



## **H-10 PRO**

UNIVERSAL REFRIGERANT LEAK DETECTOR  
**CFC • HCFC • HFC**

### Instruction Manual



P/N: 3015-9005  
Revision 1  
March 2016

Product Leadership • Training • Service • Reliability



## **H-10 PRO**

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### **NOTICE**

Specifications and information contained in this document may change without notice due to product improvements and enhancements.

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**! WARNING:** This product is considered to be Group 1 Class A equipment as defined by EN 55011 standards and is suitable for use in industrial environments. There may be potential difficulties in ensuring electromagnetic compatibility in other environments (e.g., domestic environments) due to conducted as well as radiated disturbances.

**Register your warranty by visiting**

**[www.MyBacharach.com](http://www.MyBacharach.com)**

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## **Section 1. Overview**

### **1.1. Introduction**

The H-10 Pro is the most versatile, high performance leak detector available in the industry today. It detects refrigerants to pinpoint small, medium, and large leaks quickly and efficiently. Review this manual carefully and completely to assure satisfactory product performance and a long service life.

### **1.2. Safety Warnings**

**! WARNING:** For your safety, DO NOT use this device to detect for leaks of refrigerants which are rated as combustible/flammable gases (e.g., ASHRAE A2- or A3-rated refrigerants).

**! HAZARDOUS AREA WARNING:** This instrument has not been designed to be intrinsically safe for use in areas classified as hazardous locations. For your safety, **DO NOT** use it in hazardous (classified) locations.

### **1.3. General Warnings**

**! WARNING:** This device is not to be used in any application that is beyond its intended purpose or beyond the scope of its specifications. For details on appropriate use, refer to the rest of this manual. Before risking equipment damage or personal injury, contact Bacharach if you are unsure of the validity of a particular application.

**! IMPORTANT:** This analyzer is not intended to be used on a continuous basis.

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**! WARNING:** Except for replacement of consumables such as sensors, filters, and battery, this analyzer should only be opened and/or serviced by authorized Bacharach personnel. Failure to comply may void the warranty.

**! WARNING:** Do not store instrument or its sensors with solvents or products that contain solvents.

**! IMPORTANT:** Equipment Damage Hazards

- A. Submerging the probe in liquid will damage the pump.
- B. Exposing the probe to pure refrigerant will severely reduce the life or destroy the sensor. Life of the sensor is directly proportional to the amount of refrigerant that it is exposed to.
- C. Exposure to high concentrations of refrigerant may require adjustment of sensor heat. Refer to section 3.1.

### 1.4. Specifications

|         | Spec                                 | Description                                 |
|---------|--------------------------------------|---------------------------------------------|
| Battery | Type                                 | 12V lead-acid battery                       |
|         | Life                                 | 3 hours (typical)                           |
|         | Charging                             | 3-4 hours with wall adapter (included)      |
| Sensor  | Type                                 | Heated diode                                |
|         | Life <sup>[1]</sup>                  | 1 year (typical)                            |
|         | Calibration                          | As needed (see Section 3.1)                 |
|         | Flexible Probe                       | 4.5 ft. (1.4 m) length with built-in filter |
|         | Response                             | 1 second                                    |
|         | Flow Rate                            | 90 cc/min @ small setting (typical)         |
|         | Refrigerants Detected <sup>[2]</sup> | All CFCs, HFCs, and HCFCs                   |

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| Spec                       |         | Description                                                 |
|----------------------------|---------|-------------------------------------------------------------|
| Sensitivity <sup>[3]</sup> |         | 0.006 oz/yr stationary<br>0.1 oz/yr moving per<br>SAE J2791 |
| Auto adjust to background  |         | Yes, automatic mode only                                    |
| Warm-up                    |         | 2 min (typical)                                             |
| Indication                 | Visual  | Red LED in probe tip                                        |
|                            | Audible | Internal beeper or stereo<br>headphone jack                 |
| Weight                     |         | 5.1 lb. (2.3 kg)                                            |
| Dimensions<br>(LxWxH)      |         | 10.5 x 8.3 x 5.4 in.<br>(267 x 211 x 137 mm)                |
| Operating<br>Conditions    |         | 32 to 104 °F<br>(0 to 40° C)                                |
| Approvals                  |         | CE                                                          |
| Warranty                   |         | 3 years                                                     |

<sup>[1]</sup> Based on normal use. Consistent and/or constant exposure to high levels of refrigerant will deteriorate the sensor life more quickly. Increasing the sensor heater will also impact sensor life.

<sup>[2]</sup> DO NOT use this device to detect for leaks of refrigerants which are rated as combustible/flammable gases (e.g., ASHRAE A2- or A3-rated refrigerants).

<sup>[3]</sup> Sensitivity for R12, R22, R134a, R410a, R404a and R507 when unit is set to small leak setting, manual mode.



## Section 2. Operation

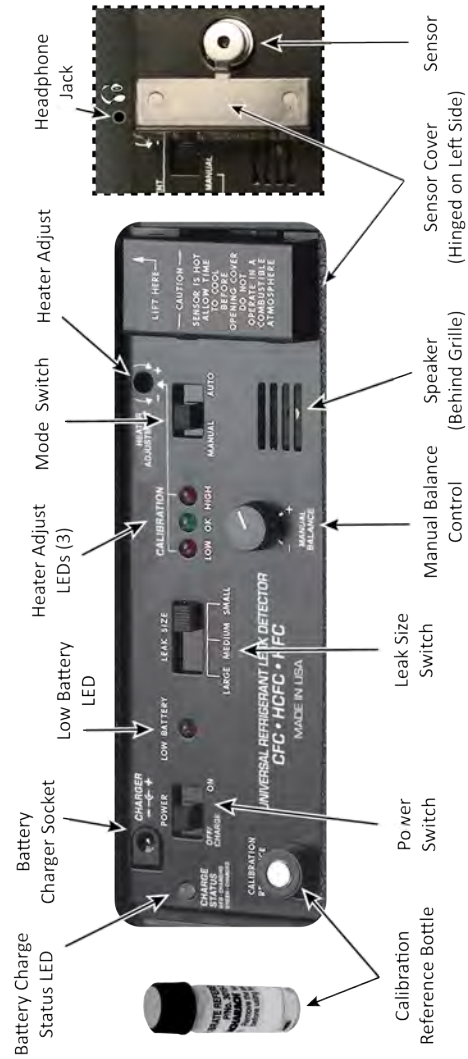
### 2.1. Overview

The H-10 Pro sensor uses positive ion emission technology, commonly known as a heated diode. It is very sensitive to only halon substances (refrigerants) making this product highly resistant to false alarming, while retaining superior sensitivity for pinpointing the most difficult to find refrigerant leaks.

A pump inside the unit draws air through the probe to the sensor. The presence of refrigerant(s) causes the H-10 Pro to sound a speaker and illuminate an LED in the probe. Sensitivity to pinpoint small, medium, and large leaks can be controlled by setting the Leak Size switch (see Section 2.2).



## 2.2. Panel Controls



### 2.3. Before First Use...

Before you use the unit the first time:

1. Remove the sticky-label disc from the cap of the calibration reference bottle. This disc can be reused to help seal the vial when the leak detector is not in use, or it can be discarded. DO NOT attempt to unscrew the cap, you may damage the bottle. The calibration reference bottle should last approximately six months.
2. With the Power switch in the OFF position, charge the battery using the wall adapter. Charge time is 3-4 hours or until the Full Charge LED turns green.

### 2.4. Adjusting the Sensitivity

Set the Leak Size switch as follows.



**SMALL** switch position is the highest sensitivity. The unit will indicate leak rates of 0.006 oz/yr or greater and is used for fluorine-based (HFC) gases like R134a. This position also assures highest repeatability for locating 0.1 oz/yr (or greater) leaks per SAE J2791 moving probe test conditions. It must always be used to verify performance and calibration when using the calibration reference bottle.

When using the small leak range position, a leak of HFC causing an audible signal equal to that produced by the leak vial

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has a leak rate of approximately 0.5 oz/year.

**MEDIUM** switch position is used for chlorine-based (CFC and HCFC) gases like R12 and R22. The medium setting will indicate approximately a 0.1 oz/yr (or greater) leak rate. This position supports finding leaks of approximately 0.5 oz/yr (per SAE J2791) or greater. It is also useful for locating larger HFC leaks.

When using the medium leak range position on a CFC or HCFC system, this leak rate would also be approximately 0.5 oz/year.

**LARGE** switch position is used to zero in on large leaks of any refrigerant. The large leak setting should be used in conjunction with manual mode.

### **2.5. Auto Mode vs. Manual Mode**



**Auto mode** enables the H-10 Pro to block out background levels of refrigerants. This greatly reduces and/or eliminates false alarms while retaining sensitivity to quickly locate small or medium size leaks. Pinpointing leaks in this mode requires continuous probe movement.

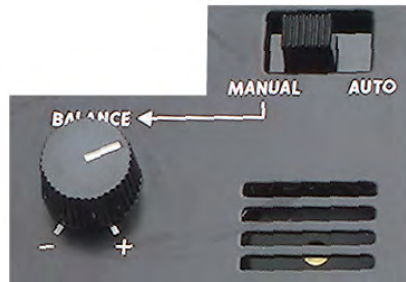
If the probe is held stationary over a leak, the unit will zero out the leak, going into the idle 1 tick/second condition. Briefly moving the probe away from the leak (1-2 seconds) permits the unit to re-establish sensitivity. Returning to the leak site, the unit will alarm again. Continuing this

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procedure will reliably and repeatedly pinpoint the leak with each pass over the leak site.

If a large leak is present, the auto zero circuit may reduce sensitivity to an unacceptable level to find small and medium sized leaks. If this condition exists, use the manual mode to pinpoint a large leak. The manual mode is also an effective means to determine if a large leak of any refrigerant exists prior to searching for leaks (see Section 2.4).



In **Manual Mode** the auto-zero circuit is disabled. The unit will not zero the leak if the probe is held over the leak site. This mode may require frequent readjustment of the Manual Balance control to maintain the required 1 tick per second that indicates proper adjustment and calibration for all three sensitivity switch positions. Manual mode provides greater sensitivity than auto mode.

### **2.6. Setup**

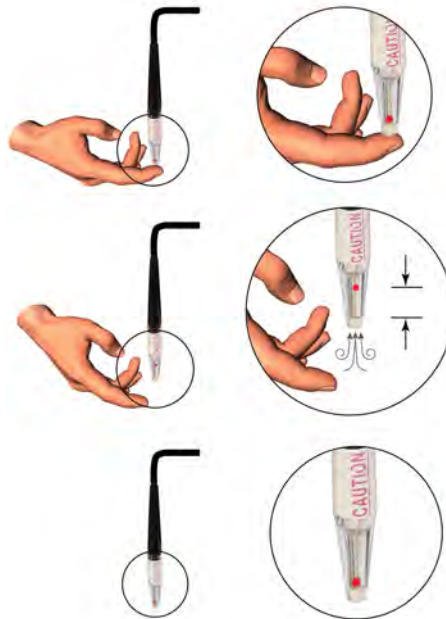
1. Turn the unit on.
2. Slide mode switch to AUTO position.
3. Slide the sensitivity switch to the SMALL position.
4. Check Low Battery LED. If it glows red, the battery needs charging, or you

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may operate the unit using the supplied wall adapter.

**! NOTE:** The sensor does not operate when the low battery LED is on.

5. Check for sufficient airflow by pointing the probe tip toward the floor, covering it with your finger, then releasing your finger. If proper flow exists, the red ball should *noticeably* rise up into the probe when you uncover the probe tip. Note that the actual height and final resting position of the red ball are not important. If the airflow ball does not rise:
  - a. Tap the probe lightly to ensure the ball is not sticking.
  - b. Check the filter in the probe tip, per Section 4.1. If the flow is still insufficient, then the unit should be sent for repair to the nearest Authorized Service Center.



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6. Allow two minutes for the sensor to warm up, after which the flashing probe light and sound indicator will idle at approximately 1 click per second.
7. Test operation by quickly touching the probe tip to the top of the calibration reference bottle (make sure sticky label is removed). The unit should respond with a rapid flash rate and sound verifying correct operation and optimum sensitivity. If the unit does not respond correctly, see Section 3.1.

### **2.7. Checking for Leaks**

**! SAFETY WARNING:** For your safety, DO NOT use this device to detect for leaks of refrigerants which are rated as combustible/flammable gases (e.g., ASHRAE A2- or A3-rated refrigerants).

1. Set the range switch to the appropriate range to ensure maximum sensor life. If the leak size is unknown, start at the Large leak setting. This protects the sensor if a large amount of gas is present.

**! IMPORTANT:** Exposing the sensor to large amounts of refrigerant or holding the probe over a leak for a long period of time will significantly shorten sensor life.

2. Check for leaks in a logical progression through the entire system.
3. If surfaces are dirty or wet, wipe them off with a clean, dry cloth to reduce filter clogging and extend sensor life. DO NOT allow the unit to draw in moisture. Use of the supplied rubber probe tip helps prevent moisture from being drawn into the

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unit. Check for moisture before inserting the probe into areas to be checked for leaks.

4. If leaks have not been detected using the large leak setting: Try using the medium or small setting as appropriate.

If leaks *have been* detected using the large leak setting: After locating and repairing any leaks requiring the use of the LARGE switch setting, switch to the MEDIUM setting and verify the system is free of leaks. For HFC refrigerants (such as R134a), verify the system is leak free using the SMALL setting. For CFC and HCFC systems (such as R12 and R22), the MEDIUM setting is typically sufficient to verify that the system is free of leaks that require repairing.

After a leak is located and repaired, clear the area with shop air, set the unit on the small leak sensitivity, and double check equipment for small leaks.



## **Section 3. Calibration and Performance**

### **3.1. Heater Adjustments**

The sensor heater circuit can be adjusted to control the sensitivity of the unit. A heat setting that is too high causes instability due to excessive sensitivity and shortens sensor life. A heat setting that is too low causes decreased sensitivity. The heater adjustment LEDs, heater adjustment, and calibration reference bottle is a unique system for setting the correct sensor heat (sensitivity) for optimum performance and long sensor life. To check the heater setting:

1. Slide the mode switch to AUTO, slide the leak switch to SMALL, turn ON the unit and allow it to stabilize (approximately 2 minutes).
2. When stabilized (at approximately 1 click per second), briefly touch the probe tip to the calibration reference bottle with the probe (ensure the sticky label disc is removed from the top of the bottle).
3. If adjusted properly, the red LOW LED will go out and the green OK LED will briefly glow. This indicates the sensor's heat/sensitivity is adjusted for optimum performance.

If the red LOW LED remains on when you briefly touch the bottle, the sensor heat is set too low and the Heater Adjustment must be turned slightly clockwise using a small screwdriver. Allow unit to stabilize about one minute and retest. Repeat

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this procedure until the green OK LED briefly glows.

If the red HIGH LED glows, the heat is set too high and the heater adjustment should be turned slightly counterclockwise using a small screwdriver. Allow the unit to stabilize for about 1 minute and then repeat the test. Repeat this procedure until the proper green OK LED is indicated.

**! NOTE:** After initial check for correct heater adjustment, disregard the calibration LEDs. Their indication is meaningless during subsequent leak testing activity.

**! NOTE:** Check for proper heat adjustment on a daily basis. This assures the H-10 Pro is calibrated for the correct sensitivity for your daily test activity.

**! NOTE:** Frequency of sensor heat adjustment is a function of how much exposure the sensor has to refrigerant. Adjustment may be required every couple of weeks for heavy duty service and once every few months for light duty service.

**! NOTE:** Over the usable sensor life, when heater adjustment is fully clockwise and the green OK LED will not come on, it is time to replace the sensor. (See Section 4.3.)

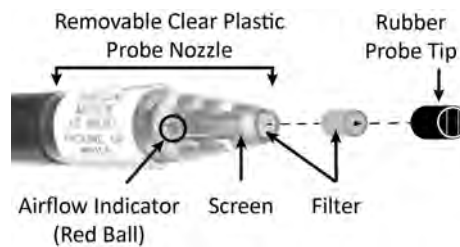


## Section 4. Maintenance

### 4.1. Replacing the Filter

To protect the pump from damage due to foreign particles and moisture, replace the filter as it becomes dirty. With moderate use (15 to 30 minutes a day), it is recommended that the filter be replaced once per month. In dirty environments or with heavy use, replace the filter more frequently. Always replace the filter when it is visibly dirty or wet. To replace the filter, follow the steps below.

1. Remove the black rubber probe tip.
2. Pick out the filter with a pin or tweezers. A fine screen will remain in the tip of the probe nozzle (behind where the filter sits).
3. Insert the new filter in the probe tip. Make sure that the filter is firmly seated against the screen.
4. Replace the rubber probe tip.



### 4.2. Replacing the Airflow Indicator

1. Remove the clear plastic section of the probe tip by gently pulling and twisting.
2. Turn the probe tip upside-down and tap on it to remove the old airflow indicator ball.

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3. Insert the new airflow indicator ball into the tip.
4. Reattach the probe tip to the probe assembly.

### 4.3. Replacing the Sensor

The sensor needs to be replaced when the H-10 Pro no longer responds to the calibration reference bottle, even with the heater adjustment turned fully clockwise (make sure the reference bottle contains some refrigerant).

1. Turn the leak detector OFF.
2. Turn the heater adjustment to its full counterclockwise position.
3. Unplug the power cord and open the sensor cover.



Sensor Cover Closed

Sensor Cover Open

4. Allow the sensor to cool before touching it.

**! WARNING:** Sensor temperature may cause a burn if not allowed to cool.

5. Unplug and discard the sensor.
6. Insert a new sensor and close the sensor cover.
7. Adjust the heater per Section 3.1.



## Section 5. Troubleshooting

### 5.1. Diagnosing Issues

**P=Problem • C/S=Cause/Solution(s)**

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**P** No response to calibration reference bottle.

**C/S** Heat Adjustment is set too low or bottle is empty. Readjust heater (see “Heater Adjustment” section) or replace bottle (3015-0864).

No air flow (indicator ball in probe doesn’t float). Replace filter in probe tip (3015-0784). Check for proper pump operation.

Sensor exposed to excessive amounts of halogen gas. Move probe to clean atmosphere for several minutes while sensor purges itself.

Water is in the probe. Turn unit off and disconnect probe from chassis. Remove screws and take out chassis. Look at the underside of the leak detector and follow the probe to the pump. Remove this hose from the pump. Blow clean air (5 psi) into the probe tip for one or two minutes. Reassemble unit and replace the filter (3015-0784).

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**P** Erratic response occurs in all leak positions.

**C/S** Filter is clogged. Replace the filter (3015-0784).

Dirt is in the sensor. Remove sensor and blow it out with clean air (not over 10 psi). If unsuccessful, replace the sensor (3015-0486). Replace the filter (3015-0784).

Sensor has a short circuit. Replace sensor (3015-0486).

Atmosphere is contaminated with excessive refrigerant gas. Ventilate the area.

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**P** Response is continuous (especially in SMALL leak switch position).

**C/S** Detector sensitivity is excessive. Readjust heater (see "Heater Adjustment" section).

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### **5.2. Limited Warranty**

The purchaser is warranted that this leak detector will be free of defects in material and workmanship for 3 years from date of purchase. This warranty does not cover sensors, reference leaks, filters, airflow balls, lamps, batteries, or probe tips. Damages caused by the user will not be covered.

If any defects are discovered during the warranty period, an Authorized Service Center will repair or replace the unit at their option. The foregoing limited warranty is exclusive and in lieu of all other warranties, whether written or implied, and no warranty of merchantability or fitness for purpose will apply.

### **5.3. Repair Information**

Should it become necessary to repair your H-10 Pro, please contact an authorized service center. Units should be carefully packed to prevent shipping damage and shipped prepaid.

**5.4. Spare Parts**

| Part Number | Description                                                                                           |
|-------------|-------------------------------------------------------------------------------------------------------|
| 3015-8004   | H-10 Pro Refrigerant Leak Detector, battery, charger, and North American plug                         |
| 3015-8005   | H-10 Pro Refrigerant Leak Detector, battery, charger, and plug set (North American and international) |
| 3015-0326   | 14" flexible probe extension                                                                          |
| 3015-5812   | Wall adapter with North American plug                                                                 |
| 3015-0119   | Wall adapter with North American and international plugs                                              |
| 3015-0895   | Battery clamp/cigarette adapter assembly                                                              |
| 3015-0641   | Clear probe tip                                                                                       |
| 3015-0680   | Rubber probe tip                                                                                      |
| 3015-0486   | Replacement sensor                                                                                    |
| 3015-0781   | Tune-up kit (sensor, 100 filters, 3 airflow balls, 3 rubber probe tips, and calibration bottle)       |
| 3015-0784   | Maintenance kit (100 filters, 3 airflow balls, 3 rubber probe tips, and calibration bottle)           |
| 3015-0737   | Maintenance kit (12 filters, 3 airflow balls)                                                         |
| 3015-0864   | Calibration reference bottle                                                                          |
| 3015-0103   | Battery                                                                                               |
| 0028-0002   | Headphones                                                                                            |
| 3015-0095   | Shoulder strap                                                                                        |

### **5.5. Authorized Service Centers**

Replacement parts and service can be obtained by contacting one of the following Bacharach Service Centers.



|                                                                                   |                                                                                 |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
|  |                                                                                 |
| EU DECLARATION OF CONFORMITY                                                      |                                                                                 |
| Product(s):                                                                       | Refrigerant Leak Detector                                                       |
| Model(s):                                                                         | H-10 Pro                                                                        |
| The manufacturer of the products covered by this declaration:                     | Bacharach, Inc.<br>621 Hunt Valley Circle<br>New Kensington, PA 15088<br>U.S.A. |
| Year(s) conformity is declared:                                                   | 2014                                                                            |
| Directive(s)                                                                      | 2014/53/EU (Electromagnetic Compatibility (EMC))                                |

This declaration of conformity is issued under the sole responsibility of the manufacturer.

|                           |                                                                                   |
|---------------------------|-----------------------------------------------------------------------------------|
| Object of the declaration |  |
|---------------------------|-----------------------------------------------------------------------------------|

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation.

|                                           |                                                                                                                                   |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Harmonised Standard(s)                    |                                                                                                                                   |
| EN 50270:2006                             | Electromagnetic compatibility: Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen |
| EN 55011:2009/A1:2010<br>Group 1, Class A | Industrial, scientific and medical equipment - Radio frequency disturbance characteristics - Limits and methods of measurement    |

Signed for and on behalf of Bacharach, Inc.

New Kensington, PA, U.S.A., 19 February 2016

Aaron E. Kinnison, Engineering Manager



The technical documentation file required by this directive is maintained at the corporate headquarters of Bacharach, Inc.

**NOTE:** The Directives or Harmonized Standards to which this product has been evaluated may have changed. Bacharach, Inc. however continues to market this product under a presumption of conformity even though the Standards may no longer be harmonized.

