



RANGER

HYDRATION SYSTEM FORWARD OSMOSIS FILTRATION

Cleaning and Storage of Filter with Potable Water

Once filter has been used, the filter must not dry out during storage. When used as a water filter, clean weekly or prior to storing for more than 48 hours. For short term storage, empty Clean and Dirty Water Reservoirs, close lid & roll top.

- 1] Pour two cups of clean water through Clean Water Port.
- 2] Add one bottle of Preservative Solution (Caution: Contains sulfites. If allergic, do not use.) Close port and mix.
- 3] Attach squeeze bulb pump to syrup port.
- 4] With bladder upside down, pump ten squeezes of water.
- 5] Drain remaining water through drink tube.
- 6] For storage, either keep the filter in place with roll top and clean water port closed, or remove the filter and store in the separate sealed storage bag.

To Restart System

- 1] If removed, re-install filter in bladder according to instructions.
- 2] Before using, pour two cups of clean water through the Clean Water Port.
- 3] Attach squeeze bulb to Syrup Port and pump ten squeezes of water.
- 4] Drain remaining water through the drink tube.
- 5] Close all ports until use.

Cleaning Reservoirs

- 1] Empty remaining water from reservoir.
- 2] Fill reservoir one-third to one-half full with clean water.
- 3] Drop one cleaning tablet into bladder.
- 4] Wait 15 to 30 minutes, shaking bladder often.
- 5] Discard treated water and rinse well before use.
Do not ingest tablet.

Troubleshooting

At 20°C (68°F), the Ranger produces 3/4 to 1 liter per hour. Production rates will be faster at warmer temperatures, slower at colder temperatures.

- 1] **System not producing any drink 20 minutes after a fill:** Check that there is syrup in the syrup chamber above the port that feeds the cartridge, that the filter cartridge fittings inside the bladder are firmly connected, that the bite tube is attached and its valve is open, and check that there is water in the Dirty Water Reservoir.
- 2] **System producing drink slowly 20 minutes after a fill:** Check same as in 1] above. Also, check that the system is nearly vertical and that the top of the cartridge is submerged in water. If everything checks out OK, clean Filter as described above.
- 3] **Unpleasant drink:** This most likely occurs on the initial use of the cartridge (due to the food-grade glycerine used in shipping) or immediately after cleaning (due to the sulfite solution). Either dump the initial 20 minutes of drink or wait until it is more dilute.

The filter utilizes a proprietary reverse osmosis membrane. In independent laboratory tests the filter meets or surpasses 6-log bacteria (99.99999%), 4-log virus (99.99%) and 3-log parasites and cyst (99.9%) reductions as specified by the EPA for water purifiers.

Do not use antifreeze or seawater. Human waste and industrial sewage not recommended. Read all instructions prior to use. Follow regular cleaning schedule for best performance.



System Components

- 1] One Ranger™ bladder with detachable drink tube
- 2] One osmotic filter cartridge
- 3] Ten 120-ml Sports Drink Syrup pouches
- 4] Cleaning kit including squeeze bulb pump, two bottles of preservative solution, and system cleaning tablets
- 5] Collapsible cup
- 6] Storage case for osmotic filter cartridge

Important Notes

Using With Clean Water: The Ranger™ may be used with clean or contaminated water. If clean water is available, pour directly through the round port labeled 'Clean Water Port'. Never pour contaminated water through the round opening. For use with clean water, the filter may be removed and stored in the provided storage bag, or left in place.

First filter use: The Ranger's™ osmotic membrane filter is shipped with a coating of food-grade glycerine. This comes off and into the first filtered water. Because of the bitter taste, we recommend you wait 30 minutes before drinking to let it dilute out. With all subsequent uses you may begin drinking as soon as there is filtered drink.

Never use auto coolants, salt water, or industrial sewage in the Ranger™. Always choose the best possible water source for filtering.

Follow A Regular Cleaning Schedule for optimum filter performance.

Bladder Volumes	Without Filter	With Filter Installed
Clean Water Reservoir	3.0 Liters	1.9 Liters
Dirty Water Reservoir	NA	2.5 Liters

Installation of Osmotic Filter

- 1] Unbuckle, unroll and remove the roll-top slider. When re-closing the roll-top opening, follow printed instructions at top of bladder for correct procedure to avoid small leaks.
- 2] Slip filter into the bladder with the hoses pointing up and the filter at a slight angle as indicated in diagram 1. If the bladder is held so that the round cap is facing toward you, then the female fitting on the filter should be rotated to the left hand side.
- 3] Connect the cartridge to the male and female quick-disconnect fittings inside the bladder (diagram 2). It may be helpful to have one hand inside the bladder and one hand grasping the hoses from the outside of the bladder.
- 4] **Make sure the fitments firmly seat. You should hear an audible 'click' when properly connected. Poor connections may keep the system from running or allow cross-contamination.**
- 5] After the filter is installed, look inside the bladder and make sure that the gray quick-disconnect buttons on the filter hoses are facing inward, toward each other. This will help prevent accidental disconnects during use.



diagram 1

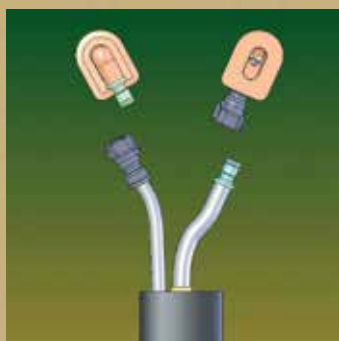


diagram 2

At 20°C (68°F), the filter will process between 3/4 and 1 liter per hour.

Filtering Water

- 1] Connect a syrup pouch **firmly** to the syrup port. Squeeze syrup into the syrup chamber. Push gray button and remove syrup bag.
- 2] Remove the roll-top slider. Fill the reservoir with water to be filtered to the point where the neck narrows. **Do not use seawater or antifreeze. Avoid industrial waste and sewage.**
- 3] Grab the bladder at the edges where the neck narrows and let the top flop over to expel excess water and air. Reinstall slider.
- 4] The filter is now processing water.
The bladder should be kept in a vertical position, and will not function properly if horizontal.
- 5] To restart system, empty the dirty water reservoir of any remaining water and repeat steps 1-4. Clean filter weekly or prior to storing for more than 48 hours. **After initial use, filter cannot be allowed to dry out. Refer to Cleaning & Storage.**

volume: 3L (2.5 with filter inserted)

filtration production: .8L / hr

filter life: 90 days

purity: 6-log bacteria reduction

turbidity high clog resistance

dual-reservoir design



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