

SECTION 083000
HIGH-SPEED ROLLING DOORS

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. High-speed roll up doors.

1.02 RELATED SECTIONS

- A. None

1.03 REFERENCES

- A. NEMA – National Electrical Manufacturers Association.
- B. LED – Light Emitting Diode.
- C. UL – Underwriters Laboratories.
- D. IP Rating – Ingress Protection.

1.04 SYSTEM DESCRIPTION

- A. Electrical Motor operated unit with manual override in case of power failure.

1.05 SUBMITTALS

- A. Submit the following:
 1. Shop Drawings: Indicate pertinent dimensioning, anchorage methods, hardware locations and installation details.
 2. Product Data: Provide general construction, component connections and details, and electrical equipment, operation instructions and information.
 3. Samples: Submit color samples of door panels for selection by owner.
 4. Manufacturer's Installation: Indicate installation sequence and procedures, adjustment and alignment procedures.

1.06 MAINTENANCE DATA

- A. Recommended preventive maintenance program to be included indicating lubrication requirements and frequency, periodic adjustments required, scheduled maintenance suggested, manufacturer data sheets, and equipment interconnection diagrams.

1.07 REGULATORY REQUIREMENTS

- A. Electrical components UL Listed or recognized by independent testing organization.
- B. Electrical enclosure NEMA approved or UL Listed.

1.08 QUALITY ASSURANCE

- A. Furnish high-speed roll doors and all components and accessories by one manufacturer.

1.09 FIELD MEASUREMENTS

- A. Verify field measurements are as indicated on shop drawings.

1.10 COORDINATION

- A. Coordinate the work with installation of electric power and locations and sizes of conduit.

1.11 WARRANTY

- A. 5 year/1,000,000-cycle limited warranty on materials and workmanship, whichever occurs first.

PART 2 – PRODUCTS

2.01 PRODUCTS

- A. Rytec Corporation Model FlexTec™
- B. No substitutions permitted

2.02 MATERIALS

- A. Main Head Assembly:
 - 1. Door main head assembly shall be assembled by the manufacturer at the manufacturer's facility in a controlled environment and ship as a complete assembly ready for installation.
 - 2. The assembly shall include the drive motor and panel assembly as described herein.
 - 3. Doors that require field assembly of the head components not allowed.
 - 4. Head assembly shall include front and side fascia covers.
 - 5. Head components to be powder coated finished.

- B. Drive Motor:
1. Drive motor shall be AC, variable-speed, constant torque type with integrated “parking brake”.
 2. Motor brakes used to slow or stop the door not allowed.
 3. AC Drive motor shall meet current efficiency standards and be listed or recognized assembly.
 4. Motor shall have ingress protection of IP65 minimum.
 5. Motor shall be factory installed and shipped as part of the head assembly.
 6. Motor assembly shall be capable of continuous or high duty cycle and of sufficient size and design to move door from closed position to full open and back to close position at normal speed 100 times minimum without rest and without overheating or fault.
 7. Motor assembly shall be factory wired and tested.
 8. Motor cables shall be of sufficient length for typical installations so as to reach door control panel without splicing.
- C. Door Panel Assembly:
1. Main panel material shall be 46 oz., 1.1 mm thick, 1-ply Rylon™.
 2. Rylon to be layered, woven, dimensionally stable, puncture resistant, polymer impregnated monofilament polyester fabric.
 3. Material to be vertically flexible but with lateral stiffness.
 4. Fabrics that are flexible both vertically and laterally will not be accepted.
 5. Bottom leading edge shall not contain any hard, rigid or stiff parts including stiffeners, sensors, batteries or transmitters.
 6. Leading edge bottom seal shall be easily replaceable without welding or tools.
 7. Panel shall be factory installed and shipped as part of the head assembly.
- D. Panel Assembly Drive System:
1. Panel assembly shall include a drive system that employs drive teeth at each vertical edge of the panel assembly.
 2. Teeth shall be spaced such that they form a nearly continuous chain. Teeth shall be designed so as to limit bending to only the direction needed to roll up thereby minimizing friction and allowing for consistent self-repair.
 3. Drive teeth shall be formed from self-lubricating composite material so as to not require grease or other forms of lubrication.
 4. Drive teeth shall be fixed in place by clamping force.
 5. Fixing hardware shall not penetrate the composite jacketed, steel core keder.
 6. Hardware that penetrates the steel cord shall not be allowed.
 7. Drive teeth shall be individually replaceable without the use of special tools or disassembly or removal of the panel assembly.
 8. Optional: replaceable 20” x 20” PVC window(s).
 9. Optional: yellow leading edge bottom seal (black is standard).

- E. Side Frames:
1. Side column and cover material shall be extruded aluminum with a clear anodized finish.
 2. Panel guide tracks shall be of durable low friction material so as to not require grease or other forms of lubrication.
 3. The track design shall be such that when an obstruction to the panel's downward movement is encountered the drive teeth shall release from the guides with little to no additional pull out force.
 4. The track design shall be such that the drive teeth stay in the track when horizontal force is applied such as wind load or pressure differential but release when such forces are excessive such as impact.
 5. The track and drive teeth shall incorporate a design element that allows a dislodged panel to reliably and repeatedly automatically re-enter the track during the opening move without wear or damage and without intervention ("self-repair").
 6. Side columns shall incorporate a single light curtain system reasonably within the line of the moving door panel.
 7. Side columns shall incorporate four Pathwatch® LED signaling strips capable of red or amber illumination.
 8. Signaling strips shall be 36" minimum and factory installed so as to be visible from all sides of the door.
 9. Side frame assemblies shall be assembled by the manufacturer at the manufacturer's facility in a controlled environment and ship as a complete assembly ready for installation.
 10. Doors that require field assembly of the side frame components not allowed.
- F. Obstruction (breakaway) & Self-Repair System:
1. Maximum force required to initially dislodge the panel from the tracks when an obstruction is encountered in the closing path (vertically) of the door shall be 12.0 lbs. or less.
 2. When the panel assembly is dislodged from the guide track system the panel assembly shall reinsert itself into the guide automatically without intervention or damage to teeth or guides.
- G. Travel Speed:
1. Door movement speeds as follows; up to 100" per second opening and 30" per second closing.
 2. Door travel speeds to be factory set but allow for user adjustability (see Electrical Controls & Operation).
- H. Electrical Controls & Operation:
1. Door Controller shall be housed in a UL/cUL Listed TYPE 4X-rated enclosure.
 2. A single controller shall be capable of single phase or 3 phases and accept voltages ranging from 200- 500vac. 600vac available as option.

3. Controller shall include an integrated variable speed drive system capable of infinitely speed control of the drive motor in both directions. External drives or single speed operation not allowed.
4. Controller shall allow for user access to all parameters through provided on-board keypad. Controllers requiring interface device not allowed. User access to sensitive or safety related parameter settings shall be password protected by rolling code to protect the integrity of critical door functions. Access to parameters and door controller adjustments shall not require opening of the enclosure.
5. Controller shall include assignable/programmable inputs and outputs to accommodate special control applications (traffic lights, horns, actuation devices, timing sequences, automation interface, etc.) without the need for additional electrical components or software revision.
6. Controller shall include scrolling, two-line vacuum fluorescent display providing expanded informational messages for straightforward installation, control adjustments and error reporting. Controller shall be capable of displaying messages in English, Spanish, French and German. Language shall be user selectable.
7. Error message history of door to be logged in the controller and include a date stamp for reference.
8. Controller to use absolute rotary encoder to regulate door travel limits.
 - a. Limits to be adjustable, without the use of tools, from floor level at the control panel. Doors using mechanical limits switches, or doors that require tools or access to the operator in order to adjust limits, will not be accepted.
 - b. Controller and encoder shall be integrated such that door movements during loss of power shall not require synchronization or resetting of limits.
9. Controller to communicate directly to the integrated Intelligent³ Light Curtain Safety System residing in the door's moving path.
 - a. Controller and light curtain shall be capable of discrete functionality including comparative analysis of door leading edge position and individual beam obstructions.
 - b. Door shall be cable of discrete reaction to blocked beams close to leading edge vs. blocked beams further from leading edge.
 - c. Light curtain systems whose operating principle is based on assumption of door position are not allowed.
 - d. Controller shall be capable of integration and troubleshooting of the light curtain system from the controller display and interface.
10. Controller shall be capable of operating threshold Pathwatch® warning lights during various door activities.
 - a. Controller and lights shall be capable of steady and flashing illumination and allow for user adjustable signaling options including but not limited to: prior to any door movement, prior to closing, while moving, when door is not fully open and when door is not in automatic operation or faulted.

- I. Finishes
 - 1. All components factory finished.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify that opening sizes, tolerances, and conditions are acceptable.

3.02 INSTALLATION

- A. Install door unit assembly in accordance with manufacturer's instructions.
- B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- C. Fit and align assembly including hardware; level to plumb to provide smooth operation.

3.03 ADJUSTING

- A. Adjust door and operating assemblies.
- B. Test and adjust doors, if necessary, for proper operation.

3.04 CLEANING

- A. Clean door and components.

END OF SECTION