

# The ABCs of PBTs

Iowa DCI Crime Lab  
Breath Alcohol Section  
Iowa Governors Traffic Safety Conference  
April, 2015

# The ABCs of PBTs

- ▶ 661–157.5(2) Any peace officer using an approved device shall follow the instructions furnished by the manufacturer for use of such a device. The calibration of each unit shall be checked at least once per month, and the device shall be calibrated, if necessary, using a dry gas standard. The officer or officer's department shall maintain a record of each calibration. This record shall include:
  - ▶ a. The identity of the officer performing the calibration.
  - ▶ b. The date.
  - ▶ c. The value and type of standard used.
  - ▶ d. The unit type and identification number

# The ABC's of PBTs

ARFH-0493

ARFH-0500

0.021	0.040	0.049	0.100	0.152
0.021	0.042	0.053	0.099	0.152
0.021	0.042	0.052	0.101	0.152
0.021	0.041	0.052	0.100	0.154
0.021	0.036	0.052	0.099	0.147
0.021	0.040	0.051	0.101	0.146
0.021	0.039	0.051	0.099	0.148

0.021	0.040	0.049	0.100	0.152
0.021	0.036	0.052	0.102	0.152
0.021	0.036	0.052	0.100	0.154
0.021	0.042	0.052	0.100	0.154
0.021	0.039	0.052	0.101	0.150
0.021	0.039	0.052	0.099	0.146
0.021	0.039	0.051	0.099	0.148

0.021	0.039	0.051	0.099	0.152
0.020	0.039	0.052	0.098	0.152
0.021	0.041	0.052	0.101	0.154
0.021	0.040	0.053	0.101	0.154
0.021	0.039	0.051	0.099	0.148
0.020	0.039	0.051	0.098	0.151
0.021	0.039	0.051	0.099	0.150

0.021	0.039	0.051	0.099	0.152
0.020	0.039	0.051	0.098	0.150
0.021	0.040	0.052	0.099	0.155
0.020	0.039	0.052	0.100	0.152
0.021	0.039	0.051	0.098	0.151
0.020	0.039	0.051	0.097	0.150
0.021	0.039	0.051	0.099	0.150

# The ABCs of PBTs

- ▶ Approved PBTs

- ▶ Alco-Sensor III
- ▶ Alco-Sensor IV
- ▶ Alco-Sensor FST
- ▶ Alco-Sensor FST 200K\*\*
- ▶ Intoxilyzer 400/400PA
- ▶ Intoxilyzer 500\*\*
- ▶ Intoxilyzer 600\*\*
- ▶ Intoxilyzer S-D5
- ▶ Intoxilyzer S-D2
- ▶ Lifeloc FC10/FC10 Plus
- ▶ Lifeloc FC20/FC20 Plus
- ▶ Alcotest 6820 \*\*
- ▶ Alert J5\*\*

Intoximeters, Inc.

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CMI, Inc.

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Lifeloc Technologies, Inc.

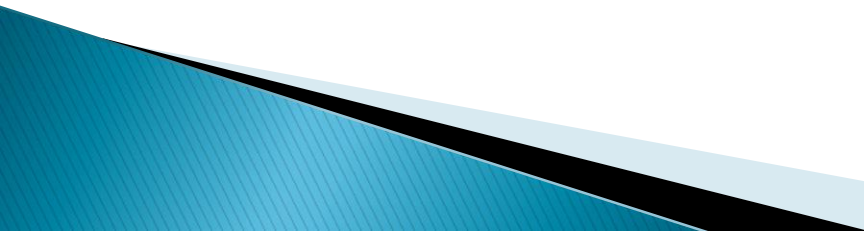
Lifeloc Technologies, Inc.

Draeger Safety Diagnostics, Inc

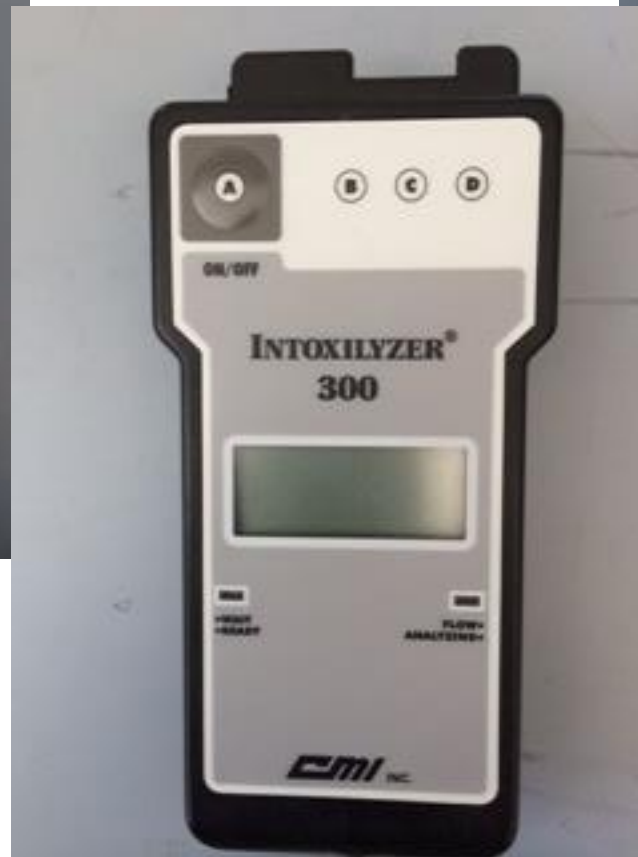
Alcohol Countermeasure Systems Corp.

- ▶ \*\* Units approved by DCI since 09/2014

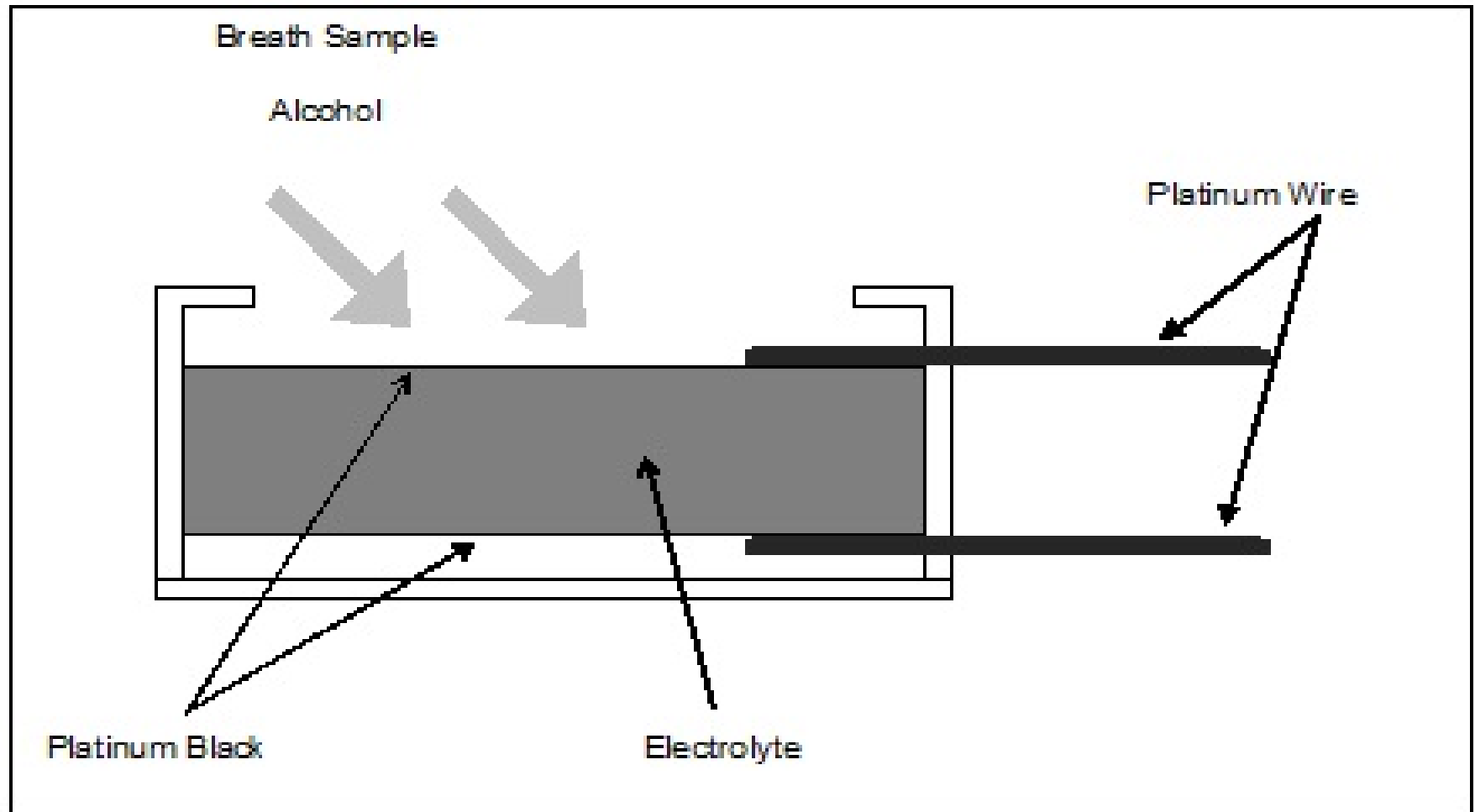
# The ABCs of PBTs

- ▶ PBTs soon to be removed from approved list
  - ▶ Alco-Sensor                      Intoximeters, Inc. – 1970s
  - ▶ Alco-Sensor II                  Intoximeters, Inc. – 1982
  - ▶ Intoxilyzer 300                  CMI, Inc. – 1995
  - ▶ Alcohol Analyzer S-D2                  NPAS, Inc.  
(I can find no record of this ever existing)
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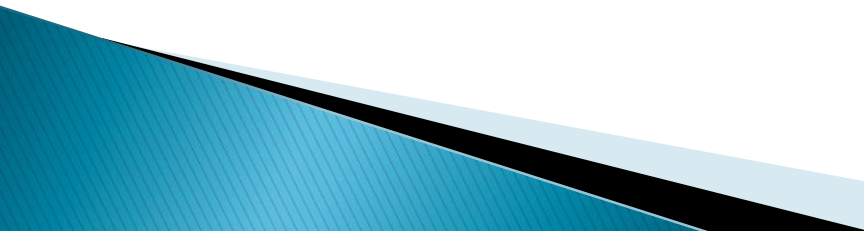
# The ABCs of PBTs



# The ABCs of PBTs



# The ABCs of PBTs

- ▶ Fuel cell average life expectancy 7–10 years
  - ▶ Lack of use can shorten the life of a fuel cell, so can extreme temperatures, cigarette smoke, excessive positive simulations with mouthwash
  - ▶ PBTs have no safeguards for mouth alcohol – 15 minute wait period is important
  - ▶ PBTs react to alcohol – isopropyl alcohol, methanol, ethyl alcohol
- 



# The ABCs of PBTs

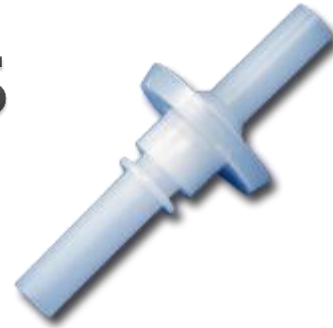
- ▶ PBT
- ▶ Mouthpiece
- ▶ Snubber (if necessary)
- ▶ Dry Gas Tank
- ▶ Regulator



# The ABCs of PBTs

## ▶ Mouthpieces

- ▶ Specific to that particular PBT
- ▶ Using incorrect mouthpiece can result in poor test sample readings and improper calibration

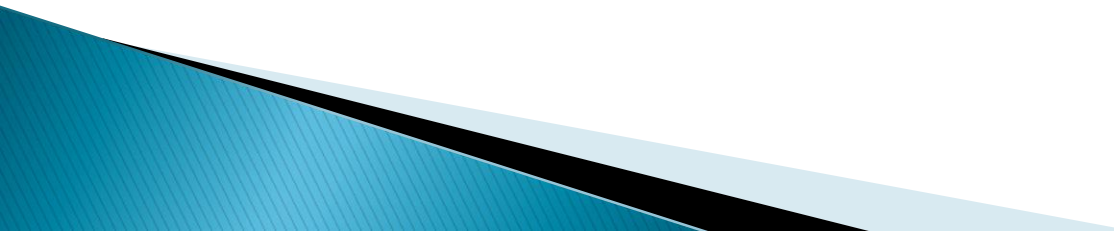


# The ABCs of PBTs

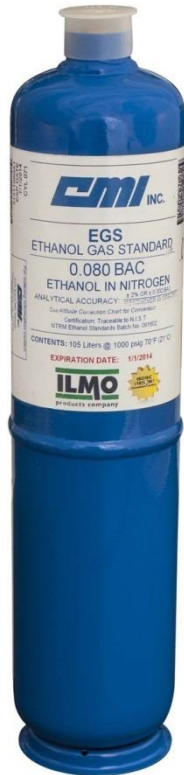
## ▶ Dry Gas Tanks

- ▶ Come in aluminum or steel tanks  
30, 34, 55, 105\*, 108\* Liter sizes (\*most common)
- ▶ Varying concentrations (0.038, 0.050, 0.080, 0.082, 0.100, etc)
- ▶ Corrected “C” and Uncorrected tanks

# The ABCs of PBTs

- ▶ Altitude conversion chart
  - ▶ Barometric pressure can affect concentration
  - ▶ Dry gas tanks should be NIST traceable
  - ▶ \*\*\*Expiration Date\*\*\*
- 

# The ABCs of PBTs



# The ABCs of PBTs

If using this  
to calibrate  
your PBTs –

**STOP!!**



# The ABCs of PBTs

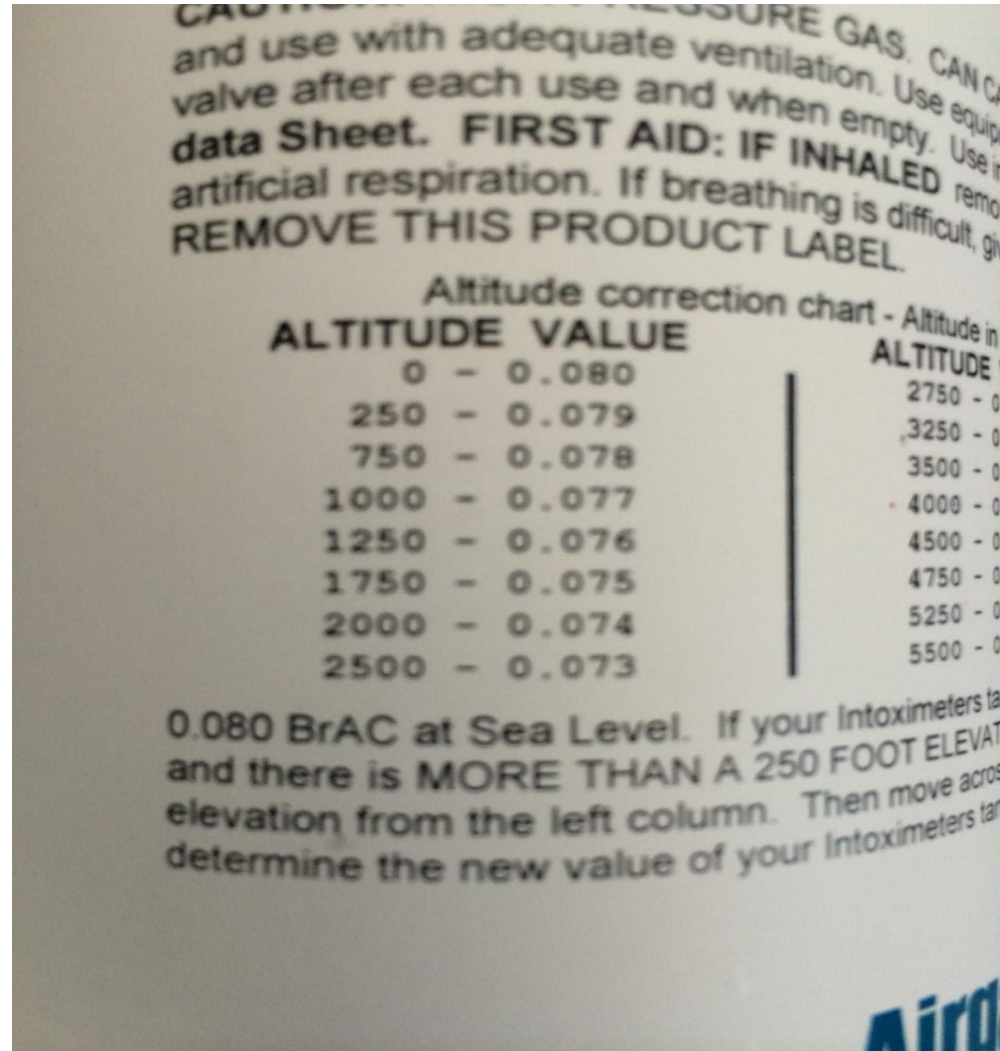
If using this to  
calibrate your  
PBTs  
standalone

Also STOP!!





# The ABCs of PBTs





# The ABCs of PBTs

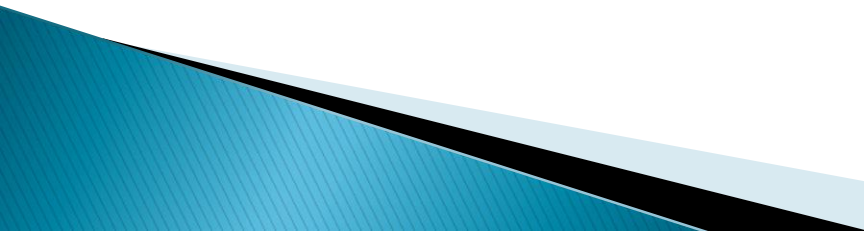
## ▶ Regulators

- ▶ All companies should have same size fitting
- ▶ Differing flow rates (LPM)
  - ▶ 1.25, 1.5 LPM (AS I,II,III,IV, CMI's products)
  - ▶ 2.5 LPM (Lifesaver FC10, FC20)
  - ▶ 6 LPM (AS FST, Alert J5)
  - ▶ 14 LPM (Alcotest 6820)

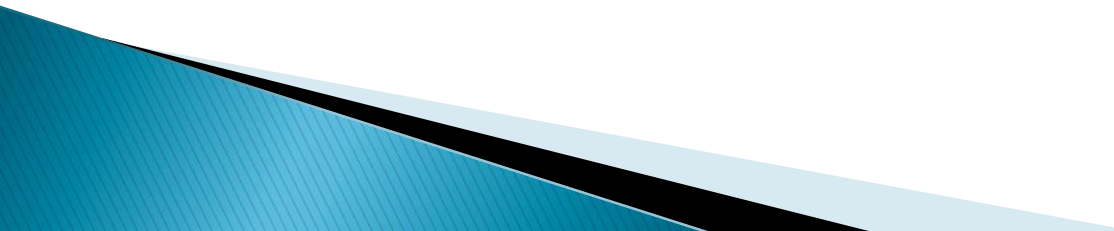
# The ABCs of PBTs



# The ABCs of PBTs

- ▶ **PBT calibration settings**
    - ▶ Automatic calibration (EASYCAL)
    - ▶ Factory required calibration (DCI tries to avoid approving this type)
    - ▶ Wet bath vs Dry gas settings – some have both
    - ▶ Altitude settings – some do, some don't
    - ▶ Barometric pressure adjustment (TRUE-CAL)
- 

# The ABCs of PBTs

- ▶ Intoximeters, Inc – St. Louis, MO
  - ▶ Alco-Sensor III
  - ▶ Alco-Sensor IV
  - ▶ Alco-Sensor FST
  - ▶ Alco-Sensor FST 200K
  - ▶ True-Cal
- 

# The ABCs of PBTs

- ▶ Intoximeters “C” tank
- ▶ Used for Intoximeters products only.
- ▶ May cause inaccurate calibrations if used for any other manufacturer’s products



# The ABCs of PBTs

## ▶ Alco-Sensor III

- ▶ Low flow regulator – 1.5 LPM
- ▶ Intoximeters “C” tank
- ▶ Potentiometer adjusted
- ▶ Approved in 1982, updated 2002 (red tab on side)



# The ABCs of PBTs

- ▶ **Alco-Sensor IV**
- ▶ Low flow regulator –1.5 LPM
- ▶ Intoximeters “C” tank
- ▶ Calibration buttons found inside battery compartment
- ▶ Approved in 1992





# The ABCs of PBTs

- ▶ **Alco-Sensor FST**
- ▶ **Alco-Sensor FST 200K**
  
- ▶ 6 LPM regulator
- ▶ Intoximeters “C” tank
- ▶ Multi button calibration
- ▶ Using 6 LPM – PBT should auto sample in both ACC/CAL
  
- ▶ FST 200K has additional memory

Approved in 2003/2015





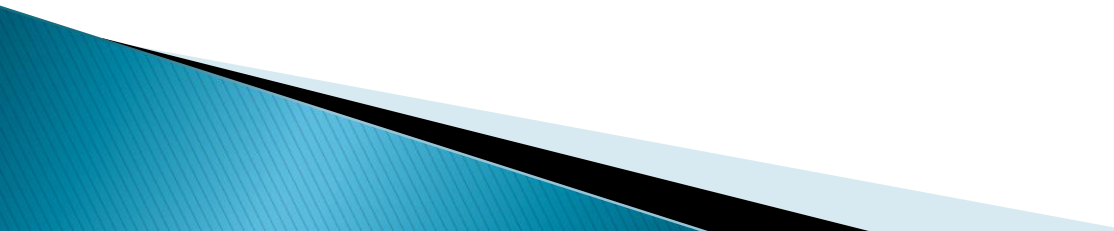
# The ABCs of PBTs

## ▶ TRUE-CAL

- ▶ Preset for specific concentration
- ▶ Adjusts for barometric pressure
- ▶ Adjusts for altitude
- ▶ Calibrate/Accuracy check to value on LCD screen
- ▶ Should only be used with Intoximeters tanks/PBTs



# The ABCs of PBTs

- ▶ CMI, Inc - Owensboro, KY
  - ▶ Intoxilyzer S-D2
  - ▶ Intoxilyzer S-D5
  - ▶ Intoxilyzer 400/400PA
  - ▶ Intoxilyzer 500
  - ▶ Intoxilyzer 600
- 

# The ABCs of PBTs

- ▶ **Intoxilyzer S-D2**
- ▶ 1.25/1.5 LPM regulator
- ▶ Uncorrected tank
- ▶ Potentiometer adjusted
- ▶ Approved in 1986



# The ABCs of PBTs

## ▶ Intoxilyzer S-D5

- ▶ 1.25/1.5 LPM regulator
- ▶ Dry gas mode
- ▶ Uncorrected tank
- ▶ Multi button adjustment procedure
  
- ▶ Approved in 2001



# The ABCs of PBTs

- ▶ **Intoxilyzer 400/400PA**
- ▶ 1.25/1.5 LPM regulator
- ▶ Uncorrected tank
- ▶ Electronic dongle required
- ▶ Multi button calibration adjustment procedure
- ▶ Approved in 1994/2000 (PA)



# The ABCs of PBTs

## ▶ Intoxilyzer 500

- ▶ 1.25/1.5 LPM regulator
- ▶ Dry gas mode
- ▶ Uncorrected tank
- ▶ Multi button adjustment procedure
  
- ▶ Approved in 2013



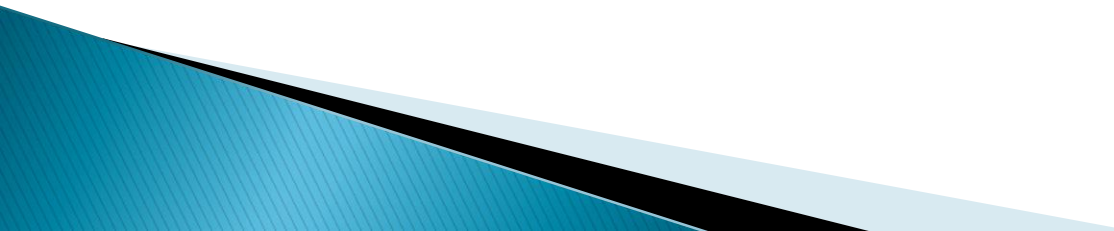
# The ABCs of PBTs

## ▶ Intoxilyzer 600

- ▶ 1.25/1.5 LPM regulator
- ▶ Dry gas mode
- ▶ Uncorrected tank
- ▶ On screen adjustment settings
- ▶ Electronic dongle required
  
- ▶ Approved in 2012



# The ABCs of PBTs

- ▶ Lifeloc Technologies, Inc – Wheat Ridge, CO
  - ▶ Lifeloc FC10/FC10 Plus
  - ▶ Lifeloc FC20/FC20 Plus
  - ▶ EASYCAL Automated Calibration Unit
- 



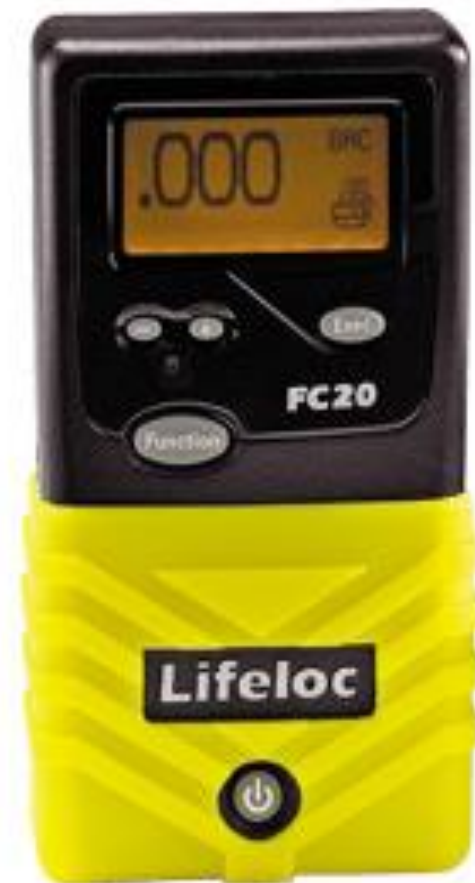
# The ABCs of PBTs

- ▶ **Lifeloc FC10/FC10 Plus**
- ▶ 2.5 LPM regulator
- ▶ Dry gas mode
- ▶ Uncorrected tank
- ▶ Multi button calibration
- ▶ EASYCAL option
  
- ▶ Approved in 2000



# The ABCs of PBTs

- ▶ **Lifeloc FC20/FC20 Plus**
- ▶ 2.5 LPM regulator
- ▶ Dry gas mode
- ▶ Uncorrected tank
- ▶ Multi button calibration
- ▶ EASYCAL option
  
- ▶ Approved in 2000



# The ABCs of PBTs

## ▶ EASYCAL

- ▶ Automated Calibration Unit
- ▶ Uncorrected tank
- ▶ FC10/FC20



# The ABCs of PBTs

- ▶ Draeger Safety Diagnostics– Irving, TX
- ▶ Alcotest 6820

# The ABCs of PBTs

## ▶ Alcotest 6820

- ▶ 14 LPM regulator
- ▶ Dry gas mode
- ▶ Enter altitude into settings
- ▶ Uncorrected tank
- ▶ Accuracy check should read what tank conc. is

Approved in 2013



# The ABCs of PBTs

- ▶ Alcohol Countermeasure Systems – Toronto, Ontario, Canada
- ▶ Alert J5

# The ABCs of PBTs

## ▶ Alert J5

- ▶ 6 LPM regulator
- ▶ Dry gas mode
- ▶ 0.080 uncorrected tank\*
- ▶ Altitude settings required
- ▶ Four samples required to calibrate
  
- ▶ Approved in 2014



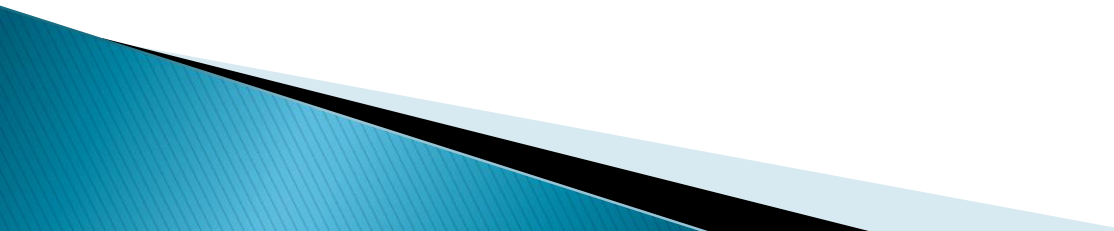
# The ABCs of PBTs

- ▶ **DataMaster DMT**
- ▶ Best for Intoximeters products
- ▶ Not efficient– wastes lots of gas
- ▶ Automatic adjustment for barometric pressure and altitude
- ▶ Will be removed from software in 2015 (tentatively)





# The ABCs of PBTs

- ▶ **Common mistakes calibrating PBTs**
  - ▶ Reusing same mouthpiece
  - ▶ Using “C” tank on non-Intoximeters products
  - ▶ Manually accepting sample when gas off
  - ▶ Failing to adjust for altitude
  - ▶ Calibrating units when they are cold
  - ▶ Using unit well past life span (+10 years)
- 

# The ABCs of PBTs

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  - ▶ 515-725-1500
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- ▶ Images of products within in this presentation used with permission from Intoximeters Inc, CMI Inc, Lifeloc Inc, ACS Corp, and Draeger Safety Inc.
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