Before Use

Roving Blue® is designed to ensure safe drinking water from tap or other clear water sources such as rainwater or clear streams.

Water that is visibly clouded with dirt, silt or algae should be allowed to settle and/or should be pre-filtered.

Also, water containing tannins (a "tea" coloring) will be rendered safe to drink; however, the tea color may not be removed.

Overview

The Roving Blue® O-Pen™ makes water safe to drink by using dissolved ozone as a sanitation agent. Ozone, or "03", is the most powerful oxidizer available that can be safely used in water treatment.[1]

Ozone is a strong oxidant that is widely recognized as a biocide and has the ability to achieve more than 99.9% pathogen kill rates.

Treatment with ozone is a proven and long-accepted method for disinfecting drinking water. Users of ozone technology include municipal water treatment plants, water bottling companies, hospitals and hotels.

- In 1997, the FDA approved the use of ozone as an anti-microbial agent with indirect contact with foods.
- In 2002, the FDA approved ozone for use on food contact areas and directly on food with its "Generally Regarded as Safe" (GRAS) designation.
- Today, the Organic Foods Production Act (OFPA) identifies aqueous ozone (ozone dissolved in water) as a substance that is allowed for use in organic crop and livestock production.

Ozone has been shown to be effective in a variety of drinking water applications including:

Disinfection, iron (Fe) and manganese (Mn) reduction, hydrogen sulfide removal, and taste and odor reduction.

Ozone can also reduce formation of disinfection by-products such as trihalomethanes (THMs) and halo acetic acids (HAAs).

Ozonation is effective for removal of difficult to treat pathogens such as giardia and cryptosporidium.

The amount of 03 generated by the O-Pen™ will vary depending on water temperature, chemistry, conductivity and pH.

Partial List of Micro-organisms that Ozone Can Destroy:

Bacillus anthracis (Anthrax)	Salmonella paratyphi (Enteric Fever)	Legionella pneumophilia (Legionnaires' Disease)
Cryptosporidium	Streptococcus faecaelis	Salmonella (food poisoning)
Giardia	Bacteriophage (E. Coli)	Salmonella typhosa (Typhoid Fever)
Influenza	Dysentery bacilli (Diarrhea)	Tuberculosis
Poliovirus (Poliomyelitis)	Hepatitis	

[1]Water Quality Association , "Ozone for POU, POE and Small Water System Water Treatment Applications," Lisle, IL 1999

Roving Blue® O-Pen™
Operations Manual

09/12/2016

Roving Blue ®, Inc.
5220 St. Patricks Road
Lena, Wisconsin USA

Roving blue®
portable water purification

Roving Blue® O-Pen™ Operations Manual

BEFORE YOU USE THE O-PEN, READ, FOLLOW AND SAVE THESE INSTRUCTIONS. OTHER THAN BATTERY MAINTENANCE, THERE ARE NO USER-SERVICABLE PARTS. EXPOSING PARTS IN THE PEN WILL VOID YOUR WARRANTY. INTERNAL PARTS SHOULD NOT BE TAMPERED WITH.

Roving Blue®, Inc.
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Email: service@rovingblue.com
www.rovingblue.com

Introduction

This Operations Manual is written to assist in the operation and maintenance of your unit. Please read this manual carefully and in its entirety before operating.

Failure to follow these instructions could result in personal injury, damage to the equipment or reduced product performance.

In our ongoing efforts to improve reliability and operating efficiency, Roving Blue®, Inc. may find it necessary to make changes to its products. The information contained in this guide may not conform in every respect to earlier versions.

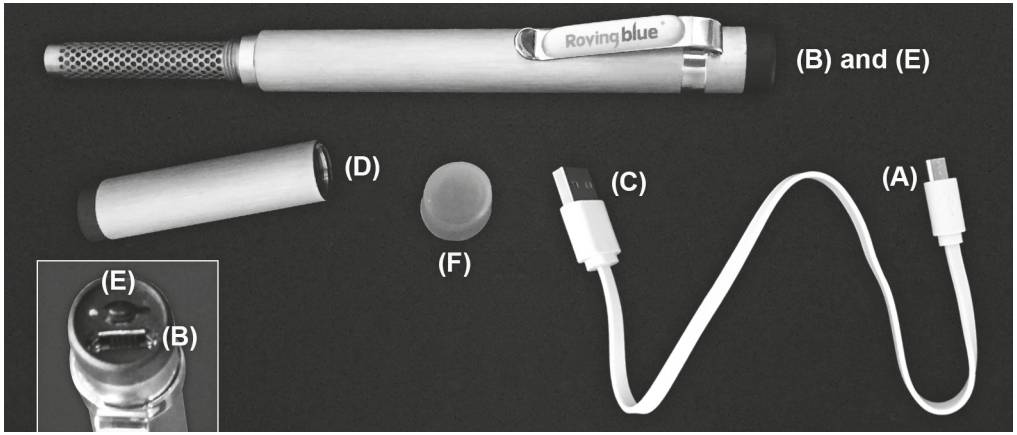
If you have any questions, please contact the Roving Blue® service department:

Phone: (920) 621-2163
Fax: (920) 227-4152
Email: service@rovingblue.com

Product Registration & Warranty Information

For product registration and warranty information, please visit www.RovingBlue.com/warranty or contact your local reseller.

Purchase Date: _____
Buyer Name: _____
Address: _____
City, State, ZIP: _____
Purchased From: _____
Price Paid: _____



Operating Instructions

1. Your unit comes equipped with lithium ion rechargeable batteries. Prior to use, fully charge the O-Pen™ by plugging the USB charger cord mini plug (A) into the plug port socket (Inset photo (B)) on the pen. Insert the USB plug (C) into any 5V USB power supply.
2. A red LED light will come on, indicating that the pen is charging. After approximately 30 minutes, the red light will go off, indicating that the pen is fully charged. Remove the power cord and replace the clear dust cover.
3. Remove the stainless steel barrel (D) by twisting it clockwise. Place the O-Pen™ in a glass or bottle containing 500-250 ml (8 to 16 ounces of water). Take care not to submerge the pen past the clip.
4. Press the Power On button (Inset photo (E)). A bright green LED light will glow and the pen will begin emitting a cloud of ozone gas in tiny bubbles in the water. You will notice the sharp, clean smell of ozone, which many people compare to the smell in the air after a thunderstorm. After use, replace protective plastic cover (F) over port socket (B) and Power On Button (E).

> ***NOTE:*** *If the water is very dirty or contains silt, it should be collected in a receptacle (such as a jerry can or barrel) and allowed to settle prior to use, preferably overnight. In addition, use a Roving Blue® pre-filter to ensure clear, clean water.*

5. BEFORE YOU USE: Fully immerse the electrode in at least 250 ml of tap water. This process removes the protective coating from the electrodes. Once the initial cycle is complete, dispose of the tap water; do not consume.
6. For subsequent uses, stir the water with the O-Pen™ for 40 seconds. This is enough time for purifying 250 ml or 8 ounces of water. This will evenly distribute the ozone throughout the water to ensure maximum disinfection.
7. If you are treating 16 ounces of water, press the button again and continue stirring for another 40 second cycle.
8. Once the cycle is complete, wait at least 5 minutes. This will give the ozone time to disinfect the water. As the ozone is used up, it begins reverting back to oxygen and the smell is diminished. Once you can no longer smell the ozone, it is safe to drink.

Shut Down Procedures

Once you are done, simply remove the O-Pen™ from the water and give it a shake to remove the excess water and replace the stainless steel cap

For further information and a video demonstrating these procedures, you should contact your nearest Roving Blue® seller (see Map on our website) or contact us directly at www.RovingBlue.com.

Care & Caution

The Roving Blue® O-Pen™ should be operated according to the guidelines described in this manual. The guidelines are not a substitute for determining additional safety procedures.

This unit is designed for safe operation when used as directed.

This device is not intended for use by children.

This is an electrical device. Other than charging the batteries, there are no user-replaceable or user-repairable parts. Please return the device to your local sales representative/reseller or distributor with any repair issues.

Never disassemble a Roving Blue® O-Pen™ unit. Removal of, or tampering with the electronic circuit board may cause injury or damage to your unit and will void your warranty. Do not open, expose, modify, dismantle or touch internal circuitry; this can lead to an electrical shock or damage.

Do not allow anyone to use this product until they fully understand proper operating procedure as outlined in the Operation Instructions section of this Operations Manual.

As with any water treatment system, you should always have a backup method available. In the event that your Roving Blue® O-Pen™ unit is lost, broken or non-functional due to low batteries, you will need an alternative method to make your water safe.

Contact your local recycling center for safe disposal of any batteries.

Your Roving Blue® O-Pen™ unit is intended for use with fresh water only! It is not intended for use with other liquids or solids.

If the Roving Blue® O-Pen™ device is below ˚32F/˚0C it should be warmed above ˚32F/˚0C before operating.

Infectious microbes can be encountered in many ways. Some other ways that infectious diseases can be spread are through:

- Improperly prepared or cooked food
- Foods washed in unsafe water
- Contact with infected people, animals or objects
- Water unintentionally consumed, such as when brushing teeth, showering or swimming

Opportunities for infection are abundant and virtually everywhere so it is important to realize that use of a Roving Blue® O-Pen™ device does not guarantee that the user will avoid illness. To avoid microbial infection, one must take a wide range of precautions. Use of a Roving Blue® O-Pen™ is an important precaution, but not the only precaution that one should take.

Additional Use Instructions

Read manual before use.

Do not immerse the unit in water.

Protect the unit from rain as not all components are sealed against water intrusion.

Protect the unit from freezing.

Use only in properly ventilated areas in conformance with all local and national regulations.

If respiratory irritation is experienced, discontinue use immediately.

To avoid shock, do not use if the device is damaged.

Do not open sealed components.

Use only with supplied USB power cord or other Roving Blue® brand accessories or parts.

The O-Pen™ was designed for use with tap water or bottled water of unknown safety. It should not be used for surface waters from lakes, rivers, or streams unless that water is clear.

Examine the water carefully. If there is any cloudiness present, this is a clear indication of very high bacteria levels. While ozone is highly effective at killing bacteria, the O-Pen may not generate the levels of ozone needed to kill high levels of bacteria. DO NOT USE CLOUDY WATER!

Do not use in water above ˚140F/˚60C.

Do not use in any manner other than as instructed in this User's Guide.

Regular Care & Cleaning

When not in use, the Roving Blue® unit should be kept in a clean, dry, non-abrasive area or container.

The unit should not be exposed to ambient temperatures above ˚140F/˚60C or below ˚4-F/˚20-C. Store with the clear dust cover in place to avoid dust or water entering the power source on the pen.

To clean the unit, wash it with a soft cloth and a mild soap solution. Rinse the soap from the device and dry it with a clean, soft cloth. Annual

Maintenance of the Electrodes:

Tap water often contains minerals such as calcium carbonate. These minerals will accumulate on the electrodes (primarily the cathode) and will cause the electrolysis process to slow down. When the generation of ozone water appears weak (or as measured by an ozone concentration meter), clean the electrodes at least once a year as follows:

1. Prepare a solution of tap water and regular kitchen vinegar (at a ratio of 5 to 1 water to vinegar or 10 to 1 water to citric acid).
2. Dip the ozone electrode into this solution for 10 minutes. Do NOT apply power.
3. Rinse the ozone water generator with tap water. After cleaning the electrodes, normal production volume will resume.