

RLD-H10PRO Refrigerant Leak Detector

Installation Instructions

RLD-H10PRO

Part No. 24-7929-71, Rev. C
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Refer to the [QuickLIT website](#) for the most up-to-date version of this document.

Application

The RLD-H10PRO is a professional-grade leak detector for use by refrigeration and air conditioning technicians. This detector senses all CFC, HCFC, and HFC refrigerants and blends, such as R12, R502, R22, R404a, R507, and R134a among others. The RLD-H10PRO leak detector is self-powered with a rechargeable battery and provides both manual and automatic compensation for background levels of refrigerant. A full line of accessories and maintenance kits are also available, including replacement sensors, tuneup kits, probe extensions, battery chargers, and leak vial bottles.

Accessories



Figure 1: RLD-H10-100—Flexible Probe Extension, 14 in. (356 mm) long



Figure 2: RLD-H10-101—Power Supply, 120 VAC (allows unit to operate from a standard outlet)



Figure 3: RLD-H10-102—Cigarette Lighter Adapter



Figure 4: RLD-H10-600R—Tuneup Kit; includes sensor, 100 filters, 4 airflow indicator balls, 3 rubber probe tips, and leak vial

Also available:

- RLD-H10-601R—replacement sensor
- RLD-H10-602R—maintenance kit
(Includes 100 filters, four airflow indicator balls, and three rubber probe tips)
- RLD-H10-603R—replacement leak vial
- RLD-H10-101—replacement battery charger

Installation



WARNING: Risk of Explosion or Fire.

Do not install or operate the RLD-H10PRO Refrigerant Leak Detector in an explosive or combustible atmosphere. The sensor operates at approximately 1,000°F (540°C), and combustible gas or vapors may explode or ignite resulting in severe personal injury or death.

AVERTISSEMENT : Risque de explosion ou incendie.

Ne pas installer ou utiliser l'RLD-H10PRO Refrigerant Leak Detector dans une atmosphère explosive ou combustible. Le capteur présente une température de fonctionnement de 540°C environ et pourrait entraîner l'explosion ou l'inflammation de gaz et de vapeurs combustibles, provoquant des blessures graves, voire mortelles.

1. Slide the power switch to the On position. (See Figure 6.)
2. Slide the range switch to the small position. (See Figure 6.)
3. Check the red Battery Low LED. If it glows, the battery needs to be recharged. (See [Charging the Batteries](#) for more information.)
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:
 - a. Tap the probe lightly to ensure the ball is not sticking.
 - b. Check the filter in the probe tip as described in the [Maintenance](#) section. If the flow is still insufficient, see the [Repair Information](#) section for warranty and non-warranty repairs.

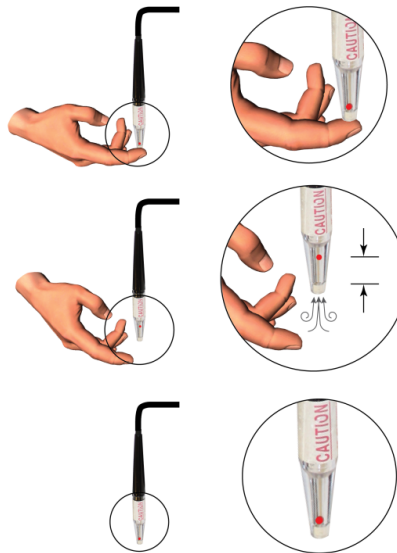


Figure 5: Verifying Airflow

5. Allow two minutes for the sensor to warm up. When the sensor is warm, the light and sound indication should be idle at around two or three beats per second.

Calibration and Verification

For optimum performance and sensor life, check the calibration frequently. Adjustments are a function of how much exposure the sensor has to refrigerant. For heavy-duty service, adjustment may be required every couple of weeks, while light-duty service may require adjustment only every few months.

The leak vial may be used as often as necessary and can assist in determining the size of the leak. When using the small leak range position, a leak of HFC causing an audible signal equal to that produced by the leak vial has a leak rate of approximately 0.5 oz./year. When using the medium leak range position on a CFC or HCFC system, this leak rate would also be approximately 0.5 oz./year.

Proper response during the calibration test verifies sensitivity and operation for both auto and manual balance modes, and for all three leak size positions.

To calibrate the leak detector:

1. Ensure that the range switch is in the small position and the balance control is in the automatic position. (See Figure 6.)
2. Remove the sticky-label disc from the cap of the leak vial. Allow a few minutes for the leak rate to stabilize. (The leak vial is filled with enough refrigerant to last approximately 6 months.)

IMPORTANT: Do not unscrew the cap of the leak vial to avoid damaging the bottle.

3. Test the operation by briefly moving the probe tip over the opening of the leak vial as if you are trying to locate a leak. It is not necessary to hold the probe over the leak as this does not simulate field conditions.

The RLD-H10PRO leak detector responds with increasing the flash rate and sound, verifying operation, and indicating the location of the leak.

Sensor Heat Adjustment

Proper heater adjustment ensures optimum performance and sensor life. Observe the heater adjustment LEDs while passing the probe over the leak vial. If the sensor heat is set properly, the red Low LED goes out and the green OK LED lights as the leak is detected.

1. If the red Low LED remains lit as the leak is detected, turn the heater adjustment 1/8 of a turn higher (clockwise).
2. If the red High LED is lit, turn the heater adjustment 1/8 of a turn lower (counterclockwise).
3. Once the sensor heat has been adjusted, allow the unit to stabilize for approximately 2 minutes and then retest.
4. Repeat using minor heater adjustments until the unit responds properly. (See Figure 6.) If the sensor heat is adjusted to the full heat position (fully clockwise), and the OK LED does not light, replace the sensor.

Note: During normal leak detection, the heater adjustment LEDs flashes randomly based on the amount of refrigerant the sensor is detecting. For proper calibration, set the sensor heat adjustment based on the response to the calibrated leak vial only.



Figure 6: RLD-H10PRO Control Panel

Charging the Batteries

The RLD-H10PRO leak detector runs continuously for about 3 hours on a fully charged battery. When the red Battery Low LED is lit, the unit should be recharged.

IMPORTANT: The RLD-10PM contains a gel-cell battery. To prolong the life of this type of battery, recharge the battery frequently (before it is fully discharged); do not recharge the battery for more than 12 consecutive hours. Do not allow the battery to freeze.

To recharge the unit:

1. Turn the leak detector off.
2. Plug the battery charger cord into the socket labeled 12 VDC Charger. (See Figure 6.)
3. Plug the charger into any 120 VAC outlet.
4. Allow the unit 8 hours to fully charge the battery. While charging, the Full Charge LED is red. The battery is fully charged when the Full Charge LED turns green.

Tips for Finding Leaks



CAUTION: Risk of Property Damage.

Do not submerge the probe in liquid. Submerging the probe in liquid damages the vacuum pump.

MISE EN GARDE : Risque de dégâts matériels.

Ne pas immerger la sonde dans le liquide. L'immersion de la sonde dans le liquide endommage la pompe à vide.

- Use the black rubber probe tip whenever possible and hold the probe approximately 1/4 inch (6 mm) above the area being tested.
- Move the probe tip at about 2 inches (63.5 mm) per second along the seams or joints suspected of leaking.
- Start leak checking anywhere, and continue in a logical progression through the entire system to locate all leaks.
- 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.

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

- Use the Large range to protect the sensor when there is a chance that it will be exposed to a high concentration of refrigerant gas. If the Large range does not detect any leak, switch to the Medium range.
- On CFC and HCFC systems, the Medium range is sufficient to verify that the system is free of leaks that require fixing.
- On HFC systems, use the Small range to verify that the system is free of leaks that require fixing.
- Replace the filter often (as described in the Maintenance section) to retain airflow and sensitivity.
- Wipe all surfaces to be tested with a clean, dry cloth.
- Check ports for moisture before inserting probe.

Automatic Balance Mode

- Use the Automatic balance mode in most situations. The Automatic zero function effectively blocks out background levels of refrigerant to make finding medium or small leaks quicker.
- Continuously move the probe at a rate of approximately 2 inches (63.5 mm) per second. As you approach a leak, the click rate increases, and as you move away from the leak, the click rate decreases. Use repeated passes over the suspected area to locate the leak.
- If the probe remains directly over the leak for several seconds, the unit becomes insensitive to that level of refrigerant. To restore sensitivity, move the probe away from the leak briefly and allow the auto-balance to restore sensitivity.

Manual Balance Mode

- Use the Manual Balance mode to find large leaks in areas where there is already a relatively high concentration of refrigerant gas in the atmosphere.
- When you search for a leak in manual mode, you must adjust the balance frequently to maintain approximately two to three clicks per second. Move the probe toward the leak. If the click rate increases, you are approaching the leak. If the click rate decreases, you are moving away from the leak. Turn the balance knob so that you are at a two or three click per second rate, and again move the probe. By always moving in the direction that increases the click rate, you can locate the leak.

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), we recommend that you replace the filter 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 remains in the tip of the probe.
3. Insert the new filter in the probe tip (Figure 7). Make sure that the filter is firmly seated against the fine screen.
4. Replace the rubber probe tip.

Replacing the Airflow Indicator

1. Remove the clear plastic probe nozzle section of the probe tip by gently pulling and twisting the white grip. (See Figure 7.)
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 nozzle to the end of the hose.

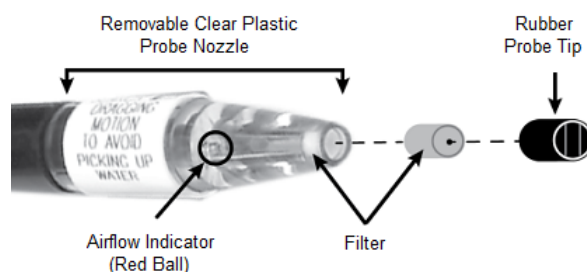


Figure 7: Replacing Filter and Airflow

Replacing the Sensor



CAUTION: Risk of Environmental and Property Damage.

Allow the sensor to cool before touching it or setting it on a surface that could be damaged by the heat. Sensor surface temperatures may reach 200°C (390°F) during operation, and may cause serious burns to the skin or other surfaces.

MISE EN GARDE : Risque de dommages environnementaux et dégâts matériels.

Laisser le capteur refroidir avant de le toucher ou de le mettre en contact avec une surface pouvant être endommagée par la chaleur. La surface du capteur peut atteindre une température de 200°C en fonctionnement et provoquer de graves brûlures de la peau ou d'autres surfaces.

The sensor is a plug-in unit that is thrown away when expended. It needs to be replaced when the RLD-H10PRO leak detector no longer responds properly to the leak vial (see the [Calibration and Verification](#) section), even with the sensor heat adjustment turned fully clockwise. (The leak vial bottle must contain some refrigerant.)

To replace the sensor:

1. Turn the leak detector off.

2. Unplug the power cord if the unit is plugged in and open the sensor cover. (See Figure 6 and Figure 8.)
3. Allow the sensor to cool before handling it (approximately 15 minutes).
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. (See Figure 6.)
7. Place the unit in operation, and calibrate the new sensor. (See instructions in the Calibration and Verification section.)

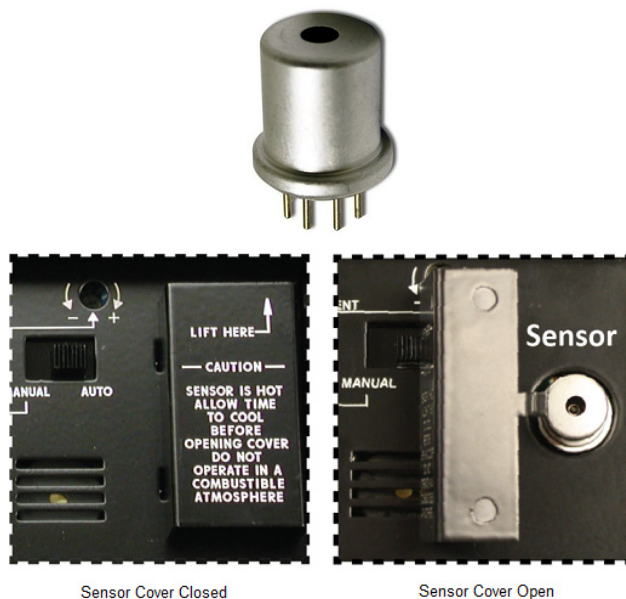


Figure 8: Replacing the Sensor

Troubleshooting

Table 1: Troubleshooting

Problem	Cause	Solution
Responds to reference leak in Large leak switch position	Heat Adjustment is set too high	Readjust the heater (see the <i>Sensor Heat Adjustment</i> section).
No response to leak vial	Leak vial empty	Reorder the leak vial (RLD-H10-603R).
	No airflow (indicator ball in probe does not float)	Replace the filter in the probe tip (RLD-H10-603R). Check air pump operation.
	Sensor exposed to excessive amounts of halogen gas	Move the probe to clean the atmosphere for several minutes while the sensor purges itself. Recalibrate in clean air. (See instructions in the <i>Calibration and Verification</i> section.)
	Water is in the probe	While the unit is operating, blow clean air (5 psi) into the probe tip for approximately one minute. Replace the filter (RLD-H10-602R).
	Heat control is set too low	Increase the sensor heat slightly by turning the heater adjustment 1/8th of a turn clockwise. (See Figure 6.) Allow a minute for the sensor to heat, and then recheck. (See instructions in the <i>Calibration and Verification</i> section.)
Audio normal; lamp does not flash	Burned-out or damaged probe lamp	Return the unit to your Johnson Controls representative.
Responds continuously in all leak positions	Filter is clogged	Replace the filter (RLD-H10-602R).
	Dirt in sensor	Remove the sensor (see Figure 8) and blow it out with clean air (not over 10 psig). If unsuccessful, replace the sensor (RLD-H10-601R). Replace the filter (RLD-H10-602R).
	Short circuit in sensor	Replace the sensor (RLD-H10-601R).
	Atmosphere contaminated with excessive halogen gas	Ventilate the area. Switch to the Large leak setting. (See Figure 6.) Reduce the sensor heat if the unit still responds excessively at the Large leak rate setting. (See instructions in the <i>Calibration and Verification</i> section.)
Responds continuously on Small leak position	Excessive sensitivity	Decrease the sensor heat slightly by turning the heater adjustment 1/8th of a turn counterclockwise. (See Figure 6.) Allow a minute for the sensor to cool and then recheck. (See instructions in the <i>Calibration and Verification</i> section.)

Repair Information

If an RLD-H10PRO Refrigerant Leak Detector fails to operate within its specifications, replace the unit. For a replacement RLD-H10PRO Refrigerant Leak Detector, contact the nearest Johnson Controls® representative.

Warranty Repairs

Units under warranty are shipped to the repair center. The repairs are completed within 24 hours after the repair center receives the unit. The repair center ships the unit back at the same shipping priority with which it was received.

Contact Johnson Controls for information on how to submit units for warranty repairs.

Non-Warranty Repairs

Units that are no longer under warranty are repaired to factory specifications for a nominal fee. The repairs are completed within 5 days after the repair center receives the unit. The repair center ships the unit back at the same shipping priority with which it was received.

Contact Johnson Controls for information about submitting units for repairs.

Technical Specifications

RLD-H10PRO Refrigerant Leak Detector

Power Requirements	12 VDC internal battery, or 100 to 240 VAC input/18 V output wall adapter (included) (RLD-H10-101).	
Sensing Element Type	Positive ion emission heated diode	
Approximate Sensitivity¹	Stationary	0.006 oz/yr
	Moving (Per SAE J2791)	0.1 oz/yr
Automatic Background Adjustment	Mode selection for automatic or manual background zeroing Note: Manual background zeroing provides the best sensitivity.	
Leak Alarm	Audible alarm (through internal beeper or stereo headphone jack), visible red LED	
Response Time	Approximately 1 second	
Warmup Time	Approximately 2 minutes	
Probe Length	Approximately 4.5 ft (1.4m)	
Ambient Operating Conditions	32°F to 104°F (0°C to 40°C); 5-90% RH, noncondensing	
Ambient Storage Conditions	14°F to 140°F (-10°C to 60°C); 5-90% RH, noncondensing	
Case	Rugged high-density polyethylene	
Dimensions (H x W x D)	5.4 x 10.5 x 8.3 in. (137 x 267 x 211 mm)	
Compliance 	Europe: CE Mark Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive.	
Shipping Weight	5.1 lb (2.3 kg)	

1. Sensitivity for R12, R22, R134a, R410a, R404a, and R507 when unit is set to small leak setting, manual mode.

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls shall not be liable for damages resulting from misapplication or misuse of its products.

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