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12-003

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**TROUBLESHOOTING A-ZERO WARNINGS IN M200EX/T200X ANALYZERS**

**I. PURPOSE:**

This service note will assist in troubleshooting analyzers that are displaying an A-Zero warning on the M200EX or T200X analyzers.

**II. TOOLS:**

Voltmeter  
Flashlight  
Philips head screw driver

**III. PARTS:**

None

**IV. PROCEDURE:**

**\*NOTE\* Remove the cover on the top of the unit before performing this procedure.**

1. Flow Zero air to your NO<sub>x</sub> analyzer for 10 minutes and then press SETUP MORE DIAG, enter 818 for the password hit ENTR. The screen should say SIGNAL I/O, hit ENTR.
2. Once in the Signal I/O menu you will want to scroll over till you get to PMT\_SIGNAL=. This should be equal to a mV reading.
3. If this PMT reading is <100mV proceed to **step 4**. If it is  $\geq 100\text{mV}$  proceed to **step 7**.
4. Record the PMT reading while on Zero air and then flow span gas into the unit for 5 minutes. Scroll over till you get AUTO\_ZERO\_VALVE= and turn this ON.
5. Scroll back to PMT\_SIGNAL again, and record the PMT reading. If it is >100mV measure the voltage going to the A-zero valve. The A-Zero valve is located directly in front of the NO<sub>2</sub> Converter marked HOT in the middle of the unit. If this is a low level unit the A-Zero valve is on the right, if this is an M or H model NO<sub>x</sub> analyzer, the valve is on the left.
6. With the A-Zero valve turned ON, this voltage should be about 12V dc. If it is, you have a bad A-Zero Valve and it should be replaced. If you do not have the 12V dc, you have a bad relay board or cabling.

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7. If your PMT\_SIGNAL value is >100mV while on zero air, please disconnect the sample inlet at the back of the unit. If the PMT goes down to <100mV, you have bad Zero air. If the PMT value stayed the same, proceed to **Step 8**.
8. Disconnect the Ozone Line on the top of the reaction cell, this will be the fitting marked .004 (4mil) or .007(7mil) that is coming from the ozone generator. If the PMT drops down to <100mV you have contamination in the reaction cell. If the PMT stayed the same, proceed to **Step 9**.
9. Turn off all the lights to the room and make the unit as dark as possible. If the PMT drops down to <100mV you have a light leak. Troubleshoot the spot where the light is leaking by shining a flashlight at different parts of the reaction cell. If the PMT stayed the same, proceed to **Step 10**.
10. Disconnect the White or Tan coax cable that runs from the front of the PMT housing to the Preamp board. If the PMT drops down to <100mV, you have either a bad PMT or HVPS. The only way to isolate the problem further is to swap one of these two parts out and see if it remedies the problem. If the PMT stays the same and is still >100mV with the coax cable disconnected, you have a bad Preamp board.