

Enviro-Flo

Wastewater Treatment Systems Installation & Owners Manual



Class I Wastewater Treatment Systems
500/550/600/750/1000/1500 Gallon Per Day Capacity
Commercial and Residential Systems

The Environmentally Friendly Alternative For Wastewater Treatment

ENVIRO-FLO Inc.
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Waste and Sewers: Where and how to dispose of waste and sewage have been the bane of Man since the beginnings of time.

While early on he recognized the value of camping downstream to let "running water take its course," the problem of disposal became acute as populations proliferated and banded together.

Aristotle instructed his prize pupil, Alexander the Great, to make sure that dung from animals, human waste, etc., was disposed of far from camp. Predating his words by about 3,000 years is the Old Testament injunction that stated: *Thou shalt have a place also without the camp, whither thou shalt go forth abroad. And thou shalt have a paddle upon thy weapon; and it shall be when though silt ease thyself abroad, thou shalt dig where-with, and shall turn back and cover that which comets from thee.* (Deuteronomy 23)

The first sewers of Rome were built between 800 B.C. and 735 B.C., preceding the first aqueduct by about 500 years. Called the Cloaca Maxima, this sewer is one of the largest of the ancient sewers still in use. It was designed to carry off the surface water, and otherwise provide drainage for the entire city.

It was said that every street emptied into a channel of the sewer. However, only a few privileged patricians or noblemen had outlets to their houses. These were but extensions to their latrines located adjacent to their kitchens. As the untrapped ends of the sewer were the only sources of ventilation that the sewers had, noxious fumes expelled into the immediate area and wafted about.

By 14th century England, the problem was still unsolved. Culled from an old record, one reads "the refuse from the king's kitchen had long run through the Great Hall in an open channel, to the serious injury to health and danger to life of those congregated at court."

Further complications resulted from medieval privies or the euphemistic "garde robes" (wardrobes for undressing) located in the "Great House" or castle. The chamber would be in a small vaulted room about 3' wide with a narrow window. The privy was built within the wall, with a vertical shaft below a stone for a wooden seat. The waste would discharge into the moat below. If there were no water, the receptacle might be a barrel or a pit. In either case, it was a deadly chore to rake the offal. The job paid top wages for brave but desperate men needing to work. Crews of 13 men were paid three times the normal rate to clean the pit at Newgate Jail in 1281. It took them five nights.

Underground channeling was a haphazard arrangement as well. Drain tiles, constructed from the "roughest brickwork" or masonry, were 12' in cross section, made by laying flat stones to form the bottom of the din. Then brick walls built up, and topped with flat stones.

The drains were built helter-skelter with no understanding of purpose. Some would be too big or too small, or running uphill or at right angles, etc.

The possibility of disease being transmitted through water and waste began to chip through centuries of ignorance. Scientific discoveries began to unfold. Some would even believe that an open cesspool was "the probable cause of headache, sore throat and depressed health to many a cook, kitchen maid and butler, and perhaps indirectly leads, in not a few instances, to the use of those treacherous self-prescribed medicines such as spirits and beer."

MISSION STATEMENT

The environment was created to support life on land and in the water. Careless efforts by mankind has nearly destroyed what once was a stable ecosystem. Science has made evident the disease and destruction that untreated sewer can cause in soil and water. Diseases caused by sewer have proved to be devastating and sometimes deadly. Our marine life has began to suffer tremendously due to commercial and residential waste and pollution. Whether a small drainage ditch or the mighty oceans, it is everyone's responsibility to protect and conserve the planet for life in the future. It is our mission to lead and direct others to the conscious reality of the effects untreated wastewater has on our society.

Process Description

The Enviro-Flo Wastewater Treatment System is designed for treating domestic wastewater generated by normal household activities. The system consist of a single tank dual extended aeration activated sludge. The system is capable of producing an effluent which meets or exceeds applicable state discharge standards. This system has been successfully tested in accordance with National Sanitation Foundation (NSF) Standard 40.

Wastewater from the home flows into the pre-treatment aeration zone of the system. Here, Oxygen supplied by the aerator along with organic matter in the waste create an ideal environment for the growth of aerobic microbes. The organisms begin to break down and convert the waste into gasses and additional microbes. The partially broken down waste then enters the treatment area, or the second aeration chamber. In the treatment area waste is continually exposed to microbes for the remainder of the treatment process. The action of the aerobic microbes result in a lower concentration of pathogenic bacteria.

After sufficient time in the aeration zone, the mixture enters the clarifiers where calm conditions enable separation of microbes, solids, and treated wastewater. The microbes that settle out of water are returned to the aeration chambers where they are again beneficial in treating wastewater.

The result of aeration and quiescent separation is an effluent that is clear and odorless which may be discharged according to local health regulations.

Enviro-Flo

Individual Home Wastewater Treatment System

The Enviro-Flo system is uniquely designed based on modern concepts. This system has been tested at a NSF certified lab. It has undergone strenuous testing meeting ANSI/NSF standard 40 requirements and is approved throughout the United States.

The Enviro-Flo Model Sizes 500, 550, 600, 750, 1000, 1500

The Enviro-Flo 500 gpd consist of three compartments. They are: 1) pretreatment post air compartment, 2) aeration compartment, and 3) clarification compartment.

Pretreatment Post Air Compartment

The pretreatment post air compartment is the first stage of the treatment system. Wastewater from the household enters this compartment where air is introduced and the promotion of aerobic microbes begins. This compartment is also designed to hold back inorganic material from the aeration compartment.

Aeration Compartment

In the aeration compartment wastewater enters through a three inch collar. The aeration compartment is designed to set the right environment for aerobic microbes to grow by having air pumped in by an aerator. The air is diffused by low pressure diffusers. This process promotes the growth of aerobic microbes which break-down organic solids in wastewater and promote further microbe growth.

Clarifier Compartment

Wastewater from the aeration chamber seeps into the clarifier from the bottom of the tank. In this system the clarifier is referred to as the still zone. In the clarifier there are no mixing of solids and wastewater. Solids are settled and diverted from the clarifier and returned to the aerator chamber for further treatment. Water, after separation, is filtered through a clarifier tee assembly and discharged as local laws allow.

Data Plates

The following data plates should be located on the aerator and audio/visual alarm:



Do Not Oil Compressor

Remove top & filter

Wash every six months or as needed
ENVIRO-FLO SEWAGE TREATMENT
VOLT 115, 60HZ, WATT 25, 500 CLASS I
FOR SERVICE CALL 1-877-8ENVIRO
MODEL E500 E550
SERIAL E

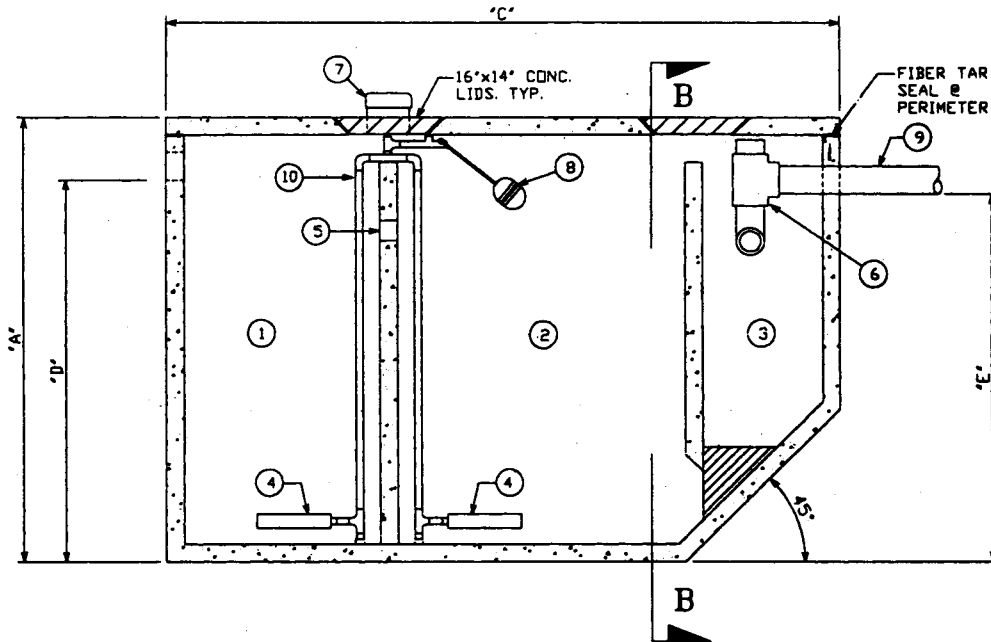


ENVIRO-FLO, INC.
Sewage Treatment Systems
P. O. Box 321161
Flowood, MS 39232
1-877-8ENVIRO
Alarm-Aerobic
Sewage Tank malfunction

Enviro-Flo Components

2 - Air Diffusers	# 4
1 - High Water Float	# 8
3 - 1" Elbows	# 10
1 - 4" or 6" PVC Cap	# 7
1 - Audio/Visual Alarm	*
1 - Blower Alarm Connector	*
1 - Clarifier Tee Assembly	# 6
1 - Linear Blower	*

NOTE:
TANK CONSTRUCTED OF 2 1/2" THICK,
3000 PSI STEEL REINFORCED CONCRETE.
OR 14ga. CARBON STEEL, ASPHALT COATED.



TANK SECTION A - A

Plant Installation Instructions

1. Read equipment parts list provided in owner's manual and verify that all required parts are on site.
2. Decide on an appropriate location for the plant which is accessible to the home sewer outlet. Excavate a site which is approximately 1 foot larger than the treatment plant that will allow proper coverage of the system. The building sewer outlet will determine the depth of the plant. Make sure you have a smooth level surface for the base of the unit. The linear blower should be no more than fifty (50) feet away from the plant and in a well ventilated area.
3. Place the unit into the excavated site. Carefully backfill around the unit compacting the soil as well as possible, leaving the inlet and outlet holes open for connections. Connect the influent end to the building sewer outlet. Connect the appropriate discharge to the effluent end of the plant. Inlet and outlet pipes should extend three (3) inches inside the unit.

4. Connect the clarifier tee to the effluent pipe inside the unit making sure that it is in the level vertical position.
5. Place one (1) pre-assembled air diffuser bar approximately three (3) inches from the rear edge of the pre-treatment chamber, the 2nd should be placed approximately three (3) inches from the front edge of the treatment chamber. Both diffusers should relax on the base of the unit, without stress to the fittings.
6. Install the blower in a dry location no more than fifty (50) feet away from the unit. Connect one (1) inch PVC from the blower to the air diffusers, making sure that the pipe is stable and resting on the excavated surface.
7. Install electrical components in accordance with local electrical codes, in a dry place.
8. Fill the unit to the level of the effluent discharge. Turn on all electrical components and verify that there are no leaks, air or water, throughout the system. If a leak is detected, repair and retest. Carefully backfill the excavated site and visually inspect all above ground connections.

Treatment Plant Start-Up

Initially the Enviro-Flo system is filled with clean water, usually from the homeowner's water supply. As stated in the installation instructions, once all the proper connections have been completed and it is filled with water, the aerator is turned on. The system is now in operation.

For the treatment plant to become biologically stable, it will take from four to sixteen weeks after first using the system to establish a population growth of microbes. It is microbes which make the system operate properly.

Maintenance Schedule

The Enviro-Flo system can be operated and maintained with a minimum amount of problems, if the following procedures are performed on a regular basis.

1. Visually check high water alarm for visual or audible warnings. If a warning is detected call your local representative for service.
2. Check components for buildup such as ant beds. Keep all components and risers free and clear of any foreign materials.
3. It is recommended that solid removal take place at least once every three to five years depending on sewage usage.
4. Remove filter element from aerator and clean once every six months, unless buildup has occurred which would require immediate cleaning.
5. Check for rotten egg odor which would signify improper treatment of wastewater. If detected call your service representative.
6. If required check and adjust disinfectant as required.

Specifications

Designation	Enviro-Flo 500 gpd, single family residential wastewater treatment system
Treatment capacity/class	500 gallons per day class 1
BOD Loading	500 gpd 1-1.5 lbs/day
Electrical requirements	115 volts 50/60
Aerator	Linear blower

Components and Materials

Tank	3000 psi concrete or 14 gauge carbon steel asphalt coated
Riser	Six inch PVC
Air pump	Linear blower
Electrical alarm and sensor	High water audible/visual

Operating Instructions

Once installed, the blower will run twenty-four hours a day, the system will operate with a minimal amount of attention. To ensure proper operation and minimize maintenance, the following materials should not be permitted to enter the system:

1. Strong disinfectants or bleaches except in moderation such as cleaning and normal laundry, be conservative.
2. Oils, grease, and chemical waste.
3. Discharge from water softeners.
4. Disposable diapers, condoms, tampons, cigarette butts, etc.
5. Items that are high in phosphates such as certain laundry detergents and dish washing soaps.

Service Policy

The purchase price for the system includes an initial two year service policy which includes all service calls as needed due to equipment failures or manufacturer defects. These service calls will be made by the dealer or his authorized representatives and shall include the following:

1. Servicing the aerator, including replacement or cleaning of the inlet filter if necessary.
2. The unit is to be inspected every six months during the initial two year service policy. Servicing should include a check of the aerator filter, proper air flow, inspection of all electrical components, and effluent quality.
3. Immediate notification of the owner in writing of any improper operation and remedies used. The manufacturer shall notify owner with an estimated date for correction.

Post Warranty

A continuing service policy is available from dealers to system owners whose initial service policy is due to expire. Notify dealer for price and details.

Warranty Registration

It is not required to register your warranty. Representatives will be responsible for all warranty information. If you wish to register your warranty please call ENVIRO-FLO, Inc. directly, and your information will be processed.

Trouble Shooting

System has offensive odor:

Check list and assure that no chemicals listed have been permitted to enter the system. Check for proper operation of the aerator including a restricted filter. Check for standing effluent that fails to run off, it is possible for standing effluent to become stagnant. Check to see if system has been pumped within the last five years. Check water level in system to insure that level is not above the system baffle allowing solids to enter the clarifier chamber.

Aerator is not working:

Check for proper wiring and connections. Check circuit breakers for failure. If the prior remedies are not sufficient replacement might be necessary.

System is not aerating:

Check aerator for operation. Check aerator filter element for restrictions. Check air lines and diffusers for proper connections or restrictions.

System is not flowing properly:

Check discharge point for restrictions. Check clarifier assembly for restrictions, this may be accomplished through the rear access port. If applicable check chlorinator for restrictions. Check system for non biodegradable items, if found system will need to be pumped for proper operation in the future.

Soil around system is settling:

Settling is normal following installation. If settling occurs years after installation have the system checked for structural integrity and correct if necessary.

Audible/visual alarm sounds:

Check water level. Verify that aerator is functioning. Check for dislocated air lines. If all appears normal alarm may need to be replaced.

Aerator is loud:

Linear compressors are made to function quietly. If the following remedies do not correct the problem the aerator may need to be replaced. Check for vibrations against solid structures. Check filter cover for proper torque.

Owner's Responsibilities

It is the owner's responsibility to operate the Enviro-Flo system to the best of their ability. To ensure proper operation the following precautions should be noted:

1. Never allow unapproved items to enter the system.
2. Do not allow nest buildup around aerator or other components.
3. Maintain grass and shrubs around system.
4. Restrict automotive travel over treatment system.

Limited Warranty

ENVIRO-FLO Inc. warrants the parts in each treatment process/system to be free from defects in material and workmanship for a period of three (3) years from the date of installation treating residential wastewater. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply. Sole obligation under this warranty is as follows: ENVIRO-FLO Inc. shall fulfill this warranty by repairing or exchanging any component F.O.B. factory, that in ENVIRO-FLO Inc.'s judgment shows evidence of defects, provided said component has been paid for and is returned through an authorized dealer, transportation pre-paid. The warrantee must also specify the nature of the defect to the manufacturer.

The warranty does not cover treatment process/system that have been flooded, by external means, or that have been disassembled by unauthorized persons, improperly installed, subjected to external damage, or damage due to altered or improper wiring or overload protection.

This warranty applies only to treatment process/system and does not include any residential wiring, plumbing, drainage, or disposal system. ENVIRO-FLO Inc. is not responsible for any delay or damage caused by defective components or materials, for loss incurred because of interruption of service, or for any other special or consequential damages or incidental expenses arising from the manufacture, sale, or use of this process/system.

ENVIRO-FLO Inc. reserves the right to revise, change, or modify the construction and design of the treatment process/system for residential wastewater or any component or parts thereof without incurring any obligation to make such changes in previously sold equipment. ENVIRO-FLO Inc. also reserves the right, in making replacements of components under this warranty, to furnish a component which, in its judgement, is equivalent to the part replaced.

Under no circumstances will ENVIRO-FLO Inc. be responsible to the warrantee for any other direct or consequential damages, including but not limited to lost profits, lost income, labor charges, delays in production, and/or idle production, which result from defects in material and/or workmanship of the system. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty is expressly in lieu of any other expressed or implied warranty, excluding any warranty of merchantability or fitness, and of any other obligation on the part of ENVIRO-FLO Inc.

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

Periods of Non-Use

The Enviro-Flo has been tested for short periods of non-use, but aerobic treatment units require organic matter to be introduced periodically to function properly. If circumstances occur where the unit will not be used for long periods of time, bioremediation is recommended to seed the system before functional use begins again. Please consult your representative for proper procedures.

Contact Information

If service is required it is advisable to contact your nearest Enviro-Flo representative. If service is unavailable refer to the system data plates located on the aerator, audio/visual alarm, and under the system access port for contact information. The data plates contain manufacture information including telephone numbers and address. Have your model number and serial number on hand at the time of your call. The serial and model number can also be located on the data plates.

Enviro-Flo Components

While all components are durable, it is recommended that care be used when unpacking the components. Always open box in an upright position to avoid dumping of components. Visually inspect all components for breakage and notify ENVIRO-FLO Inc. for replacements if damage is present. **Never install damaged components!**

A Word of Thanks

Once again ENVIRO-FLO Inc. would like to extend a word of thanks for your recent purchase. It is our hopes that our product will provide you with many years of satisfactory service. You have helped us take one more step towards a cleaner environment and waste free waters. At Enviro-Flo we will continue to work hard for you and strive to make business an enjoyable experience. **Thanks and God bless.**

“For God so loved the world that he gave his only begotten son that whosoever believeth in Him shall not perish, but have everlasting life.”

JOHN 3:16