



**VIDEOS ONLINE
FOR MOST TOPICS**

**Valve Programming
Filter Replacement**

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)

TOOLS AND MATERIALS

- 5 - Ball valves, 1 - Drain valve for Wellmate "blow down" (per diagram p.2) (Dynamixer use requires no blowdown.)
- 5/8" OD, 1/2" ID Drain Line to your floor drain 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

- 2 10 x 54 NSF Pressure Filter Tanks; (12x52 with Light Commercial 1½" Systems); Distributor Tube with attached end distributor basket inside of each 10x54" tank
- 1 40 gallon WellMate® Retention Tank or Dynamixer (**NOTE: 1¼" Fittings and Drain valve needed for WellMate®**)
- 1 ECOsmarte Control Valve with clip on upper basket (prewired)
- 1 2510 FLECK Time Clock Valve w/stainless or brass bypass
- 2 Premeasured packages sterile field gravel 15 LBS (25 LBS Light Commercial 1½")
- 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 Copper Electrode Chamber, 2" Hub (by UPS AIR w/ Electronics)
- 1 Titanium Electrode Chamber, 2" Hub (by UPS AIR w/ Electronics)
- 1 ECOsmarte™ Point-of-Entry Control Box (by UPS AIR): the valve assembly for the birm tank is prebuilt
- 1 Warranty Card with Electrode Referral Offer (in this manual)
- 1 Your Watercheck™ EPA/ETL Water Analysis (previously mailed)
- 1 10' jumper wire to connect electrode chambers (w/ electrode chambers)
- 1 Installation / Operating Guide (this document)

Optional Items

- ECOsmarte® additional Oxygen MTBE chamber
- ECOsmarte® Wellmate 80 or 120 gallon retention tank upgrade



**ECOsmarte
Control Box**

Pic. 1



**WellMate®
Retention
Tank**

Pic. 2



**ECOsmarte
Valve**

Pic. 3



**FLECK 2510
Valve w/
Bypass**

Pic. 4



**ECOsmarte
Valve
Bypass**

Pic. 5



**ECOsmarte
Copper
Chamber**

Pic. 6



**ECOsmarte
Oxygen
Chamber**

Pic. 7



**ECOsmarte
Oxygen/Cu
Jumper
Wire**

Pic. 8



Pic. 9



Pic. 10

**Flexible
Backwash
Line and
C Clamp**

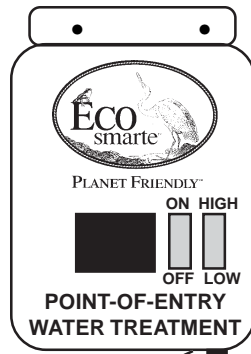
Well Water Turbo

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



PLANET FRIENDLY®

**ECOsmarte®
Point-of-Entry
Well Water
Turbo System**



Power Setting HIGH
(unless factory specified)

NOTE: Control Box to Head nearest well, prewired for install

Property Address _____

 Watercheck Notes _____

WaterValve Sensor

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

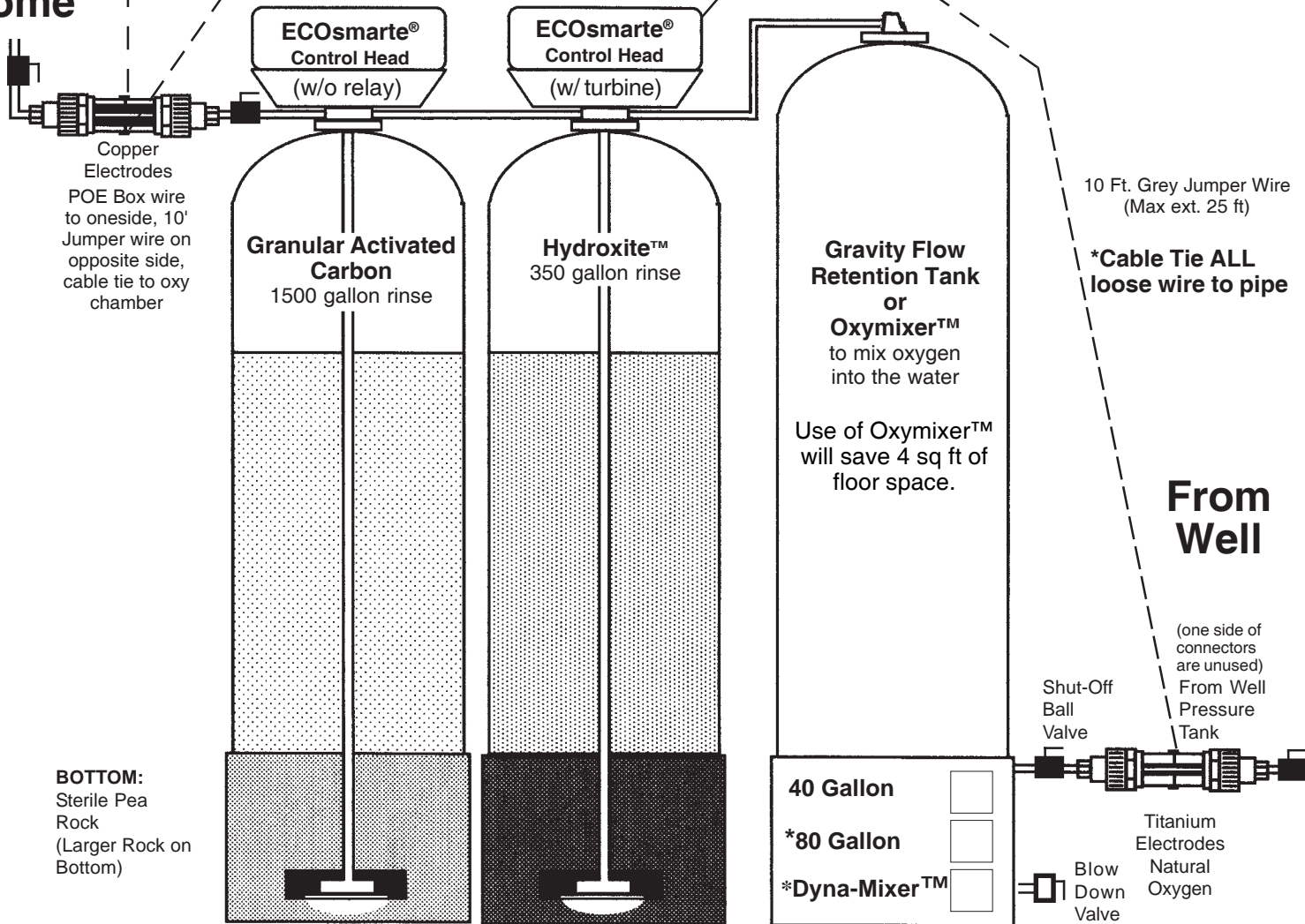
(Thinner Wire) Power Leads to Copper Chamber

Cable Connects Power Leads To GAC Valve

½ to 1½ amp fuse



To Home



BOTTOM:
Sterile Pea Rock
Rock
(Larger Rock on Bottom)

- 40 Gallon
- *80 Gallon
- *Dyna-Mixer™

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

Reviewed By:

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 maintenance.

All four are shown above:

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. **YOU MUST HAVE 11GPM TO RINSE FILTERS.**

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 11 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 11 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 as well as install time, also called an oxymixer.

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 one day per week, 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 turbine 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 expand.** 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 earlier on the GAC to stagger the backwash, on the one day per week they both backwash.

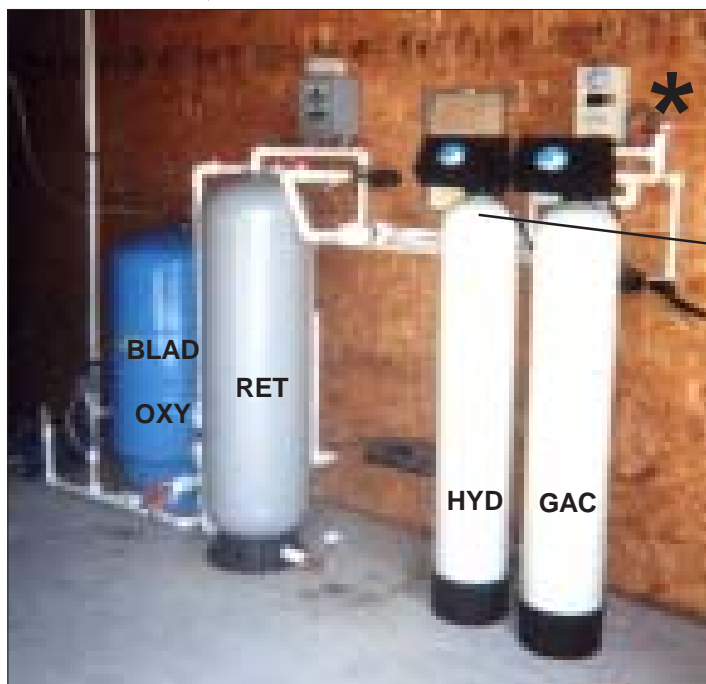
Point-of-Entry Installation Guide - Well Water

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.

FROM WELL →

TO HOME ↑



VALVE
TURBINE
IN HYD.
CONTROL
VALVE

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.)

*FLOW SWITCH on Commercial Installs Only, 1½" or larger piper and valves.

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.

**THREE TANK, FOUR TANK and
SIX TANK INSTALLS AT
www.ecosmarte.com**

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 and comes prewired, to activate the system when water flows. The valve sensor is designed to regulate current from the control box to your electrodes.
3. The grey 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, and comes prewired. 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 turbine 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.

WATER METER MAINTENANCE

CLEANING OR REPLACING VALVE TURBINE

Fig 1



Close up view of valve bypass, disassemble from valve body with Phillips screwdriver, sliding tank forward.

Fig 2



With the tank slid forward at least 3", remove valve turbine assembly per Fig 3. Note: Bypass is hard plumbed.

Fig 3



The turbine assembly and protective screen should be inspected and wiped clean after removing from the valve as pictured above.

Fig 4



Clean with white vinegar and moist rag. Replace by hand and reassemble per Fig 1, sliding tank back to the plumbed bypass

DIAGNOSING A STUCK TURBINE

The ECOsmarte control box lights must circle when water is flowing and must stop circling when water is turned off. Occasionally particulate can impair or stick the turbine, causing the lights to circle constantly or not at all. Note: a leaky toilet can also cause the light problems.

Master Programming Mode

When the Master Programming Mode is entered, all available option setting displays may be viewed and set as needed. Depending on current option settings, some parameters cannot be viewed or set.

Setting the Time of Day

1. Press and hold either the Up or Down buttons until the programming icon replaces the service icon and the parameter display reads TD.
2. Adjust the displayed time with the Up and Down buttons.
3. When the desired time is set, press the Extra Cycle button to resume normal operation. The unit will also return to normal operation after 5 seconds if no buttons are pressed.



Entering Master Programming Mode

Set the Time Of Day display to **12:01 P.M.** Press the Extra Cycle button (to exit Setting Time of Day mode). Then press and hold the Up and Down buttons together until the programming icon replaces the service icon and the Display Format screen appears.

Exiting Master Programming Mode

Press the Extra Cycle button to accept the displayed settings and cycle to the next parameter. Press the Extra Cycle button at the last parameter to save all settings and return to normal operation. The control will automatically disregard any programming changes and return to normal operation if it is left in Master Programming mode for 5 minutes without any keypad input.

Resets:

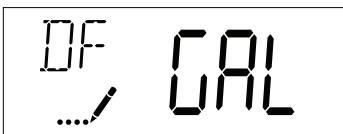
Soft Reset: Press and hold the Extra Cycle and Down buttons for 25 seconds while in normal Service mode. This resets all parameters to the system default values, except the volume remaining in meter immediate or meter delayed systems and days since regeneration in the time clock system.

Master Reset: Hold the Extra Cycle button while powering up the unit. This resets all of the parameters in the unit. Check and verify the choices selected in Master Programming Mode.

1. Display Format (Display Code DF)

This is the first screen that appears when entering Master Programming Mode. The Display Format setting specifies the unit of measure that will be used for volume and how the control will display the Time of Day. This option setting is identified by "DF" in the upper left hand corner of the screen. There are three possible settings:

Display Format Setting	Unit of Volume	Time Display
GAL	U.S. Gallons	12-Hour AM/PM
Ltr	Liters	24-Hour
Cu	Cubic Meters	24-Hour



CAUTION: Before entering Master Programming, please contact your local professional water dealer.



Fig 1
Time and Day. Ecosmarte® Control Valve is displaying the time of day.



Fig 2.
 Ecosmarte® Control Valve is displaying the 2000 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. (On well water GAC valves use pins 6 and 12)



Fig 3
 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.



Fig 4
 If 2000 gallon backwash isn't reached in certain amount of time, the system will backwash after set amount of days (14 days in Fig 4) regardless of remaining water.



Fig 5
Remaining gallons to backwash. Ecosmarte® Control Valve is displaying the remaining gallons to backwash, as indicated by the red LED display.



PLANET FRIENDLY®
The Best Non-Salt, Non-Chemical
Water Technology

(Internal wiring of ECOsmarte Box, Valve, and Turbine available at www.ecosmarte.com/onlinesupport.htm)
Online Support Password: customer2007

VIDEOS ONLINE
TOLL-FREE SUPPORT
1-800-466-7946

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 manufacturer'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 or anytime dishes or silverware spots.**

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 turbine is stuck or there is a leak in a plumbing fixture.

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. To purge scale, run 2 cups vinegar, no dishes, thru a complete cycle.
- Non-chlorine cleaners such as Lime-Away will produce best results.

**CITRUS CLEANER or
ECOsmarte Bacteria Controlled Water**

**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
- Well Water Irrigation (3, 4 or 6 tanks)

For further troubleshooting help call our toll-free line

1-800-466-7946

or email us at:

onlinesupport@ecosmarte.com

GRAVITY FLOW RETENTION TANK OPTION

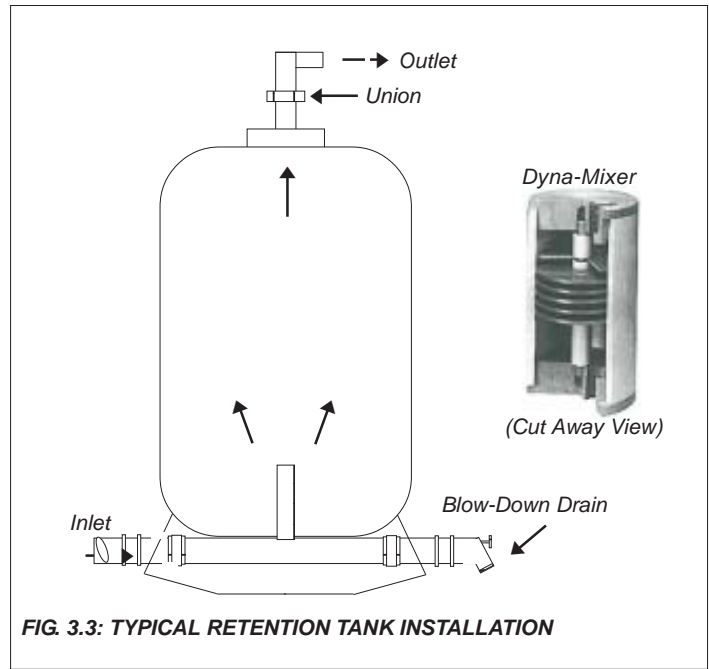
WELLMATE INSTALLATION INSTRUCTIONS

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.



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.

(RETENTION TANKS MUST BE USED WITH HIGH IRON (3.0 ppm), MANGANESE (.1 ppm) OR SULPHUR (300 ppm) AS WELL AS KNOWN BACTERIA.)



ECOsmarte® Point-of-Entry Warranty Registration

Date Received: _____

Name: _____

Street Address: _____

City: _____

State / Zip: _____

Phone Number: _____

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.

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

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).

A SYSTEM BYPASS IS REQUIRED

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. A minimum charge of \$25 is assessed to any electronic box sent to the factory and no problem is identified (The box has a 99.7% quality chart during the five year term).

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

VIDEOS ONLINE AT

<http://www.ecosmarte.com/onlinesupport.htm>

Password: customer2007

- 1) Has unit(s) backwash run clean with the 11 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 backwash 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. (Your Watercheck ETL Test)
- 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.

IMPORTANT

- 1) Confirm the low or medium heat setting on the dishwasher.
- 2) Run 1 cup vinegar, no dishes thru the dishwasher.