**Section 23 09 00 – INSTRUMENTATION AND CONTROL FOR HVAC**

23 09 13 Instrumentation and Control Devices for HVAC

* 1. CONTROL VALVES

1. Industrial and Segmented Ball Valve:
   1. 2-Way NPS ½”-4” - Valve body shall be 3-piece construction of WCB carbon steel or CF8M stainless steel, as required by the application. Stainless Steel balls and stems with NPT threaded connections.
      1. Characterized V Port and Full Port option.
      2. API 598 – Bubble Tight Leakage Rating
      3. 3-piece design for in-line servicing.
      4. Flow Characteristics: Linear, Modified equal percentage, Equal percentage based on port.
      5. Close-Off Pressure Rating:  300 psi
      6. Media Temperature Range: Water = -20 to 500⁰ F / Steam = 100 psi.
      7. Max Differential Pressure:  Water = 80 psi / Steam = 50 psi.
   2. 2-Way Segmented Ball Valve 2” – 12” – Valve body shall consist of WCB Carbon Steel or CF8M Stainless Steel, as required by application. Stainless Steel Balls and stems with ANSI Class 150 flanged connections.
      1. Characterized ball segment.
      2. ANSI Class VI Leakage Rating
      3. Flow Characteristics: Equal percentage.
      4. Close-Off Pressure Rating:  Water = 280 psi / Saturated Steam = 100 psi.
      5. Media Temperature Range: Water = -20 to 380⁰ F @ 200 psi / Saturated Steam = 100 psi.
      6. Max Pressure drop:  Water/ Steam = 1/3 of inlet Pressure.
   3. Actuator: Nema 2 or Nema 4 rated actuator based on working conditions:
      1. Actuator shall have torque rating safety factor of minimum 1.25 valve torque.
      2. Actuator shall mount directly to valve body or have manufacturer provided mounting kit.
   4. Manufactured by Bray or equal.