SECTION 22 0523 - GENERAL-DUTY VALVES FOR PLUMBING PIPING

ALL LIBRARIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Ball valves.
2. Butterfly valves
3. Check valves
4. Chainwheels.

B. Related Sections:

1. Division 22 plumbing piping Sections for specialty valves applicable to those Sections only.
2. Division 22 Section "Identification for Plumbing Piping and Equipment" for valve tags and schedules.
3. Valves for natural gas, vacuum, air, carbon dioxide, reverse-osmosis, fire protection and other specialty services are specified in their respective Sections.

1.3 DEFINITIONS

A. CWP: Cold working pressure.

B. EPDM: Ethylene propylene copolymer rubber.

C. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.

D. NRS: Non-rising stem.

E. OS&Y: Outside screw and yoke.

F. RS: Rising stem.

G. SWP: Steam working pressure.

H. SS: Stainless Steel.

1.4 SUBMITTALS

A. Product Data: For each type of valve indicated. Include body, seating and trim materials; valve design, pressure and temperature classifications; end connections, arrangement, dimensions and

required clearances.

B. Maintenance Data: For each type of valve to include maintenance manual specified in Division 01.

1.5 QUALITY ASSURANCE

A. Source Limitations for Valves: Obtain all valves, from a single source, from a single manufacturer.

B. ASME Compliance:

1. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
2. ASME B31.1 for power piping valves.
3. ASME B31.9 for building services piping valves.

C. NSF Compliance: NSF 61 and/or ANSI 372 for valve materials for potable-water service. Valves for domestic water must be 3rd party certified. Comply with Reduction of Lead in Drinking Water Act "Lead Free Law".

1.6 DELIVERY, STORAGE, AND HANDLING

A. Prepare valves for shipping as follows:

1. Protect internal parts against rust and corrosion.
2. Protect threads, flange faces, grooves, and weld ends.
3. Set angle, and globe valves closed to prevent rattling.
4. Set ball and plug valves open to minimize exposure of functional surfaces.
5. Set butterfly valves closed or slightly open.
6. Block all check valves in either closed or open position.

B. Use the following precautions during storage:

1. Maintain valve end protection.
2. 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.

C. 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.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

A. Refer to valve schedule articles for applications of valves.

B. All valves shall be by the same manufacturer.

C. Lead Free silicon bronze (ASTM listed) valves shall be made with corrosion-resistant materials. Manufacturer shall provide third party certification tested in accordance with EN ISO 6509 regarding dezincification corrosion resistance and stress cracking.

D. Bronze Valves: NPS 2 and smaller with threaded ends, unless noted otherwise.

E. Ferrous valves: NPS 2-1/2 and larger with flanged ends, unless noted otherwise

F. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

G. Valve Sizes: Same as upstream piping unless otherwise indicated.

H. Valve Actuator Types:

1. Gear Actuator: For quarter-turn valves NPS 8 and larger.
2. Handwheel: For valves other than quarter-turn types.
3. Handlever: For quarter-turn valves NPS 6 and smaller.
4. Chainwheel: Device for attachment to valve handwheel, stem, or other actuator; of size and with chain for mounting height, as indicated in the "Valve Installation" Article.

I. Valves in Insulated Piping: With 2-inch stem extensions and the following features:

1. Ball Valves: With extended neck and operating handle of non-thermal-conductive material that meets UL 2043 approved for inside air plenum, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation with memory stop that is fully adjustable after insulation is applied.

a. Basis-of-Design Product: NIBCO LF NIB-SEAL (-NS suffix in figure no.) handle extension.

2. Butterfly Valves: With extended neck.

J. Valve-End Connections:

1. Flanged: With flanges according to ASME B16.1 for iron valves.
2. Threaded: With threads according to ASME B1.20.1.

a. Aquatherm PP-R to metal transition fittings at all valves, check valves, calibrated balancing valves, etc.

K. Valve Bypass and Drain Connections: MSS SP-45.

2.2 BALL VALVES

A. Two-Piece, Full-Port, Lead-free, Silicon Bronze Ball Valves with Stainless-Steel Trim:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. NIBCO INC. # T-585-66-LF-NS - Basis of Design Product.
b. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
c. Conbraco Industries, Inc.; Apollo Valves 70LF-140-04 Series

2. Description:

a. Standard: MSS SP-110, ASME A1124.14 and NSF/ANSI-61 & 372 listings.

b. SWP Rating: 150 psig.
c. CWP Rating: 600 psig.
d. Body Design: Two piece.
e. Body Material: Lead Free Brass and Bronze.
f. Ends: Threaded.
g. Seats: Reinforced PTFE.
h. Stem: Stainless or Carbon Steel with 2-1/4" extension.
i. Ball: Stainless steel, vented.
j. Port: Full.
k. Dezincification resistant.

2.3 SINGLE-FLANGE BUTTERFLY VALVES

A. 200 CWP, Ductile-Iron, Lead-Free, Single-Flange Butterfly Valves with EPDM Seat and Aluminum-Bronze Disc:

1. Manufacturer: Subject to compliance with requirements, provide products by the following:

a. NIBCO INC. # LD2000N-315 – Basis of Design Product.
b. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
c. Conbraco Industries, Inc.; Apollo Valves.

2. Description:

a. Standard: MSS SP-67, Type I.
b. CWP Rating: 200 psig.
c. Body Design: Lug type; suitable for bi-directional dead-end service at rated pressure without use of downstream flange.
d. Body Material: ASTM A 536, ductile iron.
e. Seat: EPDM.
f. Stem: One-piece stainless steel.
g. Disc: Lead Free Aluminum-Bronze.

2.4 BRONZE CHECK VALVES

A. Class 125, Spring Actuated - Bronze Check Valves:

1. Manufacturer: Subject to compliance with requirements, provide products by the following:

a. NIBCO INC # T-480Y-LF – Basis of Design Product.
b. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
c. Conbraco Industries, Inc.; Apollo Valves.

2. Description:

a. Standard: Lead-Free Silicon Bronze.
b. CWP Rating: 250 psig.
c. Body Design: Horizontal or vertical flow.
d. Body Material: Silicon Bronze.
e. Ends: Threaded.

f. Disc: PTFE.
g. Stem: Stainless Steel.
h. Spring: Stainless Steel.
i. Listing: NSF.
j. Sizes: NPS 3/8 thru 2.

2.5 BRONZE GLOBE VALVES

A. Class 125, Bronze Globe Valves with Nonmetallic Disc:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Crane Co.; Crane Valve Group; Stockham Division # B13T.
b. NIBCO INC. # T211Y.
c. Milwaukee Valve Company # 502.

2. Description:

a. Standard: MSS SP-80, Type 2.
b. CWP Rating: 200 psig.
c. Body Material: ASTM B 62, bronze with integral seat and screw-in bonnet.
d. Ends: Threaded.
e. Stem: Bronze.
f. Disc: PTFE.
g. Packing: Asbestos free.
h. Handwheel: Malleable iron.
i. Dezincification resistant.

B. Class 150, Bronze Globe Valves with Nonmetallic Disc:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Powell # 150.
b. NIBCO INC. # T235Y.
c. Crane Co.; Crane Valve Group; Jenkins Valves # 106A.

2. Description:

a. Standard: MSS SP-80, Type 2.
b. CWP Rating: 300 psig.
c. Body Material: ASTM B 62, bronze with integral seat and union-ring bonnet.
d. Ends: Threaded.
e. Stem: Bronze.
f. Disc: PTFE.
g. Packing: Asbestos free.
h. Handwheel: Malleable iron.
i. Dezincification resistant.

2.6 CHAINWHEELS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Babbitt Steam Specialty Co.
2. Roto Hammer Industries.
3. Trumbull Industries.
4. Nibco Inc.

B. Description: Valve actuation assembly with sprocket rim, brackets, and chain.

1. Brackets: Type, number, size, and fasteners required to mount actuator on valve.
2. Attachment: For connection to ball and butterfly valve stems.
3. Sprocket Rim with Chain Guides: Ductile or cast iron, of type and size required for valve. Include zinc coating.
4. Chain: Hot-dip, galvanized steel, of size required to fit sprocket rim.

PART 3 - EXECUTION

3.1 EXAMINATION

A. 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.

B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

C. Examine threads on valve and mating pipe for form and cleanliness.

D. 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.

E. Do not attempt to repair defective valves; replace with new valves.

F. Unblock check valves prior to installation.

3.2 VALVE INSTALLATION

A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

B. Locate valves for easy access and provide separate support where necessary.

C. Install valves in horizontal piping with stem at or above center of pipe.

D. Install valves in position to allow full stem movement.

E. Install chainwheels on operators for ball, butterfly and globe valves NPS 4 and larger and more than 96 inches above floor. Extend chains to 60 inches above finished floor.

F. Install check valves for proper direction of flow and as follows:

1. Lift Check Valves: With stem upright and plumb.
2. Spring Loaded Check Valves: In vertical or horizontal position.

3.3 ADJUSTING

A. 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.

3.4 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. If valve applications are not indicated, use the following:

1. Shutoff Service: Ball, butterfly valves.
2. Butterfly Valve Dead-End Service: Single-flange (lug) type.
3. Throttling Service: Ball, or butterfly valves.
4. Pump-Discharge Check Valves: Spring Loaded or Swing Check Valves

a. NPS 2 and Smaller for Domestic Water: Bronze body, spring loaded, check valves with nonmetallic disc.
b. NPS 2-1/2 and Larger for Domestic Water: Iron swing check valves with lever and weight or with spring or iron, center-guided, resilient-seat check valves.
c. NPS 2-1/2 and Larger for Sanitary Waste and Storm Drainage: Iron swing check valves with lever and weight or spring.

B. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP classes or CWP ratings may be substituted.

C. Select valves, except wafer types, with the following end connections:

1. For Polypropylene Piping, NPS 2 and Smaller: Threaded ends.
2. For Polypropylene Piping, NPS 2-1/2 to NPS 4: Flanged ends except where threaded valve-end option is indicated.
3. For Polypropylene Piping, NPS 5 and Larger: Flanged ends.
4. For Steel Piping, NPS 2 and Smaller: Threaded ends.
5. For Steel Piping, NPS 2-1/2 to NPS 4: Flanged ends except where threaded valve-end option is indicated in valve schedules below.
6. For Steel Piping, NPS 5 and Larger: Flanged ends.

END OF SECTION 22 0523