Portable Small Meter Tester

Model PSMT

DESCRIPTION

The Model PSMT Portable Small Meter Tester is designed for use in routine field audits of meter accuracy by comparing the meter being tested to the known accuracy of the test meter in the PSMT. The accuracy of the audit test is dependent upon following good testing techniques, accurately recording data, and properly maintaining the PSMT.

The PSMT is designed to facilitate field accuracy audits and should not be considered a tool for certified meter testing, which requires accurate temperature, rate, and pressure control along with calibrated volumetric or gravimetric standards.

The test meter includes a test tag that clearly shows the certified accuracy of the meter installed in the PSMT. The accuracy (test meter factor) of the test meter is factored in audit test calculations.

INSTALLATION

Connect the PSMT downstream in series with the meter being tested using the hoses and adapters supplied.

NOTE: For accurate results, it is critical that the audited meter is isolated so that all flow passes through both meters. In the event that testing is conducted by connection of the PSMT to household plumbing, make sure no leaks are indicated in the plumbing system and that no water is used during the tests.

⚠ WARNING

- **NEVER OPERATE THE PSMT ABOVE 100 PSI (6 BAR).**
- **SECURE THE PSMT AND HOSES TO PREVENT PERSONAL INJURY FROM POTENTIAL MOVEMENT, ESPECIALLY AT HIGHER OPERATING PRESSURES.**
- **ENSURE PROPER DRAINAGE OR CONTAINMENT OF DISCHARGED WATER TO PREVENT WATER DAMAGE.**
- **OPEN AND CLOSE VALVES IN A MANNER TO PREVENT WATER HAMMER IN THE INSTALLATION.**

To prevent air entering the PSMT between test flows and to provide backpressure through the PSMT, install the outlet hose so that there is a free-air discharge into a container or waste drain at an elevation at least 12 in. (305 mm) above the outlet of the PSMT. Always use the return ell on the discharge hose end for accurate testing. Verify that there is sufficient volume in the wastewater container to contain the test volumes or that a suitable drain is available.

TEST PROCEDURE

Before starting the test, accurately record the initial reading (including the test circle of the meter being tested).

1. Connect the test unit downstream, in series with the meter being tested, using the hoses and adapters supplied.
2. Verify that all connections are watertight and that proper water disposal is provided.
3. Gradually open the supply.
4. Partially open the outlet valve, then open the inlet valve gradually to purge all air from the PSMT, hoses, connections and the audited meter.
5. With the water running, set the desired flow test rate by regulating the outlet valve and timing the movement of the sweep hand on the test meter.
6. With no flow present through the meters, set the test ring on the test meter dial to zero.
7. Open the inlet valve to start the test flow. Close the inlet valve when the desired test volume is indicated on the test meter.
8. After establishing the flow rate, stop the flow using the inlet valve. Note the final reading on the test meter and the audited meter. Calculate the accuracy using the test meter reading as the reference.

For an overall audit of meter performance, conduct the tests at three flow rates. For test reliability, average two tests at each rate. If there is a gross error between tests, run additional tests, discarding the gross error. Alternately, choose larger test volumes.

ACCURACY EVALUATION

To calculate the accuracy of the audited meter at each flow rate:

1. Subtract the initial reading from the final reading to determine the volume for the test meter and audited meter for each test run.
2. Compare these two values to determine if the audited meter performs within acceptable limits.

NOTE: The test meter has a calibrated accuracy of 100% ± 1.5% over a flowrange of 1/2…25 gpm (1.89…94.63 lpm). This must be taken into account when comparing the two meters.

STORAGE

When the tests are complete, turn off the water supply and store the PSMT and accessories as follows:

1. Open the inlet and outlet valves to remove all water from inside the test meter.
2. Disconnect the hoses and return the protective caps to the PSMT hose connectors.
3. Disconnect all fittings, drain all of the water from the hoses and fittings and neatly store in the nylon bag secured in the cover of the PSMT.
4. Wipe away any water from the interior and exterior of the PSMT, close and secure the cover.

For long life and accuracy of the PSMT:

- Store and transport the PSMT where it will not be subjected to freezing temperatures.
- Handle with care, the PSMT is a precision instrument.
- Keep the inlet and outlet valves closed when the PSMT is not in use.
- Keep the interior surfaces dry and always drain the water from fittings and hoses before storage.

MAINTENANCE

The PSMT requires only proper care as outlined in *"Installation" on page 1* and *"Storage" on page 2* of this document.
Peroidic accuracy certification of the test meter should be done to ensure the continued accurate performance of the meter. These tests should be conducted using adapters in the test bench which allow connection of the PSMT using the hoses provided. The test meter should not be removed from the PSMT case for testing. If the accuracy changes over time and usage, a new test meter factor as determined by certified testing should be used in accuracy calculation.

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