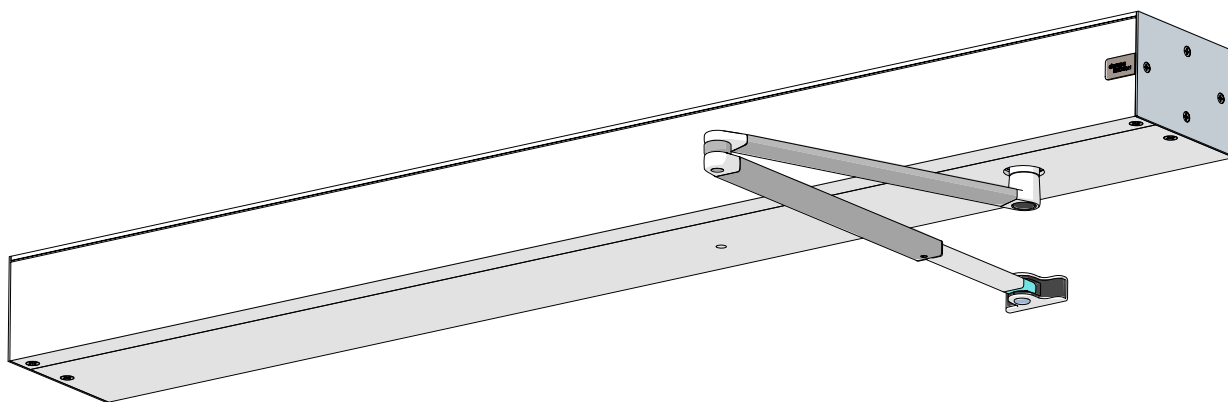




ED50

Low Energy Automatic Swing Door Operator
Installation in Surface Applied (Narrow) Header

Installation Instructions

DL4615-002 – 01-2020

| EN |

dormakaba 

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1 General information

1.1 Installation Instructions.

This manual provides installation instructions for ED50 low energy operators used in single door and double door surface applied installations.

1.2 Manual storage.

This document must be kept in a secure place, and accessible for reference as required.

If the door system should be transferred to another facility, insure that this document is transferred as well.

1.3 dormakaba.com website.

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

1.4 Symbols used in these instructions.



WARNING

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

NOTICE

Draws attention to important information presented in this document.

CAUTION

This symbol warns of a potentially unsafe procedure or situation.



TIPS AND RECOMMENDATIONS

Clarifies instructions or other information presented in this document.

1.5 Dimensions

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

1.6 Building codes and standards

ED50 installation: observe applicable national and local building codes.

2 Product description

2.1 Intended use.

The ED50 is a low energy electromechanical operator used exclusively for opening and closing interior swing doors.

The ED50 operator is installed in a surface mount header at customer site. The header must be installed on an interior building surface.

For double swing doors, both operators are installed in a single header.

2.2 Low energy operator.

ED50 is supplied only as a low energy operator.

- The operator is supplied with a reduced power motor and a brake. The brake is used during door hold open time.



WARNING

To reduce risk of injury to persons, use this ED50 operator only with a swing door for which the ED50 is designed for. Reference Chapter 7, Technical data.

2.3 Arm configurations.

ED50 is suitable for installation using:

- ED push arm
- ED arm with track

2.5 ED50 maximum door weight and width.

Reference Para. 7.2, Operating specifications.

2.6 Hardware as shipped.

2.6.1 Single swing door

1. Box containing surface mount header assembly for one ED50 operator. Included inside header are the following:
 - Low energy accessory installation kit (Chapter 6).
 - Program switch panel (Chapter 5).
 - Box containing push arm or arm and track kit.
2. Box containing ED50 operator with attached mounting base.

2.6.2 Double swing doors

1. Box containing surface mount header assembly for two ED50 operators. Included inside header:
 - (2) low energy accessory installation kits (Chapter 6).
 - Program switch panel (Chapter 5).
 - (2) boxes, each containing a push arm or arm and track kit.
 - ED50 operator connection cables (Para. 6.3).
2. (2) boxes, each containing an ED50 operator with attached mounting base.

3 Safety information

3.1 Safety instructions

This document contains important instructions for installation of the ED50 swing door operators. Review these instructions thoroughly prior to installation, and follow them carefully during installation, commissioning, troubleshooting and maintenance.

3.2 Door signage requirements, reference Chapter 11

Proper signs and labels per ANSI/BHMA A156.19 Standard for Power Assist and Low Energy Power Operated Doors shall be applied and maintained on the door controlled by the ED50 low energy operator.

3.3 Safety warnings.



WARNING

Damage to equipment or incorrect equipment operation may result from an incorrect installation.



WARNING

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



WARNING

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



WARNING

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



WARNING

Metallic doors must be grounded per national and local codes!



WARNING

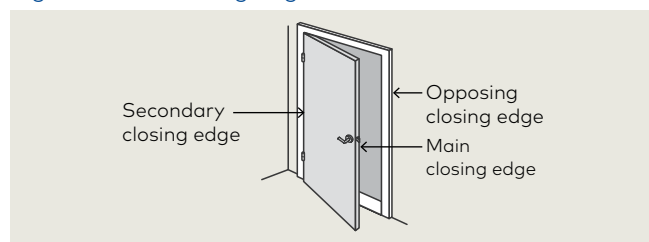
Hand pinch point and crushing hazards at door closing edges!



WARNING

Crushing hazards at door closing edges!

Fig. 3.1 Door closing edges



3.4 Residual hazards.



WARNING

After installation, hazards such as minor crushing, impact with limited force, and risk to unsupervised children may exist depending on structural design of door area, type of door, and any safeguards that have been implemented.



WARNING

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

Fig. 3.2 Hazards at arm and track

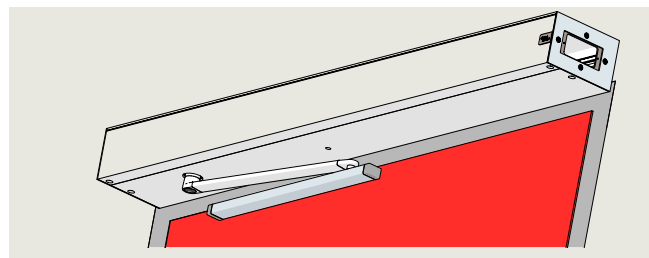
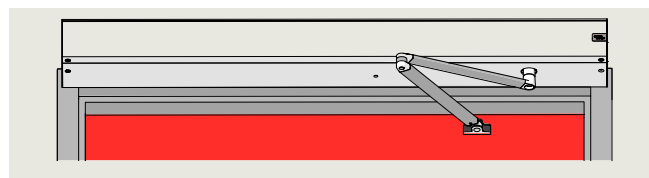


Fig. 3.3 Hazards at push arm

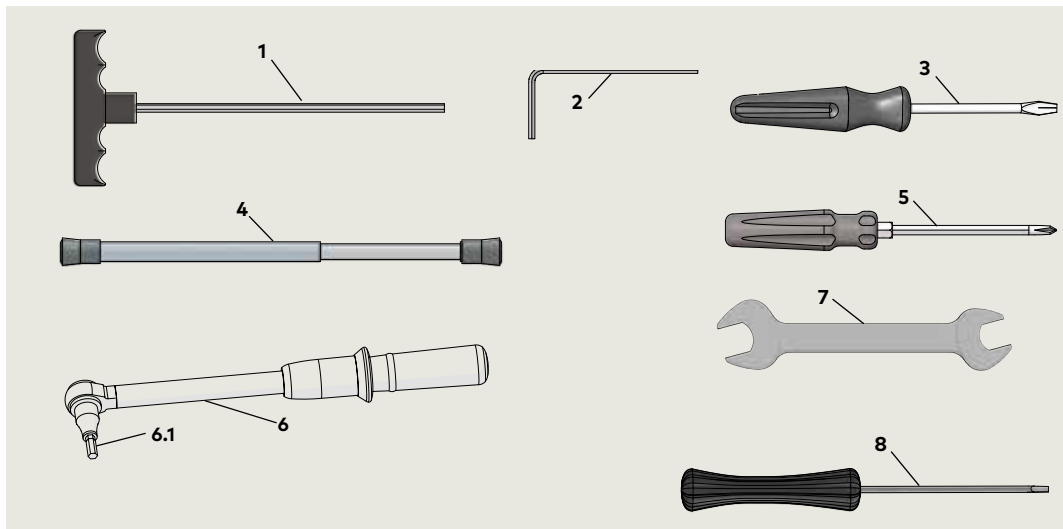


4 Recommended tools and torque chart

4.1 Recommended tools

Fig. 4.1.1 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")



4.2 Standard tightening torque

4.2.1 Standard tightening torque

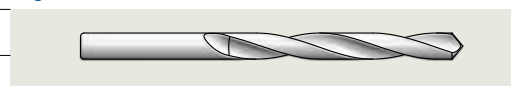
Fastener size	ft lb
M5	3.7
M6	7
M8	17
M10	34
M12	58

4.3 Drill bits

4.3.1 Drill bit sizes for fasteners

Fig. 4.3.1 Drill bit

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"	



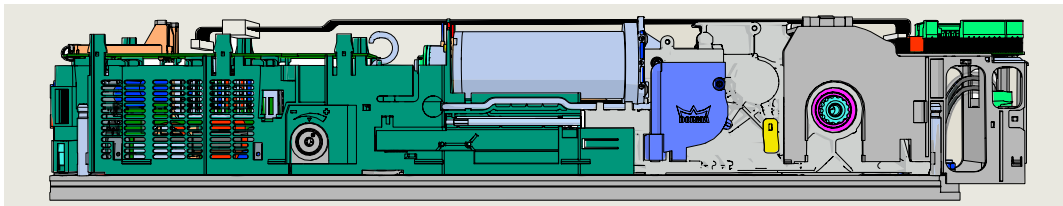
5 ED50 Product overview

5.1 ED50 operator

- 1 ED50 header
- 8 ED50 operator
- 9 Mounting plate
- 10 Push arm
- 11 Terminals for accessory wiring
- 12 Bag containing terminals and third guide pin*

* Included with operator

Fig. 5.1.1 ED50 operator



TIPS AND RECOMMENDATIONS

Reference Para. 5.6 for operator detail.

Fig. 5.1.2 Accessory terminals, guide pin



5.2 ED50 program switch panel

- 1 Program switch panel DX4604 -01C, 3 ft. cable -02C, 10 ft. cable
- 2 Program switch, 3 position
- 3 Exit only switch, 2 position
- 4 Comm port for dormakaba handheld
- 5 RJ45 comm. cable DX4607

Fig. 5.2.1 Program switch panel

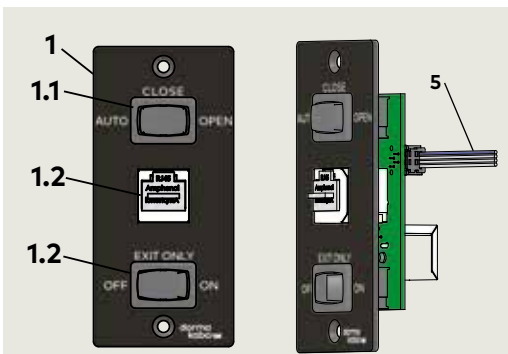
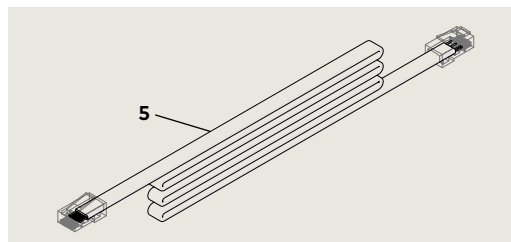


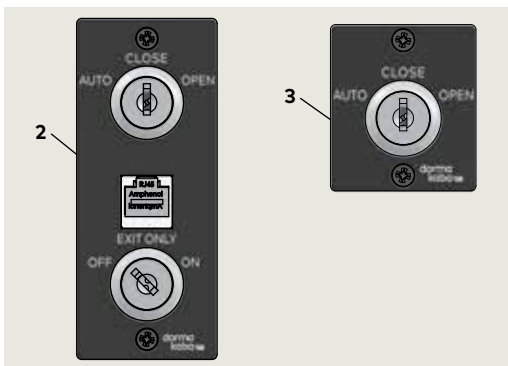
Fig. 5.2.2 RJ45 communication cable



5.3 Optional key switch panels

- 2 Key switch panel, RJ45, DX4604-21C
- 3 Key switch panel DX4604-11C

Fig. 5.3.1 Key switch panels



5.4 ED50 single swing door header

- 1 ED50
- 4" x 6" header
- 2 Header cover
- 3 Cover screws
- 4 Program switch panel mounting surface
- 5 Jamb bracket
- 6 4" x 6" header track
- 7 Hole for drive axle
- 8 ED50 operator
- 9 Hole for spring tension adjustment

Fig. 5.4.1 Header assembly with cover

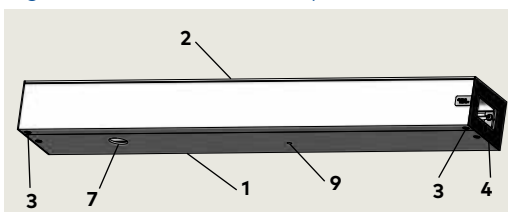


Fig. 5.4.2 Header without ED50 operator

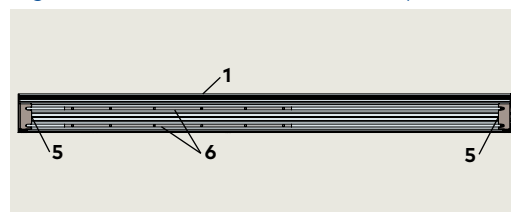
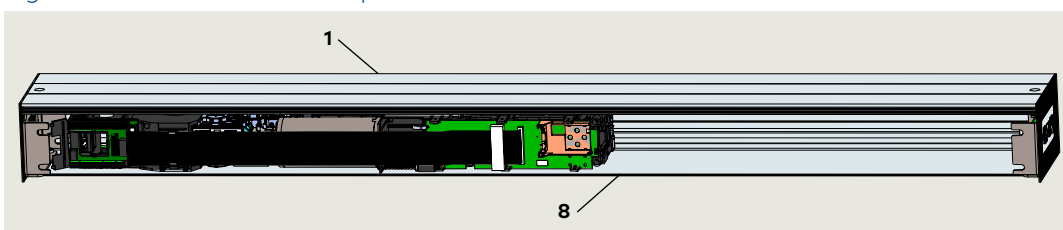


Fig. 5.4.3 Header with ED50 operator



5.5 ED50 double swing door header

- 1 Double header
- 2 Header cover
- 3 Cover screws
- 4 Program switch panel
- 5 Hole for drive axle
- 6 Header track
- 7 Hole for spring tension adjustment

Fig. 5.5.1 Double header with cover

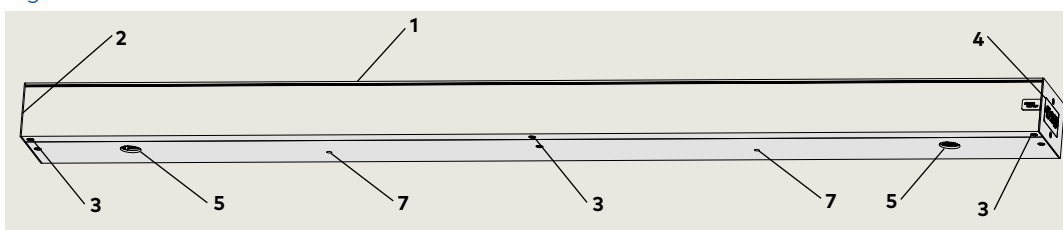


Fig. 5.5.2 Double header without ED50 operators

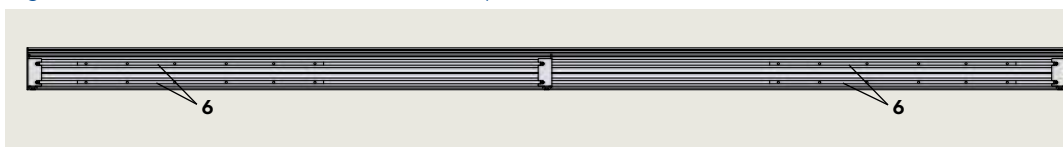
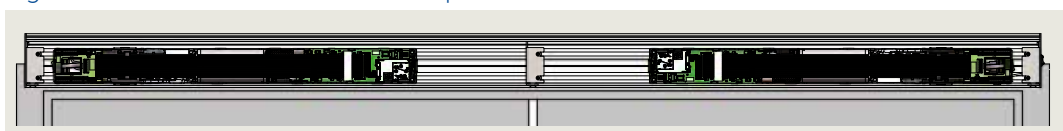


Fig. 5.5.3 Double header with ED50 operators



5.6 ED50 operator component views

Fig. 5.6.1 ED50 component views

- 1 Power switch
- 2 120 Vac cable
- 3 Housing unit
- 4 Drive spindle
- 5 Operator (motor, gear, spring)
- 6 Spring tension adjustment, closing force
- 7 Brake
- 8 4 button user interface
- 9 Information display
- 11 Potentiometer, closing speed adjustment
- 12 Terminal jumper socket, push or pull mounting
- 15 RJ45 socket, double door operator synchronization
- 16 Com 1 service connector
- 17 Accessories terminal board
- 18 Mounting plate
- 19 Customer ground terminal
- 20 Guide pin
- 21 Ribbon cable
- 22 Ribbon cable socket
- 23 Upgrade card socket
- 24 Motor
- 25 Encoder socket and cable
- 26 Motor socket and cable
- 27 Control board
- 28 Motor brake

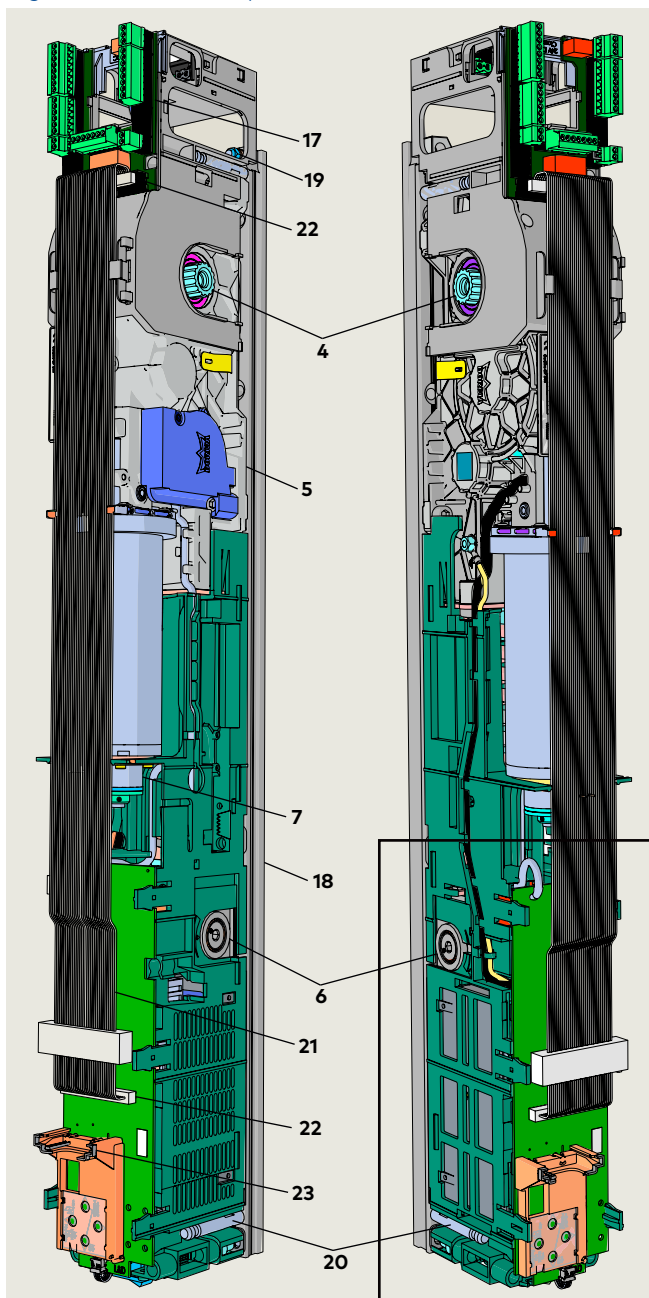
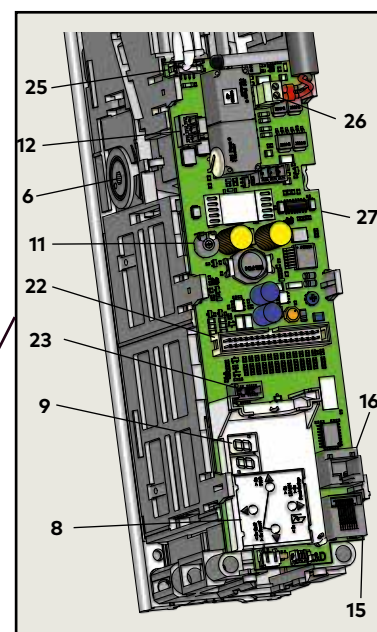
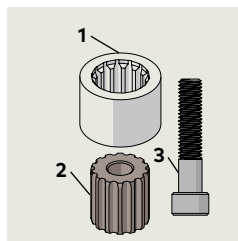


Fig. 5.6.2 ED50 control board detail



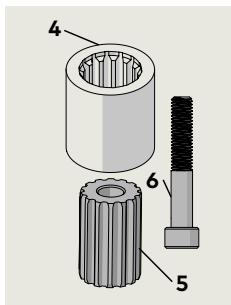
5.7 Axle extensions

Fig. 5.7.1 [20 mm]
3/4"



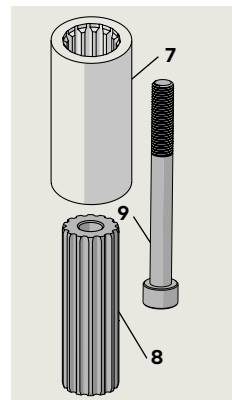
- 1 20 mm axle extension sleeve
25447200140
- 2 20 mm axle extension
25447601140
- 3 M8 -1.25 x 40
SHCS

Fig. 5.7.2 [30 mm]
1 1/8"



- 4 30 mm axle extension sleeve
25447300140
- 5 30 mm axle extension
25447701140
- 6 M8 -1.25 x 50
SHCS

Fig. 5.7.3 [60 mm]
2 3/8"



- 7 60 mm axle extension sleeve
25447400140
- 8 60 mm axle extension
25447801140
- 9 M8 -1.25 x 80
SHCS

5.8 Arm configurations

Fig. 5.8.1 Splined push arm assembly,
225 mm

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

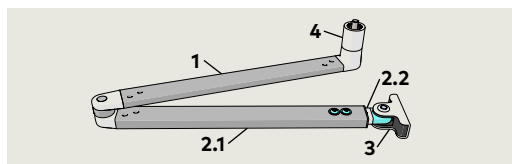


Fig. 5.8.2 Splined push arm assembly,
500 mm

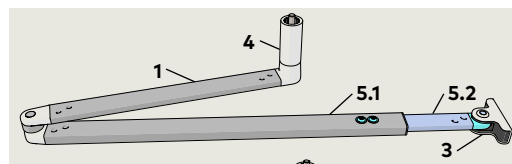


Fig. 5.8.3 Splined arm with CPD lever and
track assembly, LH

- 1 Drive arm
- 2 CPD
- 3 Track

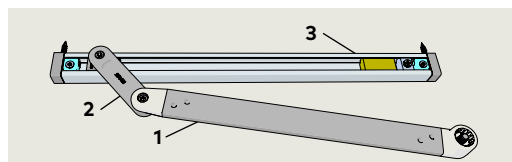


Fig. 5.8.5 Splined arm and track assembly

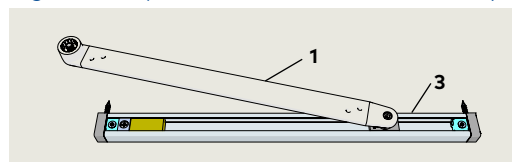
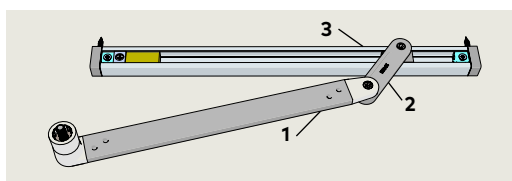


Fig. 5.8.4 Splined arm with CPD lever and
track assembly, RH

- 1 Drive arm
- 2 CPD
- 3 Track



5.9 Push arm door stop - option

Fig. 4.9.1 Door stop assembly

- 1 1/2" thick base plate
DC4633-002
- 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 Mounting screw kit
DC4633-005
- 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

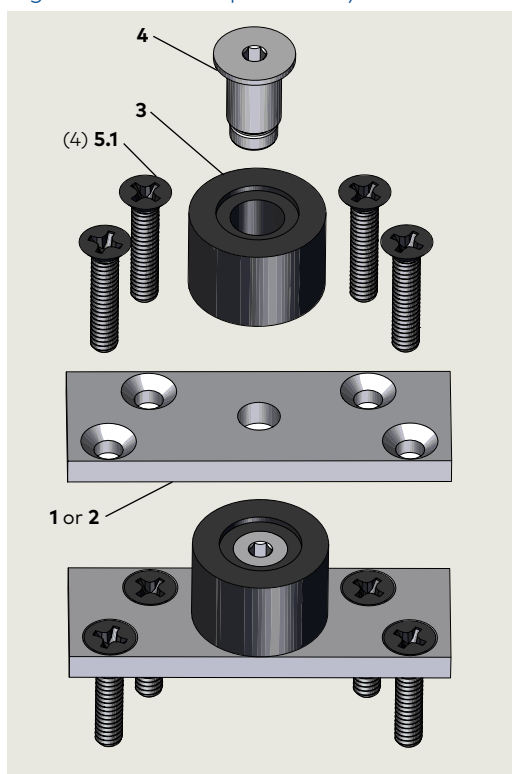
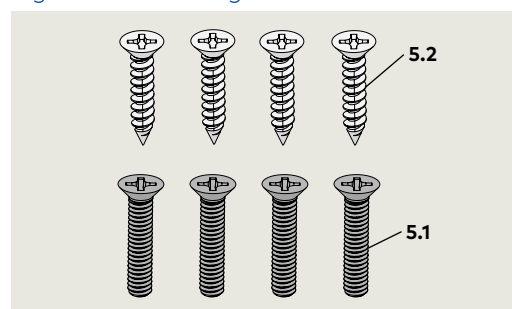


Fig. 4.9.2 Mounting screw kit

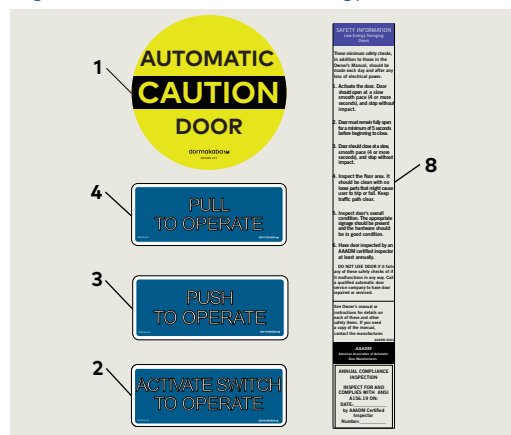


6 Accessory kit

6.1 ED50 low energy accessory kit

- 1 Decal, Automatic
Caution door (both
sides)
- 2 Decal, Activate
Switch to Operate
- 3 Decal, Push to
Operate
- 4 Decal, Pull to
Operate
- 5 Decal, AAADM
safety Information
label, low energy

Fig. 6.1.1 Decal kit, low energy



- 8** Header mounting screw pack
DK4608-010
 - 8.1** #12 x 2.5 RHWSP
(round head wood screw, Philips)
 - 8.2** 1/4-20 x 1.5 PHSLFP
(pan head self tapping, Philips)
 - 9** Push arm screw kit
DK2719-010
 - 9.1** 10-24 x 1 1/2" barrel nut
 - 9.2** 10-24 x 1" PPHMS
 - 10** Pull arm screw kit
DK2719-020
 - 10.1** 10-24 x 1 1/2" barrel nut
 - 10.2** 10-24 x 1 1/4" FHSCS
(flat head socket screw)
 - 11** 1/4-20 x 1" FHMSF
 - 12** 1 1/2" hole plug
 - 13** 3/8" [10 mm] hole plug
 - 14** Communication cable DX4607 for program switch panel
 - 15** Program switch panel DX4604
- Manuals not shown.
- 16** Installation manual
 - 18** Owner's manual

Fig. 6.1.2 Header mounting screw pack

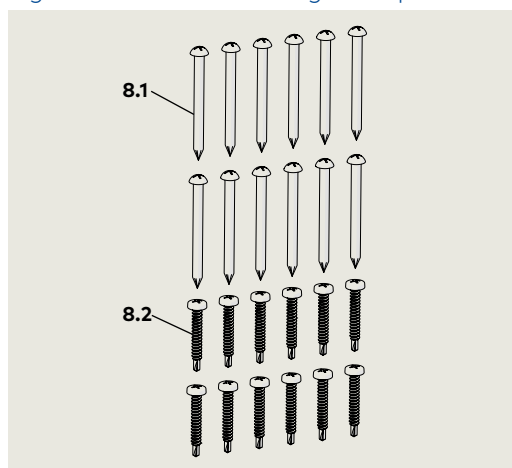


Fig. 6.1.5 Push arm screw kit

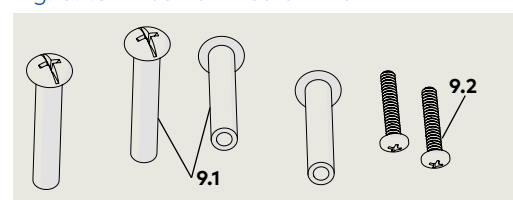


Fig. 6.1.6 Pull arm screw kit

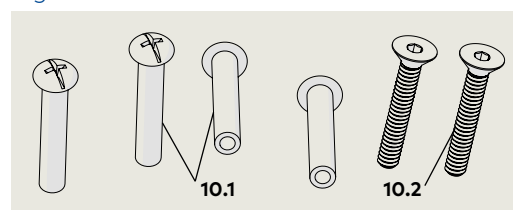


Fig. 6.1.3 Hole plug kit



Fig. 6.1.7 Mounting base screw kit

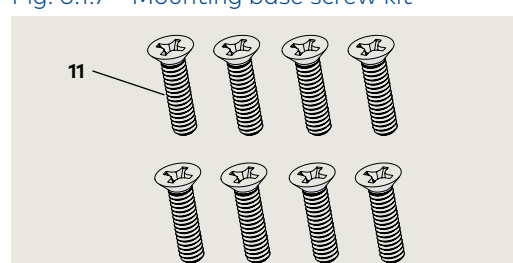


Fig. 6.1.4 Program switch panel

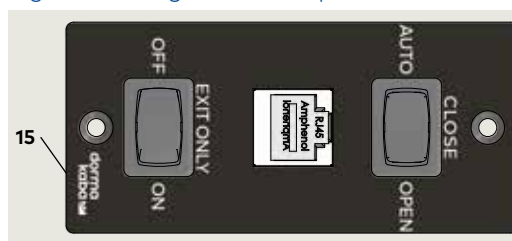
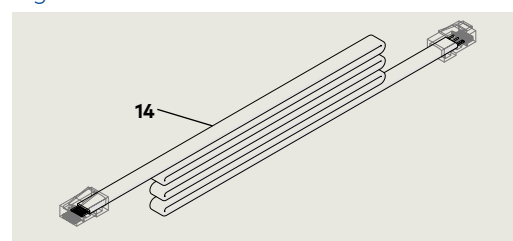


Fig. 6.1.8 Communication cable



Optional key switch panels;
Reference Para. 5.3.

6.2 Double door ED50 operator connection cables

Fig. 6.2.1 Communication cable

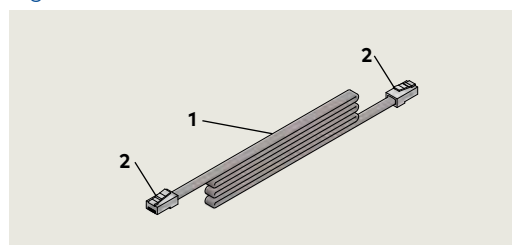
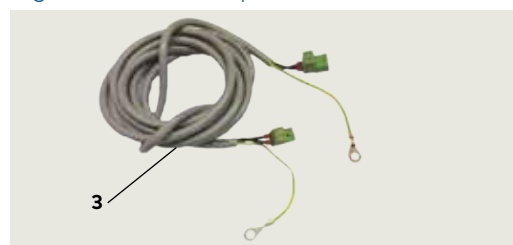


Fig. 6.2.2 115 VAC power cable



- 1** Communication cable
DX3485-010,
250 mm, 9 7/8"
DX3485-020,
1030 mm, 40 1/2"
DX3485-030,
2030 mm, 80"
- 2** RJ45 plug
- 3** 115 VAC power cable
DX3484-010,
69" long
DX3484-020,
95" long
DX3484-030,
134" long

7 Technical data

7.1 ED50 Technical data

7.1.1 Required operating conditions

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

7.1.2 General specifications

Operator dimensions (W x H x D)	26 3/4" x 2 3/4 x 5 3/4"
Operator weight	21.8 lb [9.9 kg]
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

7.1.3 Inputs

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



TIPS AND RECOMMENDATIONS

- ***X4:** terminal board numbers, reference Chapter 10, System accessories.
- Parameters, reference Chapter 21..

7.1.4 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

7.1.5 Integrated functions

Hold open time:	
Automatic opening	dd parameter 0 to 30 s
Night / bank	dn parameter 0 to 30 s
Manual opening	do parameter 0 to 30 s
Door blocking behavior	hd parameter Automatic, manual door modes
Electric strike delayed opening for locking mechanism	Ud parameter 0 to 4 s
Locking device feedback X3 43, 3	Motor lock
Wind load control, maximum	Fo, Fc parameters 33.7 lb f 150 N
Voltage independent braking circuit	Chapter 18 Adjustable with potentiometer
LED status indicators Service manual	Green Red Yellow 24 Vdc power Error codes Service interval
Program and Exit Only switches	Chapter 9 Auto, Close, Open Exit only; Off, On
User interface	Chapter 9 4 button keypad, 2 digit display
Firmware update	Appendix C Firmware update
TMP, temperature management program Service manual	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

7.2 Operating specifications

7.2.1 ED50

Maximum power consumption	120 watt	
Opening force N (lbf) F_o parameter	Minimum 20 (4.5)	Maximum 60 (13.5.5)
Manual closing force N (lbf) F_c 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"

8 Operational mode overview

8.1 ED50 door closer modes

8.1.1 Automatic mode

Door closer mode parameter **hd**=0.

Door opens automatically following pulse generation by a knowing act device or by push/pull.

8.1.2 Manual mode

Door closer mode parameter **hd**=1.

Designed for doors primarily accessed manually.



TIPS AND RECOMMENDATIONS

Parameter descriptions can be found in:

- Chapter 21, Parameters
- Appendix A, Parameter detail

8.1.3 Power assist

- Available only in door closer mode (**hd**=1), manual opening drive support is automatically adjusted to operator size.
- Parameter **hA** sets door activation angle for power assist function. Once angle reached, drive support provides easier manual opening of the door.
- Parameter **hF**, power assist function. Parameter values greater than 0 provides additional opening force.
- Parameter **hS**, power assist function support for door in closed position.

8.2 Low energy product

8.2.1 ANSI/BHMA 156.19

ED50 operator is configured to meet requirements of a low energy application per ANSI/BHMA A156.19 Standard for Power Assist and Low Energy Power Operated Doors.

8.2.2 Low energy power operated door.

A door with a power mechanism that opens the door upon receipt of a knowing act activating signal, does not generate more kinetic energy than specified in ANSI 156.19, and is closed by a power mechanism or by other means.

Required system safety, as a low energy application, is achieved utilizing the following design factors:

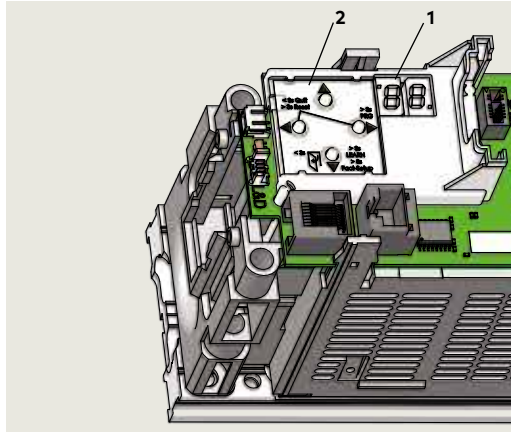
- Reduced dynamic door panel contact forces
- Reduced static door panel contact forces
- Low driving speeds
- Force limitation

9 User interface

9.1 Overview

- 1 2 digit display
- 2 4 button keypad

Fig. 9.1.1 Operator keypad and display



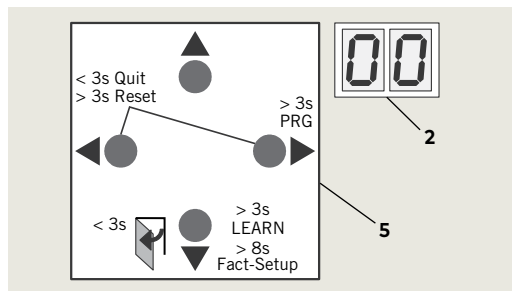
9.1.1 Operator user interfaces

1. 4 button keypad and 2 digit display.
- 4 button keypad; to select, input and adjust door parameter values.
- 2 digit display; parameter values, error and information codes.

9.2 4 button keypad and display

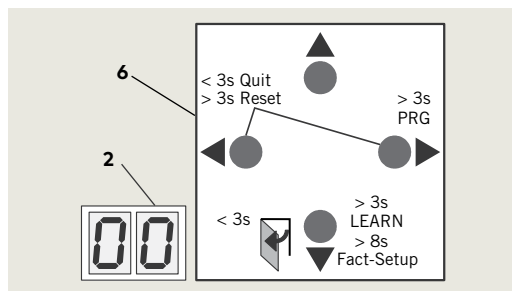
- 2 2 digit display
- 5 Button legend

Fig. 9.2.1 Door hinge side on right



- 2 2 digit display
- 6 Button legend rotated 180°

Fig. 9.2.2 Door hinge side on left



TIPS AND RECOMMENDATIONS

Symbols

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

9.2.1 4 button keypad

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

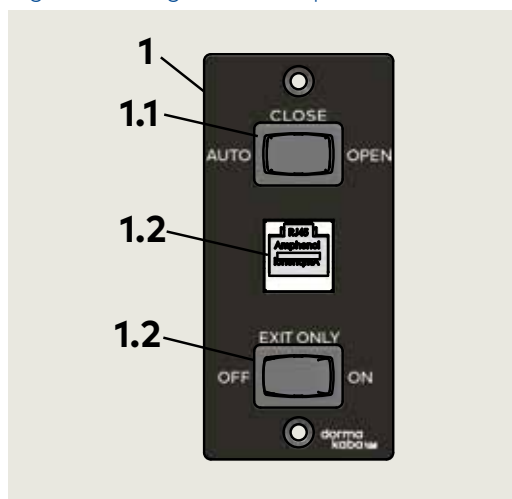
9.2.2 4 button keypad functions

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

9.3 Program switch panel

Fig. 9.3.1 Program switch panel

- 1 Program switch panel
- 2 Program switch, 3 position
- 3 Exit Only switch, 2 position
- 4 Comm port for dormakaba handheld



9.3.1 Program switch control modes

- Auto, door opens following pulse generation by a knowing act device or by push/pull.
- Close, door closes automatically, or remains closed.
- Open, door opens automatically and remains open.

9.3.2 Exit only switch

- Used when activation sensors are installed.

9.3.3 Operator status LEDs

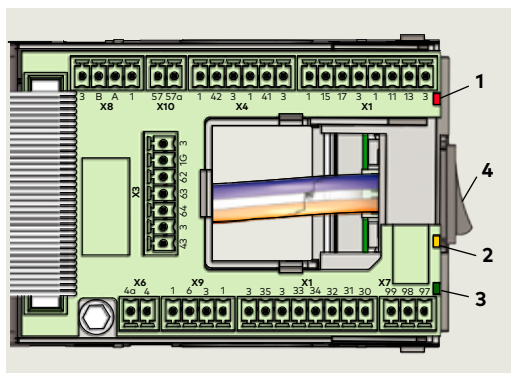
Header cover must be opened to view LEDs.

1. Red LED
Blinking codes are used to indicate "In__" information (system status or operating conditions) or certain error codes "E__".
2. Yellow LED
Maintenance interval indicator. When illuminated, an indication the operator system has to be serviced.
3. Green LED
On, internal 24 Vdc power is On.
Off, internal 24 Vdc power is Off.

9.4 Operator status LEDs

Fig. 9.4.1 Operator status LEDs

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



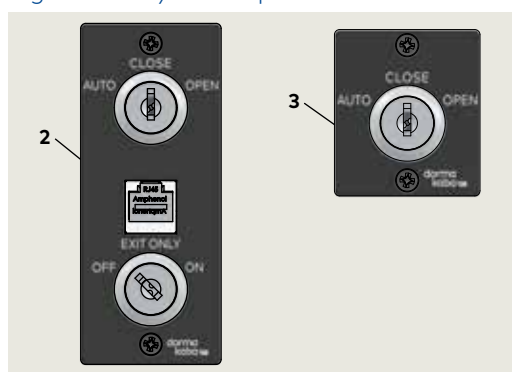
TIPS AND RECOMMENDATIONS

Details on LED status codes and maintenance intervals can be found in Appendix B, Troubleshooting.

9.5 Optional key switch panels

Fig. 9.5.1 Key switch panels

- 2 Key switch panel, RJ45, DX4604-21C
- 3 Key switch panel DX4604-11C



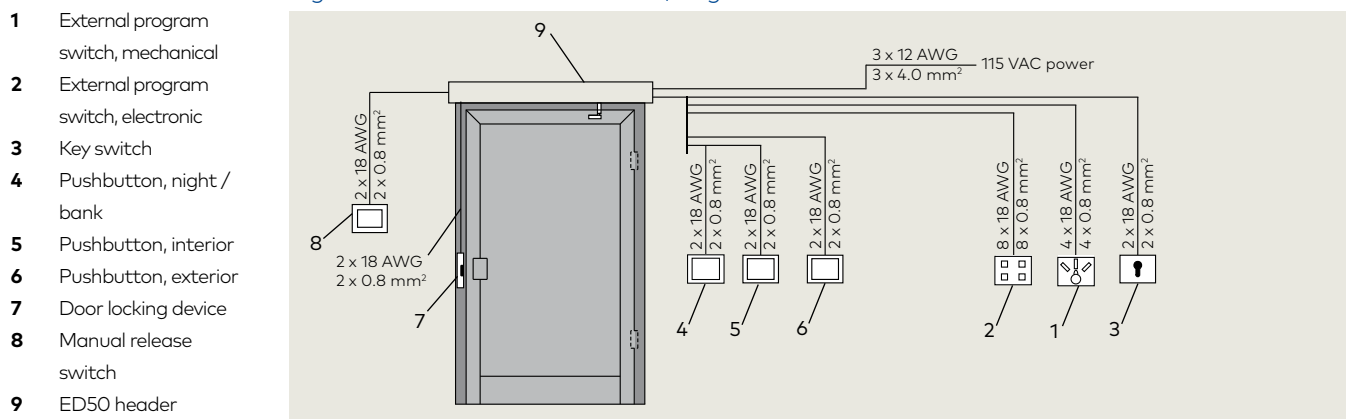
TIPS AND RECOMMENDATIONS

For optional key switch panel wiring, reference Appendix D, Wiring Diagrams.

10 System accessories

10.1 System accessory electrical connections

Fig. 10.1.1 Electrical connections, single door



10.2 System accessories

10.2.1 Overview

ED50 operators are normally used with system accessories available from dormakaba USA, Inc. or other manufacturers.

10.2.2 Accessory electrical installation

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

10.2.3 System accessories, other manufacturers.

dormakaba USA cannot guarantee compatibility for other manufacturer's accessories. If any of these accessories are used despite this caution, the operator's full range of functions may be unavailable, or the accessories may not function properly.



WARNING

Damage to operator or to connected device is also possible!

10.2.4 Power for accessories.

An external 24 Vdc power supply must be used for accessories.

10.2.5 Miscellaneous accessories.

1. Door status display, red, green.

10.2.6 Activators

Typical activators:

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



TIPS AND RECOMMENDATIONS

Refer to Chapter 7, Technical data for electrical interface requirements.

10.2.7 Locking devices.

Typical locking devices:

1. Electric strike plates
2. Electromagnetic locks
3. Electric locks

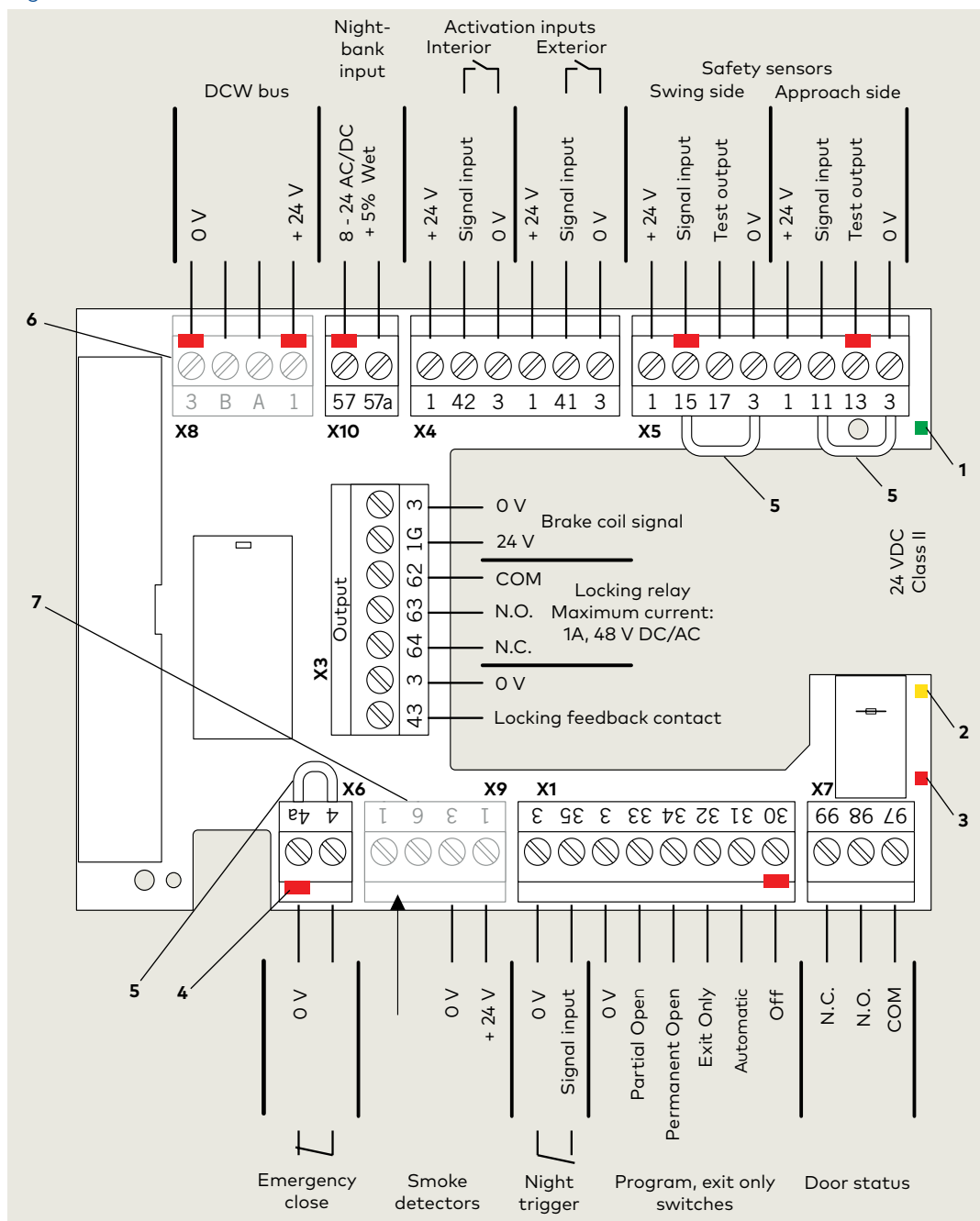
To insure that operator and locking device work safely when connected together, locking device must comply with following:

1. Operating voltage, power supply from operator, 24 Vdc, $\pm 5\%$.
2. Operating voltage, external power supply, 48 Vdc/Vac maximum.
3. Locking device relay contact, maximum load, 1 A.
4. Electric strike plate duty factor, 30% minimum.
5. Motor lock duty factor, 100%.

10.3 ED50 terminal board interfaces

Fig. 10.3.1 Terminal board electrical connections

- 1 Green LED (Para. 9.4)
- 2 Yellow LED (Para. 9.4)
- 3 Red LED (Para. 9.4)
- 4 Key (red insert) location in socket. Assigned plug has tab in same location broken off.
- 5 Jumpers, factory installed at following terminals:
 - 4 and 4a
 - 15 and 3*
 - 11 and 3*
- * Remove jumpers if safety sensors installed.
- 6 DCW upgrade card plug (n/a)
- 7 Fire protection upgrade card plug (n/a)



WARNING

ED50 115 Vac branch circuit disconnect must be Off while making accessory connections!



TIPS AND RECOMMENDATIONS

- Use documentation provided with each device for electrical installation.
- Do not connect system accessories to board until operator has been commissioned and learning cycle performed (Chapter 22).

11 ED50 door signage

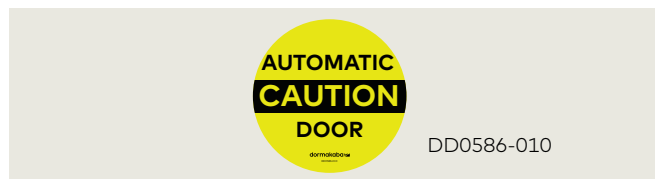
11.1 Low energy operator

11.1.1 Overview

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

11.1.2 All low energy doors.

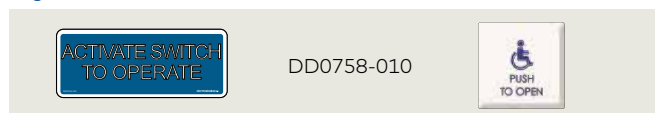
Fig. 11.1.1 AUTOMATIC CAUTION DOOR decal



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.

11.1.3 Knowing act switch used to initiate door operation.

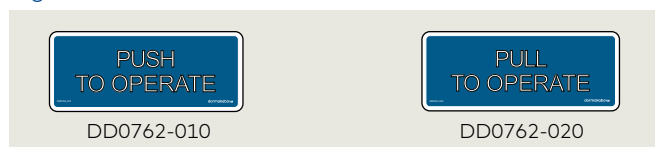
Fig. 11.1.2 ACTIVATE SWITCH TO OPERATE decal



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".

11.1.4 Push/Pull used to initiate door operation.

Fig. 11.1.3 PUSH TO OPERATE, PULL TO OPERATE decals



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.

11.2 Door signage, low energy single swing door

Fig. 11.2.1 Knowing act device initiation of door operation



- 1 Activate Switch to Operate DD0758-010

Fig. 11.2.2 Push/Pull Push To Operate

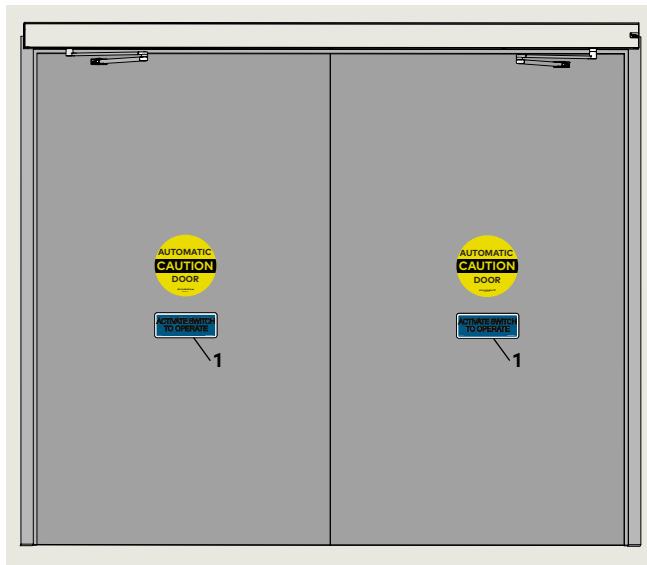
Pull To Operate



- 2 Push to Operate DD0762-010
- 3 Pull to Operate DD0762-020

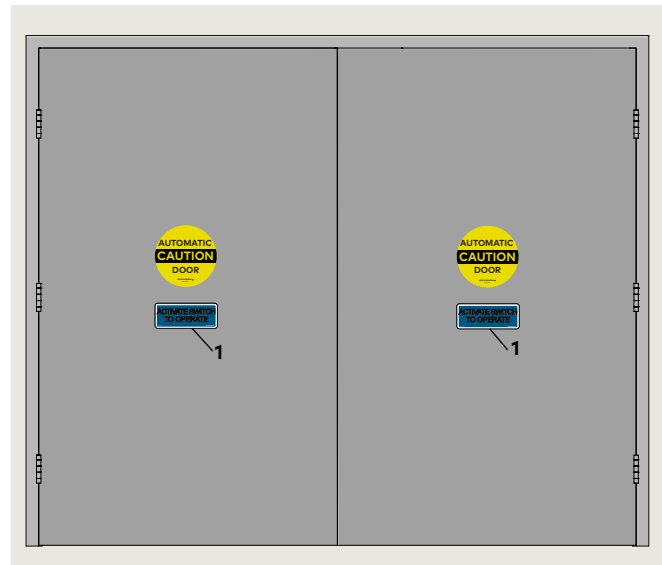
11.3 Door signage, low energy double swing doors

Fig. 11.3.1 Knowing act, SA header side



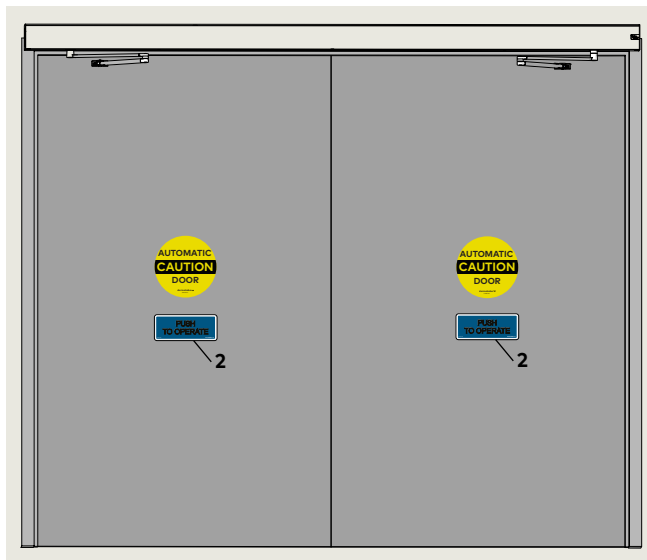
- 1 Activate Switch to
Operate DD0758-010

Fig. 11.3.2 Knowing act, hinge side



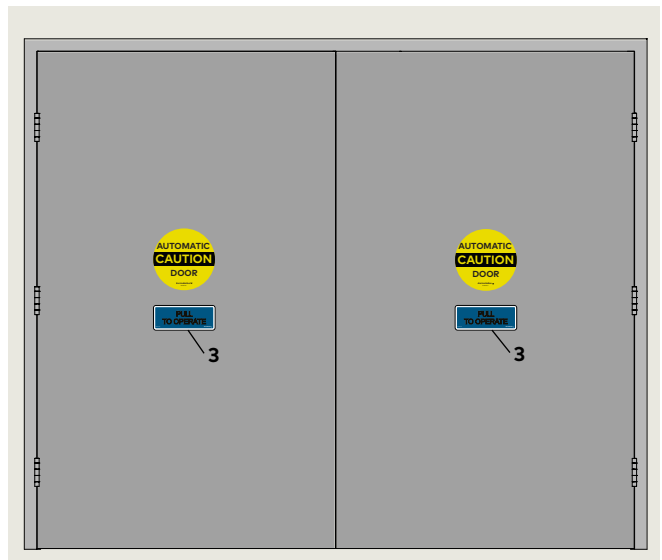
- 1 Activate Switch to
Operate DD0758-010

Fig. 11.3.3 Push/Pull, push to operate



- 2 Push to Operate
DD0762-010

Fig. 11.3.4 Push/Pull, pull to operate



- 3 Pull to Operate
DD0762-020

11.4 Safety label, low energy swing doors

11.4.1 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.

11.4.2 Safety information label location

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

11.4.3 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 a AAADM certified dormakaba USA, Inc. technician.

11.4.4 Additional annual compliance inspection labels

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

Fig. 11.4.1 Safety label

SAFETY INFORMATION Low Energy Swinging Doors	
These minimum safety checks, in addition to those in the Owner's Manual, should be made each day and after any loss of electrical power. 1. Activate the door. Door should open at a slow smooth pace (4 or more seconds), and stop without impact. 2. Door must remain fully open for a minimum of 5 seconds before beginning to close. 3. Door should close at a slow, smooth pace (4 or more seconds), and stop without impact. 4. Inspect the floor area. It should be clean with no loose parts that might cause user to trip or fall. Keep traffic path clear. 5. Inspect door's overall condition. The appropriate signage should be present and the hardware should be in good condition. 6. Have door inspected by an AAADM certified inspector at least annually. DO NOT USE DOOR if it fails any of these safety checks or if it malfunctions in any way. Call a qualified automatic door service company to have door repaired or serviced. See Owner's manual or instructions for details on each of these and other safety items. If you need a copy of the manual, contact the manufacturer. AAADM-3044	
AAADM American Association of Automatic Door Manufacturers	
ANNUAL COMPLIANCE INSPECTION INSPECT FOR AND COMPLIES WITH ANSI A156.19 ON: DATE: _____ by AAADM Certified Inspector Number: _____	

Fig. 11.4.2 Annual compliance label

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

12 ED50 SA arm configurations

12.1 Single swing door right hand arm configurations

Fig. 12.1.1 RH pull

- 1 Pull arm
- 2 Track

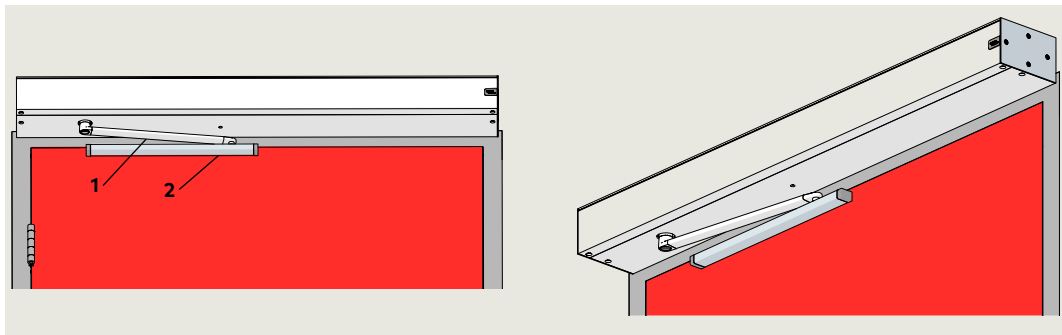


Fig. 12.1.2 RH deep pull

- 2 Track
- 3 Pull arm with CPD lever

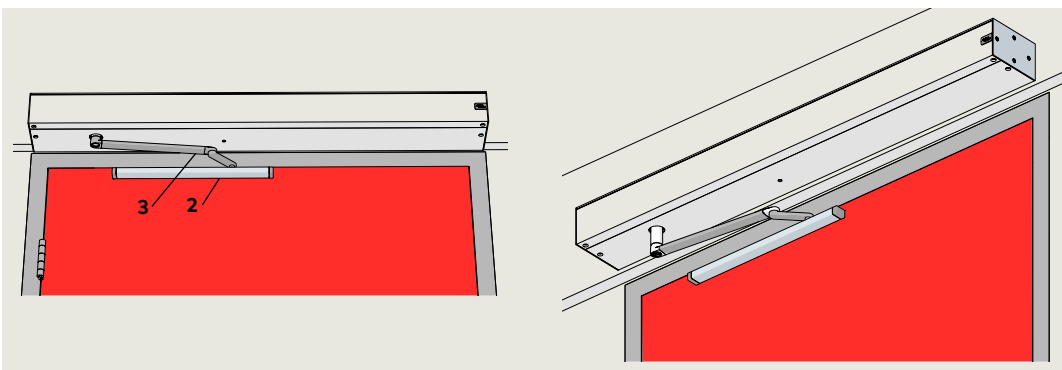


Fig. 12.1.3 RH pull as a push

- 2 Track
- 6 Pull arm with CPD lever as a push

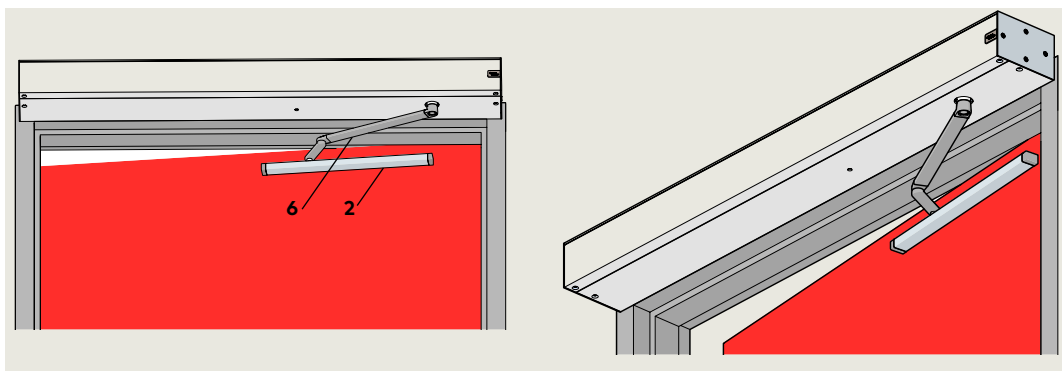


Fig. 12.1.4 RH push

- 4 Push arm
- 7 Door stop (optional)

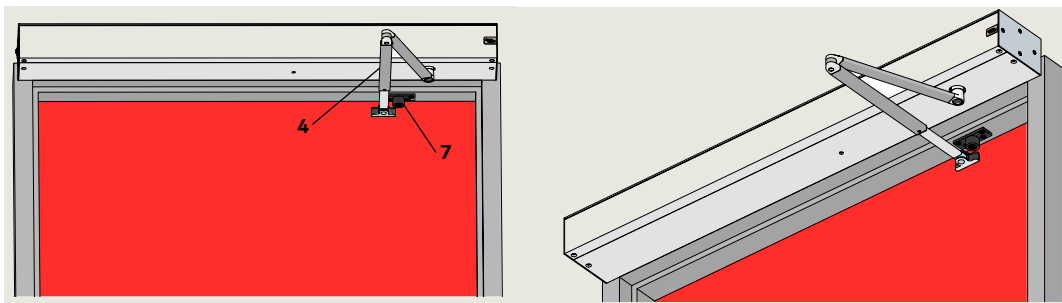
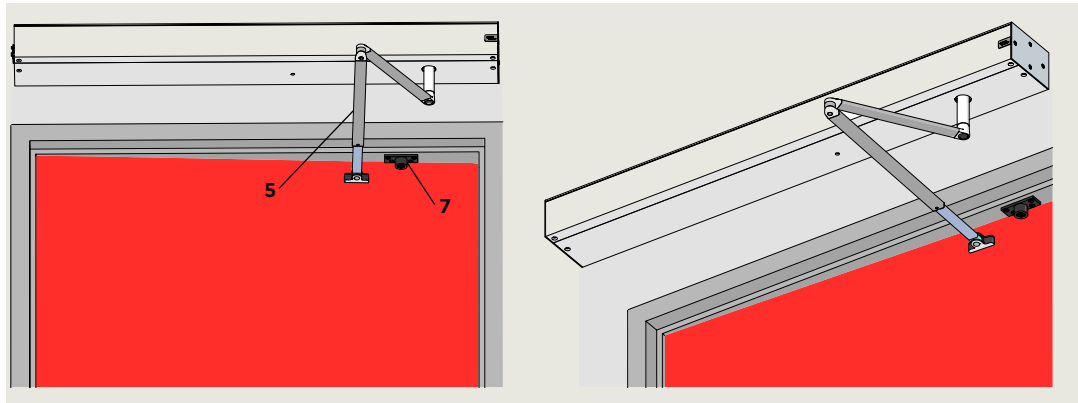


Fig. 12.1.5 RH deep push

- 5 Deep push arm
- 7 Door stop (optional)



12.2 Single swing door left hand arm configurations

Fig. 12.2.1 LH pull

- 1 Pull arm
- 2 Track

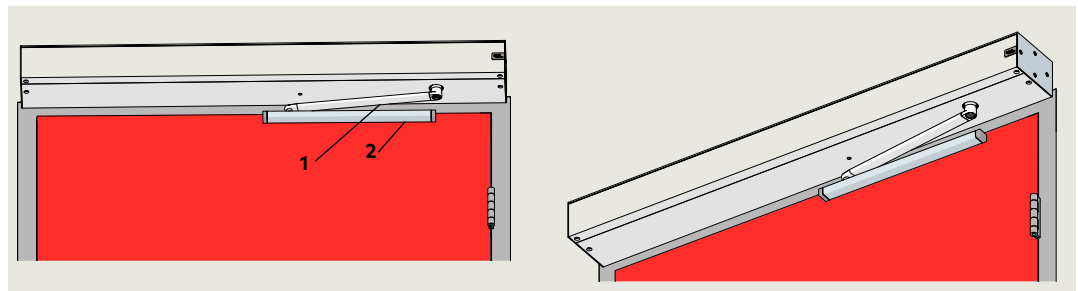


Fig. 12.2.2 LH deep pull

- 2 Track
- 3 Pull arm with CPD lever

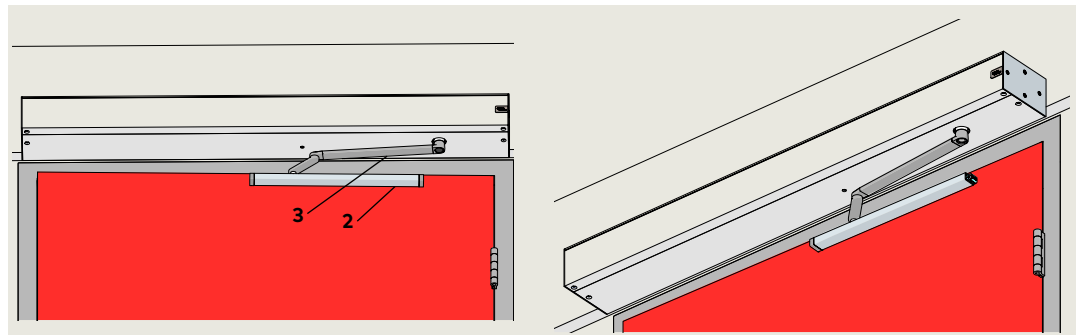
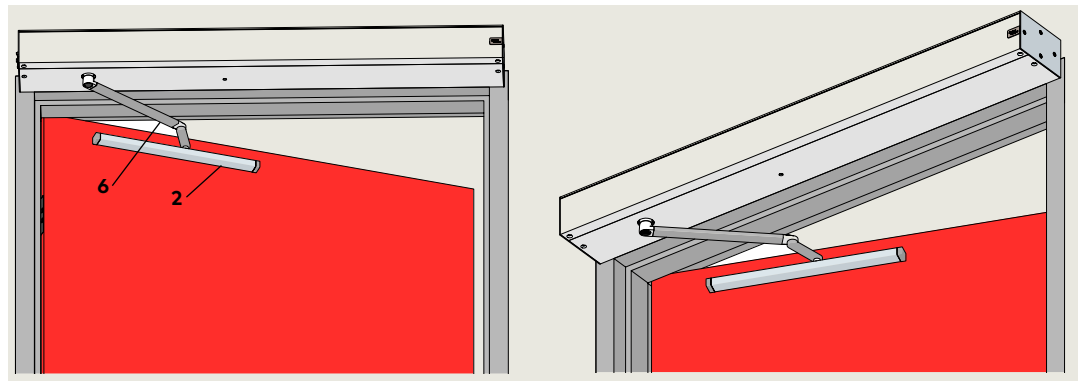


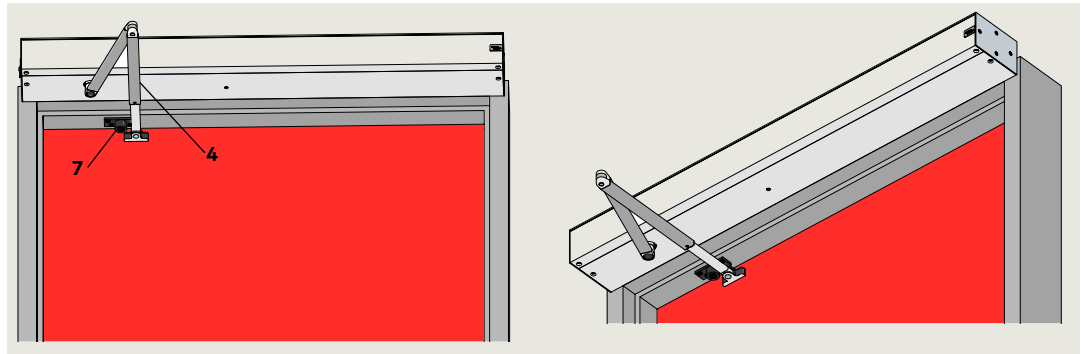
Fig. 12.2.3 LH pull as a push

- 2 Track
- 6 Pull arm as a push with CPD lever



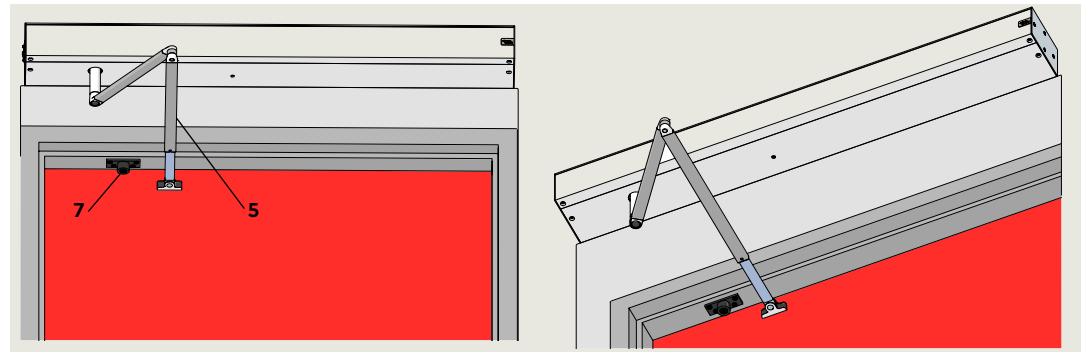
- 4 Push arm
- 7 Door stop (optional)

Fig. 12.2.4 LH push



- 5 Deep push arm
- 7 Door stop (optional)

Fig. 12.2.5 LH deep push



12.3 Single swing door center hung door arm configurations

- 4 Push arm
- 7 Door stop (optional)
- 8 Bottom pivot assembly (by others)

Fig. 12.3.1 Center hung door, RH push arm

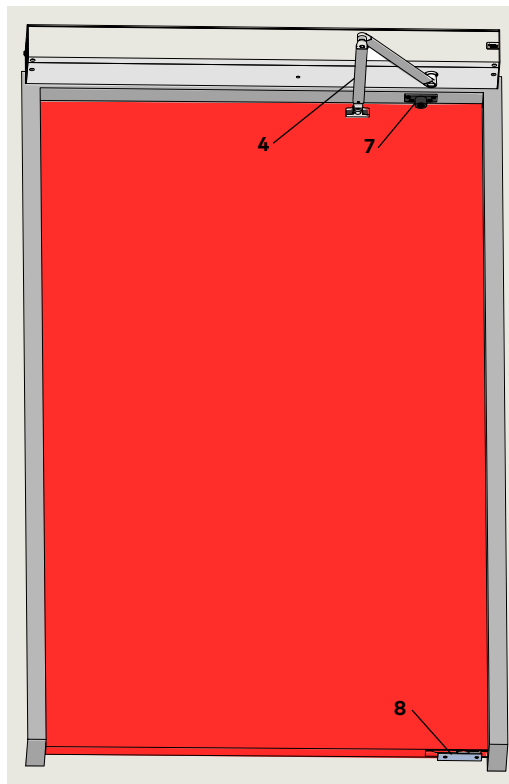
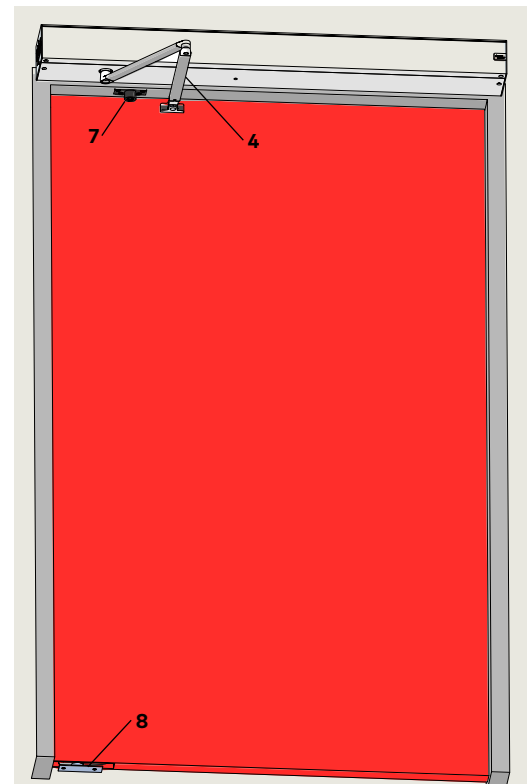


Fig. 12.3.2 Center hung door, LH push arm



- 2 Track
- 3 Pull arm with CPD lever
- 8 Bottom pivot assembly (by others)

Fig. 12.3.3 Center hung door, RH pull arm

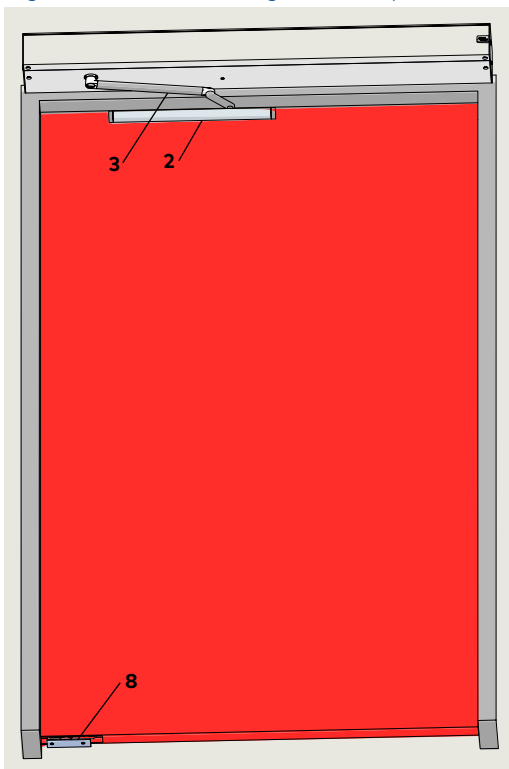
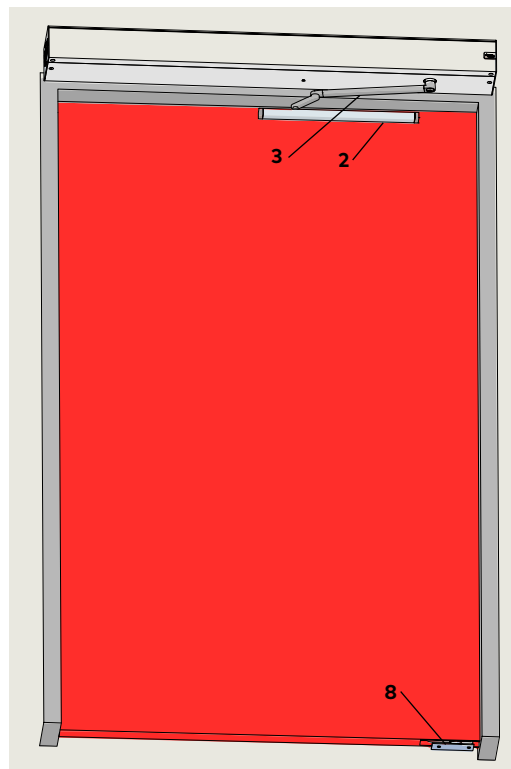


Fig. 12.3.5 Center hung door, LH pull arm



- 2 Track
- 8 Bottom pivot assembly (by others)
- 9 Pull arm with CPD lever as push

Fig. 12.3.4 Center hung door, pull as push LH

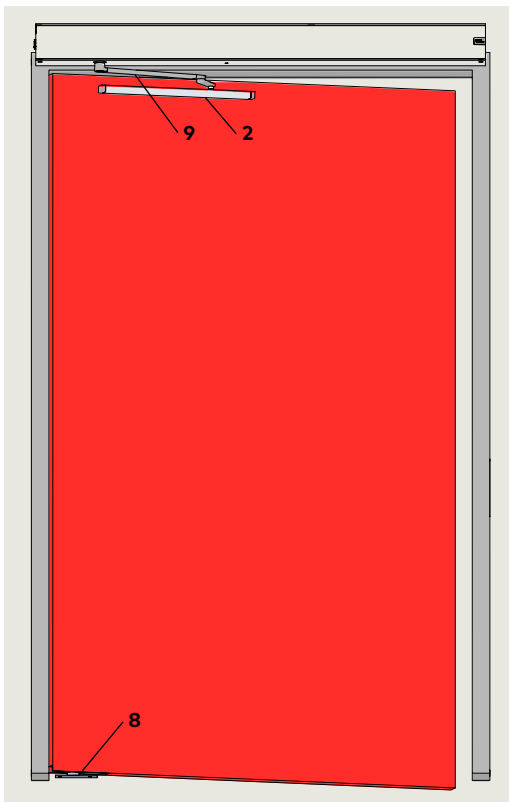
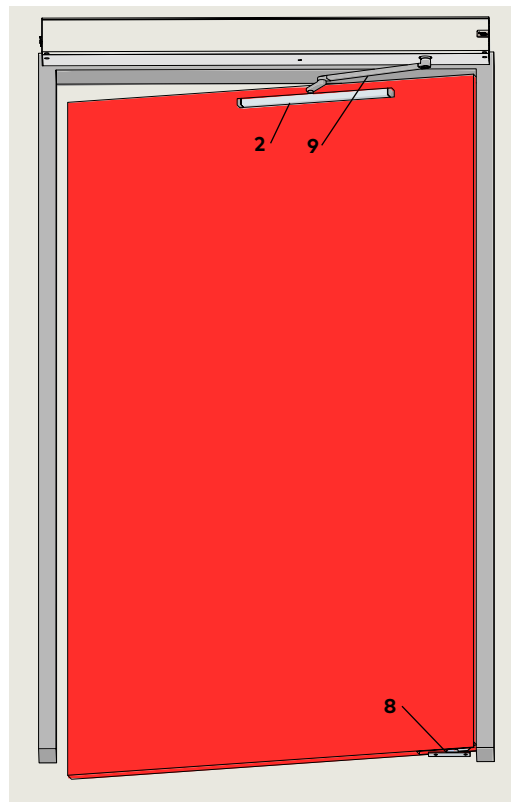


Fig. 12.3.6 Center hung door, pull as push RH



12.4 Double door arm configurations

Fig. 12.4.1 Double door pull

- 1 Pull arm
- 2 Track



Fig. 12.4.2 Double door deep pull

- 2 Track
- 3 Pull arm with CPD lever



Fig. 12.4.3 Double door pull as a push

- 2 Track
- 6 Pull arm with CPD lever as a push

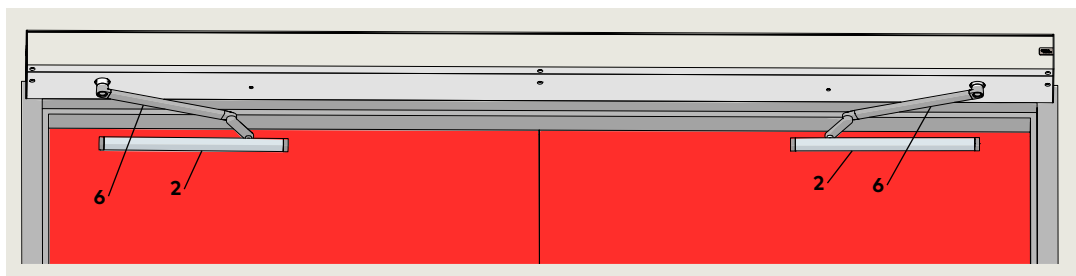


Fig. 12.4.4 Double door push

- 4 Push arm
- 8 Door stop (optional)

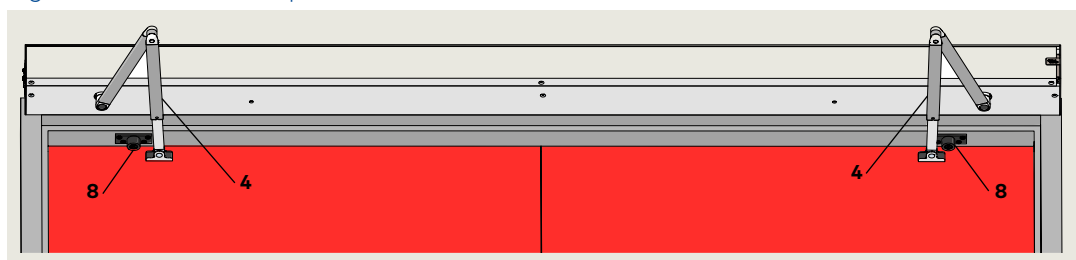


Fig. 12.4.5 Double door deep push

- 5 Deep push arm
- 8 Door stop (optional)



12.5 Double egress arm configurations

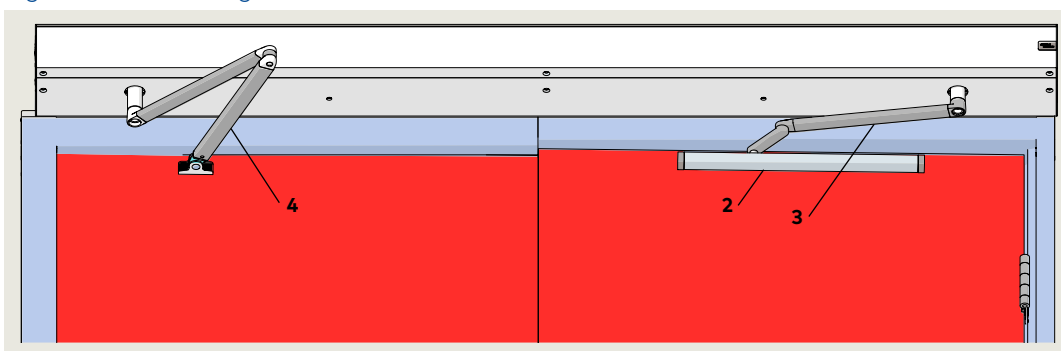
Fig. 12.5.1 Double egress LH

- 2 Track
- 3 Pull arm with CPD lever
- 4 Push arm



Fig. 12.5.2 Double egress RH

- 2 Track
- 3 Pull arm with CPD lever
- 4 Push arm



12.6 Double door center hung arm configurations

Fig. 12.6.1 Center hung door, double door pull

- 2 Track
- 3 Pull arm with CPD lever
- 8 Bottom pivot assembly (by others)
- 10 Top pivot assembly (by others) not shown

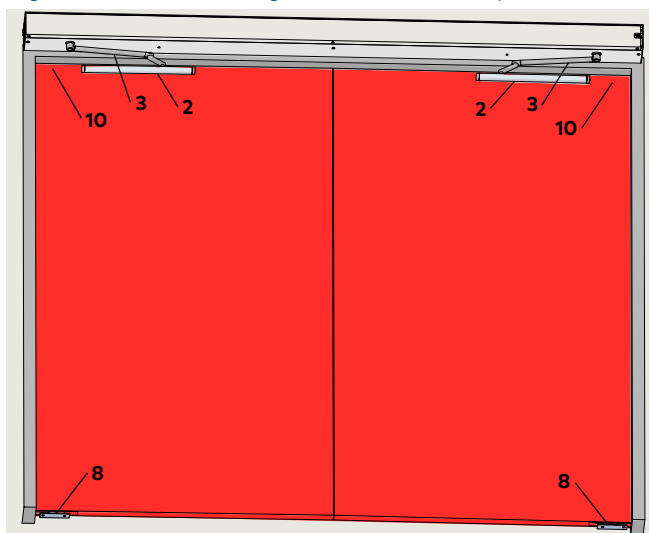


Fig. 12.6.2 Center hung door, double door push

- 4 Push arm
- 7 Door stop (optional)
- 8 Bottom pivot assembly (by others)
- 10 Top pivot assembly (by others) not shown

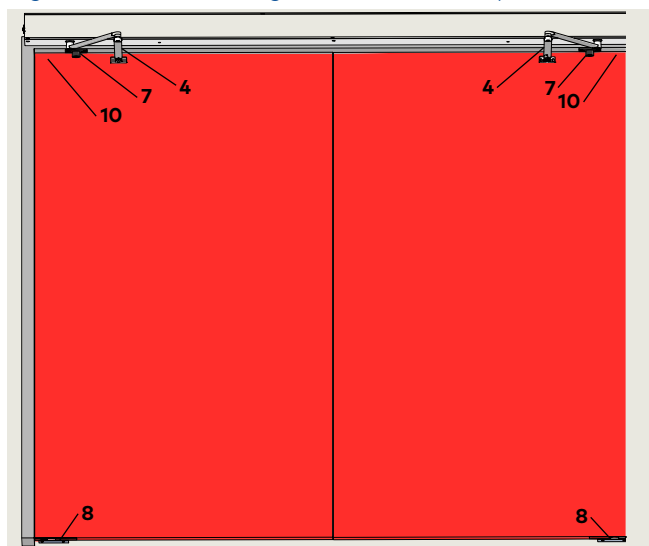
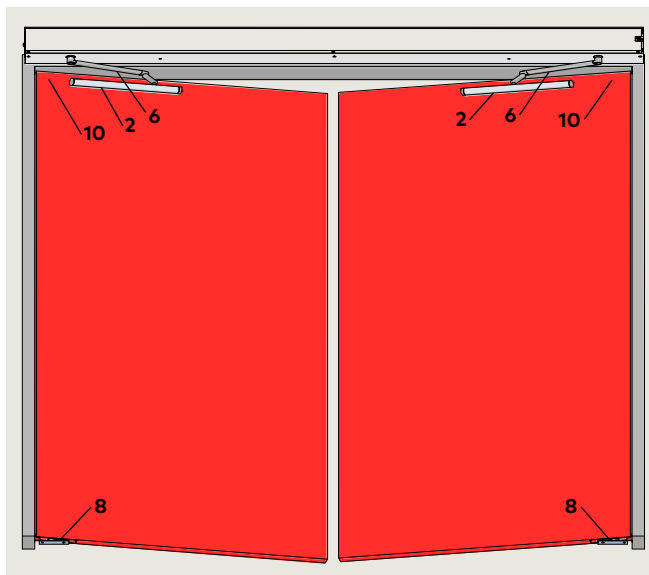


Fig. 12.6.3 Center hung door, double door pull as push

- 2 Track
- 6 Pull arm with CPD lever as a push
- 8 Bottom pivot assembly (by others)
- 10 Top pivot assembly (by others) not shown



13 Header installation

13.1 Installation preparation

NOTICE

Installation steps listed in Chapter 13 are a recommendation. Structural, local conditions, available tools, or other factors or circumstances may require modification to these steps.



WARNING

Operator 115 Vac branch circuit disconnect must be OFF at start of installation!

13.1.1 dormakaba USA hardware.

Locate shipping containers for header assembly and ED50 operator.

13.1.2 Door frame and door.

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

13.1.3 Accessories

1. Verify accessories planned for or in place for the door. Chapter 10, system accessories, list typical accessory types for ED50 operators.



TIPS AND RECOMMENDATIONS

Accessory wiring to header should be planned for prior to header installation.



WARNING

Review safety information in Chapter 3!



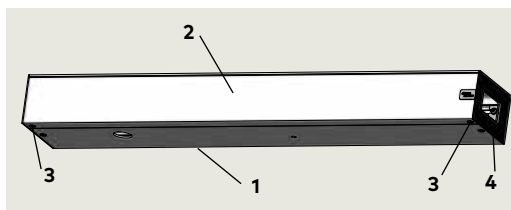
WARNING

ED50 header assembly should be installed by trained and knowledgeable installers experienced in installation and commissioning of automatic door closers. The installer should be familiar with all applicable local and national building code requirements, and with requirements of current ANSI/BHMA standard A156.19, Power Assist and Low Energy Power Operated Doors.

13.2 Unpack header assembly

Fig. 13.2.1 Single door header

- 1 ED50 4" x 6" single door header
- 2 Header cover
- 3 Cover screws
- 4 Program switch panel mounting surface



13.2.1 Unpack contents from header.

1. Remove header assembly from package.
2. Open cover secured by two screws (three for pair doors header) and remove cover.
3. Remove contents from header.

13.2.2 Single door header contents.

- Low energy accessory installation kit, (Chapter 6).
- Program switch panel assembly (Para. 5.2).
- Box containing pull arm or push arm kit.

13.2.3 Double door header content additions to para. 13.2.2.

- Low energy accessory installation kit.
- Box containing pull arm or push arm kit.
- 115 Vac power connecting cable (Para. 6.2).
- Communication cable (Para. 6.2).

13.3 Remove ED50 operator from mounting plate

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

Fig. 13.3.1 Operator M6 SHCS locations

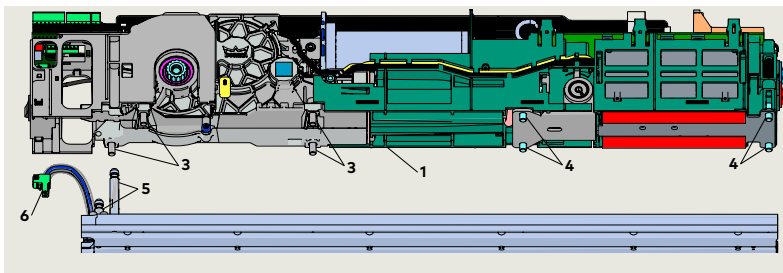


Fig. 13.3.2 M6 x 10 SHCS

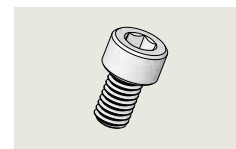


Fig. 13.3.3 Operator power switch side view

- 1.1 M6 x 10 SHCS mounting hole
- 2 115 Vac operator to mounting plate cable
- 4 115 Vac operator to mounting plate plug
- 5 115 Vac socket
- 6 Power switch
- 7 115 Vac terminal block
- 8 Ground terminal
- 9 Mounting plate

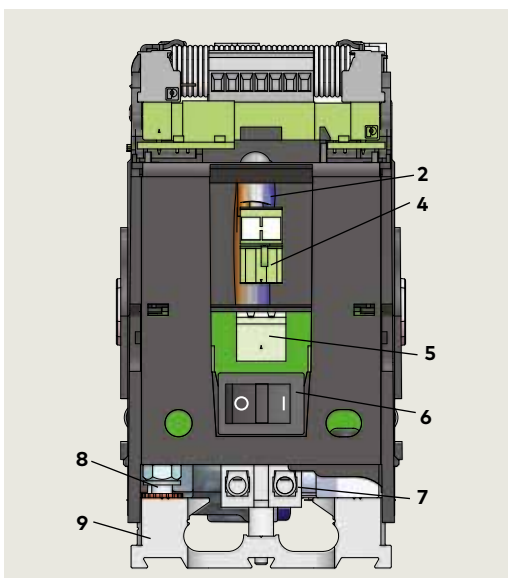
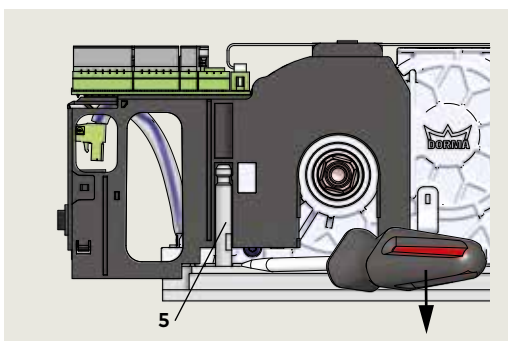


Fig. 13.3.4 Lift operator from mounting plate

- 5 Guide pin



13.3.1 Remove 115 Vac plug from socket.

1. Unplug 115 Vac plug (4) from its socket (5) above power switch.

13.3.2 Remove operator from mounting plate.

2. Use 5 mm hex T-handle to loosen eight M6 SHCS (3 and 4).



TIPS AND RECOMMENDATIONS

Insure all eight M6 fasteners are free of the mounting plate.

3. Place screwdriver blade in gap between operator drive unit and mounting plate; carefully move operator up from mounting plate.



TIPS AND RECOMMENDATIONS

Guide pin resistance may require screwdriver to start operator removal from mounting base.

4. Lift operator from mounting plate and set aside.

13.4 Single header installation

13.4.1 Single 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 (Chapter 6, Accessory kits).

Fig. 13.4.1 Door frame width

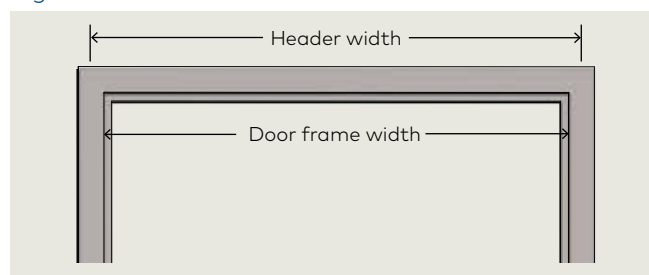
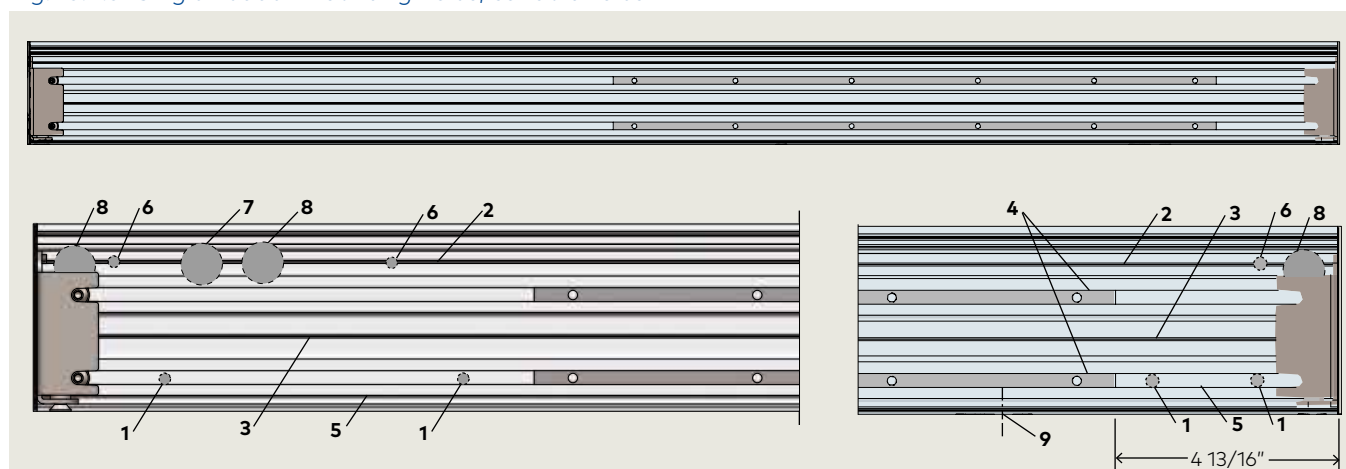


Fig. 13.4.2 Header width



Fig. 13.4.3 Single 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 (Alternate locations)
- 9 Operator axle centerline

13.4.2 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 center channel 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.

13.4.3 Install program switch panel.

1. Install program switch panel in header (Para. 13.5).

13.4.4 Mount header to door frame.

1. Using applicable installation template (Para. 13.7 - 13.13) 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 using selected screws.
 - Use shims as required to make header square to door frame.

CAUTION

Header must be square, level and plumb with door and door frame!

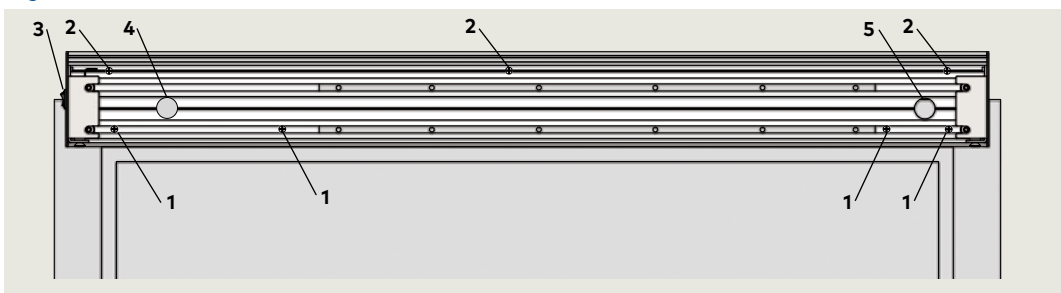
4. Drill 1/4" holes in header top V-groove on centerline of marked stud locations and secure to wall using selected screw.

CAUTION

After drilling holes, clean all metal debris from header!

Fig. 13.4.4 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)



13.5 Install program switch panel in header

Fig. 13.5.1 Program switch panel installed in header

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

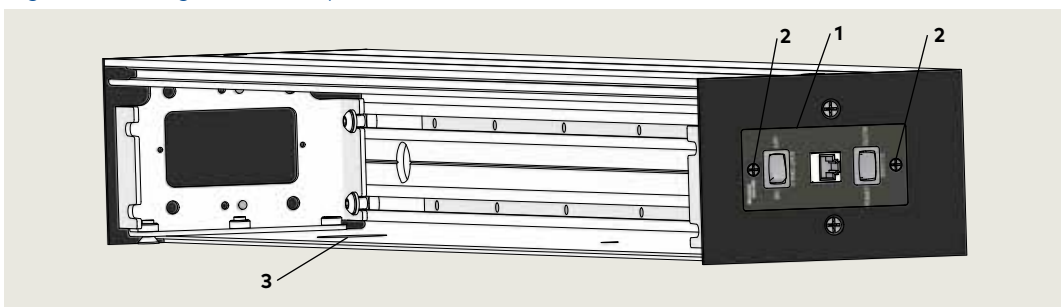
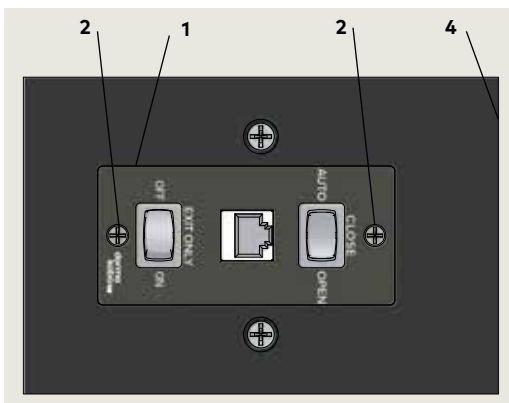


Fig. 13.5.2 Program switch panel

- 1 Program switch panel
- 2 1/8-32 x 1/4 FHMS
- 4 Door frame header edge



13.5.1 Fasten program switch panel to header door strike side.

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



TIPS AND RECOMMENDATIONS

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

- Program switch panel cable length is 36". Refer to Para. 14.7.



TIPS AND RECOMMENDATIONS

For optional Key switch panels, reference Para. 5.3 and Appendix D, Wiring Diagrams.

13.6 Double header installation

13.6.1 Double 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 (Chapter 6, Accessory kits).

Fig. 13.6.1 Header and door frame width

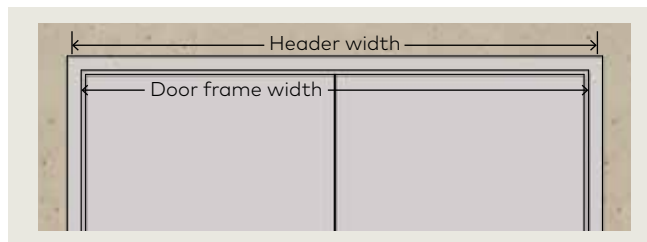
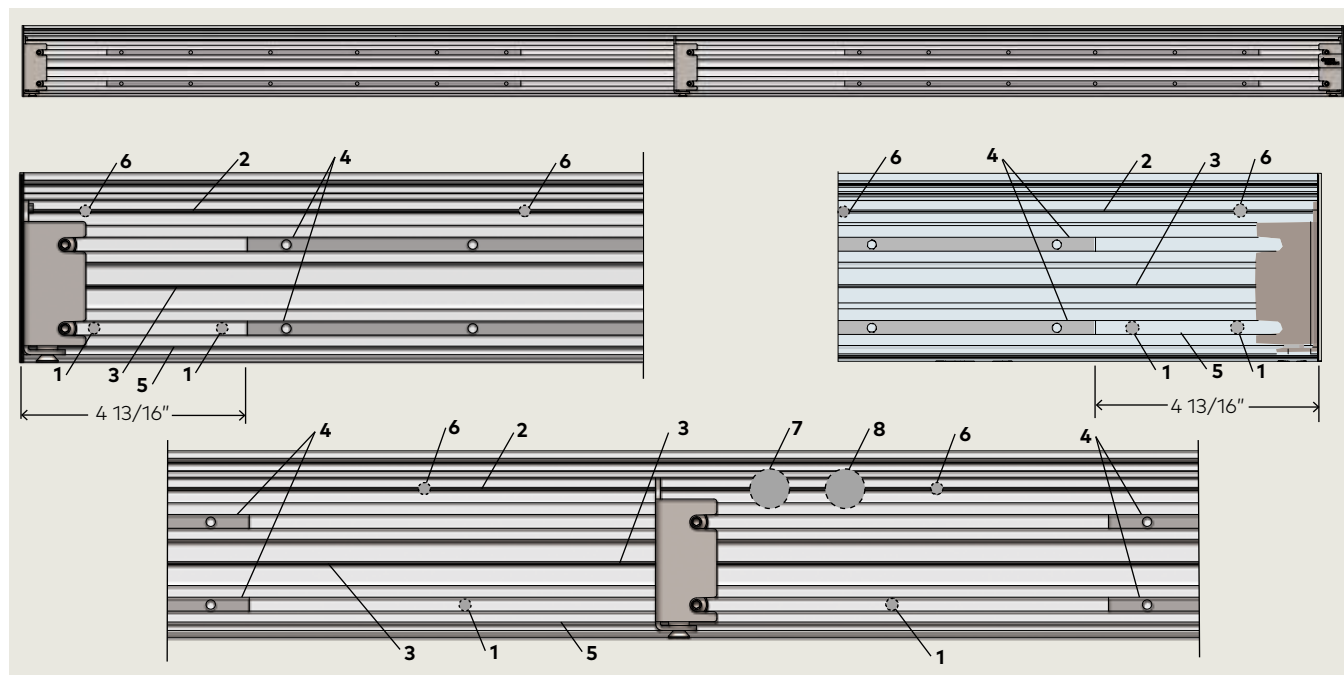


Fig. 13.6.2 Double header mounting holes, conduit holes



- 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)

13.6.2 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 center channel 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.

13.6.3 Install program switch panel.

1. Install program switch panel in header (Para. 13.8) on active door side.

13.6.4 Mount header to door frame.

1. Using applicable installation template (Para. 13.7 - 13.13) 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 using selected screw.
 - Use shims as required to make header square to door frame.

CAUTION

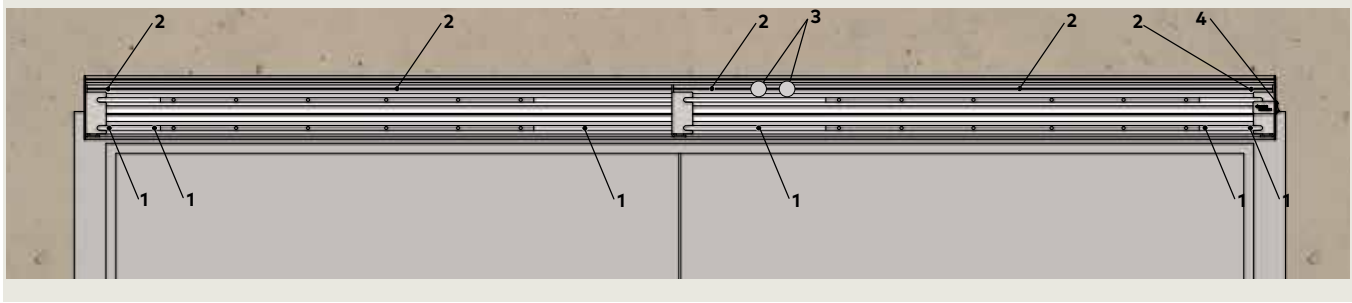
Header must be square to door frame!

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

CAUTION

After drilling holes, clean all metal debris from header!

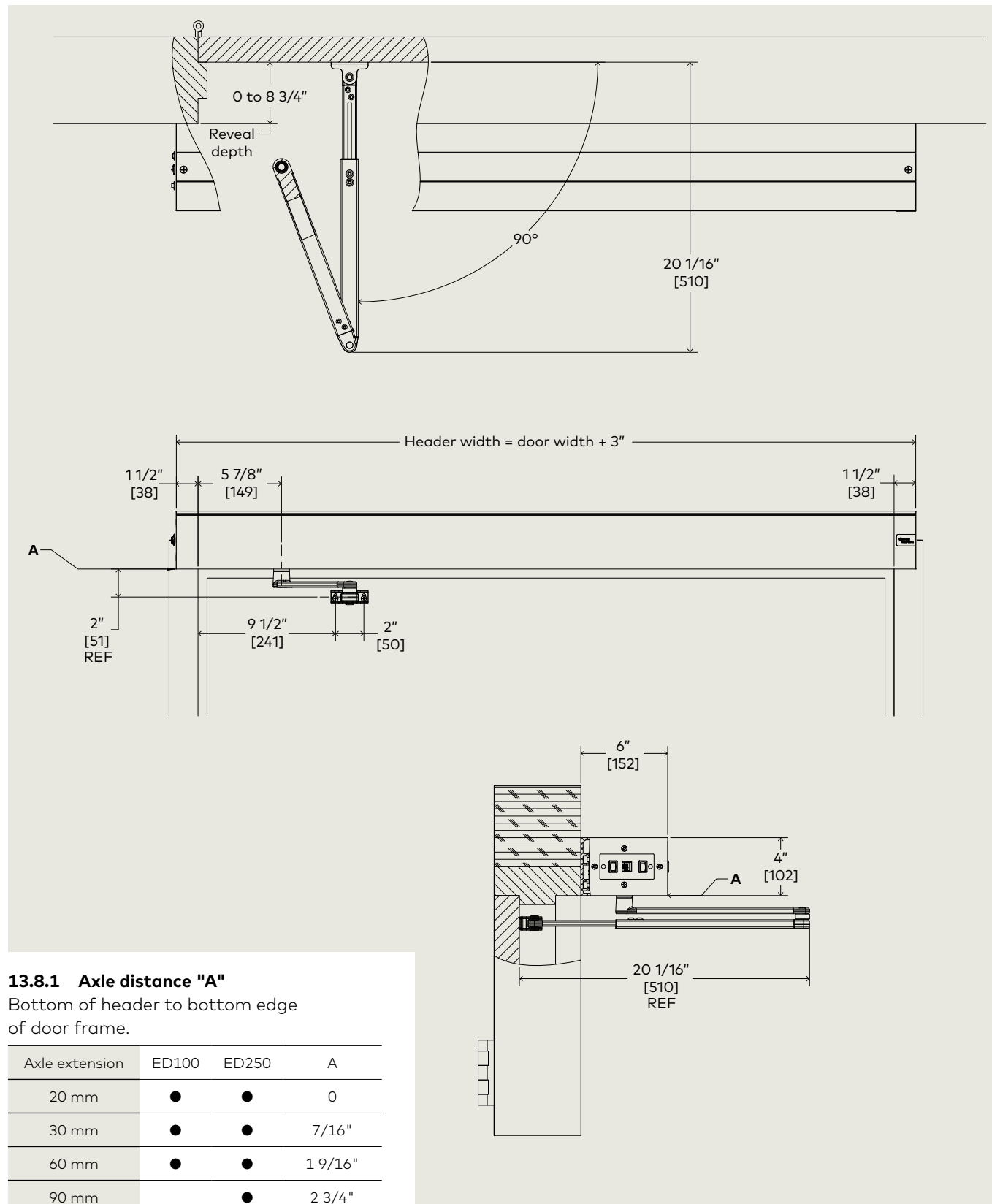
Fig. 13.6.3 Header located on door frame/wall



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

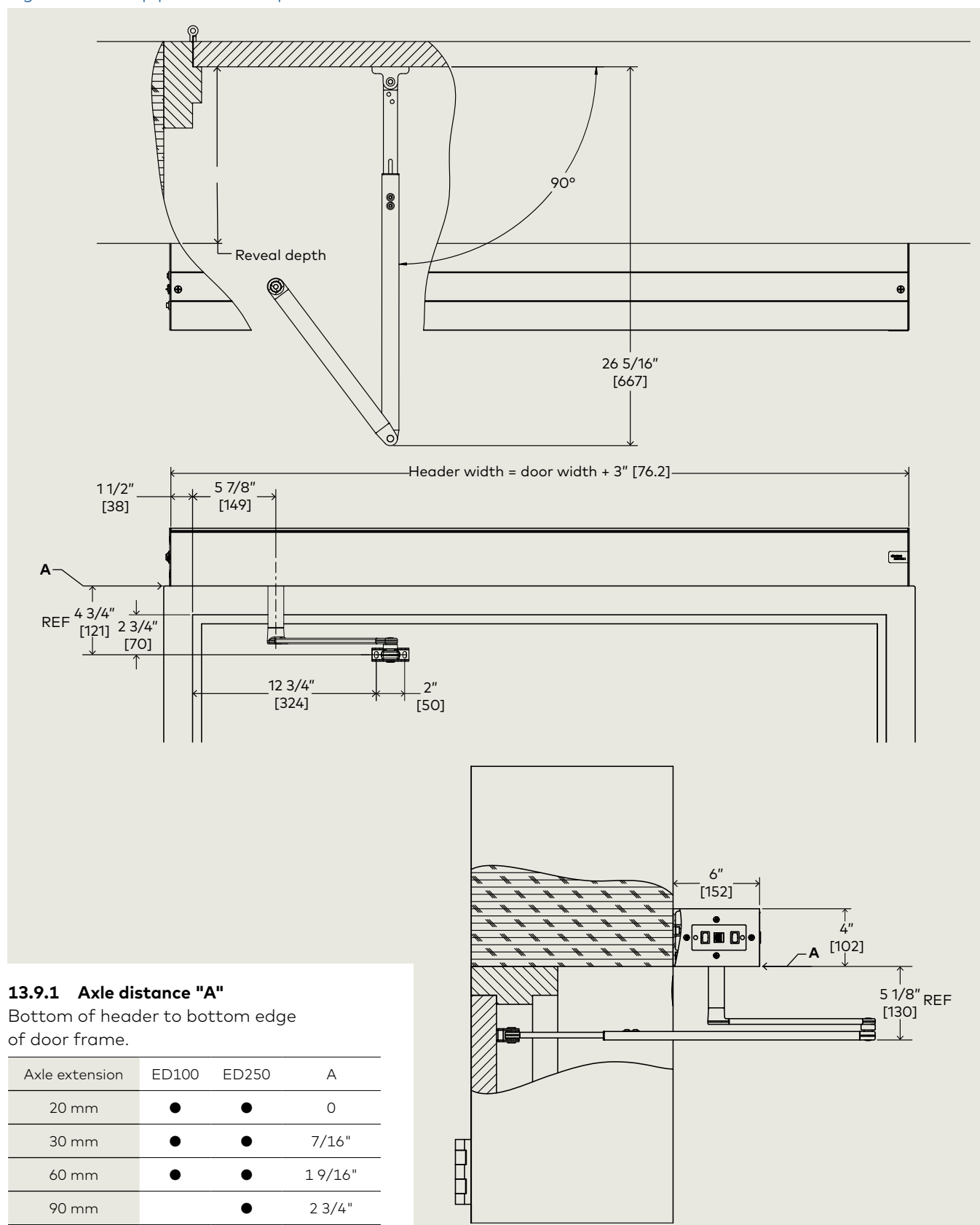
13.7 SA narrow header (4 x 6") – push arm template

Fig. 13.7.1 Standard push arm template



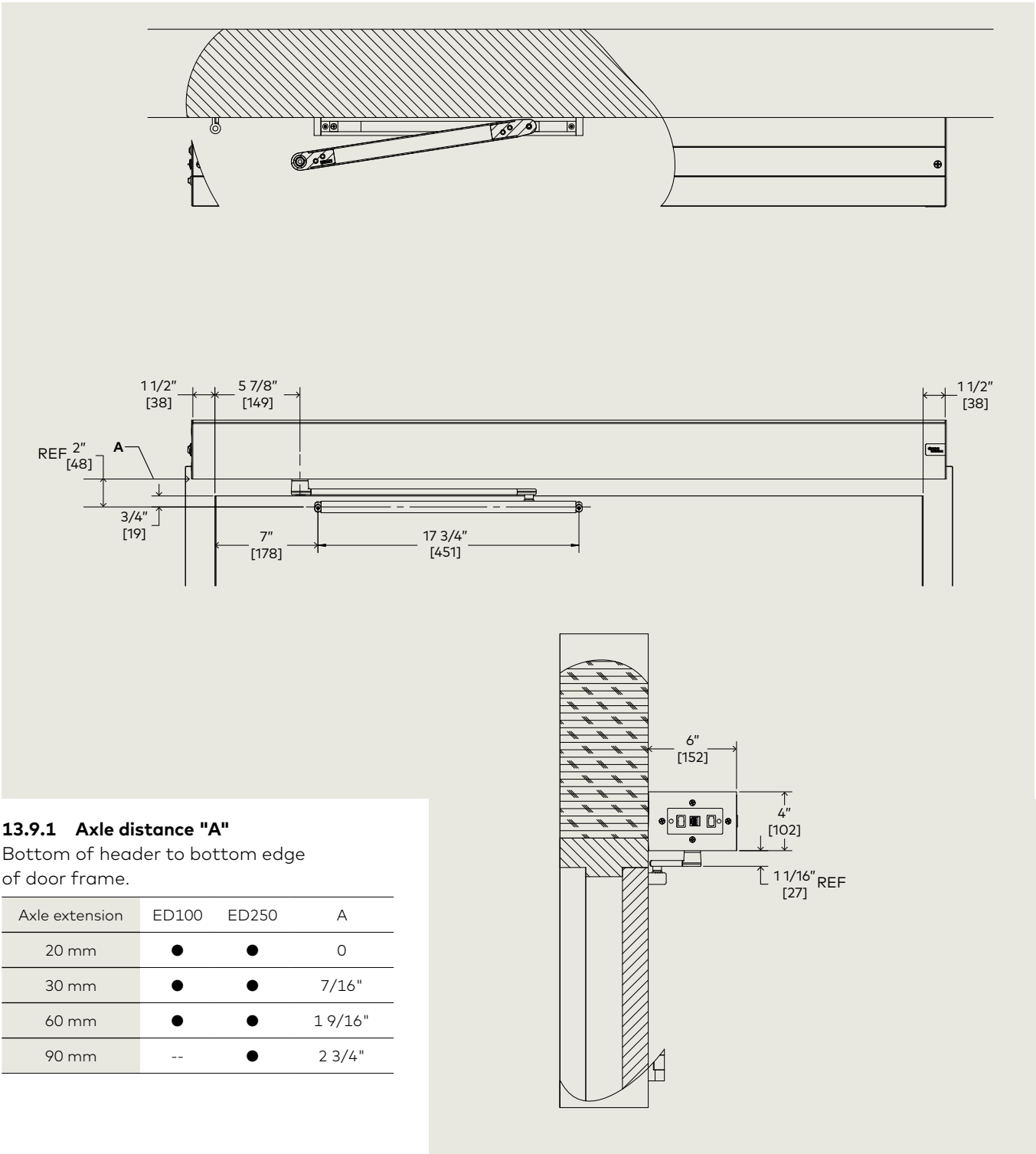
13.8 SA narrow header (4 x 6") – deep push arm installation template

Fig. 13.8.1 Deep push arm template



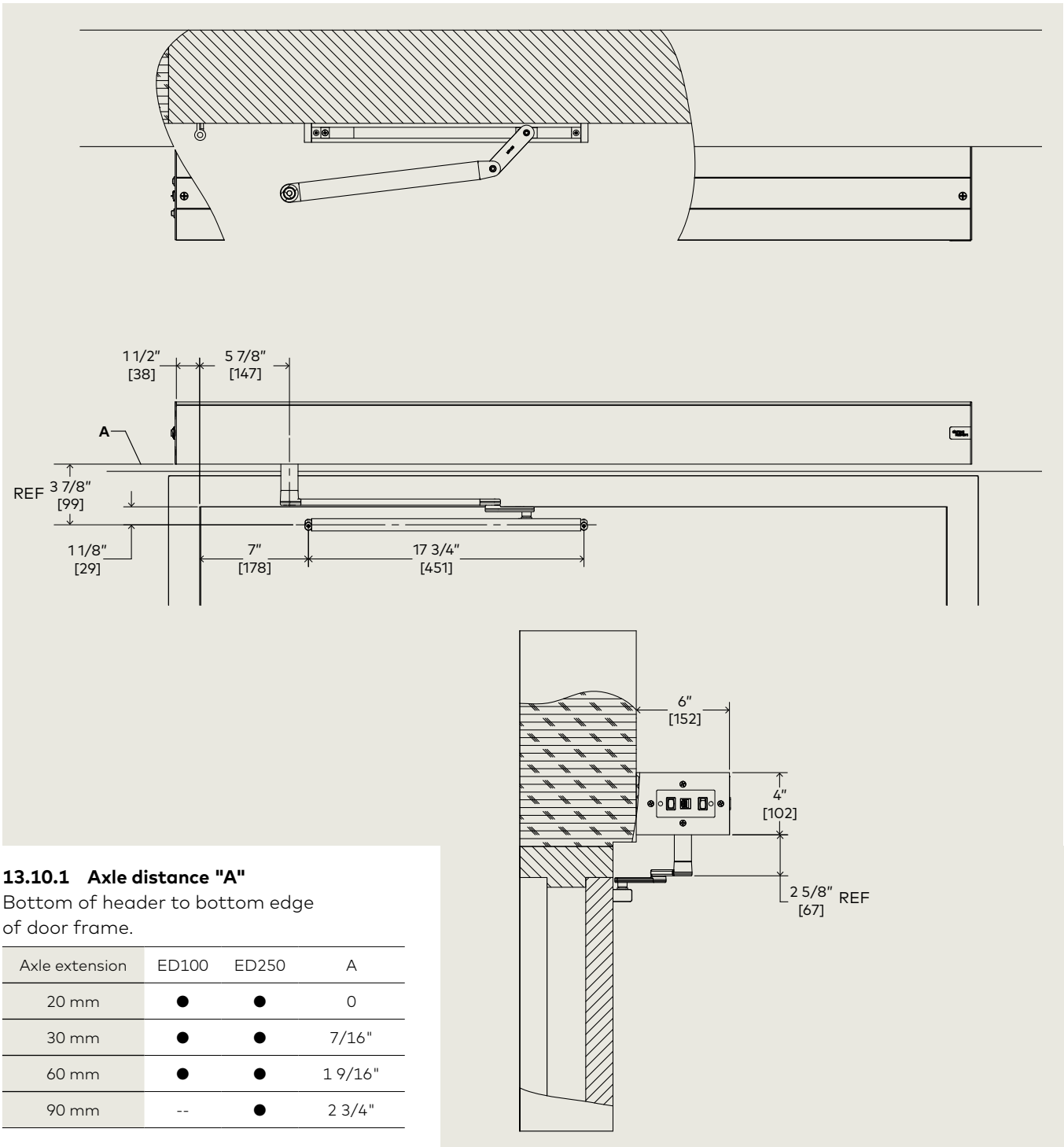
13.9 SA narrow header (4 x 6") – pull arm template

Fig. 13.9.1 Deep pull arm template



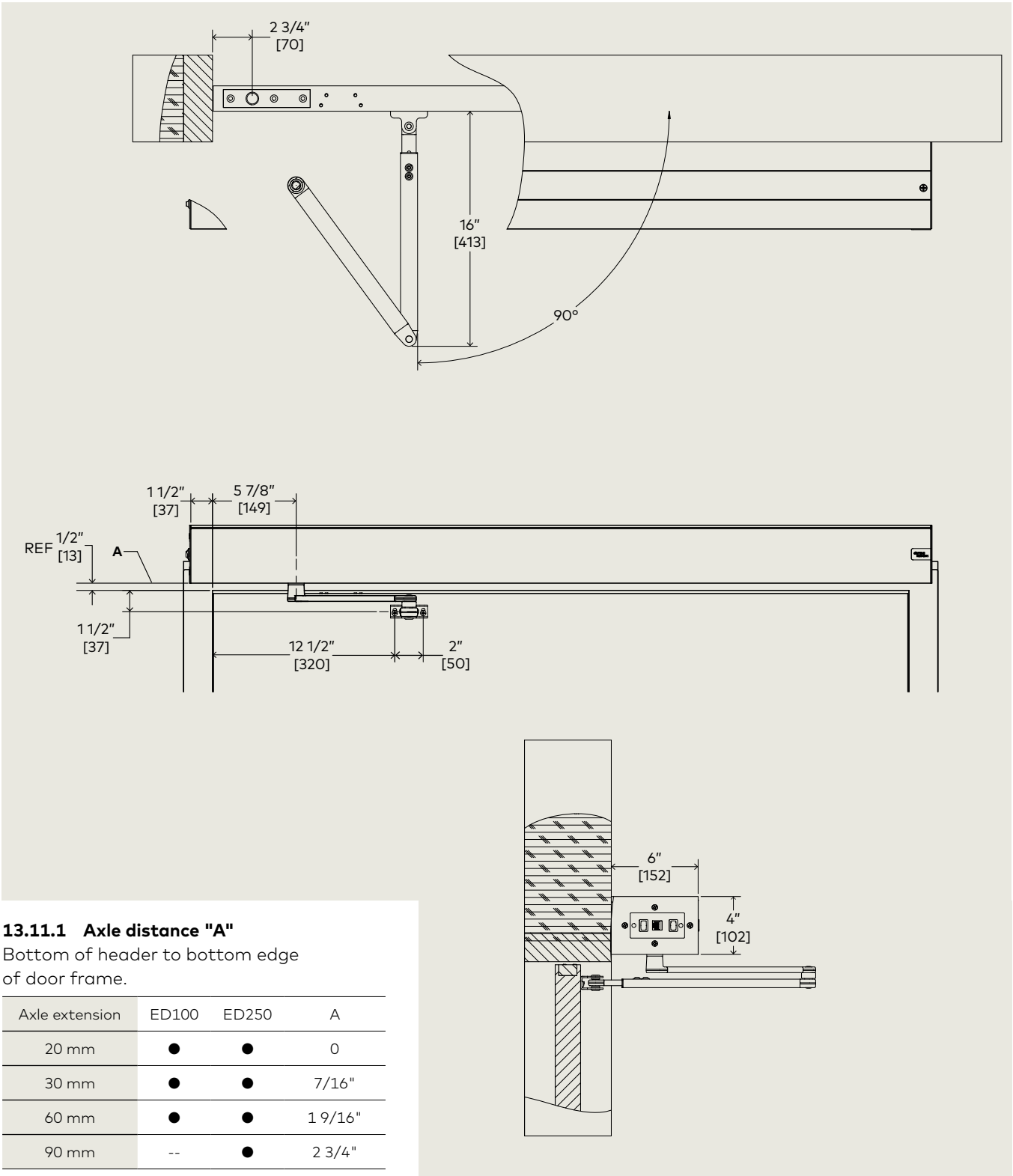
13.10 SA narrow header (4 x 6") – deep pull arm template

Fig. 13.10.1 Deep pull arm template



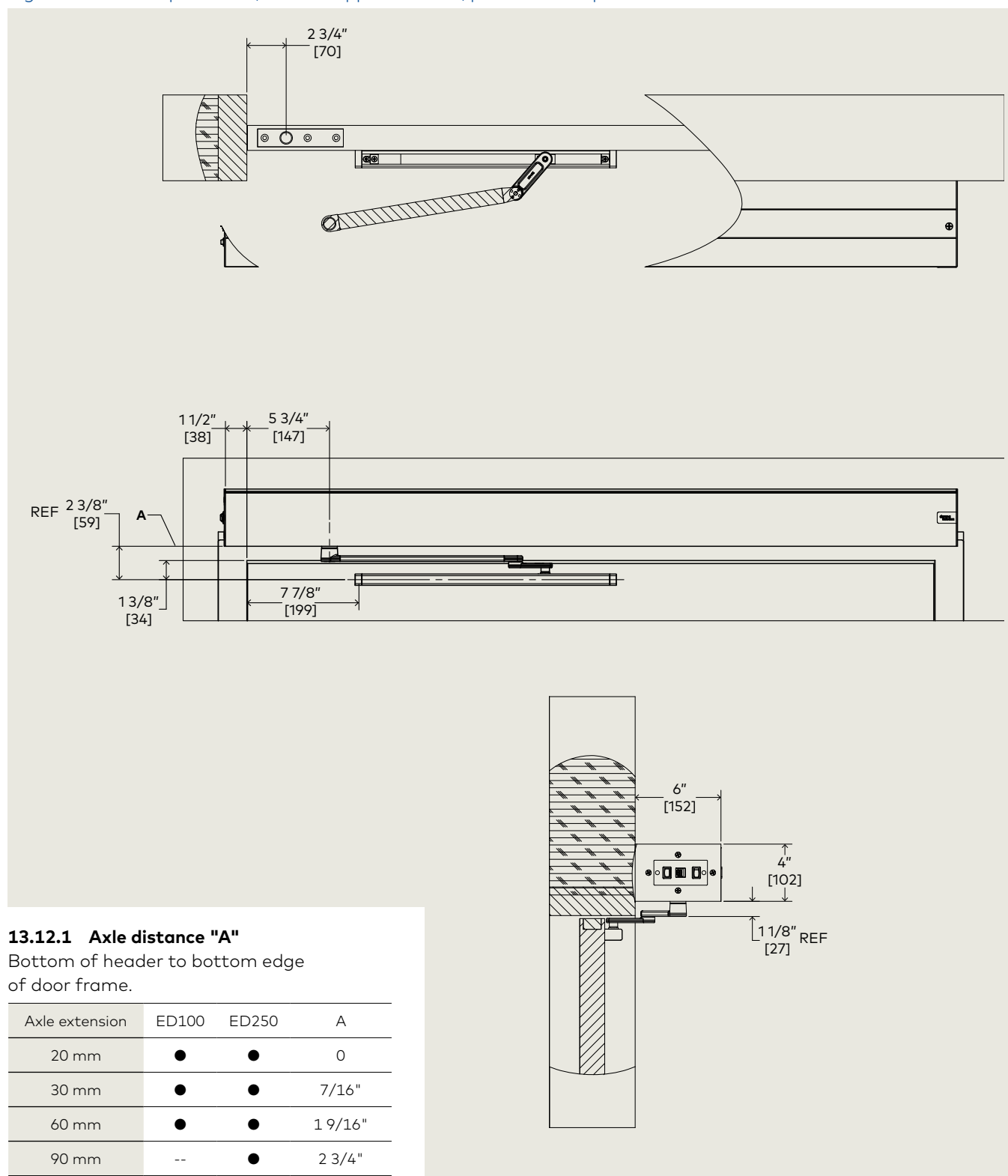
13.11 SA narrow header (4 x 6") – center hung door, push arm template

Fig. 13.11.1 Push arm template



13.12 SA narrow header (4 x 6") offset pivot door, „push arm template

Fig. 13.12.1 Offset pivot door, surface applied header, push arm template



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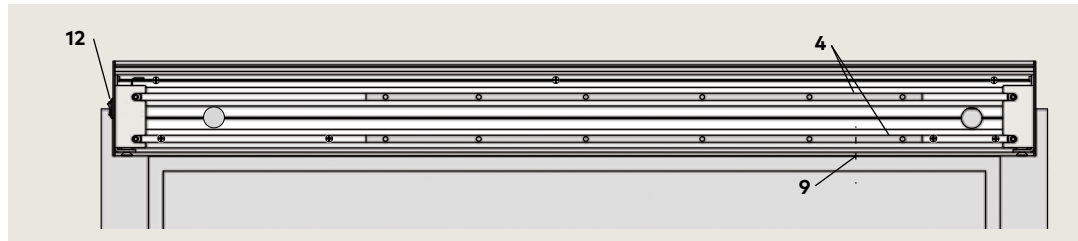
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14 ED50 operator installation

14.1 Single header mounting plate installation

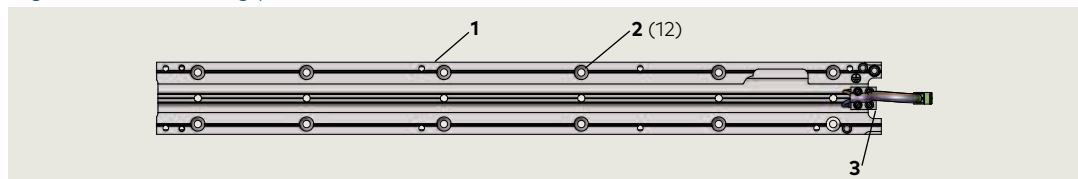
- 4 Header track
- 9 Operator axle hole
- 12 Program switch panel

Fig. 14.1.1 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" PHFHS DK4617-010

Fig. 14.1.2 Mounting plate



- 3 115 Vac terminal block
- 5 Guide pin
- 6 Third guide pin
- 9 Operator axle centerline

Fig. 14.1.3 Header with mounting plate installed

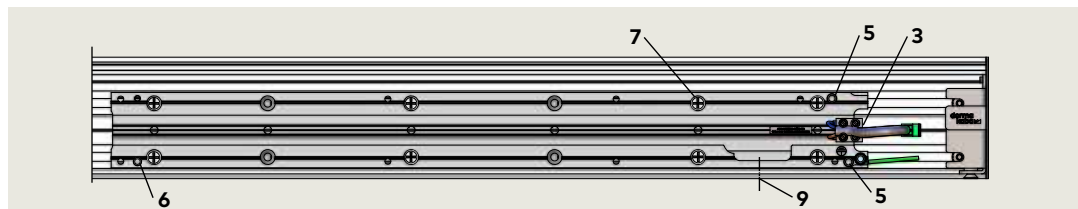
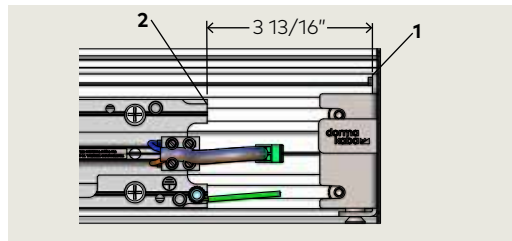
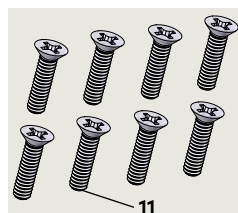
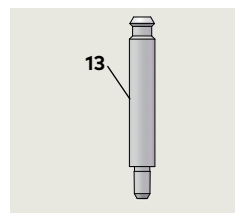


Fig. 14.1.4 Mounting plate location in header

- 1 Inside edge of jamb bracket
- 2 Edge of mounting base

Fig. 14.1.5
1/4-20 x 1" PHFHSFig. 14.1.6
Guide pin

14.1.1 Position header tracks.

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

14.1.2 Fasten mounting plate to header tracks.

- Place mounting plate on header tracks, aligning holes in header track with 1/4 x 20 UNC mounting plate holes.
- Thread eight 1/4-20 x 1" PHFHS into mounting plate hole locations (Fig. 14.1.3). Do not tighten screws.

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

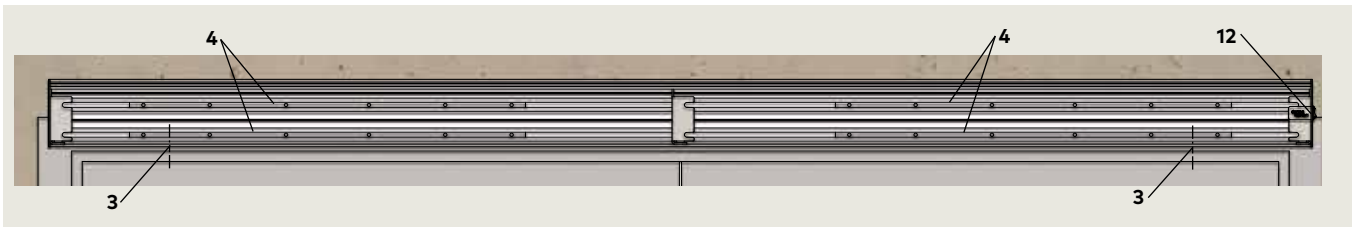
- Slide mounting plate to dimension shown between inside edge of jamb bracket and edge of mounting plate (Fig. 14.1.4).
- Tighten all eight screws using No. 3 Phillips screwdriver. Recheck dimension.

14.1.4 Install third guide pin.

- Install third guide pin (6).

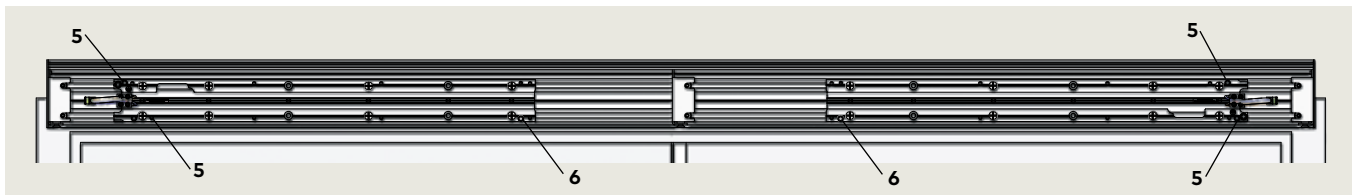
14.2 Double header mounting plate installation

Fig. 14.2.1 Double header with header tracks



- 3 Axle centerline
4 Header track
12 Program switch panel

Fig. 14.2.2 Double header with mounting plates installed



- 5 Guide pin
6 Third guide pin

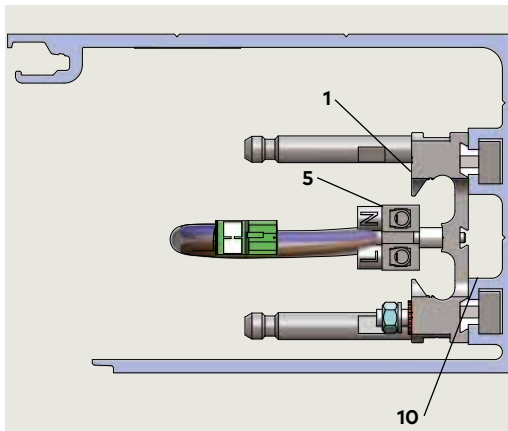
- 8 115 Vac power cable
DX3484-010, 5.8 ft.
DX3484-020, 7.9 ft
DX3484-030, 11 ft..

Fig. 14.2.3 115 Vac power cable



Fig. 14.2.4 Header and mounting plate wiring channels

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



14.2.1 Install mounting plates in double header.

1. Refer to Para. 14.1 Single header mounting plate installation.

14.2.2 Install 115 Vac power cable.

1. Route 115 Vac power cable through both mounting plate channels.



TIPS AND RECOMMENDATIONS

Cable will connect 115 Vac between the two operators (Ref. Para. 14.6).

14.2.3 Install third guide pin.

1. Install third guide pin in each mounting plate (Fig. 14.2.2).



TIPS AND RECOMMENDATIONS

Use header center channel for low voltage wiring.

14.3 Customer 115 Vac connection to mounting plate terminal block

Fig. 14.3.1 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

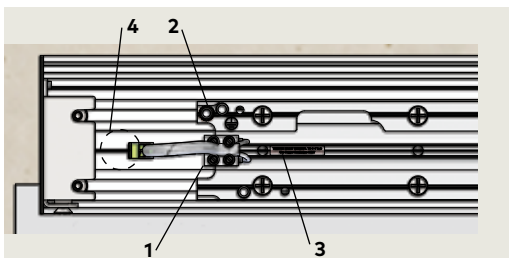


Fig. 14.3.2 115 VAC connections

- 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

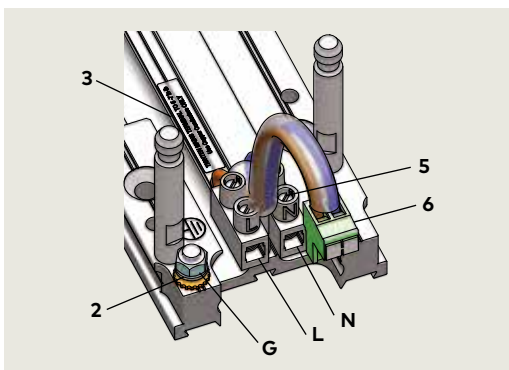


Fig. 14.3.3 Mains terminal torque and wire label

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.

14.3.1 Connect 115 Vac wiring.



WARNING

Routing and connection of 115 Vac wiring to ED50 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.



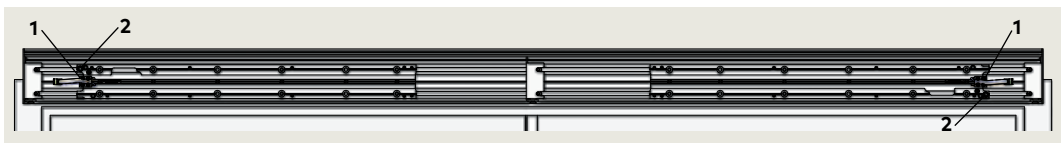
TIPS AND RECOMMENDATIONS

- Maximum wire strip length, 1/4".
 - Tighten terminal screws to torque referenced in Fig. 14.3.3.
 - 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.

14.4 Double door header 115 Vac mounting plate connection

Fig. 14.4.1 Double door header 115 Vac connection

- 1 115 Vac terminal block
- 2 Ground stud



NOTICE

115 Vac power cable connects the two operators together (Para. 14.6).

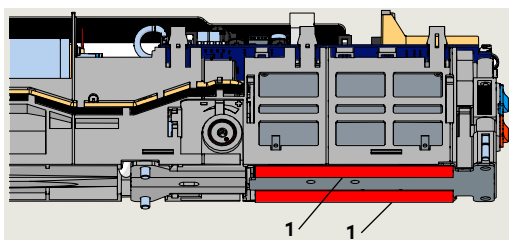
14.4.1 115 VAC connection to double door header.

1. Customer 115 Vac connects to mounting plate 115 Vac terminal block and ground stud.

14.5 Remove protective film strips from operator

Fig. 14.5.1 Operator heat conductive pads

- 1 Heat conductive pad



14.5.1 Remove protective film strips.

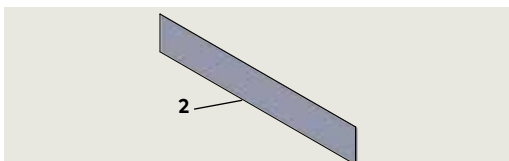
1. Remove two protective film strips from operator heat conductive pads.

CAUTION

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

Fig. 14.5.2 Protective film strip

- 2 Protective film strip



14.6 Install ED50 operator on mounting plate in header

Fig. 14.6.1 Header with mounting plate installed

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

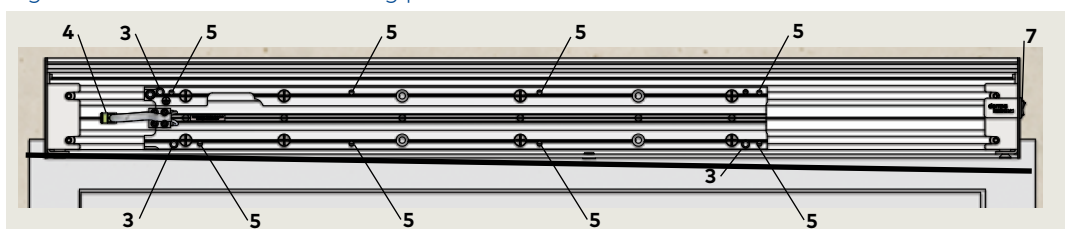


Fig. 14.6.2 Installing operator on mounting plate

- 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

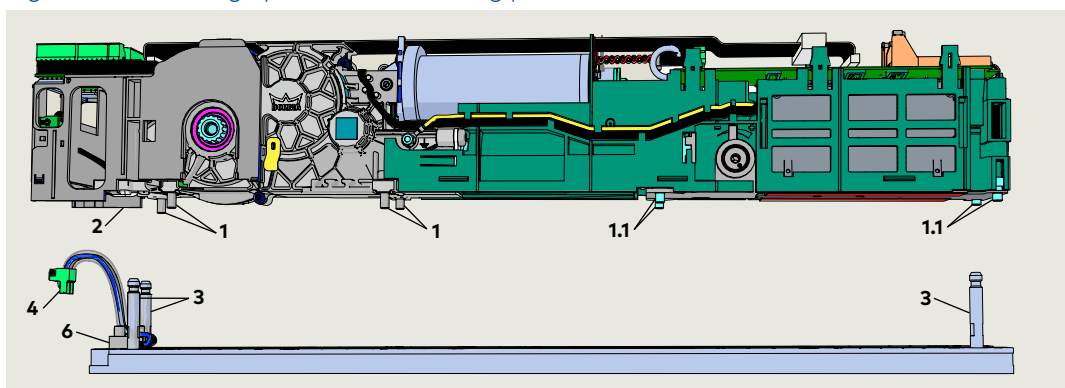
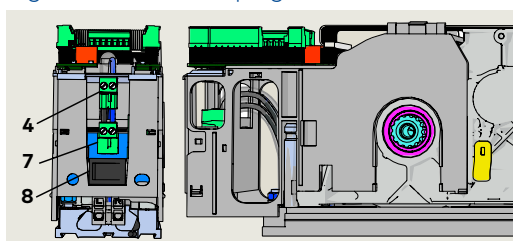


Fig. 14.6.3 115 VAC plug connection

- 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.

14.6.1 Install operator on mounting plate.

CAUTION

Insure protective film strips have
been removed from heat
conductive pads (Para. 14.4).

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.
 - Refer to Chapter 4 for torque value.

Fig. 14.6.4 Operator and mounting plate assembly

- 3 Guide pin
- 4 Mounting plate

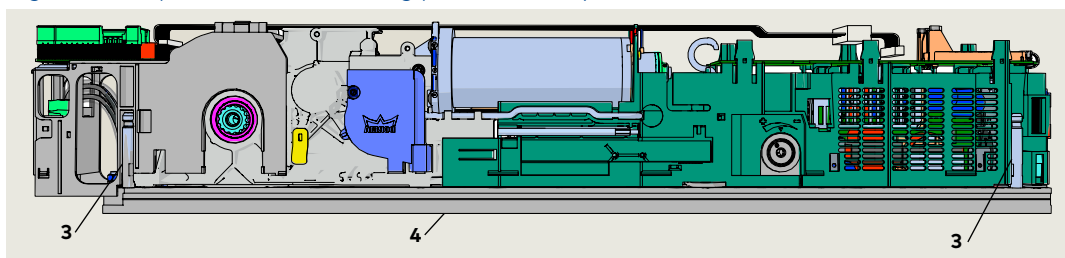


Fig. 14.6.5 Header with operator installed



14.7 Double header ED50 operator installation

Fig. 14.7.1 Double header with operators installed

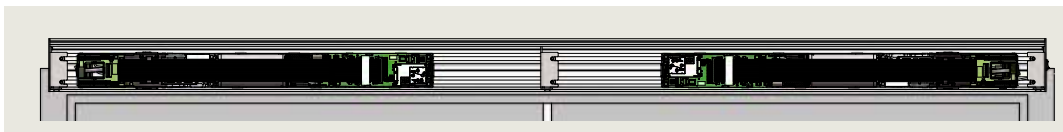


Fig. 14.7.2 115 Vac power cable installed on operator with 115 Vac customer connection

- 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

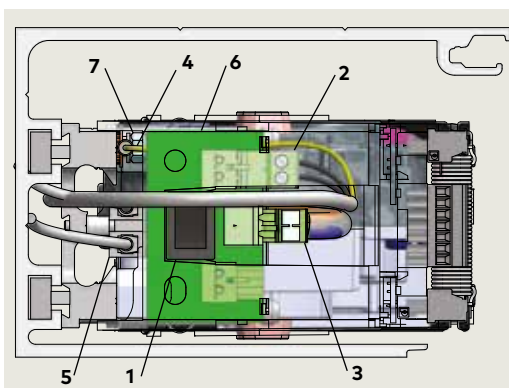


Fig. 14.7.3 115 VAC power cable installed on second operator

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

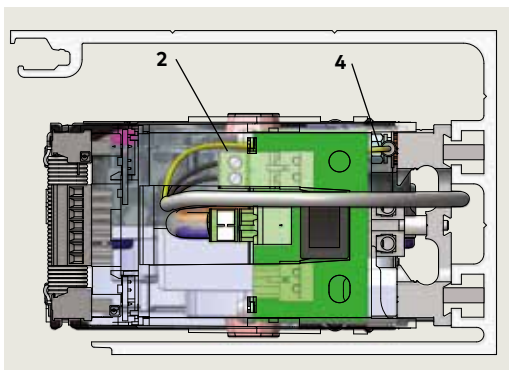


Fig. 14.7.4 115 VAC power cable

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



14.7.1 Install operators on mounting plates.

1. Refer to Para. 14.6 for installation of ED50 operators.

14.7.2 Connect 115 Vac power cable to both operators.

1. Insert power cable (Fig. 14.7.4) 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.

14.8 Connect program switch cable to ED50 operator

Fig. 14.8.1 Header with ED50 operator

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



Fig. 14.8.2 Cable installation on operator

- 1 Program switch panel
- 2 Program switch cable with connector 36" long
- 3 Header for program switch cable
- 4 RJ 45 connector, double door synchronization
- 5 COM 1 service connector
- 6 RJ 45 connector for program switch panel cable

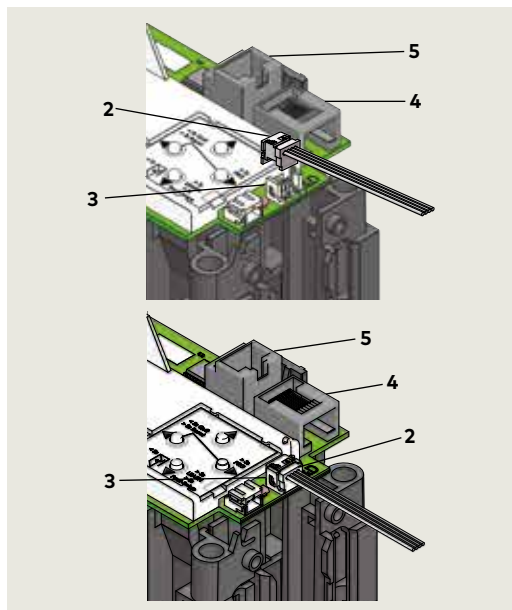


Fig. 14.8.3 RJ45 comm cable

- 6 RJ45 comm cable, 36" long DX4607

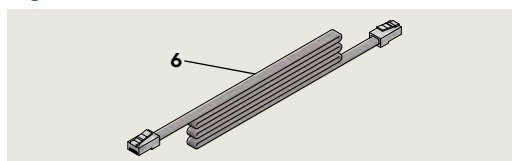
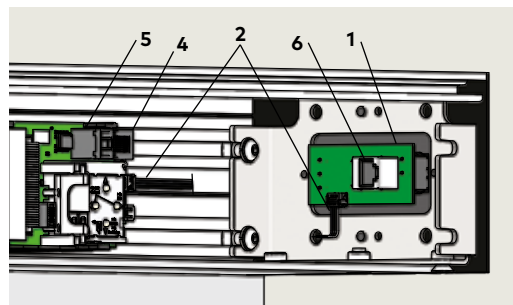


Fig. 14.8.4 Program switch panel



14.8.1 Connect program switch cable to operator

1. Carefully insert cable connector into header connector on operator.
- Note that connector inserts vertically into header connector.

14.8.2 Install RJ45 program 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.

14.9 Double header operator legend plate

Fig. 14.9.1 Double header with operators installed

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

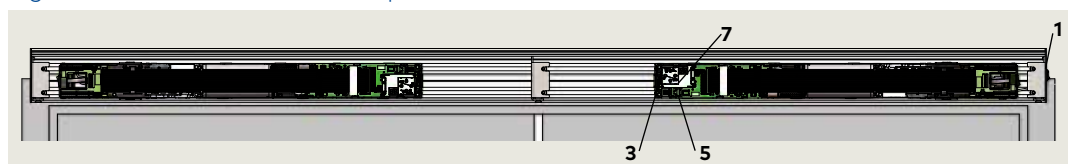
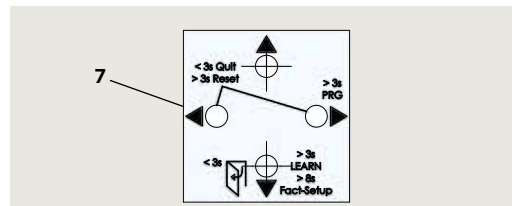


Fig. 14.9.2 Operator legend plate



14.9.1 Reverse legend plate orientation.

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

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15 Arm with track mount installation

15.1 Arm with track installation

NOTICE

Reference Para. 12.2 (single door) and
Para. 12.3 (double door) installation templates.

15.2 Splined arm and track assemblies

Fig. 15.2.1 Splined arm with CPD lever and track assembly, LH

- 1 Drive arm
- 2 CPD
- 3 Track

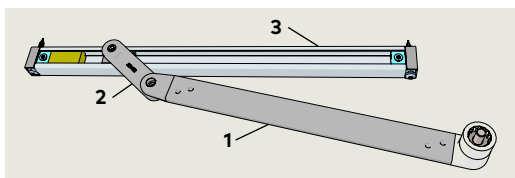


Fig. 15.2.3 Splined arm and track assembly

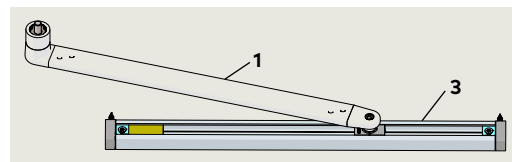
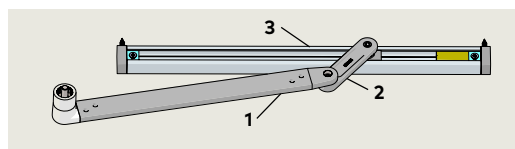


Fig. 15.2.2 Splined arm with CPD lever and track assembly, RH

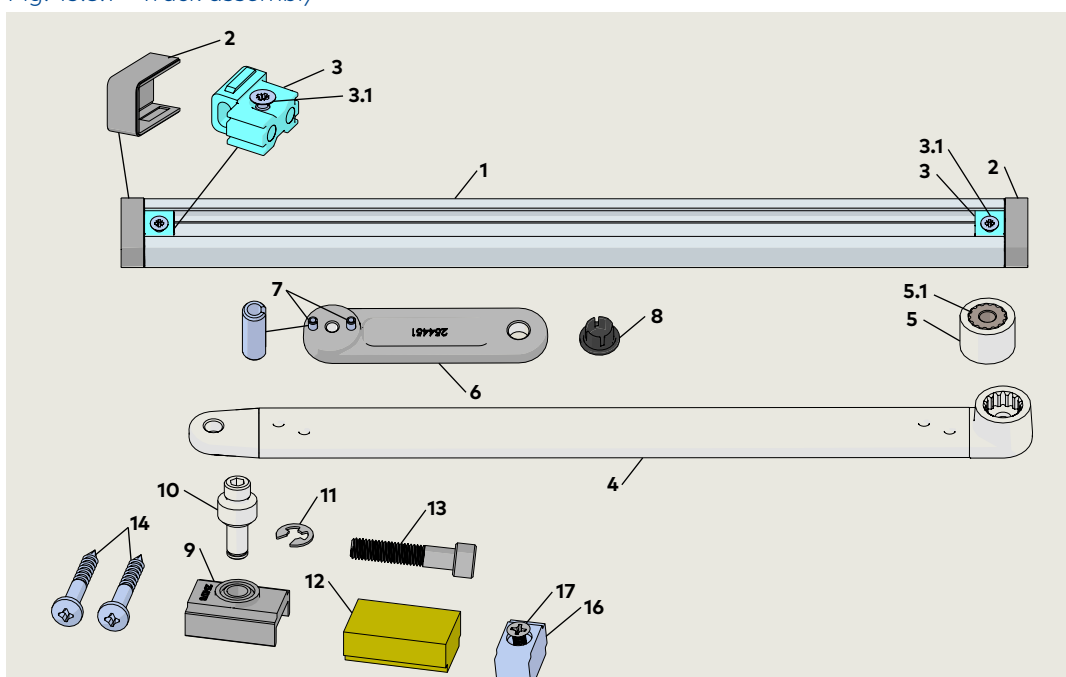
- 1 Drive arm
- 2 CPD
- 3 Track



15.3 Splined arm and track hardware

Fig. 15.3.1 Track assembly

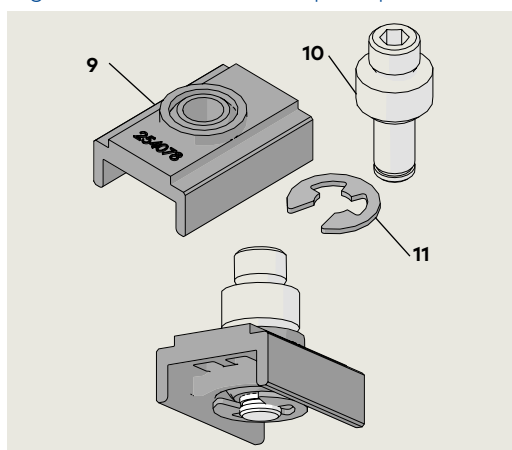
- 1 Track
- 2 End cap
- 3 Fixing piece
- 3.1 M5 x 15 Phillips FHS
- 4 Pull arm
- 5 20 mm axle extension
- 5.1 Splined
- 6 CPD lever
- 7 Slotted spring pin
- 8 Pull arm cap
- 9 Slide shoe
- 10 Pivot pin
- 11 Retaining ring
- 12 Bumper
- 13 M8 x 1.25 x 40 SHCS
- 14 Wood screws
- 15 Machine screws



15.4 Slide shoe assembly

Fig. 15.4.1 Slide shoe and pivot pin

- 9 Slide shoe
- 10 Pivot pin
- 11 Retaining ring

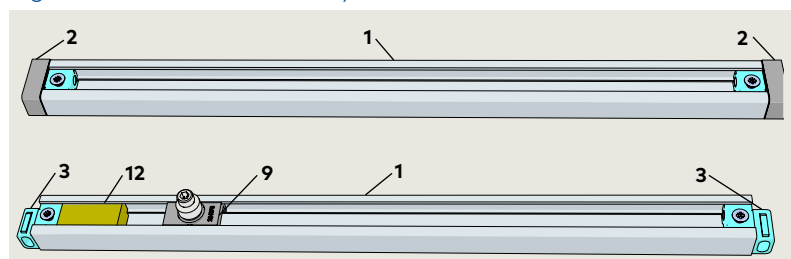


15.4.1 Install pivot pin into slide shoe.

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

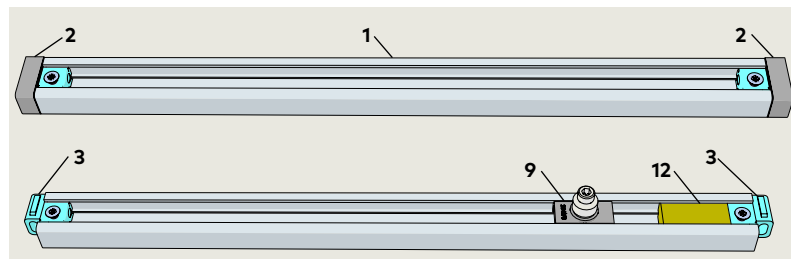
15.5 Install hardware into track

Fig. 15.5.1 LH track assembly



- 1 Track
- 3 Fixing piece
- 9 Slide shoe
- 12 Bumper

Fig. 15.5.2 RH track assembly



- 1 Track
- 3 Fixing piece
- 9 Slide shoe
- 12 Bumper

15.5.1 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 (12) and slide shoe assembly (9) into track.
2. Secure fixing piece to end of track with M5 x 15 screw (3.1).
- Use No. 2 Phillips, do not over-tighten.

15.6 Fasten track assembly to door

Fig. 15.6.1 Track assembly example

- 1 Track
- 2 Fixing piece
- 9 Slide shoe
- 12 Bumper
- 14 Wood screw

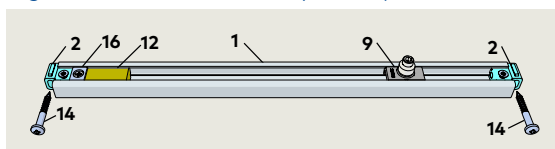
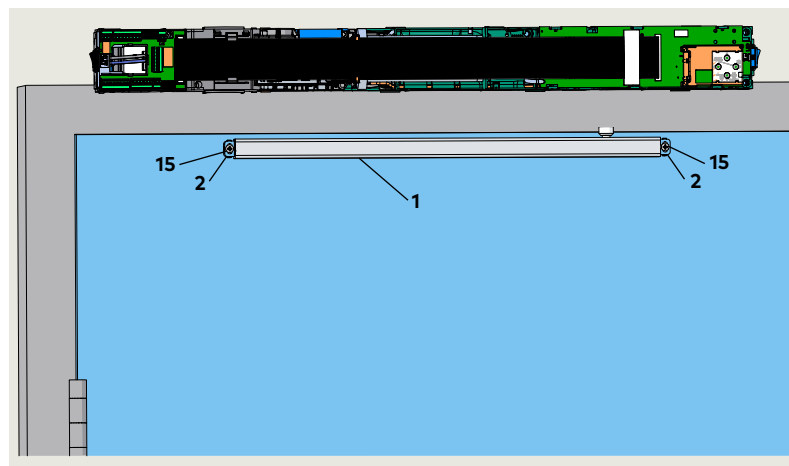


Fig. 15.6.2 Track installation



- 2 Fixing piece
- 3 Track
- 2 End cap
- 15 Fastener

Fig. 15.6.3 End cap

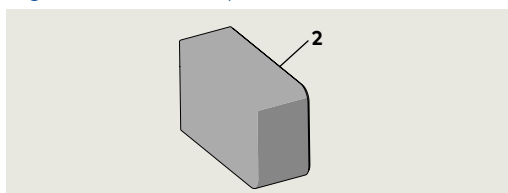
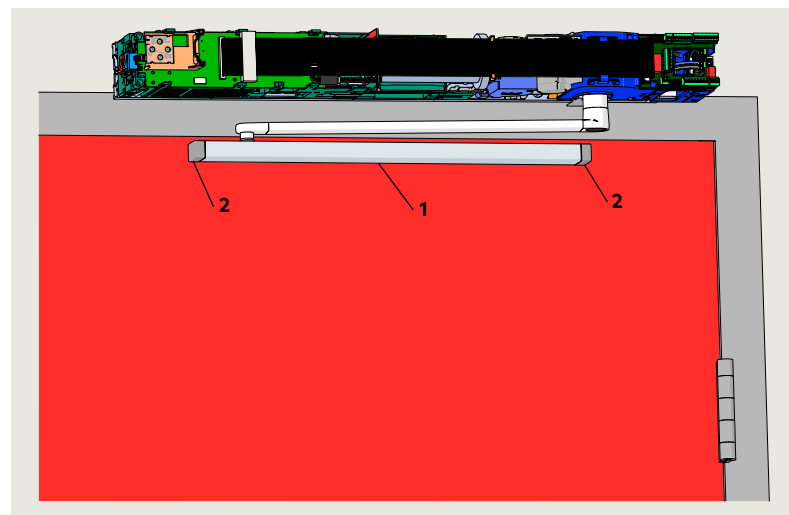


Fig. 15.6.4 End cap installation



- 1 Track
- 2 End cap

15.6.1 Mount track assembly on door.

CAUTION

Insure track hardware is assembled for hand of door.

1. Use applicable template (Chapter 13) to locate two track mounting holes on door.

CAUTION

Fastener type:

Fig. 15.6.1 shows wood screws.

- Select fastener based on door material.

2. Drill holes in door, hole size based on selected screw or fastener (Ref. Chapter 5, Accessory kits).
3. Mount track to door; thread fasteners through fixing pieces (2) into door and tighten.

CAUTION

Check track for level when tightening fasteners.

15.6.2 Install track end caps.

1. Install track end caps over fixing pieces.

15.7 Arm assembly

Fig. 15.7.1 Arm assembly

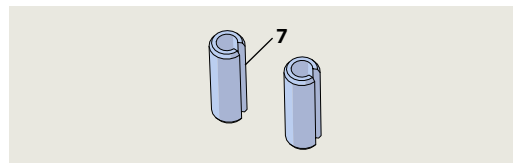
- 1 Aarm



15.8 Arm assembly with CPD extension

Fig. 15.8.1 Slotted spring pin

- 11 Slotted spring pin



15.8.1 Arm with CPD extension 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.

Fig. 15.8.2 CPD lever and slotted spring pins

- 6 CPD lever
7 Slotted spring pin

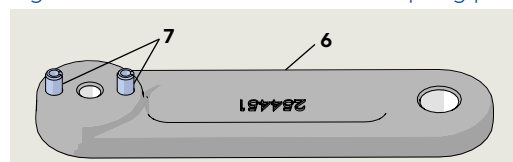


Fig. 15.8.3 Arm assembly, RH pull, LH push

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

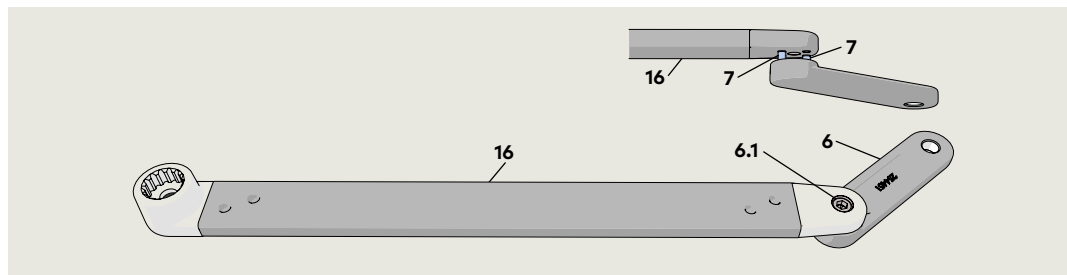
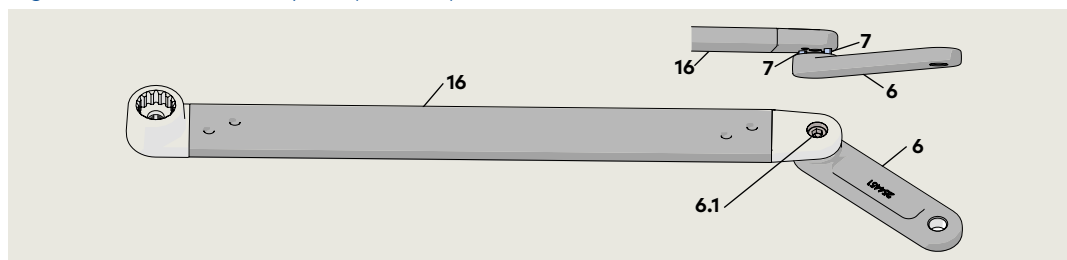


Fig. 15.8.4 Arm assembly, LH pull, RH push

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



15.9 Fasten arm to ED50 operator

Fig. 15.9.1 Mount drive arm to operator at 12 degrees

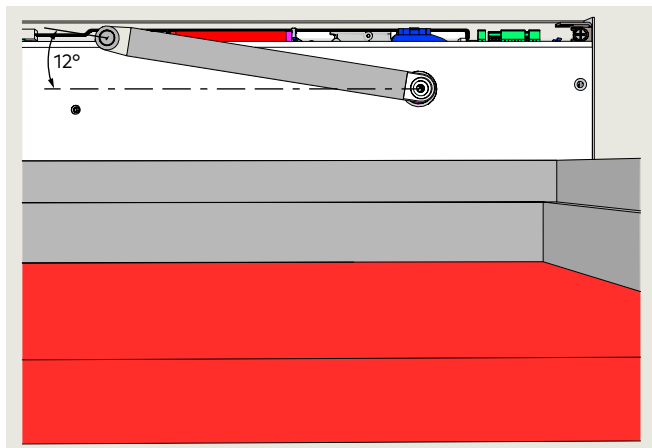


Fig. 15.9.2 Rotate drive arm 10 degrees in door opening direction

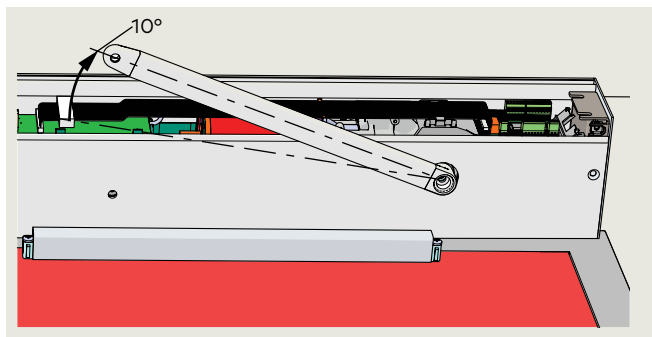


Fig. 15.9.3 Remove drive arm

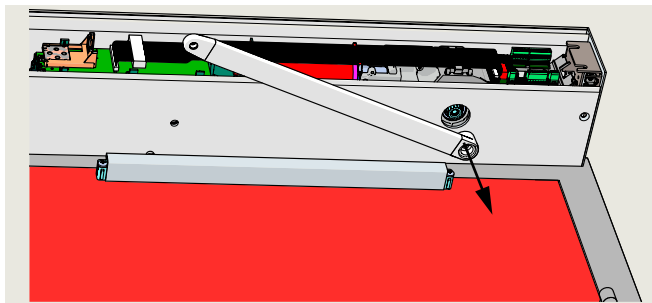
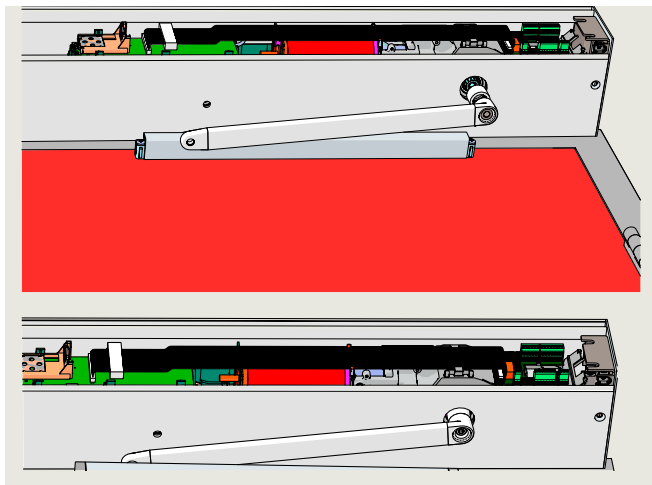


Fig. 15.9.4 Install drive arm and axle extension



15.9.1 Mount drive arm to operator.



WARNING

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

CAUTION

ED operator axle zero position.

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

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



TIPS AND RECOMMENDATIONS

Reference Chapter 19, Operator spring tension.

2. Turn spring preload back to zero rotations (fully CCW).
3. Push drive arm onto the spindle at an angle of approximately 12° to ED operator.
4. Rotate drive arm/spindle approximately 10° in door's opening direction (Fig. 15.9.2).
5. Remove drive arm from spindle (Fig. 15.9.3).
6. Position drive arm one tooth in door's closing direction (Fig. 15.9.4).
7. Push drive arm / axle extension onto spindle (Fig. 15.9.4).
8. Thread M8 x __mm SHCS into spindle and tighten SHCS.

CAUTION

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

Fig. 15.9.5 Torque wrench, 5 mm hex key

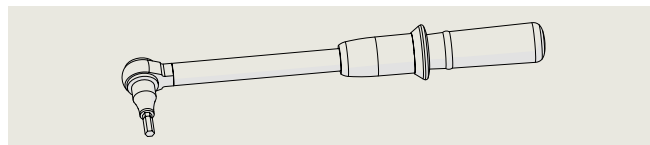


Fig. 15.9.6 Fastening drive arm to pivot pin

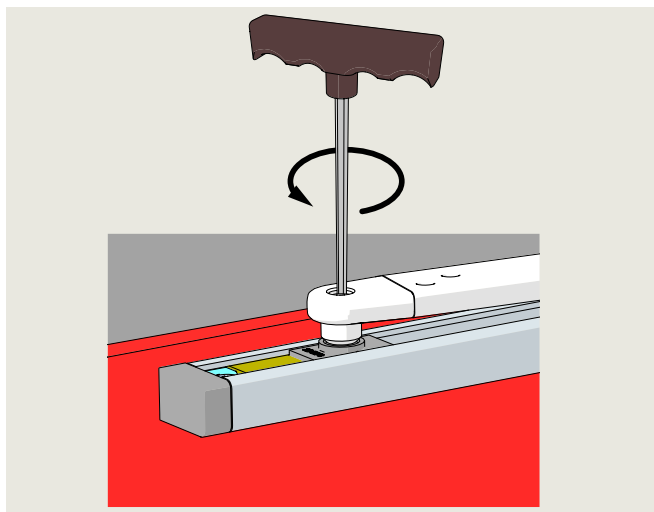


Fig. 15.9.7 Fastening drive arm with CPD to pivot pin

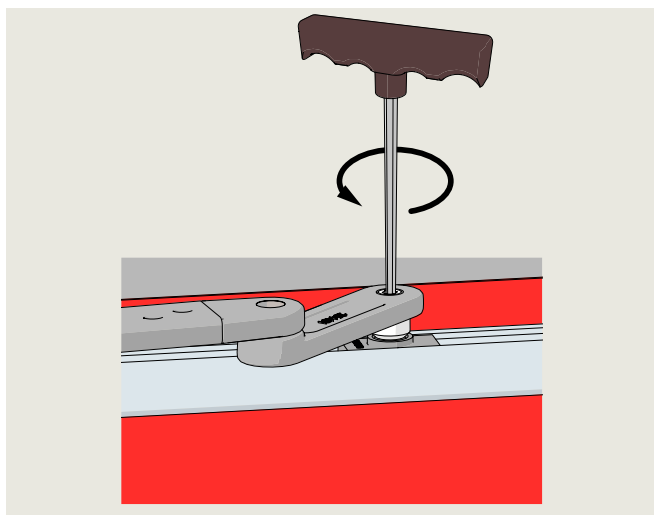
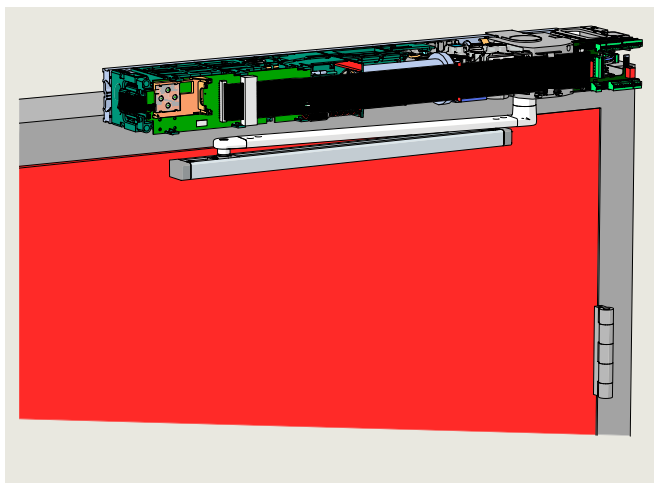


Fig. 15.9.8 Drive arm fastened to track

**15.9.2 Attach drive arm to pivot pin.**

1. Open door as required to access pivot pin M8 socket head.
2. Use 6 mm T handle hex key to rotate pivot pin M8 socket head into drive arm and tighten.

CAUTION

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

15.9.3 Set operator spring tension.**CAUTION**

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

- Reference Para. Chapter 19 for spring tension adjustment procedure.

16 Push arm installation

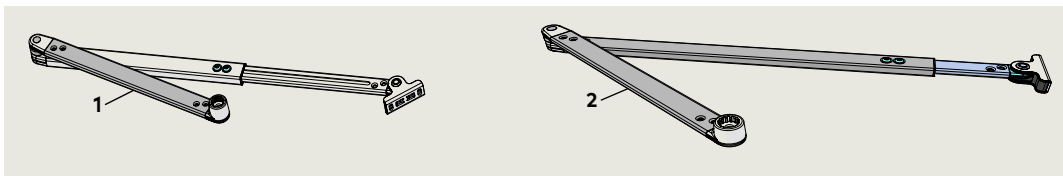
16.1 Push arm installation templates

NOTICE

Reference Chapter 13 for installation templates.

Fig. 16.1.1 Push arm assemblies

- 1 Standard push arm,
reveal depths
0 - 8" maximum
- 2 Deep push arm
reveal depths
8 - 12" maximum



16.2 Push arm installation

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

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

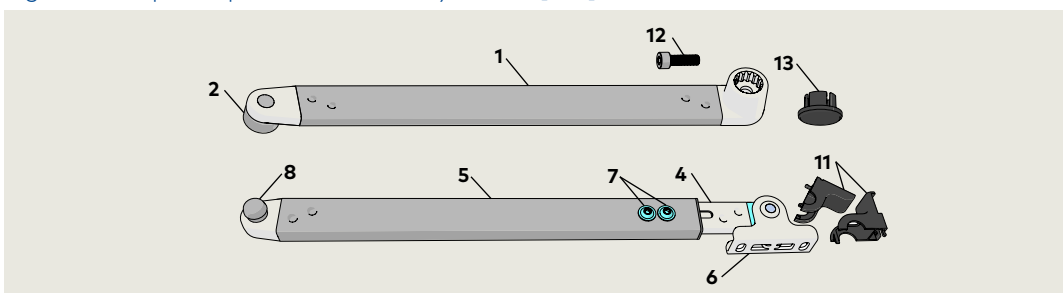
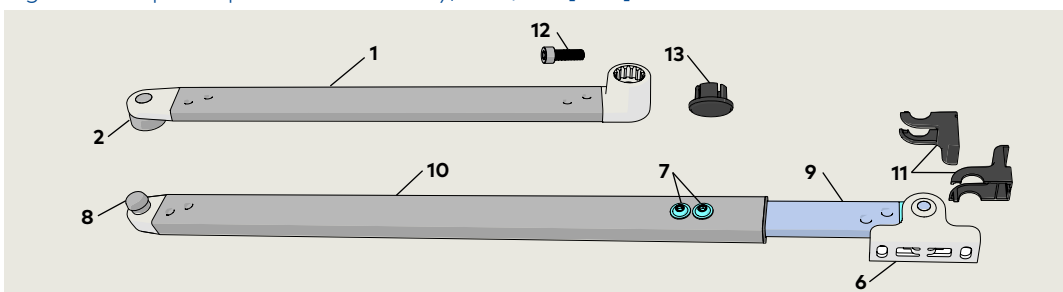


Fig. 16.2.2 Splined push arm assembly, 19 11/16" [500]

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



16.3 Assemble drive arm to operator

Fig. 16.3.1 Drive arm installation, LH push

- 1 Splined drive arm
- 2 Axle extension
- 3 M8 x 1.25 x 40 SHCS

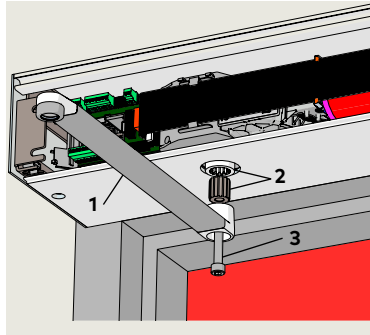
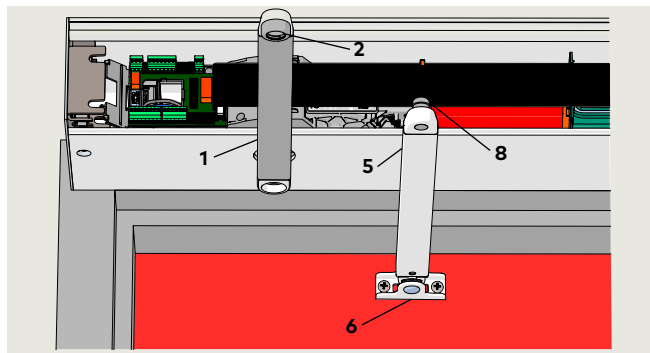


Fig. 16.3.2 Drive arm and adjustment arm installed



- 1 Splined drive arm
- 2 Socket
- 5 Adjustment arm
- 6 Shoe
- 8 Ball head

Fig. 16.3.3 Adjustment arm at 90 degrees

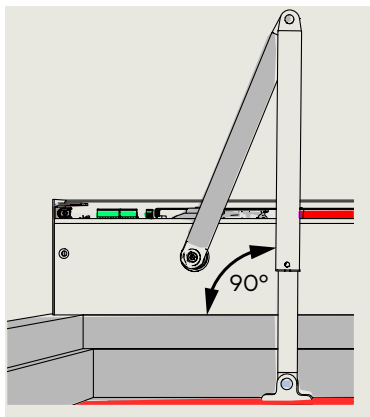
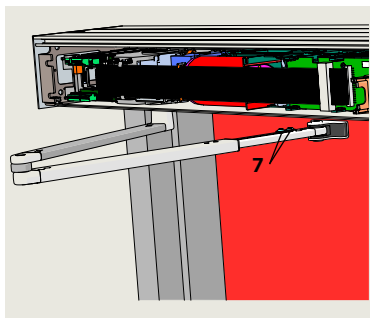


Fig. 16.3.4 Adjustment arm M6 screws

- 7 M6 x 10 mm flanged button head screw



16.3.1 Attach drive arm to operator.

CAUTION

Door must be fully closed!



WARNING

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

CAUTION

ED operator axle zero position.

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

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



TIPS AND RECOMMENDATIONS

Reference Chapter 19, Set operator spring tension.

2. Insert axle extension into drive arm.
3. Move arm to ED50, inserting axle extension sleeve into operator spindle at a 90° angle (Fig. 16.3.3).
4. Insert M8 SHCS through drive arm and axle extension. Thread SHCS into ED50 spindle and tighten.

CAUTION

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

16.3.2 Drill two holes in door for adjustment arm shoe.

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

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



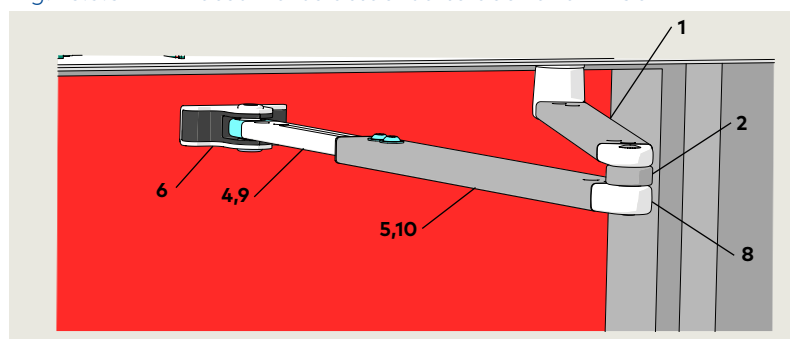
TIPS AND RECOMMENDATIONS

Reference Chapter 6, Accessory kits, for arm fasteners.

16.3.3 Secure adjustment arm assembly to door.

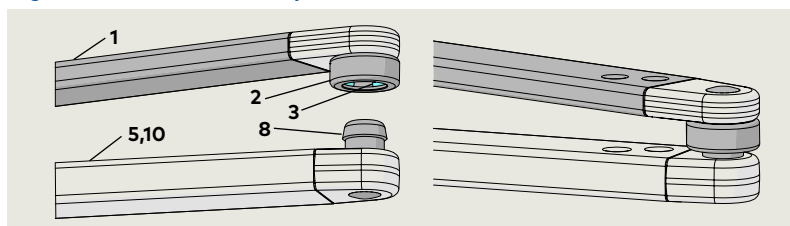
1. Fasten adjustment arm assembly to door (Fig. 16.3.5).

Fig. 16.3.5 Arm assemblies attached to door and ED50



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

Fig. 16.3.6 Drive arm, adjustment arm connection



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

- 7 M6 x 10 mm flanged button head screw

Fig. 16.3.7 Adjustment arm M6 x 10 screws

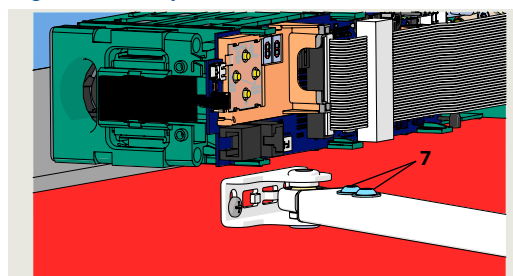
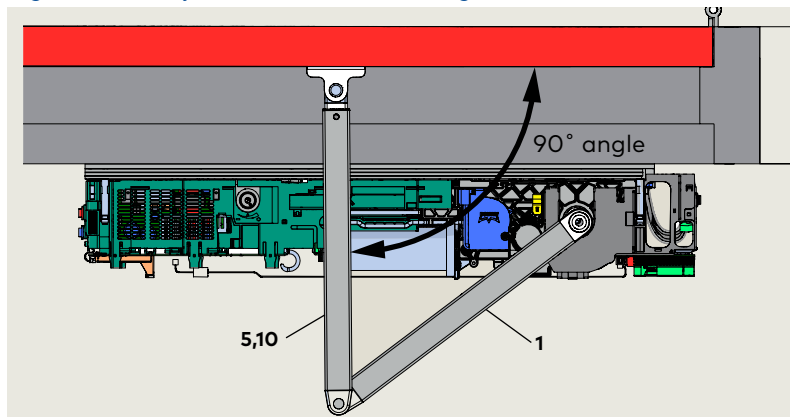


Fig. 16.3.8 Adjustment arm at 90° angle to door



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

16.3.4 Connect adjustment arm to drive arm.

- Loosen the two adjustment M6 x 10 mm flanged button head screws (Fig. 16.3.5).
- Using square, position adjustment arm assembly at 90° angle to door (Fig. 16.3.8).
- 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.

- Insert adjustment arm ball head (8) into drive arm socket (2).
- Spring in socket will retain ball head in socket.
- Secure adjustment arm position by tightening the two M6 x 10 mm flanged button head screws.

CAUTION

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

17 Measure door width, reveal depth

17.1 Door width parameter Tb

Parameter	Description	Reference paragraph, parameters
2  	Door width	Para. 20.1.9

17.1.1 Door width parameter

Door width is set in increments of 100 mm (4").
Measured width of 900 mm (35.4")
= **Tb** value of "8".

17.2 Record door width measurement, Tb value

Parameter Tb value	Door width measurement

17.3 Tb parameter values

17.3.1 ED50 door width

Door width measurement			
Inches	[mm]	Tb	Width inches
28 to 31 15/16	[711] [811]	7	28
32 to 35 15/16	[813] [912]	8	32
36 to 39 15/16	[914] [1014]	9	36
40 to 43 15/16"	[1016] [1116]	10*	40
44 to 47 15/16	[1118] [1218]	11	44
48 to 51 15/16	[1219] [1319]	12	48

*Factory setting

17.4 Reveal depth parameter rd

Parameter	Description	Reference paragraph
2  	Reveal depth	

17.4.1 Reveal depth parameter

1. Reveal depth is set in increments of 10 mm (approximately 3/8").
2. Measured reveal depth of 30 mm (approximately 1 3/16") equals **rd** parameter value of 3.



TIPS AND RECOMMENDATIONS

Use of arm and CPD lever (Fig. 17.4.1):
Value of parameter **rd** must be reduced by 3/16" [30].

- Example: ED50 with CPD pull arm and lever in pull installation with reveal of 30 mm (1 1/8").
Parameter **rd** setting = 0
(Reveal of 30 mm - 30 mm).

17.5 rd parameter values

17.5.1 ED50 reveal depths, rd parameter

Reveal measurement			Reveal measurement		
ED50			ED50		
Inches	[mm]	rd	Inches	[mm]	rd
-1 3/16	-30	-3	5 7/8	150	15
-3/4	-20	-2	6 5/16	160	16
-3/8	-10	-1	6 11/16	170	17
0	0	0	7	180	18
3/8	10	1	7 1/2	190	19
3/4	20	2	7 7/8	200	20
1 1/8	30	3	8 1/4	210	21
1 9/16	40	4	8 5/8	220	22
1 15/16	50	5	9	230	23
2 3/8	60	6	9 7/16	240	24
2 3/4	70	7	9 13/16	250	25
3 1/8	80	8	10 1/4	260	26
3 1/2	90	9	10 5/8	270	27
3 15/16	100	10	11	280	28
4 5/16	110	11	11 7/16	290	29
4 3/4	120	12			
5 1/8	130	13			
5 1/2	140	14			

Fig. 17.4.1 Arm and CPD lever with track

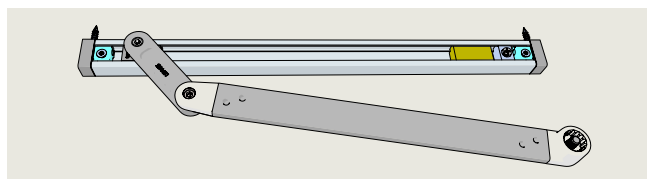


Fig. 17.4.2 Positive reveal

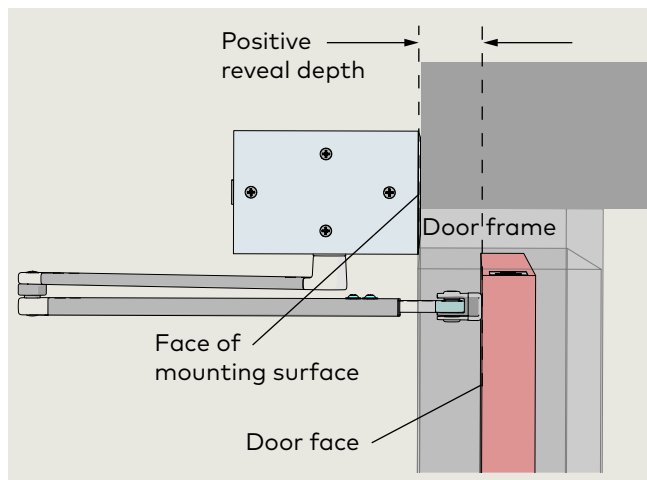
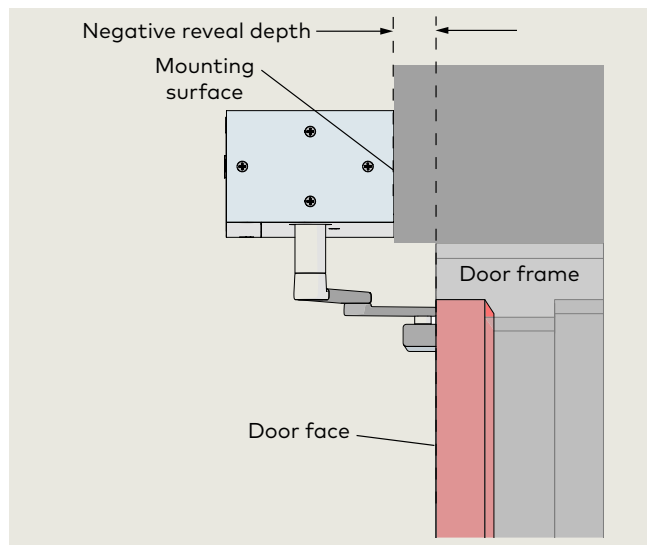


Fig. 17.4.3 Negative reveal



18 Braking circuit plug

18.1 Braking circuit plug position

Fig. 18.1.1 Braking circuit socket and plug, plug factory installed in pull installation location

- 1 Braking circuit plug
- 2 Braking circuit 3 pin socket
- 3 User interface

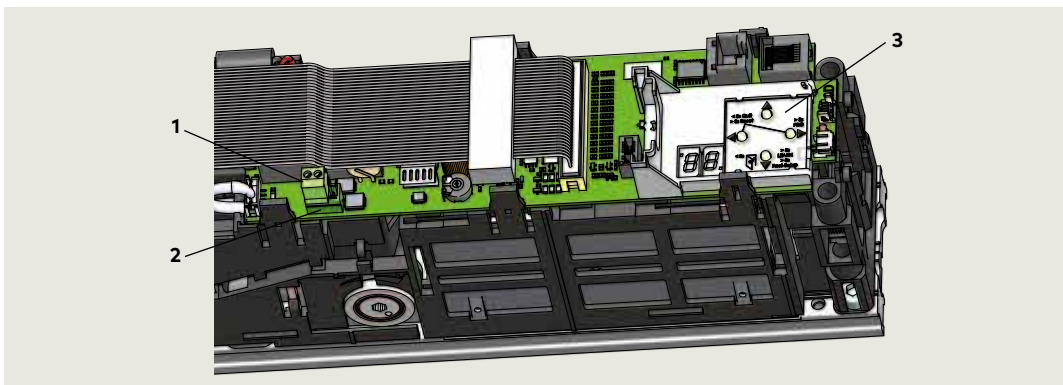


Fig. 18.1.2 Plug position, pull installation

- 1 Braking circuit plug
- 2 Braking circuit 3 pin socket

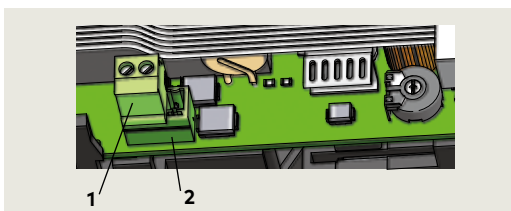


Fig. 18.1.3 Power switch

- 4 Power switch (shown ON)

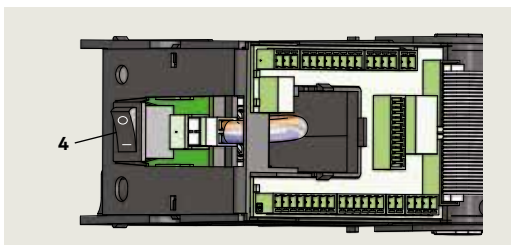


Fig. 18.1.4 Plug position, push installation

- 1 Braking circuit plug
- 2 Braking circuit 3 pin socket

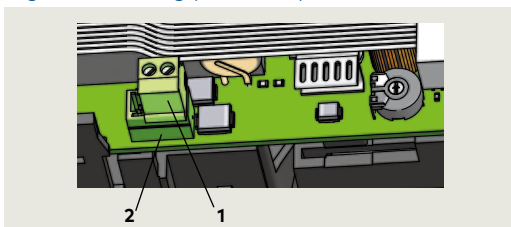
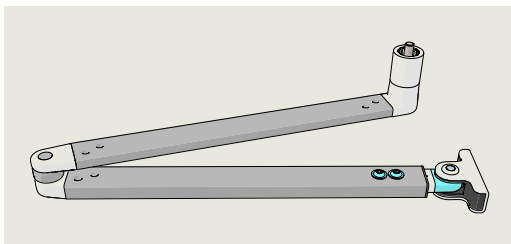


Fig. 18.1.5 Standard push arm



18.1.1 Braking circuit plug.

Operator braking circuit plug is positioned in its 3 pin socket for a push or pull installation.



WARNING

Braking circuit will not work correctly if braking circuit plug is improperly positioned, or if an incorrect plug is used!

Door may close at high speed and/or be difficult to open!

18.1.2 Factory-installed plug position.

Braking circuit plug is factory installed in the left two pins, the pull installation position (Fig. 18.1.1 and Fig. 18.1.2).

18.1.3 Change braking circuit plug position to push installation.

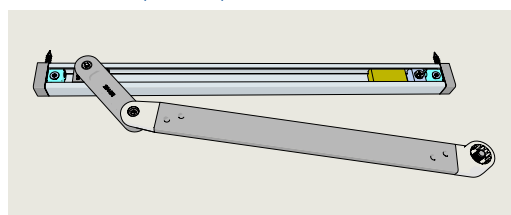
To change plug position for push installation, install plug in right two pins, toward user interface (Fig. 18.1.4).



WARNING

Insure power switch is OFF before changing plug position!

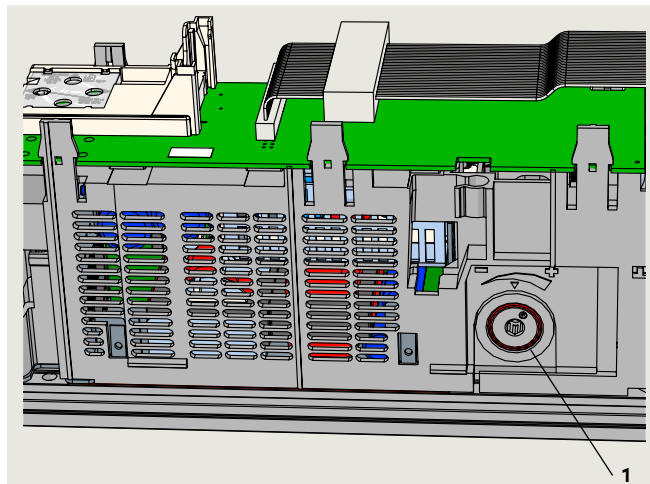
Fig. 18.1.6 Arm with CPD lever and track, pull or push installation



19 Operator spring tension

19.1 Set ED50 operator spring tension

Fig. 19.1.1 Spring tension adjustment



- 1 Spring tension adjustment

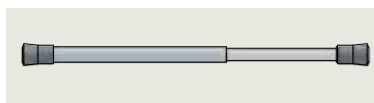
19.1.1 Spring tension setting revolutions.

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

Fig. 19.1.2 5mm T-handle hexkey



Fig. 19.1.3 Door pressure gauge



19.1.2 Operator spring tension function.

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

19.1.3 Spring tension adjustment.

1. Spring tension adjustment is factory set fully CCW, no spring tension.
 - Use 5 mm T-handle hex key (Fig. 19.1.2).
2. Spring must be pretensioned per Para. 19.1.1.

Clockwise - increases spring tension.

Counterclockwise - decreases spring tension.

CAUTION

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

CAUTION

Any change to spring tension setting requires a new learning cycle (Chapter 22)!

19.1.4 Check door closing force

1. Para. 19.1.1 lists approximate spring tension settings.
2. Use pressure gauge to check door closing force at 2° and adjust tension setting if necessary.



TIPS AND RECOMMENDATIONS

Reference Chapter 29, ANSI/BHMA standards for door closing forces.



TIPS AND RECOMMENDATIONS

System checks spring tension during learning cycle (Chapter 22).

Learning cycle will be canceled if spring is insufficiently tensioned; door will stop and display will show a rotating "0" and an "F".

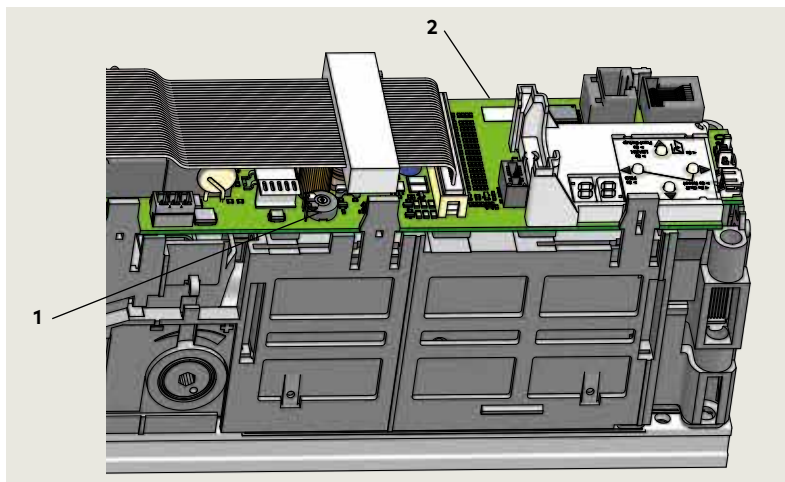


20 Power fail closing speed

20.1 Set power fail closing speed

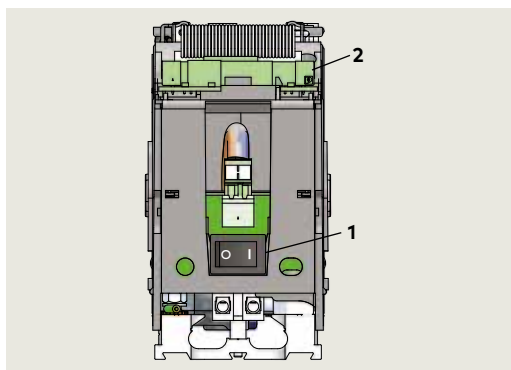
- 1 Power fail closing speed potentiometer
- 2 Control board

Fig. 20.1.1 Power fail closing speed potentiometer



- 1 Power on switch
- 2 Terminal board

Fig. 20.1.2 Power on switch



20.1.1 Power fail closing speed potentiometer.

- Single turn
- Factory setting: fully CCW
- CCW increases closing speed.
- CW decreases closing speed.
- 3/32" [2-3 mm] flat blade screwdriver required for adjustment.

20.1.2 Setting door closing speed upon power failure.

1. Turn ED50 power switch OFF.
2. Manually open door to 90° angle and let it close.
3. If door closes in less than 5 seconds, turn potentiometer 1/4 turn CW and retry test.
4. Continue retrying test after potentiometer adjustment until the door closing time is a minimum of 5 seconds.

NOTICE

Error message E73:

If door closes in less than three seconds, error message **E 73** (System error 3, braking circuit) will be displayed.

Reference:

Appendix B, Troubleshooting



TIPS AND RECOMMENDATIONS

Minimum 5 second closing time is required to meet requirements of:

- A117.1, Accessible and Usable Buildings and Facilities, Section 404.2.7.
- 2010 ADA Standards for Accessible Design, Section 404.2.8.

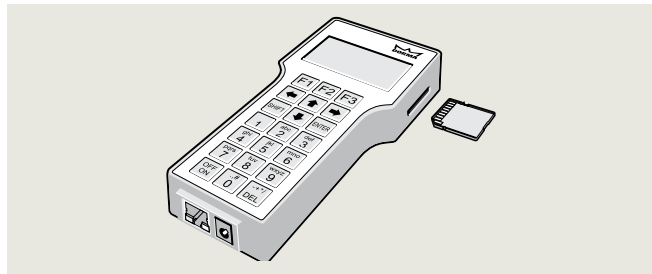
21 Parameters

21.1 Parameters

21.1.1 Firmware version and updates.

- Operator firmware version is displayed during first commissioning. Reference Chapter 22.
- dormakaba handheld can be used to check operator firmware version and to perform firmware updates. Reference Appendix C, dormakaba handheld, or dormakaba handheld manual.

Fig. 21.1.1 dormakaba handheld terminal



21.1.2 Configuration parameters.

Configuration parameters (Para. 21.1.5) are set during first commissioning (Chapter 22).

21.1.3 Driving parameters.

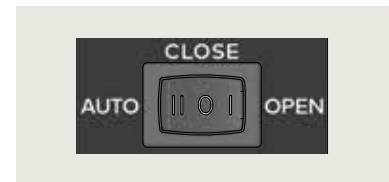
Driving parameters can be set once first commissioning has been completed.

- Reference Para. 21.1.6 for a list of driving parameters.
- Reference Appendix A for details on each driving parameter.

21.1.4 Changing parameter values.

- Set program switch to the CLOSE position

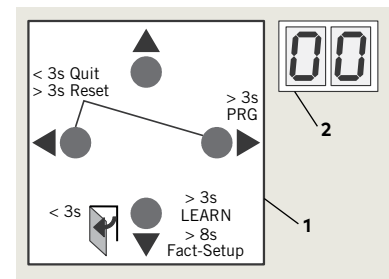
Fig. 21.1.2 Program switch



- Use 4 button keypad as outlined in Steps 1 through 8 to view or change parameter values.

Fig. 21.1.3 4 button keypad, 2 digit display

- 4 button keypad
- 2 digit display



Step 1 ▶	Press and hold right button > 3 s to enter program mode.
Step 2 ◄	Press up or down button to scroll through parameters until desired parameter is displayed.
Step 3 ▶	Press right button to display current parameter value.
Step 4 ▶	Press right button again to enable editing of value, display will start flashing.
Step 4 ◄	Press up or down button to select desired parameter value.
Step 5 ▶	Press right button to save selected value. Display stops flashing.
Step 6 ◄	Press left button to return to selected parameter.
Step 7 ◄	Press up or down button to scroll through parameters until next desired parameter is displayed.
Step 8 ◄	Press left button for a minimum of 3 s to exit program mode.

21.1.5 Configuration parameters

Parameter	Description
1 AS AS	Installation type
2 rd rd	Reveal depth
3 Tb rb	Door width
4 dL dL	Door type

21.1.6 Driving parameters

Driving parameter	Description
5 So So	Opening speed, automatic mode
6 Sc Sc	Closing speed, automatic mode
7 dd dd	Hold open time, automatic mode
8 dn dn	Hold open time, night/bank
9 do do	Hold open time, manual opening of door
10 Sb Sb	Wall masking on door swing (hinge) side
11 ST ST	Safety sensor test
12 SA SA	Activation by safety sensor on approach (opposite hinge) side
13 SP SP	Suppression of safety sensor on swing (hinge) side during initial movement
14 Ud Ud	Locking mechanism delayed opening time
15 Pu Pu	Door preload prior to unlocking
16 TS TS	PR (Power reserve) module test
17 Fo Fo	Static force on door closing edge in opening direction (wind load control)
18 Fc Fc	Static force on door closing edge in closing direction (wind load control)
19 EP EP	Motor driven latching action, automatic mode
20 EA EA	Door opening angle at which motor driven latching action is activated
21	Left intentionally blank
22 PG PG	Push and Go
23 PS PS	Program switch type
24 S1 S1	DCW EPS, electronic program switch behavior following a power reset
25 S2 S2	Internal program switch; switch function on delay
26 du du	Door unlocking during business hours
27 Sr Sr	Status relay function, terminal block X7



TIPS AND RECOMMENDATIONS

Driving parameter details can be found in Appendix A, Driving Parameters – detail.

Driving parameter	Description
28 bE bE	Input 4/4a and X3, 1G 24V locking device output configuration
29 CC CC	Cycle counter, number displayed * 10000
30 EC EC	Delete error log
31 CS CS	Reset service interval display (yellow LED)
32 SL SL	Factory setting level (Fact Setup button)
33 OA OA	Opening angle, set during learning cycle
34 hd hd	Door closer mode, automatic or manual
35 hA hA	Power assist function activation angle
36 hF hF	Power assist function force adjustment
37 hS hS	Power assist function support for manual mode in door closed position
38 F1 F1	Upgrade card, fire protection
39 F2 F2	Not used.
40 F3 F3	Not used.
41 F4 F4	Not used.
42 F5 F5	Not used.
43 F7 F7	Upgrade card, barrier free toilet
44 F8 F8	Upgrade card, DCW I/O module
45 C1 C1	Configuration of COM 1 interface
46 bc bc	Back check angle when door opened manually
47 Td rd	Door thickness (mm)
48 d1 d1	Deactivation of drive, emergency pushbutton at X4, 4 and 4a, trigger type
49 d2 d2	Night/bank function, trigger type
50 FC FC	Hold open system release by manually closing door, trigger type
51 Ad Ad	Active door with astragal: caster angle; angle door must reach before passive door starts to open
52 HS HS	Hinge clearance

21.1.7 Configuration parameters, detail

Parameter and value range. Factory setting = bold .		Parameter description
Installation type		
1		0 Pull - Arm with track (Fig. 21.1.4). - Arm and CPD lever with track (Fig. 21.1.5). Wall mounting on swing (hinge) side.
		1 Push - Standard push arm (Fig. 21.1.6). - Deep reveal push arm (Fig. 21.1.7) Wall mounting on approach (non-hinge) side.
		2 Push - Arm with track (Fig. 21.1.4). - Arm and CPD lever with track (Fig. 21.1.5). Wall mounting on approach (non-hinge) side.
		3 OHC RH Overhead concealed (OHC), right hand (v2.1)
		4 OHC LH OHC, left hand
2		5 Push - ANSI door closer size ≥ 6, greater than 1400 mm (55.1") width (v2.2). - Mounting version only used with gearbox with splined shaft axle. Wall mounting on approach (non-hinge) side.
		Reveal depth Reveal is set in increments of 10 mm (3/8"), "3" = 30 mm (1 1/8"). - ED50: [-30 to 290mm] -13/16" to 11 13/16" 0 If using CPD lever (Fig. 21.1.5), approximately 3/16" [30 mm] must be deducted from actual reveal (Para. 17.4).

21.1.8 Arm with CPD lever; rd parameter adjustment.

- Value of parameter **rd** must be reduced by 3/16" [30] when using the arm and CPD lever in a pull installation.
- Example: ED50 with arm and CPD lever in pull installation with reveal of 30 mm (1 1/8"). Parameter **rd** setting = 0 (Reveal of 30 mm - 30 mm).

3		ED50 7 to 11	Door width
		10	Door width is set in increments of 100 mm (4"), "10" = 1000 mm (39.4"). ED100: [711 - 1219 mm] 28" - 48"
4		0 to 4	Door type
		0	0 Single door
		1	Pair doors - Overlapping door (with astragal) - Active door operator.
		2	Pair doors - Overlapping door (with astragal) - Passive door operator.
		3	Pair doors - Edgeless door (no astragal) - Active door operator.
		4	Pair doors - Edgeless door (no astragal) - Passive door operator.

Fig. 21.1.4 Arm with track

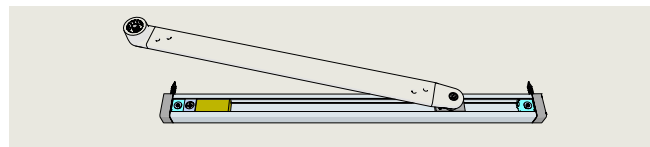


Fig. 21.1.5 Arm and CPD lever with track

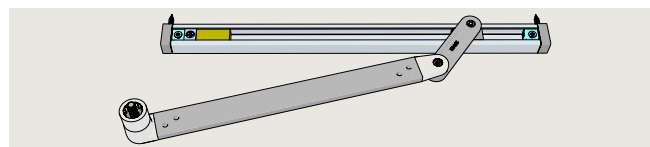


Fig. 21.1.6 Standard push arm

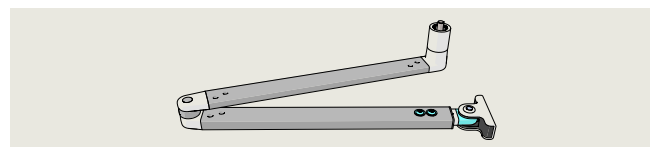
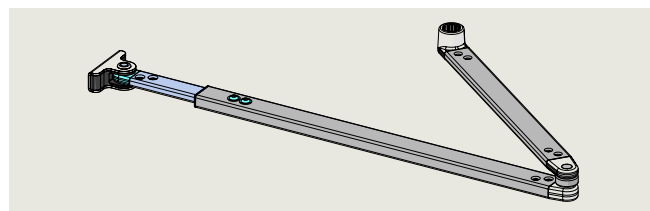


Fig. 21.1.7 Deep reveal push arm



21.1.9 Arm with track in a push installation [Application specific].

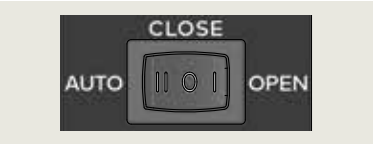
- For doors without fire or smoke detection requirements.
- Maximum reveal depth of 2 3/8" [60].
- Maximum opening width at a reveal depth of 2 3/8" [60] is reduced to 95 degrees.

22 Single door first commissioning

22.1 First commissioning

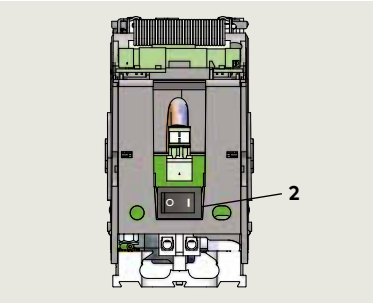
- 1 Program switch, 3 position

Fig. 22.1.1 Program switch



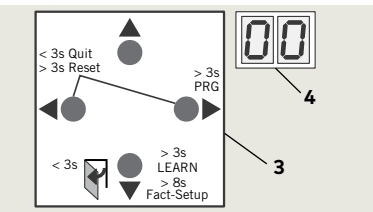
- 2 Power switch

Fig. 22.1.2 Power switch



- 3 Four button keypad
4 Two digit display

Fig. 22.1.3 4 button keypad, 2 digit display



TIPS AND RECOMMENDATIONS

If pressing down button (Step 3) does not result in desired display orientation, return to Step 2, turn power button off, then on to repeat commissioning steps.

Conditions prior to commissioning.

1. Header with operator is installed.
2. Standard push arm or arm with track is installed.
3. Key switches and other separately supplied hardware are installed and connected to operator.
4. 115 Vac branch circuit to operator is energized.
5. Operator motor is cold.

CAUTION

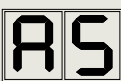
Motor must be cold for commissioning!

22.1.1 First commissioning.

Step 1	Program switch to CLOSE position.
Step 2	Power switch to ON position.
	System check. • Series of letters and numbers rapidly displayed.
	Control unit self check. • Two segments jumping back and forth.
	Horizontal dashes move up and down.
Step 3	Press 4 button keypad down button ▼.
	While 2 digit display segments move up and down, letters and numbers will change if required to display correct orientation.
	Display scrolls: • Device ID (Ed 50) • Firmware version (format F x x x x)
	Program mode display. Program mode will be displayed indicating system requires further parameter settings.

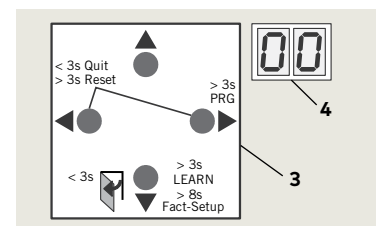
22.2 Set configuration parameters

22.2.1 Set parameter AS, installation type.

Step 1 Press		Press and hold PRG > 3 s to enter program mode, AS parameter displayed. If no change required, go to step 7.
Step 2 Press		Displays "00", factory setting.
Step 3 Press		"00" starts flashing.
Step 4 Press		Scroll to select parameter value. "1" shown as example.
Step 5 Press		Saves value entered. Display stops flashing.
Step 6 Press		Returns to Installation type parameter.

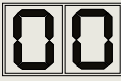
- 3 Four button keypad
4 Two digit display

Fig. 22.2.1 4 button keypad, 2 digit display



	Installation type
Parameter value	Parameter description
0*	Pull arm with track, wall mounting on swing (hinge) side.
1	Push arm, wall mounting on approach (opposite hinge) side.
2	Push arm with track, wall mounting on approach (opposite hinge) side.[Application specific]
*	Factory setting

22.2.2 Set parameter rd, reveal depth.

Step 7 Press		Scroll to rd parameter.
Step 8 Press		Displays "00", factory setting.
Step 9 Press		"00" starts flashing.
Step 10 Press		Scroll to select parameter value. "6" shown as example.
Step 11 Press		Saves value entered. Display stops flashing.
Step 12 Press		Returns to reveal depth parameter.



TIPS AND RECOMMENDATIONS

Reference Chapter 17 for reveal depth parameter values.

Configuration parameter settings continue on next page..

22.2.3 Set parameter Tb, door width.

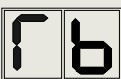
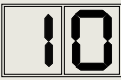
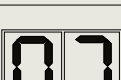
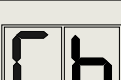
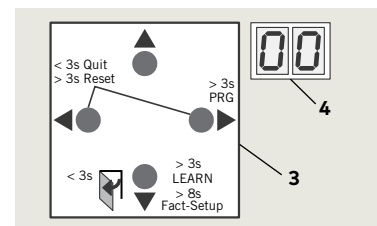
Step 13 Press		Scroll to Tb parameter.
Step 14 Press		Displays "10", factory setting.
Step 15 Press		"10" starts flashing.
Step 16 Press		Scroll to select parameter value. "7" shown as example.
Step 17 Press		Saves value entered. Display stops flashing.
Step 18 Press		Returns to door width parameter. If single door, exit program mode (Step 19).
Step 19 Press		Exits program mode. Display indicates "ready for learning cycle".

Fig. 22.2.2 4 button keypad, 2 digit display

- 3 Four button keypad
- 4 Two digit display



TIPS AND RECOMMENDATIONS

Reference Chapter 17 for door width parameter values.

22.2.4 Parameter dL, door type.



TIPS AND RECOMMENDATIONS

Parameter **dL** factory setting is 0, single door. Reference Chapter 23 for double door commissioning.

22.3 Key switch option; set parameter PS, program switch type

22.3.1 Full width cover option – set parameter PS to 1.

Step 1 Press		Press and hold PRG > 3 s to enter program mode, AS parameter displayed.
Step 2 Press		Scroll to PS (Program switch type) parameter.
Step 3 Press		Displays "00", factory setting.
Step 4 Press		"00" starts flashing.
Step 5 Press		Scroll to select parameter value "1", External mechanical program switch connected to operator terminal board.

CAUTION

Key switch option –

Program switch wired to ED50 terminal board. Reference Appendix D.

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

Step 6 Press		Saves value entered. Display stops flashing.
Step 7 Press		Returns to program switch parameter.
Step 8 Press		Exits program mode.

22.4 Perform learning cycle

CAUTION

Learning cycle must be performed while motor is cold!

CAUTION

Door must not be manually moved or held in position during the learning cycle!

CAUTION

Verify that the following parameters have been set (Para. 22.2):

- **AS**, Installation type
- **rd**, Reveal depth
- **Tb**, Door width



TIPS AND RECOMMENDATIONS

During learning cycle, operator functions are deactivated.



WARNING

No personnel or objects must be in range of door motion during learn cycle!

Step 1	Secure motion range of door.
Step 2	 Set program switch to CLOSE position.
	 Rotating "o" and a "0" indicates operator learning cycle is required.
Step 3 Press ▼	 Press and hold down button until display changes. • Door performs several movements and display shows a sequence of symbols. • Movements of door must not be interrupted!
	 Display indicates door is at 70° position and is waiting for door opening angle to be set.
Step 4	• Manually move door to desired opening angle. • Maximum door angle is 110°.
Step 5 Press ▼	 Momentarily press down button to continue learning cycle. • Door performs several movements and display shows a sequence of symbols. • Movements of door must not be interrupted!
	 Operator spring tension too low. • Display with small rotating "o" and an "F" during learn cycle indicates spring tension is too low. • Door will close. 1. Increase spring tension (Chapter 19). 2. Restart learning cycle (Step 3).
	 Door completes learning cycle. • Display with two horizontal bars indicate operator is ready for operation.
Step 6 Press ▼	Momentarily press down button to cycle door.
Step 7	Following automatic learning cycle, actual forces on door, and door opening and closing times must be measured and changed if necessary to insure compliance with ANSI/BHMA standards, reference Chapter 29.
Step 9	 Set program switch to Auto.

23 Double door first commissioning

23.1 Separately commission active and inactive doors

23.1.1 Commission active door first.

1. Refer to Para.21.1 and commission active door.

23.1.2 Commission inactive door.

1. Refer to Para.21.1 and commission inactive door.

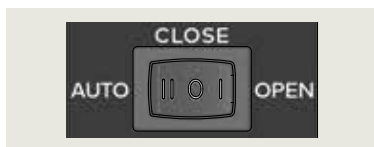
23.2 Set operator parameters for double door operation

23.2.1 Active door, set parameters dL and Ad.

1. Set program switch to CLOSE.
2. Set parameters dL (door type) and Ad (caster angle) for active door.
 - Caster angle sets opening angle of active door before inactive door starts to open. Factory setting is 30°.

Fig. 23.1.1 Program switch

- 1 Program switch, 3 position



Step 1 Press		Press and hold PRG > 3 s to enter program mode, AS parameter displayed.
Step 2 Press		Scroll to dL parameter.
Step 3 Press		Displays "00", factory setting.
Step 4 Press		"00" starts flashing.
Step 5 Press		Scroll to select parameter value ("1" as an example).
Step 6 Press		Saves value entered. Display stops flashing.
Step 7 Press		Returns to door type parameter.

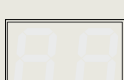
	Door type
Parameter value	Parameter description
0*	Single door
1	Double door, with astragal. Active door operator, door opens first.
2	Double door, with astragal. Inactive door operator.
3	Double door, without astragal. Active door operator. Both doors open simultaneously.
4	Double door, without astragal.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

Step 8 Press		Scroll to Ad parameter.
Step 9 Press		Displays "30", factory setting.
Step 10 Press		Scroll to select parameter value (10° as an example).
Step 11 Press		Saves value entered. Display stops flashing.
Step 12 Press		Returns to caster angle parameter.
Step 13 Press		Exits program mode. Operator is ready for operation.

23.2.2 Inactive door, set parameter dL.

1. Set program switch to CLOSE.
2. Set parameter dL (door type) for inactive door.

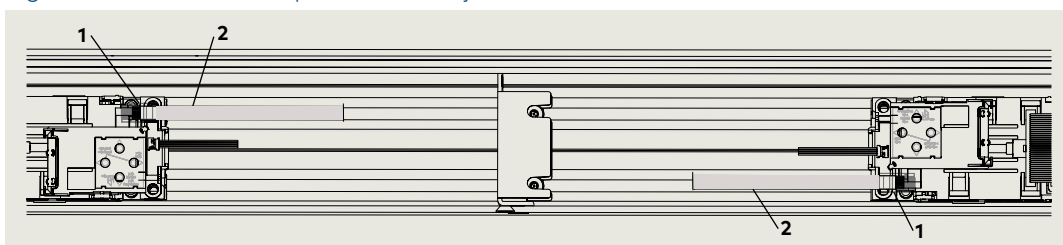
Step 1 Press		Press and hold PRG > 3 s to enter program mode, AS parameter displayed.
Step 2 Press		Scroll to dL parameter.
Step 3 Press		Displays "00", factory setting.
Step 4 Press		"00" starts flashing.

Step 5 Press		Scroll to select parameter value ("3" as an example).
Step 6 Press		Saves value entered. Display stops flashing.
Step 7 Press		Returns to door type parameter.
Step 25 Press		Exits program mode. Operator is ready for operation.

23.3 Connect communication cable between operators

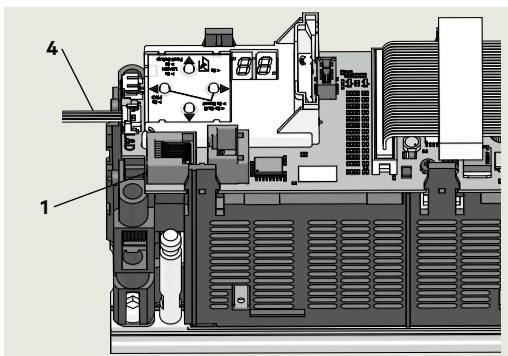
- 1 RJ45 jack (horizontal) for communication cable

Fig. 23.3.1 Double door operators, RJ45 jack for communication cable



- 1 RJ45 jack
- 4 Program switch cable

Fig. 23.3.2 RJ45 jack



23.3.1 Install communication cable

1. Set program switch to CLOSE.
2. Connect communication cable to active and inactive operator RJ45 jacks.
3. Secure cable to header.

23.3.2 Test door operation

1. Set program switch to AUTO.
2. Test double door operation.

Fig. 23.3.3 ED50 Connection cable

- 2 Communication cable, DX3484
-010, 1750 mm
-020, 2400 mm
- 3 RJ45 plug

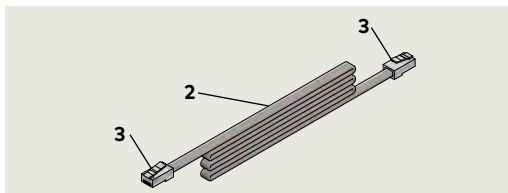


Fig. 23.3.4 Program switch

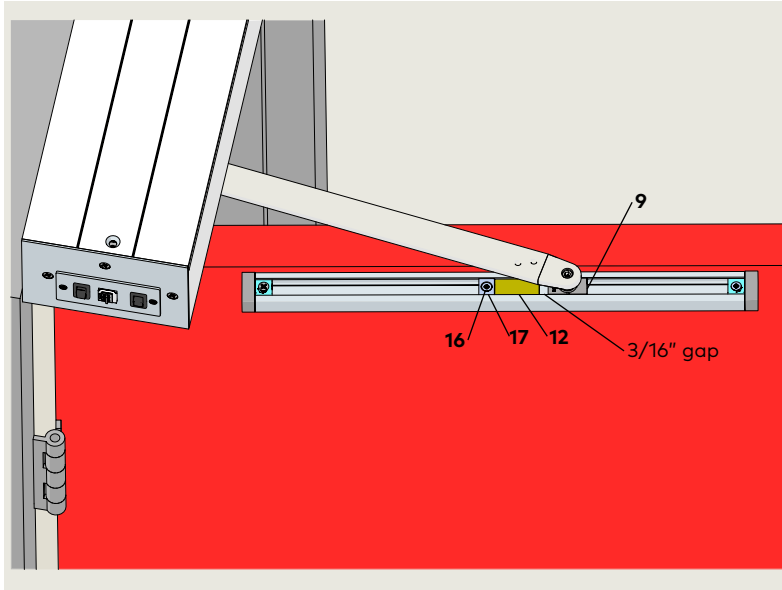
- 1 Program switch, 3 position



24 Set track bumper stop

24.1 Set track bumper stop position

Fig. 24.1.1 Door at set opening angle, bumper stop set



- | | | | |
|----|------------|----|---------------------------------|
| 9 | Slide shoe | 16 | MM5 x 13 FHMS
cross recessed |
| 12 | Bumper | 17 | Bumper stop |

24.1.1 Set bumper stop position.

1. Set program switch to OPEN.
2. Door moves to set opening angle.



WARNING

Use caution when working in proximity of door and track.

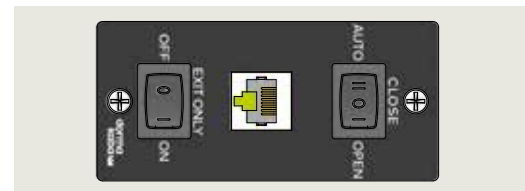
3. Slide bumper and bumper stop toward slide shoe until bumper is 3/16" from edge of slide shoe.
4. Tighten bumper stop M5 screw. Do not overtighten.

CAUTION

Using program switch, close then open door to verify gap between bumper and slide shoe with door at full open position.

24.1.2 Place program switch in AUTO.

Fig. 25.1.2 Program switch panel



25 Install push arm door stop

25.1 Install push arm bumper stop (optional assembly)

- 1 1/2" thick base plate
DC4633-002
- 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

Fig. 25.1.1 Bumper stop assembly

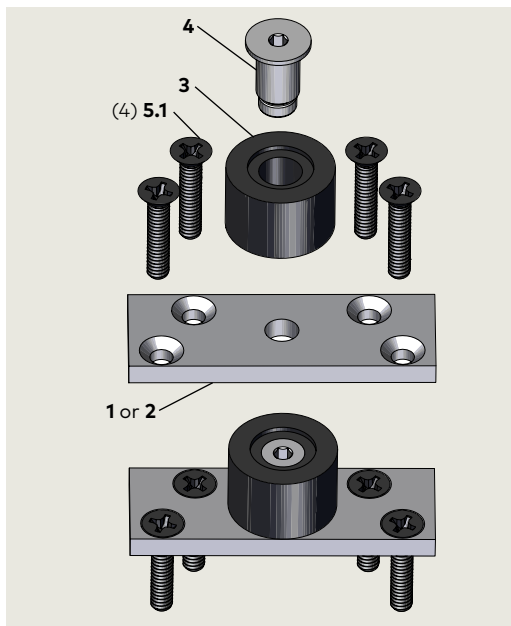
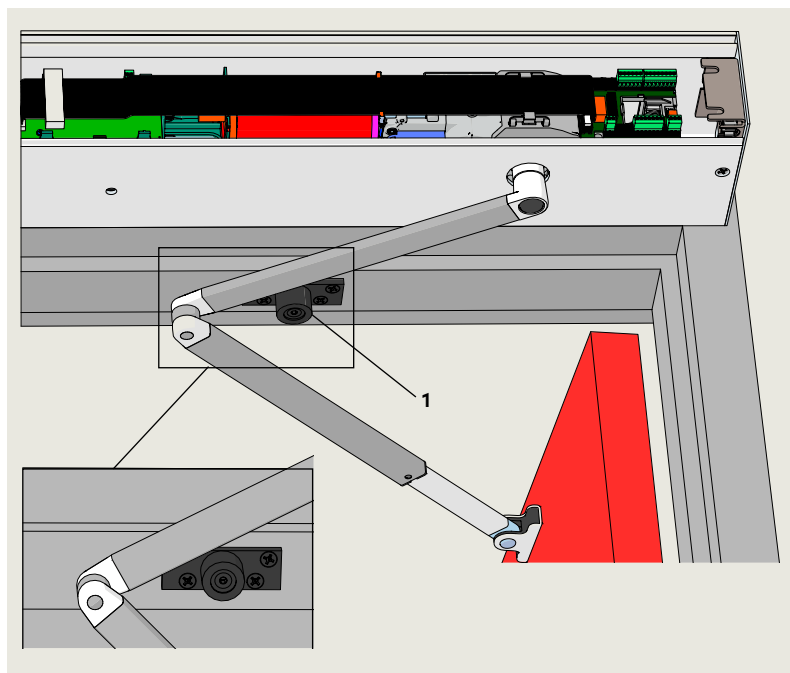


Fig. 25.1.2 Bumper stop installed



TIPS AND RECOMMENDATIONS

Contact local dormakaba USA, Inc. distributor for bumper stop assembly DC4633.

25.1.1 Assemble bumper stop.

1. Attach bumper to bumper mounting plate with 1/2" shoulder screw.
Use 5 mm hex key.

25.1.2 Open door.

1. Set program switch to OPEN.
2. Door moves to set opening angle.



WARNING

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

25.1.3 Locate bumper stop on door frame.

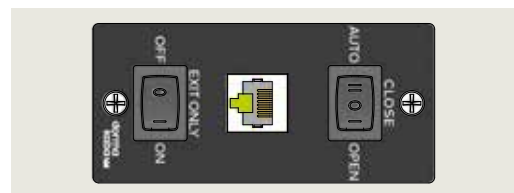
1. With door at its full open position locate bumper on door frame 1/8" beyond arm.
2. Mark mounting plate hole locations on frame. Plate hole diameter is 1/4".
3. Select screws based on door frame material.
4. Attach bumper stop to door frame.

CAUTION

Using program switch, close then open door to verify gap between bumper and slide shoe with door at full open position.

25.1.4 Place program switch in AUTO.

Fig. 25.1.3 Program switch panel



27 Install header cover

27.1 Install header cover.

27.1.1 Install header cover.

CAUTION

Before installing cover, check header assembly:

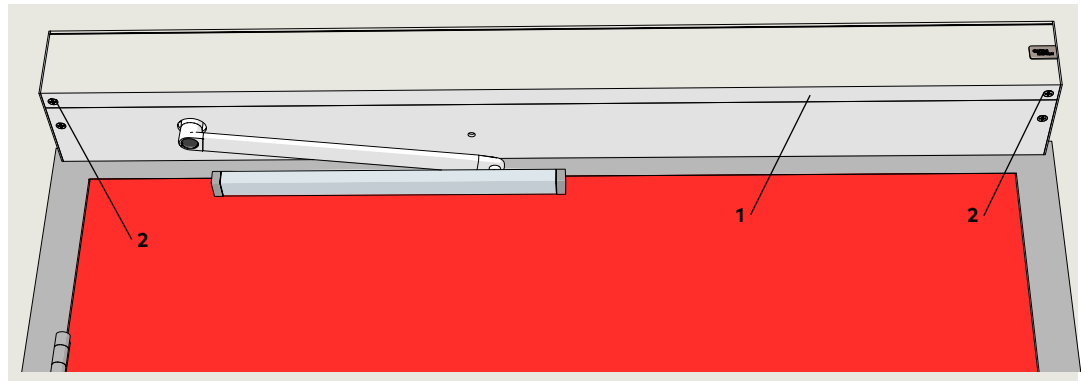
- All wiring secured.
- No pinched wiring.
- Remove any debris in header; assembly must be clean.

1. Install header cover on header and secure with supplied flat head screws.

Note: Headers with pull arms shown as an example.

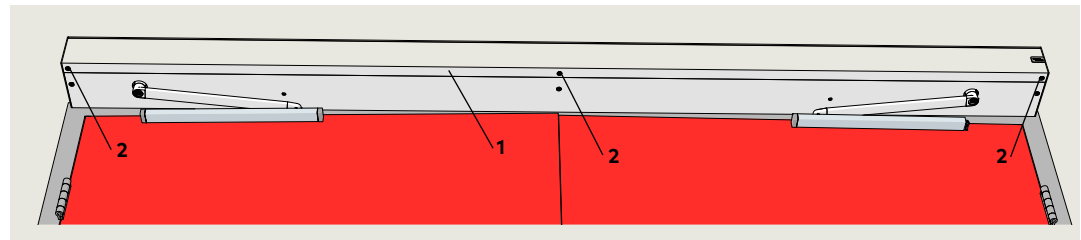
- 1 Header cover
- 2 Flat head screw

Fig. 27.1.1 Single door header with cover installation



- 1 Header cover
- 2 Flat head screw

Fig. 27.1.2 Double door header with cover installation



28 Install door signage

28.1 Install door signage

28.1.1 Install door signage based on type of door.

Install applicable door signage as outlined in Chapter 11, ED50 door signage.

29 ANSI/BHMA standards

29.1 A156.19 Low energy power operated doors

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

Reference to Appendix A for additional parameter detail.

29.1.1 Door measurements, low energy power operated door

ED50 Parameter				A156.19 standard		
Parameter		Function	Factory setting	Adjustment range	Para.	Requirement
So	Opening speed	Swing door opening speed, automatic mode	19°/s Note 1	8°/s - 27°/s	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 (next page) If door opens at more than 90°; it 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. Entered angle is subtracted from set door opening angle. Example: set door opening angle = 90°; bc = 10, back check starts at 80°.
Sc	Closing speed	Swing door closing speed, automatic mode.	19°/s Note 1	8°/s - 27°/s	4.4	Closing Doors shall close from 90° to 10° in 3 seconds or longer as required in Table I (next page). Doors shall close from 10° to fully closed in not less than 1.5 seconds.
dd	Hold open time	Hold open time (time delay)	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 ED50 service manual for parameter detail.	Support for manual mode in door closed position.			4.5	Doors shall open: - With a manual force not to exceed 15 lb f to release a latch if equipped with a latch. - To set a door in motion 30 lb f. - To fully open the door 15 lb f. - Forces shall be measured 1" 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.	4.5 lb f [20 N]	4.5 lb f [20 N] 15 lb f [67 N]	4.5	The force required to prevent a stopped door from opening or closing shall not exceed 15 lb f measured 1" from latch edge of the door at any point during opening or closing.
Fc	Static force in closing direction	Static force on door closing edge in closing direction.	4.5 lb f [20 N]	4.5 lb f [20 N] 15 lb f [67 N]	4.5	

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

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

"D" door width, inches	"W" door weight, pounds				
	100	125	150	175	200
30	3.0 s	3.0 s	3.0 s	3.0 s	3.5 s
36	3.0 s	3.5 s	3.5 s	4.0 s	4.0 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).

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

Back check at 60°	Back check at 70°	Back check at 80°
Table I plus 2 s	Table I plus 1.5 s	Table I plus 1 s

If door opens more than 90°; it shall continue at the same rate as back check speed.

Back check occurring at a point between positions shall use lowest setting.

29.1.4 Other door weights and widths

Closing time $T = (D \sqrt{W}) / 188$

D = Width of door in inches.

W = Weight of door in pounds.

T = Closing time to latch check in seconds.

30 Maintenance

30.1 Safety label, low energy swing doors

30.1.1 Low energy swinging door safety information label

This AAADM label outlines safety checks that should be performed daily on low energy swinging door controlled by an ED50 operator.

30.1.2 Safety information label location

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

30.1.3 Annual compliance section of label

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

30.1.4 Additional annual compliance inspection labels

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

Fig. 30.1.1 Safety information label

SAFETY INFORMATION Low Energy Swinging Doors	
These minimum safety checks, in addition to those in the Owner's Manual, should be made each day and after any loss of electrical power.	
1. Activate the door. Door should open at a slow smooth pace (4 or more seconds), and stop without impact. 2. Door must remain fully open for a minimum of 5 seconds before beginning to close. 3. Door should close at a slow, smooth pace (4 or more seconds), and stop without impact. 4. Inspect the floor area. It should be clean with no loose parts that might cause user to trip or fall. Keep traffic path clear. 5. Inspect door's overall condition. The appropriate signage should be present and the hardware should be in good condition. 6. Have door inspected by an AAADM certified inspector at least annually.	
DO NOT USE DOOR if it fails any of these safety checks or if it malfunctions in any way. Call a qualified automatic door service company to have door repaired or serviced.	
See Owner's manual or instructions for details on each of these and other safety items. If you need a copy of the manual, contact the manufacturer.	
AAADM-3044	
AAADM American Association of Automatic Door Manufacturers	
ANNUAL COMPLIANCE INSPECTION INSPECT FOR AND COMPLIES WITH ANSI A156.19 ON: DATE: _____ by AAADM Certified Inspector Number: _____	

Fig. 30.1.2 Annual compliance inspection label

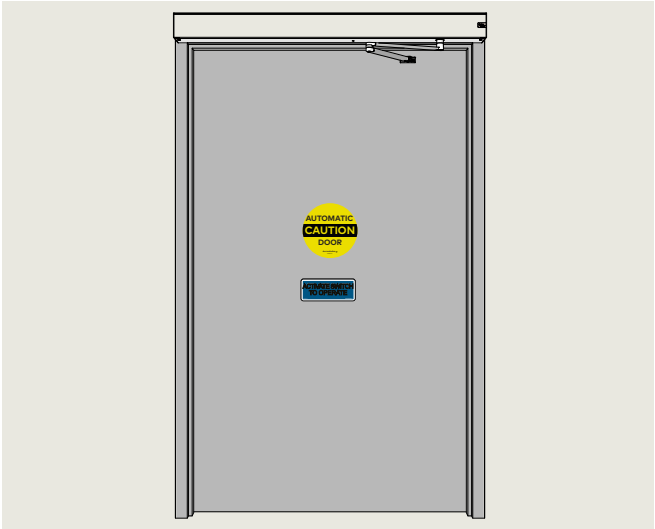
ANNUAL COMPLIANCE INSPECTION	
INSPECT FOR AND COMPLIES WITH ANSI A156.19 ON: DATE: _____ by AAADM Certified Inspector Number: _____	

30.2 ED50 environment and cleaning

Table 30.2.1 Operator environmental requirements.

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

Fig. 30.2.1 ED50 low energy installation



30.2.1 ED50 environmental requirements.

ED50 assembly is designed to operate on an interior application only under the specifications shown in Table 30.2.1.

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

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

30.2.3 Cleaning



WARNING

Cleaning of ED50 header surfaces must be done with program switches in Close position!

ED50 header can be cleaned with a damp cloth and commercial cleaning agents.



TIPS AND RECOMMENDATIONS

Abrasive (scouring) agents should not be used as they may damage header surfaces.

30.2.4 Water and other liquids.



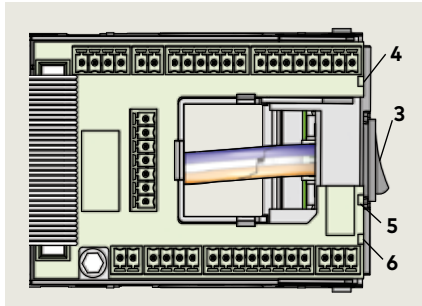
WARNING

No water or other liquids must be sprayed or spilled on ED50 header!

30.3 Yellow LED, service level

- 3 Power switch
- 4 Red LED
- 5 Yellow LED
- 6 Green LED

Fig. 30.3.1 Service level indicator



30.3.1 Service level indicator.

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



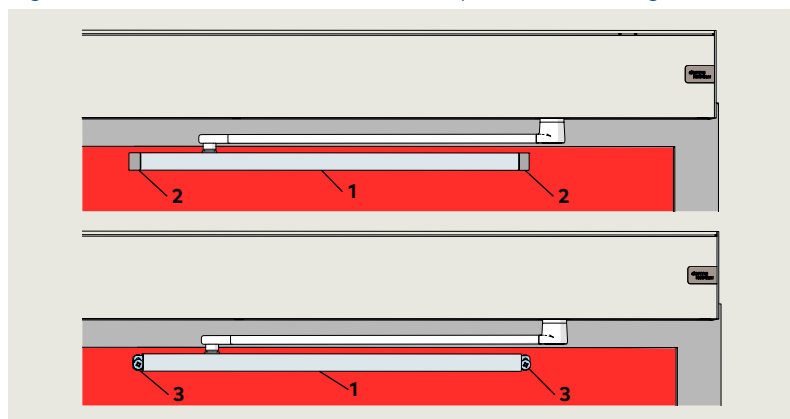
TIPS AND RECOMMENDATIONS

Reference Appendix A, Parameter detail, for information on:

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

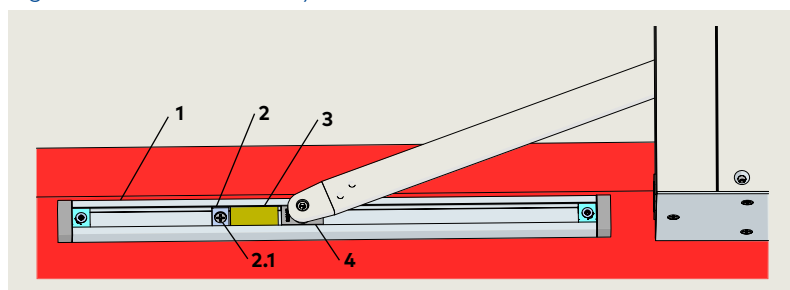
30.4 Pull arm maintenance

Fig. 30.4.1 Pull arm with track assembly, track mounting screws



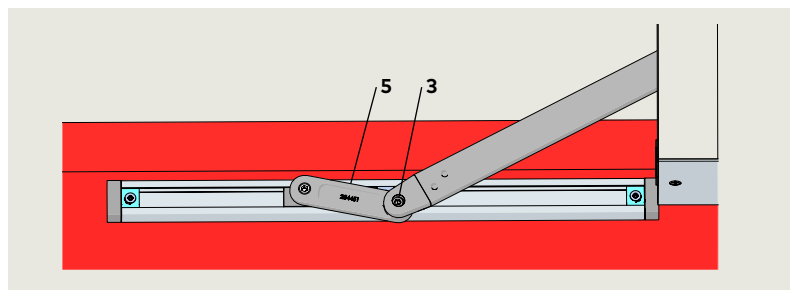
- | | | | |
|---|---------|---|----------|
| 1 | Track | 3 | Fastener |
| 2 | End cap | | |

Fig. 30.4.2 Track assembly



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

Fig. 30.4.3 CPD lever



- | | |
|---|-----------------------------|
| 3 | M6 socket head
cap screw |
| 5 | CPD lever |

Fig. 30.4.3 Program switch



30.4.1 Track mounting screws.

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

30.4.2 Track maintenance.

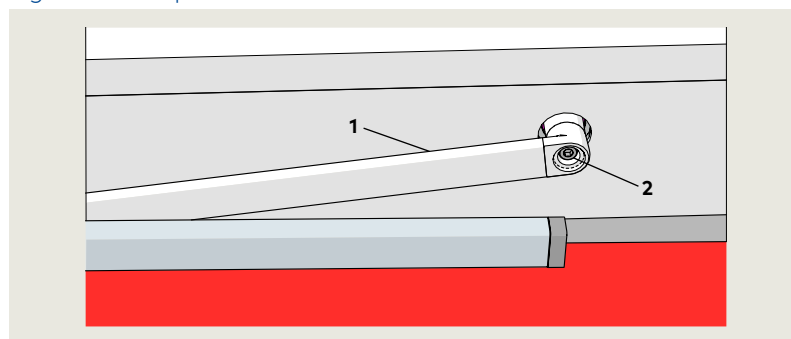
1. Set program switch to OPEN.
2. Track.
 - Check for wear or damage.
3. Slide shoe and pivot pin.
 - Check for wear or damage.
4. Bumper stop M6 screw.
 - Check bumper stop position (bumper location approximately 1/8" from slide shoe)
 - Check tightness of screw.

30.4.3 CPD lever.

1. Check tightness of M6 SHCS.

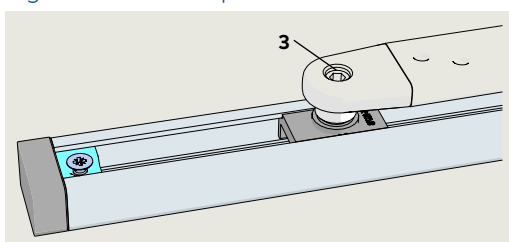
30.4.1 Arm fasteners – torque requirements

Fig. 30.4.1.1 Spindle M8 SHCS



- 1 Arm
- 2 M8 x SHCS
- 3 Pivot pin M8 socket head

Fig. 30.4.1.2 Pivot pin M8 socket head



30.4.1.1 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 5 mm hex key socket, check M8 SHCS torque. 17 ft-lb [23 Nm].

30.4.1.2 Check pivot pin M8 socket head torque.

1. Check torque.

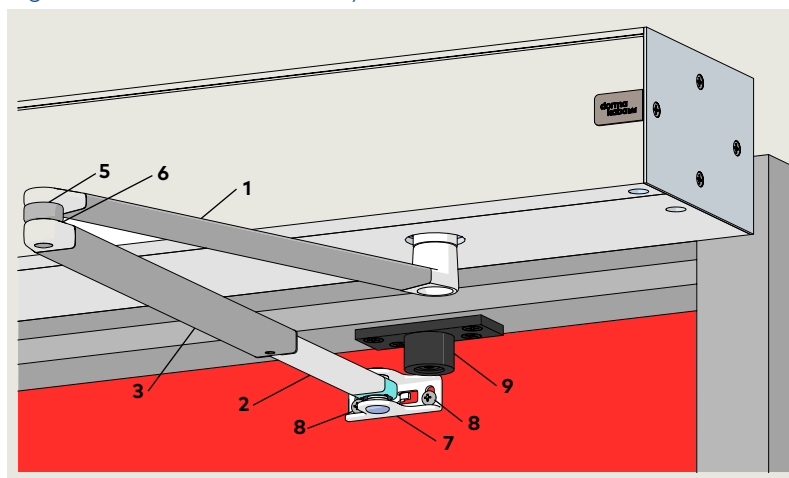
CAUTION

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

Reference Para. 15.8 for arm assembly.

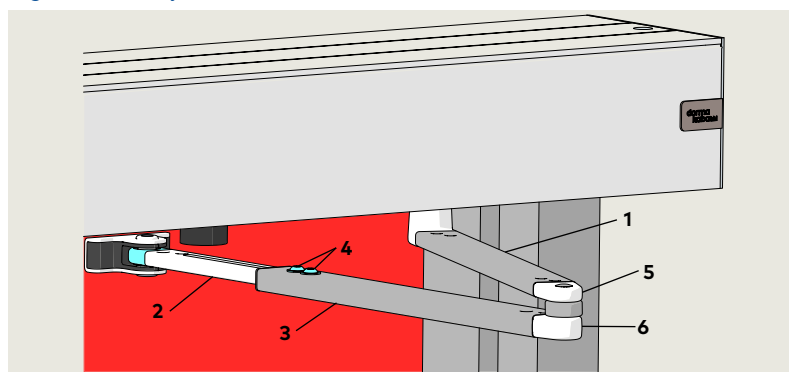
30.6 Push arm maintenance

Fig. 30.6.1 Push arm assembly



- | | | |
|-----------------------|----------------------------|----------------------------|
| 1 Drive arm | 5 Drive arm socket | 7 Shoe |
| 2 Adjustment arm | 6 Adjustment arm ball head | 8 Shoe mounting screws (2) |
| 3 Adjustment arm tube | | |

Fig. 30.6.2 Adjustment and drive arms



- | | | |
|-----------------------|--|----------------------------|
| 1 Drive arm | 4 M6 x 10 mm flanged button head screw | 6 Adjustment arm ball head |
| 2 Adjustment arm | 5 Drive arm socket | |
| 3 Adjustment arm tube | | |

Fig. 30.6.3 Push arm shoe fasteners

- | |
|------------------------|
| 8 Shoe mounting screws |
| 9 Hinge cover caps |

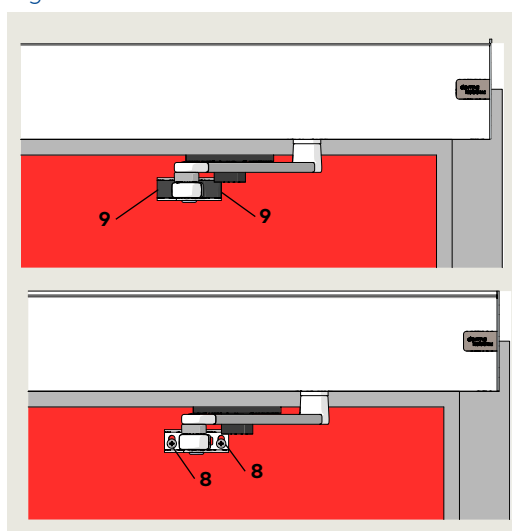


Fig. 30.6.4 Program switch



30.6.1 Push arm maintenance.



WARNING

Set program switch to CLOSE before performing maintenance!

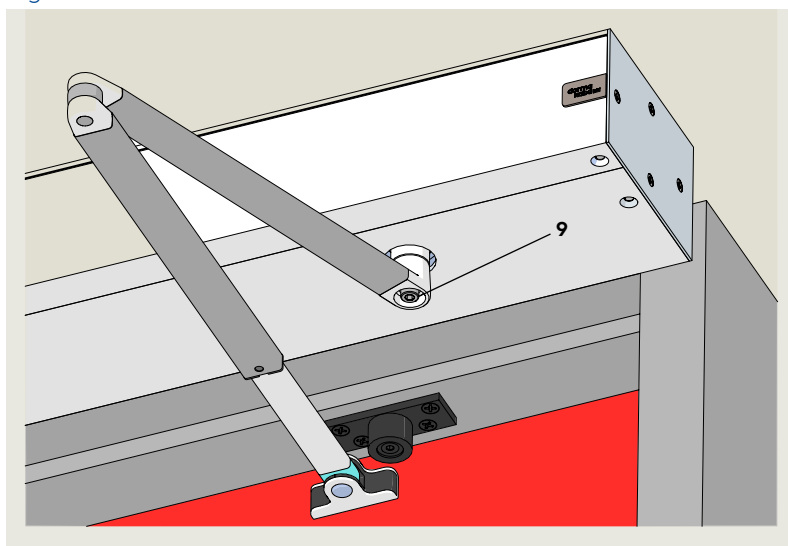
- Adjustment arm.
 - Check for wear or damage.
 - Check tightness of M6 x 10 flanged button head screws (Fig. 30.6.2).
- Shoe and adjustment arm assembly:
 - Check for wear or damage at shoe bearing (Fig. 30.6.1).
- Adjustment arm socket and ball head (Fig. 30.6.2).
 - Check for wear or damage.

30.6.2 Shoe door mounting screws .

- Remove hinge cover caps (Fig. 30.6.3).
- Check for tightness of mounting screws.
- Replace hinge cover caps.

30.7 Push arm – M8 SHCS torque requirements

Fig. 30.7.1 Push arm M8 SHCS



9 M8 x ____mm SHCS

30.7.1 Drive arm M8 SHCS torque.

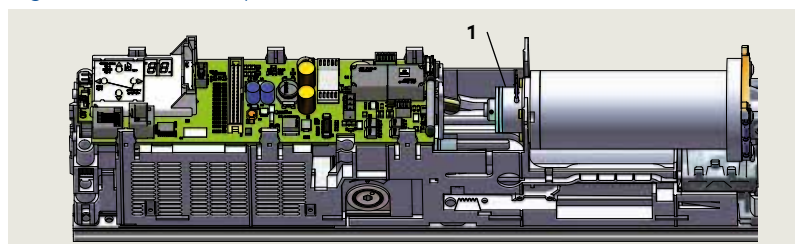
1. Remove spindle cap.
2. Check tightness of M8 SHCS.
3. Replace spindle cap.

CAUTION

Using torque wrench with 5 mm hex key socket, check M8 SHCS torque. 17 ft-lb [23 Nm].

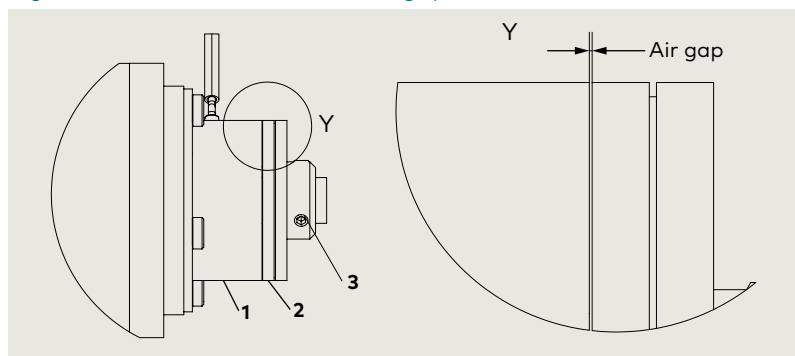
30.8 ED50 brake maintenance

Fig. 30.8.1 ED900 operator



1 Brake assembly

Fig. 30.8.2 Brake to brake disc air gap



1 Brake assembly
2 Brake disc assembly

3 M3 x 3 SHCS

Fig. 30.8.3 Brake assembly

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

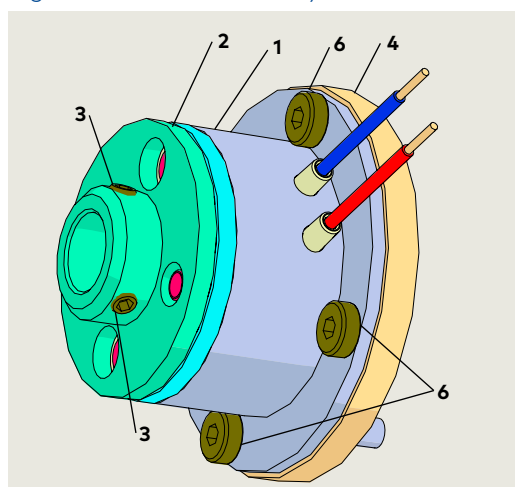


Fig. 30.8.4 Feeler gauge set



30.8.1 Adjustment of air gap: brake to brake disc (Fig. 30.8.2).



TIPS AND RECOMMENDATIONS

Reference drawing:
254197-01-50



WARNING

Set program switch to CLOSE before performing maintenance!

CAUTION

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

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

CAUTION

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

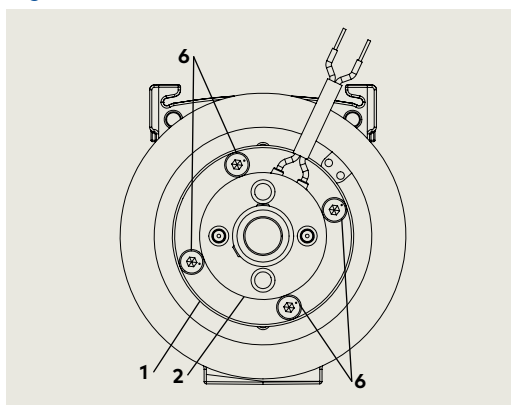


TIPS AND RECOMMENDATIONS

Paper stock thickness:
approximately 0.003"

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

Fig. 30.8.5 M3 x 5 SHCS

**30.8.2 Torque setting of M3 x 5 SHCS.**

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

Fig. 30.8.6 Brake disc assembly removed from brake

- 1 Brake assembly
- 2 Brake disc assembly
- 5 Motor shaft

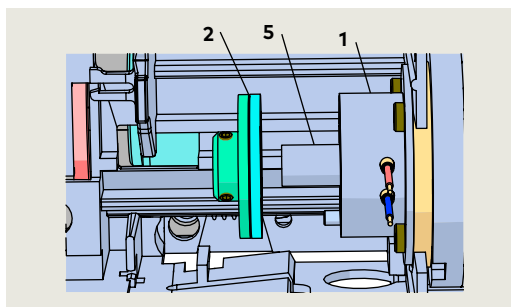


Fig. 30.8.7 Brake and brake disc assemblies

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

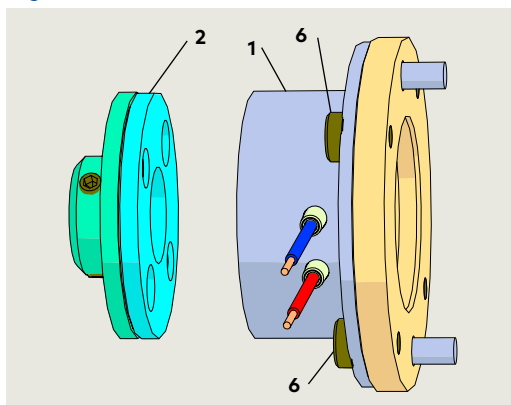
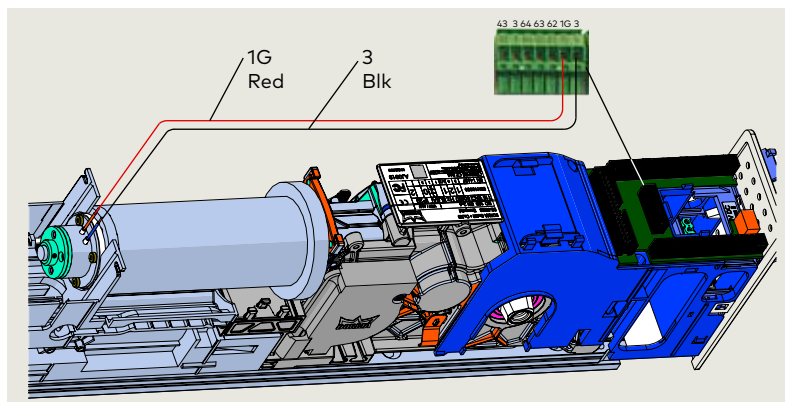


Fig. 30.8.8 Brake coil wiring



Appendix A - Driving parameters

A.1 Driving parameters – detail

A.1.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
Opening speed, automatic mode				
5	 ED50 8 - 50*	%s	25	- Opening speed refers to automatic mode, speed can be adjusted using this parameter. - Internal monitoring system checks if parameter setting is admissible. If setting exceeds admissible value, the setting is alternately displayed with the permissible value. - After parameter set, verify setting meets ANSI/BHMA A156.19 (low energy) standards. See Chapter 29. *Maximum opening speed reduced to 27%/s in low energy mode. *Maximum opening speed reduced to 27%/s in low energy mode.
Closing speed, automatic mode				
6	 ED50 2 - 27*	%s	25	- Closing speed refers to automatic mode, speed can be adjusted using this parameter. - Internal monitoring system checks if parameter setting is admissible. If setting exceeds admissible value, the setting is alternately displayed with the permissible value. - After parameter set, verify setting meets ANSI/BHMA A156.19 (low energy) standards. See Chapter 29. *Maximum closing speed reduced to 27%/s in low energy mode.
Hold open time, automatic mode				
7	 0 - 30	s	5	- Hold open time starts once all internal, external, safety and push and go inputs have been opened or dropped, and door is in an open position. - Hold open time values from 0 to 30 are set in increments of 1 second. - Hold open time values greater than 30 seconds are set in increments of 5 seconds. - In low energy mode, a minimum hold open time of 5 seconds is required. - Hold open time can be re-triggered.
Night-bank hold open time				
8	 0 - 30	s	10	- Night-bank (key switch) hold open time is set using this parameter. - Night-bank Hold open time starts once contact on night-bank activator input is opened and door is in an open position. - Night-bank hold open time can be re-triggered.
Hold open time, manual opening				
9	 0 - 30	s	1	- Default hold open time of 1 second that follows every manual opening of door can be adjusted using parameter do. - Hold open time starts when door is released.
Wall masking on door hinge side				
10	  60 - 99	°	80	- Wall masking required if door opens against an obstacle. - When door reaches set wall masking angle, system will ignore signal from safety sensor on door swing (hinge) side. - The wider the detection range of safety sensor used, the greater the area must be in which system has to ignore sensor's emitted signal. To insure personnel safety, it is advised to keep this range as small as possible. - If set wall masking angle is exceeded when door is being opened, a rapidly flashing dot appears in top left hand corner of 2 digit display. - Rapidly flashing dot disappears when door angle drops below set wall masking angle.
Safety sensor test				

A.1.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description	
11 SF ST	0 - 8		0	Safety sensor parameter ST must be set to sensors used and if they are active-high or active-low. See E 04 safety sensor test error, Appendix B.	
				0	Sensor test off.
				1	Sensor test on swing (hinge) side. Active-high
				2	Sensor test on swing and approach sides. Active-high
				3	Sensor test on swing and approach sides. Active-high
				4	Sensor test on swing side. Active-low
				5	Sensor test on approach side. Active-low
				6	Sensor test on swing and approach sides. Active-low
				7	Wall mounted sensor with data line. Lock monitoring not available.
				8	Sensor test overhead sensor type Bodyguard III or Premier T with monitoring input.
Activation by safety sensor on approach (opposite hinge) side					
12 SA	0 - 1		0	0	Safety sensor's input is disregarded as soon as door is closed.
				1	Safety sensor can trigger an opening pulse while door is closed.
Suppression of safety sensor on swing (hinge) side during initialization drive					
13 SP	0 - 1		0	0	Safety sensor on swing side is active during an initialization drive after a power on reset.
				1	1. With SP set to 1, operator will disregard swing side safety sensor during initialization drive. After a power on reset, operator starts an initialization drive at slow speed. The initialization drive cannot be completed if safety sensor on hinge side is, or has been triggered.
Delayed opening time for locking mechanism					
14 Ud	0 - 40 * 100	ms	3 * 100	1. Delayed opening time delay starts as soon as door opening pulse has been generated. 2. Door opens on expiration of time delay. 3. If parameter is set to "0" and input for locking feedback contact is closed, door will not perform a preload Pu before door unlocks. 4. Since various motor locks do not have feedback contacts, a delay of up to 4 seconds is possible	
Door preload prior to unlocking					
15 PU	0 - 9		0	1. Door preload prior to unlocking; force with which door is pushed in the "closed" direction before door is opened. 2. The door may need to be pushed in closing direction (preload) in order to release electric strike to insure door opens. 3. Preload time is set by parameter Ud, delayed opening time for locking mechanism. 4. To maintain long service life, set preload force only as high as necessary.	

A.1.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
Power reserve module SVP-PR 12 test				
				0 Test off
16	0 - 1		0	 - SVP-PR 12 power reserve module test is performed once every 24 hours, or 10 minutes after AC power has been turned on. In event of an error: - Unlocking is not performed and no automatic door movements are initiated. - Error code E 25 is displayed, See Chapter 26, Para.26.4, troubleshooting error codes. - SVP-PR 12 power reserve module can be used but must be tested on a regular basis if using: - SVP-2000 DCW emergency escape motor lock with automatic latching action. - M-SVP 2000 DCW emergency escape lock. - Test is automatically activated if a fire protection module is recognized in conjunction with SVP-2000 DCW or M-SVP 2000 DCW locks.
				1
				
Static force in opening direction				
17	2- 15 *10	N	6 *10	- Static force in opening direction (basic parameter for wind load control). Static force on door closing edge can be changed using this parameter. - Internal monitoring system checks if parameter setting is admissible. If setting exceeds admissible value, the setting is alternately displayed with the permissible value. - After parameter set, verify setting meets ANSI/BHMA standard A156.19 (low energy). See Chapter 29. - ED50 low energy operator: static force range is reduced.
	.45- 3.4 *10	lbf	1.35 *10	
Static force in closing direction				
18	2- 15 *10	N	6 *10	- Static force in closing direction (basic parameter for wind load control). Static force on door closing edge can be changed using this parameter. - Internal monitoring system checks if parameter setting is admissible. If setting exceeds admissible value, the setting is alternately displayed with the permissible value. - After parameter set, verify setting meets ANSI/BHMA standard A156.19 (low energy). See Chapter 29. - ED50 low energy operator: static force range is reduced.
	.45- 3.4 *10	lbf	1.35 *10	
Motor driven latching action, automatic mode				
19	0 - 9		0	- System offers a motor driven latching action in automatic mode in addition to mechanical latching action. - The EP parameter setting is designed to increase static force on door to insure proper closing despite resistance caused by door seals or locking devices. - Setting should be increased step by step from a low setting so as to avoid damage to the system. Use the lowest possible setting. - Ensure that both the door itself and the arm or track installation are suitable for the additional, permanent forces.
Motor driven latching action angle				
20	2 -10	°	3	Door opening angle at which motor driven latching action EP is activated. Starting angle of the latching angle adjustable from 10°.
Keep closed force				
				0 Off
21	0 - 9		0	- Keep closed force is: - Permanently applied following motor drive latching action. - Designed to keep door in closed position even if wind acts on door. - Keep closed force can be set from 0 (off) to 9, maximum force.
				1 to 9

A.1.1 Driving parameters detail.

Parameter		Value range	Units	Factory setting	Description
Push & Go					
22		0 - 1		0	0 Off
					1 1. Parameter is activated. 2. Automatic opening of door is started when door is manually moved 4° out of the closed position. 3. Door close mode parameter hd must be set to "0" (manual) to enable this function.
Program switch type					
23		0 - 4		0	0 Internal, operator mounted program switches are active.
					1 External mechanical program switch with contacts is connected to operator terminal board. Internal program switch connector must be removed.
					2 External DCW electronic program switch (EPS) is connected to operator terminal board. Internal program switch connector must be removed.
					3 Program switch control by TMS Soft control software.
					4 1. DCW electronic program switch (EPS) is installed, and operator is also connected by the building management system to TMS Soft control software. 2. When PS is set to 4, the program switch functions can be changed from DCW (EPS) to TMS Soft..
DCW® Electronic program switch (EPS) behavior following power reset					
24		0 - 1		0	0 1. In event of power failure, or if operator is deliberately switched off, EPS will automatically switch to last known position when power returns. 2. Important: The time at which power returns might not be during business hours and may affect insurance-compliant door locking requirements.
					1 1. In event of power failure, or if operator is deliberately switched off, EPS will automatically switched to OFF position when power returns. 2. This function should be used iif insurance compliant locking if required.
Internal program switches, switch on delay					
25		0 - 1		0	0 Operator will perform function of new switch setting as soon as internal program switch is moved.
					1 1. Operator will perform function of new switch setting after a delay of 10 seconds from when internal program switch is moved. 2. This function is useful if user has to pass through door and its connected detectors and sensors after program switch is set to new function.
Unlocking during business hours					

A.1.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
26 	0 - 1		0	0 Door is always locked when it reaches closed position.
				1 1. In automatic mode, door will not lock when it reaches closed position. This achieves faster door opening when system is equipped with motor driven locks. 2. If an electric strike opener is used, it must be suitable for 100% continuous duty factor to avoid possibility of damage.
Status relay function, X7 terminals				0 Status relay is deactivated.
27 	0 - 6		1	1 Status relay activated as soon as door reaches door "closed" position.
				2 Status relay activated as soon as door reaches door "open" position.
				3 Status relay activated when error codes are displayed on 2 digit operator display.
				4 "Door closed and locked" activates status relay.
				5 Status relay activated when information or error codes are displayed on 2 digit operator display.
				6 1. Status relay activated when door is opened further than opening angle parameter OA, set during learning cycle. 2. Parameter OA value can only be changed using dormakaba handheld or by performing another learning cycle.
Locking device output configuration; output X3, 1G (24V) and input X6, 4/4a				Reference Chapter 7
28 	0 - 1		0	0 Locking device output terminal X3, 1G (24V) is independent of Input X6, 4/4a.
				1 1. Locking device output terminal X3, 1G (24V) is turned on as soon as contact at X6, 4/4a is opened.. 2. Terminal X3, 1G 24V output is on for as long as contact at X6, 4/4a is open, motor lock with a 100% duty factor is required. 3. This function is not available for DCW motor locks.
Cycle counter				1. Total number of opening and closing cycles displayed is shown in increments of 10000. • Display value, "4", 40,000 cycles. • Display value, "53", 530,000 cycles.
29 	0 - 99 *10000	cycles		2. Total number of cycles can be displayed on dormakaba handheld. 3. A display value of "99" means 990,000 cycles or greater.
Delete error log				
30 	0 - 1		0	0 No function.
				1 1. When "1" entered, Error log is deleted. 2. Parameter is then automatically reset to "0".
Reset service interval display, operator yellow LED				

A.1.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
31		0 - 1	0	0 No function.
				1 1. When "1" entered: • Service cycle counter is reset to 200,000. • Service interval is reset to 12 months. • Yellow LED not illuminated. 2. Parameter is then automatically reset to "0". 3. Values other than default values must be set using dormakaba USA, Inc. handheld: • Maintenance interval • Maintenance cycles
Factory setting level				
32		1 - 2	1	Parameter SL is used to determine what data will be reset during factory setting process. Standard factory settings • Program switches CLOSE. • Door closed. • Press 4 button keypad down button ▼ for greater than 8 s. 1. All parameters reset to factory settings. 2. Procedure completed when "8" on 2 digit displays blinks twice. 3. Installed upgrade cards remain valid and do not require reinstallation. 4. Learning cycle required.
				2 Extended factory settings • Program switches CLOSE. • Door closed. • Press 4 button keypad down button ▼ for greater than 8 s. 1. All parameters reset to factory settings. 2. Procedure completed when "8" on 2 digit displays blinks twice. 3. Installed upgrade cards deleted from operator memory. 4. Parameter SL automatically reset to 1. 5. Control unit and upgrade cards can be used independently (delivery status). 6. Learning cycle required..
Opening angle				
33		0 - 110	°	1. Door opening angle set during learning cycle is displayed. 2. Opening angle can only be changed during learning cycle. 3. Due to installation and parameter tolerances, display value may not match actual door position.
Door closer mode				

A.1.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
34 	0 - 1		1	0 - Automatic mode. This mode is applicable whenever door is mainly opened automatically and where motion detectors are installed. - Mode is optimized for high frequency use. - Full energy upgrade card provides for higher door opening and closing speeds. - In case door is blocked during a closing cycle, operator reverses automatically. - Driving phase is optimized to provide reliable closing cycles. - Keep closed force (wind load control) parameter FH and Push & Go function parameter PG are only available in automatic mode.
				1 - Manual mode. This mode is applicable whenever door is mainly used manually and only rarely automatically. - In case door is blocked during a closing cycle, door will stop at its current position. - Driving phase optimized for manual opening cycles. - Power assist function parameter hf is only available in manual mode.
Power assist activation angle				- Setting of door activation angle for Power assist function (hF). - Higher settings of hA result in better spring force compensation for easier manual opening. - Power assist function is more sensitive the smaller the activation angle.
35 	1 - 5	°	3	
Power assist function				- Force setting for Power assist function. - Power assist function only available with hd parameter = 1, manual mode. "0"; power assist function OFF; power assist function enabled for available values greater than 0. - Power assist function enabled when power assist activation angle hA reached. - The greater the value of hF, the easier the door can be manually opened from power assist activation angle hA. - If power assist set too high, door can open automatically. - Power assist function is not available - If operator is switched off - A smoke detector or emergency button has been triggered.
36 	0 - 10		0	
Power assist function support for manual mode in door closed position				- Setting for power assist function support with door in closed position. - Power assist function only available with hd parameter = 1, manual mode. - The greater the value of hS, the easier the door can be manually opened from the closed position.
37  	0 - 10		0	

A.1.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
Upgrade card units codes				
0 - 3			0	0 Upgrade card not installed, function not available.
				1 Upgrade card installed, function not activated.
				2 Upgrade card installed, function activated.
				3 Upgrade card has been removed, function no longer available.
Upgrade card fire protection				
38		0,2,3	0	1. Once upgrade card installed, parameter value will automatically change to 2. 2. Following activation, drive may be used as a electrically controlled hold-open system according to EN 14637, Building hardware-Electrically controlled hold-open systems for fire/smoke door assemblies, or similar standards. 3. Full energy function is automatically activated. 4. Plug for terminal board X9 socket included with upgrade card.
39				Not used.
40			0	Not used.
41			0	Not used.
42			0	Not used.
Upgrade card barrier-free toilet				
43		0, 1, 2, 3	0	1. Once upgrade card installed, parameter value will automatically change to 1. 2. Function must be activated by changing parameter F7 to 2. 3. Operator power reset is required; turn power switch off, wait 10 s and turn power back on. 4. Upgrade card assigns inputs and outputs of the control unit with functions which are required for this application.
Upgrade card DCW				
44		0, 2, 3	0	1. Once upgrade card installed, parameter value will automatically change to 2. 2. Upgrade card provides operator with DCW bus connection. 3. Plug for terminal board X8 socket included with upgrade card. 4. DCW bus enables connection of: • Program switch EPS DCW (max. 2) • Motor lock controls SVP-S 2x DCW (max. 2) • Motor lock SVP 2000 (max. 1) • RM-ED lintel mounted smoke detector • Key switch button ST 32 DCW (max. 2) • I/O module DCW (max. 1)
COM 1 configuration interface				
45		0 - 1	0	0 Interface programmed for communication with dormakaba handheld. 1 Interface programmed for use with dormakaba TMS Soft control software.

A.1.1 Driving parameters detail.

Parameter	Value range	Units	Factory setting	Description
Backcheck when door opened manually				
46	 5 - 40 (v1.9)	°	10	- Angle after which door is braked when manually opened. - Back check level is automatically optimized during manual door opening cycles. This function improves door braking behavior in end position so door does not move beyond set opening angle OA. Entered value is subtracted from set opening angle OA. - Example - Opening angle, 90° - Parameter bc, 12° - Door back check starts at 78°.
Door thickness				
47	 0 - 99	mm	35	- Parameter is entered in mm. - Door thickness affects measured door opening angle. - Parameter Td enables a more accurate door width to be entered, if required.
	 0 - 3 7/8"		1 3/8"	
Deactivation of drive; X6, 4 and 4a, trigger type				
48	 0 - 1		0	0 NC contact, drive function is deactivated when NC contact is open. 1 NO contact, drive function is deactivated when NO contact is closed.
Night-bank contact X1; 3 and 35, trigger type				
49	 0 - 1		0	0 - NO contact, night-bank function is triggered when NO contact is closed. - Typically used when using a key switch or an access control system. 1 - NC contact, night-bank function is triggered when NC contact is opened. - Typically used when connected to building management system to trigger doors (signal normally present).
Release of hold-open system				
50	 0 - 1		1	1 - Upgrade care Fire Protection installed, users may release hold-open by manually moving door in closed direction. - A manual release button is not required. 0 - Hold-open release by manually moving door in closed direction is deactivated. - A manual release button is required.
Castor angle for double doors				
51	 0 - 30	°	30	Primary door with astragal, angle active door must open before secondary door opens.
Hinge clearance				
52	 ± 5 *10	mm	3 *10	- Clearance between hinges is critical for the calculated door angle. - It may only have a small effect but the clearance can be adjusted in extreme cases to improve accuracy. - Factory setting is 3 * 10, 30 mm, 1 3/16". - With CPD doors, setting must be changed to a negative value. A learning cycle is then required as system creates an angle table as a function of the set parameters.
	±3/16 *10	inches		

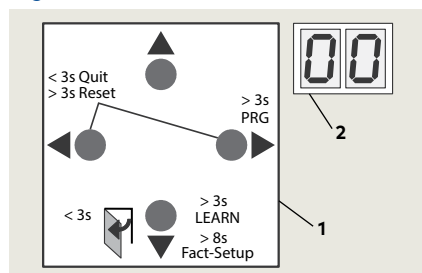
Overhead concealed mode (OHC): Activation of permanent open via night-bank input				
53		0 - 1	0	0 Function disabled.
				1 If night-bank signal is longer than 3 seconds, operator changes to permanent open mode.
Overhead concealed mode (OHC): Adjustable behavior after blockage / hold open				
53		0 - 1	0	0 Standard behavior (3 x restart).
				1 Manual mode after blockage.
Reversing after trigger of approach side safety sensor / opposite hinge side in operating mode hd=1				
55		0 - 1	0	0 Standard behavior, stop.
				1 Reversing

Appendix B - Troubleshooting

B.1 Information and error codes

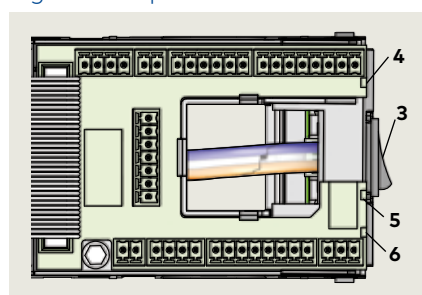
- 1 4 button keypad
2 2 digit display

Fig. B.1.1 User interface



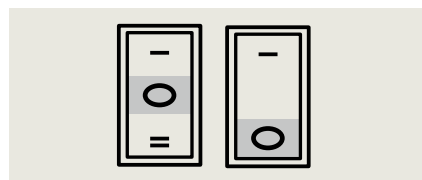
- 3 Power switch
4 Red LED
5 Yellow LED
6 Green LED

Fig. B.1.2 Operator LEDs



- 7 Program switch, es
Close position

Fig. B.1.3 Program switches



TIPS AND RECOMMENDATIONS

Para. B.3, Information codes
Para. B.4, Error codes

B.1.1 Overview

Operator monitors internal circuits and external safety circuits managed by the operator.

B.1.2 Error and information messages.

1. With operator in use, certain conditions may develop resulting in error or information messages.
2. Operator attempts to identify the cause and respond accordingly.
3. Response depends on the severity of the error:
 - Information message (**In**)
 - Error message (**E**)
 - Deactivating the operator's automatic function; operator will switch to emergency mode. Users can then access door manually.

B.1.3 User information display.

User interface display, or or dormakaba handheld displays:

- Information **In** codes
- Error message **E** codes

B.1.4 Viewing error messages.

To access and view error messages, briefly press the right ► button on the 4 button keypad.

B.1.5 Red LED on operator .

Red LED adjacent to operator power switch displays blinking codes for:

- Certain **In** information
- **E** error codes (Para. 26.2)

B.1.6 Resetting error codes.

Options for resetting error codes:

1. Set program switch in Close (off) position.
2. User interface Reset buttons:
 - Press both left ◀ and right ▶ buttons >3s to reset system (v1.8).
 - Header cover must be opened to access user interface.
3. Power reset:
 - Turn power switch OFF.
 - Turn power switch back on after 10 seconds.

CAUTION

Always analyze and remove cause for error before resetting error message!
Troubleshooting charts (Para. B.3,.4) are intended as a guide for diagnosing errors.

B.1.7 Error message memory.

1. There are ten error message memory locations; E 0 through E 9.
2. The latest error message is always stored in error memory location E 0:
 - As soon as another error occurs, the existing error stored in E 0 will be moved to E 1 and the latest error will be stored in E 0.
3. A maximum of 9 errors can be stored in memory locations E1 through E9.
4. Identical error messages occurring one after another are not stored again.

B.2 Red LED status codes

B.2.1 Red LED status codes

Red LED status	Display	Description
Steady flashing		Control unit has detected error, emergency mode activated.
On steady	In 11	Hold-open device triggered.
Flashing 2 times	E 02	Locking device error.
Flashing 4 times	E 04	Safety sensor test error.
Flashing 5 times	E 25	SVP PR DCW module test negative.
Flashing 5 times	E 51 E 52 E 53	Incremental encoder error.
Flashing 6 times	E 62	Double door operation, 2nd system has incompatible firmware version.
Flashing 6 times	E 63	Double door operation, 2nd system has incompatible fire protection setting.
Flashing 7 times	E 71	System error 1 (test), second shutdown option.
Flashing 7 times	E 72	System error 2 (test), current measuring circuit.
Flashing 7 times	E 73	System error 3 (test), braking circuit
Flashing 12 times	E 12	EEPROM error
Flashing 13 times	E 13	Motor overcurrent
Flashing 15 times	E 15	Faulty learning cycle

B.3 Troubleshooting chart, "In" codes

B.3.1 Troubleshooting chart, information messages.

No.	Display	Red LED	Description	Troubleshooting information messages
	In 01	Off	Obstruction Door obstructed by an obstacle or person; door movement stopped by operator.	Sustained operation on a door with an obstruction can result in damage to drive. 1. Object or person obstructing door movement. • Check door movement while system is deenergized. • Remove cause of anything obstructing door movement. 2. Sensor detection range too small. • Obstructions are often caused by people using door due to sensor's detection range not matching operator's opening speed. Door is unavoidably contacted by person using door. • Sensors detection range should be increased and/or operator's opening speed should be increased. 3. Test system operation after cause of obstruction found.
2	In 08	Off	Deactivation of drive function • Contact at X6, 4 and 4a is opened. • Operator switched to emergency mode, door can only be used manually.	An emergency close switch, lock switch, or other system safety device may be connected to the X6 input. 1. One of the activators connected to X6 may have opened, or a defect is present. 2. Reset the applicable activator. Operator should start operation automatically. 3. If In 08 still present, check activators or system wiring.
3	In 09	Off	Upgrade card error • Installed upgrade card has been removed. • If two upgrade cards were installed, the upgrade card installed first (container module) has not been reinstalled or is defective.	1. Installed upgrade card cannot be removed from ED50. 2. If more than one upgrade card is installed, the first card installed becomes the container module. • The container module must be installed last, after all other Upgrade cards are installed. 3. If container module is defective, first upgrade card (container module) must be replaced and all other upgrade cards must be reinstalled.
4	In 11	On	Hold-open system triggered.	1. Hold-open system can be triggered: • Automatically by smoke detector or building interface system. • Manually by a manual release button. • Manually moving door. 2. The system must be reactivated by a deliberate action. 3. Depending on system's configuration, reactivation can be done by: • Manually moving door to taught opening angle. • Switching program switch to Close (off). • Pressing both 4 button keypad left ◀ and right ▶ buttons greater than 3s. 4. It must be ensured that a smoke detector or building interface has not been triggered. 5. If reactivation is unsuccessful, there may be a defect in the smoke detector or building interface system or its connections.
5	In 23	Off	Locking alarm • Door is blocked while in the closed position.	1. Most common cause of this error is the drive unit attempting to open a locked door. 2. To eliminate the occurrence of this error, install a lock status switch. • Lock switch detects the lock pin's switching status and switches the drive unit off if necessary. 3. It is recommended to use a lock status switch, as repeated attempts to open a locked door may damage the drive unit or the door.

B.3.1 Troubleshooting chart, information messages.

No.	Display	Red LED	Description	Troubleshooting information messages
6	In 61	Off	Communication error, double door system No communication between the two operators.	- Check communication cable connection at the two operators. - Cable connects to the horizontal RJ 45 connector next to the user interface. Check communication cable.
7	In 72	Off	Current measuring circuit System could not successfully perform internal current measuring test, performed once every 24 hours.	- The initial current measuring test may not always be successfully completed due to system tolerances and environmental conditions. - The test may also fail, as an example, if someone uses the door while the test is in progress.
8	In 73	Off	Braking circuit test System could not successfully perform internal braking circuit test, performed once every 24 hours.	- The initial braking circuit test may not always be successfully completed due to system tolerances and environmental conditions. - The test also may fail, as an example, if someone uses the door manually while the test is in progress. - If the cyclical test fails ten times in a row, error message In 73 will be displayed.
9	In 91	Off	DCW communication At least one registered DCW device is missing.	- Reconnect the corresponding DCW device. - If this is not possible, reactivate the drive. Reactivation can be done by: - Switching program switch to Close (off). - Pressing both 4 button keypad left ◀ and right ▶ buttons greater than 3s.

B.4 Troubleshooting chart, "E" codes

B.4.1 Troubleshooting chart, "E" codes.

No.	Display	Red LED	Description	Troubleshooting error codes
1	E 02	Flashing 2 x	Locking device error Operator is attempting to open or close a locking device with feedback, or a DCW locking device. An error has occurred during this process.	- Probable causes are a defective locking device or wiring defect. - Check the locking device and feedback system.
2	E 03	Flashing 3 x	DCW program switch is missing	Check the DCW program switch and its connections.
3	E 04	Flashing 4 x	Safety sensor test error Test of moving safety sensors was unsuccessful.	- Factory setting level of "safety sensor test" parameter ST is 0, test off (Appendix A, Parameter detail). - When ST is configured to installed safety sensors, a test signal is sent to the sensors before each door opening or closing cycle. Operator waits for a response within a certain time window. - Check whether parameter ST has been configured to the installed safety sensors and their active-high or active-low signal level. - Check for activation of the test at the safety sensors.
4	E 12	Flashing 12 x	EEPROM error - Internal memory check could not be completed. - Drive unit works in door closer mode.	- Using dormakaba handheld, reload current firmware to reinitialize system. - If the error is still present, the control unit must be replaced.

B.4.1 Troubleshooting chart, "E" codes.

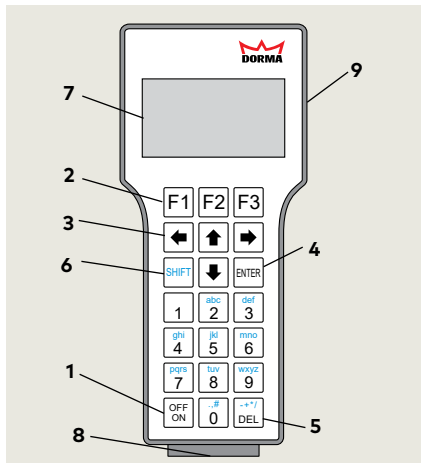
No.	Display	Red LED	Description	Troubleshooting error codes
5	E 13	Flashing 13 x	Overcurrent detection Motor is consuming more current than drive unit can provide.	- Motor is consuming too much power, check for any external causes. - Drive unit or control unit is defective. - If error repeats, operator must be replaced.
6	E 15	Flashing 15 x	Faulty learning cycle Learning cycle could not be completed (Chapter 22).	- Error may occur if learning cycle has been interrupted, for example if door movement has been interrupted during the learning cycle. - Learning cycle must be repeated.
7	E 25	Flashing 5 x	SVP-PR 12 power reserve module test negative	- See Appendix A, parameter TS, Power reserve module test. - Check power reserve module and its wiring.
8	E 51 E 52 E 53	Flashing 5 x	Incremental encoder error Motor gear unit encoder monitoring detected a faulty state.	- Check encoder plug connection at operator. - Secure connection. - Wiring terminations - Short circuits. - Check locking device for short circuits. - Error can be caused by defective motor or short circuit in locking device. - Motor gear unit must be replaced in event of defective motor.
9	E 62	Flashing 6 x	Incompatible firmware version double door system, second system.	Equip both operators with same firmware version.
10	E 63	Flashing 6 x	Incompatible fire protection setting, double door system.	For double door systems, the Upgrade card fire protection must be installed in both control units.
11	E 71	Flashing 7 x	System error 1, 2nd shutdown option	- In order to reliably switch off the drive unit, several switching elements are used and their functions are tested periodically. - If the function test always results in the error code, the control unit must be replaced.
12	E 72	Flashing 7 x	System error 2, current measurement circuit	- The current measurement circuit is part of the safety mechanisms and its function is tested periodically. - If the function test always results in the error code, the control unit must be replaced.
13	E 73	Flashing 7 x	System error 2, current measurement circuit	- The braking circuit is a safety element in the closer mode and will be tested every 24 hours. - During the test the motor is shut down during door closing and the door closes at a set angle in emergency mode. - Test can be noticed as a short jerk on the door and is normal. - Error can be due to door closing in the deenergized state too fast (under 3 seconds). See Chapter 17, Power fail closing speed. - Check the closing speed and reduce if necessary.
14			Energy management - Motor is too hot (for example, too high an ambient temperature) - System responds automatically.	- Movement dynamics in the closed direction will be reduced. - Movement dynamics in both the open and closed directions will be reduced. - System shuts down for 3 minutes (door closer mode). - Hold-open time will be extended.

Appendix C - dormakaba handheld

C.1 dormakaba handheld terminal

Fig. C.1.1 dormakaba handheld

- 1 Off/On key
- 2 Function keys
- 3 Arrow keys
- 4 ENTER key
- 5 DEL key
- 6 SHIFT key
- 7 Alpha numeric keyboard
- 8 LED, recharging battery status (Off when batteries fully charged)
- 9 SD card slot



C.1.1 Interface cable

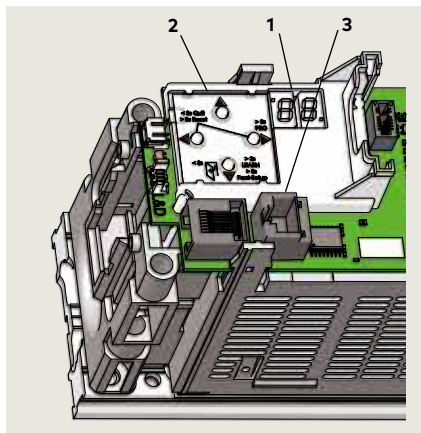
Use dormakaba interface cable (Article No. 16596101170) to connect dormakaba handheld to operator Com 1 interface.

CAUTION

Never use conventional network cable with RJ45 plug! Using conventional cable may result in permanent damage to operator!

Fig. C.1.2 Com 1 interface

- 1 2 digit display
- 2 4 button keypad
- 3 Com 1 interface
- .



C.1.2 Handheld key functions.

1. OFF ON, switches Handheld on or off.
2. Function keys F1 - F3, trigger functions shown in bottom line of display (e.g., "RPT" for repeat, "UP" and "DOWN" to switch lines, "UpDoLd" for file up and download, "CHANGE" to change values, "OPEN" to trigger opening pulses).
3. Arrow keys, allow navigation within the display. Use left arrow to get back to previous screen.
4. ENTER, selects individual menu items and confirms changes of values and settings.
5. DEL, deletes figures or letters.
6. SHIFT, switch between figures and letters or small and capital letters. Current function is indicated on display (n: numeral, A: capital letters, a: small letters).
7. Alpha numeric keyboard, allows entering values and file names in small and capital letters. There are several special characters (dot, comma, hash key, plus, minus, asterisk and diagonal slash).

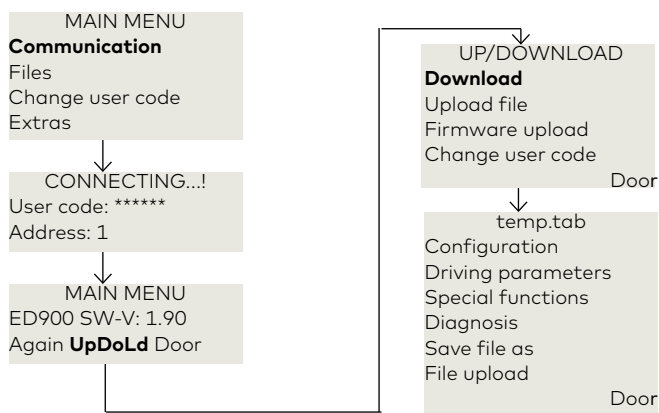
C.1.3 Handheld startup.

1. Press OFF ON to turn on Handheld terminal.
2. Screen displays Current version, creation date and name of data base. Handheld is ready for operation.
3. Select "COMMUNICATION" and enter user code (dormakaba original setting: 123456).
4. Handheld displays current software version of the connected operator (e.g., Ed900 SW- V1.40).

C.1.4 Downloading current parameters.

1. Press function key F2 "UpDoLd" to access menu "UP/DOWNLOAD".
2. Select "Download" to download current adjustments and parameters. System stores this data as temporary file under file name "temp.tab".
3. Every change in configuration, parameter setting or special functions confirmed with the "ENTER" key automatically uploads to the operator.
4. The Handheld does **not** automatically save the changes. The Handheld will prompt you to save the changes when quitting the menu.

C.1.5 Menu structure



NOTICE

Parameters and detail may change depending on firmware version.

C.2 dormakaba handheld; configuration parameters

"#" refers to reference numbers in Parameter list, Chapter 18.

C.2.1 Configuration parameters

#	Parameter and default	Description / Selections	#	Parameter and default	Description / Selections
1	Installation *	Pull arm	12	Start safety push side *	Off* Signal ignored once door closed
		Push arm			On Sensor can trigger pulse with door closed
		Gleit BGS (Track w push arm)			
		cm Inches			
2	Reveal depth 0	ED50 (-3)- 30 -1 3/16 ... 11 13/16	14	Lock delay 3	Delayed opening time for locking mechanism (0 ... 3) *100 msec
3	Door width (steps of 4") 100	ED50 71 - 122 28 -48	15	Unlock force 0	Preload prior to unlocking 0 ... 9
4	Door type *	single*	12	Test PR module *	0* Test off
		1. leaf			1* Test once every 24 hrs.
		2. leaf	23	Program switch *	Internal*
		Master			External
		Slave			DCW
11	Sensor test 0	0 Off	24	PGS power up (DCW) *	Last*
		1 Pull side high active	25	PGS delay *	Off
		2 Push side high active			Off*
		3 Both sides high active	26	Daytime unlock *	On
		4 Pull side low active			Off* Locking device remains permanently unlocked while door is in closed position.
		5 Push side low active	27	Door status (Status relay function, X7 terminals) *	1 Off Relay off
		6 Both sides low active			2 Open* door reaches closed position
		7 Bodyguard			3 Close door reaches open position
		8 Bodyguard III or Premier T with monitoring			4 Error any error message
					door closed and locked
					5 Information or error codes displayed
					6 Door opened further than opening angle

C.2.1 Configuration parameters

#	Parameter and default	Description / Selections
34	Manual mode On	On* Manual mode on.
		Off Manual mode disabled.
35	Power assist winkel (angle) 3	Activation angle for power assist function (0 ... 5)
36	Power assist kraft (force) 0	Force adjustment for power assist. 0 ... 10
21	Keep closed force 0	Force activated after latching action 0 ... 9
50	Manual release On	Off; function deactivated. Manual release button required to deactivate hold open function.
		On; function activated. Moving door manually in closing direction from hold open position deactivates hold open function.
48	Input enable operator *	Normal* NC contact, operator deactivated when contact is open
		Inverse NO contact, operator deactivated when contact is closed

#	Parameter and default	Description / Selections
49	Input Night-bank	Normal* NO contact; night-bank function triggered while contact closed.
		Inverse NC contact; Night-bank function triggered while contact open.
47	Door depth 35	0 ... 99 mm 0 ... 7/8"
52	Hinge clearance 3	-5 ... +5 mm -3/16 ... +3/16"
	I04 Out 1	
	I04 Out 1	
	I04 Out 1	
	I04 Out 1	

C.3 dormakaba handheld; driving parameters

C.3.1 Driving parameters

#	Parameter and default	Description / Selections
		%s %s
5	Speed open 25	ED50 8 ... 27 27 max. L.E.mode
6	Speed close 25	ED50 8 ... 27 27 max. L.E.mode
17	Limit force open 60	Static force in opening direction (wind load control) (20 ... 67) N L.E. mode
18	Limit force close 60	Static force in closing direction (wind load control) (20 ... 67) N L.E. mode
7	Hold-open time 5	Hold-open time automatic mode (0 ... 30) s
8	Nurse bed function 10	Hold-open time nurse bed function (0 ... 30) s

#	Parameter and default	Description / Selections
5	Offenhaltezeit man. 1	Hold-open time manual mode (0 ... 30) s
10	Wall blanking 80	Angle when system ignores safety sensor on hinge side (60 ... 99)°
19	Latching action 0	Motor-driven latching action, automatic mode (0 ... 9)
20	Latching angle 3	Opening angle, motor-driven latching angle activated. (2 ... 10)°
46	Backcheck angle 10	Backcheck angle for manual opening cycles. (5 ... 40)°
51	Coord. offset angle 30	Starting angle for second door of two door system. (0 ... 30)°

C.4 dormakaba handheld; special functions (Upgrade cards) ED50

C.4.1 Special functions (upgrade cards)

#	Parameter and default	Description / Selection
	Upgrade card status codes	- locked: not available - unlocked: available, not active - activ or active: activated - fehlt: upgrade card missing
40	Flip-flop func.	locked
		unlocked
		active
		fehlt
41	extend HOT (extended hold-open time) r/o	locked
		unlocked
		active
		fehlt
42	Nurse-Bed func.	locked
		unlocked
		active
		fehlt
38	Fire protection r/o	locked
		unlocked
		active
		fehlt

#	Parameter and default	Description / Selection
39	Full energy r/o	locked
		unlocked
		active
		fehlt
44	DCW r/o	locked
		unlocked
		active
		fehlt
43	Disabled restr r/o	locked
		unlocked
		active
		fehlt
22	Push & Go *	Off*
		On Door opens automatically when moved manually by 4° from closed position. Only available when "manual operation" is turned "off".

C.5 dormakaba handheld; diagnostics

C.5.1 Diagnostics

Parameter name	Description	Setting
FW vers BM r/o	Displays firmware (FW) version of basic module	x.x y y (e.g., 0190 v 1.9.0)
Rev FW version r/o		0 ... zzz
FW version SK r/o	Displays firmware version of Service Key	x x.y y (e.g., 01.00 = v 1.0.0)
FW bootloader		x x y y
Current error r/o	Displays current error	(...)
Error log 1		(...)
Error log 2		(...)
Error log 3		(...)
Error log 4		(...)
Error log 5		(...)
Error log 6		(...)
Error log 7		(...)
Error log 8		(...)
Error log 9		(...)
Current information	Displays current error	(...)
Delete errors	Press "ENTER" to delete error log.	Cmd ->
Installation dat r/o	Displays date of installation (month / yr)	mmyy (e.g., 1110 November 2010)
Hours counter r/o	Displays number of operating hours	(..) h
Service time interval	Enter maintenance interval	(6 .. 24) months 12
Service cycle interval	Enter number of opening and closing cycles until next maintenance	(200 .. 1000)* 1000 200

Parameter name	Description	Setting
Wartungs datum	Maintenance data	x x y y (month, year)
Cycles total r/o	Displays total opening and closing cycles	(..)
Zyklen max h r/o	Displays maximum number of cycles in one hour	(..) h
Zyklen / h r/o	Displays number of cycles in previous hour	(..) h
Zyklen / h akt.	Displays number of cycles in current hour	(..) h
Learning cycle	Press "ENTER" to start learning cycle.	Cmd->
Learn cycle stat. r/o	Indicates status of learning cycle	(..)
Factory reset	Press "ENTER" to reset system to original settings	Cmd ->
Latching action p/u		(...) kg
Setup level (Ref. parameter SL, no. 28)	- Level 1, standard original settings. - Level 2, extended original settings	- Level 1 - Level 2
DCW list r/o	Displays DCW list	List ->
DCW reset		Cmd ->
Function mode r/o	Displays program switch setting	(..)

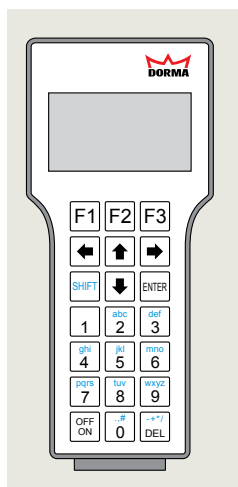
C.5.1 Diagnostics

Parameter name	Description	Setting
Setting code		0, low active (function on) 1, function off
Inp. Night - bank r/o	Status of Night -bank input X9, 6 and 1	0 1
Inp. OPEN r/o	Status of program switch permanent OPEN input X1, 34	0 1
Inp. PART OPEN r/o	Status of program switch PARTIAL OPEN input X1, 33	0 1
Inp. EXIT ONLY r/o	Status of program switch EXIT ONLY input X1, 32	0 1
Inp. AUTO r/o	Status of program switch AUTO input X1, 31	0 1
Inp. OFF r/o	Status of program switch OFF input X1, 30	0 1
Inp. Sfty pull side r/o	Status of safety sensor, hinge side input X5, 15	0 1
Inp. Sfty push side r/o	Status of safety sensor, opposite hinge side X5, 11	0 1
Inp. Activ extern r/o	Status of external activation sensor X6, 41	0 1
Inp. Activ intern r/o	Status of internal activation sensor X6, 42	0 1
Inp enable operator r/o	Status of Emergency close input X6, 4 and 4a	0 1
Inp. smoke detector r/o	Status of smoke detector input X9, 3 and 1	0 1
Inp. lock status r/o	Status of locking device input X3, 43 and 3	0 1
Locking status		locked

Parameter name	Description	Setting
Klemme 1G	Clamp X3, 1G and 3, 24 V out	
Opening width r/o	Displays opening angle	(..) °
Cur. door position r/o	Displays current door angle	(..) °
Amb. temp. r/o	Displays ambient temperature	(..) °C
Amb. max r/o	Displays maximum ambient temperature	(..) °C
Motor temp. r/o	Displays motor temperature	(..) °C
Motor temp max. r/o	Displays maximum motor temperature	(..) °C
Com 1 r/o	Com 1 connection	(..)

C.6 New dormakaba handheld; language change to English

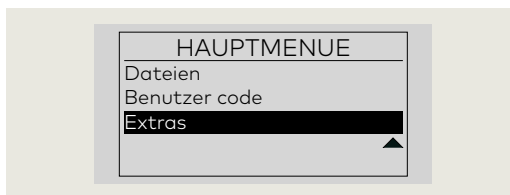
Fig. C.6.1
dormakaba handheld



C.6.1 New dormakaba handheld; language change.

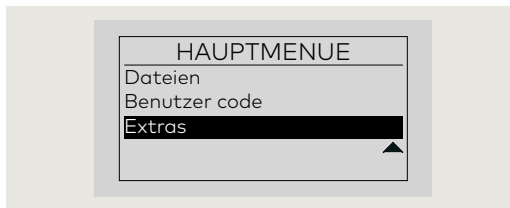
If German language is displayed on screen when handheld is first turned on (Fig. 28.6.2, handheld power on sequence), use following steps to change to English.

Fig. C.6.2 HAUPTMENUE (main menu)



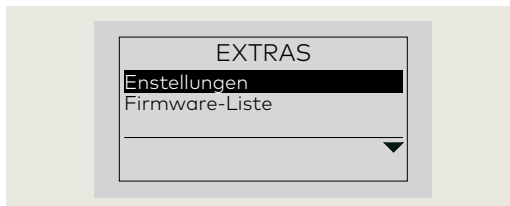
1. Scroll down Main Menu to EXTRAS:
 - Press 3 times to highlight EXTRA.

Fig. C.6.3 Main Menu; EXTRAS highlighted.



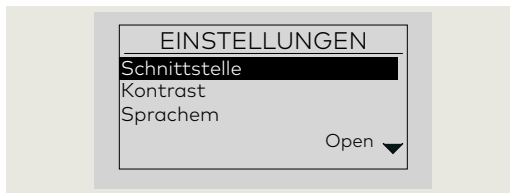
2. Press to select EXTRAS menu.

Fig. C.6.4 EXTRAS menu



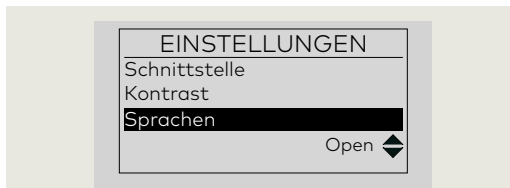
3. Press to select EINSTELLUNGEN (Settings) menu.

Fig. C.6.5 EINSTELLUNGEN menu



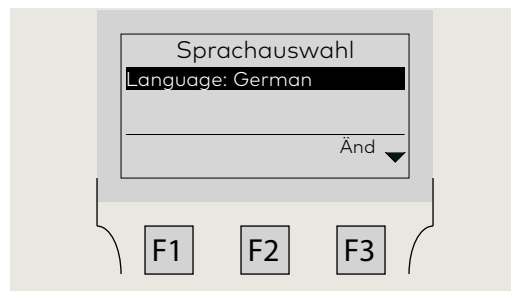
4. Scroll down EINSTELLUNGEN Menu to Sprachen (Languages):
 - Press twice to highlight Sprachen.

Fig. C.6.6 Sprachen highlighted



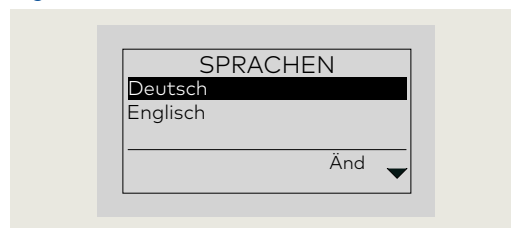
5. Press to select Sprachen (Fig. 26.6.6).

Fig. C.6.7 Sprachauswahl (Language Selection) menu



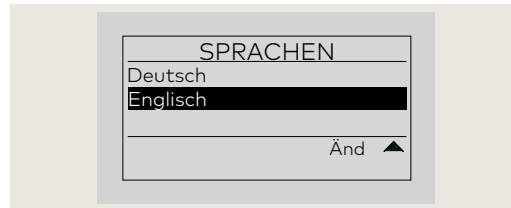
6. Press to select Änd (Amendments).

Fig. C.6.8 SPRACHEN menu



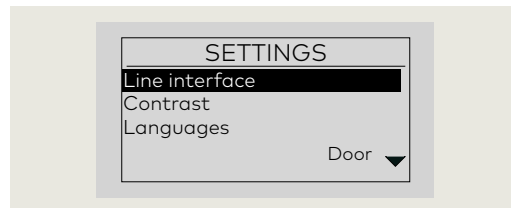
7. Scroll down SPRACHEN menu to English:
 - Press once to highlight "Englisch"

Fig. C.6.9 Englisch highlighted



8. Press to select English.

Fig. C.6.10 SETTINGS menu



TIPS AND RECOMMENDATIONS

Handheld programmer will retain English setting when unit is turned off. Change to English only required the first time the programmer is turned on "out of the box".

C.7 dormakaba handheld; firmware update

C.7.1 Firmware update procedure

CAUTION

For all firmware changes, set program switch to CLOSE and allow door to close completely before any updates are made!

Fig. C.7.1 Handheld power on sequence

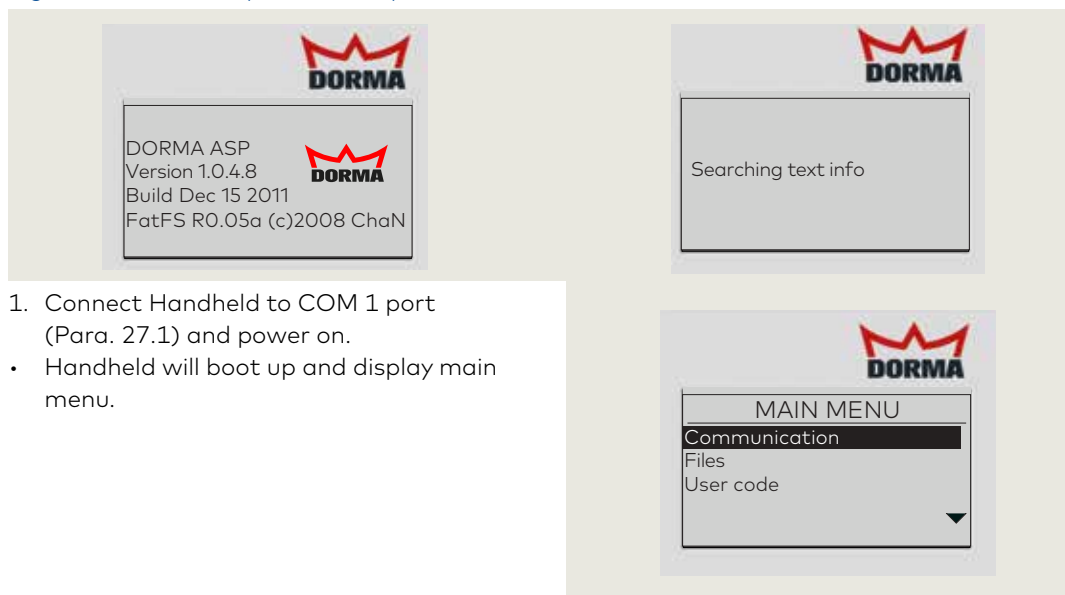
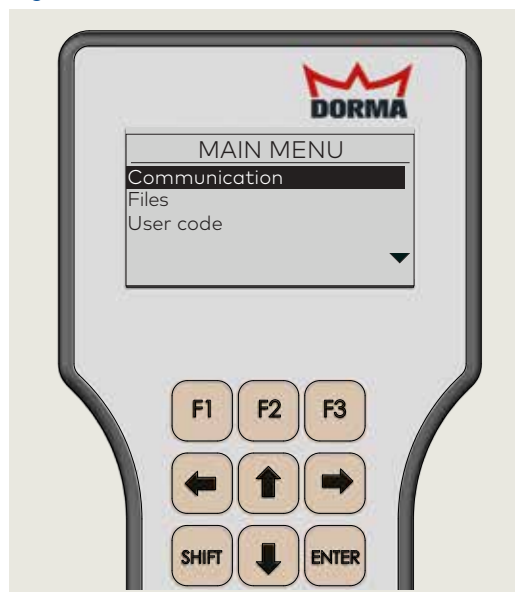
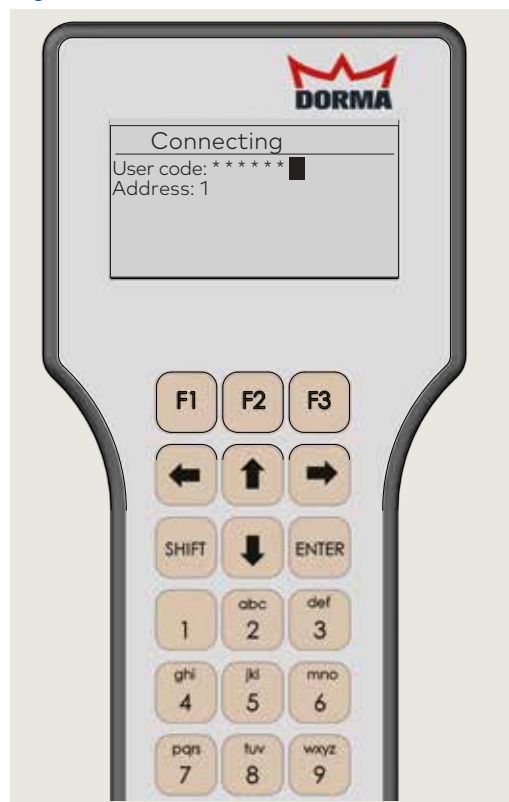


Fig. C.7.2 Select communication menu



- With Communication highlighted, press ENTER.

Fig. C.7.3 Enter Handheld user code

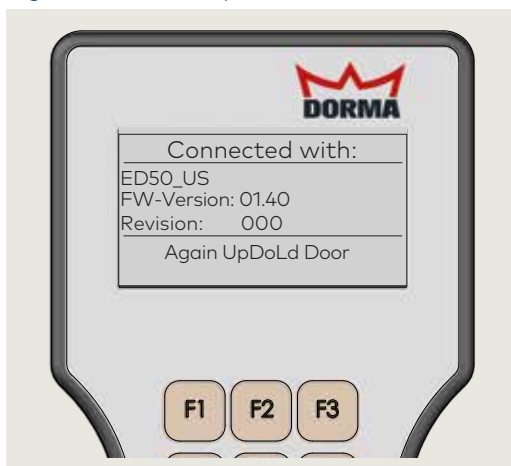


- Enter handheld user code and press ENTER.

1 ENTER button

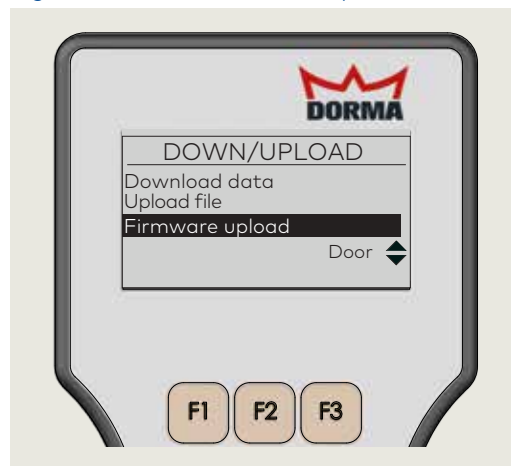
- 1 ENTER button
- 2 F2 button
- 3 Up/down arrows

Fig. C.7.4 Select UpDoLd



4. Press F2 to select UpDoLd.

Fig. C.7.5 Select Firmware upload



5. Use Up and Down arrows to select Firmware upload and press ENTER.

Fig. C.7.6 Select Firmware version



6. Use Up and Down arrows to select firmware version and press ENTER.

Fig. C.7.7 Start transmission



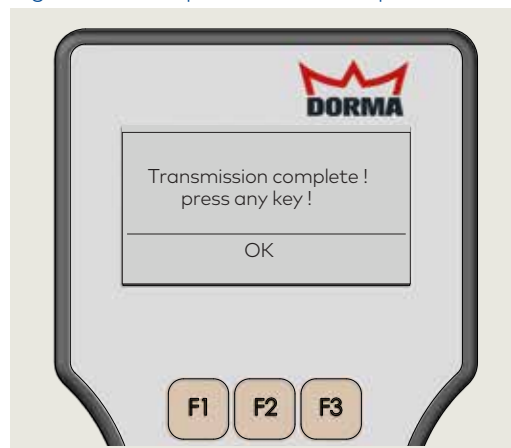
7. Press any key to start firmware transmission.

Fig. C.7.8 Firmware uploading



8. Firmware uploading to controller. Wait time of 3 to 5 minutes to upload.

Fig. C.7.9 Complete firmware update



9. Press any key to complete firmware update.

Appendix D - Wiring diagrams

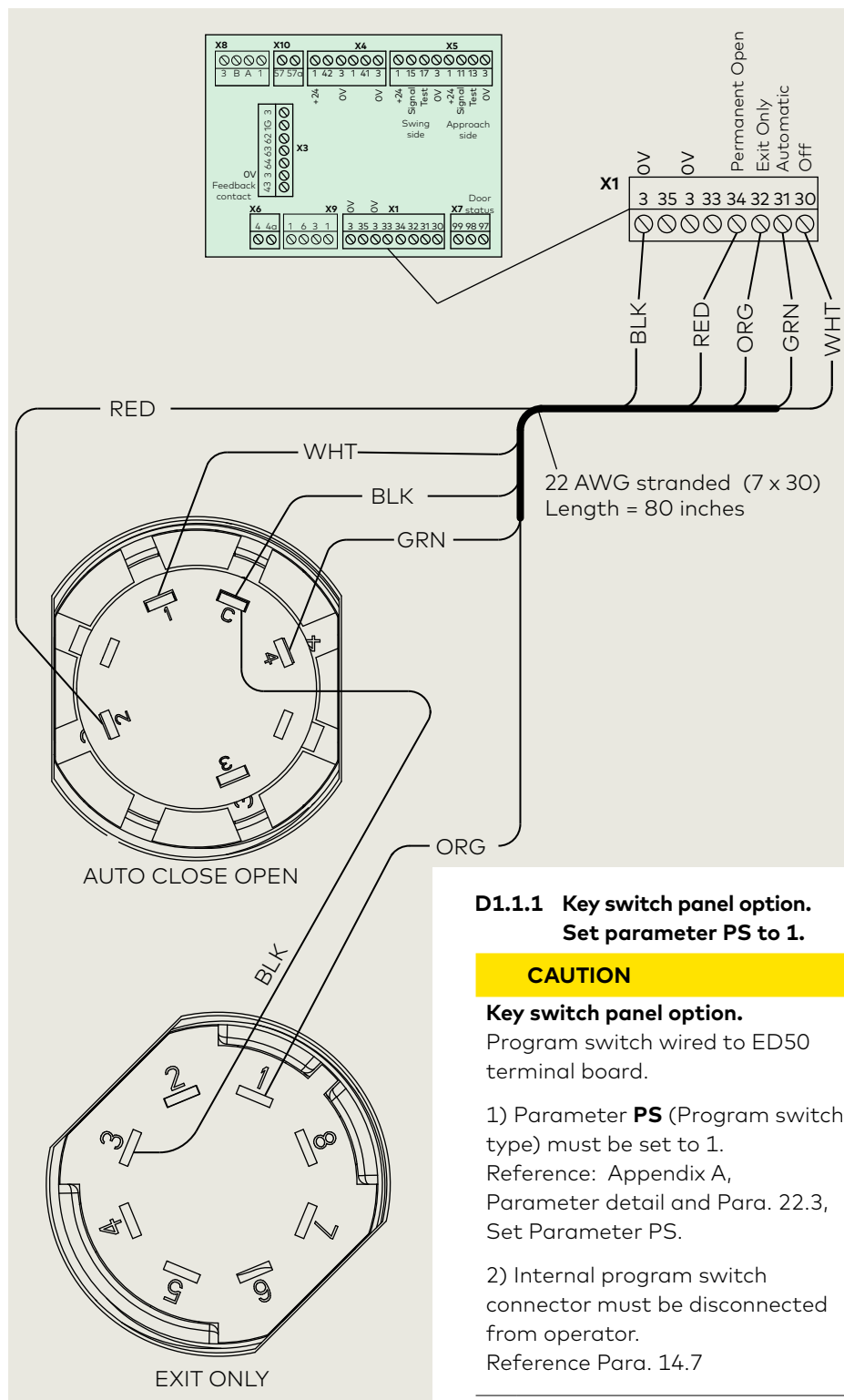
D1.1 DX4604-21C Key Switch Panel with RJ45 connector

Fig. D1.1 Key switch panel DX4604-21C



Reference Para. 14.7 for RJ45 cable connection.

Fig. D1.2 Key switch panel wiring diagram



D2.1 DX4604-11C Key Switch Panel

Fig. D.2.1 Key switch panel
DX4604-11C

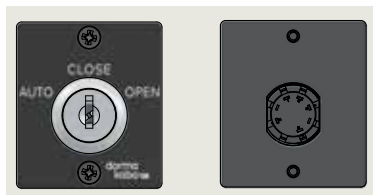
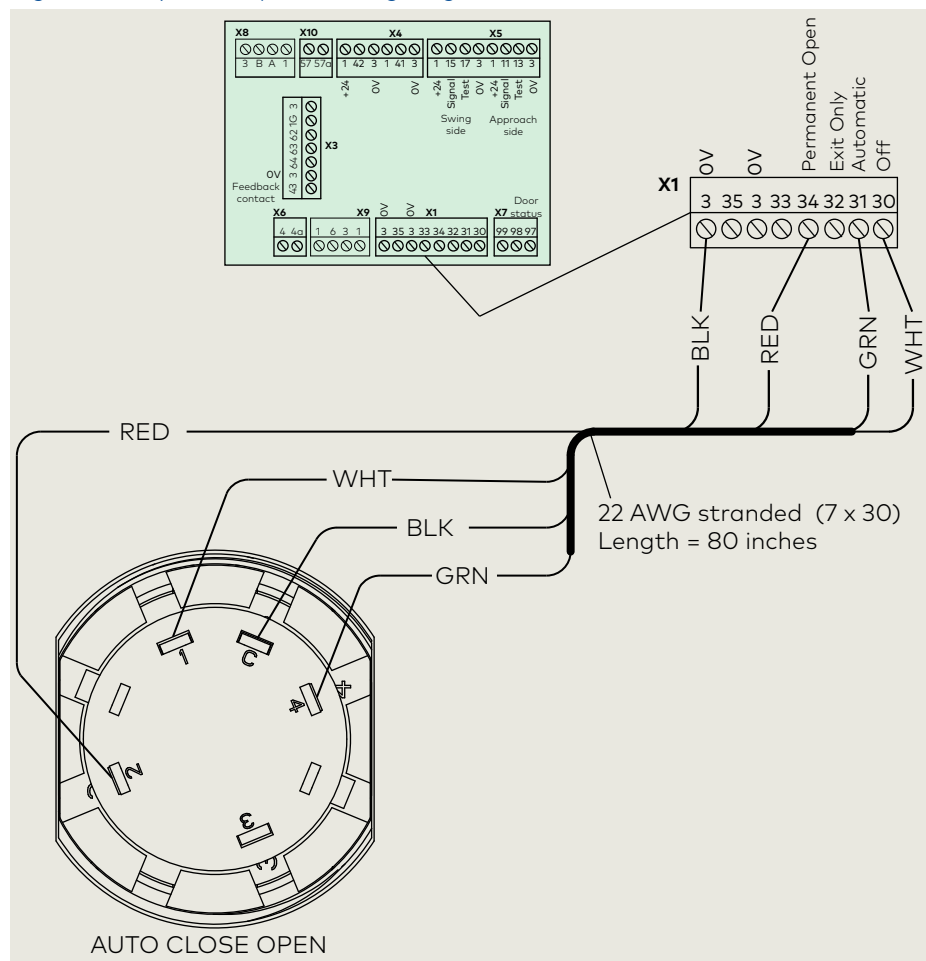


Fig. D2.2 Key switch panel wiring diagram



D1.1.2 Key switch panel option. Set parameter PS to 1.

CAUTION

Key switch panel option.

Program switch wired to ED50 terminal board.

1) Parameter **PS** (Program switch type) must be set to 1.
Reference: Appendix A, Parameter detail and Para. 22.3, Set Parameter PS.

2) Internal program switch connector must be disconnected from operator.
Reference Para. 14.7

