

## SECTION 15122 - METERS AND GAGES

## 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. This Section includes meters and gages for mechanical systems.
- B. Related Sections include the following:
  - 1. Mechanical equipment Sections that specify meters and gages as part of factory-fabricated equipment.

## 1.3 SUBMITTALS

- A. Product Data: Include scale range, ratings, and calibrated performance curves for each meter, gage, fitting, specialty, and accessory specified.
- B. Shop Drawings: Include schedule indicating manufacturer's number, scale range, fittings, and location for each meter and gage.
- C. Product Certificates: Signed by manufacturers of meters and gages certifying accuracies under specified operating conditions and compliance with specified requirements.
- D. Maintenance Data: For meters and gages.

## PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Liquid-in-Glass Thermometers:
    - a. Dresser Industries, Inc.; Instrument Div.; Weksler Instruments Operating Unit.
    - b. Terice: H. O. Terice Co.
    - c. Weiss Instruments, Inc.
  - 2. Pressure Gages:
    - a. Dresser Industries, Inc.; Instrument Div.; Weksler Instruments Operating Unit.
    - b. Terice: H. O. Terice Co.
    - c. Weiss Instruments, Inc.

## 2.2 THERMOMETERS, GENERAL

- A. Scale Range: Temperature ranges for services listed are as follows:
  - 1. Domestic Hot Water: 30 to 240 deg F, with 2-degree scale divisions.
  - 2. Domestic Cold Water: 0 to 100 deg F, with 2-degree scale divisions.
  - 3. Hot Water: 30 to 300 deg F, with 2-degree scale divisions.

- B. Accuracy: Plus or minus 1 percent of range span or plus or minus one scale division to maximum of 1.5 percent of range span.

### 2.3 LIQUID-IN-GLASS THERMOMETERS

- A. Description: ASTM E 1.
- B. Case: Die cast and aluminum finished in baked-epoxy enamel, glass front, spring secured, 9-inches long.
- C. Adjustable Joint: Finish to match case, 180-degree adjustment in vertical plane, 360-degree adjustment in horizontal plane, with locking device.
- D. Tube: Red or blue reading, organic-liquid filled with magnifying lens.
- E. Scale: Satin-faced non-reflective aluminum with permanently etched markings.
- F. Stem: Copper-plated steel, aluminum, or brass for separable socket; of length to suit installation.

### 2.4 THERMOMETER WELLS

- A. Description: Fitting with protective well for installation in threaded pipe fitting to hold test thermometer.
  - 1. Material: Brass, for use in copper piping.
  - 2. Material: Steel, for use in steel piping.
  - 3. Extension-Neck Length: Nominal thickness of 2 inches, but not less than thickness of insulation. Omit extension neck for wells for piping not insulated.
  - 4. Insertion Length: To extend to center of pipe.
  - 5. Cap: Threaded, with chain permanently fastened to socket.
  - 6. Heat-Transfer Fluid: Oil or graphite.

### 2.5 PRESSURE GAGES

- A. Description: ASME B40.1, phosphor-bronze bourdon-tube type with bottom connection; dry type, unless liquid-filled-case type is indicated.
- B. Case: Drawn steel, brass, or aluminum with 4-1/2-inch- diameter, glass lens.
- C. Connector: Brass, NPS 1/4.
- D. Scale: White-coated aluminum with permanently etched markings.
- E. Accuracy: Grade B, plus or minus 2 percent of middle 50 percent of scale.
- F. Range: Comply with the following:
  - 1. Vacuum: 30 inches Hg of vacuum to 15 psig of pressure.
  - 2. Fluids under Pressure: Two times the operating pressure.

### 2.6 PRESSURE-GAGE FITTINGS

- A. Valves: NPS 1/4 brass or stainless steel needle type.

- B. Snubbers: ASME B40.5, NPS 1/4 brass bushing with corrosion-resistant porous-metal disc of material suitable for system fluid and working pressure.

### PART 3 - EXECUTION

#### 3.1 METER AND GAGE INSTALLATION, GENERAL

- A. Install gages, and accessories according to manufacturer's written instructions for applications where used.

#### 3.2 THERMOMETER INSTALLATION

- A. Install thermometers and adjust vertical and tilted positions.
- B. Install in locations as shown on the plans.
- C. Install thermometer wells in vertical position in piping tees where test thermometers are indicated.

#### 3.3 PRESSURE-GAGE INSTALLATION

- A. Install pressure gages in piping tees with pressure-gage valve located on pipe at most readable position.
- B. Install pressure gages in the locations shown on the plans.
- C. Install pressure-gage needle valve and snubber in piping to pressure gages.

#### 3.4 ROUGHING-IN FOR WATER METERS

- A. Install roughing-in piping and specialties for water meter installation according to utility's instructions and requirements.

#### 3.5 CONNECTIONS

- A. Piping installation requirements are specified in other Division 15 Sections. Drawings indicate general arrangement of piping and specialties. The following are specific connection requirements:
  - 1. Install gages adjacent to machines and equipment to allow service and maintenance.

#### 3.6 ADJUSTING AND CLEANING

- A. Adjust faces of meters and gages to proper angle for best visibility.
- B. Clean windows of gages and clean factory-finished surfaces. Replace cracked and broken windows, and repair scratched and marred surfaces with manufacturer's touchup paint.

END OF SECTION 15122