

SECTION 15110

GENERAL DUTY VALVES FOR HVAC

**PART 1 –GENERAL**

1.1 SUMMARY

- A. Section includes valves for building services piping.

1.2 REFERENCES

- A. AGA Z21.22 (American Gas Association) - Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems.
- B. ASME B16.3 (American Society of Mechanical Engineers) - Malleable Iron Threaded Fittings.
- C. AWS (American Welding Society) - Welding and Brazing Qualifications.
- D. MSS SP-67 (Manufacturers Standardization Society of the Valve and Fittings Industry) - Butterfly Valves.
- E. MSS SP-71 (Manufacturers Standardization Society of the Valve and Fittings Industry) - Cast Iron Swing Check Valves, Flanged and Threaded Ends.
- F. MSS SP-78 (Manufacturers Standardization Society of the Valve and Fittings Industry) - Cast Iron Plug Valves, Flanged and Threaded Ends.
- G. MSS SP-80 (Manufacturers Standardization Society of the Valve and Fittings Industry) - Bronze Gate, Globe, Angle and Check Valves.
- H. MSS SP-85 (Manufacturers Standardization Society of the Valve and Fittings Industry) - Cast Iron Globe & Angle Valves, Flanged and Threaded Ends.
- I. MSS SP-110 (Manufacturers Standardization Society of the Valve and Fittings Industry) - Ball Valves Threaded, Socket-Welding, Solder

1.3 SUBMITTALS

- A. Section 01330: Submittal Procedures.

1.4 CLOSEOUT SUBMITTALS

- A. Section 01770 - Execution Requirements: Closeout procedures.
- B. Project Record Documents: Record actual locations of valves.
- C. Operation and Maintenance Data: Submit installation instructions, spare parts lists, exploded assembly views.

1.5 QUALITY ASSURANCE

- A. Perform work in accordance with applicable codes and laws as well as the Stanford University Facilities Design and Construction Standards and all Stanford University Contract documents.
- B. Maintain one copy of each document on site.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing work of this section with minimum three years documented experience.

1.7 PRE-INSTALLATION MEETING

- A. Section 01330 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store and protect equipment.
- B. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- C. Provide temporary protective coating on cast iron and steel valves.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Store and protect equipment.
- B. Do not install valves underground when bedding is wet or frozen.

1.10 WARRANTY

A. Section 01770 - Execution Requirements: Product warranties and product bonds

B. Provide five year manufacturer warranty for valves excluding packing.

1.11 EXTRA MATERIALS

A. Section 01770 - Execution Requirements: Spare parts and maintenance products.

B. Supply two packing kits for each size valve.

**PART 2 –PRODUCTS**

2.1 GATE VALVES

A. Up To and Including 2 inches:

1. Construction: Bronze body, bronze trim, screwed union bonnet, rising stem, solid wedge disc, alloy seat rings, threaded ends.

B. Over 2 inches:

1. Construction: Iron body, bronze trim, bolted bonnet, rising stem, hand-wheel, outside screw and yoke, solid wedge disc with bronze seat rings, flanged ends.

2.2 GLOBE OR ANGLE VALVES

A. Up To and Including 2 inches:

1. Construction: Bronze body, bronze trim, screwed bonnet, rising stem and hand wheel, renewable composition disc and bronze seat or renewable plug disc and stainless steel seat ring, threaded ends.

B. Over 2 inches:

1. Construction: Iron body, bronze trim, bolted bonnet, rising stem, hand-wheel, outside screw and yoke, rotating plug-type disc with renewable seat ring and disc, flanged ends.

2.3 BALL VALVES

A. Up To and Including 2 inches:

1. Construction: Bronze two piece body, chrome plated brass ball, teflon seats and stuffing box ring, lever handle with balancing stops, threaded ends with union.

B. Over 2 inches:

1. Construction: Steel and iron body, nickel or chrome plated steel body, steel stem, Buna-N seals.

## 2.4 PLUG VALVES

### A. Up To and Including 2 inches:

1. Construction: Bronze body, bronze tapered plug, full port opening, non-lubricated, Teflon packing, threaded ends.
2. Operator: One plug valve wrench for every ten plug-valves with a minimum of one wrench.

### B. Over 2 inches:

1. Construction: Cast iron body and plug, full port opening, pressure lubricated, teflon packing, flanged ends.
2. Operator: Each plug valve with a wrench with setscrew.

## 2.5 BUTTERFLY VALVES

A. Body: Cast or ductile iron with resilient replaceable EPDM seat, wafer or lug ends, extended neck.

B. Disc: Chrome plated ductile iron.

C. Operator: Infinite position lever handle with memory stop.

## 2.6 SWING CHECK VALVES

### A. Up To and Including 2 inches:

1. Construction: Bronze body, bronze trim, bronze rotating swing disc, with composition disc, threaded ends.

### B. Over 2 inches:

1. Construction: Iron body, bronze trim, bronze or bronze faced rotating swing disc, renewable disc and seat, flanged ends.

## 2.7 SPRING LOADED CHECK VALVES

A. Construction: Iron body, bronze trim, split plate, hinged with stainless steel spring, resilient seal bonded to body, wafer or threaded lug ends.

## 2.8 FLANGES, UNIONS, AND COUPLINGS

### A. Unions for Pipe 2 inches and Under:

1. Ferrous Piping: 150 psig malleable iron, threaded.
2. Copper Pipe: Bronze, soldered joints.

- B. Flanges for Pipe Over 2 inches:
  - 1. Ferrous Piping: 150 psig forged steel, slip-on.
  - 2. Copper Piping: Bronze.
- C. Gaskets: 1/16-inch thick pre-formed neoprene.
- D. Grooved and Shouldered Pipe End Couplings:
  - 1. Housing Clamps: Malleable iron, galvanized outdoors, to engage and lock designed to permit some angular deflection, contraction, and expansion.
  - 2. Sealing Gasket: C-shape elastomer composition for operating temperature range from -30 degrees F to 230 degrees F.
- E. Accessories: Steel bolts, nuts, and washers.
- F. Connections: Brass transitions.

### **PART 3 –EXECUTION**

#### **3.1 EXAMINATION**

- A. Section 01330 - Administrative Requirements: Coordination and project conditions.
- B. Verify Piping System is ready for installation.

#### **3.2 INSTALLATION**

- A. Provide brass transitions wherever jointing dissimilar metals.
- B. Install valves with stems upright or horizontal, not inverted.
- C. Use grooved mechanical couplings and fasteners only in accessible locations
- D. Install unions downstream of valves and at equipment or apparatus connections. Do not use direct welded or threaded connections to valves, equipment or other apparatus.
- E. Install gate, ball, or butterfly valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- F. Install globe, ball, or butterfly valves for throttling, bypass, or manual flow control services.
- G. Provide spring loaded check valves on discharge of water pumps.
- H. Provide plug valves in natural or propane gas systems for shut-off service.

- I. Provide flow controls in water re-circulating systems where indicated.
- J. Use butterfly valves in heating, chilled and condenser water systems interchangeably with gate and globe valves.
- K. Use only butterfly valves in chilled and condenser water systems for throttling and isolation service.
- L. Use lug end butterfly valves to isolate equipment.
- M. Use all bronze valves for fuel oil service.
- N. Use 3/4 inch gate or ball valves with cap for drains at main shut-off valves, low points of piping, bases of vertical risers, and at equipment.

### 3.3 INTERFACE WITH OTHER PRODUCTS

- A. Conform to applicable piping specification for hangers and insulation.

END OF SECTION