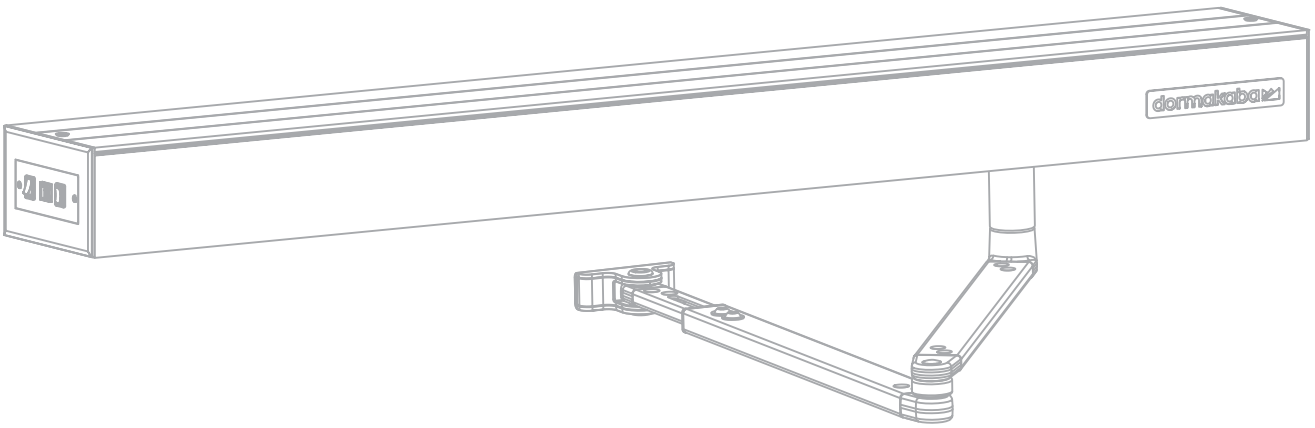
dormakaba

ED50/100/250

Swing door operator with narrow header

Installation Manual



DL4616-005 - 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 narrow header surface applied door configurations.

- Reference Para. 2.2 and 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.

1.1.2 dormakaba.us website.

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

1.1.3 Dimensions

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

1.1.4 Building codes and standards.

ED50/ED100/ED250 narrow 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 narrow header must be installed on an interior building surface.

2.1.2 ED50/ED100/ED250 narrow header exterior door installation.

NOTICE

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

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

2.2 Single door configuration examples

Fig. 2.2.1 RH pull

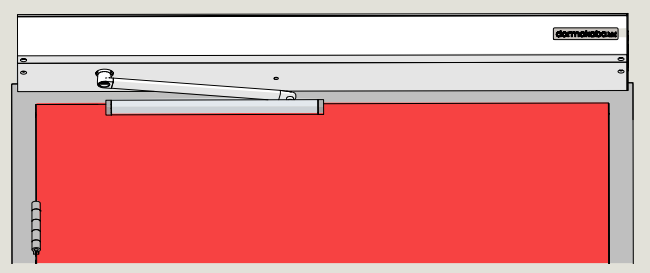


Fig. 2.2.2 RH pull as a push

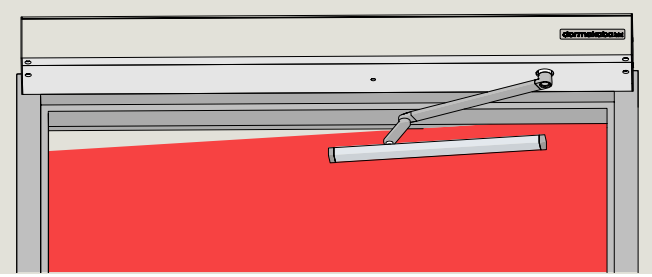
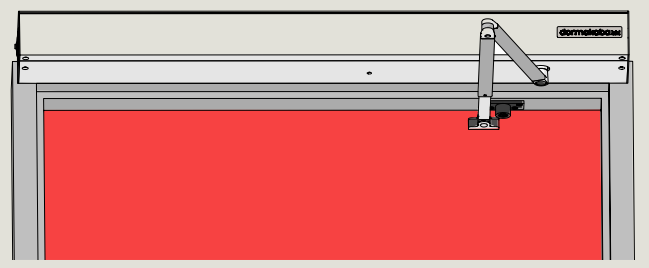


Fig. 2.2.3 RH push



2.3 Double door configuration examples

Fig. 2.3.1 Pull



Fig. 2.3.2 Push

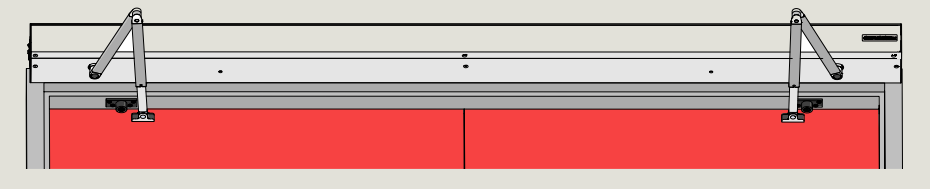
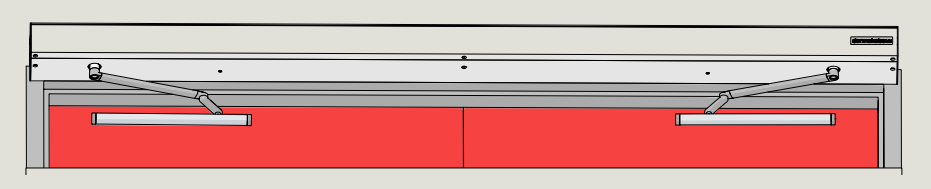
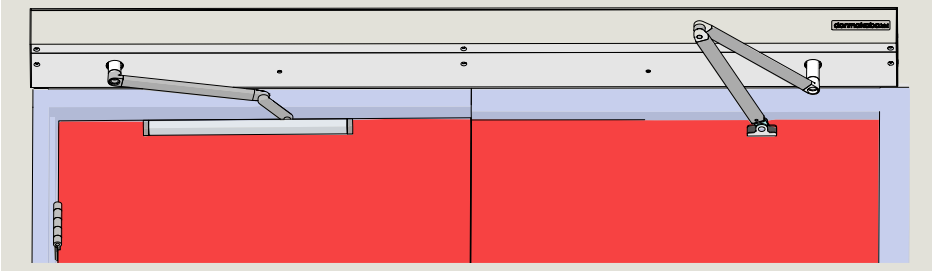


Fig. 2.3.3 Pull as push



2.4 Double egress door configuration examples

Fig. 2.4.1 RH Double egress



2.3 DS4500 ED50 surface applied (SA) Low energy (LE) door configurations

Table 2.3.1 ED50 SA push arm door configurations

Part number	Description	Finish
DS4500-01A	ED50, SA LE Push LH CL	Clear
DS4500-01B	ED50, SA LE Push LH DB	Dk Bronze
DS4500-01E	ED50, SA LE Push LH	Special
DS4500-02A	ED50, SA LE Push RH CL	Clear
DS4500-02B	ED50, SA LE Push RH DB	Dk Bronze
DS4500-02E	ED50, SA LE Push RH	Special
DS4500-03A	ED50, SA LE Push Pair CL	Clear
DS4500-03B	ED50, SA LE Push Pair DB	Dk Bronze
DS4500-03E	ED50, SA LE Push Pair	Special

Table 2.3.2 ED50 SA deep push arm door configurations

Part number	Description	Finish
DS4500-11A	ED50, SA LE Deep Push LH CL	Clear
DS4500-11B	ED50, SA LE Deep Push LH DB	Dk Bronze
DS4500-11E	ED50, SA LE Deep Push LH	Special
DS4500-12A	ED50, SA LE Deep Push RH CL	Clear
DS4500-12B	ED50, SA LE Deep Push RH DB	Dk Bronze
DS4500-12E	ED50, SA LE Deep Push RH	Special
DS4500-13A	ED50, SA LE Deep Push Pair CL	Clear
DS4500-13B	ED50, SA LE Deep Push Pair DB	Dk Bronze
DS4500-13E	ED50, SA LE Deep Push Pair	Special

Table 2.3.3 ED50 SA pull arm door configurations

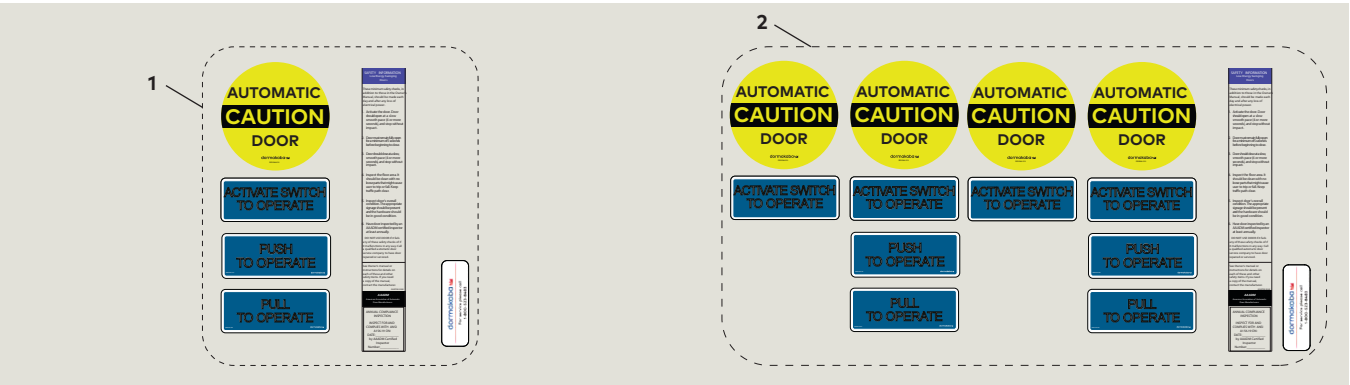
Part number	Description	Finish
DS4500-21A	ED50, SA LE Pull LH CL	Clear
DS4500-21B	ED50, SA LE Pull LH DB	Dk Bronze
DS4500-21E	ED50, SA LE Pull LH	Special
DS4500-22A	ED50, SA LE Pull RH CL	Clear
DS4500-22B	ED50, SA LE Pull RH DB	Dk Bronze
DS4500-22E	ED50, SA LE Pull RH	Special
DS4500-23A	ED50, SA LE Pull Pair CL	Clear
DS4500-23B	ED50, SA LE Pull Pair DB	Dk Bronze
DS4500-23E	ED50, SA LE Pull Pair	Special

Table 2.3.4 ED50 SA deep pull arm door configurations

Part number	Description	Finish
DS4500-31A	ED50, SA LE Deep Pull LH CL	Clear
DS4500-31B	ED50, SA LE Deep Pull LH DB	Dk Bronze
DS4500-31E	ED50, SA LE Deep Pull LH	Special
DS4500-32A	ED50, SA LE Deep Pull RH CL	Clear
DS4500-32B	ED50, SA LE Deep Pull RH DB	Dk Bronze
DS4500-32E	ED50, SA LE Deep Pull RH	Special
DS4500-33A	ED50, SA LE Deep Pull Pair CL	Clear
DS4500-33B	ED50, SA LE Deep Pull Pair DB	Dk Bronze
DS4500-33E	ED50, SA LE Deep Pull Pair	Special

2.3.1 DS4500 ED50 surface applied (SA) LE hardware

Fig. 2.3.1.1 ED50 SA hardware



Reference Table 2.3.1.1, next page.

Fig. 2.3.1.1 ED50 SA hardware

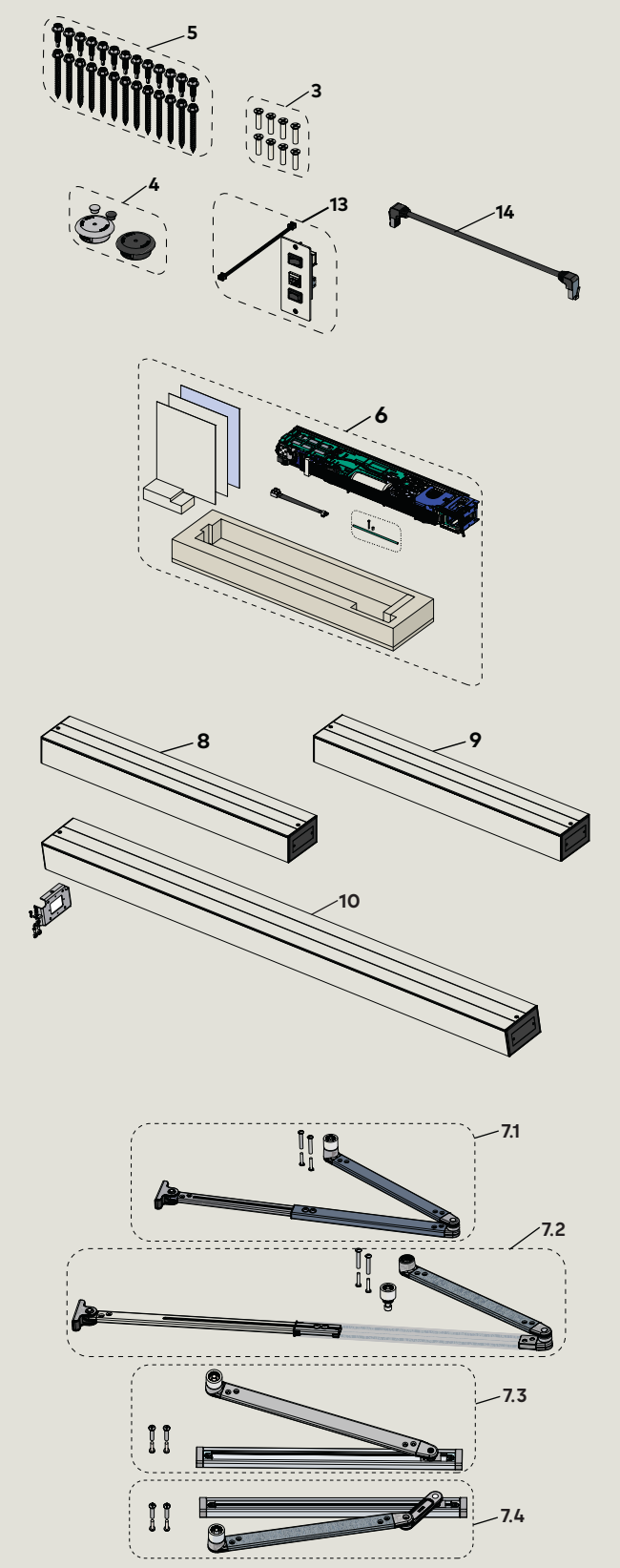


Table 2.3.1.1 ED50 SA hardware

Item	Part number	Description	LH	RH	PR
			-x1	-x2	-x3
1	DK3137-010	Kit, ED operator label, LE single	1	1	
2	DK3137-030	Kit, ED operator label, LE pair			1
3	DK4617-010	Screw package,ED operator mounting	1	1	2
4	DK4620-010	Plug package, 4x6 header	1	1	2
5	DK4654-010	Screw package, 4x6 header mounting	1	1	1
6	DK4700-010	Kit, ED50 operator	1	1	2
Reference Para. 2.3 for door arm configurations					
7.1	DK4709-01_	Kit, Push arm	1	1	2
7.2	DK4709-02_	Kit, Deep push arm	1	1	2
7.3	DK4709-11_	Kit, Pull arm	1	1	2
7.4	DK4709-12_	Kit, Deep pull arm	1	1	2
8	DS4615-01x	4x6 header assembly LH	1		
9	DS4615-02x	4x6 header assembly RH		1	
10	DS4615-03x	4x6 header assembly PR			1
11	DX3484-030	ED power connect cable 3400 mm (pair)			1
12	DX3485-030	ED sync cable 2030 mm (pair)			1
13	DX4604-05C	Kit, mode switch RJ45 10 ft FRC	1	1	1
14	DX4607-010	Communication cable, 90 Deg, RJ45 3 ft	1	1	1

2.4 DS4501 ED100 surface applied (SA) low energy (LE) door configurations

Table 2.4.1 ED100 SA LE push arm door configurations

Part number	Description	Finish
DS4501-01A	ED100, SA LE Push LH CL	Clear
DS4501-01B	ED100, SA LE Push LH DB	Dk Bronze
DS4501-01E	ED100, SA LE Push LH	Special
DS4501-02A	ED100, SA LE Push RH CL	Clear
DS4501-02B	ED100, SA LE Push RH DB	Dk Bronze
DS4501-02E	ED100, SA LE Push RH	Special
DS4501-03A	ED100, SA LE Push Pair CL	Clear
DS4501-03B	ED100, SA LE Push Pair DB	Dk Bronze
DS4501-03E	ED100, SA LE Push Pair	Special

Table 2.4.2 ED100 SA LE deep push arm door configurations

Part number	Description	Finish
DS4501-11A	ED50, SA LE Deep Push LH CL	Clear
DS4501-11B	ED50, SA LE Deep Push LH DB	Dk Bronze
DS4501-11E	ED50, SA LE Deep Push LH	Special
DS4501-12A	ED50, SA LE Deep Push RH CL	Clear
DS4501-12B	ED50, SA LE Deep Push RH DB	Dk Bronze
DS4501-12E	ED50, SA LE Deep Push RH	Special
DS4501-13A	ED50, SA LE Deep Push Pair CL	Clear
DS4501-13B	ED50, SA LE Deep Push Pair DB	Dk Bronze
DS4501-13E	ED50, SA LE Deep Push Pair	Special

Table 2.4.3 ED100 SA LE pull arm door configurations

Part number	Description	Finish
DS4501-21A	ED100, SA LE Pull LH CL	Clear
DS4501-21B	ED100, SA LE Pull LH DB	Dk Bronze
DS4501-21E	ED100, SA LE Pull LH	Special
DS4501-22A	ED100, SA LE Pull RH CL	Clear
DS4501-22B	ED100, SA LE Pull RH DB	Dk Bronze
DS4501-22E	ED100, SA LE Pull RH	Special
DS4501-23A	ED100, SA LE Pull Pair CL	Clear
DS4501-23B	ED100, SA LE Pull Pair DB	Dk Bronze
DS4501-23E	ED100, SA LE Pull Pair	Special

Table 2.4.4 ED100 SA LE deep pull arm door configurations

Part number	Description	Finish
DS4501-31A	ED100, SA LE Deep Pull LH CL	Clear
DS4501-31B	ED100, SA LE Deep Pull LH DB	Dk Bronze
DS4501-31E	ED100, SA LE Deep Pull LH	Special
DS4501-32A	ED100, SA LE Deep Pull RH CL	Clear
DS4501-32B	ED100, SA LE Deep Pull RH DB	Dk Bronze
DS4501-32E	ED100, SA LE Deep Pull RH	Special
DS4501-33A	ED100, SA LE Deep Pull Pair CL	Clear
DS4501-33B	ED100, SA LE Deep Pull Pair DB	Dk Bronze
DS4501-33E	ED100, SA LE Deep Pull Pair	Special

Table 2.4.5 ED100 SA LE deep reveal pull arm door configurations

Part number	Description	Finish
DS4501-34A	ED100, SA LE Deep Reveal Pull LH CL	Clear
DS4501-34B	ED100, SA LE Deep Reveal Pull LH DB	Dk Bronze
DS4501-34E	ED100, SA LE Deep Reveal Pull LH	Special
DS4501-35A	ED100, SA LE Deep Reveal Pull RH CL	Clear
DS4501-35B	ED100, SA LE Deep Reveal Pull RH DB	Dk Bronze
DS4501-35E	ED100, SA LE Deep Reveal Pull RH	Special
DS4501-36A	ED100, SA LE Deep Reveal Pull Pair CL	Clear
DS4501-36B	ED100, SA LE Deep Reveal Pull Pair DB	Dk Bronze
DS4501-36E	ED100, SA LE Deep Reveal Pull Pair	Special

2.4.1 DS4501 ED100 surface applied (SA) LE hardware

Fig. 2.4.1.1 ED100 SA LE hardware - continued on next page

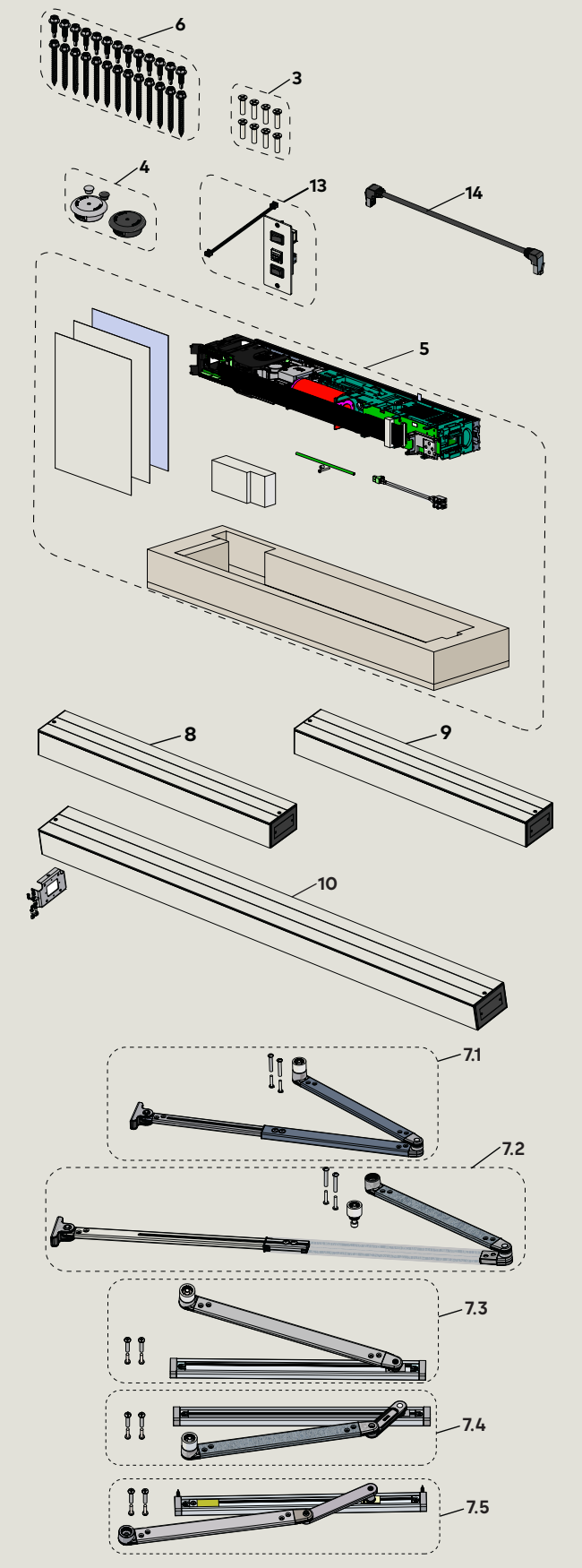


Table 2.4.1.1 ED100 SA LE hardware

Item	Part number	Description	LH	RH	PR
			-x1	-x2	-x3
1	DK3137-010	Kit, ED operator label, LE single	1	1	
2	DK3137-030	Kit, ED operator label, LE pair			1
3	DK4617-010	Screw package,ED operator mounting	1	1	2
4	DK4620-010	Plug package, 4x6 header	1	1	2
5	DK4702-010	Kit, ED100 operator	1	1	2
6	DK4654-010	Screw package, 4x6 header mounting	1	1	1
Reference Para. 2.4 for door arm configurations					
7.1	DK4709-01_	Kit, Push arm	1	1	2
7.2	DK4709-02_	Kit, Deep push arm	1	1	2
7.3	DK4709-11_	Kit, Pull arm	1	1	2
7.4	DK4709-12_	Kit, Deep pull arm	1	1	2
7.5	DK4709-13_	Kit, Deep reveal pull arm	1	1	2
8	DS4615-01x	4x6 header assembly LH	1		
9	DS4615-02x	4x6 header assembly RH		1	
10	DS4615-03x	4x6 header assembly PR			1
11	DX3484-030	ED power connect cable 3400 mm (pair)			1
12	DX3485-030	ED sync cable 2030 mm (pair)			1
13	DX4604-05C	Kit, mode switch RJ45 10 ft FRC	1	1	1
14	DX4607-010	Communication cable, 90 Deg, RJ45 3 ft	1	1	1
15	DS4633-001	Door stop assembly, 1/4" **Push arm only**	1	1	2

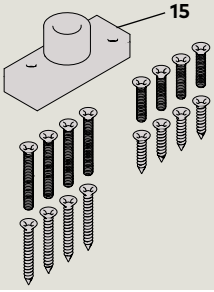
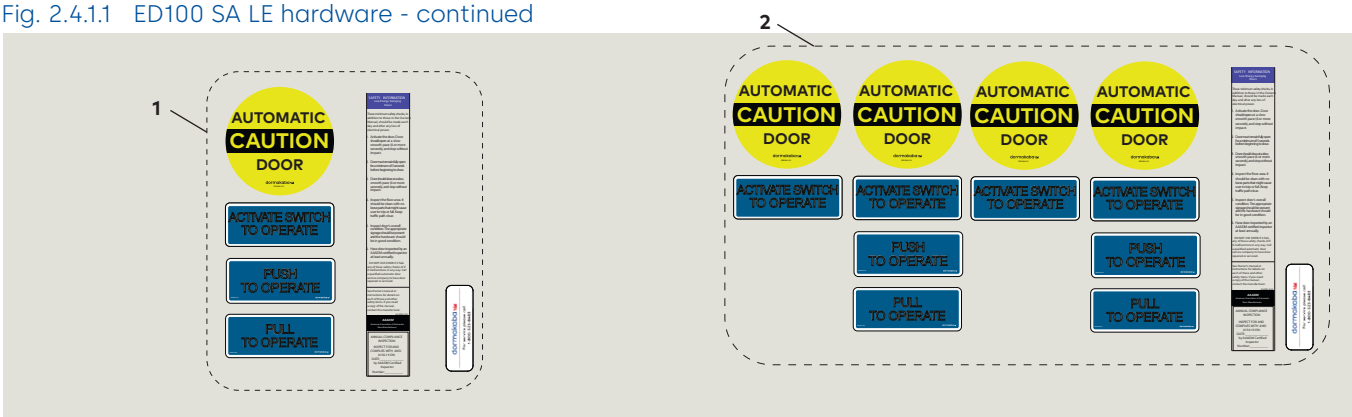


Fig. 2.4.1.1 ED100 SA LE hardware - continued



2.5 DS4501 ED100 surface applied (SA) low energy (LE) double egress door configurations

Table 2.5.1 ED100 SA LE double egress door configurations

Part number	Description	Finish
DS4501-43A	ED100, SA FE Double Egress CL	Clear
DS4501-43B	ED100, SA FE Double Egress DB	Dk Bronze
DS4501-43E	ED100, SA FE Double Egress	Special

2.5.1 DS4501 ED100 surface applied (SA) LE double egress hardware

Fig. 2.5.1.1 ED100 SA LE double egress hardware

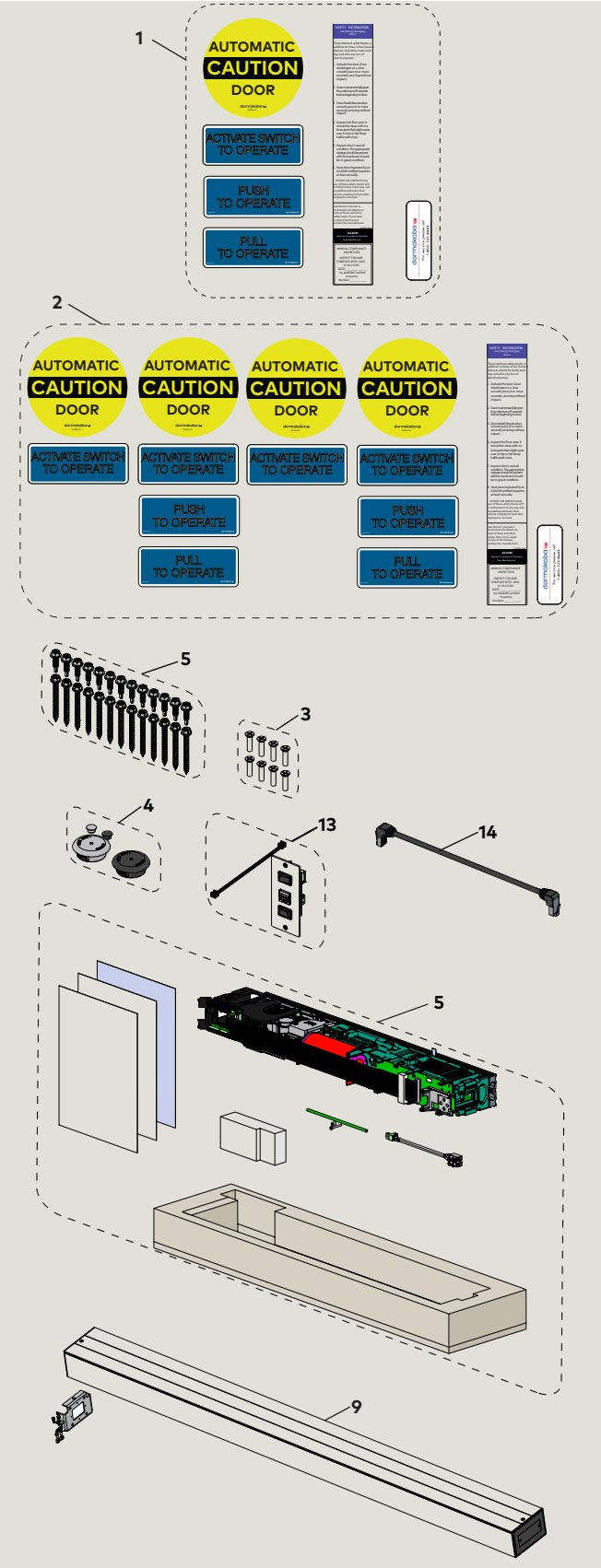
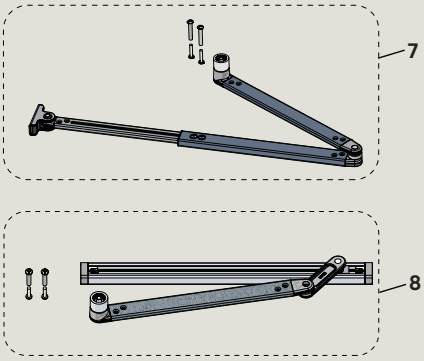


Table 2.5.1.1 ED100 SA LE double egress hardware

Item	Part number	Description
1	DK3137-010	Kit, ED operator label, LE single
2	DK3137-030	Kit, ED operator label, LE pair
3	DK4617-010	Screw package,ED operator mounting
4	DK4620-010	Plug package, 4x6 header
5	DK4654-010	Screw package, 4x6 header mounting
6	DK4702-010	Kit, ED100 operator
7	DK4709-01_	Kit, Push arm
8	DK4709-12_	Kit, Deep pull arm
9	DS4615-03x	4x6 header assembly PR
10	DS4633-001	Door stop assembly, 1/4"
11	DX3484-030	ED power connect cable 3400 mm (pair)
12	DX3485-030	ED sync cable 2030 mm (pair)
13	DX4604-05C	Kit, mode switch RJ45 10 ft FRC
14	DX4607-010	Communication cable, 90 Deg, RJ45 3 ft



2.6 DS4502 ED100 surface applied (SA) full energy (FE) door configurations

Table 2.6.1 ED100 SA FE push arm door configurations

Part number	Description	Finish
DS4502-01A	ED100, SA FE Push LH CL	Clear
DS4502-01B	ED100, SA FE Push LH DB	Dk Bronze
DS4502-01E	ED100, SA FE Push LH	Special
DS4502-02A	ED100, SA FE Push RH CL	Clear
DS4502-02B	ED100, SA FE Push RH DB	Dk Bronze
DS4502-02E	ED100, SA FE Push RH	Special
DS4502-03A	ED100, SA FE Push Pair CL	Clear
DS4502-03B	ED100, SA FE Push Pair DB	Dk Bronze
DS4501-03E	ED100, SA FE Push Pair	Special

Table 2.6.2 ED100 SA FE deep push arm door configurations

Part number	Description	Finish
DS4502-11A	ED100, SA FE Deep Push LH CL	Clear
DS4502-11B	ED100, SA FE Deep Push LH DB	Dk Bronze
DS4502-11E	ED100, SA FE Deep Push LH	Special
DS4502-12A	ED100, SA FE Deep Push RH CL	Clear
DS4502-12B	ED100, SA FE Deep Push RH DB	Dk Bronze
DS4502-12E	ED100, SA FE Deep Push RH	Special
DS4502-13A	ED100, SA FE Deep Push Pair CL	Clear
DS4502-13B	ED100, SA FE Deep Push Pair DB	Dk Bronze
DS4502-13E	ED100, SA FE Deep Push Pair	Special

Table 2.6.3 ED100 SA FE pull arm door configurations

Part number	Description	Finish
DS4502-21A	ED100, SA FE Pull LH CL	Clear
DS4502-21B	ED100, SA FE Pull LH DB	Dk Bronze
DS4502-21E	ED100, SA FE Pull LH	Special
DS4502-22A	ED100, SA FE Pull RH CL	Clear
DS4502-22B	ED100, SA FE Pull RH DB	Dk Bronze
DS4501-22E	ED100, SA FE Pull RH	Special
DS4502-23A	ED100, SA FE Pull Pair CL	Clear
DS4502-23B	ED100, SA FE Pull Pair DB	Dk Bronze
DS4502-23E	ED100, SA FE Pull Pair	Special

Table 2.6.4 ED100 SA FE deep pull arm door configurations

Part number	Description	Finish
DS4502-31A	ED100, SA FE Deep Pull LH CL	Clear
DS4502-31B	ED100, SA FE Deep Pull LH DB	Dk Bronze
DS4502-31E	ED100, SA FE Deep Pull LH	Special
DS4502-32A	ED100, SA FE Deep Pull RH CL	Clear
DS4502-32B	ED100, SA FE Deep Pull RH DB	Dk Bronze
DS4502-32E	ED100, SA FE Deep Pull RH	Special
DS4502-33A	ED100, SA FE Deep Pull Pair CL	Clear
DS4502-33B	ED100, SA FE Deep Pull Pair DB	Dk Bronze
DS4502-33E	ED100, SA FE Deep Pull Pair	Special

Table 2.6.5 ED100 SA LE deep reveal pull arm door configurations

Part number	Description	Finish
DS4502-34A	ED100, SA FE Deep Reveal Pull LH CL	Clear
DS4502-34B	ED100, SA FE Deep Reveal Pull LH DB	Dk Bronze
DS4502-34E	ED100, SA FE Deep Reveal Pull LH	Special
DS4502-35A	ED100, SA FE Deep Reveal Pull RH CL	Clear
DS4502-35B	ED100, SA FE Deep Reveal Pull RH DB	Dk Bronze
DS4502-35E	ED100, SA FE Deep Reveal Pull RH	Special
DS4502-36A	ED100, SA FE Deep Reveal Pull Pair CL	Clear
DS4502-36B	ED100, SA FE Deep Reveal Pull Pair DB	Dk Bronze
DS4502-36E	ED100, SA FE Deep Reveal Pull Pair	Special

2.6.1 DS4502 ED100 surface applied (SA) FE hardware

Fig. 2.6.1.1 ED100 SA FE hardware - continued on next page

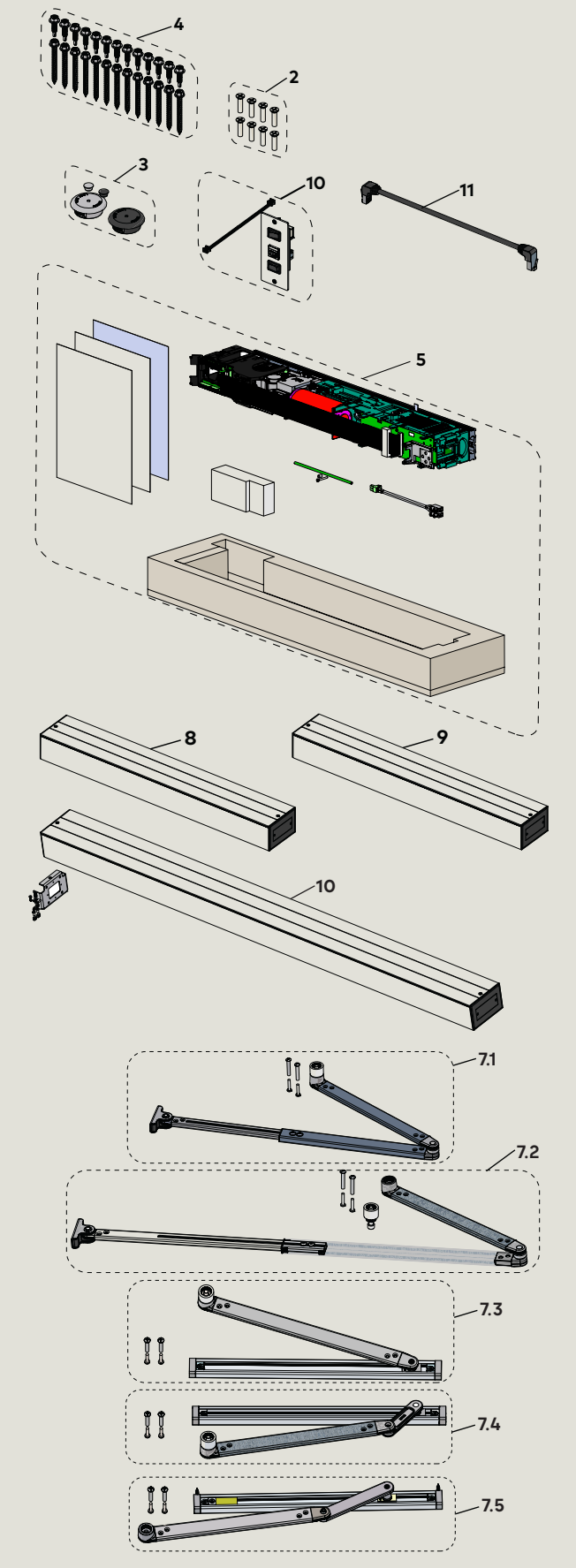


Table 2.6.1.1 ED100 SA FE hardware

Item	Part number	Description	LH -x1	RH -x2	PR -x3
1.1	DK3137-110	Kit, ED operator label, FE single	1	1	
1.2	DK3137-130	Kit, ED operator label, FE pair			1
2	DK4617-010	Screw package,ED operator mounting	1	1	2
3	DK4620-010	Plug package, 4x6 header	1	1	2
4	DK4654-010	Screw package, 4x6 header mounting	1	1	1
5	DK4702-010	Kit, ED100 operator	1	1	2
Reference Para. 2.6 for door arm configurations					
7.1	DK4709-01_	Kit, Push arm	1	1	2
7.2	DK4709-02_	Kit, Deep push arm	1	1	2
7.3	DK4709-11_	Kit, Pull arm	1	1	2
7.4	DK4709-12_	Kit, Deep pull arm	1	1	2
7.5	DK4709-13_	Kit, Deep reveal pull arm	1	1	2
8	DS4615-01x	4x6 header assembly LH	1		
9	DS4615-02x	4x6 header assembly RH		1	
10	DS4615-03x	4x6 header assembly PR			1
10	DX4604-05C	Kit, mode switch RJ45 10 ft FRC	1	1	1
11	DX4607-010	Communication cable, 90 Deg, RJ45 3 ft	1	1	1
12	DX3484-030	ED power connect cable 3400 mm (pair)			1
13	DX3485-030	ED sync cable 2030 mm (pair)			1
15	DS4633-001	Door stop assembly, 1/4" **Push arm only**	1	1	2

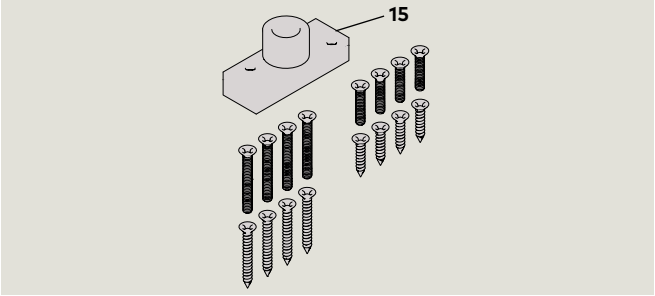
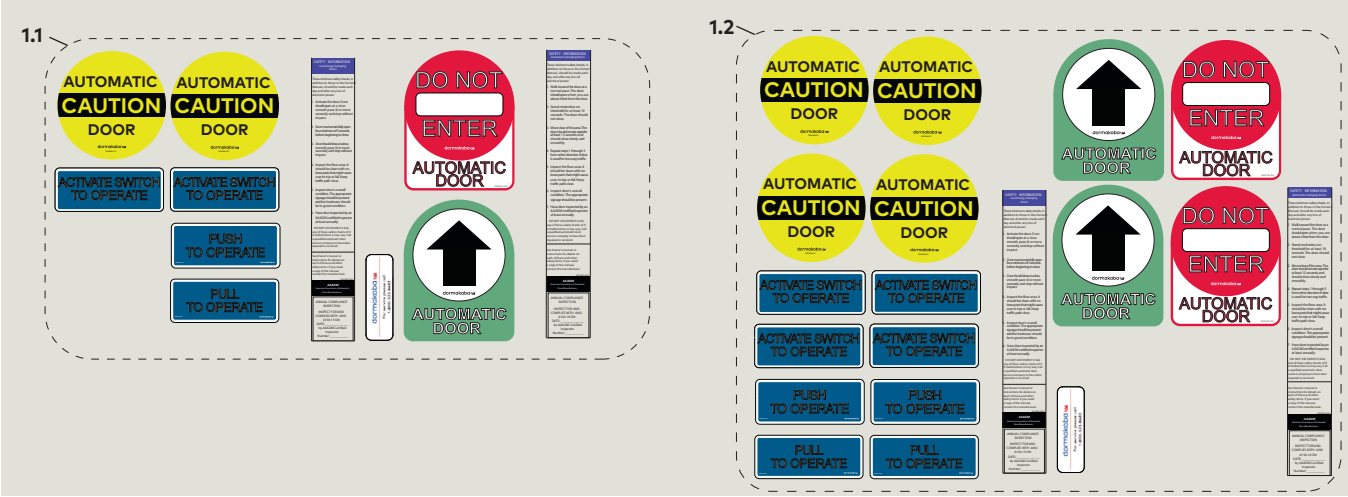


Fig. 2.6.1.1 ED100 SA FE hardware - continued



2.7 DS4502 ED100 surface applied (SA) full energy (FE) double egress door configurations

Table 2.7.1 ED100 SA FE double egress door configurations

Part number	Description	Finish
DS4502-43A	ED100, SA FE Double Egress CL	Clear
DS4502-43B	ED100, SA FE Double Egress DB	Dk Bronze
DS4502-43E	ED100, SA FE Double Egress	Special

2.7.1 DS4502 ED100 surface applied (SA) FE double egress hardware

Fig. 2.7.1.1 ED100 SA FE double egress hardware

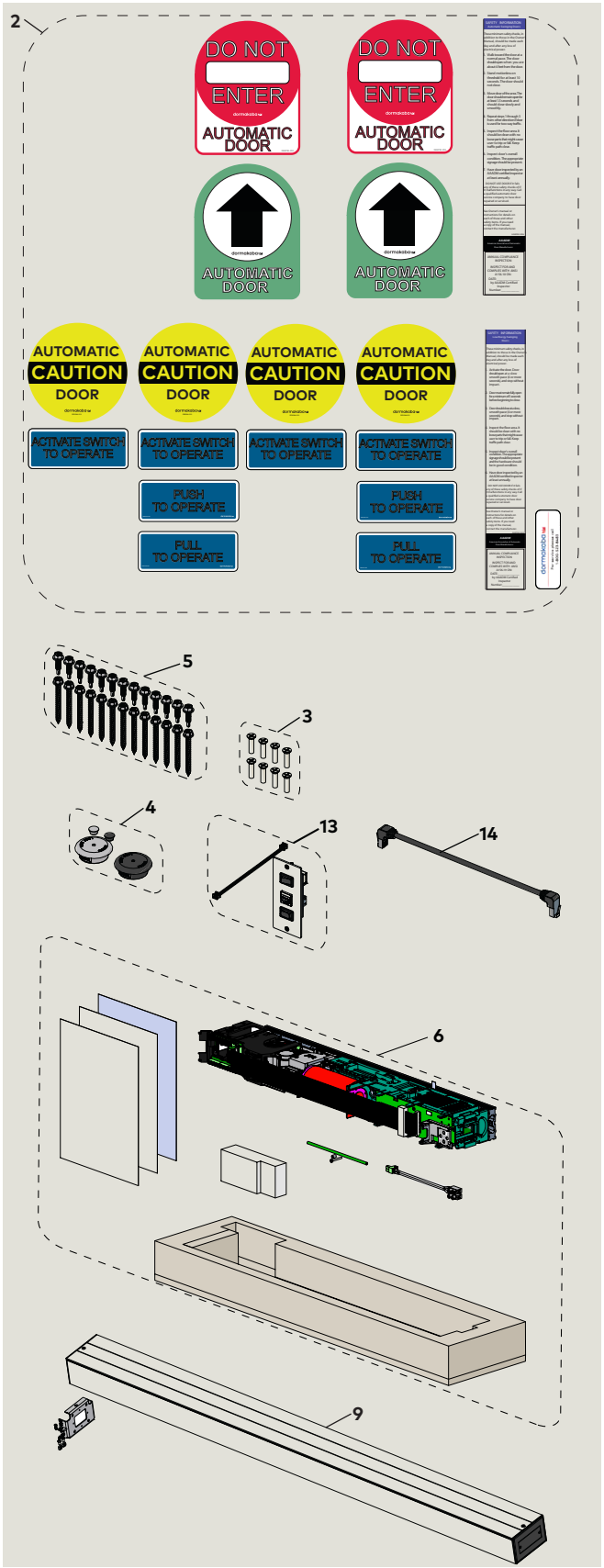
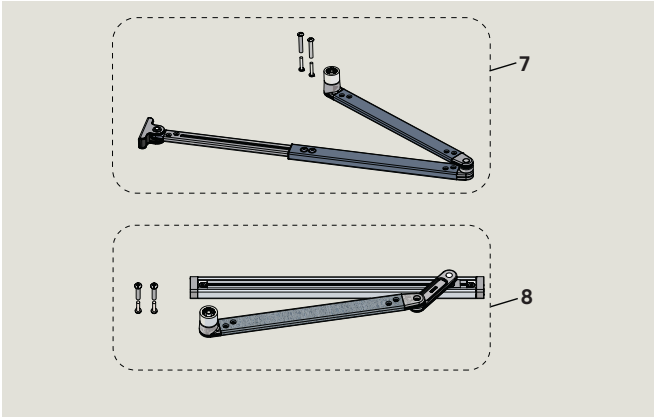


Table 2.7.1.1 ED100 SA FE double egress hardware

Item	Part number	Description
1	DK3137-110	Kit, ED operator label, FE single
2	DK3137-130	Kit, ED operator label, FE pair
3	DK4617-010	Screw package,ED operator mounting
4	DK4620-010	Plug package, 4x6 header
5	DK4654-010	Screw package, 4x6 header mounting
6	DK4702-010	Kit, ED100 operator
7	DK4709-01_	Kit, Push arm
8	DK4709-12_	Kit, Deep pull arm
9	DS4615-03x	4x6 header assembly PR
10	DS4633-001	Door stop assembly, 1/4"
11	DX3484-030	ED power connect cable 3400 mm (pair)
12	DX3485-030	ED sync cable 2030 mm (pair)
13	DX4604-05C	Kit, mode switch RJ45 10 ft FRC
14	DX4607-010	Communication cable, 90 Deg, RJ45 3 ft



2.8 DS4503 ED250 surface applied (SA) full energy (FE) door configurations

Table 2.8.1 ED250 SA FE push arm door configurations

Part number	Description	Finish
DS4503-01A	ED250, SA FE Push LH CL	Clear
DS4503-01B	ED250, SA FE Push LH DB	Dk Bronze
DS4503-01E	ED250, SA FE Push LH	Special
DS4503-02A	ED250, SA FE Push RH CL	Clear
DS4503-02B	ED250, SA FE Push RH DB	Dk Bronze
DS4503-02E	ED250, SA FE Push RH	Special
DS4503-03A	ED250, SA FE Push Pair CL	Clear
DS4503-03B	ED250, SA FE Push Pair DB	Dk Bronze
DS4504-03E	ED250, SA FE Push Pair	Special

Table 2.8.2 ED250 SA FE deep push arm door configurations

Part number	Description	Finish
DS4503-11A	ED250, SA FE Deep Push LH CL	Clear
DS4503-11B	ED250, SA FE Deep Push LH DB	Dk Bronze
DS4503-11E	ED250, SA FE Deep Push LH	Special
DS4503-12A	ED250, SA FE Deep Push RH CL	Clear
DS4503-12B	ED250, SA FE Deep Push RH DB	Dk Bronze
DS4503-12E	ED250, SA FE Deep Push RH	Special
DS4503-13A	ED250, SA FE Deep Push Pair CL	Clear
DS4503-13B	ED250, SA FE Deep Push Pair DB	Dk Bronze
DS4503-13E	ED250, SA FE Deep Push Pair	Special

Table 2.8.3 ED250 SA FE pull arm door configurations

Part number	Description	Finish
DS4503-21A	ED250, SA FE Pull LH CL	Clear
DS4503-21B	ED250, SA FE Pull LH DB	Dk Bronze
DS4503-21E	ED250, SA FE Pull LH	Special
DS4503-22A	ED250, SA FE Pull RH CL	Clear
DS4503-22B	ED250, SA FE Pull RH DB	Dk Bronze
DS4503-22E	ED250, SA FE Pull RH	Special
DS4503-23A	ED250, SA FE Pull Pair CL	Clear
DS4503-23B	ED250, SA FE Pull Pair DB	Dk Bronze
DS4503-23E	ED250, SA FE Pull Pair	Special

Table 2.8.4 ED250 SA FE deep pull arm door configurations

Part number	Description	Finish
DS4503-31A	ED250, SA FE Deep pull LH CL	Clear
DS4503-31B	ED250, SA FE Deep Pull LH DB	Dk Bronze
DS4503-31E	ED250, SA FE Deep Pull LH	Special
DS4503-32A	ED250, SA FE Deep Pull RH CL	Clear
DS4504-32B	ED250, SA FE Deep Pull RH DB	Dk Bronze
DS4503-32E	ED250, SA FE Deep Pull RH	Special
DS4503-33A	ED250, SA FE Deep Pull Pair CL	Clear
DS4503-33B	ED250, SA FE Deep Pull Pair DB	Dk Bronze
DS4503-33E	ED250, SA FE Deep Pull Pair	Special

Table 2.6.5 ED250 SA LE deep reveal pull arm door configurations

Part number	Description	Finish
DS4503-34A	ED250, SA FE Deep Reveal Pull LH CL	Clear
DS4503-34B	ED250, SA FE Deep Reveal Pull LH DB	Dk Bronze
DS4503-34E	ED250, SA FE Deep Reveal Pull LH	Special
DS4503-35A	ED250, SA FE Deep Reveal Pull RH CL	Clear
DS4503-35B	ED250, SA FE Deep Reveal Pull RH DB	Dk Bronze
DS4503-35E	ED250, SA FE Deep Reveal Pull RH	Special
DS4503-36A	ED250, SA FE Deep Reveal Pull Pair CL	Clear
DS4503-36B	ED250, SA FE Deep Reveal Pull Pair DB	Dk Bronze
DS4503-36E	ED250, SA FE Deep Reveal Pull Pair	Special

2.8.1 DS4503 ED250 surface applied (SA) FE hardware

Fig. 2.8.1.1 ED250 FE SA hardware - continued on next page

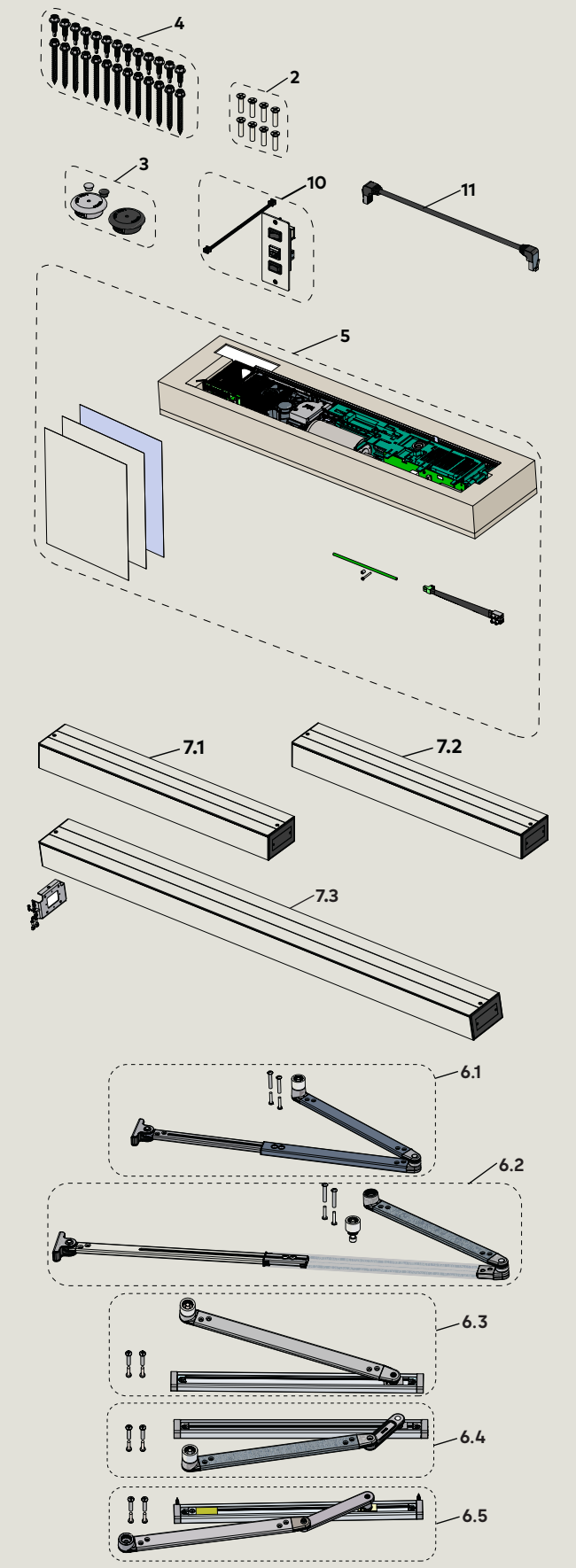


Table 2.8.1.1 ED250 FE SA hardware

Item	Part number	Description	LH -x1	RH -x2	PR -x3
1.1	DK3137-110	Kit, ED operator label, FE single	1	1	
1.2	DK3137-130	Kit, ED operator label, FE pair			1
2	DK4617-010	Screw package,ED operator mounting	1	1	2
3	DK4620-010	Plug package, 4x6 header	1	1	2
4	DK4654-010	Screw package, 4x6 header mounting	1	1	1
5	DK4704-010	Kit, ED250 operator	1	1	2
Reference Para. 2.8 for door arm configurations					
6.1	DK4709-01_	Kit, Push arm	1	1	2
6.2	DK4709-02_	Kit, Deep push arm	1	1	2
6.3	DK4709-11_	Kit, Pull arm	1	1	2
6.4	DK4709-12_	Kit, Deep pull arm	1	1	2
6.5	DK4709-13_	Kit, Deep reveal pull arm	1	1	2
7.1	DS4615-01x	4x6 header assembly LH	1		
7.2	DS4615-02x	4x6 header assembly RH		1	
7.3	DS4615-03x	4x6 header assembly PR			1
8	DX3484-030	ED power connect cable 3400 mm (pair)			1
9	DX3485-030	ED sync cable 2030 mm (pair)			1
10	DX4604-05C	Kit, mode switch RJ45 10 ft FRC	1	1	1
11	DX4607-010	Communication cable, 90 Deg, RJ45 3 ft	1	1	1
12	DS4633-001	Door stop assembly, 1/4" **Push arm only**	1	1	2

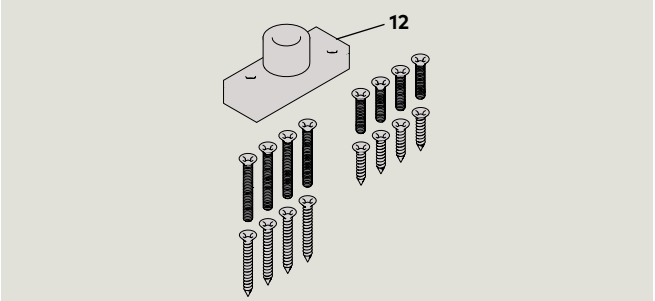
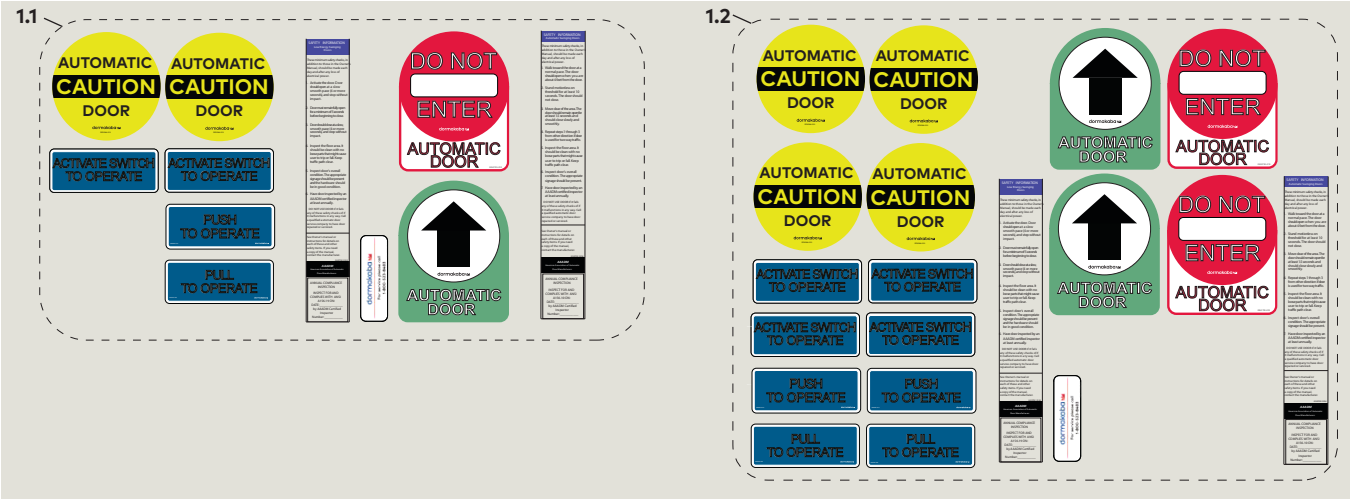


Fig. 2.8.1.1 ED250 SA FE hardware - continued



2.9 DS4503 ED250 surface applied (SA) FE double egress door configurations

Table 2.9.1 ED250 SA FE double egress door configurations

Part number	Description	Finish
DS4503-43A	ED250, SA FE Double Egress CL	Clear
DS4503-43B	ED250, SA FE Double Egress DB	Dk Bronze
DS4503-43E	ED250, SA FE Double Egress	Special

2.9.1 DS4503 ED250 surface applied (SA) FE double egress hardware

Fig. 2.9.1.1 ED250 FE SA double egress hardware

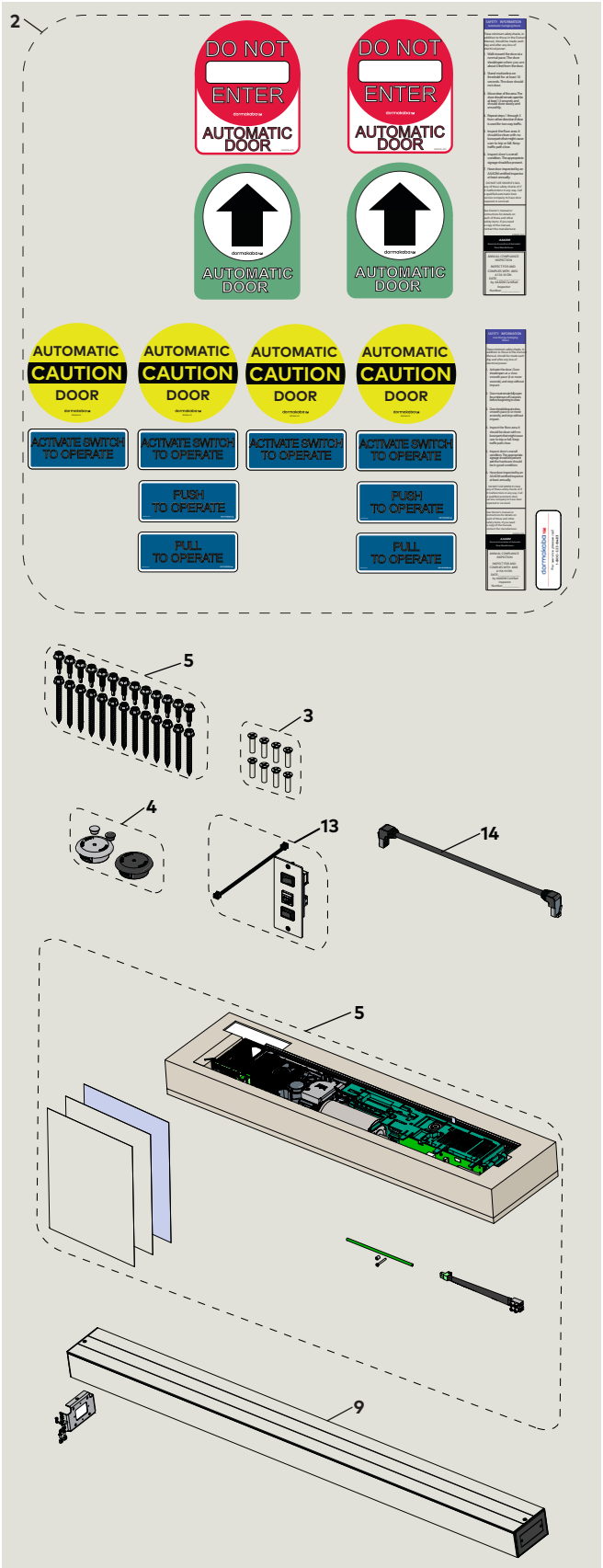
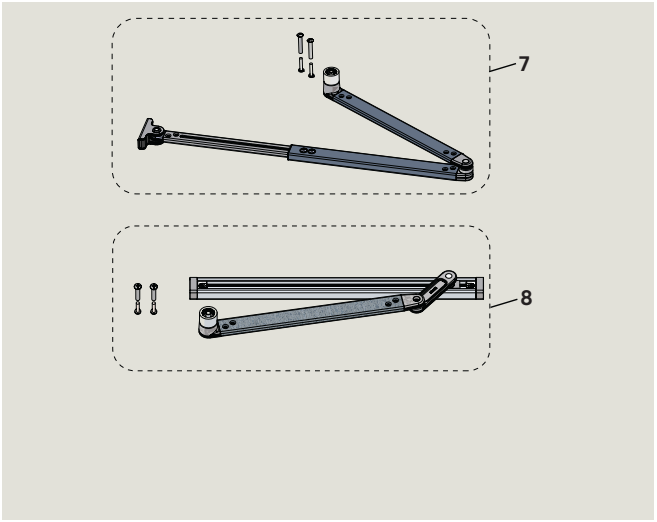


Table 2.9.1.1 ED100 FE SA hardware

Item	Part number	Description
1	DK3137-110	Kit, ED operator label, FE single
2	DK3137-130	Kit, ED operator label, FE pair
3	DK4617-010	Screw package,ED operator mounting
4	DK4620-010	Plug package, 4x6 header
5	DK4654-010	Screw package, 4x6 header mounting
6	DK4704-010	Kit, ED250 operator
7	DK4709-01_	Kit, Push arm
8	DK4709-12_	Kit, Deep pull arm
9	DS4615-03x	4x6 header assembly PR
10	DS4633-001	Door stop assembly, 1/4"
11	DX3484-030	ED power connect cable 3400 mm (pair)
12	DX3485-030	ED sync cable 2030 mm (pair)
13	DX4604-05C	Kit, mode switch RJ45 10 ft FRC
14	DX4607-010	Communication cable, 90 Deg, RJ45 3 ft



2.10 4 x 6 narrow header

Table 2.10.1 4 x 6 narrow header configurations

Part number	Description	Finish
DS4615-01A	4 x 6 header assembly SA LH CL	Clear
DS4615-01B	4 x 6 header assembly SA LH DB	Dk Bronze
DS4615-01E	4 x 6 header assembly SA LH	Custom
DS4615-02A	4 x 6 header assembly SA RH CL	Clear
DS4615-02B	4 x 6 header assembly SA RH DB	Dk Bronze
DS4615-02E	4 x 6 header assembly SA RH	Custom
DS4615-01A	4 x 6 header assembly SA PR CL	Clear
DS4615-01B	4 x 6 header assembly SA PR DB	Dk Bronze
DS4615-01E	4 x 6 header assembly SA PR	Custom

Fig. 2.10.1 Narrow header SA RH and LH

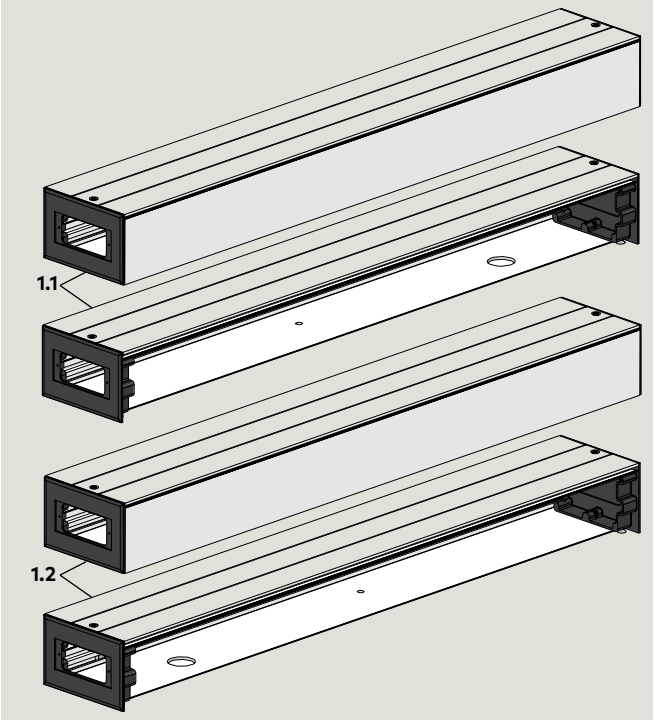


Table 2.10.2 4 x 6 narrow header hardware

	Part number	Description	LH	RH	PR
			-01x	-02x	-03x
1.1	DC4600-01x	4 x 6 header SA LH	1	-	-
1.2	DC4600-02x	4 x 6 header SA RH	-	1	-
1.3	DC4600-03x	4 x 6 header SA PR	-	-	1
2.1	DC4610-01x	4 x 6 cover	1	1	-
2.2	DC4610-03x	4 x 6 cover, PR	-	-	1
3	DC4605-010	4 x 6 header track	2	2	4
4	DC4690-01C	End cap, operator header switch	2	2	2
5	DC4692-01C	Cover, blank	1	1	1
6	DF0204-01B	#5 flat head sheet metal screw, black	2	2	2
7	DF0207-01B	1/4-20 x 5/8" self tapping screw, black oxide	6	6	7
8	DK4672-001	Kit, ED 4 x 6 jamb bracket	-	-	1

Fig. 2.10.2 Narrow header SA RH exploded view

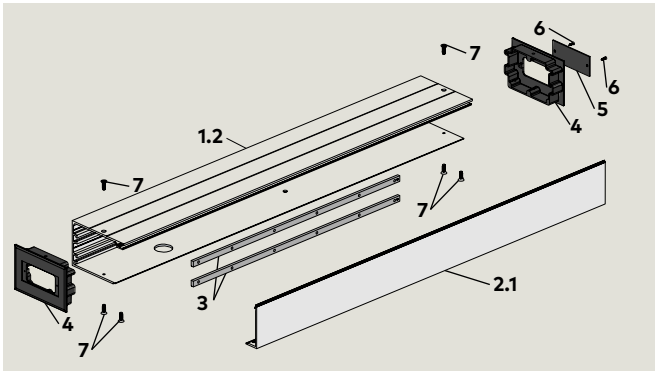
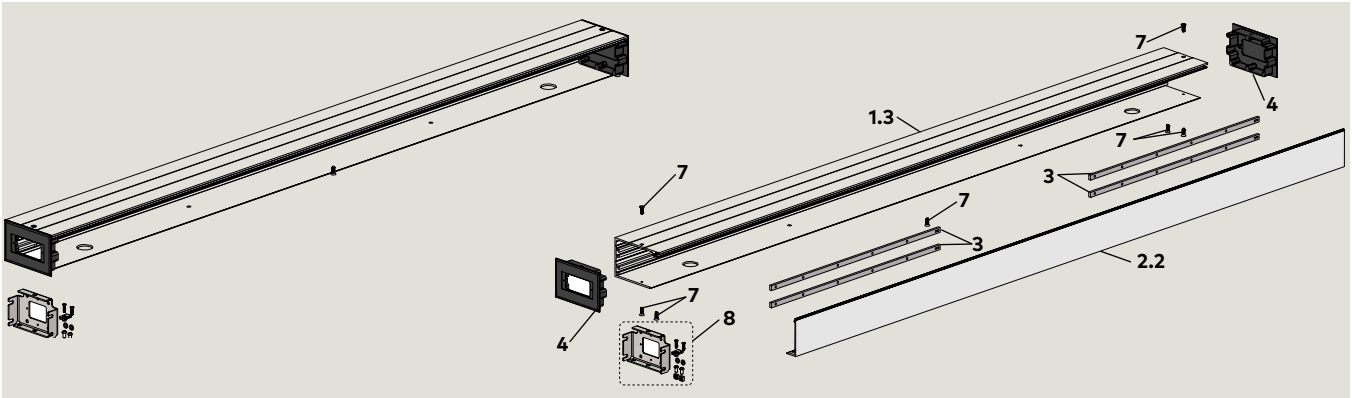


Fig. 2.17.3 Narrow header SA pair and exploded view



2.11 ED50/ED100/ED250 operators

Fig. 2.11.1 ED50 operator

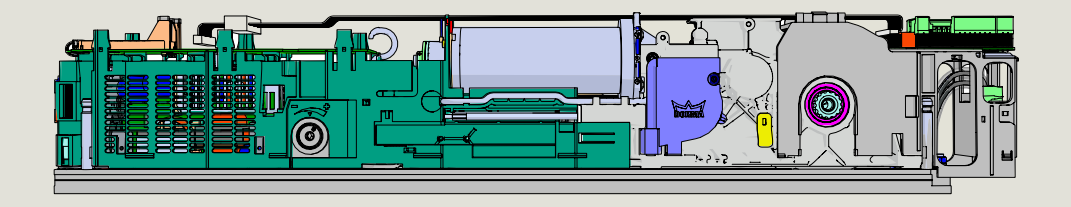


Fig. 2.11.2 ED100/ED250 operator

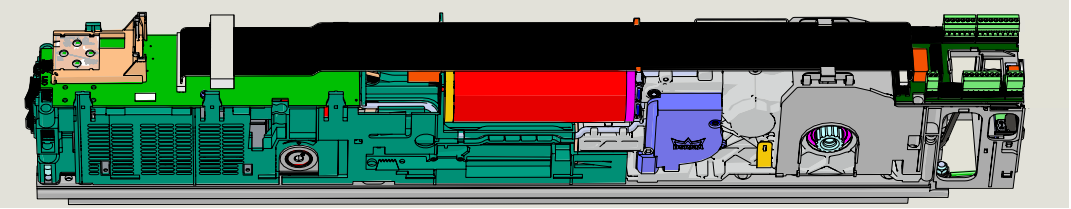
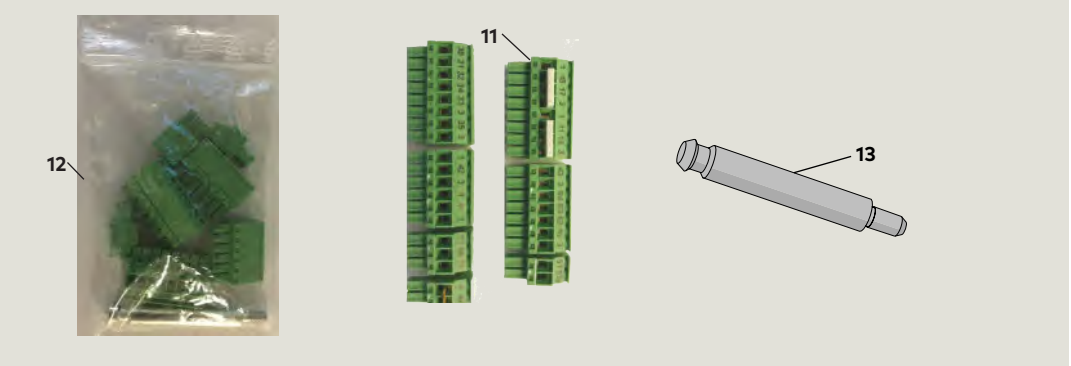


Fig. 2.11.3 Accessory terminals, guide pin



11 Terminals for accessory wiring

12 Bag containing terminals and third guide pin*

13 Guide pin

* Included with operator

2.12 Screw packs

8.1 #12 x 2.5 RHWSP
8.2 1/4-20 x 1.5 PHSLFP
11 1/4-20 x 1" FHMSP (flat head machine screw, Phillips)

Fig. 2.12.1 Mounting plate screws

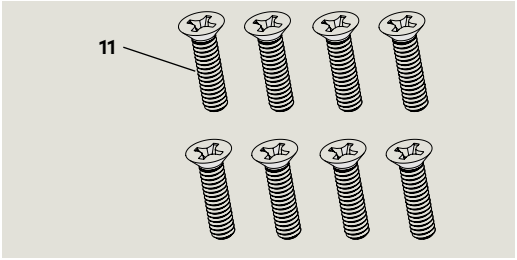
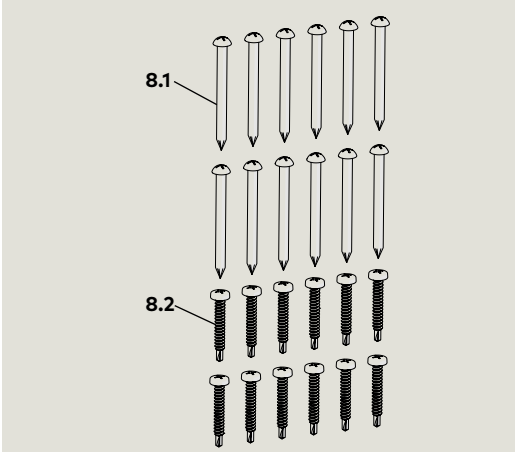


Fig. 2.12.2 Header mounting screw pack DK4608-010



2.13 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. 2.13.1 [20 mm] 3/4"

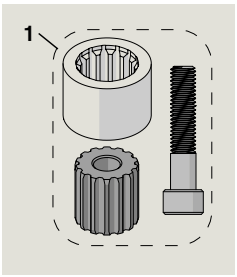


Fig. 2.13.2 [30 mm] 1 1/8"

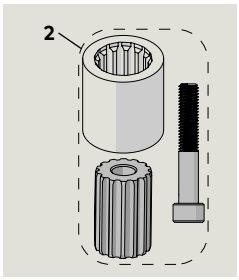


Fig. 2.13.3 [60 mm] 2 3/8""

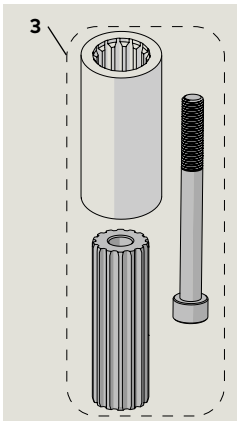
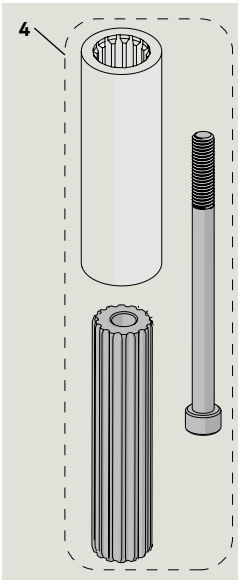


Fig. 2.13.4 [90 mm] 3 9/16" ED250



2.14 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. 2.14.1 Door stop assembly DS4633-001

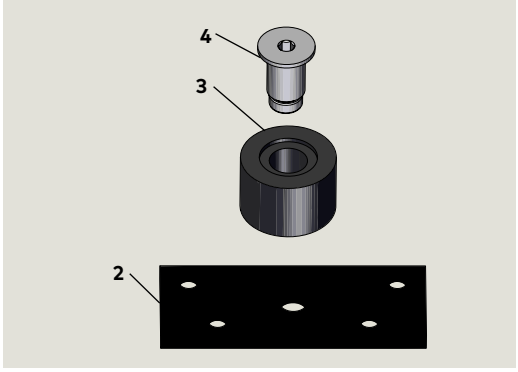
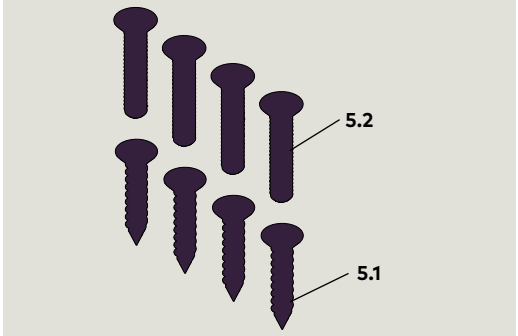


Fig. 2.14.2 Mounting screw kit DC4633-005



2.15 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
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
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. 2.15.1 Kit, ED Operator Label LE, DK3137-0X0

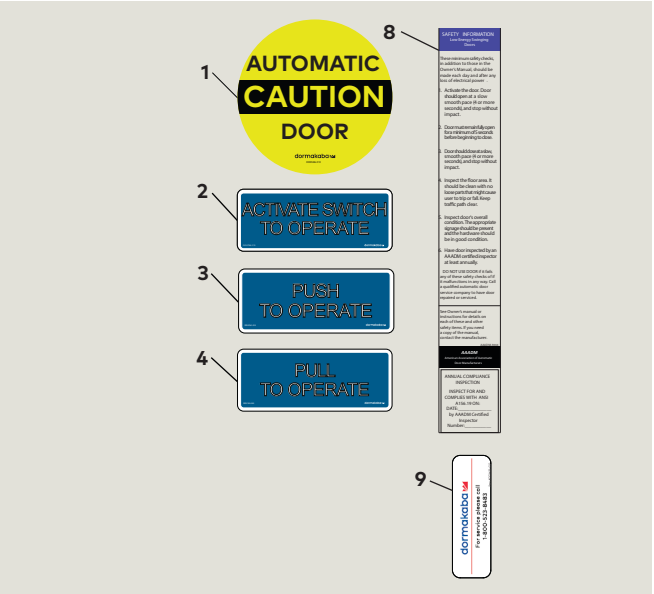
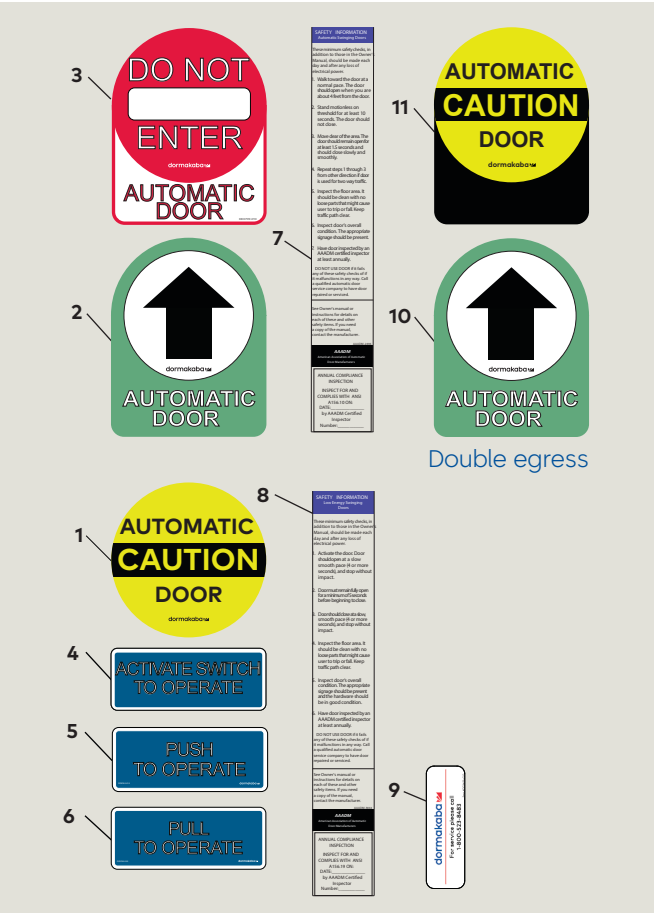


Fig. 2.15.2 Kit, ED Operator Label FE, DK3137-1X0

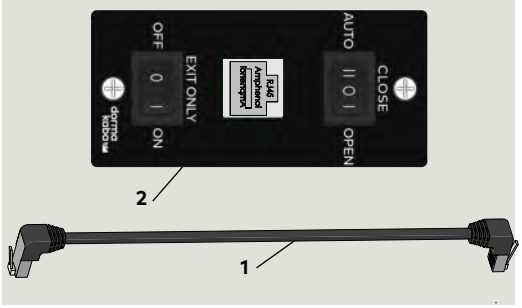


2.16 Mode and Exit Only switch panel

2.16.1 Mode switch kit.

Mode Switch Kit #	Description	Mode switch cable length		Item #
DX4604-04C	Kit, Mode Switch RJ45 3 Ft FRC	3'	[914 mm]	1, 2
Option				
DX4604-05C	Kit, Mode Switch RJ45 10 Ft FRC	10'	[3048 mm]	1, 2
DX4604-06C	Kit, Mode Switch RJ45 20 Ft FRC	20'	[6096 mm]	1, 2
DX4604-09C	Kit, Mode Switch RJ45 6 Ft FRC	6'	[1829 mm]	1, 2

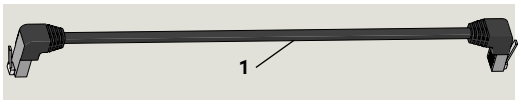
Fig. 2.16.1 Kit, Mode switch



2.16.2 RJ45 Communication cable.

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. 2.16.2 Communication cable, 90 degree RJ45



2.17 Optional key switch panels

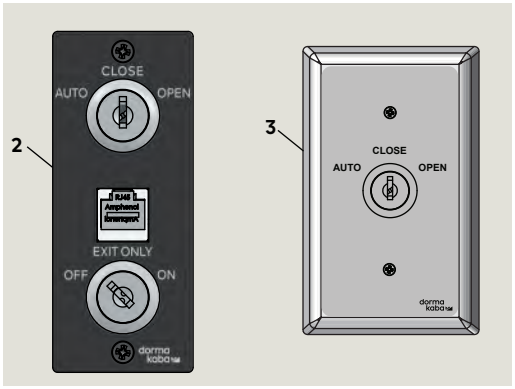
2 Key switch panel, RJ45, DX4604-21C

3 Key switch panel DX4604-07G

TIPS AND RECOMMENDATIONS

- Wiring diagrams; reference Appendix C.

Fig. 2.17.1 Optional Key switch panels



2.18 Hole plug kit

12 1 1/2" hole plug

13 3/8" [10 mm] hole plug

Fig. 2.18.1 Hole plug kit DK4620-010



2.19 Push arm kits

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

Fig. 2.19.1 Push arm kit DK4709-01X

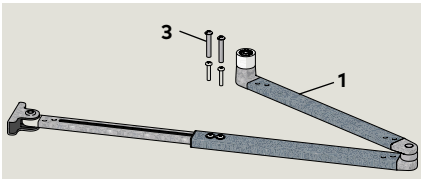
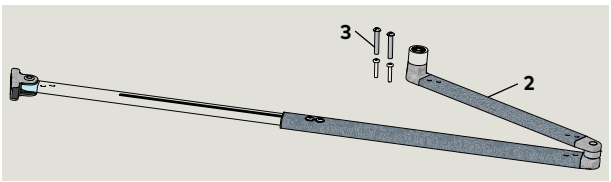


Fig. 2.19.2 Deep push arm kit DK4709-02X



2.20 Pull arm kits

1 Pull arm DC4678-01X
2 Deep pull arm DC4678-02X
3 Deep reveal pull arm DC4678-03X
3 Screw kit, DK2719-020

Fig. 2.20.1 Pull arm kit, DK4709-11X

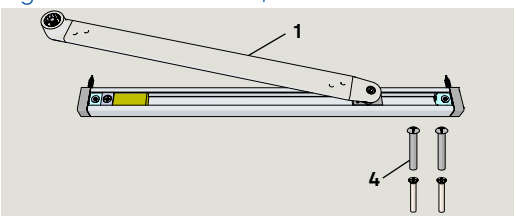


Fig. 2.20.2 Deep pull arm kit, DK4709-12X

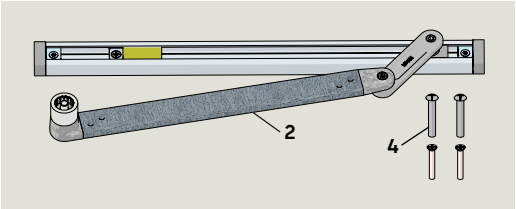
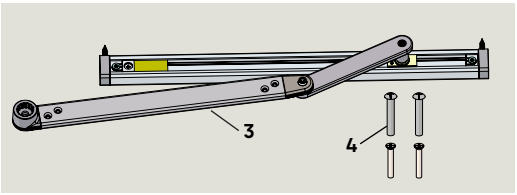


Fig. 2.20.3 Deep reveal pull arm kit, DK4709-13X



2.21 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. 2.21.1 Push arm screw kit DK2719-010

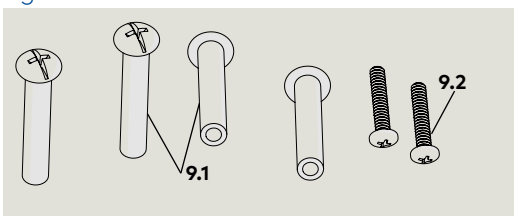
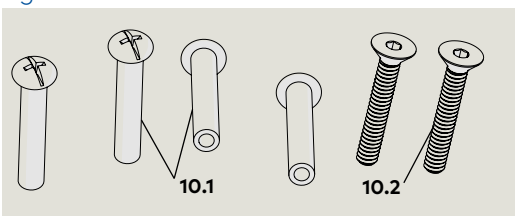


Fig. 2.21.2 Pull arm screw kit DK2719-020



2.22 Double door ED50/ED100/ED250 operator 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

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. 2.22.1 Sync cable

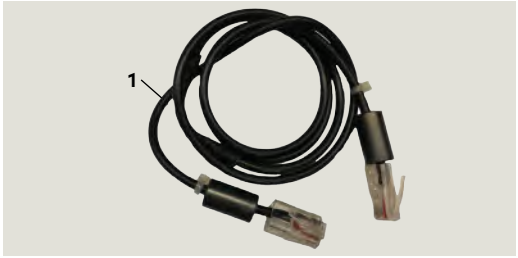
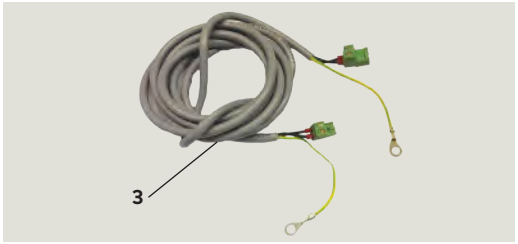


Fig. 2.22.2 Power connect cable



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	24 Vdc ± 5%, 1.5 A external power supply must be supplied.
Maximum door opening angle	95 to 110° depending on installation type

3.1.3 Inputs

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

3.1.4 Outputs

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

3.1.5 Integrated functions

Hold open time Automatic opening	**dd** parameter	0 to 30 s Optional 0 - 180 s.	
Hold open time NIght / bank	**dn** parameter	0 to 30 s	
Hold open time Manual opening	**do** parameter	0 to 30 s	
Door blocking behavior	**hd** parameter	Automatic, manual door modes	
Electric strike delayed opening for locking mechanism	**Ud** parameter	0 to 4 s	
Locking device feedback **X3** 43, 3	Chapter 4	Motor lock	
Wind load control, maximum	**Fo, Fc** parameters	33.7 lb f 150 N	
Voltage independent braking circuit	Reference: Setup and Troubleshooting Instructions	Adjustable with potentiometer	
LED status indicators Green, Red, Yellow		24 Vdc power Error codes Service interval	
Mode and Exit Only switches	Reference: Setup and Troubleshooting Instructions	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 ED50 operating specifications

3.2.1 ED50		
Maximum power consumption	120 watt	
Opening force N (lbf) **Fo** parameter	Minimum 20 (4.5)	Maximum 60 (13.5.5)
Manual closing force N (lbf) **Fc** parameter	Minimum 20 (4.5)	Maximum 60 (13.5)
Maximum door weight lb [kg]	220 [100 kg)	Depending on door width and application.
Door width	Minimum 28"	Maximum 48"

Maximum opening speed, °/s	27	May be limited by door weight after learning cycle.
Maximum closing speed, °/s	27	
Axle extensions, [mm] inches	[20] 13/16" [30] 1 3/16" [60] 2 3/8"	
Reveal depth for pull arm	1 3/16"	
Reveal depth for pull arm with CPD lever	2 1/4"	
Reveal depth for standard push arm	0 to 8 3/4"	
Reveal depth for deep push arm	8" minimum to 11 13/16"	

3.3 ED100/ED250 operating specifications

3.3.1 ED100	
Maximum power input	120 watt
Closing torque	
Maximum door weight	Reference Chapter 2, Maximum door weights
Door width	28" - 48" [700 - 1219 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°.

3.3.2 ED250	
Maximum power input	240 watt
Closing torque	
Maximum door weight.	Reference Chapter 2, Maximum door weights
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]

3.4 ED100/ED250 torque overview

	Mounting on hinge side, pull version of slide channel.			Mounting on opposite hinge side, push version of standard arm/ push version of slide channel		
3.3.1 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]	

3.3.2 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°.

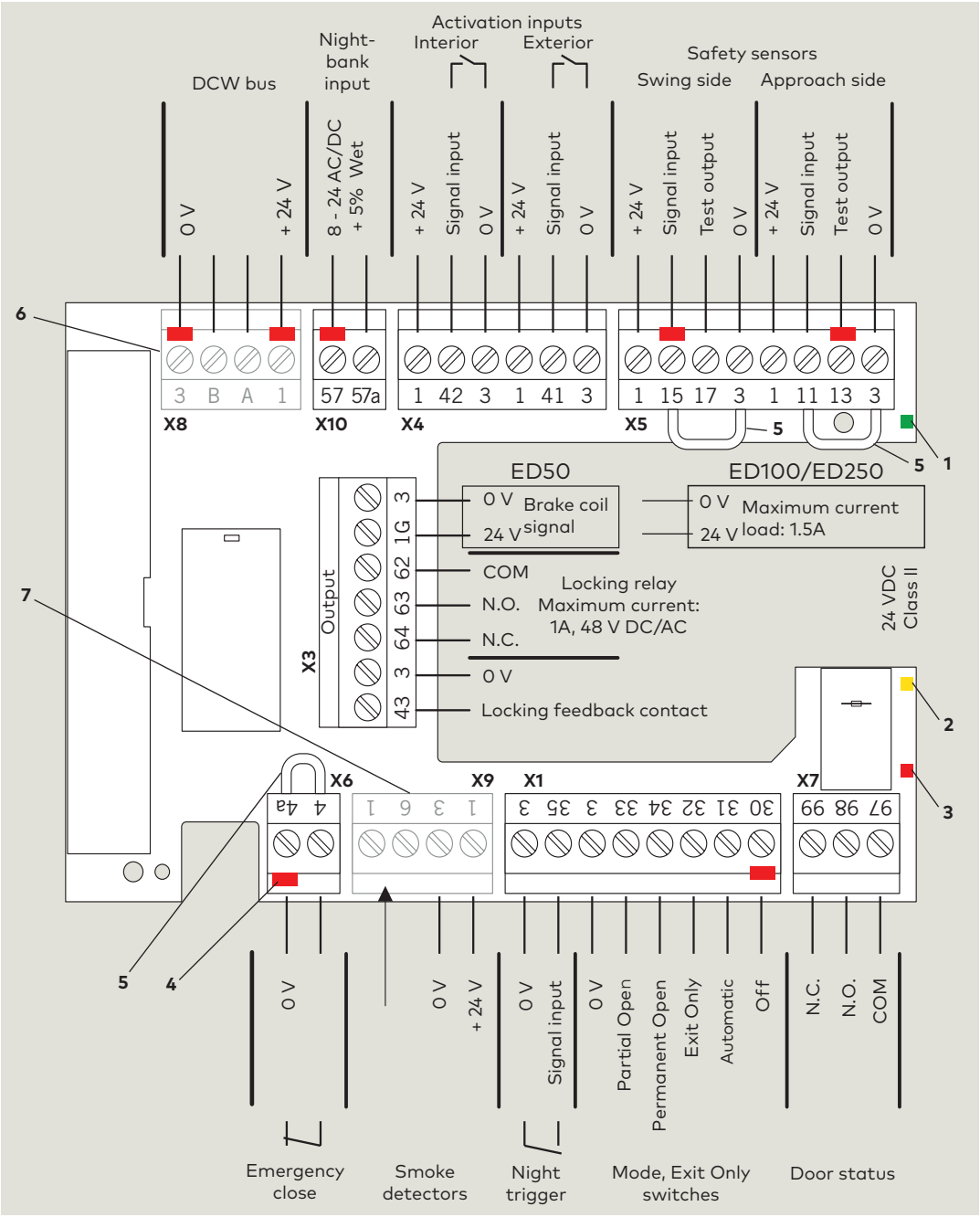
** The torque is available in the event of an automatic opening in automatic mode.

*** In the push version of the slide channel installation type, the forces reduce by approximately 33%.

4 ED50/E100/ED250 terminal board interfaces

4.1 ED50/ED100/ED250 terminal board interfaces

Fig. 4.1.1 Terminal board electrical connections



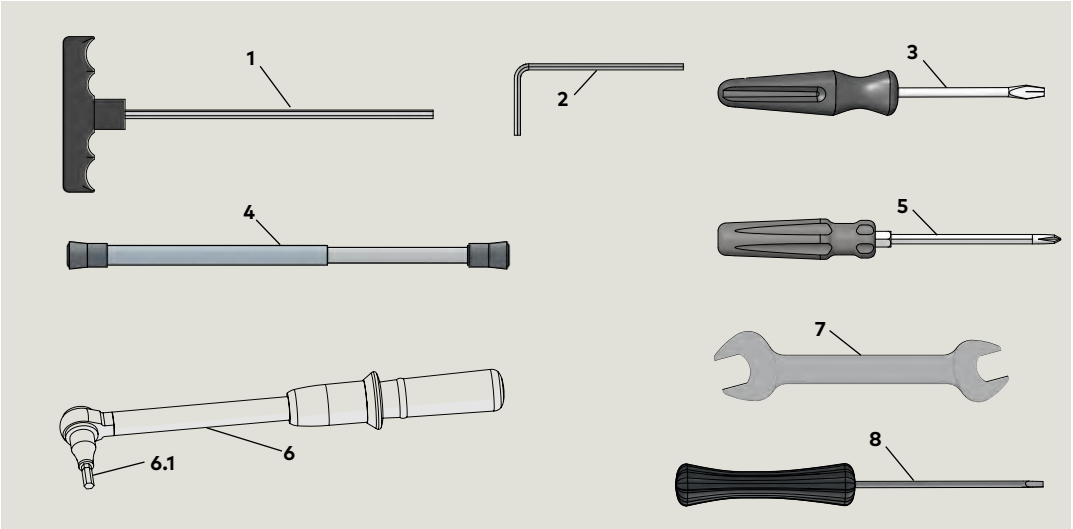
1 Green LED
2 Yellow LED
3 Red LED
4 Key (red insert) location in socket. Assigned plug has tab in same location broken off.
5 Jumpers, factory installed at following terminals:
- 4 and 4a
- 15 and 3*
- 11 and 3*

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

5 Recommended tools and torque chart

5.1 Recommended tools

Fig. 5.1.1 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")

5.2 Standard tightening torque

5.2.1 Standard tightening torque

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

5.3 Drill bits

5.3.1 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. 5.3.1 Drill bit



6 ED50/ED100/ED250 door signage

6.1 ED100/ED250 full energy operator

6.1.1 Overview

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

6.1.2 Door, one way traffic, Fig. 6.1.1.

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.

6.1.3 Door, double egress, Fig. 6.1.2.

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. 6.1.1 One decal, approach side, non-approach side



Fig. 6.1.2 One decal, double egress

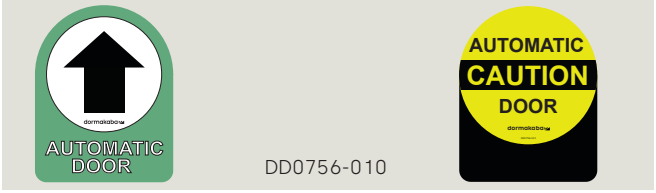


Fig. 6.1.3 ACTIVATE SWITCH TO OPERATE decal



6.1.4 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.

6.2 ED50/ED100/ED250 low energy operator

6.2.1 Overview

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

6.2.2 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.

6.2.3 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".

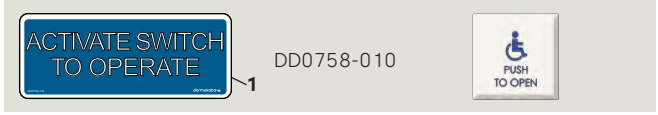
6.2.4 Push/Pull used to initiate door operation.

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. 6.2.1 AUTOMATIC CAUTION DOOR decal

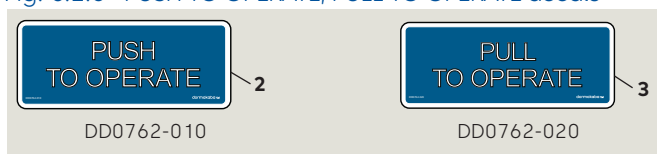


Fig. 6.2.2 ACTIVATE SWITCH TO OPERATE decal



1 Activate Switch to Operate DD0758-010

Fig. 6.2.3 PUSH TO OPERATE, PULL TO OPERATE decals



2 Push to Operate DD0762-010

3 Pull to Operate DD0762-020

6.3 Safety label, automatic swing doors

6.3.1 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.

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

6.3.3 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.

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

6.4 Safety label, low energy swing doors

6.4.1 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 the low energy mode.

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

6.4.3 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.

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

Fig. 6.3.2 Annual compliance inspection labels

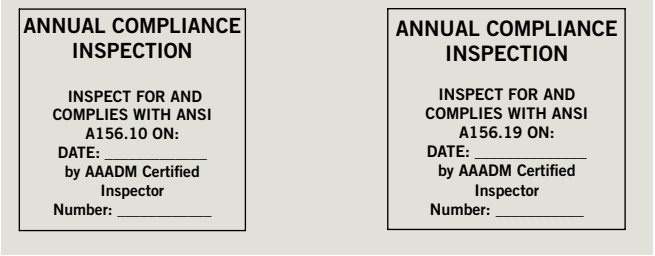
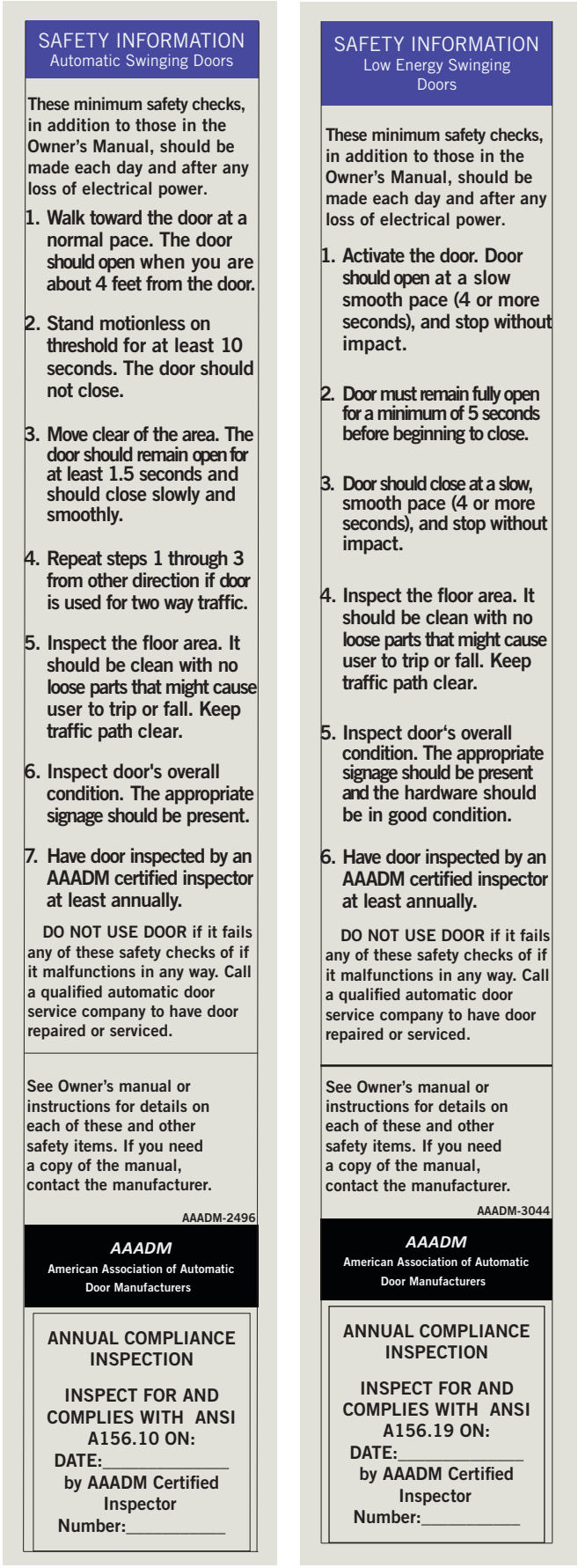


Fig. 6.3.1 Safety information labels



6.5 Door signage, full energy single swing doors

Fig. 6.5.1 One decal, one way traffic

Approach Non-approach

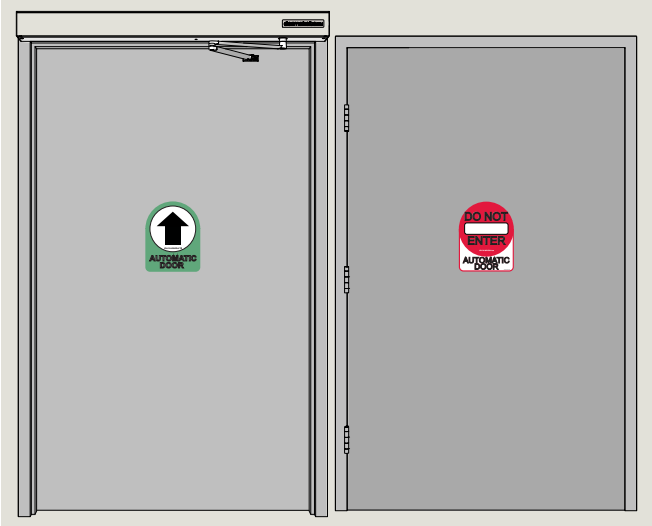
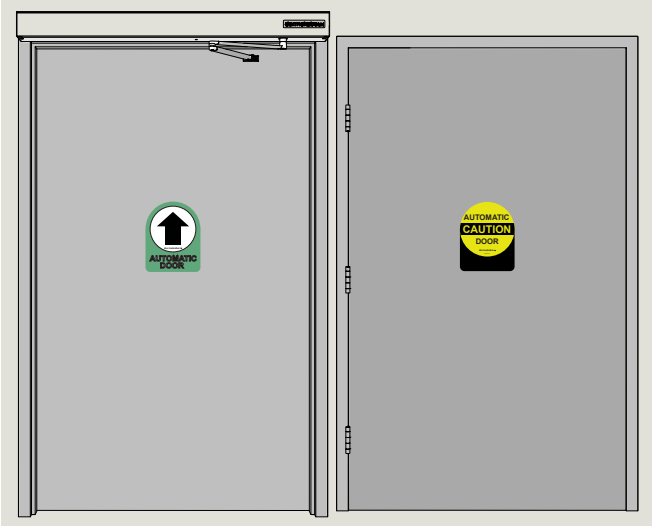


Fig. 6.5.2 One decal, two way traffic

Non-swing side Swing side



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

Fig. 6.6.1 Knowing act device

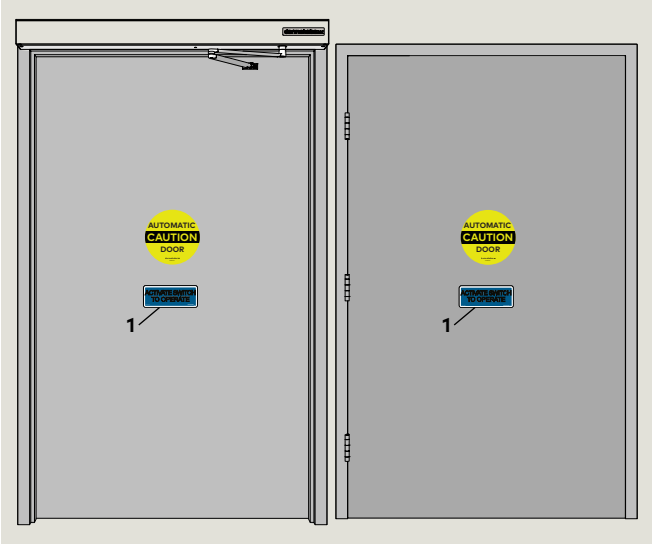
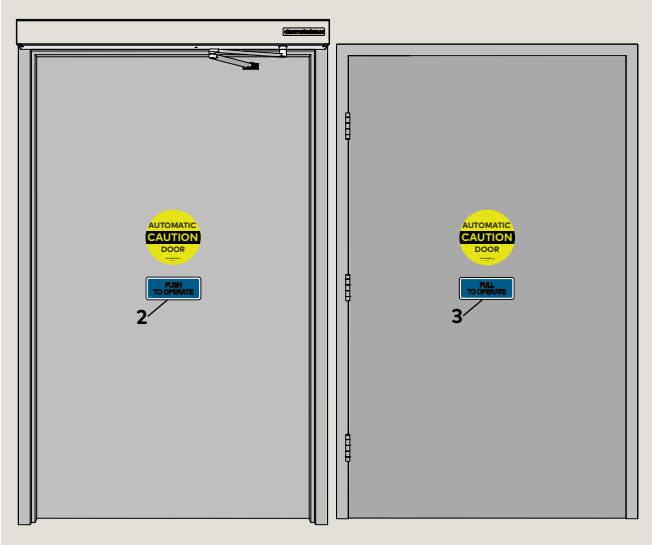


Fig. 6.6.2 Push/Pull

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

6.7 Door signage, full energy double swing doors

Fig. 6.7.1 One way traffic, approach side

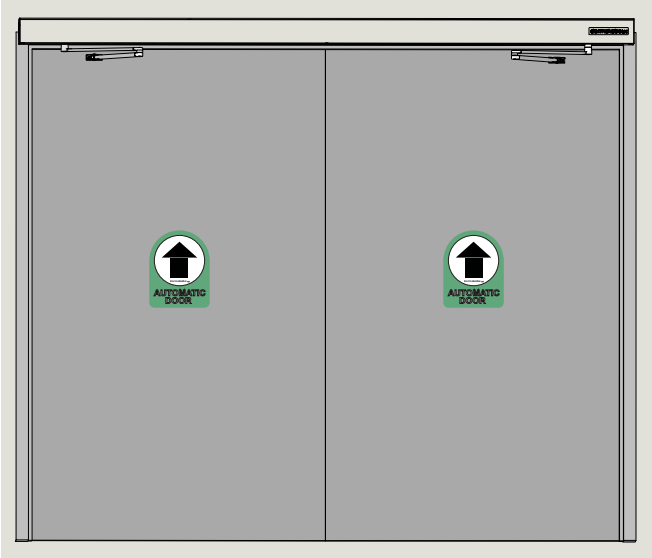


Fig. 6.7.2 One way traffic, non-approach side

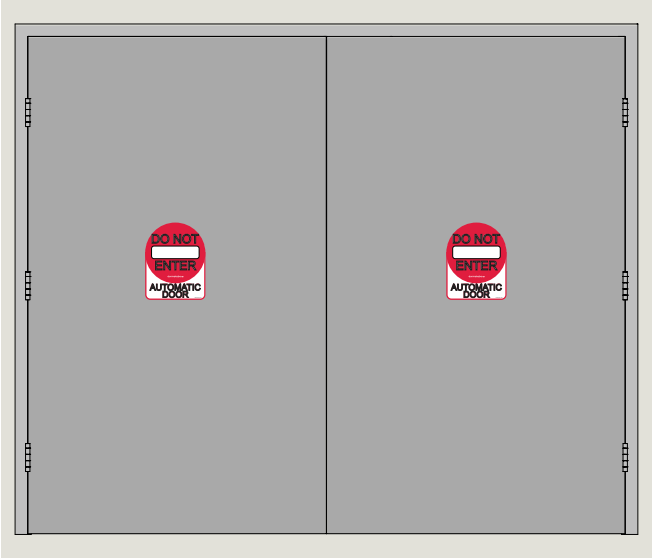


Fig. 6.7.3 Two way traffic, non-swing side

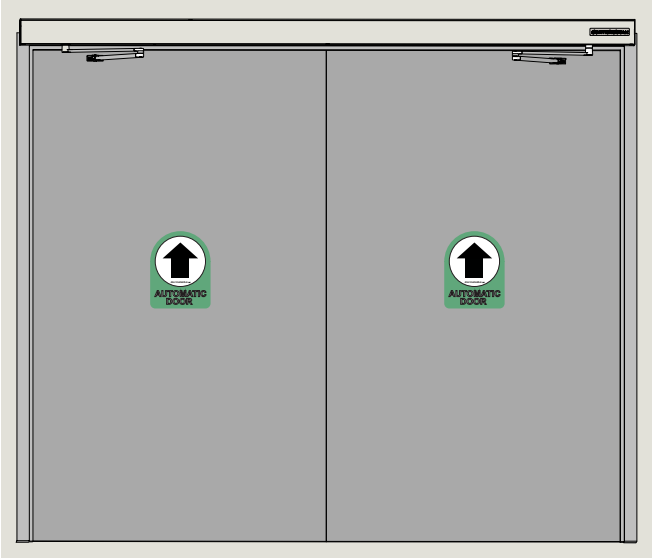


Fig. 6.7.4 Two way traffic, swing side

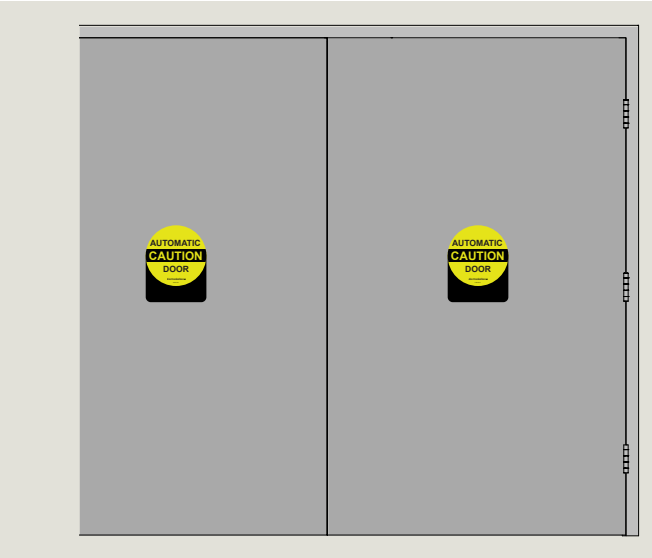


Fig. 6.7.5 One way traffic, knowing act, approach side

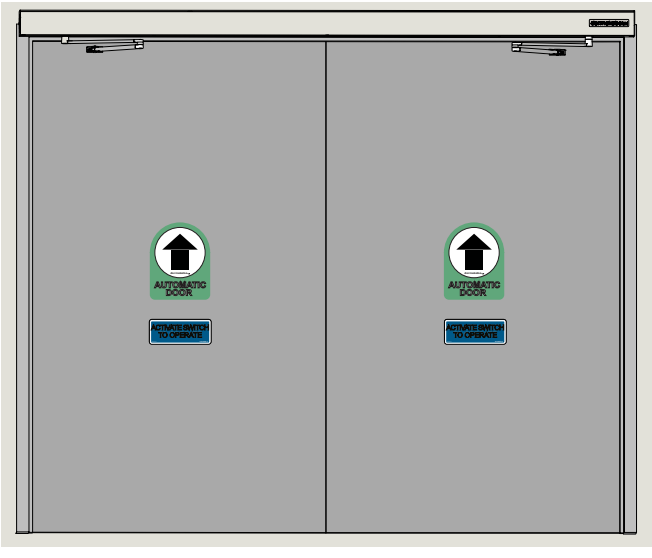


Fig. 6.7.6 One way traffic, knowing act, non-approach side

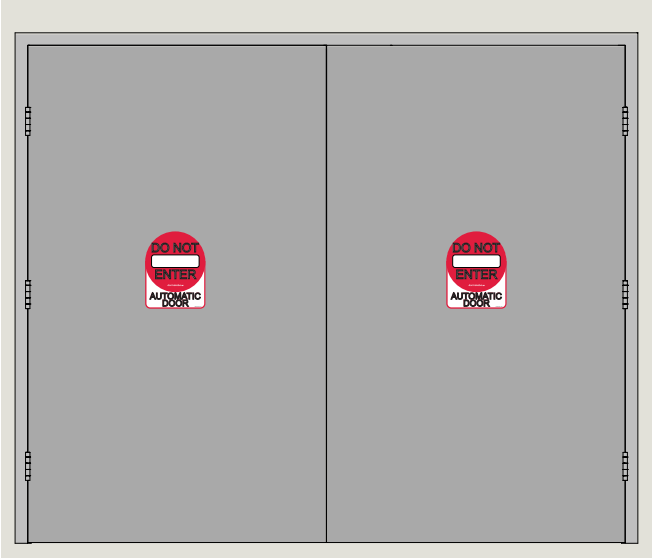


Fig. 6.7.7 Double egress, RH, one way traffic, interior

Swing side Approach side

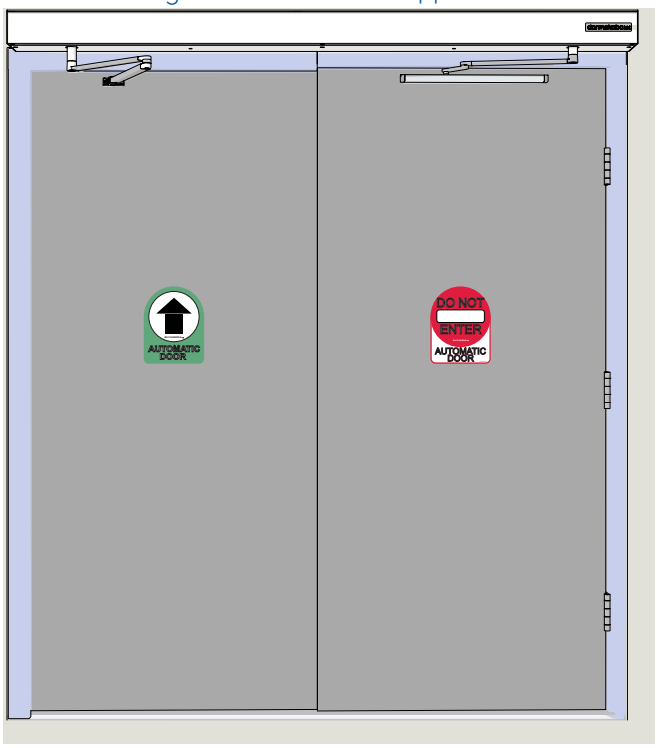


Fig. 6.7.8 Double egress, RH, one way traffic, exterior

Swing side Approach side

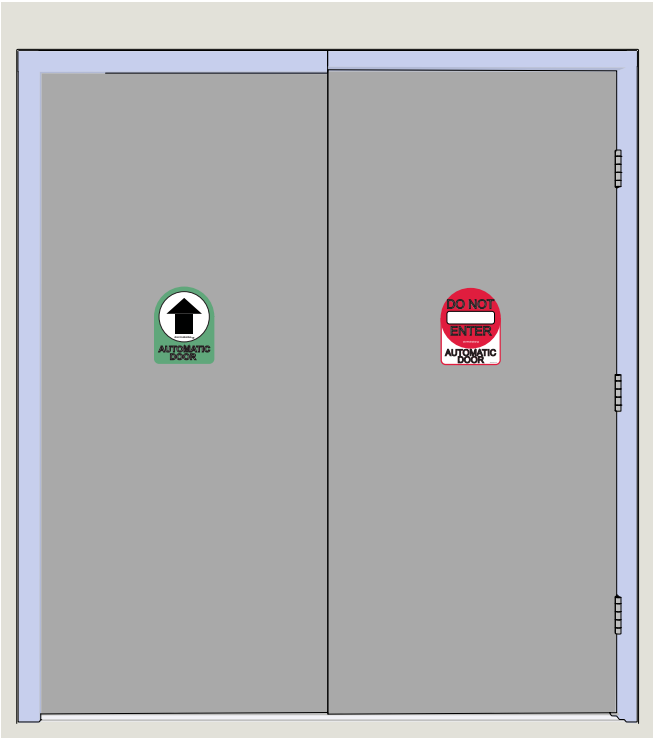


Fig. 6.7.9 Double egress, LH, two way traffic, interior

Swing side Approach side

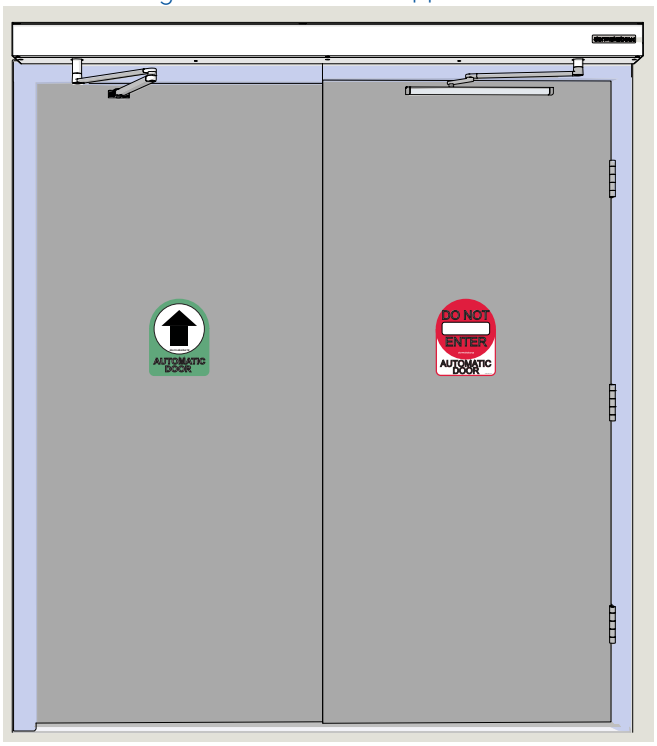
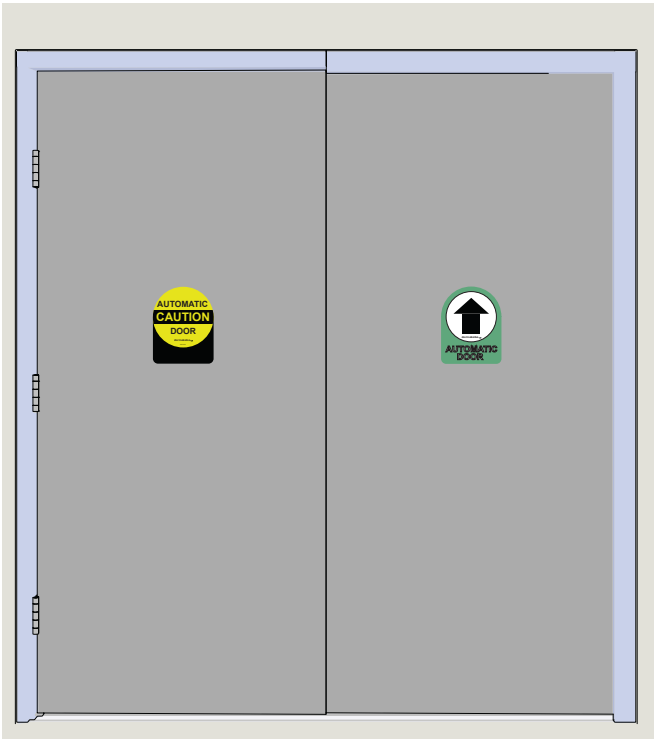


Fig. 6.7.10 Double egress, LH, two way traffic, exterior

Swing side Approach side



6.8 Door signage, low energy double swing doors

Fig. 6.8.1 Knowing act, SA header side

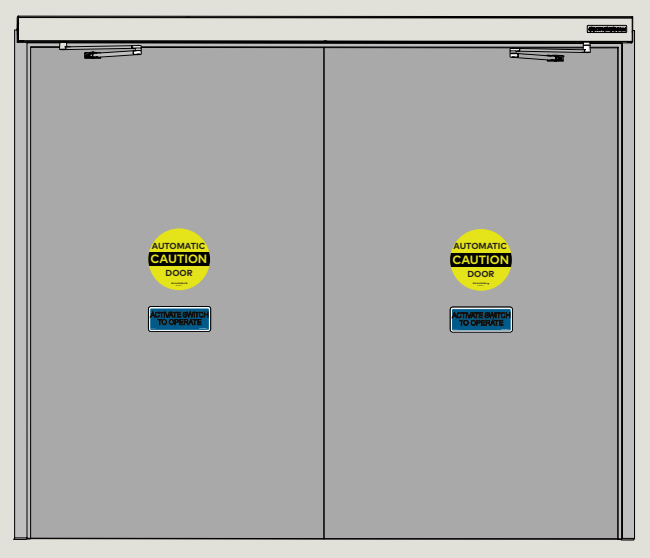


Fig. 6.8.2 Knowing act, hinge side

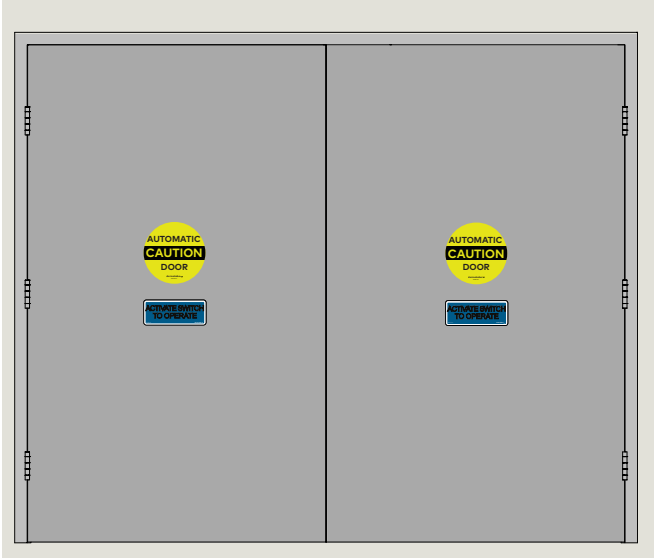
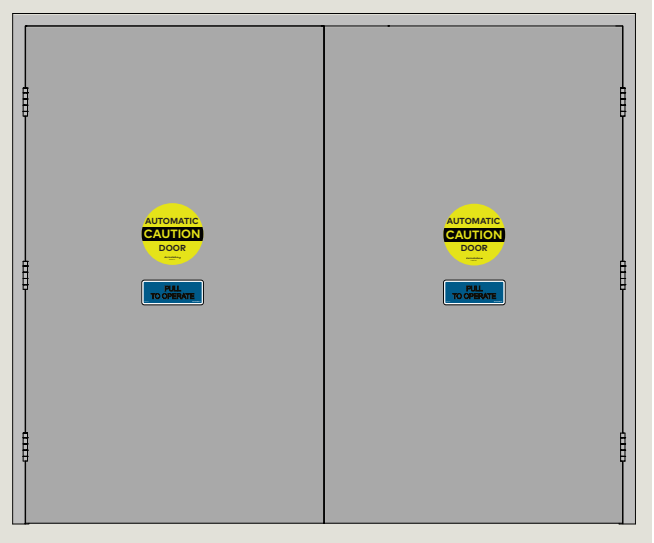


Fig. 6.8.3 Push/Pull, push to operate



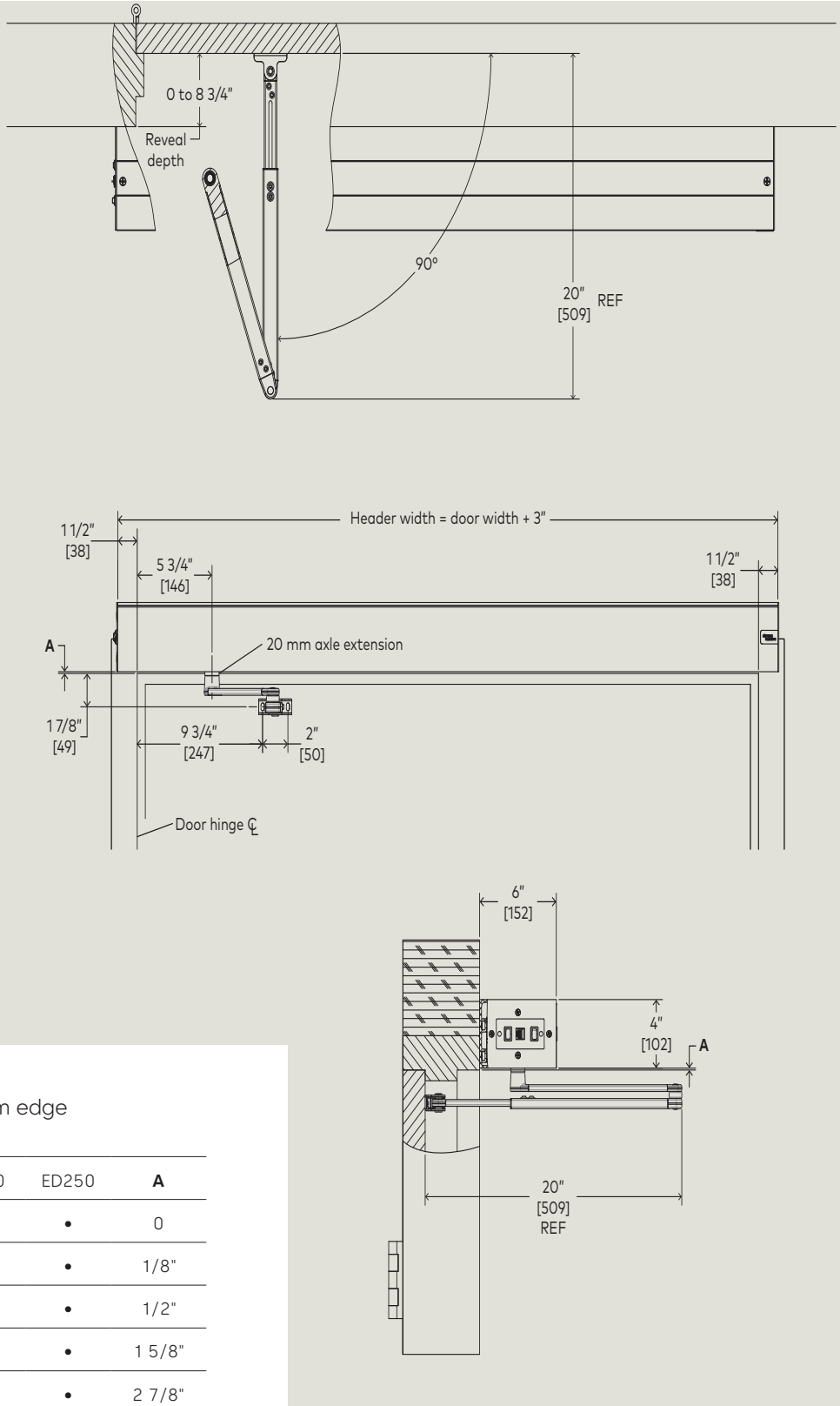
Fig. 6.8.4 Push/Pull, pull to operate



7 Installation templates

7.1 Narrow header (4 x 6") – push arm template

Fig. 7.1.1 Standard push arm template



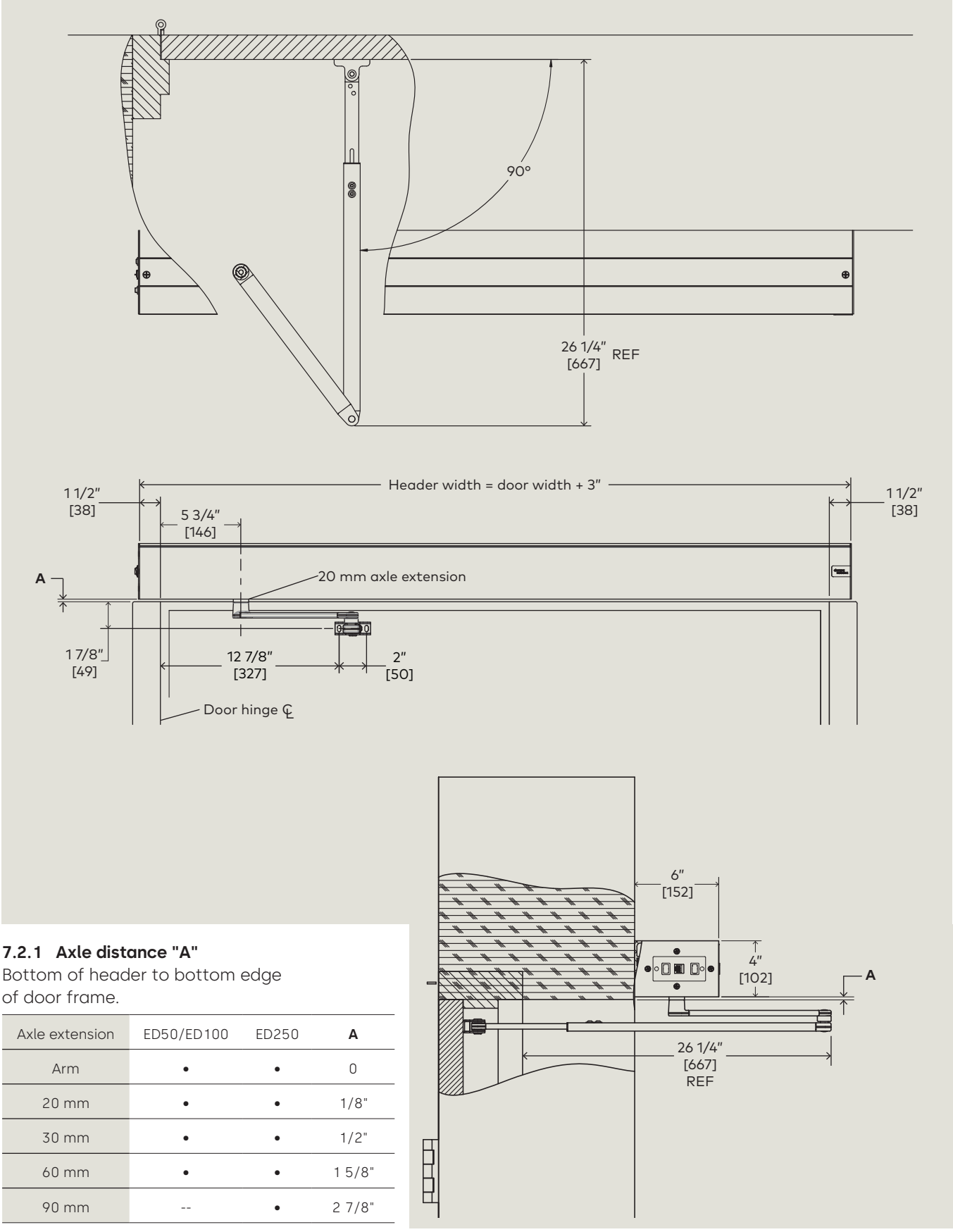
7.1.1 Axle distance "A"

Bottom of header to bottom edge of door frame.

Axle extension	ED50/ED100	ED250	A
Arm	•	•	0
20 mm	•	•	1/8"
30 mm	•	•	1/2"
60 mm	•	•	1 5/8"
90 mm	--	•	2 7/8"

7.2 Narrow header (4 x 6") – deep push arm installation template

Fig. 7.2.1 Deep push arm template



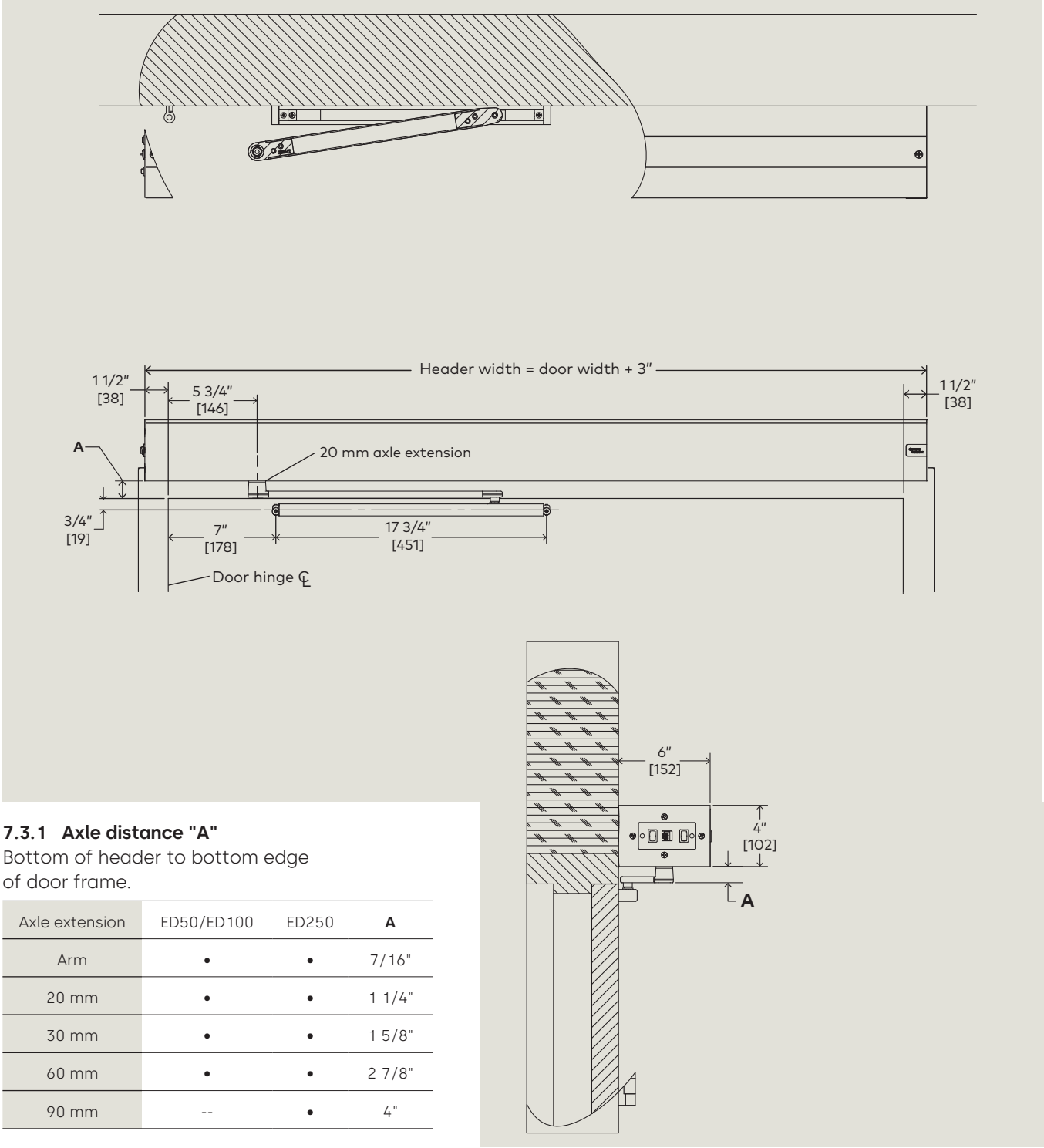
7.2.1 Axle distance "A"

Bottom of header to bottom edge of door frame.

Axle extension	ED50/ED100	ED250	A
Arm	•	•	0
20 mm	•	•	1/8"
30 mm	•	•	1/2"
60 mm	•	•	1 5/8"
90 mm	--	•	2 7/8"

7.3 Narrow header (4 x 6") – pull arm template

Fig. 7.3.1 Pull arm template



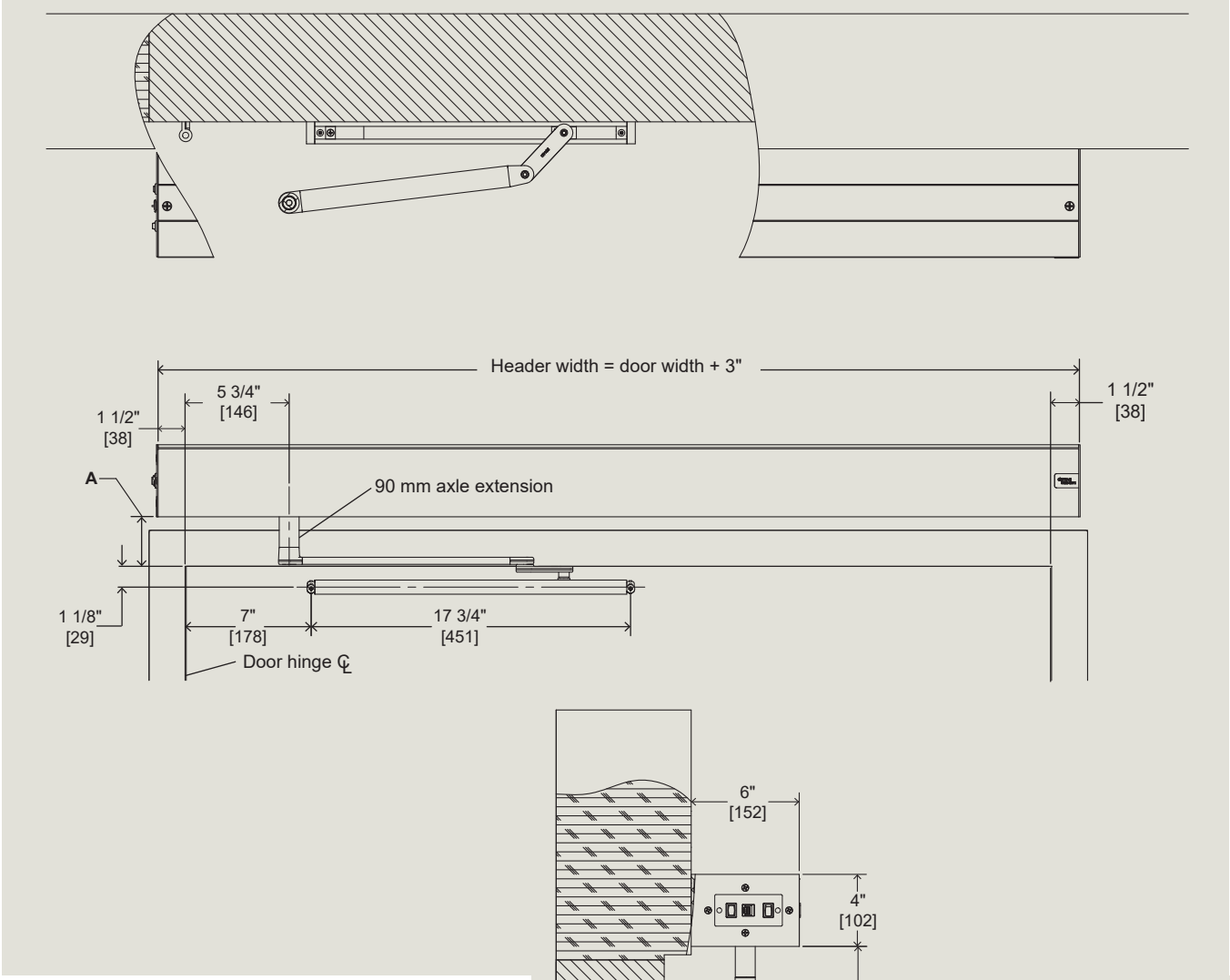
7.3.1 Axle distance "A"

Bottom of header to bottom edge of door frame.

Axle extension	ED50/ED100	ED250	**A**
Arm	•	•	7/16"
20 mm	•	•	1 1/4"
30 mm	•	•	1 5/8"
60 mm	•	•	2 7/8"
90 mm	--	•	4"

7.4 Narrow header (4 x 6") – deep pull arm template

Fig. 7.4.1 Deep pull arm template



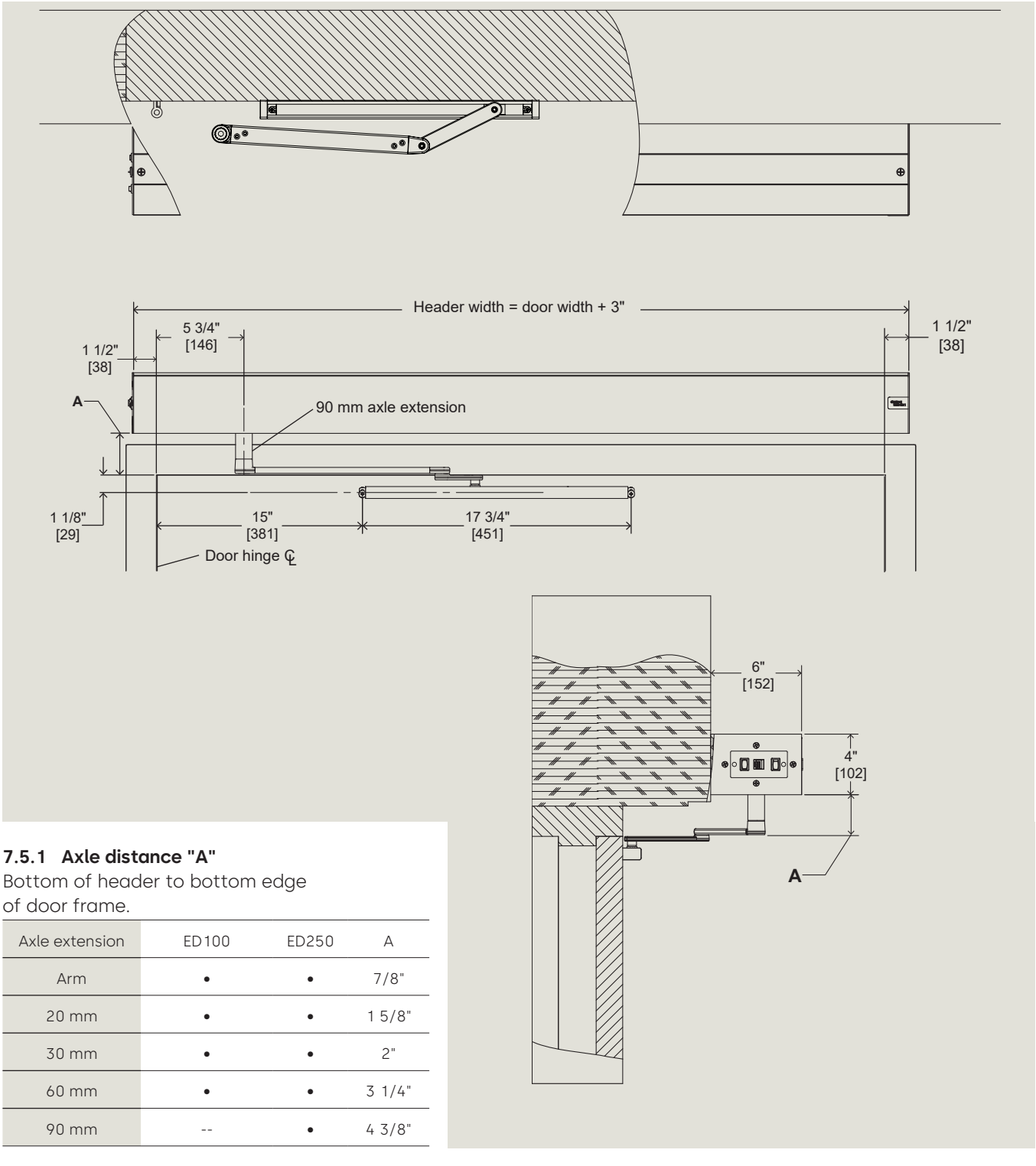
7.4.1 Axle distance "A"

Bottom of header to bottom edge of door frame.

Axle extension	ED50/ED100	ED250	A
Arm	•	•	7/8"
20 mm	•	•	1 5/8"
30 mm	•	•	2"
60 mm	•	•	3 1/4"
90 mm	--	•	4 3/8"

7.5 Narrow header (4 x 6") – deep reveal pull arm template

Fig. 7.5.1 Deep reveal pull arm template



7.5.1 Axle distance "A"

Bottom of header to bottom edge of door frame.

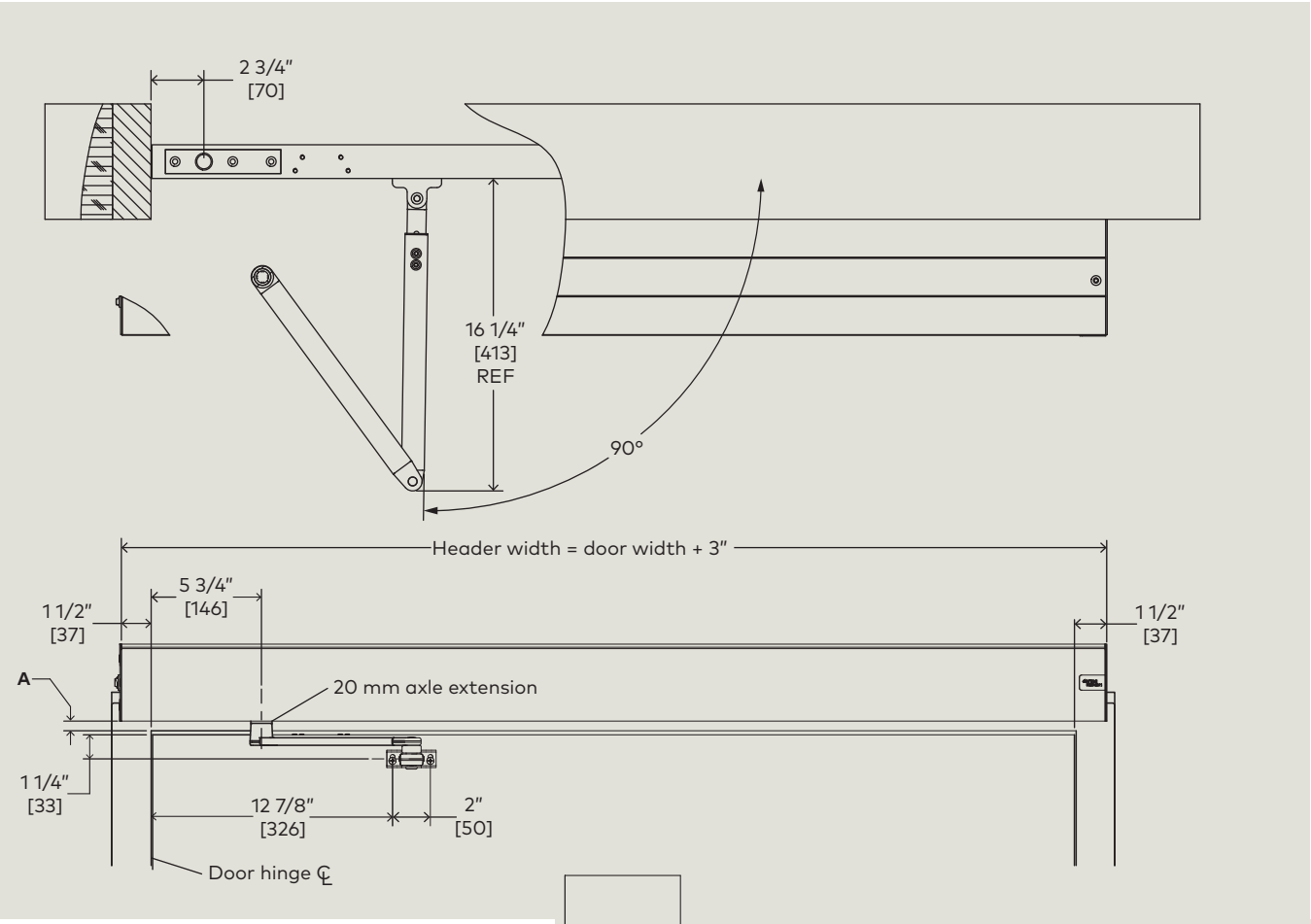
Axle extension	ED100	ED250	A
Arm	•	•	7/8"
20 mm	•	•	1 5/8"
30 mm	•	•	2"
60 mm	•	•	3 1/4"
90 mm	--	•	4 3/8"

7.5 Center hung pivot door, narrow header (4 x 6"), push arm template

NOTICE

ANSI/BHMA 156.10 Standard for Power Operator Pedestrian Doors – Finger guard requirement: Para. 10.2.10.
The opening at hinge side of center pivoted swinging doors shall be:
a) Less than 1/4" wide with the door in any position, or
b) At least 3/4" wide with the door in any position.
A door that does not comply with the above is acceptable if provided with a **finger guard**.

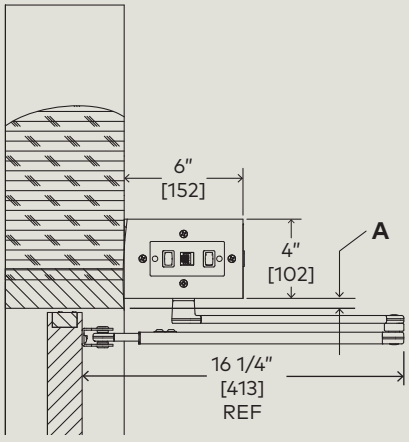
Fig. 7.5.1 Center hung pivot door, push arm template



7.5.1 Axle distance "A"

Bottom of header to bottom edge of door frame.

Axle extension	ED50/ED100	ED250	A
Arm	•	•	0
20 mm	•	•	5/8"
30 mm	•	•	1"
60 mm	•	•	2 1/8"
90 mm	--	•	3 1/4"

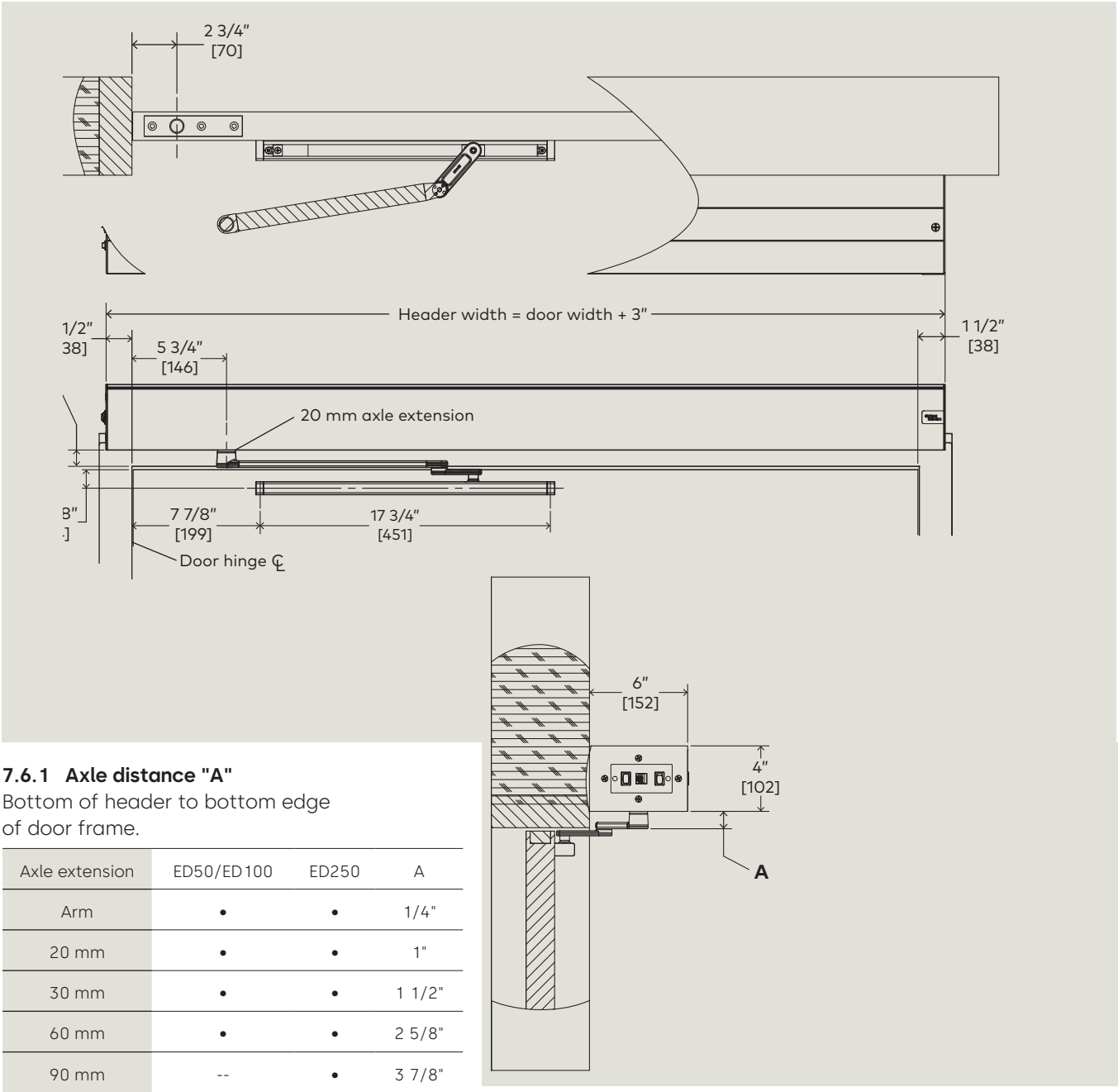


7.6 Center hung pivot door, narrow header (4 x 6"), pull arm template

NOTICE

ANSI/BHMA 156.10 Standard for Power Operator Pedestrian Doors – Finger guard requirement: Para. 10.2.10.
The opening at hinge side of center pivoted swinging doors shall be:
a) Less than 1/4" wide with the door in any position, or
b) At least 3/4" wide with the door in any position.
A door that does not comply with the above is acceptable if provided with a **finger guard**.

Fig. 7.61 Center hung pivot door, pull arm template



7.6.1 Axle distance "A"

Bottom of header to bottom edge of door frame.

Axle extension	ED50/ED100	ED250	A
Arm	•	•	1/4"
20 mm	•	•	1"
30 mm	•	•	1 1/2"
60 mm	•	•	2 5/8"
90 mm	--	•	3 7/8"

8 ED50/ED100/ED250 narrow header installation

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 narrow header 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 narrow header installation.

8.1.3 Narrow header installation preparation.

CAUTION

Use applicable ED50/ED100/ED250 installation template (Chapter 7). Holes for narrow header fasteners must be located and drilled into door frame, wall or substructure prior to mounting narrow header.

8.1.5 ED50/ED100/ED250 115 Vac electrical installation.

WARNING

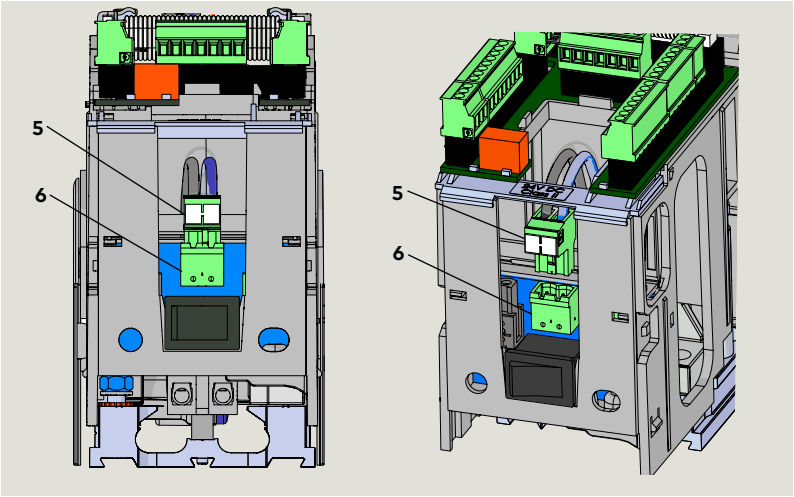
Work on electrical equipment and 115 Vac wiring installation must be performed only by qualified personnel!

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

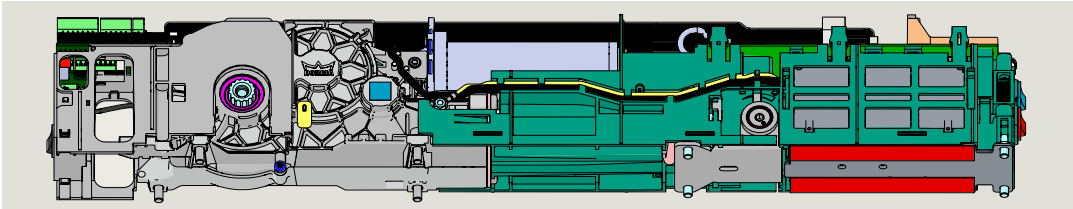
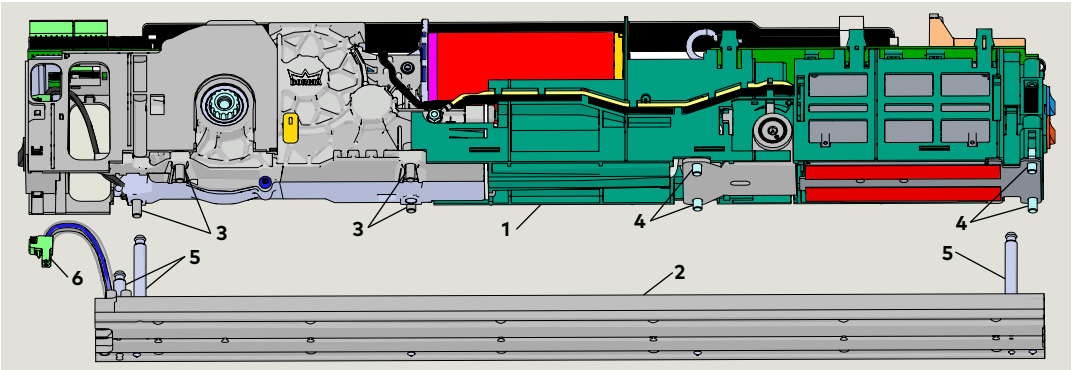
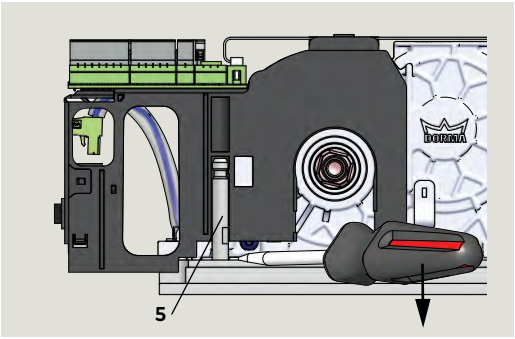


Fig. 8.2.3 ED100/ED250 operator mounting plate removed



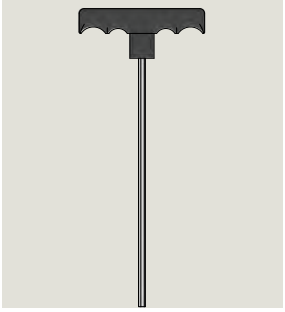
1 ED100/ED250 operator
2 Mounting plate
5 115 Vac plug
3 M6 X 20 SHCS
4 M6 X 10 SHCS
5 Guide pin
6 115 Vac plug

Fig. 8.2.4 Mounting plate removal



5 Guide pin

Fig. 8.2.5 5 mm T-handle hex key



8.3 Single door header installation

8.3.1 Single door header installation preparation.

1. Door frame installed.
2. Confirm header width.

- Header width equals door frame width plus three inches.

3. Confirm handing of door with header.
4. Determine type of door frame or header mounting surface.
5. Determine type and location of studs, or wall material, above door frame.
6. Mark stud locations on wall above door frame.
7. Select header mounting screws (Para. 2.4).

Fig. 8.3.1 Door frame width

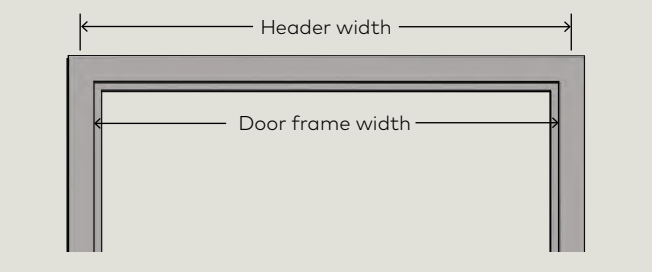


Fig. 8.3.2 Header width

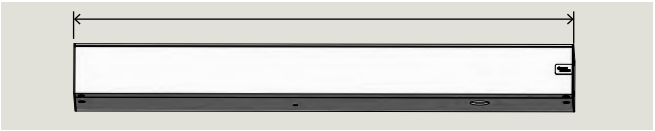
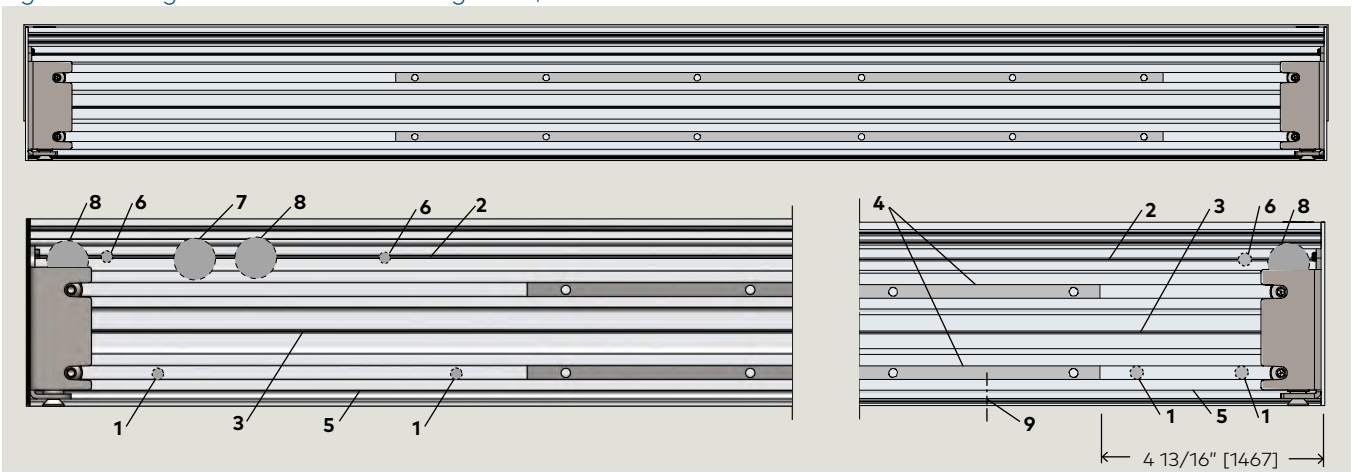


Fig. 8.3.3 Single door header mounting holes, conduit holes



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

8.3.2 Drill holes in header.

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

TIPS AND RECOMMENDATIONS

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

8.3.3 Install Mode switch panel.

1. Install Modeswitch panel in header (Para. 8.4).

8.3.4 Mount header to door frame.

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

- Use shims as required to make header square to door frame.

CAUTION

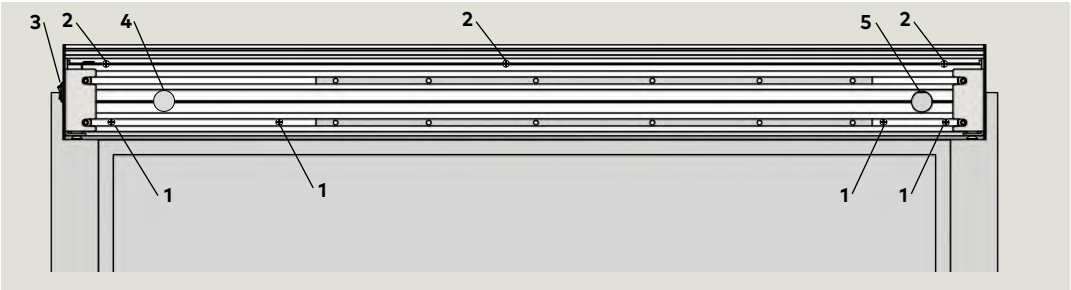
Header must be square to door frame!

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

CAUTION

After drilling holes, clean all metal debris from header!

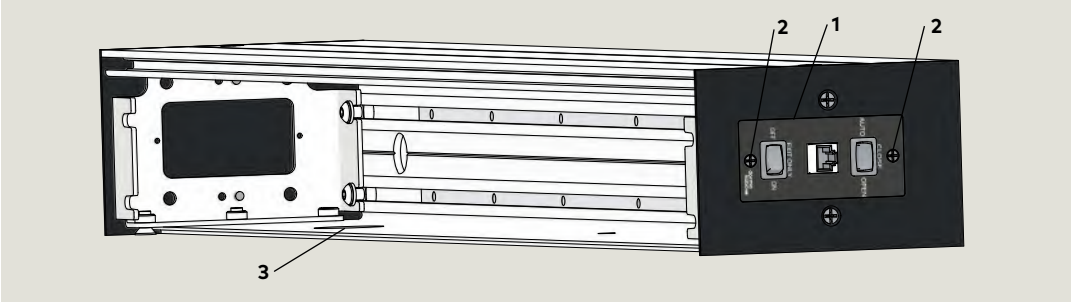
Fig. 8.3.4 Header located on door frame



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

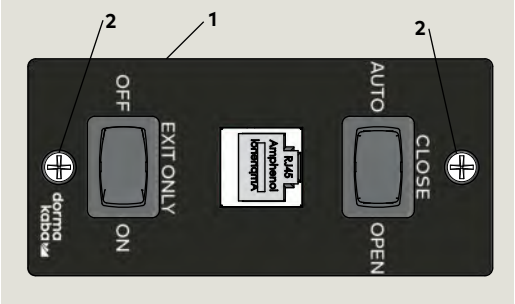
8.4 Install Mode switch panel in header

Fig. 8.4.1 Mode switch panel installed in header



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

Fig. 8.4.2 Mode switch panel



1 Mode switch panel
Ref.: Para. 2.8
2 1/8-32 x 1/4 FHMS

8.4.1 Fasten Mode switch panel to header door strike side.

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

TIPS AND RECOMMENDATIONS

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

- Mode switch panel cable length is 36".
  Refer to Para. 2.8.

8.5 Double door header installation

8.5.1 Double door header installation preparation.

1. Door frame installed.
2. Confirm header width.

- Header width equals door frame width plus three inches.

3. Determine type and location of studs, or wall material, above door frame.
4. Mark stud locations on wall above door frame.
5. Select header mounting screws (Para. 2.4).

Fig. 8.5.1 Header and door frame width

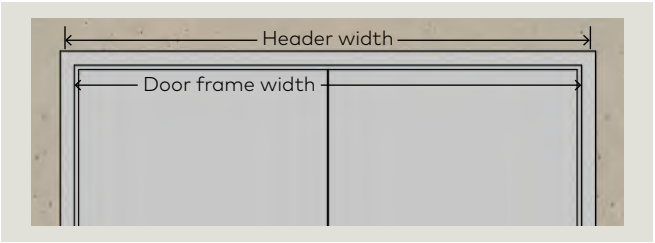
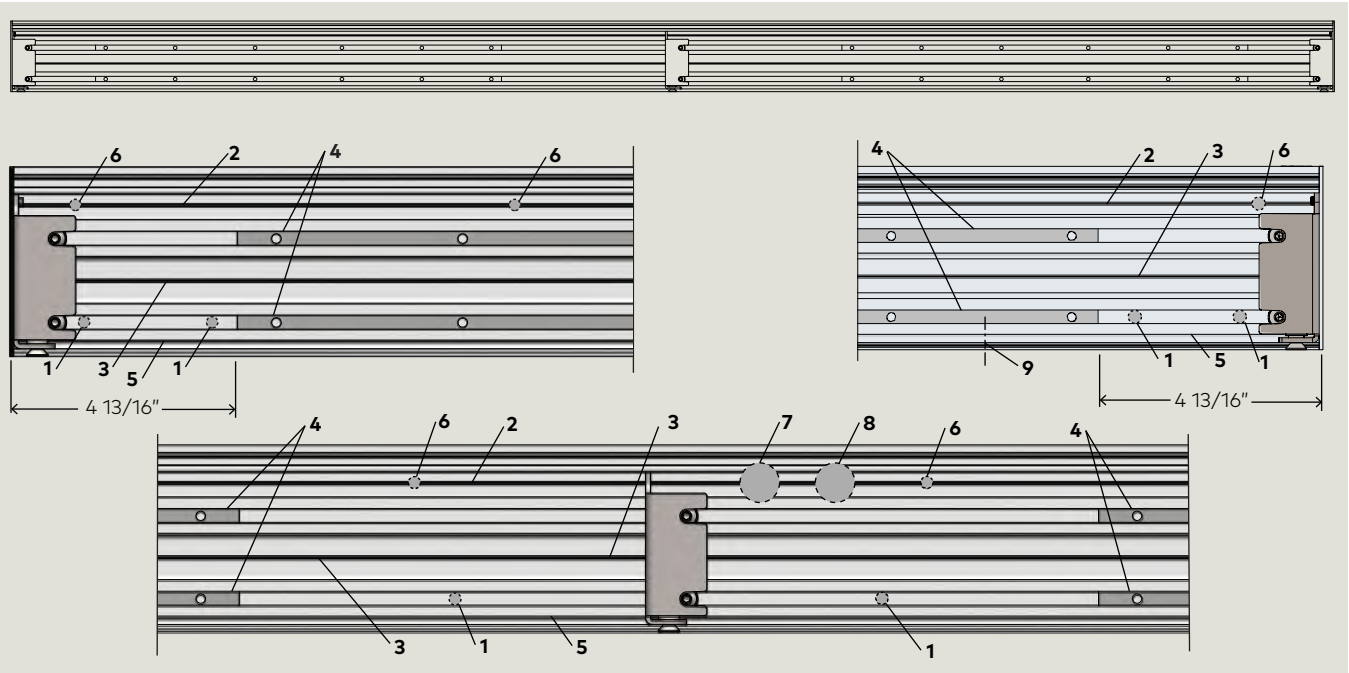


Fig. 8.5.2 Double door header mounting holes, conduit holes



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

8.5.2 Drill holes in header.

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

TIPS AND RECOMMENDATIONS

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

8.5.3 Install mode and exit only switch panel.

1. Install mode and exit only switch panel in header (Para. 8.4) on active door side.

8.5.4 Mount header to door frame.

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

- Use shims as required to make header square to door frame.

CAUTION

Header must be plumb and level to door frame!

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

CAUTION

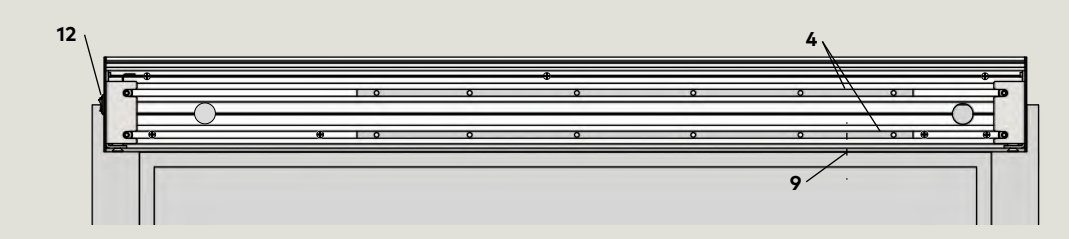
After drilling holes, clean all metal debris from header!

9 ED50/ED100/ED250 operator installation

9.1 Single door narrow header mounting plate installation

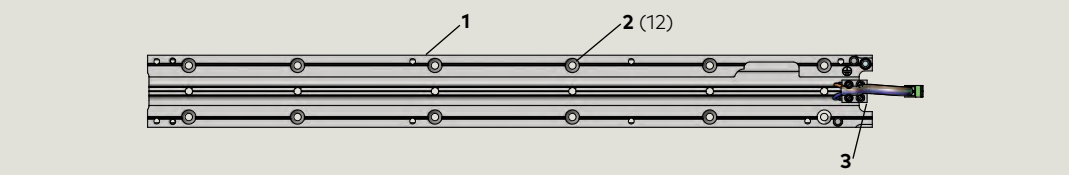
4 Header track
9 Operator axle hole
12 Program switch panel

Fig. 9.1.1 Narrow header with header tracks



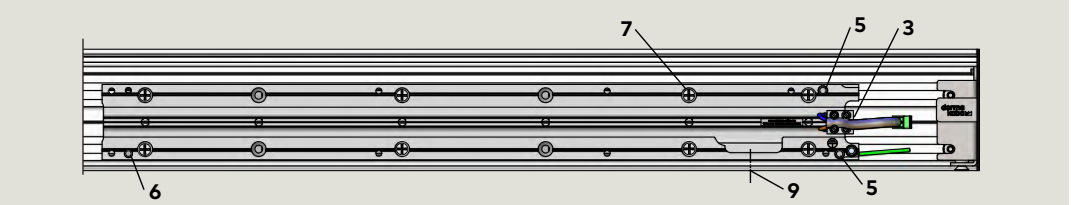
1 Mounting plate
2 1/4 x 20 UNC hole
3 115 VAC terminal block
11 1/4-20 x 1" PHFS DK4617-010

Fig. 9.1.2 Mounting plate



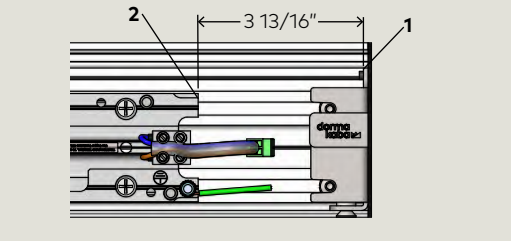
3 115 VAC terminal block
5 Guide pin
6 Third guide pin
7 1/4-20 x 1" FHMSP
9 Operator axle centerline

Fig. 9.1.3 Header with mounting plate installed



1 Inside edge of jamb bracket
2 Edge of mounting base

Fig. 9.1.4 Mounting plate location in header

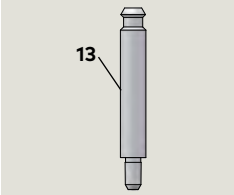


11 1/4-20 x 1" PHFS
12 Guide pin

Fig. 9.1.5 1/4-20 x 1" PHFS



Fig. 9.1.6 Guide pin



9.1.1 Position header tracks.

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

9.1.2 Fasten mounting plate to header tracks.

1. Place mounting plate on header tracks, aligning holes in header track with 1/4 x 20 UNC mounting plate holes.
2. Thread eight 1/4-20 x FSMSP into mounting plate hole locations (Fig. 9.1.3). Do not tighten screws.

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

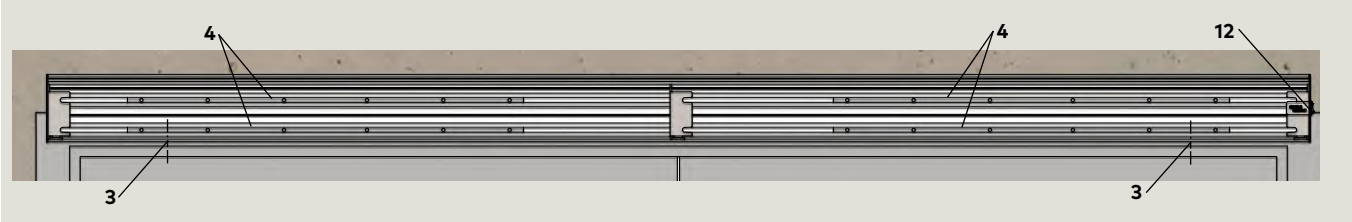
1. Slide mounting plate to dimension shown between inside edge of jamb bracket and edge of mounting plate (Fig. 9.1.4).
2. Tighten all eight screws using No. 3 Phillips screwdriver. Recheck dimension in step 1.

9.1.4 Install third guide pin.

1. Install third guide pin (6).

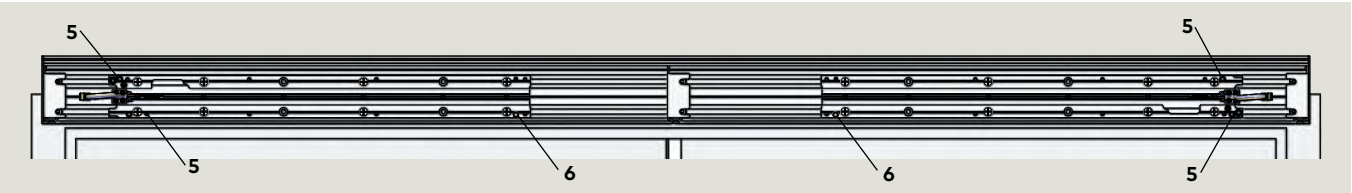
9.2 Double door narrow header mounting plate installation

Fig. 9.2.1 Double door narrow header with header tracks



3 Axle centerline
4 Header track
12 Program switch panel

Fig. 9.2.2 Double header with mounting plates installed



5 Guide pin
6 Third guide pin

Fig. 9.2.3 Power connect cable

8 Power connect cable DX3484-0x0

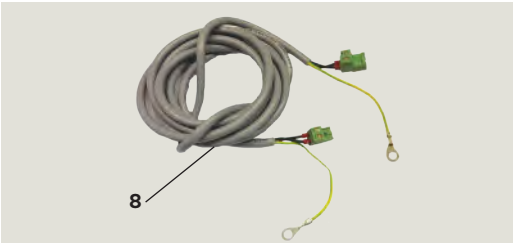
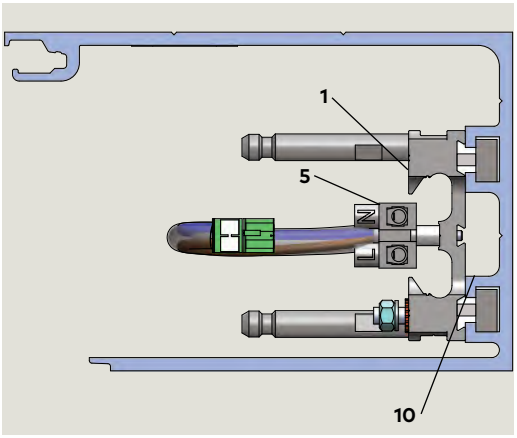


Fig. 9.2.4 Header and mounting plate wiring channels

1 Mounting plate channel
5 115 Vac terminal block
10 Header center channel



9.2.1 Install mounting plates in double header.

1. Reference Para. 9.1.

9.2.2 Install Power connect cable.

1. Route Power connect cable through both mounting plate channels.
- Reference Para. 2.4 for Power connect cable lengths.

TIPS AND RECOMMENDATIONS

Cable will connect 115 Vac between the two operators (Ref. Para. 9.4).

9.2.3 Install third guide pin.

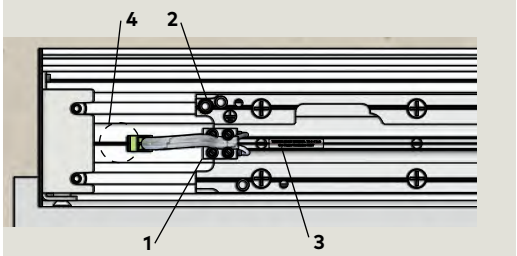
1. Install third guide pin in each mounting plate (Fig. 9.2.2).

TIPS AND RECOMMENDATIONS

Use header center channel for low voltage wiring.

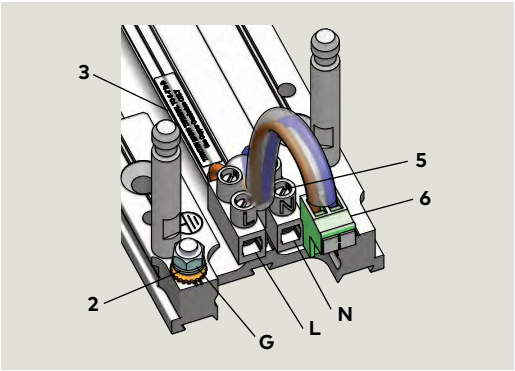
9.3 Customer 115 Vac connection to mounting plate terminal block

Fig. 9.3.1 Mounting plate power connection side



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

Fig. 9.3.2 115 Vac connections



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

Fig. 9.3.3 Mains terminal torque and wire label

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

TIPS AND RECOMMENDATIONS

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

9.3.1 Connect 115 VAC wiring.

WARNING

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

WARNING

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

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

CAUTION

Use copper conductors only!

2. Terminate 115 Vac wiring at terminal block.

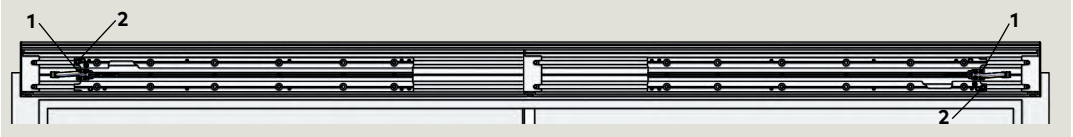
TIPS AND RECOMMENDATIONS

- Maximum wire strip length, 1/4".
- Tighten terminal screws to torque referenced in Fig. 9.3.3.
- Leave service loop in wiring at terminal block for maintenance.

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

9.4 Double door header 115 Vac mounting plate connection

Fig. 9.4.1 Double door header 115 Vac connection



1 115 Vac terminal block
2 Ground stud

NOTICE

Power connect cable connects the two operators together (Para. 9.2.2).

9.4.1 115 Vac connection to double door header.

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

9.5 Remove protective film strips from ED operator

9.5.1 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. 9.5.1 ED50 operator heat conductive pads

1 Heat conductive pad

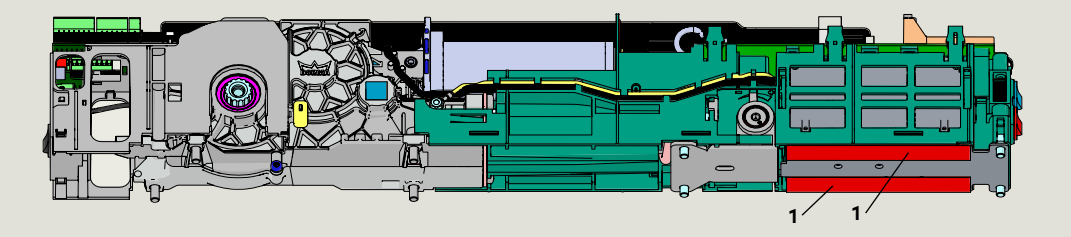


Fig. 9.5.2 ED100/ED250 operator heat conductive pads

1 Heat conductive pad

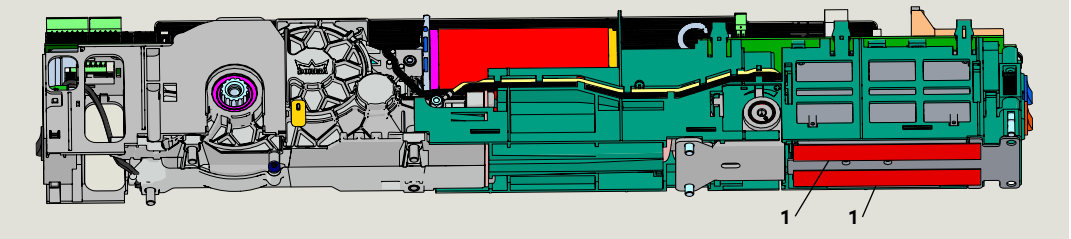
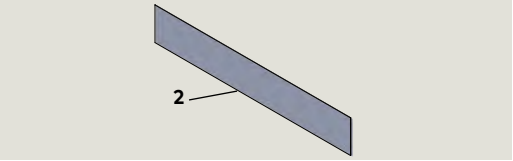


Fig. 9.5.3 Protective film strip

2 Protective film strip



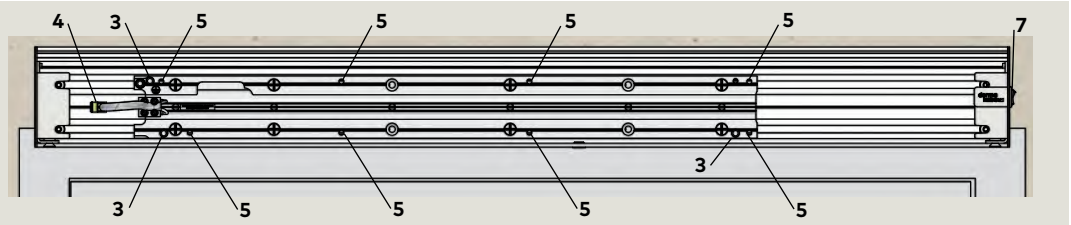
9.6 Install ED100/ED250 operator on mounting plate in header

Fig. 9.6.1 Header with mounting plate installed

3 Guide pin

4 115 Vac plug and cable to mounting plate 115 Vac terminal block

5 M6 SHCS mounting hole



9.6.1 Install operator on mounting plate.

CAUTION

Insure protective film strips have been removed from heat conductive pads (Para. 9.5).

1. Place operator over the three mounting plate guide pins.
2. Move operator in toward mounting plate, guiding all wiring into operator housing.
3. Once operator is placed flush against mounting plate, use a 5 mm T handle hex key to thread eight M6 SHCS into mounting plate.
4. Tighten all eight SHCS.
5. Insert 115 Vac mounting plate plug into operator 115 Vac socket.

Fig. 9.6.2 Installing operator on mounting plate

1 M6 x 10 SHCS
1.1 M6 x 20 SHCS
3 Guide pin
4 115 Vac plug and cable to mounting plate 115 Vac terminal block
6 115 Vac terminal block

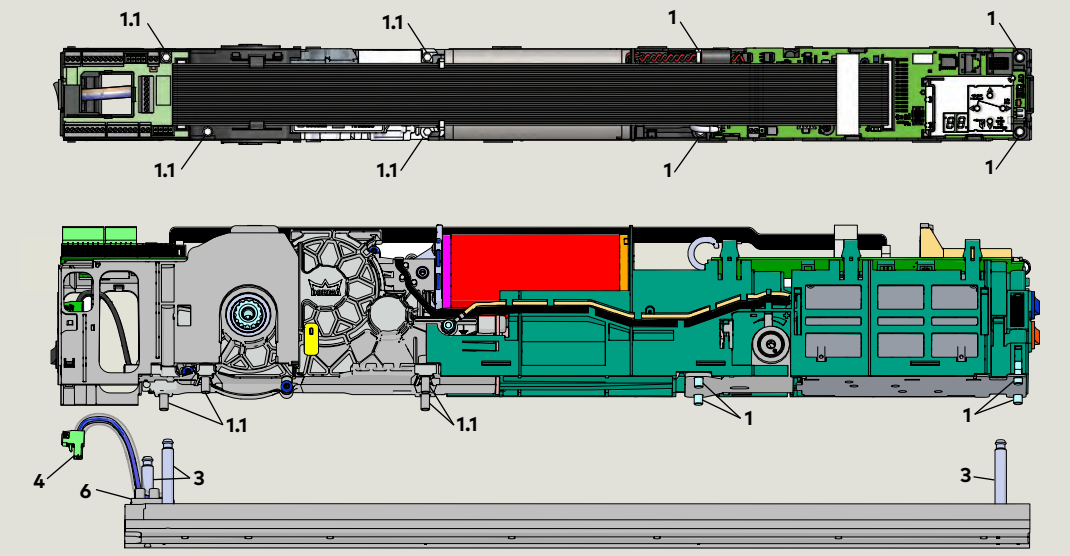
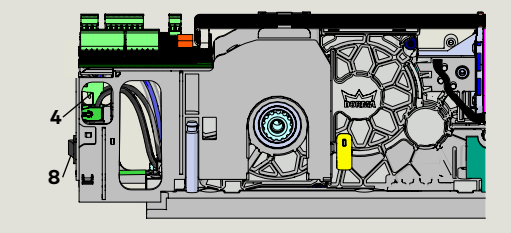


Fig. 9.6.3 115 Vac plug connection

4 115 Vac plug and cable to mounting plate 115 Vac terminal block
8 Power on switch



NOTICE

Customer 115 Vac wiring not shown for clarity.

Fig. 9.6.4 Operator and mounting plate assembly

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

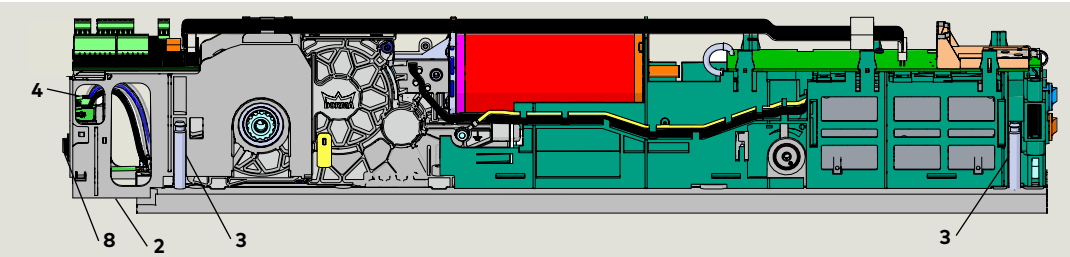


Fig. 9.6.5 Header with operator installed



9.7 Double door header ED100/ED250 operator installation

Fig. 9.7.1 Double door header with operators installed

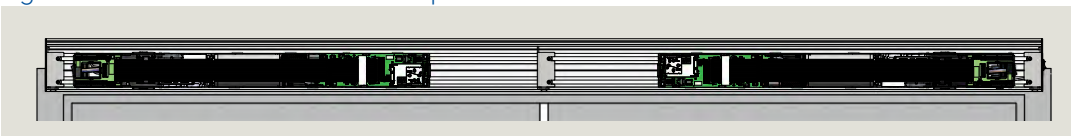
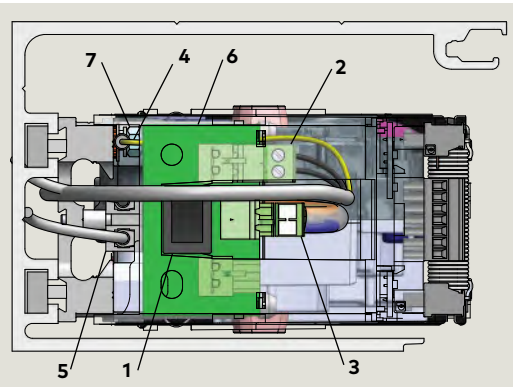


Fig. 9.7.2 115 Vac power cable installed on operator with 115 Vac customer connection



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

Fig. 9.7.3 115 Vac power cable installed on second operator

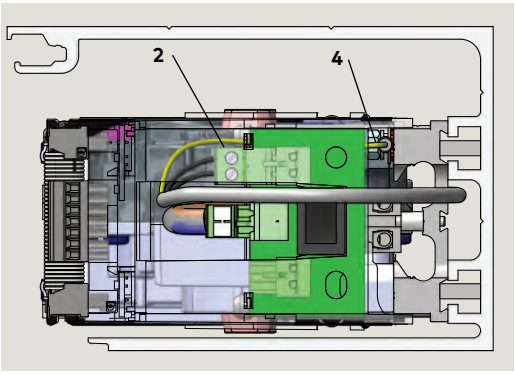
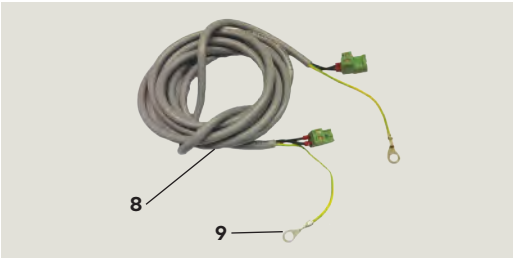


Fig. 9.7.4 Power connect cable



8 Power connect cable DX3484-0x0
9 Ground wire ring terminal

9.7.1 Install operators on mounting plates.

1. Refer to Para. 9.6 for installation of ED100/ED250 operators.

9.7.2 Connect 115 Vac power connect cable to both operators.

Refer to Para. 9.2 for installation of power cable in mounting plates.

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

TIPS AND RECOMMENDATIONS

Customer 115 Vac power connection may be on opposite operator.

9.8 Install ED50 operator on mounting plate in header

Fig. 9.8.1 Header with mounting plate installed

3 Guide pin
4 Mounting plate 115 VAC plug
5 M6 SHCS mounting hole
7 Program switch

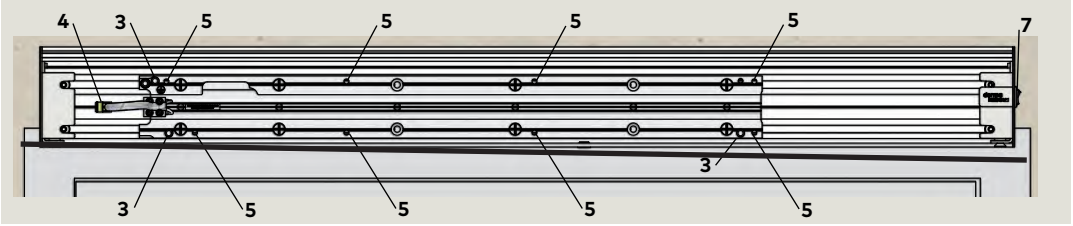


Fig. 9.8.2 Installing operator on mounting plate

1 M6 x 20 SHCS
1.1 M6 x 10 SHCS
2 Operator housing
3 Guide pin
4 Mounting plate 115 Vac plug
6 115 Vac terminal block

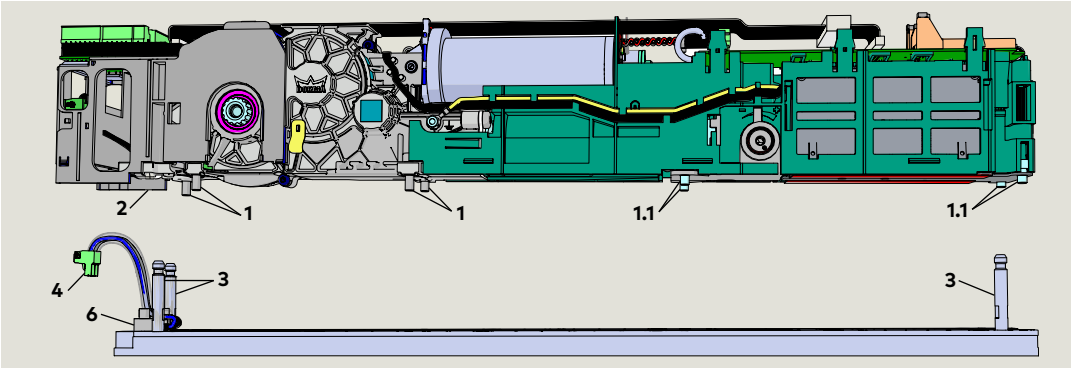
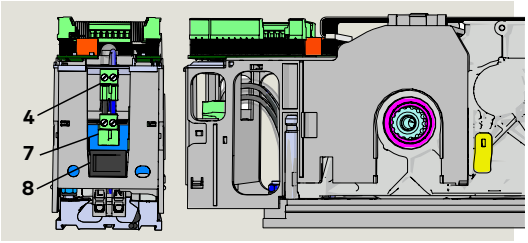


Fig. 9.8.3 115 Vac plug connection

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



NOTICE

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

9.8.1 Install operator on mounting plate.

CAUTION

Insure protective film strips have been removed from heat conductive pads (Para. 9.5).

1. Place operator over the three mounting plate guide pins.
2. Move operator in toward mounting plate, guiding all wiring into operator housing.
3. Insert 115 Vac mounting plate plug into operator 115 Vac socket.
4. Once operator is placed flush against mounting plate, use a 5 mm T handle hex key to thread eight M6 SHCS into mounting plate.
5. Tighten all eight SHCS.

Fig. 9.8.4 Operator and mounting plate assembly

3 Guide pin
4 Mounting plate

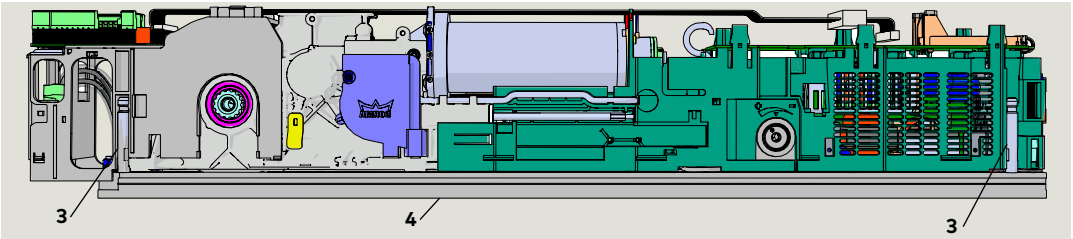


Fig. 9.8.5 Header with operator installed



9.9 Double header ED50 operator installation

Fig. 9.9.1 Double header with operators installed

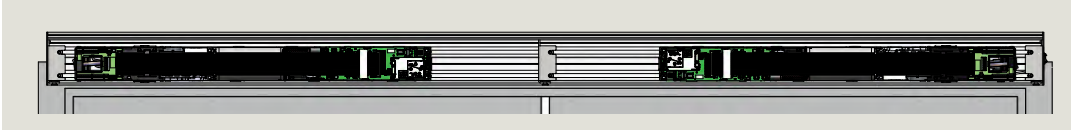
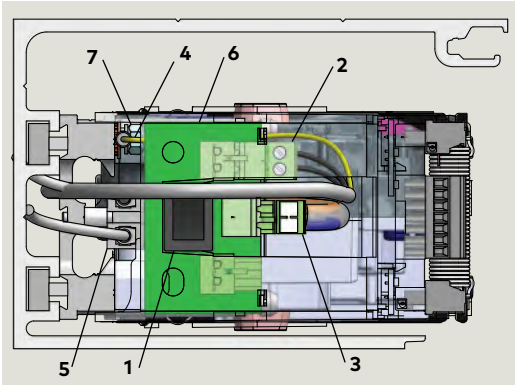
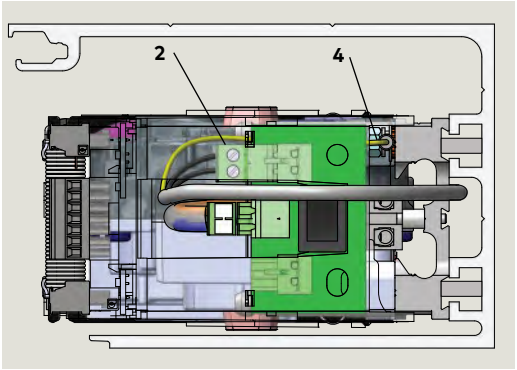


Fig. 9.9.2 115 Vac power cable installed on operator with 115 Vac customer connection



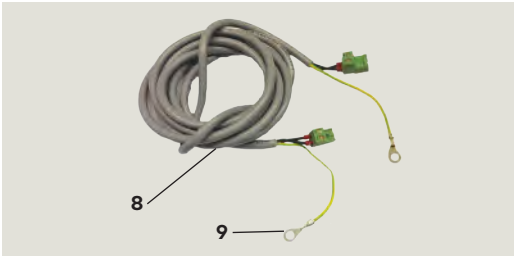
1 Power switch
2 Power cable 115 Vac plug
3 115 Vac cable to terminal block
4 Power cable ground wire and ring terminal
5 Customer 115 Vac power
6 Power switch board
7 Ground stud nut

Fig. 9.9.3 115 VAC power cable installed on second operator



2 Power cable 115 Vac plug
4 Power cable ground wire and ring terminal

Fig. 9.9.4 115 Vac power cable



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

9.9.1 Install operators on mounting plates.

1. Refer to Para. 9.8 for installation of ED50 operators.

9.9.2 Connect 115 Vac power cable to both operators.

1. Insert power cable (Fig. 9.7.4) 115 Vac plug into socket on power switch board.
- Remove ground stud nut (5/16" [8 mm] socket) and washer.
2. Insert power cable ground wire ring terminal on ground stud.
3. Replace washer, install ground stud nut and tighten.

TIPS AND RECOMMENDATIONS

Customer 115 Vac power connection may be on opposite operator.

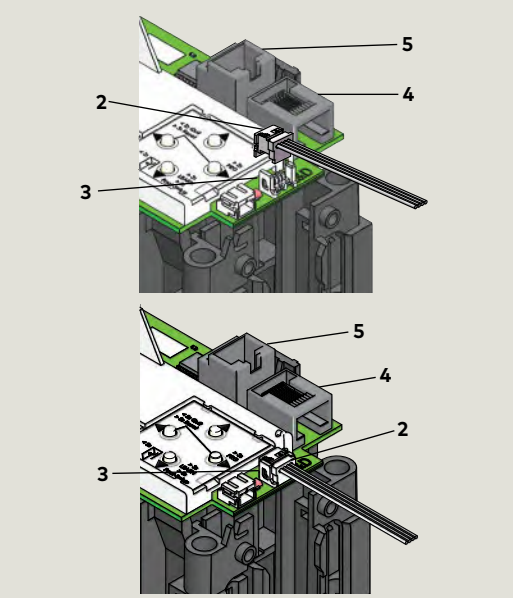
9.10 Connect cables to ED50/ED100/ED250 operator

Fig. 9.10.1 Narrow header with ED100/ED250 operator



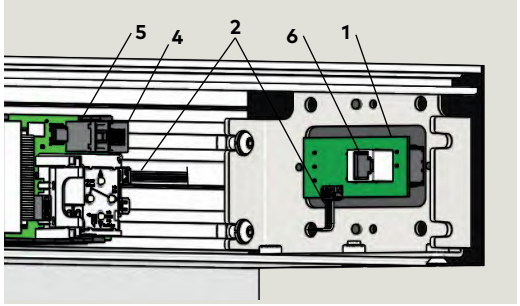
1 Program switch panel
3 Header for program switch cable
5 COM 1 service connector

Fig. 9.10.2 Cable installation on operator



1 Mode switch panel
2 Mode switch cable with connector 36" long
3 Header for mode switch cable
4 RJ 45 connector, Sync cable
5 COM 1 service connector
6 RJ 45 connector for Mode switch panel cable

Fig. 9.10.3 Mode switch panel RJ45



9.10.1 Connect mode switch cable to operator.

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

CAUTION

Connector inserts vertically into header connector.

Fig. 9.10.4 RJ45 comm cable



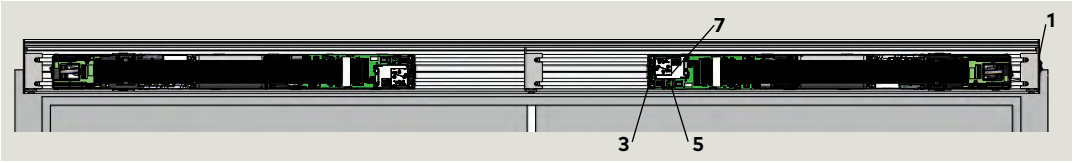
14 RJ45 communication cable DX4662-00x

9.10.2 Install RJ45 mode switch comm cable.

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

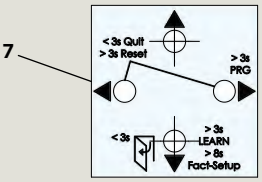
9.11 Double door header operator legend plate

Fig. 9.11.1 Double door header with operators installed



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

Fig. 9.11.2 Operator legend plate



9.11.1 Reverse legend plate orientation.

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

10 Pull arm installation

10.1 Pull arm installation

NOTICE

Reference Chapter 7, Installation Templates.

10.2 Pull arm assemblies

Fig. 10.2.1 Pull arm DK4709-11X

1 Pull arm
3 Track

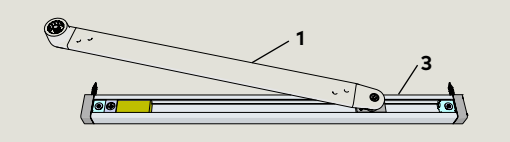


Fig. 10.2.2 Deep pull arm, LH DK4709-12X

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

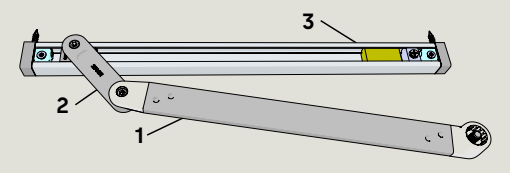


Fig. 10.2.3 Deep pull arm, RH DK4709-12X

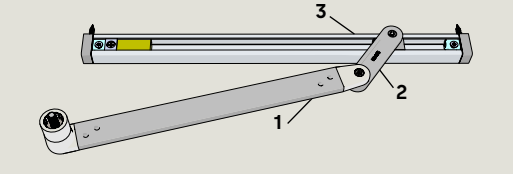


Fig. 10.2.4 Deep reveal pull arm kit, DK4709-13X, LH (ED100/ED250 only)

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

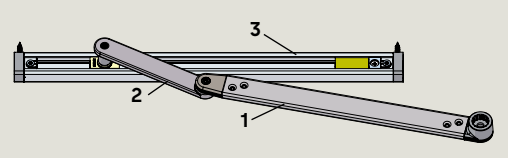
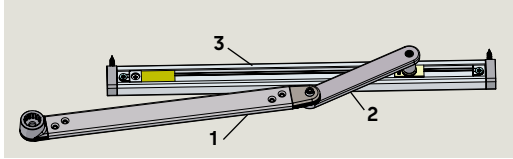


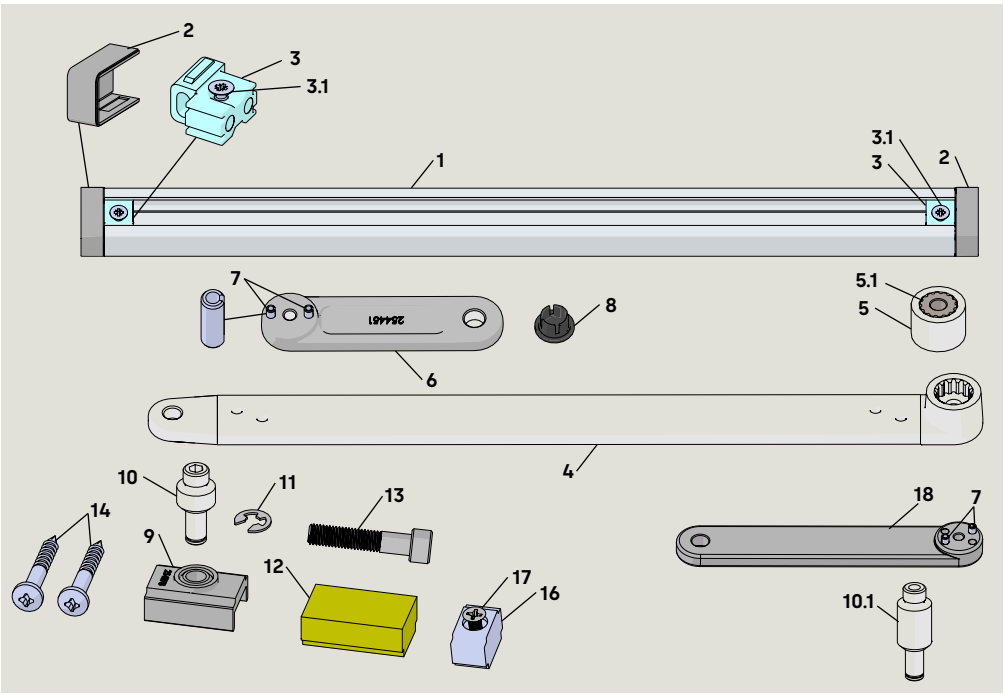
Fig. 10.2.5 Deep reveal pull arm kit, DK4709-13X, RH (ED100/ED250 only)



10.3 Pull arm hardware

Fig. 10.3.1 Pull arm hardware (combined)

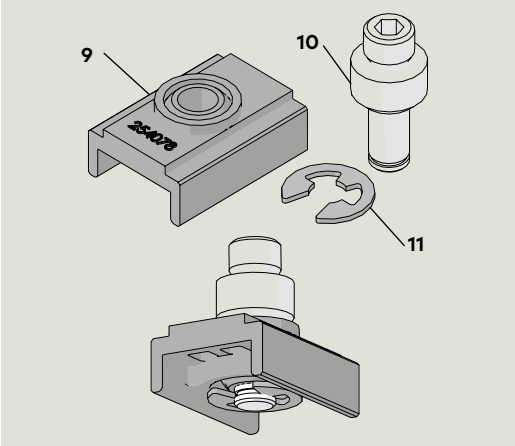
1 Track
2 End cap
3 Fixing piece
3.1 M5 x 15 Phillips FHS
4 Pull arm
5 20 mm axle extension
5.1 Splined shaft
6 CPD lever (deep pull)
6.1 M6 x 10 SHCS
7 Slotted spring pin
8 Arm cap
9 Slide shoe
10 1/2" Pivot pin
10.1 1" Pivot pin
11 Retaining ring
12 Bumper
13 M8 x 1.25 x 40 SHCS
14 Wood screws
15 Machine screws
16 Bumper stop
17 M5 x 13 FHMS cross recessed
18 CPD lever (deep reveal)



10.4 Assemble slide shoe

Fig. 10.4.1 Slide shoe and pivot pin

9 Slide shoe
10 Pivot pin
11 Retaining ring

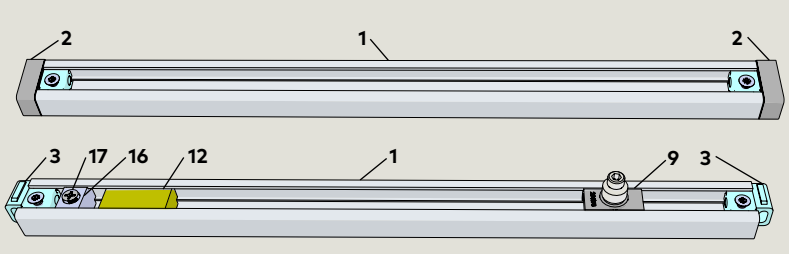


10.4.1 Install pivot pin into slide shoe.

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

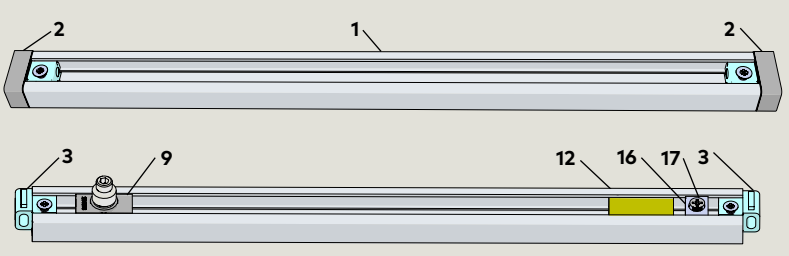
10.5 Install hardware into track

Fig. 10.5.1 RH track assembly



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

Fig. 10.5.2 LH track assembly



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

10.5.1 Track assembly.

CAUTION

Assemble track hardware based on RH or LH installation.

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

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

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

10.6 Assemble deep pull arm (DK4709-12X arm assembly) or deep reveal pull arm (DK4709-13X arm assembly) if used

6.1 M6 x 10 SHCS
7 Slotted spring pin

Fig. 10.6.1 Slotted spring pin

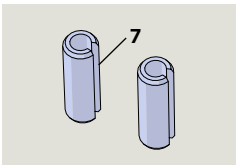
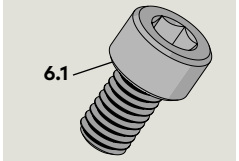
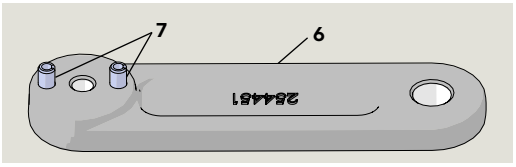


Fig. 10.6.2 M6 x 10 SHCS for CPD



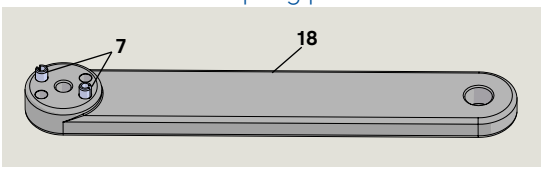
6 CPD lever - deep pull
7 Slotted spring pin

Fig. 10.6.3 Deep pull CPD lever and slotted spring pins



18 CPD lever - deep reveal
7 Slotted spring pin

Fig. 10.6.4 Deep reveal pull CPD lever and slotted spring pins



10.6.1 Deep pull arm and deep reveal pull arm assembly.

CAUTION

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

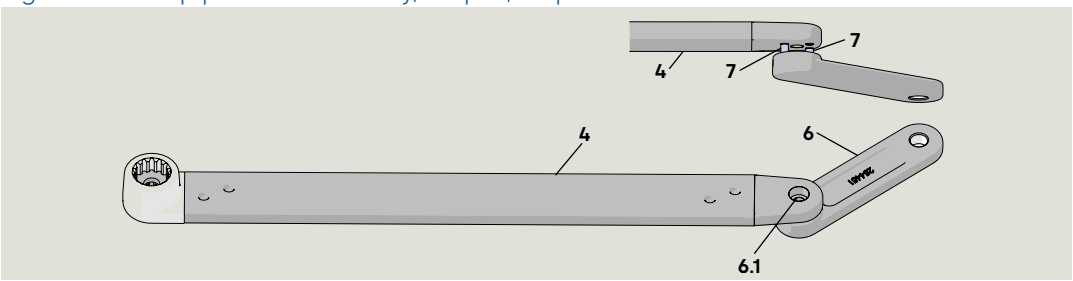
1. Press CPD lever slotted spring pins into corresponding holes in arm.
2. Secure CPD lever to arm with M6 x 10 SHCS.

NOTICE

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

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

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



4 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

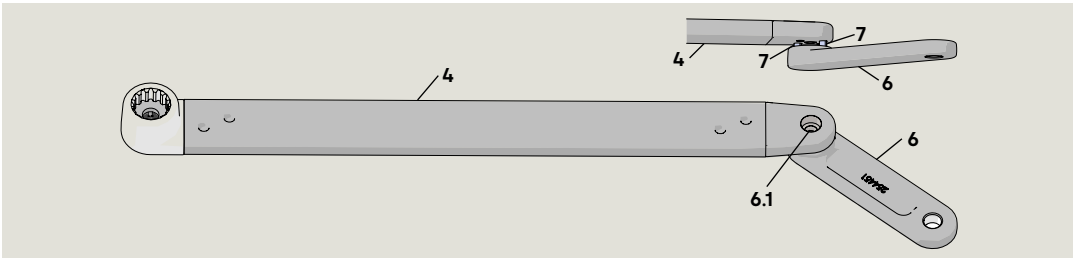


Fig. 10.6.7 Deep reveal pull arm assembly, LH pull, RH push (ED100/ED250 only)

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

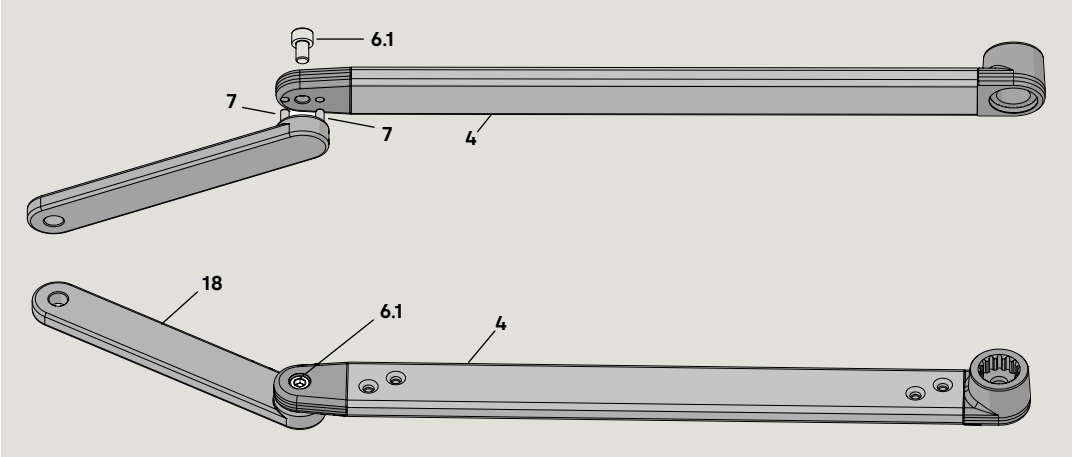
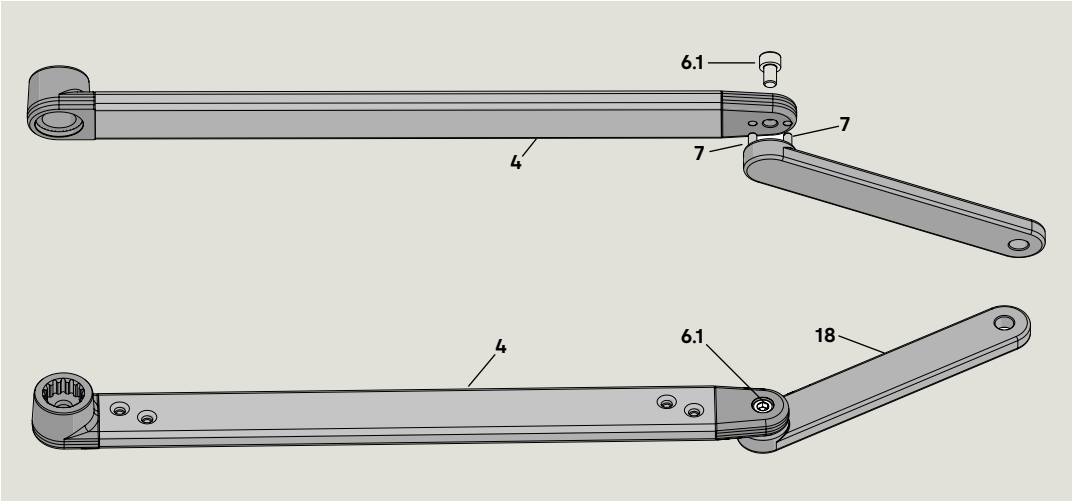


Fig. 10.6.8 Deep reveal pull arm assembly, RH pull, LH push (ED100/ED250 only)

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



10.7 Deep pull and deep reveal pull arm installation

NOTICE

Reference Chapter 7 – Installation templates.

NOTICE

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

Fig. 10.7.1 Deep pull arm parallel to door

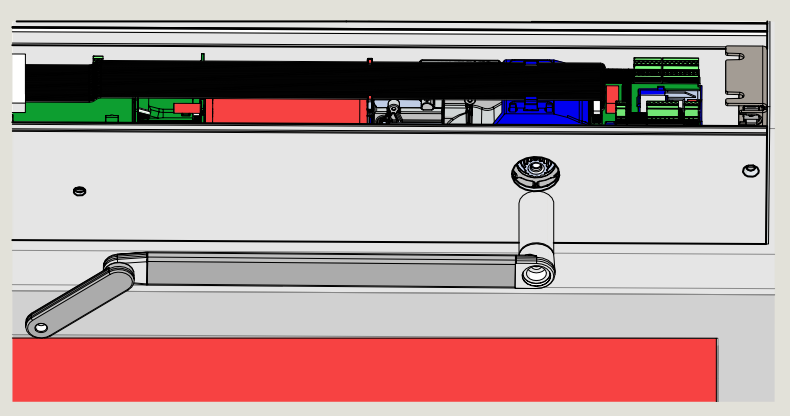
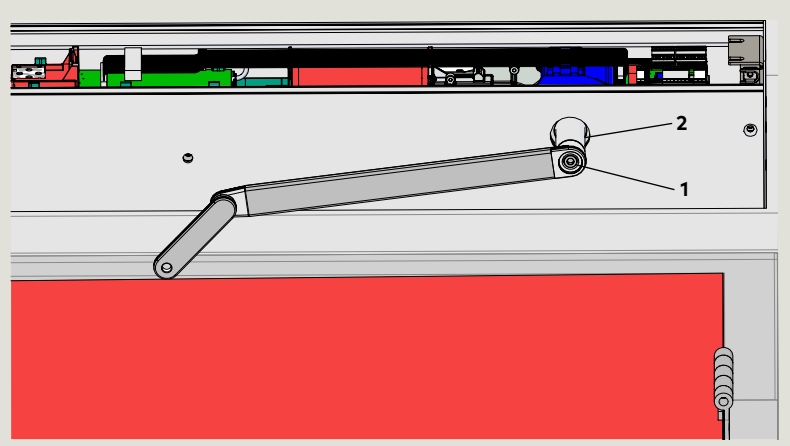
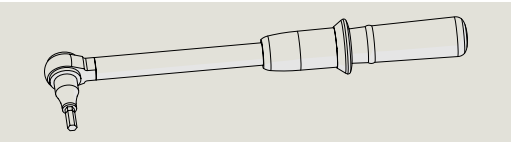


Fig. 10.7.2 Deep pull arm installed on ED100/ED250 spindle



1 M8 SHCS **2** Axle extension

Fig. 10.7.3 Torque wrench, 5 mm hex key



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

TIPS AND RECOMMENDATIONS

ED100/ED250 operator shown in illustrations.

TIPS AND RECOMMENDATIONS

Deep pull arm shown in illustrations.

WARNING

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

CAUTION

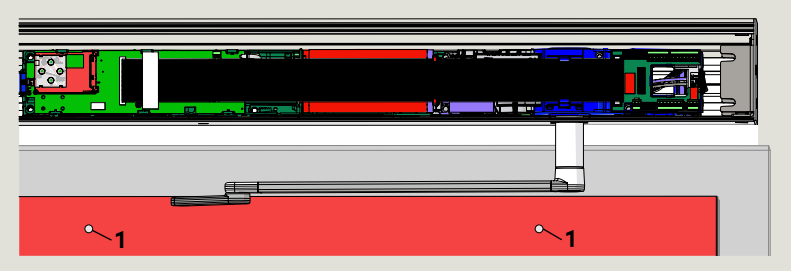
ED50/ED100/ED250 operator axle closed position.
Spindle must be at zero position to mount the arm correctly.

1. Set ED50/ED100/ED250 operator spring tension based on door width. Reference Chapter 12.
2. Position arm with axle extension 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 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. Thread the M8 x ___ mm SHCS (length determined by axle extension) into spindle and tighten SHCS.

CAUTION

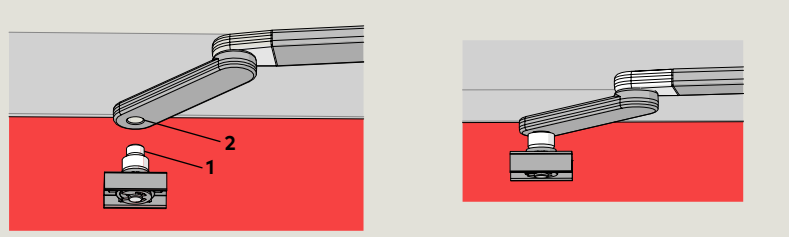
Use torque wrench with hex key socket to tighten M8 screw to 26 ft-lb [35.3 Nm].

Fig. 10.7.4 Track mounting holes in door



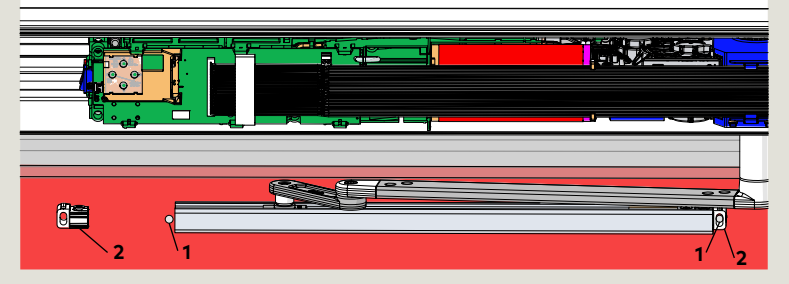
1 Track mounting hole

Fig. 10.7.5 Slide shoe installation on CPD lever



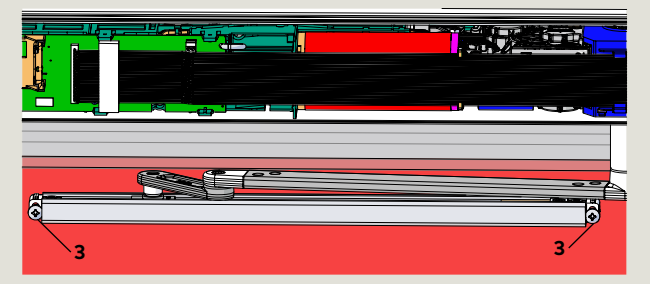
1 Pivot pin M8 SHCS **2** CPD lever

Fig. 10.7.6 Track installed over shoe



1 Track mounting hole **2** Fixing piece

Fig. 10.7.7 Track installed



3 Track fastener

10.7.2 Locate and drill track mounting holes.

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

- Reference Para. 2.13 for pull arm track fasteners.

10.7.3 Install slide shoe assembly onto pull arm.

1. Thread pivot pin M8 SHCS into CPD lever mounting hole.

- Use 6 mm hex key to tighten.

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

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. Remove fixing piece from track on opposite end from bumper.
2. Slide track assembly onto shoe (Fig. 10.7.6), lining up fixing piece with mounting hole in door.
3. Install second fixing piece onto track and secure with mounting screw. Do not overtighten.

10.7.6 Secure track assembly to door.

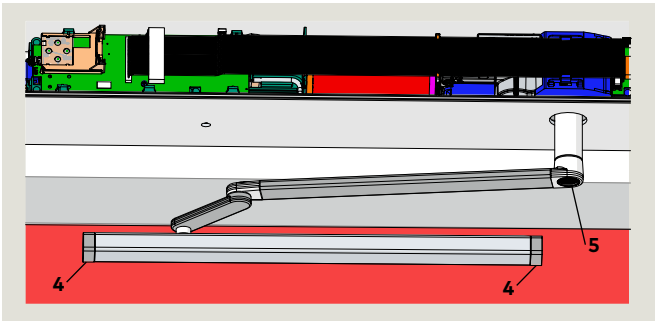
1. Attach track fixing pieces to door using selected fasteners.

- Insure track is level as fasteners are tightened.

10.7.7 Install end caps and spindle cap.

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

Fig. 10.7.8 Track end caps, spindle cap



4 Track end caps **5** Spindle cap

10.8 Standard pull arm installation

NOTICE

Reference Chapter 7 – Installation templates.

Fig. 10.8.1 Drive arm parallel to door

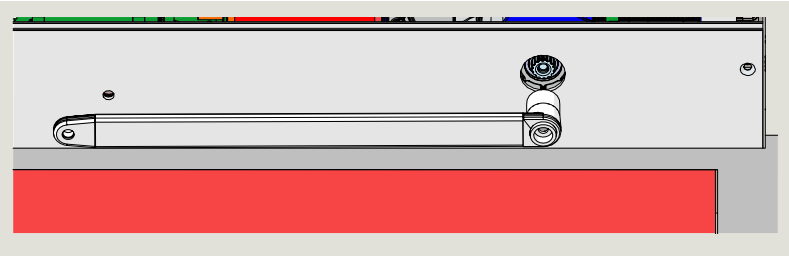
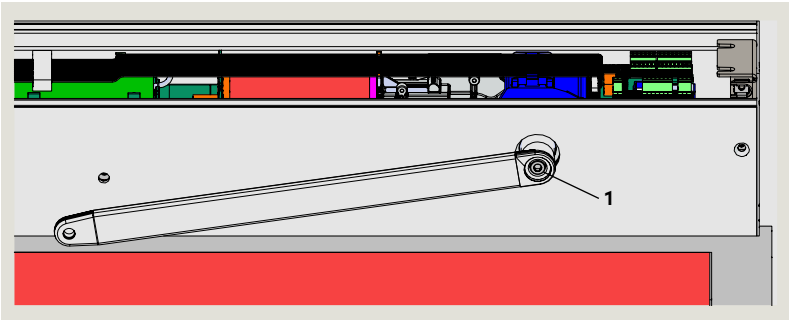


Fig. 10.8.2 Drive arm installed on ED100/ED250 spindle



1 M8 SHCS

10.8.1 Mount drive arm to ED50/ED100/ED250 operator.

WARNING

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

CAUTION

ED100/ED250 operator axle at 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 12.
2. Position pull arm with axle extension, if used, parallel to door (Fig. 10.8.1).
3. Rotate pull arm with axle extension one spindle tooth in door closed direction.
- Depending on door reveal, this arm position may be more than one spindle tooth from the arm parallel to door position (step 2).
4. Install drive arm with 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].

Fig. 10.8.3 Torque wrench, 5 mm hex key

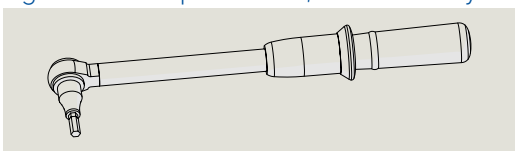
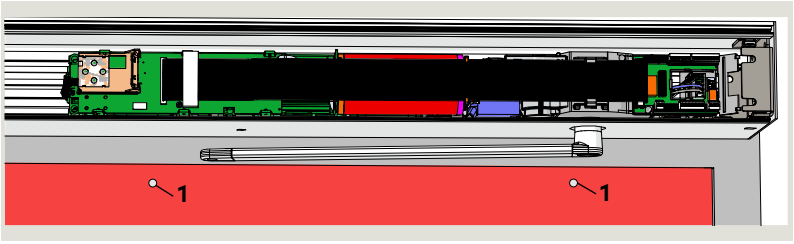
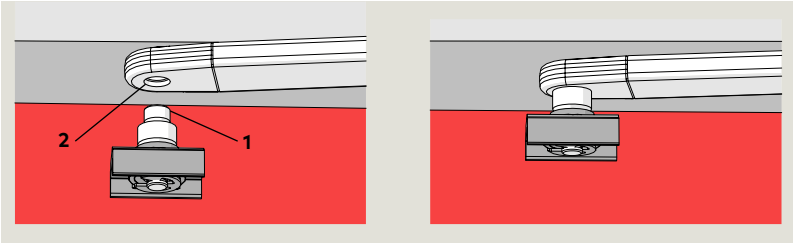


Fig. 10.8.4 Track mounting holes in door, standard arm 1/2" pivot pin



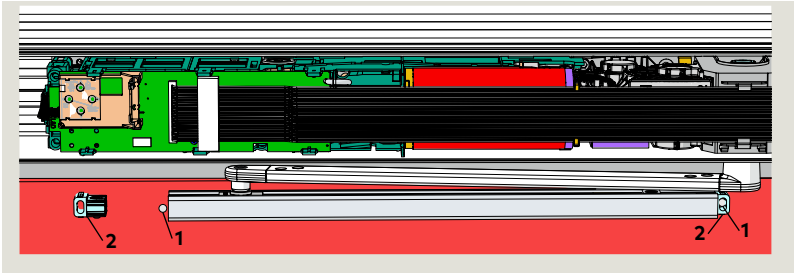
1 Track mounting holes

Fig. 10.8.5 Slide shoe installation on drive arm



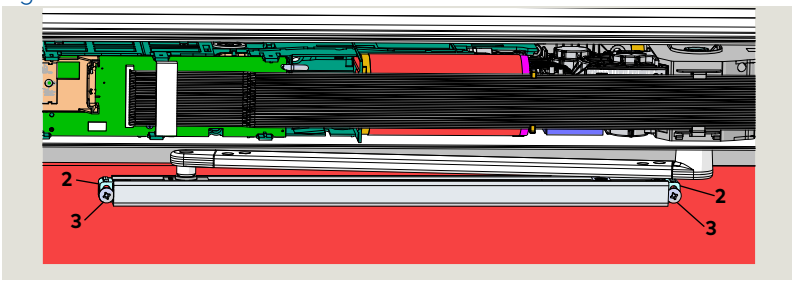
1 Pivot pin M8 SHCS **2** Drive arm M8 mounting hole

Fig. 10.8.6 Track installed over shoe



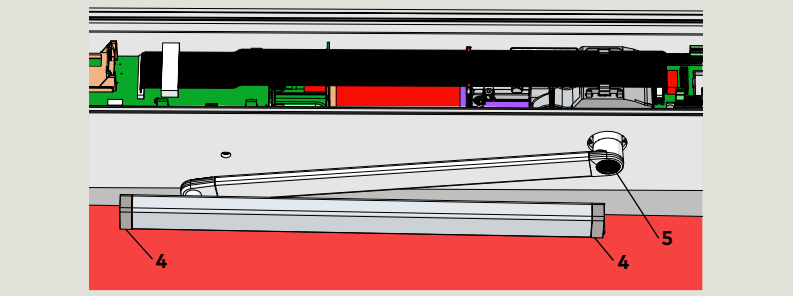
1 Track mounting hole **2** Fixing piece

Fig. 10.8.7 Track installed on door



2 Fixing piece **3** Track fastener

Fig. 10.8.8 Track end caps, spindle cap



4 Track end cap **5** Spindle cap

10.8.2 Locate and drill track mounting holes.

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

- Reference Para. 2.13 for track fasteners.

10.8.3 Install slide shoe assembly onto standard drive arm.

1. Thread pivot pin M8 SHCS into standard arm mounting hole.

- Use 6 mm hex key to tighten.

10.8.4 Track assembly.

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

10.8.5 Install track assembly onto slide shoe.

1. Remove fixing piece from track on opposite end from bumper.
2. Slide track assembly onto shoe (Fig. 10.8.6), lining up fixing piece with mounting hole in door.
3. Install second fixing piece onto track and secure with mounting screw. Do not overtighten.

10.8.6 Secure track assembly to door.

1. Attach track fixing pieces to door using selected fasteners (Fig. 10.9.7).

- Insure track is level as fasteners are tightened.

10.8.7 Install end caps and spindle cap.

1. Install two track end caps and spindle cap.

11 Push arm installation

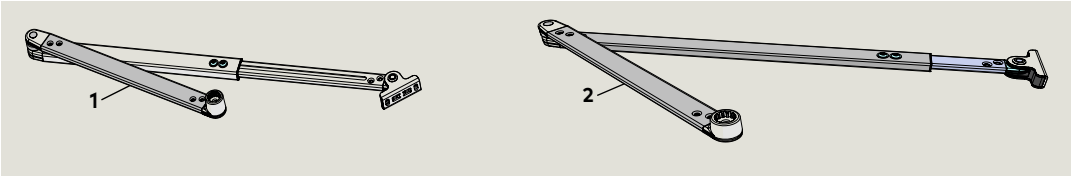
11.1 Push arm installation templates

NOTICE

Reference Chapter 7 – Installation templates.

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

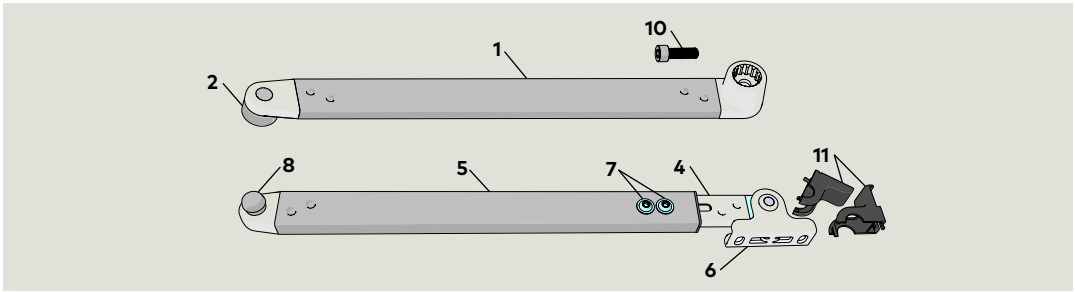
Fig. 11.1.1 Push arm assemblies



11.2 Push arm installation

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



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

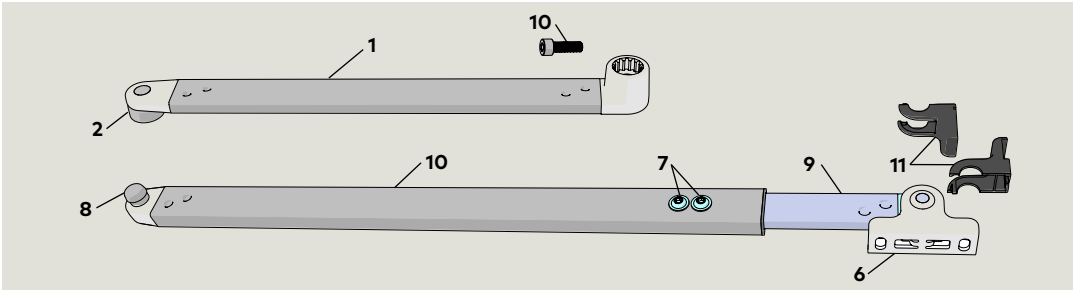


Fig. 11.2.3 Drive arm

1 Drive arm
2 Socket
3 Arm axle sleeve

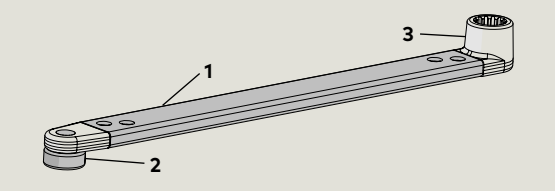
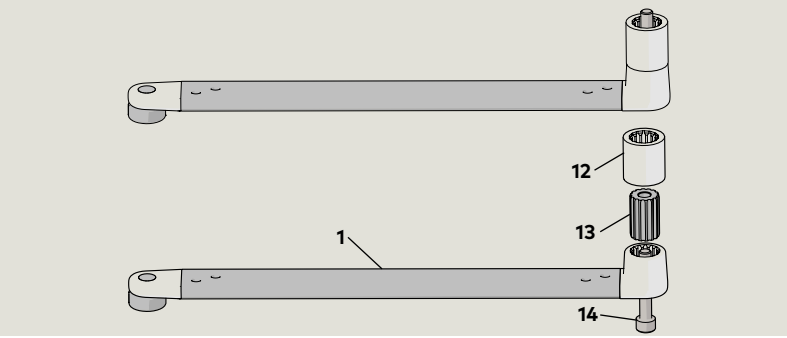
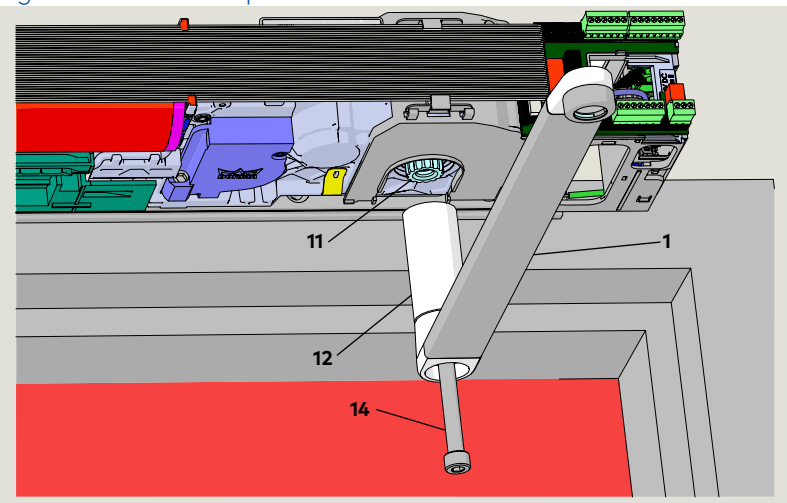


Fig. 11.2.4 Drive arm extension installation



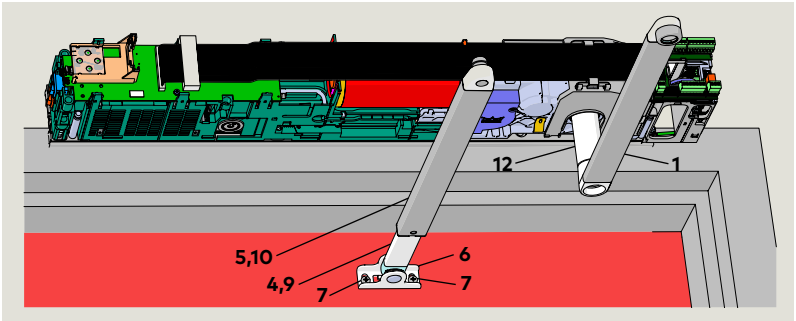
1 Drive arm
12 Axle extension
13 Splined shaft
14 M8 x ___ SHCS

Fig. 11.2.5 Push arm positioned for installation



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

Fig. 11.2.6 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

11.2.1 Attach drive arm to operator.

CAUTION

Door must be fully closed!

⚠ WARNING

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

CAUTION

ED operator axle closed position.
Spindle must be at zero position to mount the arm correctly..

1. Set ED50/ED100/ED250 operator spring tension based on width of door.

TIPS AND RECOMMENDATIONS

Reference Para. Chapter 12, Set operator spring tension.

2. Insert axle extension into drive arm.
3. Move arm to ED50/ED100/ED250, inserting arm into axle extension sleeve at a 90° angle to operator (Fig. 11.2.5).
4. 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]

11.2.2 Drill two holes in door for adjustment arm shoe.

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

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

- Fastener type based on door material.

TIPS AND RECOMMENDATIONS

Reference Chapter 2 for arm fasteners.

11.2.3 Secure adjustment arm assembly to door.

1. Fasten adjustment arm assembly to door (Fig. 11.2.6).

Fig.11.2.7 Shoe fastener covers

11 Shoe screw cover

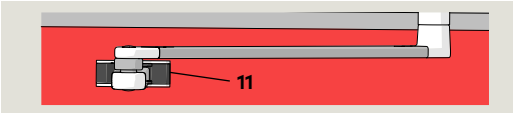
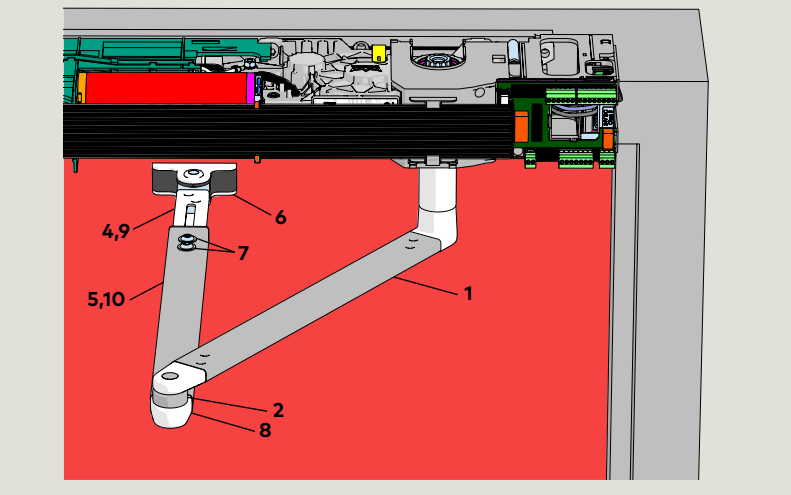
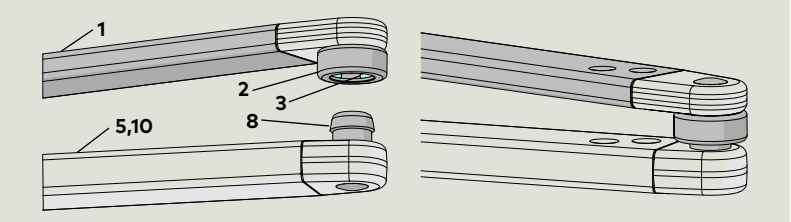


Fig.11.2.8 Arm assemblies attached to door, ED100/ED250



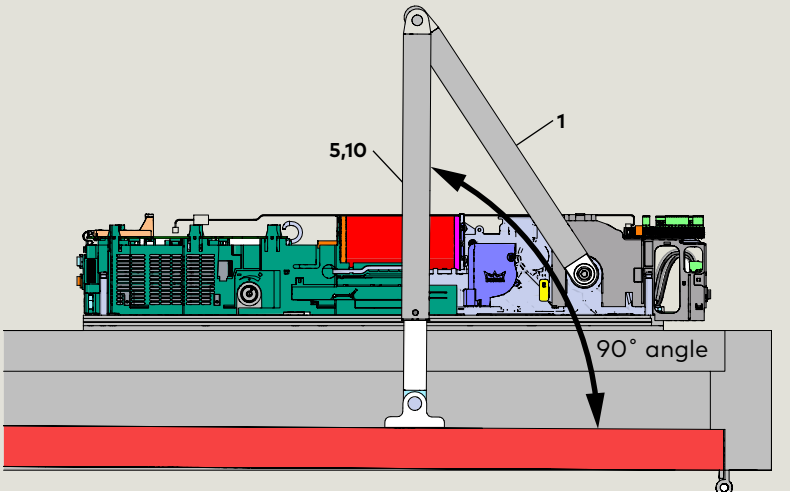
1 Drive Arm
2 Socket
4 Adjustment arm 11 1/4"[285]
5 Adjustment arm tube 12 1/4" [311]
6 Shoe
7 M6 x 10 mm flanged button head screw
8 Ball head
9 Adjustment arm, 17 3/4" [450]

Fig. 11.2.9 Drive arm, adjustment arm connection



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

Fig. 11.2.10 Adjustment arm at 900 angle to door



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

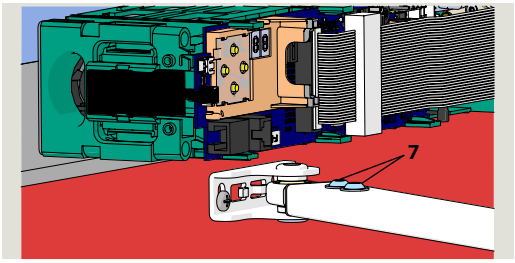
11.2.4 Install shoe fastener covers.

1. Install two shoe fastener covers.

11.2.5 Connect adjustment arm to drive arm.

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

Fig. 11.2.11 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. 11.2.10).
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. 11.2.10).

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.

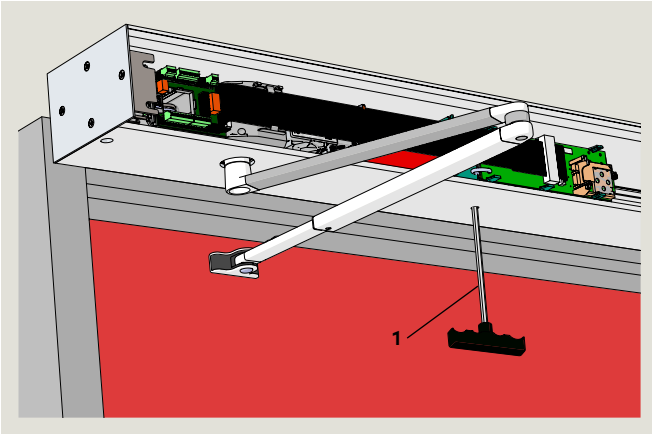
CAUTION

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

12 ED50/ED100/ED250 Operator spring tension

12.1 Set ED50/ED100/ED250 operator spring tension

Fig. 12.1.1 Spring tension adjustment

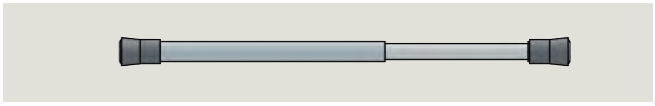


1 T handle hex key for spring tension adjustment

Fig. 12.1.2 5 mm T-handle hex key



Fig. 12.1.3 Door pressure gauge



TIPS AND RECOMMENDATIONS

System checks spring tension during learning cycle (Reference ED50/ED100/ED250 Setup and Troubleshooting Manual). Learning cycle will be canceled if spring is insufficiently tensioned. Door will stop and display will show a rotating "0" and an "F".



12.1.1 Spring tension setting revolutions.

Door width					
Inches	28	32	36	42	48
mm	711	813	914	1067	1219
Spring setting revolutions					
ED50	10	10	14	16	18
ED100	10	10	14	16	18
ED250	10	10	14	16	18

12.1.2 Operator spring tension function.

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

12.1.3 Spring tension adjustment.

1. Spring tension adjustment is factory set fully CCW, no spring tension.
2. Spring must be pretensioned per Para. 12.1.1.

- 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.

12.1.4 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 13, ANSI/BHMA standards for door closing forces.

13 ANSI/BHMA standards

13.1 A156.10 Power operated pedestrian doors

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

13.1.1 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.				

13.1.2 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

13.1.3 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.

13.2 A156.19 Low energy power operated doors

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

13.2.1 Door measurements, low energy power operated door.

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.

13.2.2 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).					

13.2.3 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.		

13.2.4 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.

14 Install door signage

14.1 Install door signage

14.1.1 Install door signage.

Install applicable door signage as outlined in Chapter 6, ED50/ED100/ED250 door signage.

15 Cover, end caps and spindle caps

15.1 Cover end cap and spindle installation

15.1.1 Cover and end cap installation.

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

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

16 Maintenance

16.1 Safety label, automatic swing doors

16.1.1 Automatic swinging door safety information label, ANSI/BHMA A156.10.

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.

16.1.2 Safety information label location.

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

16.1.3 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.

16.1.4 Additional annual compliance inspection labels

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

16.2 Safety label, low energy swing doors

16.2.1 Low energy swinging door safety information label, ANSI/BHMA A156.19.

This AAADM label outlines safety checks that should be performed daily on a swinging door controlled by an ED50 operator or an ED100/ED250 operator configured for the low energy mode.

16.2.2 Safety information label location.

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

16.2.3 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.

16.2.4 Additional annual compliance inspection labels.

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

Fig. 16.1.2 Annual compliance inspection labels

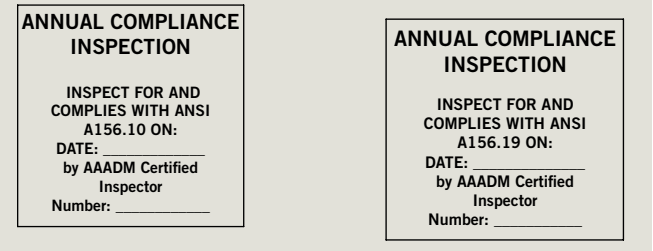
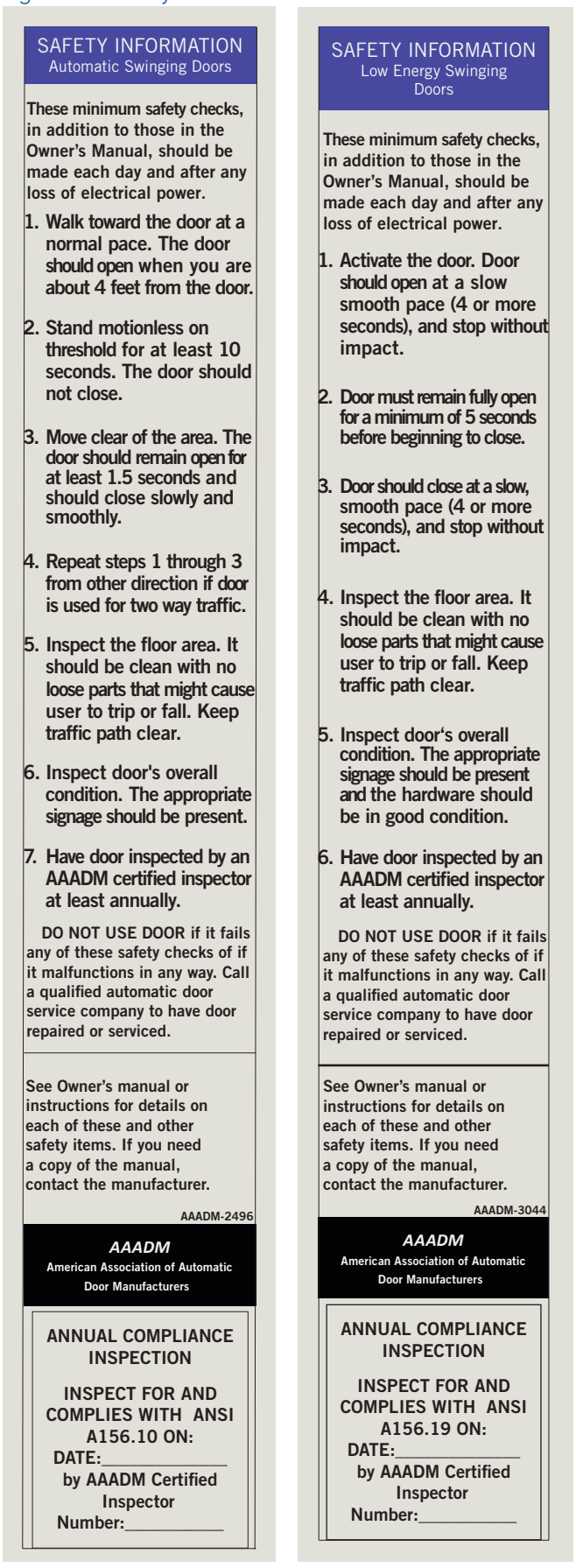


Fig. 16.1.1 Safety information labels



16.3 Arm fasteners – torque requirements

Fig. 16.3.1 Arm M8 SHCS cap

8 Cap

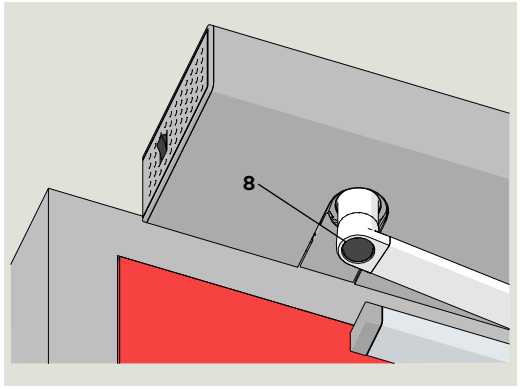


Fig. 16.3.2 M8 SHCS

5 M8 x __ SHCS

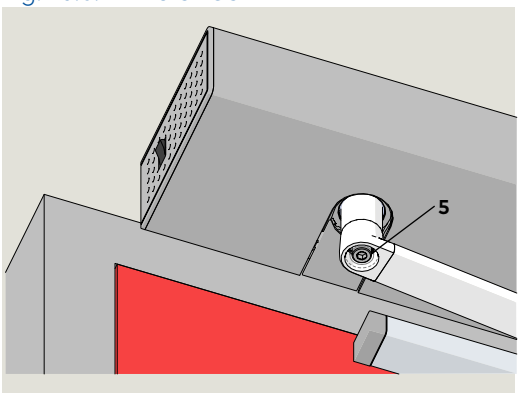
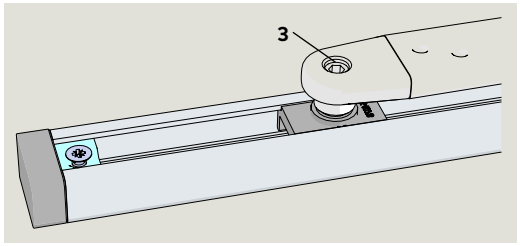


Fig. 16.3.3 Pivot pin M8 socket head

3 Pivot pin M8 socket head



16.3.1 Check drive arm M8 SHCS torque.

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

CAUTION

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

16.3.2 Check pivot pin M8 socket head torque.

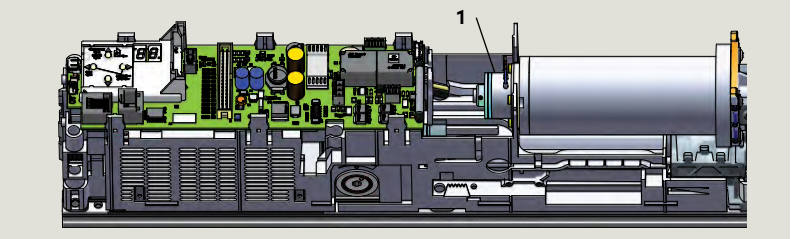
1. Check torque.

CAUTION

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

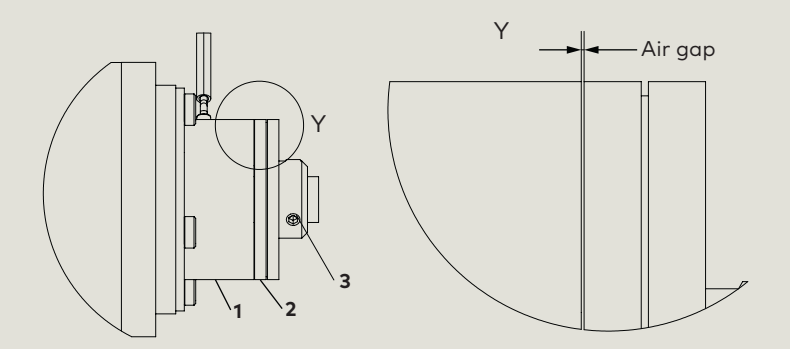
16.4 ED50 brake maintenance

Fig. 16.4.1 ED50 operator



1 Brake assembly

Fig. 16.4.2 Brake to brake disc air gap



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

Fig. 16.4.3 Brake assembly

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

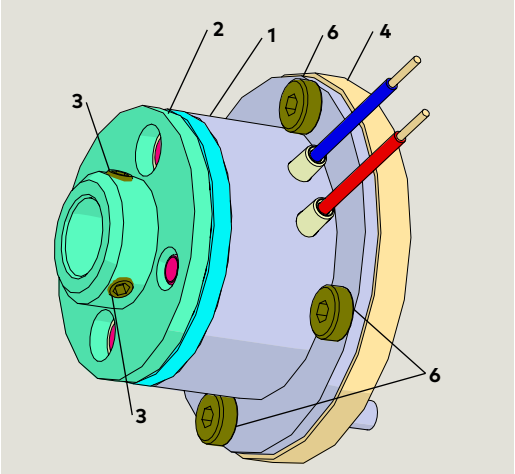


Fig. 16.4.4 Feeler gauge set



16.4.1 Adjustment of air gap: brake to brake disc (Fig. 16.3.2).

TIPS AND RECOMMENDATIONS

Reference drawing:
254197-01-50

⚠ WARNING

Set Mode switch to CLOSE before performing maintenance!

CAUTION

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

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

CAUTION

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

TIPS AND RECOMMENDATIONS

Paper stock thickness:
approximately 0.003"

Fig. 16.4.5 M3 x 5 SHCS

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

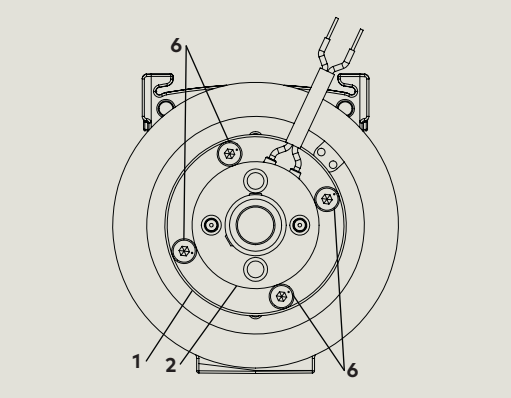


Fig. 16.4.6 Brake disc assembly removed from brake

1 Brake assembly
2 Brake disc assembly
5 Motor shaft

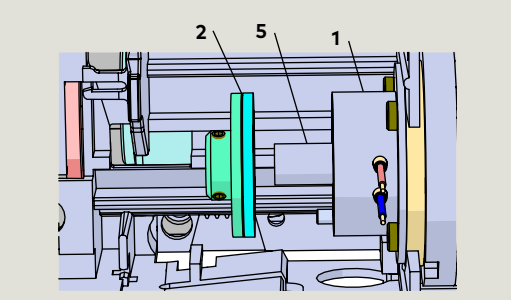


Fig. 16.4.7 Brake and brake disc assemblies

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

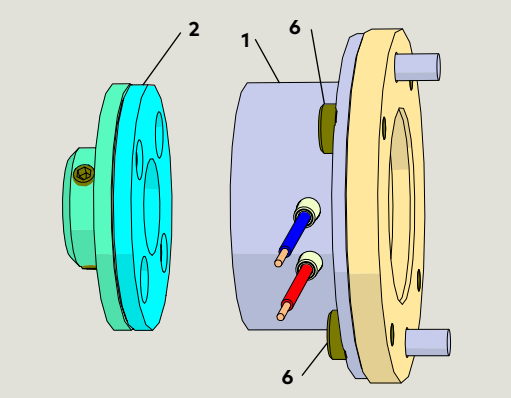
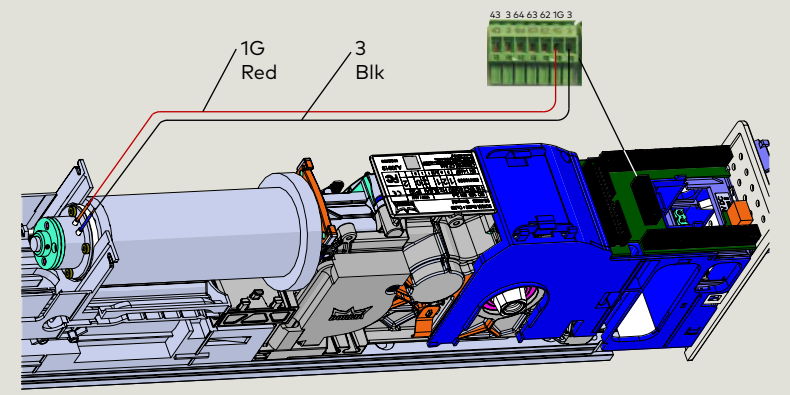


Fig. 16.4.8 Brake coil wiring



16.4.2 Torque setting of M3 x 5 SHCS.

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

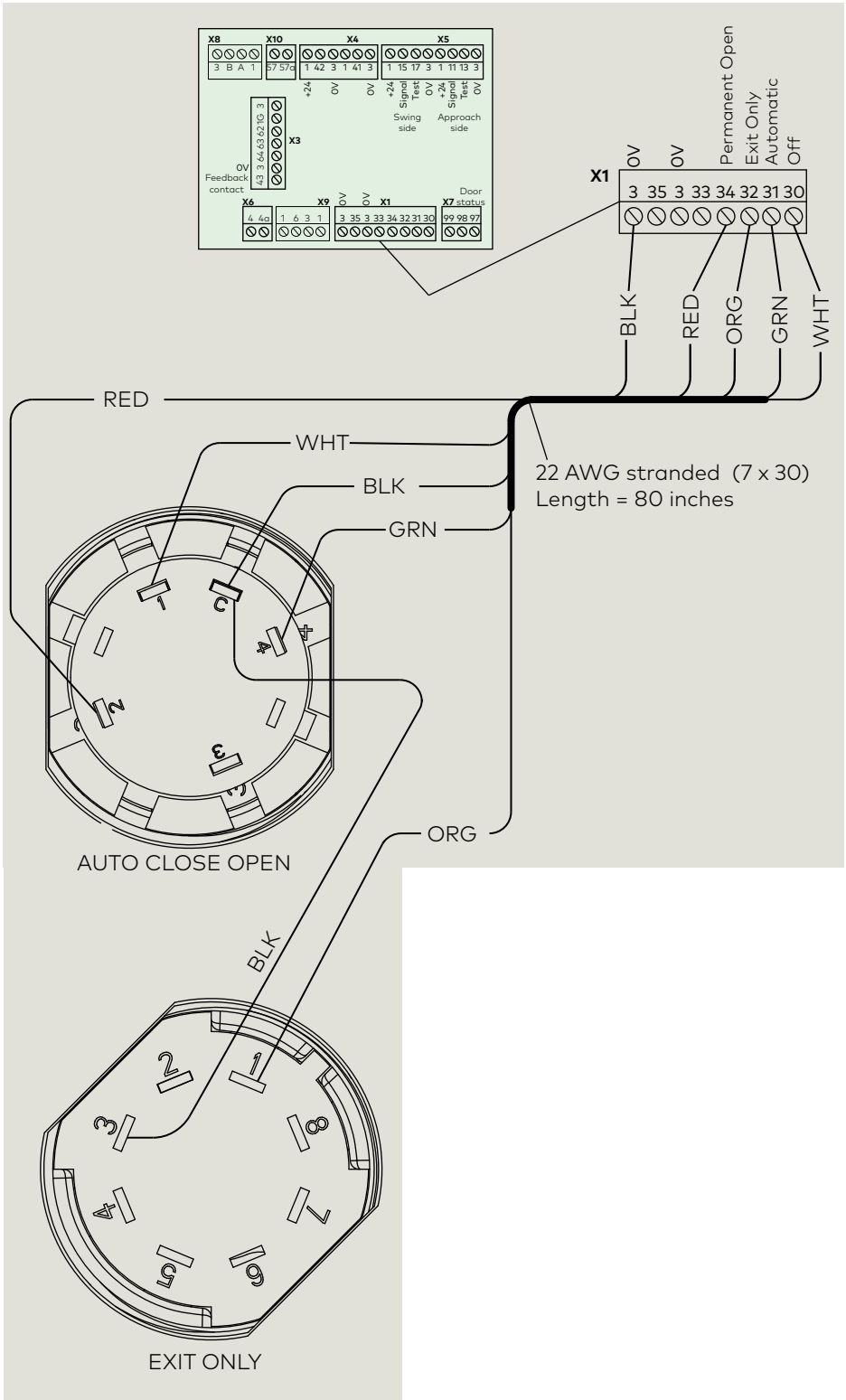
Appendix A - Key switch wiring diagrams

A1.1 DX4604-21C Key Switch Panel with RJ45 connector

Fig. A1.1.1 Key switch panel DX4604-21C



Fig. A1.1.2 Key switch panel wiring diagram



A2.1 DX4604-07GKey Switch Panel

Fig. A2.1.1 Key switch panel DX4604-07G

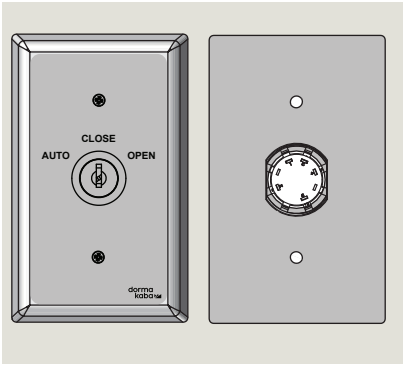
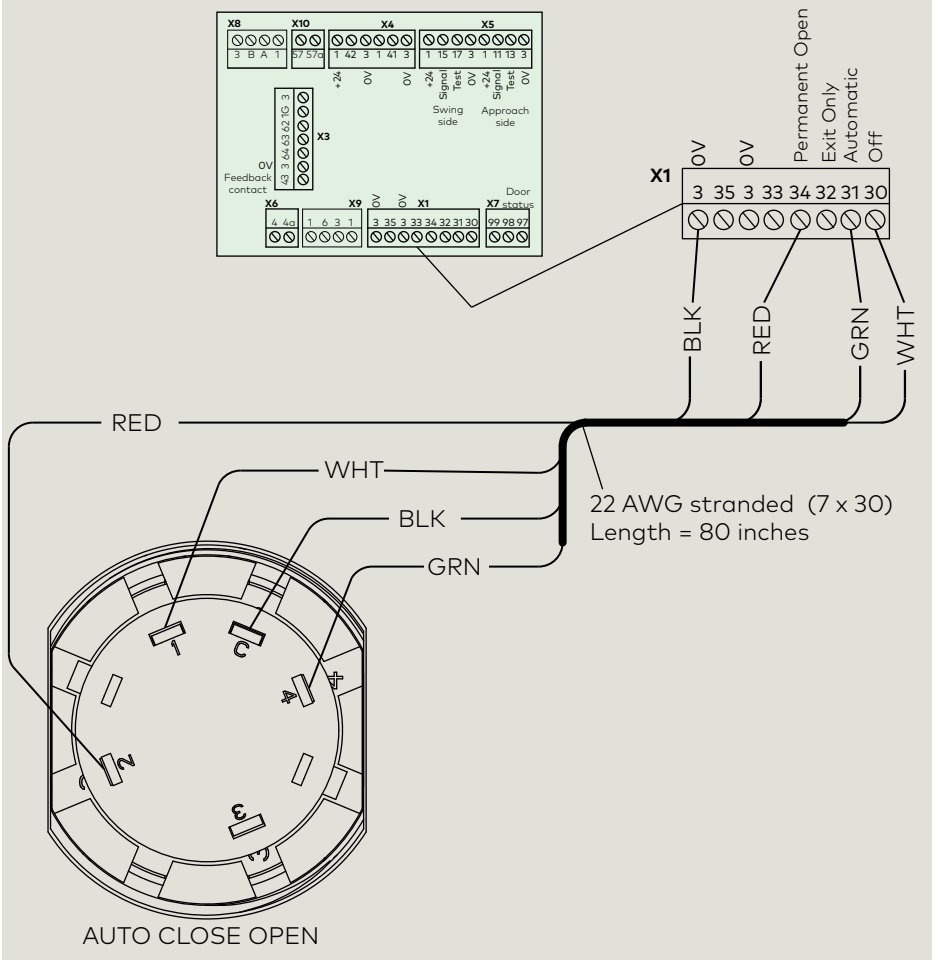


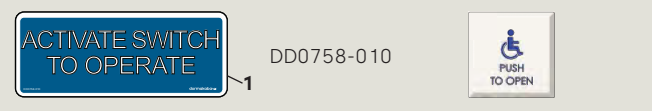
Fig. A2.1.2 Key switch panel wiring diagram



Appendix B - Knowing act switch wiring diagrams

B1.1 Knowing act switches

Fig. B1.1.1 ACTIVATE SWITCH TO OPERATE decal



1 Activate Switch to Operate DD0758-010

B1.2 Knowing act switch wiring diagram

Fig. B1.2.1 ED operator terminal board activation inputs

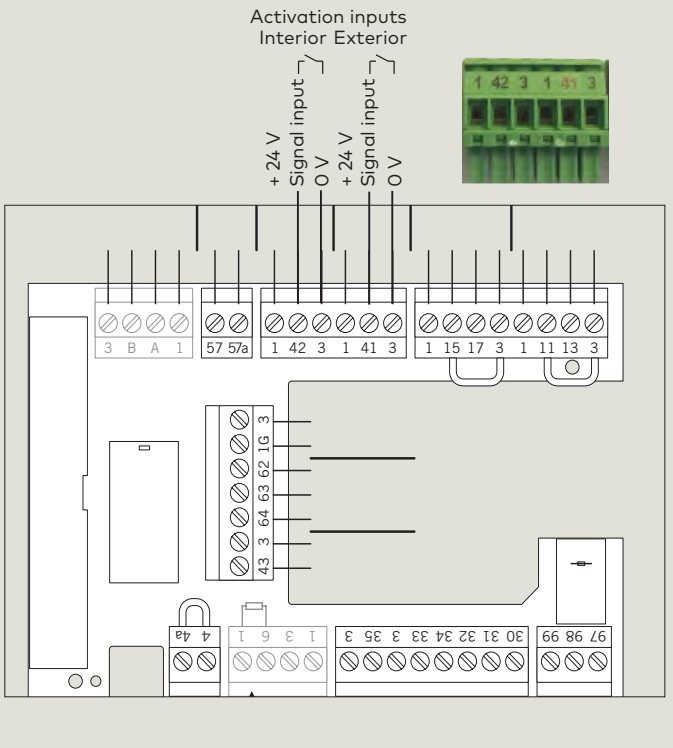
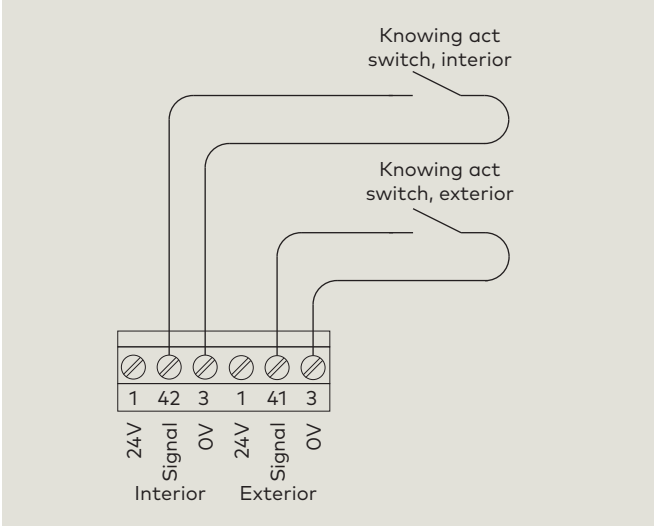


Fig. B1.2.2 Knowing act device wiring



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.
Call 800-523-8483 or visit
automaticsupport.us@dormakaba.com
for assistance or warranty information.

dormakaba USA, Inc.
1 Dorma Drive, Drawer AC
Reamstown, PA 17567