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**Whisper™**  
Ultrasonic Leak Detector

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## DECLARATION OF CONFORMITY

This is to certify that this equipment, designed and manufactured by INFICON® Inc., Two 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.

Equipment Description . . . . Whisper™ Ultrasonic Leak Detector  
Applicable Directives . . . . 73/23/EEC as amended by 93/68/EEC  
89/336/EEC as amended by 93/68/EEC  
Applicable Standards . . . . EN61010-1: 1993 EN55011, Group 1,  
Class A: 1991 EN50082-1: 1992  
CE Implementation Date . . . January 15, 2001  
Authorized Representative . Gary W. Lewis  
Vice President, Quality Assurance  
INFICON, Inc.

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.



### **WARNING**

**This symbol is used to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying this instrument.**

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## **INTRODUCTION**

The Whisper™ will detect and locate sources of ultrasonic disturbance through the use of sophisticated ultrasonic/electronic circuitry.

An ultrasonic disturbance is created when objects collide. Vacuum leaks create collisions between molecules entering into an orifice. Pressure leaks create collisions between molecules exiting an orifice. All gases and liquids create disturbances if forced into, or out of, an orifice. All solid materials create disturbances when any friction exists.

The Whisper is therefore capable of detecting and locating sources of ultrasonic disturbances created by gases, liquids or solids.

To diagnose equipment problems or to locate the source of leaks, follow the instructions as outlined in this instruction manual.

## **GENERAL INFORMATION**

The Whisper is a very sensitive instrument used to detect and locate the source of vacuum and/or pressure leaks of liquids and/or gases. The unit is sensitive only to ultrasound (40.5 kHz) and is unaffected by audible noise.

INTERNAL NOISE CONTROL (I.N.C.) allows the use of this instrument in extremely noisy environments such as mechanical rooms, around operational chillers, etc. Rotate the “Sensitivity” knob clockwise to increase sensitivity with a decrease in noise reduction. Rotate the “Sensitivity” knob counterclockwise to reduce sensitivity with an increase in noise reduction. The I.N.C. works much like a two way radio squelch allowing only the strongest and closest signals to penetrate the electronic wall built by the I.N.C. circuitry.

## APPLICATIONS

- ◆ A/C Refrigerant Leaks (Any and all types of refrigerant)
- ◆ Locating Worn Bearings
- ◆ Leaks in Pneumatic Control Systems
- ◆ Leaks in Natural Gas, LPG Leaks
- ◆ Leaks in Compressed Air Systems
- ◆ Leaks in Vacuum Systems
- ◆ Butane/Propane Storage Tank Leaks
- ◆ Locate Leaking In-Line Valves whether Leaking Internally or to Atmosphere
- ◆ Line Set Leaks In Foundation/Walls
- ◆ Diagnosing Solenoid Operations
- ◆ Steam Traps
- ◆ Electrical Arcing

## SPECIFICATIONS

Usage . . . . .	Indoor or Outdoor
Operating temperature range . . .	+32 °F to +122 °F (0 °C to +50 °C) <sup>1</sup>
Storage temperature range . . .	+14 °F to +140 °F (-10 °C to +60 °C)
Humidity . . . . .	85% RH NC Max.
Altitude . . . . .	6500' (2000 m)
Power Supply . . . . .	One 9 Volt alkaline battery
Battery Life . . . . .	Approximately 50 hours
Pollution Degree . . . . .	2
Overvoltage category . . . . .	2
Weight (with battery). . . . .	9 oz. (0.25 kg)

1. May be operated for a limited time in lower temperature environments.

## LOCATING LEAKS

**NOTE:** Bumping the probe into objects while seeking leaks will cause false leak indications. Leaks will be indicated by an increase in the audible tick rate. Disregard occasional short term alarms.



### **WARNING**

**Always keep clear of hot and/or moving engine and machinery parts. Damage or injury could result.**

1. Slide power switch to the on position and rotate the “Sensitivity” control knob to the maximum clockwise position. This sets the sensitivity for maximum gain.
2. While holding the Whisper, point the probe in the direction of the suspected leakage and scan the area using a slow “X”, a vertical and horizontal type sweeping motion, while keeping the probe pointed straight in the general direction of the suspected leak.
3. If the audible ticking rate increases, this indicates the presence of an ultrasonic disturbance. Begin turning the “Sensitivity” knob very slowly in a counter-clockwise direction until the ticking rate returns to normal.
4. Move closer to the suspected leak, continuing the pattern sweep, narrowing the range of the sweep by making smaller patterns until the ticking rate once again increases. This will lead the probe to the location of the disturbance. If an exact location is desired, attach the flexible rubber extension to the probe and repeat step 3.
5. Repair all leaks as located and repeat scan.

## **HIGH NOISE ENVIRONMENTS**

In noisy environments, it may be necessary to “tune out” unwanted signals from other areas in close proximity to where you are scanning for leaks. Begin by attaching the rubber extension over the probe. When the extension is attached, the sensing angle of the system is reduced, thereby increasing the directional capability and reducing the effects of the adjacent noise sources. This allows the probe to become more directional. If you suspect your reading to be originating from a source other than what you are scanning, point probe toward suspected other source (may be a compressor, v belt, discharging steam line, etc.) and slowly turn “sensitivity” knob counter-clockwise until the alarm stops. Turn probe back toward direction of suspected leak and continue to scan. This step may have to be repeated as you move around to other locations in search of leaks. If probe is close to internal moving parts of equipment, and the alarm sounds, push rubber probe against housing of equipment. If the alarm still sounds, internal friction of moving parts and not a leak source, may be causing the alarm.

## **GENERAL VACUUM OR PRESSURE LEAKS**

Follow instruction under [LOCATING LEAKS](#), on page 5.

## **SOLENOID OPERATION**

1. Attach rubber extension over probe end.
2. Turn “Sensitivity” knob to maximum clockwise position.
3. Push end of extension against solenoid body.
4. Energize solenoid, the alarm should sound then return to normal.

## AIR CONDITIONING/REFRIGERATION

**TIP:** If fresh refrigerant oil is visible wipe off as much oil as possible, then scan.

### 1. CHARGED SYSTEM

- 1a. If possible, turn system off. This will allow you to scan for leaks at maximum sensitivity.
- 1b. Scan the system using procedures in [LOCATING LEAKS, on page 5](#).
- 1c. If no leak is found with system off, start system up and scan for leaks, referring to operational procedures in [HIGH NOISE ENVIRONMENTS, on page 6](#).

### 2. DISCHARGED SYSTEMS

- 2a. Evacuate system as required. You may scan during vacuum.
- 2b. Scan the system using procedures in [LOCATING LEAKS, on page 5](#).

## FOUNDATION LEAKS, UNDERGROUND LEAKS, LEAKS BEHIND WALLS.

Concealed leaks are the most elusive of leaks. Proper use of equipment and interpretation of test data are extremely important.

1. Pressure system to be scanned to maximum possible pressure.
2. Use the maximum sensitivity setting possible.
3. Point the Whisper in the direction of and as close as possible to the suspected leak area. If the probe is in contact with a surface, hold it steady since rubbing or rocking against a surface will cause false signals.
4. Follow directions under [LOCATING LEAKS, on page 5](#).

## BEARINGS

Bearings may be checked with the Whisper by the following procedure:

### 1. Comparative Testing

- 1a. Attach rubber extension over probe end.
- 1b. Turn “Sensitivity” knob to maximum clockwise position.
- 1c. On new bearings or bearings known to be in proper working order, push probe end against pillow block or bearing housing assembly.

**NOTE:** Make sure probe end on housing is completely sealed. This will eliminate stray ultrasound from entering probe end, allowing detector to hear activity only inside bearing housing.

- 1d. The detector should not sound alarm. If it does, rotate “Sensitivity” knob counter-clockwise until the audible signal returns to normal.
- 1e. Do not readjust “Sensitivity” knob. Repeat step C in same location on suspect bearing as known good bearing. If the alarm sounds, suspect bearing has more internal friction occurring than known good bearing.

**NOTE:** Many bearings, even new ones, may have some internal friction occurring. You may find it necessary to customize this technique to establish your own testing parameters. The Whisper is not a bearing analyzer. However, when used properly, it can be an effective way of quickly spotting problem bearings before costly and irreparable damage occurs.

## STEAM TRAPS

1. Attach rubber extension over probe end.
2. Switch unit on and turn “Sensitivity” knob to full clockwise position.
3. Place end of rubber extension against steam trap body as close to internal working parts as possible, taking care to assure end of rubber probe is sealed against trap body. This will prevent stray ultrasound in the area from entering the probe end.
4. A sustained alarm means live steam or condensation is flowing through the trap. Rotate “Sensitivity” knob slowly counter-clockwise until the alarm returns to normal. Continue holding probe against trap. Do not readjust Whisper on this trap.
5. If, after the normal trap cycle time, the alarm sounds, trap is shown to be leaking internally prior to proper opening of internal mechanism (example: partially open bi-metallic trap).



### **WARNING**

**Do not touch end of rubber extension immediately after testing trap. High temperature burn could occur.**

## ELECTRICAL ARCING

1. Attach rubber extension over probe end.
2. Follow instructions under [LOCATING LEAKS](#), on page 5.

## INSULATED PIPE LEAKS

Gas or liquid sometimes exits through the insulation some distances from the actual leak. Follow [LOCATING LEAKS, on page 5](#) to pinpoint leaks sources.

**TIP:** When working with insulated pipe, always work with the highest pressure possible. The smaller the hole, the higher the pressure, the more ultrasound produced by the leak source.

## TRANSMITTER ACCESSORY

The Whisper Transmitter is an accessory which can be used with the Whisper Ultrasonic Leak Detector to locate leaks in walk in coolers/freezers, wall and ceiling joints, around doors, windows, body seals, rubber moldings, ducts, etc. The Transmitter produces the exact frequency as received by the Whisper. Therefore, by placing the Transmitter in a sealed area, and scanning the exterior of this area, any signal escaping from the sealed area will be indicated by a reading on the Whisper. A flaw in the seal can quickly and accurately be located and pinpointed.

You may then effect repairs and re-scan the area for any further seal integrity breaches.

1. Turn the power switch on. The LED will illuminate to indicate the Transmitter is operating.
2. Place the Transmitter into the area to be tested. Seal area to be tested completely.
3. Set the "Sensitivity" control of the Whisper to maximum.
4. Scan the exterior area for the suspect leaks. Leaks will be indicated by a constant alarm from the Whisper.
5. To pinpoint leaks, see [LOCATING LEAKS, on page 5](#).

## **CARE AND MAINTENANCE**

To clean exterior surfaces, wipe with a soft damp cloth.

To change the battery, depress the release tab using a coin or a screwdriver and slide the cover back. Replace the battery with a 9 volt alkaline battery. Replace the cover by holding it in place along the side rails while sliding it forward to engage both the rear hooks and the front release tab.

## **WARRANTY**

INFICON warrants your Whisper Ultrasonic Leak Detector to be free from defects of materials or workmanship for one year from the date of purchase. INFICON does not warrant items that deteriorate under normal use, such as power cells. 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, express 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.



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