

## **PART 1 GENERAL**

### **1.1 REFERENCES**

- .1 American National Standards Institute (ANSI)/American Society of Mechanical Engineers (ASME)
  - .1 ANSI/ASME B1.20.1, Pipe Threads, General Purpose (Inch).
  - .2 ANSI/ASME B16.18, Cast Copper Alloy Solder Joint Pressure Fittings.
- .2 ASTM International
  - .1 ASTM A276, Standard Specification for Stainless Steel Bars and Shapes.
  - .2 ASTM B62, Standard Specification for Composition Bronze or Ounce Metal Castings.
  - .3 ASTM B283, Standard Specification for Copper and Copper Alloy Die Forgings (Hot-Pressed).
  - .4 ASTM B505/B505M, Standard 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.

### **1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Division 01 - General Requirements.
- .2 Product Data:
  - .1 Provide manufacturer's printed product literature and data sheets for equipment and systems and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Division 01 - General Requirements.
- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Newfoundland and Labrador, Canada.
  - .2 Submit data for valves specified in this Section.

### **1.3 CLOSEOUT SUBMITTALS**

- .1 Provide maintenance data for incorporation into manual specified in Division 01 - General Requirements.

## **1.4 MAINTENANCE MATERIAL SUBMITTALS**

- .1 Extra Materials/Spare Parts:
  - .1 Furnish following spare parts:
    - .1 Valve seats: one (1) for every ten (10) valves each size. Minimum one (1).
    - .2 Discs: one (1) for every ten (10) valves, each size. Minimum one (1).
    - .3 Stem packing: one (1) for every ten (10) valves, each size. Minimum one (1).
    - .4 Valve handles: two (2) of each size.
    - .5 Gaskets for flanges: one (1) for every ten (10) flanged joints.
  - .2 Tools:
    - .1 Furnish special tools for maintenance of systems and equipment.
    - .2 Include following:
      - .1 Lubricant gun for expansion joints.

## **1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Division 01 - General Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements:
  - .1 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.
- .3 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials in accordance with Division 01 - General Requirements.

## **PART 2 PRODUCTS**

### **2.1 MATERIALS**

- .1 Valves:
  - .1 Except for specialty valves, to be single manufacturer.
  - .2 All products to have Canadian Registration Number (CRN).
- .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 Grooved ends to copper tube dimensions and CSA B242.
      - .3 Push-to-connect ends to ANSI/ASME B16.22 and manufacturer's standards.
- .3 Lockshield Keys:

- .1 Where lockshield valves are specified, provide ten (10) keys of each size: malleable iron cadmium plated.

## **2.2 GATE VALVES**

- .1 Requirements common to gate valves, unless specified otherwise:
  - .1 Standard specification: MSS SP-80.
  - .2 Bonnet: union with hexagonal shoulders.
  - .3 Connections: screwed with hexagonal 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, 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.

## **2.3 GLOBE VALVES**

- .1 Requirements common to globe valves, unless specified otherwise:
  - .1 Standard specification: MSS SP-80.
  - .2 Bonnet: union with hexagonal shoulders.
  - .3 Connections: screwed with hexagonal shoulders.
  - .4 Pressure testing: to MSS SP-80. Tests to be hydrostatic.
  - .5 Stuffing box: threaded to bonnet with gland follower, packing nut, high grade non-asbestos packing.
  - .6 Handwheel: non-ferrous.

- .7 Handwheel Nut: bronze to ASTM B62.
- .8 Class 125, WP=860 kPa steam, 1.4 MPa WOG.
- .9 Class 150, WP=1.03 MPa steam, 2.07 MPa WOG.
- .2 NPS 2 and under, composition disc, Class 125:
  - .1 Body and bonnet: screwed bonnet.
  - .2 Disc and seat: renewable rotating PTFE disc composition to suit service conditions, 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: union bonnet.
  - .2 Disc and seat ring: tapered plug type with disc stem ring of AISI S420 stainless steel to ASTM A276, loosely secured to 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.

## **2.4 CHECK VALVES**

- .1 Requirements common to check valves, unless specified otherwise:
  - .1 Standard specification: MSS SP-80.
  - .2 Connections: screwed with hexagonal shoulders.
  - .3 Class 125, WP=860 kPa steam, 1.4 MPa WOG.
  - .4 Class 150, WP=1.03 MPa steam, 2.07 MPa WOG.
  - .5 Class 200, 1.4 MPa CWP.
- .2 NPS 2 and under, swing type, bronze 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, Class 200:
  - .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 number 6 composition rotating disc 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 or horizontal, lift type, 1380 kPa CWP:
  - .1 Disc: 301 stainless steel, center guided.

## **2.5 SILENT CHECK VALVES**

- .1 NPS 2 and under:
  - .1 Body: cast high tensile bronze to ASTM B62 with integral seat.
  - .2 Pressure rating: Class 125.
  - .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.

## **2.6 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, solder ends to ANSI.
  - .4 Stem: tamperproof ball drive.
  - .5 Stem packing nut: external to body.
  - .6 Ball and seat: replaceable stainless steel or hard chrome solid ball and Teflon seats.
  - .7 Stem seal: TFE with external packing nut.
  - .8 Operator: removable lever handle with extension for insulated pipe.
  - .9 Cap and drain for drain service.

## **2.7 BUTTERFLY VALVES**

- .1 NPS 2½ through NPS 6, 2068 kPa with grooved ends.

- .1 Body: cast bronze, with copper-tube dimensioned grooved ends.
- .2 Disc: elastomer coated ductile iron with integrally cast stem.
- .3 Operator: lever or handwheel.

### **PART 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.

#### **3.2 CLEANING**

- .1 Clean in accordance with Division 01 - General Requirements.
  - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for reuse and recycling in accordance with Division 01 - General Requirements.

**END OF SECTION 23 05 23.01**