5900-BT Tannin Filter Installation & Maintenance Guide

Thank you for purchasing a Clean Water System! With proper installation and a little routine maintenance your system will be providing softened 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.

Minimum 30 PSI required. Maximum pressure 90 PSI.

For indoor installation. Protect from sunlight, rain, and freezing.

NOTE: Not for use on Hard Water. If your water is over approximately 5 grains/gallon hard (about 85 mg/L of calcium carbonate) we recommend installing a water softener ahead of the tannin filter to prolong the life of the tannin resin.

Questions?

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

Email us: support@cleanwaterstore.com

See more information on our website: www.cleanwaterstore.com
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Packing List for Different Size Tannin Filters

Every order includes: 5900-BT control valve and Top Screen, Bypass assembly with 1” connector yoke, Power supply (dual voltage 110-230V 50/60hz), Hose Barb Adaptor (5/8” OD), Drain Line Flow Control (DLFC), Media Funnel for adding resin to tank, Drain line tubing and Brine Tank.

Tannin Filter 16K Grain 0.5 cubic foot size
6” x 35” Tannin Filter tank with distributor tube
0.5 cubic foot of Tannin resin media; No Filter gravel needed with this size

Tannin Filter 32K Grain 1.0 cubic foot size
9” x 48” Tannin Filter tank with distributor tube
1.0 cubic foot of Tannin resin media; No Filter gravel needed with this size

Tannin Filter 48K Grain 1.5 cubic foot size
10” x 54” Tannin Filter tank with distributor tube
16 lbs. Filter gravel; 1.5 cubic foot of Tannin resin media

Tannin Filter 62K Grain 2.0 cubic foot size
12” x 52” Tannin Filter tank with distributor tube
20 lbs. Filter gravel; 2.0 cubic foot of Tannin resin media

Tannin Filter 80K Grain 2.5 cubic foot size
13” x 54” Tannin Filter tank with distributor tube
35 lbs. Filter gravel; 2.5 cubic foot of Tannin resin media

What to Do if Your Tank is Not Level Out of the Box:

Your black Tannin 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 rapping it on a concrete or solid floor once or twice to level it.
How Your Tannin Filter Works

In the Tannin Filter, water enters the top of the tank and flows down through the media and up the distributor tube. Tannin color is removed by the resin beads in the Tannin Filter.

During regeneration the first cycle in the process backwashes and cleans the Tannin resin.

Water flow is reversed and water flows down the distributor tube and up through the media, lifting and expanding the resin, and removing any trapped particles.

After the backwash stage, salt brine is automatically drawn in from the brine tank which then slowly rinses through the resin for 1 hour, allowing the color in the water to be removed.

This entire automatic process, called ‘regeneration’ takes about 90 minutes.

Typically the Tannin Filter is set to regenerate based on gallons used and timed to occur during the middle of the night when no water is being used.
Tannin Filter Installation Steps Overview

1. Verify that you have received all parts and there are no damaged or missing parts.

2. If your size Tannin Filter uses gravel (48K grain and larger) add gravel first, then add softening resin. Fill tank with clean water. OK to soak for 1 hour up to 24 hours while doing piping.

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. Attach the control head to the tank, and to the bypass assembly.

5. Install the Drain Line tubing

6. Plug in the power supply and program the valve.

7. Follow the instructions to put the Tannin Filter 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 Tannin Filter on a dry level spot where it won’t be exposed to freezing temperatures, direct sunlight, wind or rain.

4. Get all of 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.
Best Practices for Piping & Drain Installation

1. See typical installation Page 7. If on well water, Tannin Filter is installed after pressure tank.

2. Install on a level floor or surface.

3. Your new Tannin Filter must be installed at least 10 feet ahead of inlet to water heater to prevent damage due to back-up hot water or use a check valve to prevent hot water back-up.

4. DO NOT install the unit in an area of direct sunlight or expose to freezing.

5. Make sure brine tank is set on a smooth surface with no sharp objects, rocks etc.

6. Locate the unit near an unswitched, 120 volt / 60 Hz grounded electrical outlet.

7. Tannin Filter must be installed at least 10 feet ahead of inlet to water heater to prevent damage due to back-up hot water or use a check valve to prevent hot water back-up.

8. DO NOT install the unit in an area of direct sunlight or expose to freezing.

9. Locate the unit near an unswitched, 120 volt / 60 Hz grounded electrical outlet.

10. Make sure to connect the IN pipe to the 5900-BT inlet and the OUT pipe to the outlet.

11. Make sure there is a working gate or ball valve before the 5900-BT Tannin Filter and also one after as shown in Fig 2. The pressure gauges are optional. A hose bib (which is a faucet that you can attach a garden hose to) is strongly recommended after the 5900-BT Tannin Filter and before the second ball valve, for rinsing and sampling water.

12. 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.

13. 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 Tannin Filter on by-pass and remove the 5900-BT Tannin Filter control valve from the piping.

14. The drain line tubing is connected to a drain from the drain outlet using flexible poly tubing. The drain can run up above the control head and out to a drain, although this may require installing a one way, flapper-style check valve. 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 drain pipe, for example)
Piping Diagram

Typical Well Water Installation - Install After Pressure Tank

Key
- Water piping
- Check Valve
- Hose Bib
- Pressure switch
- Pressure Gauge
- Gate or ball Valve

Hose Bib and Valve Installed After Softener
Soft Water Outlet
Brine Tank
Tannin Filter
Optional Spin-Down Pre-Filter
Drain Line to Drain
To Irrigation (Before Softener)
Existing Pressure Tank
Well Head
Installation of Your Tannin Filter into Copper or Metal Piping Systems

If your new Tannin Filter is to be installed in a metal (conductive) plumbing system, i.e. copper or galvanized steel pipe, the plastic components (bypass and connectors) will interrupt the electrical continuity of the plumbing system.

As a result, any stray currents from improperly grounded appliances downstream or potential galvanic activity in the plumbing system can no longer ground through contiguous metal plumbing.

Some homes may have been built in accordance with building codes which encouraged the grounding of electrical appliances through the plumbing system.

The installation of a bypass consisting of the same material as the existing plumbing, or a grounded "jumper wire" bridging the equipment and reestablishing the contiguous conductive nature of the plumbing system must be installed prior to your systems use.

A simple ground jumper wire with a pipe clamp can be purchased at any Home Center, or hardware store etc. for a few dollars.

Add Tannin Resin and Install 5900-BT Backwash Valve on Tank

1. **Make sure you “test fit” distributor tube, find divot that keeps tube centered, before adding gravel so distributor tube does not extend past top of tank.**

2. There are two styles of funnel that we ship, depending on availability; you get either the blue or black funnel.

3. If blue funnel, cover top of distributor tube with black electrical tape, duct tape or masking tape so no gravel or media will go down distributor tube when adding media.

4. Leave a folded tab of tape so you can easily pull off tape after filling the tank.

5. 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 Tannin Filter tank.
6. Add the gravel (for 1.5 Cubic Foot 48K grain units and larger only) that came with your
   order. The gravel should cover the bottom distributor screen before adding the Tannin
   resin.

7. Next add the Tannin resin.

8. The tank should be about 2/3 to 3/4ths full of the resin.

9. **Fill tank completely with water.** Allow to soak for at least 1 hour up to 24 hours before you
   hook it up to piping.

10. Remove tape from top of distributor tube. **Be careful not to pull up distributor tube.**

11. Attach plastic top screen to 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.

12. **Screw on Control Valve:** Add small amount of silicone grease to both O‐rings (only O‐rings,
    not tank thread) on bottom of control valve and screw on 5900‐BT control valve carefully.

13. **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 greases on tank threads.**

14. If you accidentally pull distributor tube up after gravel and media are in 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 distributor tube with a garden hose while pushing on end of
    the tube. If this does not work, you must empty tank completely and start over.

15. **Do not hard pipe the drain line with PVC or copper, use flexible tubing.** If you use hard
    PVC piping for the drain line, you must able to remove the hard drain piping and attach
    flexible tubing for testing purposes.
16. Make sure the drain tubing is firmly clamped to the barbed fitting with a hose clamp to prevent leaks or blow-offs.

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 service pipe.

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

Piping Installation

1. Using Teflon tape on pipe threads, make sure to connect the IN pipe to inlet and 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 the water enters on the left.
2. The inlet and outlet are attached to the bypass valve, which is marked with arrows as well.

3. Make sure there is a hose bib installed after the system, and a working gate or ball valve before and after water Tannin Filter. The pressure gauges are optional but **a hose bib is strongly recommended after the 5900-BT control valve and before the second ball valve.** This makes it easy to rinse your new system on start-up and gives you a place to test water before it enters your house plumbing.

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 control valve with the torch, as the plastic will melt.

5. 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 by-pass and remove the Tannin Filter system from the piping.

6. The drain line tubing is connected to a drain from drain outlet using flexible tubing. Note that drain line can run up above the 5900-BT control and into a drain.

7. 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 connect with the drain tubing.

**Attach the Brine Line Tubing to Brine Tank**

Insert the 3/8” diameter tubing into the brine tank connection (included with your order).

Screw the nut with the sleeve and ferrell attached to prevent leaking.
**On the control valve side:** to connect the brine tank, begin by sliding the plastic brine injector nut on to the brine tubing by putting the tubing through the non-threaded side of the nut first.

Next, slide the white (or clear) compression ring on to the tubing with the wider diameter going on first.

Insert the tubing into the brine nut and screw tight- do not over-tighten.

**On the brine tank:** push the brine injector nut, which now has the compression rings inside of it, on to the threading of the brine tank float assembly and rotate the nut clockwise, screwing it on to the brine port on 5900-BT control valve.

Tighten it down to finger tight. The tubing should be firmly attached and not slide out if pulled on.

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**Brine Tank Set Up**

1. Add approximately 5 gallons of water to the brine tank, and then fill the brine tank with salt, add just one bag until after you have done the initial regeneration, then you can fill the brine tank about 2/3 full of salt, which will generally be enough for several months.

2. It is OK to use any kind of water softening salt; however, we find that extra coarse salt works better than pellets.

3. You do not have to add water to the brine tank again after this first time during the start-up.

4. See the over-flow barbed fitting on the side of the brine tank. You do not have to connect this to a drain.

5. If the safety float were to malfunction, there is a small chance that the brine solution will drip out of this fitting. If this would cause a big mess where you have installed the Tannin Filter, hook some tubing to this and run to a bucket, floor pan or floor drain. Normally no brine will leak out of this fitting.
Next: 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.

10. The recommended initial setting for the Tannin Filter is every 2 to 3 days for families or heavy use and every 6 days for 1 to 2 persons in the home. If you see a color to the water between regenerations, increase frequency of backwash up to once per day.

11. Your Tannin 5900-BT control valve regenerates based on days, not gallons. We don’t recommend tannin filters be set to regenerate based on gallons used, because the resin life is extended.

12. To exit menu, press the Menu/Enter button. Now the 5900-BT control will alternate the display number of days until next regeneration and current time of day.

NEXT: Enter Master Programming Mode
Master Programming Mode

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

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)

With all digits flashing press the Menu Button to set A.M. or P.M. Once A.M./P.M. is accepted the next menu item will flash.

2. Regeneration Cycle Step Programming Times

The next 4 displays viewed are part of a series of settings used to program minutes for Regeneration Cycle which is where filter backwashes tannin resin, draws in brine, rinses media of any brine remaining after brine cycle, and then refills brine tank with water to make more brine for the next regeneration.

Set each step according to the values below, appropriate for a Tannin Filter:

1   10 minutes. This is the Backwash cycle. [ 1 - 10 ]
2   60 minutes. This is the Brine Draw cycle. [ 2 - 60 ]
3   8 minutes. This is the Rapid Rinse cycle. [ 3 - 6 ]
4   Brine Refill Cycle: set the time according to the Cubic Foot size of your system below:

0.5 CF: [ 4 – 4]. 1.0 CF: [ 4 – 6]. 1.5 CF: [ 4 – 9]. 2.0 CF: [ 4 – 12]. 2.5 CF: [ 4 - 15].

3. BlueTooth Settings and Password: Next item is: bE 1 which means BlueTooth enabled. Press Menu Enter and next will displayed: btPP and flash between that and the password 1234. 1234 is default password for Bluetooth feature. If you wish to change it pressure Set/Change. Press Menu/Enter to exit Master Programming. If you wait 60 seconds Master Programming will automatically be exited.
See Historical Data and Real Time Flow Rate

Pressing and holding Menu/Enter button will access options to show you history & flow rate:

- **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.
- **Gb rl** - is the gallons used between regenerations.
- **PfDL** - This shows peak, or highest flow rate that has passed through the filter in last 24 hours.

To exit keep pressing Menu/Enter button until you have returned to the service screen.

Start Up Your Tannin Filter

1. Close both the Inlet and Outlet valves, if not already closed. If days remaining is not already at 1 press and hold the Set/Change button. Now, press and hold the set change button again, until the valve begins the backwash cycle and the display reads 1 – 10.

2. Start to put the valve into the service position by turning inlet the bypass knob counter-clockwise about a quarter inch, until you can hear water passing through the bypass into the Tannin Filter. Wait until you see water coming out of drain line.

3. Keep opening the valve, a little bit at a time, stopping for a minute or two each time. You want to see increase in flow out of the drain line as you increase the flow of water into Tannin Filter. After several minutes, you should have valve fully open.

4. Cycle Step 2, the Brine Draw, is for 60 minutes. Confirm that the water in the brine tank is being sucked down; if you start with 5 gallons, it should be empty after 15 minutes. If it is not, test your tubing connections, and make sure float assembly is working. Once it has sucked salt water into Tannin Filter, it will do a slow rinse for the rest of the cycle.

5. Allow the valve to finish running through the last two cycles: Rapid Rinse and Brine Refill.

6. Open outlet on the bypass valve and then open nearest treated water faucet to filter and allow the water to run until clear. We advise using a bathtub, laundry sink, or other fixture that does not have aerator screen as any remaining residue may get caught in the screen.

Congratulations, you are done starting up your water Tannin Filter!
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 to refresh 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.
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 item, 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 (regeneration) cycles.

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

**Option 2**: “Regenerate Unit at next Regen Time” button. This will take the system into a backwash at the next regeneration time.
Normal Operation & Maintenance

Normal display alternates between time of day and days until regeneration.

Days remaining until the next regeneration will count down from the regeneration day value to 1 day remaining. Once the count reaches 1, a regeneration cycle will be initiated at the next designated regeneration time.

Make sure brine tank is regularly filled with salt. When it gets low, refill to top with water Tannin Filter salt (pellets or coarse, but any good quality water Tannin Filter salt works fine).

How the Battery Back-up Works

Optional. Uses a 9-volt battery, not included. Do not install or attach battery until after start-up. 9-volt battery lead wires are found by removing the cover. The battery back-up maintains time of day during power failures. Replace battery annually. The battery back-up continues to count down gallons remaining during power failure (Metered Version). Menus cannot be accessed during power failure. During power failure to conserve battery power the display is turned off.

How to Start an Extra Regeneration Cycle

If days remaining is not already at 1 press and hold the Set/Change button. After 3 seconds the days remaining display will read 1 Example [ 1 ]
Regeneration cycle will be initiated at the next designated regeneration time

Starting Immediate Extra Cycle: First, complete above delayed cycle steps
With days remaining at 1 press and hold the Set/Change button
After 3 seconds the regeneration cycle will begin.

Fast Cycling Through Regeneration
First complete above immediate cycle steps
Press and hold the Set/Change button
After 3 seconds the valve will start to advance to the next step

How To Shut Down Tannin Filter For Extended Period of Non-Use

Allow Tannin Filter to go through a complete regeneration by starting an Extra Regeneration Cycle (see above). After all cycles are complete, it is OK to shut off water to system, OR put on bypass. Unplug from wall and remove battery. Program settings will be maintained by the system while you are gone, but you may need to reset current time of day when you return.
# Troubleshooting Guide

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<th>SYMPTOM</th>
<th>PROBABLE CAUSE</th>
<th>CORRECTION</th>
</tr>
</thead>
</table>
| 1. Softener fails to regenerate automatically. | A. Power supply plugged into intermittent or dead power source.  
B. Disconnected meter cable.  
C. Improper control valve programming.  
D. Defective power supply.  
E. Defective circuit board or meter.  
F. Defective drive motor. | A. Connect to constant power source.  
B. Reconnect cable.  
C. Reset program settings.  
D. Replace power supply.  
E. Replace or Repair  
F. Check motor operation by activating the service button on back of motor. |
| 2. Regeneration at wrong time. | A. Time of day improperly set, due to power failure.  
B. Regeneration time set improperly. | A. Reset time of day programming and install 9 volt battery.  
B. Reset Regeneration time programming. |
B. Brine concentration and/or quantity.  
C. Resin fouling.  
D. Poor distribution, Channeling (uneven bed surface).  
E. Internal valve leak.  
F. Resin age.  
G. Resin Loss. | A. Reset unit to the new capacity.  
B. 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.  
C. Call dealer, find out how to confirm it, clean the resin and prevent future fouling.  
D. Call dealer. Check distributors and backwash flow.  
E. Call dealer. Replace spacers, seals and/or piston.  
F. Call dealer. Check for resin oxidation caused by Chlorine. Mushy resin.  
| 4. Poor water quality. | A. Check items listed in #1, #2, & #3.  
B. Bypass valve open.  
B. Check for too slow or high service flow. Check for media fouling. |
| 5. High salt usage. | A. High salt setting.  
B. Excessive water in brine tank.  
C. Constant flow through the unit.  
D. Improperly set hardness, Regeneration frequency or regeneration day override programming. | A. Adjust brine tank refill time.  
B. See symptom No. 7.  
C. Indicates plumbing leak (ie. toilet tank).  
D. Reset programming |
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<tr>
<td></td>
<td>B. Fouled resin.</td>
<td>B. Clean resin. Pretreat to prevent.</td>
</tr>
<tr>
<td></td>
<td>C. Improper backwash.</td>
<td>C. Too many resin fines and/or sediment. Call dealer, reset backwash flow rate, and/or adjust time</td>
</tr>
<tr>
<td>7. Excessive water in brine tank and/or salty water to service.</td>
<td>A. Plugged Drain Line.</td>
<td>A. Check flow to drain. Clean flow control.</td>
</tr>
<tr>
<td></td>
<td>B. Dirty or damaged brine valve.</td>
<td>B. Clean or replace brine valve.</td>
</tr>
<tr>
<td></td>
<td>C. Plugged Injector.</td>
<td>C. Clean injector and replace screen.</td>
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<td></td>
<td>D. Low inlet pressure.</td>
<td>D. Increase pressure to allow injector to perform properly (20 psig minimum).</td>
</tr>
<tr>
<td></td>
<td>E. Excessive brine refill cycle time.</td>
<td>E. Reset brine refill cycle time.</td>
</tr>
<tr>
<td>8. Softener fails to use salt.</td>
<td>A. Check items listed in #1.</td>
<td>B. Check and reset programming.</td>
</tr>
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<td></td>
<td>B. Improper control valve programming.</td>
<td>C. Clean drain line and/or flow control.</td>
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<td></td>
<td>C. Plugged/restricted drain line.</td>
<td>D. Clean or replace injector and screen.</td>
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<tr>
<td></td>
<td>D. Injector is plugged.</td>
<td>E. Check for restriction in BLFC. Ensure safety float is not stuck. Check brine tank for leaks.</td>
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<tr>
<td></td>
<td>E. No water in brine tank.</td>
<td>F. Line pressure must be at least 20 psi.</td>
</tr>
<tr>
<td></td>
<td>F. Water pressure is too low.</td>
<td>G. Check brine line for air leaks.</td>
</tr>
<tr>
<td></td>
<td>G. Brine line injects air during brine draw.</td>
<td>H. Call dealer, Check piston, seals and spacers for scratches and dents.</td>
</tr>
<tr>
<td></td>
<td>H. Internal control leak.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B. Internal control leak.</td>
<td>B. Same as above.</td>
</tr>
<tr>
<td></td>
<td>C. Valve jammed in backwash, brine, or rapid rinse position.</td>
<td>C. Same as above</td>
</tr>
<tr>
<td></td>
<td>D. Motor stopped or jammed.</td>
<td>D. Replace motor.</td>
</tr>
</tbody>
</table>
Brine Solution Not Being Sucked in During Regeneration

Make sure the injector is drawing in the brine
Remove the brine tank tubing where it enters the 5900-BT control valve.
Initiate a backwash and skip to the Brine Cycle by following the steps below:

Start delayed extra cycle
If days remaining is not already at 1 press and hold the Set/Change button.
After 3 seconds the days remaining display will read 1 Example [ 1 ]
Regeneration cycle will be initiated at the next designated regeneration time

Start Immediate Extra Cycle - First, complete above delayed cycle steps
With days remaining at 1 press and hold the Set/Change button
After 3 seconds the regeneration cycle will begin.

Fast Cycle Through Regeneration
First complete above immediate cycle steps
Press and hold the Set/Change button

After 3 seconds the valve will start to advance to the next step, which is the Brine Cycle, where it is supposed to suck in the brine solution.

1. If it is sucking strongly, check the brine tank float inside the brine well and make sure that is free of obstructions. In some cases, it may need to be replaced or cleaned, if there is suction at the control valve, but no brine is being drawn in.
2. If there is NO suction at the control valve port where you removed the brine line tubing, then the injector should be cleaned.
3. If the injector has been cleaned and there is still no suction check to make sure there is obstruction in the backwash line; that the backwash line does not go up and over the Tannin Filter more than several feet (which causes pressure loss and the injector not to work correctly); finally check to make sure there is enough pressure. If possible increase your water pressure to Tannin Filter from your well pump and see if a slightly increased pressure makes the injector work. We recommend a minimum 30 PSI but it does work better if there is 40 to 50 minimum PSI.

System Not Programmed Correctly
In some cases, the 5900-BT control valve may not be programmed correctly. Review the programming instructions earlier in this guide.
**Brine Tank Not Filling with Enough Water**

Sometimes if the brine tank is not filling adequately, it is possible that the float assembly in the tank is set too low. You would want the float to be several inches above the air check valve inside the tank.

This will allow for enough water to be added to the tank before shutting the brine fill cycle.

If necessary, pull the float assembly rod up to the appropriate height, and cut the rod at that height, leaving while keeping the rubber washers the adequate space to hold the float in place.

**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 (Valve requires service to continue)

- **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 Power to Motor (usually this means the cable has come loose)

**Service Instructions – Perform Before Doing Any Control Valve Service**

A1. Turn off water supply to filter and put it in the bypass position.

A2. Remove cover and relieve water pressure in the 5900-BT control valve by stepping the control into the backwash position momentarily. Return the control to the service position.

A3. Unplug electrical cord from outlet.
How to Replace Powerhead

B1. Remove the control valve cover and disconnect the power supply.

B2. Disconnect meter cable from circuit board, feed through control (if meter is being re-used).

B3. Remove lower back base screws and detach lower back base.

B4. Remove screw and washer at drive yoke.

B5. Remove powerhead mounting screws.

B6. The entire powerhead assembly will now lift off easily.

B7. 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 from the motor).

B8. Replace powerhead mounting screws. Replace screw and washer at drive yoke.

B9. Reattach lower back base.

B10. Reconnect meter signal, wire and power supply.

B11. Reinstall cover.

How to Replace Piston Assembly

C1. Follow steps A1 - A3

C2. Disconnect the meter signal wire from the circuit board.

C3. Remove lower back base screws and detach lower back base.

C4. Remove screw and washer at piston drive yoke. Remove powerhead mounting screws. The entire powerhead assembly will now lift off easily.

C5. Remove piston retaining plate screws.

C6. Pull upward on end of piston yoke until assembly is out of valve.

C7. Inspect the inside of the valve to make sure that there is no foreign matter that would interfere with the valve operation.

C8. Install new seals and spacers.
C9. Take new piston assembly and push piston into valve by means of the end plug.

C10. Twist drive yoke carefully in a clockwise direction to properly align it with drive gear.

C11. Reinstall piston retaining plate screws.

C12. Follow steps B5 - B9

**How to Replace Seals and Spacers**


D2. Disconnect the meter signal wire from the circuit board.

D3. 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.

D4. 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)

D5. 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 top of the valve body)


**How to Replace Meter**

E1. Follow steps A1 - A3

E2. Unplug meter cable from front of circuit board.

E3. Unscrew meter assembly nut from valve body.

E4. Remove meter from valve body and clean or replace as necessary.

E5. Reinstall meter, nut and cable.
5900-BT Powerhead Exploded View and Parts List

<table>
<thead>
<tr>
<th>Ref</th>
<th>Description</th>
<th>Part Number</th>
<th>Qty</th>
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<tbody>
<tr>
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<td>Power Head Assy.</td>
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<tr>
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<td>Softener Circuit Board Assy.</td>
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<td>Encoder</td>
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<td>Encoder Wheel</td>
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<td>5</td>
<td>Main Gear</td>
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<td>6</td>
<td>Power Supply</td>
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<td>7</td>
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5900-BT Control Valve Body
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<tr>
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<td>Piston Assembly</td>
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<td>2</td>
<td>10-24 X 13/16 Hex Head</td>
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<td>Seal and Spacer Kit</td>
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<td>Bottom Spacer</td>
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<td>5A</td>
<td>Flow Control Button 2.4 GPM</td>
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<td>Flow Control Button 3.5 GPM</td>
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<td>Flow Control Assy. 3.5 GPM-PVC</td>
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<td>DLFC Clip</td>
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<td>Brine Line Ferrule</td>
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<td>Injector Cover</td>
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<tr>
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<td>Injector Seal</td>
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<td>Injector w/ Check Ball - Blue</td>
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<td>Injector Screen</td>
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<td>Injector Plug</td>
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<tr>
<td>18</td>
<td>Tank O-Ring</td>
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<td>19</td>
<td>Distributor Pilot O-Ring</td>
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<td>Flow Meter</td>
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<td>21/22</td>
<td>Valve Complete</td>
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</tr>
</tbody>
</table>
Warranty

Water Filters & Conditioners Limited Warranty

Date Installed __________

We warrant this water conditioner, Model ____________________ Serial Number __________________________ 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.