



Installation, Operation and Maintenance Manual

GreenWave Residential Systems

Chemical Free, Salt Free Scale Prevention

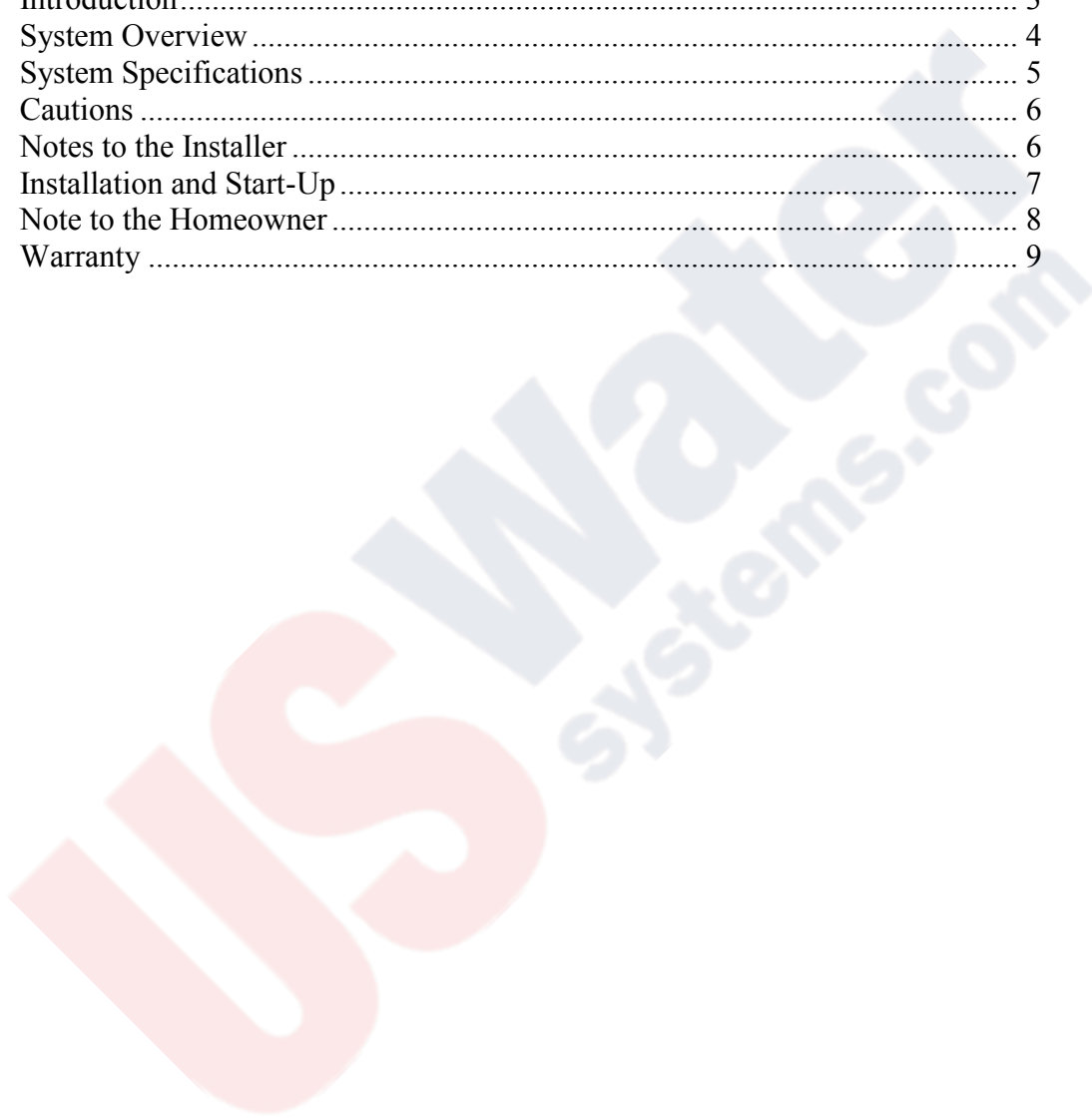


**GreenWave -1000
GreenWave -1500
GreenWave -2000**

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Introduction

The GreenWave system provides protection from scale formation throughout the home. The GreenWave system can be installed at the point of entry to treat your entire home, both hot and cold water, or it can be located directly before a water heater or other device (e.g. sauna, etc) that requires protection from scale.

GreenWave reduces or eliminates scale formation on internal and external plumbing surfaces as well as reducing spotting and streaking normally associated with hard water.

GreenWave prevents scale by transforming the normal dissolved hardness minerals into undissolved crystal micro-particles. These crystals stay suspended in the water and have a greatly reduced ability to react and attach to surfaces like dissolved hardness does. Therefore the problem of internal build-up of scale in pipes, water heaters and on fixtures and glass is greatly reduced.

GreenWave is not a water softener – low or phosphate-free cleaning products are recommended to achieve optimum results. Modern surfactant or detergent based, liquid soaps are preferred over old-fashioned caustic solid soaps.

Unlike softened water, GreenWave treated water maintains the beneficial essential mineral content of your water and is safe to drink.

GreenWave Benefits

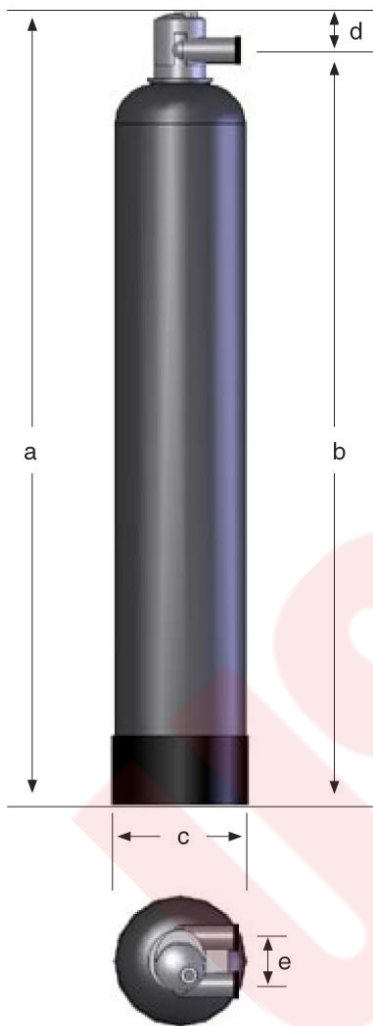
- Chemical free scale prevention. Cost savings and environmental benefits
- Virtually maintenance free. No salt bags or other chemicals to buy, transport and store
- No electricity, no wastewater, completely self-contained
- Beneficial minerals retained for more healthful drinking water
- Improves the efficiency of water-using appliances
- Simple installation – no electrical and drain hookup
- Safe for landscaping and lawn watering. No need to costly bypass plumbing
- Compatible with all on-site and community wastewater treatment systems
- Not subject to water softener restrictions and "bans"

System Overview



Equipment 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

Inlet/Outlet Connection	3/4" - 1" PVC
Temperature	40° - 110°F
pH	6.5 - 8.5
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)

*See note about iron, manganese and copper on the next page.

Mechanical Specifications

	1000	1500	2000
Max Service Flow (gpm)	10	15	20
Dry Weight (lbs)	30	40	50
Service Weight (lbs)	95	120	150

Dimensions (nominal - inches)

A	52.5	58.5	56.5
B	50	56	54
C	9	10	12
D	2.5	2.5	2.5
E	3.0	3.0	3.0

Using GreenWave with other water treatment equipment.

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

1. Do not install any filters after GreenWave or before any devices for which scale prevention is required. POU filters, e.g. carbon or RO are exempt from this requirement.
2. Do not apply phosphate or any other antiscalant either before or after GreenWave.

An important note about iron, manganese and copper in the water supply

Iron and Manganese

Just as with conventional water softening media, 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.

Cautions!

- Do not let the system freeze. Damage to the tank and pre-filter may result.
- 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.
- 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.

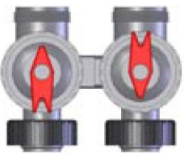
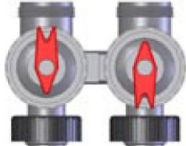
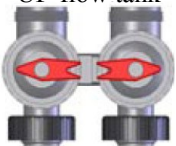
- The system is light and only partially filled with media. This is normal. The UP-flow operation of the system requires a lot of freeboard to allow the bed to fully fluidize.
- The system has no underbed so you can tip the system over without any fear of upsetting the media. This makes transportation 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.
- Please see the "important note about iron, manganese and copper" above.
- Please see the note about "Using GreenWave with other water treatment equipment" on the previous page.

Installation



1. Place the GreenWave tank in the desired location.
2. Attach the mounting bracket to the pre-filter using the included screws and tighten.
3. Securely mount the pre-filter on the wall making sure to properly anchor the filter.
4. Connect the Cold Water supply to the inlet of the pre-filter.
5. Connect the outlet of the pre-filter to the inlet of the GreenWave tank.
NOTE: The GreenWave system operates in the UPFLOW mode which is opposite of a conventional softener.
6. Place a bucket under the outlet port or run a line from the outlet port to a drain.
7. Slowly open the 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.
8. Connect the Outlet of the GreenWave system to the cold water supply to the home.
9. Open the supply valve to the GreenWave system.
10. Open faucets downstream from the GreenWave system to relieve any trapped air.
11. Check for leaks. Repair as needed.
12. The system is now ready, for service.

Bypass Valve Modification

<p>Service Position down-flow tank</p>	<p>As shipped, the bypass is set-up for down-flow use. The arrow shape of the handles points in the wrong direction for UP-flow use. To convert it to UP-flow use, pull up on the red handles until they come off. Rotate the handle 180° and put it back on the valve stem.</p>
	
<p>Service Position UP-flow tank</p>	<p>Bypass Position UP-flow tank</p>
	

A note to the homeowner

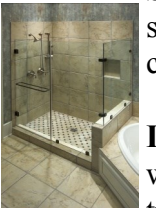
Your GreenWave system will improve the properties of water throughout your home. Here are some things to expect and some recommendations for maximizing the benefits and your enjoyment of your GreenWave system.



Sinks and fixtures - should have little or no spotting. 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 chemical should be required as with typical hard water spotting.



Dishwasher-Spotting on dishes and on the surface of the dishwasher should be greatly reduced or eliminated. Dishwashing detergents low in phosphates are highly recommended as they are better for the environment and phosphates can cause spotting. In very hard water areas, the use of a rinse aid may be advised.



Shower doors and tiles- should have little or no spotting. When water evaporates off a surface, small spots may be left behind. These spots should be easy to remove with a damp cloth or sponge.

In the bath you should notice that soaps and shampoos lather more than with untreated water. Soaps and shampoos will also 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 GreenWave is removing old scale deposits from your pipes.

Good practices:

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 GreenWave should keep it clean.

We also recommend that you drain your water heater tank. This should be done 30 to 60 days after 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.

LIMITED WARRANTY

US Water Systems, Inc. warrants the GreenWave system as follows:

- The Tank is warranted to be free of defects in materials and workmanship for life from the date of original installation.
- The Head is warranted to be free of defects in materials and workmanship for life from date of original installation.
- The Filter Housing and all other parts not mentioned here is warranted to be free from defects in materials and workmanship for five years from the date of the original installation
- The GreenWave NAC media is warranted for performance for a period of five years from the date of the original installation.

Conditions

1. The GreenWave system must be properly installed in accordance with the instructions provided by US Water Systems.
2. Any component failure must not result from abuse, fire, freezing or other acts of nature, violence, or improper installation.
3. Equipment must be installed and operated in compliance with the local plumbing codes, and on an approved water supply.
4. Equipment is limited to use at water pressures not to exceed 100 PSI and temperatures not to exceed 110 degrees F.
5. Water supply must not exceed 0.5-PPM chlorine. For water supply exceeding 0.5 PPM chlorine, pretreatment is required. (Please contact your water treatment specialist.)
6. Information, including model number, serial number, and date of installation, must be provided for any claims pertaining to equipment in warranty.
7. Defective parts are subject to inspection by either US Water Systems, Inc. or any authorized representative before final commitment of warranty adjustment is made.
8. US Water Systems, Inc. reserves the right to make changes or substitutions in parts or equipment with material of equal quality or value and of then current production.

Limitations

Our obligation under this warranty with respect to the tank or valve is limited to furnishing a replacement for, or at our option, repairing any part or parts to our satisfaction that prove defective within the warranty period stated above. Such replacement parts will be delivered to the owner F.O.B. nearest factory, at no cost, excluding freight and local labor charges, if any.

Our obligation under this warranty with respect to the GreenWave media will be limited to furnishing a replacement for the media within five years from date of original installation. Such replacement media will be delivered to the owner F.O.B. nearest factory, at no cost, excluding freight and local labor charges, if any. Damage to the media due to chlorine, other oxidizers or fouling or any other operation outside of the limits shown under Specifications, is not covered by this warranty.

US Water Systems, Inc. shall not be liable for freight, handling or labor charges, or consequential damages.





Limited Lifetime Warranty

For the lifetime of the original purchaser, at the original residential place of installation of this *GreenWave* 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.

FIVE YEAR COVERAGE

Filter Housing(s) All Other Parts

We warrant that for five (5) years from the date of purchase, we will replace the filter housing(s) and all other parts at no charge to you except for transportation and standard labor charges.

FIVE YEAR COVERAGE

NAC Media

We warrant that for five (5) years from the date of purchase, we will replace the NAC Media at no charge to you except for transportation and standard labor charges during years 1-2 and at fifty percent (50%) of the list price in years 3-5.

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 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.