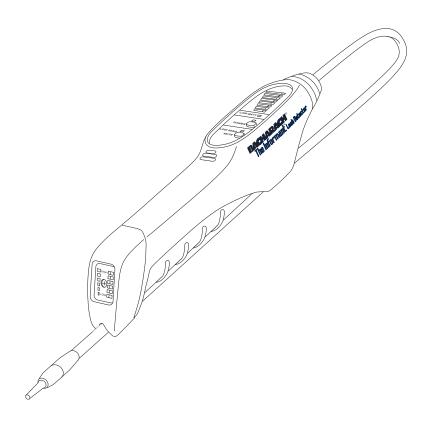


The Informant™ Refrigerant Leak Detector

Instruction 0019-9210 Operation & Maintenance

Rev. 6 - May 2010



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conforms to the following specifications: European Directive 89/336/EEC EN 50081-1: 1992 (Emissions) EN 50082-1: 1998 (Immunity) EN 61000-4-2: 1995 (Electromagnet) EN 61000-4-3: 1995 (Electromagnet)

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Introduction

The Informant Leak Detector (Figure 1) is a portable, battery powered instrument designed to pinpoint the location of refrigerant leaks in air conditioning and refrigerant systems, chillers or cold storage units.

The detector is designed to be quickly responsive to all refrigerants, even when high levels of background vapors or refrigerant are present. No manual sensitivity adjustments are necessary during the inspection process.

The detector is suitable for HVAC Service Technicians, Refrigerant Service Technicians, Plant Maintenance Departments, Automotive Service Facilities, and Refrigerant & Environmental Chamber Manufactures who are in need of a small, lightweight and rugged detector that is capable of detecting and then pinpointing small to large gas leaks in tight spaces such as those found in refrigeration units and automobile engine compartments.

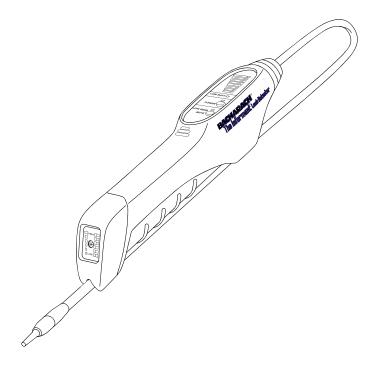


Figure 1. The Informant Refrigerant Leak Detector

Features

- · Quickly pinpoints the location of refrigerant leaks
- Patented sensor that represents the latest advancements in sensor technology
- · Microprocessor-controlled circuitry
- Dual bar-graph LED's, located both on top and at the rear of the detector, provide visual indication of the refrigerant level from a wide variety of viewing angles
- · Audible refrigerant-level indicator with mute feature
- Flashing probe tip refrigerant-level indicator
- · Low-sensitivity mode, pushbutton selectable
- Automatic zero and background compensation that allows a leak to be quickly found in contaminated atmospheres without requiring manual sensitivity adjustments
- Flexible probe that allow it to be either "docked" in its storage position for close-up leak testing, or unfolded to its maximum length of 20 inches (508 mm) for locating leaks in hard-to-reach areas
- · Filter in probe tip prevents dust, dirt and water from reaching sensor
- One-handed operation
- · No user calibration required
- Long life, DC brushless fan provides positive airflow past sensor resulting in a faster response time
- · Batteries included
- · Optional protective rubber boot
- · One year warranty
- · Extended warranty available
- · Made in U.S.A.

Technical Characteristics

Power Four 'AA' Alkaline Batteries Warm-Up Time 10 seconds Refrigerants Detected All CFC, HCFC and HFC refrigerants including: R-12, R-22, R-123, R-134a and blends R-404A, R-408A, R-409A, and R-410A (i.e., any refrigerant containing Chlorine, Fluorine or Bromine gas) Sensor: Type Heated Diode, Dispersive Electron, Plug-In Life Expectancy......Typically 150 hours or 1 year of normal use mum [reduces to 3 inches (76 mm) when wrapped around instrument], includes integral sensor, filter, and LED. Probe tip is 0.2" (5 mm) in diameter and 1" (25 mm) long. Battery Life4-5 hours, under typical intermittent operation Visual and Audible Indicators: Power On.....Green LED Low Battery.....Red LED Low Sensitivity ModeAmber LED Relative Refrigerant Level The detector responds to an increasing change in refrigerant level by activating its visual and audible indicators as follows: Visual - Dual LED bar-graphs (located on the top and rear of the detector) begin to progressively glow in series. In addition, an LED located in the probe tip begins to increase its blink rate from an idle rate of once-per-second. Audible – The audible indicator's tick rate begins to increase from its idle rate of onetick-per-second. Sensor Failure...... The middle refrigerant-level LED on both displays glows steady.

Switches: Power Mute	Toggles detector ON/OFF. Toggles audible indicator ON/OFF, and Toggles Low-Sensitivity Mode ON/OFF when switch is held down >3/4 second			
Sampling System Flowrate 40 to 50 cc/min with sensor installed				
Response Time0.2 second				
Sensitivity: Normal	.0.5 oz/year (14 g/yr) of R134a (hardest to detect refrigerant) as detected by moving probe tip at 2" (50 mm) per second, 0.1" (3 mm) above leak source. A leak rate of less than 0.25 oz/year (7 g/yr) can be detected when probe tip is held steady over leak source for at least 5 seconds.			
Sensitivity Adjustment	. Automatic – in either sensitivity mode			
Weight	.0.86 lb (0.39 kg) w/ batteries			
Size (excluding probe)	. 1.75W x 9.62L x 2.25H inches (44.5 x 244.3 x 57.2 mm)			
Probe Length				
Operating Environment: Position Temperature Humidity	0			

Operation

Battery Installation

- 1. See Figure 2. Using a #1 Phillips screwdriver, first loosen the battery door screw located at the rear of the detector; then remove the door.
- 2. Install four 'AA' alkaline batteries into the detector, observing the polarity markings that are molded on the side of the case.
- 3. Reinstall the battery door and tighten its screw.

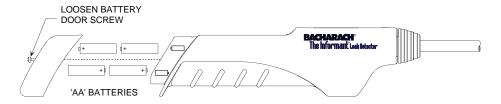


Figure 2. Battery Installation

Turning the Detector ON / OFF

See Figure 3. The detector is toggled ON and OFF by pressing the **POWER** button.

When first turned on, observe that the Power LED glows and that all other LED's are tested by being turned on for 1 second.

The detector requires 10 seconds to warm up. After which time all LED's should be off except for the Power LED, along with the probe tip blinking and audible indicator ticking at approximately once-per-second.

Note that during the warm-up period, the detector has zeroed out any background concentration of vapors or refrigerant that may have been present in the area.

After the detector is turned on and allowed to warm up, it is ready to perform leak testing as described in Section *Procedure for Locating a Refrigerant Leak*.

Low Battery Indication

A low-battery condition is indicated when the **LO BATT** LED glows. There will be approximately 20 minutes of full operation time remaining from the time this LED first turns on; after which, the intensity of all LED's and audible output will gradually diminish.

When a low-battery indication occurs, replace the batteries as described under the previous Section *Battery Installation*.

Audible Indicator Mute

The audible indicator's ticking sound can be toggled on and off by momentarily pressing the **LOW SENS / MUTE** button for less than ¾ second (observe that the **LOW SENS** LED should not be affected by this operation).

Normal / Low Sensitivity Mode

When The Informant is first turned on it defaults to its normal-sensitivity mode (**LOW SENS** LED is off). Placing the instrument into its low-

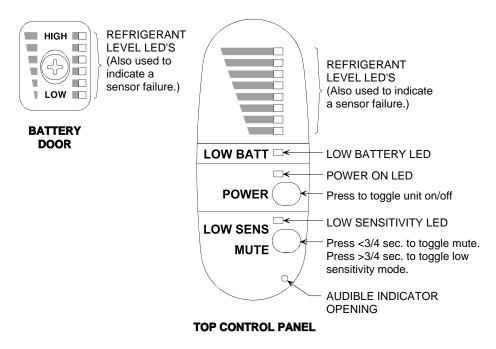


Figure 3. Indicators and Controls

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sensitivity mode helps locate a refrigerant leak source when the leak is large, or where high winds may affect the instrument's operation.

Place the Informant into its low-sensitivity mode by pressing and holding down the **LOW SENS / MUTE** button until the **LOW SENS** LED turns *on*.

Return the instrument to its normal-sensitivity mode by again pressing and holding down the **LOW SENS / MUTE** button until the **LOW SENS** LED turns *off*.

Procedure for Locating a Refrigerant Leak

After the detector is turned on and allowed to warm up, observe that none of the refrigerant level LED's should be glowing. Also note that both the probe tip should be blinking and the audible indicator ticking once per second. All of these indicators show that the detector is currently *not* detecting a *change* in the concentration of refrigerant.

Important: The detector's function is to detect a change in refrigerant level, and not to make a quantitative measurement of the that level. The technique of locating a leak by detecting a change in level allows an operator to quickly locate the source of a leak without making manual sensitivity adjustments, or being concerned about the background vapor or refrigerant level in the surrounding area.

Leak testing can be performed with the probe either "docked" in its storage position for close-up leak testing, or unfolded to its maximum length of 20 inches (508 mm) for locating leaks in hard-to-reach areas.

Begin leak testing by slowly moving the probe toward the area to be tested. If surfaces are dirty or wet, wipe them off with a clean shop towel to prevent filter clogging. Avoid allowing water to enter the probe tip.

When the detector first "sees" an increase in the refrigerant level, all refrigerant level LED's immediately glow along with the probe tip blinking and audible indicator ticking at a very rapid rate. If movement of the probe is stopped for more than 10 seconds, the detector's automatic self-zero feature will cause all refrigerant level LED's to turn off, along with decreasing the blinking and ticking rate of the probe tip and audible indicator, respectively.

Once the presence of refrigerant has been determined and the detector allowed to self zero, moving the probe toward the source of the leak will once again cause the detector to respond in a positive manner. After

which, if the probe is moved away from the leak source, the detector will respond with a lower refrigerant level indication.

Caution: Exposing the sensor to a steady stream of highly concentrated refrigerant will severely reduce sensor life or damage the sensor. Sensor life is directly proportional to the amount of refrigerant that passes through the sensor.

Use the following general procedure to pinpoint the source of a leak:

- 1. Move the probe tip along the refrigerant lines and around the fittings until the detector responds in a positive manner.
- 2. Continue moving in the same direction as long as the instrument remains at full scale. This indicates that the refrigerant concentration is increasing.
- 3. Once the source of the leak has been passed, the detector's refrigerant level indicators will all begin to decrease. At this point, reverse the direction of probing. As the probe tip is moved back and forth across the leak, the detector will automatically adjust its sensitivity to allow the user to pinpoint its source.

Sensor Failure Indication

A sensor failure is indicated by the middle refrigerant-level LED on both displays glowing steady.

Refer to the *Troubleshooting Guide* Section of this manual for information on how to clear this condition.

False Refrigerant Indication

False refrigerant indications are usually caused by abnormal changes in sensor temperature. These temperature changes are typically due to a sudden change in air flow past the sensor, or the sensor being heated by an outside source. To avoid false refrigerant indications, DO NOT...

- allow the probe tip to become clogged with dirt,
- allow the probe-tip filter to become covered with water,
- rapidly wave the probe tip back-and-forth,
- use the detector in windy areas,
- allow the probe tip to contact a hot surface.

Sensor Flooding Indication

When the sensor becomes flooded with a high concentration of refrigerant, observe that the gas-level LED's quickly light full scale and then all turn off, leaving both the audible tick rate and probe tip blink rate at elevated levels. When this condition occurs, move the detector to an area of fresh air until all indicators return to their idle state.

SAE Leak Detection Tips

The following was derived from SAE Surface Vehicle Standard J1628, Technician Procedure for Using Electronic Refrigerant Leak Detectors for Service of Mobile Air-Conditioning Systems:

- The electronic leak detector shall be operated in accordance with the equipment manufacturer's operating instructions.
- · Leak test with the engine not in operation.
- The air conditioning system shall be charged with sufficient refrigerant to have a gauge pressure of at least 340 kPa (49 psi) when not in operation. At temperatures below 15 °C (59 °F), leaks may not be measurable, since this pressure may not be reached.
- Take care not to contaminate the detector probe tip if the part being tested is contaminated. If the part is particularly dirty, it should be wiped off with a dry shop towel or blown off with shop air. No cleaners or solvents shall be used, since many electronic detectors are sensitive to their ingredients.
- Visually trace the entire refrigerant system, and look for signs of airconditioning lubricant leakage, damage, and corrosion on all lines, hoses, and components. Each questionable area shall be carefully checked
 with the detector probe, as well as all fittings, hose-to-line couplings,
 refrigerant controls, service ports with caps in place, brazed or welded
 areas, and areas around attachment points and hold-downs on lines and
 components.
- Always follow the refrigerant system around in a continuous path so that no areas of potential leaks are missed. If a leak is found, always continue to test the remainder of the system.

- At each area checked, the probe shall be moved around the location, at a rate no more than 25 to 50 mm/sec (1 to 2 in./sec), and no more than 5 mm (0.2 inch) from the surface completely around the position. Slower and closer movement of the probe greatly improves the likelihood of finding a leak.
- An apparent leak shall be verified at least once by blowing shop air into the area of the suspected leak, if necessary, and repeating the check of the area. In cases of very large leaks, blowing out the area with shop air often helps locate the exact position of the leak.
- Leak testing of the evaporator core while in the air conditioning module shall be accomplished by turning the air conditioning blower on high for a period of 15 seconds minimum, shutting it off, then waiting an additional 15 seconds minimum for the refrigerant to accumulate in the case, then inserting the leak detector probe into the blower resistor block or condensate drain hole if no water is present, or into the closest opening in the heating/ventilation/air conditioning case to the evaporator, such as the heater duct or a vent duct. If the detector activates, a leak apparently has been found.
- Following any service to the refrigerant system of the vehicle, and any other service which disturbs the refrigerant system, a leak test of the repair and of the service ports of the refrigerant system shall be done.

Maintenance

By following the procedures outlined below, The Informant Leak Detector will provide many years of trouble-free and dependable operation.

Routine Maintenance

- Replace the batteries per Section Battery Installation when the LO BATT LED glows.
- Periodically check the detector's sensitivity by exposing it to a source
 of refrigerant gas. DO NOT check sensitivity by cracking open a bottle
 of refrigerant or Schrader valve and exposing the sensor to a stream of
 pure refrigerant. This will severely reduce sensor life or damage the sensor.
- Routinely check the probe filter. A dirty filter will lengthen the detector's response time, or prevent the detection of gas if the filter has become clogged with dirt or covered with water. A dirty filter will also shorten the life of the sensor, as the result of not allowing enough air to pass over the sensor to keep it cool. Replace a dirty or clogged filter per Section *Probe Filter Replacement*.
- Keep the detector case and probe clean by wiping them with a shop towel. If necessary, moisten the towel with a mild detergent solution. Avoid using any type of solvents that may either attack the detector's ABS plastic case, or leave behind a hydrocarbon residue that may desensitize the sensor.

Probe Filter Replacement

The probe filter is designed to keep dust, dirt, and water from entering into the sensor area.

Replace this filter whenever it becomes clogged as evidenced by the detector not responding in a positive manner to a source of refrigerant gas.

Replace the probe filter as follows (see Figure 4):

Material Required:

• Probe Filter (refer to Section Replacement Parts)

Procedure:

- 1. Turn OFF detector.
- 2. Unscrew probe tip.
- 3. Remove filter from top of sensor and discard.
- 4. Insert replacement filter.
- 5. Reinstall probe tip.

Sensor Replacement

Over time the sensor will become less response to refrigerant gas as it nears the end of its useful life. A sensor's average life expectancy is approximately 150 hours or 1 year of normal use, but will vary depending on the amount of refrigerant that passes through the sensor.

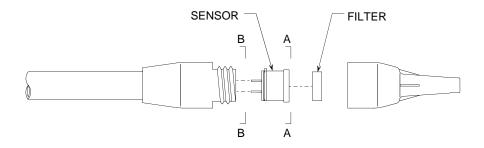
Replace the sensor as follows (see Figure 4):

Material Required:

• Sensor (refer to Section Replacement Parts)

Procedure:

- 1. Turn OFF detector.
- 2. Unscrew probe tip.
- 3. Remove filter from top of sensor; then pull out sensor from its socket and discard.
- 4. Plug in new sensor, making sure that its tab lines up with notch in sensor housing.
- 5. Install filter, which was removed in Step 3, on top of sensor.
- 6. Screw on probe tip.
- 7. Turn ON the detector and check that it responds in a positive manner to a source of refrigerant gas.



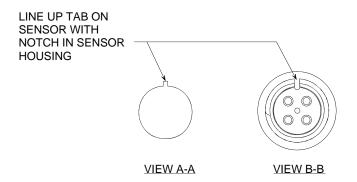


Figure 4. Probe Filter and Sensor Replacement

Probe Assembly or Fan Replacement

Replace the probe assembly or fan as follows (see Figures 5 thru 8):

Material Required:

- Probe Assembly or Fan (refer to Section Replacement Parts)
- #1 Phillips screwdriver
- · Medium flat blade screwdriver

Procedure:

- 1. Turn OFF detector; then remove the battery door and batteries.
- 2. Unscrew probe tip and lay aside.
- 3. Using a medium flat-blade screwdriver, first pry off the front retaining collar as shown in Figure 6. Then, remove the two case screws and pull the case halves apart.
- 4. Unplug both the probe and fan connectors from the printed circuit board, being very careful not to damage the pins on the board; then remove the probe assembly from the detector.
- 5. Remove fan from probe assembly by removing its three screws as shown in Figure 7.
- 6. Depending on whether the fan or probe assembly is being replaced, perform one of the following:
 - a. *If the fan is being replaced:* Discard the old fan and install a new one using the screws removed in Step 5.
 - b. *If the probe assembly is being replaced*: Install the old fan onto the new probe using the screws removed in Step 5. Also, install the sensor from the old probe assembly into the replacement probe assembly refer to Section *Sensor Replacement*.
- 7. Plug both the probe and fan connectors onto their respective header pins on the printed circuit board as shown in Figure 8.

- 8. Position the probe assembly between the two case halves, routing the fan wires through the notches in the case as shown in Figure 8. Then reassemble the case, push on the front retaining collar, screw on the probe tip, and reinstall the batteries.
- 9. Turn ON detector; then check that it responds in a positive manner to a source of refrigerant gas.

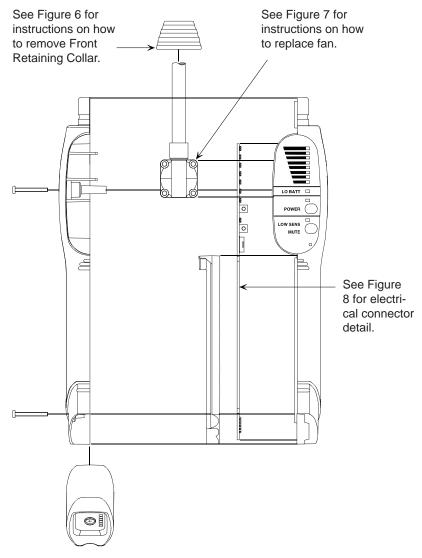


Figure 5. Exploded View of The Informant

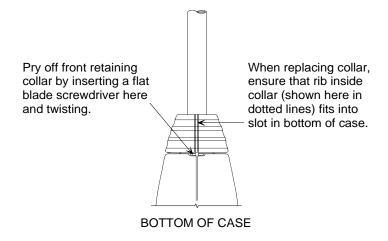
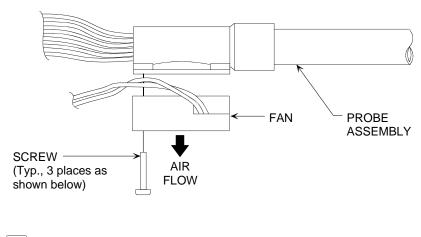


Figure 6. Front Retaining Collar Installation



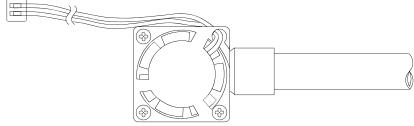
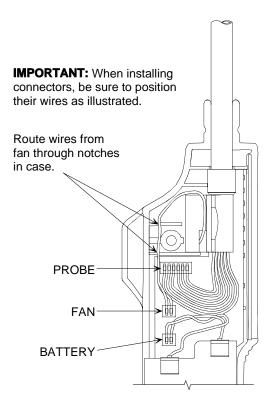


Figure 7. Fan Installation

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Figure~8.~Connector~Locations~on~Printed~Circuit~Board

Troubleshooting Guide

The following table lists the causes and remedies for the most common problems that may occur with the detector.

If the information in Table 1 does not solve the problem, or for help with any problem that is not listed, please contact one of the Bacharach Sales/Service Centers listed in Section *Parts & Service*.

TABLE 1. TROUBLESHOOTING GUIDE

Symptom	Probable Cause & Remedy		
Instrument does not turn on.	a. Batteries are dead or installed backward. Install four fresh 'AA' alkaline batteries per Section Battery Installation.		
	b. Faulty refrigerant sensor. Remove sensor and turn on detector. If detector now turns on, replace sensor per Section Sensor Replacement.		
	c. Loose printed circuit board con- nector. Disassemble detector and ensure that all connectors are securely attached to the printed circuit board. See Figure 8.		
The middle refrigerant-level LED on both displays glows steady.	Sensor depleted or faulty. Replace sensor per Section Sensor Replacement.		
All gas level LED's momentarily light full scale and then turn off, leaving both the audible tick rate and probe tip blink rate at elevated levels.	Sensor "flooded" with refrigerant. Move the detector to an area of fresh air for about 1 minute, or until all indicators return to their idle state.		
Short sensor life.	a. Probe filter dirty, in turn not allowing enough air to flow over sensor to keep it cool. Replace filter often per Section <i>Probe Filter Replacement</i> .		

TABLE 1. TROUBLESHOOTING GUIDE (Cont.)

Symptom	Probable Cause & Remedy
Short sensor life (Cont.).	b. Sensor has often been exposed to high levels of refrigerant. Avoid sampling to pure refrigerant for long periods of time.
Slow gas response time.	a. Probe filter clogged. Replace filter per Section <i>Probe Filter Replacement</i> .
	b. Sensor nearly depleted or faulty. Replace sensor per Section Sensor Replacement.
	c. Crack in rubber sheathing that covers the probe's flexible tube, allowing air to enter through the crack. Replace probe assembly per Section <i>Probe Assembly or Fan Replacement</i> .
	d. Internal fan defective. Replace fan per Section <i>Probe Assembly</i> or Fan Replacement.
Erratic gas indication.	a. Windy conditions. Shut off surrounding fans; protect probe tip from wind; switch to low-sensitivity per Section Normal/Low Sensitivity Mode.
	b. Loose sensor. Unscrew probe tip and ensure that sensor is being held firmly in socket.
	c. Sensor faulty. Replace sensor per Section Sensor Replacement.
	d. Loose printed circuit board con- nector. Disassemble detector and ensure that all connectors are securely attached to the printed circuit board. See Figure 8.

Parts & Service

Complete Kits

•
Refrigerant Leak Detector Kit: including detector, instruction manual, 4 'AA' batteries, and soft carrying case0019-8031
Deluxe Refrigerant Leak Detector Kit: including detector, instruction manual, 6 'AA' batteries, soft carrying case, protective rubber boot, and MagLite, all packaged in a hard carrying case
Optional Accessories
Deluxe Upgrade Kit: includes protective rubber boot, MagLite, 2 'AA' batteries, and a hard carrying case0019-8037
Protective Rubber Boot: provides a protective cover for the Informant that includes a cavity for a MagLite flashlight (MagLite not included)
Hard Carrying Case: provides storage for the Informant and all accessories
Replacement Parts
Fan
Front Retaining Collar
Probe Assembly (excluding fan, probe tip, sensor & filter)0019-0481
Probe Filter (pack of 5)
Probe Tip
Screw, Battery Door0102-1043
Screw, Case
Screw, Fan
Sensor

Battery Door Assembly.......0019-0591

Sales/Service Centers

Replacement parts and service can be obtained by contacting one of the following Bacharach Sales/Service Centers:

United States

Bacharach, Inc. 621 Hunt Valley Circle New Kensington, PA 15068 Phone: 724-334-5051

Fax: 724-334-5723

Email: help@bacharach-inc.com

Canada

Bacharach of Canada, Inc. 20 Amber St. Unit #7 Markham, Ontario L3R SP4 Canada

Phone: 905-470-8985 Fax: 905-470-8963

Email: bachcan@idirect.com

Notes:

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Headquarters:

621 Hunt Valley Circle, New Kensington, PA 15068
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