

RAINFRESH EAFE IRON REMOVAL FILTERS.

INSTALLATION & OPERATION INSTRUCTIONS

INTRODUCTION

Your Rainfresh EAFE iron-removal filter utilizes oxidation and filtration technology to remove dissolved iron from water.



Dissolved iron, also called ferrous iron is oxidized to a filterable form (ferric iron) which is then filtered out of the water. It can be used on ground as well as surface water sources. (see table 1).

When the well pump comes on, a venturi injects atmospheric air (oxygen) into the water. The oxygen is utilized to oxidize ferrous (dissolved or clear water) iron to a filterable precipitate (ferric hydroxide). A special oxidant medium (BIRM[®]) acts as an insoluble catalyst and enhances the oxidation process. The resulting precipitated iron (ferric hydroxide) is filtered within the system and iron-free water comes out of the system for use.

After a pre-determined amount of water has flown through the system, an automatic *backwash* process is initiated wherein the “trapped” iron is stripped away and dumped to drain and the system is ready for use again. The backwash process is completely automatic and is factory set for 2 AM (can be changed).

Note: No salt or chemicals are required to clean the system. As such it is typically safe to dump the water into the septic system. However, because in every backwash cycle, about 40-60 gallons of water are used to clean the system, it is recommended that you consult a professional to ascertain the safety of the water going into your septic system.

Note: EAFE systems do not kill or remove bacteria or any other pathogenic microorganisms. To continuously disinfect all the water in your house, we recommend that you

install a Rainfresh UV system. Call Rainfresh for details.

Max water temperature	38°C (100°F)
Water pH range	6.8 to 9.0
Max Hydrogen sulfide concentration	Nil
Oil in raw water	Nil
Polyphosphates	Nil
Free chlorine concentration	< 0.5 ppm
Alkalinity	> 2 x (sulfate conc.+ chloride conc)

Table 1

Electrical Requirements:

- The automatic control valve works on 110V AC. We recommend a GFI (ground fault interrupter) 120 volt outlet within 5 feet of the filter. Extension cords are not recommended.
- If water pipes are used to ground electrical system, you will need to install a jumper wire across the filter unit.

Unpacking the unit

The Rainfresh EAFE iron filter system includes

- 1) The main media tank with fully automatic electronic metered control system.
- 2) By-pass valve (3/4" or 1" Male NPT)
- 3) Drain Fitting (for 1/2" Hose)
- 4) Air-injector venturi (1" Male NPT)

Unpack the unit and place it at the location where you intend to install the unit.

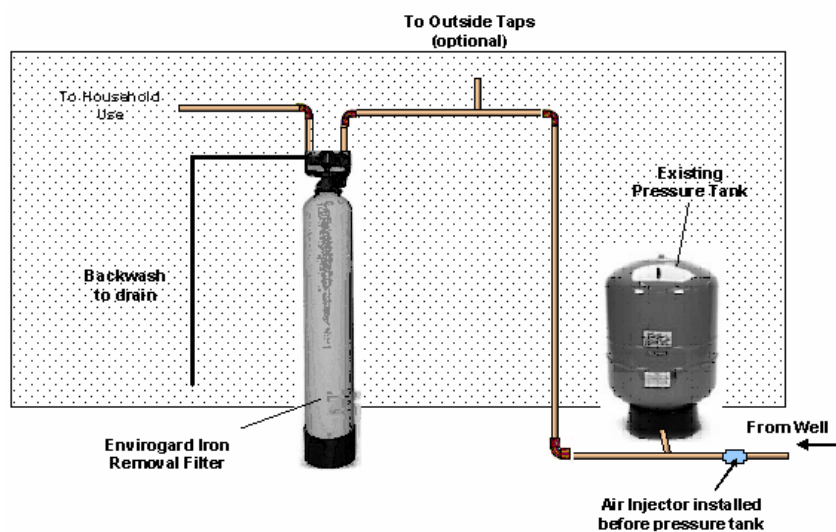
- Stand back and look at the filter system, and make sure it is standing straight up and not tilted to one side. Sometimes during shipment, the bottom of the filter will get knocked out of alignment and you will need to straighten it out before starting installation. If your filter is a bit tilted, simply pick the filter up 2 – 3 inches off the floor and drop it gently but firmly down, favoring the side of the boot that needs to be adjusted to make the filter stand straight up again.
- Make sure your chosen location is fairly level, dry, and protected from possible freezing conditions. The plastic base of the filter is slightly adjustable to non-even floors. If shimming is needed, you can make shims from small, flattened pieces of copper pipe, or some other non-corrosive material. Do not use wood. The filter can sit directly on the floor, it will not corrode. DO NOT set the tanks onto make shift platforms as this may cause the filter to topple.
- The system has an inlet, an outlet, and a drain line. If you are looking at the front of the unit, the inlet is on the right side.

Warning: Make sure that you have correctly identified the inlet of the system. REVERSING THE CONNECTIONS WILL RESULT IN FILTER MEDIA BEING THROWN INTO YOUR HOME'S PLUMBING SYSTEM CAUSING DAMAGE TO IT AS WELL AS THE IRON

- The following materials can be used for installing your new system, but it is recommended that you check your local plumbing codes. Copper and PVC, CPVC, and PEX are the most popular.
- You may choose not to treat the water spigots that go outside used for irrigation or sprinkler systems. You will have to plan the job so that you cut in to feed the iron-filter AFTER these spigots. Installing the iron filter after the pressure tank on a well water system is the preferred location. If you intend to install a water softener or a UV system, these should be installed **after** the iron filter.

Plumbing in your Iron-Filter

- Turn the power off to the well pump then shut off the main water shut off valve which should be located after the pressure tank. If your hot water tank is electric, turn off the power to it to avoid damage to the element in the tank. Open a faucet closest to the pressure tank, but after the main shut-off valve to de-pressurize the lines.
- Cut in to the pipe coming from the well to the pressure tank. Cut in before the check valve to avoid emptying the pressure tank on the floor. If you do not have a check-valve installed for any reason, then open a few faucets and empty the pressure tank before cutting into the line.
- Plumb in the air-injector (1" Male NPT connections) at this spot.
- Now position the filter in the desired location, which is after the pressure tank. Try locating the iron-filter to the left of a vertical main line. This way the inlet can be easily ran to the main line, then the outlet a few inches higher.
- Identify the inlet and outlet of the unit and plumb in the inlet and outlet of the iron filter.
- The system requires a 1/2" flexible plastic drain line running from the iron-filter. There will be a fair amount of pressure on this flexible plastic drain line when the iron-filter is in the regeneration mode, so make certain it is secured in place.



- Install the backwash line by applying Teflon tape on the drain fitting first (see pic). In some cases, the drain fitting may come pre-installed on the unit. The barbed elbow is made for 1/2" poly tubing which can be purchased by the foot at most well-stocked hardware stores. This can be ran up overhead or down along the floor. If running drain line more than 30 feet overhead, increasing the line size to 3/4" will be required. Please follow your local health dept. Codes for where to run filter discharge water. NEVER MAKE A DIRECT CONNECTION INTO A WASTE WATER DRAIN. A PHYSICAL AIR GAP OF AT LEAST 3"

SHOULD BE USED TO AVOID BACTERIA AND WASTEWATER TRAVELING BACK THROUGH THE DRAIN LINE INTO THE IRON-FILTER.

- Turn on the switch for the well pump. If you had emptied the pressure tank, allow it to fill up until the well pump shuts off.
- Turn the inlet valve (in the plastic by-pass valve) on slightly all the time watching for leaks. Make sure a faucet is on somewhere and that any aerator is removed to avoid clogging from loosened scale in the pipes. Leave the bypass valve in the bypassed position and slowly turn the main shutoff valve on all the way. If you have no leaks, proceed to the next steps.

Manual Regeneration Button

UP & DOWN Arrow Keys

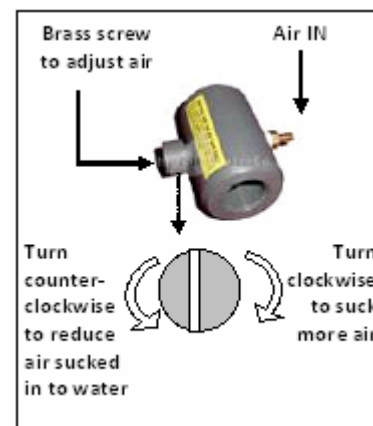


HOW TO PROGRAM SXT CONTROL VALVE

- Connect the control valve to 110V AC power source.
- Press UP or DOWN key and keep depressed until time starts to change
- Then use UP & DOWN arrow keys to set the time to 12:01PM (Make sure time is PM)
- With the time set at 12:01 PM, press both keys for 4 seconds and the display will change from time to programming mode.
- Press the manual regeneration button to go through different programming cycles.
- Check the pink/yellow sheet in the manual for details.

▪ **Air Injector**

- The air injector must be installed before the pressure tank, between the submersible pump and the pressure tank. The pump must be a **submersible pump** for the valve to operate properly. Jet pumps often do not create enough suction for the air injector.
- When the submersible pump is running, water is forced through the injection valve under very high pressure. Inside the injection valve are two openings, one is a small venturi opening and the other is a larger 3/8" opening. The high-pressure water being forced through the small venturi opening creates a low pressure area inside the injector valve, which in turn draws extremely small micro-bubbles of air into the flow of water as it passes through the venturi opening.
- The Adjustable part of the injection valve, is a flat head brass screw located as shown in the fig. Turn the screw clockwise to increase air bubbles and counter-clockwise to reduce air.



- Manually put the iron-filter into the backwash cycle by pressing the regeneration button. Turn the bypass valve slightly to allow water to run into the unit. You want water to initially fill the tank slowly. Once the tank is full of water, you can open valve fully. This prevents filter media from being pushed up into the control head by the initial surge of water going in. Once the tank is full of water you should start to see water flowing from the drain line. It may look somewhat discolored at first. This is normal. Once the water runs clear and free from air pockets, turn the bypass valve further and further into the "service position". You should have a full flow to the drain at this point.
- Details on the control valve are explained in the booklet enclosed with this unit.

Your water may be discolored for a day to two after initial installation. You can turn on a close faucet and let the water run for a couple hours to help clear up the water initially, but do not be alarmed by discolored water for a couple days or air in the water. Also even though you will have iron-free water right away, it will take a few days to get all the iron-laden water out of your hot water tank. So you will experience some discolored water from your hot water tank for a few days. You may choose to empty your hot water tank at the time of installation and clean it before letting water in from the iron-filter. The system is ready for use.

In some cases, a glass of water taken from the faucet may appear cloudy at first, but will clear up if left standing. This is usually only air that has been sucked in by the system. An air-bleed valve may be installed after the iron filter to rid of the excess air if needed.

System Specifications

Model No.	Rate Service Flow (US GPM)	Max Flow Rate (US GPM)	Backwash Flow Rate (US GPM)	Capacity between regenerations	Inlet / Outlet	Drain Connection
EAFE 948	2.2	5	4.5 (17 lps)	10,260 mg	3/4" Male NPT	1/2" Hose
	(8.3 lps)	(18.9 lps)				
EAFE 1054	2.75	6	5.5 (20.8 lps)	15,390 mg	3/4" Male NPT	1/2" Hose
	(10.4 lps)	(22.7 lps)				
EAFE 1252	3.95	8	7.9 (29.9 lps)	20,520 mg	1" Male NPT	1/2" Hose
	(14.95 lps)	(30.2 lps)				

Backwash frequency

For optimum performance, depending upon the iron content, the unit should be set to backwash at least once every 3 days.

Winterizing the system

If the unit is to be winterized, the best way is to close the by-pass valve and unscrew the 2 screws adjacent to the by-pass valves that hold the unit and the by-pass valve together, and carry the unit to a place where it will not be subject to freezing temperatures. If, however, it is not possible to easily move the system, then there are two options.

Unscrew the control valve carefully by holding it with both hands and slowly rotating it anti-clockwise while holding the tank. The control valve is internally connected to a tube which should not come out with the valve. Therefore, when the control head

is completely unscrewed, do not lift it up with force. Gently make screw in and out motions until the valve is high enough that you can hold on to the internal tube with one hand.

Now insert a 3/8" flexible tube into the tank to the top of the media and siphon off as much water as you can.

Option 1: Add a saturated brine solution to the tank. This will protect the tank from freezing up to -20°C (-4°F)

Option2: Add propylene glycol (antifreeze) to the tank.

In both cases, when re-starting operation, screw on the control valve back to the tank and connect the screws back on to the by-pass valve. Backwash the unit thoroughly at least twice in succession to make sure that it is now clean and ready to use.

FAQ

PROBLEM	POTENTIAL CAUSE	SOLUTION
Iron-filter fails to backwash	<ol style="list-style-type: none"> 1. Electricity interrupted to system 2. Control head malfunction 	<ol style="list-style-type: none"> 1. Assure continuous power supply to system. 2. Check control head manual for solution.
Iron-filter does not seem to remove iron.	<ol style="list-style-type: none"> 1. Bypass valve is in the bypass position. 2. Air-injector not sucking in air. 3. System may not be backwashing often enough 	<ol style="list-style-type: none"> 1. Move bypass valve to service position. 2. Open air-injector and inspect for dirt . Clean and replace. Check with a moist finger if air is being sucked when well pump is ON. Adjust brass screw if necessary 3. Reduce backwash interval.
Loss of water pressure.	<ol style="list-style-type: none"> 1. Iron build up in filter. 2. Not enough water flow available for backwash. 3. Inlet of control plugged. 	<ol style="list-style-type: none"> 1. Increase backwash frequency. 2. Remove piston and clean control of foreign material.
Drain flows continuously.	<ol style="list-style-type: none"> 1. Internal control leak. 2. Control valve jammed in back-wash position. 	<ol style="list-style-type: none"> 1. Replace seals, spacers or pistons.

Limited Warranty

Envirogard warrants the EAFE iron filter to the original buyer to be free from defects in material and workmanship under normal use and service for a period of 1 year from the date of shipment. No warranty is made with respect to defects not reported to Envirogard within the warranty period and/or defects or damages due to neglect, misuse, alterations, accident, misapplication, physical damage, or damage caused by fire, acts of God, freezing or hot water or similar causes. Envirogard's obligation under this Limited Warranty shall be limited, at its option, to replacement or repair of any parts deemed defective by an authorized Envirogard representative.



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