LCN COMPACT™ Automatic Operator

LCN®

Series 6400
Model 6440

Installation Instructions

Table of Contents

Description

Modular Low Energy Operator

LCN's 6400 Compact Series Automatic Operator is a modular low energy operator. The 6440 motor gearbox assembly attaches to a standard LCN 4040XP mechanical closer. The 6440 can be used with a variety of actuators, including touchless to limit contact risks. When actuated, the motor system drives the pinion of the manual closer to automatically open free-swinging, interior doors.

The 6400 Compact series is the first of its kind in its ability to automate a mechanical door without the need for removal and replacement of existing closer hardware. The 6440 motor gearbox assembly can be mounted directly onto an installed 4040XP for full functionality, or ordered as a full solution with a new 4040XP for new applications.

The solution is ANSI/BHMA A156.19 listed and capable of meeting ADA requirements.
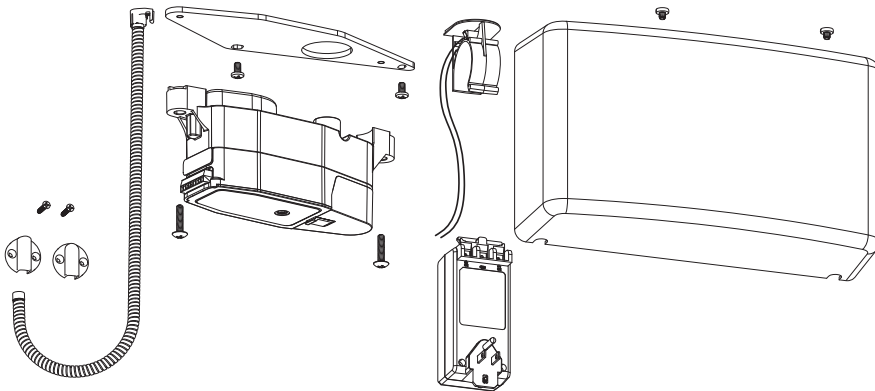
⚠ WARNING
Warnings indicate potentially hazardous conditions, which if not avoided or corrected, may cause death or serious injury.

⚠ CAUTION
Cautions indicate potentially hazardous conditions, which if not avoided or corrected, may cause minor or moderate injury. Cautions may also warn against unsafe practices.

| NOTICE |
|---|
| Notices indicate a condition that may cause equipment or property damage only. |

Technical Specifications	
Power Input	2.0A @ 24VDC (Supplied Adapter)
	If using other power supply, ensure voltage is regulated to +/- 10%
Power Output	75mA @ 24VDC (for wireless receiver)
Maximum Powered Opening	70° to 110°
Spring Size	Compatible with Sizes 2 through 4 (Size 3 default)
Door Weight	Up to 185 lb
Door Width	36"
Certifications	ADA, BHMA A156.19, UL 325, UL 10C, FCC
Features	Power Boost, Fire input, Motor Enable switch
Warranty	2 years
Clearance (Pull side)	3-3/4" (95mm) behind door required for 90° installation

Digital Experience, Please Read!

For the best installation experience, scan the QR code with your Smartphone or go to: alle.co/6400install
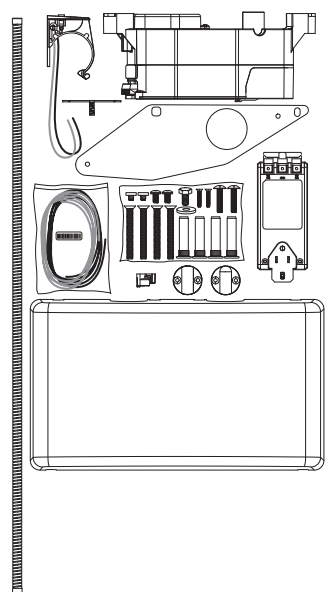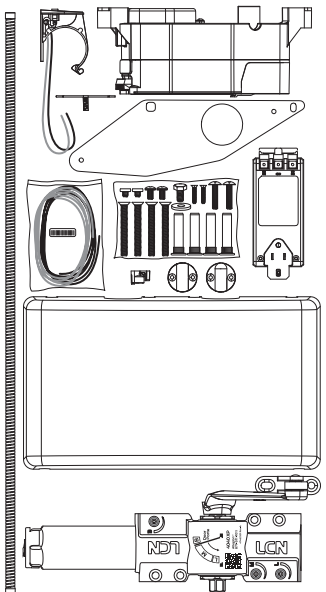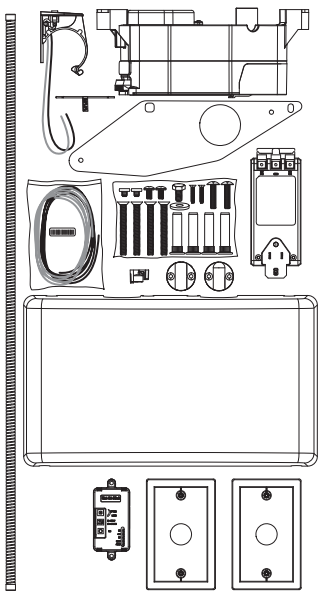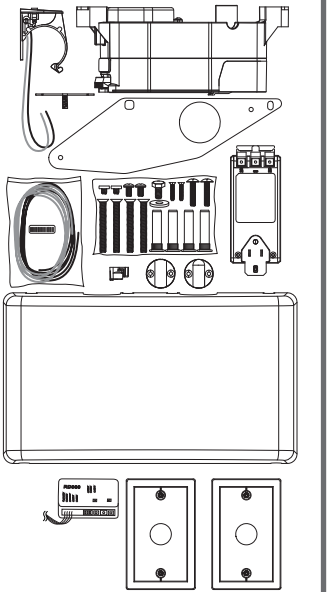
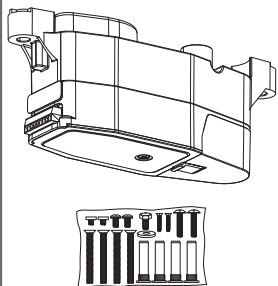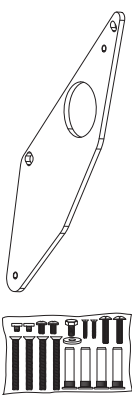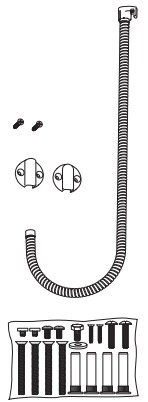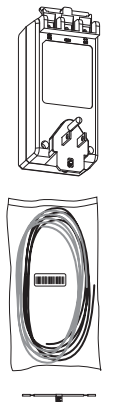This will give you access to specialized interactive installation instructions as well as specific product information
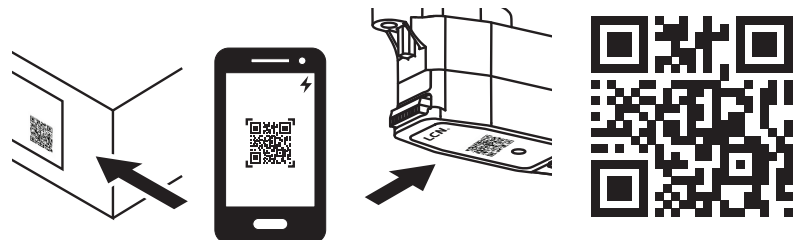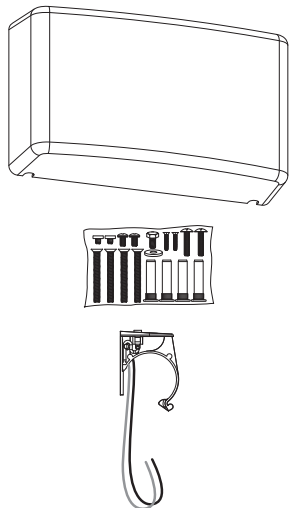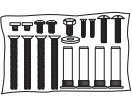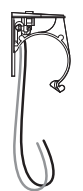
Customer Service
1-877-671-7011   www.allegion.com/us

Kits & Replacement Parts

MODULE KIT	MODULE & CLOSER KIT	MODULE & BATTERY ACTUATOR KIT	MODULE & HARDWIRED ACTUATOR KIT
6440	6440XP	6440-2210	6440-3813W

Replacement Parts

MODULE	MOUNTING PLATE	DOOR LOOP	WALL ADAPTER	COVER	SCREW BAG	I/O BLOCK	COVER INSERT
							W/SWITCH AND HARNESS ASSEMBLY
6440-MD	6440-10	6400-459	6400-470	6440-72	6400-20	6400-441	6440-54B

NOTICE
#3 Phillips screwdriver required for all module fasteners

⚠ CAUTION ⚠
Be sure to install all Safety, Traffic Control, and Instruction Labels onto the door, as required.

⚠ WARNING ⚠
Always disconnect main power or disable motor via switch prior to servicing or cleaning.

⚠ CAUTION ⚠
Do not modify product in any manner including physical addition of non-approved accessories. Consult LCN Factory Support for inquiries.

⚠ CAUTION ⚠
This operator is for indoor use only.

⚠ CAUTION ⚠
Use only LCN supplied fasteners and do not reuse fasteners.

1 Closer Orientation

1a This unit is usable with multiple closer configurations. Pull side orientation is shown in these instructions. See digital instruction for other orientations if neccessary.

Parallel arm (PA)

Top jamb (TJ)

Pull side

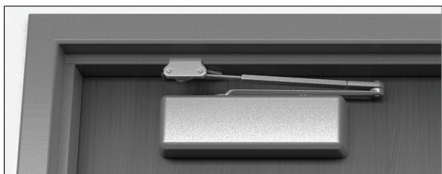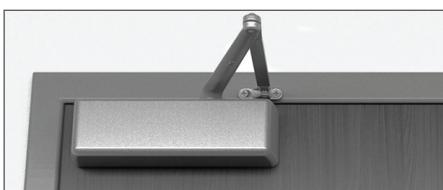If your kit includes closer see Installation Instructions included with device. Refer to the appropriate dimensional mounting template for closer and arm mounting locations. Install closer per appropriate instructions before going to the next step. Use Through Bolts and Pinion Screw referenced in steps 4 and 5.

2 Pre-Installation checklist:

- Inspect closer installation. Ensure the closer body is an LCN 4040XP or 4041, a Regular arm has been installed, and the closer has been installed according to one of the mounting templates.
- Check closer spring settings using the Green Dial. Set spring to Size 2, 3, or 4 as required. If higher closing forces are required, Power Boost may be enabled on the 6440 to provide additional closing force.
- Open the door manually and allow the closer to close the door. Ensure the door opens and closes smoothly. Adjust hydraulic valves for desired closing speed, if necessary.
- Inspect all fasteners on the 4040XP and ensure all are secure.
- Refer to chart below if using user-provided wiring:

Distance (one-way) [ft]	Minimum Wire Gauge (AWG)
50	20
80	18

3 Remove existing cover and clip (will not be reused).
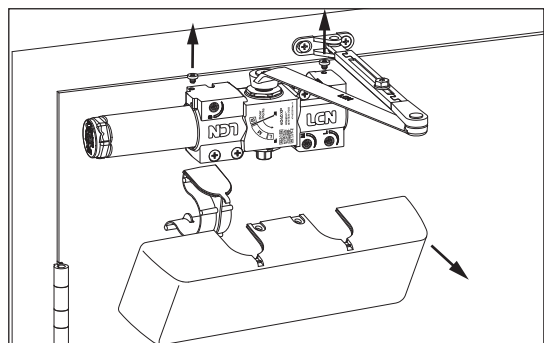
4 If closer is not installed with Through Bolts, reinstall closer using provided bolts and machine screws.

4a Operation as an auto-operator will cause additional stress on closer mounting. More secure mounting bolts are included for use.
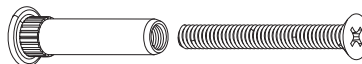
5 Replace pinion screw with more secure screw and washer provided.

Torque spec: 130 in-lb min.
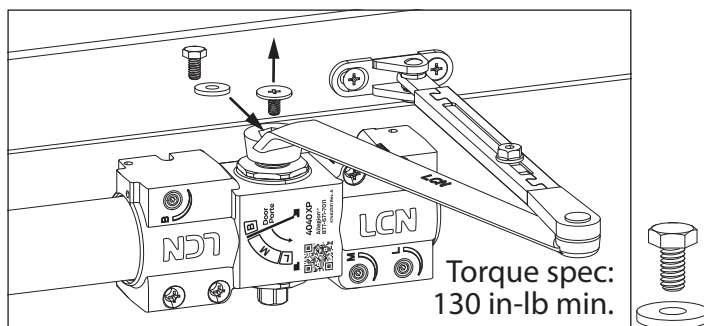
6 Install mounting plate.

Torque spec: 30 in-lb min.
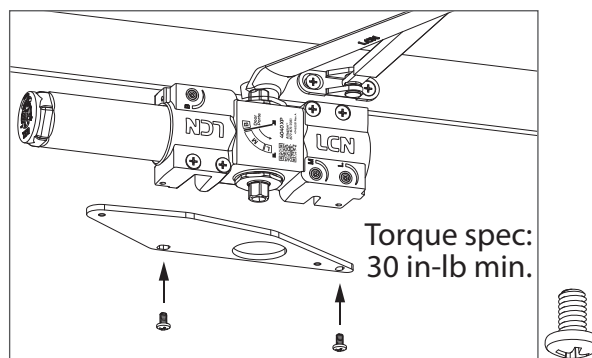
6a Ensure that side of plate with mounting holes is flush and square with door.
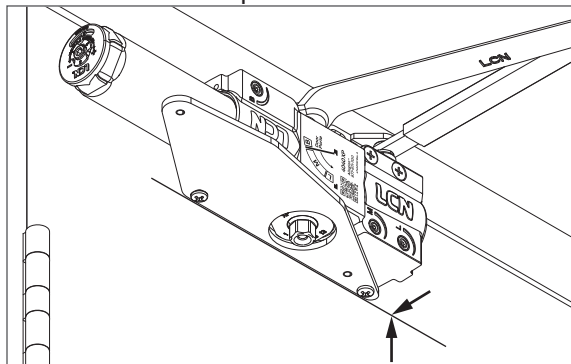
7   Push end of door loop into hook until it snaps in place.

ⓘ **Note: door loop not used in top jamb mounted closer or if using Von Duprin EPT-2. See Step 8 for further information.**
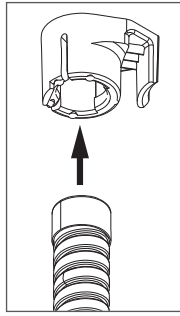
7a   Hook door loop to module on end closest to hinges and on side toward door face.
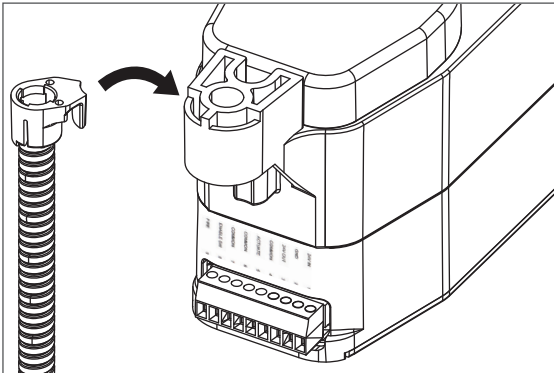
8   If using Von Duprin EPT-2

Door loop will not be used.

Steelcraft Door Notes:
• For use with Polystyrene & Honeycomb doors
• NOT applicable for Temp Core, Poly Core, or Steel Stiffened doors
• Door will need to be ordered for either pull side or push side applications (conduit is ran differently for each application)
• Installer to fish wire from EPT location to closer box
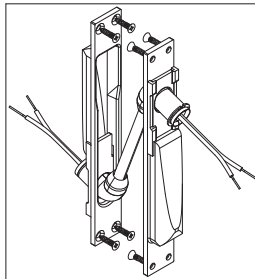
Republic Door Notes:
• For use with Polystyrene, Honeycomb, & Steel Stiffened doors
• NOT applicable for Temp Core or Poly Core doors
• EPT location is 6" below bottom of top hinge
• Installer will need to run ~1' of conduit from EPT location to closer box

8a   Parallel Arm (PA) Door Template

Hinge Edge

5 5/8"(Y)

Ø 1/2"

14 3/4"
(X)

(*Not printed to scale)
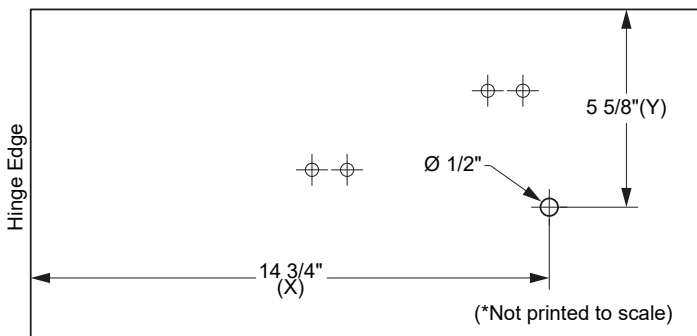
8b   Pull Side Door Template

Hinge Edge

3 7/16" (Y)

Ø 1/2"

4 1/2"
(X)

(*Not printed to scale)
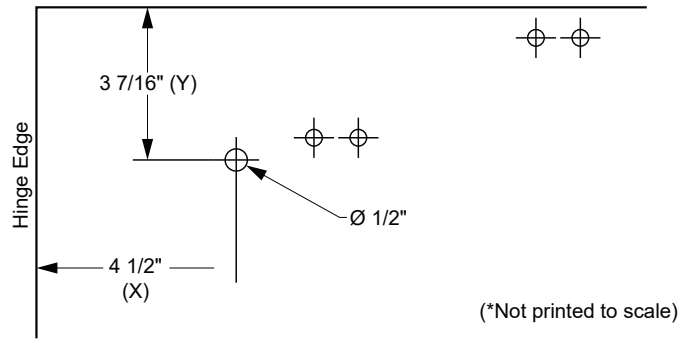
9   Install gearbox using screws provided. Ensure gearbox sits flush with the mounting plate and closer body.

Torque spec:
30 in-lb min.
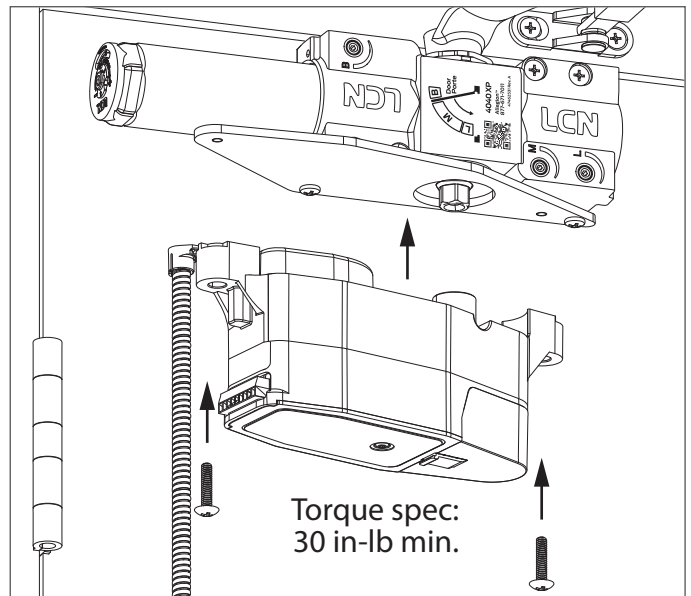
ⓘ **TIP: open door slightly to rotate closer pinion to aid alignment of hex coupler.**

Ensure that the pinion is fully engaged and the module is fully seated on the plate by hand before installing the screws.

ⓘ **IMPORTANT: do not force module onto pinion or use screws to force module flush to plate. Not seating properly may indicate an issue with your door mounting surface or closer installation.**

9a   Ensure gearbox is flush with mounting plate and closer.
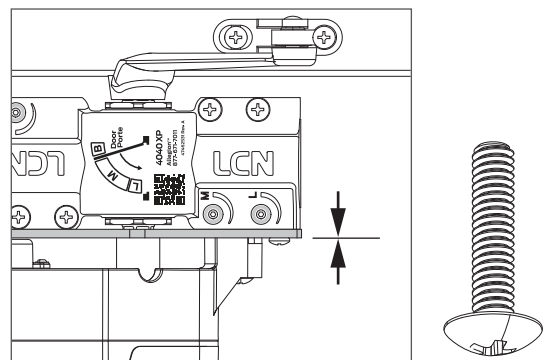
10 Snap motor enable switch assembly onto closer spring tube so it will line up with opening in cover.
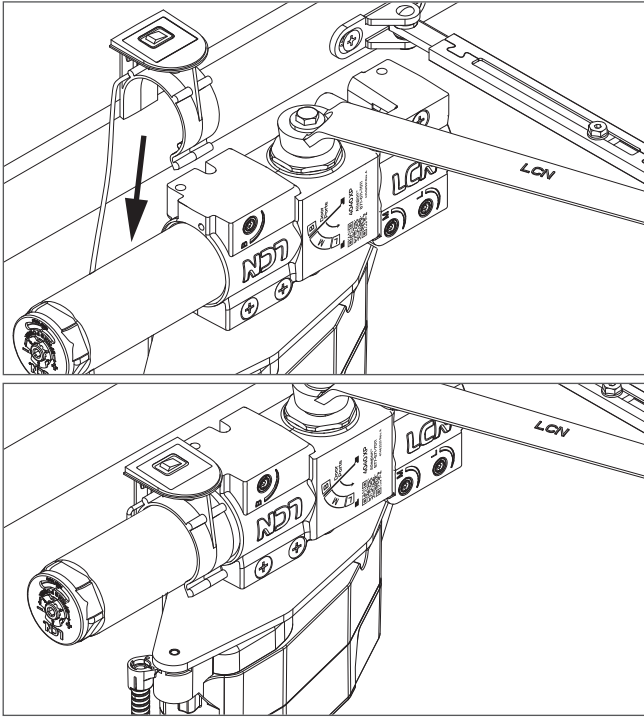
11 If using wireless actuators, attach receiver inside cover area using supplied adhesive strip.
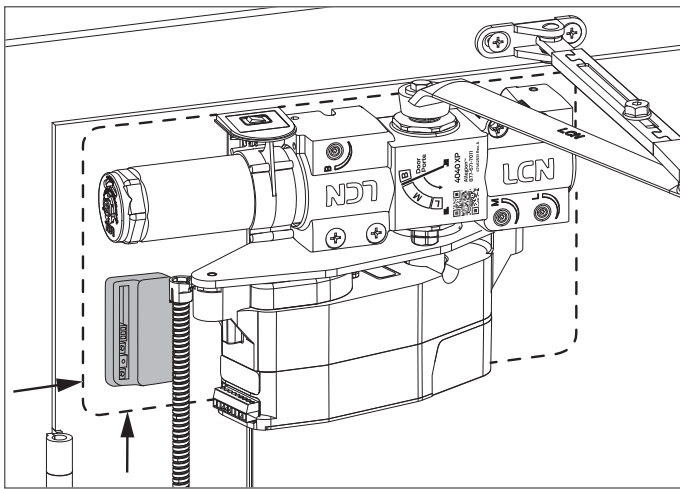
12 Route wiring through door loop.

12a Route wires for power and if used, also route wires for wired actuator and fire system. Leave enough wire to allow for flexing and freedom to connect to the device.

12b 30 feet of power wire is included with unit, trim excess before connecting.
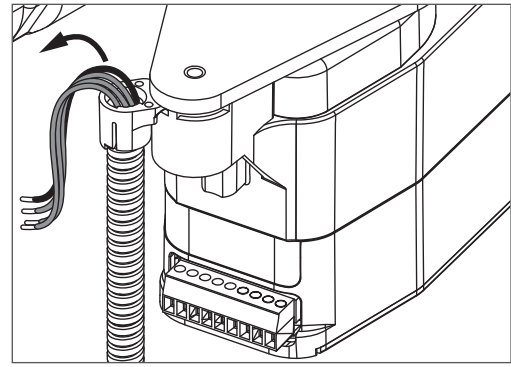
13 Attach other end of door loop to frame or wall.

13a Use appropriate endcap for thru frame or surface wiring.

Surface Power   Thru Frame or Wall Power

or

OR

DOOR FRAME

DOOR

Parallel Arm 8 ½ ± ½" Ref.

Pull Side 6 ½ ± ½" Ref.

13/16"
13/32"

Drill 5/16" hole (through-frame wiring only)

3/8"

Drill 7/64" holes for #6 self-tapping screws - 2 places

1 ¼ ± ½" Ref. located from edge of frame face
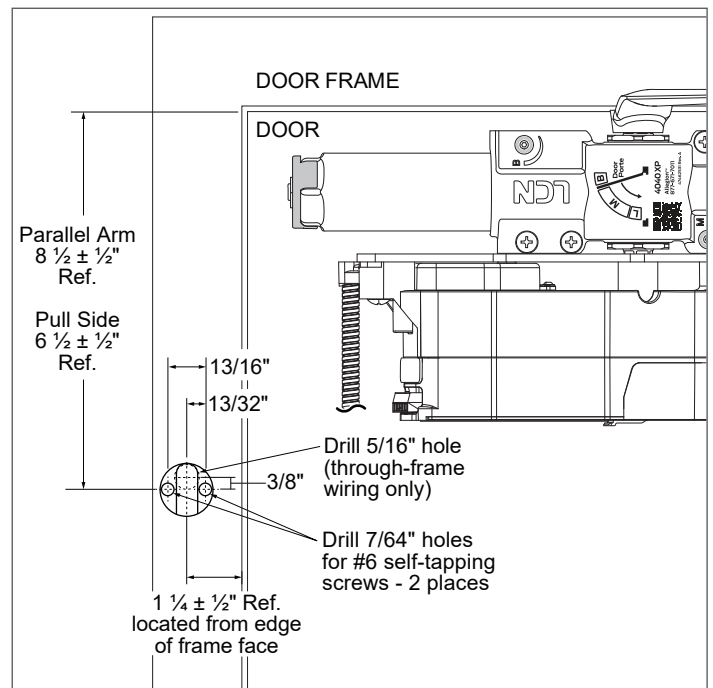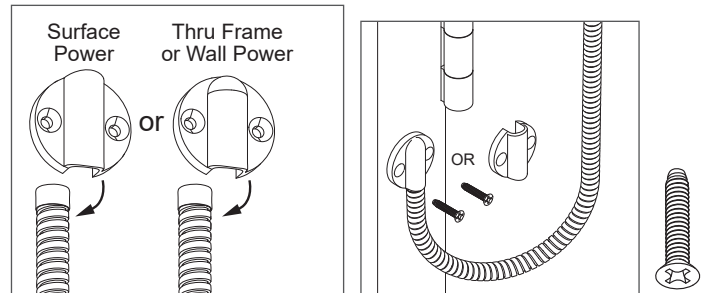
ⓘ **For surface wire run, conduit to be supplied by installer.**

ⓘ **For PA application, attachment to adjacent (door direction) frame face is recommended.**

ⓘ **For Pull Side drywall fastening, ensure appropriate anchors are utilized or affix to blank wall plate for secure fastening.**
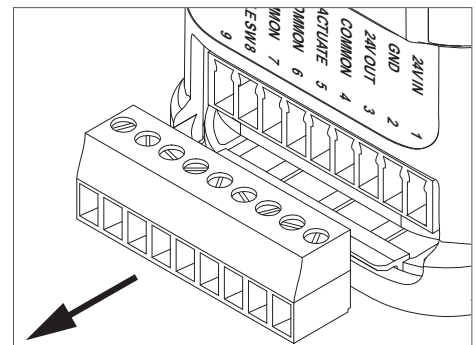
14 Connect wiring to terminal block for power, motor enable switch, actuator and fire options.

ⓘ **See appropriate wiring diagram below.**

14a For ease of connection, remove terminal block before connecting wires.

ⓘ **TIP: to remove terminal block easier pull one side first.**

14b Use small flathead screwdriver to lock wires into terminal. Note, after locking wires into terminal block, gently tug them to ensure they are secure.
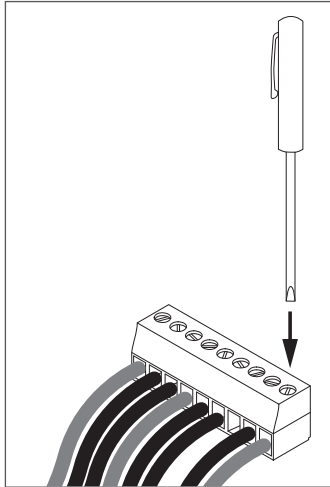
14c If no fire system is installed, you MUST use the included Fire Jumper and install across the 6 and 9 terminal positions. See below for wiring diagrams.

PLACE B.W PINS 6 & 9
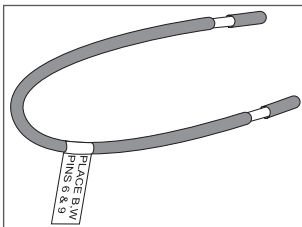
15 Typical Wiring diagrams

15a Diagram 1 - Powered via 24VDC power supply or wall adapter, wireless receiver (powered by pin 3, actuate at pin 5), fire jumper, motor enable switch.

Terminal Block

24V IN	1	+ Wall Adapter or 24VDC Power Supply
GND	2	−
24V OUT	3	+
COMMON	4	−
ACTUATE	5	C Wireless Receiver
COMMON	6	NC
COMMON	7	NO
ENABLE SW	8	Motor Enable Switch
FIRE	9	Fire Jumper
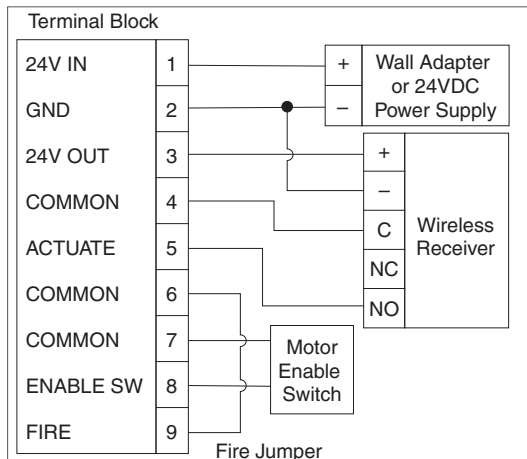
15b Diagram 2 - Powered via 24VDC power supply or wall adapter, wireless receiver, fire system, motor enable switch.

Terminal Block

24V IN	1	+ Wall Adapter or 24VDC Power Supply
GND	2	−
24V OUT	3	+
COMMON	4	−
ACTUATE	5	C Wireless Receiver
COMMON	6	NC
COMMON	7	NO
COMMON	7	Motor Enable Switch / Fire Alarm Relay Contact
ENABLE SW	8	NC
FIRE	9	C NO
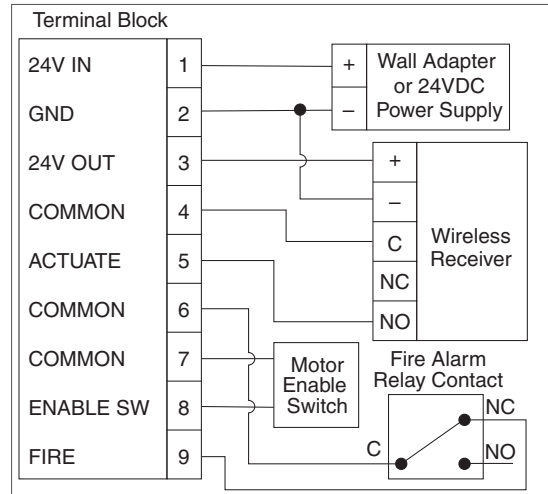
NOTICE

Wire either the Fire Jumper or a NC fire system, NOT BOTH

16 When using wall adapter connect wiring as shown in Typical Wiring Diagrams.

16a For wall adapter ensure wires pass through stress relief slots.

DC GND DC
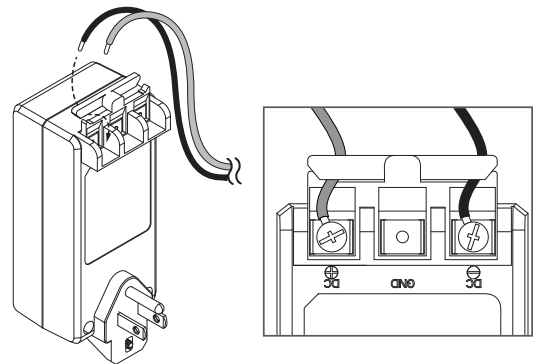
16b Remove wall plate screw and use security screw to secure adapter to outlet plate.
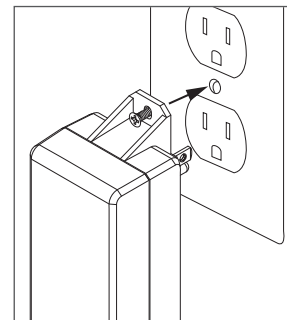
⚠ **WARNING** ⚠

Power wires are live once plugged into wall outlet, disconnect power source before servicing any power connections.

17 — User Interface, Calibration, and Factory Reset

17a To access the user interface, remove black user interface cover on unit.

17b User Interface

If actuator is connected and activated
Blue LED = "ON"

Solid Red = Uncalibrated
Solid Blue = Calibrated
Blinking Blue = Calibration in progress

If fire signal detected
Blue LED = "ON"

●Pwr ●Cal ●Actuate ●Fire ●Er

Cal 1. Ensure door is closed
2. Press **Cal** 2x to begin
3. Move door to angle you want, wait for 🔊

If power is connected and voltage in proper range
Solid Blue = "ON"
Blinking Blue = See troubleshooting section

Solid Red or **Blinking Red** = See troubleshooting section

H ● M ● L ●
Opn Spd (1-5)   **Pwr Bst**   **Lng Hld Opn**

Set door opening speed. (5 available) L, L/M, M, M/H, H

LED "OFF" = 1 sec Hold open
LED "ON" = 5 sec Hold open
LED "Blink" = See note 17e

LED "OFF" = Power Boost disabled
LED "ON" = Power Boost enabled

17c To Perform Calibration or Recalibration
1. Manually open door and allow to close under control of the closer. Verify desired closing speed and adjust closer if necessary.
2. With door fully closed, press **Cal** button 2 times. You will hear a double beep and the Cal LED will start **Blinking Blue** to indicate that you are in calibration mode.
3. Open the door to the preferred full open position. This position should between 70 and 110 degrees, and at least 0.5 inches away from a wall or other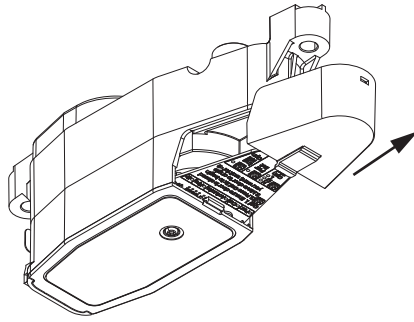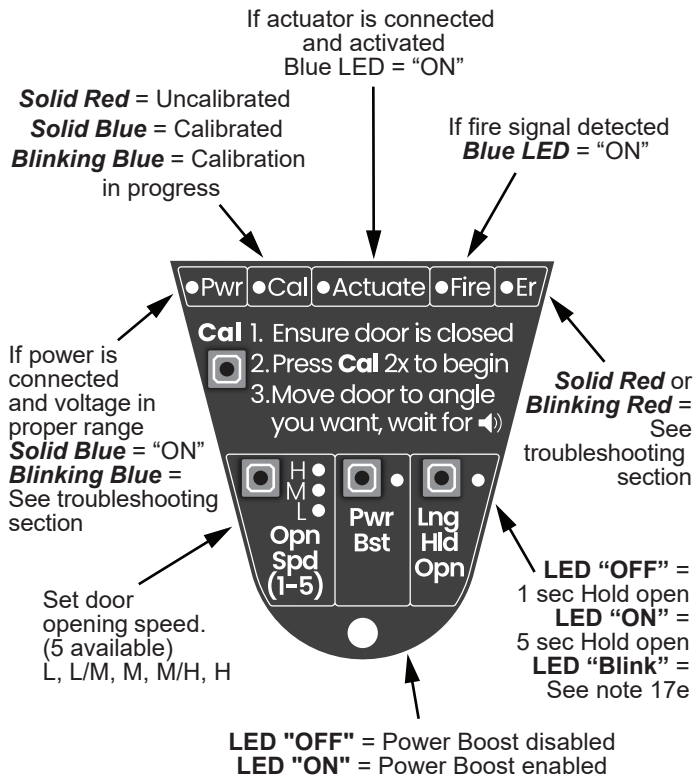 physical stop. Hold the door still at this preferred full open position for 2 seconds, until you hear a confirmation beep. The Cal LED will turn **Solid Blue** with successful calibration, and calibration mode is exited.

ⓘ **Note: Calibration mode is also exited upon an unsuccessful (out of range) calibration attempt, after a 30 second timeout, or if the Cal button is pressed a third time. In these cases, the preferred full open position will revert back to its previous setting.**

ⓘ **Note: User settings cannot be changed until door is calibrated.**

ⓘ **Note: If the Power Boost setting is toggled from ON to OFF, the calibration process should be redone.**

17d To Perform FDR (Factory Default Reset) To reset the unit to its factory default settings, press and hold the **Cal** button for 7 seconds. The unit must NOT be in calibration mode. Upon successful FDR, the startup LED and buzzer sequence will be played.

17e To set Custom Hold open, press and hold "Lng Hld Opn" button and count beeps (30 beeps maximum). When the number of beeps equals the number of seconds of desired hold open, release the button. A flashing LED indicates a custom hold open time has been set. Actuate unit to verify door holds open for desired time. Press the Lng Hld Opn button again to select a different custom hold open time. A quick press of the button will return to the default 5 second hold open.

18 — Operational Checks

18a After completing calibration ensure the Pwr and Cal LEDs are Solid Blue and the Actuate and Fire LEDs are OFF.

18b Toggle Motor Enable Switch to "ON" ("Enable") position.

18c Actuate door. Measure the opening and closing times and forces to ensure they conform to BHMA requirements. Table below lists the maximum door opening speeds specified by ANSI 156.19 for Low - Energy Door Operators.

Maximum Door Weight in Pounds	Fastest Opening Time 0 to 80 36" Door Width
100 lbs.	3.0 sec
125 lbs.	3.5 sec
150 lbs.	3.5 sec
185 lbs.	4.0 sec

If necessary, change Opening Speed in the User Interface section as appropriate to increase or decrease the opening time. If necessary, adjust the hydraulic valves to increase or decrease the closing time.

18d Test fire system, if applicable, and ensure the door. may not actuate if a fire signal is active. Does not apply if using the Fire Jumper

18e Manually open the door and ensure door opens smoothly and closes completely. Double-check that all fasteners have been tightened and that all connections are secure.

18f Put user interface cover back on.

ⓘ **NOTE: Repeat this section periodically as part of your facility's preventive maintenance plan.**

19 — Fasten the cover onto the unit.
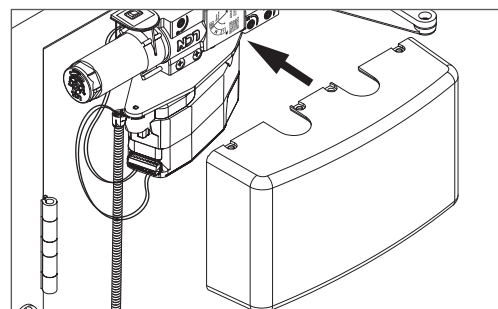
19a Ensure that door loop or wires pass through the opening on opposite side of cover.

20 Troubleshooting

20a   ISSUE: The door does not open at all.
- Verify that the Power LED is *Solid Blue*. If the Power LED is *OFF*, this indicates that the unit is not receiving power. Please verify the power source.
- Verify that the Actuate LED turns *Solid Blue* when attempting to actuate. This LED will light up when an actuation signal is received. If it is not lighting, please check your actuation system to be sure that it is connected properly and fully functional.
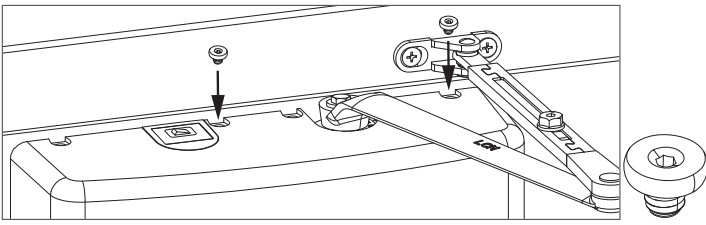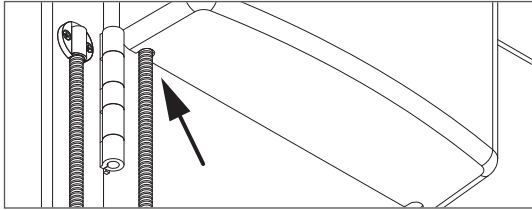- If three beeps sound when attempting actuation, verify the following:
  - Cal LED is *Solid Blue*. If the LED is *Solid Red*, please re-calibrate the unit.
  - The Motor Enable Switch is toggled to "ON" ("Enable"). If the motor drive has been disabled by the switch, the motor will not run.
  - The Fire LED is *OFF*. If the Fire LED is *Solid Blue*, this indicates that the unit is receiving a disabling signal from the existing fire system. If the jumper is being utilized, then please verify that the jumper is properly installed.
  - The Power LED is *Solid Blue*. If the Power LED is *Blinking Blue*, then the supply power has been detected as out of range. In this case, the Error LED will also blink. Please verify the power source.
  - The Error LED is *OFF*. The Error LED will be *Blinking Red* when the module has detected a recoverable motor fault condition. This will often resolve if the module is power cycled and re-calibrated. If that does not resolve the issue, or if the Error LED is *Solid Red*, please contact customer service.
  - Verify that the door isn't being prevented from movement by some sort of physical obstruction or mechanical binding. This could include a previously existing latching mechanism that is not supported by the 6440 product.

20b ISSUE: The door opens too slowly or does not open fully.
- The 6440 will attempt a learning cycle if it has recently experienced a power loss. During this cycle, the L speed LED will be *Blinking Blue*, and the door will open slowly to check for obstructions. After successful completion, the door will return to the previously calibrated speed setting. If the module appears to be unable to complete this learning cycle, a re-calibration will resolve the issue.
- The door speed may need to be increased. If the low speed is not due to a learning cycle, there are several methods for increasing door speed. Please check the following:

- The user selected speed can be increased all the way to the H setting.
- The closer's spring setting can be decreased using the closer's adjustment tool.
- The closer's hydraulic backcheck can be adjusted using the closer's adjustment tool.
- Verify that there are no hidden obstructions preventing the door from mechanically operating.
- If there are no obstructions and increasing the door speed does not resolve the issue, please attempt a re-calibration.

20c ISSUE: The door closes too slowly or does not close all the way.
- Verify that the closer is adjusted properly. The spring settings or hydraulic settings may need to be adjusted using the closer's adjustment tool in order to ensure a full closure.
- Verify that there are no hidden obstructions preventing the door from mechanically operating.
- Consider enabling power boost if it is not already. Power boost helps overcome natural resistance close to the latch and may be utilized to ensure a full closure.

ⓘ **For any other operational issues, please call customer support.**

21 Release for Service

21a Verify components are in place and under the cover. Do not operate unit without the cover.

21b Remove all tools, installation equipment and debris from the vicinity of the door.

21c MANDATORY: Install required Low Energy Operator labels onto the door, as required. Failure to do this will leave the INSTALLER LIABLE for any accidents that occur.

21d Give verbal instruction on how to properly operate the door to the owner or person in charge.

21e Give verbal instruction to the owner or person in charge on periodic inspection of the door for the following:
- Occasional damage
- Developing problems
- Minor preventative maintenance

21f Provide the owner or person in charge with a contact name and phone number to call for future service and maintenance.

21g Leave these printed instructions with the owner or person in charge.

Customer Service
1-877-671-7011   www.allegion.com/us

ALLEGION

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