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# HI-Q ENVIRONMENTAL PRODUCTS COMPANY, INC.

## *Air Sampling & Radiation Monitoring Equipment, Systems & Accessories*

*Partnering with VF, a.s.*

VF Flexible solutions



For the Health Physics, Environmental & Nuclear Industries

Catalog “X” 2016-17

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**HI-Q ENVIRONMENTAL PRODUCTS COMPANY, INC.**

*Air Sampling & Radiation Monitoring Equipment Systems & Accessories*


Certified System ISO 9001:2008 SAI Global Certified Company

## Terms and Conditions of Sale

**Establishing Terms:** We will gladly open an account to companies with an established credit rating. Credit references and banking information are required for all new accounts.

**Standard Terms & Conditions of Sale:** See www.HI-Q.net. GSA Advantage: Products & Ordering Information for GSA Contract GS-07F-277AA available at www.gsaAdvantage.gov or gsasales@HI-Q.net

**Shipping:** All shipments are considered FOB plant, San Diego, California. Shipping charges are generally prepaid and added to invoice. International orders are EXW Ex Works HI-Q Environmental Products Co., Inc.- Incoterms. A minimum $5.00 "packaging and handling" fee plus shipping and insurance are applicable to all orders. We can ship by other means or express when requested by the purchaser upon order placement. ** A 10% service charge will be added to the invoice for rush delivery. Minimum charge, $25.00.*

**Company Policies:** See www.HI-Q.net.

**Billing Terms:** Credit approval is necessary for establishing an open account. Billing terms are Net 30 days. There is a minimum order of $50.00 for all purchases. Other methods of payments are Visa, MasterCard, American Express, Checks in advance, COD, Money Order, Letter of Credit, or Wire Transfer. All processing fee's and banking charges for Wire Transfer and Letter of Credit are charged to the customer account. All prices and specification are subject to change without notice. **A monthly 1½% late charge will be applied to all past due Invoices.*

**Damages in Transit:** HI-Q Environmental Products Company takes every reasonable precaution to pack your order so that it arrives in an undamaged condition. The common carrier assumes the responsibility for safe delivery. If you find apparent or concealed damages to your shipment, YOU must make a claim to the carrier, as you are the insured party. If you do not receive complete satisfaction, please call us for our help.

*We Accept Major Credit Cards:* VISA MasterCard GSA Advantage!

# HI-Q

# Outdoor Hi-Volume Air Samplers

## HVP-5300AFC & HVP-5200AFC

### TSP HI-Vols

- **Automatic/PID, User selectable Mass or Volumetric Flow Control**
- **Networking and Communication Capabilities**
- **Barometric Pressure & Temperature Display**
- **Continuous Data Logging**
- **Removable Micro SD card**
- **User Selectable Flow Units (CFM, LPM or CMM)**
- **Auto Calibration feature**
- **Programmable Timer & Total Volume Shut-Off**
- **Brushless 2 or 3 Stage Blower Motor**
- **For Continuous Use/Maintenance Free**
- **Applicable to EPA's 40 CFR 50, App. B**
- **Applicable to EPA's Lead Sampling Standards**
- **PM-10 Adaptable**
- **EPA Recommended Filter Shield Option available**




The HVP-5000AFC-Series high volume air samplers are housed in a clear-anodized aluminum outdoor shelter. The unit incorporates a maintenance-free, 2 or 3 stage centrifugal blower powered by a brushless, variable speed maintenance-free motor. Blower selection is dependent upon individual sampling environment. The speed of the motor is controlled by a programmable logic controller (PLC) that accepts an input from a mass or volumetric flow sensor mounted in the sample air flow stream. The PLC detects changes in the operator's pre-set flow rate (in standard or actual units) due to changes in temperature, barometric pressure and pressure drop due to dust loading on the filter media. It compensates for these changes by adjusting the motor speed to maintain the pre-set flow rate. The illuminated, graphic LCD displays the operator's Pre-Set Flow Rate, Instantaneous Flow Rate, Total Volume of Air Sampled, Elapsed Sample Time, Barometric Pressure, Ambient Temperature, Min/Max/Average values of flow rate, Barometric Pressure and Ambient Temperature. The PLC also allows for programming of custom sample on/off time settings & pre-set total volume shut off. The HVP-5000AFC-Series samplers are programmed to log the flow rate (in actual and standard conditions), barometric pressure and temperature at user-selectable intervals to a Micro-SD card using user-settable file names directly in .csv format. The log files can be viewed using any standard spreadsheet software like MS Excel. This eliminates the need to carry a laptop to the field or install any custom software for data download. The Micro-SD card also allows for easy firmware updates without having to remove the controller or the panel. The HVP-5000AFC-Series samplers include an Auto Flow Calibration feature when used in combination with HI-Q's D-AFC-Series air flow calibrator. The 15 point auto-calibration can be accomplished by connecting a cable between the HVP and D-AFC and pressing few buttons on the HVP panel. Manual flow calibration is still an option using any high volume air flow calibrator. A "Filter Shield" is available as an option to prevent contamination of the filter media by windblown particulate while sampler is not in use. The "Filter Shield" automatically uncovers or covers the filter paper during sampling and non-sampling periods respectively to prevent fugitive dust from settling on the filter paper. The Networking and Communication option set-ups include: two (selectable) RS232/RS485 ports, a 4-20 mA and/or 0-10 VDC analog output proportional to flow, the ability to send & receive SMS messages to/from any CDMA/GSM cellular phone for possibly alerting/reporting any pre-defined event via text message, remote or local data acquisition, data logging in MS Excel format, and a custom remote access utility that allows complete control of the unit from a remote location.

| | |
|---|---|
| **Motor/Pump:** | Brushless, 2 or 3 Stage Centrifugal Blower. For motor specification see product description under Replacement Blowers. |
| **Housing:** | Anodized Aluminum Outdoor Shelter with lockable control panel door and filter media roof. See model # HVP-2000 for overall cabinet dimensions. Modular Cabinet Design Option Available. |
| **Display:** | Illuminated, Graphic LCD Screen |
| **Calibrated Flow Range: (HVP-5300/5200AFC)** | 10-50 SCFM (SCMM or SLPM unit calibration upon request) |
| **Calibrated Flow Range: (HVP-5304/5204AFC)** | 2-15 SCFM (SCMM or SLPM unit calibration upon request) |
| **Flow Totalizer:** | Default to Resettable Standard Cubic Feet (total volume in cubic meters or liters upon request) |
| **Elapsed Time:** | Minutes and Tenths of Minutes |
| **Unit Net Weight:** | 58 lbs. |
| **Shipping Weights & Dimensions:** | 20" x 20" x 50" @ 55 lbs. (Box 1)<br>18" x 18" x 24" @ 11 lbs. (Box 2) |
| **HVP-5300/4AFC Power Specifications:** | 115 VAC, 50/60 Hz., 10 Amp, 800 Watt / Max Vacuum Capacity 85" H20<br>230 VAC, 50/60 Hz., 10.5 Amp, 1200 Watt / Max Vacuum Capacity 118" H20 |
| **HVP-5200/4AFC Power Specifications:** | 115 VAC, 50/60Hz., 5.0 Amp, 250 Watt / Max Vacuum Capacity 49" H20<br>230 VAC, 50/60Hz., 4.5 Amp, 400 Watt / Max Vacuum Capacity 39" H20 |
| **Flow Calibrator:** | See Air Flow Calibrators |
| **Filter Paper:** | See Filter Paper For Air Sampling |
| **PM-10:** | See Size Selective Inlets |
| **Options:** | Volumetric Flow Control, Modular Cabinet Design, Automatic Filter Shield, 8" x 10" Filter Cartridge, Data & Barcode Printer, SMS Messaging, Analog Output & more... |

## Ordering Information

**HVP-5300AFC (3-Stage)**
Automatic flow control, H-Vol Air Sampler, 115VAC with 3-Stage Brushless Blower. Unit includes 8" x 10" filter paper holder.

**HVP-5200AFC (2-Stage)**
Automatic flow control, H-Vol Air Sampler, 115VAC with 2-Stage Brushless Blower. Unit includes 8" x 10" filter paper holder.

**HVP-5304AFC (3-Stage)**
Automatic flow control, H-Vol Air Sampler, 115VAC with 3-Stage Brushless Blower. Unit includes 4" diameter filter paper holder.

**HVP-5204AFC (2-Stage)**
Automatic flow control, H-Vol Air Sampler, 115VAC with 2-Stage Brushless Blower. Unit includes 4" diameter filter paper holder.

**230 Volt units, see descriptions above**

**HVP-5300AFC/230**
**HVP-5200AFC/230**
**HVP-5304AFC/230**
**HVP-5204AFC/230**



Remote Communication & Operation

# HVP-4300AFC Series & HVP-4200AFC

## TSP HI-Vols

- **Automatic/PID Mass or Volumetric Flow Control**
- **Networking & Communication Capabilities**
- **Continuous Data Logging**
- **Auto Calibration feature**
- **Programmable Timer & Total Volume Shut-Off**
- **Brushless 2 or 3 Stage Blower Motor**
- **For Continuous Use/Maintenance Free**
- **Applicable to EPA's 40 CFR 50, App. B**
- **PM-10 Head Adaptable**

The HVP-4000AFC-Series high volume air samplers are housed in a clear-anodized aluminum outdoor shelter. The units incorporate a maintenance-free, two or three stage centrifugal blower powered by a brushless, variable speed, maintenance free motor. Blower selection is dependent upon individual sampling environment. The speed of the motor is controlled by a programmable logic controller (PLC) that accepts an input from a mass or volumetric flow sensor mounted in the sample air flow stream. The PLC detects changes in the operator's pre-set flow rate due to changes in temperature, barometric pressure and pressure drop due to dust loading on filter media. It compensates for these changes by adjusting the motor speed to maintain the pre-set flow rate.

The illuminated, graphic LCD displays the operator's Pre-Set Flow Rate, Instantaneous Flow Rate, Total Volume of Air Sampled, and Elapsed Sample Time. The PLC also allows for programming of custom sample on/off time settings & pre-set total volume shut off.

Networking and Communication option set-ups include: two (selectable) RS232/RS485 ports, a 4-20 mA and/or 0-10 VDC analog output proportional to flow, the ability to send & receive SMS messages to/from any CDMA/GSM cellular phone for possibly alerting/reporting any pre-defined event via text message, remote or local data acquisition, data logging in MS Excel format, and a custom remote access utility that allows complete control of the unit from a remote location.

| | |
|---|---|
| **Motor/Pump:** | Brushless, 2 or 3 Stage Centrifugal Blower. For motor specification see product description under Replacement Blowers. |
| **Housing:** | Anodized Aluminum Outdoor Shelter with lockable control panel door and filter media roof. See model # HVP-2000 for overall cabinet dimensions. Modular Cabinet Design Option Available. |
| **Display:** | Illuminated, Graphic LCD Screen |
| **Calibrated Flow Range: (HVP-4200/4300AFC)** | 10-50 SCFM (SCMM or SLPM unit calibration upon request) |
| **Calibrated Flow Range: (HVP-4204/4304AFC)** | 2-15 SCFM (SCMM or SLPM unit calibration upon request) |
| **Flow Totalizer:** | Default to Resettable Standard Cubic Feet (total volume in cubic meters or liters upon request) |
| **Elapsed Time:** | Minutes and Tenths of Minutes |
| **Unit Net Weight:** | 58 lbs. |
| **Shipping Weights & Dimensions:** | 20" x 20" x 50" @ 55 lbs. (Box 1)<br>18" x 18" x 24" @ 11 lbs. (Box 2) |
| **HVP-4300/4AFC Power Specifications:** | 115 VAC, 50/60 Hz., 10 Amp, 800 Watt / Max Vacuum Capacity 85" H20<br>230 VAC, 50/60 Hz., 10.5 Amp, 1200 Watt / Max Vacuum Capacity 118" H20 |
| **HVP-4200/4AFC Power Specifications:** | 115 VAC, 50/60Hz., 5.0 Amp, 250 Watt / Max Vacuum Capacity 49" H20<br>230 VAC, 50/60Hz., 4.5 Amp, 400 Watt / Max Vacuum Capacity 39" H20 |
| **Flow Calibrator:** | See Air Flow Calibrators |
| **Filter Paper:** | See Filter Paper For Air Sampling |
| **PM-10:** | See Size Selective Inlets |
| **Options:** | Volumetric Flow Control, Barometric Pressure & Temperature Sensor, Modular Cabinet Design, Automatic Filter Shield, 8" x 10" Filter Cartridge, Data & Barcode Printer, SMS Messaging, Analog Output & more... |

## Ordering Information

**HVP-4300AFC (3-stage)**
Automatic flow control, Hi-Vol Air Sampler, 115VAC with 3 stage brushless blower unit. Unit includes 8" X 10" filter paper holder

**HVP-4200AFC (2-stage)**
Automatic flow control, Hi-Vol Air Sampler, 115VAC with 2 stage brushless blower unit. Unit includes 8" X 10" filter paper holder

**HVP-4304AFC (3-stage)**
Automatic flow control, Hi-Vol Air Sampler, 115VAC with 3 stage brushless blower unit. Unit includes 4" diameter filter paper holder

**HVP-4204AFC (2-stage)**
Automatic flow control, Hi-Vol Air Sampler, 115VAC with 2 stage brushless blower unit. Unit includes 4" diameter filter paper holder

**230 Volt units, see descriptions above.**
**HVP-4300AFC/230**
**HVP-4200AFC/230**
**HVP-4304AFC/230**
**HVP-4204AFC/230**

# Outdoor Hi-Volume Air Samplers

## HVP-3300BRL & HVP-3000BRL Series

**TSP HI-Vols**



- **Brushless, 2 or 3 Stage Blower**
- **Manual Speed Control**
- **Actual Flow Reading**
- **For Continuous Use**
- **Maintenance-Free**
- **Elapsed, Resettable, Electronic Timer**
- **Applicable to EPA's 40 CFR, 50, App. B**
- **PM-10 Adaptable!**

These High Volume Air Samplers are housed in a clear-anodized aluminum outdoor shelter. The Brushless, two or three stage centrifugal fan blower can be used for particulate sampling with either a 4" diameter or 8" x 10" filter paper holder. The blower motor has a variable speed control feature which allows the operator to select a flow rate up to the capacity of the pump. Select the air sampler which best fits your needs: Choose the 2-stage, 250 watt brushless blower for typical air sampling environments, or, when the sampling application requires a stronger overall vacuum capacity, select the 3-stage, 800 Watt system (for 230 Volt applications see ratings below). When ordering, please specify volumetric units and power requirements.

- For **PM-10** sampling, see the ***Size Selective Inlets*** section of this catalog.
- For **Filter Paper**, see the ***Filter Media for Air Sampling*** section of this catalog.
- For **Calibrators,** see the ***Air Flow Calibrators, Adapters and Calibration Services*** section of this catalog.
- For **Replacement Blowers,** see the ***Air Sampling Accessories*** section of this catalog.

| | |
|---|---|
| **Motor/Pump:** | Brushless, 2 or 3 Stage Centrifugal Blower. |
| **Housing:** | Anodized Aluminum Outdoor Shelter with lockable control panel door and filter media roof. See model # HVP-2000 for overall cabinet dimensions. |
| **Calibrated Flow Range: (HVP-3000/3300BRL)** | 10-50 CFM (CMM or LPM unit calibration upon request) |
| **Calibrated Flow Range: (HVP-3004/3304BRL)** | 5-35 CFM (CMM or LPM unit calibration upon request) |
| **Elapsed Timer:** | Electronic, Resettable Hours & Tenths of Hours, LCD read out, 5 year internal battery. |
| **Unit Net Weight:** | 57 lbs. |
| **Shipping Weights & Dimensions:** | 20" x 20" x 50" @ 52 lbs. (Box 1)<br>18" x 18" x 24" @ 10 lbs. (Box 2) |
| **HVP-3300/4BRL Power Specs & Max Vac Capacity:** | 115 VAC, 50/60Hz.,10 Amp, 800 Watts/ Max Vacuum: 85" $H_2O$<br>230 VAC, 50/60Hz., 10.5 Amp, 1200 Watts/ Max Vacuum: 118" $H_2O$ |
| **HVP-3000/4BRL Power Specs & Max Vac Capacity:** | 115 VAC, 50/60Hz., 5.0 Amp, 250 Watts/ Max Vacuum: 49" $H_2O$<br>230 VAC, 50/60Hz., 4.5 Amp,400 Watts/ Max Vacuum: 39" $H_2O$ |
| **Flow Calibrator:** | See Air Flow Calibrators |
| **Filter Paper:** | See Filter Paper For Air Sampling |
| **PM-10:** | See Size Selective Inlets |
| **Options:** | Modular Cabinet Design, Automatic Filter Shield, 8" x 10" Filter Cartridge, continuous Flow/Pressure Recorder, Electronic & Mechanical Skip Timers & more. |

### Ordering Information

**HVP-3300BRL (3-Stage)**
Manual Speed Control, 3-Stage Brushless, High Volume Air Sampler. 115 VAC. Unit includes 8" x 10" filter paper holder.

**HVP-3000BRL (2-Stage)**
Manual Speed Control, 2-Stage Brushless, High Volume Air Sampler. 115 VAC. Unit includes 8" x 10" filter paper holder.

**HVP-3304BRL (3-Stage, 4" Dia.)**
Manual Speed Control, 3-Stage Brushless, High Volume Air Sampler. 115 VAC. Unit includes 4" Diameter filter paper holder.

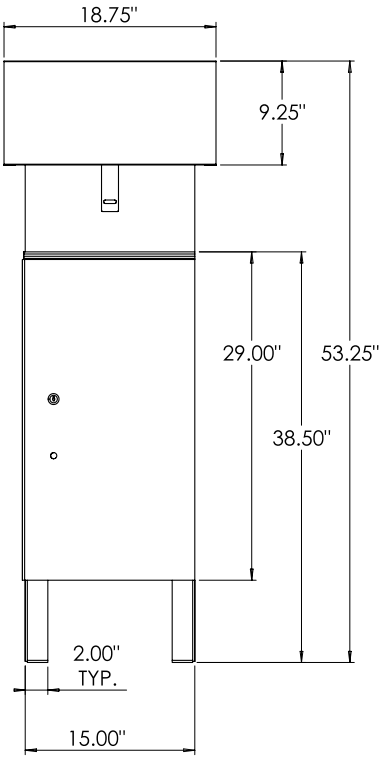
**HVP-3004BRL (2-Stage, 4" Dia.)**
Manual Speed Control, 2-Stage Brushless, High Volume Air Sampler. 115 VAC. Unit includes 4" Diameter filter paper holder.

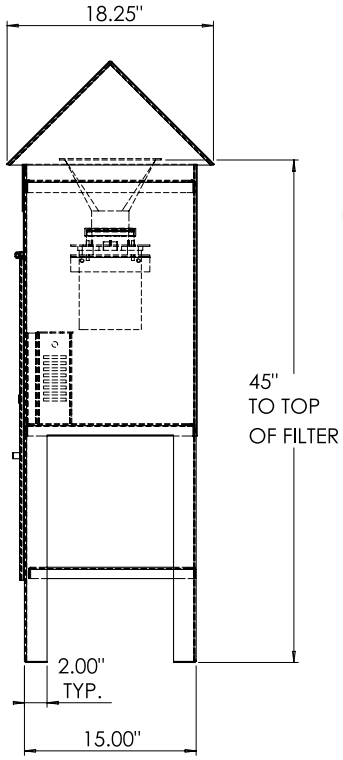
**230 Volt units, see descriptions above.**
**HVP-3300BRL/230**
**HVP-3304BRL/230**
**HVP-3000BRL/230**
**HVP-3004BRL/230**

# HVP-2000 Series

## TSP HI-Vols

- **2-Stage, Brushed Blower**
- **Adjustable Flow Rate**
- **Elapsed, Resettable Timer**
- **Instantaneous Flow Reading**
- **For Continuous Use**
- **PM-10 Adaptable!**
- **Applicable to EPA's 40 CFR, 50, App. B**






This unit is built around a two stage centrifugal fan type brushed blower. The tangential discharge exhaust allows a higher maximum flow rate than other similar types of units. To reduce motor winding burn out, the HVP-2000 has a separate motor cooling fan. Brush-life will range between 600 to 1,000 hours depending on sampling motor speed. Motor brushes can be changed in the field within 15 to 20 minutes with a screwdriver.

- For **PM-10** sampling, see the ***Size Selective Inlets*** section of this catalog.
- For **Filter Paper**, see the ***Filter Media for Air Sampling*** section of this catalog.
- For **Calibrators,** see the ***Air Flow Calibrators, Adapters and Calibration Services*** section of this catalog.
- For **Replacement Blowers,** see the ***Air Sampling Accessories*** section of this catalog.

| | |
|---|---|
| **Motor/Pump:** | Brushed, 2-Stage Centrifugal Blower. |
| **Housing:** | Anodized Aluminum Outdoor Shelter with lockable control panel door and filter media roof. |
| **Calibrated Flow Range: (HVP-2000)** | 10-50 CFM (CMM or LPM unit calibration upon request) |
| **Calibrated Flow Range: (HVP-2004BRL)** | 5-30 CFM (CMM or LPM unit calibration upon request) |
| **Elapsed Timer:** | Electronic, Resettable Hours & Tenths of Hours, LCD read out, 5 year internal battery. |
| **Unit Net Weight:** | 57 lbs. |
| **Shipping Weights & Dimensions:** | 20" x 20" x 50" @ 52 lbs. (Box 1)<br>18" x 18" x 24" @ 10 lbs. (Box 2) |
| **HVP-2000/4BRL Power Specifications:** | 115 VAC, 50/60Hz.,10 Amp<br>230 VAC, 50/60Hz., 5.0 Amp |
| **Flow Calibrator:** | See Air Flow Calibrators |
| **Filter Paper:** | See Filter Paper For Air Sampling |
| **PM-10:** | See Size Selective Inlets |
| **Options:** | Modular Cabinet Design, Automatic Filter Shield, 8" x 10" Filter Cartridge, Continuous Flow/Pressure Recorder, Electronic & Mechanical Skip Timers & more. |

## Ordering Information

**HVP-2000**
Manual Speed Control, Brushed Motor Blower, High Volume Air Sampler. 115 VAC. Unit includes 8" x 10" filter paper holder.

**HVP-2004**
Manual Speed Control, Brushed Motor Blower, High Volume Air Sampler. 115 VAC. Unit includes 4" Diameter filter paper holder.

**230 Volt version of units described above.**
**HVP-2000/230**
**HVP-2004/230**

**HVP20-003**
Replacement 115 VAC Motor Brush Set, 2 Brushes/Set

**HVP20-003-230 VAC**
Replacement 230 VAC Motor Brush Set, 2 Brushes/Set

# PM10-Series

## PM-10 Size Selective High Volume Air Sampling Systems



- **Complete Systems Designed to Meet or Exceed U.S. EPA Federal Reference Method Performance Specifications for PM-10 Sampling**
- **Three High Performance Systems to choose from**
- **Brushless & Brushed Motor Driven 2 & 3-Stage Blowers Available**
- **NIST Traceable Flow Calibration**

The EPA Clean Air Act of 1990 established a measuring standard to evaluate and monitor the health effects of thoracic inhaleable particles. The standard was set that in order for an environment to be healthy, in terms of these particles, it must have a concentration of less than 50 µg/m³ of particles with aerodynamic diameters less than 10 microns. The standard has been deemed PM-10, particulate size of 10um. Adherence to this standard is most important in industries and environments which produce a large mass of PM-10's such as mills, mines, and biomedical facilities.

HI-Q Environmental Products Company offers five complete PM-10 sampling systems designed to meet or exceed U.S. EPA Federal Reference Method performance specifications for the collection of PM-10 in ambient air. Each of the five systems incorporates the same size selective inlet mounted on top of any of HI-Q's five High Volume, Outdoor, TSP Air Sampling Systems depicted on the previous pages. The inlet is designed to sample at a flow rate of 40 CFM.

## Ordering Information

**PM10-5300AFC (3-Stage) & PM10-5200AFC (2-Stage)**
Automatic/PID Mass Flow Control, PM10 HI-Vol Air Sampling System, 115 VAC, with PLC controlled 3 or 2 Stage Brushless Blower. Date logs to Micro-SD Card in .csv format. Unit includes 8" x 10" filter paper holder, 8" x 10" paper cartridge and PM-10 Size Selective Inlet. Standard Units are SCFM. See HVP-5300/5200AFC Series samplers for complete description & available options.

**PM10-4300AFC (3-Stage) & PM10-4200AFC (2-Stage)**
Automatic/PID Mass Flow Control, PM-10 HI-Vol Air Sampling System, 115 VAC, with PLC controlled 3 or 2 Stage Brushless Blower. Unit includes 8" x 10" filter paper holder, 8" x 10" paper cartridge and PM-10 Size Selective Inlet. Standard Units are SCFM. See HVP-4300/4200AFC Series samplers for complete description & available options.

**PM10-3300BRL (3-Stage) & PM10-3000BRL (2-Stage)**
Manual Speed Control, Brushless 3 or 2 Stage Blower, PM-10, High Vol Air Sampling System. 115VAC. Unit includes 8"x10" filter paper holder, 8" x 10" paper cartridge and PM-10 Size Selective Inlet. Standard Units are ACFM. See HVP-3300/3000BRL Series samplers for complete description & available options.

**PM10-2000**
Manual Speed Control, Brushed Motor Blower PM-10, HI-Vol Air Sampling System. 115 VAC. Unit includes 8" x 10" filter paper holder, 8" x 10" paper cartridge and PM-10 Size Selective Inlet. Standard Units are ACFM. See HVP-2000 Series samplers for complete description & available options.

PM10-5300AFC/230,PM10-5200AFC/230,PM10-4300AFC/230, PM10-4200AFC/230,PM10-3300BRL/230, PM10-3000BRL/230, & PM10-2000/230 are the 230 Volt versions of units described above.

***Options:***

**7DAYTMR**
Mechanical 7 Day Skip Timers

**7DAY-ELCTMR**
Programmable Electronic Timer

**HVP-PR4-3**
Continuous Flow/Pressure Recorder

**HVP-CAB-STBLZRS**
Cabinet Stabilizer Set

**EXHAUST-10**
10' Exhaust Tubing

**HIQ-6009**
Silicone Release Spray for shim plate

**810-CARTRIDGE**
Additional 8"x10" paper cartridge

| | |
|---|---|
| **Motor/Pump:** | PM10-5300AFC: Brushless, Electronic Control/3-Stage.<br>PM10-5200AFC: Brushless, Electronic Control/2-Stage.<br>PM10-4300AFC: Brushless, Electronic Control/3-Stage.<br>PM10-4200AFC: Brushless, Electronic Control/2-Stage.<br>PM10-3300BRL: Brushless, Mechanical Control/3-Stage.<br>PM10-3000BRL: Brushless, Mechanical Control/2 Stage.<br>PM10-2000: Brushed, Mechanical Control/2-Stage. |
| **Housing:** | Anodized Aluminum Outdoor Shelter with lockable control panel door. See HI-Q's HVP-2000 & PM10-HEAD for overall cabinet & Size Selective Inlet dimensions. |
| **Calibrated Flow Range:** | 10-50 CFM (CMM unit calibration upon request).<br>NIST Traceable Calibration. |
| **Unit Net Weight:** | ~50 lbs. Cabinet Weight (avg.). 44 lbs. Size Selective Inlet. |
| **Shipping Weight & Dimensions:** | 20" x 20" x 50" @ 58 lbs. Cabinet Carton (avg.).<br>32" x 32" x 26" @ 52 lbs. Size Selective Inlet Carton. |
| **PM10-3-Stage Power Specifications:** | 115 VAC, 50/60 Hz.,10 Amp, 800 Watt<br>230 VAC, 50/60 Hz., 10.5 Amp, 1200 Watt |
| **PM10-2-Stage Power Specifications:** | 115 VAC, 50/60Hz., 5.0 Amp, 250 Watt<br>230 VAC, 50/60Hz., 5.0 Amp, 400 Watt |
| **PM10-2000 Power Specifications:** | 115 VAC, 50/60Hz., 9.0 Amp, 300 Air Watts<br>230 VAC, 50/60Hz., 4.6 Amp, 269 Air Watts |
| **Elapsed Timer: (all units)** | Electronic, Resettable Hours & Tenths of Hours,<br>LCD read out, 5 year internal battery. |
| **Flow Totalizer: (PM10-4300& 4200 only)** | Resettable Standard Cubic Feet<br>(total volume in cubic meters or liters upon request) |
| **Flow Display: (PM10-4300 & 4200 only)** | Standard Cubic Feet per Minute<br>(SCCM or SLPM display upon request) |
| **Flow Calibrator:** | See Air Flow Calibrators |
| **Filter Media:** | See Filter Media For Air Sampling Section |
| **Optional Equipment:** | See "Options" listed above & Air Sampling Accessories |



# 5000 & 4000 Series Automatic Flow Control, 2 & 3 Stage Brushless Blower Retro-Fit Kits

**with Networking & Communication Capabilities**

HI-Q's 5000 and 4000-Series 2 & 3 Stage Brushless Blower, Automatic Flow Control Retro-Fit Kits are intended to either upgrade existing mass flow control systems, or can completely convert existing standard Brushed & Brushless Manual Speed Control High Volume Air Samplers.

- **Networking & Communication Capabilities**
- **Automatic/PID Mass Flow Control**
- **Fits Standard 15" x 15" Hi-Vol Cabinets**
- **2 & 3 Stage Brushless Blower configurations**
- **Communication Options:**
  1. **2 selectable RS232/RS485 ports**
  2. **CDMA/GSM: SMS messages to/from up to 8 phone numbers**
  3. **4-20 mA and/or 0-10 VDC Analog Output**
  4. **Remote or Local Data Acquisition/Logging**
  5. **Remote Access Utility for Controlling Sampler**

HI-Q's 5000 and 4000-Series Retro-Fit Kits include a 2 or 3 stage brushless blower, mounted in series with a Mass Flow Sensor to a flat motor mount/support plate. The kit also includes a pre-programmed controller (PLC) with mounting panel, grounded power cord and all the necessary kit mounting hardware. When ordering, please specify volumetric units and power requirements.

## Ordering Information

**5300AFC-BRLKIT or 4300AFC-BRLKIT (3-stage)**
Complete automatic flow control retro-fit kit with 115 volt AC, 3-Stage brushless blower, mass flow sensor, automatic PID flow controller with panel, and all the necessary mounting hardware. For 4" diameter paper-only sampling applications, order **P/N: 5304AFC-BRLKIT or 4304AFC-BRLKIT**. For 230 VAC applications, add /230 after model number.

**5200AFC-BRLKIT or 4200AFC-BRLKIT (2-stage)**
Complete automatic flow control retro-fit kit with 115 volt AC, 2-stage brushless blower, mass flow sensor, automatic PID flow controller with panel, and all the necessary mounting hardware. For 4" diameter paper-only sampling applications, order **P/N: 5204AFC-BRLKIT or 4204AFC-BRLKIT**. For 230 VAC applications, add /230 after model number.



**shown with all Retrofit Options*

# Manual Speed Control, Brushless Blower Retrofit Kits

The BRL-3000M & BRL-3300M Series Retro-Fit Kits are for the conversion of Brushed, Shelter Type, High Volume units to complete Manual Speed Flow Controlled, 2 or 3 Stage Brushless Blower High Volume Air Samplers.

This blower pump package converts standard high volume air samplers to brushless motor, adjustable flow rate units. The easy to install package consists of a 2 or 3 -Stage brushless blower, motor speed controller, motor mounting plate with right angle shock mount support brackets and venturi tube pressure sensor mounted in the blowers exhaust. The pressure tap on the venturi tube can be connected to an existing water manometer, standard rotometer or other pressure recording device. A Rotometer with markable blank scale and bypass adjustment needle valve, electronic elapsed resettable timer, hard wired Power Toggle Switch, 8 foot power cord, fuse holder/fuse & Control/Display mounting panel (in which to mount all the retro-fit options) can be purchased separately. NIST traceable Custom calibration is also available.

## Ordering Information

**BRL-3300M (3-Stage)***
3-Stage, Brushless Motor Blower, Manual Speed Control Conversion Kit for shelter type High-Volume Air Samplers. 115 VAC. For 230 volt applications, add "/230" after model number.

**BRL-3000M (2-Stage)***
2-Stage, Brushless Motor Blower, Manual Speed Control Conversion Kit for shelter type High-Volume Air Samplers. 115 VAC. For 230 volt applications, add "/230" after model number.

**Standard Kits Include: Motor/Blower, Blower Mounting Hardware w/ 4" Threaded Ring, Back-Pressure Orifice w/ Tubing and panel mountable Motor Speed Controller.*

## *Additional Retrofit Options*

**BRL-ROTOMETER**
Flowmeter with markable blank scale, bypass calibration needle valve, & pressure tap hose barb for connection to venturi exhaust.

**CALIBRATION**
NIST traceable single range calibration of flow meter (BRL-ROTOMETER).

**EET11**
Elapsed, Resettable, Electronic Timer in Hours & Tenths Of Hours with Reset Push Button.

**TOGGLESWITCH**
Toggle Power Switch, Panel Mount.

**HVP2000/3000**
Clear Anodized Aluminum Mounting Panel for Flowmeter, Timer, Toggle Power Switch, Fuse Holder & Motor Speed Control.

**FUSEHOLDER**
Panel mountable fuse holder.

**FUSE - 7**
7 amp SLO-BLO Fuse.

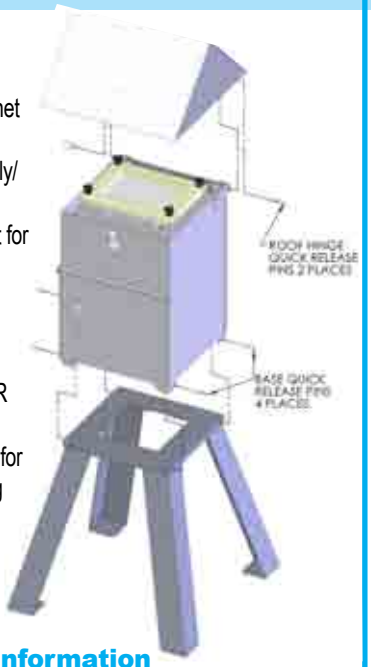
**FUSE - 12**
12 amp SLO-BLO Fuse.

**POWERCORD - 8**
8 foot, 14/3 grounded power cord.

# High Volume Air Sampling Options:

**Timers, Pressure Recorders, Modular Cabinets, Cabinet Stabilizers & Filter Shields**

## Modular HVP Cabinet



- Modular cabinet for portability
- Easy assembly/ disassembly
- Wide footprint for stability
- Sampler functional without legs
- Meets 40 CFR 50, App B requirements for TSP sampling

### Ordering Information

**HVP Modular**
Part Number: HVP-XXXX-MOD
Replace "-XXXX" with model number.

## Filter Shield



- Prevents contamination of filter by windblown particulate
- Filter Shield covers 8"x10" filter when blower is off
- Opens automatically when sampling starts

### Ordering Information

**HVP Filter Shield**
Part Number: HVP-XXXX-FS
Replace "-XXXX" with model number.

## HVP Cabinet Stabilizer



HVP style Cabinet Stabilizer Set. Each set includes 4 right angle foot supports which mount to each of the HVP Cabinet legs. All mounting hardware included.

### Ordering Information

**HVP Cabinet Stabilizer**
Part Number:
HVP-CAB-STLZRS

## 7-Day Electronic Timer



- 24 hours x 7 days programming
- 16 program steps and cycle operation
- Two independent 15 A control circuits
- Manual override switch for each output
- Easy-to-read, large, 0.5 inch high LCD display
- Wide operating voltage range
- 10-year battery backup for memory protection
- Panel and Surface mountable
- Protective cover and custom mounting options available

### Ordering Information

**7DAY-ELCTMR**
7 Day, 24 Hour Programmable Electronic Timer

**7DAY-PRTCVR**
Plastic Transparent Protective Timer Cover

## 7-Day Electromechanical Skip Timer



- 24 hours x 7 days programming
- Number of Trippers Included 14
- Maximum On/Off Cycles 3
- 12.5 Tall x 8.25 Wide x 4 Deep
- 120 Volt AC Operation

### Ordering Information

**7DAYTMR**
7 Day, 24 Hour Electromechanical Skip Timer

**7DAYTMR/230-50 (230 VAC, 50HZ)**

**7DAYTMR/230-60 (230 VAC, 60HZ)**

## Continuous Flow/Pressure Recorder



- 24 hours x 7 days continuous flow/ pressure recorder
- May be used for estimated Total Volume of Air Sampled
- 120 Volt AC Operation

### Ordering Information

**HVP-PR4-3**
115 VAC HVP-Series Continuous Flow/Pressure Recorder
**HVP-PR4-3/230 (230 VAC/50HZ)**
230 VAC/50HZ HVP-Series Continuous Flow/Pressure Recorder
**HVP-PR4-3/230-60 (230 VAC/60HZ)**
230 VAC/60HZ HVP-Series Continuous Flow/Pressure Recorder



HI-Q Environmental Products Company's Polyurethane Foam (PUF) air sampling system is designed to simultaneously collect both airborne particulate and pesticide vapors. Both the PUF-2000 (Brushed) and PUF-3300BRL (Brushless) Organic Toxics Samplers house a combination 4" diameter paper & glass cartridge "PUF" holder to collect samples at adjustable flow rates between 2 and 10 CFM. The sample flow rate can instantaneously be viewed on the panel mounted, NIST traceable calibrated flow meter. A seven day programmable digital timer is internally hard mounted in the cabinet to allow for weekly scheduling of on/off sampling. The complete system is housed in a clear-anodized aluminum outdoor shelter.

| | |
|---|---|
| **Motor/Pump:** | **PUF-2000:** Brushed, 2-Stage Centrifugal Blower.<br>**PUF-3300BRL:** Brushless,3 Stage Centrifugal Blower. |
| **Housing:** | Anodized Aluminum Outdoor Shelter with lockable control panel door and filter media cover. Please see model # HVP-2000 for overall cabinet dimensions. |
| **Calibrated Flow:** | 2-10 CFM (LPM unit calibration upon request). |
| **Range:** | NIST Traceable Calibration. |
| **Programmable Timer:** | Seven Day Digital Timer. |
| **Unit Net Weight:** | 65 lbs. |
| **Shipping Weight & Dimensions:** | 20" x 20" x 50" @ 56 lbs. (Box 1)<br>18" x 18" x 24" @ 26 lbs. (Box 2) |
| **PUF-2000 Power Specifications:** | 115 VAC, 50/60Hz., 10.0 Amp, 300 Air Watts<br>230 VAC, 50/60Hz., 4.6 Amp, 269 Air Watts |
| **PUF-3300BRL Power Specifications:** | 115 VAC, 50/60Hz., 10.0 Amp, 800 Watts<br>230 VAC, 50/60Hz., 10.5 Amp, 1200 Watts |
| **Flow Calibrator:** | See Air Flow Calibrators |
| **Filter Media:** | See Filter Paper For Air Sampling Section for 4" paper.<br>See ordering information for Polyurethane Foam. |
| **Optional Equipment:** | See Air Sampling Accessories |

## PUF-2000 & PUF-3300BRL

### Polyurethane Foam (PUF), Pesticide Particulate & Vapor Collection System

- **Used to Sample in Accordance with US EPA Methods TO-4, TO-9, & TO-13**
- **Adjustable Speed Control for Flow Rates up to 10CFM (280 LPM)**
- **Available with either a Brushless or Brushed Motor**
- **For Programmable, Continuous or Intermittent Use**
- **NIST Traceable Flow Calibration**
- **Seven-Day Digital Timer**
- **Elapsed, Resettable, Electronic Timer**

### Ordering Information

**PUF-2000**
PUF Air Sampler with 2-10 CFM Manual Speed Control. The PUF unit incorporates a 2-stage brushed motor blower, seven day digital programmable timer, an elapsed hour timer, combination 4" dia. paper & PUF holder, NIST traceable calibrated flow meter, lockable clear anodized aluminum outdoor shelter and one glass cartridge with stainless steel screen.

**PUF-3300BRL**
PUF Air Sampler with 2-10 CFM Manual Speed Control. The PUF unit incorporates a 3-stage brushless motor blower, seven day digital programmable timer, an elapsed hour timer, combination 4" dia. paper & PUF holder, NIST traceable calibrated flow meter, lockable clear anodized aluminum outdoor shelter and one glass cartridge with stainless steel screen.

**PUF-2000/230**
**PUF-3300BRL/230**
230 Volt version of units described above.

***Filter Media:***

**HIQ-3PUF**
3" long Polyurethane vapor collection substrate, (unwashed) package of 10.

**HIQ-2PUF**
2" long Polyurethane vapor collection substrate, (unwashed) package of 10.

**HIQ-1PUF**
1" long Polyurethane vapor collection substrate, (unwashed) package of 10.



***Options:***

**PUFHEAD**
PUF HEAD assembly with minimum pressure drop 1.5 MSPT adapter. Includes glass cartridge with Stainless Steel PUF Support Screen.

**EXHAUST-10**
10 foot pump/sample Exhaust Hose.

**HIQ-1009**
Glass Cartridge with Stainless Steel PUF Support Screen.

# CF-970T Series

## Timer Controlled, Portable HI-Vol Air Samplers

- **Timer Controlled Grab Sampling**
- **Timing from .01 Sec. to 9,999 Hours**
- **Six Programmable Operating Modes**
- **2-Stage Blower, Brushed Motor**
- **Manual Speed Flow Control**
- **For Continuous or Intermittent Use**
- **Instantaneous Flow Reading**
- **Motor Cooling Fan**
- **Air Sampling with Programmable Digital Timer**




The CF970T-Series Air Samplers provide sampling time ranges from 0.01 seconds to 9999 Hours. Time ranges and operating modes are selected by front panel programming. There are eleven programmable time ranges and six programmable operating modes (i.e.: delay, interval, single shot,….). The programmable versatility makes the CF-970T ideal for grab and intermittent assay of particulate and radioiodine. Specify intended filter media type and desired flow ranges/ units upon ordering.

| | |
|---|---|
| **Motor/Pump:** | Brushed, 2-Stage Centrifugal Blower. |
| **Housing:** | 8¼" x 10" x 11½", aluminum cabinet, primed and painted with two component polyurethane paint. |
| **Max Flow Rate: (CF-971T)** | 12 CFM (w/ FP2063-20) & 6.5 CFM (w/ FP5211-20) |
| **Max Flow Rate: (CF-972T)** | 35 CFM (w/ FP2063-102) & 22 CFM (w/ FP5211-102) |
| **Max Flow Rate: (CF-973T)** | 60 CFM (w/ FP2063-810, 8" x 10") & 55 CFM (w/ FP5211-810, 8" x 10") |
| **Unit Net Weight:** | 11 lbs. |
| **Shipping Weight & Dimensions:** | 13 lbs., one box 11¼" x 10" x 13¼" |
| **CF-970T-Series Power Specifications:** | 115 VAC, 50/60Hz., 15.0 Amp 230 VAC, 50/60Hz., 7.0 Amp |
| **Filter Holders & Adapters:** | See Filter Holders |
| **Flow Calibrator:** | See Air Flow Calibrators |
| **Filter Paper:** | See Filter Paper For Air Sampling |
| **Filter Cartridges:** | See Analytical Cartridges |
| **Annular Kinetic Impactors:** | See Size Selective Inlets |

### Ordering Information

**CF-971T**
Flow Range: 2-12 CFM (60-340 LPM, special request) HI-VOL Air Sampler, 115VAC. Includes 1½" Female Straight Pipe Thread for "CF" series holders.

**CF-972T**
Flow Range: 5-35 CFM (150-1,000 LPM, special request ) HI-VOL Air Sampler, 115VAC. Includes 4" Dia. filter paper only holder.

**CF-973T**
Flow Range:10-50 CFM (300-1400 LPM, special request) HI-VOL Air Sampler, 115VAC. Includes 4" Dia. filter paper only holder which accepts the "CF" series 8" x 10" holder.

**230 Volt version of units described above.**
**CF-971T/230, CF-972T/230, & CF-973TBRL/230**

**CF-970-004**
Replacement Motor Brush Set, 2 Brushes/Set.



**-DIGITAL Series,**
Digital Display of Flow Rate, Total Volume, & Min/Max Flow

## CF-1000BRL Series

### Brushless Motor, Portable HI-Vol Air Samplers

- **Portable, Less Than 10 Pounds**
- **Brushless Motor, 2-Stage Blower**
- **Adjustable Flow Rate**
- **Elapsed, Resettable, Electronic Timer**
- **Instantaneous Flow Reading**
- **For Continuous or Intermittent Use**
- **Maintenance Free!**

This Portable, Maintenance-Free, Variable Speed, High Volume Air Sampling System is ideal for continuous or intermittent sampling. The "CF-1000BRL" air sampler series have three flow ranges from which to choose. The standard CF-1001BRL unit includes a 1½" female straight-pipe fitting, which accepts all "CF" Series holders (excluding the CFPH-810), and is calibrated with a flow range of 2 to 8 CFM. The standard CF-1002 & 1003BRL models come with a 4" diameter paper holder which can be adapted either up or down to accept any combination or paper-only "CF" series filter holder, including the 8" x 10". The 1002 and 1003 units come calibrated with a flow range of 8 to 28 and 15 to 50 CFM respectively. Upon ordering, please specify intended flow range if different from those listed, volumetric units (CFM or LPM) and intended filter collection media. Customized flow ranges are available upon request.

**Note: Order CF-1000BRL-DIGITAL Series air sampler for Digital Flow Totalizer, Instantaneous Flow Rate Display, Min/Max Flow over sample period & Alarm/Communications Options.**

| | |
|---|---|
| **Motor/Pump:** | Brushless, 2-Stage Centrifugal Blower. |
| **Housing:** | 9" x 10" x 11½", aluminum cabinet, primed and painted with two component polyurethane paint. |
| **Max Flow Rate: (CF-1001BRL)** | 8 CFM (w/ FP2063-20) & 4.5 CFM (w/ FP5211-20) |
| **Max Flow Rate: (CF-1002BRL)** | 28 CFM (w/ FP2063-102) 17 CFM (w/ FP5211-102) |
| **Max Flow Rate: (CF-1003BRL)** | 50 CFM (w/ FP2063-810, 8" x 10") 45 CFM (w/ FP5211-810, 8" x1 0") |
| **Elapsed Timer:** | Electronic, Resettable Hours & Tenths of Hours, LCD read out, 5 year internal battery. Minute timer may be substituted. |
| **Unit Net Weight:** | 9.5 lbs. |
| **Shipping Weight & Dimensions:** | 12 lbs., one box. 11¼" x 10" x 13¼" |
| **CF-1000BRL-Series Power Specifications:** | 115 VAC, 50/60Hz, 7.0 Amp 230 VAC, 50/60Hz., 5.0 Amp |
| **Filter Holders & Adapters:** | See Filter Holders |
| **Flow Calibrator:** | See Air Flow Calibrators |
| **Filter Paper:** | See Filter Paper For Air Sampling |
| **Filter Cartridges:** | See Analytical Cartridges |
| **Annular Kinetic Impactors:** | See Size Selective Inlets |

### Ordering Information

**CF-1001BRL or CF-1001BRL-DIGITAL**
Flow Range: 2-8 CFM (60-230 LPM, special request) HI-VOL Air Sampler, 115VAC. Includes 1½" Female Straight Pipe Thread Inlet for "CF" series holders.

**CF-1002BRL or CF-1002BRL-DIGITAL**
Flow Range: 8- 28 CFM (250-800 LPM, special request) HI-VOL Air Sampler, 115VAC. Includes 4" Dia. filter paper only holder.

**CF-1003BRL or CF-1003BRL-DIGITAL**
Flow Range:15-50 CFM (400-1400 LPM, special request ) HI-VOL Air Sampler, 115VAC. Includes 4" Dia. filter paper only holder which accepts the "CF" series 8" x 10" holder.

**230 Volt version of units described above.**
**CF-1001BRL/230**
**CF-1002BRL/230**
**CF-1003BRL/230**

# Portable Hi-Volume Air Sampler

## CF-900 Series

### Low Cost, Portable HI-Vol Air Samplers

- **Dependable Low-Cost/High-Performance Air Sampling!**
- **2-Stage Blower, Brushed Motor**
- **Manual Speed Control**
- **Elapsed, Resettable, Electronic Timer**
- **Instantaneous Flow Reading**
- **For Continuous or Intermittent Use**
- **Portable/Rugged Housing Weighing Less Than 10 Pounds**
- **NRTL listed Models: CF-901, CF-902, & CF-903**
- **Total Volume Shut Off Option (-TS) for Digital Series Samplers.**

This Low-Cost/High-Performing Air Sampling System is ideal for radioiodine and particulate grab & continuous duty air sampling. The CF-900 Series air samplers are packaged in rugged aluminum enclosures weighing less than 10 pounds. Its' light weight yet durable frame allows a single operator to transport, set up, and take a sample quickly in almost any conditions. Order the unit which best fits your needs; specify desired flow range, volumetric units (CFM or LPM), and intended filter collection media.

**Note: Order CF-900-DIGITAL Series air sampler for Digital Flow Totalizer, Instantaneous Flow Rate Display, Min/Max Flow over sample period & Alarm Communications Options.**




**-DIGITAL Series,**
Digital Display of Flow Rate, Total Volume, Min/Max Flow and Optional Total Volume Shut Off feature

### Ordering Information

**CF-901 (NRTL listed) or CF-901-DIGITAL**
Flow Range: 2-12 CFM (60-340 LPM, special request) HI-VOL Air Sampler, 115VAC. Includes 1½" Female Straight Pipe Thread for "CF" series holders.

**CF-902 (NRTL listed) or CF-902-DIGITAL**
Flow Range: 5-35 CFM (150-1,000 LPM, special request ) HI-VOL Air Sampler, 115VAC. Includes 4" Dia. filter paper only holder.

**CF-903 (NRTL listed) or CF-903-DIGITAL**
Flow Range:10-50 CFM (300-1400 LPM, special request) HI-VOL Air Sampler, 115VAC. Includes 4" Dia. filter paper only holder which accepts the "CF" series 8" x 10" holder.

**230 Volt version of units described above.**
**CF-901/230**
**CF-902/230**
**CF-903/230**

***Options & Spare Parts:***

Add **"-TS"** to digital series unit part number (i.e.: CF-901-DIGITAL-TS) to add optional Total Volume Shut-Off Feature.

**CF-900-003**
Replacement Motor Brush Set, 2 Brushes/Set

| | |
|---|---|
| **Motor/Pump:** | Brushed, 2-Stage Centrifugal Blower. |
| **Housing:** | 8¼" x 10" x 11½", aluminum cabinet, primed and painted with two component polyurethane paint. |
| **Max Flow Rate: (CF-901)** | 12 CFM (w/ FP2063-20) & 6.5 CFM (w/ FP5211-20) |
| **Max Flow Rate: (CF-902)** | 35 CFM (w/ FP2063-102) & 22 CFM (w/ FP5211-102) |
| **Max Flow Rate: (CF-903)** | 60 CFM (w/ FP2063-810, 8" x 10") & 55 CFM (w/ FP5211-810, 8" x 10") |
| **Elapsed Timer:** | Electronic, Resettable Hours & Tenths of Hours, LCD read out, 5 year internal battery. Minute timer upon request. |
| **Unit Net Weight:** | 9.5 lbs. |
| **Shipping Weight & Dimensions:** | 12 lbs., one box. 11¼" x 10" x 13¼" |
| **CF-900-Series Power Specifications:** | 115 VAC, 50/60Hz, 15.0 Amp 230 VAC, 50/60Hz, 7.0 Amp |
| **Filter Holders & Adapters:** | See Filter Holders |
| **Flow Calibrator:** | See Air Flow Calibrators |
| **Filter Paper:** | See Filter Paper For Air Sampling |
| **Filter Cartridges:** | See Analytical Cartridges |
| **Annular Kinetic Impactors:** | See Size Selective Inlets |



## TFIA Series

### Low Cost, Portable HI-Vol Samplers

- **Dependable Low-Cost/High-Volume Air Sampling!**
- **Portable and Lightweight**
- **Instantaneous Flow Reading**
- **For Continuous or Intermittent use**
- **Indoor or Outdoor use**

This low cost pump is ideal for indoor or outdoor sampling of Air Pollutants such as Radioactive Particulate. The standard TFIA unit comes complete with a rotometer scaled up to 70 CFM and a 4" diameter filter holder assembly which accepts the "CF" series 8" x 10" paper only holders.

| | |
|---|---|
| **Motor/Pump:** | Brushed, 2-Stage Blower. |
| **Main Housing:** | Sturdy Lightweight Dural |
| **Max Flow Rate:** | 35 CFM (w/ FP2063-102) |
| **TFIA w/ 4" holder** | 25 CFM (w/ FP5211-102) |
| **Max Flow Rate:** | 70CFM (w/ FP2063-810) |
| **TFIA w/ 8" x 10" holder** | 62 CFM (w/ FP5211-810) |
| **Unit Net Weight:** | 9 lbs. |
| **Shipping Weight & Dimensions:** | 13 lbs., one box. 10½" x 10½" x 13½" |
| **TFIA TFIA-2:** | 115 VAC, 50/60Hz., 9.0 Amp (230 VAC, 50/60Hz., 5.5 Amp) |
| **Filter Holders & Adapters:** | See Filter Holders |
| **Flow Calibrator:** | See Air Flow Calibrators |
| **Filter Paper:** | See Filter Paper For Air Sampling |
| **Filter Cartridges:** | See Analytical Cartridges |
| **Annular Kinetic Impactors:** | See Size Selective Inlets |

### Ordering Information

**TFIA**
**HI-VOL Air Sampler, 115VAC 50-60 Hz.** Includes 4" Dia. filter paper only holder. Does not include HI-Q calibration.

**TFIA-2**
**HI-VOL Air Sampler, 230VAC 50-60 Hz.** Includes 4" Dia. filter paper only holder. Does not include HI-Q calibration.

* For Adjustable Flow Rate, Motor Mounting Plate, Elapsed Timer, or NIST Traceable Side Mounted Flowmeter see "TFIA Options" below.

## TFIA Options:

- **Motor Speed Control**
- **Elapsed, Electronic Timer w/ Mounting Bracket**
- **N.I.S.T. Traceable Side Mounted Rotometer**
- **Portable Motor Mounting Plate**
- **Lightweight Fiberglass Tripod**

Upon placing an order or sending a unit in for re-calibration, HI-Q suggests considering the customization of the standard TFIA sampler with some of our popular TFIA options such as: Motor Speed Control which allows the user to set specific sampling flow rates, N.I.S.T. Traceable Side Mounted Rotometer which simplifies re-calibration and meter viewing, Elapsed Timer, Tri-Pod, and TFIA Motor Mounting Plate which allows an operator to set the sampler down virtually anywhere for stable sampling.



Shown with TFIA options

***Optional Tripod***
**TR-1000B**
**Air Sampling & Equipment Tripod**
***see Air Sampling Accessories section***

***TFIA Options***

### Ordering Information

**SMR-TFIA**
HI-Q calibrated, (NIST traceable), Side Mounted Rotometer (for accurate, easy to read, flow measurements). Please specify intended filter media & desired flow range.

**MSC-TFIA**
115 VAC Hard mounted Motor Speed Control.

**MSC-TFIA/230**
230 VAC Hard mounted Motor Speed Control.

**ETMB-TFIA**
Hard mounted Electronic, Resettable, Elapsed Timer with Bracket, minutes & 10$^{ths}$ of minutes.

**MNTPLT-TFIA**
7" x 9" TFIA Mounting Plate for desk-top sampling. Non-Slip feet.

# Battery and Solar Powered Air Samplers

## CF-995B Series

### Variable Speed, Internal Battery Powered, Portable Air Sampler

- **Manual Flow Rate Control**
- **Internally Mounted 12 Volt, 26 Amp-Hour Battery, 4 AMP Out Battery Charger, & Automatic AC/DC Relay Switch**
- **Panel Mounted Programmable Timer**
- **Instantaneous Air Flow Rate Indicator**
- **N.I.S.T. Traceable Calibration**
- **2-Stage Brushed Blower**
- **For Continuous (AC) or Intermittent (DC) Use**




HI-Q has incorporated a high efficiency, variable speed circuit in its CF-995B, battery operated air sampler series which allows its users to preset flow rates by varying the blower motor speed. The CF-995B & CF-995B-4 are ideal for adjustable flow, remote location air sampling where AC line power is not available. An internally mounted battery and battery charger eliminate the need for the transportation of cumbersome battery cables and the awkward handling of heavy batteries. A 10-function, panel-mounted programmable timer allows the user to preset a wide range of sample times and cycles. The maximum settable flow rate of the CF-995B series air samplers is dependent upon the pressure drop across the collection filter media being used. An internally mounted, automatic AC/DC relay switch, allows the CF-995B series air samplers to also be used continuously when AC power is available. Upon Ordering, please specify intended filter media type and size.

| | |
|---|---|
| **Motor/Pump:** | 12 Volt DC, 8.5 Max Amp Draw, 2-stage, centrifugal blower. |
| **Battery:** | 12V, 26 A.H., Sealed/Maintenance-Free Rechargeable Battery. Average continuous run time is over 2 hours when used @ ambient conditions and a draw of 8.2 Amps. |
| **Battery Charger:** | Internally mounted, solid state 12 volt DC charger. Nominal output current of 4.0 Amps with supply voltages of 110/120 VAC, 60 Hz. |
| **Battery Specs.:** | 18.7 lbs., sealed construction, immobilized gel electrolyte. |
| **Unit Weight:** | 36 lbs. (with internal Charger & Battery) |
| **Shipping Weight:** | Total 39 lbs., 2 Boxes 8" x 8" x 6" & 13" x 11½" x 16¼" |
| **Housing:** | 10¼" x 10" x 14¼", Aluminum cabinet, primed & painted with 2-component polyurethane paint. |
| **Max Flow Rate: CF-995B** | 80 LPM (w/ FP2063-20, 2" Dia.), 68 LPM (FP2063-20 & TC-12) & 50 LPM (w/ FP5211-20, 2" Dia.) |
| **Max Flow Rate: CF-995B-4** | 165 LPM (w/ FP2063-102, 4" Dia.) & 122 LPM (w/ FP5211-102, 4" Dia.) |
| **Filter Holders & Adapters:** | See Filter Holders |
| **Flow Calibrator:** | See Air Flow Calibrators |
| **Filter Paper:** | See Filter Paper For Air Sampling |
| **Filter Cartridges:** | See Analytical Cartridges |

## Ordering Information

**CF-995B**
Variable Speed, Battery operated air sampler complete with internally mounted 115VAC battery charger (4.0 Amp output), 12VDC, 26 A.H. Battery, American Type 16/3 grounded cord. Standard Flow Range of 10-95 LPM. Includes 1½" Female Straight Pipe Thread for "CF" series holders. Specify intended filter media/ size upon ordering.

**CF-995B-4**
4" Diameter paper only, variable speed, battery operated air sampler complete with internally mounted 115VAC battery charger (4.0 Amp output), 12VDC, 26 A.H. Battery, American Type 16/3 grounded cord. Standard Flow Range of 30-175 LPM. Use HI-Q's FHA-4CF to adapt down to female 1½" dia. SPT fitting, to accept "CF" series filter holders. Specify intended filter media/ size upon ordering.

**CF-995B/230**
**CF-995B-4/230**
Unit as described above with switchable 230/115 VAC battery charger. Nominal output current from charger is 2.0 Amps.

***Options & Spare Parts:***

**CF-995B-005**
Replacement Motor Brush Set, 2 Brushes/Set

**CF-995B-002**
Replacement 12 volt DC, 26 Amp Hour Battery. This maintenance free, immobilized electrolyte battery is packaged in a high impact resistant ABS plastic case.




## CF-993B Series

### Internal Battery Operated Portable, Fixed Speed Air Sampler

- **Internally Mounted 12 Volt Battery & Battery Charger**
- **Timer Controlled Air Sampling (Programmable)**
- **Instantaneous Air Flow Rate Indicator**
- **N.I.S.T. Traceable Calibration**
- **2-Stage Brushed Blower**
- **For Continuous or Intermittent Use**

HI-Q's CF-993B & CF-993B-4 are ideal for remote location air sampling where line power is not available. An internally mounted sealed 12 Volt battery and battery charger eliminate the need for the transportation of cumbersome battery cables and the awkward handling of heavy batteries. The timer has 10 programmable timing functions with a wide time range. The flow rate of the CF-993B series air samplers are dependent upon the pressure drop across the collection filter media being used. If line power is available, sampling time can be extended by running line voltage to the charger while sampling. Due to the difference in Amp draw of the motor versus amperage output of the charger in the standard CF-993B, the unit will eventually stop running and need to be fully recharged. Upon Ordering, please specify intended filter media type and size.

**Continuous AC powered air sampling is now possible on the CF-993B & CF-993B-4 with the addition of HI-Q's optional, internally mounted, AC/DC RELAY. The AC/DC Relay can be added to existing, or supplied with new units to allow continuous sampling where AC Power is available.**

| | |
|---|---|
| **Motor/Pump:** | 12 Volt DC, 8.5 Max Amp Draw, 2-stage, centrifugal blower. |
| **Battery:** | 12V, 26 A.H., Sealed/Maintenance-Free Rechargeable Battery. Average continuous run time is over 2 hours when used @ ambient conditions and a draw of 8.2 Amps. |
| **Battery Charger:** | Internally mounted, solid state 12 volt DC charger. Nominal output current of 4.0 Amps with supply voltages of 110/120 VAC, 60 Hz. A lower output current of 2.0 Amps if using switchable style 230/115 VAC, 50/60 Hz charger. |
| **Battery Specs.:** | 18.7 lbs., sealed construction, immobilized gel electrolyte. |
| **Unit Weight:** | 36 lbs. (with internal Charger & Battery) |
| **Shipping Weight:** | Total 39 lbs., 2 Boxes 8" x 8" x 6" & 13" x 11½" x 16¼" |
| **Housing:** | 10¼" x 10" x 14¼", Aluminum cabinet, primed & painted with 2-component polyurethane paint. |
| **Max Flow Rate: CF-993B** | 95 LPM (w/ FP2063-20, 2" Dia.) & 55 LPM (w/ FP5211-20, 2" Dia.) |
| **Max Flow Rate: CF-993B-4** | 185 LPM (w/ FP2063-102, 4" Dia.) & 142 LPM (w/ FP5211-102, 4" Dia.) |
| **Filter Holders & Adapters:** | See Filter Holders |
| **Flow Calibrator:** | See Air Flow Calibrators |
| **Filter Paper:** | See Filter Paper For Air Sampling |
| **Filter Cartridges:** | See Analytical Cartridges |

### Ordering Information

**CF-993B**
Battery operated air sampler complete with internally mounted 115VAC battery charger (4.0 Amp output), 12VDC, 26 A.H. Battery, American Type 16/3 grounded cord. Standard Flow Range of 10-120 LPM. Includes 1½" Female Straight Pipe Thread for "CF" series holders. Specify intended filter media/size upon ordering.

**CF-993B-4**
4" Diameter paper only, battery operated air sampler complete with internally mounted 115VAC battery charger (4.0 Amp output), 12VDC, 26 A.H. Battery, American Type 16/3 grounded cord. Standard Flow Range of 40-195 LPM. Use HI-Q's FHA-4CF to adapt down to female 1½" dia. SPT fitting, to accept "CF" series filter holders. Specify intended filter media/size upon ordering.

**CF-993B/230**
**CF-993B-4/230**
Unit as described above with switchable 230/115 VAC battery charger. Nominal output current from charger is 2.0 Amps.

***Options & Spare Parts:***

**AC/DC RELAY**
Internally Mounted AC/DC Solid State Relay module with rectifier for CF-993B Series Air Samplers. Allows user to use system as a DC or AC powered unit.

**CF-993B-005**
Replacement Motor Brush Set, 2 Brushes/Set.

**CF-993B-002**
Replacement 12 volt DC, 26 Amp Hour Battery. This maintenance free, immobilized electrolyte battery is packaged in a high impact resistant ABS plastic case.

# Battery and Solar Powered Air Samplers

## CF-24B

### 12/24 VDC, Fixed Speed Air Samplers

- **12/24 VDC FIXED SPEED**
- **Elapsed, Resettable Timer**
- **External Battery Operated**
- **Instantaneous Flow Reading**
- **N.I.S.T. Traceable Calibration**

12/24 Volt DC Portable Power Source available on page 43



| | |
|---|---|
| **Motor/Pump:** | 12/24 Volt DC, 2-stage centrifugal blower. Amp Draw: 9.0@12 Volts & 14.4@24 Volts. Max VAC: 24" $H_2O$. |
| **Battery Cables:** | 8 Foot Battery Cables included. |
| **Unit Weight:** | 13 lbs. |
| **Shipping Weight:** | Total 14 lbs., 1 Box 11¼" x 10" x 13¼" |
| **Unit Dimensions:** | CF-24B: 8" x 11.5" x 8" |
| | Painted Aluminum cabinet. |
| **Max Flow Rate:** | 3.4 CFM (w/ FP2063-20, 2" Dia.) |
| **12 Volts DC** | 6.5 CFM (w/ FP2063-102, 4" Dia.) |
| **Max Flow Rate:** | 6.5 CFM (w/ FP2063-20, 2" Dia.) |
| **24 Volts DC** | 11.5 CFM (w/ FP2063-102, 4" Dia.) |
| **Filter Holders** | Unit includes a 1½" female straight-pipe fitting, |
| **& Adapters:** | which accepts "CF"- series holders. |
| **Flow Calibrator:** | See Air Flow Calibrators |
| **Filter Paper:** | See Filter Paper For Air Sampling |
| **Filter Cartridges:** | See Analytical Cartridges |

The CF-24B, FIXED SPEED, 12/24 VDC external battery operated field unit is ideal for remote site grab sampling. An elapsed, resettable timer (with independent 5 year battery) is incorporated into the unit housing to track exact sampling duration. The throughput flow rate is dependent upon the pressure drop across the filter media and the supplied voltage (12 or 24 volts DC). The CF-24B includes a 1½" female straight pipe fitting which accepts the "CF" series filter holders. See "Air Sampling Accessories" section of this catalog for optional 12/24 Volt DC Portable Power Source (P/N: PPS-12/24-VDC).

### Ordering Information

**CF-24B**

## TFIA-4BC

### 12/24 VDC, Fixed Speed Air Samplers

The TFIA-4BC is identical in configuration to the TFIA accepting the same TFIA options (excluding speed controller) as the AC power version depicted in the Portable HI-Volume Air Sampler section of this catalog. The TFIA-4BC operates on two automotive batteries in series, or for half the flow rate with one 12 Volt Automotive Battery (Batteries not included). See "Air Sampling Accessories" section of this catalog for optional 12/24 Volt DC Portable Power Source (P/N: PPS-12/24-VDC).



*shown with options

| | |
|---|---|
| **Motor/Pump:** | 12/24 Volt DC, 2-stage centrifugal blower. Amp Draw: 6.0 @ 12 Volts & 10 .0 @ 24 Volts. |
| **Battery Cables:** | 8 Foot Battery Cables included. |
| **Unit Weight:** | 12 lbs. |
| **Shipping Weight:** | Total 14 lbs., 1 Box, 10½" x 10½" x 13¼" |
| **Unit Dimensions:** | 8½" x 7½" x 7½" |
| **Max Flow Rate:** | 8 CFM (w/ FP2063-102, 4" Dia.) |
| **12 Volts DC** | 16 CFM (w/ FP2063-810, 8" x 10") |
| **Max Flow Rate:** | 17 CFM (w/ FP2063-102, 4" Dia.) |
| **24 Volts DC** | 26 CFM (w/ FP2063-810, 8" x 10") |
| **Filter Holders** | Unit includes a 4" Dia. paper only holder. |
| **& Adapters:** | Accepts 8" x 10" CF Holder. |
| **Batteries:** | Call for Quote |

### Ordering Information

**TFIA-4BC**
12/24 VDC, Battery Operated, Fixed Speed Air Sampler.

**SMR-TFIA**
HI-Q calibrated, Side Mounted Rotometer (for accurate, easy to read, flow measurements). Please specify intended filter media & desired flow range.

**ETMB-TFIA**
Hard mounted Electronic, Resettable, Elapsed Timer with Bracket. Hard mounted Electronic, Resettable, Elapsed Timer with Bracket, minutes & 10ths of minutes.

**MNTPLT-TFIA**
7" x 9" TFIA Mounting Plate for desk-top sampling. Non-Slip feet.



## CF-1512-VBRL & CF-1524-VBRL

### Variable Speed, Brushless Blower, Battery Operated Air Sampler

- 3-Stage Brushless Motor Blower
- Maintenance-Free
- Variable Speed Control
- Low Amp Draw
- Compact & Light Weight
- Elapsed, Resettable Sample Timer
- Ideal for Solar Powered Air Sampling Stations

| | |
|---|---|
| **Motor/Pump: CF-1512-VBRL** | 12 Volt DC, Brushless Motor, Centrifugal Blower. |
| **Motor/Pump: CF-1524-VBRL** | 24 Volt DC, Brushless Motor, Centrifugal Blower. |
| **Unit Weight:** | 9 lbs. (without battery & cables) |
| **Shipping Weight:** | Total 12 lbs., 1 Box 11¼" x 10" x 13¼" |
| **Housing:** | 10" x 9" x 11½", Aluminum cabinet, primed & painted with 2-component polyurethane paint. |
| **Approx. Max Flow Rate: CF-1512-VBRL** | 6.5 CFM (w/ FP2063-102, 4" Dia.) & 3.0 CFM (w/ FP2063-20, 2" Dia.) |
| **Approx. Max Flow Rate: CF-1524-VBRL** | 9.5 CFM (w/ FP2063-102, 4" Dia.) & 4.0 CFM (w/ FP2063-20, 2" Dia.) |
| **Filter Holders & Adapters:** | See Filter Holders. Unit includes a 4" dia. filter paper holder which may be adapted down to accept "CF" series holders. |
| **Flow Calibrator:** | See Air Flow Calibrators |
| **Filter Paper:** | See Filter Paper For Air Sampling |
| **Filter Cartridges:** | See Analytical Cartridges |

Due to the variable speed flow rate control, brushless maintenance free blower and portability, the CF-1512-VBRL is considered to be ***"The Ideal External Battery Operated Air Sampler"***.

The brushless blower used in the CF-1512-VBRL draws a maximum of 3.0 Amps at 6.5 CFM, permitting longer sampling times on a single battery charge. For higher maximum flow rates, with minimal Amp draw, consider using the CF-1524-VBRL which draws a maximum of 6.0 Amps while sampling at a controllable flow rate of 9.5 CFM.

The 12 & 24 VDC, CF-1500-VBRL Series units (without batteries & cables) each weigh less than nine pounds, which simplifies system setup and transportation. See "Air Sampling Accessories" section of this catalog for optional 12/24 Volt DC Portable Power Source (P/N: PPS-12/24-VDC).

### Ordering Information

**CF-1512-VBRL (12 Volt DC)**
**CF-1524-VBRL (24 Volt DC)**
**Use FHA-4CF to adapt down to female 1½" SPT, 11½" TPI fitting.*



## CF-5624-WR

### 24VDC, Weather Proof, Variable Speed, Brush-less Blower, Battery Operated Air Sampler

- Weather Proof Enclosure
- Omni-Directional Inlet
- Automatic Flow Control with On-Board Start Stop Timers and Flow Totalizer
- Ultra-low Amp Draw Optimized to Minimize Solar Power Requirements
- Brushless Blower
- For Continuous Use

| | |
|---|---|
| **Motor/Pump:** | 24 Volt DC, 1.5 Amp Max Amp Draw, Brushless Blower, Max VAC:24" H2O |
| **Unit Weight:** | 10 lbs. (without battery) |
| **Housing:** | 13" x 13" x 13" White Powder Coated Aluminum Cabinet |
| **Inlet:** | Anodized Aluminum Omni-Directional, Weather Proof |
| **Max Flow Rate:** | 4.5 CFM (w/ FP1441-102, 4" Dia.) 2.5 CFM (w/ FP5211-20, 2" Dia.) |
| **Filter Holders & Adapters:** | Unit includes 4" filter holder Use WRA-4CF adapter for CF-Series holders |
| **Flow Calibrator:** | HFC-XX-S (Special low pressure drop calibrator, XX is maximum flow rate) |
| **Filter Paper:** | See Filter Paper for Air Sampling |

The CF-5624-WR is optimized to use the minimum amount of electrical power in order to decrease the cost of implementing a solar powered air sampling system. The CF-5624-WR low power requirements also allow extended run times when used with battery only power. The 24 VDC brushless blower has a maximum amp draw of 1.5 Amps for a maximum power requirement of 36 Watts. The CF-5624-WR is designed for continuous use. The white powder coated aluminum weather proof enclosure is designed to minimize solar heat gain through the use of a dual wall construction that also serves to diffuse the blower exhaust through the external louvers to prevent contaminating the sampler environment with dust from the surrounding ground. The inlet features a 4" filter holder that accepts the weather proof, omni-directional inlet. 47mm and 2" filter holders can be installed under the inlet with the use of the WRA-4CF adapter and the applicable CF series filter holder.

The digital display shows instantaneous flow rate, total volume sampled and elapsed time. The built in flow controller provides automatic set point flow control as well as built-in programmable timers for sampler control and on-board data logging. Custom CF-5624-WR samplers can be provided with internal batteries and chargers.

### Ordering Information

**CF-5624-WR**

# HI-Q

# Battery and Solar Powered Air Samplers

## Custom Battery/ Solar Operated Air Sampling Systems

- **Continuous or Timer Controlled Sampling**
- **Automatic Electronic Flow Control**
- **External or Internal Battery Operated**
- **Fully Customizable Configurations**
- **Low Amp Draw**
- **Solar Powered**



Since 1973 HI-Q Environmental Products Company's engineering staff has designed and developed hundreds of "Custom, Turn-Key" Air Sampling Systems. Among these custom units are Complete Solar Powered Air Sampling Systems, which require Low Amp Draw, DC driven vacuum pumps. Let HI-Q's experience work for you.

Our solar-powered air sampling systems utilize fully integrated power supplies designed to provide safe and reliable power generation without the need and expense of installing utility power. The sealed, maintenance free batteries are designed for deep cycle operation and extended life in solar applications. The aluminum array support structures and battery enclosures are strong yet lightweight and corrosion resistant for harsh marine or severe weather locations. The solar power systems are designed to withstand rugged transportation to remote sites, single-lift integral lifting lugs and/or forklift slots are provided. Optional helicopter handling features are also available.

### Ordering Information

**Due to the uniqueness of sampling requirements, please contact our Sales/ Engineering department for a complete quotation for your particular application. For solar powered air sampling systems we require the following information: sampling flow rate, sampling media (type and size), sampling run time and installation location.**

### Complete Trailer Mounted Solar Air Sampling Systems Available



# VS23-SERIES

## Continuous Duty, Constant Flow Air Sampling Systems

- Automatic Flow Control Valve
- Continuous Duty/Constant Flow
- Longer Vane Life
- "Lubricated for Life" Bearings
- N.I.S.T. Traceable Flow Meter
- Flow Ranges of 0.1 - 9.0 CFM
- NRTL listed with TUV SUD*



**VS23-1023CV-EETXX**
**(3/4 HP w/ optional elapsed timer)**



*All 1/4 and 3/4 HP units include hard mounted toggle switch, 8 foot 14/3 grounded power cord, fuse holder and fuse.*

The VS-Series Air Sampling Systems can be either incorporated as the primary vacuum source in air monitoring instrumentation or used in conjunction with filter holders and filter media for the collection of particulate and/or gaseous constituents. The systems are furnished complete with a shock mounted base motor/pump, carrying handle, heavy duty constant air flow control valve (MCV-260), venturi flow meter, exhaust muffler, hard mounted toggle switch, 8 foot 14/3 grounded power cord, fuse holder, fuse and a 3/8" female quick disconnect for easy filter holder and sample line replacement. All rotary vane motor/pumps have automatic overload cut off and are warranted for one year after purchase.

**VS23-0523CV (1/4 HP)**

## Ordering Information

| Model Number (Order) | Net Wt. Lbs. | Power (VAC) | Motor (HP) | Max. Vac. | Max LPM (open air) | Max CFM (open air) | On/Off Switch w/ Fuse | Elapsed Timer | NRTL* Listed |
|---|---|---|---|---|---|---|---|---|---|
| **VS23-0523CV** | 35 lbs. | 115/230 | ¼ HP | 26" Hg | 127 LPM | 4.5 CFM | Yes | No | Yes |
| **VS23-0523CV-EETXX** | 35 lbs. | 115/230 | ¼ HP | 26" Hg | 127 LPM | 4.5 CFM | Yes | Yes | Yes |
| **VS23-1023CV** | 55 lbs. | 115/230 | ¾ HP | 26" Hg | 255 LPM | 9.0 CFM | Yes | No | Yes |
| **VS23-1023CV-EETXX** | 55 lbs. | 115/230 | ¾ HP | 26" Hg | 255 LPM | 4.5 CFM | Yes | Yes | Yes |

*** TUV SUD listed per NRTL standards IEC 61010-1:2001, UL 61010-1, CSA C22.1 No 1010-1, EN61010**

| | |
|---|---|
| **Air Mover:** | Oilless, Rotary Vane, Vacuum Pump with 1/4, or 3/4 HP, 115 or 230 VAC, Shock Mounted Motor. |
| **Control Valve: (MCV-260)** | Mechanical, Heavy Duty, Automatic Flow Control Valve. This valve controls the air flow rate to ±5% of the operator set flow rate. |
| **Control Valve: (MCV-22)** | Mechanical, Heavy Duty, Differential Type Automatic Flow Controller. Maintains operator pre-set flow rate within 5%. |
| **Timer Option:** | Replace "XX" with: 11 for Hrs & Tenths of Hrs / 13 for Min. & Tenths of Min. / 10 for Hrs & Min. |
| **Filter Holders:** | See Filter Holders For Air Sampling, "RV-Series" |
| **Filter Cartridges:** | See Analytical Cartridges |
| **Filter Paper:** | See Filter Paper For Air Sampling |
| **Air Flow Calibrator:** | See Air Flow Calibrators |
| **Replacement Pumps/Kits:** | See Replacement Rotary Vane Vacuum Pumps & Service Kits in the "Air Sampling Accessories" section of this catalog. |

## *VS-Series Air Sampler Options & Spare Parts:*

**VS-TMM-11**
Elapsed, Electronic, Resettable Hour Timer with Motor Mounting Bracket. 6-Digit, Hours & Tenths of Hours Display. Includes timer, toggle switch, 8 foot 14/3 grounded power cord, fuse holder and fuse.

**VS-TMM-13**
Elapsed, Electronic, Resettable Minute Timer with Motor Mounting Bracket. 6-Digit, Minutes & Tenths of Minutes Display. Includes timer, toggle switch, 8 foot 14/3 grounded power cord, fuse holder and fuse.

**EET11-VAC-SWTCH**
115 VAC Vacuum Activated Elapsed, Resettable Electronic Timer in Hours & Tenths of Hours with Mounting Bracket & 3/8" MNPT inlet/outlet.

**VS-VACUUM-GAUGE**
Hard Mounted 0"-30" Hg Vacuum Gauge.

**VS-ON/OFF-SWITCH**
In-Line ON/OFF Power Switch with fuse protection

**EET10**
Hours & Minutes

**EET11**
Hours & Tenths of Hours

**EET13**
Minutes & Tenths of Minutes

# MRV-SERIES

## Mobile Cart Continuous Duty, Constant Flow Air Sampling Systems



*shown with optional filter holder*

- **Telescoping "Goose Neck" for Breathing-Zone Air Sampling**
- **Automatic Flow Control Valve**
- **Electronic, Resettable, Elapsed Timer**
- **Continuous Duty, Rotary Vane Vacuum Pump**
- **Dual Vacuum Gauges for measuring DP across filter media**
- **Sturdy Cast Aluminum Base Plate**
- **Flow Ranges of 0 - 7.0 CFM**
- **NRTL listed with TUV SUD***

This "Golf Cart" type unit can be used for the assay of both particulates and gaseous radioiodine. Its telescoping "Goose Neck" allows for industry standard breathing zone air sampling. There is a 3/8" female Quick Disconnect fitting at the sampling inlet which accepts all "RV" series filter holders. Two vacuum gauges for measuring pressure differential across the filter media are conveniently mounted in a control box on the units handle along with a power toggle switch, fuse protection, and a resettable electronic elapsed timer. HI-Q's MCV-260 maintains a constant flow of ±5% of the operator pre-set flow rate (up to the maximum capacity of the pump). The flow rate can be viewed by incorporating one of HI-Q's optional "V-FLO-XX" venturi flow measurement units.

| | |
|---|---|
| **Air Mover:** | Oilless, Rotary Vane, Vacuum Pump with 1/4, 1/3, or 3/4 HP, 115 or 230 VAC, Shock Mounted Motor. |
| **Control Valve: (MCV-260)** | Mechanical, Heavy Duty, Automatic Flow Control Valve. This valve controls the air flow rate to ±5% of the operator set flow rate. |
| **Timer:** | Electronic, Elapsed, Resettable Timer in Hours & Tenths |
| **Optional Flow Meter:** | Add "-HMF" to model number for Hard Mounted Flowmeter option or see removable V-FLO-XX units described below. |
| **Filter Holders:** | See Filter Holders For Air Sampling, "RV-Series" |
| **Filter Cartridges:** | See Analytical Cartridges |
| **Filter Paper:** | See Filter Paper For Air Sampling |
| **Air Flow Calibrator:** | See Air Flow Calibrators |
| **Replacement Pumps/Kits:** | See Replacement Rotary Vane Vacuum Pumps & Service Kits in the "Air Sampling Accessories Section" of this catalog. |

### Ordering Information

| Model Number (Order) | Net Ship Wt. (lbs.) | Power (VAC) | Motor (HP) | (50/60 Hz) | Max. Vac. | Max CFM (open air) | Hard Mounted Flowmeter (HMF) | NRTL* Listed |
|---|---|---|---|---|---|---|---|---|
| **MRV-0523CV** | 68 lbs., 2 boxes | 115/230 | 1/4 | 1425/1725 | 26" Hg | 4.0 CFM | No | Yes |
| **MRV-0523CV-HMF** | 68 lbs., 2 boxes | 115/230 | 1/4 | 1425/1725 | 26" Hg | 4.0 CFM | Nes | Yes |
| **MRV-1023CV** | 89 lbs., 2 boxes | 115/230 | 3/4 | 1425/1725 | 26" Hg | 7.0 CFM | No | Yes |
| **MRV-1023CV-HMF** | 89 lbs., 2 boxes | 115/230 | 3/4 | 1425/1725 | 26" Hg | 7.0 CFM | Yes | Yes |

*** TUV SUD listed per NRTL standards IEC 61010-1:2001, UL 61010-1, CSA C22.1 No 1010-1, EN61010**

# V-FLO-XX

## Optional Air Flow Measuring Device for MRV-Series Air Samplers

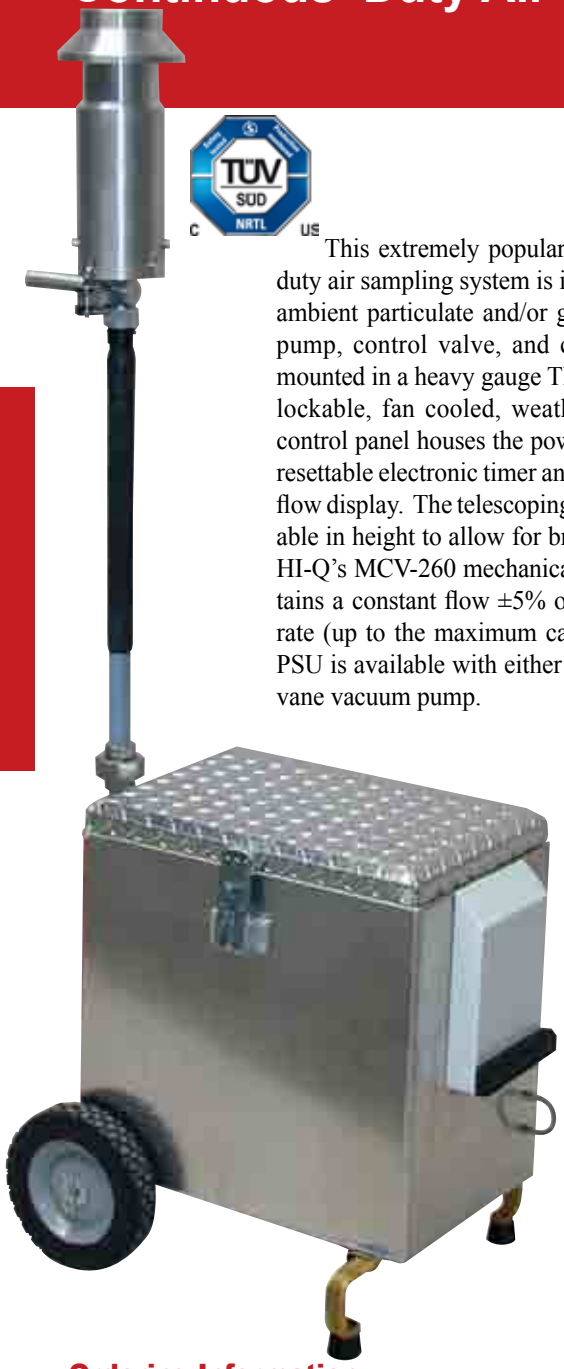



Precision machined venturi flow meter with NIST traceable flow calibration between the specified ranges described below. Each V-FLO-XX unit includes a 3/8" female quick disconnect on the inlet and a 3/8" male quick disconnect fitting on the outlet. For a complete description of HI-Q's Venturi Flow Meters, please see the "Air Flow Calibrators" section of this catalog.

### Ordering Information

| LPM Models | Calibration Range in LPM | CFM Models | Calibration Range in CFM |
|---|---|---|---|
| **V-FLO-55L** | 5 TO 55 LPM | **V-FLO-2** | 0.2 TO 2.0 CFM |
| **V-FLO-85L** | 10 to 85 LPM | **V-FLO-3** | 0.5 TO 3.0 CFM |
| **V-FLO-115L** | 15 TO 115 LPM | **V-FLO-4** | 0.5 TO 4.0 CFM |
| **V-FLO-140L** | 20 TO 140 LPM | **V-FLO-5** | 0.5 TO 5.0 CFM |
| **V-FLO-170L** | 25 TO 170 LPM | **V-FLO-6** | 1.0 TO 6.0 CFM |
| **V-FLO-200L** | 25 TO 200 LPM | **V-FLO-7** | 1.0 TO 7.0 CFM |
| **V-FLO-XXL** | SPECIFY LPM RANGE | **V-FLO-XX** | SPECIFY CFM RANGE |

** For Dual Scale (both LPM & CFM markings on the flow meter) applications add the letters "-DSC" to the end of any of the model numbers described above (i.e.: V-FLO-XX-DSC)*



## PSU-SERIES

### Outdoor Rated, Continuous Duty, Mobile Cart Air Sampling Systems

This extremely popular, outdoor rated continuous duty air sampling system is intended for secure outdoor ambient particulate and/or gaseous air sampling. The pump, control valve, and control panel are all hard mounted in a heavy gauge TIG welded aluminum, fully lockable, fan cooled, weather proof enclosure. The control panel houses the power switch, fuse protection, resettable electronic timer and either an analog or digital flow display. The telescoping sampling inlets are adjustable in height to allow for breathing zone air sampling. HI-Q's MCV-260 mechanical flow control valve maintains a constant flow ±5% of the operator pre-set flow rate (up to the maximum capacity of the pump). The PSU is available with either a ¼ or ¾ HP oilless rotary vane vacuum pump.

- **Weather Proof Aluminum Enclosure**
- **Completely Securable for Maintaining Chain of Custody**
- **Telescoping Inlet for Breathing-Zone Air Sampling**
- **Instantaneous N.I.S.T. Traceable Flow Reading**
- **Electronic, Resettable, Elapsed Timer**
- **Automatic Flow Control Valve**
- **Continuous Duty, Oilless Rotary Vane Vacuum Pump**
- **Flow Ranges from 0 to 7.0 CFM**
- **"High Efficiency" Omni directional particulate inlet head available**
- **NRTL listed with TUV SUD***



**Digital Flow Display**



**Analog Flow Display**

***Optional Calibrated Flow Displays:***

**Digital Flow Display -** Panel mounted NIST traceable digital flow meter, custom calibrated per ANSI/NCSL Z540-1-1994 using customer supplied filter media. The digital panel meter has a 15 point linearization table that relates differential pressure to flow, and is accurately compensated for filter loading. The digital panel meter displays instantaneous flow, minimum/maximum flow, and total volume of air sampled. The minimum, maximum and total sample volume are user resettable. The digital panel meter has optional plug in cards that allow DeviceNet, RS-232, RS-485 communications as well as analog signal output and relay outputs for alarms. To order complete with PSU see ordering information. To order separately as a retro-fit kit for existing PSU's use PN: PSU-DIG.

**Analog Flow Display -** Panel mounted NIST traceable rotameter, custom calibrated per ANSI/NCSL Z540-1-1994 using customer supplied filter media.

## Ordering Information

| Model Number | Power (VAC) | Motor (HP) | Max Flow (open air) | Included Inlet | Filter Holder Accepted | Flow Display | NRTL* Listed |
|---|---|---|---|---|---|---|---|
| **PSU-2** | 115/230 | ¼ | 4.0 CFM | MRV-PSU-057 | PSU-ILFH | Analog | Yes |
| **PSU-3** | 115/230 | ¾ | 7.0 CFM | MRV-PSU-057 | PSU-ILFH | Analog | Yes |
| **PSU-2-H** | 115/230 | ¼ | 4.0 CFM | PSU-RHLB | PSU-FH | Analog | Yes |
| **PSU-3-H** | 115/230 | ¾ | 7.0 CFM | PSU-RHLB | PSU-FH | Analog | Yes |
| **PSU-2-D** | 115/230 | ¼ | 4.0 CFM | MRV-PSU-057 | PSU-ILFH | Digital | No |
| **PSU-3-D** | 115/230 | ¾ | 7.0 CFM | MRV-PSU-057 | PSU-ILFH | Digital | No |
| **PSU-2-H-D** | 115/230 | ¼ | 4.0 CFM | PSU-RHLB | PSU-FH | Digital | No |
| **PSU-3-H-D** | 115/230 | ¾ | 7.0 CFM | PSU-RHLB | PSU-FH | Digital | No |
| **PSU-2-GN** | 115/230 | ¼ | 4.0 CFM | Gooseneck w/ 3/8 FQD | RV-Series | Analog | Yes |
| **PSU-3-GN** | 115/230 | ¾ | 7.0 CFM | Gooseneck w/ 3/8 FQD | RV-Series | Analog | Yes |
| **PSU-2-GN-R&WS** | 115/230 | ¼ | 4.0 CFM | Gooseneck w/ R&WS | RV-Series | Analog | Yes |
| **PSU-3-GN-R&WS** | 115/230 | ¾ | 7.0 CFM | Gooseneck w/ R&WS | RV-Series | Analog | Yes |
| **PSU-2-RHLB-RV** | 115/230 | ¼ | 4.0 CFM | RHLB for RV-Holders | RV-Series | Analog | Yes |
| **PSU-3-RHLB-RV** | 115/230 | ¾ | 7.0 CFM | RHLB for RV-Holders | RV-Series | Analog | Yes |

*** TUV SUD listed per NRTL standards IEC 61010-1:2001, UL 61010-1, CSA C22.1 No 1010-1, EN61010**

# Continuous Duty Air Samplers

***Inlet Options:***



*PSU-GN shown with GN-R&WS.*

**PSU-GN:**
180° Gooseneck Inlet. This gooseneck style inlet has a 180° bend such that the filter holder is positioned to face downward. The inlet is equipped with an industry standard 3/8 female quick disconnect.

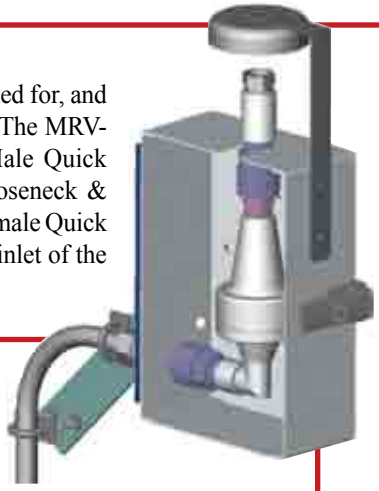
**GN-R&WS:**
Stainless steel rain and weather shield used to protect the filter holder and collection media.



**PSU-RHLB:**
High Efficiency Particulate Inlet. This laboratory tested inlet has been designed to maximize particulate sampling efficiency in all weather conditions and is lockable to maintain chain of custody of the filter media. Solid, o-ring sealed base, ensures air flow path through omni-directional inlet. HI-Q's new bayonet lock filter holder is included with this inlet and features a radial o-ring vacuum seal that prevents leakage from the outside of the filter holder as well as an axial o-ring seal under the circumference of the filter media to prevent sample blow-by. The filter holder's three piece design eliminates filter media twist when opening and closing. The filter holder is spring loaded to maintain constant filter compression for varying filter media thicknesses. The bayonet lock design opens and closes with a 120° rotation.

**PSU-RHLB-RV:**
Same inlet as described above set up to accept Standard "RV" series holders.

**MRV-PSU-057:**
Original PSU Inlet. Inlet assembly accepts holders designed for, and implemented on, the original PSU and PSU-2 samplers. The MRV-PSU-057 features a Stainless Steel, ½ Swagelock®, Male Quick Disconnect inside the lockable aluminum box. The gooseneck & lock box combination also includes a ½ Stainless Steel Female Quick Disconnect & Bug Screen feature for positioning on the inlet of the filter holder. Filter holder sold separately.





**PSU-FH-CAP:**
PSU-FH Protective Filter Holder Cap.

**PSU-FH:**
The PSU-FH filter holder features a robust cam-lock that opens and closes with a 120° rotation. The PSU-FH has unique radial and axial o-ring seals. The radial seal ensures no leakage from outside the filter holder and the axial seal around the circumference of the filter media ensures that the sample stream cannot bypass the filter collection media. The two-piece inlet design is spring loaded to compensate for different thicknesses of filter media while maintaining the radial and axial seals. The spring-loaded inlet design also prevents filter media damaged due to rotation during opening and closing of the filter holder. The PSU-FH fits into the new integral Rain Hat/Lock Box (P/N: PSU-RHLB). Each filter holder includes one aluminum transport cap to cover the inlet of the holder and protect the filter media/sample during transport.

**PSU-FH-TOOL:**
By placing the lower portion of the PSU-FH filter holder over this tool and pressing down, the honeycomb filter support is pushed up 1/8" and raises the filter paper for easy removal.

**PSU-FH-CALADAPT:**
PSU-X-H Audit Adapter. Calibration adapter for PSU-FH filter holder. Adapter slips onto top of PSU-FH filter holder. Includes 1/2" SS MALE Q/D.

**PSU-2-RAINHAT:**
Rainhat inlet designed for PSU-2 or MRV-0523CV-PSU Series Air Samplers. Rainhat Inlet includes one stainless steel ½" Female Quick Disconnect fitting on outlet to match PSU-2-ILFH inlet.



**PSU-2-ILFH:**
"L" shaped aluminum filter holder designed for PSU-2, PSU-3 or MRV-0523CV-PSU series Air Sampling lock boxes. Holds standard (Blue) plastic media cassettes.




# CMP-SERIES

## Cabinet Mounted, Continuous Duty, Constant Flow Air Sampling Systems

- **Adjustable, Heavy Duty, Automatic Flow Control Valve**
- **N.I.S.T. Traceable, Instantaneous Flow Reading**
- **Continuous Duty Rotary Vane Vacuum Pump**
- **Portable, Bench-Type and Fan Cooled**
- **Elapsed, Resettable, Electronic Timer**
- **Dual Vacuum Gauges for Evaluating Sample/Pump Performance**
- **Custom Flow Ranges & Pump Packages Available**
- **NRTL listed with TUV SUD***

HI-Q's CMP-Series air sampling systems allow for continuous duty/constant flow rate air samples at operator pre-set flow rates. These continuous duty, constant flow, self contained sampling systems are commonly used as the primary air mover for gas/particulate collection and/or real time air monitoring. Two face mounted vacuum gauges allow the user to observe pump performance and filter loading. An internal filtration system hinders premature carbon vane wear and flow meter clogging. The Cabinet Mounted Pump System has two side mounted handles to simplify transporting the unit to specific sampling locations.

## Ordering Information

### CMP-0523CV

Adjustable Flow Range: **0.5 - 4.0** CFM. Motor: 1/4 HP, 115 VAC , 50/60Hz., 5.5 Amp. Unit Weight: 45.5 lbs. Shipping Dim's: 50 lbs. 1 box, 26" x 15.5" x 14". NRTL Listed.*

### CMP-1023CV

Adjustable Flow Range: **0.5 - 6.5** CFM. Motor: 3/4 HP, 115 VAC , 50/60Hz., **11.5** Amp. Unit Weight: 64.5 lbs. Shipping Dim's: 69 lbs. 1 box, 25" x 15.5" x 14". NRTL Listed.*

### CMP-0523CV/230

Same description as above except with a ¼ HP, 230 volt 50HZ motor, 3.0 Amp draw. NRTL Listed.*

### CMP-1023CV/230

Same description as above except with a ¾ HP, 230 volt 50/60HZ motor, 6.0 Amp draw. NRTL Listed.*

| | |
|---|---|
| **Motor/Pump:** | Shock Mounted Oilless, Rotary Vane, Vacuum Pump with ¼ or ¾ HP and 115 or 230 Volt AC motor. |
| **Control Valve: (MCV-260)** | Mechanical, Heavy Duty, Automatic Flow Control Valve. This valve controls the air flow rate to ±5% of the operator set flow rate. |
| **Housing:** | 24" W x 13½" D x 11" H, aluminum cabinet painted with two component, chemically resistant, polyurethane paint. Rubber support feet. |
| **Elapsed Timer:** | Electronic, Resettable Hours & Tenths of Hours, LCD read out, 15 year internal battery. |
| **Filter Holders:** | See Filter Holders For Air Sampling, "RV-Series" |
| **Filter Cartridges:** | See Analytical Cartridges |
| **Filter Paper:** | See Filter Paper For Air Sampling |
| **Air Flow Calibrator:** | See Air Flow Calibrators |
| **Replacement Motors/Kits:** | See "Replacement Rotary Vane Vacuum Pumps & Service Kits" in the Air Sampling Accessories section of this catalog. |

*** TUV SUD listed per NRTL standards IEC 61010-1:2001, UL 61010-1, CSA C22.1 No 1010-1, EN61010**

### *Customizing Options:*

### CMP-EXHSTRTVL or CMP-EXHSTRTVL-1023

This hard mounted exhaust retrieval kit is built into the CMP cabinet to allow the user to route exhaust gases back out of the cabinet through a face mounted and labeled 3/8 male quick disconnect coupling.

### *Digital Display Options:*

### CMP-DIGITAL-4.0

The CMP-DIGITAL-4.0 air sampling system is the digital equivalent to HI-Q's CMP-0523CV. An operator is able to toggle through the panel mounted LED to display instantaneous Flow Rate, Total Volume of air sampled, and Minimum & Maximum flow rates over the sample period. The smart LED also allows for communication & alarm cards for further electronic customization of the sampler.

### CMP-DIGITAL-6.5

The CMP-DIGITAL-6.5 air sampling system is the digital equivalent to HI-Q's CMP-1023CV. An operator is able to toggle through the panel mounted LED to display instantaneous Flow Rate, Total Volume of air sampled, and Minimum & Maximum flow rates over the sample period. The smart LED also allows for communication & alarm cards for further electronic customization of the sampler.

# LF-SERIES

## Low Flow, Cabinet Mounted, Continuous Duty Air Sampling Systems



- Low Flow Rate
- Cabinet Mounted
- Fuse Protected
- Elapsed, Resettable, Electronic Timer
- Continuous Duty
- Manual Flow Control
- Customizable Configurations

### Ordering Information

**Low Flow Vibrating Armature Air Sampling Systems**

| Model Number (Order) | Net Wt. Lbs. | Power VAC | Cabinet Mounted | AMP Draw | Max. Vac. | Flow Range CCM |
|---|---|---|---|---|---|---|
| **LF10D-50** | 5 lbs. | 115 | Yes | 0.6 | 15" Hg | 5-50 CCM |
| **LF10D-240** | 5 lbs. | 115 | Yes | 0.6 | 15" Hg | 30-240 CCM |
| **LF10D-1000** | 5 lbs. | 115 | Yes | 0.6 | 15" Hg | 100-1000 CCM |

**Low Flow Oilless, Rotary Vane Air Sampling Systems**

| Model Number (Order) | Net Wt. Lbs. | Power VAC | Cabinet Mounted | AMP Draw | Max. Vac. | Flow Range CCM |
|---|---|---|---|---|---|---|
| **LF2032-10** | 15 lbs. | 115 | Yes | 1/8 | 26" Hg | 1-10 LPM |
| **LF2032-25** | 15 lbs. | 115 | Yes | 1/8 | 26" Hg | 2-22 LPM |
| **LF2032-50** | 15 lbs. | 115 | Yes | 1/8 | 26" Hg | 5-50 LPM |
| **LF3032-240** | 22 lbs. | 115 | Yes | 1/6 | 26" Hg | 0-30 LPM |
| **LF0935A-2CFM** | 22 lbs. | 115 | Yes | 1/8 | 21" Hg | 5-60 LPM |

With a continually increasing demand, HI-Q Environmental Products Company has developed a new line of low flow, low cost, manual flow control air sampling systems. HI-Q has configured this line of complete sampling systems with flow ranges from 5-CCM to 50-LPM. Each unit includes a shock mounted vacuum pump, lightweight carrying case with non-skid feet, carrying handle, 6 foot grounded power cord, electronic timer registering elapsed hours & tenths of hours, on/off switch, fuse protection, sample line inlet, and an adjustable flow metering valve.

## Low Flow Oilless Rocking Piston Air Sampling System



This Low Flow Sampling System has a flow range of 2-25 LPM. It consists of a 13 pound, 1/8 hp, Oilless Rocking Piston Pump, TMV needle control valve (for flow rate adjustment/measurement), brass interconnect piping, and 1/4" hose barb (Quick Disconnect Optional).

| Model Number (Order) | Net Wt. Lbs. | Power VAC | Cabinet Mounted | Motor HP | Max.Vac. | Flow Range LPM |
|---|---|---|---|---|---|---|
| **LFRR-25** | 15 lbs. | 115 | No | 1/8 | 26" Hg | 2-25 LPM |
| **LFRR-230** | 15 lbs. | 230 | No | 1/8 | 26" Hg | 2-25 LPM |

***Timer Options for the LFRR-25***

**LFRR-EET13-B**
Elapsed, Electronic, Resettable Minute Timer with Mounting Bracket. 6-Digit, Minutes & Tenths of Minutes Display.

**LFRR-EET11-B**
Elapsed, Electronic, Resettable, Hour Timer with Mounting Bracket. 6-Digit, Hours & Tenths of Hours Display.

**LFRR-EET10-B**
Elapsed, Electronic, Resettable Hour/Minute Timer with Mounting Bracket. 8-Digit, Hours & Minutes Display.

**EETXX**
Replacement Timer, Remote Reset Push Button, & Quick Disconnect wire leads for above listed units. Replace "XX" with corresponding number described above.



## M.A.S.S.

### Mobile Air Sampling Station, High & Low Flow Sampling

- **All-In-One Enclosure!**
- **Protocol Sampling For Particulate, Iodine, $CO_2$, $SO_2$ & Tritium**
- **Dual Mass Flow Controllers, High and/or Low Flow**
- **Separate Flow Rate & Total Volume Displays For Each Sample Line**
- **Individual Sample Line Elapsed Time Indicator Display**

HI-Q's Mobile Air Sampling Station can be supplied with controllable flow rates from as little as 2 SCCM up to, as high as 200 SLPM. The unit can be equipped as either a single or dual flow sampling system – you make the call. Have an existing Stack Flow Rate Monitor? HI-Q's MASS Unit can easily be linked together with an existing stack-flow monitor to achieve real-time Iso-Kinetic stack sampling or HI-Q can supply the MASS unit complete with its own stack flow monitor built in. The MASS unit can be supplied with fittings for stack sampling or equipped with a set-height "Giraffe Neck" type head for sampling breathing-level ambient air. Need Real Time Monitoring? HI-Q can supply the MASS Unit with "vendor-preferred" Alpha, Beta, Gamma, Iodine, and/or Tritium real-time monitors incorporated into the complete system.

The high flow system is primarily used to collect particulate and/or pull air samples through carbon or silver impregnated zeolite cartridges for the assay of radioiodine. The high flow system may also be used for pulling sample air through noble gas, alpha, beta and/or gamma radiation real time monitors. The low flow system can be supplied with glassware sampling train mounted inside the cabinet which can be used for many types of bubbler and/or silica gel column collection methods.

- **ISO-Kinetic Stack Sampling Option**
- **Available As Mobile Cart Or Fixed Location**
- **Real Time Monitoring Options**
- **Custom Configurations Available**

### Ordering Information

**MASS**

Mobile, Single Flow Measurement And Control Air Sampling System. See standard mass system, technical description.

*Add "Option #" to "Order Number" above to customize your system. I.E. Order:*

**MASS-DUAL-ISO** *for a complete dual flow, Iso-Kinetic MASS system.*

| | |
|---|---|
| **-DUAL** | Unit with two, individual, flow measurement and control systems. |
| **-F** | Fixed location system. Includes mounting plinth and hardware. |
| **-ISO** | Iso-Kinetic option. Includes single point probe, rate/total display, Iso-Kinetic control circuit. |
| **-GL** | Glassware option. Includes 490 ml column and set of two 500 ml bubblers hard mounted inside cabinet. |
| **-S** | Special. RS232, RS485, Printer, Back-up Pump, Analog Output, Real Time Monitor Connections, Special Cabinet Configurations, Alarm Contacts, and other options are available. |

***Standard MASS System, Technical Description***

| | |
|---|---|
| **Flow Measure/Control:** | Mass flow meter/controllers Accuracy: ± 1.0% of F.S. |
| **Housing:** | NEMA12, Steel with dip bath primed/powder coated finish |
| **Flow & Total Vol. Display:** | 0.56" LED with Rate, Min., Max., and Total display. |
| **Elapsed Timer:** | Electronic, resettable hours & tenths, LCD read out |
| **Pump:** | Rotary vane or other as req'd |
| **Unit Weight:** | Approx. 160 lbs. |
| **Shipping Weight:** | Approx. 200 lbs. |



## Tritium and Carbon-14 Sampler

The "Tri-Car" (Tritium – Carbon) family of $^{3}H$ and $^{14}C$ airborne samplers can be configured to sample either quantities of $^{3}H$ in the form of water or $^{14}C$ in the form of carbon dioxide. A configuration is available as a differential sampler which converts other forms of $^{3}H$ and $^{14}C$ into water and carbon dioxide to obtain a separate sample of HT, elemental hydrogen, $^{14}CO$, carbon compounds, and elemental carbon. This configuration of sampler uses a catalytic converter to oxidize these other forms of $^{3}H$ and $^{14}C$ into water and carbon dioxide. The sampler design uses a parallel flow path for the HT, elemental hydrogen, $^{14}CO$, carbon compounds, and elemental carbon reducing the statistical uncertainty of the differential measurement.

Sample flow measurement and control as well as temperature, pressure, and relative humidity measurements are provided for all flow paths. The sample flow rate measurement as well as the total sample volume is calculated at standard temperature and pressure (STP). Alarms are provided for the measurement values and all data is stored locally and can be transmitted to a remote PC. The standard sorbents used are silica gel for $^{3}H$ and NaOH for $^{14}C$. Optional sorbents can be provided depending on the sampling needs.

# Health Physics and Radiation Measurement Instruments

## PAM Series of Portable Activity Meters

The PAM-100 and PAM-170 series meters are portable hand-held user-friendly and ergonomically designed instruments intended for measuring surface contamination of alpha, beta and gamma emitting radionuclides (depending on the detectors used). Smart gasless scintillation detectors with an active area of 100 cm^2 or 170 cm^2 are used. A dual phosphor detectors with two channel electronics for alpha discrimination is available.

**Efficiency:**

- Alpha: up to 51% ($^{241}$Am), up to 48% ($^{239}$Pu), up to 92% (natU)[1]
- Beta: up to 20% ($^{14}$C), up to 45% ($^{60}$Co), up to 49% ($^{204}$Tl), up to 54% ($^{90}$Sr/$^{90}$Y), up to 48% ($^{137}$Cs)

[1] *natU is naturally occurring uranium.*





## FCM-02 and SFP Contamination Monitor

The FCM-02 Contamination Monitor is used to measure the surface contamination of workers, their clothing, and equipment. Scintillation detectors are used to measure the alpha, beta, and gamma surface activity.

The SFP series of smart frisking probes are used to detect the surface contamination. The SFP series probe has a standard active area of 15.5 in2 (100 cm2) and can be provided with dual phosphors for discrimination of alpha from beta activity.

**Efficiency:**

- Alpha: up to 51% ($^{241}$Am)
- Beta: up to 47% ($^{204}$Tl)

## MK-30P Sample Analysis System



The Sample Analysis System (consisting of MK-30P shielded chamber and connected PC/notebook) is intended for measuring swipe (smear) and evaporated samples and air filters. Various detectors can be used for specific applications: alpha, beta, gamma, alpha/beta, etc.

**Measuring dish diameter:**
max 50 mm (2 in)

## Hand/Foot Contamination Monitors



VF's line of Hand/Foot Contamination Monitors is used to measure the alpha, beta, and gamma contamination on hands and feet. Different types and thicknesses of smart scintillation detectors are used to determine the type of radiation measured and the efficiency of the detectors. Using dual phosphors, the discrimination of alpha from beta activity is available.

A User friendly touchscreen display and voice prompts are used to step the Operator through the measurement process. The display, status lights, and voice prompts provide visual and audible results of the measurements. The touchscreen display is used for maintenance functions. The maintenance functions are either password or lock protected.

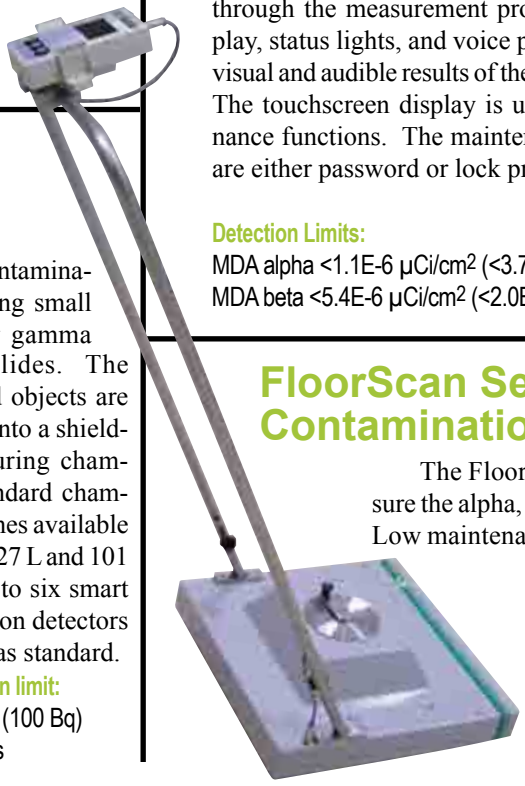
**Detection Limits:**
MDA alpha <1.1E-6 µCi/cm$^2$ (<3.7E-2 Bq/cm$^2$)
MDA beta <5.4E-6 µCi/cm$^2$ (<2.0E-1 Bq/cm$^2$)

## SIM Series of Small Items Contamination Monitors

The SIM series of small items contamination monitors are devices for monitoring small objects that may be contaminated by gamma radionuclides. The measured objects are inserted into a shielded measuring chamber. Standard chamber volumes available are 17 L, 27 L and 101 Ll. Two to six smart scintillation detectors are used as standard.



**Detection limit:**
2.7 nCi (100 Bq) of $^{137}$Cs



## FloorScan Series of Floor Contamination Monitors

The FloorScan series of monitors are used to measure the alpha, beta, and gamma contamination on floors. Low maintenance smart scintillation detectors are used to measure the contamination. Dual phosphor detectors with electronics are available for discrimination of alpha from beta activity. Versions with one or two 81.4-in$^2$ (525 cm$^2$) active area detectors are available.

HI-Q

# RADNET

## ENVIRONMENTAL AIR RADIATION MONITOR FOR REAL-TIME AIR MONITORING OF BETA AND GAMMA PARTICULATE RADIONUCLIDES



- **Outdoor high volume air sampler with automatic flow control**
- **Integrated gamma and beta detector with alpha measurement as an option**
- **High performance local processing unit**
- **Data Transmission: Cellular network, hardwire internet, and phone modem with automatic switching**
- **Weather sensors for ambient air temperature, barometric pressure, and wind speed/direction**
- **Telescoping mast**

The RADNET monitor is equipped with an integrated dual detector that measures beta and gamma pacticulate isotopes deposited on a filter paper by means of a multi-processing technique. The beta detector is a rugged, ion-implanted, silicon detector with 600mm$^2$ of sensitive surface area coupled to a charge pre-amplifier and processor-based MCA module that is able to detect and measure beta radiation. The gamma detector is a 2"x2" NaI(TI) detector with gain stabilization and automatic temperature control. The sodium iodide detector is coupled to a tubebase, charge preamplifier/high voltage power supply and to a second MCA module. The local processing unit using serial interfaces communicates with the two MCA modules, the mass flow controller and the weather data logger. The detectors are coaxial with the silicon detector close to the filter paper, in front of the sodium iodide detector to enhance its beta sensitivity. The local processing unit manages all input/output functions and performs calculations for real-time radiation monitoring and sample flow control. Also serving functions for local/remote interfacing, the local processing unit performs auxiliary datalogging, processing, data backup, on-line and offline testing, and data communication (telemetry).

**CALL HI-Q TODAY FOR MORE INFORMATION**



BETA/GAMMA DETECTOR



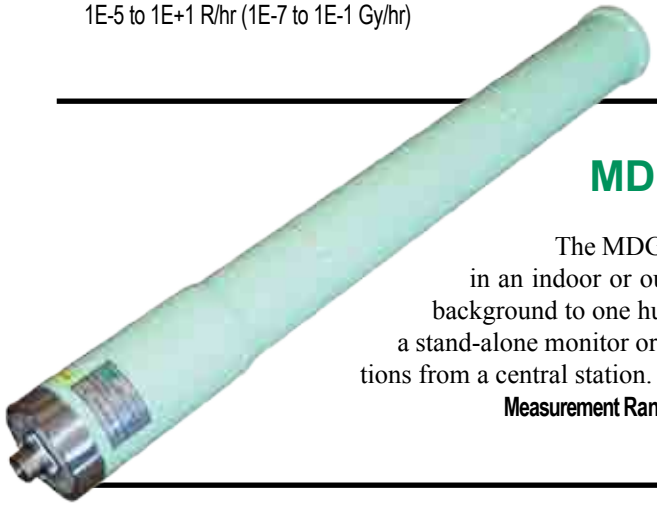
LOCAL PROCESSING UNIT

## AGM-02 Gamma Area Monitor



The AGM-02 gamma area monitor is used to monitor gamma dose rate in a room. It can be used as either an independent radiation monitor or can be integrated into a system that monitors the radiation in several rooms of a building from a central location. It is a cost-effective solution that consists of a Geiger-Müeller tube detector and integrated display. It measures the exposure rate, displays the measurement, and has visual and audible alarms. It also includes relay contact outputs for remote alarm status.

**Measurement Range:**
1E-5 to 1E+1 R/hr (1E-7 to 1E-1 Gy/hr)



## MDG-0X gamma area detector

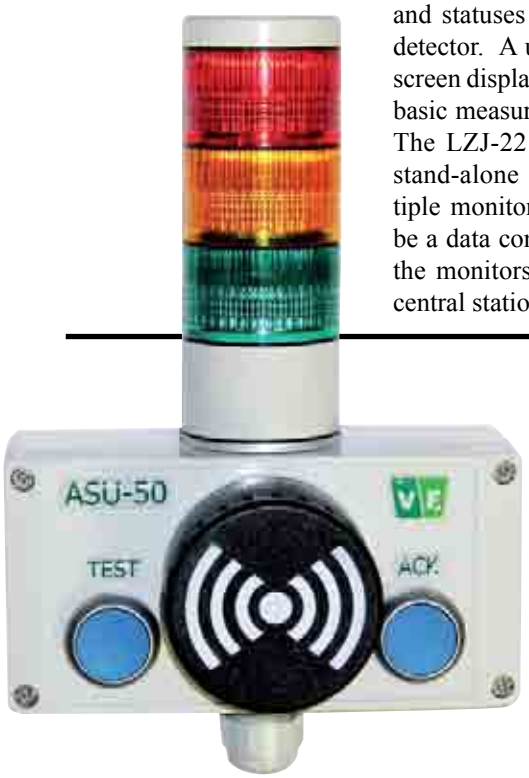
The MDG-0X series of gamma area detectors are used to measure gamma exposure rates in an indoor or outdoor environment. These detectors can be used for measuring from natural background to one hundred R/hr. These detectors can be used with local display and alarm units as a stand-alone monitor or can be integrated into a system that can monitor the radiation in multiple locations from a central station.

**Measurement Range:** 2E-6 to 1E2 R/hr (1E-8 to 1E0 Gy/hr)

## LZJ-22 Local Display Unit

The LZJ-22 provides display of the AGM Gamma Area Monitor and MDG-0X detector measurements and alarm status'. It can display the measurement of up to eight monitors/detectors and maintains the historical data and statuses for each monitor/detector. A user friendly touch screen display is used to modify basic measurement parameters. The LZJ-22 can be used as a stand-alone interface for multiple monitors/detectors or can be a data concentrator between the monitors/detectors and the central station.

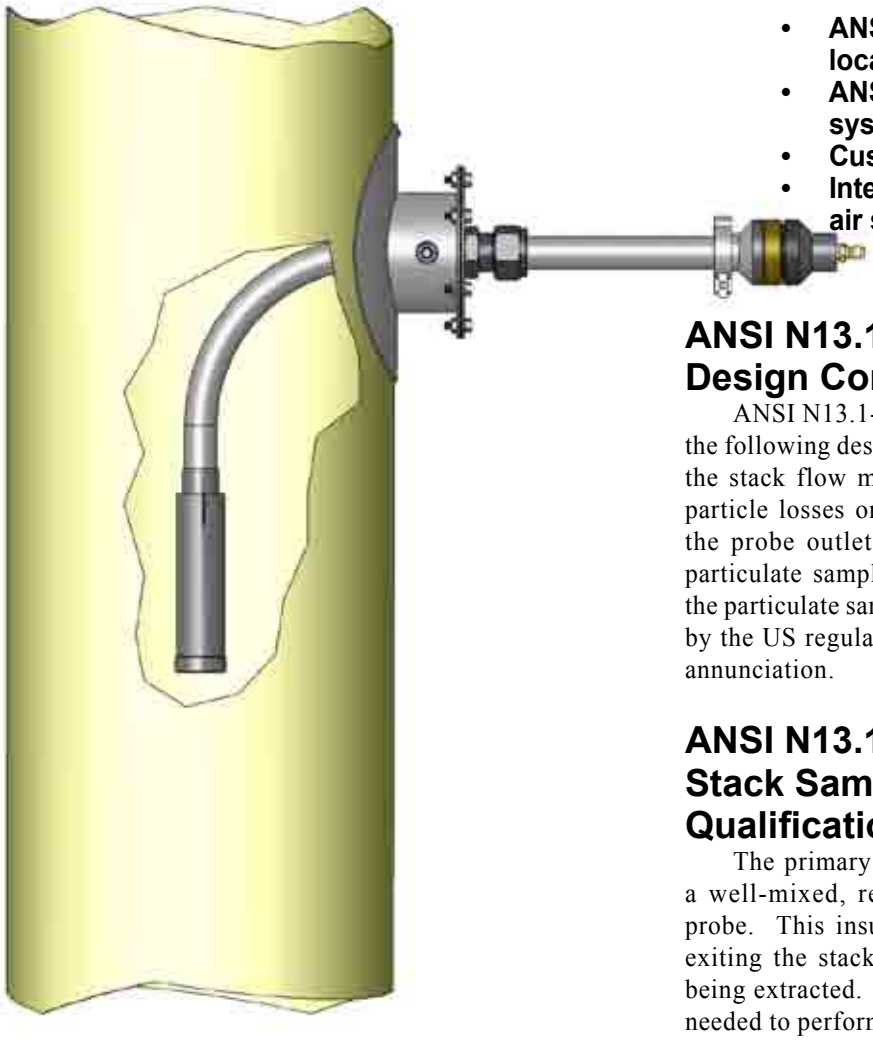





## ASU-50 Local Alarm Unit

The ASU-50 is a local visual and audible alarm unit that is used with the AGM-02 Gamma Area Monitor and the MDG-0X detector to provide full alarm capabilities for a single monitor/detector. The ASU-50 provides indication of the operating status of the monitor/detector, two visual alarm lamps, and an audible alarm horn with horn acknowledge button. The three lamps can be illuminated by the lamp test button. The ASU-50 can be directly connected to an monitor/detector or can be connected to an LZJ-22 Local Display Unit for the display of the status of one monitor/detector.

# Custom Engineering and Design Capability



- **ANSI N13.1-1999 stack sampling location qualification testing**
- **ANSI N13.1 stack sampling system design**
- **Custom air sampler design**
- **Integration of radiation detectors and air sampling systems**

## ANSI N13.1-1999 Design Considerations

ANSI N13.1-1999 requires that sampling systems satisfy the following design criteria; (1) representative particles from the stack flow must be drawn into the sampling probe, (2) particle losses on the inner surfaces of the probe and from the probe outlet through the sample transport line to the particulate sampler or monitor must be minimized, and (3) the particulate sample must be accurately analyzed as required by the US regulations, e.g., for record-keeping and/or alarm annunciation.

## ANSI N13.1-1999 Stack Sampling Location Qualification Testing

The primary consideration in stack sampling is to have a well-mixed, representative sample entering the sample probe. This insures that the concentrations of particulates exiting the stack are accurately represented by the sample being extracted. HI-Q has the expertise and instrumentation needed to perform the qualification testing required by ANSI N13.1-1999 to determine whether the stack air is well mixed at the sample location.

## ANSI N13.1-1999 Stack Sampling System Design

HI-Q has an established reputation for delivering high quality sampling systems and equipment for the environmental and nuclear industries. Once it has been established that the sampling location is well-mixed, HI-Q can recommend the appropriate sample probe based on the stack and sample flow rates. HI-Q has the expertise to recommend either multi-point sample probes or a shrouded probe depending on the Customer's needs. From the sample probes to the air sampler, HI-Q can deliver the sample system including; (1) selection of the appropriate size of tubing to minimize particle losses, (2) design of a manifold system for multi-point sample probes, (3) provide installation drawings for the sample probe assembly, and (4) perform analysis required to verify that the particle loss from the sampling location to the sampler is less than 50%. HI-Q can meet all of the current industry standards required for our sampling systems.

## Custom Air Sampler Design

For applications that do not fit HI-Q's standard product line of air samplers, HI-Q can design an air sampler to a Customer provided design specification. In many cases, the custom sampler will be a modification of HI-Q's standard product. If special features are required, HI-Q can propose a design that will meet the need.

## Integration of Radiation Detectors and Air Sampling Systems

HI-Q has provided complete radiation monitoring systems with real-time detection capability. HI-Q has the expertise to work with radiation detector manufacturers to provide the sample flow control and pumping system for any airborne monitoring application.

***Please feel free to contact our design team for assistance with custom air sampling systems.***

# Custom Engineering & Design

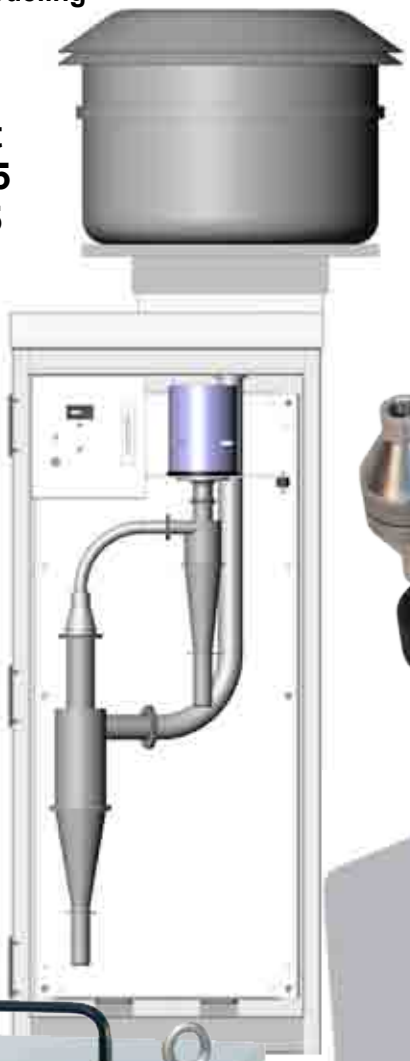
## Custom Designed Air Sampling Equipment, Systems & Accessories

- Complete Design & Engineering Capabilities
- Over 35 Years of Design Experience
- Customized Air Sampling Systems
- Solid Modeling

4-Way Manifold



Hi-Vol PM10 Inlet with PM2.5 and PM0.5 Cyclones





Custom Filter Holders

Emergency Response Air Sampling Kits

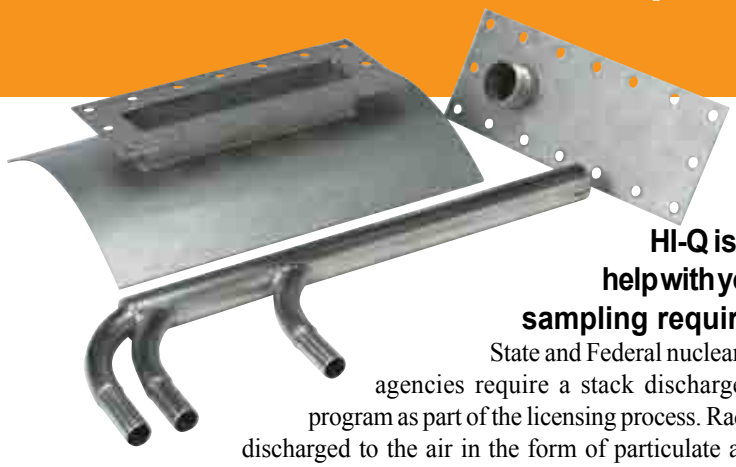


Custom Designed Air Samplers






Filter Shield



## Complete Stack Sampling Systems & Accessories

### Stainless Steel Probes, Nozzles, & Flanges

**HI-Q is ready to help with your stack sampling requirements:**

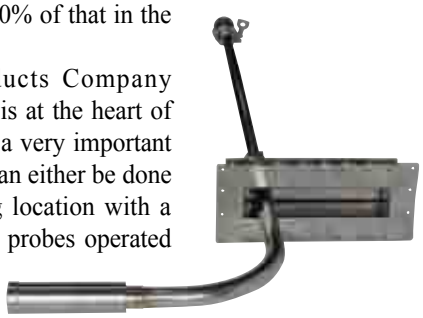
State and Federal nuclear regulatory agencies require a stack discharge sampling program as part of the licensing process. Radionuclides discharged to the air in the form of particulate and volatile compounds must be assayed. Therefore, nuclear facilities are required to follow standard protocol for sampling their effluent. Possible emission of radionuclides to the general public has to be monitored in a systematic and acceptable manner. In the United States, the Unites States Environmental Protection Agency (USEPA) has the authority over such matters, and the current requirements and guidelines for sampling in nuclear stacks and ducts are laid down in **ANSI N13.1 1999**.

The sampling requirements are such that a system has to be designed for the collection of 10µm aerodynamic diameter (AD) particles. This size has been chosen, keeping in view that any effect of an emission on the public's health, is restricted to the respirable mass it contained. Sampling of an effluent for gases, poses fewer problems compared to that of particulate. Therefore a system capable of successfully sampling 10µm AD particles will also be sufficient for sampling effluent gases.



**Non-Obstructing 1½" dia. In-Line Sample Inlet**

In particle sampling, the challenges are many fold: 1) to aspirate particles from the stack flow into a sampling probe without bias, 2) to deliver those particles at the probe exit without any appreciable loss on the inner surfaces of the probe, 3) to further carry the particles through a transport line to a detection and analysis station without incurring additional losses and 4) to successfully analyze the sample and fulfill requirements, such as, raising an alarm (if needed) and/or to keep inventory of the release. According to the **ANSI N13.1 1999** standard, the particle concentration at the detection/analysis station has to be at least 50% of that in the free stream.



HI-Q Environmental Products Company considers that the sampling probe is at the heart of the whole sampling system and is a very important design component. The sampling can either be done at multiple points at the sampling location with a rake of un-shrouded, sharp-edged, probes operated isokinetically or at a single point with a shrouded probe operated either non-isokinetically or isokinetically. The probe performance is the criterion to decide which type of sampling has to be used. For single-point sampling it has to be ensured that the uniformity of particle concentration has reached an acceptable limit at the sampling location, and that the correct type of shrouded probe is being used. For multiple-point sampling, the system has to be carefully evaluated to find out if it can achieve the acceptable performance as mentioned in **ANSI N13.1 1999**. The sample transport line has to meet the ANSI requirements as well.

**Complete Stack Sampling Systems**

- Real-Time Monitoring
- Sample Collection for Analysis
- Mass Flow Control
- Iso-Kinetic Sampling Systems
- Custom Design

**Stainless Stack Sampling Components**

- Shrouded Probes
- Single Point Probes
- Multi Point Particulate Probes
- Multi Point Gas Sampling Probes
- Slotted Sampling Probes
- Flanges
- Transport Lines
- Precision Machined Nozzle Tips

**Stack Sampling Design Standards**

- ANSI N13.1 1999
- ANSI N13.1 1969
- EPA
- NESHAPS

***The following is a brief description of common stack sampling components:***

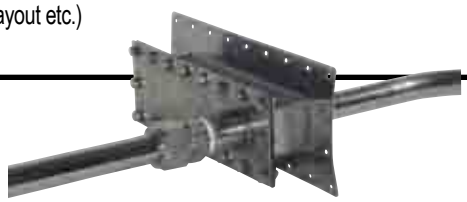
| | |
|---|---|
| **Flanges:** | Corrosion resistant stainless steel flanges or bulkhead plates are available for round or rectangular stacks, vents, or ducts. |
| **Probes & Nozzles:** | The probe can be single point, slotted, multiple point gas, or multipoint particulate depending on the size and configuration of the stack, vent, or duct. |
| **Stack Flow:** | We have a complete line of air velocity gauges and monitoring devices available to meet your needs. From multi-point pitot tubes to thermal anemometer systems. |
| **Sample Flow:** | A range of systems can be used, from a simple venturi flow meter with a manual control valve to mass flow measuring and control systems with digital displays for instantaneous flow rate and accumulated total. |
| **Pump Systems:** | Many standard systems are found throughout our catalog but special designed systems are available for stack/fume hood sampling as well. Multi-sampling-point tank systems and dual, flip-flop pump systems are available. |
| **Instrument Weather Houses:** | Our instrument weather houses are designed to house pumps and instruments in an outdoor area. They are the industry standard and have proved to be very durable with their baked on polyurethane painted finish. NEMA rated enclosures are also available. |

## Ordering Information

HI-Q Environmental Products Company's product line includes complete sampling systems, consisting of either type of probe, the transport line, sampling pump and flow controller. We recommend, design, and supply complete systems. HI-Q Environmental Products Company is able to make stack-sampling systems design suggestions by receiving your sampling requirements and operating conditions. *System design begins by providing HI-Q with the following information:*

1. Stack Flow Rate or Range: (i.e. 35,000 CFM)
2. Sample Point Stack Dimensions: (i.e. 36" Dia. Stack)
3. Sampling flow rate: (i.e. 50 LPM)
4. Sample Collection Media: (i.e. 47 mm diameter Glass Fiber)
5. Location of analysis station with respect to the sampling location: (i.e. distance, layout etc.)

### Stainless Steel Sampling Flanges



**For Round Stacks or Ducts**

| Part Number | Stack Diameter | Probe Diameter |
|---|---|---|
| **SSFLNG-50-XX** | -XX | ½" |
| **SSFLNG-75-XX** | -XX | ¾" |
| **SSFLNG-100-XX** | -XX | 1" |
| **SSFLNG-125-XX** | -XX | 1¼" |
| **SSFLNG-150-XX** | -XX | 1½" |

- XX=Exact Outer **Diameter** of Round Stack/Duct
- Add "-M" to P/N for **Multi-Point** Probe Applications
- Add "-S" to P/N for **Shrouded,** Single Point, or Gas Probe Applications

**For Rectangular Stacks or Ducts**

| Part Number | Minimum Flat Surface Area | Probe Diameter |
|---|---|---|
| **SSFLNG-50** | 49 square inches | ½" |
| **SSFLNG-75** | 64 square inches | ¾" |
| **SSFLNG-100** | 64 square inches | 1" |
| **SSFLNG-125** | 64 square inches | 1¼" |
| **SSFLNG-150** | 64 square inches | 1½" |

- Add "-M" to P/N for **Multi-Point** Probe Applications
- Add "-S" to P/N for **Shrouded,** Single Point, or Gas Probe Applications



### Gas-Only Multi-Point & Single Point Particulate Stainless Steel Sampling Probes (without nozzle)

HI-Q precision bends stack and fume hood-sampling probes from stainless steel tubing. Precision-machined nozzle tips may be added from the "Custom Machined Stainless Steel Sampling Nozzles" section. Single-point particulate probes are custom manufactured to customer specifications. Multipoint Gas Probes are custom designed to customer specified stack dimensions.

| Order XX = length after 90° | Tube OD | Min Bend Radius (5 X Tube OD) |
|---|---|---|
| **SS-PG50-XX** | ½" | N/A |
| **SS-P50-XX** | ½" | 2½" |
| **SS-P75-XX** | ¾" | 3¾" |
| **SS-P100-XX** | 1" | 5" |
| **SS-P125-XX** | 1¼" | 6¼" |
| **SS-P150-XX** | 1½" | 7½" |

- "-XX" Tube Run after 90° Bend or Exact Stack dimensions for Gas Probe applications



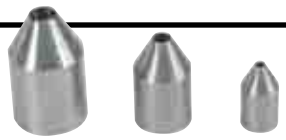
### Multi-Point Stainless Steel Sampling Probes

HI-Q designs and manufactures multi-point stainless steel probes meeting ANSI-N13.1 1969 guidelines. Multi-Point probes are custom designed to meet the end users needs.

| Order XX = length after 90° | MAIN TUBE OD | Min Bend Radius of each point (5 X Tube OD) |
|---|---|---|
| **SS-P50-XX-P** | ½" | 2½" |
| **SS-P75-XX-P** | ¾" | 3¾" |
| **SS-P100-XX-P** | 1" | 5" |
| **SS-P125-XX-P** | 1¼" | 6¼" |
| **SS-P150-XX-P** | 1½" | 7½" |

- "-XX" = Tube Run after 90° Bend
- "-P" = Number of sampling points (drops)

### Custom Machined Stainless Steel Sampling Nozzles

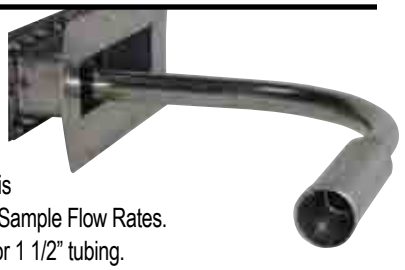


HI-Q precision machines stainless steel nozzle tips. The slip dimensions are based on standard stainless steel tubing. Specify the nozzle tip opening upon ordering by replacing the "XXX" in the order number.

| Order (XXX=Tip Opening) | TUBE OD | Nozzle Tip Opening Range |
|---|---|---|
| **SS-25NOZ-XXX** | ¼" | 0.025" to 0.194" |
| **SS-50NOZ-XXX** | ½" | 0.125" to 0.444" |
| **SS-75NOZ-XXX** | ¾" | 0.250" to 0.680" |
| **SS-100NOZ-XXX** | 1" | 0.375" to 0.930" |
| **SS-125NOZ-XXX** | 1¼" | 0.750" to 1.180" |
| **SS-150NOZ-XXX** | 1½" | 0.875" to 1.430" |

- "-XXX" = Tip Opening

### Stainless Steel Shrouded Probe Selection



Single Point Shrouded Probe selection is based on a range of Stack Velocities & Sample Flow Rates. Shrouded Probes have a weld socket for 1 1/2" tubing. Choose the correct shrouded probe from the table below:

| Probe Designation | Nominal Sampling Rate, LPM | Velocity Range (m/s) for which 0.8 </= Td" </=1.3 |
|---|---|---|
| **RF-2-111** | 2 CFM | 0-18 m/s |
| **RF-3-111** | 3 CFM | 0-23 m/s |
| **RF-2-112** | 2 CFM | 0-11 m/s |
| **RF-3-112** | 3 CFM | 0-14 m/s |

## Paper Only Filter Holders

The following filter holders are used for the collection of particulate from the air (in-line or open faced) taken with either high or low volume pumps. Choosing the correct filter holder is dependent on three factors: 1. Type of Pump (Rotary Vane or Centrifugal Fan), 2. Filter paper dimensions (i.e.: 2" dia., 47mm dia., 8" x 10" , etc.…), and 3. Type of connecting fitting (i.e.: 3/8" male quick disconnect or thread type). All of HI-Q's filter holders are machined from 6061-T6 Aluminum (unless otherwise specified) and anodized Black, Gold or Blue depending upon the filter type. **Add a "-SS" to unit model number for Stainless Steel holder construction.**

| Abbreviations: | **MQD** = Male Quick Disconnect | **MPT** = Male Pipe Thread | **SPT** = Straight Pipe Thread |
|---|---|---|---|
| | **FQD** = Female Quick Disconnect | **FPT** = Female Pipe Thread | **TPI** = Threads Per Inch |
| | **Black Anodize** = 2" Ø Paper Holder | **Gold Anodize** = 47mm Ø Paper Holder | **Clear Anodize** = 4" Ø Paper Holder |



### RVPH-Series

Open Faced Paper Only Holders. Includes 3/8" male quick disconnect coupling.

| Model | Paper Size Dia. | Fitting |
|---|---|---|
| **RVPH-20** | 2 Inch. | 3/8" MQD |
| **RVPH-25** | 47mm | 3/8" MQD |
| **RVPH-102** | 4 Inch. | 3/8" MQD |



### RVPA-Series

2",47mm, & 4" Diameter Paper Only, In-Line Adapter Cones.

| Model | Paper Size Dia. | Inlet |
|---|---|---|
| **RVPA-10** | **2 Inch.** | **3/8" FPT** |
| **RVPA-15** | **47mm** | **3/8" FPT** |
| **RVPA-102** | **4 Inch.** | **3/8" FPT** |
| **RVPA-5** | **47mm** | **1/2" FPT** |
| **RVPA-13** | **47mm** | **3/4" FPT** |
| **RVPA-17** | **47mm** | **1" FPT** |



### ILPH-Series

Complete, In-Line, Paper Only Assembly. Includes one 3/8" male & female quick disconnect.

| Model | Paper Size Dia. | In-Out Fitting |
|---|---|---|
| **ILPH-20** | 2 Inch. | 3/8" FQD-3/8MQD |
| **ILPH-47** | 47mm | 3/8" FQD-3/8MQD |
| **ILPH-102** | 4 Inch | 3/8" FQD-3/8MQD |
| **ILPH-5** | 47mm | 1/2" FPT-3/8MQD |
| **ILPH-13** | 47mm | 3/4" FPT-3/8MQD |
| **ILPH-17** | 47mm | 1" FPT-3/8MQD |



### CFPH-Series

Open Faced Paper Only Holders. 1½" male SPT, 11½ TPI male threaded fitting.

| Model | Paper Size Dia. | Outlet |
|---|---|---|
| **CFPH-20** | 2 Inch. | 1.5" Male SPT |
| **CFPH-25** | 47mm | 1.5" Male SPT |
| **CFPH-102** | 4 Inch | 1.5" Male SPT |



### CFPH-Series

4" Dia. & 8" x 10" Filter Paper Holder Attach CFPH-45 & CFPH-810 to units with 4" dia., threaded intake fittings.

| Model | Paper Size |
|---|---|
| **CFPH-45** | 4" dia. Paper Only Holder. |
| **CFPH-810** | 8" x 10" Paper only |



### 8 x 10 Removable Filter Paper Cartridge

Allows a user to pre-load & remove existing 8 x 10 filter collection media in a controlled environment. When in the field the user is able to replace the existing (used) cartridge with the pre-loaded (new) cartridge without having to directly handle the filter collection media.

| Mode | Description |
|---|---|
| **810-CARTRIDGE** | 8 x 10 removable filter paper cartridge w/ snap on cover. |

# Combination Cartridge & Paper Filter Holders

The following filter holders may be used for the collection of solid particulate on paper and/or volatile compounds in a filter cartridge taken from the air with either a high or low volume pump. In choosing the correct holder one needs to know the specific paper size (usually 2" or 47mm dia.), and a cartridge configuration. Cartridge configurations can be found under the Analytical Cartridge Section of this catalog. All HI-Q filter holders are machined from 6061-T6 Aluminum (unless otherwise specified) and anodized Black, Gold or Blue depending upon the filter media they accept. **Add a "-SS" to unit model number for Custom Order Stainless Steel holder construction.**

Abbreviations: **MQD** = Male Quick Disconnect; **FQD** = Female Quick Disconnect; **Black Anodize** = 2" Ø Paper or TC-XX/AGX-2 Holder; **MPT** = Male Pipe Thread; **FPT** = Female Pipe Thread; **Gold Anodize** = 47mm Ø Paper or TCAL-XX/AGX-4 Holder; **SPT** = Straight Pipe Thread; **TPI** = Threads Per Inch; **Blue Anodize** = TCGA-Series or AGX-10GA Holder



## RVH-Series

Open Faced, Combination Filter Paper & Cartridge Holder. Includes one 3/8" male quick disconnect.

| Model | Paper | Cartridge |
|---|---|---|
| **RVH-20** | 2" | TC |
| **RVH-25** | 47mm | TC |
| **RVH-30** | 2" | TCAL |
| **RVH-35** | 47mm | TCAL |
| **RVHGA-30** | 2" | TCGA |
| **RVHGA-35** | 47mm | TCGA |
| **RVH-102** | 4" | TC |



## RVA-Series

2", 47mm, & 4" dia. In-Line Adapter Cones, used to convert open faced filter holders to In-Line.

| Model | Paper | Inlet |
|---|---|---|
| **RVA-10** | 2" | 3/8" FPT |
| **RVA-15** | 47mm | 3/8" FPT |
| **RVA-102** | 4" | 3/8" FPT |
| **RVA-12** | 2" | ¾" FPT |
| **RVA-13** | 47mm | ¾" FPT |
| **RVA-16** | 2" | 1" FPT |
| **RVA-17** | 47mm | 1" FPT |



## ILFH-Series

Complete, In-Line, Combination Paper & Cartridge Filter Holder Assembly. Includes one 3/8" male & female quick disconnect.

| Model | Paper | Cartridge |
|---|---|---|
| **ILFH-20** | 2" | TC |
| **ILFH-22** | 2" | TCAL |
| **ILFH-25** | 47mm | TC |
| **ILFH-27** | 47mm | TCAL |
| **ILFHGA-30** | 2" | TCGA |
| **ILFHGA-35** | 47mm | TCGA |

Note: Specify Inlet size if other than 3/8" Female NPT.



## Tandem Cartridge Holder

Insert this Tandem Cartridge Holder between the sections of any combination holder to create a multi cartridge sampling train.

| Model | Cartridge Type |
|---|---|
| **CTH-50** | TC |
| **CTH-55** | TCAL |



## CF-Adapters

Adapt Down from either 8" x 10" or 4" Dia. paper holders to 1½" Female SPT 11½ TPI.

| Model | Adapter Plates From/To |
|---|---|
| **FHA-4CF** | 4" Dia./ 1.50" female SPT |
| **FHA-810CF** | 8" x 10"/ 1.50" female SPT |
| **FHA-90** | 4" dia. Paper Holder. Replaces paper nut on all combination style holders. |



## CFH-Series

Open faced combination, cartridge & paper holder. Use with CF-Series Sampling Systems with a 1.50" Dia. female threaded 11.5 TPI intake.

| Model | Paper | Cartridge |
|---|---|---|
| **CFH-20** | 2" | TC |
| **CFH-25** | 47mm | TC |
| **CFH-30** | 2" | TCAL |
| **CFH-35** | 47mm | TCAL |
| **CFH-102** | 4" | TC |
| **CFH-102A** | 4" | TCAL |

# Nuclear Grade Carbon & Silver Zeolite Cartridges used for the assay of Radioiodine




## Background information on Radioiodine Testing:

For evaluation and documentation purposes, HI-Q has all of its individual batches/lots of TEDA Impregnated Carbon and Silver Impregnated Zeolite collection media tested by an outside certified testing laboratory, at multiple flow rates in the cartridge configuration. Samples of each mesh size and batch/lot are tested in the most common cartridge configuration over a wide range of sample flow rates. Historical test data has allowed HI-Q to plot typical collection efficiency curves that will help you the customer in selecting that product which will best suit your analytical needs.

## Why test?

Collection efficiency tests on adsorption media such as TEDA Impregnated Carbon and Silver Impregnated Zeolite, are important indicators of what one might expect to collect in actual use.

## What effects collection of iodine?

Iodine usually is found as sublimed volatilized Iodine. This specie will condense on almost any surface or dust particle and will always have very high collection efficiency.

Methyl Iodide is used for standard testing because it is the smallest organo-molecular form of Iodine and is gaseous at ambient temperature. Because it is gaseous, it can be used to test the collection efficiencies on a "*worst case scenario*" basis. Methyl Iodide is not normally found in nature, or as a by-product of nuclear power generation.

## What test conditions are used?

The standard industrial test procedure is: ASTM D-3803-98, with test conditions of P=1ATM, T=30°C, Velocity=40 ft/min, R.H.=95%, $CH_3I$ concentration=1.75 mg/$M^3$, Pre-Equilibration = 18 hours, Pollutant load = 1 hour, Elution = 1 hour. The nuclear industry uses these test procedures for comparative testing of collection media.

## Awareness of environmental collection conditions.

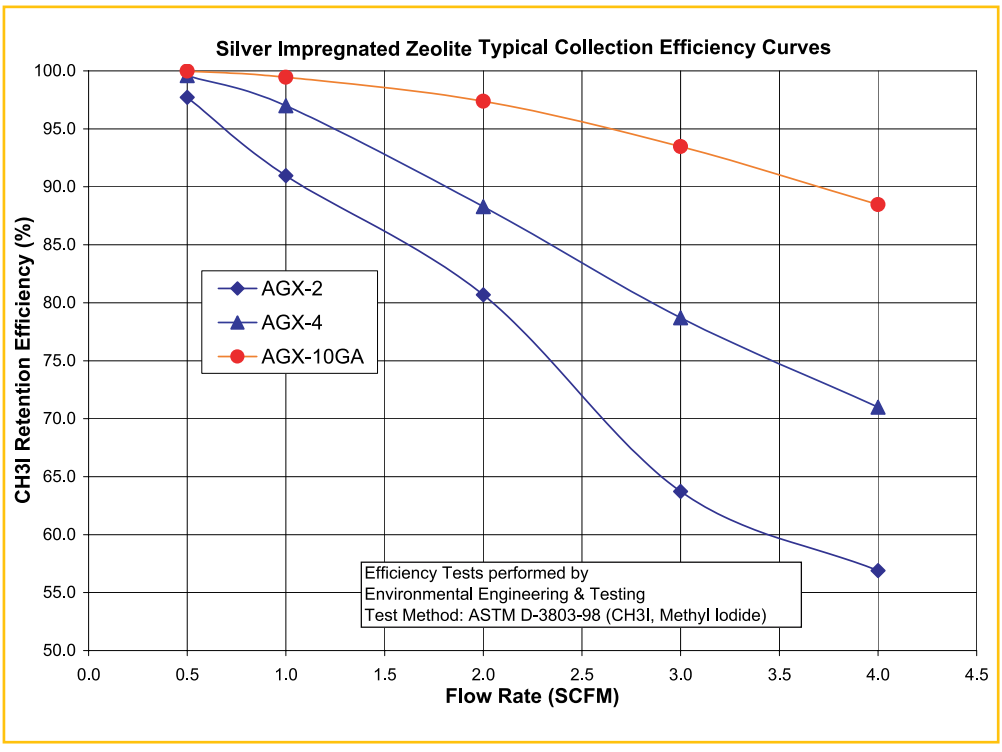
Environmental scientists will not normally use the analytical cartridges under the specified ASTM conditions, but rather at the conditions found at the sampling site. For example, the sample cartridge will be used immediately in the air sampler and not swept with inert gas, or pre-equilibrated for 18 hours. The iodine loading rate or concentration cannot be controlled. Nor does one have control of the sampled environmental air conditions such as temperature and relative humidity. The environmental scientist should be aware that air sampling for radioiodine is strongly affected by: The species of Iodine, flow rate (face velocity), collection media, mesh size of the selected media, relative humidity, temperature, and sampling duration.

## Flow rate

As a general guideline, and per the U.S. Department of Energy in their publication Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance (DOE/EH-0173T), "the linear flow rate across particulate filters and charcoal cartridges should be maintained between 20 and 50 m/minute (DOE/EP-0023)."

# Silver Impregnated Zeolite Cartridges

The "AGX" Series, Silver impregnated Zeolite Cartridges contain a highly efficient inorganic adsorbent for the collection and removal of elemental and organic forms of radioactive Iodine. Laboratory test indicate that radioactive Xenon, Krypton, and other Noble Gases are not retained to any significant degree by Silver impregnated Zeolite cartridges (approximately 1/15,000$^{th}$, or less, than that retained by activated Carbon). The media is nonflammable and operates at a very high efficiency at elevated temperatures. These cartridges are the preferred and specified type for use in post accident standby monitoring systems. All AGX-Series cartridges are individually heat-sealed in an airtight 6-mil polyethylene package to prevent contamination before use.




## Ordering Information

| Order | Cartridge Series | Dimensions | Silver Zeolite Mesh Size |
|---|---|---|---|
| **AGX-2** | AGX | 2¼" x 1" Plastic Cartridge | 16 x 40 Mesh |
| **AGX-4** | AGX | 2½" x 1" Metal Can Cartridge | 16 x 40 Mesh |
| **AGX-10GA** | AGX | 2½" x 1½" Metal Can Cartridge | 16 x 40 Mesh |

**Note: additional custom mesh sizes available: 30 x 50 and 50 x 80**



TC-08 TC-Series TCAL-Series TCGA-Series

## Radioactive Noble gas

"What is the retention efficiency of Radio Iodine or Xenon on Carbon and Silver Zeolite?" The reason the question is asked, is because $_{133}$Xe is also a by-product of nuclear fission. In the Journal of Health Physics, it is stated that when Carbon and Silver Zeolite are dosed with $_{133}$I and $_{133}$Xe, tests show that 0.03 to 0.5% of the original concentration of $_{133}$Xe will be retained on 40x50 mesh TEDA impregnated carbon. Silver impregnated Zeolite was found to have retained 1/15,000$^{th}$ the amount of $_{133}$Xe as that of the Carbon. The lower the retention or capture of $_{133}$Xe on a collection media such as silver zeolite, the lower the possibility of misinterpretation of collected radioactivity as being attributed to anything other than the iodine species.

## HI-Q stands for High Quality!

HI-Q manufactures all of its cartridges under an ISO 9001:2008 certified quality assurance program (see web site for a copy of HI-Q's certificate). Following the set procedures set forth in their Quality Assurance Program ensures repeatable performance and dimensions of each cartridge manufactured by HI-Q Environmental Products Company. *HI-Q specifically has each individual lot of carbon and silver zeolite, from which the individual cartridges are made, randomly tested and certified by an independent testing laboratory, at multiple sample flow rate points through the most common geometry of cartridges utilized in the nuclear industry. The Lot-Specific test results are included with each customer order.*

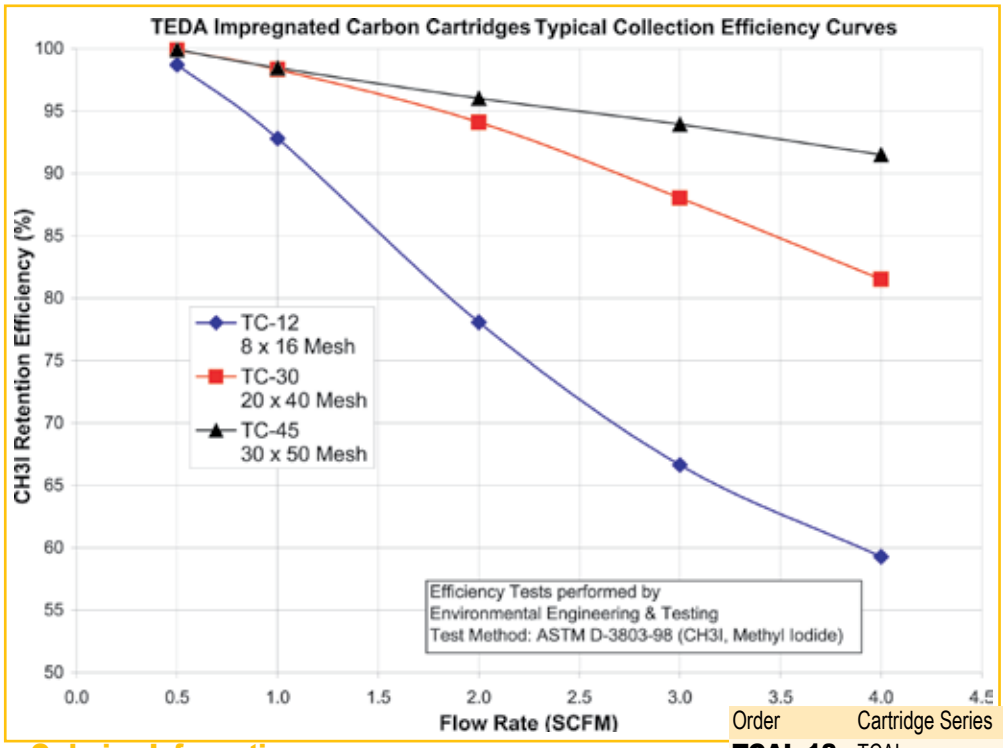
The individually labeled cartridges are heat-sealed in air tight 6 mil polyethylene packages or sleeves. Silver Impregnated Zeolite cartridges are packaged individually and TEDA Impregnated Carbon cartridges are packaged in sleeves of 10. Custom packaging configurations are available upon request. Shelf life of the sealed cartridges as defined by the industry is 10 years.

## What mesh size media should you use?

HI-Q has three mesh sizes of impregnated Carbon available. They are: 8 x 16, 20 x 40 and 30 x 50 Mesh. These three Mesh sizes are made available because sampling requirements vary, depending on, flow rate, sampling duration, sampling equipment type, Iodine specie, etc. As a rule, the smaller the physical mesh size (i.e. 30 x 50), the higher the Iodine retention efficiencies, but the greater the pressure drop through the filter cartridge (smaller size materials present a greater surface area allowing higher gas to surface contact). Because of the high pressure drop, it is recommended however that the very fine 30 x 50 Mesh cartridges only be used in positive displacement pump systems, NOT high volume centrifugal fan or battery operated pump samplers.

## TEDA Impregnated Carbon Cartridges

TEDA (triethylene di-amine) impregnated Carbon filter media has a high affinity for the adsorption, chelation and retention of the various species of Iodine. The HI-Q Environmental Products Company manufactures a number of configurations of activated carbon cartridges to fit almost all industry standard cartridge holders. The most common size in the industry is the 2¼" dia. x 1" thick unit. These are HI-Q's "TC-Series" cartridges. This cartridge container is made of radiation yellow, high density polypropylene which is chemically inert, with a spun polypropylene retainer. The cartridges are easily cut open for analysis. Other popular HI-Q cartridge configurations, are the 2½" dia. x 1" (TCAL-Series), and the 2½" dia. x 1½" (TCGA-Series) metal can configuration commonly used in post accident monitors. All cartridges are heat-sealed in an airtight 6-mil polyethylene package to prevent contamination before use. The unopened package has an industry accepted ten-year shelf life. Ten cartridges are contained in each package/sleeve. Custom packaging is available with no minimum order.




### Ordering Information

| Order | Cartridge Series | Dimensions | Carbon Mesh Size |
|---|---|---|---|
| **TC-08** | TC | 1-5/8" x 3/4" (for personnel Air Samplers) | 8 x 16 Mesh |
| **TC-12** | TC | 2¼" x 1" Plastic Cartridge | 8 x 16 Mesh |
| **TC-30** | TC | 2¼" x 1" Plastic Cartridge | 20 x 40 Mesh |
| **TC-45** | TC | 2¼" x 1" Plastic Cartridge | 30 x 50 Mesh |

| Order | Cartridge Series | Dimensions | Carbon Mesh Size |
|---|---|---|---|
| **TCAL-12** | TCAL | 2½" x 1" Metal Can Cartridge | 8 x 16 Mesh |
| **TCAL-30** | TCAL | 2½" x 1" Metal Can Cartridge | 20 x 40 Mesh |
| **TCAL-45** | TCAL | 2½" x 1" Metal Can Cartridge | 30 x 50 Mesh |
| **TCGA-12** | TCGA | 2½" x 1½" Metal Can Cartridge | 8 x 16 Mesh |
| **TCGA-30** | TCGA | 2½" x 1½" Metal Can Cartridge | 20 x 40 Mesh |
| **TCGA-45** | TCGA | 2½" x 1½" Metal Can Cartridge | 30 x 50 Mesh |




# Filter Paper for Air Sampling

## Glass Fiber, Ashless Cellulose, & Carbon Impregnated Filter Paper

***General Information:*** Environmental air sampling for particulate generally use two major types of filter paper collection media, Glass fiber and Cellulose. Carbon Impregnated filter paper is called out for in the determination of the presence of airborne Iodine.

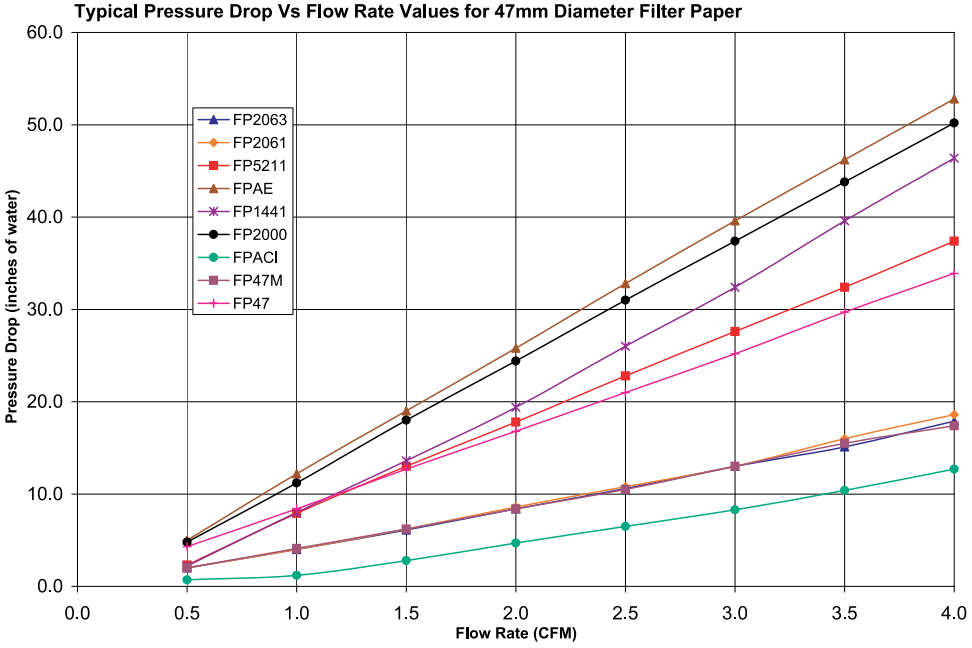
### Glass Fiber Filter Media

**Glass fiber filter media** is made from 100% micro-fine borosilicate glass fibers. Glass fiber filters are used where high flow rate and micron/sub-micron filtration is required. The filter media can be used for both liquid and air filtration. In the highest purity form, HI-Q offers a binderless "AE" grade glass filter media. With its' excellent purity, using the **FPAE-XX** series filter paper reduces the overall possibility of extractable organics commonly found in cellulose filter paper.

Where greater structural strength filter papers are needed (high pressure drop, vacuum applications), either a spun polyester backing is used, Type **FP5211**, or a minimal amount of acrylic resin binder is used, Type **FP2063** & **FP2061**, to keep up the integrity of the glass fibers during and after sampling/analysis. Some PM-10 sampling applications specifically call out for Whatman's "EPM-2000", HI-Q part number **FP2000**. FP2000 was developed and produced specially for use in high volume PM-10 air sampling equipment that collects atmospheric particulates and aerosols.

***Properties of Glass Fiber Media:*** The borosilicate glass fibers are inert and resistant to all but strongly alkaline bases or acids such as hydrofluoric acid. The fibers are heat resistant and will only begin to soften at over 600°C. The borosilicate glass has a refractive index of 1.51, and when immersed in a solvent of a similar refractive index like benzene, the fibers will be transparent. Particles collected on the media then become easier to visibly identify.

**Typical Pressure Drop Vs Flow Rate Values for 47mm Diameter Filter Paper**




## Glass Fiber Filter Collection Media:

### FP2063-XX

***Hydrophobic, Glass Fiber Filter Paper with acrylic resin binder.***

This hydrophobic, high purity filter media is recommended for use in general purpose, high and low volume air sampling applications for particulate collection. It is composed of 100% high quality borosilicate glass microfibers and an acrylic resin binder. Both the FP2063-XX & FP2061-XX filter paper grades are excellent for the removal of micron and sub-micron size particulate from ambient air and stack gases. Because glass fibers are brittle and do not naturally bind together, a small amount of acrylic resin binder (composition of which is described in CFR Title 21, Part 177.2260, Filters, Resin Bonded. ASTM Spec) is used to retain the filter paper integrity during air sampling and routine handling. The total borosilicate glass microfiber composition found in the FP2063-XX & FP2061-XX filter media contains less than 5% acrylic resin binder. DOP Collection Efficiency 97%.

### FP2061-XX

***Hydrophilic, Glass Fiber Filter Paper with acrylic resin binder.***

This high purity filter paper has all the same properties of the type FP2063-XX, except that it is hydrophilic. Choose the paper best suited for your sampling application and particle identifying method.

DOP Collection Efficiency 97%.

### FPXM

***Hydrophilic, Glass Fiber Filter Paper with acrylic resin binder.***

This hydrophilic high purity filter media is recommended for use in general purpose, high and low volume air sampling applications for particulate collection. It is composed of 100% high quality borosilicate glass microfibers and an acrylic resin binder. This media is highly inert and resistant to chemical reaction. This filter paper is excellent for the removal of micron and sub-micron size particulate from ambient air and stack gases. Because glass fibers are brittle and do not naturally bind together, a small amount of acrylic resin binder (composition of which is described in CFR Title 21, Part 177.2260, Filters, Resin Bonded. ASTM Spec) is used to retain the filter paper integrity during air sampling and routine handling. The total borosilicate glass microfiber composition found in the FPXM filter media contains less than 5% acrylic resin binder. DOP Collection Efficiency of 98%.

### FPX

***Hydrophilic, Binderless, Glass Fiber Filter Paper.***

This 100% high quality borosilicate glass micro fiber material demonstrates excellent fine particle retention and has a high retention efficiency for filtration of large volumes of air (High loading capacity). This binderless glass fiber filter possesses excellent purity. It is ideally suited for suspended solids analysis. Temperature usage up to 550°C. This media contains no acrylic binder. Low fiber shedding improves quality assurance of test results. DOP Collection Efficiency 99.98%, HEPA Quality.

***Particle Retention:*** For air and gas filtration, collection of sub-micron (less than one micrometer in aerodynamic diameter) particles is sometimes required. In nuclear environmental air testing, the protocol is for sub-micron collection. Use of glass fiber media is therefore recommended. The test procedure for determining the effectiveness of particle retention is known as the DOP smoke test. In this test, DOP (dioctyl phthalate) is heated, the vaporized compound is dispersed into the air where it is cools and condenses into mono-molecular particles of 0.3 micron size. By drawing these airborne particles through the filter media and measuring the amount of breakthrough particle, a retention efficiency is established (see ASTM method D-2986 for the complete procedure.) See tabular results in "Typical Performance Summary on Glass Fiber Filter Media" below.

## Ashless Cellulose, & Carbon Impregnated Filter Paper

**Ashless Cellulose Filter Paper** such as the **Whatman 41** series is commonly used in quantitative analytical techniques such as gravimetric analysis. E.G.: To convert precipitate to a stable weighing form, a chemist may wish to ignite the filter paper containing collected precipitate in a pre-weighed crucible, thereby removing the filter paper with minimal and uniform residual "ash". Cellulose paper is also commonly used for smears or swipes. Cellulose paper is not recommended with pumps that can't overcome large pressure drops (e.g. battery operated centrifugal type) or, where required, to maintain a constant flow rate over the entire sampling period.

## Typical Performance Summary on Glass Fiber Filter Media

*This data has been taken from production runs to show "Typical" properties. This is to be used as a guide and is not a specification sheet.*

| Media Type | Pressure Drop @ 2 CFM | DOP Efficiency 0.3µm ASTM method D-2986 | Binder | Efficiency (@ 4-8 PSI) | Thickness | Fiber Type |
|---|---|---|---|---|---|---|
| **FP2063-47** | 8 inches $H_20$ | 97% | Acrylic | High | 0.016 inches | 100% Borosilicate Glass Microfiber |
| **FP2061-47** | 8 inches $H_20$ | 97% | Acrylic | High | 0.016 inches | 100% Borosilicate Glass Microfiber |
| **FP47M** | 8 inches $H_20$ | 97-98% | Acrylic | High | 0.020 inches | 100% Borosilicate Glass Microfiber |
| **FP47** | 17 inches $H_20$ | 99.98% | None | Very High, HEPA Quality | 0.017 inches | 100% Borosilicate Glass Microfiber |
| **FP5211-47** | 18 inches $H_20$ | 99.99% | Acrylic | Very High, HEPAQuality | 0.015 inches | 100% Borosilicate Glass Microfiber |
| **FPAE-47** | 26 inches $H_20$ | 99.99% | None | Very High, HEPA Quality | 0.020 inches | 100% Borosilicate Glass Microfiber |
| **FP2000-47** | 24 inches $H_20$ | 99.99% | None | Very High, HEPA Quality | 0.017 inches | 100% Borosilicate Glass Microfiber |

## Ordering Information

(Filter Paper Packaged 100 pcs./box. Teflon Gaskets, 10/Package, Glassine Envelopes 100/Box)

| Paper Type | 47 mm Diameter | 2 Inch Diameter | 4 Inch Diameter | 8" x 10" Rectangular Sheet |
|---|---|---|---|---|
| **FP2063-XX** | FP2063-47 | FP2063-20 | FP2063-102 | FP2063-810 |
| **FP2061-XX** | FP2061-47 | FP2061-20 | FP2061-102 | FP2061-810 |
| **FPXM** | FP47M | FP2.0M | FP4.0M | FP810M |
| **FPX** | FP47 | FP2.0 | FP102 | FP810 |
| **FPAE-XX** | FPAE-47 | FPAE-20 | FPAE-102 | FPAE-810 |
| **FP2000-XX** | N/A | N/A | N/A | FP2000-810 |
| **FP5211-XX** | FP5211-47 | FP5211-20 | FP5211-102 | FP5211-810 |
| **FP1441-XX** | FP1441-47 | FP1441-20 | FP1441-102 | FP1441-810 |
| **FPACI-XX** | FPACI-47 | FPACI-20 | FPACI-102 | FPACI-810 |

**Note: HI-Q stocks many other punched filter paper sizes not shown in table above (i.e.: 21mm, 37mm, 50mm, 24" x 24".....). Call for additional custom sizes.**

| Accessory Type | 47 mm Diameter | 2 Inch Diameter | 4 Inch Diameter | 8" x 10" Rectangular Sheet |
|---|---|---|---|---|
| **TEFLON-GSKT-XX** | TEFLON-GSKT-47 | TEFLON-GSKT-20 | TEFLON-GSKT-102 | N/A |
| **Glassine-Envelopes** | G-47MM | G-2-INCH | G-4-INCH | G-8X10 |

## Glass Fiber Filter Collection Media:

### FPAE-XX

***Hydrophilic, Binderless, Glass Fiber Filter Paper.***

This binderless, high efficiency (HEPA type), high purity, 100% high quality borosilicate glass micro fiber filter media is commonly used in the collection of alpha, beta, and gamma emitting particulate. Other common uses include gravimetric analysis of air pollutants and membrane prefilters. It is an excellent all around analytical grade filtration media for use in the removal of micron and submicron size particulates from both liquids and gases. Specifically designed for analytical applications. DOP Collection Efficiency 99.99%, HEPA Quality.

### FP2000-XX

***Binderless, Ultra-Pure, Glass Fiber (Whatman EPM-2000)***

The EPM-2000 grade paper was developed and produced especially for use in high volume PM-10 air sampling equipment that collects atmospheric particulates and aerosols. It is manufactured from 100% pure borosilicate glass of special purity enabling detailed chemical analysis of trace pollutants to take place with the minimum of interference or background. EPM-2000 was selected by the EPA to be the standard filter for use in the nationwide network of Hi-Vol air samplers. 8" x 10" sheets are individually numbered to facilitate identification.

### FP5211-XX

***Hydrophilic, Laminated Glass Fiber Filter Paper with acrylic resin binder.***

This hydrophilic, laminated glass fiber filter paper is a high efficiency multi-purpose filter medium with good heat resistance. It is particularly recommended for both gas and liquid filtration in medical and air monitoring applications. The base material consists of 100% high quality borosilicate glass microfibers with a 3-7% acrylic resin binder. The supporting scrim maintains the integrity of the glass fibers under flow stress compaction. The scrim can be applied to either side depending on the filter design. The scrim is bonded to the glass media using a polyester hot melt which has a melting point of 325° F. DOP Collection Efficiency 99.99%, HEPA Quality.

## Specialty Collection Media:

### FP1441-XX

***Whatman, Grade 41: 20-25µm.***

The fastest ashless filter paper, recommended for analytical procedures involving coarse particles or gelatinous precipitates (i.e., iron or aluminum-hydroxides). Also used in quantitative air pollution analysis. Cellulose paper is also commonly used for smears or swipes.

### FPACI-XX

***Carbon Impregnated Filter Media.***

Carbon impregnated cotton fiber filter media contains 50-55% Carbon by weight. Basic Weight is 130 lbs./3000 $ft^2$. The paper is available in all standard die sizes and is generally used to qualitatively determine the presence of Iodine in a sampling environment. The paper resists most dilute acids (not suitable for warm alkaline solutions).

## Accessories:

### TEFLON-GSKT-XX

***Teflon Support Gaskets.***

Teflon Support Gaskets may be placed above and below the filter paper disc creating a protective barrier between the occasional sharp edges of filter paper holder support screens and retaining rings. The inner & outer diameters of the Teflon rings are punched to a specifically tight tolerance to minimize any flow disturbance and to maximize filter collection media face exposure. Punched Teflon thickness is 0.020.



## PM10-INLET

### PM-10 Size Selective Sampling Inlet

HI-Q Environmental Products Company's High Volume PM-10 Size Selective Inlet samples suspended particulate in the air at a flow rate of 40 CFM through its omnidirectional head. The air is then accelerated through multiple internal nozzles toward a greased collection plate. Due to their larger momentum, particles greater than 10 microns cannot negotiate the air stream turn, thereby colliding and adhering to the collection plate. Due to the difference in stopping distances the thoracic particles smaller than or equal to 10 microns are carried through, where they are collected on pre-weighed filter paper. The weight increase of the filter paper is considered the mass of PM-10 collected. The mass concentration of PM-10's is determined by dividing the particulate mass by the volume of air sampled. The "PM10-INLET" is adaptable to all of HI-Q's HVP-Series cabinets.

**Ordering Information**

**PM10-INLET**
*(filter holder not included)*
Overall Head Dimensions:
19" Tall x 28" Diameter49 lbs.
Shipping Weight & Dimensions:
1 Box 32" x 32" x 25.5", 60 lbs.

***Options:***

**HIQ-PM-6003**
8"x10" filter holder w/o channels

**HIQ-PM-3000-2**
Hold down frame

**HIQ-PM-6009**
Silicone release spray for shim plates

**HIQ-PM-1854**
Release Compound (5.3 OZ Tube) for shim plates

**810-CARTRIDGE**
8" x 10" removable filter paper cartridge with snap on cover

## PM2.5 Hi-Vol Inlet & Retrofit Kits

### PM-2.5 Size Selective Sampling Inlet

The High Volume PM 2.5 ambient air sampling inlet & retrofit kits are designed to provide existing owners of HI-Q Series High Volume PM-10 sampling systems with the option of retrofitting them into High Volume PM-2.5 Samplers, instead of needing to procure a new, complete, PM-2.5 high volume air sampler. An adapter is placed into the standard PM-10 sample inlet in place of the existing PM-10 fractionator. The retrofit kit has a new plate that contains multiple impactors which collect particles larger than PM-2.5 aerosols on an oil-wetted surface. The PM-2.5 aerosol is then transmitted through the impactor and collected on a HI-Vol filter.

**Ordering Information**

**HIQ-PM-6001-2.5 (Retrofit Kit)**
Complete Kit to Retro-Fit Existing 40 CFM PM-10 Systems to PM 2.5 High Volume Air Sampling Systems

**HIQ-PM-6001-2.5-I (Complete PM-2.5 Inlet)**
Complete 40 CFM PM-2.5 micron size selective inlet only

## AKI, AK-1375F4, AK-1375TH, C-9, & SF200

### Annular Kinetic Impactor Heads, with Adjustable Stopping Distances

HI-Q Environmental Products Company's AK-Series adjustable Annular Kinetic Impactor Heads are designed for collecting alpha, beta, & gamma-emitting contaminants, plutonium fission, Radon decay products and size specific dust particles. By adjusting the stopping distance (nozzle to impactor plate distance) and varying the particle velocities an operator can collect size specific dust particles. The AKI is currently being used in the field at 30 CFM with a ¼" gap to collect particles of 2.5µm and larger on the greased impaction plate. For a particle cut size of 10µm or larger a flow rate of 5-6 CFM through either of the AK-1375 series Impactors is recommended.



**Ordering Information**

**AKI**
Annular Kinetic Impactor Head. 4" diameter paper adapter. Rear Intake.

**C-9**
2" Dia. Cupped SS Collection Planchet with 3/16" Lip & Smooth Finish. 100/Box.

**C-10**
2" Dia. Cupped SS Collection Planchet with 1/4" Lip & Smooth Finish. 100/Box.

**C-5A**
2" Dia. Cupped SS Collection Planchet with 1/8" Lip & Smooth Finish. 100/Box.

**SF200**
Collection Coating Fluid ¼ Ounce Fluid with eyedropper.

**AK-1375F4**
Annular Kinetic Impactor Head. 4" diameter paper adapter. Front Intake.

**AK-1375TH**
Annular Kinetic Impactor Head. 1½" male SPT adapter. Front Intake.

# D-AFC-Series
# The "All-In-One"
# Digital Air Flow Calibrator

- **Flow Rate - Instantaneous Display of actual & standard flow rate (ACFM, ALPM, ACMH, SCFM, SLPM, SCMH)**
- **Flow Totalizer - Instantaneous Display of total flow in actual & standard units (ACF, AL, ACM, SCF, SL, SCM, SCMH)**
- **Temperature Sensor- Measurement & display of temperature of inline air flow (degrees F & C)**
- **Barometric Pressure Sensor - Measurement & display of barometric pressure (in Hg & mm Hg)**
- **Auto Calibration of HVP-4000 Series Air Sampler**
- **Display - Illuminated graphic LCD screen**
- **Data Logger - Internal memory for data logging. Data downloadable to PC/Laptop computer.**
- **Data Output - Optional analog 4-20 mA or 0-10 VDC scaled output**
- **Printers – Optional Data / Barcode Printers**



D-AFC-XX

| *Specifications:* | | |
|---|---|---|
| Parameter | Display Range | Resolution |
| **Barometric pressure:** | 0-32 in Hg;<br>0-812 mm Hg | 0.01 in Hg<br>0.01 mm Hg |
| **Temperature:** | 30-900 deg F<br>-1-480 deg C | 0.01 deg F<br>0.1 deg C |
| **Air Flow:** | See "Calibration Range" under "Ordering Information" | |
| **Measurement Accuracy:** | Flow rate: ± 2% of full scale<br>Temperature: ± 2 deg F<br>Barometric pressure: ± 0.2 in Hg @ 25 deg C | |
| **Flow Display:** | cfm, lpm or cmh (can be programmed for any other units) | |
| **Power Requirements:** | 110 - 240 VAC | |
| **Overall Dimensions:** | 12" W X 6" D X 11" H | |
| **Weight:** | 8.5 lbs | |
| **Storage Temperature:** | -4ºF to 158ºF (-20°C to + 70°C) | |
| **Operating Temperature:** | 14ºF to 140ºF (-10°C to + 60°C) | |
| **Calibration:** | Factory calibration is recommended once per year | |


D-HFC-XX

## Ordering Information

| Select the desired flow range: | Calibration Range | | | Meter |
|---|---|---|---|---|
| Model Number | CFM | LPM | CMM | Connection |
| **D-AFC-01** | 0.1 to 1 | 3 to 30 | 0.003 to 0.030 | 3/8" Male QD |
| **D-AFC-02** | 0.2 to 2 | 6 to 56 | 0.006 to 0.056 | 3/8" Male QD |
| **D-AFC-03** | 0.3 to 3 | 9 to 85 | 0.009 to 0.085 | 3/8" Male QD |
| **D-AFC-04** | 0.4 to 4 | 11 to 113 | 0.011 to 0.113 | 3/8" Male QD |
| **D-AFC-05** | 0.5 to 5 | 14 to 142 | 0.014 to 0.142 | 3/8" Male QD |
| **D-AFC-10** | 1 to 10 | 28 to 280 | 0.028 to 0.280 | 3/8" Male QD |
| **D-HFC-10** | 1 to 10 | 28 to 280 | 0.028 to 0.280 | 1½" MSPT |
| **D-HFC-15** | 2 to 15 | 56 to 425 | 0.056 to 0.425 | 1½" MSTP |
| **D-HFC-30** | 5 to 30 | 140 to 850 | 0.140 to 0.850 | 1½" MSTP |
| **D-HFC-40** | 5 to 40 | 140 to 1130 | 0.140 to 1.130 | 1½" MSTP |
| **D-HFC-50** | 5 to 50 | 140 to 1400 | 0.140 to 1.400 | 1½" MSTP |
| **D-HFC-70** | 10 to 70 | 280 to 1980 | 0.280 to 1.980 | 1½" MSTP |
| **D-AFC-XX or D-HFC-XX** *Replace "-XX" with uppermost flow rate.* | Dependent upon flow range | Dependent upon flow range | Dependent upon flow range | Dependent upon flow range |

Through the implementation of a barometric pressure sensor, thermocouple, precision machined venturi tube and differential pressure sensor, HI-Q's D-AFC- Series microprocessor based air flow calibrators are used to measure, record, & display insta ntaneous flow rate (i.e.: CFM, LPM, or CMH), temperature (degrees C or F), and barometric pressure ("Hg or mm Hg). Through onboard calculations the user may also select to display the flow rate or total volume in "Standard Units" (ie: SCFM, SLPM, SCMH or SCF, SL, SCM). The total volume of air sampled is displayed (resettable) in standard and actual units. The processor also has an internal memory that can be programmed for logging and time stamping the instantaneous flow rate, barometric pressure, and temperature. The data can be downloaded to an excel spreadsheet using a PC or a laptop computer. Networking and communications options include two (selectable) RS-232/RS-485 ports, a 4-20 mA and/or 0-10 VDC analog output (proportional to flow rate), the ability to send & receive SMS messages to/from any CDMA/GSM cellular phone (for possibly alerting/reporting any predefined event via text message), remote or local data acquisition and the ability to print in textual and bar code format.

# Analog & Digital AFC-XX

## Low & Medium Volume Air Flow Calibrators, Analog & Digital Displays



- **CUSTOMIZABLE- Simply Replace "-XX" with the Flow Range & Units of Your Choice.**
- **DEPENDABLE- Direct, Reliable Readings Certified & Traceable to NIST.**
- **QUICK- Standard Quick Disconnect Fitting for Airtight Setups & Immediate Flow Readings.**
- **DURABLE-Rugged Construction Built for Heavy-Duty Use in All Environments.**

## Air Flow Measurement Devices

HI-Q Environmental Products Company's steel constructed, two-component polyurethane painted Air Flow Calibrator (AFC) housings incorporate a precision machined venturi tube to create a pressure differential across a fixed orifice. By varying the air flow velocities, the pressure differentials are measured & recorded against a laminar flow element whose calibration is certified and traceable to the **National Institute of Standards and Technology (N.I.S.T.)**. The AFC's overall internal simplicity of operation reduces the frequency of re-calibration to once or twice per year depending on (individual) regulatory protocol. AFC-XX series air flow calibrators are intended to be used open to air.

## AFC-Series Flow Ranges

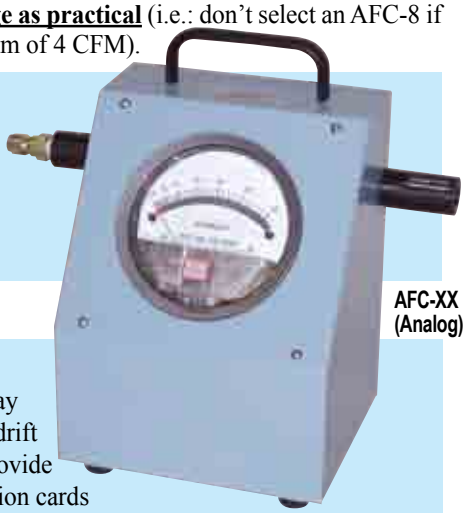
By varying the orifice size and the chosen Magnehelic® (Standard AFC) or differential pressure sensor/transmitter (AFC-DIGITAL), HI-Q can fabricate calibrators in almost any desired flow range. Unlike other manufacturers, HI-Q does not use pre-silk screened dial faces in their analog AFC units. HI-Q individually hand marks each AFC dial face.

## Choosing an AFC-Series Flow Range

Flow vs. Pressure Differential produces a logarithmic (non-linear) reading. On a Magnehelic® gage the spacing between the numbers on the lower end of the scale will be close together and further apart on the upper end of the scale. For the greatest visual accuracy, HI-Q suggests, **ordering a unit with the lowest upper range as practical** (i.e.: don't select an AFC-8 if your pump only draws a maximum of 4 CFM).

## Analog style AFC

Analog style AFC units house a Magnehelic® differential pressure gage, whose relative volumetric flow rate units are transferred onto a direct reading scale. A reflective tape on the scale, behind the analog needle, reduces parallax error. Overall accuracy on analog AFC units is better than +/- 5%.



AFC-XX (Analog)



AFC-DIGITAL-XX

## Digital style AFC

Digital style AFC units house an LED display which employs advanced technology for stable, drift free, readout while incorporating features that provide flexibility now and in the future with Plug-in option cards available for alarm contacts, analog output, and serial communication. The AFC-DIGITAL's Rate/Total display indicates air flow rate in Actual Cubic Feet per Minute (ACFM) and displays total volume sampled in Actual Cubic Feet (ACF). Metric calibration is also available. Accuracy: +/- 1% full scale at calibration points. (15 points per standard calibration). *Contact HI-Q for Analog to Digital Conversion kits.*

## Ordering Information

Replace "**XX**" with the uppermost desired flow rate. See paragraph on Choosing AFC-Series Flow Ranges. If a dual scale reading is required (both CFM & LPM displayed on one scale) replace "**AFC**" with "**DSC**" (i.e. order: DSC-3 for 0-3 CFM & 0-85 lpm marked scale).

**Low Flow, Single Range Air Flow Calibrators, ranges between 0-7 CFM (0-200 LPM)**

| Model | Calibration Range | Meter Connection |
|---|---|---|
| **AFC-XX** | 0.0-XX SCFM @ STP | 3/8" Male QD |
| **AFC-XXL** | 0.0-XX SLPM @ STP | 3/8" Male QD |
| **AFC-DIGITAL-XX** | 0.0-XX SCFM @ STP | 3/8" Male QD |
| **AFC-DIGITAL-XXL** | 0.0-XX SLPM @ STP | 3/8" Male QD |

**Medium Flow, Single Range Air Flow Calibrators, ranges between 3-15 CFM (85-425 LPM)**

| Model | Calibration Range | Meter Connection |
|---|---|---|
| **AFC-XX** | 3.0-XX SCFM @ STP | 3/8" Male QD |
| **AFC-XXL** | 85-XX SLPM @ STP | 3/8" Male QD |
| **AFC-DIGITAL-XX** | 3.0-XX SCFM @ STP | 3/8" Male QD |
| **AFC-DIGITAL-XXL** | 85-XX SLPM @ STP | 3/8" Male QD |

# AFC-Dual-XX

## Dual Range Air Flow Calibrators

### Dual Range Air Flow Calibrators

If you require visual accuracy over a large flow range, or wish to calibrate a number of air flow units consisting of more than one flow range, select HI-Q's Dual Range AFC. The Dual Range unit consists of two pressure differential gauges installed in a single cabinet, that precisely measures both the low and high rate of air through a single venturi.



AFC-XXD
(Dual Range, Analog)

**Ordering Information**
**Dual Range Air Flow Calibrators,**
**split ranges between 0-15 CFM (0-425 LPM)**

| Model | Low Range 0- up to 7 CFM | High Range 3- up to 15 CFM | Meter Connection |
|---|---|---|---|
| **AFC-XXD** | 0-XX SCFM @ STP | 3.0-XX SCFM @ STP | 3/8" Male QD |
| **AFC-XXDL** | 0-XX SLPM @ STP | 85-XX SLPM @ STP | 3/8" Male QD |
| **AFC-DIGITAL-XXD** | 0-XX SCFM @ STP | 3.0-XX SCFM @ STP | 3/8" Male QD |
| **AFC-DIGITAL-XXDL** | 0-XX SLPM @ STP | 85-XX SLPM @ STP | 3/8" Male QD |

# HFC-XX & HFC-SIDE-XX

## HI-Volume Air Flow Calibrator, HFC-Series

The HFC-Series, HI-Volume Air Flow Calibrators, have eliminated the need for cumbersome orifice plates and water manometers. The HFC-XXC series units utilize a precision machined Venturi tube coupled with a pressure differential gauge giving a direct reading in the volumetric units of your choice (i.e. SCFM @ stp) . The unit is calibrated against an in-line N.I.S.T. traceable laminar flow element. The primary calibrator meets the requirements of MIL Std. 45662A. HFC-XX series units are intended to be used open to air.

The direct meter read-out will indicate the flow in standard CFM, LPM, or CMM at standard conditions (29.92" of Hg and 70º F). Given actual sampling temperature & barometric pressure during calibration, a technician can convert actual flow readings (i.e. ACFM) to standard units (i.e. SCFM) by making a simple calculation using look-up correction factors from tables given in the operating manual.

Depending on orientation at calibration (vertical vs. horizontal), HI-Q offers two HFC models: The HFC-XX is intended for high flow calibrations in the vertical plane, such as seen with the "HVP" style high volume air samplers. Whereas HI-Q's HFC-SIDE-XX is intended for the calibration of low to high flow rates in the horizontal plane, such as seen with HI-Q's line of portable continuous duty and grab air samplers.

The HFC-XX series units have a standard 1½" male straight pipe thread (MSPT) which can be screw into most low to medium volume air sampling pumps (ie: HI-Q's, CF-1001 or CF-901 ). On higher volumetric flow samplers, a user must incorporate an adapter plate. With the use of HI-Q's **FHA-4CF** 4" diameter adapter disc, an operator is able to calibrate a unit with a 4" diameter filter holder assembly. The **FHA-810CF** adapter plate is used to calibrate units with an 8" x 10" paper holder.

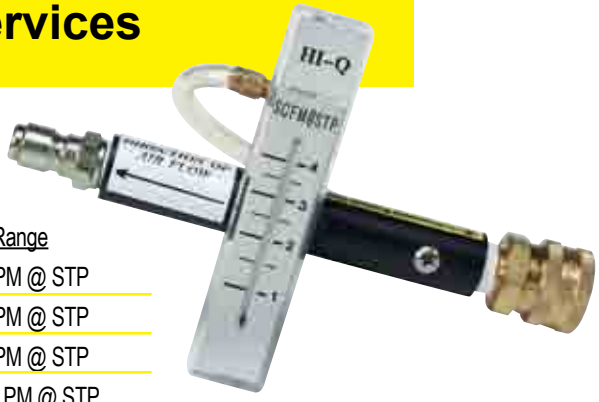



**Ordering Information**

| Model | Calibration Range | Orientation | Fitting |
|---|---|---|---|
| **HFC-XXC** | 10-XX SCFM @ STP | Vertical | 1-½" MSPT |
| **HFC-XXL** | 80-XX SLPM @ STP | Vertical | 1-½" MSPT |
| **HFC-SIDE-XXC** | 10-XX SCFM @ STP | Horizontal | 1-½" MSPT |
| **HFC-SIDE-XXL** | 280-XX SLPM @ STP | Horizontal | 1-½" MSPT |
| **HFC-DIGITAL-XX** | 10-XX SCFM @ STP | Any | 1-½" MSPT |
| **HFC-DIGITAL-XXL** | 280-XX SLPM @ STP | Any | 1-½" MSPT |

Replace "**XX**" with the uppermost desired flow rate. If a dual scale reading is required (i.e. both CFM & LPM displayed on one scale) replace "**C**" with "**DSC**" (e.g. order: HFC-50DSC for 10-50 CFM & 280-1500 LPM marked scale). High Volume, Single Range Air Flow Calibrators ranges between 10-50 CFM (280-1500 LPM).

# Air Flow Calibrators, Adapters, & Calibration Services




## V-FLO-XX
### Air Flow Measuring Unit

The V-FLO-XX series units incorporate a flowmeter and a precision-machined venturi tube to create a pressure differential across a fixed orifice which floats the indicating ball in the flowmeter. By varying the flow velocities, the pressure differentials are measured & recorded against a laminar flow element whose calibration is certified and traceable to the **National Institute of Standards and Technology (N.I.S.T.)**. The recorded volumetric flow units are then marked directly on the attached flowmeter scale. HI-Q's V-FLO models are accurate within ±5% of full scale reading. The standard V-FLO-XX body is six inches long and threaded on both ends with 3/8" female NPT. The complete unit includes one male (outlet) & one female (inlet) 3/8" quick disconnect fitting. The V-FLO-XX, venturi flow meters are intended for in-line use.

**Ordering Information for Venturi Flow meters:** On custom units replace "**XX**" with the uppermost desired flow rate. If a dual scale reading is required (i.e. both CFM & LPM displayed on one scale) add the letters "**DSC**" to the end of the model number (e.g. order: V-FLO-5-DSC for 1-5 CFM & 28-140 LPM marked scale).

**Note: Larger Flow meters with expanded scales are available.**

### Ordering Information

| Order LPM | Calibration Range |
|---|---|
| **V-FLO-30L** | 2 TO 30 SLPM @ STP |
| **V-FL0-50L** | 2 TO 50 SLPM @ STP |
| **V-FLO-70L** | 5 TO 70 SLPM @ STP |
| **V-FLO-90L** | 10 TO 90 SLPM @ STP |
| **V-FLO-115L** | 15 TO 115 SLPM @ STP |
| **V-FLO-XXL** | SPECIFY LPM RANGE |

| Order CFM | Calibration Range |
|---|---|
| **V-FLO-2** | 0.0 TO 2.0 SCFM @ STP |
| **V-FLO-4** | 0.5 TO 4.0 SCFM @ STP |
| **V-FLO-6** | 1.0 TO 6.0 SCFM @ STP |
| **V-FLO-8** | 2.0 TO 8.0 SCFM @ STP |
| **V-FLO-10** | 2.0 TO 10 SCFM @ STP |
| **V-FLO-XX** | SPECIFY CFM RANGE |

# Calibration, Re-Calibration, Certification, & Re-Certification Services for Air Sampling Equipment, Systems, & Accessories

- **All HI-Q Calibrations Performed Per ANSI/NCSL Z540-1-1994**

HI-Q Environmental Products Company offers a calibration and re-certification service for air flow calibrators and air sampling instrumentation.

Standard protocol requires recalibrating air flow measurement devices once or twice per year depending on use and sampling environment. HI-Q calibrates and certifies units against a **N.I.S.T.** traceable laminar flow element and furnishes a certification of accuracy with each unit.

Re-Calibration service charges vary depending upon the complexity of the service. The table to the right describes the recertification service ordering information for functioning air flow measurement units. Repair services are also available.



### Ordering Information

| Style | Flow Range and Scale Description | Cost Code |
|---|---|---|
| **Single Range (either SCFM or SLPM)** | | |
| V-FLO-Series | Low Flow, Single Range SCFM or SLPM Flowmeter/Rotameter | A |
| AFC-Series | Low Flow, Single Range SCFM or SLPM Magnehelic® | B |
| HFC-Series | High Flow, Single Range SCFM or SLPM Magnehelic® | C |
| **Dual Scale, Single Range (both SCFM & SLPM)** | | |
| V-FLO-Dual | Low Flow, Dual Scale SCFM and SLPM Flowmeter | B |
| DSC-Series | Low Flow, Dual Scale SCFM and SLPM Magnehelic® | C |
| HFC-Dual | High Flow, Dual Scale SCFM and SLPM Magnehelic® | D |
| **Dual Range, Single Scale (Low & High Flow, 2 Separate Gauges)** | | |
| AFC-15D | Specify Separate Flow Ranges (i.e...:0-3, 3-15) | D |
| **Dual Range, Dual Scale (Low & High Flow, 2 Separate Gauges)** | | |
| AFC-15D/425D | Specify Separate Flow Ranges (i.e...:0-3, 3-15) | E |
| **Electronic Programming Re-Calibration & Certification** | | |
| ELECTRONIC | Electronic Calibration & Certification (i.e.: Flow & Totalizer Calibration) | E |
| **Dry Gas Totaling Meters** | | |
| DRY GAS METERS | 5 Point Certification | F |

## Calibrator Adapter Fittings

Air Flow Calibrators are generally used to verify the displayed sample flow rate accuracy of complete air sampling systems. Along with the flow measuring device to be calibrated, it is recommended that a "Complete" system for calibration should also include the actual filter holder and filter media in order to duplicate realistic pressure drops experienced in a true sampling environment. The following adapters allow a technician to connect an Air Flow Calibrator at the end of (open to air) an "In-Line" High, Medium or Low Volume Air Sampling calibration set up.

Standard Calibration set-up, from right to left, (as shown in picture) is as follows: 1.) Open to Air, 2.) Air Flow Calibrator, 3.) Calibrator Adapter Fitting, 4.) Filter Holder & Media, 5.) Flow meter to be Calibrated, 6.) Flow Control Valve, and finally 7.) Vacuum Pump.



### Ordering Information

Choose In-Line Calibration Adapter Cone with reference to your filter media holder and male fitting included with your air flow calibrator.

**P/N: FHA-AKI-4CF**

This In-Line Filter Holder Adapter is used to encapsulate an "AKI" during calibration. Leaving the AKI in place during the calibration procedure ensures a representative pressure drop under normal operating conditions. Fittings: 4" Diameter Female Thread Downstream X 1.5" Diameter Female Straight Pipe Thread Inlet.

**Combination Filter & Paper Holder In-Line Adapter Cones**

| Model | Connects to Holder Type | Quick Disconnect |
|---|---|---|
| **RVA-10-CA** | Combination, 2" Paper | 3/8" Female QD |
| **RVA-15-CA** | Combination, 47mm Paper | 3/8" Female QD |
| **RVA-2-CA** | Combination, 2" Paper | 1/2" Female QD |
| **RVA-5-CA** | Combination, 47mm Paper | 1/2" Female QD |
| **CFA-20-CA** | Combination, 2" Paper | 1 1/2" FSPT |
| **CFA-25-CA** | Combination, 47mm Paper | 1 1/2" FSPT |

**Paper Only Filter Holder In-Line Adapter Cones**

| Model | Connects to Holder Type | Quick Disconnect |
|---|---|---|
| **RVPA-10-CA** | Paper Only, 2" Paper | 3/8" Female QD |
| **RVPA-15-CA** | Paper Only, 47mm Paper | 3/8" Female QD |
| **RVPA-2-CA** | Paper Only, 2" Paper | 1/2" Female QD |
| **RVPA-5-CA** | Paper Only, 47 mm paper | 1/2" Female QD |
| **CFPA-30-CA** | Paper Only, 2" Paper | 1 1/2" FSPT |
| **CFPA-35-CA** | Paper Only, 47mm Paper | 1 1/2" FSPT |

Note: FSPT = Female Straight Pipe Thread (CF-Series Holders & Adapters)

## Calibration Adapter Plates (High Flow)



HI-Q Environmental Products Company's "FHA-Series" adapters are designed to reduce overall pressure drop found during the calibration of standard 4" diameter and 8" x 10" filter paper sampling applications. The FHA's unique design reduces the overall paper to adapter fitting contact, thereby allowing the maximum obtainable free cross-sectional surface area through which unrestricted air can pass. This is done to duplicate the conditions of ambient air, open face, sampling procedure's and to reduce the overall error in calibration.

### Ordering Information

**FHA-4CF**

4" Dia. Disc x 1½" Female Straight Pipe Thread.

**FHA-810CF**

8" x 10" Plate x 1½" Female Straight Pipe Thread.

**FHA-810X810**

In-line 8" x 10" filter holder adapter with minimal flow disturbance. Assembly includes one inverted standard 8" x 10" holder complete with two mounting rails and a foam gasket. Filter holder inlet: 1½" female straight pipe thread.



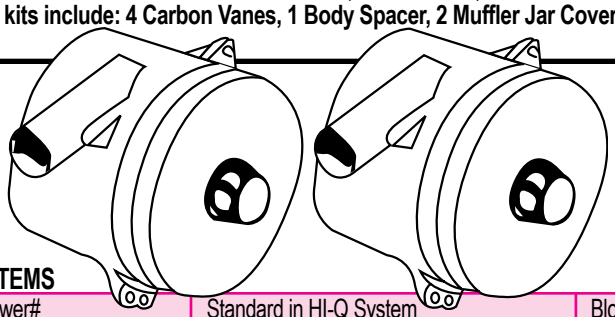
## Replacement Rotary Vane Vacuum Pumps, Parts & Service Kits
## RV11-0211, RV23-0523, & RV23-1023

The Oilless Rotary Vane, Air Sampling Pumps incorporated in HI-Q's continuous duty air sampling systems have "Lubricated-for-Life" ball bearings which leaves the internal workings virtually maintenance free. The only servicing needed is the occasional replacement of vanes, "O" Rings, filters, and gaskets when they become worn. Many variables determine the life expectancy of a pump, such as ambient temperature, operating cycle/speed, duty level, condition of air handled and unit maintenance. HI-Q recommends inspecting the pump system every 2,000 hours. Inspection is done within a few minutes by removing a few bolts and the pump end casting which exposes the rotor and vanes.

### Ordering Information

| System Model Number: | XXX-0211CRNV | XXX-0523CV | XXX-1023CV |
|---|---|---|---|
| Replacement Motor/Pump: | **RV11-0211** | **RV23-0523** | **RV23-1023** |
| Service Kits (Includes 4 Vanes) | **K218** | **K478** | **K479** |
| Single Replacement Vanes (4 Required) | **AA348A** | **AH850A** | **AK513** |
| Filter/Muffler End Cap Assembly | **AA617G** | **AK526** | **AK526** |
| 8 Foot 14/3 Grounded Power Cord | **AA816** | **AA816** | **AA816** |

- **0523 & 1023 Service kits include: 4 Carbon Vanes, 2 Felt Filters, 1 Motor Gasket and 2 Felt Filter End Cap Assembly "O"-Rings.**
- **0211 Service kits include: 4 Carbon Vanes, 1 Body Spacer, 2 Muffler Jar Cover Gaskets, & 4 Felt Filters.**



## Replacement Brushless & Brushed Vacuum Motor/Blowers

### Ordering Information

**115 VOLT SYSTEMS**

| Replacement Blower# | Standard in HI-Q System | Blower Description |
|---|---|---|
| **HVP53-001 or HVP43-001** | HVP-5300AFC or HVP-4300AFC | 120 VAC, 800 WATT, 3-STAGE BRUSHLESS, ELECTRONIC CONTROL. |
| **HVP52-001 or HVP42-001** | HVP-5200AFC or HVP-4200AFC | 120 VAC, 250 WATT, 2-STAGE BRUSHLESS, ELECTRONIC CONTROL. |
| **HVP33-001** | HVP-3300BRL | 120 VAC, 800 WATT, 3-STAGE BRUSHLESS, ELECTRONIC CONTROL. |
| **HVP33-040** | HVP-3300BRL | MOTOR SPEED CONTROL POT. |
| **HVP30-001 & CF10-001** | HVP-3000BRL & CF-1000BRL | 120 VAC, 250 WATT, 2-STAGE BRUSHLESS, ELECTRONIC CONTROL. |
| **HVP30-042 & CF10-028** | HVP-3000BRL & CF-1000BRL | MOTOR SPEED CONTROL POT. |
| **HVP20-001** | HVP-2000 | 120 VAC, 2-STAGE BRUSHED BLOWER, MECHANICAL CONTROL. |
| **CF900-001** | CF-900 | 120 VAC, 2-STAGE BRUSHED BLOWER, MECHANICAL CONTROL. |

**230 VOLT SYSTEMS**

| Replacement Blower# | Standard in HI-Q System | Blower Description |
|---|---|---|
| **HVP53-002 or HVP43-002** | HVP-5300AFC/230 or HVP-4300AFC/230 | 240 VAC, 1200 WATT, 3-STAGE BRUSHLESS, ELECTRONIC CONTROL. |
| **HVP52-002 or HVP42-002** | HVP-5200AFC/230 or HVP-4200AFC/230 | 240 VAC, 400 WATT, 2-STAGE BRUSHLESS, ELECTRONIC CONTROL. |
| **HVP33-002** | HVP-3300BRL/230 | 240 VAC, 1200 WATT, 3-STAGE BRUSHLESS, ELECTRONIC CONTROL. |
| **HVP33-041** | HVP-3300BRL/230 | MOTOR SPEED CONTROL POT. |
| **HVP30-002 & CF10-002** | HVP-3000BRL/230 & CF-1000BRL/230 | 240 VAC, 400 WATT, 2-STAGE BRUSHLESS, ELECTRONIC CONTROL. |
| **HVP30-043 & CF10-030** | HVP-3000BRL/230 & CF-1000BRL/230 | MOTOR SPEED CONTROL POT. |
| **HVP20-025** | HVP-2000/230 | 240 VAC, 2-STAGE, BRUSHED BLOWER, MECHANICAL CONTROL. |
| **CF900-002** | CF-900/230 | 240 VAC, 2-STAGE BRUSHED BLOWER, MECHANICAL CONTROL. |

**12/24 DC OPERATED SYSTEMS**

| Replacement Blower# | Standard in HI-Q System | Blower Description |
|---|---|---|
| **CF-993-001** | CF-995B, CF-993B & CF-24B | 24 VDC, 14.4 AMP, 2-STAGE BRUSHED BLOWER. |
| **CF1524-001** | CF-1524-VBRL | 24 VDC, 6AMP, BRUSHLESS BLOWER. ELECTRONIC CONTROL. |

**Note: 3-Stage Brushless Blowers can replace older 2-stage Blowers. Consult HI-Q Engineering for wiring and Fuse Specifications.**

# 12/24 VDC Battery Pack PORTABLE POWER SOURCE

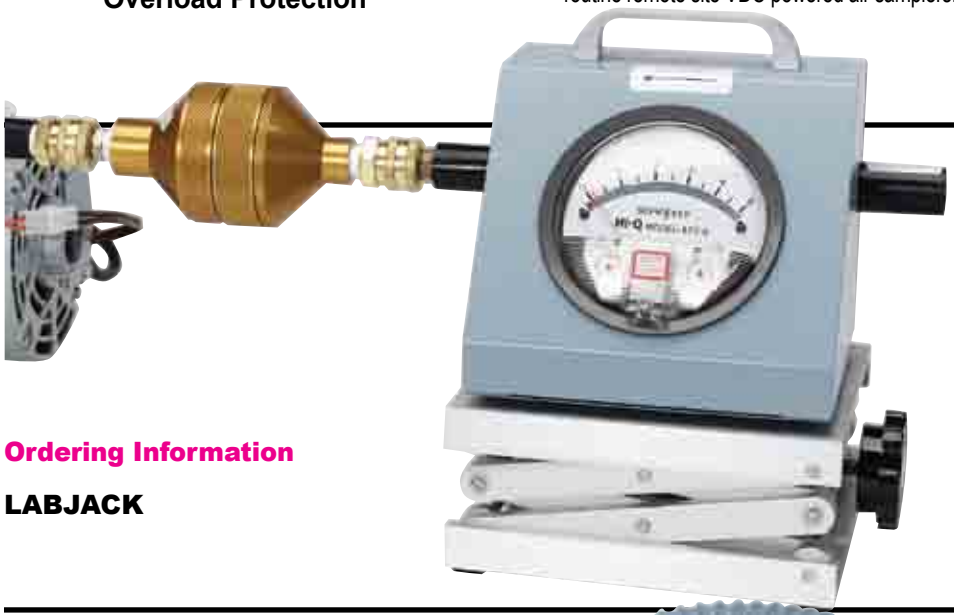
- Power to run battery operated air samplers
- Mobile Power Source for 12/24 VDC Accessories
- Rechargeable, Cordless, and Easy to use
- Side Compartments Protect Cables
- 2000 Peak Amps
- Heavy Duty Insulated Clamps
- Sealed Battery won't leak, All Position Use
- Recharges from any 110V or 12 VDC Outlet
- Charge Level Indicator Lights
- 12V DC Power Outlet with Overload Protection

| *Power Draw* | *Usage Time* |
|---|---|
| **24 Watts** | 6.5 Hours |
| **40 Watts** | 3.5 Hours |
| **80 Watts** | 1.5 Hours |



## Ordering Information

**PPS-12/24-VDC**
This selectable 12/24 Volt DC Portable Power Source is an excellent source of power for emergency response or routine remote site VDC powered air samplers.



# LABJACK

## Equipment Lab Jack

HI-Q Environmental Products Company's adjustable height lab jack can be used in supporting & elevating air sampling equipment and calibration devices with an extension range between 3½" to 14". The LABJACK's sturdy frame can support equipment weighing up to 45 lbs. on its 6¼" x 7½" platform.

## Ordering Information

**LABJACK**

# RVSMPLN-XX & CFSMPLN-XX

## Air Sampling & Return Exhaust Sample Lines



## Ordering Information

**RVSMPLN-XX**
3/8" Diameter, Rotary Vane Style Vacuum Pump Air Sampling Line. The braid reinforced polyurethane sample line includes one 3/8" male & female quick disconnect on opposing ends of the sample line. "XX" represents the number of linear feet needed.

**3/8 POLY-TUBE**
3/8" Diameter, Rotary Vane Style Vacuum Pump Air Sampling Line without end fittings. Order by the foot.

**CFSMPLN-XX**
1½" Diameter, Centrifugal Fan Type Vacuum Pump Air Sampling Line. Sample hose includes one 1½" male & female threaded PVC style fitting on opposing ends. "XX" represents the number of linear feet needed.

**1.5 WIRE-TUBE**
1½" Diameter, Centrifugal Fan Type Vacuum Pump Air Sampling Line without end fittings. Order by the foot.

**CFSMPLN-ENDS**
End Fitting Set of 1 male & 1 female coupler: Includes 1.5" FSPT x 1.5" Female Hose and 1.5" MSPT x 1.5" Female Hose.

Many air sampling procedures call for remote site sampling where the vacuum source (air sampling pump) cannot be conveniently located in the same area where sampling is required. This may be due to a variety of reasons including explosive sampling environments, inaccessibility, and noise level restrictions. For this reason, HI-Q has developed two types of sample retrieval and exhaust lines.

# Air Sampling Accessories

HI-Q

## TR-1, TR-1000B & TR-2000A

### Air Sampling & Equipment Tripods

HI-Q's TR-1, TR-1000B, & TR-2000A are Light, Medium, & Heavy Duty Air Sampling & Equipment Tripods capable of extended sampling heights over 58 inches. For lightweight instrumentation, 12 pounds or less, HI-Q recommends the TR-1. For tripod applications which must be capable of supporting up to a 15 pound workload capacity, HI-Q offers the TR-1000B. For Heavy Duty applications were the sample workload capacity may reach up to 50 pounds, HI-Q recommends the TR-2000A. All three of HI-Q's TR-Series tripods include a 9" x 10¼" x ¼" black anodized aluminum instrument mounting plate. The mounting plate comes with a series of pre-punched hole configurations to fit a variety of commercially available air samplers.







### Ordering Information

| Model Number: | TR-1 (Light Duty) | TR-1000B (Medium Duty) | TR-2000A (Heavy Duty) |
|---|---|---|---|
| Maximum Capacity: | 12 lbs. | 15 lbs. | 50lbs. |
| Maximum extended height: | 64.3" | 62.0" | 70.5" |
| Folded length: | 22" | 35" | 44" |
| Center column extension: | 13.5 | N/A | N/A |
| Net weight: | 4.5 lbs. | 8.5 lbs. | 16.5 lbs. |
| Equipment Mounting Plate: | 9" x 10¼" x ¼" Aluminum | 9" x 10¼" x ¼" Aluminum | 9" x 10¼" x ¼" Aluminum |
| Leg material: | Aluminum | Pultruded Fiberglass | Pultruded Fiberglass |

## MSC-PLASTIC, CUSTOM CARRYING CASES & MRV0523CV-ALPHA-L

### Mobile Air Sampling & Equipment Carts

- **Heavy Duty (Alpha) CAM Carts**
- **Universal, Multi-Purpose Sampling Carts**

HI-Q Environmental Products Company's Custom Mobile Air Sampling & Equipment Carts have proven to be industry leaders. From the heavy-duty design of the MRV0523CV-ALPHA used primarily to support ALPHA CAM's, to the telescoping equipment platform of the MSC-PLSTC used primarily for the transport of complete battery operated air sampling systems.

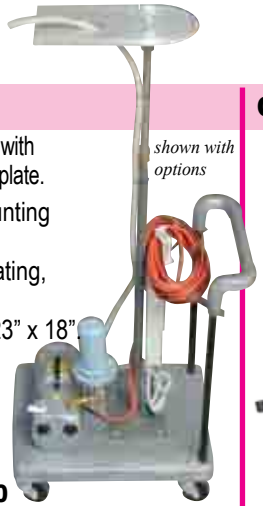
### Ordering Information

#### MRV0523CV-ALPHA-L



- ¼ Hp Oilless Rotary Vane Vacuum Pump.
- Mechanical, Heavy Duty, Adjustable Constant Duty Control Valve
- 16" X 13" Mounting Plate Mounted 28" Above The Floor On Handle Bar
- Plate includes slots for dual Criss-Cross Mounting Straps.
- 6 feet of 3/8" ID braid reinforced polyurethane vacuum sample line.
- 15" rear stabilizing axel.
- 50' power cord with Hanging Rack
- 12" x 14" shelf mounted above handlebar to hold electronic controller.

#### MSC-PLSTC



*shown with options*

Mobile Sampling Cart with telescoping mounting plate.

- Telescoping mounting plate: 54" to 72"
- Wheels: free rotating, lockable casters.
- Cart footprint: 23" x 18"

***Options***

**PO-5**
Optional hard mounted power bar.

**POWER CORD-50**
Optional 50 foot power cord, 14/3.

**POWER CORD-25**
Optional 25 foot power cord, 14/3.

**CUSTOM FEATURES**
Name your custom feature: (i.e.: custom tray sizes, cord hanging rack, shock mounted pumps…)

**HANGING-RACK**
Power cord winding hooks.

#### CUSTOM TRAVEL CASES

**Custom Cases for:**

- Air Sampler
- Air Flow Calibrators
- Emergency Response Kits



Call for available carrying case sizes. Pick & Pluck foam allows for custom interior configuration.

## MCV-260

### Mechanical, Heavy Duty, Automatic Flow Control Valve

This valve will control the air flow rate to ±5% of the set flow rate over a wide pressure differential. It is the best commercially available mechanical vacuum flow controller. The unit operates by use of two diametrically opposed springs and a diaphragm that controls the valve opening. Depending upon pump capacity, flows between 0.5 to 10 CFM can be controlled by increasing or decreasing the spring tension with a wing nut found under the protective spring cover housing. Once set, the control valve will maintain a constant flow, ±5%, up to the capacity of the pump. This valve is a full Flow Controller not a "Flow Regulator" or adjustable orifice commonly found in the industry. Because the MCV-260 uses no make up air, nor "bleed-in" air to control the flow rate, the total volume of air sampled equals the total volume of air exhausted. This is ideal for applications requiring a Gas Meter to be hooked up to the exhaust (pressure application) of the sampler for totalizing the volume of air sampled.

***FOR POSITIVE DISPLACEMENT PUMPS ONLY***



### Ordering Information

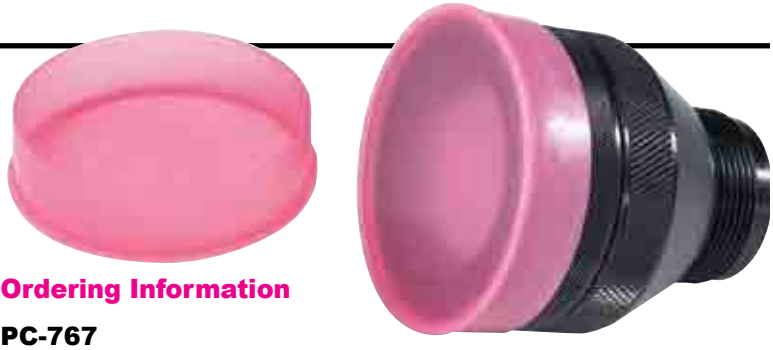
**MCV-260**
Mechanical Heavy Duty Automatic Flow Control Valve (3/8" Female NPT Inlet/Outlet).

**MCV-RK**
Rebuild Kit: Replacement Buna "N" diaphragm and "O" Ring.

## PC-767

### Sample Saver Covers
### Open Face Filter Covers

Anti-Static plastic cover for HI-Q combination cartridge & filter paper holders. Ideal for transporting filter holders to and from the field & laboratory without cross-contamination or particle loss. Fits all HI-Q open faced, combination type, filter holders.



### Ordering Information

**PC-767**
Anti-Static Filter Covers in packages of 10 each.
Fits HI-Q Combination Type, open face filter holder.

## Quick Disconnect Fittings & Hose Barbs

The following Quick Disconnect Couplings and Hose Barbs are for "RV" Series Holders and Sampling Systems. HI-Q stocks male & female Stainless Steel and Brass Quick Disconnect fittings for all 3/8" fitting combinations.

*FQD= Female Quick Disconnect*
*MQD= Male Quick Disconnect*
*MNPT= Male National Pipe Thread*
*FNPT= Female National Pipe Thread*





### Ordering Information

**Hose Barbs**

| Model | Fittings | Mtrl. |
|---|---|---|
| **375MXBARB** | 3/8" MNPT X 3/8" HOSE BARB | Brass |
| **375FXBARB** | 3/8" FNPT X 3/8" HOSE BARB | Brass |
| **375MX25BARB** | 3/8" MNPT X 1/4" HOSE BARB | Brass |
| **375FX25BARB** | 3/8" FNPT X 1/4" HOSE BARB | Brass |
| **375MX500BARB** | 3/8" MNPT X 1/2" HOSE BARB | Brass |
| **375FX500BARB** | 3/8" FNPT X 1/2" HOSE BARB | Brass |

**Disconnect Fittings**

| Model | Fittings (3/8") | Mtrl. |
|---|---|---|
| **BST-3M** | FQD-MPT | Brass |
| **BST-3** | FQD-FPT | Brass |
| **ST-N3M** | MQD-MPT | Steel |
| **SST-3M** | FQD-MPT | Stainless Steel |
| **SST-3** | FQD-FNPT | Stainless Steel |
| **SST-N3M** | MQD-MPT | Stainless Steel |

**Note: Don't see what you need? HI-Q stocks a variety of Stainless Steel & Brass quick disconnects, couplers, reducers, nipples, tees, elbows, and hose barb fittings. Give us a call.**




# S-275, R-275, #415, MR-5, MR-8, MR-12, & SK25

## Gas Totaling Meters

HI-Q offers a wide range of dry gas totaling meters which, when incorporated in an air sampling system, are an excellent source for recording the ***total volume*** of air sampled. The gas-totaling meter may either be connected to have gas supplied through the inlet (connected to the exhaust of a positive displacement pump) or drawn through the outlet (connected on the vacuum side of an air sampling system). The direction of the flow must simply be maintained per the flow arrow indicator on the cover, i.e. inlet to outlet.

### Ordering Information

| Cubic Feet P/N | Cubic Meter P/N | Capacity @ ½" Diff. CFM | Capacity @ ½" Diff. LPM | Max W.P. psi | Fitting NPT | Direct Reading Meter Index (Odometer Type) — Cubic Feet (Total = 9999XX) 1st Reading | 1st Proving Hand | 2nd Proving Hand | Cubic Metes (Total = 99999.9) 1st Reading | Proving Hand |
|---|---|---|---|---|---|---|---|---|---|---|
| **S-275** | **MR-5** | 4.2 | 118 | 5 | 3/4" F | 100 | ½'/rev | 2'/rev | 0.1 | 0.05/rev |
| **R-275** | **MR-8** | 4.7 | 133 | 5 | 3/4" M | 100 | ½'/rev | 2'/rev | 0.1 | 0.05/rev |
| **#415** | **MR-12** | 7.1 | 200 | 10 | 1¼" M | 100 | ½'/rev | 2'/rev | 0.1 | 0.05/rev |
| - | **HIQ-SK-25EX** | - | 42 | 1.45 | 3/8" F | - | - | - | 0.001 | 0.2L/rev |

*all meters rated for approximate temperature ranges of -30ºF to +150ºF.

** HIQ-SK-25EX has an accuracy of +/- 1.5% at 42 LPM. All other meters have accuracies of +/-1.0% per ANSI B109.1.

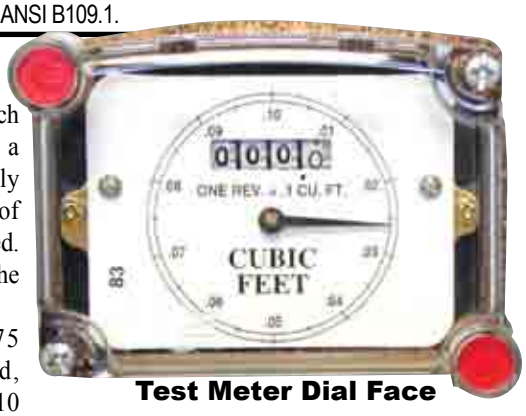
# Test Meters -TESTMETER

Test Meters are particularly advan-tageous in applications where minute amounts of gas must be measured with a high degree of accuracy. They are used in factories, laboratories, testing departments, and precision air sampling trains.

One of the more popular uses of this type of meter has been in the area of pollution control & sampling. The Environmental Protection Agency has set standards of performance for limiting gaseous and particulate emissions from factories. Federal, state, and local pollution control authorities have discovered a need for dependable precision instruments to sample and evaluate pollutants. Test Meters are being implemented in stack sampling and pollution monitoring equipment.

Test Meters come equipped with a special test index. This index has a sweep hand, which could be compared to the sweep hand on a stopwatch. The sweep hand circle is finely graduated so that accurate measurement of minute amounts of flow can be accomplished. Timing of the sweep hand also allows for the accurate establishment of small flow rates.

The test index used on the S-275 through the #415 has a sweep hand, which makes one revolution for each 1/10 cubic foot of gas consumed. It may easily be read to the nearest 0.005 cubic foot and has a maximum reading of 999 cubic feet. Upon request, this group of test meters can also be equipped with an index whose test hand makes one revolution for one cubic foot of gas consumed.




**Test Meter Dial Face**

### Ordering Information

Add the word **"-TESTMETER"** behind any of the part numbers (P/N) above. Not available on P/N SK25 meter. Not available of HIQ-SK-25EX. This feature is being discontinued. "-TESTMETER" will be based on availability.

# Temperature Compensation -TC

All dry gas-totaling meters can be equipped with a bimetallic element that will automatically correct for changes in gas temperature and convert line volumes to the common base temperature of 60 ºF.

The fundamental difference in a temperature-compensated meter is the tangent. It features twin bi-metallic elements as the active or compensating members. The tangent is mounted in such a way that temperature variations, causing expansion or contraction of the bimetallic element, alter the volume of the meter. This automatically causes the meter to speed up or slow down as required and does not affect valve timing.

A temperature compensated meter can be outwardly identified by a difference in the manufacturer's badge color along with a "TC" notation on both the badge and the meter index. Standard meters have blue badges. TC meters have red manufacture's badges.

The typical temperature compensation performance is within an accuracy band of ±2% over a flowing gas temperature range of 20ºF to +120ºF.

### Ordering Information

Add the initials **"-TC"** behind any of the part numbers (P/N) above. Not available on P/N PK25 meter.

# WH-36 & WH-40
## Instrument Weather House

HI-Q's Instrument Weather House with its heavy gauge, primed and painted, aluminum body is ideal for protecting instruments from harsh outdoor sampling environments. The WH-36 & 40 series Instrument Weather Houses conveniently house and protect air sampling and other instrumentation. Two, large, 14" x 26" heavy duty piano hinged access doors allow an operator to conveniently mount and maintain instrumentation and equipment. Both access doors may be closed with twist pins and then secured with a padlock.



**WH-40 shown with options**

***Main Specifications:***

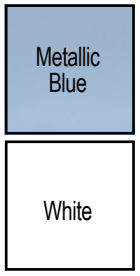
| | |
|---|---|
| **Overall Dimensions (w/ Standard Legs):** | 48"Tall x 26"Deep x 32"Wide" |
| **Overall Dimensions (w/ Extended Legs):** | 67"Tall x 26"Deep x 32"Wide" |
| **Overall Cabinet Dimensions (w/o legs):** | 24"Tall x 26"Deep x 32"Wide" |
| **Assembled Weight (w/ Standard Legs):** | 42 pounds (WH-36) & 45 pounds (WH-40)" |
| **Material- House/Doors:** | 0.09"Sheet Aluminum |
| **Standard Legs (Welded U-Frame Set):** | 30"Tall 1.5"x 1.5"(0.90"Aluminum) |
| **Extended Legs (Welded U-Frame Set w/ Cross Braces):** | 49"Tall x 1.75"x 1.75"(0.125"Aluminum) |
| **Access Doors:** | Two doors, one on each long side mounted on heavy duty piano hinges giving full 26"wide x 14"tall free access from both sides of the house. |
| **Security:** | Double thumb-twist locks with pad lockable hasp on each access door. |
| **Material Finishing:** | Material is acid wash primed and then painted with 2-component, high solid polyurethane paint with a bake finish. |
| **Color Options:** | Stocked Colors are White & Metallic Blue. Other Custom colors are available upon request. |

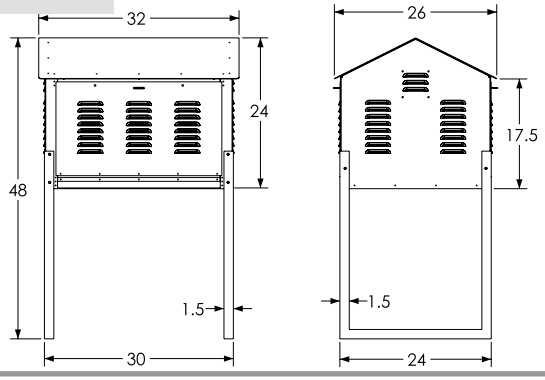
### Ordering Information

**WH-36**
Standard Instrument Weather House.

**WH-40**
Instrument Weather House with Internal Screens & Louvers. The WH-40's internal screened louvers are removable for easy cleaning. The counter mounting of the internal louvers prevents rain or snow from blowing directly into the housing and onto instrumentation.

***Color Choices:***




***Accessories:*** *All accessories are mounted free of charge when ordered with instrument weather house.*

**SD-90100**
Snap Disc Thermostat Switch. Turns on Axial fan at 100°F and Off at 90°F

**PO-5**
Power outlet with mounting bracket, 16/3 grounded wire, 5 outlets, 15 Amp breaker.

**WH-AF-100**
Axial Fan, 110V, 50/60 Hz., 100 CFM free air capacity, mounts in the apex of weather house roof. Removes excess heat generated by pumps or sun.

**WH-EL**
Extended Legs, elevates weather house to 67" above the ground (to peak).

**WH-SL**
Standard Legs, elevates weather house to 48" above the ground (to peak).

**WH-GN**
Standard gooseneck assembly for weather house. Allows operator to sample at DOE designated breathing levels by mounting the filter holder assembly externally 59" above the ground. 5/8" Stainless Steel Tube with 3/8" brass Female Quick Disconnect on inlet and 3/8" brass Male Quick Disconnect on outlet. Gooseneck assembly includes all mounting hardware & support bracket. Custom tubing lengths available. Add a "-WHITE" or "-BLUE" to part number for color selection.

**WH-6X10LS**
Replacement 6" x 10" Internal screen & louver set (3 set louvered door).

**WH-LS**
Lamp outlet with pull chain. Used for lighting or a heat lamp.

**GN-R&WS**
Rain & Wind Shield for filter holders externally mounted on gooseneck. Includes 3/8" male & female quick disconnect for easy installation. Rain & Wind Shield is shown attached to upper half of HI-Q's standard "Gooseneck" assembly, P/N: WH-GN.






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