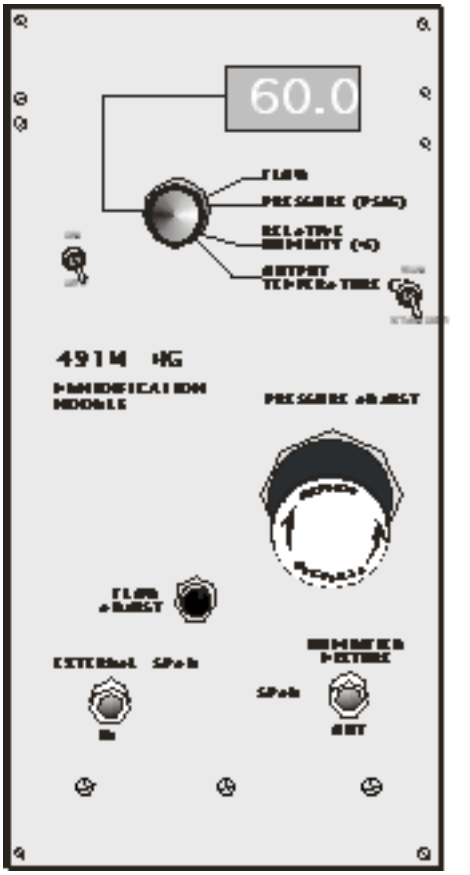
KIN-TEK

The Calibration Specialists

491 M-HG
STANDARD HUMIDIFICATION MODULE



DESCRIPTION

When an analytical method requires a humidifed gas standard for calibration, the **491M Humidification Gas Module** is used to add moisture to trace concentration standards.

Some toxic gas sensors require atmospheric humidity for proper operation. If the sensor is calibrated using a dry standard gas, the calibration will be inaccurate in a humid atmosphere. In other applications, water vapor is an interferent, particularly in infrared spectroscopic methods. In gas chromatography, water vapor can affect elution times, peak shapes, and detector sensitivity.

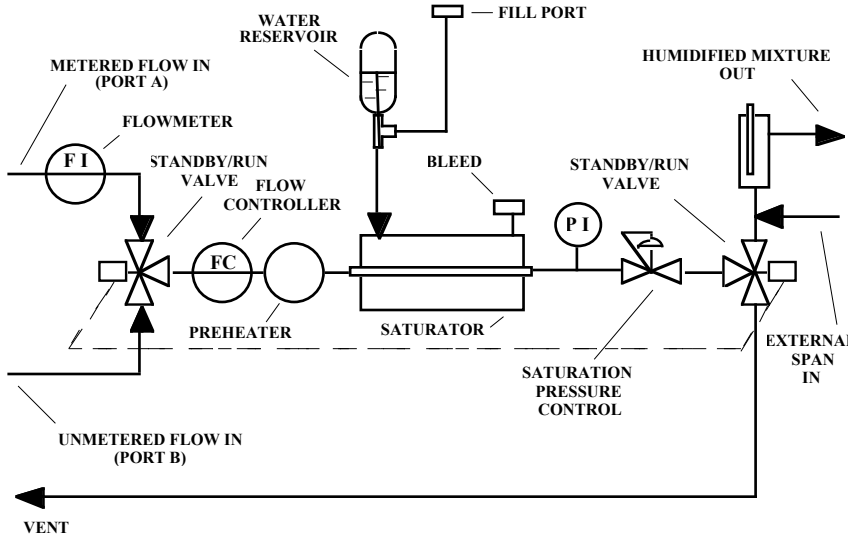
PRIMARY DESIGN

The technique used to add moisture to a gas standard is critical. If a trace concentration mixture is bubbled through water, or even makes significant surface contact with liquid water, its concentration may be changed by loss of the component(s) to the water. Since the humidity level possible depends strongly on the total pressure of the matrix, standards cannot be prepared in a prehumidifiied matrix.

With the **491M System**, flow from a permeation tube is mixed with a much larger flow of dilution gas to form the trace concentration mixture.
Incorporating a **491M-HG Module** into a **491M** series of modules allows user control of final humidified gas standards for analyzer calibration. The concentration of water vapor in the final mixture is determined by the ratio of the partial pressure of water to the total gas pressure. Since the partial pressure of water is the vapor pressure at a saturation temperature, it is fixed. Thus, increasing total pressure of the dilution gas decreases the concentration of water in the saturated mixture. When the pressure is then lowered, a variable back pressure regulator allows adjustment of the pressure at which the humidifier flow is saturated. This allows the **491M-HG** to acheive low humidity mixtures even when the total dilution flow is limited.

Overall, the **491M Humidification Gas Module** saturates a portion of the system dilution gas and adds water vapor to the final span gas mixture without any contact of the trace concentration components with liquid water.

The **491M-HG** is designed to provide a convenient means to adding humidity to standards for typical analytical applications.



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