

The following Series 70 Electric Actuator basic installation and operation instructions are a condensed version of the basic Operation and Maintenance Manual available from your local Bray distributor.

Mounting to a Valve

All Bray Series 70 electric actuators are suitable for direct mounting on Bray butterfly valves. With proper mounting hardware, the S70 actuators can easily be adapted onto any quarter-turn valve or device.

The standard mounting position for the actuator should be to orient the unit with its hand wheel in a vertical plane and parallel to the pipeline. If the actuator is to be mounted on a vertical pipe, it is recommended that the unit be positioned with the conduit entries on the bottom to prevent condensation from entering the actuator by way of the conduit.

The actuator should be mounted to the valve as follows:

- 1. Manually operate the actuator until the output shaft of the actuator is in line with the valve stem. If possible, use an intermediate position (i.e. valve disc/stem and actuator half open.)
- 2. Place the proper adapter, if required onto the valve stem. It is recommended that a small amount of grease be applied to the adapter for easier assembly to the valve stem and actuator output drive shaft.
- 3. Install the furnished mounting studs into the actuator base mounting holes. The short threaded length goes into the actuator.
- 4. Mount the actuator onto the valve stem. Be sure the mounting studs are properly aligned with the holes in the top-plate of the valve or the mounting bracket. It may be necessary to manually override the actuator to align the mounting studs with the mounting holes.
- 5. Lower the actuator onto the valve and secure tightly in place with the furnished hex nuts and lock washers.

Field Wiring

The actuator should be connected to field wiring as follows:

- 1. Each actuator is provided with two (2) conduit entries (one for power and one for control.) Remove the temporary conduit plug (recessed with no threads) for the power connection. The remaining square-headed conduit plug (for the control wiring) is weatherproof but could be replaced with a more permanent metal plug.
- 2. The motor full load current is noted on the nameplate of the actuator. The terminal strip will accept wire sizes ranging from 10 to 22 AWG (12 to 22 AWG for the servo.) 18 AWG minimum is recommended. Note that the optional heaters use approximately 0.5 amps at 110 volts.
- 3. All actuators have their applicable wiring diagrams attached to the inside of the covers. Field wiring should be terminated at the actuator terminal strip in accordance with this wiring diagram.
- 4. The conduit connections must be properly sealed to maintain the weatherproof integrity of the actuator enclosure.

Closed Travel Switch and Travel Stop Adjustment

The electrical travel switches must be set to trigger prior to reaching the mechanical travel

stops. The travel switches are labeled for open and close. The cams are color coded (green for open, red for closed.)

1. Loosen the mechanical stop for the closed position and back it off so that it does not interfere with actuator travel (closed stop located on right when viewed from travel stop side of actuator.)
2. Remove the indicator rotor by pulling up on it. This will expose the machined groove on the end of the cam shaft, which is the reference to the valve disc position.
3. Manually operate the actuator hand wheel clockwise until the valve reaches the desired closed position.
4. Rotate the red adjusting knob until the cam lobe just trips the switch from a clockwise direction. **NOTE: it is possible that the rotation of one cam will move the other cam. If this occurs, hold the other knobs or cams during adjustment.**
5. With the travel switch in the closed position, rotate the closed travel stop clockwise until it bottoms against the output gear. Then back it off 1/2 turn counterclockwise and lock in position with the locknut. **NOTE: Manual travel stops are designed to prevent manual over travel, not to stop the motor. The travel stops have an adjustment range of approximately 10 degrees.**

Open Travel Switch and Travel Stop Adjustment

Manually operate the actuator hand wheel counterclockwise until the valve is fully open. follow the same procedure as outlined in "Closed Travel Switch and Travel Stop Adjustment" except use the green cam (open) and the travel stop located on the left side when viewed from the travel stop side of the actuator.

Servo Calibration

It is important that the travel switches and travel stops are set properly prior to calibrating the servo. Use a controlled and known command signal source. Factory installed servos are pre-calibrated.

Set the Potentiometer

1. Manually operate the actuator hand wheel until the unit is in the fully closed position.
Rotate the black potentiometer drive gear adjustment knob to just engage the
2. potentiometer gear segment at the closed position. The closed position is indicated by a white dot.
3. Manually operate the actuator to the fully open position.
Fine tune the potentiometer adjustment at this end to equalize the difference between
4. the ends. The potentiometer gear segment should maintain engagement with the drive gear throughout full actuator travel.

Set the Servo

1. Set the 5 position dip switch located on the servo board to match the command signal. A chart is provided on the wiring diagram inside the cover.
2. Wire the command signal to the correct positions on the terminal strip. Correct positive and negative connections are important.
3. Five (5) trim pot settings are on the servo. Screwing any one of them in the clockwise direction (cw) will increase its function. The trim nuts faintly click when they reach

either end of travel.

Both the open speed (OS) and closed speed (CS) trim pots should be adjusted to the fastest setting by screwing them both all the way clockwise (cw) until a faint click is heard. This is the standard factory setting.

5. Power-up the actuator. The yellow LED should light-up indicating power to the servo.

The Zero (Z) trim pot sets the low command signal to the closed position. Set the command signal to the closed setting and turn the trim pot clockwise to move the

6. actuator towards the close cam until it is tripped. If the cam is already tripped, turn the trim pot counterclockwise to pull it off the switch and then clockwise until the switch just trips.

7. The Span (S) trim pot is set the same as the zero but for the opposite end.

The Dead Band (DB) should not require adjustment unless the motor is "searching"

8. for a set point. If it does search, screw the Dead Band trim pot clockwise to increase the dead band. If increased sensitivity is desired, turn the trim pot counterclockwise.

9. Run the actuator throughout its range to verify all settings are correct.