

# INSTRUCTION MANUAL

## GUARDIAN™ GRAVITY PURIFIER

### IMPORTANT

Read and understand this entire manual carefully before assembling or using this water filter. 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.

### WARNING

#### BIOLOGICAL HAZARD

There are hazards associated with backcountry travel and international travel and the use of water filters and purifiers. Drinking untreated water may expose you to harmful microorganisms and increase your 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 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 Gravity to purify seawater or chemically contaminated water, such as water from mining tailing ponds or near large agricultural operations. The Guardian Gravity does not make drinkable water from these sources and does not remove all chemicals and radioactive materials, or particles smaller than 0.02 microns. Keep the hoses 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 filter. Failure to follow warnings and instructions may result in gastrointestinal illness.



## GUARDIAN™ GRAVITY PURIFIER INSTRUCTIONS

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The Guardian Gravity Purifier uses advanced hollow fiber technology to remove viruses, bacteria, protozoa and particulate, and employs activated carbon to reduce chemicals, tastes and odors, from fresh water sources.

#### PURIFIER PARTS:

A. Hang D-Ring	G. Inlet Hose Barb	M. Universal Bottle Adapter, Outer
B. Closure Strap	H. Purifier Cartridge	N. Shutoff Clamp
C. Hang Strap	I. Outlet Hose Barb	O. Outlet Hose (30 in / 76 cm)
D. Closure Buckle	J. Inlet Hose (40 in / 102 cm)	P. Clean Side Cover, Inner
E. Prefilter Screen	K. Dirty Water Reservoir	Q. Clean Side Cover, Outer
F. Inlet Hose Disconnect	L. Universal Bottle Adapter, Inner	R. Purge Valve

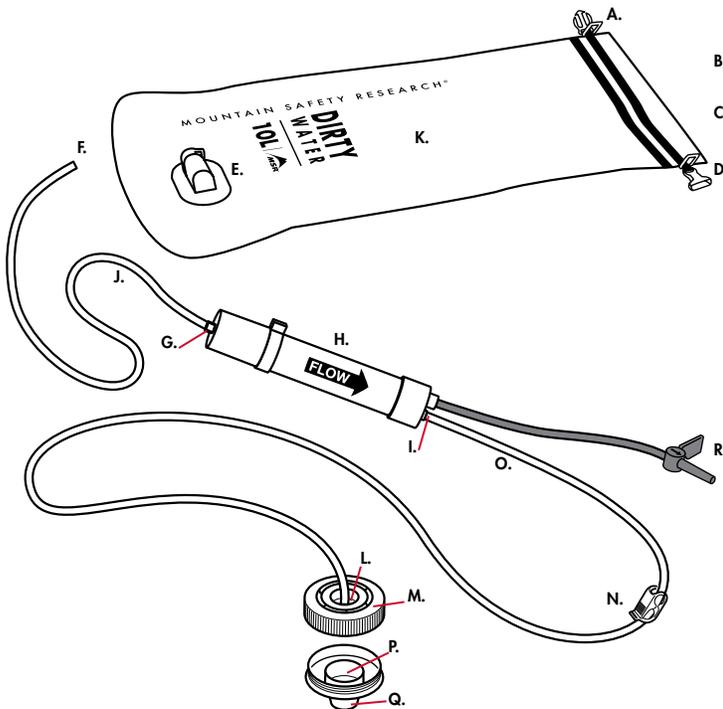
#### IMPORTANT NOTES:

 **WARNING** The Purge Valve releases concentrated dirty water. DO NOT allow any drops to splash into your clean water. Cross-contamination can expose you to microorganisms and increases your risk of gastrointestinal illness.

- Air trapped in the cartridge may reduce water flow. Release the air by opening the Purge Valve to flush the dirt and air until the water color matches the source water and is free of bubbles. Holding the cartridge horizontally or gently tapping the cartridge as water flows helps release the air.
- **DO NOT** disassemble and dry out the Purifier Cartridge before storing it. If the cartridge's internal fibers dry out, they will no longer pass water; the cartridge must stay wet inside.
- On extended trips, bring along a spare cartridge.

#### Tips for best performance:

- Use the cleanest, clearest water available, as silty, cloudy, muddy, tea-colored or glacial stream water will more quickly clog the cartridge.
- If clear water is not available, let particles settle to the bottom of the Dirty Water Reservoir before filtering. Clear the Prefilter Screen behind the Female Quick DISCONNECT as needed.
- To maximize water flow, hang the Dirty Water Reservoir as high as possible without pulling the clean container off the ground.

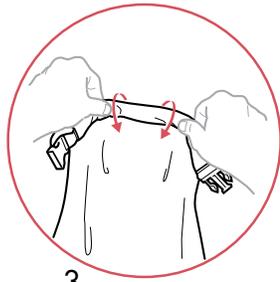
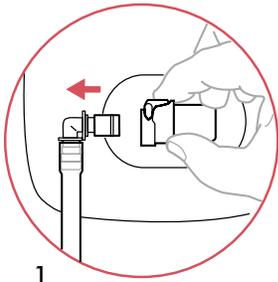


MOUNTAIN SAFETY RESEARCH®

Retain these instructions for future reference.

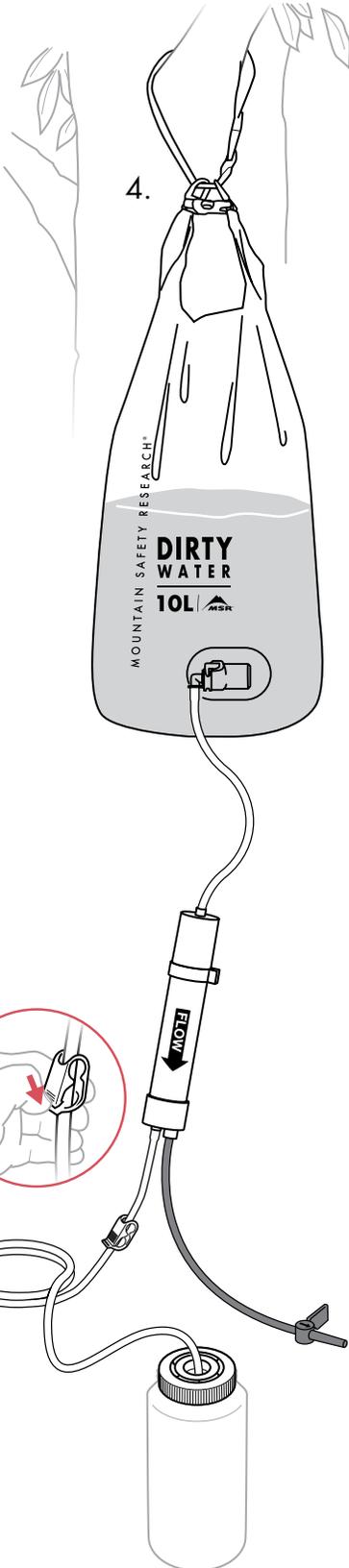
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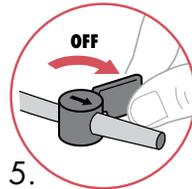


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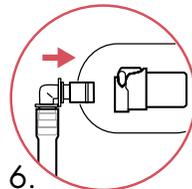
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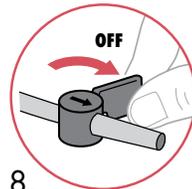
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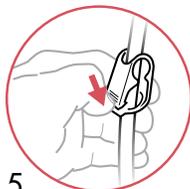
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# 1. PURIFY WATER

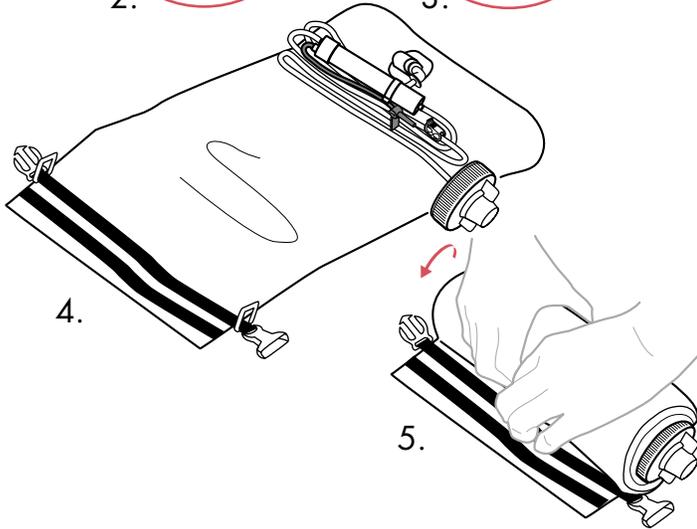
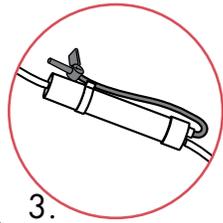
**BEFORE YOUR FIRST USE**, you will need to flush the Purifier Cartridge of loose carbon dust and glycerin, which are harmless but don't taste very good. Follow **Steps 1.1-1.8** under Purify Water. After purging the air and dirty water (**Step 1.7**), filter about ½ liter of water to waste before filtering into your drinking vessel.

1. Disconnect Inlet Hose from Dirty Water Reservoir.
2. Fill Dirty Water Reservoir with unfiltered water.
3. Fold Closure Strap on Dirty Water Reservoir 4+ times to seal. Connect the buckles of Closure Strap to each other.
4. Suspend Dirty Water Reservoir by Hang Strap. (NOTE: Hang Dirty Water Reservoir as high as possible without pulling the clean container off the ground.)
5. Ensure Shutoff Clamp and Purge Valve are both closed.
6. Reconnect Inlet Hose to Dirty Water Reservoir.
7. Open Purge Valve to start water flow, flushing any dirt and air until the water is the same color as the source water and free of bubbles. (NOTE: Holding the cartridge horizontally and gently tapping it helps release the air.)
8. Close Purge Valve.
9. Remove Clean Side Cover and open Shutoff Clamp, allowing water to flow. Rinse Bottle Adapter with filtered water. (NOTE: If this is your FIRST use of the cartridge, filter about ½ liter of water and discard it.)
10. Attach a clean container to Universal Bottle Adapter, ensure Outlet Hose isn't kinked, and allow water to fill vessel. (NOTE: Trapped air in the cartridge will affect flow.)

**⚠ WARNING** The Purge Valve releases concentrated dirty water. DO NOT allow any drops to splash into your clean water. Cross-contamination can expose you to microorganisms and increases your risk of gastrointestinal illness.

Limited Warranty details at [msrgear.com/warranty](http://msrgear.com/warranty)  
 For Troubleshooting Solutions, visit: [www.msrgear.com/guardian-gravity-purifier](http://www.msrgear.com/guardian-gravity-purifier)

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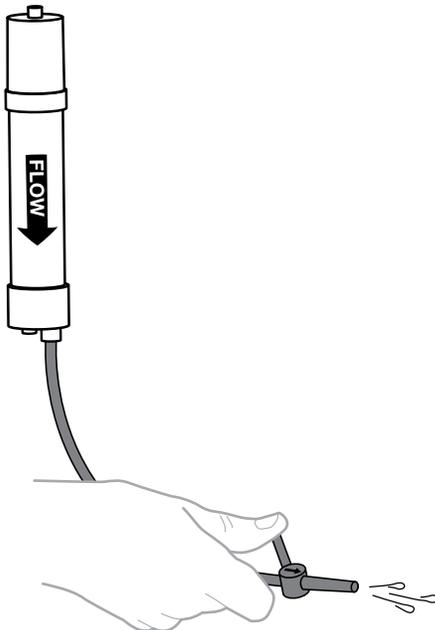
## 2. PACK & STORE GUARDIAN GRAVITY SYSTEM

1. Empty all water from system.
2. Reattach Clean Side Cover to Universal Bottle Adapter.
3. Fold up and clip Purge Valve to Purifier Cartridge.
4. Air or towel dry all parts as much as possible, then bundle hoses next to Purifier Cartridge. (**NOTE: All parts [reservoir, hoses, cartridge, adapter] should remain connected to avoid cross-contamination during storage.**)
5. Roll Dirty Water Reservoir around Purifier Cartridge and hoses and place in carry case. Always disinfect the cartridge **BEFORE** long-term storage (15+ consecutive days. See Step 5).

**⚠ WARNING** DO NOT disassemble and dry out the Purifier Cartridge before storing it. If the cartridge's internal fibers dry out, they will no longer pass water; the cartridge must stay wet inside.

**⚠ WARNING** Never store the Purifier Cartridge in cold temperatures (below 32 F/0 C). If the cartridge freezes, the flow rate will drop significantly and fibers may be damaged.

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## 3. FLUSHING (CLEANING) PURIFIER CARTRIDGE

Each time the Purge Valve is opened, dirt and built-up contaminants are flushed from the system. This cleans the filter, maintains optimal water flow and extends the filter's life. Ensure the system is flushed ideally every 10 liters, or every 3 liters for cloudy or tea-colored water.

1. Open Purge Valve to flush the Purifier Cartridge until the water is the same color as the source water and free of bubbles.

**⚠ WARNING** The Purge Valve releases concentrated dirty water. DO NOT allow any drops to splash into your clean water. Cross-contamination can expose you to microorganisms and increases your risk of gastrointestinal illness.

## 4. DISINFECT PURIFIER

To eliminate the growth of bacteria or mold, which can slow flow rates, always disinfect the purifier **BEFORE** long-term storage (15+ consecutive days).

1. Disconnect Inlet Hose from Dirty Water Reservoir.
2. Rinse reservoir with tap water to remove any debris from Prefilter Screen.
3. Ensure Shutoff Clamp and Purge Valve are closed.
4. Fill Dirty Water Reservoir with at least 3 liters of warm tap water and reattach Inlet Hose.
5. Open both Purge Valve and Shutoff Clamp. Filter water through system. Close Purge Valve and Shutoff Clamp.
6. Refill reservoir with 2 liters of clean water and add 5 mL ( $\approx$  1 tsp) of household bleach free of dyes or perfumes (5.25%-8% chlorine concentration).
7. Place Bottle Adapter in sink. Hold or hang reservoir above sink.
8. Open Purge Valve and Shutoff Clamp and filter  $\frac{1}{2}$  of bleach solution through system into sink.
9. Close valve and clamp. (Purifier Cartridge should now be filled with bleach.)
10. **Wait 30 minutes.**
11. Run second  $\frac{1}{2}$  of bleach solution through cartridge, but **STOP** just before Dirty Water Reservoir is emptied (so that bleach remains in cartridge).
12. **Wait another 30 minutes.**
13. Drain all solution from system.
14. Air or towel dry system parts completely, leaving all hoses attached. (NOTE: The bleach in the cartridge will prevent the growth of harmful microorganisms and biofilm inside.)
15. Pack and store Guardian Gravity system in storage sack.

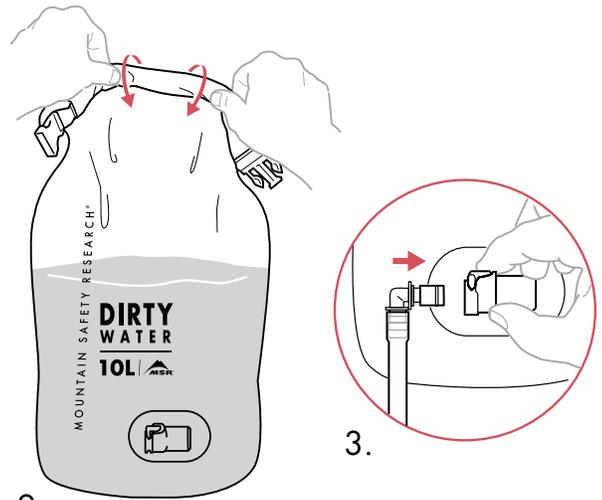
After long-term storage, before using the purifier, filter 2-3 liters of water through the system to rinse it.

**⚠ WARNING DO NOT** use more bleach than recommended, as doing so can damage the fibers.

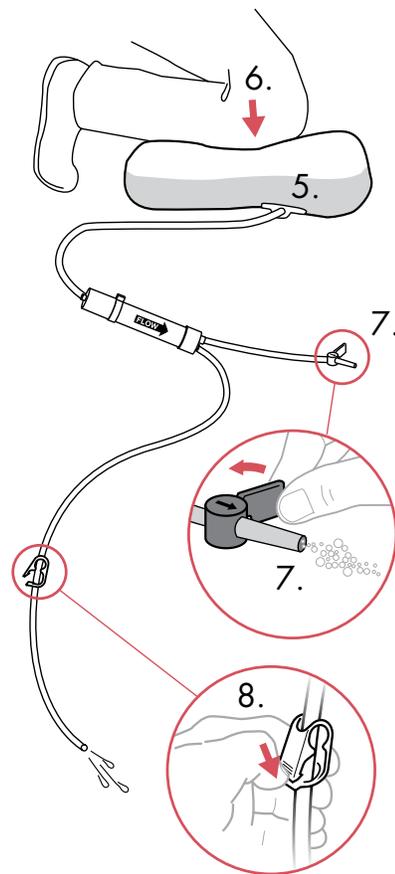
**⚠ WARNING DO NOT** disassemble and dry out the Purifier Cartridge before storing it. If the cartridge's internal fibers dry out, they will no longer pass water; the cartridge must stay wet inside.

**⚠ WARNING** Disinfect the purifier thoroughly before long-term storage to prevent the growth of mold, mildew and bacteria. Never use a dishwasher or microwave to disinfect parts because the high heat will damage or melt them.

## 5.



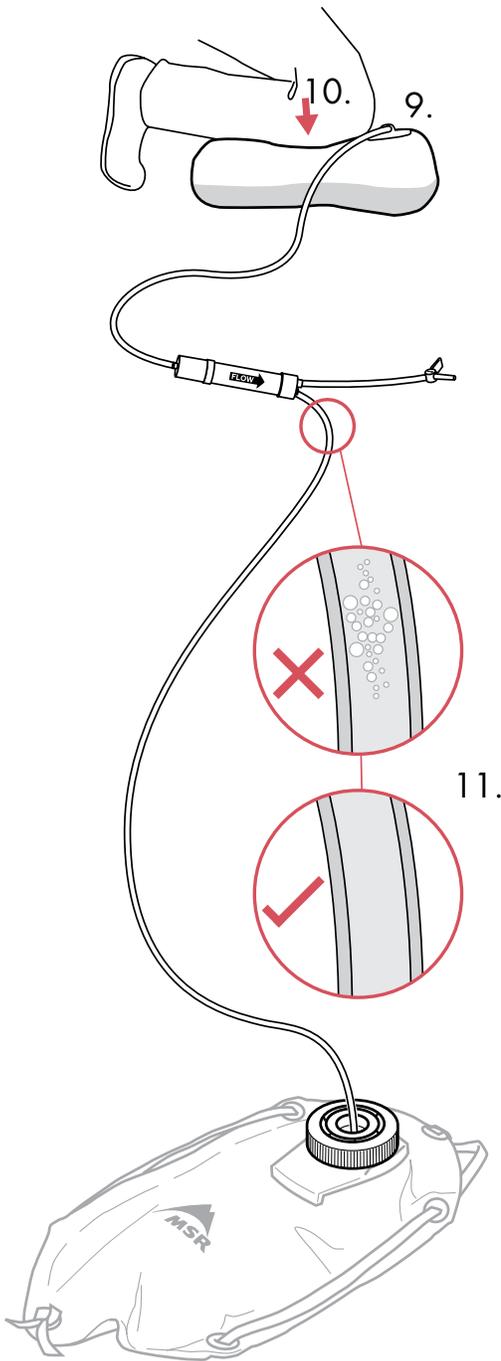
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## 5. Purifier Integrity Test

The filter media can be damaged if dropped, or if frozen after use. If either of these has happened, perform an integrity check.

1. Disconnect Inlet Hose from Dirty Water Reservoir and fill reservoir with 3-4 liters of water.
2. Fill the rest of Dirty Water Reservoir with as much air as possible. Roll Closure Strap 4+ times to seal.
3. Reconnect Inlet Hose to Dirty Water Reservoir.
4. Lay hose system on ground in front of you so that it's easy to view the entire Inlet and Outlet hose.
5. Flip Dirty Water Reservoir so that its hose port is down.
6. Holding the rolled Closure Strap, kneel on Dirty Water Reservoir and force water through Inlet Hose. Ensure no air enters.
7. Open Purge Valve to purge all air bubbles from Purifier Cartridge. **Then close it.**
8. Open Shutoff Clamp while continuing to kneel on reservoir. Fill Outlet Hose with water.
9. Flip Dirty Water Reservoir over so that its hose port is facing up.
10. Kneel on reservoir and force ONLY air through Inlet Hose all the way through to the Purifier Cartridge.  
NOTE: Your goal is to force air against the fully wetted hollow fibers inside the cartridge. If a fiber is damaged, air will escape, revealing a steady stream of bubbles in the Outlet Hose.
11. If a steady stream of bubbles appears in the Outlet Hose as you force the air through, we recommend repeating this test twice to ensure accuracy. If you see bubbles each time, your purifier is NOT SAFE. Discontinue use and replace.



These instructions are available in other languages at [www.msrgear.com/guardian-gravity-purifier](http://www.msrgear.com/guardian-gravity-purifier)