



NOTE: If Blower is on Go to Step 13

STEP 1- Check Power at Dist. Brd. (make certain filter pump motor is on)

240 or 120 VAC between Black (C) wire and Red (B) wire on Power
 YES →
 NO → Make certain filter pump is on. Correct wiring

STEP 2- Check Transformer

24 VAC between Red (2) wire and Yellow (1) wire on Transformer?
 YES →
 NO → If wired 240 VAC check voltage between Black (E) wire and Blue (F) wire. If wired 120 VAC check voltage between Black (E) and White (D) wires. If the correct voltage is present, replace Transformer, if not check Conversion Board position

STEP 3- Check Fuse

24 VAC between Red (3) wire on PIB and Yellow (1) wire on Transformer?
 YES →
 NO → Locate and correct short circuit, replace Fuse.

STEP 4- Check power to Water Press. Sw.

24 VAC between Purple (4) wire on PIB and Yellow (1) wire on Transformer?
 YES →
 NO → Recheck at Red (3) wire, if voltage is 24 VAC replace PIB.

STEP 5- Check Water Pressure Switch

24 VAC between Gray (5) wire on PIB and Yellow (1) wire on Transformer?
 YES →
 NO → Back Pressure Test, if pressure is higher than 2 PSI, replace Water Pressure Switch, if less clean filter, baskets or repair pressure problem

STEP 6- Check power to Fusible Link

24 VAC between Orange (6) wire on PIB and Yellow (1) wire on Transformer?
 YES →
 NO → Recheck voltage at Gray (5) wire, if voltage is 24 VAC replace PIB.

STEP 7- Check Fusible Link

24 VAC between Blue (7) wire on PIB and Yellow (1) wire on Transformer?
 YES →
 NO → Check Vent Limit and replace failed part if necessary.

STEP 8- Check Power to High Limits

24 VAC between Black (8) wire on PIB and Yellow (1) wire on Transformer?
 YES →
 NO → Recheck power at Blue (7) wire. If 24 VAC at Blue but not Black, replace PIB.

STEP 9- Check High Limits

24 VAC between Black (9) wire on PIB and Yellow (1) wire on Transformer?
 YES →
 NO → Replace both High Limits. Do a Temp. Rise Test.

STEP 10- Check Power to Ignition Control

24 VAC between Black/Yellow(10) wire on PIB and Yellow (1) wire on Transformer?
 YES →
 NO → Recheck power at Black (9) wire. If 24 VAC at Black, but not Black/Yellow(10), replace PIB.

STEP 11- Check Power at Ignition Control

24 VAC between Black/Yellow (11) at W terminal of Ignition Control and Yellow of Transformer?
 YES →
 NO → Correct problem with Black/Yellow wire or its connectors.

STEP 12- Check Blower

Is Blower ON?
 YES →
 NO → Check voltage between F2 terminal of Ignition Control and ground (A0). Is voltage 105 VAC or higher?

YES → Correct incoming power problem.
 YES → Check voltage between F1 terminal of Ignition Control and ground (A). Is voltage 105 VAC or higher? If no, replace Ignition Control, if yes check voltage between Black (L) to Blower PDB and white wire. Wired 120, voltage range is 105 to 130, when wired 240 range is 210 to 250. If voltage is correct replace Blower. If not check PDB and wires.

STEP 13- Check Air Pressure Switch

Blower is ON – Start on Step 13

STEP 13- Check Air Pressure Switch

24 VAC between Orange (NO) wire at the Air Pressure Switch and Yellow (1) wire on Transformer?

NO

Make certain Blower is on and combustion chamber is sealed. Check air tubes for kinks or holes. Make certain front air tube is connected to the positive (+) side and back/lower air tube is connected to negative (-) side of the Air Pressure Switch. If all are OK replace the Air Pressure Switch.

YES

STEP 14- Check Power to PSW

24 VAC between Orange (12) wire at the Ignition Control and Yellow (1) wire on Transformer?

NO

Check wire connections. Replace Orange wire.

YES

STEP 15- Check Hot Surface Igniter

After Blower comes on wait at least 15 seconds (pre-Purge). Is Igniter glowing?

NO

Check voltage between K and J of the Ignition Control. If 105 to 130 VAC, check wires and connectors to the Igniter, if OK, replace Igniter. If voltage is less than 105 VAC check incoming voltage between L1 and L2, if voltage is 105 to 130 VAC replace Ignition Control.

YES

STEP 16- Check for Ignition

After the HIS begins to glow, wait approximately 40 seconds. Did the burners ignite?

NO

Check voltage on Brown (13) wire at terminal VAL of the Ignition Control. Is there 24 VAC at VAL?

NO

Replace Ignition Control.

YES

Check supply gas pressure. If OK, replace Gas Valve.

YES

STEP 17- Check Burners operation

Do Burners stay on beyond 7 seconds?

YES

Heater is not recognizing the flame (flame rectification). Any of the following can prevent flame rectification:

- Low gas pressure.
- Poorly connected or missing ground wire.
- Corroded or dirty Flame Sense Rod.
- Ignition Control not sending flame sense signal.
- Or there is insufficient current when the gas valve is powered. Current loss can be caused by any of the following:
 - Excessive corrosion on wire terminals.
 - Frayed or over heated wires.
 - Pitting contact points, usually at the Water Pressure Switch or High Limits.

To determine whether the problem is lack of rectification or loss of current, check voltage at the Black/Yellow(11) wire at Ignition Control. Keep the meter probe at this location and watch the reading. If, after the gas valve receives power, the voltage slowly drops until the gas valve shuts off, then returns to normal, the problem is due to loss of current.

Step 18 – Verify heating

Heater is operating properly.

Note: If the Blower runs continuously, unplug F1/F2 connector from the Ignition Control, if the Blower goes off replace the Ignition Control. Of the Blower stays on, check for shorted wires between the Ignition Control and PDB or from the PDB and the Blower.

Service Codes	DISPLAY FUALT	CAUSE	REMEDY
	Fault- Pump	1. Pump is not running	1. This is a normal display when the control is in Maintain Temp mode. NO SERVICE REQUIRED.
	NO FLOW	1. Pump is not running 2. Low pump pressure. 3. Pressure switch fault	1. Check breakers and power source, recheck wiring , set time clock and current time. 2. Clean filter, clear blockages, check position of all valves in plumbing system 3. Adjust or replace pressure switch. Refer to qualified service personnel.
	FAULT – HIGH LIMIT	1. Water Temperature in heater exceeds the Internal limit. 2. Limit switch fault.	1. Verify function of high limit switches. Perform temperature rise test. Identify and correct cause of overheating. 2. Identify loose connections or replace switches. Refer to qualified Service Personnel.
	FAULT- FUSELINK/FIEL	1. Vent Limit fault.	1. Identify loose connections or replace Vent Limit. Refer to qualified Service Personnel.
	FAULT-CHECK IGN CONTROL	1. Broken, split, pinched or disconnected fan/switch tubing. 2. Fan not operating. 3. Fan running slow or premature fan failure. 4. Air flow restricted at intake or discharge. 5. Oscillating pump pressure. 6. Low gas supply pressure. 7. No flame at burners.	1. Check tubing and replace if necessary. 2. Correct fault or replace fan. Refer to qualified service personnel. 3. Verify proper wiring for 120 or 240 VAC. Refer to qualified service personnel. 4. Check for proper clearances around heater and for adequate room ventilation if enclosed. Inspect for blockages or restriction at discharge of flue. Refer to qualified service personnel. 5. Clean filter or identify and repair cause of pump oscillation. 6. Identify and correct loose wiring connections, or problems with igniter, flame sensor, gas valve, or ignition control. Refer to qualified service personnel.
	Fault- Shorted H2O Sensor Or Open Water Sensor	1.aulty wiring or connection. 2. Failed sensor.	1. Inspect sensor wiring. Ensure sensor is connected into Power Interface Board. 2. Replace temperature sensor. Refer to qualified service personnel.

Flow Rates (gpm)

BTUs	MIN	MAX
200	30	120
260	30	120
330	30	120
400	30	120

200 30 120

260 30 120

330 30 120

400 30 120

GAS PRESSURE

Inches of Water Column

	Natural	LP
Max Inlet	10.5	14
Min Inlet	4	4
Gas Offset	-0.2	-0.2