Electric auto equalizers

In addition to the original pneumatic drive system, LCN offers Automatic Electronic Equalizers. People moving through a door can use it as a normal rack and pinion door closer or, at the touch of a button, open the door automatically. An integrated digital control suite provides all electrical control functions. These self-contained units are suitable for use on single leaf doors or pair of doors where each leaf is equipped with an operator. The operator provides all the control and power elements into a single operator package, only some actuators are required to complete the system. Two surface mount models available — the 4630 mounts on the pull side of the door and the 4640 Series mounts on the push side of the door. Integrates a modified heavy-duty 4040XP Series cast iron cylinder.

Electric auto equalizer systems

- Exceeds proposed ANSI cycle test standard of 300,000 full load automatic operating cycles
- Power operation plus full door control
- For all applications, single or multi-door projects
- Opening time to back check no faster than 3 seconds
- Opening time 4 seconds or more to fully open
- Must remain fully open for at least 5 seconds
- Closing time from 90° to 10° no faster than 3 seconds
- Less than 15 pounds-force to stop door's motion
- Kinetic energy must not exceed 1.25 lbf-ft
- In event of failure; less than 15 lbf. to release latch, less than 30 lbf. to put door in motion, less than 15 lbf. to fully open door systems

Digital control box

Provides exceptionally precise control of a large range of built-in functions combined with superior durability and performance. Visual indications and digital readouts of all control function settings and activity make adjustments easy, fast and accurate.

Dual independent program memories

Each unit is pre-programmed to factory default settings. The installer can adjust the unit to meet the job site requirements. These field settings are locked into the computer's memory. Any subsequent field adjustments replace the original field adjustments. The factory settings are always retained in memory and can be recalled to replace the field settings in just seconds, restoring the unit to its original programming.

On-board diagnostics

A sophisticated built-in diagnostics program monitors the system microprocessor, power supplies, drive system and actuators circuitry. This reduces the time required to make sure the installation is complete and correct.

On-board power supply

Provides both 12V DC and 24V DC outputs to power card readers, manual actuators and other peripherals.

"No Destruct" drive system

Specially designed motor and clutch assembly reduces the chance the operator will be damaged in an abusive application. If a vandal tries to force the door closed while it is trying to open, the clutch mechanism prevents damage. The door has improved control because the heavy duty 4040XP closer is always operable.

Electronic circuit protection

The high voltage input circuit is protected by a one amp slow blow fuse. The low voltage output circuits by self-resetting fuses.

Visual function indicators

LED's allow direct observation of these inputs:

- Input power
- Fire alarm input
- Normal trigger (actuator) input
- Sequential trigger (actuator) input
- Hold open/alternate action (actuator) input
- Lockout timer
- Safety sensor (clear) input
- Safety sensor (active) input

Programming mode

Allows tailoring of the following functions to meet specific site conditions:

- Hold open time
- 90° Slow down time
- One shot input [on or off]
- Exterior mode [on or off] function to accommodate momentary resistance, like wind gusts, during the opening swing
- Electric strike delay timer
- Electric strike 3 second power function [on or off]
- Sequential trigger delay timer
- Alternate action timer
- Lockout timer

Standards, listings and approvals

- UL listed for Fire Door Operator (GUJY) and Door Operator System (FDDR) file R18222
- Tested and certified under ANSI Standard A156.19 (Refer to Section 2.1 and consult factory for details)
- ANSI Standard A117.1, Section 4.13.13
- ADA law, Section 4.13.12
- Listed for positive pressure plus UL 10B and UL 10C
- Wiring is compliant with both UL 325 and the NEC (Separation of high and low voltage)
- Consult the factory for other listings such as; State and Local Government regulations
- UL 10 C Listed for Fire Rated Door Operators with Automatic Closers, File No. (GUJY)

Warranty

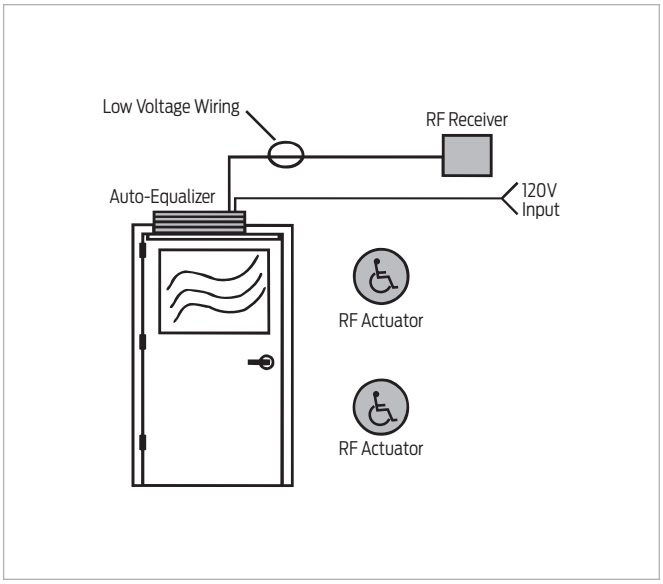
2 year limited warranty. See General Information catalog for complete details.

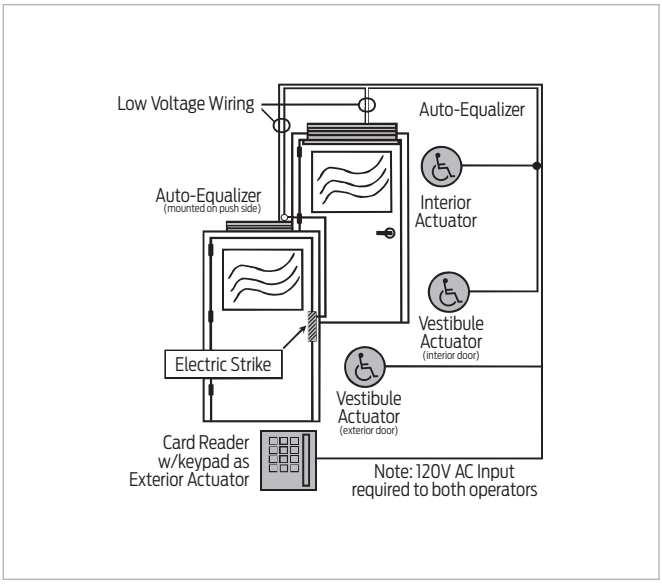
Maintenance

- For best performance, mount operators according to the LCN installation instructions
- Periodic visual inspections are recommended
- No service contracts

Wiring diagrams

This page illustrates examples of typical electric LCN systems. Please consult your local RSO representative or LCN for assistance with specific installations and material requirements.





Single door system (wireless)

- An Interior Door
- No guide rails or safety devices
- Free swinging (or dogged) door

How it works

- Wireless RF actuators and receiver, powered by the auto equalizer simplify installation and minimize installation costs
- For automatic door operation, touching either actuator signals the receiver and controller module to open the door to 90°
- The door is held there until the system times out, then full spring power is applied to reliably close and latch the door.
- Door opening speed and hold open time are adjustable on the controller
- Closing power and speed are adjustable on the cylinder assembly
- If not actuated, the Auto Equalizer functions as a full featured door closer

Bill of materials

Qty	Part number	Description
1	4631	Auto equalizer
2	8310-3856WS	Wireless actuator, wall mount and surface, logo, 4 1/2" round
1	8310-865	Wireless receiver

Vestibule door system (wired)

- Exterior and vestibule doors
- Sequential operation
- No guide rails or safety devices
- Controlled access, free egress

How it works

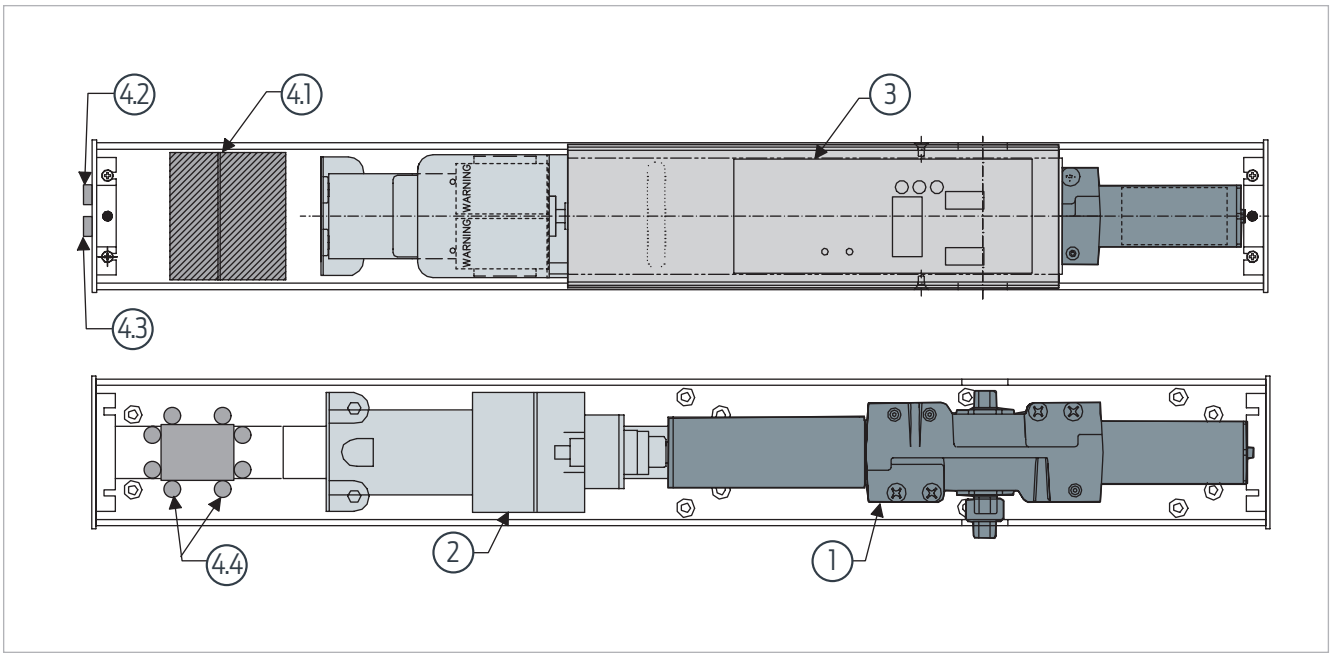
- This installation provides both accessibility and security for building occupants
- The Auto Equalizer controller module provides both the power and coordination for card reader and electric strike applications
- A built-in delay allows the strike to release before the door begins to open
- Two interconnected Auto Equalizers provide sequential operation in both directions
- Vestibule actuators allow single door ingress/egress from the vestibule as needed

Bill of materials

Qty	Part number	Description
1	4642	Auto equalizer (exterior)
1	4631	Auto equalizer (interior)
3	8310-856	Hard wired wall mount, logo, 4 3/4" x 4 3/4"
	Other products from Von Duprin and Locknetics	

Note: An EL device requires a separate power supply. If not actuated, the auto equalizer functions as a full featured door closer.

Electrohydraulic powered systems



1. Door closer assembly
- Based on a heavy duty 4040XP, cast iron cylinder with allweather fluid for consistency and reliability
- Rugged drive mechanism provides the connection to the electric motor assembly
- Fully adjustable, independent hydraulic regulation controls the door to minimize the chance of damage to the door and frame assemblies

2. Electric motor/clutch assembly
- Highly efficient motor combined with a custom designed gear system provides exceptionally quiet and smooth operation
- Special clutch transmits the power and provides a unique function that prevents damage to the operator, door and frame if a vandal forces the door closed during the powered opening swing

3. Digital controller module
- Digital control suite
- Dual independent program memories
- On board diagnostics
- Visual function indicators
- Adjustable programming modes

4.X Field wiring

4.1
- Input power; 120V AC @ 1.5 amperes
- On-board, low voltage power supply provides both 12V and 24V DC @ 1.0 ampere (maximum combined load) for LCN actuators, RF receivers, and electric strikes or magnetic locks
- Slow blow and self-resetting fuses protect input and output power from voltage spikes
- Terminal strips simplify field wiring

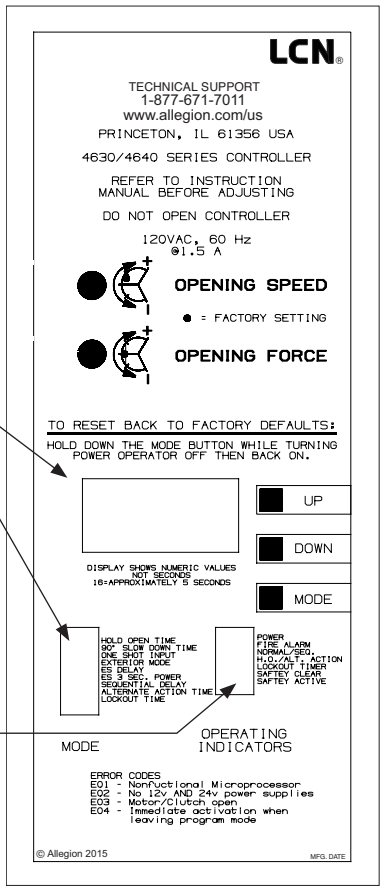
4.2
- On/Off switch

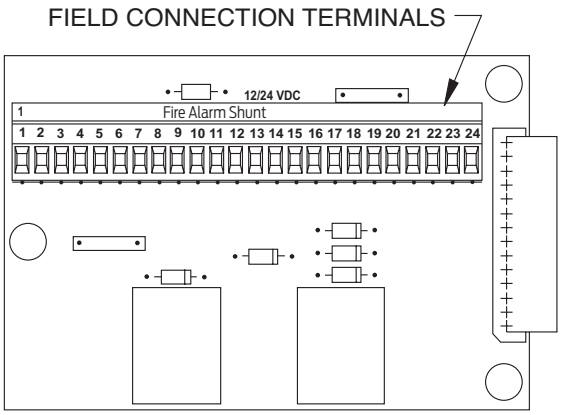
4.3
- Hold open switch

4.4
- Separate conduits for high voltage power and low voltage power and signal wiring meet UL and National Electrical Code requirements

Control box and electrical connections

Digital control box	
Opening speed adjustment	Limited to a minimum of 3 seconds to back check (approx. 70°)
Opening force adjustment	Maximum of 15 lb-f to stop door swing
Time display	Displays numeric value relating to timing adjustments (16 = approx. 5 seconds)
Mode indicator	Indicates programming mode currently being displayed
Up button	Increases time or changes from OFF to ON when programming
Down button	Decreases time or changes from OFF to ON when programming
Mode button	Advances through programming setups on mode Indicator
Operating indicators	Displays operating information about internal functions and external hardware

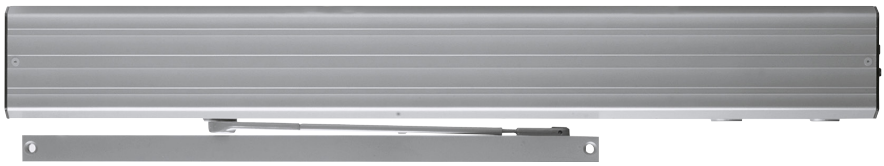




Low voltage (Class 2 NEC) electrical connections	
Function	Terminal
Actuator - Normal Input (N.O.)	16 and 17 or 18 and 1
Actuator - Sequential Input (N.O.)	8 and 19
Actuator - Alternate Action (N.O.)	15 and 17
Actuator - Continuous (N.O.)	6 and 17
Sequential Output	9
Stop Side Safety (N.O.)	19 and 2
Swing Side Safety (N.O.)	19 and 21
Fire Alarm Contact (N.C.)	13 and 14 (fire shunt)
Auxiliary Relay Contacts (5 amp max)	10 - Common 11 - N.O. 12 - N.C.
E.S. Relay Contacts (5 amp max)	22 - Common 23 - N.O. 24 - N.C.
12V DC and 24V DC Negative*	2, 4, 13, 17, and 19
12V DC Positive*	5 and 7
24V DC Positive*	1 and 3

* 1 Amp max load between 12V and 24V DC outputs.

4630 Series



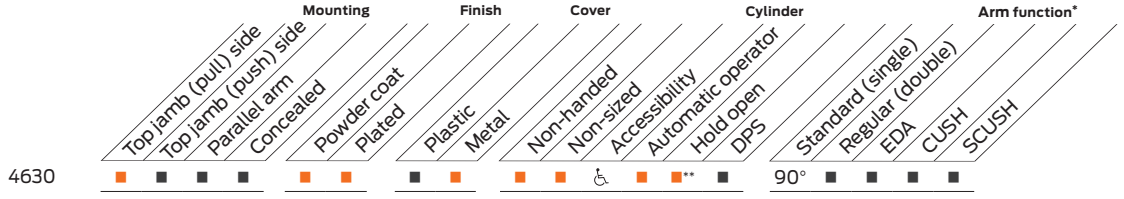
The 4630 auto equalizer is LCN's smart and reliable electrically powered low-energy automatic operator. It provides easy access for people with disabilities, or the elderly. Designed primarily for manual opening applications that occasionally required automatic opening.

Features

Certifications	Grade 1 - ANSI A117.1, A156.19, UL 10C, UL 325/228, ADA, 100 Hour Salt Spray, Meets BAA - Buy American Act
Body construction	▪ Cast iron body ▪ Full complement bearing ▪ 1 1/2" diameter piston ▪ 3/4" diameter double heat treated pinion journal
Fluid	All weather fluid
Handing	Non-handed
Size	Adjustable spring size 1-4
Warranty	2 years

Cover	Metal Cover (MC)
Fasteners	Wood and Machine Screws (WMS)
Mounting	Top jamb (pull side)
Arms	Standard single lever arm and track
Finishes/colors/ powder coat	▪ 689 Aluminum ▪ 690 Statuary Bronze ▪ 691 Light Bronze ▪ 693 Black ▪ 695 Dark Bronze ▪ 696 Brass ▪ Custom colors optional ▪ Optional SRI primer - powder coat only ▪ Optional plated finishes* *End caps are black

Special templates | Customized installation templates or products may be available to solve non-standard applications. Contact LCN Product Support for assistance.

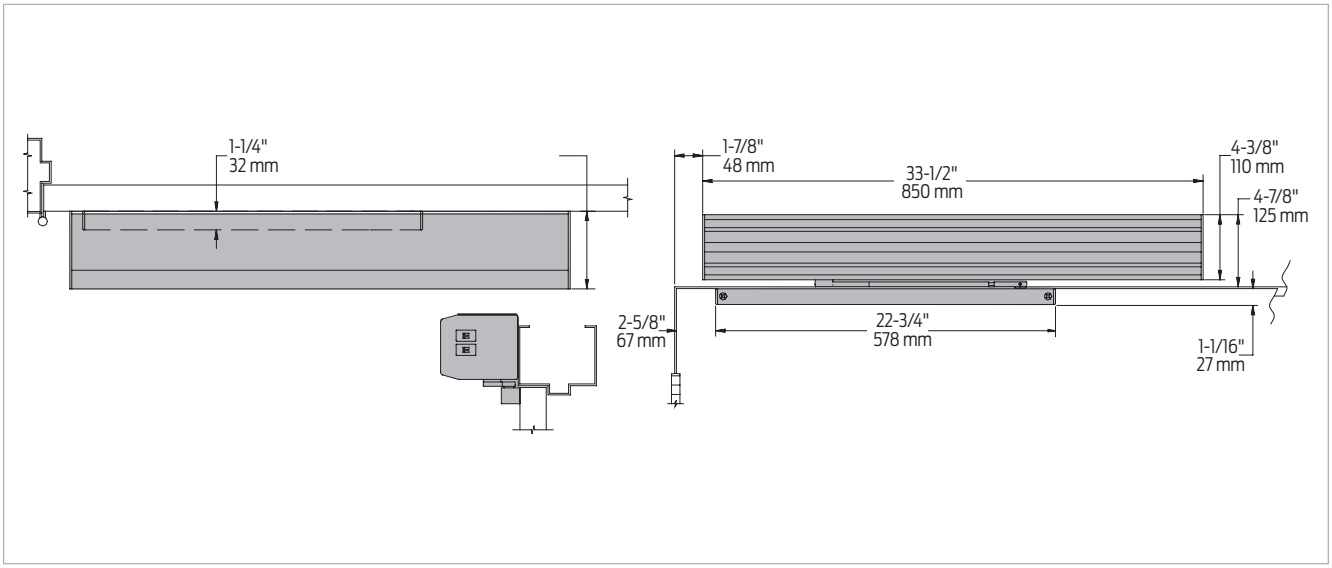


■ Available
■ Not available

♿ Meets ADA requirements (power mode).
* See individual series for maximum manual opening.
** Switch provided for continuous Hold Open (4630 only).

Mounting details

Top jamb (pull side) mounting



Butt hinges	Should not exceed 5" (127 mm) in width
Auxiliary stop	Recommended
Reveal	Should not exceed 1/8" (3 mm)
Top rail	Minimum 1 1/8" (29 mm)
Head frame	Minimum 2" (51 mm)
Opening time and force	▪ Variable by adjustments to the electronic control module located on the operator assembly ▪ Maximum hold open time adjustable up to approximately five minutes
System diagram	See page 33 for typical system wiring and pages 34-35 for electrical data
Maximum opening	▪ Templating allows 90° power opening and 170° manual opening ▪ Please note that many track style door closers are capable of allowing 180° of door swing ▪ Track style closers are at their weakest closing force at 180° ▪ Consult factory for applications where exterior or large/heavy door must swing 180°

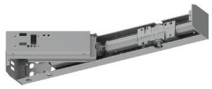
Notes:
- Actuators are sold separately, see pages 100-117
- Comes with a digital control box utilizing a 4040XP heavy duty door closer with on-board diagnostics and power supply
- Has a factory default memory that include "No Destruct" drive system
- Guard rails or safety mats not required
- 4630 has easily accessible switches to provide on/off and continuous hold open functions
- CS options provides concealed on/off power switch
- Control module provides timing and sequential door functions, electric strike controls and adjustments for opening speed and force

Accessories

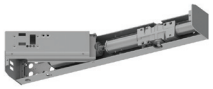
Cylinders



4631-3971
Cast Iron Cylinder Assembly (CYL)
- Non-handed
- Standard

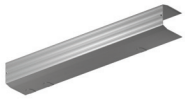


4631-3071
Cast Iron Cylinder Assembly (CYL)
- Non-handed
- Mounting plate
- Includes 4630-3454 Motor Clutch, 4630-3180 I/O Board Assembly and 4630-3462 Controller
- Standard



4631-3071CS
Cast Iron Cylinder Assembly (CYL)
- Non-handed
- Mounting plate
- Includes 4630-3454 Motor Clutch, 4630-3180 I/O Board Assembly and 4630-3462 Controller
- Same as a 4630-3071 assembly except on/ off switch is concealed in endcap and no hold open switch is included (Separate key switches suggested)
- Optional

Covers



4630-72MC
Metal Cover (MC)
- Non-handed
- Standard

Arm



4630-3077T
Standard Arm (STDTRKARM)
- Non-handed
- Track roller not included with arm

Tracks



4630-3038
Standard Track (STDTRK)
- Non-handed
- Standard

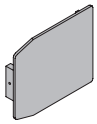
Installation accessories



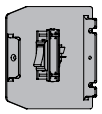
4630-3034
Track roller
- Quiet low friction roller assembly
- Shoulder dimension "X" = 1/8" (3mm)



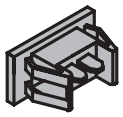
4630-334
Switch End Cap
- End cap (black powder coat finish only) with cut outs for installing on/off and hold open switches



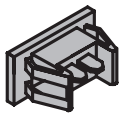
4630-334-2
Blank End Cap
- Black powder coat only



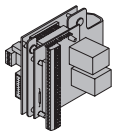
4630-334CS
Switch End Cap
- End cap and switch (black powder coat only) for concealed switch option



4630-3179-1
On/Off Switch Assembly
- Black rocker switch (plugs into high voltage PC board)



4630-3179-2
Hold Open Switch Assembly
- Black rocker switch
- Field wired to low voltage PC board



4630-3180
PC Board Assembly
- High and low voltage PC boards connected to mounting bracket



4630-3454
Motor/Clutch Assembly
- A geared assembly in an LCN automatic operator that incorporates a "no destruct" feature



4630-3462
Control Box Assembly
- Digital controller with built-in 12/24 VDC power supply
- Programming and timing functions are adjusted on controller



4630-3498-1
Ribbon Cable Connector
- 16 wire ribbon cable connecting PC board assembly to controller



4630-3498-2
AC Power Cable
- 2 wire cable to connect 120 VAC from PC board assembly to controller

Ordering information

How-to-order 4630 Series operators

1. Select finish

☐ Standard powder coat _____
Aluminum (689), Dark Bronze (695), Statuary Bronze (690), Light Bronze (691), Black (693), Brass (696).

Operator will be shipped with:

- Standard cylinder
- Metal cover
- Standard arm
- Track roller
- Standard track
- Wood and machine screws
  (unless options listed below are selected)

Operator options

Cylinder assembly

☐ Cast Iron Cylinder Assembly (CYL)
(concealed on/off switch)
(separate key switches suggested)

Finish

☐ Custom Powder Coat (RAL) _____
☐ Plated finish _____

Screw packs

☐ Through Bolt[1] Wood and Machine Screws(TBWMS)
☐ Torx Machine Screws (TORX)
☐ Through Bolt[1] and Torx Machine Screw (TBTRX)

Special template

☐ ST- _____

1. Specify door thickness if other than 1 ¾".

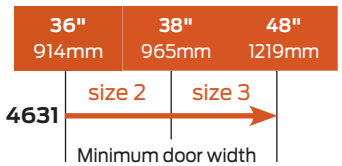
Table of sizes

- Non-Sized 4630 series cylinder is adjustable from size 1 through size 4 and is shipped set to size 3
- Closing power of 4630 Series closers may be increased 50%

Exterior (and vestibule) door width



Interior door width



→ Indicates recommended range of door width for operator.
Note: Minimum door width 36" (914mm).

4640 Series



The 4640 auto equalizer is LCN's smart and reliable electrically powered low-energy automatic operator. It provides easy access for people with disabilities, or the elderly. Designed primarily for manual opening applications that occasionally required automatic opening.

Features

Certifications	Grade 1 - ANSI A117.1, A156.19, UL 10C, ADA, 100 Hour Salt Spray, Meets BAA - Buy American Act
Body construction	▪ Cast iron body ▪ Full complement bearing ▪ 1 1/2" diameter piston ▪ 3/4" diameter double heat treated pinion journal
Fluid	All weather fluid
Handing	Non-handed
Size	Adjustable spring size 2-5
Warranty	2 years

Cover	Metal Cover (MC)
Fasteners	Wood and Machine Screws (WMS)
Mounting	Top jamb (push side)
Arms	▪ Regular Arm (REGARM), standard ▪ Long Arm (LONG), optional
Finishes/colors/ powder coat	▪ 689 Aluminum ▪ 690 Statuary Bronze ▪ 691 Light Bronze ▪ 693 Black ▪ 695 Dark Bronze ▪ 696 Brass ▪ Custom colors optional ▪ Optional SRI primer - powder coat only ▪ Optional plated finishes* *End caps are black

Special templates | Customized installation templates or products may be available to solve non-standard applications. Contact LCN Product Support for assistance.

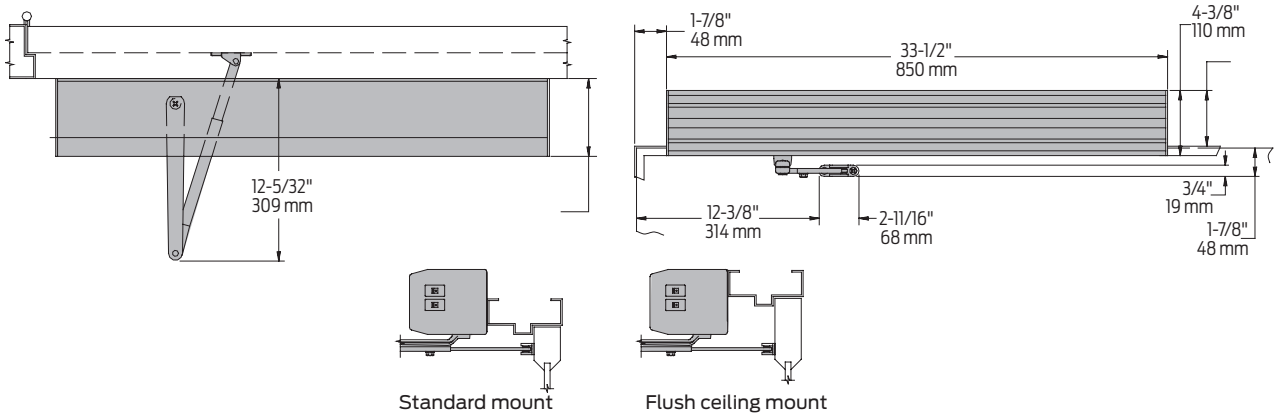
	Mounting				Finish		Cover				Cylinder					Arm function*				
	Top jamb (pull) side	Top jamb (push) side	Parallel arm	Concealed	Powder coat	Plated	Plastic	Metal	Non-handed	Non-sized	Accessibility	Automatic operator	Hold open	DPS	Standard (single)	Regular (double)	EDA	CUSH	SCUSH
4640	■	■	■	■	■	■	■	■	■	■	♿	■	■**	■	■	90°	■	■	■

■ Available
■ Not available

♿ Meets ADA requirements (power mode).
* See individual series for maximum manual opening.
** Switch provided for continuous Hold Open (4640 only).

Mounting details

Top jamb (push side) mounting



Butt hinges	Should not exceed 5" (127 mm) in width
Auxiliary stop	Recommended
Reveal	▪ 4 ½" (114 mm) allows up to 90° power opening and 100° manual opening ▪ 8" (203 mm) allows up to 90° power opening and 100° manual opening with long arm where standard rod and shoe is replaced with optional long rod and shoe, 4640-79LR
Top rail	▪ Minimum 1 ¾" (44 mm) ▪ Flush ceiling installation requires 3 ¾" (95 mm) minimum
Head frame	Minimum 1 ¾" (44 mm) (the standard mounting plate is also used to meet flush ceiling conditions)
Opening time and force	▪ Variable by adjustments to the electronic control module located on the operator assembly ▪ Maximum hold open time adjustable up to approximately five minutes
System diagram	See page 33 for typical system wiring and pages 34-35 for electrical data
Maximum opening	▪ Templating allows 90° power opening and 100° manual opening ▪ Consult factory for all pivot mounted installations

Notes:
- Actuators are sold separately, see pages 100-117
- Comes with a digital control box utilizing a 4040XP heavy duty door closer with on-board diagnostics and power supply
- Has a factory default memory that include "No Destruct" drive system
- Guard rails or safety mats not required
- 4640 has easily accessible switches to provide on/off and continuous hold open functions
- CS options provides concealed on/off power switch
- Control module provides timing and sequential door functions, electric strike controls and adjustments for opening speed and force

Accessories

Cylinders



4642-3971
Cast Iron Cylinder Assembly (CYL)
- Non-handed
- Standard

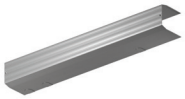


4642-3071
Cast Iron Cylinder Assembly (CYL)
- Non-handed
- Mounting plate
- Includes; 4640-3454 Motor Clutch, 4640-3180 I/O Board Assembly and 4640-3462 Controller
- Standard



4642-3071CS
Cast Iron Cylinder Assembly (CYL)
- Non-handed
- Mounting plate
- Includes; 4640-3454 Motor Clutch, 4640-3180 I/O Board Assembly and 4640-3462 Controller
- Same as a 4640-3071 assembly except on/ off switch is concealed in endcap and no hold open switch is included (Separate key switches suggested)
- Optional

Covers



4640-72MC
Metal Cover (MC)
- Non-handed
- Standard

Arm



4640-3077
Regular Arm (REGARM)
- Non-handed



4640-3077L
Long Arm (LONG)
- Includes long rod and shoe, 4640-79LR for deep reveals



4640-79
Rod and Shoe
- For use with regular arm

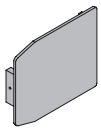


Long Rod and Shoe
- Used for long arm with deep reveals

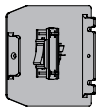
Installation accessories



4640-334
Switch End Cap
- End cap (black powder finish coat only) with cut outs for installing on/off and hold open switches



4640-334-2
Blank End Cap
- Black powder coat only



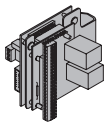
4640-334CS
Switch End Cap
- End cap and switch (black powder coat only) for concealed switch option



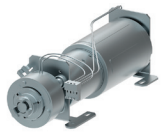
4640-3179-1
On/Off Switch Assembly
- Black rocker switch
- Plugs into high voltage PC board



4640-3179-2
Hold Open Switch Assembly
- Black rocker switch
- Field wired to low voltage PC board



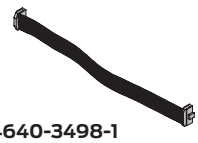
4640-3180
PC Board Assembly
- High and low voltage PC boards connected to mounting bracket



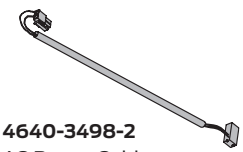
4640-3454
Motor/Clutch Assembly
- A geared assembly in an LCN automatic operator that incorporates a “no destruct” feature



4640-3462
Control Box Assembly
- Digital controller with built-in 12/24 VDC power supply
- Programming and timing functions are adjusted on controller



4640-3498-1
Ribbon Cable Connector
- 16 wire ribbon cable connecting PC board assembly to controller



4640-3498-2
AC Power Cable
- 2 wire cable to connect 120 VAC from PC board assembly to controller

Ordering information

How-to-order 4640 Series operators

Operator will be shipped with:
- Standard cylinder
- Metal cover
- Regular arm
- Wood and machine screws
  (unless options listed below are selected)

1. Select finish

☐ Standard powder coat _____
Aluminum (689), Dark Bronze (695), Statuary Bronze (690), Light Bronze (691), Black (693), Brass (696).

Operator options

Cylinder assembly

☐ Cast Iron Cylinder Assembly (CYL)
(concealed on/off switch)
(separate key switches suggested)

Finish

☐ Custom Powder Coat (RAL) _____
☐ Plated finish _____

Screw packs

☐ Through Bolt[1] Wood and Machine Screws(TBWMS)
☐ Torx Machine Screws (TORX)
☐ Through Bolt[1] and Torx Machine Screw (TBTRX)

Special template

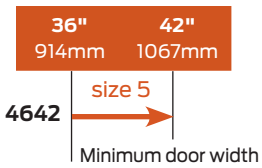
☐ ST- _____

1. Specify door thickness if other than 1 ¾".

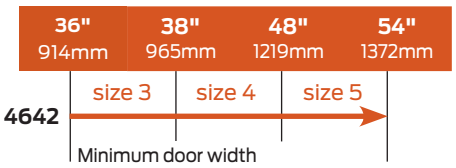
Table of sizes

- Non-sized 4640 series cylinder is adjustable from size 2 through size 5 and is shipped set to size 3
- Closing power of 4640 Series closers may be increased 50%

Exterior (and vestibule) door width



Interior door width



→ Indicates recommended range of door width for operator.
Note: Minimum door width 36" (914mm).