CASTLEGUARD
WATER FILTRATION SYSTEMS



ECO-SMART WATER SOFTENER

Installation / Operation Manual

Model #'s: CG-WS-10, CG-WS-15 & CG-WSSF-20

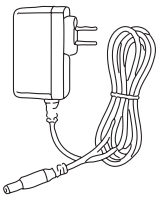
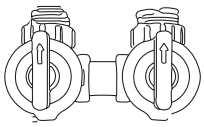
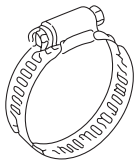
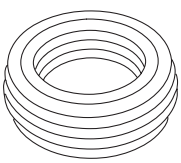
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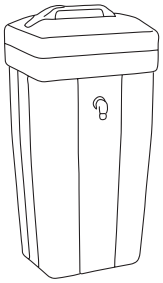
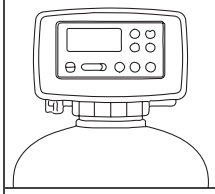
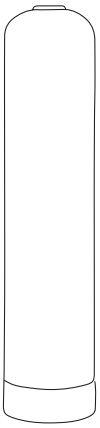
Have questions? Call us: 888-316-1832

WELCOME TO CASTLEGUARD

Congratulations on your purchase of the CastleGuard Whole House Water Softener. CastleGuard uses only the highest quality resin media and components for our softeners systems, all of which are made in the USA. With your CastleGuard Softener you will experience the benefits of amazing soft-water through ion exchange and metered flow technology. Your CastleGuard softener can be utilized effectively on municipal water sources, and also on private well water source. If you are using this softener for well water treatment, we encourage consultation with our Customer Service or Sales Team to ensure this is the right and best application for your needs.

Note: If you are using the CastleGuard Water Softener in combination with a Carbon-based whole house filter and sediment filter, we recommend those being installed prior to (upflow) of the softener system. The purchaser / end user is responsible for providing some install materials in order to complete full installation.

Parts	Descriptions	Qty
	MIPT 1" Elbow Fittings	2
	Power Supply (12 Volt DC / 1.0 AMP)	1
	Sediment Filter: 20", 5-Micron Polyspun Sediment Filter	1
	Hose Clamp	1
	50' Drain Line	1

Parts	Descriptions	Qty
	Connected Series Bypass (optional)	1
	Brine Tank	1
	Electronic Tank Head	1
	CastleGuard Softener Resin Tank	1

Note: Drawings are not to scale. Additional fittings will be needed to adapt to your plumbing.

INSTALLATION MATERIALS AND OPTIONS

The purchaser / end user is responsible for providing some install materials in order to complete full installation. These may include:

- Copper Piping & Fittings
- PVC Piping & Fittings
- PEX Piping & Fittings
- Corrugated Flex Water Connectors (1")
- Bypass Valves
- Adapters / Shut Off Valve
- Plumbers Tape
- Silicone Lubricant for O-Rings
- 9-Volt Battery

Note: Your CastleGuard Water System can be installed using various materials and components, in standard or customer layouts. Materials that may be used to complete install include Copper, PVC, PEX and Stainless Flexible / Corrugated Water Connectors.

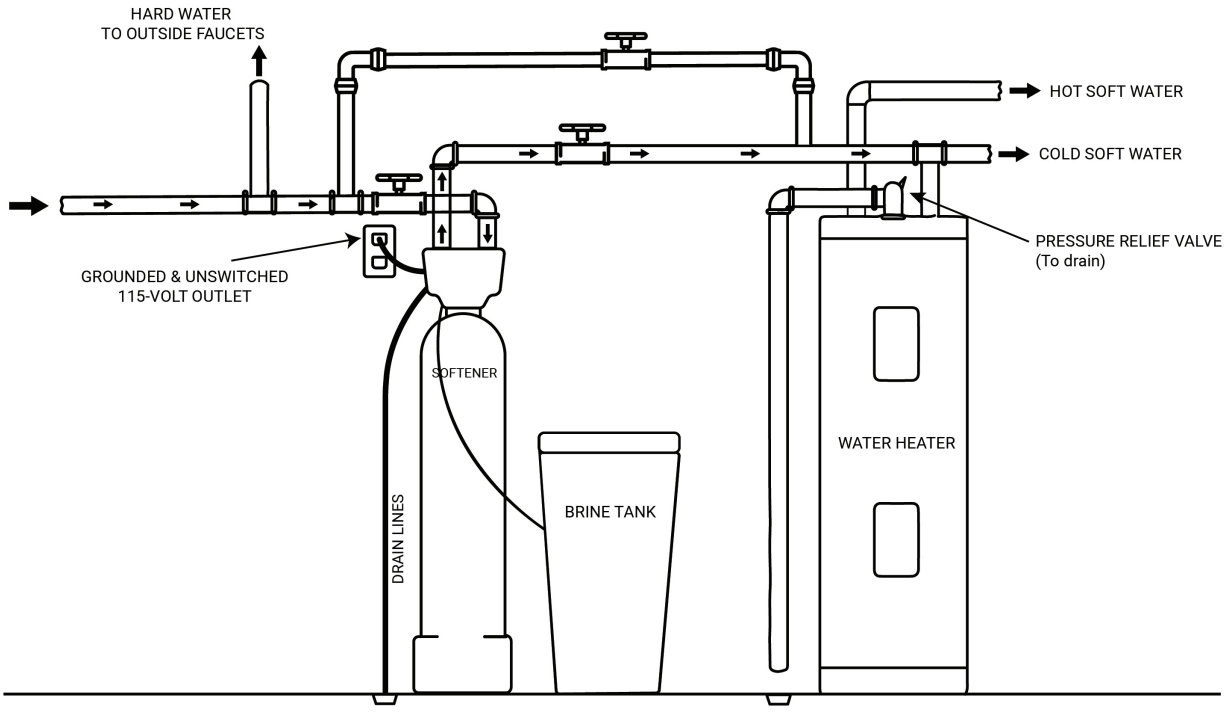
SYSTEMS LAYOUT OPTIONS

General Specifications	CG-WS-10	CG-WS-15	CG-WS-20
Softening Capacity (GPG)	36,000 grains	54,000 grains	70,000 grains
Ion Exchange Resin	1.0 cu/ft	1.5 cu/ft	2.0 cu/ft
Raw Water Max Hardness (GPG)	75 GPG	100 GPG	100 GPG
Raw Water Max Iron (PPM)	5.0 PPM	5.0 PPM	5.0 PPM
Service Flow / Max Flow Rates (GPM)	7 GPM / 10 GPM	12 GPM / 15 GPM	16 GPM / 20 GPM
Backwash Flow Rate Required (GPM)	2.4	3.5	5.2
Resin Exchange Tank Size	9" x 48"	10" x 54"	12" x 52"
Operating Pressure Range	20 – 120 PSI		
Operating Temperature Range	33°F – 120°F		
Inlet / Outlet Connection	1" FNPT		
Note: A water test to determine water hardness level in grains per gallon (gpg) will be needed in order to input correct performance settings.			

Eco-Smart Water Softener

Incoming Water from Left-Side

• **CG-WS-10** - Softener Resin Tank & Brine Tank



Recommended Requirement for Installation:

- Level floor position ahead of piping to a water heater.
- Install at least 10’ ahead of an inlet to a water heater.
- Systems should be protected from hard freezing temps and exposure to direct sunlight.
- Systems can be installed using Copper, PVC, PEX or Flex Water Connector materials.
- It is recommended that Teflon / Plumber Tape be used on all threaded connections. DO NOT use pipe dope or liquid thread sealers.
- DO NOT use Vaseline, oils, hydrocarbon lubricants or spray silicone anywhere. Petroleum based lubricants can cause swelling of O-Rings and Seals. Silicone grease can be lightly used on O-Rings and control valve components.

Softener Location / Other Requirements:

- Locate the unit near an unswitched, 120 volt / 60 Hz grounded electrical outlet.
- Check for distance and proper drain installation (e.g. floor drain, washing machine standpipe).
- Determine type and size of piping required for softener connection (e.g. copper, galvanized, PVC plastic).
- If household plumbing is galvanized and you intend to make the installation with copper (or vise versa), obtain di-electric unions to prevent dissimilar metal corrosion.
- Where the drain line is elevated above the control valve or exceeds 20 feet in length to reach the drain, use 3/4” I.D. drain line tubing instead of 1/2” I.D. Drain line tubing is not included.
- All plumbing lines not requiring “soft” water should be connected “upstream” of the softener.
- The brine tank drain line is gravity flow and must discharge below the overflow fitting.
- The brine overflow is provided as a back-up in the event the safety float shut-off should fail, allowing the brine tank to overfill. This drain connection would then carry the excess water to the drain and prevent flooding of the floor. Therefore, no liability will or can be assumed by the manufacturer of the softener should this occur.
- Caution: If sweat soldering copper pipe (remember to always use lead free solder and flux), cover bypass valve with wet rags to prevent heat damage to connections and control valve. If using PVC or plastic pipe primers and solvent cements specifically recommended for use with potable water are required.
- Do not “TEE” to the main drain line from control valve.

Systems Layout Options:

Installing your CastleGuard Water Softener will require connection to a standard 120-Volt Electrical Outlet and access to an appropriate drain area for discharge of removed contaminants during periodic backwashing.

Source Water Feed Line > Sediment Filter (optional) > Water Softener > Feed Line to Home

If you are installing your CastleGuard Water Softener system as a combo along with the CastleGuard Whole House Carbon Filter, flow order will be as follows;

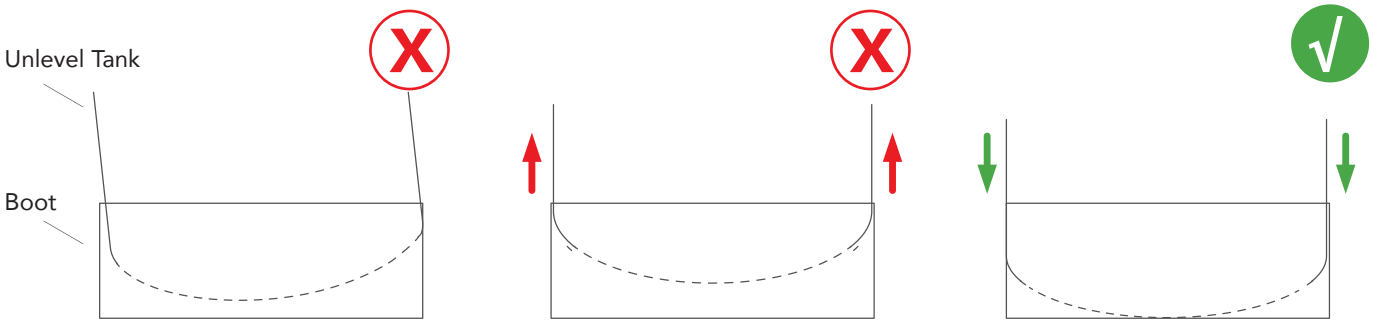
Source Water Feed Line > Carbon Tank > Sediment Filter > Water Softener > Feed Line to Home

Optional components, such as, full system bypass, additional sediment filtration, UV Purification and/or pH Neutralizers can be added as well if desired, and you can contact CastleGuard support for consultation as needed.

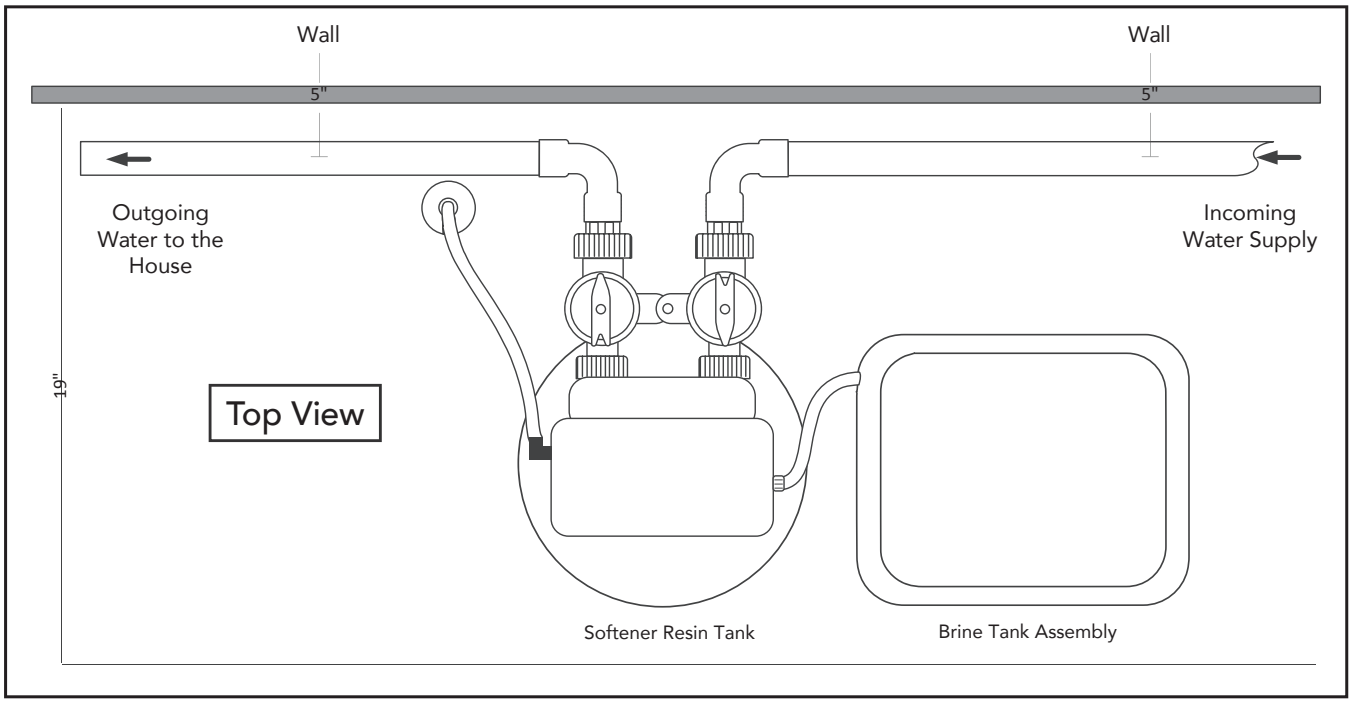
Note: CastleGuard recommends a full system 3-valve bypass, commonly referred to as a bypass loop, be install around the system. This will allow for ease of sediment and/or media replacement when the time comes. The bypass will allow you to service your CastleGuard system without turning off the main water line / valve.

Unbox and Level Your Tank:

Your media tank has a tank level boot on the bottom. If your tank is not sitting straight and level, cautiously lift the tank upward a few inches and tap towards the ground until the tank stands vertical without assistance and is fully seated in the tank boot.



Incoming Water from the Right-Side



Step By Step Installation:

1. Unscrew the tank cap at the top of the tank. This is used only for shipping and will no longer be needed. This prevents pre-install resin from leaving the tank during shipping.
2. Remove and discard the blue cap on the top of the distributor tube from inside the tank.
3. Identify the opening at the bottom of the electronic head.
4. Slide the opening on the bottom of the tank head onto the white pipe inside of the tank. Do not pull the white pipe out of the tank.
5. Under the tank head is a black O-ring. Lubricate O-ring with a small amount of silicone lubricant using your finger.
6. Install the tank head by sliding the upper basket female opening over the distributor tube in the tank, pressing down until the tank head threads will catch.
7. Screw the tank head onto the tank clockwise until tight fully tightened by hand.
8. Caution: Raised arrows located on the sides of control valve body and bypass valve indicate proper direction of water flow. Install inlet and outlet piping in direction of arrows. It is recommended that a vacuum breaker be installed on the inlet plumbing. (Install Optional Connected Series Bypass with Blue Bypass Knobs):
9. Insert the bypass assembly into the tank head by pressing in place and fully tightening the valve connector rings. Note: It is important to identify the designated INLET and OUTLET direction of the tank head as marked, and position the bypass handles (shaped like arrows) accordingly.

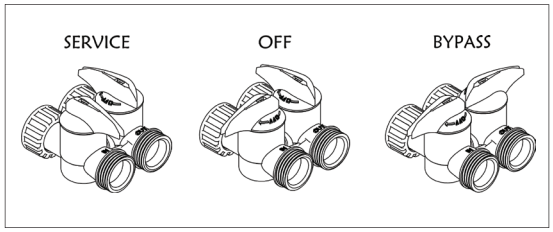
10. Attach the included MIPT 1" Elbow fittings (included) onto the bypass assembly, and tighten fully. If you choose to use optional straight fittings, use those here in place of the elbows provided.
11. Use plumber tape to properly wrap fitting threads on elbow fittings.

Installing your Water Softener:

Note: Throughout the install process, all threaded connection points should be wrapped in plumber tape to avoid leaks. The use of pipe dope and liquid thread sealants is not recommended.

1. Turn off the main water supply to the home / business.
2. You will need to access the main water supply line at your chosen installation location. Cut main line and install appropriate elbows and extensions. Inlet and outlet connections on the control valve are 1" MNPT. Attach Inlet / Outlet adapters to the water supply line as needed.
3. Position your water softener in place, with the inlet and outlet valves facing the wall, and/or your pre-plumb connection points.
4. Optional install of a ball valve shut off, ahead of the inlet connection to the softener can be accomplished at this point in the install process.
5. Rotate bypass valve to bypass position. (See diagram)

Bypass - Shown

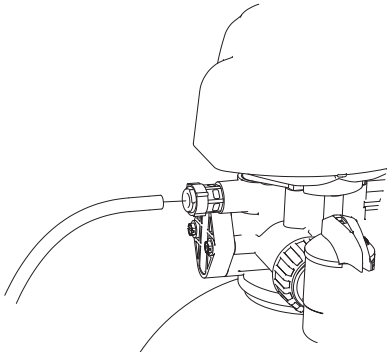


6. Connect the feed water source line to the inlet valve of the water softener. Ensure proper tightening of connectors, but do not overtighten.
7. Connect the outlet side of the softener valve to the return line of the water feed going to the house / business. Ensure proper tightening of connectors, but do not overtighten.
8. Turn the water on to restore flow the home.
9. OPEN nearest faucet to evacuate air from the plumbing lines.
10. Check all connection points for leaks!
11. The drain line flow control assembly is pre-assembled for your convenience. Attach drain line barb to threaded drain line port, if not already attached.
12. Install ½" I.D. drain line tubing from hose barb to open drain location.
13. Ensure a minimum 4" air gap between the end of the drain and open drain. This prevents waste water from being able to backflow into the line.
14. For best results, keep the drain line distance as short as possible to the drain.

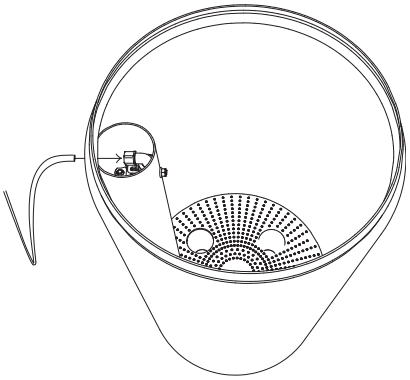
Note: Where the drain line is elevated above the control valve or exceeds 20 feet in distance, it is recommended to use a ¾" I.D. drain line tubing (not included).

Brine Line and Overflow Connection:

1. Feed one end of the brine line to the brine line connection on the control valve, push firmly all the way into the push lock fitting. Once the tube is fully inserted, the fitting will grab the tubing and hold it in place. A compression insert is not needed.
2. Inside the brine tank, remove the cap from the tope of the brine well.



BRINE LINE CONNECTION TO CONTROL VALVE



BRINE LINE CONNECTION TO BRINE TANK

3. Feed the other end of the brine tubing through the hole in the side of the brine tank, and firmly insert it all the way into the push-lock elbow fitting inside the brine well.

Electrical Connection:

1. Connect the power cord into connection "P" and plug power supply into a 120 volt / 60Hz receptacle.

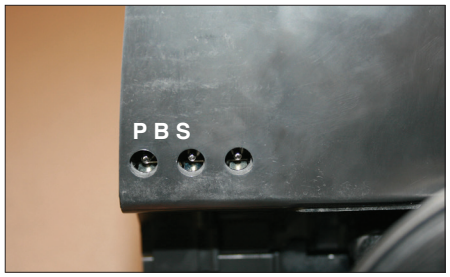
Note: Do not plug into an outlet controlled by a wall switch or pull chain that could inadvertently be turned off.

Electronic Connections:

P = Power Supply

B = Powered in Backwash Step Only (Cycle #1)

S = Powered for Entire Regen Cycle



Note: Your systems has connection and location for a 9-Volt battery to serve as a backup short term power supply to maintain setting during unexpected short term power outages. You can connect the battery at this time (not included).

Pressurizing The System:

1. Slowly rotate bypass valve to the SERVICE position.(Position of bypass lever is parallel to inlet / outlet piping.)
2. Open the nearest faucet to evacuate air from plumbing lines.

INSTALLATION

3. Check for leaks. If water is observed leaking from bottom of bypass, close and open bypass lever several times to seat O-rings. Exercise bypass valve.
4. After air is evacuated from plumbing lines, close bypass (position of bypass lever is perpendicular to the direction of inlet pipe) on bypass valve.

Note: Salt settings are pre-set at the factory for the maximum shown on the capacity charts.

Warning: Do not reduce salt settings below 9 lbs. as the water level in the brine tank will not reach the grid plate.

Control Valve Operation:

1. Advance control valve to BACKWASH (cycle 1) position and allow water to run to drain for 3 to 4 minutes.

Warning: Close valve on bypass prior to selecting the backwash position. After backwash position has been established, slightly open bypass to evacuate air from the media tank. Fully open valve when all air is depleted. This procedure will prevent media from being uplifted into control valve.

2. Advance control valve to BRINE REFILL (cycle 4) position and allow the brine tank to fill just over the salt grid plate.
3. Advance control valve to BRINE & RINSE (cycle 2) and allow the control valve to draw water from the brine tank until it stops. If no draw is observed, check tightness of brine line compression fittings.
4. Advance control valve to RAPID RINSE (cycle 3) position and let run to drain for 3-4 minutes.
5. Advance control valve to BRINE TANK REFILL (cycle 4) position and allow the control valve to automatically fill the brine tank.

Note: Control valve will advance to service position automatically.

Filling The Brine Tank With Salt:

Note: To expect a high level of performance and reliability, a salt manufactured specifically for water softeners must be used. Salt specifically designed for water softeners that are in the pellet or crystal forms may be utilitzed. If you are using your softener on well water with a high Iron content, we recommend using a water softener salt that includes an additive to aid in the removal of Iron. Consequently, the salt compartment will need to be checked and replenished periodically.

1. Add salt to the brine tank, minimum of 3 bags (120 lbs), to the brine tank with water softener salt as described above. The brine tank will hold up to 240 lbs of salt max. Warning: Do not fill salt above level of the brine well.
2. Replace brine tank lid.

Final Check:

- Be certain the bypass valve is in the SERVICE position.
- Make sure the power supply is connected to an uninterrupted 120-volt outlet.

- Check that the time of day is set.
- Double check for any leaks.
- Confirm regeneration schedule

Operation, Care and Cleaning:

When the bypass valve is in the SERVICE position (position of bypass lever is parallel to the inlet / outlet piping), water is directed through the water softener. Water may be bypassed by turning the lever to the bypass position (position of bypass lever is at right angles to inlet / outlet piping). Water to the home will bypass the softener and be untreated.

You should manually bypass the softener if :

1. The outside lines do not bypass the water softener and water is to be used for lawn sprinkling or other similar uses.
2. Servicing the water softener.
3. A water leak from the water softener is evident.
4. Shock treating water well and piping with chlorine or other disinfectant.

Extra Regeneration / Skip Regeneration:

If soft water demands are unusually heavy, an extra regeneration can be initiated manually.

To Skip a Regeneration, for vacations or extended periods of absence, the power supply can be disconnected from the control valve. It is recommended that the 9-volt battery be removed. Upon return, plug in cord and reset the time of day. Replace 9-volt battery.

General Care and Cleaning:

1. Do not place heavy or sharp objects on water softener.
2. Use only mild soap and warm water to clean exterior of the unit. Never use harsh, abrasive cleaners.
3. Protect the water softener and drain line from freezing.
4. Reset time for daylight saving time periods.
5. Replace 9-volt battery once a year.
6. Inspect and clean the brine tank when sediment appears in the bottom of the salt compartment.
7. Always keep the brine tank supplied with good quality salt, a type designed for use in water softeners.

Control Valve Start Up Procedure:

1. Put unit in bypass using the handles behind the control valve.
2. Start a regeneration by pressing and holding the set change button for 3 seconds.
   a. The display may show zeros or a 1, repeat holding the set change button.

INSTALLATION

3. Display on unit should read 1-10 (Step 1-10 min). Very slowly open the inlet bypass to remove any remaining air.
4. After the inlet bypass has been fully opened slowly, open the outlet bypass and let unit backwash for 2 minutes or until water is clear. Verify water is going to drain.
5. Fill the brine tank with a 5-gallon bucket of water and add the provided Sani pack. a. If you have already added salt, then pour the water and Sani pack down the white 4in brine well cylinder.
6. Advance unit to next regeneration cycle (Step 2-Brine draw) by holding the set change button for 3 seconds. Stay in (step 2- Brine draw) for an additional 10 minutes and verify all water has been drawn out of the brine tank.
7. Advance unit to next regeneration cycle (Step 3-Rapid Rinse) by holding the set change button for 3 seconds.
8. Stay in this step for 2 minutes. Verify water is going to drain.
9. Advance unit to next regeneration cycle (Step 4- Brine fill) by holding the set change button for 3 seconds. Let this step continue until minutes remaining are zero and the time of day appears on display. a. When finished the brine tank should have water above the salt grid.
10. Lastly, add salt to the brine tank. Do not fill salt higher than the brine well.
11. Unscrew the black lid from the blue filter housing.
12. Place the included O-Ring into the top groove of the filter housing.
13. Use a small amount of the provided lubricant to lubricate the O-Ring with your finger.
14. Turn the O-ring over in the grove and lubricate the other side as well.
15. Place the included 5-micron sediment filter into the filter housing.
16. Replace the black lid onto the blue housing and tighten firmly.
17. Use 1" PVC nipples (not included and install into the Inlet and Outlet side of the black filter housing. Tighten completely without damaging threads. It is recommended to use plumbers thread tape on all PVC threads.
18. Use a level to mark and pre-drill hole for installing the include sediment filter bracket to the wall. Allow for appropriate space to include piping to your conditioner tank and/or other components.
19. Use included hardware (bolts and washers to secure the sediment filter bracket to the wall, and sediment filter black top to the bracket. Note: Be sure to orient the INLET and OUTLET directions of the black filter top housing correctly.

Note: A Shut Off Valve (1" PVC Ball Valve or full system bypass loop with shut off valves, is recommended for periodic filter replacements and/or maintenance.

20. Move your Conditioner tank into install position, after the Sediment Filter, with the install connectors facing the wall.
21. Connect your INLET feed line to the INLET side of the Sediment Filter, using your choice of copper, PVC, PEX or Flexible corrugated connector lines / material.

22. Connect your OUTLET line from the Sediment Filter to the INLET connector of the Conditioner tank.
23. Connect your OUTLET line from the Conditioner to the return line side of your main water service line going into the home / business.
24. Prior to turning on your water supply, verify all connections are tightened appropriately. Use the included Spanner Wrench to snug the blue sediment filter housing to the top of the black head.
25. Open a faucet completely on the cold side in the home or business, to ensure there is no pressure in the line. Leave in the open position for now.
26. Ensure that the tank valves are in BYPASS POSITION, turn the main water feed back on and allow water to flow through the install lines, sediment filter, and bypass into the home.
27. While allowing water to run through the system, check all connections for leaks.
28. The tank bypass can be turned into the service flow position if no leaks are identified.
29. Allow water to run through the system and into the home for at least 10 minutes, using only the open faucet from step #32. You may see a small amount of cloudy water or sediments from the flow initially, this is normal and will quickly clear.
30. Once water has been flowing through the system and out of the faucet for at least 10 minutes, and you have verified that the water is clear and there are no leaks, you can shut the faucet off, as install is now complete.

Note: Leaks from connections with O-Rings are generally due to components not being tightened enough, or over tightening and bunching the O-Rings. When addressing these leaks, DO NOT attempt to tighten or adjust components while under pressure. Turn the main water supply off, open a faucet down flow of the system, leave open until all water and pressure is released, and then make adjustments to address leaks. Once leaks have been address, repeat steps 34-38.

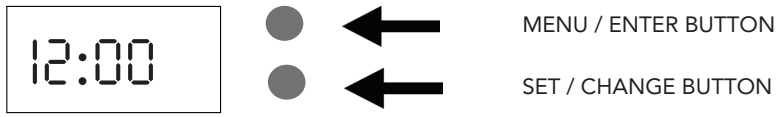
MASTER PROGRAMMING MODE

General Care and Cleaning

- Do not place heavy or sharp objects on water softener or cabinet.
- Use only mild soap and warm water to clean exterior of the unit. Never use harsh, abrasive cleaners.
- Protect the water softener and drain line from freezing.
- Reset time for daylight saving time periods.
- Replace 9-volt battery once a year.
- Inspect and clean the brine tank when sediment appears in the bottom of the salt compartment.
- Always keep the brine tank supplied with good quality salt, a type designed for use in water softeners

Programming the Control Valve

Main Menu



1 To enter Main Menu, press the Menu/Enter button.
(Time of Day will flash)

2 To set the Time of Day, press the Set/Change button.
(First digit will flash)

EXAMPLE [12-00]

- To change digit value, press the **Set/Change** button.
- To accept the digit value, press the **Menu/Enter** button.
- Next digit will flash to begin setting.
- Once the last digit display is accepted, all digits will flash.

3 To set **A.M.** or **P.M.**, press the **Menu/Enter** button.

EXAMPLE [A]

- To change digit value, press the **Set/Change** button.
- To accept the digit value, press the **Menu/Enter** button.
- Once A.M. or P.M. is accepted, the next menu item will flash.

4 To set **Hardness** an "H" will appear to enter Compensated

EXAMPLE [H - 25]

- Hardness in grains per gallon (gpg) Default setting is 25 gpg.

5 To Exit Main Menu, press the **Menu/Enter** button.

NOTE If no buttons are pressed for 60 seconds, the Main Menu will be exited automatically.

Normal Operation

Home Display

Metered models alternate the Time of Day and Gallons left until the next regeneration. The meter will count down to zero (0000) and then regenerate at the scheduled time set.

Battery Back-Up (Uses a standard 9-volt alkaline battery.)

Features of Battery Back-Up:

- During power failures, the battery will maintain the time of day as long as the battery has power. The display is turned off to conserve battery power during this time. To confirm that the battery is working, press either button and the display will turn on for five (5) seconds.
- If power failure occurs while system is regenerating, the valve will motor to a shut off position to prevent constant flow to drain. Depending upon system pressure and other factors, it is possible to observe a reduced flow to drain during this step. After power is restored, the valve will return and finish the cycle where it left off prior to the power interruption.
- When used without battery back-up, during a power failure, the unit stops at its current point in the regeneration position and then restarts at that point when the power is restored. The time will be offset by the increment of time the unit was without power, so it is necessary to reset the time of day on the unit. No other system will be affected.

Starting Extra Regeneration Cycle

1 To Start **Delayed Extra Cycle** **EXAMPLE** [ ]

- If Gallons Remaining Until Next Regeneration does not read '0000', press and hold the Set/Change button for 3 seconds until the display reads '0000' on metered.
- Regeneration cycle will initiate at the next designated regeneration time.

2 To start **Immediate Extra Cycle** → First complete above step.

- With Days Remaining Until Next Regeneration at '0000',
- Press and hold the Set/Change button.
- After 3 seconds, the regeneration cycle will begin.

3 To **Fast Cycle** thru regeneration → First complete above 2 steps.

NOTE Press and hold the Set/Change button for 3 seconds to advance to the next cycle step. Fast Cycle is not necessary unless desired to manually step through each cycle step. (Repeat until valve returns to the home display)

Softeners		Default (Min)
Step 1	Backwash	10
Step 2	Brine & Rinse	90
Step 3	Rapid Rinse	10
Step 4	Brine Refill	9 lbs/ cu ft

MASTER PROGRAMMING MODE

To enter Master Programming Mode, press and hold both buttons for 5 seconds.

NOTE All Master Programming functions have been preset at the factory. Unless a change is desired, it is **NOT** necessary to enter Master Programming Mode.

Regeneration Time (r) **EXAMPLE** [r 2A]

- The time of day at which regeneration may take place is designated by the letter "r".
- Default regeneration time setting for **SOFTENERS is 2a**
- The first display digit indicates A.M. or P.M. To change the value, press the **Set/Change** button.
- Press **Menu/Enter** button to accept the value and move to the next digit.
- The second and third display digits indicate the hour at which the regeneration will occur.
- Change the digits with the **Set/Change** button and accept with the **Menu/Enter** button.
- After the entire display flashes, press the **Menu/Enter** button to move to the next menu item.

Regeneration Day Override (A)

- Press **Menu/Enter** button. This display is used to set the maximum amount of time (in days) the unit can be in service without regeneration. This setting is identified by the letter "A" in the left digit. Regeneration will begin at the scheduled time. A setting of zero will cancel this feature.
- Example: Override every 7 days (A-07), default setting, or cancel setting (A-00). Maximum is 29.

Regeneration Cycle Step Times (Steps 1, 2, 3, 4) **EXAMPLE** [3 - 10]

- The next 4 displays set the duration of time in minutes for each regeneration cycle step.
- The step number which is currently modifiable is indicated on the far left of the display screen.
- The number of minutes allotted for the selected backwash step is displayed on the far right.
- Change the digit values using the **Set/Change** and **Menu/Enter** buttons as described above.

System Capacity in Grains (c) – Meter (Demand Mode Only)

- Press the **Menu/Enter** button. This display is used to set the system capacity in grains and is used in conjunction with the hardness setting to calculate total gallons of treated water available between regenerations. This option is identified by the letter "c" in the left digit. The maximum value for this item is 399.

EXAMPLE 32,000 grain capacity (c 032).

Reserve Capacity Setting % **EXAMPLE** [P - 25]

Brine Pre-Fill	PE-0 / PE-1 and
Display Off	DO-0 / DO-1.
Bluetooth Enabled	BE - 1 (ON) BE - 0 (OFF)
Bluetooth Password	BTPP is displayed for one second, then password is displayed.

To Exit the Master Programming Mode, press the **Menu/Enter** button until time of day returns.

NOTE If no buttons are pressed for 60 seconds, the Master Programming Mode will be exited automatically.

Utilizing Bluetooth Control

For simplified set up and control, please install the Legacy View app on a compatible Bluetooth 4.0+ enabled smart phone or tablet.

1 Download and install the Legacy View app from the Google Play Store, Apple App Store

2 Open the Legacy View app

- Choose a valve device at any time from the list of available devices to connect to by clicking on it.
- If the valve you want to connect to doesn't show up, or there is a problem connecting to a device you can press the "Scan for Devices" button or the Legacy View logo at any time to refresh the list and start the process over.
- If the valve device is a BTLE valve and it has a password other than the default password, the first time you connect to it the app will ask you to enter the password. After entering it the first time you should not need to enter it again unless it changes.

3 BTLE Valve devices can be updated by the App. When the app is updated from the Google Play Store or the Apple App Store, it may contain an updated firmware program for the valve devices. These updates could contain new features or operational improvements. It is up to the user to allow these updates to be sent to the valve device. Uploading a new program takes approximately 1 minute.

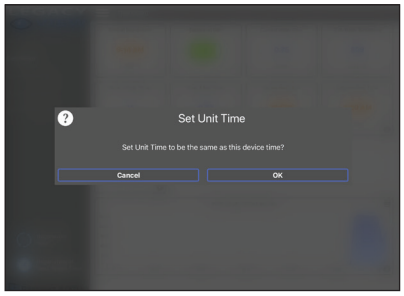
Dashboard

NOTE Consult your dealer before making any changes

From the **Dashboard**, all items in **ORANGE** can be changed, while blue fields are informational only.

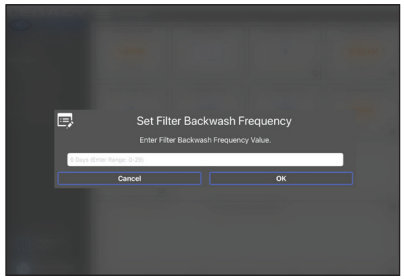


SET UP UTILIZING BLUETOOTH APP



Change Time of Day

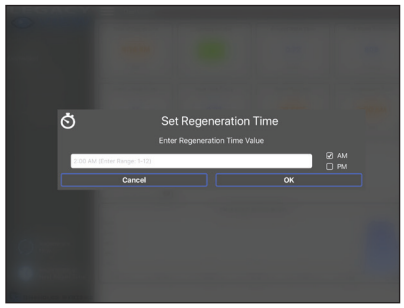
(Press "SET" to set time automatically based on device).



For Filters:

Set Backwash Frequency

This sets the amount of day between backwash cycles



Set Regeneration Time

EXAMPLE For 2a.m., just type 2, choose a.m., and press 'OK'

NOTE If you have a filter and a softener the valves should be set to regenerate at different times. Factory default times are 12a.m. for filters, and 2 a.m. for softeners.

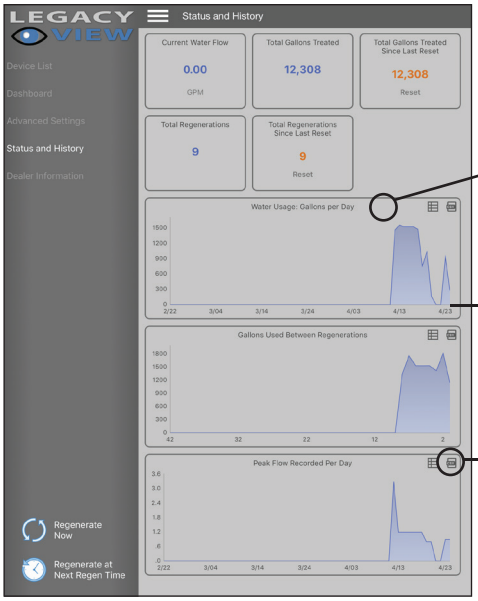
Advanced Settings

NOTE Consult your dealer before making any changes. We do not recommend changing Advanced Settings unless you have a good understanding of the system operation.

From the **Advanced Settings**, all items in **ORANGE** with a "set" button can be changed.

Status and History

From the **Status and History**, all items in **ORANGE** can be reset.

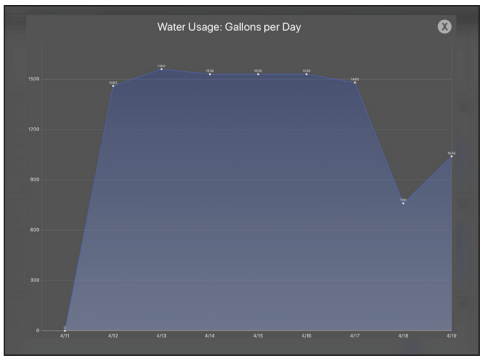


Pressing this icon will show a list of the data that is in the graph.

Touch any graph to enlarge and see details. Enlarged graphs are able to be zoomed in by pinching with two fingers.

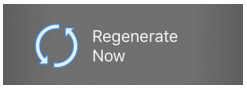
(Enlarged graph shown below)

Pressing the .csv logo in the corner will allow the graph data to be exported and shared.



Enlarged graph showing water usage

1 Start a regeneration or backwash cycle

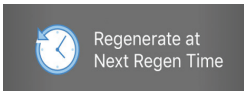


Option 1

Click the "Regenerate Unit Now."



Once a regeneration has been started, if you would like to force the unit into the next cycle step click "Go to Next Regeneration Step".



Option 2

"Regenerate Unit at Next Regen Time" button. This will take the system into a backwash cycle at the next regeneration time.

MASTER PROGRAMMING MODE

To enter Master Programming Mode, press and hold both buttons for 5 seconds.

NOTE All Master Programming functions have been preset at the factory. Unless a change is desired, it is **NOT** necessary to enter Master Programming Mode.

Backwash Time (r) **EXAMPLE** [r 1A]

- The time of day at which backwash may take place is designated by the letter "r".
- Default regeneration time settings is **1a**
- The first display digit indicates A.M. or P.M. To change the value, press the **Set/Change** button.
- Press **Menu/Enter** button to accept the value and move to the next digit.
- The second and third display digits indicate the hour at which the backwash will occur.
- Change the digits with the **Set/Change** button and accept with the **Menu/Enter** button.
- After the entire display flashes, press the **Menu/Enter** button to move to the next menu item.

Backwash Cycle Step Times (Steps 1, 2, 3, 4) **EXAMPLE** [3 - 10]

- The next 4 displays set the duration of time in minutes for each backwash cycle step.
- The step number which is currently modifiable is indicated on the far left of the display screen.
- The number of minutes allotted for the selected backwash step is displayed on the far right.
- Change the digit values using the **Set/Change** and **Menu/Enter** buttons as described above.

Bluetooth Enabled bE - 1 (ON)

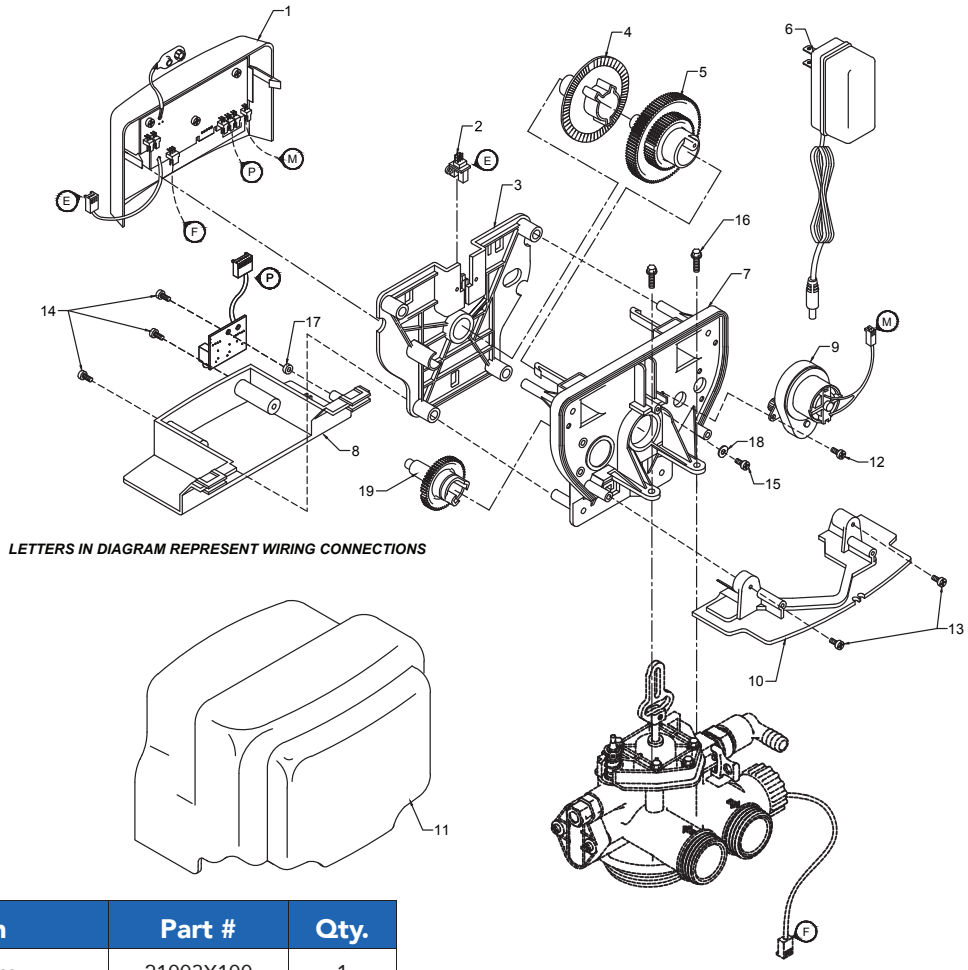
bE - 0 (OFF)

Bluetooth Password bbPP is displayed for one second, then password is displayed.

To Exit the Master Programming Mode, press the **Menu/Enter** button until time of day returns.

NOTE If no buttons are pressed for 60 seconds, the Master Programming Mode will be exited automatically.

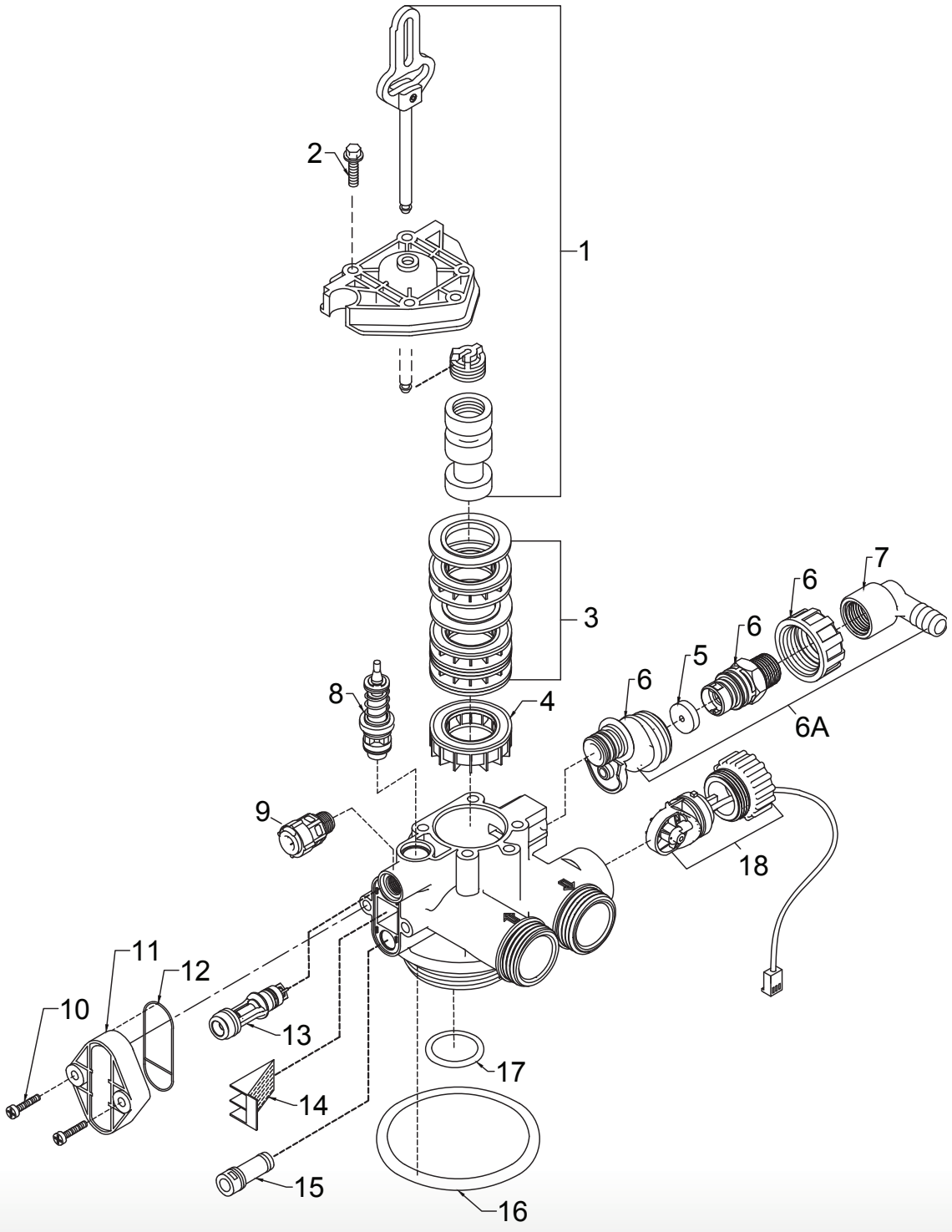
CONTROL VALVE ASSEMBLY



LETTERS IN DIAGRAM REPRESENT WIRING CONNECTIONS

Ref	Description	Part #	Qty.
0	Metered Power Head Assy.	21003X100	1
1	Softener Circuit Boad Assy.	22003X102	1
2	Encoder	20001X124	1
3	Front Plate	20001X004	1
4	Encoder Wheel	20001X007	1
5	Main Gear	21001X120	1
6	Power Supply	20001X125	1
7	Back Plate	20001X005	1
8	Lower Front Base For Cover	20111X002	1
9	Legacy View Motor Assy.	20016X006	1
10	Lower Back Base for Cover	20111X003	1
11	Valve Cover	20111X017	1
12	6 X 1/2" Slotted, Hex Head	20001X003	1
13	6 X 1/2" Phillips, Pan Head	SC10	3
14	6 X 1/2" Slotted, Hex Head Blk	SC9	2
15	6 X 1/2 Fenderwasher SST	20001X002	1
16	Washer Circuit Board	20111X014	1
17	6-32 X 5/16" Phillips, Pan Head	SC2	1
21	10-24 X 3/4" Screw SST	20001X001	2

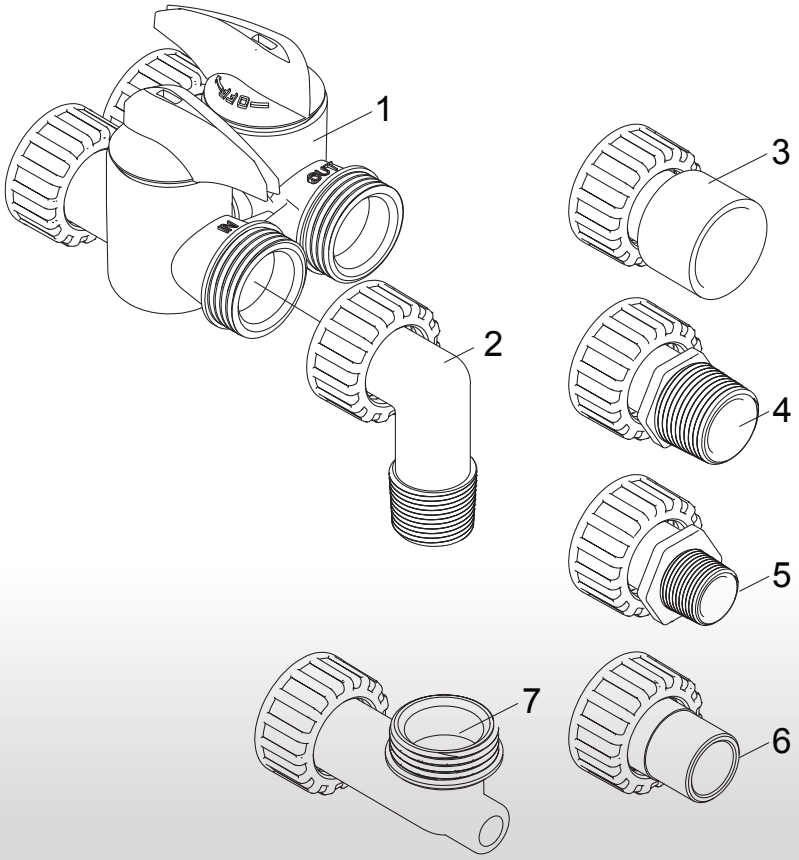
VALVE BODY ASSEMBLY



VALVE BODY ASSEMBLY

Ref	Description	Part #	Qty.
1	Piston Assembly	20001X231	1
2	10-24 X 3/4" Screw SST	20001X001	3
3	Seal and Spacer Kit	20561X253	1
4	End Spacer	20001X234	1
5	Flow Control Button 1.5 GPM	20251X266	1
	Flow Control Button 2.0 GPM	20251X267	1
	Flow Control Button 2.4 GPM	20251X268	1
6A	DLFC Assy.	20017X251	1
7	90 Degree Hose Barb Elbow	20017X266	1
8	Brine Valve	20561X225	1
9	Brine Line Connection	20561X006	1
10	10-24 X 3/4" Screw SST	20001X001	2
11	Injector Cap	20001X223	1
12	Injector Cap Seal	20001X224	1
13	Injector, White	20017x219	1
	Injector, Blue	20017x220	1
14	Injection Screen	20001X222	1
15	Plug	20001X217	1
16	Tank. O-Ring	20015X043	1
17	Dist. O-Ring	20561X204	1
18	Meter Assembly	20017X203	1

BYPASS ASSEMBLY



Ref	Description	Part #
1	D15 Bypass (included with all units)	20017X283
2	1" NPT Elbow Set (included with all units)	20017X284
3	1" Female Straight Slip Set (optional)	20017X288
4	1" NPT Straight Set (optional)	20017X289
5	3/4" NPT Straight Set (optional)	20017X307
6	1" x 3/4" Brass Sweat Connector (optional)	20017X304
7a	Elbow, Vertical Adapter Blank (optional)	20017X295
7b	Elbow, Vertical Adapter 1/4" NPT Tapped (optional)	20017X294

General Preliminary Instructions

Perform Before All Servicing Operations

1. Turn off water supply to conditioner.
   - If the conditioner installation has a "three valve" bypass system, first open the valve in the bypass line, then close the valves at the conditioner inlet and outlet.
   - If the conditioner has an integral bypass valve, put it in the bypass position.
   - If there is only a shut off valve near the conditioner inlet, close it.
2. Remove cover and relieve water pressure in the conditioner by stepping the control into the backwash position momentarily. Return the control to the service position.
3. Unplug electrical cord from outlet.

B To Replace Powerhead

1. Remove the control valve cover and disconnect the power supply.
2. Disconnect the meter cable from circuit board and feed back through control (if existing meter is being re-used)
3. Remove lower back base screws and detach lower back base.
4. Remove screw and washer at drive yoke. Remove powerhead mounting screws. The entire powerhead assembly will now lift off easily.
5. Put new powerhead on top of the valve. Be sure the drive pin on main gear engages slot in drive yoke (wide side of drive yoke upright must face to the left away form the motor).
6. Replace powerhead mounting screws. Replace screw and washer at drive yoke.
7. Reattach lower back base.
8. Reconnect meter signal, wire and power supply.
9. Reinstall cover.

C To Replace Piston Assembly

1. Follow steps **A1 - A3**
2. Disconnect the meter signal wire from the circuit board.
3. Remove lower back base screws and detach lower back base.
4. Remove screw and washer at piston drive yoke. Remove powerhead mounting screws. The entire powerhead assembly will now lift off easily.
5. Remove piston retaining plate screws.
6. Pull upward on end of piston yoke until assembly is out of valve.

7. Inspect the inside of the valve to make sure that there is no foreign matter that would interfere with the valve operation.
8. Install new seals and spacers.
9. Take new piston assembly and push piston into valve by means of the end plug. Twist drive yoke carefully in a clockwise direction to properly align it with drive gear. Reinstall piston retaining plate screws.
10. Follow steps **B5 - B9**

D To Replace Seals and Spacers

1. Follow steps **A1 - A3**.
2. Disconnect the meter signal wire from the circuit board.
3. Remove screw and washer at piston drive yoke. Remove powerhead mounting screws. The entire powerhead assembly will now lift off easily. Remove piston retaining plate screws.
4. Pull upward on end of piston rod yoke until assembly is out of valve. Remove seals and spacers. (Note: Special end spacer must be reused)
5. Lubricate new seals with silicone lubricant included in the seal and spacer kit. Make sure the special end spacer is properly seated in the valve body. Install new seals and spacers individually, pressing around the outer edge of each seal to make sure it is seated. (When all seals and spacers are seated properly, you will have a 1/4" of space between the top seal the the top of the valve body)
6. Follow Steps **C9 - C10**.

E To Service Injector and Screen

1. Follow steps **A1 - A2**.
2. Unscrew injector cover screws and remove injector cover.
3. Remove injector screen and clean or replace.
4. Remove injector and clean or replace.
5. Apply silicone lubricant to injector seal and replace cover and screws.

F To Replace Meter

1. Follow steps **A1 - A3**
2. Unplug meter cable from front of circuit board.
3. Unscrew meter assembly nut from valve body.
4. Remove meter from valve body and clean or replace as necessary.
5. Reinstall meter, nut and cable.

G To Replace Brine Valve

1. Follow Piston Replacement instructions. After the piston is removed, pull the brine valve from the valve body.
2. Inspect brine valve cavity in valve body and remove any foreign matter that would interfere with brine valve operation.
3. Apply silicone lubricant to brine valve O rings and push the new brine valve into the valve body.
4. Continue following Piston Replacement instructions to reinstall piston and powerhead

Symptom	Probable Cause	Correction
Softener Fails to Regenerate Automatically	Power supply plugged into intermittentent or dead power source	Connect to constant power source
	Disconnected meter cable	Reconnect cable
	Improper control valve programming	Reset program settings
	Defective power supply	Replace power supply
	Meter is dirty or defective	Clean or replace meter assembly
	Defective Drive motor	Replace motor
Regeneration at Wrong Time	Time of day improperly set, due to power failure	Reset time of day programming and install 9-volt battery.
	Regeneration time set improperly	Reset regeneration time programming
Loss of Capacity	Increased raw water hardness	Increase hardness setting or decrease days between regeneration
	Brine concentration and or / quantity	Keep brine tank full of salt at all times. Clean it yearly. Salt may be bridged. If using a salt grid plate, ensure refill water is over it.
	Resin fouling	Call dealer. Find out how to confirm it. Clean the resin and prevent future fouling.
	Poor distribution, channeling (uneven bed surface)	Call dealer. Check backwash flow. Regenerate more frequently
	Internal valve leak	Call dealer. Replace spacers, seals and / or piston
	Resin age	Call dealer. Check for resin oxidation caused by chlorine. Mushy resin.
	Resin loss	Call dealer. Check for correct bed depth. Broken distributor tube. Air or gas in bed: well gas eliminator. Loose brine line.
Poor Water Quality	Check items listed in #1, #2, and #3	
	Bypass valve open	Close bypass valve.
	Channeling	Check for too slow or high service flow. Check for media fouling.

TROUBLESHOOTING GUIDE

Symptom	Probable Cause	Correction
High Salt Usage	High salt setting	Lower brine tank refill time
	Excessive water in brine tank	See symptom #7
	Constant flow through the unit	Indicates plumbing leak (e.g. toilet tank)
	Regenerating too frequently	Lower hardness setting or increase days between regeneration.
Loss of WaterPressure	Scaling / fouling of inlet pipe	Clean or replace pipline. Pretreat to prevent.
	Fouled resin	Clean resin. Pretreat to prevent.
	Improper backwash setting	Backwash more frequently
Excessive Water in Brine Tank and / or Salty Water to Service	Plugged drain line or drain line control	Check flow to drain. Clean drain line flow control button
	Dirty or damaged brine valve	Clean or replace brine valve.
	Plugged injector or screen	Clean or replace injector screen.
	Low inlet pressure	Increase pressure to allow injector to perform properly. (20 psi minimum)
	Excessive brine refill cycle time	Lower brine refill time.
Softener Fails to Use Salt	Check items listed in #1	
	Improper control valve programming	Check and reset programming
	Plugged / restrict drain line	Clean drain line and / or flow control button
	Injector and / or screen is plugged	Clean or replace injector and screen
	No water in brine tank	Check for restriction in BLFC. Ensure safety float is not stuck. Check brine tank for leaks.
	Water pressure is too low	Line pressure must be at least 20 psi.
	Brine line injects air during brine draw	Check brine line connections for air leaks
	Internal control leak	Call dealer. Check piston, seals and spacers for scratches and dents.
Continuous Flow to Drain	Foreign material in control piston and seals	Call dealer. Clean valve and replace piston and seals.
	Internal control leak	Same as above.
	Valve jammed in backwash, brine or rapid rinse position	Same as above.
	Motor stopped or jammed	Check for jammed piston. Replace piston and seals. Replace motor if motor is unresponsive.

Control Valve Error Code Diagnosis

Under normal operating conditions, when your control valve is in the "in service" position, the display should alternate between the current time of day and the number of days remaining (for filters and time clock softeners) or gallons remaining (for metered softeners) until the next regeneration. This is the "home display." If the valve is currently going through a regeneration cycle, the display will show the cycle step on the left side of the display and the number of minutes remaining in that step on the right side of the display. If any other information is being displayed, then the valve is informing you of an issue. There are five error codes which could indicate an issue with the control valve. When an error is being displayed, the valve will be in a stopped position, and the buttons will not respond to being pressed. Even if the cause of the error code is corrected, the error code will not clear until the power supply has been disconnected and reconnected (this will be referred to as "cycling" the power). All error codes are displayed as the letters "Err" followed by a flashing number 2-6:

Error 2 - Valve is searching for homing slot.

Allow valve to continue running. If the homing slot is found, the valve will return to the home display, otherwise, another error code will appear.

Error 3 - No encoder slots are being seen.

This occurs when the motor is running, but the encoder is not seeing any of the slots in the encoder wheel. This can happen if the encoder has been disconnected, but most commonly occurs when debris in the valve body has stopped the piston, causing the encoder wheel to be unable to turn.

1. Check encoder connection. If the encoder is plugged in and snapped into place, skip to step #2 below. If encoder is disconnected, reconnect it and cycle power to clear the error.
2. Disconnect powerhead from valve body, cycle power to clear the error code. Manually cycle the power head through the regeneration cycle steps to verify that the motor can cycle properly while the powerhead is disconnected from the valve body. If the error 3 does not reappear, skip to step #3 below. If the error 3 does reappear, order a board & motor kit to replace the circuit board & motor.
3. Remove piston and seals from the valve body and inspect valve body for debris. Replace the seal & spacer kit. Inspect piston and replace piston if Teflon coating is worn

Error 4 - Unable to find homing slot.

1. Check encoder wheel for debris.
2. Cycle power. Valve should either find home or go to a different error code. If error 4 returns, replace powerhead assembly.

Error 5 - Motor overload.

This occurs when the motor current is too high. This could be caused by an issue with the motor itself, but is typically caused by friction in the valve body

1. Disconnect powerhead from valve body and cycle power to clear the error code.
2. If the error 5 returns, replace the motor. Otherwise, manually cycle the powerhead through the regeneration cycle steps to verify that the motor can cycle properly while the powerhead is disconnected from the valve body. Either way, proceed to the next step.
3. Remove piston and seals from the valve body and inspect valve body for debris. Replace the seal & spacer kit. Inspect piston and replace piston if Teflon coating is worn.

ERROR CODES

Error 6 - No motor current.

This typically occurs if the motor cable has come unplugged from the circuit board. Check that the motor cable is plugged into the circuit board and attached to the motor. If this is not the issue, the motor or circuit board may need to be replaced.

No Display

If your display is blank, there is no power going to the circuit board due to one of the following factors:

- The electrical outlet is not powered or is switched off
- The power cable has come unplugged from the circuit board
- The power supply has come unplugged from your electrical outlet
- The power supply has come unplugged from the control valve
- The power supply is not working