



# HOOT SYSTEMS, LLC.

[www.hootsystems.com](http://www.hootsystems.com)

2885 Highway 14 E. Lake Charles, LA 70607 (888) 878-HOOT [www.hootsystems.com](http://www.hootsystems.com)

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## Homeowners Manual for the H-Series IPA & EPA NPDES Systems for Ohio

This manual covers the H-500-NPDES, H-750-NPDES and H-1000-NPDES Models

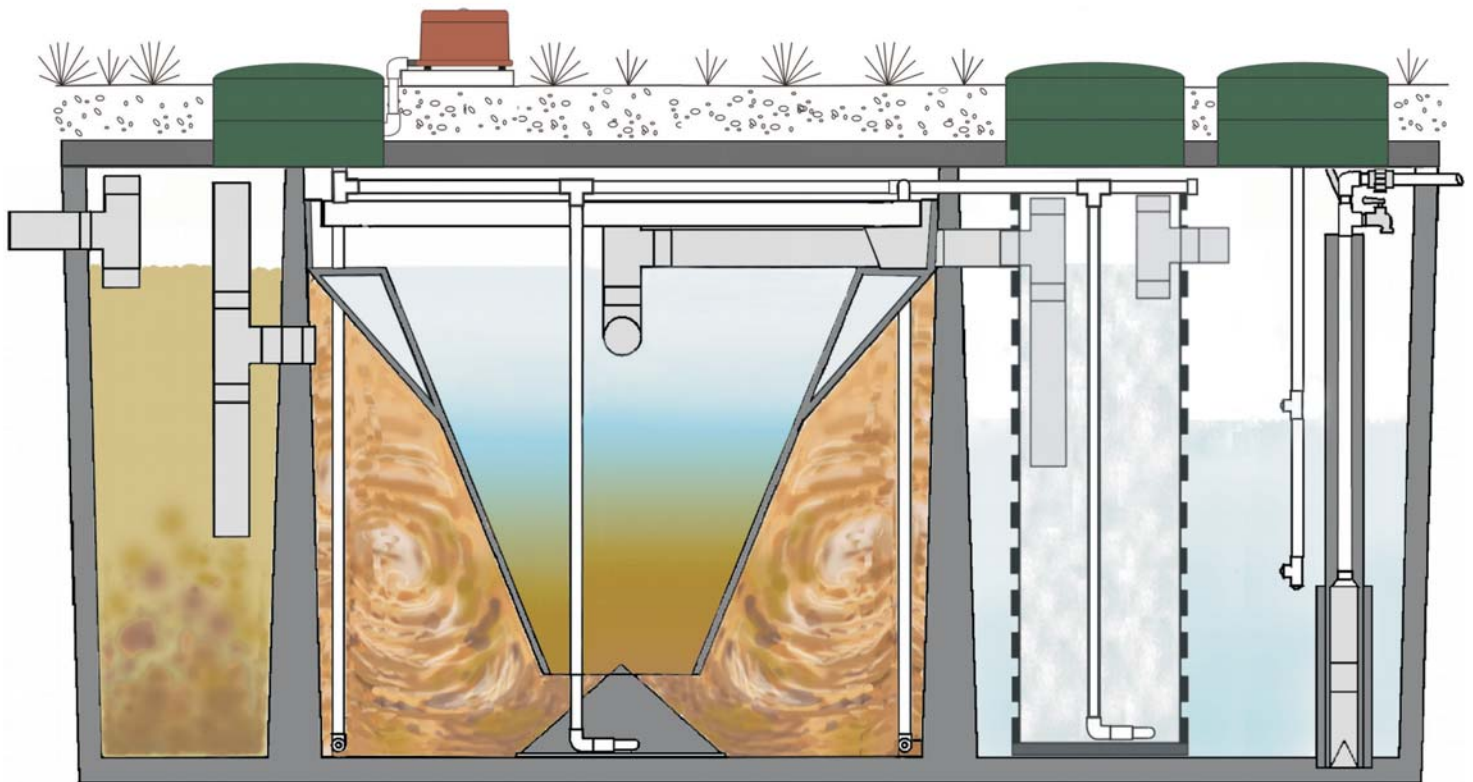


Certified to  
NSF/ANSI  
Standard 40



Onsite  
Monitoring  
Ready

This Product has been tested in accordance with the criteria set forth in the ANSI/NSF Standard 40 and is hereby certified as a Class I Aerobic Wastewater Treatment Plant.



**Hoot Systems - Working Today to Protect Tomorrows Environment**

# The HOOT Aerobic Treatment System

## Declaration of Warnings

**WARNING!** TO FUNCTION PROPERLY, THE HOOT SYSTEM MUST BE MAINTAINED BY A QUALIFIED PROFESSIONAL AT LEAST EVERY SIX (6) MONTHS FOR THE LIFE OF THE SYSTEM. FAILURE TO MAINTAIN THE HOOT SYSTEM VOIDS THE LIMITED WARRANTY AND MAY CAUSE SERIOUS BODILY INJURY OR ILLNESS TO PEOPLE AND PETS AND MAY CAUSE SERIOUS DAMAGE TO THE HOOT SYSTEM OR OTHER PROPERTY.

**DANGER!** ONLY A QUALIFIED PROFESSIONAL SHOULD ATTEMPT TO REPAIR OR FIX THE HOOT SYSTEM. ATTEMPTED REPAIR BY ANYONE OTHER THAN A QUALIFIED PROFESSIONAL MAY CAUSE SERIOUS BODILY INJURY OR DEATH TO THE HOMEOWNER OR OTHER PERSONS AND MAY CAUSE SERIOUS DAMAGE TO THE HOOT SYSTEM AND OTHER PROPERTY.

**DANGER!** DO NOT DISCONNECT THE POWER TO THE HOOT SYSTEM. DISCONNECTION OF THE POWER FROM THE SYSTEM MAY CAUSE SERIOUS ILLNESS OR DEATH TO THE HOMEOWNER AND OTHER PERSONS AND MAY CAUSE SERIOUS DAMAGE TO THE HOOT SYSTEM AND OTHER PROPERTY.

**WARNING!** IN CASE OF IMMINENT FLOOD, IMMEDIATELY TURN OFF THE ELECTRICAL POWER TO THE HOOT SYSTEM AT THE INDEPENDENT BREAKER LOCATED ON THE HOUSE. FAILURE TO TURN OFF THE ELECTRICAL POWER MAY CAUSE SERIOUS INJURY OR DEATH TO THE HOMEOWNER AND OTHER PERSONS AND MAY CAUSE SERIOUS DAMAGE TO THE HOOT SYSTEM AND OTHER PROPERTY.

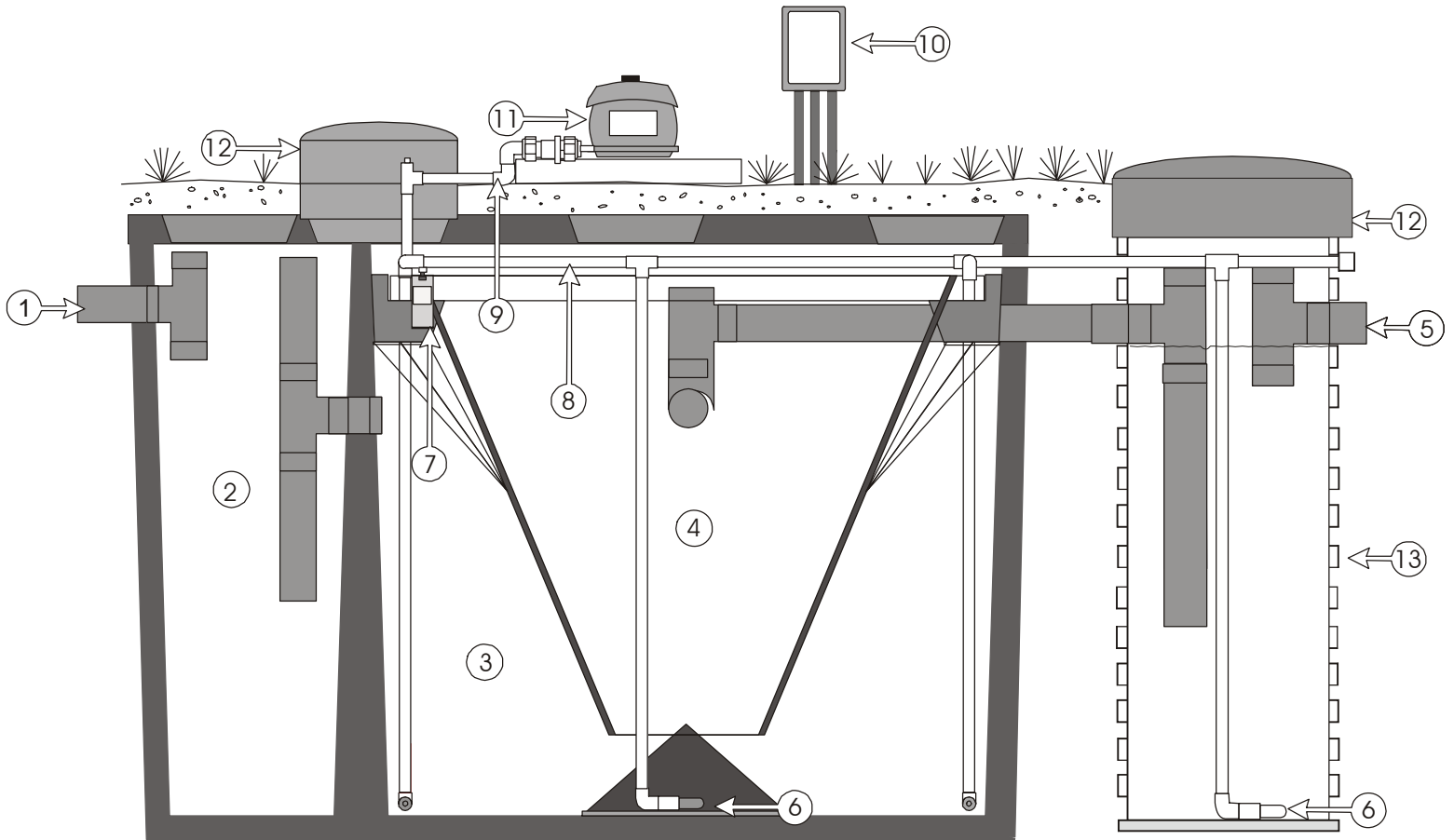
**WARNING!** IF THE UNIT FAILS TO FUNCTION PROPERLY, DO NOT USE THE BATHROOM FACILITIES UNTIL QUALIFIED PERSONNEL FIX THE PROBLEM. USE OF THE BATHROOM FACILITIES DURING A SYSTEM FAILURE MAY CAUSE SERIOUS INJURY, ILLNESS, OR DEATH TO PERSONS AND MAY CAUSE SERIOUS DAMAGE TO THE HOOT SYSTEM AND OTHER PROPERTY.

**WARNING!** DO NOT ALLOW CHILDREN TO PLAY ON OR AROUND THE AEROBIC TREATMENT SYSTEM, THE DRAINFIELD, OR OTHER OVER-LAND DISCHARGE AREA. ALLOWING CHILDREN TO PLAY IN THESE AREAS MAY CAUSE SERIOUS BODILY INJURY, ILLNESS, OR DEATH TO THE CHILDREN AND OTHER PERSONS AND MAY CAUSE DAMAGE TO THE HOOT SYSTEM AND OTHER PROPERTY.

**DANGER!** THE BLOWER AND CONTROLLER CONTAIN NO USER SERVICABLE PARTS. DO NOT OPEN CONTROL PANEL WITHOUT ELECTRICITY DISCONTINUED AND LOCKED OUT ON THE SYSTEM. FAILURE TO DO SO COULD CAUSE SEVERE INJURY OR DEATH.

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## The HOOT NPDES Treatment System Diagram

1. **Inlet:** How sewage enters the system
2. **Pretreatment Tank:** Or Trash Trap, for Settling and Floating of non liquid waste.
3. **Aeration Chamber:** Where Air is introduced to digest organic waste.
4. **Clarifier:** a still chamber where a clear, odorless, effluent rises.
5. **Outlet:** Where the treated effluent leaves the system.
6. **Diffuser:** How dissolved oxygen is added to the system.
7. **High Water Alarm:** Float that activates the high water alarm.
8. **Aeration Manifold:** How compressed air is delivered to the Diffusers.
9. **Air Line:** Delivers air to the aeration manifold and eventually the diffusers.
10. **Separate Alarm Panel:** Provides both High water, Compressor Failure alarms.  
Also houses the NSF Telemetry Controls.
11. **Linear Air Compressor:** Provides the compressed air to operate the system.
12. **At Grade Access Riser:** Provides access to the Pre-Treatment, Aeration and Clarifier chambers for servicing and pump out. Separate lid provides Access to the NPDES Post Aeration Chamber.
13. **IPA/EPA NPDES Post Aeration Chamber:** Contact chamber for Post Aeration. Includes an extra diffuser drop.

## **Tank Installation Instructions**

1. Check Tank dimensions section and prepared excavation approximately one foot larger than the tank all the way around - proper grade with smooth and level bottom. Be sure to check the dept of the excavation to the bottom of the inlet to ensure tank will be deep enough for your inlet to flow into the tank.
2. Check with local regulations regarding the bedding of the excavation with sand or pea gravel.
3. Fill out Installation and Delivery Tracking Form. Driver should not leave tank at jobsite until this filled out.
4. Delivery driver will place tank in hole - and confirm it is level within 1 inch from center of tank to any corner.
5. Begin filling the tank with water to perform water tight integrity test.
6. Bring in 4" Schedule 40 Pipe into the inlet end of tank through one or more openings to the Pre-Treatment Tank, and Schedule 40 4" line out to drainfield.
7. If regulations permit, fill between excavation walls and tank with a flowing material such as sand or non-compacted soil. (this makes working on the excavation safe) If regulations do not allow, then use care around the excavation area and fill immediately following inspection.
8. Bring required access ports to final grade.
9. Provide power to hook up the blower/alarm system.
10. Hook up blower plumbing - including sensor line to the Aeration Tee.
11. Place cover over aerator .
12. Power up system - it is ready to accept sewage.
13. Fill in Warranty Registration and Service Policy, and give to homeowner.

### **Additional instructions for IPA-NPDES Model**

14. In addition to filling Aeration chamber, fill Post Aeration Basin before Startup
- 15 . Hook up and Test Call NSF Dialer to ensure compliance with Telemetry Rule.

### **Additional instructions for EPA-NPDES Model**

14. In addition to filling Aeration chamber, fill Post Aeration Basin before startup
- 15 .Hook up and Test Call NSF Dialer to ensure compliance with Telemetry Rule.
16. Bring 1 1/4" airline from blower into Post Aeration Basin.
17. Bring 4" outlet pipe from system to Basin, from Basin to Drainfield
17. Basin Should be placed on a firm base of Pea Gravel to Prevent Settling and be
18. Backfill around Basin with Pea Gravel to provide weight to Neutral buoyancy of Post Aeration cell.

## **SPECIAL INSTRUCTIONS - PLEASE NOTE!**

The depth of cover is recommended to be a minimum of 6" inches and no greater than 30". Systems that need to be at deeper burial should be serviced through the use of a lift station. Soil used for backfill should be capable of flowing, be watered in or compacted to reduce settling.

A Pea Gravel or other compacted base is necessary for the EPA-NPDES Model. The NPDES Post Aeration Chamber needs to be at the proper depth to ensure equal diffuser operation over each drop in the tank and in the Post Aeration chamber. Backfill around the EPA-NPDES model should be done with Pea Gravel or other flowable material to allow for the "weighting" of the chamber to keep it in the ground.

The Blowers for the NPDES System contain a unique Model Series which is indicated by a Model Number of H-XXX-NPDES. XXX equals the gallons per day. An H-XXX without the NPDES after it may NOT be substituted for and NPDES Model of the same H-XXX or GPD rating.

For the system to be in compliance with the NPDES Permit, a permanent connection to a land phone line must be made for the lifetime of the system. The Telemetry system makes a call at least once per month to the data base to ensure that the phone line connection is made, however it is the responsibility of the service provider to ensure that this connection has been maintained during each service visit.

When the system is pumped out it must be refilled to stay in the ground. This is especially important with the Post Aeration Chamber. It must be immediately refilled to the outflow point and not left to fill up by use from the home. An Aeration Alarm will occur if this is not done as a reminder that the system has not been left in an operating condition.

The Post Aeration Basin is made of a double wall corrugated pipe of 18" internal diameter. Depth is indicated on the Engineering drawings. This basin is supplied by Hoot and may not be substituted without the written permission of Hoot. Watertight inlet and outlet seals are provided and the unit is suitable for use internally to, or externally from an attached or separate pump tank.

HOUSE WIRING MUST HAVE 20 AMP (30 AMP FOR SYSTEMS WITH A DISPOSAL PUMP) INDEPENDENT BREAKER AND MUST MEET NATIONAL - STATE - AND LOCAL REGULATIONS. INSTALLATION AND OPERATION MUST BE IN COMPLIANCE WITH STATE WATER REGULATIONS, COUNTY AND LOCAL PLUMBING AND ELECTRICAL CODES.

FAILURE TO COMPLY TO THE INSTRUCTIONS FOR THE INSTALLATION OF THE TANK AND THE SYSTEM CONTROLLER WILL VOID ANY AND ALL WARRANTIES PROVIDED BY HOOT AEROBIC SYSTEMS, INC., AND WILL PLACE THE BURDEN OF WARRANTY COVERAGE ON THE INSTALLER. FAILURE TO FOLLOW INSTALLATION INSTRUCTIONS PROPERLY MAY CAUSE SERIOUS INJURY, ILLNESS, OR DEATH TO PERSONS AND MAY CAUSE SERIOUS DAMAGE TO THE HOOT SYSTEM AND OTHER PROPERTY

# **HOOT Trouble Shooting Section**

## **Problems at Start Up or After Power Loss**

If **AERATION PROBLEM** occurs on Power up - Check Aerobic Chamber. The center tank should be full to the point where the pre-treatment tank is full and water flows into the pump tank. If it is not filled within 1 foot of the top in the Aeration tank, a **AERATION PROBLEM** will occur on start up. This occurs because there is not enough back pressure being developed, fill the tank and re-start. If there is still a problem, check air line for leaks, black line and compression fittings, check valve, and inside tank for a lose or broken diffuser line or blown out/broken stone.

## **Installer Self Test - All NPDES Systems**

This is a simple test designed to prevent you from needing to return because of a faulty installation. As you know, you install the finest product available, to ensure you get off to a good start with the system owner, go through the following test. Failure to follow these procedures will normally result in a SYSTEM ALARM within the first 12 hours of operation.

1. Confirm that the water level in the Aeration (Center) Tank is less than 12" from the lid of the tank.
2. Power up - connect power to unit, you will hear a short beep and all the alarm light will come on for a few seconds. If the system is full with water, then this should stop and normal operation will occur.
3. Check diffuser operation over each of the openings on the aeration chamber. If air is only coming out of one opening, then there is a missing or damaged stone. If no air is coming out, confirm check valve is in the right direction, then listen for air inside tank.
4. If enough air is being supplied, and there are no leaks, then you should continue to have operation. If not, and alarm will sound.
5. Test Telemetry System by making a call for service or generating an alarm condition. You must receive a visual confirmation by an e-mail or text message before the system is to be left in an operable condition. The phone system must be up and operable before this test can be made. Also, inform the homeowner that part of their NPDES Permit requires the permanent connection to and service of a Land Line Telephone.

## **To Create A High Water Alarm for Inspection**

To create a high water alarm for inspection purposes is a simple operation. Make sure system is on. Open the riser when the air line enters and locate the float that come in contact with the air line break. Depress the air line break. This will release the air and create an aeration alarm.

# System Operation and Maintenance

Every 6 months for the lifetime of the system the following need to be tested on each system.

**Check Blower**—The blower must be checked for proper operation, confirm that it is not running hot. Remove cover and clean the air filter by knocking off debris, then rinse with water, re-install. If blower is hot, check back pressure. If the back pressure in water column inches is greater than 100, then a **Stone Flush** is needed to bring the system back into performance range of :

60-70 for 500/600 GPD Systems

70-80 for 750 GPD Systems

75-90 for 1000 GPD Systems

(Items Needed: Pressure gauge that measures in water column inches.)

**Solids In Aeration Chamber**—Take sample using sludge judge from the aeration chamber while the blower is operating. Look at column as you withdraw it from the chamber. There should be a consistent color throughout the column. If it is not, and there are stratifications within the column there is a problem. Deliver the effluent to a graduated cylinder or a clear glass or jar. Let settle for 15 minutes. If the percentage of solids is more than 70% after 15 minutes, the tank should be pumped to reduce the potential for solids carry over.

(Items Needed: Sludge Judge, Graduated Cylinder or glass jar or bottle)

**Pump Tank Observation and Maintenance** is the most important part of your service visit. It can tell you in just a few seconds more information than any other part of the treatment system.

**Water Quality and Clarity** An observation of the water quality should be made upon arrival to the system. Pay attention to the time of day. Is it first thing in the morning and the pump tank is near the high point in the pump tank? Is there a constant stream of water into the system and no one appears to be home? A properly functioning system should have a non-offensive odor, normally described as musty

**Solids Carry over** observe the D-box for solids carry over. Floating debris is an indication of a system that may need to be pumped out, but further testing of the settleable solids level in the aeration chamber is the only way to tell for sure- See Above If the settleable solids level is within an acceptable range (below 70% after 15 minutes) then carry over can be for a multitude of other reasons, among these are: Surge flows into the system (from garden/Jacuzzi tubs or heavy washing days)



# Stone Flush Instructions

All Aerobic systems use microorganisms, present in human sewage, to degrade household waste. There are two types of systems, Fixed Media, and Suspended Growth. Fixed Media Systems have surfaces for the bacteria to grow on and the water either flows over or through them to break down the sewage. Suspended Growth systems, have the growth suspended in the tank, and the mixing process keeps it agitated. What none of us in the industry were aware of until recently was that all suspended growth systems start off as fixed media. The growth takes place on the walls of the tank, the hopper, drop lines, etc until there is so much on the walls that it can no longer hold on. Once it begins to "slough off" the sewage acts as an abrasive and causes it to all go into suspension and clear off of the walls of the tank.

Systems that are underused can take a long time to develop enough flock to go into suspension. Also, systems with little to no use, can grow algae, that will grow into its only available food source, the oxygen being provided by the aerator. This problem is worsened by high water temperatures. Systems with little or no cover will be more susceptible to the heat.

The Dead Head alarm goes off on our system when the pressure reaches 160 Water Column Inches in the tank. This indicates an air flow into the system so compromised that the system will fail to treat the sewage and turn septic. A properly functioning system should run between 56 and 65 for a 500 GPD system and 70 and 80 for a 1000 GPD. To read out the air pressure, put the system into the 3<sup>rd</sup> Beep mode (described in the Flash Codes Handout.) To enter this mode, restart the controller by depressing the Silence Alarm button for 16 seconds, release after the double beep and press again. Continue to hold and you will hear a single beep, followed 8 seconds later by one chirp, then two chirps, then three chirps release the switch. The controller will turn on the aeration problem lamp to indicate the air pressure test mode and chirp/flash the air pressure in inches of water. For example 65in/water 6 chirps pause 5 chirps long pause repeat. A zero is indicated by a beep instead of a chirp. For example 102in/water 1 chirp pause 1 beep pause 2 chirps long pause repeat. Ignore the first reading, it is inaccurate. If the pressure exceeds 100, then it is recommended to clean the stones to reduce the back pressure to the system. It will be necessary to use a Water Column Inch gauge if this is an old style controller.

In the past, the only way to reduce the pressure on the system was to change out the stones on the system. We have developed a method of cleaning the stones out, that is as effective as replacing the stones, and can be done from the top of the tank. The entire procedure will take less than 10 minutes and can be done during a regular scheduled service visit, particularly in the spring (before the hot weather) on under used systems.

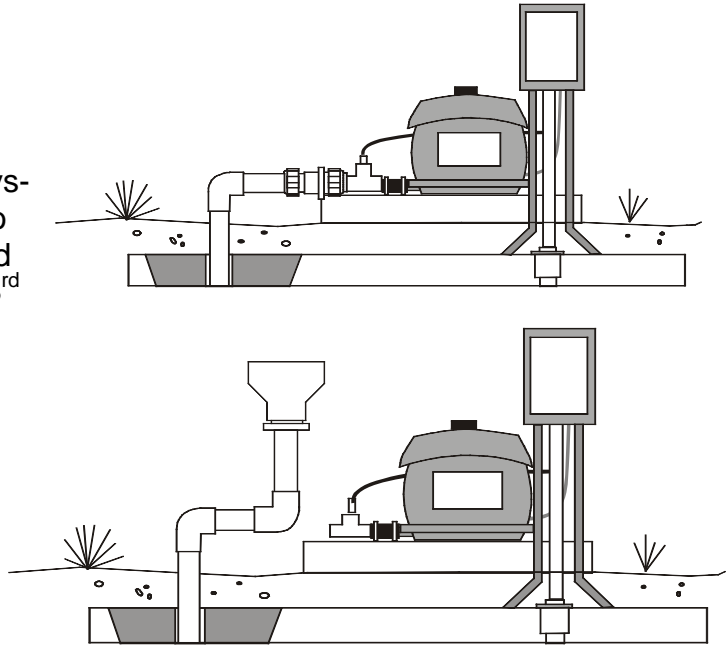
You need to make a solution that will cleanse all of the stones, so it is necessary to pour a large volume of solution down the aeration tubing all at once. A solution can be made in a five gallon bucket. Add 2 oz. of pH down or pH minus to 4 gallons of water. Always add the powder to the water, not water to the powder and mix.

To flush the stones it will be necessary to remove the check valve from the blower air assemble as pictured to the right. If you have a remotely mounted the system, it will be necessary to get next to the tank and cut the line right before it goes into the system. This procedure will not work if you are filling more than 4 feet of pipe outside the tank.

Slide on the funnel attachment pictured to the right. It can be made using a 1 1/4" 90, 1 foot of 1/4" pipe a 4" to 2" Reducer bushing and a 2" to 1 1/4" bushing. Pour the entire contents of the 5 gallon bucket into the funnel. When the funnel fills, wait for the level to go down, and fill again.

Prop up underneath the 90 so a trap formed is not formed. Another piece of pipe, or a shim of some type will do the trick. Empty the entire bucket into the system. Once it has completely drained into the system, re-install the check valve and power up the system, putting it into the 3<sup>rd</sup> mode - Aeration Pressure. The pressure should drop almost immediately to the 60 to 80 inch range.

Once it reaches that level, again disconnect the check valve, allowing the pipe to aging fill with water, and then re-connect the check valve and power up. This will move out any additional remaining solution.



Always use caution when using chemicals of any type. Use Caution to prevent contact with skin and clothing. Eye Protection and Gloves must be used when handling the chemicals or the solution. Do not mix with any other chemicals or solutions.

hth pH Minus is available at Wal-Mart and pool supply stores. pH Down is available at Home Depot. The product should contain at least a Sodium Bisulfate content of 90%.



®

# **HOOT AEROBIC TREATMENT SYSTEMS**

## **HOOT Aerobic Systems, Inc.**

2885 Highway 14 East Lake Charles, Louisiana 70607  
(337) 474-2804 phone (337) 477-7904 fax

# **Engineering Drawings**

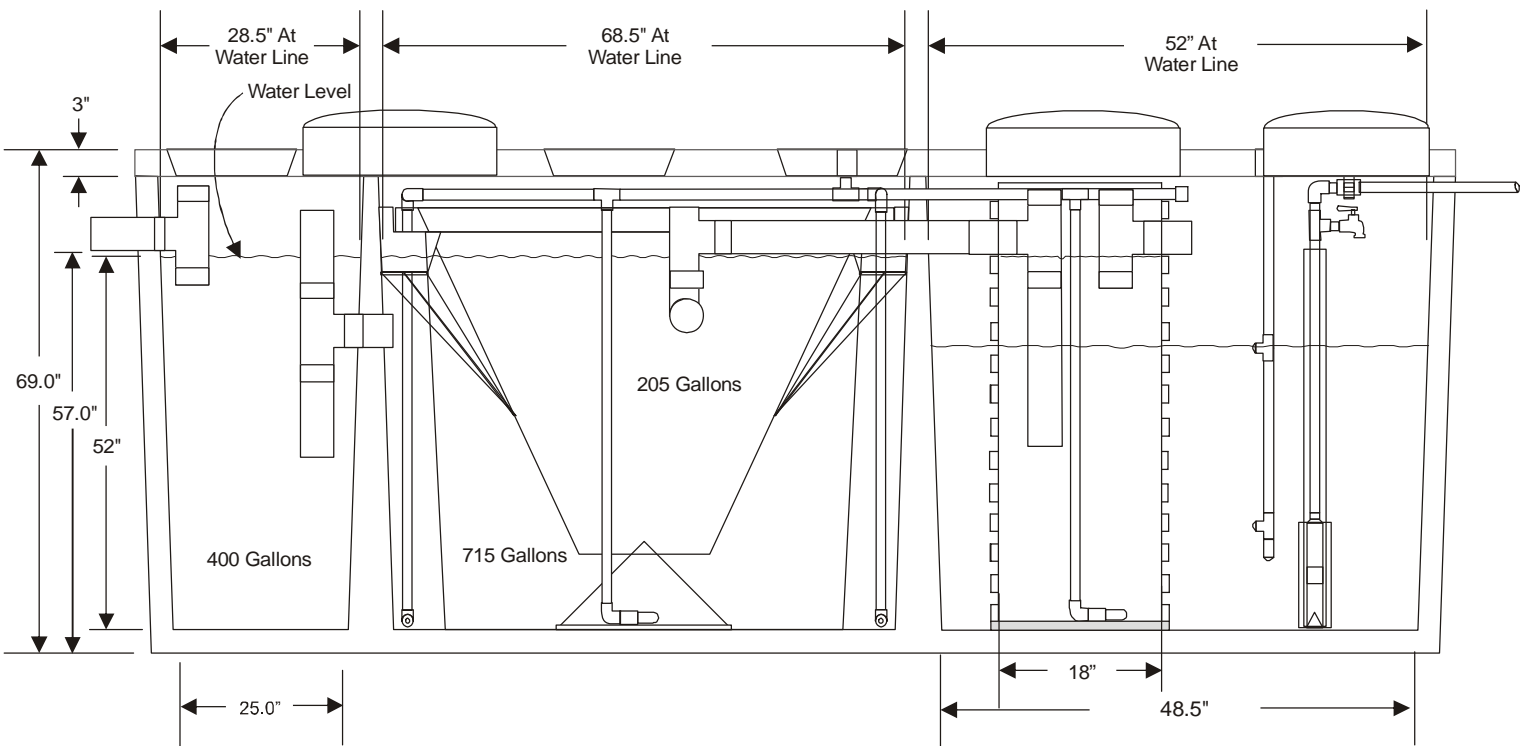
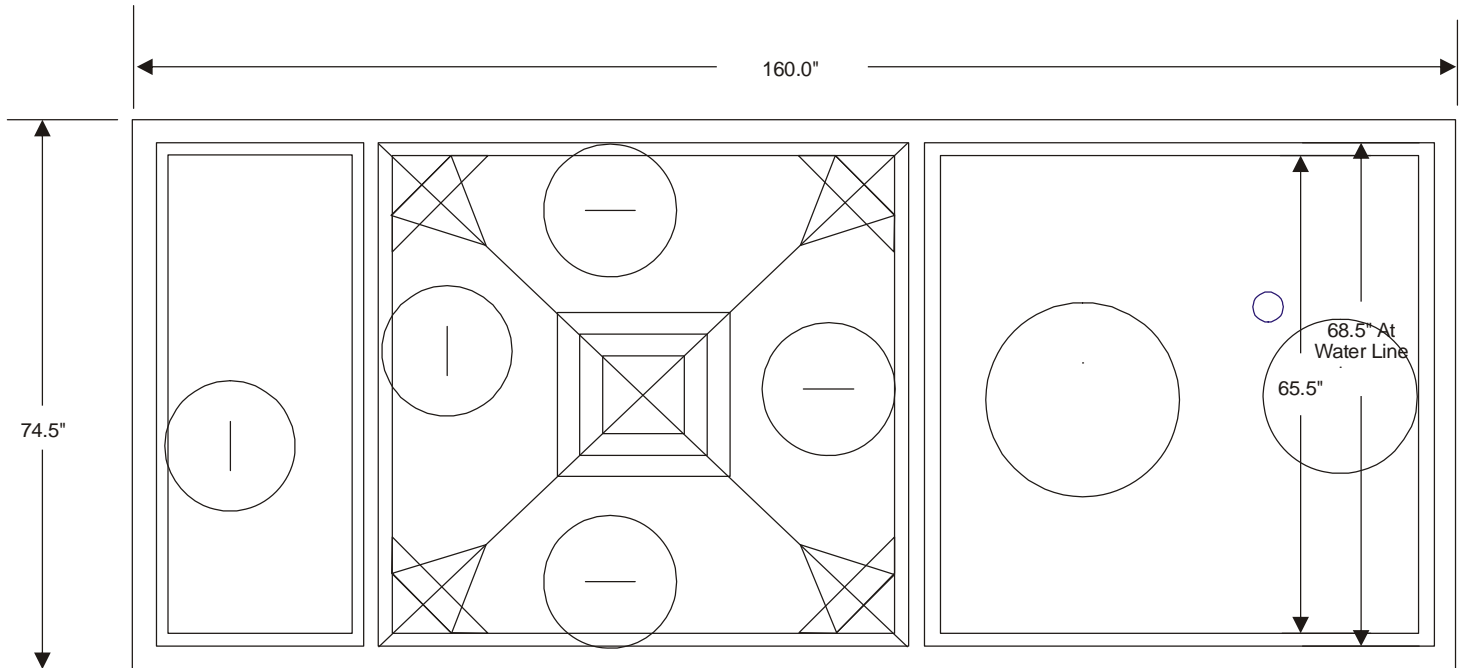
**H-500 IPA-NPDES H-500 EPA-NPDES, H-750 EPA-NPDES, H-1000 EPA-NPDES**

(Please Note: Every attempt has been made to make the following drawings to scale, however, some components may have been exaggerated in order to show detail.)



**This Product has been tested in accordance with the criteria set forth in the ANSI/NSF Standard 40 and is hereby certified as a Class I Aerobic Wastewater Treatment Plant.**

# 500 GPD Hoot System, With Internal Post Aeration H-500, IPA



**Special Note: Blower is marked H-500 NPDES**

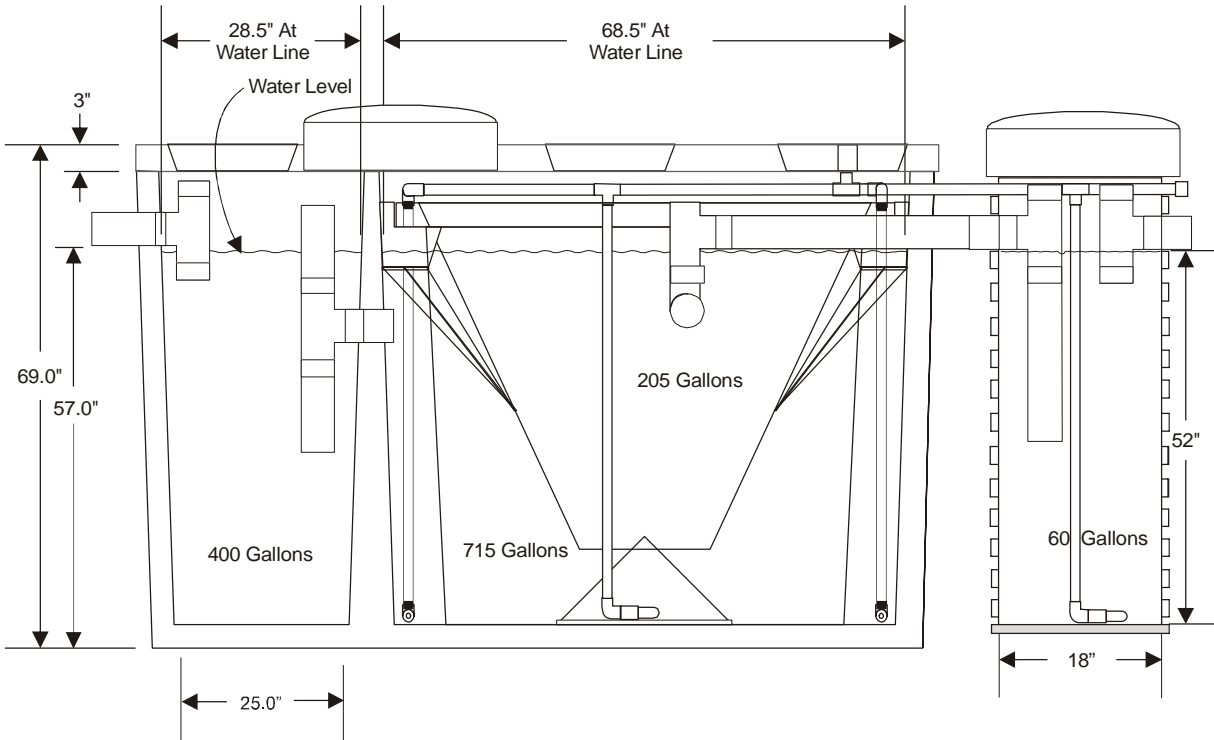
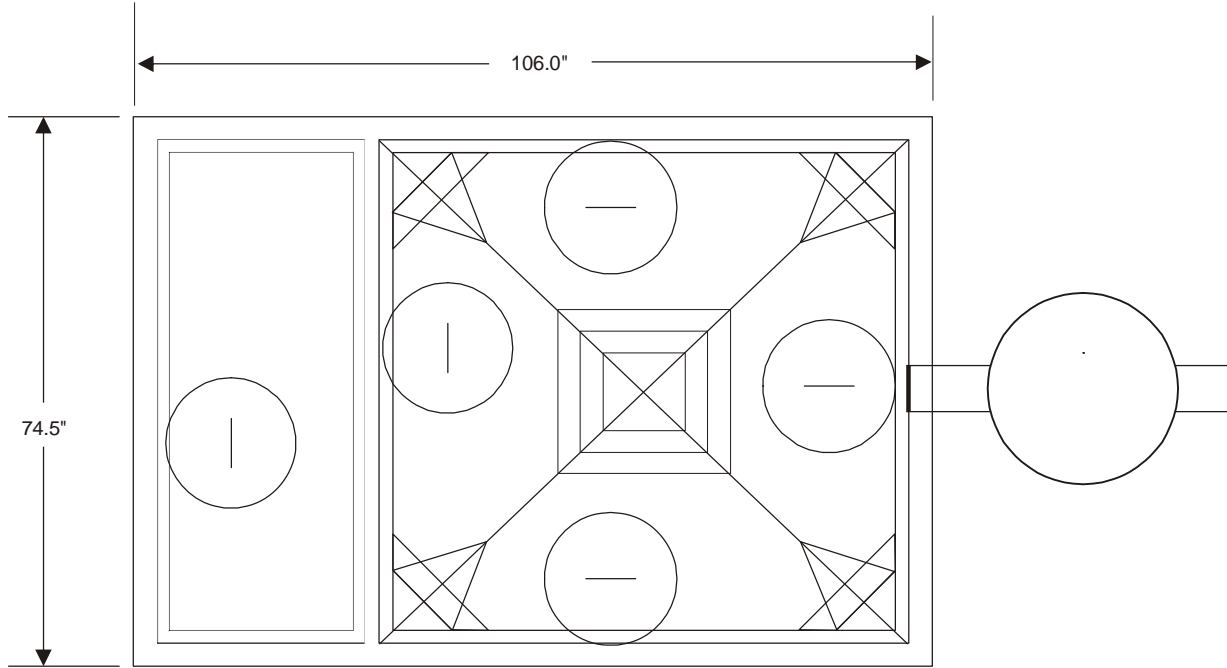
2.229' Avg. Length  
5.600' Avg. Width  
4.333' Depth

4.187' Avg. Length  
5.600' Avg. Width  
4.333' Depth

760 Gallons  
220 Gallons Remaining In Tank

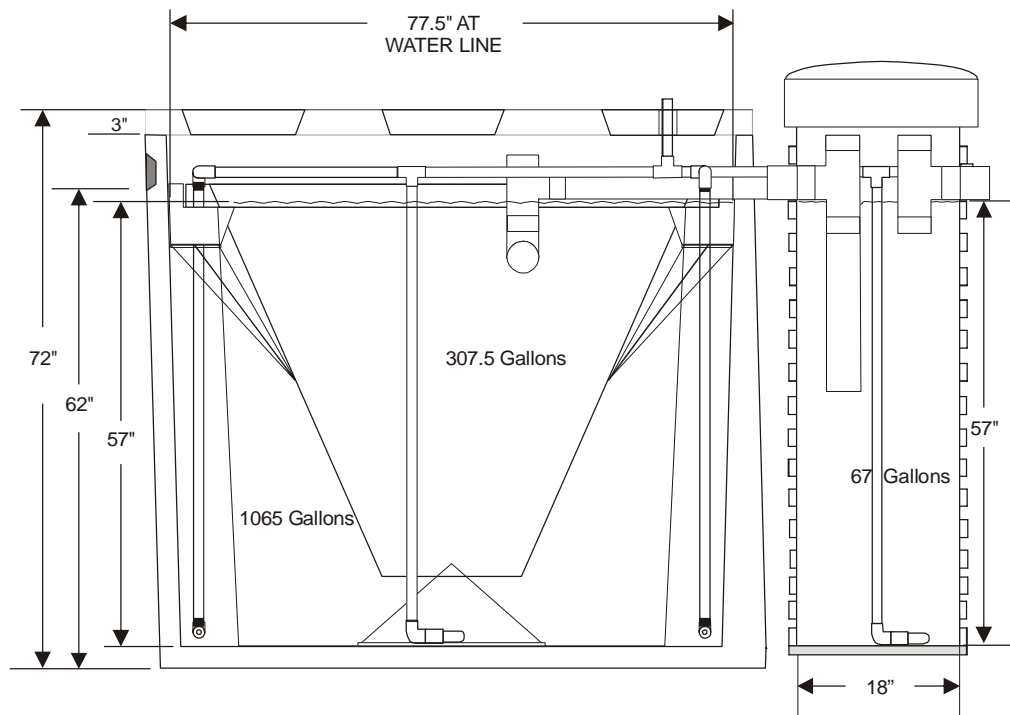
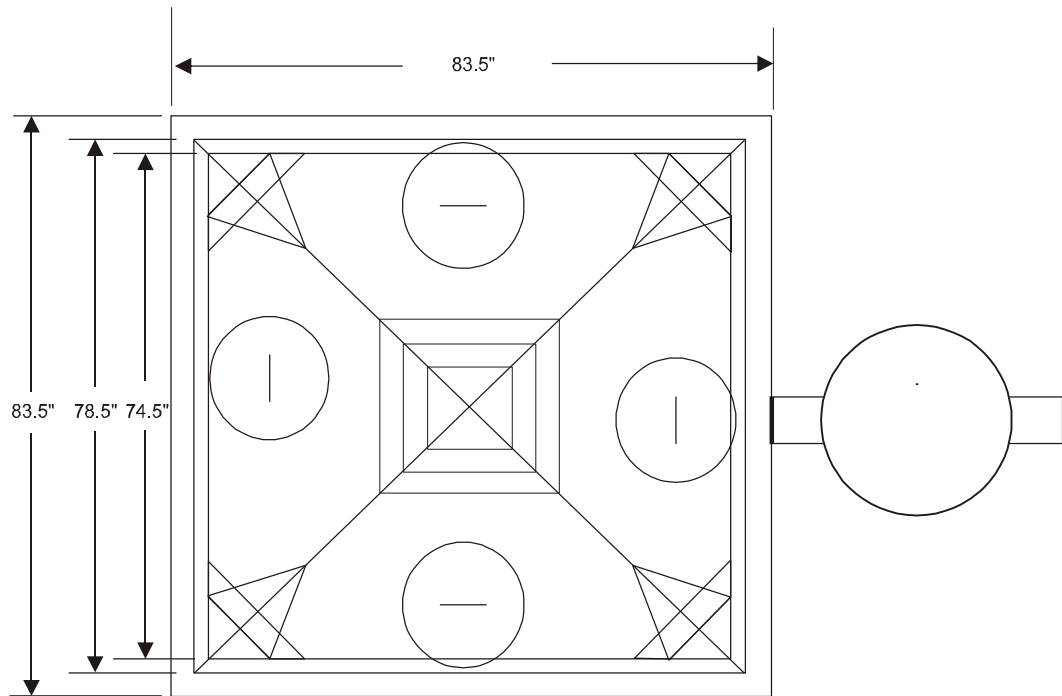
540 Gallons Holding Capacity

# 500 GPD Hoot System, With External Post Aeration H-500, EPA



2.229' Avg. Length  
5.600' Avg. Width  
4.333' Depth

## 750 GPD Hoot System, With External Post Aeration H-750, EPA

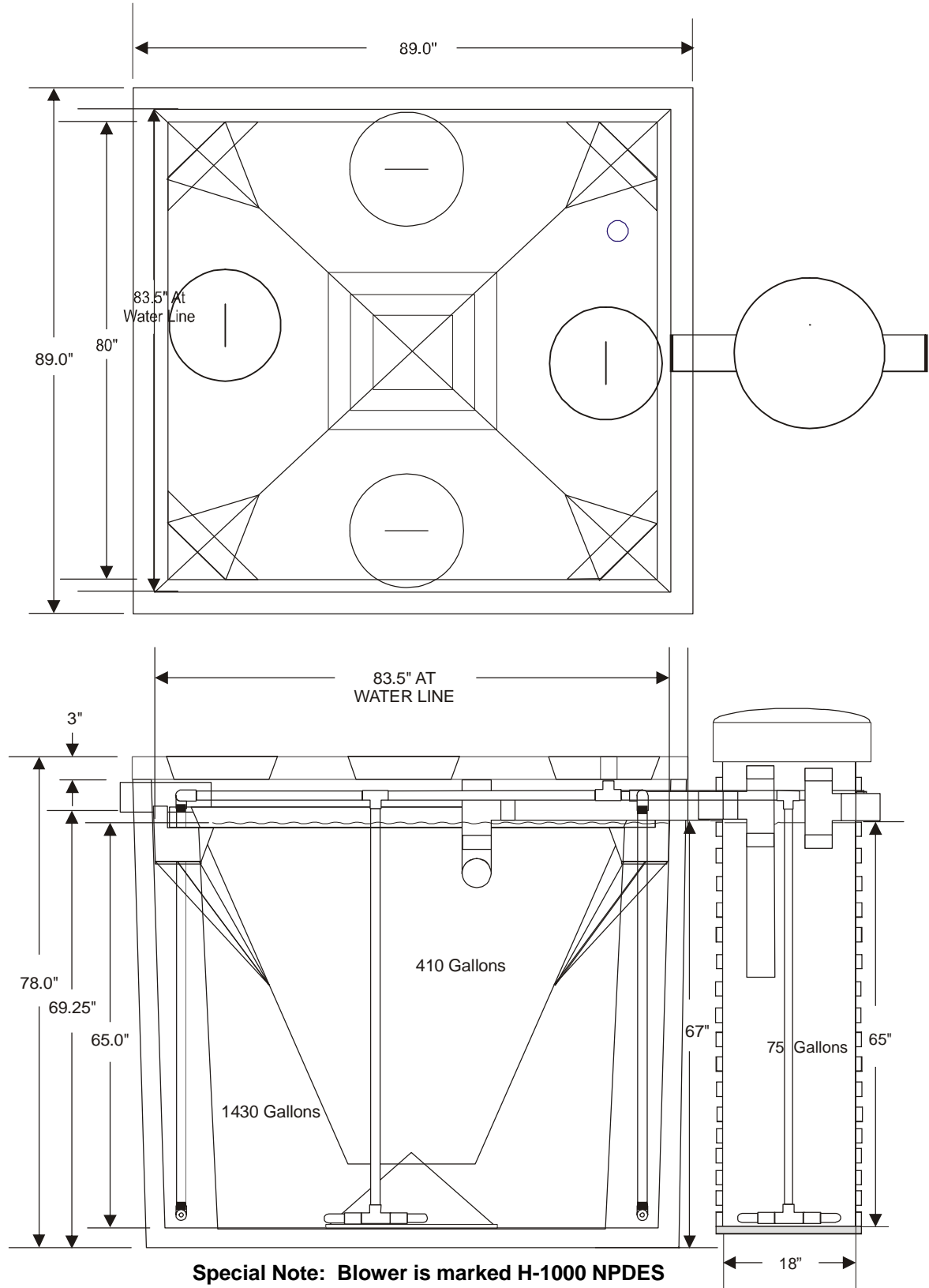


**Special Note: Blower is marked H-750 NPDES**

Note: Above system requires a Trash Trap preceding Aeration Chamber of at least 600 Gallons

76" Avg. Length  
76" Avg. Width  
57" Depth

# 1000 GPD Hoot System, With External Post Aeration H-1000, EPA



Note: Above system requires a Trash Trap preceding Aeration Chamber of at least 800 Gallons

5.312' Avg. Length  
6.812' Avg. Width  
5.416' Depth

# Hoot NPDES Service and Inspection Form

**This testing and reporting shall be completed, signed and dated after each inspection. One copy shall be retained by the maintenance company. The second copy is sent to the local permitting authority and the third copy is sent to the system owner along with an invoice for services by the maintenance company.**

1. Actual Date of Visit: \_\_\_\_\_
2. System Inspection of \_\_\_\_\_
- Owner: \_\_\_\_\_
- Address: \_\_\_\_\_
- City, St., Zip: \_\_\_\_\_

Inspected Items:	Operational	Inoperative	Not Applicable
Aerator.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aeration Plumbing.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Air Filter.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Effluent Pump (if applicable)..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Telemetry System Check....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Post Aeration Chamber Check....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OK System Light.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alarm.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D-Box .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Air Filter must be cleaned each service visit. Operation of effluent disposal system must be made each visit (if pumped). A system with greater than 70% Settleable Solids in the aeration chamber must be pumped to avoid solids leaving the tank for the drainfield.

3. Repairs to system (list all components replaced): \_\_\_\_\_

\_\_\_\_\_

4. Tests Required and Results:

Test	(If Required)	Results	Test Method
BOD (Grab)	<input type="checkbox"/>	_____	_____
TSS (Grab)	<input type="checkbox"/>	_____	_____
Fecal Coliform	<input type="checkbox"/>	_____	_____

5. Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature of Inspector: \_\_\_\_\_ Installer or WW Lic # \_\_\_\_\_



For Additional Information, Please Contact:



**HOOT Aerobic Systems, Inc.**  
2885 Highway 14 East Lake Charles, LA 70607  
(337) 474-2804 phone (337) 477-7904 fax

[www.hootsystems.com](http://www.hootsystems.com)