

Troubleshooting

Initial Troubleshooting

Only qualified, trained service technicians with appropriate test equipment should service the heater. Remember that all parts of the system affect heater operation. Before starting this troubleshooting procedure, make sure that the pump is running correctly, that there are no blockages in the system, that the valves are correctly set and that the time clock is correctly set and is running.

CAUTION: Installing the BLACK 120 volt plug in the control box and then connecting the heater to a 240 volt line will destroy the transformer, control board, and ignition control module, and will void the warranty. If you install the RED 240 volt plug and then connect the heater to a 120 volt line, the heater will not operate. See page 30.

READ THE FOLLOWING INFORMATION CAREFULLY

1. Check the line voltage to your heater. This heater will operate on either 120 Volts AC or 240 Volts AC.
2. Remove the covers and check the 12-pin plug in the back of the control box. The plug must match the voltage in the heater circuit.
3. If the 12-pin plug is not plugged into the back of the control box, select the correct plug from the bag in the control box and plug it in. The **BLACK plug** is for **120 volts**, the **RED plug** is for **240 volts**.

Error and Fault Codes

Table 11. Heater Error and Fault Codes

Fault Condition	Error Code Displayed	Note	Troubleshooting
Water pressure switch open	ERR PS	If water flow is established the error is cleared and normal operation is resumed.	No water flow thru heater
Hi temperature limit switch open	ERR HLS	When the temperature falls below 135°F the error is cleared and normal operation is resumed.	Water temperature after the 1 st pass through the heater exchanger is more than 135°F.
Air flow switch open	ERR AFS	If adequate air flow through the blower is established within 60 seconds the heater will resume normal operation. If the error is not corrected within 60 seconds the heater will need to be turned off by pressing the HEATER OFF button.	The blower is not on or air thru it is being restricted
Ignition Control Module	ERR IGN	To clear the error the HEATER OFF button must be pressed.	The Ignition Control Module was not able to ignite the heater.
Automatic gas shutoff	ERR AGS	The front panel buttons will be disabled. To reset the heater, cycle power.	Water temperature after the 2 nd pass thru the heat exchanger is more than 140°F
Excessive stack flue temperature	ERR SFS	The front panel buttons will be disabled. To reset the heater, cycle power.	The temperature of the stack flue is more than 480°F
Open stack flue sensor	E05		Follow diagram on page 49
Shorted stack flue sensor	E06	The front panel buttons will be disabled. To reset the heater, cycle power.	Follow diagram on page 49
Open water temperature sensor	E01	To clear the error the HEATER OFF button must be pressed.	Follow diagram on page 47-48
Shorted water temperature sensor	126		Follow diagram on page 47-48

Troubleshooting Instructions

Initial Troubleshooting

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IMPORTANT! READ ME FIRST!

NOTICE: Installing the **black 120 volt** plug in the control box and then connecting the heater to a **240 volt line will destroy the transformer, control board, and ignition control module, and will void the warranty.** If you install the red 240 volt plug and then connect the heater to a 120 volt line, the heater will not operate.

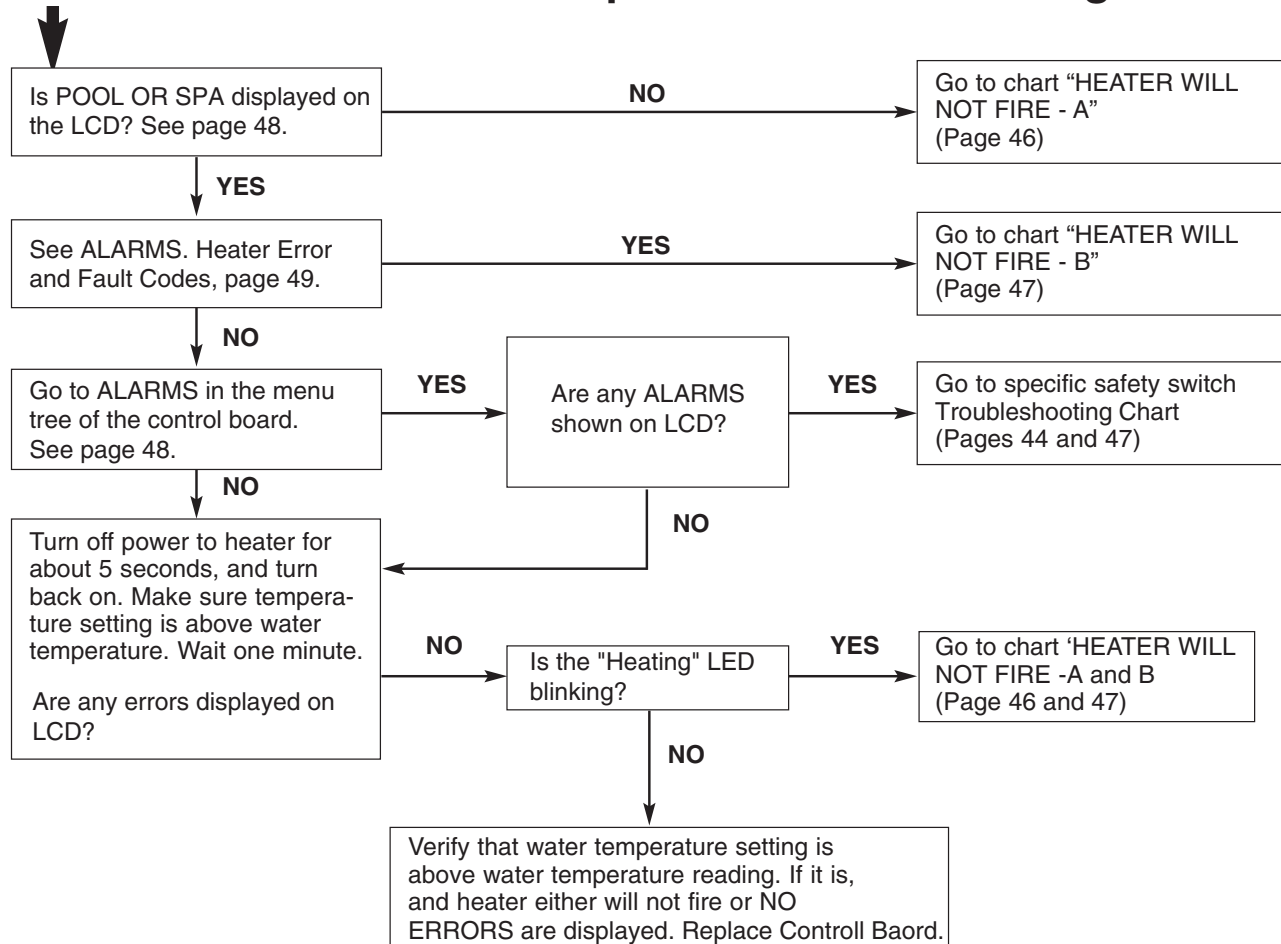
READ THE FOLLOWING CAREFULLY:

1. Check the line voltage to your heater. This heater will operate

on either 120 Volts AC or 240 Volts AC.

- Remove the covers and check the 12-pin plug in the back of the control box. The plug must match the voltage in the heater circuit.
- If the 12-pin plug is not plugged into the back of the control box, select the correct plug from the bag in the control box and plug it in. The **BLACK** plug is for **120 volts**, the **RED** plug is for **240 volts**. See page 30.

Start here for directions to specific Troubleshooting Chart

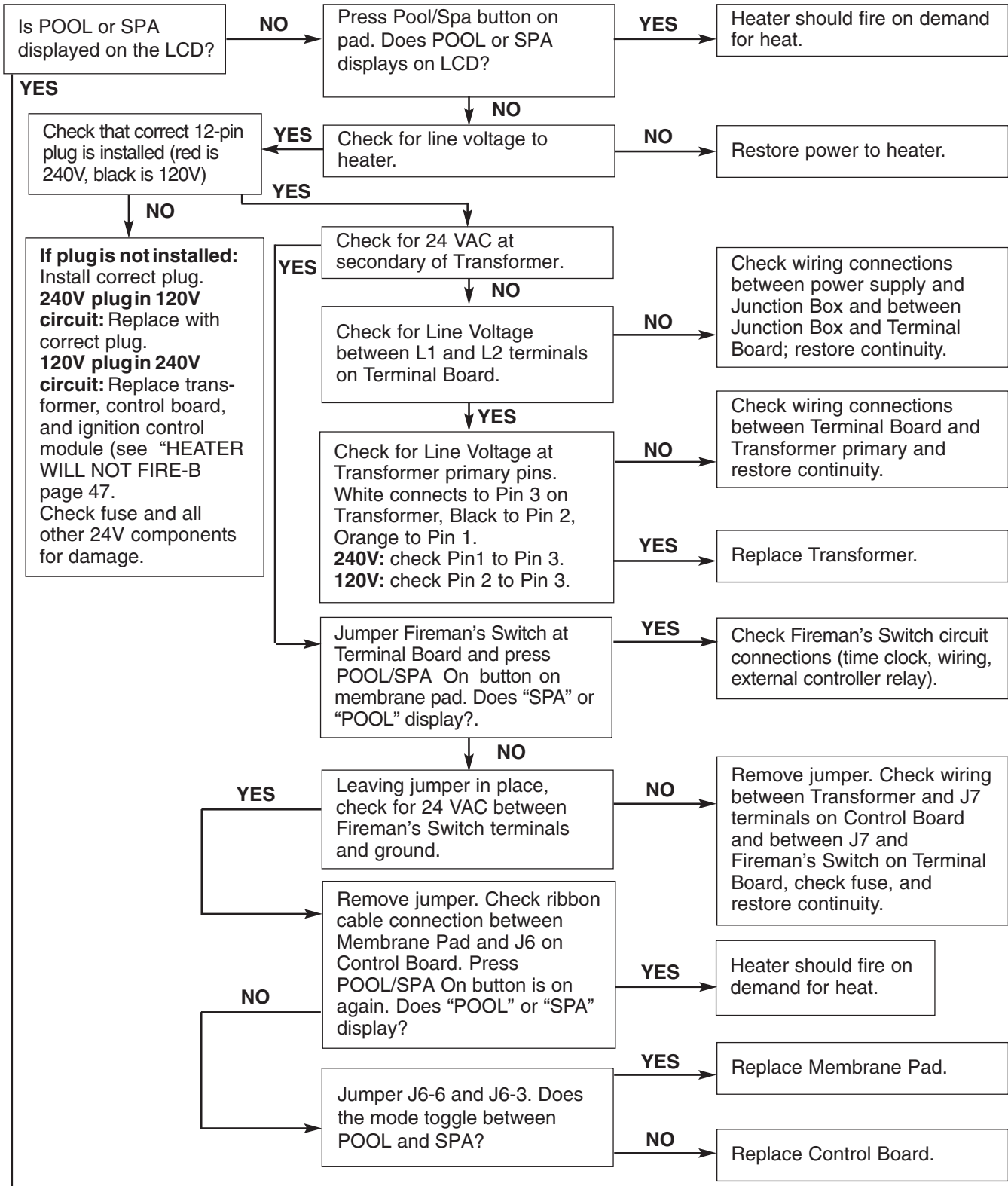


⚠ WARNING Hazardous voltage. Can shock, burn or kill. Disconnect power before servicing any components.

⚠ WARNING Fire and Explosion hazard. Do not jumper switch terminals to remedy a failed safety switch.

Heater Will Not Fire - A

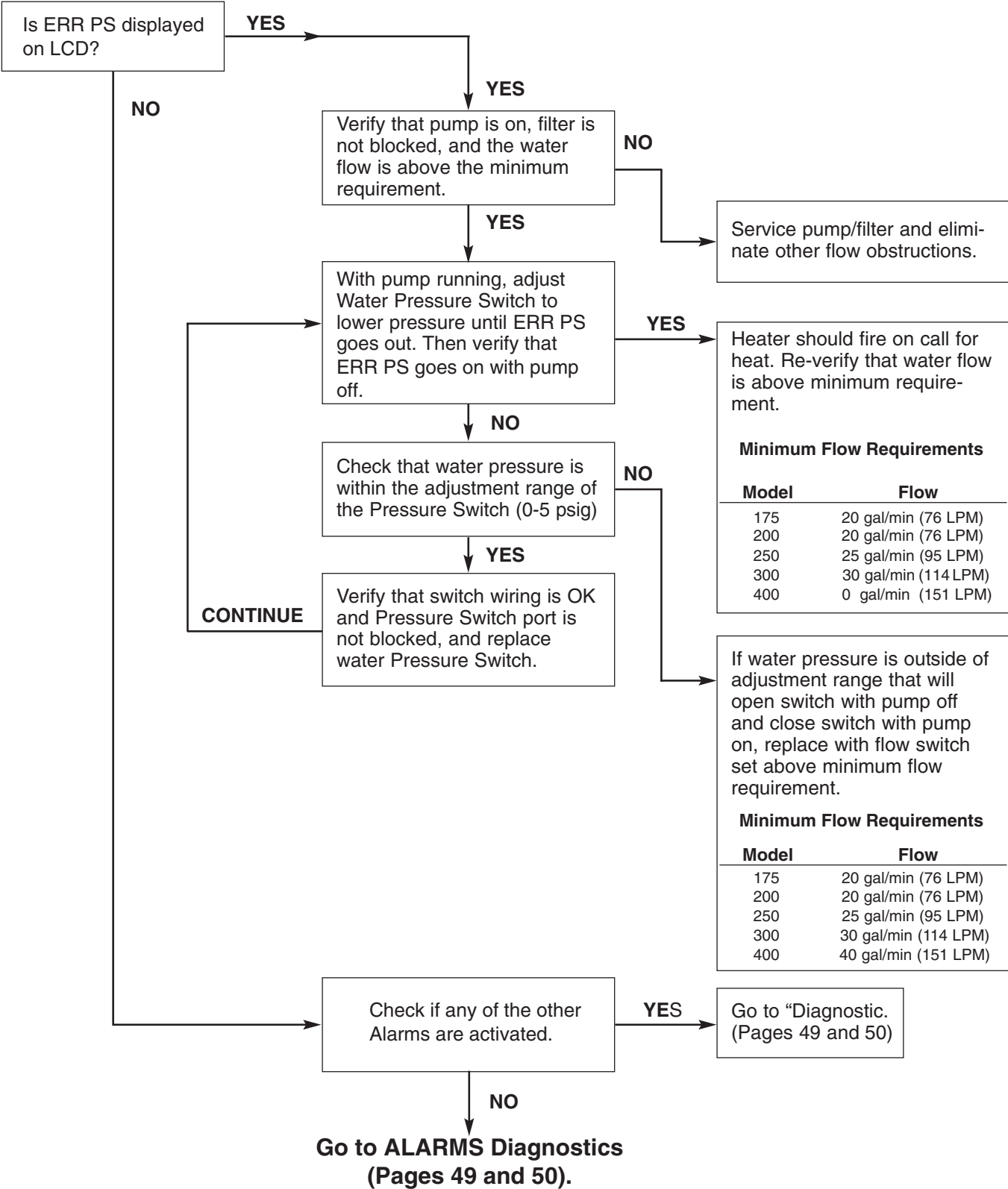
Start

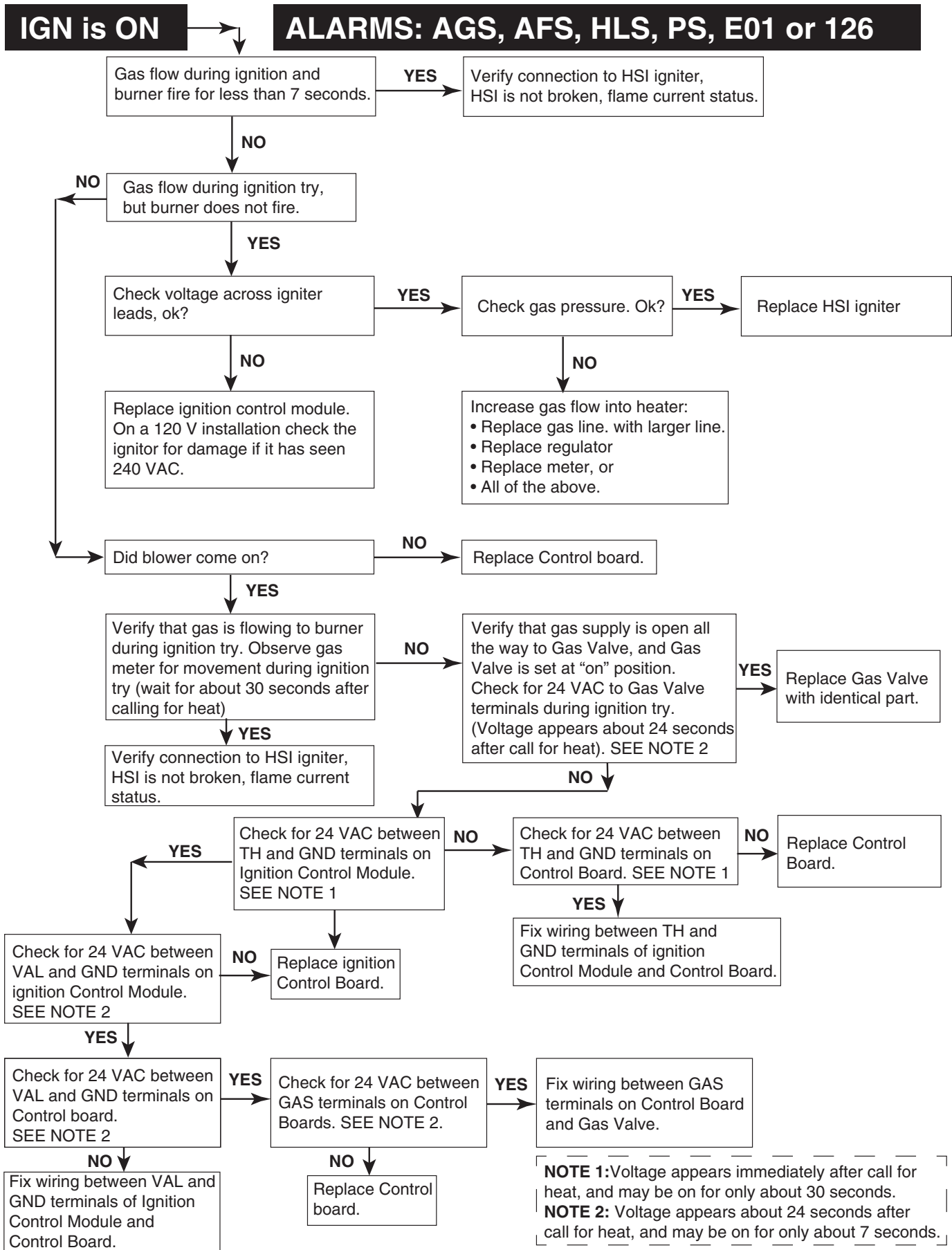


GO TO
 "HEATER WILL NOT FIRE - B"
 Page 47.

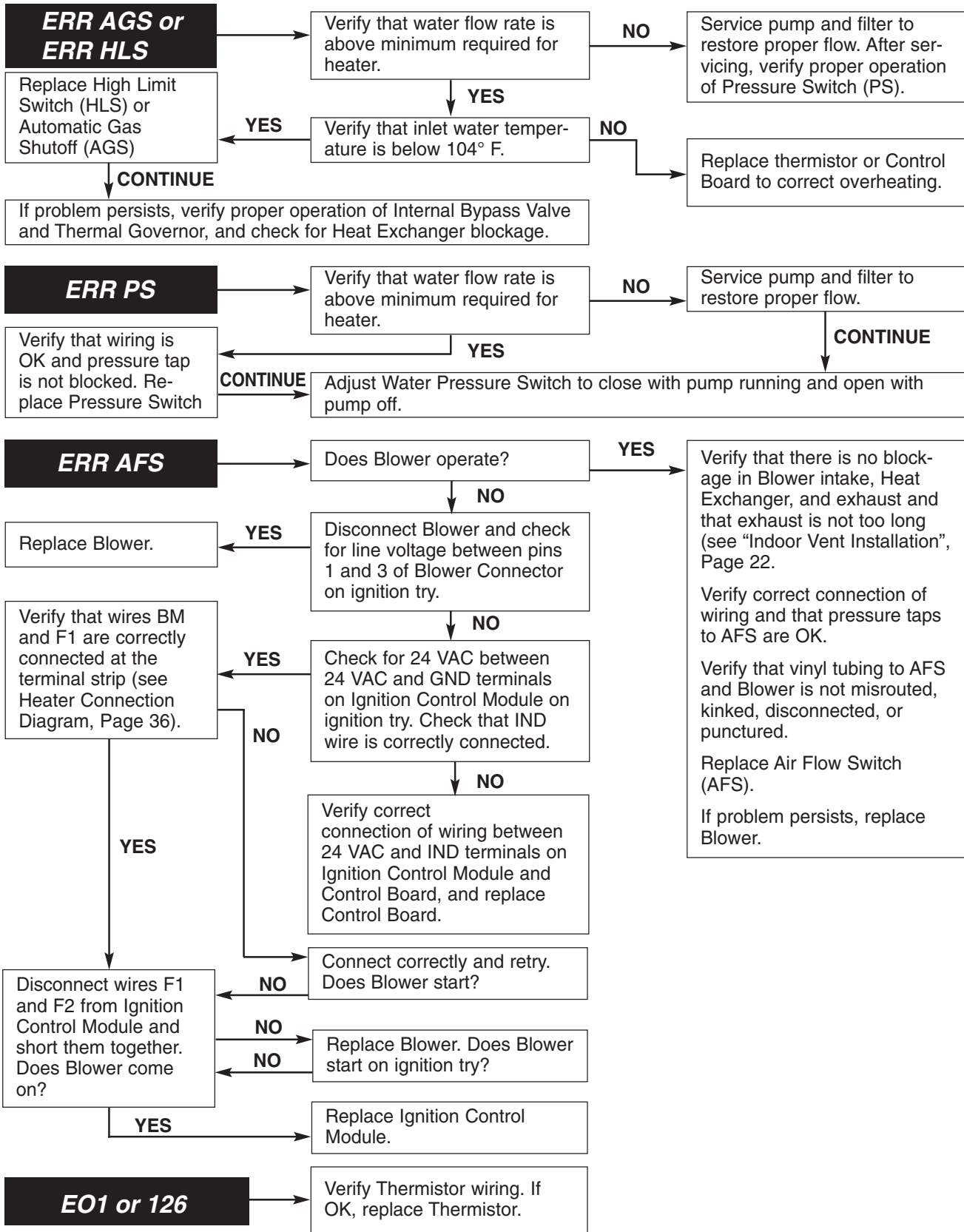
Heater Will Not Fire - B

Start





Diagnostic Alarms: AGS, AFS, HLS, PS, E01 or 126

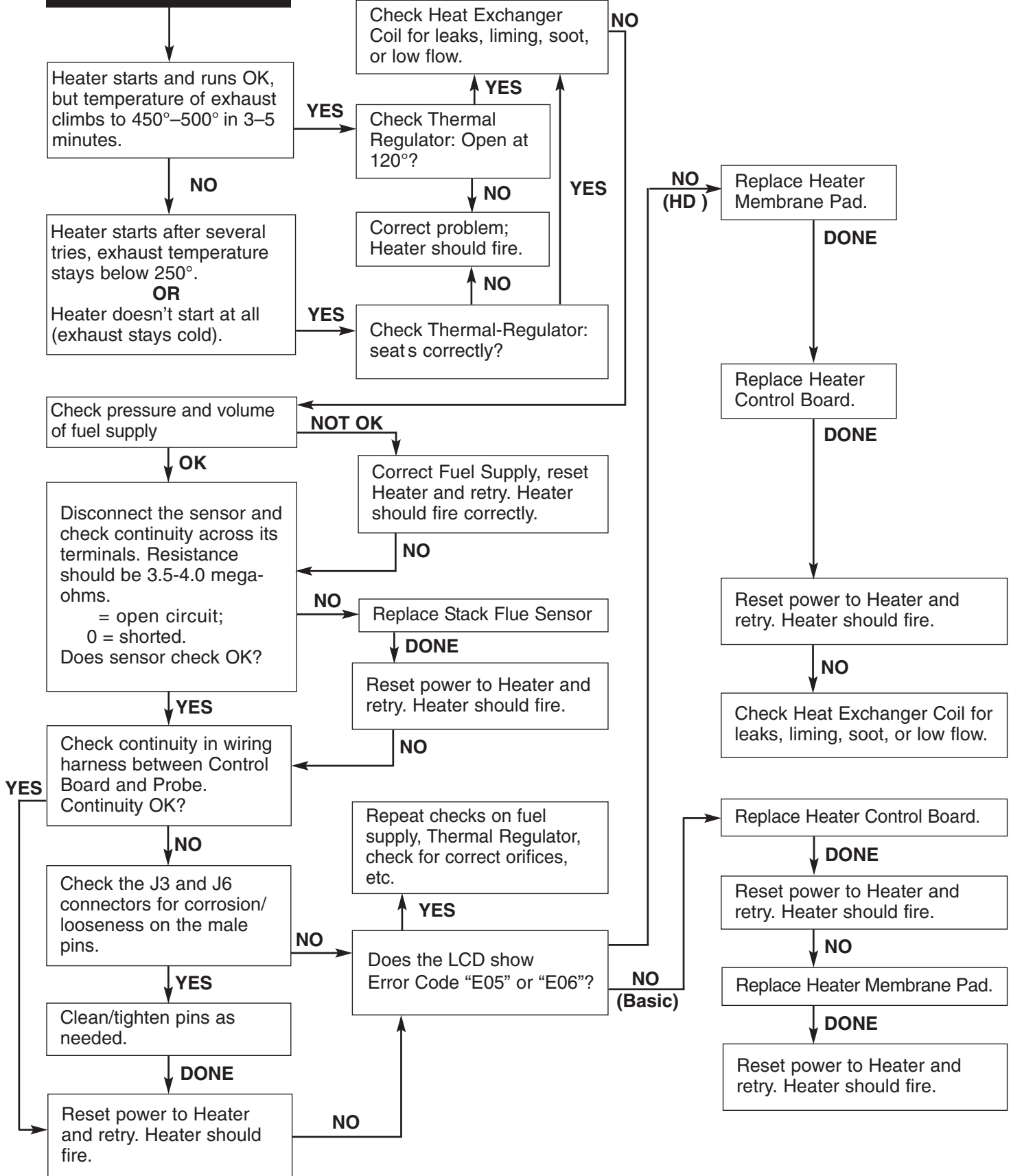


CAUTION Do not jumper a safety switch to remedy a failed switch.

NOTE: ES1 is a spare and should be jumpered.

Diagnostic Alarms: SFS

ERR SFS



Burner Troubleshooting

SYMPTOM	CAUSE	REMEDY
Loud, high-pitched whine	Flame is too rich.	Verify pressure tap between gas valve and blower inlet. See page 15 and verify that the gas regulator setting is $-0.2''$ (-0.5cm) wc. Contact a qualified technician or service agency to replace the gas orifice.
Flame is “fluttery.” Exhaust may have acrid smell or burner may fail to stay lit.	Flame is too lean.	See page 16 and verify that the gas regulator setting is $-0.2''$ (-0.5cm) wc. Contact a qualified technician or service agency to replace the gas orifice.
Burner pulsates or surges, especially on ignition.	Exhaust vent is too long.	Reduce length of exhaust vent and/or number of elbows.
Combustion appears normal, but flame does not stay lit.	Flame current is not being sensed.	Check for wet or damaged igniter with low resistance to ground. Replace with new igniter. Verify burner flameholder is properly grounded. Replace Ignition Control Module.

Heat Exchanger Troubleshooting

SYMPTOM	CAUSE	REMEDY
Boiling in heat exchanger. May be accompanied by “bumping” sounds.	Low water flow to heater. Heat exchanger plugged. Bypass valve stuck open. Thermal governor stuck closed.	Service pump and or filter. Service heat exchanger. Correct water chemistry. Service bypass valve. Replace thermal governor.
Sweating.	Thermal governor failed.	Replace thermal governor.