!!! ATTENTION !!!
PLEASE READ

PAS Vr.

Alcohol Screening & Verification Unit

INSTRUCTION MANUAL
** School Version **

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Important Information, Please Read Carefully…

CAUTION:

The PAS Vr. is a unique breath analyzer that measures the breath alcohol concentration (BrAC) accurately and reliably. It is the users duty to learn and carefully follow the procedures described in this Instruction Manual.

All breath alcohol devices and testers will be affected by mouth alcohol. Mouth alcohol has many sources such as alcoholic beverages; certain medicines such as cough medicines, and many mouthwashes (Listerine, Scope, etc). To avoid misleading or false results, wait 15-20 minutes after the last use of these preparations before testing. Also avoid blowing cigarette smoke directly into the device as it may damage the sensor.

Be aware that certain citrus-based beverages, flavored waters, and some Starbucks coffees have been reported to give a positive reaction when sampled with the PAS. It is not clear if these beverages are in fact fermenting and producing low levels of alcohol, or if certain ingredients are reacting chemically with the electrochemical fuel cell in some manner.

To minimize confusion, always retest subjects about 15 minutes after an initial positive reading to verify true alcohol presence and not the result of residual mouth alcohol from these types of beverages. However, individuals may “spike” these drinks to cover up their actual alcohol consumption. Wait 15 minutes and retest the subject following sampling instructions on page 0 to verify if they are abusing alcohol.

Always test in an environment free of ambient (environmental) alcohol. Bars and restaurants where alcoholic beverages are served may have high ambient alcohol content that may affect performance of the PAS Vr.

WARNING: DO NOT DRINK & DRIVE!

SAMPLE SCHOOL POLICY:
USE OF PASSIVE ALCOHOL SENSORS

The device is known as a Passive Alcohol Sensor (PAS). It is used to check for breath alcohol and can be used with or without a subject's direct participation. When used without direct participation, it is known as passive breath sampling as opposed to active testing where the subject blows directly into a mouthpiece or the intake port. We propose to use the PAS specifically as an active test informing the subject that they shall speak across the intake port during the five seconds that the internal pump is working. We will indicate to the subject that this technique is far less invasive than previously used methods whereby the subject exhaled with an administrator's nose within inches of the subjects face. There may be times when the PAS can be used passively – i.e.: as it can detect alcohol in open containers or in enclosed spaces such as rooms, lockers, etc. Procedurally, we will not vary from our normal course of action when faced with the question of possible consumption. All due process precautions will continue to be in place. Given reasonable suspicion, the following will occur:

- Reasonable suspicion such as a staff referral or information gathered during an investigation will initiate administrative contact with student.
- The student will be directed to an office area where he/she will be kept under observation and questioned regarding the concern of alcohol consumption.
- The student may at this point confirm or deny the report.
- After a period of observation and questioning, we will inform the student of the less invasive means of detecting breath alcohol and allow the subject to speak/breath across the intake port of the PAS device (as opposed to breathing into the nose of one, two, or three administrators attempting to smell alcohol).
- Next the subject will be informed of the determination. The sensor either detected the presence of alcohol or it didn't. (In the past, we smelled alcohol or we didn't.)
- If it is determined that the subject has consumed alcohol, we will inform the subject and his/her parents of our suspicions and that there also follows a ten day suspension.
- The subject may continue to deny consumption and wish to pursue the issue further. At this point, he/she will be informed of an alternative to clear the allegation of consumption. This would involve the opportunity to take a Breathalyzer through the local police department. The subject will also be informed that he/she may face legal consequences as a result of failing the breathalyzer (Zero Tolerance).

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INTRODUCTION

The PAS Vr. Alcohol Screening and Verification System is an advanced portable breath alcohol tester (PBT) that features both passive alcohol screening and direct measurements with the flip of a switch. This hand-held analyzer provides both color coded LED's and numeric readout. Individuals who have been trained in the administration of alcohol screening devices recommend this product.

The PAS Vr. is used to check breath alcohol levels with or without a subject's direct participation or cooperation. When used without the subject's direct participation it's known as ***passive*** breath sampling, as opposed to ***active or direct*** testing where the subject blows directly into a mouthpiece or the intake port. The PAS Vr. can also be used to detect alcohol from **open containers**, or to detect low levels of alcohol in **enclosed spaces** such as **vehicles, lockers or classrooms**. The PAS Vr. functions as an "extension of the operator's nose."

The operator controlled sampling system with mouthpiece guarantees a precise and tamper proof measurement of the breath sample. The PAS Vr. is especially suited for quick subsequent measurements.

Testing for Alcohol

The common testing medium for drugs is urine, but using a urine sample for quantitative analysis to determine a blood alcohol level is not defensible without rigid adherence to complex test procedures. Blood and urine sample results are available only after a forensic laboratory analysis has been completed. This can take hours or weeks at a substantial cost. A breath test offers important advantages by providing immediate results at a cost of pennies per sample. Whether breath tests are used for screening or evidential purposes, breath alcohol testing offers an accurate, simple, and non-invasive testing alternative.

A breath sample is easy to obtain; takes less than a minute to analyze; and with proper instrumentation and training, produces evidentially acceptable results. The procedure is sanitary and inexpensive using a disposable mouthpiece. Or, alternatively simply *"sniffing"* (screening) for the presence of alcohol initially by passive sampling, followed by a more exacting measurement using a disposable mouthpiece.

The American Medical Association has demonstrated that a blood alcohol concentration (BAC) of .04 percent impairs an individual to some degree. Impairment can occur at even lower levels in some individuals. As a result, industries that test for alcohol have chosen to use either .04 or zero BrAC as maximum acceptable levels in the workplace. In Zero Tolerance states, anyone under the age of 21 caught driving with any amount of alcohol is considered illegal. In correctional institutions and prisons no alcohol is allowed so instrumentation that can quickly and accurately sample inmates, staff, visitors and enclosed spaces for alcohol can be invaluable.

Based on extensive experience with law enforcement agencies, corporations and correctional institutions, it has been found that no single type of instrument can fill every need. As a result, PAS Systems has developed alcohol analyzers that meet specific requirements.

Schools

Every school system has an interest in preventing drug and alcohol abuse in its student populations. The school years are a time when the physical, psychological, and addictive effects of drugs and alcohol are most severe. Children grow chemically dependent faster than adults and their record of successful recovery is extremely poor. The children's lost educational opportunities will affect the rest of their lives. The effect of drug and alcohol abuse is not limited to the abuser. The student body, the faculty, and the entire educational process are all victims.

Zero Tolerance

The U. S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA) encourages states to enact zero tolerance laws designed to reduce drinking and driving among younger drivers. Such laws should: (a) establish that any measurable amount (.02 maximum) of alcohol in the blood, breath, or urine of a driver under the age of 21 would be an "illegal per se" offense; (b) provide for immediate driver license suspension periods for those under 21 who exceed the applicable breath alcohol concentration (BrAC) limit.

However, many other situations call for zero tolerance of alcohol. For example, in any correctional institution alcohol is not allowed, inmate work release programs, in-home incarceration programs, parolees, and in schools. In drug and alcohol treatment centers and counseling activities, alcohol consumption must be prohibited and monitored.

The PAS Vr. used in the passive alcohol detection mode is a safe, cost-effective, and reliable method for all such applications.

Further guidance, training, or questions regarding this precision instrument system, or its use in screening subjects for the presence of breath alcohol can be obtained by calling 800-660-SNIF.

How the PAS Vr. Works

When you use the PAS Vr., a small pump draws a breath sample through an electrochemical sensor (fuel cell) that generates a small electrical current in the presence of alcohol vapor. This current is amplified electronically and used to drive a multicolored **bar graph and numeric display**. The number of bars lit in the display indicated the alcohol concentration in the breath sample. The proprietary sensor provides high precision, short analysis time, and long-term stability. Only true alcohol content is recorded even when exposed to other breath interfering substances, for example, acetone.

The PAS Vr. is powered by a 9-volt alkaline battery.

We want you to get the best possible results from your PAS Vr. Please take the time to study this manual and to practice using the instrument before using it on patrol, in your company's U.S. Department of Transportation (DOT) Alcohol Misuse and Prevention Program, or Zero - Tolerance program.

PAS Vr.
BASIC FEATURES

Proceeding from top to bottom in the diagram below, the components of the PAS Vr. are:

Disposable Mouthpiece — Disposable mouthpieces supplied for active breath testing (BrAC).

Sampling Ports — Two small holes let the air sample pass through the PAS Vr. The inlet port is on the top, and the outlet port is on the backside of the unit.

Sampling Mode Switch — The testing mode switch controls the *passive* (PAS ON) testing function or the *active/direct* (AS ON with mouthpiece) settings.

Bar Graph with Numeric Display — Nine rectangular LED lamps give an indication of the alcohol level in the air sample. The display is color coded for easy reading at night (see pg 12) with numeric display.

Control Button — The single push button controls the sensor and sample pump.

Power Switch — Switch controls battery power to the PAS Vr.

Battery — The PAS Vr. uses a 9-Volt alkaline Battery.

AT-A-GLANCE DISPLAY

The PAS Vr. provides 6 indicator lamps located above and below the bar-graph display (see diagram below). These lamps provide useful feedback when using the PAS Vr.

Sample Pump Indicator

The **yellow PMP** lamp indicates when the PAS is taking an air or breath sample. It comes on for a few seconds at the beginning of each alcohol measurement cycle.

Power On Indicator

Controls battery current to the unit indicated by the red lamp at the top center of display.

A/D Mode

The **flashing green ACT** lamp indicates the *active/direct-testing* (AS) mode is on. If this lamp is on, you must use a disposable mouthpiece.

Sensor Indicator

The **green LED** Lamp indicates the power to the PAS Vr. is ON.

Low Battery Lamp

The **red BAT** lamp flashes once a second when the battery is almost discharged and ready for replacement.

Heater Indicator

The **orange HTR** lamp comes on when the fuel cell heater is on. The heater auto-cycles on and off to maintain an optimum fuel cell temperature at 104°F (40°C) +/- 5°

INITIALIZING

After receiving your PAS Vr. it is important to follow these steps:

[1] Install Battery Unpack all the parts shipped with your PAS Vr. Remove the battery cover and check for a single 9-volt battery. Install if needed and replace the battery cover.

[2] Turn System On Slide the power switch to the "on" position (on left side of device). The red lamp should appear at the top/center of the display. ***Wait two (2) minutes for unit to initialize.***

[3] Heater The heater automatically comes on whenever the system is on. The orange heater lamp should appear (lower right corner of display). ***Wait about two (2) minutes*** or until the heater lamp cycles off. The fuel cell heater cycles on and off as necessary.

[4] Activate Sensor Press, or tap, the black switch button and release immediately. A small green bar lamp should appear at the bottom of the display. No other bars should light. A yellow pump light will appear at top left of display. After 4-5 seconds the pump light will automatically turn off.

The system check is now complete and you are now ready to practice the procedures explained in this manual.

CAUTION! : Many hand lotions, body creams, perfumes, and colognes, etc. contain large amounts of alcohol. Whenever those containers are opened or lotion is used, large amounts of alcohol may be released into the air. If you take samples of air using the passive test mode, you may detect this ambient alcohol. To eliminate this problem, you must clear the air with fresh (alcohol free) air or leave that particular area to get reliable test results.

PAS Vr. ALCOHOL SCREENING & VERIFICATION SYSTEM INSTRUCTIONS

The PAS Vr. is a hand-held breath alcohol-measuring instrument intended for use as an alcohol-screening device to detect deep lung alcohol in human breath when used with the mouthpiece, and no mouth alcohol is present. **Although the PAS Vr. is simple to operate, it is important that the following procedure is complied with in the order given each time a breath test is run.**

ACTIVE /DIRECT BREATH SAMPLING

(Mouthpiece Required)

Step 1: Power On Power on the PAS Vr. a minute or two before you plan to test. The power-on switch will automatically activate the fuel cell heater to ensure the unit responds quickly to alcohol. The orange HTR lamp will cycle on and off as the thermostat regulates the fuel cell temperature (see page 13).

Step 2: Battery Check Check that the red low-battery (BAT) lamp is not flashing. If it is, the battery should be replaced before using the PAS Vr.

Step 3: Zero Check If you are unsure if the fuel cell has recovered from the previous sample, check a sample of alcohol-free air and verify that no bars light up in the display. Observe for about 15-20 seconds. If bars do light up, wait a minute, then try again. In severe cases, refer to the section on Overload Recovery on page 13.

Step 4: Subject Testing Set sampling mode switch to ***active mode*** (AS ON); (green ACT light will flash). Securely insert a "new" disposable mouthpiece into the intake port of the PAS Vr. Insert the opposite end into the mouth of the subject. Have subject take a deep breath - hold - and slowly but steadily exhale into the mouthpiece. As the subject exhales, tap and release the black switch button. A green LED will appear at the bottom of the display and the yellow pump light in the left upper corner comes on as the breath sample is collected. (SEE NOTE - PAGE 8)

Step 5: Peak Reading After the yellow pump light goes out you may remove the PAS Vr. mouthpiece from the mouth of the subject to observe the display. The pump draws air through the fuel cell for about 5 seconds. If there is alcohol present the bars in the main display will start lighting up, with a peak reading within 15 seconds or less.

Step 6: PAS Vr. Off After noting/recording the peak reading, press the control button again and release it immediately. The main display will turn off, and the fuel cell will recover. Remove and dispose of the mouthpiece.

Step 7: Power Off Turn power switch to the "off" position to conserve the battery when the system is not in use for extended periods, e.g., overnight, weekends, etc.

Step 8: Record Results Record results into a suitable log; note the number of bars or the numeric value (express results in terms of weight of alcohol (gm) per volume of breath (liters)) of the bar-graph that light up, if any. If no bars light up record "Negative for Detectable Levels of Breath Alcohol" and have the subject initial the recorded results. If bars light up indicating the concentration of alcohol, the employee if in the commercial transportation industry must be given an Evidential Breath Test (EBT) using a NHTSA/ D.O.T. approved EBT device. Follow the manufacturer's instructions and D.O.T approved procedures (49CFR Part 40) for conducting the EBT.

Note: Give the subject exact instructions as to what he/she is required to do in order to provide a suitable sample of breath for analysis. Tell the subject that he/she must fill his/her lungs and then blow slowly but firmly, and continue to blow until you tell him/her to stop. Finally, tell the subject to keep his/her hands down away from the instrument.

ATTACH MOUTHPIECE

Take a new PAS Vr. mouthpiece and check that the packaging is still intact. **IMPORTANT! Use only the PAS Vr. mouthpieces; these are designed and produced for PAS Systems. Do Not Substitute!** It is important the mouthpiece is attached to the instrument in such a way that your fingers do not touch the actual blowing end, otherwise the subject may refuse to take it into his or her mouth on the grounds of alleged lack of hygiene. Hold the mouthpiece, through the wrapper, between the thumb and forefinger around the blowing end and peel or force the mouthpiece through the wrapper so as to expose the small tip and about half of the barrel. Insert the tip into the sampling port on the right side of the PAS Vr. instrument, then firmly seat. The mouthpiece body should fit positively into place and stay. Having attached the mouthpiece, finally remove the wrapper from the blowing end, and dispose of it properly. You may wish to retain the wrapper to remove the mouthpiece once the test is complete, and dispose of the two items together, or you may ask the subject to remove their own mouthpiece by pulling straight out.

PASSIVE BREATH SAMPLING

(No Mouthpiece Required)

Step 1: **Power On (INITIALIZE)** Power on the PAS Vr. a minute or so before you plan to test. The orange HTR lamp will cycle on and off as the thermostat regulates the fuel cell temperature.

Step 2: **Battery Check** Check that the red low-battery (BAT) lamp is not flashing. If it is, the battery should be replaced before using the PAS Vr.

Step 3: **Zero Check (AIR BLANK)** If you are unsure if the fuel cell has recovered from the previous sample, check a sample of alcohol-free air and verify that no bars light up in the display. Observe for about 15-20 seconds. If bars do light up, wait a minute, then try again. In severe cases refer to the section on Overload Recovery on page 13.

Step 4: **Set Mode** Set sampling mode switch to the ***Passive*** setting (PAS ON) (See switch on right side of instrument).

Step 5: **Subject Testing** Have subject talk (recite alphabet, recite name, address, telephone number, etc.) or gently blow. Hold the device about 5-7 inches in front of the subject's mouth. As subject is talking or blowing, tap and release the sensor control switch. A green LED will appear at the bottom of the display and the yellow pump light in the left upper corner comes on as the breath sample is collected (approx. 4-5 seconds). If alcohol is present the bar-graph display will begin to light up within a few seconds.

Step 6: **Peak Reading** After the yellow light goes out you may remove the device from the breath stream. Observe the bar-graph display for 5-15 seconds. If there is alcohol present, the bars in the main display will start lighting up with a peak reading within about 2-10 seconds. If bars light up record the number of bars that light indicating the approximate concentration of breath alcohol (BrAC).

Step 7: **PAS Vr. Off** After noting/recording the peak reading, press the control button again and release it immediately. The Sensor main display will turn off, and the fuel cell will recover. Always turn the PAS Sensor off after recording the reading.

PASSIVE BREATH SAMPLING

(Continued)

Step 8: Power Off Turn power switch to off position to conserve the battery when the system is not in use for extended periods (overnight, weekends, etc.).

Step 9: Record Result Record results into a suitable log, record the number of bars that light up, if any. If no bars on the graph light up record "Negative for Detectable Levels of Breath Alcohol" and have the subject initial the recorded results.

CAUTION!: Be aware that ambient air alcohol may be present in your test area. Such alcohol sources may be from hand and body lotions, anti-bacterial lotions and creams, mouthwashes, perfumes, colognes, etc. Check Labels. Perform testing in areas away from such materials. Freshly applied hand creams and lotions may emit large amounts of alcohol into the air. Certain cleaning solutions may also contain alcohol.

Remember 3 Key principals (DDT) for accurate passive sampling:

Distance: 5-7 inches
Direction: Point intake port towards persons mouth
Talking: Have person talk while sampling pump is running

REMEMBER "DDT"

ALTERNATIVE METHOD OF SAMPLING
ZERO TOLERANCE TESTING

Using the PAS Vr. for reliable confirmation of the absence of alcohol (no alcohol) may best be obtained by:

Step 1: Instruct the subject to take a deep breath and exhale slowly for about 5-10 seconds.

Step 2: As the subject is exhaling place the sample port approximately 6 inches from the subject's mouth and tap and release the sensor control switch to activate the sensor and sampling pump.

Step 3: Hold the PAS Vr. directly in the breath stream until the yellow sampling pump goes out.

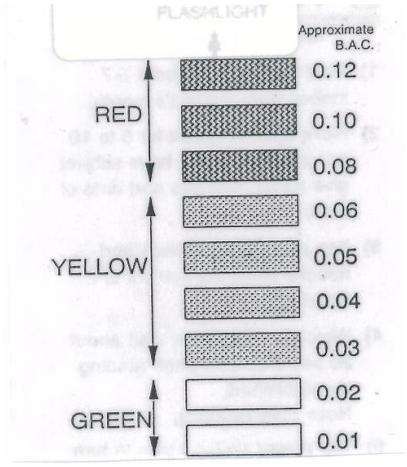
Step 4: Observe the bar-graph display for approximately 15 seconds or less and record the number of bars that light up indicating the approximate concentration of breath alcohol (BrAC).

Step 5: If no bars light up, the subject is likely free of breath/lung alcohol. Further confirmation can be made by using the ***active/direct*** setting with a mouthpiece.

Interpreting the Display

The PAS Vr. is intended to be used as a rapid **screening device** to detect alcohol in human breath or airborne alcohol in the environment. Legally binding BrAC measurements can only be obtained with evidential quality instruments. The purpose of the PAS Vr. is to help you quickly screen for breath alcohol and decide whether to use an evidential breath tester in individual cases.

If the PAS Vr. is used according to the manufacturer's instructions in the **passive testing mode**, the chart below will give you an approximate indication of the subject's breath alcohol concentration (BrAC). Roughly speaking, the readings can be interpreted as follows:



Red bars lit	Subject may exceed the .08 BrAC legal limit for drivers of private vehicles.
Yellow bars lit	Subject may exceed the .04 BrAC legal limit for drivers of certain commercial vehicles and aircraft.
Green bars lit	Alcohol is present but probably not in intoxicating quantities

If the PAS Vr. is used according to the manufacturer's instructions in the *active or direct testing mode,* the numeric value indicated on the bar-graph display will give you an accurate verification of the subject's deep lung breath alcohol concentration (BrAC). Results are expressed in terms of weight of alcohol (gm) per volume of breath (liters).

Please carefully review this **PAS Vr. Alcohol Screening & Verification System** instruction manual for tips on the usage, preparation, and maintenance of the PAS Vr. or call **1-800-660 SNIF** for guidance.

Low Temperature Operation

At low temperatures, fuel cells take longer to reach their peak readings of alcohol level. They also take longer to recover from each positive sample before you can take another. To overcome this problem, your PAS Vr. includes a thermostatically controlled heater which maintains the fuel cell temperature at 104°F (40°C).

The heater comes on automatically when the power switch is on. The fuel cell reaches its operating temperature within a few minutes, although the exact time obviously depends on how cold it is to start with. The orange HTR indicator cycles on and off as the thermostat regulates the fuel cell temperature.

The ***sensitivity*** of the fuel cell is not affected much by temperature. A cold unit will work just fine---it's simply slower to respond and recover. You do not ***have*** to wait for the fuel cell to warm up.

Clearing Overloads

If your PAS Vr. is overloaded, it will take a few minutes to recover. Here is the procedure for rapid fuel cell recovery:

[1] PAS Sensor Off/Power On	Turn off the sensor by tapping and releasing the black sensor switch button but leave the power switch "ON" to speed recovery.
[2] Check in 5 Minutes	After 5 minutes, turn the sensor back on and check the PAS Vr. with an alcohol-free air sample. If bars still light up in the display within approximately 20 seconds, repeat steps 1 and 2 as necessary until the overload has been completely cleared.
[3] PAS Off	Turn off the sensor. Your unit is now cleared and ready for use.

OTHER APPLICATIONS

Passive Mode --- Zero Tolerance

Alcohol in Enclosed Spaces

The PAS Vr. is sensitive enough to detect background levels of alcohol in enclosed spaces such as vehicles, rooms, lockers, etc. This is useful for detecting drinking by minors in cars or at social gatherings, without sampling each individual's breath, or in correctional facilities and treatment centers.

To detect alcohol in any enclosed space, simply run the PAS Vr. to sample still air drawn from anywhere in the space. Just make sure you don't sample fresh air from an open door or window.

Under suitable conditions, the PAS Vr. will detect alcohol from open containers in vehicles. Containers will be easier to detect as you get closer to them if the alcohol content is high, and if you prevent the vehicle space from getting flushed with fresh air.

Tired, Sick, or Crash Victims

If a crash victim is unconscious, it can be important to know whether he or she has been drinking. This will often determine the best course of emergency medical treatment.

Even if the victim is conscious, it is important to know whether alcohol might have contributed to the accident. This will influence the course of any investigation.

Any crash victim who is breathing can be checked with the PAS Vr. An unconscious subject might be exhaling from the nose instead of the mouth, but the procedure is the same as with anyone else. You only need a few seconds to take the breath sample, and you can move away while the PAS Vr. display is reaching its peak level.

Alcoholic Beverages

With open container laws and the problems of alcohol in our schools, the PAS Vr. is invaluable for determining whether a beverage contains alcohol. This is easily done by sampling the air above the container.

Warning! The air over an alcoholic drink--even a beer has much more alcohol in it than a drinker's breath. It is therefore easy to overload the PAS Vr. when checking beverage containers. Overloading should be avoided whenever possible, because it takes the fuel cell longer to recover, and its performance will gradually deteriorate.

To check a container for alcohol, angle the inlet port away from the container opening to dilute the sample. If your first reading is inconclusive, you can always take another one with less dilution.

The PAS Vr. readings should not be taken as an accurate indication of the strength of the drink. However, with a little experience you should be able to distinguish between beer, wine, and spirits. Take the time to practice on various drinks and develop an operating style that avoids overloading the instrument.

Detecting Alcohol in Open Containers

Under suitable conditions, the PAS Vr. will detect alcohol in open containers, in vehicles, lockers and other enclosed spaces. Please refer to the section on Enclosed Spaces for further details. (page 14).

CAUTION! BEVERAGE SAMPLING: Be aware that certain citrus-based beverages have been reported to give a positive reaction when sampled with a Passive Alcohol Sensor.

For Example: Citrus-Based beverages such as Mountain Dew, Mello Yello, Code Red, etc., may give positive readings. It's not clear if these beverages are in fact fermenting and producing low levels of alcohol, or if certain ingredients are reacting chemically with the electrochemical fuel cell in some manner to provide a positive reading.

To minimize confusion, **always retest** subjects (individuals) about **15 minutes after an initial positive reading** to verify true alcohol presence and not the result of residual mouth alcohol from these types of beverages. However, individuals may "spike" these drinks to cover up their actual alcohol consumption. Wait 15 minutes and retest the subject (follow sampling instructions on page 9) to verify if they are abusing alcohol.

Further, always conduct an "air blank" between samplings to ensure the fuel cell sensor is clear of any residual alcohol carried over from the prior sample. "Air Blanks" are done by simply activating the pump and processing a sample of alcohol-free ambient air. Observe the display for approximately 20 seconds after the sample pump has stopped. If no bars light up you may assume the sensor is free of any carry-over and you may proceed with sampling the next subject (individual). See the section on "Clearing Overloads" for additional information.

COMMON QUESTIONS

Here are the answers to questions most often asked by PAS Vr. users:

What do I do if…

Q. *The unit won't take a sample; the green or yellow indicators do not come on?*

A. The sampling pump may be damaged or the indicator lamp may be faulty. Otherwise, you might have a dead battery.

Q. *The PAS Vr. detects alcohol, but seems to be giving low readings in the Active mode?*

Your unit might need recalibrating or the mouthpiece may be incorrectly seated. **Caution:** Flow-rate is important. Have subject blow slowly, but steadily for about 5 seconds for best results.

Q. *The display lights up several bars with no alcohol present?*

A. Improper performance of initialization procedure may cause display bars to light. This can also be due to background levels of alcohol vapor in the air, but it is more likely that the fuel cell has not recovered from the previous positive reading. Many hand lotions contain alcohol that may contaminate the air. (See Caution Page 15). If the problem persists when you check a sample of fresh air, follow the procedure for clearing overloads on page 13.

Q The PAS Vr. appears to be too sensitive?

A. You might be using the instrument improperly, or it might need to be recalibrated.

Q. *The heater won't come on?*

A. The heater may be at optimum temperature, it will continue to cycle on and off. Otherwise, you might have a low battery or defective thermostat.

Q. *The red LED lamp starts flashing?*

A. The battery is discharged and could give a false reading. Replace it before using the unit.

Q. *The battery discharges too quickly?*

A. Remove battery when not in use for extended periods. Be sure the power is off when not in use for extended periods of time.

Q. *The orange HTR indicator is ALWAYS on when the PAS Vr. is on?*

A. If the HTR indicator fails to cycle on and off as the thermostat regulates the fuel cell temperature, you may have a defective thermostat. Please return your PAS Vr. for service.

Q. *I dropped my PAS Vr. on the ground?*

A. The instrument is probably just fine. If it doesn't work, the battery connectors in the battery compartment might have come loose. Check for this before assuming that the PAS Vr. needs repair.

Q. There seems to be something wrong with my unit?

A. Call PAS Systems International for assistance. Do not attempt to repair the PAS Vr. yourself. There are no user serviceable parts inside, and you will void the warranty. (Please refer to Service section on page 24.)

HINTS AND TIPS

DO Accurately position the mouthpiece in the inlet port and the subject's mouth.

DO Have subject blow slowly and steadily.

DO Keep your fingers away from the inlet/outlet ports.

DO Turn off the PAS Vr. when not in use.

DO Treat your PAS Vr. with the respect deserved by any precision instrument. Protect it from temperature extremes (i.e., don't leave it on your dash in the midday sun).

DO Remove the battery if the unit is not going to be used for more than a week.

DO Use only Alkaline batteries. These may be obtained from PAS Systems International.

DO Have the calibration of your unit checked every 6 months, or whenever it seems to be losing sensitivity.

DON'T Overload the fuel cell. The fuel cell takes a while to recover, and frequent overloads will damage it.

DON'T Sample raw cigarette smoke. This rapidly damages the fuel cell.

DON'T Allow subject to blow fast, forcefully or in short bursts.

DON'T Allow liquids to enter the inlet or outlet ports.

DON'T Subject the PAS Vr. to abuse such as excessive shocks.

DON'T Attempt to dismantle the unit. This will void the warranty.

DON'T Clean the case with chemical solvents. You might damage the fuel cell permanently.

DON'T Leave the battery in the unit for days; remove when not in use.

TECHNICAL SPECIFICATIONS

Product Name	PAS Vr. Alcohol Screening & Verification System
Function	Combines both ***direct and passive testing*** for detecting low levels of alcohol in exhaled breath or the environment.
Alcohol Sensor	Electrochemical fuel cell generates an electrical current in response to alcohol vapor.
Cell Heater	Built-in heater regulates fuel cell temperature at 104° (40°C)
Accuracy	Meets DOT requirements at 0.020% BrAC (.005)
Specificity	Fuel cell detects only alcohol. It is unaffected by acetone, paint and glue fumes, foods, confectionery, methane, and practically any other substance likely to be found in the breath.
Breath Sample	Pump runs for 5 seconds and draws in a 1 cu.in. (15ml) air sample (nominal figures).
Display	Color-coded 9-element LED bar-graph and numeric display of alcohol level.
Peak Reading	Within 2-10 secs, longer at low temperatures unless fuel cell heater is on.
Recovery Time	A few seconds to minutes after a positive reading or longer if the fuel cell is overloaded. No recovery time if no alcohol is detected.
Power Supply	9-volt Alkaline Battery.
Battery Capacity	Approximately 600 tests.
Environmental	Operating temperature range; 0 to 104°F (-18 to +40°C). The PAS Vr. housing is weather resistant.
Dimensions	2.75" (6.8cm) w x 4.60" (11.5cm) h x 1.50" (3.8cm) d
Weight	6.5oz (0.2kg) with battery
Accessories	Various accessories and spare parts are available from PAS Systems International: Mouthpieces Batteries Wet Calibration Simulator & Certified Ethanol Calibration Fluids CAL-Pump

QUALITY ASSURANCE PLAN

The following section describes the Quality Assurance Plan recommended by the manufacturer of the PAS Vr. Alcohol Screening & Verification System.

The manufacturer recommends the PAS Vr. System calibration be checked every six (6) months and sensitivity be checked monthly, or more frequently if the operator feels it is necessary because of testing schedules. In the experience of the manufacturer a monthly check of sensitivity using a known source of alcohol is adequate to assure the instrument is functioning under normal operating conditions (see product specifications). Additionally, regular visual inspection of the system to confirm the intake port or exit port is not blocked, and each light (LED) checked to be sure they display properly when activated. Note all inspections and testing in the logbook by serial number. In the event of an observed malfunction or failure of the PAS Vr. to test accurately call 1-800-660-SNIF for instructions or guidance.

Compliance with the following procedures will assure reliable testing, calibration, and operation of the PAS Vr. System.

1. Minimum Intervals for Testing System Performance

2. Tolerance (See Product Specifications)

3. Inspection, maintenance and calibration

4. Record Keeping - Logs

FOR TECHNICAL SERVICE & INFORMATION CALL 1-800-660-SNIF!

READYING THE PAS Vr. FOR TESTING

1. Install a fully charged battery. When the heater light is ON - there should be no blinking red battery light. ***Turn the power switch to the "on" position and wait a minute or two before testing – to initialize.***

2. Inspect the inlet and outlet openings of the PAS Vr. to make sure that they are clean and not clogged.

3. Conduct zero check:

> Note: Be sure the room air is alcohol free and that the ambient temperature is above 50°F. Do not have jars of stock solution or other alcohol open in the room during testing.

   a. Turn on instrument.
   b. Take an air sample - tap button; green indicator light comes on
   c. If only the small green sampling indicator light comes on, (within 15-20 seconds) - zero check is ok

4. Clear overload if necessary: If one or more of the BrAC indicator lights comes on proceed to clear overloads as follows:

   a. Turn off the PAS Vr. sensor. This will speed the recovery of the fuel cell.
   b. After five minutes, repeat the zero check making sure that the heater cycles. If none of the BrAC indicator lights come on, the zero check is OK.
   d. If however, one or more of the indicator lights comes on again, this clearance process should be repeated. If after two attempts to clear the unit, the indicator lights are still coming on when the zero check is performed, there are two possibilities:

      1. The unit requires an internal zero adjustment. To have this adjustment made, the unit has to be returned to the manufacturer.

      2. The air in the area may contain a significant amount of alcohol. To determine if this is the case, zero checks should be made away from this area to see if the unit gives a zero reading.

> Note that throughout the procedure, the test conductor should check for a flashing battery light to ensure that the batteries are not run down during testing procedures.

5. Once the zero check has been performed with a satisfactory result, the unit is ready for sensitivity testing.

PAS Vr. SENSITIVITY CHECKING/TESTING

To check the sensitivity of the PAS Vr. unit, take the steps described below:

Using a known source of ethanol alcohol, wet the index finger and hold approximately 1-2 inches in front of the intake port. Activate the pump and observe the bar-graph display for approximately 15 seconds. A reading should be observed. This procedure verifies the pump/motor is functioning properly. An alternative method is to hold the intake port 2-4 inches above a known source of alcohol (i.e.: a mixed drink, beer, or diluted mouthwash) and activate the pump motor and observe the bar-graph display for alcohol readings. If alcohol is detected, the system is functioning and ready for subject/student testing.

NOTE: Please allow several minutes for the fuel cell sensor to clear (reset) after function/sensitivity testing and before conducting a test with a subject/student.

RECORD KEEPING

Each organization/company that employs PAS Vr. units should assign a staff member to be responsible for care and maintenance. A log should be established to record the checking, calibration and maintenance activities on each unit. Testers using the units should be required to report any problems with the units to the proper staff member who should record the problems in the log. If a unit is dropped or is damaged in some other way this should be entered in the log so that the information can be forwarded to the manufacturer along with the unit for repair. The log will record the life history of the units and should be carefully maintained since it may be subpoenaed if the use of the PAS Vr. is challenged.

To ensure that there is a record that these sensitivity checks have been conducted on a monthly basis, it is necessary to establish a log with a record for each of the PAS Vr. units employed by the Company or Department.

The log also provides a brief description of the action taken to overcome the problem or to examine the unit for damage as a result of a tester's report. The log will note instances in which the PAS Vr. has been returned to the manufacturer for service and when it was received and checked upon its return. The log will also contain a notation recording each month's sensitivity check and the outcome of that check and also a calibration adjustment if such an adjustment was necessary.

In addition to monthly sensitivity checks, PAS Vr. units should be checked if they have received an unusual stress such as being dropped. If a PAS Vr. unit has been sent to the manufacturer and returned following repair, a check should be made to ensure that the calibration was not affected by the handling during shipping. Also, perform periodic functional checks with known sources of alcohol to be certain all functions (e.g., pump) are performing.

RETURN POLICY

If you receive an order that appears to be defective or damaged, please contact PAS Systems at 800-660-7643 within 10 days of receipt of the shipment. PAS Systems will replace the equipment, file any necessary claims, and correct any shipping errors.

To return an order for any other reason, contact PAS Systems at 800-660-7643 within 10 days of receipt of the order and explain the reason for the return. A 20% restocking fee will be assessed and freight charges are non-refundable.

SERVICE

Your PAS Vr. is a self-contained unit. Other than the batteries, there are no user-serviceable parts inside. If you conclude that your PAS Vr. is not functioning correctly, it must be returned to PAS Systems International for service.

Carefully package the unit. Place the package in a suitable shipping box and send to the address below. We suggest shipping UPS or Federal Express, etc., rather than parcel post for tracking purposes. It would be wise to insure the package for the original purchase price.

If your unit is out of warranty, you will be notified of a nominal service charge before repairs begin.

Ship units requiring service to:

PAS Systems International
Attn: Service Dept.
215 Southport Dr. Suite 400
Morrisville, NC 27560

Tel: (540) 372-3431
(800) 660-**SNIF**

WARRANTY

PAS Systems International, provides a one (1) year WARRANTY from the date of purchase of the instrument should the product exhibit a manufacturing defect, or defect in workmanship. Products showing unusual wear, abuse, alteration, items dropped, or accidentally broken, will not be covered under the WARRANTY. In addition the warranty does not cover the replacement of batteries. The Company will provide one (1) free calibration service during the WARRANTY period should such re-calibration be necessary.

Please call **1-800-660-SNIF** anytime you have any questions. Your satisfaction is very important to us. Thank you!

Extended Warranty Information Available

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