

Electric Heater Circuit Troubleshooting

Before troubleshooting a an electric heater circuit, please be aware of all safety hazards. Also, follow your plants lock out/tag out and PPE procedures.

PROBLEM	CAUSE(S)	SOLUTION
Control panel does not have power	No power supplied to the control panel	Verify main disconnect switch is on
	Blown fuse(s)	Verify continuity of the fuses before and after the main transformer
	Emergency Stop button is engaged	Verify the initial reason for the emergency stop. If reason has been corrected, release the Emergency Stop.
Safety interlock will not prove <i>(Interlock Proven light not illuminated)</i>	Circulating or exhaust fan(s) airflow switches are not making contact	Check the inputs to and output from switches
		Check air filter if applicable
		Verify direction of fan rotation against fan label
	High-temperature limit controller alarm active	Temperature is above designated high temperature limit set-point
Reset limit controller		
		If controller wont reset after temperature falls below set-point, replace controller
Oven will not heat, heats slow, or will not reach set temperature	Power loss	Check incoming power to control panel from source. If line voltage is not present, check and make necessary corrections at source.
		Check voltage on load side of fuses and replace if needed.
		Check voltage on load side of heater relay/contactor or SCR while controller is calling for heat. If full voltage is present on all phases, check heaters for open circuit.
	Control power loss	Check input to heater relay/contactor or SCR. When temperature controller calls for heat, contactor or relay coils should have 120V control voltage across the coil. SCR's should have 4~20mA. Refer to schematic.
		Replace heater relay/contactor or SCR if above-cited control power is available and line side voltages appear while load side voltages do not appear.
	Thermocouple burned out	Replace thermocouple
	Open heaters	Check heater resistances with ohm meter and replace open heaters.
	Blown fuses	Check all heater fuses. Replace as necessary.
	Open phase	Check three-phase power at load end of heater relay/contactor or SCR.
Failed or damaged heater elements	Replace heater elements	

	Circulating fan(s) rotating in wrong direction	Verify fan rotation against fan direction label. If fan is rotating in the wrong direction, there is an incorrect phase sequence. To correct, reverse any two leads anywhere from source to fan motor.
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Oven will not heat, heats slow, or will not reach set temperature	Temperature Controller	<p>Check temperature controller for error messages and adjustments. Refer to temperature controller manual.</p> <p>If known, set P, I, D, constants on Temperature Controller. If unknown, initiate auto tune sequence. Refer to temperature controller manual for auto tune instructions.</p> <p>Check output of temperature controller to see if it cycles. If output power is continuously present when controller does not call for power, replace temperature controller.</p>
	Door switch	If door is not securely closed, door switch will disable heat - close door. If door is closed, inspect door switch for proper function. Replace if necessary.
Oven exceeds desired temperature (overheats)	Temperature Controller	<p>Check temperature controller for error messages and adjustments. Refer to temperature controller manual.</p> <p>If known, set P, I, D, constants on Temperature Controller. If unknown, initiate auto tune sequence. Refer to temperature controller manual for auto tune instructions.</p> <p>Check output of temperature controller to see if it cycles. If output power is continuously present when controller does not call for power, replace temperature controller.</p>
	Heater control failure	Check heater relay, contactor, or SCR for shorted or welded contacts. Fix or replace as necessary.
Limit Controller High-Temp. Alarm will not turn off	High-Temp. condition exists	Wait for temperature to go below high-temp. set-point
	Limit Controller	Reset Limit Controller. If temperature is below set-point and alarm will not turn off when manually reset, replace Limit Controller.
	Hysteresis value	Hysteresis value is factory set at 20. Temperature must go 20°F. below Limit Controller set-point, before high-limit alarm can be rest. Verify Hysteresis value hasn't been changed.
	Limit Controller set wrong	Verify parameters and correct as necessary.
	Thermocouple	Inspect thermocouple. Replace if necessary
Circulating fan will not start	Motor failure or control power loss	Check fuses. Replace if needed.
		Check load side voltages on overload relay with fan control on. If three-phase imbalance voltage appears, service fan motor.
		Check 120V power across starter coil A1 - A2 with fan control on. If power appears and starter does not energize, replace starter.
	Faulty Circulating Fan Start Switch	Inspect wiring to switch. Verify all connections are secure. Tighten as necessary. If all wiring is secure, replace switch.

Circulating fan running slow & sluggish	Phase missing	Check fuses. Replace if needed.
		Check for balanced three-phase power from source and correct as necessary.

PROBLEM	CAUSE(S)	SOLUTION
Excessive fan noise or vibration	Loose mounting bolts, setscrews, bearings or couplings.	Tighten hardware to the proper torque
	Fan shaft bearings	Lubricate or replace
	Fan motor	Lubricate motor
	Misaligned or excessive wear of couplings, bearings or misaligned or unbalanced motor.	Replace couplings and bearings, and realign balanced shaft and wheel.
	Accumulation of foreign matter on the wheel or wear/erosion of the wheel.	Clean or replace fan wheel depending on extent of damage

For any issues outside the scope of this document please contact LEWCO at (419) 502-2780, or via email at ovensales@lewcoinc.com for further assistance