Operation & Maintenance

For Standard Intermittent Sand Filter Kits (w/o distributing valves)

Orenco Systems® Incorporated
1-800-348-9843

Important names and phone numbers

Service Person:_____ Phone:_____

_____

Installer:_____ Phone:_____

_____

Electrician:_____ Phone:_____

_____

Regulating agency:_____ Phone:_____

_____

Designer:_____ Phone:_____

_____

Orenco sand filter kit model #: _____

Residual head (squirt height) at startup: _____

Programmable timer settings: "ON"_____ "OFF"_____

Float settings from top of dosing tank: alarm/timer override _____ inches
timer off _____ inches
red. off/low level alarm_____ inches

Distance from top of sand filter pump basin (SFPB) to "ON" level:_____ inches

Distance from top of SFPB to bottom of treatment sand:_____ inches

O&M Manual: *Standard Intermittent Sand Filter Kits*

Table of Contents

Important: *Attach as-built drawings and pumping equipment component information to back of this manual.*

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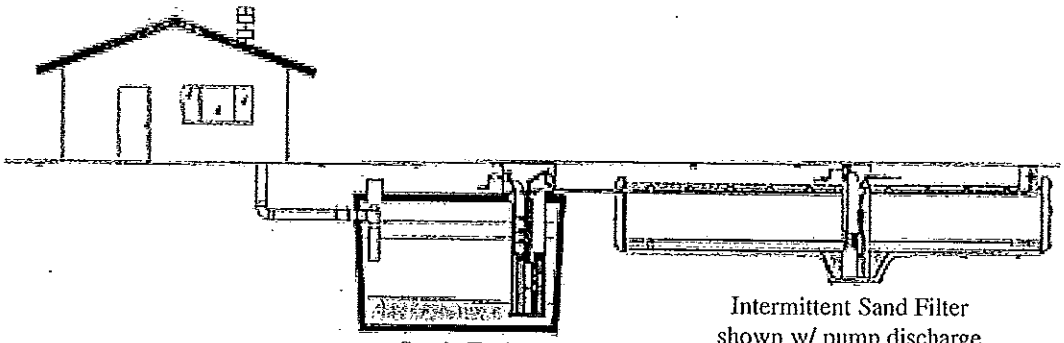
Introduction

Intermittent Sand Filter Systems for Treatment of Residential Sewage

The intermittent sand filter (ISF) system concept

Figure 1 below illustrates the general layout of an intermittent sand filter (ISF) system serving a home. Normally, the entire system is buried except for the fiberglass lids at ground level for maintenance access.

Figure 1: Typical Residential ISF System



The following describes the path the sewage takes through the system.

- Raw sewage from the home flows by gravity into the septic tank where the heavy solids settle to the bottom of the tank and the light solids float to the top of the tank. A relatively clear zone forms between the floating solids (scum) and the settled solids (sludge).
- A pump system suspended in the outlet end of the septic tank pumps liquid effluent from the clear zone of the tank to the sand filter. PVC plastic piping evenly distributes the effluent over the surface of the specially-graded sand. Small particles and other contaminants in the effluent are mechanically, biologically, and chemically reduced as the effluent passes down through the sand.
- The treated effluent is collected at the bottom of the sand filter in an underdrain from which it passes by gravity or is pumped for final treatment and disposal, usually in some type of soil absorption system.

The installer of the system should provide to the user exact drawings of the layout and construction of system. These drawings should be attached at the end of this manual.

Benefits of using an ISF system

An ISF system produces very high quality effluent, much superior to that which is discharged by a septic tank alone. In many localities, this higher degree of treatment is required to protect ground water, surface waters, and public health. Sites that have poor soil conditions, poor drainage, high ground water, or sensitive surface waters are potential candidates for sand filter installations. Because ISF effluent is highly treated, many cities and counties allow substantial reduction in the area they require for disposal. Additionally, some localities allow ISF treated water to be reused for subsurface landscape irrigation.

Operation

Components and automatic operation of the ISF system

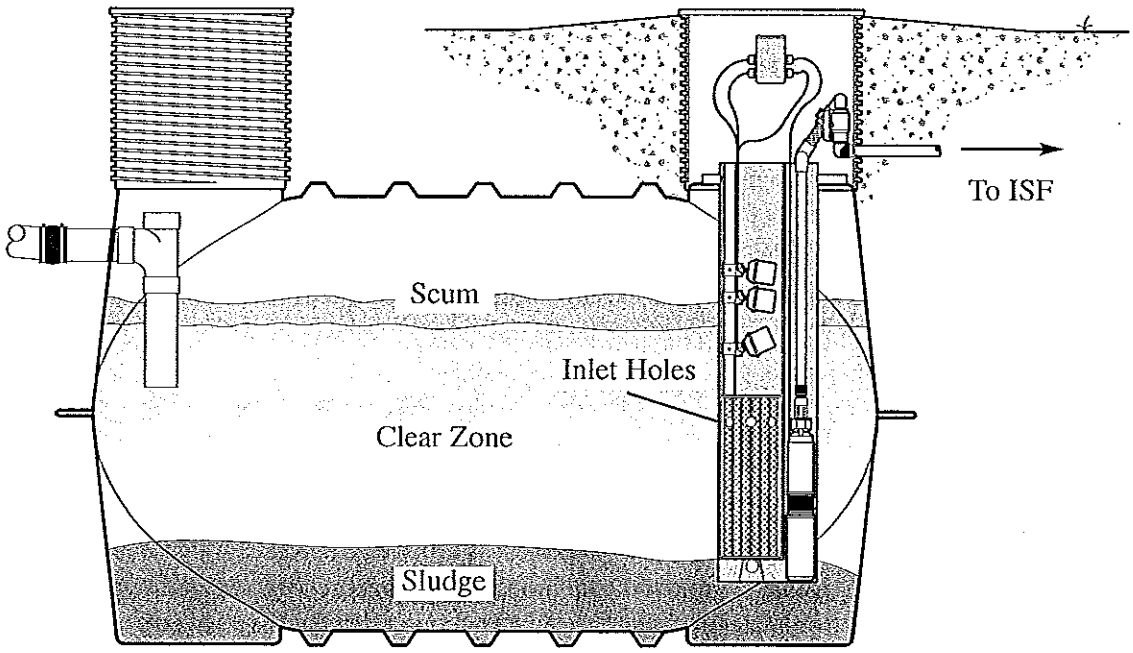
The septic tank

Figure 2 below illustrates a septic tank with a pump system installed. The septic tank is a structurally sound, watertight vessel that accepts raw sewage from a home. In the tank, the heavy solids in the sewage fall to the bottom of the tank to form the sludge layer and the light solids in the sewage float to the top of the tank to form the scum layer. The septic tank is very efficient in digesting the sewage. In fact, more than 40% of the overall sewage treatment takes place in the tank. Solids accumulate slowly in the tank over many years and have to be pumped out periodically. Please refer to the monitoring and maintenance section for further discussion.

The septic tank pump system

Figure 3 on the following page illustrates the pump system. It is installed at the outlet end of the septic tank so that the pump system's inlet holes can draw from the clearest zone in the tank. As effluent enters the PVC vault through the inlet holes, the Biotube® filter cartridge prevents solids larger than 1/8th inch from getting to the pump, thus allowing the discharged effluent to be substantially free of solids.

Figure 2: Single Compartment Dosing Septic Tank



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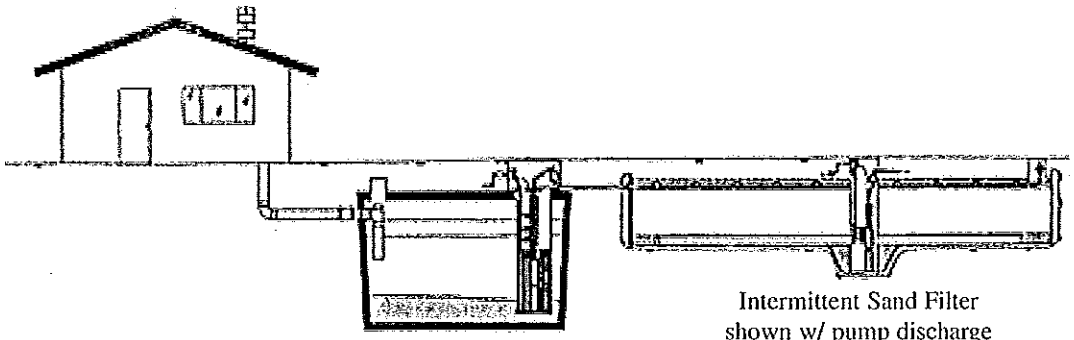

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Operation

The pump system consists of 7 main components:

1. **PVC riser with fiberglass lid** — provides ground-level access for servicing equipment and septage pumping.
2. **Electrical splice box** — provides an approved, safe method for wiring the pump and float assembly.
3. **Float assembly** — controls the minimum and maximum liquid levels in the tank and sends alarm signals to the control panel under certain conditions.
4. **Biotube® screened pump vault** — provides the method for filtering the effluent and contains the pump and float assembly.
5. **Discharge assembly** — connects the pump to the piping outside the tank and usually includes a ball valve and union for removal and maintenance.
6. **High-head effluent pump** — pumps the filtered effluent to the sand filter.
7. **Control panel** — provides electrical control of the pump system. Figures 4 and 5 show examples of "single-pump" and "double-pump" sand filter control panels.

The septic tank pump system's operation is automatic, being controlled by the float assembly and by the programmable timer (PT) in the control panel. Under normal operating conditions, the liquid level in the tank is maintained between the top two floats (Figure 3). The PT turns the pump on for short periods of time throughout the day as long as the liquid level is between the top two floats. This allows small volumes of effluent to be dosed to the sand filter, evenly spread out over a 24-hour period.

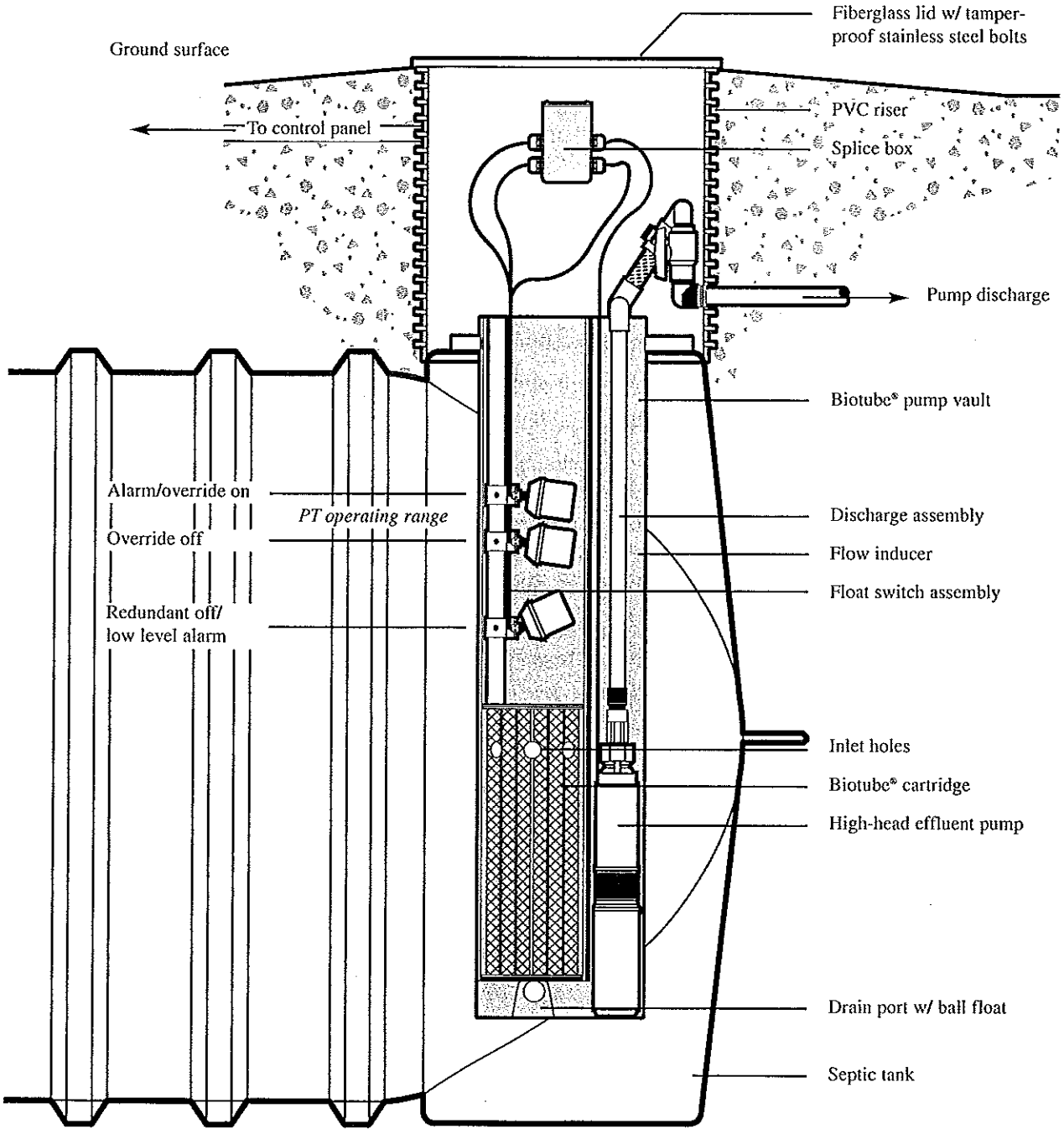
When the liquid level in the tank drops to the second or "timer off" float, the programmable timer is temporarily deactivated, preventing any effluent from being pumped out of the tank until flow into the tank raises the liquid level again. This usually happens once or more each 24-hour period, normally during the middle of the day and at night when little water is being used.

In the event that the liquid level rises to the top or "high level alarm/timer override" float, the pump will come on (overriding the PT) and an alarm on the control panel will sound. The pump runs only for a few minutes, just long enough to drop the liquid level 2.5 to 3 inches. The system then returns to PT operation and the alarm resets itself once the override condition is over. Please refer to page 17 of this manual for troubleshooting alarms.

The bottom float is called the "redundant off/low level alarm" float and is only activated during a problem situation. If the liquid level drops to this bottom float, an alarm will sound on the control panel and the pump will shut off (if it's running). Please refer to page 17 of this manual for troubleshooting alarms.

Operation

Figure 3. Biotube® Septic Tank Pump System



Operation

Figure 4: Single-pump Control Panel (gravity discharge sand filter)

1. Programmable Logic Unit
2. Motor-Start Contactor
3. Toggle Switch
4. Controls Circuit Breaker
5. Pump Circuit Breaker
6. Audio Alarm
7. Visual Alarm
8. Panel Enclosure

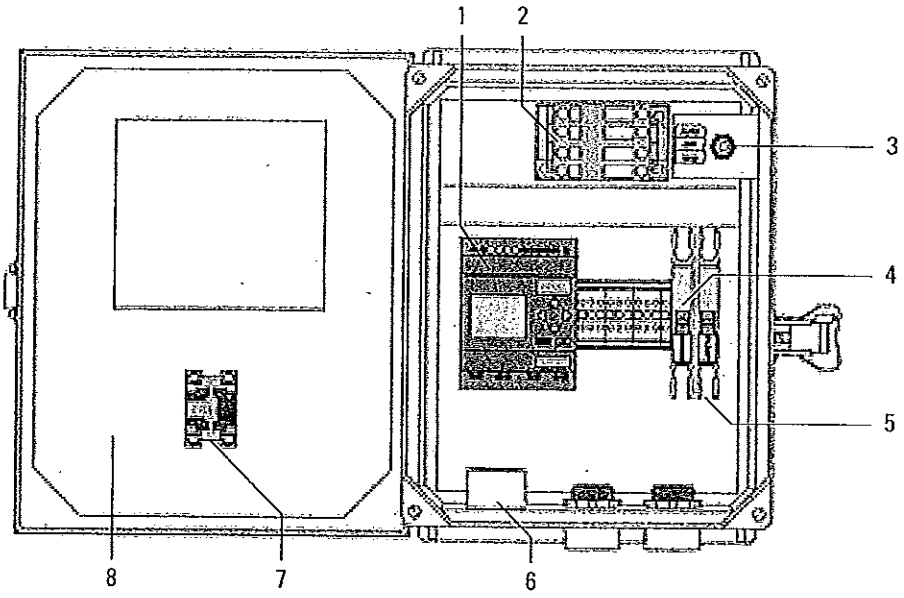


Figure 5: Double-pump Control Panel (pump discharge from sand filter)

1. Programmable Logic Unit
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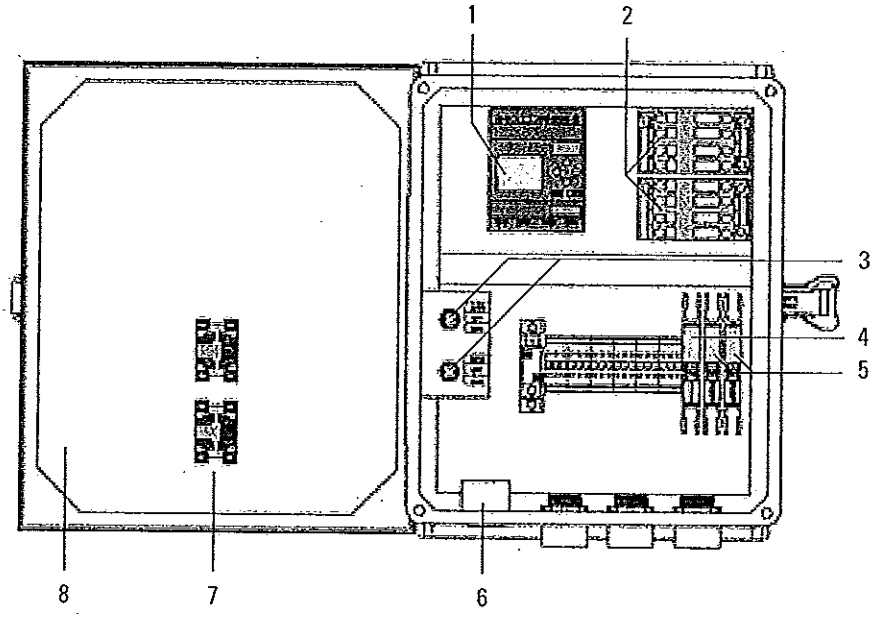
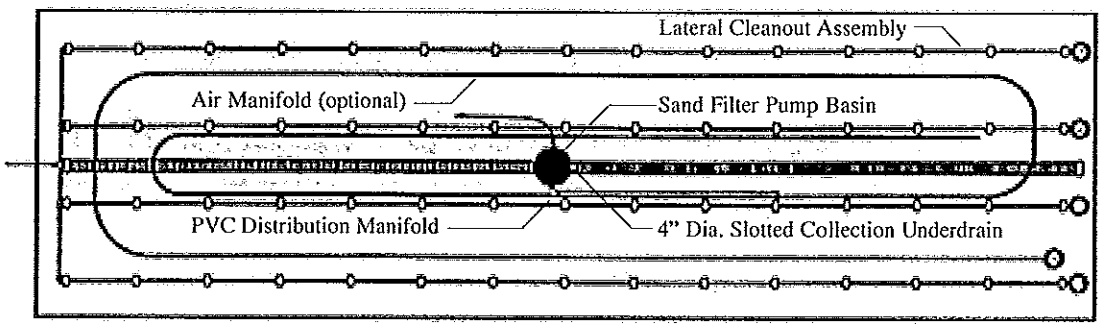


Operation

The ISF

Figures 6 and 7 are top and side views of the intermittent sand filter.

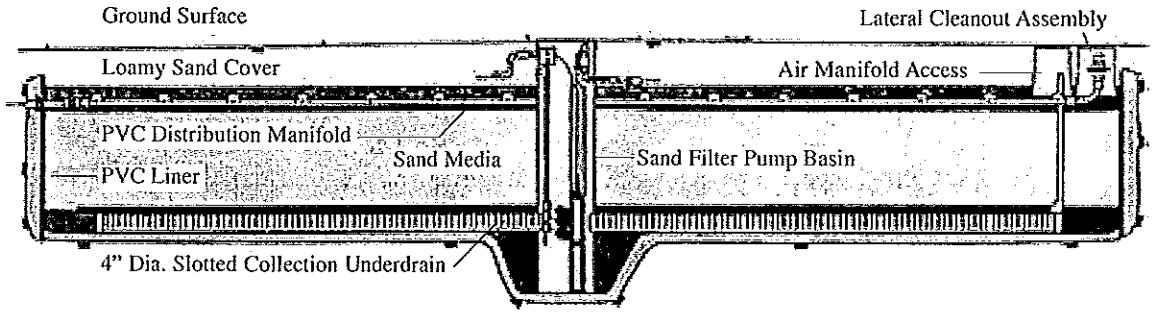
Figure 6: Top View of Standard ISF



The ISF is contained in a 30 mil PVC liner that prevents groundwater from damaging the ISF and permits collection of the treated effluent in the bottom of the ISF. When the pump in the septic tank is running, effluent pressurizes the PVC distribution manifold located on top of the treatment sand and flows out of each lateral through evenly spaced 1/8th inch holes. This spreads the effluent evenly over the sand. Small particles and other contaminants in the effluent are mechanically, biologically, and chemically reduced as the effluent passes down through the approximately 24 inch depth of specially-graded sand.

The sand filter functions optimally when it receives small volumes of effluent, evenly distributed throughout the day. A slotted 4 inch diameter pipe collects the effluent in the bottom of the ISF and conveys the treated effluent to a gravity disposal system or to a sand filter pump basin if final disposal requires the use of a pump. The as-built drawings of the actual installation should be attached at the end of this manual.

Figure 7: Side View of Standard ISF



Operation

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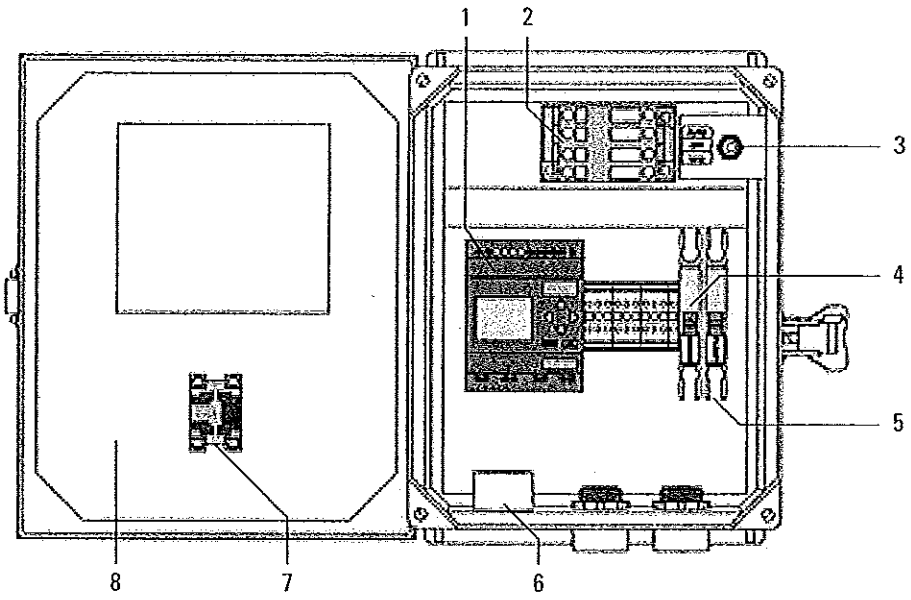

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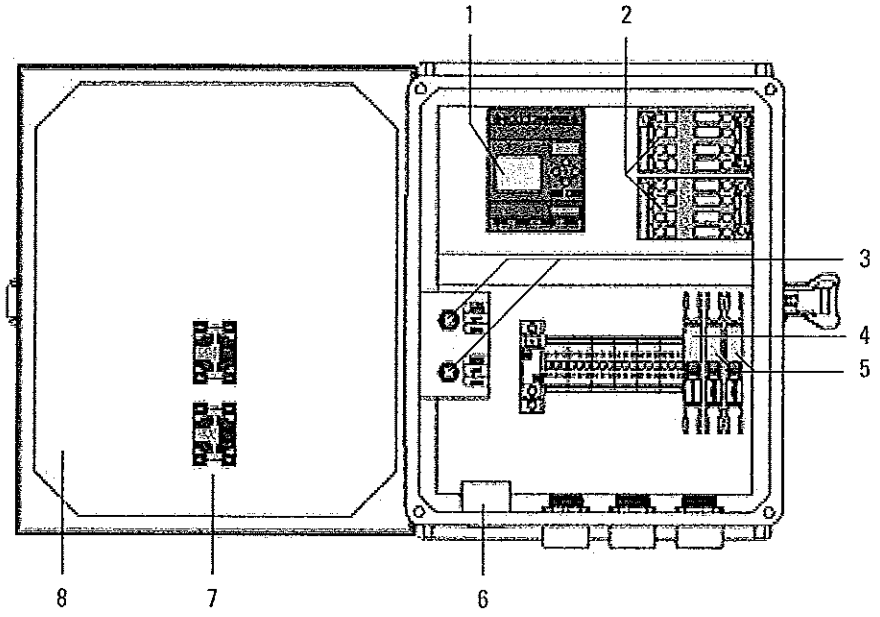
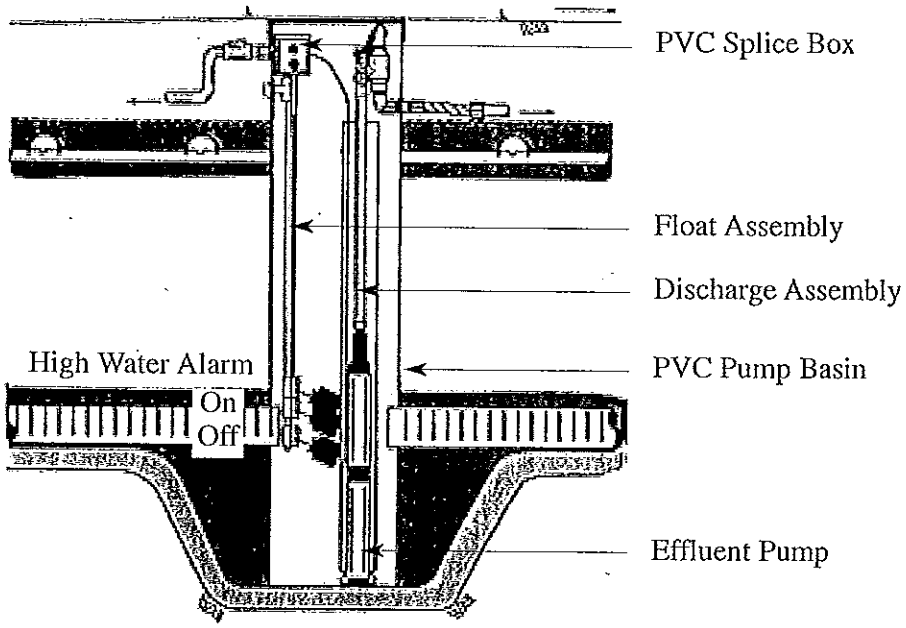


Operation

The sand filter pump basin (when required)

When final disposal cannot be achieved by gravity, e.g. the drainfield is on higher ground than the sand filter, a sand filter pump basin is installed in the ISF as shown in Figure 8.

Figure 8: Side View of Standard ISF Pump Basin



The pump basin package consists of components similar to the septic tank pump system:

1. **PVC pump basin** — contains the pump and related equipment in the ISF.
2. **Electrical splice box** — provides an approved, safe method for wiring the pump and float assembly.
3. **Float assembly** — controls the liquid level in the bottom of the ISF and sends an alarm signal to the control panel when a high water condition exists.
4. **Discharge assembly** — connects the pump to the piping outside the basin and usually includes a ball valve and union for maintenance and removal.
5. **Effluent pump** — pumps the treated effluent to the disposal points.
6. **Control panel** — provides electrical control of the pump system. Figure 5 illustrates the "double pump" control panel required when a sand filter pump basin is used.

Operation

One control panel operates both pumps (one in the septic tank; one in the sand filter pump basin). The pump in the sand filter pump basin is controlled by floats only and does not involve use of a programmable timer. This method of control is often described as "demand" operation since the pump starts "on demand" as soon as the liquid reaches the "on" float. The pump shuts off when the liquid level drops down to the "off" float. A protective interlock in the control panel prevents the septic tank pump from operating if there is a high water condition in the sand filter pump basin. This prevents flooding of the ISF.

User operation of an ISF system

While the physical and biological processes of handling and treating the wastewater in an ISF system occurs automatically, it is important that users exercise discretion in their disposal of waste to the ISF system. As a rule of thumb, it is recommended that nothing be disposed to the septic tank–with the exception of toilet paper and mild detergents–that hasn't first been ingested. Avoid dumping toxic chemicals, grease, water softener backwash, and septic tank additives into the system. The use of a garbage grinder is also not recommended.

Daily use of water should be kept within a reasonable range. Most households use an average of 50 gallon per person per day. Excessive water usage can be detrimental to the septic tank, ISF, and final disposal area. Excessive water usage will usually result in periodic short alarm occurrences (approximately 2 to 3 minutes long). These short-term alarms may be the result of doing too many wash loads in one day, leaking septic tank or plumbing fixtures, improper float or programmable timer settings, or large social gatherings. Please see the troubleshooting section starting on page 17 for more complete information on identifying alarm conditions.

The do's and don'ts lists that follows suggest practices that will help to ensure long life and minimal maintenance for ISF systems.

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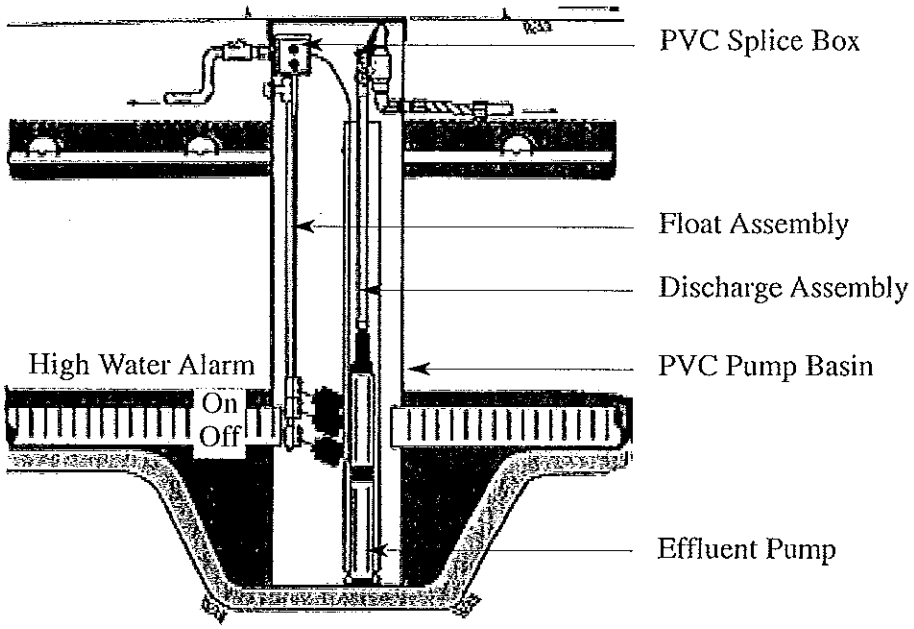

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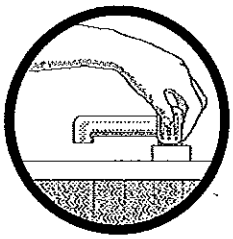
Operation

Do's

Do feel free to place a bird bath, potted plant, or other yard decoration on the tank riser lid, as long as it can be readily removed for maintenance. Landscaping or permanent structures should be planned prior to installation in order to ensure that the integrity of the system is not jeopardized.

Do keep accurate records of maintenance & service calls. The results will be valuable if system problems occur. Make sure whoever services the system keeps a complete record with this manual.



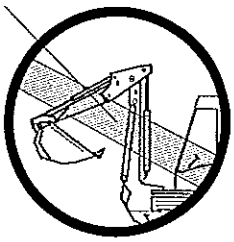
Do practice water conservation. By reducing the amount of water use, the life of the system may be increased and power consumption reduced. When possible, avoid doing several loads of laundry in one day. Take short showers and don't let water run unnecessarily while washing hands, food, teeth, dishes, etc.

Do be aware that a simple toilet float can hang up and result in over 2000 gallons per day of wasted water. Normal household usage ranges from 100 to 200 gallons per day. Use water-saving devices in the toilet tank and don't flush unnecessarily.

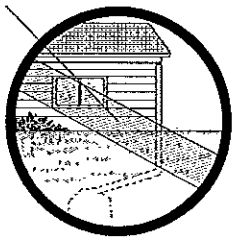
Operation

Don'ts

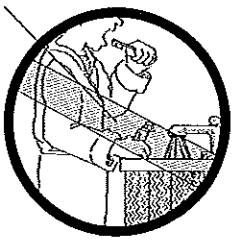
Don't accidentally dig up an underground utility line. Before digging, telephone the local One Call number to have underground utilities marked.



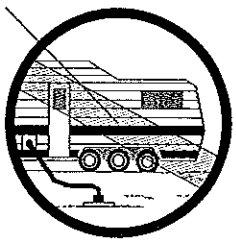
Don't connect rain gutters or storm drains to the septic tank or allow surface water to drain into it.



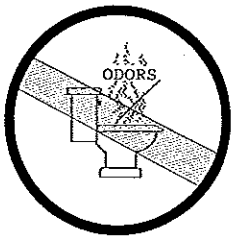
Don't use excessive quantities of water. Repair leaky toilets, faucets or plumbing fixtures. Leaky toilets can waste up to 2000 gallons of water in one day. Take shorter showers and use water saving devices such as low-flow fixtures and low-flush toilets.



Don't dump recreational vehicle (RV) waste into the septic tank because it will increase the the frequency of septage pumping and possibly damage the sand filter. RV waste dumped directly into the screened vault will clog the pump and plug the screen. Some RV waste contains chemicals that are toxic to the biological activity in the septic tank.



Don't flush undesirable substances into the septic tank. Flushing flammable and toxic products is dangerous. Other materials such as paper towels, rags, newspaper, cigarettes, coffee grounds, egg shells, sanitary napkins, large amounts of hair and cooking grease are a maintenance nuisance. These materials will also increase the frequency of septage pumping and may damage the sand filter.



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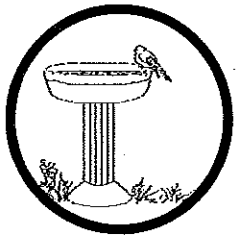

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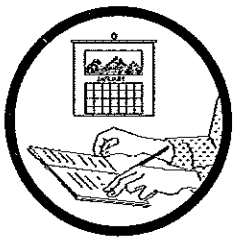

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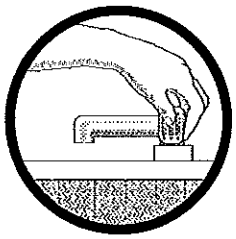

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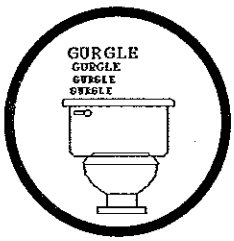

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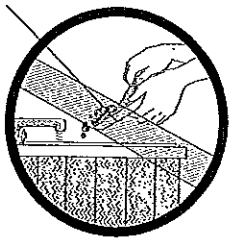
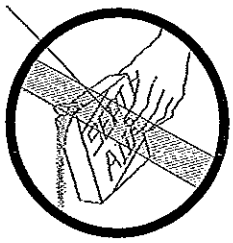
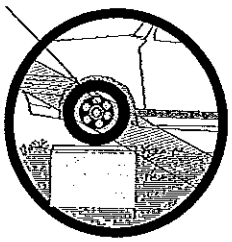


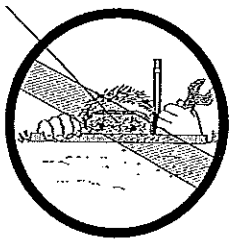
Don't use garbage disposal systems because they also increase the frequency of septage pumping. Compost food scraps or dispose of them in the trash. Collect grease in a container rather than disposing down the drain. Some items (egg shells, coffee grounds, tea bags, etc.) are not biodegradable and should be dispose of in the trash.



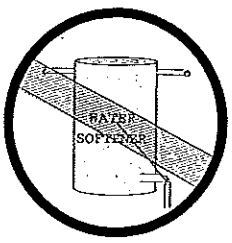
Don't use septic tank additives. Additives do not improve the performance of the septic tank and can cause major damage to the sand filter or drainfield. The natural microorganisms that grow in the system are sufficient. These organisms generate their own enzymes for breaking down and digesting nutrients.



Don't drive over the septic system. If the septic tank is in an area subject to possible traffic, consider putting up an attractive barricade or row of shrubs to discourage traffic unless the tank has been equipped with a special traffic lid.



Don't enter the septic tank. Any work to the tank should be done from the outside. Gases that can be generated in the tank or the lack of oxygen can be fatal.



Don't dispose water softener backwash in the septic tank. The backwash brine contains high levels of chlorides that can destroy the microorganisms and inhibit the biological digestion that occurs in the tank. The brine solution also interferes with the solid's sedimentation that occurs in the tank, and may increase the flow through the tank from 25 to 50 percent.

Operation

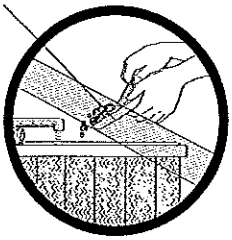
Substitutes for household hazardous wastes

Although their use is not required, the following substitutes for common house hold chemicals will reduce the stress on a septic system and the environment.

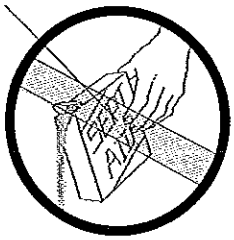
- **Ammonia-based cleaners:** Sprinkle baking soda on a damp sponge. For windows, use a solution of 2 Tbs. white vinegar to 1 qt. water. Place the mixture into the spray bottle.
- **Disinfectants:** Use Borax: 1/2 cup in a gallon of water; deodorizes also.
- **Drain decloggers:** Use a plunger or metal snake, or remove and clean trap.
- **Scouring cleaners and powders:** Sprinkle baking soda on a damp sponge or add 4 Tbs. baking soda to 1 qt. warm water or use Bon Ami. It's cheaper and won't scratch.
- **Carpet/upholstery cleaners:** Sprinkle on dry cornstarch or baking soda, then vacuum. For tougher stains, blot with white vinegar in soapy water.
- **Toilet cleaners:** Sprinkle on baking soda or Bon Ami, then scrub with a toilet brush.
- **Furniture/floor polishes:** To clean, use oil soap and warm water. Dry with soft cloth. Polish with 1 part lemon juice to 2 parts oil (any kind), or use natural products with lemon oil or beeswax in mineral oil.
- **Metal cleaners:** Brass and copper: scrub with a used half of lemon dipped in salt. Stainless steel: scouring pad and soapy water. Silver: rub gently with toothpaste and soft wet cloth.
- **Oven cleaners:** Quickly sprinkle salt on drips, then scrub. Use baking soda and scouring pads on older spills.
- **Laundry cleaners:** Choose one with a zero phosphate content or use soap flakes with 1/3 cup of washing soda. (Before switching, wash clothes in pure washing soda to remove detergent residues.)

Operation

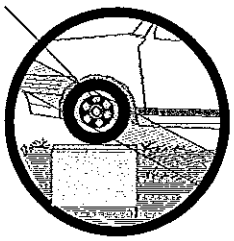
Don'ts



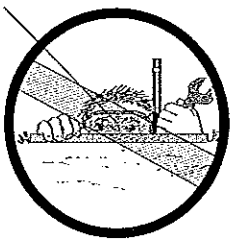
Don't use garbage disposal systems because they also increase the frequency of septage pumping. Compost food scraps or dispose of them in the trash. Collect grease in a container rather than disposing down the drain. Some items (egg shells, coffee grounds, tea bags, etc.) are not biodegradable and should be dispose of in the trash.



Don't use septic tank additives. Additives do not improve the performance of the septic tank and can cause major damage to the sand filter or drainfield. The natural microorganisms that grow in the system are sufficient. These organisms generate their own enzymes for breaking down and digesting nutrients.



Don't drive over the septic system. If the septic tank is in an area subject to possible traffic, consider putting up an attractive barricade or row of shrubs to discourage traffic unless the tank has been equipped with a special traffic lid.



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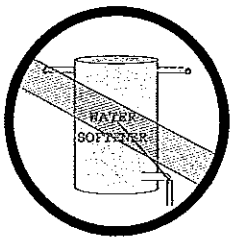


Don't dispose water softener backwash in the septic tank. The backwash brine contains high levels of chlorides that can destroy the microorganisms and inhibit the biological digestion that occurs in the tank. The brine solution also interferes with the solid's sedimentation that occurs in the tank, and may increase the flow through the tank from 25 to 50 percent.

Maintenance

ISF system monitoring and maintenance

Even though it is not difficult or time consuming, maintenance of intermittent sand filter systems is frequently neglected. It is recommended, therefore, that users of these systems contract to have routine inspections and maintenance performed. A business that specializes in installation and maintenance of such sewage disposal systems can perform the following maintenance for a nominal fee and ensure proper operation of the system for many years.

CAUTION: Use proper personal protection equipment such as rubber gloves and clothing that cover parts of the body that will be exposed to sewage or effluent.

Septic tank

Measurement of the septic tank sludge and scum depths should be done after the first year of installation and approximately every three years thereafter to determine when the septic tank needs pumping.

Septic tank pump system

The pump system should be inspected annually to ensure it's operating properly. Unscrew the two stainless steel bolts that fasten the fiberglass lid over the pumping equipment. Remove the fiberglass lid for an inspection that includes these steps.

1. Verify that there are no obvious holes or leaks in the riser.

2. Verify that the float cords are neatly wrapped in the riser so that they cannot interfere with the operation of the floats.

3. Verify that the high water alarm works by lifting the top float up.

4. Be sure the liquid level is above the middle "timer off" float for the following test. Turn the septic tank pump on by flipping the MOA switch in the control panel (Figure 4 or 5) to manual. Watch the liquid level inside the screened vault as the pump is running for about 30 seconds. Return the MOA switch to auto. If the liquid level inside the screened vault drops very quickly and activates the low level alarm, the Biotube® cartridge may need to be cleaned. Refer to the installation instructions for Screened Pump Vaults in Section 5 if cleaning is necessary.

5. If the control panel has an elapsed time meter (ETM) and/or a cycle counter (CT), read and record these values on the inspection form in Section 3. ETM's and CT's are valuable troubleshooting tools if problems occur with the system.

6. Verify the programmable timer setting is correct. The correct timer setting should be written on the front of this manual.

Maintenance

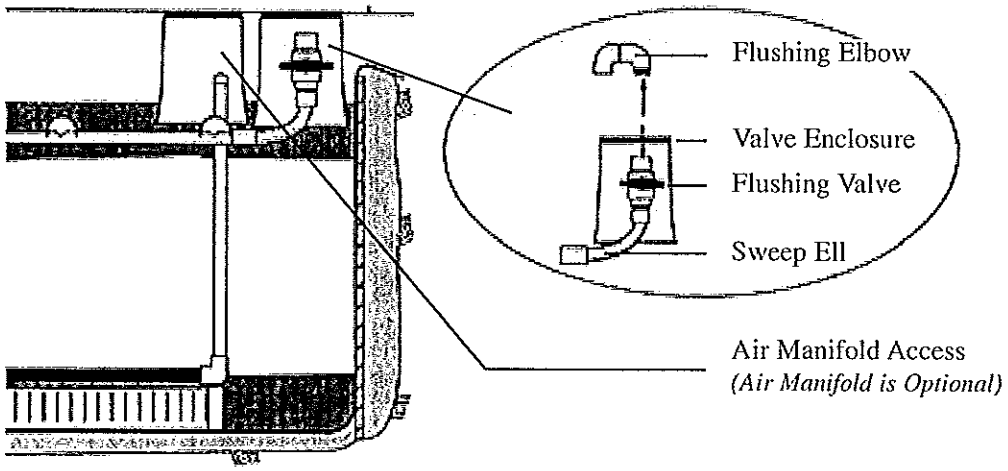
ISF

The key maintenance objective for the ISF is flushing of the manifold laterals. It is important to flush accumulated solids out of the laterals and keep the distribution orifices (holes) in the manifold clear so that the effluent is spread as evenly as possible over the sand media. Failure to perform lateral flushing will eventually lead to clogging at the top of the sand media.

The end of each lateral (Figure 9) has a cleanout assembly for flushing that should be done annually following these steps.

1. Remove the lid on the flushing valve enclosure at the end of each lateral. Locate the flushing elbow that is in the bottom of one of the enclosures.
2. Thread the flushing elbow onto the outlet of the first flushing valve. Open this valve.
3. In the control panel, flip the MOA (manual/off/auto) switch for the septic tank to manual. The pump should now be running.
4. As soon as the effluent flowing out of the flushing elbow appears clear (this should take only a few seconds), turn off the flushing valve.
5. Quickly move the flushing elbow to the next lateral. Open this valve and flush until the effluent is clear.
6. Repeat step 5 for the remaining laterals. If the redundant off/low level alarm (bottom float) is activated during the flushing, it will be necessary to add water to the tank to finish the flushing.
7. Immediately turn the MOA switch back to auto.

Figure 9: Lateral Cleanout Assembly



Maintenance

ISF system monitoring and maintenance

Even though it is not difficult or time consuming, maintenance of intermittent sand filter systems is frequently neglected. It is recommended, therefore, that users of these systems contract to have routine inspections and maintenance performed. A business that specializes in installation and maintenance of such sewage disposal systems can perform the following maintenance for a nominal fee and ensure proper operation of the system for many years.

CAUTION: Use proper personal protection equipment such as rubber gloves and clothing that cover parts of the body that will be exposed to sewage or effluent.

Septic tank

Measurement of the septic tank sludge and scum depths should be done after the first year of installation and approximately every three years thereafter to determine when the septic tank needs pumping.

Septic tank pump system

The pump system should be inspected annually to ensure it's operating properly. Unscrew the two stainless steel bolts that fasten the fiberglass lid over the pumping equipment. Remove the fiberglass lid for an inspection that includes these steps.

1. Verify that there are no obvious holes or leaks in the riser.

2. Verify that the float cords are neatly wrapped in the riser so that they cannot interfere with the operation of the floats.

3. Verify that the high water alarm works by lifting the top float up.

4. Be sure the liquid level is above the middle "timer off" float for the following test. Turn the septic tank pump on by flipping the MOA switch in the control panel (Figure 4 or 5) to manual. Watch the liquid level inside the screened vault as the pump is running for about 30 seconds. Return the MOA switch to auto. If the liquid level inside the screened vault drops very quickly and activates the low level alarm, the Biotube® cartridge may need to be cleaned. Refer to the installation instructions for Screened Pump Vaults in Section 5 if cleaning is necessary.

5. If the control panel has an elapsed time meter (ETM) and/or a cycle counter (CT), read and record these values on the inspection form in Section 3. ETM's and CT's are valuable troubleshooting tools if problems occur with the system.

6. Verify the programmable timer setting is correct. The correct timer setting should be written on the front of this manual.

Maintenance

Next, the residual pressure ("squirt") test that follows should be used to ascertain whether the distribution orifices are clear. A 10 foot long, 3/4 inch diameter, clear PVC pipe with a male adapter glued to one end is necessary to perform these steps accurately.

1. Screw the clear PVC pipe to the end of one of the flushing valves. Maintain the clear pipe in a vertical position. Letting the pipe fall unsupported to the ground may damage the flushing assembly.
2. Open the flushing valve. Have someone turn the pump on. Note: If this test is being done by only one person, turn the pump on before Step 1.
3. Using a tape measure, measure the distance from the bottom of the flushing elbow to the top of the liquid surface in the clear pipe. This measured distance is called the "squirt" height or system residual head.
4. Turn off the pump. Close the flushing valve. Unscrew the clear pipe. Note: If this test is being done by one person, first shut off the flushing valve, then slowly unscrew the clear pipe and allow the effluent in the clear pipe to flow into the flushing valve box before turning off the pump.
5. Compare the measured "squirt" height in Step 3 with the value documented during initial installation of the system. The initial value should be written on the front page of this manual. It might also be found in the control panel or on the underside of the fiberglass lid covering the septic tank pump system.
6. The "squirt" height found in Step 3 should be at least equal to the initial value, but no more than 20% higher.
7. If the "squirt" height is acceptable, be sure all flushing valves are turned off and replace the flushing valve box lids.

If the "squirt" height is found to be excessive, this indicates that too many of the orifices in the distribution manifold are plugged. Clearing of the orifices can be accomplished by one of the following methods:

1. Push a stiff bottle brush (connected to a cleaning snake) down each lateral through its flushing valve assembly.
2. Using a high pressure washer, feed a small diameter "bullet" nozzle through each lateral. The high pressure water coming out of the nozzle will help pull it through the lateral.

The "squirt" test should be performed once more to ensure the cleaning was successful.

Maintenance

Sand filter pump basin

The pump system should be inspected annually to ensure it's operating properly. Unscrew the two stainless steel bolts that fasten the fiberglass lid over the pumping equipment. Remove the fiberglass lid for an inspection that includes these steps.

1. Verify that the float cords are neatly wrapped in the top of the basin so that they cannot interfere with the operation of the floats.
2. Verify that the high water alarm works by lifting the top float up.
3. Check that the maximum normal high water level (noted on the front page of this document) is not exceeded in the basin. This can usually be seen as a water mark on the inside of the basin.

Air manifold kit (optional)

Referring to Figures 7, 8 & 9, an air manifold may have been installed during initial installation for use in renovating a failing ISF or helping the ISF perform during one or more of the following possible problem situations:

1. Clogging due to abuse of the system, resulting in hydraulic or biological overload.
2. Clogging due to poor quality sand. Note: An air manifold should NEVER be used as justification for allowance of poor quality sand.
3. Poor effluent quality due to extremely cold weather.
4. Insufficient oxygen resulting from burying the sand filter too deep, covering the sand filter with dense or otherwise impermeable material, or compaction of the cover material.

A small compressor is attached to the air line under the air manifold access lid. In some cases, it may be necessary to only run the compressor for a few days or few weeks for a successful renovation. If it is necessary to leave a compressor running continuously, a small linear compressor that draws only 2 amps is most cost-effective. Contact Orenco Systems, Inc. or its representative for more information on operating air manifolds. After the sand is renovated, be sure to fix the cause. If poor quality sand was the culprit, removal and replacement of the upper 12" of sand will be required.

Maintenance

Next, the residual pressure ("squirt") test that follows should be used to ascertain whether the distribution orifices are clear. A 10 foot long, 3/4 inch diameter, clear PVC pipe with a male adapter glued to one end is necessary to perform these steps accurately.

1. Screw the clear PVC pipe to the end of one of the flushing valves. Maintain the clear pipe in a vertical position. Letting the pipe fall unsupported to the ground may damage the flushing assembly.
2. Open the flushing valve. Have someone turn the pump on. Note: If this test is being done by only one person, turn the pump on before Step 1.
3. Using a tape measure, measure the distance from the bottom of the flushing elbow to the top of the liquid surface in the clear pipe. This measured distance is called the "squirt" height or system residual head.
4. Turn off the pump. Close the flushing valve. Unscrew the clear pipe. Note: If this test is being done by one person, first shut off the flushing valve, then slowly unscrew the clear pipe and allow the effluent in the clear pipe to flow into the flushing valve box before turning off the pump.
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The "squirt" test should be performed once more to ensure the cleaning was successful.

Maintenance

Troubleshooting chart

The following troubleshooting chart describes most of the common problems found in ISF systems.

Problem	Cause	Solution
Infrequent short duration alarms	Excessive water usage from too many loads of laundry done at once, large parties, leaving a water fixture running	Spread laundry loads out over the day or several days. Occasional parties will not harm the system–the alarm simply alerts the user that the system is getting more water than it is designed to handle on a regular basis.
Frequent short duration alarms (every day or almost every day)	Water usage beyond what the system is designed to handle	Reduce water usage. Check for leaking plumbing such as faucets and toilets. Check for possible infiltration into septic tank.
	PT not set properly to handle acceptable daily flow.	Reset PT to acceptable range.
	Top two floats set too close to one another.	Reposition floats to correct settings.
	Screened Vault filter clogged	Clean Screened Vault
Short duration alarms only during storms or very wet periods	Infiltration from leaky septic tank, plumbing, or stormwater connections.	Find and fix leaks. Unhook undesirable connections.
Continuous high water alarm		
Continuous low level alarm		

Maintenance

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Continuous high water alarm		
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Appendix A

Appendix B

Appendix A

Appendix C