



Technical Support Note

Title: Diagnosing Low Sample Gas Flow on MAP Analyzers

TSN Number: 07

File:S:\Bridge_Analyzers\Customer_Service_Documentation\Technical_Support_Notes\
07 Map Analyzer Field Test.docx

Created by: R. Schrader

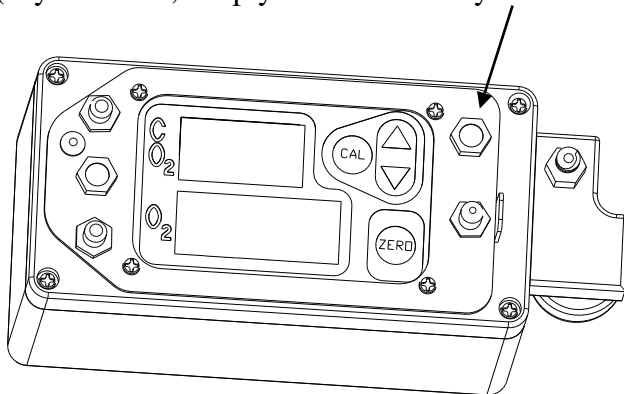
Last Revision Date: 11-Mar-14

Set the Operational Mode of the MAP Analyzer to Continuous Measurement.

Because the analyzer holds headspace gas readings immobile after the sample period, the sample and hold mode of analyzer operation is not the best mode to use for diagnosing low flow conditions. By pressing the DOWN (GREEN) arrow, the analyzer can be set to continuous measurement mode – which turns the pump on and is the preferred operational state for low flow diagnostics. The analyzer draws in test gas and continuously measures it in this mode.

Restrict the Output Flow – Confirm O2 Reading Increase.

Operate the analyzer normally, with the sample line, filter, and needle attached. You should be seeing about 21% O₂ when you select continuous measurement mode above. (If you do not, simply ZERO the analyzer before proceeding.)



Restrict the sample gas output by blocking the gas exhaust port located at the top-right side of the unit using your finger or thumb. You should see the O₂ reading increase rapidly when you do this.

Restricting the output gas flow should pressurize the test gas at the O₂ sensor, causing the reading to increase rapidly from the 21% value by several percent.

If you see low or slow response, this indicates that the sample flow in the analyzer is low.

Remove the needle first, then the filter, and perform the same test. The most likely problem is a blocked needle, but the filter is also water blocking, and may have ingested enough water to block the flow. Regardless, the analyzer should show rapid

Bridge Analyzers, Inc.
PO Box 39325
Solon, Ohio 44139 USA

(510) 337-1605 office
(216) 274-9262 fax
support@bridgeanalyzers.com



Technical Support Note

O₂ increase if both the needle and filter (and even the sample line) are removed from the gas input port.

If rapid increase in O₂ response is not seen, then there is an internal gas flow problem, and the analyzer should be returned to Bridge for service.

NOTE: Sample needles can be cleared using the Bridge P/N 00888 needle cleaning tool, and water blocked sample filters can be cleared either by blowing backward through them, or letting them air dry.

You should always have known clear sample needles and filters with the analyzer to replace parts that may inadvertently get blocked in use.

Alternative: “Breath Test” - Measuring Expired Breath CO₂ / O₂.

1. Measure your Expired Breath for CO₂ and O₂ Content.

The human body produces 5.0% CO₂ during normal respiration, using oxygen from the ambient air to do this – reducing it from 21% to about 15%. Thus, you yourself are a convenient source of CO₂ and O₂ test gas to confirm the basic functions, gas sampling flow and response times of the analyzer.

With the analyzer in continuous flow mode as set above, hold the needle vertically in front of your mouth. Open your mouth (without pursing your lips – you are not going to blow – only exhale) and holding the sample needle vertically in front of your mouth, exhale across the sample needle so that you create a plume of exhaled breath that the analyzer can draw in to sample for analysis. Keep exhaling for five seconds. (You do not have to exhale sharply – the analyzer takes a very small volume of gas. The objective is to create a plume of deep lung gas for the analyzer to sample.)

You should see the CO₂ reading increase within a second, and the O₂ reading go down shortly thereafter. For a five second exhale, you should see the CO₂ go up to as high as 5.0%, and the O₂ reading go down to as low as 15%. If you do not see this response, the sample gas flow is not proper. Proceed to troubleshoot the source of flow blockage as follows:

2. Remove the Sample Needle from the Sample Filter and repeat the ‘Breath Test’ above.

The sample needle may be blocked. It is a pencil point and cross-drilled design, intended to provide protection from inadvertent blocking during use, but may have inadvertently pierced product, resulting in ingestion of foreign material and internal blockage.

Bridge Analyzers, Inc.
PO Box 39325
Solon, Ohio 44139 USA

(510) 337-1605 office
(216) 274-9262 fax
support@bridgeanalyzers.com



Technical Support Note

If you hold the needle end of the filter close to (but not in contact with) your mouth, and allow the analyzer to sample your breath while you exhale, you should see the CO₂ and O₂ response above.

If you do, then the needle is blocked, and should be cleaned or replaced. If the expected response is not seen with the needle removed, then the sample filter is likely to be blocked.

3. Remove the Sample Filter and repeat the 'Breath Test' above.

The analyzer may be temporarily operated without a sample needle or filter installed on the sample line in order to test gas flow. If you hold the end of the sample line close to (but not in contact with) your mouth, and allow the analyzer to sample your breath while you exhale, you should see the CO₂ and O₂ response above.

If you do – then the analyzer is OK, but the sample filter is blocked – and should be replaced. The needle filter is both a particulate and water blocking filter, so if water has been inadvertently ingested, the filter will block them and shut down gas flow to protect the analyzer.

4. Once the sample needle or filter are cleaned or replaced, perform the 'Breath Test' once again to assure function.

By repeating Test 1 with the replacement parts, a full functional test should validate that the analyzer is measuring gases correctly with all the sample accessories attached.

NOTE: The sample needle is Stainless Steel, and designed for extended use. It has small ports, however, and these may be blocked inadvertently. Bridge has a sample needle cleaning tool available for needle maintenance. Bridge recommends that customers have a supply of spare needles and filters available to restore operation, and the needle cleaning tool should be available to clean blocked needles in order to keep the MAP analyzer operational in use:

P/N 108126 25 mm Dia Sample Filter Pack (6 pcs)

P/N 000617 Sample Needle

P/N 000888 Sample Needle Cleaning Tool

Contact Bridge at the telephone or fax numbers above to order these supplies or to obtain further guidance in diagnosing low flow conditions.

Bridge Analyzers, Inc.
PO Box 39325
Solon, Ohio 44139 USA

(510) 337-1605 office
(216) 274-9262 fax
support@bridgeanalyzers.com