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SECTION 08 71 13 – AUTOMATIC DOOR OPERATORS

PART 1 - GENERAL

1.1 SUMMARY

NOTE: Edit this specification as required for the project

NOTE: This specification is for automatic door operators complying with ANSI/BHMA A156.19 for power assist and low energy door applications.

- A. This section includes the following types of automatic door operators:
 - 1. Low voltage operator for low energy and power assist swinging door applications.
- B. Related Sections:
 - 1. Division 7 Sections for caulking to the extent not specified in this section.
 - 2. [Division 8 Section “Door Hardware” for hardware to the extent not specified in this Section.]
 - 3. Division 26 and 28 Sections for electrical connections including conduit and wiring for automatic entrance door operators and access control devices.

1.2 REFERENCES

- A. References: Refer to the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 70 - National Electrical Code.
 - 4. NFPA 80 - Standard for Fire Doors and Other Opening Protectives.
 - 5. NFPA 101 - Life Safety Code.
 - 6. NFPA 105 - Installation of Smoke Door Assemblies.
- B. American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA).
 - 1. ANSI/BHMA A156.19 Standards for Power Assist and Low Energy Power Operated Doors.
- C. Underwriters Laboratories (UL).
 - 1. UL Listed R-9469 Fire Door Operator with Automatic Closer.
 - 2. UL10C – Positive Pressure Fire Tests of Door Assemblies.
 - 3. UL 325 Standard for Safety for Door, Drapery, Gate, Louver and Window Operators and Systems.
- D. American Association of Automatic Door Manufacturers (AAADM).

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- E. American Society for Testing and Materials (ASTM).
 - 1. ASTM B221 Standard Specification for Aluminum and Aluminum Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.
 - 2. ASTM B209 Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate.
- F. American Architectural Manufacturers Association (AAMA).
 - 1. AAMA 611 Voluntary Specification for Anodized Architectural Aluminum.
- G. National Association of Architectural Metal Manufacturers (NAAMM).
 - 1. Metal Finishes Manual for Architectural Metal Products.
- H. International Code Council (ICC).
 - 1. [IBC: International Building Code.]
 - 2. [CBC: California Building Code.]

1.3 DEFINITIONS

- A. Activation Device: Device that, when actuated, sends an electrical signal to the door operator to activate the operation of the door.
 - 1. Knowing act: Consciously initiating the opening of a power operated door using acceptable methods including wall mounted switches such as push plates and controlled access devices such as keypads, card readers and key switches.
- B. Safety Device: A device that detects the presence of an object or person within a zone where contact could occur and provides a signal to stop the movement of the door.

1.4 PERFORMANCE REQUIREMENTS

- A. Automatic door equipment accommodates medium pedestrian traffic.
- B. Opening Force Requirements: Doors shall open with a manual force, not to exceed 30lbf (133N) to set the door in motion and 15 lbf to fully open the door applied at 1" (25 mm) from the latch edge of the door. The force required to prevent a stopped door from opening or closing shall not exceed 15 lbf (67 N) measured 1" (25 mm) from the latch edge of the door at any point during opening or closing.
- C. Closing Time:
 - 1. Doors shall be field adjustable to close from 90 degrees to 10 degrees in 3 seconds or longer as applicable per ANSI/BHMA A156.19 standards.
 - 2. Doors shall be field adjusted to close from 10 degrees to fully closed in not less than 1.5 seconds.

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1.5 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, fabrication, operational descriptions and finishes.
- B. Shop Drawings: Submit manufacturer's shop drawings, including elevations, sections and details, indicating dimensions, materials, operator, motion /presence sensor control device, anchors, hardware, finish, options and accessories.
 - 1. Indicate required clearances, and location and size of each field connection.
 - 2. Indicate locations and elevations of entrances showing activation and safety devices.
 - 3. Wiring Diagrams: For power, signal, and activation / safety device wiring.
- C. Samples: Submit manufacturer's samples of aluminum finish.
- D. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the work of this section in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the operators and their nearest service representatives. The final copies delivered after completion of the installation test to include spare parts list.
- E. Warranties and Maintenance: Special warranties and maintenance agreements specified in this Section.

1.6 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 10 years of documented experience in manufacturing of doors and equipment of similar to that indicated for this Project and that have a proven record of successful in-service performance. Manufacturer to have a company certificate issued by AAADM.
- B. Source Limitations for Automatic Door Operators: Obtain each type of operator and sensor components specified in this Section from a single source, same manufacturer unless otherwise indicated.
- C. Certifications: Operators shall be certified by the manufacturer to meet performance design criteria in accordance with the following standards.
 - 1. ANSI/BHMA A156.19 American National Standard for Power Assist and Low Energy Operated Doors.
 - 2. NFPA 101 - Life Safety Code.
 - 3. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems.
 - 4. UL Listed R-9469 Fire Door Operator with Automatic Closer.

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- D. Emergency Exit Door Requirements: Comply with requirements of authorities having jurisdiction for automatic entrance doors serving as a required means of egress.

1.7 COORDINATION

- A. Coordinate door operators with doors, frames and related work to ensure proper size, thickness, hand, function and finish. Coordinate hardware for automatic entrances with hardware required for rest of the project.
- B. Electrical System Roughing-in: Coordinate layout and installation of power door operators with connections to power supplies and access control system as applicable.

1.8 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Automatic Door Operators shall be free of defects in material and workmanship for a period of 18 months from the date of substantial completion.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Manufacturer: Entrematic Group AB

Entrematic Canada Inc.
221A Racco Parkway
Vaughan, Ontario, L4J 8X9
Phone: (877) 348-6837
Website: www.ditecentrematic.ca

Entrematic USA Inc.
1900 Airport Rd.
Monroe, NC 28110
Phone: (866) 348-6837
Website: www.ditecentrematic.us

NOTE: Revise the following substitution clause as required by project requirements. Select either Item "B" or "C"

- B. [Substitutions: Requests for substitution and product approval in compliance with the specifications must be submitted in writing and in accordance with the procedures outlined in Division 1, Section "Substitution Procedures". Approval of requests is at the discretion of the architect, owner, and their designated consultants.]
- C. [Substitutions: Not Permitted.]

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2.2 MATERIALS

- A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated, as indicated below:
1. Extruded Aluminum, Alloy 6063-T5.

2.3 SWING DOOR OPERATORS

NOTE: The HA7 swing operators are recommended for interior openings with a maximum door weight of 200 pounds

- A. Model: Entrematic Ditec HA7 low energy automatic door operator (Basis of Design):

NOTE: Select the following options as required for the project

1. Reference Standard: ANSI/BHMA A156.19.
2. Configuration: Operator to control single swinging doors as indicated on the drawings and specified below:
 - a. Traffic Pattern: **[One way.] [Two way.]**
3. Automatic Door Operator: Electro-mechanical, non-handed operator, powered by 24 volt, 1/8 hp motor. Spring shall be adjustable to compensate for different manual push forces required on varying door widths.
 - a. Automatic operator shall be capable of operating and controlling up to a 200 pound (90.82 kg) door, 48 inches (1219 mm) in width.
 - b. Surface Mounted Operator:
 - 1) Side Access Operator Housing: Operator is contained in a 2.76" (70.05 mm) deep x 1.85" (47.04 mm) high x 39.5" (1003.3 mm) (extruded aluminum housing with a removable cover.
 - 2) Connecting Hardware: Surface mounted operators to have a steel arm from the operator, mounted to the top face of the swing door.
 - 3) UL Listed R-9469 Fire Door Operator with Automatic Closer (surface mounted operator).
 - c. Operator Temperature Range: Capable of operating within temperature ranges -4°F (-20°C) and 113°F (45°C).
 - d. Electrical Characteristics: Nominal current draw for the operator is 90 watts, 3.75 amps at 24 VDC.
 - 1) The power supply for the operator requires 1.3 amps at 120 VAC, 50/60hz.

NOTE: Select one of the following electrical power supply options as required for the project. The HA7 swing operator is a low voltage operator and requires an external power supply. Direct connection of 120 VAC to the operator is not available.

00.NOTE: Maximum distance from the remote mounted power supply to swing operator is 24 feet (7.2 meters) with 14 AWG rated wire

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NOTE: No electrician is required for electrical power to the swing operator when the plug-in power supply is specified and a 120 VAC receptacle is within 18 feet of the door

- 2) [Remote Mounted Power Supply: UL listed steel box complete with required 24 VDC transformer and terminal blocks, hard wired to swing operator.]
 - a) Remote mounted power supply shall be mounted [concealed above the ceiling.] [flush mounted in wall below the ceiling.]
 - 3) [Plug-In Power Supply: 24 VDC plug-in type power supply, white in color.]
 - a) The total cable length is 18 feet. A 120 VAC receptacle must be located so that the 18 foot low voltage cable can be routed to the hinge side of door operator in an appropriate and esthetic way.
 - b) Wire mold to be provided by others.
4. Door Operation:
- a. Opening Cycle The adjustable speed operator and gear reduction system mechanically powers the arm system throughout the opening cycle, self-adjusting to mild internal stack pressures and door weight. Operator shall allow manual door operation with operational forces as indicated to fully open the door.
 - 1) Manual door operation with operational forces applied at 1" (25 mm) from the latch edge of the door shall allow the door to be fully opened by a force adjustable from 5 lbf to 15 lbf maximum.
 - 2) The door can be manually stopped at any position during the opening cycle and held open at that position.
 - b. Hold Open: The operator shall stop and hold the door open at the selected door opening angle for an adjustable period of time (1.5 seconds to 30 seconds).
 - 1) The door can be held open indefinitely at any position during the opening or closing cycles by use of the mode selector or smart device application.
 - 2) When in AUTO mode, a "nudge" feature cancels the hold open and allows door to immediately close for privacy when the door is pushed in the close direction.
 - c. Closing Cycle: Power closing shall be provided by means of closing spring and motor. The door will slow to low speed at latch check before it reaches the fully closed position.
 - 1) The door can be manually stopped at any position during the closing cycle and held open at that position.
 - 2) Selectable Closing Torque Control: When the torque control is activated, the closing torque is increased without changing the closing speed of the operator.
 - a) The torque control is disabled during manual use of the door.

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- d. Electronic Dampening: Operator to include standard electric dampening system which automatically counteracts additional forces applied to the door during the opening or closing cycle by reducing door speed.
- e. Stack Pressure Compensation: Electronic control unit allows for increases of forces to overcome mild stack pressures while compensating to lower manual push forces when the door is used in manual mode in order to comply with ANSI/BHMA A156.19.
- f. Obstruction Control: The operator will stop and reverse the door movement.
- g. Electric Lock Management:
 - 1) Internal module for electrified locking integration.
 - 2) Electric Lock Output: Selectable 12 VDC, maximum 1200 mA / 24 VDC, maximum 600 mA.
- h. Lock Retry Circuit: If attempt to fully close the door is unsuccessful, the operator will automatically reverse open 10 degrees and reclose in an attempt to successfully close the door.
- i. Electronic Controls: Microprocessor controlled unit with motor encoder shall control the operation and switching of the door operator. The microprocessor unit provides low voltage power supply for all means of actuation and electric lock management. The controls include time delay (1.5 to 30 seconds) for normal cycle.
 - 1) Setup, configuration, and controlling the operator will be done through an application on a smartphone or tablet.
 - a) The following modes can be controlled through the app on the mobile device:
 - (1) Off / Closed: The door is closed and activation devices are inactive. Electromechanical locking is secured if present on the door. Key impulse is active for card reader type security devices.
 - (2) Exit Only: The door is closed and the swing operator is controlled by activation devices on the interior side only. Electromechanical locking is secured when the door is in the closed position. Key impulse is active for card reader type security devices.
 - (3) Auto: The door is closed but the swing operator can be controlled by activation devices on both the interior and exterior sides of the opening.
 - (4) Hold: The door can be held at any position during the open and close cycles.
 - (5) Ratchet feature (1st Impulse to open, 2nd impulse to close). When ratchet feature is selected, the inner impulse function changes to the ratchet impulse feature.
 - 2) Microprocessor communicates with the mobile device through a Bluetooth interface.

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- j. Control Switch: Automatic door operators shall be equipped with the following type of multi-position function switch:

NOTE: Select one of the following control switch options if required

- 1) [3 position rocker switch mounted on end cap (On-Off-Hold).]
5. Operator Interface:
- a. Safety Sensor Integration for door mounted reactivation safety sensors.

2.4 [ACTIVATION BY FIRE DETECTION SYSTEM]

NOTE: Delete this entire option if not required – Review operation with Architect

- A. General: Provide activation by the fire detection system. Coordinate other required activation devices and safety devices with door operation and door operator mechanisms.
- B. Activation: Fire detection system shall provide activation to the operator by means of a normally closed maintained contact that opens and is maintained to control the closing of the door systems in the event of an alarm condition. When alarm clears, the contact is to revert back to a normally closed state.

2.5 ACTIVATION DEVICES

NOTE: Select the type of activation devices and safety devices required for the project

- A. General: Provide activation devices in accordance with ANSI/BHMA standards, for condition of exposure and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated. Coordinate activation and safety devices with door operation and door operator mechanisms.

NOTE: Select the type of knowing act activation devices if required for the project

- B. [Knowing Act Activation Device: Per project requirements.]

- C. [Manual Operation:]

NOTE: Specify the power assist option for doors requiring ease of manual operation

1. [Operator shall provide power assist function to the doors to provide ease of manual operational forces.]
 - a. Manual push force shall be adjustable from 5 lbf to 15 lbf maximum.

NOTE: Consult SpecDesk for “push and go” operation option

2. [Operator shall provide “push and go” operation allowing door to open automatically after activation by manually pulling or pushing on the door.]

NOTE: Consult SpecDesk for safety device recommendations – safety sensors are not required by ANSI/BHMA A156.19 for low-energy operators

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NOTE: Retain the following if safety devices are required for the project – requires “safety sensor integration” option on power operator

2.6 [SAFETY DEVICES]

- A. General: Provide safety devices for condition of exposure and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated. Coordinate safety devices with door operation and door operator mechanisms.
- B. Safety Devices:
1. Door Mounted Presence Sensor (DMPS): Shall be the ASSA ABLOY door mounted infrared presence safety device (mounted at top of each door); adjustable detection field sizes.
 - a. Unit to provide detection during the travel of the door.
 - b. Upon detection the sensor shall provide a signal to stop or reverse the door action.
 2. The door mounted safety sensor devices shall be mounted on the approach (push) side of the door (1 safety sensor per leaf), providing detection on one side of the door only.

NOTE: Coordinate with the Architect if an EPT (electrical power transfer) is required in lieu of the standard door cord power transfer – EPT specified in Division 8 Section “Door Hardware”

3. Power transfer from the door mounted safety sensor to operator shall be [through an exposed door cord] [through an EPT (electrical power transfer) specified in Division 8 Section “Door Hardware”.]

2.7 [ALUMINUM FINISHES]

NOTE: Consult SpecDesk for custom finish options

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Automatic Door Operator Enclosure:
1. [Anodized Finish:]
 - a. [AAMA 611, Clear, AA- M12C22A41, Class I, 0.018 mm.]
 - b. [AAMA 611, Dark Bronze, AA-M12C22A44, Class I, 0.018 mm.]

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PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, wall and floor construction, and other conditions affecting performance of swinging power operated doors.
- B. Examine roughing-in for electrical source power to verify actual locations of wiring connections.
- C. Proceed only after such discrepancies or conflicts have been resolved.

3.2 INSTALLATION

- A. Do not install damaged components. Fit joints to produce hairline joints free of burrs and distortion. Rigidly secure non-movement joints.
- B. Operators: Install automatic door operators plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place.
 - 1. Install surface mounted hardware using concealed fasteners to greatest extent possible.
 - 2. Set operator back plate / housing and arm assemblies level and true to location with anchorage for permanent support.

- C. [Door Operators: Connect remote mounted power supply to door operator and to the electrical power distribution system [including fire detection system] as specified in Division 26 Sections.]

NOTE: Select either the above for the remote mounted, hard wired power supply or below for the plug-in power supply

NOTE: Maximum distance from the remote mounted power supply to swing operator is 24 feet (7.2 meters) with 14 AWG rated wire

NOTE: No electrician is required for electrical power to the swing operator when the plug-in power supply is specified

- D. [Door Operators: Plug-in the power supply for the door operators into an electrical outlet.]

NOTE: Select one of the following options

- 1. [Attach the power cable that is installed between the swing operator and the power supply to the baseboard and/or wall.]
- 2. [Attach wire mold to the wall and route the power cable from the swing operator to the power supply through the wire mold.]

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- E. Sealants: Comply with requirements specified in division 7 Section "Joint Sealants" to seal between the operator housing and the adjacent surfaces.
- F. Signage: Apply signage on both sides of each door and sidelite as required by ANSI/BHMA A156.19 and manufacturers installation instructions.

3.3 ADJUSTING

- A. Adjust automatic door operators, controls and hardware for smooth and safe operation and for weather tight closure.

3.4 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by automatic door operator installation.
- B. Clean metal surfaces promptly after installation. Remove excess sealants, compounds, dirt and other substances. Repair damages and finish to match original finish.

END OF SECTION