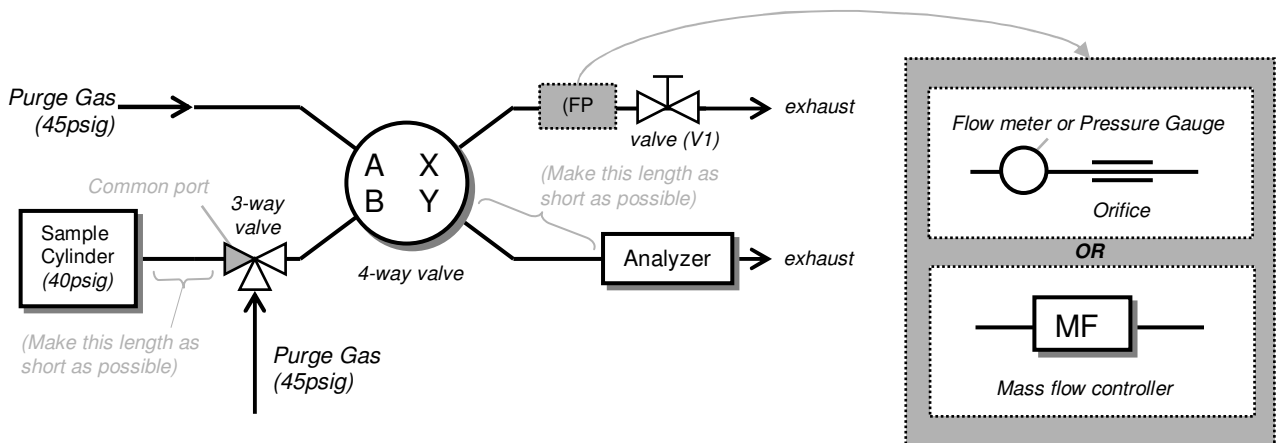


Moisture Measurement Best Practices Review

Recommendations for trace (ppb) Moisture Measurement

- a. Use a regulator specified for ultra-high purity gas applications.
- b. Use 3 and/or 4-way valves specified for UHP applications to flow dry purge gas to the sample line.
- c. Use electropolished stainless steel gas lines throughout (1/8" or 1/4" are both OK).
 - i. Teflon permeates ambient moisture and should never be used.
 - ii. Tubing with internal physical "features" (e.g. flexible "bellows" tubing) will trap moisture molecules and should never be used.
- d. Use VCR connections throughout.
- e. Use new VCR gaskets each time a connection is made; do not expose the gaskets or caps to dust.

An Example of a Sampling System That Will Help Improve the Speed of Response for Moisture Analysis



• Normal operation for Sample Cylinder measurement:

- The 4-way valve is configured for A → X and B → Y.

• To purge the analyzer with inert gas:

- The 4-way valve is configured for A → Y and B → X.

• Procedure to swap cylinders

- 1) Configure the 4-way valve for A → Y and B → X.
- 2) Close the sample cylinder valve and wait for the flow (or pressure) to deplete at (FP1). *Do not let it deplete completely, to make sure that there is no backflow into the line.*
- 3) Close the 2-way valve (V1).
- 4) Configure the 3-way valve to reverse-purge through the cylinder regulator.
- 5) With purge gas still flowing, remove the old cylinder and install the new cylinder. *This step requires additional safety measures for certain sample matrix, as the sample gas will flow out of the cylinder regulator. A ventilation hood may be needed.*
- 6) Switch the 3-way valve so the cylinder sample will flow through B → X.
- 7) Open the cylinder.
- 8) Open (V1).
- 9) Cycle-purge the cylinder regulator and the sample lines: (a) Close the sample cylinder valve and wait for the flow (or pressure) to deplete at (FP1). *Do not let it deplete completely, to make sure that there is no backflow into the line.* (b) Open the cylinder to re-establish flow. Repeat (a) and (b) at least 10 times. (Some customers perform this cycle-purge many more times).
- 10) Configure the 4-way valve for normal cylinder sample measurement: A → X and B → Y.