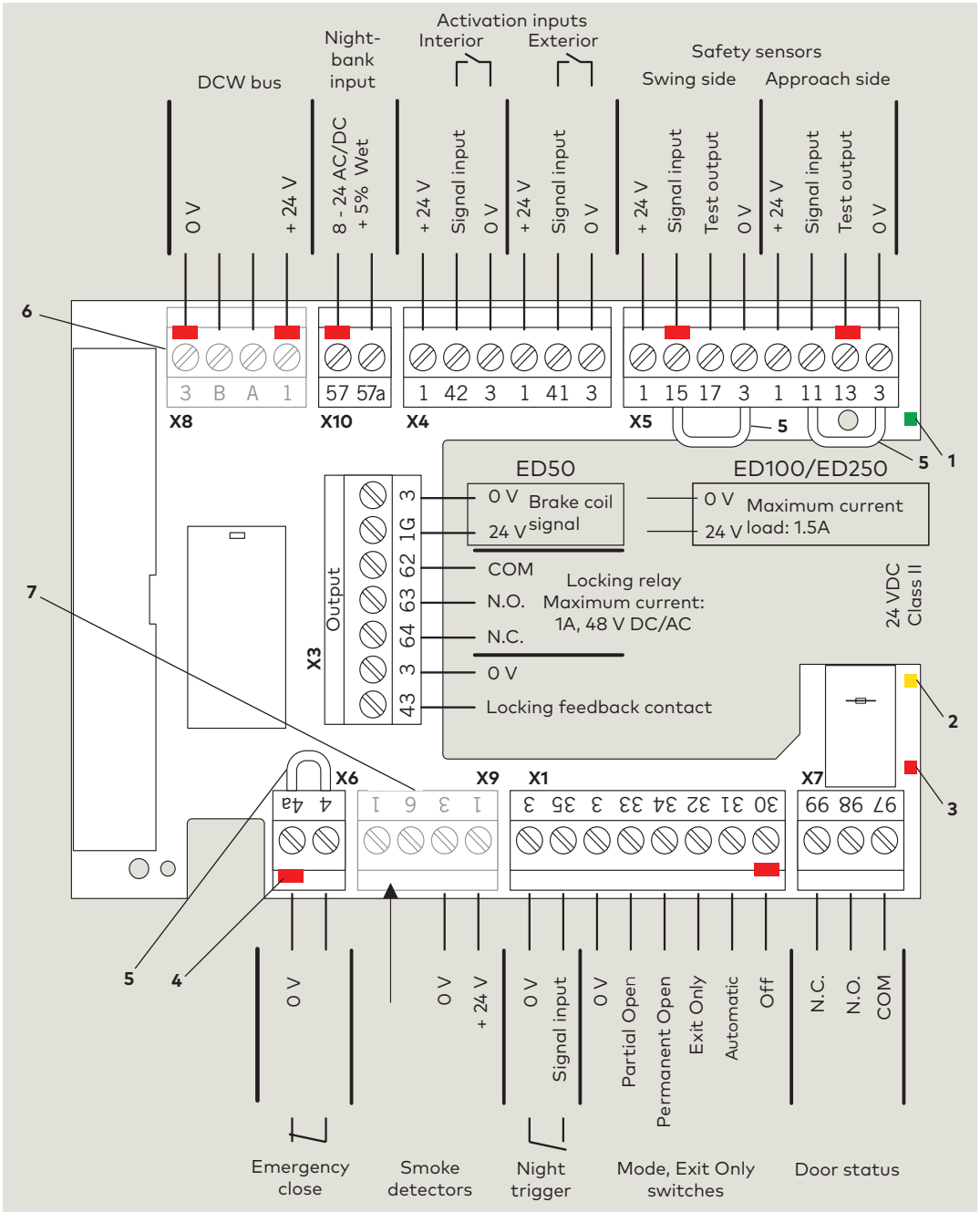
FE – Configured for full energy
LE – Low energy basic device, or configured for low energy

*If power assist support set to maximum, effective from an opening width of approximately 3°.
** The torque is available in the event of an automatic opening in automatic mode.
*** In the push version of the slide channel installation type, the forces reduce by approximately 33%.

4 Terminal board interfaces

4.1 ED50/ED100/ED250 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*

*Removed if activation input used.

6 DCW upgrade card plug
7 Fire protection upgrade card plug.

TIPS AND RECOMMENDATIONS

- Use documentation provided with each device for electrical installation.

TIPS AND RECOMMENDATIONS

- It is recommended not to connect system accessories to board until operator has been commissioned and learning cycle performed (Setup and Troubleshooting Instructions).

5 ED50/ED100/ED250 door signage

5.1 ED100/ED250 full energy operator – ANSI/BHMA A156.10

5.1.1 Overview

Signage and warnings are specified in ANSI /BHMA A156.10, American National Standard for Power Operated Pedestrian Doors, paragraph 11.

5.1.2 Door, one way traffic, Fig. 5.1.1.

1. Arrow and AUTOMATIC DOOR, one side of decal.
- Shall be visible from approach side of a swinging door, mounted on door at a height of 50" ± 12" from floor to centerline of sign.
2. DO NOT ENTER and AUTOMATIC DOOR, one side of decal (or separate decal for solid doors - DD0739-020).
- Shall be visible from non-approach side of door that swings towards pedestrians attempting to travel in wrong direction.

5.1.3 Door, two way traffic, Fig. 5.1.2.

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

Fig. 5.1.1 One decal, approach side, non-approach side



Fig. 5.1.2 One decal, two way traffic

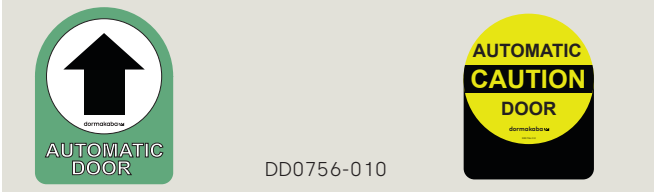


Fig. 5.1.3 ACTIVATE SWITCH TO OPERATE decal



5.1.4 Knowing act door.

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

5.2 ED50/ED100/ED250 low energy operator – ANSI/BHMA A156.19

5.2.1 Overview

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

5.2.2 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.

5.2.3 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".

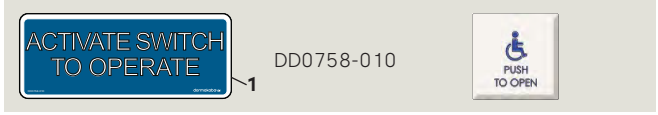
5.2.4 Push/Pull used to initiate door operation.

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. 5.2.1 AUTOMATIC CAUTION DOOR decal

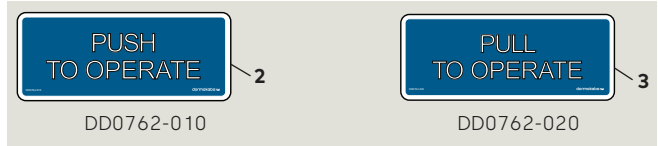


Fig. 5.2.2 ACTIVATE SWITCH TO OPERATE decal



1 Activate Switch to Operate DD0758-010

Fig. 5.2.3 PUSH TO OPERATE, PULL TO OPERATE decals



2 Push to Operate DD0762-010

3 Pull to Operate DD0762-020

5.3 Safety label, automatic swing doors

5.3.1 Automatic swinging door safety information label

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

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 automatic swing doors that comply with ANSI/BHMA A156.10 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.

5.4 Safety label, low energy swing doors

5.4.1 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 ED50 operator or an ED100/ED250 operator configured for low energy mode.

5.4.2 Safety information label location

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

5.4.3 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.

5.4.4 Additional annual compliance inspection labels

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

Fig. 5.3.1 Safety information labels

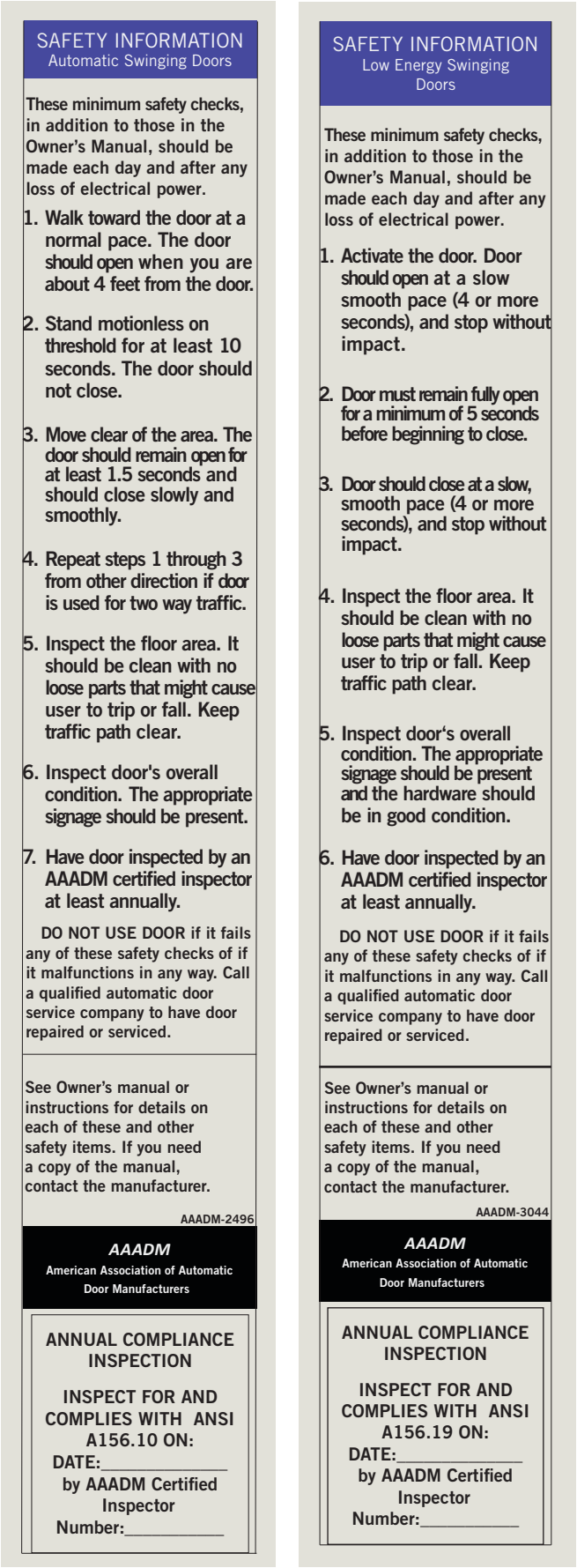
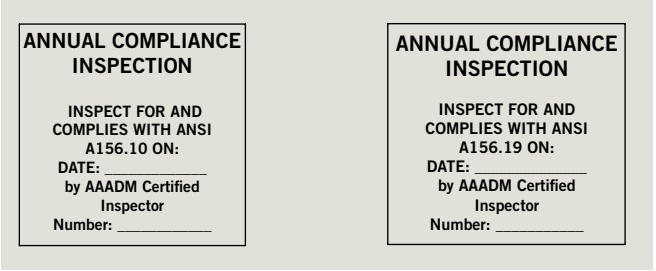


Fig. 5.3.2 Annual compliance inspection labels

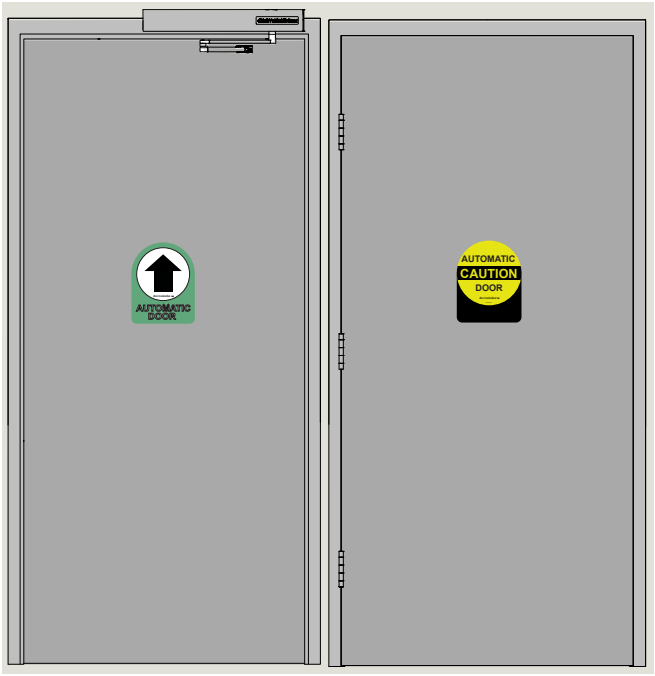


5.5 Door signage, full energy single swing door

Fig. 5.5.1 One way traffic



Fig. 5.5.2 Two way traffic



5.6 Door signage, low energy swing door

Fig. 5.6.1 Knowing act device initiation of door operation

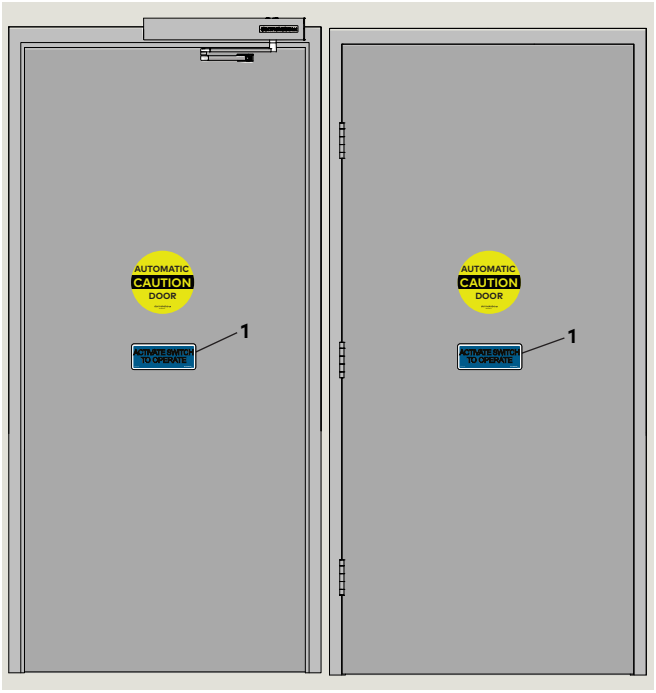
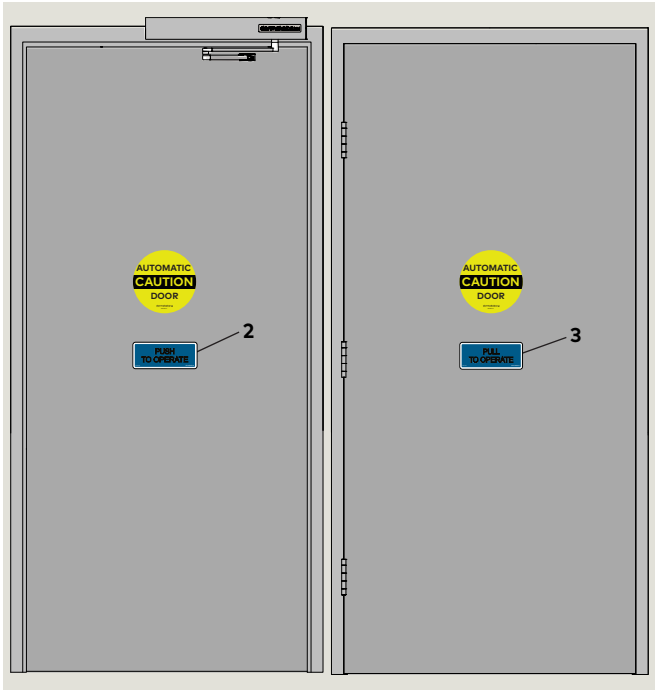


Fig. 5.6.2 Push / Pull initiation of door operation

Push to Operate Pull to Operate



1 Activate Switch to Operate DD0758-010

2 Push to Operate DD0762-010

3 Pull to Operate DD0762-020

5.7 Door signage, full energy double door

Fig. 5.7.1 One way traffic, approach side

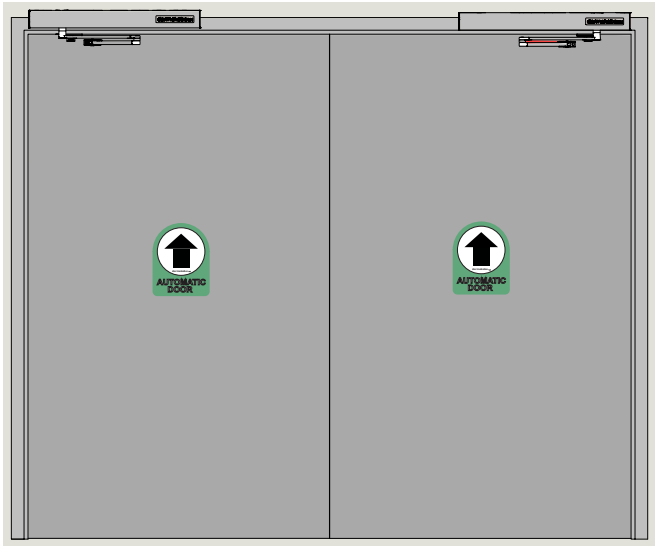


Fig. 5.7.2 Two way traffic, non-swing side

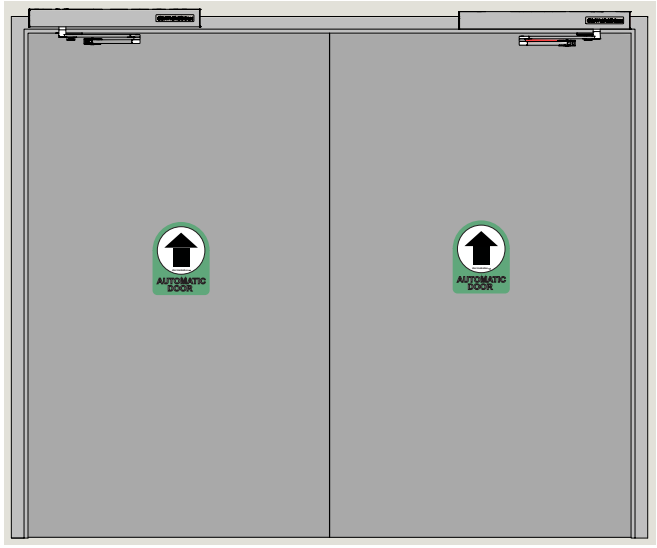


Fig. 5.7.3 One way traffic, approach side, knowing act

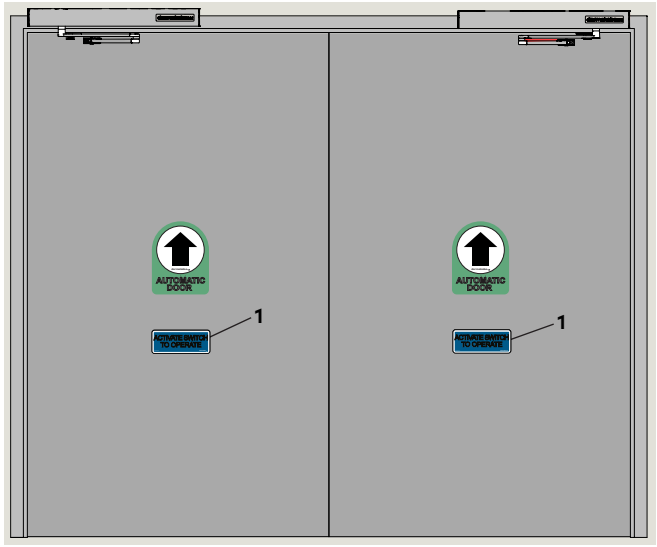


Fig. 5.7.4 One way traffic, non-approach side

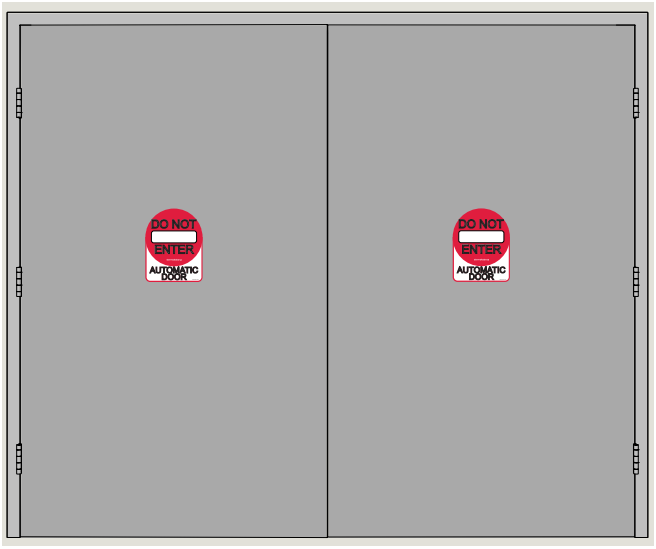


Fig. 5.7.5 Two way traffic, swing side

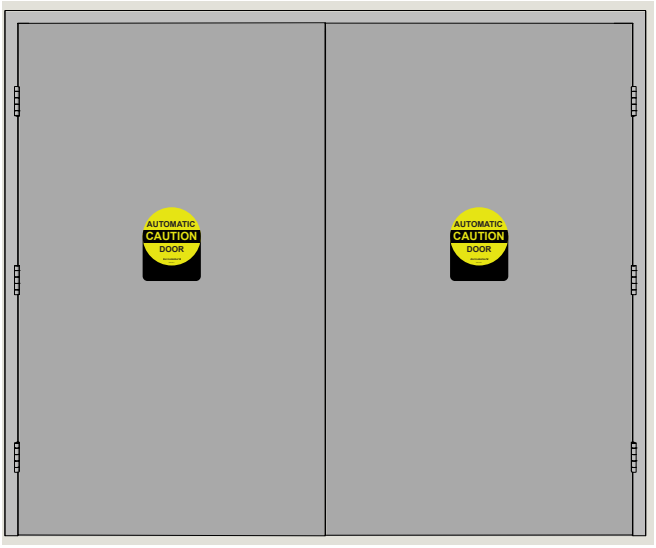
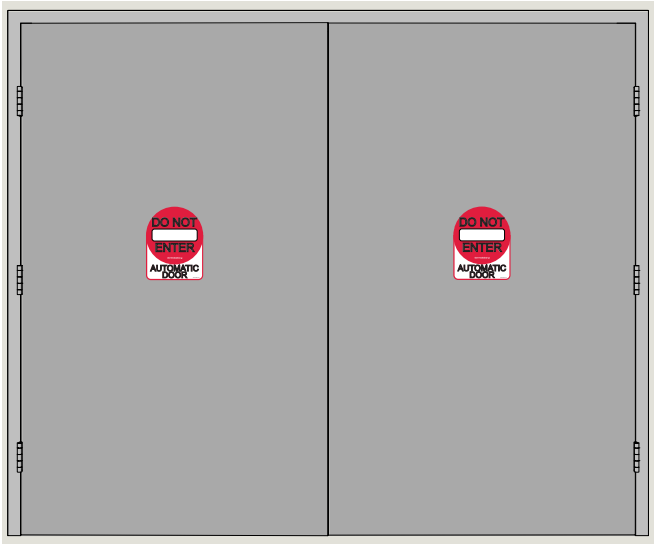


Fig. 5.7.6 One way traffic, non-approach side



1 Activate Switch to Operate DD0758-010

5.8 Door signage, full energy double egress door

Fig. 5.8.1 One way traffic, interior

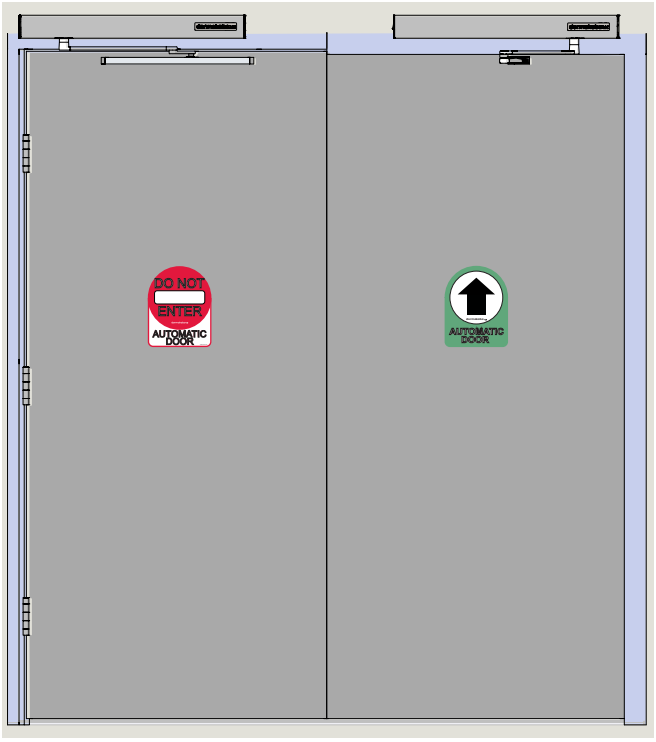


Fig. 5.8.2 Two way traffic, interior

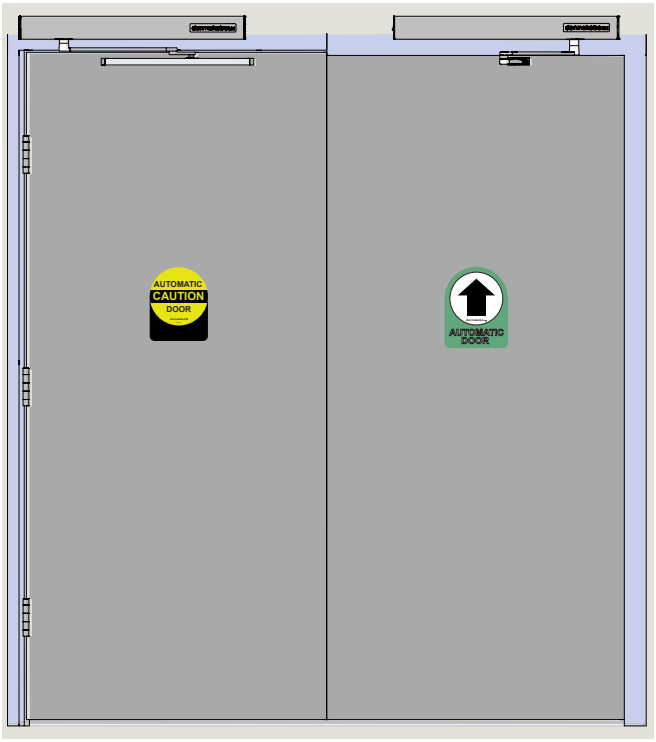


Fig. 5.8.3 One way traffic, exterior

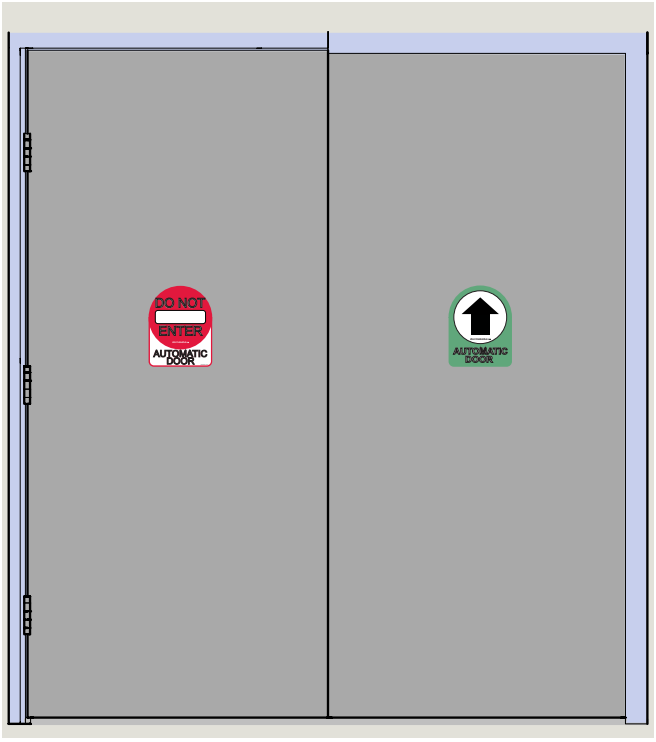
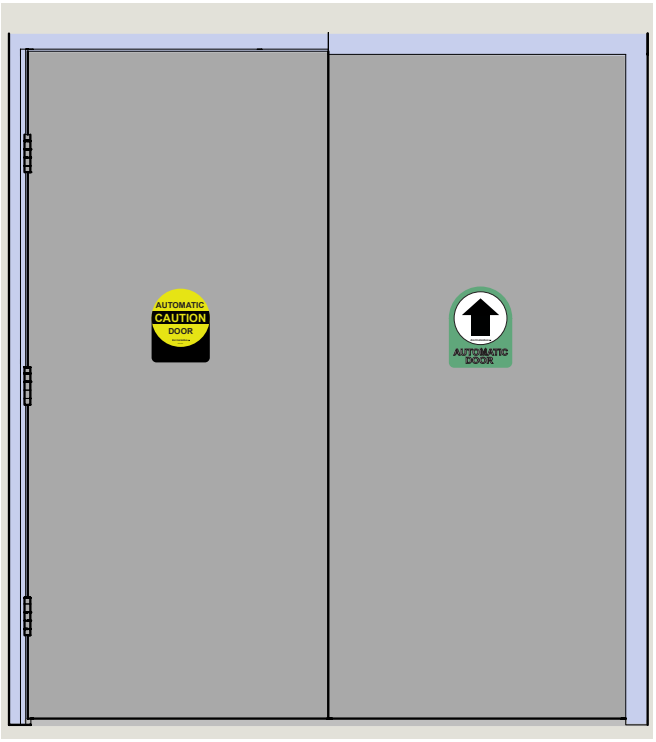


Fig. 5.8.4 Two way traffic, exterior



5.9 Door signage, low energy double doors

Fig. 5.9.1 Knowing act, non-hinge side

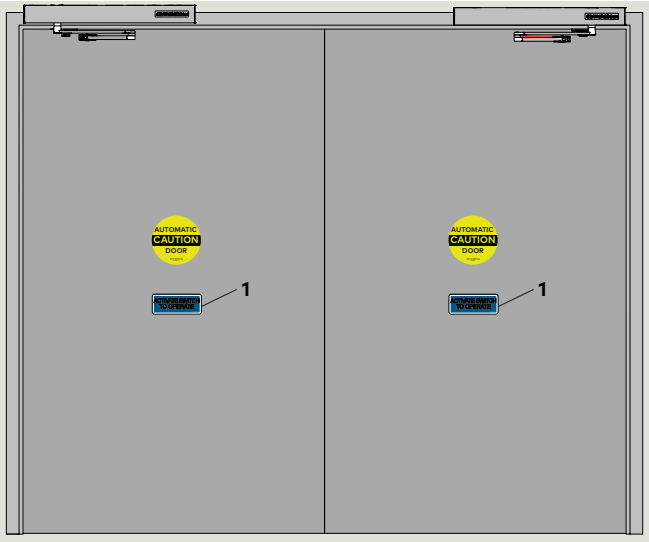


Fig. 5.9.2 Push / Pull, push to operate



Fig. 5.9.3 Double egress, knowing act

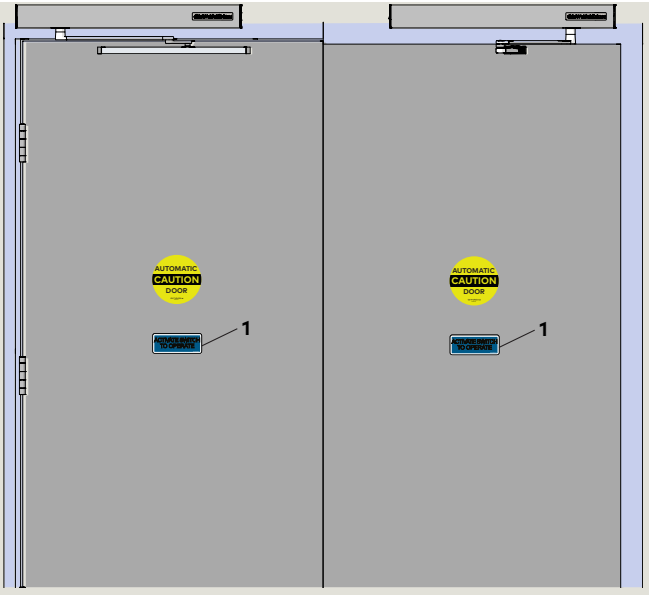


Fig. 5.9.4 Knowing act, non-hinge side

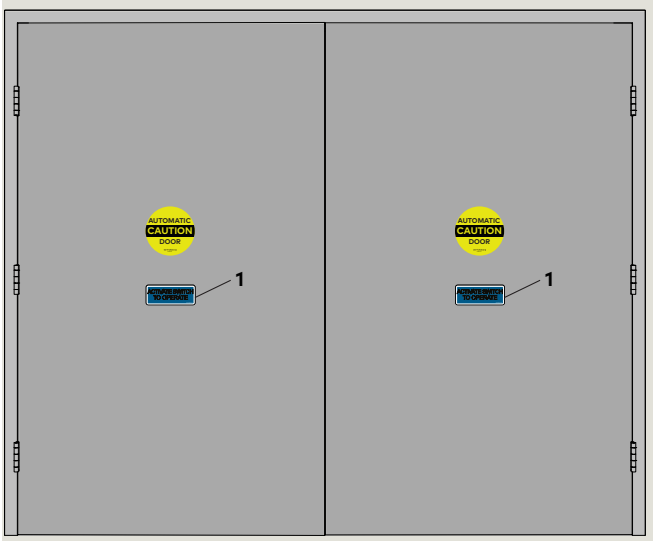


Fig. 5.9.5 Push / Pull, pull to operate

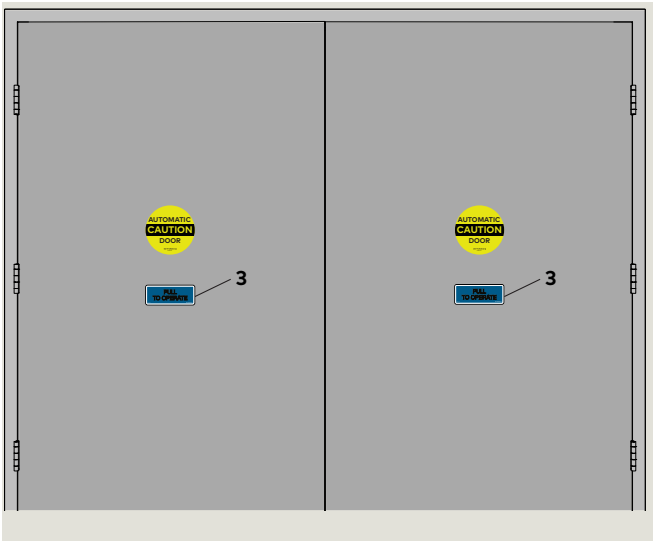
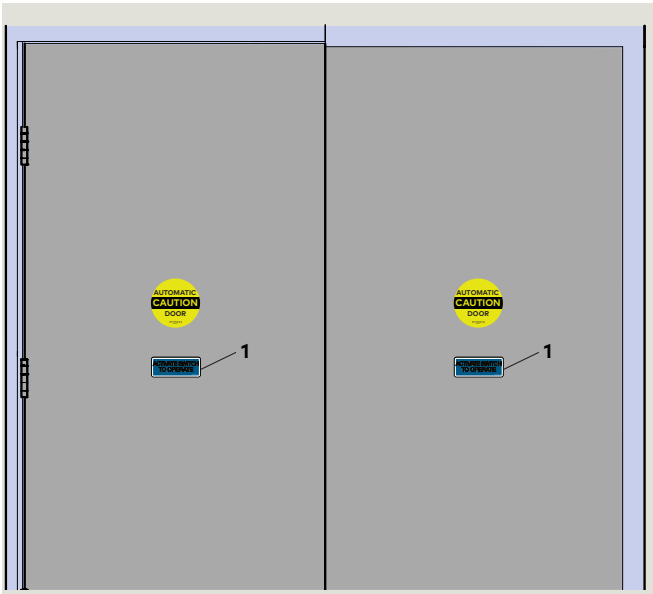


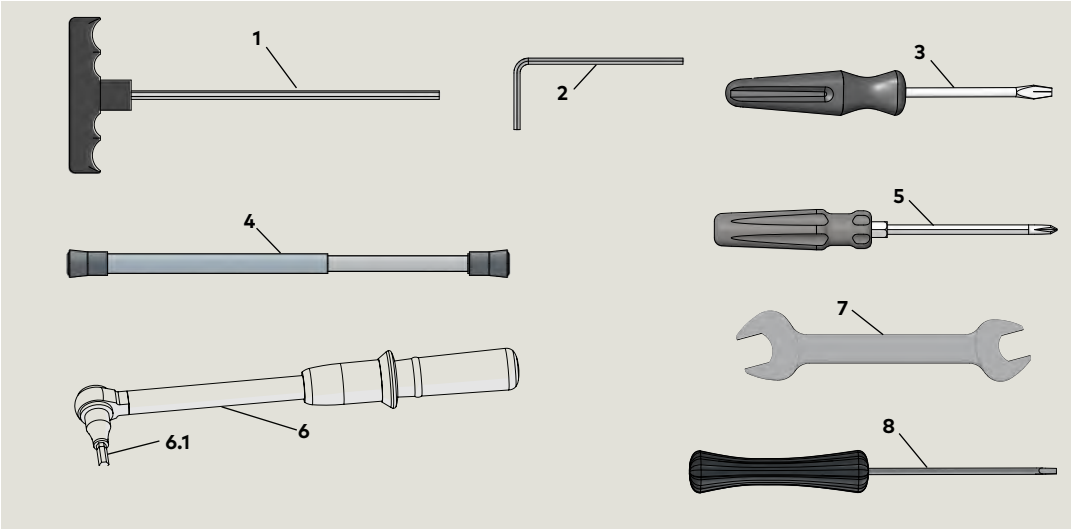
Fig. 5.9.6 Double egress, knowing act



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"	

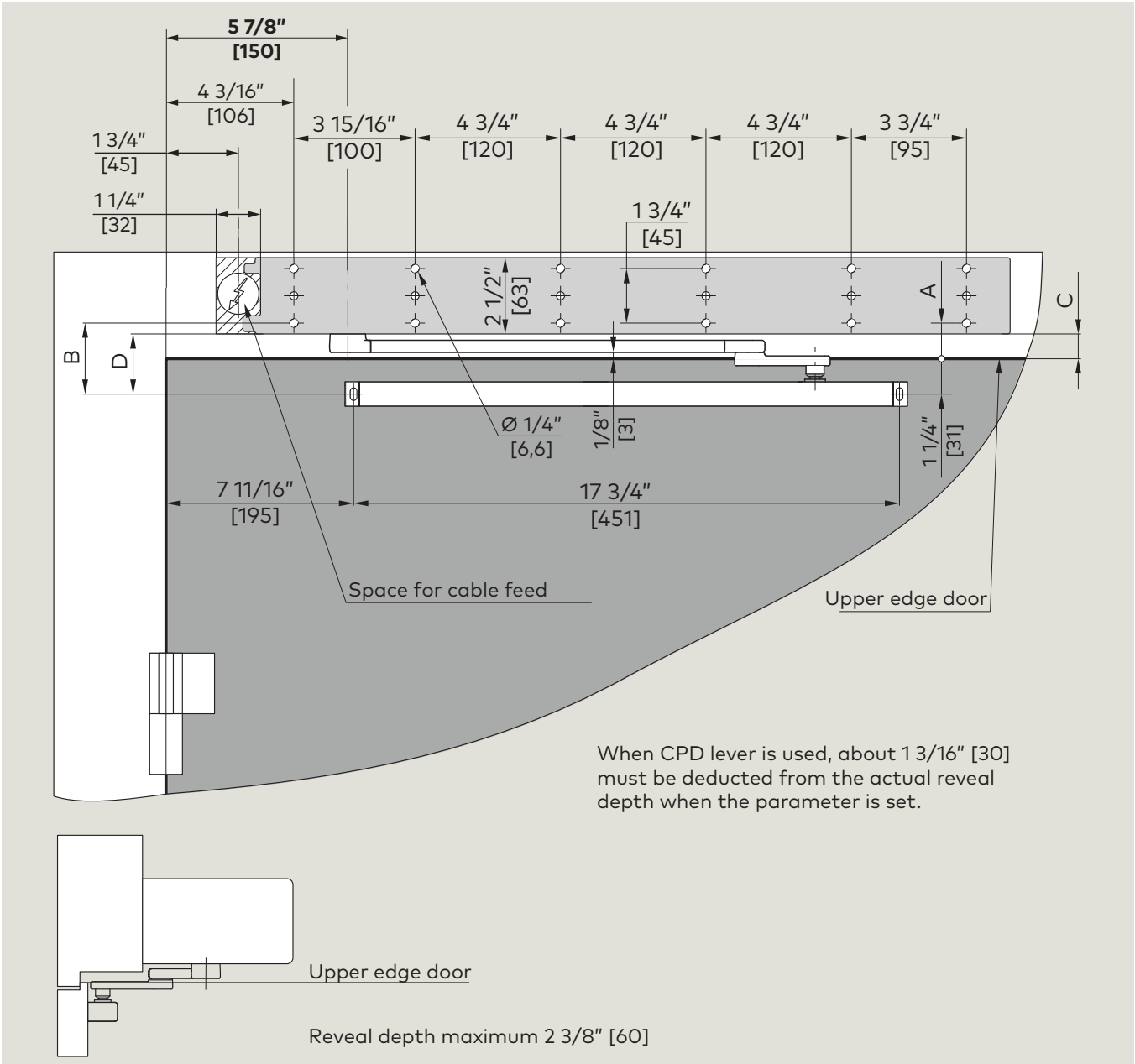
Fig. 6.3.1 Drill bit



7 Installation templates

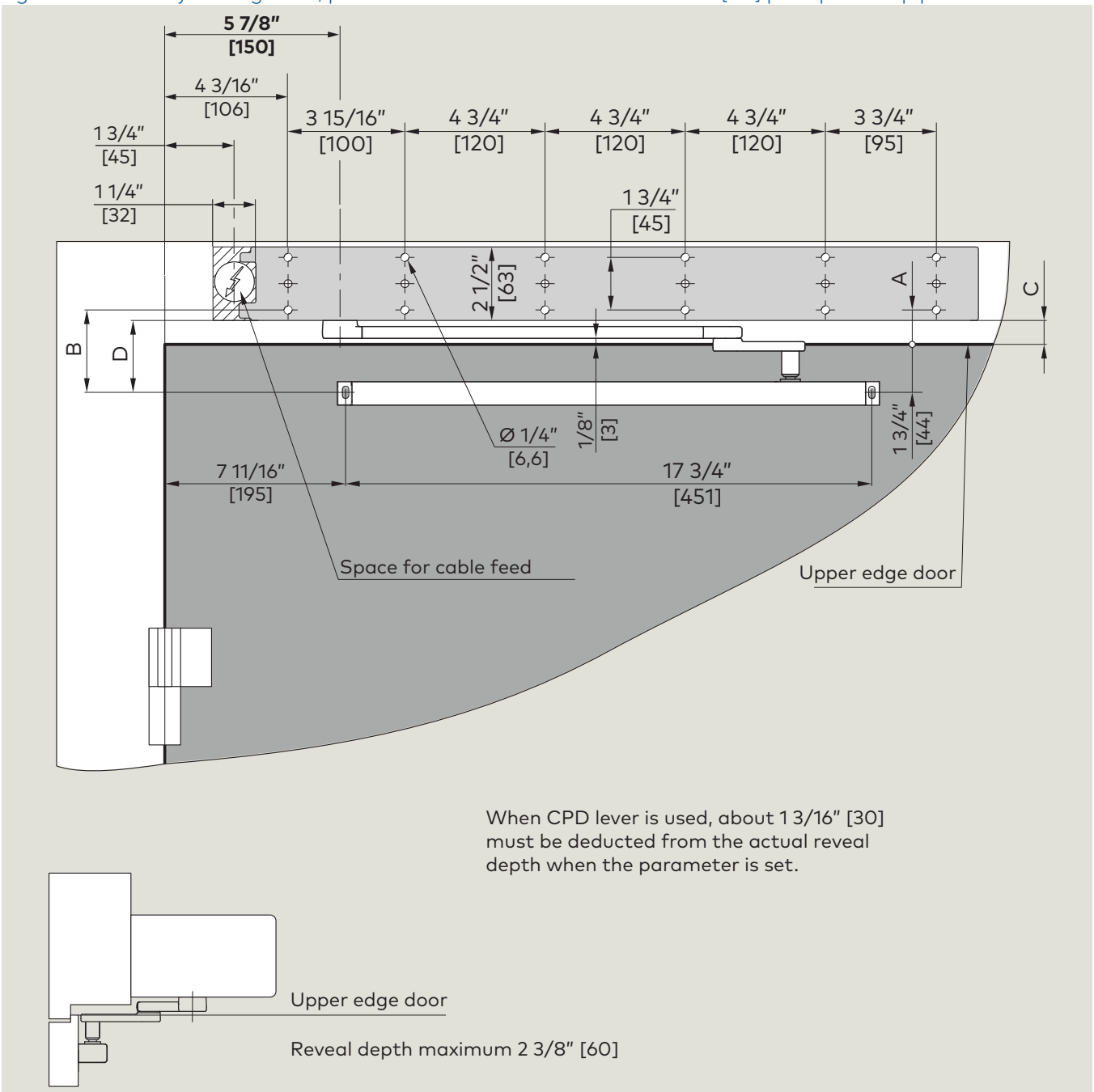
7.1 ED50/ED100/ED250 installation templates

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



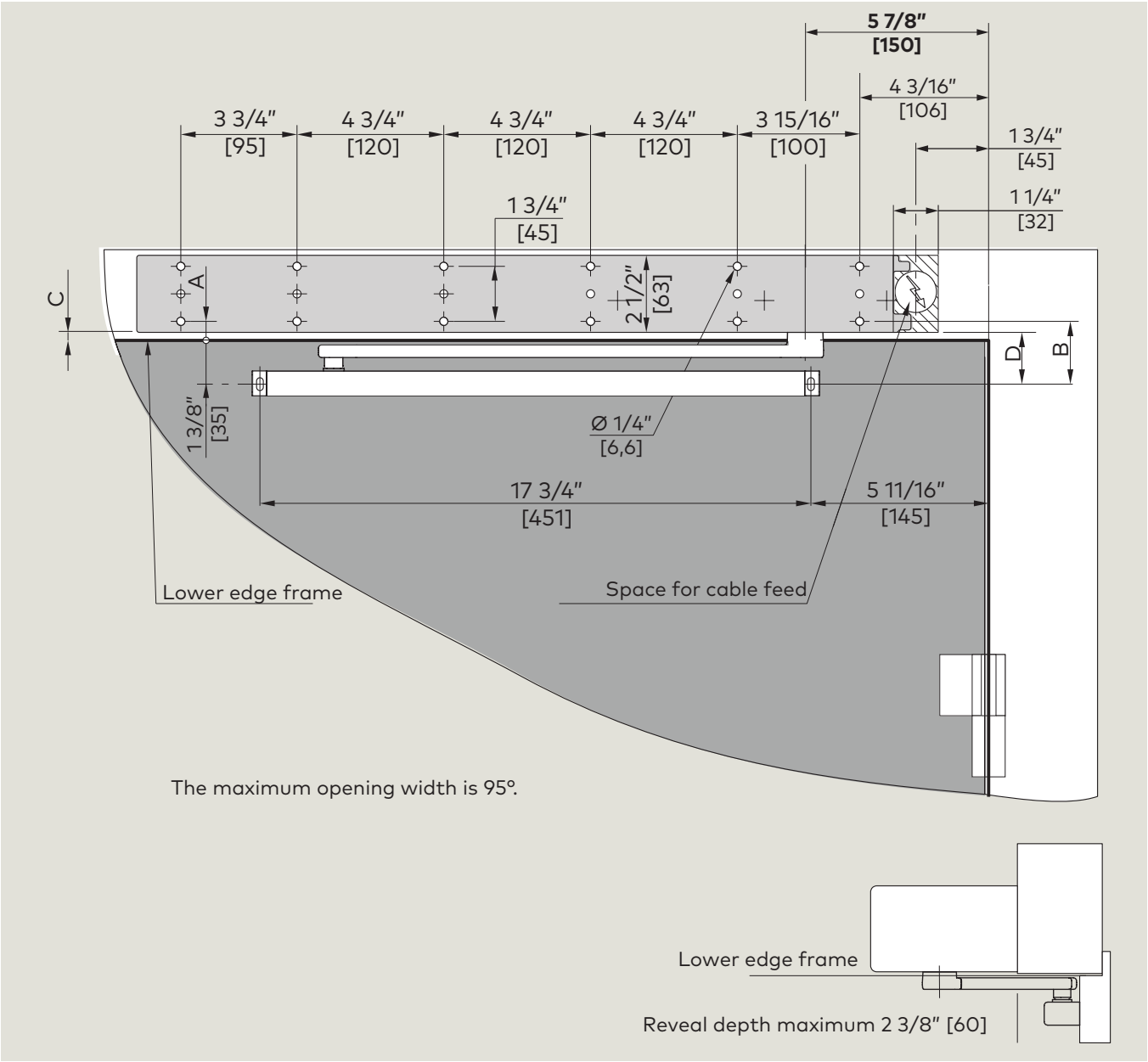
Axle extension		ED50/ED100	ED250	A		B		C		D	
				Inches	mm	Inches	mm	Inches	mm	Inches	mm
Standard		•	•	1 7/32	31	2 7/16	62	7/8	22	2 3/32	53
3/4"	[20]	•	•	2	51	3 7/32	82	1 21/32	42	2 7/8	73
1 3/16"	[30]	•	•	2 13/32	61	3 5/8	92	2 1/16	52	3 1/4	83
2 3/8"	[60]	•	•	3 9/16	91	4 13/16	122	3 7/32	82	4 7/16	113
3 9/16"	[90]	---	•	4 3/4	121	6	152	4 13/32	112	5 5/8	143

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



Axle extension		ED50/ED100	ED250	A		B		C		D	
				Inches	mm	Inches	mm	Inches	mm	Inches	mm
Standard		•	•	1 7/32	31	2 15/16	75	7/8	22	2 19/32	66
3/4"	[20]	•	•	2	51	3 3/4	95	1 21/32	42	3 3/8	86
1 3/16"	[30]	•	•	2 13/32	61	4 1/8	105	2 1/16	52	3 25/32	96
2 3/8"	[60]	•	•	3 9/16	91	5 5/16	135	3 7/32	82	4 31/32	126
3 9/16"	[90]	---	•	4 3/4	121	6 1/2	165	4 13/32	112	6 1/8	156

Fig. 7.1.3 Assembly on opposite hinge side, push version with slide channel and 1/2" [25 mm] pivot pin

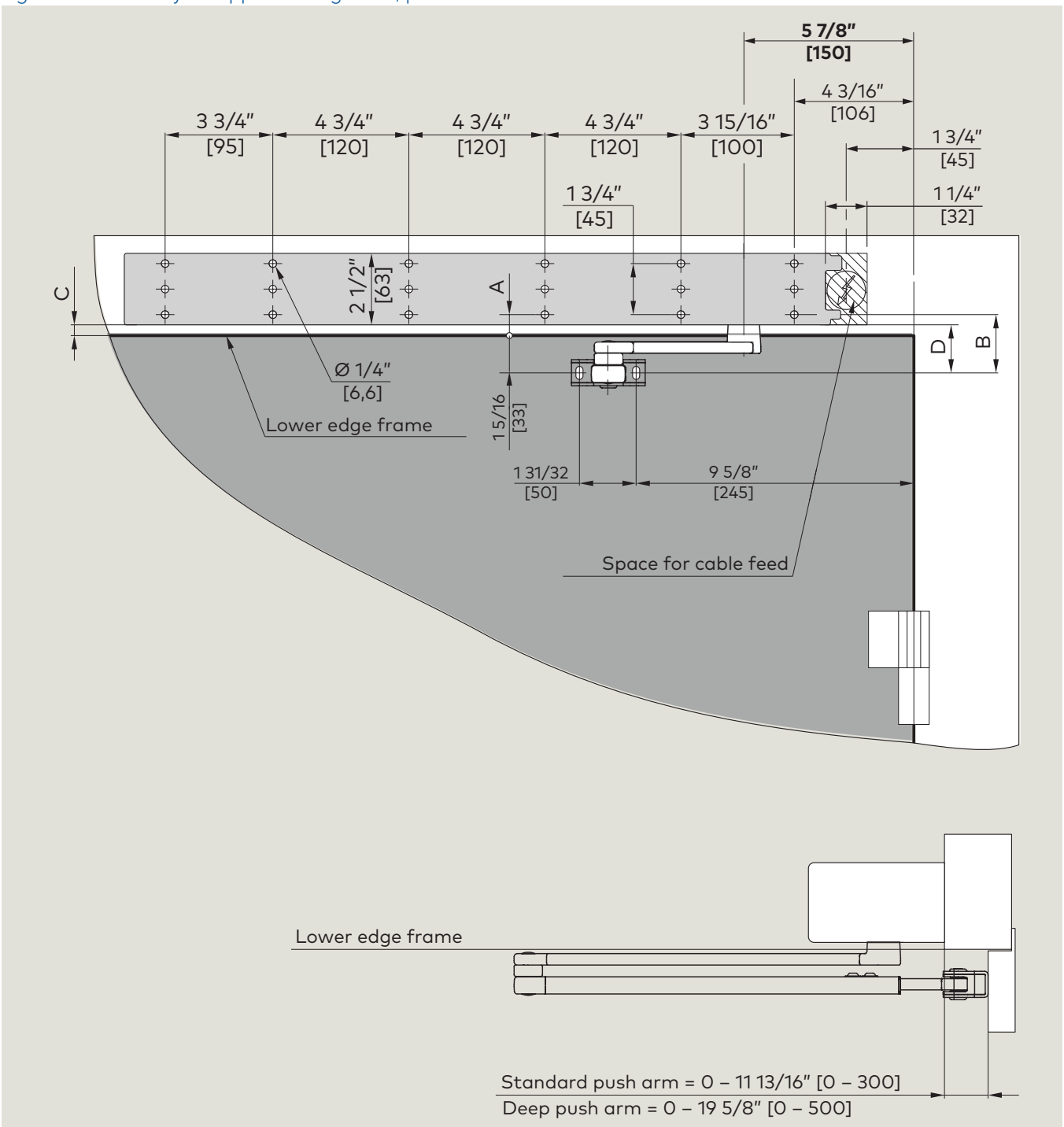


Axle extension		ED50/ED100	ED250	A		B		C		D	
				Inches	mm	Inches	mm	Inches	mm	Inches	mm
Standard		•	•	9/16	14	1 15/16	49	3/16	5	1 9/16	40
3/4"	[20]	•	•	1 11/32	34	2 23/32	69	1	25	2 3/8	60
1 3/16"	[30]	•	•	1 3/4	44	3 1/8	79	1 3/8	35	2 3/4	70
2 3/8"	[60]	•	•	2 29/32	74	4 5/16	109	2 9/16	65	3 15/16	100
3 9/16"	[90]	---	•	4 3/32	104	5 15/32	139	3 3/4	95	5 1/8	130

NOTICE

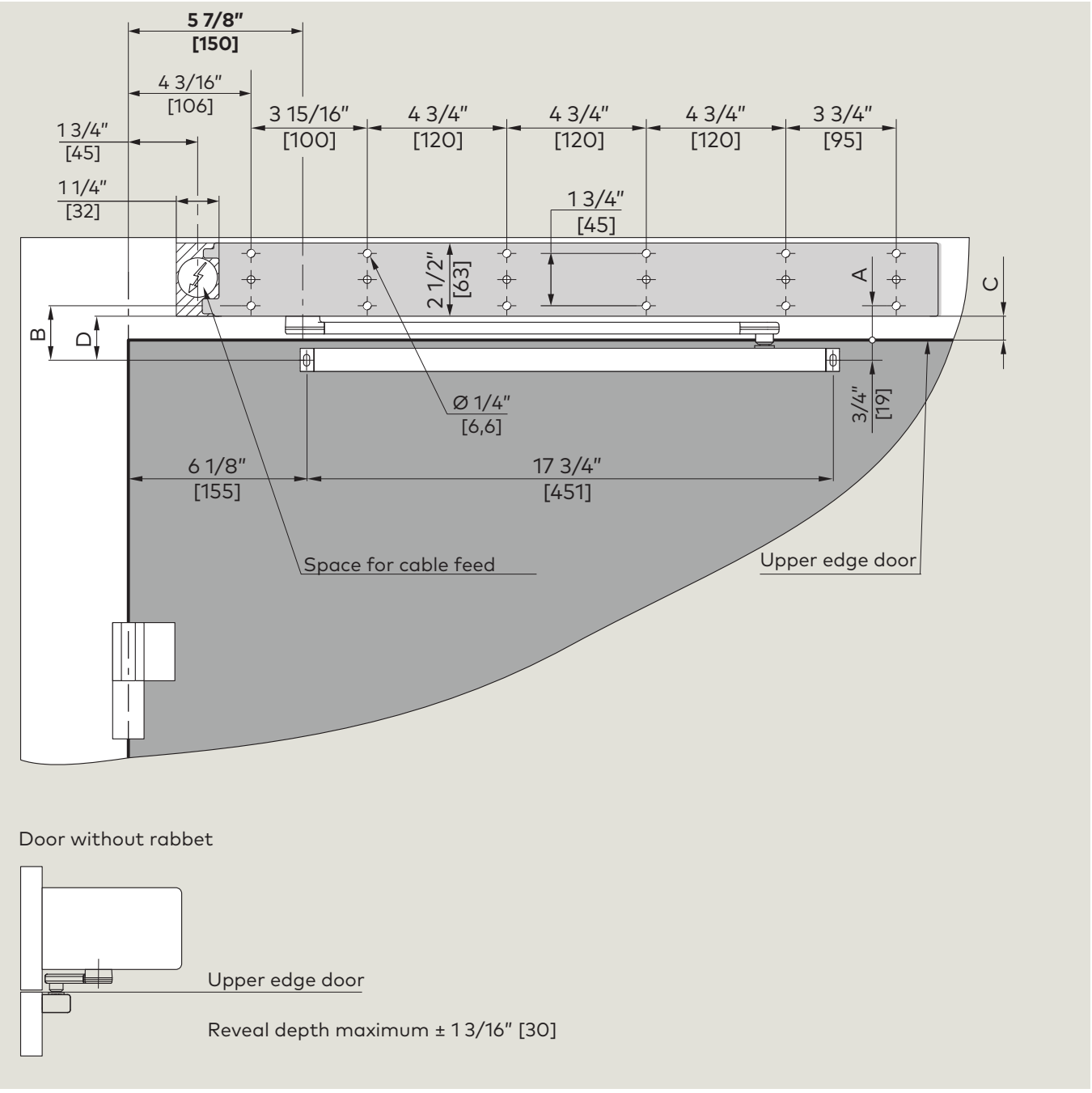
1 inch pivot pin installation:
- Add 1/2" to the B and D dimensions.
- Add 1/2" to the 1/3/8" [35 mm] dimension.

Fig. 7.1.4 Assembly on opposite hinge side, push arm version



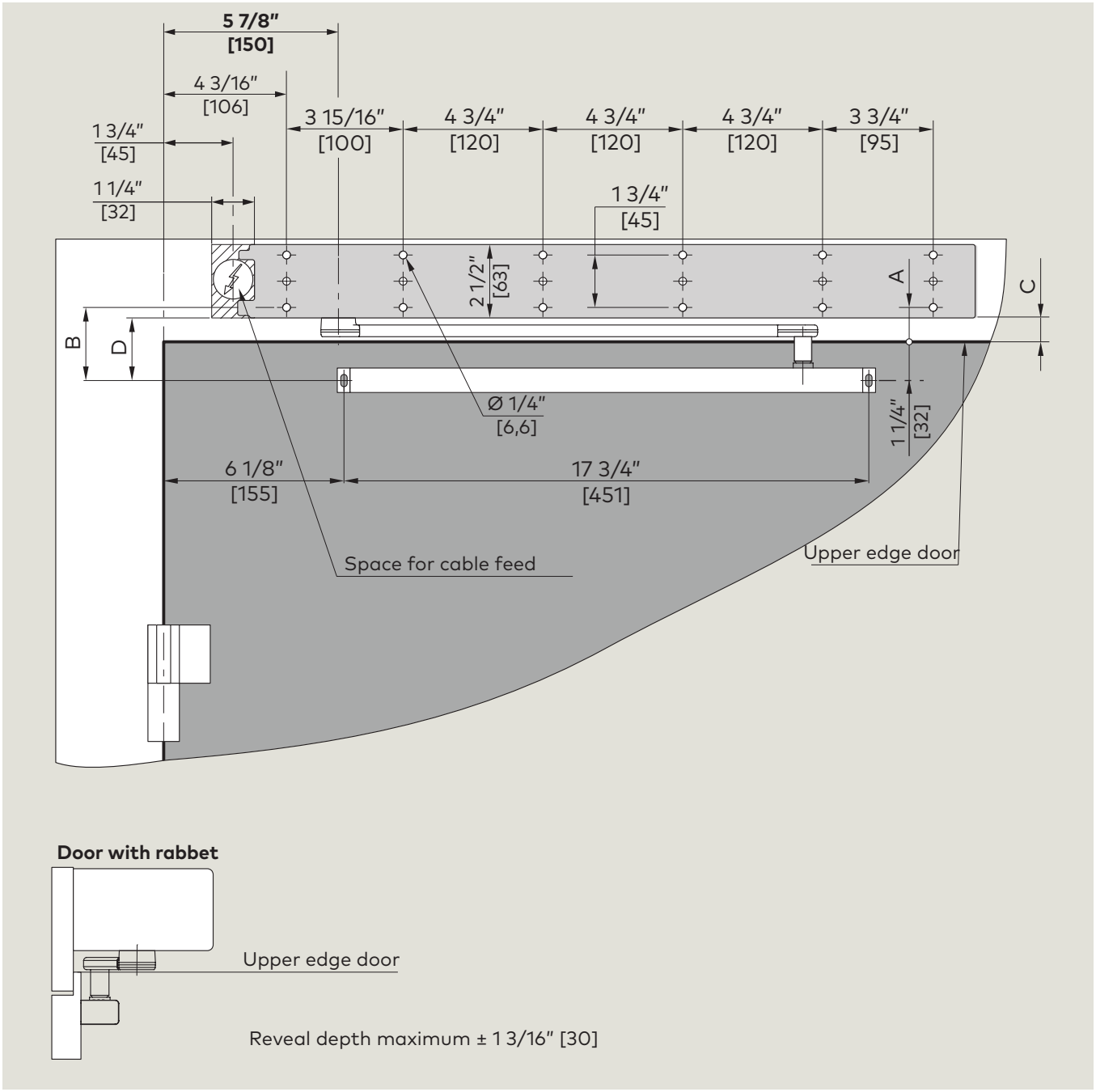
Axle extension		ED50/ED100	ED250	A		B		C		D	
				Inches	mm	Inches	mm	Inches	mm	Inches	mm
Standard		•	•	11/16	18	2	51	11/32	9	1 21/32	42
3/4"	[20]	•	•	1 1/2	38	2 13/16	71	1 1/8	29	2 7/16	62
1 3/16"	[30]	•	•	1 7/8	48	3 3/16	81	1 13/32	39	2 13/16	72
2 3/8"	[60]	•	•	3 1/16	78	4 3/8	111	2 23/32	69	4	102
3 9/16"	[90]	---	•	4 1/4	108	5 9/16	141	3 29/32	99	5 3/16	132

Fig. 7.1.5 Assembly on hinge side, pull version with slide channel and short pivot pin



Axle extension		ED100	ED250	A		B		C		D	
				Inches	mm	Inches	mm	Inches	mm	Inches	mm
Standard		•	•	1 7/32	31	1 31/32	50	7/8	22	1 5/8	41
3/4"	[20]	•	•	2	51	2 3/4	70	1 21/32	42	2 13/32	61
1 3/16"	[30]	•	•	2 13/32	61	3 1/8	80	2 1/16	52	2 13/16	71
2 3/8"	[60]	•	•	3 9/16	91	4 5/16	110	3 7/32	82	3 31/32	101
3 9/16"	[90]	---	•	4 3/4	121	5 1/2	140	4 13/32	112	5 5/32	131

Fig. 7.1.6 Assembly on hinge side, pull version with slide channel and long pivot pin



Axle extension		ED100	ED250	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
3 9/16"	[90]	---	•	4 3/4	121	6 1/32	153	4 13/32	112	5 21/32	144

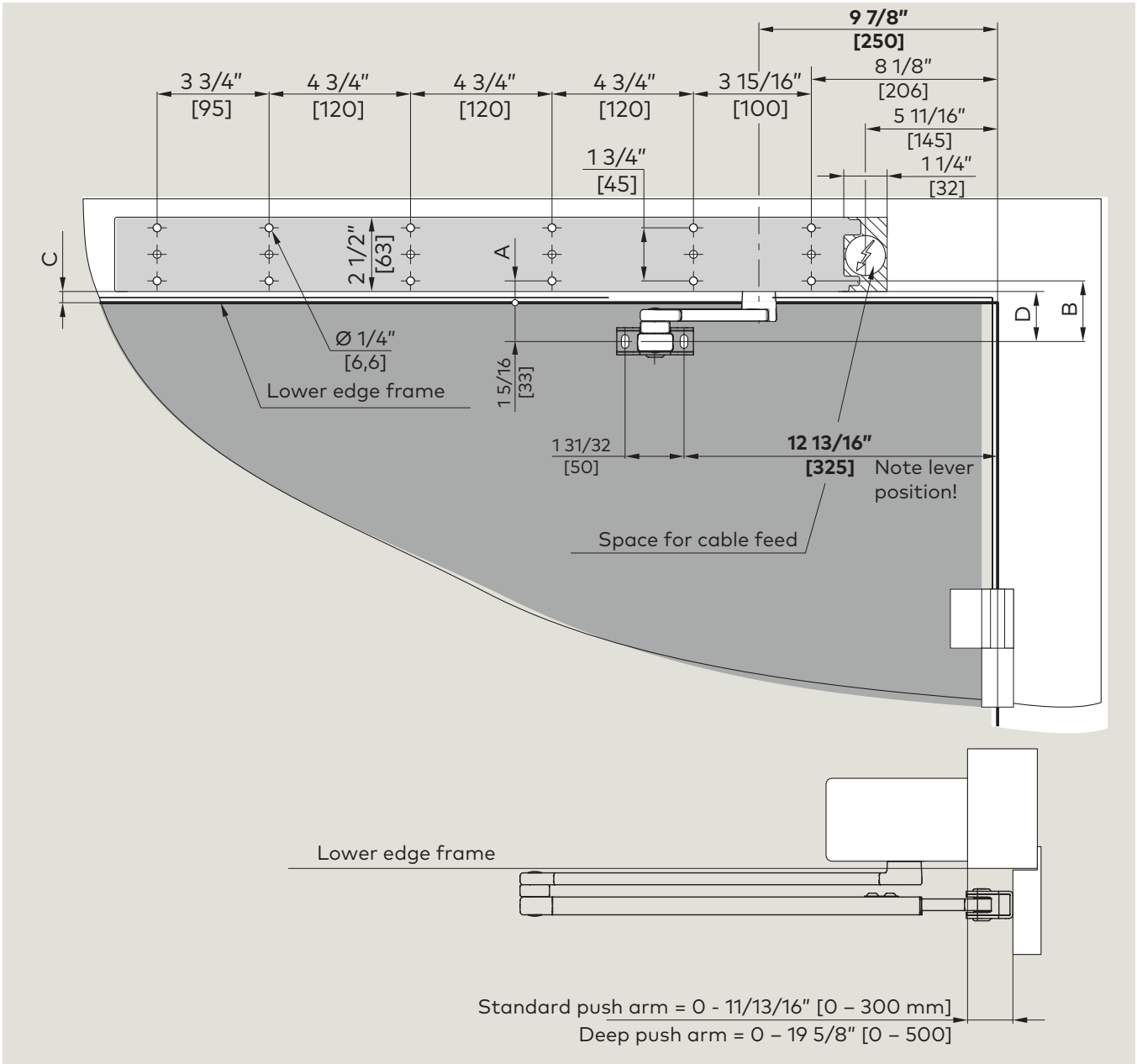
NOTICE

ED250 only.
Use template in Fig. 7.1.7 for ED250 operators only.

NOTICE

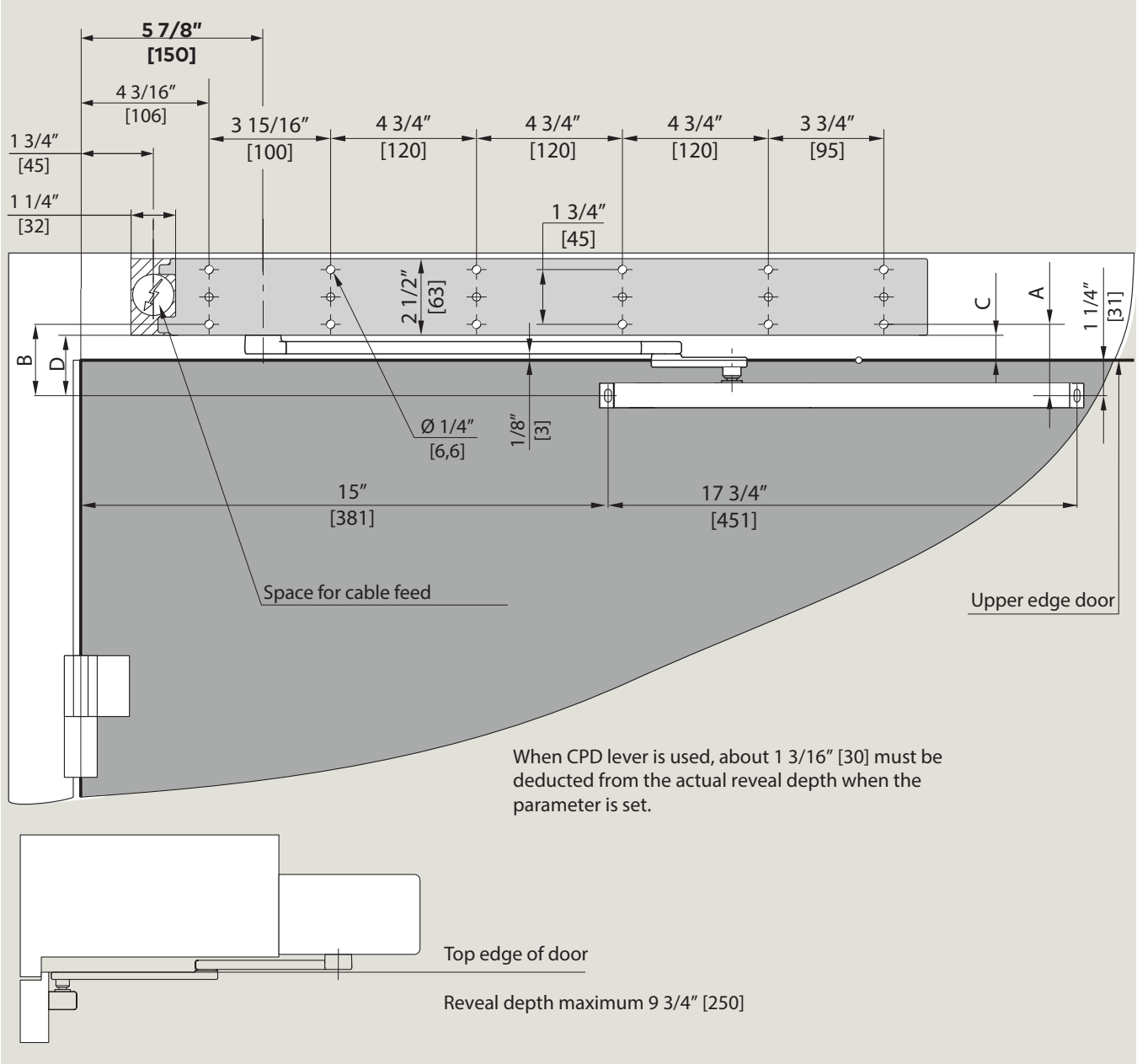
Door width size ≥ 55" [1400 mm].
Use this template only for door widths ≥ 55" [1400 mm].

Fig. 7.1.7 Assembly on opposite hinge side, push arm version ANSI 6



Axle extension	ED250	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
3 9/16" [90]	•	4 1/4	108	5 9/16	141	3 29/32	99	5 3/16	132

Fig. 7.1.8 Assembly on hinge side, pull version with slide channel CPD and 1/2" [25mm] pivot pin - deep reveal pull



Axle extension	ED100	ED250	A		B		C		D	
			Inches	mm	Inches	mm	Inches	mm	Inches	mm
Standard	•	•	1 7/32	31	2 7/16	61	7/8	22	2 3/32	52
3/4" [20]	•	•	2	51	3 7/32	81	1 21/32	42	2 7/8	72
1 3/16" [30]	•	•	2 13/32	61	3 5/8	91	2 1/16	52	3 1/4	82
2 3/8" [60]	•	•	3 9/16	91	4 13/16	121	3 7/32	82	4 7/16	112
3 9/16" [90]	---	•	4 3/4	121	6	151	4 13/32	112	5 5/8	142

NOTICE

1" Pivot pin installation:
Increase A, B and D measurements by 1/2" [25mm].

8 ED50/ED100/ED250 operator installation

NOTICE

Double door Installation:
Repeat steps in Chapter 8 for each ED50/ED100/ED250 operator.

NOTICE

Companion Door Installation:
Reference Chapters 16 through 19.

8.1 Installation preparation

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

ED50/ED100/ED250 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 standards:

- A156.10, Power Operated Pedestrian Doors.
- 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 Activation and knowing act devices.

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

TIPS AND RECOMMENDATIONS

Device wiring should be planned for prior to operator installation.

8.1.3 ED50/ED100/ED250 mounting plate installation preparation.

CAUTION

Using applicable ED50/ED100/ED250 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 ED50/ED100/ED250 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 ED50/ED100/ED250 115 Vac electrical installation.

⚠ WARNING

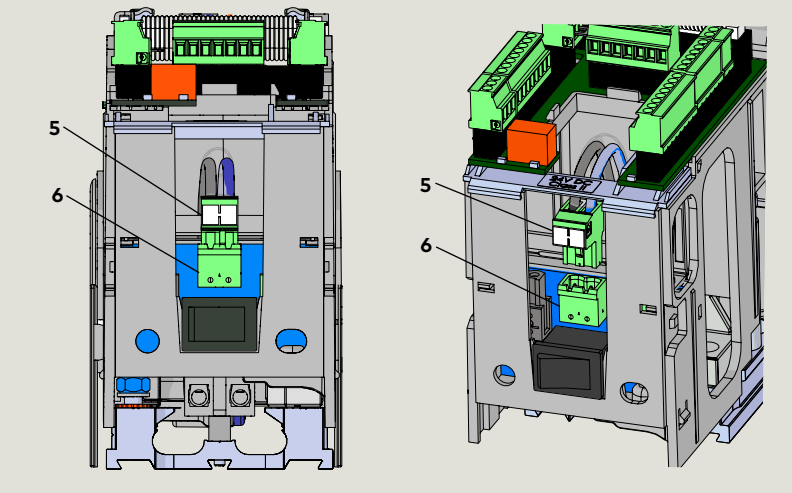
Work on electrical equipment and 115 Vac wiring installation must be performed only by qualified personnel!

⚠ WARNING

115 Vac wiring to ED50/ED100/ED250 operator must conform to local and national electrical codes.

8.2 Remove mounting plate from ED50/ED100/ED250 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. 8.2.4).

Fig. 8.2.2 ED50 operator mounting plate removed

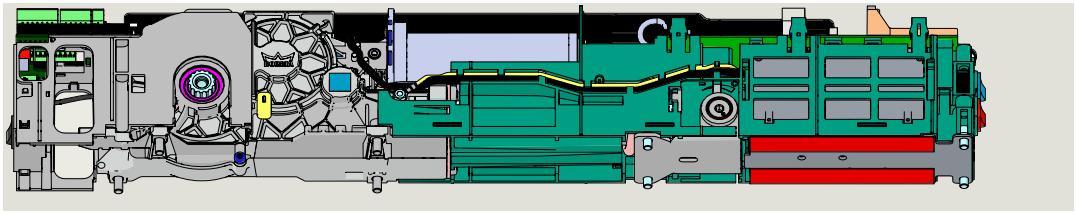
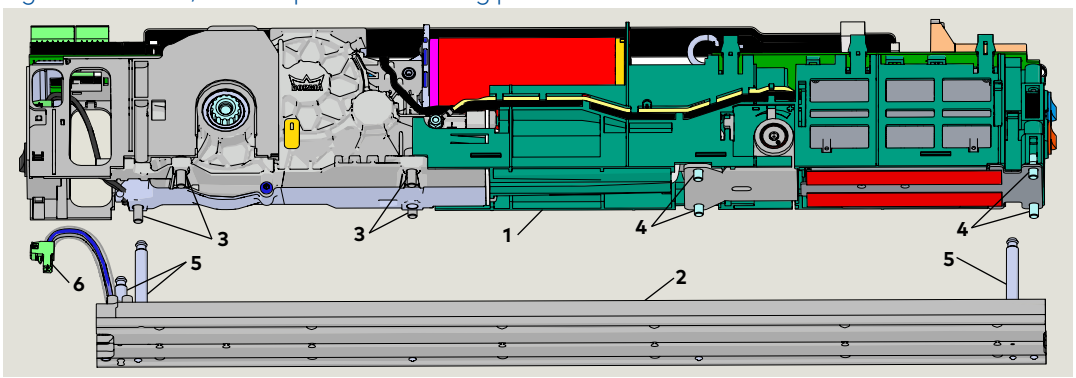
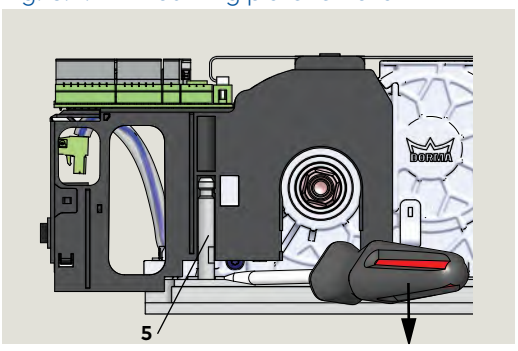


Fig. 8.2.3 ED100/ED250 operator mounting plate removed



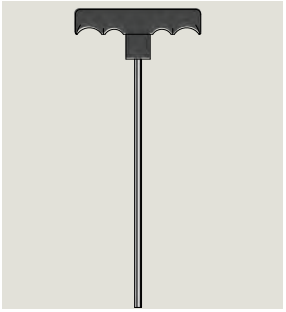
1 ED100/ED250 operator
2 Mounting plate
5 115 Vac plug
3 M6 X 20 SHCS
4 M6 X 10 SHCS
5 Guide pin
6 115 Vac plug

Fig. 8.2.4 Mounting plate removal



5 Guide pin

Fig. 8.2.5 5 mm T-handle hex key



8.3 Customer 115 Vac connection to mounting plate 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. 8.3.1 115 VAC terminal block

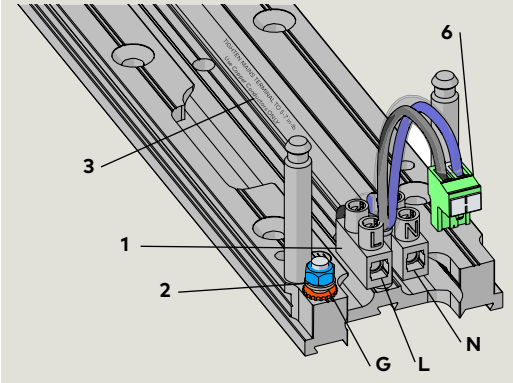
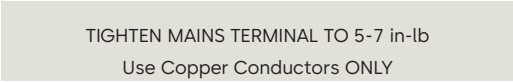


Fig. 8.3.2 Mains terminal torque and wire label



4 Conduit box DX3501-001

Fig. 8.3.3 **CB** conduit box

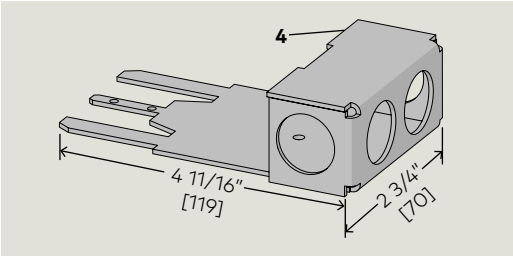
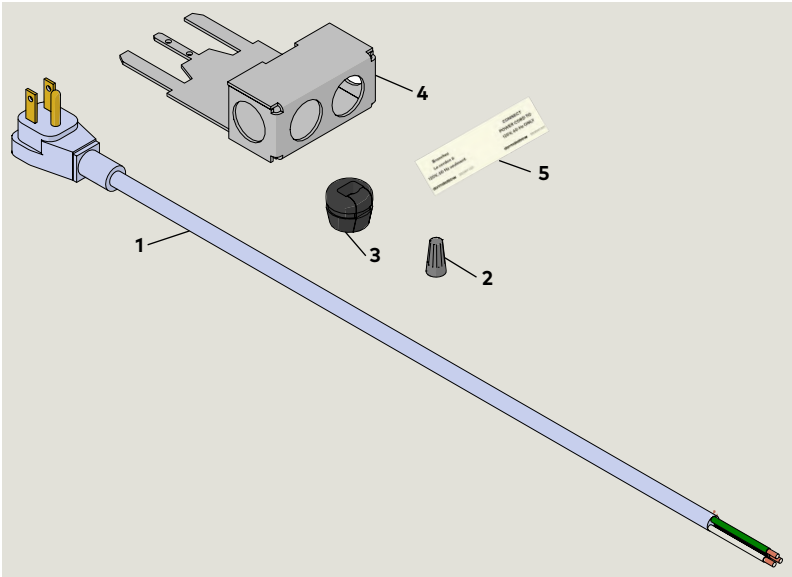


Fig. 8.3.4 **PC** wiring kit DK3597-010



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 ED50/ED100/ED250 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 ED50/ED100/ED250 wiring options.

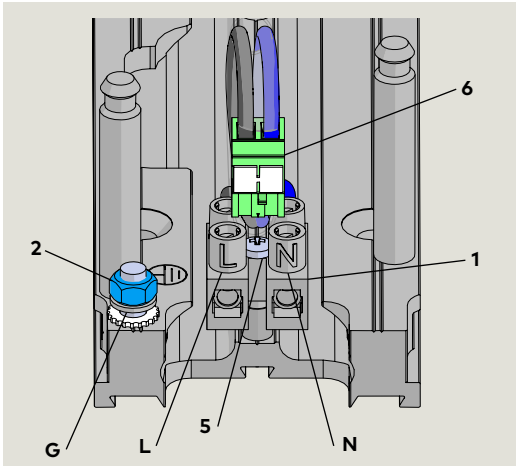
1. Conduit box **CB** (Fig. 8.3.3).
- U/L approved conduit box accessory; provides 115 Vac surface wiring to ED50/ED100/ED250.
- Reference Para. 8.3.3 for **CB** box installation.

2. Power cord wiring kit **PC** (Fig. 8.3.4).
- Eliminates need for hard wiring. Permits ED50/ED100/ED250 to plug directly into 115 Vac receptacle.
- Power cord length: 15" from end of conduit box to center of plug.

CAUTION

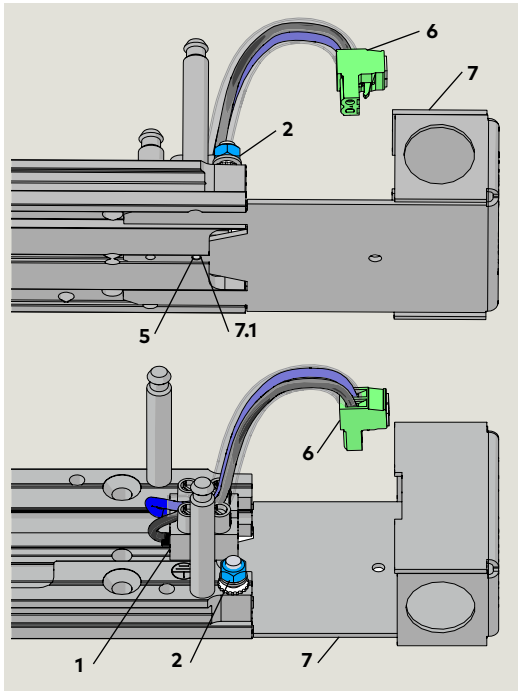
Insure **PC** installation conforms to local and national electrical codes.

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.

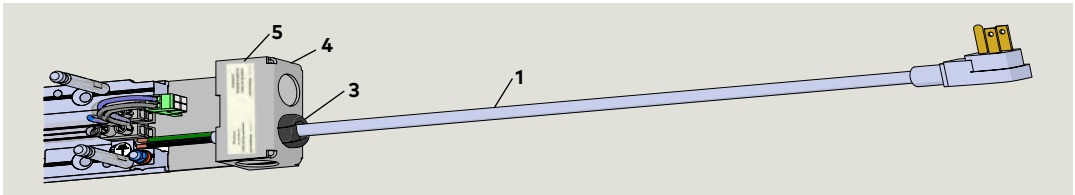
CAUTION

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.

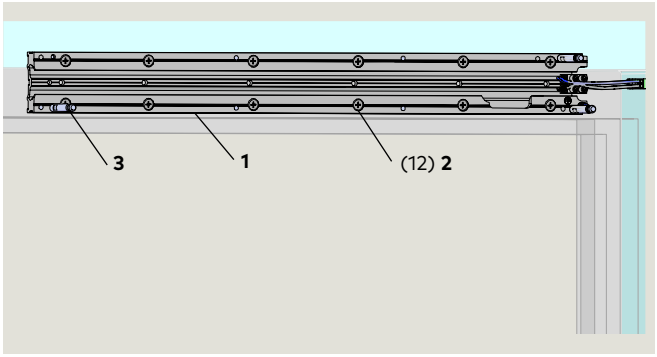
Fig. 8.3.7 PC power cord wiring kit assembly (option)



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

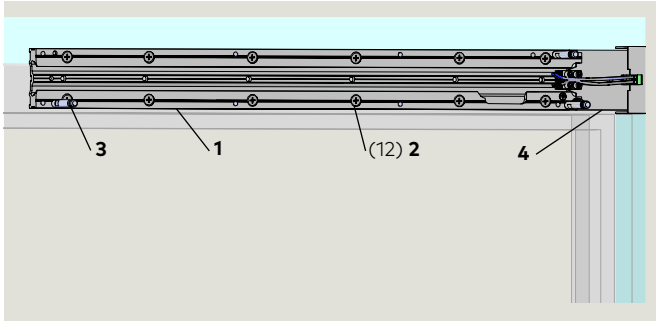
8.4 Mounting plate attachment to jamb or wall

Fig. 8.4.1 Mounting plate installation



1 ED100/ED250 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

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. 8.4.3 ED50/ED100/ED250 mounting plate screw pack DK4053-010

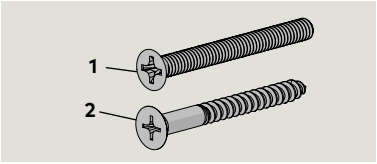
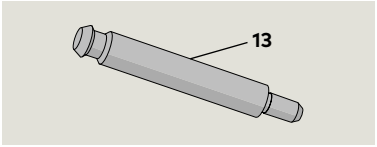


Fig. 8.4.4 Guide pin



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 ED50/ED100/ED250 (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

Fig. 8.5.1 115 Vac wiring example

4 115 Vac terminal block
5 Ground post

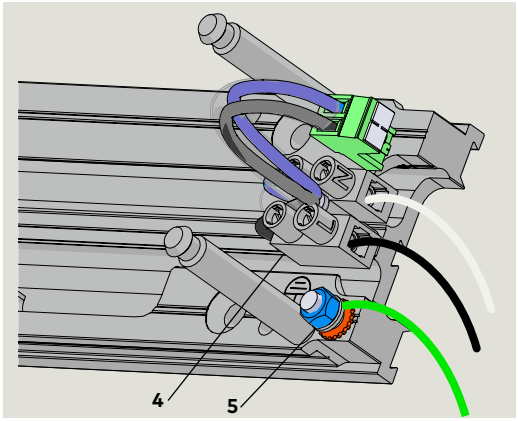


Fig. 8.5.2 Conduit box installation

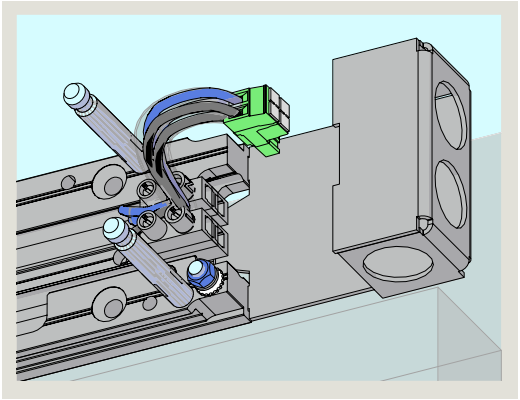
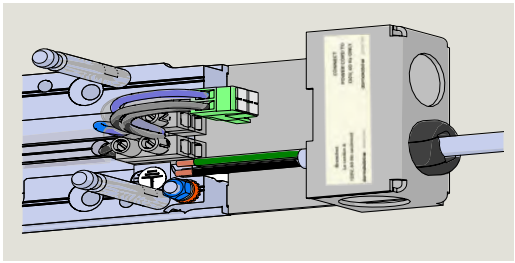


Fig. 8.5.3 PC power cord, conduit box installation



8.5.1 Connect customer 115 Vac wiring.

WARNING

Work on electrical equipment and ED50/ED100/ED250 115 Vac wiring installation must be only be performed by qualified personnel!

WARNING

Insure disconnect supplying power to ED50/ED100/ED250 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 ED100/ED250 terminal board (Chapter 4).

8.7 Remove protective film strips from operator

8.7.1 Remove protective film strips.

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

CAUTION

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

Fig. 8.7.1. ED50 operator heat conductive pads

1 Heat conductive pad

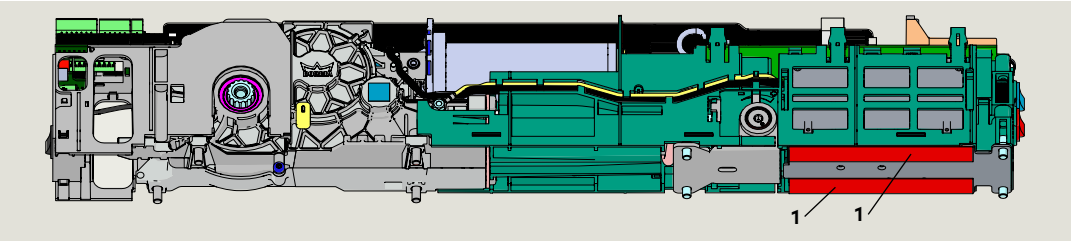


Fig. 8.7.2 ED100/ED250 operator heat conductive pads

1 Heat conductive pad

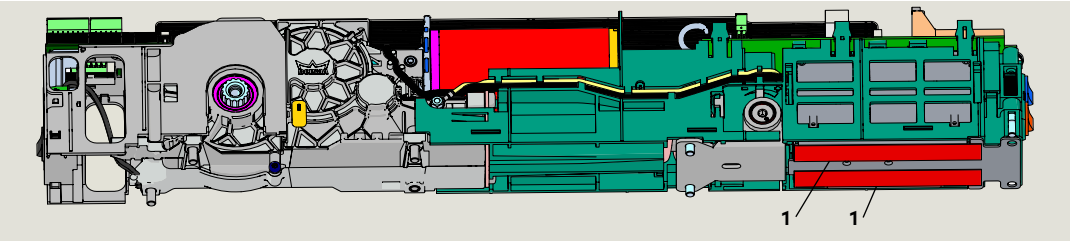
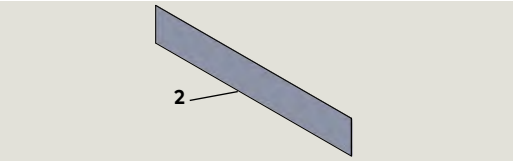


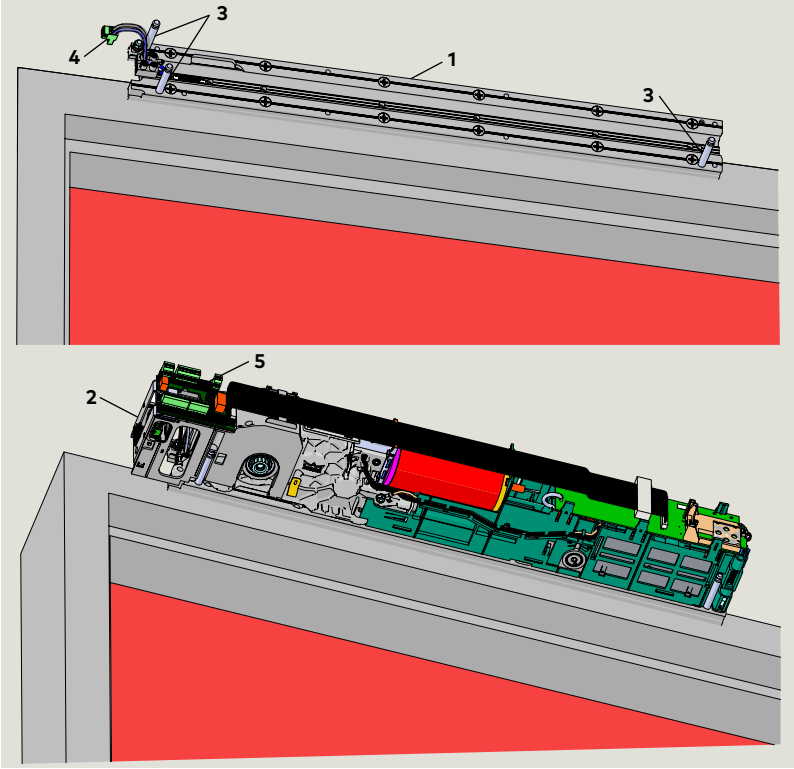
Fig. 8.7.3 Protective film strip

2 Protective film strip



8.8 Install ED100/ED250 operator onto mounting plate

Fig. 8.8.1 ED100/ED250 operator installation



1 Mounting plate
2 ED100 operator
3 Guide pin
4 115 Vac plug
6 115 Vac socket
7 Power off/on switch
11 Connectors
12 Jumpers

4 115 Vac plug
5 Accessory wiring terminal connectors

Fig. 8.8.2 115Vac plug and socket

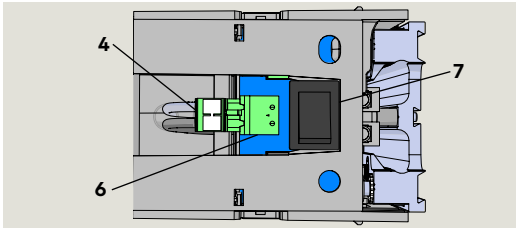
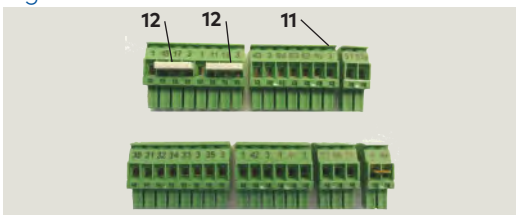


Fig. 8.8.3 Terminal connectors



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 ED100/ED250 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 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

Reference Appendix A for full width cover options.

8.8.4 Connect accessory wiring.

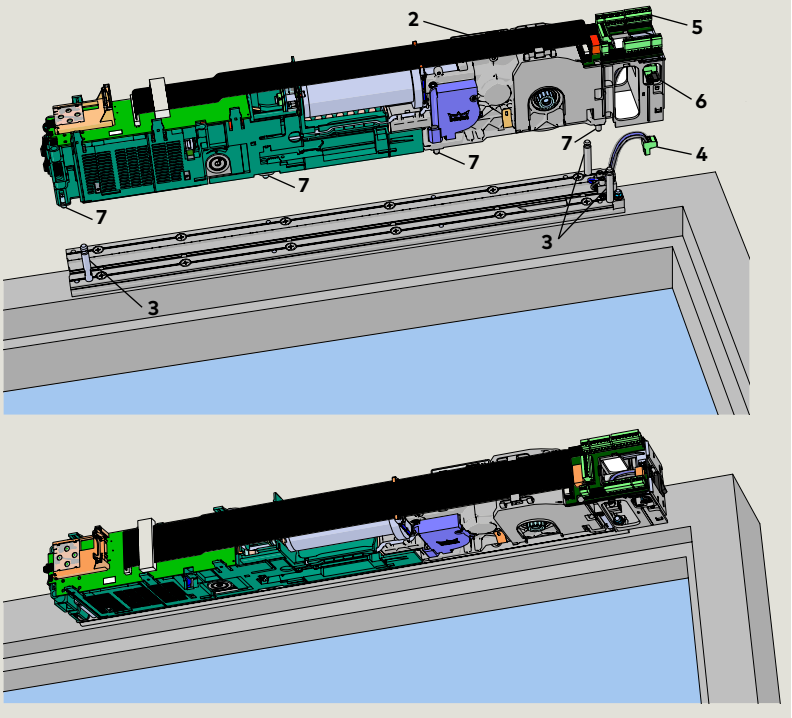
1. Use applicable terminal connectors (Fig. 8.8.3) to terminate accessory wiring.
2. Use diagram in Chapter 4 to locate connector to its socket.

CAUTION

Safety sensor jumpers.
Jumpers (Fig. 8.8.3) must be in place on safety sensor connectors.
- Reference Chapter 4.

8.9 Install ED50 operator onto mounting plate

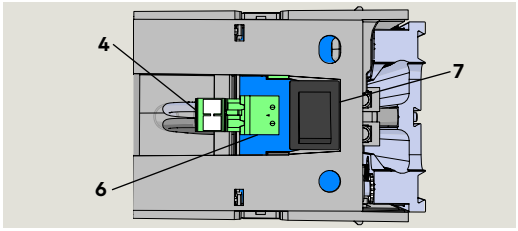
Fig. 8.9.1 ED50 operator mounting plate installation



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

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

Fig. 8.9.2 115Vac plug and socket



8.9.1 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 ED50 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.

8.9.2 Insert 115 Vac plug into socket.

1. Insert 115 Vac plug from mounting plate 115 Vac terminal block into socket (Fig. 8.9.2).

8.9.3 Full width cover option.

CAUTION

Reference Appendix A for full width cover options..

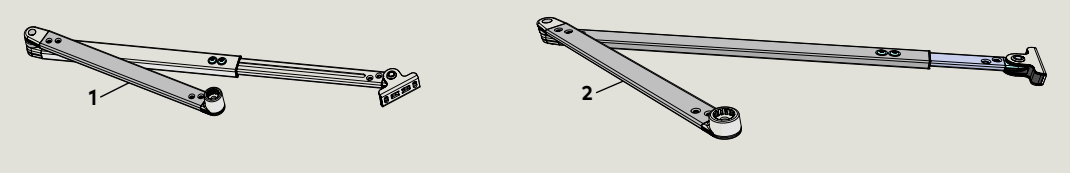
9 Push arm installation

9.1 Push arm installation templates

NOTICE

Reference Chapter 7 – ED50/ED100/ED250 installation templates.

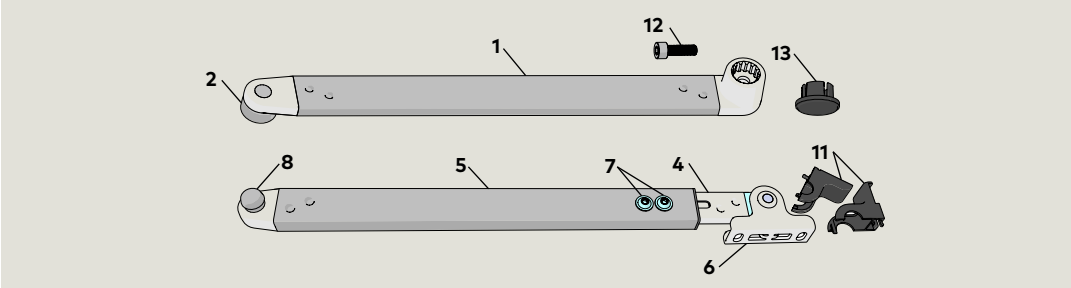
Fig. 9.1.1 Push arm assemblies



1 Standard push arm (8.75" reveal)
2 Deep push arm (19.5" reveal)

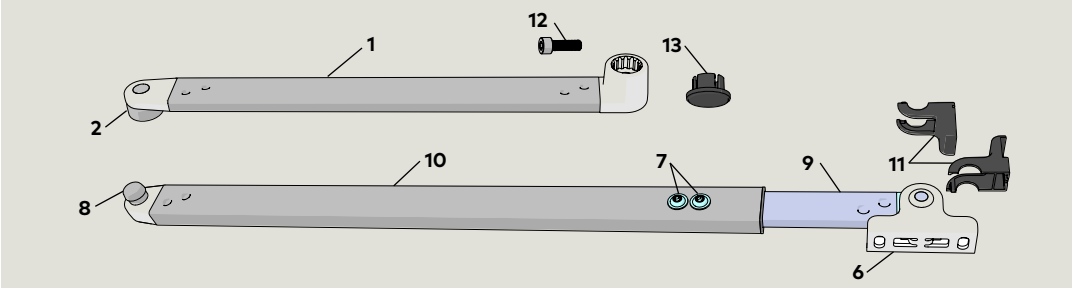
9.2 Push arm installation

Fig. 9.2.1 Push arm assembly, 8.75" [225] DC4677-01X



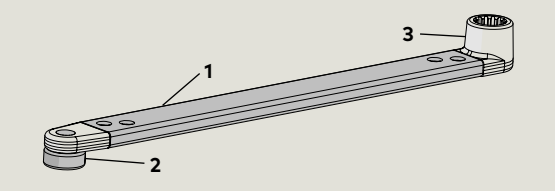
1 Drive arm
2 Socket
4 Adjustment arm 11 1/4"[285]
5 Adjustment arm tube 12 1/4" [311]
6 Shoe
7 M6 x 10 mm flanged button head screw
8 Ball head
11 Shoe screw cover
12 M8 x ___ SHCS
13 Cap

Fig. 9.2.2 Deep push arm assembly, 19.5" [500] DC4677-02X



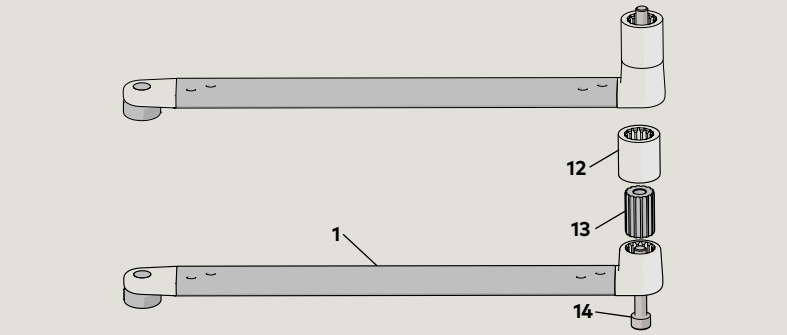
1 Drive arm
2 Socket
6 Shoe
7 M6 x 10 mm flanged button head screw
8 Ball head
9 Adjustment arm, 17 3/4" [450]
10 Adjustment arm tube, 17 3/4" [450]
11 Shoe screw cover
12 M8 x ___ SHCS
13 Cap

Fig. 9.2.3 Drive arm



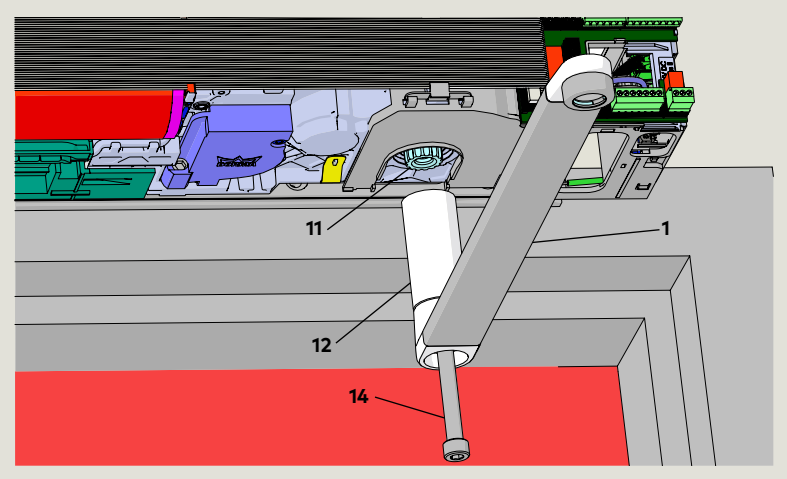
1 Drive arm
2 Socket
3 Arm axle sleeve

Fig. 9.2.4 Drive arm extension installation



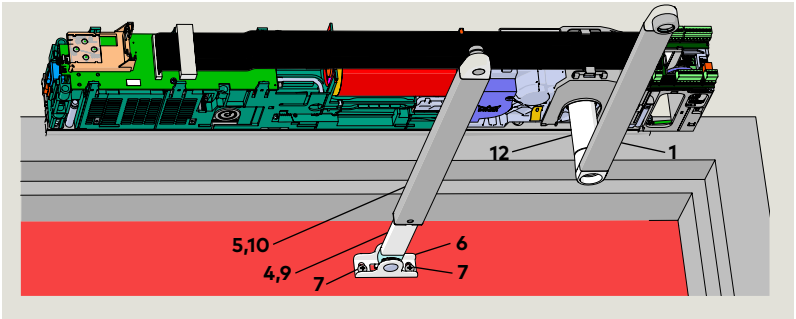
1 Drive arm
12 Axle extension
13 Splined shaft
14 M8 x ___ SHCS

Fig. 9.2.5 Push arm assemblies for installation



1 Drive arm
11 Spindle
12 Axle extension sleeve
14 M8 x __ SHCS

Fig. 9.2.6 Arm assemblies attached to door and ED100/ED250



1 Drive arm
4 Adjustment arm 11 1/4"[285]
5 Adjustment arm tube 12 1/4" [311]
6 Shoe
7 Fastener
9 Adjustment arm, 17 3/4" [450]
10 Adjustment arm tube, 17 3/4" [450]
12 Axle extension sleeve

9.2.2 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.
Spindle must be at zero position to mount the arm correctly.

1. Set ED50/ED100/ED250 operator spring tension based on door width. Reference Chapter 11.

TIPS AND RECOMMENDATIONS

Reference Para. Chapter 11, Set operator spring tension.

2. Insert axle extension into drive arm.
- Reference Chapter 7 for installation templates.

3. Move arm to ED50/ED100/ED250, inserting arm into spindle at a 90° angle to operator (Fig. 9.2.5).

4. Insert M8 SHCS through drive arm and axle extension. Thread SHCS into ED50/ED100/ED250 spindle and tighten.

CAUTION

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

9.2.3 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.

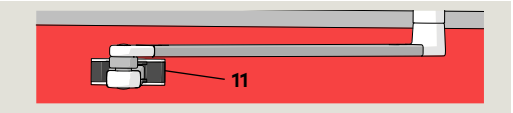
TIPS AND RECOMMENDATIONS

Reference Chapter 2 for arm fasteners.

9.2.4 Secure adjustment arm assembly to door.

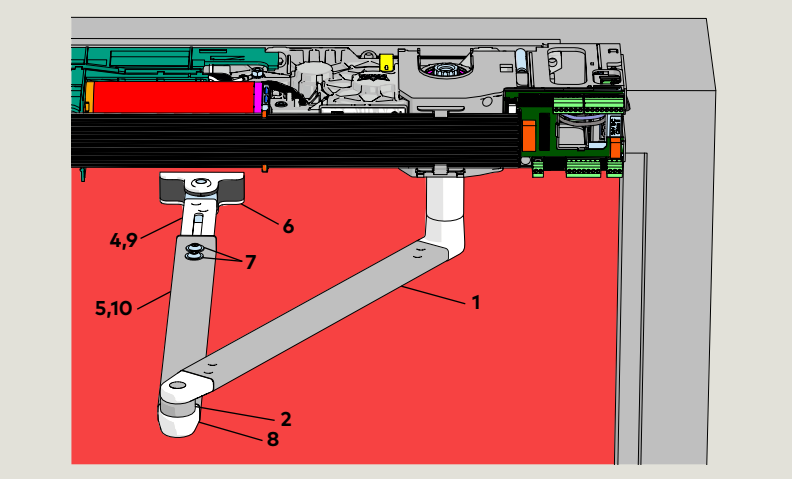
1. Fasten adjustment arm assembly to door (Fig. 9.2.6).

Fig.9.2.7 Shoe fastener covers



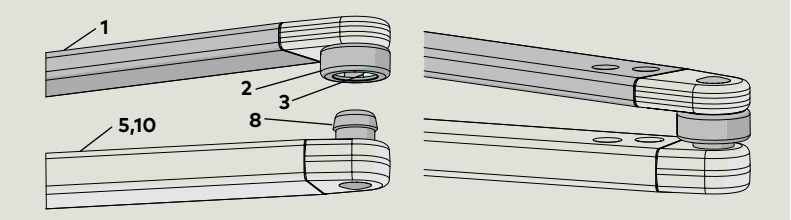
11 Shoe screw cover

Fig.9.2.8 Arm assemblies attached to door, ED100/ED250



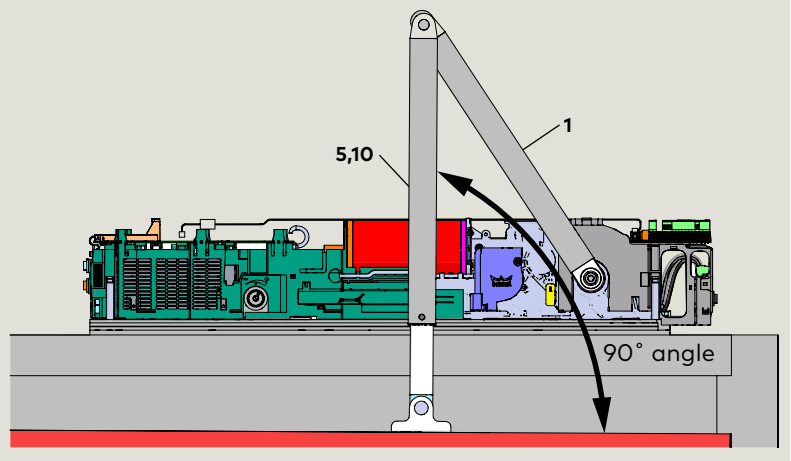
1	Drive Arm	**5**	Adjustment arm tube 12 1/4" [311]	**8**	Ball head
2	Socket	**6**	Shoe	**9**	Adjustment arm, 17 3/4" [450]
4	Adjustment arm 11 1/4" [285]	**7**	M6 x 10 mm flanged button head screw		

Fig. 9.2.9 Drive arm, adjustment arm connection



1	Drive arm	**5**	Adjustment arm tube 12 1/4" [311]	**8**	Ball head
2	Socket				
3	Spring	**10**	Adjustment arm tube, 17 3/4" [450]		

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]

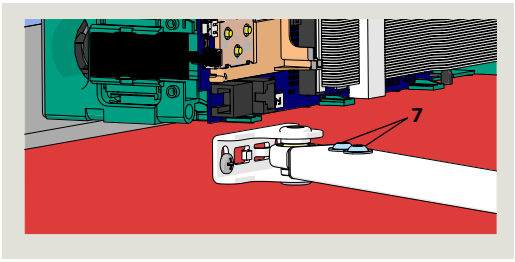
9.2.5 Install shoe fastener covers.

1. Install two shoe fastener covers.

9.2.6 Connect adjustment arm to drive arm.

1. Loosen the two adjustment M6 x 10 mm flanged button head screws.

Fig. 9.2.10 Adjustment arm M6 x 10 screws



7 M6 x 10 mm flanged button head screw

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

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

5. 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.

10 Pull arm installation

10.1 Pull arm installation

NOTICE

Reference Chapter 7 – ED50/ED100/ED250 installation templates.

10.2 Pull arm assemblies

Fig. 10.2.1 Pull arm DK4709-11X

1 Pull arm
3 Track

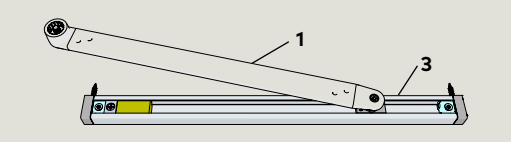


Fig. 10.2.2 Deep pull arm, LH DK4709-12X

1 Pull arm
2 CPD (2.75" reveal)
3 Track

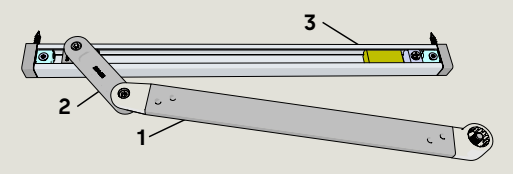


Fig. 10.2.3 Deep pull arm, RH DK4709-12X

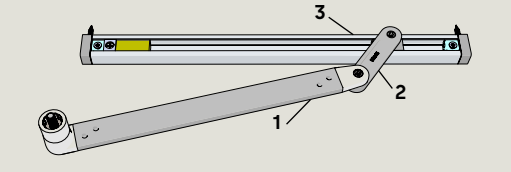


Fig. 10.2.4 Deep reveal pull arm kit, DK4709-13X, LH (ED100/ED250 only)

1 Pull arm
2 CPD (9.75" reveal)
3 Track

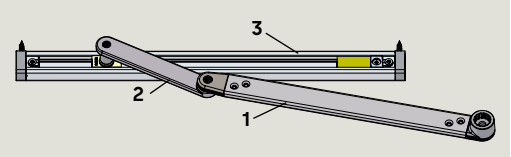
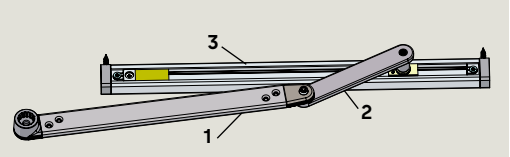


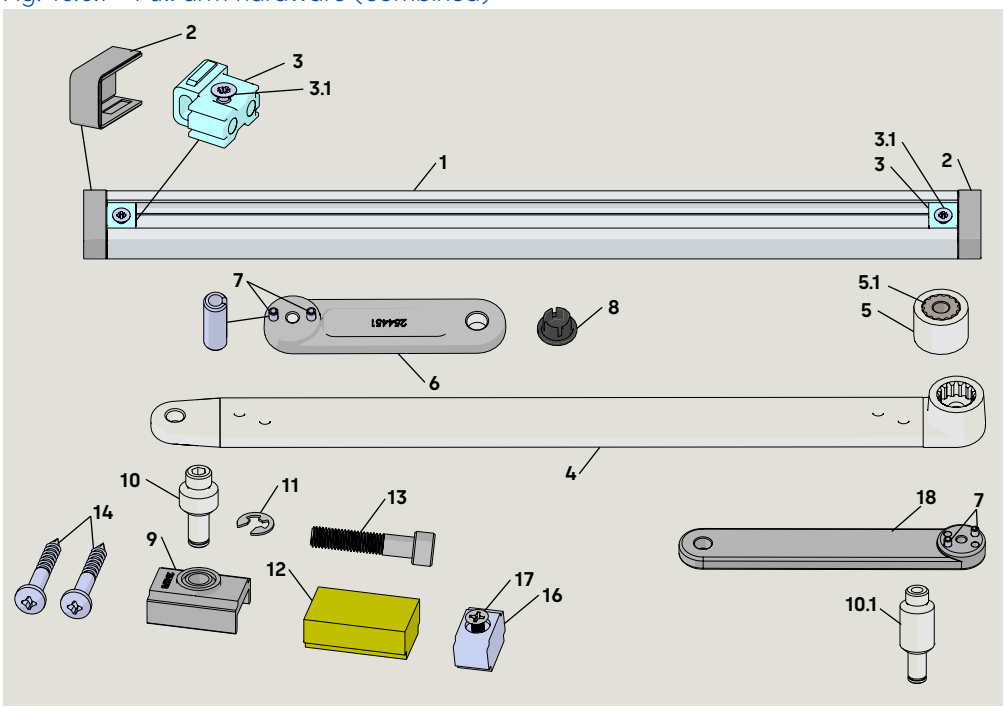
Fig. 10.2.5 Deep reveal pull arm kit, DK4709-13X, RH (ED100/ED250 only)



10.3 Pull arm hardware

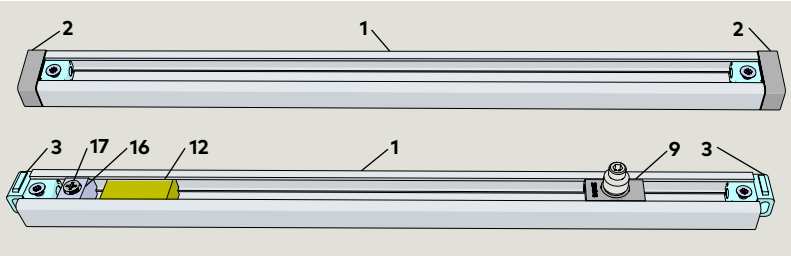
Fig. 10.3.1 Pull arm hardware (combined)

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 shaft
6 CPD lever (deep pull)
6.1 M6 x 10 SHCS
7 Slotted spring pin
8 Arm cap
9 Slide shoe
10 1/2" Pivot pin
10.1 1" Pivot pin
11 Retaining ring
12 Bumper
13 M8 x 1.25 x 40 SHCS
14 Wood screws
15 Machine screws
16 Bumper stop
17 M5 x 13 FHMS cross recessed
18 CPD lever (deep reveal)



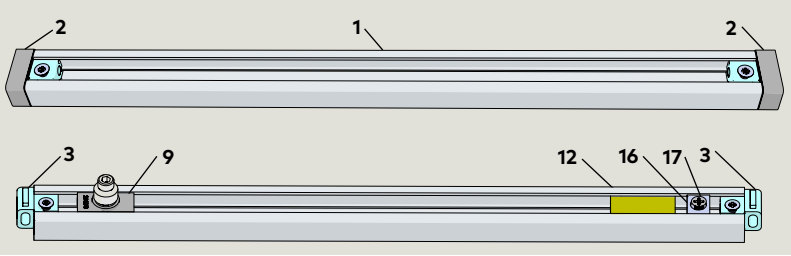
10.4 Install hardware into track

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.

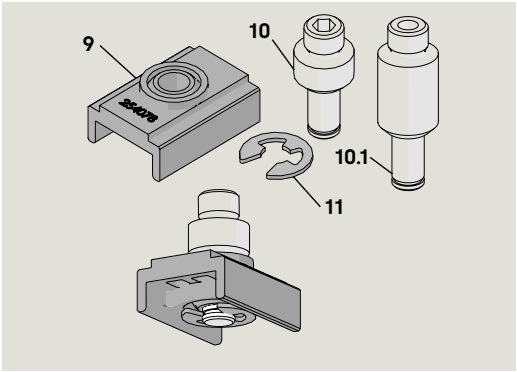
1. Slide bumper stop (16), bumper (12) and slide shoe assembly (9) into track.
- Do not tighten bumper stop M5 screw (17).

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

9 Slide shoe
10 1/2" Pivot pin
10.1 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 deep pull arm (DK4709-12X arm assembly) or deep reveal pull arm (DK4709-13X arm assembly) if used

10.6.1 Assemblepull arm and CPD lever assembly.

CAUTION

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

NOTICE

Deep reveal pull can only be used with ED100/ED250 operators.

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

Fig. 10.6.1 Slotted spring pin

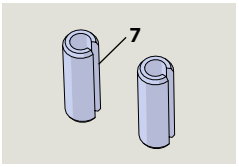
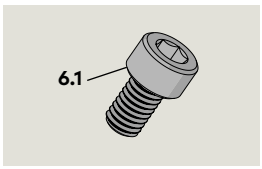


Fig. 10.6.2 M6 x 10 SHCS for CPD



6.1 M6 x 10 SHCS
7 Slotted spring pin

Fig. 10.6.3 Deep pull CPD lever and slotted spring pins

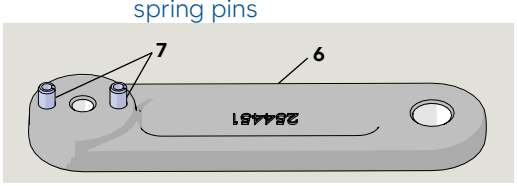
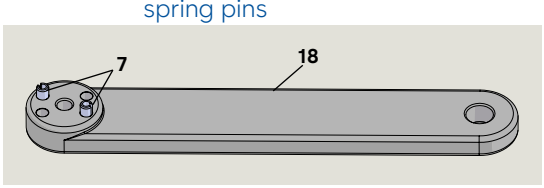
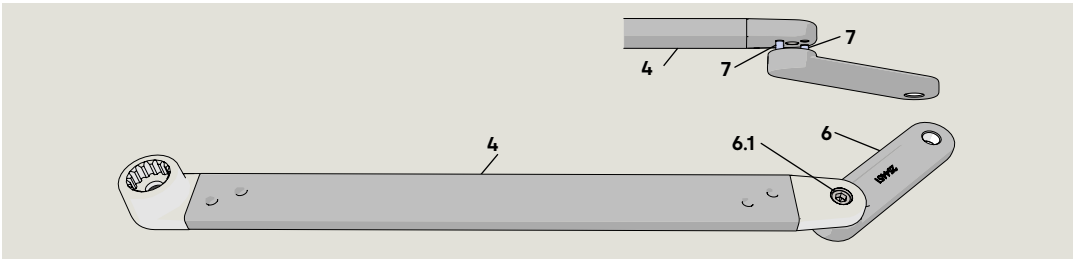


Fig. 10.6.4 Deep reveal CPD lever and slotted spring pins



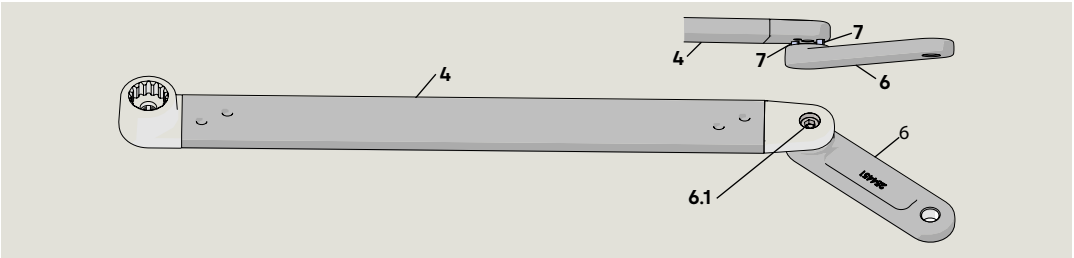
6 CPD lever - deep pull
7 Slotted spring pin
18 CPD lever - deep reveal

Fig. 10.6.5 Deep pull arm assembly, RH pull, LH push



4 Pull arm
6 CPD lever - deep pull
6.1 M6 x 10 SHCS
7 Slotted spring pin

Fig. 10.6.6 Deep pull arm assembly, LH pull, RH push



4 Pull Arm
6 CPD lever - deep pull
6.1 M6 x 10 SHCS
7 Slotted spring pin

Fig. 10.6.7 Deep reveal pull arm assembly, LH pull, RH push (ED100/ED250 only)

4 Arm
6.1 M6 x 10 SHCS
7 Slotted spring pin
18 CPD lever - deep reveal

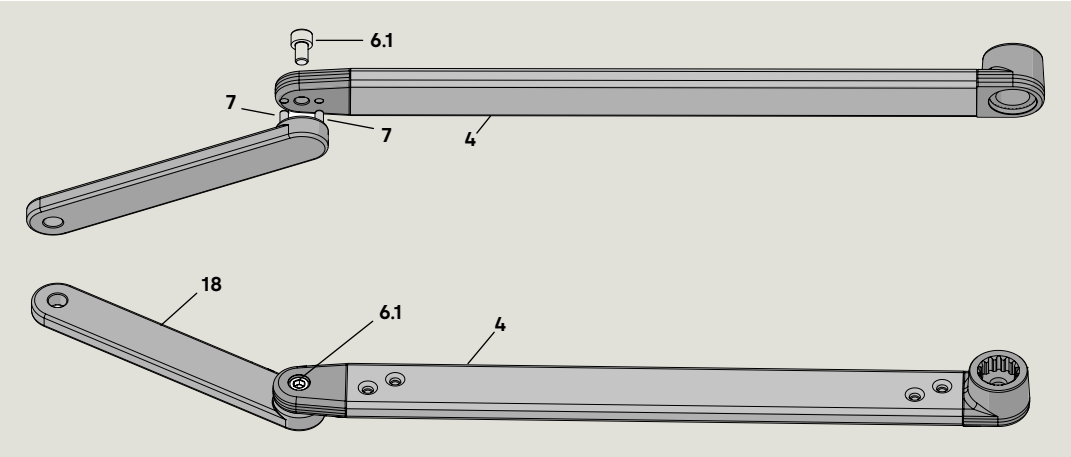
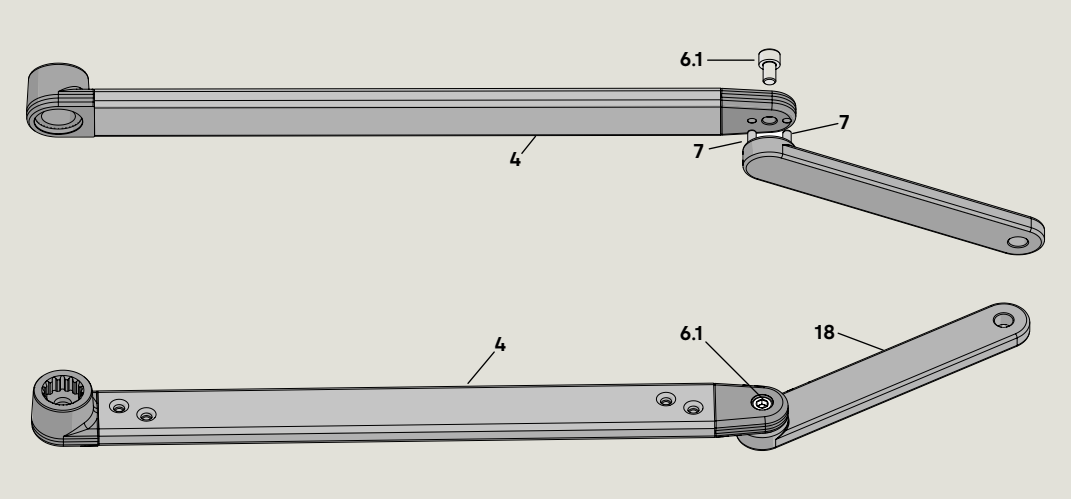


Fig. 10.6.8 Deep reveal pull arm assembly, RH pull, LH push (ED100/ED250 only)

4 Arm
6.1 M6 x 10 SHCS
7 Slotted spring pin
18 CPD lever - deep reveal

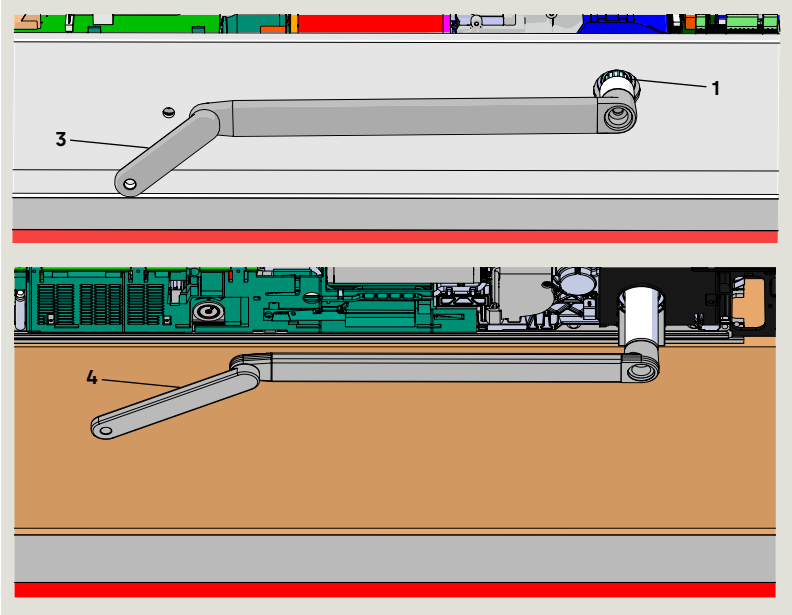


10.7 Deep pull and deep reveal pull arm installation

NOTICE

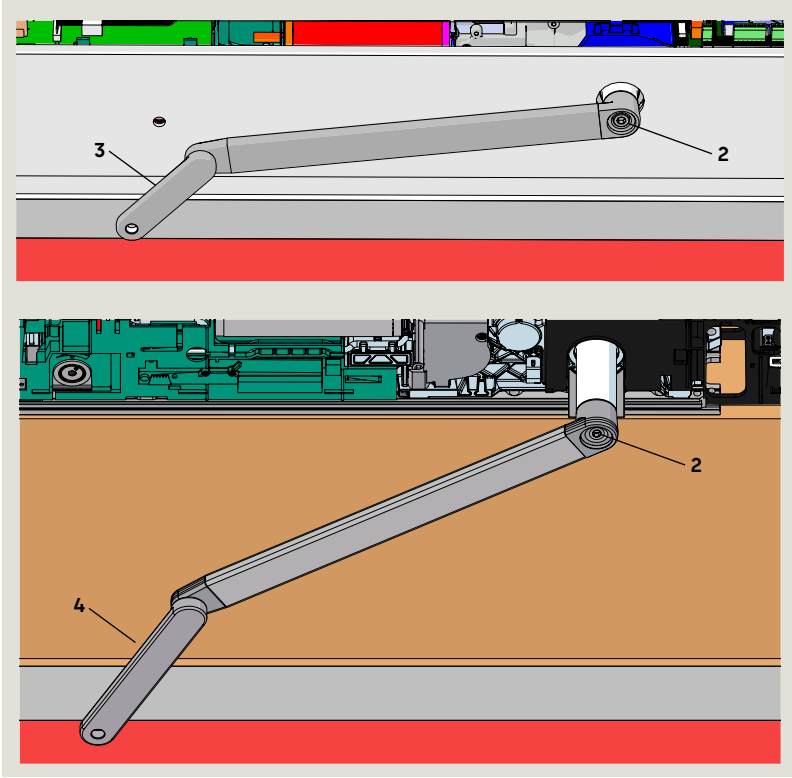
Deep reveal pull arm can only be used with ED100/ED250 operators.

Fig. 10.7.1 Pull arm parallel to door



1 Spindle
3 CPD lever - deep pull
4 CPD lever - deep reveal

Fig. 10.7.2 Pull arm installed on spindle



2 M8 SHCS
3 CPD lever - deep pull
4 CPD lever - deep reveal

10.7.1 Mount deep pull or deep reveal pull arm to operator.

WARNING

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

CAUTION

ED50/ED100/ED250 operator axle zero position.
Spindle must be at zero position to mount the arm correctly.

1. Set ED50/ED100/ED250 operator spring tension based on door width. Reference Chapter 11.
2. Position pull arm with axle extension against spindle and parallel to door.
3. Rotate arm until edge of CPD lever is adjacent to surface of door. (Fig. 10.7.2).
4. Install arm with appropriate 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. 10.7.3 Torque wrench, 5 mm hex key

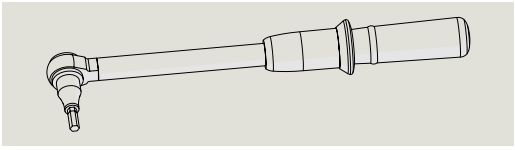
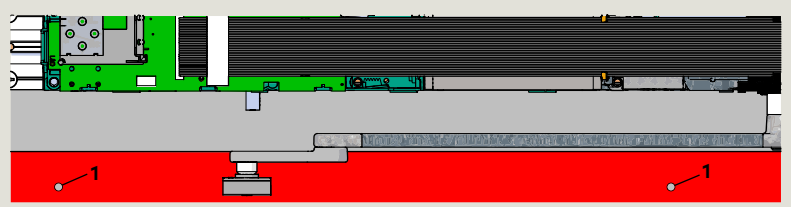
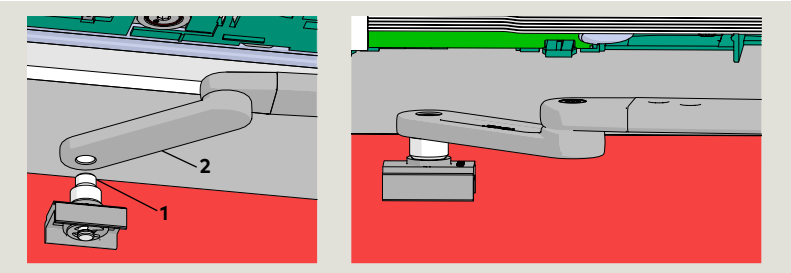


Fig. 10.7.4 Track mounting holes in door



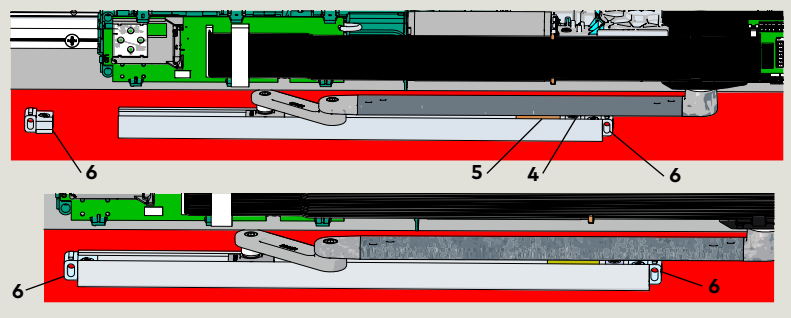
1 Track mounting holes

Fig. 10.7.5 Slide shoe installation on CPD lever



1 Pivot pin M8 SHCS
2 CPD lever (deep pull or deep reveal)

Fig. 10.7.6 Track assembly installed onto slide shoe



3 Shoe
4 Bumper stop
5 Bumper
6 Fixing piece

Fig. 10.7.7 Track assembly secured to door

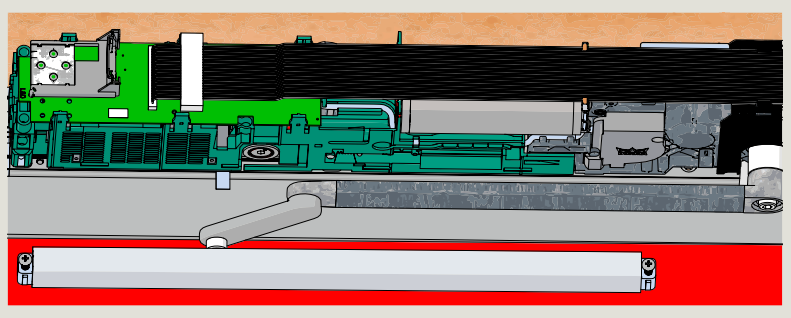
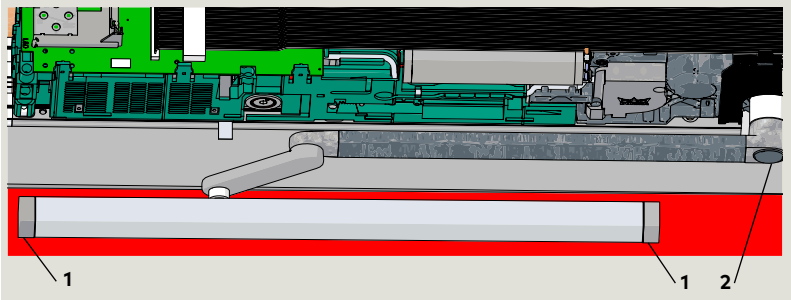


Fig. 10.7.8 End caps and spindle cap installed



TIPS AND RECOMMENDATIONS

Deep pull arm shown in illustrations.

10.72 Locate and drill track mounting holes.

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

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

1. Thread pivot pin M8 SHCS into CPD lever mounting hole (Fig. 10.7.5).

NOTE: 1/2" and 1" pivot pins are supplied.

2. Use 6 mm hex key to tighten.

10.7.4 Track assembly.

1. Insure track components and deep pull arm are assembled based on hand of door (Para. 10.4).

10.7.5 Install track assembly onto slide shoe.

1. With fixing piece removed from track on opposite end from bumper, slide track assembly onto shoe (Fig. 10.7.6).
2. Install second fixing piece onto track.

10.7.6 Secure track assembly to door.

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

- Insure track is level as fasteners are tightened.

10.7.7 Install end caps and spindle caps.

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

10.8 Standard pull arm installation

Fig. 10.8.1 Drive arm parallel to door

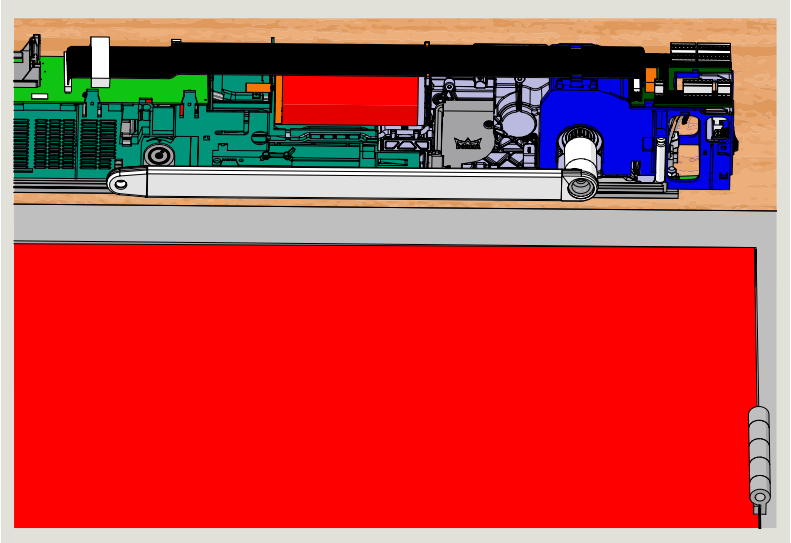
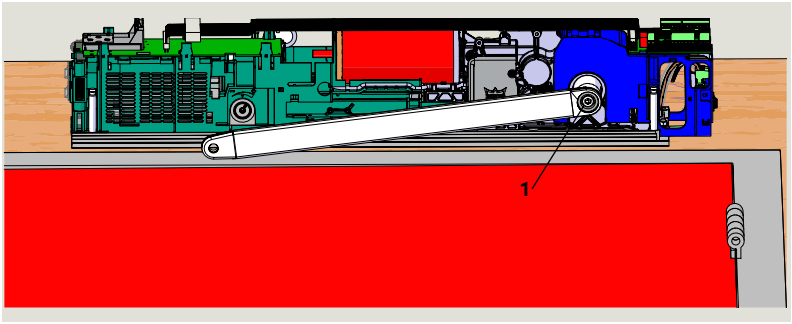
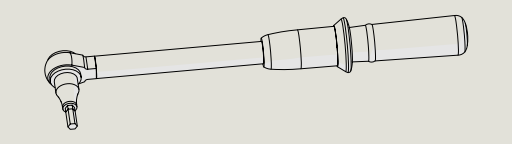


Fig. 10.8.2 Drive arm installed on spindle



1 M8 SHCS

Fig. 10.8.3 Torque wrench, 5 mm hex key



10.8.1 Mount drive arm to operator.

WARNING

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

CAUTION

ED50/ED100/ED250 operator axle zero position.
Spindle must be at zero position to mount the arm correctly.

1. Set ED50/ED100/ED250 operator spring tension based on door width. Reference Chapter 11.
2. Position pull arm with axle extension, if used, against spindle and parallel to door.
3. Rotate pull 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 pull arm with appropriate 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].

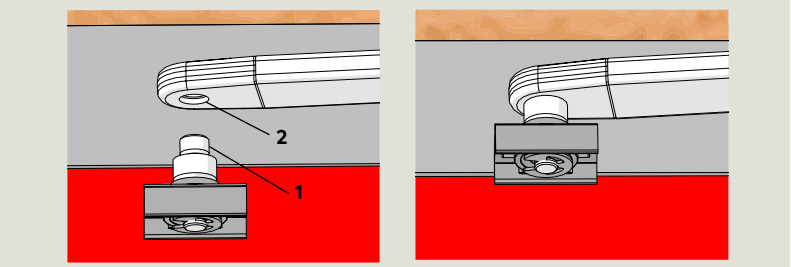
1 End cap **2** Spindle cap

Fig. 10.8.4 Track mounting holes in door



1 Track mounting holes

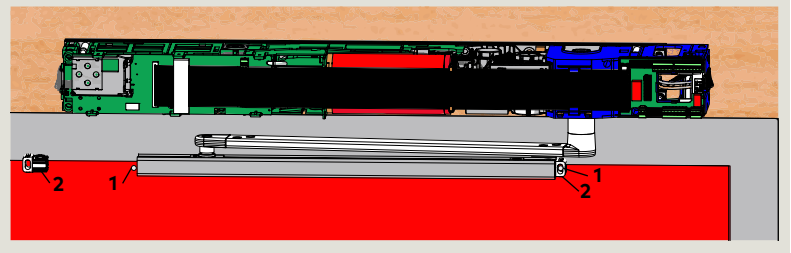
Fig. 10.8.5 Slide shoe installation on drive arm



1 Pivot pin M8 SHCS

2 Drive arm M8 mounting hole

Fig. 10.8.6 Track assembly installed onto slide shoe



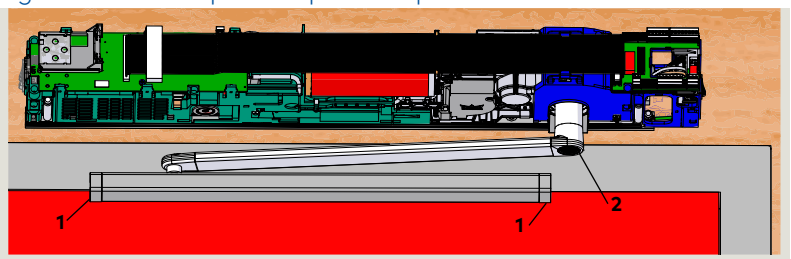
1 Mounting hole
2 Fixing piece

Fig. 10.8.7 Track assembly secured to door



1 Mounting hole
2 Fixing piece

Fig. 10.8.8 End caps and spindle cap installed



1 End cap
2 Spindle cap

10.8.2 Locate and drill track mounting holes.

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

10.8.3 Install slide shoe assembly onto drive arm.

1. Thread pivot pin M8 SHCS into drive arm mounting hole (Fig. 10.8.5).

- Use 6 mm hex key to tighten.

10.8.4 Track assembly.

1. Insure track components are assembled based on hand of door (Para. 10.4).

10.8.5 Install track assembly onto slide shoe.

1. With fixing piece removed from track on opposite end from bumper, slide track assembly onto shoe (Fig. 10.8.6).
2. Install second fixing piece onto track.

10.8.6 Secure track assembly to door.

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

- Insure track is level as fasteners are tightened.

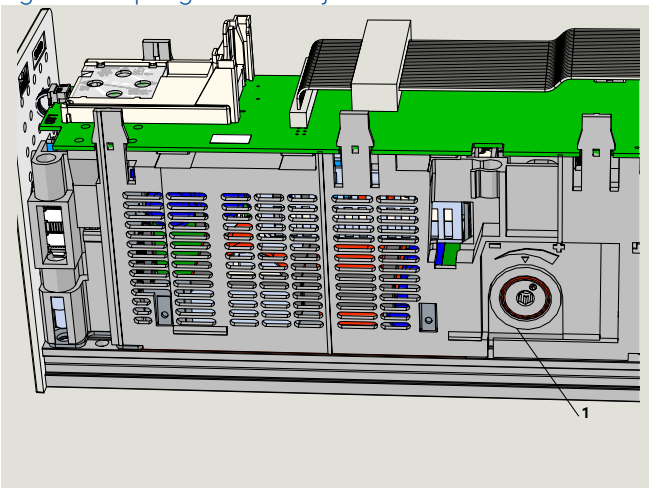
10.8.7 Install end caps and spindle caps.

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

11 Operator spring tension

11.1 Set ED50/ED100/ED250 operator spring tension

Fig. 11.1.1 Spring tension adjustment

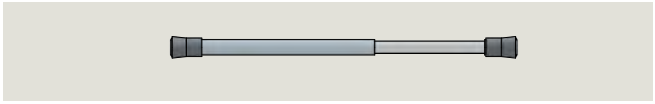


1 Spring tension adjustment

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	55	63
mm	711	813	914	1067	1219	1400	1600
Spring setting revolutions							
ED50/ ED100	10	10	14	16	18	---	---
ED250	10	10	14	16	18	24	24

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.
  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 ED100/ED250 Setup Manual). 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 A156.10 Power operated pedestrian doors

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

Reference Appendix A for additional parameter detail.

12.1.1 Door measurements, power operated swing door.

ED100/ED250 Parameter					A156.10 standard	
Parameter		Function	Factory setting	Adjustment range	Para.	Requirement
So	Opening speed automatic mode	Swing door opening speed, automatic mode.	25°/s	ED100 8°/s - 50°/s ED250 8°/s - 60°/s	10.2.1	Swing door opening time to 80°, not less than 1.5 s.
Sc	Closing speed automatic mode	Swing door closing speed, automatic mode.	25°/s	ED100 8°/s - 50°/s ED250 8°/s - 60°/s	10.2.5	Swing door closing time to latch check. Reference 28.1.2.
Fo	Static force in opening direction	Static force on door closing edge in opening direction.	13.5 lb f [60 N]	4.5 lb f - 33.7 lb f Reduced in low energy mode.	10.2.2	Not to exceed 30 lb f measured 1" from lock edge of door.
Fc	Static force in closing direction	Static force on door closing edge in closing direction.	13.5 lb f [60 N]	4.5 lb f - 33.7 lb f Reduced in low energy mode	10.2.7	Not to exceed 30 lb f measured 1" from lock edge of door at any point in closing cycle.
bc	Back check	Checking or slowing down of door speed before door being fully opened.	10°	5° - 40°	10.2.3	Shall occur at no less than 10° of full open position.
dd	Hold open time	Open time for swing doors using sensors or control mats upon loss of detection.	5 s	0 s - 30 s 0 s - 180 s (F2 parameter set to full energy)	10.2.4	Minimum of 1.5 seconds after loss of detection.
	Latch check	Checking or slowing down of door speed before door being fully closed.		Not adjustable	10.2.6	Not less than 10° from closed position. The door will not close through the final 10° in less than 1.5 s.
hS	Reference ED100/ ED250 service manual for parameter detail.	Support for manual mode in door closed position.			10.2.8	Manual opening force in event of power failure. Not greater than 30 lb f applied 1" from edge of lock stile to open.
hA		Adjustment, door activation angle.				
hF		Power assist function.				

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

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

12.1.3 Other door weights and widths

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

12.2 ANSI/BHMA 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.

12.2.1 Door measurements, low energy power operated door.

ED50/ED100/ED250 Parameter					A156.19 standard	
Parameter		Function	Factory setting	Adjustment range	Para.	Requirement
So	Opening speed	Swing door opening speed.	17°/s Note 1	8°/s - 27°/s 27°/s 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.	17°/s Note 1	8°/s - 27°/s 27°/s 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.

12.2.2 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).					

12.2.3 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.		

12.2.4 Other door weights and widths.

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

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

13.1 Install door signage

13.1.1 Install door signage.

Install applicable door signage as outlined in Chapter 5, ED50/ED100/ED250 door signage.

14 Fine cover, end caps and spindle caps

14.1 Fine cover end cap and spindle installation

14.1.1 Cover and end cap installation.

Fine cover and end caps will be installed after ED50/ED100/ED250 operator setup is completed.

- Reference ED100/ED250 Setup and Troubleshooting Manual DL4617-002.

15 Maintenance

15.1 Safety label, automatic swing doors

15.1.1 Automatic swinging door safety information label

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

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 automatic swing doors that comply with ANSI/BHMA A156.10 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.

15.2 Safety label, low energy swing doors

15.2.1 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 ED50 operator or ED100/ED250 operator configured for the low energy mode.

15.2.2 Safety information label location

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

15.2.3 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.

15.2.4 Additional annual compliance inspection labels

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

Fig. 15.1.2 Annual compliance inspection labels

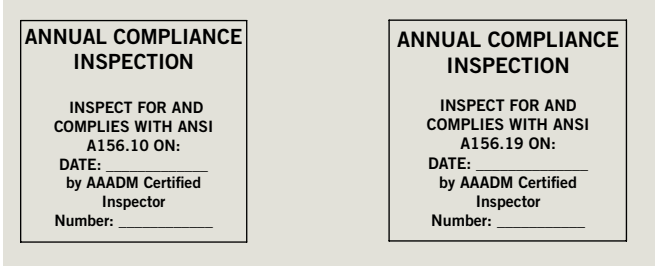
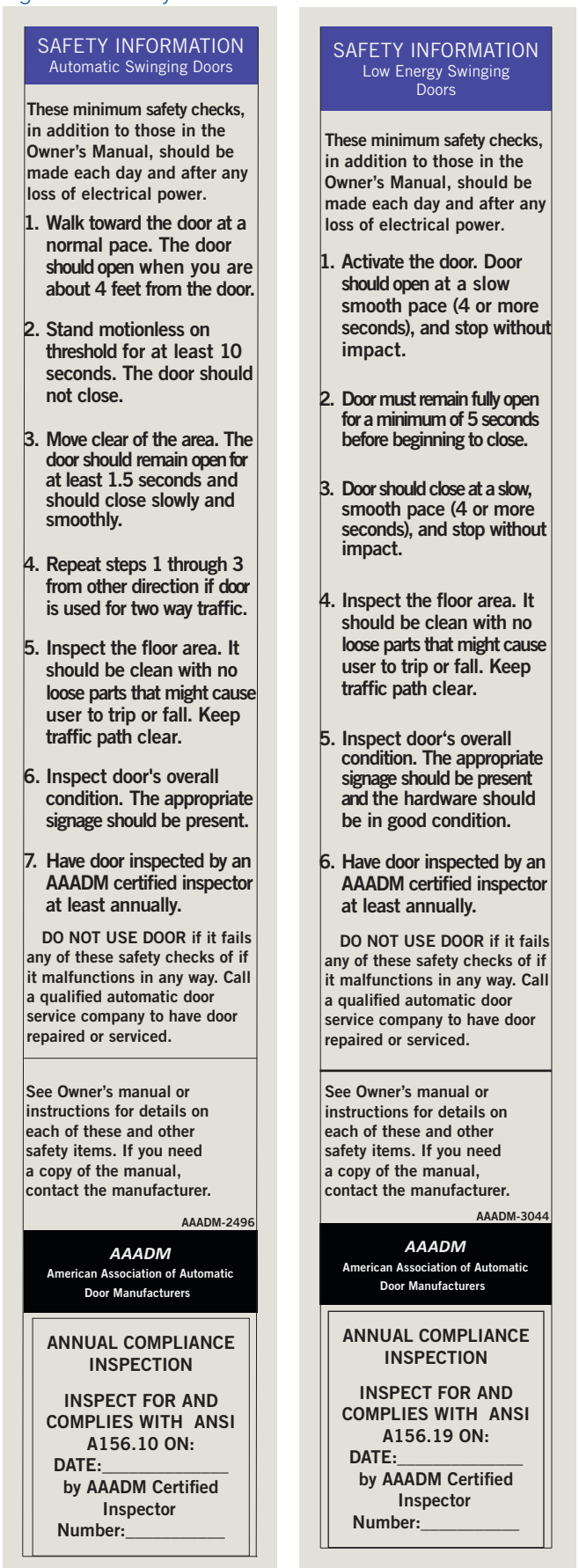


Fig. 151.1 Safety information labels



15.2 Arm fasteners – torque requirements

Fig. 15.2.1 Arm M8 SHCS cap

8 Cap

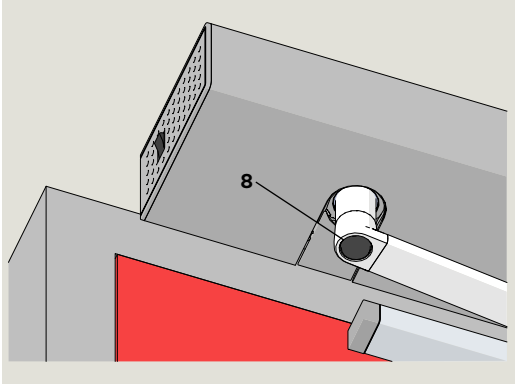


Fig. 15.2.2 M8 SHCS

5 M8 x __ SHCS

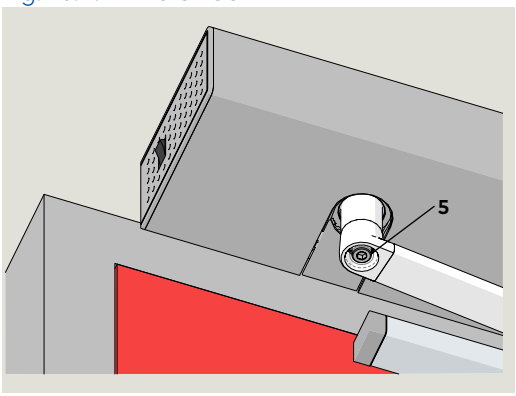
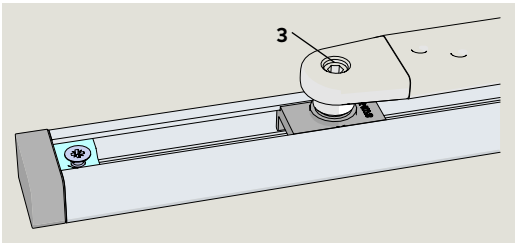


Fig. 15.2.3 Pivot pin M8 socket head

3 Pivot pin M8 socket head



15.2.1 Check drive arm M8 SHCS torque.

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

15.2.2 Check pivot pin M8 socket head torque.

1. Check torque.

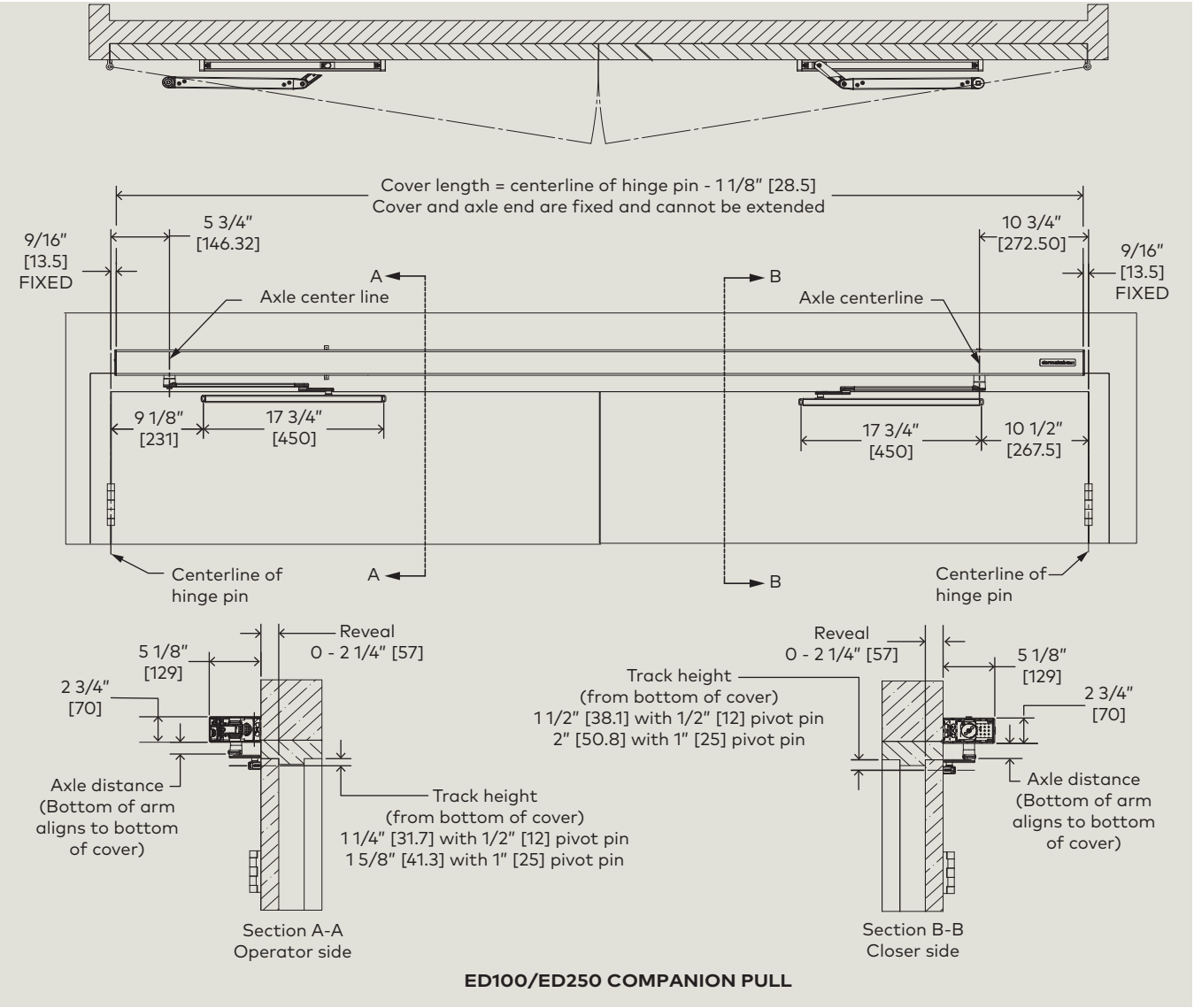
CAUTION

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

16 Companion door installation

16.1 ED100/ED250 Companion installation templates

Fig. 16.1.1 ED100/ED250 Companion pull



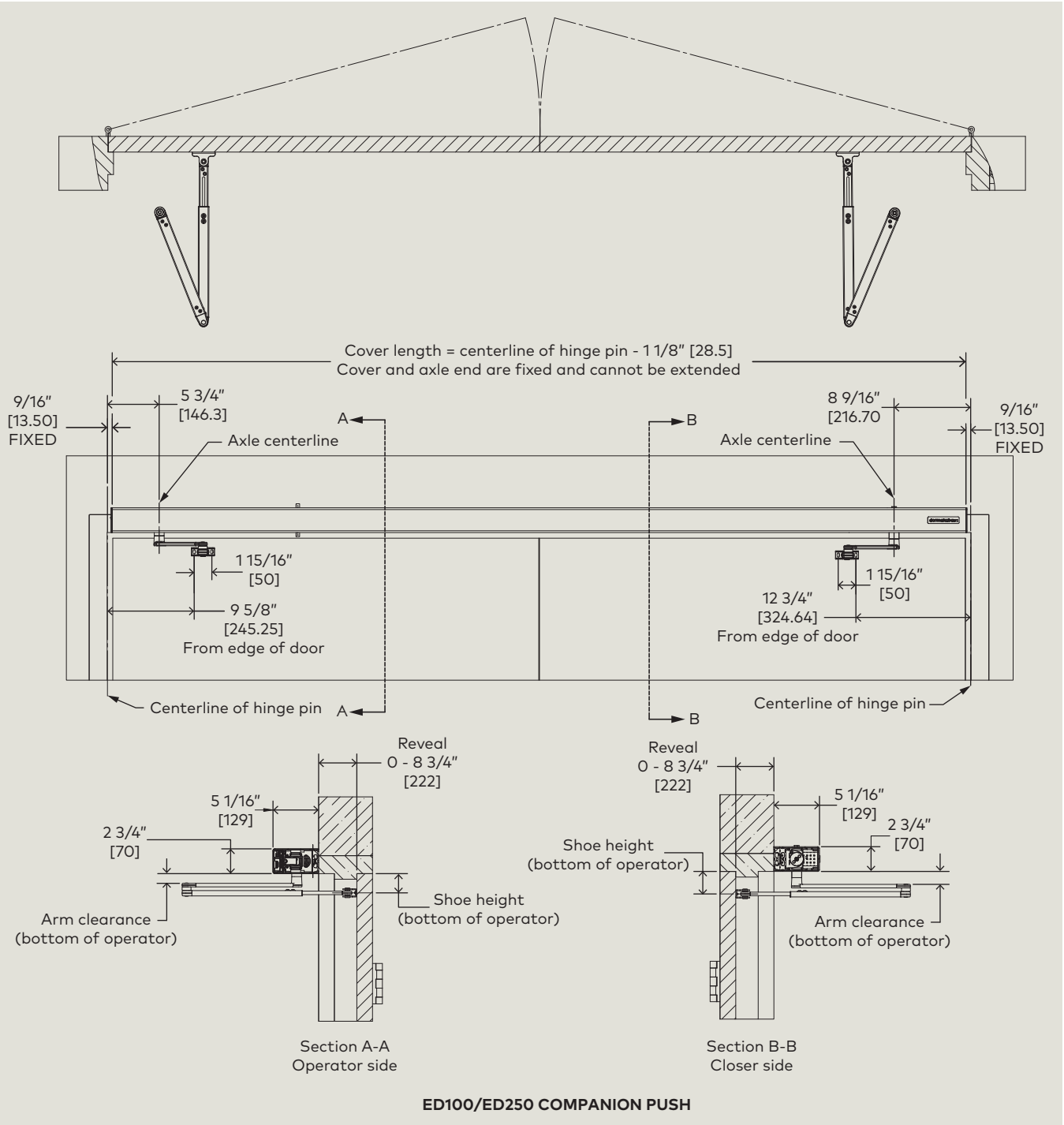
ED100/ED250 COMPANION PULL

Axle extension	Pull axle distance
13/16" [20]	1 5/8" [41]
2 3/8" [60]	3 1/8" [81]

16.1.1 ED100 low energy operation installation.

- Reference Chapter 8, ED100 operator installation.

Fig. 16.1.2 ED100/ED250 Companion push



ED100/ED250 COMPANION PUSH

Axle extension	Push shoe height	Push arm clearance
13/16" [20]	2 1/2" [63.5]	1 3/8" [36]
2 3/8" [60]	4" [103]	3" [76]

16.1.2 ED100 push arm installation.

- Reference Chapter 9, push arm installation.

16.2 8616 closer and adaptor

Fig. 16.2.1 8616 closer views

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

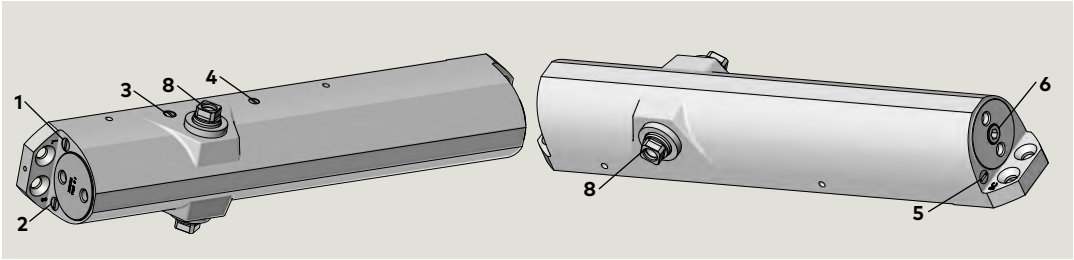


Fig. 16.2.2 Companion screw kit DK4607-001

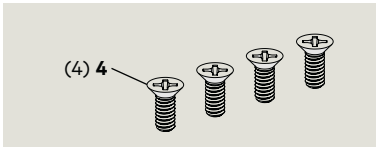
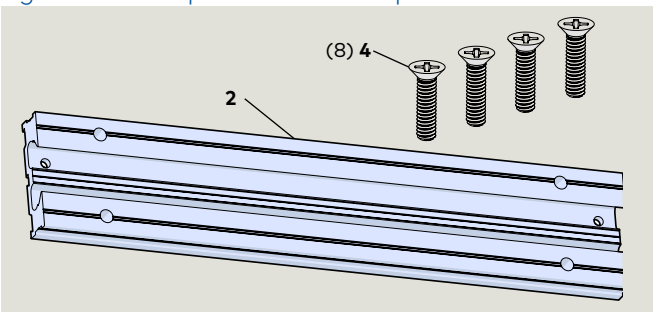


Fig. 16.2.3 Companion closer adapter HC3468-070



2 Companion closer adaptor DC3468-070
4 1/4-20 x 1" FHMS Phillips undercut DF3101-01Z
4 1/4-20 x5/8" FHCS DF0399-00G

16.2.1 Companion door 8616 Door closer data

16.2.1.1 8616 adjustments.

Adjustments				
		Spring force adjustment	Adjustable	From size 1 to size 6
1	L	Latch speed	Adjustable	
2	S	Sweep speed	Adjustable	Door should close in 3 to 6 seconds
5	BC	Backcheck	Off, On	Must be turned ON for parallel arm applications. Backcheck position will advance approximately 150.
4		Backcheck positioning	Adjustable	Adjustable hydraulic backcheck will take effect at approximately 700.
3	DEL	Delayed action	Adjustable	Delays door closing to allow unobstructed passage through the opening.

16.2.1.2 8616 spring size selection, regular and top jamb closers.

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

16.3 Select installation template

16.3.1 Select installation template.

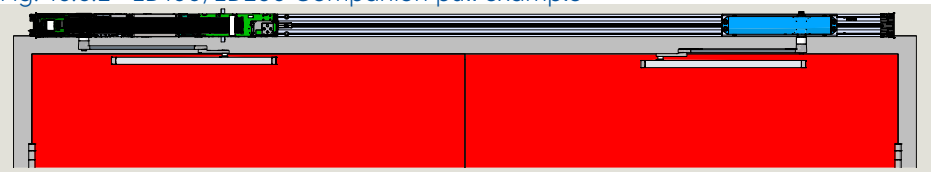
1. Select installation template based on companion door configuration.

- Reference Para. 16.1.

Fig. 16.3.1 ED100/ED250 Companion push example

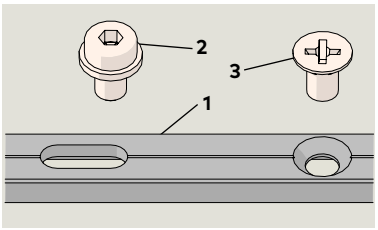


Fig. 16.3.2 ED100/ED250 Companion pull example



16.4 Assemble ED100/ED250 and closer backplates

Fig. 16.4.1 Backplate connect kit DK3491-001



1 ED100, mtg extr connector DC3491-010
2 M6 x 10 mm socket head w/washer DF3495-01Z
3 M6 x 10 mm Phillips flat head screw DF3496-01Z

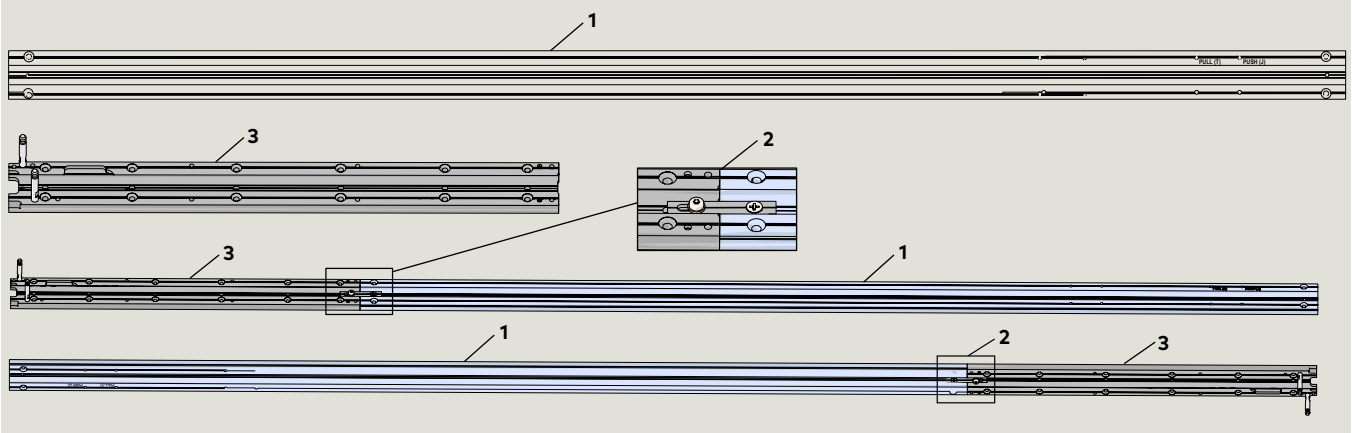
16.4.1 Remove ED100 or ED250 operator from mounting plate.

1. Reference Chapter 8, Para. 8.2.
2. Remove operator from its mounting plate.

16.4.2 Connect ED100/ED250 mounting plate and closer mounting plate.

1. Connect ED100/ED250 operator mounting plate to companion mounting plate using backplate connect kit DK3491-001.
2. Insure the two mounting plates are configured based on door configuration.

Fig. 16.4.2 Backplate assembly example



1 Backplate, ED operator companion DC3468-050
2 Backplate connect kit DK3491-00
3 ED100/ED250 operator mounting plate

17 Companion door, push arm installation

17.1 Mount backplate, push arm application

Fig. 17.1.1 ED100/ED250 Companion backplate template; LH push version

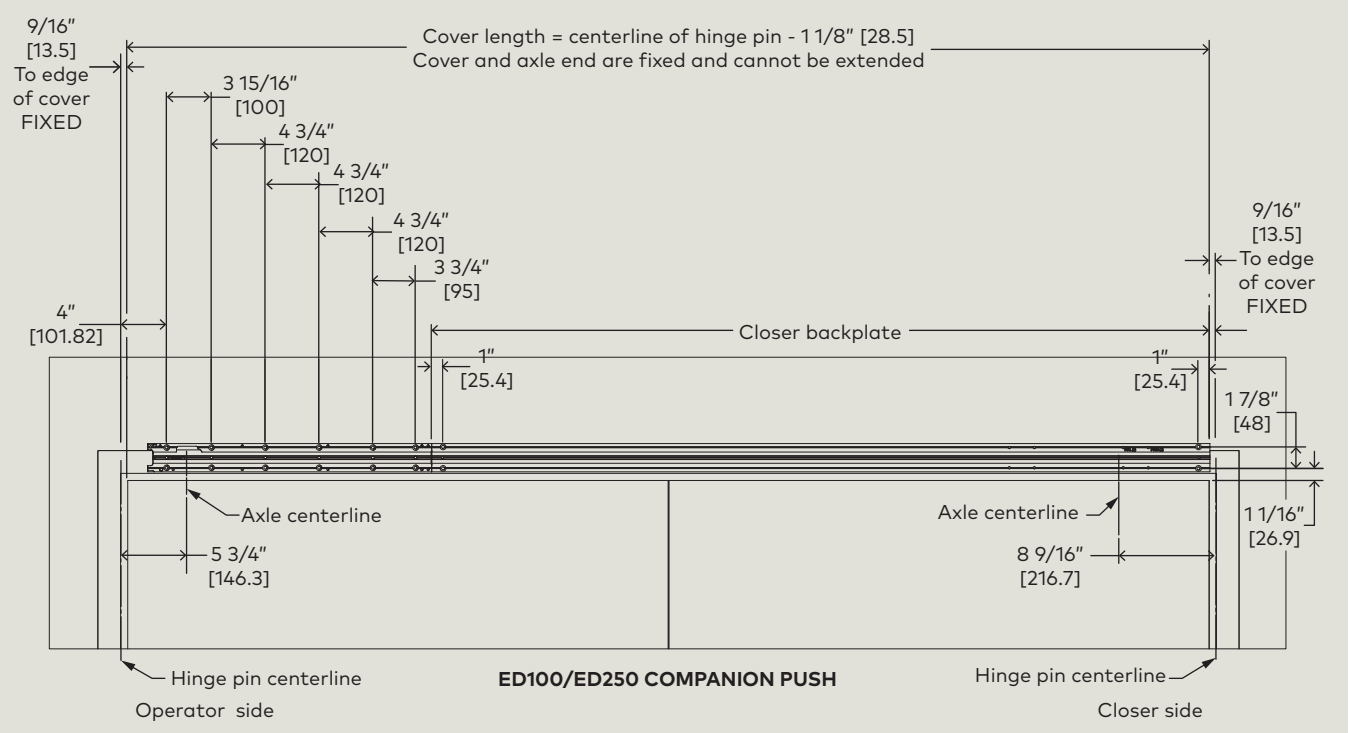
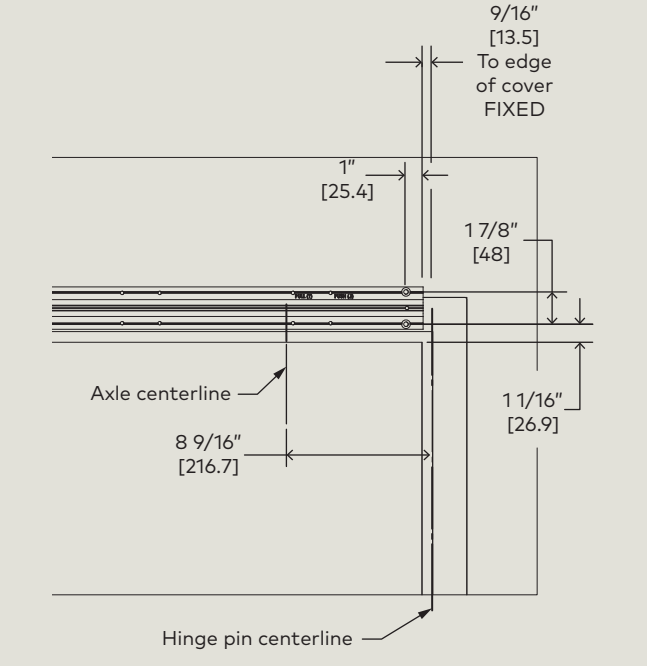


Fig. 17.1.2 Push arm backplate mounting



17.1.1 Install backplate, push arm application.

1. Using backplate template (Fig. 17.1.1 and 17.1.2), locate left hand and right hand backplate mounting holes on door frame/wall.

NOTICE

Template documents a LH push installation. Template must be mirrored for a RH push installation.

2. Place backplate on door frame/wall and align with the mounting hole locations in step 1.
- Check hinge pin centerline to edge of backplate distance.
3. Check backplate for level; adjust if necessary.
4. Mark backplate mounting hole locations.
5. Remove backplate and drill holes based on fastener selected for door frame/wall material.
- Reference Para. 2.1 for backplate mounting screw kit.
- Use appropriate wall anchors if required.
6. Place backplate on door frame/wall and secure with fasteners (Step 6).

17.2 Install 8616 closer on backplate – push arm mounting

17.2.1 Install 8616 closer for push arm application.

NOTICE

Verify closer spring size prior to installation.

NOTICE

PUSH (J) mounting holes.
For push arm application, use PUSH (J) mounting holes (Fig.. 17.2.3).

Fig. 17.2.1 Companion screw kit DK4607-001

3 #4 x 1/4-20 x 5/8" Philips flat head screw DF0399-00G

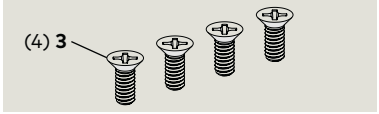


Fig. 17.2.2 Companion closer adapter fasteners

4 1/4-20 x 1" Philips FHMS undercut DF3101-01Z

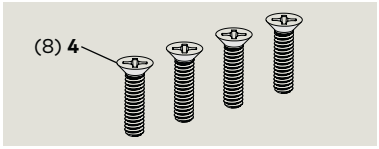


Fig. 17.2.3 Closer adapter and closer assembly mounting to backplate – push arm application

1 Backplate, ED operator companion DC3468-050
2 Companion closer adapter DC3468-070
3 #4 x 1/4-20 x 5/8" Philips flat head screw DF0399-00G
4 1/4-20 x 1" Philips FHMS undercut DF3101-01Z
5 Door closer, 8616 08210970

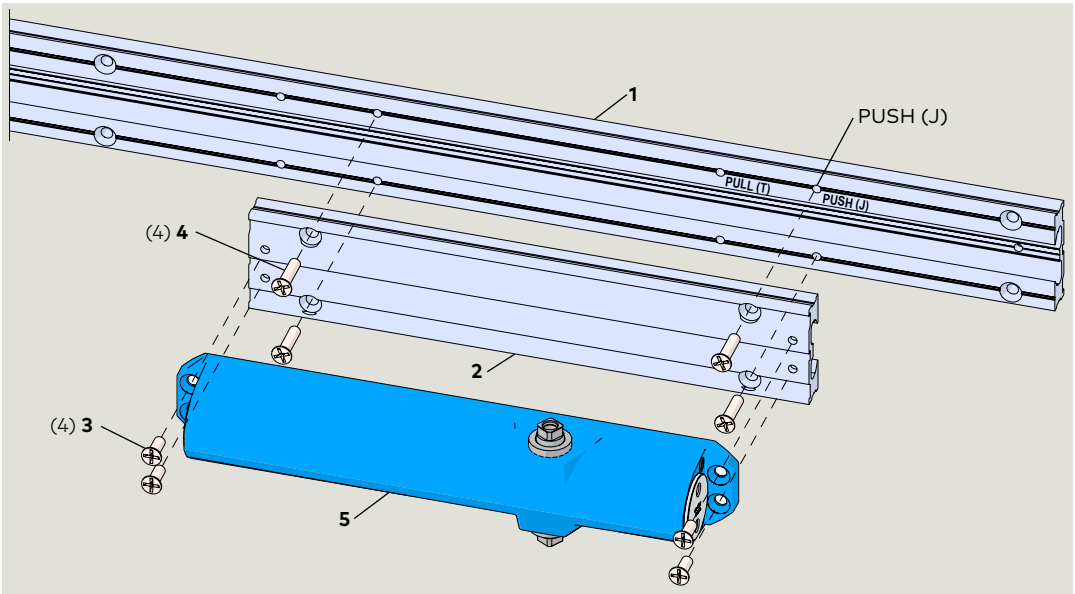
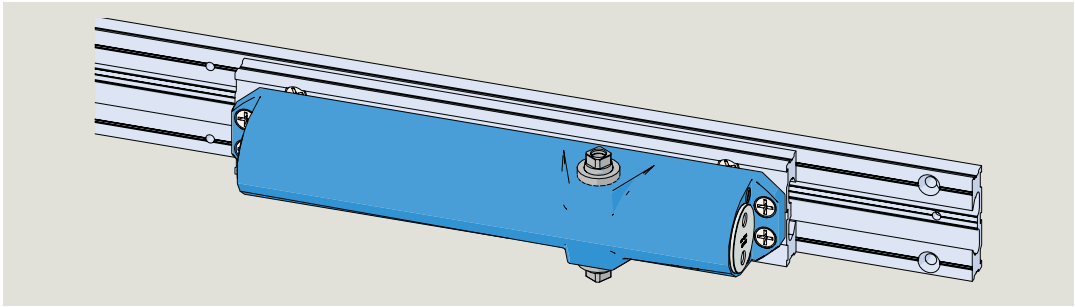
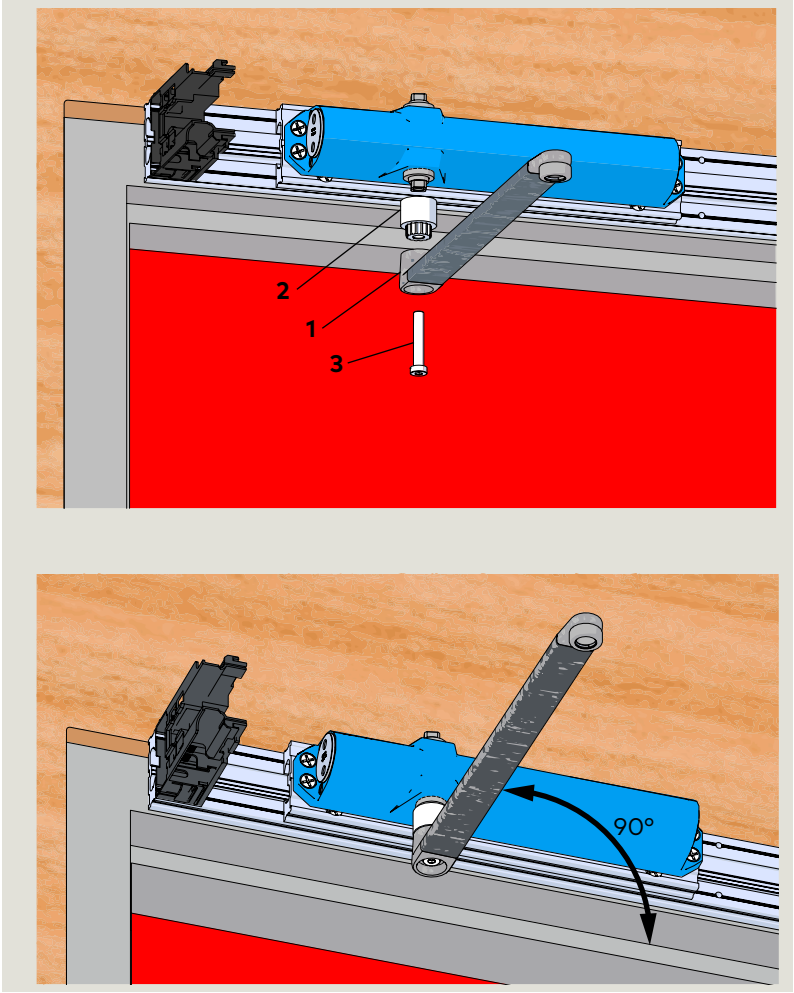


Fig. 17.2.4 Closer adapter and closer assembled to backplate



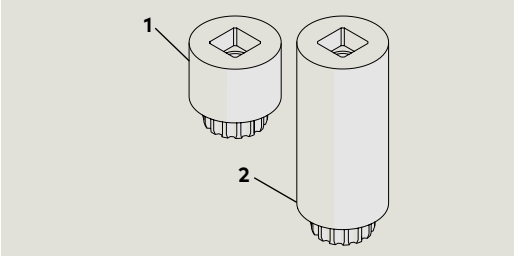
17.3 Push arm installation

Fig. 17.3.1 Drive arm installation



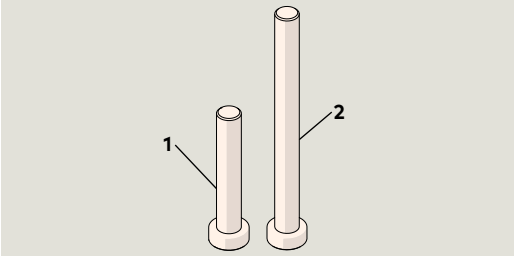
1 Drive arm
2 20 mm axle extension
3 20 mm bolt axle extension

Fig. 17.3.2 Drive axle extensions



1 20 mm axle extension, door closer, DC4680-001
2 60 mm axle extension, door closer, DC4680-002

Fig. 17.3.3 Bolt, axle extensions



1 20 mm bolt,axle extension DF3465-020
2 60 mm bolt axle extension DF3465-040

17.3.1 Push arm hardware.

1. Reference Para. 9.2 for push arm hardware.

17.3.2 Attach drive arm to closer.

CAUTION

Door must be fully closed!

WARNING

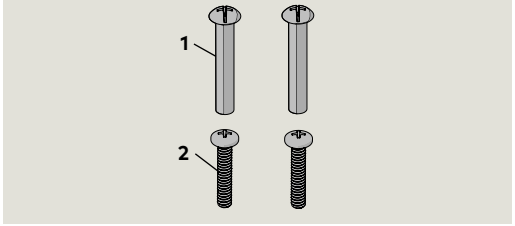
Use caution when working in proximity of door and push arm!

2. Insert axle extension (Fig. 17.3.2) into drive arm.
3. Move arm to 8616, inserting arm into 8616 pinion at a 90° angle.
4. Insert M8 SHCS through drive arm and axle extension. Thread SHCS into 8616 pinion and tighten.

NOTICE

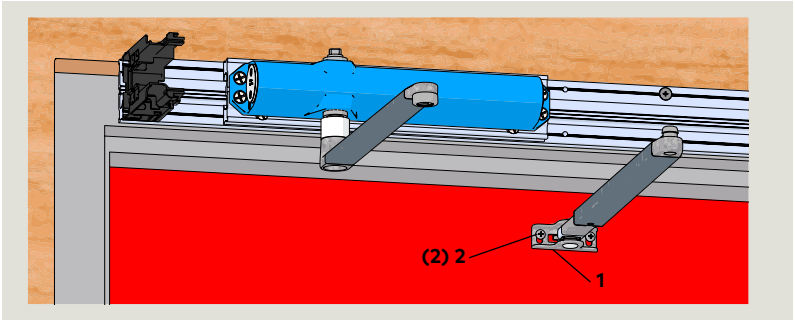
M8 SHCS tightening torque.
Use torque wrench (25 ft-lbs) to tighten SHCS to 17 ft-lb [23 Nm].

Fig. 17.3.4 Push arm screw kit DK2719-010



1 10-24 x 1 1/2" pan head Philips slotted barrel nut DF2718-01Z
2 10-24 x 1/2 " pan head Philips screw DF3278-01Z

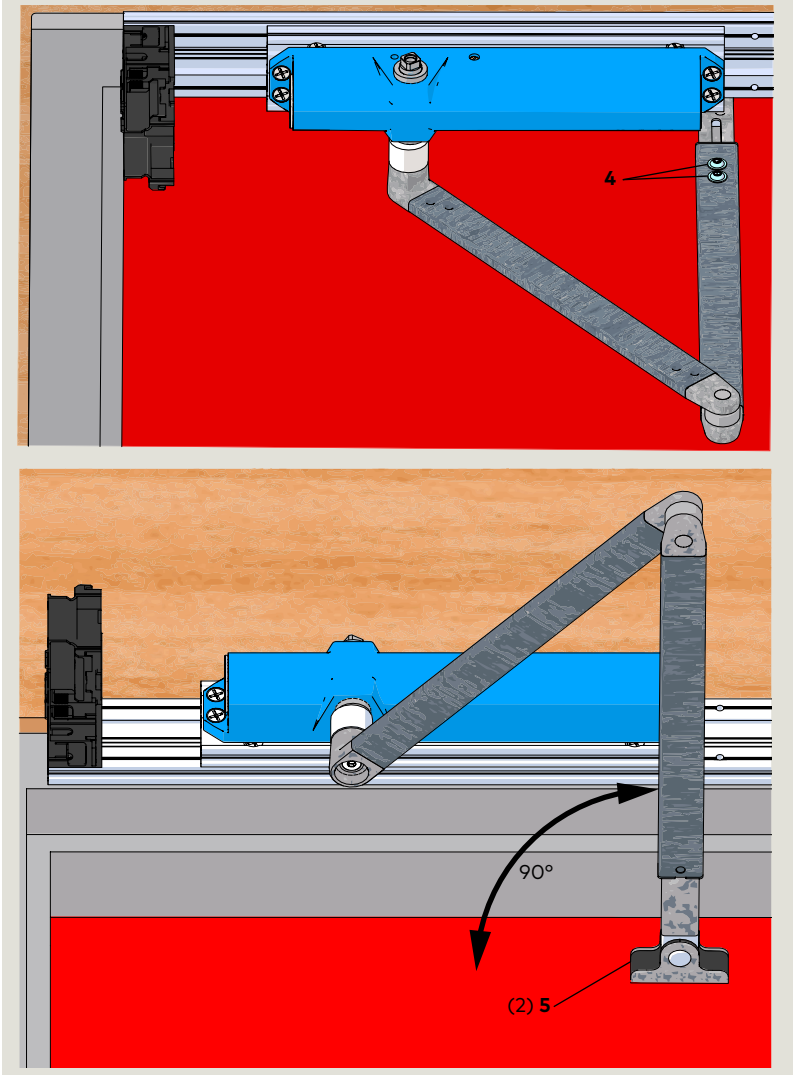
Fig. 17.3.5 Adjustment arm installation



1 Adjustment arm shoe

2 10-24 x 1 " pan head Philips screw

Fig. 17.3.6 Connecting drive arm to adjustment arm



4 M6 x 10 mm flanged button head screw

5 Shoe screw cover

17.3.3 Drill two holes in door for adjustment arm shoe fasteners.

Push arm installation template (Chapter 16) documents location of shoe on door.

1. Drill holes in door for adjustment arm shoe fasteners. Reference push arm screw kit (Fig. 17.3.4).

17.3.4 Install adjustment arm assembly on door.

1. Fasten adjustment arm assembly to door.
2. Insure arm is at installation height as shown on push arm installation template.

NOTICE

Check shoe for level.
Check adjustment arm shoe for level as fasteners are tightened.

17.3.5 Connect adjustment arm to drive arm.

1. Loosen the two adjustment M6 x 10 mm flanged button head screws..
1. Using square, position adjustment arm assembly at 90° angle to door.
2. Adjust length of adjustment arm until drive arm ball head is aligned with adjustment arm socket.

CAUTION

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

3. Insert adjustment arm ball head into drive arm 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.

17.3.6 Install shoe screw covers.

1. Install shoe screw covers.

17.3.7 Door closer adjustments.

Reference Chapter 19.

18 Companion door, pull arm installation

18.1 Mount backplate, pull arm application

Fig. 18.1.1 ED100/ED250 Companion backplate template; RH pull version

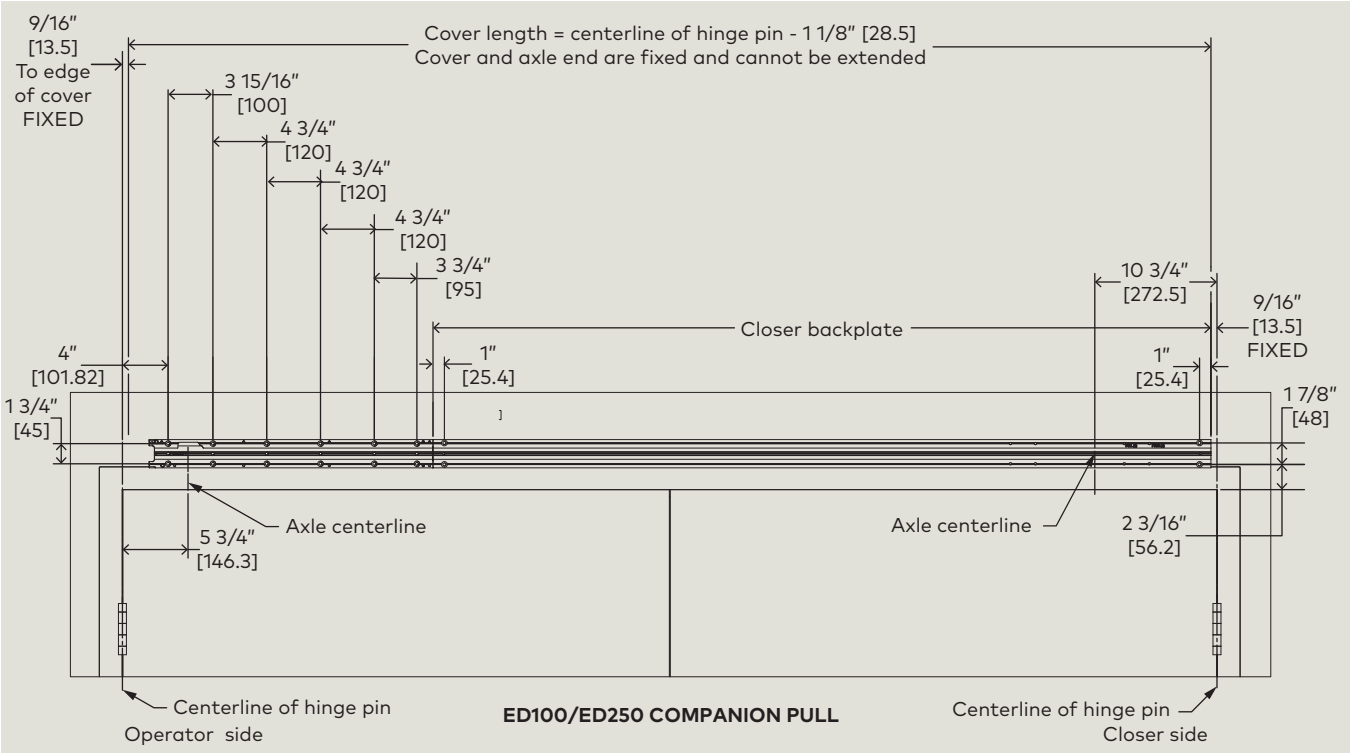
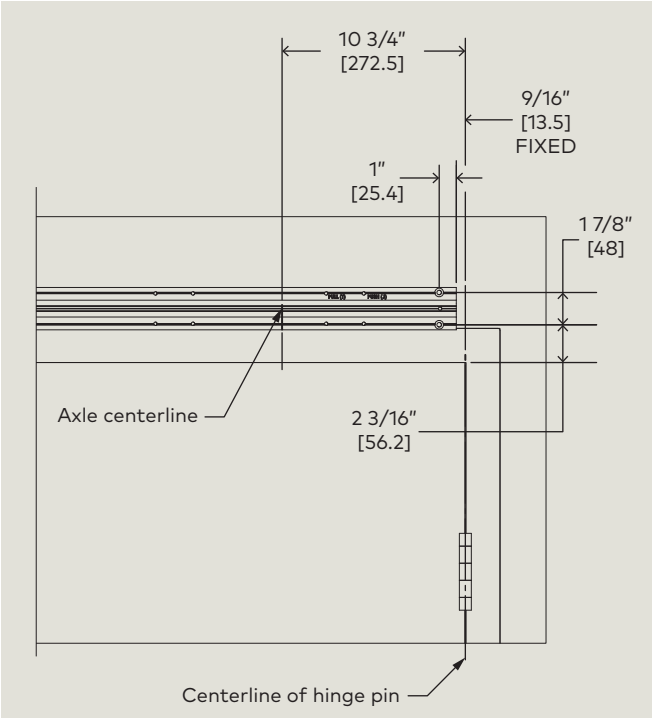


Fig. 18.1.2 Pull arm backplate mounting



18.1.1 Install backplate, pull arm application.

1. Using backplate template (Fig. 18.1.1 and 18.1.2), locate left hand and right hand backplate mounting holes on door frame/wall.

NOTICE

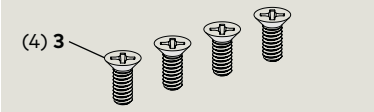
Template documents a RH pull installation. Template must be mirrored for a LH pull installation.

2. Place backplate on door frame/wall and align with the mounting hole locations in step 1.
- Check hinge pin centerline to edge of backplate distance.
3. Check backplate for level; adjust if necessary.
4. Mark backplate mounting hole locations.
5. Remove backplate and drill holes based on fastener selected for door frame/wall material.
- Reference Para. 2.1 for backplate mounting screw kit.
- Use appropriate wall anchors if required.
6. Place backplate on door frame/wall and secure with fasteners.

18.2 Install 8616 closer on backplate – pull arm mounting

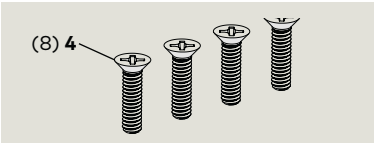
3 #4 x 1/4-20 x 5/8" Philips flat head screw DF0399-00G

Fig. 18.2.1 Companion screw kit DK4607-001



4 1/4-20 x 1" Philips FHMS undercut DF3101-01Z

Fig. 18.2.2 Companion closer adapter fasteners



18.2.1 Install 8616 closer for pull arm application.

NOTICE

Verify closer spring size prior to installation.

NOTICE

PULL (T) mounting holes.
For pull arm application, use PULL (T) mounting holes (Fig..18.2.3)

Fig. 18.2.3 Closer adapter and closer assembly mounting to backplate – pull arm application

1 Backplate, ED operator companion DC3468-050**2**
Companion closer adapter DC3468-070
3 #4 x 1/4-20 x 5/8" Philips flat head screw DF0399-00G
4 1/4-20 x 1" Philips FHMS undercut DF3101-01Z
5 Door closer, 8616 08210970

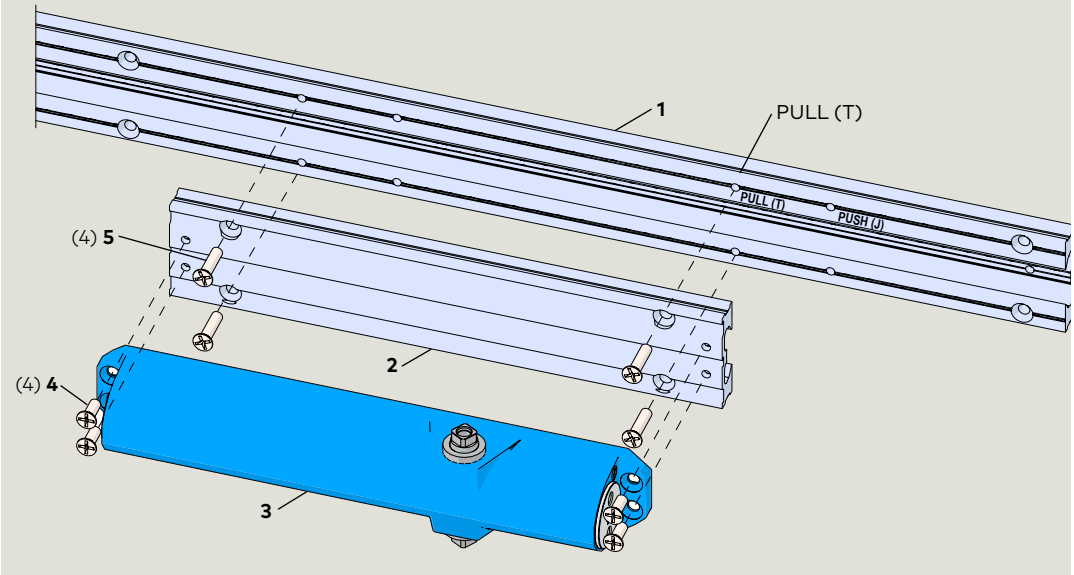
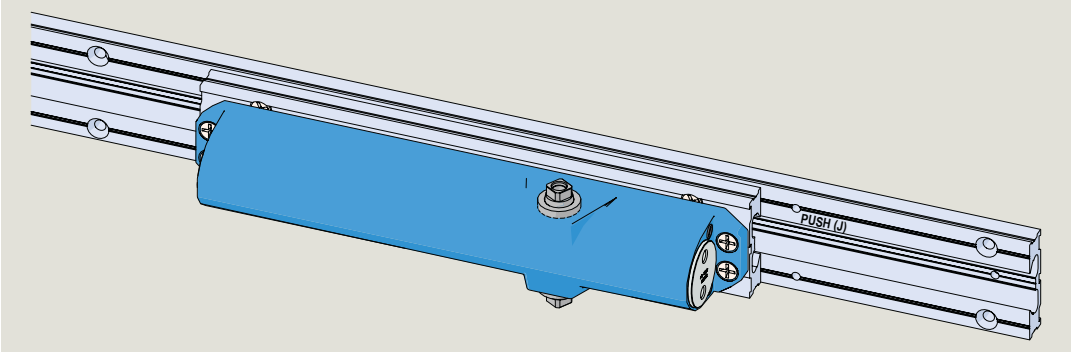
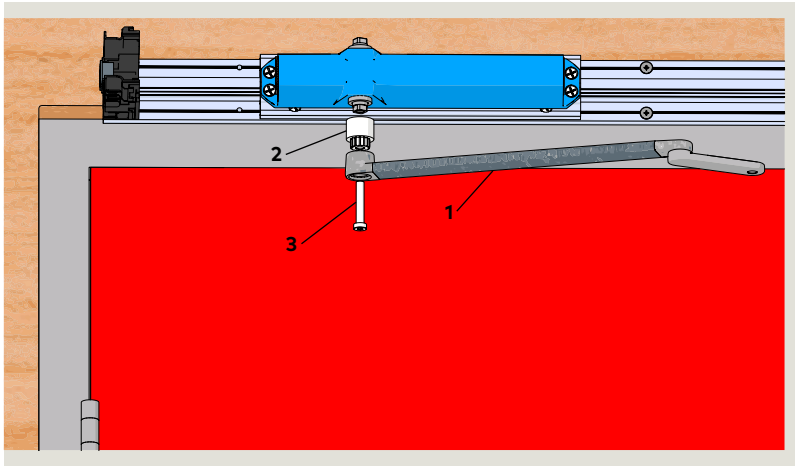


Fig. 18.2.4 Closer adapter and closer assembled to backplate



18.3 Pull arm installation

Fig. 18.3.1 Drive arm with CPD lever installation

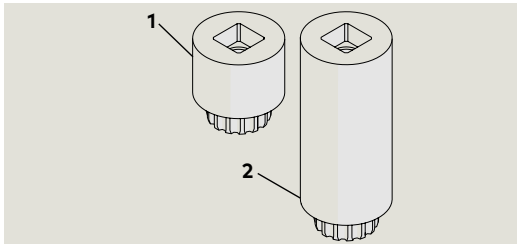


1 Drive arm with CPD lever assembly

2 20 mm axle extension DC4680-001

3 M8 x 40 mm SHCS

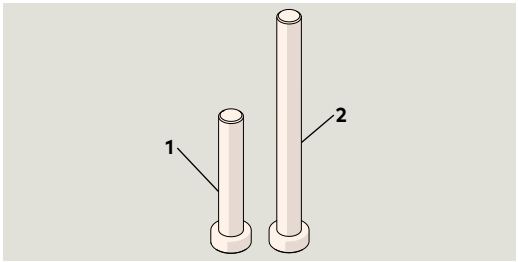
Fig. 18.3.2 Drive axle extensions



1 20 mm axle extension, door closer, DC4680-001

2 60 mm axle extension, door closer, DC4680-002

Fig. 18.3.3 Bolt, axle extensions



1 20 mm bolt,axle extension DF3465-020

2 60 mm bolt axle extension DF3465-040

18.3.1 Assemble track hardware.

1. Reference Chapter 10, Para. 10.4 and assemble hardware into track based on RH or LH pull arm installation.

18.3.2 Assemble CPD lever to drive arm.

1. Reference Chapter 10, Para. 10.6. Assemble CPD lever to drive arm based on RH or LH pull arm installation.

Fig. 18.3.4 Drive arm with CPD lever installed at 15 degree angle

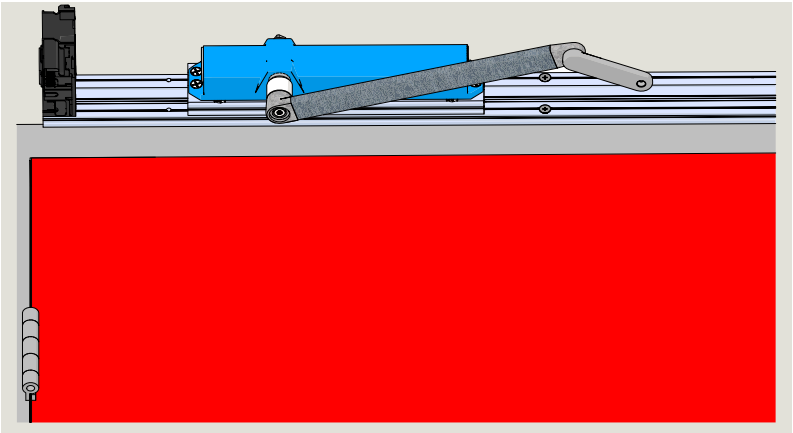
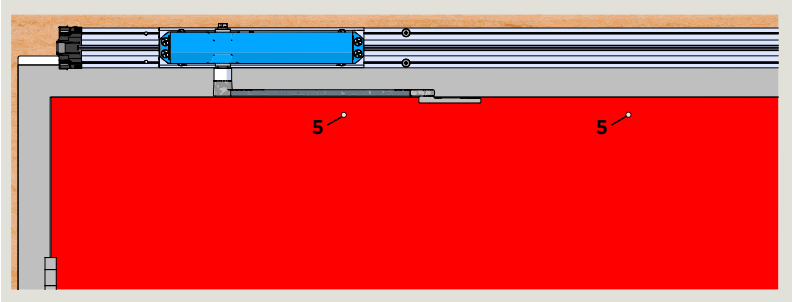
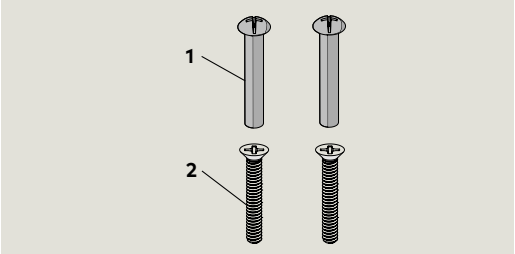


Fig. 18.3.5 Mounting holes for track



5 Track mounting holes

Fig. 18.3.6 Pull arm screw kit DK2719-020



1 10-24 x 1 1/2" pan head Philips slotted barrel nut DF2718-01Z

2 10-24 x 1 1/4" flat head Philips screw DF2717-01Z

18.3.3 Install drive arm with axle extension.

1. Install the drive arm with axle extension (Fig. 18.3.2) onto the 8616 pinion at a minimum angle of 15 degrees.
2. Thread M8 x 40 mm SHCS (for 20 mm axle extension) into 8616 pinion and tighten SHCS.

NOTICE

M8 SHCS tightening torque.
Use torque wrench (25 ft-lbs) to tighten SHCS to 17 ft-lb [23 Nm].

18.3.4 Drill holes in door for track fasteners.

NOTICE

Pull arm installation template.
Reference Chapter 16 for installation template.

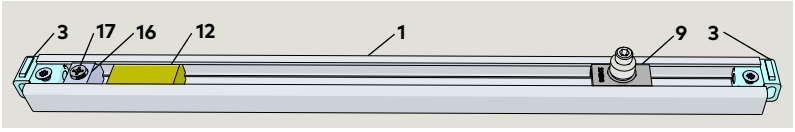
1. Use pull arm template to locate two track mounting holes on door.
2. Drill two holes in door for track mounting.

- Reference Fig. 18.3.6 for pull arm screw kit.

NOTICE

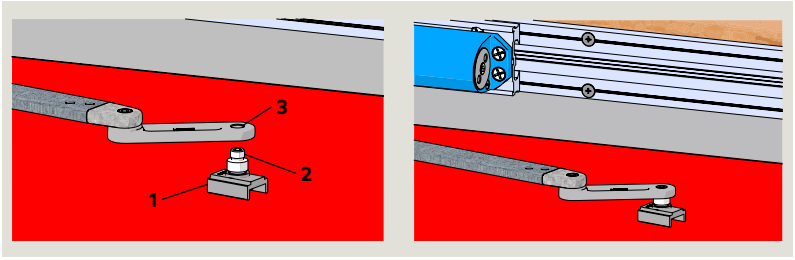
Check hole locations for level.
Check mounting hole locations for level prior to drilling holes.

Fig. 18.3.7 Track assembly



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

Fig. 18.3.8 Pivot pin/slide shoe attachment to CPD lever



1	Slide shoe	**3**	Pivot pin M8 SHCS
2	CPD lever mounting hole		

Fig. 18.3.9 Track mounted to slide shoe/pivot pin assembly

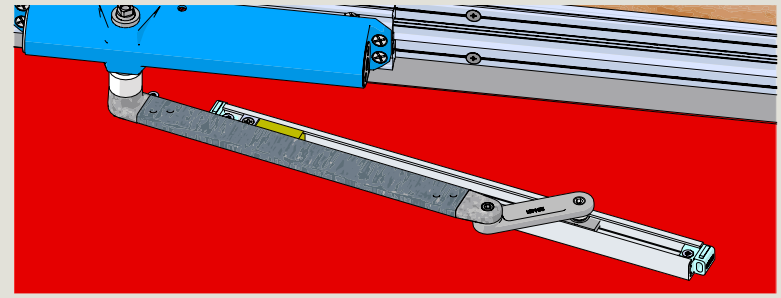
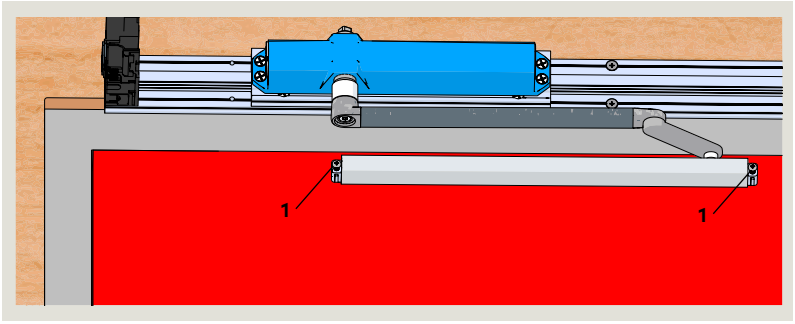
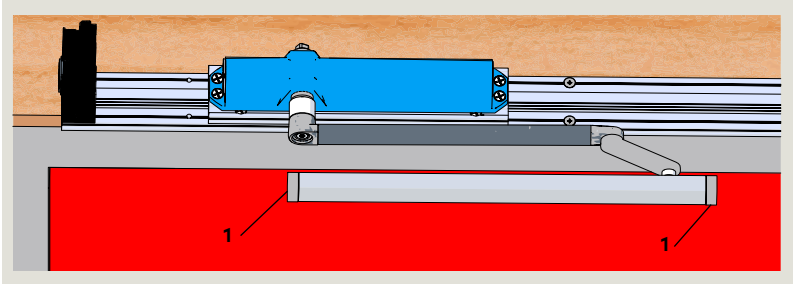


Fig. 18.3.10 Track assembly mounted to door



1 Pull arm fasteners

Fig. 18.3.11 Track end caps installed



1 Track end caps

18.3.5 Attach track pivot pin to CPD lever.

1. Remove fixing piece from one end of track.
2. Remove slide shoe/pivot pin assembly.
3. Position slide shoe/pivot pin under CPD lever mounting hole.
4. Thread pivot pin M8 SHCS into CPD lever mounting hole.
5. Use 6 mm hex key to tighten.

NOTICE

M8 SHCS tightening torque.
Use torque wrench (25 ft-lbs) to tighten SHCS to 5.9 - 7.4 ft-lb [8 - 10 Nm].

18.3.6 Install track onto slide shoe/pivot pin assembly.

1. Slide track onto slide shoe.
2. Reinstall fixing piece assembly.

18.3.7 Attach track assembly to door.

1. Rotate track assembly to door (Fig. 18.3.10).
2. Fasten track to door using fasteners selected in Para. 18.3.4.

NOTICE

Check track for level.
Check track for level as fasteners are tightened.

18.3.8 Attach end caps.

1. Attach end caps to track.

18.3.9 Door closer adjustments.

Reference Chapter 19.

19 8616 closer adjustments

19.1 8616 door closer adjustments

19.1.1 8616 closer adjustments.

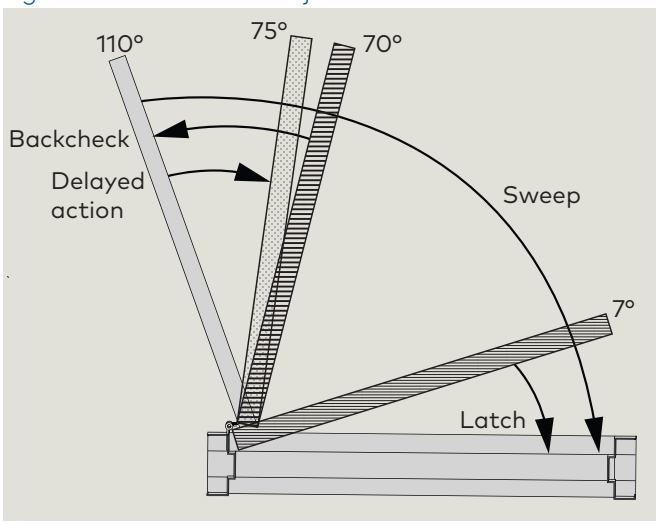
CAUTION

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

CAUTION

Do not back valves out beyond closer casting.

Fig. 19.1.1 8616 closer adjustments



19.1.2 Sweep speed (1) adjustment.

Adjust sweep speed from 70° to 10°.

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

19.1.3 Latch speed (2)adjustment.

1. Adjust latch speed from 10° to 0°

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

19.1.4 Backcheck (3) adjustment.

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

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

19.1.5 Backcheck positioning (5)adjustment.

Adjusting backcheck positioning will advance approximately 15° in the "ON" position. Shipped from factory fully "ON".

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

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

CAUTION

Maximum door opening angle: 110°.

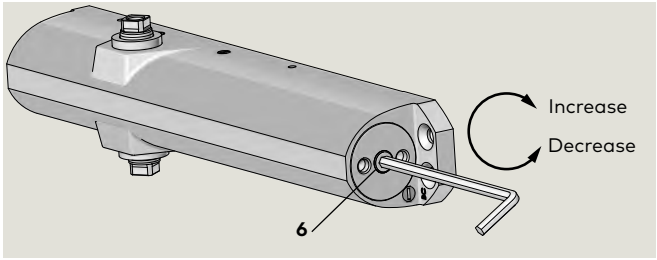
CAUTION

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

NOTICE

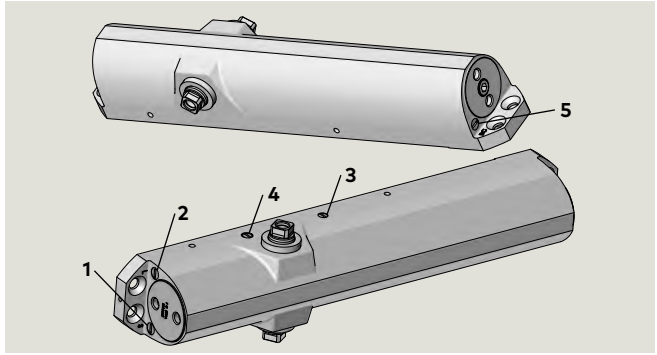
Closer supplied with a size 2 spring setting.

Fig. 19.1.2 8616 spring force adjustment



6 Spring force adjustment

Fig. 19.1.3 8616 closer adjustments



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

19.1.6 Delayed action (4)adjustment.

1. Adjust delayed action for door area from 110° to 75°.

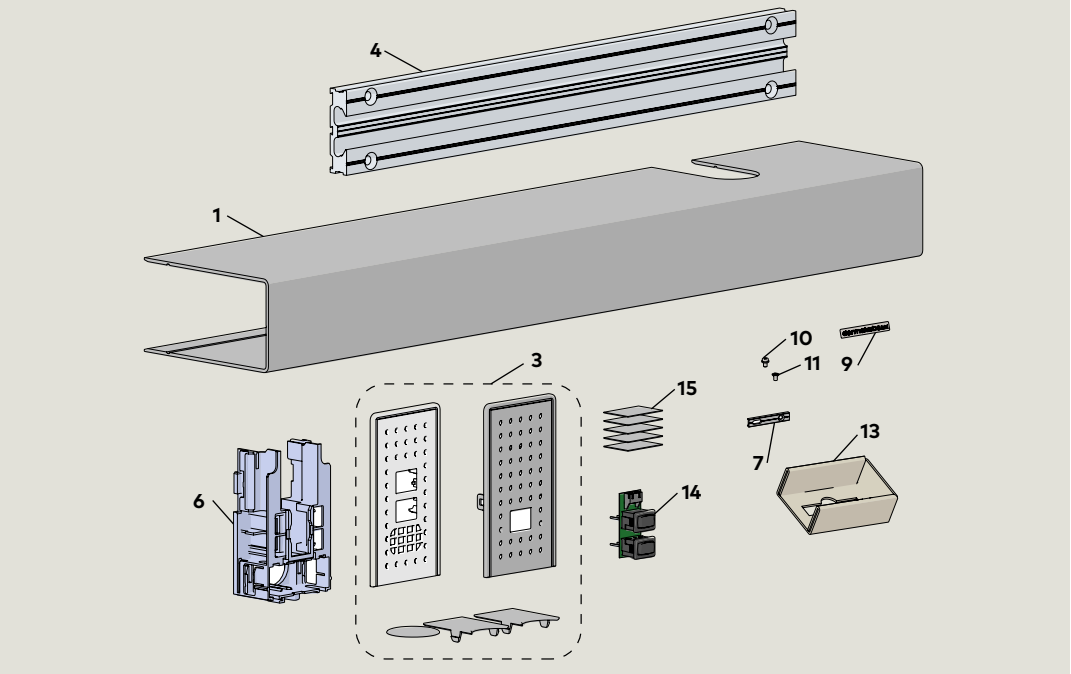
- Increase delayed action: Turn valve CCW.
- Decrease delayed action: Turn valve CW.

Appendix A - Fine cover professional cover kits

A.1 Professional cover kit DK3401-05X installation instructions – single door

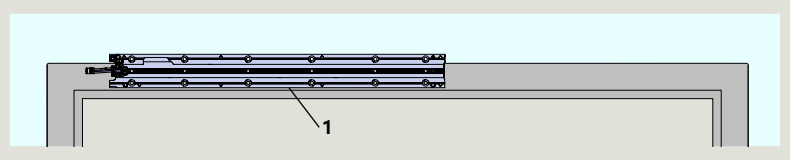
A1.1 Fine cover kit professional single, DK3401-05X.

Fig.A1.1 Fine cover kit professional single DK3401-05X



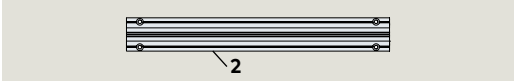
1 Fine cover single DC3459-01X
3 End cap set DC3466-01X
4 Backplate, ED oper FC Ext, DC3468-010
6 Cover bracket DC3481-010
7 Mtg, extr connector DC3491-010
9 dormakaba logo plate DD4613-010
10 M6 x 10 mm SHS with washer DF3495-01Z
11 M6 x 10 mm PFHS, DF3496-01Z
13 Logo placement template DP4613-001
14 Mode switches with cable DX3482-010
15 Wire retainer DX3493-010

Fig. A.1.2 ED100/ED250 mounting plate



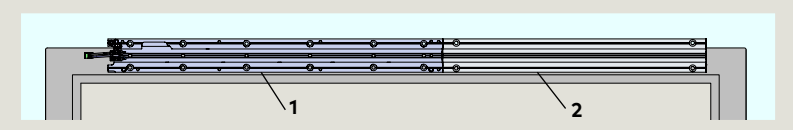
1 Mounting plate

Fig. A.1.3 Mounting plate extension



2 Mounting plate extension HC3614-010

Fig. A.1.4 Mounting plate extension installation



1 Mounting plate **2** Mounting plate extension

A.1.1 Install ED100/ED250 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 ED100/ED250. Ref. Chapter 2.

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

A.1.3 Mounting plate installation checks.

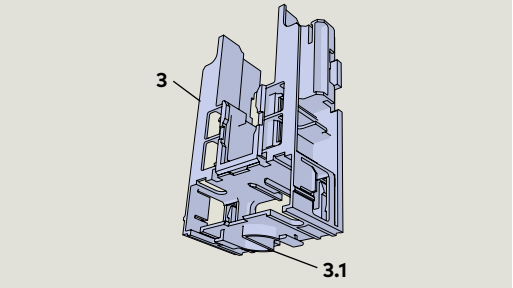
CAUTION

- 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

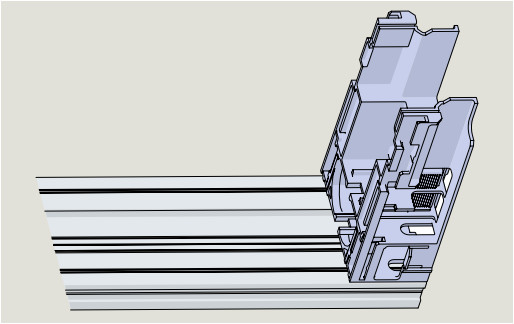
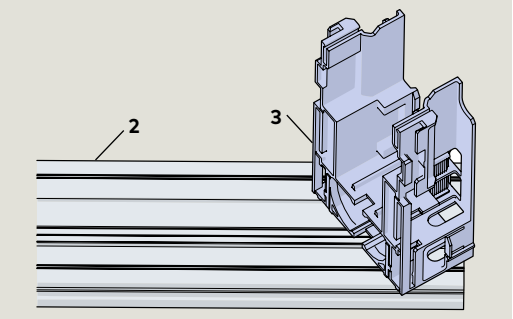


Fig. A.1.6 Install cover bracket

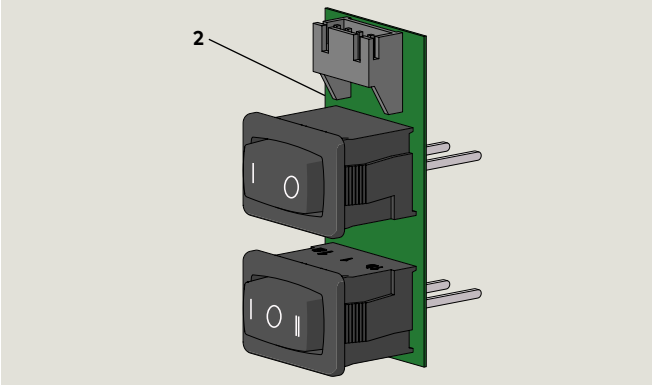


2 Mounting plate extension
3 Professional cover bracket HC3481-010

A1.5 Install Mode switch PCB into cover bracket.

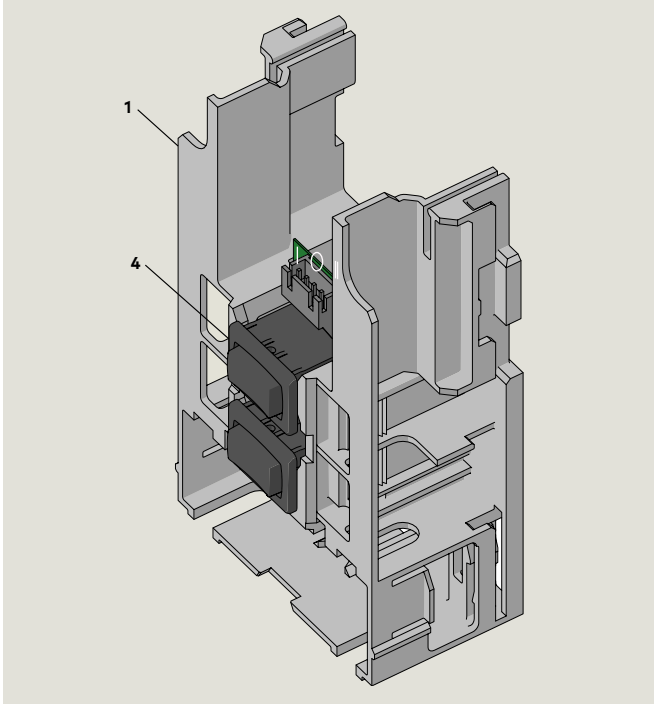
1. Install Mode switch PCB into cover bracket.

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. A1.11.

Fig. A1.10 Mode switch wiring

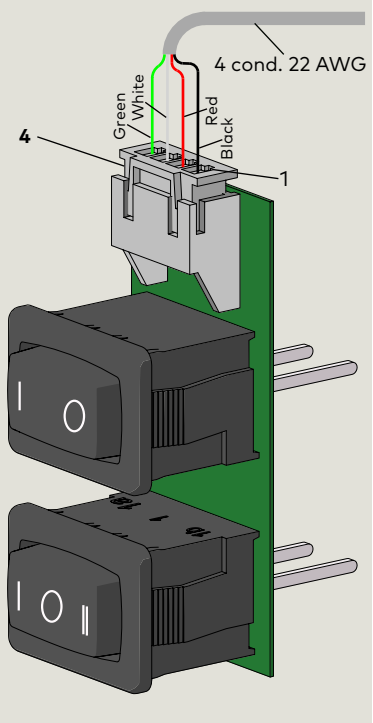
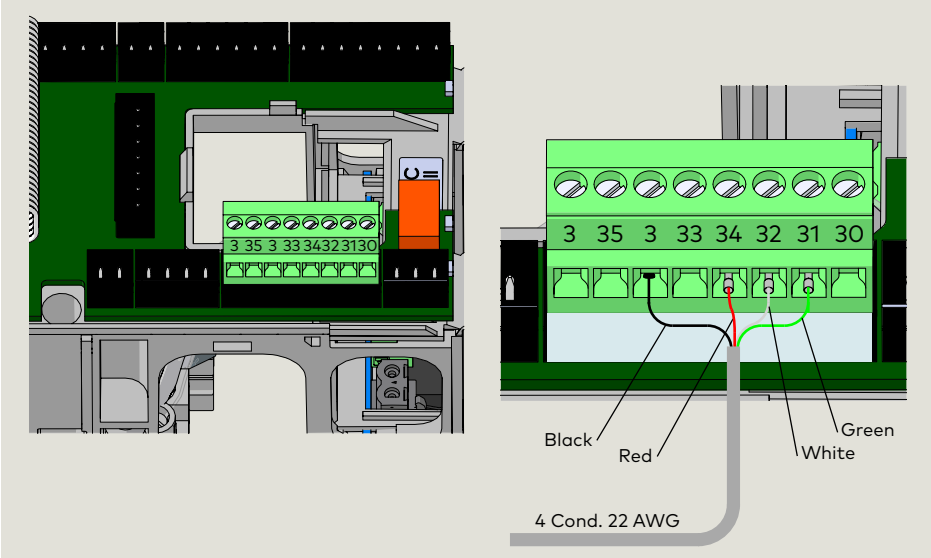


Fig. A1.11 Mode switch wiring at ED100LE terminal board



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.

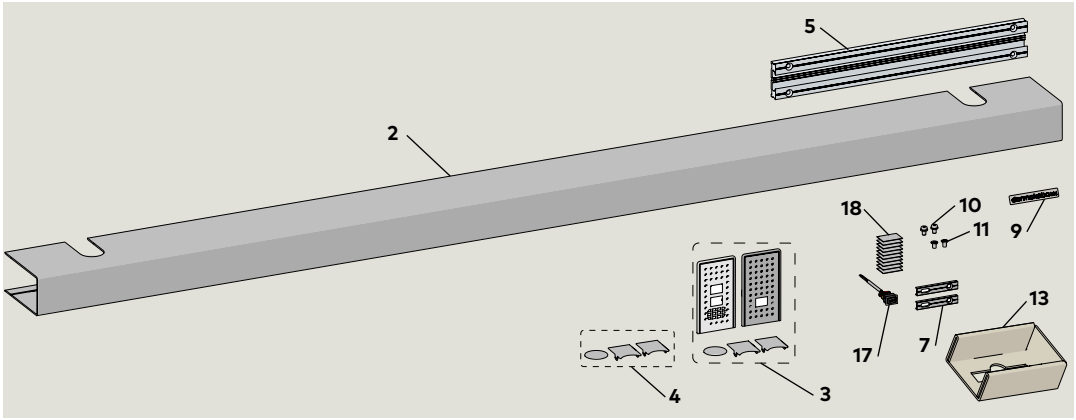
Fig. A.1.11 Label, service call



1 Label, Service call, DD3425-010

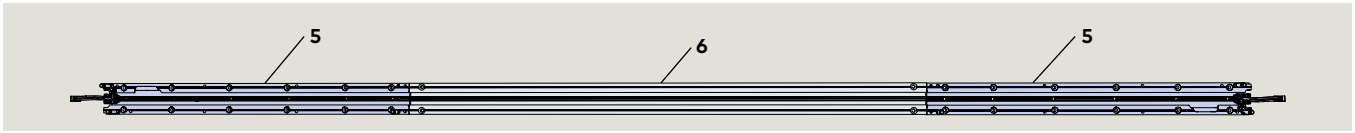
A.2.1 Professional cover kit DK3401-07X installation instructions – pair

Fig. A.2.1 Fine cover kit, professional pair DK3401-07X



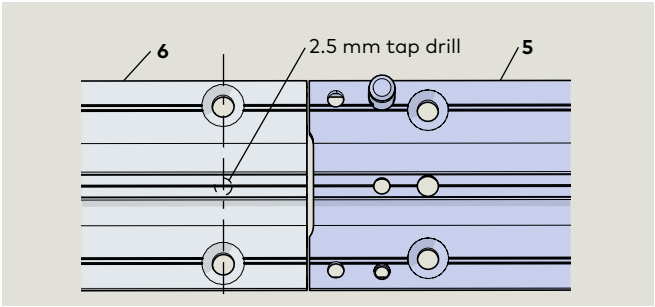
2 Fine cover, pair, DC3459-03X
3 End cap set, DC3466-01X
4 Spindle cap set, DC3466-02X
5 Backplate, ED operator FC Ext DC3468-010
7 Mounting extr connector DC3491-010
9 dormakaba logoplate DD4613-020
10 M6 x 10 mm SHS with washer DF3495-01Z
11 M6 x 10 mm PFHS, DF3496-01Z
13 Logo placement template DP4613-001
17 Mode switch, 3340 mm cable, DX3486-030
18 Wire retainer DX3493-010

Fig. A.2.2 Mounting plates positioned for assembly



5 Mounting plate, ED100/ED250 operator
6 Mounting plate, FC extension DC3468-010

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



5 Mounting plate, ED100/ED250 operator
6 Mounting plate, FC extension DC3468-010

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).

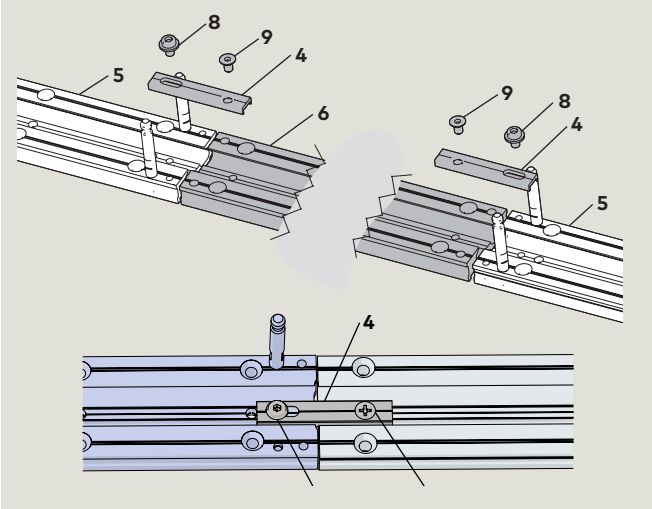
A.2.2 Assemble mounting plates.

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

CAUTION

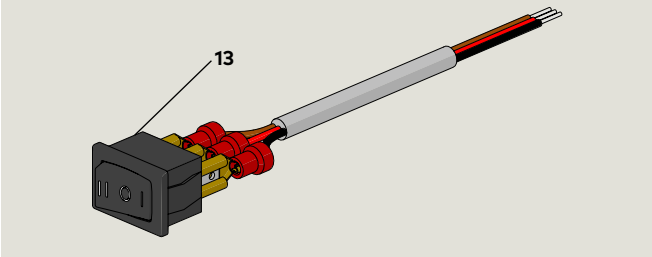
Verify mounting plate assembly dimensions with installation template (Para. 7.3).

Fig. A.2.4 Mounting plate connectors and fasteners



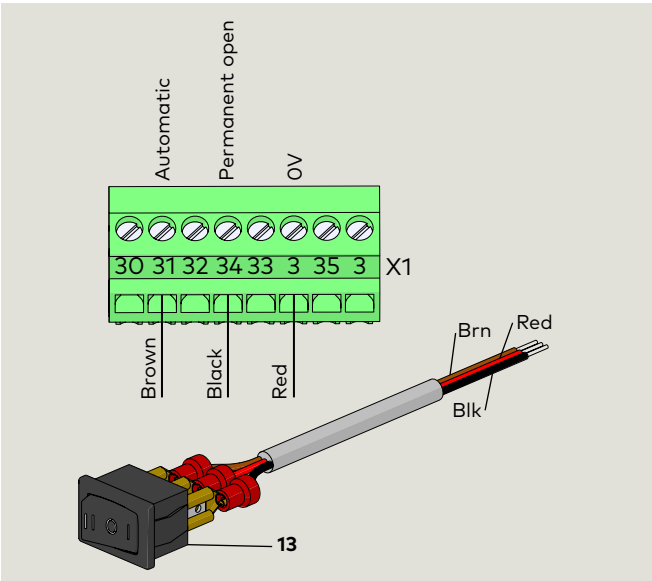
4 Mounting plate extr connector DC3491-010
5 ED100/ED250 operator mounting plate
6 Backplate, ED operator FC Ext DC3468-010
8 M6 x 10 mm SHS with washer DF3495-01Z
9 M6 x 10 mm PFHS DF3496-01Z

Fig. A.2.5 Mode switch and cable



13 Mode switch DX3486-030

Fig. A.2.6 ED50/ED100/ED250 mode switch wiring



13 Mode switch DX3486-030

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 ED operators onto their mounting plates (Para.)
2. Place end caps (2) at end of each operator.
3. Place cover over end caps and ED100/ED250 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.

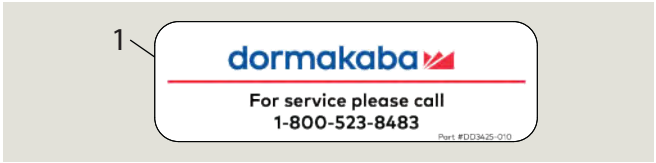
A.2.5 Install mode switch.

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

A.2.6 Install Service Call label.

1. Install Service Call label (Fig. A.2.7) at a convenient location.
- Service call label included in Low Energy label kit DK3137-030.

Fig. A.2.7 Label, service call



1 Label, Service call, DD3425-010

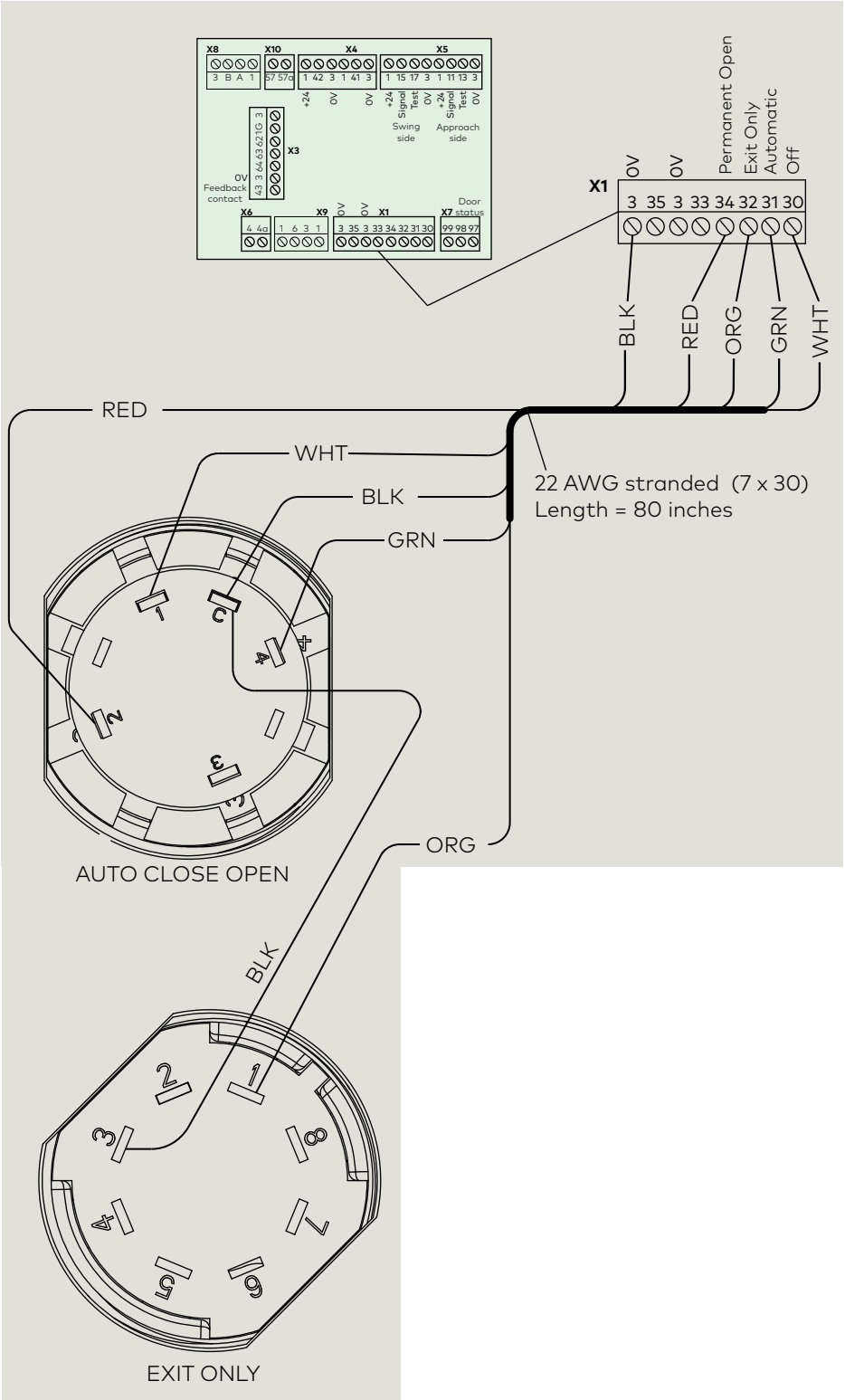
Appendix B - Key switch wiring diagrams

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

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



Fig. B1.1.2 Key switch panel wiring diagram



B2.1 DX4604-07G Key Switch Panel

Fig. B2.1.1 Key switch panel DX4604-07G

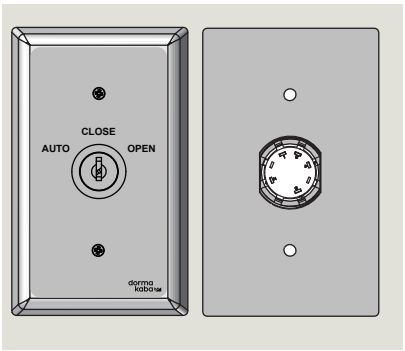
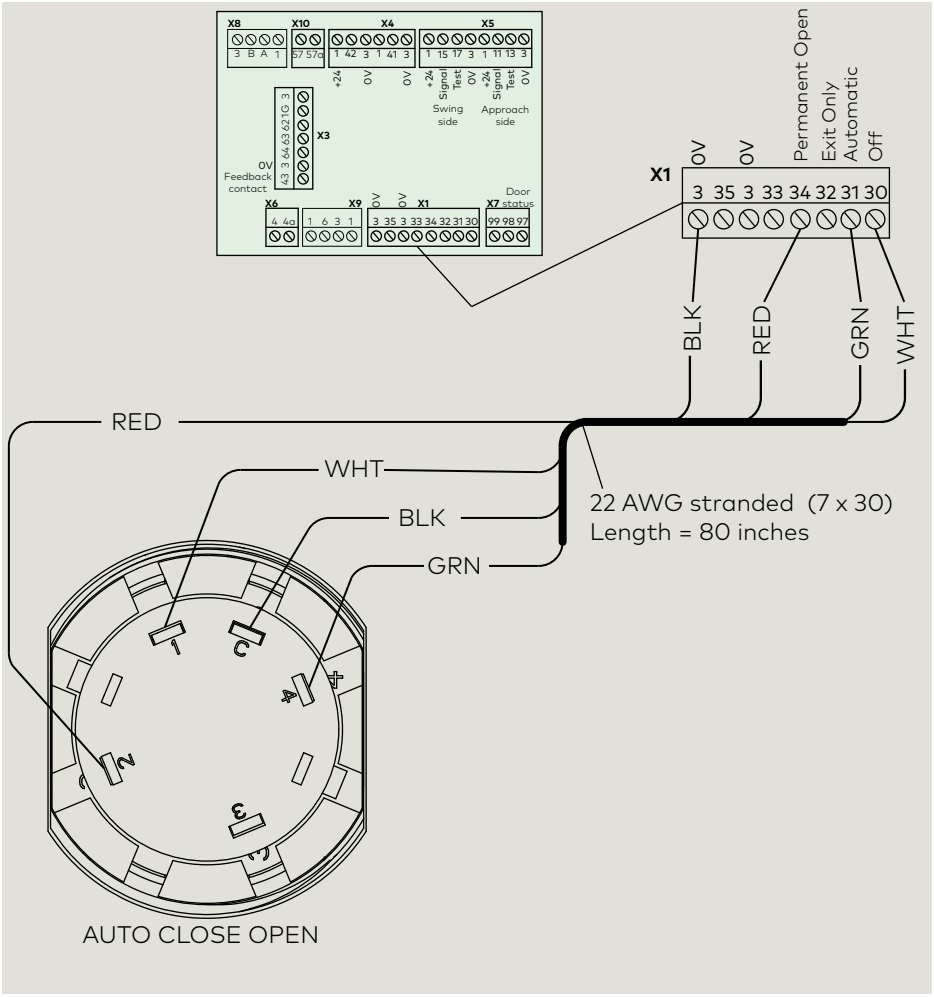


Fig. B2.1.2 Key switch panel wiring diagram



Appendix C - Knowing act switch wiring diagrams

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

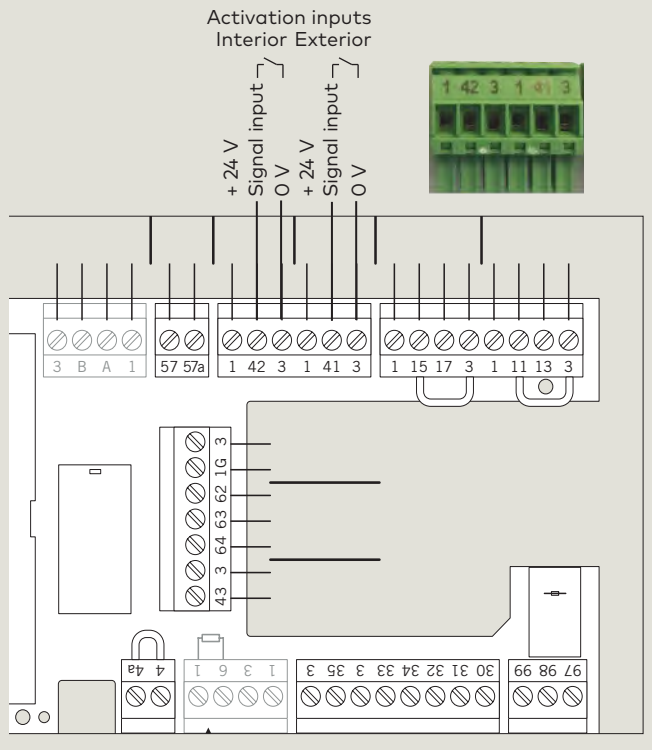
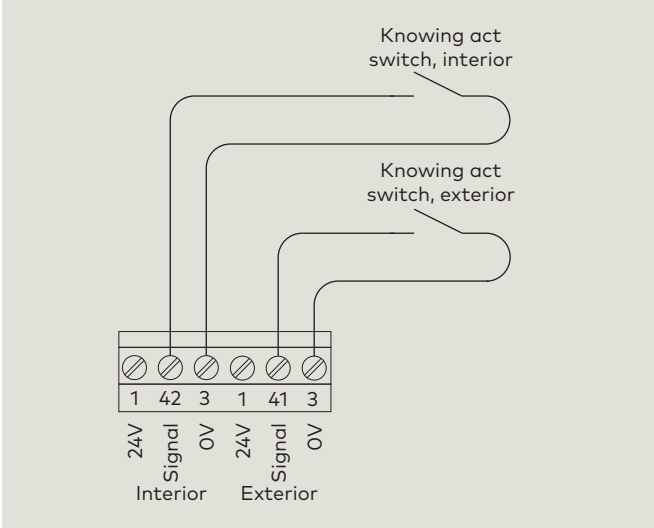


Fig. C1.2.2 Knowing act device wiring



24 V is available for illuminated knowing act devices.

NOTICE

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

Scan for product details and downloads.
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