

SECTION 22 10 00 – VALVES

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Provide labor, materials, equipment and services to perform operations required for the complete installation and related Work as required in Contract Documents.

1.2 SUBMITTALS

- A. Valves and accessories.

PART 2 - PRODUCTS

2.1 VALVES

- A. General: Valves shall have following requirements:
 - 1. Working pressure stamped or cast on bodies per MSS SP-25.
 - 2. Stem packing serviceable without removing valve from line and shall be free of asbestos.
- B. Makes:
 - 1. Gate, and check valves: Milwaukee, Hammond, Nibco, Watts.
 - 2. Ball valves: Apollo (Conbraco), Hammond, Milwaukee, Nibco, Watts.
 - 3. Butterfly valves: Demco, DeZurik, Hammond, Keystone, Milwaukee, Watts.
 - 4. Balance valves: Circuit Solver, Armstrong, Tour and Anderson, Nibco.
 - 5. To establish a standard of quality and identify features, certain manufacturer's numbers are given in the following paragraphs.
- C. Gate Valves:
 - 1. 2-1/2 and larger: Lead free cast iron body, OS&Y, solid wedge disc, flanged bonnet, rising stem, 250 psi non-shock cold working pressure, Watts 408-OSYRW.
 - 2. 2 in. and smaller: Lead free, bronze, solid wedge disc, rising stem, 300 WOG, union bonnet. Soldered ends, Milwaukee UP149.
- D. Check Valves:
 - 1. 2-1/2 in. and larger: Brass body, threaded bonnet, brass disc, 200 psi Milwaukee UP967.
 - 2. 2 in. and smaller: silicon bronze alloy, Y-pattern, swing check, 200 psi non-shock

cold working pressure. Screwed ends, Nibco T-413-Y-LF, threaded ends, Nibco S-413-Y-LF.

- 3. Silent check valves (2 inch and smaller): Lead free cast copper silicon alloy body and check, with stainless steel spring, 400 psi WOG non-shock, Watts LF600.

E. Ball Valves:

- 1. 4 inches and under: Lead free, two piece, brass body, full port with hard chrome plated brass ball. Watts LFFBV-3C series.

F. Balance Valves:

- 1. Lead free calibrated balance valve with factory pre-set flowrate limit over control range. Valve shall have internal seals. Valves shall be stainless steel, with a nickel plated brass collar.
- 2. Balance valves sizes shall be factory pre-set and suitable for differential control ranges of 2-32 or 5-60 psi.
- 3. Balance valve sizes shall be based upon gpm range rather than pipe size.

| <u>Balance Valve Size</u> | <u>GPM Range</u> |
|---------------------------|------------------|
| ¾" | up to 3.0 |
| 1" | 3.1 – 7.0 |
| 1 ¼" | 7.1 - 12 |
| 1 ½" | 13 - 22 |
| 2" | 23 - 45 |
| 2 ½" | 46 - 70 |
| 3" | 71 – 140 |
| 4" | 141 – 280 |

- 4. Provide balancing valve arrangements at each location where multiple risers or horizontal loops intersect on hot water return lines.
- 5. Design equipment equal to Victaulic ICSS, TA series 76X.
- 6. Bell & Gossett "Circuit Setter" are not permitted.

G. Valves For Gauges And Instruments:

- 1. 1/4 in. size: Brass bar stock for 1000 psi and 300°F; Trerice No. 735 needle valve.

H. Butterfly Valves For Water Service:

- 1. 100% bubbletight shutoff against listed working pressure of 200 psi. Milwaukee "C" Series.
- 2. Body: Lug type, ductile iron ASTM A536 or cast iron ASTM A126B.

3. Disc: Aluminum bronze or bronze.
 4. Seat: Replaceable, EPDM, reinforced resilient seat, for water temperatures up to 250°F at 150 psi.
 5. Shaft: 316 or 416 stainless steel, mounted within corrosion resistant bearings, of the two piece type.
 6. Operators: Valves up to 6 in. with lever operators; valves 8 in. and larger with heavy duty manual gear actuators.
 7. Valves shall be capable of B1-Directional Flow and have extended neck which can accommodate 2 in. of pipe insulation.
 8. Valves are to conform to MSS-SP-67.
- I. Gas Valves:
1. 4 in. and larger: Manual actuated with lever actuators bolted gland type, short pattern, lubricated plug type, 200 CWP, flanged, Nordstrom Fig. #143.
 2. 2 in. and smaller: Iron body, screwed ends, AGA approved and UL listed. Nordstrom Fig. #142.
 3. Solenoid valves for gas line emergency shutoff ASCO#H117 cast iron body, normally closed operation, IRI approved, UL listed, two way valve with synthetic seat, 120 Volt AC.
 4. Gas vent valve shall be ASCO #S262 two way normally open, aluminum body, NBR seals and disc.
 5. Regulators shall be Equimeter Model 121 sized for the flow and pressure drop required for 100% capacity of the plant. Coordinate with the utility for exact requirements.
 6. Master Gas Shut-off valves shall be ASCO model 216C89 key operated, normally open switch and a normally closed push-button mounted in stainless steel faceplate with wall box. Provide relay control panel ASCO model 108D10C. Provide ASCO model EF8215B50 solenoid valve tied into emergency shut off button. Provide signage at emergency push button to properly label emergency shut-off. Coordinate exact location of devices in field with general contractor prior to start of work.
- J. Fire Protection Valves:
1. General: UL listed and FM approved and labeled for intended fire protection service. Sprinkler systems 175 psi wwp; stamped/cast on body.
 2. Gate Valves: OS&Y pattern. IBBT, flanged ends, 200 psi wwp, resilient wedge disc 2-1/2 in. and up; bronze body, threaded ends 2 in. and smaller.

- a) Stockham #B-133 (2 in. and less).
 - b) Stockham #G-610 (2-1/2 in. and up).
 - c) Make: Kennedy, Mueller, Stockham
3. Butterfly/Ball Control Valves with Provision Tamper Switch: Iron or bronze body:
- a) Milwaukee "Butterball" (2 in. and less).
 - b) Grinnell #770FP or Gruvlok (2-1/2 in. and up).
 - c) Make: Grinnell, Kennedy, Milwaukee, Stockham, Victaulic.
4. Check Valves: Swing type rubber faced, IBBM, flanged/water/grooved ends 2-1/2 in. and up; bronze body, threaded ends 2 in. and smaller.
- a) Grinnell #3315 (2 in. and less).
 - b) Grinnell #780FP (2-1/2 in. and up).
 - c) Make: Grinnell, Kennedy, Stockham.
5. Trim, Drain and Test Valves: Ball, plug, angle or globe type, bronze body, threaded ends, UL listed.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General:

1. Provide valves of type called for and where required to service equipment and fixtures.
2. Use extreme care and caution when soldering valve connections to piping to prevent valve seat damage. Apply heat with the flame directed away from the center of the valve body. Inspect all valves after soldering, tighten valve packing nut and make adjustments if required to ensure valve operates properly.
3. Provide at major building and systems sections.
4. Provide chain wheels, guides, and chain loops for valves, where called for.
5. Locate valves with stems at or above horizontal positions and swing check valves in horizontal position only.
6. Butterfly valves may be used for water service over 3 in. unless otherwise noted.
7. Ball valves shall be used for water service through 3 in., unless otherwise noted.
8. Provide hose threaded drain valves at all low points, strainers, equipment, and as called for.

END OF SECTION