



ECOsmarte® Point-of-Entry Residential Well Water Turbo System Pre-Install Checklist:

Your Turbo Point-of-Entry Well Water System will require the following material and tools for proper installation: (in addition to fittings)

- ☐ 5 - Ball valves, 1 - Drain valve for Wellmate "blow down" (per diagram p.2)
- ☐ 5/8" OD, 1/2" ID Drain Line to your distance w/ mounting clamps
- ☐ Adequate ceiling and floor clearance for setup and every 5 years media replacement (actual system height is 5' 0")
- ☐ Step Ladder if needed
- ☐ PVC Cement & Cleaner (no CPVC or ABS primer)
- ☐ 2" Pipe Wrench & 18" Pliers, channel lock preferable
- ☐ Pipe Cutter or Hacksaw & Emery Cloth (Cleaning end of pipe)
- ☐ Propane Torch, Flux, Lead-free Solder for copper required plumbing
- ☐ Screwdriver (3/16" Blade), Needle Nose Pliers, Funnel, & consumables (screws, teflon tape, pipe straps.)

- ☐ Access to Floor Drain or Laundry Tub Drain, Hose Clamp
- ☐ 110V Four way Outlet within 4 feet of electronics and 6 feet from either filter tank
- ☐ Small Phillips Screwdriver

You should have received the following: (NOTE: Optional Items below)

- ☐ 2 10 x 54 NSF Pressure Filter Tank
- ☐ 1 40 gallon Wellmate Retention Tank or Dynamixer (**NOTE: 1 1/4" Fittings and Drain valve needed**)
- ☐ 2 ECOsmarte² Control Valve with clip on upper basket (marked GAC and HYD)
- ☐ 1 Distributor Tube with attached end distributor basket inside of each 10" x 54" tank
- ☐ 2 Premeasured packages sterile field gravel
- ☐ 1 Premeasured package Granular Activated Carbon to go in 10 x 54 tank last
- ☐ 1 Premeasured one cube Hydroxite Filter Media for 10 x 54 tank after gravel. (Marked BIRM)
- ☐ 1 2 110V AC-Adapters, 2 Backwash Flow Restrictors (White and Brass threaded PVC)
- ☐ 1 Copper Electrode Chamber, 2" Hub (by UPS AIR w/ Electronics)
- ☐ 1 Titanium Electrode Chamber, 2" Hub (by UPS AIR w/ Electronics)
- ☐ 1 ECOsmarteTM Point-of-Entry Control Box (by UPS AIR)
- ☐ 1 Warranty Card with Electrode Referral Offer (in this manual)
- ☐ 1 Your WatercheckTM EPA/ETL Water Analysis (previously mailed)
- ☐ 1 10' jumper wire to connect electrode chambers (w/ electrode chambers)
- ☐ 2 Osmonics bypass valves, w/2 pair tank connectors (PVC or Copper)
- ☐ 1 Installation / Operating Guide (this document)

Optional Items

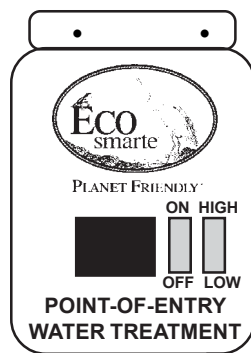
- ☐ ECOsmarte® additional Oxygen MTBE chamber
- ☐ ECOsmarte® Wellmate 80 or 120 gallon retention tank upgrade
- ☐ ECOsmarte® Additional Ionic Copper Chamber for bacteria control

Well Water Turbo

The Best Non-Salt, Non-Chemical Technology...



ECOsmarte® Point-of-Entry Well Water Turbo System



Property Address _____

Watercheck Notes _____

Power Setting HIGH

(unless factory specified)

NOTE: Control Box to Head nearest well

WaterValve Sensor

- Lights will circle on control box, indicating power to the electrodes, when faucet is opened.

To Home

Wall Transformers
One to each Tank

(Thinner Wire)
Power Leads
to Copper Chamber

Cable Connects
Power Leads
To GAC Valve

1/2 to 1 1/2 amp fuse

ECOsmarte®
Control Head
(w/o relay)

Osmonics
Control Head
(w/ relay)

Copper
Electrodes
POE Box wire
to oneside, 10'
Jumper wire on
opposite side,
cable tie to oxy
chamber

**Granular Activated
Carbon**
1500 gallon rinse

Hydroxite™
350 gallon rinse

**Gravity Flow
Retention Tank
or
Oxymixer™**
to mix oxygen
into the water

Use of Oxymixer™
will save 4 sq ft of
floor space.

10 Ft. Grey Jumper Wire
(Max ext. 25 ft)

***Cable Tie ALL
loose wire to pipe**

**From
Well**

(one side of
connectors
are unused)
From Well
Pressure
Tank

Shut-Off
Ball
Valve

BOTTOM:

Sterile Pea
Rock
(Larger Rock on
Bottom)

40 Gallon

*80 Gallon

*Oxymixer™

Titanium
Electrodes
Blow Down
Natural
Oxygen

NOTE: A Full System Bypass is recommended, not illustrated. There are four (4) Shut-off Ball Valves to be installed on the Well Water system. (One on either side of both electrode chambers). All will be helpful in future cleaning and maintainance.

All four are shown above:

***Larger size for Bacterial Control, and outdoor irrigation with iron present.**

Reviewed By:

INSTALLING THE ECOsmarte® WELL WATER POINT-OF-ENTRY SYSTEM:

Congratulations on your new investment! The ECOsmarte® Well Water Point-of-Entry Water System will provide years of satisfying home water.

The Point-of-Entry is designed to neutralize the harmful effects of hard minerals by ionization; and, at the same time, remove chemicals, foul taste and odors, sulfur, iron, dirt, rust, toxic chemicals and physical contaminants from your water system. It contains an electronic ionization chamber, high quality activated carbon, and a special blend of natural minerals to provide you with “filtered spring water” at every tap in your home or place of business.

When properly installed, and with nominal maintenance, the Point-of-Entry will provide many years of trouble-free service. Read this manual carefully and follow the installation steps in proper order.

Ionic Water Purification

“Ionic Water Purification” is an effective and proven method in preventing scale and controlling corrosion, in most applications ionization is effective in removing existing scale buildup on pipes, plumbing and mechanical equipment. Electronic oxidation will provide additional oxygen to improve municipally fed water. Ionic water purification removes toxic chemicals from water and has benefits and features that allow it to go beyond water conditioning to become a complete water purification system. You have purchased the best non-salt, non-chemical technology available.

Bacteria

When bacteria is a concern, testing can be done at a cost of less than a few dollars by using a simple milipore bacteria test kit. Ionization controls biological infestations. The Point-of-Entry Systems are designed to provide bacteria control to protect the filter media from transient bacteria infestation. When known bacteria contamination exists in the source water, specific design and equipment must be used to assure adequate protection. Both of your electrode pairs have bacterial kill rates, but known bacteria in water should be EPA/ETL lab tested. The low-level ionization in your piping will provide longer and better protection against bacteria when water is standing in the line. Known bacteria sites must have the two copper chamber option.

Toxic Chemicals

When toxic chemicals, herbicides, pesticides,

fertilizers or septic contaminants are known or suspected in the water, specific and proper sized equipment is required. The tank size 10x54 furnished is designed to provide 99.9% removal of volatile organic chemicals. ECOsmarte® has oversized your equipment for residential protection levels. You have protection against future chemicals in the ground water supply feeding your well.

Description and Operation

The Point-of-Entry consists of three major components:

1. Electronic Ionization and Oxidation System including Electrode Chambers: The Ionization System provides a low voltage electrical charge creating positively charged mineral ions, which significantly alters the physical characteristics of the water, minerals and chemicals in the water. Some dissolved substances become filterable, others are rendered neutral and will stay in solution providing benefits to health and superior taste. Your oxygen electrodes will oxidize mineral and bacteria, while raising the level of dissolved oxygen in the water.
2. Self cleaning filters with Hydroxite: Granular Activated Carbon (GAC) and sterile pea gravel, a special blend of insoluble natural minerals to filter and remove contaminants. The high quality filtration virtually provides, “Filtered Spring Water.” Healthy beneficial calcium remains in your water in soluble, bicarbonate form. The filter rinses with your own well water.
3. Oxy-Mixer or retention tank

The Well Water System has Two Options

1. Either a 80 gallon or Dynamixer upgraded retention tank (residential).
2. A second copper chamber for bacteria environments or extremely high calcium.

All Point-of-Entry systems have been **over-designed** to allow for irregularities of water flow and contaminant levels. Each system has a recommended maximum level of water flow per minute and is related to the Maximum Contaminant Removal.

Granulated Activated Carbon (GAC)

Activated Carbon is very effective in removing these hazardous chemicals and is further supported with Hydroxite™. The Point-of-Entry is specially designed to permit a “normal” rate of water flow, to allow enough contact time for efficient removal of toxic contaminants. Your ECOsmarte® system contains only the best GAC.

Point-of-Entry Installation Guide - Well Water

FLOW RATES

The Point-of-Entry System requires proper water service flow rates for satisfactory performance. Water flow rates of less than 9 gpm through the Point-of-Entry System will not allow proper backwash of the filter bed. A larger well pump or booster pump maybe required.

If the media is not properly back-washed it will not break loose the contaminants. Without proper backwash the bed will slowly foul and make the media useless.

TANK SIZE

The recommended size value and tank will determine the satisfactory performance or failure of the system. Water volume or flow rate requires commercial equipment. For customers that demand calcium removal, a water softener can be used along with the Point-of- Entry system, with the softener first in-line. If system is configured with a softener, be sure not to backwash filter and softener at the same time. We advise an under-sink reverse osmosis system (non-brine) for complete calcium and sodium removal in drinking water.

INSPECTING AND HANDLING THE SYSTEM

Inspect the equipment for any visible shipping damage. If damaged, notify the transportation company and request a damage inspection. Damage to cartons should also be noted.

NOTES:

Handle the filter unit with care. Damage can result if dropped or if set on sharp, uneven projections on the floor. Do not turn the filter unit upside down.

If a severe loss in water pressure is observed when the filter unit is initially placed in service, the filter tank may have been laid on its side during transit. If this occurs, backwash the filter to "reclassify" the media. The sand or gravel will resettle to bottom after several back-washings.

PLANNING

1. All installation procedures **MUST** conform to local and state plumbing codes.
2. Remember that the **FILTER INLET** is marked with arrows. This is connected to the main water supply (i.e., from the water pump or the water meter).
3. Before installation study the existing piping system and determine the type of fittings required. **NOTE:**

If the plumbing system is used to ground the electric supply, continuity should be by installing ground swaps around any nonconductive plastic piping used in this installation, It's highly recommended to use an alternative grounding source other than the water supply.

FILTER LOCATION

1. Select the location of your filter tanks with care. The installation of the Point-of-Entry should allow for easy access to the main water supply, to allow for treatment of all water at the location.
2. An accessible drain to backwash the system is required. The tanks will rinse automatically.
3. Do not install a filter in a location where freezing temperatures occur. Freezing may cause permanent damage to this type of equipment, and will void the factory warranty. .
4. Temperatures above 120°F may also damage filters and will void the factory warranty. Garage installation in desert climates is okay as long as direct sun light is avoided.
5. **IMPORTANT:** If installed within 20 running pipe feet of your water heater, a check valve to prevent suction of hot water back into your filter is required. Also, backpressure from an undersized drain trap can impede filter performance. The drain must be 7 GPM capable.



Fig. 1: Free Space to allow for proper backwashing; Anchor 1/2" drain hose from water valve to drain. Water must backwash at 10 gpm. Backpressure from undersized drains must be avoided (well pump to bladder tank shown above, pre-install).

Point-of-Entry Installation Guide - Well Water

Hydroxite™

Hydroxite is a super oxidation media (formulated by our science chairman) with the highest oxidation capabilities of any single media on the market. Hydroxite is combination High Purity natural mineral, synthesized material specially processed to enhance and promote its function as a high capacity media for water filtration.

Hydroxite™ Features:

Hydroxite™ is similar to activated carbon in that it is highly porous with an extremely large surface area. The high porosity allows Hydroxite™ to address and effectively remove Iron, Manganese, Hydrogen Sulfide, Arsenic, Barium, Lead, Mercury and other heavy metals and contaminants.

Hydroxite™ is relatively new for general water treatment but has specified ingredients used for industrial applications for years. Typical applications include metal removal, taste and odor control, turbidity reduction, de-chlorination and to extend GAC carbon bed life.

How Hydroxite™ Works

Hydroxite™ works on the principle of catalytic oxygen reaction. This means it causes and promotes reactions but it remains unchanged. This reaction is accomplished by the formation of oxygenated compounds, such as ox-ides of iron and manganese.

Hydroxite™ promotes oxygenation whereby hydrogen sulfide, iron, and manganese are attracted to the media and held on the surface of the Hydroxite™ until backwashing cleans the bed. No chemical regeneration is required, as our oxygenation prior to process media is sufficient with proper backwash. Hydroxite was formulated for optimum contaminant removal and will work with the ECOsmarte® Ionization and oxidation process. Nothing is imparted into the drinking water and essentially unlimited capacity for removal of low level contaminants is possible. Your filter rinses itself with the natural well water, metered by the control head.

Hydroxite™ works well in pH ranges of 6 to 9. However, if you have a pH of 6.5 or under and multiple minerals, it may be necessary to neutralize the water (i.e. between 7 and 8 pH), depending on your target removal levels. The level of sulfur or iron does not adversely affect the performance of Hydroxite™. Manganese at high levels with low pH will require extra dwell time. The higher the pH, the better the manganese removal, i.e., an 8 to 9 pH is ideal for manganese removal.

Prominent Types of Water with Iron:

1. Water which begins to precipitate hydrogen sulfide, iron and manganese on exposure to air usually is hard water containing carbonates, sulfates, or both.
2. Water which will hold hydrogen sulfide, iron, and manganese in solution indefinitely; even when chlorinated and/or aerated. The elements usually combine with organic acids and appear in the colloidal form.
3. Waters that contain hydrogen sulfide, iron and manganese, in the above forms, and therefore will deposit a part, but not all, of the element after aeration, chlorination or ozonation and cannot be removed entirely by simple filtration. The titanium electrodes will effectively oxidize the contaminants making them filterable. A percentage will drop down in the wellmate requiring a "blow down" (see *maintenance* section of this manual).

Well Equipment Requirements

A minimum flow rate of 9 gallons per minute is required for adequate filter rinse and backwash. Some customers will need to install a new pressure tank and or a booster pump. Bladder type tanks alone are not sufficient if there is hydrogen sulfide gas or iron is present. The Installation of a retention tank or dynamixer is important in eliminating or reducing contaminants which require additional time for complete contaminant filtration oxidation. If your well is not capable of 9 GPM, the filter will foul and require replacement. 1/2 Horse Power well pumps will not run ECOsmarte® equipment.

Tank Sizing:

Your existing pressure tank size is important. To determine if it is the correct size, check the pump capacity under load. Open a faucet nearest the pressure tank until the pump turns on. Then, measure how many seconds the pump runs until it stops. The pump rate in gallons/minute (gpm) equals the amount of water in the bucket divided by how many seconds the pump ran. Multiply the result by 60 to get the gallons per minute. Next fill a low capacity container until pump turns on again. Now, take the existing tank size in gallons and divide the gpm pump rate. If the result is less than 8, the customer needs a larger pressure tank. When a larger pressure tank is needed, take the pump gpm discharge and multiply by 8 to assure a recommended pressure tank size.

NOTE: A proper size pressure tank and/or retention tank can be the key to successfully removing sulfur gas and iron. You will not save money by skimping on pressure or retention tank size, (40 gallon retention tanks are most common), a Dynamixer can save floor space.

Point-of-Entry Installation Guide - Well Water



Fig. 2: Oxy Chamber Plumbed Prior to Wellmate or Dynamixer In All Installations.

FILTER TANK FILLING

For ease of handling and installation it is sometimes preferable to load and fill tanks at the location. These are procedures to follow:

1. Tape top of distributor tube, to prevent media from entering. If media gets into the distributor tube it will plug up the backwash valve causing poor or no water to flow.
2. Center distributor tube with a 1/6 to 1/8-inch maximum extension above the top of the tank.
3. With optional fill funnel hold tube centered and install clean and washed pea gravel. This should cover the base of the distributor tube by 2 to 3 inches minimum (Pre-measured, larger stone first). The base gravels are identical in each tank.
4. Check to make sure that the tape at the top of the distributor tube is not damaged.
5. Option: Additional coarse sand or Filter-ag. Up to an additional 2 gallons of coarse sand can be added to improve clarity and filtration for waters that have high turbidity caused by silt or other particles in the water. This is unique to certain areas North America
6. Add your premeasured Hydroxite™ to the tank nearest the well, followed by your activated carbon to the tank nearest the home. Caution should be used as the fine media easily gets all over the floor.

Recommendation: use masks when filling, your packaging has been premeasured for volume.

7. After adding media clean top of the tanks and threads, making sure all particulate is wiped clear.

IMPORTANT NOTE

1. Your ECOsmarte® Control Valve marked "City" must be installed on the tank nearest the home (this tank will contain the carbon). You should set this to backwash every 1500- 3000 gallons.(has no relay)
2. Your ECOsmarte® Control Valve marked "Well" must be installed on the tank containing one cube Hydroxite. This valve will generate greater down flow and backwash, normally every 400 gallons.(Has relay to control box connection).
3. You should stagger backwash times by at least two hours to avoid unfiltered iron from hitting the carbon tank during backwash. **Units should not backwash during outdoor irrigation hours. Irrigation systems may require dedicated filter tanks, which may require an additional charge.**

8. Check and remove tape and clean the top of the distributor tube.
9. Move tank close to the area of installation and fill with water. **For first time installers: Tank should sit for 24 hours to let the media settle and escape.** Air trapped in the filter can force small amounts of carbon into the water supply at start-up of system.

INSTALLATION OF ECOsmarte® CONTROL VALVE

1. After positioning tank, lubricate the distributor tube o-ring seal and tank o-ring seal. The 1" distributor tube should be cut flush with the top of each tank.
2. Place the main control valve on tank. Note: Only use silicon lubricant
3. Keep timer head straight when screwing on tank, as this will pull the distributor tube through the o-ring.
4. Place ECOsmarte® Control Valve in by-pass position. Turn on main water supply. Open a cold water tap nearby and let run a few minutes or clear. Close water tap.
5. Place ECOsmarte® Control Valve in service position and let water flow into the tanks. When water flow stops, slowly open a cold water tap nearby and let run until air is purged from unit.
6. Plug unit into an electrical outlet and set timer.
7. The in-service dial (with faceplate removed) will rotate for one hour and forty-five minutes, but the entire backwash cycle is completed in approximately the first fifteen minutes.
8. Recommended backwash interval is once every week on the carbon tank and 300 to 500 gallons on the metered hydroxite tank. Set time 2 hours off on the GAC to stagger the backwash.

Point-of-Entry Installation Guide - Well Water

FILTER TANK INSTALLATION SETUP

1. Position your filled tank where it will be permanently located.
2. Take measurements for plumbing configuration, and actual length of drain hose required.
3. The bypass valve can be separated from the valve body by removing the two screws and "U" clips, to allow the tank to be pulled out for easier installation.
4. Either PVC or copper pipe and fittings should be used and precut and fitted.
5. Unions and shut-off's should be considered to allow bypass and servicing of equipment (see diagram p.2)
6. Shut off main water supply and install.

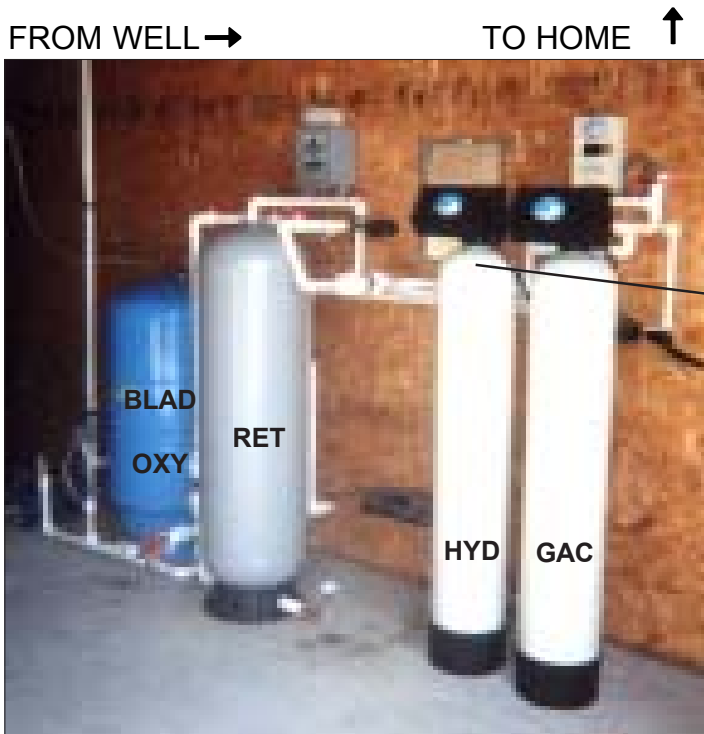


Fig. 3: Left to Right: Wellmate, Well, Bladder Tank, OXY Chamber, Hydroxite Tank with Valve Sensor, ECOsmarte® Valves, Carbon Tank, Cu Chamber (behind GAC), Water to Home.

NEW CONSTRUCTION ONLY

Chlorinated water should run through each faucet, hot and cold to accelerate removal of dust and oxidize solder residues. It is not unusual to see debris in your water for 7 - 21 days. Run faucet 5 seconds before drinking. 1 Gallon of household bleach per 50 feet well depth is required, with filters in bypass to "bleach" plumbing lines.

ELECTRONIC INSTALLATION

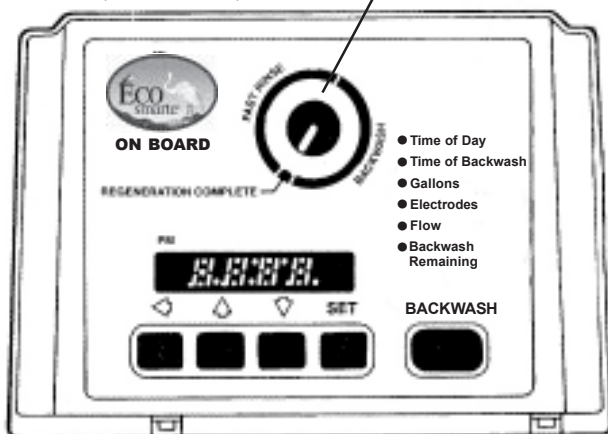
1. ECOsmarte® Control Valves and Point-of-Entry control box may plug into the same outlet; they are both 110V (Total of 3 Plug-ins Required).
2. The thin clear wires from the Point-of-Entry control box and the wires from the ECOsmarte® Control Valve nearest the well must be connected to activate the system when water flows. The valve sensor is designed to regulate current from the control box to your electrodes.
3. The thin wires from the ECOsmarte control box connect to the COPPER electrode chamber. The voltage Power wire from the ECOsmarte control box is a double wire and can be split and cut and fit as desired. The thicker, low-voltage cable connects to the valve sensor. Connect your 10' jumper wire from the copper to the titanium chamber.
4. There is a circle of red lights on the control box. The valve sensor activates the circling lights. Approximately every 1 to 2 minutes the lights will reverse direction. The change in direction indicates a polarity reversal that induces self cleaning of the electrodes. The lights must be on to indicate the system is operating. A light circles when a faucet is opened. A single light indicates power available to the system.

START-UP

1. Before allowing the water to flow through the Point-of-Entry system, the bypass valve on the back of the water valve should be in the "BY-PASS" position.
2. Turn main water supply on. Check fittings and installation for any leaks. Run water in each faucet, flush toilets to remove air from lines.
3. Turn off your hot water Inlet valve before beginning your first backwash.
4. Manually backwash the system by turning the timer head. **Do not open a faucet until the backwash is complete and runs clear water.** Using the faucet nearest the unit, open and run until clear.
5. Turn on a faucet nearest the Point-of-Entry system. This will allow water to flow through the Point-of-Entry system when the valve is in service. This will minimize air bubbles and activated carbon in the pipes.
6. From the nearest faucet, run the hot water until clear. If nearest faucet is "down-line" from water heater, drain hot water heater, and flush with hose level pressure.

SETTING CONTROL VALVE; IN POSITION; WIRE HOOK-UP.

1. Connect ECOsmarte® Control Box to Rear of Valve (Thinner wires)



2. Connect AC-Adapter to Wall Plug 110V and to the valve.

3. Connect thicker wires from control box to electrode chamber, same side of chamber.

Figure: 4

Three WIRE Hook-Ups

1. Control Box to Back of Valve (Hydroxite)
2. AC wall Adapter to Lower Left of Valve
3. Control Box to Copper Electrode Chamber
4. Jumper wire Copper Chamber to Titanium Chamber

BYPASS POSITION TOP VIEW

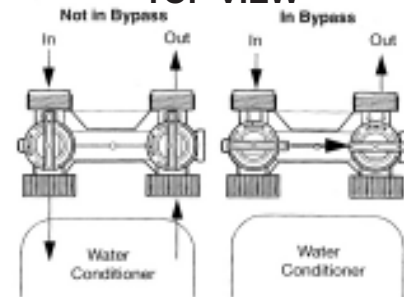


Figure 1

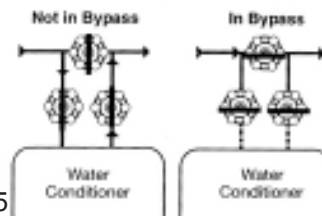
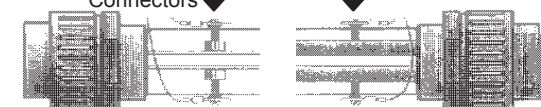


Figure: 5

Connect Clear Jumper Leads to Titanium Side From Copper Connectors

Connect Red and Black Leads to Copper Side



LEAD WIRE CONFIGURATION

Red and Black Leads From Copper Connectors
Fig: 6 Clear Jumper Wire From Copper to Titanium Connectors on each chamber

Water Meter Maintenance

Note: A Water Meter is used only with the ECOsmarte® Control Valve.

The metering device used with the ECOsmarte® Control Valve demand controls may require simple maintenance. In rare instances, the turbine wheel of the water meter can collect small particles of oxidized iron, eventually preventing the wheel from turning.

1. Shut off the water supply or put the bypass valve(s) into the bypass position.
2. Relieve pressure by opening the Backwash Drain Valve (the seventh back from the control) with a screwdriver (Figure 7).
3. Loosen and remove the pipe/tube adapters or 1265 bypass from the inlet and outlet of the valve body.
4. Using a needle-nose pliers, remove the turbine from the outlet housing. Grasp one of the four vanes of the outer gland and pull straight out to remove turbine assembly from the outlet of the valve (Figure 8).
5. Carefully remove the turbine wheel from the housing. Use a toothbrush to lightly scrub the iron of the magnet. Iron buildup on the surface can be removed by soaking the wheel in a mild sodium hydrosulfite (such as RoVer®) solution for a few minutes. Flush thoroughly with water.
6. Carefully reinstall the turbine wheel into the turbine cage housing. Make sure that the shaft of the wheel seats into the bearing of the cage. Reassemble the turbine cage and check that the wheel rotates freely.
7. Reinstall the turbine cage into the outlet of the valve.
8. Reinstall the pipe/tube adapters or 1265 bypass to the inlet and outlet of the valve.
9. Turn on the water supply or put the bypass valve(s) into the service position and purge the air out of the system.

To check for proper meter operation, open a downstream faucet and observe the water flow indication on the control display.

Figure: 7

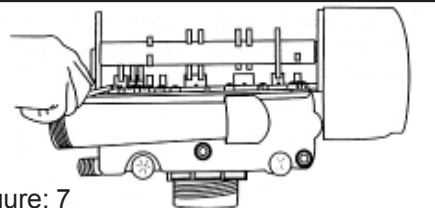
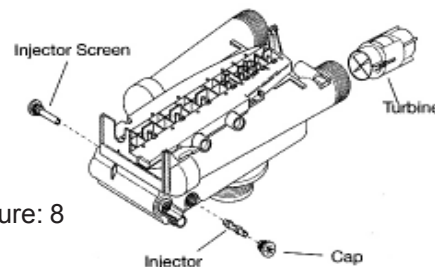


Figure: 8



TYPICAL VALVE SETTINGS

1. Time of Backwash 2.00AM - 4.00AM
2. Gallons Between Backwash: GAC QTY
1000 gallons Low Volume Water User
2000 gallons Medium Water User
3000 gallons High Volume
3. Hydroxite (400 gallons) regardless of volume
4. Electrodes 25,000 gallons or quarterly whichever comes first

(Available ver. 1.2 , March 2004)

ECOsmarte® Control Valve Level 1 Parameter Programming

Level 1 parameters are identified as those that have an LED indicator on the front panel. The green indicator illuminates next to the name of the active control settings. The end user has access to all of these parameters. In general, pressing the down arrow (↓) button displays the Level 1 Parameters in the following order:

- Time of Day
- Time of Backwash
- Gallons
- Electrodes (March. 2004)*
- Flow (Pre-programmed, display only)

If you continue to press the down arrow (↓) button, the parameters starts over with Time of Day. Pressing the up arrow (↑) button displays the parameters in reverse order.

Press the **SET** button and the far right digit of the display starts flashing. If you want to change this number, press the up arrow (↑) button to increase the number or the down arrow (↓) button to decrease the number. To skip the number without changing, press the left arrow (←) button. When you reach the far left digit, pressing the left arrow button (←) button will return you to the far right digit.

Note: If you press and hold either the up arrow (↑) button or the down arrow (↓) button for more than one second, the flashing number will increment or decrement at the rate of 10 counts per second.

When the number is correct, press the left arrow (←) button. The far right digit stops flashing and the next digit to the left starts flashing. **You can only change the flashing number.** Continue changing numbers until you reach the desired setting. Press the **SET** button. The numbers stop flashing and the control accepts the new setting. After approximately 30 seconds, the control starts alternating the display between Time of Day and Flow.

Note: If a new setting is not accepted because it was outside the allowable range, the old value will be displayed.

*) The semiannual or annual electrode cleaning will leave the green LED for Electrodes on constantly in ver. 1.2, March. 2004.

Valve Relay Control



Figure 1A.
Activating Your ECOsmarte® Control Valve.
The ECOsmarte Control Box Connector Requires you to connect the white and grey leads from control box to pin 2 and 3, and the black and red from the water valve relay to pin 4 and 8. (Shown Fig 1A, Top view with cover off)



Figure 1B.
Your ECOsmarte® Software Version.
Enable the valve by connecting the wall AC-adaptor to the water valve at the lower left, your software version will display. (Fig. 1B, Above) Depress the set button to go to step 3. (Fig.1C, Below)



Figure 1C.
Setting Time of Day and Choosing Time of Backwash.

Working right to left on the display, the up and down arrow keys allow you to set the column value. Press the left arrow to move to the next column. When all columns are finished, press the **SET** key.



Figure 1D.

Ecosmarte® Control Valve is displaying the time set for backwash (02.00AM). Backwash starts automatically when the preset usage has been reached, at 2.00AM when total gallons have been used that day.



Figure 2A.

Time and Day. Ecosmarte® Control Valve is displaying the time of day AND the day of the week. (6=Friday)



Figure 2B.

Household Water Demand.

Ecosmarte® Control Valve is displaying the total flow rate (1 GPM) demanded by the property in gallons per minute. The ECOsmarte® control box lights circle (above right) when ever water is demanded above ½ GPM. A one to four second delay occurs.



Figure 3.

Ecosmarte® Control Valve is displaying the 1000 gallon backwash interval. (Low volume user). Typical settings for granular activated carbon tanks are 1000 gallons for low volume users, 2000 gallons for average and 3000 gallons per months for large families or when outdoor water is used.



Figure 4.

Remaining gallons to backwash.

Ecosmarte® Control Valve is displaying the remaining gallons to backwash, as indicated by the green LED on the right. The green LED for gallons will remain constantly lit when the programmed filter life has been entered in years (7) or in gallons (500,000). ver. 1.2, March-2004)



PLANET FRIENDLY®

***The Best Non-Salt, Non-Chemical
Water Technology***

Point-of-Entry Installation Guide - Well Water

PLUMBING SYSTEM CLEANUP

The following procedures are guidelines only. Under no circumstances should any procedure outlined below be followed contrary to the appliance manufacture's instructions.

SOFTENER

In extreme cases, water softeners are used with POE's. Softeners, in difficult water, often foul their bed and lose both hardness removal capacity and the limited capacity for iron removal. This requires resin bed replacement. ECOsmarte® POE installs before all softening equipment.

HOT WATER HEATER

If the hot water heater has been exposed to both iron and hardness for a long period of time, replacement of the heater tank may be the only practical solution to prevent further stains originating from this source. After completing the installation of the Point-of-Entry System, clean the hot water heater by opening the furthest hot water faucet from the heater run the water approximately thirty minutes to purge water heater.

If after approximately thirty minutes flushing, water does not clear, terminate flushing operation. The water heater will need flushing with approximately 1/2 gallon of household bleach. Allow bleach to stand in tank for twenty to thirty minutes. Flush tank again until water is clear. **NOTE:** If water does not clear in approximately ten days water heater probably should be replaced.

IMPORTANT: Use medium setting on water heater when available.

DISHWASHER

The dishwasher will normally clean itself within a few days. Consult owner's handbook and follow manufacturer's instructions. After installation of Point-of-Entry, use vinegar as your rinse agent, medium heat or air-dry instead of high heat. The high heat setting is your largest residential amperage draw and is not cost effective or energy efficient, similar to the high settings on most water heaters. **Running 2 cups of vinegar, no dishes, thru a complete cycle is recommended, prior to your first load.**

TOLIET FLUSH TANKS

Prior to installation pour 4 to 6 ounces of toilet bowl cleaner into flush tanks and bowls and let stand. When installation is completed, flush

toilets several times with iron-free water. If iron deposits or stains remain, repeat procedure until clear. The system will prevent recurrence.

IRON

Iron concentration as low as 0.3 ppm will cause staining. Your Point-of-Entry System is capable of filtering out the three main types of iron found in water supplies: soluble iron (also known as "clearwater" or ferrous iron), precipitated iron (also known as "red water" or ferric iron), and bacterial iron (also known as iron bacteria). Special care must be taken when we select a filter model if your water has a combination of high iron, very low pH and/or manganese levels above 0.2 ppm. ECOsmarte® Well Water systems address these conditions.

MANGANESE

Manganese can cause more staining problems than iron and removal is difficult. As little as 0.05 ppm of manganese can produce brown or black staining. The ability of the filter to remove manganese depends on its concentration, the pH of the water, and other mineral combinations. Your Hydroxite™ is best available technology.

TANNINS (HUMMIC ACID)

Tannins (a hummic acid) are the result of various forms of decaying vegetation. Tannins can cause in the operation of the Point-of-Entry filter by a sticky coating on the media, thus rendering it incapable of filtering. Generally with tannin concentrations of 0.5 ppm or less, frequent backwashing will prevent the sticky coating from forming. Your Point-of-Entry representative before installing the system will need specific information; the type and level of tannins in the water and other contaminants that may need to be addressed. Cleaning of electrodes is required every three months when tannins are present.

HYDROGEN SULFIDE (H₂S)

Hydrogen Sulfide (often referred to as "sulfur"), is easily detectable by its objectionable "rotten egg" odor. Sulfur corrodes iron, brass, copper, and silver. The Point-of-Entry is capable of removing sulfur in concentrations of up to 2 or 3 ppm, and sometimes as high as 5 ppm. Whenever hydrogen sulfide is present, backwashing must be performed at more frequent intervals, and the pumping system must include a retention tank to allow time for the oxygen to react with the hydrogen sulfide. Some cities deliver this odor only during certain seasons. You may backwash every day until source water clears.

Point-of-Entry Installation Guide - Well Water

PH

Water with a pH of 7.0 is neutral. pH below 7.0 is acidic. Acidic water (pH less than 7.0) is corrosive to pipes, appliances, etc. A pH of 7.0 or higher facilitates iron removal, which is why the filter is designed to increase the pH slightly (.1 to .3).

TROUBLESHOOTING GUIDE

Your Point-of-Entry will give you years and years of quality water and trouble-free service. The electrodes and filter material need to be replaced about every 5 to 8 years, depending on your Point-of-Entry model. The chart below will help you know when this should be done. In addition, the chart will help you handle other infrequent problems.

Important: If you think you have a problem, please check these items first before calling for service.

- Is your Point-of-Entry plugged in?
- Has water been flowing through the system and not bypassing it? Check bypass valves.
- Is backwash drain line crimped or plugged in?
- Has system been regularly backwashing? Check the backwash settings "gallons".
- Is "time of day" correct on backwash timer?

1. No Lights on Control Box:

Possible Causes:

- System is unplugged, or turned off.
- Well water system: light only turns on when pump runs
- Electrodes need replacement.
- Box defective due to power surge, or fuse blown.

What to Do:

- Plug 'it back in, turn switch to "on" position.
- Make' sure wires are connected.
- See if a light turns on when pump starts up.
- Confirm outlet is good.
- Call for replacements.
- Change ½ to 1½ amp fuse on controlbox available at any hardware store

2. Lights Circle Constantly:

Possible Causes:

- Valve sensor is stuck or there is a leak.

What to Do:

- See Water Meter Maintenance on page 8 of this manual. Check toilet and sprinkler for leaks.
- Disconnect copper electrode lead wires until fixed to avoid build-up of copper. Your titanium electrode will be free, additional dissolved oxygen in the water will do no harm. Call dealer for procedures.

3. Loss of Water Pressure or Flow:

Possible Causes:

- Pump out (for well water).
- Bypass valve partially closed; home valves not fully open. Open all valves completely, then turn back one-quarter turn to prevent future sticking.
- Filter tank is fouled because backwashing hasn't occurred, drain line is plugged or pump output is too low.

What To Do:

- Check pump and pressure tank.
- Check valve positions on unit and in home.
- Booster pump or larger well pump needed if regular occurrences. May need larger Point-of-Entry tank.
- Make sure tank has been backwashing. Manually backwash system.

4. Water is coming out the backwash drain at the wrong time:

Possible Causes:

- Power outage has reset clock on automatic system.
- Installer plugged system into outlet that only has intermittent power.

What to do:

- Reset to proper time.

5. Black Specks Seen in Water, Second Week

Possible Causes:

- System has not been backwashed adequately.
- Water going through Point-of-Entry tank in the wrong direction.

What to do: (See Start-up)

- Run system through manual backwash. And run cold water from faucet close to Point-of-Entry until clear.
- Call installer to correct.
- Drain and flush water heater.

6. White Powder On Glassware In Dishwasher Or On Shower Glass Doors.

Possible Causes:

- This problem is old scale or calcium in water.
- Your calcium is above 24 grains or 400ppm

What to Do:

- Try using vinegar as dishwasher rinsing agent. Try other types of soaps if problem lasts more than a month or so. Run 2 cups vinegar, no dishes, thru a complete cycle.
- Non-chlorine cleaners such as Lime-Away will produce best results.

**USE LOW HEAT OR AIR DRY ON
DISHWASHER**

Point-of-Entry Installation Guide - Well Water

7. Chunks Of White Scale In Faucet Aerators.

Possible Causes:

- System installed in houses with existing scale.

What To Do:

- This problem shows Point-of-Entry is working to eliminate scale. Take off aerators as needed to clear.

8. Soap In Clothes Or Residue In Hair.

Possible Causes:

- Too much soap being used.

What To Do:

- Reduce soap used

9. Orange-Brown Stain In Laundered Clothes or Rotten Egg Odor Is Noticed:

Possible Causes:

- Water is bypassing your tank,
- Electrodes not getting power.
- Tank is fouled and is not backwashing enough, improper backwashing.
- Water source quality has changed.
- Well system: Pressure tank undersized.

What To Do:

- Check valve positions to make sure water is flowing through tank.
- Check to see that system has power. Check drain line for plugs. Run system through a manual backwash cycle. Good flow to drain? If not, open tank and clean head.
- Consider 1 Gallon bleach overnight in both tanks, followed by backwash.
- Call us to retest water. New media or bigger tank needed.
- Call us to make sure system is working and is the proper size for your needs.

10. Fishy Smells, Chlorine Or Other Odor

Possible Causes:

- Water is bypassing your tank.
- You are using water at a faster rate than capacity.

What To Do:

- Check valve positions to make sure water is flowing through tank.
- Contact us to see if you need a larger tank due to irrigation.

11. Green Water build-up in Toilet or Bath:

Possible Causes:

- Valve sensor is stuck, putting constant power to the copper electrode.
- Power is constant to electrodes due to box failure.
- pH of water is below 6.4 (well water).

What To Do:

- Follow Water Meter Maintenance on page 8 of this manual. Check for leaky toilets or irrigation lines.

- Consider pH-up tank.

- Call Dealer for a replacement control box.

Contact us if you discover other problems that we haven't covered here. Most problems tend to occur right after installation. Once solved, you can expect quality water for a long time.

RESIDENTIAL PREVENTATIVE MAINTENANCE SCHEDULE

1. Electrode cleaning: **First cleaning at 60 days. WaterCheck results will determine whether your cleaning period is 60, 90, or 180 days.**
2. Wellmate Blow Down when electrodes are cleaned.
3. Copper electrode replacement: every 3-5 years.
4. Filter replacement (threaded tank only): every 5-8 yrs, assuming above maintenance is performed.

You will need to replace the copper electrodes only; the titanium should never corrode. **However both electrodes should be cleaned per YOUR frequency (as determined from WaterCheck results) to insure system performance and maintain Five-year filter warranty.**

The electrodes can be cleaned periodically by removing the entire chamber and Soaking it in a water/muriatic acid solution (3:1). To replace the copper electrodes, see the Copper Electrode Replacement Instructions sheet. Cleaning caps are available at nominal cost to reduce acid use.

KEEP INSTRUCTIONS AND TROUBLESHOOTING MANUAL IN A SAFE PLACE FOR FUTURE REFERENCE.

Fuse Value ½ to 1½ amp, available at all hardware and convenience stores.

OUR PRODUCT GROUP

- ☐ 100% Chemical-Free Spa System
- ☐ 100% Chlorine-Free Pool System
- ☐ Well Water Point-of-Entry
- ☐ Municipal Point-of-Entry
- ☐ Cooling Tower Controller
- ☐ Chemical-Free Golf System

**For further troubleshooting help
call our toll-free line**

1-800-466-7946

or email us at:

customerservice@ecosmarte.com

GRAVITY FLOW RETENTION TANK

WELLMATE INSTALLATION INSTRUCTIONS

WARNING: Before starting installation, please read all installation information and supplements.

- The Universal and HP tanks are not designed to withstand vacuum. Install an adequately sized vacuum relief valve if the possibility of vacuum exists.
- A pressure limiting device or pressure relief valve must be installed with the tank. The warranty is void if the system pressure or temperature exceeds the maximum operating rating on the tank label.
- Never install the tank where it can freeze.
- All Plumbing should be in compliance with local codes and standards.

RETENTION TANK APPLICATIONS

1. Turn off electrical power to pump at control box.
2. If replacing an existing tank, drain and depressurize system of water and remove old tank.
3. Remove tank from box and connect two 1 1/4" PVC pipes to drain so they extend through holes in base sufficiently to connect to plumbing. Place identifying mark on inlet PVC pipe to assure correct flow direction.
4. Place tank in vertical position on a level surface. The base should be fully supported to ensure maximum stability.

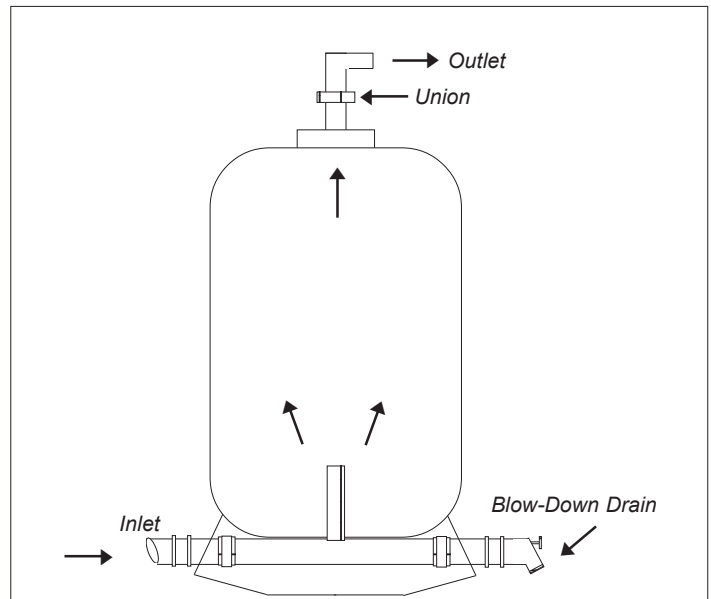


FIG. 3.3: TYPICAL RETENTION TANK INSTALLATION

5. Connect all plumbing lines. (**Note:** Prevent the tank connections from heating up if you are sweating fittings.)
6. Turn on system and check to assure all connections are leak free.



ECOsmarte® Point-of-Entry Warranty Registration

Date Received: _____

Name: _____

Street Address: _____

City: _____

State / Zip: _____

Phone Number: _____

Return this card within 60 days to register your ECOsmarte® Point-of-Entry System. Timely registration will ensure a prompt warranty response in the event a problem occurs. Carefully read the Warranty descriptions on this document. The same warranty information is contained within your Owner's Manual.

FREE ELECTRODE KIT OFFER! To receive your free copper electrode kit from the ECOsmarte factory, just send this registration card along with a paragraph describing why you enjoy your ECOsmarte® Water.

MAIL TO: ECOsmarte Planet Friendly, Inc.
1600 East 78th Street
Richfield, MN 55423

Product Purchased:	Municipal System	Well Water System	Commercial Point-of-Entry System
	☐	☐	☐

LIMITED FIVE-YEAR WARRANTY
ECOsmarte® warrants to the original owner that the entire water system (including tanks, electronics, flow switch and media) is free from defect in material and workmanship under normal use, service and conditions. All parts are F.O.B. factory.

The labor charges incidental to the repair and/or replacement of parts, tanks, or water conditioning units other than factory repairs is expressly **excluded** from this warranty. The filter media is also expressly **excluded** from this warranty **IF** the electrode chamber(s) have not been maintained according to manufacturer's requirements. See Warranty Repair section below for repair procedures.

LIMITED LIFETIME WARRANTY
ECOsmarte® warrants to the original owner that the pressure vessel (i.e., tanks only) is free from defect in material and workmanship under normal use, service and conditions.

To the original owner at the original installation site, the pressure vessel is warranted not to leak, burst, or fail in any way, subject to the following conditions:

- (1) Installation is made according to manufacturer's recommendations and local codes, and
- (2) Water pressure does not exceed 100 PSI or water temperature not higher than 100° F, and
- (3) That failure has not resulted from misuse, alteration, freezing, or act of God, and
- (4) A bypass valve has been installed (which comes with the water valve).

If failure should occur, the manufacturer will replace (labor and freight excluded) or at its option repair any part or parts that to its satisfaction proves defective. In no event shall manufacturer's liability exceed the original purchase price.

All warranty coverage terminates if you sell or otherwise transfer the equipment.

WARRANTY REPAIR PROCEDURE
In order to be eligible for service under this warranty you **MUST** return the warranty registration card attached below within 60 days of purchasing the ECOsmarte product. If something goes wrong with your ECOsmarte product, call 1(800)466-7946 with a brief description of the problem or write:

ECOsmarte Planet Friendly, Inc.
1600 East 78th St.
Richfield, MN 55423

We will problem solve your system and contact you within 72 hours to give the results of our analysis and an estimate of the labor charges required to fix the System. If you authorize repairs, we will either arrange for on-site service or instruct you to send the product to the factory. You must pay any labor charges upon receipt of the repaired System. If you inform us that you wish us to provide necessary parts to you but you wish to have repairs performed elsewhere, we send replacement parts to you within 72 hours. There is no charge for problem solving.

NO OTHER WARRANTY EXPRESSED OR IMPLIED, INCLUDING MERCHANTABILITY, APPLIES to the equipment, nor is any person or company authorized to assume any other warranty. ECOsmarte Planet Friendly, Inc., does not assume any responsibility for any consequential damages occasioned by the equipment, or inconvenience or interruption in operation.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Please register your warranty with the form included in this manual.

ECOsmarte® Point-of-Entry Factory Warranties

LIMITED FIVE-YEAR WARRANTY

ECOsmarte® warrants to the original owner that the entire water system (including tanks, electronics, flow switch and media) is free from defect in material and workmanship under normal use, service and conditions. All parts are F.O.B. factory.

The labor charges incidental to the repair and/or replacement of parts, tanks, or water conditioning units other than factory repairs is expressly **excluded** from this warranty. The filter media is also expressly **excluded** from this warranty ***IF the electrode chamber(s) have not been maintained, or the Wellmate retention tank has not been "Blown Down" according to manufacturer's requirements. See Warranty Repair section below for repair procedures.***

LIMITED LIFETIME WARRANTY

ECOsmarte® warrants to the original owner that the pressure vessel (i.e., tanks only) is free from defect in material and workmanship under normal use, service and conditions.

To the original owner at the original installation site, the pressure vessel is warranted not to leak, burst, or fail in any way, subject to the following conditions:

- (1) Installation is made according to manufacturer's recommendations and local codes, and
- (2) Water pressure does not exceed 100 PSI or water temperature not higher than 100° F, and
- (3) That failure has not resulted from misuse, alteration, freezing, or act of God, and
- (4) A bypass valve has been installed (which comes with the water valve).

If failure should occur, the manufacturer will replace (labor and freight excluded) or at its option repair any part or parts that to its satisfaction proves defective. In no event shall manufacturer's liability exceed the original purchase price.

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**ECOsmarte Planet Friendly, Inc.
1600 East 78th St.
Richfield, MN 55423**

We will problem solve your system and contact you within 72 hours to give the results of our analysis and an estimate of the labor charges required to fix the System. If you authorize repairs, we will either arrange for on-site service or instruct you to send the product to the factory. You must pay any labor charges upon receipt of the repaired System. If you inform us that you wish us to provide necessary parts to you but you wish to have repairs performed elsewhere, we send replacement parts to you within 72 hours. There is no charge for problem solving. A minimum charge of \$25 is assessed to any electronic box sent to the factory and no problem is identified (The box has a 99% quality chart).

NO OTHER WARRANTY EXPRESSED OR IMPLIED, INCLUDING MERCHANTABILITY, APPLIES to

the equipment, nor is any person or company authorized to assume any other warranty. ECOsmarte Planet Friendly, Inc., does not assume any responsibility for any consequential damages occasioned by the equipment, or inconvenience or interruption in operation. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Please register your warranty with the form included in this manual.



PLANET FRIENDLY®

ECOsmarte® Point-of-Entry Post-Installation Checklist

- ☐ 1) Has unit(s) backwash run clean with the 9 GPM available rinse water?
- ☐ 2) Has faucet nearest the filters run clean?
- ☐ 3) Have other faucets been opened and has trapped air or carbon passed clear?
- ☐ 4) Do control box lights circle when water flows? Do the lights stop circling when the water stops flowing?
- ☐ 5) Does D/C voltage exist between 5V and 19V on both copper and titanium electrodes?
- ☐ 6) Does polarity reverse on voltage (indicated by lights reversing)?
- ☐ 7) Have backweash times on each tank been staggered?
- ☐ 8) Does voltage stop when lights stop circling on the Control Box?
- ☐ 9) Does copper ppm measure between 0.1 and 0.5 ppm?
- ☐ 10) Has backwash line been properly secured and vented per code?

TIPS FOR EASIEST INSTALL & BEST PERFORMANCE

- A) Soak Granular Activated Carbon and/or Hydroxite filters 24 hours before putting in final service. This can be done before tank is brought to site, or the night before installation. Unit can be left in bypass the first night after installation.
- B) Water with Total Dissolved Solids **BELOW** 500 ppm should operate in "**High**" mode; water with Total Dissolved Solids **ABOVE** 500 ppm should operate in "**Low**" mode.
- C) First Electrode Cleaning Schedule: Well Water Systems - 60 days; Municipal Water Systems - visually inspected at 180 days and cleaned at least annually. Cleaning should be done using three-parts water and one-part muriatic acid (3:1) in a 5-gallon bucket for 15 minutes, or using cleaning caps available from you dealer.