



Owner and Operational Manual



Model: _____

Serial Number: _____

Install Date: _____

Installed By: _____

Service Phone: _____

Sold By: _____

Please read this manual carefully before proceeding with installation. Your failure to follow any of these instructions or operating parameters may lead to personal injury or damage to the equipment and/or personal property. Do not use this Iron Filter system with water that is microbiologically unsafe or of unknown quality, without adequate disinfection before or after the system. This water treatment system contains replaceable treatment components critical for effective performance. It is the user's responsibility to periodically test the product water to verify the system is performing satisfactorily. Failure to properly maintain this water treatment system may cause a health risk.

Save this manual for future reference

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This owner's manual is designed to assist owners and installers with the operation, maintenance and installation of your new water filter. Detailed instructions on general operating conditions, installation instructions, start-up, and programming are included. A troubleshooting guide, service instructions and parts diagrams are also included to assist with future needs.

Please contact the dealer who installed the system if you need professional assistance in service of your water filter.

Guardian General Specifications

Inlet/Outlet.....	1"
Cycles.....	2
Valve Material	Noryl©

Operating Pressures

Minimum/Maximum	40 - 80psi
Optimal Range.....	40 - 60psi

***Pump output must meet or exceed backwash rate.**

Operating Temperatures

Minimum/Maximum	40° - 110°F
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Flow Rate

Guardian 100 Series	1.5 – 2.5 gpm
Guardian 150 Series	2.2 – 3.0 gpm
Guardian 200 Series.....	3.0-4.0 gpm
Guardian 250 Series	3.7-4.7 gpm
Guardian 300 Series	4.7-5.7 gpm

Dimensions

Drain Line	¾" or 1" NPT
Electrical Current Draw and Voltage	120V/15VDC

* Operating outside of the optimum pressure range may affect system functionality. Contact your dealer for more information.

** Guardian Series not to be used with micro-biologically unsafe water sources

Pre-Installation Check List

(All electrical and plumbing should be done in accordance to all local codes)

Guardian Series is acceptable for indoor use only

Water Quality: Sand and sediment are often problems in rural water supplies. They may plug the filter and restrict water flow through the media bed. Well and/or pump problems affecting the operation of the filter and repairs are not covered under warranty.

Water Pressure: A minimum of 40 pounds of water pressure (psi) is required for operation.

Maximum pressure is 80 psi.

Water Temperature: Filter water temperature must not exceed 110°F or be subject to freezing.

Existing Plumbing: Must be free from build-up. If plumbing is blocked, it must be replaced or additional equipment may be needed ahead of filter.

Electrical: All electrical connections must be connected per local codes. A continuous 110 volt supply is required.

Drain Line: Filter should be located near drain. Do not use overhead drain lines as possible back pressure may occur. Pipe size should be a minimum of $\frac{3}{4}$ " for the drain.

Bypass Valves: Always allow for installation of a bypass valve.

Start-Up Instructions

***For optimal results, the filter media should be soaked for 12 hours prior to installation.**

1. Complete all plumbing connections; inlet, outlet, and drain line.
2. Place bypass in bypass position. Turn on main water supply and open a cold filtered faucet to clear lines of air or obstructions.
3. Plug unit into a 120-volt outlet. Valve will move to service position once connection is made.
4. Start a backwash cycle by holding the "REGEN" button down until valve movement is heard.
5. Slowly open inlet valve on bypass until it is fully in open position. Allow water to run to the drain until clear.
6. Allow system to continue going through all the cycles.
7. Filter is ready for use after first regeneration cycle is complete.

BYPASS VALVE OPERATION

BYPASS VALVE OPERATION

Figure 1

NORMAL OPERATION

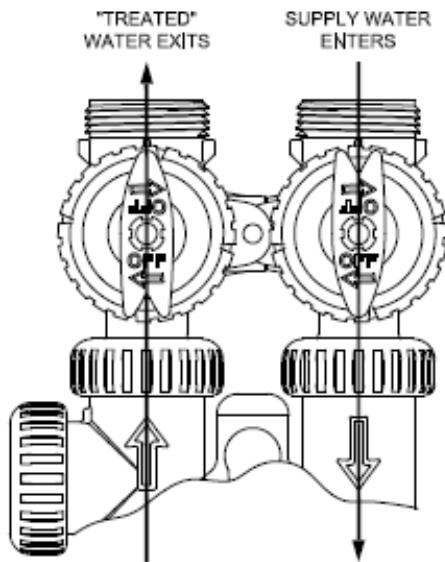


Figure 2

BYPASS OPERATION

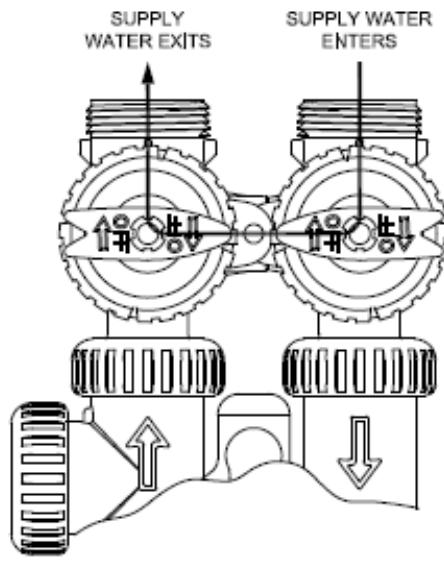


Figure 3

DIAGNOSTIC MODE

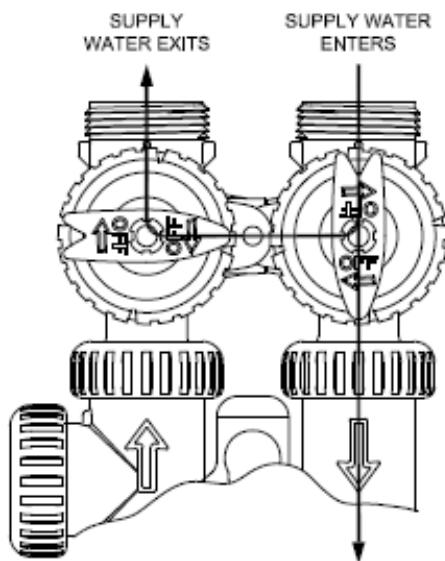
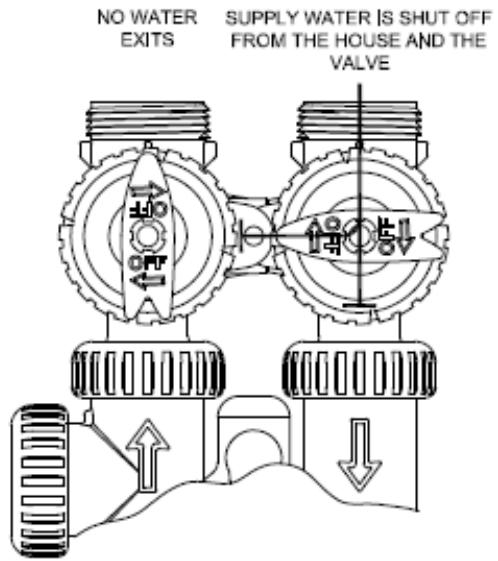


Figure 4

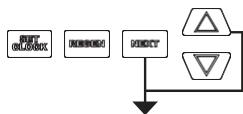
SHUT OFF MODE



Installer Display Settings

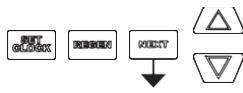
STEP 1

STEP 1I - Press NEXT and ▲ simultaneously for 3 seconds.



STEP 3I

DAYS BETWEEN REGEN
SET 14



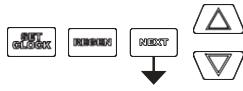
STEP 3I – Day Override: When volume capacity is set to “OFF”, sets the number of days between regenerations. When volume capacity is set to AUTO or to a number, sets the maximum number of days between regenerations. If value set to “OFF”, regeneration initiation is based solely on volume used. If value is set as a number (allowable range from 1 to 28) a regeneration initiation will be called for on that day even if sufficient volume of water were not used to call for a regeneration. Set Day Override using ▼ or ▲:

- number of days between regeneration (1 to 28); or
- “OFF”.

See Setting Options Table for more detail on setup. Press NEXT to go to step 4I. Press REGEN to return to previous step.

STEP 4I

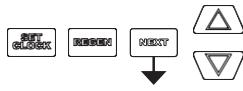
REGENERATION TIME
SET 2:00 AM



STEP 4I – Next Regeneration Time (hour): Set the hour of day for regeneration using ▼ or ▲. AM/PM toggles after 12. The default time is 12:00 AM. This display will not appear if IMMEDIATE is selected in Set Regeneration Time Option in OEM Softener System Setup Step 10S. Press NEXT to go to step 5I. Press REGEN to return to previous step.

STEP 5I

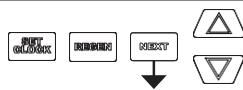
REGENERATION TIME
SET 2:00 AM



STEP 5I – Next Regeneration Time (minutes): Set the minutes of day for regeneration using ▼ or ▲. This display will not be shown if IMMEDIATE is selected in Set Regeneration Time Option in OEM Softener System Setup Step 10S. Press NEXT to go to Step 6I. Press REGEN to return to previous step.

STEP 6I

ENERGY SAVER
ON



STEP 6I – As an energy-saving feature, the control will automatically turn off the display illumination after 5 minutes of keypad inactivity. Any further keypad activity or water use will re-illuminate the display for 5 minutes. The Energy Saver feature default is ON. Press NEXT to exit Installer Display Settings. Press REGEN to return to previous step.

RETURN TO NORMAL MODE

User Display Settings

General Operation

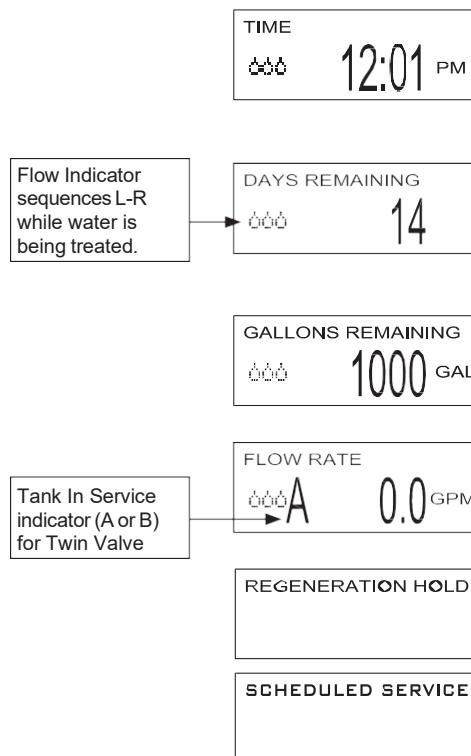
When the system is operating, one of several displays may be shown. The displays normally rotate, however pressing NEXT will pause on the selected display for 5 minutes. Pressing NEXT will alternate between the displays. One of the displays is always the current time of day. Days Remaining is the number of days left before the system goes through a regeneration cycle. Gallons Remaining is the gallons that will be treated before the system goes through a regeneration cycle.

Pressing ▼ while in the Gallons Remaining display will decrease the capacity remaining in 10 gallon increments and will also increase the volume used impacting the recorded values in Diagnostics Steps 3D, 4D and 5D and Valve History, Step 4VH.

Another display shows the current treated water flow rate through the system. Either REGENERATION DP or REGENERATION HOLD will be displayed if the dP switch is closed. To clear the Service Call reminder, press ▲ and ▼ simultaneously while the number and banner text screen is displayed.

If the system has called for a regeneration that will occur at the preset time of regeneration, the words REGEN TODAY will alternate with the header on the display.

If a water meter is installed, the flow indicator flashes on the display when water is being treated (i.e. water is flowing through the system).



Regeneration Mode

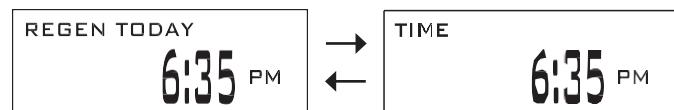
Typically a system is set to regenerate at a time of low water usage. An example of a time with low water usage is when a household is asleep. If there is a demand for water when the system is regenerating, untreated water will be used.



When the system begins to regenerate, the display will change to include information about the step of the regeneration process and the time remaining for that step to be completed. The system runs through the steps automatically and will reset itself to provide treated water when the regeneration has been completed.

Manual Regeneration

Sometimes there is a need to regenerate the system sooner than when the system calls for it, usually referred to as manual regeneration. There may be a period of heavy water usage because of guests or a heavy laundry day.



To initiate a manual regeneration at the preset delayed regeneration time, when the regeneration time option is set to DELAYED REGENERATION or DELAY + IMMEDIATE REGENERATION, press and release REGEN. The words REGEN TODAY will periodically be shown on the display to indicate that the system will regenerate at the preset delayed regeneration time. If you pressed the REGEN button in error, pressing the button again will cancel the request. Note: If the regeneration time option is set to IMMEDIATE REGENERATION there is no set delayed regeneration time so REGEN TODAY will not activate if REGEN is pressed.

To initiate a manual regeneration immediately, press and hold the REGEN button for three seconds. The system will begin to regenerate immediately. The request cannot be cancelled.

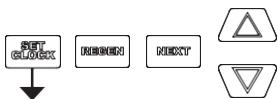
Note: For softeners, if brine tank does not contain salt, fill with salt and wait at least two hours before regenerating.

Set Time of Day

The user can also set the time of day. Time of day should only need to be set if the battery has been depleted because of extended power outages or when daylight saving time begins or ends. If an extended power outage occurs, the time of day will flash on and off which indicates the time of day should be reset. The non rechargeable battery should also be replaced.

STEP 1U

STEP 1U – Press CLOCK.



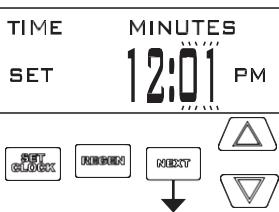
STEP 2U

STEP 2U - Current Time (hour): Set the hour of the day using ▼ or ▲. AM/PM toggles after 12. Press NEXT to go to Step 3U.



STEP 3U

STEP 3U - Current Time (minutes): Set the minutes of the day using ▼ or ▲. Press NEXT to exit Set Time of Day. Press REGEN to return to previous step.



RETURN TO NORMAL MODE

Power Loss

If the power goes out the system will keep time until the battery is depleted. If an extended power outage occurs, the time of day will flash on and off which indicates the time of day should be reset and the non rechargeable battery replaced. The system will remember the rest.

Error Message

If the word “ERROR” and a number are displayed contact the OEM for help. This indicates that the valve was not able to function properly. If the number and banner text in the Contact Screens has been edited, the two displays below will alternate.



Front Cover and Drive Assembly

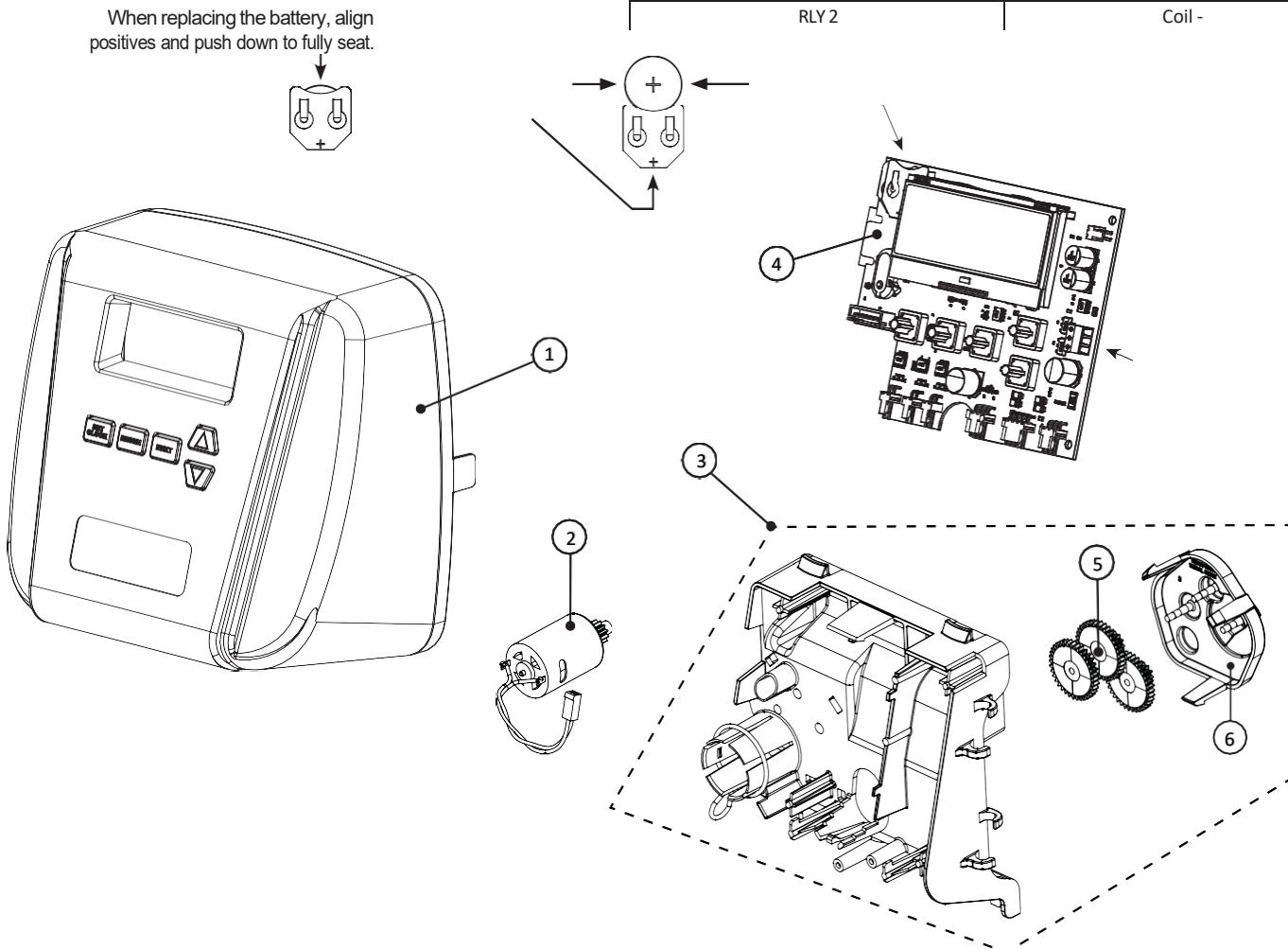
Drawing No.	Order No.	Description	Quantity
1	V4441-01	COVER ASY	1
2	V3107-01	MOTOR ASY	1
3	V3002-A	DRIVE BRACKET ASY	1
4	V4461FB-BOARD	THRU2 FB PCB REPLACE	1
5	V3110	DRIVE REDUCING GEAR 12X36	3
6	V3109	DRIVE GEAR COVER	1
Not Shown	V3186-06	POWER SUPPLY US 15VDC HOCP	1
	V3186AUS-05OD	POWER SUPPLY AUS 15VDC VI OUTDOOR	
	V3186EU-06	POWER SUPPLY EU 15VDC HOCP	
	V3186UK-06	POWER SUPPLY UK 15VDC HOCP	
	V3186-01	POWER CORD ONLY	
Not Shown	V3946	WIDE DRIVE BACK PLATE	1

Refer to Control Valve Service Manual for other drawings and part numbers.

Power Supply	U.S.	International
Supply Voltage	100-120 VAC	100-240 VAC
Supply Frequency	50/60 Hz	50/60 Hz
Output Voltage	15 VDC	15 VDC
Output Current	500 mA	500 mA

Relay Specifications: 12V DC Relay with a coil resistance not less than 80 ohms. If mounting relay under the cover check for proper mounting dimensions on the backplate.

Wiring for Correct On/Off Operation	
PC Board Relay Terminal Block	Relay
RLY 1	Coil -
V +	Coil +
RLY 2	Coil -

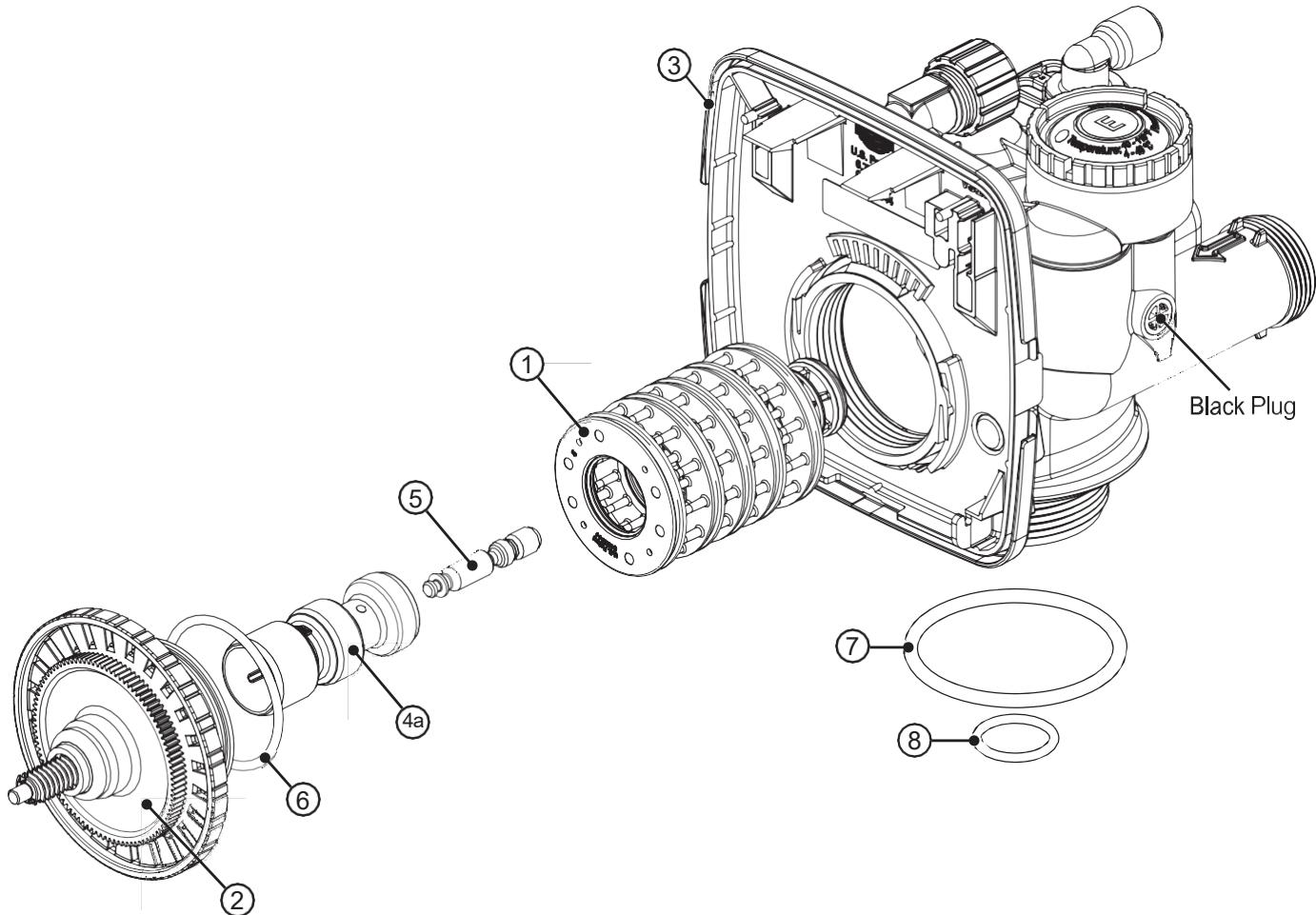


Drive Cap Assembly, Downflow Piston, Upflow Piston, Regenerant Piston and Spacer Stack Assembly

Drawing No.	Order No.	Description	Quantity
1	V3005-02	Spacer Stack Assembly	1
2	V3004	Drive Cap ASY	1
3	V3946	Refer to Programming and Cover Drawing Manual	1
4a	V3011*	Piston DownflowASY	1
5	V3174	Regenerant Piston	1
6	V3135	O-ring 228	1
7	V3180	O-ring 337	1
8	V3105	O-ring 215 (Distributor Tube)	1
Not Shown	V3001	Body ASY Downflow	1

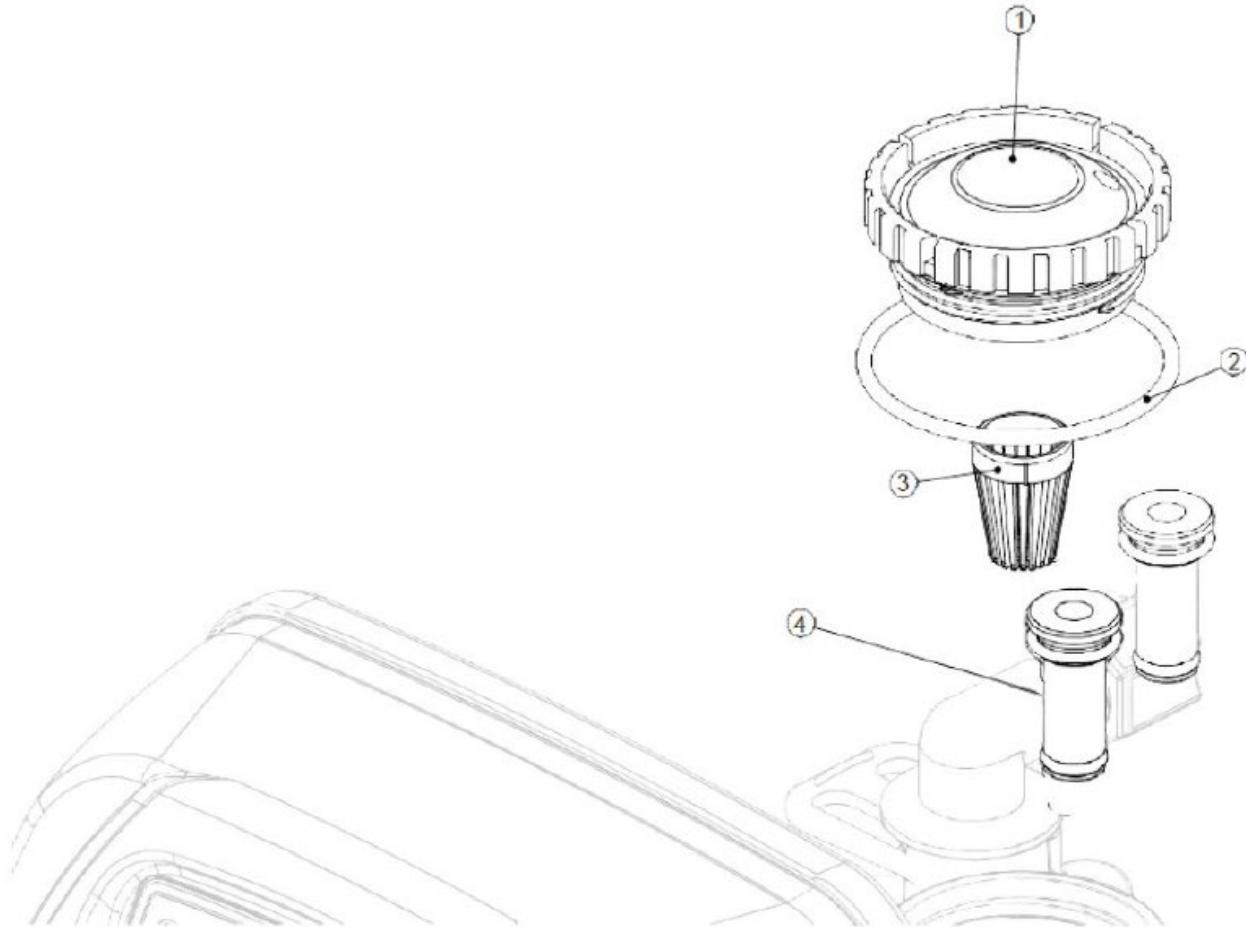
*V3011 is labeled with DN and V3011-01 is labeled with UP. Upflow option is not applicable to TC control valves.

Note: The regenerant piston is not used in backwash only applications.



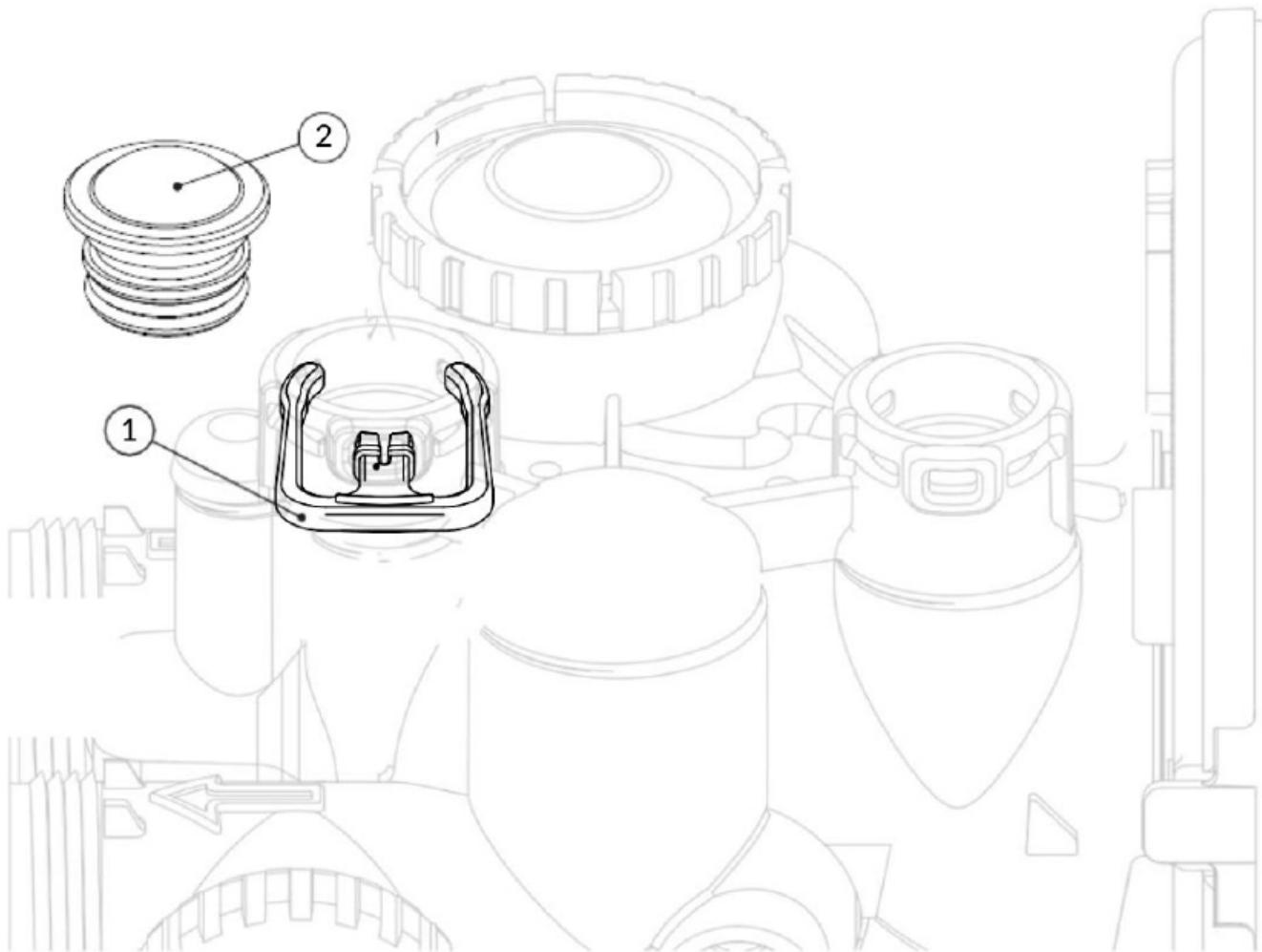
Injector Cap, Injector Screen, Injector, Plug and O-Ring

Drawing No.	Order No.	Description	Quantity
1	V3176	Injector Cap	1
2	V3152	O-Ring 135	1
3	V3177-01	Injector Screen Cage	1
4	V3010-1Z	Injector Asy Plug-Filter	1



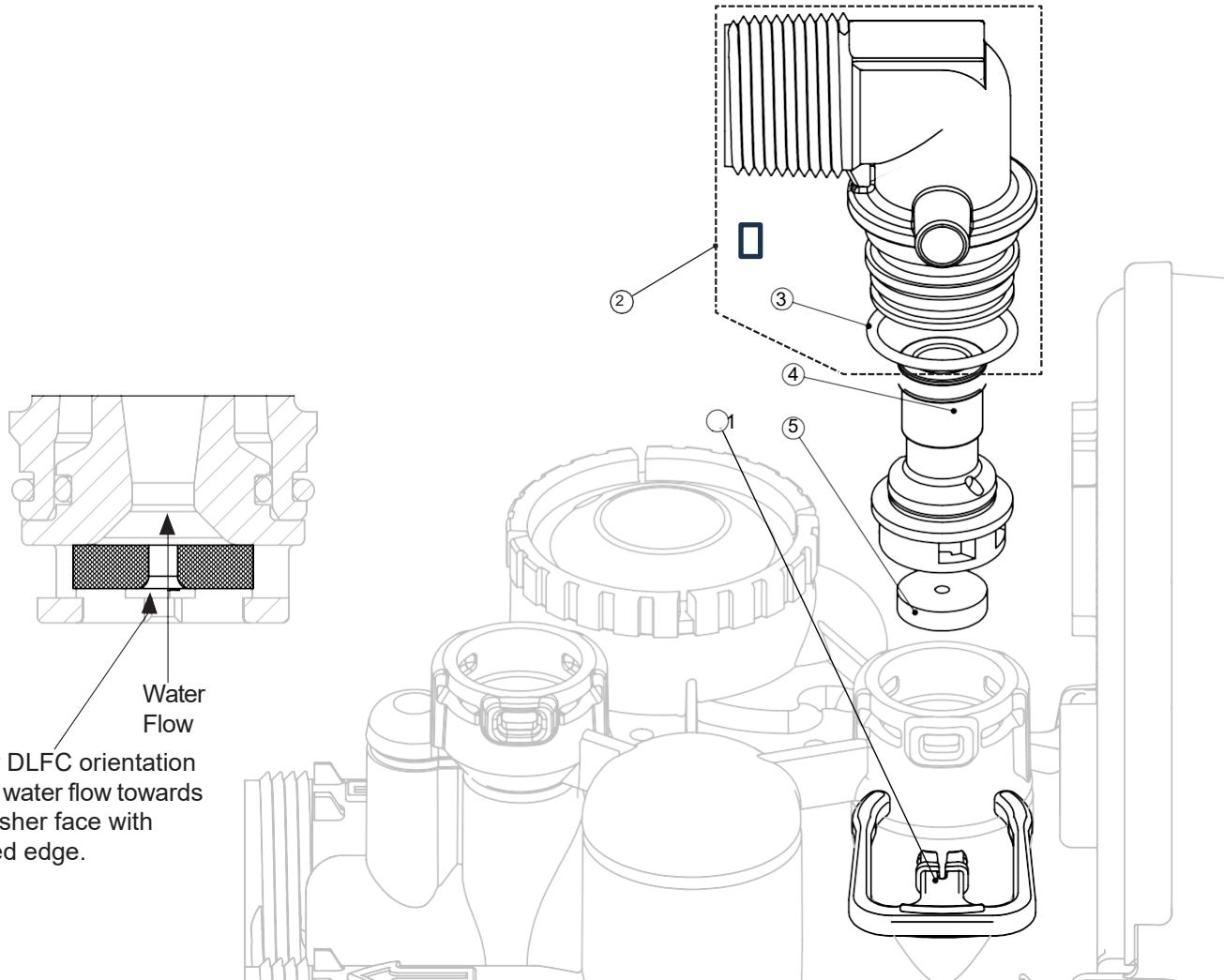
Refill Control and Check Valve

Drawing No.	Order No.	Description	Quantity
1	H4615	Elbow Locking Clip	1
2	V3195-01	WS1 Refill Port Plug	1



Drain Line – 3/4"

Drawing No.	Order No.	Description	Quantity
1	H4615	Elbow Locking Clip	1
2	V3962	Drain Elbow 3/4 Male	1
3	V3163	O-ring 019	1
4	V3159-01	DLFC Retainer ASY	1
5	V3162-xxx	DLFC Based Upon tank and media used	One DLFC must be used if 3/4 fitting is used

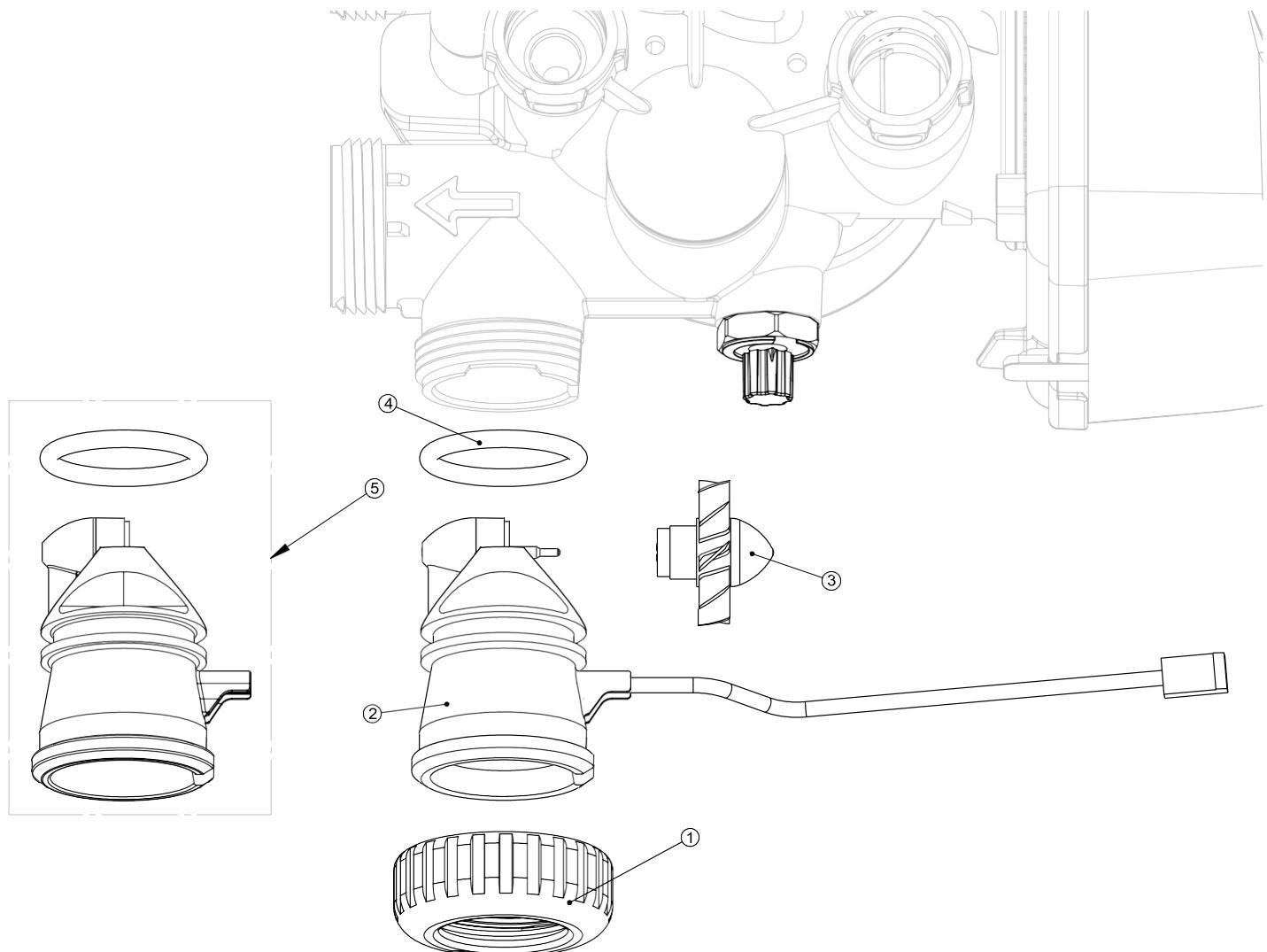


Water Meter, Meter Plug and Mixing Valve

Drawing No.	Order No.	Description	Quantity
1	V3151	Nut 1" QC	1
2	V3003-05*	Meter ASY	1
3	V3118-01	Turbine ASY	1
4	V3105	O-ring 215	1
5	V3003-01	Meter Plug ASY	1

*Order number V3003 includes V3118-01 AM1 Turbine ASY and V3105 O-ring 215.

THIS WATER METER SHOULD NOT BE USED AS THE PRIMARY MONITORING DEVICE FOR CRITICAL OR HEALTH EFFECT APPLICATIONS.

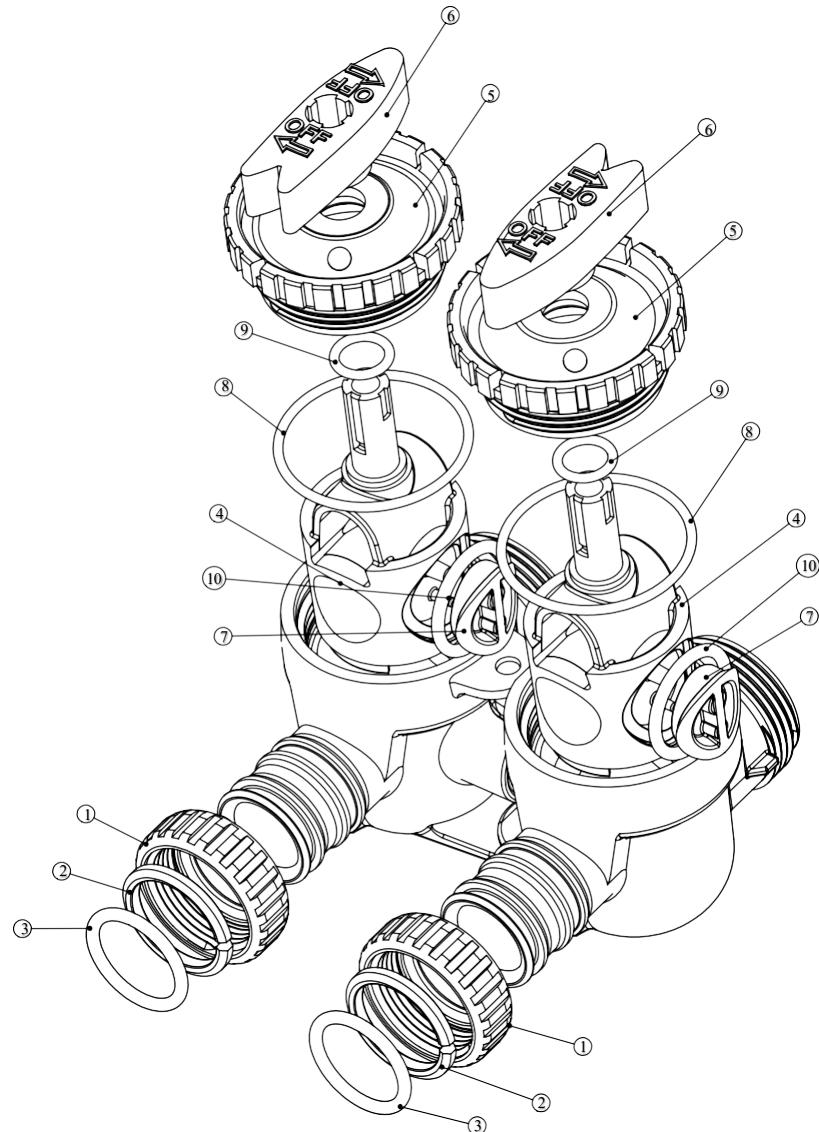


Bypass Valve

Drawing No.	Order No.	Description	Quantity
1	V3151	Nut 1" Quick Connect	2
2	V3150	Split Ring	2
3	V3105	O-Ring 215	2
4	V3145	Bypass 1" Rotor	2
5	V3146	Bypass Cap	2
6	V3147	Bypass Handle	2
7	V3148	Bypass Rotor Seal Retainer	2
8	V3152	O-ring 135	2
9	V3155	O-ring 112	2
10	V3156	O-ring 214	2

(Not Shown) Order No. V3191-01, Description: AM1 Bypass Vertical Adapter Assembly

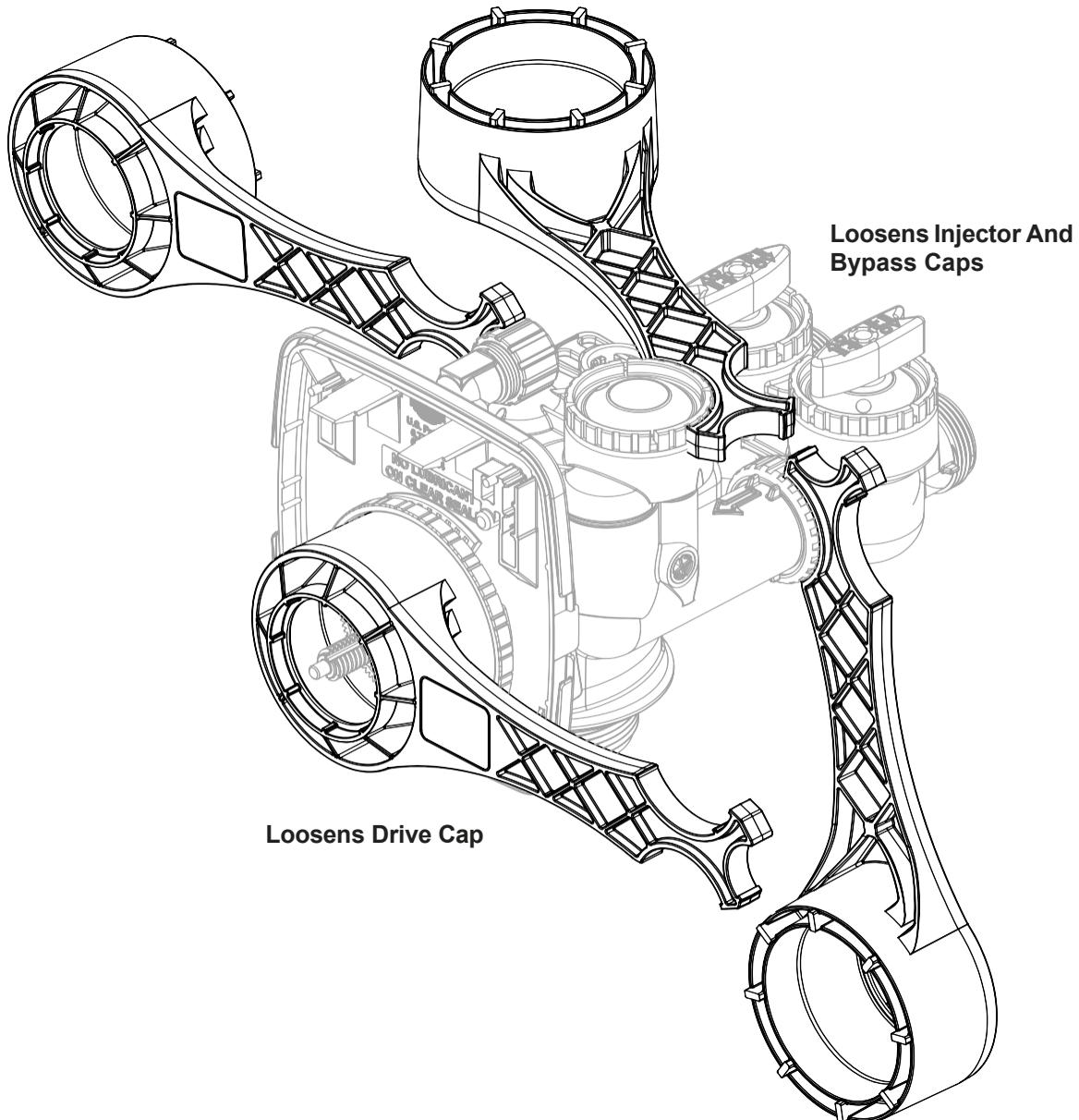
Order No.	Description	Quantity
V3151	Nut 1" Quick Connect	2
V3150	Split Ring	2
V3105	O-Ring 215	2
V3191	Bypass Vertical Adapter	2



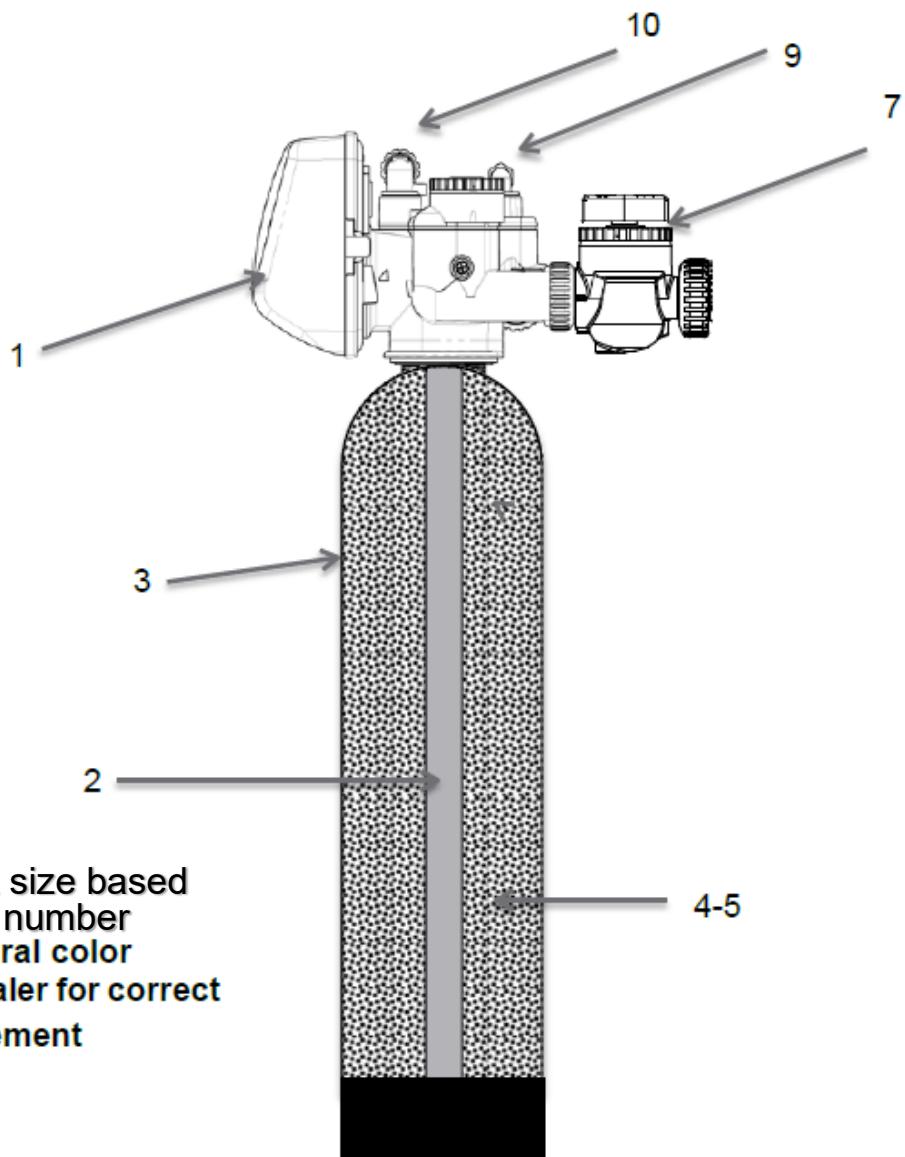
Service Spanner Wrench

(Order No. V3193-02)

Although no tools are necessary to assemble or disassemble the valve, the WS1 wrench (shown in various positions on the valve) may be purchased to aid in assembly or disassembly.



<u>Item</u>	<u>Quantity</u>	<u>Part Number</u>	<u>Description</u>
1	1	V1FBBMZ	1FB Metered Backwashing Valve
2	1	ENDT	Distributor Tube
3	1	EN* NVT	Vortech Mineral Tank
4-5	1-3	***	Filter Media
7	1	V3006	Bypass Assembly
9	1	V3195-01	Brine Elbow with CV
10	1	V3962	Drain Assembly



*Specify tank size based on model number

ⁿBlack or natural color

***Consult dealer for correct media replacement

Troubleshooting

Problem	Cause	Solution
1. Blank or unreadable LCD display	A. Transformer unplugged B. Defective transformer C. No electric power at outlet D. Check battery in valve E. PC board is defective	A. Connect to Power B. Check to ensure 12 volt motor, replace transformer C. Repair outlet or switch to working outlet D. Replace battery if less than 3 volts E. Replace PC Board
2. Control valve stalled in regeneration	A. Broken drive gear or drive cap assembly B. Broken regenerant piston C. Broken main piston D. Motor not operating correctly E. Defective transformer F. No power to unit	A. Replace drive gear or drive cap assembly B. Replace regenerant piston C. Replace main piston D. Replace motor E. Check to ensure 12 volt motor, replace transformer F. Ensure working outlet
3. Control valve regenerates at wrong time of day	A. Power outages B. Time of day not set correctly C. Control valve is programmed incorrectly	A. Reset time of day, replace lithium coin type battery on circuit board B. Reset time of day C. Check control valve programming procedure
4. Odor/Color noticed on outlet of filter	A. Perform water analysis B. Determine if filter media needs replacing	A. Increase regeneration time. a. Exceeding flow rate specification B. Replace filter media
5. Reduction of water pressure	A. Determine if filter media needs replacing	A. Replace filter media