DF SERIES

distributed in Oregon by:

Aerobic Septic Systems

for information on sales or service:

Randy Arts (541) 580-4100 or Mike Arts (541) 580-4102

AerobicSepticSystems.com
Principle Components of a System

- DF Series aerobic treatment unit
- Delta effluent pump station or State approved pump filter vault
- Pump control panel with alarms
- Delta air compressor(s)
General Operation of DF Series

- Raw wastewater enters the primary septic tank
- Primary treated wastewater either gravity flows or is pumped to the DF Series unit
- Aerobic microorganisms oxidizes the organic matter
- Organic matter is converted to water and carbon dioxide creating mixed liquor and suspended solids (MLSS)
- MLSS separate in the clarifier, the clear water exits the treatment unit and the remaining MLSS settles and returns to the aeration chamber
- Secondary treated wastewater gravity flows or is pumped to the drain field depending on the required configuration
Delta’s DF Series Flow Diagram

Plan View
(with cover removed)

Air In
Sewage In
Effluent Out

Grade Elev.

Air In
Sewage In
Effluent Out

Clear Water Zone

Clarifier

Aeration Chamber
Dirty Water Zone
Why Choose Delta?

- **Initial 2 year maintenance contract included** – Maintained by factory trained, licensed service providers.

- **No mandatory phone line**

- **Simple by design = less maintenance** - Treatment process is not overly complex, simple to service, less expensive to maintain.

- **Different sizes available** – 500, 600, 1000 & 1500 gpd.

- **Fast installation** – Durable fiberglass construction, quick setup, easy to haul and handle

- **Proven process** - Same basic principle used in many municipal plants

- **Versatility** - Multiple configurations allow for most possible system design

- **Replaces class 1 sand filters** - New construction or repair (w/o replacing existing septic tank if approved)
Three Approved Installation Configurations*

- Achieves ATT malfunction prevention compliance
- Allows for best configuration per site requirements

*DF100 & 150 only available in configurations 2 & 3
Configuration 1

- State approved septic/primary tank
- DF Series Whitewater unit with Delta air compressor
- Delta effluent pump station
- Pump control panel with alarm
**Configuration 1**

*NOTE: ALL EXTERIOR PIPE SIZE AS PER OREGON REQUIREMENTS*
*NOTE: THE VOLUME OF THE SEPTIC TANK WILL BE AS REQUIRED IN OAR 340-471-220(3)*
Configuration 2

- State approved septic/primary tank
- State approved pump filter vault
- DF Series Whitewater unit with Delta air compressor(s)
- Pump control panel with alarm
Configuration 2

*NOTE: THE VOLUME OF THE SEPTIC TANK WILL BE AS REQUIRED ON OAR 340-071-220 (3)
*NOTE: ALL EXTERIOR PIPE SIZE AS PER OREGON REQUIREMENTS
Configuration 3

- State approved septic/primary tank
- DF Series Whitewater unit with Delta air compressor(s)
- State approved dosing tank
- Effluent pump
- Pump control panel with alarm
Configuration 3

*NOTE: ALL EXTERIOR PIPE SIZE AS PER OREGON REQUIREMENTS
*NOTE: THE VOLUME OF THE DOSING TANK WILL BE AS REQUIRED IN OAR 340-071-220(6)
*NOTE: THE VOLUME OF THE SEPTIC TANK WILL BE AS REQUIRED IN OAR 340-071-220(3)
Basic Installation notes

- Maximum burial depth is two feet from tank flange to surface. (12” above riser)

- These systems will need to be preceded by a septic tank approved for use in Oregon - OAR 340-071-220 (3)

- Dosing tank (if used) must be approved for use in Oregon - OAR 340-071-220(6)

- Anti-buoyancy is provided by design thru vertical wall sidewall friction.
Basic Installation

1. Excavate a hole that allows one foot clearance on all sides of the tank (if space allows) and a depth that will allow approximately 3 inches of the lid to extend above normal ground level. Bed the bottom with a 6 inch layer of sand or gravel if otherwise unable to provide a smooth, level, compact base with native soil.

2. Using the lifting lugs provided, place the unit in the hole. The inlet line from the septic tank can be level with the unit (with minimal fall if necessary). The outlet line should be level with the pump chamber or dosing tank in configurations 1 and 3. The outlet line should slope away from the plant as necessary (a minimum of 1%) in configuration 2. The plant should be level within 1 inch, edge to edge.
Basic Installation Cont.

3. Open lid and make sure discharge tee assembly is level and centered in clarifier prior to attaching discharge piping. **Fill the tank with water** up to the discharge before backfilling. Back fill around the treatment plant up to the bottom of the discharge connections.

4. Do not install the air compressor in a low lying area where water may accumulate. The air compressor should be installed near the control panel and within 100 ft. of the tank. The compressor should be installed outdoors in a accessible location in provided enclosure.

*If the air compressor is to be installed in an alternative enclosure, the enclosure must be approved by Delta in writing.*
5. Mount the control panel in an area so the alarm can be heard and be readily seen*. A 20 amp, 3-wire grounded circuit is required. Install a physical disconnect switch near the control panel if the circuit breaker is not easily accessible. All electrical work shall be done according to NEC and local code requirements.

>The control panel must be grounded<

*The visual alarm must be conspicuous at a distance of 50 feet and audible alarm must be discernable at a distance of 50 feet.

6. Attach the control panel to secure mounting surface using flange on box. Do not place it where it can be immersed in rising water or where run-off water, such as from a roof, will pour on it. Do not mount it where it is subject to wetting from sprinklers, hoses, etc.
Basic Installation Cont.

7. After the control panel is properly mounted, connect conduit for wiring as shown on drawings.

8. Keep sufficient distance between air and electrical lines to avoid confusion of pipes or damage to wiring during installation or repair of air piping.

9. Connect the clear pressure air tubing from the control panel to the compressor or delivery line.

10. Install 3/4" schedule 40 PVC piping between air pump and treatment unit. A minimum of 12" ground cover is recommended.

11. Turn on power to control panel. Air compressor should start.
Basic Installation Cont.

12. Check air piping joints for leakage using a soapy water solution. Repair if necessary and then carefully compact bedding under air line, inlet and discharge piping to minimize settling.

13. Test low air alarm circuit by disconnecting clear air tubing from compressor or feed line, alarm should sound in a few seconds. Reconnect air tubing, press reset and alarm should stop. Lift float in Whitewater unit to horizontal position, alarm should sound. Release float, press reset and alarm should stop. Repeat procedure with top float in pump chamber if present.

14. Plant is ready to receive incoming sewage. No special start-up procedures are required. The process is naturally occurring and does not require any special additives.
15. In the event that a fuse blows, replace with time delay or slow blow, 125 volt minimum voltage rating and the same amp rating as the existing fuse.

16. Check for air discharge into unit, should be obvious gurgling sound.

17. Spend some time to educate your customer whenever possible. Review operation instructions. Be sure that the customer has a manual to keep. This saves valuable time and helps eliminate return visits.

18. Retain these instructions for future reference.
Ready for inspection

- Fill unit with water to outlet.
- Check level. Make sure there has been no settlement.
- Backfill with suitable material. Leave all piping exposed to view.
- Have electrical hookup completed. (temp. power if necessary).
- Start system and listen at vent for heavy gurgling sound.
- Activate alarms – low pressure and both high waters.
Delta’s Control Panel Features

- Upon air compressor failure or high water alarm status controller will lock out influent or effluent pump operation
- Pump lock out feature will stay locked out until reset
- Alarm lights and audible alarms will indicate which failure is occurring
- Visual and audible signals are noticeable at 50 feet
- Audible is between 70 and 90 dba at 5 feet
- Visual and audible signals are separate from mechanical functions and remain activated during malfunctions except when there is loss of electrical service
- A visual label with instructions for obtaining service will be attached to control panel
Delta’s Effluent Pump Station

Installation

The basin is plastic pipe with sealed fiberglass bottom and optional anti-floatation concrete ring for high water conditions. Do not leave basin in unfilled hole without being filled with water or concrete ring installed as ground water may float basin upwards breaking connections. A 24”w x 4” thick concrete base is recommended for these conditions.

Electrical Assembly

Install junction box snug to inside of basin to maximize access to other components. Install at a high enough elevation to allow reasonable access for installation and service. Connect pump and float wires with waterproof connectors. Run wires to control panel in conduit using wiring diagram included in control panel.

Starting System

Open ball valve, fill basin until “ON” float (second from top) is level and starts pump. The pump should operate until the “OFF” float (third from top) is level.
Basic Service

- Remove vent, smell for obnoxious odor.
- Sample mixed liquor suspended solids (MLSS), place in clear quart jar.
- Clean the compressor lid & filter, check general condition & area for pest invasion.
- Open lid, break up any scum mat, wash sides of clarifying cone.
- Check settle ability sample, dump back in system, replace vent cap & lid.
**SOLIDS REMOVAL**

- The **Whitewater® Treatment System** is designed to provide years of trouble free operation.
- Determination of the need for solids removal can be done through a simple test. A one quart sample should be pulled from the aeration tank and can be done so through the 4" sample port/vent. Allow the sample to settle in a clear one quart jar for thirty minutes. If the solids content exceeds 50% of the total volume after settling, the treatment plant should be pumped out. Call your local authorized sewage disposal service to have the tank contents pumped out and disposed of properly.
- The method of pumping out should be as follows:
  - Remove any floating solids by skimming.
  - The air pump must be operating to keep the solids in suspension.
  - Pump out two thirds of the tank volume with the suction pipe opening being placed at the tank bottom.
- After the pump-out process is complete, fill the tank with fresh water to normal operating level.
- Refer to the Installation Instructions to get the treatment plant back into operation.
- Should indication of improper operation be observed at any point in time, contact your local distributor.
- **NOTE: THE COST ASSOCIATED WITH PUMPING THE TREATMENT SYSTEM IS NOT COVERED UNDER WARRANTY AND IS NOT INCLUDED IN THE SERVICE POLICY.**
DELTA ENVIRONMENTAL PRODUCTS
PUMP OUT PROCEDURE

1. Determine the amount of MLSS by using a "Sludge Judge" type sampler through the 4" vent/sample port riser.

2. Leave the air compressor for the ATU running.

3. Insert vacuum hose into the main access riser. Skim off any floatable solids on the surface of the clarifier and lower to the bottom of the clarifier.

   **Caution:** Care must be taken not to damage the discharge tee assembly.

4. Pump out 80 to 90 percent of the ATU. Then remove the vacuum hose.

5. Insert a water hose into the main access riser. Wash down the clarifier walls and partially refill the ATU with clean water.

6. Repeat step 3 and refill the ATU with clean water.
   * Never leave tank empty.
   * Always use licensed pumpers/haulers for this task.
GENERAL COMMENTS

• Only factory approved equipment can be used for replacement on treatment system & components.

• If the decision is made to pump out a system, be sure to contact a licensed waste-hauler.

• If a chronic problem develops and all items have been checked, consult with the factory representative.

• Educate the consumer as much as possible, this will limit future frustration.

• Keep good records, pictures before and after help with locating possible problems.
Troubleshooting compressor alarm

1. Air compressor does not run:
   a. Check main service for power - reset breaker.
   b. Check fuse - replace with same rating.
   c. Check if GFCI outlet has tripped - reset

2. Alarm does not occur when air compressor is off:
   a. Malfunctioning pressure switch - replace.
   b. Malfunctioning light or buzzer - replace.

3. Alarm occurs continuously even when air compressor is running
   a. Air leak in main air system or air tubing to pressure switch - repair leak or replace air line.
   b. Malfunctioning pressure switch - replace.

NOTE: All replacement parts are available from your service provider.

CAUTION: Electrical shock or hazard may occur if unit is not serviced properly. The manufacturer recommends that a licensed electrician be called when electrical problems occur.
HOMEOWNER CARE AND OPERATION INSTRUCTIONS

The Whitewater® System has been designed and built to provide long term, reliable and efficient service. Once the unit has been installed, it will operate with a minimum amount of attention. Please reference the system’s Data Plates that are located on the aerobic tanks 24" cover, air pump, and the alarm panel in the event that a problem arises or service is required.

The following should be accomplished as checks for system failure:

**Daily** - Observe the control panel warning device, which comes on when the power to the air compressor has been interrupted, when the air supply system has malfunctioned or a high water situation has occurred. If the alarm is activated, check for a blown fuse or thrown circuit breaker.  

**Weekly** - Check air compressor for unusual noise, once accustomed to the soft humming sound of a properly operating unit, any unusual noise is an indication of malfunction. Check for any persistent obnoxious or “rotten egg” smell coming from the units vent.
HOMEOWNER CARE AND OPERATION cont.

If any of the problems develop in the daily or weekly sections contact your contract service provider.

*Twice a year* – (This will taken care of your contracted service provider) Inspect and make any necessary adjustments to mechanical and electrical components. Inspect effluent quality, color, and check for any odor. Take a sample from the aeration tank and perform a settle ability test described in the “Solids Removal” section. Break up any sludge that may have developed in the clarifier so it can return back to the aeration zone. Care should be taken to prevent solids from leaving the unit.

The homeowner must be notified in writing if any improper operation is observed and can not be corrected at the time of service.
ITEMS NOT PERMITTED IN THE SYSTEM

- Strong disinfectants or bleaches, other than small amounts normally utilized in day to day cleaning and laundry (be conservative). Laundry detergents recommended for use are low-sudsing, low phosphates and biodegradable.
- Discharge from water softener
- Any type of oils, greases, or other chemical wastes
- Disposable baby diapers and wipes
- Sanitary napkins, condoms or other similar items
- Hair, bandages, rags, or string
- Latex, plastic, or metallic objects
- Coffee grounds or cigarette butts
- Mud or sticks
- Paper towels, napkins, or Kleenex
- Tidy Bowl type products
- Beer waste or any other rich liquids
- Garbage disposal should be used sparingly, not as a method of disposing all solid food waste. In order to ensure good plant operation, waste should be disposed of in the garbage container.

The Whitewater® System is designed to handle domestic wastewater and nothing else should go into it. For anything other than domestic contact: Delta Environmental Products™
WARNINGS

The proper operation of this or any other home sewage system depends upon proper organic loading and the life of the microorganisms inside the system. Delta is not responsible for the in-field operation of a system, other than the mechanical and structural workings of the plant itself. We cannot control the amount of harsh chemicals or other harmful substances that may be discharged into the system by the occupants of a house hold we can only provide a comprehensive owner's manual that outlines substances that should be kept out of the system.

Hydraulic overloading (flows in excess of design flow) may cause the sewage treatment system not to perform to the fullest capabilities.

Ants have been shown to be destructive to the air compressor. Regular care should be taken to prevent infestation of ants near the system. Damage or destruction by ants is not covered under manufacturer's warranty.

Your State or Local Health department may require other pieces of equipment to function separately or in conjunction with equipment manufactured by Delta Environmental Products™. Delta Environmental Products™ is not responsible for the mechanical or electrical safety of equipment it does not manufacture or supply with its aerobic treatment units. Particular care should be used in evaluating the electrical or mechanical safety of equipment manufactured by others. This may include but not be limited to electrical control panels or air pumps.

If electrical service has not been installed for checking air distribution system during installation, and if an extension cord is used to test the air compressor, never leave the extension cord plugged in. Remove it after testing is completed.

Due to a possible fire hazard, DO NOT plug into service equipment on power pole and DO NOT use extension cords. All electrical work performed by the installer or others must be in accordance with the National Electrical Code and Local Codes.

The operation & maintenance outlined in this manual applies to normal operating conditions. Extreme conditions such as frigid cold temperature, extreme heat and high altitudes may effect the operation and maintenance of this unit. Consult Factory regarding these extreme conditions.
LIMITED WARRANTY

Delta Environmental Products, Inc. warrants the parts in each treatment system as follows: air pump: limited pro-rated five (5) years* – first two (2) years 100%, third (3) year 75%, fourth (4) year 50%, fifth (5) year, 25%; fiberglass tanks: limited ten (10) years, metal tanks: limited two (2) years, and concrete tanks: limited two (2) years. All warranty questions shall be resolved through Delta Environmental Products, Inc. The warranty on the treatment device is that the device is free from defects in material and workmanship from the date of installation treating household wastewater. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply. The sole obligation under this warranty is as follows: Delta Environmental Products, Inc. shall fulfill this warranty by repairing or exchanging any component part, F.O.B. factory that in Delta Environmental Products, Inc. judgment shows evidence of defects, provided said component part has been paid for and is returned through an authorized dealer, transportation prepaid. The warrantee must also specify the nature of the defect to the manufacturer.

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

This warranty applies only to the treatment process/device and does not include any of the house wiring, plumbing, drainage, or disposal system. Delta Environmental Products, Inc. is not responsible for any delay or damages caused by defective components or material, or for loss incurred because of interruption of service, or for any other special or consequential damage or expenses arising from the manufacture, sale or use of this process/device.
Delta Environmental Products, Inc. reserves the right to revise, change or modify the construction and design of the treatment process/device for household wastewater or any component part or parts thereof without incurring any obligation to make such changes or modifications in previously sold equipment. Delta Environmental Products, Inc. also reserves the right, in making replacements of component parts under this warranty, to furnish a component part which, in its judgment is equivalent to the part replaced.

Under no circumstances will Delta Environmental Products, 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 damages are caused by a defect in material and/or workmanship in its parts. Some states do not allow the exclusion of limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

The warranty is expressly in lieu of any other express or implied warranty, excluding any warranty of merchantability or fitness and of any other obligation on the part of Delta Environmental Products, Inc.

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

*The 3, 4, and 5 year pro-rated portion of this warranty is only valid with a continuing Service Policy in effect. Proof of this continuing Service Policy must be provided.*