

TSP High Volume Samplers

Total Suspended Particulate Sampling Systems

Andersen/GMW's TSP recording High Volume Air Samplers are the EPA ambient air Reference Method standard for lead and secondary ambient particulate matter. The TSP Hi-Vol is used to collect and accurately measure airborne particulate matter. In addition to standard ambient air monitoring, the TSP can also be used to monitor enclosed environments for collecting high levels of particulate matter.

Mass Flow Controlled High Volume Air Sampling Systems

The TSP Mass Flow Controlled High Volume Samplers feature accurate collection of total suspended particulates meeting EPA specifications. Air flow through the system is maintained at a constant rate by an electronic probe which automatically adjusts the speed of the blower/motor to correct for variations in line voltage temperature, pressure, and filter loading.

Adjustable over a range from 20CFM to 60CFM, the air flow is controlled at a constant temperature of 25°C and 760 mm Hg pressure within plus or minus 1CFM. By maintaining an exact air flow rate through the sampler, the particulate concentration is extremely accurate.

The high volume air sampler incorporates a pressure recorder or a well-type manometer for flow verification. The elapsed time indicator is calibrated in hours, tenths, and hundredths. A wide variety of electronic and mechanical timers are available, along with the Flow Manager (see specification sheet for Flow Manager).

FEATURES

- Adjustable Flow Range: 20-60 CFM
- All Weather, Outdoor Shelter Constructed of Anodized Aluminum
- High Speed Motor Designed for 24-Hour Continuous Sampling
- Variety of Timing Devices Available
- Optional Brushless Blower Motor Available
- Electronic Flow Manager Available for Data Logging and Sampler Field Data



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Volumetric Flow Controlled Air Sampling Systems

The Andersen/GMW Volumetric Flow Controller(VFC) is a critical flow venturi device used to control gas flow. When applied to a high volume air sampler, this flow control principle incorporates a smooth-wall venturi orifice that gradually opens to a recovery section. Vacuum is provided by a blower/motor downstream of the venturi. Over 95% of the energy lost in differential pressures across the restricting orifice is recovered in this design.

Flow control is accomplished by restricting, and thus accelerating the air flow through the venturi. At a point in the flow stream, air velocity will equal acoustic velocity, or speed of sound, and critical flow will be achieved. As long as downstream changes are small, all conditions at the venturi (including the flow rate) are determined by upstream conditions. This is referred to as "choking" and is a characteristic of all VFC's. The TSP utilizes this principle of choked or critical flow to maintain a constant actual flow rate over the sample period. Since critical flow through the venturi is not greatly affected by changes in the filter loading, ambient temperature or barometric pressure, a stable volumetric flow rate is maintained as long as power is provided to the sampler blower motor.

The orifice used in this system can also be described as a well documented Critical Venturi Meter (CVM). CVM is a specially machined nozzle or restriction device designed to react to a specific pressure ratio expressed in absolute terms. When air reaches the speed of sound in the throat (smallest diameter) of the CVM, a sound pressure barrier is set up that will not allow more air through under the existing temperature and pressure conditions. This is the "critical flow" point of the meter, thus the name Critical Venturi Meter. The volumetric flow controller regulates flow at a constant but unadjustable rate without any moving parts or electronic components.

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Specifications:	Mass Flow Control	Volumetric Flow Control
Motor:	HP 0.6	HP1.0
Amperage:	6.25	7.0
Wattage:	750	840
Flow Set Point:	20to60 ACFM	40 ACFM
Flow Control Accuracy	+/-2.5%	<1% Deviation over 24-hour period
Power Source:	115v,60Hz or 220v50/60Hz	115v,60Hz or 220v,50/60Hz
Net Weight:	112lbs.	72lbs.
Shipping Sizes & Weights:		
Shelter: 46" x 20" x 23"	70lbs.	70lbs.
Lid: 20" x 15" x 15"	14lbs.(w/filter holder)	8lbs.
VFC, Blower & Filter Holder		
28" x21" x19":	N/A	27 lbs.
Federal Reference Method		
Designation Number:	RFPS-1287-063	RFPS-1287-063