



## MPMS Application Note 1014-308

# High-Powered Impedance Test

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The high-powered impedance test is used to check the ability of the MPMS to restrict the flow through the impedance tube. This restriction capability is a necessary function for reaching temperatures below 4.5K.

### Prepare the MPMS

1. Set temperature to 10 K and wait for it to stabilize.
2. Set the impedance heater to high. Press **F7** to open the **Diagnostic Menus**. Move the cursor to **Gas Controls** and press **Enter** to open the **Diagnostic Gas Controls** menu.
3. Move the cursor to **Impedance Heater** and select **High**.
4. It is very important to wait for at least one minute.
5. Open the cooling valve. Within the **Diagnostic Gas Controls** menu, move the cursor to **Cooling Valve** and select **Open**.

### Expected Results

In the next procedure you will be switching the exhaust hose from one flow meter to another. There are particular events that may occur which would verify the proper functioning of the high impedance. The first event is a flow rate that reaches the top of the gauge for one to two minutes. Next, the flow rate drifts down to a value between 20 to 40 cc/min. A poorly functioning high impedance causes the gauge to drift down to a value of 45 cc/min or higher.

### Moving the Exhaust Hose to Start the Test

On the flow meters, move the hose from the 250 cc/min flow meter to the 50 cc/min flow meter, the one on the far left side.

### Verify the Proper Functioning of the High Impedance with the Impedance Heater Turned Off

1. Return the hose from the 50 cc/min flow meter to the 250 cc/min flow meter.
2. Turn the impedance heater off. Within the **Diagnostic Gas Controls** menu, move the cursor to **Impedance Heater** and select **Off**.

3. The results should indicate a flow rate that reaches the top of the gauge after 12 to 15 minutes.

### **Restore the MPMS**

1. Within the **Diagnostic Gas Controls** menu, move the cursor to **Cooling Valve** and select **Close**.
2. Reset the temperature or place the system in standby.