

Section 08461 — Automatic Swinging Doors

This section is based on the products of Dor-O-Matic, an Ingersoll-Rand business, located at:

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Dor-O-Matic is one of the oldest and most experienced manufacturers of automatic door equipment. This section covers only a part of their product line: Astro Swing® swinging door operators, with accompanying control components, including motion detectors and advanced infrared safety systems. See other sections for automatic sliding doors, automatic bi-folding doors, and ADA-compliant door operators.

Part 1 General

1.1 Section Includes

- A. Aluminum doors and frames.

1.2 Related Sections

If aluminum doors and frames are not specified in this section, they may be specified in Section 08120 .Aluminum Doors, in Section 08410 - Entrances and Storefronts or in Section 08910 - Metal-Framed Curtain Wall or any number of other narrow scope sections. Verify method used for this project.

- B. Section _____ – _____: Aluminum doors and frames.

- C. Section 08211 – Flush Wood Doors.

Verify electrical circuit capacity required for operator and all its actuators and safeties.

- D. Division 16 – Electrical: 115 VAC (15 amp circuit breaker, one per unit), single-phase wiring in conduit between operator enclosure and building power supply and low-voltage wiring between enclosure and actuators and safeties.

1.3 References

- A. ANSI/BHMA A156.10 – American National Standard for Power-Operated Pedestrian Doors.
- B. UL 325 – Standard for Door, Drapery, Gate, Louver and Window Operators and Systems.

1.4 Submittals

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's catalog data, detail sheets and specifications.

C. Shop Drawings: Prepared specifically for this project; show dimensions of doors, operators and interface with other products.

D. Operating and Maintenance Data: Operating and maintenance instructions, parts lists and wiring diagrams.

1.5 Quality Assurance

A. Installer Qualifications: Factory-trained with minimum 3 years experience.

Part 2 Products

2.1 Manufacturers

A. Acceptable manufacturer: Provide products made by Dor-O-Matic, an Ingersoll-Rand business.

B. Requests for substitutions will be considered in accordance with provisions of Division 1.

Delete paragraph above or below; coordinate with Division 1 requirements.

C. Provide all door operators from a single manufacturer.

2.2 Doors and Frames

Automatic swinging doors are available from Dor-O-Matic in complete packages including aluminum doors, frames, operators and actuators. For aluminum doors, dark bronze anodized and aluminum anodized are standard. Special paint finishes are also available.

Delete one of the following groups to specify doors. The first set is for doors furnished in this section.

A. Doors and Frames: Extruded aluminum.

1. Finish: Anodized aluminum.
2. Finish: Dark bronze anodized aluminum.
3. Finish: Paint.

B. Doors and Frames: Specified elsewhere; see drawing for configuration.

The following is an example of how to specify which operators and actuators are to be used, when more than one configuration is used on the project and the drawings do not call out such details. If this method is used, include the following paragraphs with either of the two sets of paragraphs above specifying the doors themselves.

Delete one of the following.

1. Operator: Overhead, surface-mounted.
2. Operator: Overhead, concealed.

Delete all but one of the following three numbers. Under some conditions, more than one actuator is appropriate for a single door.

3. Actuator: Motion detector.
4. Actuator: Push plate.
5. Actuator: _____.

Delete all but one of the following three numbers. Only one type of safety should be used for a single opening.

6. Safety: Overhead-mounted infrared safety sensor.
7. Safety: Overhead-mounted infrared safety sensor with door-mounted infrared safety sensor.

2.3 Operator Components

A. Door Operators - Operation: Electric power open with spring and power boost closing and holding; comply with ANSI A156.10 and UL 325.

1. Close and center door against stop after each cycle, and hold against drafts, winds and stack pressure.
2. Spring-close closing force: 9 lb-force.
3. Manual switch between spring close-and-hold and power boost-close-and-hold.
4. Power boost-close-and-hold: Electronically increase door closing force to 25 lb.
5. Provide adjustment by self-contained microprocessor control for:
 - a. Opening speed.
 - b. Backcheck speed.
 - c. Hold-open speed, from 1 to 30 seconds.
 - d. Closing speed.
6. Factory-set door hold-open voltage.
7. Manual "Off/Auto/Hold-Open" rocker or key switch.
8. Fail safe: In event of power failure, make door operate manually with controlled spring close as though equipped with a manual door closer without damage to operator components.

B. Door Operators - Construction: Completely electromechanical; comply with ANSI A156.10 and UL 325.

1. Gear box operator: Self-contained cast aluminum housing, with precision-machined gears and bearing seals and all-weather lubricant, mounted on vibration isolators. No exposed gears.
2. Gears: Manufactured by door operator manufacturer specifically for operators.

3. Motor: DC permanent magnet motor with shielded ball bearings. Motor will stop when the door stops or is fully open and when breakaway is operated.
4. Door operating arm: Forged steel, attached at natural pivot point of door; do not use slide block in top of door.
 - a. Exposed arms: Factory-polished and finished to match operator enclosure.
5. Microprocessor control: 115 VAC. Do not use microswitches. Mount controls in snap-in type control box.
6. "Off/Auto/Hold-Open" three-position rocker or key switch.
7. Control circuits for actuators and safeties: Low-voltage, NEC Class II.
8. Service conditions: Satisfactory operation between –30 degrees F (-34 degrees C) and 160 degrees F (71 degrees C).
9. Power supply required: 115 VAC (15 amp circuit breaker one per unit).

C. Operator Enclosure: Extruded header concealing all operating parts except arms and manual control switches.

Delete any of the following mounting types that are not required. If more than one mounting is required, be sure that drawings give enough information to determine mounting required for each door.

1. Surface Mounting: On surface of door frame/wall, mounting 1" (25.4 mm) above top of door.
2. Between Jamb Mounting: Between door frame jambs, taking the place of frame header/transom bar; conceal door arm when door is closed.
3. Concealed Mounting: In ceiling or frame header, accessed through cutout; conceal door arm when door is closed.

The size of the operator enclosure significantly affects the overall appearance. If other sizes are not acceptable, say so.

4. Size: 5-3/4" (146 mm) high x 4-1/2" (114 mm) deep by full doors width.
5. Provide bottom loading header for access to controls and removable components without removal of door or operator.

Delete three of the following four. Anodized aluminum is the standard finish for exposed headers. Clad finish applies to storefront or curtain wall installations where the adjacent finish is bronze, stainless, or other metal finish. If coated finishes are specified, the color should be specified; especially it must match the doors.

6. Finish of Exposed Surfaces: Match doors.
7. Finish or Exposed Surfaces: Anodized aluminum.
8. Finish or Exposed Surfaces: Factory-coated, Kynar 500™.
9. Finish of Exposed Surfaces: Clad.

Delete all but one of the following six. If clad metal finish is specified, delete all color paragraphs.

10. Color: To match door.
11. Color: As selected from manufacturer's standard selection.
12. Color: Dark bronze.
13. Color: Aluminum.
14. Color: Black.
15. Color: _____.

2.4 Actuators

A. Motion Detectors: Dor-O-Matic Supplied #74600-900

1. Provide either unidirectional or bi-directional movement detection.
 - a. Unidirectional Operation: Detects movement towards the swinging door package; however, it ignores movement away from the door package, allowing the doors to close faster and conserve energy.
 - b. Bi-directional operation: Detects movement both towards and away from the swinging door package.
2. Adjustable sensitivity and time delay.
3. Housing: Black high-impact material.
4. Mounting: Flush against header/wall.
5. Operating unit: Adjustable for a narrow or wide traffic pattern.
6. Electronics: Unaffected by radio frequency interference, normal police, fire and ambulance frequencies, and other two-way radio frequencies; designed to eliminate line noise and surge current.
7. Service conditions: Satisfactory operation between -30 degrees F (-34 degrees C) and 160 degrees F (71 degrees C); unaffected by humidity or moisture.
8. Mats and Push Plates are also available as substitutes for motion detectors.

B. Push Plate Actuator: Formed metal plate with rounded corners, satin finish; approximately 5" (127 mm) square; with depressed marking.

Delete one of the following two.

1. Material: Stainless steel
2. Material: Brass.

Delete one of the following three.

3. Marking: "Push to operate door."
4. Marking: Wheelchair symbol.

5. Marking: Plain face.

The #77700 sensor is a presence sensor that can be used for single doors and pairs. It must be combined with a safety "logic" beam (also infrared) that is mounted across the door opening beyond the door swing.

C. Overhead-Mounted Infrared Safety Sensors: Dor-O-Matic #77700 with safety beams.

1. Housing: Black extruded aluminum with ABS end caps.
2. Detection (safety) zone: Area of door swing plus most of the threshold area when door is open.
3. Door operator control: Microprocessor.
 - a. Safety beam blocked or inoperative: Prevent closed door from opening, prevent open door from closing.
 - b. Object detected in safety zone, door closed: Prevent door opening.
 - c. Object detected in safety zone, during door opening: Switch door operator to safety-slow/stop.
 - d. Object detected in safety zone, door open: Continue to hold door open.
 - e. Safety beam blocked during door closing: Allow door to close under spring power then return to overhead sensor operation.
4. Provide safety-slow/stop function for door operator, with manual switch between options:
 - a. Safety-slow: Immediately slow down to creep speed and continue to full open position.
 - b. Safety-stop: Immediately stop for 6 seconds, then continue to full open position at creep speed.
5. Safety Beam Mounting - No wall available: Manufacturer's standard guide rail.

Delete three of the following four.

- a. Anodized aluminum extruded bars, color to match operator enclosure; surface-mounted.
- b. Stainless steel round tubing, satin No. 4 finish, recessed post foot.
- c. Stainless steel round tubing, bright No.7 finish, recessed post foot.
- d. Textured acrylic infill panels.

Delete the following if not required - optional.

6. Wall-Mounted Safety Beam: Manufacturer's standard wall-mounted rail.

The following sensor is contained in a horizontal housing mounted on each side of the door. Depending on whether the door is open or closed, each sensor can act as a safety. It has a short range actuating function that is usually supplemented by a motion detector for medium- and long-range actuation.

D. Overhead mounted infrared safety beams with Door-Mounted Infrared Safety Sensors: Dor-O-Matic #87500; provide on both sides of swinging door.

1. Housing: Extruded anodized aluminum with end caps.
2. Detection (safety) zone: Area of door swing.
3. Door Operator Control: Microprocessor.
 - a. Inoperative: Prevent closed door from opening, prevent open door from closing; allow manual opening.
 - b. Object detected on active side, door closed: Open door.
 - c. Object detected on safety side before door starts to open: Prevent door opening.
 - d. Object detected in safety zone, during door opening: Switch door operator to safety-slow/stop.
 - e. Object detected in safety zone, door open: Continue to hold door open.
4. Provide safety-slow/stop function for door operator, with manual switch between options:
 - a. Safety-slow: Immediately slow down to creep speed and continue to full open position.
 - b. Safety-stop: Immediately stop for 6 seconds, then continue to full open position at creep speed.

E. Provide guard rails complying with ANSI A16.10 and applicable codes.

F. Signs: Provide signs complying with ANSI A156.10 and applicable codes.

1. Approach side: Black arrow on white background inside green circle.
2. Reverse side: "DO NOT ENTER" in white letters on a red circle.
3. Traffic in both directions through same door: Yellow circle with "AUTOMATIC DOOR" in black letters and "CAUTION" across the middle in yellow letters on black.

Part 3 Doors and Frames

A. Doors and Frames: Extruded aluminum alloy, nominal .125" thick.

Select finish below.

1. Finish: Aluminum anodized.
2. Finish: Dark bronze anodized.
3. Finish: Black anodized.
4. Finish: Paint.

B. Door Construction:

1. Through-rod bolted for securing lock and pivot stiles to top and bottom rails.
2. Top Rail:

- a. Web: 1/4" (6.3 mm) thick minimum.
- b. Factory-prepare to accept top door arm, Dor-O-Matic 880-000.
- c. Provide six custom steel press nuts to accept screws for mounting door arm to rail.

3. Bottom Rail:

- a. Factory-prepare to accept bottom pivot (Dor-O-Matic 10160-000).
- b. Provide four custom steel press nuts for securing bottom pivot.
- c. Bottom rail must be one piece construction and not stacked.

Delete narrow stile or medium stile doors below if not required for project.

C. Narrow Stile Doors:

Standard top rail is 2-1/2" (63 mm) high; optional heights of 3-1/2" (89mm high) and 5" (127 mm high) are available. Delete either 1 or 2 as required.

1. Top Rail: 2-1/2" (63 mm) high standard.
2. Top Rail: _____ high. (Indicate optional 3-1/2" or 5".)

Standard bottom rail is 3-1/2" (89 mm high). Optional heights are available to 10". Delete either 3 or 4 as required.

3. Bottom Rail: 3-1/2" (89 mm) high standard.
4. Bottom Rail: _____ high. (Indicate optional 5", 7-1/2" or 10".)
5. Stiles: 2" (51 mm) wide.

D. Medium Stile Doors:

Standard top rail is 3-1/2" (63 mm) high; optional heights of 2-1/2" (63 mm high) and 5" (127 mm high) are available. Delete either 1 or 2 as required.

1. Top Rail: 3-1/2" (89 mm) high standard.
2. Top Rail: _____ high. (Indicate optional 2-1/2" or 5".)

Standard bottom rail is 5" (127 mm) high; optional heights are available to 10" (254 mm) high. Delete number 3 or 4 as required.

3. Bottom Rail: 5" (127 mm) high standard.
4. Bottom Rail: _____ high. (Indicate optional 3-1/2", 7-1/2" or 10".)
5. Stiles: 3-3/4" (95 mm) wide.

Part 4 Execution

4.1 Examination

- A. Verify that door openings and doors are properly installed and ready for installation of automatic door equipment.
- B. Verify that electrical service is available, properly located and of proper type.

4.2 Installation

- A. Install in accordance with manufacturer's instructions; comply with ANSI A156.10.
- B. Verify that electrical connections are made correctly and with dedicated grounding.

4.3 Adjust and Clean

- B. Adjust doors and operators for proper operation, without binding or scraping and without excessive noise.
- C. Clean Glass.
- D. Supply Owner/Contractor with AAADM Certified Daily Safety Check.
- E. Supply Owner/Contractor with keys if required.
- F. Supply Owners Manual.

End of Section