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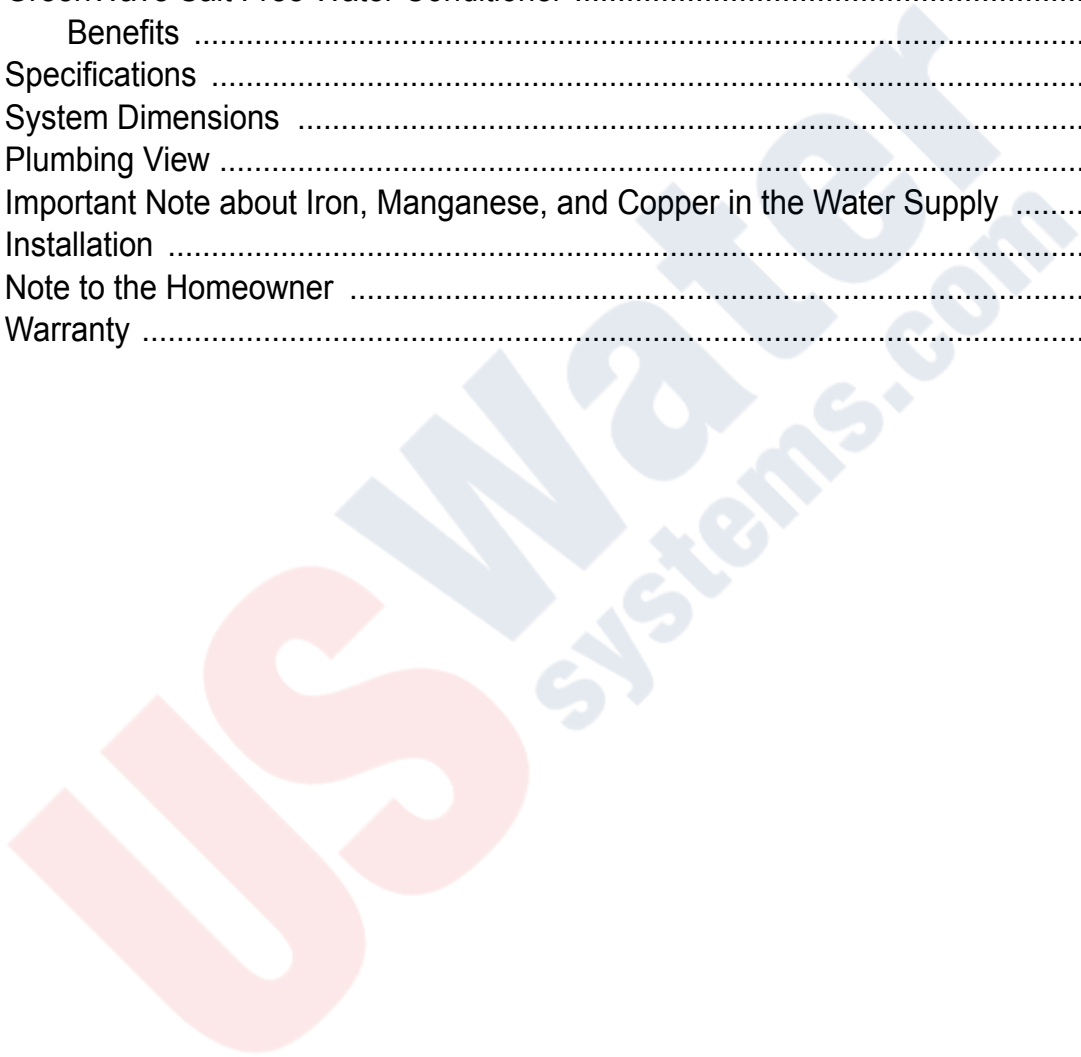
# GreenWave Salt-Free Water Conditioner

385-GW-XXX



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## Unpacking and Inspection

Be sure to check the entire unit for any shipping damage or lost parts. Also note damage to the shipping cartons. Contact US Water Systems at 1-800-608-8792 to report any shipping damage within **24 hours of delivery**. Claims made after 24 hours may not be honored. Small parts, needed to install the unit, will be in a parts bag. To avoid loss of the small parts, keep them in the parts bag until you are ready to use them.

## Safety Guide

- Check and comply with your provincial / state and local codes. You must follow these guidelines
- Use care when handling the system. Do not turn upside down, drop, drag, or set on sharp protrusions
- **WARNING:** This system does not remove biological contaminants. US Water Systems recommends that bacteria levels be checked periodically to ensure there is no bacteria present. Coliform and E.coli most importantly.

## Before Starting Installation

### Proper Installation

*This water system must be properly installed and located in accordance with the Installation Instructions before it is used or the warranty will be void.*

- **Do not** install or store where it will be exposed to temperatures below freezing or exposed to any type of weather. Water freezing in the system will break it. Do not attempt to treat water over 100°F
- **Do not** install in direct sunlight. Excessive sun or heat may cause distortion or other damage to non-metallic parts.
- Maximum allowable inlet water pressure is 100 psi. If daytime pressure is over 80 psi, night time pressure may exceed the maximum. Use a pressure reducing valve to reduce the pressure.
- System must be operated in a vertical position. Do not lay it down during operation. The system may be placed in any position for shipping and installation but must be operated in the vertical position.
- Place the system on a smooth, level surface. Because the system operates in an UP-Flow, fluidized bed mode, having a level surface is more important than with a softener or media filter.
- A bypass valve should be installed on every system to facilitate installation and service.
- Water supply must not exceed 0.01 PPM of chlorine. For water supply exceeding 0.05 PPM of chlorine, pre-treatment is required. Contact US Water Systems for chlorine removal equipment.
- Observe all local plumbing and building codes when installing the system.

### Notes to the Installer

The GreenWave system differs from a conventional softener or media filter in a number of key respects.

- The system is light and only partially filled with media. This is normal. The UP-flow operation of the system requires a lot of freeboard to allow the bed to fully fluidize.
- The system has no underbed so you can tip the system over without any fear of upsetting the media. This makes transportation and installation much easier than conventional systems.
- Because the GreenWave system operates in the UP-Flow mode, the tank connections are opposite of what you're used to.

## GreenWave Salt Free Water Conditioner

The GreenWave system attracts and converts hardness minerals into harmless, inactive microscopic crystal particles that stay suspended in the water and are passed through the system.

The GreenWave system operates using an up-flow configuration. This means the water enters the bottom of the tank and exits out the top. This allows the water to enter under the SP3 media and lift it up while in operation. This is called a "fluidized bed". This allows every piece of the SP3 media to make contact with the water which is crucial for proper operation. Because the media is in a fluidized state, no water passes through untreated.

As the hard water passes through the tank, the calcium bicarbonate  $\text{Ca}(\text{HCO}_3)_2$  is transformed into the aragonite form of calcium carbonate  $\text{CaCO}_3$  crystals. These crystals are formed through a decomposition and crystallization process, forming very stable harmless crystals. The following equation describes the reaction that occurs inside the pressure vessel when water flows over grains of nucleation:  $\text{Ca}(\text{HCO}_3)_2 \rightarrow \text{CaCO}_3 + \text{CO}_2 + \text{H}_2\text{O}$ .

### Benefits

- Prevents scale INSIDE the plumbing
- No salt required
- No backwashing required
- No regeneration cycle required
- No increase in sodium content in water
- Removes the existing scale in plumbing
- The catalytic process converts Calcium and Magnesium into harmless microcrystals
- Maintenance-free
- No chemicals required for disinfection
- No electrical connections required
- No drain connections required
- No control valves required
- Very easy to install
- Provide the best quality healthy water without the addition of Sodium or Phosphates

## Specifications

GreenWave systems are complete, self-contained, loaded with media and ready to use. A simple inlet and outlet connection is all that is required for installation. Please review operating pressures, temperatures and water chemistry limitations to ensure compatibility.

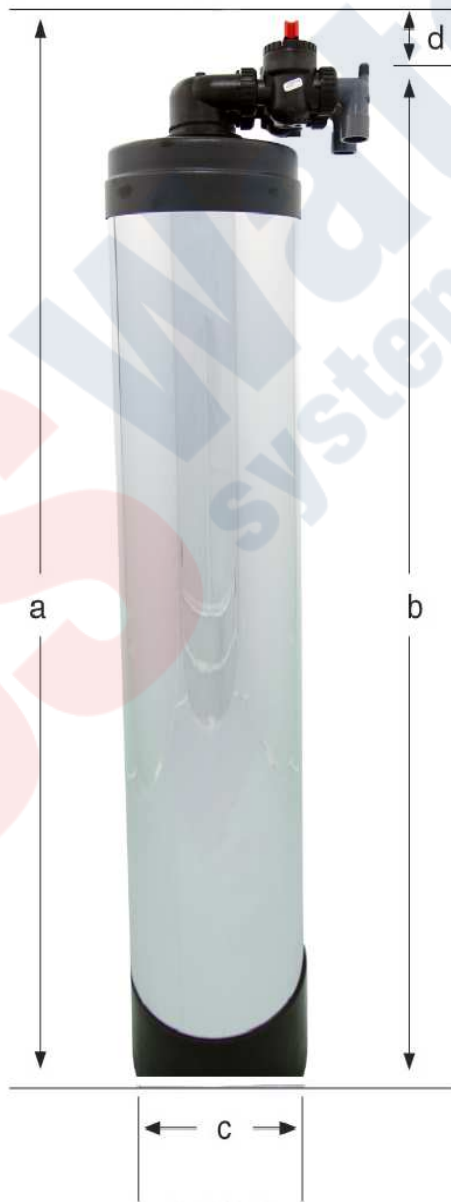
Specifications	GW-100	GW-150	GW-200	GW-250
Inlet/Outlet Connection	3/4" or 1" QC			
Temperature	40°F - 110°F			
pH	6.5 - 8.5			
Chlorine, Max*	0.05 mg/L			
Ferrous Iron, Max*	0.3 mg/L			
Manganese, Max*	0.05 mg/L			
Copper, Max*	1.3 mg/L			
Water Pressure	15 min, 100 max (psi)			
Max Service Flow (gpm)	10	15	20	25
Dry Weight (lbs)	30	40	50	60
Service Weight (lbs)	95	120	150	180

Due to the unique properties of the GreenWave media, there are some requirements for using the GreenWave in conjunction with other filtration or forms of water treatment.

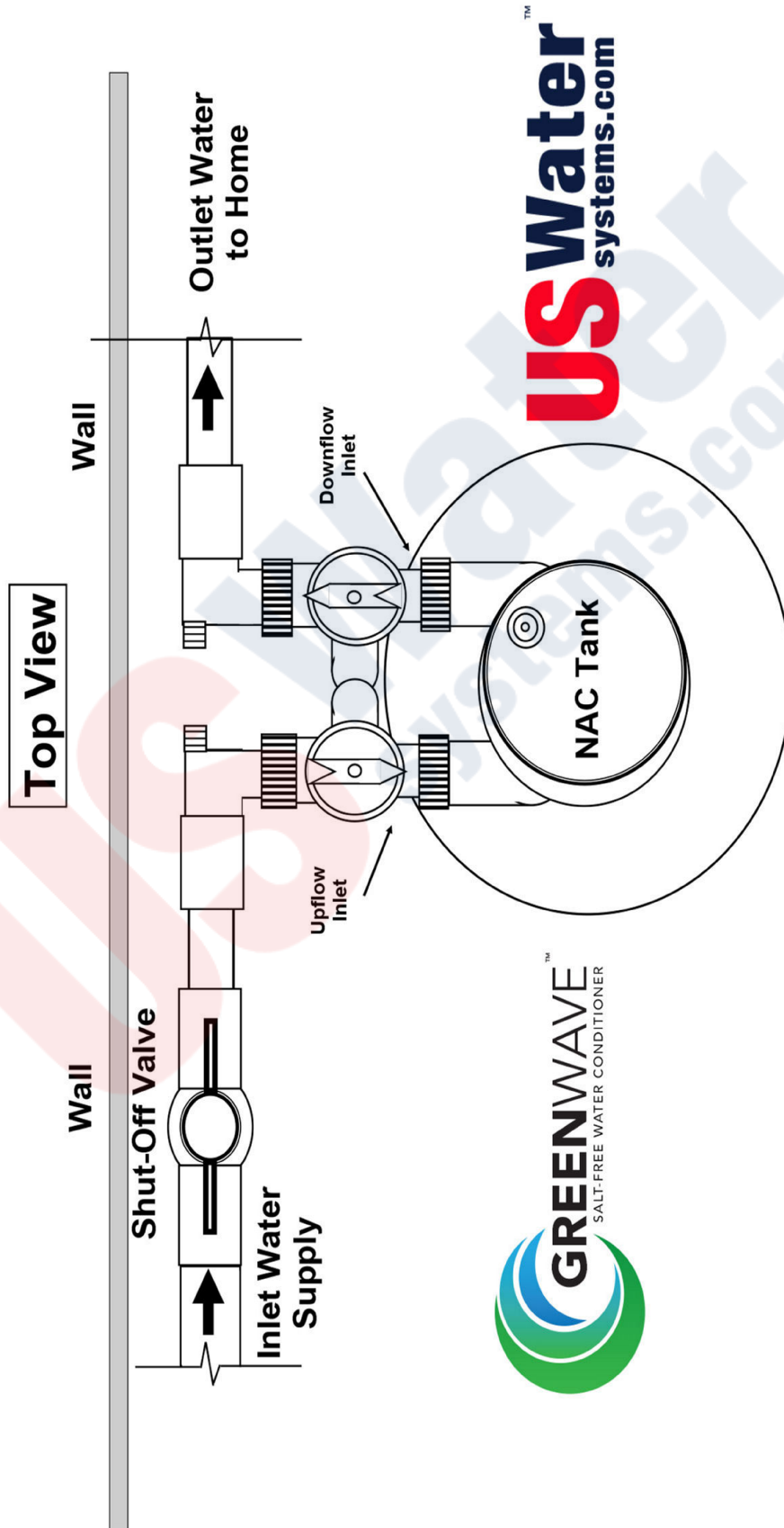
- Do not install any filters after the GreenWave or before any devices for which scale prevention is required. POU filters e.g. carbon or RO are exempt from this requirement.
- Do not apply phosphate or any other anti-scalant either before or after the GreenWave.

## System Dimensions

Dimensions	GW-100	GW-150	GW-200	GW-250
A	52.5"	58.5"	56.5"	58.5"
B	50"	56"	54"	56"
C	9"	10"	12"	13"
D	2.5"	2.5"	2.5"	2.5"



# Plumbing View





## Important Note about Iron, Manganese, and Copper in the Water Supply

**Iron and Manganese** - Just as with conventional water softening media, the GreenWave needs to be protected from excess levels of certain metals that can easily coat the active surface, reducing its effectiveness over time. Public water supplies rarely, if ever, present a problem but if the water supply is from a private well, confirm that the levels of iron (Fe) and manganese (Mn) are less than 0.3 mg/L and 0.05 mg/L respectively. Copper should be less than 1.3 mg/L

**Copper:** - Copper usually originates from new copper plumbing upstream of the GreenWave system. If this condition exists, we recommend waiting 3-4 weeks before placing the system in operation. This will allow the copper surfaces to be fully flushed and develop a natural protective surface. To further minimize any problem with excess copper, the plumbers should be advised to avoid applying excess flux on the inner surfaces of the pipe and to use a low-corrosivity water soluble flux listed under the ASTM 8813 standard. Once the plumbing connections are complete, place the GreenWave system in bypass prior to following the startup procedure and flush the plumbing for at least 10 minutes.

**Chlorine** - Chlorine is detrimental to the GreenWave media. If the feed water contains chlorine, it must be removed. Call a US Water Systems water specialist to purchase chlorine removal equipment.

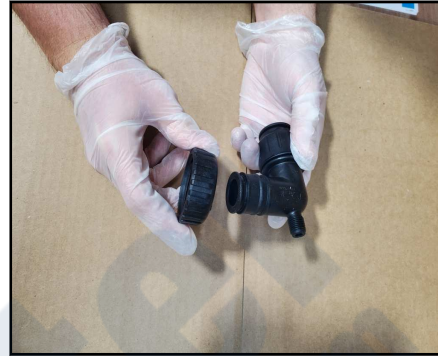
## Installation

1. Remove the tank from the shipping carton.
2. Lubricate the inner and outer O-ring of the in/out head.
3. Install the upper basket on the bottom of the head by lining up the tabs then turning the basket clockwise to lock it in place. Place the upper basket over the distributor tube and push the head on the tank. Thread the head on the tank by turning it clockwise. Be sure not to cross-thread the head on the tank.

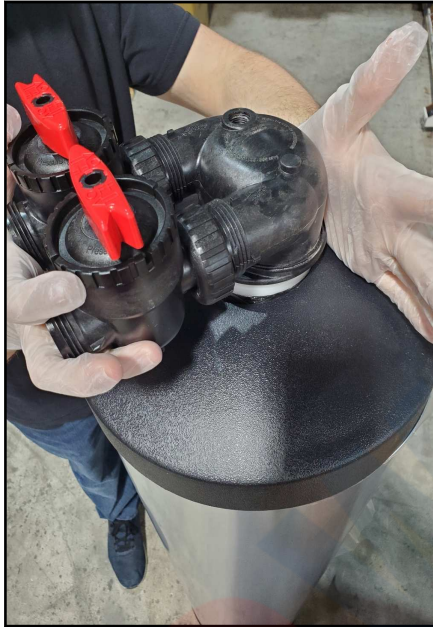


4. Place the GreenWave tank in the desired location. Typically this is at the water inlet of the home.

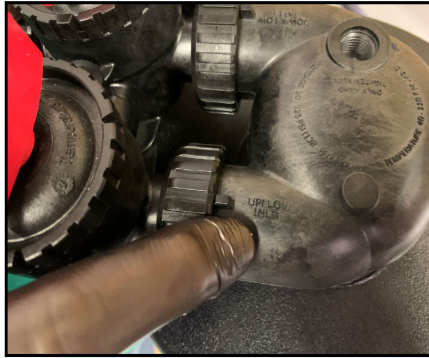
5. Prepare the tank connections by installing the nut on the elbow connector. Push the split white ring down over the elbow fitting to the second groove. Use the supplied silicone grease to lubricate the O-ring. Slide the O-ring over the elbow fitting and put it in the first groove. Make sure the O-ring is not twisted.



- Lubricate the O-rings on the supplied bypass with the silicone grease. Install the bypass on the tank and fully tighten the retaining nuts. The bypass will move slightly once tight. It is made to flex and move and will not be rigid. Be sure the O-rings are lubricated on the elbow connectors previously assembled. Install the elbows in the bypass valve and tighten the retaining nuts. These will move when tight. They are made to flex just like the bypass valve connections.

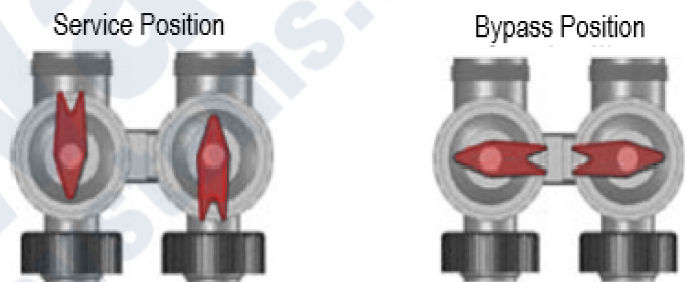


7. Connect the cold water supply to the "Up Flow" inlet of the GreenWave tank



**NOTE: The GreenWave system operates in the UPFLOW mode which is the opposite of a conventional water softener.**

8. Place a bucket under the outlet port (downflow inlet) of the GreenWave tank or run a line from the outlet port of the tank to a drain. Place the bypass in the service position.



9. Slowly open the main supply valve (user supplied) to the GreenWave system. Allow the tank to fill with water. Close the supply valve when a steady stream of water comes out of the outlet port and the water is running clear.
10. Once the GreenWave system is flushed, connect the Outlet (marked DownflowInlet) of the GreenWave tank to the CTS or PEX cold water supply feeding the rest of the home.



11. Open faucets downstream from the GreenWave system to relieve any trapped air.
12. Check for leaks. Repair as needed.
13. The system is now ready for service.



## Note to the Homeowner

Your GreenWave System will improve the properties of water throughout your home. Here are some things to expect and some recommendations for maximizing the benefits and your enjoyment of the GreenWave system.

- **Sinks and fixtures will have some spotting but it will wipe off much easier.** If water is allowed to evaporate off a surface, small spots may be left behind. This spotting should not require any more than a wet cloth or sponge to remove. No harsh chemicals should be required as with typical hard water spotting.
- **Spotting on dishes and on the surface of the dishwasher may be reduced but we recommend using a product like Lemishine in the dishwasher.** Dishwashing detergents low in phosphates are highly recommended as they are better for the environment and phosphates can cause spotting.
- **Shower doors and tiles will have spots but they will wipe off much easier.** When water evaporates off a surface, spots may be left behind - this is normal as we are not taking out the calcium and magnesium, just neutralizing it. These spots should be easy to remove with a damp cloth or sponge.
- **In the bath, soaps and shampoos may rinse off much easier and faster than they would with traditional soft water.** We recommend the use of modern soaps for the best results.

### Things to watch for during the first 30-90 days:

- Faucet aerators and drains may plug occasionally as old scale is removed from your plumbing system and water heater.
- You may also see milky water while the descaling is taking place. This is simply an increase in the calcium in the water because the GreenWave is removing old scale deposits from your pipes.

If your dishwasher is severely coated with scale at the time of installation, we recommend that you purchase a product like Jet-Dry Dishwasher cleaner to accelerate the cleaning. After this initial cleaning, the GreenWave should keep it clean.

We also recommend that you drain your water heater tank. This should be done 30 to 60 days after the GreenWave is installed and again in one year. This is a good practice that can dramatically increase the life of your water heating appliance. The GreenWave will help keep the tank and heating elements free of scale and operating at peak efficiency. Please follow the manufacturers instructions.

## Warranty

For the lifetime of the original purchaser, at the original residential place of installation of this Green Wave Water Conditioning System, **US WATER SYSTEMS, INC.** warrants the following:

### **LIFETIME COVERAGE: Media Tank -**

Free of all costs to you except transportation and labor charges, we warrant that we will replace or repair the fiberglass media tank and the control valve body, if for any reason it is found to be defective, because of faulty materials or workmanship.

### **LIFETIME COVERAGE: Head Assembly -**

We warrant that for life from the date of purchase, we will replace the head assembly at no charge to you except for transportation and standard labor charges.

### **FOUR YEAR COVERAGE: NAC Media -**

We warrant that for four (4) years from the date of purchase, we will replace the NAC Media at no charge to you except for transportation and standard labor charges.

**GENERAL PROVISIONS** - This warranty does not apply to any commercial or industrial installations or to any part of the water conditioner which has been subjected to misuse, neglect, alteration or accident; or to any damage caused by fire, flood, freezing, Acts of God, or any other casualty, or if the original serial numbers have been removed. Fouling or damage to the media caused by iron, sulfur, bacterial iron, silt, sand, tannins, organics, bacteria, hot water or chlorine (exceeding 0.01 ppm) voids the warranty on media.

These warranties are in lieu of all other warranties expressed or implied, and we do not authorize any person to assume for us any other obligation on the sale of this water conditioner. No responsibility is assumed for delays or failure to meet these warranties caused by strike, government regulations or other circumstances beyond the control of US WATER SYSTEMS, INC..

To obtain warranty service, call or write: US WATER SYSTEMS, INC. 1209 Country Club Road Indianapolis, IN 46234 (800) 608-USWA.

ANY IMPLIED WARRANTIES OF FITNESS OR MERCHANTABILITY ARE LIMITED TO THE TERMS OF THIS EXPRESSED WARRANTY AND THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THOSE HEREIN. US WATER SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Some states do not allow the exclusion or limitations of incidental or consequential damages so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

THIS WARRANTY MAY BE TRANSFERRED TO A SUBSEQUENT OWNER WITH WRITTEN APPROVAL OF US WATER AND PAYMENT OF STANDARD TRANSFER FEE.