EverGreen AIF Iron Solution System

INSTALLATION, OPERATING AND START-UP MANUAL

REV 03.22

PARGREEN WATER TECHNOLOGIES

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Table of Contents

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Iron Filter Check List and Flushing Instructions

1. AIF Iron Filters should not be used on water that has possible Iron Bacteria or SRB without Ozone Option.
2. Filter media should be wetted and soak for 4 hours before start-up.
3. All sequestering agents including polyphosphates and meta-phosphates should be added after the filter System.
4. For pH <7.0, it is recommended that the iron filter be followed by a water softener even if the water is <3 grains per gallon. In hard water, a water softener should always follow an iron filter and the softener system should include a resin cleaner device.
5. The unit must be backwashed at its specified flow rate at minimum 30psi to achieve bed expansion for effective removal of precipitates and suspended solids.
6. The start-up backwash and rinse prior to new service installation is critical for clearing media of color and fines. We recommend 5 bed volumes of backwash followed by 5 bed volumes of fast rinse. This timing is explained in Schedule B.
7. The backwash frequency shall be every 12 to 24 hours for **continuous operating systems**. If the unit is operated intermittently, backwash per recommendations in Schedule A.

Schedule A.

1 to 3 ppm Fe (Iron)

Maximum flow rate: 4.0 US GPM/Ft3

Media backwash frequency: Every Three Days

4 to 6 ppm Fe (Iron)

Maximum flow rate: 2.5 US GPM/Ft3

Media backwash frequency: Every Two Days

7 to 9 ppm Fe (Iron)

Maximum flow rate: 2.0 US GPM/Ft3

Media backwash frequency: Daily

Schedule B.

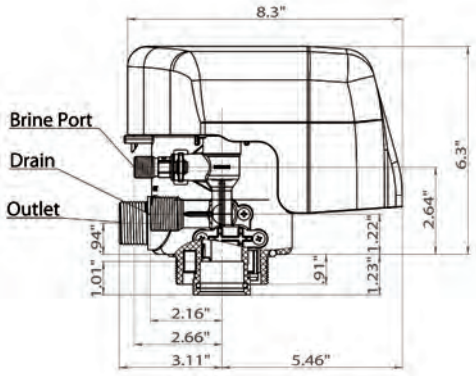
One cubic foot: Backwash is 8 minutes and fast rinse is 6 minutes.

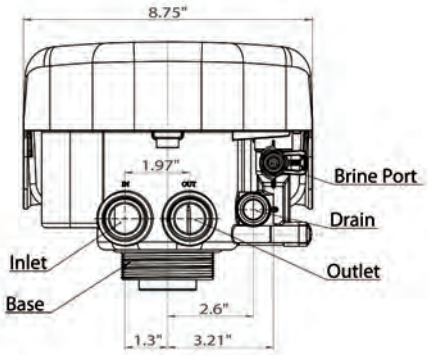
One and one-half cubic feet: Backwash is 10 minutes and fast rinse is 8 minutes.

Two cubic feet: Backwash is 12 minutes and fast rinse is 10 minutes.

Any size in the presence of iron: Backwash 15 minutes and fast rinse 12 minutes

EverGreen AIF Iron Solution System





EverGreen Aeration Ozone System Specifications

Model*	Resin Cubic Feet	Overall Height Inches	Diameter Inches	Flow Rate Gallons Per Minute$_1$	Water (Gallons) Used Per Recharge$_2$	Gallons Per Minute in Backwash	Gallons Per Regeneration - FeO3 ≤ 5 PPM$_3$
FSB1054-AIF-OZ	1.5	60.9	10	3.8	160	6.6	450
FSB1252-AIF-OZ	2	69.0	12	5.5	195	8.10	600
FLB1354-AIF-OZ	2.5	61.4	13	6.5	264	11.00	750
FLN1465-AIF-OZ	3	72.2	14	7	329	13.70	900

* Additional Sizes Available
1 - Flow Rate at 7 GPM/Square Foot
2 - Usage Based on Water Supply Quality; Usage ± 10%
3 - Based on 300/Cubic Foot, pH 7.0

Electrical / Operational Specifications

Control Valve		Working Conditions	
Transformer Input	120VAC - 60Hz	Water Pressure	20 -120 PSI
Transformer Output	12VDC - 2A	Water Temperature	35˚F - 125˚F
Valve Wattage	24W	Iron Level$_4$	1 to 5 PPM

4 - For Ferric Iron and Ferrous Iron Over 5 PPM, Contact PWT Technical Support

Control Valve Parameters

Inlet	Outlet	Drain$_5$	Brine Line	Base	Riser Tube	Raw Water Bypass
1″	1″	1/2″ Barb	3/8″	2.5″ - 8NPSM	1-1/4″	Yes - During Regeneration

5 - Drain Connection Also 3/4″ MNPT

Additional Specifications

Valve Material	Tank Material	Meter Accuracy	Clock
Noryl®	FRP	± 5%	12 Hour - with Battery Back-up

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Product Features and Applications

Primary Applications

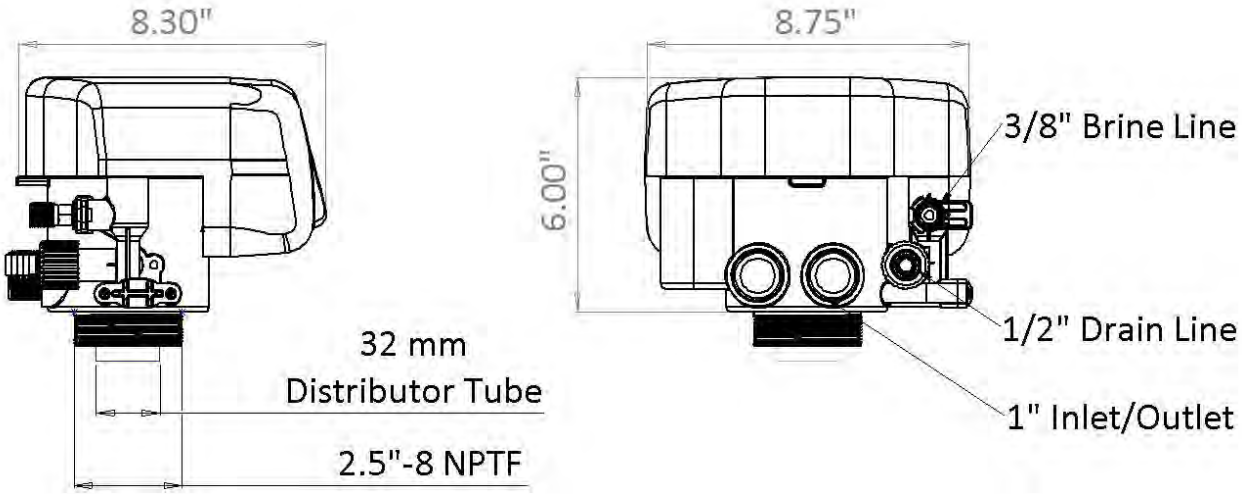
Recommended for commercial and residential softening or demineralization water treatment systems.

- Softening System
- Iron Removal System
- Ion Exchange Equipment
- Boiler Softening Water Treatment
- RO Pre-treatment

Product Characteristics

- **Mechanical Components**
  The PWT 5 uses internal ceramic discs which are corrosion and abrasion resistant to form a hermetic seal. Rotation of the upper disc aligns to the corresponding lower disc ports for Service, Backwash, Brine & Slow Rinse, Brine Refill and Fast Rinse modes.
- **Hard Water/No Hard Water Bypass**
  Up-flow regeneration with no hard water and hard water bypass options. This valve operates as a hard water bypass.
- **Excellent Flow Rate:** 20 gpm @ 15 psi drop.
- **365 Day Usage Memory**
- **Manual / Delayed Regeneration**
  Pressing at any time results in an immediate manual regeneration.
  Pressing and holding for 3 seconds, when system is locked, results in a delayed regeneration at the preselected time.
- **Extended Power Outage Indicator**
  If outage exceeds 3 days, the time of day indicator "" will flash 12:12. The current time of day needs to be re-set. All other set parameters remain stored in memory. The valve will resume to operate from the point of the power outage.
- **Three Regeneration Sequences**
- **Lockout Function**
  Keypad will lock after 5 minutes without use. To access the parameter changes press and hold and simultaneously for 3 seconds to unlock.
- **LCD Display Screen**
- **Advanced Valve and External Device Connections**
  Interlock and Alternate Interlock
  Remote Handling
  Solenoid Valve
- **7 Regeneration Mode Options with Adjustable Cycle Times**
- **Maximum Day Regeneration Interval**
  When the valve reaches the maximum programmed service days, without reaching the set service capacity, it will trigger a regeneration at the pre-programmed time of day. Regeneration(s) reset both the maximum day regeneration value and the service capacity value.
- **One Button to Change the Current Time**
  Pressing and holding the button for 3 seconds, when system is locked, allows the current time of day to be adjusted.
- **Service Alarm**
  When the service alarm feature counts-down and reaches set point, (Selectable 30 day min to 900 day max in 30 day increments) the alarm will activate at 8pm. The alarm will sound for 2 minutes and then shut off automatically. To silence alarm within the 2 minute period, press any button. A service call message will then appear on the screen as a signal for the homeowner to contact a water treatment professional for routine service. To eliminate this message from the screen, unlock the valve programming by pressing the UP and DOWN arrows simultaneously until the padlock in the upper left corner of the screen disappears (approximately 3 seconds). Next, enter the programming menu by pressing the MENU/CONFIRM button once and then pressing the BACK/REGENERATION button once. The system will then go back to normal status and the operational days will re-start new count-down. Note: The system will operate normally when it is displaying the service alarm message.

Product Dimensions and Specifications



Model	Length(max)	Width(max)	Height (max)	Regeneration Mode
PWT 5	8.3”	8.75”	7.5”	Up-flow
The valve dimensions are for reference only.				

Connect Port Dimensions							
Product Model	Inlet Port	Outlet Port	Drain Port	Brine Port	Base	Riser Pipe	Hard Water Bypass
PWT 5	1” NPT	1” NPT	3/4” NPT	3/8”	2.5” 8NPSM	32 mm	No
PWT 5	1” NPT	1” NPT	3/4” NPT	3/8”	2.5” 8NPSM	32 mm	Yes

Main Technical Parameters	
Water Capacity	See Performance Data Sheet
Power Input	100-240VAC 50/60Hz
Power Output	12VDC @ 2A
Regeneration Cycles	Sequence 1: Service → Backwash → Brine & Slow Rinse → Fast Rinse → Brine Refill Sequence 2: Service → Backwash → Brine & Slow Rinse → Backwash → Fast Rinse → Brine Refill Sequence 3: Service → Brine Refill → Service (180 min-time fixed) → Backwash → Brine & Slow Rinse → Backwash → Fast Rinse
Regeneration Mode	A-01 Meter Delay: Regeneration happens when the capacity reaches zero and the preset time of regeneration is reached. A-02 Meter Immediate: Regeneration happens when the capacity reaches zero. A-03 Intelligent Meter Delay: The same delay function as A-01 but the capacity is determined by entering the total Resin Capacity, Feed Water Hardness, and the Number of People in the household. The control valve automatically calculates the gallons for regeneration. A-04 Intelligent Meter Immediate: The same function as A-02 but the capacity is determined by entering the Total Resin Capacity and Feed Water Hardness. The control valve automatically calculates the gallons for regeneration. A-05 Remaining Compare: Compares current usage with previous 365 day daily usage to intelligently determine when regeneration will occur. Regeneration starts at the set regeneration time. A-06 By Day (timer): Service days count down to zero (0) and regeneration starts at the set regeneration time. A-07 Filter Meter: Filter mode, regeneration occurs when the capacity reaches zero and the preset time for regeneration is reached.

Pre-Installation Check List

Before installation, read through this manual thoroughly. Then obtain all materials and tools needed for installation.

This softening system will operate at maximum efficiency when the following conditions are considered.

Required PWT 5 Operation Conditions:		
Working Conditions	Working pressure	20psi - 120psi
	Water temperature	35 °F - 125 °F
Working Environment	Environment temperature	35 °F - 125 °F
	Relative humidity	≤95%
	Power source	100 - 240VAC 50/60Hz
Inlet Water Quality	Turbidity	2FTU
	Hardness	50 grains per gallon
	Chlorine	0.1 mg/l
	$Iron^{2+}$ / $Iron^{3+}$	5.0 mg/l / 0.30 mg/l

- All plumbing and electrical work should be performed by an accredited professional to ensure all federal, state, local and municipal regulations are met.
- Do not use the system with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.
- Do not use the brine tube, injector body, or other connectors on the PWT 5 valve as a handle to carry the system.
- Ensure there is no ozone or other oxidizers injected prior to this system.

- When there is moderate to high turbidity, a filter should be installed before the water softening system on the inlet side.
- If the water pressure exceeds 120psi, a pressure reducing valve must be installed before the water inlet. If the water pressure exceeds 80 psi, installing a pressure reducing valve before the water inlet is highly recommended. If the water pressure is under 20 psi, a booster pump must be installed before the water inlet.
- Replacement parts for the PWT 5 valve should only be purchased through Pargreen resellers. Electrical specific to the PWT 5 valve from Pargreen resellers.
- Any modification to Pargreen equipment, which is outside the standard scope of supply, voids the product warranty.
- Pargreen equipment, like all modern electronic devices, can be damaged by electrical surges or brown outs. Every effort has been taken to harden the circuits, by design, to protect against such events. These precautions, or even additional surge protection, are not 100% effective. Therefore, equipment damage caused by abnormal electrical events is not covered by warranty.

*****Failure to use this product within the described conditions may void the warranty*****

Installation

- **Installation Notice**
  - Before installation, read through this manual thoroughly and obtain all materials and tools needed for installation.
  - All plumbing and electrical work should be performed by an accredited professional to ensure all federal, state, local and municipal guidelines are met.
- **Unit Location**
  - The filter or softener should be located close to a floor drain away from direct sunlight and any heat sources.
  - Protect equipment from direct sunlight and precipitation exposure.
  - Install equipment in a location safe from unauthorized access or vandalism.
  - Ensure that the unit is installed with enough space for operation and maintenance.
  - The installation surface should be clean and level.
  - Install the unit in an environment which minimizes consumer risk of loss in the event of malfunction.
  - Hankscraft offers many different products for many different applications, for both indoor and outdoor environments. If you are not 100% sure the equipment purchased is suitable for the installation application or environment, please check with a Hankscraft representative, or your local equipment provider, to ensure the proper equipment is selected. Equipment installed in inappropriate applications or environments are not covered by warranty.
  - Brine tank should be installed close to the PWT 5 control valve.
- **Plumbing and Mechanical Setup**

  Note:

  1) *If the water outlet or water tank is installed higher than control valve, or parallel interlock system with multi-outlets, a liquid level controller must be installed in the brine tank. If not, the water outlet or source tank will flow backwards into brine tank during backwashes.*

  2) *If making a soldered copper installation, all sweat soldering should be done before connecting pipes to the valve. Torch heat will damage plastic parts.*

  3) *When turning threaded pipe fittings onto plastic fitting, take precaution not to cross thread or over tighten.*

  - Control Valve Installation
    - As Figure 1-1 shows; insert a 32mm riser pipe with bottom basket into the center of the mineral tank. If pipe is higher than the top of the pressure tank, mark it, remove from tank, and cut. Take care to keep foreign material out of pressure tank.
      Note: *The length of riser pipe should be below tank flange. The distance from the top of the tank to the top of the pipe should be between* ***3/16" and 1/4"****. The edges of the pipe should not be sharp to avoid damage to the seal inside the* PWT 5 *valve.*
    - If mineral tank was not purchased as part of a complete system from Hankscraft Runxin be sure to plug the riser pipe prior to filling with media. Media quantity is relative to desired capacity and tank size. (Refer to Product Sizing table on page 7)
    - Install Valve Base O-ring around the neck of the valve.
    - Lubricate the center hub O-ring of the PWT 5 valve.
    - Install the top basket with a twist and lock action to center hub of the PWT 5 valve.
    - Place PWT 5 valve onto tank with the distributor pipe inserted down the middle of The top basket. Rotate clockwise to secure onto the tank. Do not overtighten! Overtightening may cause the valve to crack and void the warranty.

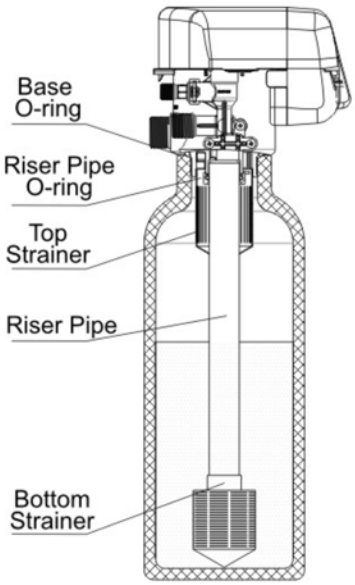


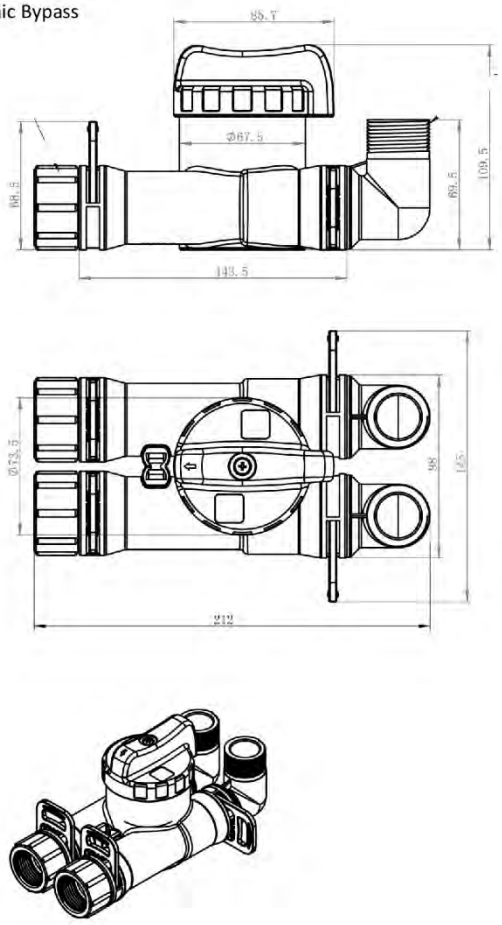
Figure 1-1

Installation- Continued

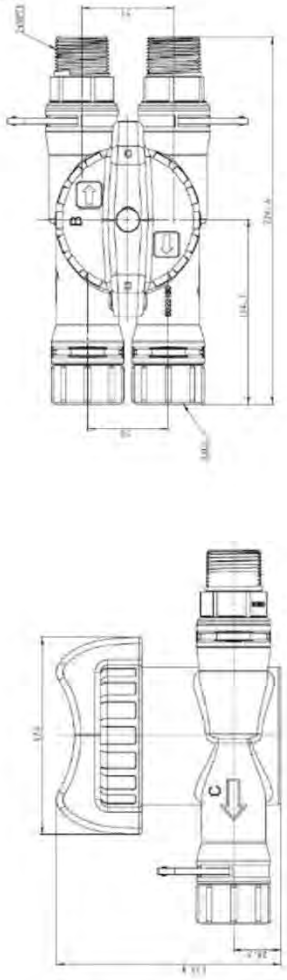
- **System Installation continued on page 22**

Ceramic Bypasses

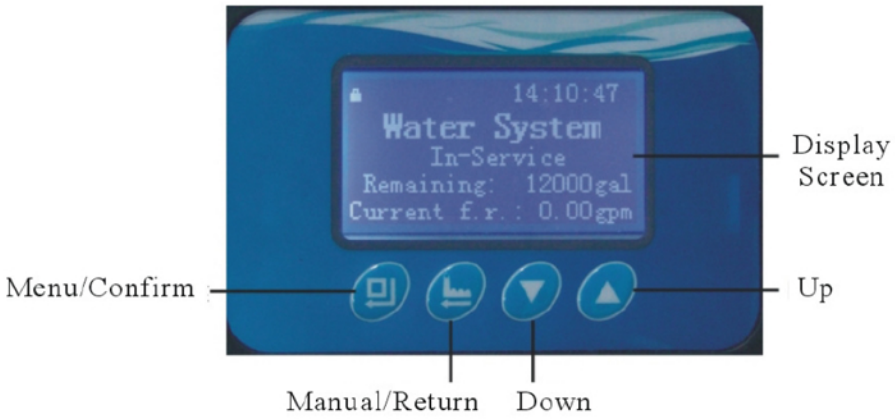
Hankscraft Part Number 41207
Large Ceramic Bypass



Hankscraft Part Number 41205
Small Ceramic Bypass



Programming: Display and Instructions



- **Programming Instructions**

  Manual / Delayed Regeneration

  Pressing ◐ at any time results in an immediate manual regeneration.

  Pressing and holding ◐ for 3 seconds, when system is locked, results in a delayed regeneration at the preselected time.

  One Button to Change the Current Time

  Pressing and holding the ⏎ button for 3 seconds, when system is locked, allows the current time of day to be adjusted.

  Unlocking the Keypad 🔒

  🔒 icon indicates the buttons are locked within 5 minutes of idle use. To unlock press and hold ▲ and ▼ for 3 seconds until the 🔒 icon is off.

  Enter Key ⏎

  Press ⏎ button to enter the basic programming mode, modify highlighted options, and return to the main menu.

  Manual Regen/Esc. Key ◐

  Press ◐ at any phase during manual regeneration to advance to the next phase or press during programming to exit to the home screen without modifying the current highlighted option.

  Up and Down Arrows ▲▼

  ▲ or ▼ buttons are used to scroll through the various basic programming options as well as adjust values.

- **Programming Modes**

  - Basic Programming – Allows you to adjust the time values for each phase. To enter basic programming, follow the directions below.
    - When the 🔒 icon is on, press and hold both ▲ and ▼ for 3 seconds to unlock the keypad; then press ⏎ to enter the main menu; press ▲ or ▼ to highlight each option. Press ⏎ to enter that option. Press ▲ or ▼ to adjust the value. Press ⏎ to accept changes. (Press ◐ to exit back to service status）
  - Advanced Programming – Allows you to set the Regen Cycle and Regen Mode that will work best for your customer; as well as adjust or set each phase time. To enter advanced programming, follow the directions below.

    - Plug the PWT 5 in and immediately press ⏎ ◐ ▼ in sequence to enter into the advanced setting. Press ▲ or ▼ to select the menu item to be changed (Press ◐ to return to the previous menu).
      Note: *If valve locks while programming, unplug power supply and repeat step above.*

    - Press ⏎ to enter the main menu; press ▲ or ▼ to highlight each option. Press ⏎ to enter highlighted option. Press ▲ or ▼ to adjust the value. Press ⏎ to accept changes. (Press ◐ to advance to service status）
      The following pages will outline programming for each regeneration mode.

EverGreen AIF & AIF O3 Iron Solution

System Set-up Sheet

Control Valve - PWT 5

Regen Cycle 4; Regen Mode A-01

Programming: Mode A-01 ***Set Regen Cycle First in Programming**

Screen View	Setting	Additional Information
Review Company Info	NA	
Set Valve Model	62605	
Set Language	English	
Set Company Info	NA	
Set Hour Mode	12 HR	
Set Time of Day	Actual Time	
Set Date	Current Date	
Set Program Type	Interlock	
*Set Regen Cycles 1,2,3,4	4	Must Set Regen Mode to A-01 first to see Regen Cycle 4
Clear Data	Close	
*Set Regen Mode: A-01-A-07 *	A-01	Meter Delayed
Set Capacity	Gallons	FSB1054 = 750, FSB1252 = 1000, FLB1354 = 1250
Set Regen Time	12am	
Set Backwash Time	12 Min.	GPM: FSB1054=4.89; FSB1252=8.1; FLB1354=9 (no DLFC)
Set Air Draw Time	Min. →	FSB1054 = 8, FSB1252 = 10, FLB1354 = 15 Min.
Set Fast Rinse Time	10 Min.	
Max Days for Regeneration	3 Days	
Signal Output Mode b-01 (02)	b-01	
Set Service Alarm	disabled	
Review Regen Times	NA	
Review Software Ver.	Ver. 5.0	

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Warranty

Limited Warranty

As described herein, Hankscraft Runxin, LLC ("Hankscraft"), warrants its products are free from defects in material and workmanship only, when properly installed, operated, and maintained. This warranty is subject to the exceptions herein.

Hankscraft warrants to the original owner that the items listed below, excluding but not limited to wear parts like O-rings, gaskets and seals, will be free from defects in materials and workmanship for the period of time specified below from the original purchase date.

- Control valves and all internal valve parts and the salt storage tank – FIVE (5) YEARS
- Mineral tank – TEN (10) YEARS
- Any other component – ONE(1) YEAR
- Ceramic disc for rotary valve (applicable to RevV series valves only) – LIFETIME
- RO and UF Filter Systems- ONE (1) YEAR

Media/resin is not warrantied due to water supply quality differences

Any parts used for replacement are warrantied for the remainder of the original warranty period applicable to the part from the date of manufacture so long as the parts are installed by a Hankscraft factory trained and authorized installer.
Hankscraft's obligation by this Limited Warranty, at is option, is to repair or replace any warrantied product only. Labor for repair or replacement is not included as part of this warranty. Prior to returning the product to Hankscraft, a valid return materials authorization number must be obtained from Hankscraft. Any product returned to Hankscraft without a valid return authorization number will be rejected. Any product found to be defective will, at the sole discretion of Hankscraft, be repaired or replaced. Hankscraft is not responsible for shipping cost to the repair facility. This section lists the sole remedies for any valid warranty claim.

This warranty does not apply to defects reported to Hankscraft outside of the warranty period.

This warranty does not apply to defects caused by installing, operating, servicing, modifying, repairing or maintaining (or lack of maintaining) the product outside of Hankscraft's recommendations. Filters, membrane elements and flow restrictors that become fouled or plugged due to excessive turbidity, dissolved solids, or microorganisms are not covered by this warranty. This warranty does not apply to defects caused by damage during shipment, neglect, misuse, modification, accident, noncompliance with local codes and ordinances, hot water, frozen water, sediment, corrosive liquids, gases, chemicals, bacteria, animals, sand, salt, flood, wind, fire, outdoor installations where the product is not reasonably covered, pneumatic use, natural disasters, war, terrorism or acts of God. No other person is authorized to make any other warranty on behalf of Hankscraft either during or after the applicable warranty period.

Hankscraft assumes no liability for determining the proper products and equipment or installation necessary to meet the requirements of the user of the product, and Hankscraft does not authorize others to assume such liability on its behalf.

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