

SECTION 230923.11 – CONTROL VALVES

- A. Control valves assemblies shall be provided and delivered from a single manufacturer as a complete assembly.
- B. The manufacturer shall warrant all components for a period of 5 years, except where noted, from the date of production with the first two years unconditional.

1.1 BUTTERFLY-STYLE CONTROL VALVES

- A. Commercial-Grade Butterfly Valves **NPS 8 (DN 200) to NPS 12 (DN 300)**:
 - 1. Manufactured, brand labeled or distributed by Belimo.
 - 2. Three-way valve arrangement: Two 2-way butterfly valves in a cast iron Tee configuration cross-linked to ensure proper flow orientation.
 - 3. Performance:
 - a. Bi-directional 0% shutoff at **200 psig (1379 kPa)**.
 - b. Rotation: Zero to 90 degrees.
 - c. Modified equal percentage flow characteristic.
 - 4. Body: Polyester coated ductile iron fully lugged, body pressure rating consistent with ASME/ANSI Class 125.
 - 5. Disc: 304 stainless steel with a pin connection. Disc shells and coated discs are not acceptable.
 - 6. Shaft: 420 stainless steel.
 - 7. Seat: Reinforced EPDM.
 - 8. Shaft Bushings: Stainless steel and PFE.
 - 9. Process temperature rating: negative **Minus 22 DegF to 250 DegF (negative 30 DegC to plus 120 DegC)**.
 - 10. Housing: NEMA Type 4X. Assembly shall have an internal heater and an integrated humidity sensor to prevent condensation within the housing.
 - 11. The valve assembly shall include a reflective position indicator.
 - 12. The travel rotation shall be automatically be determined by the actuator without the use of adjustable mechanical cams or end of travel limit switches. End of travel limit switches are not acceptable.
 - 13. Actuator shall self-adapt to ensure close-off with no end stop limit adjustment required. End of travel limit switches are not acceptable.
 - 14. Override: A detachable hand crank shall also de-clutch the actuator to permit manual override when powered.
 - 15. Communication: Actuator shall incorporate NFC (Near Field Communication) for configuration and testing.
 - 16. Proportional actuators shall be software configurable through an EEPROM without the use of actuator mounted switches. Programmable functions shall include a scalable operating range 0.5 – 32.0 vdc with a 2.0 vdc (minimum) span; variable runtime; and data logging. BACnet communication shall be included.
 - 17. Corrosion-resistant nameplate indicating:
 - a. Model number and production date.
 - b. Body size.
 - c. Flow arrow.

- B. Commercial-Grade Butterfly Valves **NPS 2 (DN 50)** through **NPS 6 (DN 150)** and **NPS 14 (DN 350)** through **NPS 24 (DN 600)**:
1. Manufactured, brand labeled or distributed by Belimo.
 2. Three-way valve arrangement: Two 2-way butterfly valves in a cast iron Tee configuration cross-linked to ensure proper flow orientation.
 3. Performance:
 - a. Bubble-tight shutoff (no leakage).
 - b. Rotation: Zero to 90 degrees.
 - c. Modified equal percentage flow characteristic.
 4. Body: Ductile iron fully lugged **200 psig (1379 kPa)** body.
 5. Disc: 304 stainless steel with a pin connection. A coated disc shell is not acceptable.
 6. Shaft: 304 stainless steel.
 7. Seat: Reinforced EPDM.
 8. Shaft Bushings: Reinforced PTFE supported at a minimum of 4 locations.
 9. Process temperature rating: **negative 22 DegF to plus 250 DegF (negative 30 DegC to plus 120 Deg C)**.
 10. Actuators for **NPS 14 (DN 350)** through **NPS 24 (DN 600)**:
 - a. Overload Protection: Auto-reset thermal switch shall be embedded in the motor.
 - b. Actuator shall be equipped with a hand wheel or shaft for manual override to permit operation of the actuator in the event of an electrical power failure.
 - c. A visual indication beacon shall indicate position status of the device.
 - d. Warranty shall be 2 years (minimum) from date of production.
 11. Corrosion-resistant nameplate indicating:
 - a. Model number and production date.
 - b. Body size.
 - c. Flow arrow.