Series 70 Electric Actuators

Actuator Type: Bray Series 70 Electric Actuator or approved equal.

General:

- The actuator shall be compact and low profile to minimize space requirements.
- The actuator shall be 90º operation.
- The actuator shall provide easy access for field wiring and adjustment.
- The actuator shall be built to withstand line vibration and shock without failure.

Enclosure:

- The enclosure shall be die-cast aluminum and polyester or Seacorr coated (as specified) for environmental protection.
- The enclosure shall be provide with captive cover bolts to prevent loss of cover bolts when cover is removed.
- The enclosure shall have two conduit connections (one for power wiring and one for control signal wiring) in either NPT or metric threads as specified.
- The actuator enclosure shall be provided with a high visibility valve position display prominently labeled and color coded to indicate the valve position throughout the full range of travel.

Motor:

- The motor shall be a single phase, permanent split capacitor reversible induction type with Class F or better insulation.
- The motor shall contain a built-in UL approved automatic reset thermal overload protector set at 275º F (135º C) embedded in the motor windings.
- Motors shall be 24 VAC, 120 VAC or 240 VAC 50/60 Hz as specified.
- Additional DC motors and 3-phase 50/60 Hz AC motors shall be available upon request.

Actuator Gear Train System:

- The actuator shall have a self-locking gear train system consisting of a worm and worm gear output drive mechanism, which will hold the valve in the desired position without the need for an electro-mechanical braking system.
- The spur gear train shall have precision cut multi-staged gears which will withstand locked rotor conditions and are permanently lubricated at the factory.

Mechanical Travel Stops:

- Mechanical stainless steel travel stops shall be provided and located outside the actuator enclosure for ease of adjustment.
- Stainless steel lock nuts to hold the travel stops in position and O-ring seals for waterproof protection shall be provided.
- The mechanical travel stops shall be capable of limiting the travel of the actuator in either direction from full closed to full open.

Manual Override:

- The actuator shall be equipped with a manual override handwheel to rotate the valve without electrical power.
- The manual override system shall ensure positive and efficient manual operation without the use of extra tools or levers.

Emergency Shut-off:

- An automatic power cutout switch shall be provided to cut power to the motor when the actuator manual override is engaged.
- This cutout switch shall also function as a safety emergency power shutdown device and shall be accessible from outside the actuator enclosure.

Travel Switches:

- All travel switches shall be:
  Single Pole, Double Throw Form C Type
  UL Listed and CSA Approved
  10A at 125/250 VAC and 1/2A at 125 VDC
- The Actuator switches shall be pre-wired to a terminal block for ease of access and all internal wiring shall range from 12-22 AWG.
- The travel limit switches shall limit the actuator travel in both the open and closed direction of travel.
- Cams for each travel limit switch shall be infinitely adjustable by finger touch or screw driver.

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Service Requirements:

- Actuators shall be designed for electric operation for the following service conditions:
  Temperature ranges of -20ºF (-29ºC) to +150ºF (+65º)

Duty Cycle:

- 25% for Intermittent Operation
- 100% for Continuous Operation

Testing:

- All actuators shall be factory tested to ensure proper operation.

Mounting:

- All actuators shall mount directly to the valve mounting flange and stem without the need for any brackets or couplings.

Optional Equipment:

- The actuator shall be designed to accept any of the following optional accessories if specified:

Torque Limiting System:

- Shall include 2 SPDT mechanical switches and 2 factory calibrated adjusting screws.
- The switches, in response to a predetermined load on the actuator output shaft, shall interrupt power to the motor.
- The switches shall operate at any point and in both directions of actuator travel.

Heater:

- Shall include a self-regulating temperature control to prevent condensation build-up.
- Shall be pre-wired to the terminal block for ease of connection to external source.
- Rated output shall be 5 W at 120 or 220 VAC.

Local Control Station:

For local electrical operation of the actuator:
Shall flush mount to the actuator and include:

- a local/off/remote control switch
- an open/stop/close switch
- two lights which indicate open and closed valve position

Enclosure shall be aluminum and waterproof (NEMA 4, 4X, IP 65)

Approvals & Certifications:

Actuators and Certifications:

- CE98/37/EC
- IEC IP65 Test Certification
- ABS
- Bureau Veritas Certification
- CSA Certification
- TUV IP65

Microprocessor Servo:

- Shall provide precise modulating control of the valve position in response to an analog input signal.
- Shall have an analog output signal proportional to the actual valve position and the signal shall be configurable to either current or voltage output.
- Voltage spike protection shall be provided on all input terminals.
- Independent adjustments shall be provided for Deadband and for both open and closed Speed Control of the actuator.
- Input Signals shall be:
  4-20 mADC 250 Ohm Input Impedance
  0-10 VDC 2.1k Ohm Input Impedance
  2-10 VDC
  10K Ohm or greater potentiometer

Calibration shall be accomplished by pressing a single button to initiate the calibration routine.
Control characteristic shall be linear and duty cycle shall be 100%.
Internal feedback shall be by means of a 10k Ohm potentiometer.
Retransmission outputs shall be:

4-20 mADC
0-5 VDC
0-10 VDC
2-10 VDC

Separate Speed Control adjustments shall be provided for adjustment of open and close travel speeds.
Inputs for the control box, handwheel, LED status indicators and self-diagnostic capability shall also be provided.
DeviceNet Servos shall also be available if specified.

Enclosure:

- The waterproof enclosure shall be certified to UL, CSA and CE (NEMA 4, 4X, IP 65) waterproof standards.
- The waterproof/explosion proof enclosure shall be certified to UL (NEMA4, 4X, 7 & 9) hazardous locations.