OWNER'S MANUAL

Premium Series Two Tank 1-PLUS-1 Water Conditioner & Whole House Filters

Congratulations!

You've selected our Premium Series Two Tank 1-PLUS-1 water conditioner and whole house filter for top performance and greater efficiency. It's a combination water conditioner and whole house filter, all in one!

Your Premium Series water conditioning and filtering system is 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.

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Routine maintenance recommended

Common with all equipment, routine maintenance is necessary. Maintenance procedures generally include a complete water test to evaluate your system's performance. Your dealer will also check your valve's settings to be sure the system is operating at peak efficiency; tanks, for leaks; salt usage; drain line, to be sure they are clear; seals and spacers, for proper regeneration and resin cleaning.

MODELS

Water Conditioners (tank #1)

Model Number	Tank Size	Resin Volume
PS-WC-100	10x44	1.0 Cu. Ft.
PS-WC-150	10X54	1.5 Cu. Ft.

Water Filter (tank #2)

Carbon filters

Model Number	Tank Size	Catalytic Carbon & KDF
PS-1+1-SRB-100	10x44	1.0 Cu. Ft.
PS-1+1-SRB-150	10X54	1.5 Cu. Ft.

Iron filters

Model Number	Tank Size	Birm®
PS-1+1-BIRM-100	10x44	1.0 Cu. Ft.
PS-1+1-BIRM-150	10X54	1.5 Cu. Ft.

Acid Neutralizers

Model Number	Tank Size	Calcite & Coresex
PS-1+1-AN-100	10x44	1.0 Cu. Ft.
PS-1+1-AN-150	10X54	1.5 Cu. Ft.

Specifications

Valve type	Metered (1) Motorized MAV (1)
Valve sizes	1” and 1.25”
Pipe fittings available	¾”, 1”, 1.25” and 1.5”
Regeneration method	Down flow
Riser tube size	1.05” and 1.25”
Drain line fitting	¾” male NPT
Drain line tubing	½”, ¾” or 1”
Brine line	3/8” quick connect
Supply voltage	120 V AC
Supply frequency	60 Hz
Output voltage	12 V AC
Output current	500 mA
Resin volume (cubic feet)	1.0, 1.5
Resin type	10% crosslinked (Premium)
Filter media	Carbon, Birm, Calcite, Coresex
Brine tank volume	240 lbs.
Brine tank overflow prevention	Included
By-pass valve	Included
Tank colors	Light gray

Open Cartons

This carton is inside the mineral tank carton. It includes the valve, by-pass, fittings you ordered, drain line nut, drain line insert, upper basket, installation instructions and warranty.

Mineral tank carton with valve carton inside.

Set-Up Valve & Install On Tank

1. Assemble pipe fittings (Follow directions in package.)

2. Lubricate ALL black o-rings with Silicone.

3. Install upper basket (insert and twist to lock in place).

4. Install valve on mineral tank.

5. Install by-pass.

6. Connect pipe fittings to by-pass.

Hand tight – All connections.

Brine Tank Set-Up

Premium Brine Tanks

Components

Brine well & fitting with overflow device

Overflow fitting

Note: It is necessary to remove and replace the overflow prevention device to be able to attach the brine well to the brine tank using the overflow fitting.

Brine tank set-up instructions:

1. Install one of the two caps to cap the bottom of brine well.
2. Remove overflow device to be able to connect brine well to the side of the brine tank.
3. Connect brine well to brine tank using overflow fitting and reinstall overflow device.
4. Connect brine line to brine line fitting on the overflow device.
5. Connect brine line to brine line fitting on the valve.
7. Add 6” of water to the brine tank from a sanitary source.

DO NOT ADD SALT AT THIS TIME.

Brine line connection

Caution: Push quick connect fittings **TWICE!** Once, to engage the collet and again to secure the seal. Use 5/16” drain line tubing up to 20’. Otherwise use ¾” or 1” PVC.

Drain Line Installation

If 5/8” x ½” drain line tubing is used insert the tubing “insert” into the tubing; install nut ; push tubing into the drain line fitting and tighten nut. Otherwise, PEX pipe or rigid ¾” or 1” PVC can be used for the drain.

Insert “insert” in ½” tubing.

Push tubing in fitting and tighten nut.

Note: Drain line fitting is ¾” male NPT.

System Placement

- Locate water line and determine where to place the unit. (Be sure placement is near electrical power and a potential drain.)
- Install system on main water line before the water heater.

Notes:

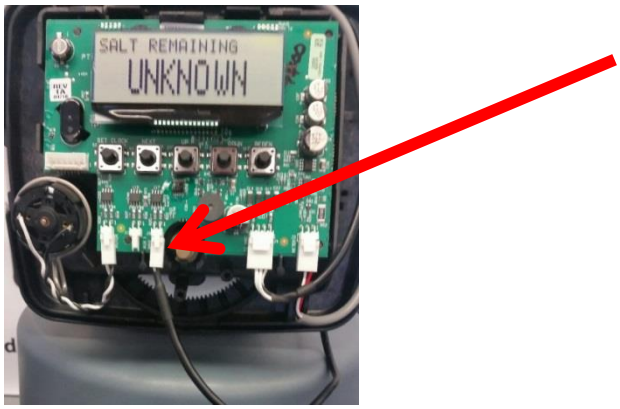
Be sure by-pass is closed.

If a filter is also to be installed, install the softener after the filter.

On two tank systems a hose bib may be useful between the tanks to test the performance of the first tank.

Electrical Connections

Connect MAV valve to control valve **PRIOR** to power up. (See “MAV” port on control valve’s PC board.) May need to “knock out” plugged hole on the back plate for power cord.



Control Valve

MAV Valve

Water Test

It is essential to complete a water test, prior to start-up and valve programming.

Check the following parameters:

- Hardness
- pH
- Iron (well water)
- Hydrogen Sulfide (you can smell it!)
- Chlorine
- TDS

We also recommend you check for obvious signs of bacteria on well water installations by checking for slime in back of the toilets.

Note: If bacterial is a concern or known to be present, sanitize the well and provide continuous disinfection if required. Additional testing may be necessary.

Premium Valve Cycles For One Plus One Systems

Softener

1. Brine tank refill, followed by a 120 minute dwell time to dissolve the salt.
2. Backwash (up flow).
3. Draw / rinse to flow brine water through the resin bed.
4. 2nd backwash (up flow).
5. Rinse (down flow).

Filter

1. Backwash

(Choose option: Pre - During brine water refill and dwell time.)

Valve Programming

Note: Connect MAV valve to master valve and connect master valve to power source before proceeding.

On master valve display will read: **"SALT REMAINING UNKNOWN".**

STEPS:

Once the valve is powered up, the display will read:

"**SALT REMAINING UNKNOWN**"

STEPS:

- Push **NEXT** repeatedly until **CAPACITY REMAINING** is displayed with a default of 1500 GAL showing. (Number will change later.)
- Press **SET** to make adjustments.
- Size (select 1" or scroll to 1.25").
- Press **NEXT** to select type.

Reminder:
To get into the settings always press **NEXT** until **CAPACITY REMAINING** is displayed. Then press **SET** to adjust settings.

Optional types are:

A. Conditioner
B. Iron-Sulfur Zapper
C. Chem-Free filter (two tank)
D. D. Filter (carbon, sediment, neutralizer)
E. Conditioner – Filter (1-PLUS-1 two tank system)

Select "**CONDITIONER – FILTER**" for 1-PLUS-1 system and press NEXT.

Valve Programming (Continued)

Assuming you selected “Conditioner-Filter”, continue as follows:

- XR 1000 will appear on the screen. This is 8% resin. For Premium Systems select XR3000, for 10% resin and press NEXT
- Select the resin volume and press NEXT (0.75 cu. ft. with 8x44 tank; 1.0 cu. ft. with 10x44 tank; 1.5 cu. ft. with 10x54 tank; or 2.5 cu. ft. with 13x52)
- Enter water hardness (GPG) from water test and press NEXT
- Enter the level of Iron from water test and press NEXT
- Select DAYS OVERRIDE (14 is typical) and press NEXT

  Note: If “Iron” is entered in set-up, override is limited to 5 or 6 days.
- TDS (select “low” if under 800 or “high” if over 800). Press NEXT
- Select Regenerate Type (Na Cl is typical for Sodium Chloride salt or KCL for Potassium Chloride.) Press NEXT
- Select capacity at regen (set on 50% for greater efficiency). Press NEXT

Valve Programming (Continued)

Injectors are factory installed. When setting regen at 50% capacity, we use:

8” tanks	-	“C” injector (violet)
10” tanks	-	“E” injector (white)
12” tanks	-	“F” injector (blue)
13” tanks		“G” injector (yellow)

Check injector label and color of injector.

Valve Programming (Continued)

At **Filter 1 Schedule** – **SET**

- 5 days for carbon or lighter media
- 2 days for Birm or heavy media
- 4 days for neutralizer.

Press **NEXT**.

At **Filter 1 OP Sequence** - SET **BEFORE CND**. Press **NEXT**.

Backwash time (for softener) - **SET** 5 minutes for city water and 10 for well water). Press **NEXT**

Add to draw. (Brine draw is determined by the valve). Add to draw if additional rinse is needed and press **NEXT**.

2nd backwash. Set at 5 minutes. Alter needed and press **NEXT**.

Rinse. Set at 5 minutes. Alter if needed and press **NEXT**.

Filter 1 Backwash – **SET** 15 mins. for carbon; 20 mins. for neutralizer; and 25 mins. for Birm.

Now, the display will read **SALT REMAINING** and goes back to default screen.

Time of Day

TIME OF DAY

At the **SALT REMAINING** default screen:

- Press NEXT until you see TIME OF DAY.
- Press SET and TIME HOUR is displayed at the top with the hour flashing. Arrow to the correct hour and AM or PM and press NEXT.

Note: Clock is a 12 hour clock. Go past 12 to change to AM / PM.

- TIME MINUTES is displayed with minutes flashing, Arrow to the correct minutes, then press NEXT.
- REGEN TIME HOUR will be displayed. Arrow to the desired hour, and press NEXT.
- REGEN TIME MINUTES will be displayed. Arrow to the desired minutes, and press NEXT

Salt Level Settings

From the **SALT REMAINING** default screen:

- Press SET
- SALT LEVEL is displayed at the top and 0.0 is flashing. Use the arrow buttons to the salt level shown on the brine tank.
- Press SET and the display will show **SALT REMAINING UNKNOWN**.

Note:

"SALT REMAINING UNKNOWN" will be displayed until water use has been established. The board will make the first calculation after the first few regenerations and show the actual days remaining. It may take several days to become fully accurate.

Manual Regen

So easy . . . With three regen options:

1. Press and hold the REGEN button (5 seconds), regeneration will be immediate.

2. Press and release the REGEN button, regeneration will be tonight.

3. Press and quickly release REGEN, then press and hold REGEN to initiate an immediate regen, followed by a regen that night.

Start Up

By-pass valve in closed position.

Once the installation is complete, initiate an immediate regen to start up system in with inlet and outlet valves closed.

Slowly open valve inlet 1/3 to fill tank.

- Press and hold the **REGEN** button until the valve advances to the **FILL** position, with time counting down on the display. (Refill is the first cycle in the regeneration process.)
- Press and release the **REGEN** button again ,and the valve will advance to the next position.

Note: REFILL is the first cycle with Premium Series valves. Therefore, skip past "refill" on the initial start up to prevent carbon and other media fines from going into the brine tank.

- The valve should be programmed as a "Conditioner – Filter", and the display will read "Conditioning", with 120 minutes counting down for the refill and dwell time to dissolve the salt
- Press **REGEN** and the valve will advance to **BACKWASH.**
- After initiating the filter backwash, open the filter's inlet slowly 1/3 to fill mineral tank.
- Allow air to escape (listen until spurting stops).
- Once water flows from drain, open inlet fully.
- **Continue backwash until water runs clear. (Repeated backwash cycles may be necessary to fully rinse the carbon or other filter media.)**

Note: Because treated water is used to refill the brine tank, this process is the first step in the regeneration process. Also, the filter will backwash during the 120 minute dwell time for the salt to dissolve prior the brine rinse cycle to remove hardness minerals from the ion exchange resin.

Start Up (Continued)

- Press REGEN again and the valve will move to REGENERANT DRAW DN cycle. During this cycle watch the level of water in the brine tank go down. (This observation is essential; otherwise, the resin will not become cleaned without brine water.)
- Press REGEN again and the valve will advance to the second backwash. (Check drain line for clear water before advancing to the next cycle.)
- Press REGEN again and the valve will advance to the Rinse position. Allow the water to run out the drain until it runs clear.
- Press the REGEN button again and the valve will advance to Service. (The display will read **SALT REMAINING UNKNOWN,** until several regenerations when the correct data will be shown.)

Open outlet slowly to supply water to the house..

Finally:

- **Open valve's outlet to supply water to the house.**
- Go in the house and open a faucet. See if water runs clear.
- Look for gallons flow in the lower left of the valve's display.
- Go back in the house and shut off faucet.
- **Add salt to the brine tank (3-4 bags .)**

Error Messages

To go back to factory settings follow these directions:

Press **NEXT** and **REGEN** together for 3 to 5 seconds (release when motor starts).

Wait until the screen says: **SALT REMAINING UNKNOWN.**

Now, press **NEXT**, **NEXT, NEXT** until you get to **CAPACITY REMAINING .**

Then, press **SET**. Then **PRESS** and **HOLD** the **UP** and **DOWN** arrow buttons to restore programming to factory settings. After this process, the screen will eventually say **SALT REMAINING UNKNOWN.**

Other messages:

ERROR -MAV TOO LONG

Here, the valve is set up for a second motorized valve, but no motorized valve is installed.

(You are set up in the wrong mode, check your settings; check filter valve's plug connections.)

Press NEXT and REGEN and **HOLD.**

IF VALVE APPEARS TO BE LOCKED:

If it appears a valve is locked, press in sequence: ARROW DOWN; NEXT; ARROW UP; SET CLOCK. Then, settings may be viewed and adjusted.

Note: Check if vacation mode is "on". (If it is "on" turn it "off".)

TROUBLE SHOOTING

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

- Test for hardness.
- Check power source.
- Check to make sure by-pass is open.
- Check salt level in the brine tank.
- Try to determine if the unit regenerated recently.
- Check the display for flow (meter may not be working)*
- Go through a manual regeneration to see if the cycles are operating properly.
- Make adjustments to improper settings.
- During “draw” watch to see the water level in the brine tank go down.
- During “refill” watch to see the water level in the brine tank go up.
- If the brine tank has a float, make sure it is set properly and not tangled.

*When water is flowing the valve will display the gallons per minute flow rate. (Water flow is necessary for a metered valve to regenerate.)

Other common problems

- Too much water in brine tank. (Plugged injector; improper “refill” settings).
- High salt usage. (Check settings; wrong salt settings).
- Flow to drain continuously. (Check valve settings; foreign material in control valve.)
- Unit fails to draw brine. (Drain line is plugged; injector is plugged; inlet pressure to low).
- Resin in drain line. (Air in the system; incorrect drain line flow control button).
- Resin in house. (Broken bottom distributor; upper basket missing).
- Low water pressure. (Iron or scale build-up; inlet plugged).

If it appears a valve is locked, press in sequence: ARROW DOWN; NEXT; ARROW UP; SET CLOCK. Then, settings may be viewed and adjusted.

Note: Check if vacation mode is “on”. (If it is “on” turn it “off”.)

Customer Orientation

Once the installation and start-up are completed, we suggest you explain the following to your customer:

- How to use the bypass and when this is recommended
- Explain how to set the salt level when adding salt
- Explain how the “add salt” reminder works
- Emphasize the importance of keeping salt in the brine tank
- Suggest the best salt options (Crystal Solar salt is recommended.)
- Explain how to set the clock in the event of a prolonged power outage
- Demonstrate the sound of water coming out of the drain so they will not be alarmed when they hear a backwash cycle
- Explain the warranty (and with Premium Series system fill out the warranty card, which came with the Owner’s Manual.
- Recommend a maintenance agreement!