

O P E R A T I N G   M A N U A L



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# GAS-Mate™

Combustible Gas Leak Detector

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# DECLARATION OF CONFORMITY

This is to certify that this equipment, designed and manufactured by Inficon® Inc., 2 Technology Place, East Syracuse, NY 13057 USA meets the essential safety requirements of the European Union and is placed on the market accordingly. It has been constructed in accordance with good engineering practice in safety matters in force in the Community and does not endanger the safety of persons, domestic animals or property when properly installed and maintained and used in applications for which it was made.

<b>Equipment Description</b> . . . . .	GAS-Mate™ Combustible Gas Leak Detector
<b>Applicable Directives</b> . . . . .	89/336/EEC as amended by 93/68 EEC 94/9/EC
<b>Applicable Standards</b> . . . . .	EN50081-1, EN50082-1, EN50014, EN50020
<b>CE Implementation Date</b> . . . . .	January 2000
<b>Intrinsically Safe</b> . . . . .	Group II, Category 3, Subdivision C per EN50014
<b>Authorized Representative</b> . . . . .	Gary W. Lewis Vice President - Quality Assurance Inficon Inc. Two Technology Place East Syracuse, NY 13057

Any questions relative to this declaration or to the safety of Inficon's products should be directed, in writing, to the quality assurance department at the above address.

## CERTIFICATION

Intrinsically Safe, USA . . . . .	Class I, Division I, Group A, B, C and D UL913 Certified by MET Laboratories, Inc. Listing #E112145
Intrinsically Safe, Europe . . . . .	Group II Category 3 Subdivision C Gases Temperature Code 160 °C (T3) 10 °C ≤ Tamb ≤ 45 °C EN50014



### CAUTION / WARNING

**This symbol is intended to alert you to the presence of important operating and maintenance (servicing) instructions in this manual.**

## INTRODUCTION

Thank you for buying the Inficon® GAS-Mate™ Combustible Gas Leak Detector. The Gas-Mate is an intrinsically safe instrument designed to detect leaks of a variety of combustible gases. It can be used for many leak testing applications including, but not limited to:

- ❖ Combustion appliances
  - ▶ Gas fired Furnaces
  - ▶ Gas stoves
- ❖ Hydrocarbon cooled refrigeration
- ❖ Gas pipelines, valves and meters
- ❖ Heat Exchanger testing with combustible gases

The GAS-Mate is sensitive to a variety of hydrocarbons and other gases including, but not limited to:

Natural Gas	Cyclopentane	Isobutane
Methane	Propane	Ethane
Butane	Ammonia	Ethanol

To get the best performance from your GAS-Mate Combustible Gas Leak Detector, please read this manual carefully before you start using the instrument. If you have any questions or need additional assistance, please call 800-344-3304. We'll be happy to help you!

Inficon is a registered trademark of Inficon Inc.  
Gas-Mate and Laboratory Accurate, Toolbox Tough are trademarks of Inficon Inc.

## **GAS-MATE'S HIGH PERFORMANCE FEATURES**

- ❖ New, highly advanced thick film sensor.
- ❖ Small sensor and probe tip allow leak checking in tight spaces.
- ❖ Automatic adjustment (zeroing) to combustible gases in leak test area for greater stability.
- ❖ Maximum set-point (fixed) and adjustable sensitivity settings for faster pinpointing of leaks.
- ❖ Rugged flexible probe.
- ❖ Variable pitch audible leak signal as well as flashing LED to indicate leak.

## **SPECIFICATIONS**

Sensitivity . . . . .	5 PPM Methane
Operating temperature range . . . . .	50 °F to 113 °F (10 °C to +45 °C)
Storage temperature range . . . . .	14 °F to 140 °F (-10 °C to +60 °C)
Humidity . . . . .	85% non-condensing
Power Supply. . . . .	Two "D" cell alkaline batteries
Battery Life . . . . .	Approximately 60 hours
Weight (with power cells). . . . .	1.5 lb (0.7 kg)



## **PRODUCT WARNINGS**

To prevent ignition of a hazardous atmosphere, batteries must only be changed in an area known to be nonhazardous.

**AVERTISSEMENT:** Afin de prévenir l'inflammation d'atmosphères dangereuses, ne changer les batteries que dans des emplacements désignés non dangereux

Use only Duracell® MN1300 batteries to maintain intrinsically safe approval.

Always check instrument operation with a known combustible leak source before using.

The GAS-Mate will detect leaks as described below but may not indicate when a hazardous atmosphere is present due to its Auto Zeroing operation. Lack of a reading by the GAS-Mate should not be taken as an indication that the atmosphere is totally safe.

To maintain intrinsically safe approval the bail clip must be securely latched over the battery compartment door. Worn or damaged locking tabs on the battery door may reduce the bail clip's ability to lock in place. This may also impair the intrinsically safe status of the instrument.

There are no user serviceable parts inside.

## **GETTING STARTED**

1. Your combustible gas sensor comes installed in the tip of the GAS-Mate.
2. Install the two "D" sized alkaline batteries (see page 6).
3. Turn the power switch on to the MAX position.
4. Wait for the GAS-Mate to warm up. The high pitched audible tone will change to a steady chirp and the LED alarm indicator will flash slowly. The warm up time is approximately 30 seconds, but will vary depending on the length of time since the unit was last used.

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## USING THE GAS-MATE

1. The GAS-Mate has two modes of operation, a fixed sensitivity mode (MAX) and an adjustable sensitivity mode (ADJ). The instrument is most sensitive when the power switch is set to the MAX position. In this setting the sensitivity slide adjustment has no effect. MAX is the setting which should be used when searching for very small leaks. The ADJ setting allows the user to reduce the sensitivity using the sensitivity adjustment slide. This can be very helpful for pinpointing the location of larger leaks. In both operating modes, the automatic background zero function keeps the instrument stable, eliminating the need to frequently readjust the sensitivity.
2. In clean air, the audio alarm will chirp and the ALARM LED will flash at a slow, steady rate. When the GAS-Mate detects the presence of a combustible gas, the chirp rate of the alarm increases in proportion to the size of the leak. The rate of flashing of the ALARM LED also increases with the increase in gas concentration.
3. The LOW BAT LED is normally extinguished, but illuminates when the batteries need to be replaced. The GAS-Mate will continue to operate for an hour or more after the LOW BAT LED has illuminated.

## OPERATING TIPS

1. Turn the GAS-Mate on and adjust the sensitivity setting in a non contaminated area for ideal leak checking conditions.
2. Carry the GAS-Mate into the area of the suspected leak. An alarm at this time indicates a build up of combustible gas in the general area. The automatic background zero function (which is constantly working) will zero out the background gas and the alarm will slowly return to a slow tick. When the unit has stabilized again proceed towards the suspected leak site. The GAS-Mate will continue to indicate changes in gas concentration by giving an alarm signal as the concentration increases.

3. Move the probe tip slowly (approximately 2-5 centimeters per second) around the suspected leak sites. Try to position the probe tip as close as possible to the suspected leak site for optimum performance. An increase in the chirp rate and flashing LED indicates a leak.
4. To confirm a leak, pull the probe away from the leak and allow the instrument to stabilize (alarming to cease). Repeat step 3.
5. It is normal for the alarm to sound when the sensitivity is being adjusted, either with the slide adjustment or when switching between the ADJ and MAX settings. The alarm will stop as soon as the unit stabilizes at the new sensitivity setting.
6. After exposure to very high concentrations of some gases, the sensor may require several minutes to recover to the normal operating condition (for the unit to stabilize).
7. Store your Inficon GAS-Mate in a clean place, protected from shock, impact, or other possible damage. We suggest storing it in the hard plastic carrying case that comes with the unit.
8. For more information on sensitivities or your specific application, please call the factory at 1-800-344-3304.

## HOW TO INSTALL THE ALKALINE BATTERIES



**WARNING:** To prevent ignition of a hazardous atmosphere, batteries must only be changed in an area known to be nonhazardous.

**AVERTISSEMENT:** Afin de prévenir l'inflammation d'atmosphères dangereuses, ne changer les batteries que dans des emplacements désignés non dangereux.

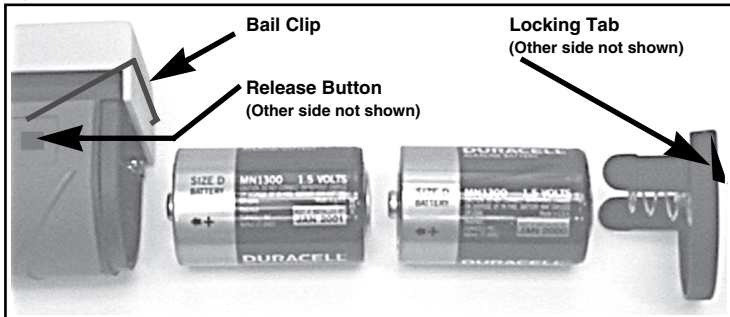
**CAUTION:** Use only Duracell® MN1300 "D" size batteries to maintain intrinsically safe approval.

1. Slide the bail clip over the locking tabs and away from the battery compartment door. See Figure 1. You may need to use a small flat-blade screwdriver to assist with sliding the bail clip over the locking tabs.
2. Remove the battery compartment door on the back of the GAS-Mate by pressing on both release buttons on the grip and pulling the door straight out.
3. Insert the two "D" sized alkaline batteries into the battery compartment with the positive ends first.
4. Replace the battery compartment door by aligning the two tabs and sliding the door straight in until it latches.
5. Slide the bail clip over the battery compartment door and over the locking tabs such that the bail clip is held securely in position.



**WARNING:** Failure to return the bail clip to its locked position may impair the GAS-Mate's intrinsically safe status. Worn or damaged locking tabs on the battery door may reduce the bail clip's ability to lock in place. This may also impair the intrinsically safe status of the instrument.

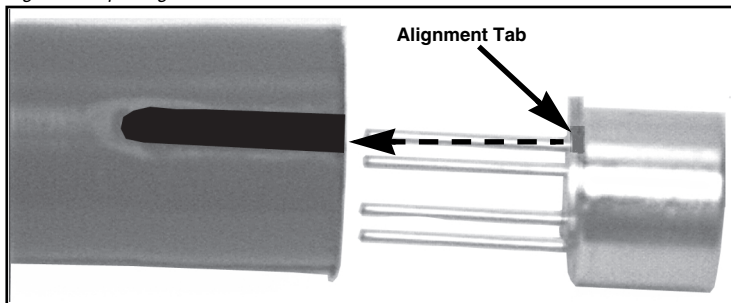
Figure 1. Battery Compartment



## HOW TO CHANGE THE SENSOR

1. When the unit is shipped to you, the sensor comes installed in the tip of the GAS-Mate probe.
2. Insert a paper clip or a small screwdriver under the sensor through the slot in the probe tip and carefully slide the sensor out of the end of the probe tip as seen in Figure 2.
3. Remove the new sensor from it's packaging and install it by aligning the tab on the metal sensor can with the slot in the probe tip and gently sliding the sensor into the tip. Be certain that the four wire leads on the sensor fit into the four holes at the base of the probe sensor socket.
4. When properly installed, the top of the sensor should be approximately flush with the tip of the probe.

*Figure 2. Replacing The Sensor*



## TROUBLESHOOTING



### WARNING

**Substitution of components may impair intrinsic safety.**

### AVERTISSEMENT

**La Substitution de composants peut compromettre la sécurité intrinsèque.**

Except for the batteries and the sensor, the internal parts of the GAS-Mate Combustible Gas Leak Detector are not user serviceable. If you experience a problem with your GAS-Mate, follow the steps in the trouble shooting guide below to determine how to remedy your problem. If you can not remedy the problem, take your GAS-Mate to your wholesaler for warranty evaluation.

1. GAS-Mate will not power up.
  - ❖ Batteries are worn out or have been installed improperly. Check for proper installation (refer to Figure 1 on page 6).
2. Poor sensitivity. The GAS-Mate runs, but will not detect gas leaks.
  - ❖ Sensitivity setting is too low. Increase the sensitivity setting (use the MAX setting).
  - ❖ Sensor is worn out or dead. Install a new sensor (refer to How To Change The Sensor, on page 7).
3. The alarm sounds continuously even after the instrument has warmed up for one to two minutes.
  - ❖ The Sensor is not installed properly or is missing.
    - ▶ The sensor leads must be straight and inserted in the holes at the base of the sensor socket (refer to Figure 2 on page 7).
    - ▶ The orientation tab or key on the sensor must align with the slot in the probe tip.
  - ❖ The Sensor is worn out or dead.
    - ▶ Install a new sensor (refer to How To Change The Sensor, on page 7).

## **DISPOSING OF THE ALKALINE BATTERIES**

At the end of the life of your set of alkaline batteries, please dispose of them according to applicable state and local regulations. In the absence of such regulations, Inficon encourages its customers to recycle and/or dispose of the cells through voluntary waste recycling programs.

## **REPLACEMENT PARTS AND ACCESSORIES**

Replacement parts and accessories for your Inficon GAS-Mate Combustible Gas Leak Detector are available through the same dealer from whom you bought the instrument.

Plastic storage case . . . . . 706-701-G1

Replacement sensor . . . . . 706-700-G1

## **WARRANTY AND LIABILITY**

**Inficon warrants your GAS-Mate Combustible Gas Leak Detector to be free from defects of materials or workmanship for two (2) years from the date of purchase. Inficon does not warrant items that deteriorate under normal use, including power cells and sensors. In addition, Inficon does not warrant any instrument that has been subjected to misuse, negligence, or accident, or has been repaired or altered by anyone other than Inficon.**

**Inficon's liability is limited to instruments returned to Inficon, transportation prepaid, not later than thirty (30) days after the warranty period expires, and which Inficon judges to have malfunctioned because of defective materials or workmanship. Inficon's liability is limited to, at its option, repairing or replacing the defective instrument or part.**

**This warranty is in lieu of all other warranties, expressed or implied, whether of Merchantability or of Fitness For A Particular Purpose or otherwise. All such other warranties are expressly disclaimed.**

**Inficon shall have no liability in excess of the price paid to Inficon for the instrument plus return transportation charges prepaid. Inficon shall have no liability for any incidental or consequential damages. All such liabilities are excluded.**

## **RETURN AUTHORIZATION PROCEDURE**

Defective GAS-Mates, or defective replacement parts and accessories, should be returned to your wholesaler for warranty evaluation. If you have any questions, please contact Inficon at 800-344-3304.

Please, do not return your defective unit directly to the factory without first contacting your wholesaler.



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