⚠ DANGER

If you smell gas:

1. Shut off gas to the appliance.
2. Extinguish any open flame.
3. If odor continues, keep away from the appliance and immediately call your gas supplier or fire department.

⚠ WARNING

Fire Hazard

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

A propane cylinder not connected for use shall not be stored in the vicinity of this or any other appliance.

Failure to follow these instructions can result in death, injury or property damage.

⚠ FOR OUTDOOR USE ONLY

ROBERTS GORDON®

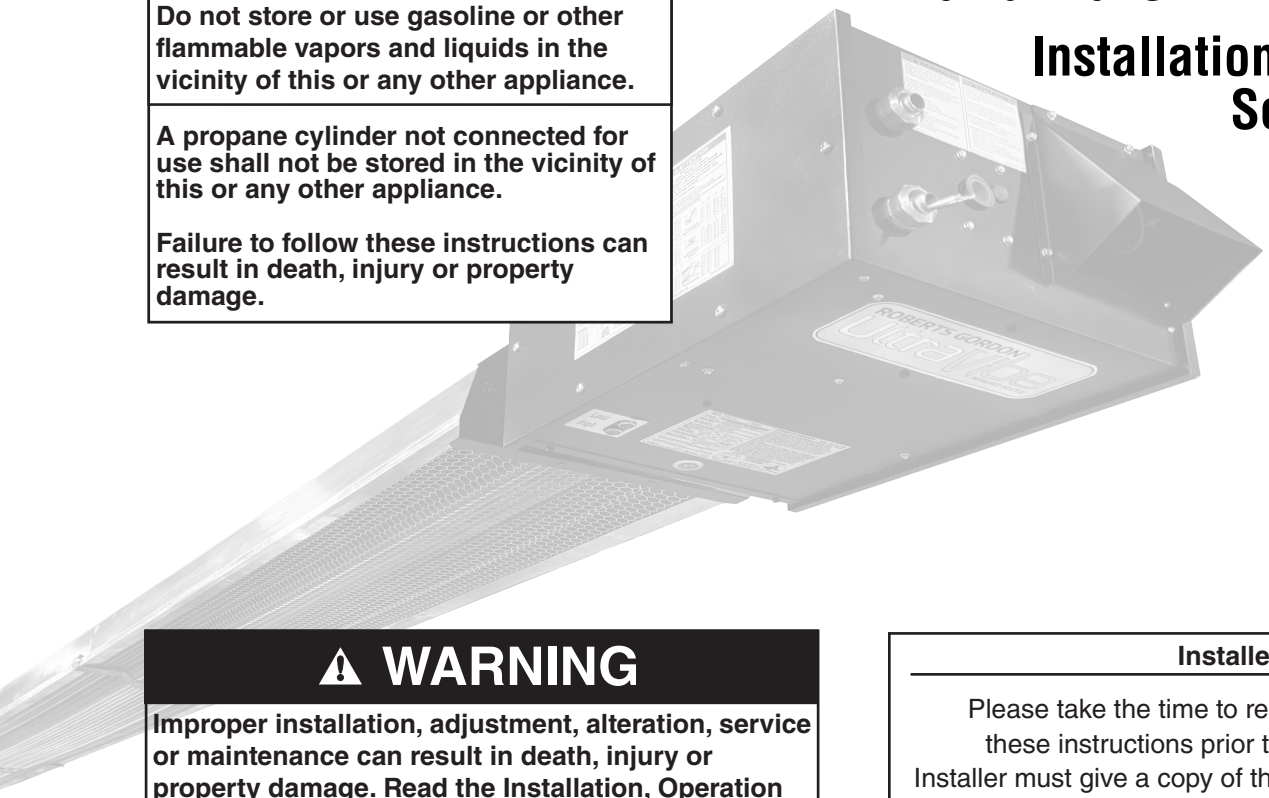
UltraVibe™ INFRARED HEATER

Model VOH

Gas-Fired, Low Intensity Unitary Heater for Patios and Harsh Environments

Installation, Operation & Service Manual

VOH-80
VOH-100
VOH-125



⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can result in death, injury or property damage. Read the Installation, Operation and Service Manual thoroughly before installing or servicing this equipment.

Installation must be done by a contractor qualified in the installation and service of gas-fired heating equipment or your gas supplier.

Installer

Please take the time to read and understand these instructions prior to any installation. Installer must give a copy of this manual to the owner.

Owner

Keep this manual in a safe place in order to provide your service technician with necessary information.

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www.robertsgordon.com

P/N 170100NA Orig 9/25

TABLE OF CONTENTS

Printed in U.S.A.

SECTION 1: HEATER SAFETY

Your Safety is Important to Us! This symbol is used throughout the manual to notify you of possible fire, electrical or burn hazards. Please pay special attention when reading and following the warnings in these sections.

Installation, service and annual inspection of heater must be done by a contractor qualified in the installation and service of gas-fired heating equipment.

Read this manual carefully before installation, operation or service of this equipment.

This heater is designed for heating nonresidential outdoor spaces. It should only be installed in well ventilated spaces, and shall not be used in a building, garage, or any other enclosed area. This heater is not certified to meet the requirements of NFPA30A-2012 Section 7.6.6. (maximum tube temperature of 750 °F (399 °C)). Do not install this heater in facilities where compressed natural gas (CNG) or liquid natural gas (LNG) are present. These instructions, the layout drawing, local codes and ordinances, and applicable standards that apply to gas piping, electrical wiring, venting, etc. must be thoroughly understood before proceeding with the installation.

This heater may be installed with shelter no more inclusive than the following:

1. With walls on all sides, but with no overhead covering.

2. Within a partial enclosure, which includes an overhead cover and no more than two side walls. These side walls may be parallel, as in a breezeway or at right angles to each other.

3. Within a partial enclosure which includes an overhead cover and three side walls, as long as 30% or more of the periphery of the enclosure is permanently open.

Protective gear is to be worn during installation, operation and service in accordance to the Occupational Safety and Hazard Administration (OSHA). Gear must be in accordance to NFPA 70E, latest revision when working with electrical components. Thin sheet metal parts have sharp edges. To prevent injury, the use of work gloves is recommended. The use of gloves will also prevent the transfer of body oils from the hands to the surface of the reflector.

Before installation, check that the local distribution conditions, nature of gas and pressure, and adjustment of the appliance are compatible.

This heater must be applied and operated under the general concepts of reasonable use and installed using best building practices.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

For additional copies of the Installation, Operation and Service Manual, please contact Roberts-Gordon LLC.

1.1 Manpower Requirements

To prevent personal injury and damage to the heater, two persons will be required for installation.

1.2 Safety Labels and Their Placement

Product safety signs or labels should be replaced by the product user when they are no longer legible. Please contact Roberts-Gordon or your ROBERTS GORDON® independent distributor to obtain replacement signs or labels. *See Page 2, Figure 1 through Page 3, Figure 2*.

1.3 California Proposition 65

In accordance with California Proposition 65 requirements, a warning label must be placed in a highly visible location on the outside of the equipment (i.e., near equipment's serial plate). See label placement drawing *on Page 2, Figure 1* for label location. Avoid placing label on areas with extreme heat, cold, corrosive chemicals or other elements. To order additional labels, please contact Roberts-Gordon LLC or your ROBERTS GORDON® independent distributor.

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

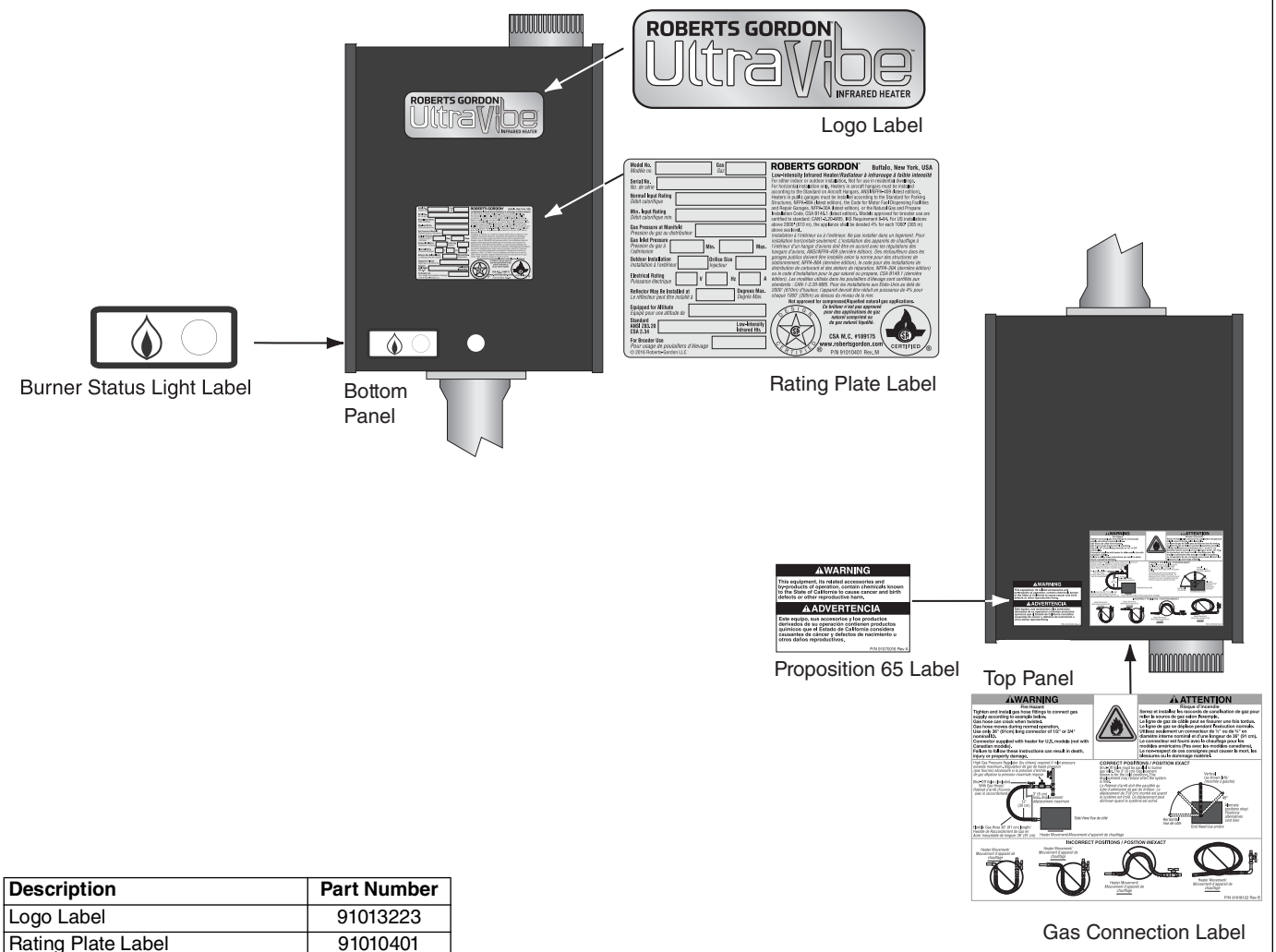
Young children should be carefully supervised when they are in the area of the heater.

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.

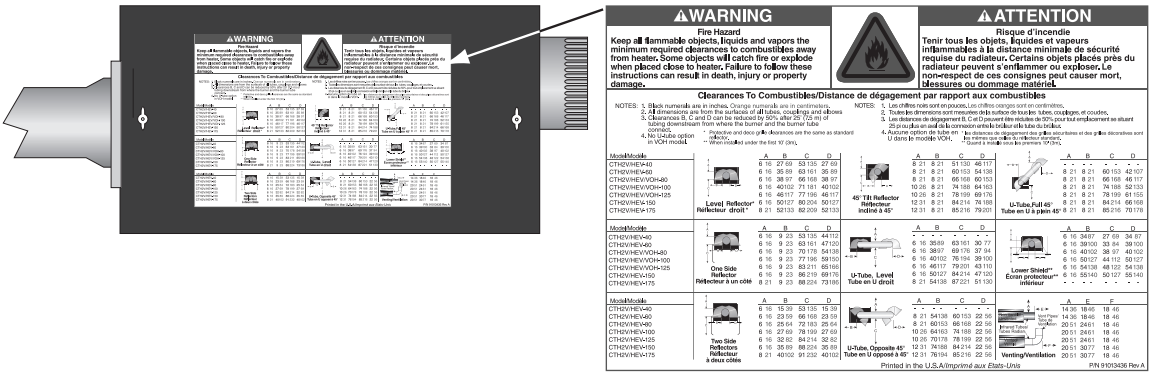
Installation and repair should be done by a qualified service person. More frequent cleaning may be required as necessary. It is imperative that control compartment, burners and circulating air passageways of the heater be kept clean.

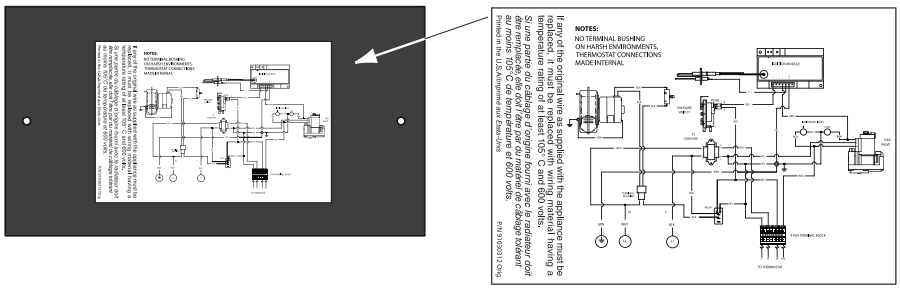
FIGURE 1: Top and Bottom Panel Label Placement



Description	Part Number
Logo Label	91013223
Rating Plate Label	91010401
Gas Connection Label	91018122
Proposition 65 Label	91070016
Firing Rate Lights Label	91032900

FIGURE 2: Side and Back Panel Label Placement





Description	Part Number
Lighting Instruction Plate Label	91029602
Wiring Label	91030312
Clearances to Combustibles Label	91013436

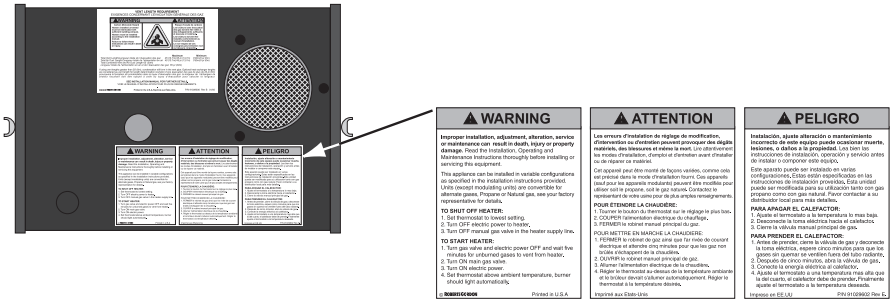
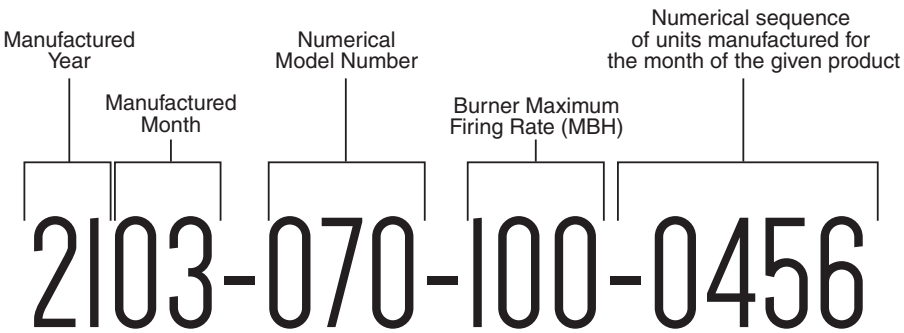


FIGURE 3: Serial Number Identification Chart



Serial numbers are located on both the burner shipping carton and the data plate. Each burner will have a unique 14-digit serial number used for identification purposes to allow the lookup of various items such as manufacture test records, replacement part identification, and manufactured date.

SECTION 2: INSTALLER RESPONSIBILITY

The installer is responsible for the following:

- To install the heater, as well as the gas and electrical supplies, in accordance with applicable specifications and codes. Roberts-Gordon recommends the installer contact a local Building Inspector or Fire Marshal for guidance.
- To use the information given in a layout drawing and in the manual together with the cited codes and regulations to perform the installation.
- To install the heater in accordance with the clearances to combustibles.
- To furnish all needed materials not furnished as standard equipment.
- To plan location of supports.
- To provide access to burners for servicing on all sides for burner removal.
- To provide the owner with a copy of this installation, operation and service manual.
- To never use heater as support for a ladder or other access equipment and never hang or suspend anything from heater.
- To ensure there is adequate air circulation around the heater and to supply air for combustion, ventilation and distribution in accordance with local codes.
- To safely and adequately install heater using materials with a minimal working load of 75 lbs (33 kg).
- To ensure the heater is placed in a approved application.

2.1 Wall Tag

A laminated wall tag is available for the heater as a permanent reminder of the safety instructions and the importance of the required clearances to combustibles. Please contact Roberts-Gordon or your ROBERTS GORDON® independent distributor to obtain the wall tag. Affix the tag by peeling off the backing of the adhesive strips on the rear surface and position the tag on a wall near the heater (e.g. thermostat or ROBERTS GORDON® Controller).

A copy of the wall tag (P/N 91037912) is illustrated on the back cover. For an immediate solution, you may affix this copy on the wall near the heater.

Know your model number and installed configuration. Model number and installed configuration are found on the burner and in the Installation, Operation and Service Manual. *See Page 3, Figure 3*. Write the proper clearance dimensions in permanent ink according to your model number and configuration in the open spaces on the tag.

2.2 Corrosive Chemicals

⚠ CAUTION

Product Damage Hazard

Do not use heater in area containing corrosive chemicals.

Refer to appropriate Material Safety Data Sheets (MSDS).

Failure to follow these instructions can result in product damage.

Roberts-Gordon cannot be responsible for ensuring that all appropriate safety measures are undertaken prior to installation; this is entirely the responsibility of the installer. It is essential that the contractor, the sub-contractor, or the owner identifies the presence of combustible materials, corrosive chemicals or halogenated hydrocarbons* anywhere in the premises.

** **Halogenated Hydrocarbons** are a family of chemical compounds characterized by the presence of halogen elements (fluorine, chlorine, bromine, etc.). These compounds are frequently used in refrigerants, cleaning agents, solvents, etc. If these compounds enter the air supply of the burner, the life span of the heater components will be greatly reduced. An outside air supply must be provided to the burners whenever the presence of these compounds is suspected. Warranty will be invalid if the heater is exposed to halogenated hydrocarbons.*

2.3 National Standards and Applicable Codes

All appliances must be installed in accordance with the latest revision of the applicable standards and national codes. This refers also to the electric, gas and venting installation. Note: Additional standards for installations in Public Garages, Aircraft Hangars, etc. may be applicable.

SECTION 3: CLEARANCES TO COMBUSTIBLES

3.1 Required Clearances to Combustibles

Clearances are the required distances that combustible objects must be away from the heater to prevent serious fire hazards. Combustibles are materials that may catch on fire and include common items such as wood, paper, rubber, fabric, etc. **Maintain clearances to combustibles at all times for safety.**

Clearances for all heater models are located on the burner of the heater and *on Page 6, Figure 5 through Page 6, Figure 5* in this manual. Check the clearances on each burner for the model heater being installed to make sure the product is suitable for your application and the clearances are maintained. Read and follow the safety guidelines below:

- Keep gasoline or other combustible materials including flammable objects, liquids, dust or vapors away from this heater or any other appliance.
- The stated clearances to combustibles represents a surface temperature of 90° F (32°C) above room temperature. Building materials with a low heat tolerance (such as plastics, vinyl siding, canvas, triply, etc) may be subject to degradation at lower temperatures. It is the installer's responsibility to assure that adjacent materials are protected from degradation.
- Maintain clearances from heat sensitive equipment and workstations.
- Maintain clearances from vehicles parked below the heater.
- Maintain clearances from swinging and overhead doors, overhead cranes, vehicle lifts, partitions, storage racks, hoists, building construction, etc.

⚠WARNING

Fire Hazard

Keep all flammable objects, liquids and vapors the minimum required clearances to combustibles away from heater.

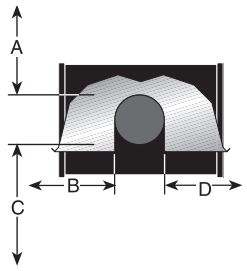
Some objects will catch fire or explode when placed close to heater.

Failure to follow these instructions can result in death, injury 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 required clearances from the heater to the combustibles. Signs must be posted adjacent to the heater thermostat. In the absence of a thermostat, signs must be posted in a conspicuous location.
- Consult local Fire Marshal, Fire Insurance Carrier or other authorities for approval of proposed installation when there is a possibility of exposure to combustible airborne materials or vapors.
- Hang heater in accordance to the minimum suspension requirements *on Page 15, Figure 8*.
- If the radiant tubes must pass through the building structure, be sure that adequate sleeving and fire stop is installed to prevent scorching and/or fire hazard.

NOTE: 1. All dimensions are from the surfaces of all tubes, couplings and elbows.
2. Clearances B, C and D can be reduced by 50% after 25' (7.5 m) of tubing downstream from where the burner and burner tube connect.

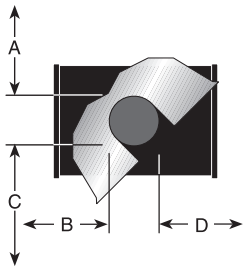
FIGURE 4: LEVEL REFLECTOR



Model	(inches) A	B	C	D	(centimeters) A	B	C	D
VOH-80	6	38	66	38	16	97	168	97
VOH-100	6	40	71	40	16	102	181	102
VOH-125	6	46	77	46	16	117	196	117

NOTE: 1. All dimensions are from the surfaces of all tubes, couplings and elbows.
2. Clearances B, C and D can be reduced by 50% after 25' (7.5 m) of tubing downstream from where the burner and burner tube connect.

FIGURE 5: 45° TILT REFLECTOR



Model	(inches) A	B	C	D	(centimeters) A	B	C	D
VOH-80	8	8	66	60	21	21	168	153
VOH-100	10	8	74	64	26	21	188	163
VOH-125	10	8	78	69	26	21	199	176

SECTION 4: NATIONAL STANDARDS AND APPLICABLE CODES

4.1 Gas Codes

The type of gas appearing on the nameplate must be the type of gas used. Installation must comply with national and local codes and requirements of the local gas company.

United States: Refer to National Fuel Gas Code NFPA 54/ANSI Z223.1 - latest revision.

Canada: Refer to Natural Gas and Propane Installation Code CSA B149.1 - latest revision.

4.2 Electrical

The heater must be electrically grounded in accordance with the following codes:

United States: Refer to National Electrical Code®, NFPA 70 - latest revision. Wiring must conform to the most current National Electrical Code®, local ordinances and any special diagrams furnished.

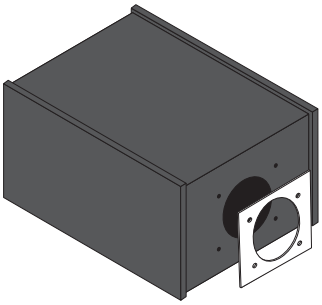
Canada: Refer to Canadian Electrical Code, CSA C22.1 Part 1 - latest revision and 2, CAN/CSA C22.2 No.3 Electrical features of Fuel Burning Equipment.

4.3 High Altitude

These heaters are approved for installations up to 2000' (610 m)(US) without modification.

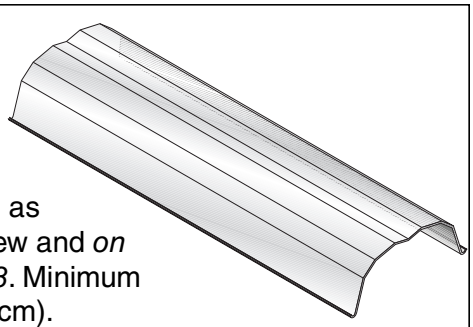
SECTION 5: MAJOR COMPONENTS

FIGURE 6: Major Component Descriptions - Standard Reflector

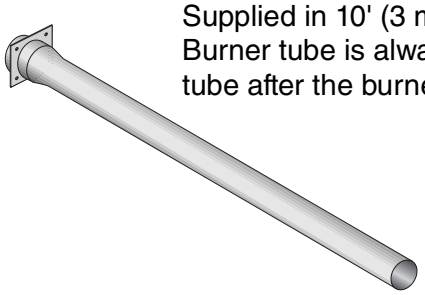


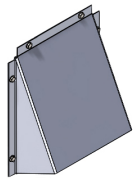
Burner with Tube Gasket
Must be installed with the flame observation window facing down.

Standard Reflector (Aluminum or Stainless Steel)
Alternate overlap as shown on overview and *on Page 15, Figure 8*. Minimum overlap is 6" (16 cm).

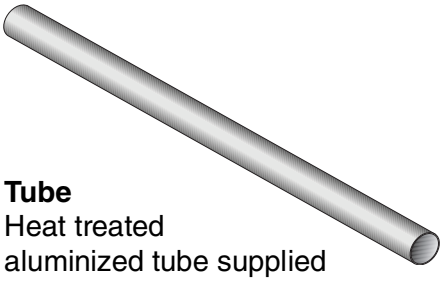


Burner Tube
Supplied in 10' (3 m) lengths. Burner tube is always the first tube after the burner.

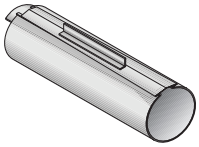




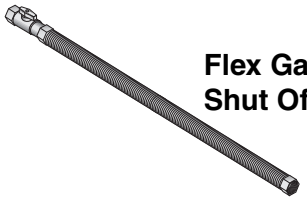
Combustion Air Weather Vent
Attach at flue end and air inlet where required.



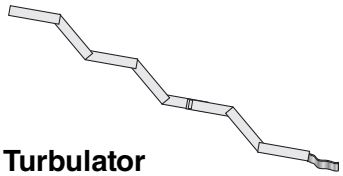
Tube
Heat treated aluminized tube supplied in 10' (3 m) lengths.



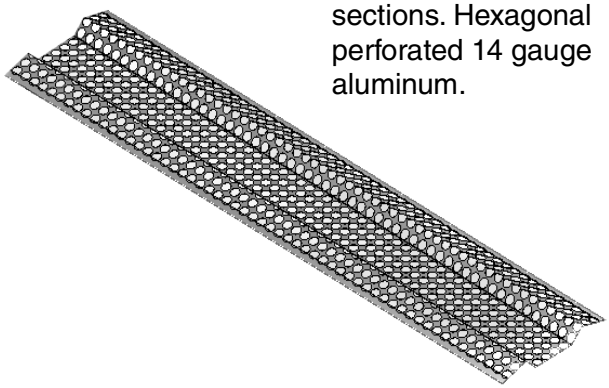
Coupling Assembly with Lock



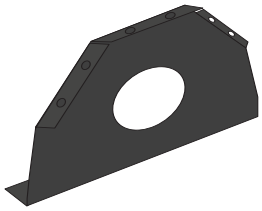
Flex Gas Line with Shut Off Cock



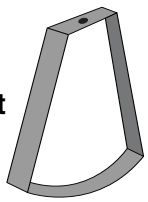
Turbulator
Install turbulator as specified in the "Turbulator Installation" chart. See page 19.



Grille
Supplied in 57" (145 cm) sections. Hexagonal perforated 14 gauge aluminum.



Bulkhead



Tube/Reflector Support

5.1 Standard Parts List

Table 1: Contents of the Burner Carton

Part No.	Description	VOH-80	VOH-100	VOH-125
070XXXXX	Burner Assembly (Rate and Fuel Varies)	1	1	1
02568200	Gasket (Burner to Burner Tube)	1	1	1
170100NA	Installation, Operation and Service Manual	1	1	1
03700009	Combustion Air Weather Vent	1	1	1
94273914	Hex Head Bolts 5/16" - 18 Rolok	4	4	4
96411600	Split Lock washer	4	4	4
91221100	Pipe Nipple (Galvanized) 1/2” NPT x 4”	1	1	1
91309701	Grommet - Liquid Tight	1	1	1
*91412204	36" Vinyl Coated Flexible Stainless Steel Gas Hose - 3/4" NPT (US Models Only)	1	1	1
03051501	Turbulator Adapter	1	1	1
03051502	Turbulator 2.5' (76 cm), Aluminized Steel	-	2	3
03051505	Turbulator 2.5' (76 cm), Stainless Steel	1	1	-

*Canadian Models: Rubber (Type 1) Gas Hoses available as an accessory. *See Page 22, Section 7.*

**Contents located in box separate from burner

Table 2: Contents of Standard Core and Extension Packages

		Core Packages					
		Aluminized with Aluminum Reflector			Aluminized with Stainless Steel Reflector		
Part No.	Description	10' (3 m)	15' (4 m)	20' (6 m)	10' (3 m)	15' (4 m)	20' (6 m)
91409408	Tube, HT Aluminized, 10' (3 m)	-	-	1	-	-	1
91409409	Tube 4" X 5FT HT ALUM	-	1	-	-	1	-
03051601	Burner Tube, HT ALUMI-THERM® Steel, 10' (3 m)	1	1	1	-	1	-
03051602	Burner Tube, HT ALUMI-THERM® Steel - HE, 10' (3m)	-	-	-	1	-	1
01312700	Coupling Assembly	-	1	1	-	1	1
02750303	Standard Reflector, 8' (3.5 m)	1	2	3	-	-	-
027503SS*	Stainless Steel Reflector, 8' (3.5 m)	-	-	-	2	2	3
07040000	Bulk Head	2	2	2	-	2	-
027508SH*	Stainless Steel End Cap with Hole	-	-	-	2	-	2
03090100	Tube and Reflector Hanger	-	-	-	2	-	3
01329802	Tube/Reflector Support Assembly	-	1	2	-	1	2
03050010	Reflector Support Package (Strap, Wire Form, Screws)	-	-	-	2	-	4
91107720	U-Clip Package	1	1	1	1	1	1
90502701	Vent Adapter	-	-	1	1	-	1
01318901	Tube Clamp Package	2	2	2	2	2	2
	Part Number	**CP10ALUM-UV**	**CP15ALUM-UV**	**CP20AIUM-UV**	**CP10ALUMSS**	**CP15ALUMSS**	**CP20ALUMSS**

Table 3: Component Package Guide

Model	Tubing Length	Standard Core Packages	
		Aluminized	Stainless Steel
VOH-80	10ft (3m)	CP10ALUM-UV	CP10ALUMSS
VOH-100	15ft (4m)	CP15ALUM-UV	CP15ALUMSS
VOH-125	20ft (6m)	CP20ALUM-UV	CP20ALUMSS

SECTION 6: HEATER INSTALLATION

⚠ WARNING

Severe Injury Hazard

Secure burner to burner tube with bolts and lockwashers.

Hang heater with materials with a minimum working load of 75 lbs (33 kg).

Failure to follow these instructions can result in death, injury or property damage.

⚠ WARNING

Cut/Pinch Hazard

Wear protective gear during installation, operation and service.

Edges are sharp.

Failure to follow these instructions can result in injury.

To ensure your safety, and comply with the terms of the warranty, all units must be installed in accordance with these instructions.

The gas or the electrical supply lines must not be used to support the heater.

Do not locate the gas or electric supply lines directly over the path of the flue products from the heater.

The heater must be installed in a location that is readily accessible for servicing.

The heaters must be installed in accordance with clearances to combustibles as indicated on the rating plate and in this instruction manual.

The minimum and maximum gas inlet pressures must be maintained as indicated on the rating plate.

Typical installation configurations are shown in *Section 6.1*.

Expansion and contraction of the tube dictates that the minimum suspension lengths in the table *on Page 15, Figure 8* be maintained.

6.1 Mounting

The heater is meant for stationary mounting in all situations and should not be suspended from any structure which may become mobile or from any organic structures such as trees. Clearances to combustibles must be maintained in all cases; do not install heaters in a location such as a parking area, where a vehicle with a painted or non-metallic upper surface, may be parked within the clearances to combustibles. *See Page 14, Figure 7*.

The bottom of the combustion air inlet shall not be less than 12" (30 cm) above a surface which could support snow, ice, or debris.

FIGURE 7: Critical Hanger Placement

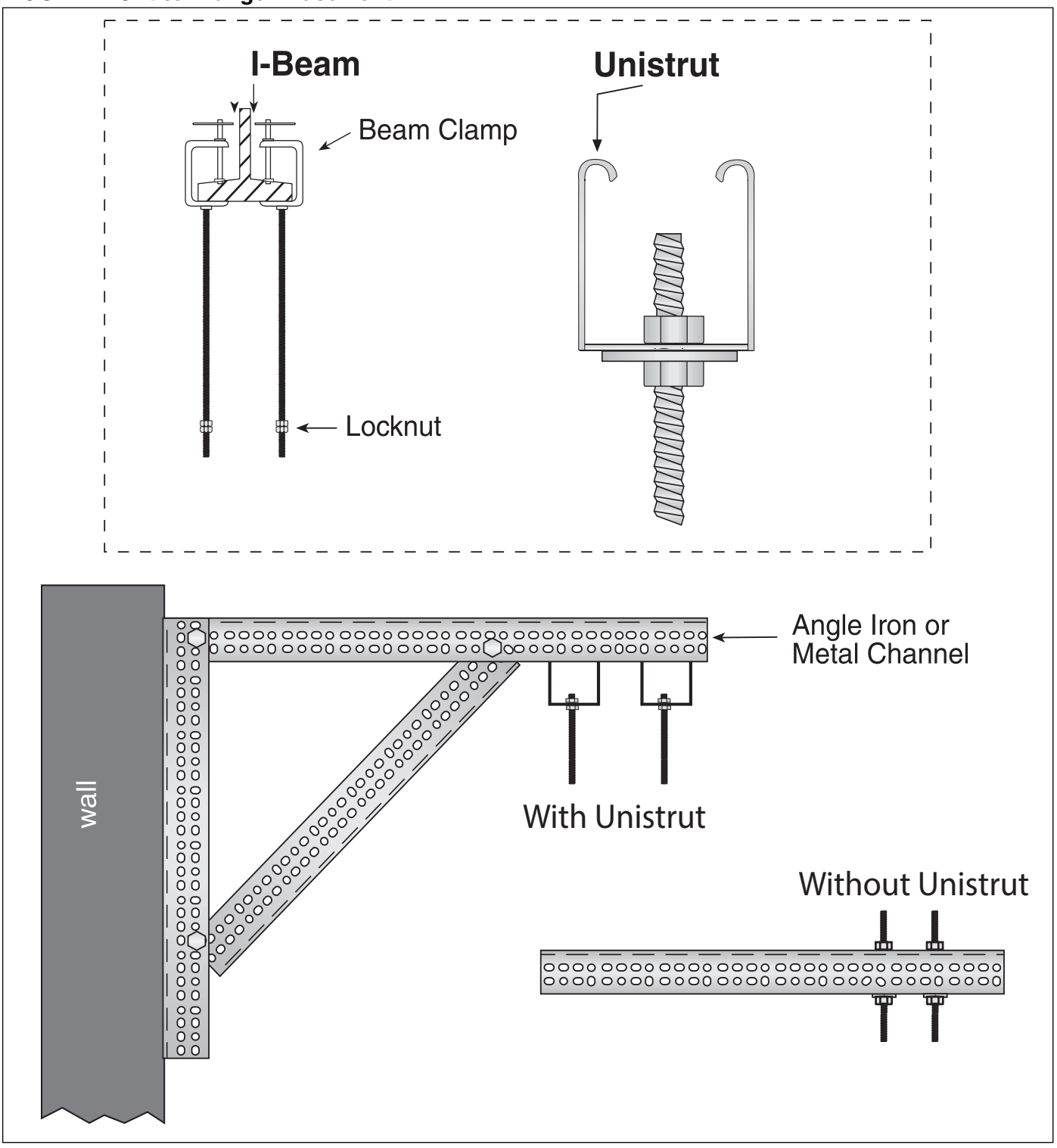
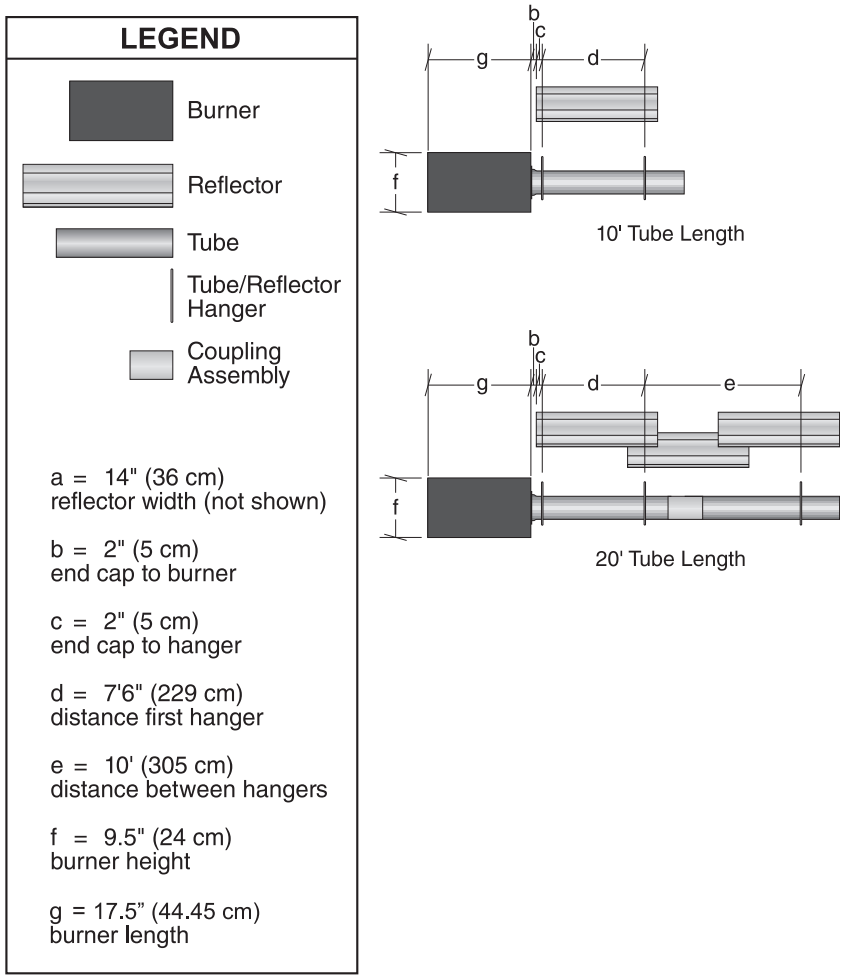
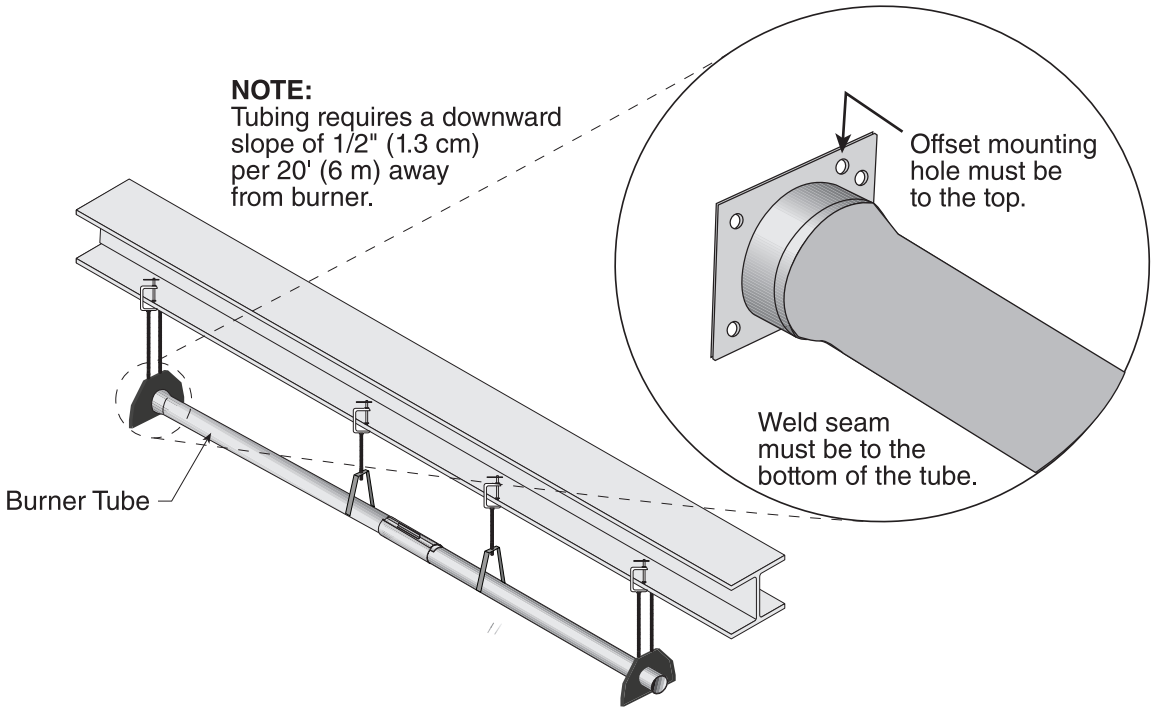


FIGURE 8: Linear Heater Layout Overview



Step 6.2 Burner Tube Installation

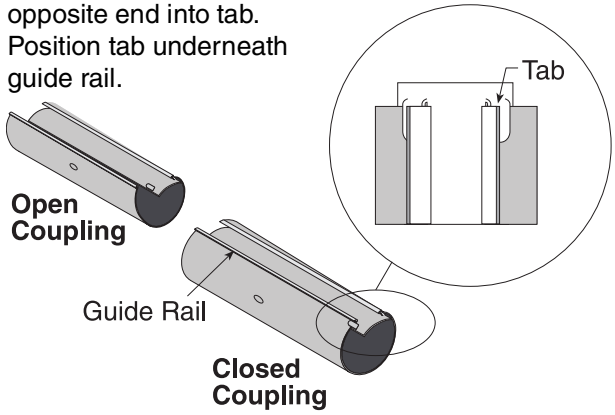


Description	Part Number
Burner Tube	03051XXX
Bulkhead	07040000

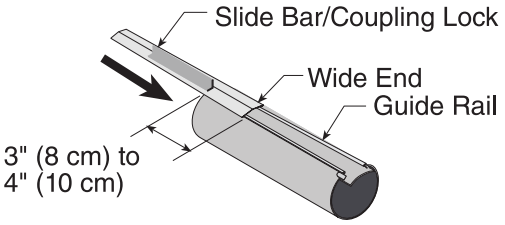
Step 6.3 Coupling and Tube Assembly

NOTE: Prior to coupling installation review Turbulator Installation on Page 17, Step 6.4.

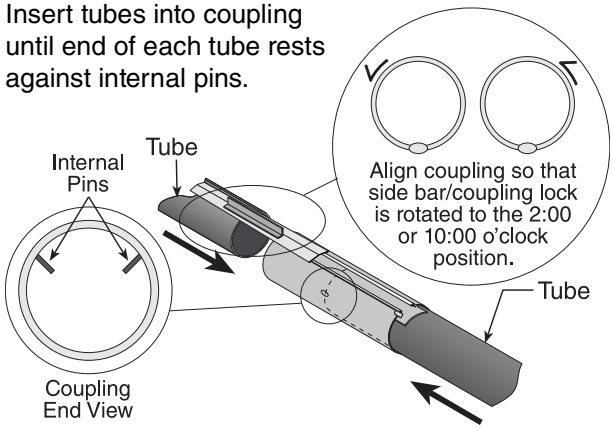
A Close coupling and slide opposite end into tab. Position tab underneath guide rail.



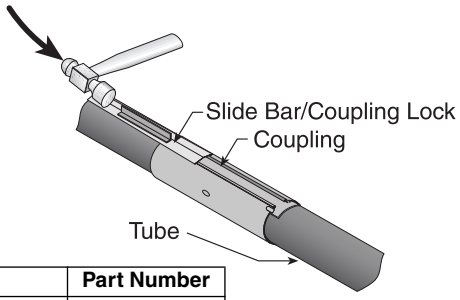
B Insert wide end of slide bar/coupling lock into guide rail on opposite end of tabs. Slide the slide bar/coupling lock up the guide rail until snug (approximately 3" (8 cm) to 4" (10 cm)).



C Insert tubes into coupling until end of each tube rests against internal pins.



D

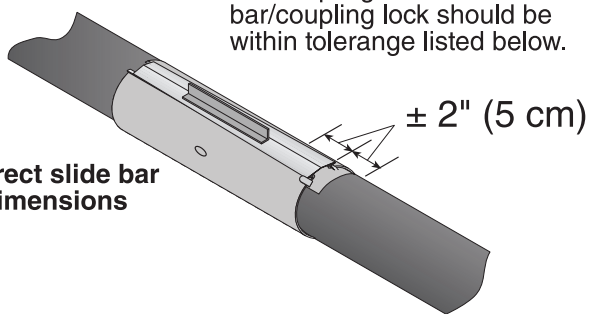


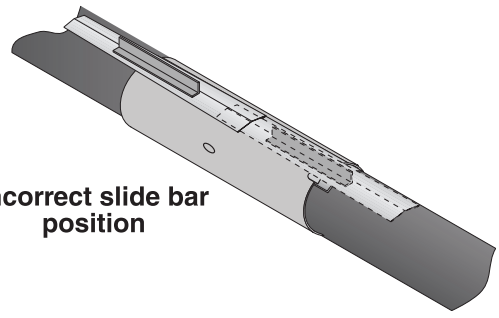
Description	Part Number
Coupling	01329600
Slide Bar/Coupling Lock	01329700
Tube	91409XXX

Step 6.3.1 Coupling and Tube Assembly (Continued)

Tighten slide bar as shown below.

Be sure not to over tighten slide bar/coupling lock. Slide bar/coupling lock should be within tolerange listed below.

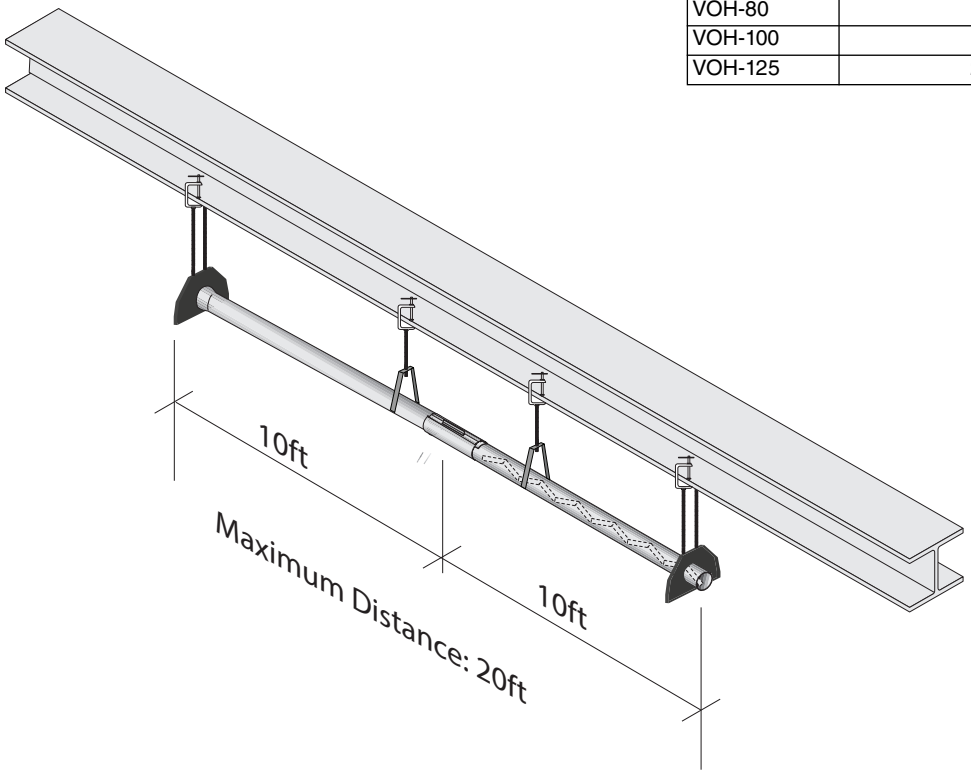




- **Repeat Step 6.3 A - D until all tubes are assembled.** ***See Page 18, Section 6.3.2.***

Step 6.3.2 Coupling and Tube Assembly (Continued)

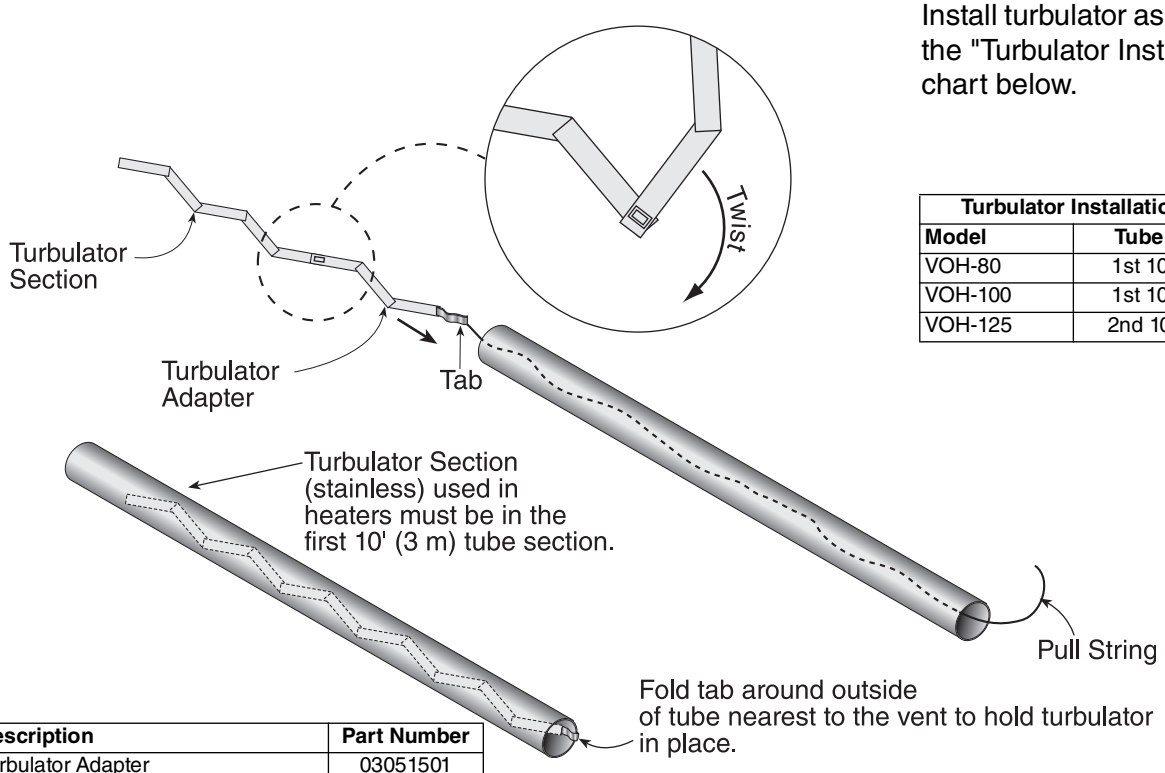
Model	Tube Length Minimum
VOH-80	10' (3 m)
VOH-100	15' (4 m)
VOH-125	20' (6 m)



Step 6.4 Turbulator Installation

Install turbulator as specified in the "Turbulator Installation" chart below.

Turbulator Installation Chart	
Model	**Tube Section**
VOH-80	1st 10' Section
VOH-100	1st 10' Section
VOH-125	2nd 10' Section



Description	Part Number
Turbulator Adapter	03051501
Turbulator Section	03051502
Turbulator Section (stainless)	03051505
Tube	91409XXX

Step 6.5 Reflector Installation

⚠ WARNING

Fire Hazard

Support reflector with bulkhead and reflector support assembly.

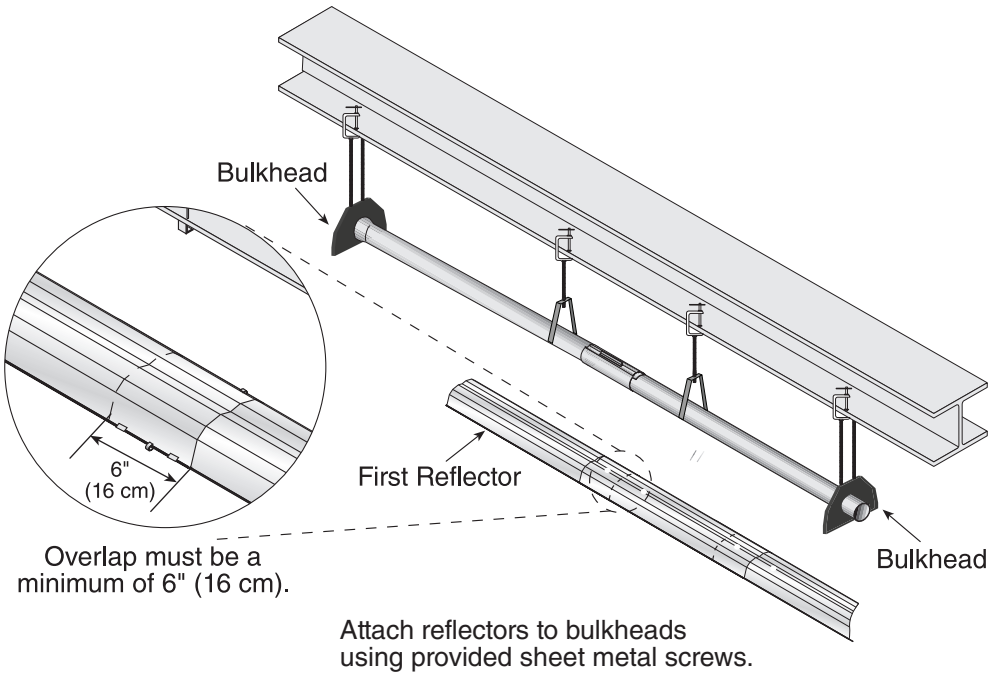
Reflector must not touch tube.

Failure to follow these instructions can result in death, injury or property damage.

Step 6.5.1 Reflector, U-Clip and Reflector Support Installation

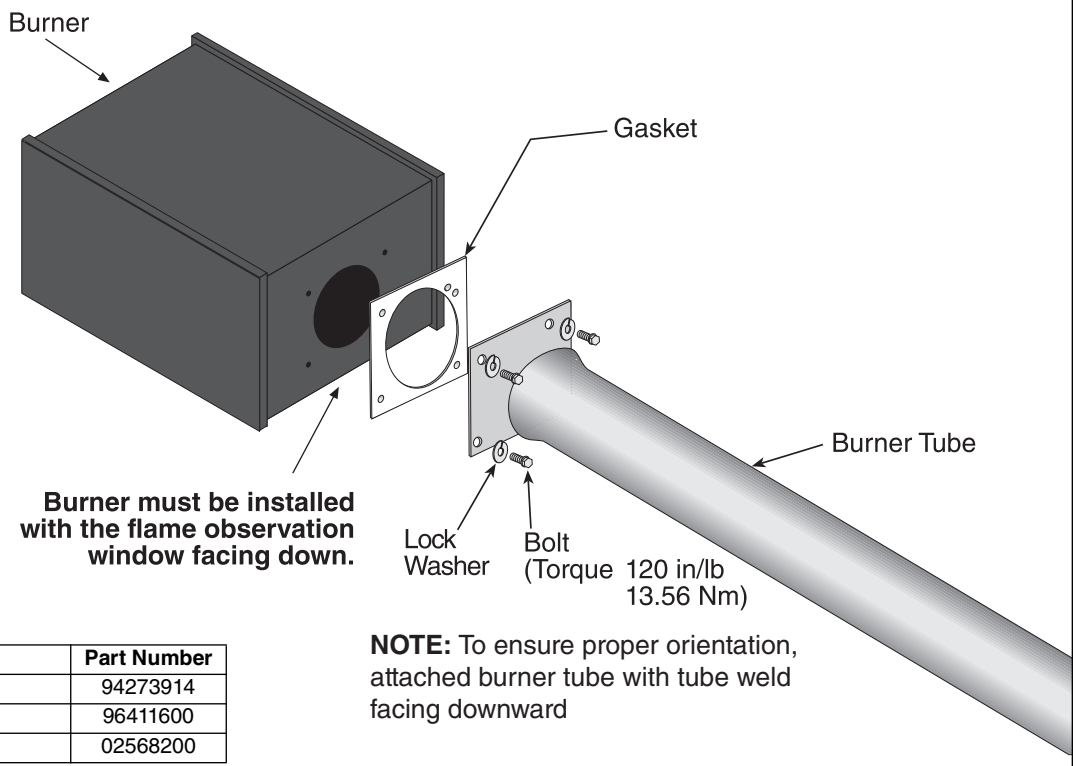
The pictorial drawings of the heater construction in *Section 6* are schematic only and provide a general guideline of where hangers, reflector supports and
U-clips are to be installed.

To ensure proper expansion and contraction movement of the reflectors, a combination of U-clips and reflector supports are used. The positioning of reflector supports and U-clips depends on the individual installation. Use either pop rivets or sheet metal screws instead of u-clips when installing end caps and joint pieces in areas where impact and high wind may be a factor. The following rules must be observed.



Description	Part Number
Screw #8 x 3/4	94320812
2 Bulkheads	0704000

Step 6.6 Burner Installation



Description	Part Number
Bolt	94273914
Lock Washer	96411600
Gasket	02568200

NOTE: To ensure proper orientation, attached burner tube with tube weld facing downward

SECTION 7: GAS PIPING

⚠ WARNING

Fire Hazard

Tighten gas hose fittings to connect gas supply according to Figure 23.

Gas hose can crack when twisted.

Gas hose moves during normal operation.

Use only 36" (91 cm) long connector of 1/2" or 3/4" nominal ID.

Connector supplied with heater for U.S. models (not with Canadian models).

Failure to follow these instructions can result in death, injury or property damage.

⚠ WARNING

Explosion Hazard

Leak test all components of gas piping before operation.

Gas can leak if piping is not installed properly.

The heater and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psi (3.5 kPa).

The heater must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psi (3.5 kPa).

Failure to follow these instructions can result in death, injury or property damage.

Install the gas hose as shown in *Figure 9*. The gas hose accommodates expansion of the heating system and allows for easy installation and service of the burner. Before connecting the burners to the supply system, verify that all high pressure testing of the gas piping has been completed. The gas hose shall not be be located in pathways where it would be a trip hazard or where it may be subject to accidental damage.

There is an expansion of the tube with each firing cycle. This will cause the burner to move with respect to the gas line. This can cause a gas leak resulting in an unsafe condition if the gas connection is not made in strict accordance with *Figure 9*.

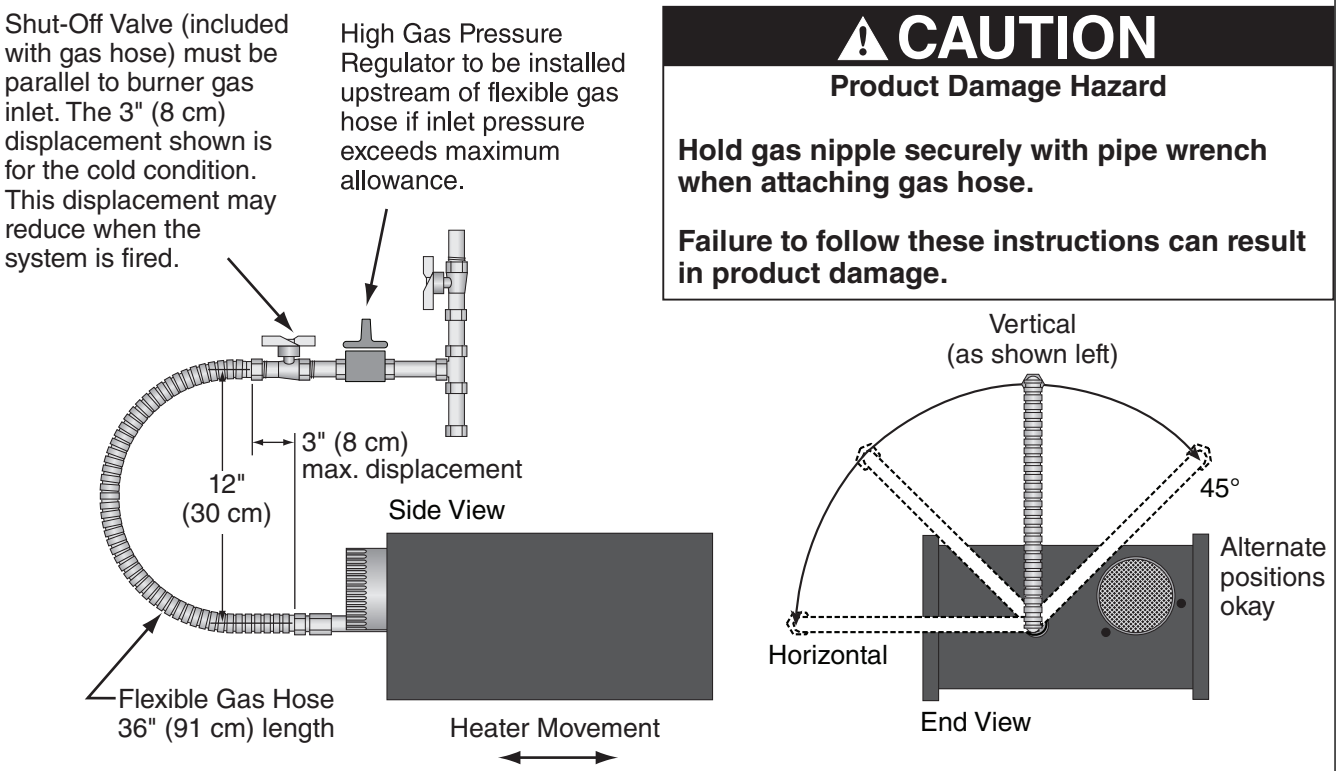
Meter and service must be large enough to handle all the burners being installed plus any other connected load. The gas line which feeds the system must be large enough to supply the required gas with a maximum pressure drop of 1/2" wc When gas piping is not included in the layout drawing, the local gas supplier will usually help in planning the gas piping.

Gas lines must meet applicable codes:
United States: The Flexible Stainless Steel Gas Hose (US models) supplied with the heater is certified per the Standard for Connectors for Gas Appliances, ANSI Z21.24/CSA 6.10 - latest revision.
Canada: The Rubber Type 1 Gas Hose (Canadian models) optional with the heater is 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 - Latest revision.

- **Check the pipe and tubing ends for leaks before placing heating equipment into service. When checking for gas leaks, use a soap and water solution; never use an open flame.**

FIGURE 9: Gas Connection with Flexible Gas Hose

CORRECT POSITIONS



⚠ CAUTION

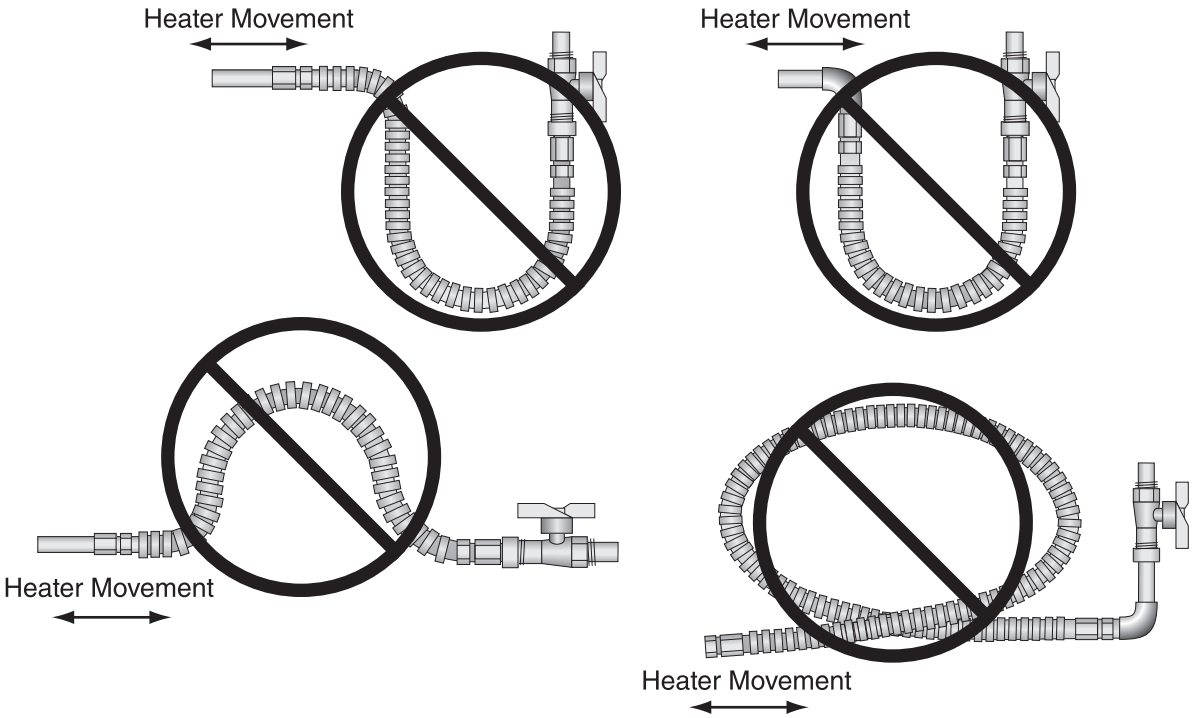
Product Damage Hazard

Hold gas nipple securely with pipe wrench when attaching gas hose.

Failure to follow these instructions can result in product damage.

Description	Part Number
High Pressure Regulator - 2 psi	90207600

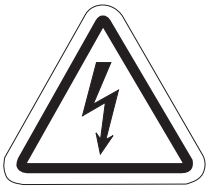
INCORRECT POSITIONS (WRONG INSTALLATION)



Description	Part Number
36" Vinyl Coated Flexible Stainless Steel Gas Hose - 3/4" NPT (US Models Only)	91412204

SECTION 8: WIRING

⚠ DANGER



Electrical Shock Hazard

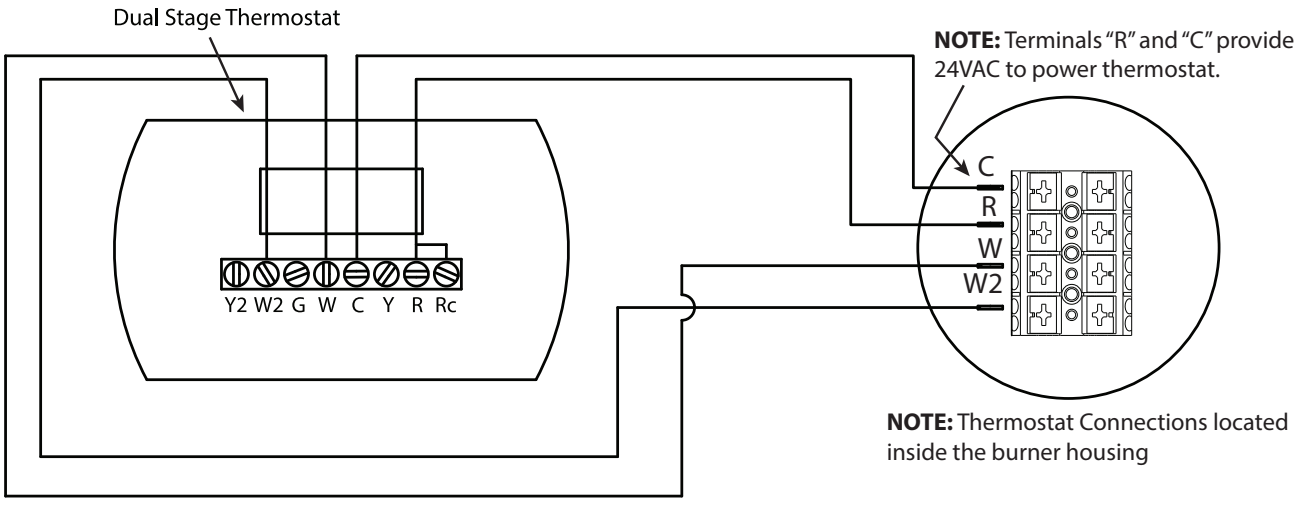
Disconnect electric before service.

Heater must be properly earthed.

Failure to follow these instructions can result in death or electrical shock.

Heaters can be controlled using several methods. Normally thermostats are used to control the heaters but they can also be controlled by an Energy Management System. *Section 8.1* below illustrates the connection for heaters controlled by a line voltage thermostat. NOTE: In order to use line voltage thermostats, the low voltage terminal located at the back of each burner must be connected as shown in the detail. For a single heater on a low voltage thermostat, *See Page 25, Figure 8.1* below. To control multiple heaters on one low voltage thermostat, *See Page 27, Figure 8.3*. NOTE: In order to control multiple heaters on one low voltage thermostat, the low voltage terminals on each heater must be connected as shown in detail. Heater must be grounded in accordance with applicable codes: **United States:** refer to National Electrical Code® NFPA 70 - latest revision **Canada:** refer to Canadian Electrical Code, CSA C22.1 Part I - latest revision.If any of the original internal wiring must be replaced, it must be replaced with wiring materials having a temperature rating of at least 105° C and 600 V.

8.1 Dual Stage Low Voltage Thermostat Wiring

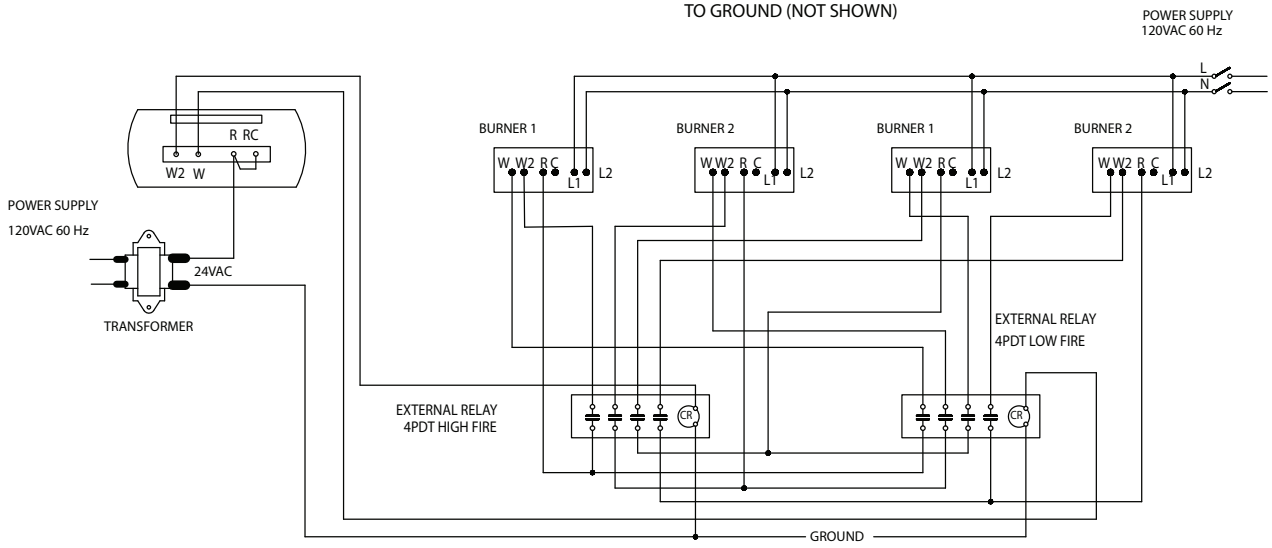


Description	Part Number
Dual Stage Low Voltage Thermostat	90425412

8.2 Multiple Burners For Connection To One Thermostat

Four Burners For Connection To One Thermostat

ALL BURNERS MUST BE CONNECTED
TO GROUND (NOT SHOWN)

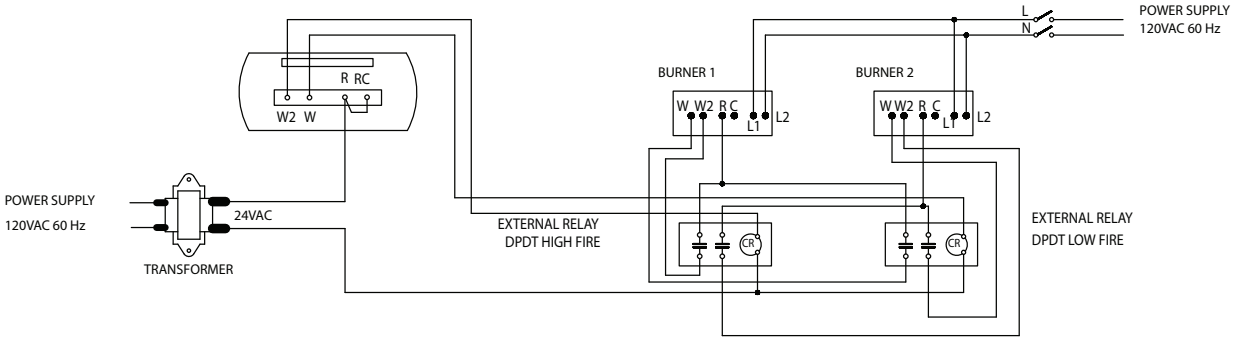


NOTE: 24 VAC transformer (provided by others) required for multiple burners to a single thermostat.

NOTE: Two 4PDT relays requird for 3 OR 4 burners and one thermostat.

Two Burners For Connection To One Thermostat

ALL BURNERS MUST BE CONNECTED
TO GROUND (NOT SHOWN)

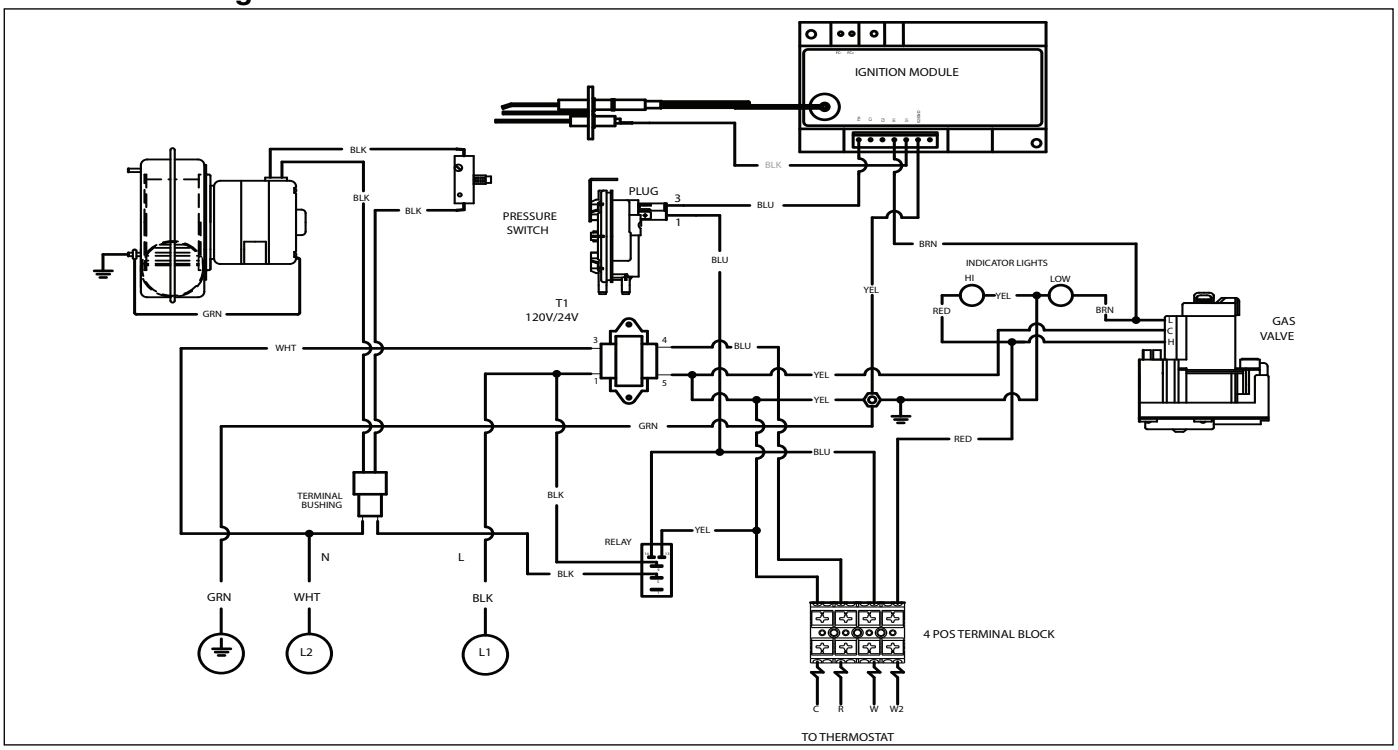


NOTE: 24 VAC transformer (provided by others) required for multiple burners to a single thermostat.

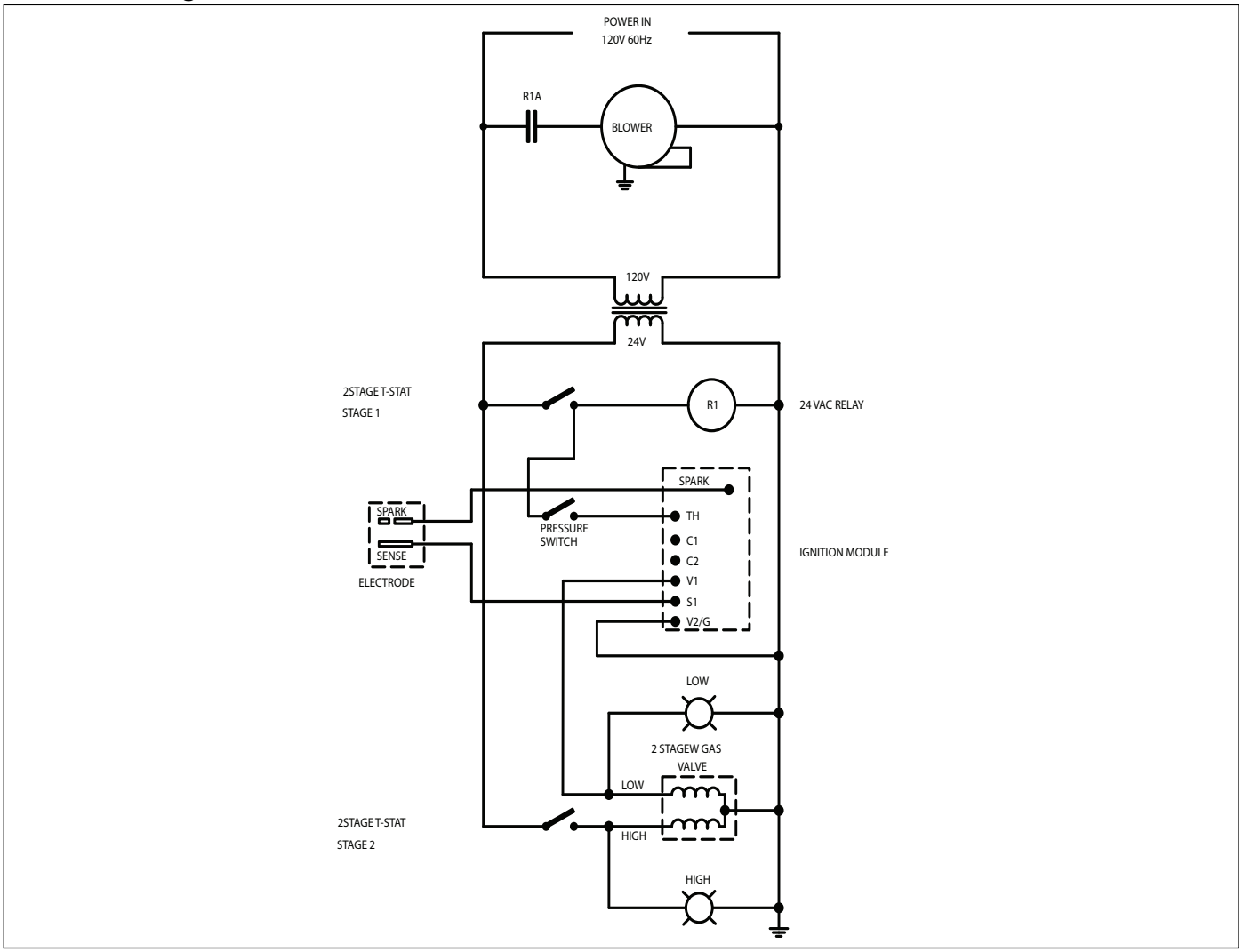
NOTE: Two DPDT relays requird for two burners and one thermostat.

Description	Part Number
Dual Stage Low Voltage Thermostat	90425412

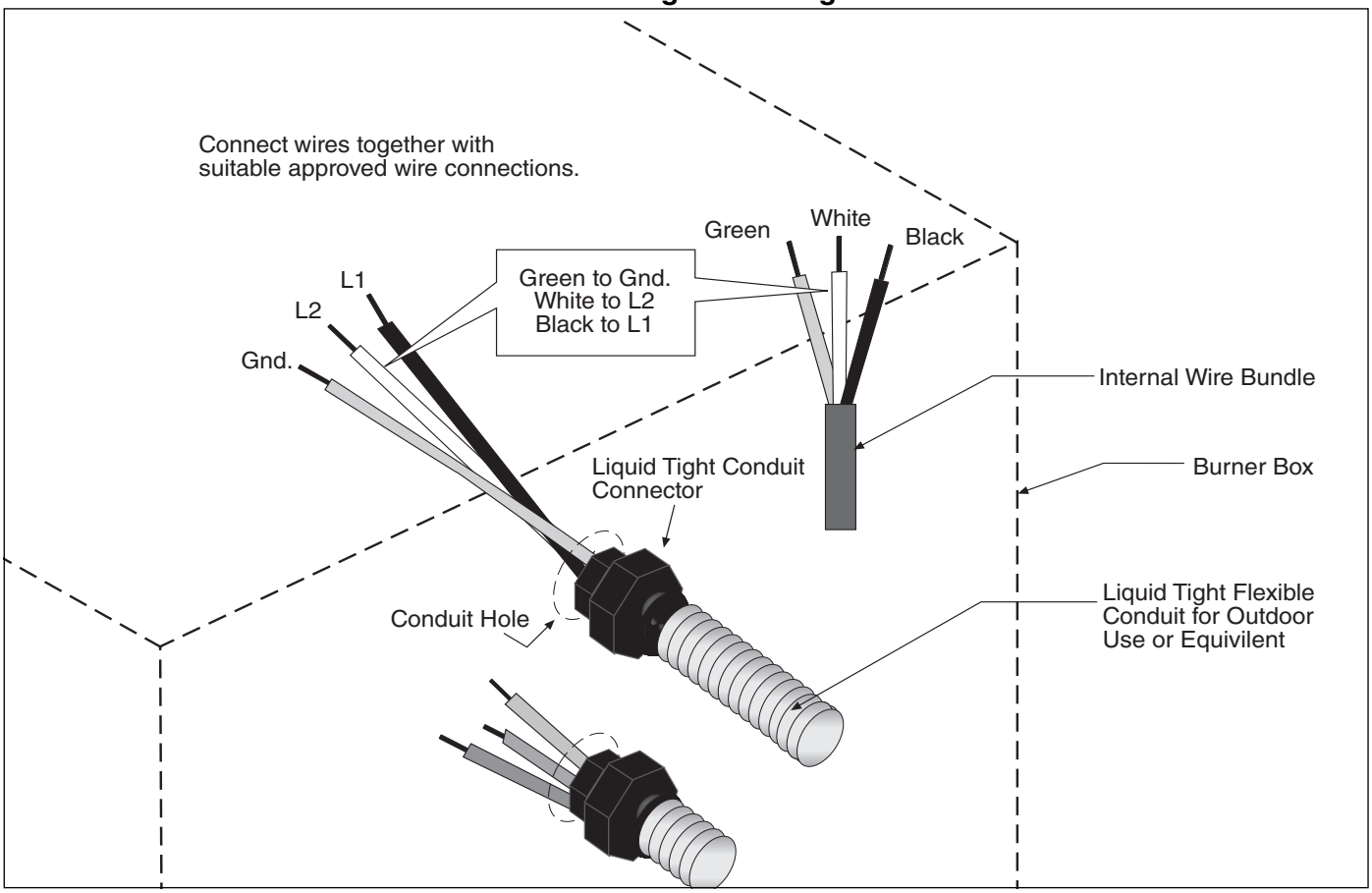
8.3 Internal Wiring



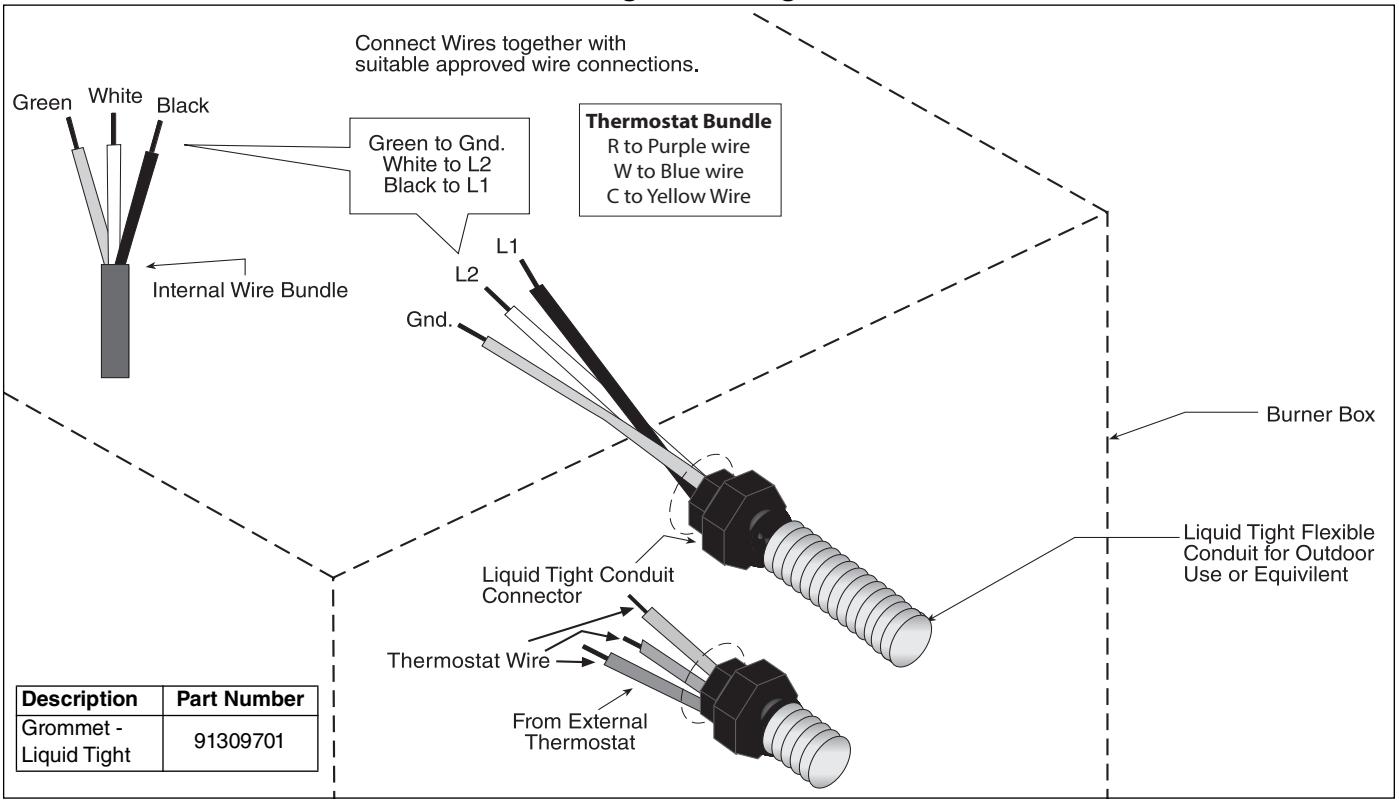
8.4 Ladder Diagram



8.5 Electrical Connection to the Burner Box using Line Voltage Thermostat on Control



8.6 Electrical Connection to Burner Box using Low Voltage Thermostat on Control



Description	Part Number
Grommet - Liquid Tight	91309701

SECTION 9: OPERATION AND MAINTENANCE

⚠ DANGER	⚠ WARNING		
			
Electrical Shock Hazard **Disconnect electric before service.** **Heater must be connected to a properly grounded electrical source.**	**Explosion Hazard** **Turn off gas supply to heater before service.**	**Burn Hazard** **Allow heater to cool before service.** **Tubing may still be hot after operation.**	**Cut/Pinch Hazard** **Wear protective gear during installation, operation and service.** **Edges are sharp.**
Failure to follow these instructions can result in death, electric shock, injury or property damage.			

This heater is equipped with a direct spark ignition system.

9.1 Sequence of Operation

The two-stage heater is a dual firing heating unit that must be connected to a two-stage thermostat (P/N - 90425412) for correct operation. The ROBERTS GORDON® two-stage thermostat uses an algorithm that controls whether the heater operates on high or low fire. The algorithm output will vary based on load conditions. For example, if the thermostat does not sense a heat rise during a heat cycle within a certain time, it may prompt the two-stage heater to operate in high fire. The temperature and timing within the algorithm that causes the two-stage burner to fire in high or low fire varies each heat cycle. The thermostat automatically adjusts the two-stage output during each cycle to improve operation efficiency.

9.2 High/Low Firing Operation

When the thermostat is turned up, the burner will ignite on low fire. The low fire condition is indicated by the low fire indicator light on the burner box that illuminates when the gas valve opens. The high fire condition is indicated by the high fire indicator light that will illuminate when the gas valve switches to high fire.

9.3 Sequence of Operation

1. Turn the thermostat up. When the two-stage thermostat calls for heat, the ignition module will energize the blower motor.
2. When the motor approaches nominal running RPM, the pressure switch closes and activates the ignition module.
3. The ignition module then opens the two-stage gas valve for low fire operation and energizes the spark igniter.
4. When the flame is established, the sparking sequence ceases. The burner is either operating at high fire or low fire depending on the load conditions sensed by the thermostat. If the burner is on high fire, the high fire indicator light will illuminate immediately. The low fire indicator light will illuminate upon ignition and stay energized while the burner is operation, regardless of the firing rate. If the burner is on low fire, only the low fire indicator light will be illuminated.
5. If the flame is not established during the ignition sequence, the ignition module closes the gas valve and purge begins. Module will try 2 additional times for ignition (with purge in between). If ignition is not established, the module will lock out.
6. If the flame extinguishes during operation, the ignition module will provide multiple trial sequence described in step 5. If ignition is not re-established, the module will lock out.
7. After lockout, control must be reset by turning down thermostat for five seconds, and then raising it again to desired temperature, or by disconnecting power and then reconnecting.
8. When the thermostat is satisfied, all power to the unit is shut off.

9.4 To Shut Off Heater

Set thermostat to lowest setting.
Turn OFF electric power to heater.
Turn OFF manual gas valve in the heater supply line.

9.5 To Start Heater

Turn gas valve and electric power OFF and wait five minutes for unburned gases to vent from heater.
Turn ON main gas valve.
Turn ON electric power.
Set thermostat to desired temperature.
Burner should light automatically.

9.6 Pre-Season Maintenance and Annual Inspection

To ensure your safety and years of trouble-free operation of the heating system, service and annual inspections must be done by a contractor qualified in the installation and service of gas-fired heating equipment.
Turn off gas and electric supplies before performing service or maintenance. Allow heater to cool before servicing.
Before every heating season, a contractor qualified in the installation and service of gas-fired heating equipment must perform a thorough safety inspection of the heater.
For best performance, the gas, electrical, thermostat connections, tubing, suspensions and overall heater condition should be thoroughly inspected.
NOTE: Gas flow and burner ignition are among the first things that should be throughly inspected.
Please *see Page 30, Section 9.7* for suggested items to inspect.

9.7 Maintenance Checklist

Installation Code and Annual Inspections:
All installation and service of ROBERTS GORDON® equipment must be performed by a contractor qualified in the installation and service of equipment sold and supplied by Roberts-Gordon LLC and conform to all requirements set forth in the ROBERTS GORDON® manuals and all applicable governmental authorities pertaining to the installation, service, operation and labeling of the equipment.

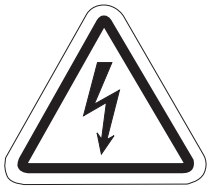
To help facilitate optimum performance and safety, Roberts-Gordon LLC recommends that a qualified contractor conduct, at a minimum, annual inspections of your ROBERTS GORDON® equipment and perform service where necessary, using only replacement parts sold and supplied by Roberts-Gordon LLC.

The Vicinity of the Heater	Do not store or use flammable objects, liquids or vapors near the heater. Immediately remove these items if they are present. *See Page 4, Section 2*.
Vehicles and Other Objects	Maintain the clearances to combustibles. Do not hang anything from, or place anything on, the heater. Make sure nothing is lodged underneath the reflector, in between the tubes or in the decorative or protective grilles (included with select models). Immediately remove objects in violation of the clearances to combustibles. *See Page 5, Section 3*.
Reflector	Reflector must not touch tube. Make sure there is no dirt, sagging, cracking or distortion. Do not operate if there is sagging, cracking or distortion. Clean outside surface with a damp cloth.
Tubes	Make sure there are no cracks. Make sure tubes are connected and suspended securely. *See Page 13, Section 6*. Make sure there is no sagging, bending or distortion. Clean or replace as required.

Gas Line	Inspect the visible portion of the hose before each use of the appliance. The hose assembly must be replaced prior to the appliance being put into operation if there is evidence of excessive abrasion or wear, or if the hose is damaged. The replacement hose assembly is specified on in the parts list in *See Page 10, Section 5.1*.
Burner Observation Window	Make sure it is clean and free of cracks or holes. Clean and replace as required.
Blower Scroll, Wheel and Motor	Compressed air or a vacuum cleaner may be used to clean dust and dirt.
Burner Cup and Orifice	Clear of obstructions (even spider webs will cause problems). Carefully remove any dust and debris from the burner.
Electrode	Replace if there are cracked ceramics, excessive carbon residue, or erosion of the electrode. The electrode gap should be 1/8" (3.2 mm).
Thermostat	There should be no exposed wire or damage to the thermostat. *See Page 25, Section 8*.
Suspension Points	Make sure the heater is hanging securely. Look for signs of wear on the chain or ceiling. *See Page 14, Section 6.1*.
Decorative Grille (optional)	The grille must be securely attached.
Wall Tag	If wall tag is present, make sure it is legible and accurate. Please contact Roberts-Gordon LLC or your ROBERTS GORDON® independent distributor, if you need a wall tag. *See Page 4, Section 2.1*.
Safety Labels	Product safety signs or labels should be replaced by the product user when they are no longer legible. Please contact Roberts-Gordon LLC or your ROBERTS GORDON® independent distributor to obtain replacement signs or labels. *See Page 2, Figure 1 through Page 3, Figure 2*.

SECTION 10: TROUBLESHOOTING

⚠ DANGER



Electrical Shock Hazard

Disconnect electric before service.

Heater must be properly earthed.

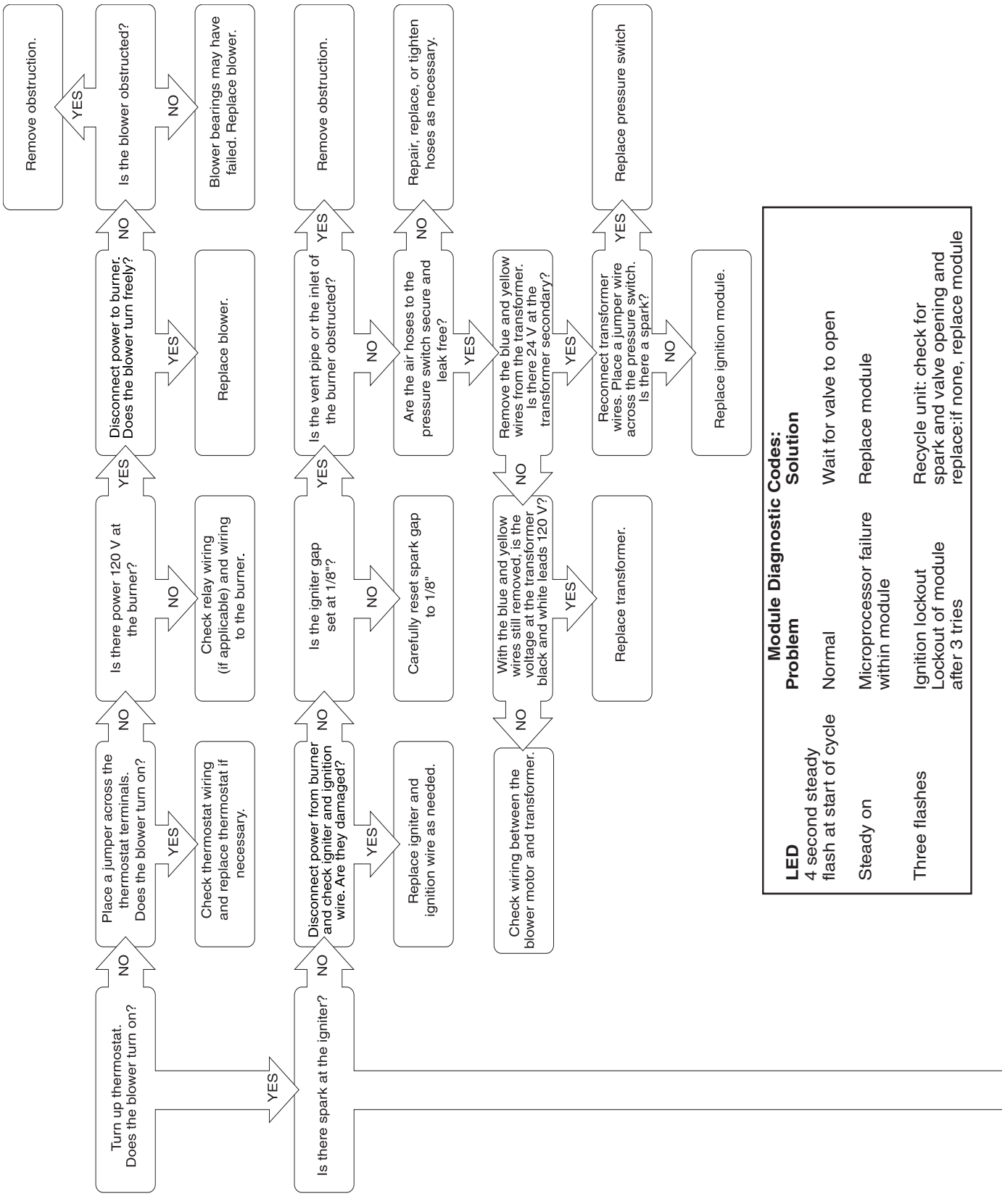
Failure to follow these instructions can result in death or electrical shock.

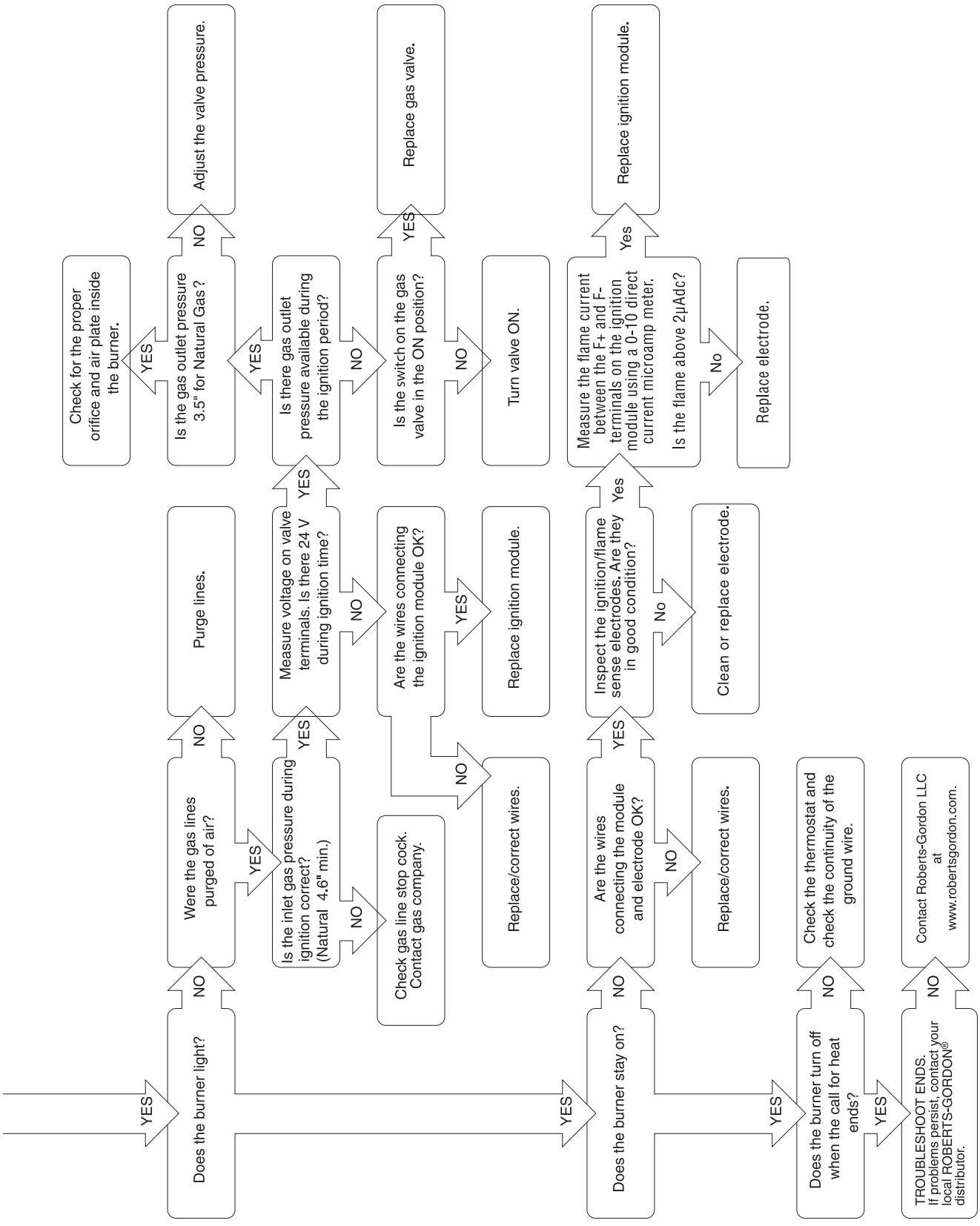
⚠ WARNING

			
Fire Hazard	**Explosion Hazard**	**Burn Hazard**	**Cut/Pinch Hazard**
Keep all flammable objects, liquids and vapors the minimum required clearances to combustibles away from heater. **Some objects will catch fire or explode when placed close to heater.**	**Turn off gas supply to heater before service.**	**Allow heater to cool before service.** **Tubing may still be hot after operation.**	**Wear protective gear during installation, operation and service.** **Edges are sharp.**

Failure to follow these instructions can result in death, injury or property damage.

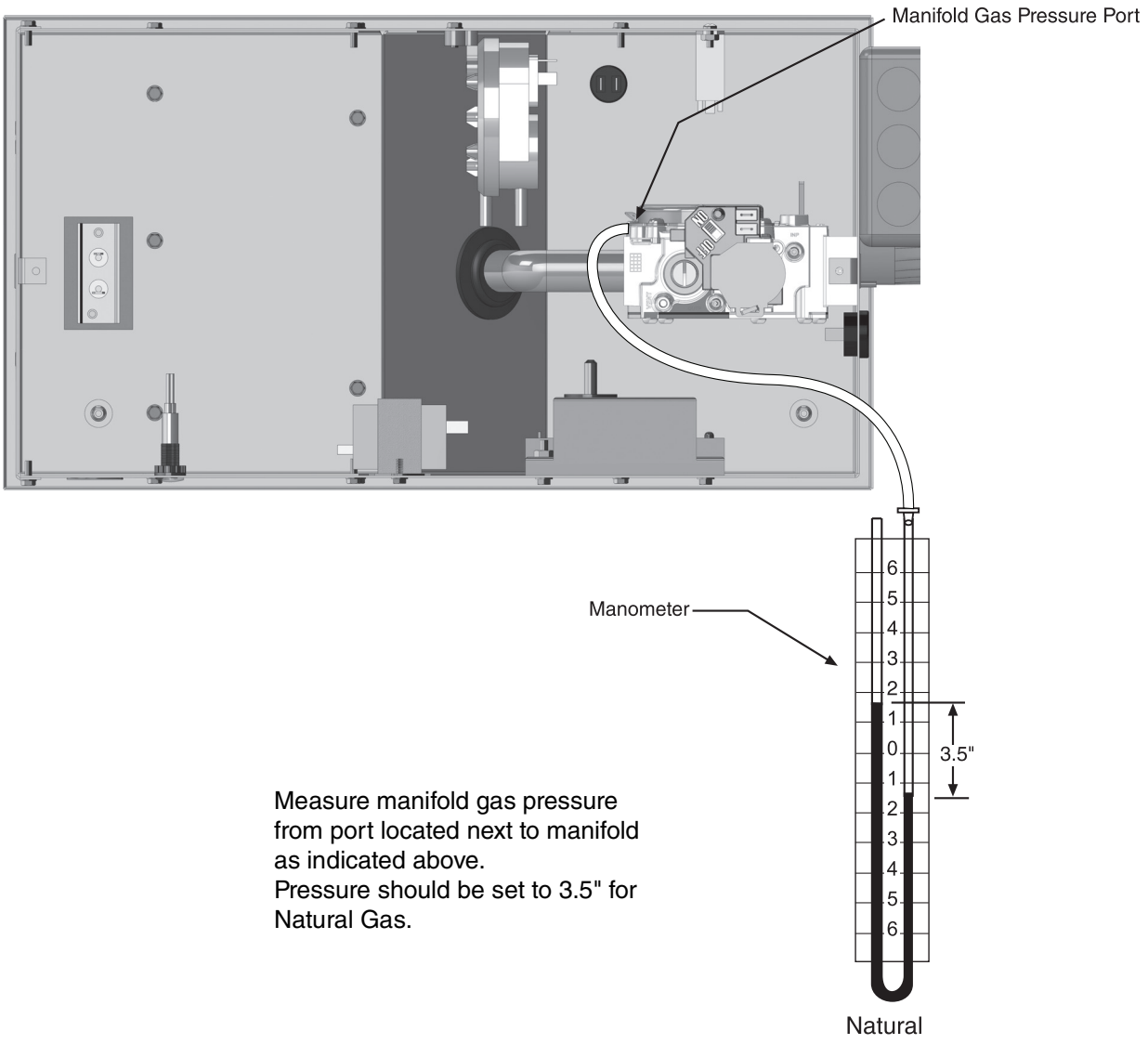
10.1 Troubleshooting Flow Chart




Does the burner light?
YES
NO
Were the gas lines purged of air?
YES
NO
Purge lines.
Is the inlet gas pressure during ignition correct? (Natural 4.6" min.)
YES
NO
Check gas line stop cock. Contact gas company.
Measure voltage on valve terminals. Is there 24 V during ignition time?
YES
NO
Are the wires connecting the ignition module OK?
YES
NO
Replace ignition module.
Replace/correct wires.
Is there gas outlet pressure available during the ignition period?
YES
NO
Is the switch on the gas valve in the ON position?
YES
NO
Replace gas valve.
Turn valve ON.
Is the gas outlet pressure 3.5" for Natural Gas ?
YES
NO
Adjust the valve pressure.
Check for the proper orifice and air plate inside the burner.
Does the burner stay on?
YES
NO
Are the wires connecting the module and electrode OK?
YES
NO
Replace/correct wires.
Inspect the ignition/flame sense electrodes. Are they in good condition?
Yes
No
Clean or replace electrode.
Measure the flame current between the F+ and F- terminals on the ignition module using a 0-10 direct current microamp meter.
Yes
Is the flame above 2µAdc?
No
Replace electrode.
Replace ignition module.
Does the burner turn off when the call for heat ends?
YES
NO
Check the thermostat and check the continuity of the ground wire.
TROUBLESHOOT ENDS. If problems persist, contact your local ROBERTS-GORDON® distributor.
NO
Contact Roberts-Gordon LLC at www.robertsgordon.com.

10.2 Manifold Gas Pressure Setting

Side View of Heater



Measure manifold gas pressure from port located next to manifold as indicated above.
Pressure should be set to 3.5" for Natural Gas.

SECTION 11: REPLACEMENT PARTS

⚠ DANGER | **⚠ WARNING**



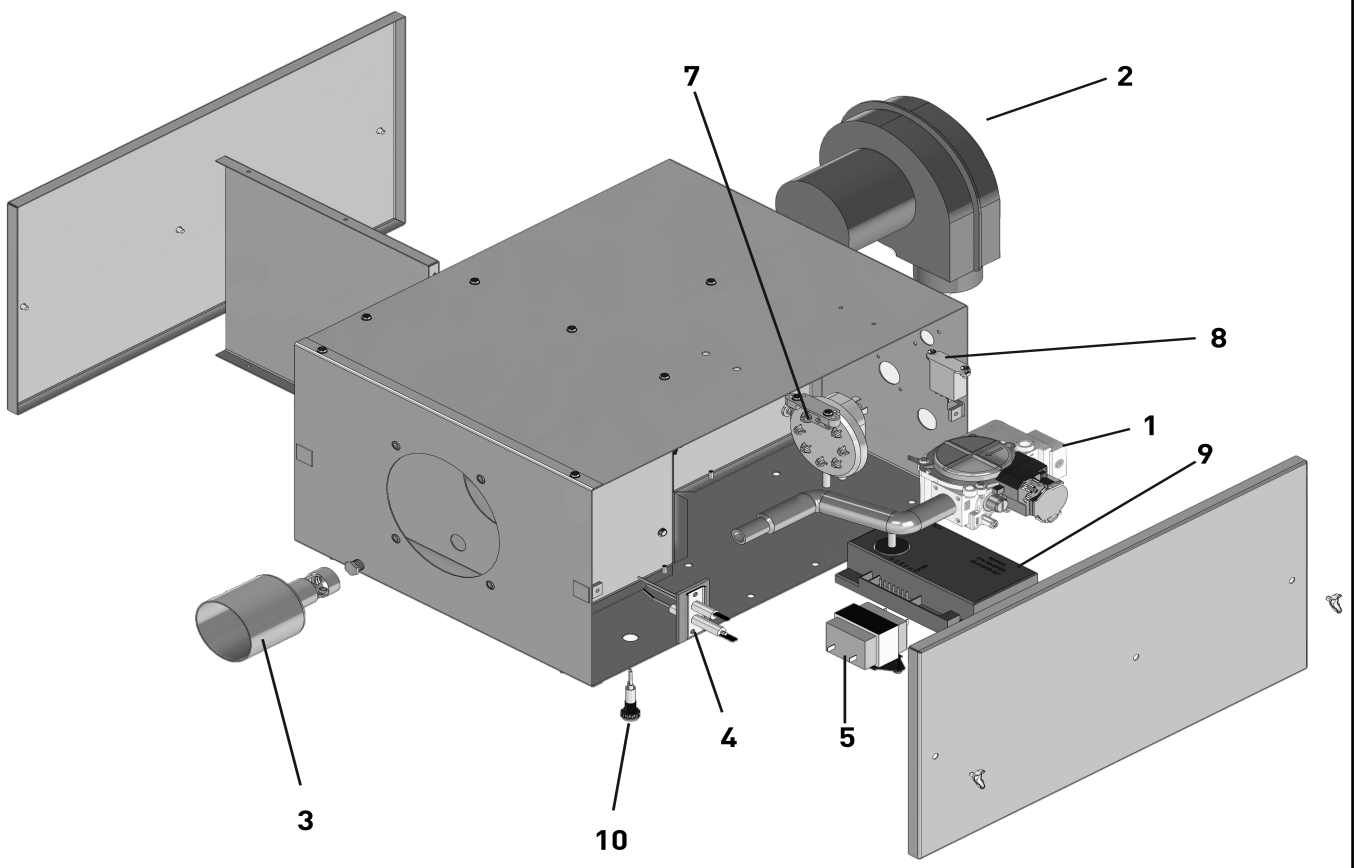

Electrical Shock Hazard | **Explosion Hazard** | **Fire Hazard** | **Carbon Monoxide Hazard**

Use only genuine ROBERTS GORDON® replacement parts per this installation, operation and service manual.

Failure to follow these instructions can result in death, electric shock, injury or property damage.

See warnings and important information before removing or replacing parts. After any maintenance or repair work, always test fire the heater in accordance with the start-up instructions *on Page 29, Section 9* to help ensure all safety systems are in working order before leaving the heater to operate. Minor faults may be traced by using the troubleshooting charts *on Page 32, Section 10 through Page 35, Figure 10.2.*

FIGURE 10: Burner Exploded View



	Description	Part Number
1	2-Stage Gas Valve	90032535
	Tube Gasket (Not Shown)	02568200
	Blower Inlet Gasket (Not Shown)	03050900
2	Motor and Blower Assembly	90708600-P
	Combustion Air Weather Vent (Not Shown)	03700009
3	Burner Cup Assembly	03020100
4	Electrode Assembly	90427400
	Mica Window Assembly (Not Shown)	02553203
5	Transformer	90436900K
7	Pressure Switch:	
	(100)	90439802K
	(125)	90439801K
	(80)	90439806K
8	24 Vac Relay	90447140
9	DSI Ignition Module	90439500K
10	LED Burner Status Light	91316103
11	Four Pole Terminal Block (Not shown)	91300034

SECTION 12: GENERAL SPECIFICATIONS

12.1 Material Specifications

12.1.1 Reflectors

.024 Aluminum
(optional .024 Stainless Steel Type 304, Standard Reflectors Only)

12.2 Heater Specifications

12.2.1 Ignition

Fully automatic, three-try, direct spark, electronic ignition control, 100% safety shut-off.

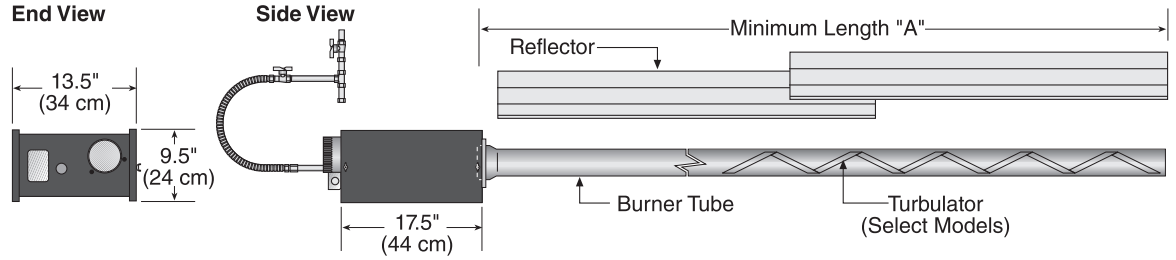
12.3 Suspension Specifications

Hang heater with materials with a minimum working load of 75 lbs (33 kg). *See Page 14, Figure 6.1*.

12.4 Controls Specifications

Time switches, thermostats, etc. can be wired into the electrical supply. External controls supplied as an optional extra.

General Specifications for the heaters are as follows:



Model	Heat Input Rate (Btu/h) x (1000)	Length "A" Minimum	Recommended Minimum Mounting Height* Space	Spot
VOH-80	80	10' (3m)	12'-15' (3.6 - 4.5m)	11' (3.3m)
VOH-100	100	15' (4.5m)	12'-15' (3.6 - 4.5m)	12' (3.7m)
VOH-125	125	20' (6m)	15'-20' (4.5 - 6m)	15' (4.6m)

**See Page 5, Section 3* for clearances to combustibles.

GAS PRESSURE AT MANIFOLD:
Natural Gas: 3.5" wc

PIPE CONNECTION:
1/2" NPT

DIMENSIONS:
Vent Connection Size: 4" (10 cm)
Outside Air Connection Size: 4" (10 cm)
Refer to figure above for dimensional information.

GAS INLET PRESSURE:
Natural Gas: 4.6" wc Minimum
14.0" wc Maximum

ELECTRICAL RATING (ALL MODELS):
120 V - 60 Hz., 1.0 A

PRODUCT "TYPE" ACCORDING TO ASHRAE HANDBOOK-HVAC SYSTEMS AND EQUIPMENT (LATEST EDITION)
Type: "C" - Indirect Tube-Type Heater (Forced Draft)

SECTION 13: THE ROBERTS GORDON® ULTRAVIBE™ WARRANTY

ROBERTS-GORDON WILL PAY FOR:

Within 36 months from date of purchase by buyer or 42 months from date of shipment by Roberts-Gordon LLC (whichever occurs first), replacement parts will be provided free of charge for any part of the product which fails due to a manufacturing or material defect.

Roberts-Gordon LLC will require the part in question to be returned to the factory. Roberts-Gordon LLC will, at its sole discretion, repair or replace after determining the nature of the defect and disposition of part in question.

ROBERTS GORDON® Replacement Parts are warranted for a period of 12 months from date of shipment from Roberts-Gordon LLC or the remaining ROBERTS GORDON® ULTRAVIBE™ warranty.

ROBERTS-GORDON WILL NOT PAY FOR:

Service trips, service calls and labor charges.

Shipment of replacement parts.

Claims where the total price of the goods have not been paid.

Damage due to:

- Improper installation, operation or maintenance.
- Misuse, abuse, neglect, or modification of the ROBERTS GORDON® ULTRAVIBE™ in any way.
- Use of the ROBERTS GORDON® ULTRAVIBE™ for other than its intended purpose.
- Incorrect gas or electrical supply, accident, fire, floods, acts of God, war, terrorism, or other casualty.
- Improper service, use of replacement parts or accessories not specified by Roberts-Gordon.
- Failure to install or maintain the ROBERTS GORDON® ULTRAVIBE™ as directed in the Installation, Operation and Service manual.
- Relocation of the ROBERTS GORDON® ULTRAVIBE™ after initial installation
- The use of the ROBERTS GORDON® ULTRAVIBE™ in a corrosive atmosphere containing contaminants.
- The use of the ROBERTS GORDON® ULTRAVIBE™ in the vicinity of a combustible or explosive material.
- Any defect in the ROBERTS GORDON® ULTRAVIBE™ arising from a drawing, design, or specification supplied by or on behalf of the consumer.
- Damage incurred during shipment. Claim must be filed with carrier.

WARRANTY IS VOID IF:

The ROBERTS GORDON® ULTRAVIBE™ is not installed by a contractor qualified in the installation and service of gas fired heating equipment.

You cannot prove original purchase date and required annual maintenance history.

The data plate and/or serial number are removed, defaced, modified or altered in any way.

The ownership of the ROBERTS GORDON® ULTRAVIBE™ is moved or transferred. This warranty is nontransferable.

Roberts-Gordon is not permitted to inspect the damaged controller and/or component parts.

READ YOUR INSTALLATION, OPERATION AND SERVICE MANUAL

If you have questions about your controller, contact your installing professional. Should you need Replacement Parts or have additional questions, call or write:

Roberts-Gordon LLC
1250 William Street
Buffalo, New York 14240-0044
Telephone: +1.716.852.4400
salesinfo@rg-inc.com
www.robertsgordon.com

Roberts-Gordon LLC's liability, and your exclusive remedy, under this warranty or any implied warranty (including the implied warranties of merchantability and fitness for a particular purpose) is limited to providing replacement parts during the term of this warranty. Some jurisdictions do not allow limitations on how long an implied warranty lasts, so this limitation may not apply to you. There are no rights, warranties or conditions, expressed or implied, statutory or otherwise, other than those contained in this warranty.

Roberts-Gordon LLC shall in no event be responsible for incidental or consequential damages or incur liability for damages in excess of the amount paid by you for the ROBERTS GORDON® ULTRAVIBE™ **.** Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from jurisdiction to jurisdiction.

Roberts-Gordon shall not be responsible for failure to perform under the terms of this warranty if caused by circumstances out of its control, including but not limited to war, fire, flood, strike, government or court orders, acts of God, terrorism, unavailability of supplies, parts or power. No person is authorized to assume for Roberts-Gordon any other warranty, obligation or liability.

LIMITATIONS ON AUTHORITY OF REPRESENTATIVES:

No representative of Roberts-Gordon LLC, other than an Executive Officer, has authority to change or extend these provisions. Changes or extensions shall be binding only if confirmed in writing by Roberts-Gordon LLC's duly authorized Executive Officer.

ROBERTS GORDON®
INFRARED HEATING

OWNER WARRANTY REGISTRATION CARD

Mail or Email to:

Roberts Gordon LLC •1250 William Street • Buffalo, NY 14206 • Phone: 716-852-4400
salesinfo@rg-inc.com • www.robertsgordon.com

About the Owner:

Name:_____

Address:_____City:_____State:_____Zip Code:_____

Phone:_____ Fax:_____ E-mail:_____

About the Installer:

Name:_____

Address:_____City:_____State:_____Zip Code:_____

Phone:_____Fax:_____E-mail:_____

Purchased From (if different than installer):

Name:_____

Address:_____City:_____State:_____Zip Code:_____

Phone:_____ Fax:_____ E-mail:_____

About your Heater:

Model#:_____ Serial #:_____ Fuel:_____Installation Date:_____

Type of Installation (check one):

o Automotive	o Manufacturing	o Warehouse	o Recreational	o Aircraft
o Public Building	o Office	o Retail	o Agricultural	o Other_____

Installation Code and Annual Inspections: All installation and service of ROBERTS GORDON® equipment must be performed by a contractor qualified in the installation and service of equipment sold and supplied by Roberts-Gordon LLC and conform to all requirements set forth in the ROBERTS GORDON® manuals and all applicable governmental authorities pertaining to the installation, service, operation and labeling of the equipment.

To help facilitate optimum performance and safety, Roberts-Gordon LLC recommends that a qualified contractor conduct, at a minimum, annual inspections of your ROBERTS GORDON® equipment and perform service where necessary, using only replacement parts sold and supplied by Roberts-Gordon LLC.

These products are not for residential use.

This product is intended to assist licensed professionals in the exercise of their professional judgment.

Attach this information to a wall near the ROBERTS GORDON® heater.

ROBERTS GORDON®
Infrared Heating

Read the Installation, Operation, and Service Manual thoroughly before installation, operation, or service.

Know your model number and installed configuration.

Model number and installed configuration are found on the burner and in the Installation, Operation and Service Manual.

Write the largest clearance dimensions with permanent ink according to your model number and configuration in the open spaces below.

OPERATING INSTRUCTIONS

1. STOP! Read all safety instructions on this information sheet.
2. Open the manual gas valve in the heater supply line.
3. Turn on electric power to the heater.
4. Set the thermostat to desired setting.

TO TURN OFF THE HEATER

1. Set the thermostat to off or the lowest setting.

IF THE HEATER WILL NOT OPERATE, TO ENSURE YOUR SAFETY, FOLLOW THESE INSTRUCTIONS TO SHUT DOWN YOUR HEATER

1. Set the thermostat to off or the lowest setting.
2. Turn off electric power to the heater.
3. Turn off the manual gas valve in the heater supply line.
4. Call your registered installer/contractor qualified in the installation and service of gas-fired heating equipment.

⚠WARNING

Fire Hazard

Keep all flammable objects, liquids and vapors the minimum required clearances to combustibles away from heater.

Some objects will catch fire or explode when placed close to heater.

Failure to follow these instructions can result in death, injury or property damage.

Maintain_____clearance to the side and _____ clearance below the heater from vehicles and combustible materials.

Roberts-Gordon LLC
1250 William Street
Buffalo, NY 14206
Telephone: +1.716.852.4400

Installation Code and Annual Inspections:
All installation and service of ROBERTS GORDON® equipment must be performed by a contractor qualified in the installation and service of equipment sold and supplied by Roberts-Gordon and conform to all requirements set forth in the ROBERTS GORDON® manuals and all applicable governmental authorities pertaining to the installation, service, operation and labeling of the equipment. To help facilitate optimum performance and safety, Roberts-Gordon recommends that a qualified contractor conduct, at a minimum, annual inspections of your ROBERTS GORDON® equipment and perform service where necessary, using only replacement parts sold and supplied by Roberts-Gordon.

Further Information: Applications, engineering and detailed guidance on systems design, installation and equipment performance is available through ROBERTS GORDON® representatives. Please contact us for any further information you may require, including the Installation, Operation and Service Manual.

This product is not for residential use.

www.robertsgordon.com P/N 91037912 Rev M