SECTION 230523.15 - GATE 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. Brass gate valves.
2. Bronze gate valves.
3. Iron gate valves.
4. Chainwheels.

1.3 DEFINITIONS

A. ANSI: American National Standards Institute.

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

C. CSA: Canadian Standards Association.

D. CWP: Cold working pressure.

E. DZR: Dezincification Resistant.

F. EPDM: Ethylene propylene-diene monomer rubber.

G. FM: Factory Mutual.

H. LF: Lead Free (Brass).

I. MSS: Manufacturer's Standardization Society.

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

K. NRS: Nonrising stem.

L. NSF: National Sanitation Foundation.

M. OS&Y: Outside screw and yoke.

N. Pb: Lead.

O. PTFE: Polytetrafluoroethylene.

P. RPTFE: Reinforced Polytetrafluoroethylene.

Q. RS: Rising stem.

R. SWP: Steam working pressure.

S. TFM: Modified Polytetrafluoroethylene (Hostaflon).

T. T.E.A.: Ternary Ecological Alloy.

U. UL: Underwriters Laboratory.

V. WOG: Water, Oil, and Gas.

W. 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 gate valves closed to prevent rattling.

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 B1.20.1 for threads for threaded-end valves.
2. ASME B16.1 for flanges on iron valves.
3. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
4. ASME B16.18 for solder joint.
5. ASME B31.1 for power piping valves.
6. 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. RS Valves in Insulated Piping: With 2-inch (50-mm) stem extensions.

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

2.2 BRASS GATE VALVES

A. Class 125, NRS, Brass Gate Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Jomar Valve; [**T-301**][**S-301**] or comparable product by one of the following:

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

2. Description:

a. CWP Rating: 200 psig (1380 kPa).
b. Body Material: Brass with integral seat and screw-in bonnet.
c. Ends: Threaded or solder joint.

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d. Stem: Brass.
e. Disc: Solid wedge; brass.
f. Packing: Graphite.
g. Handwheel: Malleable iron, bronze, or aluminum.

2.3 BRONZE GATE VALVES

A. Class 125, NRS, Bronze Gate 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-80, Type 1.
b. CWP Rating: 200 psig (1380 kPa).
c. Body Material: ASTM B 62, bronze with integral seat and screw-in bonnet.
d. Ends: Threaded [**or solder joint**].
e. Stem: Bronze.
f. Disc: Solid wedge; bronze.
g. Packing: Asbestos free.
h. Handwheel: Malleable iron[**, bronze, or aluminum**].

B. Class 125, RS, Bronze Gate Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Jomar Valve; [**T-351G**][**S-351G**] or comparable product by one of the following:

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

2. Description:

a. Standard: MSS SP-80, Type 2.
b. CWP Rating: 200 psig (1380 kPa).
c. Body Material: ASTM B 62, bronze with integral seat and screw-in bonnet.
d. Ends: Threaded or Solder.
e. Stem: Bronze.
f. Disc: Solid wedge; bronze.
g. Packing: Asbestos free.
h. Handwheel: Malleable iron, bronze, or aluminum.

C. Class 150, NRS, Bronze Gate Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide comparable product by one of the following:

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

2. Description:

    a. Standard: MSS SP-80, Type 1.
    b. CWP Rating: 300 psig (2070 kPa).
    c. Body Material: ASTM B 62, bronze with integral seat and union-ring bonnet.
    d. Ends: Threaded or Solder.
    e. Stem: Bronze.
    f. Disc: Solid wedge; bronze.
    g. Packing: Asbestos free.
    h. Handwheel: Malleable iron, bronze, or aluminum.

D. Class 150, RS, Bronze Gate 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 Jomar Valve **[T-351G][S-351G]** or comparable product by one of the following:

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

3. Description:

    a. Standard: MSS SP-80, Type 2.
    b. CWP Rating: 300 psig (2070 kPa).
    c. Body Material: ASTM B 62, bronze with integral seat and union-ring bonnet.
    d. Ends: Threaded or Solder.
    e. Stem: Bronze.
    f. Disc: Solid wedge; bronze.
    g. Packing: Asbestos free.
    h. Handwheel: Malleable iron[**, bronze, or aluminum**].

2.4 IRON GATE VALVES

A. Class 125, NRS, Iron Gate Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Jomar Valve; **[F-351 Series]** or comparable product by one of the following:

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

2. Description:

a. Standard: MSS SP-70, Type I.
b. NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 200 psig (1380 kPa).
c. NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 150 psig (1035 kPa).
d. Body Material: ASTM A 126, gray iron with bolted bonnet.
e. Ends: Flanged.
f. Trim: Bronze.
g. Disc: Solid wedge.
h. Packing and Gasket: Asbestos free.

B. Class 125, OS&Y, Iron Gate Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Jomar Valve; **[F-361 Series]** or comparable product by one of the following:

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

2. Description:

a. Standard: MSS SP-70, Type I.
b. NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 200 psig (1380 kPa).
c. NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 150 psig (1035 kPa).
d. Body Material: ASTM A 126, gray iron with bolted bonnet.
e. Ends: Flanged.
f. Trim: Bronze.
g. Disc: Solid wedge.
h. Packing and Gasket: Asbestos free.

C. Class 250, NRS, Iron Gate 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-70, Type I.
b. NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 500 psig (3450 kPa).
c. NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 300 psig (2070 kPa).
d. Body Material: ASTM A 126, gray iron with bolted bonnet.
e. Ends: Flanged.
f. Trim: Bronze.
g. Disc: Solid wedge.
h. Packing and Gasket: Asbestos free.

D. Class 250, OS&Y, Iron Gate 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-70, Type I.
   b. NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 500 psig (3450 kPa).
   c. NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 300 psig (2070 kPa).
   d. Body Material: ASTM A 126, gray iron with bolted bonnet.
   e. Ends: Flanged.
   f. Trim: Bronze.
   g. Disc: Solid wedge.
   h. Packing and Gasket: Asbestos free.

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 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.

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 gate 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 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

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

1. Shutoff Service: Gate valves.

B. If valves with specified SWP classes or CWP ratings are unavailable, the same types of valves with higher SWP classes or CWP ratings may be substituted.

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

1. For Copper Tubing, NPS 2 (DN 50) and Smaller: Threaded ends, except where solder-joint valve-end option is indicated in valve schedules below.
2. 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 below.
3. For Copper Tubing, NPS 5 (DN 125) and Larger: Flanged ends.
4. For Steel Piping, NPS 2 (DN 50) and Smaller: Threaded ends.
5. 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 below.
6. For Steel Piping, NPS 5 (DN 125) and Larger: Flanged ends.
7. For Grooved-End [**Copper Tubing**] [**and**] [**Steel Piping**], except for Steam and Steam Condensate Piping: Valve ends may be grooved.

3.5 CHILLED-WATER VALVE SCHEDULE

A. Pipe NPS 2 (DN 50) and Smaller: Bronze Valves, [**Class 125**] [**Class 150**], [**NRS**] [**RS**] with [**soldered**] [**threaded**] ends.

B. Pipe NPS 2-1/2 (DN 65) and Larger: Iron Gate Valves, [**Class 125**] [**Class 250**], [**NRS**] [**OS&Y**].

3.6 CONDENSER-WATER VALVE SCHEDULE

A. Pipe NPS 2 (DN 50) and Smaller: Bronze Valves, [**Class 125**] [**Class 150**], [**NRS**] [**RS**] with [**soldered**] [**threaded**] ends.

B. Pipe NPS 2-1/2 (DN 65) and Larger: Iron Gate Valves, [**Class 125**] [**Class 250**], [**NRS**] [**OS&Y**].

3.7 HEATING-WATER VALVE SCHEDULE

A. Pipe NPS 2 (DN 50) and Smaller: Bronze Valves, [**Class 125**] [**Class 150**], [**NRS**] [**RS**] with [**soldered**] [**threaded**] ends.

B. Pipe NPS 2-1/2 (DN 65) and Larger: Iron Gate Valves, [**Class 125**] [**Class 250**], [**NRS**] [**OS&Y**].

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

A. Pipe NPS 2 (DN 50) and Smaller: Bronze Gate Valves, [**Class 125**] [**Class 150**], [**NRS**] [**RS**].

B. Pipe NPS 2-1/2 (DN 65) and Larger: Iron Gate Valves, [**Class 125**] [**Class 250**], [**NRS**] [**OS&Y**].

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

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A. Pipe NPS 2 (DN 50) and Smaller: Bronze Gate Valves, [**Class 125**] [**Class 150**], [**NRS**] [**RS**], bronze.

B. Pipe NPS 2-1/2 (DN 65) and Larger: Iron Gate Valves, [**Class 125**] [**Class 250**], [**NRS**] [**OS&Y**].

3.10 STEAM-CONDENSATE VALVE SCHEDULE

A. Pipe NPS 2 (DN 50) and Smaller: Bronze Gate Valves, [**Class 125**] [**Class 150**], [**NRS**] [**RS**].

B. Pipe NPS 2-1/2 (DN 65) and Larger: Iron Gate Valves, [**Class 125**] [**Class 250**], [**NRS**] [**OS&Y**].

END OF SECTION 230523.15