



Clean Water Made Easy

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# **5900-BT**

# **Neutralizer**

## **Operation & Maintenance Manual**



Thank you for purchasing a Clean Water System! With proper installation and a little routine maintenance your system will be providing neutral pH water for many years.


Please review this start-up guide entirely before beginning to install your system, and follow the steps outlined for best results.

**CALCITE MEDIA CONTAINS DUST. USE PAPER MASK AND VENTILATE TO AVOID BREATHING DUST (Use a spray bottle to wet the media down).**

## Helpful Videos

<https://www.youtube.com/channel/UC415QpvlRz-YAntxIMiel2w/videos>

## Questions?

 **Call us toll-free:** 1-888-600-5426 or 1-831-462-8500

 **Email us:** [support@cleanwaterstore.com](mailto:support@cleanwaterstore.com)

 **See more information on our website:** [www.cleanwaterstore.com/resources](http://www.cleanwaterstore.com/resources)

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# 5900-BT Neutralizer Operation & Maintenance

## Packing Lists

### All systems include:

5900-BT control valve, bypass assembly with 1" connector yoke, power supply, top screen, and media funnel for adding the Neutralizer media.

### Neutralizer Filter 1.0 cubic foot size

10" x 44" filter tank with distributor tube

12 lbs. Filter gravel and 1 cubic foot of Calcite (or Calcite blend if you have blend type)

### Neutralizer Filter 1.0 cubic foot size (Short Tank)

13" x 30" filter tank with distributor tube

12 lbs. Filter gravel and 1 cubic foot of Calcite (or Calcite blend if you have blend type)

### Neutralizer Filter 1.5 cubic foot size

10" x 54" filter tank with distributor tube

16 lbs. Filter gravel and 1.5 cubic foot of Calcite (or Calcite blend if you have blend type)

### Neutralizer Filter 2.0 cubic foot size

12" x 48" filter tank with distributor tube

20 lbs. Filter gravel and 2.0 cubic foot of Calcite (or Calcite blend if you have blend type)

### Neutralizer Filter 2.5 cubic foot size

13" x 54" filter tank with distributor tube

35 lbs. Filter gravel and 2.5 cubic foot of Calcite (or Calcite blend if you have blend type)

## What to Do if Your Tank is Not Level

Your black filter tank base is not glued to the bottom of your tank. Occasionally tank bases will become crooked during shipment. If you find that that your tank does not sit level on the floor, you can easily adjust it by holding the empty tank and gently knocking the base on a concrete or solid floor once or twice to level it.

## 5900-BT Neutralizer Operation & Maintenance

### How Your Neutralizer Works

See Fig 1 on the right. In your Neutralizer, the water enters the top of the tank (red arrows) and flows down through the media and up the distributor tube (blue arrows).

The downflow type Neutralizer raises the pH of your water and can be backwashed, which cleans and re-classifies the Calcite, preventing channeling.

During backwash the flow of water is reversed, and water flows down the distributor tube and up through the media, lifting and expanding the Calcite media.

During the backwash the Calcite is cleaned by the action of the water flowing through it.

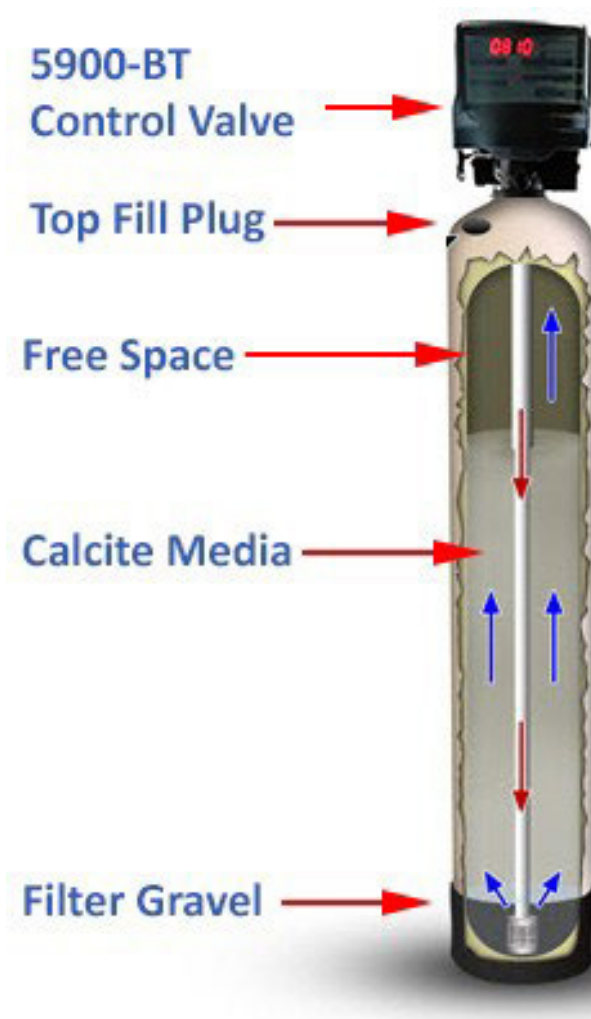


Fig 1

# 5900-BT Neutralizer Operation & Maintenance

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## System Installation Recommendations

1. Verify that you have received all parts and there are no damaged or missing parts.
2. Put gravel in first, then Neutralizer Media. Fill tank with clean water. Allow to soak for at least one hour up to 24 hours.
3. Make the plumbing connections from your existing system to the bypass assembly, installing extra valves, unions, pressure gauges and hose bibs as needed.
4. Do not use copper piping BEFORE the neutralizer, best to use PVC or PEX. OK to use copper AFTER the neutralizer filter.
5. Attach the control head to the tank, and to the bypass assembly.
6. Install the Drain Line tubing and Drain Line Tubing Flow Control button (Internal for models 2.0 CF and less, or External flow control assembly for models 2.5 CF).
7. Plug in the power supply and program the valve.
8. Follow the instructions to put the system online and to verify the system is leak-free.

## Pre-Installation

1. Review your packing list to make sure you have received all the parts before installation.
2. If you are going to be turning off the water to the house and you have an electric water heater, shut off the power to the water heater before beginning installation.
3. Pick a suitable location for your filter system on a dry level spot where it won't be exposed to freezing temperatures, direct sunlight, wind or rain.
4. Get all your plumbing parts together before beginning installation.
5. After the system is installed and running, your water may be discolored, or full of sediment or rust, especially if you have older or corroded piping. This typically clears up over a day or two.

# 5900-BT Neutralizer Operation & Maintenance

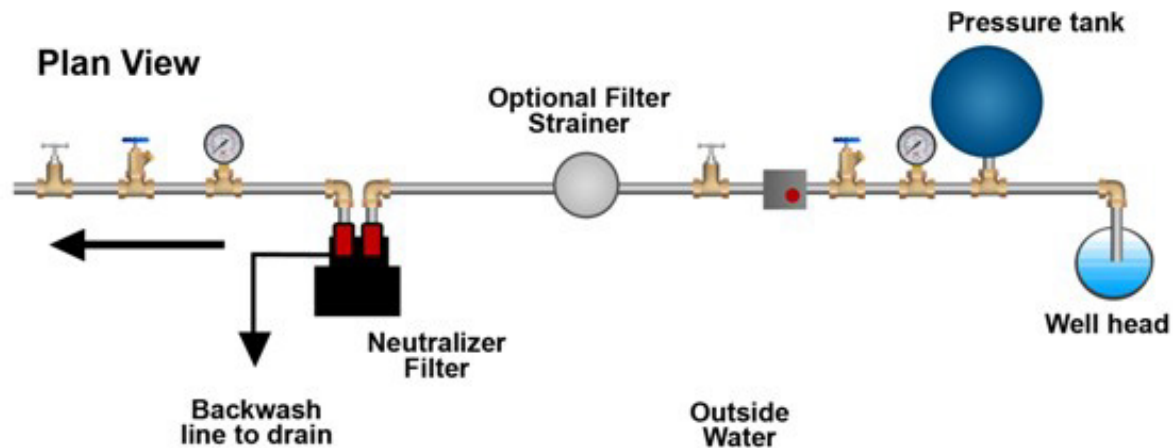
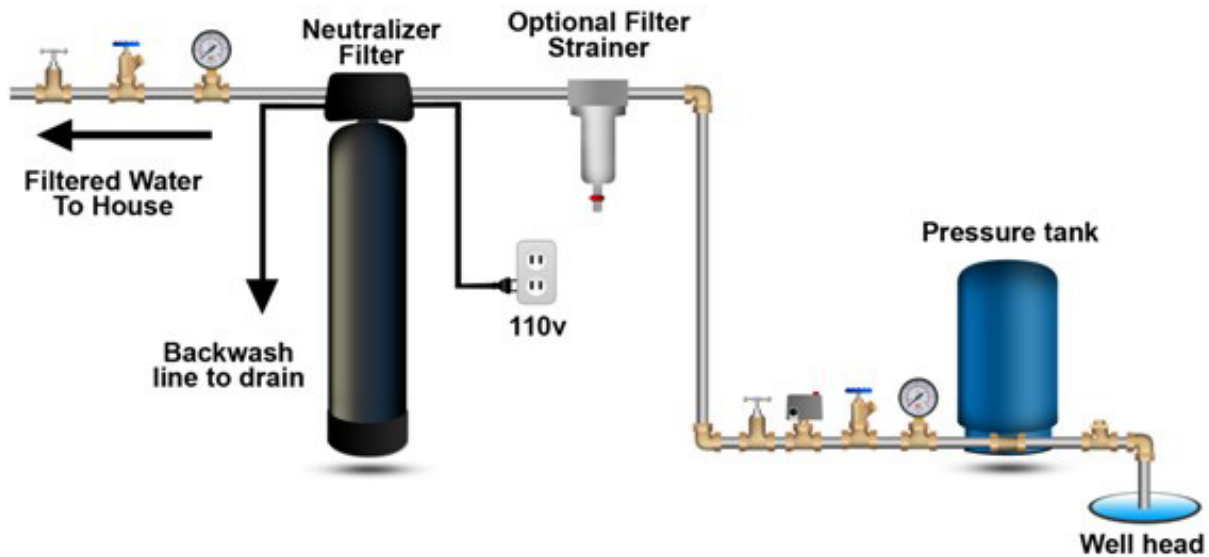
## Best Practices for Piping & Drain Installation

1. See typical installation diagram (Fig 3 on next page). In well water applications, the neutralizer filter must be installed after the pressure tank.
2. Make sure to connect the IN pipe to the 5900-BT inlet and the OUT pipe to the outlet. As you face the 5900-BT control from the front, the water enters on the right and exits on the left. From the back (see Fig 3) the water enters on the left. The inlet and outlet are attached to the bypass valve, which is marked with arrows as well.
3. Make sure there is a working gate or ball valve before the Neutralizer Filter and also one after as shown in Fig 3. The pressure gauges are optional and perhaps not necessary but a hose bib (which is a faucet that you can attach a garden hose to) is strongly recommended after the Neutralizer Filter and before the second ball valve. This makes it easy to rinse your Neutralizer Filter on start-up and gives you a place to test the water before the house pipes.
4. If you will be using copper piping, do not sweat the copper pipe directly on to the 5900-BT control valve. Avoid heating up the 5900-BT control valve plastic with the torch.
5. You do not need unions to install your 5900-BT control valve. If you need to remove it, the 5900-BT has quick-release couplings that make it easy to put the Sediment filter on by-pass and remove the filter system from the piping.
6. The drain line tubing (not supplied) is connected to a drain from the drain outlet using flexible 1/2" ID tubing. The drain can run up above the control head and out to a drain. Most plumbing codes require an air-gap connection, so that if your sewer or septic tank backs up, it cannot cross connect with the drain tubing (if running tubing into the washing machine drainpipe, for example).



## 5900-BT Neutralizer Operation & Maintenance

### Typical Neutralizer 5900-BT piping installation



#### Key

Water piping



Check Valve



Hose Bib



Pressure switch



Pressure Gauge



Gate or ball Valve

Fig 3



# 5900-BT Neutralizer Operation & Maintenance

## Installation Steps Overview

1. Install on a level floor or surface.
2. Unit must be installed at least 10 feet ahead of the inlet to a water heater to prevent damage due to back-up hot water or use a check valve to prevent hot water back-up.
3. DO NOT install the unit in an area of direct sunlight or where freezing temperatures may occur.
4. Locate the unit near an unswitched, 120 volt / 60 Hz grounded electrical outlet.
5. Check for distance and proper drain installation (e.g. floor drain, washing machine standpipe). Determine type and size of piping required for filter connection (e.g. copper, galvanized, PVC plastic).
6. **Note:** If household plumbing is galvanized and you intend to make the installation with copper obtain di-electric unions to prevent dissimilar metal corrosion.
7. **Caution:** If sweat soldering copper pipe (remember to always use lead free solder and flux), cover yoke and 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.

## Add the Filter Media and Install 5900-BT Backwash Valve on Tank

1. If a blue funnel, cover the top of the distributor tube with black electrical tape, duct tape or masking tape so that no gravel or media will go down the distributor tube when adding the media. Leave a folded tab of tape so you can easily pull off the tape after filling the tank.
2. Make sure you “test fit” the distribution tube, and find the divot that keeps the tube centered, before adding the gravel and media. Hold the tube center until there is enough gravel and media to support the tube. The top of the distributor tube should be level with the top opening of the filter tank and not stick up higher than the top of the tank.



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3. There are two styles of funnel that we ship, depending on availability; you get either the blue or black funnel.
4. Add the filter gravel that came with your order. The gravel should cover the bottom distributor screen before adding the Calcite filter media.
5. If you received Corosex or Flomag (magnesium oxide) in your shipment (used with a pH of below 6), you can now mix it together with the Calcite before adding the blend into the tank. It does not have to be exact, but we recommend mixing them together in a bucket, and adding into the tank until it is 2/3rds full, do not fill past 2/3rds.
6. Fill tank completely with water and allow to soak for at least 1 hour up to 24 hours before you hook it up to piping.
7. Remove tape from top of distributor tube. Be careful not to pull up distributor tube.

**Make sure top of distributor tube  
is level with top of tank**



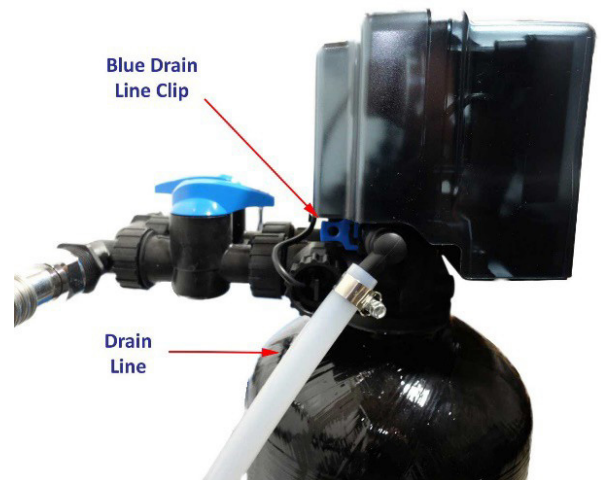
### Start Installation

1. Make sure to connect the IN pipe to the inlet and the OUT pipe to the outlet (see previous page). As you face the 5900-BT control from the front, the water enters on the right and exits on the left. From the back the water enters on the left. The inlet and outlet are attached to the bypass valve, which is marked with arrows as well.
2. Make sure there is a hose bib installed after the system, and a working gate or ball valve before the filter system and also one after as shown in Fig 2 and 3. The pressure gauges are optional (although strongly recommended) but a hose bib (which is a faucet to which you can attach a garden hose) is strongly recommended after the Neutralizer Filter.. before the second ball valve. This makes it easy to rinse your new 5900-BT on start-up and gives you a place to test the water.
3. Attach plastic top screen to the under-side of the 5900-BT control valve. It is a funnel-shaped plastic screen that snaps on to the control valve and prevents resin from being backwashed out to drain during the regeneration cycles. It may twist on clockwise or counter-clockwise.



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4. Add a small amount of silicone grease to both O-rings (only O-rings, not tank thread) on the bottom of the control valve and screw on 5900BT control valve carefully.
5. Do not lubricate tank threads or any other fittings other than O-rings. Do not use pipe-joint compound, vegetable oil, Teflon tape, or Vaseline or other petroleum greases on tank threads.
6. If you pull up the distributor tube up after the gravel and media are in the tank (upon initial install or any time after, for service, etc.), it must be re-seated. It is usually possible to do this by spraying water down the distributor tube with a garden hose while pushing on the end of the tube. If this does not work, you must empty the tank completely and start over.
7. Do not hard pipe the drain line with PVC or copper, use flexible tubing. If you use hard PVC piping for drain line, you must be able to remove the hard drain piping and attach tubing to test flows.
8. Make sure the drain tubing is firmly clamped to the barbed fitting with a hose clamp.
9. You do not need unions to install your 5900-BT control valve. If you need to remove it, the 5900-BT control valve has quick-release couplings that make it easy to put the 5900-BT on bypass and remove the filter system from the piping.
10. The drain line tubing is connected to a drain from the drain outlet using flexible 5/8" ID tubing. Note that the drain line can run up above the 5900-BT control and into a drain, it does not have to drain down, as the filter backwashes under line pressure.
11. Most plumbing codes require an air-gap connection for the drain line tubing, so that if your sewer or septic tank backs up, it cannot cross connect with the drain tubing.



## External Drain Line Flow Control

1. If you bought a 2.0 or 2.5 cubic foot neutralizer filter you will get an external Drain Line Flow control with your order. This has three pieces: a 1" x 3/4" Adapter, the DLFC, and two hose barb fittings.
2. Assemble the 3 parts using Teflon tape, making sure the flow arrow is facing the right direction. This can go anywhere in the drain line run, even at the end. Clamp it to a wall, especially when running the drain line "up and out."



## 5900-BT Neutralizer Operation & Maintenance

### How to Attach the Bypass

Make sure there is lubricant on all three sets of O-rings and insert and screw bypass onto end connectors (O-rings are already on valve, with the Inlet Air Check Valve on the left, Inlet side).

Screw the Elbow fittings onto the end of the bypass and attach to In and Out service pipe.



Note: There is supposed to be some “play” in the whole assembly. No need to over-tighten.

### How to Connect Electrical Power Supply

**P = Power** – Use this connection

**B = Optional** (not used, powered in backwash step only)

**S = Optional** (not used, powered in regeneration step only)

Connect the power supply to the control valve connection P. This is the connection on the outside of the valve, nearest the side or outer section of the valve. Plug into a wall outlet.

B and S connections are used to power optional external relays, pumps, or solenoid valves (not used for most residential applications).



### How to Connect Electrical Power Supply

#### **DO NOT INSTALL BATTERY UNTIL AFTER INITIAL BACKWASH!**

Connect 9V battery to battery cable under control panel. Battery cable and battery will sit under control panel.

Control panel can be easily removed to access battery cable if needed, no tools are required.

During power failures the battery will maintain the time of day if the battery has power. The display is turned off to conserve battery power during this time. If a power failure occurs while the system is regenerating, the motor will advance to a shut-off position to prevent constant flow to drain



# 5900-BT Neutralizer Operation & Maintenance

## Program Your Valve. Main Menu

1. Remove cover by pulling out front and back tabs slightly and lifting straight up to access control panel.
2. Enter main menu, by pressing the Menu/Enter button once (Time of day will flash)
3. Set current time of day by pressing the Set/Change button (First digit will begin to flash)
4. To change digit value, press the Set/Change button.
5. To accept the digit, press the Menu/Enter button
6. Once the last digit for current time of day is accepted all digits will flash.
7. With all digits flashing next press the Menu Button to set A.M. or P.M.
8. Once A.M./P.M. is accepted the next menu item will flash
9. To Set Number of Days Between Backwash Cycles (A) Press the Set/Change Button and set number of days between cycles. Maximum value is 29. If value is set to 0, no automatic backwash will occur.
10. The recommended initial setting for the Neutralizer Filter is every 4 days for families or heavy use and up to every 7 days for 1 to 2 persons in the home. If you experience pressure loss in between backwashes, increase frequency of backwash up to once per day.
11. To exit menu, press the Menu/Enter button



## Master Programming Mode

To enter Master Programming Mode press and hold both buttons for 5 seconds. To change a value, Press the Set/Change buttons. When done, press the Menu/Enter button to go to the next step.

### 1. Regeneration Time (r)

The first master programming display viewed is the option setting for Regeneration Time. It is identified by the letter 'r' in the left digit. Set the desired time of day that a regeneration (the backwash and rinse cycles) will occur, when required.

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**We recommend setting the system to backwash at 2 AM,** or at any time that it is unlikely that any water will be used.

If you have 2 or more filters, make sure they are programmed to start an hour apart, so they do not backwash at the same time.

The first digit(s) indicates the Hour and the other digit indicates A.M. or P.M. Example: 12 A.M. regeneration time - [ r 12A] (factory setting)

## 2. Regeneration Cycle Step Programming Times

The next 3 displays viewed are part of a series of option settings used to program the Regeneration Cycle which is where the filter backwashes and rinses itself. Up to 3 steps can be programmed and they are: Backwash, Rest, and Rapid Rinse.

Each display is used to set the duration time in minutes for that specific step in a regeneration cycle. Regeneration steps are skipped by setting the display to 0 as shown below:

Set each step according to the values below, appropriate for a 5900-BT filter system:

- a. 10 minutes. This is the BACKWASH cycle. [ 1 - 10] (Set for 6 minutes minimum)
- b. 5 minutes. This is the REST cycle. [ 2 - 5]
- c. 6 minutes. This is the RAPID RINSE cycle. [ 3 - 05] (Set for 4 minutes minimum)
- d. Next step will be "bE 1". If you are using the Bluetooth Legacy App, the 01 means that it's ready.
- e. Next and final step is bbPP is displayed for one second, then password is displayed.

Press the menu/enter button, and now you are back to the home service screen (displaying the clock time and the number of days until backwash). bE is for Bluetooth enabled.

## See Historical Data and Real Time Flow Rate

Pressing and holding the Menu/Enter button will also access some options:

**Flo-** this is the flow rate, if water is running, it will display the volume, in gallons per minute.

**Gt r-** this the total # of gallons that has gone through the filter.

**g tot-** this is the same as the previous.

**rC r-** number of regeneration done. **rC-** the same.

**gPdL-** shows how many gallons used each day.

**Gbrl-** is the gallons used between regenerations.

**PfDL-** This shows the peak, or highest flow rate that has passed through the filter in the last 24 hours.

**If you "get stuck" in these options, keep pressing the Menu/Enter button until you have returned to the service screen.**

# 5900-BT Neutralizer Operation & Maintenance

## Start Up of Neutralizer Filter

1. Calcite media has a lot of white fines or dust, and must be rinsed free by backwashing and rinse, which may take several backwashes.
2. MAKE SURE THE SOURCE WATER ENTERS THE INLET PIPING (IN OTHER WORDS, THAT THE SYSTEM IS PIPED IN CORRECTLY, WITH THE WATER INLET TO THE INLET ON THE BYPASS VALVE)
3. MAKE SURE THAT BOTH THE INLET AND OUTLET BYPASS VALVES ARE CLOSED INITIALLY
4. MAKE SURE TO CLOSE THE BALL VALVE OR GATE VALVE AFTER THE FILTER SO NO WATER CAN ENTER THE HOME DURING THIS INITIAL BACKWASH. (If you did not install a hose bib and gate or ball valve after the system as recommended, be sure to NOT use any water in the home during the initial start-up.)
5. If you have any filters or softeners installed after the filter system, bypass them until all media fines have been rinsed.

## Detailed Steps to Starting Up Neutralizer Filter System

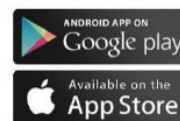
1. First, if days remaining is not already at 1, press and hold the Set/Change button.
2. Next press and hold the Set/Change button, until the valve begins the backwash cycle and the display reads 1 [1-10]. This is the first cycle that starts a backwash.
3. Start to put the valve into the service position by turning the inlet bypass knob counter-clockwise about a quarter inch, until you can hear water passing through the bypass into the filter. Stop and wait until you see water coming out of the drain line. It will often be mixed with air bubbles.
4. When you do not see bubbles anymore, keep opening the valve, a little bit at a time, stopping for a minute or two each time to bleed air out of system.
5. After several minutes, you should have the valve fully open, and with no media coming out. The water will be black, turning to gray, mostly clear water- the water does not get crystal clear in the Backwash mode (only at the end of Rapid Rinse and during Service).
6. After the backwash cycle, the filter will go into a rest for 5 minutes. After 5 minutes the next cycle, the Rinse cycle will start.
7. NOTE: To skip to the next cycle or fast forward past Rest or other cycles, hold down Set/Change button for 3 seconds.
8. Let the unit do the Rapid Rinse cycle and advance to the "Service" position.

## 5900-BT Neutralizer Operation & Maintenance

9. Repeat Step 1 and start up another backwash, rest, rinse sequence. You may need to backwash the filter 2 or 3 times to thoroughly clean up the filter media.
10. Next, open the outlet on the bypass valve and then open the nearest treated water faucet to the unit and allow the water to run until it is clear. We advise using a bathtub, laundry sink, or other fixture that does not have an aerator screen as any remaining residue may get caught in the screen. Run the water in the home for 10 minutes or more to flush pipes.

**CONGRATULATIONS,  
YOU ARE DONE STARTING UP YOUR FILTER SYSTEM!**

### Installing and Using the Optional Legacy View App



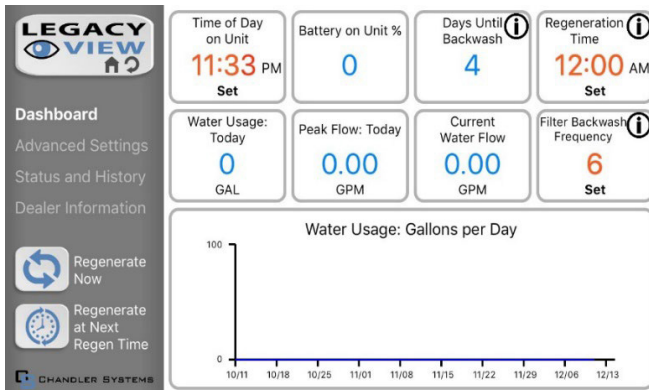
For simplified set up and control, please install the Legacy View on a compatible Bluetooth 4.0+ enabled smart phone or tablet.

1. Download and install the Legacy View app from the Google Play Store, Apple App Store.
2. Open the Legacy View app
3. Choose a valve device at any time from the list of available devices to connect to by clicking on it (which means your 5900-BT control valve, or valves if you have more than one system)
4. If the valve you want to connect to doesn't show up, or there is a problem connecting press the "Scan for Devices" button or the Legacy View logo at any time to refresh the list and start the process over.
5. 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.
6. After entering it the first time you should not need to enter it again unless it changes.
7. The control valve firmware 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.
8. 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.



# 5900-BT Neutralizer Operation & Maintenance

## Legacy Phone App Dashboard

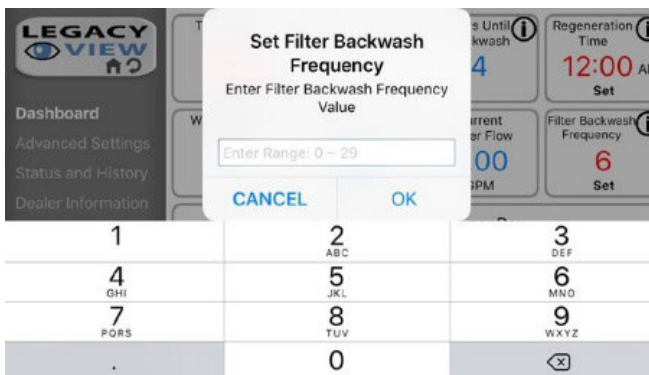


From the Dashboard, all items in **ORANGE** can be changed, while blue fields are informational only.

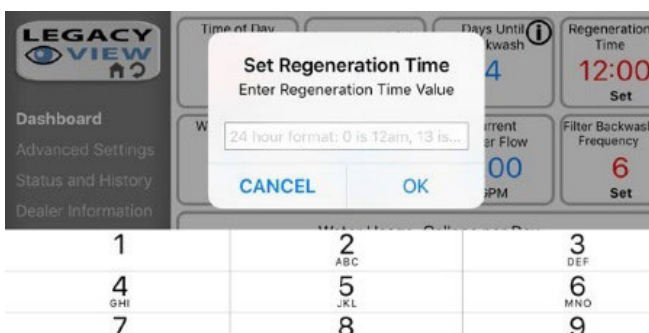
*If you are unsure about the function of the field, click the Info icon for more information*



1. Change Time of day (Press "set" to set time automatically based on device time)



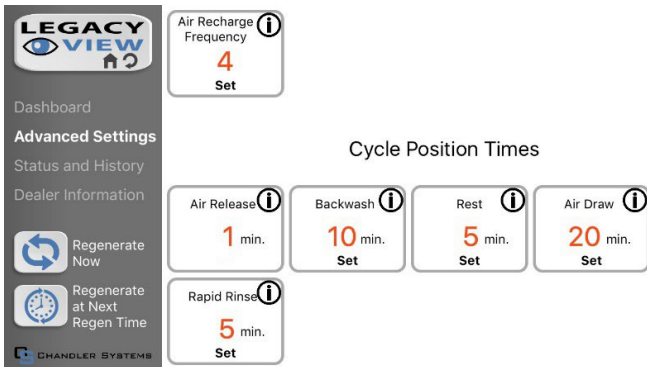
2. Set Backwash Frequency. This sets the amount of days between backwash cycles.



3. Set Regeneration Time. Example: For 2am, just type 2 and press OK.

# 5900-BT Neutralizer Operation & Maintenance

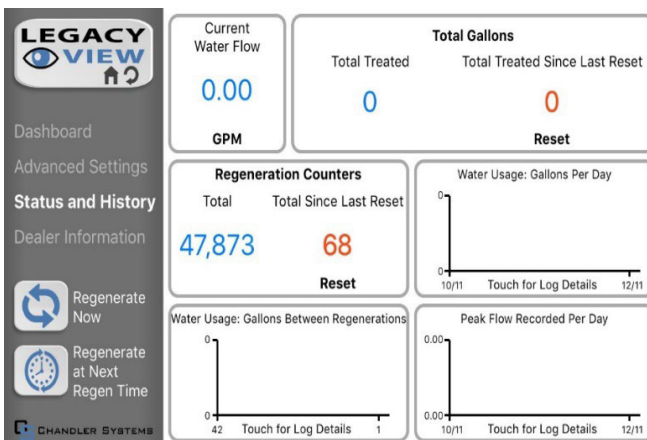
## Legacy App Advanced Settings



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

Touch any table to explode a detailed list of the last 60 days.

## Status and History Using Legacy View App



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

## Start a regeneration or backwash cycle



Option 1: Click on “Regenerate Unit Now.”



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 at the next regeneration time.

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## Filter System Normal Operation

- Normal display alternates between time of day and days until regeneration.
- Days remaining until the next regeneration will count down from the regeneration day override value to 1 day remaining.
- Once count reaches 1, a regeneration will be initiated at next scheduled regen time.

## Battery Back-up (9 Volt Battery Required)

1. Attach a 9v battery to its cable. The battery lays on bottom plate of the valve, below circuit board assembly. **DO NOT INSTALL BATTERY UNTIL AFTER INITIAL BACKWASH!**
2. The purpose of the battery is to hold the clock time during a power outage (all other values are stored on the circuit board) and to advance the valve to a cycle step that will not allow water to run to drain, if the power failure occurs during a backwash cycle.
3. If this event happens, replace the battery afterwards.

## How to Start A Manual Backwash

1. If days remaining is not already at 1 press and hold the Set/Change button.
2. After 7 seconds the days remaining display will read: [1]
3. With days remaining at 1 press and hold the Set/Change button again.
4. After 5 seconds the regeneration cycle will begin.
5. Fast Cycling Through each Step
6. First complete above immediate cycle steps
7. Press and hold the Set/Change button
8. After 3 seconds the valve will start to advance to the next step

# 5900-BT Neutralizer Operation & Maintenance

## Maintaining Your Neutralizer

1. Check the pH before and after the neutralizer. You want to have a pH of at least 7.0 after the neutralizer filter.
2. If the pH drops below 7, check the depth of the Calcite media by shining a bright light through the tank. Your tank should be about 2/3rds full of media. When the media level drops to ½ full, it is time to add more Calcite or Calcite blend media .
3. 3. For most residential applications, adding Calcite media once or twice a year is adequate. Do not fill more than 2/3rds full.

## How to Add Calcite Media

CALCITE MEDIA CONTAINS DUST. USE PAPER MASK OR VENTILATE TO AVOID BREATHING DUST.

1. Begin by putting the neutralizer filter on bypass or turning the water pressure off.
2. Initiate a manual backwash cycle. Since it is on bypass, this will relieve the pressure inside the control valve, so you safely unscrew the Media Fill Plug located on top.
3. Unplug the control valve cord from the wall outlet.
4. Unscrew the media fill plug with channel locks or pliers and using a tube or hose siphon 2 to 3 gallons of water out of the filter tank. If you don't siphon water out before adding filter media, water will flow out the fill plug hole and onto the floor.
5. Add neutralizer filter media until the tank is 2/3rds full. Do not over-fill; be sure to leave at least 12" of free space above the media to allow room for it to expand during a backwash.
6. Put the top fill plug back in. Do not use Teflon tape or plumbing grease, it is an O-ring seal.
7. Plug the control valve back in. The control valve is in the backwash cycle.
8. Turn on the bypass valve - slowly at first - back to full open.
9. Allow the system to go through a complete backwash and rinse cycle. Repeat this backwash and rinse cycle by starting another manual cycle, so the neutralizer is thoroughly backwashed and rinsed before going back into service.

## When to Use Calcite Blends

If the water pH is less than 6.0, Calcite alone may not be enough to bring the pH up to the desired range of 7.0 to 7.8. In this case, a blend of Calcite and Magnesium Oxide (sold as Corosex or FloMag brand). should be used.

## 5900-BT Neutralizer Operation & Maintenance

Calcite is a calcium media consisting of calcium carbonate and will raise the pH slowly. Calcite will not raise the pH much over 7.2.

Corosex/FloMag is a natural mineral media consisting of magnesium oxide. It reacts much faster and raises the pH much higher than Calcite alone.

Corosex is almost never used alone as it will raise the pH too high and, in some cases, will over-correct and create a highly basic (high pH) condition. It can also cement together like concrete in the neutralizer tank if you add too much and there is not sufficient backwash.

For most residential well applications, a 90% Calcite and 10% Corosex is best.

However, in some cases an 80%/20% mix or even a 70%/30% is used. It is always better to start with a 90%/10% mix at first as this solves most of low pH problems in the range of 4.5 to 5.9.

For a pH of 6.0 to 6.9 use Calcite alone.

For a pH of 5.0 to 6.0 use a blend of Calcite and Corosex usually 90% Calcite and 10% Corosex, or more Corosex as needed if the pH is less than 5.0.

### How to Mix and Use Calcite Blends

The Calcite and Corosex media are sold and shipped in separate boxes. It does not have to be completely blended to use as it will mix during the backwash and rinse cycles.

When you are adding the Calcite and Corosex it is better to blend it lightly in a 5-gallon bucket and then add it.

You can also add some Calcite and then add some Corosex as you are filling the tank.

**WARNING:** If you are using a Calcite Blend, do not add all the media that was shipped with your order. This will result in the tank being more than 2/3 full and can cause media to get back up into the control valve during backwashing. This can then result in damage to the control head. If the tank is overfilled, use a shop vacuum to remove media back to the 2/3 fill line.

### How much Calcite and Corosex Weighs Per Cubic Foot

- Calcite is shipped in 50 lb. boxes and one box of Calcite is equal to 0.55 cu ft.
- Corosex is shipped in 10 lb. boxes and 1 box is equal to 0.13 cu ft.

**Neutralizers 1.0 Cubic Foot:** use 90 lbs. Calcite and 10 lbs. Corosex Your new 1.0 Cubic Foot Neutralizer Blend filter order includes:

- • Calcite 100 lbs. (2 50-lb. boxes) 1.1 cu ft.
- • Corosex 10 lbs. (1 10 lb. boxes) .13 cu ft.

## 5900-BT Neutralizer Operation & Maintenance

**Neutralizers 1.5 Cubic Foot:** use 150 lbs. Calcite and 10 lbs.

Corosex Your new 1.5 Cubic Foot Neutralizer Blend filter order includes:

- Calcite 150 lbs. (3 50-lb. boxes) 1.65 cu ft.
- Corosex 10 lbs. (1 10 lb. boxes) .13 cu ft.

**Neutralizers 2.0 Cubic Foot:** use 150 lbs. Calcite and 15 lbs.

Corosex Your new 2.0 Cubic foot Neutralizer Blend filter order includes:

- Calcite 150 lbs. (4 50 lb. boxes) 2.2 cu ft.
- Corosex 20 lbs. (1 20 lb. boxes) .26 cu ft.

**Neutralizers 2.5 Cubic Foot:** use 200 lbs. Calcite and 20 lbs.

Corosex Your new 2.5 Cubic Foot Neutralizer Blend filter order includes:

- Calcite 200 lbs. (5 50 lb. boxes) 2.75 cu ft.
- Corosex 20 lbs. (2 20 lb. boxes) .26 cu ft.

## Troubleshooting the 5900-BT Neutralizer Filter Backwash Flow Rate

One problem that may occur is if you do not have enough backwash flow rate to properly clean the Neutralizer filter. You can verify the backwash flow rate by running the drain line into a bucket and timing it when the 5900-BT is in Cycle 1 or backwash.

<b>1.0 CF</b>	<b>5 GPM</b>
<b>1.5 CF</b>	<b>5 GPM</b>
<b>2.0 CF</b>	<b>7 GPM</b>
<b>2.5 CF</b>	<b>10 GPM</b>

In some cases, the 5900-BT may not be programmed correctly. See this manual for instructions on how to access the master programming.

## Error Codes

**There are five (5) error codes that could indicate a possible problem with the control valve:**

**Error 2** - Homing slot expected. Valve will start looking for home. (Normal operation continues)

**Error 3** - Encoder is not sending a signal (Check that cable is attached)

**Error 4** - Unable to find homing slot (Valve requires service to continue)

**Error 5** - Motor overload (stalled position or shorted motor valve requires service to continue)

**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.

## 5900-BT Neutralizer Operation & Maintenance

### pH is Too High

If the pH after your neutralizer is greater than 8.5, your pH kit may turn the color of the reagent, a purple color. This is nothing to be alarmed about.

In some cases, too much Corosex added to the Calcite-Corosex blend can cause this problem; it almost never happens with Calcite only systems.

If this happens, set the backwash cycle frequency to every night for a couple of weeks, which will cause the media to be washed more thoroughly and use up the excess Corosex.

Alternatively, you can manually backwash it several times on a given day, etc. Secondly, you can open the bypass valves slightly, and allow some untreated water to lower the pH by blending in some of the lower pH water.

When you go to add more media in 6 to 12 months, just add less Corosex.

### pH is Too Low

This can happen if the water entering the neutralizer has a pH less than 6.0. Generally, the water after your neutralizer should have a pH of 7.0, and the pH reagent in your pH test kit should turn a light green to darker green depending on the pH.

Give your neutralizer some time, and after several weeks, if the pH is still coming out less than 7 and the test reagent is yellowish in color, you may need to add some Corosex to the neutralizer. Contact our office if you don't have any Corosex on hand and/or you ordered a Calcite-only system. The Calcite-only systems work best if your water's pH is between 6 and 6.9 and are desirable as they add fewer minerals to the water, so it is best to start out with a Calcite only system if your pH is 6.0 to 6.9. This works for most our customers.

### White Spots on Fixtures and Glasses

Calcite neutralizers work by adding natural calcium minerals to the water. Many natural well or spring waters that are acidic (with a pH of less than 7.0) are low in minerals and are considered "soft" water.

This lack of natural buffering calcium minerals contributes to the corrosive nature of these waters. After the water has passed through the neutralizer, the water will be higher in calcium and "harder" but typically not hard enough to warrant a water softener, which removes calcium hardness.

It is more common to see some white film or spotting on fixtures if you are using a blend of Calcite and Corosex. In some cases, it might be that too much Corosex was used originally in the mix of media.



## 5900-BT Neutralizer Operation & Maintenance

If you are starting to see white spots and films on surfaces after the neutralizer has been installed, you might want to take these steps:

- Set the backwash frequency for every 3 days for a couple of months.
- Check the hardness level before and after. If your hardness is higher than 5 grains per gallon after the neutralizer, your neutralizer may be adding more minerals than is needed, and you can open the bypass valves a slight amount to blend in some untreated water.
- Check the pH before and after. You only need the pH to be in the 7.0 to 7.5 range. If the pH is higher than that, you may be adding more Corosex than is necessary.

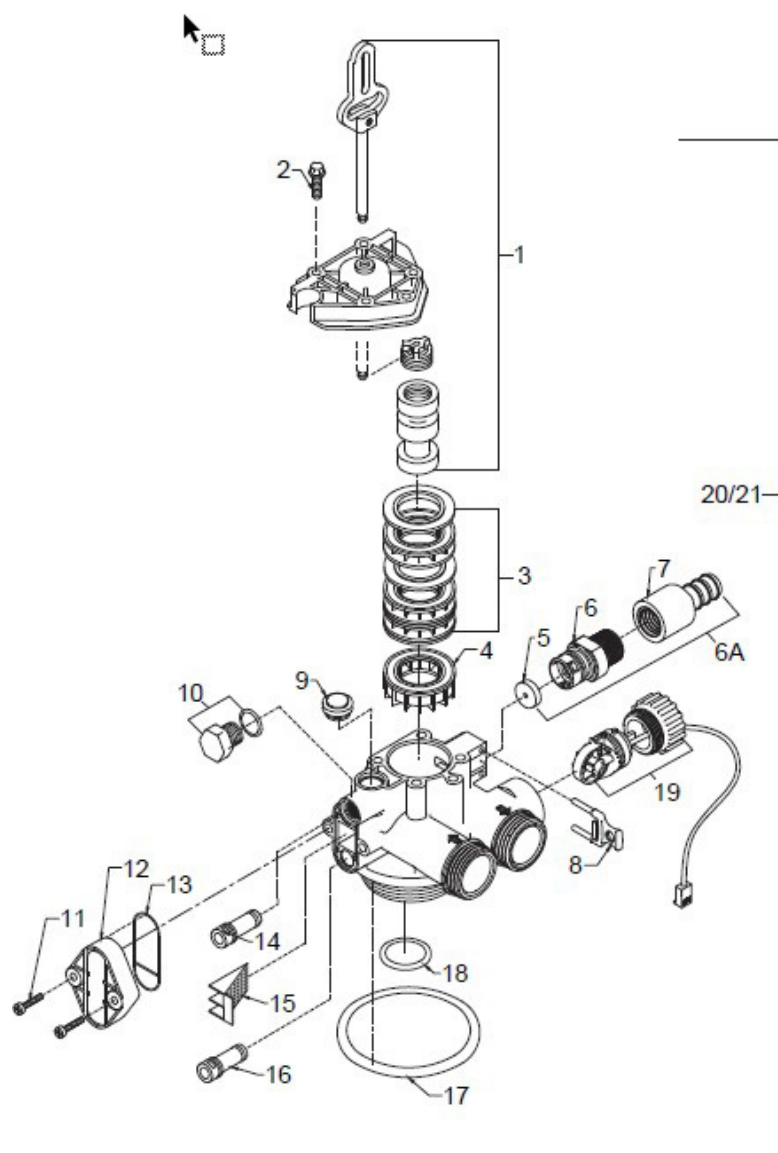
### Replace Seals and Spacers Inside 5900-BT Control

1. Remove the control valve cover.
2. Remove screw and washer at drive yoke.
3. Remove powerhead mounting screws. The entire powerhead assembly will now lift off easily.
4. Remove piston retaining plate screws.
5. 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)
6. 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.
7. Install new seals and spacers individually, pressing around the outer edge of each seal to make sure it is seated.
8. (When all seals and spacers are seated properly, you will have a 1/4" of space between the top seal the top of the valve body)
9. Take new piston assembly and push piston into valve by means of the end plug.
10. Twist drive yoke carefully in a clockwise direction to properly align it with drive gear. Reinstall piston retaining plate screws.
11. Place powerhead on top of valve. Be sure drive pin on main gear engages slot in drive yoke.
12. Wide side of yoke upright must face to the left away from the motor.
13. Replace powerhead mounting screws.
14. Replace screw and washer at drive yoke.



# 5900-BT Neutralizer Operation & Maintenance

## Valve Body Assembly S900-BT



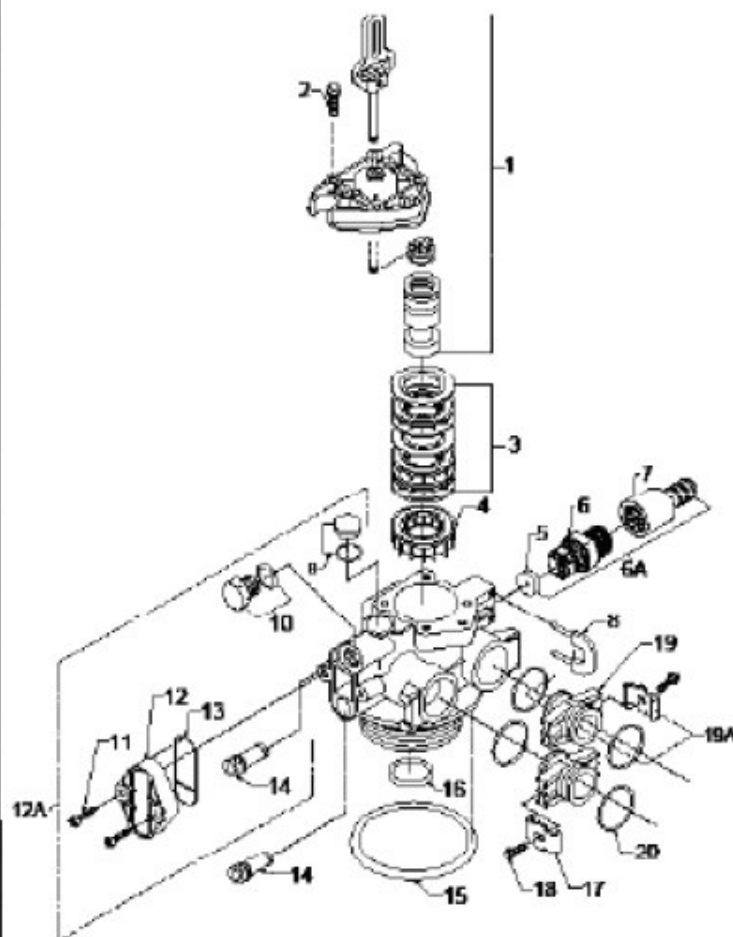
Ref #	Description	Part #	Qty.
1	Piston Assembly	20001X231	1
2	10-24 X 13/16" Screw	20001X226	3
3	Seal and Spacer Kit Incl (5) #3 & (4) #4	20561X253	1
4	End Spacer	N/S	1
5	Flow Control Button 5.0 GPM	20251X272	1
	Flow Control Button 6.0 GPM	20251X274	1
	Flow Control Button 7.0 GPM	20251X273	1
6	Plastic Flow Control Housing	20017X100	1
6A	Flow Control Assembly-Specify GPM Incl. (1) each #5, #6, #7		
	Flow Control Assy. 5.0 GPM-PVC	20017X262	1
	Flow Control Assy. 6.0 GPM-PVC	20017X263	1
	Flow Control Assy. 7.0 GPM-PVC	20017X264	1
8	Drain Retainer	20017X254	1
9	O Ring & Brine Valve Cap Assembly	20001X230	1
10	O Ring & Filter Plug Assembly	20001X229	1
11	10-24 X 1 Screw	20001X226	1
12	Injector Cap	20001X223	1
12A	Filter Conversion Kit Incl. (1) each #9, #10, #12, #13, #14 & (2) #11	20001X221	1
13	Injector Seal	20001X224	1
14	Injector Plug & O Ring Assembly	20001X217	1
15	Screen	20001x222	1
16	Injector Plug & O Ring Assembly	20001X217	1
17	Valve O-Ring	20001x215	1
18	Dist. O-Ring	20561X204	1
19	Meter Assembly	20017X203	1
20	Valve Body Assembly	VH2-B-D15	1

## 5900-BT Neutralizer Operation & Maintenance

### Control Valve Assembly 5900-BT



Ref #	Description	Part #	Qty.
1	Piston Assembly	20001X231	1
2	10-24 X 13/16" Screw	20001X226	3
3	Seal and Spacer Kit Incl (5) #3 & (4) #4	20561X253	1
4	End Spacer	N/S	1
5	Flow Control Button 5.0 GPM	20251X272	1
	Flow Control Button 6.0 GPM	20251X274	1
	Flow Control Button 7.0 GPM	20251X273	1
6	Plastic Flow Control Housing	20017X100	1
6A	Flow Control Assembly-Specify GPM Incl. (1) each #5, #6, #7		
	Flow Control Assy. 5.0 GPM-PVC	20017X262	1
	Flow Control Assy. 6.0 GPM-PVC	20017X263	1
	Flow Control Assy. 7.0 GPM-PVC	20017X264	1
7	Drain Line Fitting 1/2" NPT X 1/2"	20017X235	1
8	Drain Retainer	20017X214	1
9	O Ring & Brine Valve Cap Assembly	20001X230	1
10	O Ring & Filter Plug Assembly	20001X229	1
11	10-24 X 1 Screw	20001X226	1
12	Injector Cap	20001X223	1
12A	Filter Conversion Kit Incl. (1) each #9, #10, #12, #13, #14 & (2) #11	20001X221	1
13	Injector Seal	20001X224	1
14	Injector Plug & O Ring Assembly	20001X217	1
15	Valve O Ring	20561X205	1
16	Dist.O Ring	20561X204	1
17	Mounting Clip	20561X201	2
18	8-18 X 5/8" Screw	20561X217	2
19	Adapter Coupling	N/S	2
19A	Adapter Coupling & O Ring Assembly Incl. (1) # 17, #18, #19 & (2) #20	20561X215	1
20	O Ring	20561X216	4



# 5900-BT Neutralizer Operation & Maintenance

## Water Filters Limited Warranty

We warrant this water filter/ softener/ conditioner, when installed according to factory recommendations, to be free from defects in materials and workmanship as follows:

### Limited Warranty

This water conditioner unit is comprised of the finest industry components available. Each individual component used in the assembly of our equipment is covered by the original equipment manufacturer's warranty. All components, except those specifically listed below, are warranted for a period of one (1) year from date of installation to the original purchaser to be free of defects in materials and workmanship subject to the manufacturer's conditions and/or the conditions shown below.

### Mineral Tanks

The fiberglass, polyglass or composite mineral tanks used in the assembly of this unit are warranted to be free of defects in materials and workmanship for a period of ten (10) years on 6" – 13" size tanks, and five (5) years on 14" and larger size tanks used for softener/filtration applications, subject to the manufacturer's conditions and/or the conditions shown below.

Warranty does not cover exposure to weather, freezing, fractures caused by external impact, or exposure to vacuum.

### Control Valves

The CWS control valve is warranted to be free of defects in materials and workmanship for a period of seven (7) years, subject to the manufacturer's conditions and/or the conditions shown below. Fleck & other brand control valves have 5-year warranty.

### Conditions

1. This warranty only covers water conditioners installed for residential use. Water conditioners installed for commercial or industrial applications are guaranteed for one (1) year from the date of installation.
2. Installation must be made in accordance with legal or local codes and manufacturer's recommendations.
3. Failure must not result from exposure to weather, rodents, misuse, alteration, fire, lightning, power surges or neglect.
4. Water pressure must not exceed 100 PSI and water temperature must not exceed 100 degrees.
5. Subject to the above terms and conditions we will replace and/or repair, at our option, any parts of the water conditioner found defective in materials and workmanship. Defective parts must be returned, freight pre-paid for repair or replacement.
6. This warranty does not cover labor, shipping charges, damages caused by delays of consequential damages or other causes beyond our control. Warranty does not cover pipes, fixtures or appliances. Warranty extends to the actual water conditioner components only.
7. This warranty is to the original purchaser and is not transferable after the third year to any subsequent owner(s).
8. No other guarantees or warranty, expressed or implied, is applicable to our product. No repair or replacement made under the terms of the warranty shall extend this warranty.