

WARRANTY

Your **SENSIT®GOLD** is warranted to be free from defects in materials and workmanship for a period of two years after purchase (excluding calibration and batteries). If within the warranty period, your instrument should become inoperative from such defects, the unit will be repaired or replaced at our option. This warranty covers normal use and does not cover damage which occurs in shipment or failure which results from alteration, tampering, accident, misuse, abuse, neglect or improper maintenance. Proof of purchase may be required before warranty is rendered. Units out of warranty will be repaired for a service charge. Internal repair or maintenance must be completed by a J And N authorized technician. Violation will void warranty. Units must be returned postpaid, insured and to the attention of the Service Dept. for warranty or repair.

This warranty gives you specific legal rights and you may have other rights which vary from state to state.

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10/03 UL-V1

SENSIT®GOLD

INSTRUCTION MANUAL

For use with Combustible Gases
and optionally available
Oxygen and Toxic Gases

Read and understand
instructions before use.



Approved UL913, For Class 1,
Division 1, Groups C & D
hazardous locations when used
with alkaline batteries.

Warning:
*To prevent ignition
of flammable or
combustible
atmospheres,
disconnect power
before servicing.*

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PARTS AND ACCESSORIES

Standard Accessories (included)

Two Piece -Polycarbonate Bar Hole Probe Assembly, Carrying Case, Alkaline Batteries, Wrist Strap, Extra Sensor Cap with O-Rings and Instruction Manual

Accessories and Replacement Parts

ASG0150	Extension Adapter
ASG0128	Hydrocarbon Filter (6)
AJN02023	Hot Air Probe Assembly
AJN02017	32" Fiberglass Bar Hole Probe with Filter
AJN02013	Confined Space Probe with Tubing
ASG0500-P	Printer
AJN02033-PCI	PC Interface
CSC00100	SMART-CAL™ Automatic Calibration System
PJN0110	Sensor Cap with O-Rings
Calibration Kits	Contact us for correct Calibration Kit.

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GENERAL DESCRIPTION

The **Sensit®Gold** is designed to detect combustible gases, oxygen content and toxic gases when so equipped with the available sensors. Each model of the **Sensit®Gold** provides specific detection features based on available sensor options. Each **Sensit®Gold** can be re-configured or upgraded by the manufacturer for an additional charge should your sensing requirements change. Consult J And N Enterprises, Inc. for a listing of new sensors available for use with the **Sensit®Gold**.

SENSING FEATURES

SENSIT® GOLD INSTRUMENTS	LEL ALARMS	LEL DISPLAY	LEAK DETECTION	CARBON MONOXIDE	OXYGEN	HYDROGEN SULFIDE
MODEL EX	●	●	●			
MODEL EX-CO	●	●	●	●		
MODEL EX ^{Plus}	●	●	●		●	
MODEL EX-CO ^{Plus}	●	●	●	●	●	
MODEL EX-TOX	●	●	●			●
MODEL EX-TOX ^{Plus}	●	●	●		●	●
MODEL 4GAS	●	●	●	●	●	●

All **Sensit®Gold** instruments incorporate low power semiconductor sensor to measure combustible gases in LEL (Lower Explosive Limit) range. An automatically backlit display shows all gas concentrations being measured. LEDs located on the front of the instrument indicate preset visual warnings of increased gas concentration. All gases are continuously sampled with the use of an internal pump.

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GENERAL DESCRIPTION *continued from page 2*

Audible and visual alarms warn the operator of hazardous conditions being sensed. The preset alarms are indicated by a red flashing LED, display indicator and alarm sound. The combustible gas alarm is preset 50% LEL methane. The carbon monoxide (CO) alarm is preset at 50ppm. The oxygen (O₂) alarms are preset at below 19.5% and above 23.5%. The hydrogen sulfide (H₂S) alarm is preset at 10ppm.

The **Sensit®Gold** instruments is approved by Underwriters Laboratories to UL913, for Class 1, Division 1, Groups C & D hazardous locations when used with alkaline batteries.

SPECIFICATIONS

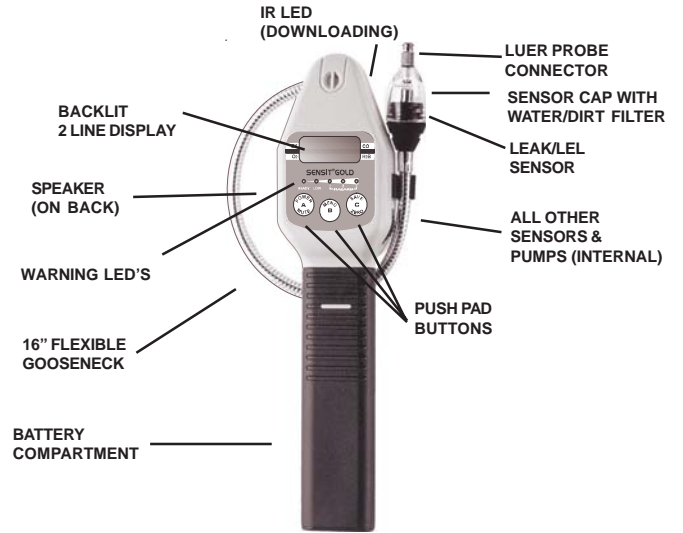
SENSOR SPECIFICATIONS			
TYPE	RESOLUTION	RANGE	ACCURACY
Leak	N/A	0-50,000ppm	N/A
LEL	0.1%	0-100%	±10%
O ₂	0.1%	0-25%	±0.2% or 2%*
CO	1ppm	0-2000ppm	±5ppm or 5%*
H ₂ S	1ppm	0-100ppm	±2ppm or 5%*

* Whichever is greater

PRODUCT SPECIFICATIONS

Size: 11.5" x 3" x 2.32" (292 x 76 x 69 mm)
 Weight: 1.2 lbs.
 Operational Temp: 0 to 120° F
 Storage Temp: -20° to 132° F
 Battery Life: Alkaline: approximately 16 hrs. continuous

PRODUCT FEATURES



Sensit®Gold instruments are constructed of durable Cyclopol plastic to withstand the rigors of field use. Incorporated in the hand grip area is the **battery compartment**. All **Sensit®Gold** instruments require 3 “C” type alkaline or rechargeable batteries. *Duracell MN 1400* batteries provide approximately 16 hours of continuous use. A **tick adjust knob**, when so equipped, is located on the right side of the instrument to activate the audible tick sound that helps in locating the source of a gas leak. This tick is generated by using specialized circuitry in combination with the LEL sensor located at the end of the gooseneck assembly.

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The tick can be easily heard with the speaker located in the back of the instrument.

An **infrared LED** is located on the right side to allow the **Sensit@Gold** instruments to download calibration data and readings the operator has elected to save to the instrument's on-board memory.

A **flexible gooseneck** is used to assist in locating the source of gas leaks and remote sampling. A water/dirt trap is located at the end with a convenient luer style connector to attach sampling and probe accessories.

A **two line display** continuously updates the operator of all available gas concentrations and alarms simultaneously as well as indicates internal functions such as air flow and battery power. Below the display is a series of LEDs that are preset to indicate combustible gas concentrations. The red LED on the right side will flash during any alarm condition.

There are **3 operational button pads** on the front of all **Sensit@Gold CGI** instruments.

- **LEFT BUTTON:** Operates **power** and **mute** features.
- **CENTER BUTTON:** Operates a Bar Hole (BH) Test mode to assist in pinpointing underground leakage and operates a **user menu** to calibrate, download and set the clock.
- **RIGHT BUTTON:** Activates the **save** feature and performs a manual **zeroing** of the sensors.

Pressing any button will produce a click sound.

Combustible Gas Sensor

All **Sensit@Gold** instruments incorporate a highly sensitive semi-conductor type sensor. The function and accuracy of the sensor are monitored and controlled by specialized circuitry and a microprocessor. This sensor is capable of measuring concentrations as low as 50ppm of methane (natural) gas up to 100% LEL methane.

Electrochemical Sensors (optional)

All **Sensit@Gold** instruments when equipped with the following optional sensors, microprocessor and associated circuitry will measure oxygen levels from 0-25%; measure carbon monoxide (CO) levels from 0-2000ppm; measure hydrogen sulfide (H2S) levels from 0-100ppm. All gases are displayed simultaneously on the display.

The Pump

The **Sensit@Gold** instruments are equipped with a powerful and efficient rotary vane pump. A water/dirt filter at the end of the gooseneck protects the pump from foreign material. An additional internal filter protects the pump from damaging debris if the primary filter is missing or damaged. There are audible and visual indicators that will show a blocked or improperly operating pump.

NOTICE	
 CAUTION	This safety symbol is used to indicate a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

BATTERY INSTALLATION/REPLACEMENT

Battery replacement is necessary when the display reads **BAT LOW**, an audible alarm sounds and the green ready LED flashes. When **BAT LOW** is displayed, the instrument has approximately 30 minutes of useful operation time prior to shut off.

⚠ CAUTION: Always change batteries in an environment free of combustible gases.

Remove the battery sleeve cover by depressing the locking tab on the front of the handle (yellow) with a coin or flat object and pulling the handle away from the top or display area of the instrument.

Place 3 approved batteries into the battery holder. For best results hold the battery compartment so that it lays in your right hand. With your left hand install the battery that goes toward the front first. The battery that is in contact with the rear spring second and finally insert the third battery in the center by forcing the second battery such that the spring compresses and allows the batteries to go into place. If you do not use your right hand to hold the bottom of the battery compartment the batteries can come out.

Observe the polarity markings on the inside of the battery holder. Improper installation will cause the instrument not to operate. Replace the battery sleeve and allow the locking tab to snap into position.

Check to be sure the handle is secure to the instrument body by gently pulling the handle away. The handle will remain firmly in place if a proper connection is made.

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OPERATION AND USE

1. Push the POWER button to initiate operation. A beep will be heard during any button activation.

⚠ CAUTION: Always start any Sensit®Gold in a gas free environment to insure a proper zero.

2. If the display fails to illuminate or "BAT LOW" is shown on the display, replace or recharge the batteries. There is room in the carrying case to keep an extra set of alkaline batteries.

3. Upon successful start-up, the pump will start and the display will illuminate. The instrument will then display:

- a. Product name and software version.
- b. System check for proper pump and battery operation.
- c. Date and time.
- d. Serial Number.
- e. Display "CAL PAST DUE" only when calibration is overdue.
- f. Warm-up countdown for 10 seconds.
- g. Display "AUTOZERO" indicating the zeroing of all sensors.
- h. Any sensor that is completely inoperable during start up will be indicated by "FAIL" on the display in the location where readings would normally be located. The GREEN READY LIGHT will not illuminate indicating the instrument requires service.

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4. The display will indicate LEL readings (when so equipped) by displaying an "L" next to the percent symbol. All LEL readings have a resolution of 0.1% LEL or 50ppm methane.

5. It may be necessary to manually ZERO the instrument based on company practices and environmental conditions. If LEL levels are preset, zeroing will not be possible.

6. Prior to use, test the integrity of the sensor cap and tubing. Use your finger to block the inlet of the sensor cap for 4-5 seconds. The display will read "FLOW BLOCKED" if all seals are intact. If this does not occur change the sensor cap and "O" rings. A spare sensor cap and "O" rings are shipped with each product. During pump flow block, a beep will occur every 2 seconds until the pump restarts and adequate flow is present.

7. When testing areas with elevated temperatures such as appliance vents or flues always attach the optional hot air probe assembly. Attach the probe by twisting the connector of the probe onto the matching adapter at the end of the sensor cap.

These connections need only be finger tight. It is necessary to use a particle filter and desiccant when performing flue testing. The use of an unapproved probe assembly may void the warranty.

⚠ CAUTION: Do not handle the steel portion of any hot air probe after use as burns may occur!

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8. When testing remote areas with dirt, water or debris it may be necessary to clean or replace the sensor cap from time to time. Additional filters may be placed into any sampling assemblies as long as they will allow a pump flow block to show on the display. If this does not occur there is leakage and improper readings may result.

9. When testing high areas or overhead lines the use of the optional extension adapter will allow a broom handle or painters stick to extend the instrument to the area where sensing must be accomplished. This slides onto the battery sleeve and is held in place by the locking nut assembly.

10. When testing areas the appropriate sensors will cause the display to update when a gas is encountered. Additionally, if a combustible gas is encountered a series of LEDs on the front of the instrument will illuminate when the preset concentrations are reached. If any alarm condition exists for any sensor, based on their preset alarm points, the red (HAZ 3) LED will flash and the alarm will sound. Additionally, the reading for the gas exceeding the alarm set point will also flash.

The preset alarm points are:

- a. Combustible gas - Methane 50% LEL - 100% LEL
 - i. Green LED/Ready = 0-4.9% LEL Methane
 - ii. Amber LED/Low = 5-9.9% LEL Methane
 - iii. Red LED/Haz1 = 10.0-24.9% LEL Methane
 - iv. Red LED/Haz2 = 25.0-49.9% LEL Methane
 - v. Red LED/Haz3 = 50% LEL - 100% LEL

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- b. Oxygen - below 19.5% and above 23.5%
- c. Carbon Monoxide - 50ppm per industry standards
- d. Hydrogen Sulfide - 10ppm and above per Federal OSHA guidelines

⚠Caution: These instruments have cross sensitivities to a variety of gases. J And N is continuing to create a cross sensitivity chart based on methane calibrations for the combustible sensor. Other sensors have limited cross sensitivity properties though they do exist. Be sure to contact J And N for the latest information.

11. To disable the audible alarm press and release the left button (MUTE). To enable the alarm press it again. During an alarm the gas that has exceeded the preset alarm point will flash on the display and the HAZ3 LED will flash indicating a potential unsafe condition. When combustible gas readings exceed the alarm range, all LEDs (except green and red HAZ3) will turn off.

12. To assist in locating the source of small combustible gas leaks or surveying areas outdoors or indoors, rotate the thumbwheel located on the right side of the instrument, when so equipped, until a steady ticking sound is heard. Note: There is no warm-up for this feature as it uses the LEL sensor that is already operating. Move the sensor head toward the area suspected of leakage. As the sensor head moves closer to a leak source the tick will increase. When the tick becomes a steady tone rotate the thumbwheel in a clockwise direction while

keeping the sensor head in the same position. This will slow down the tick and allow the operator to find a higher concentration using the same procedure. If the tick goes away you have moved away from the leak or there is no more gas present. The leakage rate may be less than the rate the pump is drawing the sample. For best results always use the leak detector prior to using any liquid leak detection fluids as these sensors will detect their presence.

13. At any time the operator may save the readings on the display by pressing the SAVE button on the right. This will save all readings for download at a later time. The memory is factory set to store 6 events. This can be adjusted from 1-15 at the factory. The most recent save is first during download.

14. Following federal, State, Municipal and/or Company procedures move to the areas where gas readings are suspected or must be tested. Use necessary accessories to draw samples from areas not accessible with the instrument itself, such as confined spaces or flue gases. During sampling the respective readings may change. Audible and visual alarms will activate when the preset limits are reached.

15. When being used in dark areas an automatic backlight will illuminate the display.

16. To turn instrument off, push and hold the power button for 5-6 seconds until "POWER DOWN" appears on the display.

CALIBRATION CHECK

To verify the accuracy of any **Sensit®Gold**, it must be exposed to a known concentration of test gas that will test any sensor combination included in your particular model. Any sensor that does not meet the specifications listed in this manual may require calibration or repair. A calibration check does not update the calibration due date. Full calibration is required to update these times.

A calibration past due message will illuminate during warm-up if calibration has not been performed per your company specified interval. Anytime it is suspected the **Sensit®Gold** is not working properly, check calibration.

MENU

The **Sensit®Gold** has several user adjustable features in the USER MENU. These include:

PRINT MENU:Printing session, calibration, Bar Hole Test logs and accessing Smart-Cal Automatic Calibration Station.

CALIBRATION:Calibrate CO, H₂S, LEL and access Smart-Cal Automatic Calibration Station.

POWER OFF:Set the automatic shut off timer in minutes.

SET CLOCK:Set date and time.

SHOW CAL LOG:Display last calibration of all gasses.

SHOW SES LOG:Display saved gas reading data with date and time.

BUMP TEST:Perform automatic test for response to minimum of 80% of calibrated gas value within 45 seconds.

SMART-CAL:Access automatic calibration station.

PRINT MENU

From the working display access the menu by pressing and holding the menu button until the top line of the display reads USER MENU. The bottom line will read PRINT MENU. Press the center button to access the PRINT MENU options. Use the right button to select the CAL LOG or SESSION LOG option. At this time prepare the printer. Aim the IR LED on the right side of the instrument to the IR receptor on the printer. Press the center button to print the data. Pressing the left button will reenter the USER MENU.

Use the right button at this time to scroll to another menu function as indicated by the top line reading USER MENU. Pressing the left button will return the instrument to the working (gas readings) display.

POWER OFF

From the working display access the menu by pressing and holding the menu button until the top line of the display reads USER MENU. Press and release the right button until the bottom line displays POWER OFF. Press the center button. Use the right button to increase the number of minutes of run time and the center button to reduce them. Setting the timer to 0 will cause the unit to always remain on. After adjusting the number, press and release the left button to save the adjustment. Use the right button at this time to scroll to another menu function as indicated by the top line reading USER MENU. Pressing the left button will return the instrument to the working (gas readings) display.

SET CLOCK

From the working display access the menu by pressing and holding the menu button until the top line of the display reads USER MENU. Press and release the right button until the bottom line displays SET CLOCK. Press the center button. The day will flash upon entering the SET CLOCK option. The right button advances to the next item and the center button changes the flashing item. All settings are based on US time and date settings using a 24 hour clock. After adjusting all numbers press

and release the left button to save the adjustment. Use the right button at this time to scroll to another menu function as indicated by the top line reading USER MENU. Pressing the left button will return the instrument to the working (gas readings) display.

SHOW CAL LOG

From the working display access the menu by pressing and holding the menu button until the top line of the display reads USER MENU. Press and release the right button until the bottom line displays SHOW CAL LOG. Press the center button. At this time one of the gases and the last calibration date will be displayed. Use the right button to review all other calibrations dates and their respective gases. After review of the last available gas the instrument will automatically return to the user menu as indicated by the top line reading USER MENU. Pressing the left button will return the instrument to the working (gas readings) display.

SHOW SES LOG

From the working display access the menu by pressing and holding the menu button until the top line of the display reads USER MENU. Press and release the right button until the bottom line displays SHOW SES LOG. Press the center button. Use the right button to scroll to the saved session you wish to review. SESSION 1 is the most recent data saved. Pressing the center button will display the date and time of that session.

Pressing the center button again will display the gas reading. Pressing the right button will allow you to scroll through all other gas readings. Press the left button to return to SESSION (No.) and pressing the right button will allow you to review all previously saved SESSION's by date. Press the center button to review the gas data. Pressing the left button 3 times will return you to the USER MENU. Pressing the left button once more returns you to the working display. The number of stored session log saves is factory set at 6. It can store up to 16 by changing factory settings (contact factory for instructions).

BUMP TEST

From the working display access the menu by pressing and holding the menu button until the top line of the display reads USER MENU. Press and release the right button until the bottom line displays BUMP TEST. Prepare 50% LEL, 100ppm CO and/or 25ppm H₂S gases for application to the instrument. Attach the hose to the inlet connection. Turn on the gas. Press the center button. EACH GAS must read 80% of calibrated value within 45 seconds. The readings are on the left and the timer on the right side of the display. If the instrument passes, the display will read BUMP TEST PASSES and a beep will sound. If the instrument fails, the display will read BUMP TEST FAILED and a beep will sound. At the end of any bump test press the left button to return to the working display.

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SMART-CAL

From the working display access the menu by pressing and holding the menu button until the top line of the display reads USER MENU. Press and release the right button until the bottom line displays SMART CAL. Place the instrument into the cradle provided on the left side of the Smart-Cal Calibration Station. Attach the tubing from the station to the inlet side of the instrument. Press the center button. The display will show "SMART CAL Communicating" and the pump will turn off. Select the test from the Smart-Cal Station to be performed. At the end of the test the instrument will beep 3 times and display PASS or FAIL. Retry the test if necessary by pressing the proper button on the Smart-Cal Station again. Press the left button to return the working display, remove the tubing and return instrument to service or send instrument to the proper place for repair per company procedures.

SHORTCUT TO ACCESS SMART-CAL: Place the instrument into the cradle provided on the left side of the Smart-Cal calibration Station. Attach the tubing from the station to the inlet side of the instrument. While in the working display press the power button for 2-3 seconds and release. The display will show "SMART CAL Communicating" and the pump will turn off. Perform all tests as described in the SMART CAL section.

ADJUSTABLE FEATURES (FACTORY ONLY)

CALIBRATION

ADJUSTABLE FEATURES (FACTORY ONLY)

SAVES	RANGE	DEFAULT
Session Saves	1-15	6
Purge Time	0-30 Seconds	0 Seconds
%LEL	NA	%LEL
Alarm - LEL	0-99%	50%
Alarm - O ₂ (low only)	0.1-20.0%	19.5% (OSHA)
Alarm - CO	0-999ppm	50ppm
Alarm - H ₂ S	0-3-ppm	10ppm
Cal Due Interval	30, 45, 60, 90, 180, 360 Days	30 Days
Show Session Log*	1-15	6

*Can be disabled

Calibration is the process of setting the readings of the instrument to equal the value of certified calibration gases. Prior to calibration allow the instrument to operate for 5 minutes in a room environment free of combustible, CO and H₂S gases. Manually zero the instrument prior to beginning the calibration process.

NOTE: Using calibration kits other than recommended by J And N may cause inaccurate readings. Repairs are required if any sensor fails to calibrate. Consult J And N for details.

NOTE: When calibrating, the numbers shown on the display represent the numbers seen by the microprocessor and should not be confused with actual gas readings.

STEP 1

From the working display access the menu by pressing and holding the menu button until the top line of the display reads **USER MENU**. Press and release the right button until the bottom line displays **CALIBRATION**. Press the center button. The top line will now read **CALIBRATION**.

Use the right button to view the CO 100ppm, H₂S 25ppm, 50% LEL calibration options. If the instrument cannot calibrate properly to the calibration gas applied BAD CAL will appear after 2 minutes. Calibration readings update on the display every 5 seconds.

CARBON MONOXIDE (CO) CALIBRATION (CO - 100PPM)

Perform STEP 1 first. To calibrate CO, push the center button when the top line reads CALIBRATION and the bottom line reads CO 100 PPM. Immediately apply 100 ppm CO (balance air). When the reading is satisfactory, the display will read DATA SAVED indicating calibration is complete. The date for CAL PAST DUE is automatically reset at this point. Press the right button to advance to another gas to be calibrated as indicated by the top line of the display reading CALIBRATION and the bottom line reading another gas. Pressing the left button will return the instrument to the working (gas readings) display. Remove the gas.

HYDROGEN SULFIDE (H2S) CALIBRATION (H2S-25 PPM)

Perform STEP 1 first. To calibrate H2S, push the center button when the top line reads CALIBRATION and the bottom line reads H2S 25 PPM. Immediately apply 25ppm H2S (balance air). When the reading is satisfactory, the display will read DATA SAVED indicating calibration is complete. The date for CAL PAST DUE is automatically reset at this point. Press the right button to advance to another gas to be calibrated as indicated by the top line of the display reading CALIBRATION and the bottom line reading another gas. Pressing the left button will return the instrument to the working (gas readings) display. Remove the gas.

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COMBUSTIBLE GAS CALIBRATION (50.0% LEL)

Perform STEP 1 first. To calibrate LEL, push the center button when the top line reads CALIBRATION and the bottom line reads 50% LEL NAT. Immediately apply 50% LEL methane (balance air). When the reading is satisfactory, the display will read DATA SAVED indicating calibration is complete. The date for CAL PAST DUE is automatically reset at this point. Press the right button to advance to another gas to be calibrated as indicated by the top line of the display reading CALIBRATION and the bottom line reading another gas. Pressing the left button will return the instrument to the working (gas readings) display. Remove the gas.

OXYGEN (O2) CALIBRATION

There is no menu option to select oxygen (O2) calibration. At this point if the instrmt is operated, the readings will be based on the last successful calibration and may be inaccurate. Calibration is also performed during any manual zeroing. Calibration can be verified using 100% nitrogen. The readings should be less than 0.4%.

NOTE: Improper calibration is indicated by “Bad Cal” when save is attempted. Calibration will be based on the last successful calibration. Recalibration is recommended. The calibration due date will not be updated until successful calibration has occurred. Any instrument that does not calibrate requires service. Contact J And N for details.