



TRU POINTE[®]
IR-

Infrared Refrigerant Leak Detector

CFCs, HFCs, HCFC Blends,
and HFO-1234YF

Operator's Manual



Patent 7,022,993

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Revision 1

Product Leadership • Training • Service • Reliability



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SECTION 1. INTRODUCTION

1.1. Product Overview


Tru Pointe® IR is a hand-held refrigerant gas detector that uses infrared technology and combines sensitivity, portability, and ease of use to detect CFCs, HFCs, HCFC blends, and HFO-1234YF in HVAC/R applications. Features include the following:


- Sensitivity <0.1 oz/yr (3 g/yr) (exceeds SAE J2791 standard)
- Adjustable squelch feature (low, medium, and high sensitivity)
- Additional Background Mode for maximum sensitivity to pick up low-level leaks in areas heavily contaminated with refrigerant
- Never needs to be calibrated (automatically adjusts to ambient conditions of an area that may have background refrigerant gases present)
- LED bar graph display with audible feedback and mute option
- Peak reading display
- Rechargeable lithium-ion battery with low battery alert
- Dual charging capabilities (AC adapter and DC cigarette lighter)
- Rugged housing with rubber boot and magnetic clip
- 15" flexible probe with a 9" flexible extension and 9" rigid extension
- Replaceable filter (limits moisture and contaminants)
- 30-second self-test and calibration at start-up
- Molded plastic carrying case.




Figure 1. Tru Pointe® IR

1.2. General Safety Precautions

 **KNOW YOUR EQUIPMENT!** Before operating this unit, please read this manual in its entirety. It is important that you have a thorough understanding of the procedures outlined in this manual. Failure to follow these procedures could void all manufacturer warranties. Also, read and understand the labels affixed to the unit. Learn the application and limitations as well as the specific potential hazards of your equipment.


 **CAUTION!** Avoid breathing high concentrations of refrigerant vapors. Inhalation of high concentrations is harmful and may cause heart irregularities, unconsciousness, or death.


 **WARNING!** To prevent personal injury and/or equipment damage:


- Read, understand, and follow all warnings stated in the Lithium Battery Care section of this manual.
- DO NOT charge the battery with any charger other than the chargers supplied with the unit.
- DO NOT use the instrument without a clean filter correctly installed in the tip.
- DO NOT draw moisture in through the probe.


1.3. Lithium Battery Care and Safety


The Tru Pointe® IR instrument operates on a lithium-ion type NP-120 battery. To promote the longest possible battery life and safe operation, and to prevent personal injury and/or equipment damage, observe all warnings.

 **WARNING!** Do not disassemble or attempt to repair the battery or protective circuit.

 **WARNING!** Do not expose the battery to temperatures above 140° F (60° C).

 **WARNING!** Do not charge the battery near a fire or in a hot vehicle or in direct sunlight.

 **WARNING!** Do not solder directly on the battery.

 **WARNING!** Do not subject the battery to impact.

Tru Pointe® IR Refrigerant Leak Detector



WARNING! Do not expose the battery to moisture or immerse it in fluid.



WARNING! Do not deform, pierce, or damage the battery.



WARNING! Do not touch a battery that is leaking electrolytes. If battery fluid should get in your eyes, flush with fresh water, do not rub eyes, and see a physician immediately.



WARNING! Do not use a battery if it is deformed, smells bad, changes color, or appears abnormal. Return the unit for a replacement battery immediately.

1.4. Components



Figure 2. Tru Pointe® IR Components

1.5. Specifications

Item	Description
Type of detector	Locating leak detector (type C)
Refrigerants	HFC, CFC, HCFC, HFO-1234YF and blends
Sensitivity level	<0.1 oz/yr (<3 g/yr)
Output signal	Instantaneous with audio and visual indicators
Dimensions (H×L×W)	1.25" × 7.5" × 2.25" (3.18 cm × 19.05 cm × 5.72 cm)
Weight	15 oz (0.4 kg)
Environment temperatures	Operation: 32° F to 122° F (0° C to 50° C)
	Storage: -4° F to 140° F (-20° C to 60° C)
Sensing element	Enhanced infrared photo optics
Sensor life	Approximately 10 years
Battery, type	Lithium-ion; 3.7 V, 1800 mAH rechargeable
Battery, charge	8 hours continuous use before recharge
Battery, recharge	Approximately 3 hours
Battery, indicator	Alert LED is on when 1 hour of battery life remains
Auto off	After 10 minutes of inactivity
Compliance	Exceeds requirements of SAE J1627, J2791, and J2913; CE pending; EN 14624:2012
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EN14624 Data	Value
Response time	< 1 second
Recovery time	<2 seconds
Zeroing time	< 2 seconds
Calibration	None required (auto calibration)
Fixed probe (static) detection limits	Upper detection limit: None (≥ 50 g/yr)
	Lower detection limit: 0.5 g/yr (0.02 oz/yr)
Moving probe (dynamic) limits	Upper detection limit: None (≥ 50 g/yr)
	Lower detection limit: 1.0 g/yr (0.04 oz/yr)
Contamination	Lower detection limit (env.): 3.5 g/yr (0.12 oz/yr)
Repeatability	100%


SECTION 2. OPERATION

2.1. Charging the Lithium-Ion Battery



IMPORTANT! Avoid discharging the battery completely. Recharging a partially discharged battery more frequently is better for the life of a lithium-ion battery.

To recharge the Tru Pointe® IR instrument follow the instructions below.

Step	Charging the Lithium-Ion Battery
1	<p>Verify that your charging environment is appropriate. ONLY charge the instrument within the environment specifications listed in Section 1. Select the desired charger:</p> <ul style="list-style-type: none"> • AC charger for wall outlets (100-240 VAC, 50/60 Hz) • DC charger for vehicle cigarette lighters.  <p>Figure 3. AC (Wall Outlet) and DC (Vehicle) Chargers</p>
2	Plug one end of the charger into the power source (wall outlet or a car's cigarette lighter outlet).
3	Plug the other end of the charger into the connector located on top of the Tru Pointe® IR instrument.
4	Verify that the LOW-BATT LED is blinking which indicates the battery is being charged. Refer to Figure 5.



NOTE! When the battery is low, the LOW-BATT LED will illuminate.



IMPORTANT! Be sure to fully charge the battery before using the instrument for the first time. The unit was packaged and shipped from the factory with the battery only partially charged.

2.2. Buttons

Button	Description
L/M/H Button (Sensitivity Levels)	Set the unit's sensitivity level by pressing the L/M/H button. Refer to Figure 4. Low (L), medium (M), or high (H) sensitivity level is indicated by its respective LED. The higher the background concentration of refrigerant in the air, the lower the sensitivity level should be set. To detect a very small leak in a high refrigerant background, use Background Mode.
ON/OFF Protection	Press and hold the ON/OFF button for one second to turn the instrument ON or OFF. This one-second delay protects against accidental ON or OFF. Refer to Figure 4.
Mute Button	Press the MUTE button to toggle the audio portion of the instrument ON or OFF. Refer to Figure 4.
Peak Button	The PEAK function stores the highest change in refrigerant concentration achieved while continuing to detect leaks. Press the PEAK button to toggle this function ON and OFF. Refer to Figure 4. The PEAK LED illuminates when this function is turned on. Turning the PEAK function off clears the peak information.
Toggle Background Mode (Peak Button x 4)	To detect even the smallest leak in refrigerant-contaminated environments, press the PEAK button rapidly four times when in High sensitivity mode. The green LED will flash rapidly to show Background Mode is on. Press the PEAK button rapidly four times again to turn Background Mode off.

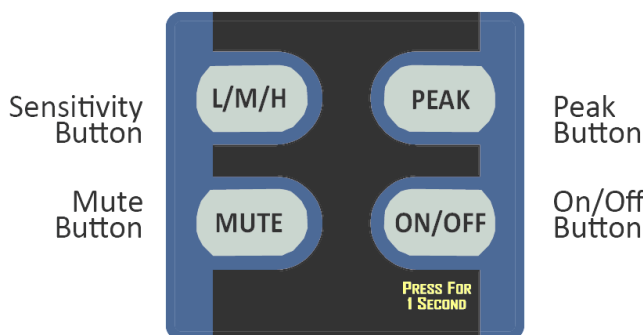


Figure 4. Buttons

2.3. LED Indicators

Indicator	Description
LED Bar Graph Display	The LED bar graph display indicates the degree of change in refrigerant concentration. As the concentration of detected refrigerant in the air increases, the eight LED bars illuminate from left to right (green, amber, and then red). Refer to Figure 5.
Sensitivity Level LEDs	The Sensitivity Level LEDs show which of the three main sensitivity levels is active. Refer to Figure 5. <ul style="list-style-type: none"> • Low = L • Medium = M • High = H
Background Mode Indicator	The left-most bar (green) flashes quickly when the instrument is placed in Background Mode. Use Background Mode to detect a very small leak in an area containing high-levels of background refrigerant. Refer to Figure 5.
Peak LED	When in Peak mode, the Peak LED remains illuminated. In addition, the highest LED in the bar graph display stays lit. Refer to Figure 5.
Low-Batt LED	When the battery has approximately one hour of charge remaining, the Low-Bat LED will illuminate. The LOW-BATT LED blinks when the battery is being charged. Refer to Figure 5.

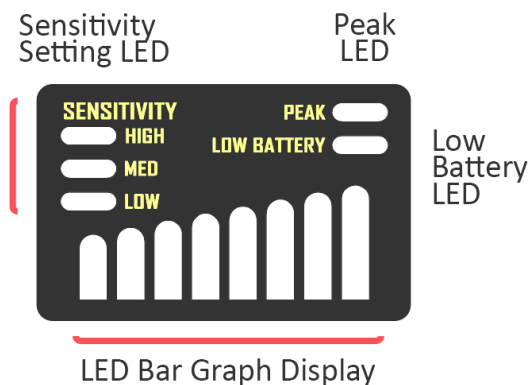


Figure 5. LED Indicators

2.4. Sensitivity Settings

The Tru Pointe® IR has four sensitivity settings used to detect refrigerant leaks: Low, Medium, High (default at start-up), and Background.

Use the high sensitivity setting to detect refrigerant leaks as small as 0.1 oz/yr (3 g/yr). Medium and low sensitivity settings can also be used for progressively larger leaks. Change this setting using the L/M/H button based on your preference, suspected leak type, and particular application. Consecutive presses of the L/M/H button will toggle the instrument through these three modes.



NOTE! Generally, a retest is advisable when a leak is discovered using the most sensitive settings or if the probe was in a static position when the leak was discovered. In these cases, repeat the test ensuring the probe moves past the suspected leak location while maintaining the smallest possible gap between the suspected leak point and the tip of the probe. Also, consider using the Medium sensitivity position of the detector after finding an apparent leak with the High sensitivity setting.

A fourth sensitivity setting is Background Mode. Background Mode is the most sensitive operating mode of the Tru Pointe® IR. In this mode, the instrument will trigger on extremely small refrigerant levels as well as sudden probe movements.

- With the instrument in High sensitivity mode, quickly press the Peak button 4 times in succession to put the Tru Pointe® IR into Background Mode
- The first (left most) LED in the bar graph display will blink quickly when in Background Mode
- The leak detection tone will change from a tick to a steady tone when in Background Mode
- To exit the Background Mode, quickly press the PEAK button 4 times in succession, or switch from High sensitivity mode to one of the other levels.

2.5. Probe Selection

The Tru Pointe® IR has a 15" (38.1 cm) flexible probe. For applications requiring additional reach, this probe may be extended using the 9" (22.9 cm) flexible probe extension. For targeted detection in confined locations, the 9" (22.9 cm) rigid "needle" probe extension may be used. Use an O-ring between probes, the probe tip, and any extensions (if used).



Figure 6. Flexible and Rigid Probe Extensions

2.6. Leak Detection



NOTE! The Tru Pointe® IR instrument detects changes in concentration of refrigerant, not the absolute concentration of refrigerant. This allows the detection of leaks in locations that may have refrigerant in the air, however, be sure to keep the probe tip moving during testing.



NOTE! Some leaks may not be measurable if the pressure in the HVAC system is too low. In such cases, you may need to charge the system with sufficient refrigerant to have a gauge pressure of at least 340 kPa (50 psi) with the system off.



WARNING! The Tru Pointe® IR instrument is sensitive and can take up to 30 seconds to clear after detecting a small amount of contaminant. It will typically clear in 2 to 15 seconds.



WARNING! Do not use cleaning agents or solvents on or near A/C lines. Wipe away any dirt or potential false-trigger chemicals using a dry towel.

To perform refrigerant leak detection, follow the instructions below.

Tru Pointe® IR Refrigerant Leak Detector

Step	Leak Detection Procedure
1	Ensure that the instrument's battery is fully charged before initial use. Charging takes approximately 3 hours.
2	Press and hold the ON/OFF button for one second to turn on the instrument.
3	Wait for the warm-up and calibration sequence to complete. This takes approximately 30 seconds.
4	The default sensitivity level is High at startup. Change this setting using the L/M/H button based on your preference and application. If you suspect a large leak, use either the medium or high sensitivity setting.
5	Locate the most likely place for a refrigerant leak. Key points to consider include: <ul style="list-style-type: none">• soldered joints in refrigerant lines• points that have changes in cross section• points that have changes in direction of these lines. Visually trace the entire refrigerant system (all lines, hoses, fittings, couplings, service valves, etc.) looking for signs of lubricant leakage, damage, and corrosion as indications of likely leak points.
6	Move the probe slowly (approximately 3 in/sec or 75 mm/sec) in a sweeping back-and-forth motion no more than 0.25" (0.63 cm) away from suspected leak areas. See Figure 7. A closer probe position and slower "sweeping" movement normally improve the likelihood of finding a leak. The audio signal will increase in the number of tics per second in proportion to the detected leak intensity. Similarly, the LED bar graph will light from left to right (green, amber, and then red) in proportion to leak intensity.
7	Test the entire refrigerant system by following the refrigerant system in a continuous path to ensure complete coverage (see Figure 8). If a leak is found, continue to test the remainder of the refrigerant system.
8	Retest, as needed, at lower sensitivity settings. Retest service valves with caps removed.



NOTE! Use shop air or compressed air to quickly clear a suspected area of refrigerant build-up, and then re-test. Do not use commercially available "canned" air to clear refrigerant build-up as it uses refrigerant as a propellant and will further contaminate the immediate area.

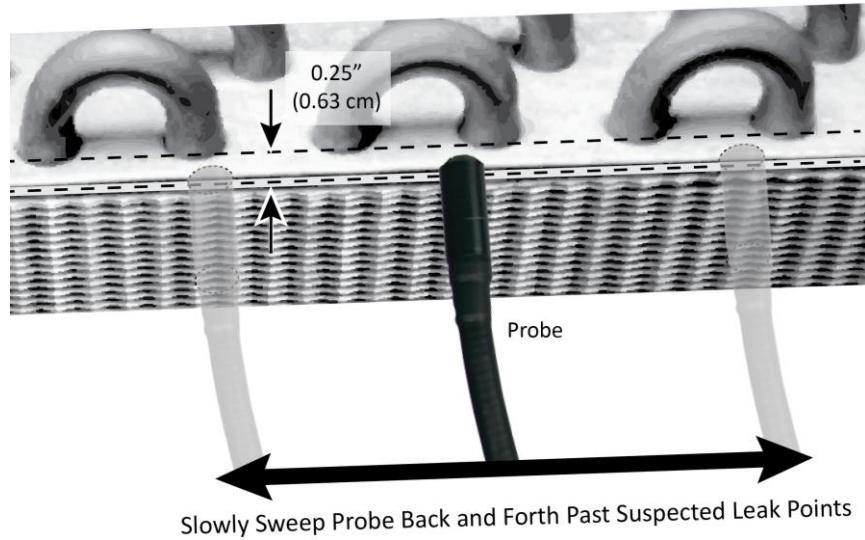


Figure 7. Probe "Sweeping" Method for Detecting Refrigerant Leaks

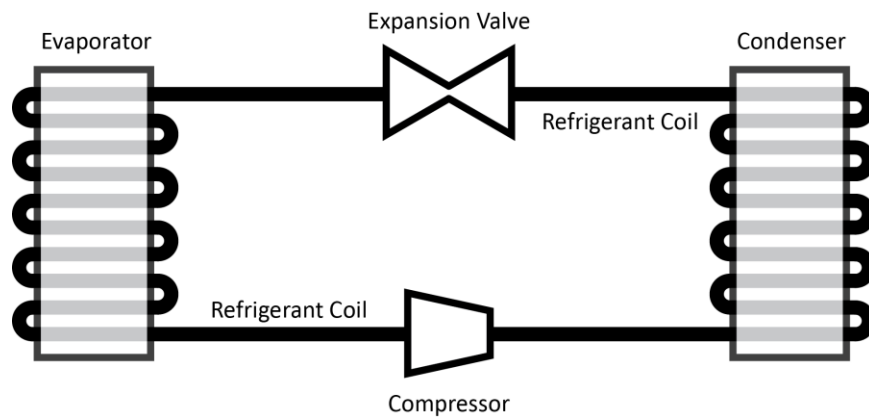


Figure 8. Sample Refrigerant Path for Testing Leaks

SECTION 3. MAINTENANCE

3.1. Filter Replacement

A filter located in the tip of the wand blocks moisture and other contaminants from the sensor. When this filter becomes wet, it restricts the flow of air and must be replaced. To replace the filter, follow the steps below.

Step	Description
1	Unscrew and remove the probe tip (or rigid probe extension, if used) to expose the white filter inside.
2	Remove and discard the filter. Tweezers or small needle-nosed pliers may be helpful in removing the filter.
3	Position a new filter in the tip so the round end of the filter is closest to the tip of the probe.



NOTE! Use only replacement filters supplied by Bacharach.

3.2. Replacement Parts and Accessories

Part Number	Spare Part Description
0019-8200	Tru Point® IR Refrigerant Instrument Kit
0019-9372	Instruction Manual
0019-0801	Filter (5) and “O” Ring (3) Kit
0019-0802	Replacement DC Car Charger
0019-0803	Replacement AC Wall Charger
0019-0804	Replacement Rubberized Boot with Magnet
0019-0805	Replacement Probe Tip
0019-0806	Replacement Case
0019-0808	Replacement 9" (22.9 cm) Flexible Extension
0019-0809	Replacement 9" (22.9 cm) Rigid “Needle” Extension