Owner's Manual & Safety Instructions

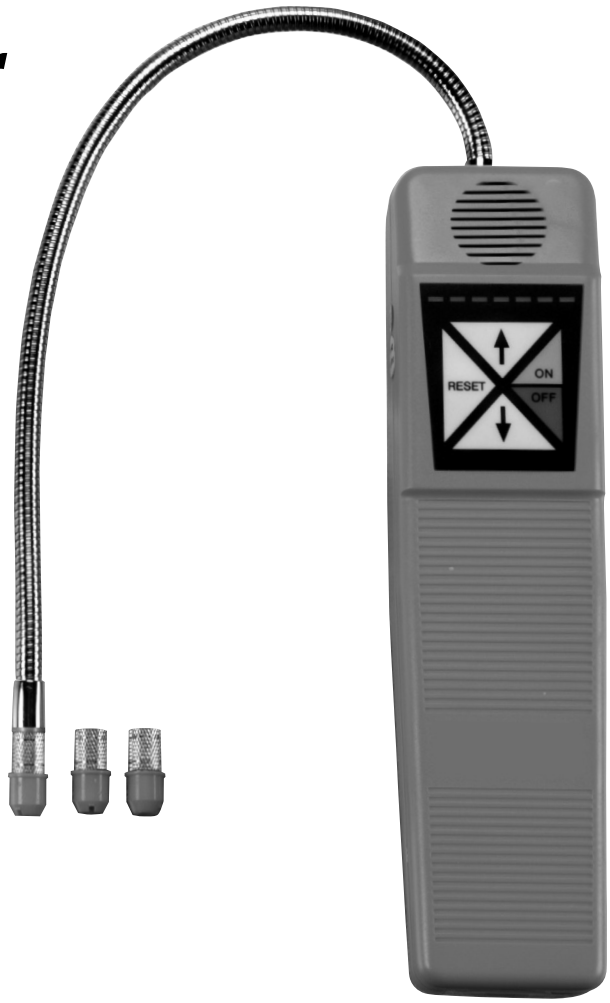
Save This Manual Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual near the assembly diagram (or month and year of purchase if product has no number). Keep this manual and the receipt in a safe and dry place for future reference.

REV 16i

PITTSBURGH® AUTOMOTIVE

92514

Electronic Refrigerant Leak Detector



Visit our website at: http://www.harborfreight.com
Email our technical support at: productsupport@harborfreight.com

When unpacking, make sure that the product is intact and undamaged. If any parts are missing or broken, please call 1-888-866-5797 as soon as possible.

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No portion of this manual or any artwork contained herein may be reproduced in any shape or form without the express written consent of Harbor Freight Tools.
Diagrams within this manual may not be drawn proportionally. Due to continuing improvements, actual product may differ slightly from the product described herein.
Tools required for assembly and service may not be included.

⚠WARNING

**Read this material before using this product.
Failure to do so can result in serious injury.
SAVE THIS MANUAL.**

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WARNING SYMBOLS AND DEFINITIONS	
⚠	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
⚠ DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE CAUTION	Addresses practices not related to personal injury.

Important Safety Instructions - PLEASE READ

⚠WARNING

When using appliances, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and personal injury, including the following:

1. **Keep work area clean.** Cluttered areas invite injuries.
2. **Observe work area conditions.** Do not use machines or power tools in damp or wet locations. Don't expose to rain. Keep work area well lit. Do not use electrically powered tools in the presence of flammable gases or liquids.
3. **Keep children away.** Children must never be allowed in the work area. Do not let them handle machines, tools, or extension cords.
4. **Store idle equipment.** When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep out of reach of children.
5. **Use the right tool for the job.** Do not attempt to force a small tool or attachment to do the work of a larger industrial tool. There are certain applications for which this tool was designed. It will do the job better and more safely at the rate for which it was intended. Do not modify this tool and do not use this tool for a purpose for which it was not intended.
6. **Do not overreach.** Keep proper footing and balance at all times. Do not reach over or across running machines.
7. **Maintain tools with care.** Keep tools maintained and clean for better and safer performance. Follow instructions for maintenance and changing accessories. The handles must be kept clean, dry, and free from oil and grease at all times.
8. **Stay alert.** Watch what you are doing, use common sense. Do not operate any tool when you are tired.
9. **Check for damaged parts.** Before using any tool, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function. Any part that is damaged should be properly repaired or replaced by a qualified technician. Do not use the tool if any switch does not turn On and Off properly.
10. **Guard against electric shock.** Prevent body contact with grounded surfaces such as pipes, radiators, ranges, and refrigerator enclosures.
11. **Replacement parts and accessories.** When servicing, use only identical replacement parts. Use of any other parts will void the warranty. Only use accessories intended for use with this tool. Approved accessories are available from Harbor Freight Tools.
12. **Do not operate tool if under the influence of alcohol or drugs.** Read warning labels on prescriptions to determine if your judgment or reflexes are impaired while taking drugs. If there is any doubt, do not operate the tool.
13. **Maintenance.** For your safety, service and maintenance should be performed regularly by a qualified technician.
14. **Do not use the detector without using the tip protector. K**eep the sensing tip clean. Prevent dust, moisture or grease contamination by using the provided tip protector.
15. **High concentrations of halogenated gas in an enclosed area can displace oxygen and create a RISK OF SUFFOCATION and DEATH.** Always work in a well-ventilated area. This unit is intended for detecting small, nonhazardous leaks only.
16. **The warnings, precautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur.** It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

⚠ SAVE THESE INSTRUCTIONS.

Specifications

Power Supply	Two ‘C’ Batteries (Included)
Duty Cycle	Continuous
Probe Length	14"
Sensitivity Levels	7
Operating Temperature	30° to 125°

This tester will detect most gases which contain Chlorine, Fluorine or Bromine (the halogen gases). Microprocessor driven, this leak detector will identify halogenated refrigerants in concentrations as small as 3 Gr. per Yr. The microprocessor samples the halogen concentration and battery voltage level continuously, resulting in a very stable and reliable real time readout.

Seven levels of sensitivity, which increase 64 times from level 1 to level 7 allow you to focus on the concentration appropriate to your location. 3 color LED indicators identify leak size, sensitivity level, and battery voltage.

Setup



Read the ENTIRE IMPORTANT SAFETY INFORMATION section at the beginning of this manual including all text under subheadings therein before set up or use of this product.



WARNING! High concentrations of halogenated gas in an enclosed area can displace oxygen and create a RISK OF SUFFOCATION and DEATH. Always work in a well-ventilated area. This unit is intended for detecting small, nonhazardous leaks only.

Battery Installation

1. To install batteries, remove the battery compartment door which is at the bottom of the case by sliding it up.
2. Install two “C” batteries with both positive polarity toward the battery compartment door. **WARNING!** Position batteries in proper polarity and do not install batteries of different types, charge levels, or capacities together.

Note: The positive end has the button on top.

Battery Level Indicator

Whenever the unit is powered on, the battery power level is constantly shown by the LED on the left. See alarm level chart, next page.

If the left hand LED light is Green, the batteries are in good condition, if the left hand LED is Orange, the batteries are low, and if the left hand LED is Red, the batteries are below minimum operating power and must be replaced. If the batteries are dead or not installed, the LED will not light at all. If the batteries are not fully charged or properly installed, performance may be affected and readings might not be accurate.

Applications

This tester may be used to:

1. Detect leaks in all A/C or refrigerant systems, or storage/recovery containers. It will respond to all halogenated refrigerants, including but not limited to:

   CFC's such as R12, R11, R500, R503, etc.
   HCFC's such as R22, R123, R124, R5022, etc.
   HFC's such as R134a, R404a, R125, etc.
   Blends such as AZ-50, HP62, MP39, etc.

Note: Halogenated refrigerants are those which contain Chlorine or Fluorine.

2. Detect SF-6 in high voltage circuit breakers.
3. Detect most gases which contain Chlorine, Fluorine or Bromine (the halogen gases).
4. Detect cleaning agents used in dry cleaning, such as perchloroethyl.

Automatic Circuit/Reset Features

This tool features a reset function that will set the tester to ignore the ambient or baseline level of halogenated refrigerants in the atmosphere. This allows you to identify leaks without the false positives of the background concentration.

1. **Automatic Circuit.** When the unit is first powered on, it will set itself to ignore the current level of halogen in the atmosphere. This allows the unit to identify leaks by the higher concentration of halogen present at the leak location.

Note: If the unit is powered on at a leak location, it will assume the current concentration of halogen is the normal level. Always power the unit on in a known clean or neutral environment.

2. **Reset Feature.** Pressing the RESET key will cause the detector to measure the current level of halogen concentration as zero. In a contaminated environment, you may not be able to find the source of a leak. By resetting the detector in that environment, you can then seek a higher concentration of halogen, thus homing in on the source of a leak. You can also use this function to reset the unit to true zero in fresh air, after using it in a contaminated environment.

Note: Whenever resetting the unit, all the LED's except the left-most power indicator LED will turn red for 2 seconds. This confirms the reset action.

Sensitivity Adjustment

1. When the unit is turned on, it is set at sensitivity level 5.
2. To adjust, press the Arrow Up key to increase sensitivity, or Arrow Down key to decrease sensitivity.

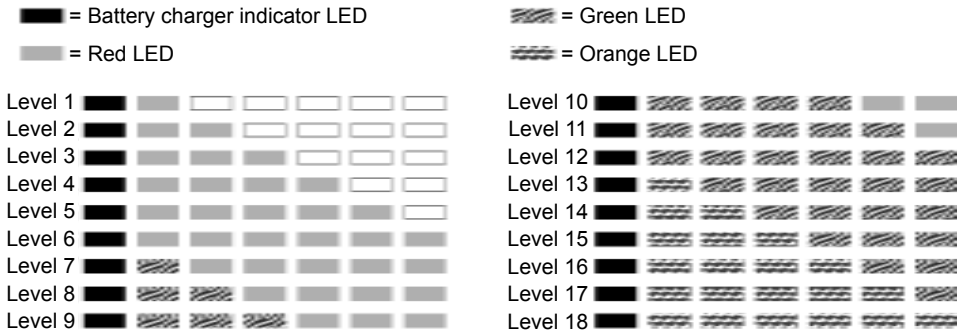
Note: The sensitivity is doubled, or halved at each increment up or down. To go from level 5 to level 4, the sensitivity is reduced by 1/2. To go from level 5 to level 6 the sensitivity is doubled. Thus the difference from level 1 to level 7 is a multiple of 64 times the sensitivity of level 1. Therefore the lower levels would be used to find very small concentrations of halogen, while the higher levels would be used to identify significant leaks in an environment which may be contaminated with a high general level of halogen.

Level	Sensitivity
1	1
2	2
3	4
4	8
5	16
6	32
7	64

Alarm Indications

The Electronic Refrigerant Leak Detector features 18 alarm levels from low to high to help you home in on a leak.

The alarm level will increase as the leak is being approached. Alarm levels are indicated by the last 6 LED's lighting and changing in color from Red, Green and Orange. The LED's will light and change color from left to right, one at a time. See alarm level chart below.



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Read the ENTIRE IMPORTANT SAFETY INFORMATION section at the beginning of this manual including all text under subheadings therein before set up or use of this product.



WARNING! High concentrations of halogenated gas in an enclosed area can displace oxygen and create a RISK OF SUFFOCATION and DEATH. Always work in a well-ventilated area.
This unit is intended for detecting small, nonhazardous leaks only.

Basic Operation

1. Turn the unit on by pressing the ON key. The display will show the reset indication (left LED green, all others red) for 3 seconds.
2. The battery level indicator will come on. Ensure that the battery level is good. (See instructions on page 5.)
3. When turned ON, the unit automatically goes to sensitivity level 5. A continuous beep tone will indicate that the unit is functioning. If you want to change the sensitivity, press the arrow up or arrow down key.
4. Begin searching for leaks. When a leak is found, the beep tone will change to a “siren” tone. In addition to the audible indicator, you will see the LED display the alarm message as described on page 6.
5. Sensitivity can be adjusted at any time during use by pressing the arrow up or arrow down keys. This will help you home in on the source of a leak.
6. If a full alarm is indicated before you have found the source of the leak, you can reset the detector to zero by pressing the reset key. This will allow you to find progressively greater concentrations, and eventually find the source of the leak.

Operating Tips

1. Adjust the sensitivity up only when a leak can be found. Adjust the sensitivity down only when resetting the unit does not allow you to home in on the leak.
2. In areas contaminated with leaked gas, reset the unit to zero it out and allow you to find heavier concentrations of gas. Do not move the probe while the unit is being reset.
3. In windy areas, it may be difficult to find even a large leak. Shield potential leak sites from wind to make finding concentrations of leaked gas easier.
4. The detector may alarm if the probe tip comes in contact with moisture or solvents. Do not allow the tip to contact these materials.

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Leak Detection Procedure

Note: On automotive systems, turn the engine off before beginning the leak detection procedure.

1. The air conditioning or refrigeration system should be pressurized to at least 50 PSI. At lower pressures you may not be able to detect the leak.

Note: At temperatures below 60° Fahrenheit you may not be able to maintain 50 PSI.

2. Be careful not to contaminate the probe tip by touching it to the parts being checked. If the suspected area is dirty or moist, dry it off with a clean shop towel, or blow it off with compressed air. Do not use cleaners or solvents, as the detector might be sensitive to ingredients in the cleaner.

3. Visually examine the entire refrigerant system, looking for signs of air conditioning lubricant leaks, damage, or corrosion on any line, hose or connector. Each questionable area should be checked with the probe. Also check all fittings, couplings, controls, service ports, brazed or welded areas and areas around hold down or attachment points.

4. Always do a thorough check of the system, following the refrigerant flow in a continuous path, so you do not miss an area that might be leaking. Remember that there may be more than one leak in a system. Even after a leak is found, continue to test the entire system.

5. At each area being checked, the probe should be moved around the location at a rate of no more than 1–2 inches per second, and at a distance of no more than 1/4" from the surface. Slower and closer movement of the probe greatly improves your chance of finding a small leak.

Note: Be careful not to allow the probe tip to come in contact with the site being checked as this might contaminate the tip or cause a false reading.

6. An apparent leak should be verified at least once by one of the following methods:
   a. Blow compressed air around the suspected leak to clear the area of contaminants. Recheck with the tester to see if new refrigerant has been leaked into the area.
   b. Move the probe tip to fresh air, and reset the tester. Then hold the probe tip as close as possible to the suspected leak site. Move the tip around until the leak is confirmed.

7. On automotive A/C systems only: Leak test the evaporator core by turning the A/C blower on high for at least 15 seconds. Then turn it off, and wait for the refrigerant to accumulate in the case for at least 10 minutes before testing. Then insert the probe tip into any opening in the system closest to the evaporator, being sure no water is present. If the tester alarms, an apparent leak has been found.

8. Always leak test after any repair or maintenance of an A/C or refrigerant system.

Procedures not specifically explained in this manual must be performed only by a qualified technician.

⚠WARNING

TO PREVENT SERIOUS INJURY FROM ELECTRIC SHOCK:
Turn unit off before performing removing Sensor Tip. Do not use Detector without Sensor Tip Protector.

TO PREVENT SERIOUS INJURY FROM TOOL FAILURE: Do not use damaged equipment.
If abnormal noise or vibration occurs, have the problem corrected before further use.

Maintenance

1. **Keep the Sensor Tip Protector clean**. Prevent dust, moisture, or grease contamination by using provided Tip Protector.
2. Before using detector, examine the Detector's tip and Protector to ensure they are clean and in good condition. To clean:
   a. Turn unit off.
   b. Remove Protector by grasping the tip and pulling it off.
   c. Clean Protector with a clean shop towel and compressed air.
3. If the tip itself is dirty, clean it by immersing in a mild solvent such as alcohol for a few seconds. Use a clean shop towel or compressed air to dry.

WARNING! Do not use solvents such as gasoline, turpentine or mineral spirits to clean the tip. Doing so will leave a residue which will reduce the tip's sensitivity.

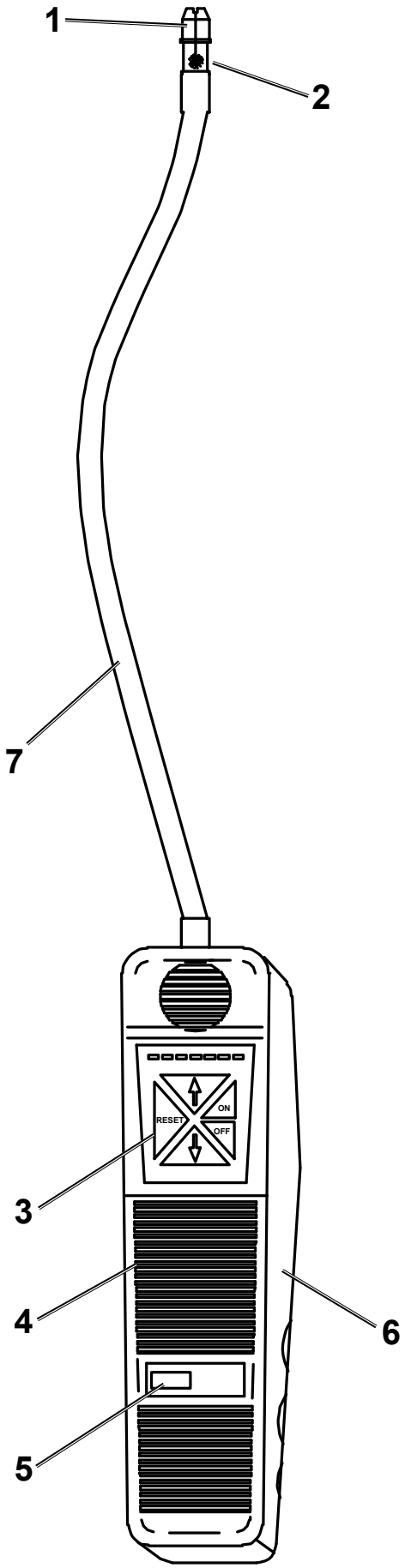
Replacing the Sensor Tip

Note: Eventually the Sensor Tip will wear out and must be replaced. Typical tip life is approximately fifty hours of use. However, tip life is affected by frequency of use and amount of halogen detected and therefore will vary. If the alarm sounds in clean air, or behaves erratically, you may need to replace the Sensor Tip.

1. Be sure the Detector is turned off.
2. Remove the old tip by unscrewing it counterclockwise.
3. Use the supplied replacement tip which is stored in the carrying case. Replace it by screwing it on clockwise until secure.

Parts List and Diagram

Part	Description
1	Sensor Tip Protector (Orange)
2	Sensor
3	Keyboard
4	Front Panel
5	Label
6	Housing
7	Flexible Probe Shaft



Note: No replacement parts are available for this item except the replacement Sensor Tip Protector.

PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS LIST AND ASSEMBLY DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER OR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT, OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS, AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

Record Product's Serial Number Here:_____

Note: If product has no serial number, record month and year of purchase instead.

Note: Some parts are listed and shown for illustration purposes only, and are not available individually as replacement parts.

Limited 90 Day Warranty

Harbor Freight Tools Co. makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that this product is free from defects in materials and workmanship for the period of 90 days from the date of purchase. This warranty does not apply to damage due directly or indirectly, to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, criminal activity, improper installation, normal wear and tear, or to lack of maintenance. We shall in no event be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation of exclusion may not apply to you. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

To take advantage of this warranty, the product or part must be returned to us with transportation charges prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must bear the cost of returning the product.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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