



## Electronic Ball Valve Guide Specifications

### Control Valve Assemblies

#### *Ball Valve Bodies*

All ball valves used for modulating or floating (tri-state) control must be furnished with a stainless steel ball & stem, RPTFE or PTFE seat seals and a high performance graphite impregnated stem seal that are rated for four times the modulation life of RTFE. Standard RTFE stem seals will not be acceptable. Two-way bronze bodies up to 3 inches must be rated for 600 PSI WOG, cold, non-shock service. Three-way bronze bodies up to 2 inches must be rated for 400 PSI WOG, cold, non-shock service. The valves must have a blowout proof stem design. Each valve must be tested by the valve manufacturer with air and under water at each end of travel. The stem packing gland must be adjustable to compensate for wear. Stem O-rings are not acceptable. Valve design must allow for disassembly of valve top, inspection and replacement of packing without system shutdown or valve body removal. Reduced port Cv's on valves must be set using a gauge and end stops. Modified balls which do not have equal percentage flow curves are not acceptable. Valves with nonmetallic characteristic discs are not acceptable.

#### *Valve/Actuator Mounting*

All ball valve actuator brackets must be metallic. Nonmetallic brackets are not acceptable. Mounting brackets must differ dimensionally for both "standard" and "high/low" temperature applications. Separation must be provided between the mounting bracket and electronic valve actuators to allow complete free air movement around the actuator to minimize heat transfer and condensation. Valve assemblies without the standoffs described above are not acceptable.

### Application

#### *Hot or Chilled Water*

The pressure drop of the coil and the added pressure drop incurred when reducing the line size to the control valve (adjustment of the Cv for the Piping Geometry Factor, Fp) must be taken into consideration when sizing the valve. Three-way ball valves must be piped as diverting valves or mixing valves depending on the application. When used for coil applications, the valve must be piped before the coil (as a diverting valve) and not after the coil (as a mixing valve). The manufacturer's recommendations must be followed with regard to mounting, locating, insulating, wiring and applying the control valve assembly.

#### *Steam*

Ball valves may be used to control steam only when the complete assembly is specifically designed for high temperature applications. This applies to modulating applications up through 15 PSIG saturated steam and to two-position control applications up through 150 PSIG saturated steam. All seats and seals used for steam applications must be MTFE. Standard RTFE is not acceptable. Extra high brackets specifically designed for high temperature must be used. Brackets must separate the actuator from the valve body with a minimum of the following dimensions: for 1/2" to 1" valves a minimum of 4-5/8"; for 1-1/4" to 2" reduced port, and 1" and 1-1/4" full port valves a minimum of 6-1/2"; for full port valves 1-1/2" and larger and 3" reduced port a minimum of 5-1/2". All stem adapters between the valve stem and the electronic actuator must be close tolerance machined stainless or nickel plated steel, so as to provide low thermal conductivity and precise positioning throughout the full travel of the valve.

The manufacturer's recommendations must be followed with regard to mounting, locating, insulating, wiring and applying the products.



**Valve Actuator - Commercial Type:**

The valve actuator must be capable of providing the minimum torque required for proper valve close-off for the application. Each actuator must have current limiting or stall detection circuitry incorporated into its design to prevent damage to the actuator. A gear release mechanism or manual override crank must be provided on all non-spring return motors to allow for manual override. Applications that require fail-safe operation of the valve assembly must use actuators with mechanical spring return or the addition of a centralized battery backup module at the control panel for ease of maintenance.

The actuator must be modulating, floating (tri-state) or two-position with spring return as called out in the control sequence of operation. All modulating valves must have positive positioning and respond to a 0(2)-10 VDC or a 0(4)-20 mA (with a dropping resistor) control signal. These modulating units must each have a position feedback signal corresponding to the actual valve position that can be wired back to the control system. An optional feedback potentiometer or auxiliary switch must be available, if required, for floating or two-position type actuators. All control valves must have a visual position indicator. The actuator must be powered by a 24 VAC, 120 VAC or 24 VDC signal. Actuators must be UL listed.

NEMA 4/4X type housing constructed of marine grade aluminum with an epoxy coating must be available as an option for all single actuator and dual assemblies. Field fabrication or non-NEMA 4/4X type enclosures are not acceptable.

The manufacturer must warranty the control valve assembly for a period of 2 years from the date of installation, not to exceed 30 months from the original date of shipment.

Control Valves must be provided by ( DEI ) Dodge Engineering and Controls, Chelmsford, MA.