SECTION 220521

GAGES FOR PLUMBING PIPING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Pressure gages and pressure gage taps.

B. Thermometers and thermometer wells.

1.2 RELATED SECTIONS

A. Section 22 34 36 - Plumbing Equipment.

1.3 REFERENCES

A. ASME B40.1 - Gages - Pressure Indicating Dial Type - Elastic Element.

B. ASTM E1 - Specification for ASTM Thermometers.

C. ASTM E77 - Verification and Calibration of Liquid-in-Glass Thermometers.

1.4 SUBMITTALS

A. Division 01 - Submittals: Procedures for submittals.

B. Product Data: Provide the manufacturer’s data which indicates use, operating range, total range, accuracy, and location for manufactured components.

1.5 SUBMITTALS AT PROJECT CLOSEOUT

A. Division 01 - Contract Closeout: Procedures for submittals.

B. Project Record Documents: Record actual locations of components and instrumentation.

C. Operation and Maintenance Data: Include instructions for calibrating instruments.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Do not install instrumentation when areas are under construction, except for required rough-in, taps, supports and test plugs.

PART 2 PRODUCTS

2.1 PRESSURE GAGES

A. Manufacturers:
   1. Weiss.
   2. Trerice.
   3. Weksler.
   4. Ashcroft.

B. Gage: ASME B40.1, with bourdon tube, rotary brass movement, brass socket, front recalibration adjustment, black scale on white background.
   1. Case: Steel.
   2. Bourdon Tube: Brass.
   3. Dial Size: 2-1/2 inch diameter.
   4. Mid-Scale Accuracy: One percent.
   5. Scale: Psi.

2.2 PRESSURE GAGE TAPS

A. Gage Cock: Tee or lever handle, brass for maximum 150 psig.

B. Needle Valve: Brass for maximum 150 psig.

C. Pulsation Damper: Pressure snubber, brass with 1/4 inch connections.

2.3 THERMOMETERS

A. Manufacturers:
   1. Weiss.
   2. Trerice.
   3. Weksler.
   4. Ashcroft.

B. Stem Type Thermometers:
   1. ASTM E1, 9 inch scale, adjustable angle, red appearing mercury, lens front tube, cast aluminum case with enamel finish and clear glass window, 6 inch brass stem, cast aluminum adjustable joint with positive locking device, 2 percent of scale accuracy to ASTM E77, scale calibrated in degrees F.

C. Dial Thermometers:
   1. ASTM E1, 3 inch diameter dial in stainless steel case, adjustable angle with front recalibration, bimetallic helix actuated with silicone fluid damping, white with black markings and black pointer hermetically sealed glass lens, stainless steel stem, one percent of full scale accuracy, calibrated in degrees F.
   2. ASTM E1, 3-1/2 inch diameter dial in stainless steel case, vapor or liquid actuated with brass or copper bulb, 5 feet copper or bronze braided capillary, white with black markings and black pointer glass lens, 2 percent mid-scale accuracy, calibrated in degrees F.

D. Thermometer Supports:
   1. Socket: Brass separable sockets for thermometer stems with or without extensions as required, and with cap and chain.
   2. Flange: 3 inch outside diameter reversible flange, designed to fasten to sheet metal air ducts, with brass perforated stem.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with the manufacturer's instructions.

B. Provide one pressure gage per pump, installing taps before strainers and on suction and discharge of pump. Pipe to gage.

C. Install pressure gages with pulsation dampers. Provide needle valve to isolate each gage.

D. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inch for installation of thermometer sockets. Ensure sockets allow clearance for insulation.

E. Install thermometers in air duct systems on flanges.

F. Provide instruments with scale ranges selected according to service with largest appropriate scale.

G. Install gages and thermometers in locations where they are easily read from normal operating level.

H. Adjust gages and thermometers to final angle, clean windows and lenses, and calibrate.

END OF SECTION