

# ***RADeCO, Inc. - ETI Product Training Presentation***



# ***Background***

RADēCO, is a veteran owned business operating in New England. About 40 years ago RADēCO started as a small company designing Air Samplers for the nuclear industry. In 1973, Science Applications International (SAI) purchased RADēCO. It was here the name RADēCO took on its true form. RADēCO stands for RAdiation DEtection COmpany pronounced (RA Deek Oh.)

After purchasing the RADēCO product line from Science Applications International Corporation (SAIC) in February 2000, the company was moved to New England. Since that time our manufacturing facility and annual sales have tripled in size. Over the last several years RADēCO has been awarded multiple large contracts from military and emergency response organizations including the U.S. Navy, U.S. Air Force, and USEPA.

# ***Customer Base***

- RADeCO currently supplies the United States Air Force, Navy, Environmental Protection Agency, Department of Energy, commercial nuclear utilities, police and fire departments.



# ***Types of Air Samplers***

- Air Sampling is divided into two categories  
High Volume and Low Volume

**High Volume**



**Low Volume**



# *High Volume*

- RADeCO offers two models of high volume air samplers; the digital H-810 series and the analog H-809 series.
- RADeCO High Volume models include..

H-809VI, H-809VII and  
H-809C (DC)



Rotometer based air  
flow indicator

Same Flow  
rates, different  
display

H-810, H-810-2 and  
H-810 DC



Microprocessor based  
air samplers

# *The H-810*

- The H-810's microprocessor can hold up to three independent calibrations, correct flow for high altitude samples and has a programmable default target volume.

Recommended kit for  
emergency responders

Model H-810DC  
with TRP-2 tri-pod  
and RAD1224  
Battery Pack



# ***H-809 Series***

- The H-809 utilizes case pressure with a rotometer to determine the flow rate. These units are calibrated at standard temperature and pressure, unless otherwise specified by customer.

Used by USAF, US Navy

Rugged thick cast  
aluminum case, UL Listed,  
basic high volume air  
sampler



# ***Low Volume***

- Low volume air samplers are typically used by commercial nuclear power plants, laboratories, and occasionally hospitals. The target market is commercial nuclear power.





# ***Low Volume***

- Low volume air samplers are most commonly run continuously at low flow rates (0.5-3.5 CFM or 20-100 LPM). They are available as mobile and stationary systems. Each low volume air sampler would include one spare parts kit. This should be sufficient for two years of continuous use.

**Stationary >**



**AVS-28A**

**Mobile >**



**HD-29A**

# ***Filter Media***

- RADeCO supplies an estimated 60,000 Radioiodine sampling cartridges and an around 250,000 glass fiber filters for nuclear power plants in the US each year.



# ***Filter Media***

- RADeCO offers two different mesh sizes in TEDA treated carbon and one mesh size in silver zeolite.

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## **TEDA Impregnated Charcoal**

CP-100  
(40x50 Mesh)



BG-300  
(20x30 Mesh)



## **Silver Zeolite**

GY-130  
(30x50 Mesh)



# ***Silver Zeolite Vs. TEDA Carbon***

- TEDA treated carbon cartridges are more commonly used by Nuclear power plants HP departments and Remote Monitoring Departments for the sampling of radioactive iodine.
- Silver Zeolite filters out the organic forms of radioiodine like xenon, krypton, and other noble gases. Because of this, it is used as a post accident standby monitoring system and has a very high collection efficiency.

# ***Filter Media***

- Our variety of filter holders enables a user to adapt any RADeCO filter media to any RADeCO air sampler. All new filter holders will include one spare o-ring kit. This additional kit, plus the o-rings included on the filter holder, should be a two year supply.



# ***Filter Holders***

- RAdECo filter holders can be identified by physical characteristics like colors, parts and connectors. Filter holders with quick disconnects are used on low volume constant flow air samplers such as the AVS-28A and HD-29A. Threaded connections are used on high volume air samplers. Gold filter nuts are for 47mm and black are for 2 inch (50 mm). Combination, glass fiber filter and cartridge holders will have two filter nuts instead one.



4 Inch, high volume, filter paper only



2 Inch, high volume, combination filter holder



47mm, low volume, combination filter holder

# Accessories

- RADeCO offers a selection of accessories for both low and high volume air samplers.

Calibrators



12/24 VDC  
Battery Pack



Protective Cases



# Notes

- All RADeCO air samplers should be calibrated annually.
- New units include a one year NIST traceable calibration.
- When high volume air samplers are purchased, calibration data must be provided to RADeCO in order to perform a factory calibration. Have the customer identify what specific filter media they will be using with the air sampler they are purchasing. They must be specific i.e. manufacturer and part number.
- New air samplers include one operation manual.
- All Radioiodine cartridges are supplied with an independent testing certificate.
- All Radioiodine cartridges have a 10 year shelf life.
- All carbon sampling radioiodine cartridges are packaged in sleeves of 20 unless specified otherwise.
- All silver zeolite cartridges are packaged in sleeves of 10 unless specified otherwise.
- Both types of cartridges are available individually wrapped at an additional cost. 1-100: \$0.25 USD Each 100+: \$0.50 USD Each



# RADēCO

509 Norwich Avenue, Taftville, CT 06380  
(860) 823-1220 FAX (860) 823-1521 [www.radecoinc.com](http://www.radecoinc.com)

## AIR FLOW CALIBRATORS MODELS C-812, C-828 AND C-8528

Twenty-five Years of Proven Reliability

### FEATURES

- RUGGED CONSTRUCTION
- DIRECT READING IN CFM OR LPM
- REFLECTIVE ARC FOR PARALLAX CORRECTION
- BETTER THAN  $\pm 5\%$  ACCURACY Full Scale
- THREE FLOW RANGES (see chart on reverse)
- CALIBRATION CERTIFIED AND TRACEABLE TO NIST



RADēCO Air Flow Calibrators are the most durable and repeatable calibration devices available. RADēCO calibrators are constructed of a precision machined aluminum venturi tube and an appropriately ranged magnehelic gauge mounted in a rugged steel case. Simple, cost effective and consistently accurate year after year.

RADēCO Air Flow Calibrators are available calibrated in cubic feet per minute or in liters per minute. Dual calibrations are available on special request. Each calibrator is individually calibrated to an air flow instrumentation system whose calibration is certified and traceable to the National Institute of Standards and Technology (NIST). The RADēCO Air Flow Calibrators are guaranteed to an accuracy of better than  $\pm 5\%$  FS, referenced to 29.92 inches of mercury and 70°F. A Certificate of Calibration is supplied with each air flow calibrator.

RADēCO maintains an Air Flow Calibrator recertification and repair service for all RADēCO units. Similar units manufactured by competitors can also be serviced at our facility. Special calibrations are available upon request. An assortment of adaptors are available which mate the calibrators to various RADēCO Sample Holders.

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AIR FLOW	RANGES	AVAILABLE
Model No.	Cubic Feet Per Minute	Liters Per Minute
C-812	0.5 to 3	10 to 90
C-828	1 to 8	25 to 225
C-8528	4 to 28	100 to 800

## Specifications

**Accuracy:** Better than  $\pm 5\%$  FS at 29.92" Hg and 70°F

**Weight:** Less than 5 pounds (2.3 Kg)

**Calibration Frequency:** For calibration laboratory use recertification is suggested once every two years; for field or dusty environment use, calibration should be once a year.

AIR FLOW CALIBRATOR ADAPTORS	
Model No.	Description
2500-43	Adapts C-8528 to Sample Head 2500-25A
2500-54	Adapts C-8528 to Staplex 4" Sample Head
2500-60	Adapts C-8528 to Sample Head 2500-23
2500-61	Adapts C-8528 to Sample Head 2500-33
2500-83	Adapts C-8528 to Sample Heads 2500-05, -19, 21-, -27, 41, 45
2500-86	Adapts C-8528 to Sample Heads 2500-34, -35, -39, -40, -44, -46
2500-55	Adapts C-8528 to Sample Heads 2500-34, -35, -39, -40, -44, -46
2500-56	Adapts C-828 to Sample Heads 2500-05, -19, -21, -27, -41, -45
2500-57	Adapts C-828 to Sample Head 2500-33
2500-58	Adapts C-828 to Sample Head 2500-23
2500-79	Adapts C-812 to Sample Heads 2500-35, -46
2500-80	Adapts C-812 to Sample Heads 2500-05, -21
2500-81	Adapts C-812 to Sample Head 2500-42
2500-82	Adapts C-812 to Sample Head 2500-04
2500-53	Adapts C-812 to Sample Heads 2500-06, -07

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## **MODEL H-810 High Volume Air Sampler**



- **HIGH ACCURACY**
- **ALTITUDE CORECTIONS**
- **LCD DISPLAYS**  
*Elapsed Sample Time*  
*Flow Rate*  
*Total Volume*
- **MICROPROCESSOR BASED**
- **BATTERY-BACKED**
- **DATA MEMORY**
- **3 INDEPENDENT PROGRAMMABLE CALIBRATIONS**

The RADēCO™ Model H-810 is a dependable, lightweight high volume air sampler which incorporates the reliability of the Model H-809V with an Air Volume Totalizer. This microprocessor based unit is designed to eliminate the use of rotometers and mechanical time meters, simplifying air sampling procedures while adding significantly higher accuracy to air sampling data.

The Air Volume Totalizer portion of the sampler is composed of an enclosed air-turbine which rotates at speeds proportional to the air velocity of the sampled air. The turbine's rotation is sensed by a reflective sensor/breaker disk. The microprocessor converts the signal to volume and displays the flow rate, total volume, and elapsed time on the LCD readout.

The Model H-810 may be operated in the TOTAL VOLUME mode or the TOTAL ELAPSED TIME mode with the mode of operation determined by the user's established procedures. All functions are entered during the calibration mode. The functions/parameters established during calibration may be locked in using the keypad security. When the keypad security is on, all keys on the keypad are disabled with the exception of the START/STOP and UNITS keys. The UNITS key will toggle the LCD display from CFM to LPM.

The operation of the Model H-810 is a very simple, four-step procedure, and the training required by the user is relatively short. Its operational procedure is:

1. Connect to a power source.
2. Install the sample holder with filter media.
3. Turn power switch on.
3. Press the start key.

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## MODEL H-810 HIGH VOLUME AIR SAMPLER

### SPECIFICATIONS

The Model H-810 samples the environment until the desired total volume or total elapsed time has been reached and then turns itself off. The LCD readout indicates the total volume and elapsed sample time. A STOP key is provided to stop the sampling procedure at any point during the sampling period, and the total volume of air sampled up to that point is indicated. Should the power be cut off, the unit will store the total volume and sample period and display it when power is restored.

If the FLOW reading is blinking during regular operation, it is because the unit is running beyond its calibrated range. This can be corrected by increasing or decreasing flow adjust, located on the left side of the unit.



The Model H-810 has been designed using the latest in technology. The unit is microprocessor based with battery backed data memory to store operational parameters for as long as 10 years. All calibrations are performed using the on-board membrane key pad.

A 2" wide, 6' belt for carrying purposes or for hanging the instrument during sampling is provided.

A tripod (shown on front cover) is available as well as different style flow barrels for varying flow rates.

120/220VAC/60Hz; 220/50hz available.

TYPICAL MAXIMUM FLOW RATES  
FOR VARIOUS COMBINATIONS OF FILTERS AND CARTRIDGES

CARTRIDGE	HD-2061 FILTER 47mm DIAMETER  FLOW RATE (CFM)	LB-5211 FILTER 0750-36 47mm DIAMETER  FLOW RATE (CFM)	GELMAN AE FILTER 47mm DIAMETER  FLOW RATE (CFM)
CP-100	4.5	3.3	2.8
CP-200	8.9	4.9	5.0
BG-300	7.4	4.7	3.8
GY-130	4.2	3.1	2.7
None	11.8	6.0	4.5

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## AIR SAMPLING FILTER HOLDERS



### General Description

RADēCO™ has available the finest line of precision machined, all aluminum, holders for air sampling media. There are four different types of holders: (1) Open Face Filter Holder, (2) Inline Filter Holder, (3) Open Face Combination Filter and Cartridge Holder, and (4) Inline Combination Filter and Cartridge Holder. All four types are available for the RADēCO H809, H810, HD and AVS series of air samplers as well as for other manufacturers models.

RADēCO pioneered the unique two O-ring method of preventing the sampling air from bypassing the cartridge in the combination holder. This method of sealing the cartridge in the lower body eliminated gasket creep and wrinkling which caused leakage past the cartridge.

All 47 mm, 2 inch and 4 inch holders are hard anodized to give the sample holders good chemical resistance to prevent oxidation and to color code the various parts. The main body of each holder is colored blue, while the filter retainer nuts and the cartridge retainers are colored gold for 47 mm, black for 2 inch, and blue for 4 inch.

Open Face Filter and Open Face Combination Holders for the HD & AVS series are supplied with a mating 3/8 inch male quick disconnect fitting which will snap directly into the inlet of the samplers. All inline type holders are furnished with a 3/8 inch male quick disconnect at both the inlet and outlet of the holder.

When ordering, please specify the type of holder desired, the diameter of the filter to be used, and in the case of a combination holder, the type of charcoal or silver zeolite cartridge (RADēCO or Scott) to be used in the holder.

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## OPEN FACE FILTER HOLDERS



Filter Diameter	47 mm	2"	4"
Holder Number			
2500-04		B	
2500-23		A	
2500-25A			A
2500-33	A		
2500-42	B		

## OPEN FACE COMBINATION FILTER AND CARTRIDGE HOLDERS



Filter Diameter	47 mm	2"
Holder Number		
2500-05		B,C
2500-19		A,D
2500-21		B,D
2500-27		A,C
2500-34	A,D	
2500-35	B,C	
2500-39	A,C	
2500-46	B,D	

## INLINE FILTER HOLDERS



Filter Diameter	47 mm	2"
Holder Number		
2500-65	B	
2500-67		B

## INLINE COMBINATION FILTER AND CARTRIDGE HOLDERS



Filter Diameter	47 mm	2"
Holder Number		
2500-40	B,C	
2500-41		B,C
2500-44	B,D	
2500-45		B,D

A-Threaded for 787, 809, 810 series  
 B-With 3/8" male quick disconnects for HD & AVS series.  
 C-Holds Scott cartridge  
 D-All RADēCO Cartridges

Note: All inline holders fitted with two 3/8" male quick disconnect fittings.