

Operating Instructions (original instructions)



Model: LD9-TG
Dual Mode Tracer Gas
Leak Detector

Model: LD9-TGKIT
A/C System Tracer Gas
Leak Detection Service Kit

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Introduction

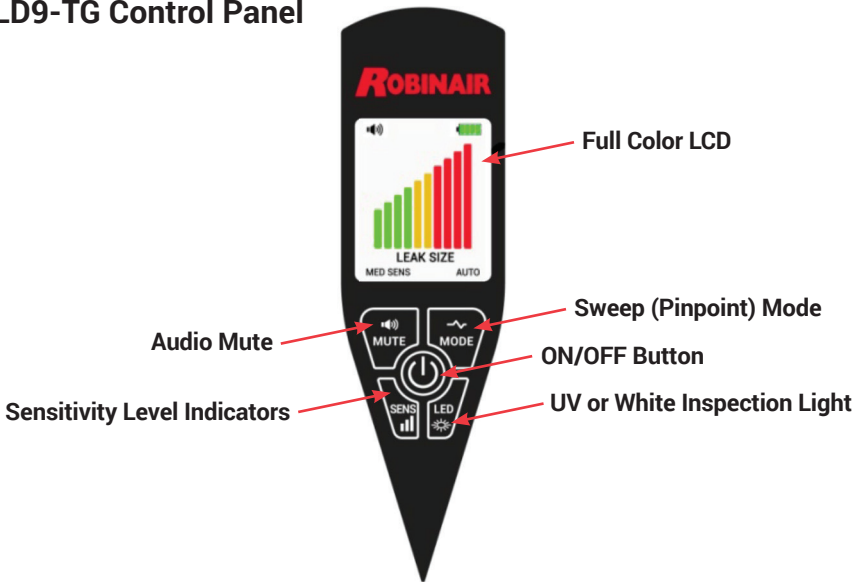
The LD9-TG features sensor technology designed to detect a 5% hydrogen / 95% nitrogen tracer gas mixture. The LD9-TG's full color liquid crystal display (LCD) and sweep mode function convey messages, graphics, and prompts to help the A/C technician locate the source of a leak and ensure that the leak detector is always at optimal performance. The light-emitting diode (LED) inspection lights aid the technician in locating and inspecting suspected leak sources.

When used with the hydrogen/nitrogen tracer gas mixture, the LD9-TG will detect leak rates equivalent to 4 g/year of R-134a in the High setting, and 7 g/year in the Normal setting while moving at 3 inches (8 cm) per second. This complies with SAE J2970 sections 7.2 and 7.3. Testing with tracer gas also complies with European standards EN 35422 and EN 14624.

Features

- Patented 3 LED ultraviolet (UV) lights with 395–415 nm wavelengths optimized for A/C dye fluorescence
- Full color LCD with user-friendly message and error screens
- Sensitivity equivalent to .015 oz/yr of R-1234yf in High mode
- Sensitivity equivalent to .05 oz/yr for R-134a in High mode
- Certified to SAE J2970
- Sweep mode function to pinpoint leak source
- Automatic calibration and reset to ambient air
- High-intensity LED inspection light
- 3 sensitivity levels
- Low battery indicator
- True mechanical pump
- Audio mute function
- Uses 4 AA alkaline batteries
- CE certified
- Ergonomic Santoprene handle grip
- 2-year warranty

LD9-TG Control Panel



Operating Instructions

1. **Turn On:** Press the ON/OFF button once to turn on; press again to turn off.

NOTE: The LD9-TG defaults to SAE J2970 mode on power up. Hold down ON/OFF button to select the Sensitivity Boost mode for smaller leaks.

2. **Warm Up:** The detector automatically starts heating the sensor. During the heating cycle, the LCD will display the message "WARM UP PLEASE WAIT" with a progress bar. Warm up is usually less than 20 seconds.
3. **Search:** The display will show the message "READY" and then "SEARCH" when the detector begins to search for leaks. An audible beep will begin to sound. Move the probe tip towards a suspected refrigerant leak at the rate of less than 2 inches (~5 cm) per second, no more than 1/4 inch (~0.6 cm) away from the suspected source.
4. **Detection:** If a leak exists, the beeping will increase in rate and pitch and the display will show the numerical indication of the leak size.
NOTE: The leak detector responds to changes in tracer gas concentration. When detection occurs, move the probe away from the source and back again to confirm the leak source. The detector's audible beeping will reset if the probe is held fixed at the source (see Automatic Calibration).

UV Light and Inspection Light Operation



CAUTION: UV LIGHT EMITS ULTRAVIOLET RADIATION

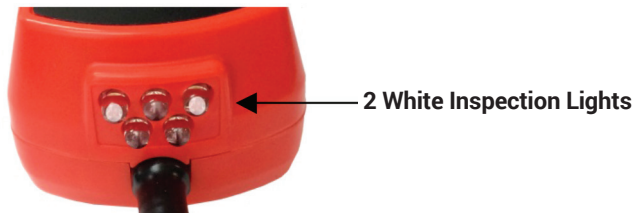
- **Avoid direct eye and skin exposure to UV light.**
- Wear personal protective equipment that meets ANSI/ISEA and OSHA standards.

Before leak checking with the UV light:

- a. Make sure the A/C system is properly charged with sufficient dye. (See manufacturer's specifications for proper dye charge.)
 - b. Run the A/C system long enough to thoroughly mix and circulate the dye (sold separately) with the refrigerant and lubricating oil.
1. Turn on UV light by pressing the LED button once. (See control panel on page 4.) Three UV lights will turn on (see image below).
 2. Holding the leak detector approximately 10–14 inches (25–35 cm) away, shine the UV light beam slowly over the components, hoses, and metal fittings that make up the A/C system.
 3. When the UV light shines on the fluorescent dye that has escaped from the system, the dye will glow a bright yellow green.



1. Turn on the inspection light by pressing the LED button until the white LED lights turn on. (See control panel on page 4.)
2. Inspect all components, hoses, and fittings for excessive wear or damage.

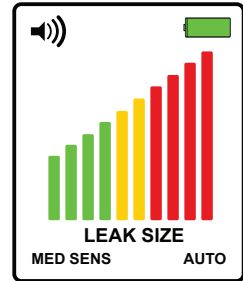


NOTE: If not manually turned off, the UV light and inspection light will automatically shut off after 5 minutes to preserve battery life.

Leak Size Indicator

Once a leak is detected, the leak size indicator bar graph will display on the detector screen. The number of bars will increase or decrease depending on the amount of tracer gas detected. The maximum value of the tracer gas will be displayed once the leak source has been located.

Refer to the table below to determine the approximate size of the leak.



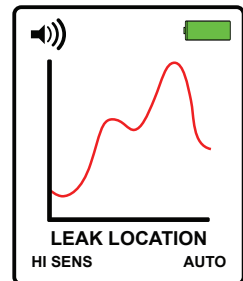
Maximum Bars Displayed	Leak Size (oz/yr)
1–2 (green color)	< 0.1
3–5 (yellow color)	0.1–0.5
6–10 (red color)	> 0.5

Sweep (Pinpoint) Mode

Turn on sweep mode by pressing the MODE button. This mode allows the user to pinpoint hard to find small leaks. The display cursor will sweep across the display from left to right tracking a horizontal baseline over a 3 second period.

When no tracer gas is detected, the display cursor will be flat. If tracer gas is detected, the cursor on the display will rise up and continue to rise as the leak source is approached. If the detector moves away from the leak source, the cursor will drop back down.

NOTE: The default sensitivity level in the sweep mode is High.



Automatic and Manual Calibration

After a leak is identified, the detector will recalibrate itself either automatically (default) or manually to the ambient air and resume audibly beeping as soon as the leak is detected again.

In Automatic mode, the detector will automatically recalibrate if the probe is held fixed at the source of the leak, and the detector will not beep again until the probe is moved away from the source and back again. In Manual mode, the detector will continue to beep if tracer gas is detected until the user presses the SENS button to recalibrate.

To use the detector in Manual mode, press and hold the SENS button and release when the AUTO icon is replaced with MANUAL on the display. To return to Automatic Calibration, press and hold the SENS button and release when the AUTO icon is displayed.

NOTE: The sensitivity levels can only be changed in Automatic mode. To change sensitivity levels while in Manual mode, switch to Automatic mode and select the desired sensitivity level, then return back to Manual mode.

Adjusting Sensitivity Levels

While in automatic mode, the detector can be set to 3 different sensitivity levels (**LO, MED, HI**). If the detector continues to beep after moving it away from the source of the leak, the sensitivity level can be adjusted so the detector will only sound when the probe is close to the leak source.

The detector will default to the **MED** sensitivity level automatically once the unit comes out of the warm up cycle. To change sensitivity levels, press the **SENS** once for **HI** sensitivity and again for **LO** sensitivity.

Audio Mute Function

To mute the audible beep, press the MUTE button. To restore the audible beep, press the MUTE button again. (**NOTE:** There is a few seconds lapse to restore sound if the MUTE button is pressed in rapid succession.)

Leak Test Vial

The leak detector comes with a leak test vial that allows the user to verify that the detector is performing properly. Check the expiration date on the vial before testing the leak detector.

1. Remove the colored label dot on the center of the screw cap to expose the vent hole.
2. Turn on the detector and allow the unit to complete the warm up cycle. Set sensitivity level to HIGH.
3. Place the probe tip close to the hole in the leak test vial. The beep rate should increase and the leak size indicator should display 3–6 bars, indicating that the sensor and electronics are working properly.

Replacing Batteries

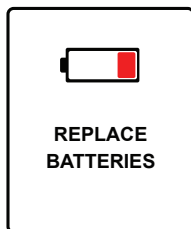


WARNING: RISK OF FIRE OR EXPLOSION -

Use AA alkaline batteries only in this product. Using the wrong type of battery could result in a fire or explosion.

Replace the batteries when the display shows the message “REPLACE BATTERIES.”

1. Unscrew battery cover located at the base of the unit as shown.
2. Install four AA alkaline batteries into the battery compartment, noting the polarity mark on the inside of the battery compartment for proper battery orientation.



Replacing Sensor and Sensor Filter

To Replace Filter. Replace filter when it becomes visibly dirty or when the display shows “REPLACE SENSOR FILTER.” Unscrew probe tip as shown to replace filter. The LD9-TG will keep track of the number of hours of usage and advise the user when it is time to replace the filter.

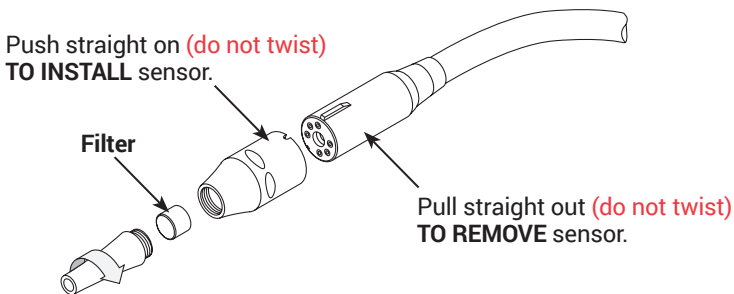


REPLACE
SENSOR
FILTER

To Replace Sensor. Remove the sensor by pulling it out of the socket. Install the new sensor by aligning the grooves in the sensor cover with the raised grooves on the sensor socket holder (see figure below).

CHECK
SENSOR
CONNECTION
OR REPLACE
SENSOR

NOTE: Do not force the sensor into the socket. Misalignment can damage the sensor pins.

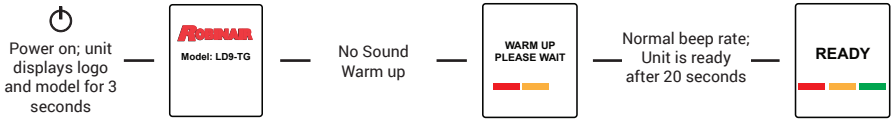


CAUTION: The detector’s software is designed to alert the user if the sensor is dislodged or defective. If the sensor is not fully inserted into the six-pin socket, or if it is defective, the unit will not come out of the warm up mode for proper operation when the power button is pressed. In this case, the message screen “CHECK SENSOR CONNECTION OR REPLACE SENSOR” will be displayed. Additionally, if the unit becomes unstable during operation, it is an indication that the sensor may be defective.



NOTE: If the leak detector has been out of use for an extended period of time, the following action is recommended. Power on the unit and allow it to come out of warm up, then run it at sensitivity level **HI** for several minutes before testing it with the leak test vial. This action will help ensure that the sensor is fully conditioned for maximum response to the tracer gas.

User Interface Displays

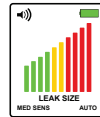


Unit begins searching
Default is MED and AUTO



DETECTION

Rapid beep rate when leak is detected



SENS
Press to change sensitivity level
LO, MED, HI



SENS
Hold down to change Auto/Manual



Press once to MUTE
Press again to UNMUTE



Press for Leak Location mode



Shows raw signal from sensor
Unit stays in HI and Manual mode
Mute is turned on



Press once for UV LED



Press twice for Inspection LED



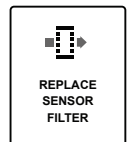
Sensor Clearing Message

NOTE: The "SENSOR CLEARING MESSAGE" is displayed when the sensor becomes saturated with a very large concentration of gas. Recovery is normally less than 10 seconds, during which time the sensor will not function optimally.



Replace Sensor Filter Message

NOTE: The "REPLACE SENSOR FILTER" message is displayed when the detector's timer registers approximately 30 hours of accumulated use. Press the appropriate button when prompted "DONE" or "LATER" on the display. If "DONE" is selected, the detector will reset to zero hours. If "LATER" is selected, the detector will continue to prompt the user to replace the filter after each subsequent use until "DONE" is selected.



Product Specifications

Model No.	LD9-TG
Name	Leak Detector, Dual Mode Tracer Gas
Sensitivity	Equiv.: .05 oz/yr R134a; .015 oz/yr R1234yf
UV Mode	3 UV LED
UV Wave-length	395–415 nanometers
Sensor Life	> 10 years
Response Time	Instantaneous
Power Supply	4 AA alkaline batteries
Battery Life	4 hours continuous
Warm up time	< 20 seconds
LCD Display	128 x 160 full color graphic display
Probe Length	17 inches (43 cm)
Weight	1.5 lb (0.7 kg)
Warranty	2 years (includes sensor)

Product Application Ambient

- Indoor/Outdoor Use
- Temperature Range: -24–125°F (-31–52°C)
- Humidity Range: <95% Non-Condensing
- Altitude: <10,000 ft.
- Pollution Degree 4
- Protection Grade: IP51

Replacement Parts for LD9-TG

Item	Part Number
Sensor with Filter	SP01957180
Sensor Filters (5 pack)	SP01964946
Leak Test Vial	SP01964945
Sensor Tip	SP01964944
Parts Kit (includes sensor, test vial & filter kit)	SP01957179
Carrying Case	SP01957181

Cross Sensitivity to Automotive Chemicals

Some automotive solvents and chemicals have similar hydrocarbon properties as R134a and may elicit a positive response from the detector. Before leak checking, clean up any chemicals in the list below that elicit a positive response.

Chemical Name/Brand	Response
Rain-X Windshield Wash Fluid	Yes
Ford Spot Remover (wet)	Yes
Ford Rust Inhibitor	Yes
Ford Gasket Adhesive (wet)	Yes
Loctite Natural Blue Degreaser (diluted)	Yes
Ford Brake Parts Cleaner	Yes
Ford Silicone Rubber (uncured)	No
Motorcraft Antifreeze heated to 160 degrees F	No
Gunk Liquid Wrench	Yes
Ford Silicone Lubricant	No
Ford Pumice Lotion (with solvent)	Yes
Ford Motorcraft Brake Fluid	Yes
Ford Carburetor Cleaner	Yes
Dextron Transmission Fluid heated to 160 degrees F	No
Quaker State Motor Oil heated to 160 degrees F	No

Model: L9-TGKIT (Leak Detection Service Kit)

LD9-TGKIT Components:

- Tracer Gas 100 psi Regulator
- R134a Manual Service Coupler (Red)
- R1234yf Manual Service Coupler (Red)
- 8 ft. (2.4 m) Service Hose (Red)
- 18 in. (46 cm) Carrying Case
- LD9-TG Tracer Gas Leak Detector



Operating Instructions

1. Determine the refrigerant charge of the A/C system using refrigerant gauges (not included with this tool).
2. If there is a suspected refrigerant leak, use the SAE certified refrigerant leak detector models LD7, LD5, or LD3 to locate the leak(s).
3. Using an SAE certified A/C recovery machine (not included with this tool), vacuum any remaining refrigerant out of the A/C system.
4. Connect the psi regulator to the tracer gas tank (not included with this tool) to charge the A/C system with tracer gas.
5. Connect the appropriate R134a or R1234yf service port coupler fitting to the hose and verify that the coupler is in the closed position.

NOTE: Refrigerant may be used in some electric or hybrid vehicles to cool the batteries. Refer to the appropriate shop manual procedures to recover refrigerant from the battery coolant system, or to charge refrigerant into the system.

6. Open the valve on the tracer gas tank to charge the A/C system and adjust the psi regulator to 60 psi.

NOTE: Do not exceed the maximum pressure of the A/C system being serviced. Refer to the appropriate shop manual specifications.

7. Purge the air from the hose by loosening the hose fitting to the R134a or R1234yf service port coupler and then retightening.
8. Connect the service port coupler to the high side service port on the vehicle and open the service port coupler.
9. Allow the tracer gas to fill the A/C system. Refer to the appropriate shop manual for pressure specifications.
10. Use the model LD9-TG Leak Detector that is included with the LD9-TGKIT to check the system for leaks. Refer to the operating instructions for using the LD9-TG Leak Detector listed on page 4.
11. Sweep the probe tip slowly over the components, hoses, and metal fittings that make up the A/C system.

NOTE: The hydrogen/nitrogen tracer gas mixture rises; it does not sink like R134a or R1234yf refrigerant.
12. Discharge the tracer gas into the atmosphere after the system leak(s) are located. **Do Not** recover the tracer gas into an A/C recovery machine.
13. Charge the system with the appropriate R134a or R1234yf refrigerant only after the leak(s) are repaired and the A/C system retested with the tracer gas and LD9-TG Leak Detector.

Replacement Parts for LD9-TGKIT

Item	Part Number
Tracer Gas 100 psi Regulator	12056
R134a Manual Service Coupler	18191A
R1234yf Manual Service Coupler	18123
8 ft. (2.4 m) Service Hose	33096
18 in. (46 cm) Carrying Case	12055