



# Clean Water Made Easy

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## Fleck 2510-SXT Softener Installation & Start-Up Guide

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

SOFTENING RESIN CONTAINS DUST.

USE PAPER MASK AND VENTILATE AREA TO AVOID BREATHING  
DUST DURING INSTALLATION



Questions?

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# *Fleck 2510-SXT Softener Installation & Startup Guide*

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## Packing List

### Model Size: 24K Grain Softener:

Quantity	Description
1	Fleck 2510-SXT backwash control valve & bypass valve
1	Pipe connector kit (either 1" or ¾")*
1	8" x 44" filter tank with distributor tube
1	Media funnel
1	3/4 cubic foot box of softening media (resin)
1	Brine tank

### Model Size: 32K Grain Softener:

Quantity	Description
1	Fleck 2510-SXT backwash control valve & bypass valve
1	Pipe connector kit (either 1" or ¾")*
1	10" x 44" filter tank with distributor tube
1	Media funnel
1	1 cubic foot box of softening media (resin)
1	Brine tank

### Model Size: 48K Grain Softener:

Quantity	Description
1	Fleck 2510-SXT backwash control valve & bypass valve
1	Pipe connector kit (either 1" or ¾")*
1	10" x 54" filter tank with distributor tube
1	Media funnel
1	1 cubic foot boxes of softening media (resin)
1	½ cubic foot box of softening media (resin)
1	Brine tank

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## Packing List (cont.)

### Model Size: 64K Grain Softener:

Quantity	Description
1	Fleck 2510-SXT backwash control valve & bypass valve 1
1	Pipe connector kit (either 1" or ¾")*
1	12" x 52" filter tank with distributor tube
1	Media funnel
2	1 cubic foot boxes of softening media (resin)
1	Brine tank

### Model Size: 80K Grain Softener:

Quantity	Description
1	Fleck 2510-SXT backwash control valve & bypass valve 1
1	Pipe connector kit (either 1" or ¾")*
1	13" x 54" filter tank with distributor tube
1	Media funnel
2	1 cubic foot boxes of softening (resin)
1	½ cubic foot box of softening media (resin)
1	Brine tank

NOTE: All fine mesh resin softeners will come with a box of gravel (does not include SST60 resin)

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## **Pre-Installation**

1. See typical installation (Fig. 2). The softener is installed after the pressure tank.
2. Make sure to connect the inlet pipe to the Fleck 2510-SXT inlet and the outlet to the outlet (see Fig. 3). Water enters the valve on the right and exits on the left when facing it from the front. From the back the water will enter 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 Fleck 2510-SXT and also one after as shown in Fig. 2. The pressure gauges are optional, but a hose bib (a faucet to which you can attach a garden hose) is strongly recommended after the softener, but before the second ball valve. This makes it easy to rinse your new softener on start-up and gives you a place to test the water before it enters your household plumbing.
4. If you will be using copper piping, do not sweat the copper pipe directly on to the Fleck 2510-SXT control valve, and avoid heating up the valve's plastic with your torch.
5. You do not need unions to install your Fleck 2510-SXT control. If you need to remove it, the Fleck 2510-SXT has quick-release couplings that make it easy to put the softener on bypass 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. Note that the drain can run up above the Fleck 2510-SXT control valve and into a drain—it does not need to drain down, as the filter backwashes under line pressure from your well pump. 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.

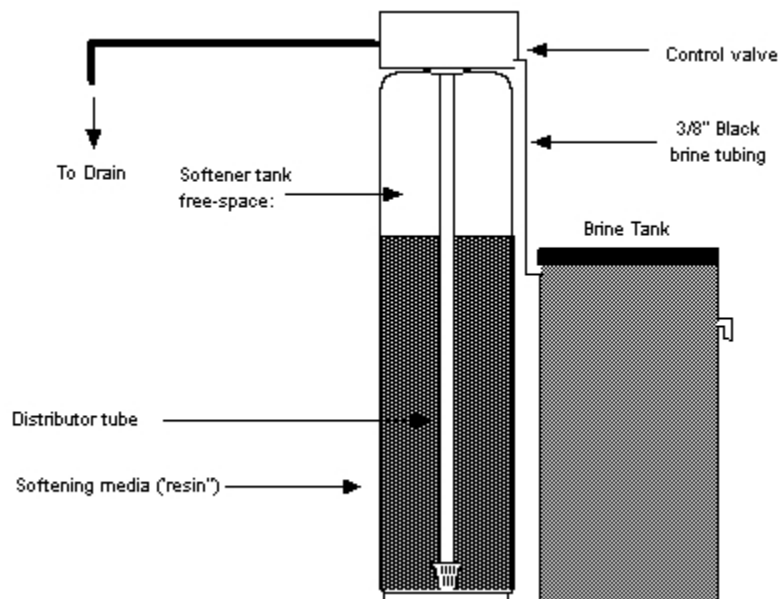
## **How Your Softener Works**

See Fig. 1. Water enters the softener through the top of the tank and flows down through the media and up the distributor tube. Hardness minerals are drawn to the resin beads in the softener. During backwash, the flow of water is reversed and water flows down the distributor tube and up through the media,

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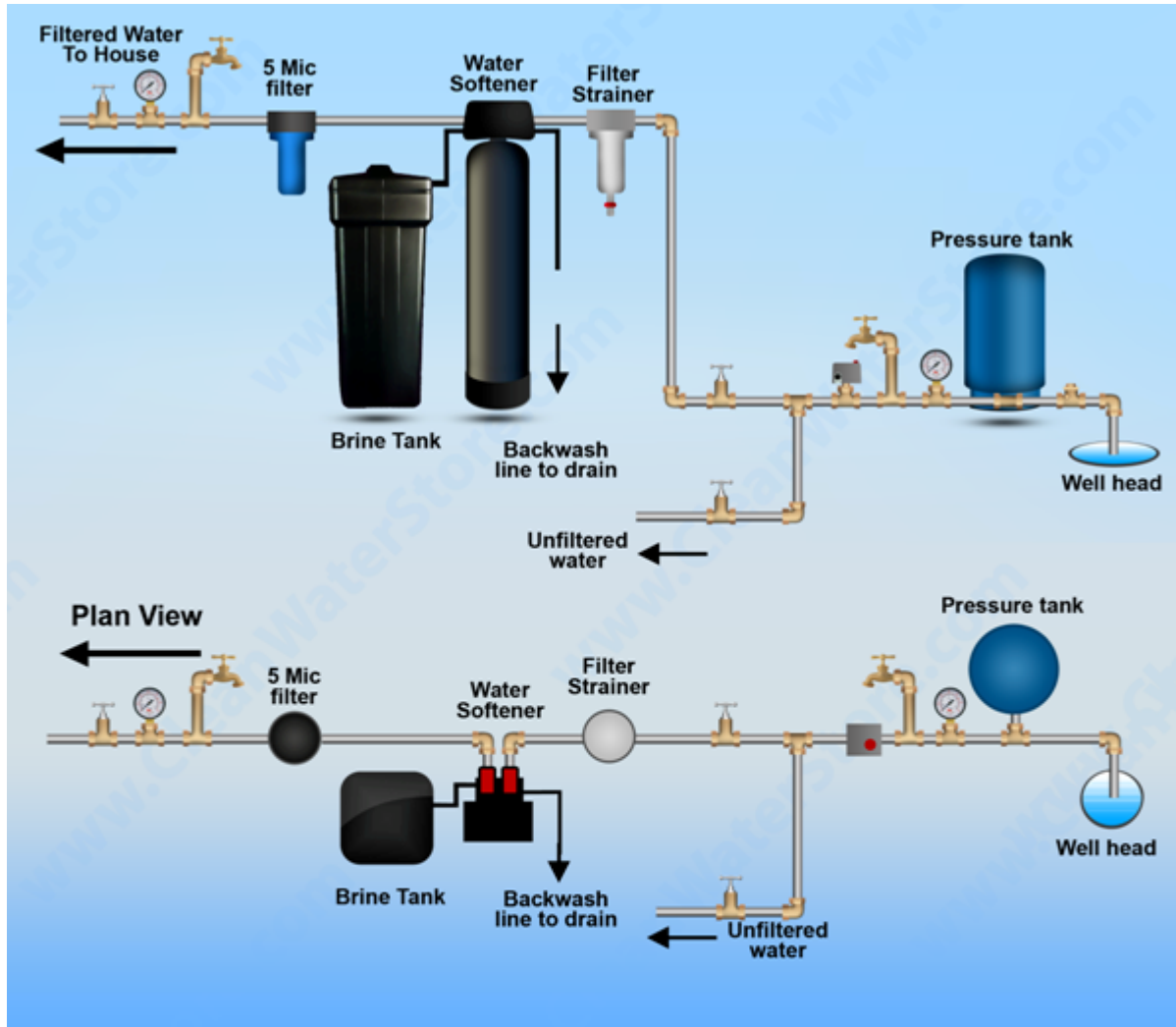
lifting and expanding it and removing any trapped particles. After the backwash stage, salt brine is automatically drawn in from the brine tank and slowly rinsed through the softening resin for 1 hour, during which the hardness minerals are swapped out with harmless sodium or potassium ions. This entire automatic process, called “regeneration” takes about 90 minutes. Typically the softener filter is set to regeneration every 14-21 days, during the middle of the night when no water is being used.

**Fig. 1—Softener Filter Tank Cutaway Illustration**



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Fig. 2—Typical softener Fleck 2510-SXT piping installation with ball valve and hose bib after the filter along with pre- and post- filtration (if necessary):



## Key



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Fig. 3—Fleck 2510-SXT from the rear, showing the inlet and outlet end-connector fittings (1" or 1.25" NPT in Noryl plastic). Brass end-connectors are also available for connecting to copper tubing.

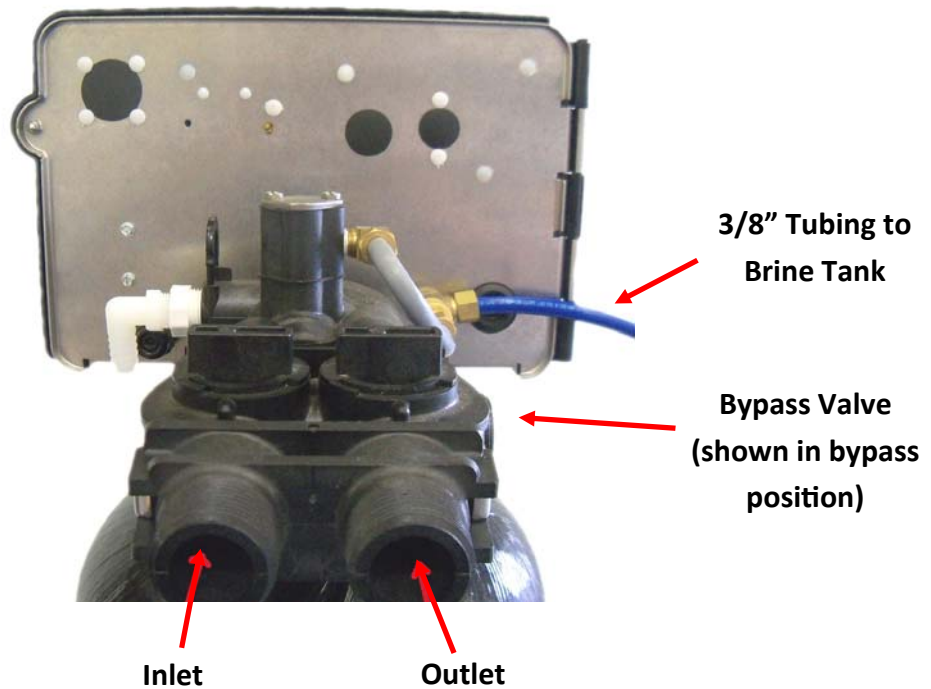
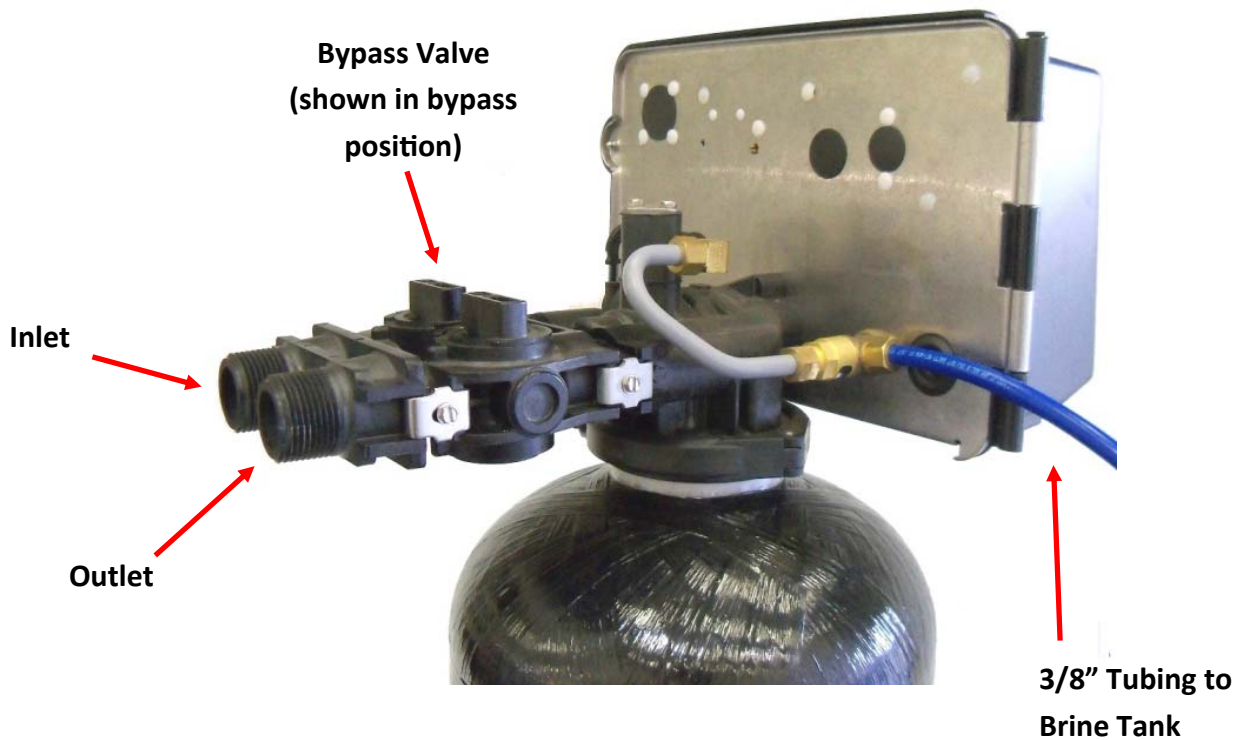


Fig. 4—Fleck 2510-SXT side view





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## Installation Instructions

1. Make sure the blue cap that came with your system is on top of the distributor tube as shown below on the left, or wrap the tube with electrical or duct tape to prevent any media from entering when you fill the tank.

**Fig. 5—Distributor tube and media funnel**



2. Next add the softening resin using the media funnel provided, as seen above on the right. Tank should be approximately 2/3 to 3/4 full.
3. Remove the cap or tape from top of the distributor tube, taking care not to pull the distributor tube up when removing the cap or tape.
4. Attach plastic top screen to the underside of the Fleck 2510-SXT control valve as seen below in Fig. 6. 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 cycle.

**Fig. 6—Top Distributor Basket**

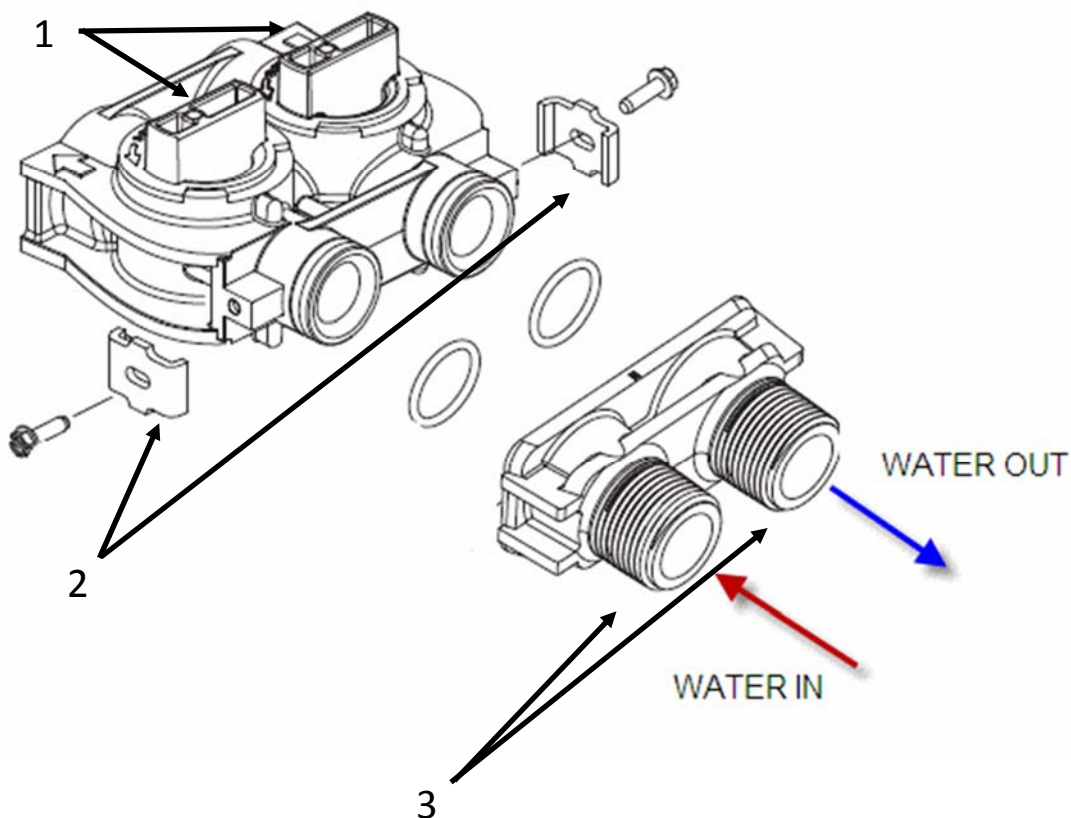


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5. **NOTE REGARDING TEFLON TAPE AND PIPE SEALANTS:** It is OK to use Teflon tape and pipe sealant on the water pipe connector threads, where you attach your pipes or plumbing to the Fleck 2510-SXT. However, DO NOT use any Teflon tape or pipe joint compound on the tank itself or on the threads where the Fleck 2510-SXT threads into the tank.
6. Install the Fleck 2510-SXT control valve on to the top of the filter tank by hand, taking care not to over-tighten.
7. See Figure 7 below. Note that items 3 are the pipe connectors, and the other end is what gets attached to the control valve. Items 2 are the nuts and steel brackets that hold the pipe connectors to the bypass valve (two included). Do not remove the brackets to put the system into or out of bypass mode, just turn the knobs (items 1).

**Fig. 7—Fleck 2510-SXT bypass valve and pipe connectors**

BY-PASS VALVE - Shown in By-Pass Mode



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8. Lubricate the bypass valve o-rings only on the pipe connectors with some vegetable oil or silicone grease and connect the bypass assembly to the Fleck 2510-SXT control valve by sliding the bypass valve firmly into its body. Once the bypass valve is in far enough, you will be able to easily tighten the screws onto the steel brackets. Again, **do not use oil or petroleum grease on any part of the Fleck 2510-SXT control valve.**
9. Make sure the bypass valve is in the bypass position when starting the installation. Follow the IN and OUT arrows on the bypass valve and control valve for proper connection of in and out water piping. Leave in the bypass position for now.
10. Now install your water pipes to the Fleck 2510-SXT bypass end connectors. Our preferred method is to wrap the pipe threads with 2 or 3 layers of Teflon tape, then apply a thin coating of white, non-hardening Teflon joint compound paste (available at all hardware stores) before attaching the pipe fittings. Make sure inlet is installed to the IN pipe connector on the bypass valve, and outlet to the OUT connector. **NOTE:** Arrows on bypass valve should be visible from the top of the bypass valve.
11. Connect some flexible tubing from the drain connection on the Fleck 2510-SXT control valve to a suitable drain such as a septic tank or sewer drain. It is OK to run the drain line up and over the Fleck 2510-SXT Softener up to 4 feet above the tank. If the drain line will be more than 20 feet long, and especially if your system is 2.0 cubic feet in size or larger, use a larger diameter tubing such as 3/4" or 1". Note that it is desirable to be able to run the drain line into a bucket in order to test the backwash flow rate in the future. This is why hard piping the drain line is discouraged. However, you may use hard PVC drain piping if you are able to remove it and attach flexible tubing should you ever desire for testing purposes. Make sure the drain tubing is firmly clamped to the barbed fitting with a hose clamp to prevent leaks.
12. Next, connect the solution tank to the Fleck 2510-SXT control valve with the black tubing provided with your brine tank.

(guide continues on next page)

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## Attaching the Brine Line Tubing to the Brine Tank & Fleck 2510-SXT Brine Valve



1. 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. Next, slide the black (or clear) compression ring on to the tubing with the narrower diameter going on first. Then slide the taller, white compression ring on to the tubing with the wider diameter going on first. The two compression rings should lay flush against each other on the tubing. Slide them in to the brine injector nut and place the brine tubing into the brine valve. Finally, push the brine injector nut, which now has the compression rings inside of it, on to the threading of the brine valve and rotate the nut clockwise, screwing it on to the brine valve. Tighten it down to finger tightness—the tubing should be firmly attached and not slide out if pulled upon.



2. Repeat step 1 to attach the tubing to the brine tank's valve.

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3. Add approximately 5 gallons of water to the brine tank, then fill the tank about 2/3 full of salt. It is OK to use any kind of water softening salt, however we find that extra coarse salt works better than pellets. You do not have to add water to the brine tank again after this first time during the start-up.
4. See the over-overflowed barbed fitting on the side of the brine tank. You do not have to connect this to a drain. If the safety float were to malfunction, there is a small chance that the brine solution would drip out of this fitting. If this would cause a mess where you have installed the softener, hook some tubing to this and run it to a bucket, floor pan, or floor drain. Normally no brine should leak from this fitting.
5. Now you are ready to turn on the water to the system. Turn it on and leave the valve on bypass while checking for leaks. Leave the ball valve after the softener closed, so that water is still off to the house, but connect a garden hose, open up the hose bib after the softener, and allow the water to run. This will help to clear out any foreign material that may be in the pipes from the piping installation. If you do not have a valve installed after the softener, nor a hose bib, you will need to turn on the water inside the house and let it run. Use a bathtub, laundry sink, or other fixture that does not have an aerator screen.
6. Leave the water running out of your hose (or fixture) at a slow rate. Now you can turn the bypass valve to the service position. DO NOT remove the red clips in order to do so. Slowly open the inlet side of the bypass valve, then slowly open the outlet side of the bypass valve until it is in full service position. Make sure to turn the bypass valve knobs counter-clockwise.
7. Now turn your garden hose or inside fixture up to full force and let the water flow until it looks relatively clear (it may exhibit some discoloration at first).
8. PROGRAMMING: Your 2510-SXT control valve does require some modifications to the programming to make your system function as a softener. To enter programming mode, set the time to 12:01 PM by holding either the UP or DOWN button until the time display changes. Then push the EXTRA CYCLE button to confirm the time and exit the time-setting mode.

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- a. Press and hold the up and down arrows simultaneously for 5 seconds to enter Master Programming mode. Change the parameters according to the following guide:
- b. Display Format (**Display Code: DF**): Set display to GAL, for U.S. gallons. If you live outside of the U.S., change to liters or cubic meters. Press the extra cycle button to go to the next step.
- c. Valve Type (**Display Code: VT**): Set to DF2b, for standard downflow mode. Press the extra cycle button.
- d. Control Type (**Display Code: CT**): Set to Fd. This is the “meter delayed” option, which tells the Fleck 2510-SXT to regenerate based on the amount of water used, but to wait until the pre-set regeneration time (we recommend the middle of the night) to run a regeneration cycle. Press the extra cycle button.
- e. Unit Capacity (**Display Code: C**): The unit capacity specifies the treatment capacity of the unit. Set to 24 if you have a 24k grain capacity softener, 32 if you have a 32k grain softener, 48 if you have a 48k grain softener, 64 if you have a 64k grain softener, or 80 if you have an 80k grain softener. Press the extra cycle button.
- f. Number of Tanks (**Display Code: N**): Set to 1, as this is a single-tank system, then press the extra cycle button.
- g. Feedwater Hardness (**Display Code: H**): Set to your water’s hardness in grains per gallon. This setting allows the meter to calculate the number of gallons to be used between backwashes. Ideally it’s a good idea to overcompensate a bit by adding 2 or 3 grains to your actual hardness level to make the system backwash a little sooner and avoid exhausting your softening resin, as well as to allow for actual increases in your well water’s hardness. For example, if your water’s hardness is 10 grains per gallon, set this setting to 13. If your water test shows the hardness in parts per million (PPM) or milligrams per liter (mg/L) then divide your test result by 17.1 to convert it to grains per gallon. [**1 grain per gallon = 17.1 PPM or mg/L of hardness**] Press the extra cycle button.
- h. Reserve Selection (**Display Code: RS**): Set to SF, for “safety factor,” and press the extra cycle button.
- i. Safety Factor (**Display Code: SF**): Set to 10. This tells the softener to regenerate sooner by 10% of its capacity to avoid having the softener resin get totally exhausted before it needs to regenerate. Press the extra cycle button.
- j. Day Override (**Display Code: DO**): Set to 7-14. Use the up and down arrows to change the setting. This will allow the softener to regenerate once every 7 to 14 days no matter how much water is used. This is optional (you can set it to 0) but it can help keep the softener clean if you have iron or other sediment in your water. Press the extra cycle button to continue.

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- k. Regeneration Time (**Display Code: RT**): Set to 2:00 AM or some other time when no water is being used and no other filter or softener is likely to be in a regeneration cycle. Press the extra cycle button.
  - k. Regeneration Cycle Step Times: Use this display to set the various minutes of each cycle. Use the up and down arrows to change the setting as desired. Press the extra cycle button to accept and move to the next parameter:
    - a. **B1—Backwash**: Set to 8 minutes
    - b. **BD—Brine Draw**: Set to 60
    - c. **B2—2nd backwash**: Set to 6 minutes
    - d. **RR—Rapid Rinse**: Set to 6 minutes
    - e. **BF—Brine Fill**: For 32k grain softeners set to 12 minutes; 48k grain softeners: 20 minutes; 64k grain softeners: 26 minutes; 80k grain softeners: 32 minutes
  - l. Flow Meter Type (**Display Code: FM**): Set to T0.7, the standard setting for Fleck 2510-SXT valves. Press the extra cycle button, and you're done programming. Now all you have to do is set the clock to the right time by holding the up or down arrow.
9. Your softening media must be regenerated before you can use your water. Start a manual backwash and rinse ("regeneration") by pressing and holding the extra cycle button for 5 seconds.
  10. At this point the softener will be in a backwash mode, which is the first of five cycles it goes through during regeneration. The backwash will take 8 minutes. After 8 minutes, the Fleck 2510-SXT will begin to suck up brine solution from the brine tank.
  11. After another 10-15 minutes the brine tank will be sucked dry of the salt brine. Check to make sure that the brine tank has no water after this cycle.
  12. After 60 minutes in the brining cycle, your softener will begin a second backwash cycle. After that, it will go through a 6 minute rapid rinse cycle, and, finally, it will move to the brine fill cycle during which the brine tank is refilled.
  13. After all cycles have run to completion, ensure that the brine tank is filled with enough water to cover the salt. You can change the level of the brine by adjusting the level of the float assembly. However, this is not necessary for most users.
  14. After the regeneration cycle is complete, turn on the water to the house and allow it to run for a few minutes.
  15. If desired, refer to your Fleck 2510-SXT service manual for more information about your control valve's programming.

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## Maintaining Your Softener 2510-SXT System

### Adding Salt to the Brine Tank:

Be sure to check the level of salt in the brine tank every few months (typically 3-4). You will likely see that the salt level has dropped significantly, at which point you should add more salt just as you did the first time (page 13 of this guide, step 3).

### Cleaning the Injector

1. Put filter system on bypass or shut off water to system.
2. Turn center knob on timer assembly a few degrees clockwise until you hear control valve motor engage—this will release the water pressure in the control valve so you can change the injector assembly.
3. Unplug control valve from electrical outlet.
4. Un-screw bolts and, using a small screwdriver, remove nozzle and throat, unscrewing counter-clockwise. You may need to use a paper clip or other piece of wire to remove the lower nozzle once it is unscrewed.
5. Replace and/or clean in acid, and replace or clean screen.
6. Put system back online. Make sure timer assembly is advanced so the piston on the control valve is back in service position. If desired, initiate a manual regeneration by turning the timer assembly knob a few degrees clock-wise.

## Troubleshooting the Fleck 2510-SXT Softener

PROBLEM / SYMPTOM	POSSIBLE CAUSE	SOLUTION
Water softener fails to regenerate	Electrical service to unit has been interrupted	Assure permanent electrical service (check fuse, plug, pull chain, or switch)
	Timer is defective	Replace timer
	Power failure	Reset time of day

(chart continued on next page)



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Hard water	By-pass valve is open	Close by-pass valve.
	No salt is in brine tank	Add salt to brine tank and maintain salt level above water level.
	Injector screen plugged.	Clean injector screen
	Insufficient water flowing into brine tank.	Check brine tank fill time and clean brine line flow control if plugged
	Hot water tank hardness.	Repeated flushings of the hot water tank is required.
	Leak at distributor tube.	Make sure distributor tube is not cracked. Check O-ring and tube pilot.
	Internal valve leak	Replace seals and spacers and/or piston.
Unit used too much salt	Improper salt setting.	Check salt usage and salt setting
	Excessive water in brine tank.	See problem 7.
Loss of water pressure	Iron buildup in water conditioner.	Clean control and add mineral cleaner to mineral bed. Increase frequency of regeneration.
	Inlet of control plugged due to foreign material broken loose from pipes by recent work done on plumbing system.	Remove piston and clean control
	Air in water system	Assure that well system has proper air eliminator control. Check for dry well condition.
Loss of softening resin through drain line	Improperly sized drain line flow control.	Check for proper drain rate.
	Fouled mineral bed.	Check backwash, brine draw, and brine tank fill. Increase frequency of regeneration. Increase backwash time.
Iron in conditioned water	Plugged drain line flow control	Clean flow control
Excessive water in brine tank	Plugged injector system	Clean injector and screen.
	Timer not cycling	Replace timer
	Foreign material in brine valve	Replace brine valve seat and clean valve.
	Foreign material in brine line flow control.	Clean brine line flow control
	Drain line flow control is plugged	Clean drain line flow control

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Softener fails to draw brine	Injector is plugged.	Clean injector
	Injector screen plugged	Clean screen
	Line pressure is too low	Increase line pressure to 20 psi (1.3 bar)
	Internal control leak	Change seals, spacers, and piston assembly.
	Service adapter did not cycle.	Check drive motor and switches.
	Misadjusted, broken, or shorted switch	Determine if switch or timer is faulty and replace it, or replace complete power head.
Control cycles continuously	Valve is not programming correctly.	Check timer program and positioning of control. Replace power head assembly if not positioning properly.
Drain flows continuously	Foreign material in control.	Remove power head assembly and inspect bore. Remove foreign material and check control in various regeneration positions
	Internal control leak.	Replace seals and piston assembly.

## What To Do If Your Filter Tank Does Not Sit Level On the Floor

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 rapping it on a concrete or solid floor once or twice in order to level it.