

## Preventive Maintenance Schedule

Used from Serial No. A-8122

When installed according to good workmanlike a proper correcting procedure determined standards and according to the supplied installation instructions, the RELAX-A-MIST™ steam generator should give years of trouble-free service being controlled by the time clock or the with little or no maintenance. However, it is a good practice to periodically check the unit so that any small problems that may occur can be identified and corrected before they become large ones.

During preventive maintenance, it is assumed that the steam generator is operating normally, and that this checking is to ensure that the equipment continues to operate to original standards. To implement this, it is not necessary to dismantle any internal parts from the steam generator. To check the steam generator's operation, only the time clock cover, the electric box covers and the cover on the lower front (directly below the electric box) should be removed.

Preventive Maintenance should start with a physical cleanup of the generator housing (using a mild detergent such as "Mr. Clean" or "Fantastic") and a complete visual inspection of the generator and it's controls. A suggested step by step inspection should include:

1. Place a sign on the steam room door:  
**Temporarily out of service for regular maintenance**
2. Remove the clock cover, the electric box covers and the lower front panel of the steam generator.
3. Check for any sign of moisture in the electric box and in the boiler housing below. If any is found, the source should be determined and a proper correcting procedure determined.
4. Determine whether the steam operation is being controlled by the time clock or the remote switch. If the remote switch is being used, for the duration of this preventive maintenance operation move the switch located on the lower front of the printed circuit board from "remote" to "clock. Also make sure the time clock is set at the correct time of day and the "trippers" on the clock face are in the "on" (out) position. If the time clock is being used check to ensure the clock shows the correct time of day.
5. Turn the time clock switch off manually by moving the switch button located on the clock face to the LOWEST or off position. This will shut down the boiler operation and turn on the drain flush system.
6. The drain flush system is designed to remove any residue that may have accumulated in the boiler during the day's operation.  
When the boiler operation switch, either the time clock or the remote switch, is turned "off" either manually or at the end of a normal day's operation, the motorized drain valve opens and stays open for 20 minutes. During this 20 minutes, a spray head in the top center of the boiler interior flushes the inside of the boiler with 7 separate 14 second (approximately 2 gallon) flushes of water, then the motorized drain valve closes and the boiler stays empty until the time clock switch is turned on again.  
As mentioned above, the drain flush system removes any LOOSE particles, whether as solids or dissolved solids, brought into the boiler with the water. Should the boiler water supply contain minerals (i.e. calcium) and be untreated to neutralize the effect of such minerals (calcium adhering to the boiler interior), the drain flush will not remove any substances that have already adhered to the boiler. Treated water will usually hold such minerals in suspension and allow them to be carried away with the drain flush.  
Should the steam generator require decalcifying, see section 13, "Minerals In The Water". To check the operation of the drain valve, check the difference in temperature of the 1" drain pipe on either side of the motorized drain valve. The pipe on the boiler side should be hot because of the water temperature in the boiler, and the other side should be cooler. When the motorized drain valve opens, the pipe on the drain side of the valve should heat rather rapidly because of the hot water (either boiling or recently boiling) that is leaving the boiler.  
The flush valve will open 7 times for 14 seconds each time during the flush operation. There is a 2 minute interval between flushes to allow the boiler to drain. It is usually necessary to observe 2 flushes, and not wait for all 7.
7. While the generator is turned off, visually inspect:
  - The main relay contactors to see if there is a carbon build up around the points that may indicate that the points should be either cleaned or replaced.
  - All the wire terminals and wire joints to ensure that there has been no excessive heat build up through a resistance that may cause future problems.

8. Turn the time clock switch on by moving the switch button to the CENTER position, to observe the steam operations. This will start a chain of operations controlled by the main circuit board:
  - The boiler water fill valve will open filling the boiler.
  - When the water in the boiler rises to the level of the electronic water sensing probe:
    - The water will close.
    - The main contactor or contactors will close energizing the heater elements.
    - On the larger commercial generators, there can be up to four contactors that will close in stages, with a 5 to 7 second delay between each stage.
  
9. In 3 to 4 minutes the boiler should start producing steam. The operation of the water fill valve can be monitored by the way it opens and closes as the water boils away and is replaced. As the water boils out of the boiler, the level drops and contact with the water sensing probe is broken. This opens the valve and the boiler fills until contact is again made between the water and the probe, closing the valve. The valve opening and closing operation should take 1 second or less. The water level in the boiler is kept to within 1/16" to 1/8" of it's normal operating level at all times. Observing the fill valve operation 3 to 4 times should be adequate.
  
10. During normal daily operations, the main contactors will not open as the water boils away and contact with the water sensing probe is broken. When the water breaks from the probe, if the water valve does not open allowing the boiler to refill and again make contact with the probe, in 6 seconds the contactors will open turning off the heater elements. The contactors remain open and the heater elements remain turned off until water again makes contact with the water sensing probe. CALL FOR SERVICE.
  
11. Replace the clock, electric box, and housing covers.
  
12. If no problems are found:
  - Turn off the main power supply to the steam generator so there will be no chance of the boiler producing steam during the cleaning operation.
  - Remove the "OUT OF SERVICE" sign from the steam room door.
  
13. Should the water supply not be treated properly, the most common mineral to give problems is calcium. If the water is not treated to neutralize this mineral, it will adhere to the boiler interior and not be flushed out by the daily drain flush cycle. This MUST be dissolved on a regular basis or the heater elements will burn out and the warranty will be null and void.

#### **To Decalcify:**

Turn off the main power supply to the steam generator so there will be no chance of the boiler producing steam during the cleaning operation.

- Determine that the time clock is being used to control the boiler steam operation as is outlined in item 4.
- Manually drain the steam boiler with the ball valve that is installed to bypass the motorized drain valve and when the boiler is empty, close the valve.
- Disconnect the pressure relief loop so a chemical to dissolve the calcium can be poured into the boiler.
- We suggest an "Ice Machine Cleaner" type of product that can be purchased from refrigeration service people, as it usually can be flushed down the drain after it has dissolved the calcium. The cleaner necessary to clean the boiler interior will be determined by the water conditions in your area. Check with your water specialist.
- After the calcium has been dissolved, remove the cover from the clock face and turn the clock off by switching to the "LOWEST" positions.
- Turn on the main power supply to the boiler.
- When the power supply is turned on, turn the time clock switch "ON" {the CENTER position} for 10 to 15 seconds and turn it "OFF" {the LOWEST position} again. This will activate the 20 minute drain flush operation, open the motorized drain valve, and the 7 flushes should nicely wash the dissolved solids down the drain. At your discretion, the flush cycle may be repeated. Turn the time clock switch on for approximately 10 to 15 seconds and then off again. This will start the 20 'minute drain flush cycle again.
- After the drain flush operation has been completed:
  - Re-connect the pressure relief loop.
  - If the steam operation was set to use the remote switch, move the switch on the lower part of the main circuit board to remote.
  - If the steam operation was set to use the time clock, set the time clock to the correct time.
  - Set the steam operation on to observe the boiler operation, steps 3 to 12.