

## **Part 1 General**

### **1.1 GENERAL REQUIREMENTS**

- .1 The Contractor shall be responsible to carry out all the Work set out or referred to in this Section 23 05 19 01.

### **1.2 SECTION INCLUDES**

- .1 Materials and installation for thermometers and pressure gauges in piping systems.

### **1.3 RELATED SECTIONS**

- .1 Division 01 – General Requirements.
- .2 Section 23 05 53.01 - Mechanical Identification.

### **1.4 REFERENCES**

- .1 American Society of Mechanical Engineers (ASME):
  - .1 ASME B40.100-01, Pressure Gauges and Gauge Attachments.
  - .2 ASME B40.200-01, Thermometers, Direct Reading and Remote Reading.
- .2 Canadian General Standards Board (CGSB):
  - .1 CAN/CGSB-14.4-M88, Thermometers, Liquid-in-Glass, Self Indicating, Commercial/Industrial Type.
  - .2 CAN/CGSB-14.5-M88, Thermometers, Bimetallic, Self-Indicating, Commercial/Industrial Type.

### **1.5 SUBMITTALS**

- .1 Submittals in accordance with Division 01 – General Requirements.
- .2 Submit shop drawings and product data.
- .3 Submit manufacturer's product data for following items:
  - .1 Thermometers.
  - .2 Pressure gauges.
  - .3 Stop cocks.
  - .4 Syphons.
  - .5 Wells.

## **Part 2 Products**

### **2.1 GENERAL**

- .1 Design point to be at mid point of scale or range.
- .2 Ranges:
  - .1 Heating water: 0-180°C.

## **2.2 DIRECT READING THERMOMETERS (HVAC PIPING)**

- .1 Industrial, variable angle type, liquid filled, 125 mm scale length: to CAN/CGSB14.4 and ASME B40.200.

## **2.3 THERMOMETER WELLS**

- .1 Copper pipe: copper or bronze.
- .2 Steel pipe: brass or stainless steel.
- .3 Install thermowells for HVAC controls division where indicated, including bushings and fittings as required.

## **2.4 PRESSURE GAUGES (HVAC PIPING)**

- .1 115 mm, dial type: to ASME B40.100, Grade 2A, stainless steel bourdon tube having 0.5% accuracy full scale unless otherwise specified.
- .2 Provide:
  - .1 Siphon for steam service.
  - .2 Diaphragm assembly for corrosive service.
  - .3 Gasketed pressure relief back with solid front.
  - .4 Bronze stop cock.

## **Part 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 Install where shown on drawings.

### **3.2 THERMOMETERS**

- .1 Install in wells on piping. Provide heat conductive material inside well.
- .2 Install in locations as indicated.
- .3 Install wells as indicated for balancing purposes.
- .4 Use extensions where thermometers are installed through insulation.

### **3.3 PRESSURE GAUGES**

- .1 Install in following locations:
  - .1 Suction and discharge of pumps.

- .2 Upstream and downstream of PRV's.
  - .3 Upstream and downstream of control valves.
  - .4 Inlet and outlet of coils and/or heat exchangers.
  - .5 In other locations as indicated.
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- .2 Install gauge cocks for balancing purposes, elsewhere as indicated.
  - .3 Use extensions where pressure gauges are installed through insulation.

### **3.4 NAMEPLATES**

- .1 Install engraved lamicoid nameplates as specified in Section 23 05 53.01 - Mechanical Identification, identifying medium.

END OF SECTION