

Serial No. _____

Sun-Mar

Global Composting Experts

CENTREX 2000

OWNER'S MANUAL



CENTREX 2000



CENTREX 2000 NE



Certified to NSF/ANSI Standard 41
Certified for liquid containment,
odors, and solid end products in
both residential and cottage use

Models for which the manual applies:

CCEB-02510 Centrex 2000 115V
CCNB-02540 Centrex 2000 NE
CCEB-02515 Centrex 2000 230V

RATED CAPACITY

Residential & Continuous Use

CENTREX 2000: 4 Adults
CENTREX 2000 NE: 3 Adults

Weekend & Vacation Use

CENTREX 2000: 7 Adults
CENTREX 2000 NE: 5 Adults

TABLE OF CONTENTS

The CENTREX 2000 Toilet	1	Compost Troubleshooting	14
The Patented Bio-Drum	1	Compost Too Wet	14
Compost Finishing Drawer	1	Waste Not Breaking Down	14
Evaporation Chamber	1	Lumps In Drum	14
How Composting Works	2	Drum Too Full	14
		Strong Odor	14
		Flies Present	14
What's In the Box?	3	Mechanical Troubleshooting	15
Parts and Functionality	3	Urine Odor in Washroom	15
Installation FAQ	4	Occasional Urine Odor Outside	15
Rough-In Diagrams	5	Fan Noisy	15
Installation Specifications	6	Fan Not Working	16
CENTREX 2000	6	Liquid Build-Up In Evaporation Chamber	16
CENTREX 2000 NE	6	Liquid Overflow	16
Space Required and Other	6	Heating System not Working/	16/17
Considerations	7	Lack of evaporation	
Vent Pipe Installation	7	Liquid in Finishing Drawer	17
CENTREX 2000	7	Drum Will Not Turn	17
CENTREX 2000 NE (Non-Electric)	8	Drum Door Not Opening/ Closing	17
Inlet Coupling	8	Properly	
Diffuser Installation	8		
		CENTREX 2000 Explosion Diagram	18
Drain Installation	9	Wiring Diagram/ Electrical	
Effluent Handling	9	Specifications	
Installing The Waste Pipe	9		
		Composting Toilet Accessories	19
Initial Start-Up and Use	10		
Basic Instructions and Ongoing Toilet	11		
Maintenance			
Removing Compost From The Bio	12		
Drum™			
Seasonal Usage and Spring Start-Up	13		
Winter Use	13		

Do NOT stand on the toilet.

Electric toilets must be installed so that electrical components in the base of the toilet are protected from rain, flooding and melting snow.

Do NOT power wash electric toilets.

Using metal tools for cleaning purposes will damage the toilet.



THE SUN-MAR CENTREX 2000 TOILET

The key to the success of the CENTREX 2000 lies in its three-chamber design. Each chamber – the patented Bio-drum™, the compost finishing drawer, and the evaporation chamber - has their own independent environments for optimum efficiency.

The **CENTREX 2000** electric version has a thermostatically controlled heater, and a fan to help evaporate liquid. They must be connected to electricity consistently, unless the toilet will not be used for three continuous days or longer.

The **CENTREX 2000 Non-Electric** ("NE") is for use where there is no electricity readily available. It has no built-in fan or heater.

The safety drain must be connected in all CENTREX 2000 installations. Please see page 9 for full details on drain installation.

The Patented Bio-drum™

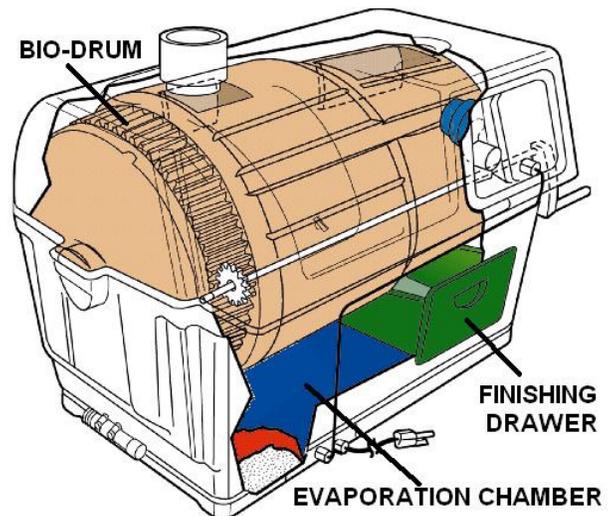
Unique to Sun-Mar, the patented Bio-drum™ provides the necessary mass to maintain good compost and allows easy aeration of the compost by simply turning the drum. Excess liquid will exit through a screen in the bottom of the drum into the evaporation chamber. Mixing compost in the Bio-drum™ is accomplished by rotating the handle in a clock-wise direction. Compost is removed from the drum by pulling out the drum lock button and rotating the handle in a counter clock-wise direction.

The Compost Finishing Drawer

The compost finishing drawer sits below the Bio-drum™ of the toilet. Compost in the drawer is isolated from mixing with new waste while resting for 4 weeks so that it can finish composting.

The Evaporation Chamber

The evaporation chamber is the floor of the unit under the compost finishing drawer. This is the area where any excess liquid will gather for evaporation.



HOW COMPOSTING WORKS

Composting is the natural process of decomposition that can be assisted by providing the ideal conditions to help your composting toilet work at peak performance. The ideal conditions for decomposition to occur depend on several factors: oxygen, temperature, moisture content, and the carbon/nitrogen ratio.

Oxygen

Oxygen is very important in composting. Your compost should be aerated in order to encourage aerobic bacteria growth. Aerobic bacteria are bacteria that grow and live in the presence of oxygen and are very efficient in breaking down waste. To aerate the compost and encourage the growth of these bacteria, the compost drum should be turned three times per week (6 complete turns of the drum).

Temperature

Temperature is another important consideration when composting. Optimal composting temperatures range between 70-100 °F (21-38 °C). Decomposition will slow significantly or stop completely if the compost becomes too cold (below 55 °F or 13 °C). If you are in an area that experiences temperatures below 55 °F (13 °C) additional heat is required if the composting toilet will be used continually or frequently. If used for intermittent cottage application (3 - 4 weekends throughout the cold season) no additional heat is required. The toilet will function as a holding tank until the temperature warms up.

Moisture

Moisture is necessary to achieve good compost. Your compost should always be damp, like your garden after you have watered it. This moisture allows the bacteria to travel around in the compost so that they can speed decomposition by digesting the waste. If the compost is too dry, the bacteria cannot survive and decomposition will slow or cease. When adding water to the compost, you are aiming for damp compost, not saturated. Too much liquid in the compost limits the amount of oxygen that aerobic bacteria require to survive. If normal urination is not enough to maintain the correct moisture level in the compost, we encourage you to add additional water to the drum.

Carbon/Nitrogen Ratio

Almost all organic material will compost with the proper amounts of carbon and nitrogen. In order to maintain a good balance between carbon and nitrogen, only carbon-rich materials (SUN-MAR Compost Sure Blue) and nitrogen-rich human waste should be added to the composting toilet.

What's in the box?

CENTREX 2000	CENTREX 2000 NE
1-Owner's Manual 1- Warranty Card 1- Rake 6 - 2"x31" Vent pipes (PVC Central Vacuum Tubing) 1- 4" Diffusor 2- Compost Sure Blue 1- Hardware Kit 1- 1" x 8' Drain Hose	1- Owner's Manual 1- Warranty Card 1- Rake 5 - 4"x31 Vent pipes (PVC) 1- 6" Diffusor 2- Compost Sure Blue 1- Hardware Kit 1- 1" x 8' Drain Hose

Parts and Functionality

Familiarize yourself with your new toilet

<p>1) Turn the drum handle clockwise to rotate the Bio-drum™ for mixing and aeration. (The drum rotates counter-clockwise and the drum door closes). This is how you will rotate the drum during regular operation.</p>
<p>2) Lift and remove the access door and rotate the drum until the drum opening is visible through the access door opening for adding "Compost Sure Blue". This is how you will add "Compost Sure Blue" bulking mixture to the drum during regular operation.</p>
<p>3) Pull the drum locker button, (located on the side, near the handle), hold it out and turn the handle counter-clockwise to simulate removal of compost from Bio-drum™ to the finishing drawer. This is how you will remove compost during regular operation. (see page 12)</p> <p>Note: Compost will not drop into the drawer automatically; the drum locker must be pulled out and held while the handle is being turned counter clockwise to remove compost. There should be no resistance on the handle when turning. (Page 12)</p>
<p>4) Plug the toilet's electrical cord (CENTREX 2000 electric) into a standard three-prong electrical outlet and feel the air movement from the vent outlet at the front of the unit to ensure the vent system is working properly.</p>
<p>5) After the toilet has been plugged in for ten minutes, remove the compost finishing drawer at the bottom front of the toilet. Place a hand inside the drawer opening, on the surface of the evaporating chamber (the area under the finishing drawer) to check it is warm to the touch, and that the heater is working properly (CENTREX 2000 electric).</p>
<p>6) The unit must be installed so that the base is protected from weather. The rubber "u" channel at the bottom of the unit is well-sealed, but if the unit is sitting in water, has snow melting against it, or rain pouring on it, this may eventually wear through and short out the heating element. This seal is water resistant; it is not water-proof.</p> <p>Note: The composting unit should be placed on a level surface, or sloping slightly toward the safety drains assembly to ensure drainage of effluent. Do not install the unit in a pit where water can accumulate around the compost.</p>

Installation FAQ

1) Must I install the vent?

Yes, in order to ensure odorless operation.

2) Vent pipe leading out of the toilet

When you are installing the vent pipe, **completely avoid ANY downward sloping or horizontal runs**, no matter how small.

3) How many bends can I put in the vent pipe?

Electric Systems: No more than four 45° bends. There **should not** be any **horizontal runs** (no matter how small) or downward slopes of the pipe. Fasten your pipe with the supplied brackets to prevent settling.

Non-Electric: No more than two 45° bends. If elbows are used, a 12 volt fan is available for purchase from Sun-Mar and if necessary, should be installed.

4) Can I merge the toilet vent with an existing plumbing vent?

No. We realize that this will make your installation easier, but if the toilet is not installed with its own vent, it will hamper the airflow, and will lead to **odors**. In addition, other plumbing fixtures connected to the same vent will start to smell of ammonia. **The toilet needs to be installed with its own vent in order to function odorlessly.**

5) Where does the diffuser go?

On top of the vent stack.

6) I have a metal roof, an obstruction or a steeply pitched roof. Must I have the vent above the peak of the roof?

Yes. If the vent ends under the eave, the air from the vent will downdraft over the property, possibly causing a urine smell to occur. The vent should be installed 24-30 inches above the peak of the roof to prevent downdraft. See pages 7 and 8 for complete instruction.

7) How will I secure the stack if I need go to 24-30 inches above the peak of the roof?

Guy wires. These should be available at your local hardware store.

8) Can I use venting other than what is supplied?

No, always use the recommended venting. Schedule 40 venting has a smaller inside diameter that will reduce venting capacity, and may result in odor. **Flexible venting should not be used in any application**, as this will result in odor around the toilet.

9) Do I need to plug in my electric toilet?

Yes. Your composting toilet should be plugged in continuously unless it will not be used for 3 or more consecutive days.

10) Will I need an overflow drain on a CENTREX 2000?

While both electric and non-electric composters have a considerable evaporating capacity, as a precautionary measure Sun-Mar recommends that the safety drains on all toilets be connected.

11) Do I really need an overflow drain with a non-electric toilet?

Yes. You will have overflow liquid, even with limited usage. **If the drain is not connected, the evaporation chamber will overflow.**

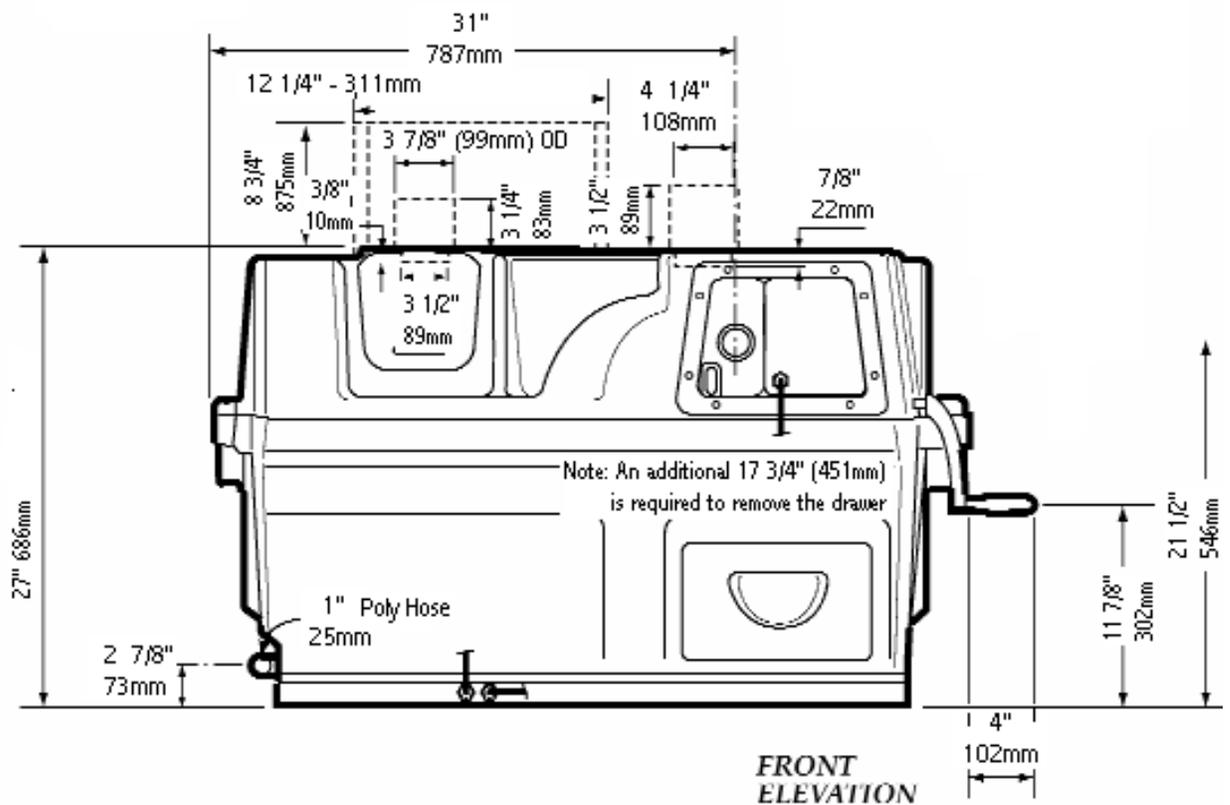
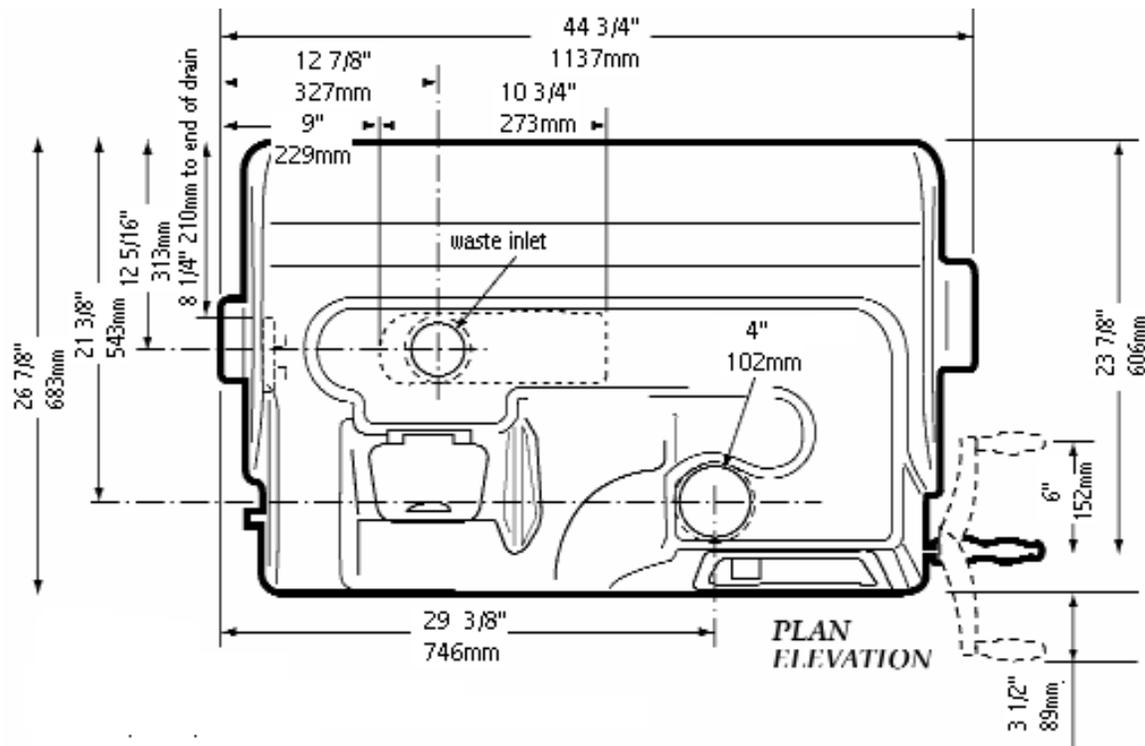
12) What should the overflow drain be connected to?

All effluent handling systems should be in accordance with local regulatory practices. Please see page 9 for more detail on possible configurations.

13) The CENTREX 2000 is installed in an area that can get below 55° F (13°C) at times. Will this affect composting?

Yes. If the toilet is being used continuously, you will need to install an additional heat source, or leave the heat on in the area where the toilet is located. If you are only using it three or four weekends during this time, see page 14 for further details.

CENTREX 2000 ROUGH IN DIMENSIONS



Installation Specifications

CENTREX 2000

Space Required and other Installation Considerations

- 1) Ensure that the unit is installed on a level surface or sloping slightly towards the safety drain.
- 2) Ensure the CENTREX 2000 is protected from precipitation.
- 3) To ensure that the CENTREX 2000 is accessible for ongoing maintenance, install the composter in an area with a minimum height of 28". **DIGGING BELOW GROUND TO FACILITATE THE INSTALLATION OF THE CENTREX 2000 IS NOT RECOMMENDED.**
- 4) Compost will be removed from the finishing drawer at the front of the toilet. Ensure that there is at least 17" in front of the CENTREX 2000 so that the drawer may be removed from the composter unit. (See page 12)
- 5) The safety drain is required in **ALL** installations. Install the unit in a location where the safety drain can be connected. This drain exits from the left side of the unit and must slope downward at all points. (See page 9)
- 6) Install in a location where the vent pipe can be attached. (See page 7)
- 7) To ensure proper ventilation, install in a location that is not air tight. The toilet must be able to vent to ensure odorless operation.
- 8) The fan will run continuously 24 hours per day while in use. A ground fault interrupter (GFI) circuit is recommended for any toilet installed. If you are in an area where you experience power fluctuations, you may wish to use a surge protector. Some 230V models may have an over current protection device on the heating element circuit, which is intended to protect the fuse and is located on the electric box.

CENTREX 2000 NE (Non-Electric)

Space Required and other Installation Considerations

- 1) Ensure that the unit is installed on a level surface or sloping slightly towards the safety drain.
- 2) Bends in the vent, downward or horizontal runs, installation near hills or overhanging trees may cause downdraft. A 12volt fan may be necessary.
- 3) To ensure that the CENTREX 2000 NE is accessible for ongoing maintenance, install the composter in an area with a minimum height of 28". **DIGGING BELOW GROUND TO FACILITATE THE INSTALLATION OF THE CENTREX 2000 IS NOT RECOMMENDED.**
- 4) Compost will be removed from the finishing drawer at the front of the toilet. Ensure that there is at least 17" in front of the CENTREX 2000 NE so that the drawer may be removed from the composter unit. (See page 12)
- 5) The safety drain is required in all installations. Install the unit in a location where the safety drain can be connected. This drain exits from the left side of the unit and must slope downward at all points. (See page 9)
- 6) Install in a location where the vent pipe can be attached. (See page 8)
- 7) To ensure proper ventilation, install in a location that is not air tight. The toilet must be able to vent to ensure odorless operation.
- 8) Competing appliances (i.e. wood stove) may need an air intake installed from the outdoors. The CENTREX 2000 NE has a passive vent. Competing appliances can draw a lot of air and may cause your composting toilet vent to release air into the building rather than venting to the outside. While not required, a 12volt 2.4watt fan may be necessary. Please contact Sun-Mar for purchase.

Vent Pipe Installation – CENTREX 2000

If running a vent through a wall, it should only be done at a 45° angle to prevent condensation from accumulating in the pipe, causing a constriction. Venting should only be installed **vertically**. Limit bends in the vent stack to no more than **four** that have a combined total of **180°**. Use silicone to seal all vent connections. **DO NOT INSTALL WITH HORIZONTAL, FLAT OR DOWNWARD SECTIONS OF VENT.**

All vent pipe that is exposed to the outside or in a non-heated space should be insulated if using the unit during cold weather.

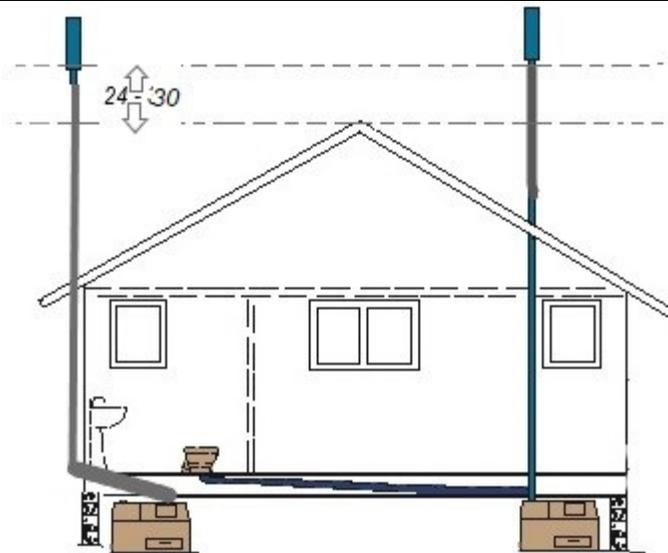
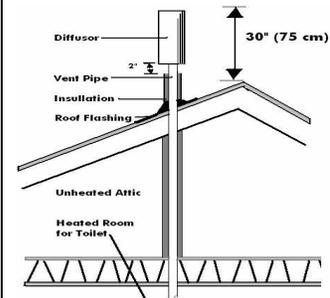
INSTALL VENT SO THAT IT TERMINATES 24" - 30" ABOVE HIGHEST PEAK OF THE ROOF. If there is more than 30" of vent, including diffuser, needed above the roof line, use guy wires to secure the vent above the roof.

A 4" diffuser is included with the CENTREX 2000. This is meant to be installed at the top of the vent stack to encourage updraft. (See page 8 for installation instructions)

The vent must be installed separately from **ALL** other household vents. **Venting cannot be merged with other, pre-existing venting.** Doing so will prevent the toilet from operating odorlessly.

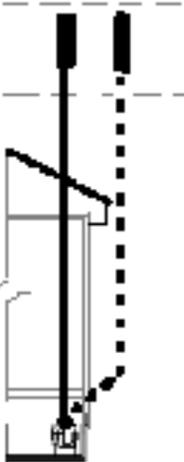
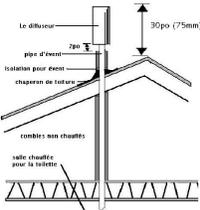
All connections in the vent pipe should be sealed. Use silicone caulking to seal the connection between the vent and the composting toilet. A sealant such as PVC cement may be used for all other vent connections.

The vent stack should end approximately 24" - 30" above the peak of the roof to allow for proper ventilation of odor, and to encourage updraft. Where the pipe is taken through the roof, a roof flashing may be required if running the vent stack through the roof. If you have a steeply pitched roof, or are in an area where snow shear is a danger, you may wish to install a heavier pipe around the vent pipe where it exits from the roof. If you do choose to install in such a manner, ensure that the area between the pipes is sealed with a waterproof substance to prevent leaks.



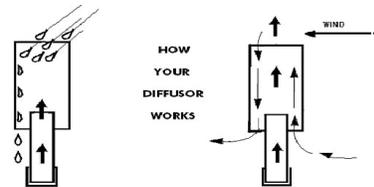
Possible vent configurations for the 2" vent

Vent Pipe Installation – CENTREX 2000 NE

<p>INLET COUPLING: Place the vent inlet coupling into the hole on the top of the CENTREX 2000 NE, so that the 1" of smaller diameter pipe is inserted into the hole on the top of the toilet. This is the first piece of the venting. Once you have finished assembling the vent, you should run a bead of silicone around where the inlet coupling meets the top of the toilet to prevent odor from escaping.</p>	
<p>The CENTREX 2000 NE does not have a built-in fan and operates with passive venting. Due to this, bends in the vent stack must be limited to no more than two 45° bends. All additional vent pipes should only be vertically installed. THERE CAN BE NO HORIZONTAL, FLAT OR DOWNWARD SECTIONS OF VENT.</p> <p>*An optional 12volt fan may be necessary if there are competing appliances, or due to climactic conditions. This fan is available for purchase from Sun-Mar.</p>	
<p>INSTALL VENT SO THAT IT TERMINATES 24" - 30" ABOVE THE HIGHEST PEAK OF THE ROOF. If there is more than 30" of vent, including diffusor, needed above the roof line to reach 24-30" above the highest peak of the roof, use guy wires to secure the vent above the roof.</p>	
<p>The vent must be installed separately from ALL other household vents. Venting cannot be merged with pre-existing venting. Doing so will prevent the toilet from operating odorlessly.</p>	
<p>All connections in the vent pipe should be sealed. Use silicone caulking to seal connections closest to the toilet, and PVC glue to seal any others.</p>	
<p>The vent stack should end approximately 24" - 30" above the peak of the roof to allow for proper ventilation of odor, and to encourage updraft. Where the pipe is taken through the roof, a roof flashing may be required if running the vent stack through the roof. If you have a steeply pitched roof, or are in an area where snow shear is a danger, you may wish to install a heavier pipe around the vent pipe where it exits from the roof. If you do choose to install in such a manner, ensure that the area between the pipes is sealed with a waterproof substance to prevent leaks.</p>	

Diffusor Installation

The diffusor provided with the toilet 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 vertically on the topmost section of vent pipe. The diffusor design encourages updraft, and discourages wind and weather from going down the vent stack. We do not recommend installing anything else on the top of the vent as it could impede the venting. Unlike wind turbines, diffusors are less likely to freeze in winter, and are more effective in calm weather.



The Safety Drain Hose

For all CENTREX 2000 units, the safety drain must be connected. The safety drain is to remove excess liquid that is not evaporated from the evaporation chamber.

**The safety drain is gravity fed, and so, must slope downward at all points. Do not merge sinks, bathtub, etc. drains to the safety drain.*

- 1) The drain assembly (fig. 1), has a cap on one end, the other end will be uncapped to facilitate the connection of the drain hose (Included with unit). The cap can be removed, and placed on either side of the drain assembly, for convenience of installation.
- 2) Place the 1" SS hose clamp over the end of the hose that will be connected to the drain assembly. Carefully push the drain hose over the barbed end of the drain assembly where the cap has been removed (Fig 2) so that the drain hose will overlap the drain assembly by 1".
- 3) Move the 1" SS hose clamp on to the section of the hose that is covering the end of the drain assembly. Use a flat head screwdriver to tighten the 1" SS hose clamp (Fig 3), until the drain hose is firmly affixed to the drain assembly.
- 4) The drain assembly is gravity fed, ensure that the drain hose is lower than the drain assembly at all points (Fig 4). This may necessitate clamping the drain to the floor in some installations.



Fig 1



Fig. 2



Fig 3

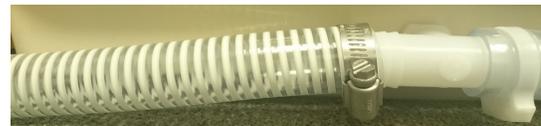


Fig 4

Effluent Handling

The following are possible options to take care of the liquid:

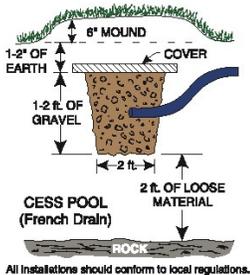
- Feed into a lined pit filled with gravel and sand. Such a recycling bed also ensures a closed loop system.
- Feed into a small cesspit or "French drain".
- Plumb into an existing septic or holding tank line.

Installation should be in accordance with applicable local regulations.

Installing The Waste Pipe

When installing the waste pipe from the toilet to the unit, the following should be considered:

- 1) The pipe should be either 45 ° or vertical (if composting unit is directly below toilet), or at a 2-3 ° angle (1/8 inch-1/4 inch or 3mm-13mm drop per foot maximum) so that the waste travels with the liquid.
- 2) Pipe should not slope upwards at any point.
- 3) Connections should be snug so that waste does not collect and cause blockage.
- 4) It is recommended that the waste pipe be no longer than 15 feet (460cm) without installing a clear out port (a Y fitting with screw on end cap) near the toilet to provide easy access should it be required.
- 5) Use a soft sealant, such as silicone for the connection of the waste pipe to the unit so that the unit can be moved for servicing or other reasons should this ever be required.
- 6) Insulate pipe if unit is to be used during the winter.
- 7) For installations of waste pipe over 6 feet, ensure the waste pipe is supported to prevent sagging.

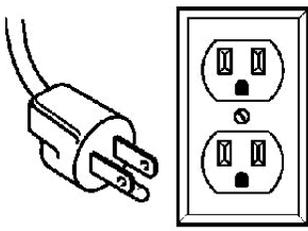


All installations should conform to local regulations.

Initial Start-Up

Follow these steps when starting up your CENTREX 2000 toilet for the first time, or if you have emptied the Bio-drum™ and need to re-start the compost.

After installation is complete, do the following:

<p>Step 1: Spray Compost Quick: Remove the finishing drawer and spray the whole inner floor of the toilet (evaporation chamber) under the finishing drawer. This will help to prevent organic material from hardening on the floor of the toilet. Spray Compost Quick into the patented Bio-drum™ and the inside of the finishing drawer.</p>	
<p>Step 2: Pour 1 bag of Compost Sure Blue into a bucket and add 2 quarts of warm water. Add 1/2 of the Microbe Mix packet (2 Tablespoons) to the bucket. Allow the Compost Sure Blue to absorb the water (about an hour).</p>	
<p>Step 3: Scoop the Compost Sure Blue mixture into the patented Bio-drum™ through the access door on the CENTREX 2000. Rotate the drum to mix.</p> <p>Ensure that the opening in the drum remains open under the waste pipe. The CENTREX 2000 toilet is now ready for use.</p>	
<p>Step 4: For electric toilets only: The fan should run continuously 24 hours per day when installed in a primary residence. 120 Volt Use: Plug in to a three-pronged electrical outlet. 240 Volt Use: The toilet must use a main plug with an earth connection. Replacement of electrical components (including the power cord and main plug) must be performed by a qualified person to avoid electrical hazard.</p>	

Once installation and initial startup has been completed, the toilet may be used immediately. Please note that when first used it will take approximately **6 weeks** at optimum temperatures (70-90 ° F, 20-30 ° C) before you will have sufficient microbial cultures in the drum to achieve good compost. During this time, the contents of the Bio-drum™ start out as Compost Sure Blue and waste. Over the first 6 weeks, you will notice that the compost will hold moisture and will become more uniformly dark in color.

During the first 6 weeks, you may notice that some Compost Sure Blue has fallen through the drum screen onto the evaporation chamber to the left of the finishing drawer. This should be raked out and removed with the rake tool provided with the toilet.

NOTE: Regular toilet paper may be used. Toilet paper is a good source of carbon for your compost.

Ongoing Toilet Maintenance

Once your CENTREX 2000 toilet is installed and you have gone through the initial start-up procedure, follow the steps outlined below to keep your composting toilet working optimally.

<p>Daily</p>	<p>Even if you only use the toilet for urination, at least one cup of Compost Sure Blue should be added per person per day of use. Add the Compost Sure Blue through the access door of the CENTREX 2000 toilet. The Compost Sure Blue should be added to the composting unit, just prior to turning the drum.</p> <div style="text-align: center;">  </div> <p>When in use, the opening in the Bio-drum™ must be centered under the waste pipe, ready to receive waste at all times.</p>
<p>Every second day</p>	<p>Every second day before turning the handle, spray 3-4 sprays of Compost Quick on the surface of the compost and add Compost Sure Blue, at the rate of one cup per person per day. Compost Quick is an enzyme that will speed up the composting process.</p> <p>Turn the handle in a clockwise direction to mix and aerate the compost. When mixing, ensure that the drum rotates 6 complete revolutions (42 turns of the handle).</p>
<p>Every two weeks</p>	<p>Add one scoop (tablespoon) of Microbe Mix to the Bio-drum™ to 'recharge' the pile. This will help to ensure your microbe colony stays constant and healthy.</p>
<p>Every three months</p>	<p>Rake the evaporation chamber: Remove the finishing drawer. Rake any solid debris from the floor of the toilet under the drawer (evaporation chamber), paying extra attention to the two back corners of the toilet as this is where debris may accumulate. Remove and dispose of the solid debris.</p>
<p>Twice per year</p>	<p>Clean the drum screen. Spray the Bio-drum™ screen with Compost Quick and let sit for 15 minutes (this will help to loosen the debris if the screen is not too encrusted). Scrub the screen vigorously with a wire brush. If brushing the screen does not clear it and liquid is still not draining through the screen, you may have to use a screwdriver or nail to clear each hole in the drum screen. See page 18, "Liquid in Drawer" for details.</p>
<p>Periodic maintenance</p>	<p>Remove compost from the Bio-drum™. When the Bio-drum™ is half full (even with the middle of the drum hub at the front of the Bio-drum™) it is time to remove compost. To remove compost from the Bio-drum™, see the section of manual titled, "Removing Compost from the Bio-drum™." (See page 13)</p>

CAUTION

- 1) **Do NOT** add or clean the toilet bowl liner with chemicals. Chemicals will kill the bacteria. Instead, clean the bowl liner with Compost Quick.
- 2) **Do NOT** add plastic, glass, metal, cleaning fluids, cigarettes. Add only waste and Compost Sure bulking material.
- 3) Kitchen or garden waste, are **NOT** recommended.
- 4) **Do NOT** add baby wipes, diapers or feminine paper as they will not compost.

Removing Compost from the patented Bio-drum™

The level of compost in the Bio-drum™ should never be more than half full. As a guide, the compost in the drum should be at least 4 inches from the bottom of the drum door. Compost may be removed from the drum by following the steps outlined in this section.

<p>Pull the drum lock button</p>	<p>The drum lock button is located below the handle. Pull the button out approximately 1/2" and hold.</p> <p>Do NOT push the button in.</p>	<p>The drum lock button is attached to a bar that sits in a molded depression in the drum. When the button is pulled, the bar is pulled out of the depression, which allows the drum to turn counter-clockwise.</p>	
<p>Turn the handle counter-clockwise</p>	<p>While holding the drum lock button out, turn the handle counter-clockwise for three revolutions of the handle. Release the drum lock button and continue to turn the handle counter-clockwise until the handle hits a hard stop.</p>	<p>The drum door will stay open allowing compost to fall into the finishing drawer. Fresh and composted material will be deposited into the drawer.</p>	
<p>Level the compost in the drawer</p>	<p>Open the drawer and use rake to level the compost.</p>	<p>Leveling the compost will prevent compost from soiling the patented Bio-drum™.</p>	
<p>Allow the compost to rest</p>	<p>Compost should now be allowed to rest in the drawer for 3 - 4 weeks to finish the composting process.</p>	<p>This compost will be isolated from any new waste and should be left in the drawer for a minimum of 3-4 weeks or longer to finish composting.</p>	

Compost may be removed at any time that you need more space in the Bio-drum™ and will need to be removed more frequently for heavily used units or where the CENTREX 2000 toilet is the primary residential toilet.

Seasonal Use and Springtime Start Up

Empty Compost from Last Season

Before your first use of the unit, extract compost from the drum by releasing the drum locker (located on the handle side of the unit), then rotate the handle counter-clockwise giving the drum one complete revolution only. Compost from the drum will drop into the finishing drawer. Empty the drawer and repeat this procedure until most of the compost is removed, leave 4-6 inches of compost. This will be your “starter base” for the coming season.

Rake

Remove the finishing drawer and use the rake tool to rake any loose material from the floor of the toilet. Pay careful attention to the back two corners of the toilet (near the safety drain), to ensure that your drains do not get clogged. Do not dig or chip into the buildup, as this can damage the toilet.

Add Water & Microbe Mix

Add some warm water to the remaining compost, enough to ensure that it is quite moist. Also, add some Sun-Mar Microbe Mix (two scoops) to give the compost pile a “kick-start” and rotate the drum several times to mix. If your composting toilet is electric, plug it in and use for another season.

Guidelines for Winter Use

No Winter Use

When preparing for the winter shut down, just add enough water to soak the compost within the Bio-drum™. Contact Sun-Mar regarding specific amounts as installation and expected usage varies. If the toilet is electric, make sure to unplug it before leaving.

If the toilet will not be used for the duration of winter, it is possible to place something over the diffuser to prevent animals (who are looking for a home at this time of year) from getting down the vent stack and into the toilet. Please remember to remove this block before spring start up. **Do not add anti-freeze or similar substances to the toilet.**

Occasional Winter Use

If the toilet will be used for **3-4 weekends** throughout the winter season, it is considered occasional use. All of the same considerations should be taken with these toilets to winterize them (please see the information described above, and the section below titled, “**Heavy or Residential Winter Use**”). When the temperature dips below 55 °F (13 °C), composting activity will decrease dramatically. These toilets do not need to be kept warm and will act as a holding tank during the winter months until spring, when it will warm and begin composting again.

During the winter, the compost will freeze into a solid mass. The **drum should not be turned** as this may damage the composting toilet. With this in mind, it is a good idea to remove enough compost before it gets too cold to make room in the drum in the event of occasional winter use.

Heavy or Residential Winter Use

The toilet should be kept in a heated area and the following winterization tips should be followed if the toilet will receive frequent use:

- 1) **Vent Pipe** – electric models: all 2” vent pipe should be insulated where exposed to the outside or in an unheated area. If you are in an area that experiences extreme winter conditions, we recommend that heat tape should be applied to the exposed vent pipe to prevent ice blockages.
- 2) **Safety Drain** – all models: we recommend that the safety drain should be installed and insulated above the frost line. There will be less evaporation in the winter so this will help with any excess liquid. If possible, heat tape can be applied to the safety drain to prevent ice blockage.
- 3) **Keep it warm**: If the composting toilet is used frequently in the winter then the toilet should be kept in a warm place, with temperatures above 55 °F (13 °C).

Warning: The water valve must be drained and removed if the ultra-low flush toilet is installed in an area where freezing temperatures are anticipated to prevent freezing and cracking of valve.

Compost Troubleshooting

Symptom	Cause	Remedial Action	Prevention
Compost Too Wet	Compost porosity is poor	Ensure that Compost Sure Blue is being used.	Use Sun-Mar Compost Sure Blue
	Drum screen clogged	Spray the drum screen with Compost Quick. Scrub the drum screen with wire brush.	When toilet is in use, turn the Bio Drum™ every other day, for six (6) revolutions of the drum.
Waste not Breaking Down At All (the drum will fill up quickly) AND/OR Large Lumps in Compost	Insufficient Microbes	Add Sun-Mar Microbe Mix.	Be sure to add the Microbe Mix packet at start up.
	Room Temperature Under 55 ° F/13°C	Install heat source to increase temperature. Temperature should be above 55 ° F/13°C constantly to ensure composting does not stop.	Install toilet in warm area. The warmer the area, the better your compost will be!
	Compost Too Dry/ Insufficient Moisture	Add 1/2 to 1 gallon of warm water to compost in order to bring it up to appropriate moisture level. Remove or break lumps apart.	A moisture content of 40-60% is ideal for aerobic microbes.
Drum Too Full	Compost not emptied into finishing drawer in a timely fashion	Remove compost until drum is only half full or less. Rotate compost thoroughly to aerate, and add compost accelerant (Compost Quick and Microbe Mix).	Do NOT let drum get above 1/2 full. This will lead to lack of aeration, and the possibility of an anaerobic compost.
Strong Odor	Compost anaerobic	See “Drum screen is clogged” in “ Compost Too Wet ” and “ Drum Too Full ”	Follow “ Ongoing Maintenance ” and use Compost Sure Blue.
Flies Present	Kitchen/Garden Waste added	Do not add kitchen waste or garden scraps.	Do not add kitchen waste or garden scraps.
	Compost too dry OR Foreign material added	Applying pesticides such as pyrethrin, or any locally permitted equivalent safe for garden use, to your compost is an immediate remedy. Please contact Sun-Mar for specifics. The alternative to using pesticides is to completely clean the toilet out, and wash the inside of the drum with soap and water. IMPORTANT: If using pesticides, avoid spilling on the outer shell of the composter.	Keep compost moist. It 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 the fungus which forms on compost when it dries out. Moist compost will not be attractive to flies. Do not add topsoil from the ground, composted matter, or kitchen scraps to the toilet. These may carry or attract flies. Use Compost Sure Blue.

MECHANICAL TROUBLESHOOTING

Symptom	Cause	Remedial Action	Prevention
Urine Odor in Washroom	Horizontal runs or downward slopes in vent pipe	Re-install the vent so there are no horizontal or low points where condensation can collect.	Install wall brackets on vent pipe to prevent settling. DO NOT install horizontal runs; liquid will collect and block ventilation, causing odor.
	Fan has failed	Have your serial number ready and call SUN-MAR for a replacement. Instructions are included with the replacement fan.	
	Competing Appliances OR Downdraft	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. (This is specific to the electric models.)	
		Install a 12volt fan in vent pipe. (CENTREX 2000 NE) Wood stoves or furnaces installed in a tightly sealed room with the composting toilet may draw air in causing a vacuum in the room. This will draw air down the vent pipe.	Downdraft is dependent on wind direction as well as natural obstructions etc. Install the vent so it goes above the highest peak of the roof.
Occasional Urine Odor Outside	(CENTREX 2000 NE) 1) Vent stack not installed above peak of roof. 2). If vent stack is installed above roof line, natural obstructions, such as tall trees, being located in a valley or close to a hill may be causing downdraft.	1) Check that the vent is installed above the peak of the roof. If not, extend the vent. Guy wires may be necessary. 2) Add lime to the evaporation chamber – Contact Sun-Mar for specific instructions. You will have to rake more often if you do this. 3) SUN-MAR has a filter box available which will filter the ammonia out of the vented air in a downdraft situation. Call SUN-MAR for details.	Follow instructions on page 7 & 8.
Fan Noisy	Bearings beginning to wear, OR Dust/debris gathering on blades	1) If it is rattling, it may need to be cleaned or the bearings are worn and the fan needs to be replaced. 2) A low “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 a fan speed control so that the fan may be turned down.	The fan is a constantly moving part and has a finite service life. Clean the fan with a small brush and/or compressed air nozzle once a year. This will prevent wear and lengthen the life of your fan.

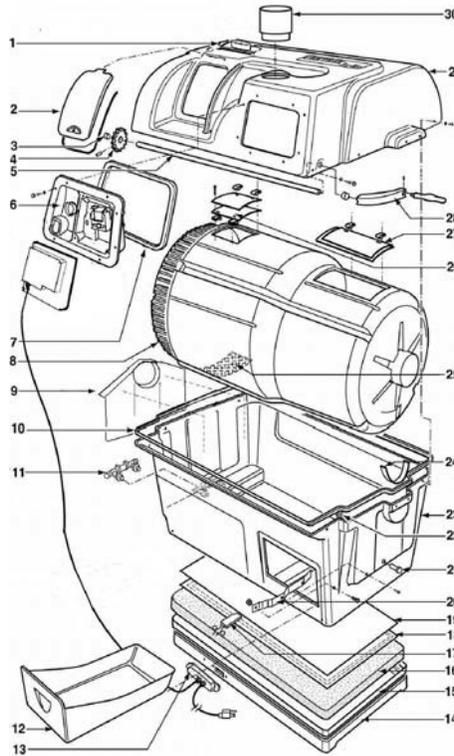
Fan not Working	Debris in fan, or Mechanical failure resulting in loss of power	Remove the fan assembly from the toilet and vacuum any dust out of the fan blades. Check the power source (ie. breakers, fuses). If this does not remedy the problem, have your serial number ready and call SUN-MAR	The fan is a continuously moving part which will eventually have to be changed.
Liquid Build up in Evaporation Chamber	Increased usage	The amount of liquid varies substantially between installations. The overflow drain needs to be installed.	Install the overflow drain.
	Climactic conditions	Evaporation rates vary substantially with climatic conditions. Expect faster evaporation rates during warm dry weather.	
	Mineral salts may have accumulated in the evaporation chamber, reducing evaporation rates	Fill the evaporation chamber with very hot water and 1/3 bottle of "Compost Quick" enzyme liquid. Leave overnight, and rake gently the following day to remove.	Rake evaporating chamber at spring start ups for cottage use, and once every other month for residential use.
Liquid Overflow	If Drain Is Blocked	1) Check drain line for kinks, blockages or upward bends. Remove and flush if blockages present; un-kink if bent and ensure that the drain pipe is sloping downward. If your drain pipe is in order, proceed to step 2. 2) Rake any solid materials away from the safety drains. This is the "build up" area. If drains are still clogged, proceed to step 3. 3) Use a wire to poke blockage out of the drain assembly. A brown spot may be visible through the opaque assembly. Drain all liquid through the overflow drain by tipping the toilet back (making sure overflow is hooked up first)	1) A clogged drain is not very likely to happen if evaporating chamber is raked every 3-4 months. 2) Use premium 1"ID hose for the drain line. A good hose will be less likely to kink. Use elbows or fittings around bends to prevent kinks. Hose is provided with the Centrex 2000 and 2000 NE units. 3) Use Compost Sure Blue as a bulking material.
	Overflow drain not hooked up	Connect overflow safety drain.	
	Toilet tipped forward	Check and ensure that the toilet is level.	
Heating System not working/ Lack of Evaporation	Test to determine whether failure has occurred	Pull finishing drawer out and put your hand in the evaporation chamber (NOT in the liquid). This heat can be felt if there is liquid in the chamber. If there is no warmth rising from the floor of the toilet, 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 Build up " for solutions.	A ground fault interrupter circuit is recommended to protect your Centrex 2000 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)	

	Heating Element Failure	Fan failure coinciding with a lack of heat, or the breaker supplying power to the heating element beginning to trip indicates a problem with the element. Have your serial number ready and call SUN-MAR for further diagnostic instructions or to order replacement parts.	1) Install unit with a ground fault interrupter and/or a surge protector, 2) If you remove the toilet from the bathroom for cleaning, DO NOT use a water hose to clean the toilet. The base is water resistant, NOT water proof. 3) Install according to manual guidelines.
	Blown fuse (230V toilets ONLY)	Have your serial number ready and call SUN-MAR for a replacement. (Detailed instructions are included with the replacement part) Check fuse located on the electric box to ensure that it is functioning correctly, if the wire in the fuse is charred or broken, replace the fuse.	Power surges can cause the fuse to blow. If this is a possibility in your area, a surge protector is recommended.
Liquid in Finishing Drawer	Drum Screen Clogged Or Condensate coming down vent stack (NE)	CENTREX 2000 (electric): Unplug the Centrex 2000 before attempting any maintenance. Disconnect the vent stack and remove the fan assembly. Rotate the drum until the drum screen is visible. Spray the drum screen with Compost Quick and let sit for 30-45 minutes. Use a long-handled wire brush to thoroughly scour the drum screen. Rotate drum so screen is on the bottom, then look through drawer opening to check for liquid dripping from screen. CENTREX 2000 NE: Remove the blank fan plate. Rotate the drum until the drum screen is visible through the opening where the blank fan plate was located. Spray the drum screen with Compost Quick, let sit for 30-45 minutes, then thoroughly scour with long handled wire brush.	Following the routine maintenance described on page 12 will prevent the drum screen from becoming clogged. In a CENTREX 2000 being used residentially, the drum screen should only have to be scrubbed twice a year, approximately every six months.
Drum will not turn	Set screw securing handle to shaft has broken.	Drill out set screw and replace, or have your serial number ready and call SUN-MAR for a handle replacement kit (instructions included).	Drum should never be more than ½ full. Use the circular indent on the front inside of the drum as a guide. Compost should never be above half way up that circle. See page 12 for further information on removing compost.
	Steel roll-pin securing gear wheel to shaft has broken.	Have your serial number ready and call SUN-MAR for a replacement small gear kit.	
Drum Door Not Opening/ Closing Properly	Drum too full and/or Hinges are stuck	Spray hinges with Compost Quick. Scrub hinges with toothbrush or other soft nylon bristled brush. Remove compost using a small, hand-held tool until drum is less than half-full.	Do not allow the Bio-drum™ to become more than half full. This can lead to excess stress on hinges and other moving parts, and can prevent compost from being able to exit the drum.

If you have any questions, please call Sun-Mar’s customer service number, 1 888 341 0782 ext. 218 before proceeding with any mechanical repairs. The serial number of your composting toilet will be required for warranty purposes, and to ensure that the correct part is provided for your toilet.

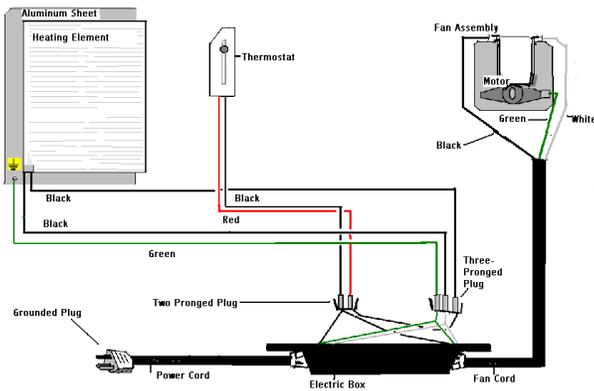
CENTREX 2000 SPECIFICATIONS

CENTREX 2000 EXPLOSION DIAGRAM



- | | | |
|---|--|--|
| <ul style="list-style-type: none"> 1) Waste Pipe Cover Plate 2) Centrex 2000 Access Port 3) Shaft Assembly Bearing 4) Small Nylon Gear 5) SS Shaft Assembly 6) Fan Assembly (Electric) 7) Fan Assembly Rubber Gasket 8) Centrex 2000 Drum 9) Drum Bearing Plate (Left) 10) Rubber U Channel | <ul style="list-style-type: none"> 11) Drain Assembly 12) Centrex 2000 Finishing Drawer 13) Power Box Assembly 14) Centrex 2000 Heater Tray 15) Rubber U Channel 16) Insulation 17) Thermostat 18) Heating Element 19) Aluminum Sheet 20) Drum Locker Assembly | <ul style="list-style-type: none"> 21) Drum Locker Knob 22) Air Intake Vent (Not visible) 23) Centrex 2000 Tank 24) Drum Bearing Plate Strip 25) Drum Screen 26) Drum Door (Input) 27) Drum Door (Output) 28) Swivel Handle Assembly 29) Centrex 2000 Top Kit 30) Pipe Piece Inlet (NE 4") |
|---|--|--|

Wiring Diagram



Toilet	Maximum Amps	Fan Power	Heater Power	Avg. Power
CENTREX 2000 (115V)	3.6 A	35 Req	370 W	200 W
CENTREX 2000 (240V)	1.69A	35 Req	370W	200 W

ACCESSORY ITEMS FOR THE CENTREX 2000 TOILET

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	
Compost Quick	Cleans and accelerates the composting action of your Sun-Mar composting toilet. Compost Quick is a specially selected natural enzyme solution that also assists in the decomposition of waste. 100% natural and non-toxic. 500ml(16oz) Bottle	
Microbe Mix	100% natural product combining a blend of microbes and enzymes designed to start and accelerate composting in all Sun-Mar toilets. 500g (16oz) Jar	
Compost Sure Blue	For use with all Sun-Mar low water CENTREX systems. Compost Sure Blue's mix enriches compost with organic carbon and also provides drainage of excess liquid ensuring compost remains aerobic and odor-free. 30 Litre/8 Gallon Bag	
DC Vent Kit	Kit required for conversion of electric units to also operate without electricity or 12volt DC mode. Includes a 12volt DC fan.	
AF Waterless Kit	Purchase of a SUN-MAR dry toilet necessary. This kit will adapt a CENTREX 2000 for use without water. Ideal where water supply is limited or low output is desired.	
AC Fan Speed Control	Designed for electric units only, the control kit allows users to adjust the speed of the fan. Ideal for installations where the toilet is used in winter applications or in bunkies where the toilet may be in close proximity to sleeping quarters.	
12 Volt 2.4Watt Fan	Designed for use in the 4" non-electric vent only. This fan increases the air flow in non-electric units to help overcome down draft.	

Note: Use "Compost Sure Blue" for optimum results.

Sun-Mar



Product Info: (905) 332-1314 - Fax: (905) 332-1315 – Customer Service: 1-888-341-0782 Ext 218
E-mail: compost@sun-mar.com www.sun-mar.com

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5370 South Service Rd.
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L7L 5L1
CANADA

PO-MANU0-0814XX
Jan 2021
Rev.D15

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 and five years on the fibreglass tank, 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. **Labour and service 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.



SUN-MAR WARRANTY REGISTRATION

Complete and return this warranty to register your unit in the Sun-Mar warranty database. Be sure to include your email address if you would like to receive Sun-Mar newsletters and promotions. You can also register online at sun-mar.com/online-warranty-registration/

Please indicate model purchased and serial #: _____

EXCEL		CENTREX 1000		CENTREX 3000	
EXCEL NE		CENTREX 1000 NE		CENTREX 3000 NE	
COMPACT		CENTREX 2000			
SPACE SAVER		CENTREX 2000 NE			

Date purchased _____	Purchased from _____
----------------------	----------------------

Owner:

Name: _____ Street: _____

City: _____ State/Prov. _____ ZIP/PC: _____

Tel: _____ Email: _____

Location installed (circle selection):

Residence	Cabin/Cottage	Work	Resort	Other _____
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Age (circle selection):

18 - 35	36 - 45	46 - 55	56 - 65	65+
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Owner introduced to Sun-Mar via (circle selection):

Dealer	Internet	Friend	Magazine	Show
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Please complete, then mail to:

Sun-Mar Corporation
 5370 South Service Rd.
 Burlington, Ontario L7L 5L1
 Canada