

OVEN TROUBLESHOOTING

The following steps are intended as a guide and may not cover every possible scenario. A multi-meter is required for troubleshooting along with the electrical prints and component specific literature.

Only A qualified person should work on the electrical controls while the power is on due the risk of personal injury, death or property damage.

Symptom	Possible Cause	Remedy
1. Fan(s) won't start:	<ul style="list-style-type: none"> • Main power off or blown fuses • Control transformer fuses blown. • Fan motor overload relay tripped. • Fan safety disconnect switch off • Fan Auto Off / Run switch is in the Auto Off position. For PLC controls, the Auto Shut Down Active button pushed. 	<ul style="list-style-type: none"> • Check main power & fuses, replace as needed. • Check fuses, replace as needed. • Reset the overloads, check the fan motor amps. • Turn on disconnect • Switch to the Run position. PLC controls, deactivate the Auto Shut Down.
2. Temperature Controller or High Temperature Limit Controller display reads OPEN or reads 0 for PLC controls.	<ul style="list-style-type: none"> • Open circuit in thermocouple wiring. • Defective thermocouple 	<ul style="list-style-type: none"> • Check for wiring errors, reference electrical drawing & thermocouple head drawing. • Check for broken thermocouple wire • Replace thermocouple
3. Burner Purging Light or indicator (PLC) does not light up when burner start button pushed.	<ul style="list-style-type: none"> • All fans not running • High Temperature Limit Controller is tripped. • Recirculation Fan or Exhaust Fan air flow switch not proving. • Burner combustion Air Flow Switch is not proving. • Low gas pressure switch tripped. • High gas pressure switch tripped. • Flame relay module tripped. • Low fire start interlock switch not proven • Main Gas Valve proof of closure switch open. • Bad light bulb. 	<ul style="list-style-type: none"> • Check all fans • Check temperature set point VS actual, push reset. • Check air flow switches on these fans for damaged or obstructed sensing lines. Adjust sensing lines or switch as necessary. Check belts. • Check inlet air filters, Clean or replace filters – adjust switch. • Check inlet gas pressure reset switch. • Reset switch, start burner and check gas pressure at burner. • Reset module and check ignition. • Investigate switch position adjust as needed confirm burner is in low fire position • Check Gas Valve for power. Verify switch position. • Replace light bulb.

For ovens with a PLC when the above recommendations are not successful check the specific inputs and outputs on the PLC rack that controls the component you are trouble shooting. Check the inputs and outputs by verifying the voltage and whether or not the input or output indicator light is on.

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4. Purging completes cycle but burner did not light. Burner controller alarm LED light is illuminated	<ul style="list-style-type: none"> • Igniter failed to spark. • UV Scanner failed to see the flame. • Pilot Solenoid Valve failed to open. 	<ul style="list-style-type: none"> • Check igniter, clean as necessary. Verify ignition transformer circuit. • Clean the UV Scanner lens check for obstructions in the sight tube. Verify UV Scanner circuit. • Check electrical power to the valve. Verify gas pressure down stream of Pilot Solenoid Valve when energized.
5. Burner drops out after successful lighting or during normal run time.	<ul style="list-style-type: none"> • Burner low fire set too low. • Airflow Switch or other safety switch opened after it was closed. See item 3 above. 	<ul style="list-style-type: none"> • Adjust the low fire, this is uncommon. • Check the Airflow Switches & tubing. Check other safety switches, see section 3 above.
6. Oven will not heat up.	<ul style="list-style-type: none"> • Low fire / Modulating Switch is in Low Fire position. • Burner modulating actuator not operating. • Burner actuator linkage loose or disconnected • Low gas pressure at burner • External Interlock not made • PLC, conveyor low fire interlock active 	<ul style="list-style-type: none"> • Set the switch to the Modulating position. • Check for voltage at burner actuator • Check milliamp output from temperature controller or PLC • Reconnect linkage • Check gas pressure and compare to specification • Check for external interlocks. • Start conveyor

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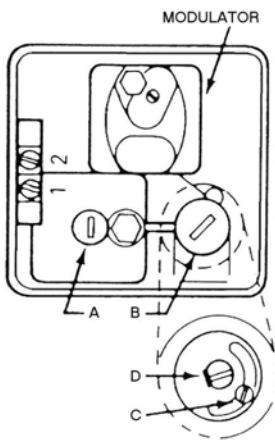
APPENDIX I: BURNER FIRING RATE CALIBRATION

High fire adjustments

**NOTE: THE MODULATING/REGULATOR VALVE IS LOCATED ON THE GAS TRAIN.
SEE GAS TRAIN DRAWING FOR LOCATION OF VALVE.**

In order to set the High Fire gas pressure correctly, three terms must be understood. They are:

- 1. Differential Gas Pressure:** This is the difference between the burner negative and the high fire gas pressure. The maximum differential gas pressure is shown on the oven rating tag located on the burner box for the oven and on the burner box layout drawing. A typical setting is 4.5" W.C. for natural gas. The only change needed to run the oven on propane is a pressure change (**use 43% of the natural gas pressure setting for propane operation**). Adjust high gas pressure switch accordingly.
- 2. Burner Negative:** Is measured with the fans **ON**, doors **CLOSED** and the burner and pilot **OFF**. See specification label or burner box layout drawing for design negative. The burner negative is dependent on the width of the return air opening and the setting of the supply air nozzles. Therefore the burner negative should be checked **after** these adjustments have been completed. Reference the pressure gauge on the manifold or connect a manometer to the gas piping downstream of the modulating regulator valve (normally at the high gas pressure switch).
- 3. High Fire Gas Pressure:** Is measured with a manometer connected in the same place as above, or by referencing the gas pressure gauge installed on the gas train. The fan(s) must be ON and the temperature controller calling for maximum burner output. The desired high fire gas pressure, being adjusted in Step 3 below, is the difference between the burner negative and the differential gas pressure (see example).



1. Force the burner into high fire by setting the temperature controller set point to 450 degrees. This will place approximately 20VDC at the modulating gas valve coil.
2. Remove the seal cap (A) on the Regulator (which adjusts the high fire setting).
3. Turn the Regulator adjusting screw inside to achieve the pressure called for on the oven rating tag.
(Clockwise rotation increases pressure.)

Example:

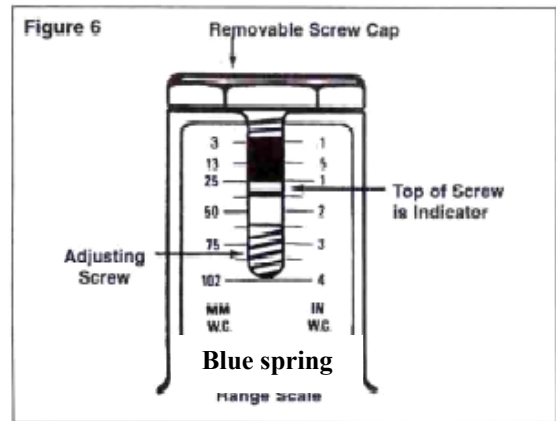
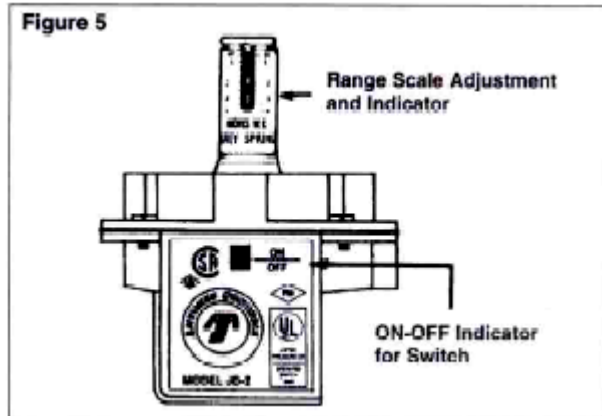
Differential gas pressure	4.5" w.c.
Burner negative pressure	-.5" w.c. (must be measured)
High fire gas pressure	4.0" w.c.

4. Replace the seal cap (A).

Low fire adjustments

1. Force the burner into low fire by adjusting the temperature controller set point to 32 degrees
2. Remove the seal cap (B) on the low fire setting.
3. Loosen the lock screw (C) inside and then adjust the screw (D) until achieving a continuous ribbon of flame across the entire burner. (Clockwise rotation reduces the minimum flow rate.)
4. Tighten the set screw (C).
5. Replace the seal cap (B).

APPENDIX II: AIRFLOW SWITCH CALIBRATION



Line Burners:

Note 1 - Exhaust Fan Air Flow / Burner Low Air Flow & Recirculation Air Flow Switch

These air flow switches should be set when the oven is at or near operating temperature. The switch opens on a pressure drop. Adjust the switch by removing the cap to expose the adjuster. The indicator in the window on the face of the switch will tell you if the switch is in the ON or OFF position. Normal operating condition of these switches is in the ON position. Using a screwdriver turn the adjuster CW to make the switch less sensitive and CCW to make it more sensitive. Turn the adjuster CW until the switch trips disabling the burner and then turn the adjuster CCW one to two full turns for a final setting.

Note 2 - Burner High Air Flow Switch – Canadian Ovens Only

This air flow switch should be set when the oven temperature is at or near ambient temperature. This switch opens on a pressure rise. Adjust the switch by removing the cap to expose the adjuster. The indicator in the window on the face of the switch will tell you if the switch is in the ON or OFF position. Normal operating condition of this switch is in the OFF position. Using a screwdriver turn the adjuster CCW to make the switch less sensitive and CW to make it more sensitive. Turn the adjuster CCW until the switch trips disabling the burner and then turn the adjuster CW one to two full turns for a final setting.

Ovenpak Burners:

Note 3 - Exhaust Fan Air Flow / Burner Low Air Flow Limit & Recirculation Fan Air Flow Switch

These three air flow switches work as described above in Note 1. Follow directions in Note 1 for setting up these air flow switches.