

**SECTION 22 05 23**  
**GENERAL-DUTY VALVES FOR PLUMBING PIPING**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

A. General-duty valves for domestic water and sewer systems.

**1.2 RELATED WORK**

A. Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING.

**1.3 SUBMITTALS**

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Manufacturer's Literature and Data:

1. Valves.
2. Backflow Prevention Devices.
3. Pressure Reducing Valves.

**1.4 APPLICABLE PUBLICATIONS**

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American Society of Mechanical Engineers (ASME):

- A112.1.2-04.....Air Gaps in Plumbing Systems
- A112.14.1.....Backwater Valves

C. American Society for Testing and Materials (ASTM):

- A47-04.....Ferritic Malleable Iron Castings
- A126-04.....Gray Iron Castings for Valves, Flanges and Pipe Fittings.

A536-84-04e1.....Ductile Iron Castings

B62-02.....Composition Bronze or Ounce Metal Castings

D. International Code Council

International Plumbing Code

E. Manufacturers Standardization Society of the Valve and Fittings

Industry, Inc. (MSS):

SP-67-02a.....Butterfly Valves

SP-70-98.....Cast Iron Gate Valves, Flanged and Threaded Ends.

SP-72-99.....Ball Valves With Flanged or Butt Welding For General Purpose

SP-80-08.....Bronze Gate, Globe, Angle and Check Valves.

SP-110-96.....Ball Valve Threaded, Socket Welding, Solder  
Joint, Grooved and Flared Ends

F. American Society of Sanitary Engineers (ASSE):

1012-02.....Backflow Preventers with Intermediate  
Atmospheric Vent

1013-05.....Reduced Pressure Principle Backflow Preventers

1015-05.....Double Check Backflow Prevention Assembly

**PART 2 - PRODUCTS**

**2.1 VALVES**

A. Asbestos packing is prohibited.

B. Shut-off:

1. Domestic Cold, Hot and Recirculating Hot Water:

a. 50 mm (2 inch) and smaller:

- 1) Angle Valve, MSS SP-80, Type 1, Class 125, ASTM B62 bronze body integral seat and screw-in bonnet, bronze disk and stem, CWP Rating 1380 kPa (200 PSIG), loose key, threaded or solder-joint ends, chrome plated.
- 2) Ball, MSS SP-72, SP-110, Type II, Class 125, Style 1, rated for 1035 kPa at 176 Celsius (150 psig at 350 Fahrenheit), two piece, full port, chrome plated brass ball, end entry body style, 15% glass reinforced PTFE seats, PTFE packing and blow-out proof stem, vinyl covered steel handle, with solder-joint end connections or threaded ends with adapters are acceptable, SWP Rating 1035 kPa (150 PSIG), CWP Rating 4140 kPa (600 PSIG).
- 3) Ball, MSS SP-72, SP-110, Type I, Class 150, Style 1, rated for 1035 kPa at 176 Celsius (150 psig at 350 Fahrenheit), three piece, full port, ASTM B 584 Type 316 stainless steel ball and stem, 15% glass reinforced PTFE seats, PTFE packing and blow-out proof stem, vinyl covered steel handle, with solder-joint end connections or threaded ends with adapters are acceptable, SWP Rating 1035 kPa (150 PSIG), CWP Rating 4140 kPa (600 PSIG).

b. Less than 65 mm (2 ½ inch) to 100 mm (4 inches):

- 1) Butterfly, MSS SP-67, Type 1 iron body, ASTM A 126 cast iron or ASTM A 536 ductile iron body, lug type suitable for bidirectional dead-end service at rated pressure without use of downstream flange, aluminum bronze disc, one or two piece

416 stainless steel stem, EPDM seat, wafer design, lever operator, 1375 kPa (200 pound) WOG, Fed. Spec WW-V-1967.

C. Balancing:

1. Hot Water Recirculating, 50 mm (2 inches) and smaller: Combination type, calibrated, bronze with bronze disc, equipped with readout valves with integral check valve, indexing position pointer and calibrated name plate, internal EPT 0-ring seals and factory molded insulating enclosures.
2. Larger than 50 mm (2 inches): Combination balancing and shut-off, non-lubricated eccentric plug type with cast iron or semi-steel body, electroless nickel plated cast iron plug, with resilient facing suitable for continuous water service up to 80 °C (180 °F), bronze bearings, 1200 kPa (175 pound) WOG rating and an adjustable open position memory stop and lever.

D. Check:

1. Less than 80 mm (3 inches) and smaller): Cast bronze body and trim conforming to ASTM B 62, horizontal swing type, Y-pattern, bronze disk, stainless steel pin, MSS-SP-80, 850 kPa (125 pound) WSP. Class 150 valves meeting the above specification may be used where pressure requires or Class 125 are not available.
2. Larger than 100 mm (4 inches and larger):
  - a. Iron body, bronze trim, swing type, vertical or horizontal installation, flange connections, 1375 kPa (200 pound) WOG.
  - b. Ductile iron (ASTM A536) or malleable iron (ASTM A47) body, stainless steel or aluminum bronze trim, dual disc, spring loaded, non-slamming design with grooved ends for connection with mechanical grooved couplings. Consult manufacturer for appropriate elastomeric seal for intended service. The maximum working pressure shall be 3450 kPa (500 pounds psi), depending on size.

E. Globe:

1. 80mm (3 inches) or smaller: MSS-SP-80, Cast bronze bonnet and stem ASTM B62, class 850 kPa (125 pound) WSP, copper-silicon bronze stem. Disk shall be free to swivel on the stem. Composition seating surface disk construction may be substituted for all metal disk construction. Packing shall be a woven non-asbestos material, impregnated with not less than 25 percent, by weight, tetrafluoroethylene resin, malleable iron handle.

2. Larger than 80 mm (3 inches): Similar to above, except with cast iron body and bronze trim.

## **2.2 WATER PRESSURE REDUCING VALVE AND CONNECTIONS**

- A. Single-seated, for dead end service for 200 to 850 kPa (30 to 125 pounds) range on low pressure side. Composition diaphragm and stainless steel springs, bronze body with threaded connections for sizes 15 to 55 mm (1/2 to 2 inch), cast iron or semi-steel body with brass or bronze trimmings and flanged connections for sizes 15 to 50 mm (2-1/2 to 4 inch).
- B. Operation: Diaphragm and spring to act directly on valve stem. Delivered pressure shall vary not more than one kPa for each 10 kPa (one pound for each 10 pounds) variation on inlet pressure.
- C. Setting: Entering water pressure, discharge pressure, capacity, size, and related measurements shall be as shown on the drawings.
- D. Connections Valves and Strainers: Install shut off valve on each side of reducing valve and full sized bypass with globe valve. Install strainer on inlet side of, and same size as pressure reducing valve. Install pressure gage on low pressure side of line.

## **2.3 BACKWATER VALVE**

- A. ASME A112.14.1, Horizontal, cast-iron, check valve type, removable bronze swing check, factory assembled, open for airflow unless subject to backflow condition, hinged or pivoted, with revolving disc. Extension ASTM A74 service class of sufficient size to permit removal of valve from grade or floor. Hinge, pivot, disc and seat shall be nonferrous metal. Provide clamping device wherever the cleanout extends through the membrane waterproofing.

## **2.4 BACKFLOW PREVENTERS**

- A. Provide a backflow prevention device at the domestic water service entrance to each building and at any point in the plumbing system where the potable water supply comes in contact with a potential source of contamination. Device shall be certified by the American Society of Sanitary Engineers. Listed below is a partial list of connection to the potable water system which shall be protected against backflow or back siphonage.
- B. Double Check Backflow Preventer: ASSE 1015, continuous pressure applications, pressure loss of 5-psig maximum thru the middle 1/3 of valve flow range, horizontal configuration, bronze body for 50 mm (2 inch) and smaller, iron valves with interior lining complying with AWWA

C550 or that is FDA approved for 65 mm (2 1/2"inch) and larger, ball type valves on inlet and outlet of 50 mm (2 inch) backflow valves and gate valves on inlet and outlet of 65 mm (2 1/2 inch) backflow valves.

1. Double check backflow devices shall be installed on all domestic water supplies to each building connected to a municipal or rural water supply and as required by the ICC International Plumbing Code.

C. Reduced Pressure Backflow Preventer: ASSE 1013, continuous pressure applications, pressure loss of 12-psig maximum thru the middle 1/3 of valve flow range, horizontal configuration, bronze body for 50 mm (2 inch) and smaller, iron valves with interior lining complying with AWWA C550 or that is FDA approved for 65 mm (2 1/2"inch) and larger, ball type valves on inlet and outlet of 50 mm (2 inch) backflow valves and gate valves on inlet and outlet of 65 mm (2 1/2 inch) backflow valves. Provide air gap fitting conforming to ASME A112.1.2 matching the backflow preventer connection.

1. Reduced Pressure Principle Backflow devices shall be installed for all water make-up supplies to heating systems, cooling tower, chilled water system, and generators and as required for facilities with high cross contamination risks as required by the ICC International Plumbing Code.

D. Intermediate Atmospheric-Vent Vacuum Breaker: ASSE 1012, continuous pressure applications, bronze body.

1. Hose bibs and sinks w/threaded outlets.
2. All kitchen equipment, if not protected by air gap.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION**

A. General: Installation shall comply with the ICC International Plumbing Code and the following:

1. Install valves in accordance with manufacturers installation instructions.
2. Install valves with stem in horizontal position and in a position to allow full stem movement.
3. Install valves for each fixture or plumbing equipment in a manner to allow fixture or equipment removal without distribution system shut-down.
4. All valves shall be easily accessible. Install valve in each water connection to fixture.

5. Backflow prevention device shall be installed in an accessible location, between 305 mm (12 inches) and 915 mm (36 inches) above finish floor.
6. After piping systems have been tested and placed into service but before final adjusting and balancing, inspect each valve for leaks; replace if necessary.

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