



VALVE ACCESSORIES & CONTROLS, INC.

Principal of Operation

V200E-FF “Fail Freeze” Electropneumatic Positioner

A simple design and concept equals a simple operation of these components:

- A pneumatic positioner
- A close-coupled Fail Freeze I/P converter

Note: Principal of operation assumes proper calibration of the unit has been made.

Supply pressure up to 145 PSI is connected to the supply port of the unit (marked S on the gauge block side), and the actuator ports (marked C+ and C-) are connected to either a double or single acting (spring return actuator-rotary or linear) actuator. The C+ port is the positioners opening port. An instrument signal (generally 4-20 mA) is then connected to the external FF I/P. The Fail Freeze I/P is directly coupled with the pneumatic positioner; with a custom designed adapter. Air supply for the I/P (up to 145 psi) is internally supplied from the positioners supply air pressure. The I/P converter will convert the 4/20 mA signal to a 3-15 psi signal to the positioner diaphragm. A milliamp change causes the I/P to respond and sends a pneumatic signal (internally) to the positioner diaphragm, causing the diaphragm to move and the spool valve (air shuttle valve) to move, sending air to the actuator. As the actuator moves, feedback to the positioner is provided through the actuator linkage and the positioner spindle/cam assembly. As the actuator moves the spindle/cam rotate and turn to the desired “set point” based on the mA input signal. Once the set point is achieved a steady state position is maintained. Should this unit loose electrical power, (<2ma) the unit will “fail” in its current position, no matter what the actuator failure mode. It literally locks the actuator in it current position and will hold that position, with only a small leakage rate for several hours. Once power is restored, the unit will return to the original signal set point. Most electropneumatic positioners will fail to a zero position on loss of input signal, and will allow the actuator to take control of the failure mode. The V200E-FF acts like a normal 4-20 mA positioner, unless it looses power. It then fails the package in place. The most common application for this product is on damper control. However, critical process control valves could benefit with this feature.

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