

TROUBLE SHOOTING GUIDE

SAUNATEC AI-SERIES COMMERCIAL BOILERS

All repairs should be performed by a qualified service person. For additional assistance or the factory authorized Service Representative nearest you call the SAUNATEC Service Department at 800-331-0349. The Troubleshooting Guide below is meant as a general aid only. Follow ACTION TO BE TAKEN in order, until the problem is resolved.

QUICK REFERENCE STATUS LIGHT CONDITIONS

FAULT CONDITIONS: The thermostat, room switch and boiler Room Status LEDs will blink to indicate operating faults. The affected room will not heat while the status LEDs are blinking. LEDs turn on and off one or more times to define the fault, pause a few seconds, and then repeat the code.

ROOM STATUS LEDs BLINK IN UNISON While in fault mode, that room will not heat. If the two room option is installed, only the faulty room will be affected. Turn the room off and on again (via the thermostat or room switch) to reset the system after correcting the condition.

LEDs blink on once then pause = room temperature sensor or its cable is open or disconnected (See Symptom 6. Room Not Hot Enough).

LEDs blink on twice then pause = room temperature sensor or its cable is shorted. (See Symptom 6. Room Not Hot Enough).

LEDs blink on three times then pause = thermostat or its cable is open or disconnected. (See Symptom 6. Room Not Hot Enough).

ROOM STATUS LEDs BLINK TOP AND BOTTOM ALTERNATELY Top left and bottom right LEDs light then bottom left and top right LEDs light to indicate a major fault with an overheated room. Neither room will heat and the boiler heat will remain turned off during this condition. Turn the boiler power off and on again to reset the system after correcting the condition. Contact Saunatec Service!

LEDs blink on five times then pause = Room 1's temperature is too hot (over 130F) (See Symptom 5. Room Overheats).

LEDs blink on seven times then pause = Room 2's temperature is too hot (over 130F) (See Symptom 5. Room Overheats).

ROOM STATUS TOP LEDs BLINK OFF When the Cool Drain option is installed.

LEDs blink off once then light 5 seconds = drain is running slow; tank and drain may need cleaning.

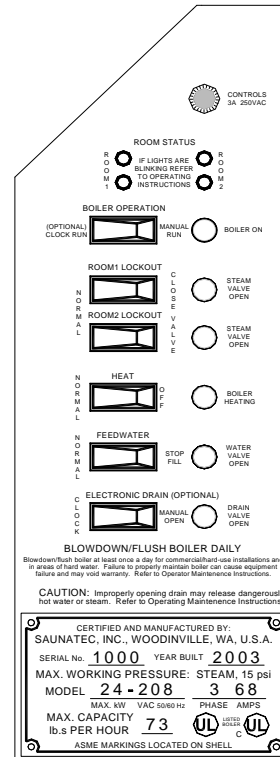
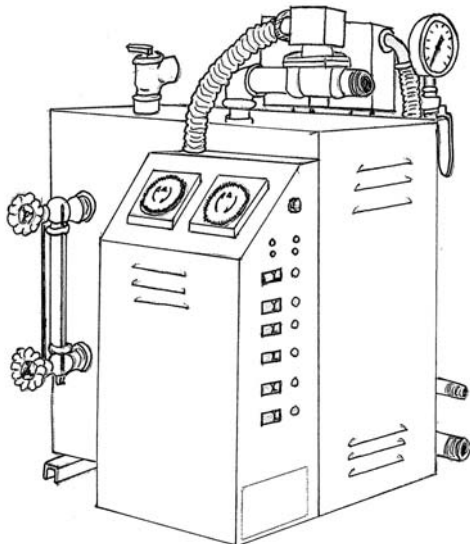
LEDs blink off twice then light 5 seconds = drain may be plugged; tank and drain may need cleaning.

Note: Before starting the Boiler Troubleshooting Guide, please follow the steps below!

- 1) Verify that proper line to line voltage is present at the Boiler Main Terminal Block located at the bottom of the Control Panel (see page titled Electrical in the Commercial Steam Generator Installation Instructions).
- 2) Verify 120vac is present at the 2 position Terminal Block designated 120VAC located at the bottom of the Control Panel (see page titled Electrical in the Commercial Steam Generator Installation Instructions).
- 3) Please review both sides the laminated sheet (attached to the Boiler)
- 4) All Control Panel Switch should be to the left (no orange showing) – with the exception of the Boiler Operation Switch – this switch should be to the right (orange showing).
- 5) Control Panel Set-Up Test #1 must be performed before Test #2.

Control Panel Set-up for Test #1 & Symptoms 1 thru 4 (Room "Off")

- 1) Boiler "On" Switch to the right / "Manual Run" position & Boiler "on" light illuminated
- 2) All other switches to the left
- 3) Thermostat not turned "On" / L.E.D not illuminated
- 4) Optional I60 not pushed "On" / L.E.D. not illuminated



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			TEST #1 (ROOM "Off")		
SYMPTOM	CONTROL PANEL LIGHT	PROBABLE CAUSE	ACTION TO BE TAKEN	WHAT SHOULD HAPPEN	
1. Boiler will not fill with water	Feedwater Light "On" Low water in site glass	Water Supply "off"	Turn "On" water supply	Tank should fill to (3/4 full in site glass)	
		Clogged Strainer <i>Or</i> Clogged Water inlet Line <i>Or</i> Clogged Water Solenoid Valve	Clean Strainer <i>Or</i> Clean Water inlet Line <i>Or</i> Clean Water Solenoid Valve Inspect valve assembly and replace valve if necessary		
		Water Inlet Valve Faulty	Replace Water Inlet Valve		
	Feedwater Light "OFF" Low water in site glass	Water level probe calcified causing low resistance condition. The Probe Access Cover is located on top of the boiler near the pressure relief valve.	Remove wires from level probes & retest boiler, if tank fills clean or replace all level probes If Tank does not fill, call Tech Support 800-331-0349		
2. Boiler tank overfills with water. Note: It may be normal for the tank to overfill during a auto drain cycle	Feedwater Light "ON"	Water level probe/s calcified causing high resistance condition. - The Probe Access Cover is located on top of the boiler near the pressure relief valve.	Remove and clean level probes <i>Or</i> Replace level probes	Tank should fill to (3/4 full in site glass)	
		"H" Water level probe wire (red) is open	Ohm out wire with both ends disconnected & replace wire if necessary		
		Tank / Baffle Clog	Clean Tank and Baffle <i>area</i> (located on inside left wall of tank) Call Amerec Tech Support at 800-331-0349 to order Element Gasket kit		
	Feedwater Light "Off"	Water Inlet Valve faulty Water Pressure too high -i.e... over 100psi	Inspect and clean valve assembly or replace valve Install Pressure Reducer in Water Supply Line If problem not corrected, call Tech Support at 800-331-0349	No Water should enter Tank	
3. Boiler will not produce steam pressure	Boiler Heating Light <u>not</u> "On"	Water level probe/s calcified causing high resistance condition. - The Probe Access Cover is located on top of the boiler near the pressure relief valve.	Check Level Probe voltage (should be 0vac to 1vac from top of probe to ground) <i>If voltage is correct</i> Call Tech Support at 800-331-0349 <i>If voltage is incorrect</i> Clean or replace level probes Check "L" (Red) & "M" (White) Probe wires for continuity, ohm out each wire with both ends disconnected and replace wires if necessary Call Tech Support at 800-331-0349	All Contactors should close and provide full line to line voltage to each element and steam pressure should be produced	
		Honeywell Pressure switch tripped	Push red reset button on Honeywell pressure switch. If pressure switch continues to trip call Tech Support at 800-331-0349		
		Asco Pressure Switch open	Check for 120vac to ground on each side of Pressure Switch(s) contacts <i>If voltage is correct</i> Call Tech Support at 800-331-0349 <i>If voltage is incorrect</i> Clean or replace pressure switch & pressure switch plumbing line		



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	Boiler Heating Light "On"	<p style="text-align: center;">Contactor(s) coil(s) <i>Or</i> Contacts burned out</p>	<p style="text-align: center;"><u>Turn All Power On !</u></p> <p>Check line to line voltage to each element on right side of contactor(s) contacts</p> <p>If proper Line to Line Voltage not present then replace contactor(s)</p> <p>If proper Line to Line voltage is present then see Probable Cause Element Failure Call Tech Support at 800-331-0349</p>	
			<p style="text-align: center;"><u>Turn All power Off</u></p> <p>Remove contactor/element access cover located on Control Panel light/switch side of Boiler and follow wiring diagram</p> <p>Ohm out contactor coil(s). They should read 90 ohms with black and white wires connected to both contactor coils or 180ohms if only one coil connected. If boiler has 4 contactors and all 4 coils are connected, ohm reading should read 45ohms.</p> <p>If coils do not ohm out properly then replace appropriate contactor(s)</p>	
		<p style="text-align: center;">Element(s) Failure</p>	<p style="text-align: center;"><u>Turn All Power Off</u></p> <p>Remove contactor/element access cover located on Control Panel light/switch side of Boiler and follow wiring diagram</p>	
			<p>Ohm out elements. Ohm reading should range from 5ohms to 60ohms depending on kw and voltage rating of element</p> <p>If elements do not ohm out properly - Replace elements</p>	
<p>4. Boiler Overheats Room with Room Control "off"</p>	<p style="text-align: center;">Steam Valve Open Light "Off"</p>	<p style="text-align: center;">Steam Valve stuck open</p>	<p>Inspect and clean valve assembly or replace valve</p>	<p style="text-align: center;">No steam should enter room when room is off</p>

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Control Panel Set-up for Test #2 & Symptoms 5 thru 7 (Room "On")

- 1) Boiler "On" Switch to the right / "Manual Run" position & Boiler "on" light illuminated
- 2) All other switches to the left
- 3) Thermostat turned "On" / L.E.D. illuminated
- 4) Optional I60 pushed "On" / L.E.D. illuminated

			TEST #2 / ROOM "On"		
SYMPTOM	CONTROL PANEL LIGHT	PROBABLE CAUSE	ACTION TO BE TAKEN	WHAT SHOULD HAPPEN	
5. Room Overheats	Boiler Heating Light "On"	Sensor Failure	<p style="text-align: center;"><u>Turn All Power "Off"</u></p> Disconnect Sensor Cable from PCA, Ohm out Sensor Cable with Sensor still plugged into other end of cable Approximate ohm readings: 100K @ 77deg.F; 57K @100deg. F; 32K @ 125deg. F <i>If ohm readings are incorrect</i> Replace Sensor or Cable	Room should heat to Set Point Temperature then Steam Valve should close and remain closed until room temperature drops approx. 2 Deg. below Set Point Temperature	
		Thermostat Faulty	<p style="text-align: center;"><u>Turn All Power "Off"</u></p> See Installation Instructions: Step 2. <u>Thermostat Installation</u> for proper wiring sequence Disconnect Thermostat Cable from PCA, Ohm across red and white wires of thermostat cable with thermostat still connected to other end of cable Approximate ohm readings with thermostat dial in "Off" position: 9.8K ohms; "5" position: 5.5K ohms; "10" position: 5-10 ohms; "Max" position: 2-4 ohms		
6. Room Not Hot Enough	Boiler Heating Light "Off" And Steam Valve(s) Open Light "Off"	Sensor Failure	<p style="text-align: center;"><u>Turn All Power "Off"</u></p> Disconnect Sensor Cable from PCA, Ohm out Sensor Cable with Sensor still plugged into other end of cable Approximate ohm readings: 100K @ 77deg.F; 57K @100deg. F; 32K @ 125deg. F If ohm readings are incorrect, Replace Sensor or Cable		
		Thermostat Faulty	See Installation Instructions: Step 2. <u>Thermostat Installation</u> for proper wiring termination. Disconnect Thermostat Cable from PCA, Ohm across red and white wires of thermostat cable with thermostat still connected to other end of cable Approximate ohm readings with thermostat dial in "Off" position: 9.8K ohms; "5" position: 5.5K ohms; "10" position: 5-10 ohms; "Max" position: 2-4 ohms		
	Boiler Heating Light "On" & Steam Valve(s) Open Light "On"	Element(s) Failure	See Symptom 3. Contactor and Element Failure		
7. Excessive Water out of Steamhead	Boiler Heating Light "On" & Steam Valve(s) Open Light "On"	Improper Configuration of Steam Line	See Installation Instructions: Step 2. Install Steam Line	Steam should be dispersed from steam head without excessive water	
		Foaming inside boiler tank	See Installation Instructions: Pages 17-19 Blowdown/Drain/Flush Tank		