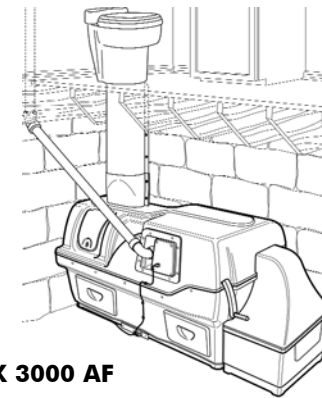


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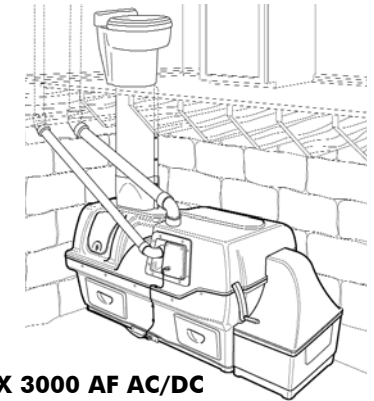
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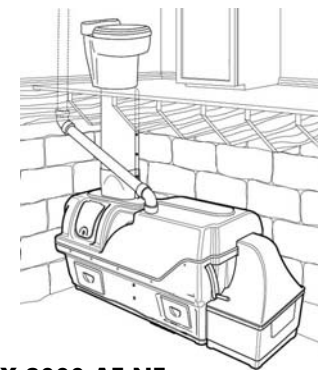
# CENTREX 3000 AF FAMILY OWNER'S MANUAL



**CENTREX 3000 AF**



**CENTREX 3000 AF AC/DC**



**CENTREX 3000 AF NE**



Certified to NSF/ANSI Standard 41

Standard 41

Certified for liquid containment,  
odors, and solid end products in  
both residential and cottage use

## **RATED CAPACITY**

### **Weekend & Vacation Use (Cottage Use)**

NE units; 8 Adults or families of 10 or  
Electric Units; 9 Adults or families of 11

### **Residential & Continuous Use**

NE units; 5 Adults or a family of 7 or  
Electric Units; 6 Adults or families of 8



Product Info: (905) 332-1314  
E-mail: [compost@sun-mar.com](mailto:compost@sun-mar.com)

Fax: (905) 332-1315

Tech. Service: (905) 332-1314  
<http://www.sun-mar.com>

600 Main St  
Tonawanda NY  
14150-0888 USA

5370 South Service Rd.  
Burlington, ON  
L7L 5L1 CANADA



# OWNER'S MANUAL

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Sealand toilet and 'Centrex Family' Central Units

### Introduction

## HOW YOUR COMPOSTING TOILET WORKS

*The key to the success of the "CENTREX 3000 AF FAMILY" lies in its three chamber design. Each of the three chambers; composting, compost finishing, and evaporation have their own independent environments for optimum efficiency.*

Composting is a natural recycling process where human waste and toilet paper are broken down by microbes into minerals and converted back to earth. Heat, oxygen, organic material and moisture are needed to transform this waste into good fertilizing soil, perfect for your flower beds.

Oxygen is provided by the ventilation system, and by tumbling of the composting drum. Additional organic material is introduced by adding "Compost Sure" (or peat moss mix). The waste entering the toilet is approximately 90% water content. Any excess liquid which is not absorbed will collect on the floor of the unit (evaporation chamber) where it may be evaporated into water vapor and carried back to the atmosphere through the venting system. The remaining waste material is transformed into an inoffensive earth-like substance.

### The Composting Chamber

The composting chamber is in the form of a Bio-drum which holds the natural compost heat, provides the necessary mass to maintain a good compost, and is rotated by turning the handle to achieve perfect mixing and aeration.

During mixing, the input door at the top left will remain closed. When the drum returns to the top dead center position ready to receive more waste, the input door will remain open.

A drum stopper behind the doghouse on the right side of the unit automatically holds the Bio-drum in a top dead center position so that it is always positioned to receive new material.

Compost is extracted from the drum by continuously feeding into the collection bin (doghouse) whenever the drum is rotated.

To ensure that the compost remains moist, but does not get too wet (between 40 and 60% moisture content is ideal), any excess liquid which the compost cannot absorb drains through a screen in the bottom of the drum directly onto an evaporating tray beneath the screen, and from there, overflows into the larger evaporating chamber. The evaporating tray can be removed periodically to remove peat moss debris that has accumulated.

### Compost Collection Drawers and Chamber

The compost collection drawers are at the extreme right and left of the unit below the composting drum, and just above the evaporating chamber. The right drawer is used only if you wish to completely empty the drum.

The collection drawer on the left is merely to provide access to the evaporation chamber. Compost from the drum will automatically feed into the collection chamber at the far right end of the unit.

The toilet is porcelain and should be cleaned with hot water or bio-degradable products to avoid damage to the compost. If required 'Compost Quick' or Baking Soda can be used diluted in hot water.

### Three times a week weekly maintenance:

Turn drum to reveal waste inlet hole through access port and add compost mix at the rate of @ 1 cupful per person per day.

Rotate handle clockwise to mix contents of Bio-drum and give 10 complete revolutions of the drum - (60 rotations of the handle). Ensure that the drum door opening is in the vertical position at the end after hearing the 'click' of the catch.

Spray 'Compost Quick' into the drum before and after mixing - also once a week in base of unit and finishing tray.

### Check compost volume and condition in Bio-drum and:

If the waste in the Bio-drum is too wet add wood shavings to improve aeration.

If composting is too slow add one scoop of Microbe Mix every second week, and ensure that the drum is not more than 1/2 full. If it is, follow the instructions for the emptying cycle.

### Monthly maintenance and emptying cycle:

Rake out evaporation chamber with rake provided. For units with one (Centrex 1000, 2000, & 3000 units) The black evaporating tray should be removed, solid matter tipped into the finishing tray and then replaced beneath the drum screen.

Empty out the collection chamber ready to receive fresh material.

**Attention:** The composting unit must remain plugged in to an electrical outlet continuously to function odorlessly. The AC/DC units should have both fans running while used in electric mode to prevent recirculation between vent stacks. If you will be away from the residence where the composting unit is installed for longer than three days, the power may be disconnected while the composting unit lays dormant.

## WARRANTY

SUN-MAR Corp. warrants the original purchaser that this toilet is free from defects in material and workmanship under normal house or cottage use. SUN-MAR Corp. will furnish new parts for any part that fails within three years provided that our inspection shows that such failure is due to defective material or workmanship. Any part supplied by us to replace another part is warranted for the balance of the original warranty period.

This warranty does not cover:

1. Damage resulting from neglect, abuse, accident or alteration; or damage caused by fire, flood, acts of God or any other casualty.
2. Parts and accessories not sold or manufactured by SUN-MAR Corp. or any damage resulting from the use of such items.
3. Damage or failure resulting from failure of the purchaser to follow normal operating procedure outlined in the Owner's Manual or in any other printed instructions.
4. Labor and services charges incurred in the removal and replacement of any parts found defective under the terms of this warranty.
5. All returns to the factory must be made freight prepaid. All shipments from the factory are made F.O.B. the factory.

This warranty is in lieu of all other warranties expressed or implied, and no person is authorized to enlarge our warranty responsibility, which is limited to the terms of this certificate. The Company reserves the right to change, improve or modify its products without obligation to install these improvements on equipment previously manufactured.

## Evaporating Chamber

The third chamber is the floor of the Sun-Mar "CENTREX 3000 AF" which forms the evaporation chamber from where excess liquids are evaporated. You will frequently see liquid in this area.

In Electric or AC/DC units, air is pulled through intake holes at the rear of the unit; over the evaporating chamber, and up the 2" vent stack which exits from the front of the composting unit when AC power is being used.

When using the NE or AC/DC units and AC power is unavailable, natural draught caused by the chimney effect combined with a 12 volt fan draws air into the unit and up the 4" vent stack.

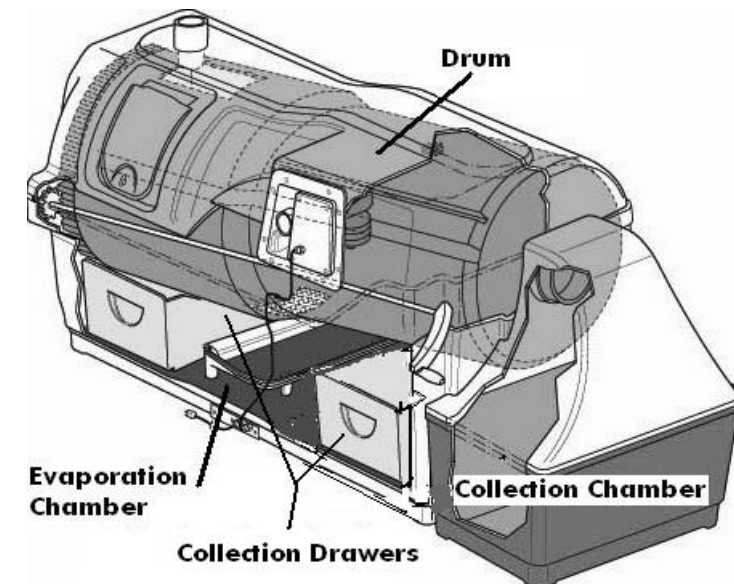
In Electric or AC/DC units using the AC mode, the evaporation process is further assisted by a thermostatically controlled heating element in a separate sealed compartment under the evaporating chamber. This heater is on when there is liquid in the evaporating chamber, and largely off when the chamber is dry. The heating system maintains warmth in the evaporating chamber, and the indirect warmth assists the composting

process, without the compost drying out. A safety drain exits from the left side of the composter which drains off any excess liquid to a cess pool, recycling bed, old septic bed or other approved facility.

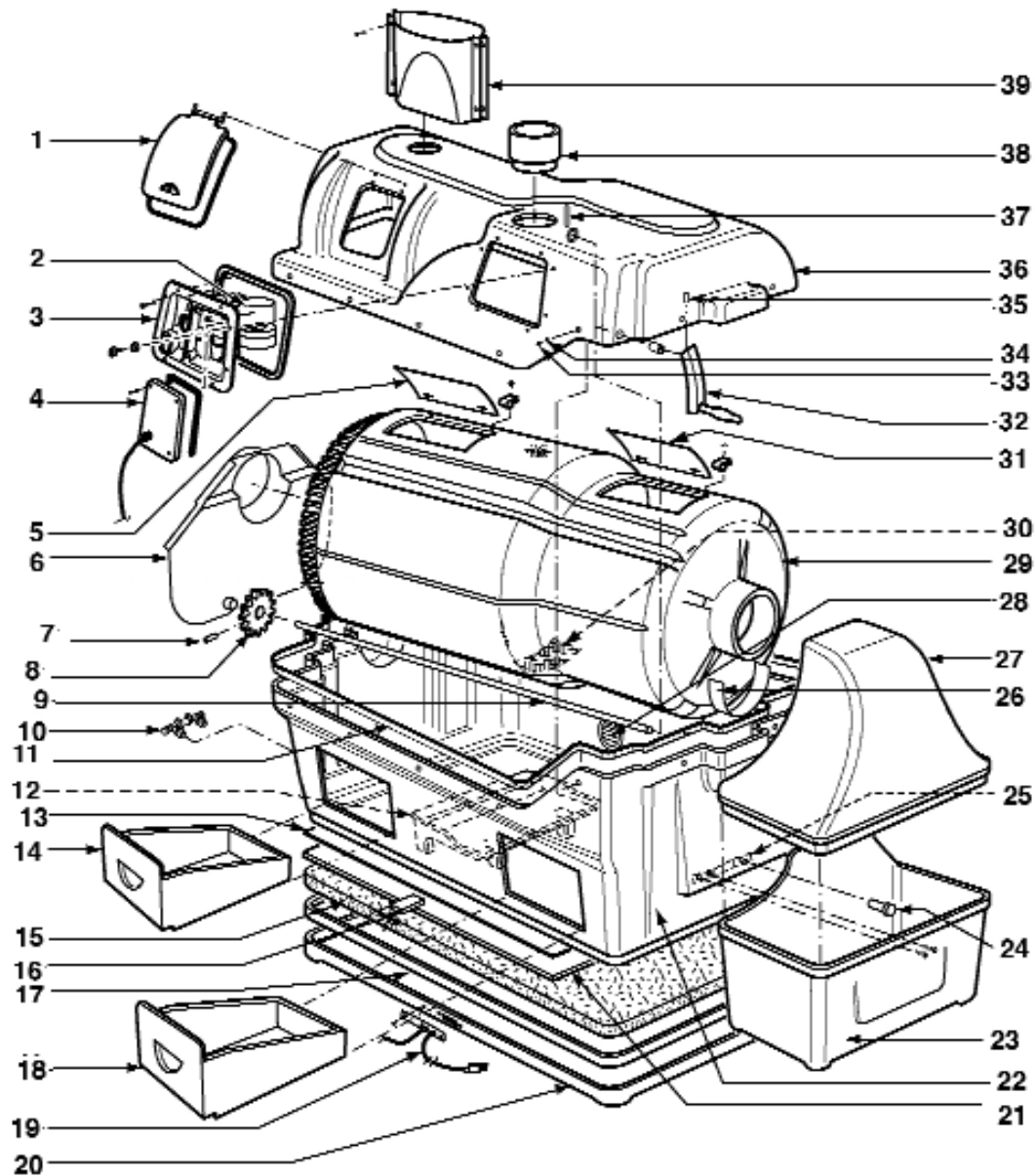
## Winter Use

Because "Sun-Mar" units are made of fiberglass and high grade stainless steel, freezing temperatures will not damage the composting unit. Composting action decreases as the temperature drops, so for extended use, the toilet should be kept constantly at or above 55-60 degrees F (15 C). All exposed vent stack should be insulated to minimize the condensation in the pipe and avoid ice blockages.

In extreme temperatures, an additional source of heat will also be required. If the compost is frozen in the drum, the unit may be used periodically as a "holding tank", until the compost warms up and the microbes emerge from dormancy. Space should be made in the drum to accommodate winter use. The drum should NOT be rotated when the compost is frozen.



## EXPLOSION DRAWING OF COMPOSTING UNIT



## ACCESSORY ITEMS FOR COMPOSTING

SUN-MAR has developed a number of composting accessory items over the years in response to frequent requests from users. These items may serve to improve composting speeds under some circumstances.

Name	Description	Container	Price*	
<b>"Compost Quick"</b>	Solution containing a mixture of enzymes designed to facilitate bacterial activity. Also useful as a cleaner.	16 oz. (454 gm) spray bottle	\$15.50 Freight included	
<b>"Microbe Mix"</b>	Special selected dried bacteria to decompose waste also includes dried enzymes.	16 oz, (454 gm) Jar	\$16.00 <i>*Price does not include freight - see chart below for region specific freight</i>	
<b>"Compost Sure "</b>	Bulking material containing a mix of coarse peat moss, and chopped hemp stalk to provide moisture retention, porosity, and free air space within the compost. <i>* Price does not include freight</i>	30 litre (7.9USG) bag	\$10.00* <i>*Price does not include freight - see chart below for region specific freight</i>	
<b>Freight Charges</b>				
	Canada	Zone 1	Zone 2	Zone 3
Compost Sure Blue	Shipping Determined at time of order	\$10.00	\$ 15.00	\$ 25.00
Microbe Mix	Shipping Determined at time of order	\$5.00	\$ 6.50	\$ 6.50
Zone 1 All Continental United State Zone 2 WA, OR, ID, MT, NV, CA, NM, AZ Zone 3 AK, HI <i>* Prices subject to change. Please call for current prices before ordering</i>				

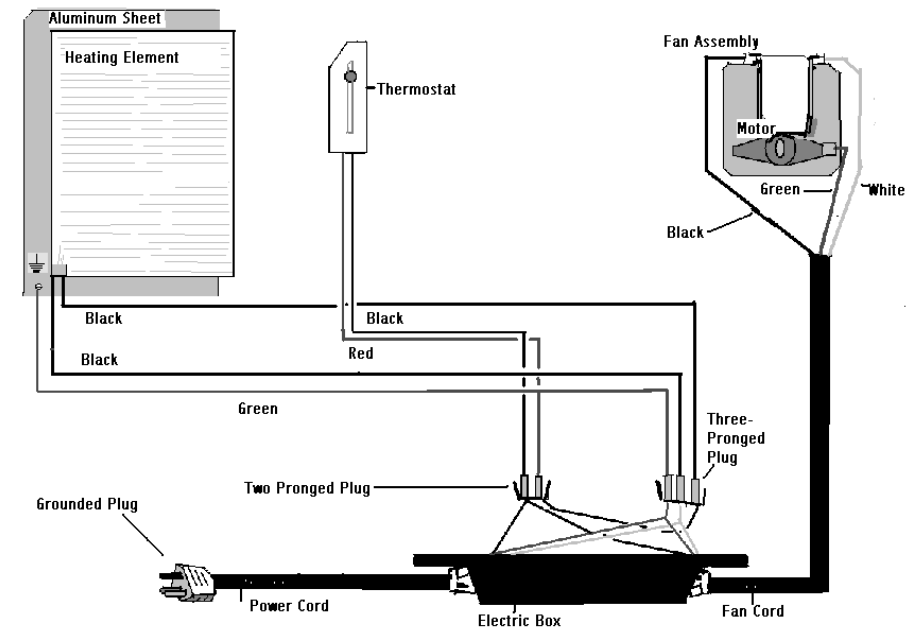
### Note:

If the peat moss you are using is powdery and fine, it will result in poor porosity and an excessively wet, oxygen deficient compost. You should change or modify your bulking material. This situation is most likely to happen with central units which are exposed to a lot of flushing liquid. Modify by adding wood shavings, or use "Compost Sure" for optimum results.

Symptom	Cause	Remedial Action	Prevention
<b>Drum Will Not Turn (Cont'd)</b>	Drum fallen from bearings fallen.	Have your serial number ready. If the drum has fallen, contact Sun-Mar immediately. We will make sure your problem is fixed quickly.	Not a common repair.
	Drum too full	See Section on "Compost Troubleshooting- Drum Too Full"	Follow items in prevention column for "Drum Too Full"
<b>Drum Door Not Opening/Closing Properly</b> <i>(Compost will drop into the finishing drawer even when the drum is not being rotated backwards to extract compost).</i>	Hinges Stuck	Drum Hinges have compost caked on them. Clean with wire brush. If this is not effective, use a blunt object (like a nail file) to insert in the hinge slots. This will push the obstruction away so the door swings freely.	Drum should never be more than 1/2-2/3 full.
	Hinge(s) broken	Call Sun-Mar to obtain a replacement drum hinge.	
	Screws holding down hinges too tight or too loose.	Using a slot screwdriver, tighten or loosen screw until the drum door swings freely.	
	Slots for hinges cut too small.	Using a small file, file down hinge slots marginally until drum door swings freely.	
	Drum Door Cut improperly	Obtain a Drum Door Replacement Kit from Sun-Mar. Be sure to specify serial number and/or year of model for proper part.	

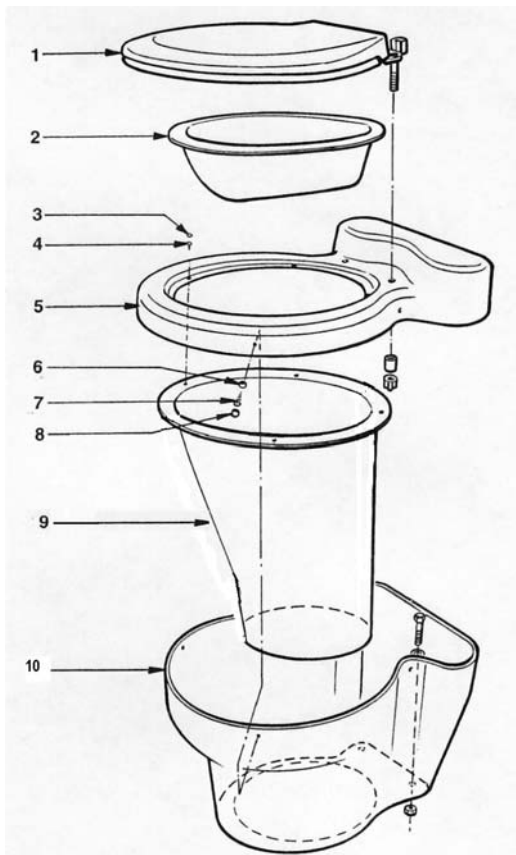
## CENTREX 3000 A/F PART NUMBERS & DESCRIPTIONS

#	PART	DESCRIPTION	#	PART	DESCRIPTION
1	AO-DRUMD-0481XX	Centrex 3000 Access Door	22	PF-TNAK3-0831XX	Centrex 3000 Tank
2	AO-FAN_A-0315KX	Fan (Electric and AC/DC)	23	PP-DOBBO-0000XX	Collection Bin Bottom
3	AO-FAN_A-0315KX	Fan Assembly Housing (Electric and AC/DC)	24	PP-SCREO-0580XX	Drum Locker Thumb Screw
4	AO-FAN_A-0315KX	Plastic Fan Motor Cover (Electric and AC/DC)	25	PF-LOCK3-0836XX	Drum Locker
5	PP-DRUMD-0846XX	Centrex 3000 Drum Door	26	PP-BEARS-0787CX	Drum Bearing Strip
6	PP-Bearp-0758RX	Centrex 3000 Bearing Plate	27	PP-DOGTO-0000XX	Collection Bin Top
7	PM-ROLLPO-0216XX	Roll Pin	28	PP-INTAV-0797XX	3" Air Intake
8	AO-SMALL-0440XX	Nylon Drive Gear	29	PP-DRUM0-0837XX	Centrex 3000 Drum
9	AO-SHAF A-0853XX	Centrex 3000 Shaft Assembly	30	PM-DRUMS-0194XX	Drum Screen
10	AP-DRAIO-0306XX	1" Drain Assembly	31	PP-DRUMD-0846XX	Centrex 3000 Drum Door
11	PP-GASKO-0188BX	Rubber U Channel	32	AO-HANDO-0307BX	Handle
12	PF-EVAPT-0789XX	Evaporation Tray	33	PP-WASHO-0274XX	Washer Pastic CSK
13	PM-ALUMS-0811XX	Aluminum Sheet (Electric and AC/DC)	34	PM-SCREW-0251XX	Screw #8 X 5/8" SS
14	PF-DRAW3-0746CX	Centrex 3000 Drawer	35	PM-SCREW-0554XX	Set Screw
15	PP-INSU0--187XX	Insulation (Electric and AC/DC)	36	PF-TOPC3-0832FX	Centrex 3000 AF AC/DC Top
16	AO-THER-0310GX	Thermostat (Electric and AC/DC)	36	PF-TOPC3-0832DX	Top Centrex 3000 AF
17	PP-GASKO-0188BX	Rubber U Channel	36	PF-TOP00-0833XX	Centrex 3000 AF NE Top
18	PF-DRAW3-0746CX	Centrex 3000 Drawer	37	PM-ROLLP-0216XX	Roll Pin
19	PO-CORDO-0181XX	Power Cord	38	AO-PIPEP-0305XX	4" Vent Inlet (AC/DC & NE)
20	PF-HEAT3-0833XX	Centrex 3000 Heating Tray	39	PP-INLEP-0207CX	Centrex Waste Inlet
21	AO-HEATE-0311XX	Centrex 3000 Heating Element (Electric and AC/DC)			



## EXPLOSION VIEW & PARTS FOR DRY TOILET

#	PART	DESCRIPTION	#	PART	DESCRIPTION
1	PP-TOILS-0208CX	Toilet Seat White	6	PM-SCRE0-0251BX	#8 X 5/8" Stainless Steel Flat Head Screw
	PP-TOILS-0208DX	Toilet Seat Bone			
2	PF-BOWLL-0246FX	AF Bowl Liner	7	PP-WASH0-0274XX	CKS Plastic Washer
3	PP-CAP00-0587XX	Tap Cap Bone	8	PP-SNAPC-0273XX	Snap Cap (Bone)
	PP-CAP00-0587WX	Tap Cap White		PP-SNAPC-0273WX	Snap Cap (White)
4	PM-SCRE0-0250XX	#8 X 3/4" Flat Head Philips Screw	9	PP-AIRFL-003XX	Toilet Chute
			10	PF-AIRFL-0002BX	Toilet Base Bone
5	PF-AIRFL-0001BX	Toilet Top Bone		PF-AIRFL-0002XX	Toilet Base White
	PF-AIRFL-0001XX	Toilet Top White			



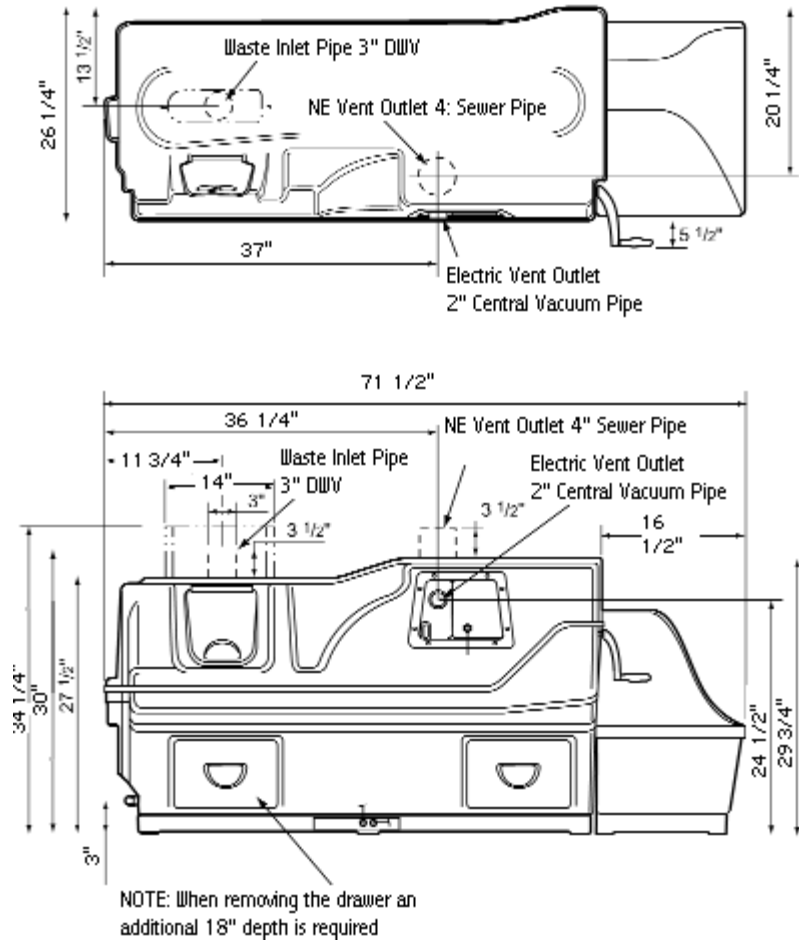
Symptom	Cause	Remedial Action	Prevention
<b>Heating System Not Working (Cont'd)</b> (Electric or AC/DC)	Heating Element Failure	Have your serial number ready and call Sun-Mar for a replacement. (Detailed instructions are included with the replacement part) Please note: Because this part is not easy to replace, and because there is far less chance that you will need this part than a thermostat; we recommend trying to replace the thermostat first.	DO NOT use a pressure hose around the base of the unit.
	<b>Liquid in Finishing Drawer</b>	Drum Screen Clogged	Use a flashlight to see the screen at the bottom of the drum. Scrub screen with wire brush. The overflow drain should be hooked up.
	Unit tilted to the right	Use a 1/4" to 1/2" wedge piece under the right side of the unit to drain liquid more easily towards the overflow drain of the unit.	Install toilet level or tilting slightly to the left, DO NOT install the toilet tilting forwards or to the right. If you are unsure of the grade of the floor, install it with a wedge piece.
	Condensation running down vent stack	Liquid will be clear or yellowish in appearance. Make sure all vent pipe exposed to the outdoors is well insulated and there are no horizontal runs.	Remove horizontal sections of vent pipe and insulate all exposed 2" venting.
<b>Drum Will Not Stay Vertical</b>	Drum Locker Broken	Have serial number ready and call Sun-Mar for a replacement part.	When returning the drum to top dead center position, do not bang against drum locker with excessive force. Remember to pull out the drum locker button before rotating the drum backwards.
<b>Drum Will Not Turn</b>	Set screw securing handle to shaft has broken	Drill out set screw and replace, or get handle replacement kit (instructions included).	Not a common repair.
	Steel pin securing gear wheel to shaft has broken	Have your serial number ready and call Sun-Mar for a replacement Small Gear Kit.	Keep composting drum from becoming overloaded. This puts undue strain on the nylon gear.

Symptom	Cause	Remedial Action	Prevention
<b>Overflowing Liquid (Cont'd)</b>	Drains Blocked	<p>1. Rake peat moss away from back two corners of Centrex 3000 A/F. These are the “buildup” areas. If drains are still clogged, proceed to step 3.</p> <p>2. Check drain line for kinks, blockages or upward bends. Remove and flush if blockages present, unkink if bent and ensure that the drain pipe is sloping downward. If your drain pipe is in order, proceed to step 3.</p> <p>3. Use a wire to poke peat moss out of the drain assembly at the back. You will notice if this is clogged because you will see a brown spot through the opaque assembly. (Only peat would make it through the drum screen). If there is no peat clog, or the problems continue, backwash the unit quickly with a hose by applying the nozzle to one of the drain assemblies and turning it on and off very quickly. If the bottom of the unit is full of liquid, you may wish to remove some prior to back-washing. A shop-vac works well.</p>	<p>1. A clogged drain is not very likely to happen if you rake your evaporating chamber 1-2 times a season (cottage use) and 3-4 times for continuous use.</p> <p>2. Use premium 1” hose for the drain line. A good hose will be less likely to kink. Use elbows or fittings around bends to prevent kinks.</p> <p>3. Use Compost Sure as your bulking material.</p>
<b>Heating System Not Working</b> (Electric or AC/DC)	Test to determine whether failure has occurred	Pull drawer out and put your hand in the evaporation chamber (Not in the liquid). If there is no warmth rising from the floor of the unit, your heating system is not working. It is most commonly the thermostat that has failed. If you notice a lack of evaporation, but there is still warmth in the heating chamber, see “Liquid Buildup” for solutions.	A ground fault interrupter circuit is recommended to protect your Centrex 3000 A/F from power surges that could cause your heating system to malfunction.
	Thermostat Failure	Have your serial number ready and call Sun-Mar for a replacement. (Detailed instructions are included with the replacement part) If the insulation behind the thermostat access cover is moist or discolored, or heating does not work after the new thermostat has been connected, then the heating element has failed.	Your thermostat and fan are the two constantly moving parts on the unit, and so are the most likely to fail. Both are easy to replace.

## Chapter 1 Inspection

<b>Inspecting the unit for damage</b>	<p><b>i) If there is any visible damage to the carton-</b> the contents of carton MUST be inspected before signing bill of lading. Damaged units should be refused. Call Sun-Mar immediately.</p> <p><b>ii) Before signing the shipping papers and dismissing the driver.-</b> ensure that the carton contents have been inspected.</p> <p><b>iii) If the shipper has left-</b> Report the damage immediately to the transport company and call Sun-Mar.</p> <p><b>iv) Soon after delivery, remove the Centrex 3000 AF carefully from the carton-</b> If there is hidden damage, or for any service Questions, contact Sun-Mar to determine the best course of action.</p>
<b>Check Carton Contents and Familiarize Yourself with the CENTREX 3000 AF</b>	<p>Check that the carton contains the vent stack (pipe, fittings, roof flashing and diffusor); “Compost Sure”, rake, drain hose and fittings, etc. Notify Sun-Mar if you are missing anything.</p> <p>i) Turn the drum handle clockwise to rotate the Bio-Drum for mixing and aeration. (The drum rotates counter-clockwise and the drum door closes). <b>This is how you will rotate the drum.</b></p> <p>ii) Lift and remove the access door and rotate the drum until the drum opening is opposite the access door for adding “Compost Sure”. <b>This is how you will add “Compost Sure”peat moss mixture to the drum</b></p> <p>iii) Plug the unit’s electrical cord into a standard three-prong electrical outlet, and feel the air movement from the vent outlet at the top left of the unit to ensure the vent system is working properly (Electrical or AC/DC)</p> <p>v) Pull out the compost finishing drawers at the bottom left and right of the unit.</p> <p>vi) After the unit has been plugged in for ten minutes, place a hand on the floor of the evaporating chamber (the inside floor of the unit) to check it is warm to the touch, and that the heater is working properly.</p> <p>vii) Affix the “WARNING/CLEANING” sticker to the underside of the toilet seat cover, and check that another is on the access port of the composting unit.</p> <p>viii) Check the AF “Dry Toilet” for any damage.</p>
<b>Placement of AF Dry Toilet</b>	<p>Ensure that the floor joists are not in the way and that there is an unobstructed 10” diameter passage from the underside of the AF “Dry Toilet” to the top of the transition piece. The 10” hole should be centered 13” from the back wall and at least 7 1/2” from the side wall in the room where the toilet will be installed.</p> <p>The transition piece on the top of the composting unit should be located so that the center line of the transition piece is directly below the center of the 10” circular cutout which will be made in the bathroom floor above. The transition piece should be at a right angle to the composting unit.</p>

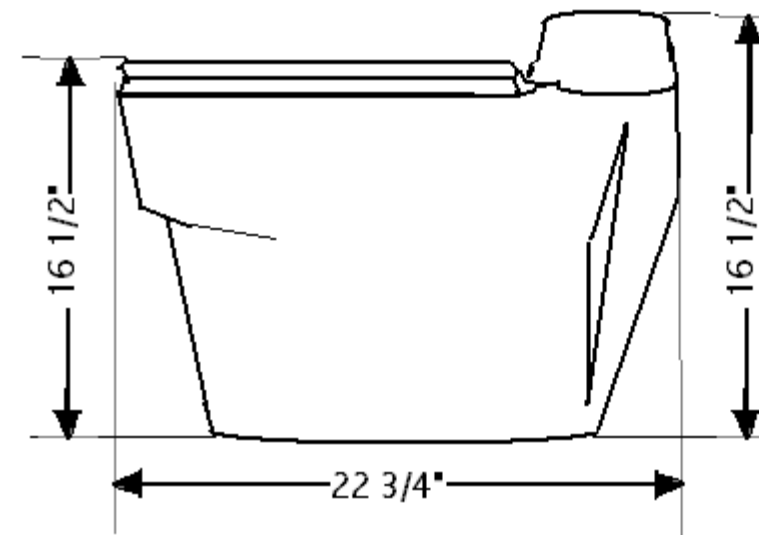
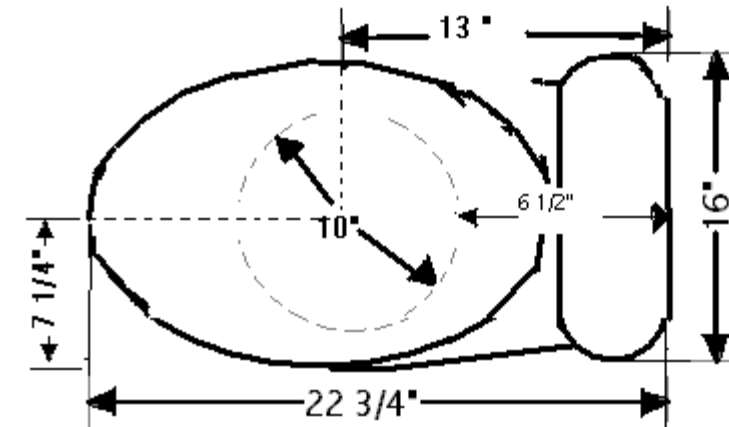
Chapter 2  
**Installation**  
**ROUGH IN DIMENSIONS**


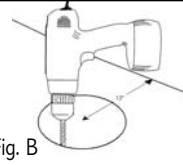
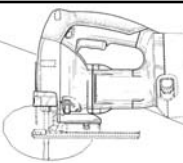
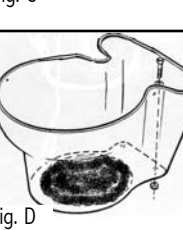



Symptom	Cause	Remedial Action	Prevention
<b>Fan Noisy (Cont'd)</b> (Electric or AC/DC)	Fan damaged in shipping, or bearing are beginning to wear if it is rattling.	3. If it is a vibration noise, you may need to tie down the top of the stack with guide wires and bracket the pipe that runs up the side of the structure.	
<b>Fan Not Working</b> (Electric or AC/DC)	Debris in fan or Mechanical Failure.	Have your serial number ready and call Sun-Mar.	The fan is a continuously moving part which will eventually have to be changed. Do Not turn on and off daily.
<b>Liquid Buildup/ Lack of Evaporation</b>	Increased usage.	The amount of liquid varies substantially between installations. The overflow drain needs to be installed on all Centrex 3000 AF models as you will have overflow in DC mode and with heavy use on AC mode.	Install the safety drain. If the unit is being used in DC mode there will be very little evaporation.
	Failure of heating system (Electric or AC/DC)	Check "heating not working".	Rake evaporating chamber vigorously at spring startups for cottage use, and once every other month for residential use.
	Mineral salts may have accumulated in the evaporation chamber over a few years, reducing evaporation rates.	To get rid of these, fill the evaporation chamber with very hot water and 1/3 bottle of "Compost Quick" enzyme liquid. Leave overnight. Drain all Liquid through the overflow drain by tipping the unit up (make sure overflow is hooked up first)	
<b>Overflowing Liquid</b>	Overflow drain not hooked up	Connect overflow safety drain (See also increased usage above)	
	Unit tipped forward	Check and ensure that the unit is level or tilting slightly towards the back by placing a 1/4" - 1/2" shim piece under the right side of the unit.	

Symptom	Cause	Remedial Action	Prevention
<b>Occasional Urine Odor Outside</b>	<p>1. Vent stack not installed even with peak of roof.</p> <p>2. If vent stack is installed above roof peak, natural obstructions, such as tall trees, being located in a valley or close to a hill may be causing downdraft.</p>	<p>1. Check that the vent is installed at least even with the peak of the roof. If not, extend the vent. Guide wires may be necessary.</p> <p>2. Add lime to the evaporation chamber - as much as you think necessary. You will have to rake more often if you do this. You can also add lime to the compost if desired, but no more than 1/2 cup per week as it may upset the PH balance in larger amounts.</p> <p>3. Sun-Mar has a filter box available which will filter the ammonia out of the 2" stack vented air in a downdraft situation. Call Sun-Mar for details.</p>	<p>Downdraft is dependent on wind direction, as well as natural obstructions, etc.</p> <p>Initially, install the vent equal with the peak of the roof. If symptoms occur, add lime or a filter box.</p>
<b>Strong Sewage Odor Present when drum turns</b>	Compost is anaerobic	Begin following: "Compost Troubleshooting" suggestions.	Follow "Ongoing Maintenance" and use proper bulking material.
<b>Fan Noisy</b> (Electric or AC/DC)	Fan damaged in shipping, or bearings are beginning to wear if it is rattling.	<p>1. If the fan is rattling, it may need to be cleaned or the bearings are worn and the fan needs to be replaced.</p> <p>2. A hum is the normal sound the fan will make. If you are in a very quiet setting it will be more noticeable. If this is the case, consider purchasing an AC fan speed control so that the fan may be turned down when the noise bothers you. These are not available for our DC fans, but should not be necessary.</p>	<p>Clean the AC fan with a small brush and/or compressed air nozzle once every 2-3 years in cottage use, or once a year residentially. To do this, remove the fan assembly by taking off the snap cap covers and unscrewing the screws which hold it in.</p> <p>The entire assembly will then simply slide out. This will prevent wear and lengthen the life of your fan.</p> <p>Cleaning should not be necessary for the DC fan.</p>

**AF "DRY TOILET" ROUGH IN DIMENSIONS**



<b>Included In Your Kit</b>	1- Owners Manual 1- Warranty Card 1- Evaporation Tray 1- 10' Drain Pipe 1- Rake 1- AF Transition Piece 5- 4" x 31" ABS Pipe (NE & AC/DC) 1- 12 Volt 2.4 Watt Fan (NE & AC/DC) 1- 44" Pipe Piece	1- 1 1/2" Roof Flashing (Electric & AC/DC) 1- 4" Roof Flashing (NE & AC/DC) 6- 2" x 31" ABS Pipe (Electric & AC/DC) 2- Compost Sure 1- 4" Diffusor (Electric & AC/DC) 1- 6" Diffusor (NE & AC/DC) 1- Centrex 3000 Hardware Kit 1- Centrex NE Hardware Kit (NE & AC/DC) 1- AF Silicone Kit
<b>Installing the AF Toilet Base</b>	<p>The AF "Dry Toilet" comes preassembled. For the purpose of explanation, the toilet base is the bottom of the toilet which is secured to the bathroom floor, the toilet chute is the black inner section (shown in Fig. A) that fits through the floor and is attached to the toilet top, the toilet top is the upper part of the toilet that attaches to the toilet base, and the bowl liner which is the black removable funnel shaped piece below the toilet seat.</p> <p>To install the AF "Dry Toilet", follow the procedure outlined below:</p> <ol style="list-style-type: none"> <li>1. To locate the position of the hole, place the toilet chute in the desired location and trace the 10" diameter cut out in the bottom of the toilet base on the floor in the bathroom. (See Fig. A)</li> <li>2. Drill a 1/4" hole on the front of traced line and then check under the floor that the hole will be clear of floor joists and will line up with the composting unit below. (See Fig. B)</li> <li>3. If the position is correct, complete the cutting of the 10" diameter circle with a jig saw. (See Fig. C)</li> <li>4. Center the toilet base over the 10" diameter hole that has been cut out of the floor and securely attach to the floor by using the four 5/16" by 2 1/2" lag bolts that are provided with your kit. (See Fig. D)</li> </ol> <p>**Prior to finishing the toilet installation, it is a good idea at this time to do a pre-assembly check to see if you will need any extension pipe</p>	 <p>Fig. A</p>  <p>Fig. B</p>  <p>Fig. C</p>  <p>Fig. D</p>
<b>The Transition Piece</b>	<p>Place transition piece (Fig. E) into the waste inlet hole on the top of the Centrex 3000 AF composting unit. Make sure that the transition piece is at right angles to the unit, or completely vertical. It is important that the transition piece is not tilted so that waste can drop directly into the composting drum.</p>	 <p>Fig. E</p>

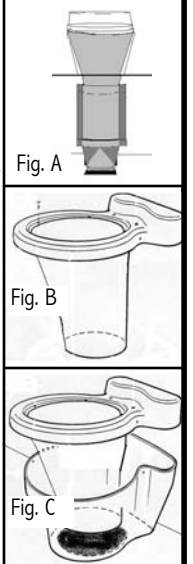
## Chapter 5 MECHANICAL TROUBLE SHOOTING

*Most problems are prevented through proper maintenance and the use of proper bulking materials in the toilet. If you do have a problem which may be a mechanical or installation problem, this Trouble Shooting section will help you solve it. If you still have further questions, contact technical service at Sun-Mar for advice at 1-888-341-0782*

Symptom	Cause	Remedial Action	Prevention
<b>Urine Odor in Washroom</b>	Horizontal runs or downward slopes on pipe are causing condensate to block 2" pipe. (Electric or AC/DC)	Re-install the vent so there are no longer any low points where condensate can collect. If re-installation is not possible, drill a small hole in the bottom of the low point (preferably outdoors) to allow condensate to drain. (Note: watch for icing in winter at this hole.)	Install wall brackets on vent pipe to prevent settling. DO NOT install horizontal runs as liquid will collect and block ventilation, causing odor.
	Fan has failed (AC or DC mode)	Have your serial number ready and call Sun-Mar for a replacement. Instructions are included with the replacement fan.	The fan is a constantly moving part and has a finite service life.
	Device other than Sun-Mar diffusor is installed on top of the vent stack	Wind turbines or vent caps may be discouraging air movement. If so, replace with a Sun-Mar diffusor.	Wind turbines or vent caps should not be installed on or, instead of a Sun-Mar diffusor.
	Room where unit is located is airtight.	<ol style="list-style-type: none"> <li>1. Hold a lighter up to the air intake holes on the back of the unit. Air should be drawn into the holes. If air is not easily pulled in, check venting for too many bends or horizontal lengths and/or provide more ventilation to the room.</li> <li>2. Install fresh air intakes on any competing appliances.</li> </ol>	Install your Centrex 3000 AF in an area with plenty of ventilation and watch for competing appliances such as bathroom fans and wood stoves.
	2" vent stack has too many bends and/or horizontal lengths. (Electric or AC/DC)	<ol style="list-style-type: none"> <li>1. Re-install the 2" vent stack to reduce the number of bends/eliminate horizontal lengths.</li> <li>2. If the vent stack cannot be further straightened, remove the AC fan assembly and reduce the amount of recirculating air by covering up the area between the fan exhaust and the 90 degree vent intake elbow with duct tape or similar.</li> </ol>	Install the vent with minimal bends (total bends should equal no more than 360 degrees) and NO horizontal or downward slopes.
	Not enough air being pulled down the dry toilet	Two 3" diameter air intake holes covers are supplied with the hardware kit. One or both of the air intake holes at the rear of the unit, may be covered so that more air is pulled down the toilet.	Covers should only be inserted if they are needed, because insertion reduces airflow over the evaporation chamber, which in turn reduces evaporation performance.

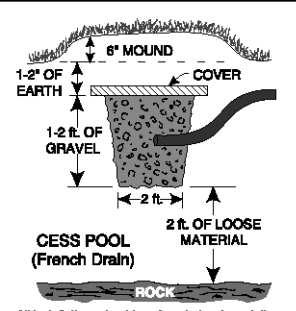
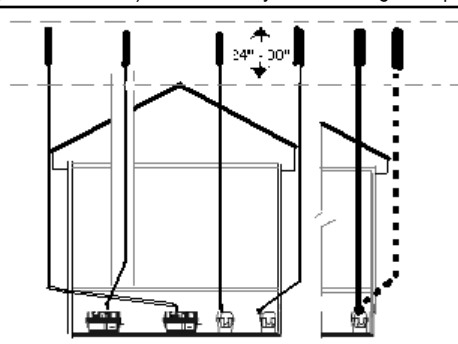
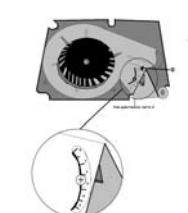
Symptom	Cause	Remedial Action	Prevention
<b>Flies Present</b>	-compost too dry -compost anaerobic -kitchen/garden waste added -foreign material added	<p>1. To get rid of flies, you can use any pesticide that is used on your garden. Pesticides used for garden use are not anti-bacterial so are safe to use on your compost. If you prefer not to use a pesticide in your compost, the unit should be cleaned out completely and washed with soapy water to kill any remaining eggs. Once the unit is washed, it should be rinsed well to remove all traces of soap before restarting the compost.</p> <p>2. If using a pesticide to kill the insects, it may be purchased from a local garden center or hardware store.</p> <p>3. If using a liquid, sprinkle about 1/2 cup of the mixture directly over the compost. Using a spray bottle, apply throughout the entire toilet (finishing drawer, evaporating chamber, drum, out side of drum) until the fly population is eliminated. Open a window or door to ventilate the room while applying and keep children and pets away from the area for a few hours after application. Repeat if you see another fly after the initial application.</p> <p><b>IMPORTANT:</b> Application of a pesticide in a Sun-Mar composter is not a health concern because all Sun-Mar units are vented.</p>	<p>1. Keep compost moist. In order to determine a good level of moisture, shine a flashlight into the drum. The compost should have a slight gloss or shine. If it does not, add warm water to it until it reaches this consistency. Fungus gnats tend to be attracted to a dry compost, due to the fungus which begins to form on the surface when it dries out. A good, moist compost will not be attractive to flies.</p> <p>2. Do not add topsoil from the ground, composted matter, or kitchen scraps to the toilet. Flies may be present in, or attracted to these items.</p> <p>3. If toilet is installed over an old septic line, make sure that the lines are well sealed. Insects find unused lines attractive.</p> <p>4. See "Compost Remediation" if the compost smells- anaerobic compost will attract flies and drastically reduce the performance of your composting unit</p> <p>5. Use "Compost Sure" or a mixture of peat moss and non-cedar wood shavings.</p>

<b>Determining if an Extension Pipe Piece is Needed</b>	Place the toilet chute into the toilet base in the bathroom. If the toilet chute extends 1 - 2" into the transition piece, then no extension pipe pieces will be required. If the transition piece does not extend far enough up to meet the toilet chute, then one or more pipe sections will be needed. These minimum 45" pipe sections can be cut down to the correct length, so that when assembled and placed in the transition piece, they extend 1-2" over the toilet chute. After taking into account the overlap, each pipe piece provides an extension of about 41".
<b>Assembling and Installing the Extension Pipe Pieces (If Needed)</b>	<p>A pipe section, which comes in two halves, can be cut to the correct length, by cutting the required amount off the straight ends of each half with a hack saw.</p> <p>It is easier to cut pipe sections to length before joining the two halves together. After cutting, clean up the edges with a sanding block and coarse (40-60 grit) sandpaper.</p> <p>Before joining the two halves of the pipe pieces, spread a bead of silicone caulking from top to bottom along the inside of both halves of pipe pieces (so that the inside of the pipe section will be sealed). Press the two halves together, and secure them by screwing in the self tapping screws provided into the pre-drilled holes. Run a finger or spatula up along each joint inside the chute to remove any excess silicone. Ensure that when the pipe pieces are assembled together, and the bottom piece is placed in the transition piece of the composting unit, that the top of the transition piece extends 1-2" over the chute.</p>
<b>Finishing the AF "Dry Toilet" Installation</b>	<p>Before finishing the installation, do a preassembly check to make sure everything fits together properly. The top of the pipe piece is belled out to accommodate the toilet chute. Place the transition piece in the cut out provided on the top of the composting unit, then place the pipe pieces, if any, inside the transition piece. Next lower the toilet top onto the base so that the chute projects 1-2" into the pipe piece or directly into the transition piece if no pipe piece is used. Ensure that the toilet top is properly located over the toilet base, that the chute is completely vertical, and that the screws to attach the top to the toilet base line up properly. ( Fig. A) If the pre-assembly check appears OK, then disassemble and reassemble each piece as in the pre-assembly check.</p> <p>To assemble the toilet top with the chute, line up top with the chute and fasten the four screws around toilet opening and cover with the snap caps (Fig B). Insert the toilet chute into the toilet base until the toilet top rests on the base (Fig C). When reassembling use silicone caulking at the joints where the toilet chute sits inside the extension pipe piece, where the extension pipe piece sits inside the transition piece and where the transition piece sits inside the composting unit.. Use a finger or spatula to remove any excess silicone.</p> <p>Next, line up the two pre-drilled holes which go through the front of the toilet top, through into the toilet base, and insert the two screws without tightening them. With these front two holes secured, tilt the rear of the top down over the base until the last four screws are located. Screw in all six screws, making sure not to over-tighten, and push on the plastic caps over the screw heads. Attach the toilet seat by threading the nylon screws through the toilet seat hinge and into the holes into the toilet top. Put the black removable bowl liner into place under the toilet seat.</p>
<b>Installing the Compost Finishing Chamber</b>	Line the base of the compost finishing chamber with a large garbage bag. Place the base of the compost finishing chamber against the right side of the unit, directly below the drum output, so that compost will drop into the compost finishing chamber automatically. The top of the compost finishing chamber should be placed on the bottom half so that it covers the drum output (the end of the drum where the compost will come out).





Symptom	Cause	Remedial Action	Prevention
<b>Compost Too Wet</b>  <i>Your compost is too wet when there are standing pools of liquid. Compost will smell of sewage and is anaerobic</i>	Compost porosity is poor. Too much peat moss has been used as a bulking material. This is compacting, preventing liquid from draining through, and leaving no free air space for oxygen.	For an immediate improvement in porosity add about 1/2 gallon of wood shavings, of any kind (except cedar) to the drum.  On an ongoing basis, change bulking material to Compost Sure or a 70% wood shavings and 30% peat moss mix.	Use Sun-Mar Compost Sure or 30% peat moss, 70% wood shavings as a bulking material.
	Drum screen clogged	Remove the finishing drawer. Scrub screen (which will be visible with a flashlight on the bottom of the drum) with wire brush. The overflow drain should be hooked up.	
<b>Compost Too Dry</b>  <i>Compost is too dry when compost looks flat and brown rather than rich and black.</i>	Moisture not being added periodically or before departure on cottage units. Toilet not used for urination .	Add 1/2 to 1 gallon of hot water to compost in order to bring it up to appropriate moisture level.	Follow section on moisture in "PERIODIC CHECKUP".
	Insufficient bulking material or not enough peat moss.	Peat moss retains moisture. 40-60% moisture content is ideal for aerobic microbes to thrive.	Use toilet for urination.  Add correct bulking material.
<b>Waste not Breaking Down at all</b>  <i>If this is the case, the drum will fill up quickly</i>	Insufficient Microbes	Add Sun-Mar Microbe Mix or unsterilized black earth from a garden center.	Be sure to add microbe packet at startups.
	Temperature around unit under 60F/15C	Install heat source to increase temperature. Temperature should be kept above 55-60F/15C constantly if toilet will be used on an ongoing basis.	Install unit in warm area. The warmer the area, the better your compost will be! If evening temperatures fall below the prescribed temperatures on a residential unit, consider installing a heat source on a timer for evenings.
	Bleach or other anti-bacterial chemicals added.	Empty drum. Hose out inside of drum. Restart compost according to "Initial System Startups".	Never add bleach or cleaning chemicals.

<b>Handling Effluent</b>	<p>The following are possible options to take care of the liquid:</p> <ul style="list-style-type: none"> <li>- Use a container which is emptied periodically (water jug or small barrel). This ensures a closed loop system.</li> <li>- Feed into a lined pit filled with gravel and sand. Such a recycling bed also ensures a closed loop system.</li> <li>- Feed into a small cesspit or "french drain".</li> <li>- Plumb into an existing septic or holding tank line.</li> </ul> <p>Installation should be in accordance with applicable local regulations.</p>	 <p>CESS POOL (French Drain)</p> <p>All installations should conform to local regulations.</p>
<b>Vent Piping Location</b>	<p>Piping can be installed up the inside wall; through the wall at a slight angle and up the outside wall. The choice depends on ease of installation, visibility, and (especially if the toilet is to be used consistently through a cold winter), the necessity of insulating all exposed vent pipe.</p>	 <p>The vent on the right is a 4" non-electric vent. All others show possible 2" Centrex 3000 AF vent configurations.</p>
<b>Adjusting the fan gate (Electric and AC/DC)</b>	<p>If you believe that there may be a downdraft outside of the building, it may be a good idea to remove your fan assembly prior to installation and set the fan gate to '0' to prevent urine odor in the bathroom. The fan gate is factory set to '3', which recirculates air within the unit. If there is a downdraft you may get blow back into the room where the unit is installed. When setting the fan gate to '0', you may lose some evaporation so it is also wise to hook up the emergency drain.</p>	
<b>Vent Piping Installation</b>	<p>Piping and fittings are of standard 2" PVC thin wall tubing (central vacuum) and/or 4" PVC thin wall pipe. Additional pipe or fittings can be purchased from a building supply dealer. If you cannot find them near your location, you can substitute schedule 40 pipe and use a rubber coupling to join this pipe to the unit.</p> <ol style="list-style-type: none"> <li>Minimize the number of sharp angles in the 2" vent as each reduces vent efficiency. The 4" vent should be installed as near to vertical as possible. It is recommended if it is necessary to have angles in the 4" vent pipe that 45 degree angles are used whenever possible. On the 4" DC stack, bends should be limited to 2 - 45 degree angles. will necessitate the installation of a 12 volt fan.</li> <li>Do not lead the 2" vent pipe downward or horizontally at any point. This may lead to the vent pipe</li> </ol>	

**Vent Piping Installation (Cont'd)**

being blocked by condensation which would cause a urine smell in your bathroom.

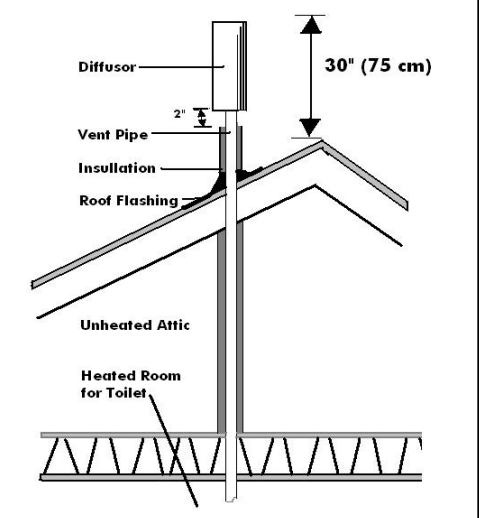
iii) All connectors in the vent pipe should be sealed. **Use silicone for the connection of the vent stack to the toilet in case the composting unit has to be moved or you have to access the fan.** PVC cement may be used in the rest of the stack installation if desired.

iv) All exposed vent pipe should be insulated with the foam insulation. This is especially important for winter or residential use.

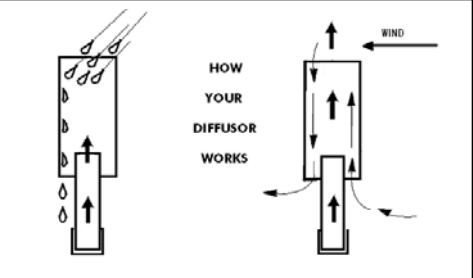
v) The Sun-Mar 12 Volt fan is fitted inside a 10" length of 4" vent pipe for easy installation, should it be needed. It is installed by either cutting out a section of the vent immediately above the composting unit, or by raising the vent stack off of the composting unit and inserting the fan section. The fan can be used with a solar panel and 12 volt battery, or by purchasing a 12 volt adapter from your local hardware store and simply plugging it into the wall.

**Leading the vent through the roof**

As shown in the installation, the vent stack should end about 30" above the peak of the roof so that it is less subject to downdraft. Where the piping is taken through the roof, the roof flashing provided should be used to seal the installation. Insert the vent into the bell of the roof flashing and slide the roof flashing down until it lays evenly on the roof. Slip the upper edge of the roof flashing flange under the shingles. Outline the flashing on the roof. Raise the roof flashing and apply silicone sealant or roofing tar inside the outline. Slide the flashing back into place and firmly press onto the sealant. The flashing is properly placed when the top part of the roof flashing flange is tucked under the shingles and the lower portion is sealed on top of the shingles so that water sheds easily. Secure the flashing with corrosion resistant nails at each corner and along sides. Any exposed nails should be sealed with silicone caulking.



**The Diffusor**



The diffusor provided with the unit is a simple device to be installed at the top of the vent stack with the larger pipe protruding above the smaller. To install, simply glue the diffusor on the topmost section of vent pipe. The diffusor design encourages updraft, and discourages wind and weather from going down the vent stack. Unlike wind turbines, diffusors are less likely to freeze up in winter, and are more effective in calm weather.

**Electrical Considerations (Electric and AC/DC)**

A ground fault interrupter (GFI) circuit is recommended to protect your composting unit from electrical problems. This may be installed directly on the wall socket or at the circuit breaker.

## Chapter 4 Compost Troubleshooting

*This chapter will deal with problem that may arise with your compost, what is required to make your compost healthy and how to correct problems if they arise.*

### Requirements of an Aerobic Compost

In a Sun-Mar, a good compost is predominantly aerobic, which means that oxygen is available for aerobic bacteria throughout the Bio-drum. Aerobic bacteria consume waste quickly and odorlessly to produce carbon dioxide and water vapor and leave behind a small fraction of the original waste volume in the form of basic minerals. The end compost is a mix of valuable minerals and bulking material that has not decomposed.

To work effectively to break down waste, aerobic bacteria need oxygen, moisture, available carbon (from the bulking material), and warmth.

In a Sun-Mar, oxygen is provided by the tumbling of the drum and the bulking material leaving free air space within the compost. Moisture is provided by the waste, and is made available to aerobic bacteria by the moisture retention properties of the bulking material. If the compost is too dry, add warm water.

In summary, to keep the compost aerobic, it is important to rotate the drum, add bulking material, and keep the compost moist.

### Oxygen

Lack of oxygen becomes a problem where:

- Too much moisture eliminates the free air space,
- A lack of bulking material limits free air space,
- Aerobic bacteria use up oxygen in the compost.

Lack of oxygen causes the compost to become increasingly anaerobic, which means that aerobic bacteria are displaced by anaerobic bacteria. Anaerobic bacteria work slowly and produce undesirable ammonia, hydrogen sulphide, and methane. Consequently, the maintenance of 'free air' space by periodically rotating the drum and adding the right bulking material is very important in Sun-Mar units. Excessive rotation is not helpful and can harm the compost by disturbing the bacteria too much.

### Moisture

If there is too much moisture, and the compost is approaching saturation, oxygen is pushed out and anaerobic activity predominates. On the other hand, if there is too little moisture, aerobic activity slows. For this reason, it is important to maintain adequate moisture levels (40-60% moisture content is ideal). Generally, if you shine a flashlight in after mixing, there should be a slight sheen of moisture on your compost.

### Warmth

Too little warmth will cause aerobic activity to slow. Below 55-60 degrees F, microbes will go dormant and composting will stop. Composting speeds increase dramatically with temperature.

### Characteristics of a Bad Compost

If your compost is over 8 weeks old and it exhibits one or more of the following characteristics, then an operating change is indicated.

- ✓ Extraction required too often (under 4 weeks)
- ✓ Large Lumps present in compost
- ✓ Compost muddy or clay-like
- ✓ Flies present (this may also be a problem with foreign matter being added to unit; see section on flies)
- ✓ Compost has strong unpleasant smell of sewage when drum is turned.
- ✓ Toilet paper present in finishing drawer

### Troubleshooting

In using this troubleshooting section, you should follow remedial action in the order that they are given, unless you are sure of the problem. You should see improvement in a week, and your compost should be back to normal in 2-3 weeks. If it is not, make sure that "Ongoing Toilet Maintenance" is being followed and check the mechanical troubleshooting section.

**ONGOING TOILET MAINTENANCE**

The procedure below is designed to keep the compost:

- **Moist, but not too wet**
- **Well aerated and mixed**
- **Well balanced and aerobic**

Action	Reason for Action
<b>Add</b> 1 cupful (or 2 handfuls) of Sun-Mar Compost Sure Blue (or 100% non-cedar wood shavings) to the Bio-Drum per person per day of use.	<ul style="list-style-type: none"> <li>- Maintains the carbon/nitrogen balance</li> <li>- Absorbs liquid</li> </ul>
<b>Turn Handle</b> to rotate the drum a minimum of 10 complete revolutions , every second day when in use. Turn the handle 1/2 turn past its' resting position to level the compost inside the drum (until the input door is visible through the access hatch). DO NOT forget to return the drum opening to a position under the wastepipe.	<ul style="list-style-type: none"> <li>- Helps oxygen penetrate for aerobic composting</li> <li>- Mixes and oxygenates the compost</li> </ul>
<b>Unplug</b> the unit if you are leaving for a period of more than a few days. If you are leaving one weekend and coming back the next, you may unplug the unit. Consider installing a timer to shut the unit off after 48 hours to evaporate excess liquid. If you are leaving for a period of more than a few days, or the compost appears dry, add approximately 1/2 gallon of warm water to keep the compost moist.	<ul style="list-style-type: none"> <li>- unplugging unit will conserve power and keep compost from drying.</li> <li>- addition of water helps keep the compost moist</li> </ul>
<b>Check</b> compost collection chamber to make sure the bag does not need changing. When the compost in the drum accumulates to a certain point, it will automatically move along the drum into the collection chamber every time the drum is rotated. When the bag becomes full, simply empty into a secondary compost container, where we recommend storing compost in a container before using.	<ul style="list-style-type: none"> <li>- Moves some compost to the next stage for finishing</li> <li>- Ensures that the drum does not get too full</li> </ul>

**CAUTION**

1. Do **NOT** add or clean the toilet bowl with chemicals. Chemicals will kill the bacteria. **INSTEAD**, clean the bowl liner with "Compost Quick", or hot water and baking soda.
2. Do **NOT** add plastic, glass, metal, cleaning fluids, cigarettes. Add only waste and bulking material.
3. Kitchen or garden waste are **NOT** recommended.

**12 Volt Fan Installation (AC/DC and NE)**

Every Sun-Mar AC/DC and NE model comes with a 12 Volt Fan for installation in the 4" stack. Its installation is required in the following situations:

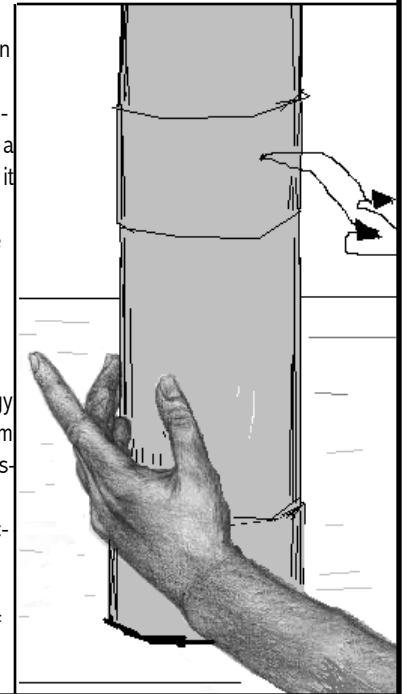
- If you are installing both 2" and 4" vent stacks (prevents downdraft from the 2" vent)
- If you are in an area where you are subject to downdraft
- If you are using the unit residentially
- If you need to install the vent stack with bends

We include it because many AC/DC owners do install both vent stacks. It may also be installed later if you wish simply by cutting a section out of your vent and replacing it with the fan.

To install the fan initially, pick a spot on the stack that you can reach easily. In order to get the best evaporative performance from the fan, install it near the toilet if possible (remember, the fan will still not be enough to evaporate all liquids in a non-electric or DC only environment). Once you have placed it where you wish, use silicone caulking, or rubberized couplings, to make the installation airtight. Do not use ABS glue at this area as you may need to change the fan at a later date.

The 12 Volt Fan may be powered with a battery that is connected to a generator, solar panel, or other alternative energy system. For use in AC, purchase a 12 Volt to AC Adapter from any electrical store and snip off the female end - wire the positive wire to the red wire on the fan, and the negative wire to the blue wire on the fan. Tie them off with small wire connectors, and plug your AC Adapter into the wall.

The 12 Volt Fan should be continuously running if used, as if it is not running it will act as a block in the vent stack.



Chapter 3

**Start Up and Use**

Although the start up instructions remain the same no matter what your application, different situations will require different actions and this chapter will explain what they are.

**Initial System Start Up**

Begin operation by carrying out the start up procedure described below, and then continue with the “Ongoing Toilet Maintenance” routine. It normally takes six weeks before a compost is properly established. You will know this has happened when:

- **Compost Volume increases more slowly**
- **Compost turns black and becomes loam-like**
- **Toilet paper decomposes within a few days**

	<b>Action</b>	<b>Why?</b>
<b>ADD</b>	One entire bag of Compost Sure to the drum.	-Provides carbon base and initial mass for compost.
<b>ADD</b>	1/2 Microbe Mix packet at start up, other 1/2 in two weeks	-Adds necessary microbes which will break-down the compost.
<b>SPRINKLE</b>	About 1 gallon of warm water into the drum	-Moistens carbon base
<b>PLUG IN</b>	Fan and heater are operating	-The unit is ready for use
<b>SPRAY</b>	“Compost Quick” enzymes into drum before and after mixing. Coat the evaporation chamber with it before using the unit.	-Speeds start up of compost by acting as a catalyst to assist bacteria. -Prevents possibility of start-up odor in the evaporating chamber.
<b>RAKE</b>	Loose peat moss from the evaporating chamber until the compost is established, which takes approximately 6 weeks.	-Until the compost is active, some peat moss may fall through the screen or drum door into the evaporating chamber
<b>POSITION</b>	Black evaporating tray under drum screen to the left of the drawer.	Extends the surface area of evaporation chamber
<b>LINE</b>	Compost collection bin (Doghouse) with garbage bag.	-Allows easy removal of finished compost.

\* Toilet paper is a good source of carbon and should be added after use.

**CAUTION**

1. Do **NOT** add or clean the toilet bowl with chemicals. Chemicals will kill the bacteria. **INSTEAD**, clean the bowl with “Compost Quick”, or very hot water and baking soda.
2. Do **NOT** add plastic, glass, metal, cleaning fluids, feminine paper products or cigarettes. Add only waste and bulking material.
3. Kitchen or garden waste are **NOT** recommended.

**Annual Start Up (seasonal units only)**

Many units are only used regularly throughout the summer. For such seasonal units Sun-Mar recommends that the following start up procedure be followed at the beginning of the season.

<b>Action</b>	<b>Reason for Action</b>
<b>Empty</b> the compost that is in the compost finishing chamber , and use the rake to clean out the evaporation chamber.	- Your fertilizer is ready. - This is a good time to remove peat debris
<b>(Optional)</b> If more space is required in the drum, remove additional drawers of compost , by releasing the drum lock (white button on right side of unit), and rotating the drum clockwise (the handle turns counter-clockwise) to extract compost into the drawer. (At the beginning of the season, it will all be finished compost)	- Frees space in the composting chamber for the new seasons composting.
<b>Add</b> 1/2 gallon of warm water.	- Raises moisture level
<b>As an option for optimal composting,</b> Add SUN-MAR “Microbe Mix” . We do not recommend using topsoil as it may contain fly larvae.  SUN-MAR “Compost Quick” enzyme can also be used as a compost accelerant.	- Even though the compost still has microbes in it, you may want to start the year by replenishing your batch of microbes. - Compost Quick helps to accelerate the action of the microbes.

**Periodic Check Up**

Once your unit has been through initial or annual start-ups, and ongoing maintenance procedures are being followed, Sun-Mar recommends a system of periodic checks be undertaken.

<b>Action</b>	<b>Reason for Action</b>
<b>Rake</b> peat moss debris from the evaporation chamber, making sure to rake from the rear of the chamber, including the back two corners of the unit. Raking should occur on a yearly basis for cottages (best done at annual startups), and a bi-monthly period for continuous users.	- Ensures drains cannot get plugged and evaporation is improved.
<b>Check</b> your compost moisture level on each visit for cottage users and once every two weeks for continuous users. This can be done by shining a light into the Bio-Drum. The compost should have a slight gloss or shine to it. A moisture meter may also be used if so desired. Range should be 4-6, which represents 40% to 60%	- A good compost is between 40% and 60% moisture content. - Prevents lumps, ensures toilet paper breaks down quickly. - Prevents insects
<b>Pour</b> 1 gallon of very hot water down the toilet.	- Ensures waste piping remains free-flowing.
<b>Extract</b> compost from the collection bin by changing or emptying the garbage bag. If the drum is becoming too full, increase your revolutions to twelve complete revolutions, three times per week to increase the compost output.	- Frees space in the composting chamber.