

Roving Blue® O-Pen™ Operations Manual



portable water purification

rev.5

READ, FOLLOW AND SAVE THESE INSTRUCTIONS. THERE ARE NO USER-SERVICEABLE PARTS. EXPOSING PARTS IN THE PEN WILL VOID YOUR WARRANTY. **INTERNAL PARTS SHOULD NOT BE EXPOSED OR TAMPED WITH.** DO NOT USE IN ANY OTHER MANNER THAN AS DESCRIBED IN THIS MANUAL.

Roving Blue's® O-Pen™ technology is patent-pending. Roving Blue® is a registered trademark of Roving Blue, Inc. O-Pen(TM) is a trademark of Roving Blue, Inc.

Introduction:

This user guide 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 effort 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:

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Intended Use: The O-Pen™ is designed to ensure safe drinking water from taps or other clear water sources such as rainwater or clear streams. It does this by infusing the water with high levels of ozone. Ozone is the most powerful oxidizer available that can be safely used in water treatment.* 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. Don't forget to register your product. Go online to www.rovingblue.com/warranty, or call with the following information: Name, address, serial number of Pen. (Silver Pen, number is on a label inside the box lid, on the Tactical Black, the number is engraved under the pen clip.) Date of Purchase.

*Water Quality Association, “Ozone for POU, POE and Small Water System Water Treatment Applications,” Lisle, IL 1999

Caution: The O-Pen™ was designed for use with clear tap water of unknown safety. It may be used with fresh surface waters or collected rainwater, however it is quite important that you make sure that water is clear. **DO NOT USE WITH CLOUDY WATER.** Examine the water carefully. If there is any cloudiness present, this is an indicator of very high bacterial levels. While ozone is highly effective at killing bacteria, the O-Pen™ may not generate enough ozone to kill very high levels of bacteria. Operate it repeatedly until there is a strong smell of ozone. It is not possible to “over-ozonate” water, however, you can under-dose it. If you cannot smell the ozone, it is probably being used up by whatever is in the water. You may need to operate it many times to be sure you can smell the ozone. **If, even after several uses of the O-Pen™, you cannot smell the ozone, you should not consume the water.**

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

- Foods washed in unsafe water
- Contact with infected people, animals or objects
- Unintentional water consumption, 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.

Ongoing Care & Cleaning:

When not in use, the O-Pen™ should be charged and kept in its box. It should not be exposed to temperatures above 140°F/60°C or below -4°F/-20°C. Store with the clear dust cover in place. To clean the unit, wash it with a soft cloth and mild soap solution. Rinse and shake dry and lay out to dry completely. Replace cap and store.

Periodic Maintenance:

Water often contains minerals such as calcium carbonate. Like a coffee-maker, these minerals will slowly accumulate on the electrodes, and will cause the electrolysis process to slow down. When the production of ozone appears weak, you may clean the electrodes as follows:

1. Prepare a solution of tap water and regular kitchen vinegar at a ratio of 5 parts water to 1 part vinegar.
2. Dip the ozone electrode into this solution for 10 minutes. Do NOT apply power.
3. Stir a few times and remove from solution. Rinse the tip in cool tap water. After cleaning the electrodes, normal production on will resume.

Overview: The Roving Blue® O-Pen™ makes water safe to drink by using dissolved ozone as a sanitation agent. Ozone, or “O3”, is the most powerful oxidizer available that can be safely used in water treatment. 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 boiling 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.

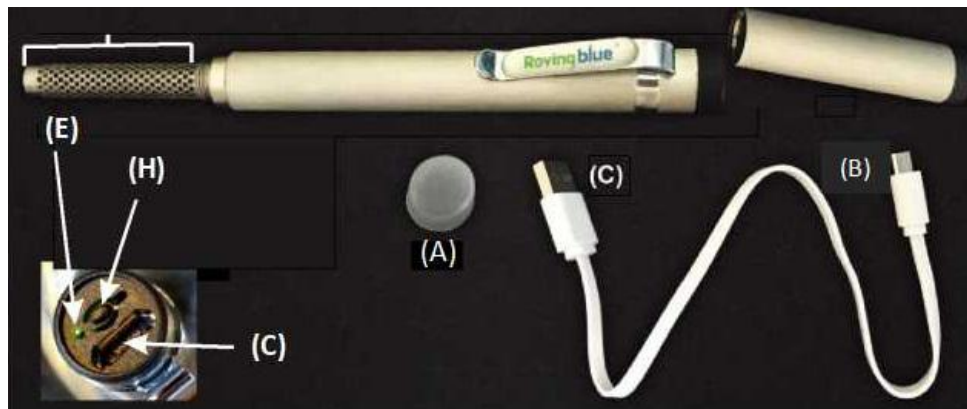
Ozone can also reduce formation of disinfection by-products such as trihalomethanes (THMs) and halo acetic acids (HAAs). Ozonation is effective for removal of difficult to treat pathogens such as giardia and cryptosporidium. The amount of O3 generated by the O-Pen™ will vary depending on water temperature, chemistry, conductivity and pH.

Before Your First Use: Your unit comes equipped with lithium ion rechargeable batteries. Prior to use, you will want to fully charge the O-Pen™. Remove the clear silicone cap (A) from the end of the pen. Plug the USB charger cord mini plug (B) into the plug port socket (C). Then, Insert the USB plug (D) into any 5V USB power supply to charge.

To show that the unit is charging, a LED light (E) will illuminate. When fully charged, the light will either dim or turn off, (depending on pen model) to indicate that the pen is fully charged. Charging will take 5 minutes to 3 hours depending on charge state of battery pack. When charging is complete, remove the power cord and replace the clear silicone cap.

Remove the pen cap (F) by twisting it counter-clockwise. Place the O-Pen™ in a glass of water so that the stainless metal electrodes are (G) are fully submerged.

Press the small ON/OFF button (H) on the end of the pen. Depending on your pen model, a blue or green LED light will come on. Each pen is timed for a :40 second run me “dose” (:30 is good for 8 oz, 1:00 is good for 16 oz.) . When the timed cycle is complete, the LED light will go out. You may now swish the tip in the glass and repeat 5 times. This will ensure the electrodes are clean and clear of a protective coating. Dispose of the water. Do not consume. Your unit is now ready to be used.



To Use:

1. Make sure unit is fully charged.
2. Replace protective cap. (A)
3. Submerge the tip in a glass that contains up to 16oz or 475 L (about a standard bottle of water) of clear water. Take care not to submerge the USB port end of the pen. (C)
4. Press the on/off switch, observe that the LED light comes on. (H), (E)
5. Stir the water with the pen for the entire cycle time. One :30 second cycle is good for 8 oz or .236 L of water, two :30 second cycles are good for 16 oz or 475 L of water. You will notice the sharp, clean smell of ozone.
6. Once the cycle(s) are complete, wait at least 3 minutes. This will give the ozone time to disinfect the water. It is not harmful to consume the water at this point, however, many people prefer to let the ozone go away completely before consuming. This will take anywhere from 5 minutes to an hour depending on the water's temperature, pH, and other factors. While you can still smell the ozone, that water can actively kill germs, so you can use it to disinfect wounds, rinse your mouth (like a mouthwash), or to rinse vegetables.

NOTE: If the water is very dirty or contains silt, it should be collected in a receptacle (such as a jerry can or bucket) and allowed to settle prior to use, preferably overnight.

It is not possible to “over-ozonate” water, so if the water is still suspect, you may repeat doses for additional peace of mind.

Shut Down Procedures:

Once you are done, remove the O-Pen™ from the water and give it a shake to remove the excess water. Optional: Lay it out on a clean napkin or cloth to dry fully. Replace the cap and store in its box. For further information and videos demonstrating these procedures, you should contact your nearest Roving Blue® seller (see Map on our website) or contact us directly at: www.RovingBlue.com.