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Incinolet Toilet Systems



INCINOLET®
 ELECTRIC INCINERATING TOILET

INSTALLATION / MAINTENANCE MANUAL

All Models

4



MODEL WB	
Uses:	Houseboat, Workboat
Serves:	4 (8)
Volts:	120 (240)
Watts:	1800 (3600)
Amps:	15
Warranty:	2 years
General Dimensions	
Width:	15 in.
Height:	20 in.
Depth:	24 in.
Vent collar from floor:	10-3/4 in.
Ventpipe:	3 in. dia.

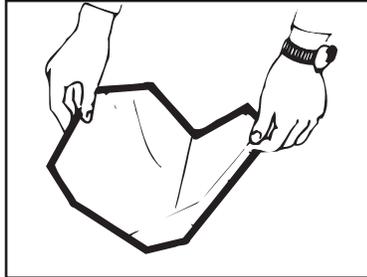


NSF Protocol P8
 Electrical Incinerating Toilets • Health and Sanitation
 (replaces 1983 edition of NSF Standard 41)

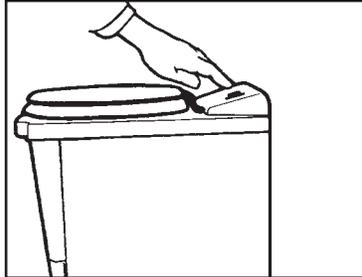
WARNING: Do not operate INCINOLET until you have read thoroughly and understand completely all instructions and safety rules contained in this manual. Save this manual and review frequently for continuing safe operation, and instructing possible third-party users.

Incinolet Toilet Systems

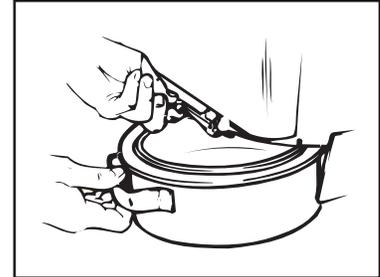
Tips for Success



Use a bowl liner for each and every use.



Push button to start after each use.



Empty ashpan OFTEN – when ash is 1/2 inch deep

Fig. 1

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How INCINOLET Works

When you push the start button, heater and blower both come on. Heater alternates off and on for an hour. Blower stays on for an additional 30 to 55 minutes. YOU CAN USE INCINOLET ANY TIME DURING THE INCINERATION CYCLE. Push start button after each use.

YOU SHOULD INCINERATE WASTE AFTER EACH USE. ACCUMULATED WASTE, PARTICULARLY SOLIDS, RESULTS IN ODOR AND CAN REDUCE LIFE OF THE HEATER.

If INCINOLET is used primarily in the morning, with little or no use during the day, then reset the timer to 1 1/2 or 2 hours to insure complete incineration.

Ash is not suitable to use as fertilizer or compost. It should be disposed of in household trash – just as you would with any other ash waste.

Party Stress For times when you are having a party or house guests, when the INCINOLET may have to serve more than the stated capacity for a short time, follow these tips:

1. Empty the ashpan before guests arrive.
2. Be sure guests are instructed as to proper use and that a **bowl liner is required for each and every use.**
3. Push button after each use and check occasionally to be sure it's not over filled.
4. You may need to run an extra cycle or two to insure complete burn.

HOW TO INSTALL INCINOLET

1. Remove all packing materials – including cardboard inside ashpan panel.
2. Set unit on level floor in desired position:
Allow clearance at rear for wiring and vent-line connection. Allow at least 2” on left side and plenty of room on the right side to operate foot pedal.
3. Prepare electrical supply within 4 feet of toilet location.
4. Install mounting plate to floor (RV and WB only).
5. Connect vent-line.
6. Plug INCINOLET into the proper receptacle on a 20-amp circuit. Dedicated circuit recommended.

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Preparing Vent-Line

Vent pipe can run horizontally or vertically. Venting materials can be placed within a wall and INCINOLET can be placed close to a wall at the back. Allow 6 to 8 inches on the right side (facing the toilet) to operate the foot pedal.

Vertical vent-line should terminate with a rain cap. For horizontal venting use a dryer flap or add a PVC elbow turned downward to prevent back-drafting.

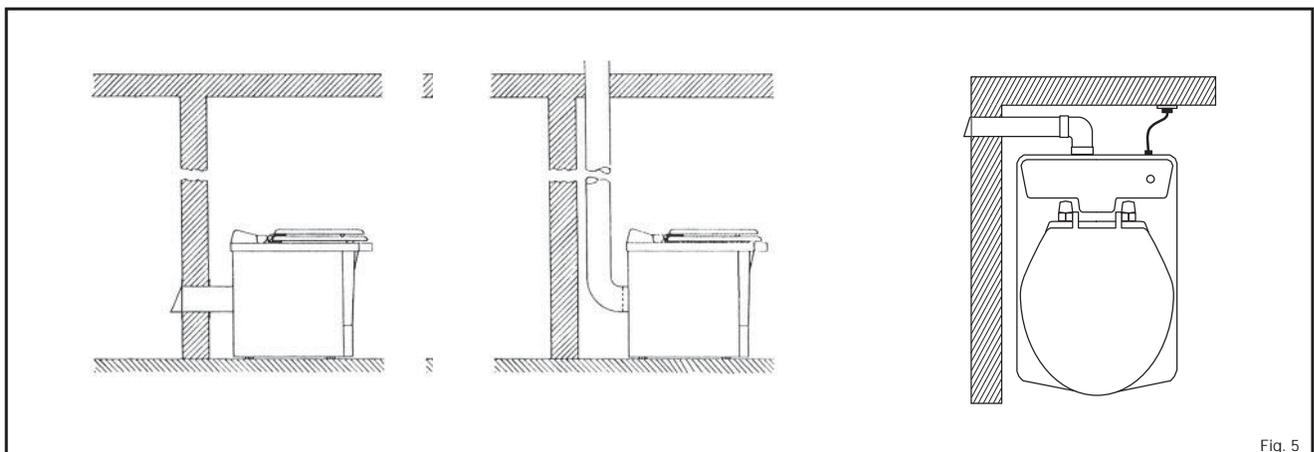


Fig. 5



Incinolet Toilet Systems

For proper operation, vent-line must be as straight as possible with a minimum of elbows. Maximum length of pipe at the 4" diameter is 20 feet plus 2 elbows. Use larger diameter pipe for longer runs. Contact Humco if you have questions about special installations.

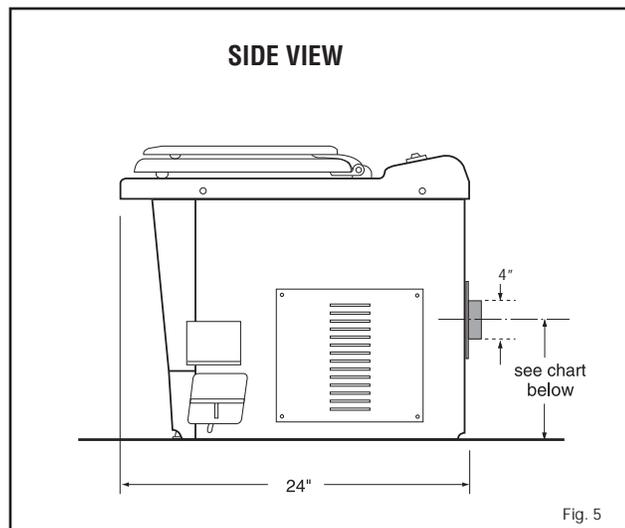
For best performance, use the shortest possible run and a minimum number of elbows. Do not vent into an attic or crawl space. Assemble vent pipe pieces securely, gluing or taping all connections. Connect coupling and pipe to vent collar at the rear of the unit. Put a dryer flap or rain cap at outside of building to prevent back drafting.

**Center of vent collar on the back of INCINOLET varies by model.
Use this chart to find the correct measurement for your toilet.**

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Center of vent hole – up from floor:

Model CF	10"
Model RV	10 1/4"
Model TR	10 5/8"
Model WB, 120 v.	10 1/4"
Model WB, 240 v.	10 7/8"
Model WB, 208 v.	10 7/8"

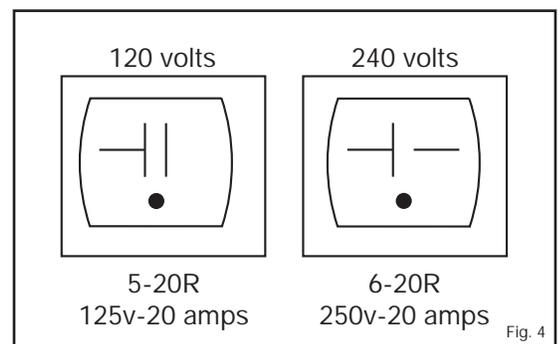


Electrical Preparation

This appliance has a 20-amp plug and is meant to fit **only** into a 20-amp receptacle. (Fig. 4) If the outlet you intend to use for the INCINOLET is not the proper type, then change the receptacle. You must have a circuit suitable for 20 amps, headed by a 20-amp circuit breaker. Do not attempt to defeat this safety feature by modifying the plug in any way. Power cord is 4 feet long.

Extension cords should not be used with this appliance.

START-UP PROCEDURE - Once Incinolet is connected to vent line and plugged into a 20 amp receptacle on a 20 amp circuit of the appropriate voltage, it's a good idea to run a test cycle using a cup of water poured into a bowl liner.





Incinolet Electrical Operation

UNDERSTANDING ELECTRICAL OPERATION

1. Pushing the Start Button closes the Start Switch which engages a timer. Timer begins a new cycle each time start switch is closed. Timer doesn't accumulate time, merely starts over again.
2. Timer is set to 60 minutes at factory. Timer activates temperature controller. Controller output is connected to the coil of a Relay, which controls the electric current to the heater.
3. Temperature Controller responds to the output from a Thermocouple, which measures Heater temperature. When the temperature of the lower coil of the heater reaches approximately 1200 degrees F., controller shuts down the relay, which cuts off the heater. When heater temperature falls to about 1000 degrees F., controller again activates relay and heater comes on. Heater is off, then on, about twice a minute.
4. Timer also controls exhaust blower. Blower and heater come on and both stay on for 60 minutes together. After heater cuts off, blower continues on until incinerator area has cooled to about 130 degrees F.
5. Blower Thermostat (ITS) closes when it senses a temperature of 130 degrees F., and stays closed after the heating cycle is over, until incinerator temperature falls below 130 degrees F., about 30 to 50 minutes later.

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Power Consumption

One complete cycle uses about 1 1/2 to 2 kilowatt hours of electricity. Because you can use INCINOLET any time during the cycle, your "per use" cost is lower.

During a Power Failure

If waste is burning in the INCINOLET when the electric service is interrupted, you may get smoke and odor in the room. Open a window to ventilate as best you can. When power comes back on, the fan should start automatically, if needed, and run until unit is cool enough. Heater does not come on until you push the button. You can push foot pedal to check contents of ashpan then start a cycle if needed.

To Interrupt an Incineration Cycle

In normal use, it is never necessary to stop a cycle to add waste. However, on rare occasions (doing repairs, etc.), you may want to stop a cycle in progress. Turn the circuit breaker off momentarily (or unplug INCINOLET) to cancel the cycle. Then turn the circuit breaker back on (or plug in INCINOLET) so that the toilet is ready for use. If unit is hot enough to need it, the blower should come back on automatically to cool it. NOTE: If blower does not come on, smoke and odor may come directly into room. In this case, you may want to start the cycle again for a few minutes to finish burning off the waste remaining in the ashpan.

Thermostats

Your INCINOLET is equipped with three thermostats.

1. SAFETY THERMOSTATS (STS) shuts heater off if air temperature inside toilet reaches about 145°F. It is located on the front surface of the control box at the upper right rear of the unit. To replace, disconnect voltage, remove top of unit, disconnect lead wires to old thermostat, and replace. (Fig. 9)
2. BLOWER THERMOSTAT (ITS) turns fan off when outside skin of chamber cools to 130°F and will turn fan on again if temperature increases. It is accessible through access panel opening, just to the left of the heater terminals. To replace, follow same procedure as for STS above.
3. LIMIT THERMOSTAT (TS) turns heater off if skin of chamber reaches a temperature of 325°F. It is located below the ITS blower thermostat and heater terminals, outside ashpan compartment. To replace, follow same instructions as for other thermostats.



Incinolet Care and Cleaning

CARE AND CLEANING

Keep your INCINOLET clean to prevent odors.

- Empty ashpan when ash is about 1/2 inch deep. **EXCESSIVE ASH BUILD-UP CAUSES ODOR, SHORTENS HEATER LIFE, AND DECREASES EFFICIENCY.** If ash is caked and hard to remove, just soak insert pan for a few minutes in warm water.
- Wipe up urine spills as they happen.
- **Every 6 months** – clean blower wheel and inside of INCINOLET.
 1. Unplug unit and remove top. (See instructions below.)
 2. Clean inside with a detergent or a spray cleaner such as Formula 409. (Do not use pine oil cleaners.)
 3. Remove blower wheel and clean.
 4. **DO NOT STEAM CLEAN.**
 5. Stainless steel polish can be used on outside surfaces to keep INCINOLET's finish lustrous.

TIP: If blower becomes noisy or vibrates, clean or replace blower wheel.

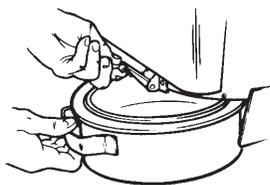
Bowl Liners

BE SURE that the top edges of the liner are below the lid when it closes. Otherwise, paper will burn outside the chamber and cause momentary smoke and odor. CAUTION: Failure to use bowl liner for each and every use will always cause odor and urine on the floor.

Bowl liners are made of a special paper coated with polyethylene film. This liner is necessary to catch and contain the waste, then convey it into the incineration chamber. **USE A BOWL LINER FOR EACH AND EVERY USE.** Liner protects the bowl and prevents urine from draining to the floor.

How to Remove Ashpan

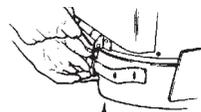
Remove ashpan only when pan is cool and toilet is not operating.



TO REMOVE ASHPAN

Remove ashpan panel.
Raise camloc handle and unhook it from ashpan handle. Pull ashpan out.
Empty ash in garbage.

CAUTION: ASHPAN MUST BE SECURELY IN PLACE FOR PROPER OPERATION.



TO REPLACE ASHPAN

Push ashpan firmly into place.



Lift up on ashpan handle and engage hook of camloc under ashpan handle.



Push down on camloc handle. Replace ashpan panel.

Fig. 7

Removing the Top (Seat, Lid, Bowl Halves)

Top is held in place with four screws, two per side and a rubber boot which protects the start button. Remove them, and then lift top up.

To replace top: With incinerator lid closed, hold bowl halves together and lower top into position. Replace four screws and rubber boot over start button. **Tip:** If you have trouble holding bowl halves in closed position while placing it back on toilet, just use a small piece of masking tape to hold them together, then slice through it from the top later.

Incinolet Toilet Schematic Sheet

Call Humco
800-381-9968

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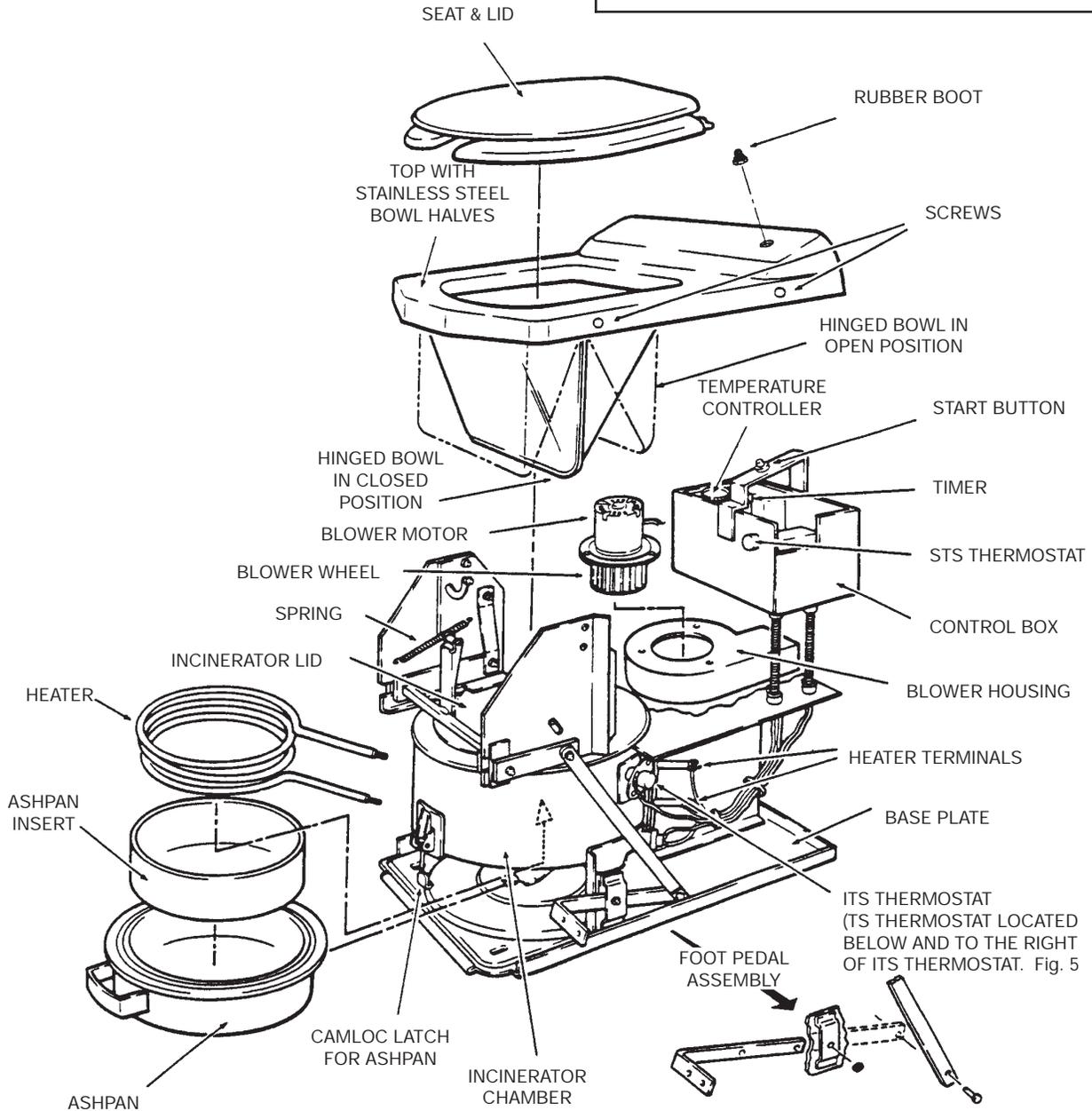
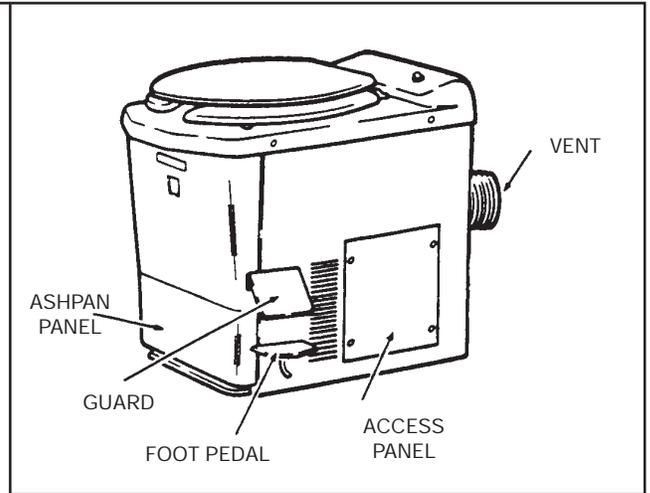
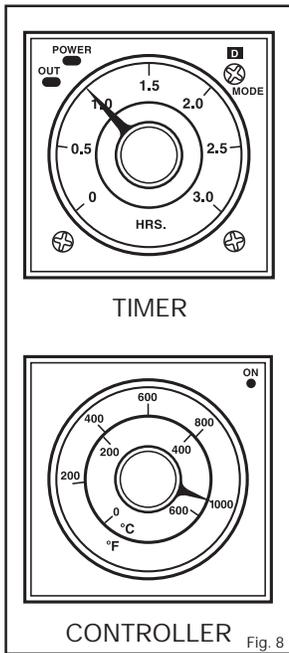


Fig. 9

Incinolet Troubleshooting

TROUBLESHOOTING



TIMER & TEMPERATURE CONTROLLER THE KEY TO TROUBLESHOOTING

Timer limits heating cycle, Controller limits heater temperature. Timer and temperature controller are within control box in upper right corner of housing, accessible with top removed. Timer has two lights: **green** and **red**. Temperature controller has one **red** light. A **steady green light** on timer indicates unit has power and is ready for operation. When start button is pushed, **green light begins blinking** and the **red light** comes on and stays on for a timed interval, during which time temperature controller is activated and its **red light** is on. Controller **red light** means that the relay is activated and supplying power to heater. Controller **red light** stays on until timer cuts off after the timed interval, or heater reaches maximum allowed temperature and thermocouple signals controller to open relay. In actual operation, when timer reaches end of timed

interval, its **red light** goes off, and **blinking green light turns steady** again. During the timed interval, controller **red light** will be on constantly until heater reaches about 1200 degrees F, at which point controller red light goes off and the relay opens. Controller **red light** comes on again after 30 seconds or so, stays on for about 40 seconds, then goes off again, and so on until the end of timed interval.

TIMER ADJUSTMENT: (See Fig. 8.)

Timer dial reads 0 to 3 hrs. Timer pointer is set to 1.0 hrs. If INCINOLET is used primarily for solids deposits in rapid succession and incineration is incomplete, move pointer to 2.0 hrs. If used throughout the day, both for urine and solids, timer would be best set at 1.0 hr. To adjust timer, remove top of toilet and turn dial so timer reads new setting. Replace top. **DON'T MAKE ANY ADJUSTMENT REQUIRING SCREWDRIVER.**

BLOWER COMES ON BUT HEATER DOESN'T HEAT

Remove top, examine timer and controller as above. If both timer and controller lights are on, then heater has failed. To verify, remove access panel, measure voltage directly across heater terminals, not from terminal to ground. If voltage appears, REPLACE HEATER. If no voltage appears, check circuit further.

TIMER LIGHTS WORK BUT CONTROLLER RED LIGHT IS NOT ON

Test thermocouple. Unplug toilet, remove side access panel. Remove wire nuts from thermocouple leads (#6 & #7). Twist the gray and purple wires together, then plug unit in and push start button. If controller red light comes on, REPLACE THERMOCOUPLE.

CIRCUIT BREAKER OPENS WHEN START BUTTON IS PUSHED

This indicates heater may be shorted to ground. Unplug toilet, remove access panel. Remove orange lead wires to heater terminals. Again push start button. If blower comes on and circuit breaker does not open, heater is shorted. REPLACE HEATER.

Unplug toilet, examine all wiring which might be grounded by touching housing. REPLACE OR TAPE ANY BARE WIRES.

NOTHING COMES ON, BUT TIMER GREEN LIGHT IS ON

Inspect timer lights as you push start button. Red lights should come on, green light should begin blinking. If not, CHECK START SWITCH OR REPLACE TIMER.

BLOWER, HEATER WON'T STAY ON

If timer, blower and heater come on when start button is pushed but turn off as soon as start button is released, REPLACE TIMER.

BLOWER STOPS AT END OF HEATING CYCLE

Blower should be on from 30 to 55 minutes after heater cuts off. Unplug toilet, remove access panel, inspect for and tighten any loose wiring. REPLACE BLOWER THERMOSTAT.

BLOWER DOES NOT OPERATE

Blower must come on immediately when start button is pushed and should not stop while heater is on. If not, check blower wheel to be sure it's not binding. Listen to blower motor for a humming sound (like motor is trying to start). This would indicate bad motor bearings. REPLACE BLOWER MOTOR

BLOWER OFF & ON AT CYCLE END

It is normal for blower to stop for 4 or 5 minutes, then start again for a few minutes, a couple of times at end of cycle. If, however, blower stops and starts rapidly, blower (ITS) thermostat is faulty. REPLACE ITS THERMOSTAT

BOWL HANGS OPEN:

PEDAL WON'T RETURN

1. Closing mechanism may be out of adjustment.
2. Foot pedal goes too far down and locks up. Place block under foot pedal to prevent excess travel.

EXCESSIVE NOISE, VIBRATION
CLEAN OR REPLACE BLOWER WHEEL.

INCOMPLETE INCINERATION

Can be any one of several causes:

1. Start button not pushed after each use.
2. Ashpan too full. Empty more often. (Empty when ash is 1/2 inch deep.)
3. Too many people using toilet.
4. Burn cycle too short. Add more time to the timer.

ODOR WITHIN ROOM

Can be any one of several causes:

1. **Failure to use bowl liner each and every time or careless use of liner.**
2. Solids not completely incinerated. May need more time on timer or additional incineration cycles.
3. Ashpan too full. Empty more often. (Empty when ash is 1/2 inch deep.)
4. Back-drafting. Use back-draft preventer on horizontal vent-line or run the vent vertically with a rain cap at the top.

ODOR OUTSIDE

Causes same as above, plus:

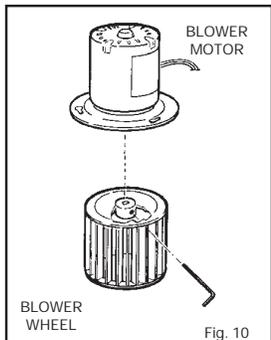
1. Catalyst port perforations are clogged. Clean chamber wall behind heater coil with small brush.
2. Catalyst has "set". Stir with small rod to loosen.
3. Incinerator lid hanging open, allowing odor to escape.

RESIDUE BLACK, LIKE CHARCOAL

Ash should be white to gray. Black lumps means insufficient air is being drawn into chamber. There may also be soot around ashpan lip at front and on inside of ashpan panel. Remove ashpan and use small brush to clean perforations in inner incinerator wall back of heating coils.

MAINTENANCE AND REPAIRS

Clean Blower Wheel



Blower draws fresh air into toilet to provide oxygen for the burn, carries smoke and odor into the catalyst, then exhausts moist air outside. Clean blower wheel and housing every 90 days, or any time excessive noise and vibration occur.

1. Remove top of INCINOLET.
2. Disconnect two wires on side of control box to free motor.
3. Loosen (no need to remove) 3 screws holding blower motor plate. (Fig. 10). Twist and lift motor over screw slots to remove it.
4. Use 1/8" Allen wrench to remove set screw in wheel hub.
5. Clean grease and dirt from wheel with hot soapy water or a degreasing cleaner.
6. Replace wheel if corroded or if vibration indicates it is out of balance.
7. Clean inside of blower housing occasionally.

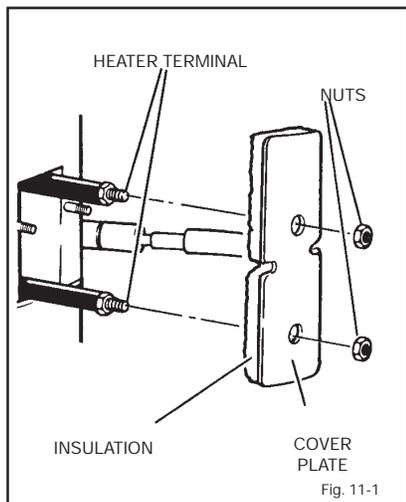
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Replace Heater

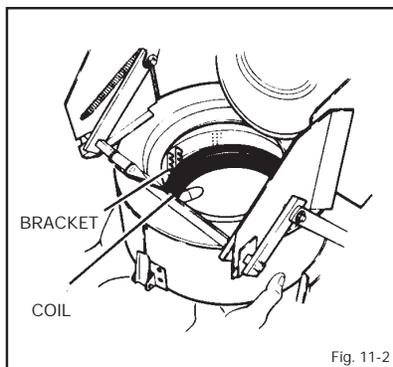
Note: For maximum heater life incinerate after each use, and keep ash level down to no more than 1/2 inch.

To Remove Old Heater:

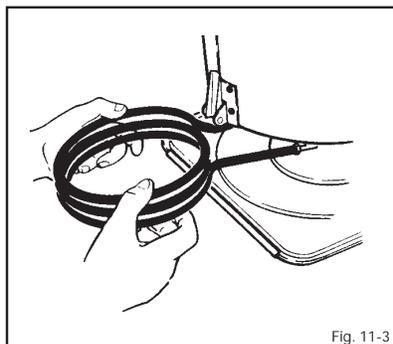
- Turn off voltage to INCINOLET. Remove ashpan. Remove access panel. Remove top. Hold incinerator open either by wedging down the foot pedal or blocking flushing mechanism in open position.
- Remove thermocouple but do not disconnect. (Fig. 12)
- Disconnect wiring to heater terminals. Remove cover plate and insulation around heater terminals. (Fig. 11-1)



- Push up on heater coils to clear heater brackets. (Fig. 11-2)



- Remove heater through ashpan opening. (Fig. 11-3)
Note: Brackets may be wedged tightly in slots in wall. It is okay to remove brackets, but not absolutely necessary.



To Install New Heater:

- Reverse above procedure. Locate heater in brackets, making sure brackets are seated in slots in the incinerator wall. (Fig. 11-2)
IMPORTANT: Locate heater at lowest position in heater bracket. Coils must not touch each other.
- Replace insulation and cover over heater terminals. (Fig. 11-1)
- On new heater coil, remove nut and only 1 of the 2 new washers. Slip heater wire's connector over the terminal, then the 2nd new washer and a nut. It is best to reuse the original lock nut, but the new nut can be used if needed. Always use the new washers, one on either side of the heater wire connector.
- **CAREFULLY tighten nut, using two (2) end wrenches to prevent twisting the heater stud terminals, which would break the moisture seal at end of heater (Fig. 11-1).**
- Replace thermocouple. Push knurled cylinder to compress spring. Turn to engage stud, then release. Spring must be compressed to insure that tip of thermocouple contacts outer surface of heater.
- Replace access panel, ashpan, top. Close circuit breaker.
- Start cycle to test heater and total operation.