

## **1. PART 1 – GENERAL**

### **1.1 References**

- .1 ANSI/ASME B40.1-1990, Gauges-Pressure Indicating Dial Type - Elastic Element.
- .2 CAN/CGSB-14.4-M88, Thermomètres indicateurs, à dilatation de liquide dans une gaine de verre, de type commercial/industriel.
- .3 CAN/CGSB-14.5-M88, Thermomètres indicateurs, bimétalliques, de type commercial / industriel.

### **1.2 Shop drawings and technical sheets**

- .1 Submit shop drawing and technical sheets as per section 230500E – Common work results for mechanical.
- .2 Submit technical sheets of manufacturers for the following:
  - .1 Thermometers;
  - .2 Gauges;
  - .3 Shut off valves;
  - .4 Siphon;
  - .5 Thermo-wells.

## **2. PART 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, (9") 225 mm scale length, to CAN/CGSB 14.4 with readings in °F and °C.
  - .1 Acceptable products: Flobab series 420-A9VS or equivalent from Trerice, Ashcroft or Winters.

### **2.3 Remote reading thermometers**

- .1 100 mm (4") diameter vapour activated dial type: to CAN/CGSB-14.5, accuracy within one scale division, brass movement, stainless steel capillary, stainless steel spiral armour, stainless steel bulb and polished stainless steel case for wall mounting.
  - .1 Acceptable products: Trerice, Ashcroft, Marshalltown or Pitanco.

### **2.4 Thermometer wells**

- .1 Copper pipe: copper or bronze.
- .2 Steel pipe: brass or stainless steel.

## 2.5 Pressure gauges

- .1 112 mm (4 ½"), dial type: to ONGC-91-GP-3, liquid filled having 0.5% accuracy full scale unless otherwise specified with readings in psi and kPa..
  - .1 Acceptable products: Flobab 420-FF4-LF or Trerice, Winters equivalent.
- .2 Provide:
  - .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 Bronze stop cock.

## 3. 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.

### 3.2 Thermometers

- .1 Install in wells on piping. Provide heat conductive material inside well.
- .2 Install in locations as indicated and on inlet and outlet of:
  - .1 Heat exchangers.
  - .2 Water heating and cooling coils.
- .3 Install wells as indicated only 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.
  - .5 Inlet and outlet of liquid side of heat exchangers.
  - .6 Outlet of boilers.
  - .7 In other locations as indicated.
  - .8 In compressed air network and air compressors.
- .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 lamicaid nameplates as specified in Section 230554E - Mechanical Identification.