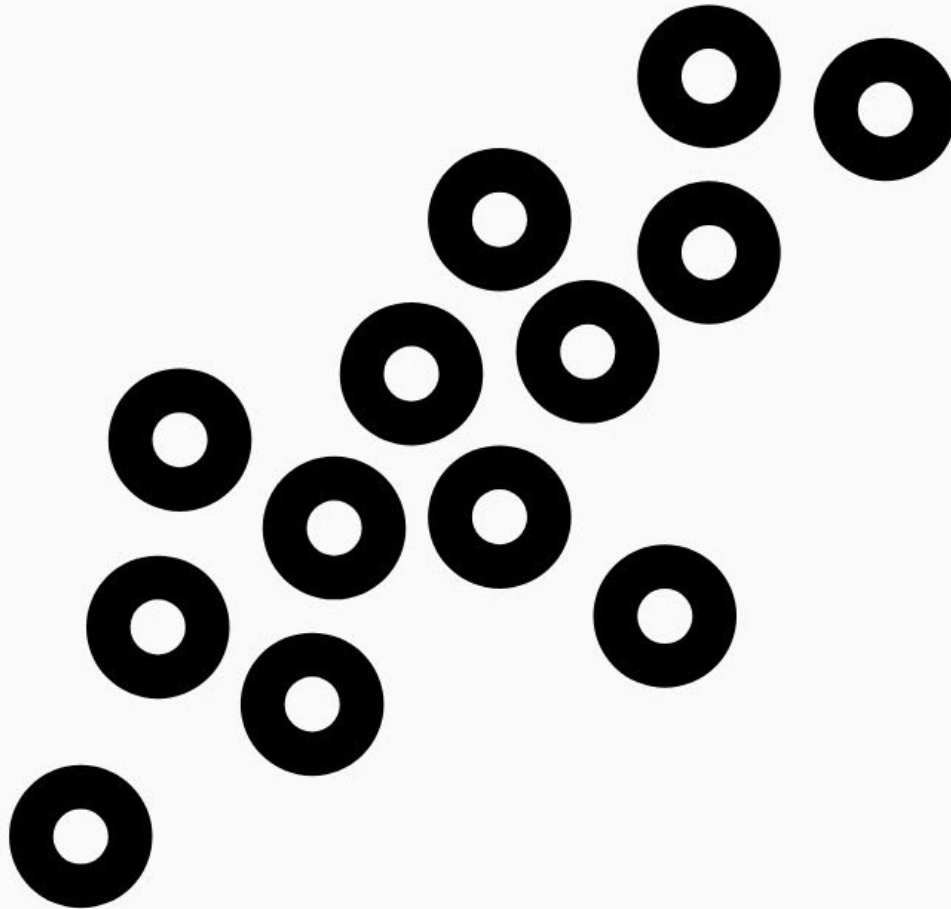




Check / adjust flow of particle profiler

Written By: Tanya Taylor



INTRODUCTION

You can use the TSI 440 flowmeter or a single rotameter to measure the flow rate of your particle profiler.

When measuring the flow rate of the particle profiler, it's important to use a buffer chamber to ensure accurate measurement. The buffer chamber is part of the zero filter and flow assembly. It is also part of your monitor's service kit.

To understand how often you should perform this service activity, [click here](#).



TOOLS:

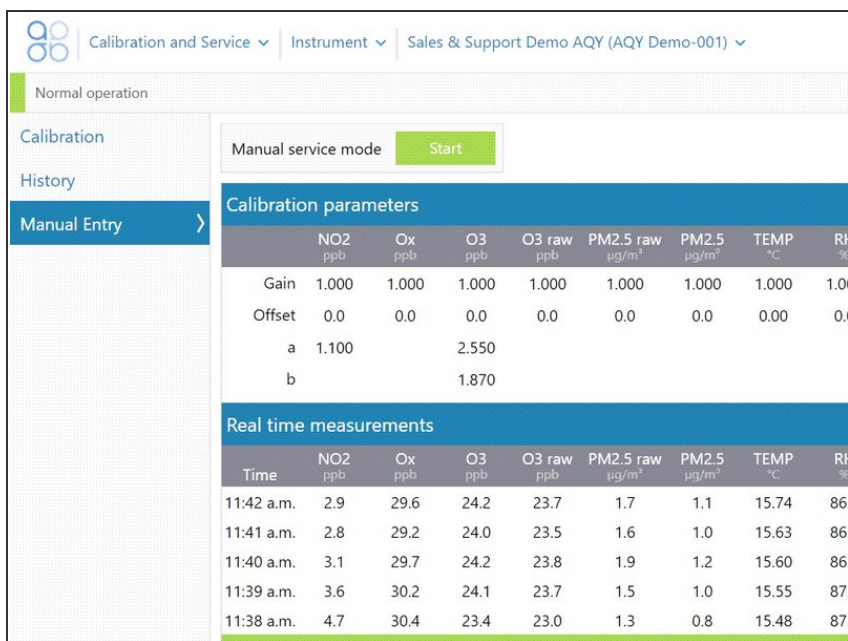
- [Small Phillips head screwdriver](#) (1)



PARTS:

- [Flowmeter - TSI 4140](#) (1)
- [Flowmeter - rotameter](#) (1)
- [Zero filter and flow assembly](#) (1)

Step 1 — Enter service mode



Normal operation

Calibration

History

Manual Entry

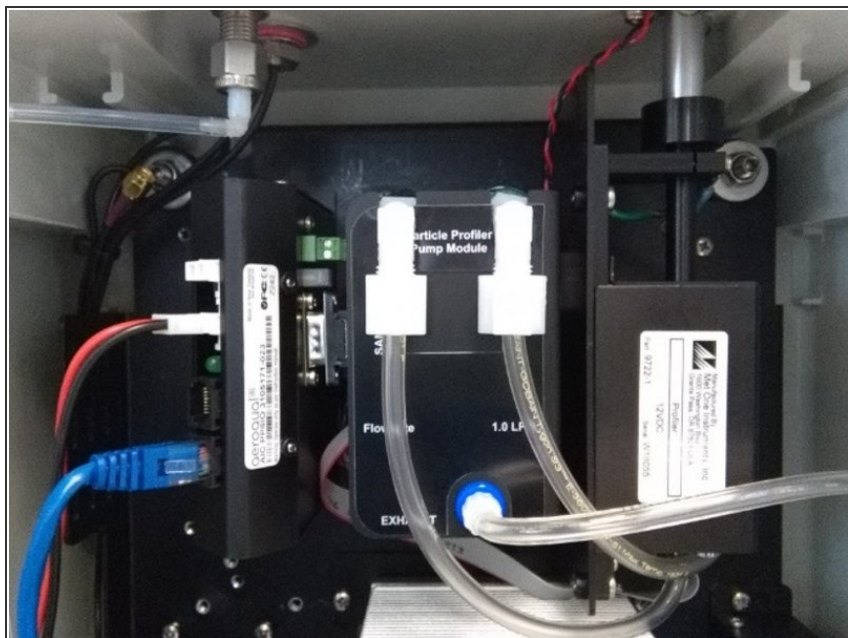
Manual service mode Start

Calibration parameters								
	NO2 ppb	Ox ppb	O3 ppb	O3 raw ppb	PM2.5 raw µg/m³	PM2.5 µg/m³	TEMP °C	RH %
Gain	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Offset	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0
a	1.100		2.550					
b			1.870					

Real time measurements								
Time	NO2 ppb	Ox ppb	O3 ppb	O3 raw ppb	PM2.5 raw µg/m³	PM2.5 µg/m³	TEMP °C	RH %
11:42 a.m.	2.9	29.6	24.2	23.7	1.7	1.1	15.74	86.
11:41 a.m.	2.8	29.2	24.0	23.5	1.6	1.0	15.63	86.
11:40 a.m.	3.1	29.7	24.2	23.8	1.9	1.2	15.60	86.
11:39 a.m.	3.6	30.2	24.1	23.7	1.5	1.0	15.55	87.
11:38 a.m.	4.7	30.4	23.4	23.0	1.3	0.8	15.48	87.

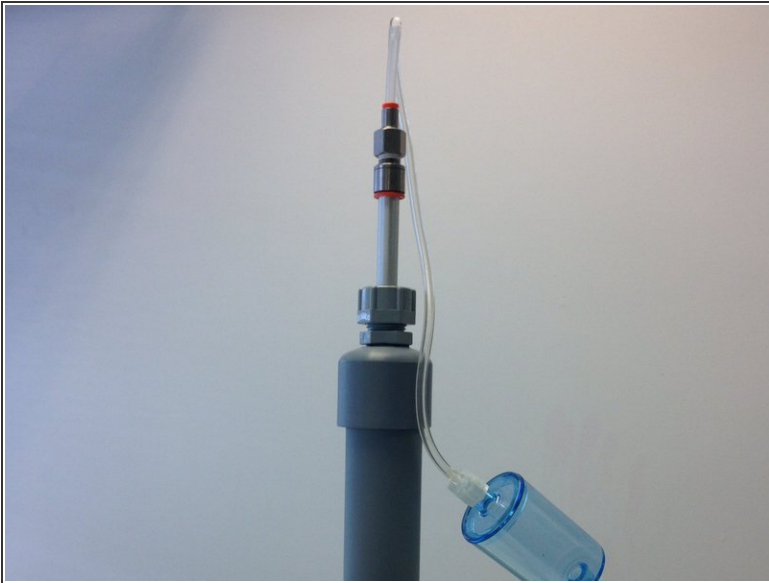
- [Enter service mode](#) so any fluctuations in the data caused from this activity can be excluded from air quality reports.

Step 2 — Expected flow rate



- The flow rate of the particle profiler is 1.0 ± 0.05 LPM (between 0.95 and 1.05 LPM).
- A constant 1.0 LPM flow is essential to ensure monitor is measuring correctly.

Step 3 — Check flow



- Remove the TSP head from the top of the particle inlet and attach the flow adaptor on your flow assembly.
- Attach the flow assembly to a 0-2.5 LPM volumetric flowmeter.
 - ❗ If using the single rotameter, connect the assembly to the top port of the flowmeter (negative flow).
- Attach a flow buffer chamber between the flowmeter and inlet to smooth the flow coming from the diaphragm pump.

Step 4 — Adjust flow



- Ensure the flow meter is on a steady surface before reading the flow rate.

⚠ Adjust the sample flow by pulling the adjustment knob outwards, turning the knob to increase/decrease flow, and pushing the knob back in to lock when desired flow has been reached.

- If the flow isn't correct, adjust the sample flow adjustment valve, which is located on the face plate of the pump module, until the flow reads 1.0 ± 0.05 LPM (between 0.95 and 1.05 LPM).
 - ⓘ On older monitors, the sample flow adjustment valve is positioned at the bottom of the enclosure under the PDI cover.
- ⚠ If you can't reach 1.0 ± 0.05 LPM, there may be a leak, the sample and purge filters may be dirty, or the pump may need replacing.**

Step 5 — Record in journal

Instrument ▾ Air Quality Monitor (AQM65 04082015-437) ▾

All journal types ▾

User entry | Cloud user · John Wagner

1. Site Inspection:	No new local emission sources Instrument in good condition No obstructions to monitoring equipment	2. Instrument inspection: Cooling fan operational PM and gas inlet secure Instrument has been running at stable
3. Equipment:	Aeroqual Gas dilution calibrator: Aircal 1000 Aeroqual Ozone calibrator: AQM O3Cal Aeroqual Flow meter: AQM R7	4 Gas cylinders: CO 1000 ppm in Air (expiry March) SO2 20 ppm in Air (expiry December) NO2 20 ppm in Air (expiry November)
4. Flow rate check:	Expected flow rate = 0.450 ml per min, Measured flow rate = 0.452 ml per min Main inlet flow rate OK, individual module flow rates were not measured.	5. Open door and change gas inlet filter
6. Zero calibration	All modules passed zero calibration, all modules were stable and all offsets were within acceptable limits.	
7. Span Calibration	CO @ 10.00 ppm Module response was 8.95 ppm gain adjustment to 1.15 pass SO2 @ 0.2 ppm Module response was 0.210 ppm gain adjustment to 0.92 pass NO2 @ 0.2 ppm Module response was 0.090 ppm gain adjustment to 2.10 pass (module may need replacing soon contact Aeroqual)	
8 Pack up. Next scheduled calibration 3 months from now. June 2017.		

- [Record the results of this service activity in the monitor's journal.](#)
- [Exit service mode.](#)

For further support, contact [Technical Support](#).