

SECTION 08720

AUTOMATIC DOOR OPERATORS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
 - 1. Low-energy, power-operating door operators.
- B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
 - 1. Section 00850 – NATIONAL ACCOUNTS for pricing.
 - 2. Section 08461 - SLIDING AUTOMATIC ENTRANCE DOORS for entrance doors packaged with automatic door operators and controls.
 - 3. Section 08710 - DOOR HARDWARE for door hardware that must be coordinated with automatic door operator fire-door package.
 - 4. Division 16 - ELECTRICAL for electrical connections including conduit and wiring for automatic door operators.

1.2 DEFINITIONS

- A. Activation Device: Device that, when actuated, sends electrical signal to automatic door operator to open door.
- B. Safety Device: Device that prevents door from opening or closing.

1.3 PERFORMANCE REQUIREMENTS

- A. Opening and Closing Forces: Not more than 15 lb-ft at a distance of 1 inch from the latch edge of the door.
- B. All equipment must meet the requirements of the American National Standard for Power Assist and Low Energy Power Operated Doors, ANSI/BHMA A156.19-1984.
- C. The system must operate between –30 deg. F (-34 deg. C) and 160 deg. F (71 deg. C).

1.4 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for automatic door operators and activation and safety devices.
- B. Shop Drawings: Show fabrication and installation details for automatic door operators. Include locations and elevations of entrances showing activation and safety devices.
 - 1. Include plans, elevations, sections, details, and attachments to other work for guide rails.
- C. Samples for Initial Selection: For each type of exposed component and door control indicated.
- D. Samples for Verification: For exposed components and activation and safety devices with factory-applied color finishes.
- E. Qualification Data: For Installer.
- F. Field quality-control test reports.
- G. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product.
- H. Operation and Maintenance Data: For automatic door operators to include in emergency, operation, and maintenance manuals.
- I. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
 - 1. Maintenance Proximity: Not more than four hours' normal travel time from Installer's place of business to Project site.
- B. Manufacturer Qualifications: Company certificate issued by AAADM.
- C. Source Limitations: Obtain automatic door operators through one source from a single manufacturer.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- E. UL Standard: Comply with UL 325.

- F. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify door openings by field measurements before fabrication of exposed covers for automatic door operators and indicate measurements on Shop Drawings.

1.7 COORDINATION

- A. Coordinate size and locations of recesses in concrete floors for recessed control mats that control automatic door operators. Concrete, reinforcement, and formwork requirements are specified in Division 3.
- B. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing automatic door operators. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing automatic door operators to comply with indicated requirements.
- C. Electrical System Roughing-in: Coordinate layout and installation of automatic door operators with connections to power supplies and security access control system.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of automatic door operators that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Faulty or sporadic operation of automatic door operator or activation and safety devices.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering or use.
 - 2. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:

1. LCN Closers; an Ingersoll-Rand Company.
- B. Fresenius Medical Care has a corporate purchase agreement with Ingersoll-Rand, Security & Safety, which guarantees pricing for material and installation.
- C. The Low Energy Power Operated Door operating equipment (Senior Swing) shall be fabricated and delivered by IR LCN Inc., 121 West Railroad Ave., Princeton, IL 61356.
- D. For pricing and to place an order complete the order form in Appendix “A” and Fax to 800-248-1460, ATTN: CUSTOMER SERVICE.
- E. Provide LCN 9542 Senior Swing with push side mounted at all out-swinging single door applications. Provide LCN 9531 Senior Swing with pull side mounted at all in-swinging single door applications.
- F. Provide LCN 9563 Senior Swing with push side mounted at all out-swinging pair door applications. Provide LCN 9563 Senior Swing with pull side mounted at all in-swinging pair door applications.
- G. Optional Equipment as required:
 1. Hard Wired Switches:
 - a. 1-3/4" X 5" 7930-211 Push Plate
 - b. 4-5/8" X 4-5/8" 7930-204 Push Plate
 2. Radio Control Switches:
 - a. 7930-160 Radio Control Receiver Package
 - b. 7930-211RF 1-3/4" X 5" Push Plate
 - c. 7930-204RF 4-5/8" x 4-5/8" Push Plate

Exclusions:

1. ALL TAXES
2. Dedicated 110VAC to operator(s)
3. Low Voltage Wire between Header, Wall Switches, Boxes & Conduit
4. Concrete Work, Cutting or Patching
5. Glass, Glazing and Caulking of Automatic Doors
6. Jambs, Transoms, Doors and Frames
7. Buttons at Nurse's Station and Reception Area
8. Electric Strike
9. Non Standard Working Hours - Standard working hours 7:00am to 5:00pm.

2.2 MATERIALS

- A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated, complying with standards indicated below:
 1. Sheet: ASTM B 209.

2. Extrusions: ASTM B 221.

B. Welding Rods and Bare Electrodes: AWS A5.10/A5.10M.

2.3 MATERIALS & EQUIPMENT

A. The door operating equipment must use the completely electro-mechanical Astro-Swing motor gear box. The gear box shall use an individually hand wound clock spring made from polished special alloy nickel steel for maximum life. No electro-hydraulic equipment shall be allowed.

B. A two position rocker switch clearly marked "SECURE" and "UNSECURE" will be mounted on the front of the header case. This rocker switch may be located in Receptionist Office only if requested by Owner's Project Manager. In this special case, Electrical Contractor to provide wiring between switch and door operator. This switch shall be furnished and marked by the manufacturer. Due to certain job conditions, the header may have to be mounted as a pull application. In this condition, the mounting of the two-position switch should be located to the inside (opposite) part of the frame where security can be maintained. The two-position switch must at all time be mounted in a securable location.

C. An energy saving Power Boost Close and Power Boost Hold, "PB" feature, shall be available at the flip of a switch on the control box which is located inside the header case. The PB close feature shall conserve energy by electronically increasing the door closing force from 9 lbs. to 15 lbs. in order to close and hold the door closed against the wind or stack pressure so that conditioned air will not be let out of the building or annoying drafts let into the building. The door shall be spring closed and spring held when the PB feature is not turned on. Control box setting shall start with the following: Function Selector dial setting 7; latch selector dial setting 4.

D. The operator header must be 4-1/2" deep by 5-3/4" high, by the width of the door.

E. The header shall be bottom loading so it can be concealed in a wall above the door or in the ceiling without the need of side access panels or special shafts or pivots.

F. Door activating and holding controls shall be by push plates. All controls shall be hard wired using LCN 7930-204 push plates on the exterior or swing side and using LCN 7930-211 push plates on the interior or approach side. On some existing conditions, radio controls may be accepted.

2.4 FINISH

A. The header shall be provided in 204A1RI satin polished, etched, and anodized aluminum in US28 clear aluminum finish to match framing, DC13 dark bronze aluminum finish where entrance framing bronze.

1. Any exposed conduit shall match header in color.

2.5 FUNCTIONAL REQUIREMENTS AND MARKINGS

- A. The equipment must be designed to handle swing doors up to a weight of 225 lbs.
- B. Opening Speed:
 1. The door shall be field adjusted so that opening speed to back check or 80o shall be 3 seconds or longer as required in Table I of ANSI/BHMA A.156.19-1997.
 2. Opening speed to fully open shall be 4 seconds or longer.
- C. Hold Open: The door shall be field adjusted to remain fully open for not less than 5 seconds or more than 30 seconds.
- D. Closing Speed:
 1. Doors shall be field adjusted to close from 90o to 10o in 3 seconds or longer as required in Table of ANSI/BHMA A156.19-1997.
 2. Doors shall be field adjusted to close from 10o to fully closed in not less than 1.5 seconds.
- E. The force required to prevent a door from opening or closing shall not exceed 15 lbs. applied 1" from the latch edge of the door at any point in the opening or closing cycle.
- F. In the event of a power failure, doors shall open with a manual pressure not to exceed 25 lbs. at a point 1" from the latch edge of the door.
- G. Doors shall be equipped with a sign(s) visible from either side, instructing the user as to the operation and function of the door. Signs or stickers should include the following:
 1. PUSH TO OPERATE
 2. PULL TO OPERATE
 3. AUTOMATIC PUSH SWITCH TO OPEN
 4. CAUTION – AUTOMATIC DOOR
- H. Upon completion of the work, apply a sticker to the operator header case where the owner can easily read the installer's name, address, and phone number in the event a service call is needed.

2.6 SYSTEM OPERATION

- A. All operators will have a switch by the manufacturer with (2) settings labeled SECURE AND UNSECURE mounted on the front of the header case.
- B. When the switch is in the SECURE position, the panic device or latch shall be in an undogged or locked mode whereby the door latches each time it closes. In this position, the door will not operate or open by any person trying to gain access into the building

when depressing the nearby button or when pulling on the door. That person will have to use a nearby intercom to signal two remote areas (RECEPTIONIST and NURSE STATION) where activation of the door can occur with the push of a button. Both remote areas shall work in conjunction with an electric strike which is usually on one entrance door only. This sequence of operation is as follows: Nurse station or Receptionist button is depressed, the electric strike is energized and retracts followed with energizing of the operator to swing the door. In the SECURE position, "exiting" will be possible with the PUSH-N-GO feature.

- C. When the switch is in the UNSECURE position, the panic device or latch shall be in a dogged down, no latching mode whereby the door will open with either the appropriate push buttons or the PUSH-N-GO (PULL-N-GO) feature when both exiting and entering.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances, door and frame supports, and other conditions affecting performance of automatic door operators.
 - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance.
- B. Examine roughing-in for electrical systems to verify actual locations of power connections before automatic door operator installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install complete automatic door operator system, including activation and safety devices, control wiring, and remote power units.
- B. Power Door Operator Installation Standard: Comply with BHMA A156.10 for installation.
- C. Low-Energy Power Door Operator Installation Standard: Comply with BHMA A156.19 for installation.
- D. Automatic Door Operators: Install door operator system, including control wiring, as follows:

1. Refer to Section 16100 - ELECTRICAL for connection to electrical power distribution system.
- E. Activation and Safety Devices: Install devices and wiring, including connections to automatic door operators, according to BHMA A156.10 and as follows:
 1. Wall Switches: Provide push plates on both sides of each opening indicated to receive automatic door operators.
- F. Guide Rails: Install rails according to BHMA A156.10 including Appendix A, manufacturer's written instructions, and as indicated.
- G. Connect wiring according to Section 16100 - ELECTRICAL.

3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Testing and Inspecting: After installation has been completed, testing and inspecting of each automatic door operator shall be performed to verify compliance with applicable BHMA standards.
 1. Inspection Report: Submit report in writing to Architect and Contractor within 24 hours after inspection.
- C. Remove and replace automatic door operators where test results indicate they do not comply with specified requirements.
- D. Additional testing and inspecting, at Contractor's expense, shall be performed to determine compliance of replaced or additional work with specified requirements.

3.4 ADJUSTING

- A. Adjust automatic door operators and activation and safety devices to operate smoothly, easily, and properly, and for safe operation and weather tight closure.
 1. Adjust doors with low-energy door operators to close according to BHMA A156.19.
- B. Lubricate operators, hardware, and other moving parts.
- C. After completing installation of exposed, factory-finished automatic door operators, inspect exposed finishes and repair damaged finishes.

- D. Readjust automatic door operators and activation and safety devices after repeated operation of completed installation equivalent to three days' use by normal traffic (100 to 300 cycles). Lubricate hardware, operating equipment, and other moving parts.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain automatic door operators.

END OF SECTION

APPENDIX "A"

AUTOMATIC DOOR OPERATORS

A. To place an order, provide the following information and Fax to 800-248-1460, ATTN: CUSTOMER SERVICE.

- 1. FMC Project Name: _____
- 2. Project Address: _____
- 3. Contractor: _____
- 4. Contractor's Contact: _____
- 5. Contractor's Address: _____
- 6. Contractor's Phone: _____

7. Quantity to be Furnished and Installed (provide individual order sheets for each series):

- a. _____ LCN Senior Swing surface applied. LCN series number: _____
- b. Finish: _____ US-28 _____ DC-13 (Dark Bronze) _____ Painted
- c. _____ Pull Arm(s) _____ Right or _____ Left
- d. _____ Pull Arm(s) _____ Right or _____ Left
- e. Standard Header Lengths: (enter quantity)
_____ 36" _____ 42" _____ 44" _____ 48" _____ Special: _____

B. Under the Owner's purchasing agreement, Ingersoll-Rand guarantees the material cost and installation of (1) Single Application LCN 9531 (pull side) or 9542 (push side) series Senior Swing surface applied operator including the following:

- 1. Clear or dark bronze finish.
- 2. LH or RH surface applied for single 36" or 42" door.
- 3. Reduced opening force.
- 4. 1 door arm.
- 5. 1 Push-N-Go decal.
- 6. 1 two-position day night switch (secured and unsecured).
- 7. 1 1-3/4" x 5" push button (handicap).
- 8. Time delay relay and transformer.
- 9. Electric lock interface.
- 10. 1 push-plate (handicap).

11. Freight.
12. Total Equipment Price Installed: **(See Project Manager)**

C. Under the Owner's purchasing agreement, Ingersoll-Rand guarantees the material cost and installation of (1) Pair Application LCN 9563 (pull side or push side) series Senior Swing surface applied operator including the following:

1. Clear or dark bronze finish.
2. LH and RH surface applied for pair 36" or 42" door.
3. Reduced opening force.
4. 2 door arm.
5. 2 Push-N-Go decal.
6. 1 two-position day night switch (secured and unsecured).
7. 1 1-3/4" x 5" push button (handicap).
8. Time delay relay and transformer.
9. Electric lock interface.
10. 1 push-plate (handicap).
11. Freight.
12. Total Equipment Price Installed: **(See Project Manager)**

D. Optional Equipment to be added **(See Project Manager for pricing)**:

1. Hard Wired Switches:
 - a. 1-3/4" X 5" 7930-211 Push Plate:
 - b. 4-5/8" X 4-5/8" 7930-204 Push Plate:
2. Radio Control Switches:
 - c. 7930-160 Radio Control Receiver Package:
 - d. 7930-211RF 1-3/4" X 5" Push Plate:
 - e. 7930-204RF 4-5/8" x 4-5/8" Push Plate:
3. Miscellaneous Options:
 - a. Special Header Size (SPECIFY SIZE): _____: No Charge for special size up to 49".
 - b. Paint (SPECIFY COLOR): _____: Powder Coat.

E. Exclusions:

1. ALL TAXES
2. Dedicated 110VAC to operator(s)
3. Low Voltage Wire between Header, Wall Switches, Boxes & Conduit
4. Concrete Work, Cutting or Patching
5. Glass, Glazing and Caulking of Automatic Doors
6. Jambs, Transoms, Doors and Frames
7. Buttons at Nurse's Station and Reception Area
8. Electric Strike
9. Non Standard Working Hours - Standard working hours 7:00am to 5:00pm.

END OF APPENDIX "A"