

Safety Zone Water Systems

Owner's Manual, Installation Instructions and Start-Up Procedures

**WATER SOFTENERS AND COMBINATION
WATER SOFTENER & WHOLE HOUSE FILTERS
WITH ELECTRONIC CONTROL VALVE**



Safety Zone Water Softeners & Combo Systems



Two-Tank Combo Water Softener & Filter

Single Tank Combo Water Softener & Filter

Water Softener

Congratulations!

You've selected our best-selling water conditioning models for top performance and economy.

Safety Zone Water® conditioning systems are designed to provide years of service with proper care and maintenance.

Hopefully, this manual will be beneficial and provide information you need to install, start-up and maintain your system.

To view our valve manuals visit www.safetyzonewater.com

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Specifications

Valve type	Metered
Valve sizes	1", 1.25", 1.5" and 2"
Pipe fittings available	3 / 4", 1", 1.25" and 1.5"
Regeneration method	Down flow
Riser tube size	1.05", 1.25", 1.5" and 2"
Drain line fitting	3 / 4" male NPT
Brine line	3/8" quick connect (1" valve)
Supply voltage	120 V AC
Supply frequency	60 Hz
Output voltage	12 V AC
Resin volume (cubic feet)	1.0, 1.5, 2.0, 3.0, 4.0, 7.0 & 10
Resin type	8% cross linked Ion Exchange
Carbon type (Combo units)	Catalytic coconut shell
KDF (Combo units)	KDF-55
Brine tank volume	200 lbs.
Brine tank overflow prevention	Included
By-pass valve	Included

INSTALLATION PROCEDURES

Before you start

Order a pipe fitting kit to connect the system to your plumbing. Pipe fitting kits are ordered separately, because there are options, NPT, Slip, ¾", 1", 1-1/4" and 1-1/2". It is also essential to order weather covers if your plan to install your system outdoors.

A by-pass valve is included. Install the by-pass on the valve. Be sure to lubricate the orings with silicone lubricant. (Do not use pipe dope.)



**BY-PASS VALVE
(Included)**



**PIPE FITTING KIT
(Ordered separately)**

Pipe fitting kits

Part number	Description
V3007	1" elbow, NPT
V3007-01	Elbow, ¾" & 1" combo, slip
V3007-07	1-1/4" & 1-1/2" combo, slip
V3007-02LF	1" brass sweat
V3007-03LF	3 / 4" brass sweat

Outdoor installations

Electrical components are not covered under our limited warranty in outdoor installations if weather covers are not used, the electrical connections are not shielded from the weather and when systems are powered by an extension cord.



Waterproof electrical outlets are required outdoors.



**Weather covers are required in outdoor installations. (See above.)
Part Number: WC-SS-W**



Two-tank and multi-tank systems

Install filters before water softeners in two and multi tank installations. This includes carbon, Iron, sediment filters and acid neutralizers.

However, with well water and little or no Iron, Sulfur filters (SF-150 and SF-250) are installed after the water softeners, where low levels of Iron are removed by the water softener to provide improved performance.

INSTALLATION PROCEDURES (CONTINUED)

Installation

Eliminate costly call backs! Carefully follow the instructions described below.



Indoor installation



Outdoor well water installation

1. The system should be installed on the main water line, prior to the water heater. On well water installations, install the unit after the bladder tank and before the water heater.
2. Make sure a 110 – 120 volt electrical outlet is nearby. (Do not use an extension in outdoor installations.)
3. Decide where to install your drain. (Drain water should flow freely, and drain water cannot be restricted.)
4. Install the by-pass valve (lubricate the o-rings)
5. Install the pipe fittings on the valve (using slip, NPT or brass fittings).
6. Install your drain using $\frac{3}{4}$ " PVC, 1" PVC or $\frac{1}{2}$ " drain line tubing. Don't restrict drains!



Outdoor installations

In Florida, systems are often installed outdoors, where water enters the house.



Drain water must be free-flowing. Do not restrict drains.

INSTALLATION INSTRUCTIONS (CONTINUED)



Connect brine well to the inside wall of the brine tank. Secure with the "overflow fitting".



Overflow fitting and brine line tubing, shown above.



Add 6" of potable water to the brine tank. **Do not add salt at this time.**

Assemble the brine tank and make your brine tubing connections:

1. Take cap off the top of the brine well and place it on the bottom of the brine well.
2. Connect the brine well to the side of the brine tank with overflow fitting. (It may be necessary to remove the float assembly to reach inside the brine well.)
3. Connect the 3/8" brine line tubing to the valve. (Be sure to "**push twice**" to complete a secure connection. (Otherwise, you will suck air during "draw" and not brine water.)
4. Connect the 3/8" brine line tubing to the quick connect fitting in the brine well. (**To eliminate "call backs", be sure to "push twice" so this connection will be secure.**)
5. Place cap on top of the brine well to prevent salt from interfering with the float.



IMPORTANT

This fitting must be secure. Otherwise you will suck air instead of brine water during the "brine draw" cycle, the resin will not be properly cleaned and your customer will not have soft water. Also, you may end up with "too much" water in the brine tank since water will be added during the "refill" cycle but not sucked out during the "draw" cycle. **Hold the side of the brine well with one hand for support and push TWICE with the other hand.**

- 4 Add 6" of potable water to the brine tank. **DO NOT add salt at this time.**
- 5 Test the water for water hardness since it is necessary to set the hardness level when programming the valve.



VALVE SETTINGS



Valve settings

All settings may be adjusted to meet individual requirements.

System Data and Valve Default Settings

System	Resin (Cu. Ft.)	Tank Size	Capacity (Grains)	Backwash #1	Draw	Backwash #2	Rinse	Refill Salt Setting (lbs.)
Softener	1	9x48	24,000	8	60	8	8	9.5
Softener	1.5	10x54	36,000	8	60	8	8	9.5
Softener	2	12x52	48,000	8	60	8	8	9.5
Softener	3	14x65	72,000	8	60	8	8	9.5
Combo 2-100	1	10x44	24,000	8	60	8	8	9.5
Combo 2-150	1.5	10x54	36,000	8	60	8	8	9.5
Combo 1-150	1	10x54	24,000	8	60	8	8	9.5
Combo 1-200	1	12x52	24,000	8	60	8	8	9.5

Note: Settings are in minutes. Settings may be adjusted depending in water source, hardness levels and Iron content.

HOW TO VERIFY OR ADJUST EACH REGENERATION CYCLE



Set hardness, regeneration time and regen days override

At the clock, press **NEXT** and **ARROW UP** simultaneously for five seconds and release simultaneously. Here you should see, "**Set Softening**". (If you see "set filtering" be sure to arrow to "set softening".) In this mode, you can set water hardness, regen days (to override the meter) and regen time. (Keep regen time set at 2:00 AM or you may adjust.)



To adjust regeneration cycles and relay

At the clock, press **NEXT** and **ARROW DOWN** simultaneously for five seconds to verify the cycles.

1. First, backwash (8 minutes. default)
2. Brine draw (60 minutes default)
3. Second backwash (8 minutes default)
4. Downward rinse (8 minutes default)
5. Brine tank refill (9.5 lbs. of salt default)

TO SET CLOCK – Press **SET CLOCK** at any time to set hour and minutes, then press "**NEXT**" to exit. The clock is a 24 hour clock, so AM or PM must be set accordingly. (You may make adjustment only when "hour" or "minutes" blink.)

START-UP

(ELIMINATE COSTLY CALL BACKS – FOLLOW EACH STEP COMPLETELY)

Before start-up

Before start up, you should have accomplished the following:

- ✓ Installed the system, making sure you used the correct inlet and outlet.
- ✓ (See arrows on the valve.)
- ✓ Installed your drain (must be free flowing). Do not restrict your drain!
- ✓ Set up the brine tank.
- ✓ Added 6" of potable water to the brine tank (do not add salt at this time – last step).
- ✓ Made brine line connections, being sure to “push twice” to make sure connections will not suck air versus drawing water from the brine tank into the mineral tank.
- ✓ Made electrical connections (110 / 120 volt).
- ✓ Shielded the electrical connections in outdoor installations.
- ✓ **Set the hardness in the valve’s programming (see page 6).**
- ✓ Closed both red knobs on the by-pass valve.
- ✓ Feed water to the system.

Note: You also have installed shut-off valves before and after the system to isolate the system if necessary.



See arrows on valve to show direction of flow.



To start - Step #1

With both red knobs closed, **press and hold** the **REGEN** button until the motor starts. This puts you into cycle #1, which is **BACKWASH**.

Next, open the red inlet knob slowly to allow water to fill the mineral tank. Once you see water running to drain, you may open the inlet completely.



To start open inlet slowly.



Important

Stay in BACKWASH until the drain water runs clear. This may take several minutes if your system is a water softener, or longer if you are installing a combination system, which includes activated carbon and Ion Exchange resin.

NOTE: Once you are in a cycle, you may advance to the next cycle by pressing “Regen”. You do not have to wait to complete the entire cycle.



Step #2

Press and release the **REGEN** button to advance to cycle #2, **BRINE DRAW**. Here, you should watch closely to be sure the water level in the brine tank is going **DOWN**. Otherwise, your customer will not have soft water after the initial period. If water is not drawing properly, check the brine line tube connections.



During “Draw” water level goes down.

START-UP (CONTINUED)

(ELIMINATE COSTLY CALL BACKS – FOLLOW EACH STEP COMPLETELY)



Step #3

Press and release the **REGEN** button to advance to cycle #3, the second backwash. Here, you want to again check to be sure the drain water is running clear. If not, stay in backwash until the drain water is clear.



Step #4

Press and release the **REGEN** button to advance to cycle #4, **RINSE**. This is a very important cycle, since fresh water is used to rinse the tank and rinse salt off the resin. The default setting for this cycle is eight (8) minutes, which may be adjusted depending on circumstances. (See pg. 6.)



Thanks to cycle #4, there is no salt in your water!



Step #5

Press and release the **REGEN** button to advance to cycle #5, **REFILL**. Here fresh, conditioned water is added to the brine tank to produce more brine water for the next resin cleaning process. During this cycle, watch carefully to be sure the water level in the brine tank is going **UP**.



During "Refill" water level goes up.



Step #6 – Advance to service

Press and release the regen button to advance to service.

Finally . . .

Step #7

Add salt to the brine tank (two to three bags initially).

Step #8

Go inside the house (or to a laundry sink) and open a faucet to be sure water is running clear. You may also test the water for hardness to show your customer the water is soft (once the conditioned water gets to the faucet used for the demonstration).

Step #9

Give your customer an initial orientation (see next page).

Note: Water in the house will be "soft" once water in the water pipes are flushed.

WATER SOFTENER CUSTOMER ORIENTATION

Thank you for selecting Safety Zone Water Systems to improve the quality of your water. Our goal is to have you as a satisfied customer and maintain a positive relationship as long as you own our equipment. We hope the following information will help you become familiar with your system's operation.



Components

Your Safety Zone Water softener includes the following component:

- Automatic control valve
- By-pass valve so the unit may be isolated if necessary
- Pressure tank with Ion Exchange resin
- Brine tank with air check and safety float to prevent brine water overflow

By-pass valve

Should it be necessary to by-pass your water softener, turn the red knobs on the by-pass valve at right angles to the direction of the flow (see right).



By-Pass Valve

How to set the clock

The valve has a battery to keep time for a limited period of time. However, should it be necessary to re-set the clock press SET CLOCK for several seconds. Notice hours are blinking. Also, notice if AM or PM appears. Arrow up or down to the correct hour, AM or PM. Press next. Now, the seconds are blinking. Arrow to the correct minutes, and press NEXT to exit the "set clock" mode. During a power outage other valve settings are maintained, however.

Resin cleaning process

The Ion Exchange resin in your water softener must be cleaned periodically to remove hardness minerals which have been removed from your water. Your control valve initiates this resin cleaning process automatically based on water use. This process is typically set to occur at 2:00 AM, but adjustments are possible. When this occurs, you will hear water running to drain. This is normal.

When to add salt to your brine tank

Salt is used for the resin cleaning process to remove the hard water minerals from the resin. For this reason, it is essential to monitor your salt levels and to add salt to your brine tank when needed. We recommend CRYSTALS, but other softener salt is acceptable. Initially, add three 40 lb. bags of salt to the brine tank.

Salt in your water

Water softener salt is used to remove hardness minerals (Calcium and Magnesium) from the resin. However, after the "brining cycle" your water softener goes through a second backwash cycle and a downward flow rinse cycle to remove salt from the tank and resin. For this reason salt will not be in your water. Furthermore, the duration of these cycles can be easily adjusted if necessary.

Iron

If you have Iron in your water, we recommend the use of a resin cleaner. Be sure to ask your installer if a resin cleaner is appropriate for your situation.

Error messages

If an error message is shown on your valve's display use the valve manual posted on our website for additional information (www.safetyzonewater.com).

PROBLEM SOLVING

Problem solving

If your water softener is “not working”, here is a basic check list to follow:

1. Test for hardness.
2. Check power source.
3. Check to make sure by-pass is open.
4. Check salt level in the brine tank.
5. Check to see if water is in the bottom of the brine tank.*
6. Try to determine if the unit regenerated recently (see diagnostics below).
7. If the valve is metered, check the display for flow (meter may not be working)**
8. Go through a manual regeneration to see if the cycles are operating properly.
9. During “draw” watch to see the water level in the brine tank go down.
10. During “refill” watch to see the water level in the brine tank go up.
11. If the brine tank has a float, make sure it is set properly and not tangled.

*This assumes the valve is set up to refill POST regeneration, which is most common.

**When water is flowing valve will blink ‘SOFTENING” in upper left corner of the display.

Water flow is necessary for a metered valve to regenerate.

Other common problems

1. Too much water in brine tank. (Plugged injector; improper “refill” settings; or brine line connections not secure).
2. High salt usage. (Refill set to high – check settings; wrong settings).
3. Flow to drain continuously. (Check valve settings; foreign material in control valve.)
4. Unit fails to draw brine. (Drain line is plugged; injector is plugged; inlet pressure to low).
5. Resin in drain line. (Air in the system; incorrect drain line flow control button).
6. Resin in house. (Broken bottom distributor; upper basket missing).
7. Low water pressure. (Iron or scale build-up; inlet plugged).
8. Water taste salty. Adjust the second backwash and rinse cycles to run longer. **(Press ▼ & NEXT).**

Error Messages

E1, 1001, 101	Valve unable to sense motor movement. Snap board in properly.
E-2, 1002, 102	Motor unable to find next cycle. Main drive too tight. Improper voltage.
E3, 1003, 103	Drive bracket not snapped in properly.
E4- 1004, 104	Drive bracket not snapped in properly.
E-1006, 106	Motor wire not connected to PC board.

Note: Email sales@safetyzonewater.com for VALVE DRAWINGS & SERVICE MANUAL. Full details are provided error codes



Try this:

To clear an error message, try re-booting by disconnecting power from this terminal and reconnect. (Not from the electrical outlet).

Diagnostics

To determine how frequently the resin cleaning process has occurred and observe other operational factors follow the following directions:

Press ▲ and ▼ simultaneously for 5 seconds and release. Observe the following data, pressing NEXT to advance through the data:

1	Software version	5	Error log
2	Volume of water used since start-up	6	Days since last regeneration
3	Total days since start-up	7	Volume of water since last regeneration
4	Total regenerations since start-up	8	Press next until you get back to the clock to exit

Note: For valve manuals, go to www.safetyzonewater.com. Scroll down to footer on our home page.

SERVICE & MAINTENANCE

Service

When you first arrive to service a water softener, complete a water analysis to determine the hardness (and Chlorine level if you are dealing with a COMBO system).

Next, check the basics:

1. Are the inlet and outlet valves open?
2. Is the valve installed correctly? (Direction of flow – see arrows on valve).
3. Does the system have power, or is the display blank?
4. Is there salt and water in the brine tank?
5. Is there too much water in the brine tank?
6. Is there too little water in the brine tank?
7. Go into diagnostics (pg. 10) to determine when the last Rgen occurred and other factors.
8. Check the valve settings (see page 6).
9. Check the hardness setting (press next and arrow up) to determine if the valve's hardness setting is the same as the actual level of hardness.
10. Go through a regeneration and advance through the cycles to determine if each cycle is operating properly. (See start-up procedures on pages 7 and 8.)
11. Is the backwash water flowing properly? (2-5 GPM is typical for residential softeners).
12. Is water continuously running to drain?
13. Call Safety Zone Water if you need assistance. Tel: 352-492-9516

SPARE PARTS

Part number	Description
V3006	By-pass valve
WC-SS-W	Weather cover for valve; white
V3186-05	Transformer and power cord (standard)
V3186-05OD	Transformer and power cord (outdoor)
V3476	Motor
V3408EE-04BOARD	PC board for water softener and Iron / Sulfur air draw filter
V3193-02	Service spanner wrench
V3005-02	Spacer stack assembly
DF-V3011	Piston for water softener; down flow
V3174	Brine piston for water softener
V3162-022	Drain line flow control button; 2.2 gpm (for 9" & 10" tank)
V3162-027	Drain line flow control button; 2.7 gpm (for 12" tank)
V3162-053	Drain line flow control button; 5.3 gpm (for 13" tank)
V3162-075	Drain line flow control button; 7.5 gpm (for 14" tank)
V3010-1E	Injector for 9" and 10" tank; white
V3010-1F	Injector for 12" tank; blue
V3010-1G	Injector for 13" tank; yellow
V3010-1H	Injector for 14" tank; green
V3003	Meter assembly
H4615	Red clip for drain line and brine tubing fitting
V3150	Split ring for pipe fittings
V3105	O-ring 215 for pipe fittings
H4850-17.875	Brine well with safety float assembly (4"x30")
H7018	Poly bag with 4' brine line tubing, 4" cap and 2 pc. overflow fitting
G2195	Brine tank lid; 15x17; black

LIMITED WARRANTY

SAFETY ZONE WATER™ SYSTEMS

Safety Zone Water Systems (Manufacturer) are warranted to be free of defects in material and workmanship to the ORIGINAL residential purchaser. All aspects of this warranty are subject to the limitations, terms and conditions described below:

Duration

Water conditioner and whole house filter components, including valves, tanks and non-wear parts are covered under this warranty. Should failure occur due to defects in materials and workmanship, Manufacturer, at its sole discretion, will repair or replace the defective part or component for the duration of five years for valves; ten years on tanks; and five years on electrical components. Labor for parts replacement, service, shipping and handling charges are not included, and they are the customer's responsibility under the terms of this warranty.

Limitations of Coverage

This warranty extends only to the CONSUMER for damage resulting from defects in materials and workmanship, and does not include wear related damage, renewable or consumable components, such as seals, spacers, ultraviolet lamps, filter cartridges, resin, neutralizing media, iron media, sediment media and granular activated carbon. Damage caused by the CONSUMER'S neglect or abuse, accident, rain, wind, heat, cold, ultraviolet light exposure, damage caused by acts of God, civil insurrection and extraordinary circumstances beyond the Manufacturer's control are not covered. Manufacturer shall not be liable for any direct or indirect damage resulting from the use of the Equipment, and this Warranty coverage shall not exceed the purchase price of the Equipment. This Limited Warranty excludes: 1. Any equipment not manufactured by the Manufacturer. 2. Equipment which has been altered by the CONSUMER or non-authorized service personnel. 3. Systems where date codes and serial numbers have been removed. Additionally, electrical components are not covered under the following circumstances: 1. Systems installed outside without a weather cover. 2. Systems where electrical connections are not properly shielded from the weather. 3. Systems installed outdoors, powered with an extension cord.

This limited warranty may not be transferred from the original owner to another individual.

Water quality

Manufacturer cannot know the characteristics of the customer's water quality. Furthermore, water characteristics may vary, over time. For these reasons, Manufacturer assumes no liability for product selection.

Claims

All claims for Warranty coverage must be accompanied by a copy of the purchase agreement, showing date of the original installation. If this is not available, a warranty card must be on file. Manufacturer reserves the right to inspect the equipment, prior to honoring any warranty claim. This Warranty gives CONSUMERS specific rights, and these rights may vary from state to state.

Contact information

Any and all claims should be directed to the Authorized Dealer in your area. If this information is not available, consumers may contact Safety Zone Water Systems, LLC.

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