

## Sensor Data Sheet

**SENSALERT PLUS****SENSIDYNE**

**Chlorine (Refillable)**  
**(0 – 10.0 ppm)**  
**Part No. 823-0202-61**



Minimum Indicated Concentration .....	0.3 ppm
Repeatability <sup>2</sup> .....	± 5% of Reading
Accuracy <sup>1</sup> .....	± 10% of Reading
Span Drift .....	< 12% per 6 months (typical)
Response Time (Rise).....	T <sub>50</sub> : < 15 seconds
Response Time (Rise).....	T <sub>90</sub> : < 30 seconds
Recovery Time (Fall) .....	T <sub>10</sub> : < 60 seconds
Temperature Range .....	5° to 45°C (-4° to 113°F)
Humidity Range (continuous) .....	15–90 %RH, non-condensing
Humidity Range (intermittent).....	0–99 %RH, non-condensing
Pressure Range .....	Ambient atmospheric, ± 1 psi
Expected Sensor Life .....	5 years from Shipping Date
Recommended Calibration Flow Rate .....	500 to 1000 cc/min
Oxygen Requirement .....	None
SensAlert 4-Channel Controller.....	Compatible
Position Sensitivity.....	Vertical Face Down ±15°

<sup>1</sup> When unit is calibrated and serviced at recommended intervals.

<sup>2</sup> Room Temperature, seasoned system, repeat exposures.

**Cross-Interferences\***

Gas	Gas Exposure	Sensor Output
Bromine	2.5 ppm	+1 ppm
Carbon Monoxide	200 ppm	None
Chlorine Dioxide	10 ppm	+1 ppm
Fluorine	0.8 ppm	+1 ppm
Hydrocarbons	%Vol. Range	None
Hydrogen	4.5 ppm	-1 ppm
Hydrogen Chloride	1000 ppm	+1 ppm
Hydrogen Cyanide	10 ppm	None
Hydrogen Sulfide	200 ppm	None
Nitrogen Dioxide	670 ppm	+1 ppm
Sulfur Dioxide	5 ppm	No Data

\* Interference factors may differ from sensor to sensor, it is not advisable to calibrate with interferent gases.

## Special Calibration Considerations: **Chlorine (Refillable) (PN° 823-0202-61)**

### Calibration Adapter

Due to pressure and pulse sensitivities, this sensor requires use of the SensAlertPlus calibration adapter model number 821-0541-01 for calibration. The use of any other calibration adapter can result in erroneous calibrations or calibration failures.

### Zeroing The Sensor

It is recommended that the sensors be zeroed in either clean ambient air or Zero Air.

### Span Calibration

It is recommended that this sensor be calibrated at 5 ppm Cl<sub>2</sub>. It is recommended that the sensor undergo a 2 minute pre-calibration exposure in order to season the calibration system. This pre-exposure ensures that the gas reaches the sensor at full concentration. The use of Teflon™ or HDPE tubing is recommended with this gas to prevent gas absorption into the tubing walls. Complete span calibration instructions are provided in the SensAlert<sup>Plus</sup> User Manual or SensAlert ASI User Manual.

### Test-on-Demand Cell

There is no Test on Demand cell for this sensor.

### Moisture Barrier Use

The use of a SensAlert<sup>Plus</sup> moisture barrier, p/n 821-0201-01, is not recommended with these sensors. The barrier blocks almost all of the Cl<sub>2</sub> gas from the sensor (at 5 to 10 ppm levels).

## **REFILLABLE SENSOR MAINTENANCE**

### **1.1 OVERVIEW**

Periodic preventive maintenance of SensAlert refillable sensors is required to ensure proper operation of the system. The following sections describe certain simple maintenance procedures that may be performed in the field. Field maintenance should be limited to:

- General inspection
- Electrolyte replacement
- Membrane cap replacement

General inspection, electrolyte replacement, and membrane cap replacement should be performed at regular three (3) month intervals. These maintenance procedures should also be performed following prolonged exposure to high concentrations of the target gas. The sensor assembly should be replaced if it is damaged, when it no longer performs properly, or as scheduled.

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*If the sensor assembly is damaged or defective, DO NOT attempt to repair it. Return the entire sensor to Sensidyne for service.*

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#### **NOTE**

*The three (3) month maintenance schedule is based on "normal" operating conditions. Excessively severe or dirty environments may require these maintenance procedures to be applied more often.*

## 1.2 GENERAL INSPECTION

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This inspection procedure should be performed every three (3) months (normal operating conditions). Refer to Figure 1.1.

- 1) Perform a visual inspection of the area surrounding the transmitter to ensure air flow to the sensor is unrestricted.
- 2) Remove the sensor holder from the transmitter
- 3) Remove the sensor assembly from the sensor interface assembly by gently pulling down.
- 4) Remove the sensor electrode from the PCB by holding the edges of the PCB and pulling the sensor off the coaxial (BNC)
- 5) Position the sensor vertically with the membrane cap facing down. Hold the sensor up to a bright light at eye level. The electrolyte should be visible, with its level just below the vent hole.
- 6) Position the sensor vertically with the membrane cap facing down. Hold the sensor up to a bright light at eye level. The electrolyte should be visible, with its level just below the vent hole.  
  
If the electrolyte is not visible, or the level is well below the vent hole, the electrolyte should be replaced. (Go to Section 1.3.)
- 7) Refer to Figure 1.1. With the membrane cap still facing down, inspect the cap for leakage.

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**NOTE**

*Leaks – regardless of their source – tend to migrate toward the face of the membrane cap.*

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If leak is visible, determine its source by first blotting off excess electrolyte, then placing the sensor (cap-side down) on a piece of paper.

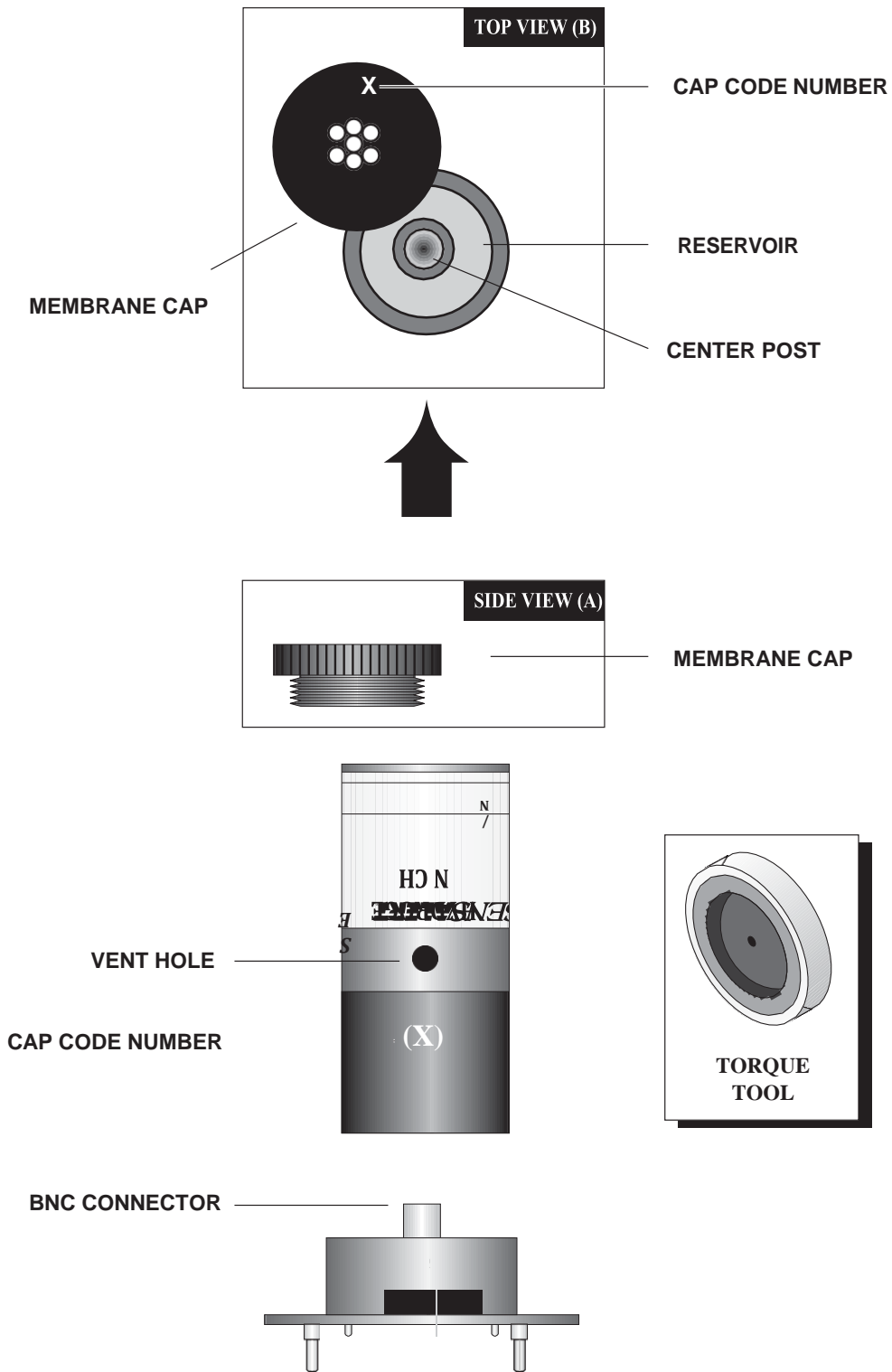


Figure 1.1  
Refillable Sensor Maintenance

- 8) Remove the sensor and examine the surface of the paper:
  - **If the wet area forms a ring**, electrolyte is leaking from the edges of the cap, indicating that it may not be securely sealed.
    - a) Remove the cap and apply silicone grease to the threads so that the threads are completely covered (do not get grease on the inside surface of the cap, on the face of the cap, or on the membrane itself. If you do, discard the cap).
    - b) Replace the cap and tighten it using the Sensidyne Torque Tool. Re-inspect for leaks. If leaks are still visible, replace the membrane.
      - **If the wet area forms a dot**, the leak is coming from the membrane itself.
    - c) Remove the membrane cap and closely inspect the membrane for tears or punctures. If tears or punctures are visible, replace the membrane cap. If the membrane appears un-damaged, apply silicone grease to the threads so that the threads are completely covered (do not get grease on the inside surface of the cap, on the face of the cap, or on the membrane itself. If you do, discard the cap).
- 9) Position the sensor with the membrane cap facing up.
- 10) Inspect the membrane cap to ensure that the holes exposing the membrane are not clogged. Gently blow away any dirt that may be clogging the holes. Do not touch the membrane.
- 11) Inspect the holes again. If the dirt is still clogging the holes, the membrane cap must be replaced. (Proceed to Section 1.3).
- 12) Once all applicable maintenance procedures have been performed, mount the sensor by pressing it into the coaxial (BNC) connector. Mount the sensor in the transmitter. Push the sensor assembly upward to engage the electrical connection.
- 13) Make certain the sensor holder is properly installed.
- 14) Allow the sensor to stabilize for one (1) hour before attempting calibration.

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**WARNING**

*Vapors from silicone grease will quickly poison a catalytic bead combustible sensor. Do not use silicone grease where its vapors can migrate to a catalytic bead combustible sensor.*

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- a) Replace the cap and tighten it using the Sensidyne Torque Tool. Re-inspect for leaks. If leaks are still visible, replace the membrane. (Proceed to Section 1.3).

### 1.3 ELECTROLYTE & MEMBRANE CAP REPLACEMENT

Sensidyne recommends replacing the membrane cap whenever the electrolyte is replaced. Electrolyte replacement should be done every three months. The electrolyte replacement schedule is based on normal conditions.

Temperatures and/or air speeds higher than specified, or humidity lower than specified will increase the frequency of electrolyte replacement.

#### CAUTION

*The code number on the replacement membrane cap must be equal to or greater than the code number in parenthesis on the outer wall of the sensor. A mismatched membrane cap can seriously impair the performance of the sensor or tear the membrane.*

*Electrolyte replacement should be done before replacing the membrane cap to ensure the membrane is not contaminated with "old" electrolyte.*

Replace the membrane cap and electrolyte as follows (refer to Figure 1.1):

- 1) Remove the sensor holder.
- 2) Remove the sensor assembly from the sensor interface assembly by gently pulling down. Remove the sensor from its PCB by pulling it off the coaxial (BNC) connector.
- 3) Position the sensor vertically with the membrane cap facing up.
- 4) Carefully unscrew the membrane cap and lift it off the sensor. The membrane will be retained within the cap. Do not touch the surface of the membrane or any internal part of the sensor.
- 5) Safely dispose of the spent electrolyte. Shake the sensor to remove all of the electrolyte.
- 6) Re-orient the sensor vertically with the sensor reservoir surface facing upward. Fill the reservoir with distilled or de-ionized water. Discard the water and shake out any excess droplets.
- 7) Rinse the sensor electrode with a few ml of electrolyte then discard the rinse electrolyte. Slowly pour 4-5 ml of fresh electrolyte into the sensor. This amount is sufficient to fill the sensor to approximately 0.5-1.0 cm (0.2- 0.4 in) below the threads of the reservoir. A low profile drop of electrolyte should adhere to the surface of the center post.
- 8) Remove the new membrane cap from its packaging. Ensure that the cap code number is equal to or greater than the code number in parenthesis on the outer wall of the sensor (shown as "X" in Figure 1.1).
- 9) Ensure that the threads of the membrane cap are freshly prepared with a substantial amount of silicone grease. Applying a sufficient amount of silicone grease to fill the threads of the cap. (Do not get grease on the inside surface of the cap, on the face of the cap, or on the membrane itself. If you do, discard the cap.)
- 10) Replace and tighten the cap using the Sensidyne Torque Tool until it is secure. Wipe away any excess silicone grease that escapes from around the edges of the membrane cap.
- 11) Position the sensor with the membrane cap facing down. Lightly tap the sensor 3-4 times to moisten the inside of the new membrane.
- 12) Once all applicable maintenance procedures have been performed, mount the sensor in the transmitter. Push the sensor assembly upward to engage the electrical connection.
- 13) Make certain the sensor holder is properly installed.
- 14) Allow the sensor to stabilize for one (1) hour before attempting calibration.

#### CAUTION

*The sensor operation may be degraded by using a cap with too small a code number.*

#### NOTE

*Do not use any tools other than the Sensidyne Torque Tool to tighten the membrane cap. The sensor membrane cap may be damaged by over-tightening.*

## **Torque Tool:**

By design, the Sensidyne torque tool provides a clicking motion when the membrane cap has been adequately tightened. Remove excessive grease from inside of the torque tool after each use.

## **Membrane Cap Inspection:**

Remove the membrane cap from the sensor housing and inspect the membrane before installing new membrane. A leaking membrane can be a result of the following conditions:

- a.) Not using the Sensidyne torque tool
- b.) Not installing the correct cap code #
- c.) Operating conditions or age of the membrane

**CAUTION:** A larger cap code # can be used on a smaller sensor housing number e.g. 3>2

Using a smaller cap code # on a larger sensor housing number can result in a torn membrane e.g. 2>3