



OWNER'S MANUAL

FOR USE WITH
BIO-MICROBICS, INC.
FAST®
WASTEWATER TREATMENT SYSTEMS

IMPORTANT: *We urge you to fully read this manual. The contents are important to your safety and the operation of the Bio-Microbics, Inc. wastewater treatment system. Keep this manual with other important household manuals for future reference.*

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: _____

TABLE OF CONTENTS

Warning Labels 3-4
Dangers.....4
Warnings5
Introduction5
How FAST® Systems Work6
System Components 7-9
 Underground Treatment System 7
 Control Panel 7-8
 Identification Plate 8
 Blower Housing 8-9
Introducing Substances into the System 9-12
 Prohibited Substances 10
 Limited-Use Substances 11
 Acceptable Substances 12
System Maintenance and Monitoring 12-15
The Septic Tank 15
Alarm Warning 15-16
Blower Stoppage or Electrical Power Outage 16
Flooding 16-17
Evaluation of System Performance 17
Intermittent Use 17-18
Abandonment or Decommissioning 18
Specifications 18
Important Phone Numbers 18
Warranty 19
FAST® Installation Components Diagram 20-21
Index 22

INDEX

- Abandonment, 18
 Acceptable substances, 12
 Alarm, 8, 12, 13, 15, 16
 Animal fats, 10
 Bleach, 11-12
 Blower housing, 5, 8, 9, 12, 13, 15, 16
 Blower stoppage, 16
 Chemicals, 10-11
 Control panel, 7-9, 13, 15
 Corn cobs, 11
 Dangers, 4
 Decommissioning, 18
 Detergents, 11-13
 Disinfectants, 10
 Drain cleaners, 10
 Electrical power outage, 16
 Flooding, 16
 Gasoline, 10
 Identification plate, 8
 Limited-use substances, 9, 11
 Melon rinds, 11
 Motor oil, 10
 Intermittent Use, 17-18
 Paint, 10
 Paint thinner, 10
 Paper products, 10
 Pesticides, 10
 Phone numbers, 19
 Pipes, 4, 5, 7
 Plastic, 10
 Prohibited substances, 9-10
 Pump-out, 6, 7, 9, 11, 15
 Septic tank, 5-7, 9, 11, 13, 15, 16
 Specifications, 18
 System diagram, 6
 Toilet paper, 12
 Treatment tank, 7, 8, 17
 Warning labels, 3-4
 Warnings, 5
 Warranty, 10, 19

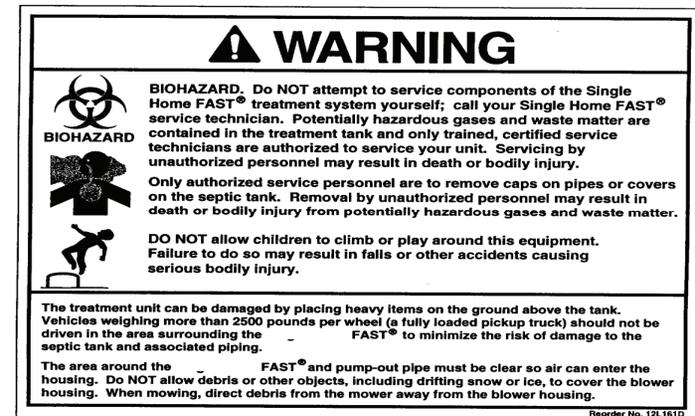
THANK YOU for choosing a FAST wastewater treatment system for your wastewater treatment needs. Bio-Microbics cares about your safety and satisfaction. Please take the time to read the information in this manual. Safe and proper operation of your FAST system will ensure long product life.

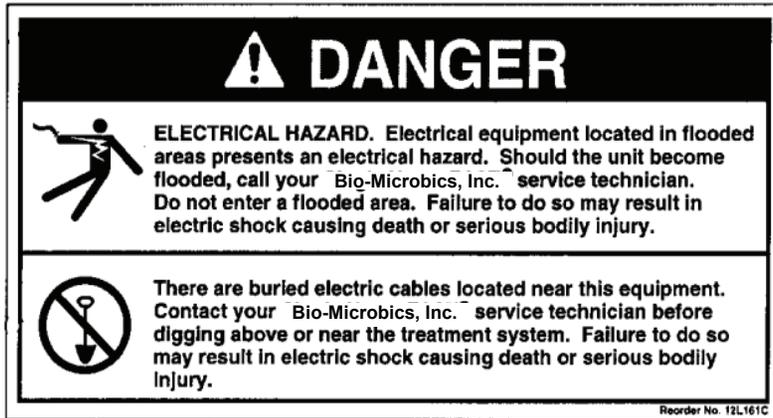
WARNING LABELS

These warning labels are located on the control panel and blower housing. You must follow the information on these labels to ensure your safety.



Located on the Blower Housing





Located on the Blower Housing

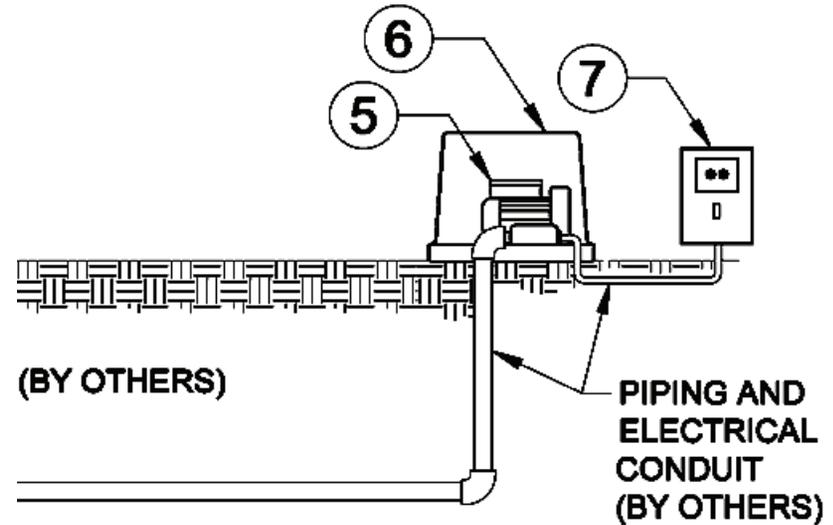
IMPORTANT INFORMATION

Please read and follow the cautionary notes given below and those found elsewhere in this manual. If you have questions regarding the safety or operation of your FAST® Wastewater Treatment System, contact your authorized Bio-Microbics service technician.



DANGERS

1. Electrical equipment located in flooded areas presents an electrical hazard. Should the unit become flooded, call your Bio-Microbics service technician. Do not enter a flooded area. Entering a flooded area may result in electrical shock causing death or serious bodily injury.
2. There are buried pipes and electric cables located near this equipment. Contact your authorized Bio-Microbics service technician before digging above or near the treatment system. Failure to do so may result in electrical shock causing death or serious bodily injury.



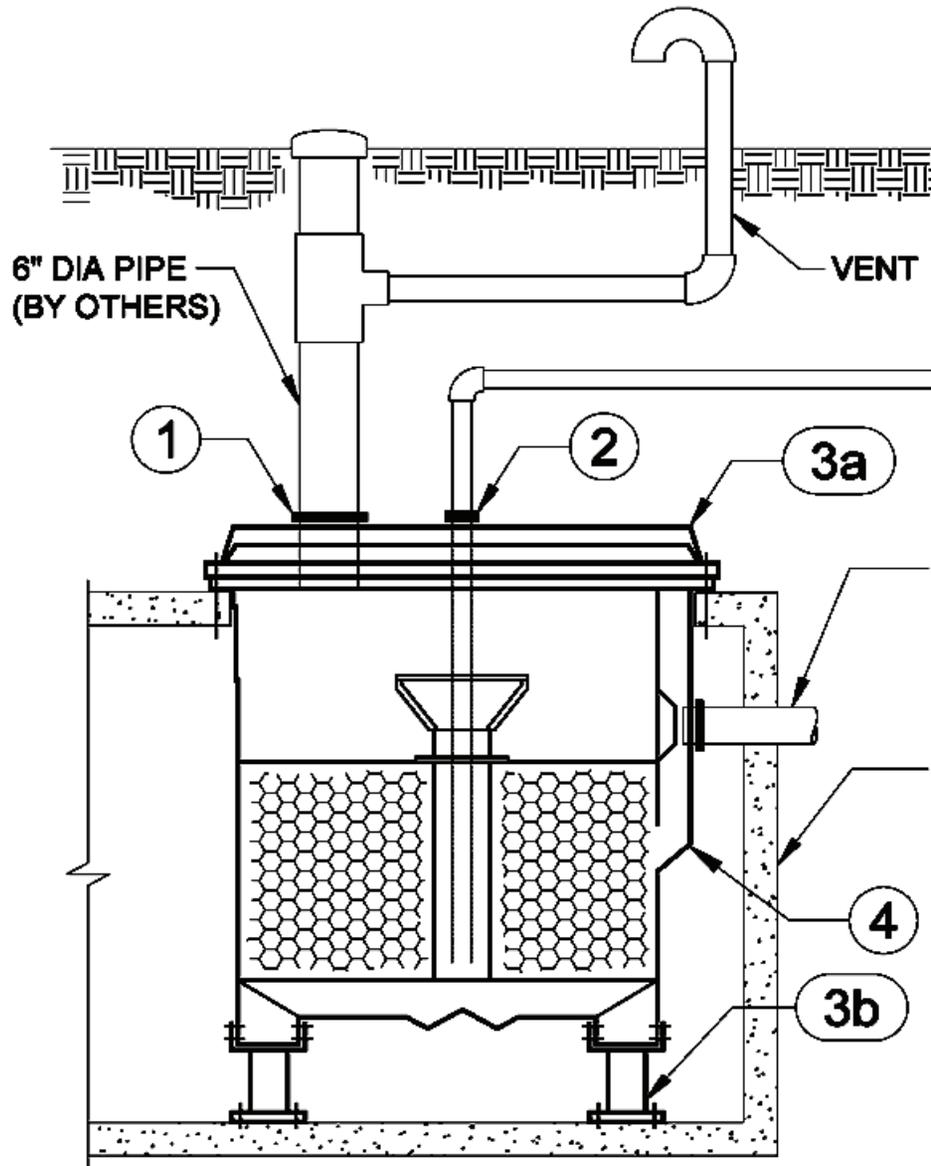
**OUTLET PIPE
(BY OTHERS)**

**SEPTIC TANK
(BY OTHERS)**

- 1 = GASKET, 6"**
- 2 = GASKET, 2"**
- 3a = LID (or FEET)**
- 3b = FEET (or LID)**
- 4 = FAST® INSERT**
- 5 = BLOWER**
- 6 = BLOWER HOUSING**
- 7 = ALARM PANEL**

Typical FAST® Installation Components

(Actual installed components subject to design specifications)



WARNINGS

1. **DO NOT** attempt to service components of the FAST wastewater treatment system yourself; call your authorized Bio-Microbics service technician.
2. Only authorized service personnel are to remove caps on pipes or covers on the septic tank. Removal by unauthorized personnel may result in death or bodily injury from potentially hazardous gases and waste matter.
3. **DO NOT** allow children to play on or around the vents and blower housing. Such play may result in falls or other accidents causing serious bodily injury.
4. Ice may form around vents during cold weather. Use caution when walking in these areas to avoid falling, causing serious bodily injury.
5. Anyone coming in contact with wastewater must remove any contaminated clothing and thoroughly wash all body areas and clothing exposed to wastewater with soap and water. Then consult a physician to minimize the risk of illness.
6. The treatment unit can be damaged by placing heavy items on the ground above the tank. Vehicles heavier than a lawn tractor should not be driven in the area surrounding the FAST system to minimize the risk of damage to the septic tank and associated piping (unless the septic tank has been specially designed for use under roadways).
7. The area around the blower housing and vents must be clear so air can enter the housing. Do **NOT** allow debris or other objects, including drifting snow or ice, to cover the blower housing or vents. When mowing, direct debris from the mower away from the blower housing and vents.

INTRODUCTION

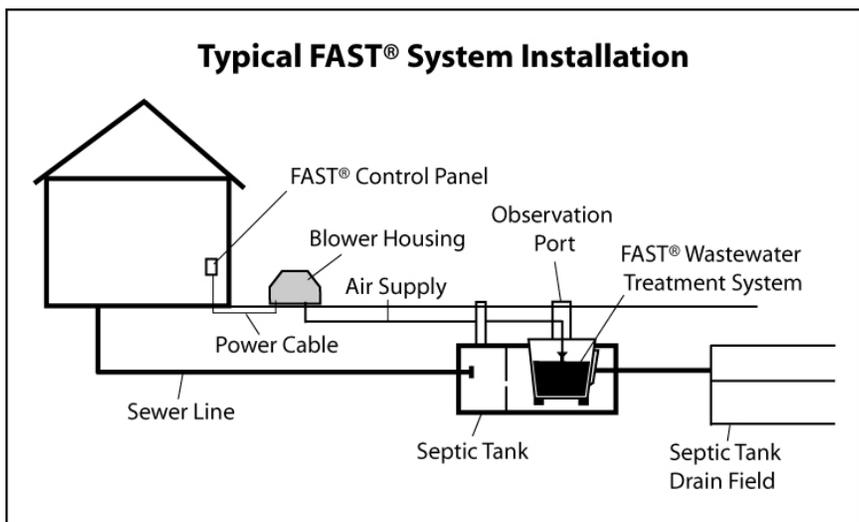
Thank you for choosing a FAST wastewater treatment system for your home. The system is compatible with garbage disposals (see note on p. 11), dishwashers and other household appliances. The MicroFAST 0.5, 0.75, 0.9 and 1.5 systems have been tested and certified by NSF International to meet NSF Standard 40, Class 1.

HOW FAST® TREATMENT SYSTEMS WORK

FAST stands for Fixed Activated Sludge Treatment. In the FAST wastewater treatment system process, a colony of bacteria, called the biomass, breaks down biodegradable waste into carbon dioxide and water. The process occurs continuously as long as the biomass is supplied food (incoming waste) and oxygen (air) in a suitable environment. Solid material that the biomass cannot process settles into the septic tank for normal removal by pump-out.

The heart of the FAST wastewater treatment system is a honeycomb-type media suspended in the septic tank below ground. The media contains the biomass. Above ground, an electric blower blows air through an underground pipe into the media to aerate the wastewater. Aeration circulates the wastewater, thereby providing both food and oxygen to the biomass. An outlet pipe directs treated wastewater into the septic tank drain field.

There are no moving mechanical parts in the FAST wastewater treatment system other than the blower (however there may be other moving parts associated with other portions of your treatment system). With proper use and maintenance, and a healthy environment for the biomass, the FAST wastewater treatment system will perform safely and reliably.



System Diagram

LIMITED 24-MONTH WARRANTY

Bio-Microbics, Inc. warrants every new Residential FAST® system against defects in materials and workmanship for a period of two years after installation 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 house 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.

INTERMITTENT USE

The FAST wastewater treatment system will function normally even if wastewater does not enter the system for an extended period of time. The power to the system should be left on during short periods when there is no wastewater flow to the system. Suggestions for intermittent use (Check with local regulations before attempting): If the property is going to be used seasonally and shut down completely for an extended period of time (i.e. summer use only and then abandoned for the winter), we suggest that the blower be shut down. The blower should be re-started upon return to the property. Your local service provider may be contacted to perform these functions (It is also possible to arrange for the re-starting of the blower a week or two in advance of return through your local service provider.). If the property will be used on weekends only, it is best to leave the blower on continuously throughout the season for use until an extended period of absence is anticipated. (Extended period being at least 4 weeks or more.) A slight odor may be detected for a couple of days while the system returns to normal operation.

ABANDONMENT OR DECOMMISSIONING

If you plan to connect your house's sewer system to a municipal sewer system, or if your FAST wastewater treatment system is no longer needed, please contact your Bio-Microbics service technician or Bio-Microbics, Inc. (913-422-0707). Procedures specified by regulatory agencies must be followed when the FAST wastewater treatment system is abandoned or decommissioned.

SPECIFICATIONS

Power Requirements

120 or 220 VAC, 1 Phase, 60Hz., 50Hz.

IMPORTANT PHONE NUMBERS

Space is provided for you on the title page to record important phone numbers.



1-800-753-FAST (3278)

SYSTEM COMPONENTS

A. Underground Treatment System

The underground treatment tank includes the septic tank (supplied by others) and the FAST wastewater treatment module. Underground pipes carry wastewater into and away from the tank. Depending upon local codes, a pipe or cover may extend upward from the tank. This pipe may serve as a pump-out pipe to remove solid material from the septic tank. An observation port may extend from the top of the module. This can serve as a vent for the module and also used for service.



WARNING: Only authorized service personnel are to remove caps on pipes or covers on the septic tank. Removal by unauthorized personnel may result in death or bodily injury from potentially hazardous gases and waste matter.



WARNING: The treatment unit can be damaged by placing heavy items on the ground above the tank. Vehicles heavier than a lawn tractor should not be driven in the area surrounding the FAST system to minimize the risk of damage to the septic tank and associated piping (unless the septic tank has been specially designed for use under roadways).

B. Control Panel

A light on the control panel reports the status of the system's electrical circuit. If the red light is lit or flashing, there is a problem in the system. A buzzer also sounds when the red light flashes.

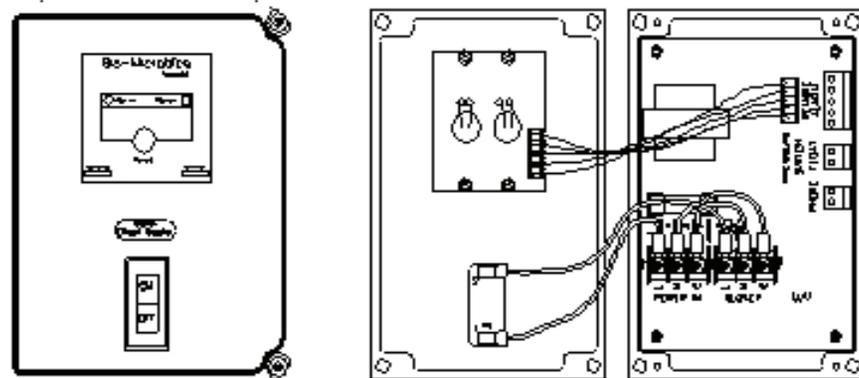


FIGURE 1 CONTROL PANEL

ALARM WARNING

The system is equipped with a red light on the control panel and an alarm horn. Should the red light illuminate or flash and the horn activate, check the breaker on the control panel to ensure it is not off. If the breaker is turned off, attempt to reset it. If the breaker fails to remain reset, call your Bio-Microbics service technician. The alarm horn may be shut off by pushing the silence button. Pushing the silence button will not reactivate the unit, only silence the horn.

BLOWER STOPPAGE OR POWER OUTAGE

The FAST wastewater treatment system requires a supply of oxygen and food for the biomass. Should the blower stop, air flow through the aeration pipe will stop, cutting off the supply of oxygen to the biomass. A prolonged absence of oxygen will seriously affect the condition of the biomass. When the blower is operating, it will emit a humming sound.

If the blower is not operating, first determine whether an electrical power outage has occurred in your community.

If your house is without electricity, call the electric utility. If the electricity is off more than 48 hours, call your Bio-Microbics service technician as well for treatment system advice.

If your house has electricity, but the blower is not operating, follow the procedure under **ALARM WARNING**.

FLOODING

Flood water may cover the septic tank unit, the blower housing, or both, if the FAST system is installed in a low-lying area.



DANGER: *Electrical equipment located in flooded areas presents an electrical hazard. Should the unit become flooded, call your Bio-Microbics service technician. Stay out of a flooded area. Failure to do so may result in electrical shock causing death or serious bodily injury.*

SHOULD water cover all, or part, of the blower housing, IMMEDIATELY disconnect electrical power to the blower at your house circuit breaker box by switching the circuit breaker to “off”. Immediately call your Bio-Microbics service technician. Do not



WARNING: *Do NOT allow children to play on or around the blower housing. Such play may result in falls or other accidents causing serious bodily injury.*



CAUTION: *Ice may form around vents during cold weather. Use caution when walking in these areas to avoid falling, causing serious bodily injury.*

NOTICE: *Do not cover the blower housing or vents. When mowing, direct debris from the mower away from the blower. The area around the blower housing and vents must be clear so air can enter the housing and vents. Do NOT allow debris or other objects, including drifting snow or ice, to cover over housing and vents.*

E. NSF STANDARD 40, CLASS 1, CERTIFICATION MARK

The NSF mark shown below is displayed on all NSF Standard 40, Class 1 certified FAST wastewater treatment systems. The MicroFAST 0.5, 0.75, 0.9, and 1.5 system should all have this mark on the side of the control panel housing. Non NSF certified systems will not have this mark.



FIGURE 3 NSF CERTIFICATION MARK

INTRODUCING SUBSTANCES INTO THE SYSTEM

Introducing harmful substances into the system may reduce the efficiency of the system or stop the treatment process by destroying the biomass. These substances that reduce the efficiency or stop the treatment process can be grouped into two groups, prohibited substances and limited-use substances. While the FAST wastewater treatment system will process most waste produced by the average household, the following information will maximize the system's efficiency and reduce the time period between septic tank pump-outs. In general, if a substance is harmful to humans, or is anti-biotic in

nature, it should not be put into any septic system including FAST. If you have a question regarding the effect of a particular substance on the FAST system, call your Bio-Microbics service technician.

NOTICE: *Introducing harmful or damaging chemicals into your FAST system may void the warranty.*

A. Prohibited Substances

Prohibited substances are those substances which, when present in even small amounts, will prevent the FAST system from providing wastewater treatment. Substances that will not dissolve may clog and possibly damage the aeration unit. The following is a partial list of prohibited substances, common sense should be used for other substances not on this list:

1. Plastic or rubber products
2. Petroleum based products, such as motor oil, paint, paint thinner, gasoline, and solvents
3. Non-biodegradable products, such as sanitary napkins, wipes, condoms, diapers and cat litter
4. Toxic substances such as pesticides, strong disinfectants large amounts of strong caustic drain cleaners, paint or anything else that would be toxic to humans. This includes quaternary ammonia compounds (found in some commercial cleaners).
5. Large amounts of paper products, such as paper towels and synthetic fiber-reinforced products advertised as having "wet strength,"
6. Animal fats, such as bacon grease or lard (normal cleaning of pots and pans is acceptable).
7. Liquid fabric softeners
8. Water softener waste (from regeneration) without flow equalization

Chemicals

The following chemicals are prohibited substances and should not be poured into the FAST system tank or leach field:

1. Herbicides
2. Pesticides
3. Paint thinner
4. Motor oil (including transmission oil and hydraulic fluid)

NOTICE: *Contact your Bio-Microbics, Inc. service technician immediately if a substantial spill occurs in the area of the treatment system.*

SERVICE AFTER THE FIRST TWO YEARS

An **Extended Service Policy** is available and may be purchased through your local Bio-Microbics distributor. The extended service policy should provide the same service checks as the initial NSF service policy, sludge accumulation levels in the septic and FAST tanks, and perform any additional service required by local regulation. Extended service on NSF certified systems should be performed twice per year.

THE SEPTIC TANK

Periodically, waste will need to be removed from the settling compartment of the septic tank using normal pump-out procedures. Bio-Microbics recommends that pump-out occur if sludge is 18 inches deep, or takes up 75% of the volume of the settling compartment below the port connecting settling chamber to FAST chamber. All stricter, applicable regulations supercede these operational directions. When pump out of the settling compartment occurs, the FAST compartment should also have any sludge removed. Only persons experienced in wastewater treatment or service are authorized to remove the septic tank cover. If the drains in your house require an unusual amount of time to drain, the septic tank may require pumping out.



WARNING: *Do NOT attempt to service components of the FAST wastewater treatment system yourself; call your Bio-Microbics service technician. Only authorized service personnel are to remove caps on pipes or covers on the septic tank. Removal by unauthorized personnel may result in death or bodily injury from potentially hazardous gases and waste matter.*



WARNING: *The treatment unit can be damaged by placing heavy items on the ground above the tank. Vehicles heavier than a lawn tractor should not be driven in the area surrounding the FAST system to minimize the risk of damage to the septic tank and associated piping (unless the septic tank has been specially designed for use under roadways).*

NOTICE: *The area around the blower housing and vents must be clear so air can enter the housing. Do NOT allow debris or other objects, including drifting snow or ice, to cover the blower housing or vents. When mowing, direct debris from the mower away from the blower housing and vents.*

A. Complete this section ONLY if the FAST® was installed in tank at the jobsite.					
Concrete Tank			Trash Tank Clean Out Present		
Fiberglass Tank			FAST Chamber Clean Out Present		
Anti-Flotation Installed			Trash Tank Vent		
H ₂ O Loading Capabilities			Inspection Port Access to Grade		
Fill Over FAST Lid					
Tank Level					
Watertight Joints & Piping					
B. Tankage					
	Yes	No	Service & Access Port	Yes	No
Tank Manufacturer			Tank Model No.		
Working Liquid Volume in Trash Collector Chamber					
Working Liquid Volume in FAST Treatment Chamber					
FAST system installed using which method			Lid Suspension		
			Leg Support		
FAST system installed into tank by whom:					
C. Alarm Panel/Piping					
Visual Alarm Operating			Length of Air Supply Line		
Audio Alarm Operating			Diameter of Air Supply Line		
Sensor Switch Installed					
D. Air Blower					
Filter Element Inside			Inlet & Outlet Pipe Installed Correctly		
Blower Hood Installed			Blower Operates Correctly		
Blower Hood Secure			Blower Area Subject to Flooding		
Blower Area Ventilated			Blower Area Subject to Snow Load		
			Blower Hood Vents Clear		
Wired for High or Low Voltage			Single Phase or Three Phase		
Voltage			50 hz or 60 hz		
E. Treatment Unit					
Air Lift Operates Correctly			Remote or Inspection Port Vent		
Module Insert Stable			Module Sealed & Bolted to Tank		
4" Outlet Pipe Place			Air Line Connection Glued to Airlift		
Length of Vent Line			Size of Vent Line Pipe		
F. Other					
Manuals Onsite for Owner			NSF Inspection Service Given to Owner		
Warranty to Owner			After NSF Service Contract to Owner		

B. Limited-use Substances

Limited-use substances in large concentration will reduce or stop the treatment process. These same substances in smaller concentrations will have no harmful effect on the treatment process (in general, a small concentration is defined as being a dosage amount that the substance's manufacturer recommendeds). You may use the following substances without harming your FAST system if you use the substance according to the manufacturer's directions, use the substances sparingly, and do not introduce concentrated doses into the system.

1. Laundry bleach
2. Detergents with bleach
3. Household cleaners containing sodium bactericides such as:
 - Pine oil (disinfectant used in general purpose liquid cleaners),
 - N-alkyl dichlorobenzyl ammonium chloride (disinfectant used in detergents and spray cleaners),
 - Sodium hydroxide (lye-chemical used in drain openers and cleaners),
 - Sodium dichlor-s-triazinetrione (powdered bleach used in scouring powders and automatic dishwasher detergents),
 - Ortho-phenylphenol (bactericide used in tub and toilet bowl cleaners).

Food Waste

Some food waste, whether or not it is run through a garbage disposal, will not be treated by the FAST system, but will remain in solid form and fall to the bottom of the septic tank. Large quantities of organic material introduced into the FAST system from the garbage grinder may organically overload the FAST system and cause more frequent pump-out of the septic tank. Therefore, you should consider not disposing of these food items:

1. Animal bones
2. Melon rinds
3. Corn cobs
4. Pits and seeds
5. Eggshells
6. Any other non-edible waste

C. Acceptable Substances

Substances that are considered to be typical domestic wastewater are

human waste, bath and dish water, edible food waste, and coffee and tea grounds.

The following substances may be used regularly without harming your FAST wastewater treatment system:

1. Laundry detergents without bleach
2. Dishwashing detergents without bleach
3. Toilet paper
4. Household cleaners containing sodium bicarbonate, sodium carbonate and sodium borate.

NOTICE: *Sodium borate is found in some household cleaners. It will not harm the FAST wastewater treatment system, but its use may be restricted by local wastewater codes. Check with the appropriate authority before using products containing sodium borate.*

NOTICE: IMMEDIATELY *fix all leaky fixtures. Even the smallest leak will greatly increase the hydraulic load on the FAST unit and may prevent it from fully treating the waste. Excess flow may also cause eventual failure of a drainfield system.*

SYSTEM MAINTENANCE AND MONITORING

The FAST wastewater treatment system operates automatically and continuously. The maintenance procedures for the user of the FAST wastewater treatment system include keeping the vents and the blower housing clear of debris. The homeowner should monitor the status of the system (alarm indicator light as shown in Figure 2), substances introduced into the system, and the frequency of required pumpout as determined by the service provider.

IF WASTEWATER BACKUP OCCURS, do not add water; turn off any taps or appliances, such as a clothes washer, that direct water into the wastewater system and contact service technicians immediately.

If the instructions contained in this manual are carefully followed, the FAST wastewater treatment system can provide years of service. If problems arise due to chemical spills, power outages or alarms, contact your Bio-Microbics service technician. This unit is to be serviced only by trained and certified Bio-Microbics technicians.

EXCESSIVE FOAMING

Some foaming may occur during the startup of the system. This foaming is tan in color and is normal due to massive growth of the bacterial population in the treatment chamber.

The production of pure white foam after the system has been running for at least one week, indicates the excessive use of detergents, or use of detergents that have a large amount of sudsing agents (Tide is known to produce condition).

NSF CERTIFIED SYSTEMS SERVICE POLICY

All NSF Standard 40, Class 1 certified wastewater treatment systems (MicroFAST 0.5, 0.75, 0.9, 1.5) have an initial service agreement for two years (two calls per year) included with the system's initial purchase price. To find out who is the NSF initial service provider for your system, check the labels on the blower housing or control panel.

If there are any deficiencies in the FAST systems operation or components, the service person will notify the owner in writing and detail when these deficiencies can be fixed.

If these service calls are not performed on your NSF certified system, or not all of the items are checked, please call Bio-Microbics toll-free at 800-753-FAST (3278).

For the homeowner, operational procedures for the FAST wastewater treatment system are minimal. Normal operation of the unit requires operation of the blower and regular discharge of wastewater to the unit. Leaves, snow, or other material must not be allowed to block the blower intake. If the blower should fail, follow the procedure given under ALARM WARNING.

During service calls, the authorized service person will check the blower for proper operation and perform preventative maintenance including cleaning of the blower intake and inspection of control panel light. The service provider should also measure the solids level in the septic tank and recommend pumpout when necessary.

When performing an NSF service call, the service provider will run the checks included on the checklist shown on the next page (a service provider's checklist may have a different appearance, but will contain each of these checks).