



# TECHNICAL TRAINING

**HEATING**

TROUBLESHOOTING AND QUICK REFERENCE



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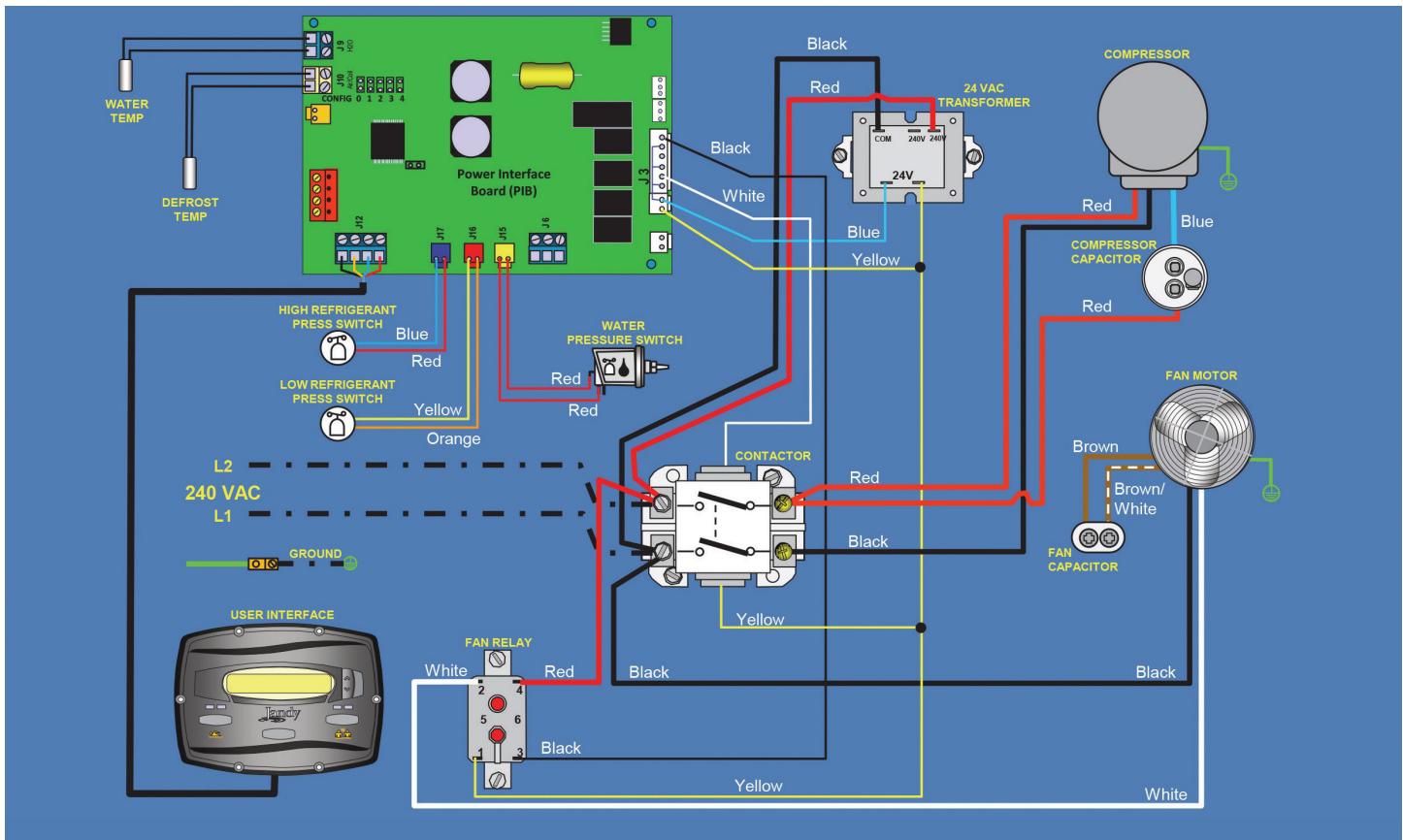
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<b>INTERNATIONAL</b>	4000	4000@fluidra.com	7AM – 4PM (PST)	5AM – 2PM (PST)

At least two representatives in each region will provide support via live chat.  
To start a chat, simply visit [FluidraUSA.com/Support](http://FluidraUSA.com/Support) and click on one of the Live Chat links.

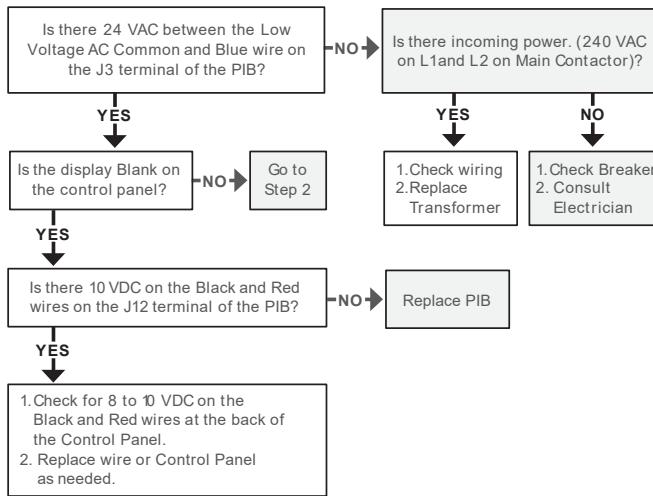
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## JE HEAT PUMP TROUBLE SHOOTING



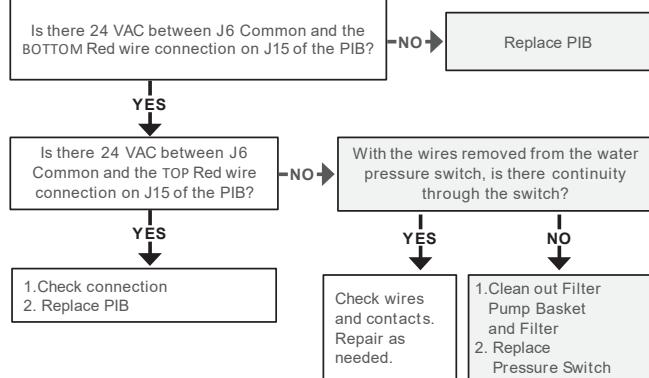
### STEP 1 INCOMING POWER



### STEP 2 CHECK WATER / REFRIGERANT PRESSURE SWITCHES

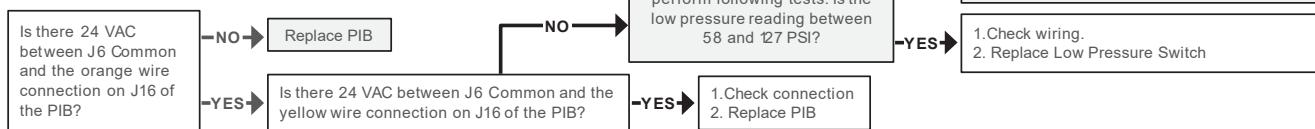
Note: These switches are in series, voltage will not continue through the switches until the previous switch has closed. The Filter Pump must be on.

#### SERVICE CODE: LOW H2O

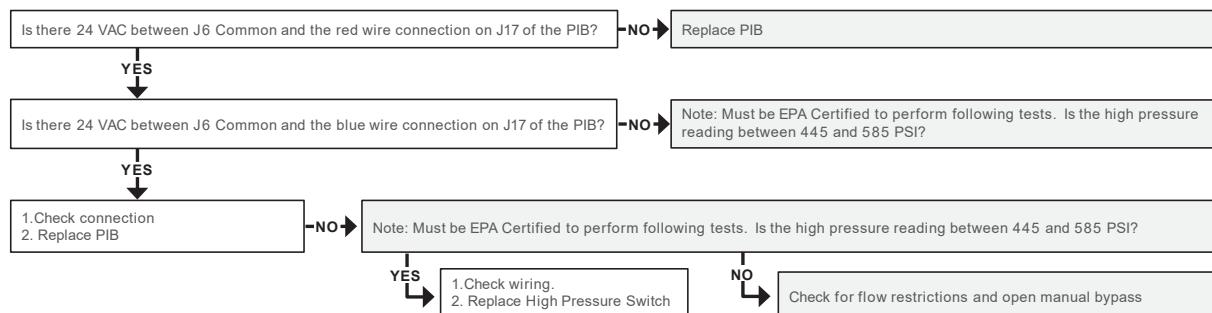


#### SERVICE CODE: LOW REFRIGERANT PRESSURE

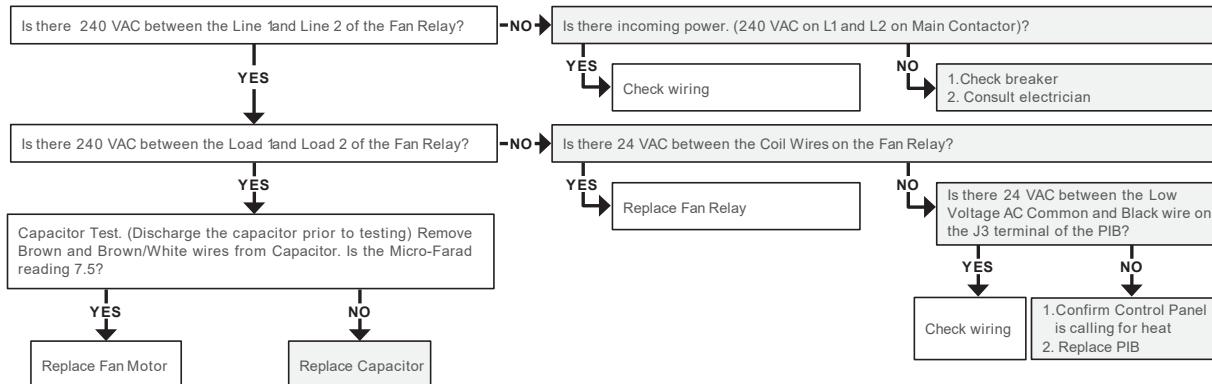
\*For refrigerant pressure ranges contact your regional tech support rep



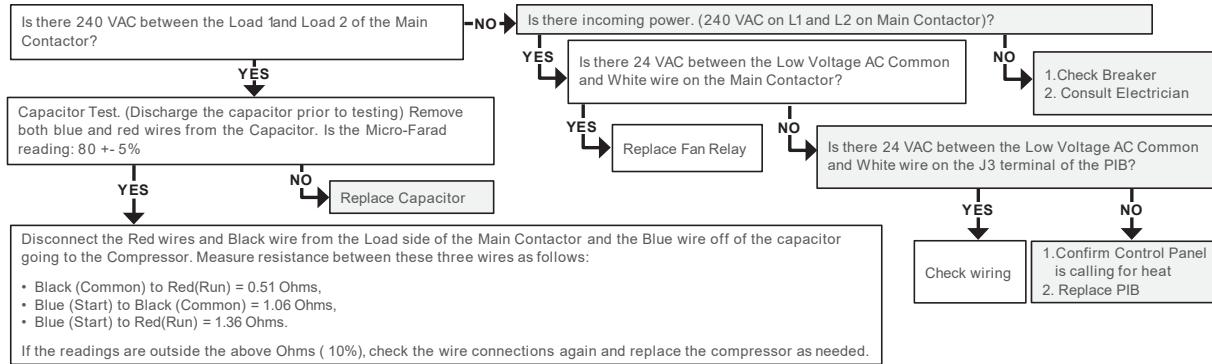
# JE HEAT PUMP TROUBLE SHOOTING



## PROBLEM: FAN NOT OPERATING



## PROBLEM: COMPRESSOR NOT OPERATING



Average Refrigerant Pressure Readings (R410A). A qualified, licensed refrigerant technician is required for these tests.

These numbers are averages based on a water flow of 50 gallons per minute and 80° water temp.

The lower the flow and higher the water temperature, the higher the pressure.

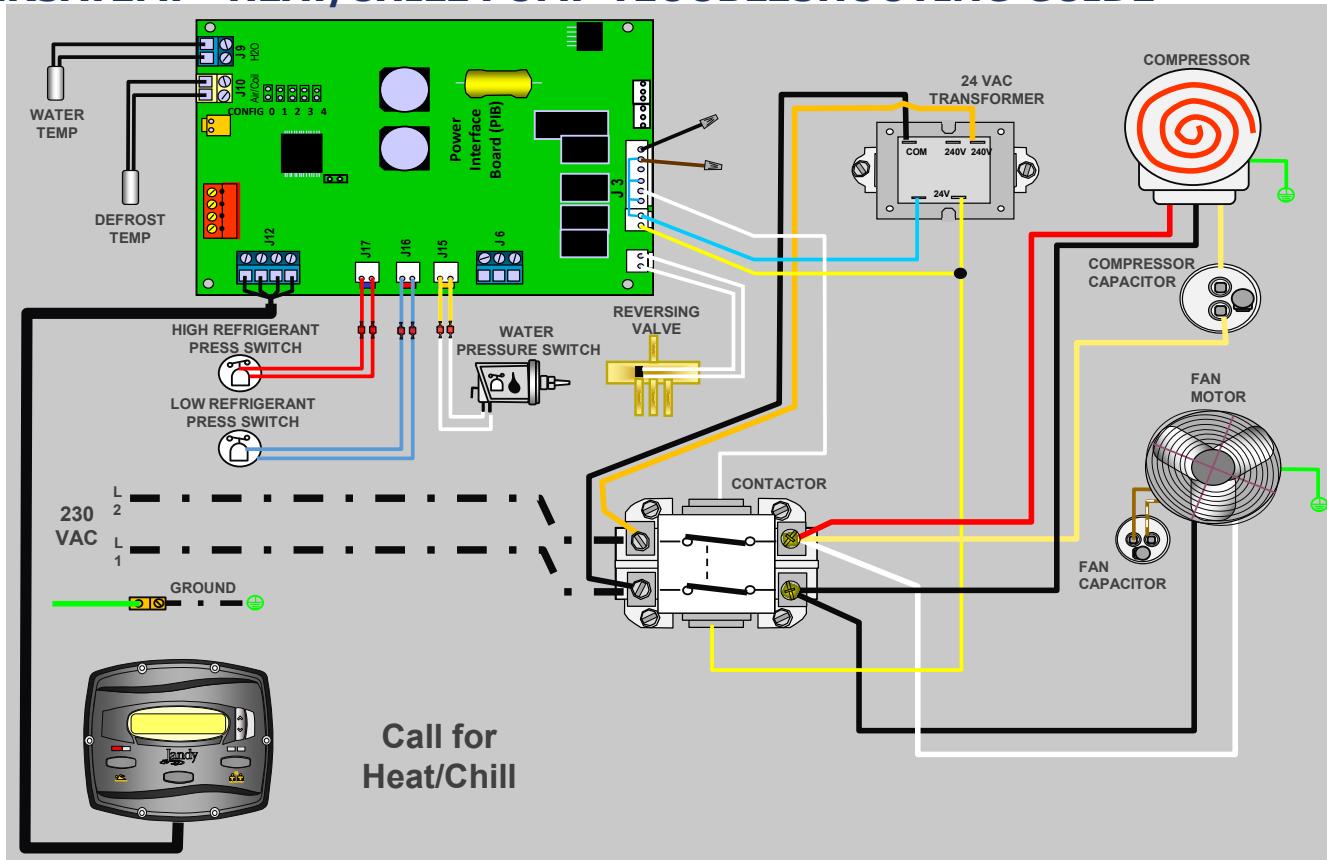
Low Refrigerant Pressure Chart

Ambient Air Temp.	Low Press. Lbs.	Ambient Air Temp.	Low Press. Lbs.
40° - 45°	72 - 89	70° - 75°	117 - 159
45° - 50°	79 - 100	75° - 80°	125 - 172
50° - 55°	85 - 112	80° - 85°	134 - 185
55° - 60°	93 - 123	85° - 90°	143 - 199
60° - 65°	101 - 135	90° - 95°	155 - 215
65° - 70°	109 - 147	95° - 100°	162 - 231

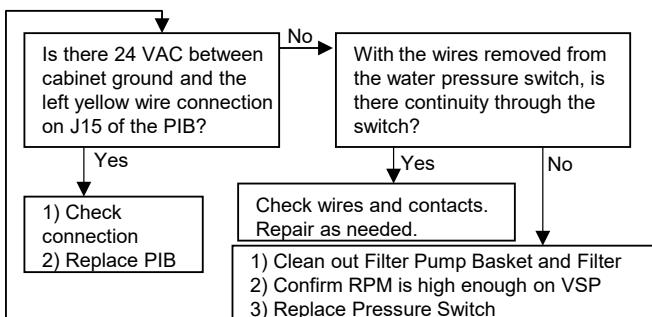
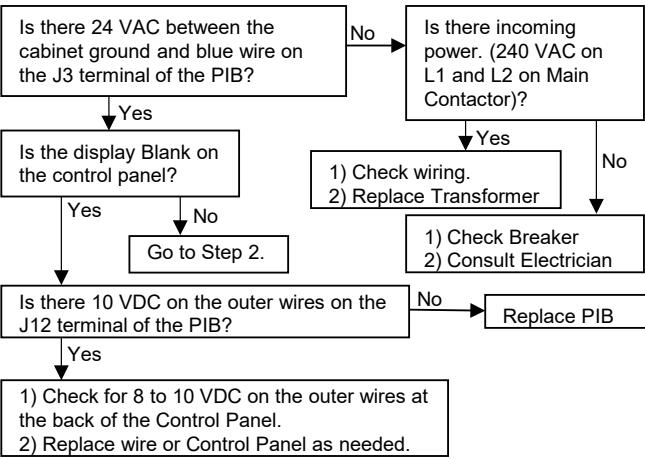
High Refrigerant Pressure Chart

Water Temp.	High Pressure Lbs.	Water Temp.	High Pressure Lbs.
50° - 55°	206 - 252	75° - 80°	302 - 361
55° - 60°	223 - 272	80° - 85°	324 - 385
60° - 65°	242 - 292	85° - 90°	348 - 412
65° - 70°	261 - 314	90° - 95°	373 - 442
70° - 75°	281 - 337	95° - 100°	399 - 472

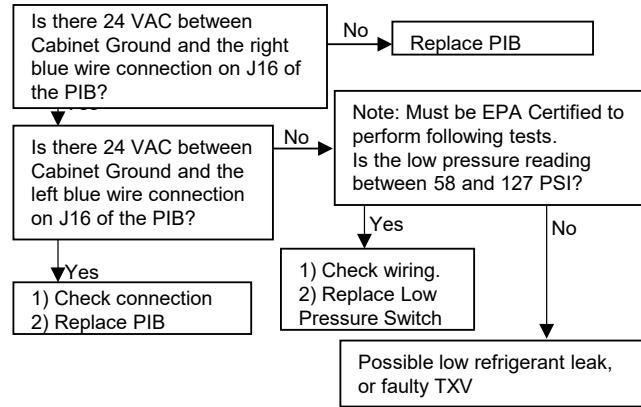
## VERSATEMP™ HEAT/CHILL PUMP TROUBLESHOOTING GUIDE



### Step 1 – Incoming Power

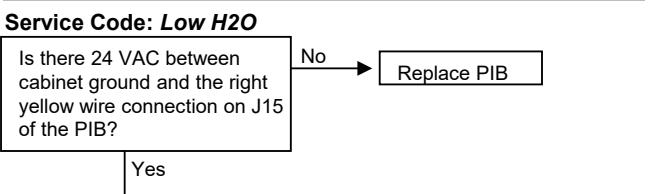


### Service Code: Low Refrigerant Pressure

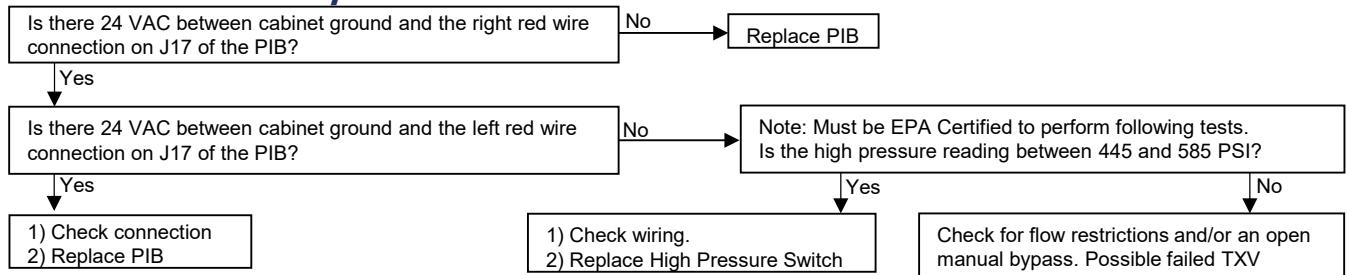


### Step 2 – Checking Water and Refrigerant Pressure Switches

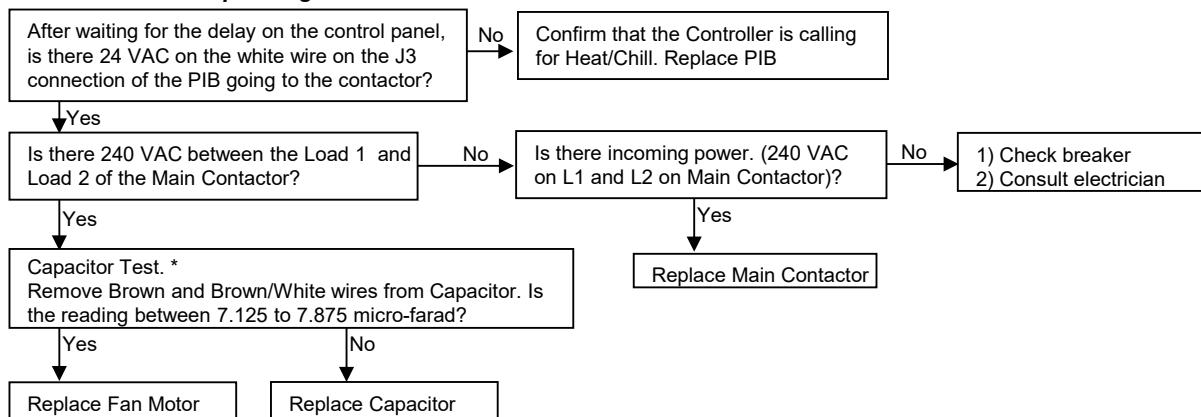
(Note: These switches are in series, voltage will not continue through the switches until the previous switch has closed. The Filter Pump must be on.)



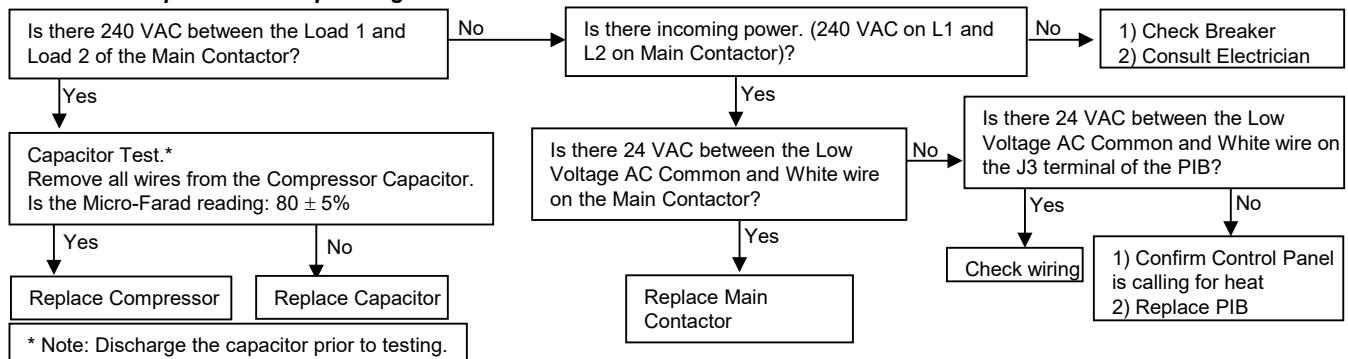
# VERSATEMP™ HEAT/CHILL PUMP TROUBLESHOOTING GUIDE



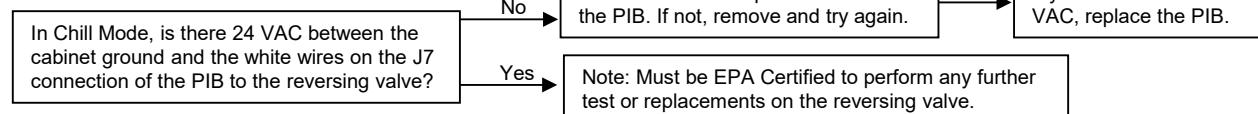
## Problem: Fan Not Operating



## Problem: Compressor Not Operating



## Problem: Reversing Valve Not Operating



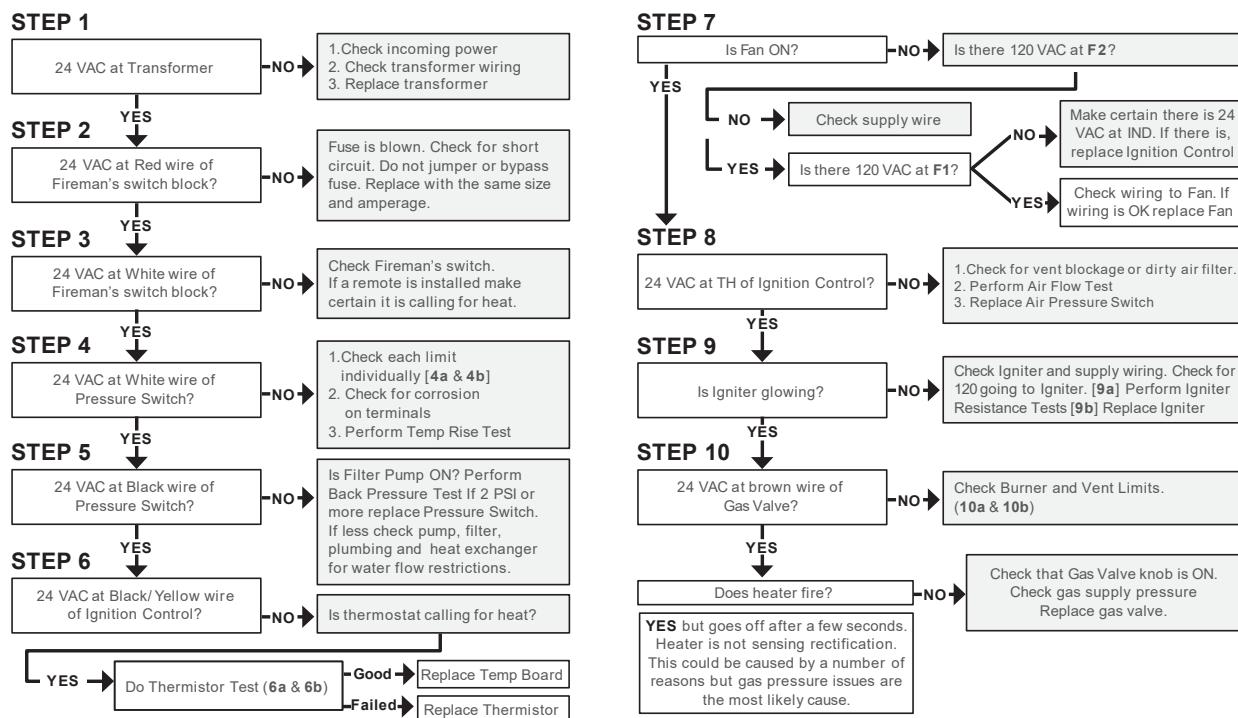
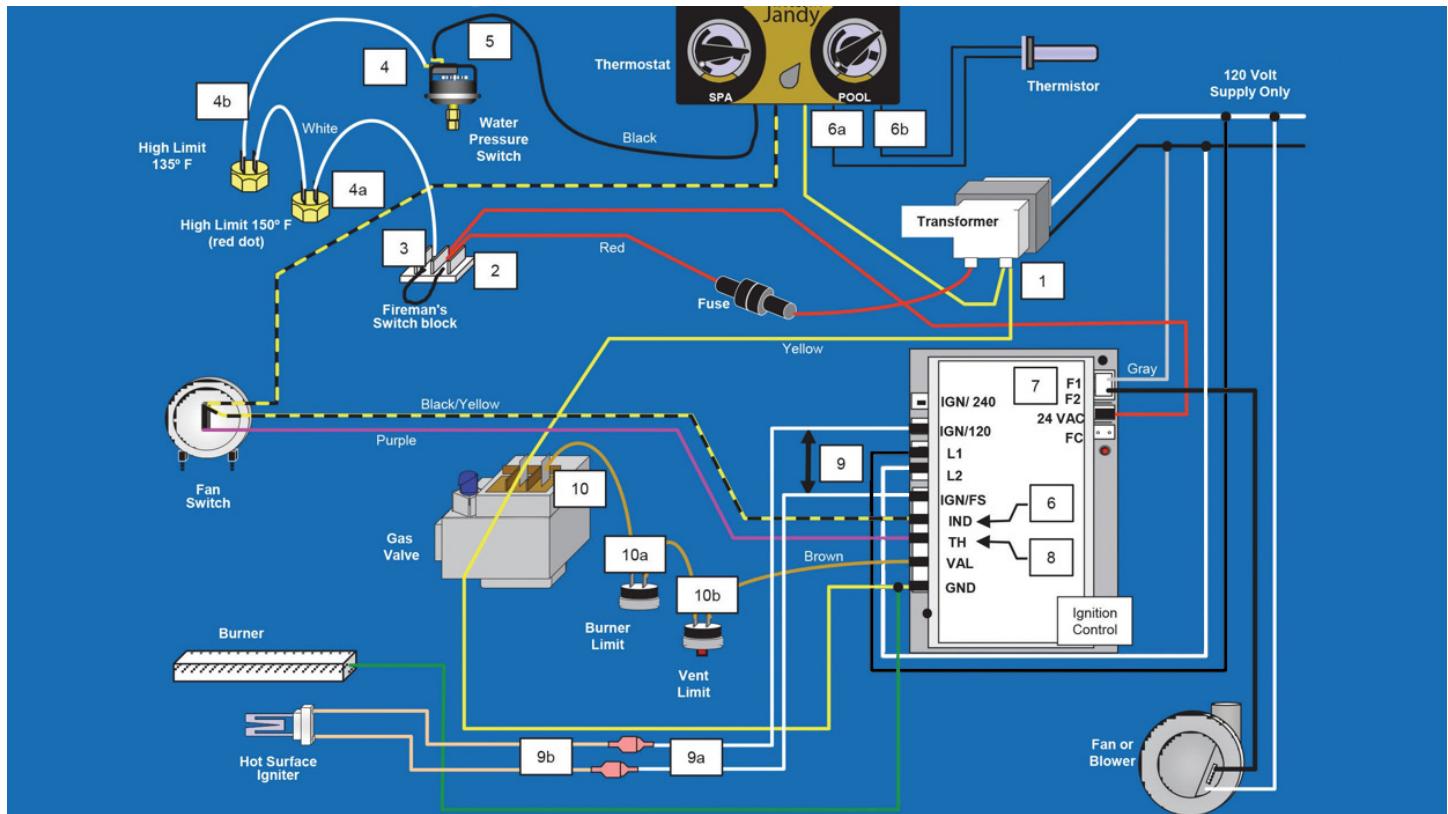
### Average Refrigerant Pressure Readings (R410A). A qualified, licensed refrigerant technician is required for these tests

These numbers are averages based on a water flow of 50 gallons per minute and 80° water temp. The lower the flow and higher the water temperature, the higher the pressure.

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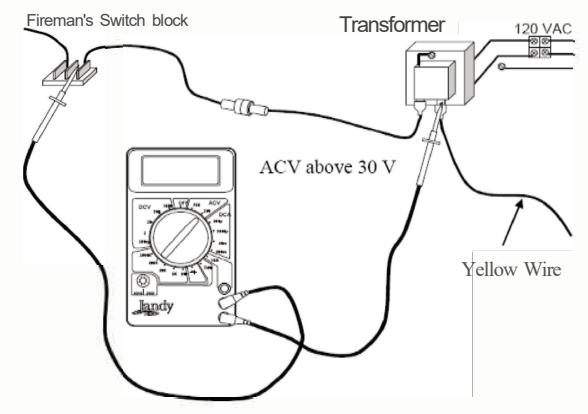
## HI-E2 TROUBLESHOOTING GUIDE



# HI-E2 TROUBLESHOOTING GUIDE

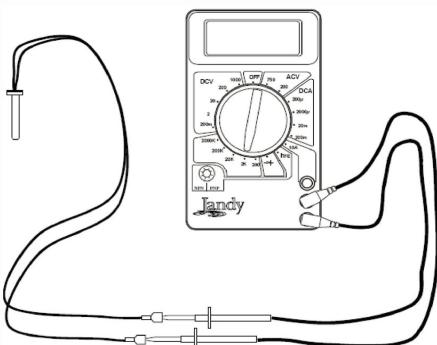
## Safety Circuit Test

Leave black probe on Transformer terminal with yellow wire. Move red probe to each component.



## Thermistor Test

Remove thermistor leads from temperature board. Set meter to test resistance above 20 K Ohms. Using chart at the right, compare the actual water temperature to the resistance reading to determine if the thermistor is OK.

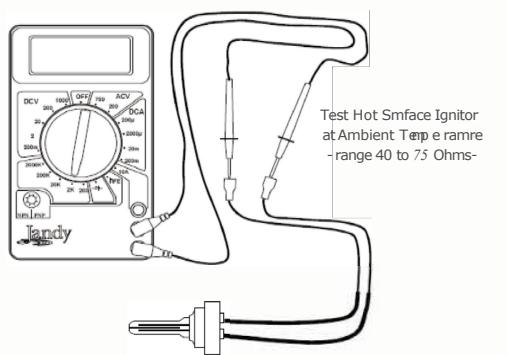


## Temperature Rise Test

MODEL		TEMP.DIFF.	
		MINIMUM	MAXIMUM
EHE (HI E2)	350	20	29

## Hot Surface Ignitor Test

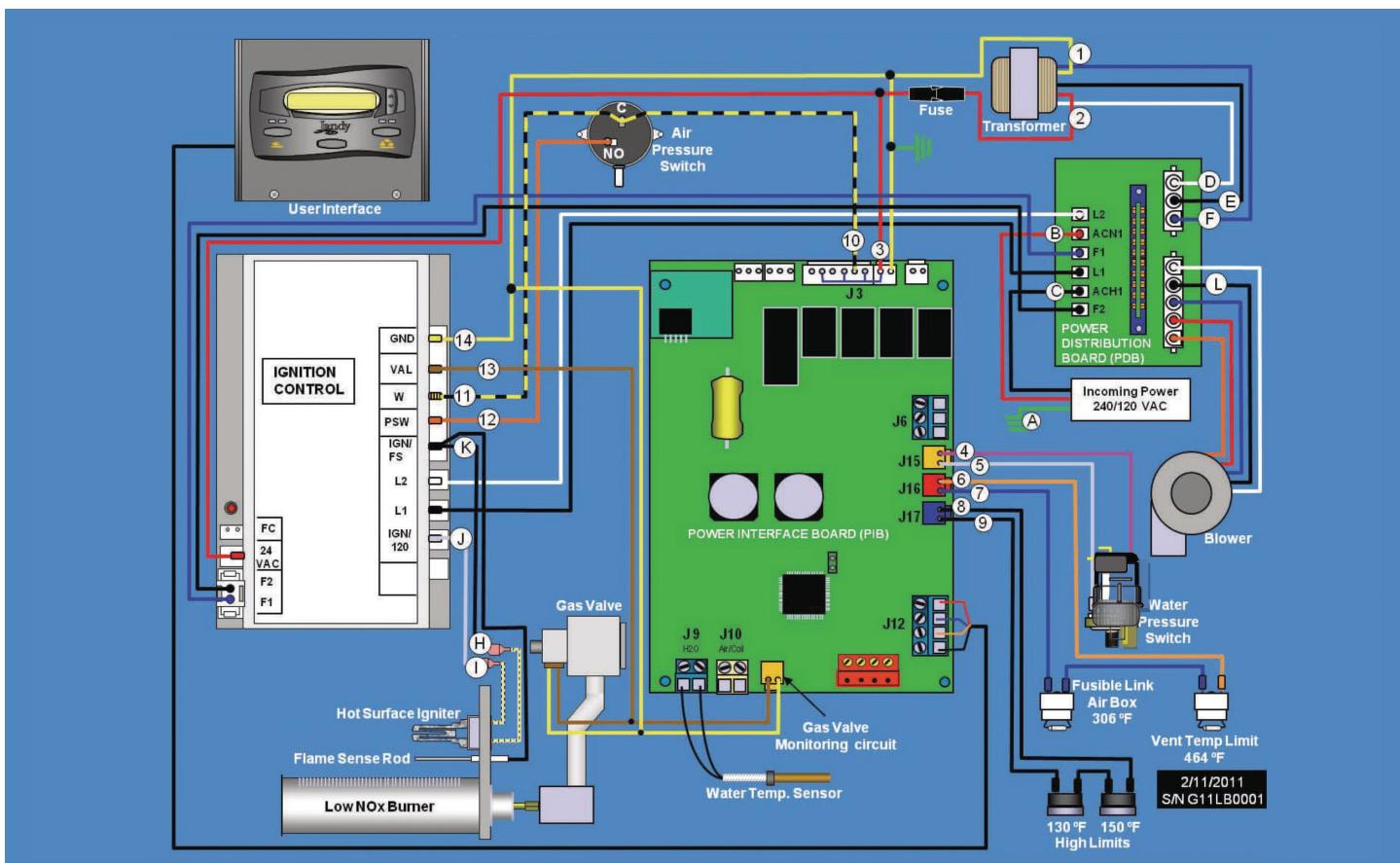
Ignitor must be disconnected from the Ignition Control and cool to the touch. Resistance through the Hot Surface Ignitor should be 40 to 75 Ohms.



## Thermistor Test Chart

Temp	Resistance	Temp	Resistance
50° F	19.898 KOhms	78° F	9.735 K Ohms
51° F	19.435 KOhms	79° F	9.483 K Ohms
52° F	18.871 KOhms	80° F	9.284 K Ohms
53° F	18.382 KOhms	81° F	9.079 K Ohms
54° F	17.902 KOhms	82° F	8.864 K Ohms
55° F	17.473 KOhms	83° F	8.655 K Ohms
56° F	16.988 KOhms	84° F	8.450 K Ohms
57° F	16.549 KOhms	85° F	8.253 K Ohms
58° F	16.150 KOhms	86° F	8.057 K Ohms
59° F	15.710 KOhms	87° F	7.871 K Ohms
60° F	15.314 KOhms	88° F	7.687 K Ohms
61° F	14.923 KOhms	89° F	7.509 K Ohms
62° F	14.547 KOhms	90° F	7.335 K Ohms
63° F	14.193 KOhms	91° F	7.166 K Ohms
64° F	13.823 KOhms	92° F	7.001 K Ohms
65° F	13.477 KOhms	93° F	6.840 K Ohms
66° F	13.138 KOhms	94° F	6.685 K Ohms
67° F	12.813 KOhms	95° F	6.531 K Ohms
68° F	12.492 KOhms	96° F	6.384 K Ohms
69° F	12.186 KOhms	97° F	6.238 K Ohms
70° F	11.893 K Ohms	98° F	6.099 K Ohms
71° F	11.593 K Ohms	99° F	5.963 K Ohms
72° F	11.309 K Ohms	100° F	5.829 K Ohms
73° F	11.032 K Ohms	101° F	5.700 K Ohms
74° F	10.765 KOhms	102° F	5.572 K Ohms
75° F	10.502 KOhms	103° F	5.449 K Ohms
76° F	10.250 KOhms	104° F	5.327 K Ohms
77° F	10.000 K Ohms		

## JANDY® LXI™ TROUBLESHOOTING SERIAL# G11LB0001 AND NEWER



### 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 Dist. Brd.?

-NO → NO Make certain filter pump is on. Correct wiring.

YES

### STEP 2 CHECK TRANSFORMER

24 VAC between Red (2) wire and Yellow (1) wire on Transformer?

-NO →

If wired 240 VAC check voltage between Blue (F) wire and White (D) 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.

YES

### STEP 3 CHECK FUSE

24 VAC between Red (3) wire on PIB and Yellow (1) wire on Transformer?

-NO →

Locate and correct short circuit, replace Fuse.

YES

### STEP 4 CHECK POWER TO WATER PRESS. SW.

24 VAC between Purple (4) wire on PIB and Yellow (1) wire on Transformer?

-NO →

Recheck voltage at Red (3) wire, if voltage is 24 VAC replace PIB.

YES

### STEP 5 CHECK WATER PRESSURE SWITCH

24 VAC between Gray (5) wire on PIB and Yellow (1) wire on Transformer?

-NO →

Do a Back Pressure Test, if pressure is higher than 2 PSI, replace Water Pressure Switch, if less clean filter, baskets or repair pressure problem.

YES

Go to Step 8

### STEP 6 CHECK POWER TO FUSIBLE LINK

24 VAC between Orange (6) wire on PIB and Yellow (1) wire on Transformer?

-NO →

Recheck voltage at Gray (5) wire, if voltage is 24 VAC replace PIB.

YES

### STEP 7 CHECK FUSIBLE LINK

24 VAC between Blue (7) wire on PIB and Yellow (1) wire on Transformer?

-NO →

Check Fusible Link Air Box and Vent Temp Limit individually. Replace failed part. Correct excessive heat problem in vent or air box.

YES

### STEP 8 CHECK POWER TO HIGH LIMITS

24 VAC between Black (8) wire on PIB and Yellow (1) wire on Transformer?

-NO →

Recheck power at Blue (7) wire. If 24 VAC at Blue but not Black, replace PIB.

YES

### STEP 9 CHECK HIGH LIMITS

24 VAC between Black (9) wire on PIB and Yellow (1) wire on Transformer?

-NO →

Replace both High Limits. Do a Temp. Rise Test.

YES

### STEP 10 CHECK POWER TO IGNITION CONTROL

24 VAC between Black/Yellow (10) wire on PIB and Yellow (1) wire on Transformer?

-NO →

Recheck power at Black (9) wire. If 24 VAC at Black, but not Black/Yellow (10) replace PIB.

YES

Go to Step 11

# JANDY® LXI™ TROUBLESHOOTING SERIAL# G11LB0001 AND NEWER

## STEP 11 CHECK POWER AT IGNITION CONTROL



NO → Correct problem with Black/Yellow wire or its connectors.

YES ↓

## STEP 12 CHECK BLOWER

Is Blower ON?

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 on 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.

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

YES ↓

A incoming power problem.

## STEP 13 CHECK AIR PRESSURE SWITCH

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

YES ↓

## STEP 14 CHECK POWER TO PSW

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

YES ↓

Go to Step 15

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.

Check wire connections. Replace Orange wire.

## STEP 15 CHECK HOT SURFACE IGNITER

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

NO →

## STEP 16 CHECK FOR IGNITION

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

YES ↓

## STEP 17 CHECK BURNERS OPERATION

Do Burners stay on beyond 7 seconds?

YES ↓

Heater is operating.

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.

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.

- Excessive corrosion on wire terminals.
- Frayed or over heated wires.
- Pitting of contact points of the Water Pressure Switch or corrosion on connectors of the High Limits.

To determine whether the problem is lack of rectification or loss of current, check voltage at the Black/Yellow (1) wire at the 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 return to normal, the problem is due to loss of current.

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

## SERVICE CODES

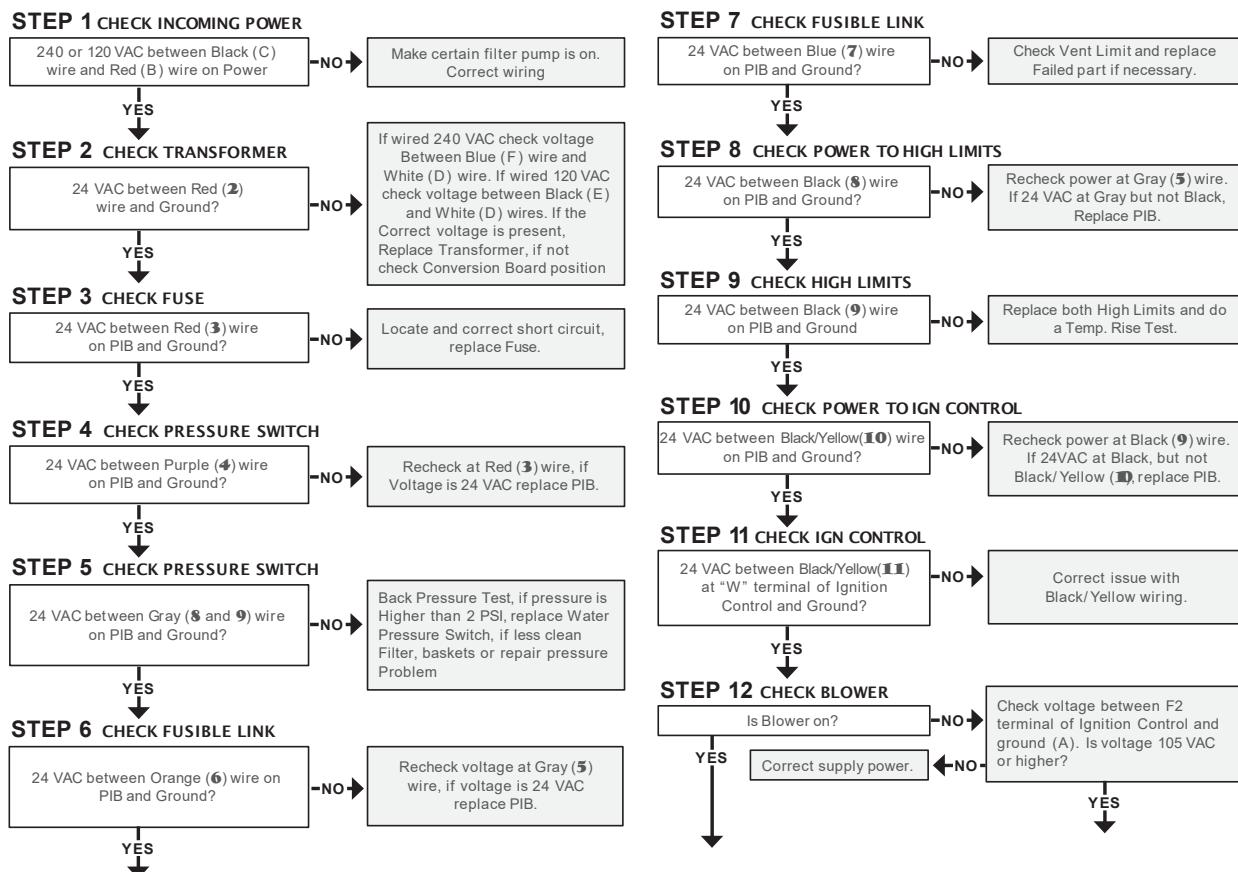
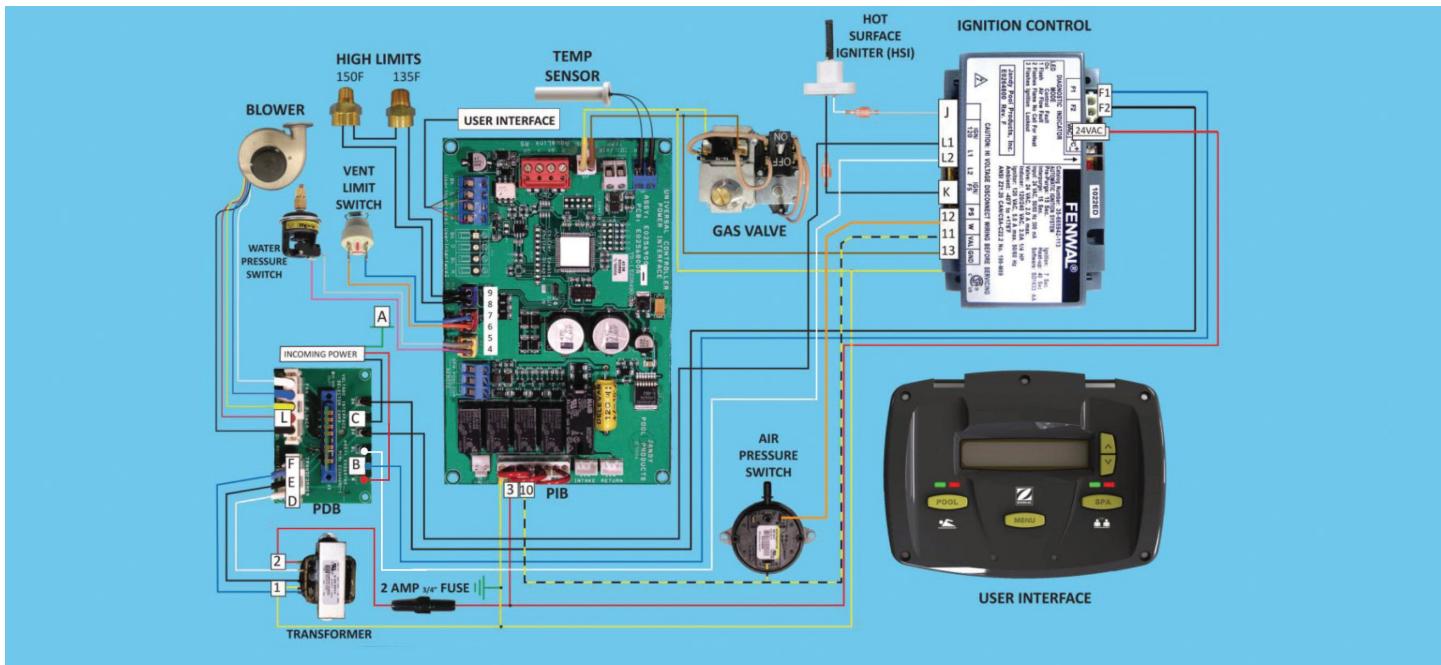
### 300 BTU DISCONTINUED 2014

<b>TEMPERATURE RISE</b>		
MODEL 250	MIN.	MAX.
Serial # A & B	7 °F	10 °F
Serial # C & Newer	8 °F	12 °F
MODEL 300	MIN.	MAX.
Serial # A & B	8 °F	11 °F
Serial # C & Newer	11 °F	18 °F
MODEL 400	MIN.	MAX.
Serial # A & B	13 °F	17 °F
Serial # C & Newer	14 °F	21 °F

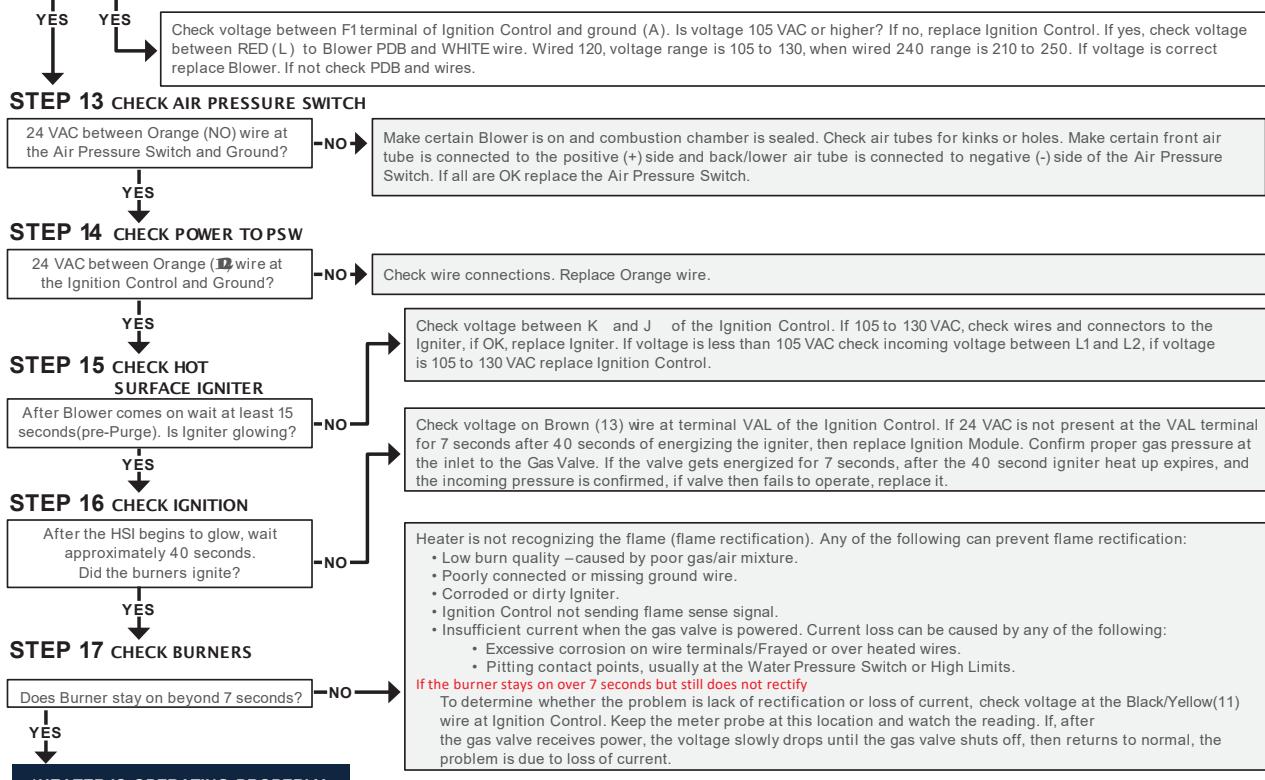
<b>GAS PRESSURE</b>		
Inches of Water Column		
Manifold	Natural 2.5	LP 9.0
Supply	5.5 to 10.5	11 to 14

DISPLAY FAULT	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/FIELD	1. Fusible Link fault. 2. Vent Limit fault	1. Identify loose connections or replace Fusible Link. Refer to qualified Service Personnel. 2. 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. Faulty 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.

## JXI™ TROUBLESHOOTING GUIDE REV G AND EARLIER



# JXI™ TROUBLESHOOTING GUIDE REV G AND EARLIER

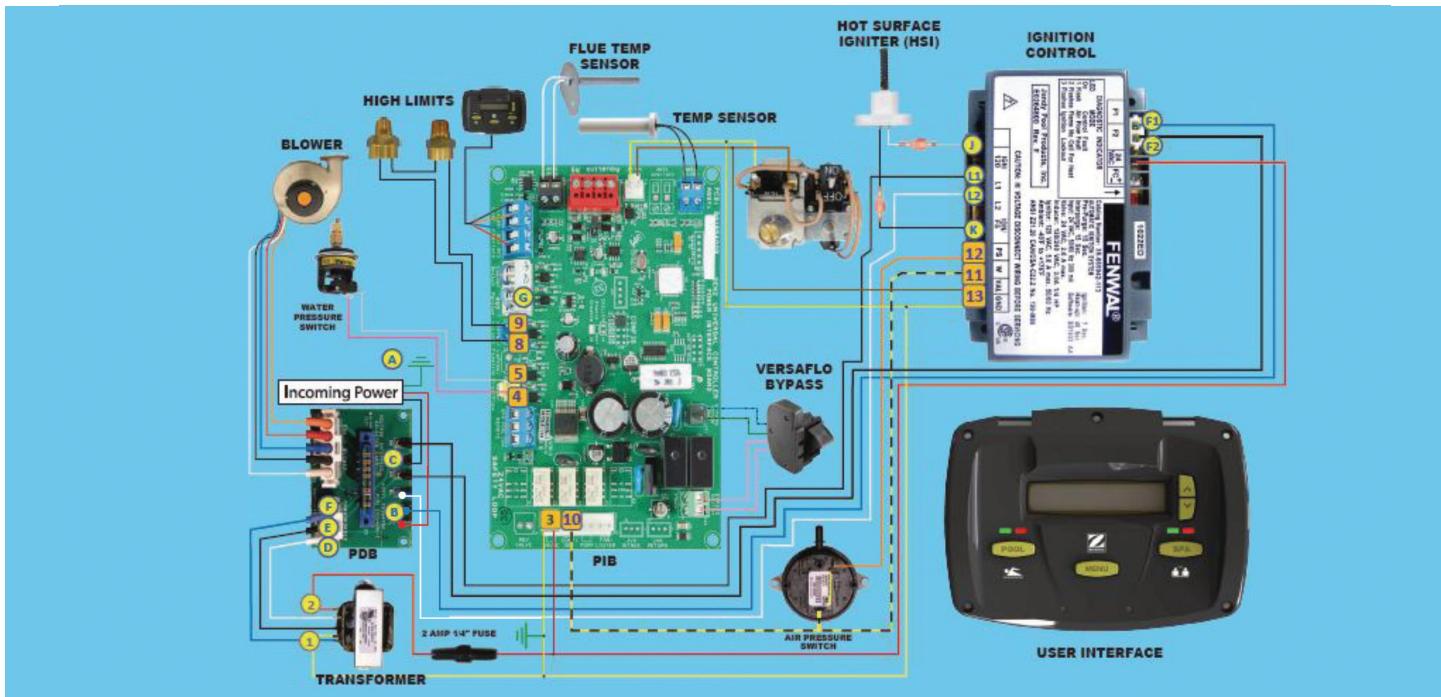


## STANDARD JXi ERROR CODES

CODE	DIAGNOSIS	SOLUTIONS
<b>FAULT – NO FLOW</b>	Pump is not running. Low pump pressure. Pressure switch fault. Variable speed pump set too low	Check breakers and power source, recheck wiring, set time clock and current time. Clean filter or clear blockage, check position of valve in plumbing system. Make sure return eyeball fittings are installed on the wall of the pool Adjust or replace pressure switch. Adjust variable speed pump.
<b>FAULT – HI LIMIT</b>	Water temperature in heater exceeds the internal limit. Limit switch fault.	Inspect vent for obstructions or blockages. Indoor installations, check vent pipe for bird, insect or rodent activity that could cause a blockage. Replace switches.
<b>FAULT – FUSELINK/FIELD</b>	Vent temp limit fault(Ensure fusible link is rated for 240°C and is marked with red paint)	Identify and correct loose connections. Replace vent temperature limit switch.
<b>FAULT – CHECK IGN CONTROL</b>	Broken, split, pinched or disconnected air pressure switch tubing. Fan not operating. Fan running slow or premature fan failure. Air flow restricted at intake or discharge. Broken igniter. Low gas supply pressure/volume. No flame at burner.	Check wiring connection at "Flue Temp" terminal. Re-fire heater – If error occurs remove sensor and test sensor wires for Continuity. Ω If YES – Replace PIB. If NO – Replace Sensor.
<b>FAULT – SHORTED H2O SENSOR OR FAULT - OPEN WATER SENSOR</b>	Faulty wiring or connection. Failed water temperature sensor.	Inspect water temperature sensor wiring. Ensure sensor is connected correctly into the PIB PCB. Replace water temperature sensor.
<b>FAULT – PUMP</b>	Status message indicating the filter pump is currently turned OFF when the heater system programmed in Maintain Temp mode.	No Service Required. This is normal when the control is in a Maintain Temp mode.

FOR VERSAFLO ERROR CODES REFER TO JXI TROUBLESHOOTING GUIDE FOR REV H AND LATER

## JXI™ TROUBLESHOOTING GUIDE REV H AND NEWER WITH VERSAFLO



### STEP 1 CHECK INCOMING POWER

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

YES

### STEP 2 CHECK TRANSFORMER

24 VAC between Red (2) wire and Ground?  
-NO → If wired 240 VAC check voltage between Blue F wire and White D 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

YES

### STEP 3 CHECK FUSE

24 VAC between Red (3) wire on PIB and Ground?  
-NO → Locate and correct short circuit, replace Fuse.

YES

### STEP 4 VERSAFLO ERROR CODES

VERIFY FAULT CODE  
-NO → SEE CHART ON REVERSE SIDE

YES

### STEP 5 CHECK PRESSURE SWITCH

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

YES

### STEP 6 CHECK PRESSURE SWITCH

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

YES

### STEP 7 CHECK POWER TO HIGH LIMITS

24 VAC between Black (8) wire on PIB and Ground?  
-NO → Recheck power at Gray (5) wire. If 24 VAC at Gray but not Black, replace PIB.

YES

### STEP 8 CHECK HIGH LIMITS

24 VAC between Black (9) wire on PIB and Ground?  
-NO → Replace both High Limits and do a Temperature differential test.

YES

### STEP 9 CHECK POWER TO IGN CONTROL

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

YES

### STEP 10 CHECK IGN CONTROL

24 VAC between Black/Yellow (11) at "W" terminal of Ignition Control and Ground?  
-NO → Correct issue with Black/Yellow wiring.

YES

### STEP 11 CHECK BLOWER

Is Blower on  
-NO → Check voltage between F2 terminal of Ignition Control and ground (A). Is voltage 105 VAC or higher?

YES

Correct supply power  
-NO → 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 RED (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.

# JXI™ TROUBLESHOOTING GUIDE REV H AND NEWER WITH VERSAFLO

## STEP 12 CHECK AIR PRESSURE SWITCH

24 VAC between Orange (NO) wire at the Air Pressure Switch and Ground?

→ 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 13 CHECK POWER TO PSW

24 VAC between Orange (12) wire at the Ignition Control and Ground

→ NO

Check wire connections. Replace Orange wire.

YES

## STEP 14 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 15 CHECK IGNITION

After the HSI 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. If 24 VAC is not present at the VAL terminal for 7 seconds after 40 seconds of energizing the igniter, then replace Ignition Module. Confirm proper gas pressure at the inlet to the Gas Valve. If the valve gets energized for 7 seconds, after the 40 second igniter heat up expires, and the incoming pressure is confirmed, if valve then fails to operate, replace it.

YES

## STEP 16 CHECK PROPER BURN

Does Burner stay lit beyond 7 seconds?

→ NO

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

- Low burn quality –caused by poor gas/air mixture.
- Poorly connected or missing ground wire.
- Corroded or dirty Igniter.
- Ignition Control not sending flame sense signal.
- 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.

If the burner stays on over 7 seconds but still does not rectify

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.

**HEATER IS OPERATING PROPERLY**

## VERSAFLO ERROR CODES

CODE	DIAGNOSIS	SOLUTIONS
<b>FAULT – CHECK VERSAFLO</b>	Signal is coming from Micro switch error: Jammed Actuator Faulty Micro Switch Faulty Actuator Motor Open/faulty connection on PIB	Check wiring at micro switch and actuator terminal Clear header of any obstructions. Fire heater – Test 24 VAC at J22 terminal to common. If 24 VAC not at both – Bad Micro Switch – Replace Versa Bypass . If 24 VAC is present at both terminals and Error still present replace PIB
<b>FAULT – CHECK AUX MONITOR</b> <small>*LATCHING ERROR - Must be reset in service menu</small>	AUX Monitor is not currently used and is jumped out at the board	Check wire connection at AUX terminal (G) and ensure jumper is in place. Re-fire heater - If ERROR returns replace PIB.
<b>FAULT – SHORTED FLUE SENSOR</b>	Sensor is faulty Temp is rising too quickly to measure	Inspect clean-air and exhaust venting for obstruction Do Temp differential test to ensure good water flow Re-fire heater – If error occurs - replace Sensor. If error occurs after Sensor replacement - replace PIB.
<b>FAULT – OPEN FLUE SENSOR</b>	Sensor is faulty Wiring is faulty PIB is faulty	Check wiring connection at "Flue Temp" terminal. Re-fire heater – If error occurs remove sensor and test sensor wires for Continuity. Ω If YES – Replace PIB. If NO – Replace Sensor.
<b>FAULT – HIGH FLUE TEMPERATURE</b> <small>*LATCHING ERROR - Must be reset in service menu</small>	Temp has exceeded 464°F (240°C) Faulty Flue Sensor Faulty PIB Condition causing high temp	Inspect clean-air and exhaust venting for obstruction. Do Temp differential test to ensure good water flow. Re-fire heater – If error occurs replace Sensor. If error occurs replace PIB.

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