

## **1 General**

### **1.1 RELATED SECTIONS**

- .1 Section 23 05 15 - Common Installation Requirements for HVAC Pipework.

### **1.2 REFERENCES**

- .1 American National Standards Institute (ANSI)/ American Society of Mechanical Engineers (ASME).
  - .1 ANSI/ASME B1.20.1 (R2001), Pipe Threads, General Purpose (Inch).
  - .2 ANSI/ASME B16.18, Cast Copper Alloy Solder Joint Pressure Fittings.
  - .3 ANSI/ASME B16-22 Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
- .2 American Society for Testing and Materials International, (ASTM).
  - .1 ASTM A276, Specification for Stainless Steel Bars and Shapes.
  - .2 ASTM A536, Specifications for Ductile Iron Castings.
  - .3 ASTM B62, Specification for Composition Bronze or Ounce Metal Castings.
  - .4 ASTM B16 Specifications for Free Cutting Brass Rod Bar and Shapes for use in Screw Machines.
  - .5 ASTM B283, Specification for Copper and Copper Alloy Die Forgings (Hot-Pressed).
  - .6 ASTM B505/B505M, Specification for Copper-Base Alloy Continuous Castings.
- .3 Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS).
  - .1 MSS-SP-25, Standard Marking System for Valves, Fittings, Flanges and Unions.
  - .2 MSS-SP-80, Bronze Gate Globe, Angle and Check Valves.
  - .3 MSS-SP-110, Ball Valves, Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.
  - .4 Canadian Standards Association (CSA)
    - .1 CSA B242, Groove and Solder type mechanical pipe couplings.

### **1.3 SUBMITTALS**

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data: submit WHMIS MSDS - Material Safety Data Sheets.
  - .1 Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Submit data for valves specified in this section.
- .3 Closeout Submittals:
  - .1 Submit maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

### **1.4 QUALITY ASSURANCE**

- .1 Health and Safety:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

### **1.5 DELIVERY STORAGE AND DISPOSAL**

- .1 Waste Management and Disposal:
  - .1 Separate and recycle waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.
  - .2 Collect and separate for disposal paper packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

## 1.6 MAINTENANCE

- .1 Extra Materials:
- .2 Furnish following spare parts:
  - .1 Spare Valves: one for every valve size and type, and one (1) additional valve for every ten (10) valves (of each size/type)
  - .2 Gaskets for flanges: one (1) for every ten (10) flanged joints.

## 2 Products

### 2.1 MATERIALS

- .1 Valves:
  - .1 All products to have CRN registration numbers.
- .2 End Connections:
  - .1 Connection into adjacent piping/tubing:
    - .1 Steel pipe systems: Screwed ends to ANSI/ASME B1.20.1.
    - .2 Copper tube systems:
      - .1 Solder ends to ANSI/ASME B16.18.
      - .2 Push-to-connect ends to ANSI/ASME B16.22 and manufacturers standards.
- .3 Lockshield Keys:
  - .1 Where lockshield valves are specified, provide 10 keys of each size: malleable iron

### 2.2 CHECK VALVES

- .1 Requirements common to check valves, unless specified otherwise:
  - .1 Standard specification: MSS SP-80.
  - .2 Connections: screwed with hexagonal shoulders.
    - .1 Class 125, WP = 860 kPa (125 psi) 1.4 MPa (200psi) WOG
    - .2 Class 150, WP = 1.03 MPa
    - .3 200 6WP, WP = 1.4 MPa (200psi) Water.
- .2 NPS 2 and under, non-rising stem, solid wedge disc, Class 125
  - .1 Body: Y-pattern with integral seat at 45 degrees, screw-in cap with hex head.
  - .2 Disc and seat: renewable rotating disc, two-piece hinge disc construction; seat: regrindable.
- .3 NPS 2 and under, swing type, bronze disc:
  - .1 Body: Y-pattern with integral seat at 45 degrees, screw-in cap with hex head.
  - .2 Disc and seat: renewable rotating disc, two-piece hinge disc construction; seat: regrindable.
- .4 NPS 2 and under, swing type, composition disc, 200 CWP:
  - .1 Body: Y-pattern with integral seat at 45 degrees, screw-in cap with hex head.
  - .2 Disc: renewable rotating disc of number 6 composition to suit service conditions, bronze two-piece hinge disc construction.
- .5 NPS 2 and under, horizontal lift type, composition disc, Class 150:
  - .1 Body: with integral seat, union bonnet ring with hex shoulders, cap.
  - .2 Disc: renewable PTFE for steam, #6 composition rotating disc for water, oil, or gas service in disc holder having guides top and bottom, of bronze to ASTM B62.
- .6 NPS 2 and under, vertical lift type, bronze disc, Class 125:
  - .1 Disc: rotating disc having guides top and bottom, disc guides, retaining rings.
- .7 NPS 2 and under vertical on horizontal lift type 1380kPa CWP:
  - .1 Disc type 301 stainless steel, center guided.

## **2.3 SILENT CHECK VALVES**

- .1 NPS 2 and under:
  - .1 Body: cast high tensile bronze to ASTM B16 or ASTM B62 with integral seat.
  - .2 Pressure rating: Class 125, MPa Steam.
  - .3 Connections: screwed ends to ANSI B1.20.1 and with hex. shoulders.
  - .4 Disc and seat: renewable rotating disc.
  - .5 Stainless steel spring, heavy duty.
  - .6 Seat: regrindable.

## **2.4 BALL VALVES**

- .1 NPS 2 and under:
  - .1 Body and cap: cast high tensile bronze to ASTM B62.
  - .2 Pressure rating: Class 125, 860 kPa steam.
  - .3 Connections: Screwed ends to ANSI B1.20.1 and with hexagonal shoulders, push to connect press fit ends.
  - .4 Stem: tamperproof ball drive.
  - .5 Stem packing nut: external to body.
  - .6 Ball and seat: replaceable stainless steel solid ball of hand chrome plated brass solid ball and teflon seats.
  - .7 Stem seal: TFE EPDM, Nitrile, Fluoropolymer with external packing nut.
  - .8 Operator: removable lever handle.
  - .9 Cup and drain for service.

## **2.5 GATE VALVES**

- .1 Requirements common to all gate valves, unless specified otherwise:
  - .1 Standard specification: MSS SP-80.
  - .2 Bonnet: with hex. shoulders.
  - .3 Connections: with hex. shoulders.
  - .4 Inspection and pressure testing: to MSS SP-80. Tests to be hydrostatic.
  - .5 Packing: high grade non-asbestos packing.
  - .6 Handwheel: non-ferrous.
  - .7 Handwheel Nut: bronze to ASTM B62.
- .2 NPS 2 and under, non-rising stem, solid wedge disc, Class 125:
  - .1 Body: with long disc guides, screwed bonnet with stem retaining nut.
  - .2 Operator: Handwheel.
- .3 NPS 2 and under, non-rising stem, solid wedge disc, Class 150:
  - .1 Body: with long disc guides, screwed bonnet with stem retaining nut.
  - .2 Operator: Handwheel.
- .4 NPS 2 and under, rising stem, split wedge disc, Class 125:
  - .1 Body: with long disc guides, screwed bonnet.
  - .2 Disc: split wedge, bronze to ASTM B283, loosely secured to stem.
  - .3 Operator: Handwheel
- .5 NPS 2 and under, rising stem, solid wedge disc, Class 125:
  - .1 Body: with long disc guides, screwed bonnet.
  - .2 Operator: Handwheel.
- .6 NPS 2 and under, rising stem, solid wedge disc, Class 150:
  - .1 Body: with long disc guides, screwed bonnet.
  - .2 Operator: Handwheel.

## **2.6 GLOBE VALVES**

- .1 Requirements common to all globe valves, unless specified otherwise:
  - .1 Standard specification: MSS SP-80.
  - .2 Bonnet: union with hex. shoulders.
  - .3 Connections: screwed with hex. shoulders.
  - .4 Inspection and pressure testing: to MSS SP-80. Tests to be hydrostatic.
  - .5 Packing: non-asbestos.
  - .6 Handwheel: non-ferrous.
  - .7 Handwheel Nut: bronze to ASTM B62.
- .2 NPS 2 and under, composition disc, Class 125:
  - .1 Body and bonnet: screwed bonnet.
  - .2 Disc and seat: renewable rotating PTFE disc regrindable bronze seat, loosely secured to bronze stem to ASTM B505.
  - .3 Operator: Handwheel.
- .3 NPS 2 and under, composition disc, Class 150:
  - .1 Body and bonnet: union bonnet.
  - .2 Disc and seat: renewable rotating PTFE disc in easily removable disc holder, regrindable bronze seat, loosely secured to bronze stem to ASTM B505.
  - .3 Operator: Handwheel.
- .4 NPS 2 and under, plug disc, Class 150, screwed ends:
  - .1 Body and bonnet.
  - .2 Disc and seat ring: tapered plug type with disc stem ring of stainless steel to ASTM A276, loosely secured of stem.
  - .3 Operator: Handwheel.
- .5 Angle valve, NPS 2 and under, composition disc, Class 150:
  - .1 Body and bonnet: union bonnet.
  - .2 Disc and seat: renewable rotating PTFE disc in slip-on easily removable disc holder having integral guides, regrindable bronze seat, loosely secured to stem.
  - .3 Operator: Handwheel.

### **3 Execution**

#### **3.1 INSTALLATION**

- .1 Install rising stem valves in upright position with stem above horizontal.
- .2 Remove internal parts before soldering.
- .3 Install valves with unions at each piece of equipment arranged to allow servicing, maintenance, and equipment removal.
  - .1 Unions are not required in Installations using ground mechanical couplings. The couplings shall serve as unions.
- .4 Add joining tube, couplings and fittings with grooved joint valves shall be copper tube dimensioned. Flaring tube or fitting ends to accommodate IPS sized valves is not permitted.

#### **3.2 COMMISSIONING**

- .1 As part of commissioning activities, develop a schedule and valves and record there on there as identifier, location, services, purchase order number and date, manufacturer, identification data specified above.

**END OF SECTION**

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