

Model PSMT

Portable Small Meter Tester

Operation Manual



BadgerMeter, Inc.

PSMT-IOM-1
P/N 63009-002 Rev. 1

GENERAL:

The Model PSMT Portable Small Meter Tester [PSMT] 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 proper maintenance of the **PSMT**. This unit 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, ensure that no leaks are indicated in the plumbing system and that no water is used during the tests.

⚠ WARNING

Safety Considerations

- **Never operate the PSMT above 100 psi.**
- **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" above the **OUTLET** of the **PSMT**. Always use the return ell on the discharge hose end for accurate testing. Ensure that there is sufficient volume in the wastewater container to contain the test volumes or that a suitable drain is available.

TEST PROCEDURE:

1. Ensure that all connections are watertight, that proper water disposal is provided, and then gradually open the supply.
2. Partially open the **OUTLET** valve. Then open the inlet valve gradually, to purge all air from the **PSMT**, hoses, connections, and the **audited** meter.
3. 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**.
4. When the flow rate is established, close the **INLET** valve.
5. With no flow present through the meters, set the test ring on the **TEST METER** dial to zero.
6. Accurately record the **INITIAL** reading of the **AUDITED** meter (including the test circle).
7. Open the **INLET** valve to start the test flow.
8. Close the **INLET** valve when the desired test volume is indicated on the **test meter**.

9. Record the **final** reading on the **test meter** and the **audited** meter.
10. One can repeat the test at this rate starting at Step 5.

For an overall audit of meter performance, tests should be conducted at three flow rates. To ensure test reliability, two tests can be averaged at each rate and if there is gross error between tests, additional tests should be run – discarding the gross error. Alternately, larger test volumes can be chosen.

ACCURACY EVALUATION:

Calculate the accuracy of the audited meter at each flow rate as follows:

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 whether or not the audited meter performs within acceptable limits.
NOTE: The test meter has a calibrated accuracy of 100% ± 1.5% over a flowrange of ½ - 25 GPM. 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.

NOTE: 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 the **INSTALLATION** and **STORAGE** sections. Periodic 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**.

Due to continuous research, product improvements and enhancements, Badger Meter reserves the right to change product or system specifications without notice, except to the extent an outstanding contractual obligation exists.



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