System Studies Incorporated

Hydrogen Leak Detector

Product Information **9800-0042**

…utilizing the ideal tracer gas for locating cable leaks

Over the years, tools and techniques for leak locating in cable pressurization systems have come a long way. Using gas detecting equipment to “sniff out” tracer gas has been a valuable component of a field technician’s array of weapons for tracking leaks. However, each gas detector has had practical drawbacks—either limited portability of the equipment or the inherent characteristics of the tracer gas being used.

Hydrogen is the ideal leak detection tracer gas because of its low viscosity and density. The low viscosity gives hydrogen a very high penetration rate along tightly packed cables and through leaks. It is the lightest substance in the universe (about 15 times lighter than air) and, therefore, very easy to ventilate away when released in utility holes. Used in ducted cables, it follows the natural draft along the duct, giving a clear indication of where the leak is. No gas upstream, and plenty downstream.

It also has several advantages over other tracer gases. Its viscosity is less than half that of air, while helium has a higher viscosity than air. Hydrogen is totally nontoxic, and has no adverse effects on the environment. It is also the cheapest tracer gas available, especially when an industrial grade is used.

Hydrogen has not been widely used for pressurized cable leak locating for two basic reasons. First, it is commonly regarded as being too dangerous because of the potential for explosion when handled in high concentrations. Second, until recently, no suitable hydrogen leak detectors have been available.

System Studies Incorporated now provides the industry’s most practical, responsive, and easy-to-use Hydrogen Leak Detector (Part No. 9800-0042). This lightweight, portable tool simplifies the process of locating cable leaks in utility holes, conduits and central offices. Once you have narrowed down your search area using conventional leak locating formulas and placed the hydrogen gas mixture in the leaking cable, you can begin “sniffing” for the leak almost immediately. The Hydrogen Leak Detector's incredibly fast response time and high sensitivity put you on top of the leak before other more cumbersome, less responsive tracer gas detectors can be set up for operation.

The tracer gas used with this detector is a standard industrial gas mixture containing 5% hydrogen (H_2) and 95% nitrogen (N_2). The hydrogen is traced by the detector, and the nitrogen acts as a safety buffer. When purchased ready-mixed with nitrogen, the gas is totally nonflammable as long as it contains less than 5.7% hydrogen (per ISO 10156:1996). Please note that high concentrations of hydrogen gas must never be used for leak locating.

The Hydrogen Leak Detector is also priced low enough so that one instrument can be purchased for each maintenance truck. This places a valuable leak locating tool on the job, in the hands of the technician, when it’s needed most—when he or she visits a utility hole the first time, not a day or two later at twice the labor expense.

Part No. 9800-0042

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Key Features and Advantages:

- **Compact size and light weight.** Unlike some of the substantially bigger and heavier tracer gas detectors used for leak locating, the Part No. 9800-0042 Hydrogen Leak Detector is a relatively small, ergonomic hand-held unit. It weighs just over 9 ounces.
- **Convenient Carrying Case.** The product comes with a protective plastic, foam- filled carrying case for storing and transporting the leak detector unit, as well as a battery charger and headphone. The hard-shell case closes securely with two latches.
- **Easy-to-Use Keypad Control Functions.** On the face of the Hydrogen Leak Detector is a membrane touchpad with two flush-mounted operational controls: On/Off (which also functions as the Zero Calibration control for resetting the unit prior to taking a new reading) and Set, which turns the audible signal on or off and which also can be used for manual suppression of background hydrogen concentrations. The On/Off button also serves to turn on a LED lamp to assist with identifying a leak location in dark working environments.

  Located above the two control buttons are five LEDs that provide operational signals and provide an optical indication of the amount of tracer gas detected. The unit is incredibly simple to operate, and includes an attached set of laminated quick-step operating procedures for reference. Also included in the case is a CD that contains a PDF file of the manufacturer's more detailed Operating Manual.
- **Short Warm Up Time for Readings.** After the turning on power to the detector, the unit warms up and is ready for operation in less than 90 seconds. Many other leak detectors can take several minutes before a reading is possible.
- **Response Time.** Both displayed (LED) and audible gas detection signals are provided in one to two seconds. This represents a major improvement over most other gas detectors.
- **Recovery Time.** Like the initial response time, the Hydrogen Leak Detector can be moved from one reading location to another where it provides a new, accurate reading within one to two seconds.
- **LED Display Scale.** The reading display shows the concentration of detected gas as a relative value on a scale, consisting of a linear array of lights. As the concentration in parts per million (ppm) increases, more LEDs light up.
- **Audible Detection Indicator.** The Leak Detector also provides an audible output. When the unit begins to pick up measurable traces of hydrogen, the signal gets louder as you approach the leak.
- **Earphone Assistance.** To help identify detected traces of hydrogen gas in environments with a high background noise level, the Part No. 9800-0042 includes a plug-in earphone attachment. Please note the audible signal is used, in addition to the LED array, to confirm varying concentrations of tracer gas.
- **Rechargeable Batteries.** The Hydrogen Leak Detector uses four AA-size rechargeable batteries for operation. The supplied AC charger restores maximum battery capacity in a totally discharged unit in approxim ately 12 hours.
- **Convenient Car Charger.** Also supplied is a charging attachment for use with your vehicle's cigarette lighter receptacle.

Specifications

Model No.:	Part No. 9800-0042
Physical Size:	Length: 18.9 in (480 mm) Width: 1.73 in (44 mm) Height: 1.1 in (28 mm) Weight: 9.17 oz (260 g) Measuring Sensor: 12.6 in (320 mm)
Electrical:	Power Supply: Rechargeable batteries Power Consumption: 1.5 watts Operating Period: 5 hours
Start-up Time:	< 90 sec
Response Time:	1 to 2 sec
Temperature/Humidity:	Operating Temperature Range: 5° F to 122° F (-15° C to +50° C) Storage & Transport Temperature Range: -13° F to 122° F (-25° C to +50° C) Storage & Transport Humidity Range: 20% to 80% rel. hum.
Sensitivity:	Reads hydrogen (H) concentration from 0 ppm to 200 ppm: Green LED – 0 ppm Yellow LED 1–10 ppm Yellow LED 2–20 ppm Red LED 1–100 ppm Red LED 2–200 ppm
Audio Signal:	Proportional to the leak rate. Optional earphones plug into the handheld unit.

For ordering information, contact your product procurement department or call System Studies Incorporated.

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