



# SERVICE BULLETIN

MODEL NO'S. SG-9, SG-14, SG-18, SG-23, SG-27, SG-36

BULLETIN NO. 95-1

SUBJECT: **CHECKING THE ELECTRICAL OPERATION**

## **PROBLEM:**

Time clock switch closes, boiler fills with water,  
CONTACTOR DOES NOT CLOSE TO ENERGIZE THE HEATER ELEMENTS.

## **POSSIBLE CAUSES:**

1. Digital electronic thermostat not operating properly.
2. Burned out coil on contactor.
3. No voltage across the terminals on the contactor coil.

## **TROUBLE SHOOTING:**

It is assumed that the time clock switch is closed (turned on), as this would have to be the case for the boiler to fill with water in the first place, and that the probe (water level circuit) is working properly for the water inlet valve to close.

We are also assuming that the temperature of the steam room is lower than the setting on the low temperature thermostat and that the low temperature thermostat would be closed, calling for heat.

## **CHECKING THE THERMOSTATS:**

1. Checking the A-350 HIGH TEMP control, room temperature at 70 degrees F. The LED indicator light (on the face of the control) when illuminated indicates that the room is calling for steam. Check the visible range scale and turn the adjustment knob to a setting of maximum 120 degrees F (only the A-350 thermostat has a range scale and adjustment knob). If the LED light is not illuminated, remove the 4 cover screws and the face of the module. Check power supply between terminals 24V and COM, there should be 24VAC. If there is not approximately 24VAC present check the power supply from the steam generator.

If the correct power supply is present check the DIFFERENTIAL potentiometer setting is at 2 degrees. Turn the white slot in the center of the potentiometer counterclockwise to shorten the time between make and break for steam. Check that the HIGH TEMP wires are connected to NO & COM and there is continuity between these terminals. Check that the black and white sensor wires are connected to SEN and COM (one white sensor wire should be connected with the common wire from steam generator in the COM terminal and there should be no wires in VDC terminal).

With an OHM meter check for a reading of approximately 1K when the room is at 70 degrees F or 20 degrees C. Reconnect the sensor wires if above OK. Replace sensor if no reading or other than above found. If the LED light is not illuminated and above conditions are OK replace the A-350 HIGH TEMP control.

2. Checking the S-350 LOW TEMP control. The red LED indicator light (on the face of the control) when illuminated, indicates that the room is calling for steam. If the LED light is not illuminated, check that all modules are plugged tightly together. If the LED light is still not illuminated, remove 4 cover screws and the face of the module. Check that the OFFSET potentiometer setting is at 24 degrees (located on the left side). If other than 24 degrees, turn the white slot in the center of the potentiometer clockwise to increase the temperature difference between the HIGH TEMP and LOW TEMP modules.

Check that the DIFFERENTIAL potentiometer is set at 2 degrees (located on the right side). If other than 2 degrees, turn the white slot in the center of the potentiometer counterclockwise to shorten the time between make and break for steam. Check that the LOW TEMP wires are connected to NO & COM and check for continuity between these terminals. If LED is illuminated and no continuity is found then replace S-350 LOW TEMP control.

3. Once 1 & 2 above have been checked and corrected if necessary, should the contactor/s not close and the steam room temperature is below what the LOW TEMP thermostat is set for:
  - i.) Remove the cover plate from the low voltage control side of the main electrical connection box. Identify the LOW TEMP terminals (above the time clock) and bridge across them. If the contactor closes, turn off the power supply to the steam generator and remove the 2 wires from the low temp screw terminals. Check the wires between the temperature controls and the steam generator for a possible break. Repair or replace the wires.

## **CHECKING THE RELAY CONTACTOR CIRCUIT**

When the thermostat circuit checks OK, turn on the time clock switch by identifying the 96 "trippers" located around the clock face making sure they are in the on position (out position) and the 3-way manual switch is in the automatic position (centered between the top and bottom of the path it slides on). With the time clock switch closed (turned on) check the following:

1. The red LED full light (located on the left side approximately mid point of the circuit board) must be illuminated (for the contactor to close). If the full light is not illuminated see TROUBLE SHOOTING FOR NO WATER. The 4 red LED contactor/s lights (located on the lower right side of the circuit board) H1, H2, H3, H4, must be illuminated (for the contactor to close). With a volt meter, check across the contactor coil terminals (located at the bottom of the contactor) there should be 24VAC. If the above voltage is correct and the contactor does not close, the contactor is faulty and should be checked for repair or replacement. If there is no voltage across the contactor coil terminals, and the LED lights are on, turn off the power supply to the steam generator. Remove the plastic JB-2 10-pin plug on terminal block and test for continuity between the plug and the female disconnects at the contactor coil terminals.

- If no continuity is found carefully try to insert the wire deeper into the socket. This may be done (after removing the black plastic wire retainer) with a very small ended screw driver (CAUTION DO NOT PUSH AGAINST THE P.C. BOARD) and re-test until continuity is found. If continuity is found to be OK and there is still no voltage present at the contactor coil terminals (with the steam generator power supply on) the P.C. board contactor circuit must be defective and the P.C. board removed for repair.
2. Should the main circuit board require testing, check for 24VAC at the JB-4 terminal, across the 2 brown wires 24VAC, across the 2 blue wires 24VAC, and across the yellow and either blue wires 11VAC/16VAC. If above voltages are not correct, check control transformer (located in the right side of the main electrical connection box). Also visually inspect the 3 fuses at the top right side of the P.C. board to determine if they are burnt and need replacement. These fuses should be replaced by qualified personal only.