

SECTION 230530 - METERS AND GAUGES FOR HVAC PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes: Thermometers, Gauges, Test plugs and accessories.

1.3 SUBMITTALS

- A. Submit Product Data for type of product.
- B. Provide operation installation and maintenance data.

PART 2 - PRODUCTS

2.1 METAL-CASE, LIQUID-IN-GLASS THERMOMETERS

- A. Manufacturers: Subject to compliance with requirements, provide fully adjustable angle thermometers by one of the following:
 - 1. Palmer - Wahl Instruments Inc.
 - 2. Terice, H. O. Co.
 - 3. Weiss Instruments, Inc.
 - 4. Weksler Instruments Operating Unit; Dresser Industries; Instrument Div.
 - 5. Miljoco Corporation.
- B. Case: Cast aluminum with dark blue epoxy coating, 9 inches long.
- C. Window: Clear acrylic for temperatures up to 300 deg. F; glass for higher temperatures.
- D. Tube: blue reading, organic filled.
- E. Window: Clear acrylic.
- F. Stem: brass for thermowell installation and of length to suit installation.
- G. Accuracy: Plus or minus 1 scale division.

2.2 THERMOWELLS

- A. Manufacturers: Same as manufacturer of thermometer being used.

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- B. Description: Pressure-tight, brass construction, socket-type metal fitting made for insertion into piping and of type, diameter, and length required to hold thermometer.

2.3 PRESSURE GAUGES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Palmer - Wahl Instruments Inc.
 - 2. Terice, H. O. Co.
 - 3. Weiss Instruments, Inc.
 - 4. Weksler Instruments Operating Unit; Dresser Industries; Instrument Div.
 - 5. Miljoco Corporation.
- B. Dial-Type Pressure Gauges: Indicating-dial type complying with ASME B40.100.
 - 1. Case: Liquid-filled type, fiberglass reinforced polypropylene, 4-1/2-inch diameter, solid front, blow-out back.
 - 2. Pressure-Element Assembly: Bronze tube.
 - 3. Pressure Connection: Brass, NPS 1/4 or 1/2".
 - 4. Movement: Stainless steel rotary type with stainless steel bushings.
 - 5. Dial: Satin-faced, nonreflective aluminum with permanently etched scale markings.
 - 6. Pointer: Red or other dark-color metal.
 - 7. Window: Acrylic plastic.
 - 8. Accuracy: plus or minus .5 percent range.
 - 9. Vacuum-Pressure Range: 30-in. Hg of vacuum to 150 psig of pressure.
 - 10. Range for Fluids under Pressure: Two times operating pressure.
 - 11. Temperature range: 250 deg. F for heating systems; 150 Deg. F for all other hydronic systems.
- C. Pressure-Gauge Fittings:
 - 1. Valves: NPS 1/4 brass or stainless-steel needle type valve.

2.4 TEST PLUGS

- A. Manufacturers: Subject to compliance with requirements provide test plug (PT Plug) products by one of the following:
 - 1. Flow Design, Inc.
 - 2. Peterson Equipment Co., Inc.
 - 3. Sisco Manufacturing Co.
 - 4. Terice, H. O. Co.
 - 5. Watts Industries, Inc.; Water Products Div.
- B. Description: Ports are to be suitable to accept thermometer stem or pressure gauge adapter and shall have dual EPDM internal seals, threaded brass cap with metal retainer strap. Ports are to be adequate length and suitable for installation in insulated or non-insulated piping.
- C. Construction: Brass body with dual EPDM seals.
- D. Minimum Pressure and Temperature Rating: 1000 psig at 270 deg F.

PART 3 - EXECUTION

3.1 THERMOMETER APPLICATIONS

- A. Install thermometers where indicated on the drawings, see plans and detail drawings.
- B. Provide the following temperature ranges for thermometers
 - 1. Heating Hot Water System: 30 to 240 deg. F, with 2-degree scale divisions.
 - 2. Chilled Water System: 0 to 100 deg. F, with 2-degree scale divisions.
 - 3. Water Source System: 0 to 100 deg. F, with 2-degree scale divisions.
 - 4. Geothermal System: 0 to 100 deg. F, with 2-degree scale divisions.

3.2 GAUGE APPLICATIONS

- A. Install pressure gauges, where indicated in other Division 23 Sections, and where indicated on the drawings plans and detail drawings.

3.3 INSTALLATIONS

- A. Install direct-mounting thermometers and adjust vertical and tilted positions.
- B. Install thermowells with socket extending to center of pipe and in vertical position in piping tees where thermometers are indicated.
- C. Install pressure gauges in piping tees with pressure gauge located on pipe at most readable position.
- D. Install shut-off needle-valve and snubber fitting in piping for each pressure gauge and thermometer.
- E. Install test plugs in tees in piping.

3.4 CONNECTIONS

- A. Install meters and gauges adjacent to machines and equipment to allow service and maintenance for meters, gauges, machines, and equipment.

3.5 ADJUSTING

- A. Calibrate meters according to manufacturer's written instructions, after installation.
- B. Adjust faces of meters and gauges to proper angle for best visibility.

END OF SECTION 230530