

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Common Work Results for HVAC Section 23 05 00

1.2 PRODUCT OPTIONS AND SUBSTITUTIONS

- .1 Refer to Division 1 for requirements pertaining to product options and substitutions.

1.3 SHOP DRAWINGS AND PRODUCT DATA

- .1 Comply with requirements of Section 01 33 10.
- .2 Submit product data for each type of pressure gauge or thermometer indicating operating range and total range, accuracy, repeatability, size and style.
- .3 Schedule of gauges and thermometers listing service, size, location, tag no., design operating parameters.

Part 2 Products

2.1 PRESSURE GAUGES

- .1 Positive Pressure Gauge: to CGSB 91-GP-1 and as follows:
- .1 Type: Type A pressure type.
 - .2 Accuracy: Grade A - accurate within $\pm 1\%$
 - .3 Gauge Size: 110 mm diameter.
 - .4 Case Material: steel, protected against corrosion and painted black.
 - .5 Crystal: shatterproof glass.
 - .6 Mounting: stem mounting at bottom of case.
 - .7 Bourdon Tube Material: phosphor bronze.
 - .8 Dial Graduations: kPa.
 - .9 Scale Range: conform to the following:
 - .1 Hydronic Systems: 0-700 kPa
 - .2 Domestic Water Systems: 0-700 kPa
 - .10 Stop: bourdon tube and stop.

- .11 Movement: stainless steel or non-ferrous metal.
- .12 Calibrator: set screw.
- .2 Air System Static Pressure Gauge:
 - .1 Type: pressure type.
 - .2 Accuracy: within $\pm 1\%$.
 - .3 Gauge Size: 110 mm diameter.
 - .4 Case Material: aluminum alloy.
 - .5 Crystal: shatterproof glass.
 - .6 Mounting: stem mounting at back of case.
 - .7 Actuator: diaphragm actuated.
 - .8 Dial Graduations: Pa.
 - .9 Scale Range: 0-2000 Pa.
 - .10 Stop: movement stop.
- .3 Filter Differential Pressure Gauges: incline tube manometer with tubing, static pressure tips and mounting assembly for differential pressure measure mounts.

2.2 THERMOMETERS

- .1 Stem Type Thermometer: to CGSB 14-GP-2a and as follows:
 - .1 Type: Type C any angle, adjustable.
 - .2 Class 2: fixed calibration.
 - .3 Case Material: steel, protected against corrosion and painted black.
 - .4 Crystal: shatterproof glass.
 - .5 Case Length: 225 mm.
 - .6 Capillary Tube: filled with red mercury.
 - .7 Graduations: °C.

- .8 Scale Range: conform to the following:
 - .1 Hydronic Heating System: 0 - 110°C
 - .2 Condenser Water: 0 - 50°C
 - .3 Chilled Water: 0 - 50°C
 - .4 Domestic Hot Water: 0 - 110°C
 - .5 Domestic Cold Water: 0 - 50°C
- .2 Dial Type Thermometer: to CGSB 14-GP-5 and as follows:
 - .1 Type: Type B - back connected.
 - .2 Class 1: adjustable calibration.
 - .3 Stem Length: 300 mm.
 - .4 Dial Graduations: °C.
 - .5 Dial Size: 75 mm diameter.
 - .6 Scale Range: conform to the following:
 - .1 Mixed Air Plenum: -40°C to 40°C
 - .2 Outside Air Plenum: -40°C to 40°C
 - .3 Return, exhaust, outside, and supply air ductwork on all air handling units: -40°C to 40°C
 - .4 Other: 0°C to 100°C
- .3 Thermometer Wells: to CGSB 14-GP-5 and as follows:
 - .1 Construction: one piece brass construction.
 - .2 Diameter: 6 mm.
 - .3 Depth: to suit thermometer stem.

2.3 PRESSURE/TEMPERATURE TAPS

- .1 Fitting to allow a 3 mm O.D. plug-in gauge to measure temperature or pressure.
 - .1 Maximum pressure: 3450 kPa
 - .2 Maximum temperature: 135°C

- .2 Fitting constructed of:
 - .1 13 mm NPT brass body with hex head screw cap.
 - .2 Two self-closing valves constructed of norel.
- .3 Test kit including the following:
 - .1 One 65 mm diameter compound pressure gauge with 3 mm O.D. plug in stem.
 - .2 One 125 mm diameter temperature gauge with 3 mm O.D. plug-in stem, range 0-110°C.
 - .3 One 125 mm diameter temperature gauge with 3 mm O.D. plug-in stem, range 0-50°C.

Part 3 Execution

3.1 INSTALLATION

- .1 Note that pressure gauges and thermometers required by this Section are in addition to sensors provided by the Control Trade.
- .2 Provide one compound pressure gauge per pump. Install taps on pump suction, pump discharge and before strainer. Pipe to gauge with needle valve on each tap.
- .3 For gauges on liquid service, provide tee in piping with bronze pulsation damper and needle valve.
- .4 For steam service, provide a pigtail syphon and needle valve.

3.2 PRESSURE/TEMPERATURE TAPS

- .1 Install pressure/temperature taps into threaded pipe nipples welded to wall of pipe. Locate fittings in accessible spaces.
- .2 Install pressure/temperature taps in the following locations:
 - .1 Major heating and cooling coils: at common inlet and at outlet of each coil.
 - .2 Reheat coils: at inlet and outlet.
 - .3 Where shown on drawings.

3.3 GAUGE SCHEDULE

- .1 Provide pressure gauges, thermometers, pressure gauge taps and thermometer taps as indicated on the drawings and as outlined in the following Schedule:
 - .1 Positive Pressure Gauges
 - .1 Expansion tanks
 - .2 Pressure reducing valves
 - .2 Air System Static Pressure Gauges
 - .1 Medium and high pressure system
 - .2 Supply fan discharge
 - .3 Filter Differential Pressure Gauges
 - .1 Built-up filter banks on each air system
 - .4 Stem Type Thermometers
 - .1 Headers to central equipment
 - .2 Coil banks at inlet and outlet
 - .5 Dial Type Thermometers
 - .1 After coils in air systems
 - .2 Each supply air zone
 - .3 Exhaust air, outside air, return air, supply air, and mixed air ductwork at air handling units
 - .6 Air System Static Pressure Taps
 - .1 Inlet and discharge of supply and return fans
 - .2 Inlet and discharge of coils
 - .3 Inlet and discharge of heat recovery sections

END OF SECTION