



TWIN SYSTEMS

INSTALLATION GUIDE & OWNER'S MANUAL

FOR MODELS

- SP-844TW
- SP-1044TW
- SP-1054TW
- CH-1054TW
- CH-1354TW

INDEX

| | |
|---|----|
| Valve Settings— For Users | 3 |
| Bypass Valve Operation | 4 |
| Bypass Valve Diagrams | |
| Installation Instructions | 5 |
| Pre-Installation Checklist | |
| Installation Diagram | |
| Post-Installation Checklist | |
| Valve Settings— For Installers | 7 |
| Access Programming | |
| Regeneration Mode | |
| Manual Regeneration | |
| Error Codes and In-Field Resolution Guide | 9 |
| Replacement Parts | 12 |
| System Specifications | 20 |

YOUR SYSTEM:

Installation Date: _____

Installer: _____

City/State: _____

Phone: _____

Model: _____

Serial #: _____

YOUR WATER RESULTS:

Total Hardness: _____ gpg

Iron (Fe): _____ ppm

Acidity (pH): _____

Total Dissolved
Solids (TDS): _____ ppm

Total Compensated
Hardness: _____ gpg

PRODUCT WARRANTY

In the unlikely event that your system has defects in material or assembly, the manufacturer will proudly stand behind our products and support the original owner for the following:

5 YEARS
on Mineral Tank

5 YEARS
on Brine Tank

5 Years
on All Parts

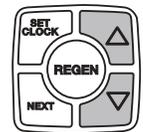
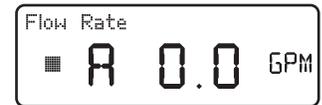
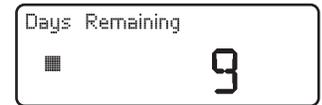
System must be installed in accordance with specifications outlined in this manual and local plumbing codes to qualify for the factory warranty. Warranty coverage is limited and will not cover damaged due to accident, fire, flood, freezing, any other "Act of God," change in water conditions, misapplication, neglect, vacuum, lack of maintenance, or equipment installed on a non-potable water source.

VALVE SETTINGS— USER

DISPLAY SETTINGS

When the system is operating, the screen will scroll between the following displays. Press **NEXT** to pause on the current display for 5 minutes. Continue to press **NEXT** to alternate between displays:

- **Current Time of Day Screen**— Be sure this is accurate for proper operation of the system.
- **Days Remaining**— Number of days left before the system regenerates.
- **Capacity Remaining**— Volume of water that will be treated before the system regenerates. Press ∇ button while on the Capacity Remaining display to decrease the volume in 10 gallon increments.
- **Flow Indicator**— If a water meter is installed, the flow indicator flashes on the display to show the rate at which water is flowing through the system.
- **Flow Rate**— Show the current speed treated water is flowing through the system in gallons per minute.

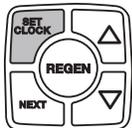


SERVICE REMINDER

Regular maintenance will prolong the life of your system. The unit will let you know when it's time to schedule a check-up. To clear this reminder, press the Δ and ∇ buttons together while the scrolling message is displayed.

SET TIME OF DAY

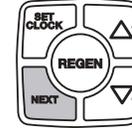
Besides the initial start up, time of day should only need to be set if the battery has been depleted due of extended power outages or for daylight saving time. If an extended power outage occurs, the time of day will flash, which indicates the time of day should be reset and the non-rechargeable battery replaced.



- 1. Access Time of Day**— Press **SET CLOCK**.



- 2. Set Hour**— Use the Δ or ∇ button to select the current hours of the day. The AM/PM designation will change as you scroll past 12. Press **NEXT**.

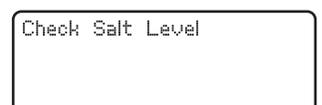
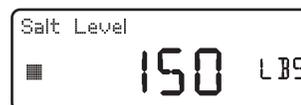


- 3. Set Minutes**— Use the Δ or ∇ button to select the current minute of the hour. Press **NEXT** to exit the Time of Day settings. — or — Press **REGEN** to return to previous step.

Return to operating display screens

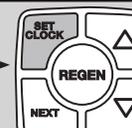
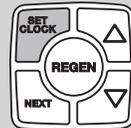
SALT ALARM

If the Salt Level Alarm was set, the remaining salt level will be displayed. When the salt remaining has gone below the set point, the display will show CHECK SALT LEVEL.



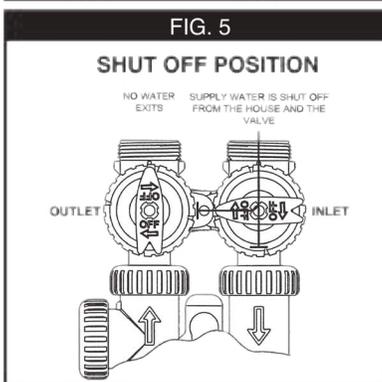
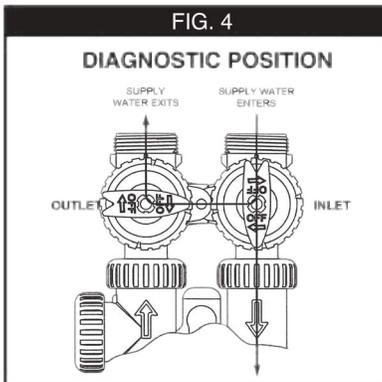
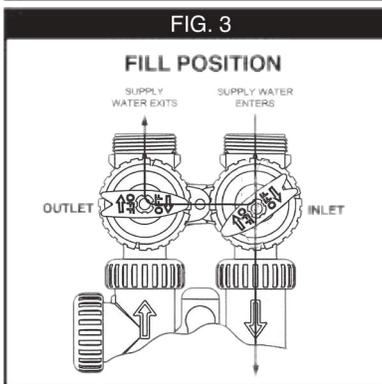
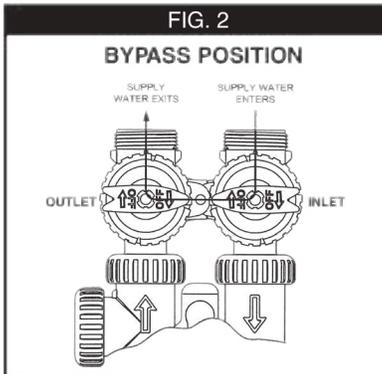
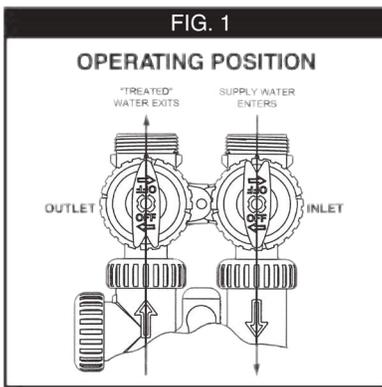
RESET SALT LEVEL

- 1. On the Check Salt Level Screen**— Press **SET CLOCK**.
- 2. Set Salt Pounds**— Use the Δ or ∇ button to set pounds of salt (Range: 0-400 lbs).



Return to operating display screens

BYPASS VALVE OPERATION



The bypass valve is used to isolate the system's operation from the plumbing system's water pressure in order to perform repairs or maintenance. The bypass provided with your water system is uniquely designed to be versatile with many advanced features. The 1" full flow valve incorporates four positions, including a diagnostic position that allows service personnel to work on a pressurized system while still providing untreated water to the building. It's completely non-metallic design allows for easy serviceability without the needs for tools.

The bypass body and rotors are glass-filled Noryl while the nuts and caps are glass-filled polypropylene. All seals are self-lubricating EPDM to help prevent seizing after long periods of non-use. Internal O-rings can easily be replaced if maintenance is required.

The bypass consists of two interchangeable plug valves that are operated independently by red arrow-shaped handles. The handles will point in the direction of the water flow in any given position. The plug valves enable the bypass valve to operate in multiple positions. See diagrams for details.

- 1. Normal Operating Position—** Inlet handle is turned to have the arrow pointing toward the unit. Water flows through the control valve during normal operation. This position also allows the control valve to isolate the media bed during the regeneration cycle. The outlet handle is pointed away from the unit to allow the flow of treated water to leave the system and enter the building's plumbing system. (See Fig. 1 below)
- 2. Bypass Position—** The inlet and outlet handles point towards each other. This isolates the control valve from the water pressure contained in the plumbing system. Any water drawn from the building while the system is in this position will receive untreated water directly from the source. (See Fig. 2 below)
- 3. Fill Position—** During initial start up, the media tank will need to be filled with water. Slowly open the inlet handle to be partially open; handle arrow should point at a 30°-45° angle from the closed position. The outlet handle should remain closed, pointing toward the center of the bypass. (See Fig. 3 below)
- 4. Diagnostic Position—** The inlet handle arrow points toward the unit to allow water pressure to flow into the control valve. The outlet handle remains closed, pointed toward the center of the bypass. (See Fig. 4 below) This is helpful to have water run through the system without it affecting the rest of the building.
- 5. Shut Off Position—** The inlet handle is closed with the arrow pointing toward the center of the bypass. The outlet handle should point away from the unit. (See Fig. 5 below) This will stop all water flow to the building. If water is still available to the plumbing system in this position, this indicates a plumbing connection somewhere that is going around the unit.

INSTALLATION INSTRUCTIONS

PRE-INSTALLATION CHECKLIST

Plumbing Connections— All plumbing materials and the installation must adhere to State and Local Plumbing Codes.

Water Pressure— Proper operation of the equipment requires:

- A minimum of 25 pounds water pressure.
- A maximum of 100 pounds water pressure.
- A minimum flow rate of 3 gallons per minute.

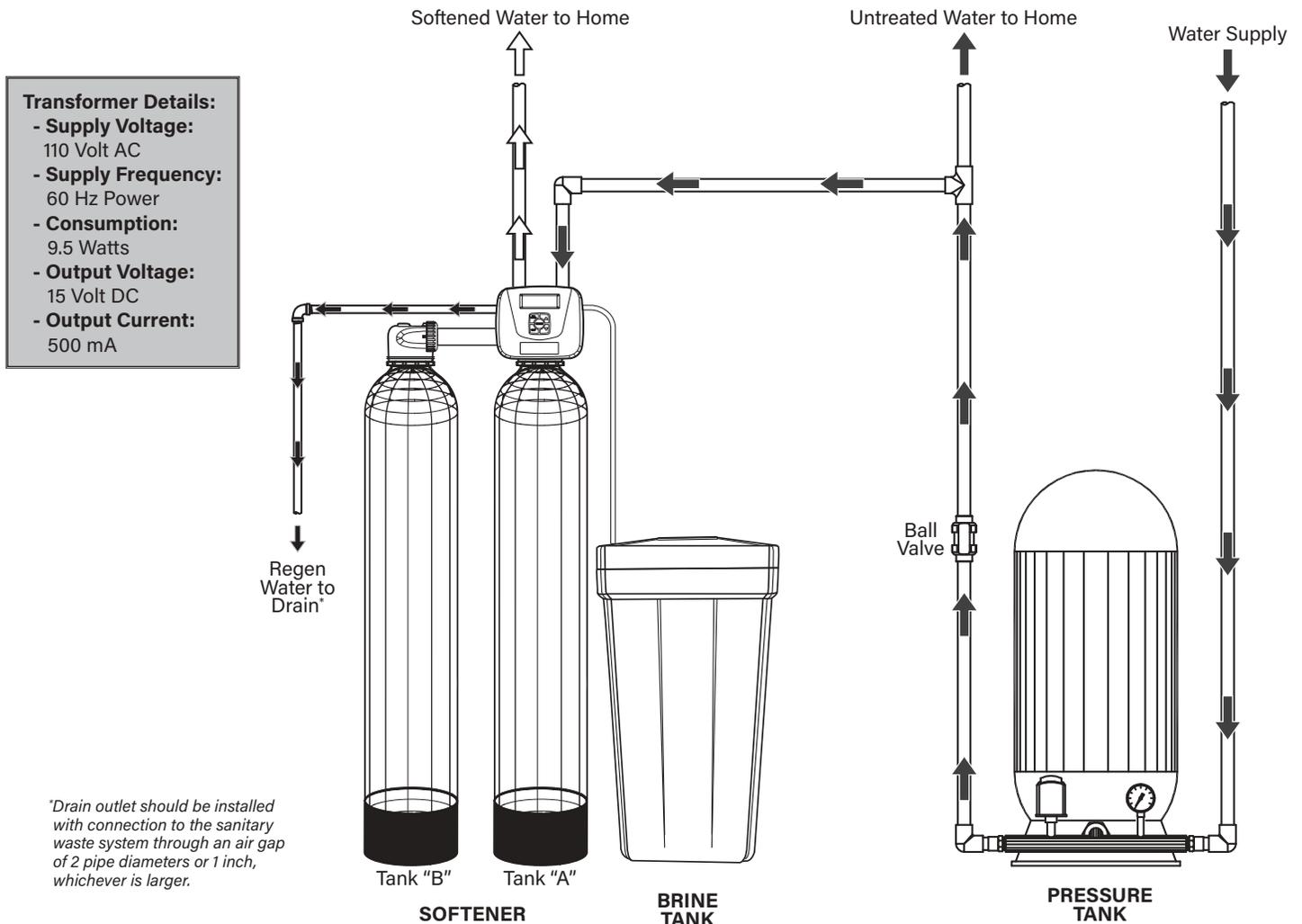
Electrical Requirements— A continuous 110 volt 60 hertz AC current is needed for power supply. Ensure power is not on a switched outlet or interrupted in any other way.

Temperature— Equipment must not be installed where it will be exposed to temperatures below 40° F or above 100° F.

Drainage Information— The unit should be installed as close to the drain and water supply as possible. The connections for inlet and outlet are 1" Sweat copper or 1" NPT made adapter. The drain connector is 3/4" NPT male. Construct the drain outlet to include an air gap of 2 pipe diameters or 1" (whichever is larger).

Bypass Valve— The system includes a bypass valve. If the existing plumbing already has a bypass, the one provided may be removed. If you used the bypass provided, a full port ball valve should be installed on the inlet side. The equipment is designed to accommodate minor plumbing misalignments, but is not able to support the weight of the system or plumbing.

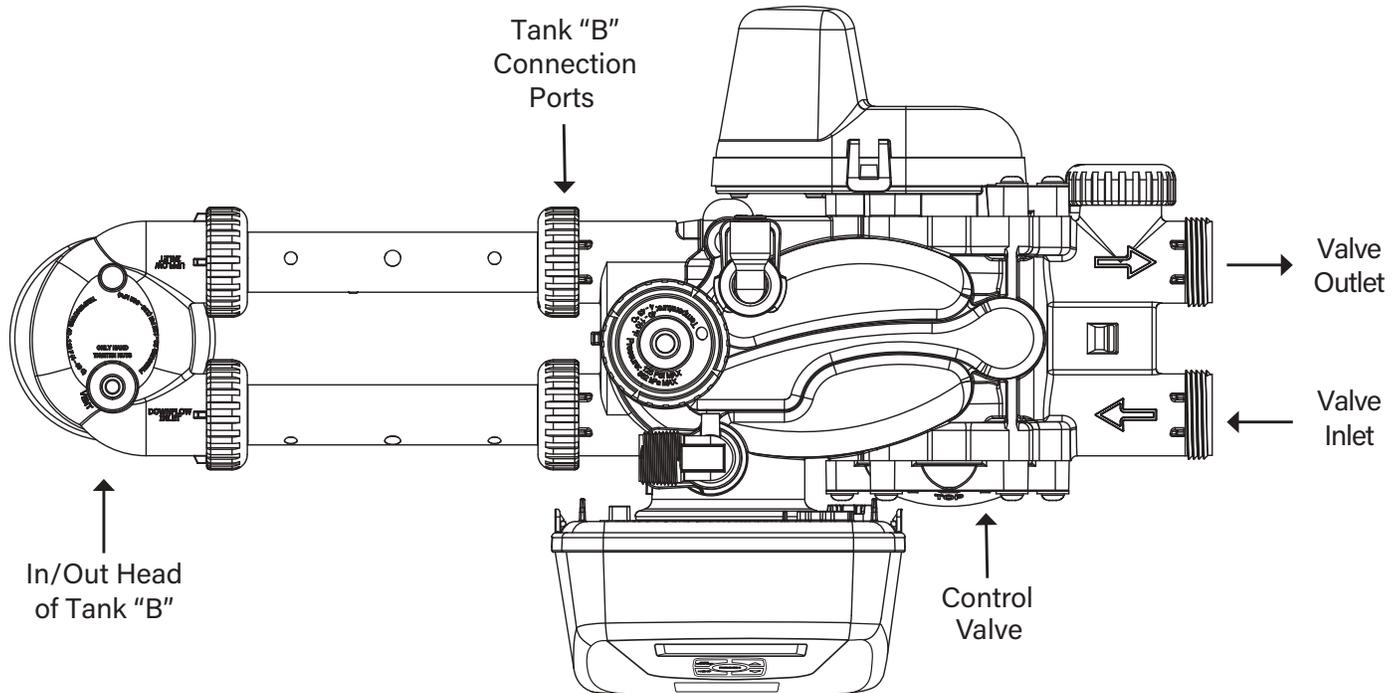
INSTALLATION DIAGRAM



TANK CONNECTION DIAGRAM

While setting up the system, the main control valve will have multiple connection ports on both sides. It is critical to install the bypass on the proper water source inlet and treated water outlet ports. See diagram below for reference. The opposite side is dedicated to installing the second media tank to the system with the connectors provided.

Improper installation of the bypass and/or the second media tank connectors will lead to failed cycles or dislodging of components inside of the valve.



POST-INSTALLATION CHECKLIST



IMPORTANT—

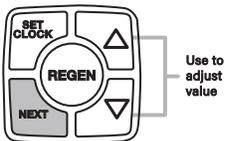
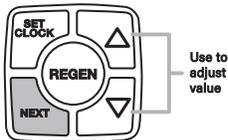
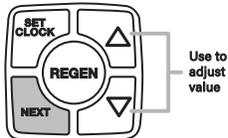
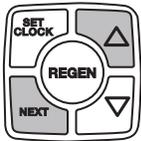
Do not plug the transformer into an outlet until instructed in the steps below.

- 1. Flush System—** After installation is complete, rotate the bypass valve handles to the bypass position shown in **Fig. 2** on page 4. With water pressure turned on, open a cold water faucet and allow water to clear pipes of debris which may occur during installation. Close cold water faucet.
- 2. Fill Brine Tank—** Manually pour water into brine tank until approximately 2" of water is visible in the tank. Then, add 160-200 lbs. of solar salt to the tank. Always keep salt above the water level in tank.
- 3. Set Time of Day—** Plug power cord into a 120/60 uninterrupted outlet. Press and hold **SET CLOCK** button until hour number is flashing. Use the Δ and ∇ buttons to set correct hour of day (cycle past 12 to change AM/PM). Press the **NEXT** button to advance to the minutes value and use the Δ or ∇ button to set current minute of the hour. Press **NEXT** to exit and save the current time. See page 3.
- 4. Start Up Instructions—**
 - Press and hold **REGEN** button until motor starts. When motor stops, valve will be in **BACKWASH** cycle of regeneration process.
 - **Unplug** power cord from 120/60 outlet. Rotate inlet side of bypass partially open so water enters system slowly, as shown in **Fig. 3** on page 4. Continue to until water is flowing from drain pipe at a steady pace and without any air; this indicated that the media tank is completely full.

- **Rotate** the inlet side of the bypass to fully open position as shown in **Fig. 4** on page 4.
- **Plug** the power cord back into a 120/60 outlet. Press **REGEN** button to force motor to advance to **BRINE** position. While system is counting down, press **REGEN** again to advance motor to the **2ND BACKWASH** cycle. While system is counting down, press **REGEN** button a third time to advance the system to the **RINSE** cycle. While system is counting down, press **REGEN** button to advance the system to the **FILL** cycle. While system is counting down, press **REGEN** button a final time to advance motor to **SOFTENING** position. The time of day will return to the screen.

5. Release Treated Water— Slowly turn the outlet side of the bypass valve top open it as shown in **Fig. 1** on page 4. Unit is now providing conditioned water to the building.

VALVE SETTINGS— INSTALLER



1. Access Programming— Press and hold **NEXT** and the Δ button simultaneously for 3 seconds.

2. Water Hardness— Use the Δ and ∇ buttons to set the grains of hardness as CaCO_3 per gallon. The grains per gallon can be increased if soluble iron needs to be reduced.

- **Range:** 1-150 grains
- This display will only appear if **Volume Capacity** is set to **AUTO** in advanced programming (see Advanced Water Technician's Guide).

3. Day Override— If **Volume Capacity** is set to **OFF**, this setting will control the number of days between regenerations. If **Volume Capacity** is set to **AUTO** or a specific number, this will set the **maximum** number of days between regenerations.

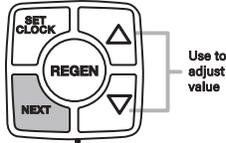
Use the Δ or ∇ button to select one of the following options:

- **Days Value:** Set a number (1-28) of days to trigger a regeneration, even if sufficient volume of water has not been used.
- **OFF:** System will only trigger a regeneration based on volume used.

4. Regeneration Time— Use the Δ or ∇ button to set the hour of the day regeneration should begin. The AM/PM designation will change as you scroll past 12. Press **NEXT** to change the minutes value.

- The ideal time will vary based on the owner's water usage habits. Set a regeneration time when treated water is not necessary.
- This display will not appear if **Regeneration Time Option** is set to **IMMEDIATE REGENERATION**.

.....➔ Process continued on next page



.....➔ Return to regular operating display screens

- 5. Energy Saver**— Use the Δ or ∇ button to select one of the following options:
- **ON:** The control will automatically turn off the display screen light after 5 minutes of keypad inactivity.
 - **OFF:** The display screen light will always be illuminated.

Press **NEXT** to exit Installer Display Settings. — or — Press **REGEN** to return to previous step.

REGENERATION MODE

A system is usually set to regenerate at a time of low water usage (*i.e. 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 starts regeneration, the screen information will display the current cycle that is in process and the time remaining for that step to be completed. The system performs each cycle automatically and will return to the operating mode once all regeneration cycles are complete.



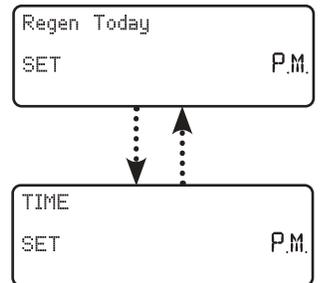
MANUAL REGENERATION

Occasionally, you may need to manually regenerate the system before the programming calls for it, such as after increased water usage due to guests or a heavy laundry day.

To start a manual regeneration, press and release the **REGEN** button. **REGEN TODAY** will flash on the display to indicate that the system will regenerate at the preset delayed regeneration time (*default is 2:00 AM*).

- Press **REGEN** again to cancel the request.

NOTE: If the **Regeneration Time Option** is set to **IMMEDIATE REGENERATION**, there is no delayed regeneration time designated in the programming. Therefore **REGEN TODAY** will not activate if **REGEN** is pressed. To initiate a manual regeneration immediately, press and hold **REGEN** for **3 seconds**. The system will begin to regenerate immediately. The request cannot be canceled.



(For softeners, if brine tank does not contain salt, fill with salt and wait at least 2 hours before regenerating.)

ERROR CODES AND DESCRIPTIONS

| Error Code Number | Definition | Description |
|-------------------|-------------------------------|--|
| 101 | Unable to start | Valve does not sense any movement with motor engaged |
| 102 | Motor stalled | Valve is not able to find the next cycle position |
| 103 | Motor ran too long | Valve is not able to find the next cycle position |
| 104 | Valve homing | Valve is not able to find the "Home" position |
| 106 | MAV 1 ran too long | MAV 1 was not able to find proper park position |
| 107 | MAV 1 stalled | MAV 1 motor ran too short and was not able to find proper park position |
| 109 | Invalid motor state | Control detected incorrect motor state and can no longer operate properly |
| 116 | MAV 2 ran too long | MAV 2 was not able to find proper park position |
| 117 | MAV 2 stalled | MAV 2 motor ran too short and was not able to find proper park position |
| 201 | Invalid regen step | Internal software issue regarding regeneration cycle steps causing controller to malfunction |
| 204 | Leak detected | Occurs when dP input is active for "ALARM" and the input is closed. |
| 402 | Power down memory | Check sum error for operational data and status section of EEPROM memory—specific type of memory error. |
| 403 | Program memory | Check sum error for operational data and status section of EEPROM memory—specific type of memory error. |
| 404 | Diagnostic memory | Check sum error for operational data and status section of EEPROM memory—specific type of memory error. |
| 405 | History memory | Check sum error for operational data and status section of EEPROM memory—specific type of memory error. |
| 406 | Contact memory | Check sum error for operational data and status section of EEPROM memory—specific type of memory error. |
| 407 | Status RAM memory failure | Control can no longer operate properly due to corrupted data detected in the Operational Data and Status Section of RAM memory. Once generated, the Error Mode is not entered nor an error displayed, instead previously stored data (<6 hours old) is used to maintain control operation. |
| 408 | Diagnostic RAM memory failure | Control can no longer operate properly due to corrupted data detected in the Operational Data and Status Section of RAM memory. Once generated, the Error Mode is not entered nor an error displayed, instead previously stored data (<6 hours old) is used to maintain control operation. |
| 410 | Config download | Configuration file downloaded to the control was not originally uploaded from another control with the identical software revision. |

Press and hold **NEXT** and **REGEN** simultaneously for 3 seconds to perform a soft reset and clear an error.

IN-FIELD RESOLUTION GUIDE

| Service Issue | Recommended Solution |
|---|---|
| Display is flashing Time of Day | Likely caused by a power outage. Reset Time of Day by following instructions in product's Installer & Owner's Manual. If system included a battery back up, replace it following instructions on Page 3. |
| Display is showing the wrong Time of Day | Unit has irregular access to power. Check to make sure product is not plugged into an outlet controlled by a light switch or a breaker/GFI was triggered. If no issues found with power source, replace the PC board. |
| There is nothing shown on display | The unit may have no access to power. Ensure adapter is plugged into an active outlet and cord is fully connected to PC board. If no issues found with power source, you have the option to replace the power adapter and/or the PC board. |
| Display does not show Flow Indicator icon while processing water | A flow meter may not be installed. Other possibilities include the unit being in Bypass position, the flow meter is not properly connected to the PC board, or something is lodged inside prohibiting turning of the blades. If no issues are found with the flow meter, it may be defective and should be replaced. |
| Unit is regenerating at wrong time of day | Ensure the Time of Day is correct and reset as needed by following instructions in product's Installer & Owner's Manual. Check the Time of Regeneration is set correctly and/or that programming setting has DELAYED regeneration selected. <i>(Immediate Regeneration will activate at random times.)</i> |
| Unit is not regenerating automatically when holding down the REGEN button | The valve cover may not be positioned correctly. Remove and reattach in proper position. Other reasons include a broken piston rod, broken drive gear, or broken drive cap assembly. If all components appear intact, replace the PC board. |
| Unit is not regenerating according to the system programming, but <i>will</i> while holding down the REGEN button | The unit may be in the Bypass position or the regeneration settings are not programmed correctly. Other possibilities include the flow meter is not connected to the PC board or something is lodged inside prohibiting turning of the blades. If no issues are found in the items above, you have the option to replace the flow meter and/or the PC board. |
| Water is running to the drain | Please review all of the following scenarios: <ul style="list-style-type: none"> ▪ After a power outage, the system will resume an interrupted regeneration process. If system included a battery back up, replace it following instructions on Page 3. ▪ Seal, stack assembly, or piston assembly may be damaged and needs to be replaced. ▪ Ensure drive cap assembly is tightened properly. |

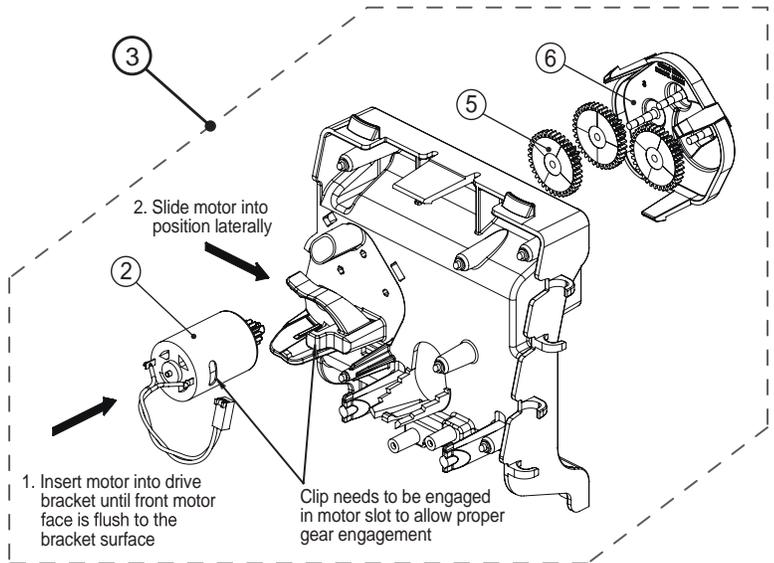
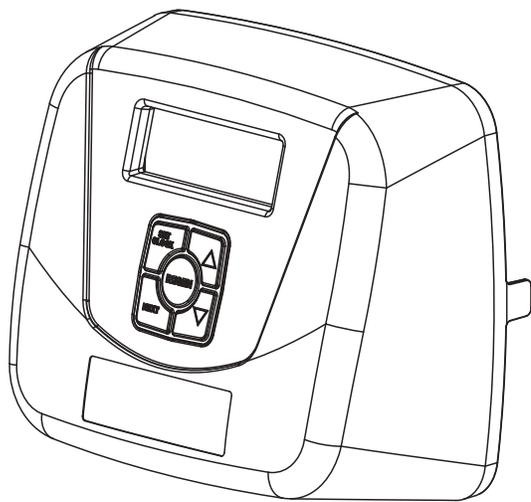
Additional common troubleshooting recommendations continue on next page

IN-FIELD RESOLUTION GUIDE

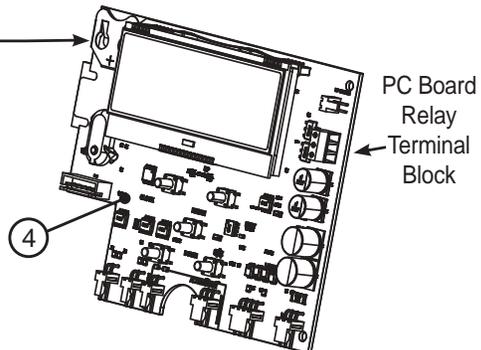
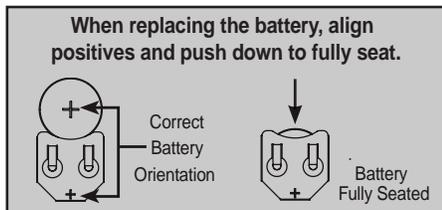
| Service Issue | Recommended Solution |
|--|--|
| System is using too much regenerant | <p>Check the valve programming for REFILL setting, water quality setting, and regen frequency to ensure it matches the job site needs.</p> <p>Also ensure there are no leaking fixtures drawing water causing the unit to regenerate more often.</p> |
| Regenerant is present in treated water | <p>This could be caused by low water pressure entering the system. Ensure there is a minimum of 25 psi at all times. Also check for an incompatible, damaged, or plugged injector, and that the drain line is free from debris.</p> |
| Unfiltered or hard water is present after passing through the unit | <p>Please review all of the following scenarios:</p> <ul style="list-style-type: none"> ▪ Ensure the bypass is in the closed position. ▪ Check flow meter to ensure nothing is lodged inside. ▪ Media could be exhausted from unusually high water usage or changes in water quality. Test the water and adjust program settings as needed. ▪ Regenerant is available during regen cycles. Ensure brine tank has salt and system is able to draw in regenerant. <i>(See Service Issue below for details.)</i> ▪ Check seals, piston, and stack assembly for damage. ▪ Ensure the control valve type and piston type are compatible. ▪ The media may be fouled and needs to be replaced. |
| Unit does not draw in regenerant | <p>Please review all of the following scenarios:</p> <ul style="list-style-type: none"> ▪ Injector is plugged. Remove and replace part. ▪ The regenerant piston may be broken. Remove and replace part. ▪ Check the regenerant line for air leaks. ▪ Check the drain line for material restricting flow and causing excess back pressure. ▪ Drain line is too long or too high for proper drainage. ▪ Check incoming water pressure to ensure it maintains a minimum of 25 psi. |
| There is excessive water in the brine tank | <p>Please review all of the following scenarios:</p> <ul style="list-style-type: none"> ▪ Brine line is not fully inserted into connector elbow inside brine tank. ▪ Injector is plugged. Remove and replace part. ▪ The seal, stack assembly, or piston may be damaged. ▪ Check the REFILL setting in programming. ▪ Ensure drive cap assembly is tightened properly. ▪ Check the drain line for restrictions from debris or kinks in the line. ▪ Backwash flow controller is plugged. Remove and replace part. ▪ Refill flow controller is missing; replace part. |

REPLACEMENT PARTS

| Front Cover & Drive Assembly | | | |
|------------------------------|---------------|------------------------------------|----------|
| Drawing # | Part Number | Description | Quantity |
| 1 | V4576-01 | VARSITY FRONT COVER ASSEMBLY BLACK | 1 |
| 2 | V3107-01 | MOTOR ASSEMBLY | 1 |
| 3 | V3002 | DRIVE BRACKET ASY W/ MOTOR | 1 |
| 4 | V4630CP-BOARD | WS1 THRU 2 CP PCB REPL | 1 |
| 5 | V3110 | DRIVE REDUCING GEAR 12x36 | 3 |
| 6 | V3109 | DRIVE GEAR COVER | 1 |
| Not Shown | V3186-06 | POWER SUPPLY US 15VDC HOCV | 1 |
| | V3186AUS-05OD | POWER SUPPLY AUS 15VDC VI OUTDOOR | |
| | V3186EU-06 | POWER SUPPLY EU 15VDC HOCV | |
| | V3186UK-06 | POWER SUPPLY UK 15VDC HOCV | |
| | V3186-01 | POWER CORD ONLY | |
| Not Shown | V3946 | BACKPLATE MIDSIZE | 1 |



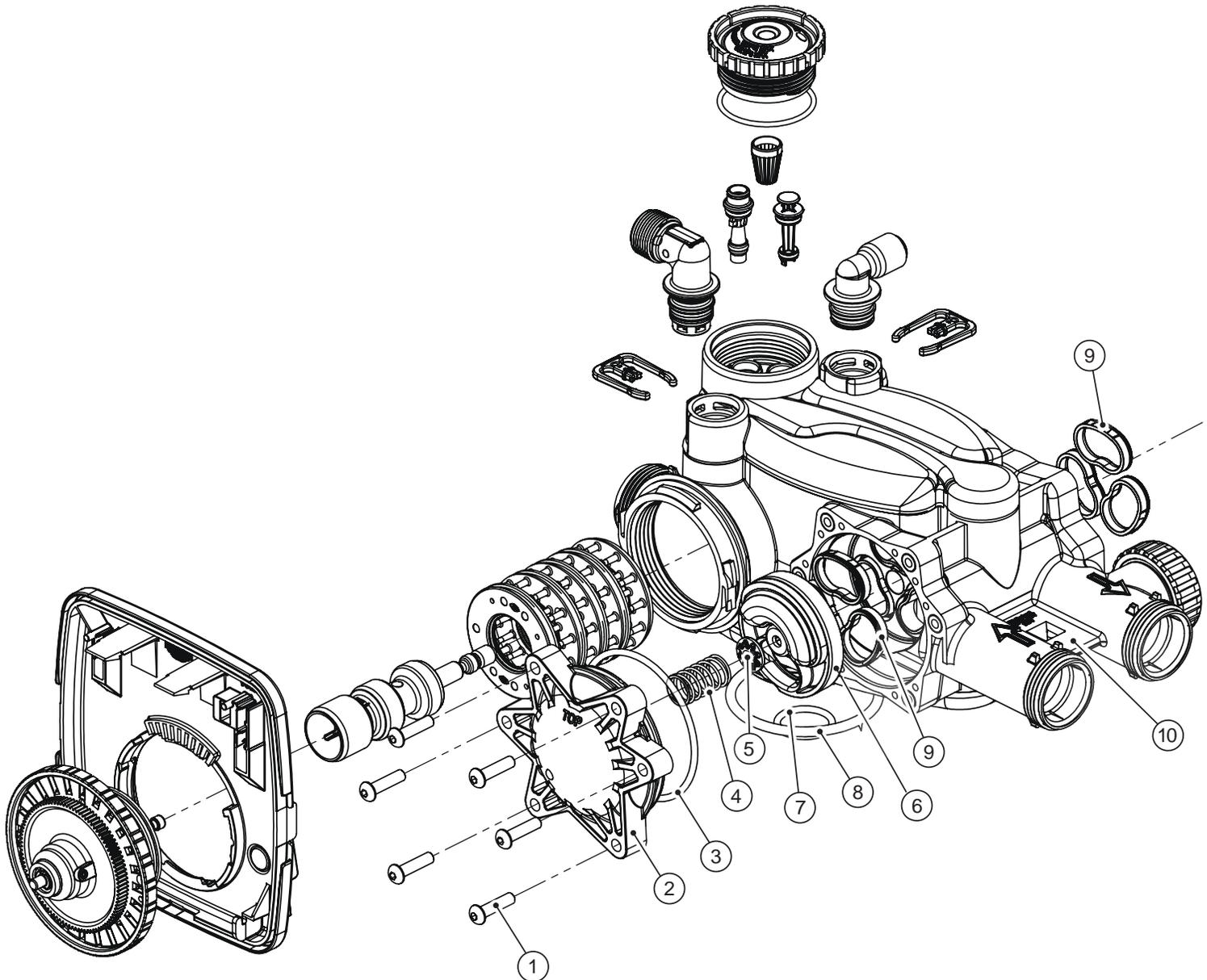
Battery replacement is 3 volt lithium coin cell type 2032.



Twin Transfer

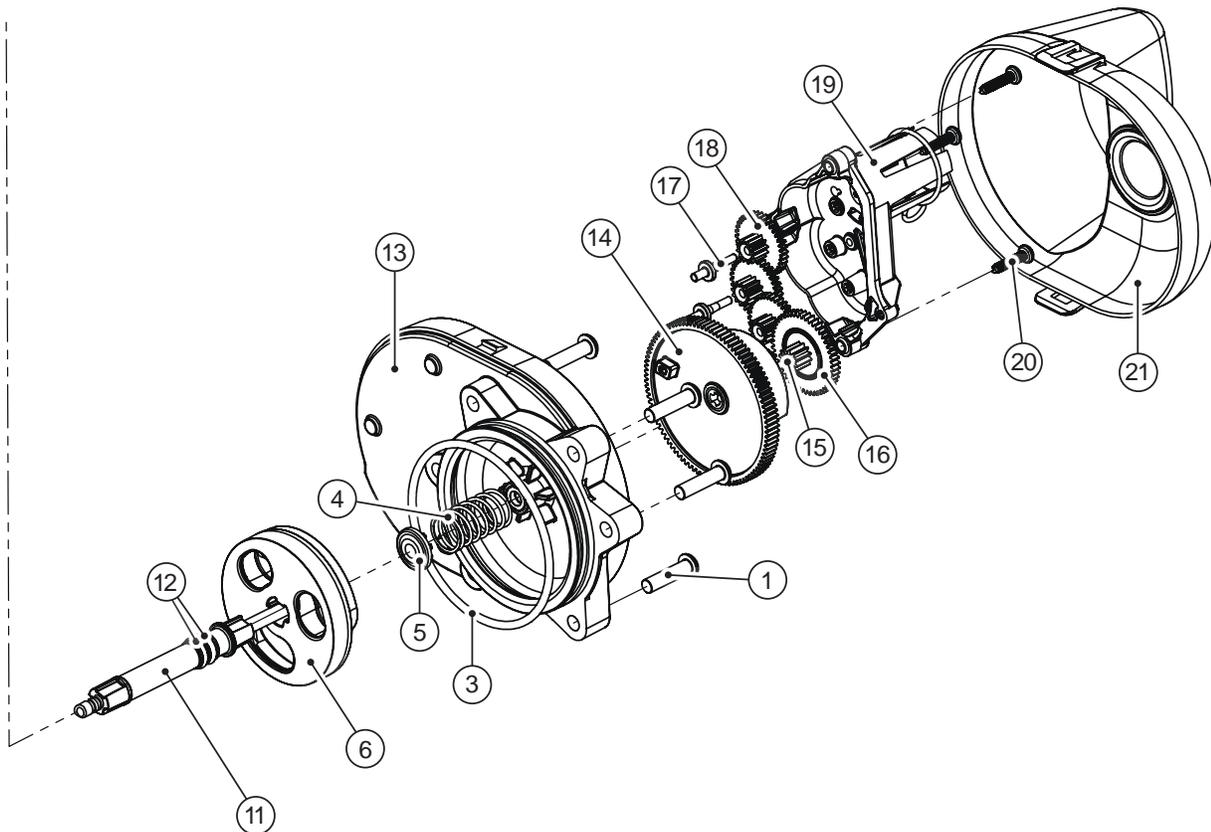
| Drawing # | Part Number | Description | Quantity |
|-----------|-------------|----------------------------------|----------|
| Not Shown | V4043 | T1 TRANSFER MOTOR ASSEMBLY | 1 |
| Not Shown | V3151 | WS1 NUT 1 QC | 1 |
| Not Shown | V4055* | TWIN TANK METER ASSEMBLY | 1 |
| Not Shown | V4017-01 | T1 INTERCONNECT FITTING ASSEMBLY | 1 |
| Not Shown | D1400 | 1191 IN/OUT HEAD | 1 |

**This water meter should not be used as the primary monitoring device for critical or health effect applications.*

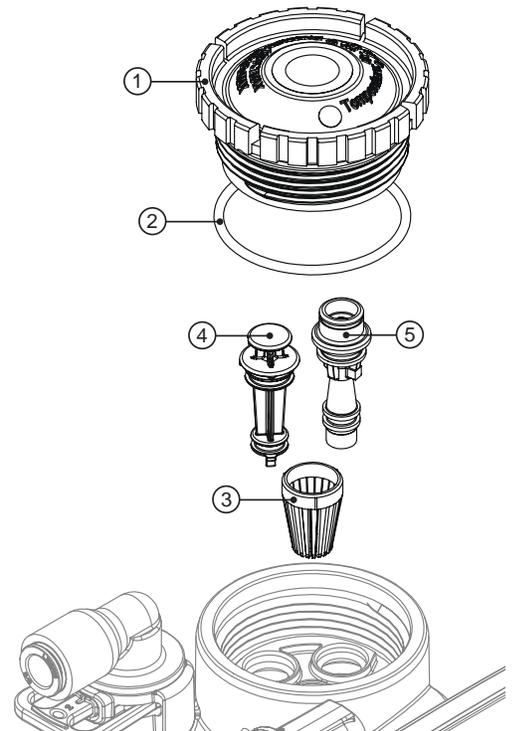


Twin Transfer

| Drawing # | Part Number | Description | Quantity |
|-----------|-------------|--|----------|
| 1 | V3470 | SCREW BHC 1/4-20 x 1 SS | 12 |
| 2 | V4005-01 | T1 TRANSFER CAP ASSEMBLY | 1 |
| 3 | V4029 | O-RING 236 | 2 |
| 4 | V4015 | T1 TRANSFER SPRING | 2 |
| 5 | V4014 | T1 TRANSFER SPRING SUPPORT | 2 |
| 6 | V4036 | T1 ROTOR DISK ASSEMBLY | 2 |
| 7 | V3105 | O-RING 215 (DISTRIBUTOR TUBE) | 1 |
| 8 | V3180 | O-RING 337 | 1 |
| 9 | V4016 | T1 TRANSFER SEAL | 6 |
| 10 | V3031 | T1 BODY SOFT WATER REGEN | 1 |
| 11 | V4023 | T1 TRANSFER DRIVE SHAFT ASSEMBLY | 1 |
| 12 | V3287 | O-RING 110 | 2 |
| 13 | V4006-01 | T1 TRANSFER DRIVE CAP ASSEMBLY | 1 |
| 14 | V4011-01 | T1 TRANSFER DRIVE GEAR ASSEMBLY | 1 |
| 15 | V4012 | T1 TRANSFER DRIVE GEAR AXLE | 1 |
| 16 | V4013 | T1 TRANSFER REDUCTION GEAR | 1 |
| 17 | V3264 | WS2H BYPASS REDUCTION GEAR AXLE | 3 |
| 18 | V3110-01 | WS1 DRIVE REDUCING GEAR PLAIN | 3 |
| 19 | V3262-01 | WS1.5 & 2 ALT/2BY REDUCING GEAR COVER ASSEMBLY | 1 |
| 20 | V3592 | SCREW #8-1 PHPN T-25 SS | 3 |
| 21 | V4049 | T1 COVER ASSEMBLY | 1 |



| INJECTOR PARTS | | | |
|----------------|----------|--------------------------------------|-----|
| DRAWING # | PART # | DESCRIPTION | QTY |
| 1 | V3176 | Injector Cap | 1 |
| 2 | V3152 | O-Ring 135 | 1 |
| 3 | V3177-01 | Injector Screen Cage | 1 |
| 4 | V3010-1Z | WS1 Injector Assembly Z Plug | 1 |
| 5 | V3010-1A | WS1 Injector Assembly A: Black | 1 |
| | V3010-1B | WS1 Injector Assembly B: Brown | |
| | V3010-1C | WS1 Injector Assembly C: Violet | |
| | V3010-1D | WS1 Injector Assembly D: Red | |
| | V3010-1E | WS1 Injector Assembly E: White | |
| | V3010-1F | WS1 Injector Assembly F: Blue | |
| | V3010-1G | WS1 Injector Assembly G: Yellow | |
| | V3010-1H | WS1 Injector Assembly H: Green | |
| | V3010-1I | WS1 Injector Assembly I: Orange | |
| | V3010-1J | WS1 Injector Assembly J: Light Blue | |
| | V3010-1K | WS1 Injector Assembly K: Light Green | |
| Not Shown | V3170 | O-Ring 011 | * |
| Not Shown | V3171 | O-Ring 013 | * |



*Injector plug and injectors each contain one 011 (lower) and one 013 (upper) o-ring.

NOTE: For upflow position, injector is located in the up hole and injector plug in the down hole. For a filter that only backwashes, injector plugs are located in both holes.

INJECTOR ORDERING INFORMATION

| PART # | INJECTOR COLOR | TYPICAL TANK DIAMETER | |
|----------|----------------|-----------------------|--------|
| | | DOWNFLOW | UPFLOW |
| V3010-1A | Black | 6" | 8" |
| V3010-1B | Brown | 7" | 9" |
| V3010-1C | Violet | 8" | 10" |
| V3010-1D | Red | 9" | 12" |
| V3010-1E | White | 10" | 13" |
| V3010-1F | Blue | 12" | 14" |
| V3010-1G | Yellow | 13" | 16" |
| V3010-1H | Green | 14" | 18" |
| V3010-1I | Orange | 16" | 21" |
| V3010-1J | Blue | 18" | |
| V3010-1K | Light Green | 21" | |

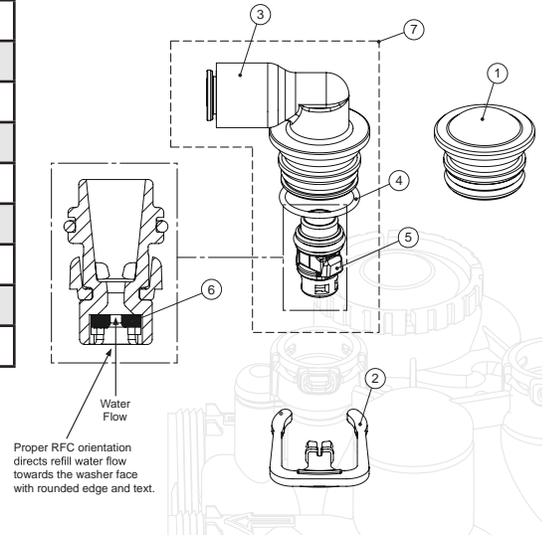
Actual tank size used may vary depending on the design and application of the system. Tank diameter is an approximation for the following:

- Downflow** softener using standard mesh synthetic cation exchange media that regenerates with sodium chloride
- Upflow** softener using standard mesh synthetic cation exchange media that regenerates with sodium chloride, an inlet pressure of 30-50 psi and water temperature of 60° F (15.6° C) or warmer. Higher pressure or lower temperatures would need smaller injectors to avoid lifting the bed.

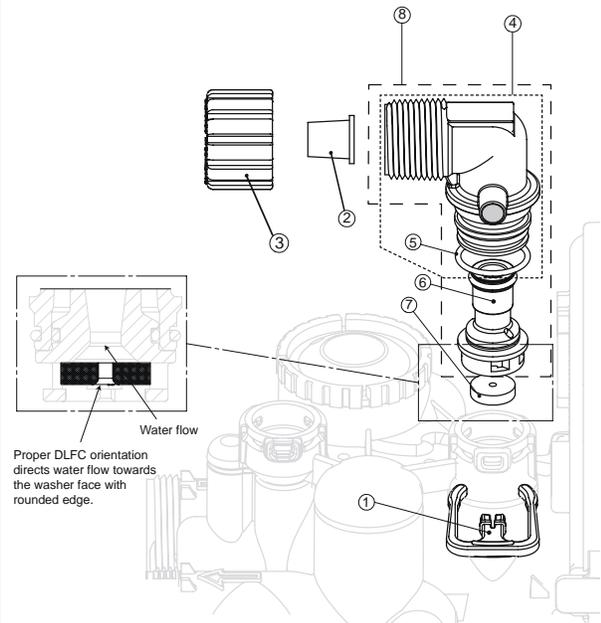
| REFILL FLOW CONTROL & PORT PLUG | | | |
|---------------------------------|------------|--------------------------------|--------|
| DRAWING # | PART # | DESCRIPTION | QTY |
| 1 | V3195-01 | WS1 Refill Port Plug Assembly* | 1 |
| 2 | H4615 | Elbow Locking Clip | 1 |
| 3 | H4628 | Elbow 3/8 Brine QC | 1 |
| 4 | V3163 | O-Ring 019 | 1 |
| 5 | V3165-01** | WS1 RFC Retainer Assembly | 1 |
| 6 | V3182 | WS1 RFC | 1 |
| 7 | V4144-01 | Elbow 3/8 Brine QC w/RFC | 1 |
| Not Shown | V3552 | WS1 Brine Elbow Assembly w/RFC | Option |
| Not Shown | H4650 | Elbow 1/2" with Nut and Insert | Option |

*This part is required for backwash only systems

**Assembly includes WS1 RFC

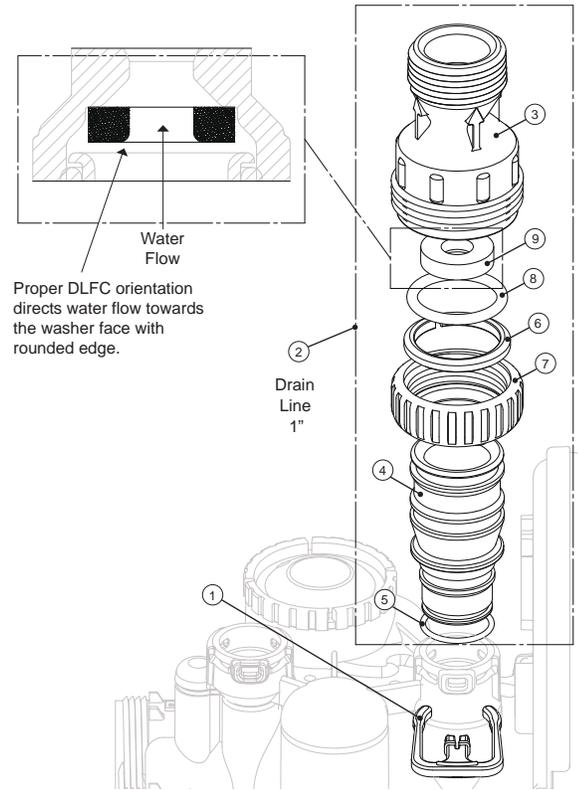


| DRAIN LINE — 3/4" | | | |
|-------------------|---------------|-----------------------------------|---|
| DRAWING # | PART # | DESCRIPTION | QTY |
| 1 | H4615 | Elbow Locking Clip | 1 |
| 2 | PKP10TS8-BULK | Polytube Insert 5/8 | Option |
| 3 | V3192 | WS1 Nut 3/4 Drain Elbow | Option |
| 4 | V3158-01 | WS1 Drain Elbow 1/4 Male Assembly | 1 |
| 5 | V3163 | O-Ring 019 | 1 |
| 6 | V3159-01 | WS1 DLFC Retainer Assembly | 1 |
| 7 | V3162-007 | WS1 DLFC 0.7 gpm for 3/4 | One DLFC must be used if 3/4" fitting is used |
| | V3162-010 | WS1 DLFC 1.0 gpm for 3/4 | |
| | V3162-013 | WS1 DLFC 1.3 gpm for 3/4 | |
| | V3162-017 | WS1 DLFC 1.7 gpm for 3/4 | |
| | V3162-022 | WS1 DLFC 2.2 gpm for 3/4 | |
| | V3162-027 | WS1 DLFC 2.7 gpm for 3/4 | |
| | V3162-032 | WS1 DLFC 3.2 gpm for 3/4 | |
| | V3162-042 | WS1 DLFC 4.2 gpm for 3/4 | |
| | V3162-053 | WS1 DLFC 5.3 gpm for 3/4 | |
| | V3162-065 | WS1 DLFC 6.5 gpm for 3/4 | |
| | V3162-075 | WS1 DLFC 7.5 gpm for 3/4 | |
| | V3162-090 | WS1 DLFC 9.0 gpm for 3/4 | |
| | V3162-100 | WS1 DLFC 10.0 gpm for 3/4 | |



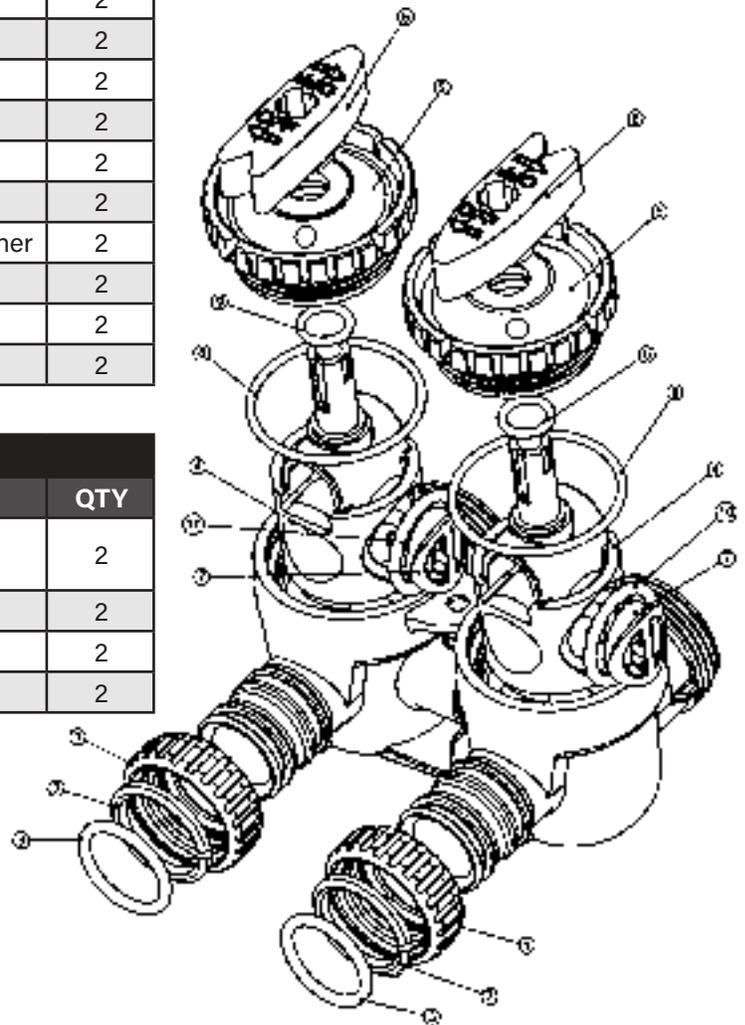
Valves are shipped without drain line flow control (DLFC) — install DLFC before using. Valves are shipped without 3/4" nut for drain elbow (polytube installation only) and 5/8" polytube insert (polytube installation only).

| DRAIN LINE — 1" | | | |
|-----------------|-----------|--------------------------|---|
| DRAWING # | PART # | DESCRIPTION | QTY |
| 1 | H4615 | Elbow Locking Clip | 1 |
| 2 | V3008-02 | WS1 Drain FTG 1 Straight | 1 |
| 3* | V3166 | WS1 Drain FTG Body1 | 1 |
| 4* | V3167 | WS1 Drain FTG Adapter | 1 |
| 5* | V3163 | O-Ring 019 | 1 |
| 6* | V3150 | WS1 Split Ring | 1 |
| 7* | V3151 | WS1 Nut 1" QC | 1 |
| 8* | V3105 | O-Ring 215 | 1 |
| 9 | V3190-090 | WS1 DLFC 9.0 gpm for 1 | One DLFC must be used if 1" fitting is used |
| | V3190-100 | WS1 DLFC 10.0 gpm for 1 | |
| | V3190-110 | WS1 DLFC 11.0 gpm for 1 | |
| | V3190-130 | WS1 DLFC 13.0 gpm for 1 | |
| | V3190-150 | WS1 DLFC 15.0 gpm for 1 | |
| | V3190-170 | WS1 DLFC 17.0 gpm for 1 | |
| | V3190-200 | WS1 DLFC 20.0 gpm for 1 | |
| | V3190-250 | WS1 DLFC 25.0 gpm for 1 | |

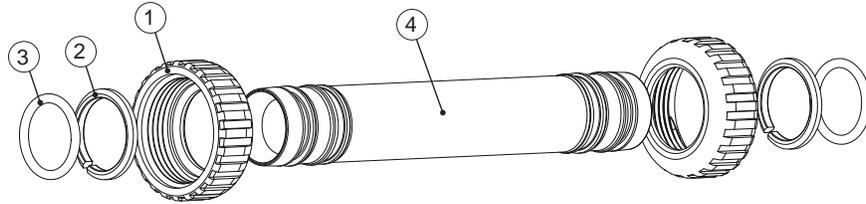


| BYPASS VALVE | | | |
|--------------|--------|--------------------------------|-----|
| DRAWING # | PART # | DESCRIPTION | QTY |
| 1 | V3151 | WS1 Nut 1" Quick Connect | 2 |
| 2 | V3150 | WS1 Split Ring | 2 |
| 3 | V3105 | O-Ring 215 | 2 |
| 4 | V3145 | WS1 Bypass 1" Rotor | 2 |
| 5 | V3146 | WS1 Bypass Cap | 2 |
| 6 | V3147 | WS1 Bypass handle | 2 |
| 7 | V3148 | WS1 Bypass Rotor Seal Retainer | 2 |
| 8 | V3152 | O-Ring 135 | 2 |
| 9 | V3155 | O-Ring 112 | 2 |
| 10 | V3156 | O-Ring 214 | 2 |

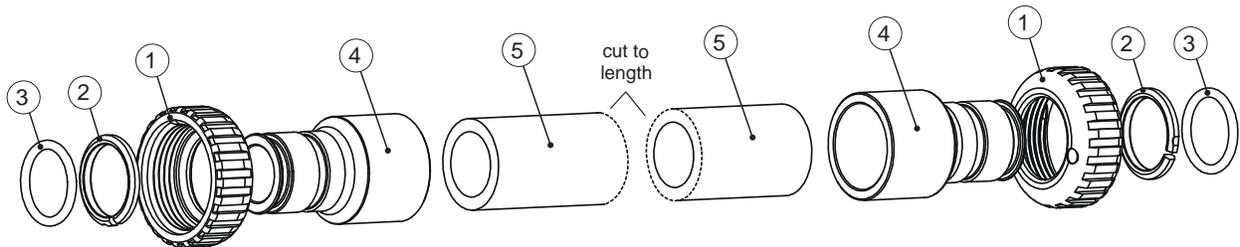
| BYPASS VERTICAL ADAPTER | | | |
|-------------------------|----------|--------------------------------------|-----|
| DRAWING # | PART # | DESCRIPTION | QTY |
| Not Shown | V3191-01 | WS1 Bypass Vertical Adapter Assembly | 2 |
| Not Shown | V3151 | WS1 Nut 1" Quick Connect | 2 |
| Not Shown | V3150 | WS1 Split Ring | 2 |
| Not Shown | V3105 | O-Ring 215 | 2 |



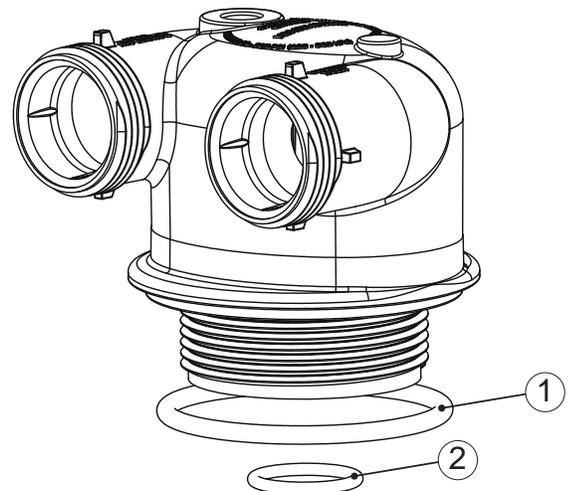
| INTERCONNECT FITTING ASSEMBLY (UP TO 10" TANKS) | | | |
|---|--------|--------------------------|-----|
| DRAWING # | PART # | DESCRIPTION | QTY |
| 1 | V3151 | WS1 Nut 1" Quick Connect | 4 |
| 2 | V3150 | WS1 Split Ring | 4 |
| 3 | V3105 | O-Ring 215 | 4 |
| 4 | V4017 | T1 Interconnect Fitting | 2 |



| INTERCONNECT FITTING ASSEMBLY (12"-21" TANKS) | | | |
|---|--------|-------------------------------------|-----|
| DRAWING # | PART # | DESCRIPTION | QTY |
| 1 | V3151 | WS1 Nut 1" Quick Connect | 4 |
| 2 | V3150 | WS1 Split Ring | 4 |
| 3 | V3105 | O-Ring 215 | 4 |
| 4 | V3352 | WS1 Fitting 1/4" & 1/2" PVC Solvent | 4 |
| 5 | V4052 | Pipe PVC SCH 80 1/4" x 2" | 2 |



| IN/OUT HEAD | | | |
|-------------|--------|-------------------------------|-----|
| DRAWING # | PART # | DESCRIPTION | QTY |
| 1 | V3180 | O-Ring 337 | 1 |
| 2 | V3105 | O-Ring 215 (Distributor Tube) | 1 |

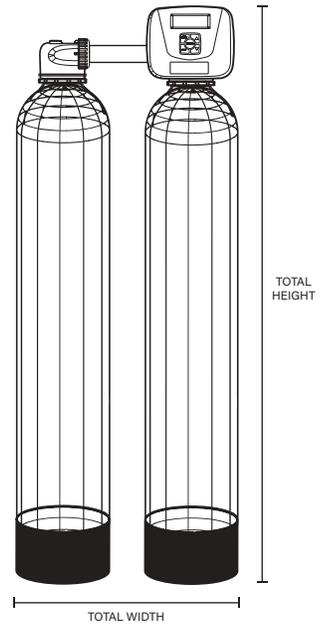


SPECIFICATIONS

TWIN SOFTENER CAPABILITIES

| Model Size: | SP-844TW | SP-1044TW | SP-1054TW |
|--|----------------------|----------------------|----------------------|
| Softening Capacity: (Grains @ Lbs.) | | | |
| ▪ Minimum Setting | 13,500 @ 3.0 | 18,000 @ 4.0 | 27,000 @ 6.0 |
| ▪ Medium Setting | 21,000 @ 7.0 | 28,000 @ 9.0 | 42,100 @ 14.0 |
| ▪ Maximum Setting | 24,600 @ 11.0 | 32,800 @ 15.0 | 48,300 @ 22.5 |
| Maximum Hardness (GPG) | 25 | 50 | 75 |
| Maximum Iron (PPM) | 2 | 2 | 2 |
| Maximum Chlorine (PPM) | 0.5 | 0.5 | 0.5 |
| Media Included (Cu. Ft.) | Cat-Ion Resin 1.5 | Cat-Ion Resin 2.0 | Cat-Ion Resin 3.0 |
| Drain Line Flow Control | 1.7 | 2.2 | 2.7 |
| Efficiency @ 1 lb. Salt Setting (Grains/Lbs. Salt) | 4,500 | 4,500 | 4,500 |
| Max. Service Flow (GPM) | 11 | 12.5 | 13.1 |
| Min.-Max. Operating Pressure (PSI) | 25-100 | 25-100 | 25-100 |
| Min.-Max. Operating Temp. (°F) | 40-100 | 40-100 | 40-100 |
| Electrical Requirements: | 110V/15vDC 60Hz | 110V/15vDC 60Hz | 110V/15vDC 60Hz |
| Plumbing Size: | 1" | 1" | 1" |
| Total Dimensions: | | | |
| ▪ Valve & Media Tank (Width x Height) | 27"x54" | 29"x54" | 29"x64" |
| ▪ Brine Tank (Width x Depth x Height)* | 15"x17"x33" | 15"x17"x33" | 15"x17"x33" |

*Various brine tank sizes are available and may vary from the standard sizes shown in chart above.



TWIN COMBINATION SOFTENER/FILTER CAPABILITIES

| Model Size: | CH-1054TW | | CH-1354TW | |
|--|--------------------|--------------|--------------------|--------------|
| Softening Capacity: (Grains @ Lbs.) | | | | |
| ▪ Minimum Setting | 18,000 @ 4.0 | | 27,000 @ 6.0 | |
| ▪ Medium Setting | 28,000 @ 9.0 | | 42,100 @ 14.0 | |
| ▪ Maximum Setting | 32,800 @ 15.0 | | 48,300 @ 22.5 | |
| Maximum Hardness (GPG) | 50 | | 75 | |
| Maximum Iron (PPM) | 0 | | 0 | |
| Maximum Chlorine (PPM) | 2.0 | | 4.0 | |
| Media Included (Cu. Ft.) | Carbon 1.0 | Resin 2.0 | Carbon 2.0 | Resin 3.0 |
| Drain Line Flow Control | 5.3 | | 7.5 | |
| Efficiency @ 1 lb. Salt Setting (Grains/Lbs. Salt) | 4,500 | | 4,500 | |
| Max. Service Flow (GPM) | 12.5 | | 13.1 | |
| Min.-Max. Operating Pressure (PSI) | 25-100 | | 25-100 | |
| Min.-Max. Operating Temp. (°F) | 40-100 | | 40-100 | |
| Electrical Requirements: | 110V/15vDC 60Hz | | 110V/15vDC 60Hz | |
| Plumbing Size: | 1" | | 1" | |
| Total Dimensions: | | | | |
| ▪ Valve & Media Tank (Width x Height) | 29"x64" | | 31"x64" | |
| ▪ Brine Tank (Width x Depth x Height)* | 15"x17"x33" | | 15"x17"x33" | |

*Various brine tank sizes are available and may vary from the standard sizes shown in chart above. 18"x40" round brine tanks only available on CH-1354TW models.

