



TROUBLESHOOTING SAMPLE FLOW IN THE M400A

I. SCOPE:

To help our customers understand how we are measuring sample flow in the M400A analyzer & how to trouble shoot this new flow measurement method.

II. BACKGROUND:

In the M400A analyzer we are measuring the sample flow differently than we had in the M400 analyzer. We are now using two pressure transducers, one on each side of the critical flow orifice to calculate sample flow. What this means is that as long as the orifice is at critical flow the sample flow through the analyzer will be stable. By measuring the flow upstream & downstream of the orifice we can accurately calculate what the sample flow is. The sample flow through the analyzer has to be calibrated. The method of calibration will be described in the procedure of this service note.

III. TOOLS:

A flow meter that will measure in the 0 to 1000 cc/min range (or there about).

IV. PROCEDURE:

1. If you are having a problem with the flow that is displayed on the front panel of the analyzer then measure the flow @ the rear panel & check the flow on the front of the analyzer. Do the flows match? If they do match then you probably need to remove & replace the orifice, o-rings & the sintered filter in the flow block. If they do not match go to step 2.
2. Perform a Leak check of the analyzer to determine if the flow problem is due to a leak. To do this push, "SETUP_MORE_DIAG_ENTER_NEXT to LEAK CHECK_ENTER" & follow the directions on the front panel. If the unit fails the leak check then find the leak, when you fix the leak odds are that the flow problem will be fixed as well. If you find the leak & still have a problem with the flow go to step 3. Verify that both sample pressure & vacuum are less than 10"-hg-a. if they are then the pump is probably good.
3. If the flows do not match push the following buttons; "SETUP_MORE_DIAG_ENTER_NEXT to FLOW CALIBRATION push ENTER" now enter in the flow that you just measured @ the rear panel.
4. EXIT back to the sample menu & push the TST> button until you come to sample flow.

"TROUBLESHOOTING SAMPLE FLOW IN THE M400A"

Service Note 99-030

Page 1 of 2

5. Does the sample flow on the front panel match what you measured? If it does then you can calibrate the unit on zero & span gas & put the analyzer back on line. If it does not then proceed to step 6.
6. Push the TST> button until you come to PRES, this should be between 25 & 35 in-hg-a. This is usually about 1" less than your barometric pressure.
7. Push the TST> button & you should see VAC, this should be between 5 – 15 in-hg-a. If it is higher than 15 in-hg-a you are probably going to have to rebuild the pump. If it is lower than 15 in-hg-a then go to step 8.
8. Turn the unit off & remove the two fittings on top of the pump.
9. Turn the unit on & look @ PRES & VAC & these numbers should be the same & they should be close to your barometric pressure. If they are not then press "SETUP_MORE_DIAG_929_ENTER_NEXT to PRESSURE CALIBRATION_ENTER enter in your barometric pressure & push ENTER"
10. Press "PREV to FLOW CALIBRATION_ENTER enter in the flow & press ENTER".
11. Now exit out to the sample menu & check the flow. If it is correct then calibrate the unit @ span & zero & put the unit back on line. If it is not correct then you probably have a bad pressure transducer & replacing it will fix the problem. Fill out the warranty/repair form in the manual & fax it to API so that we can help you get the proper parts to fix this unit.

If you have questions regarding this procedure or any API equipment, please contact an API Customer Service representative at:

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WWW: <http://www.advpol.com>

“TROUBLESHOOTING SAMPLE FLOW IN THE M400A”

Service Note 99-030

Page 2 of 2