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**Part 1            Général**

**1.1                RELATED REQUIREMENTS**

- .1    Section 23 05 00 – Common Work Results for HVAC
- .2    Section 23 05 05 – Installation of Pipework
- .3    Section 23 05 53.01 – Mechanical Equipment and Network Identification
- .4    Section 23 07 15 – Thermal Insulation for Piping
- .5    Section 23 21 13 – Hydronic Networks – Steel Piping, Valves and Connections

**1.2                REFERENCES**

- .1    American National Standards Institute (ANSI)/American Society of Mechanical Engineers (ASME)
  - .1    ANSI/ASME B1.20.1-1983(R2006), Pipe Threads, General Purpose (Inch).
  - .2    ANSI/ASME B16.18-2001, Cast Copper Alloy Solder Joint Pressure Fittings.
  - .3    ASME B16.1-05, Cast Iron Pipe Flanges and Flanged Fittings.
- .2    ASTM International
  - .1    ASTM A276-08, Standard Specification for Stainless Steel Bars and Shapes.
  - .2    ASTM B62-02, Standard Specification for Composition Bronze or Ounce Metal Castings.
  - .3    ASTM B283-08a, Standard Specification for Copper and Copper Alloy Die Forgings (Hot-Pressed).
  - .4    ASTM B505/B505M-08a, Standard Specification for Copper-Base Alloy Continuous Castings.
  - .5    ASTM A49-01(2006), Standard Specification for Heat-Treated Carbon Steel Joint Bars.
  - .6    ASTM A126-04, Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
  - .7    ASTM A536-84(2004)e1, Standard Specification for Ductile Iron Castings.
- .3    Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS)
  - .1    MSS-SP-25-1998, Standard Marking System for Valves, Fittings, Flanges and Unions.
  - .2    MSS-SP-80-2008, Bronze Gate Globe, Angle and Check Valves.
  - .3    MSS-SP-110-1996, Ball Valves, Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.
  - .4    MSS SP-61-03, Pressure Testing of Steel Valves.
  - .5    MSS SP-70-06, Grey Iron Gate Valves, Flanged and Threaded Ends.
  - .6    MSS SP-71-05, Grey Iron Swing Check Valves, Flanged and Threaded Ends.
  - .7    MSS SP-82-1992, Valve Pressure Testing Methods.

- .8 MSS SP-85-2002, Cast Iron Globe and Angle Valves, Flanged and Threaded Ends.

### **1.3 APPROVAL/INFORMATION**

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .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.
- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed by a professional engineer registered or licensed in Canada and member of the OIQ.
  - .2 Submit datasheets for valves specified in this Section.

### **1.4 CLOSEOUT SUBMITALLS**

- .1 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

### **1.5 MAINTENANCE MATERIAL SUBMITTALS**

- .1 Where materials or products are specified by their trademark, consult the Instructions to Bidders document for the procedures to follow regarding the request for approval for materials or product replacement.
- .2 Extra Materials/Spare Parts:
  - .1 Furnish following spare parts:
    - .1 Valve seats: one for every 10 valves each size, minimum 1
    - .2 Discs and caps: 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.
  - .2 Tools
    - .1 Furnish special tools for maintenance of systems and equipment.
    - .2 Special tools include the following:
      - .1 Lubricant gun for expansion joints.

### **1.6 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance
  - .1 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

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**Part 2**

**Products**

**2.1 MATERIALS/EQUIPMENT**

- .1 Valve
  - .1 Except for specialty valves, all valves must be supplied by a single manufacturer.
- .2 Connection
  - .1 Connection into adjacent piping/tubing
    - .1 Steel pipe systems: screwed ends to ANSI/ASME B1.20.1.
    - .2 Copper tube systems: grooved ends to ANSI/ASME B16.18.
- .3 Standard Specifications
  - .1 Gate valves: MSS SP-70
  - .2 Globe valves: MSS SP-85.
  - .3 Check valves: MSS SP-71.
- .4 Requirements common to valves, unless specified otherwise:
  - .1 Body, bonnet: cast iron to ASTM B209 Class B.
  - .2 Connections: flanged ends plain face to ANSI B16.1.
  - .3 Inspection and pressure testing: to MSS SP-82.
  - .4 Bonnet gasket: non-asbestos.
  - .5 Stem: to have precision-machined Acme or 60 degrees V threads, top screwed for handwheel nut.
  - .6 Stuffing box: non-galling two-piece ball-jointed packing gland, gland bolts and nuts.
  - .7 Gland packing: non-asbestos.
  - .8 Handwheel: die-cast aluminum alloy to ASTM B85/B85M or malleable iron to ASTM A49. Bronze nut to ASTM B62.
  - .9 Identification tag: with catalogue number, size, other pertinent data.
- .5 All products to have CRN registration numbers.

**2.2 GATE VALVES**

- .1 Balancing valve
  - .1 All valves (butterfly, ball valve, plug valve) used for balancing, must be supplied with dial indicator, pointer and memory stop.
- .2 Lubricated plug valve
  - .1 To 125 mm (5") NPS supply with wrench type handle. Supply a wormgear operator with indicator and flywheel for 150 mm (6") NPS and over. Valves shall be of the lubricated type.
  - .2 Factory tested to ANSI B16-1 and B16-3.
- .3 Butterfly valves

- .1 Supplied with locking lever handle with eight (8) positions notched plate, to NPS 150 (6"), and supplied with worm gear, permanently lubricated, dial indicator and fly wheel, for NPS 200 (8") and over. Body shall be lug type.
- .2 Acceptable products: Keystone F-401 and F-427, Crane, Grinnell series 1 000, Victaulic, Gruvlock or a replacement product approved by addendum in accordance with the Instructions to Bidders.
- .4 Ball Valves
  - .1 Supplied with command lever, vinyl covered
  - .2 Standard orifice size.
  - .3 Extended stem for insulation thickness.
  - .4 With dial indicator and positioning notches for balancing.
- .5 Chain pulley
  - .1 Valves located 2.1 m (7') above floor to be provided with a chain pulley. Extend chains to 1.5 m (5') approximately above floor level, and attach them so that to maintain practical traffic in corridors and other areas.
- .6 Floor Stand
  - .1 Where indicated, supply valves with floor stand, open/closed, indicator and fly wheel stem extension.
  - .2 Acceptable products : Keystone F-422, Crane 1182 or a replacement product approved by addendum in accordance with the Instructions to Bidders.
- .7 Drain valve
  - .1 Drain valves: ball valve or gate valve, bronze body with hose thread, with cap and chain

<b>System pipe diameter</b>	<b>Valve size</b>
To NPS 32 mm (1.25")	20 mm (¾")
38 to 65 mm (1.5" to 2.5")	25 mm (1")
75 mm (3") and over	50 mm (2")

- .2 Acceptable products: Toyo 5046, Nibco T113HC or a replacement product approved by addendum in accordance with the Instructions to Bidders.
- .8 Radiator valve
  - .1 Stop valve, inlet side
  - .2 Stop valve installed on return side, key operated

### **2.3 WATER PIPING to 120°C (250°F), 1035 kPa (150 psi)**

- .1 See specification sheet P23-6 and P23-6a for material used at the end of this Section.

**Part 3            Execution**

**3.1                INSTALLATION**

- .1    Install rising stem valves in upright position with stem above vertically.
- .2    Remove internal parts before soldering.
- .3    Install valves with unions at each piece of equipment arranged to allow servicing, maintenance, and equipment removal.

<b>SPECIFICATIONS SHEET FOR MATERIALS TO BE USED</b>				
<b>SERVICE</b>	<b>P-23-6   water to 120°C (250°F), 1035 kPa (150 psi)</b>			
<b>FLUIDS</b>	Use on hot water, ethylene or propylene glycol (with proper packing), chilled water, water form tower or cooling water at maximum operating pressure of 120°C (250°F). No mechanical joint is accepted.			
<b>Items</b>	<b>Nominal Dimensions</b>	<b>Description</b>	<b>Standards</b>	<b>Acceptable Products</b>
Gate valves	NPS 12 to 50 mm (½" to 2")	Class 150, threaded ends, bronze body, solid wedge disc, rising stem		Crane 431, Toyo 298, Milwaukee 1150, Nibco T-131, Kitz 42T.
	NPS 12 to 50 mm (½" to 2")	Class 150, threaded ends, bronze body, solid wedge disc, non-rising stem		Crane 437, Toyo 204-A, Milwaukee 1140, Nibco T-133.
Butterfly valves	NPS 50 to 300 mm (2" to 12")	Class 175 for 1205 kPa (175 psig) service pressure, cast iron body, bronze-aluminium wedge, 304 stainless steel stem EPDM seat, support legs 50 mm (2") high		Crane 44-BXZ-L, Toyo 918 BESL, Milwaukee CL223E ou CL323-E, Kitz 6122EL Jenkins 2232ELJ
Ball valves	NPS 12 to 50 mm (½" to 2")	Class 150 threaded sleeves, brass body, brass ball, chrome finish, brass stem, PTFE reinforced packing.	ASTM B-584 ASTM B-371	Crane 9202, Toyo 5044A, Milwaukee BA475B, Nibco T-585-70, Kitz 58.
Globe valves	NPS 12 to 50 mm (½" to 2")	Class 150, screwed ends, bronze body, plastic disc for maximum temperature 185 °C (365 °F)		Crane 7-TF, Toyo 221, Milwaukee 590, Nibco 235Y, Kitz 09.
	NPT 65 to 300 mm (2½"to 12")	Class 150, iron body, bronze disc, trim and seat ring, bolted bonnet, rising stem		Crane 21 –E, Toyo 300SCJS, Milwaukee F-2983-M, Nibco F-768-B.

Check valves	NPS 12 to 50 mm (½" to 2")	Class 200, bronze body and disc, threaded ends removable swing disc, screw-in cap		Crane 36, Milwaukee 508, Nibco T-453-B, Kitz 19.
	NPS 65 to 300 mm (2½" to 12")	Class 250, iron body, flanged, swing check, replaceable and rectifiable desk and seat, bolted bonnet		Crane 39-E, Milwaukee F-2970, Nibco F-968-B, Kitz 300SCOS
Spring loaded check valve	NPS 50 to 300 mm (2" to 12")	Class 150, cast iron body, disc, Buna-N seat, stainless steel accessories	ANSI 150	Mueller 103-MAP, Keystone 831, Nibco W960, Centerline R-1*644*D1X, Jenkins 339RJ
Lubricated plug valve	NPS 12 to 50 mm (½" to 2")	Class 150, cast iron body, with threaded sleeves	ASTM A-126	Keystone Ball Centric 541, Huber Resun D-125, Homestead 611-612
	NPS 75 to 125 mm (3" to 5")	Class 175, cast iron flanged, fullflow disc, operating lever	ASTM A-150	Keystone Ball Centric F-580, Homestead 611-612
N.B.:	All these plug valves shall be delivered to the site lubricated with lubricant suitable for the service intended and clearly identified, or with EPDM covered disc.			
Lubricating gun	Provide a lubricating gun and 12 sealing tubes for each service			

**FIN DE LA SECTION**