



Recirculation System Instructions for Controller Calibration V1.5

Please refer to the diagram on the following page.

Objective of the recirculation system:

The reason for the recirculation system is to isolate sample water from the main process in order to calibrate the controller, by enabling a constant sample to pass through the measurement flow cell. After a short time, the water passing through the flow cell would be of a constant solution value (Chlorine ppm, Turbidity NTU etc.) and provide a stable reading on the controller which can then be calibrated.

However, if the process water is known to be of a stable value, you are able to calibrate the system with a single point calibration only, without using the recirculation system.

Plumbing and notes:

- As per diagram, use ½" O.D. tubing (recommended), although 3/8" could also be used.
- Have your known ppm, NTU, or standard solution in the container, verified by a 3rd party tester, or laboratory.
- Always provide flooded suction to the recirculation pump, and do not run the pump dry.
- Pump is not rated for outdoor use, avoid water ingress to motor area of pump.
- Always have the 3-way hand valves **BOTH** either in position 1 or 2.
- The 2-way hand throttle valve is there to prevent pump strain, whereas if the flow through the flow cell is low, the majority of the recirculated water can flow through this valve, back to the container.
- The sample cell flow adjust valve is to accommodate different types of manifolds that may require different flows, to either limit or increase the flow through the measurement manifold.

Operation:

1. As per the diagram, start with both 3-way valves in position 1.
 2. Ensure the 2-way hand throttle valve is fully open.
 3. Switch on the recirculation pump.
 4. With both 3-way valves in position 1, the water is isolated from the process line and drain, and will recirculate through the sample measurement flow cell and calibration solution container.
 5. Initially the 2-way hand throttle valve should be fully open. If more flow is required through the flow cell, slowly close this valve, diverting more water through the flow cell.
 6. When a stable reading is achieved on the controller, a calibration can now be performed.
 7. ***If performing a 2-point calibration, increase the concentration in the container to the desired value, verified by a 3rd party tester, or lab and repeat step 6. It is always necessary to perform the low calibration first, and will error if done in reverse.***
 8. When satisfied, switch off the recirculation pump, and turn both 3-way hand valves to position 2. This now isolates the recirculation lines from the process water, and enables the process water to now flow through the flow cell to drain, or continue in the process.
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Re-circulation loop diagram for Amperometric Sensor Calibration

