Manual

**WARNING**

**BIOREATIONAL HAZARD**

There are hazards associated with backcountry travel and the use of water filters. Drinking untreated water can result in exposure to harmful microorganisms and an increased risk of gastrointestinal illness. Using this filter 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.

**NOTE:**

You are responsible for your own safety and the safety of those in your group. Please use good judgment. You are responsible for your own safety and the safety of those in your group. Please use good judgment.

**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.

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**TIPS**

- **Ceramic Element**
  - Clever the element whenever flow is noticeably reduced to maintain 1 L/min. output.
  - Avoid excessive or uneven rubbing during cleaning because it may cause surface grooves. Measure the element for wear after each cleaning.
  - CAUTION: Handle the element carefully to avoid damage or breakage.

  **Water Collection and Preparation**
  - Use the cleanest, clearest water available.
  - Avoid excessive or uneven rubbing during cleaning because it may cause surface grooves. Measure the element for wear after each cleaning.
  - CAUTION: Handle the element carefully to avoid damage or breakage.

  **Operation**
  - To maintain pumping performance, air must exist in the housing and should be visible through the clear gray shell when not pumping.
  - The Clean Side Cover can be threaded onto a Nalgene bottle cap to keep it and the filter dry when filtering water.
  - In soft water, place a small rock on the Inlet Cage to keep it submerged below the water surface.

- **Clean the element whenever flow is noticeably reduced to maintain 1L/min. output.**
- **Avoid excessive or uneven rubbing during cleaning because it may cause surface grooves.**
- **Measure the element for wear after each cleaning.**
- **CAUTION: Handle the element carefully to avoid damage or breakage.**

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**LIMITED LIFETIME WARRANTY/LICENSES OF REMEDIES AND LIABILITY**

**USA and Canada**

Cascade Designs, Inc. warrants to the original owner that this product is free from defects in material and workmanship for the life of the Product. No warranty applies to defects in materials and workmanship of the filter media. This warranty is non-transferable. No warranty applies to defects in materials and workmanship of the filter media. This warranty is non-transferable.

**EUROPE**

Cascade Designs, Ltd. (“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 for the life of the Product. No warranty applies to defects in materials and workmanship of the filter media. This warranty is non-transferable. No warranty applies to defects in materials and workmanship of the filter media. This warranty is non-transferable.
**KNOW YOUR MSR® MINIWORKS® EX FILTER**

**MINIWORKS® EX OPERATING INSTRUCTIONS**

**1 PREPARE FILTER**

1. Unscrew the Clean Side Cover from the Housing.
2. Connect open end of Inlet Hose to Inlet Hose Barb.
3. Place a clean container under the filter OR attach an MSR Dromedary Bag onto the bottom of the filter.
4. Begin pumping until water enters Pump Head, fills Housing, and begins to flow out of filter. **NOTE:** Airspring design provides best performance when air is visible in Housing. Do not allow filter to purge air out.

**2 FILTER WATER**

1. Place a clean container under the filter OR attach an MSR Dromedary Bag onto the bottom of the filter.
2. Pump the Handle to purge filter of any remaining water.
3. Rinse and air dry Ceramic Element completely (3-5 days) before storage.
4. Attach Clean Side Cover onto the bottom of the filter to prevent contamination.
5. Wind Inlet Hose around Housing.

**3 PACK AND STORE FILTER**

1. Remove Inlet Cage from water.
2. Pump the Handle to purge filter of any remaining water.
3. Rinse and air dry Ceramic Element completely (3-5 days) before storage.
4. Attach Clean Side Cover onto the bottom of the filter to prevent contamination.
5. Wind Inlet Hose around Housing.
7. Place filter inside Storage Sack.

**WARNING**
Always wash and dry filter parts thoroughly before long-term storage to prevent the growth of mold, mildew, and bacteria. Never use a dish washer to wash parts because the high heat may damage or melt them.

**FILTER CLEANING AND MAINTENANCE**

The MiniWorks EX requires regular cleaning and maintenance to function properly. Cleaning and maintenance depends on frequency of use and water quality. The Ceramic Element will clog gradually during use, especially when filtering from glacial streams or cloudy water. If necessary, replacement parts can be found in the MSR Water Filter Maintenance Kit, purchased separately from a local or online MSR dealer.

**CLEANSING THE CERAMIC ELEMENT - AFTER EACH USE**

1. Unscrew Pump Head from Housing.
2. Unscrew Clean Side Cover from Housing.
3. Hold Housing and pull Ceramic Element out from bottom.
4. Wet Scrubbing Pad with clean water and gently rub the element.
5. Rinse Ceramic Element with clean water and reassemble.

**CLEANING THE CERAMIC ELEMENT**

**NOTE:** MSR recommends measuring the Ceramic Element after each cleaning.

1. Unscrew Ceramic Gauge from Clean Side Cover.
2. Remove Ceramic Element from Housing.
3. Place gauge around body of the element and slide it along its surface to measure wear.
4. Replace Ceramic Element if gauge slides easily. **NOTE:** Measuring the Ceramic Element.
5. Rinse Ceramic Element if gauge slides easily. **NOTE:** Measuring the Ceramic Element.

**REPLACING THE CERAMIC ELEMENT**

Follow removal and reinstallation steps in "Cleaning the Ceramic Element."

**CLEANING THE UMBRELLA VALVE**

1. Unscrew Pump Head.
2. Pinch and pull gently to remove Umbrella Valve.
3. Rinse Pump Head and Umbrella Valve thoroughly with clean water.
4. Press Umbrella Valve firmly back into place and reassemble.

**LUBRICATING THE PISTON O-RING**

1. Pull out Pump Head Pin and Pump Head Bushing.
2. Remove Handle and Piston.
3. Lubricate Piston O-Ring and reassemble. Use MSR Silicone Lubricant, lip balm or petroleum jelly.

**STERILIZE CERAMIC ELEMENT**

Sterilize the Ceramic Element if the filter has been used for more than seven consecutive days. Also, sterilize it before or after long-term storage, especially if Ceramic Element was stored wet:

1. Remove Ceramic Element from Housing.
2. Remove Lower End Cap O-ring.
3. Place Ceramic Element in large pot. Cover the Ceramic Element completely with water (room temperature) and allow room for the water to reach a rolling boil without spilling over.
4. Bring water to a boil and allow element to remain in rolling boil for 5 minutes.
5. Turn off stove and allow water to cool before removing element.
6. Air dry Ceramic Element completely (3-5 days). Wash and dry completely all other filter parts.
7. Reassemble filter. **IMPORTANT:** Remember to reinstall Lower End Cap O-ring.

**MEASURE CERAMIC ELEMENT**

**NOTE:** MSR recommends measuring the Ceramic Element after each cleaning.

1. Unscrew Ceramic Element from Housing.
2. Unscrew Ceramic Element from Housing.
3. Place Plastic inside Storage Sack.
4. Attach Clean Side Cover onto the bottom of the filter to prevent contamination.
5. Wind Inlet Hose around Housing.
7. Place filter inside Storage Sack.

**IMPORTANT:** Remember to reinstall Lower End Cap O-ring.