# HL3 Series
# Insert Manual

**For complete installation instructions, see the Tube Heater General Manual that accompanies this Series Insert Manual.**

The HL3 Series Infrared Tube Heater is a positive pressure, two-stage radiant heater system. This insert manual is a supplement to the Tube Heater General Manual and provides specific information related to the HL3 Series model. All persons involved with the installation, operation and maintenance of the heater system must read and understand the information in this insert manual and the accompanying Tube Heater General Manual.

## ⚠ WARNING



Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operation and maintenance instructions thoroughly before installing or servicing this equipment.

This heater must be installed and serviced by trained gas installation and service personnel only. Failure to comply could result in personal injury, asphyxiation, death, fire or property damage.



In locations used for the storage of combustible materials, signs must be posted to specify the maximum permissible stacking height to maintain the required clearances from the heater to the combustibles. Signs must either be posted adjacent to the heater thermostats or in the absence of such thermostats, in a conspicuous location.



**Not for residential use!** Do not use this heater in the home, sleeping quarters, attached garages, etc. **Installation of a commercial tube heater system in residential indoor spaces may result in property damage, serious injury, asphyxiation or death.**

## For Your Safety

**If you smell gas:**

- Do not try to light any appliance.
- Do not touch any electrical switch.
- Do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone.
- Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

**Keep these instructions for future reference.**

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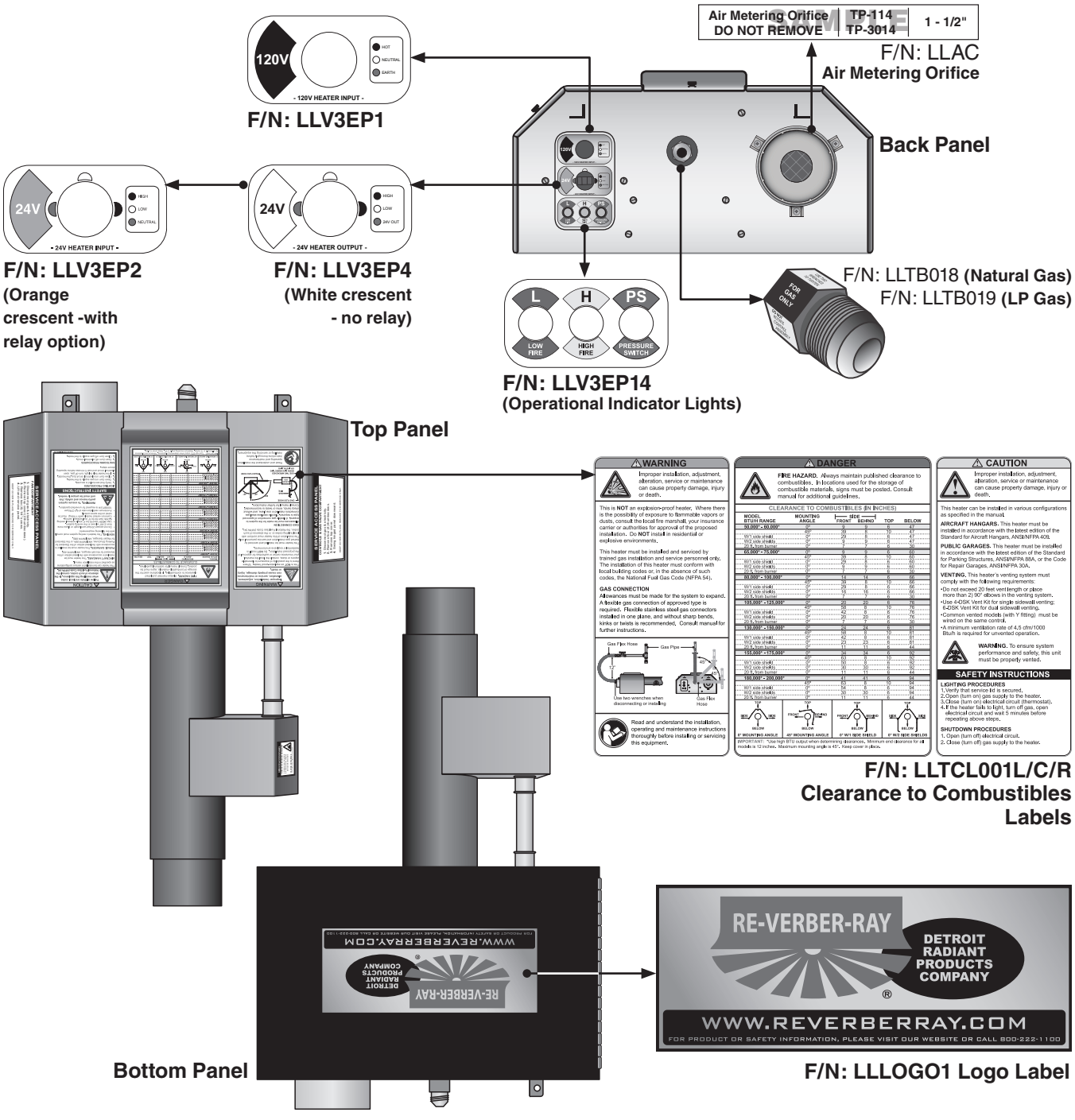
**NOTE:** See page 10 for a list of available models and specifications.

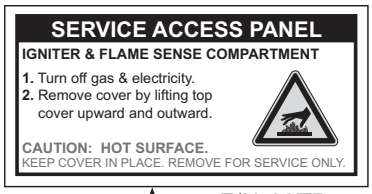
# 1.0 Safety

Read and understand all safety information and warnings in this insert manual and the Tube Heater General Manual before installation, operation and maintenance of the radiant tube heater system.

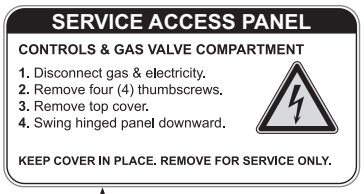
## Safety Labels and Their Locations

Product safety signs or labels should be replaced by the product user when they no longer are legible. Contact either your local distributor or the product manufacturer for obtaining replacement signs or labels.

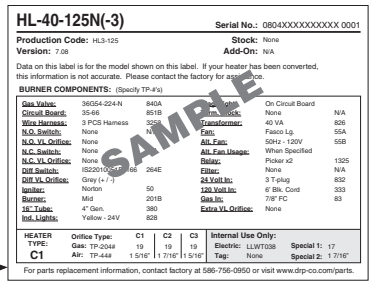




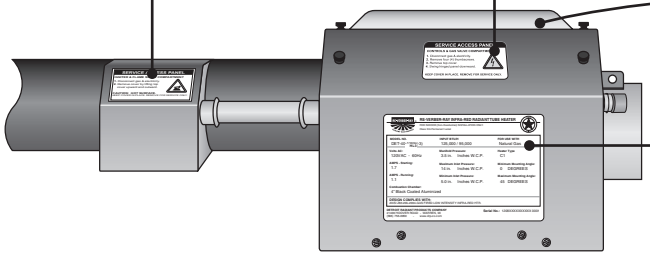

F/N: LLTB026



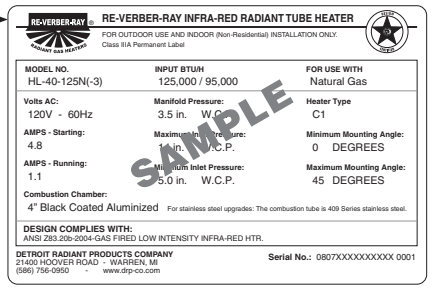

F/N: LLTB024L



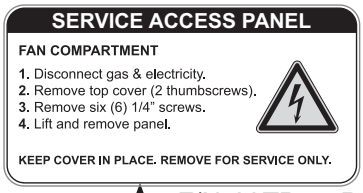

Burner Control Box Component Label
(located inside the center compartment lid)



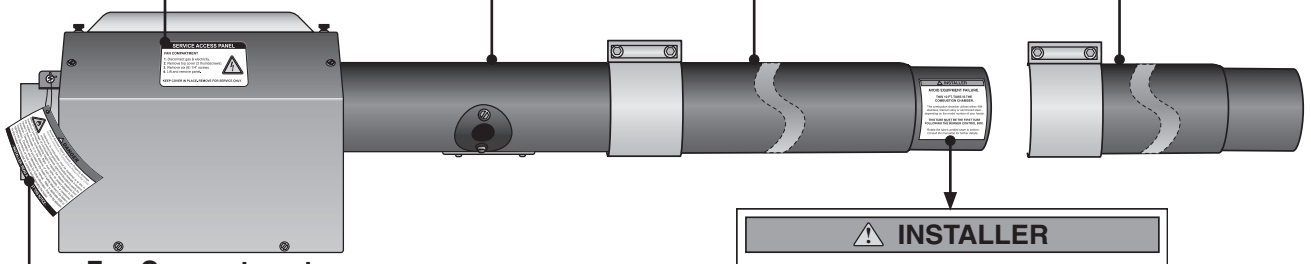
**Controls Compartment**



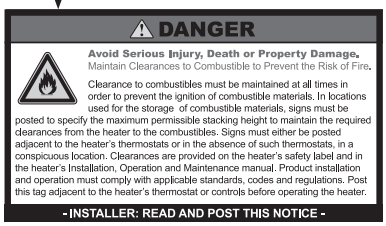

Rating Plate



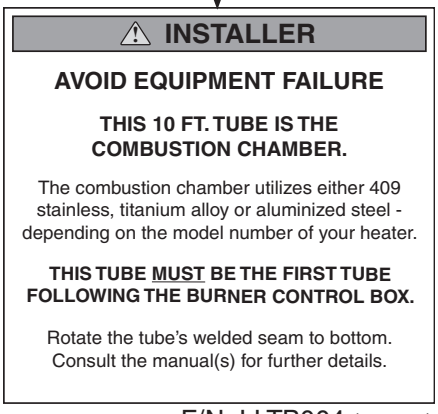

F/N: LLTB025R




**Fan Compartment**




F/N: LL01 - Clearance Safety Tag
(Affix adjacent to heater's thermostat)




F/N: LLTB004 (orange)
(150,000-200,000 BTU/h models and all heaters with 409 stainless steel tubes)

## Clearance to Combustibles

**⚠ WARNING**



Placement of explosive objects, flammable objects, liquids and vapors close to the heater may result in explosion, fire, property damage, serious injury or death. Do not store or use explosive objects, liquids or vapor in the vicinity of the heater.

Clearance to combustibles is defined as the minimum distance that must exist between the tube surface, or reflector, and any combustible items (see Figure 1.1). It also pertains to the distance that must be maintained from moving objects around the tube heater.

When installing the tube heater system, clearances to combustibles for the model tube heater and configuration must be maintained. Refer to Chart 1.1 below to determine the required distances for your model.

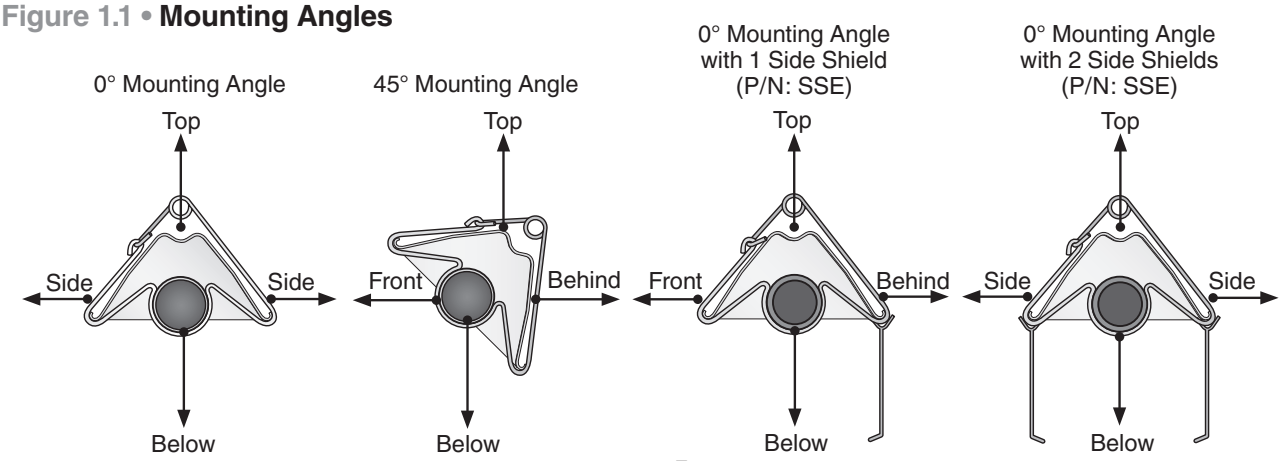
Chart 1.1 • **Clearance to Combustibles in Inches** (see Figure 1.1 for Mounting Angles)

| Model Number | Mounting Angle* | Sides | | Top | Below |
|---|---|---|---|---|---|
| | | Front | Behind | | |
| **HL3 (20, 30, 40) - (65, 75) [N, P]** | 0° | 9 | 9 | 6 | 60 |
| | 45° | 39 | 8 | 10 | 60 |
| with 1 side shield | 0° | 29 | 8 | 6 | 60 |
| with 2 side shields | 0° | 9 | 9 | 6 | 60 |
| 20 ft. from burner | 0° | 7 | 7 | 6 | 30 |
| **HL3 (30, 40) - 100 [N, P]** | 0° | 14 | 14 | 6 | 66 |
| | 45° | 39 | 8 | 10 | 66 |
| with 1 side shield | 0° | 29 | 8 | 6 | 66 |
| with 2 side shields | 0° | 16 | 16 | 6 | 66 |
| 20 ft. from burner | 0° | 7 | 7 | 6 | 30 |
| **HL3 (30, 40, 50) - 125 [N, P]** | 0° | 20 | 20 | 6 | 76 |
| | 45° | 58 | 8 | 10 | 76 |
| with 1 side shield | 0° | 42 | 8 | 6 | 76 |
| with 2 side shields | 0° | 20 | 20 | 6 | 76 |
| 20 ft. from burner | 0° | 7 | 7 | 6 | 30 |
| **HL3 (40, 50, 60) - 150 [N, P]** | 0° | 24 | 24 | 6 | 81 |
| | 45° | 58 | 8 | 10 | 81 |
| with 1 side shield | 0° | 42 | 8 | 6 | 81 |
| with 2 side shields | 0° | 23 | 23 | 6 | 81 |
| 20 ft. from burner | 0° | 11 | 11 | 6 | 44 |
| **HL3 (40, 50, 60, 70) - 175 [N, P]** | 0° | 34 | 34 | 6 | 92 |
| | 45° | 63 | 8 | 10 | 92 |
| with 1 side shield | 0° | 50 | 8 | 6 | 92 |
| with 2 side shields | 0° | 30 | 30 | 6 | 92 |
| 20 ft. from burner | 0° | 11 | 11 | 6 | 44 |
| **HL3 (50, 60, 70) - 200 [N, P]** | 0° | 41 | 41 | 6 | 94 |
| | 45° | 63 | 8 | 10 | 94 |
| with 1 side shield | 0° | 54 | 8 | 6 | 94 |
| with 2 side shields | 0° | 30 | 30 | 6 | 94 |
| 20 ft. from burner | 0° | 11 | 11 | 6 | 44 |

*****Heaters mounted on an angle between 0° to 45° must maintain clearances posted for 0° or 45°; whichever is greater.

The stated clearance to combustibles represents a surface temperature of 90ºF (32ºC) above room temperature. Building materials with a low heat tolerance (such as plastics, vinyl siding, canvas, tri-ply, etc.) may be subject to degradation at lower temperatures. It is the installer's responsibility to assure that adjacent materials are protected from degradation.

Figure 1.1 • **Mounting Angles**



# 2.0 Installation

## ⚠ WARNING



Improper installation, adjustment, alteration, service or maintenance can cause property damage, serious injury or death. Read and understand the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment. Only trained, qualified gas installation and service personnel may install or service this equipment.

**Not for residential use!** Do not use this heater in the home, sleeping quarters, attached garages, etc. **Installation of a commercial tube heater system in residential indoor spaces may result in property damage, serious injury or death.**

Instructions for the following are detailed in the Tube Heater General Manual:

- Design considerations
- Hanger suspension and placement
- Tube layout and assembly
- Burner control box suspension
- Reflectors (and accessories)
- Venting and combustion air intake
- Gas requirements
- Baffle assembly

**Note:** Electronic versions of all manuals are available at www.detroitradiant.com

## Gas Requirements

| Type of Gas | Required Manifold Pressure | Minimum Inlet Pressure | Maximum Inlet Pressure |
|---|---|---|---|
| Natural | 3.5 Inches. W.C. | 5.0 Inches. W.C. | 14.0 Inches. W.C. |
| Liquefied Petroleum | 10.0 Inches. W.C. | 11.0 Inches. W.C. | 14.0 Inches. W.C. |



**IMPORTANT:** Consult the Tube Heater General Manual for gas connection requirements.

## Electrical Requirements

- 120 Volt - 60 Hz GRD, 3-wire.
- 24V thermostat connection.
- Starting current 4.8 amps
- Running current 1.1 amps

## *NOTICE*

Connecting the thermostat with a voltage other than 24V may damage the heater. The HL3 Series requires a 24V connection to the thermostat. This is either supplied by the heater internally (standard) or by an external transformer (with optional isolation relays, P/N: HLRP). See Figure 2.1.

# Wiring

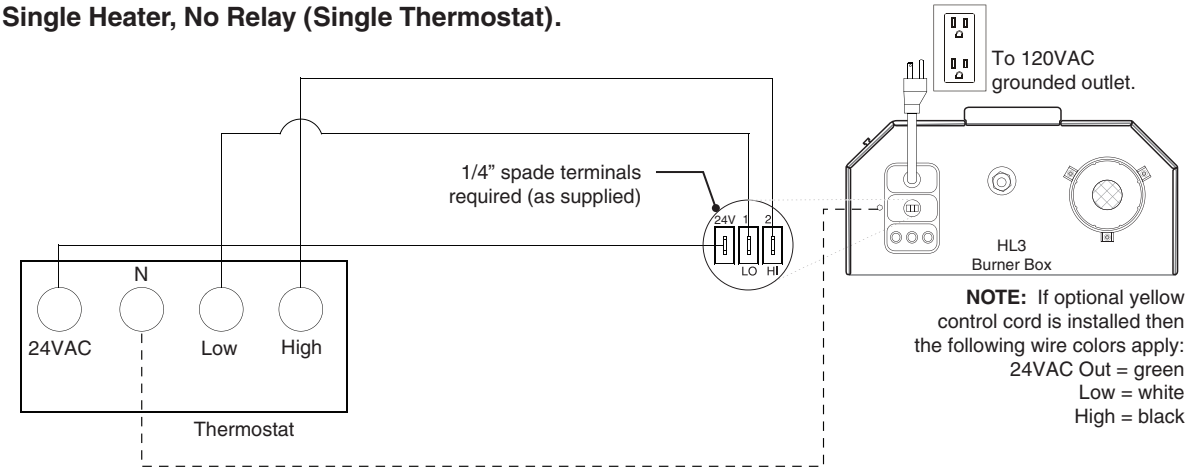
## ⚠ WARNING

**Electric Shock**

Field wiring to the tube heater must be connected and grounded in accordance with national, state, provincial, local codes and to the guidelines in the Tube Heater General Manual and Series Insert Manual. In the United States refer to the most current revisions to the ANSI/NFPA 70 Standard and in Canada refer to the most current revisions to the CSA C22.1 Part I Standard.

**Figure 2.1 • Field Wiring Diagrams**

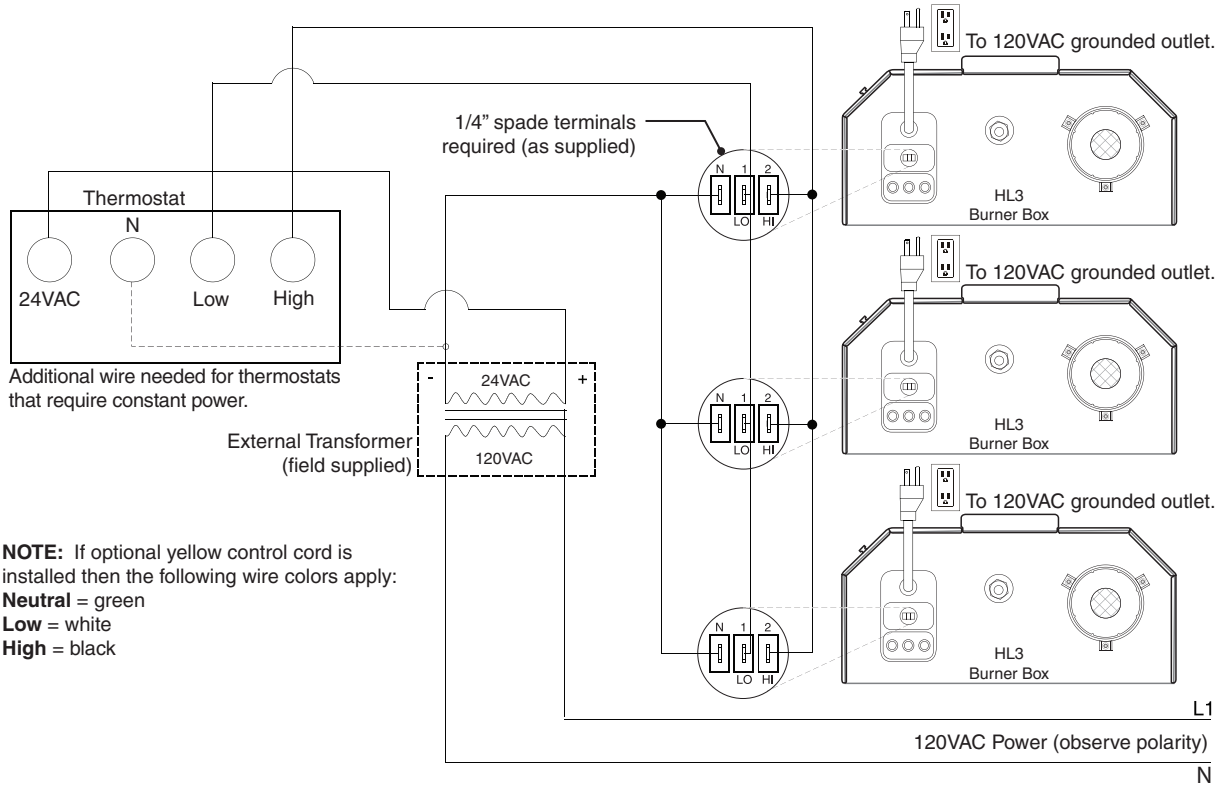
**A. Single Heater, No Relay (Single Thermostat).**




**NOTE:** If optional yellow control cord is installed then the following wire colors apply:
24VAC Out = green
Low = white
High = black

- - - - - When using a thermostat that requires constant power a common wire must be run form the C terminal on the thermostat back to the transformer.

**B. Multiple Heaters with Relay Option (Single Thermostat).**



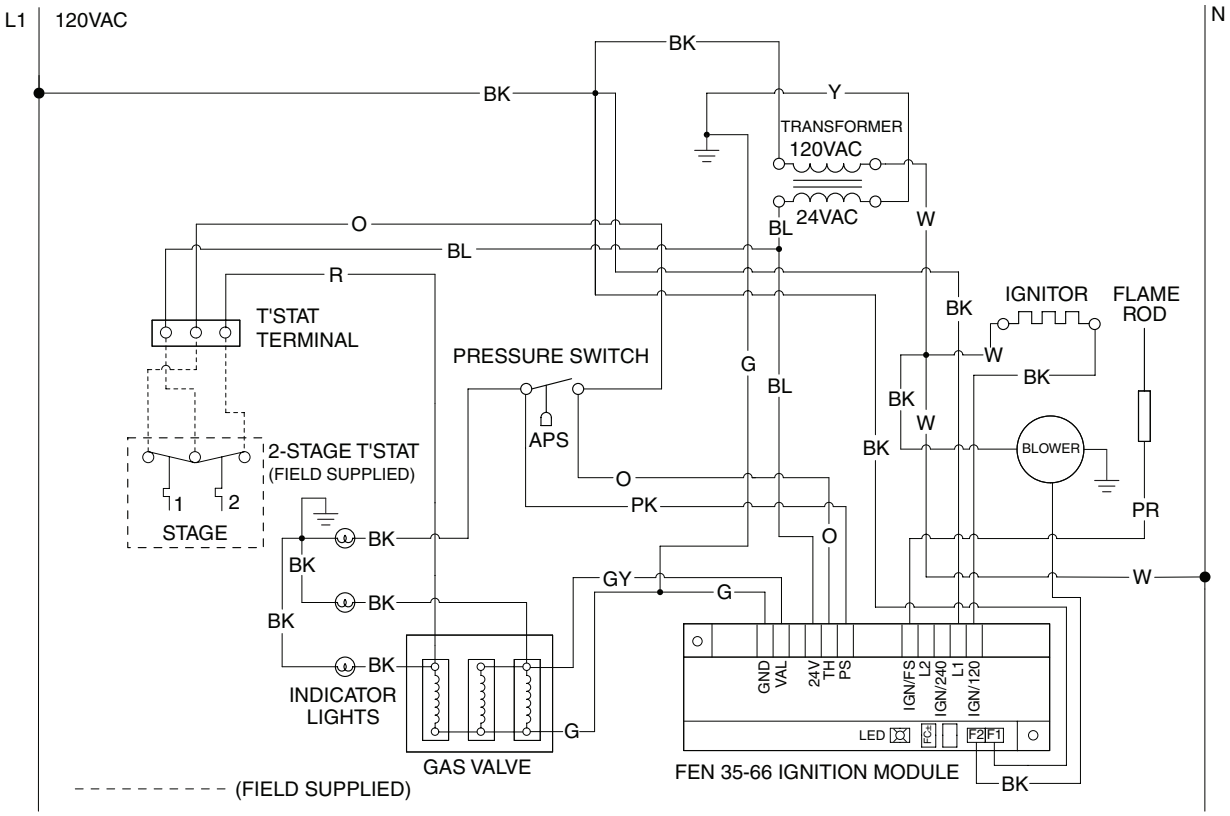

**NOTE:** If optional yellow control cord is installed then the following wire colors apply:
**Neutral** = green
**Low** = white
**High** = black

**Before field wiring this appliance -** Check existing wiring; replace if necessary.

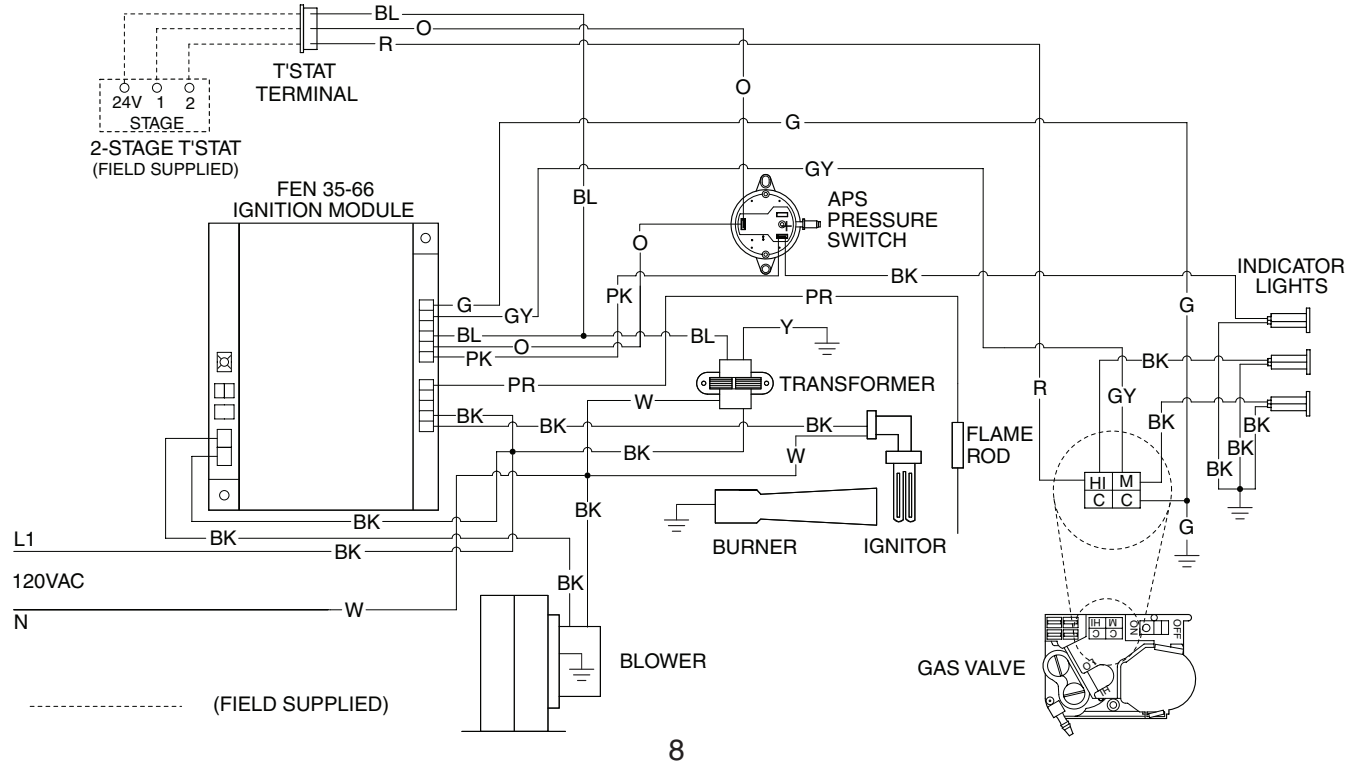
**Note:** If any of the original wire supplied with the appliance must be replaced, it must be replaced with wiring material having a temperature rating of at least 105° C.

**Figure 2.2 • Internal Wiring Diagrams**

**A.** 35-66 Ladder Diagram

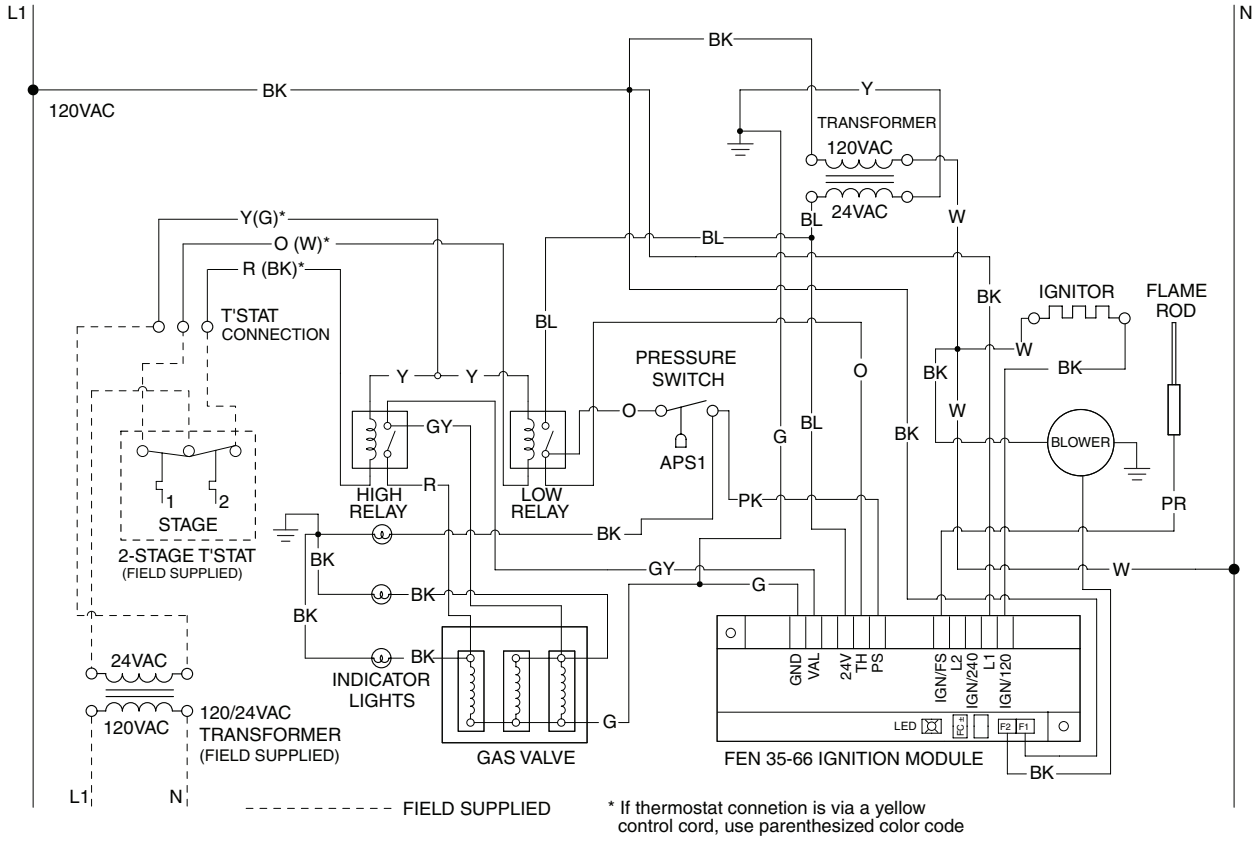



**B.** 35-66 Block Diagram

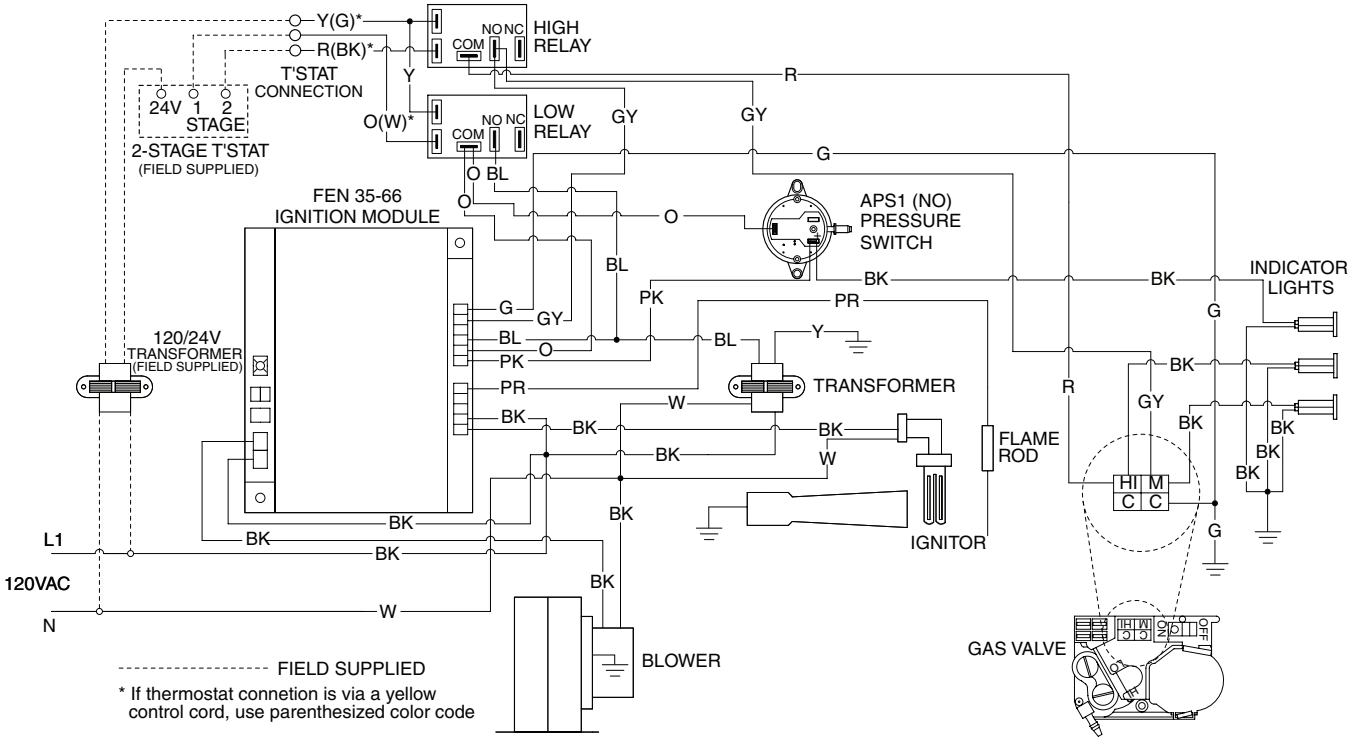


## Figure 2.3 • **Alternative Wiring Diagrams**

**A.** 35-66 Ladder Diagram - **With HLRP Relay**




**B.** 35-66 Block Diagram - **With HLRP Relay**



# Specifications

**Chart 2.1 • Specifications**

| Model Number | Gas Type (select one) | BTU/h (High Fire) | BTU/h (Low Fire) | Straight Length | U-Tube Length | Standard Weight (lbs.) | Stainless Steel Weight (lbs.) | Recommended Mounting Height | Combustion Chamber (Black Coated) | Radiant Emitter Tube(s) (Black Coated) | Radiant Surface Area (sq. ft.) | 36" Baffle Quantity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HL3-20-65** | N or LP | 65,000 | 50,000 | 21'-9" | 13'-1" | 120 | N/A | 9' to 14' | Alum | Alum | 20.2 | 5 |
| **HL3-20-75** | N or LP | 75,000 | 50,000 | 21'-9" | 13'-1" | 120 | 145 | 10' to 15' | Alum | Alum | 20.2 | 5 |
| **HL3-30-65** | N or LP | 65,000 | 50,000 | 31'-5" | **17'-9" | 160 | N/A | 10' to 15' | Alum | Alum | 30.4 | 4 |
| **HL3-30-75** | N or LP | 75,000 | 50,000 | 31'-5" | **17'-9" | 160 | 195 | 11' to 18' | Alum | Alum | 30.4 | 5 |
| **HL3-30-100** | N or LP | 100,000 | 65,000 | 31'-5" | **17'-9" | 160 | 195 | 12' to 20' | Alum | Alum | 30.4 | 5 |
| **HL3-30-125** | N or LP | 125,000 | 95,000 | 31'-5" | **17'-9" | 160 | 195 | 13' to 23' | Alum | Alum | 30.4 | 6 |
| **HL3-40-65** | N or LP | 65,000 | 50,000 | 41'-1" | 22'-9" | 190 | N/A | 11' to 18' | Alum | Alum | 40.5 | 3 |
| **HL3-40-75** | N or LP | 75,000 | 50,000 | 41'-1" | 22'-9" | 190 | 235 | 11' to 18' | Alum | Alum | 40.5 | 4 |
| **HL3-40-100** | N or LP | 100,000 | 65,000 | 41'-1" | 22'-9" | 190 | 235 | 12' to 20' | Alum | Alum | 40.5 | 4 |
| **HL3-40-125** | N or LP | 125,000 | 95,000 | 41'-1" | 22'-9" | 190 | 235 | 13' to 23' | Alum | Alum | 40.5 | 5 |
| **HL3-40-150** | N or LP | 150,000 | 100,000 | 41'-1" | 22'-9" | 190 | 235 | 14' to 25' | Titan | Alum | 40.5 | 5 |
| **HL3-40-175** | N or LP | *175,000 | 125,000 | 41'-1" | 22'-9" | 190 | 235 | 15' to 27' | Titan | Alum | 40.5 | 5 |
| **HL3-50-125** | N or LP | 125,000 | 95,000 | 50'-9" | **27'-5" | 235 | 290 | 15' to 27' | Alum | Alum | 50.6 | 3 |
| **HL3-50-150** | N or LP | 150,000 | 100,000 | 50'-9" | **27'-5" | 235 | 290 | 15' to 27' | Titan | Alum | 50.6 | 3 |
| **HL3-50-175** | N or LP | *175,000 | 125,000 | 50'-9" | **27'-5" | 235 | N/A | 16' to 30' | Titan | Alum | 50.6 | 3 |
| **HL3-50-200** | N or LP | *200,000 | 145,000 | 50'-9" | **27'-5" | 235 | N/A | 17' to 35' | Titan | Alum | 50.6 | 2 |
| **HL3-60-150** | N or LP | 150,000 | 100,000 | 60'-5" | 32'-5" | 265 | 330 | 16' to 30' | Titan | Alum | 60.7 | 2 |
| **HL3-60-175** | N orLP | *175,000 | 125,000 | 60'-5" | 32'-5" | 265 | N/A | 16' to 30' | Titan | Alum | 60.7 | 2 |
| **HL3-60-200** | N or LP | *200,000 | 145,000 | 60'-5" | 32'-5" | 265 | N/A | 17' to 35' | Titan | Alum | 60.7 | 2 |
| **HL3-70-175** | N or LP | * 175,000 | 125,000 | 70'-1" | **37'-3" | 300 | N/A | 19' to 42' | Titan | Alum | 70.9 | 2 |
| **HL3-70-200** | N or LP | * 200,000 | 145,000 | 70'-1" | **37'-3" | 300 | N/A | 19' to 42' | Titan | Alum | 70.9 | 2 |

* Model requires stainless steel tube clamp (P/N: TP-220) to be located at the seam between the primary combustion chamber and the secondary combustion tube downstream of the burner control box.
** Model requires 5EA-SUB accessory package when installing in a 'U' configuration (P/N: TF1B).

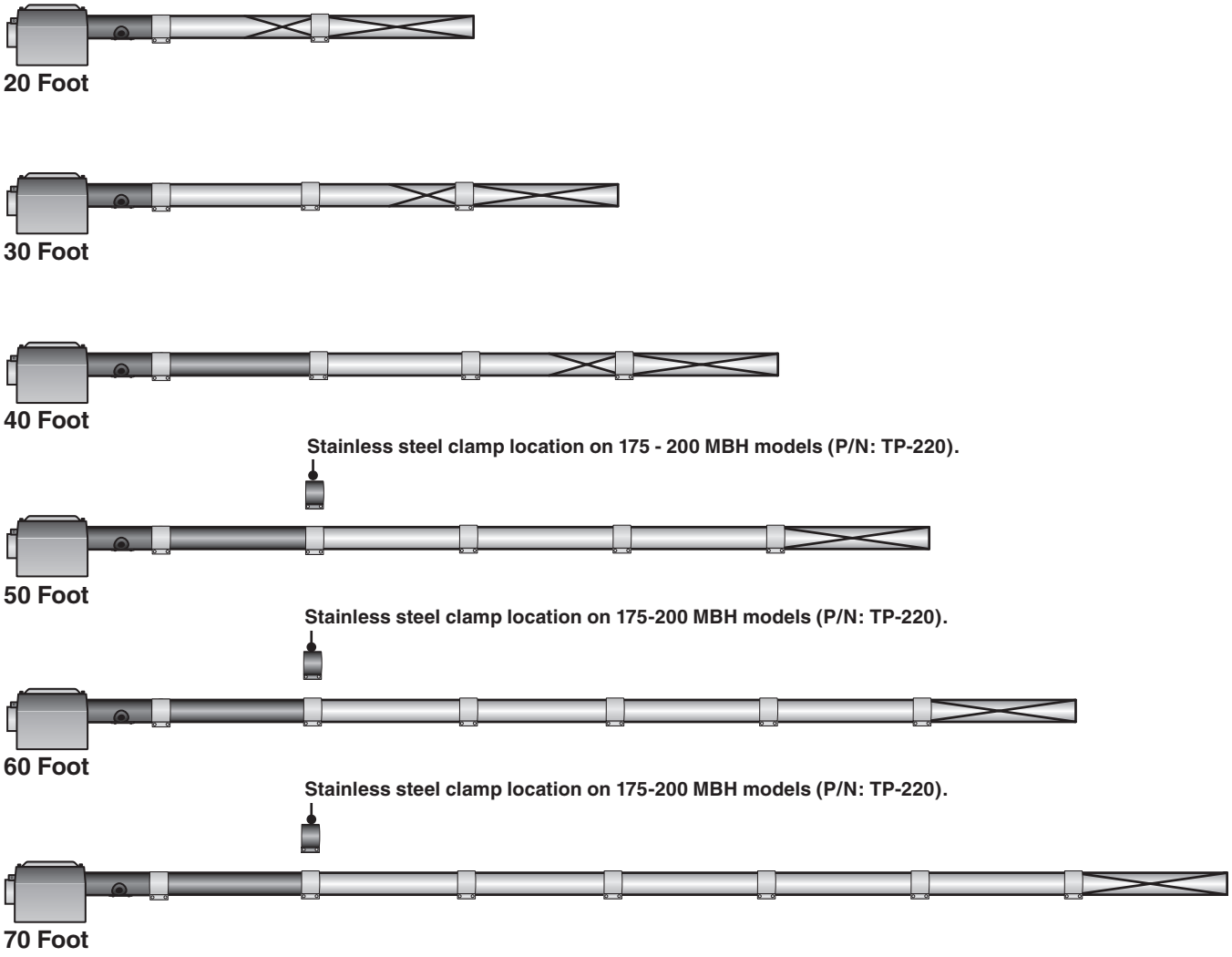
**IMPORTANT**: Reference box label to determine the number of required baffle sections for each model heater.

Titan = Black coated titanium stabilized aluminized steel.
Alum = Black coated aluminized treated steel.

## Tube Installation Sequence

**Figure 2.4 • Tube Installation Sequence**

**Important!** The combustion chamber & radiant tube sections must be installed in the following order.




**Key**

- Burner Control Box with 16-inch Burner Tube
- Black Coated Combustion Chamber Tube*
- Black Coated Aluminized Combustion Chamber/Radiant Emitter Tube
- Standard Tube Clamp
- Stainless Steel Tube Clamp (P/N: TP-220)
  *175-200 MBH models only - Located between 1st and 2nd 10 ft. tube sections.*
- **Baffle Location**

*Aluminized tubes (50,000 to 125,000 BTU/H models); Titan tubes (150,000 to 200,000 BTU/H models).
**NOTE:** Refer to the Tube Heater General Manual, Chart 3.6 (page 23) for secured reflector joints.

# 3.0 Operation

## ⚠ WARNING



This heater must be installed and serviced by trained gas installation and service personnel only.

Do not bypass any safety features or the heater's built in safety mechanisms will be compromised.

**Note:** Reference the Tube Heater General Manual for installation requirements.

## Sequence of Operation

**Standby:** The 35-66 control continually checks for internal faults, circuit integrity and relay contact positioning.

**Starting Circuit:** Upon a call for heat, the control verifies that the differential switch is in the proper position (open). The control energizes the fan. Once operational static pressure is achieved, the differential switch will close initiating the ignition sequence. The glo-bar is powered and the gas valve opens after 45 seconds. If the flame is not sensed, the heater will attempt to re-ignite for a total of three (3) trials for ignition before proceeding to soft lockout.

**Single Stage Running Circuit:** After ignition, the flame rod monitors burner flame. If sense of flame is lost, the control closes the gas valve within one second and a new trial sequence (identical to the starting sequence) is initiated. If flame sense is not established within 8.5 seconds, the heater will attempt two (2) additional ignition sequences before proceeding to soft lockout. The control can be reset by briefly interrupting the power source.

**Two Stage Running Circuit:** The second stage on the gas valve is powered directly from the second stage of the thermostat. In order for two stage to flow to a higher output, single stage must be energized as well. The thermostat determines which stage to maintain for the desired temperature.

**Shut Down:** When the thermostat is satisfied, the fan will enter a two (2) minute post-purge cycle. Refer to Soft and Hard Lockout under Diagnostics; p. 13.

## Thermostat

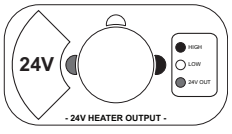
HL3 Series heaters require a 24VAC, two-stage thermostat to operate. The burner control box is equipped with a round terminal strip that accepts three (3) 1/4" insulated female spade terminals. Do not supply 120V to the 24V connection.

The HL3 Series is equipped with or without relays (P/N: HLRP). The optional relays must be factory installed. **NOTE:** Units with a relay installed must have an external transformer (field supplied), see wiring diagram. (Figure 2.2B).

### Standard Configuration

Without relays (identified with white label around the terminal block):

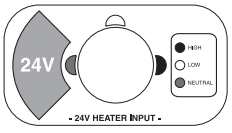
- Single burner control box.
- Single thermostat.




### Optional Configuration

With relays (identified with orange label around the terminal block):

- A single thermostat controls two or more burner control boxes.
- Heaters are common vented.
- Must be factory installed.



## Diagnostics

**Lockout:**

The controls will automatically lockout the heater system when an external or system fault occurs. There are two types of lockout:

**Soft Lockout:** The heater will attempt to light three times. In the event of a failed attempt to light, (gas pressure, valve, no flame sense etc.), the heater will enter a soft lockout period for 15 minutes and then attempt to light three more times before entering Hard Lockout mode.

**Hard Lockout:** If proof of flame is not established, a component failure occurs or blockages are evident, the heater will enter hard lockout. If lockout occurs, the control can be reset by briefly interrupting the power source. Refer to Chart 3.1 below for a description of LED codes.

Figure 3.1 • **Operational Indicator Lights**

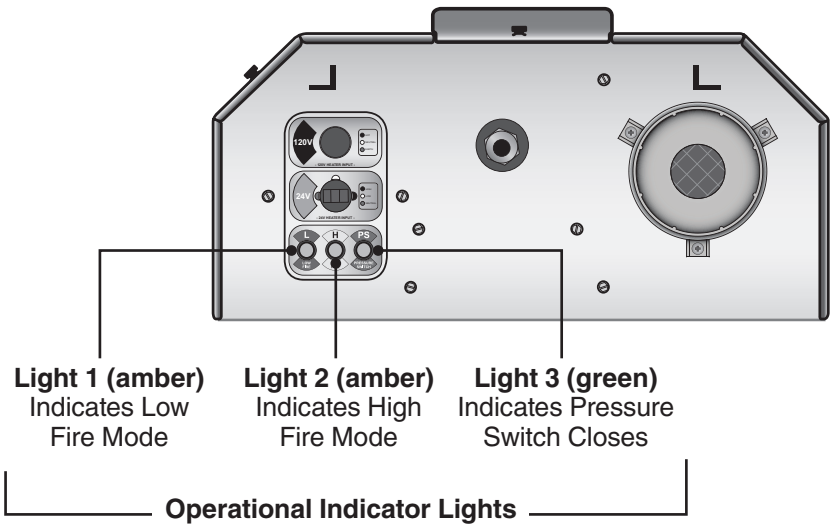
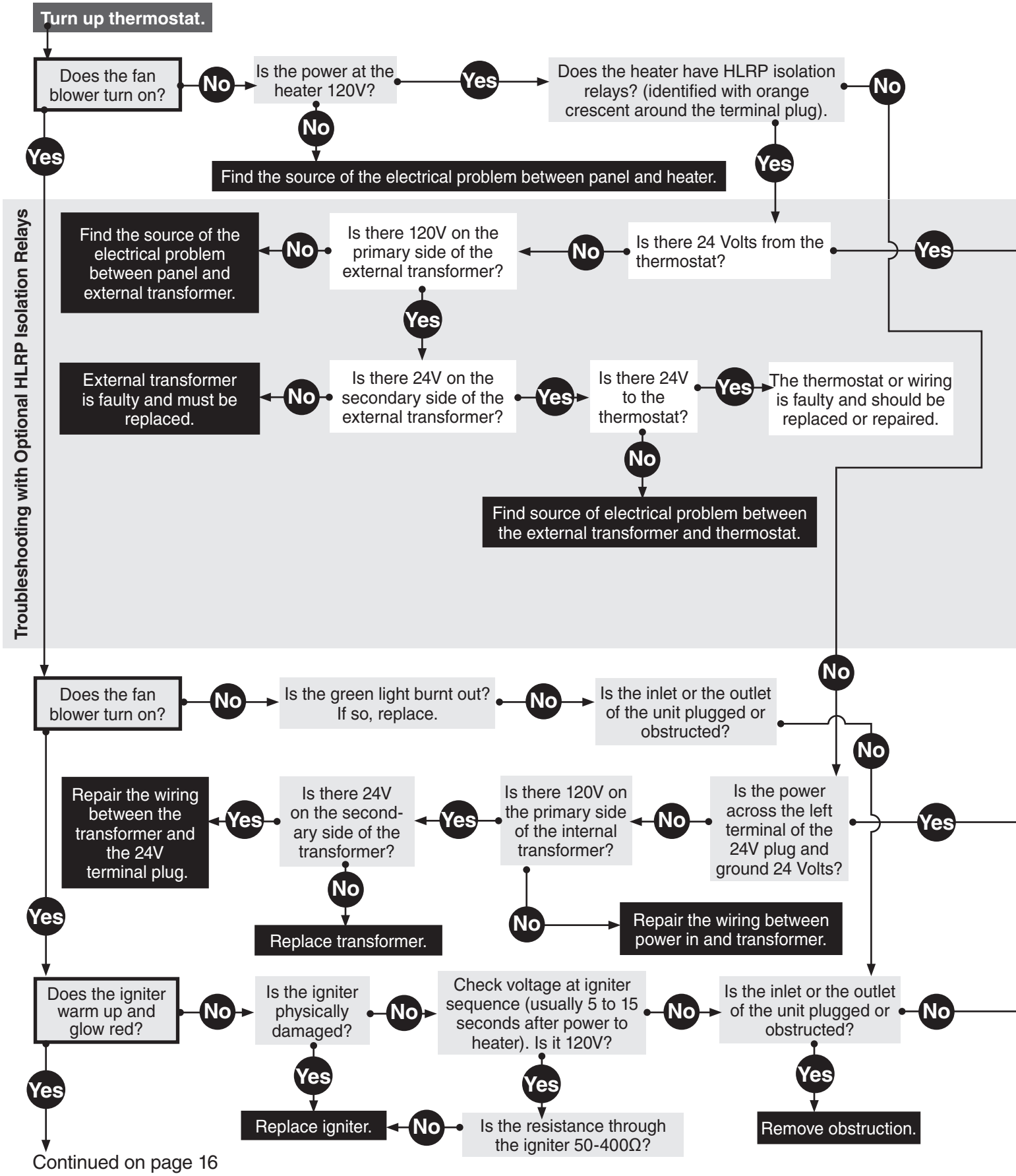



Chart 3.1 • **LED Fault Code Status** (located internally on circuit board)

| LED Code | Fault Status | Fault Code Delay* |
|---|---|---|
| Initial flash on power up, then steady off | No fault, normal operation | No delay |
| Steady ON | Module failure / Internal fault | No delay |
| 1 flash | Ignition failure | 3 minutes |
| 2 flashes | APS (Air Proving Switch) (Fan / Intake / Exhaust) | 0 - 30 seconds |
| 3 flashes | Lockout | 17 minutes |
| 4 flashes | Solenoid valve fault<br>Leaky valve<br>Flame amplifier fault | No delay |
| No flash on 117V startup | Transformer fault | No delay |

*Some LED codes have a time delay before the LED will flash.

# 4.0 Troubleshooting Guide




Continued on page 16

**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.

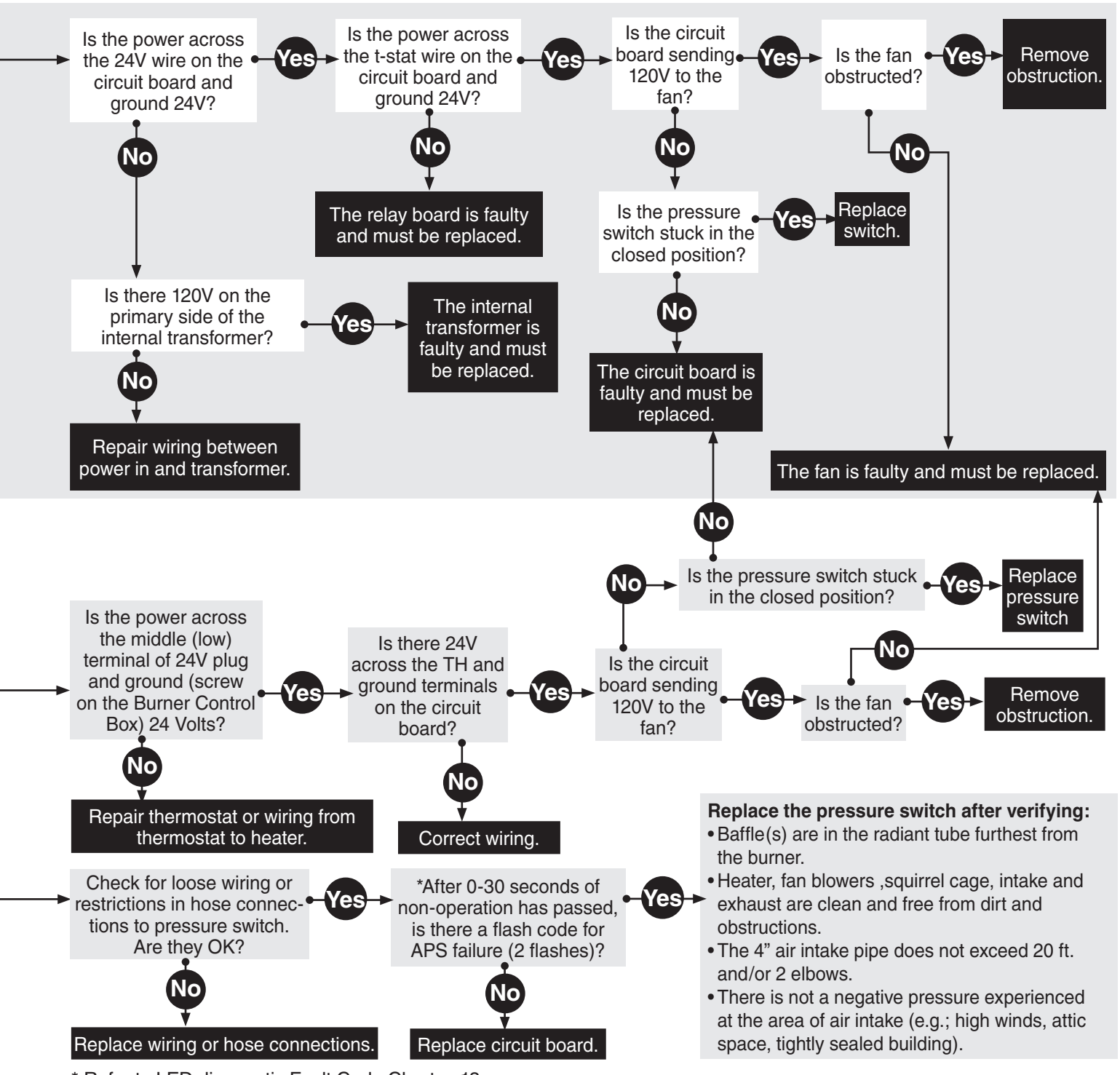
## Key

**Without HLRP Isolation Relays:**

- Start Question
- Process Question
- Corrective Action

**With HLRP Isolation Relays:**

- Process Question
- Corrective Action

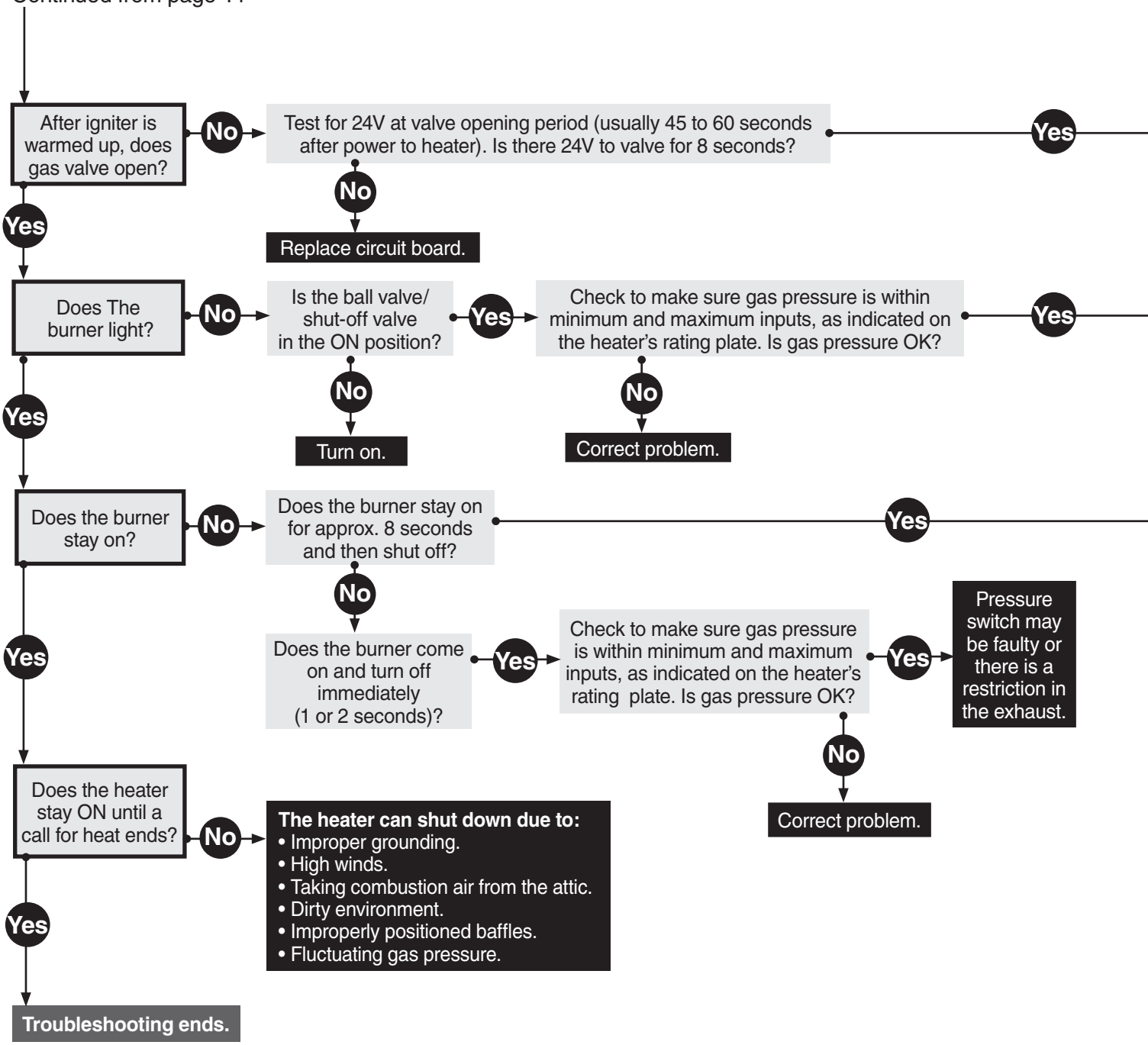


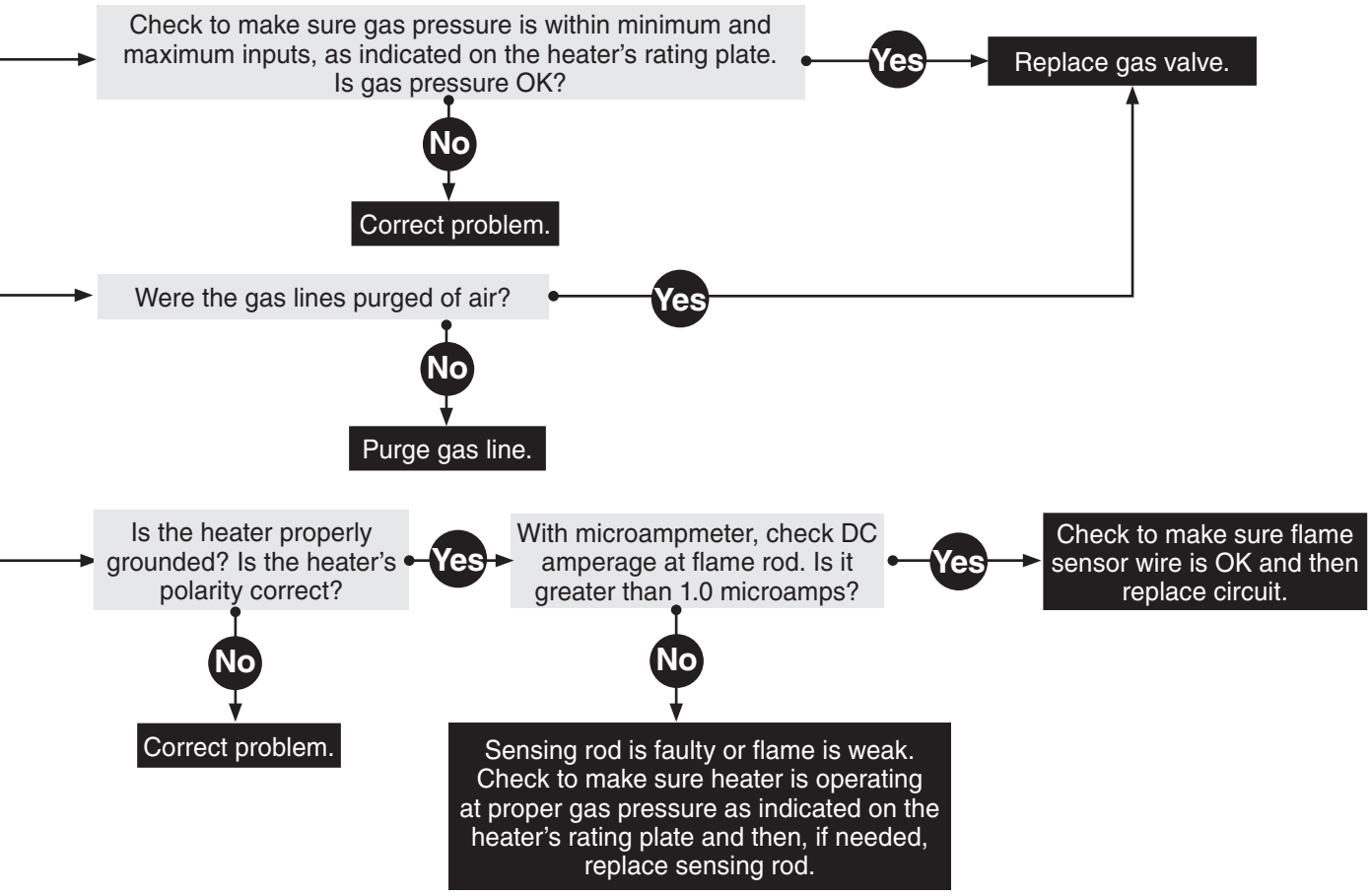

**Replace the pressure switch after verifying:**

- Baffle(s) are in the radiant tube furthest from the burner.
- Heater, fan blowers ,squirrel cage, intake and exhaust are clean and free from dirt and obstructions.
- The 4" air intake pipe does not exceed 20 ft. and/or 2 elbows.
- There is not a negative pressure experienced at the area of air intake (e.g.; high winds, attic space, tightly sealed building).

* Refer to LED diagnostic Fault Code Chart; p.13.

Continued from page 14

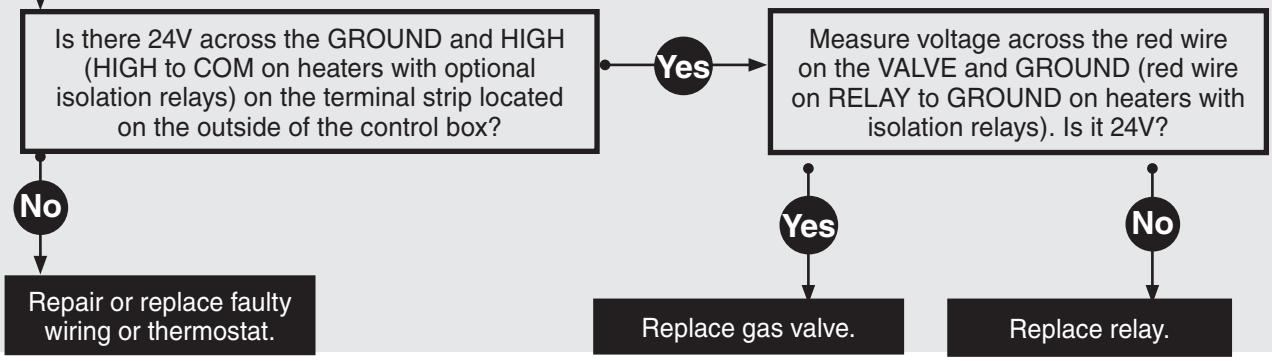





**If heater does not go into high fire mode:**

**NOTE**: To confirm that the heater is not in high fire mode, check manifold pressure. If manifold pressure is 3.3" to 3.5" for natural gas or 9" to 10" for propane, the light is faulty and should be replaced.

When the heater is in low fire mode, manifold pressure is approximately 2.0" to 2.5" for natural gas or 5.0" to 6.5" for propane. If this is the case, the following troubleshooting steps should be followed:



# 5.0 Parts

Figure 5.1 • **Burner Assembly Components**

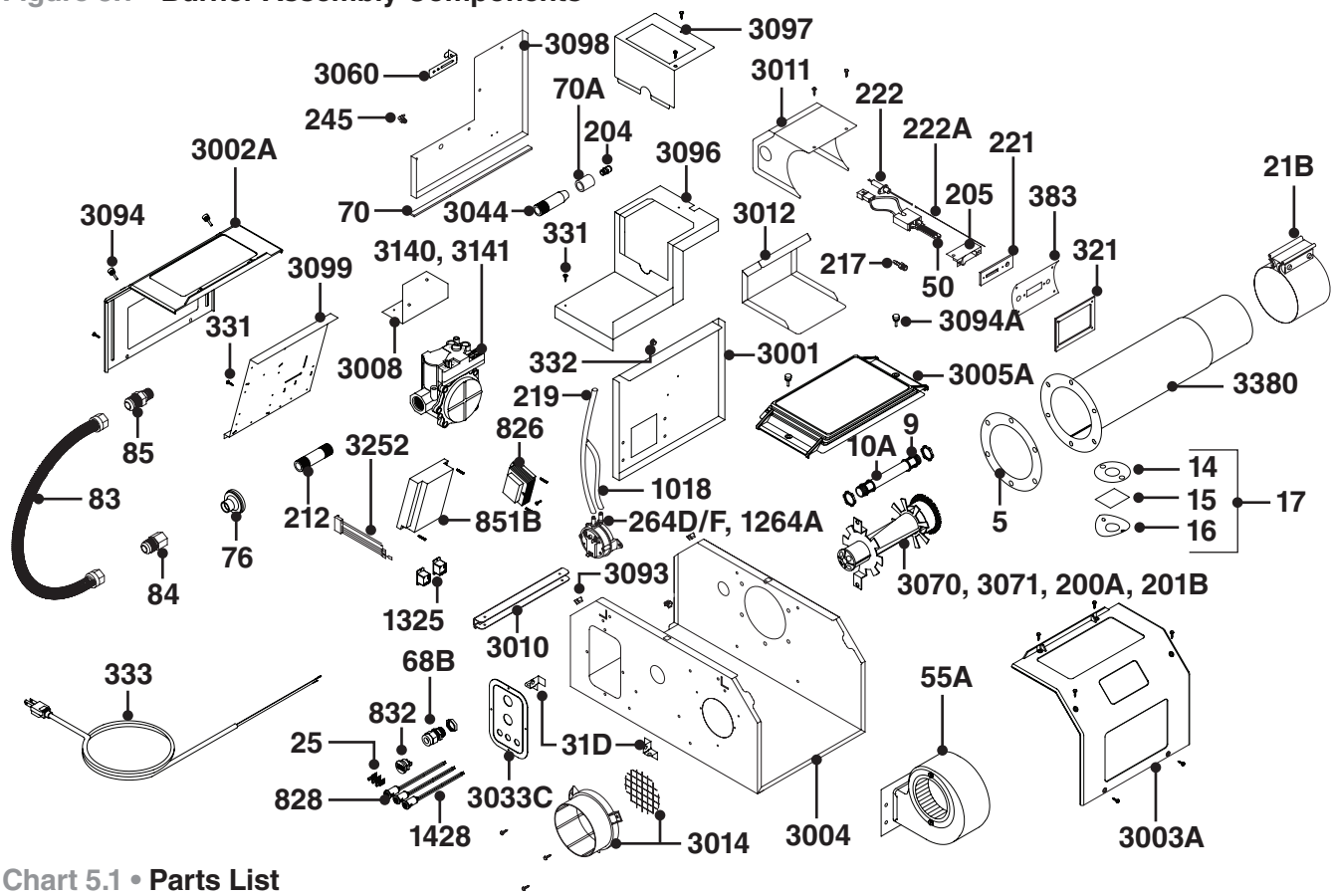
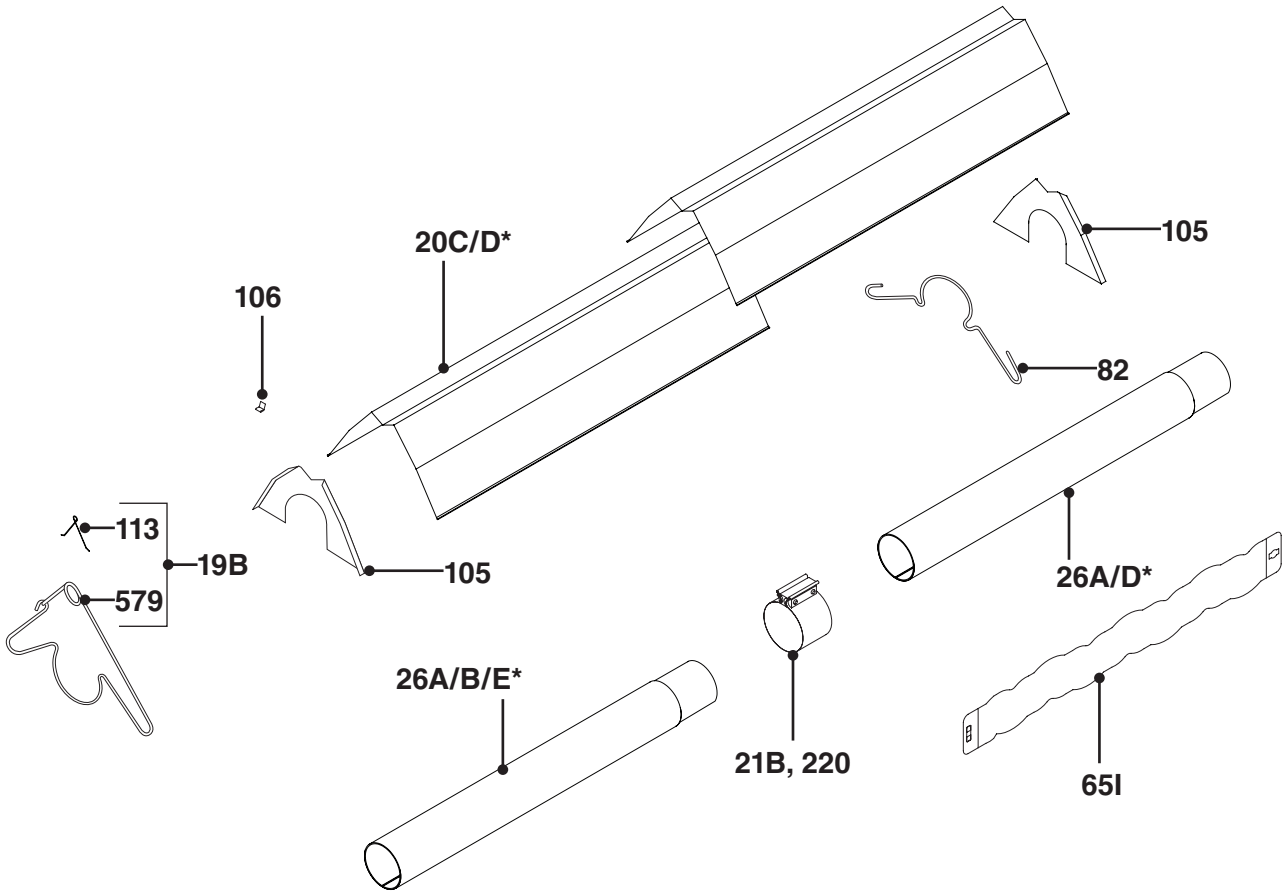



Chart 5.1 • **Parts List**

| Part # | Description | Part # | Description |
|---|---|---|---|
| TP-5 | Flange Gasket | TP-70 | 1/2 in. Control Box Gasket (10.3 inches) |
| TP-9 | Conduit Coupling | TP-70A | 1 in. Control Box Gasket (6 inches) |
| TP-10A | Conduit 4” x 3/4” | TP-76 | Rubber Grommet |
| TP-14 | Sight Glass Gasket | TP-82 | Reflector Center Support (RCS) |
| TP-15 | Sight Glass | TP-83 | 24 in. Stainless Steel Flexible Gas Connector |
| TP-16 | Sight Glass Washer | TP-84 | 1/2 in. Female / Male Flare Fitting |
| TP-17 | Sight Glass Kit | TP-85 | 1/2 in. Male / Male Flare Fitting |
| TP-19B | 4 in. Wire Hanger with Tension Spring | TP-105 | Aluminum Reflector End Cap |
| TP-20C | 120 in. Aluminum Reflector | TP-106 | Reflector End Cap Clips (8 pcs.) |
| TP-20D* | 120 in. Stainless Steel Reflector | TP-113 | Reflector Tension Spring |
| TP-21B | 4 in. Standard Tube Clamp | TP-200A | V.3 Low SS Burner (Blue) - consult factory |
| TP-25 | 1/4 in. Female Spade Terminal (Qty. 3) | TP-201B | V.3 Mid SS Burner (Tan) - consult factory |
| TP-26A | 10 ft. Aluminized Radiant / Combustion Tube | TP-204 | Gas Orifice (consult factory) |
| TP-26B | 10 ft. Titanium Coated Combustion Tube | TP-205 | Glo-Bar™ Holder |
| TP-26D* | 10 ft. 304 Stainless Steel Radiant Tube | TP-212 | 1/2” x 3” Pipe Nipple |
| TP-26E* | 10 ft. 409 Stainless Steel Combustion Tube | TP-217 | Brass Pressure Switch Barb Fitting |
| TP-31D | Interlocking Mounting Bracket (Qty. 2) | TP-219 | Differential Vinyl Sensing Tube (burner) |
| TP-50 | Glo-Bar™ Igniter | TP-220 | Stainless Steel Tube Clamp (175 & 200 MBH) |
| TP-55A | Fan Blower | TP-221 | Glo-Bar™ Holder Gasket |
| TP-65I | 36 in. Interlocking Turbulator Baffle | TP-222 | Flame Rod |
| TP-68B | Large Strain Relief Bushing | TP-222A | Flame Rod Wire |

* Optional upgrade or add-on item.

Figure 5.2 • **Tube & Reflector Components**

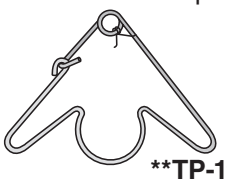
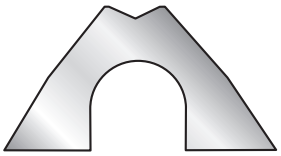
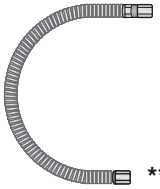
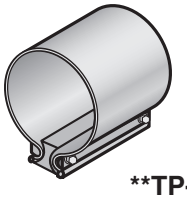
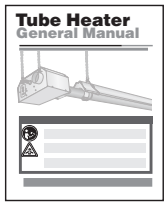
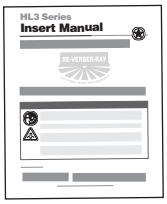



| Part # | Description | Part # | Description |
|---|---|---|---|
| TP-245 | 3/16” X 1/8” Plastic Gas Valve 90° Vent | TP-3008 | Gas Valve Mounting Bracket |
| TP-264D | Differential Pressure Switch, 65 to 75 MBH | TP-3010 | Service Panel Hinge |
| TP-264F | Differential Pressure Switch, 150 to 200 MBH | TP-3011 | V.3 Igniter Box |
| TP-321 | Ignition Plate Gasket | TP-3012 | V.3 Igniter Box Cover |
| TP-331 | Green Self-Tap Ground Screw (Qty. 2) | TP-3014 | Plastic Air Orifice with Screen |
| TP-332 | Divider Grommet | TP-3033C | HL3 Power Entry Plate |
| TP-333 | 72 in. Black 120V Power Cord | TP-3044 | Gas Manifold |
| TP-383 | Glo-Bar™ Igniter Plate | TP-3060 | V.3 Pressure Switch Mounting Bracket |
| TP-579 | 4 in. Wire Hanger w/o Tension Spring | TP-3070 | Low BTU SS Burner (Red) - consult factory |
| TP-826 | 40VA Transformer | TP-3071 | High BTU SS Burner (Purple) - consult factory |
| TP-828 | 24V Yellow Operational Indicator Light (Qty. 2) | TP-3093 | #8-23 Cage Nut (Qty. 4) |
| TP-832 | Thermostat Terminal Strip | TP-3094A | #8-32 x ½” Zinc Coated Steel Knurled Thumb Screw (Qty. 4) |
| TP-851B | 35-66 Diagnostic Circuit Board | | |
| TP-1018 | Differential Switch Vinyl Sensing Tube (exhaust) | TP-3096 | Valve Compartment Bottom Panel |
| TP-1264A | Differential Pressure Switch, 100 to 125 MBH | TP-3097 | Valve Compartment Top Panel |
| TP-1325 | Optional HLRP Isolation Relay* (Qty. 2) | TP-3098 | Valve Compartment Side Panel |
| TP-1428 | 24V Green Operational Indicator Light | TP-3099 | Controls Mounting Panel |
| TP-3001 | Divider Panel | TP-3140 | 36G54-224 Gas Valve - Natural Gas Assembly |
| TP-3002A | Plastic End Panel, Control Compartment | TP-3141 | 36G54-226 Gas Valve - LP Gas Assembly |
| TP-3003A | Plastic End Panel, Fan Compartment | TP-3252 | 4-Piece Wire Harness Set |
| TP-3004 | V.3 Control Box | TP-3380 | V.3 16” HSI Burner Tube w/ Flange and Fittings |
| TP-3005A | Plastic Valve Chamber Lid | | |

* Optional upgrade or add-on item.

## Kit Contents Check List

**Kit Contents -** Reference the length column for your model.

| HL3 Series Kit Contents | | | | |
|---|---|---|---|---|
| **TP-19B** 4" Hanger with Reflector Tension Spring  ****TP-19C** | **TP-82** 4" Reflector Center Support (RCS)  ****TP-829** | **TP-105** Reflector End Cap  ****TP-105A** | **TP-106** Reflector End Cap Clips  | **TP-25** 1/4" Female Spade Terminal  |
| **TP-83** 24" Stainless Steel Flexible Gas Connector  ****TP-83A** | **TP-220** 4" Tube Clamp  ****TP-220** | **LIOGT3** General Manual   | **LIOHL3** HL3 Series Insert   | |

| Part No. | Description | 20 ft. | 30 ft. | 40 ft. | 50 ft. | 60 ft. | 70 ft. |
|---|---|---|---|---|---|---|---|
| TP-19B | 4" Hanger w/ Tension Spring | 3 | 4 | 5 | 6 | 7 | 8 |
| TP-21B | 4" Tube Clamp | 2 | 3 | 4 | 5* | 6* | 7* |
| TP-25 | 1/4" Female Spade Terminal | 3 | 3 | 3 | 3 | 3 | 3 |
| TP-82 | 4" Reflector Center Support | 2 | 3 | 4 | 5 | 6 | 7 |
| TP-83 | 24" S.S. Flexible Gas Connector | 1 | 1 | 1 | 1 | 1 | 1 |
| TP-105 | Reflector End Cap | 2 | 2 | 2 | 2 | 2 | 2 |
| TP-106 | Reflector End Cap Clips | 8 | 8 | 8 | 8 | 8 | 8 |
| LIOGT3 | V3 General Tube Heater Manual | 1 | 1 | 1 | 1 | 1 | 1 |
| LIOHL3 | HL3 Series Insert Manual | 1 | 1 | 1 | 1 | 1 | **1** |
| Filled By: | | | | | | | |

* **NOTE:** One 4" stainless steel tube clamp (P/N: TP-220) is provided for each 175,000 - 200,000 BTU model. Place as shown on page 11.

** Part number for models upgraded with stainless steel options.

## Approvals

- CSA.
- Indoor approval.
- Outdoor approval with OD-Kit.
- Commercial approval.

## Limited Warranty

- 1 year - Burner box components.
- 5 years - Combustion and radiant tubes.
- 10 years - Stainless steel burner.
- See page 36 of the General Tube Heater Manual for terms and conditions.

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21400 Hoover Road • Warren, MI 48089
Phone: (586) 756-0950 Fax: (586) 756-2626
www.detroitradiant.com • sales@drp-co.com