

NOTE: Completely read and understand this manual before operating a vehicle with the *Determinator System* installed. A user must comply with the requests of the unit and follow its instructions in a timely manner. Failure to do so may require early service or a vehicle lockout – at the driver's expense and inconvenience. Always operate the vehicle and provide breath samples in a safe manner.

1. ADS *Determinator* System Overview

Alcohol Detections Systems' *Determinator* is a breath alcohol ignition interlock device (BAIID) designed to prevent a driver from starting a vehicle when his breath alcohol content (BRAC) is above a defined set point. It is certified per NHTSA (National Highway Traffic Safety Administration) specifications.

2. System Components

2.1. Determinator Hand Held with Camera

The *Hand Held* is the removable portion of the *Determinator* system into which a user provides a breath sample. Display messages and voice prompts are provided by the *Hand Held* to instruct a user.



For positive driver identification, the *Hand Held* optionally takes the driver's photo at the instant a sample is provided and measured. To ensure the driver's face is photographed, the unit must be held upright and essentially level (+/- 30 degrees) with respect to the centerline of the mouthpiece.



2.2. Determinator Vehicle Module

The *Vehicle Module* is wired to the vehicle's electrical system. It is out of sight of the user and provides the connection to the vehicle through the shown wiring harness. The coiled cord is permanently attached to the *Vehicle Module* and connects to the *Hand Held*.



2.3. Determinator Kit - Mouthpieces & Vehicle Mount

Along with *Hand Held*, *Vehicle Module*, and wiring harness, the *Determinator* Kit includes disposable mouthpieces and a vehicle mount. Additional mouthpieces are available from your Service Center. Mouthpieces should be changed at a user's discretion or for a change of user. Always keep a spare handy.

A vehicle mounting bracket is supplied to mount the *Determinator* when not in use (in-between samples). Use the provided cleaning wipes to prepare a flat surface in the vehicle. Pick a location where the *Hand Held* is easily reachable and can be seen and heard. Make sure the use of the *Hand Held* and its coiled cable does not interfere with vehicle operation. Peel the adhesive, then press and hold the mount in place. Wait several minutes before using the mount.



3. Operation

- **Plug In:** Connect the *Hand Held* to the coiled cable
- **Turn On:** Switch the vehicle's ignition to "RUN"
- **Warm-Up:** Wait for the unit to warm-up
- **Provide Breath Sample:** Blow-Suck-Blow
- **Start Vehicle:** Drive until a random retest is required

3.1. Plug In

Plug the Hand Held Unit into the coiled cable. The connector is keyed and will only plug in with the connector writing "up". To remove, squeeze the both sides of the connector and gently pull.

3.2. Turn On

Turn the ignition to "RUN" - this is the position just before "CRANK". The Hand-Held will turn on and prompt the user for the next step.

3.2.1. Turn On Messages

- *Hand Held* firmware version number
- *Hand Held* serial number
- Initializing Message

- Possible Service Due Messages

HH X-XX
SN XXXXX
Initting

Serv Due 30 Days
Lock Due 5 Days

LOCKOUT: Enter Code (S/N XXXXX)
RETURN FOR SERVICE (LOCKOUT)

Pay attention to the service due or lockout date. If you are parking your vehicle for an extended period of time, it may be locked out when you return.

3.3. Warm Up

The Determinator must warm to operating temperature before a sample is requested. Bringing a unit indoors in a cold climate will reduce the required warmup time. The message displayed while heating shows 0% to 100% completion.

Wait XX

3.4. Provide Sample : Blow/Suck/Blow (BSB)

The Determinator requests a breath sample at turn-on and at random intervals.

- Do not provide a sample until requested
- Two beeps are sounded for attention before “Please Provide Sample” is seen/heard.

Please Provide Sample

- Breath in deeply to fill lungs.
- Provide the sample in three steps:
 - STEP #1: Blow: short, sharp, pulse of air until you hear a beep.
 - STEP #2: Suck: short, sharp, pulse of air until you hear a beep.
 - STEP #3: Blow: long, continuous stream of air to empty the lungs. Keep the pressure above/below the min/max set points. Three tones may be heard:
 - Low tone : blow harder
 - Medium tone : try to maintain this
 - High tone : blow softer
- When the tone stops, stop blowing, sample is complete. Wait for the voice prompt to start the vehicle. DO NOT start the vehicle until instructed to do so.
- If the BSB feature has been replaced with a “Straight Blow”, only STEP #3 is required.

Breath Sample Procedure :

	Pressure	STEP #1 : Blow Out (short)	STEP #2 : Suck In (short)	STEP #3 : Blow Out (long)
Blow ↑	25		See Below: Provide quick suck. When you hear the beep - quickly go to STEP #3	Too Hard – Retry
	20	Blow this Hard or Harder until Beep		High Tone - Blow Softer
	15			Middle Tone - Continue
	10			Low Tone - Blow Harder
	5			Too Soft – Retry
	0			
Suck ↓	-5	See Above: Provide quick blow. When you hear the beep - quickly go to STEP #2		See Above: Provide a long sample. When the tone stops, you're done!
	-10		Suck this Hard or Harder until Beep	
	-15			
	-20			

3.4.1. Sample Errors

If an error is detected while taking a sample, the *Determinator* reports the error and requests the user retry the sample. Possible errors include:

- "Err: Pressure Not Stable" ⇒ Prior to Step #1 - do not blow into the unit until requested
- "Err: Suck Not In Time" ⇒ Step #2 (short suck) sample not provided in allotted time
- "Err: Blow Not In Time" ⇒ Step #3 (long blow) sample not provided in allotted time
- "Err: Low Sample Pressure" ⇒ Step #3 - pressure was too low during sample
- "Err: High Sample Pressure" ⇒ Step #3 - pressure was too high during sample
- "Err: Sample Temp" ⇒ Step #3 – sample temperature out of range
- "Err: Fuel Cell Stability" ⇒ At the start of a sample, the alcohol measurement device was not ready
- "Err: Hold Level " ⇒ To ensure a clear picture, the unit must be held upright and within +/-30 degrees of level at the time a sample is provided.

3.5. Start The Vehicle

After a successful sample, the *Determinator* will say, "You may start the vehicle". At this time, turn the ignition to start the vehicle. If a sample is positive for alcohol, "Vehicle Starting is Disabled" will be heard.

Once the vehicle has been started, do NOT disconnect the *Hand Held* unit until the vehicle has been turned off. Once started, the *Hand Held* will display:

Running-

Randomly, while driving, the *Determinator* will ask for additional samples. See *Rolling Random Retest*.

4. Rolling Random Retest

While driving the vehicle you will be asked to provide retests at random intervals. The rolling retest sample is provided the same way as the original sample – by providing a Blow/Suck/Blow sample. The typical time allowed is 3 minutes.

As the driver, you must be sure you can safely provide this sample. Move to a safe lane, reduce vehicle speed, or pull over, if necessary.

Do not leave a vehicle running unattended - the rolling retest will require a sample. If a sample is not provided in the allotted time, sanctions will be invoked. These include an early lockout and vehicle warning indications.

5. Courtesy Restart

If the engine dies, or is turned off, a courtesy restart is allowed. If a rolling retest is not required, the vehicle may be restarted for up to three minutes (typically). If the engine ever dies or is turned off, DO NOT restart the engine until you hear “You May Start the Vehicle” and see the message:

Start Vehicle

6. Service Interval / Unit Lockout

The Determinator must be returned to the Service Center at a defined interval – typically 30 to 60 days. When the *Hand Held* is turned on, it will display the number of days before the next required service. If the unit is not returned to the Service Center within the allotted time, the unit will become “locked out”. No samples will be accepted and the vehicle may not be started.

A code may be entered through the *Hand Held's* keypad to allow a 24 hour grace period to get to a Service Center. This is an optional feature of the unit. If enabled, the display will show:

LOCKOUT: Enter Code (S/N XXXXX)

If not available, the display will show:

RETURN FOR SERVICE (LOCKOUT)

Contact your dealer and provide the displayed 8 digit serial number to receive a temporary code. A charge may apply.

The code will be 5 digit code containing only the numbers 1, 2, or 3. Enter the code using the corresponding keys on the *Hand Held* (numbers are written below the buttons). If entered wrong, the ignition must be turned off and back on for the unit to request the code. Once accepted, the unit will reset and begin a normal startup sequence requiring the driver to provide a sample.

7. Tampering / Circumvention / Early Service

“A person tampering with, circumventing, or otherwise misusing this Ignition Interlock System is guilty of a misdemeanor, and, on conviction is subject to additional time in the Interlock Program, a fine, or imprisonment”

Tampering and circumvention include: jump or push starting, opening the unit's case, disconnection of the *Vehicle Module* or battery, and bogus breath samples.

If any tampering, circumvention, or positive alcohol is detected by the unit, the service interval will be set to 5 days (typ). The unit will be locked out unless returned for service within this time period.

The *Determinator Hand Held* and *Vehicle Module* devices log and report all aspects of the unit's operation as well as any tampering or circumvention to State authorities.

8. Products Containing Alcohol

The *Determinator* measures and will report the presence of alcohol as a violation and will require an early return for service. Products containing alcohol:

- Mouthwash / breath strips-drops-mints / some gums
- Menthol and bargain cigarettes or chewing tobacco
- Baked goods high in yeast or fermented foods including vinegar
- Cough syrups and cough drops and some cold remedies

The occurrence of a positive alcohol sample must be explained to the proper authorities. The early return for will also cost the user in inconvenience and the cost of a download.

Avoid eating and smoking while using the *Determinator*. Wait 15 minutes before providing a sample if any of the products listed above are ingested.

9. Service Center

The Service Center is responsible for vehicle installation of the *Determinator* as well as required periodic service and “downloads”. Return the vehicle to the Service Center when the *Determinator Hand Held* service interval has expired and the unit requests “Return for Service Now”.

Contact the Service Center to report any problems or ask questions related to the operation of the *Determinator*.

Upon leaving the Service Center, the unit will have been checked for correct operation and the service interval reset.

10. Verify Safe Installation

The *Determinator* should not interfere with the operation of a vehicle after it has been started.

- Verify the location of the *Hand Held* mount and the Coiled Cable routing from the *Vehicle Module* does not interfere with vehicle operation, but gives full access to the *Hand Held*.
- Double check that taking the *Hand Held* from its mount to the driver's mouth is a normal motion and that the coiled cord does not interfere with any driver control such as the steering wheel, blinkers, or gear shift.
- Verify brake and gas pedals and steering are not affected by the installation.

11. Training and Demo Mode

- Read this manual completely
- Watch the *Determinator* video
- Demo Mode

At a Service Center, using a computer, the *Determinator* can be placed into a demonstration mode to allow a driver to learn all aspects of the Determinator operation such as:

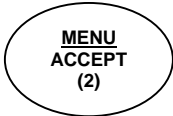

- how to provide a sample
- starting the vehicle
- rolling random retests
- courtesy restarts

In demo mode, the *Hand Held* displays the following message at turn-on.

*** DEMO ***

The *Determinator Hand Held* is shipped in Demo Mode to allow a new user to learn the unit's operation. In Demo Mode, the unit is fully functional, but all aspects of operation are sped up (to the point of being non-functional while driving). Typically, one minute is allowed to provide a sample or a rolling retest. In Demo Mode, the service due date will not elapse. A vehicle may not be started unless a proper sample is provided.

To exit Demo Mode,

Press:  until  is seen.

The unit then displays: 

Press:  to exit demo mode.

12. Determinator Menu

- Menu Button: YES Accept or change the currently displayed menu option. Also the “1” key.


**YES
(1)**

- Menu Button: MENU Enters the *Determinator's* menu and steps through options. Also the “2” key.


**MENU
ACCEPT
(2)**

- Menu Button: NO Exit the *Determinator* menu. Also the “3” key.


**NO
(3)**

- DEMOEXIT press YES to exit Demo Mode
- SERV DUE how many days until required to return to Service Center
- VOLUME press YES to increase the voice volume (values 1-10)
- TIME HMS display unit's time
- DATE YMD display unit's date
- DAYS2CAL number of days until a Service Center calibration is required
- DIAGNOSE press YES to enter the Diagnostic sub-menu
 - Starter if a sample has been provided and vehicle is not running, allows the starter relay to cycle on/off.
 - Horn cycle the horn relay on/off
 - Lights cycle the lights relay on/off
 - Alarm cycle the VM alarm on/off
 - BattVolt display the vehicle's battery voltage (displays about 0.5 v less than actual)
 - TachCnt displays the number of positive and negative edges seen on the digital tach signal (per second)
 - Pressure display the pressure sensor value in "H2O
 - TSample temperature of breath sample
 - TFuelCel temperature of the fuel cell
 - Tblock temperature of the measurement block
 - HH SN serial number of the *Hand Held*
 - HH VERS firmware version of the *Hand Held*
 - VM SN serial number of the last connected (or expected) *Vehicle Module*
 - VM VERS firmware version of the last connected (or expected) *Vehicle Module*

13. Frequently Asked Questions

Q101: Can I leave my car while it warms up, or while I run into the convenience store?

A101: NO. Once a vehicle has been started, the *Determinator* will randomly prompt the user for a sample. If the user is not available, this will be treated as a failure to provide a random retest and an early lockout will be invoked.

Q102: The *Determinator* requires a long time to heat up and request a sample. Can this time be decreased?

A102: The *Determinator* must warm up to operating temperature. In cold climates, warm up time can be improved by disconnecting the unit from the coiled cord and bringing the unit indoors or keeping it in a pocket.

Q103: “My battery died” or “I replaced my battery”. Why did I get an early lockout?

A103: The *Determinator* detects tampering at the loss of battery power. A vehicle must be in good operating condition. A user must provide documentation for the loss of battery power.

Q104: A sample was rejected for “Pressure not stable”.

A104: Do not provide a sample until requested. If a user blows into the unit or even breathes lightly into the unit, this error can occur. Please retry providing the sample.

14. Startup Error Messages

The following messages may be displayed at unit startup with the unit temporarily disabled. If the indicated problem has been resolved, turn the ignition off and back on to retry normal operation.

Displayed Message	Explanation
"Lockout: Enter Code (S/N 001001)" or "Restricted: Enter Code (S/N 001001)"	Unit is locked out either due to expiration of the service interval or due to a daily time restriction. Provide the Hand Held's Serial Number (it is displayed and printed on the unit's rear label) to the service center. A 5 digit code will be provided. Enter the code using the Hand Held's keypad with the buttons representing the numbers 1, 2, and 3. The unit will allow for 24 hours of continued operation.
"DISABLED - RANDOM RETEST FAIL"	A random retest was not provided in the allotted time. Pull over as instructed and turn off the ignition.
"DISABLED - NO SAMPLE"	No sample was provided in the allotted time.
"DISABLED - BREATH TEMP"	The temperature of the sample was too low or too high.
"DISABLED - POSITIVE ALCOHOL"	A sample over the allowed limit was measured. If driving, pull over as instructed and turn off the ignition.
"DISABLED - TIME RESTRICTE"	The unit has an optional time restriction entered. The unit will only operate between certain hours.
"DISABLED - AMBIENT TEMP"	System error: the internal ambient temperature is out of expected range.
"DISABLED - HEATING"	System error: the heaters encountered an unexpected condition.
"DISABLED - SYNCH MISMATCH"	The Hand Held unit does not recognize the connected Vehicle Module. These two devices are paired at the Service Center and must remain matched.
"DISABLED - SYNCH ERROR"	The Hand Held could not communicate to the Vehicle Module. This could indicate a problem with either device or the coiled cable between them.

15. Voice Prompts

The Determinator has several voice prompts that are spoken to alert the user to provide a sample or indicate the unit status.

Spoken Prompt	Explanation
"Return for Service Soon"	Spoken after warm up if service is due in less than 5 days
"Please Wait"	Spoken while heating, or before requesting a sample.
"Determinator, Please Wait"	Start-up message
"Please Provide Sample"	Spoken for a first test or rolling random retest. Provide a breath sample.
"Please Retry Sample"	Previous sample failed. Provide another breath sample.
"Provide sample now"	Spoken during a random retest if the first request is ignored
"Provide Sample Now or Vehicle Lockout will begin"	Spoken during a random retest if the first two requests are ignored
"Pull over and stop the vehicle"	The engine was detected as running without authorization to start/run. Continuing to drive after a positive alcohol sample or the failure to provide a random retest will also generate this message.
"Invalid sample - Please wait"	Spoken if the provided sample could not be measured (temperature/pressure/etc) . See ?? for more information.
"You May Start the Vehicle"	The vehicle may be started. Spoken if a proper sample was provided or if the engine dies and a courtesy restart is allowed.
"Vehicle Starting is Disabled"	An alcohol positive sample was measured. The vehicle will not start.
"Rolling Retest Passed. Thank You"	A valid sample was provided for a rolling random retest. A new random interval will be calculated.
"Return for service now - Vehicle lockout"	Lockout period has elapsed. Vehicle is locked out and may not be started. If enabled, a code may be entered for a 24 hours grace period.