

IN-HOUSE PROCEDURE # _____

PROCEDURE FOR VERIFYING AIR METER

Item:

Type B Air Meter (Pressure)

Purpose:

This method provides instructions for checking the critical dimensions of the measuring bowl and verifying the expansion factor and pressure gauge readings of a Type B air meter.

Inspection Equipment Required:

1. Ruler readable to 1/16 inch (1 mm) or better
2. Standardization Vessel (cylinder)

Tolerance:

Equipment shall meet the dimensional tolerances specified in the applicable test method.

Procedure:

CRITICAL DIMENSIONS

1. Measure the inside diameter of the measuring bowl.
2. Measure the inside height of the measuring bowl.
3. Determine the diameter / height ratio.
4. Refer to the density measure calibration worksheet to obtain the mass of water required to fill the measuring bowl, W .
5. Accurately determine the mass of water required to fill the standardization vessel, w , and calculate the effective volume of the standardization vessel, w/W .

EXPANSION FACTOR

1. Fill the measuring bowl with water and secure the cover assembly. Add water through one petcock until water emerges from the opposite petcock. Continue adding water and jar the meter to remove entrapped air. Close the air bleeder valve.
2. Pump air into the chamber until the dial gauge needle is on initial pressure mark indicated on the dial face. Tap the dial gauge lightly with your fingers until stabilized. Adjust pressure if needed by pumping air into or releasing air from the chamber.
3. Close both petcocks. Release the air into the bowl by opening the main air valve. Tap the gauge lightly with your fingers until stabilized.
4. Read the dial gauge to the nearest 0.1 %. The gauge should read 0 %. If not, repeat test and adjust the initial pressure line if two or more readings show the same variation from 0 %. Repeat the check to verify.

PRESSURE GAUGE

1. Fill the measuring bowl with water. Screw the short, straight piece of tubing into the threaded petcock hole on the underneath side of the cover. Secure the cover assembly onto the measuring bowl.
2. Add water through the petcock with the tubing until water emerges from the opposite petcock. Continue adding water and jar the meter to remove entrapped air. Close the air bleeder valve.
3. Pump air into the air chamber until the pressure reaches the indicated initial pressure line. Stabilize the gauge hand by lightly tapping, bleeding off or pumping as necessary.
4. Close the petcock without the attached lower tubing. Attach the curved tubing to the same petcock with the lower tubing. Place the standardization vessel (cylinder) under the curved tubing to catch water. Carefully open the main air valve and fill the standardization vessel full with water. You may control the flow with the main air valve or by partially closing the petcock. If overfilled and water is spilled, the test must be repeated.
5. Release the air by opening the petcock without the tubing to allow the water in the tubing to drain back into the measuring bowl.
6. Pump air into the air chamber until the dial gauge needle is again stabilized on the initial pressure line. Close both petcocks.
7. Release the air into the measuring bowl by opening the main air valve. While holding the main air valve open, stabilize the gauge by lightly tapping with your fingers. Record the dial reading to the nearest 0.1 %.
8. The dial reading should match the amount of water removed or the volume of the standardization vessel used. If not within ± 0.1 % and two or more determinations indicate the same variation from the correct reading, reset the dial gauge hand to the correct reading and repeat checks of the expansion correction factor and pressure gauge until both requirements have been satisfied.