

GENERAL

- > The actuator shall be compact and low profile to minimize space requirements.
- > The actuator shall provide adjustable operation up to 90°.
- > 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 - WEATHERPROOF

- > The enclosure shall be die-cast aluminum.
- > The enclosure shall be polyester or Seacorr coated (as specified) for environmental protection.
- > The enclosure shall be provided 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 induction type with Class F or better insulation.
- > The motor shall contain a built-in UL approved automatic reset thermal overload protector set at 275°F (135°C) embedded in the motor windings.
- > Motors shall be 120 VAC or 220 VAC (230 VAC compatible) 50/60 Hz as specified.
- > Other DC and 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.
- > The actuator shall have an Oldham coupler to correct any misalignment between the output gear and the cam shaft.

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 shall be provided to hold the travel stops in position.
- > O-ring seals for waterproof protection shall be provided.
- > The mechanical travel stops shall limit the travel of the actuator in either direction to the full travel range of the valve.
- > Stainless steel spacers shall be provided to prevent adjustment of travel stops above 0° and below 90°.

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 efficient manual operation without the use of extra tools or levers.
- > A motor power cutout switch shall be provided to cut power to the motor when the actuator manual override is engaged.

TRAVEL LIMIT SWITCHES

- > Travel limit switches shall limit the actuator travel in both the open and closed direction of travel.
- > Travel limit switches shall be held in brackets for accurate and repeatable valve position feedback.
- > Travel limit switch cams shall be infinitely adjustable by finger touch or screw driver.
- > All travel limit switches shall be:
 - Single Pole Double Throw (SPDT) Form C, UL Listed, and CSA Approved.
 - 10A at 125/250 VAC and 1/2A at 125 VDC.
- > Travel limit switches shall be pre-wired to a terminal block for ease of access and all internal wiring shall range from 12-22 AWG.



SERVICE REQUIREMENTS

- > Actuators shall be designed for electric operation under the following service conditions:
- > Temperature range:
 - -20°F to 150°F (-29°C to 65°)
- > Duty Cycle:
 - 25% for Intermittent Operation
 - 100% for Continuous Operation

TESTING

- > All actuators shall be factory tested at rated load to ensure proper operation.

MOUNTING

- > All actuators shall comply with ISO 5211 and 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 the following optional accessories if specified:

TORQUE LIMITING SYSTEM

- > Limits torque output during electrical operation.
- > Shall include two SPDT mechanical switches and two 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

- > Prevents internal condensation build-up.
- > Shall be a self-regulating temperature control type.
- > 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

- > Permits 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.
 - Two ¾" NPT conduit entries in base of enclosure for customer wiring.
- > Enclosure shall be aluminum and weatherproof.

BATTERY BACK UP

- > User-selectable valve fail position upon loss of power supply in 24V applications.
- > Shall flush mount to the actuator and include:
 - Visual and remote indication of battery status and operation.
 - Field selectable valve fail position.
 - Two ¾" NPT conduit entries in base of enclosure for customer wiring.
- > Enclosure shall be aluminum and weatherproof.

POTENTIOMETER

- > Provides continuous feedback of valve position.
- > Shall be a gear driven 10k Ohm potentiometer.
- > Shall be standard for units with Servo NXT controller.

AUXILIARY SWITCHES

- > Indicates travel position for remote customer control systems.
- > All auxiliary switches shall be:
 - Single Pole Double Throw (SPDT) Form C, UL Listed, and CSA Approved.
 - 10A at 125/250 VAC and 1/2A at 125 VDC
- > Up to 6 auxiliary switches may be added.

SERVO NXT

- > Precise modulating control of the valve position.
- > Shall accept an analog input command signal proportional to the desired valve position.
- > The analog input signal shall be configurable to either current or voltage input:
 - 4-20mA DC, 0-10V DC, 2-10V DC, 0-5V DC.
- > Shall have an analog output retransmission signal proportional to the actual valve position.
- > The analog output signal shall be configurable to either current or voltage output:
 - 4-20mA DC, 0-10V DC, 0-5V DC.
- > LED driven menu display shall be provided for simplified commissioning, monitor and control of actuator.
- > Voltage spike and transient protection shall be provided on all input terminals and output terminals.
- > Independent isolation shall be provided between analog input command signal and output retransmission signal to eliminate ground loops.
- > 120/230VAC units shall have inductive isolation between line voltage and logic level voltages.
- > Control characteristic shall be linear and duty cycle shall be 100%.
- > Calibration shall be accomplished by pressing a single button to initiate the calibration routine.
- > Independent adjustments shall be provided for deadband and for both open and closed speed control of the actuator.
- > Internal feedback shall be by means of a 10k Ohm potentiometer.
- > Manual mode operation shall be provided to allow for control of actuator when no command signal is present.
- > On-board fault indications shall be provided.
- > Shall be designed to meet UL and CE standards.

ACTUATOR APPROVALS & CERTIFICATIONS

- > CE
 - Low Voltage Directive: 2014/35/EU
 - EMC Directive: 2014/30/EU
 - Machinery Directive: 2006/42/EC
 - RoHS Directive: 2011/65/EU
 - IP65, IP67 (Excluding S70-130/180)
- > ABS
- > Bureau Veritas Certification
- > CSA Certification
 - For select 120VAC units.
- > UL Certification (cULus)
 - For select 120VAC units.
 - NEMA Type 4, 4x.

HAZARDOUS LOCATION

- > Certified to UL and CSA standards.
 - For select 120VAC units.
 - NEMA Type 4, 4x, 7, 9.
- > Hazardous location enclosure shall be UL certified to:
 - Class I, DIV 1 & 2, Group C, D
 - Class II, DIV 1 & 2, Group E, F, G
 - Operating Temperature Code: T3B (165°C)
- > All unused conduit entry points to be sealed for ingress protection.