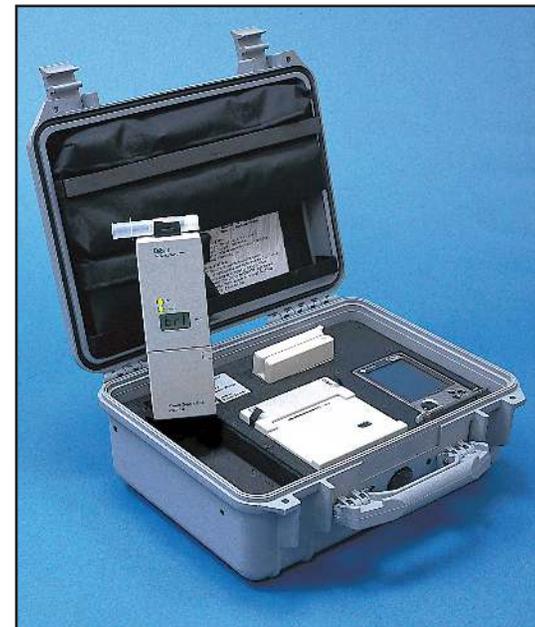


April 2001

---

# ***EPAS***



## **Operating Manual**

---

**Draeger Safety, Inc.**  
**Breathalyzer Division**  
185 Suttle Street, Suite 105  
Durango, CO 81303-7911

Tel: (970) 385-5555 Fax: (970) 385-5522  
E-Mail: [info@draeger-breathalyzer.com](mailto:info@draeger-breathalyzer.com)

[www.draeger-breathalyzer.com](http://www.draeger-breathalyzer.com)

Copyright © 2000,

All rights reserved.

Reproduction of this document, in part or whole, by any means, electronic or otherwise, is prohibited, except by express written permission from Draeger Safety, Inc., Breathalyzer Division, 185 Suttle Street, Suite 105, Durango, CO 81303-7911.

### Disclaimer

The authors of this manual have incorporated their best efforts in preparing this information and ensuring that the technical content is completely accurate at the time of publication.

Draeger Safety, Inc., Breathalyzer Division, accepts no responsibility for technical inaccuracies and reserves the right to make periodic changes, enhancements, revisions and alterations to the programs and/or its manuals without obligation to notify any person, institution or organization of such changes, enhancements, revisions and alterations.

### Safety

For correct and effective use of the **EPAS**, it is essential to read and strictly follow the instructions contained in this document.

The **EPAS** is to be used only for the purposes specified herein.

### Maintenance

Repairs of the **EPAS** may only be performed by Draeger Safety, Inc., Breathalyzer Division, or a qualified service technician.

Only original Draeger spare parts may be used.

# Contents

## **EPAS** Components

System Overview .....	3
Cassiopeia® .....	4
Alcotest® 7410 <i>Plus</i> .....	5
Printer .....	6
Mag Card Reader .....	6

<b>Quick Reference Guide</b> .....	7
------------------------------------	---

## **EPAS** Preparation

<b>Preparing the Electrical System</b> .....	8
Charging the Batteries .....	8
AC Charging of the Batteries .....	8
DC Charging of the Batteries .....	8
Low Battery Indication .....	9

<b>Preparing the Alcotest® 7410 <i>Plus</i></b> .....	9
Disconnecting/Connecting the Battery Pack .....	9
Turning On and Off .....	10

<b>Preparing the Printer</b> .....	10
Loading Paper .....	10
Replacing the Ribbon Cartridge .....	11
Re-printing the last Test .....	11

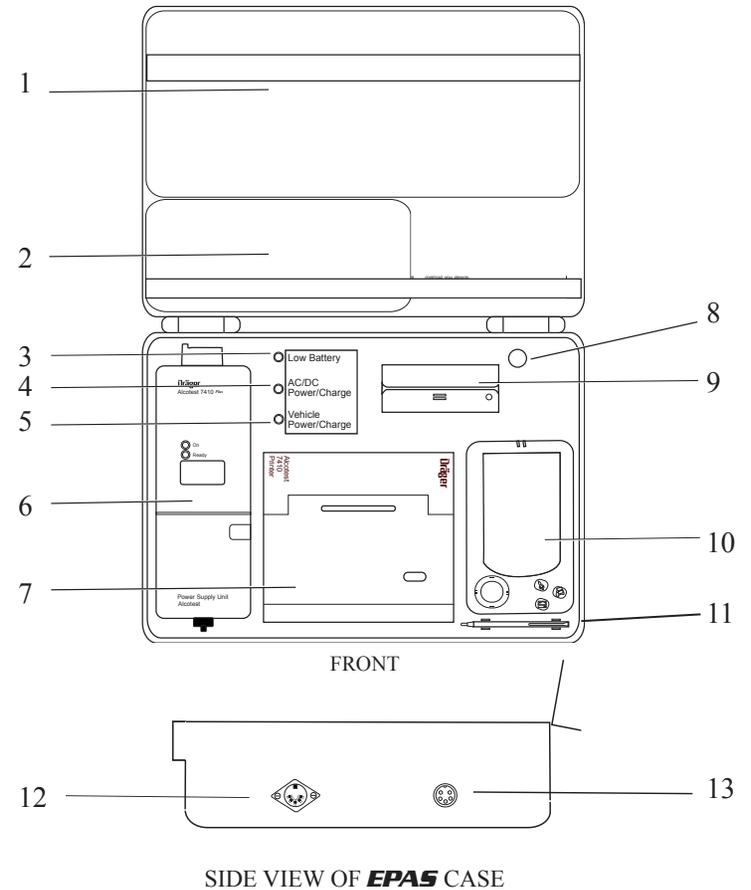
## **EPAS** Operation

Normal Power Up .....	12
Quick Start Power Up .....	12

<b>Data Entry Options</b> .....	13
Using Magnetic Stripe Cards .....	13
Using the Cassiopeia® Virtual Keyboard .....	13

<b>Performing an Evidential Breath Test</b> .....	13
Subject Data .....	14
Operator Data .....	14
Editing Operator or Subject Data .....	16
Evidential Test Warm Up Sequence .....	16
Performing a Breath Test .....	17
Printing Test Results .....	18
Aborting a Test .....	19
Turning the Alcotest® 7410 <i>Plus</i> Off .....	20
<b>Performing a Screening Test</b> .....	21
Providing a Breath Sample .....	22
Printing Test Results .....	22
Additional Screening Test .....	23
Turning the Alcotest® 7410 <i>Plus</i> Off .....	23
<b>Performing an Accuracy Check</b> .....	24
Beginning an Accuracy Test .....	24
Delivering the Sample .....	26
Printing Test Results .....	26
<b>Wet Bath Calibration</b> .....	27
<b>Maintenance and Troubleshooting</b> .....	28
Alcotest® 7410 <i>Plus</i> .....	28
Alcotest® 7410 <i>Plus</i> Printer .....	31
<b>Technical Specifications</b> .....	
Alcotest® 7410 <i>Plus</i> .....	32
Alcotest® 7410 <i>Plus</i> Printer .....	33
<b>Examples of Printout</b> .....	34

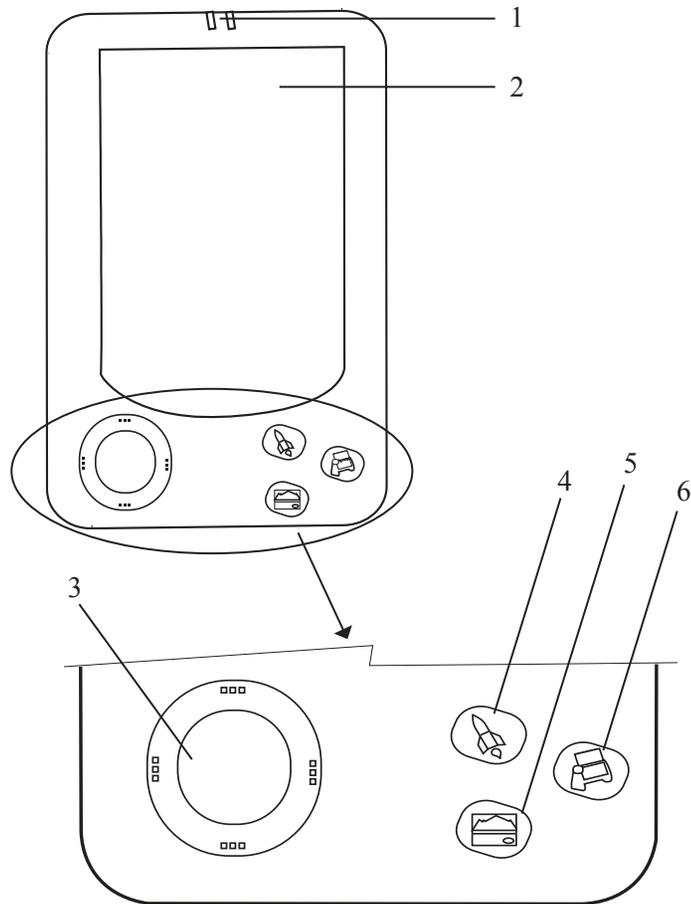
## System Components Overview



### Component Definitions:

- |                                |                                 |
|--------------------------------|---------------------------------|
| 1.) Mouthpiece Pouch           | 8.) Automatic Power-up Switch   |
| 2.) Accessories Pouch          | 9.) Magnetic Stripe Card Reader |
| 3.) Low Battery LED            | 10.) Casio™ Cassiopeia® PDA     |
| 4.) AC/DC Power/Charge LED     | 11.) Stylus                     |
| 5.) Vehicle Power/Charge LED   | 12.) External Data Port         |
| 6.) Alcotest® 7410 <i>Plus</i> | 13.) External Power Port        |
| 7.) Alcotest® 7410 Printer     |                                 |

## Cassiopeia® Components

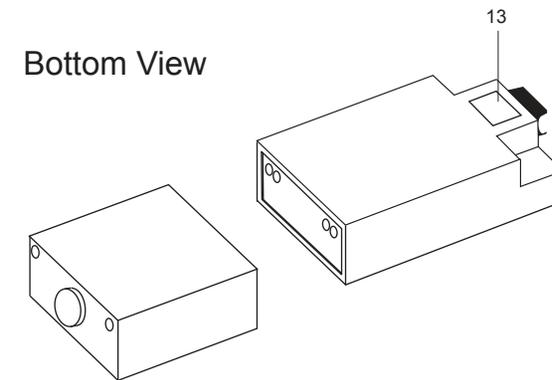
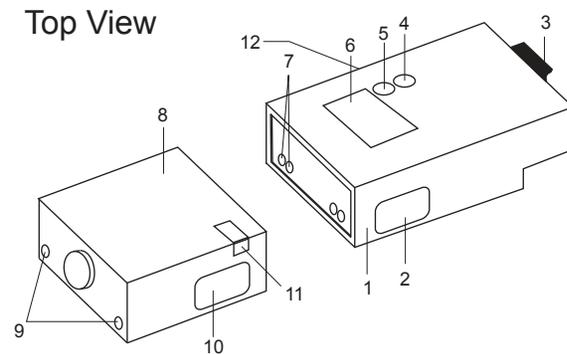


(Close-up of Cassiopeia®  
Control Buttons)

### Component Definitions:

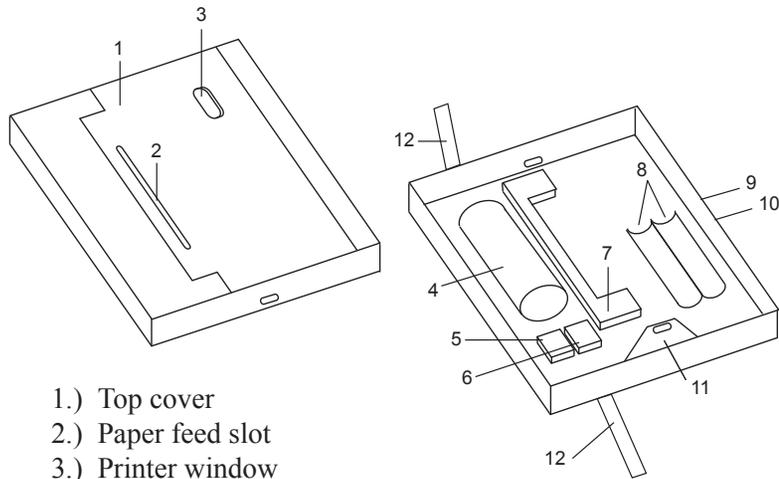
- 1.) Power/Charge Indicators
- 2.) Touch Screen
- 3.) Cursor Control Button (Not Functional)
- 4.) Rocket Button (Start Test)
- 5.) Calendar Button (Precautionary Checklist Prompt)
- 6.) Rolodex Button (Reset Button)

## Alcotest® 7410 Plus Components



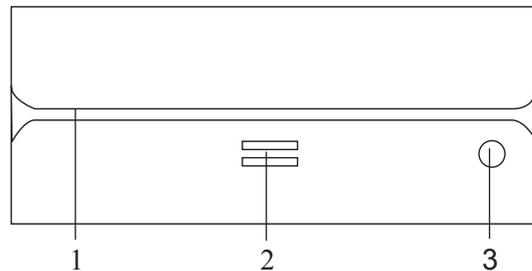
- 1.) Electronics compartment
- 2.) ON/OFF switch
- 3.) Mouthpiece holder
- 4.) Yellow ON light
- 5.) *Green* READY light LED / *Red* ERROR light LED
- 6.) LCD display
- 7.) Electrical contacts for battery pack connection
- 8.) Battery pack
- 9.) Electrical contacts for NiCd charger
- 10.) Battery pack release button
- 11.) Safety lock tab
- 12.) PC interface
- 13.) Infrared communication window

## Printer Components



- 1.) Top cover
- 2.) Paper feed slot
- 3.) Printer window
- 4.) Paper roll
- 5.) Red button (not functional)
- 6.) White button (not functional)
- 7.) Printer ribbon
- 8.) Battery compartment (not used)
- 9.) Power receptacle
- 10.) PC interface
- 11.) Latch tab
- 12.) Pull tabs

## Mag Card Reader Components



- 1.) Card Swiping Slot
- 2.) Magnetic Stripe Direction Indicator
- 3.) Green/Red LED Swipe Indicator

## Quick Reference Guide

ACRONYMS	EXPLANATIONS
EPAS	Evidential Portable Alcohol-testing System
LCD	Liquid Crystal Display on the Alcotest® 7410 <i>Plus</i>
LED	Light Emitting Diode Low Battery and Power Charge lights inside case ON and READY/ERROR lights on 7410 and swipe indicator on Mag Card Reader
PDA	Personal Data Assistant Casio™ Cassiopeia®
ABL	Displayed on the LCD when the 7410 performs an Airblank Test.
ACC	Displayed on the LCD when the 7410 is ready to accept a dry gas sample for Accuracy Testing.
br1	Displayed on the LCD when the 7410 is ready to perform a Breath Sample. The number 1, 2, or 3 that follows br indicates which Breath Sample the operator is on.
dIAT	Displayed on the LCD when the 7410 is ready to accept an Evidential Test.
End	Displayed on the LCD during an Evidential test to allow the operator to abort the test.
Err	Test results exceeds dry gas standard.
INS	Displayed on the LCD when the Breath Sample is insufficient.
Scr	Displayed on the LCD when the 7410 is ready to accept a Screening Test.
LES	Displayed on the LCD to warn the operator of a lock out due to exceeding maximum number of days between Accuracy tests.
Prn	When displayed on the LCD, the operator can print the last test that was performed.

# EPAS Preparation

## Preparing the Electrical System

The **EPAS** utilizes a rechargeable lead-acid battery to power the various components that make up the system. This battery maintains a consistent charge for the components with internal batteries, as well as, providing power to the components without batteries. **Before using the EPAS, it is important to fully charge the main system battery.**

**Note:** Even when the unit is turned off, small amounts of power are required to retain memory contents in the Cassiopeia<sup>®</sup> PDA, which can cause the batteries to go dead even when the unit is not in use.

### Charging the Batteries

The batteries can be charged in two different ways: through an AC power supply, or a 12 volt DC power supply from a car. **The first time you charge the EPAS, 24 hours is required to attain a complete charge.**

### AC Charging of the Batteries

- 1.) Connect the DC connector of the AC adapter to the **EPAS** external power port (see illustration on page 3).
- 2.) Plug the AC cord of the adapter into your AC power source.
- 3.) The LED marked "AC/DC Power/Charge" will light up to indicate that the **EPAS** is connected to the AC power source.

### DC Charging of the Batteries

- 1.) Connect the DC power cord to the **EPAS** external power port (see illustration on page 3).
- 2.) Plug the other end into the car's cigarette lighter receptacle.
- 3.) The LED marked "Vehicle Power/Charge" will light up to indicate that the **EPAS** is connected to a vehicle power source.

After the **EPAS** has charged for a full 24 hours, it is ready for use.

### Low Battery Indication

The top LED installed in the case, marked "Low Battery", will light up when it is time to recharge the **EPAS**. If you need to continue testing after the "Low Battery" LED lights up, it is recommended that you connect the **EPAS** to a dependable power supply, using either the AC or DC power sources. After the initial 24 hour system charge, a charge of 12 hours is recommended as a sufficient time period to recharge the **EPAS**.

It is acceptable to leave the **EPAS** constantly connected to the AC or DC power supply.

## Preparing the Alcotest<sup>®</sup> 7410 *Plus*

Your Alcotest<sup>®</sup> 7410 *Plus* will arrive in the **EPAS** unit with a NiCd battery pack.

### Disconnecting / Connecting the Battery Pack

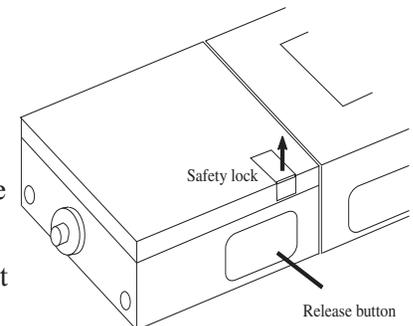
The Alcotest<sup>®</sup> 7410 *Plus* is powered by a rechargeable NiCd battery pack.

To disconnect the battery pack:

- 1.) Pull up the safety lock on the battery pack unit.
- 2.) Depress the release button.

To connect the battery pack:

- 1.) Pull up the safety lock on the battery pack unit.
- 2.) Position the battery pack unit into the base of the instrument and depress the safety lock.



### **Turning On and Off**

The Alcotest® 7410 *Plus* is automatically powered up when the **EPAS** case is opened.

To turn the Alcotest® 7410 *Plus* off, place the instrument into the cradle and close the lid of the **EPAS** case.

**Note: The Alcotest® 7410 *Plus* will power off automatically after 5 minutes.**

If you need to turn the unit off before completing a test sequence, simply double-click the power button twice.

## **Preparing the Printer**

Your Alcotest® 7410 *Plus* printer will arrive inserted in the **EPAS** unit, with a full roll of paper and a new ribbon. The printer power supply will be connected when it arrives.

The printer performs a brief self-test and advances the paper a half inch when the **EPAS** lid is opened. If the printer does not perform this self test upon opening the case, verify that the printer power supply is connected (*see illustration on page 6*).

### **Loading Paper**

When a colored stripe appears on the printed output, the paper roll should be changed soon.

- 1.) Lift the printer out of the cradle by pulling the black pull tabs on the left and right side of the printer (*see illustration on page 6*).
- 2.) Disconnect the printer from the power supply.
- 3.) Remove the upper section of the printer housing by depressing the area beneath the oval-shaped holes on the side of the printer. Lift one side up first, then the other (*see illustration on page 6*).
- 4.) Remove the printer ribbon (*see "Replacing the Ribbon Cartridge" on page 11*). Remove the rest of the old paper by gently pulling the roll.

- 5.) Place new paper roll into the magazine, making sure that the paper projects from the bottom of the roll.
- 6.) Insert the projecting paper into the tractor slot of the printer.
- 7.) Push the black rubber roller towards the back of the printer until the paper is drawn in and fed out the top of the printer about 1/2". If the paper does not feed easily, fold over about 1/2" of paper to create a sharper edge.
- 8.) Re-insert the printer ribbon (*see the next section, "Replacing the Ribbon Cartridge"*).

### **Replacing the Ribbon Cartridge**

The ribbon cartridge should be replaced when printouts begin to appear faint. After removing the paper roll, follow the directions below.

- 1.) Press down the end of the cartridge marked PUSH, and the ribbon will dislodge at the other end of the printer. The cartridge can then be removed.
- 2.) Insert a new cartridge with the ribbon positioned in the slot between the two metal tongues of the printing mechanism. Be sure to thread the paper roll between the ribbon and the plastic edge of the cartridge.
- 3.) Press the cartridge onto the driver pin.

### **Re-printing the Last Test**

If the Alcotest® 7410 *Plus* has been turned off, press the ON/OFF button and hold, until the unit displays .

The very last test that was performed with the **EPAS** (Screening, Evidential, or Accuracy) will be printed.

For detailed information on printing, follow the instructions on page 18, "Printing Test Results".

# EPAS Operation

This section explains the basic operation of the **EPAS** components, and the procedure for conducting breath tests and accuracy tests.

## Normal Power Up

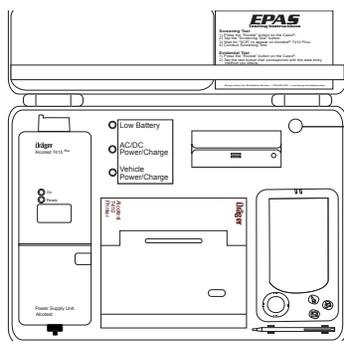
- 1.) Open the case.
- 2.) Upon opening the case, the printer conducts a print test, the Alcotest® 7410 *Plus* is turned on and displays "dAt", and the LED on the magnetic stripe card reader is illuminated.
- 3.) Ensure that the "Low Battery" LED in the case next to the magnetic card reader is not lit; if you have the **EPAS** connected to a power source, the appropriate power source LED should be lit.

**Note:** If the "Low Battery" LED is lit, fully charge the **EPAS** before use, or connect to a continuous AC/DC power source.

The **EPAS** is now ready to begin the testing procedure.

## Quick-Start Power Up

If the EPAS is left open between tests, the Alcotest® 7410 *Plus* may power off in the cradle. In this situation, it is quicker to press and hold down the white Automatic Power-up Switch in the EPAS case for one second and then release it again. This simulates the lid being closed and opened, and will activate the Alcotest® 7410 *Plus* into "dAt" mode.



Automatic Power-up Switch

# Data Entry Options

## Using Magnetic Stripe Cards

The magnetic card reader provides a convenient way to enter data into the Alcotest® 7410 *Plus* for both evidential and accuracy tests. In order to use the magnetic card reader for data input while conducting an accuracy test, the operator must have a properly formatted operator card.

- 1.) Hold the card so the magnetic stripe is facing the double line symbol in the middle of the card reader (see illustration on page 6).
- 2.) Swipe the card through the card reader, keeping the bottom edge of card flush with bottom of card reader slot.
- 3.) A successful read is indicated by a beep, an unsuccessful read is indicated by a red light on the card reader, and an error message on the Casio.
  - If the magnetic card reader cannot read the card, try to re-swipe the card, or select the "Won't Swipe" button on the PDA and follow the instructions for "Entering Data with the Virtual Keyboard" on page 4.

## Using the Cassiopeia® Virtual Keyboard

The virtual keyboard will appear when the "No" button is selected when asked if there is a driver's license or operator card to be swiped or if the "Won't Swipe" button is selected from the swipe the driver's license or operator card screen. The virtual keyboard will also appear when the "edit subject" or "operator" buttons are pushed from the verify data screen.

Use only the stylus that comes with the **EPAS** (see illustration on page 3) or any other soft tipped instrument (e.g. a pencil eraser) to enter data. Never use a pen, pencil, or other sharp writing object. Doing so can scratch the touch screen and cause it to malfunction.

# Performing an Evidential Breath Test

Ensure that the Alcotest® 7410 *Plus* is on, in "dAt" mode, and in the cradle in the case.

- 1.) Press the "Rocket" button on the Cassiopeia® to bring up the "Choose an Option" screen.
- 2.) Select "Evidential Test" from the Cassiopeia® touch screen.
- 3.) Enter the subject and operator data.

## **Subject Data**

- 1.) The Cassiopeia® will ask you if you have a Driver's License to swipe.
- 2.) Choosing "Yes" will prompt you to swipe the subject's driver's license. There will also be an audible prompt to swipe the driver's license. Choosing "No" will make the virtual keyboard appear.

### ***Entering Data with the Magnetic Card Reader***

- a.) Hold the card so the magnetic stripe is facing the double line symbol in the middle of the card reader (*see illustration on page 6*).
- b.) Swipe the card through the card reader, keeping bottom of card flush with bottom of card reader slot.
- c.) A successful read is indicated by a beep, an unsuccessful read by a red light on the card reader, and an error message on the Casio.

### ***Entering Data with the Virtual Keyboard***

The virtual keyboard will appear when "No" is selected at the "Do you have a driver's license to swipe?" screen. Use the stylus to enter the data when prompted. Do not use the "CAP" key on the virtual keyboard because the Cassiopeia® will automatically capitalize all the data.

- 3.) Enter the subject's data according to the screens prompted:  
*Type Subject First Name, Then Press <NEXT> - Type Subject Middle Name, Then Press <NEXT> - Type Subject Last Name, Then Press <NEXT> - Type Subject DOB Then Press <NEXT> - Type Subject License, Then Press <NEXT> - Type Two Letter State, Press <NEXT> - Select Location of Arrest Then Press <NEXT> - Select Violation -*

The minimum subject data required for a test is the subject's first and last name.

## **Operator Data**

- 1.) The Cassiopeia® will ask if you have an Operator's Card to swipe.
- 2.) Selecting "Yes" will prompt you to swipe the operator card. There will also be an audible prompt to swipe the operator card. Selecting "No" will make the virtual keyboard appear.

## ***Entering Data with the Magnetic Card Reader***

- a.) Hold the card so the magnetic stripe is facing the double line symbol in the middle of the card reader (*see illustration on page 6*).
- b.) Swipe the card through the card reader, keeping bottom of card flush with bottom of card reader slot.
- c.) A successful read is indicated by a beep, an unsuccessful read by a red light on the card reader, and an error message on the Casio.

### ***Entering Data with the Virtual Keyboard***

The virtual keyboard will appear when "No" is selected at the "Do You Have An Operator ID Card To Swipe?" screen. Use the stylus to enter the data when prompted. There is no need to capitalize because the Cassiopeia® will capitalize all the data. Do not use the "CAP" key on the virtual keyboard.

- 3.) Enter the operator's data according to the screens prompted:  
*Type Operator First Name, Then Press <NEXT> - Type Operator Last Name, Then Press <NEXT> - Type Operator I.D. Then Press <NEXT> - Select Operator Agency Then Press <NEXT>*

All of the operator information is required.

- 4.) To edit the subject or operator data, press "Edit Sub." or "Edit Op." or touch the line of data that needs to be changed (*see "Editing Operator or Subject Data", page 16*) from the "Verify Data" screen.
- 5.) If the data is correct, select "Data OK" from the touch screen.

If the data is correct, and you select "Data OK" from the Cassiopeia® touch screen, the data will be sent to the Alcotest® 7410 <sup>Plus</sup>. If the data is successfully transferred, the PDA will display "Remove 7410 from the cradle and continue with test". A series of three beeps will sound from the Alcotest® 7410 <sup>Plus</sup> indicating that the testing mode has been initiated and that it can be removed from the cradle. The Alcotest® 7410 <sup>Plus</sup> will begin to warm up (*see "Editing Operator or Subject Data", page 16*) and the "Choose Option" screen will appear on the Cassiopeia® in preparation for the next subject.

### Editing Operator or Subject Data

You can edit the Operator or Subject data by tapping the data field you want to edit, or you can follow the steps below to edit the Operator or Subject Data.

- 1.) Select "Edit Op." or "Edit Sub." from the Cassiopeia® touch screen.
- 2.) The data entry sequence will be repeated, allowing you to make the necessary changes.
- 3.) When all data has been verified, the Cassiopeia® will return to the "Verify Data" screen and allow you to initiate the breath test.
- 4.) When the data is correct, select "Data OK" from the touchscreen to send the data to the Alcotest® 7410 Plus.

After selecting "Data OK", the data will be sent to the Alcotest® 7410 Plus. If the data is successfully transferred, a series of three beeps will sound from the Alcotest® 7410 Plus indicating that the testing mode has been initiated. The Alcotest® 7410 Plus will begin to warm up and the "Choose Option" screen will appear on the Cassiopeia® in preparation for the next subject.

### Evidential Test Warm Up Sequence

The Alcotest® 7410 Plus will start the evidential test warm up sequence by displaying the date:

month                      day                      year  
 nn 08                      dd 06                      'yy '99

followed by the time:

hour                      minute  
 hh 15                      nn 45

followed by: --- ABL (Air Blank)

followed by: 000 ---

(Air Blank result)

**Note: If alcohol is detected by the Alcotest® 7410 Plus in the ambient air, or the Alcotest® 7410 Plus has not reached 0.000 from the previous breath test, the Alcotest® 7410 Plus will automatically perform additional Air Blanks until the results are 0.000.**

After a successful Air Blank, the Alcotest® 7410 Plus will display --- then b r 1 (Breath Test Number 1), followed simultaneously by the horn sounding and the green "READY" light illuminating.

### Performing a Breath Test

- 1.) Remove the Alcotest® 7410 Plus from its cradle by pulling up on the mouthpiece holder.
- 2.) Attach a mouthpiece, ensuring that the arrows on the mouthpiece and mouthpiece holder point the same direction. Align the ridges on the mouthpiece with the grooves on the mouthpiece holder making sure the mouthpiece fit is snug against the mouthpiece holder.
- 3.) Instruct the subject to take a deep breath and blow evenly as long as the horn sounds.
- 4.) When the subject has successfully provided a breath sample, the result will automatically be displayed on the LCD display. (Display time of the results will vary depending on the alcohol concentration.)



After displaying the breath test result for five seconds, the Alcotest® 7410 Plus will initiate a 120 seconds count down before the second breath test can begin.

**Note: If the subject does not fulfill the volume and/or flow rate requirements, 175 will be displayed, indicating an insufficient breath sample. To complete the test, the subject must repeat the breath sample after the green "READY" light comes on.**

When b r 2 is displayed, repeat the steps above.

**Important: If the two Evidential Breath Tests are not within 0.02 g/210L of each other, the Alcotest® 7410 Plus will initiate another two minute countdown.**

**After the countdown is completed,  will be displayed indicating that a third test is required.**

Once the test is completed, the Alcotest® 7410 Plus will store the data in its memory.

If 2 out of 3 breath test results are not within 0.02 g/210L of each other, "Invalid Test" will be printed on the printout.

The test results must be printed within five minutes or the Alcotest® 7410 Plus will time out and turn itself off. To print the test results after the Alcotest® 7410 Plus has turned itself off, put the Alcotest® 7410 Plus in the "PRN" mode (see page 11, "Re-printing the Last Test") and print the results.

### **Printing Test Results**

Test results from the Alcotest® 7410 Plus can be transferred and printed via the LEDs (ON and READY/ERROR lights) on the face of the Alcotest® 7410 Plus.

**Note: If the breath test result is flashing, printing is not possible because another breath sample must be provided. A non-flashing result indicates successful 0.02 g/210L agreement between two breath samples and completion of the test.**

Follow the steps below to print test results.

- 1.) Place the Alcotest® 7410 Plus onto the printer with its front side facing the printer, so that the two lights (READY and ON) interface with the printer window. (To ensure proper transmission, keep window clean and free from scratches.)
- 2.) After a few seconds, the printer will begin to print the report.

**Note: The date and time stamp indicated on the printout will be the actual time of the breath test.**

- 3.) Remove the Alcotest® 7410 Plus from the printer. Do not reset or turn off the Alcotest® 7410 Plus until the results have been verified. Once the printing has stopped, additional printouts can be printed, as long as the results are displayed on the 7410 by aligning the Alcotest® 7410 Plus to the printer as outlined above.

**Follow the steps below to turn the Alcotest® 7410 Plus off after a successful test:**

- 1.) Press the power button on the Alcotest® 7410 Plus and wait until the instrument displays "dAt".
- 2.) Double-click the power button twice to turn the Alcotest® 7410 Plus off.

### **Aborting a Test**

If the subject does not deliver a breath sample within a pre-set time frame (approx. 45 seconds, after , , or  is displayed),  (allowing the operator to choose to end the test) will be displayed along with a series of short beeps.

The operator can abort the test while the Alcotest® 7410 Plus is beeping and  is on the display by pressing the ON/OFF button while the beeping continues.  will be displayed on the Alcotest® 7410 Plus, the test will be stored, and the print-out will read "Test Aborted" and also display any results prior to aborting the test.

If the ON/OFF button is not pressed, the instrument will cycle back to , , or , indicating that a breath sample can be taken.

**Note: The Alcotest® 7410 Plus will continue to go through the above "time out" sequence until a breath test is conducted or  is selected.**

Test results from the Alcotest® 7410 Plus can be transferred and printed via the LEDs on the face of the Alcotest® 7410 Plus.

**Note: If the breath test result is flashing, printing is not possible because another breath sample must be provided. A non-flashing result indicates successful 0.02 g/210L agreement between two breath samples and completion of the test.**

The operator may now proceed to print the Test Results.

Follow the steps below to print test results.

- 1.) Place the Alcotest® 7410 *Plus* onto the printer with its front side facing the printer, so that the two lights (READY and ON) interface with the printer window. (To ensure proper transmission, keep window clean and free from scratches.)
- 2.) After a few seconds, the printer will begin to print the report.

**Note: The date and time stamp indicated on the printout will be the actual time of the breath test.**

- 3.) Remove the Alcotest® 7410 *Plus* from the printer. Do not reset or turn off the 7410 until the results have been verified.

Additional printouts can be obtained by aligning the 7410 to the printer as outlined above.

### **Turning the Alcotest® 7410 *Plus* Off**

The Alcotest® 7410 *Plus* can be turned off one of two ways after the test results have been displayed.

- 1.) Press the power button on the Alcotest® 7410 *Plus* and wait until the instrument displays "dAt". Double-click the power button twice to turn the Alcotest® 7410 *Plus* off, or
- 2.) Place the Alcotest® 7410 *Plus* into the cradle and close the lid of the **EPAS** case. The Alcotest® 7410 *Plus* will power off automatically after 5 minutes.

## Performing a Screening Test

- 1.) Remove the Alcotest® 7410 *Plus* from the cradle.
- 2.) Ensure that the Alcotest® 7410 *Plus* is on, and in "dAt" mode.

**Note: The Alcotest® 7410 *Plus* can be turned on and put in the "dAt" mode by pressing the power button once.**

- 3.) Double-click the power button to begin the Screening Test warm-up procedure. The horn will sound twice and the Alcotest® 7410 *Plus* will go through the sequences detailed below:

The Alcotest® 7410 *Plus* will go through the date sequence,

month                      day                      year

nn	00	dd	00	'yy	'99
----	----	----	----	-----	-----

followed by the time sequence...

hour                      minute

hh	15	nn	45
----	----	----	----

followed by the air blank test:

---	ABL	000	---	Scr
-----	-----	-----	-----	-----

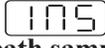
---, indicates that the unit is warming up. Once the Alcotest® 7410 *Plus* is ready for a Screening Test, the display shows 

Scr
-----

 and the green "READY" light comes on.

### **Providing a Breath Sample**

- 1.) Attach a mouthpiece, ensuring that the arrows on the mouthpiece and mouthpiece holder point the same direction. Make sure the mouthpiece fit is snug against the mouthpiece holder.
- 2.) Instruct the subject to take a deep breath and blow evenly as long as the horn sounds.
- 3.) If the test was successful, the result will automatically be displayed on the LCD display. (Display time of the results will vary depending on the alcohol concentration).

**Note: If the subject does not fulfill the volume and/or flow rate requirements,  will be displayed, indicating an insufficient breath sample.**

When the instrument recycles to "Scr" and the green "READY" light comes on, the subject can complete the screening test by providing a proper breath sample.

All test results are stored in the Alcotest® 7410 *Plus* memory, including date, time, and sequential test number.

### **Printing Test Results**

Test results from the Alcotest® 7410 *Plus* can be transferred and printed via the LEDs on the face of the Alcotest® 7410 *Plus*.

- 1.) Place the Alcotest® 7410 *Plus* onto the printer with its front side facing the printer, so that the two lights (READY and ON) interface with the printer window. (To ensure proper transmission, keep window clean and free from scratches.)
- 2.) After a few seconds, the printer will begin to print the report.

**Note: The date and time stamp indicated on the printout will be the actual time of the breath test.**

- 3.) The Alcotest® 7410 *Plus* can be removed from the printer once the printing has started. Do not reset or turn off the Alcotest® 7410 *Plus* until the results have been verified as accurate.

Additional printouts can be obtained by aligning the Alcotest® 7410 *Plus* to the printer as outlined above.

### **Additional Screening Test**

- 1.) Press and hold the power button until the results are cleared.
- 2.) The Alcotest® 7410 *Plus* will automatically return to the "dAt" (data) mode.
- 3.) From the "dAt" mode, double-click the power button to enter the Screening Test mode.

### **Turning the Alcotest® 7410 *Plus* Off**

The Alcotest® 7410 *Plus* can be turned off one of two ways after the test results have been displayed.

- 1.) Press the power button on the Alcotest® 7410 *Plus* and wait until the instrument displays "dAt". Double-click the power button twice to turn the Alcotest® 7410 *Plus* off, or
- 2.) Place the Alcotest® 7410 *Plus* into the cradle and close the lid of the **EPAS** case. The Alcotest® 7410 *Plus* will power off automatically after 5 minutes.

## Performing an Accuracy Check

The Alcotest® 7410 *Plus* must be checked for accuracy not exceeding 10 days or following the testing of every 150 subjects, whichever comes sooner, or as specified by your state.

The test result, using a 0.100 % BAC dry gas standard, must be between .090 and .110 % BAC. A test result out of this window of tolerance will disable the Alcotest® 7410 *Plus* and  followed by  will flash on the Alcotest® 7410 *Plus* display.

On the day prior to the maximum number of days allowed between Accuracy Checks, the Alcotest® 7410 *Plus* will warn of the upcoming lock-out by flashing  then  on the instrument display.

**Important: Only use the specified dry gas concentration and never blow into the Alcotest® 7410 *Plus* in the  mode or a lockout will occur.**

For Accuracy Checks, have a dry gas canister of 0.100% ethanol concentration ready (only use the Draeger supplied regulator).

### **Beginning an Accuracy Test**

Ensure that the Alcotest® 7410 *Plus* is on, and in the "dAt" mode.

- 1.) Press the "Rocket" button on the Cassiopeia® to start the testing software.
- 2.) Select "Accuracy Test" from the "Choose an Option" screen.
- 3.) Choose a data entry option, and enter all operator data as prompted by the Cassiopeia® by using the virtual keyboard or the magnetic stripe card reader.

### **Entering Data with the Magnetic Card Reader**

- a.) Hold the card so the magnetic stripe is facing the double line symbol in the middle of the card reader (*see illustration on page 6*).
- b.) Swipe the card through the card reader, keeping bottom of card flush with bottom of card reader slot.
- c.) A successful read is indicated by a beep, an unsuccessful read by a red light on the card reader, and an error message on the Casio.

### **Entering Data with the Virtual Keyboard**

The virtual keyboard will appear when "No" is selected at the "Do you have an operator ID card to swipe?" screen or when "Won't swipe" is selected at the "Swipe Operator Card" screen. Use the stylus to enter the data when prompted. Do not use the "CAP" key on the virtual keyboard because the Cassiopeia® will automatically capitalize all the data.

- 4.) When all the data has been entered it will be displayed on the "Verify Data" screen of the Cassiopeia® and provide you with the option of "Edit Operator Information" or "Initiate 7410 For Accuracy Check".
- 5.) If the information needs to be edited, select "Edit Operator Information" or touch the data that needs to be edited. If the operator information is correct, select "Initiate 7410 For Accuracy Check" from the Cassiopeia® touch screen.

### **Editing Operator Information**

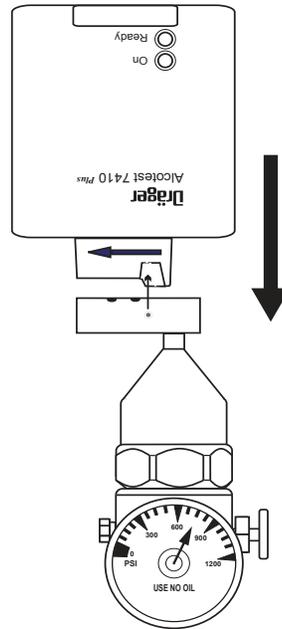
You can edit the Operator data by tapping the data field you want to edit, or you can follow the steps below to edit the Operator Data.

- a.) Select "Edit Operator Information" from the Cassiopeia® touch screen.
- b.) The data entry sequence will be repeated, allowing you to make the necessary changes .
- c.) When all data has been verified, the Cassiopeia® will return to the "Verify Data" screen allowing you to initiate the test.
- d.) When the data is correct, select "Initiate 7410 for Accuracy Check" from the touch screen to send the data to the Alcotest® 7410 *Plus*.

After selecting "Initiate 7410 for Accuracy Check", all data will be sent to the Alcotest® 7410 *Plus* instrument, which initiates the date, time, and warm up sequence. If the data is successfully transferred, a series of three beeps will sound from the Alcotest® 7410 *Plus*, it can then be removed from the cradle.

## Delivering the Sample

- 1.) Hold the Alcotest® 7410 Plus upside down and connect the mouthpiece holder with the regulator gas outlet as illustrated, making sure that the metal pins on the brass regulator attachment are aligned with the grooves in the mouthpiece holder on the Alcotest® 7410 Plus (a mouthpiece is not required).
- 2.) Start the gas flow by pressing the regulator button.
- 3.) Keep the button depressed until the horn of the Alcotest® 7410 Plus stops (approximately 2-3 seconds).
- 4.) The Alcotest® 7410 Plus will display the alcohol concentration.
- 5.) The test results can be printed at this time.



## Printing Test Results

Test results from the Alcotest® 7410 Plus can be transferred and printed via the LEDs on the face of the Alcotest® 7410 Plus.

- 1.) Place the Alcotest® 7410 Plus onto the printer with its front side facing the printer, so that the two lights (READY and ON) interface with the printer window. (To ensure proper transmission, keep window clean and free from scratches.)
- 2.) After a few seconds, the printer will begin to print the report.

**Note: The date and time stamp indicated on the printout will be the actual time of the test.**

- 3.) Remove the Alcotest® 7410 Plus from the printer. **Do not reset or turn off the 7410 until the results have been verified.**

Additional printouts can be obtained by aligning the Alcotest® 7410 Plus to the printer as outlined in the "Printing Test Results" section.

**Important: If the result is within the specified tolerance, the Alcotest® 7410 Plus can be used for Breath Testing. All Accuracy Check results are stored in the Alcotest® 7410 Plus.**

If the result is **not** within the acceptable tolerance, you will briefly see the message **ACC ERR** (error) followed by the result. The test results may be printed after every test (see page 26, "Printing Test Results" for instructions on printing).

Press and hold the ON/OFF button to clear the results (approximately 3 seconds). The unit will briefly display **ACC** followed by **ERR** and then shut down.

**Important: Once the Alcotest® 7410 Plus is disabled, the instrument will not allow further operation until a successful Accuracy Check is performed, or the instrument is recalibrated.**

## Wet Bath Calibration

The Alcotest® 7410 Plus unit should be calibrated whenever it is unable to perform a successful Accuracy Test.

Because precise calibration is crucial, it must be performed only by Draeger Safety, Inc., Breathalyzer Division, or by a factory qualified technician.

# Maintenance and Troubleshooting

The maintenance and troubleshooting tables that follow are provided to help eliminate confusion and prevent downtime by supplying corrective procedures.

If problems persist, call Draeger Safety, Inc., Breathalyzer Division, Support and Technical Service at (970) 385-5555.

## Alcotest 7410 *Plus*

FAULT	CAUSE	REMEDY
Instrument switches off automatically or yellow light is not lit after switching on, or is only faintly lit; the display shows incomplete symbols.	Battery pack is discharged, or battery pack is completely exhausted.	Recharge battery pack or replace with another power pack.
"READY" light is not lit after switching on and 4 minute waiting interval has not elapsed.	Instrument malfunction	Contact Draeger Safety, Inc., Breathalyzer Division, Customer Support Department.
No continuous audible tone when blowing into the instrument.	Instrument not yet ready for measurement. Horn needs replacement (very unusual) or intake is blocked by foreign matter. Subject not blowing hard enough or mouthpiece not seated properly.	Have subject blow harder or check the mouthpiece. Contact Draeger Safety, Inc., Breathalyzer Division Customer Support Department.

## Alcotest 7410 *Plus*

Error Code	Cause	Remedy
Acc Err	Accuracy Check is out of limits.	Redo Accuracy Check and Calibrate if necessary.
INS	Test subject is not blowing hard enough or steadily enough. Intake is blocked by foreign matter. Pressure sensor or flow rate suspect.	Ask subject to blow harder or more steady. Sensor or flow rate must be checked by Draeger Safety, Inc., Breathalyzer Division, Technical Department.
rFi	RFI present.	Change location or remove RFI source.
E2	Instrument does not recognize calibration clip. Cal switch malfunction.	Attach calibration clip correctly before turning on instrument. Cal switch must be replaced by an authorized Service Technician.
E3	Calibration data invalid, lifetime of sensor reached or cal data malfunction.	Calibrate instrument. Sensor must be replaced or inspected by Draeger Safety, Inc., Breathalyzer Division.
E4	Improper value was used for calibration.	Calibrate with proper value.
E5	Fault in sampling system (due, most likely, to motor malfunction).	Repeat measurement. If E5 reappears, contact Draeger Safety, Inc., Breathalyzer Division.

## Alcotest 7410 *Plus*

Error Code	Cause	Remedy
E6	Instrument Parameter Error	Contact Draeger Safety, Inc., Breathalyzer Division, Technical Department.
E7	Instrument Parameter Error	Contact Draeger Safety, Inc., Breathalyzer Division, Customer Support Department.
E8	Timing malfunction	Instrument will power down after 10 seconds. Turn back on. If problem persists, contact Draeger Safety, Inc., Breathalyzer Division, Customer Support Department.

## Printer

Fault	Cause	Remedy
Not printing although supply voltage is supplied.	Voltage too low, too high, or wrong polarity	Detach unit from power supply, provide voltage greater than 9.5 V/1A and less than 17V/1A. Detach unit from power supply and replace fuse (1A). Contact Draeger Safety, Inc., Breathalyzer Division, Customer Support Department.
	Defective Fuse Malfunction	
Although supply voltage is available, paper feed is irregular or printer stops.	Faulty power cord	Replace power cord. Provide voltage greater than 9.5V/1A and less than 17V/1A. Contact Draeger Safety, Inc., Breathalyzer Division, Customer Support Department.
	Power supply inadequate or faulty Mounting socket broken	
Message Printed	Cause	Remedy
TRANSMISSION ERROR	Incorrect log received	Position Alcotest® 7410 <i>Plus</i> again, or clean transparent window or lenses.
HARDWARE ERROR	Hardware error	Contact Draeger Safety, Inc., Breathalyzer Division, Customer Support Department.

# Technical Specifications

## Alcotest® 7410 *Plus*

### Measurement range

Accurate between 0.000 % BAC to 0.400 % BAC.

### Ambient conditions for storage

-40° to +149° F (-40° to +65° C)

600 to 1300 mbar

10 to 98% relative humidity

### Sample conditions

Blowing time 4 to 12 seconds (depending on intensity)

Flow rate > 6 liters/minute

Volume > 1.2 liters

### Measurement accuracy

Reproducible with an ethanol standard:

0 to 0.100% +/- 0.005% BAC

> 0.100% +/- 5% of measured value

### Dimensions

9.0 x 2.8 x 1.3 in (230 x 70 x 34 mm)

### Weight

1.1 lb (0.5 kg)

### Electrical power supply options:

1. Battery pack which holds three (3) rechargeable NiCd batteries.

Notes:

- NiCd rechargeable battery packs will provide approximately 300 tests between charges.

- The **LO BAT** warning is displayed when the Alcotest® 7410 *Plus* NiCd battery pack needs to be recharged. This will typically not happen, as the **EPAS** internal central power system will usually need charging before the Alcotest® 7410 *Plus* NiCd battery pack; however, when the **LO BAT** warning appears, there will be enough time to complete the current test, and then it is recommended that the Alcotest® 7410 *Plus* NiCd battery pack be fully recharged (approximately 24 hours).

## Alcotest® 7410 Printer

### Environmental conditions for operation

32° to 122° F (0° to 50° C)

600 to 1300 mbar

10 to 98% relative humidity

### Environmental conditions for storage

-40° to 158° F (-40° to 70° C)

600 to 1300 mbar

10 to 98% relative humidity

### Dimensions

5.6 x 5.3 x 1.9 in (140 x 133 x 48 mm)

### Weight

1.0 lb (0.5 kg)

### Power supply

Operating voltage: 9.5V to 17V / 1A

Consumption: 10 W for log printout, 200 mW in standby mode

Fuse: M 1.0 A DIN 41571 (1x)

Batteries: LR6 DIN IEC 86 (AA) (2ea)

(Usage period at 25° C is approximately 2 years)

# EXAMPLE OF PRINTOUTS

```

CALIFORNIA DOJ
ALCOTEST 7410 PLUS
SERIAL NUMBER: ARNN-0116

MM.DD.YY HH:MM
09.13.02 15:25 DST
SEQUENTIAL TEST #: 00044
*****
SUBJECT:
LAST : SMITH
FIRST : JOHN
LICENSE : ABC 123-456-78
DOB : 11-14-1978
OPERATOR:
LAST: DOE
FIRST: JOHN
ID-NUMBER : ABC12345
AGENCY : ABC
LOC: ABCDEFG
VIOLATION: ABC123
*****
AIR BLANK 0.000 15:25
BREATH TEST 1 0.09 15:26
BASELINE = 0.000
BREATH TEST 2 0.09 15:29
BASELINE = 0.000
BREATH TEST 3 - - - - - - - -
ALL RESULTS IN gm/210L
*****
COMMENTS:
*****
OBSERVED 15 MIN _____
OPERATOR SIGNATURE:
.....

```

Example of Evidential  
Breath Test printout.

```

CALIFORNIA DOJ
ALCOTEST 7410 PLUS
SERIAL NUMBER: ARNN-0116

MM.DD.YY HH:MM
09.13.02 15:17 DST
SEQUENTIAL TEST #: 00042
*****
SCREENING TEST :
AIR BLANK 0.000 15:17
BREATH TEST 0.030 15:17
ALL RESULTS IN gm/210L
*****
COMMENTS:
*****
OPERATOR SIGNATURE:
.....

```

Example of Screening Test  
printout.

```

CALIFORNIA DOJ
ALCOTEST 7410 PLUS
SERIAL NUMBER: ARNN-0116

MM.DD.YY HH:MM
09.13.02 15:22 DST
SEQUENTIAL TEST #: 00043
*****
ACCURACY TEST :
OPERATOR:
LAST: DOE
FIRST: JOHN
ID-NUMBER: ABC12345
AGENCY: ABC
*****
AIR BLANK 0.000 15:22
TEST RESULT 0.099 15:22
ALL RESULTS IN gm/210L
*****
COMMENTS:
*****
OPERATOR SIGNATURE:
.....

```

Example of Accuracy Check  
printout.