



Clean Water Made Easy

www.cleanwaterstore.com

9510 Greensand Backwash Filter Installation & Maintenance Guide

Thank you for purchasing a Clean Water System!

With proper installation and a little routine maintenance your system will be providing iron-free water for many years.

Please review this manual entirely before beginning to install your system, and follow the steps outlined for best results.

**Minimum 30 PSI required. Maximum pressure 90 PSI.
For indoor installation. Protect from sunlight, rain, and freezing.**

**GREENSAND MEDIA CONTAINS DUST.
USE PAPER MASK AND VENTILATE TO AVOID BREATHING DUST.
OK to wet down media prior to installing into tank**

NOTE: Greensand Filter media requires a chlorine feed or water that is chlorinated ahead of the greensand filter media to work properly and keep the greensand media in good condition.



Questions?

Call us toll-free: 1-888-600-5426 or 1-831-462-8500

Email us: support@cleanwaterstore.com

See more information on our web site: www.cleanwaterstore.com

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Page 1 | 24 Rev 072020

Table of Contents

Packing Lists.....	3
How Your Greensand Backwash Filter Works	4
System Installation Steps Overview.....	5
Pre-Installation	5
Best Practices for Piping & Drain Installation	6
Diagram of Typical Installation Well Water	7
Add Filter Media and Install 9510 Backwash Valve on Tank	7
Build a Bypass	9
Piping Installation	10
Start-up Instructions.....	11
Programming Settings	12
How To Change Settings	13
MANUAL REGENERATION.....	14
Main Program	15
Control Operation Notes	21
Troubleshooting Chart.....	22
How to Replace the Greensand Filter Media.....	23
Limited Warranty.....	24

Packing Lists

All systems include:

9510 control valve, Top Screen, 1 ½" connector yoke; power supply; media funnel for adding the Media;

Greensand Filter 2.5 cubic foot size

13" x 54" filter tank with distributor tube
35 lbs. 1/8" x ¼" filter gravel
2.5 cubic foot of Greensand Media

Greensand Backwash Filter 3.0 cubic foot size

14" x 65" filter tank with distributor tube
40 lbs. 1/8" x ¼" filter gravel
3.0 cubic foot of Greensand Media

Greensand Backwash Filter 4.0 cubic foot size

16" x 65" filter tank with distributor tube
50 lbs. 1/8" x ¼" filter gravel (1 box 50 lbs.)
4.0 cubic foot of Greensand Media

Greensand Backwash Filter 5.0 cubic foot size

18" x 65" filter tank with distributor tube
75 lbs. 1/8" x ¼" Filter gravel
5.0 cubic foot of Greensand Media

Greensand Backwash Filter 7.0 cubic foot size

21" x 65" filter tank with distributor tube
100 lbs. 1/8" x ¼" filter gravel
7.0 cubic foot of Greensand Media

What to Do if Your Tank is Not Level Out of the Box:

Your black filter tank base is not glued to the bottom of your tank. Occasionally tank bases will become dislodged during shipment. If you find that that your tank does not sit level on the floor, you can easily adjust it by holding the empty tank and knocking or tapping it on a concrete or solid floor once or twice to level it.

How Your Greensand Backwash Filter Works

Water enters the top of the tank and flows down through the media and up the distributor tube.

The downflow type Greensand Filter removes iron and can be backwashed, which cleans and re-classifies the filter media, preventing channeling.

During backwash the flow of water is reversed and water flows down the distributor tube and up through the media, lifting and expanding the Greensand Media.

During the backwash the filter media is cleaned by the action of the water flowing through it.

NOTE: Greensand Filter media requires a chlorine feed or water that is chlorinated ahead of the greensand filter media to work properly and keep the greensand media in good condition.

System Installation Steps Overview

1. Verify that you have received all parts and there are no damaged or missing parts.
2. Put gravel in first, then Greensand. Fill tank with clean water. The longer it soaks while you are doing everything else, the better.
3. Make the plumbing connections from your existing system to the bypass assembly, installing extra valves, unions, pressure gauges and hose bibs as needed.
4. Attach the control head to the tank, and to the bypass assembly.
5. Install the Drain Line tubing from control valve to a drain with an air gap.
6. Plug in the power supply and program the valve.
7. Follow the instructions to put the system online and to verify the system is leak-free.

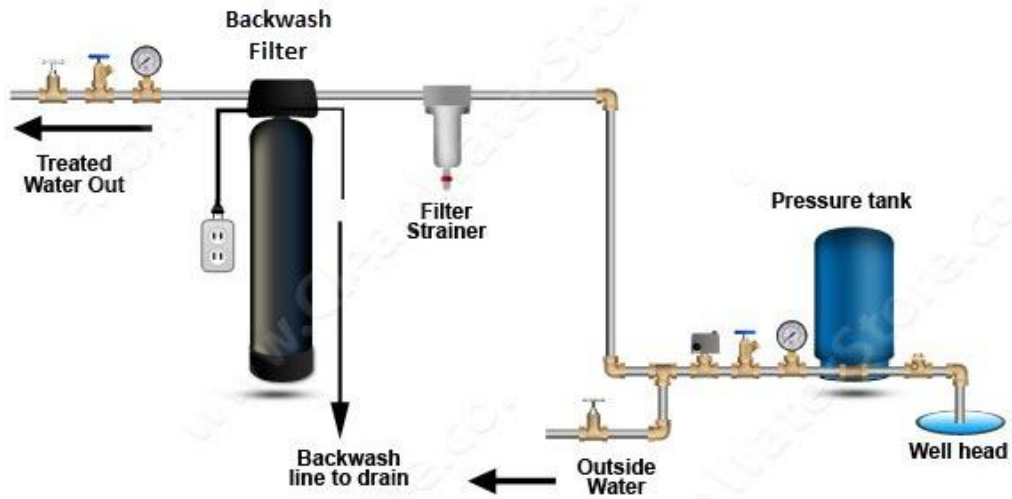
Pre-Installation

1. Review your packing list to make sure you have received all the parts before installation.
2. If you are going to be turning off the water to the house and you have an electric water heater, shut off the power to the water heater before beginning installation.
3. Pick a suitable location for your filter system on a dry level spot where it won't be exposed to freezing temperatures, direct sunlight, wind or rain.
4. Get all of your plumbing parts together before beginning installation.
5. After the system is installed and running, your water may be discolored, or full of sediment or rust, especially if you have older or corroded piping. This typically clears up over a day or two.

Best Practices for Piping & Drain Installation

1. See typical installation (Fig 2). The Greensand Backwash Filter is installed after pressure tank.
2. Install on a level floor or surface.
3. Filter system must be installed at least 10 feet ahead of inlet to water heater to prevent damage due to back-up hot water or use a check valve to prevent hot water back-up.
4. DO NOT install the unit in an area of direct sunlight or expose to freezing.
5. Locate the unit near an unswitched, 120 volt / 60 Hz grounded electrical outlet.
6. Filter system must be installed at least 10 feet ahead of inlet to water heater to prevent damage due to back-up hot water or use a check valve to prevent hot water back-up.
7. Make sure to connect the IN pipe to the 9510 inlet and the OUT pipe to the outlet.
8. Make sure there is a working gate or ball valve before the 9510 Greensand Filter and also one after as shown in Fig 2. The pressure gauges are optional. A hose bib (which is a faucet that you can attach a garden hose to) is strongly recommended after the 9510 Filter and before the second ball valve, for rinsing and sampling water.
9. If you will be using copper piping, do not sweat the copper pipe directly on to the 9510 control valve. Avoid heating up the 9510 control valve plastic with the torch.
10. The drain line tubing is connected to a drain from the drain outlet using flexible poly tubing. The drain can run up above the control head and out to a drain, although this may require installing a one way, flapper-style check valve.
11. **Most plumbing codes require an air-gap connection, so that if your sewer or septic tank backs up, it cannot cross connect with the drain tubing (if running tubing into the washing machine drain pipe, for example)**

Diagram of Typical Installation Well Water



Add Filter Media and Install 9510 Backwash Valve on Tank

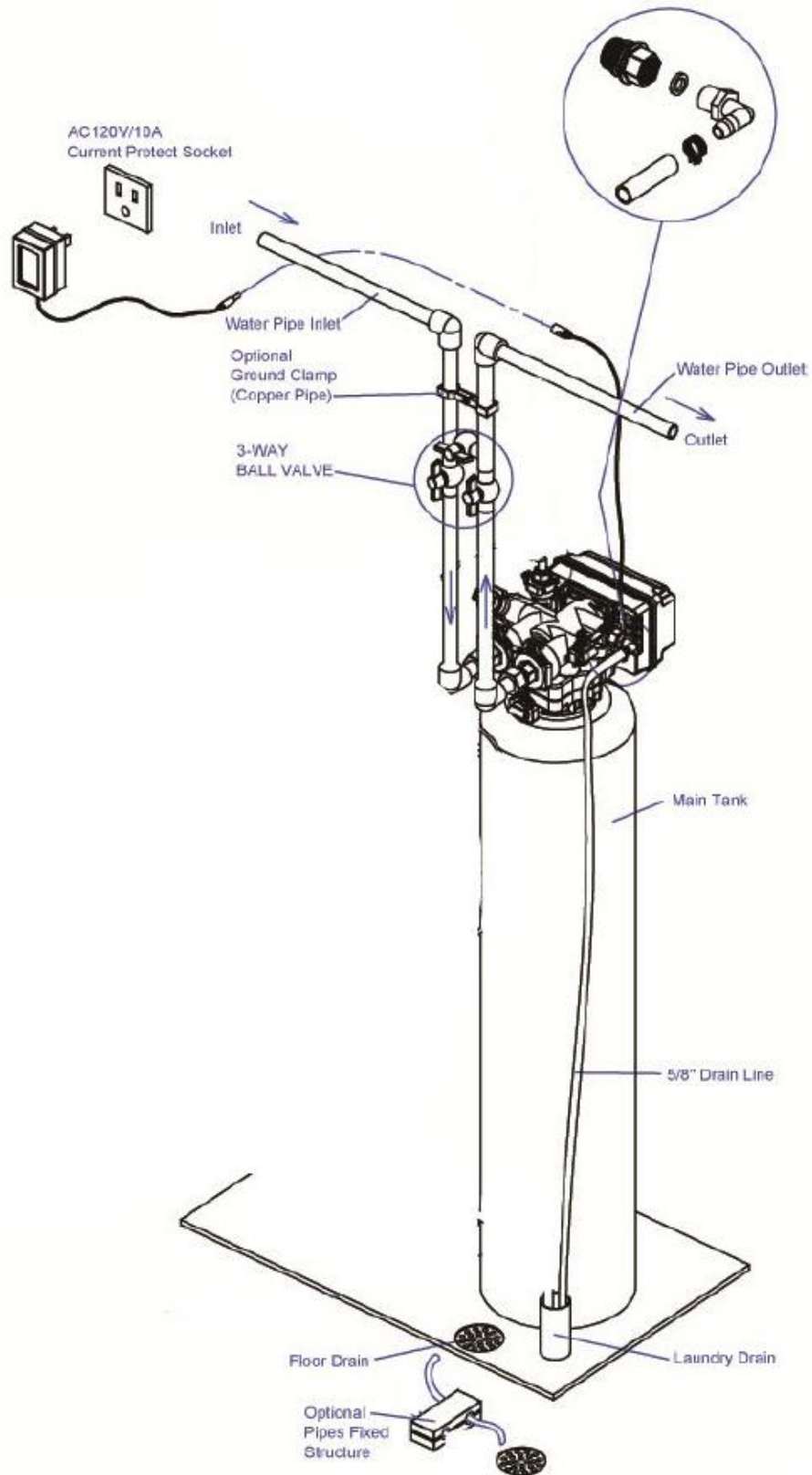
1. **Make sure you “test fit” distributor tube, find divot that keeps tube centered, before adding gravel so distributor tube does not extend past top of tank.**
2. Cover top of distributor tube with tape so no media enters distributor tube.
3. Hold the tube center until there is enough gravel and media to support the tube. The top of the distributor tube should be level with the top opening of the filter tank.
4. Add the filter gravel that came with your order. The gravel should cover the bottom distributor screen before adding the Greensand Filter media.
5. Next add the Greensand Media.
6. The tank should be about 2/3 full of media, do not fill much more than 2/3 full, even if there is media left over. We ship the correct amount of media to fill your tank.
7. Add 2 cups of chlorine bleach down the distributor tube, and then fill tank completely with water. Allow to soak for at least 2 hours up to 24 hours.
8. Remove tape from top of distributor tube. Be careful not to pull up distributor tube.
9. Install Top Screen using the 2 small screws provided in your parts bag.
10. Screw on Control Valve: Add small amount of silicone grease to both O-rings (only O-rings, not tank thread) on bottom of control valve and screw on 9510 control valve. **Do not lubricate tank threads or any other fittings other than O-rings. Do not use pipe-joint compound, vegetable oil, Teflon tape, or Vaseline or greases on tank threads.**
11. If you accidentally pull distributor tube up after gravel and media are in tank it must be re-seated. It is possible to do this by spraying water down distributor tube with a garden hose while pushing on end of the tube. If this does not work, you must empty tank completely and start over.
12. **Do not hard pipe the drain line with PVC or copper, use flexible tubing.** If you use hard PVC piping for the drain line, **you must be able to remove the hard drain piping and attach flexible tubing for testing purposes.**
13. **Make sure the drain tubing is firmly clamped to the barbed fitting with a hose clamp to prevent leaks or blow-offs**

Make sure top of distributor tube
is level with top of tank



Build a Bypass

Install a 3-way ball valve bypass as shown, so unit can be bypassed if it needs service.



Piping Installation

1. If your hot water tank is electric, turn off the power to it to avoid damage to the element in the tank.
2. If you have a private well, turn the power off to the pump and then shut off the main water shut off valve. If you have municipal water, simply shut off the main valve. Go to the faucet, (preferably on the lowest floor of the house) turn on the cold water until all pressure is relieved and the flow of water stops.
3. Locate the filter tank close to a drain where the system will be installed. The surface should be clean and level.
4. Connect the inlet and outlet of the filter using appropriate fittings. Perform all plumbing according to local plumbing codes. Use 3/4" minimum pipe or tubing size for the drain line

ON COPPER PLUMBING SYSTEMS BE SURE TO INSTALL A GROUNDING WIRE BETWEEN THE INLET AND OUTLET PIPING TO MAINTAIN GROUND-ING.

Any solder joints near the valve must be done before connecting any piping to the valve. Always leave at least 6" (152 mm) between the valve and joints when soldering pipes that are connected to the valve. Failure to do this could cause damage to the valve.

5. Connect the drain hose to the valve and secure it with a hose clamp. Run the drain hose to the nearest laundry tub or drainpipe. This can be ran up overhead or down along the floor.

If running the drain line more than 20 ft overhead, it is recommended to increase the hose size to 3/4" .

NEVER MAKE A DIRECT CONNECTION INTO A WASTE DRAIN. A PHYSICAL AIR GAP OF AT LEAST 1.5" SHOULD BE USED TO AVOID BACTERIA AND WASTEWATER TRAVELLING BACK THROUGH THE DRAIN LINE INTO THE FILTER.

6. Place the unit in the bypass position.

Make sure there are no leaks in the plumbing system before proceeding.

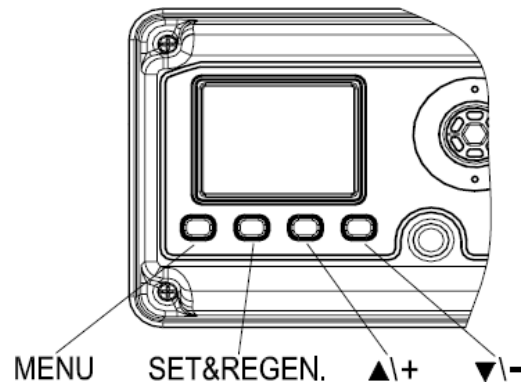
Note: The unit is not ready for service until you complete the start-up instructions.

8. Using Teflon tape on pipe threads, make sure to connect the IN pipe to inlet and OUT pipe to the outlet.
9. Make sure there is a hose bib installed after the system, and a working gate or ball valve before filter system and also one after as shown in Fig 2. The pressure gauges are optional but **a hose bib is strongly recommended after the 9510 control valve and before the second ball valve.** This makes it easy to rinse your new system on start-up and gives you a place to test water before it enters your house plumbing.

Start-up Instructions

1. Plug the valve into an approved power source.
2. When power is supplied to the control, the screen will display “Advancing to Service Wait Please” while it finds the service position.
3. Start an Immediate Manual Regeneration. The valve will immediately start moving to the BACKWASH position.
4. Open the inlet on the bypass valve slowly and allow water to enter the unit. Allow all air to escape from the unit before turning the water on fully then allow water to run to drain for 8 – 10 minutes or until all media fines are washed out of the filter as indicated by clear water in the drain hose.
5. Press any button to advance to the RINSE position. Check the drain line flow. Allow the water to run for 8 – 10 minutes or until the water is clear.
6. The valve will automatically advance to the SERVICE position after the RINSE cycle is complete. Open the outlet valve on the bypass, then open the nearest treated water faucet and allow the water to run until clear, close the tap and replace the faucet screen.
7. NOTE: 9510 Greensand Backwash Filter may need to be backwashed and rinsed several cycles to condition and rinse Media on start-up.
8. Next program the time, date, and number of days between regenerations into controller using Programming Instructions

Programming Settings



MENU

Enter or exit the system menu. Press and hold the button for 3 seconds to unlock the screen.

SET/REGEN

Press this button to select a program or to save the settings. Press and hold the button for 3 seconds to initiate a manual regeneration.

DOWN / UP

Press these buttons to increase or decrease the value of the settings. Press the buttons to enter the previous or the next menu.

How To Change Settings

1. Press the MENU button to enter and exit the menu.
2. Press the UP or DOWN button to select the parameter.
3. Press the SET/REGEN button to enter or activate the parameter for editing.
4. Press the UP or DOWN button to change the value.
5. Press the SET / REGEN button to save the value.
6. Press the UP or DOWN button to select other parameters.
7. Follow the above steps to change other parameters.
8. Press the MENU button to save and exit settings

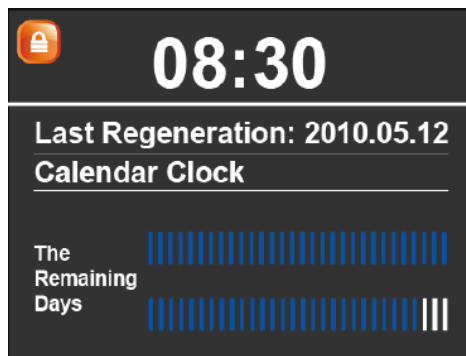
You can only change flashing parameters.

Main Display

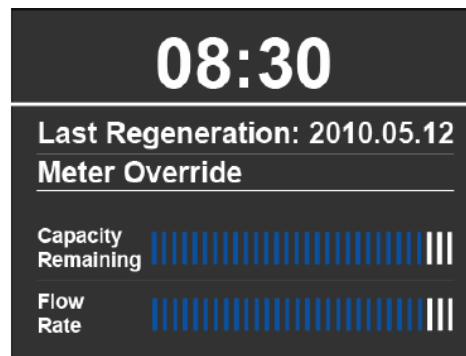
When power is first supplied, the valve may take up to two minutes to find the service position. During this time the valve will show:



Do not touch any buttons at this time. When the valve reaches the service position it will display:



Calendar Clock Mode



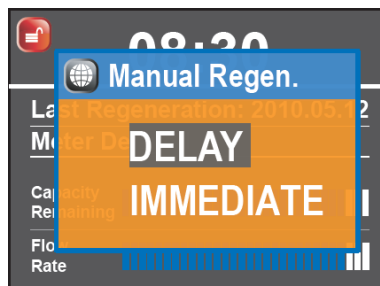
Meter Mode (Meter Immediate, Meter Delay, Meter Override)

This page shows the current time, last regeneration day, and the regeneration mode. The number of blue bars represent the capacity remaining and the flow rate. The screen will be locked after 3 minutes. To unlock the screen press and hold the MENU key for 3 seconds.



MANUAL REGENERATION

Press and hold the SET REGEN button for 3 seconds to enter the manual regeneration page. The screen will display:



If you choose DELAY, the valve will start a regeneration at the next regeneration time (default is 2:00 AM).

If you choose IMMEDIATE, the valve will start a regeneration immediately.

When a regeneration is started, the screen will display:



When the valve reaches the BackWash position. The screen will display:



When Back Wash remaining time reaches zero or any button is pressed, the valve will advance to the Rinse position.

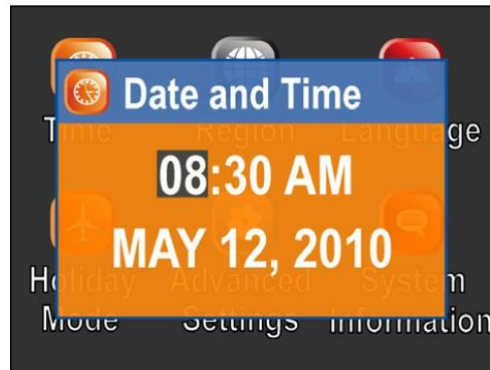
Main Program

Press the MENU key to view the main page.



1. Press the MENU button to enter and exit the menu.
2. Press the UP or DOWN button to select the parameter.
3. Press the SET/REGEN button to enter or activate the parameter for editing.
4. Press the UP or DOWN button change the value.
5. Press the SET / REGEN button to save the value.
6. Press the UP or DOWN button to select other parameters.
7. Follow the above steps to change other parameters.
8. Press the MENU button to save and exit settings.
9. You can only change flashing parameters.

Choose Time icon to adjust the current date and time.



Choose Region icon to change the display unit of measures. Choose Language icon to change the display language. Note English may be only option depending on version of software.



Choose Holiday Mode icon if you wish to activate it. The system will perform a brief back wash and rinse every 7 days. When turning Holiday Mode ON, remember to add the end date. This will ensure the valve will return to normal operation on that date.



The advanced settings have two options. Choose manual settings.



In Regen Mode you can select four different regeneration modes.



Calendar Clock: the unit will initiate regeneration at the next pre-set regeneration time based on the interval of days between regeneration days.

Meter Immediate: the unit will initiate regeneration immediately after the volume remaining reaches zero.

Meter Delayed: this is the most common setting. When the volume remaining reaches zero, the system will initiate regeneration at the next preset regeneration time.

Meter Override: when the volume remaining reaches zero, the system will initiate regeneration at the next pre-set regeneration time. If the days between regeneration are reached before the volume remaining reaches zero, the system will override the meter setting and initiate regeneration.

The menu options will depend on the type of regeneration mode selected.



Calendar Clock



Meter Immediate



Meter Delayed



Meter Override

Choose Regen Time to adjust the time of day for a regeneration to occur.



Choose Regen. Days to adjust the interval (days) between regenerations. Set to backwash every 7 days for most applications, although very dirty water or heavy use may require more frequent backwashes.



Choose Regen. Cycle to adjust the length of time for each cycle. Note that filter valve mode only has two cycles: Backwash and Rinse. Set backwash for 10 – 15 minutes &rinse for 6 – 8 minutes. The Greensand Filter uses Backwash and Rinse cycles only.

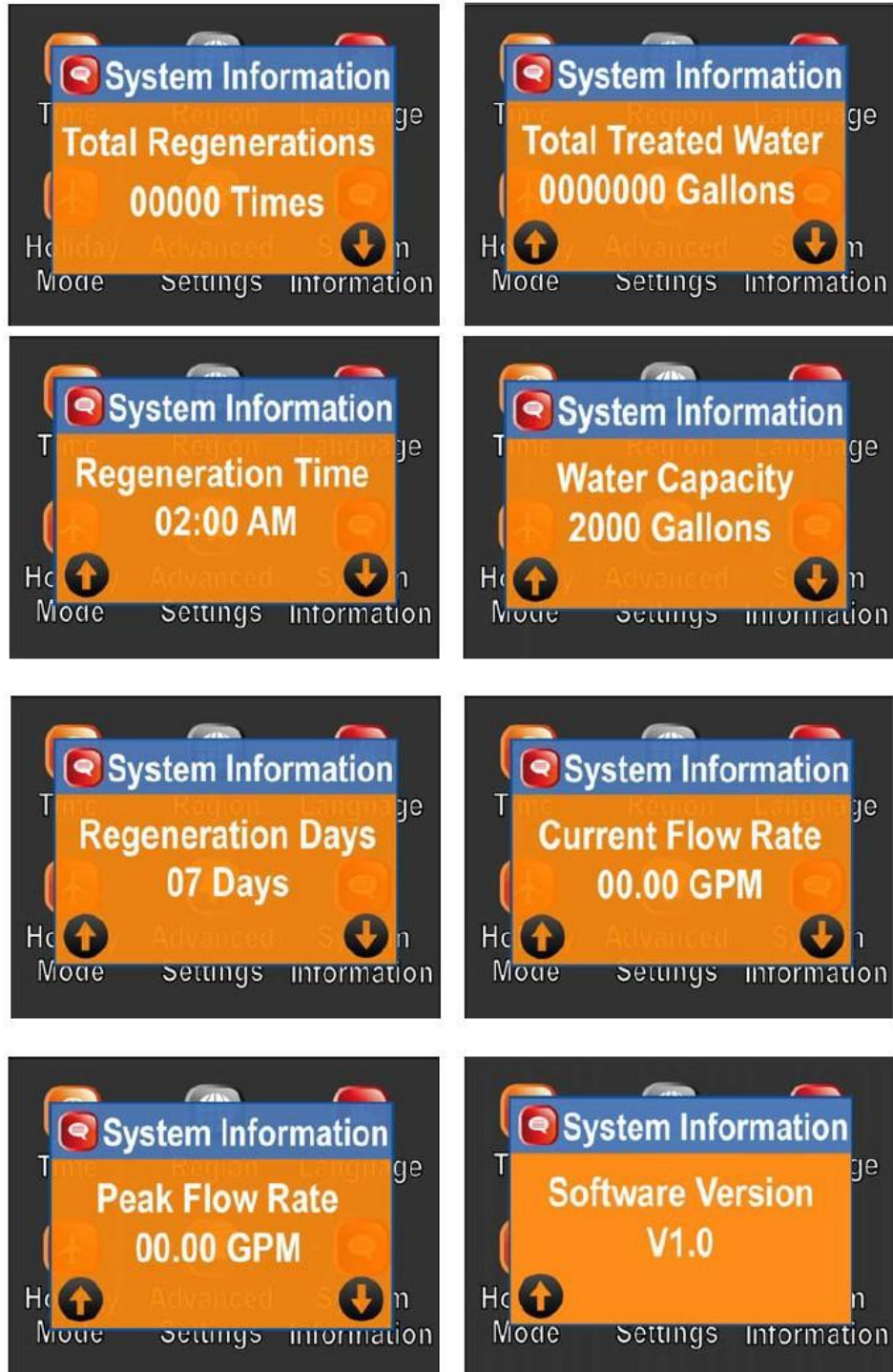


Restore Defaults will erase all the current settings. Be careful when choosing this since you will lose all the current settings and the default settings loaded back in may not be the correct settings for your system.



System Information will provide diagnostic information about your system.

Hold the SET/ REGEN button for 3 seconds to reset values to zero.



Control Operation Notes

In the event of a power failure, the valve will keep track of the time and day for 48 hours. The programmed settings are stored in a non-volatile memory and will not be lost during a power failure.

If power fails while the unit is in regeneration, the valve will finish regeneration from the point it is at once power is restored.

If the valve misses a scheduled regeneration due to a power failure, it will queue a regeneration at the next regeneration time once power is restored.

Automatic Hard Water Bypass During Regeneration

The regeneration cycle can last 30 minutes after which filtered water service will be restored. During regeneration, unfiltered water is automatically bypassed for use in the household.

Hot water should be used as little as possible during this time to prevent un- filtered water from filling the water heater.

This is why automatic regeneration is set for some time during the night and manual regenerations should be performed when little or no water will be used in the household. Normal regeneration time is 12:00 AM.

Regeneration Process

Periodically the filter will require a back wash to clean the trapped particles and unpack the filter bed to restore the system flow rates. The table below explains the regeneration steps.

Step	Name	Description
#1	Back Wash	Fresh water is introduced to the bottom of the tank flowing upwards expanding the filter media to rinse out any dirt or small particles to the drain and to un- compact the bed to restore full service flow rates.
#2	Rinse	Fresh water is introduced from the top of the tank flowing down through the filter bed rinsing any unfiltered water to the drain.

Troubleshooting Chart

SYMPTOM	PROBABLE CAUSE	CORRECTION
1. Fails to Regenerate Automatically	Power supply plugged into intermittent or dead power source	Connect to constant power source
	Improper control valve programming	Reset program settings
	Defective power supply	Replace power supply
	Defective Drive motor	Replace motor
2. Regeneration at Wrong Time	Time of day improperly set, due to power failure	Reset time of day programming and install 9-volt battery.
	Regeneration time set improperly	Reset regeneration time programming
3. Poor Water Quality	Check items listed in #1 and #2	
	Bypass valve open	Close bypass valve.
	Channeling	Check for too slow or high service flow. Check for media fouling.
	Lack of aeration in water	Program valve to draw air more frequently. Increase number of minutes in air draw cycle. Clean injection assembly and screen (instructions on page 13).
4. Loss of Water Pressure	Scaling / fouling of inlet pipe	Clean or replace pipeline. Pretreat to prevent.
	Fouled media	Clean media. Pretreat to prevent.
	Improper backwash setting	Backwash more frequently
5. Continuous Flow To Drain	Foreign material in control	Clean valve and replace pistons and seals.
	Internal control leak	Same as above.
	Valve jammed in backwash or rapid rinse position	Same as above.
	Motor stopped or jammed	Check for jammed piston. Replace piston and seals. Replace motor if motor is unresponsive.
6. Media in Service Line	Plumbed in backward	Re-plumb the system properly
	Internal leak in unit	Call dealer.
7. Media Flows to Drain	Media did not soak long enough	Re-soak the media for a longer length.
	Incorrect or missing drain flow control	Check for proper flow control (reference no. 5 on page 9). Call dealer, if problems persist.

Problems with Pressure Loss or Reduced Flow

1. First make sure that the problem is the 9510 Filter and not another cause. Check the flow rate out of a faucet, with the 9510 control valve on by-pass.
2. Greater flow and pressure when the unit is on bypass means the problem is in the filter. No change would indicate the problem is before the filter.
3. **The valve:** Over time, deposits can build up on the inside of the valve, and prevent the piston from moving, or fully advancing to where it needs to be, and this can affect the flow. The solution is to replace the seals and spacers, clean the valve where you removed the parts, clean and inspect the piston, and re-install.
4. **The filter media:** As is already noted in the guide, backwash must be done with sufficient flow rate and be backwashed frequently enough to keep the filter media clean.

How to Replace the Greensand Filter Media

1. Typically, after 5 to 7 years the Greensand Media will stop removing iron and may need to be replaced. To accomplish this:
2. Turn water to system and depressurize the filter by opening a hose bib or faucet after the filter system.
3. Put system on bypass
4. Unscrew the control valve and set aside.
5. Siphon water out of the Greensand Filter by inserting a small flexible tube down the distributor tube and siphoning out the water.
6. Lay down a clean tarp outside or somewhere you can flush water and clean the tank out.
7. Insert a garden hose in the tank and allow water to flow down center distributor tube. Media will begin to flow out on to the tarp.
8. Flush out all Greensand and gravel and discard to landfill or trash. Observe all local laws and codes, generally it is acceptable to dispose of the media in a landfill.
9. Rinse out filter tank until clean.
10. Add a ½ cup of unscented household bleach and a few gallons of water and rinse inside of tank with chlorinated solution.
11. Rinse out filter tank until chlorine is gone.
12. Add gravel and new Greensand and re-start up system following original directions in this manual.

Limited Warranty

We warrant this water filter/ softener/ conditioner, when installed according to factory recommendations, to be free from defects in materials and workmanship as follows:

-----Limited Warranty-----

This water conditioner unit is comprised of the finest industry components available. Each individual component used in the assembly of our equipment is covered by the original equipment manufacturer's warranty. All components, except those specifically listed below, are warranted for a period of five (7) years from date of installation to the original purchaser to be free of defects in materials and workmanship subject to the manufacturer's conditions and/or the conditions shown below.

-----Mineral Tanks-----

The fiberglass, polyglass or composite mineral tanks used in the assembly of this unit are warranted to be free of defects in materials and workmanship for a period of ten (10) years on 6" – 13" size tanks, and five (5) years on 14" and larger size tanks used for softener/filtration applications, subject to the manufacture's conditions and/or the conditions shown below. Warranty does not cover exposure to weather, freezing, fractures caused by external impact, or exposure to vacuum.

-----Control Valves-----

The CWS control valve is warranted to be free of defects in materials and workmanship for a period or seven (5) years, subject to the manufacturer's conditions and/or the conditions shown below.

-----Conditions-----

1. This warranty only covers water conditioners installed for residential use. Water conditioners installed for commercial or industrial applications are guaranteed for one (1) year from the date of installation.
2. Installation must be made in accordance with legal or local codes and manufacturer's recommendations.
3. Failure must not result from exposure to weather, rodents, misuse, alteration, fire, lightning, power surges or neglect.
4. Water pressure must not exceed 100 PSI and water temperature must not exceed 100 degrees.
5. Subject to the above terms and conditions we will replace and/or repair, at our option, any parts of the water conditioner found defective in materials and workmanship. Defective parts must be returned, freight pre-paid for repair or replacement.
6. This warranty does not cover labor, shipping charges, damages caused by delays of consequential damages or other causes beyond our control. Warranty does not cover pipes, fixtures or appliances. Warranty extends to the actual water conditioner components only.
7. This warranty is to the original purchaser and is not transferable after the third year to any subsequent owner(s).
8. No other guarantees or warranty, expressed or implied, is applicable to our product. No repair or replacement made under the terms of the warranty shall extend this warranty.