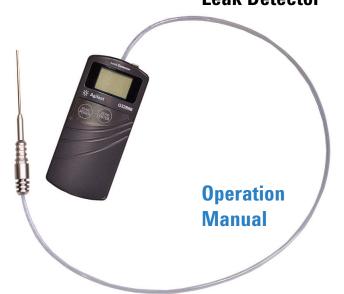


# Agilent G3388B Leak Detector



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## Introduction

The Agilent Technologies G3388B Leak Detector is a portable, highly sensitive instrument designed to detect helium and hydrogen gas leaks in gas chromatographs (GCs) and their accessories, such as purge and trap systems. The detector finds leaks by comparing thermal conductivity between the ambient atmosphere and a target gas. The detector indicates leaks through a dual system that consists of an indicating LCD and an audible alarm. The detector is more reliable and convenient to use than soap solutions and is capable of detecting even the smallest, hard-to-reach gas leaks.

Figure 1 and Figure 2 show the controls and other parts of the meter.



Figure 1 Front view of the meter

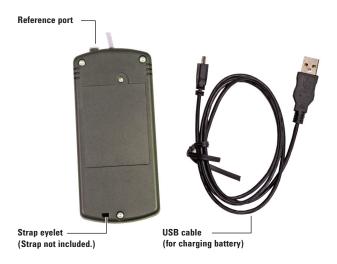


Figure 2 Back view of the meter, and USB cable

Use the Agilent Leak Detector only for detecting gases. Never allow liquids or particles to enter the sample probe or reference port.

The G3388B is not a quantitative device. It is designed to detect leaks in gas line connections commonly associated with laboratory equipment.

#### CAUTION

- Do not expose the detector to shock, wet environments, or solvents.
- Do not use the detector at temperatures outside its specified operating range.
- Do not open the detector's body.
- Do not use the detector to detect corrosive gases.
- Do not block the reference port (fresh air inlet) at the top of the detector.
- The detector's sensitivity will be adversely affected if it is used in an area containing the leaking gas.
- · Detector sensitivity can be affected by wind.
- Do not use the detector's micro USB cable for other devices.
- During use, keep the detector temperature stable.
   Do not use the detector while charging. Allow the detector temperature to stabilize (cool) for 30 minutes after charging.

#### WARNING

- Do not use the detector in areas at risk for fire, explosion, or large leaks of flammable gas.
  - When detecting small leaks of flammable gases, make sure sufficient ventilation exists to prevent a fire hazard.
- Do not use the detector in environments that may be potentially contaminated with dust or combustible fumes.
- Do not use the detector as safety equipment.
- This leak detector must not be used in Classified (Hazardous) locations. Use of this leak detector in a hazardous location could lead to personal injury or death.
- The customer may not replace the battery. The customer must return the leak detector to an Authorized Agilent Repair Center for repair.

# **Specifications**

gases:

Detector: Thermistor-actuated thermal conduc-

tivity cell

Thermal conductivity of He, CO<sub>2</sub>, Ar, Ne, and so forth (at 0 °C,

nonflammable, noncorrosive atmo-

sphere)

Sensitivity: Selectable in two ranges:

Std range: Helium 0.005 mL/min in

atmosphere

Helium 0.0005 mL/min in Hi range:

atmosphere

Rechargeable lithium-ion battery Battery:

Charging time < 2.5 h

5 hours (with a new, fully charged bat-Continuous operation:

tery, standard range, LED off, Buzzer off,

Backlight off)

Display: LCD display with 8 bar graphs

8 LED lamps

Recharger: USB cable, part number G3388-80000

Operating temperature

range:

Overall size:

10 to 40 °C (noncondensing)

 $50 \text{ mm (W)} \times 19.5 \text{ mm (D)} \times 111 \text{ mm (H)}$ Net weight: 95 grams (approximate)

The sensitivity depends on the relative thermal conductivities of the target gas and the ambient atmosphere (typically air). The larger the difference, the greater the sensitivity. See Table 1.

Table 1 Thermal conductivities of common gases at 0 °C,

Gas	Thermal conductivity (mW/m•k)		
Hydrogen	168.2		
Helium	142.2		
Neon	46.5		
Methane	30.2		
Air <sup>*</sup>	24.1		
Nitrogen <sup>*</sup>	24.0		
Ethane	18.0		
Ethylene	16.4		
Argon	16.3		
Carbon dioxide	14.5		
Krypton	8.7		
Xenon	5.2		

<sup>\*</sup> Not detectable

# Operation

### General information

NOTE

Before first use and after a long period of disuse, fully charge the battery. See "Charging the battery" on page 16.

To determine whether a GC or a GC accessory is leaking gas, place the Agilent Leak Detector's sample probe near the suspected leak. Make sure that the sample probe remains open during leak detection. Be careful not to place the probe's tip against the connection or fitting that you are checking.

Protect the detector from vibration while it is operating.

NOTE

Be aware that the detector will give a positive response to water vapor, for example to skin vapor and to fittings that were recently leak checked with a soap solution.

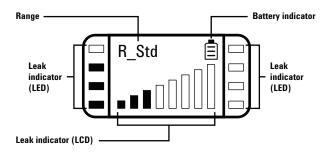
Periodically replace the filter (part number G3388-80001) that is attached at the inlet of the sample probe. See "Replacing the filters" on page 17.

# **Displays**

**Warmup display**: At startup, the detector warms up for 25 s when set for standard range, or 90 s when set for high range sensitivity. Press [**ZERO/ENTER**] to skip warmup.

After warmup, the detector is ready for use.

Standard and high range displays:



### Range

**R\_Std** Standard sensitivity range

**R\_Hi** High sensitivity range (10 times more sensitive

than standard range)

## **Battery indicator**

The Battery indicator shows the battery charge level in 3 levels.

3 bars Ample charge. Greater than 50% charge

remaining

**2 bars** Low charge. Battery charge about 20–30%.

1 bar Very low charge. Battery charge required. About

10 minutes of use remaining.

### Leak indicator (LCD display)

When the leak gas is detected, displays a bar graph. The number of bars indicates the relative size of the gas leak (maximum 8 bars).

Zero point display When measuring clean ambient air, the first bar alternates between ■ and □ when the detector becomes stable.

Leak display

■: Indicates a gas leak for a gas with a *higher* thermal conductivity than air.

□: Indicates a gas leak for a gas with a *lower* thermal conductivity than air.

### Leak indicator (LED display)

When the leak gas is detected, the LEDs light from the bottom left to the top, then from the bottom right to the top (maximum 8 bars). The LED indicators can be turned off if desired.

Zero point display

When measuring clean ambient air, the green or the red LED blinks when the detector becomes stable.

Leak display

■: Red indicates a gas leak for a gas with a *higher* thermal conductivity than air.

**:** Green indicates a gas leak for a gas with a *lower* thermal conductivity than air.

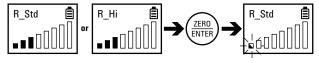
# **Detecting leaks**

To use the detector:

- Press and hold [FUNC/POWER] to turn on the detector. You will hear the detector begin to sample air.
   Wait until the warmup completes.
- 2 If desired, set the sensitivity range or other settings. See "Setting options" on page 13.
- 3 Check the stability at the zero point (while sampling clean air). When stable, the leak indicator in the LCD display will alternate between ■ and □.
  - If the detector indicates a leak (more than one bar), press [ZERO/ENTER] to reset the zero balance.
  - Temperature or humidity fluctuations can impact the zero point.

### Out of zero point

#### ZERO adjust



- 4 Place the sample probe near the gas connection to check for a leak. Do not press the probe tip against the fittings, tubing, and so forth.
  - One bar (or LED) may not indicate a leak, especially in high sensitivity mode.
  - Two or more bars indicates a leak.
  - An audible alarm sounds when 3 or more bars display (with Buzzer set to On).

Turn off the detector when not in use. Press **FUNC/POWER** and hold for 3 seconds.

The detector can be set to turn off automatically after 10 minutes. To enable Auto Power Off, see "Setting options" on page 13.

# **Setting options**

Press [FUNC/POWER] to cycle through the setting options or to toggle a selected function on or off. Press [ZERO/ENTER] to select a function for editing. See Figure 3 and Figure 4.

Table 2

Item	Function and options				
Range	Select standard (Std) or high (Hi) range sensitivity. Standard is the factory default.				
Buzzer	Enable/disable audible alarm for leaks that sho 3 or more bars/LEDs.				
LED	Turn LED indicators off/on. Turn off to conserve battery charge.				
Backlight	Turn LCD backlight on or off. Turn off to conserve battery charge.				
A.P.Off	When on, the detector turns off after 10 min of inactivity. Turn on to conserve battery charge.				

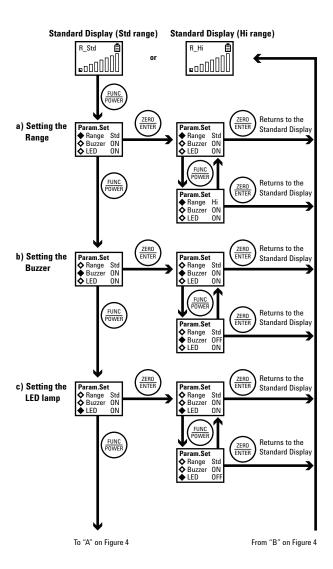


Figure 3 Setting options

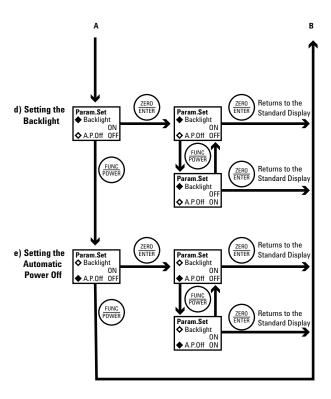
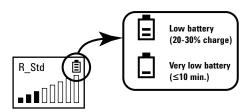


Figure 4 Setting options, continued

### Maintenance

# Charging the battery

Charge the battery when the LCD display is blank or when the battery indicator shows less than 3 bars.



To charge the battery:

- 1 Turn off the detector.
- 2 Connect the detector to a PC USB port using the USB to micro USB cable (part number G3388-80000).
- 3 Allow to charge for approximately 2.5 hours.

Do not use the detector with the cable attached.

The detector and battery may become warm while charging.

After charging the battery, allow the detector to stabilize (cool) for 30 minutes before use.

CAUTION

Because the battery gets warm while charging, allow the detector to stabilize (cool) for 30 minutes before use. The detector should be thermally stable for best performance.

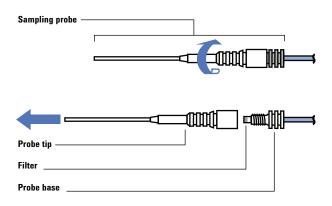
# Replacing the filters

The detector includes filters on the sample probe and reference port to protect against particulate contamination. A decrease in sensitivity can indicate a clogged filter. Replace the filters as described below.

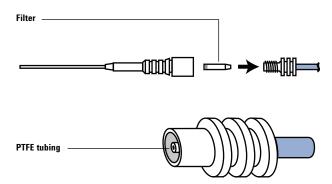
- Replacement sample probe filter: G3388-80001
- Replacement reference port filter: G3388-80002

### To replace the sample probe filter

- 1 Turn off the detector.
- 2 Unscrew the probe halves and disassemble the probe.
- 3 Use long-nosed pliers to remove the old filter.
- 4 Install the filter into the probe base as shown below.



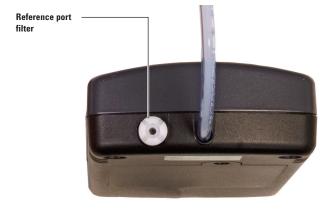
5 Install the new filter over the PTFE tubing as shown below.



6 Reassemble the probe halves.

## To replace the reference port filter

To replace the reference port filter, remove the old filter from the detector body, then insert a new filter.







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