

22 05 09 – Meters and Gauges for Plumbing

1. General

A. Section includes:

1. Positive displacement meters
2. Pressure gauges
3. Pressure gauge tap
4. Thermometers
5. Test Plugs

2. Products

A. Positive Displacement Meters (LIQUID)

- a. Refer to 33 19 00 District Thermal and Water Utility Meters for specifications.

B. PRESSURE GAUGES

1. Gauge: ASME B40.1, UL 393 with bourdon tube, rotary brass movement, brass socket, front calibration adjustment, black scale on white background.
 - a. Case: Cast aluminum or Stainless steel.
 - b. Bourdon Tube: Brass or Type 316 stainless steel.
 - c. Dial Size: 4 inch diameter.
 - d. Mid-Scale Accuracy: One percent.
 - e. Scale: Psi.

C. Pressure Gauge Taps

1. Ball Valve:
 - a. Brass or Stainless Steel, 1/4 inch NPT for 250 psi. Petcock valves are not acceptable.
2. Pulsation Damper:
 - a. Pressure snubber, brass with 1/4 inch NPT connections.
3. Siphon:

- a. Steel, Schedule 40 or Brass, ¼ inch NPT angle or s straight pattern.

D. Stem Type Thermometers

1. Thermometer: adjustable angle, digital solar powered, black with LCD display
 - a. Size: 7 inch scale.
 - b. Window: Clear glass.
 - c. Stem: Brass, ¾ inch NPT, 3-1/2 inch long.
 - d. Accuracy: +/- 1% or +/-1 degree (whichever is greater)
 - e. Calibration: Both degrees F and degrees C.
 - f. Temperature range: -50 deg F to 300 deg F

E. Test Plugs

1. ¼ inch NPT or ½ inch NPT brass fitting and cap for receiving 1/8 inch outside diameter pressure or temperature probe with:
 - a. Neoprene core for temperatures up to 200 degrees F.
 - b. Nordel core for temperatures up to 350 degrees F.
 - c. Viton core for temperatures up to 400 degrees F.

3. Execution

A. INSTALLATION

1. Install positive displacement meters in accordance with 33 19 00 District Thermal & Water Utility Meters, with isolating valves on inlet and outlet. Provide full line size bypass with globe valve for liquid service meters.
2. Install one pressure gauge per pump, with taps before strainers and on suction and discharge of pump; pipe to gauge.
3. Install gauge taps in piping
4. Install pressure gauges with pulsation dampers. Provide ball valve to isolate each gauge. Extend nipples to allow clearance from insulation.
5. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inches for installation of thermometer sockets. Ensure sockets allow clearance from insulation.

6. Coil and conceal excess capillary on remote element instruments.
7. Install static pressure gauges to measure across filters and filter banks, (inlet to outlet). On multiple banks, provide manifold and single gauge.
8. Provide instruments with scale ranges selected according to service with largest appropriate scale.
9. Install gauges and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.
10. Adjust gauges and thermometers to final angle, clean windows and lenses, and calibrate to zero.
11. Locate test plugs as applicable.
12. Provide manual air vents at system high points and as indicated.
13. Provide drain and hose connection with valve on strainer blow down connection.
14. Provide pump suction fitting on suction side of base mounted centrifugal. Remove temporary strainers after cleaning systems.
15. Support pump fittings with floor mounted pipe and flange supports.
16. Provide relief valves on pressure tanks, low-pressure side of reducing valves, heat exchangers, and expansion tanks.
17. Select system relief valve capacity so that it is greater than make-up pressure reducing valve capacity. Select equipment relief valve capacity to exceed rating of connected equipment.
18. Pipe relief valve outlet to nearest floor drain.