Troubleshooting Guide UH

NOTICE Bypassing any switch is intended for testing purposes only. Do not leave switch bypassed during normal operation or the heater's built-in safety mechanisms will be compromised.

Turn on control device for heat.

Does the draft inducer motor turn on?
- No → Does the air circulating fan turn on immediately?
  - No → Does the heater have 120 VAC at the main power connection?
    - No → Find source of electrical problem.
    - Yes → Is there 24 VAC across the 'R' and 'C' terminals?
      - No → Check fuse on circuit board and internal controls transformer.
      - Yes → Is there 24 VAC across the 'W' and 'C' terminals?
        - No → Repair thermostat or thermostat wiring.
        - Yes → Is the circuit board sending 120 VAC to the draft inducer motor?
          - No → Is the pressure switch stuck in the closed position?
            - No → Check the two flame roll out switches and the tube temperature limit switch. Are they closed?
              - No → Reset or replace faulty limit switch.
              - Yes → Replace circuit board.
            - Yes → Pressure switch is faulty.
          - Yes → Is the draft inducer impeller obstructed or locked up?
            - No → The draft inducer motor is faulty and must be replaced.
            - Yes → Remove obstruction.
  - Yes → Limit switch is open or pressure switch is stuck closed. Find faulty switch and repair.
- Yes

Does the pressure switch indicator light turn on?
- No → Is the inlet or outlet of the heater obstructed, or is the vent exceeding the recommended lengths?
  - No → Check for loose wiring or restrictions in the hose connection to the pressure switch. Are they acceptable?
    - No → Replace wiring or hose connections.
    - Yes → After approx. 10 seconds of operation, is there a flash code for 'Pressure Switch Failure'?
      - No → Replace pressure switch after verifying:
        - Heater, blower, and venting are clean and free of obstructions.
        - The allowable vent length is not exceeded.
        - There is not a negative pressure experienced at the area of intake (e.g., high winds, attic space, tightly sealed building).
      - Yes → Replace circuit board.
  - Yes → Remove obstruction or correct vent lengths.
- Yes

Does the circuit board send spark to the electrode?
- No → Does the electrode appear to be physically damaged?
  - No → Temporarily disconnect the igniter wire from the circuit board and check for continuity. Is there continuity?
    - No → Replace wire.
    - Yes → Replace circuit board.
  - Yes → Replace igniter.
- Yes

Does the valve indicator light turn on?
- No → Does the gas valve turn on? Do you see the burners in the sight glass?
  - Yes → Gas valve indicator light is burned out. Replace light.
  - No → Check inlet pressure to the heater. Is it within the minimum and maximum allowable range as per the rating plate?
    - No → Adjust inlet pressure.
    - Yes → Are the wires to and from the gas valve properly connected?
      - No → Correct wiring.
      - Yes → Monitor the voltage on the gas valve terminals during trial for ignition. Is there 24 VAC present during the spark sequence?
        - Yes → Gas valve is faulty. Replace.
        - No → Check for flash codes on the circuit board. Replace the ignition module.
- Yes

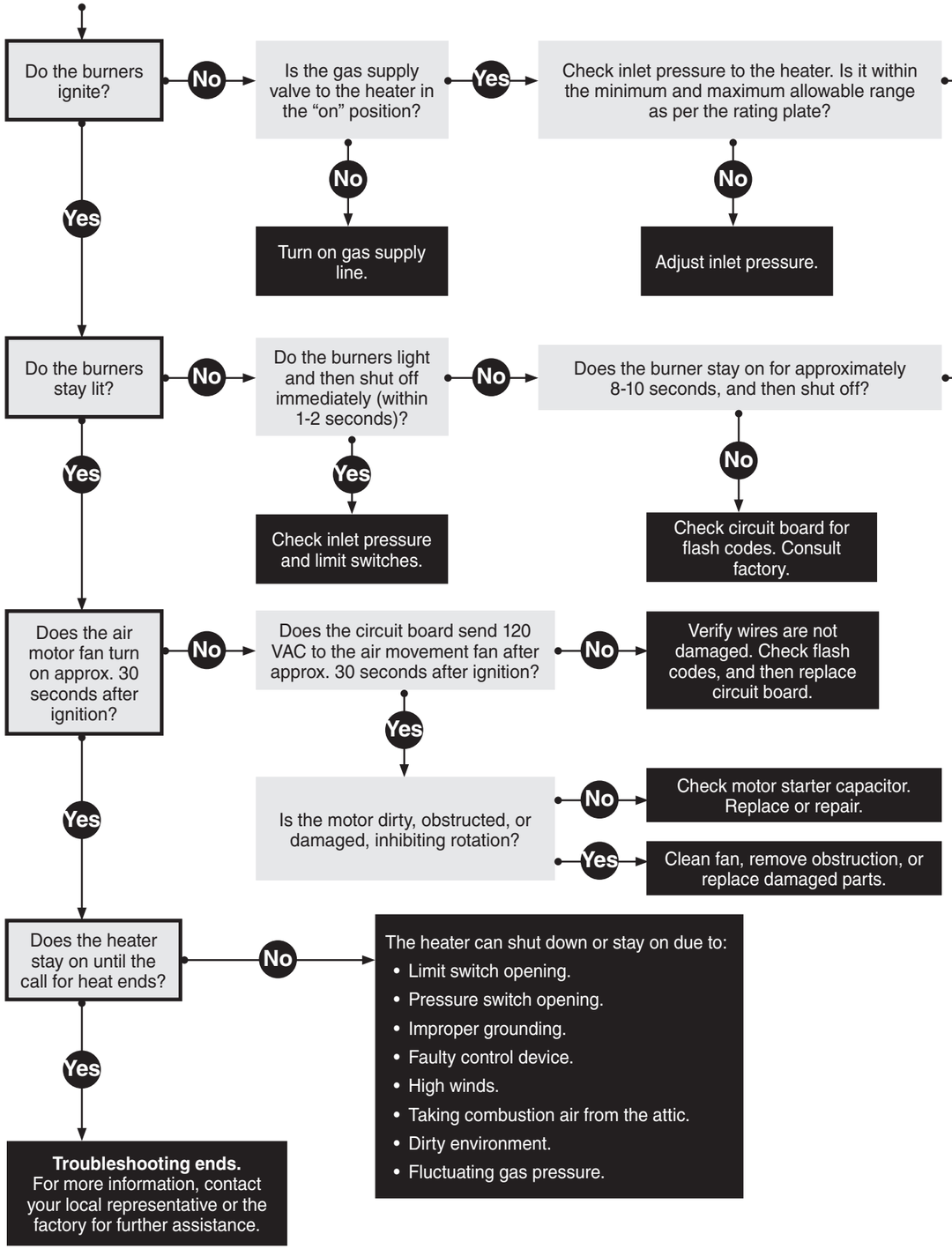
Does the gas valve turn on?
- No → Check inlet pressure to the heater. Is it within the minimum and maximum allowable range as per the rating plate?
- Yes

Continued on page 48.

Key

- Start Question
- Process Question
- Corrective Action

Continued from page 46.



LED Diagnostic Codes

United Technologies Circuit Board	
LED CODE (# of flashes)	**GREEN LED STATUS / ERROR**
STEADY OFF	Internal Control Fault or No Power
STEADY ON	Control Ok
1	In Lockout from Failed Ignitions or Flame Losses
2	Pressure Switch Open with Inducer ON
3	Pressure Switch Closed with Inducer OFF
4	Limit Switch is OPEN
5	In Lockout from False Flame
LED CODE (# of flashes)	**AMBER LED STATUS / ERROR**
FAST FLASH	Flame Present With Gas Valve Off
STEADY ON	Flame is Sensed

Fenwal Circuit Board	
LED CODE (# of flashes)	**GREEN LED STATUS / ERROR**
SLOW FLASH	Normal Operation - No Call for Heat
FAST FLASH	Normal Operation - Call for Heat
2	Ignition Lockout - No Flame Detected
3	Airflow Fault - Pressure Switch Open or Closed
4	High Limit or Rollout Switch Open
5	Flame Sense Error - Gas Valve Not Energized
STEADY ON	Internal Control Failure
LED CODE (# of flashes)	**AMBER LED STATUS / ERROR**
OFF	Flame Signal is Below Required Level / No Flame Present
STEADY ON	Flame is Sensed