

Test Equipment Depot - 800.517.8431 -
99 Washington Street Melrose, MA 02176

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CPS[®]

Leak-Seeker[®] II Refrigerant Leak Detector



US Patent 8,555,701

OPERATION MANUAL

GENERAL INFORMATION

Table of Contents

General Information

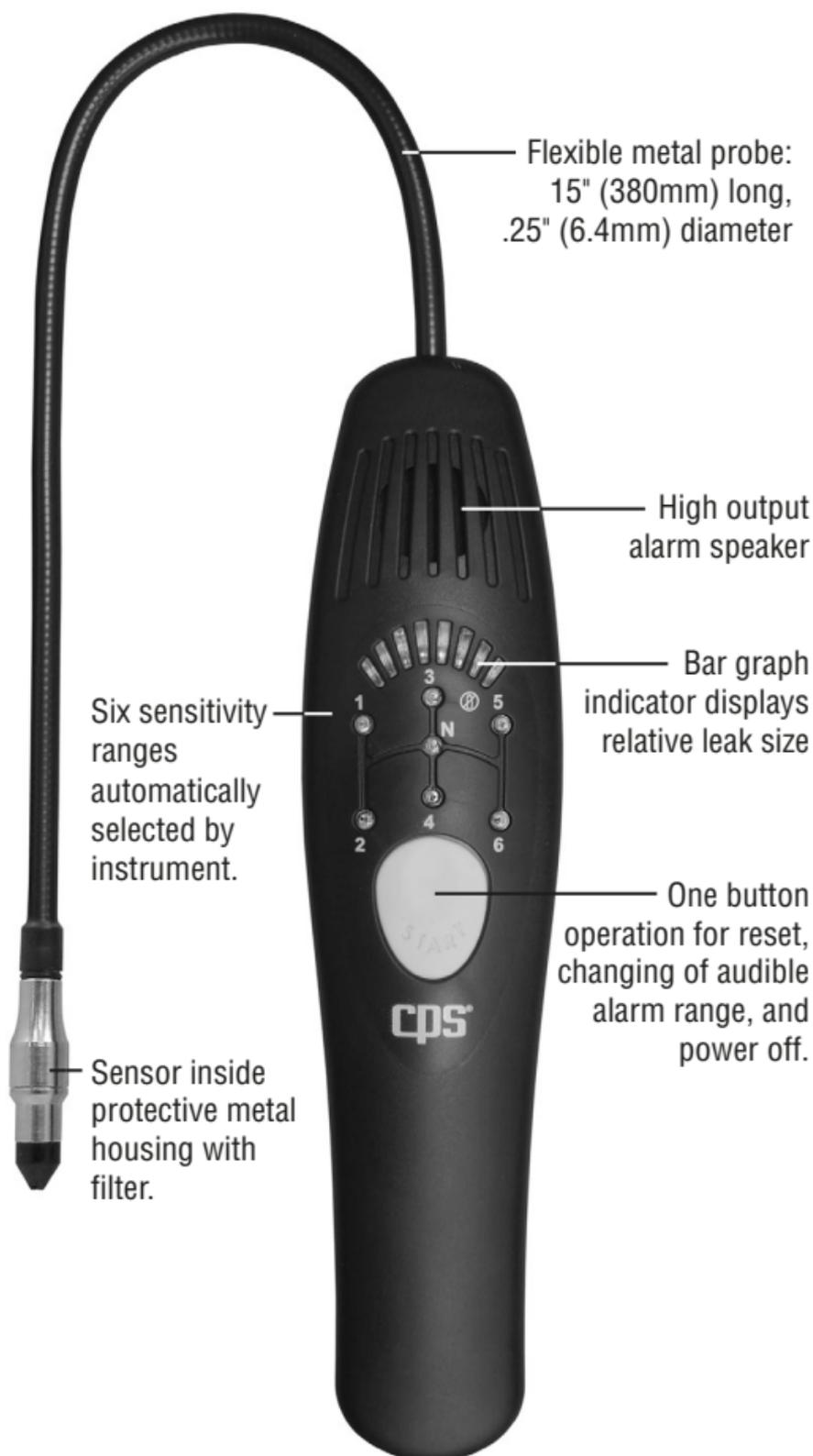
Introduction	2
Leak-Seeker® II Specifications	3
Leak-Seeker® II Overview	4

Operation

Using the Leak-Seeker® II	5
Searching for Leaks	6
Maintenance	7
Sensor Replacement Diagram	8

Warranty	9
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Introduction



GENERAL INFORMATION

Leak-Seeker[®] II Specifications

Sensor:	State of the art E_MOS [®] technology.
Gases:	Detects refrigerants including those with hydrocarbon components (CFC, CH ₂ F ₂ , HCFC, HFC, HFO, NH ₃ , HC. Hydrogen trace gas in 95% N ₂ , 5% H ₂ mixture A2L refrigerants). CAUTION: This leak detector is not intrinsically safe. Use in well ventilated areas.
Sensitivity:	Better than a 0.1 oz / year (3 g / annually) for all common refrigerants, including R-410a, R-404a and R-407a.
Audible Alarms:	A bar-graph LED display shows the relative leak size in each of 7 possible ranges. Each range is indicated by a numbered LED. Each range is automatically selected by the instrument starting with highest sensitivity and automatically switching to lower sensitivities as the leak source is approached.
Operating Temperature:	-18 to 60°C (0 to 140°F)
Power:	Three size "C" alkaline batteries (NEDA/ANSI 14A).
Battery Life:	50 hours minimum at 77°F (25°C). Battery life depends on cell chemistry and ambient conditions. Alkaline batteries provide longest life. Cold ambient conditions decrease battery life. The Leak-Seeker [®] II turns itself off after 10 minutes of inactivity— START button not pressed—to further prolong battery life.
Dimensions:	Instrument (L x W x H): 10" x 2.3" x 2" 254mm x 59mm x 51mm
Probe:	15" (380mm) long, .25" (6.4mm) diameter.
Weight:	1 lb 2 oz (500 g)
Certifications:	Complies with European Standard EN14624:2012

GENERAL INFORMATION

Leak-Seeker® II Overview

Leak-Seeker® II is the world's only fully automatic electronic leak detector with E_MOS® sensor technology. Sophisticated software algorithms control the operation of this instrument allowing the user to quickly find the location of both small and large leaks with pin-point accuracy. Efficient control of the power to the sensor increases the life of the batteries while ensuring that the sensor is operated within its optimum parameters. A wide range audible alarm and 56 levels of sensitivity, automatically selected by the POWERSHIFT™ software and displayed in a bar graph type visual indicator, lets the user concentrate on finding the leaks and not on the instrument. Housed in an ergonomically shaped high impact plastic chassis with a flexible 15" probe, the **Leak-Seeker® II** is built for rugged field use. The E_MOS® sensor is enclosed in a metal cage designed to protect the sensor from dirt and water. The sensor housing incorporates an easily removable threaded cap with a filter, allowing the user to easily clean any dirt or grease which may collect while searching for leaks.

Features:

- Microprocessor controlled sensor electronics utilizing a multi channel signal detection method, improves sensitivity while reducing false alarms.
- New E_MOS® sensor technology incorporates a proprietary pulse modulation design to increase both battery and sensor life.
- Software managed sensor rejuvenation mode, automatically initiated at each startup ensures the highest level of sensitivity every use, for up to 500 hours of detecting leaks of less than .1 oz per year.
- Sensitivity remains constant over the life of the sensor.
- Dynamic signal analysis and automatic sensitivity control, enables the **Leak-Seeker® II** to make quick work of any leak regardless of its size or the refrigerant type...without operator intervention.
- The world's only leak detector with fully automatic sensitivity selection and control.
- Senses all refrigerants including those with hydrocarbon components.
- Meets or exceeds all U.S. and International standards for commercial use.
- Superior sensitivity to R-410A and new HFO refrigerants.
- Sensor not contaminated by R-404a.
- Sensitivity to 35 parts per million (less than .1 oz per year).
- 50+ hour battery life (3) "C" batteries.
- 500+ hour sensor life.
- 2 year warranty.
- Patented.

Using the *Leak-Seeker*® II

Turning the instrument ON:

Press the yellow **START** button once to turn the unit **ON**. The instrument initiates a sensor self-cleaning and conditioning cycle which lasts for **35 seconds**. During that time, the tachometer lights scan from left to right. When the audible alarm turns on the instrument is ready to use.

Resetting the instrument:

At any time during operation, pressing the yellow **START** button resets the instrument to its highest sensitivity level and balances it to ambient conditions.

Switching audible alarms:

The **Leak-Seeker**® II incorporates two user selectable audible alarm ranges. At any time during operation, simply double click the yellow **START** button to toggle between the two audible alarm range options. The instrument will store the current audible alarm range when turned **OFF**, thus becoming the operating alarm the next time the instrument is powered up.

Turning the instrument OFF:

At any time during operation, press and hold down the yellow **START** button until the LED display turns **OFF**. This indicates that the unit has been shut down.

Low battery indicator :

When the batteries reach approximately 10% of capacity, the rightmost bar graph LED will stay lit above the **LO BAT** legend.

Windy conditions:

Locating leaks under windy conditions may severely impede the leak searching process. Even very large leaks may be difficult to locate as the escaping gas is quickly dissipated into the atmosphere. If necessary, fabricate a gas trap using aluminum foil around joints or fittings or otherwise shield the search area from the wind.

When to reset the unit:

It is necessary to reset the **Leak-Seeker**® II during a leak search if the unit becomes fully saturated, multiple leaks are present or during the leak verification process.

Leak verification:

If a suspected leak is indicated, verify several times by moving the sensor away from the leak area, resetting the unit and then back to the suspected leak. If the instrument indicates a leak three consecutive times, then you have found a leak.

Searching For Leaks

The **Leak-Seeker® II** is fully automatic and needs only to be turned on to begin leak searching. All necessary sensitivity and calibration settings are automatically selected by the unit's advanced POWERSHIFT™ software providing optimal leak finding performance under any conditions.

1. Take care not to plug the sensor housing tip by dragging it over dirty or wet surfaces. If the area is particularly dirty, or condensate (moisture) is present, it should be wiped off with a dry shop towel. No cleaners or solvents should be used, since the detector may be sensitive to their ingredients. Visually trace the entire refrigerant system and look for signs of air conditioning lubricant leakage, damage, and corrosion on all lines, hoses, and components. Each questionable area should be carefully checked with the detector: controls, service ports with caps in place, brazed or welded areas, and areas around attachment points and hold-down on lines and components.
2. Always follow the refrigerant system around in a continuous path so that no areas of potential leaks are missed. If a leak is found, always continue to test the remainder of the system.
3. At each area checked, the probe should be moved around the location at a rate no more than 1-2 in / sec. (25 to 50mm / sec.), and no more than .2" (5mm) from the surface, completely around the position. Slower and closer movement of the probe greatly improves the likelihood of finding a leak.
4. An apparent leak shall be verified at least once by blowing shop air into the area of the suspected leak and repeating the check of the area. In cases of very large leaks, blowing out the area with shop air often helps locate the exact position of the leak.
5. Following any service to the refrigerant system, and any other service that disturbs the refrigerant system, a leak test of the repair and of the service ports of the refrigerant system should be done.

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Maintenance

With a sensor life of more than 500 hours and a battery life of over 50 hours, very little maintenance is required to keep the **Leak-Seeker® II** in top operating conditions. Below are the proper procedures to follow when changing batteries and sensors.

Low battery indication:

When the batteries reach approximately 10% of capacity, the rightmost LED of the tachometer indicator (above the LO BAT symbol (⊕)) will energize. The other seven LED's will continue to function as indicators of the leak's relative size. To replace the batteries, slide the bottom cover of the instrument backwards to reveal the battery compartment. Replace the batteries with a new set of (3) "C" alkaline batteries.

Changing the sensor:

See page 8 for the sensor replacement diagram.

- Remove the sensor housing cap by turning it counterclockwise.
- With a pair of tweezers or a needle nose pair of pliers gently pull the sensor away from its socket.
- Inspect the inside of the sensor housing and verify that there is an O-ring over the socket and that no dirt or debris is present. If there is dirt or debris, gently pull the O-ring out, use a dry cotton swab to loosen the dirt and blow with compressed air. Clean the O-ring and replace.



Do not cover the O-ring with Vaseline or any other lubricant.

- Install the replacement sensor. Orient the tab on the edge of the sensor so it coincides with the slot on the side of the housing and gently push the sensor in.



Do not use silicone based hand cleaners or lotions prior to installing a new sensor as this will irreversibly affect the operation of the sensor.

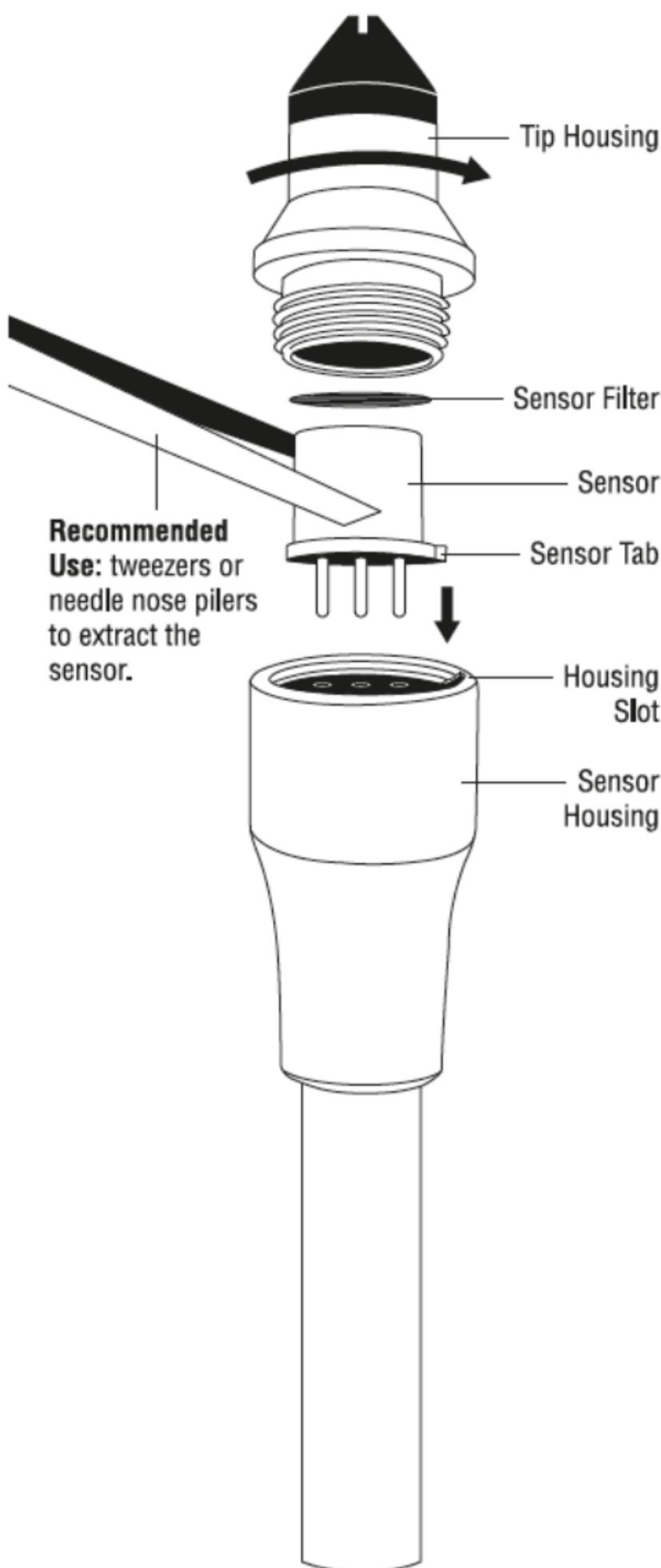
- Remove and discard the filter inside the sensor housing's cap. Replace with a new filter disk, making sure no dirt, water, oil or any other substance comes in contact with filter. It is recommended to first clean the sensor housing's cap with alcohol or some other solvent which does not contain oil or silicone. Use a cotton swab to first loosen any debris from the cap's opening. Finish by blowing with dry, oil-free, compressed air. Re-attach the cap to the sensor housing, screwing it finger tight.



Do not use acetone or silicone based solvents, lotions or un-cured adhesives while handling the sensor.

OPERATION

Sensor Replacement Diagram



Replacement Parts

EMOS2	Replacement EMOS sensor
LS2XF	Replacement filters
LS2XVF	Replacement water vapor filter

CPS® Products, Inc., guarantees that all products are free of manufacturing and material defects for two years. If the equipment should fail during the guarantee period it will be repaired or replaced (at our option) at no charge. This guarantee does not apply to equipment that has been altered, misused, or returned solely in need of field service maintenance. This repair policy does not include equipment that is determined to be beyond economical repair. All products being returned for warranty repair must be accompanied by an original bill of sale and customer contact information.

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