

**EXPLORER  
CO<sub>2</sub> SENSOR  
USER MANUAL**

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# NOTICES

## LIMITED WARRANTY

For details, refer to the Product Warranty section on the Hollis web site: [www.HollisGear.com](http://www.HollisGear.com)

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Explorer CO<sub>2</sub> Sensor User Manual, Doc. No. 12-4127  
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### **DANGERS, WARNINGS, CAUTIONS, AND NOTES**

Pay attention to the following symbols when they appear throughout this document. They denote important information and tips.

- !** **DANGERS:** are indicators of important information that if ignored would lead to severe injury or death.
- !** **WARNINGS:** are indicators of important information that if ignored could lead to severe injury or death.
- !** **CAUTIONS:** are indicators of information that if ignored may lead to minor to moderate injury.
- !** **NOTES:** indicate tips and advice that can inform of features, aid assembly, or prevent damage to the product.

## ! DANGERS !

The CO<sub>2</sub> Sensing Module should NOT be used to determine absorbent duration. It is critical that you have read (section 3.14 and 6.1 of the Explorer User Manual, doc. 12-4102), read this Explorer CO<sub>2</sub> Sensor User Manual, understood, and been trained in its proper use.

The Explorer rebreather scrubber is a maximum two hour duration scrubber when used under sport diving conditions. Under no circumstances should it be used for more than two hours. See Part 4 Section 2 "CO<sub>2</sub> Absorbent Scrubber Pack" of the Explorer User Manual, doc. 12-4102, for further information on duration times.

At this time, the CO<sub>2</sub> Sensing Module is ONLY tested and known to be safe for use in the Hollis Explorer rebreather.

Improper use or abuse (outside of the intended purpose) of this device can lead to serious harm or death.

## ! WARNINGS !

As with all underwater life support equipment, improper use or misuse of this product could cause serious injury or death.

There are many risks in rebreather diving. Education, preparation, and diving well within your skill level are your best means to safely pursue this sport.

DO NOT attempt to disassemble, repair, or adjust the CO<sub>2</sub> Sensor (P/N 25429). Doing so could cause malfunction resulting in serious injury or death. It will also void the limited warranty.

The CO<sub>2</sub> sensor MUST be calibrated in accordance with the instructions in section 3.14 of the Explorer User Manual (doc. 12-4102), before use.

This is an electronic device, and like all electronic devices this device can fail. Always carry adequate bailout gas for the dive. If you feel symptoms of CO<sub>2</sub> poisoning, bail out regardless of what the electronics read.

## CO<sub>2</sub> SENSOR OPERATION

The Explorer CO<sub>2</sub> sensor is intended for use in detecting channeling, high work rates, bad absorbent material, and other possible failures of the Explorer scrubber system. When used properly, this accessory can add another safeguard to the use of your Explorer.

This manual is intended to be used in conjunction with the Explorer User Manual (doc. # 12-4102). Proper installation, calibration, and use of your new CO<sub>2</sub> Sensor is critical. This manual covers proper assembly and maintenance of the CO<sub>2</sub> sensor assembly. For proper use of the CO<sub>2</sub> sensor with the Explorer, see the Explorer User Manual.

**! WARNING: You must read and understand the Explorer User Manual (doc. # 12-4102), this manual, and have received an appropriate Hollis Certified user-training course before use of this CO<sub>2</sub> sensor.**

The CO<sub>2</sub> sensor used in the Explorer is an NDIR (Non-Dispersive Infrared Sensor). It relies on an optical path to measure the concentration of CO<sub>2</sub> within the breathing loop. Water vapor can condense on the optical elements of the sensor blocking the infrared signal the sensor uses, resulting in false CO<sub>2</sub> readings. Hollis uses indicating **silica gel (7)** beads to prevent moisture inside the Explorer breathing loop from interfering with the CO<sub>2</sub> sensor readings in this way. This system though effective relies on the user inspecting and replacing the silica beads on a regular basis.

The silica gel material is spherical in shape, 2 to 4 mm in diameter. Hollis supplies 30 grams of **silica beads (7)** in an air tight container with this kit. This is enough to fill the CO<sub>2</sub> sensor **cap (10)** five times. Though the beads may be dried for reuse, see the section "Drying Silica Beads For Reuse".

The **silica beads (7)** are an amber color when ready for use in your Explorer (*Fig. 1*). When the **silica beads (7)** are saturated with moisture they turn an emerald green color. With the Explorer the silica beads should be changed with dried or new silica beads every 4-6 hours of use or whenever the beads have changed to emerald green, whichever occurs first.

**! NOTE: 4-6 hours is a recommendation for most conditions. Different environments and use may require more frequent silica bead inspection to avoid false CO<sub>2</sub> readings during the dive.**

The **silica beads (7)** will absorb moisture from the surrounding environment. To keep your **silica beads (7)** dry and ready for use they should be stored in an airtight container. For conve-



Fig. 1

nience, the whole CO<sub>2</sub> sensor cap assembly can may be removed from the sensor module and stored in an airtight container (i.e. ziplock bag) between dives.

**ASSEMBLY**

1. If not already installed, press the smaller diameter white **filter (8)** into the **cap (10)**, as shown (Fig. 2).
2. Then press the larger diameter white **filter (6)** into the **cap cover (5)**.
3. If not already installed, install lightly lubricated **O-rings (9 & 11)** onto the **cap (10)**, see the diagram at the end of this manual for individual **O-ring (9 & 11)** location.
4. Fill the **cap (10)** with 6 grams of fresh or dried **silica beads (7)** (to an estimated 1/16 inch below the rim), as shown (Fig. 3).

**! WARNING: NEVER use broken silica beads in your Explorer CO<sub>2</sub> sensor cap. Doing so could lead to obstructed gas flow, rendering the CO<sub>2</sub> sensor ineffective in detecting dangerous levels of CO<sub>2</sub> gas.**

5. Press the **cap cover (5)** onto the **cap (10)**.
6. Remove the sensor module according to instructions in the Explorer User Manual (doc. # 12-4102), Part 2 Section 3 "Complete Disassembly & Reassembly.
7. Having removed the sensor module, inspect the mini-jack connector, and carefully wipe clean with a soft cloth.
8. Press the CO<sub>2</sub> sensor onto the mini-jack.

**! DANGER: ONLY the Hollis CO<sub>2</sub> sensor may be used with the Explorer. No other CO<sub>2</sub> sensors are tested or approved.**

9. Fit the now filled **cap (10)** assembly onto the sensor module (Fig. 4).
10. Reinstall the sensor module following the directions in the Explorer User Manual (doc. # 12-4102), Part 2 Section 3 "Complete Disassembly & Reassembly.

**! DANGER: After CO<sub>2</sub> SENSOR (12) replacement into the sensor module, you must ensure the unit is calibrated by completing a full pre-dive sequence on the Explorer unit.**



Fig. 2



Fig. 3



Fig. 4

## DISASSEMBLY

1. Remove the sensor module according to instructions in the Explorer User Manual (doc. # 12-4102), Part 2 Section 3 "Complete Disassembly & Reassembly.
2. Pull the **cap (10)** assembly off of the sensor module (*Fig. 5*).
3. Pull the **CO<sub>2</sub> sensor (12)** off of the mini-jack.
4. Having removed the **CO<sub>2</sub> sensor (12)**, inspect the mini-jack connector, and carefully wipe clean with a soft cloth.
5. Remove the **cap cover (5)** from the **cap (10)** (*Fig. 6*).
6. Empty the **silica beads (7)**. Inspect for broken or damaged beads; discard if found. Otherwise, you may follow the instructions in the section "Drying Silica Beads For Reuse" to dry the beads for reuse.
7. Remove the **O-rings (9 & 11)** from the **cap (10)**. Inspect for any signs of deterioration. Discard if found.
8. Visually inspect the white **filters (6 & 8)** to ensure they are intact and their pores are not clogged. Remove and discard if clogged or damaged. Otherwise, they may remain installed for reuse.



Fig. 5



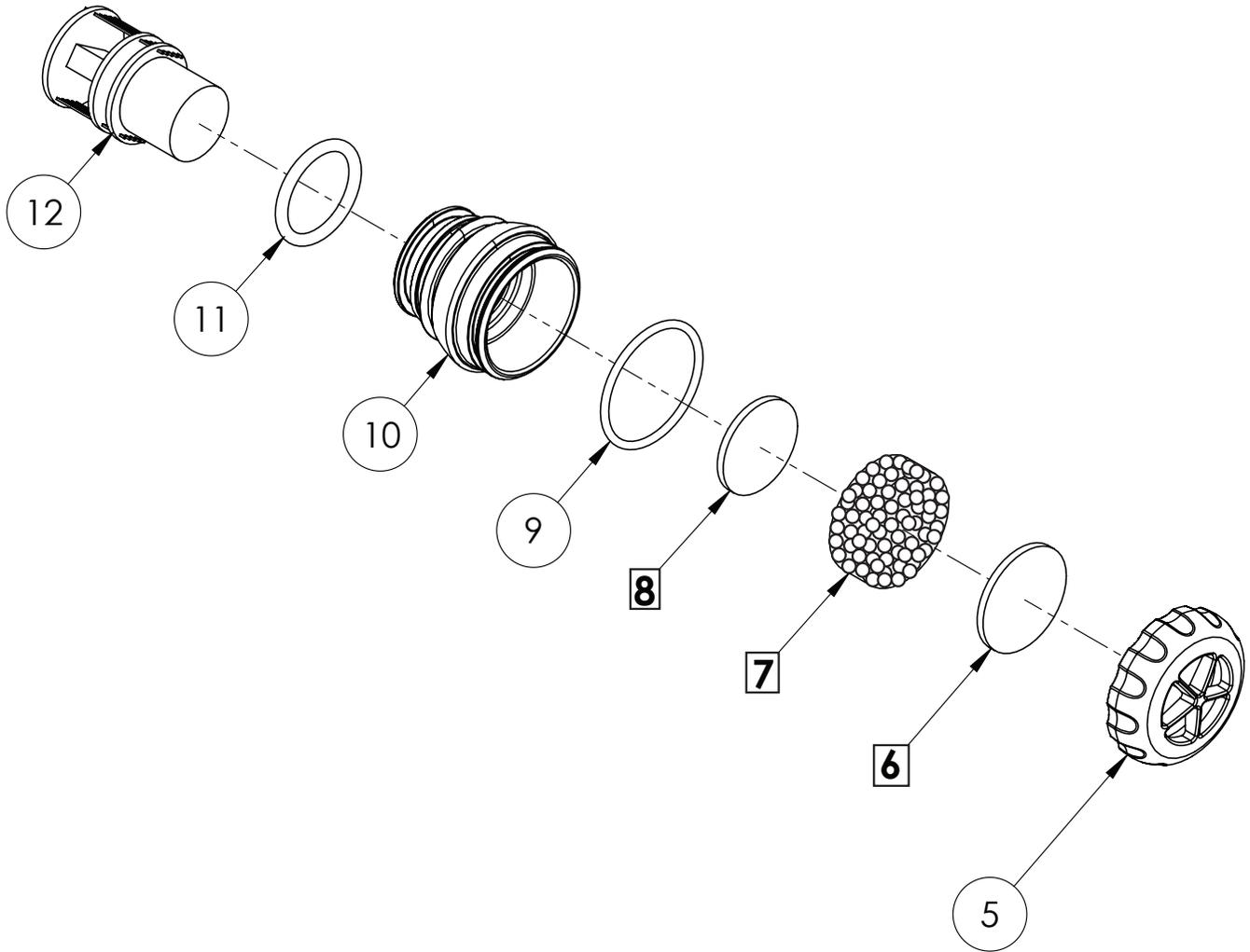
Fig. 6

## DRYING SILICA BEADS FOR REUSE

**Silica beads (7)** can simply be replaced with new or dried for reuse. To dry **silica beads (7)** Hollis recommends heating in an oven at 225° F for about an hour (times vary depending on your oven). When the granules return to their original amber color, they are ready for use in the Explorer. Avoid rapid hydration due to liquid water exposure or rapid dehydration of the **silica beads (7)**. Any **silica beads (7)** that have become broken due to liquid exposure, rapid drying, harsh handling; etc. must be discarded and replaced.

**! WARNING: Rapid hydration (i.e. breathing loop flooding) or dehydration of the silica gel beads can cause them to fracture. NEVER use broken silica beads in your Explorer CO<sub>2</sub> sensor cap. Doing so could lead to obstructed gas flow, rendering the CO<sub>2</sub> sensor ineffective in detecting dangerous levels of CO<sub>2</sub> gas.**

# CO<sub>2</sub> SENSOR ASSEMBLY DIAGRAM



| <b>DIA.</b> | <b>P/N</b> | <b>DESCRIPTION</b>       | <b>NOTES</b>         |
|-------------|------------|--------------------------|----------------------|
| 5           | 25522      | CAP COVER                |                      |
| 6           | 25687      | FILTER                   |                      |
| 7           | TBD        | SILICA BEADS, INDICATING | supersedes P/N 25427 |
| 8           | 25686      | FILTER                   |                      |
| 9           | 25646      | O-RING                   |                      |
| 10          | 25425      | CAP                      |                      |
| 11          | 25644      | O-RING                   |                      |
| 12          | 25429      | CO <sub>2</sub> SENSOR   |                      |

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## RECORDS

CO<sub>2</sub> SENSOR SERIAL NUMBER: \_\_\_\_\_

DATE OF PURCHASE: \_\_\_\_\_

HOLLIS DEALER: \_\_\_\_\_

DEALER PHONE NUMBER: \_\_\_\_\_

## NOTES:

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