



MAINTENANCE

- **FOR SAFETY REASONS, BEFORE PERFORMING ANY MAINTENANCE, DISCONNECT AND LOCKOUT THE ELECTRICAL SUPPLY, INCLUDING THE THERMOSTAT, BY POSITIVE MEANS.**
- All maintenance and/or repair **MUST** be performed by someone trained and qualified to work on gas and electrical equipment.
- Annual maintenance done prior to the beginning of each heating season is all that is usually necessary.
- In dirty, dusty, or wet atmospheres, it may be necessary to examine and perform needed maintenance at additional times during the heating season. Experience will dictate the frequency.
- Radiant tubes, combustion air ducting, and exhaust venting should be inspected to make sure that: suspension points are secure, tube clamp nuts are tight, heater is level, chains are plumb and taut (except for burner safety chain), vent pipe joints are properly sealed, "S" hooks are crimped closed, there is no excessive exterior buildup of dust or dirt, and make sure there are no restrictions such as bird or insect nests in the combustion air or vent piping or their terminations.
- Reflectors should be inspected to make sure they are clean and secure, as detailed in the INSTALLATION section. If dirty, reflectors should be removed and washed with isopropyl alcohol, Simple Green, or buffed with mild rubbing compound.
- On U-tube systems, the U-bend reflector support nuts should be inspected to make sure they are tight.
- Inspect the inside of the blower housing for excessive dust or dirt buildup on the impeller wheel and make sure the air orifice and the inlet air collar are properly attached. Check that the blower can come up to full speed.
- Remove the cover by removing the 4 sheet metal screws on top of the cover.
- Remove the ignitor by removing **ONLY** the end where the vinyl tubing is attached to the ignitor bracket; the fitting to which the vinyl tubing was connected; the ignition lead wire from the ignition detection control; and the sheet metal screw holding the ignitor bracket to the burner housing wall.
- Remove the ignitor carefully; its' electrodes make a ninety degree turn to the right.
- Clean the ignitor's porcelain insulation and check for cracks and proper gaps (see STARTUP section).
- Within the interior of the burner tube, examine the burner nozzle, primary air holes, main orifice and surrounding area for build up of dust or dirt. Clean if necessary.
- Reinstall the ignitor by following the previous instructions in reverse order.
- Examine the ignition detection control for overheating (warped plastic housing, discoloration, etc.)
- A visual inspection of gas valve, airflow switch, and wiring is adequate.
- Inside each clear vinyl tube used for air flow sensing is a small snubber (aluminum cylinder piece). Visually inspect for cleanliness.
- Clean any surfaces needed and correct any situations found in disrepair.
- Replace the cover and sheet metal screws.
- The blower motor is of the permanently lubricated type and requires no additional lubrication.
- Double check that the area under the heater is kept clear and free from combustible materials, gasoline, and other flammable vapors and liquids.
- Reconnect electrical supply and cycle the heater several times using the thermostat allowing (5) five minutes between cycles for proper operation.
- **WARNING: Do not operate heater with any part bypassed, with any part failed or in any possible situation that may compromise safety. Personal injury, death, and/or property damage could result.**

TROUBLESHOOTING

• Check for symptoms and possible causes in the order presented from the top of this chart to the bottom.		
SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
New Installation.	1. Heaters not isolated during high pressure leak testing.	1. Replace combination gas valves on each heater.
	2. All gas lines not completely bled of air.	2. Disconnect flex hose at each heater until gas is present. Connect flex hose and leak test.
	3. External gas supply regulator reversed.	3. Remove external regulator and install properly.
	4. Electrical supply voltage & neutral polarity reversed.	4. Correct electrical supply polarity.
Gas Odor.	1. Gas pipe joints loose.	1. Check joints with soap solution, tighten as needed.
Diagnostic light not ON. (Indicator light ON for normal operation).	1. Power supply fuse defective.	1. Replace power supply fuse.
	2. 115 VAC not reaching heater.	2. Check wiring and fix.
	3. Ground connections not secure to ground screw or gas valve.	3. Secure all ground connections and remove power for 5 seconds.
	4. Internal transformer defective.	4. Replace internal transformer.
	5. Diagnostic light defective.	5. Replace diagnostic light.
Pressure switch does not close or sticks closed / Diagnostic light four flashes. 4 FLASHES	1. Inlet or exhaust piping not the proper size and length. (Refer to manual.)	1. Replace piping as required.
	2. Inlet or exhaust termination fittings not to factory specifications.	2. Replace fittings as required.
	3. Inlet or exhaust blocked.	3. Clear blockage.
	4. Airflow tubing or snubber orifice blocked in one or both tubes.	4. Clear blockage.
	5. Blower wheel dirty or damaged.	5. Clean or repair wheel.
	6. Airflow pressure switch malfunction.	6. Correct gas pressures or replace airflow pressure switch.
Ignitor does not spark / Diagnostic light one flash. 1 FLASH	1. 24 VAC not reaching the Ignition Detection Control (IDC) due to loose wire or connector.	1. Repair loose wire or connector.
	2. 24 VAC not reaching the Ignition Detection Control (IDC) due to defective internal transformer.	2. Replace internal transformer.
	3. High-voltage wire loose or damaged.	3. Secure high-voltage wire or replace ignitor.
	4. Ignition Detection Control (IDC) defective.	4. Replace IDC box.
Burner does not ignite. (There are three trials-for-ignition before the IDC goes into lockout) / Diagnostic light two flashes. 2 FLASHES	1. Gas supply not turned on.	1. Open all manual gas supply valves.
	2. Ignitor not sparking at the tips.	2. Measure spark gap and adjust gap as necessary to 5/32" [0.156" (3.96mm)].
	3. Ignitor not sparking at correct gap.	3. Replace ignitor.
	4. Gas inlet pressure not correct. (See serial plate). Gas inlet piping not sized correctly.	4. Replace inlet gas piping with correct size pipe.
	5. Gas inlet pressure not correct. (See serial plate). Gas supply regulator not set correctly.	5. Adjust gas supply regulator to set inlet pressure to proper level. (See serial plate).
	6. Gas supply regulator sticking.	6. Replace gas supply regulator.
	7. Combination gas valve not in the ON position.	7. Turn combination gas valve to the ON position.
	8. Ignition Detection Control (IDC) not sending 24VAC to combination gas valve.	8. Replace IDC box.
	9. Combination gas valve defective.	9. Replace combination gas valve.
	10. Combination gas valve outlet (manifold) pressure not correct. (See serial plate).	10. Adjust combination gas valve regulator to set inlet (manifold) pressure to proper level.
	11. Main orifice blocked by spider web, etc.	11. Clear blockage.
	12. Gas orifice or air orifice not correct size.	12. Install correct size gas orifice or air orifice.
Spark does not stop when the burner ignites / Diagnostic light three flashes. 3 FLASHES	1. Power supply not grounded to a true earth ground.	1. Install a true earth ground to the power supply.
	2. Flame sensor wire loose or damaged.	2. Secure flame sensor wire or replace wire harness to IDC box.
	3. Flame signal insufficient.	3. Check gas inlet and manifold pressures compared to the possible causes in the previous symptom where the burner does not ignite.
	4. Ignition Detection Control (IDC) is defective.	4. Replace IDC box.
Burner does not stay lit until thermostat is satisfied / Diagnostic light three flashes. 3 FLASHES	1. Flame sensor wire is loose or damaged.	1. Replace wire harness to IDC box.
	2. Electrical supply voltage & neutral polarity reversed.	2. Correct electrical supply polarity.
	3. Inlet or exhaust partially blocked.	3. Clear blockage.
	4. Airflow pressure switch erratic or defective.	4. Consult factory or replace airflow pressure switch.
	5. Flame signal insufficient.	5. Check gas inlet and manifold pressures compared to the possible causes in the previous symptom where the burner does not ignite.
	6. Ignition Detection Control (IDC) defective.	6. Replace IDC box.
Heater will not turn off.	1. Thermostat defective.	1. Replace thermostat.