

H-10PM Refrigerant Leak Detector



Congratulations! You have just purchased the most versatile, high performance service leak detector available in the industry today. It will detect refrigerants with a sensitivity to effectively pinpoint both small and large leaks quickly and efficiently.

We encourage your review of this manual to assure satisfactory performance and a long service life.

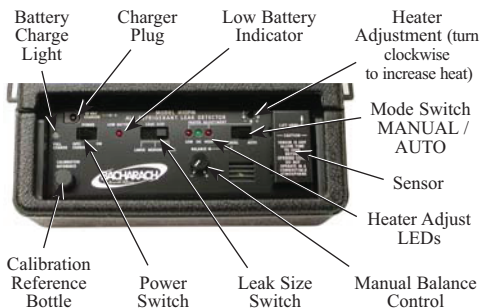


WARNING: This device is not to be used in any application that is beyond its intended purpose or beyond the scope of its specifications. For details on appropriate use, refer to the rest of this manual. Before risking equipment damage or personal injury, contact Bacharach if you are unsure of the validity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

How the H-10PM Works

The sensor in the H-10PM uses positive ion emission technology, commonly known as a heated diode. It is very sensitive to only halon substances (refrigerants) making this product highly resistive 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 sensor. Any presence of halogen gases (such as refrigerants) causes an ionized current to flow that sounds a speaker and illuminates a neon light in the probe. Sensitivity to pinpoint both large and small leaks can be controlled by setting the three position Leak Size switch.



Panel Operating Controls

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! It is filled with enough refrigerant to last approximately six months.
2. With the Power switch in the OFF position, charge the internal battery using the furnished wall adapter. Charge time is 8–10 hours or, until the red Full Charge LED turns green.

Adjusting the Sensitivity

Set the Leak Size switch as follows:

SMALL switch position is the highest sensitivity. The unit will indicate 0.1 ounce or greater leak rates and is used for fluorine based gases like R134a and SF6. This position also assures highest repeatability for locating 0.5 ounce or greater R134a leaks (per SAE Std. J1627 moving probe test conditions). It must always be used to verify performance and calibration when using the Calibration Reference Bottle.

MEDIUM switch position is used for chlorine and chlorine based gases like R12, R22, R123, etc. and will indicate a 0.1 ounce per year or greater leak rate. This position supports finding a 0.5 ounce or greater leak during the moving probe test as defined in SAE J1627. It is also useful for locating larger R134a leaks of one ounce or greater.

LARGE switch position is used to zero in on large leaks of any refrigerant. If a large leak is suspected, switch unit to its Manual mode. Adjust the Manual Balance control for 2-3 ticks per second and slowly

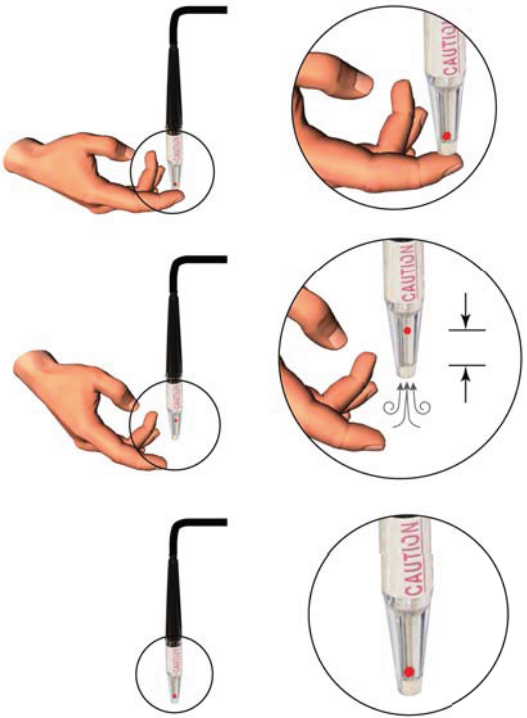
approach the test equipment/area. Adjust the Manual Balance control counterclockwise as necessary to maintain 2-3 ticks per second. As you approach the vehicle or equipment, the gas concentration will increase, causing an alarm condition. Each time an alarm occurs, readjust the Manual Balance control. Continue this process until the leak is located. Blowing out the test site with shop air may enable you to locate the leak more quickly.

NOTE: After the large leak is located and repaired, blow out the area again with shop air, set the unit on the small leak sensitivity and double check equipment for small leaks.

Operating Instructions

1. Slide mode switch to AUTO position.
2. Slide power switch to ON position and sensitivity switch to SMALL position.
3. Check Low Battery LED. If it glows red, the battery needs charging, or you may operate the unit from a 12VDC source, or with optional AC Adapter of the correct voltage and current.
4. 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:
 - Tap the probe lightly to ensure the ball is not sticking.
 - Check the filter in the probe tip, as described in the *Maintenance* section.

If the flow is still insufficient, then the unit should be forwarded for repair to the nearest Authorized Service Center.



5. Allow two minutes for the sensor to warm up, after which the flashing probe light and sound indicator will idle at 2-3 clicks per second.
6. Test operation by quickly touching 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 for detecting all refrigerant leaks. During product life, if unit does not respond correctly, see “Heater Adjustment” section.

WARNING: Personal Injury Hazard

Do not use the H-10PM in an explosive or combustible atmosphere. The ambient atmosphere is drawn through the probe and through the sensor, which operates at approximately 1472°F (800°C). The resulting hot mixture of air and combustible gas could explode.

YOU'RE READY TO FIND THE LEAK !

(You have a choice of two modes)

Auto Mode

This mode is preferred because the unit effectively auto zeros to block out background levels of refrigerants and changes in background contamination. 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. (We recommend 2 inches per second as specified in SAE J1627 and J1628). If the probe is held stationary over the leak the unit will zero out the leak, going into the idle 2-3 ticks/second condition. Briefly moving the probe away from the leak, for 1-2 seconds, permits the unit to re-establish sensitivity. Returning to the leak site, the unit will alarm again. Continuing this 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, the manual mode will enable you to pinpoint the 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 "Adjusting the Sensitivity").

Manual Mode

In the Manual Mode the auto-zero circuit is disabled. The unit will not zero out 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 2-3 ticks per second that indicates proper adjustment and calibration for all three sensitivity switch positions. In this mode you may notice sensitivity is slightly greater (10-20%) than the auto-zero mode. This is normal.

Heater Adjustment

(for optimum performance and calibration)

The Calibration Reference Bottle sensor heater circuit controls the sensitivity of the unit. A heat setting that is too high causes instability due to excessive sensitivity and shortens sensor life. The LOW / OK / HIGH LEDs in conjunction with the Heater Adjustment and Calibration Reference Bottle is a unique system for setting the correct sensor heat (sensitivity) for optimum performance and long sensor life.

The unit is pre-set for optimum initial operation. To check the setting, slide the mode switch to AUTO, turn ON the unit and allow it to stabilize (approximately 2 minutes). When stabilized, at 2-3 clicks per second, briefly touch the Calibration Reference Bottle with the probe (after removing the sticky label disc from the top of the bottle). 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. Allow unit to stabilize about one minute and retest. Repeat

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. Allow the unit to stabilize and then repeat the test. Continue this procedure until the proper green OK LED indication has been achieved.

NOTES:

A. After initial check for correct adjustment, disregard the LOW / OK / HIGH LEDs. Their indication is meaningless during subsequent leak testing activity.

B. Check for proper heat adjustment the first time the unit is turned on and repeat on a daily basis. This assures the product is calibrated for the correct sensitivity in all leak size switch positions for your daily test activity.

C. 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. The sensor LED status indicators will accurately tell you when adjustment is necessary during the daily check.

D. 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. Before plugging in a new one, turn the Heater Adjustment fully counterclockwise then plug in the new sensor and test and adjust as described above to calibrate the instrument.

Application Notes

1. Start leak checking anywhere and continue in a logical progression through the entire system to locate all leaks. If surfaces are particularly 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 ingest moisture.

Use of the supplied rubber probe tip helps prevent moisture from being drawn into the unit. Check ports for moisture before inserting the probe.

2. 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 only (such as R134a), you also must verify the system is leak free using the SMALL setting. For CFC and HCFC systems (such as R11, R12, R22, R123), the MEDIUM setting is sufficient to verify that the system is free of leaks that require repairing.

Caution: Equipment Damage Hazard

A. Submerging the probe in liquid will damage the air pump.

B. Exposing the probe to a stream of pure refrigerant coming out of a tank will severely reduce the life or destroy the sensor. Life of this rare-earth sensor technology is directly proportional to the amount of refrigerant that passes through it. With normal intermittent service, the sensor can last for one year or longer.

C. Exposure to high concentrations of refrigerant may require adjustment of sensor heat. To check, repeat the test procedure in “Heater Adjustment” section.

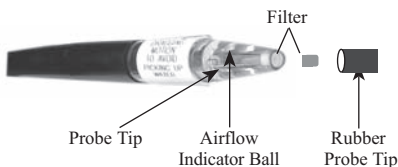
Maintenance

(replacing the filter and airflow indicator)

To protect the air 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 a month. In dirty environments or with heavy use, replace the filter more frequently. Always replace the filter when it is visibly dirty or wet.

Replacing the Filter:

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.
3. Insert the new filter in the probe tip. Make sure that the filter is firmly seated against the fine screen.
4. Replace the rubber probe tip.



Replacing Airflow Ball Indicator:

1. Remove the clear plastic section of the probe tip by gently pulling and twisting the white grip.
2. Turn the probe tip upside-down and tap on it to remove the old airflow indicator ball.
3. Insert the new airflow indicator ball into the tip.
4. Reattach the probe tip to the probe assembly.

Replacing the Sensor:

The sensor is a plug-in unit that can be thrown away when expended. It needs replaced when the H-10PM no longer responds to the Calibration Reference Bottle, even with the Heater Adjustment turned fully clockwise (make sure the reference bottle contains some refrigerant).

Caution: Personal Injury Hazard

Sensor surface temperature may reach 390°F (200°C) during operation, and may cause a burn if not allowed to cool.

1. Turn the leak detector OFF.
2. Unplug the power cord if the unit is plugged in and open the sensor cover.
3. Allow the sensor to cool before touching it.
4. Unplug and discard the sensor.
5. Insert a new sensor and close the sensor cover.
6. Turn the Heater Adjustment to its full counterclockwise position.
7. Apply power to the unit and adjust the sensor's heat setting (see "Heater Adjustment" section).

Troubleshooting

Problem Responds to reference leak in LARGE leak switch position

Cause Heat Adjustment set too high

Solution Readjust heater (see "Heater Adjustment" section)

**** Solution # corresponds to Cause # ****

Problem No response to Calibration
Reference bottle

Cause ¹Heat Adjustment set too low or
bottle is empty
²No air flow (indicator ball in
probe doesn't float)
³Sensor exposed to excessive
amounts of halogen gas
⁴Water in probe

Solution ¹Readjust heater (see "Heater
Adjustment" section) or replace
bottle (3015-0864)
²Replace filter in probe tip
(3015-0784). Check air pump
operation.
³Move probe to clean atmo-
sphere for several minutes while
sensor purges itself.
⁴Turn 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 air 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).

Problem Probe tip lamp does
not flash

Cause Burned out or damaged probe
lamp

Solution Return for repair

**** Solution # corresponds to Cause # ****

Problem Erratic response in all leak positions

Cause **1**Filter is clogged
2Dirt in sensor
3Short circuit in sensor
4Atmosphere contaminated with excessive refrigerant gas.

Solution **1**Replace the filter (3015-0784)
2Remove sensor and blow it out with clean air (not over 10psi). If unsuccessful, replace the sensor (3015-0486). Replace the filter (3015-0784).
3Replace sensor (3015-0486)
4Ventilate area

Problem Responds continuously only in SMALL leak switch position

Cause Excessive sensitivity

Solution Readjust heater (see “Heater Adjustment” section)

Ordering Information

- 3015-0627** H-10PM Refrigerant Leak Detector w/ Battery & Charger
- 3015-0326** 14 inch Flexible Probe Extension
- 3015-0119** 100-240VAC Charge/Run AC Adapter
- 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

Repair Information

Should it become necessary to repair your H-10PM, please contact an Authorized Service Center. Units should be carefully packed to prevent shipping damage and shipped prepaid.

Warranty

Send units under warranty and a copy of the purchase receipt to an Authorized Service Center for repairs. Please include your company name, telephone number including area code, and a contact name.

Non-Warranty

Units that are no longer under warranty will be repaired to factory specifications for a nominal fee. Please include your company name, telephone number including area code, and a contact name.

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.

Authorized Service Centers

United States

Bacharach Sales/Service Center
621 Hunt Valley Circle
New Kensington, PA 15068
Phone: 724-334-5051
Fax: 724-334-5723
E-mail: help@mybacharach.com

Canada

Bacharach of Canada, Inc.
20 Amber St. Unit #7
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