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Service Note

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TROUBLESHOOTING AND MEASURING SAMPLE FLOWS IN M200, M200A, M200AH, M200AU, M100AH AND M300H ANALYZERS.

SCOPE:

This procedure explains the use of pressure transducers to measure flow in API analyzers, and gives a method of troubleshooting flow problems.

BACKGROUND:

Historically API has used mass flowmeters to measure flows in all analyzers except for the sample flow in the M200. This has continued with the "A" and "A look" series. Due to their susceptibility to water and dust, as well as difficulty in soldering them, these flowmeters have always had a relatively high failure rate.

In seeking to improve overall analyzer quality, API has decided to adopt a different method of calculating flow in our analyzers. This method involves measuring upstream and downstream pressure across the flow control orifice and calculating the flow from the differential pressure. This is the method that API has always used for measuring of sample flow in the NOx line of analyzers.

With the advent of the M400A, M100AH and now the M300H analyzers, API has taken the first step to achieving this goal. As products are re-designed and new products introduced, API will be moving away from the mass flowmeter in favor of the differential pressure method of calculating flow in all of our products.

TOOLS REQUIRED:

Flowmeter

PARTS:

None

PROCEDURE:

1. Using the flowmeter, measure sample flow at the sample inlet.
2. Press the TEST button on the front panel to scroll through the TEST features until you see PRESS or SAMP PRES. This number should be within 1"-Hg of ambient pressure. If not, check for restrictions in sample filters, valves, etc.
3. Press the TEST button on the front panel to scroll through the TEST features until you see VAC or RCELL PRESS. This number should be less than 10"-Hg-A. If not, check for leaks, restrictions in scrubbers, etc. Rebuild pump if needed.
4. Verify that the front panel sample flow matches the measured flow.
5. If adjustment of the sample flow is necessary, adjust as follows:
   M200:

A. Connect a computer via RS232 to the analyzer.
B. Type "?" (do not type quotes for any commands) and press the Enter key. The analyzer should respond with a menu of commands.
C. Type "V<sp>SFLOW_SET=" where <sp> means hit the space bar. Press the Enter key. The analyzer should respond with the current flow setting. To calculate the change needed, subtract the current front panel flow reading from the desired reading. Add the difference to the current RS232 flow reading and type the following: "V<sp>SFLOW_SET=XXX" where XXX is the new number you calculated. Press Enter. The analyzer should respond by showing the new flow.

M200AH, M200A, M100AH, M300H:

A. Press SETUP-MORE-VARS. Press NEXT until you see SAMPLE_FLOW.
B. Press EDIT.
C. Calculate the change by subtracting the current front panel flow from the desired flow. Add the difference to the existing number in the VARS.
D. After changing the number in the VARS to the calculated number press ENTR.

If you have any questions regarding this or any API equipment, please contact an API Customer Service Engineer.