SECTION 230523.13 - BUTTERFLY VALVES FOR HVAC PIPING

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. Iron, single-flange butterfly valves.
2. Iron, grooved-end butterfly valves.
3. High-performance butterfly valves.
4. Chainwheels.

1.3 DEFINITIONS

A. ANSI: American National Standards Institute.

B. Buna-N: Nitrile copolymer of butadiene and acrylonite.

C. CSA: Canadian Standards Association.

D. CWP: Cold working pressure.

E. EPDM: Ethylene propylene copolymer rubber.

F. MSS: Manufacturer's Standardization Society.

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

H. SWP: Steam working pressure.

I. NSF: National Sanitation Foundation.

J. Pb: Lead

K. PTFE: Polytetrafluoroethylene.

L. RPTFE: Reinforced Polytetrafluoroethylene.

M. UL: Underwriters Laboratory.

N. Viton: Fluoropolymer Elastomer.

O. WOG: Water, Oil, and Gas.

P. WSP: Working Steam Pressure.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of valve.

1.5 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 butterfly valves closed or slightly open.

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. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.

B. ASME Compliance:

1. ASME B16.1 for flanges on iron valves.
2. ASME B16.5 for pipe flanges and flanged fittings, NPS 1/2 through NPS 24.
3. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
4. ASME B31.1 for power piping valves.
5. ASME B31.9 for building services piping valves.

C. AWWA Compliance: Comply with AWWA C606 for grooved-end connections.

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

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

F. Valve Actuator Types:

1. Gear Actuator: For valves NPS 8 (DN 200) and larger.
2. Handlever: For valves NPS 6 (DN 150) and smaller.
3. Chainwheel: Device for attachment to gear, stem, or other actuator of size and with chain for mounting height, according to "Valve Installation" Article.

G. Valves in Insulated Piping: With 2-inch (50-mm) stem extensions with extended necks.

2.2 IRON, SINGLE-FLANGE BUTTERFLY VALVES

A. Iron, Single-Flange Butterfly Valves with Stainless-Steel Disc:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Jomar Valve; **[600 Series BFV]** or comparable product by one of the following:

a. <**Insert manufacturer's name**>.

2. Description:

a. Standard: MSS SP-67, Type I.
b. CWP Rating:
1) NPS 1/2 (DN 15) to NPS 12 (DN 300): [**100 psig (690 kPa)** without down stream flange] [**200 psig (1380 kPa)** with down stream flange].
2) NPS 14 (DN 350) to NPS 24 (DN 600): 150 psig (1035 kPa) with down stream flange.

c. Body Design: Lug type; suitable for bidirectional dead-end service at rated pressure without use of downstream flange.
d. Body Material: ASTM A 126, cast iron or ASTM A 536, ductile iron.
e. Seat: [**EPDM**] [**NBR**] [**Viton**] [**PTFE**] .

f. Stem: One- or two-piece stainless steel.
g. Disc: Stainless steel.

2.3 DUCTILE-IRON, GROOVED-END BUTTERFLY VALVES

A. 175 CWP, Iron, Grooved-End Butterfly Valves:

1. Manufacturers: 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**]:
2. Basis-of-Design Product: Subject to compliance with requirements, provide [**product indicated on Drawings**] <**Insert manufacturer's name; product name or designation**> or comparable product by one of the following:

a. <**Insert manufacturer's name**>.

3. Description:

a. Standard: MSS SP-67, Type I.
b. CWP Rating: 175 psig (1200 kPa).
c. Body Material: Coated, ductile iron.
d. Stem: Two-piece stainless steel.
e. Disc: Coated, ductile iron.
f. Seal: EPDM.

B. 300 CWP, Iron, Grooved-End Butterfly Valves:

1. Manufacturers: 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**]:
2. Basis-of-Design Product: Subject to compliance with requirements, provide [**product indicated on Drawings**] <**Insert manufacturer's name; product name or designation**> or comparable product by one of the following:

a. <**Insert manufacturer's name**>.

3. Description:

a. Standard: MSS SP-67, Type I.
b. NPS 8 (DN 50) and Smaller CWP Rating: 300 psig (2070 kPa).
c. NPS 10 (DN 250) and Larger CWP Rating: 200 psig (1380 kPa).
d. Body Material: Coated, ductile iron.
e. Stem: Two-piece stainless steel.
f. Disc: Coated, ductile iron.
g. Seal: EPDM.

2.4 HIGH-PERFORMANCE BUTTERFLY VALVES

A. Class 150, Single-Flange, High-Performance Butterfly Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Jomar Valve; **[600 HPBFV Series]** or comparable product by one of the following:

a. <**Insert manufacturer's name**>.

2. Description:

a. Standard: MSS SP-68.
b. CWP Rating: 285 psig (1965 kPa) at 100 deg F (38 deg C).
c. Body Design: Lug type; suitable for bidirectional dead-end service at rated pressure without use of downstream flange.
d. Body Material: Carbon steel or Stainless steel.
e. Seat: Reinforced PTFE or metal.
f. Stem: Stainless steel; offset from seat plane.
g. Disc: Stainless steel.
h. Service: Bidirectional.

B. Class 300, Single-Flange, High-Performance Butterfly Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Jomar Valve; **[600 HPBFV Series]** or comparable product by one of the following or comparable product by one of the following:

a. <**Insert manufacturer's name**>.

2. Description:

a. Standard: MSS SP-68.
b. CWP Rating: 720 psig (4965 kPa) at 100 deg F (38 deg C).
c. Body Design: Lug type; suitable for bidirectional dead-end service at rated pressure without use of downstream flange.
d. Body Material: Carbon steel or Stainless Steel.
e. Seat: Reinforced PTFE or metal.
f. Stem: Stainless steel; offset from seat plane.
g. Disc: Stainless steel.
h. Service: Bidirectional.

2.5 CHAINWHEELS

A. Manufacturers: 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**]:

B. Basis-of-Design Product: Subject to compliance with requirements, provide [**product indicated on Drawings**] <**Insert manufacturer's name; product name or designation**> or comparable product by one of the following:

1. Babbitt Steam Specialty Co.
2. Roto Hammer Industries.
3. Trumbull Industries.
4. <**Insert manufacturer's name**>.

C. Description: Valve actuation assembly with sprocket rim, chain guides, chain[**, and attachment brackets for mounting chainwheels directly to hand wheels**].

1. 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.**]
2. Chain: [**Hot-dip, galvanized steel**] [**Brass**] [**Stainless 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 mating flange faces for damage. 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.

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

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 butterfly valves [**NPS 4 (DN 100)**] <**Insert 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.

F. Install valve tags. Comply with requirements in Section 230553 "Identification for HVAC Piping and Equipment" for valve tags and schedules.

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 CHILLED-WATER VALVE SCHEDULE

A. Pipe NPS 2-1/2 (DN 65) and Larger:

1. Iron, Single-Flange Butterfly Valves, NPS 2-1/2 to NPS 12 (DN 65 to DN 300): 200 CWP, [**EPDM**] [**NBR**] seat, [**stainless-steel**] disc.
2. Iron, Single-Flange Butterfly Valves, NPS 14 to NPS 24 (DN 350 to DN 600): 150 CWP, [**EPDM**] [**NBR**] seat, [**stainless-steel**] disc.
3. Iron, Grooved-End Butterfly Valves, NPS 2-1/2 to NPS 12 (DN 65 to DN 300): [**175**] [**300**] CWP.
4. High-Performance Butterfly Valves: [**Class 150**] [**Class 300**], single flange.

3.5 CONDENSER-WATER VALVE SCHEDULE

A. Pipe NPS 2-1/2 (DN 65) and Larger:

1. Iron, Single-Flange Butterfly Valves, NPS 2-1/2 to NPS 12 (DN 65 to DN 300): 200 CWP, [**EPDM**] [**NBR**] seat, [**aluminum-bronze**] [**ductile-iron**] [**stainless-steel**] disc.
2. Iron, Single-Flange Butterfly Valves, NPS 14 to NPS 24 (DN 350 to DN 600): 150 CWP, [**EPDM**] [**NBR**] seat, [**aluminum-bronze**] [**ductile-iron**] [**stainless-steel**] disc.
3. Iron, Grooved-End Butterfly Valves, NPS 2-1/2 to NPS 12 (DN 65 to DN 300): [**175**] [**300**] CWP.
4. High-Performance Butterfly Valves: [**Class 150**] [**Class 300**], single flange.

3.6 HEATING-WATER VALVE SCHEDULE

A. Pipe NPS 2-1/2 (DN 65) and Larger:

1. Iron, Single-Flange Butterfly Valves, NPS 2-1/2 to NPS 12 (DN 65 to DN 300): 200 CWP, [**EPDM**] [**NBR**] seat, [**stainless-steel**] disc.
2. Iron, Single-Flange Butterfly Valves, NPS 14 to NPS 24 (DN 350 to DN 600): 150 CWP, [**EPDM**] [**NBR**] seat, [**stainless-steel**] disc.
3. Iron, Grooved-End Butterfly Valves, NPS 2-1/2 to NPS 12 (DN 65 to DN 300): [**175**] [**300**] CWP.
4. High-Performance Butterfly Valves: [**Class 150**] [**Class 300**], single flange.

3.7 LOW-PRESSURE STEAM VALVE SCHEDULE (15 PSIG ([**104 kPa**]) OR LESS)

A. Pipe NPS 2-1/2 (DN 65) and Larger: [**Class 150**] [**Class 300**], high-performance butterfly valves, single flange.

3.8 HIGH-PRESSURE STEAM VALVE SCHEDULE (MORE THAN 15 PSIG ([**104 kPa**]))

A. Pipe NPS 2-1/2 (DN 65) and Larger: [**Class 150**] [**Class 300**], high-performance butterfly valves, single flange.

3.9 STEAM-CONDENSATE VALVE SCHEDULE

A. Pipe NPS 2-1/2 (DN 65) and Larger: [**Class 150**] [**Class 300**], high-performance butterfly valves, single flange.

END OF SECTION 230523.13