SECTION 08 71 13 – COMMERCIAL DOOR OPERATORS
PULSE 300 SERIES DIRECT DRIVE DC DOOR OPERATOR

PART 1 – GENERAL

1.1 SUMMARY

Provide a direct-drive commercial door operator consisting of a DC electric motor directly coupled to a hollow shaft worm gear reducer. The continuous duty ½, ¾, or 1 HP, 90 V DC, 1750 rpm, IP44 rated motor shall operate from 110–130 V AC or 208–240 V AC, 1 phase, 60 Hz power.

1.2 REFERENCES

A. UL 325.

B. Manufacturer's installation manual.

C. Applicable electrical codes.

1.3 SUBMITTALS

A. Product data.

B. Shop drawings.

C. Wiring diagrams.

D. Operation and maintenance manuals.

E. Warranty documentation.

1.4 QUALITY ASSURANCE

A. Installer shall be trained and experienced with UL 325 requirements.

B. Door shall be properly balanced with limit brackets or bumper springs installed.

C. Structural support shall be adequate to withstand torque arm forces.

1.5 DELIVERY, STORAGE AND HANDLING

A. Store products in original packaging; protect from moisture and impact.

B. Store batteries in temperature-controlled conditions; avoid extreme heat or cold.

1.6 WARRANTY

A. Provide a two-year or one-million-cycle warranty, whichever occurs first.

PART 2 – PRODUCT

2.1 MANUFACTURER

iControls Inc., Richmond Hill, Ontario, Canada (iControlsGlobal.com).

2.2 MOTOR AND GEARBOX

A. Operator shall include a 90 V DC motor available in ½, ¾, or 1 HP ratings.

B. Worm gearbox reducer shall be available in 30:1, 40:1, 50:1, or 60:1 ratio.

C. Gearbox sizes shall include Size 50 and 63 with 1" shaft entry or Size 75 with 1¼" shaft entry.

2.3 CONTROL PANEL

A. Provide a programmable, wall-mountable NEMA 4X control panel with LCD display and OPEN, CLOSE, and STOP buttons.

B. Control voltage shall be 24 V DC.

2.4 BATTERY BACKUP SYSTEM

A. Operator shall include a 24 V battery backup system with two 9 Ah batteries.

B. Operator shall function, as normal, under battery power at reduced speed when AC power is interrupted.

C. When battery charge is depleted (to 75%), system shall revert to a “last cycle” mode requiring constant-pressure on OPEN or CLOSE buttons for operation.

2.5 MECHANICAL BACKUP SYSTEM

A. 9/16" hex shaft on bottom of motor shall be included for redundant mechanical backup

B. An optional chain hoist shall be available for manual operation when battery backup is depleted

C. Chain hoist shall attach directly to the motor and be operable from floor level.

D. Two color-coded cords shall be provided to engage and disengage the chain hoist, with an interlock switch that cuts power to the motor upon chain-hoist engagement.

2.6 PROGRAMMABLE SPEED SETTINGS

A. Open and close speeds shall be adjustable through the control panel user interface.

B. Maximum open speed shall be up to 24"/s; maximum close speed up to 16"/s, depending on shaft size, drum size, door size, door weight and application.

C. Soft start/stop and programmable ramp distances for smooth acceleration/deceleration to reduce mechanical wear.

2.7 ENCODER SYSTEM

A. A gearbox-mounted encoder shall provide precise limit setting and support left or right-side mounting.

B. Encoder shall support advanced door control functionality.

C. Encoder shall sense any lack of motion of the door and halt operation.

2.8 FORCE MONITORING

A. Operator shall include intelligent force monitoring that detects obstructions or jams.

B. Door shall stop during opening and stop and reverse during closing when an obstruction is detected.

C. Force sensitivity shall be adjustable through the control panel.

2.9 SAFETY MONITORING DEVICES

A. Provide a reflective photo eye kit for safety monitoring.

B. For 1 HP operators, provide an upgraded thru-beam photo eye.

2.10 BALANCE DOOR CHECK

A. A feature shall be provided to detect whether the door is properly balanced.

B. When activated, the encoder shall complete a low-speed cycle and analyze the current required to open and close the door. The same or similar numbers indicate a balanced door.

2.11 ADDITIONAL FEATURES AND OPTIONS

A. Additional features include door lock activation, programmable closing timer, voltage selection, door close warning and a weather protection option.

B. Features shall be as specified in manufacturer documentation.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify door balance and smooth operation prior to installation.

B. Confirm clearances: minimum 6" from shaft end, 18" below shaft, and 3" exposed keyed shaft.

C. Verify structural support for supplied torque arm attachment.

3.2 INSTALLATION

A. Install limit brackets or bumper/pusher springs prior to operator installation.

B. Install shaft collar and bent key, mount operator onto keyed shaft.

C. Secure torque arm to structural support using supplied hardware.

D. Mount control panel minimum 5 ft above floor and within sight of the door.

E. Install photo eye no more than 6" above floor; align using indicator LEDs.

F. Complete wiring in accordance with manufacturer diagrams and electrical codes.

3.3 ADJUSTMENT AND TESTING

A. Power system and run self-diagnostic.

B. Program limits, speeds, forces, and timer-to-close settings.

C. Verify photo eye alignment and safety reversal function.

D. Test battery backup operation.

3.4 CLOSEOUT

A. Provide manuals and warranty documentation.

B. Train owner’s personnel in operation and maintenance.