

SECTION 22 05 19 - METERS AND GAGES FOR PLUMBING PIPING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Pressure Gauges, Gauge trim, and pressure gauge taps.
- B. Thermometers and thermometer wells.

1.2 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. *Add as needed in your specifications.*

1.3 REFERENCE STANDARDS

- A. ASME B40.100 - Pressure Gauges and Gauge Attachments; 2013.
- B. ASME MFC-3M - Measurement of Fluid Flow in Pipes Using Orifice, Nozzle and Venturi; 2007.
- C. ASTM E1 - Standard Specification for ASTM Liquid-in-Glass Thermometers; 2014.
- D. UL 393 - Indicating Pressure Gauges for Fire-Protection Service; Current Edition, Including All Revisions.

1.4 SUBMITTALS

- A. See Section *add other sections as needed.*
- B. Product Data: Provide list that indicates use, operating range, total range and location for manufactured components.

1.5 FIELD CONDITIONS

- 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 GAUGES

- A. Manufacturers:
 1. Miljoco Inc
 2. Other as listed

- B. Pressure gauges at Pumps.
 1. Similar to Mijoco P4509LX-PBF-F
 2. Accuracy: ASME B40.1 grade of 2A or better, $\pm 1/2\%$ of the entire range.
 3. Gauges to be dual scale of PSIG and Feet.
 4. Size: Dial glass 4-1/2" diameter or larger. System connection 1/4" NPT
 5. Case: Pressure gauges shall have cases and rings made of cast aluminum or stainless steel.
 6. Tubes and sockets: Low lead brass or stainless steel meeting the requirements of the US Safe Drinking Water Act.
 7. Movement: stainless steel rotary type.
 8. Pointer: Black, micro-adjustable.
 9. Gauges shall be rated for liquid temperatures to 200°F.

- C. All other pressure gauges.
 1. Similar to Miljoco P4598L-PBF
 2. Accuracy: ASME B40.1 grade 1A or better, $\pm 1\%$ of the entire range.
 3. Size: Dial 4" diameter or larger. System connection 1/4" NPT
 4. Case: Pressure gauges shall have cases and rings made of stainless steel, nylon, or polypropylene.
 5. Pointer: Black, aluminum, adjustable.
 6. Tubes and sockets: Low lead brass or stainless steel meeting the requirements of the US Safe Drinking Water Act.
 7. Movement: Brass or stainless steel.
 8. Gauges shall be rated for liquid temperatures to 200°F.

2.2 PRESSURE GAUGE TRIM

- A. Ball Valves: 1/4" NPT low lead brass meeting the requirements of the US Safe Drinking Water Act. Maximum 150 psi (1034 kPa). Provide for all gauges. Similar to Miljoco 1050-PBF series

- B. Pressure Snubbers: low lead brass meeting the requirements of the US Safe Drinking Water Act, 1/4 inch (6 mm) NPT for minimum 150 psi (1034 kPa). Provide for all gauges. Similar to Miljoco 1200-25-B-2-PBF series

2.3 STEM TYPE THERMOMETERS

- A. Manufacturers:
 1. Miljoco Inc
 2. Other as listed

- B. Thermometers- Adjustable Angle: Red, green, or blue-appearing non-toxic liquid in glass; ASME B40.200 & ASTM E1; cast aluminum adjustable joint with positive locking device;

adjustable 360 degrees in horizontal plane, 180 degrees in vertical plane.

1. Similar to Miljoco series SX-935
2. Size: 9 inch (225 mm) scale.
3. Case: Aluminum with enamel or powder coat finish
4. Lens: Clear Lexan, acrylic, or polycarbonate.
5. Stem: 3/4 inch (20 mm) NPT brass, 3-1/2" length through 8" pipe. 6" length over 8"
6. Range: Cold Service Water 0-120°F, Hot Service & Recirc. Water 30-180°F
7. Accuracy: ± 1 scale division
8. Calibration: Degrees F.

2.4 THERMOMETER SUPPORTS

- A. Socket:
 1. Similar to Miljoco model W35B-PBF
 2. Low lead brass separable sockets (well) for thermometer stems with or without extensions as required.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. On pumps, provide one pressure Gauge per pump, installing taps on suction and discharge of pump. Pipe to Gauge.
- C. Install pressure Gauges with pulsation dampers. Provide Ball Valve to isolate each Gauge. Extend nipples to allow clearance from insulation.
- D. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inch (60 mm) for installation of thermometer sockets. Ensure sockets allow clearance from insulation.
- E. Install Gauges and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.
- F. Adjust Gauges and thermometers to final angle, clean windows and lenses, and calibrate to zero.

END OF SECTION