

Owner's Manual



**Model:
Impression Series**

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Water Test

Hardness	_____	gpg
Iron	_____	ppm
pH	_____	number
Nitrates*	_____	ppm
Manganese	_____	ppm
Sulphur	_____	yes/no
Total Dissolved Solids (TDS)	_____	

* Over 10 ppm (expressed as Nitrogen) may be harmful for human consumption. AWP water conditioners do not remove nitrates or coliform bacteria, this requires specialized equipment.

Your VIQUA Impression series water conditioners and backwashing filters are precision built high quality products. These units will deliver conditioned water for many years to come, when installed and operated properly. Please study this manual carefully and understand the cautions and notes before installing. This manual should be kept for future reference. If you have any questions regarding your water conditioner, contact your local dealer or VIQUA.

Section 1 General Information

1.1 Pre-installation Instructions for Dealers

The manufacturer has preset the water treatment unit's sequence of cycles, cycle times, salt dose, exchange capacity and salt dose refill time.

The dealer should read this page and guide the installer regarding hardness, day override, and time of regeneration, before installation.

For the installer, the following must be used:

- Program Installer Settings, Hardness, Day Override (preset to 12 days), and Time of Regeneration (preset to 2 a.m., refer to [Section 3.2](#))
- Read Normal Operating Displays
- Set Time of Day
- Read Power Loss and Error Display

For the homeowner, refer to [Section 3.2](#).

1.1.1 Impression Series Water Softeners

During operation, the normal user display is time of day and gallons per minute.

Days Remaining is an optional display but is not normally used. Each of these can be viewed by pressing **NEXT** to scroll through them. When stepping through any programming, if there aren't any buttons pressed within 5 minutes, the display returns to a normal user display. Any changes made prior to the 5 minute time out are incorporated.

To quickly exit any Programming, Installer Settings, and so on, press **SET CLOCK**. Any changes made prior to the exit are incorporated. If desired, two regenerations within 24 hours are possible with a return to the preset program. To do a double regeneration:

1. Press the **REGEN** button once. "**REGEN TODAY**" will flash on the display.
2. Press and hold the **REGEN** button for three seconds until a regeneration begins.

Once the valve has completed the immediate regeneration, the valve will regenerate one more time at the preset.

1.2 Bypass Valve

The bypass valve is typically used to isolate the control valve from the plumbing system's water pressure in order to perform control valve repairs or maintenance. The 1" full flow bypass valve incorporates four positions including a diagnostic position that allows a service technician to have pressure to test a system while providing untreated bypass water to the building. Be sure to install bypass valve onto main control valve, before beginning plumbing, or make provisions in the plumbing system for a bypass.

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

The bypass consists of two interchangeable plug valves that are operated independently by red arrow shaped handles. The handles identify the direction of flow. The plug valves enable the bypass valve to operate in four positions.

- a. Normal Operation Position:** The inlet and outlet handles point in the direction of flow indicated by the engraved arrows on the control valve. Water flows through the control valve for normal operation of a water softener or filter. During the regeneration cycle this position provides regeneration water to the unit, while also providing untreated water to the distribution system. Refer to [Figure 1](#).
- b. Bypass Position:** The inlet and outlet handles point to the center of the bypass. The system is isolated from the water pressure in the plumbing system. Untreated water is supplied to the building. Refer to [Figure 2](#).
- c. Diagnostic Position:** The inlet handle points toward the control valve and the outlet handle points to the center of bypass valve. Untreated supply water is allowed to flow to the system and to the building, while not allowing water to exit from the. Refer to [Figure 3](#). This allows the service technician to draw brine and perform other tests without the test water going to the building.

Note: *The system must be rinsed before returning the bypass valve to the normal position.*

General Information

d. **Shut Off Position:** The inlet handle points to the center of the bypass valve and the outlet handle points away from the control valve. The water is shut off to the building. The water treatment system will depressurize upon opening a tap in the building. A negative pressure in the building combined with the softener being in regeneration could cause a siphoning of brine into the building. If water is available on the outlet side of the softener or filter it is an indication of water bypassing the system. Refer to [Figure 4](#). (i.e. a plumbing cross-connection somewhere in the building).

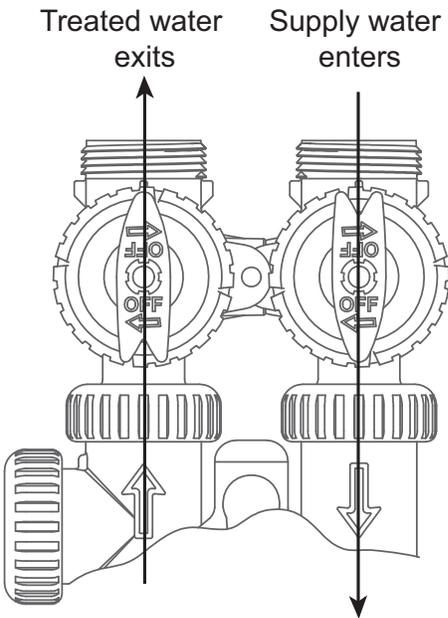


Figure 1 Normal Operation Position

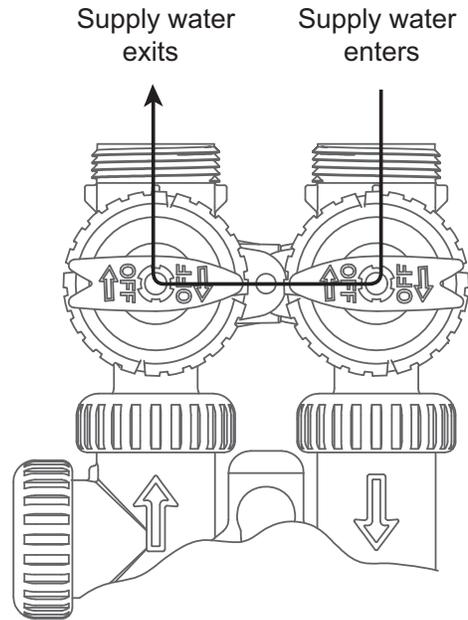


Figure 2 Bypass Position

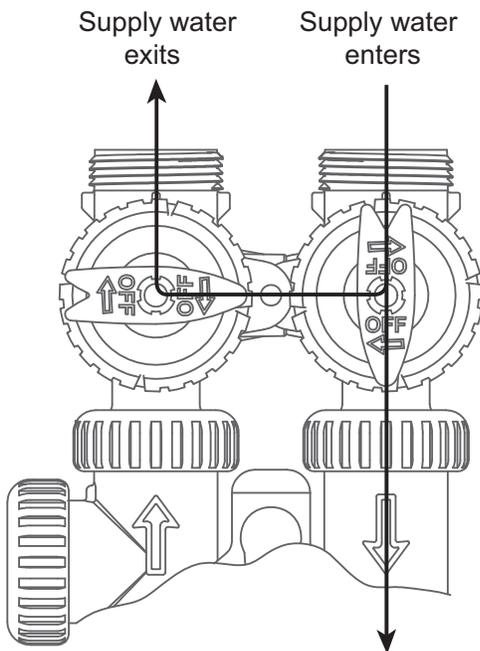


Figure 3 Diagnostic Position

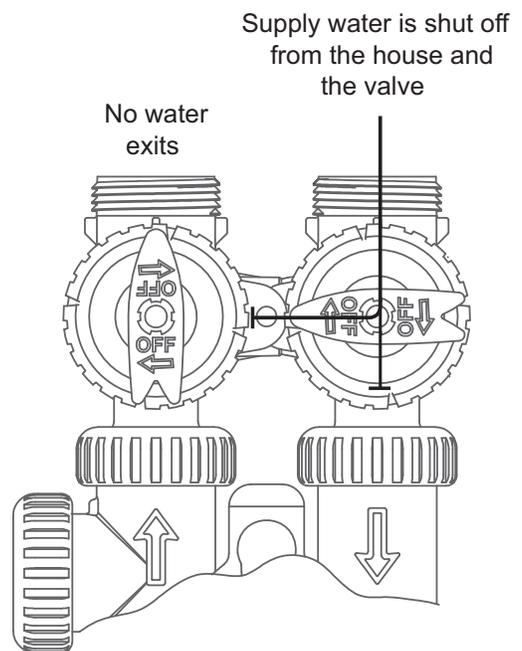


Figure 4 Shut Off Position

Section 2 Installation

⚠ WARNING

- Changes or modifications made to this system without the consent of the manufacturer could render the system unsafe for operation and may void the manufacturer's warranty.
- The control valve, fittings and/or bypass are designed to accommodate minor plumbing misalignments. There is a small amount of "give" to properly connect the piping but the water softener is not designed to support the weight of the plumbing.
- **DO NOT** use vaseline, oils, other hydrocarbon lubricants or spray silicone anywhere. A silicone lubricant may be used on black O-rings, but is not necessary. Avoid any type of lubricants, including silicone, on red or clear lip seals.
- **DO NOT** use pipe dope or other sealants on threads. Teflon[®] tape must be used on the threads of the 1" NPT inlet and outlet, the brine line connection at the control valve, and on the threads for the drain line connection. Teflon[®] tape is not used on the nut connections or caps because O-ring seals are used. The nuts and caps are designed to be unscrewed or tightened by hand or with the special plastic Service Wrench, #CV3193-01. If necessary pliers can be used to unscrew the nut or cap.
- **DO NOT** use a pipe wrench to tighten nuts or caps.
- **DO NOT** place screwdriver in slots on caps and/or tap with a hammer.

Site Requirements:

- Water pressure - 25-100 psi
- Water temperature - 0.5-37.7° C (33-100° F)
- Electrical - 115/120V, 60Hz uninterrupted outlet locations only
- The tank should be on a firm level surface
- Current draw is 0.5 amperes
- The plug-in transformer is for dry

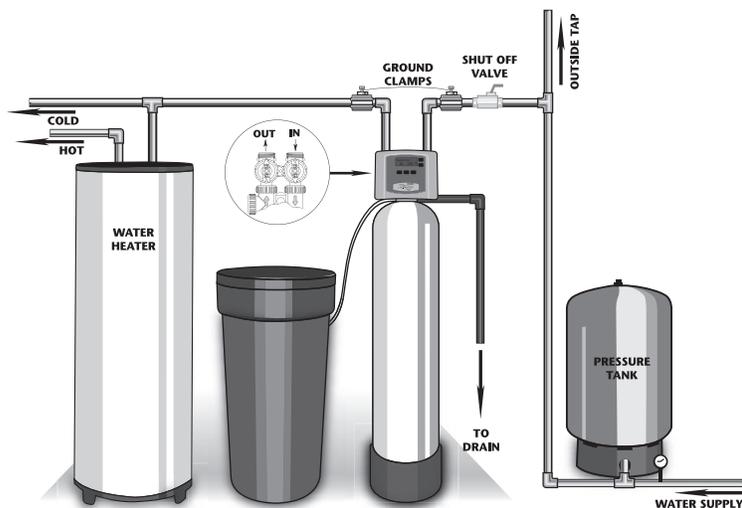


Figure 5 Well Water Installation

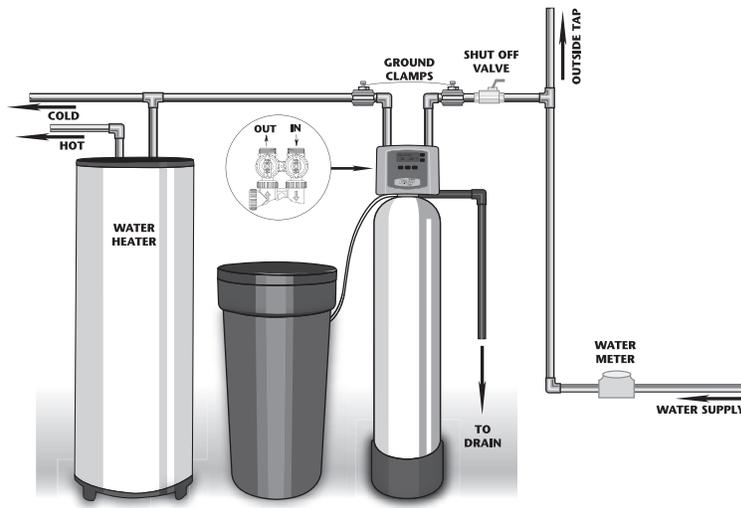


Figure 6 Municipal Water Installation

1. The distance between the drain and the water conditioner should be as short as possible.
2. As salt must be periodically added to the brine tank, it should be located where it is easily accessible.
3. Do not install any water conditioner with less than 10 feet of piping between its outlet and the inlet of a water heater.
4. Do not locate unit where it or its connections (including the drain and overflow lines) will ever be subjected to room temperatures under 0.5° C (33° F).

Inlet/Outlet Plumbing: Be sure to install Bypass Valve onto main control valve before beginning plumbing. Make provisions to bypass outside hydrant and cold hard water lines at this time. Install an inlet shutoff valve and plumb to the unit's bypass valve inlet located at the right rear as you face the unit. There are a variety of installation fittings available. They are listed in [Section 5.11](#). When assembling the installation fitting package (inlet and outlet), connect the fitting to the plumbing system first and then attach the nut, split ring, and O-ring. Heat from soldering or solvent cements may damage the nut, split ring or O-ring. Solder joints should be cool and solvent cements should be set before installing the nut, split ring, and O-ring. Avoid getting solder flux, primer, and solvent cement on any part of the O-rings, split rings, bypass valve or control valve. If the building's electrical system is grounded to the plumbing, install a copper grounding strap from the inlet to the outlet pipe. Plumbing must be done in accordance with all applicable local codes.

Installation

6. **Drain Line:** Make sure that the drain handles the backwash rate of the system. Solder joints near the drain must be done prior to connecting the drain line flow control fitting. Leave at least 6" between the drain line flow control fitting and solder joints. Failure to do this could cause interior damage to the flow control. Install a 1/2" I.D. flexible plastic tube to the Drain Line Assembly or discard the tubing nut and use the 3/4" NPT fitting for rigid pipe (recommended). If the backwash rate is greater than 7 gpm, use a 3/4" drain line. Where the drain line is elevated but empties into a drain below the level of the control valve, form a 7" loop at the discharge end of the line so that the bottom of the loop is level with the drain connection on the control valve. This will provide an adequate anti-siphon trap. Piping the drain line overhead <10 ft is normally not a problem. Be sure adequate pressure is available (40-60 psi is recommended). Where the drain empties into an overhead sewer line, a sink-type trap must be used. Run drain tube to its discharge point in accordance with plumbing codes. Pay special attention to codes for air gaps and anti-siphon devices.

Note: Drain line nut will not be supplied for units having a backwash rate greater than 7 gpm.

7. **Brine Tank Connection:** Install the 3/8" O.D. polyethylene tube from the Refill Elbow to the Brine Valve in the brine tank.
8. **Overflow Line Connection:** An overflow drain line is recommended where a brine overflow could damage furnishings or the building structure. Your softener is equipped with a brine tank safety float which greatly reduces the chance of an accidental brine overflow. In the event of a malfunction, however, an overflow line connection will direct the "overflow" to the drain instead of spilling on the floor where it could cause considerable damage. This fitting is an elbow on the side of the brine tank. Attach a length of 1/2" I.D. tubing to fitting and run to drain. Do not elevate overflow line higher than 3" below bottom of overflow fitting. Do not "tie" this tube into the drain line of the control valve. Overflow line must be a direct, separate line from overflow fitting to drain, sewer, or tub. Allow an air gap as per the drain line instructions.

CAUTION



- Never insert a drain line into a drain, sewer line, or trap.
- Always allow an air gap between the drain line and the wastewater to prevent the possibility of sewage being back-siphoned into the conditioner.

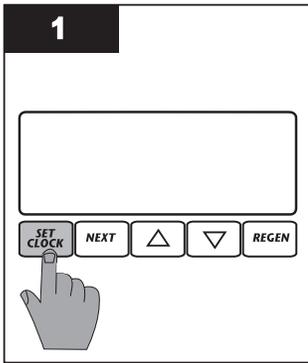
Section 3 Operation

3.1 Programming Procedures

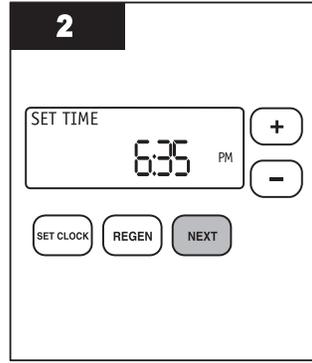
3.1.1 Set Time of Day

Time of day should only need to be set after extended power outages or when daylight saving time begins or ends. If an extended power outage occurs, the time of day will flash on and off indicating that the time should be reset.

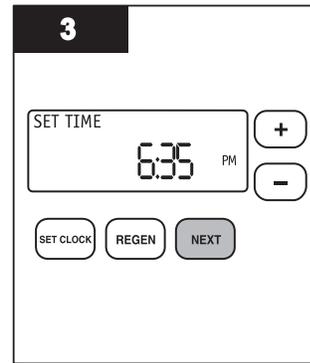
Procedure:



- Press **SET CLOCK**.



- For Current Time (hour), set the hour of the day using + or – buttons. "AM/PM" toggles after 12. Press **NEXT**.

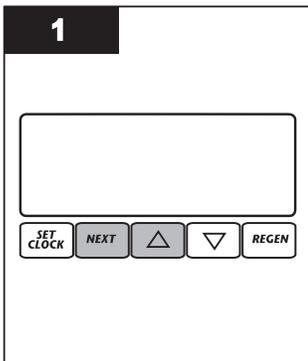


- For Current Time (minutes), set the minutes using + or – buttons. If it is desired to back up to the previous step press **REGEN** button once.
- Pressing **NEXT** will exit **SET CLOCK** and return to the general operating display. Insert the sleeve removal tool at the bottom of the sleeve.

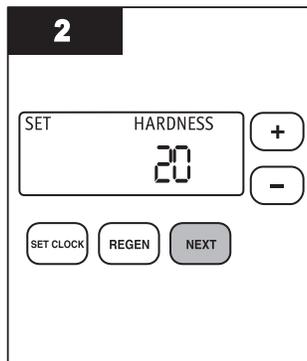
3.1.2 Programming

Note: The manufacturer has preset the unit so that the gallons between regenerations will be automatically calculated after the hardness is entered.

Procedure:

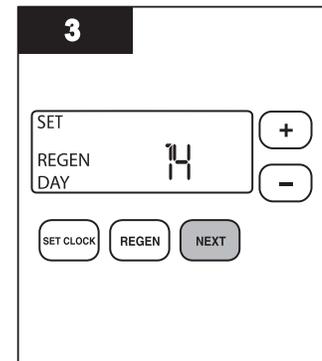


- Press **NEXT** and + simultaneously for 3 seconds.



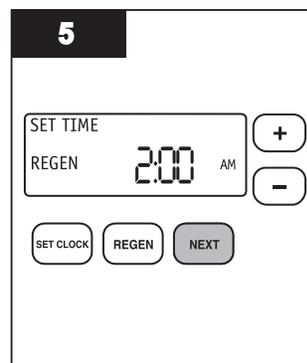
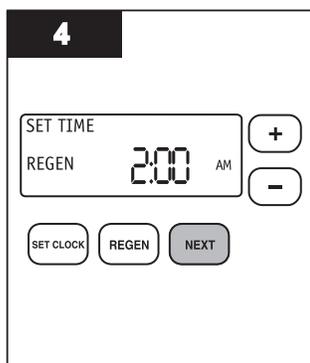
- Set the amount of hardness in grains per gallon (default 20) using the + or – buttons.
- The allowable range is from 1 to 150 in 1 grain increments.

Note: Increase the grains per gallon if soluble iron is present (1 ppm = 4 gpg). This display will show “-nA-” (not available) if “FILTER” is selected or if “AUTO” is not factory set. Press **NEXT** or press **REGEN** to exit.



- Set Day Override using + or – buttons (12 is recommended);
- Set number of days between regeneration (1 to 28) or
- Set to “OFF”
- Press **NEXT** or press **REGEN** to return to the previous step.

Note: The manufacturer has factory set 12 days as the default. This is the maximum number of days between regenerations. If this is set to “OFF”, regeneration initiation is based solely on gallons used. If any number is set (allowable range from 1 to 28), a regeneration initiation will be called for on that day even if a sufficient number of gallons were not used to call for a regeneration.



- Regeneration hours: Press **NEXT** or press **REGEN** to return to the previous step.

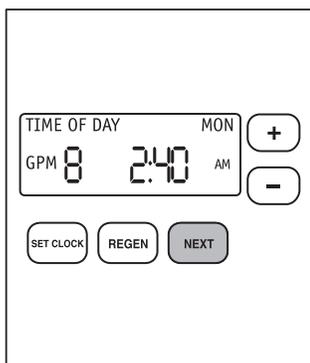
Note: The manufacturer has factory set 2:00 A.M. as the default. This is the hour of day for regeneration and can be reset by using + or – buttons. “AM/PM” toggles after 12. The default time is 2:00 A.M. (recommended for a normal household).

- Set the regeneration minutes using + or – buttons.
- Press **NEXT** to exit installer programming.
- Press **REGEN** to return to previous step.
- To initiate an immediate manual regeneration, press and hold the **REGEN** button for three seconds. The system will begin to regenerate immediately. The control may be manually stepped through the re generation cycles by pressing **REGEN**.

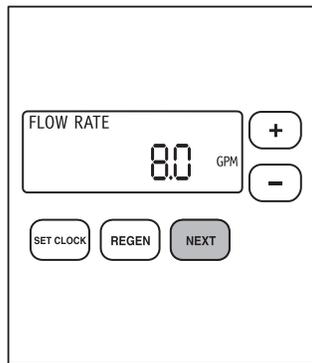
3.2 Displays and Instructions

3.2.1 General Operation

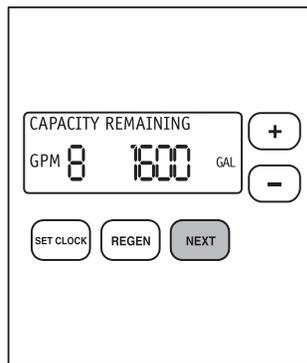
When the system is operating, one of four following displays may be shown. Pressing **NEXT** will toggle between the displays. The user can scroll between the displays as desired:



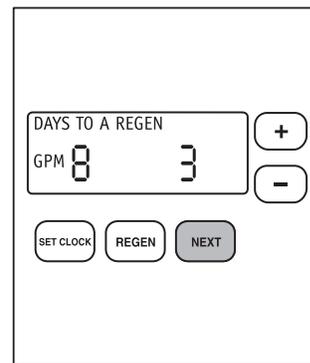
Current “TIME OF DAY” and “GPM”



FLOW RATE is the current treated water flow rate through the system measured in GPM.



CAPACITY REMAINING is the gallons that will be treated before the system signals a regeneration cycle.



DAYS TO A REGEN is the number of days left before the system goes through a regeneration cycle, based on the days override value.

If the system has called for a regeneration that will occur at the preset time of regeneration, the words “**REGEN TODAY**” will appear on the display.

If a water meter is installed, “**GPM**” flashes on the display when water is being treated, indicating gallons per minute going through the system.

3.2.2 Regeneration Mode

Typically a system is set to regenerate at a time of no water usage. If there is a demand for water when the system is regenerating, untreated water will be delivered. When the system begins to regenerate, the display will change to include information about the step of the regeneration process and the time remaining for that step to be completed. The system runs through the steps automatically and will reset itself to provide treated water when the regeneration has been completed.



3.2.3 Manual Regeneration

Sometimes there is a need to regenerate before the control valve calls for it. This may be needed if a period of heavy water use is anticipated or when the system has been operated without salt.

1. To initiate a manual regeneration at the next preset regeneration time, press and release **REGEN**. “REGEN TODAY” will flash on the display to indicate that the system will regenerate at the next regeneration time (set in [Section 3.1.2](#), steps 4 and 5). If **REGEN** button is pressed by mistake, press the same button again to cancel the command.
2. To initiate a manual regeneration immediately, press and hold the **REGEN** button for three seconds. The system will begin to regenerate immediately. This command cannot be cancelled.



Note: “REGEN TODAY” and “TIME OF DAY” will flash alternately if a regeneration is expected tonight.

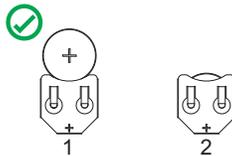
Once a manual regeneration is initiated, the unit will go into the “FILL” position, followed by the steps listed in [Section 3.3](#). During this initial sequence the water softener will deliver treated water.

3.2.4 Power Loss and Battery Replacement

The AC transformer comes with a 15 foot power cord and is designed for use with the control valve; the transformer should only be used in a dry location.

In the event of a power outage, the control valve will remember all settings and time of day. If an extended power outage occurs, the control valve will keep time of day until the battery is depleted. When the battery becomes depleted, the only item that needs to be reset is the time of day and will be indicated by the time of day flashing. All other settings are permanently stored in the nonvolatile memory.

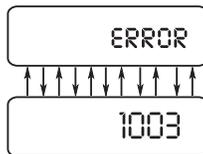
If a power loss occurs and the time of day flashes, this indicates that the battery is depleted. The time of day should be reset and the non rechargeable battery should be replaced. The battery is a 3 Volt lithium coin cell type 2032 and is readily available at most stores. To access battery location, remove front cover, refer to [Section 5.1](#).



Note: When replacing the battery, align positives and push down to fully seat.

3.2.5 Error Message

If the word “ERROR” and a number are alternately flashing on the display record the number and contact your dealer for help. This indicates that the control valve was not able to function properly.



3.2.6 Brine Tank Maintenance and Salt

Refill the brine tank as necessary, making sure at least 1/3 of the brine tank is full at all times. Without proper salt levels, the water softener may not operate properly.

The manufacturer recommends the use of solar salt for best results. The brine tank is manufactured for the use of solar, pellets, rock salt or block salt. If pellet or rock salt is used, a cleaning of the brine tank every six months is recommended.

3.3 Start-up Instructions

- After installation is complete, rotate bypass handles to bypass mode, refer to [Figure 2](#).
- Turn on water and check for leaks.
- Fully open a cold water faucet - preferably a laundry sink or bathtub with no aerator.
- Allow water to run until clear to rid pipes of debris which may have occurred during installation.

3.3.1 Softeners

System regeneration sequence will flow in the following order.

Note: *If the following order changes then refer to the “Dealer Manual” or contact VIQUA).*

- Brine tank refill
- 4 hours (240 minutes) of softening mode while salt is dissolving
- Backwash
- Brine draw and slow rinse
- Fast rinse
- End (return to service – softening)

The system is now ready for filling with water and for testing.

1. With the softener in the bypass mode ([Figure 2](#)) and the control valve in normal operation where the display shows either the time of day or the gallons remaining, manually add 5" of water to the regenerant tank.

Note: *If too much water is put into the brine tank during softener start up, it could result in a “salty water” compliant after the first regeneration.*

During the first regeneration the unit will draw out the initial volume of brine/regenerant and refill it with the correct preset amount.

2. Press and hold the **REGEN** button until the motor starts. Release button. The display reads “FILL” and the remaining time in this step is counting down. Check to verify that the regenerant tank is filling at a rate of 1/2 gallon per minute. Since the regenerant tank was already filled in Step 1, press **REGEN** again and the display will read “SOFTENING 240”. (During a full regeneration this will be a 4 hour period for salt to dissolve). Press **REGEN** again to put the valve into “BACKWASH”. Unplug the transformer so that the valve will not cycle to the next position. Open the inlet handle of the bypass valve very slightly allowing water to fill the tank slowly in order to expel air.

⚠ CAUTION



If water flows too rapidly there will be a loss of media to the drain.

3. When the water is flowing steadily to the drain without the presence of air, slowly open the inlet valve. Restore power and momentarily press the **REGEN** button to advance the control to the “BRINE” position.
4. The bypass is now in the diagnostic mode ([Figure 3](#)). Check to verify that water is being drawn from regenerant brine tank with no air leaks or bubbles in the brine line. There should be a slow flow to the drain.
5. Momentarily press **REGEN** again until the display reads “RINSE”. There should be a rapid flow to the drain. Unplug transformer to keep the valve in the “RINSE” position. Allow to run until steady, clear, and without air. While the unit is rinsing load the brine tank with water softener salt. Restore power.
6. Place bypass valve in the normal operating mode ([Figure 1](#)) by opening the outlet bypass handle. Press **REGEN** and the unit will return to the service position with time of day being displayed.

3.3.2 Backwashing Filters

1. Place the bypass valve into the bypass mode, refer to [Figure 2](#).
2. Press and hold the **REGEN** button until the motor starts. Press **REGEN** again and display will read "FILTERING". Press **REGEN** again to put the valve into "BACKWASH". Unplug the transformer so that the valve will not cycle to the next position. Open the inlet handle of the bypass valve very slightly allowing water to fill the tank slowly in order to expel air.

⚠ CAUTION	
	If water flows too rapidly there will be a loss of media to the drain.

3. When the water is flowing steadily to the drain without the presence of air, slowly open the inlet valve. Restore power and momentarily press **REGEN** button to advance the control to the "RINSE" position.
4. The bypass is now in the diagnostic mode ([Figure 3](#)). There should be a rapid flow to the drain. Unplug transformer to keep the valve in "RINSE" position. Allow to run until steady, clear, and without air.
5. Restore power and place bypass valve in the normal operating mode ([Figure 1](#)) by opening the outlet bypass handle. Press **REGEN** in sequence until display returns to "TIME".

3.3.3 CS and BA Series Backwashing Filters

Special precautions must be made when connecting the drain line (hard pipe is recommended - during backwash, high volumes of water and air rapidly escape causing flexible drain tubing to "whip"). Please attach drain line securely with rigid piping.

1. Included with your backwashing filter are two check valves:
 - 3/8" John Guest® push in type with a screen
 - 1" FPT stainless steel check valve
2. The 3/8" JG valve has a small piece of grey tubing inserted into it which should be inserted into the brine elbow on the control valve (check valve arrow in direction of air flow into the brine elbow).
3. The 1" SS valve should be installed on the inlet of the control valve so air cannot travel back through the inlet. Refer valve flow for flow direction - the arrow goes in the direction of the water flow.

Note: Plumbing codes may require an expansion tank after water treatment device and water heater for thermal expansion control.

4. After installation is complete, fill the unit using the backwash instructions above, let water run to drain slowly and increase flow until clear. Place the unit in the next cycle which is down brine and let the unit finish on it's own. This will allow the unit to draw in the air so it can function properly.

Note: Media is dry and filling water too fast in backwash will result in media plugging the drain and the valve assembly.

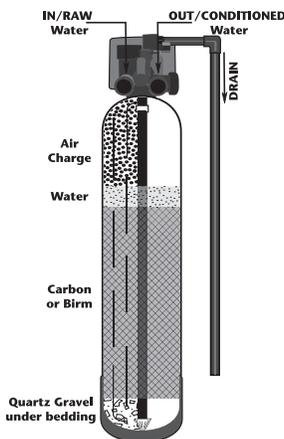


Figure 7 CS/BA

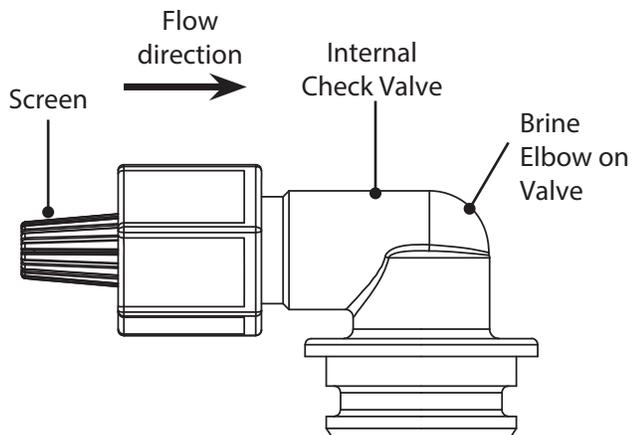


Figure 8 Air Draw Check Valve Assembly(CH4642-WR-A)

Note: Rigid drain line is highly recommended.

Note: The 3/8" check valve will have a screen and two small pieces of grey tubing attached.

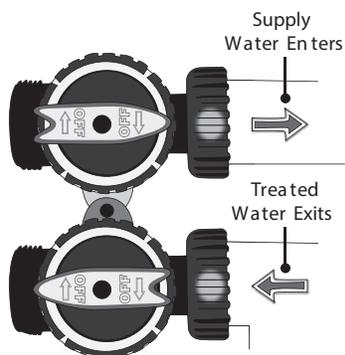
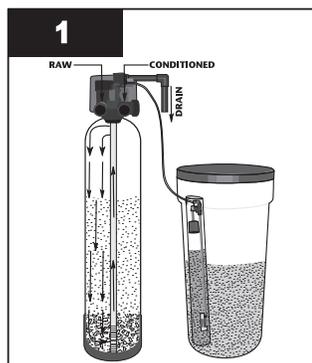


Figure 9 Inlet Check Valve Assembly

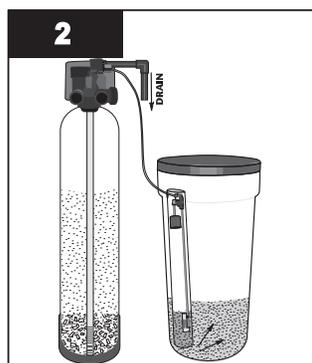
Note: Install 1" stainless steel female check valve on the inlet of the control valve.

3.3.4 Water Softener/Filter Flow Diagrams

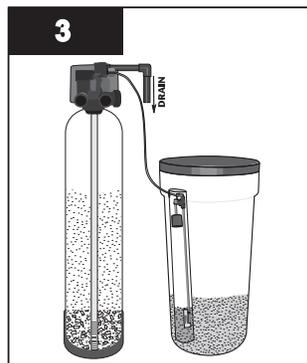
LEGEND:



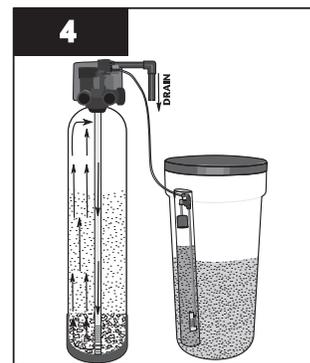
- Service Position: Raw water enters control head and flows down through the media, removing hardness.



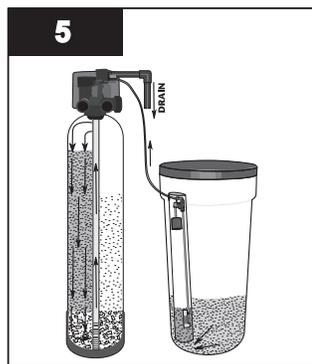
- Brine Tank Fill Position: Water enters control head to self clean injector while flowing back to refill the brine tank. Unit will deliver soft water in this position.



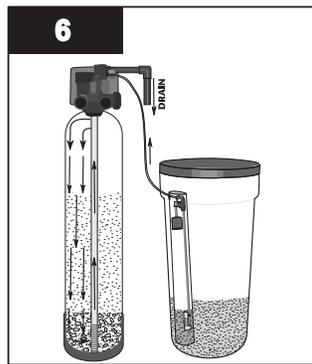
- Softening Position: Water in the brine tanks slowly dissolves salt in preparation for Brine/Rinse Position. During this cycle, unit will deliver soft water. Factory setting for this cycle is 240 minutes.



- Backwash Position: Raw water enters control head and flows into lower distributor upward through mineral bed and out to drain, lifting and cleaning turbid particles from media bed.



- Brine/Rinse Position: Raw water enters control head flowing through the injector, drawing brine from the brine tank.



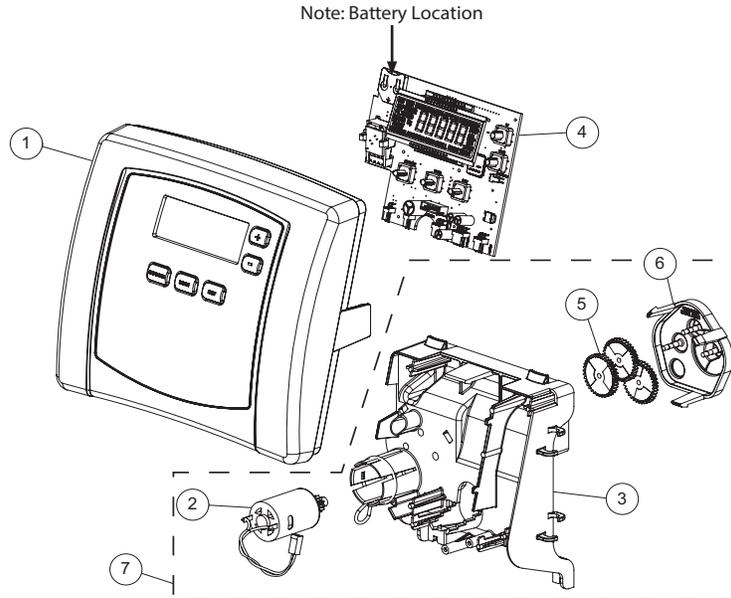
- Slow Rinse Position: Raw water enters control head and flows down through the media, rinsing residual brine to drain.

Section 4 Troubleshooting

Symptom	Possible Cause	Possible Solution
Timer does not display "TIME OF DAY"	Transformer unplugged	Reconnect transformer
	No power at outlet	Repair or use working outlet
	Defective transformer	Replace transformer
	Defective PC board	Replace PC board
Time does not display correct time of day or "TIME OF DAY" flashes	Outlet is on a switch	Used un-switched outlet
	Power outage; transformer was unplugged from either wall outlet or from PC board	Reset time of day and replace battery. Refer to Section 3.2
	Defective PC board	Replace PC board
Does not display "SOFTENING/FILTERING" when water is flowing	Bypass valve in bypass position	Put bypass in service position
	Meter cable disconnected	Reconnect PC board
	Restricted/stalled meter turbine	Remove meter and check for debris
	Defective meter	Replace meter
	Defective PC board	Replace PC board
Unit regenerates at wrong time of day	Past power outage	Reset time of day
	Incorrect time of day displayed	
	Time of regenerant set incorrectly	Reset time of regeneration
	Control set at "ON 0"	Check with regeneration time option in programming
	Control set at "NORMAL + on 0"	
Valve stalled in regeneration	Motor not operating	Replace motor
	No power at outlet	Repair outlet or use working outlet
	Defective transformer	Replace transformer
	Defective PC board	Replace PC board
	Broken drive gear or drive cap assembly	Replace gear or drive cap assembly
	Broken piston retainer	Replace drive cap assembly
	Broken main or regenerant piston	Replace main or regenerant piston
Valve does not regenerate automatically when REGEN button is pressed	Transformer unplugged	Connect transformer and PC board power
	No power at outlet	Restore power
	Broken drive gear or drive cap assembly	Replace gear or drive cap assembly
	Defective PC board	Replace PC board
Valve does not regenerate automatically but does when REGEN button is pressed	Bypass valve not in normal operating mode	Refer Section 1.2 .
	Meter disconnected	Reconnect to PC board
	Obstructed meter turbine	Clear obstruction
	Defective meter	Replace meter
	Programming error	Review programming
	Defective PC board	Replace board
"ERROR" followed by code # "ERROR" code 1001 – unable to recognize start of regeneration "ERROR" code 1002 – unexpected stall "ERROR" code 1003 – motor ran too long Timed out trying to reach next cycle position (If other codes appear, contact factory)	Valve has just been serviced	Press NEXT and REGEN for 3 seconds or momentarily unplug power source from PC board
	Foreign material stuck in valve	Check piston and spacer stack for obstruction
	Excessive piston resistance	Replace piston(s) and spacer stack assembly
	Piston not in home position	Press NEXT and REGEN or momentarily unplug PC board power
	Motor gears not fully engaged –motor wires broken – missing or broken gear	Check motor wiring
	Center drive gear reflector dirty or damaged – missing or broken gear Drive bracket incorrectly aligned on back plate	Replace or clean drive gear(s)
	Drive bracket incorrectly aligned on backplate	Reset drive bracket
	PC board is damaged or defective	Replace PC board
	PC board incorrectly aligned on drive bracket	Reset PC board onto drive bracket

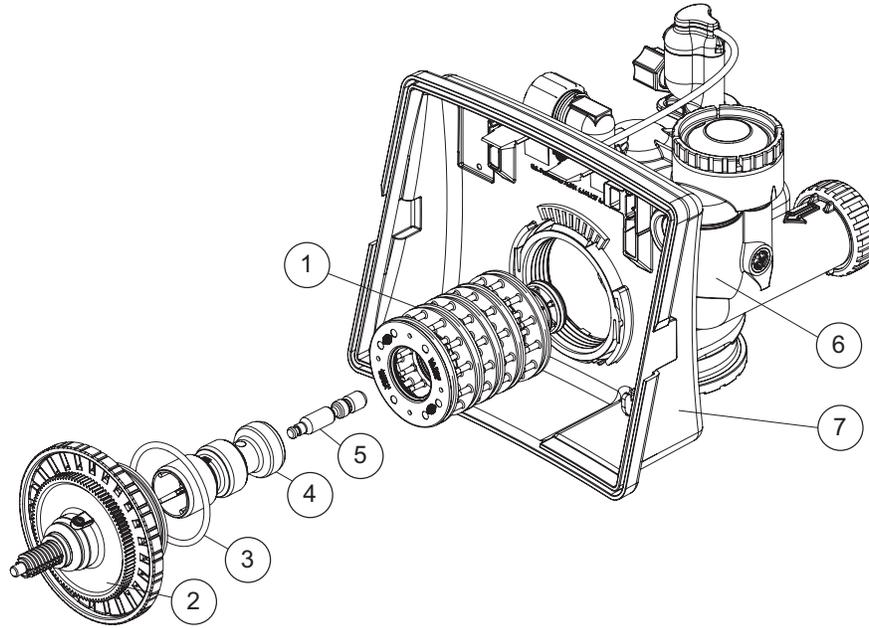
Section 5 Replacement Parts

5.1 Front Cover and Drive Assembly



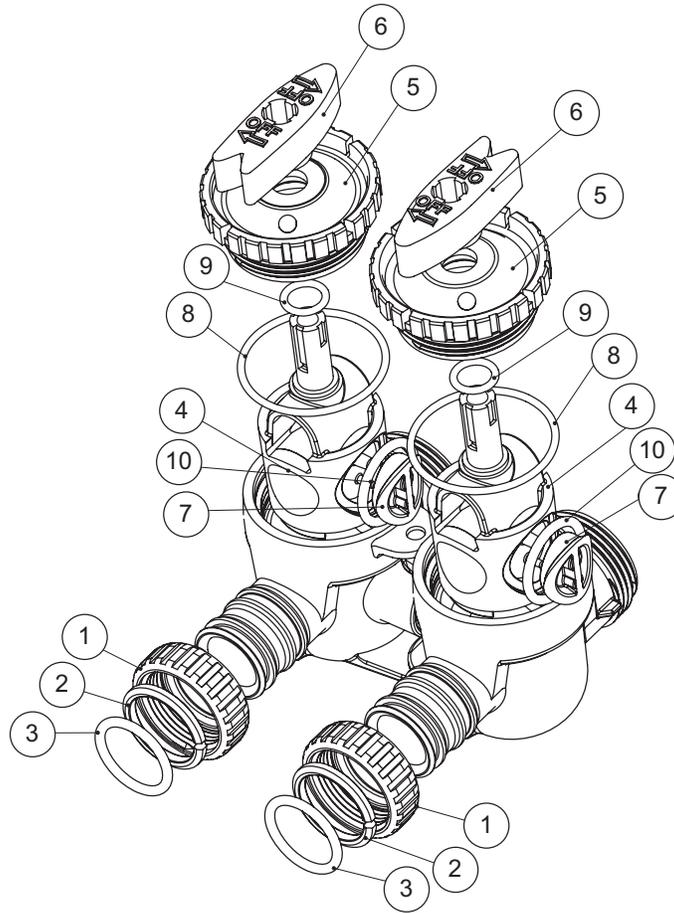
Item	Description	Part Number	Quantity
1	Black Impression® cover	CV3540-A	1
	Grey Impression® cover	CV3540-W-A	1
2	Motor	CV3107-1	1
3	Drive bracket and spring clip	CV3106-1	1
4	PC board, CC	CV3579WI	1
5	Drive gear, 12 x 36	CV3110	3
6	Drive gear cover	CV3109	1
7	Drive assembly, CC	CV3002CC	1
-	Transformer, 110V-12C	CV3186	1

5.2 Piston Assembly



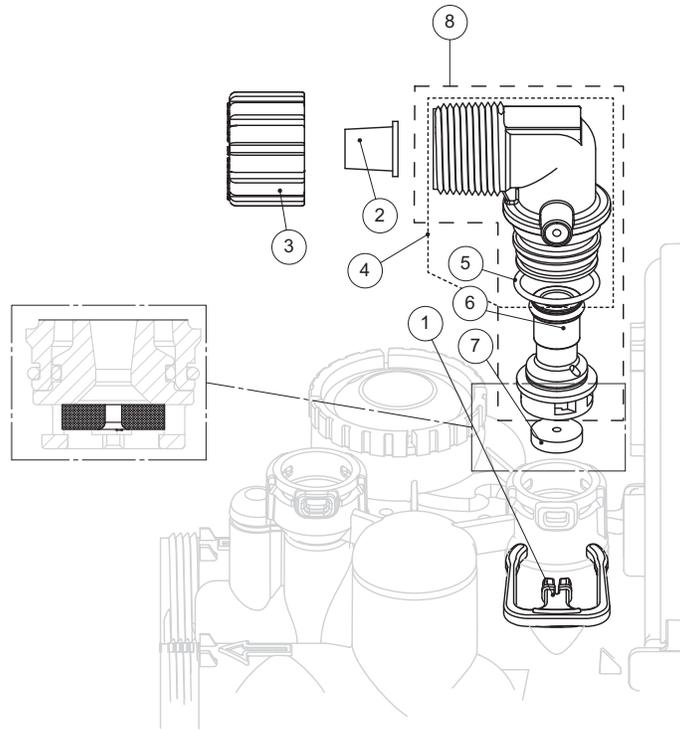
Item	Description	Part Number	Quantity
1	1" spacer stack assembly	CV3005	1
	1.25" spacer stack assembly	CV3430	1
2	Drive cap assembly	CV3004	1
3	O-ring 228	CV3153	1
4	1" piston assembly down-flow	CV3011	1
	1" piston assembly up-flow	CV3011-01	1
	1.25" piston assembly down-flow	CV3407	1
5	Regenerant piston	CV3174	1
6	1" body assembly down-flow	CV3001	1
	1" body assembly up-flow	CV3001UP	1
	1.25" body assembly down-flow	CV3020	1
7	Drive backplate	CV3541	1

5.3 Bypass Valve Assembly



Item	Description	Part Number	Quantity
1	Nut, 1"quick connect	CV3151	2
2	Split ring	CV3150	2
3	O-ring 215	CV3105	2
4	Bypass rotor, 1"	CV3145	2
5	Bypass cap	CV3146	2
6	Bypass handle	CV3147	2
7	Bypass rotor seal retainer	CV3148	2
8	O-ring 135	CV3152	2
9	O-ring 112	CV3155	2
10	O-ring 214	CV3156	2

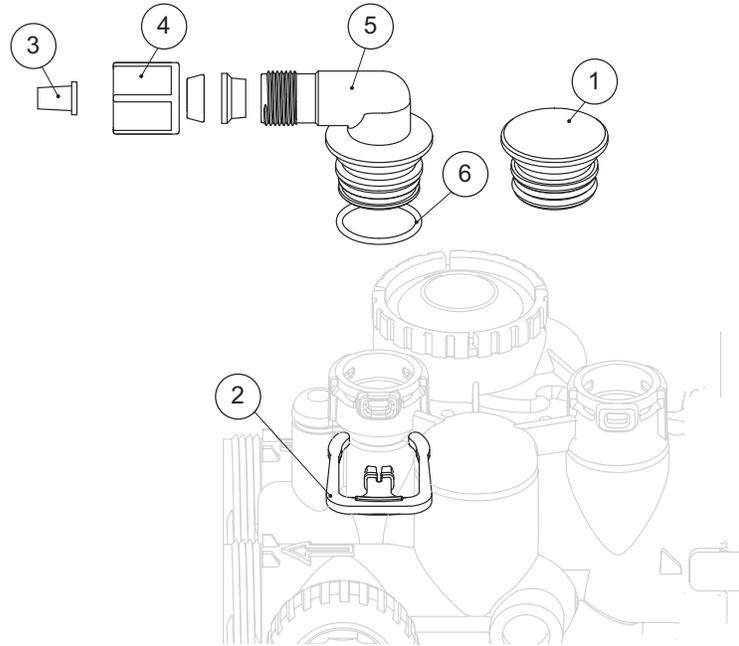
5.4 Drain Line Assembly 3/4"



Item	Description	Part Number	Quantity
1	Elbow locking clip	CH4615	1
2	Insert, 5/8"tube (optional)	CPKP10TS8-BULK	1
3	Nut, 3/4"drain elbow (optional)	CV3192	1
4	Drain elbow, 3/4"NPT with O-ring	CV3158-01	1
5	O-ring 019	CV3163	1
6	DLFC retainer assembly	CV3159-01	1
7	0.7 DLFC for 3/4" elbow	CV3162-007	1
	1.0 DLFC for 3/4" elbow	CV3162-010	
	1.3 DLFC for 3/4" elbow	CV3162-013	
	1.7 DLFC for 3/4" elbow	CV3162-017	
	2.2 DLFC for 3/4" elbow	CV3162-022	
	2.7 DLFC for 3/4" elbow	CV3162-027	
	3.2 DLFC for 3/4" elbow	CV3162-032	
	4.2 DLFC for 3/4" elbow	CV3162-042	
5.3 DLFC for 3/4" elbow	CV3162-053		
8	Drain elbow and retainer assembly	CV3331	1

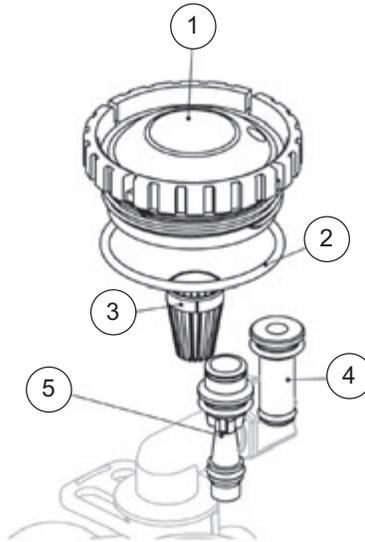
Note: Items 2 and 3 are only used with 1/2" I.D. by 5/8" O.D. poly-tubing. For other piping material, the 3/4" NPT is used.

5.5 Brine Elbow Assembly(CV3330-A)



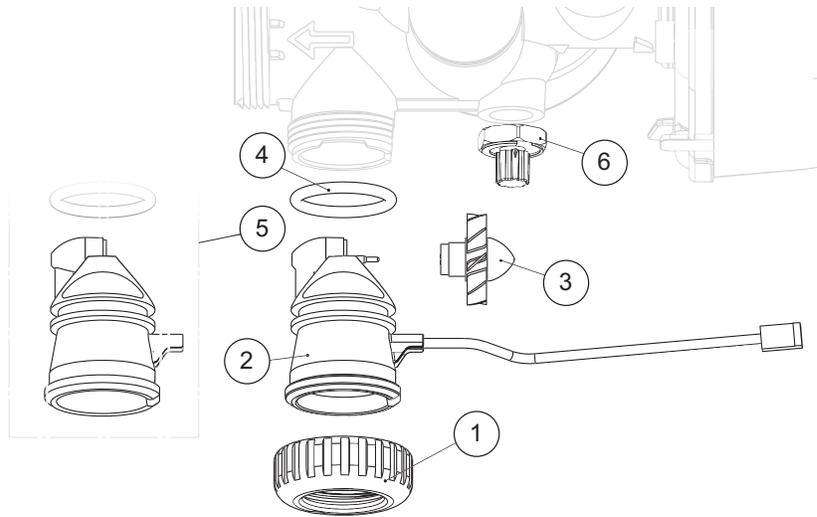
Item	Description	Part Number	Quantity
1	Refill port plug assembly	CV3195-01	1
2	Elbow locking clip	CH4615	1
3	Tube insert, 3/8"	CJCP-P-6	1
4	Nut, 3/8"	CJCPG-6PBLK	1
5	Elbow cap, 3/8"	CH4613	1
6	O-ring 019	CV3163	1

5.6 Injector Assembly



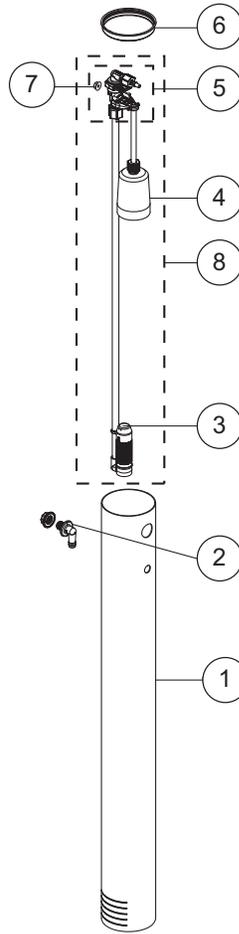
Item	Description	Part Number	Quantity
1	Injector cap	CV3176	1
2	O-ring 135	CV3152	1
3	Injector screen	CV3177	1
4	Injector assembly plug	CV3010-1Z	1
5	Injector assembly, Black	CV3010-1A	1
	Injector assembly, Brown	CV3010-1B	
	Injector assembly, Violet	CV3010-1C	
	Injector assembly, Red	CV3010-1D	
	Injector assembly, White	CV3010-1E	
	Injector assembly, Blue	CV3010-1F	
	Injector assembly, Yellow	CV3010-1G	
	Injector assembly, Green	CV3010-1H	
	Injector assembly, Orange	CV3010-1I	
	Injector assembly, Light Blue	CV3010-1J	
	Injector assembly, Light Green	CV3010-1K	

5.7 Water Meter and Meter Plug



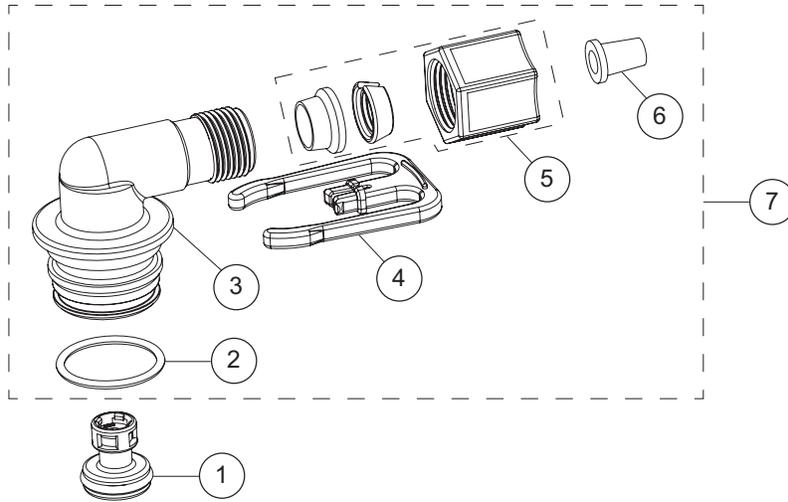
Item	Description	Part Number	Quantity
1	Nut, 1" QC	CV3151	1
2	Meter assembly (includes items 3 and 4)	CV3003	1
3	Turbine assembly	CV3118-01	1
4	O-ring 215	CV3105	1
5	Meter plug assembly	CV3003-01	1
6	Mixing valve (optional)	CV3013	1

5.8 Safety Float Assembly



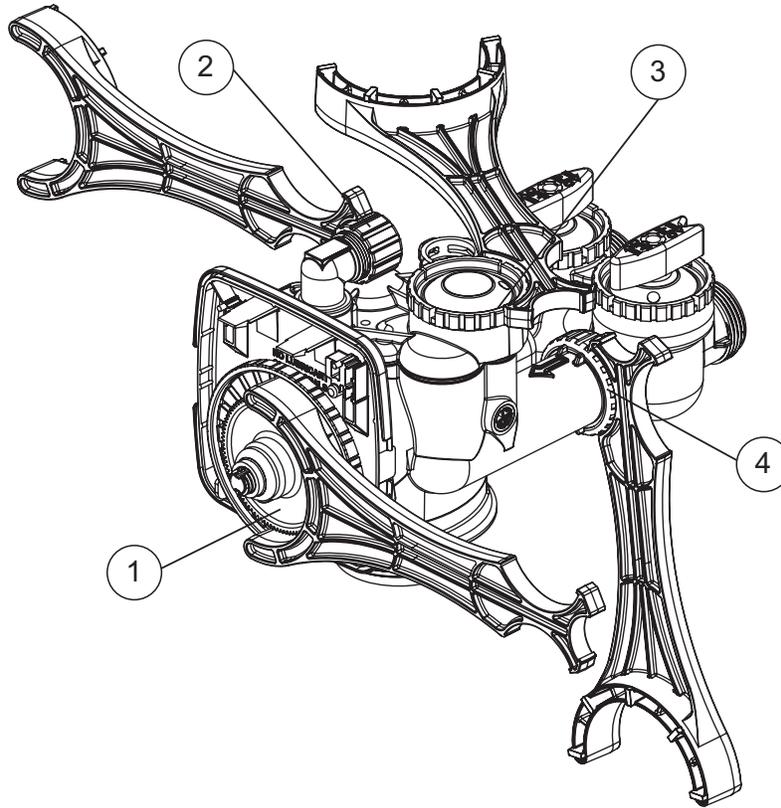
Item	Description	Part Number	Quantity
1	4" x 32" brine well (18" x 36" BT)	CH1030-32	1
	4" x 34.5" brine well (18" x 40" BT)	CH1030-34.5	
2	2 piece overflow set	CH1018	1
3	474 air check assembly, 1/2" x 48"	CH4500-48	1
4	474 float assembly, 32" with two grommets	CH4640-32	1
5	474 safety brine valve with 0.5 gpm flow control	CH4600-50	1
6	Cap 4" brine well	CH7016	1
7	Nut safety brine valve stand off	CH4626	1
Assemblies			
8	0.5 gpm safety float assembly, 18" x 36"	CH4700-32WR-1	1
	0.5 gpm safety flow assembly, 18" x 40"	CH4700-34.5WR-1	

5.9 Safety Float Brine Elbow Assembly



Item	Description	Part Number	Quantity
1	474 0.5 gpm flow control	CH4655	1
2	O-ring 019	CH3163	1
3	3/8" elbow cap	CH4613	1
	1/2" elbow cap	CH4612	
4	Elbow locking clip	CH4615	1
5	3/8" compression nut	CJCPG-5PBLK	1
	1/2" compression nut	CJCPG-8PBLK	
6	Poly-tube insert	FP10332	1
7	Safety float brine elbow assembly	CV3330-A	1

5.10 Service Wrench



Sl. No	Description
1	Loosening Drive Cap
2	Loosening Drain Nut in Polytube Applications
3	Loosening Injector and Bypass Caps
4	Loosening Quick Connect Nuts

Although no tools are necessary to assemble or disassemble the valve, the Service Wrench - CV3193-01 (shown in various positions on the valve) is available to aid in assembly or disassembly.

5.11 Installation Fitting Assemblies (Sold separately)

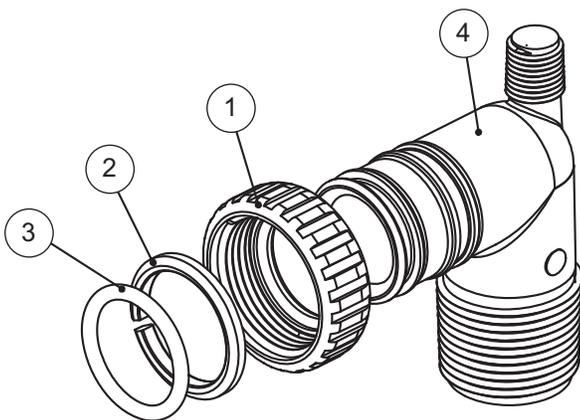


Figure 10 1" PVC Male NPT Elbow Assembly - CV3007

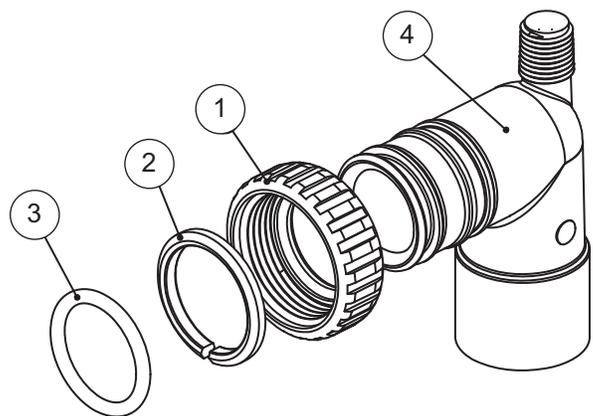


Figure 11 3/4" and 1" PVC Solvent Elbow Assembly - CV3007-01

Replacement Parts

Item	Description	Part Number	Quantity
1	Nut, 1" quick connect	CV3151	1
2	Split ring	CV3150	1
3	O-ring 215	CV3105	1
4	Fitting	CV3149	1

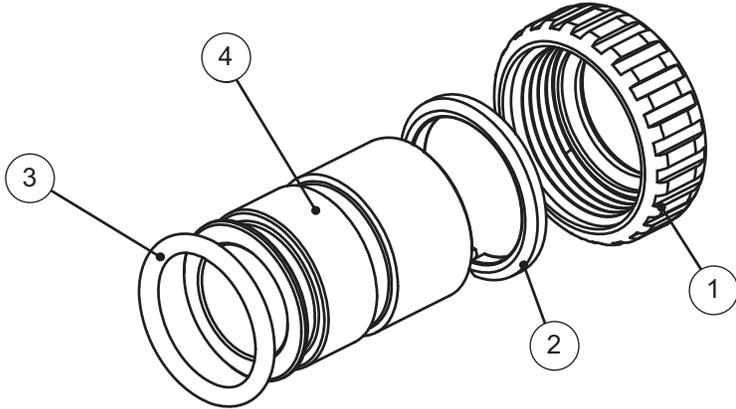


Figure 12 1" Brass Sweat Assembly - CV3007-02

Item	Description	Part Number	Quantity
1	Nut, 1" quick connect	CV3151	1
2	Split ring	CV3150	1
3	O-ring 215	CV3105	1
4	Fitting	CV3188	1

Item	Description	Part Number	Quantity
1	Nut, 1" quick connect	CV3151	1
2	Split ring	CV3150	1
3	O-ring 215	CV3105	1
4	Fitting	CV3199	1

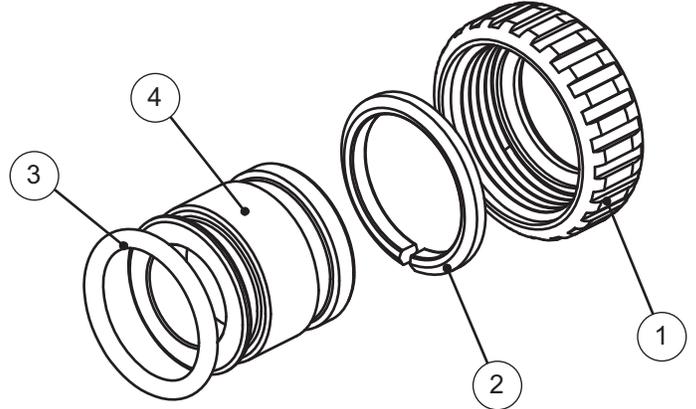


Figure 13 3/4" Brass Sweat Assembly - CV3007-03

Item	Description	Part Number	Quantity
1	Nut, 1" quick connect	CV3151	1
2	Split ring	CV3150	1
3	O-ring 215	CV3105	1
4	Fitting	CV3199-01	1

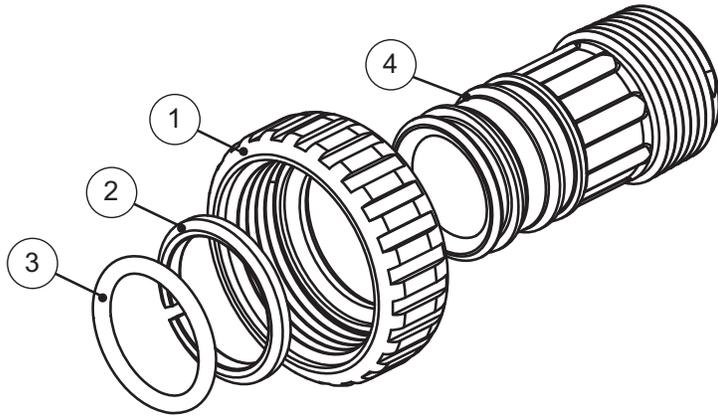


Figure 14 1" PVC Male NPT Assembly - CV3007-04

Item	Description	Part Number	Quantity
1	Nut, 1" quick connect	CV3151	1
2	Split ring	CV3150	1
3	O-ring 215	CV3105	1
4	Fitting	CV3164	1

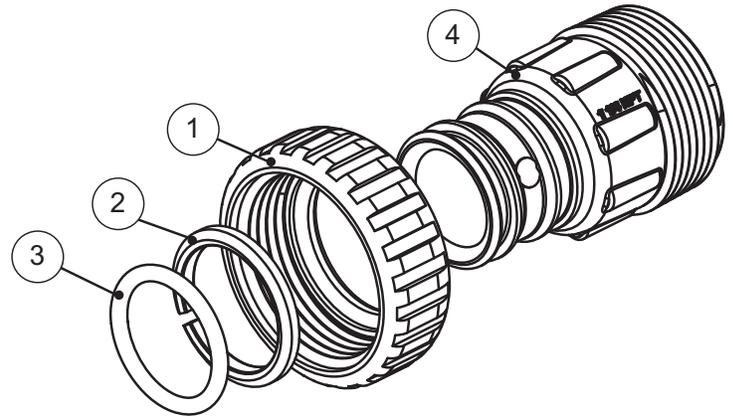


Figure 15 1 1/4" Plastic MALE Assembly - CV3007-05

Item	Description	Part Number	Quantity
1	Nut, 1" quick connect	CV3151	1
2	Split ring	CV3150	1
3	O-ring 215	CV3105	1
4	Fitting	CV3317	1

Section 6 Specifications

6.1 Water Softener

Model		AWP25EB *AWP25EB-FM	AWP32EB *AWP32EB-FM	AWP50EB *AWP50EB-FM	AWP72EB *AWP72EB-FM	AWP1054RC	AWP1354RC
¹ Capacity: (Grains/ lbs. NACL)	Maximum	25600 @ 9.0	32000 @ 15.0	48800 @ 21.0	72800 @ 32.0	30500 @ 15.0	59000 @ 26.0
	Medium	21600 @ 6.0	28400 @ 9.0	44400 @ 15.0	64200 @ 20.0	26400 @ 9.0	52600 @ 18.0
	Minimum	15600 @ 3.0	23600 @ 6.0	35400 @ 9.0	53000 @ 14.0	22100 @ 6.0	44000 @ 12.0
Efficiency (gr./lb) @ Lowest Setting		5200	3900	3900	3800	3680	3670
Amount of Media		0.02 m ³ (0.85 ft ³)	0.03 m ³ (1.0 ft ³)	0.04 m ³ (1.5 ft ³)	0.07 m ³ (2.5 ft ³)	0.04 m ³ (1.5 ft ³)	0.07 m ³ (2.5 ft ³)
Maximum Water Hardness		50 gpg	75 gpg	100 gpg	100 gpg	75 gpg	100 gpg
² Maximum Iron	Standard Resin	1 ppm	1 ppm	1 ppm	1 ppm	1 ppm	1 ppm
	Fine Mesh Resin	2 ppm	2 ppm	2 ppm	2 ppm	-	-
Minimum pH Required		7	7	7	7	6.8	6.8
³ Peak Flow Rate @ 15 psid		11.4 gpm (43.2 lpm)	17.1 gpm (65 lpm)	14.3 gpm (54.1 lpm)	18.5 gpm (70 lpm)	12.0 gpm (45.4 lpm)	14.0 gpm (53 lpm)
Continuous Flow Rate @ 5 psid		5.0 gpm (19 lpm)	6.0 gpm (23 lpm)	5.0 gpm (19 lpm)	7.0 gpm (26.5 lpm)	5.0 gpm (19 lpm)	6.0 gpm (23 lpm)
Water Pressure Range		25-100 psi	25-100 psi	25-100 psi	25-100 psi	25-100 psi	25-100 psi
Water Temperature		0.5-37.7°C (33- 100°F)	0.5-37.7°C (33- 100°F)	0.5-37.7°C (33- 100°F)	0.5-37.7°C (33- 100°F)	0.5-37.7°C (33- 100°F)	0.5-37.7°C (33- 100°F)
Electrical Requirements		110 V/50-60 Hz	110 V/50-60 Hz	110 V/50-60 Hz	110 V/50-60 Hz	110 V/50-60 Hz	110 V/50-60 Hz
Total Dimension	Media Tank (width x height)	20.3 cm x 132.1 cm (8" x 52")	25.4 cm x 132.1 cm (10" x 52")	25.4 cm x 157.5 cm (10" x 62")	33 cm x 157.5 cm (13" x 62")	25.4 cm x 132.1 cm (10" x 52")	25.4 cm x 157.5 cm (10" x 62")
	Brine Tank (width x height)	45.7 cm x 91.4 cm (18" x 36")	45.7 cm x 91.4 cm (18" x 36")	45.7 cm x 91.4 cm (18" x 36")	45.7 cm x 91.4 cm (18" x 36")	45.7 cm x 91.4 cm (18" x 36")	45.7 cm x 91.4 cm (18" x 36")
Shipping Weight		36.3 kg (80 lbs)	49.9 kg (110 lbs)	63.5 kg (140 lbs)	99.8 kg (220 lbs)	57 kg (125 lbs)	86 kg (190 lbs)

* Extra Iron Capacity - These units feature unique fine mesh resin for high capacity hardness reduction and increased clear water iron (ferrous) removal up to 5 ppm.

¹ All Impression units are factory set for Medium salting.

² Iron removal may vary depending on form of iron, pH and other local conditions.

³ The peak flow rates listed above do not represent the maximum service flow rate for determining the softener capacity and efficiency ratings. Continuous operation at flow rates greater than the maximum service flow rate may affect capacity and efficiency performances.

6.2 Backwashable Filter

ACID NEUTRALIZING FILTERS				FILTER Z™ FILTERS			
Model	AWPBF1- 1044AN	AWPBF1- 1054AN	AWPBF1- 1354AN	AWPBF1- 1044MZ	AWPBF1- 1054MZ	AWPANI- 1354AN	AWPANI- 1465AN
Solves	Acid water (low pH)	Acid water (low pH)	Acid water (low pH)	Turbidity (5 micron)	Turbidity (5 micron)	Turbidity (5 micron)	Turbidity (5 micron)
Mineral	Calcite or Mix 0.03 m ³ (1.0 ft ³)	Calcite or Mix 0.04 m ³ (1.5 ft ³)	Calcite or Mix 0.07 m ³ (2.5 ft ³)	Filter Z™ 0.03 m ³ (1.0 ft ³)	Filter Z™ 0.04 m ³ (1.5 ft ³)	Filter Z™ 0.07 m ³ (2.5 ft ³)	Filter Z™ 0.08 m ³ (3.0 ft ³)
Gravel Amount	9.5 kg (21 lbs)	9.5 kg (21 lbs)	12.7 kg (28 lbs)	6.4 kg (14 lbs)	6.4 kg (14 lbs)	9.5 kg (21 lbs)	12.7 kg (28 lbs)

Specifications

ACID NEUTRALIZING FILTERS				FILTER Z™ FILTERS			
Model	AWPBF1-1044AN	AWPBF1-1054AN	AWPBF1-1354AN	AWPBF1-1044MZ	AWPBF1-1054MZ	AWPANI-1354AN	AWPANI-1465AN
Solves	Acid water (low pH)	Acid water (low pH)	Acid water (low pH)	Turbidity (5 micron)	Turbidity (5 micron)	Turbidity (5 micron)	Turbidity (5 micron)
Continuous Flow	5.0 gpm (18.9 lpm)	5.0 gpm (18.9 lpm)	6.0 gpm (22.7 lpm)	7.0 gpm (26.5 lpm)	7.0 gpm (26.5 lpm)	10.0 gpm (37.9 lpm)	13.0 gpm (49.2 lpm)
Peak Flow	8.0 gpm (30.3 lpm)	9.0 gpm (34.1 lpm)	12.0 gpm (45.4 lpm)	9.0 gpm (34.1 lpm)	10.0 gpm (37.9 lpm)	16.0 gpm (60.6 lpm)	19.0 gpm (71.9 lpm)
Backwash Flow	5.0 gpm (18.9 lpm)	5.0 gpm (18.9 lpm)	7.0 gpm (26.5 lpm)	7.0 gpm (26.5 lpm)	7.0 gpm (26.5 lpm)	12.0 gpm (45.4 lpm)	15.0 gpm (56.7 lpm)
Total Dimensions (width x height)	25 cm x 132 cm (10" x 52")	25.4 cm x 158 cm (10" x 62")	33 cm x 158 cm (13" x 62")	25 cm x 132 cm (10" x 52")	25.4 cm x 158 cm (10" x 62")	33 cm x 158 cm (13" x 62")	36 cm x 185 cm (14" x 73")
Shipping Weight	66.2 kg (146 lbs)	93.4 kg (206 lbs)	142.9 kg (315 lbs)	49.1 kg (108 lbs)	63.2 kg (139 lbs)	99.6 kg (219 lbs)	118.2 kg (260 lbs)

CARBON FILTERS				TANNIN REDUCTION FILTERS		
Model	AWPBF1-1044C	AWPBF1-1054C	AWPBF1-1354C	AWP1044IMT1	AWP1054IMT1	AWP1354IMT1
Solves	Taste and Odour	Taste and Odour	Taste and Odour	Tannin reduction	Tannin reduction	Tannin reduction
Mineral	Carbon 0.03 m ³ (1.0 ft ³)	Carbon 0.04 m ³ (1.5 ft ³)	Carbon 0.07 m ³ (2.5 ft ³)	0.02 m ³ (0.7 ft ³)	0.03 m ³ (1.0 ft ³)	0.05 m ³ (1.7 ft ³)
Gravel Amount	6.4 kg (14 lbs)	6.4 kg (14 lbs)	9.5 kg (21 lbs)	6.4 kg (14 lbs)	6.4 kg (14 lbs)	9.5 kg (21 lbs)
Continuous Flow	4.0 gpm (15.1 lpm)	4.0 gpm (15.1 lpm)	6.0 gpm (22.7 lpm)	4.0 gpm (15.1 lpm)	5.0 gpm (18.9 lpm)	8.0 gpm (30.3 lpm)
Peak Flow	5.0 gpm (18.9 lpm)	6.0 gpm (22.7 lpm)	8.0 gpm (30.3 lpm)	5.0 gpm (18.9 lpm)	6.0 gpm (22.7 lpm)	9.0 gpm (34.1 lpm)
Backwash Flow	5.0 gpm (18.9 lpm)	5.0 gpm (18.9 lpm)	8.0 gpm (30.3 lpm)	2.7 gpm (10.2 lpm)	2.7 gpm (10.2 lpm)	4.2 gpm (15.9 lpm)
Total Dimensions (width x height)	25 cm x 132 cm (10" x 52")	25.4 cm x 158 cm (10" x 62")	33 cm x 158 cm (13" x 62")	25 cm x 132 cm (10" x 52")	25.4 cm x 158 cm (10" x 62")	33 cm x 158 cm (13" x 62")
Shipping Weight	34 kg (75 lbs)	40.8 kg (90 lbs)	72.6 kg (160 lbs)	47.3 kg (104 lbs)	60.0 kg (132 lbs)	93.6 kg (206 lbs)

SULPHUR FILTERS				IRON FILTERS		
Model	AWPBF1-1054CS	AWPBF1-1248CS	AWPBF1-1354CS	AWPBF1-1054BA	AWPBF1-1248BA	AWPBF1-1354BA
Solves	Sulphur and odour	Sulphur and odour	Sulphur and odour	Iron and manganese	Iron and manganese	Iron and manganese
Mineral	Carbon 0.03 m ³ (1.0 ft ³)	Carbon 0.04 m ³ (1.5 ft ³)	Catalytic Carbon 0.06 m ³ (2.0 ft ³)	Birm 0.03 m ³ (1.0 ft ³)	Birm 0.04 m ³ (1.5 ft ³)	Birm 0.06 m ³ (2.0 ft ³)
Gravel Amount	9.5 kg (21 lbs)	12.7 kg (28 lbs)	12.7 kg (28 lbs)	9.5 kg (21 lbs)	12.7 kg (28 lbs)	12.7 kg (28 lbs)
Continuous Flow	5 gpm (18.9 lpm)	6 gpm (22.7 lpm)	7 gpm (26.5 lpm)	5 gpm (18.9 lpm)	6 gpm (22.7 lpm)	7 gpm (26.5 lpm)
² Peak Flow	8 gpm (30.1 lpm)	9 gpm (34.1 lpm)	10 gpm (37.9 lpm)	8 gpm (30.1 lpm)	9 gpm (34.1 lpm)	10 gpm (37.9 lpm)
Backwash Flow	5 gpm (18.9 lpm)	8 gpm (30.1 lpm)	10 gpm (37.9 lpm)	5 gpm (18.9 lpm)	8 gpm (30.1 lpm)	10 gpm (37.9 lpm)
Total Dimensions (width x height)	25 cm x 157 cm (10" x 62")	30 cm x 142 cm (12" x 56")	33 cm x 157 cm (13" x 62")	25 cm x 157 cm (10" x 62")	30 cm x 142 cm (12" x 56")	33 cm x 157 cm (13" x 62")
Shipping Weight	35.3 kg (78 lbs)	49.4 kg (109 lbs)	59 kg (130 lbs)	40 kg (88 lbs)	67.1 kg (126 lbs)	69 kg (152 lbs)

¹ Iron removal may vary depending on form of iron, pH and local conditions. On waters that are pre-chlorinated or where other pre-oxidation occurs, an iron precipitate can form that is too small to be filtered.

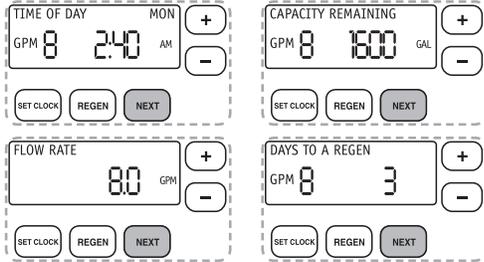
² The peak flow rates listed above do not represent the maximum service flow rate used for determining the filter capacity and efficiency ratings.

Section 7 Quick Reference Guide

General Operation

When the system is operating, one of the following four displays will be shown:

- “TIME OF DAY/GPM”, “FLOW RATE”, “CAPACITY REMAINING” or “DAYS TO A REGEN”.
- Pressing **NEXT** will toggle between the three choices.

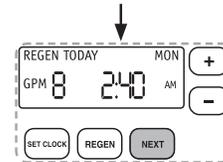


Manual Regeneration

Note: For softeners, if brine tank does not contain salt, fill with salt and wait at least two hours before regeneration. If you need to initiate a manual regeneration, either immediately, or the same night at the pre programmed time, for regeneration (typically 2:00 AM), complete the following steps.

- 1 Press and hold **REGEN** until valve motor starts (typically 3 seconds).
- 2 Press and release **REGEN** (notice that flashing appears).

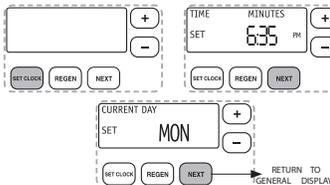
“REGEN TODAY” AND “TIME OF DAY” WILL FLASH ALTERNATELY IF A REGENERATION IS EXPECTED TONIGHT.



To Set Time of Day

In the event of a prolonged power outage, time of day flashes, indicating that this needs to be reset. All other information will be stored in memory no matter how long the power outage.

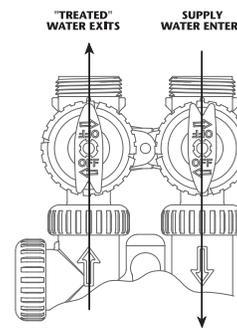
- 1 Accessed by pressing set clock.
- 2 Adjust hours with + and – buttons, AM/PM toggles at 12.
- 3 Press **NEXT**
- 4 Adjust minutes with + and – buttons
- 5 Press **NEXT** to complete and return to normal operation



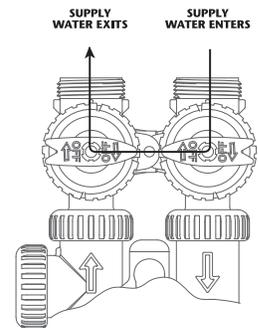
Bypass

To shut off water to the system, position arrow handles as shown in the bypass operation diagram below. If your valve doesn't look like the diagram below, contact your service technician for instructions on how to shut off water.

NORMAL OPERATION

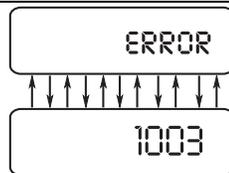


BYPASS OPERATION



Error

If the display toggles between “ERROR” and an error code (i.e. a number), call a service technician and report the error code.

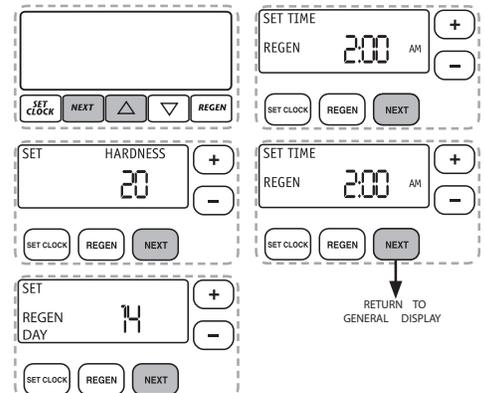


Adjust Hardness, Days Between Regeneration, Time of Regeneration and Alarm Buzzer

For initial set-up or to make adjustments, please complete the following steps:

Note: Hardness display shows “-nA-” if used as a filter. If other displays do not appear, refer to manual.

- 1 Accessed by pressing **NEXT** and + button simultaneously.
- 2 Adjust hardness using + and – buttons.
- 3 Press **NEXT**.
- 4 Adjust days between regenerations using + and – buttons.
- 5 Press **NEXT**.
- 6 Adjust time of regeneration hour with + and – buttons, “AM/PM” toggles at 12:00.
- 7 Press **NEXT**.
- 8 Adjust time of regeneration minutes with + and – buttons.
- 9 Press **NEXT** to complete and return to normal operation.



Section 8 Manufacturer's Warranty

This VIQUA water conditioner unit is conditionally guaranteed against defects in material and workmanship for a period of three (3) years unless otherwise specified. The fiberglass "Mineral Tank" is conditionally guaranteed against defects in material and workmanship for a period of ten (10) years to the original owner of the equipment. The warranty does not include freezing of equipment, vacuum on system, or extreme pressure (+125 psi). The "Brine Tanks" are conditionally guaranteed against defects in material and workmanship for a period of five (5) years. The water conditioning "Media" is conditionally guaranteed against defects in material and workmanship for a period of one (1) year. The warranty does not cover change in water test, mis-application of media, use of mineral cleaners in brine tank including salt additives, lack of maintenance, or any other acts of God. VIQUA will not be responsible for any labour charges to the customer incurred by the dealer or any freight charges to or from the customer. The above provisions of the guarantee will be valid as long as the unit is connected with identical properties and conditions of the original installation and owned by the original owner. Provisions should be made by the owner, that in the event of leaking or overflow of the brine tank that the resulting flow of water will not damage any surroundings. No responsibility is assumed for loss of use of the unit, inconvenience, loss or damage to personal property or any consequential damages. This warranty extends only to repair or replacement (at the manufacturer's discretion) of this product in accordance with the conditions stated within.



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