

System Studies Incorporated Ultrasonic Leak Detector

Product Information

9800-3750



A more selective ear for successful leak locating

The Ultrasonic Leak Detector (Part No. 9800-3750) from System Studies Incorporated is a small, easy-to-use tool that makes it possible to detect inaudible high frequency sound waves in the 35 kHz to 45 kHz range. The sonic frequency range that the unaided human ear can detect, on the other hand, is between 20 Hz and 20 kHz—well below what is required to detect pressurized cable leaks that generate an ultrasonic frequency sound emission.

That's why the Ultrasonic Leak Detector is such a valuable addition to your collection of cable pressurization maintenance tools. It is ideally suited for leak locating in the underground, particularly in man-holes where small leaks in cable sheaths, splice cases and pneumatic fittings would otherwise go unnoticed. It can also be used to detect small leaks in and around the entrance to ducts, and in the central office around air dryers and air source delivery panels.

How It Works

When a leak develops in a pressurized cable, compressed air molecules flow toward the leak (the point of least resistance) and eventually force their way through the sheath opening. The velocity of the escaping molecules produces an ultrasonic signal. Molecules escaping from a small cable leak where air pressure remains high cause a very high-pitched, ultrasonic sound. Larger leaks that result in less cable pressure produce a subsonic noise that cannot be detected with the ultrasonic leak locator. These are the leaks that can often be heard by the unaided ear. (In contrast, the largest cable leak possible, the zero PSI leak, cannot be heard at all.) For this reason, in order for the ultrasonic leak detector to function properly, there must be a minimum amount of pressure in the cable, in most cases at least 3 PSI.

When the ultrasonic leak detector is directed toward a potential leak, it converts the ultrasonic sound emission to a frequency range that can be heard by humans. The sound generated by the detector is 32 times lower in frequency than the sound that is received. The headphones provided with the unit serve to eliminate surrounding “white noise” and amplify the converted signal generated by the detector. The result is a clear, audible indication of the actual location of the leak.

Supplied Equipment

The Part No. 9800-3750 Ultrasonic Leak Detector (shown above) includes a plastic carrying case that contains the following components:

- Ultrasonic leak detector
- Form-fitting protective canvas cover with adjustable shoulder strap
- Flexible tubing adapter
- Tubing extension
- Parabola
- Headphones with male/male jack plug cable



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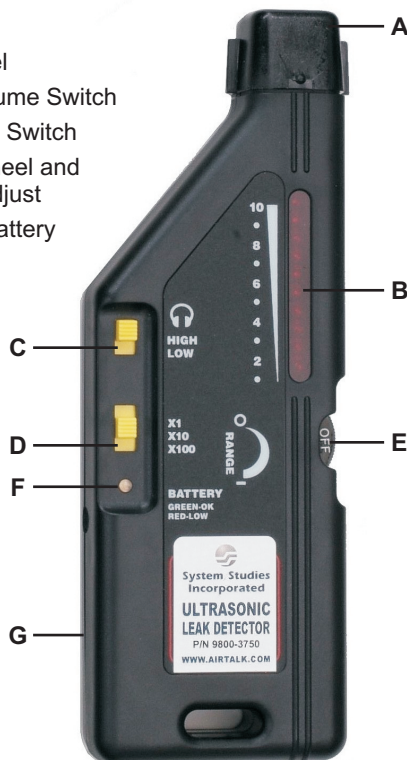
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The parabola (or collector) assembly is used to dramatically reduce the ultrasonic background noise in cases where there is intense ultrasonic activity. It helps to focus signal reception to a more specific location. Once again, the detector's internal amplifier converts this ultrasonic signal into an audible, intermediate frequency that is transmitted to the technician through the attached headphones. Another method of reducing ultrasonic background noise is to attach the supplied tubular extension to the adapter and place it over the sensor horn at the tip of the detector unit. This effectively extends the sensor horn, carrying the sound from places that are too difficult to reach.

Operational Overview

The Ultrasonic Leak Detector consists of a sensor horn at the tip, an LED display which indicates the sensitivity level, a head phones volume switch, both a coarse sensitivity switch and a fine sensitivity adjustment, power on/off wheel and a fine sensitivity adjust, power on/off wheel, and a battery strength indicator.

- A. Sensor Horn
- B. LED Display Panel
- C. Head Phones Volume Switch
- D. Coarse Sensitivity Switch
- E. On/Off Thumb Wheel and Fine Sensitivity Adjust
- F. Power and Low Battery LED Indicator
- G. Battery



It is a simple instrument to use, as explained in the accompanying instruction sheet. A key to effectively using the device is being able to point it directly at the suspected leak. In some cases, attaching the tubing extension may provide the means necessary.

Specifications

Operating Temperature:	32° F to 100° F (0° C to 38° C)
Storage Temperature:	-40 F°° to 150 F (-40° C to 66° C)
Weight:	6.3 ounces (180 grams) with Battery
Dimensions:	Length: 7.3 in (185.4 mm) Width: 2.5 in (63.5 mm) Thickness: 1.0 in (25.4 mm)
Frequency Response:	35 kHz to 45 kHz + 6db
Power Consumption:	22 mA at 9-Volts DC (Duracell #MN1604)
Battery Life:	33 Hours with 9-Volt alkaline battery (NEDA 1604A, IEC 6LR651)
Performance:	Meets the ASTM standard, ASTM E1211-07
Battery Test:	LED battery color indicator: Green-good / Red-replace
Case:	High impact ABS plastic



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