

Streamline™ Flow Transfer Standard

Congratulations, and thank you for choosing the Streamline FTS – a highly accurate flow meter designed to fit directly on all new generation air samplers using the standard 1¼" inlet tube, including the Rupprecht and Patashnick (R&P) family of samplers including Partisols, FRMs and TEOMs.

The Streamline FTS is especially well suited for field use. It is rugged and designed to be used at all ambient conditions without affecting its accuracy or performance. In fact, the Streamline is patented because its performance and calibration do not change with changing temperatures.

Standard Streamline calibrations are for air. Black Streamlines are calibrated for 0.5-6 liters/minute, white Streamlines for 5-20 liters/minute. Other gases, ranges and configurations are available. Contact Chinook Engineering for information.

The actual volumetric flow rate through a Streamline (Q_a) is a function of the pressure drop across the device (ΔP), and the density of the measured fluid, as described by Bernoulli's Equation. For ambient air the following equation is used:

$$Q_a = \left[m * \sqrt{\frac{(\Delta P)(T_a)}{(P_a)}} \right] + b \quad \text{where } Q_a \text{ is typically in liters/minute.}$$

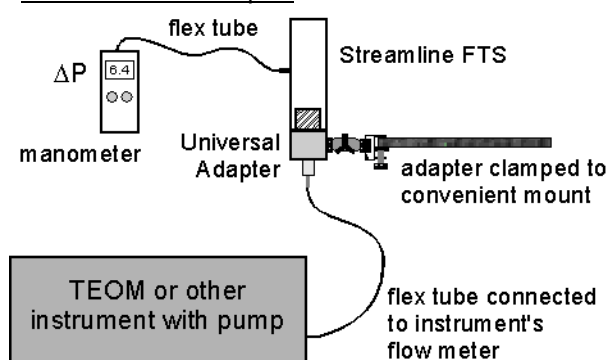
Each Streamline has a unique pair of calibration constants, "m" and "b", determined from their calibration. See your Streamline for specific calibration constants and units of measurements.

Instructions for Use: Follow the manufacturer's instructions for calibrating and auditing instrument/sampler flow using the Streamline as your flow standard. Install the Streamline in series with the instrument's flow meter. Streamlines fit directly on standard 1¼" inlet tubes, and can be adapted to other instruments and tubing sizes using the optional Universal Adapter kit as illustrated below.

Direct Fit to Sampler



With Universal Adapter



If you are using newer R&P instruments, the Streamline's calibration constants and ΔP s can be input directly into the instrument, and calculations will be made automatically using on-board temperature and barometric pressure measurements (which should be checked prior to flow audits/calibrations). Otherwise, measure the ΔP across the Streamline, the ambient temperature and pressure, and calculate the flow manually.

In most air pollution instrument applications a vacuum source is integral in the instrument being calibrated and the Streamline is mounted 1st in series. Ambient temperature and pressure define the density of ambient air. If a Streamline is used under pressurized conditions, 2nd in series, or with other gases, compensation must be made for the density of measured fluid. Contact Chinook Engineering for guidance.

Care and Maintenance

Streamlines should be kept clean and stored in their case. The orifice element can be carefully cleaned with the enclosed swabs using a low residue solvent such as methanol or DI water. If the orifice element becomes damaged, the unit's calibration is no longer valid, and the unit should be returned to Chinook Engineering for repair and re-calibration. Most Quality Assurance programs direct calibration standards to be re-certified yearly. See the enclosed sheet for descriptions and prices for Chinook's NIST traceable certification services.