



Campbell Sampler Advantages

Vacuum Technology Significantly Improves Water Sampling Equipment



Advantages of Vacuum-Based Sampling

Campbell Scientific's vacuum-pump technology delivers a significant improvement over peristaltic-pump technology for water sampling.

- The vacuum pump draws at much greater speeds and allows for larger height gain, important for accuracy and difficult sampling needs.
- Samples are representative. Rather than squeezing only the desired sample amount through, a larger volume is drawn into the metering chamber, from which the desired sample amount is taken. This allows for solids and suspended material to remain in the final sample.
- Sample measurements are precise. Reliable, consistent sampling within 2cc's of repeatability. Most competitors attain 10cc's in repeatability.
- Unlike peristaltic sampling, which squeezes samples through tubes, the materials and parts DO NOT wear down quickly! This means less maintenance time and less spare parts. Vacuum-based samplers are able to draw reliable liquid samples for years without concern of replacement parts or inaccurate samples.

- The fluid travels only through the intake hose to the metering chamber, and then through the discharge hose, eliminating cross-sample contamination from pumps, valves, and distribution plates.
- All excess water is pushed out of the system using a noninvasive purge of air, both before and after sampling. This leaves tubing clean and free from contaminants.

*EPA Report Comparing Vacuum and Peristaltic Sampling Methods**

"...it is the opinion of the Field Investigations Section that high-vacuum sampling equipment produces more representative samples. On waste sources with appreciable concentrations of large and/or heavy settleable material such as raw municipal wastewater, the section makes every effort to install a high vacuum unit when compatible with the site conditions and data requirements. Since these units yield higher results, they are of advantage to treatment plants in determination of removal efficiencies."

* Excerpt from the Harris-Keffer Report, p.80, available from NTIS, Document PB259875

specs, questions, & quotes: 435.227.9030

www.campbellsci.com/water-samplers



Vacuum Sampling Process

1. Liquid is drawn into the metering chamber, up to the liquid sensing rod.
2. All excess liquid is then purged from the system down to the level set by the volume control tube using the vacuum pump.
3. The sample is then released into either one composite container or one of several discrete containers.

Peristaltic-pump sampling equipment requires frequent replacement parts. They draw the sample by repeatedly squeezing the intake tube, causing the tube to wear out quickly. Manufacturers claim tubing lasts 500,000 pump counts, or 500 samples of 200ml each. In other words, for regular use the tubing on a peristaltic model sampler will last two or three weeks before needing a replacement. This process also alters the sample as large particles get caked onto the inner walls.

Frequent tube replacements causes sampling interruptions. This costs valuable time, money and requires constant monitoring to ensure sampler is working. Peristaltic-pump samplers also require frequent replacements of rotor, stator, driveshaft and gears.

By contrast, with the vacuum method employed by Campbell Scientific (see right). Sampler parts are subject to minimal wear and stress. As a result, Campbell samplers require minimal maintenance for many years.

