

The CL17sc is equipped with a built-in flow meter that measures real-time flow **through** the analyzer via an impeller.

The flow meter checks for sufficient sample flow **through** the analyzer during the flushing phase of each measurement cycle. During the rest of the measurement cycle, there is no flow through the analyzer and the flow meter expects to measure 0 mL/min. See below for the expected flow through the analyzer during the three phases of a measurement cycle:

- Phase 1: Sample is flushing the cell (this is the only phase of the measurement cycle in which there is flow through the analyzer)
- Phase 2: Reagents are added to the cell and mixed and color develops (no sample flow through the analyzer)
- Phase 3: Measurement is performed (no sample flow through the analyzer)

What happens when there is insufficient flow through the analyzer? If during Phase 1 the sample flow through the analyzer is less than the required specification (60 mL/min), the analyzer will perform the following:

- Trigger a LOW SAMPLE FLOW warning
- Change status light from green to amber
- Show LOW SAMPLE FLOW warning in diagnostics menu
- Stop measurements and reagent dispensation
- Open the sample line, allowing the flow meter to continuously measure sample flow coming through the analyzer

With the sample line open, the CL17sc continues monitoring sample flow coming through the analyzer without dispensing reagents or taking measurements. When the flow meter detects that sample flow coming through the analyzer has returned to the required specification, the analyzer will perform the following:

- Clear the LOW SAMPLE FLOW warning
- Change status light from amber to green
- Clear the LOW SAMPLE FLOW warning from the diagnostics menu
- Begin automatically a new measurement cycle and resume normal operation

Please note that LOW SAMPLE FLOW includes zero sample flow.

What happens when there is too much flow through the analyzer? If during Phase 1 sample flow through the analyzer is above the maximum specification (200 mL/min), the analyzer will perform the following:

- Trigger a HIGH SAMPLE FLOW warning
- Change status light from green to amber
- Show HIGH SAMPLE FLOW warning in diagnostics menu
- Continue reagent dispensation and measurements

Why do measurements continue in a HIGH SAMPLE FLOW warning but not a LOW SAMPLE FLOW warning? In low sample flow situations, the analyzer is not receiving enough new sample to flush the previous cycle's reacted sample and deliver a new, accurate measurement. In high sample flow situations, the analyzer *does* have enough new sample to flush the previous cycle's reacted sample and deliver a new, accurate measurement. Although measurements continue, the analyzer needs attention because high pressure / flow can cause damage to the analyzer.