SECTION 230923.11 – CONTROL VALVES

A. Control valves assemblies shall be provided and delivered from a single manufacturer as a complete assembly. 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 BALL-STYLE CONTROL VALVES

1. Manufactured, brand labeled or distributed by Belimo.
2. **NPS 2 (DN 50)** and Smaller: Provide a pipe package supplied by the valve manufacturer. The supply side of the coil shall contain a strainer/shut-off ball valve/drain [an integrated isolation ball valve/manual air vent] with P/T port. The return side of the coil shall contain a union fitting with a P/T port, ball-style control valve, an integrated manual balancing valve/union/isolation ball valve/manual air vent with P/T port. Shut-off valves as an integrated part of the ball-style control valve shall not be permitted. **[For ball valves with two ports, supply an integrated 100% port isolation valve/manual air vent with P/T port for field installation in the bypass of the circuit.] [A [12"] [24"] flexible hose set shall be provided for each coil supply and return connection.]**

A. Ball Valves with Single Reduced Port:

1. Pressure Rating for **NPS 3/4 (DN 20)** and smaller: **360 psi (2482 kPa)**.
2. Close-off Pressure: **75 psig (517 kPa)**.
3. Media Temperature Range: **36 to 212 deg F (Plus 2 to plus 100 deg C)**.
4. Body and Tail Piece: Forged brass with nickel plating.
5. End Connections: NPT female ends.
6. Ball: Chrome-plated brass.
7. Stem and Stem Extension:
   a. Material: brass to match ball.
   b. Blowout-proof design.
8. Ball Seats: Teflon PTFE.
9. Stem Seal: Dual EPDM O-rings (lubricated)
10. Flow Characteristics for A-Port: Equal percentage.
11. Label each valve with following:
    a. Manufacturer's name and model number.
    b. Body size.

B. Pressure-Independent Ball Valves **NPS 3/4 (DN 20)** and Smaller:

1. Performance:
   a. Pressure Rating: **360 psig (2482 kPa)**.
   b. Close-off pressure of **200 psig (689 kPa)**.
   c. Process Temperature Range: Between **36 deg F to 212 deg F (minus 18 to plus 100 deg C)**.
2. Integral Pressure Regulator: Located upstream of ball to regulate pressure, to maintain a constant pressure differential while operating within a pressure differential range of **5 to 50 psig (34 to 345 kPa)**. Replaceable cartridges are not permitted.
3. Body: Forged brass, nickel plated, and with NPT female ends.

4. Ball: Stainless steel.
5. Stem and Stem Extension: Stainless steel, blowout-proof design.
6. Ball Seats: Teflon PTFE.
7. Stem Seal: Dual EPDM O-rings (lubricated).
8. Flow characteristic: Equal percentage

SPECIFYING PRESSURE INDEPENDENT CONTROL VALVES REQUIRE THE FOLLOWING ADDITIONS TO SECTIONS 232113 AND 230593.

To be inserted into Section 232113 – HYDRONIC PIPING

2.6 CONTROL VALVES

K. Calibrated Balancing Valves and Automatic Flow-Control Valves shall not be used on equipment where pressure independent control valves are installed.

To be inserted into Section 230593 – TESTING, ADJUSTING, AND BALANCING FOR HVAC

3.11 PROCEDURE FOR HYDRONIC SYSTEMS

H. Systems installed with pressure independent control valves shall not require terminal level hydronic system balancing. **[Field verify installation and operating differential pressure range of all pressure independent control valves.] [Total system flow shall be verified to be within +/-10% of system design.] [10%] [20%] [25%] <Insert Percentage> of the total installed product shall be randomly checked for individual conformance. Exact locations of tested product to be coordinated with the design engineer.] Any individual adjustments for the pressure independent valve assembly (valve and actuator combination) for field conditions shall be performed using the pressure independent control valve manufacturer's documented procedure following the guidelines of the National Environmental Balancing Bureau (NEBB) and the Testing Adjusting Balancing Bureau (TABB)]**