

## **1 General**

### **1.1 RELATED SECTIONS**

- .1 Section 23 05 53 - Identification for HVAC Piping and Equipment.

### **1.2 REFERENCES**

- .1 American Society of Mechanical Engineers (ASME).
  - .1 ASME B40.100, Pressure Gauges and Gauge Attachments.
  - .2 ASME B40.200, Thermometers, Direct Reading and Remote Reading.
- .2 Canadian General Standards Board (CGSB).
  - .1 CAN/CGSB-14.4, Thermometers, Liquid-in-Glass, Self Indicating, Commercial/Industrial Type.
  - .2 CAN/CGSB-14.5, Thermometers, Bimetallic, Self-Indicating, Commercial/Industrial Type.

### **1.3 SUBMITTALS**

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit manufacturer's product data for following items:
  - .1 Thermometers.
  - .2 Pressure gauges.
  - .3 Stop cocks.
  - .4 Syphons.
  - .5 Wells.
- .3 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures. Include product characteristics, performance criteria, and limitations.

### **1.4 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
- .2 Collect, separate and place in designated containers for reuse and recycling, paper, plastic, polystyrene, corrugated cardboard packaging, steel, metal, in accordance with Waste Management Plan.
- .3 Fold up metal banding, flatten and place in designated area for recycling.
- .4 Place materials defined as hazardous or toxic waste in designated containers.
- .5 Ensure emptied containers are sealed, labelled and stored safely for disposal away from children.

## **2 Products**

### **2.1 GENERAL**

- .1 Design point to be at mid point of scale or range.
- .2 Ranges: as indicated.

### **2.2 DIRECT READING THERMOMETERS**

- .1 Industrial, variable angle type, liquid filled, accuracy +/- scale division 225 mm scale length: to CAN/CGSB14.4 or ASME B 40, 200.

### **2.3 THERMOMETER WELLS**

- .1 Copper pipe: copper or bronze.
  - .2 Steel pipe: brass.
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## **2.4 PRESSURE GAUGES**

- .1 Dial type 112 mm, dial type: to ASME B40.100, Grade 2A, stainless steel or phosphor bronze bourdon tube having 0.5% accuracy full scale, 1% accuracy for liquid filled.
- .2 Provide bronze stop cock and :
  - .1 Siphon for steam service.
  - .2 Snubber for pulsating operation.
  - .3 Diaphragm assembly for corrosive service.
  - .4 Gasketed pressure relief back with solid front.
  - .5 Oil filled for high vibration applications such as pumps.
  - .6 Bronze ball valve to Section 23 05 23.01 - Valves - Bronze.

## **3 Execution**

### **3.1 GENERAL**

- .1 Install so they can be easily read from floor or platform. If this cannot be accomplished, install remote reading units.
- .2 Install between equipment and first fitting or valve.

### **3.2 THERMOMETERS**

- .1 Install in wells on piping arrange so that at least 25mm (1") of the stem of the thermometer is immersed in flowing fluid. Provide heat conductive material inside well.
- .2 Install on inlet and outlet of equipment:
  - .1 Heating and cooling coils.
  - .2 Boilers.
  - .3 DHW tanks.
- .3 Install wells in other locations as indicated.
- .4 Use extensions where thermometers are installed through insulation.

### **3.3 PRESSURE GAUGES**

- .1 Install in following locations:
  - .1 Suction and discharge of pumps (liquid filled).
  - .2 Upstream and downstream of PRV's.
  - .3 Inlet and outlet of coils.
  - .4 Inlet and outlet of heat exchanger.
  - .5 Outlet of boilers.
  - .6 In other locations as indicated.
- .2 Install ball valves to Section 23 05 23.01 - Valves - Bronze.
- .3 Use extensions where pressure gauges are installed through insulation.

### **3.4 NAMEPLATES**

- .1 Install engraved lamicoid nameplates as specified in 23 05 53 - Identification for HVAC Piping and Equipment, identifying medium.

**END OF SECTION**

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