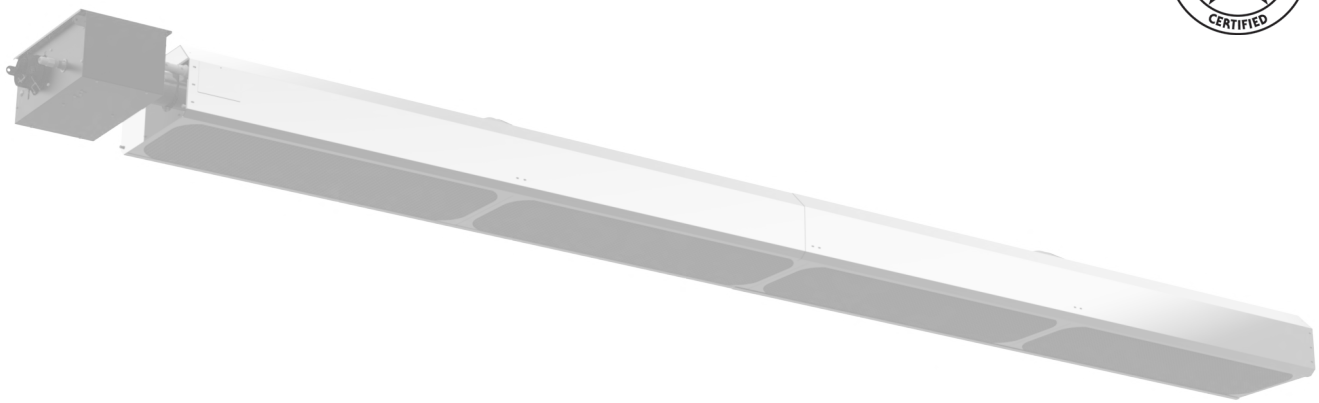
HL2-DS Series
Installation Manual



The HL2-DS Series Infrared Tube Heater is a positive pressure, two-stage radiant heater system designed for unvented use outdoors. This manual provides specific information related to the HL2-DS series models. All persons involved with the installation, operation, and maintenance of the heater system must read and understand the information in this 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.

INSTALLER: Present this manual to the end user.
Keep these instructions in a clean and dry place for future reference.

Model#: _____ **Serial #:** _____
(located on rating label)

LIOHL2DS-Rev. 12917
Print: 5c-08/19_r4-10/20 (CDS)
Replaces: 1M-10/18 (CDS)

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1.0 Introduction

Overview

The intent of this manual is to provide information regarding general safety, installation, operation, and maintenance of this radiant tube heater. You must read and understand all instructions and safety warnings before installing or servicing the radiant tube heater.

Heater Components

Prior to installation, verify that the heater's gas type and voltage (as listed on the rating plate) match that of your application. Also verify that you have received all heater components included with your radiant tube heater. Refer to page 40 for a list of the kit contents for your series heater. Materials not included in the heater kit contents (e.g., screws, terminals, etc.) are the responsibility of the installer. Notify your product representative or Detroit Radiant Products of any discrepancy or missing kit contents prior to installing unit.

Specifications

Chart 1.1 • HL2-DS Specifications

Model Number	Gas Type (select one)	BTU/H (High Fire)	BTU/H (Low Fire)	Length	Unit Weight (lbs.)	Recommended Mounting Height*	Radiant Surface Area (sq. ft.)	36" Baffle Sections
HL2-DS-30-65	Nat. or Prop.	65,000	50,000	16'-4"	170	9' to 16'	20.2	4
HL2-DS-30-80	Nat. or Prop.	80,000	52,000	16'-4"	170	9' to 16'	20.2	4
HL2-DS-30-100	Nat. or Prop.	100,000	65,000	16'-4"	170	9' to 16'	20.2	4

* Typical or recommended mounting heights are provided as a guideline. Actual conditions may dictate variations from this data.

⚠ WARNING

California Proposition 65

This product can expose you to chemicals including lead and carbon monoxide, which are known to the State of California to cause birth defects or other reproductive harm.

For more information, go to www.P65Warnings.ca.gov.

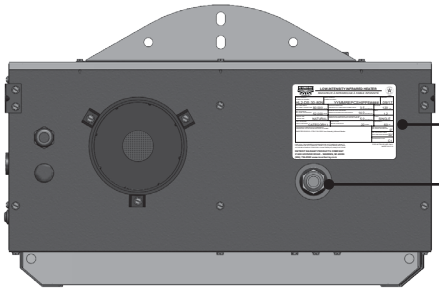
⚠ WARNING

Read and understand all safety information and warnings in this 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.

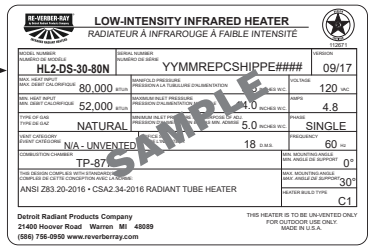
Back Panel





F/N: LLTB018 (Natural Gas)
F/N: LLTB019 (Propane Gas)

Rating Plate



LOW-INTENSITY INFRARED HEATER
RADIATEUR À INFRAROUGE À FAIBLE INTENSITÉ

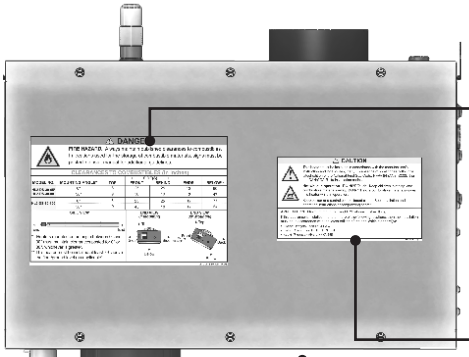
MODEL NUMBER / NUMÉRO DE MODÈLE	HL2-DS-30-80N
SERIAL NUMBER / NUMÉRO DE SÉRIE	YYMMREPCSHIPPE####
VERSION	09/17
MAX. HEAT INPUT / MAX. DÉBIT CALORIFIQUE	80,000 BTUH
MANIFOLD PRESSURE / PRESSION À LA TUBULURE D'ALIMENTATION	3.5 INCHES W.C.
VOLTAGE	120 VAC
MIN. HEAT INPUT / MIN. DÉBIT CALORIFIQUE	52,000 BTUH
MAXIMUM INLET PRESSURE / PRESSION D'ALIMENTATION	4.0 INCHES W.C.
AMPS	4.8
TYPE OF GAS / TYPE DE GAZ	NATURAL
MINIMUM INLET PRESSURE / PRESSION D'ALIMENTATION MIN. ACHEVÉ	5.0 INCHES W.C.
PHASE	SINGLE
VENT CATEGORY / EVENT CATEGORIE	N/A - UNVENTED
L.H.V.	18 B.M.S.
FREQUENCY	60 HZ
COMBUSTION CHAMBER	TP-87
MAX. MOUNTING ANGLE / MIN. ANGLE DE SUPPORT	0°
THIS DESIGN COMPLIES WITH STANDARD(S) / CE MODÈLE EST CONFORME AUX NORMES	ANSI Z83.20-2016 • CSA2.34-2016 RADIANT TUBE HEATER
MAX. MOUNTING ANGLE / MAX. ANGLE DE SUPPORT	30°
HEATER BUILD TYPE	C1

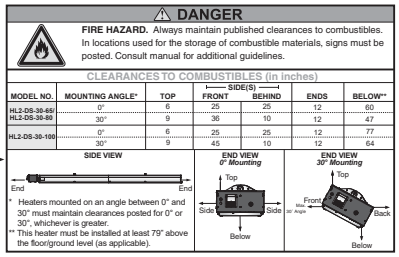
SAMPLE

Detroit Radiant Products Company
21400 Hoover Road Warren MI 48089
(586) 756-0950 www.reverberray.com

THIS HEATER IS TO BE UN-VENTED ONLY
FOR OUTDOOR USE ONLY
MADE IN U.S.A.

Top Panel





⚠ DANGER

FIRE HAZARD. Always maintain published clearances to combustibles. In locations used for the storage of combustible materials, signs must be posted. Consult manual for additional guidelines.

CLEARANCES TO COMBUSTIBLES (in inches)

MODEL NO.	MOUNTING ANGLE*	TOP	SIDE(S) FRONT	SIDE(S) BEHIND	ENDS	BELOW**
HL2-DS-30-65/ HL2-DS-30-80	0°	6	25	25	12	60
	30°	9	36	10	12	47
HL2-DS-30-100	0°	6	25	25	12	77
	30°	9	45	10	12	64

SIDE VIEW — End — End

END VIEW 0° Mounting — Top — Side — Side — Below

END VIEW 30° Mounting — Top — Front — Back — Below

* Heaters mounted on an angle between 0° and 30° must maintain clearances posted for 0° or 30°, whichever is greater.
** This heater must be installed at least 79" above the floor/ground level (as applicable).

F/N: LLTCL018
Clearances to Combustibles Label



⚠ CAUTION

This heater must be installed in accordance with the manufacturer's instruction and local codes, if any. In absence of local codes, follow the latest edition of the National Fuel Gas Code, NFPA 54 (ANSI Z223.1) or the CAN/CCA B149 installation codes.

Hot while in operation. DO NOT Touch. Keep children, clothing, and combustible materials away. **DO NOT** store combustible materials under this heater while in operation.

Keep burner and control compartment clean. See installation and operating instructions accompanying heater.

APPLICATION: Minimum mounting height 79" above finished floor.
If this appliance is installed in one or more of the following locations, then the installation must be in accordance with the latest edition of the applicable standard(s):
- Aircraft Hangers - ANSI / NFPA 409
- Parking Structure - ANSI / NFPA 88A
- Repair Garages - ANSI / NFPA 88B

F/N: LLTCL016a
Safety Label

HL2-DS-30-80N — **Serial No.:** 0914XXXXXXXXX 0001

Production Code: HL2-125 **Stock:** None
Version: 9.14 **Add-On:** N/A

Data on this label is for the model shown on this label. If your heater has been converted, this information is not accurate. Please contact the factory for assistance.

BURNER COMPONENTS: (Specify TP-#'s)

Gas Valve:	36E96-224-N	840	Diag. Light:	On Circuit Board	
Circuit Board:	Micro60-24	851	Term. Block:	None	N/A
Wire Harness:	3 PCS Harness	852	Transformer:	40 V-A	826
N.O. Switch:	None	N/A	Fan:	Fasco Lg.	55A
N.O. VL Orifice:	None		Alt. Fan:	50Hz - 120V	55B
N.C. Switch:	None	N/A	Alt. Fan Usage:	When Specified	
N.C. VL Orifice:	None		Relay:	None	N/A
Diff Switch:	IS2201051F5169	264E	Filter:	None	N/A
Diff VL Orifice:	Grey (+ / -)		24 Volt In:	3 T-plug	832
Igniter:	Norton	50	120 Volt In:	2 x 4 Box	66
Burner:	Low-Mid	3072	Gas In:	7/8" FC Flare	83
16" Tube:	4" Gen.	380	Extra VL Orifice:	None	
Ind. Lights:	Yellow - 120V	828			

HEATER TYPE:	Orifice Type:	C1	C2	C3	Internal Use Only:			
C1	Gas: TP-204#	3	3	3	Electric: LLWT038		Special 1:	Micro60
	Air: TP-44#	1 1/2"	1 5/8"	1 5/8"	Tag:	None	Special 2:	Plug-Wh.

For parts replacement information, contact factory at 586-756-0950 or visit www.drp-co.com/parts.

Burner Control Box Component Label (located under the top panel)

Bottom Panel

F/N: LLLOGO032

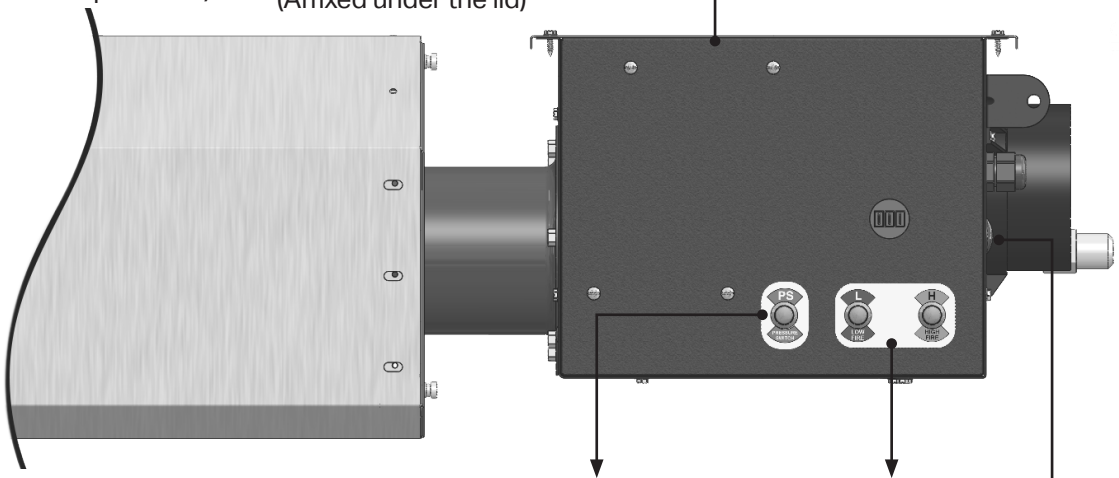


LED CODE	FAULT STATUS	FAULT CODE DELAY
Initial flash on power up, then steady off	No fault, normal operation	No delay
Steady on	Module failure / Internal fault	No delay
1 flash	Ignition failure	3 minutes
2 flashes	APS air flow fault NOTE: fan/intake/exhaust	1-30 seconds
4 flashes	Erroneous flame signal	No delay
No flash on 117V start-up	Transformer fault	No delay

NOTE: Lockout LED CODE appears on completion of the soft lockout operation.

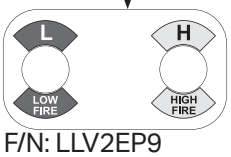
F/N: LLTB007(3)
(Affixed under the lid)

Left Panel
(Fan Compartment)

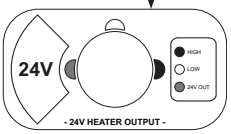




F/N: LLV2EP15



F/N: LLV2EP9



F/N: LLV3EP4
White Crescent

WARNING

Avoid Serious Injury, Death, or Property Damage.
Maintain Clearances to Combustible to Prevent the Risk of Fire.

Clearances to combustibles must be maintained at all times in order to prevent the ignition of combustible materials. 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's thermostats or, in the absence of such thermostats, in a conspicuous location. Clearances are provided on the heater's safety label and in the heater's Installation, Operation, and Maintenance manual. Product installation and operation must comply with applicable standards, codes, and regulations. Post this tag adjacent to the heater's thermostat or controls before operating the heater.

California Proposition 65

This product can expose you to chemicals including lead and carbon monoxide, which are known to the State of California to cause birth defects or other reproductive harm.

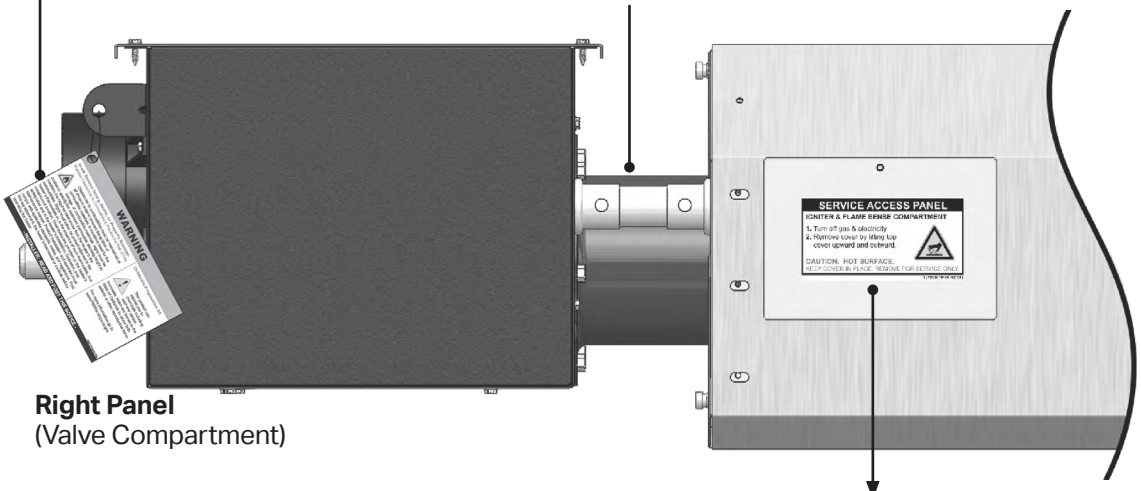
For more information go to www.P65Warnings.ca.gov.

LL001-938-07/18 (CDS)

- INSTALLER: READ AND POST THIS NOTICE -

F/N: LL001 - Clearance Safety Tag
(Affix adjacent to heater's thermostat)

16" Burner Tube



Right Panel
(Valve Compartment)

SERVICE ACCESS PANEL

IGNITER & FLAME SENSE COMPARTMENT

1. Turn off gas & electricity.
2. Remove cover by lifting top cover upward and outward.

CAUTION: HOT SURFACE.
KEEP COVER IN PLACE. REMOVE FOR SERVICE ONLY.

F/N: LLTB026

2.0 Safety

Read and understand all safety information and warnings in this manual prior to installation, operation, and maintenance of this tube heater. Warnings indicate a potentially hazardous situation which, if not avoided, could result in death or injury.

⚠ WARNING



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

Warning Symbols

Safety is the most important consideration during installation, operation, and maintenance of the heater. You will see the following symbols and signal words when there is a hazard related to safety or property damage.

⚠ WARNING

Warning indicates a potentially hazardous situation which, if not avoided, could result in death or injury.

⚠ CAUTION

Caution indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Notice indicates a potentially hazardous situation which, if not avoided, could result in property damage.

Applications

This is **not** an explosion proof heater. This heater may not be used in a Class 1 or Class 2 Explosive Environment. Consult your local fire marshal, insurance carrier, and other authorities for approval if the proposed installation is in question.

Patio

This patio heater is specifically designed to provide heated comfort in a **non-residential outdoor environment**. When properly integrated into a patio design, the heaters generally increase the comfort levels.

Standards, Certifications, and Government Regulations

Installation of this tube heater must conform with all applicable local, state, and national specifications, regulations, and building codes. Contact the local building inspector and/or fire marshal for guidance.

In the absence of local codes, the installation must conform to the latest edition of:

United States: National Fuel Gas Code, ANSI Z223.1 (NFPA 54).

Copies of the Standards can be viewed or purchased at www.nfpa.org.

⚠ WARNING

Not For Use in Indoor Living Spaces. Installing this unit in residential indoor living spaces or sleeping quarters, such as bedrooms or basements, may result in property damage, serious injury, or death. This unit is approved for **unvented commercial/industrial outdoor use only**.

Sprinkler Heads:

Fire sprinkler heads must be located at an appropriate distance from the heater to avoid accidental discharge of the fire suppression system. This distance may exceed the published clearances to combustibles (see Chart 2.2 on page 9). Certain applications will require the use of a higher classification of sprinkler heads or relocation of the heaters. Chart 2.1 is derived from NFPA 13 Table 3-2.5.1. Some manufacturers may supply sprinklers with temperature ratings that vary from the chart below. Consult the manufacturer of the sprinkler heads and NFPA 13 for more information.

Chart 2.1 • Sprinkler System Temperature Ratings

Classification	Max. Ceiling Temperature	Sprinkler Activation Temperature	Glass Bulb Color	Fusible Link Color
Ordinary	100°F	135°F - 170°F	Orange (135°F) Red (155°F)	Black or No Color
Intermediate	150°F	175°F - 225°F	Yellow (175°F) Green (200°F)	White
High	225°F	250°F - 300°F	Blue	Blue
Extra High	300°F	325°F - 375°F	Purple	Red
Very Extra High	375°F	400°F - 475°F	Black	Green
Ultra High	475°F	500°F - 575°F	Black	Orange
Ultra High	625°F	650°F	Black	Orange

Clearances to Combustibles

A critical safety factor to consider before installation is the clearances to combustibles. **Clearance to combustibles** *is defined as the minimum distance you must have between the tube surface, or reflector, and the combustible item*. Considerations must also be made for moving objects around the tube heater. The following is a partial list of items to maintain clearances from:

Combustible items:

- Wood
- Paper
- Fabric
- Chemicals
- Paint
- Parked vehicles
- Gasoline
- Storage racks

Moving Objects:

- Overhead doors
- Vehicle lifts
- Cranes
- Hoists

Hazards:

For maximum safety the building must be evaluated for hazards before installing the heating system. Examples include, but are not limited to:

- Gas and electrical lines
- Combustible and explosive materials
- Chemical storage areas
- Areas of high chemical fume concentrations
- Provisions for accessibility to the heater
- Adequate clearances around air openings
- Combustion and ventilating air supply
- Vehicle parking areas
- Vehicles with lifts or cranes
- Storage areas with stacked materials
- Lights
- Sprinkler heads
- Overhead doors and tracks
- Dirty, contaminated environment

⚠ 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, and vapor in the vicinity of the heater.

⚠ CAUTION

Children and adults should be alerted to the hazards of high surface temperatures and should stay away to avoid burns or clothing ignition.

Young children should be carefully supervised when they are in the same space as the heater.

Clothing or other flammable materials should not be hung from the heater or placed on or near the heater.

Any guard or other protective device removed for servicing the heater must be replaced prior to operating the heater.

Installation and repair should be done by a qualified service person. The heater should be inspected before use and at least annually by a qualified service person. More frequent cleaning may be required as necessary. It is imperative that the control compartment, air passageways, and burner(s) of the heater be kept clean.

When installing the tube heating system, the minimum clearances to combustibles for your series tube heater and system configuration must be maintained. These distances are shown in Chart 2.2 on page 9 and on the burner control box. If you are unsure of the potential hazards, consult your local fire marshal, fire insurance carrier, or other qualified authorities on the installation of gas fired tube heaters for approval of the proposed installation.

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's thermostat or in a conspicuous location.

The stated clearance to combustibles represents a surface temperature of 90°F (50°C) 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.

⚠ WARNING



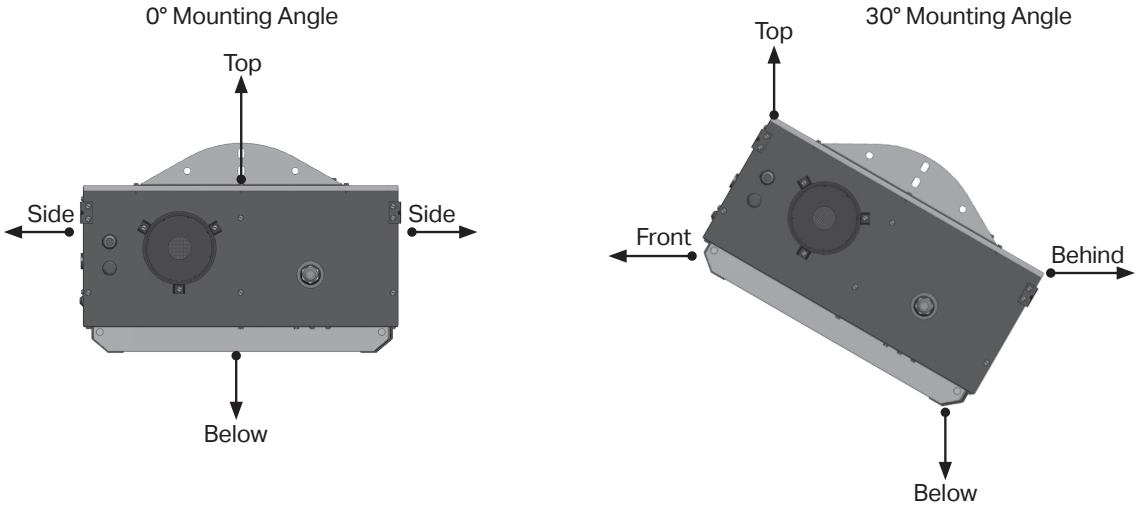
Failure to comply with the stated clearances to combustibles may result in personal injury, property damage, and/or death.

Chart 2.2 • Clearances to Combustible Materials in Inches (see Figure 2.1)

Model Number	Mounting Angle*	Sides		Top	Below	End
		Front	Behind			
HL2-DS-30-65 [N, P]	0°	25	25	6	60	12
	30°	36	10	9	47	12
HL2-DS-30-80 [N, P]	0°	25	25	6	60	12
	30°	36	10	9	47	12
HL2-DS-30-100 [N, P]	0°	25	25	6	77	12
	30°	45	10	9	64	12

* Heaters mounted on an angle between 0° and 30° must maintain clearances posted for 0° or 30°, whichever is greater.

Figure 2.1 • Mounting Angles



3.0 Installation

⚠ WARNING



Improper installation, adjustment, alteration, service, or maintenance can cause property damage, serious injury, or death.

Read and understand the installation, operation, and maintenance instructions thoroughly before installing or servicing this equipment.

Only trained, qualified gas installation and service personnel may install or service this equipment.

Design Considerations and Prechecks

Placement of infrared heaters is influenced by many factors. All installation manuals, along with national, state, and local codes, address these issues. It is critical that you read, understand, and follow all guidelines and instructions.

To ensure a properly designed heating system, a layout should be developed for the correct placement of the burner control box, tubes, and reflectors. Inspect and evaluate the mounting conditions, gas supply, and wiring.

When designing an infrared radiant heating system for a patio, consider the following:

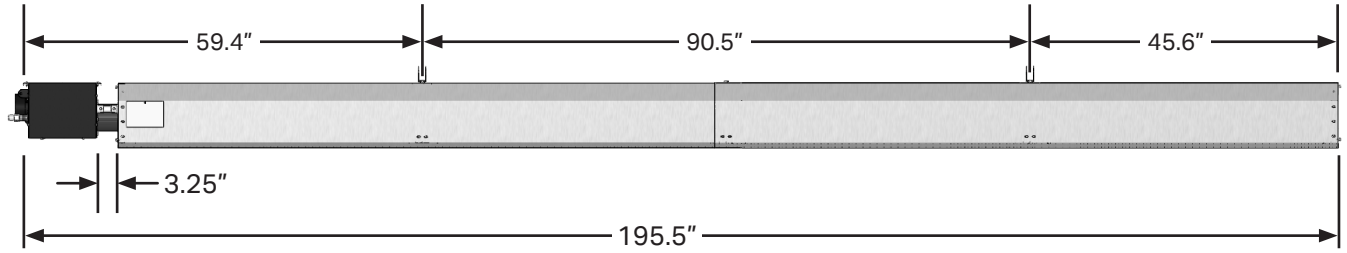
- What expectations does the end user have for coverage and comfort level of the space?
- Does the design meet the needs of the space?
- Have recommended mounting heights been observed?
- Have all clearances to combustible situations been observed?
- Is the supply (burner) end of the heater located where more heat is required?
- Is it best to offset the heaters?

IMPORTANT: Fire sprinkler heads must be located at an appropriate distance from the heater. This distance may exceed the published clearances to combustibles as posted on the heater. Certain applications may require the use of high temperature sprinkler heads or relocation of the heaters. Refer to Chart 2.1 on page 7 and NFPA 13.

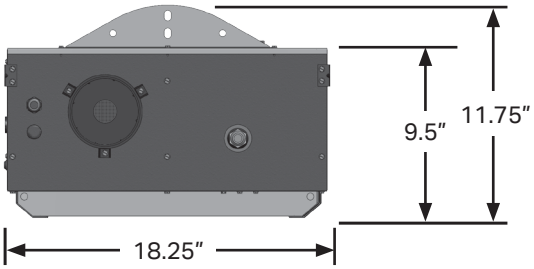
Sprinkler systems containing propylene glycol or other flammable substances are not to be used in conjunction with this heater without careful consideration for and avoidance of potential fire or explosion hazards. For further information consult NFPA 13.

The comfort level of a person or space may be diminished with wind velocities above 5 mph. The use of adequate wind barrier(s) may be required (see page 18).

Figure 3.1 • Heater Dimensions



SIDE VIEW



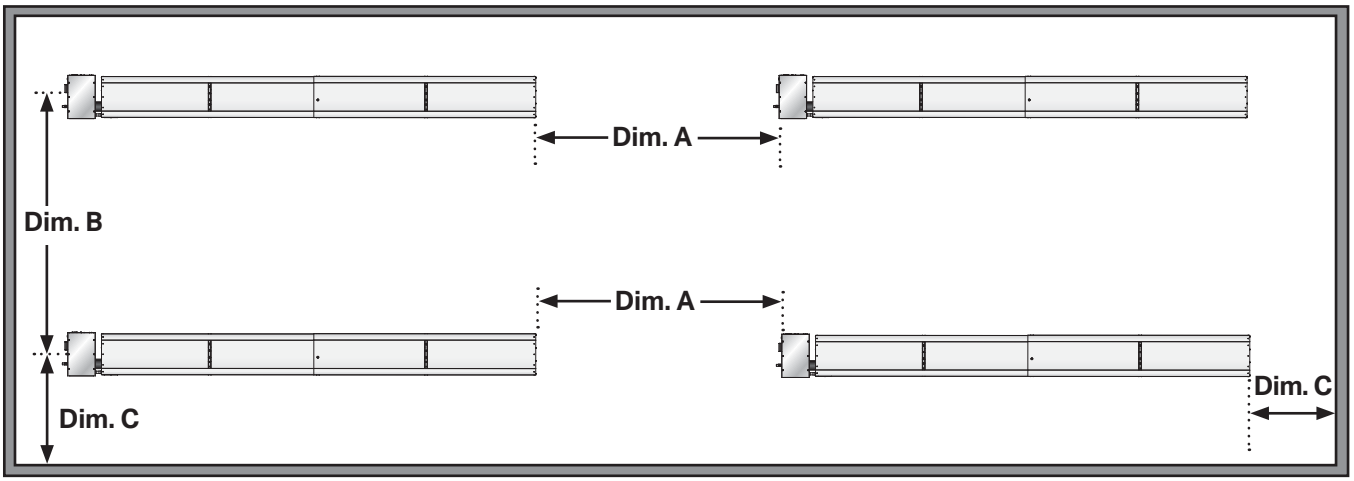
END VIEW

Chart 3.1 • Recommended Mounting Heights and Coverages for HL2-DS Series Heaters

Max. Input (BTU/h)	Typical or Recommended Mounting Height*	Coverage Area Straight Config. (LxW)	Distance Between Heaters (ft.) Dim. A	Distance Between Heater Rows Dim. B	Max. Distance Between Heaters and Wall - Dim. C
65,000	9′ - 16′	26′ x 12′	10′ - 20′	20′ - 40′	16′
80,000	9′ - 16′	26′ x 12′	10′ - 20′	20′ - 40′	16′
100,000	9′ - 16′	26′ x 12′	10′ - 20′	20′ - 40′	16′

* Factory recommended mounting heights are listed as a guideline. If infrared heaters are mounted too low or too high, they may result in discomfort due to excessive heat or lack of heat. Detroit Radiant Products Company generally recommends observing the recommended mounting heights to optimize comfort conditions. However, certain applications such as spot heating, freeze protection, outdoor patio heating or very high ceilings may result in the heaters being mounted outside of the factory recommended mounting heights.

Figure 3.2 • Mounting Height Dimensions (see Chart 3.1 for dimensions)



NOTE: Dimensions A, B, & C are based upon heaters hung at the factory recommended mounting height.

Heater Assembly Instructions

⚠ WARNING



At least two people are required to assemble and hang this heater. Failure to follow these instructions can result in property damage, serious injury, or death.

Read and understand the installation, operation, and maintenance instructions thoroughly before installing or servicing this equipment.

Only trained, qualified gas installation and service personnel may install or service this equipment.

❶ Remove the lids from the two (2) tube and reflector boxes and set end to end in assembly area. Place one (1) tube and reflector assembly on each box, with the "U" end on the outside and the tubes facing upward (see Fig. 3.3).

❷ Open the burner carton, remove the burner box, and place the empty carton at the burner end of the first tube and reflector assembly.

❸ Disconnect the pressure switch hose, Glo-Bar connector, and electrode wire from their respective connections on the burner tube. Remove the conduit nut from the end of the conduit and set aside. Holding the burner box on its side so as to keep the Glo-Bar clear, place the burner tube through the reflector, lining the swaged end up with the combustion tube (see Fig. 3.3). Rotate the burner box flat so the lid is facing downward. Carefully slide the burner tube into the combustion tube, and the conduit, hose, and wires through the conduit hole in the reflector. Screw the nut onto the conduit and securely fasten.

Figure 3.3 • Assembly Layout

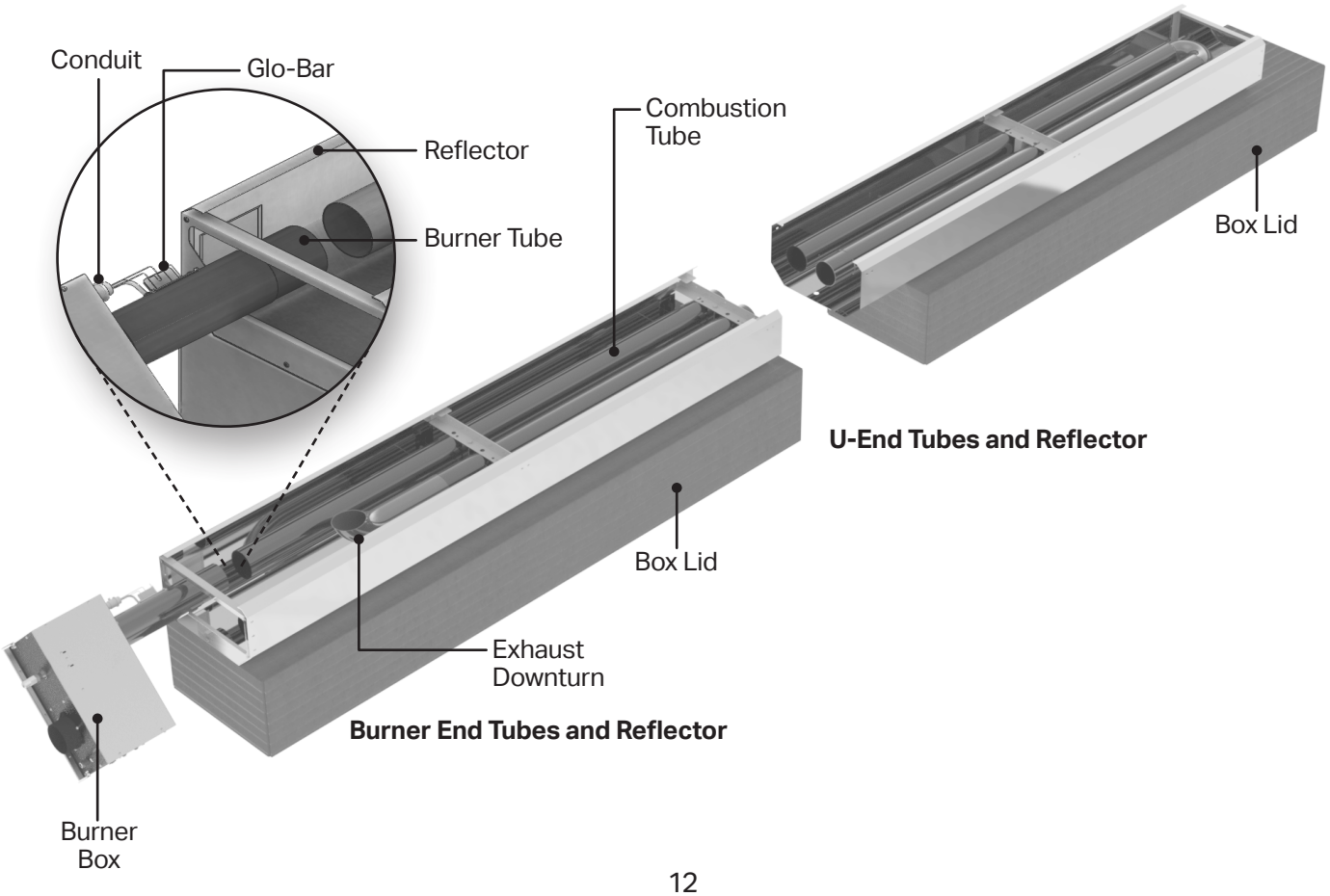
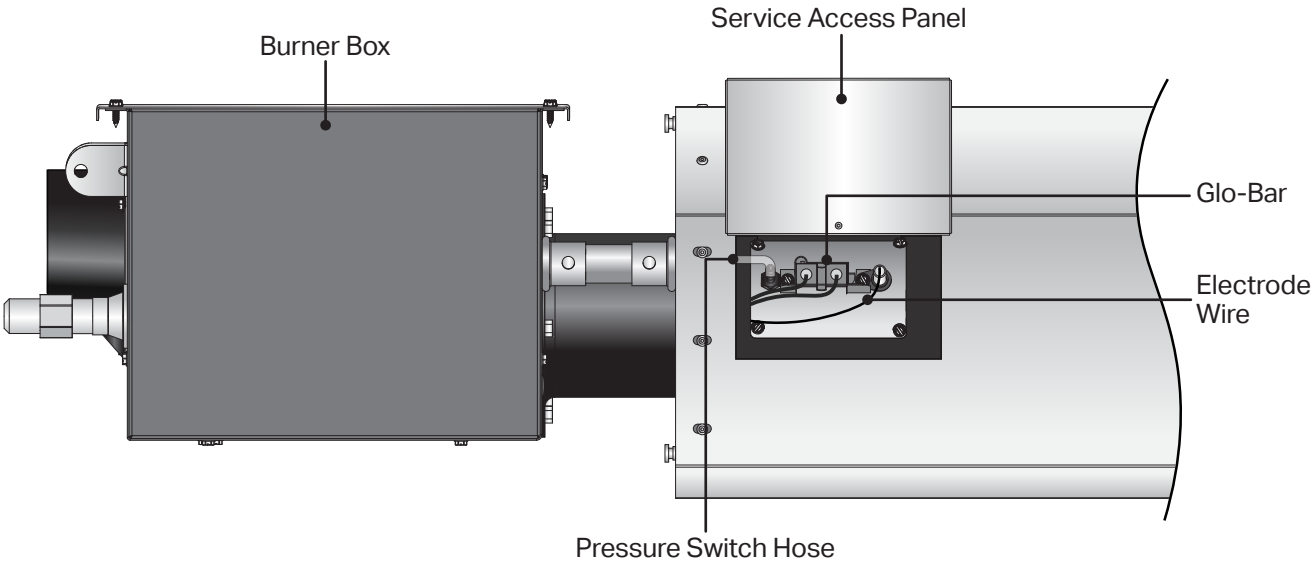


Figure 3.4 • Service Access Panel Connections



4. Rotate the service access panel up so the Glo-Bar compartment is accessible. Re-connect the Glo-Bar, pressure switch hose, and electrode wire, leaving the Glo-Bar connector just outside of the conduit (see Fig. 3.4). **Carefully rotate the service access panel back to its closed position.**
5. Ensure that the swaged end of the burner tube is completely inserted into the combustion tube, then secure with one (1) included sheet metal screw.
6. Align both tube and reflector assemblies, then carefully slide the assemblies together, guiding the radiant tubes into one another. The exhaust end reflector will slightly overlap the burner end reflector. The tube and reflector assemblies are in the correct position when the reflector screw holes are aligned (see Fig. 3.7).
7. Remove the screw holding the exhaust downturn and set aside. Insert the baffle into the exhaust tube, locking each baffle together as they are inserted. Once in the tube, ensure the baffles are in the vertical position and flush with the end of the tube (see Fig. 3.5). Reattach the exhaust downturn and secure with one (1) sheet metal screw.

Figure 3.5 • Baffle Placement

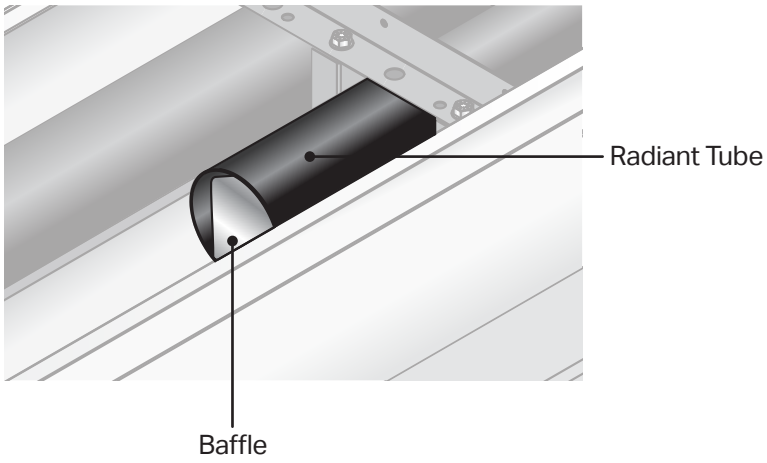
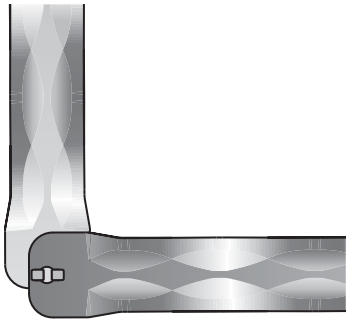


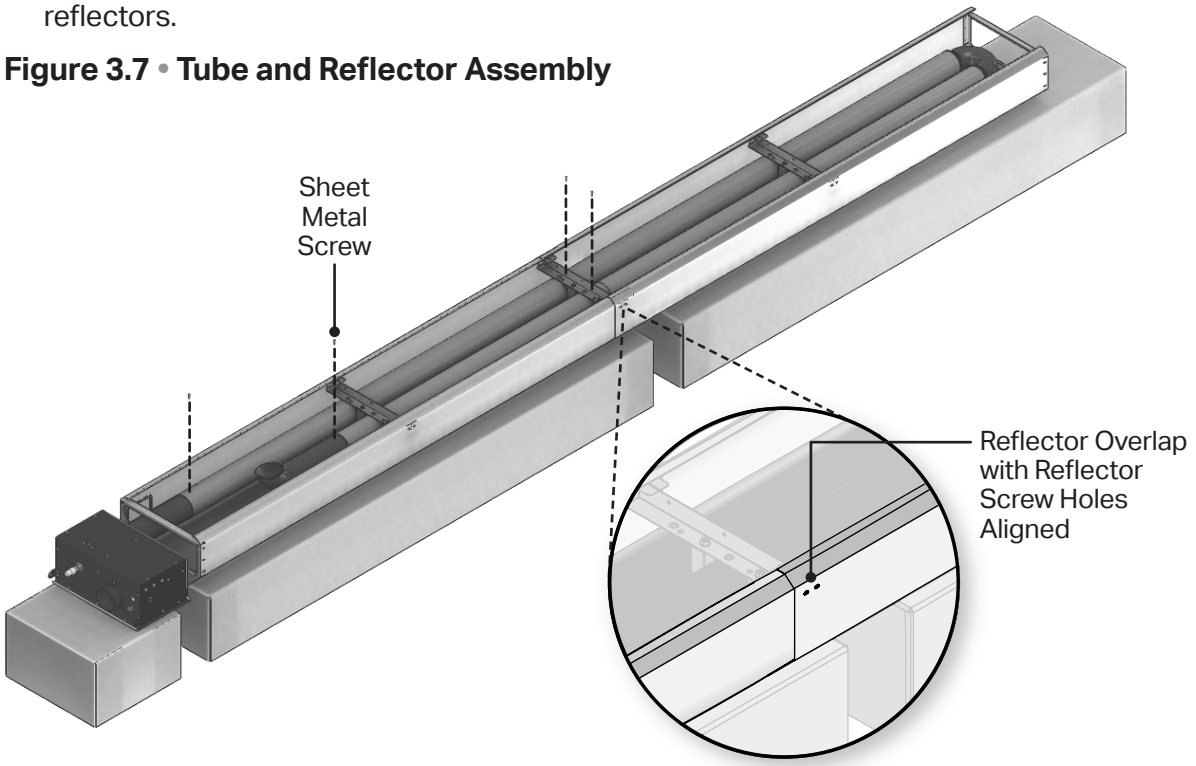
Figure 3.6 • Baffle Assembly



❽ Secure both radiant tube sections together with one (1) included self-tapping screw in each.

❾ Using the four (4) screws provided and a nut driver, attach the reflectors together so that the screws are hand tight. **Do not** overtighten as this will not allow for the expansion and contraction of the reflectors.

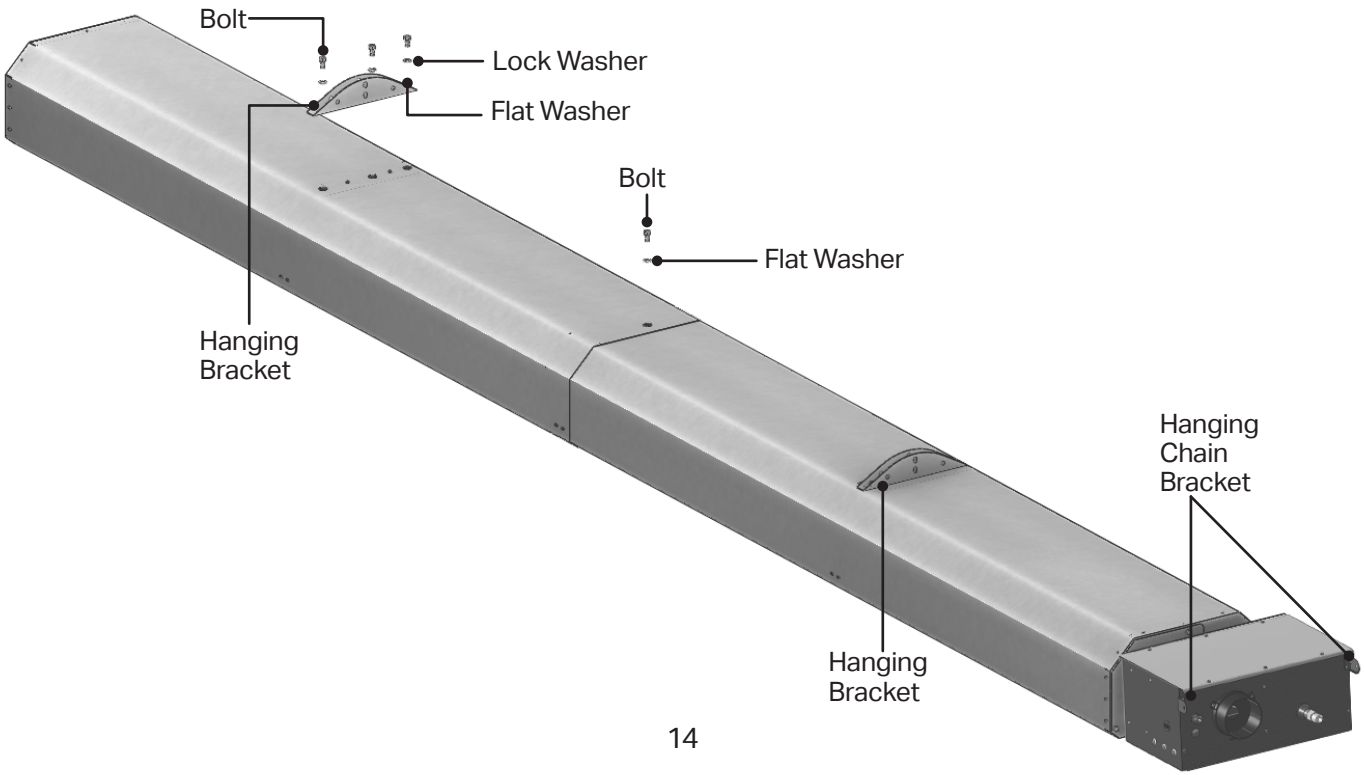
Figure 3.7 • Tube and Reflector Assembly



❿ Insert the bolt in the nutsert and secure (see Fig. 3.8).

⓫ With one person positioned at each end of the heater, carefully flip the unit over and set back down onto the cartons. Using the supplied bolts attach the hanging brackets to the top of the unit (see Fig. 3.8).

Figure 3.8 • Mounting Bracket Placement



Heater Placement and Suspension

⚠ WARNING



Improper suspension of the tube heater may result in collapse and being crushed. Always suspend from a permanent part of the building structure that can evenly support the total force and weight of the heater.

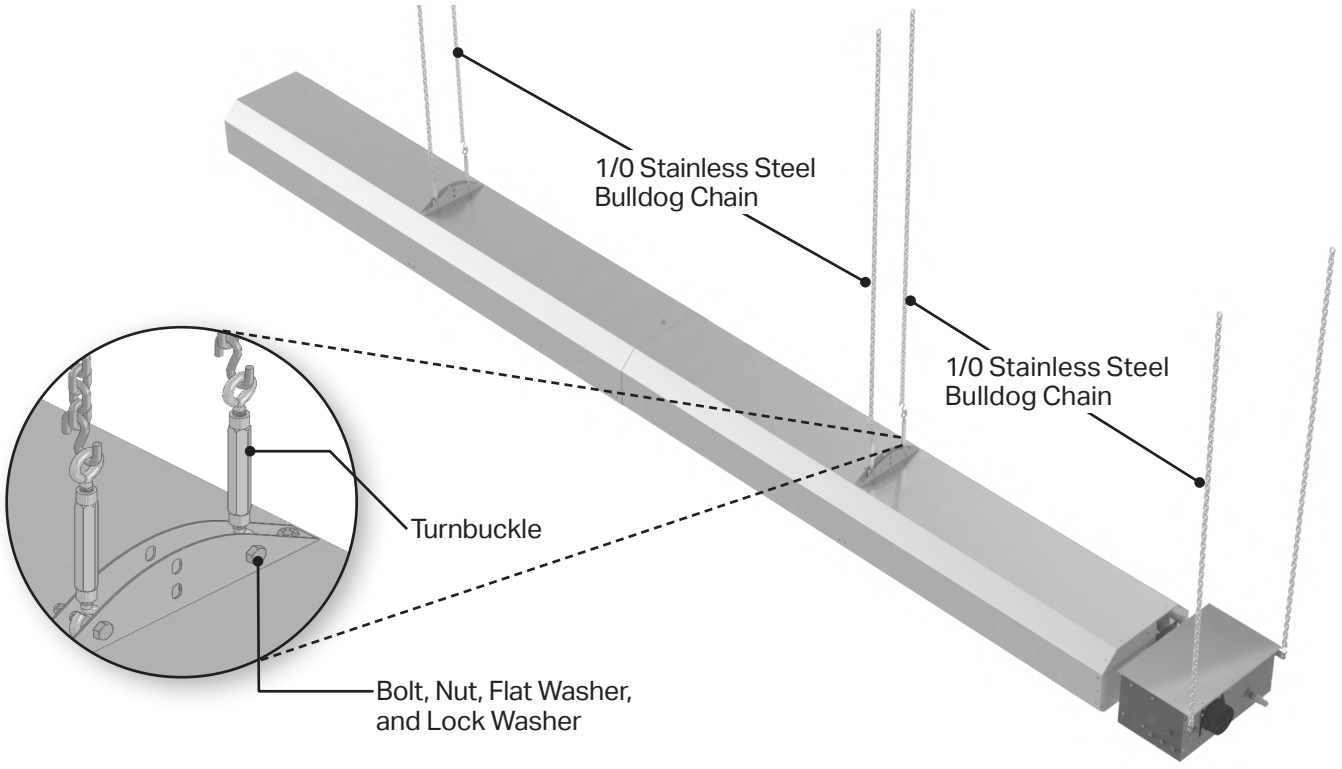


Failure to maintain minimum clearances to combustibles may result in fire and/or explosion, property damage, serious injury, or death. Always maintain minimum clearances and post clearance safety limit signs or the clearance safety tag where needed.

Suspension of the heater must conform to applicable codes referenced in the Safety section and these instructions.

1. Mark locations for hanging points.
2. Prepare mounting surface. If necessary, weld blocks and drill holes.
3. Fasten beam clamp, screw hook, or other type of suspension anchor to hanging point.
4. Attach and close stainless steel S-hook and 1/0 stainless steel bulldog chain to anchor. Check that it is securely attached. **NOTE:** Threaded rod may be used.
5. Attach stainless steel S-hooks to turnbuckles and hanging bolts inserted through the hanging brackets. Adjust chain lengths until heater is level and equal weight distribution is achieved.
6. Once heater is level, insert egg crate assemblies by sliding in the reflector, 2 from each end (see Figure 3.11).
7. Follow instructions on page 17 to install end panels.

Figure 3.9 • Mounting the Heaters



Sway Bracing for High Air Movement and Outdoor Applications

For high air movement and outdoor applications, install side restraints (field supplied) to reduce side to side swaying (Fig. 3.10). Side restraints should be installed so that they are angled at 45° ± 10° and should be placed at every designated suspension point. It may be necessary to add additional support structures at the ceiling level for the connection of these side suspensions. Apply longitudinal (forward/backward) bracing (P/N: THGH10-3 or field supplied) at each reflector hanging bracket. The desired suspension material shall have a minimum work load rating of 200 pounds.

Figure 3.10 • Heater with Sway Bracing Installation

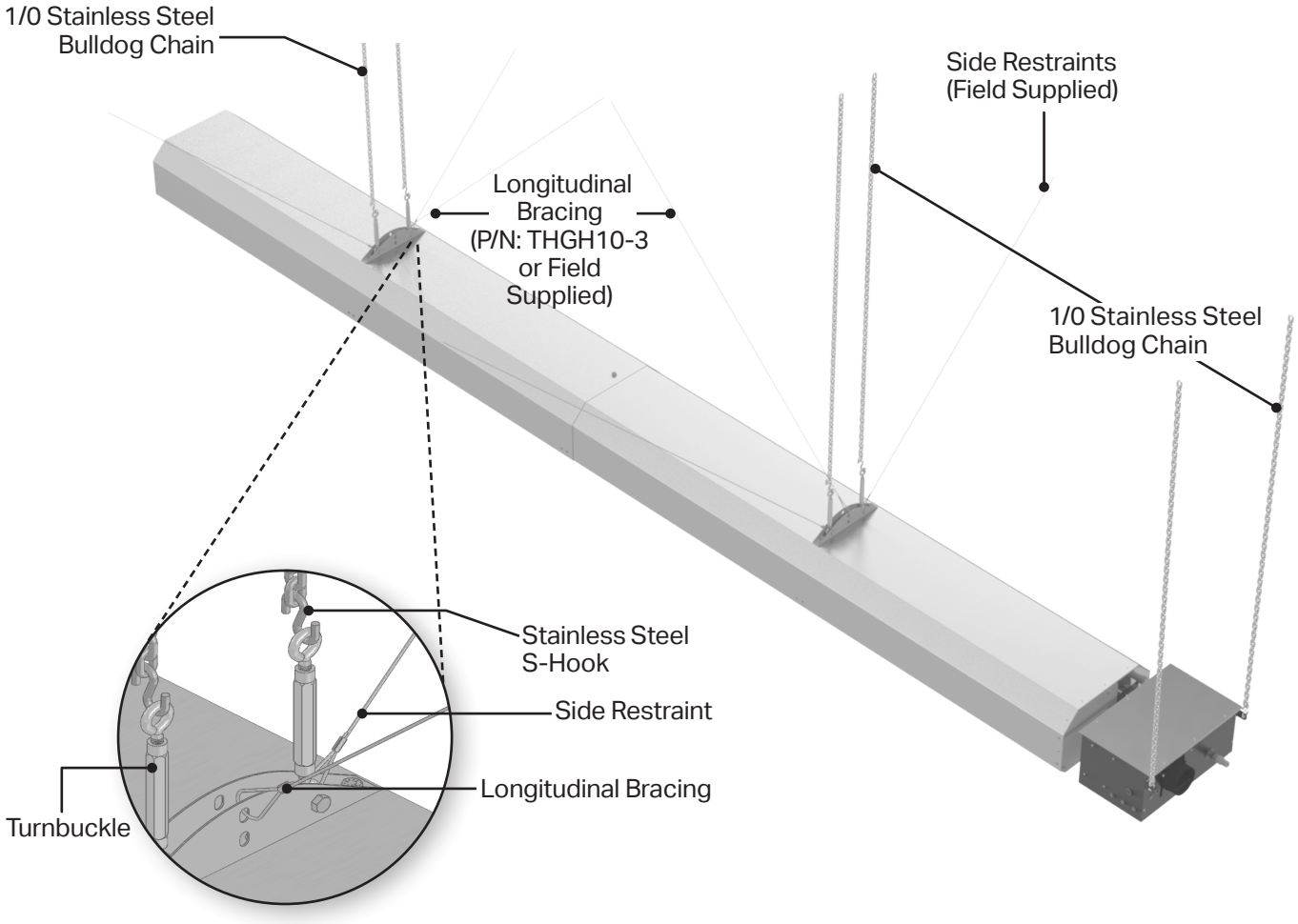
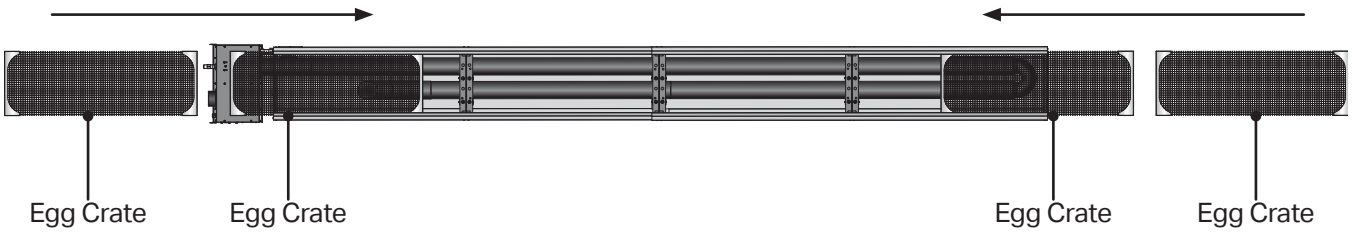


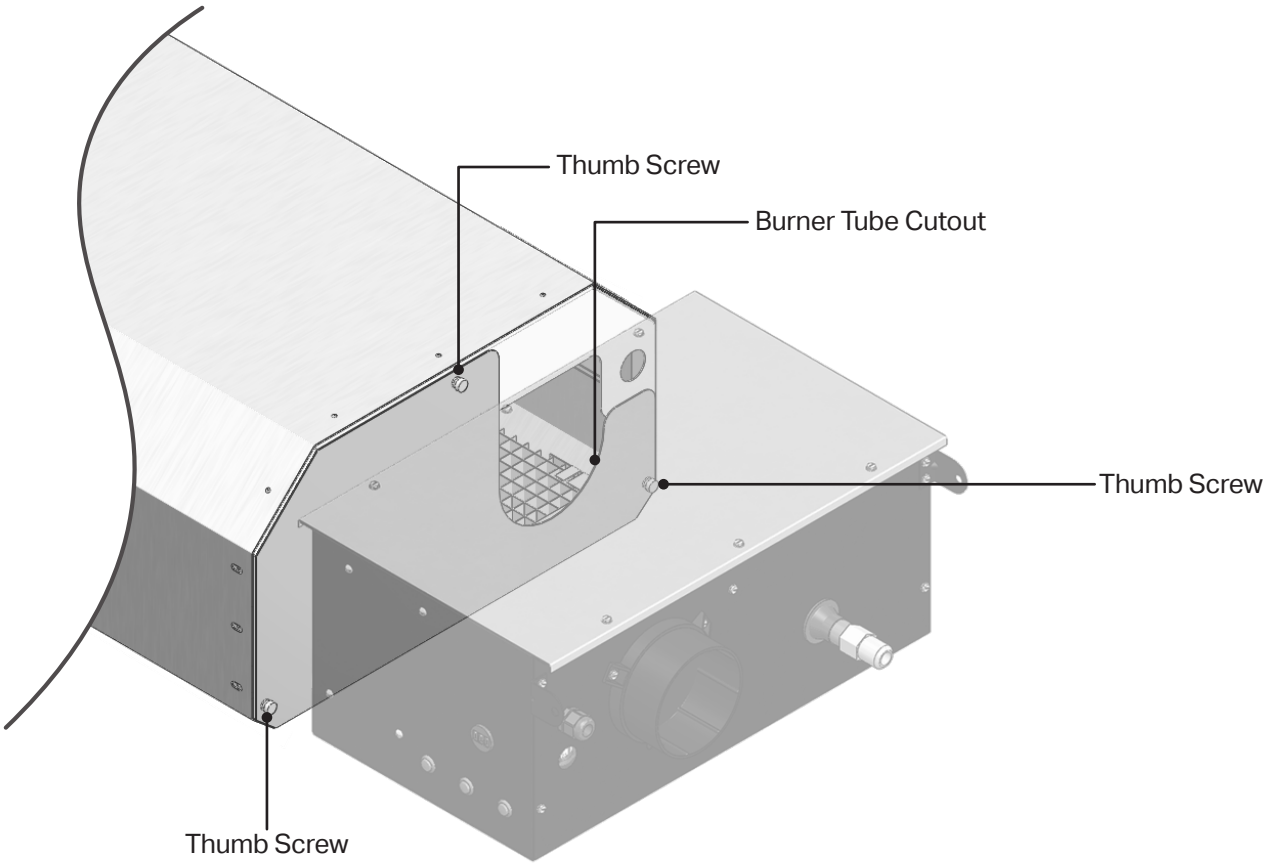
Figure 3.11 • Egg Crate Installation



End Panel Installation

1. Once egg crates are installed, place the reflector end panel flush on the end of the reflector, ensuring edges and screw holes are aligned. Secure with three (3) thumb screws (see Figure 3.12).
2. Repeat process with the U-end reflector end panel.

Figure 3.12 • End Panel Installation



Outdoor Unvented Operation

⚠ WARNING



This appliance must be used outdoors only! Use of this heater indoors may result in property damage, serious injury, or death.

This is an unvented, outdoor appliance. If the use of wind barriers is required, consider the following:

- Where wind barriers are used, natural or mechanical means **must** be provided to supply and exhaust a minimum of 4 CFM/1,000 BTU/h input of installed heaters.

  NOTE: Gravity or mechanical means may be used to accomplish the air displacement. Local codes may require that the mechanical exhaust system be interlocked with the electrical supply line to the heaters, enabling both to function simultaneously.

- When the space requires mechanical ventilation, the exhaust openings for removing the flue products must be located above the level of the heater(s).

Figure 3.13 • Minimum End Clearances



Gas Supply Installation Instructions

The gas supply to the unit heater must be connected and tested in accordance with national, state, and local codes along with guidelines in this manual. In the United States, refer to the latest edition of the ANSI Z223.1 (NFPA54) Standard.

Supply gas piping to the unit should conform with the local and national requirements for type and volume of gas handled, and pressure drop allowed in the line. Avoid pipe sizes smaller than ½".

⚠ WARNING



Improperly connected gas lines may result in serious injury and death, explosion, poisonous fumes, toxic gases, or asphyxiation. Connect gas lines in accordance to national, state, provincial, and local codes.

Gas pressure to the appliance controls must never exceed ½" PSI (14" W.C.). Damage to the controls may result.

⚠ CAUTION

Gas lines should be purged of air as described in ANSI Z223.1 (NFPA 54) or CSA-B149.1 (latest version). Installation of the piping must also conform with the local building codes or, in the absence of local codes, with the latest edition of the National Fuel Gas Code (NFPA 54).

NOTICE

The total input to the appliance must fall within +/- 5% of the rated input as indicated on the rating plate. Otherwise the heat exchanger may prematurely fail.

IMPORTANT! Before connecting the gas supply to the burner control box:

- Verify that the heater's gas type (as listed on the rating plate) matches that of your application and the installation complies with national and local codes and requirements of the local gas company.
- Unless otherwise noted on the rating plate, this infrared heater is designed and orificed to operate on standard BTU gas. Contact the factory if utilizing non-standard BTU gas.
- Check that the gas piping and service has the capacity to handle the total gas consumption of all heaters being installed, as well as any other gas appliances being connected to the supply line.
- Check that the main gas supply line is of proper diameter to supply the required fuel pressures.
- If utilizing used pipe, verify that its condition is clean and comparable to a new pipe. Test all gas supply lines in accordance with local codes.

To connect the gas:

⚠ WARNING



Failure to install, operate, or service this appliance in the approved manner may result in property damage, injury, or death. Only trained, qualified gas installation and service personnel may install or service this equipment.

The HL2-DS series heater is equipped to connect to the corrugated stainless steel tube (CSST) flexible gas connector (included). **Do not connect the main gas line directly to the heaters gas inlet without the use of the flexible connector.** All piping must be installed in accordance with the requirements outlined in the National Fuel Gas Code ANSI/Z223.1 (latest edition) or CSA-B149.1. Support all gas piping with pipe hangers, metal strapping, or other suitable material. Do not rely on the heater to support the gas pipe.

When connecting piping to the unit, the use of a thread joint compound is required. The thread compound (pipe dope) shall be resistant to the action of the type of gas being used or any other chemical constituents of the gas to be conducted through piping. Use of Teflon® tape is not permitted.

⚠ WARNING



Always use two (2) opposing wrenches to tighten mating pipe connections to prevent excessive torque on the gas valve and manifold pipe. Excessive torque can damage the valve and/or misalign the orifice, resulting in fire, explosion, serious injury, or death.

Connect the main gas supply line with an approved flexible connector or, if the authority having jurisdiction requires rigid piping, the use of approved swing joints may be used. If swing joints are utilized, the heater must be allowed to freely expand and contract without causing undue stress on the gas pipe.

The heater shall not be connected to the building piping system with rigid pipe or semi-rigid metallic tubing, including copper. When using such material, an intermediate connection device that allows for the heater expansion must be used.

The gas outlet must be in the same room as the appliance is installed, and must be accessible. It may not be concealed within or run through any wall, floor, or partition. When installing the heater in a corrosive environment (or near corrosive substances), use a gas connector suitable for the environment. Do not use the gas piping to electrically ground the heater.

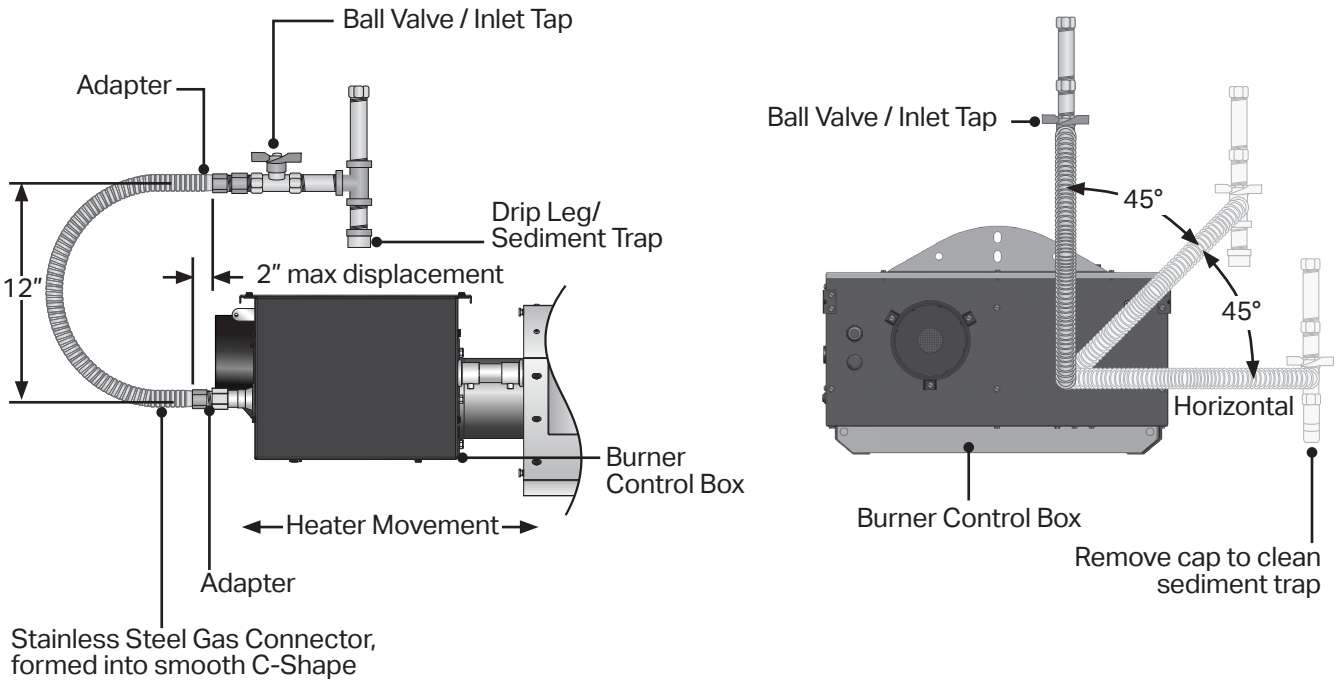
Installation of the Gas Line to the Heater

1. Install a sediment trap / drip leg in the supply line at the lowest spot prior to the gas ball valve. The trap length shall be at least three inches long. Ideally, the trap would be installed as close as possible to the shut off. **NOTE:** For high pressure gas above 14" W.C., a high pressure regulator and ball valve must be utilized and located upstream of the flex connector.
2. Install manual shut off ball valve with optional ⅛" NPT Test connection towards the supply line. The manual shut off ball valve must be located within 6 feet of the appliance's service access door.
3. Install the ⅝" flare to ½" NPT adapter piece downstream of the gas valve as shown in Figures 3.14-3.15. This piece is typically included with the flexible gas connector, loosely installed on one of the flare nuts. **NOTE:** Keep flare surfaces clean and free of sealing compounds. Only the pipe threads require sealing compounds.
4. Form the ½" x 24" stainless steel flexible gas connector into a smooth C-shape, allowing approximately 12 inches between the flexible connector's end nuts (see Figure 3.14). The connector must reach from the gas supply to the appliance without stretching, kinking, or twisting.
5. Attach the flexible connector to the ⅝" flare adapter on the gas line and the other end to the ⅝" flare on the heaters inlet pipe. **DO NOT** connect the connector flare nuts directly to pipe threads. Use only the adapters provided. **DO NOT** kink, twist, or over-torque the connector when installing.

⚠ CAUTION

When using a stainless steel flexible gas connector, **do not** attach the connector nuts directly to the gas pipe supply. Connector nuts must be installed to an approved adapter.

Figure 3.14 • Gas Connection (Flexible Gas Connection Shown)
NOTE: Do not exceed 14 Inches W.C. to the appliance.



In Canada, the infrared heater shall only be connected with a Type I hose connector that is (a) certified as being in compliance with the *Standard for Elastomeric Composite Hose and Hose Couplings for Conducting Propane and Natural Gas, CAN/CGA 8.1*; and (b) of a length of 36 ± 6 in (90 ± 15 cm).

Refer to Chart 3.2 for natural gas and Chart 3.3 for propane to determine the cubic feet per hour (CFH) required for the type of gas and size of unit to be installed. To determine the proper pipe diameter, use the CFH value and the length of pipe necessary from Chart 3.4. In the case where several units are serviced by the same main gas line, the total capacity (CFH) and length of main must be adequate to service all appliances downstream of this main.

Chart 3.2 • Natural Gas Consumption

Model	Input High/Low	Manifold Pressure (Inches W.C)	Min. Inlet Pressure (Inches W.C.)	Max. Inlet Pressure (Inches W.C.)	Gas Consumption (CFH)*
HL2-DS-30-65	65,000 (High)	3.5	5.0	14.0	61.9
	50,000 (Low)	2.2			47.6
HL2-DS-30-80	80,000 (High)	3.5	5.0	14.0	76.2
	52,000 (Low)	1.7			49.5
HL2-DS-30-100	100,000 (High)	3.5	5.0	14.0	95.2
	65,000 (Low)	1.8			61.9

* Assumes an average heating value of 1050 BTU/SCF and a Specific Gravity of 0.60.

Chart 3.3 • Propane Gas Consumption

Model	Input High/Low	Manifold Pressure (Inches W.C.)	Min. Inlet Pressure (Inches W.C.)	Max. Inlet Pressure (Inches W.C.)	Gas Consumption (CFH)*	Gallons p/ Hour
HL2-DS-30-65	65,000 (High)	10.0	11.0	14.0	26	0.71
	50,000 (Low)	4.8			20	0.54
HL2-DS-30-80	80,000 (High)	10.0	11.0	14.0	32	0.87
	52,000 (Low)	4.8			21	0.56
HL2-DS-30-100	100,000 (High)	10.0	11.0	14.0	40	1.08
	65,000 (Low)	4.8			26	0.71

* Assumes an average heating value of 2500 BTU/SCF and a Specific Gravity of 1.53.

Chart 3.4 allows for a 0.3 inch W.C. pressure drop in the supply pressure from the building main to the inlet of the unit. Refer to the chart for the appropriate range of inlet pressures for each gas type. When sizing the inlet gas pipe diameter, make sure that the unit supply pressure can be met after the 0.3 inch W.C. pressure drop has been subtracted from the main pressure. If the 0.3 inch W.C. pressure drop is too high, refer to NFPA 54 or the Gas Engineer's Handbook for other gas pipe capacities.

Install ground joint union with a brass seat and a manual shut-off valve adjacent to the unit for emergency shut-off and easy servicing of controls. A ⅛" NPT plugged tap that is accessible for a test gauge connection is also recommended, as illustrated in Figure 3.15.

A sediment trap must be installed in the supply line in the lowest spot prior to connecting to the heater. The trap length shall be at least three inches long. Ideally, the trap would be installed as close as possible to the shut-off, as shown in Figure 3.15.

Figure 3.15 • Recommended Hardware • Manual Shut Off and Sediment Trap

In Canada, infrared heater shall only be connected with a Type I hose connector that is (a) certified as being in compliance with the *Standard for Elastomeric Composite Hose and Hose Couplings for Conducting Propane and Natural Gas, CAN/CGA 8.1*; and (b) of a length of 36 ± 6 in (90 ± 15 cm).

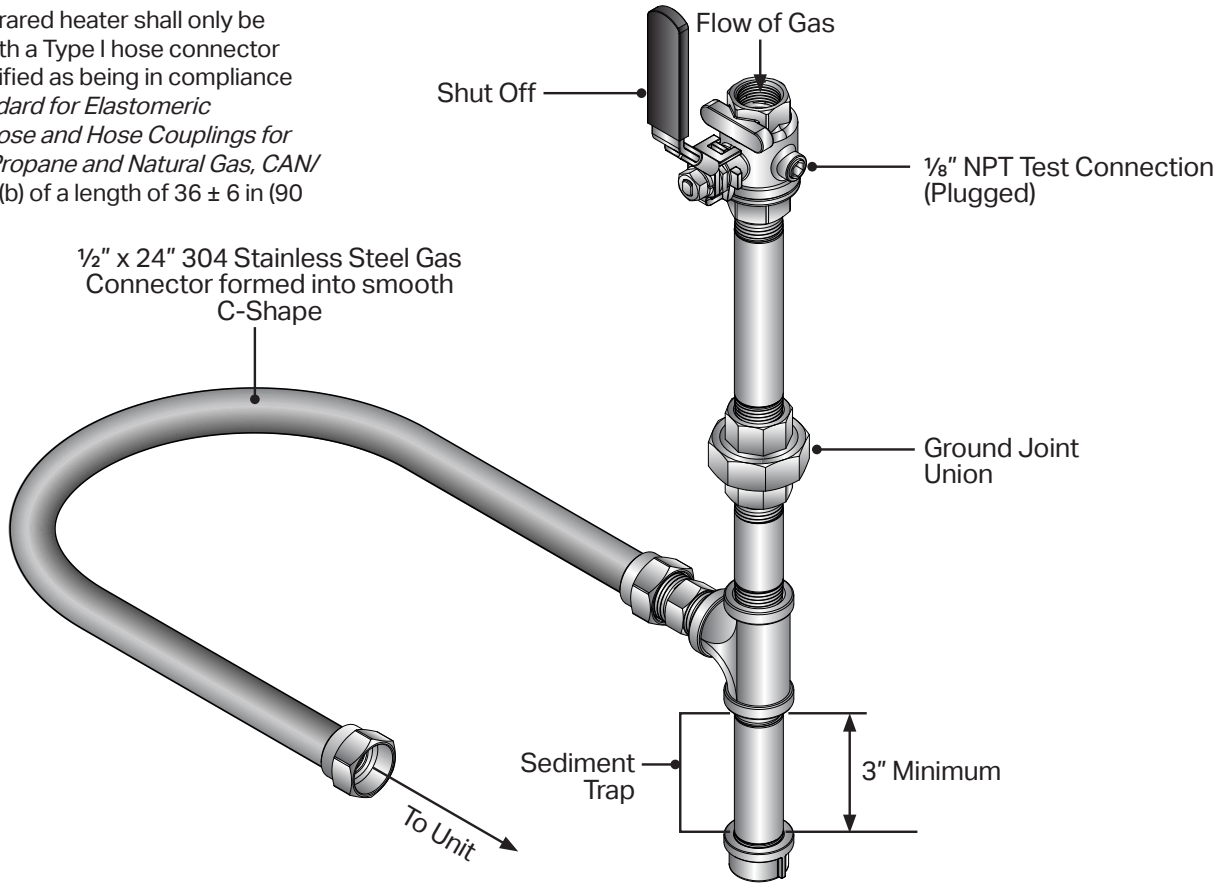


Chart 3.4 • Maximum Capacity for Schedule 40 Metallic pipe, in CFH

Pipe Length	½"		¾"		1"		1 ¼"		1 ½"		2"	
	Nat	**Prop**	**Nat**	**Prop**	**Nat**	**Prop**	**Nat**	**Prop**	**Nat**	**Prop**	**Nat**	**Prop**
10 feet	132	86	278	182	520	340	1050	686	1600	1046	3050	1993
20 feet	92	60	190	124	350	229	730	477	1100	719	2100	1373
30 feet	73	48	152	99	285	186	590	386	890	582	1650	1078
40 feet	63	41	130	85	245	160	500	327	760	497	1450	948
50 feet	56	37	115	75	215	141	440	288	670	438	1270	830
60 feet	50	33	105	69	195	127	400	261	610	399	1150	752
70 feet	46	30	96	63	180	118	370	242	560	366	1050	686
80 feet	43	28	90	59	170	111	350	229	530	346	990	647
90 feet	40	26	84	55	160	105	320	209	490	320	930	608
100 feet	38	25	79	52	150	98	305	199	460	301	870	569
125 feet	34	22	72	47	130	85	275	180	410	268	780	510
150 feet	31	20	64	42	120	78	250	163	380	248	710	464
175 feet	28	18	59	39	110	72	225	147	350	229	650	425
200 feet	26	17	55	36	100	65	210	137	320	209	610	399

The HL2-DS series heater is equipped to receive a gas supply line nipple of ½" NPT Schedule 40 metallic pipe. All piping must be installed in accordance with the requirements outlined in the National Fuel Gas Code ANSI/Z223.1 (latest edition) or CSA-B149.1. Support all gas supply piping with pipe hangers, metal strapping, or other suitable material. Do not rely on the heater to support the gas pipe.

When connecting piping to the unit, the use of a thread joint compound is required. The thread compound (pipe dope) shall be resistant to the action of liquefied petroleum gas or any other chemical constituents of the gas to be conducted through the piping. Use of Teflon® tape is not permitted.

⚠ WARNING



Always use two (2) opposing wrenches to tighten mating pipe connections to prevent excessive torque on the gas valve and manifold pipe. Excessive torque can damage the valve and/or misalign the orifice, resulting in fire, explosion, serious injury, or death.

Leak Testing

⚠ WARNING



Use a soap solution or equivalent for leak testing. Never test for leak with an open flame. Failure to comply could result in personal injury, property damage, or death.

Always leak test final gas assembly for gas leaks according to the procedures outlined in NFPA 54 and all local codes and/or Standards.

For leak testing on pressures below ½" PSI

Before leak testing, close the field installed manual shut off valve shown on Figure 3.15 on the supply line to isolate the gas valve from the pressure.

NOTE: All factory installed gas connections have passed an approved leak test.

For leak testing on pressures above ½" PSI

When leak testing with pressures above ½" PSI (14" W.C.), the unit must be isolated from the supply pipe. Close the field installed manual shut off valve, disconnect the supply line to the unit, and temporarily cap the supply line for testing purposes.

⚠ WARNING



Gas pressures to the appliance controls must never exceed 14" W.C. (½" PSI). Supply pressures greater than 14" W.C. can damage the controls, resulting in personal injury, property damage, or death.

Electrical Requirements and Wiring Diagrams

⚠ WARNING

Shock hazard. Disconnect power supply before making wiring connections to prevent electrical shock and equipment damage.

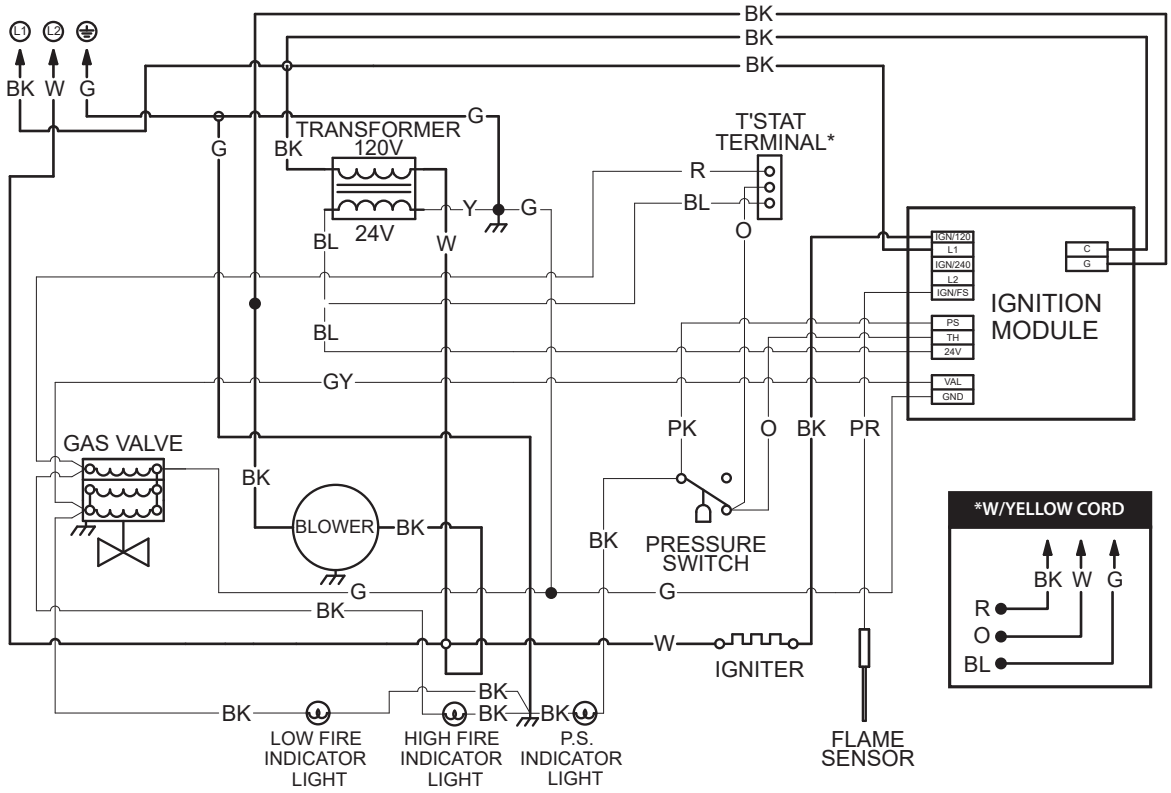
Any original factory wiring that requires replacement must be replaced with wiring material having a temperature rating of at least 105°C minimum voltage.

All field installed wiring to the tube heater must be must be done in accordance with the national, state, provincial, local codes, and to the guidelines in this manual. In the United States, refer to the most current revisions to the Electrical Code ANSI/NFPA 70. The unit must be electrically grounded according to these codes. Line polarity must be observed when making field connections.

Internal Wiring Diagram

Before wiring this appliance, check the existing wiring; replace if necessary. If any of the original wire supplied with the appliance must be replaced, it must be replaced with copper wiring material having a rating of at least 300 V, 105°C.

Figure 3.16 • Internal Wiring Diagram



WIRING INFORMATION:

LINE VOLTAGE:

- FACTORY STANDARD
- FACTORY OPTION
- FIELD INSTALLED

LOW VOLTAGE:

- FACTORY STANDARD
- FACTORY OPTION
- FIELD INSTALLED

⚠ WARNING



Incorrect or improper wiring may result in shock, injury, or death. Field wiring to the heater must be connected and grounded in accordance with national, state, provincial, local codes, and to the guidelines in this manual. Refer to the most current revisions to the ANSI/NFPA 70 Standard.

All field wiring to the HL2-DS series heater must be done in accordance with the national, state, provincial, local codes, and the guidelines in this manual. In the United States, refer to the most current revisions to the Electrical Code ANSI/NFPA 70. The unit must be electrically grounded according to these codes.

Field Wiring Supply Voltage

Before proceeding with electrical connections, ensure that the supply voltage, frequency, phase, and current capacity meet the requirements specified on the rating plate. A dedicated line voltage supply with properly sized wire should run directly from the main electrical panel to the heater. The power to the unit must be protected with a circuit breaker appropriate for the load. The unit must be electrically grounded in accordance with local codes or, in their absence, with the latest edition of the National Electrical Code, ANSI / NFPA 70 and/or the Canadian Electrical Code CSA C22.1 (latest edition).

⚠ CAUTION

The power supply to the heater must be within +/- 5% of the voltage rating as indicated on the rating plate of the appliance. If input power does not meet these specifications, contact your utility company.

The heater comes equipped with a supply cord to connect the main power supply. It is located at the rear of the heater's burner box and utilizes a grounding prong. This plug must be connected into an appropriate outlet receptacle that is properly installed and grounded in accordance to local codes and ordinances.

The grounding receptacle must be installed within 5 feet of the heater's service panel and located in the space occupied by the appliance. When plugging in the heater, make sure the supply cord is protected from damage and keep all cords away from the heater's surfaces and out of the clearances to combustibles zone (see page 9). When routing the electrical supply for the unit, ensure that it does not interfere or obstruct the heater's service panel. Keep any electrical supply cord away from any heated surfaces.

⚠ WARNING



Electric Shock Hazard

Do not force the three-prong plug into the grounded outlet, modify the plug, or use an adapter. Never operate this appliance if the cord or plug is damaged.

Thermostat Connection

NOTE: Different thermostats operate according to their particular features. Refer to thermostat specifications for details.

HL2-DS series heaters may be controlled by a thermostat or switch. The control voltage is 24 VAC and the burner control box is equipped with a 60" yellow 24 VAC control wire. Do not supply 120 VAC to the 24 VAC connection.

Figure 3.17 • Field Wiring Diagram - Controlling a single heater with a single control device

Starting Amp Draw: 4.8 Amps
Running Amp Draw: 1.1 Amps

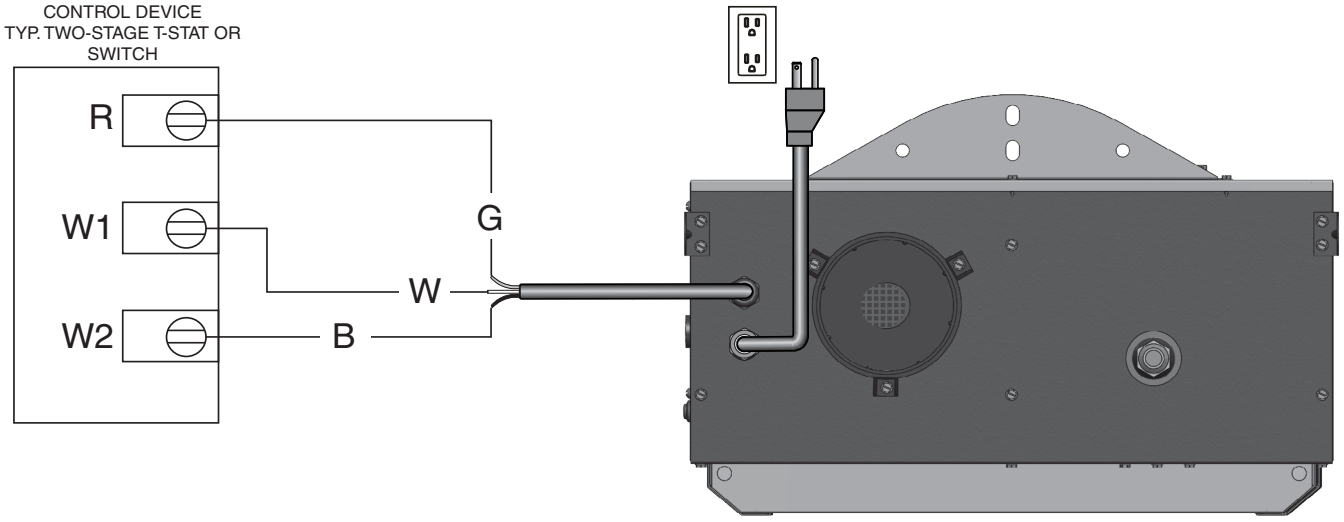
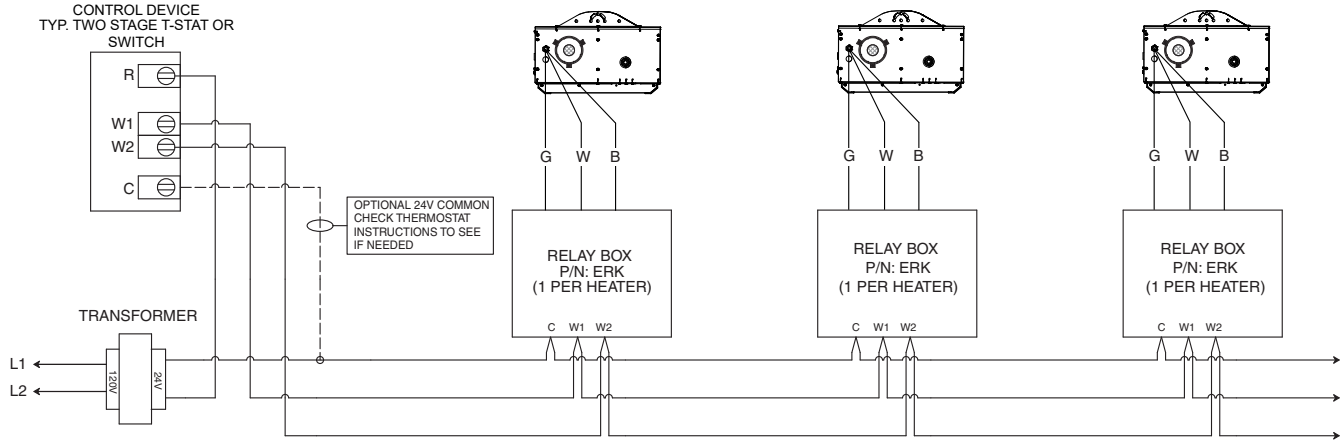


Figure 3.18 • Field Wiring Diagram - Controlling multiple heaters with a single control device

Starting Amp Draw: 4.8 Amps
Running Amp Draw: 1.1 Amps



Field Wiring:

❶ When controlling multiple heaters with a single control device, one ERK or ERK-HE per heater is required.
❷ An external 24 VAC transformer (0.2 Amp) per heater is required (supplied by installer).
❸ Maintain electrical polarity when hooking up multiple heaters.
❹ Allow heaters to be switched by zones for heating flexibility.
❺ Do not attempt to install transformer inside of heater.

4.0 Operation

Sequence of Operation

Standby: The circuit board 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.

Low Fire 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.

High Fire 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.

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 30 minutes, 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 4.1 below for a description of LED codes.

Figure 4.1 • External LED Operation Indicator Lights

NOTE: Hard Lockout LED CODE will appear upon completion of the Soft Lockout sequence of operation.

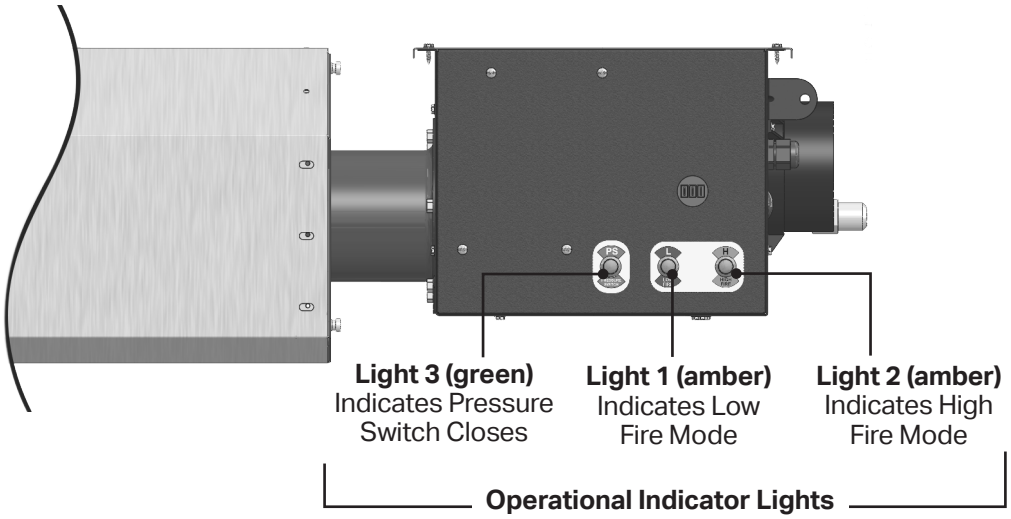
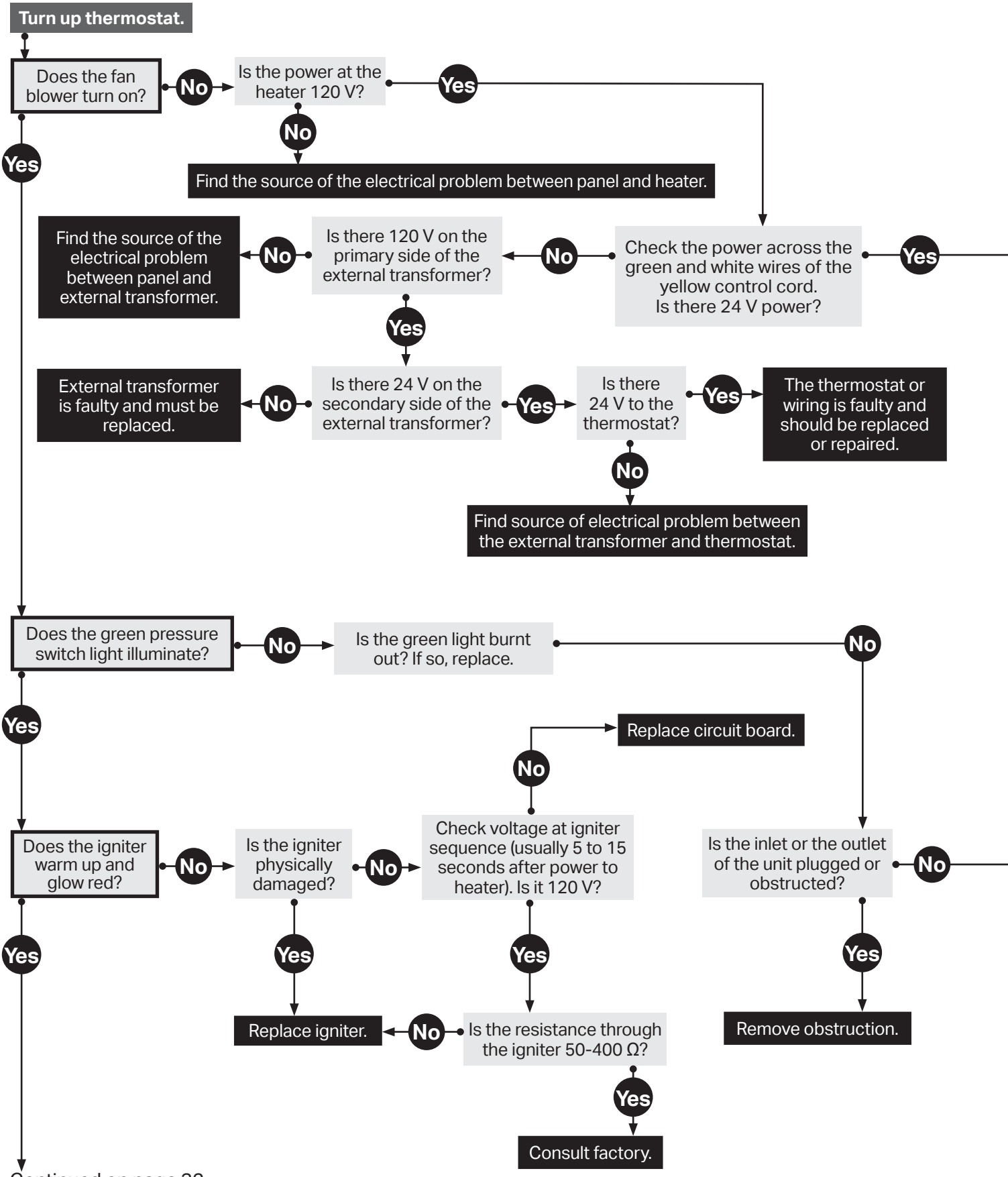


Chart 4.1 • LED Fault Code Status (Located on Circuit Board Inside Control Box)

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 flash	APS (Air Proving Switch) Fan / Intake / Exhaust	1 - 30 seconds
4 flashes	Erroneous flame signal	No Delay
No flash on 117 V startup	Transformer fault	No Delay

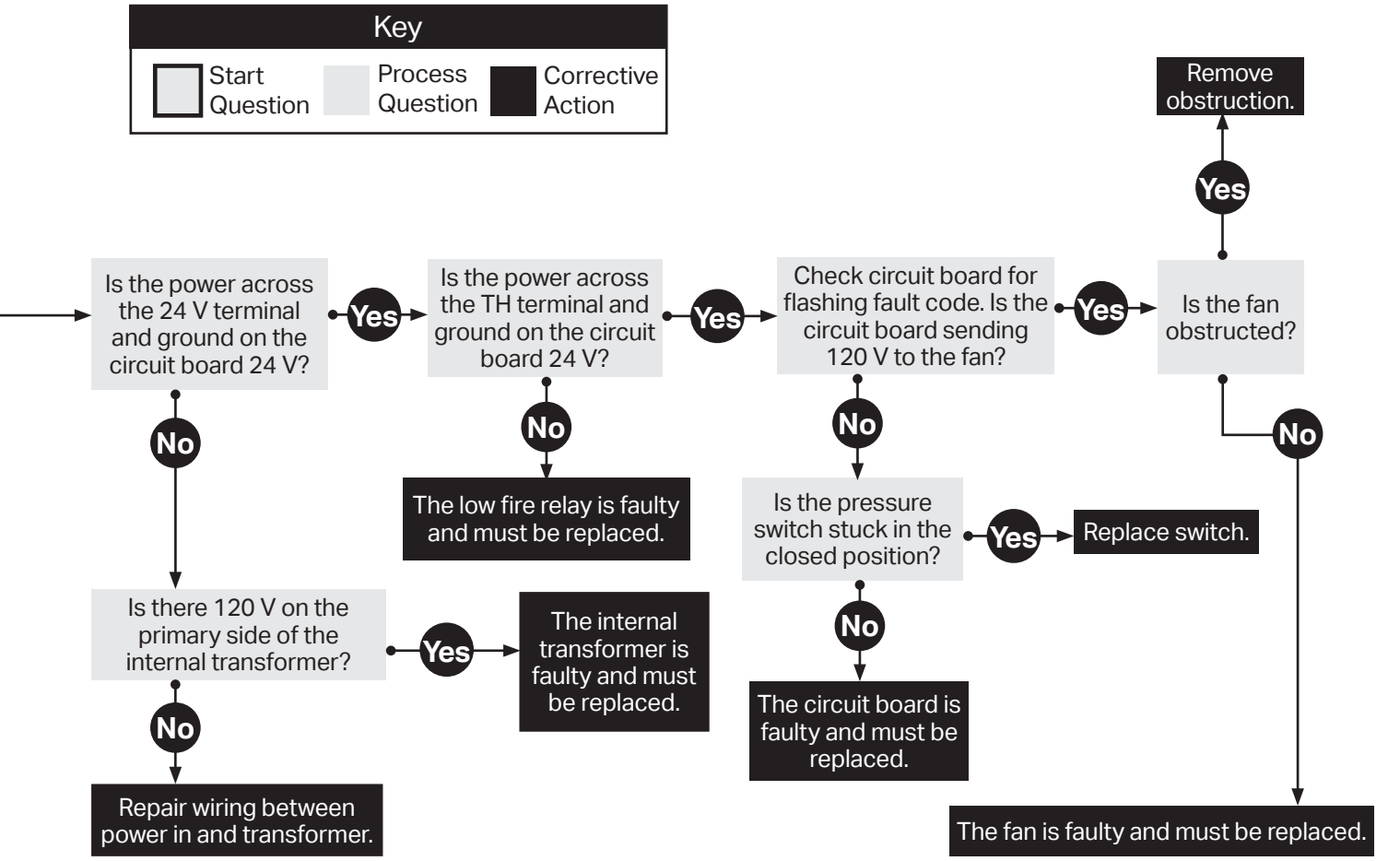
* Some LED codes have a time delay before the LED will flash.

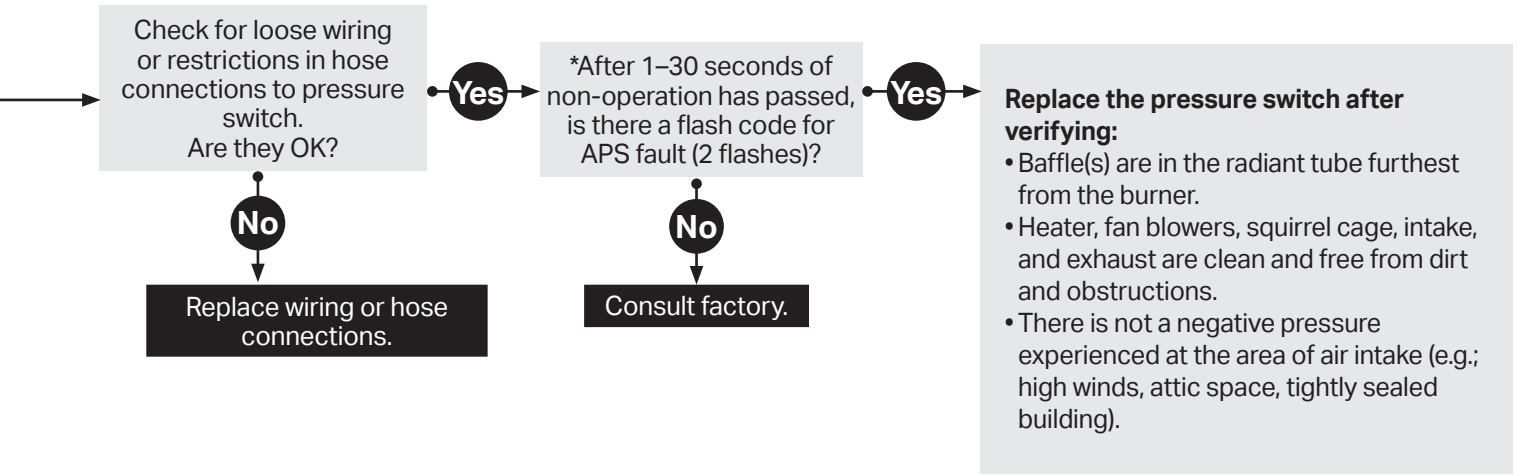
5.0 Troubleshooting Guide



Continued on page 32

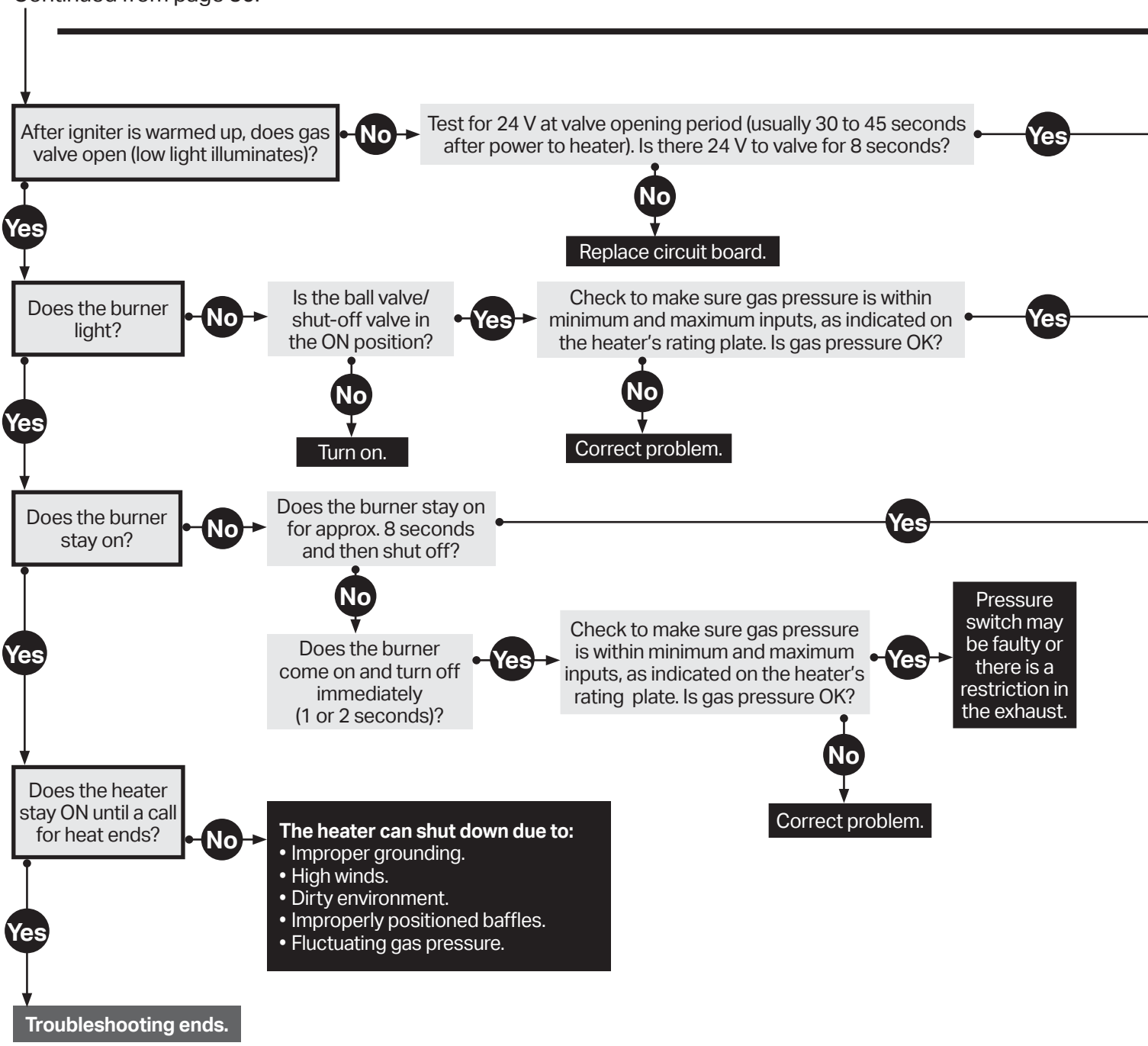
NOTICE Bypassing any switch is intended for testing purposes only. Do not leave switch bypassed during normal operation or the heater's built-in safety mechanisms will be compromised.



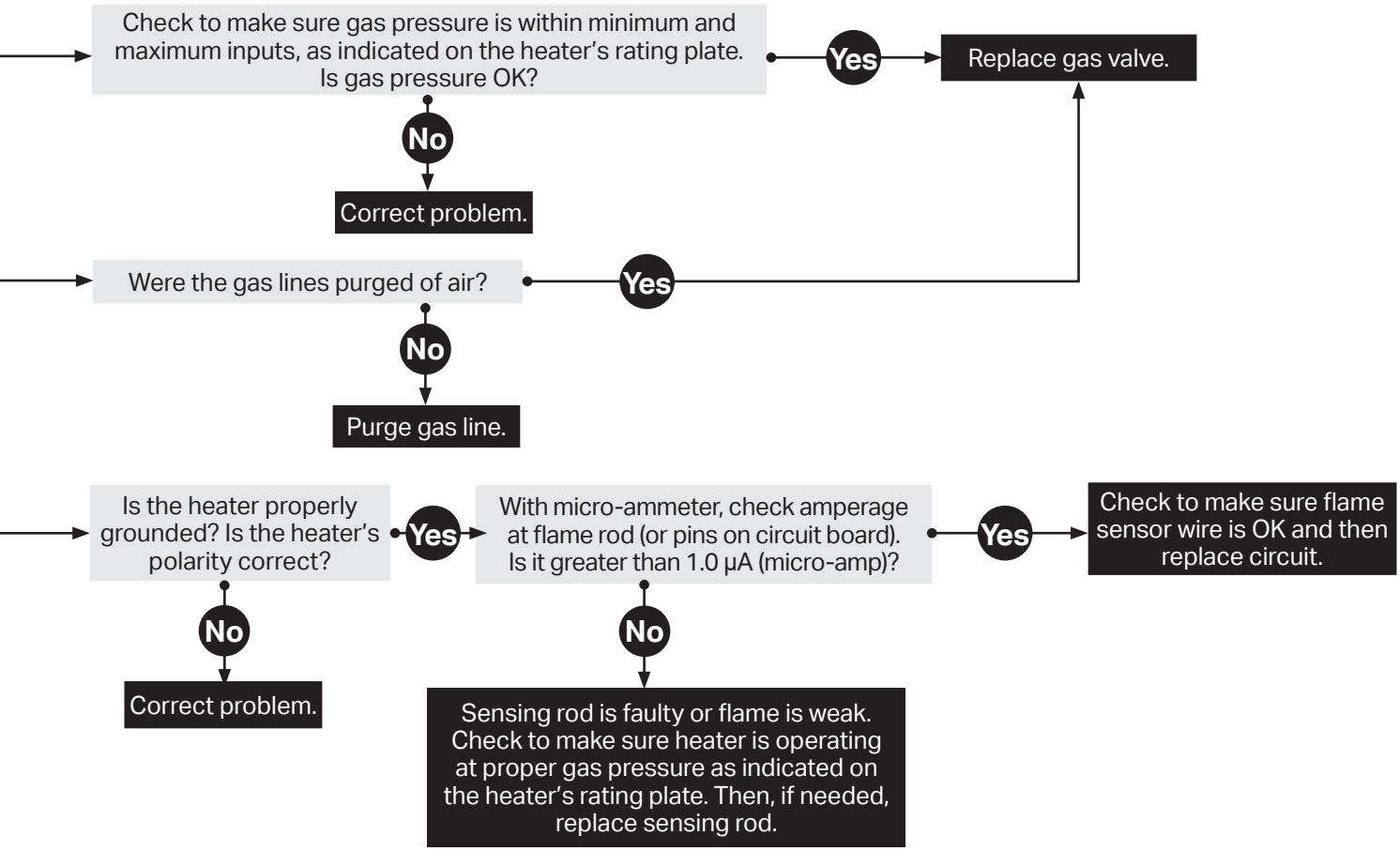


*Refer to LED diagnostic Fault Code Chart; p.29.

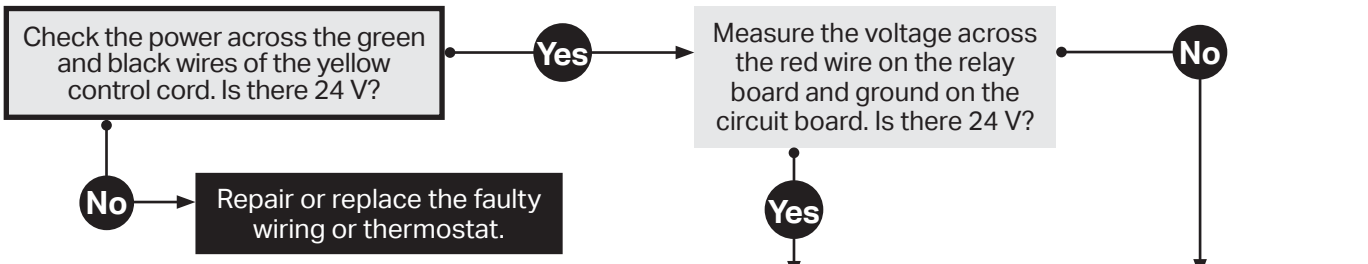
Continued from page 30.



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.



If the heater does not enter High Fire mode, check the following:



NOTE: To confirm that the heater is not in high fire mode, check the manifold pressure. If it is 3.5" (natural gas) or 10" (propane), the indicator light is faulty and should be replaced. If approximately 2.0" to 2.5" (natural gas) or 5.0" to 6.5" (propane), the heater is in low fire mode and the troubleshooting steps described here should be followed.

6.0 Maintenance

⚠ WARNING





Personal injury or death may result if maintenance is not performed by properly trained gas installer or service personnel. Contact the installing distributor or place of purchase for service. **Do not operate heating system if repairs are necessary.**

Allow heater to cool prior to servicing.

Disconnect power to heater before servicing.

Use protective glasses when maintaining the heater.

Routine Maintenance and Inspection:

At least once per year, the heating system should be inspected and serviced by trained gas installation and service personnel only. This inspection should be performed at the beginning of the heating season to ensure that all heater components are in proper working order and that the heating system operates at peak performance. Particular attention should be paid to the following items.

- **Clearances to Combustibles:** Inspect the area near the unit to be sure there is no combustible material located within the minimum clearance requirements listed in this manual. Under no circumstances should combustible material be located within the clearances specified in this manual. Failure to provide proper clearance could result in personal injury or equipment damage from fire.
- **Gas Connection:** Inspect the integrity of the gas connection to the heater. Check for leaks, damage, fatigue or corrosion. Do not operate if repairs are necessary and turn off gas supply to the heater. Contact service personnel.

To check gas tightness of the safety shut-off valves, turn off the manual valve upstream of the appliance combination control. Remove the hex head plug on the inlet side of the combination control and connect a manometer to that tapping.

Turn the manual valve on the apply pressure to the combination control. Note the pressure reading on the manometer, then turn the valve off. Any loss of pressure indicates a leak. If leak is detected, use a soap solution to check all threaded connection. If no leak is found, combination control is faulty and must be replaced before putting appliance back in service.

- **Blower Motor:** Annual oiling of the blower motor with SAE 20 oil will extend bearing life significantly. Ensure that the squirrel cage in the blower is kept clean. If dirt becomes a problem, installation of outside air intake ducts for combustion is recommended.

  Check lubrication instructions on motor. If oiling is required, add three or four drop of SAE 20 electric motor oil.
- After three years or 25,000 hour (for light-duty operation).
- Annually after three years or 8,000 hours (for medium-duty operation).
- Annually after one year or 1,500 hours (for heavy-duty operation).

NOTICE

Never over-oil the motor or premature failure may occur.

- **Heat exchangers:** Check the integrity of the heat exchangers. Replace if there are signs of structural failure. Check for corrosion and/or buildup within the tube exchanger passageways.
- **Burner:** Check for proper ignition, burner flame and flame sense. Flame should extend directly outward from burner without floating or lifting.
- **Wiring:** Check electrical connections for tightness and/or corrosion. Check wires for damage.
- **Gas Connection:** Inspect the integrity of the gas connection to the heater. Check for leaks, damage, fatigue or corrosion. Do not operate if repairs are necessary and turn off gas supply to the heater. Contact service personnel.
- **Reflector:** To maintain effective infrared heating, always keep both sides of the reflector clean. Maintenance can vary significantly depending on the environment. Dirt and dust can be vacuumed or wiped with a soap and water solution. Use metal polish if the reflectors are severely dirty.

Contact service personnel if repairs are necessary. Do not operate unit.

Maintenance Log

Date	Maintenance Performed	Replacement Parts Required

7.0 Parts

Figure 7.1 • Burner Assembly Components

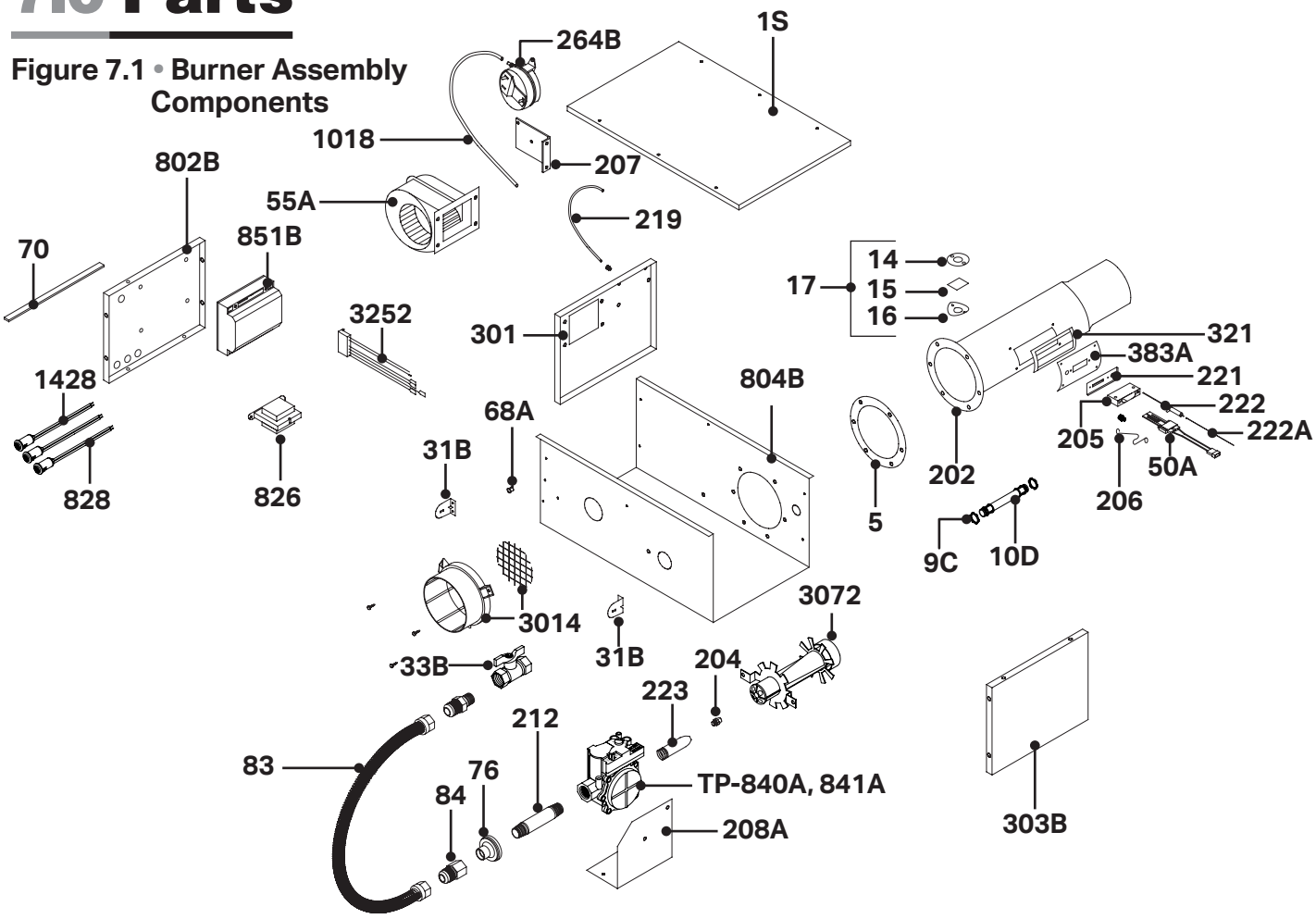


Chart 7.1 • Parts List

Part No.	Description	Part No.	Description
TP-1S	Control Box Cover - Stainless Steel	TP-83	24" Stainless Steel Flexible Gas Connector
TP-5	Flange Gasket	TP-84	½" Female/Male Flare Fitting
TP-9C	¾" Conduit Coupling and Nut	TP-202	16" HSI Burner Tube with Flange
TP-10D	3" x ¾" Metal Conduit	TP-204	Gas Orifice (consult factory)
TP-14	Sight Glass Gasket	TP-205	Glo-Bar™ Holder
TP-15	Sight Glass	TP-206	Glo-Bar™ Holder Spring Clip
TP-16	Sight Glass Washer	TP-207	Pressure Switch Mounting Bracket
TP-17	Sight Glass Kit	TP-208A	Gas Valve Mounting Bracket
TP-31B	Control Box Mounting Bracket	TP-212	½" x 3" Pipe Nipple
TP-33B	½" Shut-Off Ball Valve / Inlet Tap	TP-219	Diff. Vinyl Sensing Tube (Burner)
TP-50A	Glo-Bar™ Ignitor	TP-221	Glo-Bar™ Holder Gasket
TP-55A	Fan Blower	TP-222	Flame Rod
TP-65I	36" Interlocking Turbulator Baffle	TP-222A	Flame Rod Wire
TP-68A	Strain Relief Bushing	TP-223	Gas Manifold
TP-70	Control Box Cover Gasket (per foot**)	TP-264B	Differential Pressure Switch
TP-76	Rubber Grommet	TP-301	Burner Control Box Center Panel

Figure 7.2 • Tube and Reflector Components

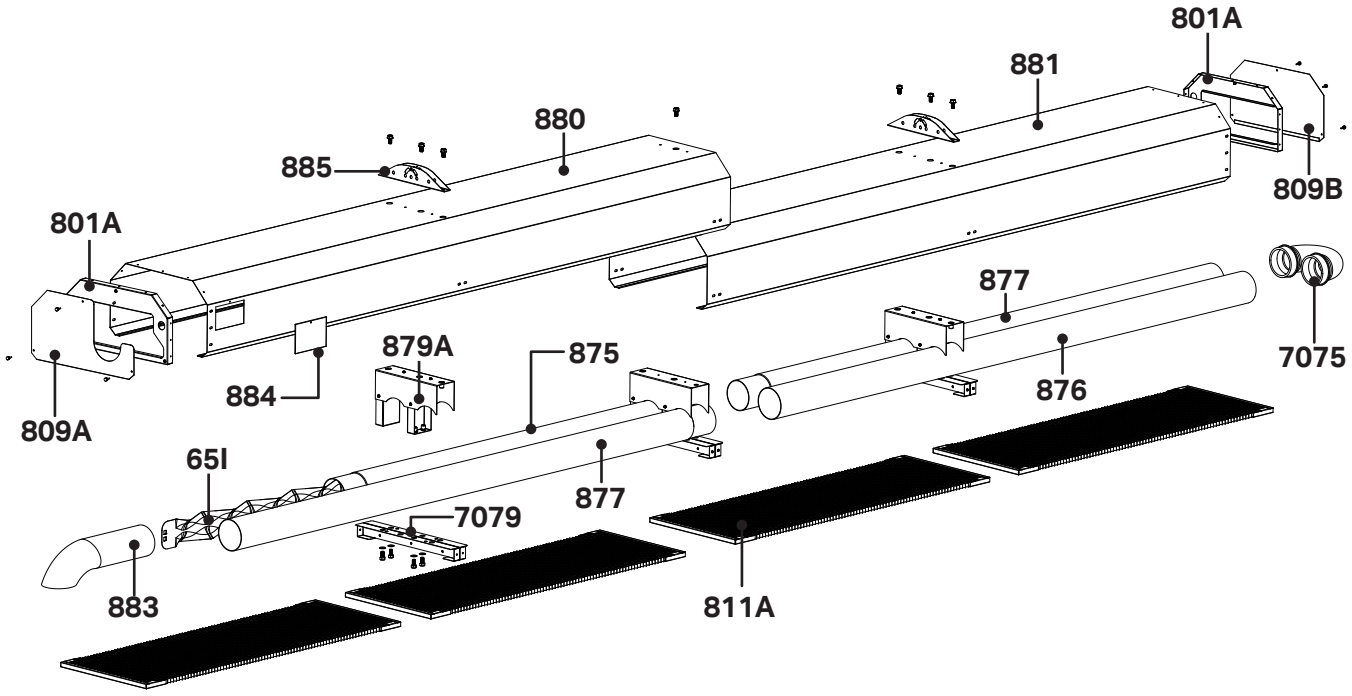


Chart 7.1 • Parts List (cont.)

Part No.	Description	Part No.	Description
TP-303B	End Panel, Right - Black	TP-876	7' Unswedged Tube
TP-321	Ignition Plate Gasket	TP-877	7' Swedged Tube
TP-383A	Glo-Bar™ Ignitor Plate	TP-879A	Mounting Bracket Assembly
TP-801A	Reflector End Cover Support	TP-880	Burner End Reflector
TP-802B	End Panel, Left - Black	TP-881	U-End Reflector
TP-803	Reflector U-End Panel	TP-883	Exhaust Downturn
TP-804B	Burner Control Box Outer Shell - Black	TP-884	Service Access Panel
TP-809A	Reflector End Cover (Burner End)	TP-885	Mounting Bracket
TP-809B	Reflector End Cover (U-End)	TP-1018	Diff. Switch Silicone Sensing Tube (Exhaust)
TP-811A	Egg Crate Assembly (4 Per Heater)	TP-1428	Green Operational Indicator Light
TP-826	40 VA Transformer	TP-3014	Air Orifice (Specify Size)
TP-828	Amber Operational Indicator Light	TP-3072	Burner (Green)
TP-840A	Two-Stage Natural Gas Valve Assembly	TP-3252	Wire Harness
TP-841A	Two-Stage Propane Gas Valve Assembly	TP-7075	U-Bend
TP-851B	35-66 Diagnostic Circuit Board	TP-7079	Mounting Bracket Assembly Support (Qty. 2)
TP-875	5' Swedged Tube		

Limited Warranty Terms and Conditions

Three-Year Limited Warranty: The heaters covered in this manual are warranted by Detroit Radiant Products Company to the original user against defects in workmanship or materials under normal use for three years after date of purchase. Any part which is determined to be defective in material or workmanship and returned to an authorized service location, as Detroit Radiant Products Company designates, shipping costs prepaid, will be, as the exclusive remedy, repaired or replaced at Detroit Radiant Products Company's option. For limited warranty claim procedures, see PROMPT DISPOSITION below. This limited warranty gives purchasers specific legal rights which vary from jurisdiction to jurisdiction.

Additional Limited Warranty: In addition to the above mentioned three-year warranty, Detroit Radiant Products Company warrants the original purchaser an additional extension on the heat exchangers and burners. This extension excludes electrical/purchased components.

General Conditions: The Company will not be responsible for labor charges for the analysis of a defective condition of the heater or for the installation of replacement parts. The warranties provided herein will not apply if the input of the heater exceeds the rated input at time of manufacturing or if the heater in the judgment of the Company has been subjected to misuse, excessive dust, improper conversion, negligence, accident, corrosive atmospheres, excessive thermal shock, excessive vibration, physical damage to the heater, alterations by unauthorized service personnel, operation contrary to the Company's instructions or if the serial number has been altered, defaced, or removed. The Company shall not be liable for any default or delay in the performance of these warranties caused by contingency beyond its control, including war, government restriction or restraints, strikes, fire, flood, short or reduced supply of raw materials, or parts.

Limitation of Liability: To the extent allowable under applicable law, Detroit Radiant Products Company's liability for consequential and incidental damages is expressly disclaimed. Detroit Radiant Products Company's liability in all events is limited to and shall not exceed the purchase price paid.

Warranty Disclaimer: Detroit Radiant Products Company has made a diligent effort to provide product information and illustrate the products in this literature accurately; however, such information and illustrations are for the sole purpose of identification, and do not express or imply a warranty that the products are merchantable, or fit for a particular purpose, or that the products will necessarily conform to the illustrations or descriptions. Except as provided below, no warranty or affirmation of fact, expressed or implied, other than as stated in the "LIMITED WARRANTY" above is made or authorized by Detroit Radiant Products Company.

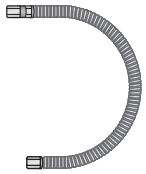
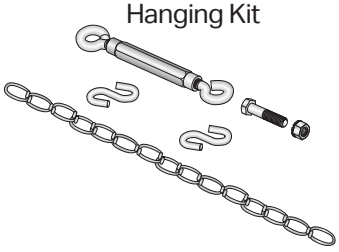
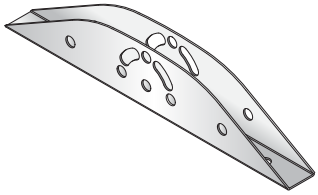
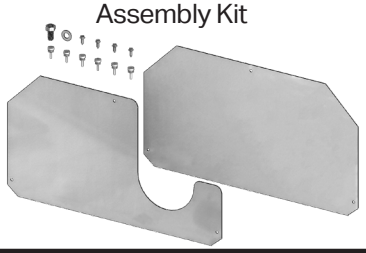
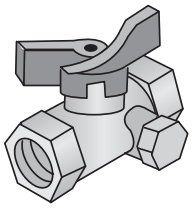
Product Suitability: Many jurisdictions have codes and regulations governing sales, construction, installation, and/or use of products for certain purposes, which may vary from those in neighboring areas. While Detroit Radiant Products Company attempts to assure that its products comply with as many codes, it cannot guarantee compliance, and cannot be responsible for how the product is installed or used. Before purchase and use of a product, review the product applications, and all applicable national and local codes and regulations, and be sure that the product, installation, and use will comply with them. Certain aspects of disclaimers are not applicable to consumer products: e.g., (a) some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you: (b) also, some jurisdictions do not allow a limitation on how long an implied warranty lasts, consequently the above limitation may not apply to you: and (c) by law, during the period of this limited warranty, any implied warranties of implied merchantability or fitness for a particular purpose applicable to consumer products purchased by consumers, may not be excluded or otherwise disclaimed.

Prompt Disposition: Detroit Radiant Products Company will make a good faith effort for prompt correction or other adjustment with respect to any product which proves to be defective within limited warranty. For any product believed to be defective within limited warranty, first write or call dealer from whom the product was purchased. Dealer will give additional directions. If unable to resolve satisfactorily, write to Detroit Radiant Products Company at 21400 Hoover Road, Warren, Michigan 48089, listing dealer's name, address, date and number of dealer's invoice, and describe the nature of the defect. Title and risk of loss pass to buyer on delivery to common carrier. If product was damaged in transit to you, file claim with carrier.

Notes

Kit Contents Check List

Chart 7.2 • Kit Contents for HL2-DS Series

HL2-DS Series Kit Contents		
TP-83 ½" x 24" 304 Stainless Steel Flexible Gas Connector 	**HL2DS-HANG*** Hanging Kit 	**TP-885** Hanging Bracket (x2) 
HL2DS-ASSY Assembly Kit 	**TP-33B** ½" Shut-Off Valve (Ball Valve & Inlet Tap) 	**LIOHL2DS** HL2-DS Series Installation, Operation, and Maintenance Manual 

Part No.	Description	Quantity
TP-33B	½" Shut-Off Valve and Inlet Tap	1
TP-83	½" x 24" 304 Stainless Steel Flexible Gas Connector	1
TP-885	Hanging Bracket	2
HL2DS-ASSY	#8 x ½" Stainless Steel Self-Tapping Screw (4), ⅜-16 x ¾" Bolt (7), Flat Washer (7), Lock Washer (7), #10 x ½" Screw (5), Thumb Screw (6), Reflector End Panel Bracket (Burner End), Reflector End Panel Bracket (U-End)	1
HL2DS-HANG*	⅜-16 x 1 ¾" Stainless Bolt (4), Stainless Steel Keps Nuts (4), Stainless Steel S-Hooks (12), Zinc-Plated Turnbuckle (4), #1/0 Stainless Steel Bulldog Chain (6)	1
Filled By:		

* HL2DS-HANG Kit is not included when optional hanging bracket kit (P/N: DS-BKT20 or DS-BKT33) is ordered.

Approvals

- CSA
- Outdoor Approval

Limited Warranty

- 3 year - Burner box components
- 5 years - Combustion and radiant tubes
- 10 years - Stainless steel burner
- See page 38 for terms and conditions.

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