

Service and Installation Guide



by AdEdge Water Technologies, LLC.

Medallion Series Arsenic Removal Systems

Models:

POE-5-1252

POE-7-1354

POE-10-1465

Arsenic Treatment Solutions

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The service and installation guide is designed to assist the professional water treatment provider and qualified staff. This document is not intended for the end user.

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Arsenic Treatment Facts

Arsenic (As) is a naturally occurring contaminant found in many ground waters. Generally occurring in two forms: pentavalent arsenic (also known as As(V), As(+5), and arsenate) and trivalent arsenic (also known as As(III), As(+3), and arsenite).

Arsenic does not generally impart color, taste, or smell to water; therefore, it can only be detected by an analytical test. Public water supplies are required to monitor delivered water for arsenic contaminates and the results are available to the public from the utility. Consumers using private water sources will need to make arrangements for regular testing. An arsenic test usually costs about \$15-30, and it is recommended that the test be conducted by a certified laboratory. Local health departments or environmental protection agencies can help provide consumers with a list of certified laboratories. Some laboratories may also be able to analyze the specific species present in the water sample if requested.

The Medallion System is designed to reduce arsenic: both pentavalent and trivalent forms of arsenic to concentrations less than 10 µg/L, when applied within the standard water quality parameters recommended by AdEdge. Actual performance of the system may vary depending on specific water quality conditions at the consumer's installation. Following installation of this system, the consumer should have the treated water tested for arsenic to verify that arsenic reduction is being achieved and have routine service performed to ensure the system is functioning properly.

The arsenic removal component of this system must be replaced at the end of its useful life, please consult AdEdge for service life expectancy based on specific water quality parameters. The replacement component, AdEdge's Bayoxide® E33 media, can be purchased from the original source of this system.

More information about arsenic and its toxicity can be found at the Agency for Toxic Substances and Disease Registry website at www.atsdr.cdc.gov/toxprofiles/phs2.html, the U.S. Geological Survey website at <http://water.usgs.gov/nawqa/trace/arsenic/>, the U. S. Environmental Protection Agency website at www.epa.gov/safewater/arsenic.html or your state department of environmental health.

Operating Guidelines

Typical Arsenic Treatment Goal	0.010 mg/L
Arsenic Reduction Capabilities	Arsenic V, Arsenic III
Reduction Efficiency	95-99%
Media Life	Dependent upon specific contaminant levels
Media Disposal	Meets (TCLP) and (WET)

Recommended Water Parameters

pH	5.5 – 8.5
Total Arsenic	0.005 – 0.100 mg/L
Iron	< 0.5 mg/L
Manganese	< 0.05 mg/L
Sulfides	< 0.1 mg/L
Silica	< 30 mg/L
Phosphates	< 0.5 mg/L
Sulfate	< 100 mg/L
Fluoride	< 1.0 mg/L
Hardness	< 300 mg/L
Sediment	< 30 micron
Tannins	Non - Detect
Turbidity	< 5 NTU
Temperature	40°F – 110°F / 4°C – 43°C
Operating Pressure	30 psi – 125 psi

Please consult AdEdge for installations with water characteristics outside of the recommended water parameters.

Medallion Series Specifications

Flow Rates	POE-5-1252	POE-7-1354	POE-10-1465
Service Flow Rate	3 – 5 gpm	5 – 7 gpm	8 – 10 gpm
Peak Flow Rate	6 gpm	8 gpm	10 gpm
Inline Service Flow Control	6 gpm	8 gpm	10 gpm
Backwash Rate	5.3 gpm	7.5 gpm	10 gpm

Cycle Times	POE-5-1252	POE-7-1354	POE-10-1465
Service Cycle	5,000 gallons 28 day override	6,000 gallons 28 day override	10,000 gallons 28 day override
Cycle 1 – Backwash	14 minutes	14 minutes	14 minutes
Cycle 2 – Regenerate	Off	Off	Off
Cycle 3 – 2nd Backwash	Off	Off	Off
Cycle 4 – Fast Rinse	2 minutes	2 minutes	2 minutes
Cycle 5 – Regenerate Refill	Off	Off	Off

Design	POE-5-1252	POE-7-1354	POE-10-1465
Media – Bayoxide® E33	2 cubic feet	2.75 cubic feet	4 cubic feet
Tank Size	12 x 52, 2.5”T	13 x 54, 4”T	14 x 65, 4”T
Distributor Assembly	Basket	Hub & Laterals	Hub & Laterals
Underbed 1/4” x 1/8”, #20	20 lbs	25 lbs	40 lbs
Drain Size	3/4” MNPT	3/4” MNPT	3/4” MNPT
Standard Inlet/Outlet	1” MNPT PVC	1” MNPT PVC	1” MNPT PVC
Power Supply	120 VAC, 60Hz	120 VAC, 60Hz	120 VAC, 60Hz
Shipping Weight	120 lbs	160 lbs	230 lbs

Installation Diagram

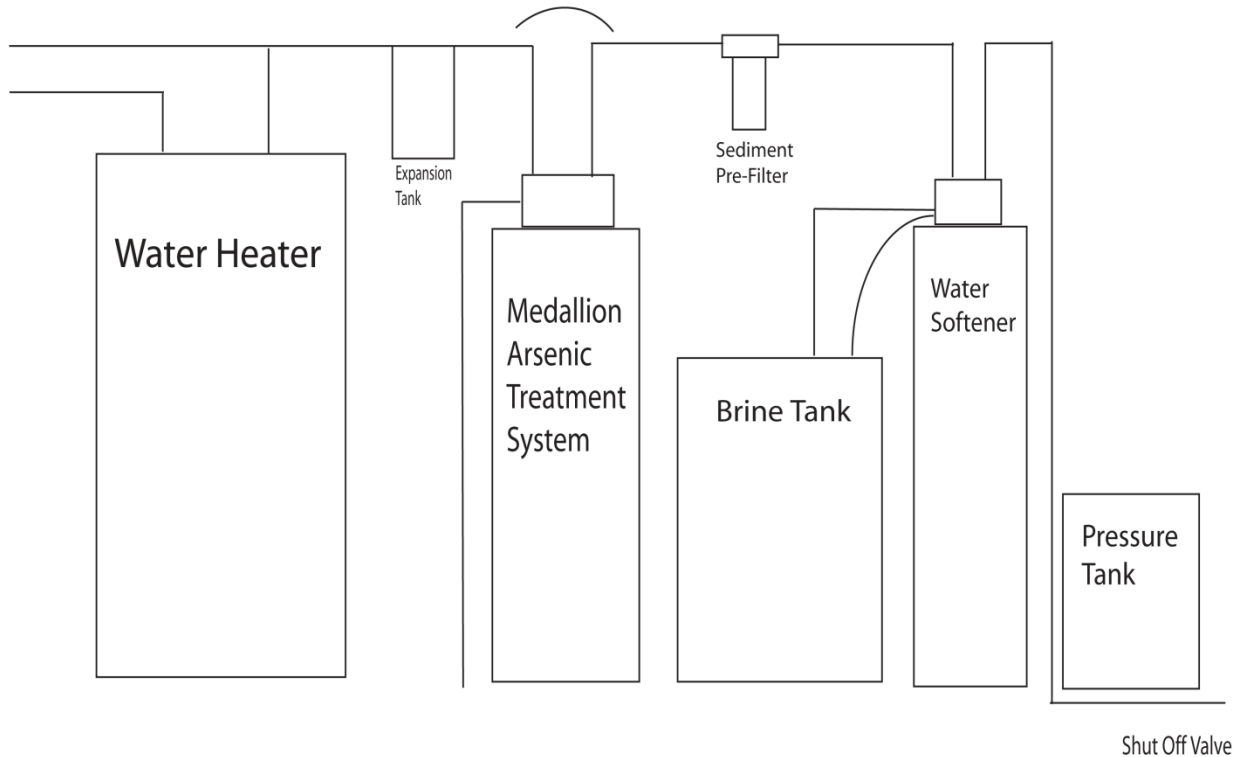


Illustration details omitted for clarity, not intended to represent suitability of site specific standards. Follow all applicable plumbing and electrical codes

Installation Materials

30 Micron Sediment Pre-Filter

Cartridge Housing

Inline Service Flow Control - Included

Sample Ports – ¼" FNPT Shut Off Valves - Included

½" I.D. Flexible Tubing or ¾" Rigid Pipe and Pipe Fittings for Drain

Approved Strap to Ground Metal Plumbing Lines

Disinfection Product for Sanitation

Silicone lubricant

Installation Guidelines

Note: Read this section entirely before starting installation. Follow all applicable plumbing and electrical codes.

Pre-Installation

- Open all containers and packaging, remove components, inspect quantities and sizes before installation (refer to Medallion Specifications pg 4 for quantities and sizes).

Placement

- Connect the Medallion System in the water line following an existing water softener, carbon, iron filter, or sediment treatment equipment if present (consult AdEdge for installations with equipment not listed).
- Select a clean, solid, level surface near water line, drain, electrical service and confirm components are protected from freezing and natural elements.
- Permit at least 10' of plumbing between system and water heater, a thermal expansion tank placed before the water heater is recommended.

Media Loading

1. Inspect mineral tank internals to confirm laterals are securely connected to the hub and centered in the tank.
2. Wear appropriate safety equipment i.e. eyewear, gloves, respirator, or other.
3. Fill the mineral tank 1/3 full with potable water to reduce dust and prevent damage to the internals.
4. Sanitize system by pouring 1-2 ounces of common 5.25% or 6% household bleach into the mineral tank.
5. Cover the riser tube to prevent media from entering the distributor and riser tube.
6. Using a large open funnel fill the mineral tank with under bed material, verify the distributor is covered.
7. Add the AdEdge Bayoxide E33 filtration media.
8. Upon filling verify the approximate void space from the top of the media to the threads of the tank.

POE-5-1252:	15"
POE-7-1354:	12"
POE-10-1465:	12"
9. Remove the material covering the riser tube to provide a clear path for water in operation.
10. Fill mineral tank with water and allow 2-3 hours minimum for the media to soak before preparing system for operation, permitting trapped air to release and preventing unnecessary service issues on start-up.

Control Valve Connection

- Do not apply Vaseline, oils, spay or lubricants containing hydrocarbon. Avoid applying any lubricant on piston or seal and spacer. Silicone lubricant gel may be applied to black o-rings, but is not required with valve components.
- Apply silicone lubricant to the 4" x 2.5" tank adapter o-ring, confirm the correct size chamfer seal o-ring (refer to tank diagram pg 25). Thread adapter into place by hand and tighten with strap wrench or channel locks.
- Connect a top basket to the valve and align valve threads with tank adapter threads, tighten only by hand.

Bypass Connection

- The bypass valve connects to the control valve with hand-tightened nut connections; o-ring seals eliminate the need for Teflon tape. Do not use pipe dope or other liquid sealants on any control valve threads or bypass. Teflon tape must be used on the 1" MNPT plumbing adapters and on the drain connection threads.

Plumbing Connections

- The control valve, fittings and bypass accommodate minor plumbing misalignments but are not designed to support the plumbing or treatment system.
- The inlet supply line enters the control valve and bypass on the right side when facing the unit and the treated water exits on the left.
- **Inlet and outlet plumbing installation considerations and recommendations;**
 1. Install sample ports for raw and treated water (1/4" FNPT shut off valves connect to the standard plumbing adapter fitting P# V3007).
 2. Install inline service flow control device on outlet.

POE-5-1252:	6 gpm Red orifice
POE-7-1354:	8 gpm Green orifice
POE-10-1465:	10 gpm Orange orifice
 3. Install filter housing prior to treatment system with isolation for replacement of 30 micron filter.
 4. Install shutoff valve prior to treatment system.
 5. Bypass outside or untreated water lines from entering treatment system.
 6. Connect approved strap to ground metal plumbing.

Installation Guidelines Cont'd

Note: Read this section entirely before starting installation. Follow all applicable plumbing and electrical codes.

Plumbing Connections Cont'd

- Heat from soldering or solvents; may damage the nut, split ring, o-ring or drain line flow control housing. Avoid contact with solder, flux, primer, or solvents on any part of the o-rings, split rings, bypass valve or control valve.
- Remove the drain line flow control locking clip and inspect flow control for appropriate size (refer to Parts Diagram on pg 28 for proper size).
- The drain line requires ½" I.D. size flexible tubing at a minimum for model POE-5-1252. Installations with more than a 20' length line or models POE-7-1354 and POE-10-1465 require ¾" rigid line for the drain.
- Form a 7" loop at the discharge point if the drain line elevates above the control valve at any point and then empties at a level below the control valve. This is intended to prevent a siphon.
- Verify adequate pressure is available to run an elevated drain line. At a height of 10' above the floor 40-60 psi is required with less than 30' length line.
- Allow for 4" air gap in drain line at discharge point.

Electrical Connection

- A continuous 120 VAC, 60 Hz current is required. Be certain the outlet is uninterrupted by a switch.

Bypass Valve Operation

1. Normal Operating Position: inlet and outlet handles point in the direction of the engraved arrows on the control valve. *Water flows through the treatment system in normal operating position (Figure 1).*

2. Bypass Position: inlet and outlet handles point to the center of the bypass. *Raw water is delivered through plumbing lines with treatment system isolated (Figure 2).*

3. Diagnostic Position: inlet handle points in the direction of engraved arrow on the control valve and the outlet handle points to the center of the bypass. *Raw water is delivered through plumbing lines with treatment system supplied with water, but prevented from delivering treated water through outlet (Figure 3).*

4. Shut Off Position: inlet handle points to the center of the bypass and the outlet handle points in the direction of the engraved arrow on the control valve. *Water is prevented from entering the treatment system or delivered through plumbing lines (Figure 4).*

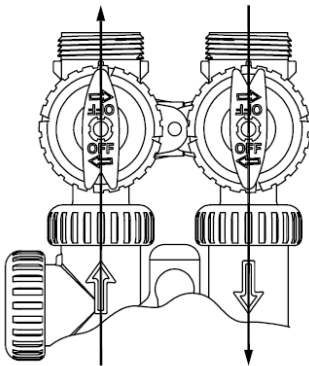


Figure 1

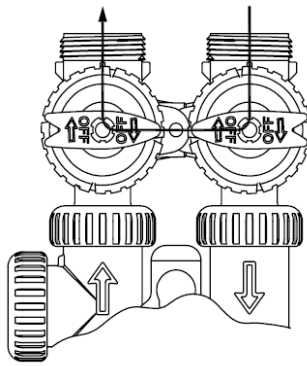


Figure 2

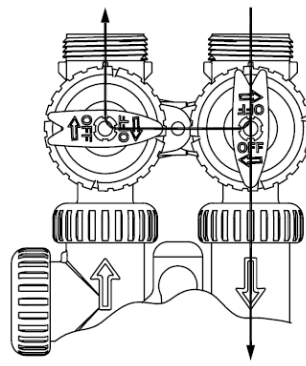


Figure 3

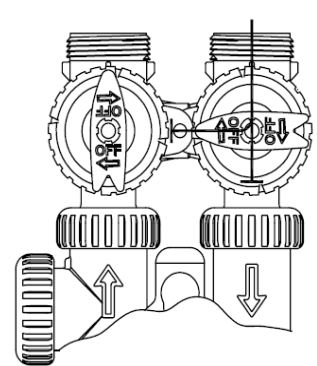





Figure 4

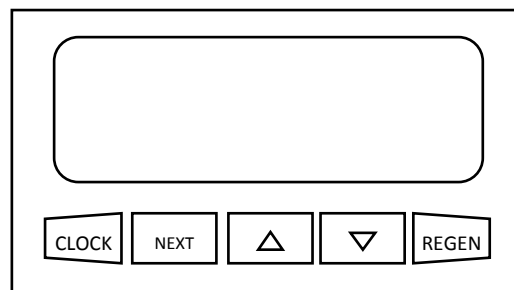
Basic Programming

General Navigation for Programming Modes


advance to the next step press 

return to the previous step press 

exit programming mode press 



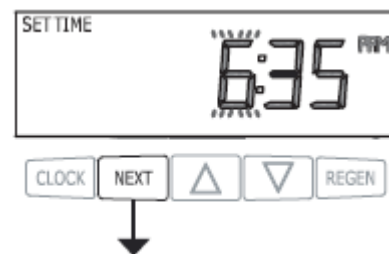
Set Time of Day

Step 1: Press and Hold  for 3 seconds



Step 2: Set "Hour"  or  AM/PM toggles at 12

Step 3: Set "Minutes"  or 

Step 4: End Programming





Installation Programming

Step 1: Press and Hold  and  for 3 seconds



Step 2: The display "-nA-" will appear indicating the system is programmed for **FILTERING**

if "-nA-" does not appear, press  to exit programming.
Refer to pg 9 for System Programming.

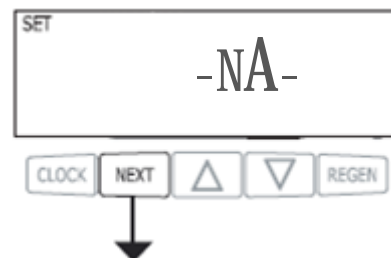
Step 3: Day Override: Set to "28" days  or 

if water usage does not activate a backwash based on demand, the system will override the meter and backwash at 28 days

Step 4: Set Time of Backwash (Hour)  or 


Step 5: Set Time of Backwash (Minute)  or 


Step 6: End Programming



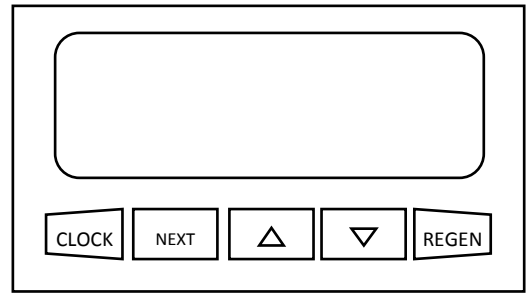
System Setup Programming

General Navigation for Programming Modes



advance to the next step press 

return to the previous step press 

exit programming mode press 







Filter Setup



Step 1: Press and Hold  and  for 3 seconds



if screen in Step 2 does not appear in 5 seconds,
the system is locked, refer to pg 13

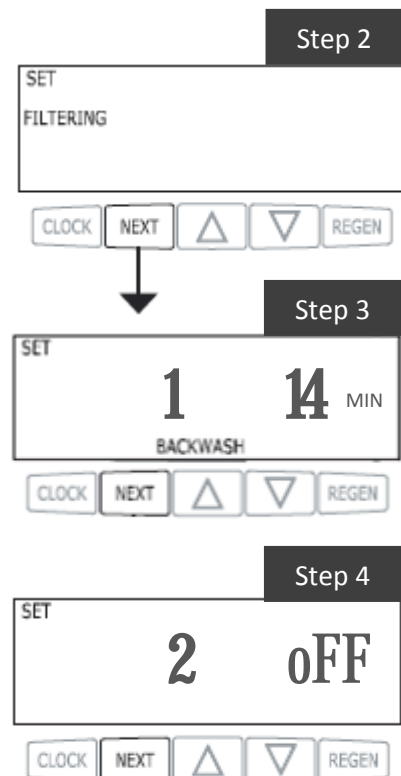
Step 2: Select "FILTERING"  or 

Step 3: 1st Backwash
"14" MINUTES  or 

Step 4: Brine Draw
"oFF"  or 

Step 5: 2nd Backwash
"oFF"  or 

Step 6: Fast Rinse
"2" MINUTES  or 



System Programming Cont'd

Step 7: Refill Amount

"oFF" or

Step 8: Gallon Capacity between Backwash Cycles

Adjust Capacity or

Model	Capacity Setting
POE-5-1252	5,000 Gallons
POE-7-1354	6,000 Gallons
POE-10-1465	12,000 Gallons

Step 9: Backwash Time "NORMAL" or

when the gallon capacity of the system is reached, backwash is delayed to the next scheduled backwash time

Step 10: Auxiliary Relay

"oFF" or

Step 11: Service Call Indicator "Yr 100" or

the digital display will read "CALL" after 1 year indicating the homeowner needs to call for routine service. This programming can be changed at the discretion of the installer.

Step 12: End Programming

Startup Procedures

Upon completing installation and programming follow the startup procedures to prepare the system for operation.

1. The media has been soaking during installation and set up (2 – 3 hours minimum) to absorb water and release air.
2. Before pressurizing the treatment system, place the system into the backwash cycle, press and hold **REGEN** for 3 seconds. The motor will initiate and the display will indicate you are in the backwash position.
3. Unplug the power source to remain in the backwash cycle.
4. In a counter clockwise motion slightly open the inlet bypass valve handle to allow less than 1/3 water flow. Allow system to backwash until the backwash water is clear and free of media fines. Typically 10-15 minutes.
5. Incrementally increase by 1/3 or less flow rate and verify the water is clean and clear before increasing water flow.
6. With the system backwashing take a rubber mallet and repeatedly tap on the exterior of the tank. Tap high and low on the tank, the vibration is intended to free media from clinging to the sides or bottom of the tank.
7. Once full flow is reached and the backwash water is clear allow at least 15 or 20 minutes for a complete backwash.
8. Open the outlet bypass valve handle and all sample ports to purge air in the plumbing system.
9. Restore power to the treatment system.
10. Proceed to the rinse cycle by pressing **REGEN** advance until the display indicates the system is in "rinse".
11. Allow the system to rinse for the programmed 2 minutes and return to the service position.
12. Before drawing a test sample allow the water to run 5-10 minutes to ensure steady state conditions are achieved for an accurate test.
13. With the time of day screen shown press **REGEN** to initiate a delayed regeneration "REGEN TODAY" will appear and the system will initiate regeneration / backwash at the programmed time of day.

Failure to follow startup procedures may result in poor water quality and substandard performance.

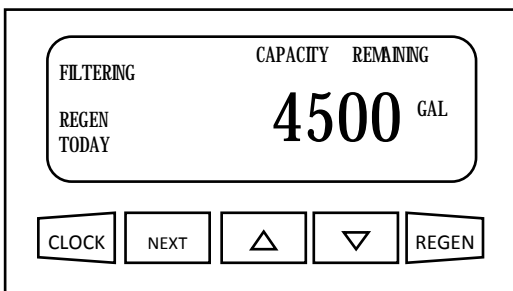
Valve Operation


When the system is operating the following display screens will alternate by pressing

NEXT



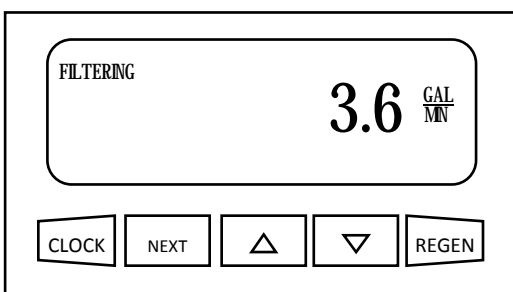
The current time of day display is indicated by the word "TIME" in the upper left corner. In a power outage a battery backup will keep the time until the battery is depleted. All other settings are stored in a nonvolatile memory and do not require re-setting.



Capacity remaining "4500" indicates the number of gallons before a scheduled backwash will occur. Pressing  while at this display screen will decrease remaining capacity in 10 gallon increments.

If water is flowing through the meter "FILTERING" will flash in the display.

If a scheduled backwash at the pre-set time of day will occur within 24 hours "REGEN TODAY" flashes in the display.

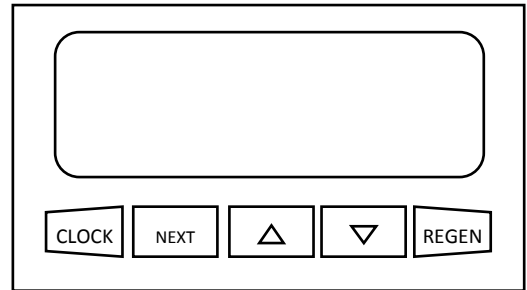


A current flow rate is indicated when treated water is passing through the system. Flow rates are measured in U.S. gallons per minute.

Valve Operation Cont'd

Immediate Manual Regeneration

With the time of day display screen shown. Immediate manual regeneration can be initiated press and hold **REGEN** for 3 seconds. The motor will advance the piston to backwash cycle operation taking approximately 5 seconds.



The display will indicate the valve cycle and the time remaining in the cycle.

To advance the valve cycle manually, press **REGEN**
(The motor will not initiate the next cycle until it pauses)

Delayed Manual Regeneration

With the time of day display screen shown. Delayed manual regeneration can be scheduled, press **REGEN** the system will initiate a regeneration / backwash at the programmed time of day. "REGEN TODAY" will flash indicating the system will regenerate at the next programmed time.

Programming "LOCK OUT"

Access to diagnostics, valve history display and programming modifications can be locked. To either lock or unlock the valve programming the following buttons must be pressed in sequence.



"CALL" Service Indicator

The valve can be programmed to display "CALL" after set amount of time for a routine service reminder. To clear the "CALL" display press and hold **NEXT** **REGEN** for 3 seconds. The valve will display "all wording" and the piston will reset to the service position. To set the "CALL" interval or turn off (refer to System Setup pg 10, Step 11).

Routine Service

Routine service is recommended to ensure the system operates properly and arsenic is reduced to acceptable levels.

Quarterly Service

- Replace pre-filter cartridge
- Test and record treated water arsenic levels

Annual Service

- Test and record water sample from inlet for iron, manganese, pH, arsenic and other potential contaminants
- Test and record treated water sample from outlet for arsenic levels
- Confirm the water meter is registering and operating correctly
- Record the total water usage registered for the household
- Record the total number of backwashes since installation
- Check control valve for proper power supply and battery backup function
- Program the correct time of day for the control valve
- Visually inspect for leaks in the plumbing system, bypass, control valve, and tank
- Verify mechanical and functional operation of bypass
- Disinfect treatment system as specified in installation instructions
- Verify mechanical and functional operation of the system by initiating an immediate regeneration
- Confirm correct valve cycle programming
- Check operation and function of automatic pre-filters or softener


Media Replacement


When the media requires replacement please reference the information below.


- 1) Place the treatment system in a bypass position; advance the valve operation to backwash and depressurize the system; siphon or drain all water from the tank.
- 2) Remove media; wet/dry vacuum equipment, mineral extractor, scoop or pour media out of tank.
- 3) Remove free liquids and containerize media for land disposal.
- 4) Follow local, state and federal regulations for disposal. The Toxicity Characteristic Leaching Procedure (TCLP) and Waste Extraction Test (WET) have demonstrated Bayoxide E33 to be a non-hazardous waste for disposal in a sanitary landfill when applied as directed.

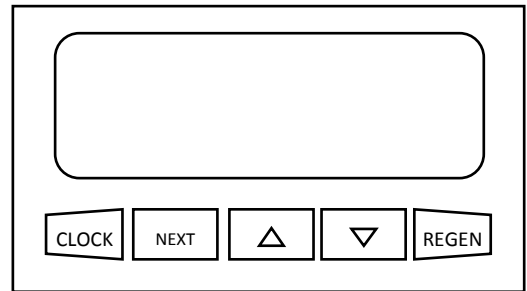
Diagnostics Data

General Navigation for Programming Modes



advance to the next step press 

return to the previous step press 

exit programming mode press 

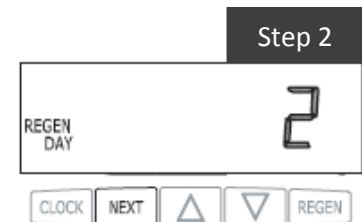


Diagnostics Data

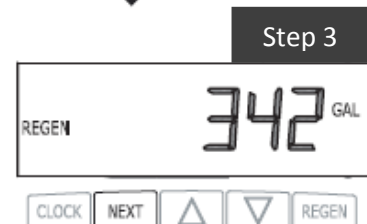
Step 1: Press and Hold   for 3 seconds

if screen in Step 2 does not appear in 5 seconds,
the system is locked, refer to pg 13

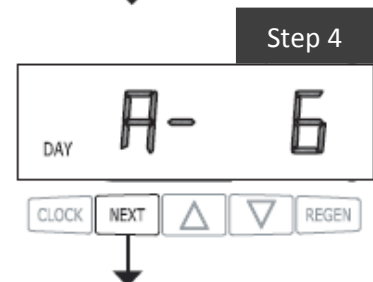
Step 2: Days since last regeneration



Step 3: Water usage since last regeneration



Step 4: Reserve capacity used for last 7 days
-Not Applicable for Medallion System-



Step 5: Water usage for the past 63 days

Select day  or 

display "1" indicates water usage yesterday


display "REGEN" indicates the day regeneration occurred


Diagnostics Cont'd


- Step 6: Peak flow rate in the last seven days
 - Step 7: Total water usage since installation
 - Step 8: Days since valve programming set up
 - Step 9: Total number of regenerations / backwashes initiated since valve programming setup. This includes manual regenerations.
 - Step 10: End Diagnostic Mode
-

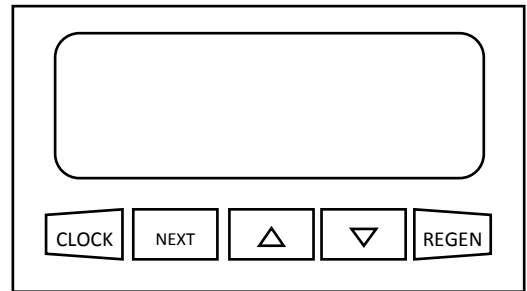
Valve History

General Navigation for Programming Modes

advance to the next step press 

return to the previous step press 

exit programming mode press 



Valve History

Step 1: Press and Hold   for 3 seconds

Then press   momentarily

If screen in Step 2 does not appear in 5 seconds,
the system is locked, refer to pg 13

Step 2: Displays the software version of the valve



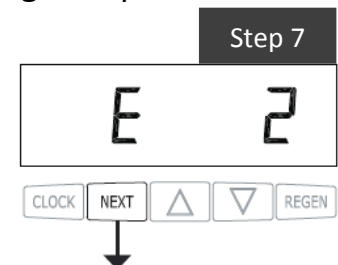
Step 3: Peak flow rate since installation

Step 4: Total water usage since installation

Step 5: Days since valve programming set up

Step 6: Total number of regenerations since valve programming set up

Step 7: Total number of Errors since programming set up



Step 8: End valve history mode

Drive Assembly

Remove the valve cover to access the drive assembly. Disconnect the power source plug (black wire) from the PC board prior to disconnecting the motor or the water meter plugs from the pc board. The power source plug connects to the four-pin jack. The motor plug connects to the two-pin jack on the left-hand side of the PC board. The water meter plug (gray wire) connects to the three-pin jack on the far right hand side of the PC board.

PC Board Replacement

To remove the PC board from the drive bracket, unplug the power, water meter and motor plugs from the PC board. Handle the board by the edges. Lift the middle latch along the top of the drive bracket while pulling outward on the top of the PC board. The drive bracket has two plastic pins that fit into the holes on the lower edge of the PC board. Push towards the valve until it snaps under the middle latch, weave the power and water meter wires into the holders and reconnect the motor, water meter and power plugs. (The PC board can be removed separately from the drive bracket, but is not recommended. Do not attempt to remove the display panel from the PC board.)

Drive Bracket Replacement

The drive bracket must be removed to access the drive cap assembly and pistons or the drive gear cover. It is not necessary to remove the PC board from the drive bracket to remove the drive bracket. To remove the drive bracket start by removing the plugs for the power source and the water meter. Unweave the wires from the side holders. Two tabs on the top of the drive back plate hold the drive bracket in place. Simultaneously lift the two tabs and gently ease the top of the drive bracket forward. The lower edge of the drive bracket has two notches that rest on the drive back plate. Lift up and outward on the drive bracket to disengage the notches.

To reassemble, seat the bottom of the drive bracket so the notches are engaged at the bottom of the drive back plate. Push the top of the drive bracket toward the two latches. The drive bracket may have to be lifted slightly to let the threaded piston rod pass through the hole in

the drive bracket. Maintain slight engaging force on top of the drive bracket while deflecting the bracket slightly to the left by pressing on the side of the upper right corner. This helps the drive gears mesh with the drive cap assembly. The drive bracket is properly seated when it snaps under the latches on the drive back plate. If resistance is felt before latching, then notches are not fully engaged, the piston rod is not in the hole, the wires are jammed between the drive bracket and drive plate, or the gear is not engaging the drive cap assembly.

Drive Gear Replacement

To inspect the drive gears, the drive gear cover needs to be removed. Before trying to remove the gear cover, the drive bracket must be removed from the drive back plate. (Refer to the instructions above regarding removing the drive bracket from the drive back plate. The drive gear cover can be removed from the drive bracket without removing the motor or the PC board.) The drive gear cover is held in place on the drive bracket by three clips. The largest of the three clips is always orientated to the bottom of the drive bracket. With the PC board facing up, push in and down on the large clip on the drive gear cover. Handle the cover and the gears carefully so that the gears do not fall off the pegs in the cover.

Replace broken or damaged drive gears. Do not lubricate any of the gears. Avoid getting any foreign matter on the reflective coating because dirt or oils may interfere with the pulse counting.

The drive gear cover only fits on one way, with the large clip orientated towards the bottom. If all three clips are outside of the gear shroud on the delivery bracket the drive gear cover slips easily into place.

Drive Motor Replacement

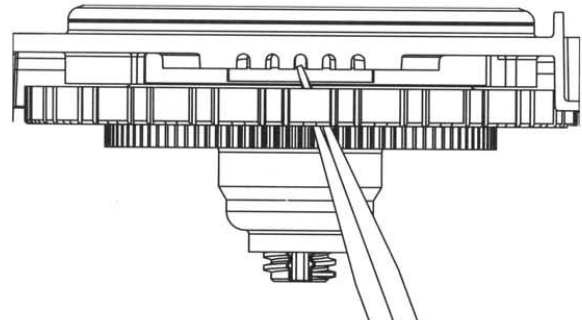
The drive bracket does not need to be removed from the drive plate if the motor needs to be removed. To remove the motor, disconnect the power and motor plugs from the jacks on the PC board. Move the spring clip loop to the right and hold. Rotate the motor at least a ¼ turn in either direction so the wires are vertical (up &

down) before gently pulling on the wire connectors to remove the motor. Pulling directly on the wires without rotating the motor may break the wires off the motor. Replace the motor if necessary. Do not lubricate the motor or the gears. To reinstall the motor, move the spring clip loop to the right and hold. Gently turn the motor while inserting so that the gear on the motor meshes with the gears under the drive gear cover. Release the spring clip loop and continue to rotate the motor until the wires are horizontal and the motor housing engages the small plastic bulge inside the drive bracket motor retainer. Reconnect the motor plug to the two-pronged jack on the lower left side of the PC board. If the motor will not easily engage with the drive gears when reinstalling, lift and slightly rotate the motor before reinserting. Reconnect the power plug.

Replace the valve cover. After completing any valve maintenance, press and hold NEXT and REGEN buttons for 3 seconds or unplug power source jack (black wire) plug back in. This resets the electronics and establishes the service piston position. The display should flash all wording, then flash the software version and then reset the valve to the service position.

Drive Cap Assembly, Regenerant and Main Piston

The drive assembly must be removed to access the drive cap assembly pistons. The drive cap assembly is threaded into the control valve body and seals with an o-ring. To remove the drive cap assembly use the special plastic wrench or insert a ¼" to ½" flat blade screwdriver into one of the slots around the top 2" of the drive cap assembly so it engages the notches molded into the drive back plate around the top 2" of the piston cavity. See Figure 5. The notches are visible through the holes. Lever the screwdriver so the drive cap assembly turns counter clockwise. Once loosened unscrew the drive cap assembly by hand and pull straight out.



The drive cap assembly contains the drive cap, the main drive gear, drive cap, piston rod and various other parts that should not be disassembled in the field. The only replaceable part on the drive cap assembly is the o-ring. Attached to the drive cap assembly is the main piston (downflow or upflow) and if a regenerant is used, a regenerant piston.

The Regenerant piston (the small diameter one behind the main piston) is removed from the main piston by pressing sideways and unsnapping it from its latch. Chemically clean to dilute sodium bisulfate or vinegar, or replace the Regenerant piston if needed. To remove the main downflow or upflow piston fully extend the piston rod and then unsnap the main piston from its latch by pressing on the side with the number. Chemically clean in dilute sodium bisulfate or vinegar, or replace the main piston.

Reattach the main piston to the drive cap assembly. Reattach the Regenerant piston (if needed) to the main piston. Do not lubricate the piston rod, main piston or regenerant piston. Lubricant will adversely affect the piston seals. Reinsert the drive cap assembly and piston into the spacer stack assembly and hand tighten the drive cap assembly. Continue to tighten the drive cap assembly and piston into the spacer stack assembly and hand tighten the drive cap assembly. Continue to tighten the drive cap assembly using a screwdriver as a ratchet until the black o-ring on the spacer stack assembly is no longer visible through the drain port. Excessive force can break the notches molded into the drive back plate. Make certain that the main drive gear

still turns freely. The exact position of the piston is not important as long as the main drive gear turns freely.

Reattach the drive assembly to the control valve and connect all plugs. After completing any valve maintenance, press and hold NEXT and REGEN buttons for 3 seconds or unplug power source jack (black wire) and plug back in. This resets the electronics and establishes the service position.

Spacer Stack Assembly

To access the spacer stack assembly remove the drive assembly, drive cap assembly and piston. The spacer stack assembly can be removed easily without tools by using thumb and forefinger. Inspect the black O-rings and piston seals for wear and damage. Replace the entire stack if necessary. Do not disassemble the stack assembly.

The spacer stack assembly may be chemically cleaned (dilute sodium bisulfate or vinegar) or wiped with a soft cloth.

The spacer stack assembly can be pushed in to the control valve body bore by hand. Since the spacer stack assembly can be compressed it is easier to use a blunt object (5/8" to 1-1/8" in diameter) to push the center of the assembly into the control valve body. The assembly is properly seated when at least four threads are exposed (approximately 5/8"). Do not force the spacer stack assembly. The control valve body bore interior can be lubricated with silicone to allow for easy insertion of the entire stack. Do not use silicone or any other type of lubricant on the piston seals or the piston.

Reattach the drive cap assembly and piston(s) and the drive assembly.

After completing any valve maintenance, press and hold NEXT and REGEN buttons for 3 seconds or unplug power source jack (black wire) and plug back in. This resets the electronics and establishes the service piston position. The display should flash all wording, then flash the

software version and then reset the valve to the service position.

Injector Cap, Screen, Injector Plug and Injector

Unscrew the injector cap and lift off. Loosen cap with the special plastic wrench or pliers if necessary. Attached to the injector cap is a screen. Remove the screen and clean if fouled.

The plug and / or injector can be pried out this a small screwdriver. The plug can be wiped clean. If the plug leaks replace the entire plug. The injector consists of a throat a throat and a nozzle. Chemically clean the injector with vinegar or sodium bisulfate. The holes can be blown out with air. Both pieces have small diameter holes that control the flow rates of water to insure that the proper concentration of regenerant is used. Sharp objects, which can score the plastic, should not be used to clean the injector. Scoring the injector or increasing the diameter of the hole will change the operating parameters of the injector.

Refill Flow Control Assembly or Refill Port Plug

To clean or replace the refill flow control, pull out the elbow-locking clip and then pull straight up on the elbow. Replace the elbow locking clip in the slot so that it is not misplaced. Twist to remove the white flow control retainer. The flow control can be removed by prying upward through the side slots of the retainer with a small flat blade screwdriver.

Chemically clean the flow control or the white flow control retainer using dilute sodium bisulfate or vinegar. Do not use a wire brush. If necessary, replace the flow control, o-ring on the flow control retainer, or the o-ring on the elbow.

Reseat the flow control so the rounded end is visible in the flow control. Reseat the white flow control retainer by pushing the retainer into the elbow until the o-ring seats. Remove locking clip, push down on elbow to reseat and insert locking clip.

Do not use Vaseline, oils, or other unacceptable lubricants on o-rings. A silicone lubricant may be used on the o-ring on the elbow or the white retainer.

Water Meter or Meter Plug

The water meter assembly is connected to the PC board by a wire. If the entire water meter assembly is to be replaced, remove the control valve cover and disconnect the power source and water meter plugs from the PC board. Unlatch the drive assembly and lean it forward. Unthread the water meter wire from the side of the drive assembly and through the drive back plate. To reinstall, rethread the water meter and power plugs.

If no water meter wire is visible, then a plug is installed, not a water meter.

The water meter wire does not need to be removed from the PC board if the water meter is only being inspected and cleaned. To remove the water meter assembly, unscrew the meter cap on the left side of the control valve. Pliers may be used to unscrew the nut if necessary.

With the nut removed, a slot at the top of the water meter is visible. Twist a flat blade screwdriver in the slot between the control valve body and the meter. When the meter is part way out it is easy to remove the water meter from the housing. Once the water meter is removed from the control valve body, gently pull forward on the turbine to remove it from the shaft.

Do not use a wire brush to clean the turbine. Wipe with a clean cloth or chemically clean in dilute sodium bisulfate or vinegar. The turbine can be immersed in the chemical. Do not immerse electronics. If the turbine is scored or damaged or the bearings on the turbine are worn, replace the turbine.

Do not lubricate the turbine shaft. The turbine shaft bearings are pre-lubricated. Do not use Vaseline, oils or other unacceptable lubricants on the o-ring. A silicone lubricant may be use on the black o-ring.

Snap the turbine on the shaft and reinsert the water meter into the side slot. Hand tighten the nut. Do not use a pipe wrench to tighten nut.

Bypass Valve

The parts of the bypass valve are rotor assemblies that are contained under the bypass valve caps. Before working on the rotors, make sure the system is depressurized. Turn the red arrow shaped handles towards the center of the bypass valve and back several times to ensure the rotor is turning freely.

The nuts and caps are designed to be unscrewed or tightened by hand. If necessary pliers can be used to unscrew the nut or cap. Do not use a pipe wrench to tighten or loosen nuts or caps. Do not place screwdriver in slots on caps and/or tap with a hammer. To access the rotor, unscrew the cap and lift the cap, rotor and handle out as one unit. Twisting the unit as you pull it out will help to remove it more easily. There are three o-rings: one under the rotor cap, one under the rotor stem and the rotor seal. Replace worn o-rings. Clean rotor. Reinstall rotor.

When installing the red arrow handles be sure that:

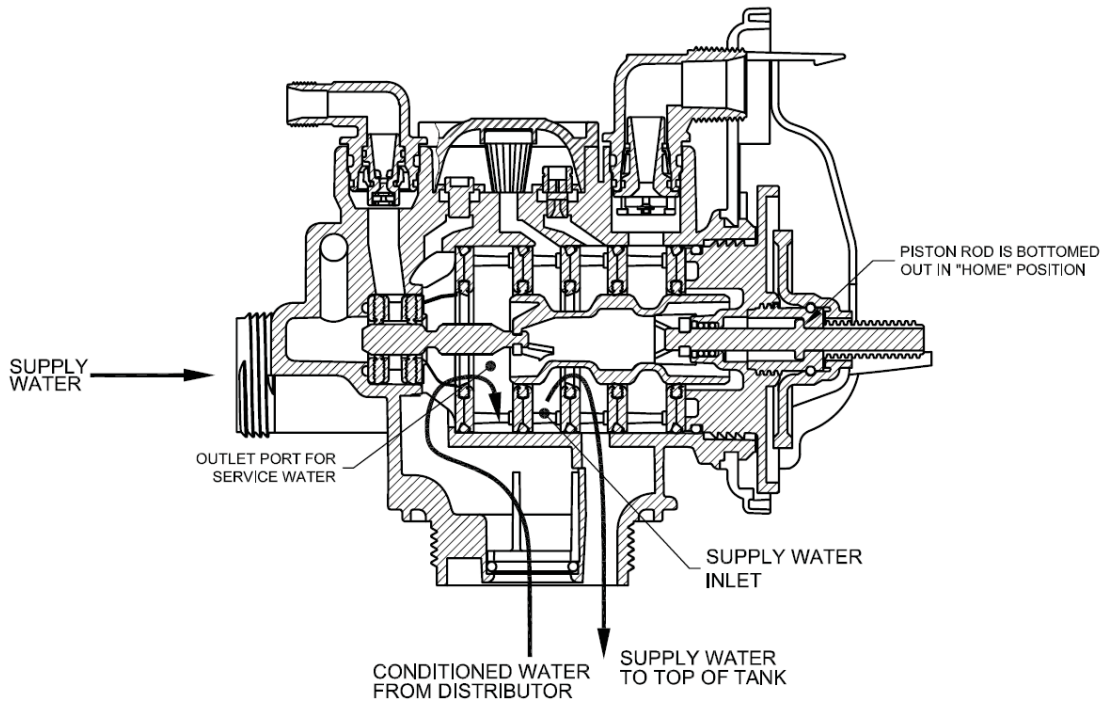
1. The handle pointers are lined up with the control valve body arrows, and the rotor seal o-ring and retainer on both rotors face to the right when being viewed from the front of the control valve; or
2. Arrows point toward each other in the bypass position.

Since the handles can be pulled off, they could be accidentally reinstalled 180° from their correct orientation. To install the red arrow handles correctly, keep the handles pointed in the same direction as the arrows engraved on the control valve body while tightening the bypass valve caps.

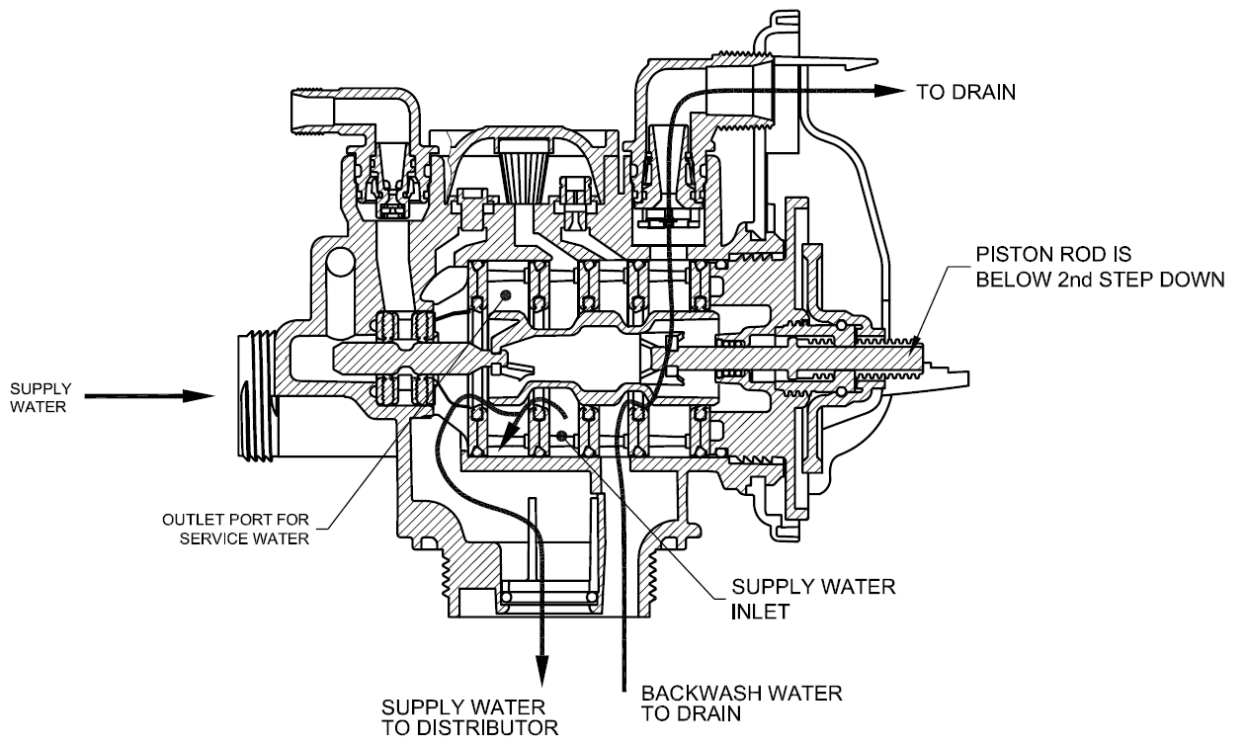
After completing any valve maintenance, press and hold NEXT and REGEN buttons for 3 seconds or unplug power source jack (black wire) and plug back in. This resets the electronics and establishes the service piston position.

Flow Diagrams

Service Flow Diagram

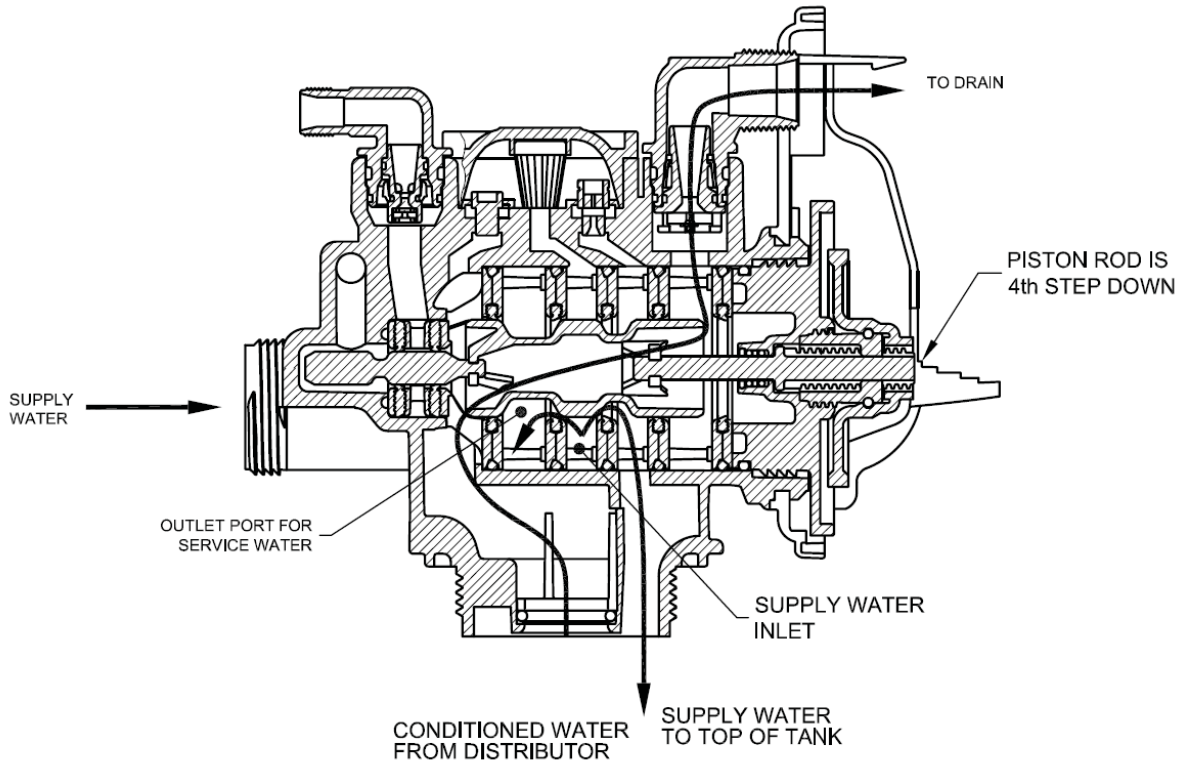


Backwash Flow Diagram



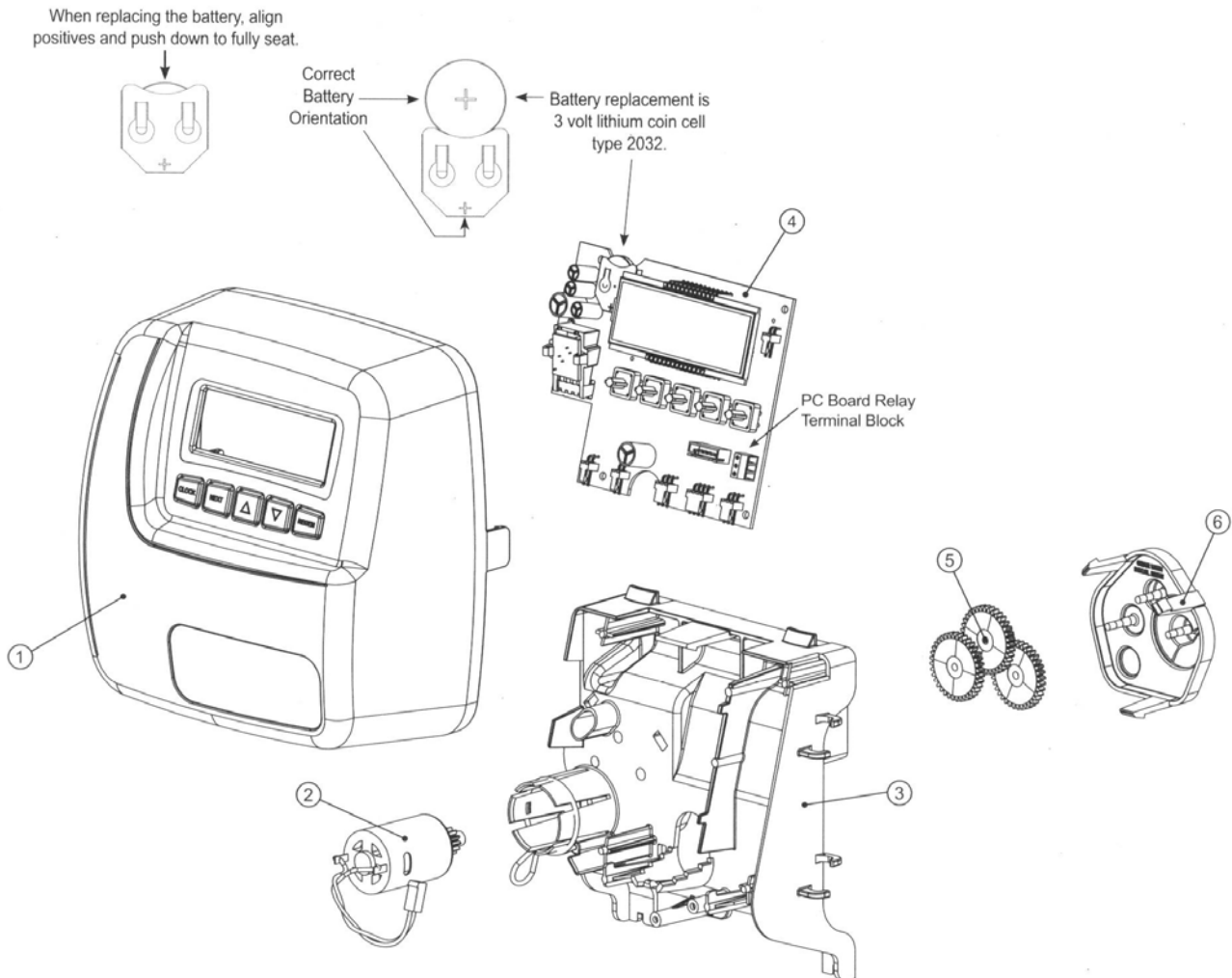
Flow Diagrams Cont'd

Fast Rinse Flow Diagram



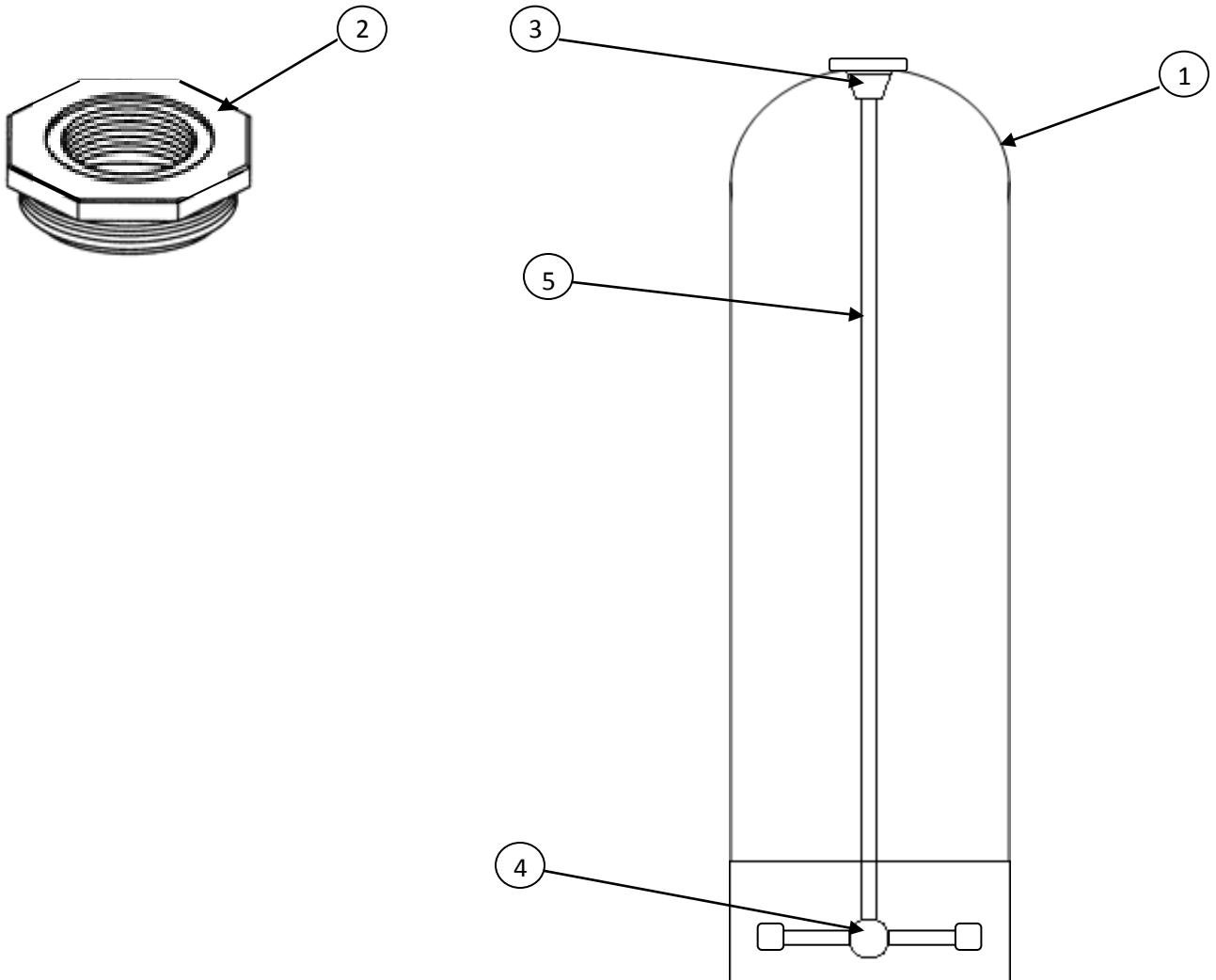
Medallion Front Cover Assembly

Item #	Part #	Description	Quantity
1	V3435-01	WS1CH Front Cover Assembly	1
2	V3107-01	WS1 Motor	1
3	V3106-01	WS1 Drive Bracket & Spring Clip	1
4	V3558CH	WS1 PC Board	1
5	V3110	WS1 Drive Gear 12x36	3
6	V3109	WS1 Drive Gear Cover	1
	V3186	WS1 AC Adapter 110V-12V	1
	-	Replacement Battery, 3 volt lithium coin cell type 2032	1



Medallion Tank

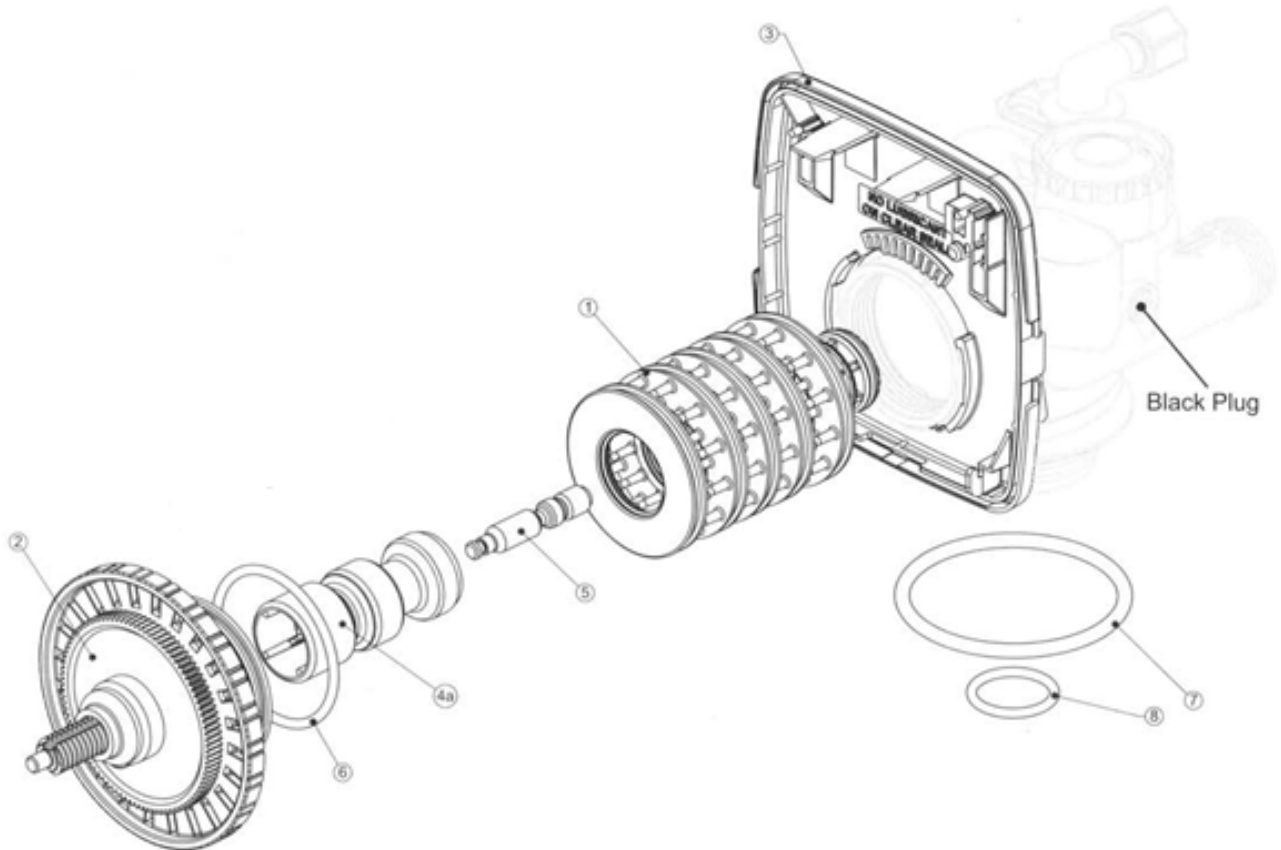
Item #	Part #	Description	Quantity
1	TV15075	12" x 52" Poly Glass Vessel, POE-5-1252	1
	TV15100	13" x 54" Poly Glass Vessel, POE-7-1354	1
	TV15125	14" x 65" Poly Glass Vessel, POE-10-1465	1
2	TV14205	2 1/2" x 4" Tank Adapter (POE-7-1354 & POE-10-1465 models only)	1
	-	Chamfer Seal O-Ring: Clack, Wave Cyber, Park Tanks 3-3/4 Nominal I.D., 3/16 Nominal cross section, 4-1/8 Nominal O.D. (-343, 3.725±.028 I.D., 0.210±.005 Cross Section)	1
	-	Chamfer Seal O-Ring: Structural Tanks 3-3/4 Nominal I.D., 1/8 Nominal Cross Section, 4.0 Nominal O.D. (-240, 3.734 ± .028 I.D., 0.139 ± .004 Cross Section)	1
3	TV14300	Upper Basket	1
	TV14305	Lower Distributor Basket 1.05", POE-5-1252	1
4	IA14010	Hub & Lateral Assembly w/ Adapter, POE-7-1354 & POE-10-1465	1
5	PP10200	Riser Tube 1.05" X 65"	1



Medallion Drive Assembly

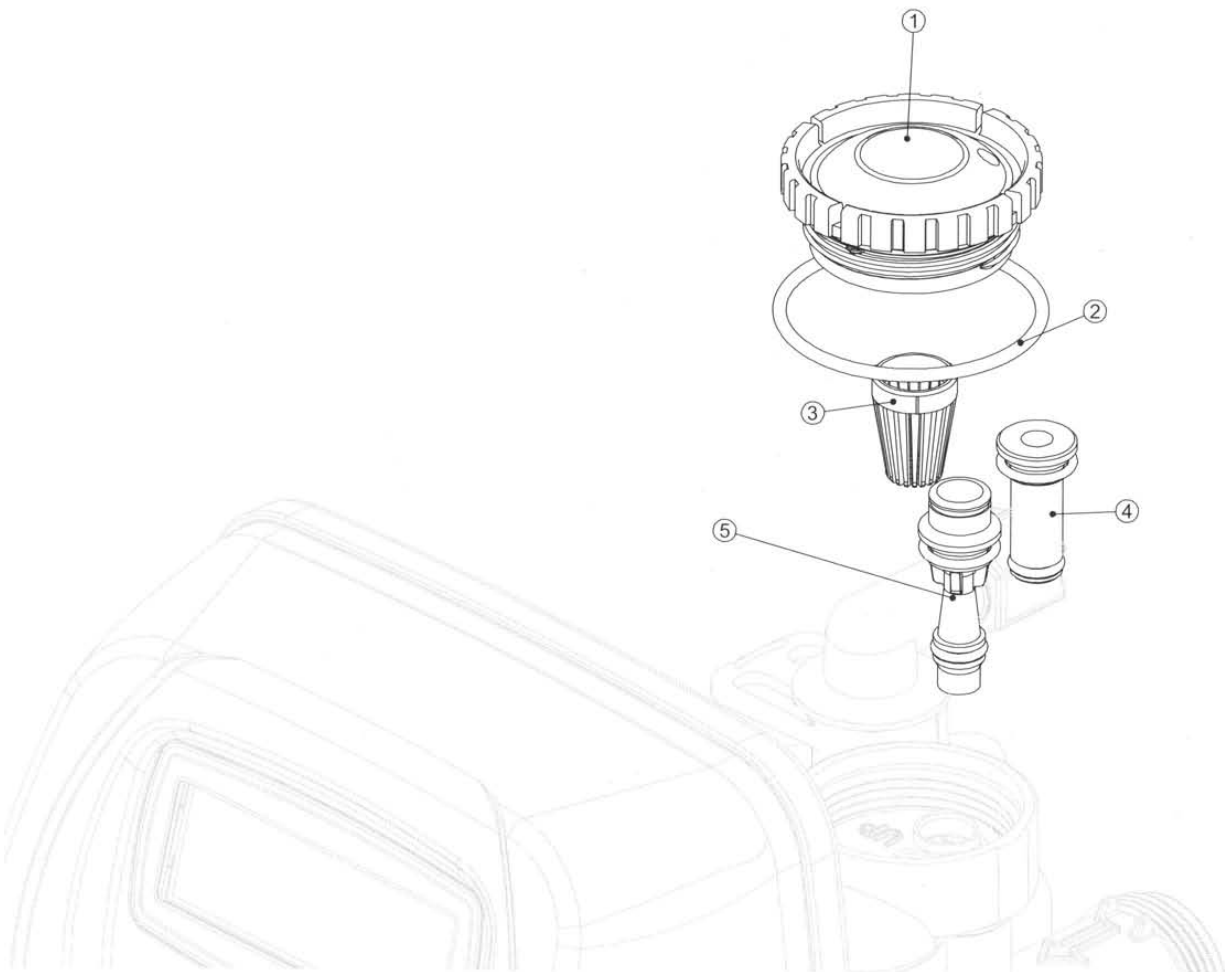
Medallion Drive Assembly, Downflow Piston, Regenerant Piston and Spacer Stack Assembly

Item #	Part #	Description	Quantity
1	V3005	WS1 Spacer Stack Assembly	1
2	V3004	Drive Cap Assembly	1
3	V3178	WS1 Drive Back Plate	1
4	V3011	WS1 Piston Downflow Assembly	1
5	V3174	WS1 Regenerant Piston	1
6	V3135	O-Ring 228	1
7	V3180	O-Ring 337	1
8	V3105	O-Ring 215, Distributor	1
	V3001	WS1 Valve Body Assembly Downflow	1



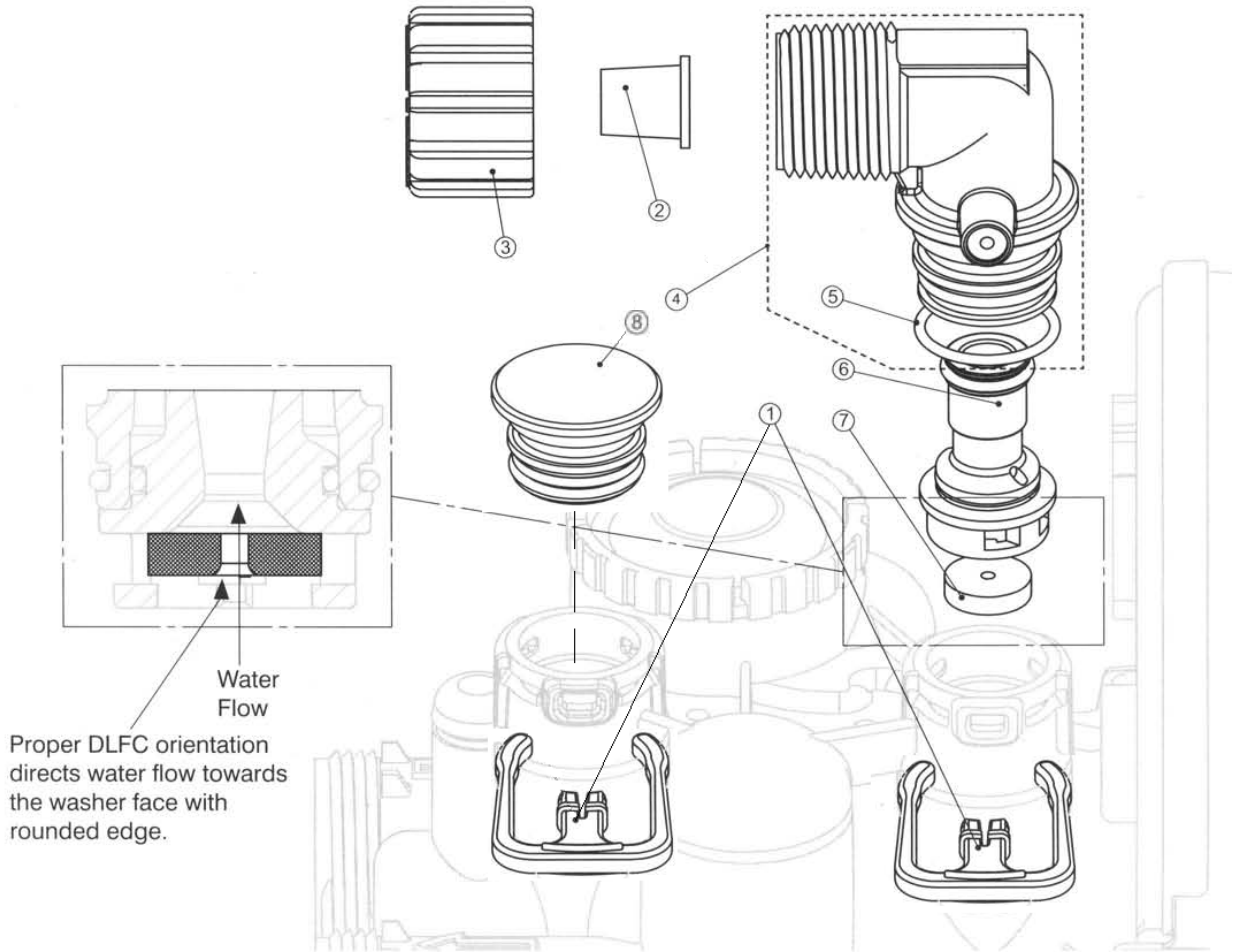
Medallion Cap

Item #	Part #	Description	Quantity
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	V3010-1E	WS1 Injector Assembly E White	1



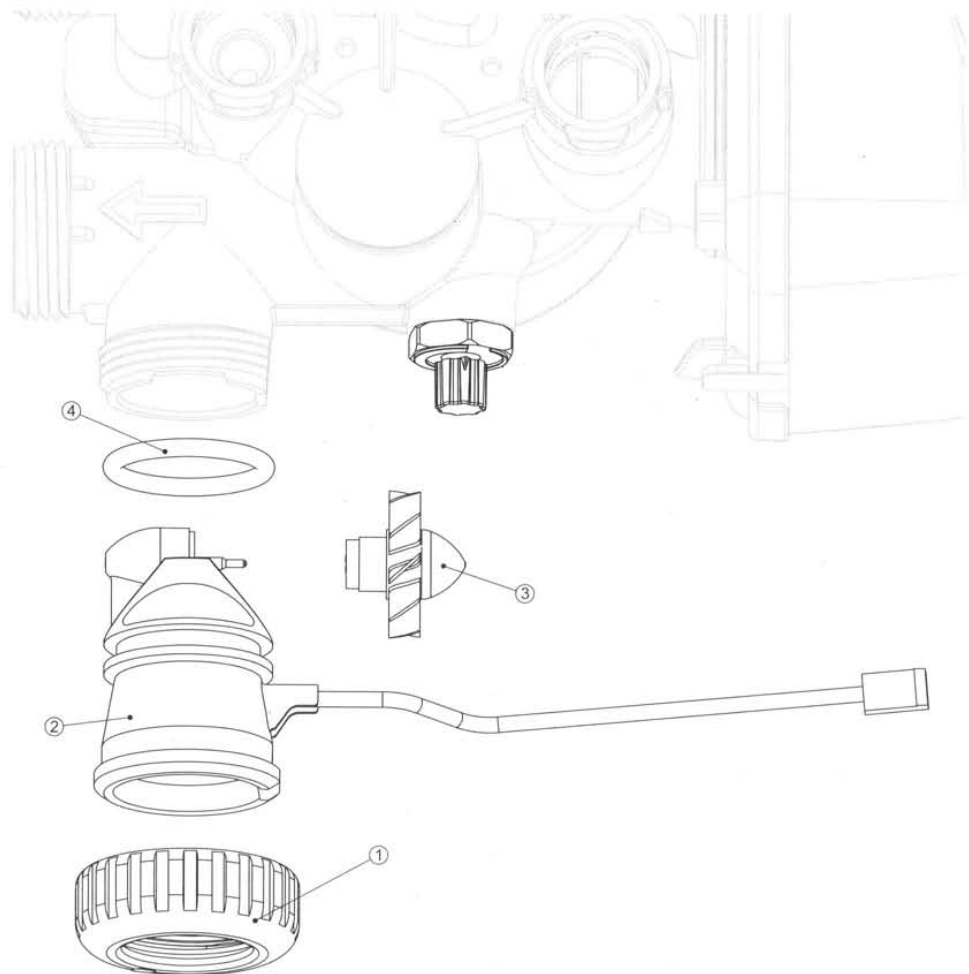
Medallion Drain Connections

Item #	Part #	Description	Quantity
1	H4615	Elbow Locking Clip	2
2	PKP10TS8	Polytube Insert 5/8"	1
3	V3192	Nut 3/4" Drain Elbow	1
4,5,6	V3331	WS1 Drain Elbow and Retainer Assembly, 3/4" MNPT	1
7	V3162-053	5.3 GPM, DLFC for POE-5	1
	V3162-075	7.5 GPM, DLFC for POE-7	1
	V3162-100	10.0 GPM, DLFC for POE-10	1
8	V3195-01	WS1 Refill Port Plug Assembly	1



Medallion Meter

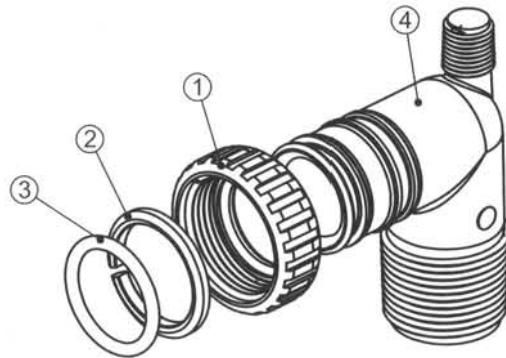
Item #	Part #	Description	Quantity
1	V3151	WS1 Nut 1" QC	1
2,4	V3003	WS1 Meter Assembly with O-Ring 215	1
3	V3118-01	WS1 Turbine Assembly	1



Medallion Plumbing Adapters

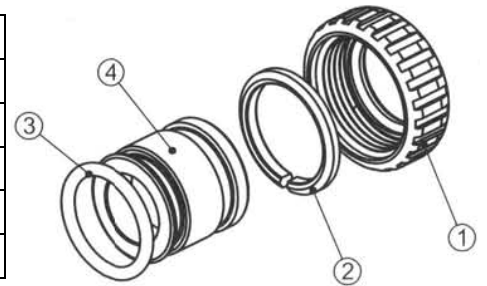
Standard - 1" PVC Male NPT, 1/4" MNPT Elbow Assembly

Item #	Part #	Description	Quantity
1-4	V3007	(2) 1" PVC Male NPT Elbow, 1/4" MNPT Complete Assembly	1
1	V3151	WS1 Nut 1" QC	2
2	V3150	WS1 Split Ring	2
3	V3105	O-Ring 215	2
4	V3149	WS1 Fitting 1" PVC Male NPT Elbow, 1/4" MNPT	2



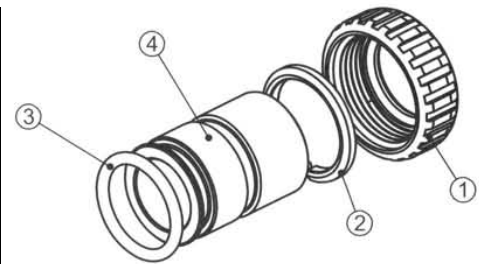
Optional - 3/4" Brass Sweat Assembly

Item #	Part #	Description	Quantity
1-4	V3007-03	(2) 3/4" Brass Sweat Assembly	1
1	V3151	WS1 Nut 1" QC	2
2	V3150	WS1 Split Ring	2
3	V3105	O-Ring 215	2
4	V3188-01	WS1, 3/4" Brass Sweat Assembly	2



Optional - 1" Brass Sweat Assembly

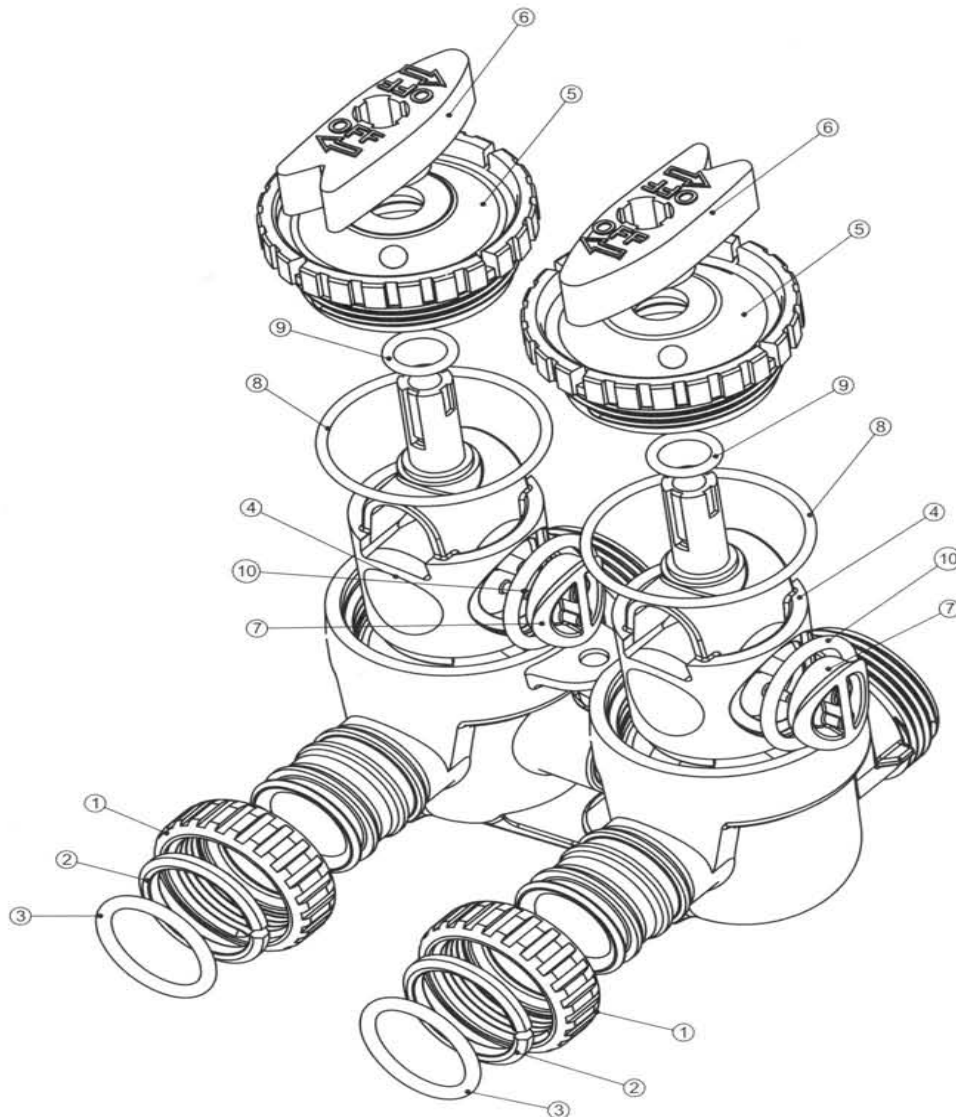
Item #	Part #	Description	Quantity
1-4	V3007-02	(2) 1" Brass Sweat Assembly	1
1	V3151	WS1 Nut 1" QC	2
2	V3150	WS1 Split Ring	2
3	V3105	O-Ring 215	2
4	V3188	WS1, 1" Brass Sweat Assembly	2



Additional plumbing adapters are available upon request.

Medallion Bypass Valve

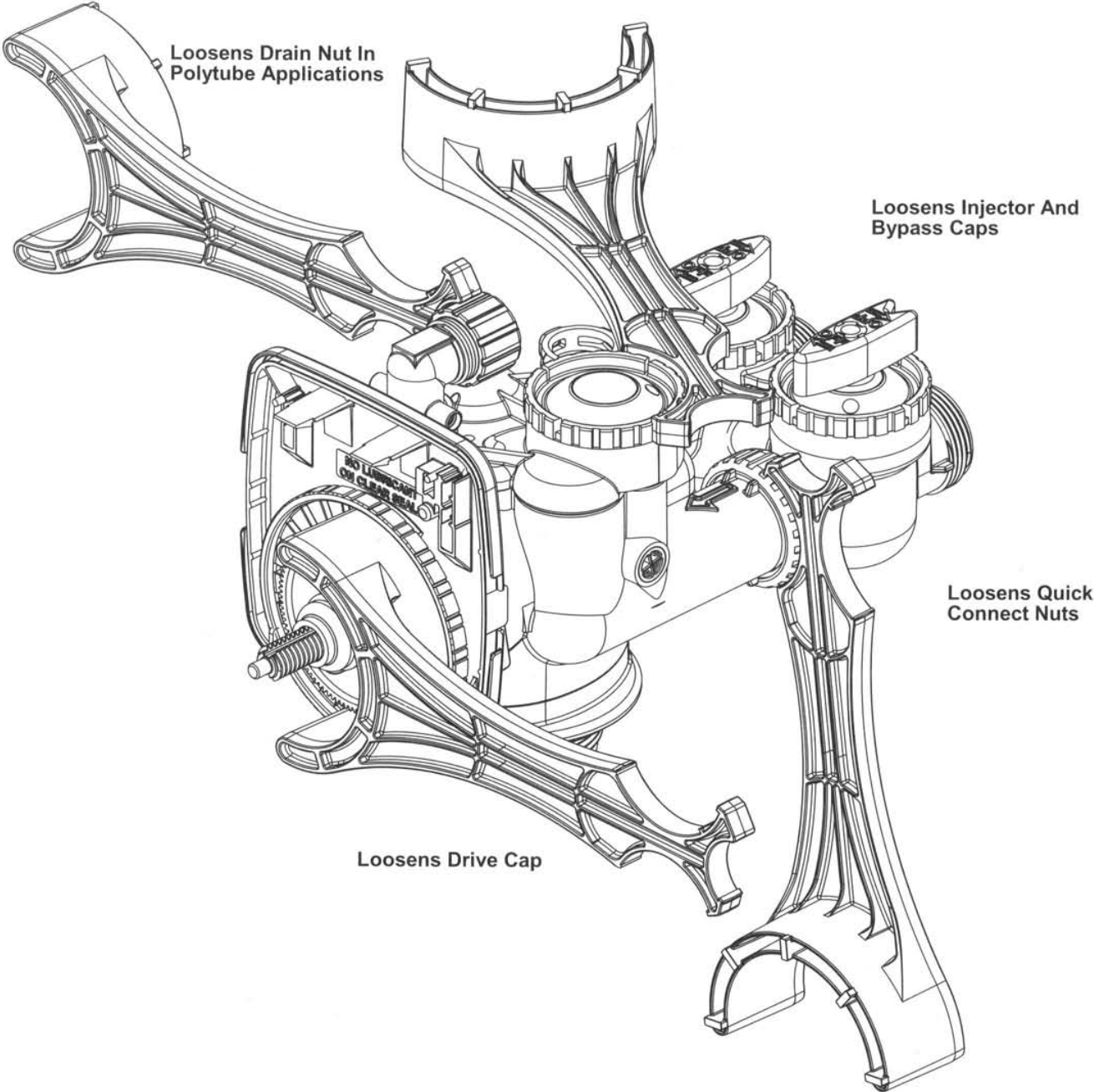
Item #	Part #	Description	Quantity
1-10	V3006	WS1 Bypass Assembly Complete	1
1	V3151	WS1 Nut 1" Quick Connect	2
2	V3150	WS1 Split Ring	2
3	V3105	O-Ring 215	2
4	V3145	WS1 Bypass 1" Rotor	2
5	V3146	WS1 Bypass Cap	2
6	V3147	WS1 Bypass Handle	2
7	V3148	WS1 Bypass Rotor Seal Retainer	2
8	V3152	O-Ring 135	2
9	V3155	O-Ring 112	2
10	V3156	O-Ring 214	2



Medallion Wrench

(Part # V3193-01)

Although no special 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.



Troubleshooting Procedures

Problem	Possible Cause	Solution
1. Timer does not display time of day.	a. Power adapter unplugged	a. Connect power
	b. No electric power at outlet	b. Repair outlet or use working outlet
	c. Defective power adapter	c. Replace Power Adapter
	d. Defective PC board	d. Replace PC board
2. Timer does not display correct time of day.	a. Switch controls outlet	a. Use uninterrupted outlet
	b. Power outage	b. Reset time of day. Battery may be depleted. See Front Cover Assembly.
	c. Defective PC board	c. Replace PC board
3. Display does not indicate water is flowing. Filtering display should blink when water flows through meter.	a. Bypass valve in bypass position	a. Put bypass valve in service position
	b. Meter connection disconnected	b. Connect meter to PC board
	c. Restricted. Stalled meter turbine	c. Remove meter and check for rotation and foreign material
	d. Defective meter	d. Replace meter
	e. Defective PC board	e. Replace PC board
	f. Meter not installed	f. Install meter
	g. PC board incorrectly programmed	g. Refer to programming instructions
4. Control valve cycles at wrong time of day.	a. Power outage	a. Reset time of day. Battery may be depleted. See Front Cover Assembly
	b. Time of day not set correctly	b. Reset to correct time of day
	c. Time of regeneration incorrect	c. Reset regeneration time
	d. Control valve set "on 0" (immediate regeneration)	d. Check control valve set-up procedure regeneration time option
	e. Control valve set "NORMAL + on 0" (delay + immediate regeneration)	e. Check control valve set-up procedure regeneration time option
5. Control valve stalled in regeneration.	a. Motor not operating	a. Replace motor
	b. No electric power at outlet	b. Repair outlet or use working outlet
	c. Defective power adapter	c. Replace power adapter
	d. Defective PC board	d. Replace PC board
	e. Broken drive gear or drive cap assembly	e. Replace drive gear assembly
	f. Broken piston retainer	f. Replace drive cap assembly
	g. Broken main piston	g. Replace main piston
6. Control valve does not regenerate automatically when REGEN is depressed and held.	a. Power adapter unplugged	a. Connect power adapter
	b. No electric power at outlet	b. Repair outlet or use working outlet
	c. Broken drive gear or drive cap assembly	c. Replace drive gear or drive cap assembly
	d. Defective PC board	d. Replace PC board
7. Control valve does not regenerate automatically but does when the REGEN button is depressed and held.	a. Bypass valve in bypass position	a. Put bypass in service position
	b. Meter connection disconnected	b. Connect meter to PC board
	c. Restricted/ stalled meter turbine	c. Remove meter and check for rotation and foreign material
	d. Defective meter	d. Replace meter
	e. Defective PC board	e. Replace PC board
	f. Set-up error	f. Check control valve set-up procedure

Problem	Possible Cause	Solution
8. Time of day flashes on and off.	a. Power Outage	a. Reset time of day. Battery may be depleted. See Front Cover Assembly
9. Error Codes E1 – Unable to recognize start of regeneration E2 – Unexpected stall E3 – Motor ran to long timed our trying to reach next cycle position If other error codes display contact the factory	a. Control valve has just been serviced	a. Unplug power source jack form the printed circuit board (black wire) and plug back in or press and hold NEXT and REGEN buttons for 3 seconds
	b. Foreign matter is lodged in control valve	b. Check piston and spacer stack assembly for foreign material
	c. High drive forces on piston	c. Replace piston and spacer stack
	d. Control valve not in home position	d. Unplug power source jack form the printed circuit board (black wire) and plug back in or press and hold NEXT and REGEN buttons for 3 seconds
	e. Motor not inserted fully to engage piston, motor wires broken or disconnected, motor failure	e. Check motor and wiring, replace motor if necessary
	f. Drive gear label dirty or damaged, missing or broken gear	f. Replace or clean gear drive
	g. Drive bracket correctly aligned to back plate	g. Reseat drive bracket properly
	h. PC board is damaged or defective	h. Replace PC board
	i. PC board incorrectly aligned to drive bracket	i. Ensure PC board is correctly snapped on to drive bracket
10. Water leak around tank adapter	a. Improper O-Ring for the tank	a. Replace with correct o-ring
11. Arsenic not reduced with system	a. Bypass valve open or faulty	a. Close bypass valve or replace
	b. Untreated water sample	b. Sample water directly after system
	c. Internal leak in the system	c. Replace riser tube o-ring c. Replace piston and spacer stack
	d. Insufficient media	d. Improper system size and see #12
	e. Water parameters outside of operating guidelines	e. See operating guidelines pg 3 for pre-treatment requirements
12. Low level of media	a. Backwash control missing	a. Install proper backwash control
	b. Faulty distributor assembly	b. Upper basket, riser tube, lower distributor assembly cracked or missing
13. Continuous flow to the drain	a. Piston assembly failure	a. Replace piston assembly or remove debris
	b. Motor failure	b. Replace motor
	c. Circuit board failure	c. Replace circuit board
	d. Power outage	d. Restore power and advance to service position
14. Pressure loss	a. Iron / Manganese/ Sulfide/ Organic has fouled media	b. Replace Media and install pre-filter for fouling contaminants
	b. Sediment or sand build up in media	b. Replace Media and install sediment pre-filter
	c. Media compacted from differential pressure	c. Replace media and repair control valve to properly operate

