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SECTION 220523.15 - GATE VALVES FOR PLUMBING PIPING

1. GENERAL
   * + 1. SUMMARY
          1. Section Includes:
       2. DEFINITIONS

Retain terms that remain after this Section has been edited for a project. Include only essential definitions or acronyms not well understood by the affected industry or trade.

* + - * 1. CWP: Cold working pressure.
        2. EPDM: Ethylene propylene-diene terpolymer.
        3. NRS: Nonrising stem.
        4. OS&Y: Outside screw and yoke.
        5. RS: Rising stem.
      1. ACTION SUBMITTALS

Action submittals are submittals requiring responsive action and return of reviewed documents to Contractor.

* + - * 1. Product Data:

Bronze gate valves.

Iron gate valves.

CPVC gate valves.

PVC gate valves.

Chainwheels.

* + - 1. 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, press connections, and weld ends.

Set gate 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, stems, or other components as lifting or rigging points unless specifically indicated for this purpose in manufacturer's instructions.

1. PRODUCTS
   * + 1. SOURCE LIMITATIONS
          1. Obtain each type of valve from single source from single manufacturer.
       2. PERFORMANCE REQUIREMENTS
          1. Standards:

Since January 2014, the U.S. Safe Drinking Water Act (SDWA) has required national compliance with less than or equal to 0.25 percent weighted average lead content at wetted surfaces for pipe, fittings, and devices intended to convey or dispense water for human consumption. The IPC and the UPC have the same requirements. Items in compliance with NSF 61/NSF 372 also comply with this requirement. Some manufacturers choose to comply with this requirement through independent testing and have "certified lead-free" products, which may or may not have NSF 61/NSF 372 certification.

Domestic water piping check valves intended to convey or dispense water for human consumption are to comply with the U.S. Safe Drinking Water Act (SDWA), requirements of authorities having jurisdiction, and NSF 61/NSF 372, or to be certified in compliance with NSF 61/NSF 372 by an American National Standards Institute (ANSI)-accredited third-party certification body that the weighted average lead content at wetted surfaces is less than or equal to 0.25 percent.

* + - * 1. ASME Compliance:

ASME B1.20.1 for threads for threaded end valves.

ASME B16.1 for flanges on iron valves.

ASME B16.5 for flanges on metric standard piping.

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

Valve solder-joint connections are common in smaller sizes of plumbing 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.

ASME B16.18 for cast-copper solder joint.

ASME B16.22 for wrought copper solder joint.

ASME B16.51 for press joint.

ASME B31.9 for building services piping valves.

* + - * 1. AWWA Compliance: AWWA C606 for groove-end connections.

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-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 stem extensions.
        4. Valve Bypass and Drain Connections: MSS SP-45.
      1. IRON GATE VALVES

Retain "Iron Gate Valves, NRS, Class 150"; "Iron Gate Valves, OS&Y, Class 125"; "Iron Gate Valves, NRS, Class 250"; or "Iron Gate Valves, OS&Y, Class 250" Paragraph below if iron gate valves are required. MSS SP-70 covers iron gate valves from NPS 2 to NPS 48 (DN 50 to DN 1200). Valves specified in this article are from NPS 2-1/2 to NPS 12 (DN 65 to DN 300).

* + - * 1. Iron Gate Valves, NRS, Class 150:

Retain "Basis-of-Design Product" Subparagraph and list of manufacturers below to identify a specific product or a comparable product from manufacturers listed.

Basis-of-Design Product: Subject to compliance with requirements, provide **Zurn Industries, LLC; Model 48** or comparable product by one of the following:

<**Insert manufacturer's name**>

Description:

Standard: MSS SP-70, Type I.

CWP Rating: 200 psig.

Body Material: Gray iron with bolted bonnet.

Ends: Flange.

Trim: Bronze.

Disc: Solid wedge.

Packing and Gasket: Asbestos free.

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. Examine press joint surfaces. Verify they are clean and free from dents and burrs, and that o-ring seals are in place and undamaged.
          6. Do not attempt to repair defective valves; replace with new valves.
       2. INSTALLATION OF VALVES
          1. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
          2. Provide support of piping adjacent to valves such that no force is imposed upon valves.
          3. Locate valves for easy access and where not blocked by equipment, other piping, or building components.
          4. Install valves so that stems are horizontal or slope upward from centerline of pipe.
          5. Install valves in position that does not project into aisles or block access to other equipment.
          6. Install valves in position to allow full stem and manual operator movement.
          7. Verify that joints of each valve have been properly installed and sealed to assure there is no leakage or damage.
          8. Install chainwheels on manual operators for gate valves [**NPS 4**] <**Insert size**> and larger and more than [**96 inches**] <**Insert dimension**> above floor. Extend chains to [**60 inches**] <**Insert dimension**> above finished floor.
          9. Install valve tags. Comply with requirements in Section 220553 "Identification for Plumbing Piping and Equipment" for valve tags and schedules.
          10. Adhere to manufacturer's installation instructions. When soldering or brazing valves, do not heat valves above maximum permitted temperature. Do not use solder with melting point temperature above valve manufacturer's recommended maximum.
       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 valves in NPS 2 (DN 50) and smaller and iron valves from NPS 2-1/2 to NPS 24 (DN 65 to DN 600).

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

Retain and revise valve applications in paragraphs and schedules below. Coordinate with valves specified in Part 2.

* + - * 1. Use gate valves for shutoff service only.
        2. If valves with specified CWP ratings are unavailable, the same types of valves with higher CWP ratings may be substituted.
        3. End Connections:

For Copper Tubing, NPS 2 (DN 50) and Smaller: Threaded, soldered, or press-end connections.

For Copper Tubing, NPS 2-1/2 to NPS 4: Flange or threaded.

For Copper Tubing, NPS 5 and Larger: Flange.

For Steel Piping, NPS 2 and Smaller: Threaded.

For Steel Piping, NPS 2-1/2 to NPS 4: Flange or threaded.

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

For Groove-End [**Copper Tubing**] [**and**] [**Steel Piping**]: Groove.

* + - 1. LOW-PRESSURE, COMPRESSED-AIR VALVE SCHEDULE - 150 PSIG (1035 kPa) OR LESS
         1. Pipe NPS 2 (DN 50) and Smaller: Bronze gate valves, [**NRS**] [**RS**], [**Class 125**] [**Class 150**] with [**soldered**] [**threaded**] ends.
         2. Pipe NPS 2-1/2 (DN 65) and Larger: Iron gate valves, [**NRS**] [**OS&Y**], [**Class 125**] [**Class 150**] with flange ends.
      2. HIGH-PRESSURE, COMPRESSED-AIR VALVE SCHEDULE - 150 TO 200 PSIG (1035 TO 1380 kPa)
         1. Pipe NPS 2 (DN 50) and Smaller: Bronze gate valves [**NRS**] [**RS**], [**Class 125**] [**Class 150**] with [**soldered**] [**threaded**] ends.
         2. Pipe NPS 2-1/2 (DN 65) and Larger: Iron gate valves, [**NRS**] [**OS&Y**], [**Class 125**] [**Class 250**] with flange ends.
      3. DOMESTIC HOT- AND COLD-WATER VALVE SCHEDULE
         1. Pipe NPS 2 (DN 50) and Smaller:

Retain first or second subparagraph below.

Bronze gate valves, [**NRS**] [**RS**], [**Class 125**] [**Class 150**] with [**soldered**] [**threaded**] ends.

Bronze gate valves, press ends.

* + - * 1. Pipe NPS 2-1/2 (DN 65) and Larger: Iron gate valves, [**NRS**] [**OS&Y**], [**Class 125**] [**Class 250**] with flange ends.

Retain one of first two paragraphs below if retaining CPVC pipe in Part 2.

* + - * 1. CPVC Pipe, NPS 2 (DN 50) and Smaller: [**Union**] [**Non-union**] ball valve.
        2. CPVC Pipe, NPS 4 (DN 100) and Smaller: [**Union**] [**Non-union**] ball valve.

Retain one of two paragraphs below if retaining PVC pipe in Part 2.

* + - * 1. PVC Pipe, NPS 2 (DN 50) and Smaller: [**Union**] [**Non-union**] ball valve.
        2. PVC Pipe, NPS 4 (DN 100) and Smaller: [**Union**] [**Non-union**] ball valve.

END OF SECTION 220523.15