

December 07, 2012

Ms. Allison Blodig, REHS  
Bio-Microbics, Incorporated  
8450 Cole Parkway  
Shawnee, KS 66227

Dear Ms. Blodig:

This letter revises our letters of no objection of May 07, 2012 and September 21, 2012 to your request to utilize the "RetroFAST®" product as an alternative repair method for onsite sewage treatment systems in Florida. By e-mail of September 14, 2012 and September 24, 2012 you indicated a change in the rated treatment capacity of your products. This change is reflected in the underlined sentences below.

Your literature of September 24, 2012 distinguishes between two such uses as an alternative repair method: "remediation" and "new construction", which was previously referred to as "PR™" for "preventative-remediation". You provided information that this alternative repair method will include the following:

1. Installation of a device that you manufacture. This device consists mainly of a blower with housing, treatment media with liner, and a manhole cover with openings and gaskets for the air line and an observation port. Pipes for air lines will be provided by the installer.
2. The treatment media and liner will be installed generally on the outlet side of the tank or tank compartment. The blower is installed outside of the tank.
3. You distinguish between three devices: RetroFAST 0.150, 0.250, 0.375, where the number reflects the rated treatment capacity in 1000 gallons per day. They differ in the size of the media and liner. The rating can be increased by up to 30% only when used as alternative repair method for remediation of failed drainfields, resulting in treatment capacities of 195, 325, and 487 gpd, respectively.

The Department has no objection to the use of your product subject to the terms below:

1. Installation and use shall be as detailed in your manual created April 10, 2012, your application, your 2009 service manual included in your application, and the specifications revised 09/20/2012. Any changes to these must be reviewed by the Department prior to distribution in Florida.
2. The treatment receptacles shall be large enough to hold the products. No structural modifications to the existing tanks are allowed. The following table contains minimum dimensions based on your drawings.

Device	Minimum compartment width	Minimum compartment length	Minimum compartment depth (liquid level)	Minimum airspace height	Minimum man-hole opening diameter or square	Design use (persons)
RetroFAST .150	22"	24"	36"	7"	16"	3
RetroFAST .250	27"	30"	38"	8"	16"	4
RetroFAST .375	39"	30"	38"	8"	16"	5


December 07, 2012

3. No structural modifications to existing lids are allowed. The unit must be installed through the manufactured access openings in the lid. Step 7 of the Module Installation/Installing Liner instructions refers to the use of non-corrosive anchor bolts to attach parts of your products to the septic tank or riser. Drilling into or modifying an existing septic tank lid without evaluation by an engineer could impact the structural capacity and resistance to corrosion (see item 1) and shall not be allowed. Attachment to the riser with the mentioned bolts, or glueing, casting in, or adding additional material to the tank to then affix the devices to are acceptable.
4. As detailed in your manual, the direct venting option or remote venting option requires covers to prevent foreign materials or insect entry. Your manual specifies a #4 mesh cover for such purposes. The biofilter option, when specified by the engineer of record for the system, is acceptable.
5. No additional outlet filter or outlet deflection device is required when your product is directly connected to the outlet pipe of the tank.
6. Installation of your unit shall be considered an alternative repair subject to s. 64E-6.015(3), FAC. Please note that alternative repair methods may not be used where the absorption surface of the drainfield is within six inches of the wet season water table.
7. Your instructions allow that the products may be switched off after the drainfield has been rejuvenated. If your products operate continuously, you recommend annual maintenance by a service provider certified by you. Please be aware that currently, the Florida's regulations do not require a maintenance contract for alternative drainfield repairs.
8. The products may be installed in repair, modification and new onsite sewage treatment and disposal system construction applications.

Be advised that the department is not a testing agency. This determination reflects only a review of the information submitted by you for compliance with Florida Statutes and Florida Administrative Code. The product evaluation does not investigate the validity of performance claims. The department acceptance must not be interpreted as certifying effectiveness, endorsing or recommending use of an additive. The product cannot be advertised as "state approved". The Florida Department of Health also does not assume liability for any promise, guarantee, or expectation from purchasing or using an additive. The department reserves the right to withdraw acceptance if the product is modified after evaluation by the department or subsequently found not to be in compliance with the rule.

This letter of no-objection is limited to Department of Health jurisdictional circumstances as defined in Chapter 64E-6, Florida Administrative Code and Chapter 381.0065, Florida Statutes. If we may be of further assistance or should you have any additional questions regarding this letter, please contact Eberhard Roeder at (850) 245-4070.

Sincerely,

  
Gerald R. Briggs, MSM  
Environmental Administrator  
Water and Onsite Sewage Programs Section

GRB/er

## NOTICE OF RIGHTS TO APPEAL

A party whose substantial interest is affected by this order may petition for administrative hearing pursuant to Sections 120.569 and 120.57, Florida Statutes. Such proceedings are governed by Chapter 28-106, Florida Administrative Code. A petition for a hearing must be in writing and must be received by the Agency Clerk for the Department within twenty-one (21) days from the receipt of this order. The address for the Agency Clerk is 4052 Bald Cypress Way, Bin # A02, Tallahassee, FL 32399-1703. The Agency Clerk's facsimile number is (850) 410-1448.

Mediation is not available as an alternative remedy.

Your failure to submit a petition for hearing within 21 days from receipt of this order will constitute a waiver of your right to an administrative hearing, and this order shall become a "final order".

Should this Order become a Final Order, a party who is adversely affected by it is entitled to judicial review pursuant to section 120.68, Florida Statutes. Review proceedings are governed by the Florida Rules of Appellate Procedure. Such proceedings may be commenced by filing one copy of a Notice of Appeal with the Agency Clerk of the Department of Health and a second copy accompanied by the filing fees required by law with the Court of Appeal in the appropriate District Court. The notice must be filed within 30 days of the rendition of the final order.

# RetroFAST® Installation Manual

FOR USE WITH  
(ETV/EPA tested) RetroFAST® .150, .250, .375



This File was Revised by  
the Manufacturer and  
received April 11, 2012

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8450 Cole Parkway • Shawnee, KS 66227 • USA  
Ph: 913-422-0707 • Fax: 913-422-0808  
800-753-FAST (3278) • www.biomicrobics.com



FAST® System Serial Number: \_\_\_\_\_

System Designer Name: \_\_\_\_\_

Designer Phone: \_\_\_\_\_

Health Official Name: \_\_\_\_\_

Health Official Phone: \_\_\_\_\_

Manufacturer Name: Bio-Microbics, Inc.

Manufacturer Phone: 1-800-753-FAST (3278)

Installed By: \_\_\_\_\_

Installer Phone: \_\_\_\_\_

Maintenance Provider Name: \_\_\_\_\_

Maintenance Provider Phone: \_\_\_\_\_



# INSTALLATION MANUAL

## FOR USE WITH

(ETV/EPA tested) RetroFAST® .150, .250 and .375

## GENERAL INFORMATION

The RetroFAST process has been tested and verified in the USEPA (Environmental Protection Agency) ETV (Environmental Technology Verification) program (RetroFAST 0.375 tested). All FAST® products are ETL certified for safety (electrical, environmental, etc.). One or more of the following patents protects this process: 3,966,599; 3,966,608; 3,972,965; 5,156,742. If you have questions regarding any Bio-Microbics products, please contact us:

**800-753-FAST (3278) or (913) 422-0707**

**e-mail: [onsite@biomicrobics.com](mailto:onsite@biomicrobics.com)**

## DELIVERY INSPECTION

Every FAST® system is designed and inspected to meet stringent quality assurance standards prior to shipment. Check the packaging for signs of shipping damage before and after uncrating the unit. If there is evidence of damage or abuse, notify Bio-Microbics, Inc. at (800) 753-3278 or (913) 422-0707.

**About FAST®:** The FAST® (Fixed Activated Sludge Treatment) system uses naturally occurring bacteria (biomass) to treat sewage for dispersal into the environment. This continuous process provides the biomass with waste (food) and air in a suitable environment. Dead bacteria and non-biodegradable waste settle and accumulate in the bottom of the septic tank for periodic removal.

The FAST® process consists of the treatment module and blower. The blower provides air to the system via the air supply pipe. The air supply pipe and draft tube create an air lift. The air lift mixes oxygen and waste throughout the media inside the tank. Bacteria grow on the media and digest the waste. A vent pipe expels harmless vapors created by the process.

## Dear Septic System Owner

Thank you for purchasing a Bio-Microbics RetroFAST® septic system enhancement to upgrade your existing system.

Engineered and manufactured to meet the highest industry standards by the leader in onsite wastewater equipment, the FAST® System is at the forefront of green technology. Based on environmentally sound and simple scientific principles, the FAST® process is our continued commitment to improve small onsite treatment capabilities. You can take pride in knowing that, with the FAST® system, you will help ensure a clean environment for future generations.

Please take time to read this FAST® Owner's Manual, you will learn important safety precautions, review detailed information on proper use and care of your system. Designed for minimal operator attention, the FAST® System contains only one moving part – the blower. By consistently following a maintenance schedule and being mindful of what can go down your drains, you can enjoy the lasting benefits FAST® Wastewater Treatment System for decades to come.

### Top things you can do to prolong the life of your system:

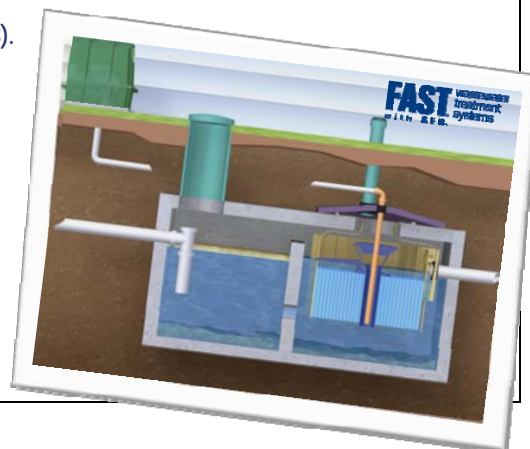
1. Have the FAST® system inspected and tank pumped as necessary.
2. Keep track of the substances entering your system, please review the list of Do's & Don'ts (see other side for poster).
3. Keep the FAST® System operating - do not turn off the blower.
4. Care for your drain field or irrigation system (if incorporated into your FAST® System).

If you should desire any further assistance, please contact Bio-Microbics at [sales@biomicrobics.com](mailto:sales@biomicrobics.com) or call us at 800-753-FAST (3278).

**Thank you again for  
using RetroFAST®!**

**Sincerely,**

*Bio-Microbics Team*





## SYSTEM COMPONENTS

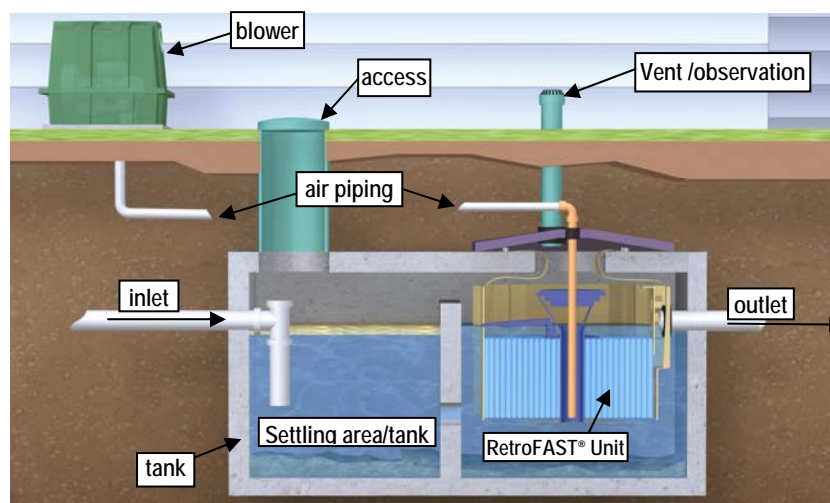
RetroFAST® Septic System Enhancement System includes the following components:



	PART NAME	PART NUMBER
<b>1</b>	RetroFAST® Lid	010-CVRG25-375
<b>2</b>	Blower	020-1/4HPPAC
<b>3</b>	1.5" Air line gasket	050-GSKT2R
	6" O/V gasket	050-GSKT8
	RetroFAST® Manual	RTF manual
<b>4</b>	Blower housing	250-BBHSFL
<b>5</b>	3" Outlet gasket	050-GSKT3
<b>6</b>	Liner	Model dependant
<b>7</b>	Blower piping & screws	720-BLPRTS1/4HP

## LOCATION

**CAUTION** Always have all utility lines and equipment marked by a locating service prior to performing any work. Failure to do so could result in severe bodily injury or death.



RetroFAST® systems may be located in the same position relative to the house and water supply as any conventional septic system. However, some basic guidelines should be followed:

1. RetroFAST® system cover is designed to withstand a burial depth of up to 4 feet (1.2 meters). Do not place the tank in a location where it could be subjected to additional weight.
2. RetroFAST® system must be located so that sufficient slope ( $\geq 2\%$ ,  $\frac{1}{4}$  inch/foot) is provided for the influent and effluent lines.
3. Excessive back pressure must not be placed on the blower. Follow all installation guidelines.
4. Method and arrangement for effluent discharge must not interfere with the system's operation.
5. If the tank is smaller than the minimum dimensional range specified, the RetroFAST system may not operate properly. The effluent quality could suffer and may not meet standards.

# INSTALLATION PROCEDURE

**\*PLEASE NOTE:** There maybe associated equipment with your system: pumps (before and/or after the FAST® unit), distribution box, disinfection system, irrigation system, remote alarm, auto dialer, etc.

**⚠ WARNING** Only qualified service people should open any access port on a septic system. Infectious organisms exist in a septic tank. Persons coming in contact with wastewater must immediately wash and disinfect all exposed areas and contact their personal physician. Failure to do so could result in severe sickness or death.

## MATERIALS REQUIRED FOR INSTALLATION

1. Septic tank that meets all applicable requirements and standards
2. Safe lifting mechanism (RetroFAST® units weigh ≤130 lbs [59 kg])
3. Anchor bolts for securing RetroFAST® unit to the tank and blower housing to the concrete base.
4. Piping for observation/vent port, air lines, and vent lines (check installation procedures, specs, and plans to determine the size and type of pipes needed).
5. PVC saw
6. Pipe lubricant/soap
7. PVC primer and glue (weather appropriate)
8. Concrete base for blower assembly
9. Electrical conduit, fittings and specified wires
10. Hammer, drill, and masonry bits appropriate for anchor bolts

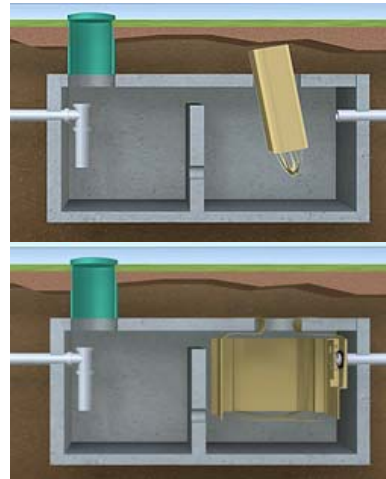
**⚠ WARNING** Persons coming in contact with wastewater, must immediately wash all exposed areas with disinfecting cleaner and contact your personal physician. Failure to do so could result in severe sickness or death.

**⚠ WARNING** Hazards exist in confined spaces, such as a septic tank. If entering the tank, use necessary precautions. Always keep tank openings covered during storage and installation.

MODULE SIZE AND WEIGHTS		
RTF .150	16" L (41 cm) x 16" W (41 cm) x 32" H (81 cm)	74 lbs [33.5 kg]
RTF .250	28" L (71.1 cm) x 24" W (61 cm) x 33.5" H (85.1 cm)	130 lbs [59 kg]
RTF .375	41" L (104.1 cm) x 24" W (61 cm) x 33.5" H (85.1 cm)	156 lbs [70.8 kg]

## MODULE INSTALLATION

For best results, read the entire installation procedure before beginning. Check the tank to ensure it is level within  $\pm 1/2"$  [12 mm]. Before starting installation, take close look of the RetroFAST® unit in its shipping container. Note the position and orientation of all components. The installation procedures will require disassembly of the unit outside the tank, and then reassemble it inside the tank. The airlift sits in the center of the unit, which has a recirculation trough attached to it that protrudes through the edge of the liner, opposite the effluent pipe opening. The media is cut into four (4) pieces that fit together in one specific manner. All of these parts are contained in the liner that has two attached flaps at the top.



**NOTICE:** You must have your tank pumped out in compliance with local health and environmental regulations prior to RetroFAST® installation. Once the septic tank is pumped out, the installation of the module may begin.

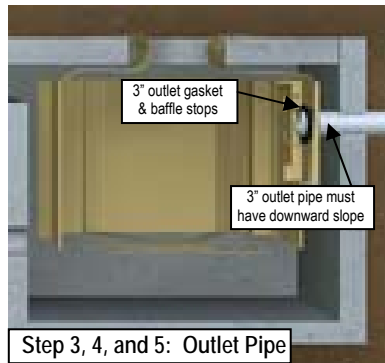
### INSTALLING LINER

1. Take all parts including the airlift and media out of the liner. Clear the debris around the septic tank and open the lid.
2. Fold up the module liner and lower it through the manhole of the septic tank. Keep flaps on top of tank as show in pic to the right. Unfold liner inside the tank.
3. Insert proper length of 3" [76 mm] Sch 40 PVC pipe into RetroFAST®'s effluent hole and gasket, being careful to only insert the pipe until it rests on the pipe stops that are in the effluent chamber.
4. Insert the 3" pipe into the outlet of the existing tank (you may have to modify the baffle of the existing tank).
5. Adjust level of the RetroFAST unit so



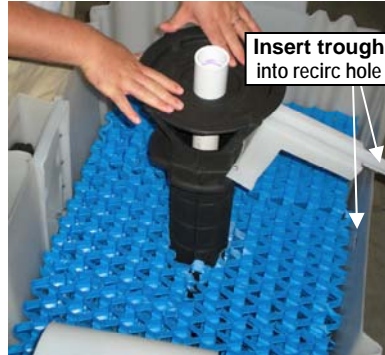
that the 3" outlet pipe rests 1/2–2" [12–51 mm] higher than the existing tank outlet.

6. Seal the 3" outlet pipe to the tank's existing outlet pipe.
7. Use non-corrosive concrete anchor bolts to fasten the flaps of the RetroFAST® unit to the septic tank or tank's riser. Place the media back into the liner, being careful to install the pieces with the original orientation



Step 3, 4, and 5: Outlet Pipe

8. Then install the airlift into the center of the media making 'sure to orient the recirculation trough opposite the effluent hole and so that the end inserts through the small hole in the liner. The airlift MUST be installed so that the "collar" rests on the media as before.



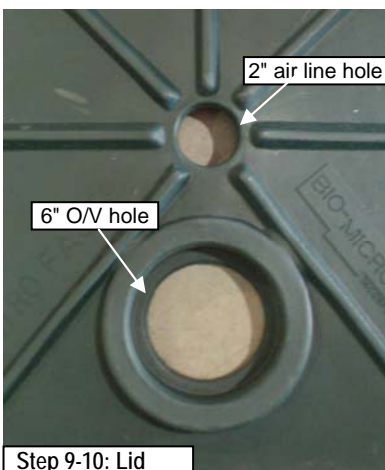
Step 7-8: Replace Parts

9. **AIR LINE** Insert cut length of 1.5" [38 mm] air supply pipe through factory provided air line gasket in module lid. Use 6" hole in the lid to connect & glue air supply to air lift coupling. Run the air line to the desired blower location using required piping. Blower piping to RetroFAST® may not exceed 100 ft [30.5 m] total length with ≤ 4 elbows.

**ALL CONNECTIONS MUST BE AIR / WATER TIGHT AND PERMANENT.**

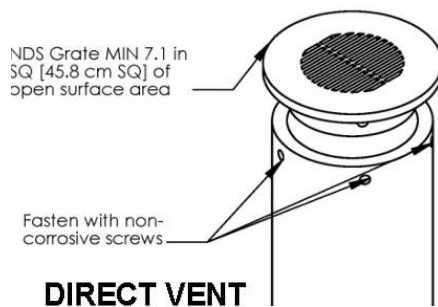
10. **OBSERVATION/VENT PORT** (o/v port) Insert desired length of 6" pipe into factory provided gasket then into access hole in lid. Insert pipe until it stops.

**DO NOT PUSH PIPE TO MEDIA SURFACE!**

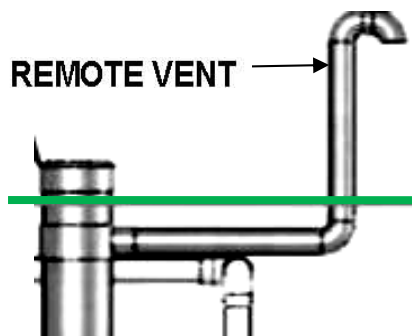


Step 9-10: Lid

11. **VENTING** Numerous options exist for proper venting. Three of the most common are mentioned here. The vent system must be sized properly to avoid excessive back pressure in the system (see table below). It also must not allow surface water to enter the system and must allow internal condensation to drain.



**DIRECT VENT:** The 6" o/v port can have holes drilled in it or a slotted cap put on it. Any cap must be fastened with screws to prevent unauthorized access. The opening(s) should prevent foreign material from entering the system.



**REMOTE VENT:** Branch the ≥3" vent pipe off the 6" o/v port or manhole below grade and then run the vent pipe to the desired location and terminate above grade. Cover opening with #4-mesh screen or similar. Water accumulating in the vent piping MUST be drained to prevent backpressure.

**BIOFILTER:** This method may require design by a qualified engineer. Run a significant amount of perforated vent line in a trench. Cover the trench with shredded bark mulch. DO NOT cover the mulch with soil.

**NOTE:** A biofilter vent must not allow moisture to back into the treatment system.



## BLOWER INSTALLATION

**CAUTION** Always have all utility lines and equipment marked by a locating service prior to performing any work.

**WARNING** All electrical work shall be properly performed by a qualified electrician per all applicable codes. Failure to do so may result in severe bodily injury or death.

The blower housing must be placed on a concrete slab. All conduit/piping should pass through the concrete slab from below.

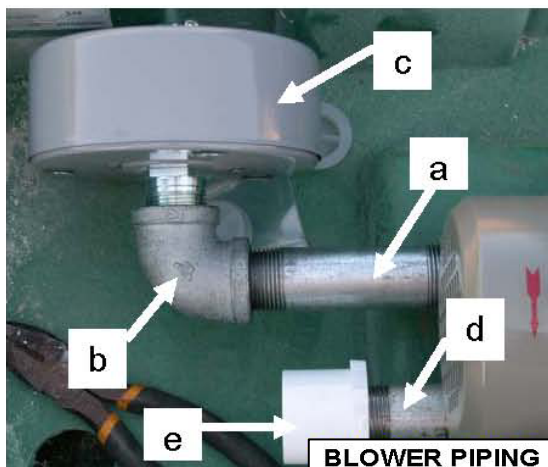
### 1. CONNECT SUPPLIED INITIAL PIECES

- a. Longest pipe
- b. Elbow
- c. Air filter assembly
- d. Shortest pipe
- e. Reducer bushing

**NOTE:** All connections must be air/water-tight and permanent. **USE TEFLON SEALANT TAPE ON ALL PIPE CONNECTIONS.**

### 2. SECURE BLOWER

assembly to housing base using four supplied #14 x 1½" self-tapping screws. Drill screws directly into blower base.



3. **CONNECT AIR LINE** from RetroFAST® unit to blower outlet using required 1.5" [3.8 cm] piping. Blower piping to RetroFAST® may not exceed 100 ft [30.5 m] total length and have ≤ 4 elbows. Keep all debris out of air line.

## CONTROL PANEL INSTALLATION (OPTIONAL)

**WARNING** All electrical work shall be performed by a qualified electrician per all applicable codes. Failure to do so may result in severe bodily injury or death.

The RetroFAST® system including all electrical parts are ETL (UL equivalent) certified for electrical safety. The optional control panel meets NEMA4X standards for all weather use (not explosive or submerged environments).

Bio-Microbics also manufactures other control panels that can control UV systems and sewage pumps. The TRACK system (or other auto-dialers) can connect to these panels.

1. Examine wiring directions inside the supplied FAST® control panel
2. A dedicated breaker is required in the building's master electrical panel. Make connections between the master panel and FAST® control panel
3. Make connections between the blower and FAST® control panel per the electrical diagram

## FINAL INSTALLATION INSPECTION & START UP

It is the responsibility of the installer to ensure that the tank will not float due to hydraulic conditions at the site. Your local FAST® Systems distributor may provide installation inspection services. If you have questions, call Bio-Microbics at 1-800-753-FAST or (913)422-0707.

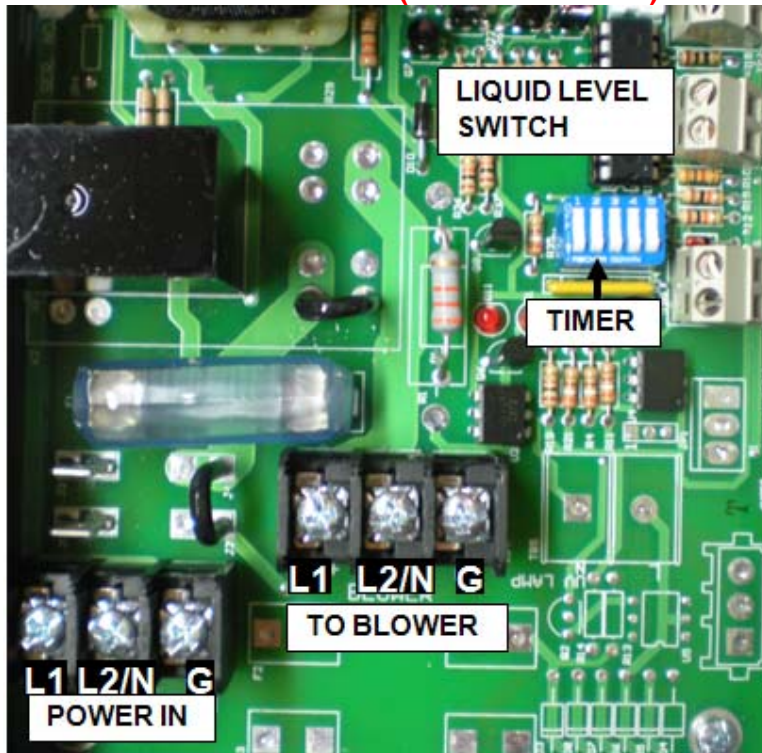
**WARNING** Persons coming in contact with wastewater, must immediately wash all exposed areas with disinfecting cleaner and contact your personal physician. Failure to do so could result in severe sickness or death.

### BEFORE THE UNIT IS BACKFILLED:

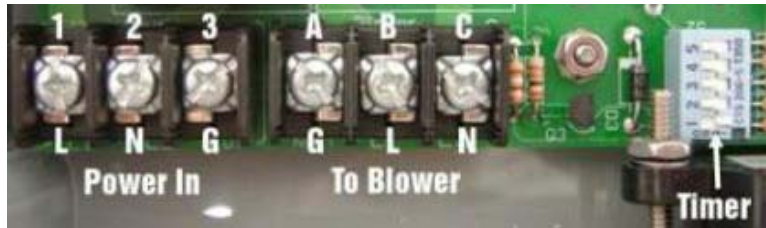
- A. Fill the tank to the normal operating level.
- B. Check for leaks in all water-tight seals.
- C. Turn the blower ON and observe the operation of the airlift. A robust splash should be present.
- D. Check for excessive back pressure: Seal all access covers, place hand about 8 inches [20 cm] from FAST® vent, if air flow is felt then excessive back pressure exists and the system's vent must be upgraded.
- E. Check for proper water level over the media. The normal water line should be ~2" [5 cm] over the media.
- F. Check for proper alarm function. Turn OFF the blower circuit breaker and wait for the alarm to sound. If the alarm does not sound after 30 seconds, then review the electrical installation procedures.
- G. Turn the blower back ON.
- H. Backfill the excavation.
- I. Lastly, record the FAST® unit's serial number in the Service Manual.

# ELECTRICAL DIAGRAMS

## AMI 110/220 PANEL (2 FRONT LIGHTS)



## 110VAC "CSI" PANEL W/ 3 FRONT LIGHTS



# BLOWER DIAGRAMS

ATTENTION: Please refer to side of shipping box for correct Blower

**Pacific**

**Model: PACIFIC PB91**  
**Power: 110V, 1Ø**  
 -L1 to 1 and 3  
 -N to 2 and 4

**Model: PACIFIC PB91**  
**Power: 220V, 1Ø**  
 -2 and 3 cap together  
 -L1 to 1  
 -L2 to 4

**Fuji**

**Model: FUJI VFC 209, 100P, 300P**  
**Power: 110VAC**  
 - L1 to P1  
 - N to T2, T4  
 - T1 & T3, cap together

**Model: FUJI VFC 209, 100P, 300P**  
**Power: 220V 1Ø**  
 - L1 to P1  
 - L2 to T4  
 - T2 & T3, cap together  
 - T1, cap off



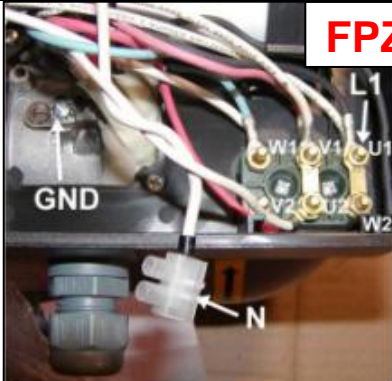
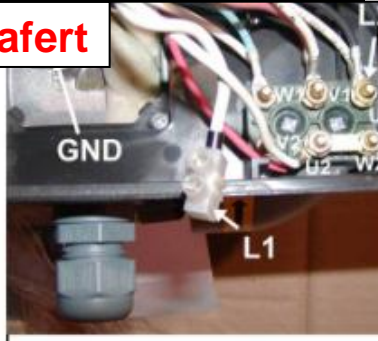
## LIMITED WARRANTY

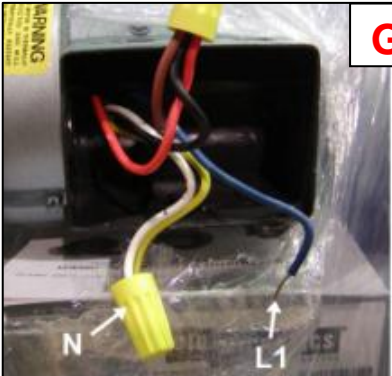
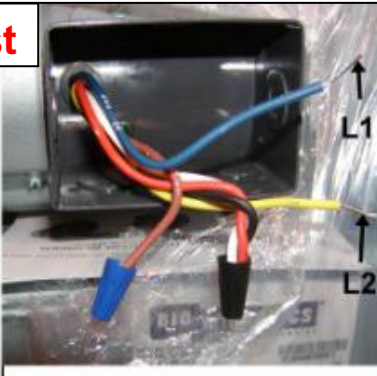
Bio-Microbics, Inc. warrants every new residential FAST® system against defects in materials and workmanship for a period of two years after installation or three years from the date of shipment, subject to the following terms and conditions, (Commercial FAST system for a period of one year after installation or eighteen months from date of shipment, whichever occurs first, subject to the following terms and conditions):

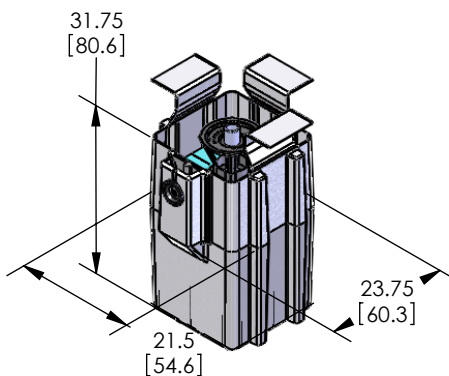
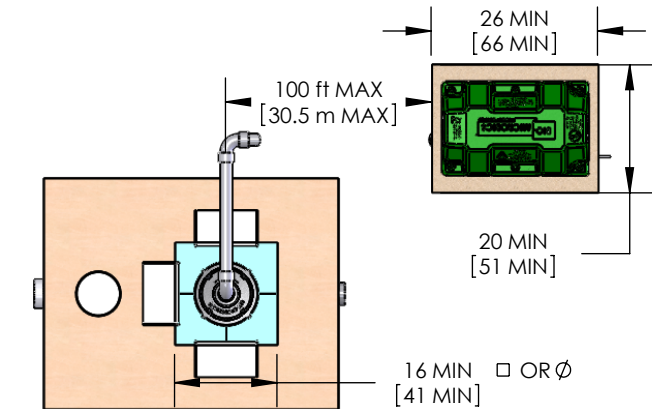
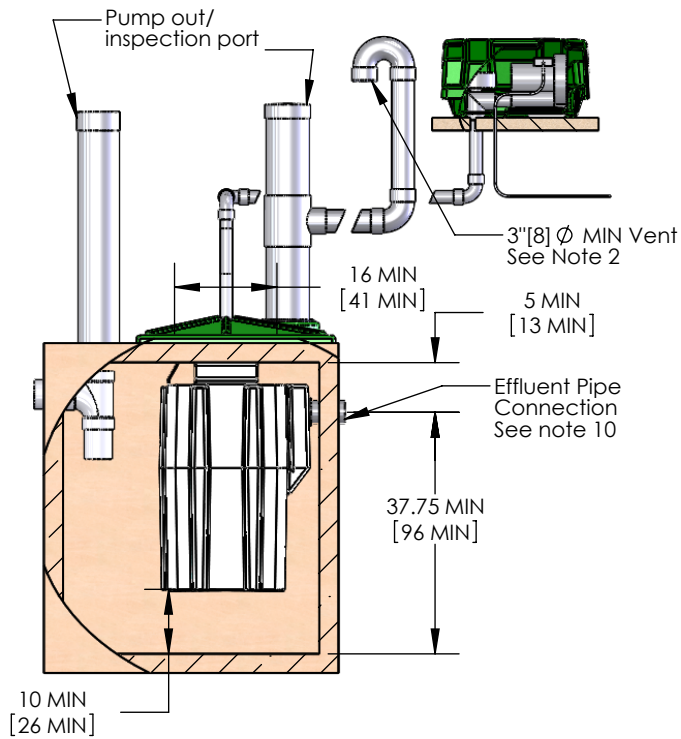
During the warranty period, if any part is defective or fails to perform as specified when operating at design conditions, and if the equipment has been installed and is being operated and maintained in accordance with the written instructions provided by Bio-Microbics, Inc., Bio-Microbics, Inc. will repair or replace at its discretion such defective parts free of charge. Defective parts must be returned by owner to Bio-Microbics, Inc.'s factory postage paid, if so requested. The cost of labor and all other expenses resulting from replacement of the defective parts and from installation of parts furnished under this warranty and regular maintenance items such as filters or bulbs shall be borne by the owner. This warranty does not cover general system misuse, aerator components which have been damaged by flooding or any components that have been disassembled by unauthorized persons, improperly installed or damaged due to altered or improper wiring or overload protection. This warranty applies only to the treatment plant and does not include any of the structure wiring, plumbing, drainage, septic tank or disposal system. Bio-Microbics, Inc. reserves the right to revise, change or modify the construction and/or design of the FAST system, or any component part or parts thereof, without incurring any obligation to make such changes or modifications in present equipment. Bio-Microbics, Inc. is not responsible for consequential or incidental damages of any nature resulting from such things as, but not limited to, defect in design, material, or workmanship, or delays in delivery, replacements or repairs.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. BIO-MICROBICS SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NO REPRESENTATIVE OR PERSON IS AUTHORIZED TO GIVE ANY OTHER WARRANTY OR TO ASSUME FOR BIO-MICROBICS, INC., ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF ITS PRODUCTS.

**Contact your local distributor for parts and service.**

<b>FPZ/Lafert</b>	
	
<p><b>Model: FPZ SCL06</b>  <b>Power: 110VAC</b></p> <ul style="list-style-type: none"> <li>- Jumper U2 to V1</li> <li>- Jumper W2 to U1</li> <li>- L1 to "terminal block"</li> <li>- N to white connector</li> </ul>	<p><b>Model: FPZ SCL06</b>  <b>Power: 220VAC, 1ø</b></p> <ul style="list-style-type: none"> <li>- L1 to "terminal block"</li> <li>- L2 to V1</li> <li>- Jumper W2 to U2</li> </ul>

<b>Gast</b>	
	
<p><b>Model: GAST R2103, R4P115, R1102</b>  <b>Power: 110VAC</b></p> <ul style="list-style-type: none"> <li>- L1 to P1</li> <li>- N to 2,4</li> <li>- P2,5,3 cap together</li> </ul>	<p><b>Model: GAST R2103, R4P115, R1102</b>  <b>Power: 220VAC 1ø</b></p> <ul style="list-style-type: none"> <li>- L1 to P1</li> <li>- L2 to 4</li> <li>- 5, 3 and 2, cap together</li> <li>- P2 cap off</li> </ul>



## RetroFAST® 0.150

### NOTES

- Blower piping to FAST® may not exceed 100 FT [30.5m] total length and use 4 elbows maximum. For distances greater than 100 FT [30.5m] - consult factory. Blower must be located above flood/standing water levels on a solid surface or concrete base 24" X 18" X 2" [61X45.7X5cm] minimum.
- Vent to be located above finish grade or higher to avoid infiltration. Cap with vent grate w/at least 7.1 sq in. [45.8 sq. cm] open surface area. Secure with stainless steel screws.  
or  
Run vent to desired location and cover opening with vent grate w/at least 7.1 sq in. [45.8 sq. cm] of open surface area. Secure with stainless steel screws. Vent piping must not allow excess moisture build up or back pressure.
- All appurtenances to FAST® (e.g. tank pump outs, etc.) must conform to all country, state, province, and local plumbing and electrical codes. The blower control system is provided by Bio-Microbics, Inc.
- Optional blower control system by Bio-Microbics, Inc.
- Fast® module must be secured by bolting through straps, then lid is bolted to the tank.
- No more than 4 FT [1.2 m] of fill may be placed over unit lid.
- All inspection, viewing and pump out ports must be secured to prevent accidental or unauthorized access.
- Tank, anchors, piping, conduit, blower housing pad and vents are provided by others.
- All piping and ancillary equipment installed after FAST® must not impede or restrict free flow of effluent.
- Effluent hole will accept a 3" SCH 40 PVC pipe which can be then inserted into the existing 4" Discharge pipe in the septic tank.

DO NOT SCALE  
UNLESS NOTED  
DIMENSIONS  
ARE IN INCHES  
[CENTIMETERS]  
TOLERANCES  
± 0.02 IN/IN  
[± 0.05 CM/CM]



RetroFAST 0.150

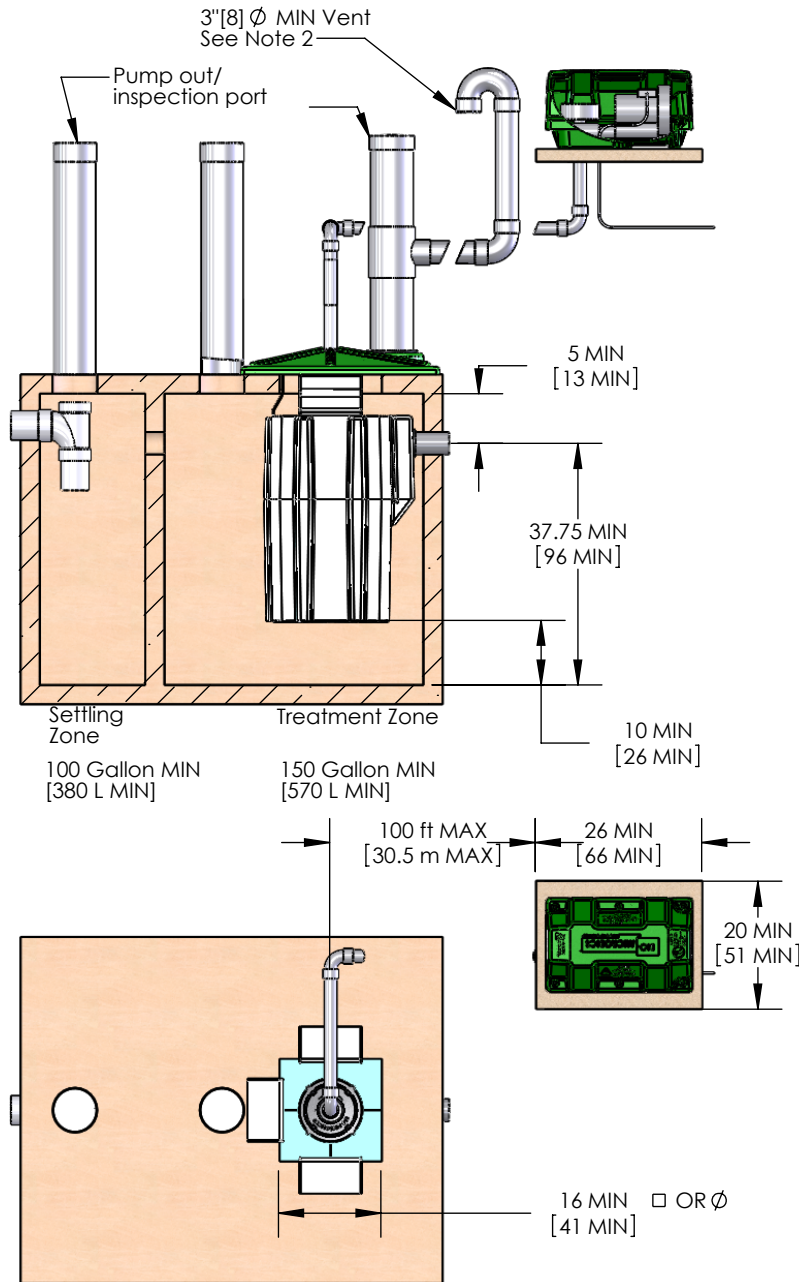
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WEIGHT	lb	SIZE	DRAWING NUMBER	RetroFAST®.15 Remediation	SHEET 1 OF 3
NAME	DATE	A			
DRAWN	CTC	5/5/2008			
CHECKED	PF	9/20/2012	REVISED 9/20/2012		



# RetroFAST® 0.150



## NOTES

- Blower piping to FAST® may not exceed 100 FT [30.5m] total length and use 4 elbows maximum. For distances greater than 100 FT [30.5m] - consult factory. Blower must be located above flood/standing water levels on a solid surface or concrete base 24" X 18" X 2" [61X45.7X5cm] minimum.
- Vent to be located above finish grade or higher to avoid infiltration. Cap with vent grate w/at least 7.1 sq in. [45.8 sq. cm] open surface area. Secure with stainless steel screws.  
or  
Run vent to desired location and cover opening with vent grate w/at least 7.1 sq in. [45.8 sq. cm] of open surface area. Secure with stainless steel screws. Vent piping must not allow excess moisture build up or back pressure.
- All appurtenances to FAST® (e.g. tank pump outs, etc.) must conform to all country, state, province, and local plumbing and electrical codes. The blower control system is provided by Bio-Microbics, Inc.
- Optional blower control system by Bio-Microbics, Inc.
- Fast® module must be secured by bolting through straps, then lid is bolted to the tank.
- No more than 4 FT [1.2 m] of fill may be placed over unit lid.
- All inspection, viewing and pump out ports must be secured to prevent accidental or unauthorized access.
- Tank, anchors, piping, conduit, blower housing pad and vents are provided by others.
- All piping and ancillary equipment installed after FAST® must not impede or restrict free flow of effluent.
- Effluent hole will accept a 3" SCH 40 PVC pipe which can be then inserted into the existing 4" Discharge pipe in the septic tank. The RetroFAST® provides vigorous aeration in a septic tank which reverses the clogging process in a drain field.

DO NOT SCALE  
UNLESS NOTED  
DIMENSIONS  
ARE IN INCHES  
[CENTIMETERS]  
TOLERANCES  
± 0.02 IN/IN  
[± 0.05 CM/CM]



RetroFAST 0.150

WEIGHT	lb	SIZE	DRAWING NUMBER	SHEET 2 OF 3
NAME	DATE	A	RetroFAST®.15 New Construction	
DRAWN	CTC	5/5/2008		
CHECKED	PF	9/20/2012	REVISED 9/20/2012	
			REV. INI-01-Y	

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Specifications for RetroFAST 0.150 Wastewater Treatment System

1. GENERAL

The contractor shall furnish and install (1) RetroFAST 0.150 treatment system as manufactured by Bio-Microbics, Inc. The treatment system shall be complete with all needed equipment as shown on the drawings and specified herein.

The principal items of equipment shall include FAST System insert, insert lid, blower assembly, and blower housing. The RetroFAST 0.150 unit shall be situated within tank that exceeds the minimum dimensions and a 16" [41cm] tank opening. Tank(s) must conform to local, state, and all other applicable codes. The contractor shall provide coordination between the FAST system and tank supplier with regard to fabrication of the tank, installation of the FAST unit and delivery to the job site.

2. OPERATING CONDITIONS

The RetroFAST 0.150 treatment system shall be capable of treating the wastewater produced by typical family activities (bath, laundry, kitchen, etc.) ranging from (1) one to (3) three persons and not to exceed 150 US Gallons per day (568 LPD). For systems installed for rejuvenation of a failed drainfield the flow can exceed the maximum flow rate by up to 30%. Consult factory for guidance.

3. MEDIA

The FAST media shall be manufactured of rigid PVC, polyethylene, or polypropylene and it shall be supported by the polyethylene insert. The media shall be fixed in position and contain no moving or wearing parts and shall not corrode. The media shall be designed and installed to ensure that sloughed solids descend through the media to the bottom of the septic tank.

4. BLOWER

The RetroFAST 0.150 unit shall come equipped with a regenerative type blower capable of delivering 9-24 CFM [15-41m3/hr]. The blower assembly shall include an inlet filter with metal filter element.

5. REMOTE MOUNTED BLOWER

The blower shall be mounted up to 100 feet [30.5 meters] away from the RetroFAST unit on a contractor supplied concrete base. The blower elevation must be higher than the normal flood level. A two-piece, rectangular housing shall be provided with tamper-proof screws. The discharge air line from the blower to the RetroFAST shall be provided and installed by the contractor.

6. ELECTRICAL

The electrical source should be within 150 feet [45.7 meters] of the blower consult local codes for longer wiring distances. All wiring must conform to all applicable codes(IEC, NEC, etc.). Wiring distances must prevent significant voltage loss. Input power on 60Hz electrical system is 110/220 VAC, single phase, 2.3/1.0 Amps. Input power on 50Hz electrical systems 127/230 VAC, single phase 0.253 kw/hr. All conduit and wiring shall be supplied by contractor.

7. INSTALLATION AND OPERATING INSTRUCTIONS

All work must be done in accordance with local codes and regulations. Installation of the RetroFAST 0.150 shall be done in accordance with the written instructions provided by the manufacturer. An operation and maintenance manual shall be furnished, which will include a description of system installation, operation, and maintenance procedures.

8. OPTIONAL ALARM PANEL

The alarm system shall consist of a visual and audible alarm to indicate loss of power to the blower. A manual silence switch is included.

9. FLOW AND DOSING

Wastewater treatment systems work best when influent flow is delivered as consistently as possible. FAST systems have been successfully designed, tested, and certified receiving gravity, demand-based influent flow. When influent flow is controlled (either by influent pump or other means) to the FAST system to help with highly variable flow conditions, then multiple feeding events should be used to help assure even flow, optimum performance, and reliability.


10. WARRANTY

Bio-Microbics, Inc. warrants all new RetroFAST® models (RetroFAST 0.150, 0.250, and 0.375) against defects in materials and workmanship for a period of two years after installation or three years from date of shipment, whichever ever occurs first, subject to the following terms and conditions:

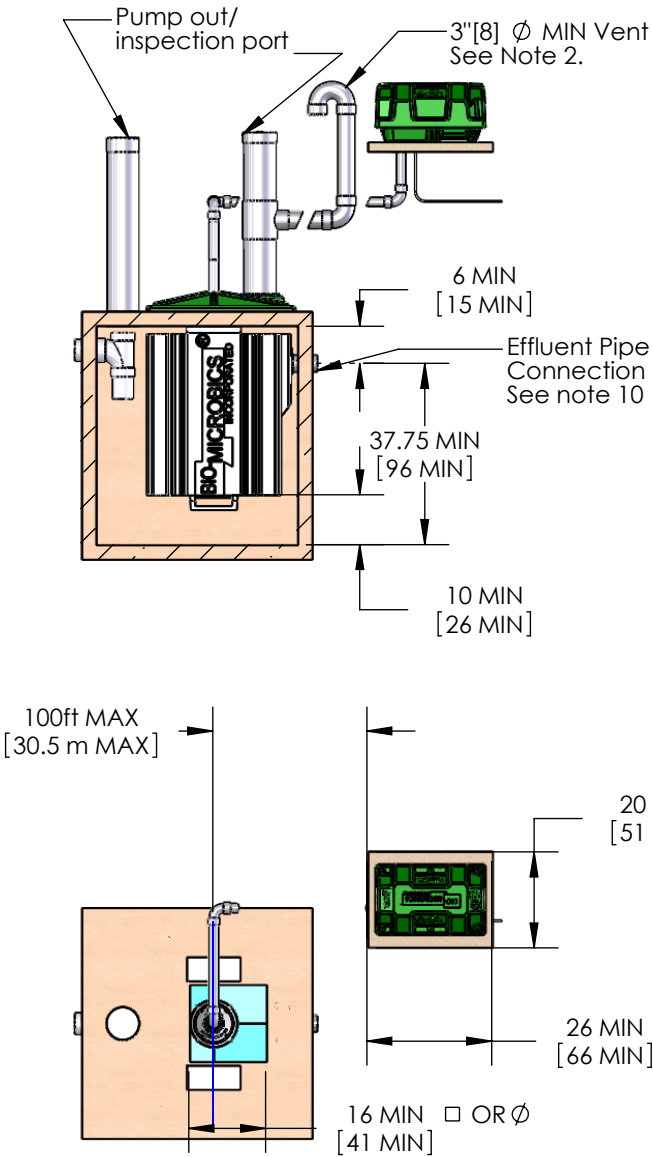
During the warranty period, if any part is defective or fails to perform as specified when operating at design conditions, and if the equipment has been installed and is being operated and maintained in accordance with the written instructions provided by Bio-Microbics, Inc., Bio-Microbics, Inc. will repair or replace at its discretion such defective parts free of charge. Defective parts must be returned by owner to Bio-Microbics, Inc.'s factory postage paid, if so requested. The cost of labor and all other expenses resulting from replacement of the defective parts and from installation of parts furnished under this warranty and regular maintenance items such as filters or bulbs shall be borne by the owner. This warranty does not cover general system misuse, aerator components which have been damaged by flooding or any components that have been disassembled by unauthorized persons, improperly installed or damaged due to altered or improper wiring or overload protection. This warranty applies only to the treatment plant and does not include any of the structure wiring, plumbing, drainage, septic tank or disposal system. Bio-Microbics, Inc. reserves the right to revise, change or modify the construction and/or design of the FAST system, or any component part or parts thereof, without incurring any obligation to make such changes or modifications in present equipment. Bio-Microbics, Inc. is not responsible for consequential or incidental damages of any nature resulting from such things as, but not limited to, defect in design, material, or workmanship, or delays in delivery, replacements or repairs.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. BIO-MICROBICS SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

NO REPRESENTATIVE OR PERSON IS AUTHORIZED TO GIVE ANY OTHER WARRANTY OR TO ASSUME FOR BIO-MICROBICS, INC., ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF ITS PRODUCTS. Contact your local distributor for parts and service.

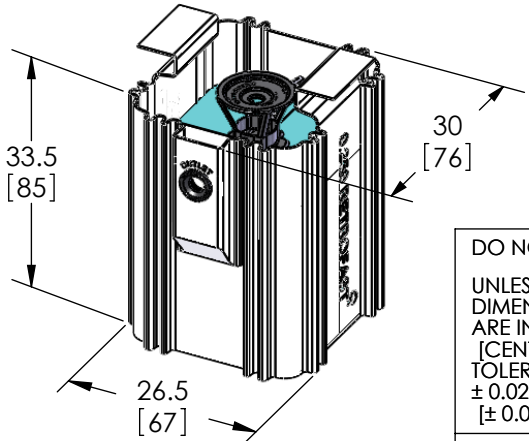
DO NOT SCALE		 <p>RetroFAST 0.150</p>	
UNLESS NOTED DIMENSIONS ARE IN INCHES [CENTIMETERS] TOLERANCES ± 0.02 IN/IN [± 0.05 CM/CM]			
WEIGHT	lb	SIZE	DRAWING NUMBER
		A	RetroFAST® 0.150 Specification
DRAWN	CTC	DATE	5/5/2008
CHECKED	PF	DATE	9/20/2012
		REVISED	9/20/2012
		REV.	INI-01-U
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# RetroFAST® 0.250



**NOTES**

- Blower piping to RetroFAST® may not exceed 100 FT [30.5m] total length and use 4 elbows maximum. For distances greater than 100 FT [30.5m] - consult factory. Blower must be located above flood/standing water levels on a solid surface or concrete base 24" X 18" X 2" [61X45.7X5cm] minimum.
- Vent to be located above finish grade or higher to avoid infiltration. Cap with vent grate w/at least 7.1 sq in. [45.8 sq. cm] open surface area. Secure with stainless steel screws.  
or  
Run vent to desired location and cover opening with vent grate w/at least 7.1 sq in. [45.8 sq. cm] of open surface area. Secure with stainless steel screws. Vent piping must not allow excess moisture build up or back pressure.
- All appurtenances to FAST® (e.g. tank pump outs, etc.) must conform to all country, state, province, and local plumbing and electrical codes. The blower control system is provided by Bio-Microbics, Inc.
- Optional blower control system by Bio-Microbics, Inc.
- Fast® module must be secured by bolting through straps, then lid is bolted to the tank.
- No more than 4 FT [1.2 m] of fill may be placed over unit lid.
- All inspection, viewing and pump out ports must be secured to prevent accidental or unauthorized access.
- Tank, anchors, piping, conduit, blower housing pad and vents are provided by others.
- All piping and ancillary equipment installed after FAST® must not impede or restrict free flow of effluent.
- Effluent hole will accept a 3" SCH 40 PVC pipe which can be then inserted into the existing 4" Discharge pipe in the septic tank.

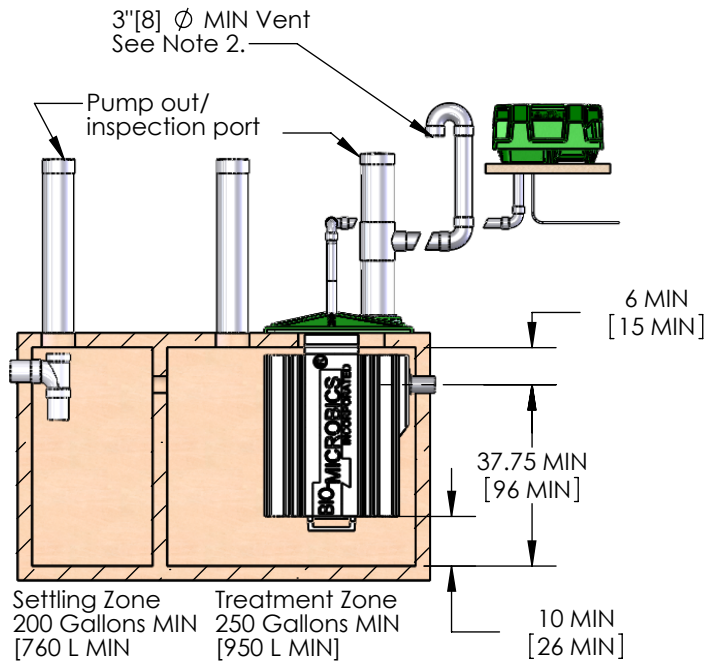


DO NOT SCALE UNLESS NOTED DIMENSIONS ARE IN INCHES [CENTIMETERS] TOLERANCES ± 0.02 IN/IN [± 0.05 CM/CM]		<b>BIO-MICROBICS</b> INCORPORATED	
		RetroFAST 0.250	
WEIGHT	lb	SIZE	DRAWING NUMBER
		A	RetroFAST® 0.250 Remdiation
DRAWN	CTC	DATE	5/5/2008
CHECKED	PF	DATE	9/20/2012
		REVISED	9/20/2012
		REV.	INI-01-T
			SHEET 1 OF 3

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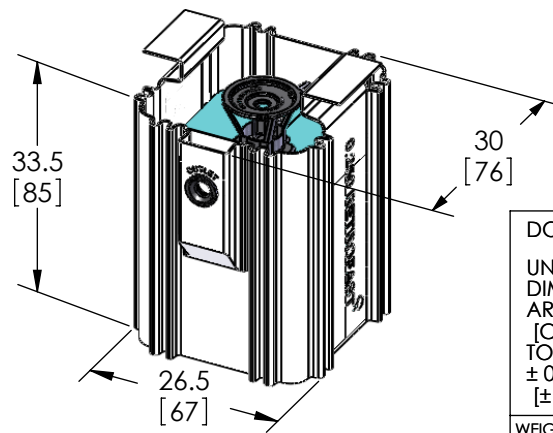
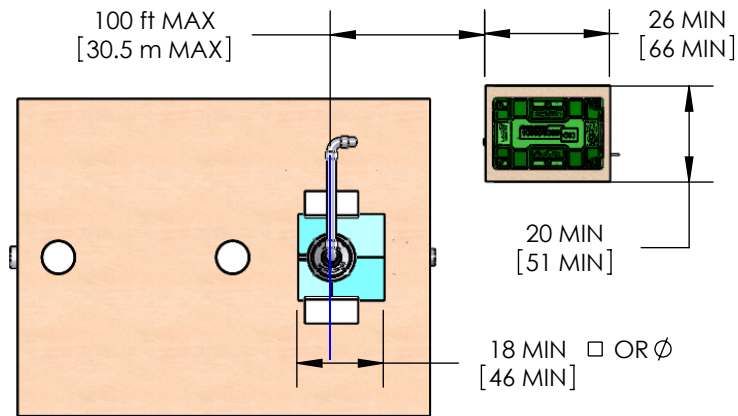
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# RetroFAST® 0.250



## NOTES

- Blower piping to RetroFAST® may not exceed 100 FT [30.5m] total length and use 4 elbows maximum. For distances greater than 100 FT [30.5m] - consult factory. Blower must be located above flood/standing water levels on a solid surface or concrete base 24" X 18" X 2" [61X45.7X5cm] minimum.
- Vent to be located above finish grade or higher to avoid infiltration. Cap with vent grate w/at least 7.1 sq in. [45.8 sq. cm] open surface area. Secure with stainless steel screws.  
or  
Run vent to desired location and cover opening with vent grate w/at least 7.1 sq in. [45.8 sq. cm] of open surface area. Secure with stainless steel screws. Vent piping must not allow excess moisture build up or back pressure.
- All appurtenances to FAST® (e.g. tank pump outs, etc.) must conform to all country, state, province, and local plumbing and electrical codes. The blower control system is provided by Bio-Microbics, Inc.
- Optional blower control system by Bio-Microbics, Inc.
- Fast® module must be secured by bolting through straps, then lid is bolted to the tank.
- No more than 4 FT [1.2 m] of fill may be placed over unit lid.
- All inspection, viewing and pump out ports must be secured to prevent accidental or unauthorized access.
- Tank, anchors, piping, conduit, blower housing pad and vents are provided by others.
- All piping and ancillary equipment installed after FAST® must not impede or restrict free flow of effluent.
- Effluent hole will accept a 3" SCH 40 PVC pipe which can be then inserted into the existing 4" Discharge pipe in the septic tank. The RetroFAST® provides vigorous aeration in a septic tank which reverses the clogging process in a drain field.



DO NOT SCALE  
UNLESS NOTED  
DIMENSIONS  
ARE IN INCHES  
[CENTIMETERS]  
TOLERANCES  
± 0.02 IN/IN  
[± 0.05 CM/CM]



RetroFAST 0.250

WEIGHT		lb	SIZE	DRAWING NUMBER		SHEET	
NAME		DATE		A	RetroFAST@.25 New Construction		2 OF 3
DRAWN	CTC	5/5/2008	REVISED 9/20/2012		REV. INI-01-T		
CHECKED	PF	9/20/2012					

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Specifications for RetroFAST 0.250 Wastewater Treatment System

1. GENERAL

The contractor shall furnish and install (1) RetroFAST 0.250 treatment system as manufactured by Bio-Microbics, Inc. The treatment system shall be complete with all needed equipment as shown on the drawings and specified herein.

The principal items of equipment shall include FAST System insert, insert lid, blower assembly, and blower housing. The RetroFAST 0.250 unit shall be situated within tank that exceeds the minimum dimensions and a 16" [41cm] tank opening. Tank(s) must conform to local, state, and all other applicable codes. The contractor shall provide coordination between the FAST system and tank supplier with regard to fabrication of the tank, installation of the FAST unit and delivery to the job site.

2. OPERATING CONDITIONS

The RetroFAST 0.250 treatment system shall be capable of treating the wastewater produced by typical family activities (bath, laundry, kitchen, etc.) ranging from (1) one to (4) four persons and not to exceed 250 US Gallons per day (945 LPD). For systems installed for rejuvenation of a failed drainfield the flow can exceed the maximum flow rate by up to 30%. Consult factory for guidance.

3. MEDIA

The FAST media shall be manufactured of rigid PVC, polyethylene, or polypropylene and it shall be supported by the polyethylene insert. The media shall be fixed in position and contain no moving or wearing parts and shall not corrode. The media shall be designed and installed to ensure that sloughed solids descend through the media to the bottom of the septic tank.

4. BLOWER

The RetroFAST 0.250 unit shall come equipped with a regenerative type blower capable of delivering 9-24 CFM [15-41m3/hr]. The blower assembly shall include an inlet filter with metal filter element.

5. REMOTE MOUNTED BLOWER

The blower shall be mounted up to 100 feet [30.5 meters] away from the RetroFAST unit on a contractor supplied concrete base. The blower elevation must be higher than the normal flood level. A two-piece, rectangular housing shall be provided with tamper-proof screws. The discharge air line from the blower to the RetroFAST shall be provided and installed by the contractor.

6. ELECTRICAL

The electrical source should be within 150 feet [45.7 meters] of the blower consult local codes for longer wiring distances. All wiring must conform to all applicable codes(IEC, NEC, etc.). Wiring distances must prevent significant voltage loss. Input power on 60Hz electrical system is 110/220 VAC, single phase, 2.3/1.0 Amps. Input power on 50Hz electrical systems 127/230 VAC, single phase 0.253 kw/hr. All conduit and wiring shall be supplied by contractor.

7. INSTALLATION AND OPERATING INSTRUCTIONS

All work must be done in accordance with local codes and regulations. Installation of the RetroFAST 0.250 shall be done in accordance with the written instructions provided by the manufacturer. An operation and maintenance manual shall be furnished, which will include a description of system installation, operation, and maintenance procedures.

8. OPTIONAL ALARM PANEL

The alarm system shall consist of a visual and audible alarm to indicate loss of power to the blower. A manual silence switch is included.

9. FLOW AND DOSING


Wastewater treatment systems work best when influent flow is delivered as consistently as possible. FAST systems have been successfully designed, tested, and certified receiving gravity, demand-based influent flow. When influent flow is controlled (either by influent pump or other means) to the FAST system to help with highly variable flow conditions, then multiple feeding events should be used to help assure even flow, optimum performance, and reliability.

10. WARRANTY

Bio-Microbics, Inc. warrants all new RetroFAST® models (RetroFAST 0.150, 0.250, and 0.375) against defects in materials and workmanship for a period of two years after installation or three years from date of shipment, which ever occurs first, subject to the following terms and conditions:

During the warranty period, if any part is defective or fails to perform as specified when operating at design conditions, and if the equipment has been installed and is being operated and maintained in accordance with the written instructions provided by Bio-Microbics, Inc., Bio-Microbics, Inc. will repair or replace at its discretion such defective parts free of charge. Defective parts must be returned by owner to Bio-Microbics, Inc.'s factory postage paid, if so requested. The cost of labor and all other expenses resulting from replacement of the defective parts and from installation of parts furnished under this warranty and regular maintenance items such as filters or bulbs shall be borne by the owner. This warranty does not cover general system misuse, aerator components which have been damaged by flooding or any components that have been disassembled by unauthorized persons, improperly installed or damaged due to altered or improper wiring or overload protection. This warranty applies only to the treatment plant and does not include any of the structure wiring, plumbing, drainage, septic tank or disposal system. Bio-Microbics, Inc. reserves the right to revise, change or modify the construction and/or design of the FAST system, or any component part or parts thereof, without incurring any obligation to make such changes or modifications in present equipment. Bio-Microbics, Inc. is not responsible for consequential or incidental damages of any nature resulting from such things as, but not limited to, defect in design, material, or workmanship, or delays in delivery, replacements or repairs.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. BIO-MICROBICS SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NO REPRESENTATIVE OR PERSON IS AUTHORIZED TO GIVE ANY OTHER WARRANTY OR TO ASSUME FOR BIO-MICROBICS, INC., ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF ITS PRODUCTS. Contact your local distributor for parts and service.

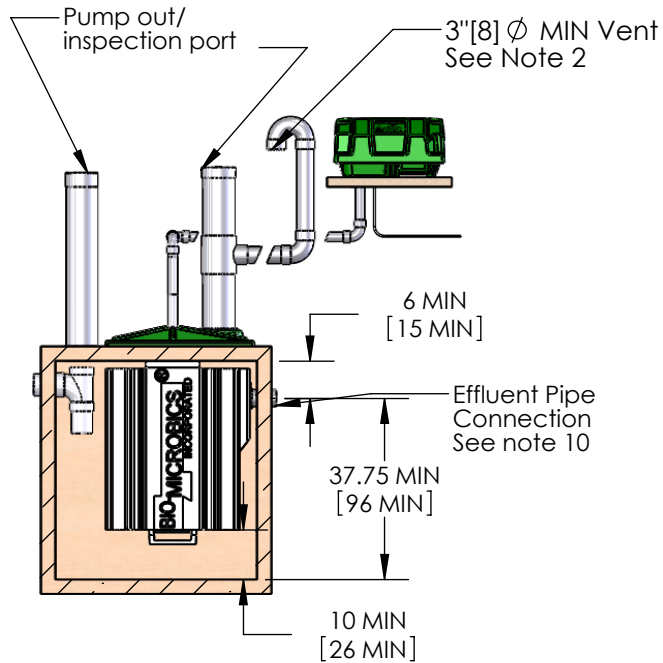
<p><b>DO NOT SCALE</b></p> <p>UNLESS NOTED DIMENSIONS ARE IN INCHES [CENTIMETERS] TOLERANCES ± 0.02 IN/IN [± 0.05 CM/CM]</p>		 <p>RetroFAST 0.250</p>	
WEIGHT	lb	SIZE	DRAWING NUMBER
		A	RetroFAST® 0.250 Specification
DRAWN	5/5/2008	CHECKED	PF
	9/20/2012	REVISED	9/20/2012
		REV.	

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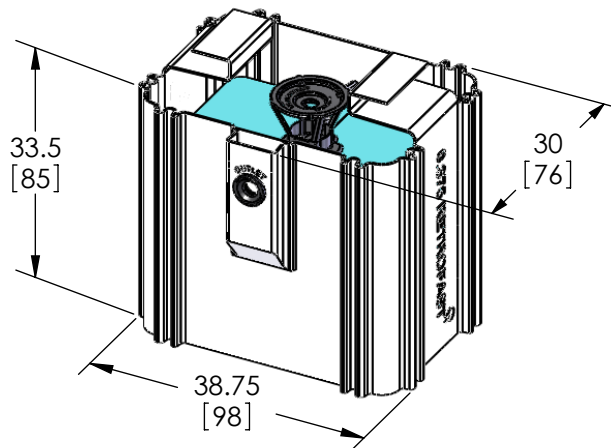
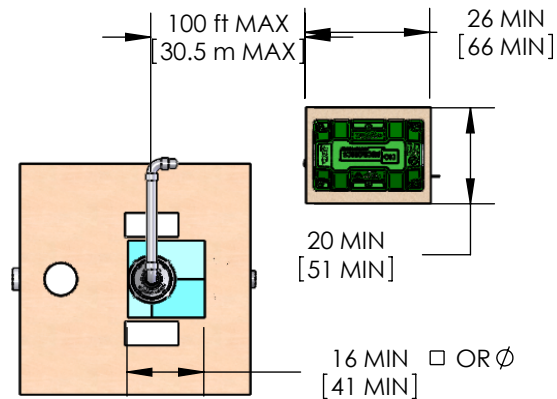
SHEET 3 OF 3

# RetroFAST® 0.375



## NOTES

- Blower piping to FAST® may not exceed 100 FT [30.5m] total length and use 4 elbows maximum. For distances greater than 100 FT [30.5m] - consult factory. Blower must be located above flood/standing water levels on a solid surface or concrete base 24" X 18" X 2" [61X45.7X5cm] minimum.
- Vent to be located above finish grade or higher to avoid infiltration. Cap with vent grate w/at least 7.1 sq in. [45.8 sq. cm] open surface area. Secure with stainless steel screws.  
or  
Run vent to desired location and cover opening with vent grate w/at least 7.1 sq in. [45.8 sq. cm] of open surface area. Secure with stainless steel screws. Vent piping must not allow excess moisture build up or back pressure.
- All appurtenances to FAST® (e.g. tank pump outs, etc.) must conform to all country, state, province, and local plumbing and electrical codes. The blower control system is provided by Bio-Microbics, Inc.
- Optional blower control system by Bio-Microbics, Inc.
- Fast® module must be secured by bolting through straps, then lid is bolted to the tank.
- No more than 4 FT [1.2 m] of fill may be placed over unit lid.
- All inspection, viewing and pump out ports must be secured to prevent accidental or unauthorized access.
- Tank, anchors, piping, conduit, blower housing pad and vents are provided by others.
- All piping and ancillary equipment installed after FAST® must not impede or restrict free flow of effluent.
- Effluent hole will accept a 3" SCH 40 PVC pipe which can be then inserted into the existing 4" Discharge pipe in the septic tank.



DO NOT SCALE  
UNLESS NOTED  
DIMENSIONS  
ARE IN INCHES  
[CENTIMETERS]  
TOLERANCES  
± 0.02 IN/IN  
[± 0.05 CM/CM]

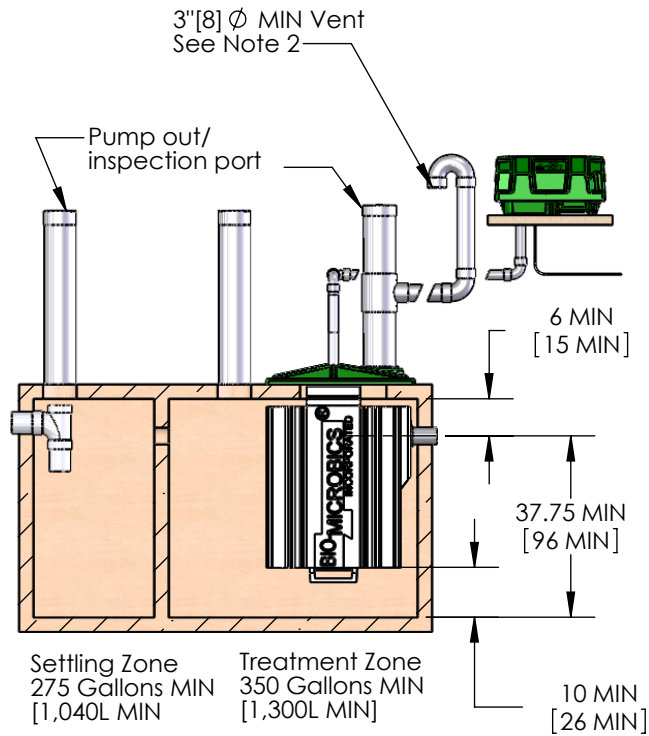


RetroFAST 0.375

WEIGHT		lb	SIZE	DRAWING NUMBER		SHEET
NAME	DATE	A		RetroFAST® 0.375		
DRAWN	CTC	5/5/2008	Remediation			
CHECKED	PF	9/20/2012	REVISED	9/20/2012	REV. INI-01-T	

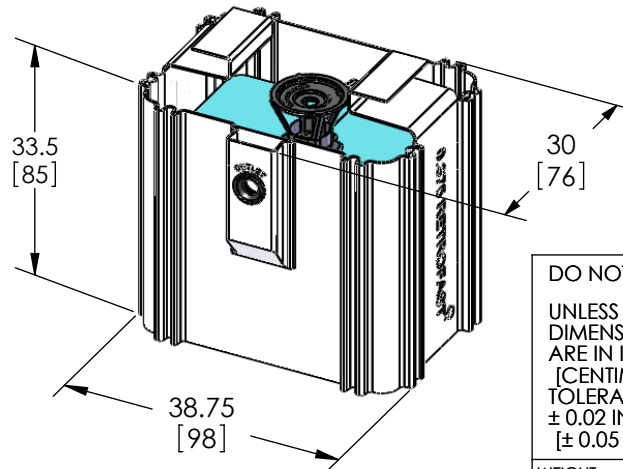
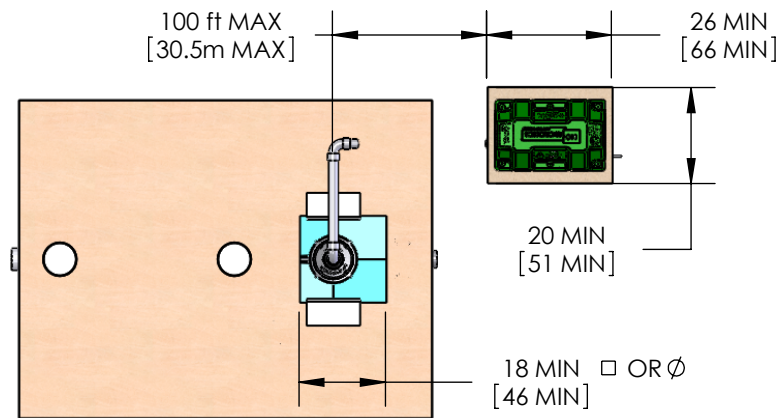
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#### NOTES

- Blower piping to FAST® may not exceed 100 FT [30.5m] total length and use 4 elbows maximum. For distances greater than 100 FT [30.5m] - consult factory. Blower must be located above flood/standing water levels on a solid surface or concrete base 24" X 18" X2" [61X45.7X5cm] minimum.
- Vent to be located above finish grade or higher to avoid infiltration. Cap with vent grate w/at least 7.1 sq in. [45.8 sq. cm] open surface area. Secure with stainless steel screws.  
or  
Run vent to desired location and cover opening with vent grate w/at least 7.1 sq in. [45.8 sq. cm] of open surface area. Secure with stainless steel screws. Vent piping must not allow excess moisture build up or back pressure.
- All appurtenances to FAST® (e.g. tank pump outs, etc.) must conform to all country, state, province, and local plumbing and electrical codes. The blower control system is provided by Bio-Microbics, Inc.
- Optional blower control system by Bio-Microbics, Inc.
- Fast® module must be secured by bolting through straps, then lid is bolted to the tank.
- No more than 4 FT [1.2 m] of fill may be placed over unit lid.
- All inspection, viewing and pump out ports must be secured to prevent accidental or unauthorized access.
- Tank, anchors, piping, conduit, blower housing pad and vents are provided by others.
- All piping and ancillary equipment installed after FAST® must not impede or restrict free flow of effluent.
- Effluent hole will accept a 3" SCH 40 PVC pipe which can be then inserted into the existing 4" Discharge pipe in the septic tank. The RetroFAST® provides vigorous aeration in a septic tank which reverses the clogging process in a drain field.



DO NOT SCALE  
UNLESS NOTED  
DIMENSIONS  
ARE IN INCHES  
[CENTIMETERS]  
TOLERANCES  
 $\pm 0.02$  IN/IN  
 $\pm 0.05$  CM/CM

**BIO-MICROBICS**  
INCORPORATED

RetroFAST 0.375

WEIGHT	lb	SIZE	DRAWING NUMBER	SHEET 2 OF 3
NAME	DATE	A	RetroFAST@.375New Construction	
DRAWN	CTC	5/5/2008		
CHECKED	PF	9/20/2012	REVISED 9/20/2012 REV. INI-01-T	

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Specifications for RetroFAST 0.375 Wastewater Treatment System

1. GENERAL

The contractor shall furnish and install (1) RetroFAST 0.375 treatment system as manufactured by Bio-Microbics, Inc. The treatment system shall be complete with all needed equipment as shown on the drawings and specified herein.

The principal items of equipment shall include FAST System insert, insert lid, blower assembly, and blower housing. **The RetroFAST 0.375 unit shall be situated within tank that exceeds the minimum dimensions and a 16" [41cm] tank opening.** Tank(s) must conform to local, state, and all other applicable codes. The contractor shall provide coordination between the FAST system and tank supplier with regard to fabrication of the tank, installation of the FAST unit and delivery to the job site.

2. OPERATING CONDITIONS

The RetroFAST 0.375 treatment system shall be capable of treating the wastewater produced by typical family activities (bath, laundry, kitchen, etc.) ranging from (1) one to (5) five persons and not to exceed 375 US Gallons per day (1420 LPD). For systems installed for rejuvenation of a failed drainfield the flow can exceed the maximum flow rate by up to 30%. Consult factory for guidance.

3. MEDIA

The FAST media shall be manufactured of rigid PVC, polyethylene, or polypropylene and it shall be supported by the polyethylene insert. The media shall be fixed in position and contain no moving or wearing parts and shall not corrode. The media shall be designed and installed to ensure that sloughed solids descend through the media to the bottom of the septic tank.

4. BLOWER

The RetroFAST 0.375 unit shall come equipped with a regenerative type blower capable of delivering 9-24 CFM [15-41m3/hr]. The blower assembly shall include an inlet filter with metal filter element.

5. REMOTE MOUNTED BLOWER

The blower shall be mounted up to 100 feet [30.5 meters] away from the RetroFAST unit on a contractor supplied concrete base. The blower elevation must be higher than the normal flood level. A two-piece, rectangular housing shall be provided with tamper-proof screws. The discharge air line from the blower to the RetroFAST shall be provided and installed by the contractor.

6. ELECTRICAL

The electrical source should be within 150 feet [45.7 meters] of the blower consult local codes for longer wiring distances. All wiring must conform to all applicable codes(IEC, NEC, etc.). Wiring distances must prevent significant voltage loss. Input power on 60Hz electrical system is 110/220 VAC, single phase, 2.3/1.0 Amps. Input power on 50Hz electrical systems 127/230 VAC, single phase 0.253 kw/hr. All conduit and wiring shall be supplied by contractor.

7. INSTALLATION AND OPERATING INSTRUCTIONS

All work must be done in accordance with local codes and regulations. Installation of the RetroFAST 0.375 shall be done in accordance with the written instructions provided by the manufacturer. An operation and maintenance manual shall be furnished, which will include a description of system installation, operation, and maintenance procedures.

8. OPTIONAL ALARM PANEL

The alarm system shall consist of a visual and audible alarm to indicate loss of power to the blower. A manual silence switch is included.

9. FLOW AND DOSING

Wastewater treatment systems work best when influent flow is delivered as consistently as possible. FAST systems have been successfully designed, tested, and certified receiving gravity, demand-based influent flow. When influent flow is controlled (either by influent pump or other means) to the FAST system to help with highly variable flow conditions, then multiple feeding events should be used to help assure even flow, optimum performance, and reliability.


10. WARRANTY

Bio-Microbics, Inc. warrants all new RetroFAST® models (RetroFAST 0.150, 0.250, and 0.375) against defects in materials and workmanship for a period of two years after installation or three years from date of shipment, whichever ever occurs first, subject to the following terms and conditions:

During the warranty period, if any part is defective or fails to perform as specified when operating at design conditions, and if the equipment has been installed and is being operated and maintained in accordance with the written instructions provided by Bio-Microbics, Inc., Bio-Microbics, Inc. will repair or replace at its discretion such defective parts free of charge. Defective parts must be returned by owner to Bio-Microbics, Inc.'s factory postage paid, if so requested. The cost of labor and all other expenses resulting from replacement of the defective parts and from installation of parts furnished under this warranty and regular maintenance items such as filters or bulbs shall be borne by the owner. This warranty does not cover general system misuse, aerator components which have been damaged by flooding or any components that have been disassembled by unauthorized persons, improperly installed or damaged due to altered or improper wiring or overload protection. This warranty applies only to the treatment plant and does not include any of the structure wiring, plumbing, drainage, septic tank or disposal system. Bio-Microbics, Inc. reserves the right to revise, change or modify the construction and/or design of the FAST system, or any component part or parts thereof, without incurring any obligation to make such changes or modifications in present equipment. Bio-Microbics, Inc. is not responsible for consequential or incidental damages of any nature resulting from such things as, but not limited to, defect in design, material, or workmanship, or delays in delivery, replacements or repairs.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. BIO-MICROBICS SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

NO REPRESENTATIVE OR PERSON IS AUTHORIZED TO GIVE ANY OTHER WARRANTY OR TO ASSUME FOR BIO-MICROBICS, INC., ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF ITS PRODUCTS. Contact your local distributor for parts and service.

DO NOT SCALE			RetroFAST 0.375
UNLESS NOTED DIMENSIONS ARE IN INCHES [CENTIMETERS] TOLERANCES ± 0.02 IN/IN [± 0.05 CM/CM]			
WEIGHT	lb	SIZE	DRAWING NUMBER
		A	RetroFAST® 0.375 Specification
DRAWN	5/5/2008	CHECKED	PF
	9/20/2012	REVISED	Thursday, September 20, 2012
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