
PART 1 GENERAL

1.1 SUMMARY

- .1 Section Includes:
 - .1 Bronze – valves.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal Procedures
- .2 Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .3 Section 01 78 00 – Closeout Submittals.
- .4 Section 23 05 05 – Installation of Pipework

1.3 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
 - .3 ANSI/ASME B16.22, Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
- .2 American Society for Testing and Materials (ASTM)
 - .1 ASTM A 276, Specification for Stainless Steel Bars and Shapes.
 - .2 ASTM A536, Specification for Ductile Iron Castings.
 - .3 ASTM B 16, Specification for Free-Cutting Brass Rod Bar and Shapes for Use in Screw Machines.
 - .4 ASTM B 62, Specification for Composition Bronze or Ounce Metal Castings.
 - .5 ASTM B 283, Specification for Copper and Copper Alloy Die Forgings (Hot Pressed)
 - .6 ASTM B 505/B505M, Specification for Copper-Base Alloy Continuous Castings.
 - .7 ASTM B584, Specification for Copper Alloy Sand Castings for General Applications.
- .3 Canadian Standards Association (CSA)
 - .1 CSA B242, Groove and Solder Type Mechanical Pipe Couplings.
- .4 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.

1.4 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Closeout Submittals
 - .1 Submit maintenance data for incorporation into manual specified in Section 01 78 00 – Closeout Submittals.

1.5 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.
- .2 All grooved joint couplings, fittings, valves, and specialties to be the products of a single manufacturer. Grooving tools to be of the same manufacturer as the grooved components.

1.6 DELIVERY, STORAGE AND DISPOSAL

- .1 Waste Management and Disposal
 - .1 Separate and recycle waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
 - .2 Collect and separate for disposal, paper, plastic, polystyrene, corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

1.7 MAINTENANCE

- .1 Extra Materials
 - .1 Furnish following spare parts:
 - .1 Valve seats: one for every 10 valves each size. Minimum 1.
 - .2 Discs: one for every 10 valves, each size. Minimum 1.
 - .3 Stem packing: one for every 10 valves, each size. Minimum 1.
 - .4 Valve handles: 2 of each size.
 - .5 Gaskets for flanges: one for every 10 flanged joints.
 - .6 Grooved couplings: IPS and copper-tube dimensioned, one for every 10 (ten) grooved joints.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Except for specialty valves, to be single manufacturer.
- .2 All products to have Canadian registration numbers (CRN).
- .3 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 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.
- .4 Lockshield Keys
 - .1 Where lockshield valves are specified, provide 10 keys of each size: malleable iron cadmium plated.

2.2 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.
 - .8 Glass 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, 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 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.
 - .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 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 all check valves, unless specified otherwise:
 - .1 Standard specification: MSS SP-80.
 - .2 Connections: with hex agonal shoulders.
 - .3 Glass 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°, 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°, 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°, 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, Class150:
 - .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 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 B16 or ASTM B62.
 - .2 Pressure rating: Class 125, 860 MPa steam.
 - .3 Connections: Screwed ends to ANSI B1.20.1 and with hex. shoulders. Push-to-connect, Pressfit ends.
 - .4 Stem: tamperproof ball drive.
 - .5 Stem packing nut: external to body.
 - .6 Ball and seat: replaceable stainless steel or hard chrome, plated brass solid ball and teflon seats.
 - .7 Stem seal: TFE, EPDM, Nitrile, Fluoroelastomer with 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 2-1/2 through NPS 6.
 - .1 Body: cast bronze per CDA-836 (85-5-5-5).
 - .2 Pressure rating: 2065-kPa CWP.
 - .3 Connections: copper tube dimensioned grooved ends.
 - .4 Disc: ductile iron per ASTM A536 with elastomer coating.
 - .5 Stem: integrally cast with disc.
 - .6 Stem Nuts: nickel plated 416 stainless steel.
 - .7 Operator: gear operator, NPS and over.

2.8 ACCEPTABLE PRODUCT

- .1 Acceptable Product: Jenkins, Crane, Watts, Newman Hattersley, Milwaukee, Conbraco, Kitz, Red White, M.A. Stewart, Nibco, Victaulic.

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 Adjoining 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.
- .4 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 grooved mechanical couplings. The couplings shall serve as unions.

3.2 COMMISSIONING

- .1 As part of commissioning activities, develop schedule of valves and record thereon identifier, location, service, purchase order number and date, manufacturer, identification data specified above.

END OF SECTION