SECTION 230523.11 - GLOBE VALVES FOR HVAC PIPING

Revise this Section by deleting and inserting text to meet Project-specific requirements.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

1. GENERAL
   * + 1. RELATED DOCUMENTS

Retain or delete this article in all Sections of Project Manual.

* + - * 1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
      1. SUMMARY
         1. Section Includes:

Bronze angle valves.

Bronze globe valves.

Iron globe valves.

Chainwheels.

* + - 1. DEFINITIONS

Retain terms that remain after this Section has been edited for a project.

* + - * 1. CWP: Cold working pressure.
      1. SUBMITTALS
         1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
         2. Manufacturer’s installation instructions shall be provided along with product data.
         3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
         4. Product Data: For each type of valve.
      2. DELIVERY, STORAGE, AND HANDLING

Information in this article is paraphrased from MSS publications.

* + - * 1. Prepare valves for shipping as follows:

Protect internal parts against rust and corrosion.

Protect threads, flange faces, grooves, and weld ends.

Set angle and globe valves closed to prevent rattling.

* + - * 1. Use the following precautions during storage:

Maintain valve end protection.

Store valves indoors and maintain at higher-than-ambient dew point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

* + - * 1. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

1. PRODUCTS

See Editing Instruction No. 1 in the Evaluations for cautions about named manufacturers and products. For an explanation of options and Contractor's product selection procedures., see Section 016000 "Product Requirements."

* + - 1. GENERAL REQUIREMENTS FOR VALVES

HVAC valve applications specified in this Section are limited to NPS 24 (DN 600). Many valves specified are available in larger sizes.

* + - * 1. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.
        2. ASME Compliance:

ASME B1.20.1 for threads for threaded-end valves.

ASME B16.1 for flanges on iron valves.

ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.

Valve solder-joint end connections are not recommended for valves in HVAC piping. Soldering and brazing methods used to achieve required pressure-temperature ratings may damage internal valve parts. Special installation requirements for soldered valves may make threaded valves more cost-effective.

Caution: Use solder with melting point below 840 deg F (454 deg C) for angle and globe valves.

ASME B16.18 for solder joint.

ASME B31.1 for power piping valves.

ASME B31.9 for building services piping valves.

* + - * 1. Refer to HVAC valve schedule articles for applications of valves.

Caution: Revise pressure ratings and insert temperature ratings in valve articles if valves with higher ratings are required. Valves larger than NPS 12 (DN 300) typically have a lower pressure rating than smaller valves. Verify pressure requirements for large valves.

* + - * 1. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
        2. Valve Sizes: Same as upstream piping unless otherwise indicated.
        3. Valves in Insulated Piping: With 2-inch (50-mm) stem extensions.
        4. Valves shall be first quality, free from all imperfections and defects, with body markings indicating manufacturer and rating.
        5. Valve parts of same manufacturer, size and type shall be interchangeable.
        6. Manually operated globe and angle valves shall be of rising stem type, unless otherwise specified.
        7. Valves which use packing, shall be capable of being packed when wide open and under full working pressure.
      1. BRONZE ANGLE VALVES

Retain "Bronze Angle Valves, Class 125" or "Bronze Angle Valves, Class 150" Paragraphparagraph below, or both, if bronze angle valves are required. MSS SP-80 covers bronze angle valves of NPS 1/4 to NPS 3 (DN 8 to DN 80).

* + - * 1. Bronze Angle Valves, Class 125:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9678) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Hammond Valve](http://www.specagent.com/Lookup?uid=123457063389).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457063390).

[NIBCO INC](http://www.specagent.com/Lookup?uid=123457063391).

Approved equivalent.

Description:

Standard: MSS SP-80, Type 1.

CWP Rating: 200 psig (1380 kPa).

Body Material: ASTM B62, bronze with integral seat and screw-in bonnet.

Ends: Threaded.

Stem and Disc: [**Bronze**] [**PTFE**].

Packing: Asbestos free.

Handwheel: Malleable iron[**, bronze, or aluminum**].

* + - * 1. Bronze Angle Valves, Class 150:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9679) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[KITZ Corporation](http://www.specagent.com/Lookup?uid=123457063393).

[Stockham; a Crane brand](http://www.specagent.com/Lookup?uid=123457063394).

Approved equivalent.

Description:

Standard: MSS SP-80, Type 1.

CWP Rating: 300 psig (2070 kPa).

Body Material: ASTM B62, bronze with integral seat and union-ring bonnet.

Ends: Threaded.

Stem and Disc: [**Bronze**] [**PTFE**].

Packing: Asbestos free.

Handwheel: Malleable iron[**, bronze, or aluminum**].

* + - 1. BRONZE GLOBE VALVES

Retain "Bronze Globe Valves, Class 125" or "Bronze Globe Valves, Class 150" Paragraphparagraph below, or both, if bronze globe valves are required. MSS SP-80 covers bronze globe valves of NPS 1/4 to NPS 3 (DN 8 to DN 80).

* + - * 1. Bronze Globe Valves, Class 125:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9680) Subject to compliance with requirements, [provide products by the following] [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:

[Hammond Valve](http://www.specagent.com/Lookup?uid=123457063398).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457063400).

[NIBCO INC](http://www.specagent.com/Lookup?uid=123457063401).

Approved equivalent.

Description:

Standard: MSS SP-80, Type 1.

CWP Rating: 200 psig (1380 kPa).

Body Material: ASTM B62, bronze with integral seat and screw-in bonnet.

Ends: Threaded[**or solder joint**].

Stem and Disc: [**Bronze**] [**PTFE**].

Packing: Asbestos free.

Handwheel: Malleable iron[**, bronze, or aluminum**].

* + - * 1. Bronze Globe Valves, Class 150:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9681) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Hammond Valve](http://www.specagent.com/Lookup?uid=123457063408).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457063410).

[NIBCO INC](http://www.specagent.com/Lookup?uid=123457063411).

Approved equivalent.

Description:

Standard: MSS SP-80, Type 2.

CWP Rating: 300 psig (2070 kPa).

Body Material: ASTM B62, bronze with integral seat and union-ring bonnet.

Ends: Threaded.

Stem: Bronze.

Disc: [**Bronze**] [**PTFE**].

Packing: Asbestos free.

Handwheel: Malleable iron[**, bronze, or aluminum**].

* + - 1. IRON GLOBE VALVES

Retain "Iron Globe Valves, Class 125" or "Iron Globe Valves, Class 150" Paragraphparagraph below, or both, if iron globe valves are required. MSS SP-85 covers iron globe valves of NPS 2 to NPS 12 (DN 50 to DN 300).

* + - * 1. Iron Globe Valves, Class 125:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9682) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Hammond Valve](http://www.specagent.com/Lookup?uid=123457063420).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457063422).

[NIBCO INC](http://www.specagent.com/Lookup?uid=123457063423).

Approved equivalent.

Description:

Standard: MSS SP-85, Type I.

CWP Rating: 200 psig (1380 kPa).

Body Material: ASTM A126, gray iron with bolted bonnet.

Ends: Flanged.

Trim: Bronze.

Packing and Gasket: Asbestos free.

Operator: Handwheel or chainwheel.

* + - * 1. Iron Globe Valves, Class 250:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9683) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Hammond Valve](http://www.specagent.com/Lookup?uid=123457063432).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457063433).

[NIBCO INC](http://www.specagent.com/Lookup?uid=123457063434).

Approved equivalent.

Description:

Standard: MSS SP-85, Type I.

CWP Rating: 500 psig (3450 kPa).

Body Material: ASTM A126, gray iron with bolted bonnet.

Ends: Flanged.

Trim: Bronze.

Packing and Gasket: Asbestos free.

Operator: Handwheel or chainwheel.

* + - 1. CHAINWHEELS

* + - * 1. [Manufacturers:](http://www.specagent.com/Lookup?ulid=9516) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Babbitt Steam Specialty Co](http://www.specagent.com/Lookup?uid=123457063436).

[Roto Hammer Industries](http://www.specagent.com/Lookup?uid=123457063437).

[Trumbull Industries](http://www.specagent.com/Lookup?uid=123457063438).

Approved equivalent.

Retain option in "Description" Paragraphparagraph below if chainwheel does not mount directly to the valve stem or gearbox shaft.

* + - * 1. Description: Valve actuation assembly with sprocket rim, chain guides, chain[**, and attachment brackets for mounting chainwheels directly to handwheels**].

In "Sprocket Rim with Chain Guides" Subparagraphsubparagraph below, consider specifying aluminum, or the zinc or epoxy coatings, for corrosive operating conditions. Bronze should be specified for severe operating conditions. See the Evaluations.

Sprocket Rim with Chain Guides: [**Ductile iron**] [**Ductile or cast iron**] [**Cast iron**] [**Aluminum**] [**Bronze**], of type and size required for valve.[**Include zinc or epoxy coating.**]

In "Chain" Subparagraphsubparagraph below, retain option appropriate for chosen sprocket rim material.

Chain: [**Hot-dip-galvanized steel**] [**Brass**] [**Stainless steel**], of size required to fit sprocket rim.

1. EXECUTION
   * + 1. EXAMINATION
          1. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.
          2. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.
          3. Examine threads on valve and mating pipe for form and cleanliness.
          4. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.
          5. Do not attempt to repair defective valves; replace with new valves.
       2. VALVE INSTALLATION
          1. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
          2. Locate valves for easy access and provide separate support where necessary.
          3. Install valves in horizontal piping with stem at or above center of pipe.
          4. Install valves in position to allow full stem movement.
          5. Install chainwheels on operators for globe valves [**NPS 4 (DN 100)**] <**Insert pipe size**> and larger and more than [**96 inches (2400 mm)**] <**Insert dimension**> above floor. Extend chains to [**60 inches (1520 mm)**] <**Insert dimension**> above finished floor.
          6. Install valve tags. Comply with requirements in Section 230553 "Identification for HVAC Piping and Equipment" for valve tags and schedules.
       3. ADJUSTING
          1. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.
       4. GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

The Section Text is arranged to provide bronze or brass valves in NPS 2 (DN 50) and smaller and iron valves in NPS 2-1/2 to NPS 24 (DN 65 to DN 600).

Caution: Verify that valve classes and pressure and temperature ratings are adequate for system fluid. Repeat each category listing if necessary and insert required pressure range for each listing. Indicate location of each different pressure system on Drawings.

Retain and revise valve applications in this article. Coordinate with valves specified in Part 2.

* + - * 1. If valve applications are not indicated, use the following:

Throttling Service except Steam: [**Globe**] [**Globe or angle**] valves.

Throttling Service, Steam: [**Globe**] [**Globe or angle**] valves.

* + - * 1. If valves with specified CWP ratings are unavailable, the same types of valves with higher CWP ratings may be substituted.
        2. Select valves with the following end connections:

For Copper Tubing, NPS 2 (DN 50) and Smaller: Threaded ends except where solder-joint valve-end option is indicated in valve schedules.

For Copper Tubing, NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Flanged ends except where threaded valve-end option is indicated in valve schedules.

For Copper Tubing, NPS 5 (DN 125) and Larger: Flanged ends.

For Steel Piping, NPS 2 (DN 50) and Smaller: Threaded ends.

For Steel Piping, NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Flanged ends except where threaded valve-end option is indicated in valve schedules.

For Steel Piping, NPS 5 (DN 125) and Larger: Flanged ends.

* + - 1. CHILLED-WATER VALVE SCHEDULE
         1. Pipe NPS 2 (DN 50) and Smaller: Bronze angle or globe valves, [**Class 125**] [**Class 150**], [**bronze**] [**PTFE**] disc, with [**soldered**] [**threaded**] ends.
         2. Pipe NPS 2-1/2 (DN 65) and Larger: Iron globe valves, [**Class 125**] [**Class 250**], with flanged ends.
      2. CONDENSER-WATER VALVE SCHEDULE

Retain one of two paragraphs in this article to suit Project.

* + - * 1. Pipe NPS 2 (DN 50) and Smaller: Bronze angle or globe valves, [**Class 125**] [**Class 150**], with [**bronze**] [**PTFE**] disc and [**soldered**] [**threaded**] ends.
        2. Pipe NPS 2-1/2 (DN 65) and Larger: Iron globe valves, [**Class 125**] [**Class 250**], with flanged ends.
      1. HEATING-WATER VALVE SCHEDULE
         1. Pipe NPS 2 (DN 50) and Smaller: Bronze angle or globe valves, [**Class 125**] [**Class 150**], with [**bronze**] [**PTFE**] disc, and [**soldered**] [**threaded**] ends.
         2. Pipe NPS 2-1/2 (DN 65) and Larger: Iron globe valves, [**Class 125**] [**Class 250**], with flanged ends.
      2. LOW-PRESSURE STEAM VALVE SCHEDULE (15 PSIG (104 kPa) OR LESS)
         1. Pipe NPS 2 (DN 50) and Smaller: Bronze angle or globe valves, [**Class 125**] [**Class 150**], [**bronze**] [**PTFE**] disc, and [**soldered**] [**threaded**] ends.
         2. Pipe NPS 2-1/2 (DN 65) and Larger: Iron globe valves, [**Class 125**] [**Class 250**], with flanged ends.
      3. HIGH-PRESSURE STEAM VALVE SCHEDULE (MORE THAN 15 PSIG) (104 kPa)

Caution: Verify that valve classes and pressure and temperature ratings are adequate for system fluid. Note According to DOL Code Rule 14 for High Pressure Boilers all valves and fittings on all feedwater piping from the boiler up to and including the first stop valve and check valve shall be rated to a pressure exceeding the maximum allowable working pressure of the boiler by either 25 percent or 225 PSI, whichever is the lesser.

* + - * 1. Pipe NPS 2 (DN 50) and Smaller: Bronze angle or globe valves, [**Class 125**] [**Class 150**][**Class 250**], with [**bronze**] [**PTFE**] disc and [**soldered**] [**threaded**][**flanged**] ends.
        2. Pipe Sizes NPS 2-1/2 (DN 65) and Larger: Iron globe valves, [**Class 125**] [**Class 250**].
      1. STEAM-CONDENSATE VALVE SCHEDULE
         1. Pipe NPS 2 (DN 50) and Smaller: Bronze angle or globe valves, [**Class 125**] [**Class 150**][**Class 250**], with [**bronze**] [**PTFE**] disc, and with [**soldered**] [**threaded**] ends.
         2. Pipe NPS 2-1/2 and Larger: Iron globe valves, [**Class 125**] [**Class 250**].
         3. Pipe NPS 2-1/2 (DN 65) and Larger: Iron globe valves, [**Class 125**] [**Class 250**].

END OF SECTION 230523.11