

# INTRODUCTION

## Overview of the AlcoHAWK® Slim

The AlcoHAWK® Slim is a breath alcohol tester designed to test for the presence of alcohol in the blood. This device provides a digital reading of an individual's approximate blood alcohol concentration (BAC) in seconds. The AlcoHAWK® Slim is powered by two AA batteries that generally last between 200-300 tests.

To fully utilize this device to its potential, we recommend reading this entire manual. Enjoy your AlcoHAWK® and please do not drink and drive!

## Alcohol Testing Theory

Ethyl alcohol is detectable in the breath because it is absorbed from the mouth, throat, stomach and intestines into the bloodstream. When blood flows through the lungs, some of the alcohol passes across the membranes of tiny lung air sacs (alveoli) into the air. The concentration of the alcohol in the alveolar air is proportional to the alcohol in the blood. As the alcohol in the alveolar air is exhaled, it can be screened by a breath alcohol testing device. Rather than drawing a subject's blood to test for alcohol level, a subject's breath can be tested using a breath alcohol testing device. Because breath alcohol concentration is proportional to blood alcohol concentration (BAC), BAC can be calculated by measuring alcohol content on the breath. The ratio of breath alcohol to blood alcohol is 2,100:1. This means that 2100 milliliters of alveolar air will contain the same amount of alcohol as 1 millimeter of blood. This concept is well established by Henry's Law, which states that the concentration of a volatile substance in the air above a fluid is proportional to the concentration of the volatile substance in the fluid.

When performing a breath alcohol test, it is necessary to analyze an alveolar or deep lung air sample. If the test sample is not based on a deep lung sample, the sample analyzed could be diluted with breath of lower alcohol concentration from the upper respiratory tract. This would result in a lower than optimum test result. As a result, breath alcohol testers listed on the Department of Transportation (DOT), National Highway Traffic Safety Administration's (NHTSA) Conforming Products List of Screening Devices To Measure Alcohol in Bodily Fluids, typically have protocols which require the subject to deliver at least 1.5 liters, or continuous blowing into the unit for least five (5) seconds.

<sup>1</sup>Federal Register: May 4, 2001 (Volume 66, Number 87)

## **Description Of Testing System**

This device contains a sensor chip designed to test for the presence of alcohol. A thick film heater is printed on the reverse of the chip placed in the plastic housing. The metal oxide material is heated to a specific temperature. The resistance of sensing material changes rapidly according to gas concentration changes, thereby enabling the reading of alcohol concentration by resistance measurement. This alcohol concentration is directly related (as explained in the above paragraph) to the concentration of alcohol in the blood. Therefore, this device can give a reading that reflects an estimate of the concentration of alcohol in the blood.

## **Dose-Specific Effects Of Alcohol Intoxication**

The effects of alcohol intoxication are greatly influenced by individual variations among users, as well as other factors such as altitude and air temperature. The following are *general* dose-specifics effects of alcohol, although some users may become intoxicated at a much lower BAC than shown below. Because a safe reading on a breath alcohol screener does not mean that a driver's reaction times can respond to any emergency encountered, do not drink alcohol and drive.

Some states prohibit driving with a .08% BAC or above reading, and in many states, individuals can be prosecuted for driving under the influence at any level.

Some states also prohibit driving commercial vehicles or any vessel with .04% or more. There is no safe way to drive under the influence of alcohol. Even one drink can make you unsafe.

<b>BAC</b>	<b>Dose-Specific Effects<sup>2</sup></b>
0.02-0.03% <sup>3</sup>	Generally no loss of coordination, slight euphoria or loss of shyness. Depressant effects are not apparent.
0.04-0.06%	General feeling of well-being, relaxation, lower inhibitions, sensation of warmth. Euphoria. Some minor impairment of reasoning and memory, lowering of caution. Driving skills may be impaired at this level of intoxication.
0.07-0.09%	Slight impairment of balance, speech, vision, reaction time, and hearing. Euphoria. Judgment and self-control are reduced, and caution, reason and memory are impaired. Driving skills are always impaired at this level of intoxication.
0.10-0.125%	<b>Significant impairment of motor coordination</b> and loss of good judgment. Speech may be slurred; balance, vision, reaction time and hearing will be impaired. Euphoria.
0.13-0.15%	<b>Gross motor impairment and lack of physical control.</b> Blurred vision and major loss of balance. Euphoria is reduced and dysphoria is beginning to appear.
0.16-0.20%	Dysphoria (anxiety, restlessness) predominates, nausea may appear. The drinker has the appearance of a "sloppy drunk."
0.25%-0.29%	Needs assistance in walking; total mental confusion. Dysphoria with nausea and some vomiting.
0.30%-0.39%	Loss of consciousness.
0.40% +	Onset of coma, possible death due to respiratory arrest.

<sup>2</sup> Bailey, William J., *Drug Use in American Society*, 3rd ed., Minneapolis: Burgess, 1993.

<sup>3</sup> Some individuals may experience impairment at BAC levels of .03% or even lower.

## Uses Of Breath Alcohol Screening Devices

Breath alcohol screeners are used in a wide variety of applications. For example, law enforcement officials use breath alcohol screeners on the roadside to determine if a subject should be tested on an evidential alcohol test (a test given to determine an exact blood alcohol concentration). In addition, breath alcohol screeners are used in a wide range of professions and industries to screen for the presence of alcohol before an individual performs certain job functions. Since the presence of alcohol in a person's body can impair numerous activities of an individual, a simple breath alcohol screening device that can test for the presence of alcohol in a individual's system can be of great value.

## PREPARATION

### Installing The Battery

Apply a small amount of pressure on the indentation of the battery compartment cover located on the rear of the unit and pull the cover out and away from the bottom of the unit to release the cover. Install the batteries and replace the battery compartment cover. See the following diagram.



## Opening The Mouthpiece

Pull up on the folding mouthpiece located on the left side of the unit until the mouthpiece extends straight out from the unit. If testing multiple individuals, it is suggested to place a new cover over the mouthpiece each time for sanitary purposes. See diagram below.



# COMPONENTS DIAGRAM



## OPERATION

### Operating Instructions

WAIT **20 MINUTES** AFTER SMOKING, EATING, OR DRINKING BEFORE USE. FAILURE TO DO SO CAN ALTER THE BAC READING AND CAN DAMAGE THE SENSOR.

- 1) Place a fitted cover over the mouthpiece each time you test another individual.
- 2) If it has been more than 24 hours since the device was last used, **prime the sensor** by blowing into the mouthpiece for 4 to 5 seconds **before** turning on the device.
- 3) **PRESS** the black **Power On/Off** button located on the front of the unit. A single beep will sound and the device will count down from 60 as

it prepares the sensor for testing.

**Note:** The device will restart a count down from 10 if the sensor is not ready within the first 60 second countdown.

4) **WAIT** until the **RED LIGHT IS SOLID RED** and you hear a **SINGLE BEEP**.

**Note:** The device will not shut off until a test is performed OR until 15 seconds of non use elapses.

5) Take a **DEEP BREATH AND BLOW STEADILY** (for at least 5 seconds) until a **BEEP** sounds to signal completion of the testing.

6) **READ THE RESULTS (NEVER DRINK AND DRIVE).**

<b>Reading</b>	<b>What It Generally Means</b>
.02-.03%	Generally no loss of coordination, slight euphoria or loss of shyness. Depressant effects are not apparent. <b>DO NOT DRIVE.</b>
.04-.06%	General feeling of well-being, relaxation, lower inhibitions, sensation of warmth. Euphoria. Some minor impairment of reasoning and memory, lowering of caution. <b>Driving skills may be impaired at this level of intoxication. DO NOT DRIVE.</b>
.07-.09%	Slight impairment of balance, speech, vision, reaction time, and hearing. Euphoria. Judgment and self-control are reduced, and caution, reason and memory are impaired. <b>Driving skills are always impaired at this level of intoxication. You are legally intoxicated at 0.08% in most states! DO NOT DRIVE.</b>
.10% +	Significant impairment of motor coordination and loss of good judgment. Speech may be slurred; balance, vision, reaction time and hearing will be impaired. Euphoria. <b>DO NOT DRIVE.</b>

7) For more testing, wait one (1) minute and repeat steps 1 – 6.

## Error Messages

Error Message	Cause and Course Of Action
Sn or PL	There has been an error with the sensor. This can occur if the test subject does not wait at least 20 minutes after smoking, eating or drinking before using the unit. or if the unit has not been used for an extended period of time. Press the Power On/Off button once to turn off the unit and repeat Steps 1 – 6 above. If this message is displayed four consecutive times, the unit may need serviced.
rP	Repeat the test because the unit did not detect an even alcohol concentration in the breath sample. This can occur if the user varies the blowing force when performing a test or if the exhaust port is obstructed. Repeat Steps 1 – 6 above to perform another test.
H	The unit detected a very high alcohol concentration (above 0.40% BAC).
Lo	Low Battery. Replace AA batteries.

## Understanding The Results

The result that displays on this device is an estimate of the subject's BAC. The Department of Transportation (DOT) employs the standard of 0.02% as a threshold for a positive test for alcohol in no tolerance screening. Nearly all states have 0.08% as the legal BAC limit for tasks such as operating a motor vehicle. Some states prohibit driving commercial vehicles or any vessel with a 0.04% BAC or higher. This device should only be used as a screening device and may only give a reading of the possible presence of alcohol in the blood of the test subject. Correlation between breath alcohol content and BAC depends on many factors, including temperature and health conditions. **The exact BAC in the blood of the test subject cannot be exactly determined by using a breath alcohol screening device. Never drink and drive.**

## Precautions

1. After drinking, smoking and eating, users should **wait at least 20 minutes** before testing.
2. Avoid testing in strong winds, in a closed room with a heavy amount of smoke, or where a lot of alcohol is being consumed.
3. When the unit displays Lo, replace the AA batteries.
3. Do not blow cigarette smoke, food or liquid into the instrument because this may damage the sensor.
4. This device is designed to be used in a temperature range of 10– 40 (C) or 50-104 (F). Operation of the unit in temperature ranges above or below this range may affect the accuracy of results.
5. Avoid testing in the presence of any substances that contain methyl alcohol, isopropyl alcohol or acetone. These substances may interfere with the results of the test.
6. Conditions that increase the amount of ketones on the breath, such as diabetes and low caloric intake, may cause a false positive test.
- 7. DO NOT USE THIS DEVICE AS A TOOL TO DETERMINE WHETHER YOU OR ANYONE ELSE SHOULD OPERATE ANY MOTOR VEHICLE OR MACHINERY.**
- 8. AN INDIVIDUAL'S BAC CAN CONTINUE TO INCREASE OR DECREASE OVER TIME, DEPENDING ON MANY FACTORS. OBTAINING A BAC READING AT ONE TIME DOES NOT MEAN THE BAC READING WILL BE THE SAME EVEN A FEW MINUTES LATER.**
- 9. DO NOT DRINK AND DRIVE. ALWAYS HAVE A DESIGNATED DRIVER WHEN YOU DRINK ALCOHOL.**

## SPECIFICATIONS

Dimensions	5 x 1.75 x .75 inches
Weight	.3 lbs (240 grams)
Housing	Shock Resistant, Molded Plastic
Power	2 AA Batteries
Battery Life	150 Tests
Sensor	Sensitive Semiconductor Sensor
Blowing Time	5 Seconds
Response Time	5 Seconds
Digital Display	2 Digits (.00% B.A.C.)
Operating Temp	10 – 40 c (50 – 104 f)
Detection Range	.00% - .40% B.A.C.
Air Sample	5 Seconds
Calibration	Visit <a href="http://www.q3i.com">www.q3i.com</a>
Operation	1 Button
Warranty	1 Year Limited Warranty