A.P. BUCK Inc.

BUCK-BASIC-1
BUCK-BASIC-5
BUCK-BASIC-12

INSTRUCTION MANUAL

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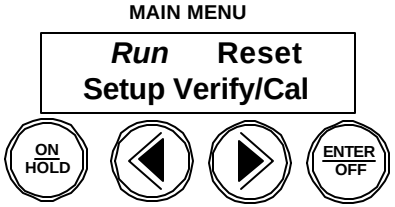
Section 1

Buck-Basic Series KeyPad Functions

Note: *You MUST have a filter cassette and tubing properly attached to pump before programming, setting Flow Rate, or calibrating. Failure to do this will result in improper operation.*



Main Menu

ON HOLD

The *BUCK-Basic Series Pumps* have multi-function keys that change their functions depending on what Menu or Sub-Menu you are in. You must first stop pump Operation with HOLD before you can turn the pump off with OFF. Also use this key to return from sub-menus.

ENTER OFF

Reset parameters or flow rate, or access any of the other functions in the Main Menu. This gives you the programming and operational flexibility for changing media or flow rates, shift sampling, interrupted and ad hoc sampling and other situations where you may just want to pause the pump without actually turning it off.

Pressing ENTER at any flashing Menu or sub-Menu selection or value highlighted by a blinking cursor enters or accepts that Menu selection or value and moves you to the next level in that Menu, sub-Menu or display.

◀ and ▶

These arrow keys are scroll keys that allow you to move among the various flashing Main Menu and sub-Menu entries, and enter numbers (increase or decrease values) flow rate, toggle between "accept" (YES) or "decline" (NO) options and selections, etc.

Notes: If the password control is activated (under Setup Mode), the Main Menu of "Reset, Setup and Verify/Cal." are blocked. To enter these Menus, press the following keys at the prompt of Password. 1st ON, 2nd ◀ 3rd ▶ and 4th ENTER OFF.

With these four keys, you can easily operate, program and control the BUCK-Basic Series Pumps.

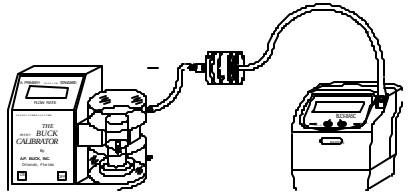
Quick Start Tutorial

The following section is to allow a first time user to quickly operate the pump as a *simple* pump while learning of the many features available.

Three Easy Steps To Cassette Sampling
One time only configure pump settings.
At Main Menu, arrow to **SETUP**, press **ENTER**
Use arrow to select and press **ENTER**

Select:

- Flow Control, "Flow"
- "Activate," Flow Fault Mode
- "OFF" for Password Lock
- Select Language "English"



Main Menu – Sample Cassette and Hose Attached

Step 1 ▶ to Reset, Press **ENTER**, Yes to "Clear all Data"

Step 2 "Run" press **ENTER**, arrow new flow rate and press **ENTER**

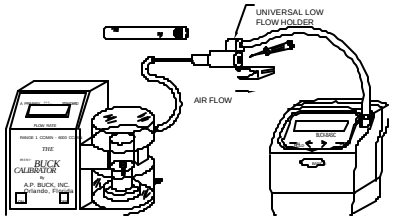
Step 3 "Run" press **ENTER** to begin sampling

Easy Three Step Sorbent Tube Sampling
At Main Menu, arrow to **SETUP**, press **ENTER**
Use arrow to select and press **ENTER**

Universal Low Flow Holder is an Optional Part

Select:

- Flow Control, "Pressure"
- "Activate," Flow Fault Mode
- "OFF" for Password
- Select Language "English"



Main Menu – Low Flow Tube Holder and Sorbent Tube Attached

Step 1 At "Run" press **ENTER** to measure flow; adjust arrow to speed up pump and screwdriver to adjust Universal Low Flow Holder to obtain desired flow, press **ENTER**

Step 2 Enter calibrator flow into pump display, press **ENTER**

Step 3 "Run" press **ENTER** to begin sampling (See Section 6)

Section 2

BUCK-Basic Series Pump

2 A. Design and Basic Features

The main purpose of this battery-operated personal sampling pump is to draw contaminants from an air sample into, onto or through a sampling media such as adsorbent sample tubes, filters, impingers, gas sample bags, or long-duration color detector tubes to gauge personnel exposure to gases, vapors, particulates, aerosols, etc. Both the analytical method required for the contaminant and the type(s) of contaminants sampled determine the selection of sampling media. Many sampling methods specify the use of filters for collection. The pore size, filter diameter, and filter material affect the ability of the sample pump to draw air through the filter for contaminant collection. The various detailed capabilities of the *BUCK-Basic* Models are presented in the **Appendix** of this Manual.

The *BUCK-Basic-1*™ **Constant Flow** range is 75 to 600 cc/min. The *BUCK-Basic-5 is* 600 to 5,000 cc/min. The *BUCK-Basic-12*™ has a Constant Flow range of 2 to 12 LPM.

All *BUCK-Basic* Series pumps have internal revolutions per minute (RPM) sensor to provide selection of flow range by keypad. Although the constant flow system has an accuracy of ± 3% as read by the sample pump's display, good industrial hygiene practice is to verify the flow against a primary gas flow calibrator such as the **mini-BUCK Calibrator**™. *Verification of sample flow should be conducted at intervals consistent with the user's or required standards.*

The BUCK-Basic-5 and Basic-12 can operate at lower vacuum flows of 5 to 800 cc/min. by operating in **Pressure Mode** and using the *optional* Universal Low Flow Holder (P.N. 109030.). For use with the *BUCK-Basic-1* only, flows of 5 to 80 cc/min. are performed with a Low Flow Holder (P.N. 109033), *also optional*, with the pump in Pressure Mode.

BUCK-Basic Series pumps are designed to collect air samples using accepted industrial hygiene principles and techniques, with recommended routine maintenance and service as required. These pumps assure the highest degree of reliable end-of-day samples through their advanced design, rugged construction, and market-leading features. An on-board 16-bit microprocessor controls the pump's flow, elapse time and volume calculations.

For further information, see the **Appendix**.

2 B. Pump Operation

2. B. 1. Basic Features

- **Display.** Each *BUCK-Basic* Series pump uses a 16-digit, 2-line alpha/numeric backlit LCD display to show pump operation and programming. In general, the display will show a parameter or menu choice requiring a response (entry) from the user (YES, NO, ACTIVATE, etc.).

- **Keypad.** All four keys (**ON/HOLD**, ◀ , ▶, **ENTER/OFF**) perform multiple functions:

  ON/HOLD turns pump **ON**, puts pump into HOLD mode via 4-second countdown, and serves as an "Escape" key in sub-MENUS.

  ARROW ◀ and ▶ keys let you scroll within various menus and enter values (numbers) for sample flow.

  ENTER key (a) accepts the current display message and (b) turns pump OFF from "Main" Menus.

- **Menus.** A 4-function "Main Menu : (Run, Reset, Setup, Verify/Cal) provides the ability to select sample flow rate, clear previous data and pump settings, put pump on "HOLD", and turn the pump off, all through direct entry or various sub-Menus. Additional Menus allow Password Lock option, types of Flow Control and Language selection.

2. B. 2. Pump Control

- **Constant Flow System**. The system uses a revolution per minute (RPM) sensor on the pump. Data from these sensors are used in conjunction with a flow reading obtained with a mini-BUCK Primary Flow Calibrator to establish a flow factor based on RPM's. Pump software calculates the flow instantly and adjusts the pump's speed to match the selected flow. Accuracy of flow is ± 3% of the display. It may be re-calibrated by a primary gas flow calibrator to ± 1.0 % at any specified flow.

2. B. 3. Pressure Mode is utilized by the *BUCK-Basics* to collect low flow samples such as charcoal tubes. The Pressure operating mode under Setup Main Menu is selected to operate the pump in conjunction with the optional Low Flow Universal Tube Holder (P.N. APB-109030), and sample flow rates from 5 to 800 cc/min. can be achieved.

2. C. Data Storage

Static Ram for memory backup saves sampling information and is independent of the sample pump main battery pack. The data saved in memory includes: Elapsed Time, Flow Rate and accumulated Sample Volume based on actual flow rates.

2. D. Battery Monitor

To ensure the pump has enough power for the entire sampling period, the *Pumps* display battery capacity during the sampling run time. Based on a "fuel gauge" approach of 0 to 100%, the capacity is displayed during pump run operation. To conserve battery life, the pump will turn itself off if inadvertently turned on and no keys are pressed for 5 minutes while in the Main Menu (RUN, RESET, SETUP, Verify/Cal).

2. D. 1. Battery Capacity

a. When selecting a flow rate, the upper right line of the display shows the predicted hours of run time based on the pump's current drain.
b. Remaining hours are displayed during sampling period by pressing the right arrow key.
c. Battery conditioning will show the actual milliampere hours capacity of the battery discharge.

2. E. Flow Fault

At zero RPM i.e. sample flow has been blocked due to plugged filter, "ATTENTION, FLOW INTERRUPT" is displayed. The pump will automatically attempt to re-establish sample flow after one minute or press the ENTER key.

2. E. 1. Flow Blockage Compensation. The filter plugging during an 8 hour sampling is controlled with a "Filter Compensation Control Algorithm". This sophisticated equation monitors the motor power every 30 seconds and adds more power to the motor to maintain the constant flow of the pump. Back pressure increases up to 30 inches of water will be maintained within 3% of the selected flow accuracy.

2. F. Flow Adjustment

1. The *BUCK-Basic Series Pumps* flow rate (cc/min.) is easily adjusted using the arrow keys ◀ or from the RESET sub-Menus (see **QuickStart Guide** "TO CHANGE FLOWRATE?" for easy flow adjustment keystrokes). Once the desired flow rate is reached, press **ENTER** twice to begin sampling. To re-adjust flow, halt pump operation by pressing **HOLD** for 4-second countdown, then reset the flow rate again under the RESET sub- Menus.
2. Press **ENTER** at the Verify/Cal main menu to verify or recalibrate the pump flow calibration. Verify Flow allows flow readings without advancing the elapse clock. Calibration changes the internal flow factor. Proceed only if an accurate flow reading device such as the **mini-BUCK Calibrator** is available.

Warning: The sampling filter media must be attached to the inlet of the pump. If this menu is entered by mistake, press ON/HOLD to escape.

When clearing the current calibration, if YES is chosen, the factory calibration factor is cleared to allow a new calibration. If NO is chosen, the display will go to Run Menu.

A specific flow may be selected for this calibration change. Once the appropriate flow is displayed, press **ENTER.**

Use arrows to adjust the numbers to match the external flow calibrator. Press **ENTER** and the correction factor will now present a flow rate matching the external flow.

2. G. Pump Security

A single PASSWORD is selectable as Activated/Deactivated under Setup. The Password will secure all Main Menus except Run. This security system provides the security necessary to collect a valid set of sampling results by ensuring the required sample flow rate is not tampered with after programming or in the field. The predefined code for this lock system is factory programmed and not changeable.

The "PASSWORD" a set of four keypad strokes. Press **ON/HOLD,** ◀, , **ENTER/OFF**, in sequence.

2. H. Battery Pack

The *BUCK-Basic Series* Standard Battery Pack (APB-129020) consists of four AUL nickel cadmium batteries. The batteries are rated at 1100 mA hour capacity. The FastOne™ and FastFive™ Battery Chargers connect to the back of each battery case; by lifting the protective rubber cover, the charger lead can be easily inserted. A Triple Battery Pack (P.N. APB-129320) may be substituted for the standard battery pack to provide three times as much battery capacity for the Basic-*1* and Basic-*5*. When a Battery Pack or pump with Battery Pack is connected to a **BUCK FastOne™** or **FastFive™** Charger, a yellow LED (**CHARGING**) will indicate the charging cycle has begun. The charge cycle takes approximately 60 minutes. When the charging cycle is completed, a green LED will light (READY) indicating end of cycle. Individual battery packs may be charged independently of the pump, if required. The pump should not be left connected to the charger in "trickle charge" indefinitely. Battery cases are connected to the pump case bottom with four self-retaining screws.

Caution: Never charge batteries in hazardous areas.

2. I. Continuous Sampling

The *BUCK-Basic Series* Pumps are capable of running continuously (for IAQ, environmental and other applications) with the battery eliminator (P.N. APB-109056) attached to the pump in place of the Battery Pack and plugged into an AC source. The elapsed clock will convert 24 hours of sampling into days with the balance in minutes up to 99 days. The accumulated volume converts to kililiters (KL) after 1000 liters. It displays up to 999.9 KL. **Caution: The Battery Eliminator should not be used in hazardous areas.**

2. J. Digital Flow and Volume Display

The constant flow rate is ± 3% accurate of any display. The flow rate is based on flow determined by the RPM flow factor. This flow factor is created in Calibration Mode when measured calibrator's flow is manually entered in the pump through the keypad. The sampled Volume in Liters is incremented every second and is accurate to 10 cc (0.010 Liters). **In Pressure Mode, flows entered by the user at time of calibration will be displayed as a "set" flow rate. Volume is based on elapsed time multiplied by the flow rate entered by the user.**

2. K. Pump Case

The *BUCK-Basic* rugged stainless steel fiber filled polycarbonate case is highly water and dust resistant and electricity conductive. The inlet port is recessed for added protection and is barbed to help prevent sample tubing from being pulled off. The sample outlet (discharge) is internal as the pump exhausts into the case. This keeps the pump case always at positive pressure, preventing dust and particulate contamination. All exhaust air passes out the exhaust valve under the belt clip. Gas bag filling is not possible.

2. L. Shielding for RFI and EMI

CE Mark for EMC (Electrical Magnetic Conformity) was conducted and passed. The standard used was CENELEC Publication 61000-4-11-1994. Testing was for Electromagnetic Compatibility, Basic Immunity Standards for radiated, radio frequency electromagnetic field immunity.

This manual describes the basic operation of the *BUCK-Basic Series* Pumps. It does not detail how to sample or analyze collected samples, nor how to select methods for various airborne hazards. For this information, the best general application reference is to be found in the **NIOSH Manual for Analytical Methods** from the U.S. Government Printing Office. Additional reference sources may be found at the **www.apbuck.com** homepage on the World Wide Web.

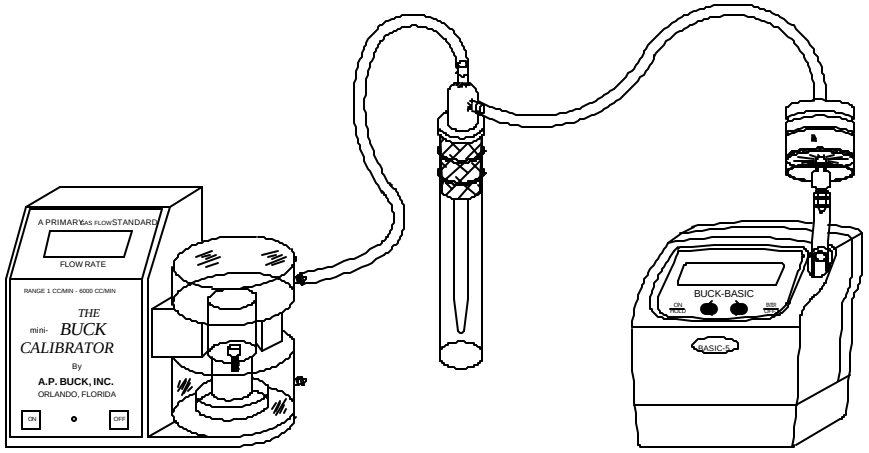
Section 3

Operating Menus and sub-Menus

Main Menus	Sub Menus	Operating Modes
RUN	Select Flow Rate None after flow rate has been selected	Sample Collection: Elapsed clock, flow and accumulated volume are displayed
RESET	Sampling Data Clear Run Battery Life	Clears all data and timing Discharge Batteries fully Does not recharge. Displays time for complete discharge
SETUP	Flow Control Mode	Constant Flow Pressure
	Flow Fault Mode	Activate / Deactivate
	Password for SETUP Mode	Hold, ◀, , ENTER (keys of password)
	Select Language	English displays Spanish Displays French Displays
Verify/Cal	Sampling Flow Verify	Requires a Primary Gas Flow Calibrator
	Clear Last Calibration	

Section 5

Bubbler and Impinger Sampling

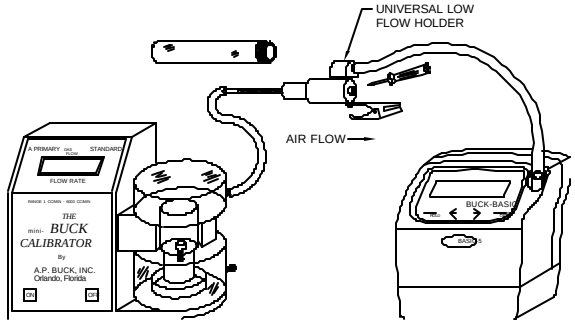


CAUTION: <u>FIRST SET THE FLOW WITHOUT SOLUTION IN BUBBLER.</u> The default flow rate at 2000cc/min. or previously selected flow may be too fast and draw bubbler solution into the pump. Generally, 1,000 cc/min. is the flow of choice.

1. Connect a standard 37mm three piece filter cassette (with a 0.8 micron filter in place) close to the inlet of the pump. This serves as a protective trap to prevent any fluids from being drawn into the pump.
2. Attach a bubbler using desired length of hose to the input of the cassette, so the order of the sampling train from right to left (traveling upstream of the flow) is pump, cassette and then bubbler as shown in drawing. Set flow at 1,000 cc/min.
3. Next add solution to bubbler and reinstall flow tube to holder.
4. Press ENTER to begin sampling. Even though different brands of bubblers/impingers have varying amounts of flow resistance, the *BUCK-Basic* Series Pumps will operate at the pre-selected flow.

Section 6

LOW FLOW SAMPLING (5 to 800 cc/min.)



SETUP:

Using the setup as shown above, flows of 5 to 800 cc/min. may be collected in adsorbent tubes (charcoal, silica gel, etc.). Caution: first set up sorbent tube in Tube Holder with proper tubing before turning pump on.

Low Flow Sampling Procedure :

1. The pump must be in PRESSURE MODE under *Setup* under the Main Menu. Use ◀ or ▶ to scroll to 'Flow to Presure. Press "ENTER".
2. Press ENTER at the "RUN" Mode.
3. The default Power Scale (ps) of 20% as the pump starts to run at a "fixed RPM"..
4. Using the **mini-BUCK Calibrator M1 (0.1 to 300 cc/min.)** or **M5 (1 to 6000 cc/min.)**, measure the flow through the adsorbent tube as shown above.
5. Use a screw driver to adjust the flow to the desired rate. If the desired flow cannot be obtained by adjusting the needle valve in the low flow holder, on the pump use the ◀ or ▶ arrows to increase the Pressure setting (ps). Lower pressures give longer sample run times. Some new higher flow thermal desorption, higher backpressure tubes may be used in "Constant Flow" Mode with the non-adjustable tube holder (P.N. APB-109032) for flow above 800 cc/min.
6. Once the sample flowrate has been set, press the "ENTER" key to enter the measured flow. An accuracy of flow of ± 5% can be maintained throughout the sampling day.

Section 7

BATTERY CHARGERS

Note: *The BUCK FastOne ä and FastFive ä Battery Chargers are designed to charge only the battery packs for the BUCK-Basic Series Pumps.*

7.1 BUCK *FastOne* ä and *FastFive* ä Battery Chargers

Description

The BUCK *FastOne* ä and *FastFive*™ Chargers are microprocessor-controlled battery chargers providing an entirely automatic battery charging cycle in approximately one hour. The pump battery pack can be recharged with or without the pump connected. When inserting the charger lead into the battery pack socket, first lift up the protective rubber cover. The charger uses a voltage detection technique that provides a full recharge. When plugged in, the Yellow and Green LEDs light to indicate the microprocessor is functioning and the charging cycle is in progress ("Yellow") and finished or ready ("Green").

The ***FastOne***™ and ***FastFive***™ Chargers will charge a pump battery in approximately one (1) hour and 15 minutes. Three (3) hours and 45 minutes for the optional Triple Pack with a fully discharged pack. After a full charge, a trickle charge cycle ("Green" LED) will begin. Batteries may be left in trickle charge indefinitely.

The charger is designed to operate from a 115 VAC outlet (100 VAC and 220 VAC versions are available). The charger begins operation automatically when plugged in to an AC source.

7.2 Operation

When plugged in, the "Charging" light will indicate Yellow (ON). When the green light turns ON and Yellow turns OFF, the batteries are fully charged.

The fast charging of the ***FastOne***™ and ***FastFive***™ Chargers prevent any of the "Memory Problems" previously associated with Nickel Cadmium batteries. *BUCK-Basic Series* pump batteries take advantage of improved chemistries in the cells' electrolyte and the high current charge rate. Any stagnation of the electrolyte or electrical corrosion is removed on charging.

7.3 Standard Charger

The Standard Charger is designed to charge the BUCK PUMP battery pack in 16 hours. The connection is made through the charge port on the rear bottom of the battery pack. The RED LED light on the A/C charger will light. After 16 hours, the pump batteries will be fully recharged for portable operation. The battery pack can be charged either on or off the *BUCK-Basic* pump.

Note: *The percent battery capacity display will not be accurate during charging. The percent is only accurate when the pump is on and running for a period of 10 minutes. At this time the battery chemistry is providing the voltage, and not a static charge on the electrodes of the battery.*

A. Battery Eliminator

CONTINUOUS SAMPLING. The BUCK-Basic Series Pumps are capable of running continuously with the battery eliminator (P.N. APB-109056) attached to the pump. **Intrinsic safe models cannot use the Battery Eliminator in hazardous areas.**

Elapsed time will count to 24 hours and XX minutes and then display 1 (one) day with hours. Up to 99.9 days are displayed. When this maximum point is reached, the timer will begin over at 00:00 hours. Contact A.P. Buck for information on extended memory times.

Cumulative "Volume" of Samples will accumulate up to 1,000 Liters and then convert to kililiters up to 999 KL's.

The volume is displayed during the RUN Mode in bottom left of display while pump is sampling.

7.4 Interchangeable Batteries

The BUCK-Basic Series incorporates a unique system of interchangeable batteries to provide additional flexibility in sampling. The standard battery pack (PN APB-129020) is included with the Basic-1 and Basic-5 Series pumps. It is ETL-approved, intrinsically safe, and can be fully recharged in 1 (one) hour with either the BUCK ***FastOne***™ or ***FastFive***™ Charger.

For extended run times, the standard battery pack can be exchanged for the Triple battery pack (PN APB-129320). It is intrinsic safe rated and can provide considerably longer pump operating times, depending on sample flow rate and backpressure. Recharge time is approximately two to three times the standard battery pack time with either the BUCK ***FastOne***™ or ***FastFive***™ Charger.

APPENDIX

Helpful Hints and Tips

A.1 Flow Calibration

Flow Calibration is a stable process and has shown with experience not to change. It is good practice to verify flow using an external CALIBRATOR on a routine basis (as often as start and again at stopping of sampling day). Experience has shown an interval of recalibration once a month will provide the creditable documentation. Creditable documentation would be a record of the "pump flow" showing the calibration date and flow. The consistent repetitive results verify a monthly interval is sufficient. However, calibration of the pumps flow should be conducted at intervals consistent with the user's standards.

A.2 Battery Conditioner and Life Test

This option located under the Reset Mode will completely discharge a battery pack and automatically display the time it took to discharge. To obtain the true purpose of this test, first charge the pack on the Fast One or Fast Five Charger. Then perform the Battery Conditioner and Life Test. The data at the end of the test will indicate whether the battery pack still retains its full 1500 maH capacity. The pack must be recharged after the test. This process, performed on a monthly basis, will extend the battery life and remove any potential for a memory problem.

Cassette Type	Table of Typical Battery Life in Hours : Constant Flow Mode Flow Rate LPM					
	2	2.5	3	3.5	4	4.5
25 mm 0.8 µ	10.1	8.1	6.8	5.9		
37 mm 0.8 µ	11.8	9.4	7.7	6.5		
37 mm glassfiber	13.4	10.9	9.4	8.1	7.1	6.3
47 mm glassfiber	14.3	11.6	9.7	8.4	7.4	6.5

Display Data	Run Mode:	Battery (%), Elapsed Time, Cumulative Volume (L), Flow (cc/min)
	Reset Mode:	Clear all pump settings?, Clear elapsed time only?
	Verify/Cal Mode:	Sampling Flow Verify?, Current Data, Clear Current Calibration?
	Setup Mode:	Select Constant Flow/Pressure?, Select Language?, Password Activate?

Rechargeable NiCad Batteries:	4.8V, 1.5 aH
Operating Temperature Limits:	32° to 104° F (0° to 40°C)
Size:	4.5"H x 4"W x 2"D (11.4 cm H x 10.2 cm W x 5 cm D)
Weight:	19 oz. (539 g)

Typical Operating Range of *BUCK-Basic Series Pump*

60 inches of water pressure up to 1.7 LPM
50 inches of water pressure up to 2.1 LPM
40 inches of water pressure up to 2.5 LPM
30 inches of water pressure up to 2.9 LPM
20 inches of water pressure up to 3.5 LPM
10 inches of water pressure up to 4.2 LPM
5 inches of water pressure up to 4.8 LPM
2 inches of water pressure up to 4.9 LPM

A.4 Parts and Accessories for the Buck-Basic™ Series Pumps

1. **BUCK FastOne ā Charger** 120VAC (APB-601900), 230VAC (APB- 601910) Single Station Automatic One Hour Charger.
2. **BUCK FastFive ā Charger** 120 VAC (APB-605900), 230VAC (APB-605910) Five (5) Station Automatic One Hour Charger.
3. **BUCK Standard Charger** 120VAC (APB-603900)
   Designed to charge the *BUCK-Basic Series* Pump battery-pack up to 16 hours maximum.
4. **BUCK "One Hour" Rechargeable Battery Pack ā** (APB-129020)
   These self contained packs may be charged independently from the pump and used as additional back up batteries in the field. Simple four screw changing operation.
5. **BUCK Triple Rechargeable Battery Pack** (APB-129320)
   For extended run time.
6. **BUCK Battery Eliminator** (APB-109056)
   Replaces battery pack for continuous pump operation from 120V AC power source.
7. **BUCK Battery Eliminator** (APB-109058) replaces battery pack for continuous pump operation from 230V AC power source.
8. **BUCK Adjustable Universal Low Flow Tube Holder** (APB-109030). Desired flow may be precisely adjusted for flows of 5 to 800 cc/min. with the *mini-BUCK Calibrator*™ and a screwdriver using the tube holder's built-in adjustable screw.
9. **Tube Cover** for Adjustable Universal Low Flow Tube Holder (Sorbent sample tube size determines cover size).
   (APB-109022) NIOSH Charcoal; all standard 6mm O.D. x70mm (3" length)
   (APB-109024) All 8mm O. D. x 110 mm (4 - 5/8" in length)
   (APB-109026) All 10mm O.D. x 150mm (6 - 1/4" in length)
   (APB-109028) All 10mm O.D. x 220mm (8 - 15/16" in length)
10. **Luer Adapter** (APB-109000) (pkg 10). Adapter (black) fits onto tubing to easily attach filter cassette inlet to tubing to aid in calibration.
11. **Sample Hose Clip** (APB-109020) (pkg 10). Clothing clip for attaching hoses and sampling heads to a worker's collar or shirt, with snap nylon strap for 3/8" O. D. hose.
12. **Multi Low Flow Tube Holder** (APB-109034). Acrylic manifold allows connection of up to three sorbent tubes and Protective Covers for independent multiple low flow sampling with a single pump.
13. **Non-Adjustable Flow Sample Holder** (APB-109032). To be used with any model of Buck pump in Constant Flow.
14. **5-Pack Pump Case** (APB-109017). Designed to hold up to 5 BUCK-Basic Series pumps, FastOne™ or FastFive™ charger(s), accessories, media, tubing, etc. Rugged design protects contents even when shipped by UPS™, air freight, etc.
15. ***BUCK-Basic Series* Pump Manual** (APB-109116)

WARRANTY

The seller warrants to the Purchaser that any equipment manufactured by it and bearing its name plate to be free from defects in material or workmanship, under proper and normal use and service, as follows: if, at any time within 1 year from the date of sale, the Purchaser notifies the Seller that in his opinion, the equipment is defective, and returns the equipment to the Seller's originating factory prepaid, and the Seller's inspection finds the equipment to be defective in material or workmanship, the Seller will promptly correct it by either, at its option, repairing any defective part or material or replacing it free of charge and return shipped lowest cost transportation prepaid (if Purchaser requests premium transportation, Purchaser will be billed for transportation costs). If inspection by the Seller does not disclose any defect in material or workmanship, the Seller's regular charges will apply. This warranty shall be effective only if installation and maintenance is in accordance with our instructions and written notice of a defect is given to the Seller within such period. This warranty is exclusive and is in lieu of any other warranties, written, oral or implied; specifically without limitation, there is no warranty of merchantability or fitness for any purpose. The liability of the Seller shall be limited to the repair or the replacement of materials or parts as above set forth.

LIMITATION OF LIABILITY

The seller shall not be liable for any claim for consequential loss or damage arising or alleged to have risen from any delay in delivery malfunction or failure of the equipment. The Seller's liability for any other loss or damage arising out of or connected with the manufacture, sale or use of the equipment sold, including damage due to negligence, shall not in any event exceed the price of the equipment supplied by us.

A.P. Buck, Inc. reserves the right to make changes at any time, without notice, in prices, colors, materials, specifications, and models; and to discontinue models.

SERVICE INFORMATION

For all work not covered under warranty, A.P. Buck, Inc. will repair any instrument for the cost of parts and labor as quoted. If major components must be replaced, A.P. Buck, Inc. will notify the customer before proceeding with repairs.

When returning any instrument for service, please include a Purchase Order marked: "Repair – Cost Not To exceed $250.00 without customer authorization". Please provide the following information with your instrument:

Company Name:
Address:
Telephone:
Fax:
Contact Name:
Serial Number(s):
Date of Purchase:
Service Required or Description of Problem:

You must obtain an RMA number prior to returning any product. Obtain your RMA number by calling **A.P. Buck, Inc. Customer Service at 800-330-BUCK** or **407-851-8602.** To expedite service and repairs, have your Customer ID handy.

Please ensure that all products returned to A.P. Buck, Inc. contain no hazardous materials. Any obviously contaminated product received will be returned to the customer. All products scheduled for service must be received within 30 days of the RMA number issuance date. Unauthorized products will be returned to the customer.

TECHNICAL SUPPORT SERVICES

Technical Assistance:	(407) 851-8602
Fax:	(407) 851-8910
Email:	apbuck @apbuck.com
Web site:	www.apbuck.com
Hours :	Monday – Friday
	8:00 AM to 4:30 PM (E ST)

If you need additional information or help during installation or normal use of this product, contact A.P. BUCK, Inc. Technical Support. Our customer support staff will attempt to answer your installation questions by phone or issue a service authorization number for repair or replacement of your product. Unauthorized returns will not be accepted. When calling for support, please have your product serial number and product model available.

NOTES:

INSTRINSIC SAFE LISTING LETTER

ITS Intertek Testing Services
ETL SEMKO

February 1, 2000

Mr. Al Buck
A.P. Buck, Inc.
7101 Presidents Drive
Suite 110
Orlando, Florida 32809

Dear Mr. Buck:

Subject: ETL/ETLc Listing Report J99023963-001

This is to certify that the Portable Air Sampling Pumps, Models VSS-1, VSS-5, BASIC-1 and BASIC-5 have been listed to all applicable safety standards under the following standards:

ANSI/UL 913: 1998 Intrinsically Safe Apparatus and Associated Apparatus for use in Class I, II, III, Division 1, Hazardous (Classified) Locations, Fourth Edition

CSA C22.2 No. 157-92, Intrinsically Safe and Non-Incendive Equipment for use in Hazardous Locations.

The products covered are a battery powered personal air sampling pump, which draws air from a work area onto a sampling media. The contaminants on the media are shipped to a laboratory for analysis, not analyzed by the product. The product is portable, worn on the belt of a worker and contained within a plastic enclosure. A rechargeable 5-volt Ni-Cad battery pack, which is charged in a non-hazardous area, powers the assembly. The product is intrinsically safe for Class I, Groups A, B, C, D, Class II, Groups E,F, G, and Class III.

To establish that the product is under the ETL Certification program, it is necessary to determine that the ETL Listing Mark is affixed to the product. Only those products bearing the appropriate Listing Mark and the company name, trade name, trademark, or other recognized identification should be considered as covered by the ETL Listing and Follow-Up Service.

Investigation and test data was conducted by Mr. Alan Geller, Sr. Staff Engineer and Mr. Antony Sadler, Project Engineer.

Thank you for using Intertek Testing Services a Nationally Recognized Testing Laboratory accredited by the Occupational Safety and Health Administration.

Best regards,

R.Scott Wilson
General Manager

Intertek Testing Services NA Inc.
4200 Vineland Road, Suite K-3, Orlando, FL 32811
Telephone 407-872-7600 Fax 407-872-7700 Home Page www.etlsemko.com

Warnock Hersey

ETL SEMKO LISTING LETTER

ITS Intertek Testing Services
ETL SEMKO

March 22, 2000

Mr. Al Buck
A.P. Buck, Inc.
7101 Presidents Drive
Suite 110
Orlando, Florida 32809

Dear Mr. Buck:

Subject: CE/EX Marking

This is to certify that the Portable Air Sampling Pumps, Models VSS-1, VSS-5, BASIC-1 and BASIC-5 have been tested to all applicable EU Product Safety Standards under the following EU Directives and Standards:

Low Voltage Directive
EN 50020, 2nd Edition, August 1994
Electrical Apparatus For Potentially Explosive Atmospheres
EN 50014, December, 1992, Edition

EMC Directive
Radiated and Conducted Emissions
EN 61326
CISPR 16
CISPR 16-1

The products covered consist of battery powered personal air sampling pumps, which draws air from a work area onto a sampling media. The contaminants on the media are shipped to a laboratory for analysis, and not analyzed by the product itself. The product is portable, worn on the belt of a worker and contained with a plastic enclosure. A rechargeable 5-Volt Ni-Cad battery pack, which is charged in a non-hazardous area, powers the assembly. The product is deemed intrinsically safe for Class I, Groups A, B, C, D, Class II, Groups E, F, G, and Class III.

To establish that the product meets all EU Directives and Standards, it is necessary to determine that the CE, EX, and D Marks are affixed to the product at the time of manufacturing. Only those products bearing the appropriate EU Certification Marks should be considered as covered by the Intertek Testing and Certification Reports. Additionally, it is the responsibility of the manufacturer to maintain a Technical File for the Component Authority within the borders of the EU.

Thank you for using Intertek Testing Services, a Notified Body, and the world's largest product and commodities testing and certification organization in the world.

Best regards,

S. Wilson

R. Scott Wilson
General Manager

Intertek Testing Services NA Inc.
4203 Vineland Road, Suite K-3, Orlando, FL 32811
Telephone 407-872-7800 Fax 407-872-7100 Home Page www.etlsemko.com

Warnock Hersey