REDLINE DETECTION.COM

EV NANOLEAK LOCATOR™
OPERATION MANUAL

P/N 95-0606

CONTENTS

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Email Support: info@RedlineDetection.com

Response by email or telephone within one business day

Online: www.RedlineDetection.com

SPECIFICATIONS

Dimensions	22.5 in x 16 in x 7.6 in (57cm x 41cm x 19 cm)
Weight - EV NanoLeak Locator™ Machine	25 lbs (11.3kg)
Weight - Accessory Kit Only	3 lbs (1.4 kg)
Shipping - Weight	37 lbs (16.75kg)
Shipping - Dimensions	20 in x 15 in x 21 in (51 cm x 38 cm x 53 cm)
Power Input	90/230 V~
Frequency Rating	50/60 Hz
Current Rating	2.5 A
Fuse Rating	F 2.5 L250V
Output Pressure	-13 PSI to 40 PSI (-0.9 to 2.8 BAR)
Operating Temperature	70°F to 90°F (21°C to 32°C)
Operating Humidity	No Restrictions
Operating Altitude	No Restrictions
90/230 V~ Power Cord	10 ft. (3 m)
Operating Modes	Cooling System Purge/ Cooling System Test / Battery Enclosure Test / Find Leaks
EV NanoLeak Locator™ Extended Warranty	

1. Electrical Inlet 90- 230 V~

2. EV NanoLeak Locator™ Power Switch

3. EV NanoLeak Locator™ Status Lights

4. NanoLeak™ Signature Air Power Switch

5. FIND LEAKS switch
Depress to begin 30 minute Signature Air production cycle.

6. NanoLeak™ Solution Fill Port
Remove fluid fill plug to fill machine with Redline 2 0z NanoLeak™ Solution

7. Vacuum Test Port

8. Low Pressure Test Port

9. High Pressure Test Port

10. NanoLeak™ Signature Air Port

11. USB Connection

12. Booting (Light Blue)

Indicates EV NanoLeak Locator™ performing self test initialization

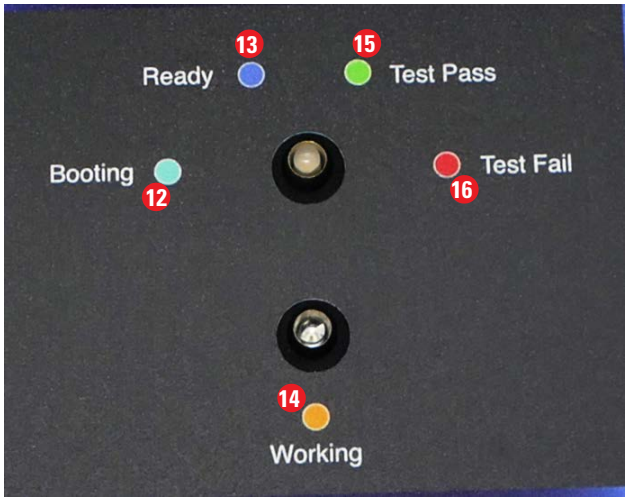
13. Ready (Blue)

Indicates EV NanoLeak Locator™ ready to perform test

14. Working (Orange)
Indicates test in progress

15. Test Pass (Green)
Indicates test performed has passed

16. Test Fail (Red)
Indicates test performed has failed



ACCESSORIES INCLUDED

1. Low Pressure Test Hose [96-0453]

2. Vacuum Test Hose [96-0452]

3. High Pressure Test / Purge Hose [96-0451]

4. OEM-Approved NanoLeak™ Solution [96-0769] 2 fl. oz.

Important: NanoLeak™ Solution contains NO Dye or Contaminants. *Replace solution every 1,000 tests or 4 months, whichever comes first

5. Power Cable [20-0010]

6. NanoLeak Handheld Locator™ [96-0116]

EV NanoLeak Locator™ is designed to be used to quickly test and precisely locate leaks in all EV and Hybrid Vehicle Battery Enclosures + Battery Enclosure Cooling Systems.

SAFETY GLASSES MUST BE WORN

- Always wear proper safety protection for the work being performed, including OSHA standard eyewear

SAFETY PRECAUTIONS

- Never leave a vehicle unattended while equipment is connected and operating
- Exercise caution when connecting and disconnecting Test Hoses + Adapters
- System testing pressure should never exceed manufacturer test pressures
- Some valving components may have acceptable leak tolerances. Check with the component manufacture for further instructions.

TO BE USED BY PROFESSIONAL TECHNICIANS ONLY

NanoLeak™ Finder OEM-Approved NanoLeak™ Solution

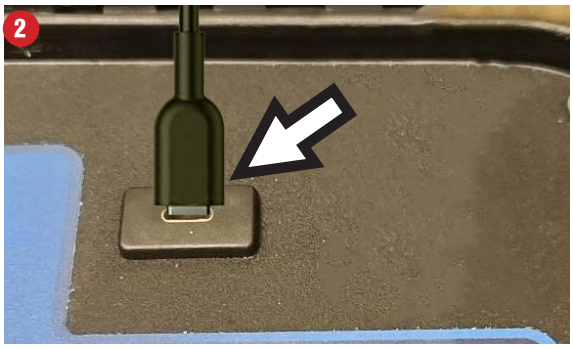
Redline Detection uses an environmentally friendly (non-polluting), contaminant free NanoLeak™ Solution. For this reason, the Signature Air can be safely released into the environment after the leak detection procedure is completed. The NanoLeak™ Handheld Leak Locator will detect even the most minute leak. Because the Signature Air atoms in the NanoLeak™ Solution are so small, it is effective and approved for leak detection using your NanoLeak™ Handheld Leak Locator.

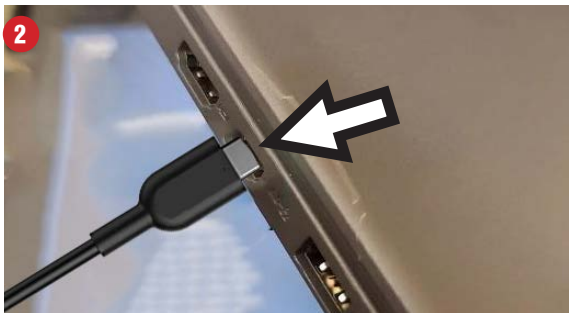
The NanoLeak™ Signature Air is charged into an empty system at pressure. Once the source of the leak is located, release system of pressurized Signature Air, perform repairs, retest system to ensure that the repair has been performed properly.

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions
2. Keep these instructions
3. Heed all warnings
4. Follow all instructions
5. Clean only with dry cloth
6. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions
7. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat
8. Protect the power cord from being walked on or pinched particularly at plugs and the point where they exit from the apparatus
9. Only use attachments/accessories specified by the manufacturer
10. Unplug this apparatus during lightning storms or when unused for long periods of time
11. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped
12. CAUTION: To disconnect the unit completely from the MAINS, unplug the unit. Turning the power switch off does not disconnect the unit completely from the MAINS.
13. WARNING: This is a Class I apparatus. It should be connected to a MAINS socket outlet with a protective earthing connection.
14. This equipment design typically applies to commercial or industrial equipment expected to be installed in locations where only adults are normally present.

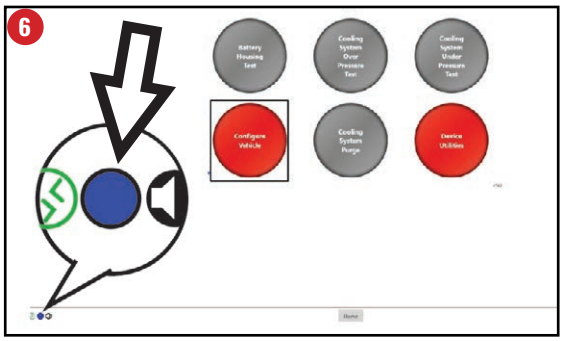
EV NANOLEAK LOCATOR / COMPUTER SET UP

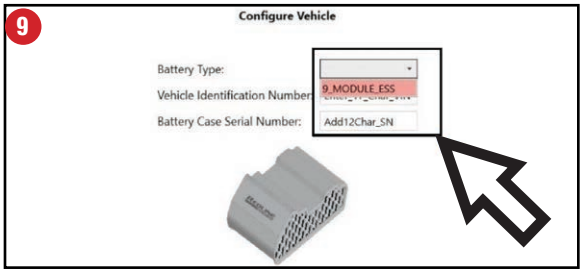


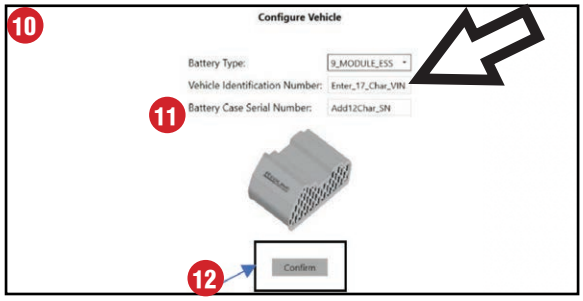


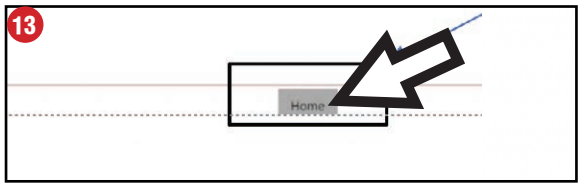
EV NanoLeak™ Locator SET UP

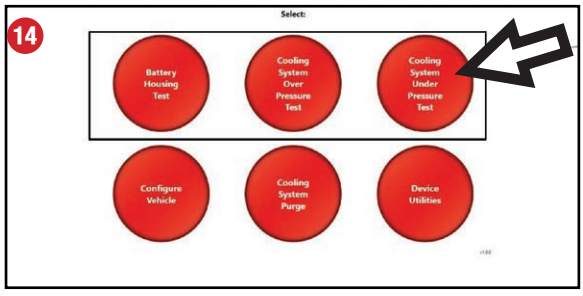
1. Connect EV NanoLeak Locator™ to 90/230 V~
2. Attach communication cord to EV NanoLeak Locator™ and Laptop.
3. Power On EV NanoLeak Locator™ with power switch Machine will begin to self test (light blue LED). Allow 30s-1m for this process.
4. Once EV NanoLeak Locator™ self test is complete the status LED will be Blue.
5. Power up laptop to boot EV NanoLeak Locator™ software on screen. The application will open to the home screen.
6. Verify proper EV NanoLeak Locator/laptop connection and communication statis on laptop screen (BlueDot GreenDot).











8. On Computer screen, Click on the "configure vehicle" icon.

9. The battery type option will become available. Select "Desired Battery Type" from drop down box.

10. Input vehicle Vin (_____).

11. Input battery enclosure serial number.

12. Click Confirm.

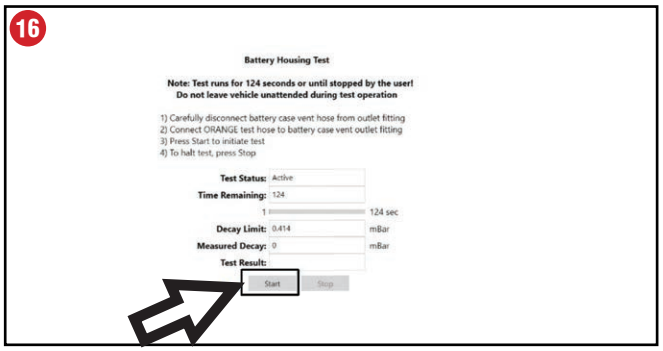
13. Click home to list or allow test.

14. Select test to be performed.

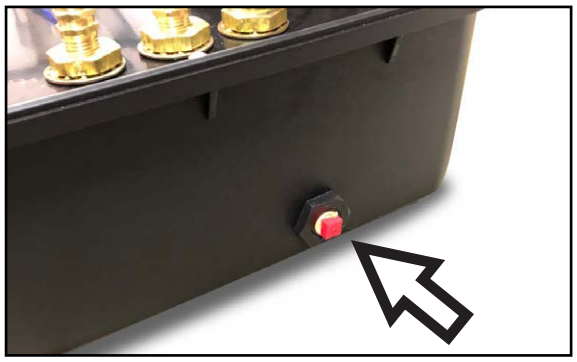
15. Connect corresponding hose chosen in the application to EV NanoLeak Locator™ and enclosure.

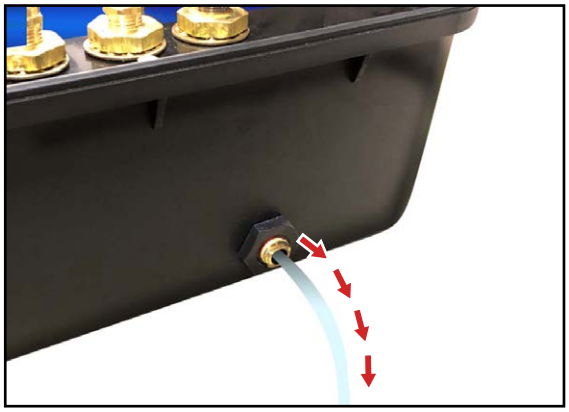
16. Click Start Test to begin operation.

17. Repeat steps 14 and 15 for all other tests.



FIND LEAKS SET UP





FIND LEAKS SET UP

FILL NANOLEAK™ SOLUTION

a. Remove Fluid Fill Plug

b. Fill NanoLeak™ Solution no more than (2oz /62ml) (1 Bottle)

c. Replace Fluid Fill Plug

d. Do not overtighten Fill Plug

e. Only use Redline NanoLeak™ Solution. Use of any other solution voids warranty.

NANOLEAK™ SOLUTION REPLACEMENT

⚠ Replace Redline NanoLeak™ Solution every 1000 Tests or 4 months, whichever occurs first

Drain and Refill

a. Tilt EV NanoLeak Locator™ on side and allow machine to completely drain of old solution.

b. Refill to top of Fill Port, 2 oz

c. Replace Fluid Fill Plug.

⚠ Do not over tighten Fill Plug

FINDING LEAKS

⚠ Perform “Find Leaks” test in a still air environment

1. System to be tested must be completely depressurized
2. Attach appropriate testing hose and connecting adapter to “Find Leaks” outlet connector on EV NanoLeak Locator™ to insure a leak free hook up.
3. Press “Find Leaks” cycle begins a 30 minute “Find Leaks” cycle
4. Create a vent at a point farthest from testing hose inlet point to exhaust stale air and fill with Signature air.
5. Use EV NanoLeak Locator™ to determine if Signature Air has properly filled vessel under test.
6. Reseal leak point created to properly pressurize system under test.
7. With “Find Leaks” active: Use handheld Nanoleak Locator™ to precisely locate leak(s). Refer to Page12. Probe around and above suspected leaking fittings, seals/ sealing points and body connecting studs/fittings. Move NanoLeak Locator™ no faster than 1/2” per second. Press sensitivity adjustment to HIGH initially to find general areas of leaks. Then choose MEDIUM or LOW sensitivity to pin point the precise location(s) of leak(s)
8. If “Find Leaks” times out, depress “Find Leaks” again to extend.
9. Press “Find Leaks” to end testing
10. Repair located leaks
11. Re-test system using proper decay testing procedure to confirm repair(s)

⚠ When the Instrument signals a leakage, pull the probe away from the leak for a moment, and then bring it back to pinpoint the location. If the Signature Air leak is large, setting the sensitivity switch to LOW will make it easier to find the exact site of the leak.

NANOLEAK™ HANDHELD LOCATOR

The NanoLeak™ Handheld Leak Locator features a long life sensor technology that is designed to detect minute amounts of Redline NanoLeak™ Signature Air.

The NanoLeak™ Handheld Leak Locator's unique digital leak size indicator takes the guesswork out of whether or not to repair a small leak. The digital display is independent from the audio alarm and sensitivity level, allowing the precise pinpointing of the leak source.

The NanoLeak™ Handheld Leak Locator does not require rechargeable batteries. When used with the NanoLeak™ Finder, the NanoLeak™ Handheld Leak Locator will detect leak rates less than 5 ppm.

Features

- Unique numeric leak size indicator
- Long life, stable sensor
- NanoLeak™ Leak Locator sensitivity < 5 ppm
- Visual LED leak alarm near sensor
- Low battery indicator
- Audio mute function
- CE certified
- Automatic calibration and reset to ambient
- 3 adjustable sensitivity levels
- True mechanical pump
- Uses 4 AA alkaline batteries
- Comfort grip
- Made in the USA

NanoLeak™ Detection

Redline NanoLeak™ Signature Air consists of an environmentally friendly (non-polluting), contaminant free mixture. For this reason, the NanoLeak™ Signature Air can be released into the environment after the leak detection procedure is completed.

The NanoLeak™ Handheld Leak Locator will detect even the most minute amounts of NanoLeak™ Signature Air. Because the air molecules in NanoLeak™ Signature Air are so small, it is the only effective and approved air for leak detection using your NanoLeak™ Handheld Leak Locator.

The NanoLeak™ Signature Air is charged into an empty system. Always probe slightly above and around the suspected leak area. Once the source of the leak is located and repaired, the NanoLeak Signature Air can be safely released.

NOTE: All repairs should be re-checked for quality of repair.

NANOLEAK™ HANDHELD LOCATOR OPERATION

1. GENERAL INFORMATION

Read though the instruction manual before operation for correct and safe usage. Please store and retain this instruction manual for future reference. NanoLeak™ Detection Redline Signature Air consists of a non-toxic, environmentally friendly (non-polluting) contaminant free mixture. For this reason, the Redline Signature Air can be released in to the environment after the leak detection procedure is completed. The NanoLeak™ Locator will detect even the most minute amounts of Redline Signature because the signature air molecules are so small, it is the only effective and approved leak detection using your NanoLeak Locator™. The Redline Signature Air is charged into an empty system. Always probe slightly above the suspected leak area. Once the source of the leak is located and repaired, the Redline Signature Air can be released.

2. SPECIFICATION

Detectable Gases: Redline NanoLeak™ Signature Air. Sensitivity: Less than 5 ppm H M L Signature Air 2g/year 15g/year 30g/year Alarm Method: Buzzer, Tricolor LED bar Indicator. Power Usage: 4 AA size (6V DC) Alkaline Batteries Snake Tube length: 40cm (15.5") Dimension / Weight: 173 x 66 x 56 mm (approximately 400g) Accessories: Alkaline batteries (AA) X 4 pcs User manual, carry case. Battery Life: Approximately 7 hours normal use. Auto power OFF: 10 minutes Disable Auto Power Off: Press and Hold "Hi" button then power on the meter. Warm-Up Time: Approximately 45 seconds Operating Temperature & Humidity: 0 ~40 °C, < 80% RH

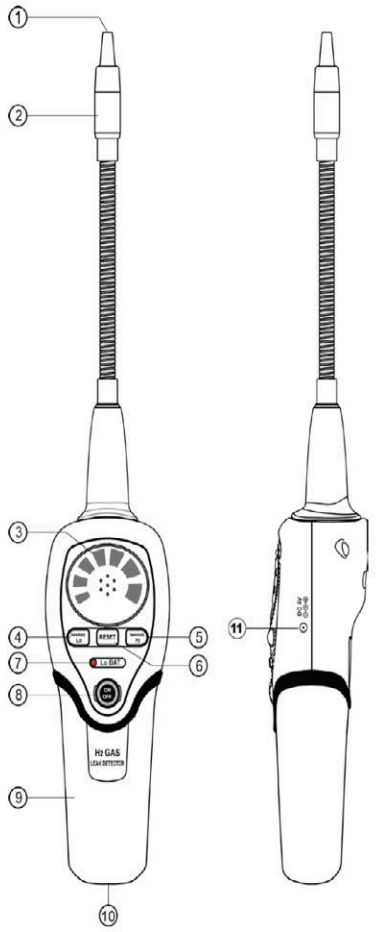
Storage Temperature & Humidity: -10 ~60 °C, < 70% RH Altitude: < 2000M (6500')

4. OPERATION GUIDE

(1) There are some environmental conditions that might cause error reading:

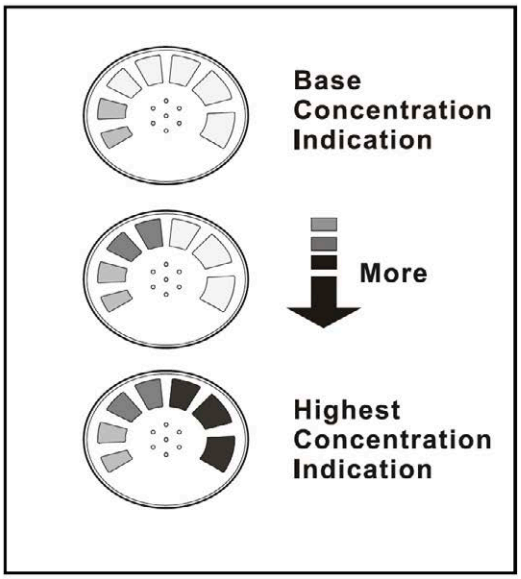
- Pollutant places.
- Large temperature variation.
- Places with high wind velocity.
- Organic solvent, adhesive vapor, fuel gas and vesicant will cause abnormal response from the sensor. Try to avoid the environment involved with this substance.
- Places filled with too much NanoLeak Signature Air.

5-1 Panel Description



① Sensor	② Sensor Protector
③ LED Leak Indicators	④ Sensitivity Lo Button
⑤ Sensitivity Hi Button	⑥ Reset Button
⑦ Low Battery Indicator	⑧ Power On/Off
⑨ Battery Cover	⑩ Battery Cover Screw

5-2 LED Leak Indicator Definition:



6. GETTING STARTED

6-1 Installing Batteries

- Loose the screw and remove the battery compartment door located on the bottom of the instrument as show below (Fig.1).
- Install 4 “AA” size alkaline batteries.
- Reinstall the battery cover by aligning it with the handle. When the batteries are nearing the end of their useful life, the Red LED Low Battery indicator illuminates. The batteries should be replaced as quickly as possible.

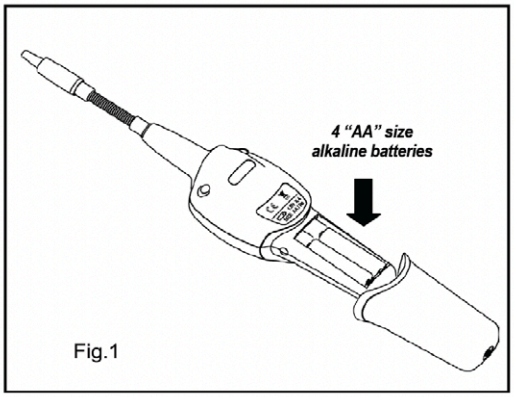


Fig.1

6-2 Automatic Ambient Reset Feature

The Redline NanoLeak Locator features an Automatic Ambient Reset function that sets the unit to ignore ambient concentrations of Signature Air.

- Automatic Ambient Setup - Upon initial power on, the unit automatically sets itself to ignore the level of Signature Air present at the tip. Only a level, or concentration, greater than this will cause an alarm. CAUTION! Be aware that this feature will cause the unit to ignore any Signature Air present at turn on. In other words, with the unit off if you place the tip up to a known leak and switch the unit on, no leak will be indicated!
- Ambient Reset Feature - Resetting the unit during operation performs a similar function, it programs the circuit to ignore the level of Signature Air concentration present at the tip. This allows the user to 'home-in' on the source of the leak (higher concentration). Similarly, the unit can be moved to fresh air and reset for maximum sensitivity. Resetting the unit with no Signature Air present (fresh air) causes any level above zero to be detected.
- After the unit is warmed up, the default sensitivity level is set at "High" and Auto Reset function is "ON"

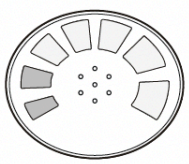
NanoLeak Locator 10

- Auto Reset function is best used initially when user is moving around trying to identify leakage source. Once the leak source is determined, cancel the Auto Detect function to proceed with leakage measurement.
- Auto Reset function should be turned OFF when use in fixed position leakage detection.

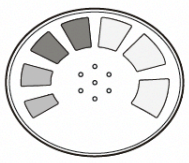
6-3 Feature Sensitivity Adjustment

The Instrument provides three levels of sensitivity. When the unit is switched on, it is set to the high sensitivity level.

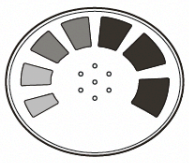
- To change the sensitivity, press the Sensitivity Lo key. When the key is pressed, the visual display will momentarily show the two left LED's (green) indicating Low Sensitivity level is selected.
- To switch back to High Sensitivity, press the Sensitivity Hi key. The two right LED's (red) will light momentarily indicating high Sensitivity level is selected.



Low Sensitivity level
(Green LED)



Medium Sensitivity level
(Orange LED)



High Sensitivity level
(Red LED)

7. OPERATING PROCEDURE WARNING!

⚠ Do not operate this instrument in the presence of gasoline, natural gas, propane, or in other combustible atmospheres.

How To Find Leaks?

NOTE: A sudden whipping of the leak detector probe or "blowing" into the sensor tip will affect the air flow over the sensor and cause the instrument to alarm.

(1) Power-Up key:

The key turns the Redline NanoLeak Locator instrument ON or OFF function. Press it once to turn on the Redline NanoLeak Locator, the display will illuminate with flash, for 45 seconds to heat up the sensor. Press and hold this button for 5 second to turn OFF the power.

(2) Auto reset & Reset function key

When the Auto Reset function is turned ON, the meter will monitor background status and fine tune itself. When Reset LED light is on, it indicates it is in ON mode. Press Reset button and hold for 2 seconds the Reset light will turn off and Auto Reset function is in OFF mode.

NanoLeak Locator 13 When the Reset light is off, it indicates the Reset function is in manual mode. Press the Reset button once to enable manual Reset function.

(3) Enter the measuring mode

- Place the tip of the leak-detector probe as close as possible to the site of the suspected leak. Try to position the probe within 1/4 inch (6 mm) of the possible leak source.
- Slowly move the probe past each possible leakage point.
- When the instrument detects a leak source, the audible tone will alarm. Additionally, the visual indicators will light from left to right, Green LED then Orange LED then Red LED (highest concentration) as increasing of level indicate that the location is close to the source.
- When the Instrument signals a leakage, pull the probe away from the leak for a moment, and then bring it back to pinpoint the location. If the Signature Air leak is large, setting the sensitivity switch to LOW will make it easier to find the exact site of the leak.
- Return the sensitivity switch to HIGH before searching for additional leaks.
- When you've finished leak-testing, turn OFF the instrument and store it in a clean place, protect the leak detector from possible damage.

8. REPLACING NEW SENSOR

The sensor has a limited operative period. Under normal operation, the sensor should work more than one year. Expose the sensor under high density of coolant (>30000ppm) will shorten its life cycle rapidly. It is important to ensure that sensor surface is free from water droplets, vapor, oil, grease, dust and any or all other forms of contaminant. Furthermore, to ensure good working condition of the unit, sensors must be replacement periodically when its operative life is over.

⚠ WARNING! When replacing new sensor, the worn-out sensor may be HOT!! ⚠

(1) Remove cone cap cover from the tip of snake tube.

(2) Pull out old sensor and insert the new sensor into the plug (see below fig.2).

(3) Seal the cap cover over the plug.

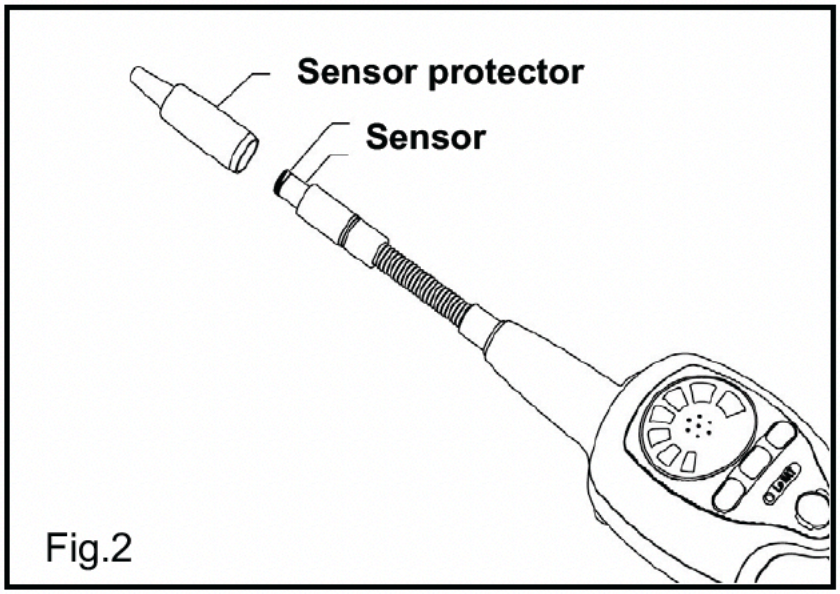


Fig.2

9. CLEANING:

The Instrument plastic housing can be cleaned with standard household detergent or isopropyl alcohol. Care should be taken to prevent the cleaner from entering the instrument. Gasoline and other solvents may damage the plastic and should be avoided.

WARNING! The detergent or isopropyl alcohol might damage the sensor, please keep then from the sensor through the process.

TROUBLESHOOTING / WARRANTY

EV NanoLeak Locator™	SOLUTION
Won't perform test	• Hose Connections • Block offs in place
Won't Power up	• Fuse
	• Contact Redline Technical Support 800-55-SMOKE or +1 714-451-1411 Email: info@RedlineDetection.com

EV NanoLeak Handheld Locator™	SOLUTION
Excessive "False Positives"	• Sensor Tip is dirty – clean sensor or replace • Sensor Tip is loose. Reconnect.
	• Contact Redline Technical Support 800-55-SMOKE or +1 714-451-1411 Email: info@RedlineDetection.com

The manufacturer, Redline Detection, LLC ("Redline") warrants this product to be free from defects in workmanship and material under normal use and service for a period of one-year from the date of purchase. Redline's liability under this warranty is limited to: (1) repair or replacement of any parts or product which are determined to be defective; or at Redline's sole option (2) refund of the purchase price. In either event, product to be returned shipping prepaid within the one year warranty period. Products are only to be used by persons having skill and knowledge in the motor vehicle repair field, and improper use or maintenance may cause serious injury. In no event shall Redline be liable beyond replacement of product or refund of the purchase price. This warranty shall void if a product is improperly maintained, altered, abused or otherwise misused in any way.

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Redline Detection, LLC

*w/ globally sourced components

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