

### SPECIFICATIONS

Kit Contents	Guardian™ Purifier Instruction Manual Storage Sack
Weight	17.3 oz. / 490 g
Dimensions	8.2 x 4.7 in. / 21 x 12 cm
Flow Rate	2.5 liters per minute
Hollow Fiber Filter	Up to 10,000+ liters (depends on water conditions)
Patents	U.S. patent pending

### TROUBLESHOOTING

Problem	Cause	Solution
Guardian™ Purifier Instruction Manual Decreased/no water flow, or hard to pump	Clogged Prefilter	Rinse/Clean Prefilter
Storage Sack	Clogged Filter Cartridge (See Pump Head Maintenance)	Replace Filter Cartridge (See Pump Head Maintenance)
Weight	Inspected and lubed Cup Seal	Replace Cup Seal Replace if necessary (See Pump Head Maintenance)
Dimensions	Limp Handle (PULL stroke)	Replace if necessary (See Pump Head Maintenance)
Flow Rate	Limp Handle (PUSH stroke)	Piston End Nut lacks Clean Piston End Nut, End Nut O-ring and Piston O-ring (See Pump Head Maintenance)
Hollow Fiber Filter	Pressure Relief Valve (PRV) is contaminated	Clean Umbrella Valve, replace if necessary (See Pump Head Maintenance)
Patents	Water Outlet Hose with little water exiting Clean Water Port	Replace O-ring if necessary, Clean Umbrella Valve, replace if necessary (See Pump Head Maintenance)
	Lots of water exiting Dirty Water Outlet Hose with little water exiting Clean Water Port	Replace O-ring if necessary, Clean Umbrella Valve, replace if necessary (See Pump Head Maintenance)

# INSTRUCTION MANUAL



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# GUARDIAN™ PURIFIER

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info@cascaledgedesigns.com

### HOW IT WORKS

The Guardian Purifier's Hollow Fiber Filter removes pathogens and other particles through *size exclusion purification*. This is the most reliable means of purification because the fibers' pores physically block pathogens, including viruses. Pressure forces clean water through the walls of these fibers. The microbes and dirt left behind are pumped out through the Dirty Water Outlet Hose.

Other purifiers rely on chemicals or UV light to kill pathogens, or adsorption (such as carbon) to attract them. While these methods can be effective in clear water, the Guardian Purifier is reliably effective in all water types – clear, turbid, tea colored or muddy.

The Guardian Purifier also uses a patent-pending system to self-clean with every stroke. It does not require in-field cleaning to maintain flow.

### PURIFIER CARE AND MAINTENANCE

To keep your Guardian Purifier performing reliably for many years, service your purifier using the Annual Maintenance Kit, available at msrgear.com.

#### STORAGE

Before storage, pump out any excess water and attach the Clean Side Cover.

**DO NOT** disassemble and dry the Filter Cartridge. **A dry cartridge will not work properly.** (Please contact MSR customer service if you suspect your filter has dried out.)

Towel dry the outside of the pump. Gently rub off any debris from the Prefilter and rinse it with fresh water.

Before or after long-term storage, sterilize the purifier to ensure fresh-tasting water (see "Sterilizing the Purifier").

#### STERILIZING THE PURIFIER

**When to sterilize:** Sterilize the Purifier before and/or after long-term storage to ensure long life and fresh-tasting water. Also sterilize it before any disassembly.

- Mix a solution of 2 mL (~1/2 tsp) of household bleach (free of dyes or perfumes) with 2 L of water, or dissolve 12 MSR Aquatabs® tablets in 2 L of water.
- Pump most of this solution through the purifier, stopping before air can enter the pump.
- Wait 30 minutes.
- Pump 1-2 liters of clean water to clear any remaining solution from pump.
- Pump the Handle to purge excess water from the Purifier.

**WARNING**

Disassembling the Purifier can expose you to contaminated parts, resulting in sickness. MSR recommends sterilizing the Purifier before any disassembly. If you cannot sterilize the Purifier, wash your hands *thoroughly* after disassembly.

#### REPLACING THE FILTER CARTRIDGE

The Guardian Purifier's Hollow Fiber Filter has been tested to over 10,000 liters.

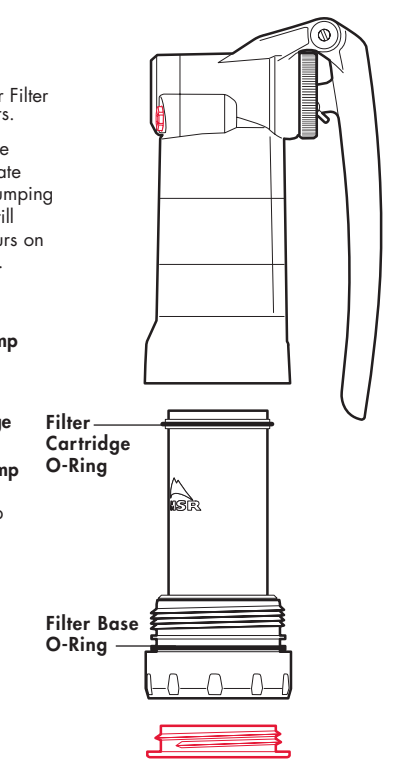
**When to replace:** The Filter Cartridge should be replaced when the flow rate drops to less than 1L /min. when pumping 70 strokes per minute. The filter is still purifying water, but more wear occurs on internal parts as the flow rate drops.

#### DISASSEMBLY

- Unthread the Filter Base from Pump Housing.

#### ASSEMBLY

- Lightly lubricate the Filter Cartridge O-ring and Filter Base O-ring.
- Thread the Filter Base into the Pump Housing. Don't over tighten. The Filter Base is designed to stop rotating when it's fully threaded.



# WARNING

### BIOLOGICAL HAZARD

There are hazards associated with backcountry or international travel and the use of water purifiers. Drinking untreated water can result in exposure to harmful microorganisms and an increased risk of gastrointestinal illness. Using this purifier improperly increases your risk of exposure to harmful microorganisms and increases your risk of gastrointestinal illness. Reduce your chances of becoming sick by following the warnings and instructions in this manual and educating yourself on backcountry and international water safety.

**YOU ARE RESPONSIBLE FOR YOUR OWN SAFETY AND THE SAFETY OF THOSE IN YOUR GROUP. PLEASE USE GOOD JUDGMENT.**

Never use the Guardian Purifier to filter seawater or chemically contaminated water, such as water from mining tailing ponds or near agricultural operations. The Guardian Purifier does not make potable water from these sources and does not remove chemicals and radioactive materials.

Keep the Inlet Hose and other potentially contaminated parts away from purified water to prevent cross contamination.

**READ, UNDERSTAND, AND FOLLOW ALL instructions and warnings in this manual before using this purifier.** Failure to follow warnings and instructions may result in gastrointestinal illness.

**IMPORTANT**

Read and understand this entire manual carefully before assembling or using this water purifier. Keep this manual for future reference. If you do not understand this manual or have any questions, please call Cascade Designs at 1-800-531-9531.

### LIMITED WARRANTY/LIMITATIONS OF REMEDIES AND LIABILITY

**Limited Warranty:** Cascade Designs, Inc. ("Cascade"), to the original owner ("Owner"), under intended use and maintenance, warrants the enclosed product ("Product") to be free from defects in materials and workmanship. No warranty against defects in materials and workmanship applies if Product is: (i) altered in any way; (ii) used for purposes inconsistent with Product's intended purpose or design; or (iii) used for purposes inconsistent with Product's intended purpose or design; if failure to follow Product instructions or warnings; or (iv) subjected Product to misuse, abuse, or neglect. Product parts determined by Cascade to be defective in materials or workmanship will be repaired or replaced as Owner's sole remedy. Cascade reserves the right to replace any discontinued product with a new product of comparable value and function. A returned product deemed irreparable becomes the property of Cascade and will not be returned.

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## TIPS

### WATER COLLECTION AND PREPARATION

Use the cleanest, clearest water available.

### STORAGE

**DO NOT** disassemble and attempt to dry out Filter Cartridge. A dry cartridge will not work properly.

Pump out any excess water from the Purifier prior to storing it.

### PREFILTER

The Prefilter is designed to draw water from just below the surface, where it's cleanest. Position the Dual Hose and Float such that the Prefilter's mesh cage floats vertically under the Float.

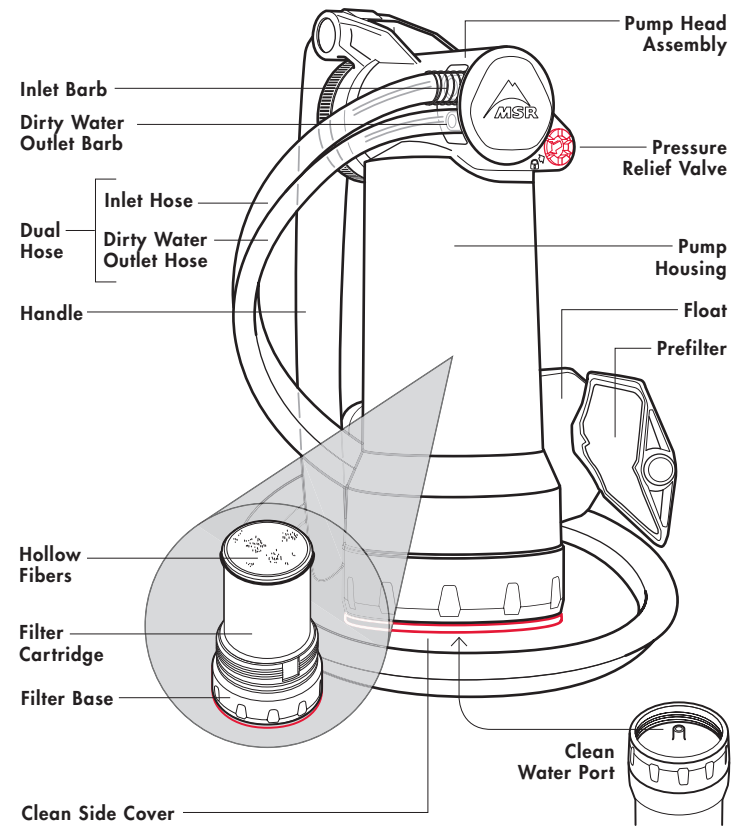
In some cases, the mesh cage may rotate partially out of the water. This is OK. The cage is designed to draw water even when it's partially submerged.

If the mesh becomes clogged with debris, swirl it in water and brush the dirt off. If dirt becomes trapped inside the mesh, remove the Prefilter by gently twisting and pulling it from the Inlet Hose. Then, rinse the dirt out.

### IN FREEZING TEMPERATURES

**DO NOT** pump the Purifier if its Filter Cartridge is frozen. The cartridge **MUST** be fully thawed before pumping.

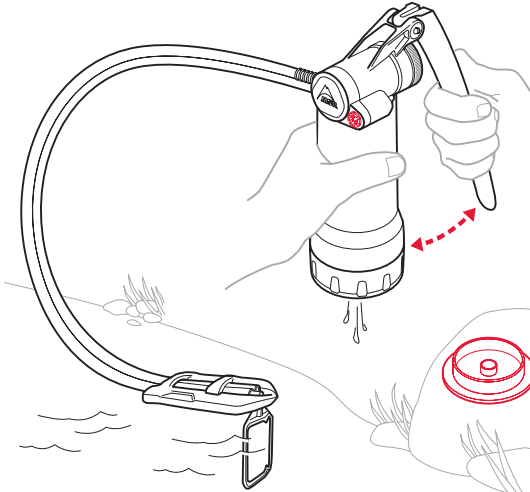
## KNOW YOUR MSR® GUARDIAN™ PURIFIER



## GUARDIAN™ PURIFIER OPERATING INSTRUCTIONS

### 1 PREPARE PURIFIER

1. Uncoil the Dual Hose and place Prefilter in water.
2. Remove **RED** Clean Side Cover and pump 5-10 strokes to ensure clean-tasting water.

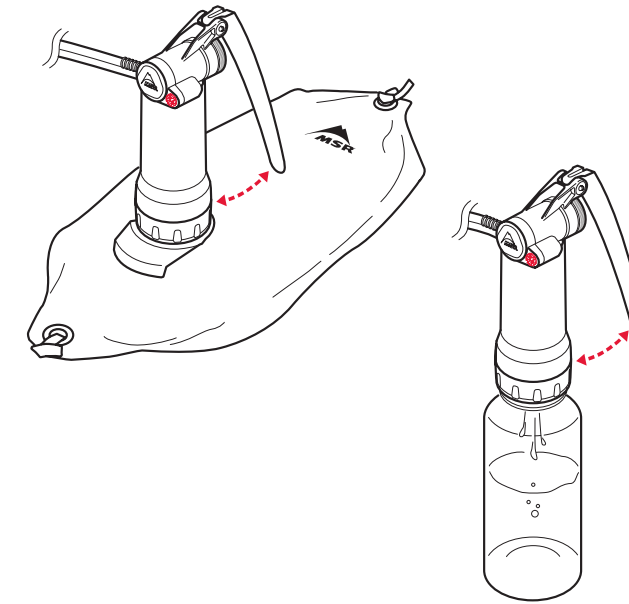


#### WARNING

**WARNING** – DO NOT pump water over 160°F (71°C). DO NOT pump if purifier is frozen. These actions could damage the purifier.

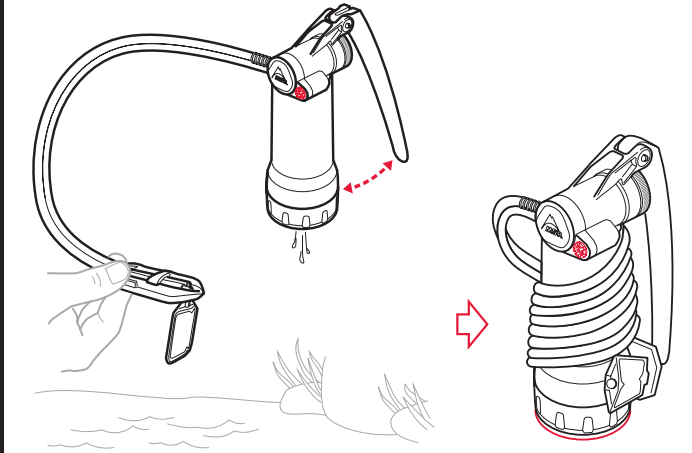
### 2 PURIFY WATER

1. Attach threaded container to threaded bottom of purifier. Or, a hose may be attached to the Clean Water Port.
2. Pump to purify water (~60-80 strokes/min. is optimal).



### 3 PACK AND STORE PURIFIER

1. Detach container and remove Prefilter from water.
2. Pump the Handle to purge excess water from purifier.
3. Replace Clean Side Cover & wrap Dual Hose.



#### WARNING

**WARNING** – DO NOT disassemble and attempt to dry out the Filter Cartridge. See "Replacing the Filter" for more information.

## PURIFIER INTEGRITY TEST

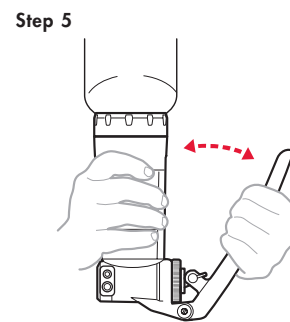
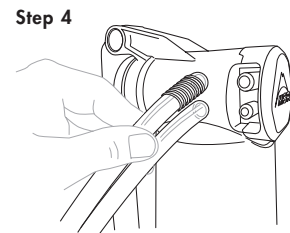
The Guardian Purifier withstands freeze- and drop-testing (6 ft. to concrete), but if you believe the Filter may have been compromised, an integrity test should be performed, and can be done in the field. **A CLEAR, THREADED WIDE-MOUTH BOTTLE MUST BE CARRIED TO PERFORM THE TEST. Read all steps first.**

### INSTRUCTIONS:

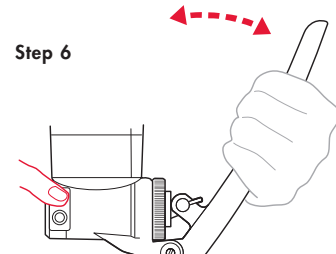
1. Uncoil Dual Hose and place Prefilter in a water source.
2. Remove Clean Side Cover and attach clear, threaded bottle to bottom of purifier.
3. Pump Handle to fill about 1/3 of the bottle with water.
4. Remove the Prefilter from the water source and disconnect Dual Hose.

**STOP. READ STEPS 5-7 BEFORE PROCEEDING.**

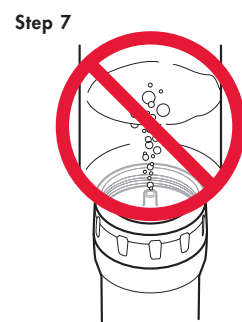
5. With threaded container attached, orient pump upside down, and face Inlet/Outlet Barbs away from you; water will be exiting them. Pump Handle 5-10 strokes until only air exits the Outlet Barb. (A little water will drip from the bottle.)



6. Plug Outlet Barb (the smaller hole) by securely placing a finger over it. Pump 5-10 complete strokes (one stroke = complete pump in and out).



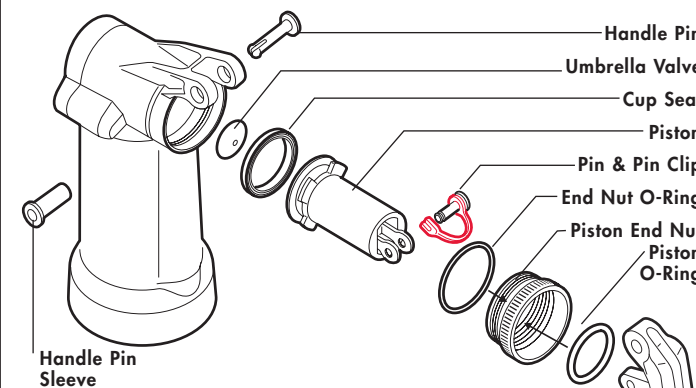
7. Keeping Outlet Barb plugged, observe water in bottle for 30 seconds: If a steady stream of air bubbles exits the Clean Water Port, the purifier is **NOT SAFE** to use. If a few bubbles escape, pump the Handle 5 more strokes and observe another 30 seconds. If no subsequent bubbles escape, the pump is safe.



If your Filter Cartridge has been compromised, please purchase a replacement at [msrgear.com](http://msrgear.com).

## FIELD MAINTENANCE

The MSR Guardian Purifier is designed to be serviceable in the field. Please purchase the Annual Maintenance Kit for replacement parts, available at [msrgear.com](http://msrgear.com).



#### WARNING

Disassembling the Purifier can expose you to contaminated parts, resulting in sickness. MSR recommends sterilizing the Purifier before any disassembly. If you cannot sterilize the Purifier, wash your hands thoroughly after disassembly.

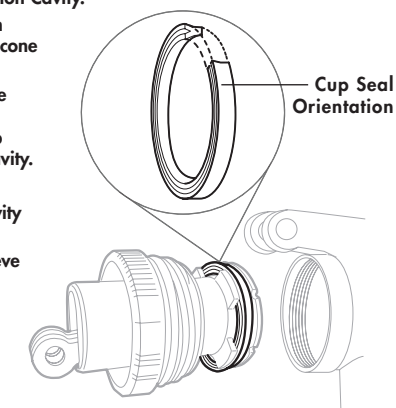
### PUMP HEAD MAINTENANCE

#### DISASSEMBLY:

1. Remove Handle Pin (pinch, then push) and Handle Pin Sleeve.
2. Remove Pin & Pin Clip. Set Handle aside.
3. Unthread Piston End Nut and remove Piston assembly.
4. Separate Piston from Piston End Nut.
5. Remove Umbrella Valve by lifting it out with your finger.
6. Note orientation of Cup Seal. Remove all seals (Cup Seal, Piston O-ring, End Nut O-ring).
7. Rinse all parts with clean water.

#### ASSEMBLY:

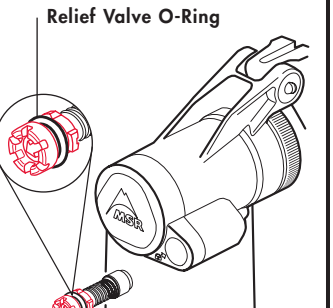
1. Using finger, firmly insert stub end of Umbrella Valve into center hole of Piston Cavity.
2. Install new End Nut O-ring and Piston O-ring. Apply a thin layer of MSR Silicone Lubricant to each.
3. Install new Cup Seal onto Piston in the same orientation as old Cup Seal. Apply a thin layer of Lubricant to Cup Seal and the inside walls of Piston Cavity.
4. Slide Piston End Nut onto Piston.
5. Thread Piston End Nut into Piston Cavity until rotation stops completely.
6. Reattach Handle with Handle Pin Sleeve and Handle Pin.
7. Align Piston to Handle and reinstall Pin & Pin Clip. Confirm that end of Pin Clip is clipped onto Pin.



### PRESSURE RELIEF VALVE AREA MAINTENANCE

#### DISASSEMBLY:

1. By hand or using a coin, push and rotate Relief Valve Assembly 1/3 rotation.
2. Carefully slide Relief Valve Assembly from cavity.
3. Remove Relief Valve O-ring.
4. Rinse Relief Valve Assembly with clean water to remove debris.
5. Flush Relief Valve Cavity with clean water. **DO NOT** place objects in the Relief Valve Cavity.



#### ASSEMBLY:

1. Replace Relief Valve O-ring and apply a thin layer of Lubricant to it.
2. Verify that the rubber end surface of the Relief Valve Assembly is clean of debris.
3. Reinstall Relief Valve Assembly by pushing while rotating it until its arrow aligns with the arrow and lock symbol on the Pump Housing.

