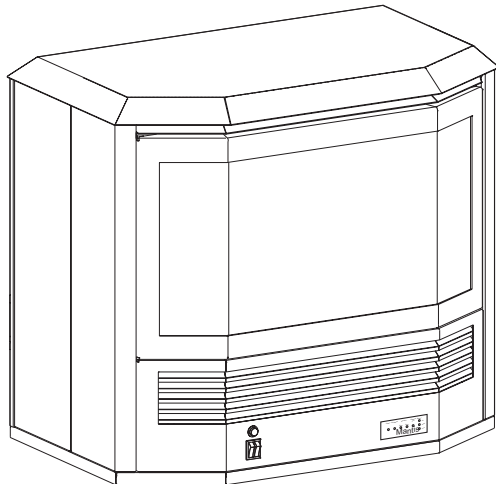




Empire Comfort Systems

# INSTALLATION INSTRUCTIONS AND OWNER'S MANUAL



*Mantis*<sup>™</sup>

**Installer:** Leave this manual with the appliance.

**Consumer:** Retain this manual for future reference.

**WARNING:** If the information in these instructions are not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- **WHAT TO DO 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.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.

## POWER-VENT HIGH-EFFICIENCY FIREPLACE WITH BAY WINDOW

### MODELS

PV-28SV50-(BN,BP)-1

PV-28SV55-(CN,CP,GN,GP)-1



**EFFECTIVE DATE  
NOVEMBER 2006**

This appliance may be installed in an aftermarket, permanently located, manufactured home (USA only) or mobile home, where not prohibited by state or local codes.

This appliance is only for use with the type of gas indicated on the rating plate. This appliance is not convertible for use with other gases, unless a certified kit is used.

**WARNING:** If not installed, operated and maintained in accordance with the manufacturer's instructions, this product could expose you to substances in fuel or from fuel combustion which can cause death or serious illness.

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# IMPORTANT SAFETY INFORMATION

## THIS IS A HEATING APPLIANCE

DO NOT OPERATE THIS APPLIANCE WITHOUT FRONT PANEL INSTALLED.

- Due to high temperatures the appliance should be located out of traffic and away from furniture and draperies.
- 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 room as the appliance.
- Clothing or other flammable material should not be placed on or near the appliance.
- Any safety screen or guard removed for servicing an appliance must be replaced prior to operating the appliance.
- Keep burner and control compartment clean.
- Vent cap hot while furnace is in operation.
- For manufactured home (USA only) or mobile home or residential installation convertible for use with natural gas and liquefied petroleum gases when provision is made for the simple conversion from one gas to the other.
- Installation and repair should be done by a QUALIFIED SERVICE PERSON. The appliance should be inspected before use and at least annually by a qualified service person. More frequent cleaning may be required due to excessive lint from carpeting, bedding materials, etc. It is imperative that control compartments, burners and circulating air passageways of the appliance be kept clean.
- DO NOT put anything around the furnace that will obstruct the flow of combustion and ventilation air.
- DO keep the appliance area clear and free from combustible material, gasoline and other flammable vapors and liquids.
- Do examine venting system periodically and replace damaged parts.
- Do make a periodic visual check of burner. Clean and replace damaged parts.
- DO NOT use this heater if any part has been under water. Immediately call a qualified service technician to inspect the heater and to replace any part of the control system and any gas control which has been under water.

# SAFETY INFORMATION FOR USERS OF LP-GAS

Propane (LP-Gas) is a flammable gas which can cause fires and explosions. In its natural state, propane is odorless and colorless. You may not know all the following safety precautions which can protect both you and your family from an accident. Read them carefully now, then review them point by point with the mem-

bers of your household. Someday, there may not be a minute to lose, everyone's safety will depend on knowing exactly what to do. If, after reading the following information, you feel you still need more information, please contact your gas supplier.

## LP-GAS WARNING ODOR

**If a gas leak happens, you should be able to smell the gas because of the odorant put in the LP-Gas.**

**That's your signal to go into immediate action!**

- Do not operate electric switches, light matches, use your phone. Do not do anything that could ignite the gas.
- Get everyone out of the building, vehicle, trailer, or area. Do that IMMEDIATELY.
- Close all gas tank or cylinder supply valves.
- LP-Gas is heavier than air and may settle in low areas such as basements. When you have reason to suspect a gas leak, keep out of basements and other low areas. Stay out until firefighters declare them to be safe.
- Use your neighbor's phone and call a trained LP-Gas service person and the fire department. Even though you may not continue to smell gas, do not turn on the gas again. Do not re-enter the building, vehicle, trailer, or area.
- **Finally**, let the service man and firefighters check for escaped gas. Have them air out the area before you return. Properly trained LP-Gas service people should repair the leak, then check and relight the gas appliance for you.

## NO ODOR DETECTED - ODOR FADE

Some people cannot smell well. Some people cannot smell the odor of the chemical put into the gas. You must find out if you can smell the odorant in propane. Smoking can decrease your ability to smell. Being around an odor for a time can affect your sensitivity or ability to detect that odor. Sometimes other odors in the area mask the gas odor. People may not smell the gas odor or their minds are on something else. Thinking about smelling a gas odor can make it easier to smell.

The odorant in LP-gas is colorless, and it can fade under some circumstances. For example, if there is an underground leak, the movement of the gas through soil can filter the odorant. Odorants

in LP-Gas also are subject to oxidation. This fading can occur if there is rust inside the storage tank or in iron gas pipes.

The odorant in escaped gas can adsorb or absorb onto or into walls, masonry and other materials and fabrics in a room. That will take some of the odorant out of the gas, reducing its odor intensity.

LP-Gas may stratify in a closed area, and the odor intensity could vary at different levels. Since it is heavier than air, there may be more odor at lower levels. Always be sensitive to the slightest gas odor. If you detect any odor, treat it as a serious leak. Immediately go into action as instructed earlier.

## SOME POINTS TO REMEMBER

- Learn to recognize the odor of LP-gas. Your local LP-Gas Dealer can give you a "Scratch and Sniff" pamphlet. Use it to find out what the propane odor smells like. If you suspect that your LP-Gas has a weak or abnormal odor, call your LP-Gas Dealer.
- If you are not qualified, do not light pilot lights, perform service, or make adjustments to appliances on the LP-Gas system. If you are qualified, consciously think about the odor of LP-Gas prior to and while lighting pilot lights or performing service or making adjustments.
- Sometimes a basement or a closed-up house has a musty smell that can cover up the LP-Gas odor. Do not try to light pilot lights, perform service, or make adjustments in an area where the conditions are such that you may not detect the odor if there has been a leak of LP-Gas.
- Odor fade, due to oxidation by rust or adsorption on walls of new cylinders and tanks, is possible. Therefore, people should be particularly alert and careful when new tanks or cylinders are placed in service. Odor fade can occur in new tanks, or reinstalled old tanks, if they are filled and allowed to set too long before refilling. Cylinders and tanks which have been out of service for a time may develop internal rust which will cause odor fade. If such conditions are suspected to exist, a periodic sniff test of the gas is advisable. If you have any question about the gas odor, call your LP-gas dealer. A periodic sniff test of the LP-gas is a good safety measure under any condition.
- If, at any time, you do not smell the LP-Gas odorant and you think you should, assume you have a leak. Then take the same immediate action recommended above for the occasion when you do detect the odorized LP-Gas.
- If you experience a complete "gas out," (the container is under no vapor pressure), turn the tank valve off immediately. If the container valve is left on, the container may draw in some air through openings such as pilot light orifices. If this occurs, some new internal rusting could occur. If the valve is left open, then treat the container as a new tank. Always be sure your container is under vapor pressure by turning it off at the container before it goes completely empty or having it refilled before it is completely empty.

# REQUIREMENTS FOR MASSACHUSETTS

For all side wall horizontally vented gas fueled equipment installed in every dwelling, building or structure used in whole or in part for residential purposes, including those owned or operated by the Commonwealth and where the side wall exhaust vent termination is less than seven (7) feet above finished grade in the area of the venting, including but not limited to decks and porches, the following requirements shall be satisfied:

1. **INSTALLATION OF CARBON MONOXIDE DETECTORS.**

At the time of installation of the side wall horizontal vented gas fueled equipment, the installing plumber or gas fitter shall observe that a hard wired carbon monoxide detector with an alarm and battery back-up is installed on the floor level where the gas equipment is to be installed. In addition, the installing plumber or gas fitter shall observe that a battery operated or hard wired carbon monoxide detector with an alarm is installed on each additional level of the dwelling, building or structure served by the side wall horizontal vented gas fueled equipment. It shall be the responsibility of the property owner to secure the services of qualified licensed professionals for the installation of hard wired carbon monoxide detectors

  - a. In the event that the side wall horizontally vented gas fueled equipment is installed in a crawl space or an attic, the hard wired carbon monoxide detector with alarm and battery back-up may be installed on the next adjacent floor level.
  - b. In the event that the requirements of this subdivision can not be met at the time of completion of installation, the owner shall have a period of thirty (30) days to comply with the above requirements; provided, however, that during said thirty (30) day period, a battery operated carbon monoxide detector with an alarm shall be installed.
2. **APPROVED CARBON MONOXIDE DETECTORS.** Each carbon monoxide detector as required in accordance with the above provisions shall comply with NFPA 720 and be ANSI/UL 2034 listed and IAS certified.
3. **SIGNAGE.** A metal or plastic identification plate shall be permanently mounted to the exterior of the building at a minimum height of eight (8) feet above grade directly in line with the exhaust vent terminal for the horizontally vented gas fueled heating appliance or equipment. The sign shall read, in print size no less than one-half (1/2) inch in size, **“GAS VENT DIRECTLY BELOW. KEEP CLEAR OF ALL OBSTRUCTIONS”**.
4. **INSPECTION.** The state or local gas inspector of the side wall horizontally vented gas fueled equipment shall not approve the installation unless, upon inspection, the inspector observes carbon monoxide detectors and signage installed in accordance with the provisions of 248 CMR 5.08(2)(a) 1 through 4.
  - (b) **EXEMPTIONS:** The following equipment is exempt from 248 CMR 5.08(2)(a)1 through 4:
    1. The equipment listed in Chapter 10 entitled “Equipment Not Required To Be Vented” in the most current edition of NFPA 54 as adopted by the Board; and
    2. Product Approved side wall horizontally vented gas fueled equipment installed in a room or structure separate from the dwelling, building or structure used in whole or in part for residential purposes.
  - (d) **MANUFACTURER REQUIREMENTS - GAS EQUIPMENT VENTING SYSTEM NOT PROVIDED.** When the manufacturer of a Product Approved side wall horizontally vented gas fueled equipment does not provide the parts for venting the flue gases, but identifies “special venting systems”, the following requirements shall be satisfied by the manufacturer:
    1. The referenced “special venting system” instructions shall be included with the appliance or equipment installation instructions; and
    2. The “special venting systems” shall be Product Approved by the Board, and the instructions for that system shall include a parts list and detailed installation instruction.
  - (e) A copy of all installation instructions for all Product Approved side wall horizontally vented gas fueled equipment, all venting instructions, all parts lists for venting instructions, and/or all venting design instructions shall remain with the appliance or equipment at the completion of the installation.

# GAS SUPPLY

Consult the current National Fuel Gas Code, ANSI Z223.1 CAN/CGA-B149 (.1 or .2) installation code.

### Recommended Gas Pipe Diameter

Pipe Length	Schedule 40 Pipe Inside Diameter		Tubing, Type L Outside Diameter	
	Nat.	L.P.	Nat.	L.P.
0-10 feet 0-3 meters	1/2" 12.7mm	3/8" 9.5mm	1/2" 12.7mm	3/8" 9.5mm
10-40 feet 4-12 meters	1/2" 12.7mm	1/2" 12.7mm	5/8" 15.9mm	1/2" 12.7mm
40-100 feet 13-30 meters	1/2" 12.7mm	1/2" 12.7mm	3/4" 19mm	1/2" 12.7mm
100-150 feet 31-46 meters	3/4" 19mm	1/2" 12.7mm	7/8" 22.2mm	3/4" 19mm

**Note:** Never use plastic pipe. Check to confirm whether your local codes allow copper tubing or galvanized.

**Note:** Since some municipalities have additional local codes, it is always best to consult your local authority and installation code.

The use of the following gas connectors is recommended:

- ANS Z21.24 Appliance Connectors of Corrugated Metal Tubing and Fittings
- ANS Z21.45 Assembled Flexible Appliance Connectors of Other Than All-Metal Construction

The above connectors may be used if acceptable by the authority having jurisdiction. The state of Massachusetts requires that a flexible appliance connector cannot exceed three feet in length.

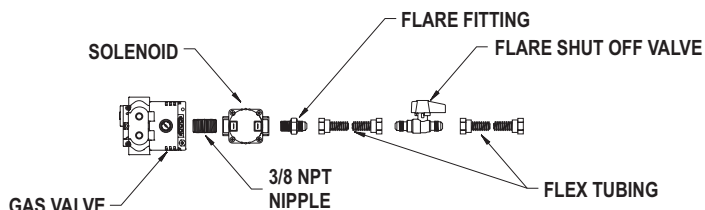


Figure 1

### Installing a New Main Gas Cock

Each appliance should have its own manual gas cock.

A manual main gas cock should be located in the vicinity of the unit. Where none exists, or where its size or location is not adequate, contact your local authorized installer for installation or relocation.

Compounds used on threaded joints of gas piping shall be resistant to the action of liquefied petroleum gases. The gas lines must be checked for leaks by the installer. This should be done with a soap solution watching for bubbles on all exposed connections, and if unexposed, a pressure test should be made.

**Never use an exposed flame to check for leaks. Appliance must be disconnected from piping at inlet of control valve and pipe capped or plugged for pressure test. Never pressure test with appliance connected; control valve will sustain damage!**

A gas valve and ground joint union should be installed in the gas line upstream of the gas control to aid in servicing. It is required by the National Fuel Gas Code that a drip line be installed near the gas inlet. This should consist of a vertical length of pipe tee connected into the gas line that is capped on the bottom in which condensation and foreign particles may collect.

### Pressure Testing of the Gas Supply System

1. To check the inlet pressure to the gas valve, a 1/8" (3mm) N.P.T. plugged tapping, accessible for test gauge connection, must be placed immediately upstream of the gas supply connection to the appliance.
2. The appliance 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 psig (3.5 kPa).
3. The appliance 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 psig (3.5 kPa).

**Attention! If one of the procedures results in pressures in excess of 1/2 psig (14" w.c.) (3.5 kPa) on the fireplace gas valve, it will result in a hazardous condition.**

### Checking Manifold Pressure

Both Propane and Natural gas valves have a built-in pressure regulator in the gas valve. Natural gas models will have a manifold pressure of approximately 3.5" w.c. (.872kPa) at the valve outlet with the inlet pressure to the valve from a minimum of 5.0" w.c. (1.245kPa) for the purpose of input adjustment to a maximum of 10.5" w.c. (2.614kPa) Propane gas models will have a manifold pressure approximately 10.0" w.c. (2.49kPa) at the valve outlet with the inlet pressure to the valve from a minimum of 11.0" w.c. (2.739kPa) for the purpose of input adjustment to a maximum of 13.0" w.c. (3.237kPa).

A 1/8" (3mm) N.P.T. plugged tapping, accessible for test gauge connection, is located on the outlet side of the gas control.

# INTRODUCTION

## Introduction

Always consult your local Building Department regarding regulations, codes or ordinances which apply to the installation of a direct vent wall furnace.

## Instructions to Installer

1. Installer must leave instruction manual with owner after installation.
2. Installer must have owner fill out and mail warranty card supplied with furnace.
3. Installer should show owner how to start and operate furnace and thermostat.
4. Installer must locate unit near a grounded wall receptacle for 115VAC power and must provide gas supply and vent the unit properly for safe operation.

### Warning:

**Any change to this furnace or its control can be dangerous. This is a heating appliance and any panel, door or guard removed for servicing an appliance must be replaced prior to operating the appliance.**

## General Information

This series is designed certified in accordance with American National Standard/CSA Standard Z21.88 and CSA 2.33 by the Canadian Standards Association as a Gas Fireplace Heater to be installed according to these instructions.

**Any alteration of the original design, installed other than as shown in these instructions or use with a type of gas not shown on the rating plate is the responsibility of the person and company making the change.**

## Important

All Correspondence should refer to complete Model Number, Serial Number and type of gas.

**Notice:** During initial firing of this unit, oil from the heat exchanger may bake out and smoke may occur. To prevent triggering of smoke alarms, ventilate the room in which the unit is installed.

## Installation in Residential Garages

Gas utilization equipment in residential garages shall be installed so that all burners and burner ignition devices are located not less than 18" (457mm) above the floor.

Such equipment shall be located, or protected, so it is not subject to physical damage by a moving vehicle.

## Qualified Installing Agency

Installation and replacement of gas piping, gas utilization equipment or accessories and repair and servicing of equipment shall be performed only by a qualified agency. The term "qualified agency" mean any individual, firm, corporation or company which either in person or through a representative is engaged in and is responsible for (a) the installation or replacement of gas piping or (b) the connection, installation, repair or servicing of equipment, who is experienced in such work, familiar with all precautions required and has complied with all the requirements of the authority having jurisdiction.

The installation must conform with local codes, or in the absence of local codes, the National Fuel Gas Code, ANSI Z223.1/NFPA 54 or Natural Gas and Propane Installation Code, CSA B149.1.

\* Available from the American National Standards Institute, Inc., 11 West 42nd St., New York, NY 10036.

A manufactured home (USA only) or mobile home OEM installation must conform with the Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280, or, when such a standard is not applicable, the Standard for Manufactured Home Installations, ANSIZ225.1, or Standard for Gas Equipped Recreational Vehicles and Mobile Housing, CSA Z240.0.

**Sate of Massachusetts:** The installation must be made by a licensed plumber or gas fitter in the Commonwealth of Massachusetts.

## High Altitudes

For altitudes/elevations above 2,000 feet (610m), input ratings should be reduced at the rate of 4 percent for each 1,000 feet (305m) above sea level, this may be accomplished by reducing manifold pressure. The maximum allowable reduction in manifold pressure for Natural gas shall be from 3.5" w.c. (.872kPa) to 2.8" w.c. (.697kPa). The maximum allowable reduction in manifold pressure for Propane (LP) gas shall be from 10.0" w.c. (2.49kPa) to 8.0" w.c. (1.99kPa). For Canadian high altitude applications, this appliance is suitable for installation at elevations between 0 feet (0m) and 4,500 feet (1,372m) without change.

# SPECIFICATIONS

Model	PV28SV50
Input BTU/HR (KW/H)	19,000 Rear - 9,000 Front
Height	25 1/8"
Width	28 3/16"
Depth	17 5/8"
Gas Inlet (Pipe)	3/8" Flair
Electrical -	Unit has a 5' (1.5m) 3 pronged cordset for connection to an approved 115 VAC 60HZ maximum AMPs - 5A wall receptacle.

Accessories	
Part Number	Description
PV-2H	Top Cover - Slim Assembly
PV-4H	Top Cover - Short Assembly
PVPK	Pedestal Kit
PVE-1	6" Surround Assembly
PVSH	Rear Shroud
TRW	Wall Thermostat - Wireless Remote
FRBTC	Battery Operated Remote w/Thermostat
FRBTP	Battery Operated Remote w/Programmable Thermostat
TMV2	Two-Stage Thermostats
CIPFP-1	Floor Pad Kit
CIFPB-1C	Corner Floor Pad Kit
PVVK24H	Direct Vent 24" Vent Kit
PVVK48H	Direct Vent 48" Vent Kit
PVVK-SH	Single Flue Horizontal Vent Kit
PVVK-SV	Single Flue Vertical Vent Kit
PVVK-CFA	Flex Vent Kit



# CLEARANCES FOR DIRECT VENT

1. Pick a location on a wall with a clear space in the room. In selecting a location for installation, it is necessary to provide adequate accessibility clearances for servicing and proper installation. Be sure to locate the unit close enough to a 110 VAC wall receptacle to properly power appliance.
2. When facing the front of the furnace the minimum clearances from casing to combustible construction are 0" (0mm) on top, 0" (0mm) on each side, recommend 4" (102mm) on sides for servicing and 0"(0mm) from the floor and 0" (0mm) to rear wall.
3. The minimum distance from the center of the vent cap to the nearest outside corner or obstruction is 12" (305mm).
4. The minimum wall depth is 4" (102mm) and the maximum is 48" (121.92cm).

The vent terminal of a direct vent appliance, with an input of 50,000 BTU (14.6KW) per hour or less shall be located at least 9" (229mm) from any opening through which flue gases could enter a building.

The bottom of the exhaust vent terminal and the air intake shall be located at least 12" (305mm) above grade and must be vented outside.

**WARNING: The nearest point of the vent cap should be a minimum horizontal distant of six (6) feet (1.83m) from any pressure regulator. In case of regulator malfunction, the six (6) feet (1.83m) distance will reduce the chance of gas entering the vent cap.**

## Installation on Rugs and Tile

If this appliance is to be installed directly on carpeting, tile, or other combustible material, other than wood flooring, the appliance shall be installed on a metal or wood panel extending the full width and depth of the appliance.

The base referred to above does not mean the fire-proof base as used on wood stoves. The protection is primarily for rugs that may be extremely thick and light-color tile that can discolor.

# HEATER INSTALLATION FOR DIRECT VENT

## Locating Wall Opening

The recommended location for this furnace is on an outside wall. Locate wall studs so that wall vent opening will be located between wall studs. The wall opening required for venting is a 3 1/2" (89mm) minimum diameter opening.

Refer to Figures 3 and 6 for positioning the heater on wall and for locating gas line connection and vent opening. Furnace can sit on the floor.

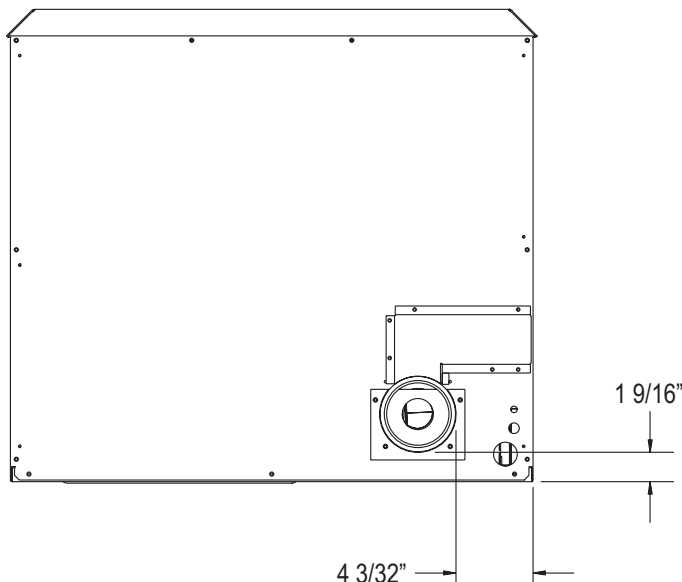


Figure 2

## CLEARANCES FOR SINGLE FLUE

1. Pick a location on a wall with a clear space in the room. In selecting a location for installation, it is necessary to provide adequate accessibility clearances for servicing and proper installation. Be sure to locate the unit close enough to a 115 VAC wall receptacle to properly power appliance.
2. When facing the front of the furnace, the minimum clearances from casing to combustible construction are 0" (0mm) on top, 0" (0mm) on each side, recommend 4" (102mm) on right side for serving and 0" (0mm) from the floor and 2" (51mm) to rear wall.
3. The minimum distance from the center of the vent cap to the nearest outside corner or obstruction is 12" (305mm).

The bottom of the exhaust vent terminal and the air intake shall be located at least 12" (305mm) above grade and must be vented outside.

**WARNING: The nearest point of the vent cap should be a minimum horizontal distance of six (6) feet (1.83m) from any pressure regulator. In case of regulator malfunction, the six (6) feet (1.83m) distance will reduce the chance of gas entering the vent cap.**

### Installation on Rugs and Tile

If this appliance is to be installed directly on carpeting, tile, or other combustible material, other than wood flooring, the appliance shall be installed on a metal or wood panel extending the full width and depth of the appliance.

The base referred to above does not mean the fire-proof base as used on wood stoves. The protection is primarily for rugs that may be extremely thick and light-color tile that can discolor.

## HEATER INSTALLATION FOR SINGLE FLUE

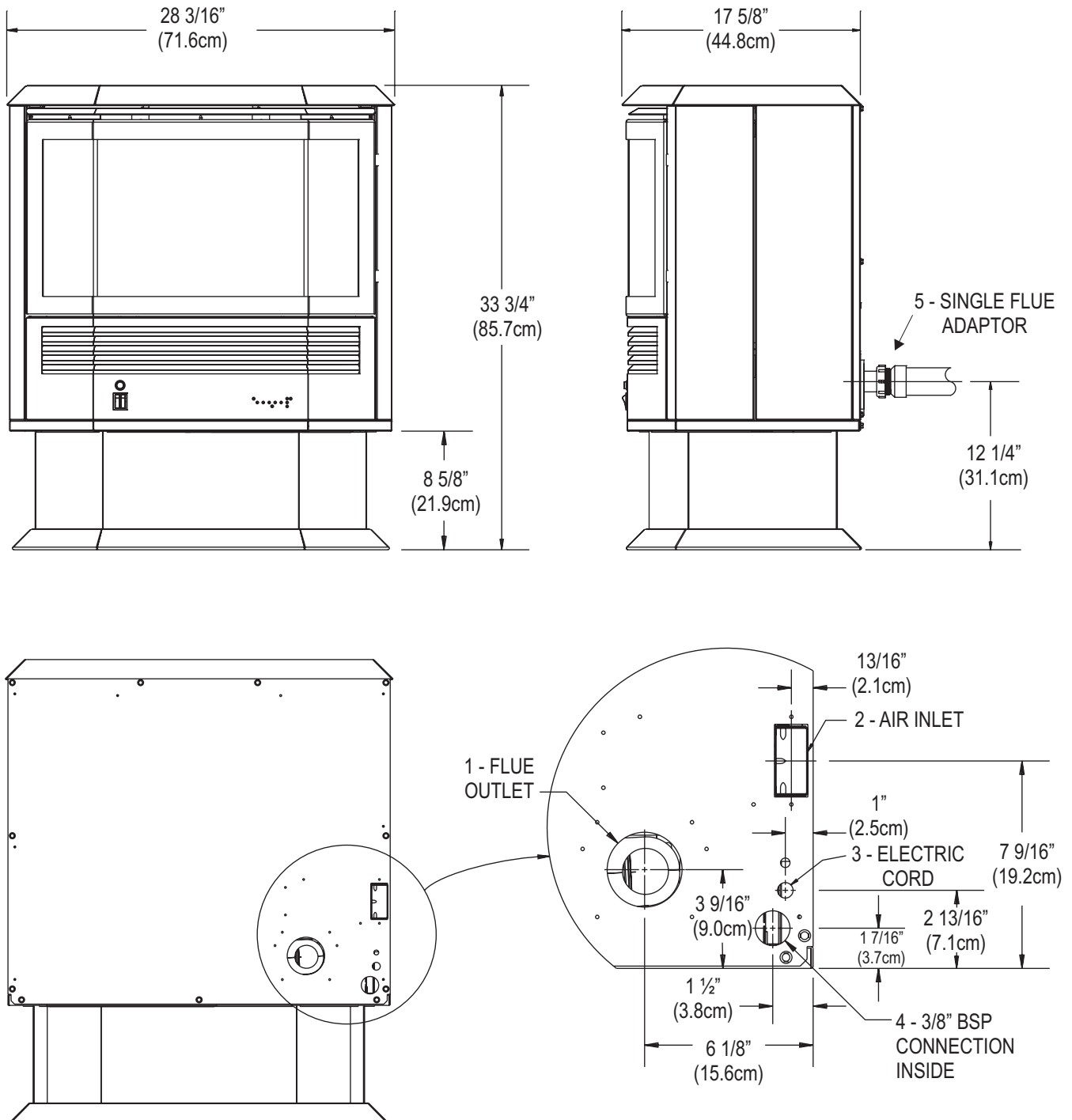
### Locating Wall Opening

The recommended location for this heater is on an outside wall (the unit can be located on an inside wall but must not exceed 20' (6.096m) in exhaust vent length). Locate wall studs so that wall vent opening will be located between wall studs. The wall opening required for venting is a 1 7/8" (48mm) minimum diameter opening.

Refer to Figures 3 to 6 for positioning the heater on wall and for locating gas line connection and vent opening. Heater can sit on the floor.

# SPECIFICATIONS

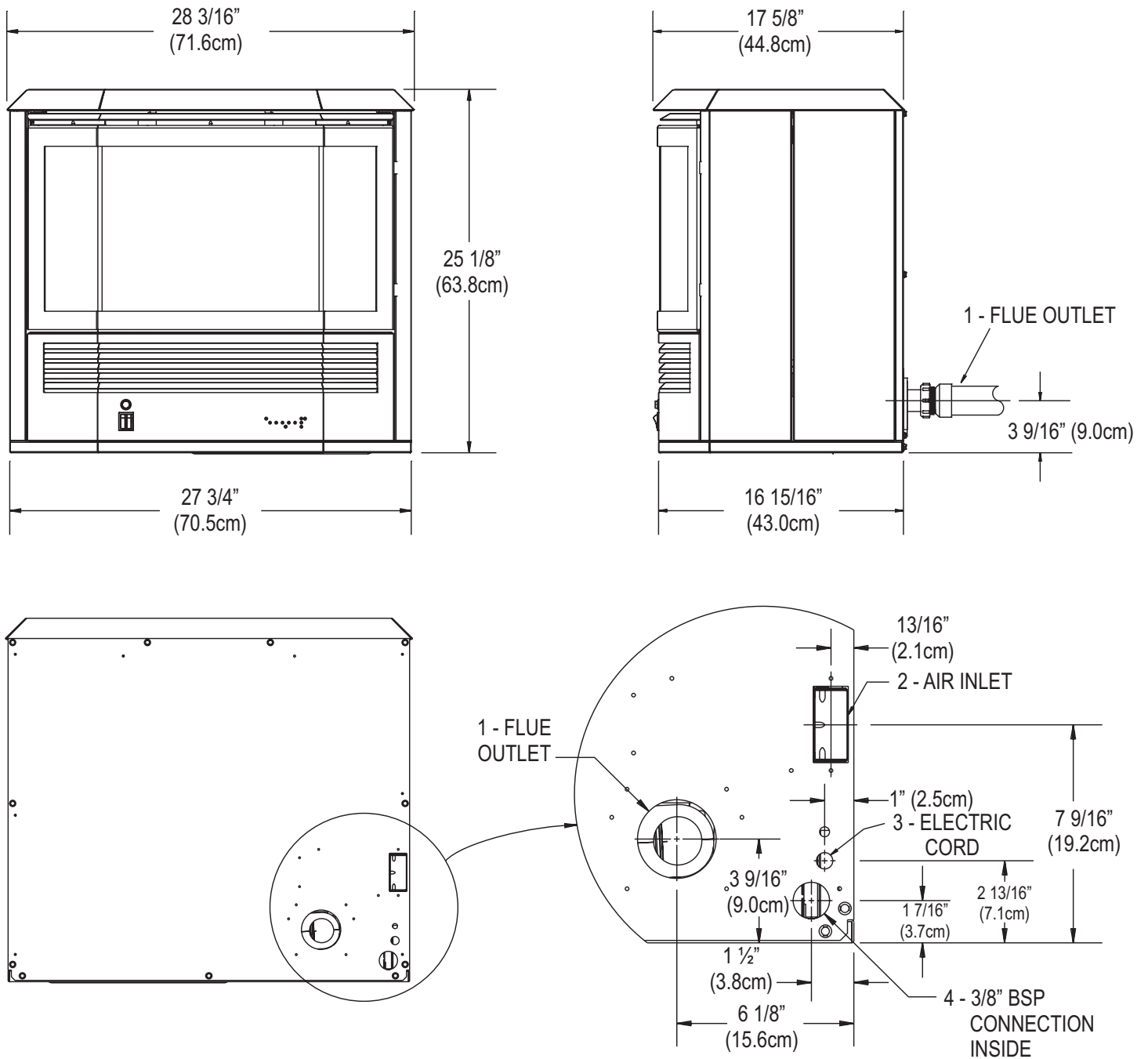
Heater with Pedestal and Single Flue Adaptor	
1	Flue Outlet 1 1/2" PVC Pipe
2	Air Inlet
3	Electric Cord
4	3/8" BSP Connection (Inside)
5	Single Flue Adaptor



**Figure 3**

# SPECIFICATIONS - (continued)

Heater without Pedestal	
1	Flue Outlet
2	Air Inlet
3	Electric Cord
4	3/8" BSP Connection (Inside)



**Figure 4**

# SPECIFICATIONS - (continued)

Fireplace Insert with Mantel surround with slim top panel	
1	Flue Outlet
2	Electric Cord
3	3/8" BSP Connection (Inside)
4	Surround

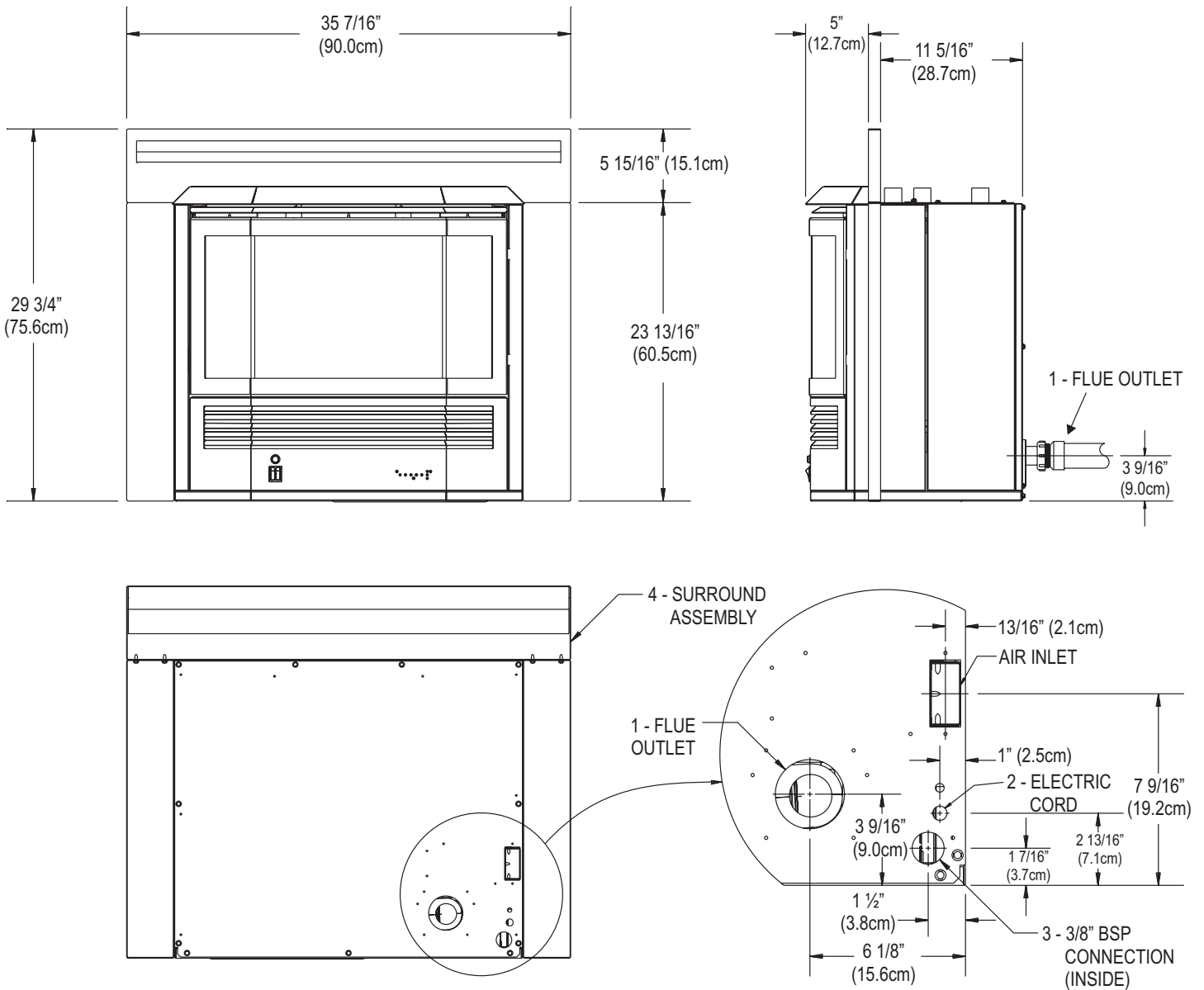


Figure 5

# SPECIFICATIONS - (continued)

Fireplace Insert with Mantel Surround with short top panel	
1	Flue Outlet
2	Electric Cord
3	3/8" BSP Connection (Inside)
4	Surround
5	Air Inlet

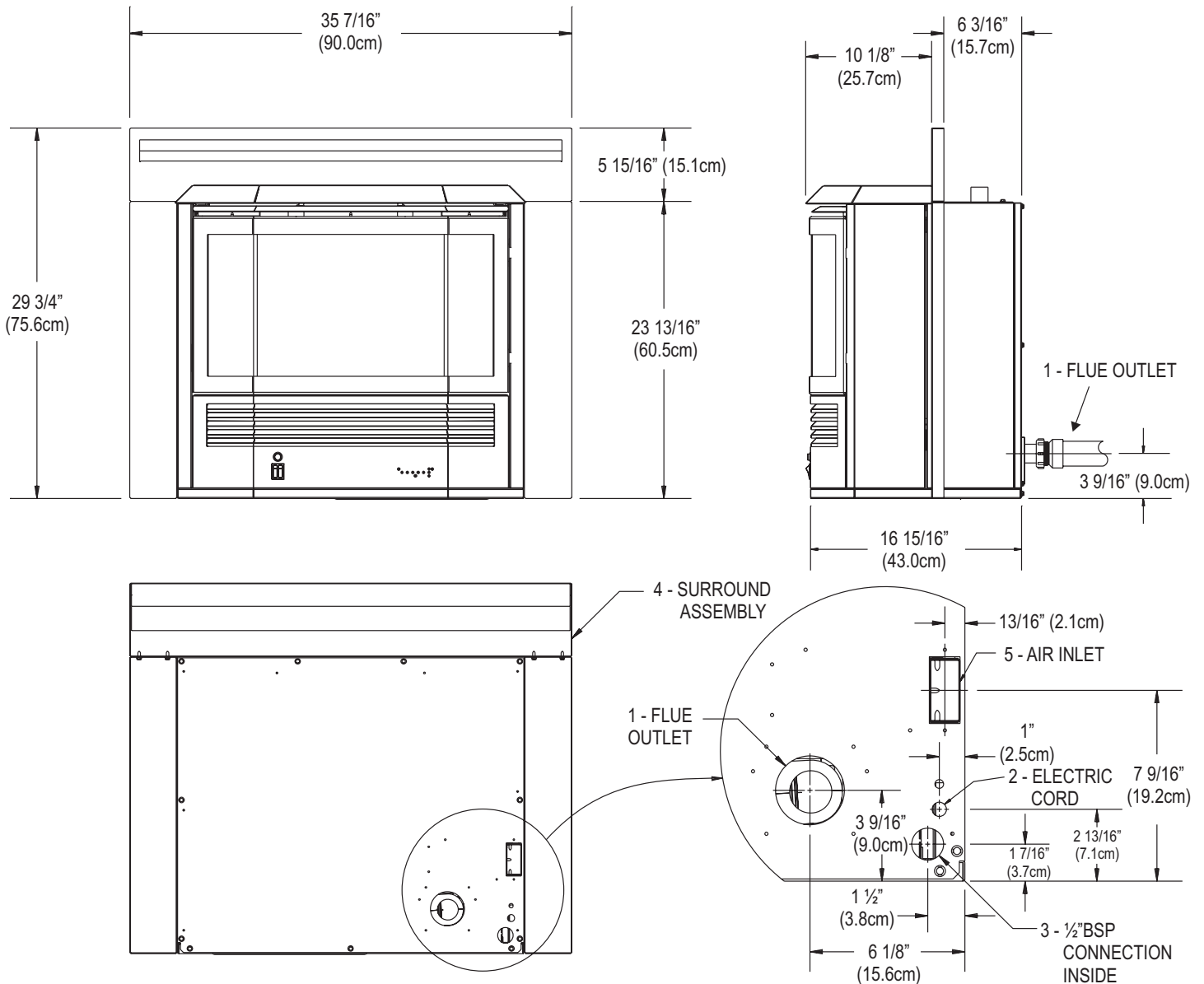


Figure 6

# CLEARANCE TO COMBUSTIBLES

## Freestanding Models

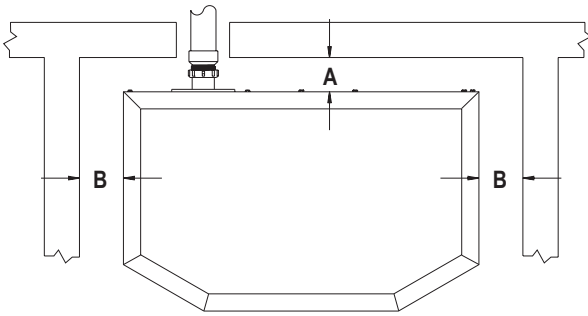


Figure 7

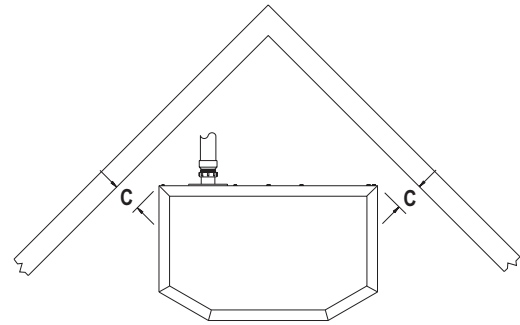
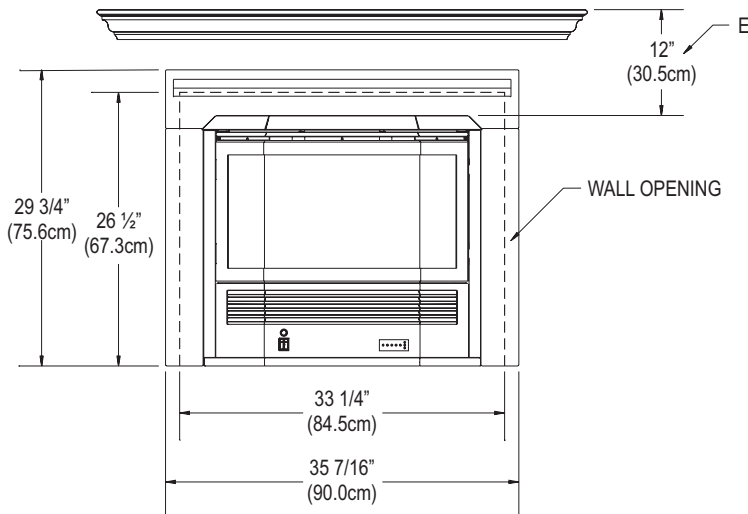


Figure 8

Freestanding Units		
A	Rear Wall to Heater	2" Single Flue and 1 1/4" Direct Vent
B	Side Wall to Heater	0" 3/4" recommended for serviceability
C	Corner Installation	0"
D	Sidewall to Heater	0" when short top is being used
E	Mantel Clearance	12" from top of Heater

## Fireplace Insert



Single Flue  
Requires surround for combustion air.  
Figure 9

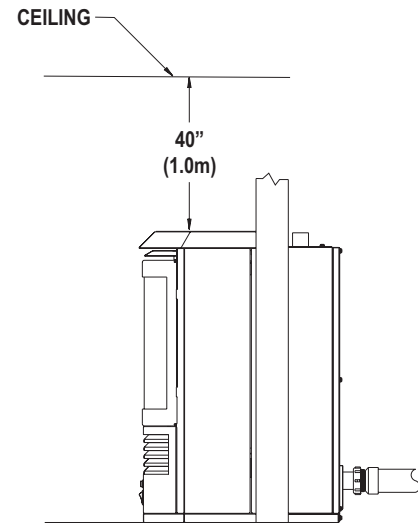
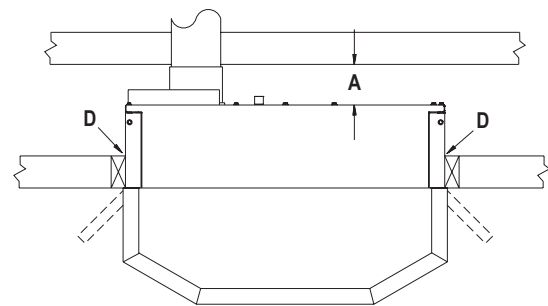


Figure 10



Direct Vent Installation, Single Flue  
Requires surround for combustion air.  
Figure 11

**Note:** The Mantis Power-Vent High-Efficiency Fireplace has been tested and approved for zero clearance to combustible materials. Empire Comfort Systems, Inc. recommends that clearances as listed above should be maintained to allow for removal of the product for servicing.

# LOG SET INSTALLATION INSTRUCTIONS

## Log Installation

The gas log set (front left log, front right log, center log and rear log) is pre-set and installed in the factory. Only the top left log and top right log are packaged separately inside the firebox for installation by the installer.

1. To access the log set parcel, lift off top panel.
2. Pivot left and right panels open.
3. Unlatch main door latches located on right and left hand side of the heater, remove door.
4. Carefully remove top left log and top right log from firebox and remove cardboard protection from center log and middle log and all packaging materials.

Note: Positions of front left log, front right log, center log, and rear log have been preset at the factory and their locations should not be changed. Check that logs have not been damaged in transit.

5. Carefully remove wrapping from top left log and top right log.

**Note:** Before you begin: Do not handle these logs with your bare hands! Always wear gloves to prevent skin irritation. After handling logs, wash your hands gently with soap and water.

## All Logs

The positioning of the logs is critical to the safe and clean operation of this heater. Sooting and other problems may result if the logs are not properly and firmly positioned in the appliance.

6. Prior to positioning of top left log and top right log, inspect front burner and rear burner for particles or dust accumulation on top of burners. If any particles or dust is visible on top of front or rear burners, remove particles before placing top left log and top right log into position.
7. Position top left log into locating pin on rear log and rest on center log. See Figure 12.
8. Position top right log into locating slot on rear log. See Figure 12.
9. After top left log and top right log have been placed in position and safety check has been carried out, install door and latch securely with latches located on right and left side of heater.

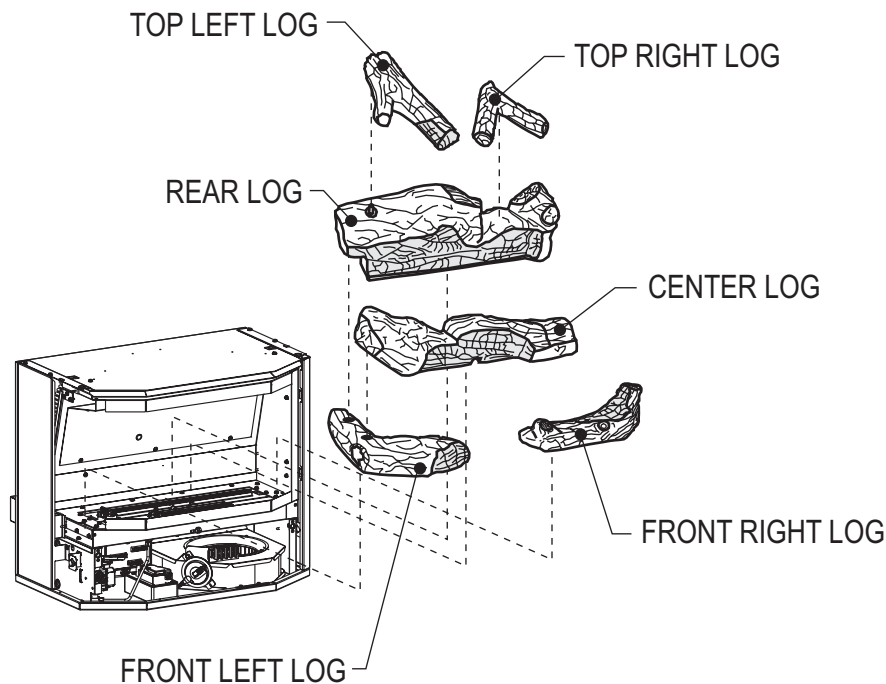


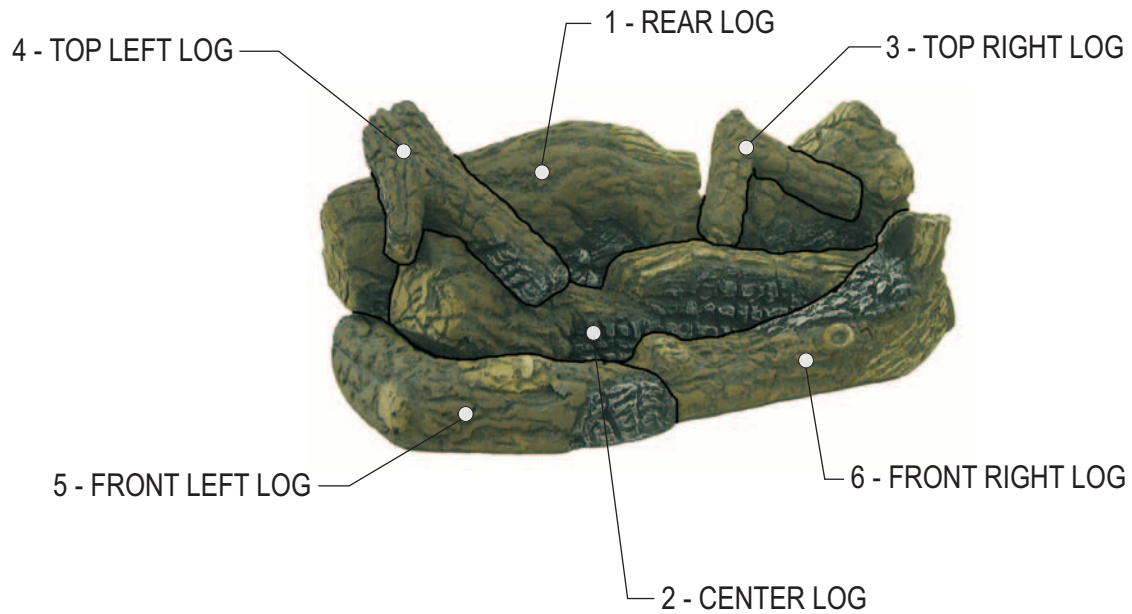
Figure 12



# LOG SET INSTALLATION INSTRUCTIONS

## LOG SET DIAGRAM - A

- The Gas Log Kit contains the following:
- 1) Rear Log
  - 2) Center Log
  - 3) Top Right Log
  - 4) Top Left Log
  - 5) Front Left Log
  - 6) Front Right Log



**Figure 13**

# INSTALLATION INSTRUCTIONS - GENERAL SAFETY INFORMATION

1. This installation must conform with local codes or, in the absence of local codes with NFPA54.
2. Provide adequate clearances around the product for servicing and ensure there are no obstructions to the combustion air intake situated at the back of the heater. Refer to Page 15, Figures 7 and 11.
3. The appliance must be installed on a flat, solid continuous surface (i.e. wood, metal, concrete). Please Note: Rough or uneven surfaces can cause vibration or humming in the heater.
4. The Mantis Power-Vent High-Efficiency Fireplace can be installed in a wide variety of ways and will fit nearly any room layout. It may be installed in a recessed position, framed out into the room, or across a corner. For installation options refer to page 15.
5. This appliance (Insert and Freestanding Models) needs to be installed in such a way that the heater can be removed at all times to service the heater exchanger and flue fan located in the rear section of the heater.

**Note:** Under no circumstances should the appliance be installed under conditions which would not allow for easy removal of the appliance to carry out routine inspection and service to the appliance, to do so will void the warranty.

**Note:** On Single Wall flue pipe installations (imitation zero clearance fireplace) a minimum of 2" (50.8cm) clearance must be provided at the rear of the heater to enable the heater to get sufficient combustion air to the air inlet located at the rear of heater. Refer to installation instructions on page 15, Figures 7 and 9.

**Note:** Where a mantel surround is being used on insert installations and zero clearance fireplace installations, the combustion air intake slot located in the top mantel surround must have no obstructions to allow combustion air to enter through the slot to the combustion air inlet located at the back of the heater.

# VENT EXAMPLES FOR SINGLE FLUE

## Max Vent Run - 20ft. Equivalent With Three (3) 90° Elbows

Three foot (3' (91.4cm)) minimum vent run vertical with one (1) 90° elbow

The vent terminal 90° elbow and first 90° elbow off back of heater when within 6" (15.2cm) off back of heater do not get counted.

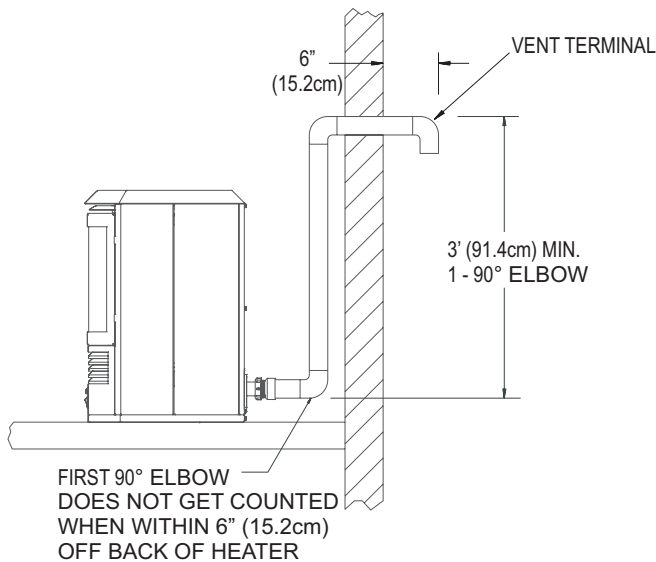
**Special Note:** For each 45° elbow installed in the horizontal run, the length of the horizontal run **MUST** be reduced by 18" (45cm). This does not apply if the 45° elbows are installed on the vertical part of the vent system. Reduce the length of the horizontal run 36" (91.4cm) for every 90° elbow.

**Note:** On horizontal runs, a P.V.C. support clamp needs to be installed every 3 feet. No "sags" in horizontal vent runs; water will settle in the pipe.

When installing a single flue horizontal, minimum vent length protruding from the outside wall including 90° elbow is 6" (15.2cm) from the outside wall. See Figure 14.

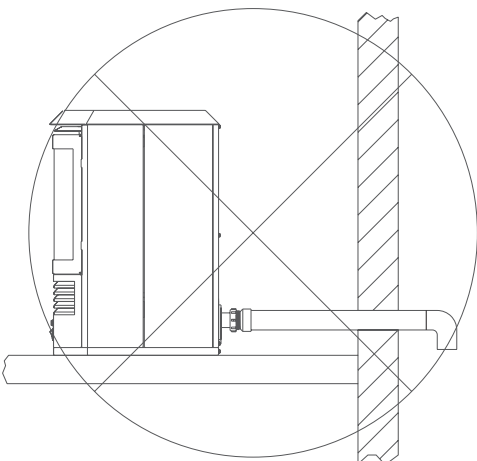
**Note:** Horizontal discharge 90° elbow must be pointed downward. See Figure 16.

**Note:** All PVC vent run piping can be purchased at a local hardware store. Schedule 40 PVC pipe should be used and cemented.



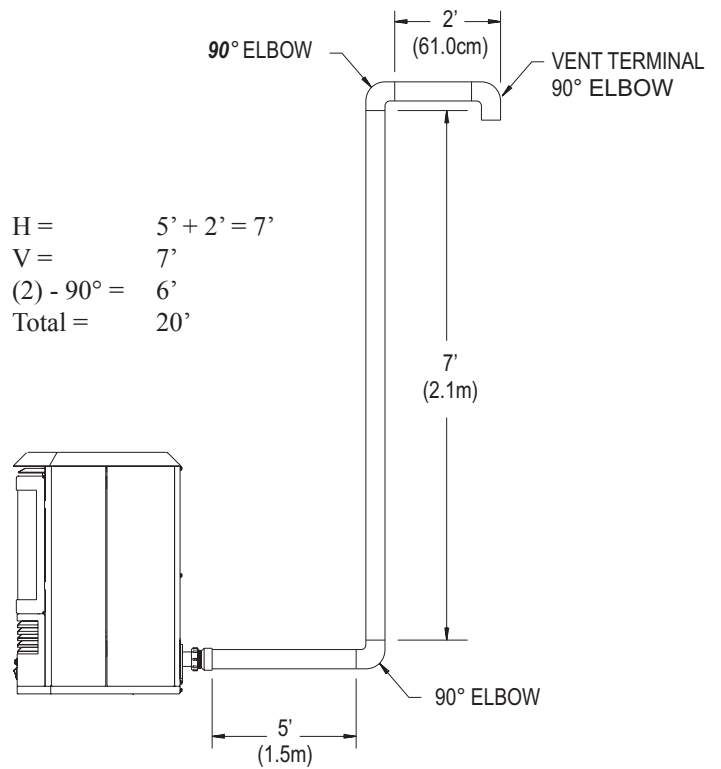
**Figure 14**

**Single Flue - Horizontal Short Vent Run**  
Minimum vertical vent runs is 3' (91.4cm)



**Figure 15**

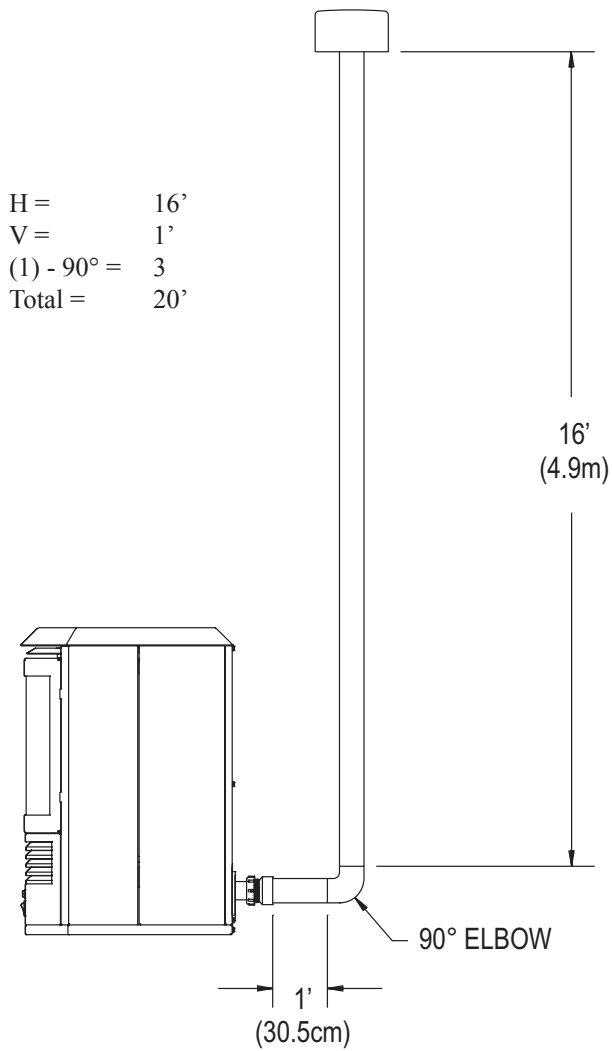
**Single Flue - Unacceptable Venting**



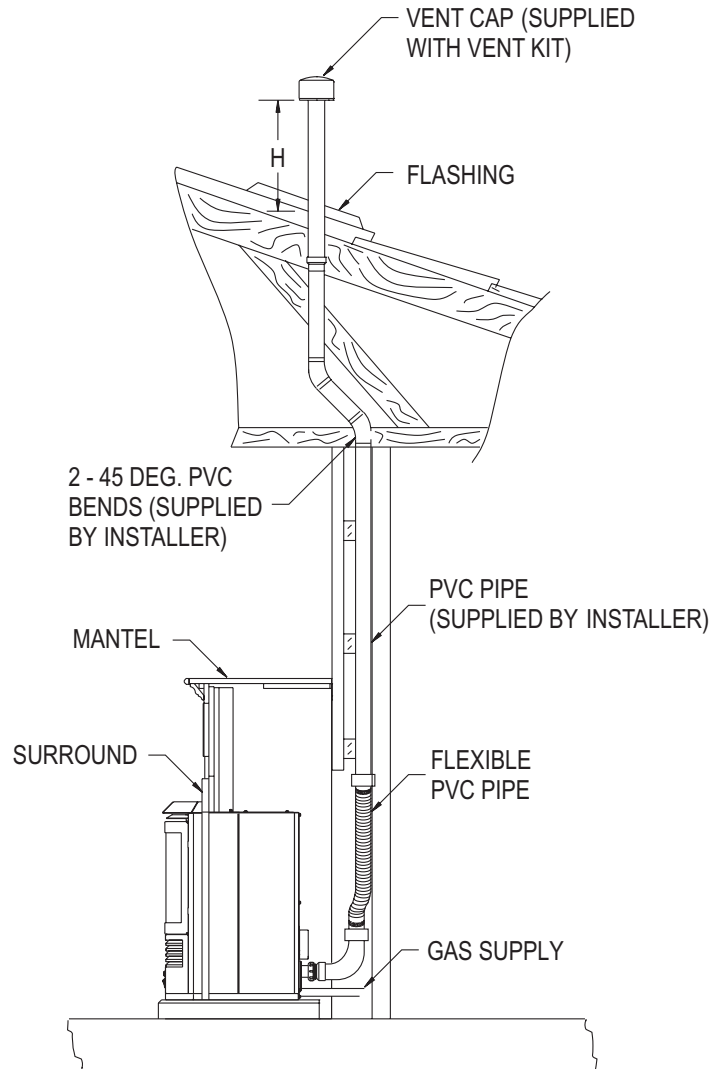
**Figure 16**

**Single Flue - Horizontal Tall Vent Run**

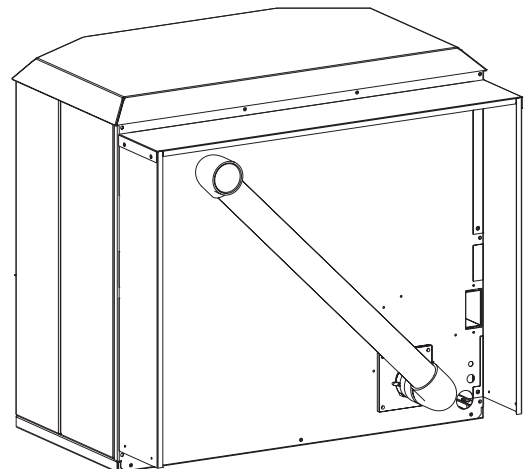
# VENT EXAMPLES FOR SINGLE FLUE (cont.)



**Figure 17**  
Single Flue - Vertical Vent Run

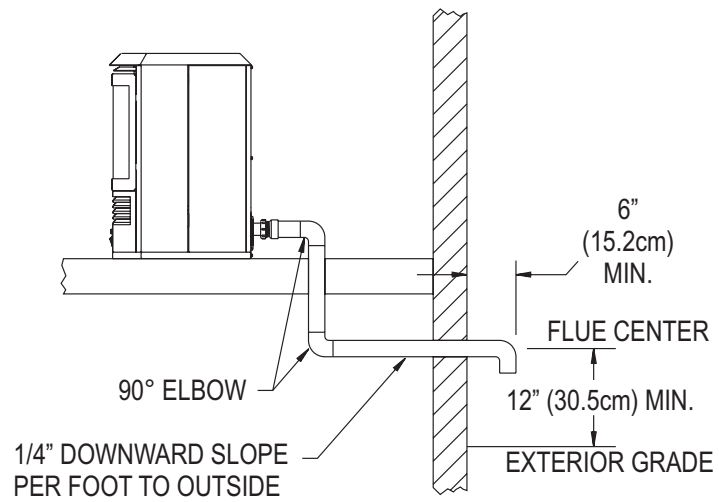


**Figure 18**  
Single Flue - Vertical Vent Run  
with 45 degree elbows

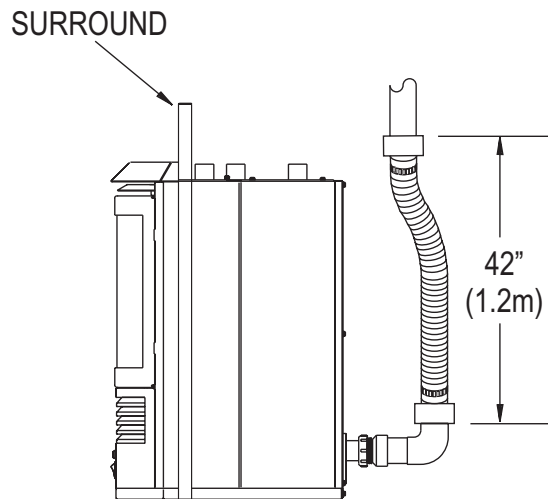


**Figure 19**  
Single Flue - Venting with Shroud Installed

## VENT EXAMPLES FOR SINGLE FLUE (cont.)



**Figure 20**  
**Minimum Exterior Grade Dimension - Single Flue, Horizontal Venting Below Floor**

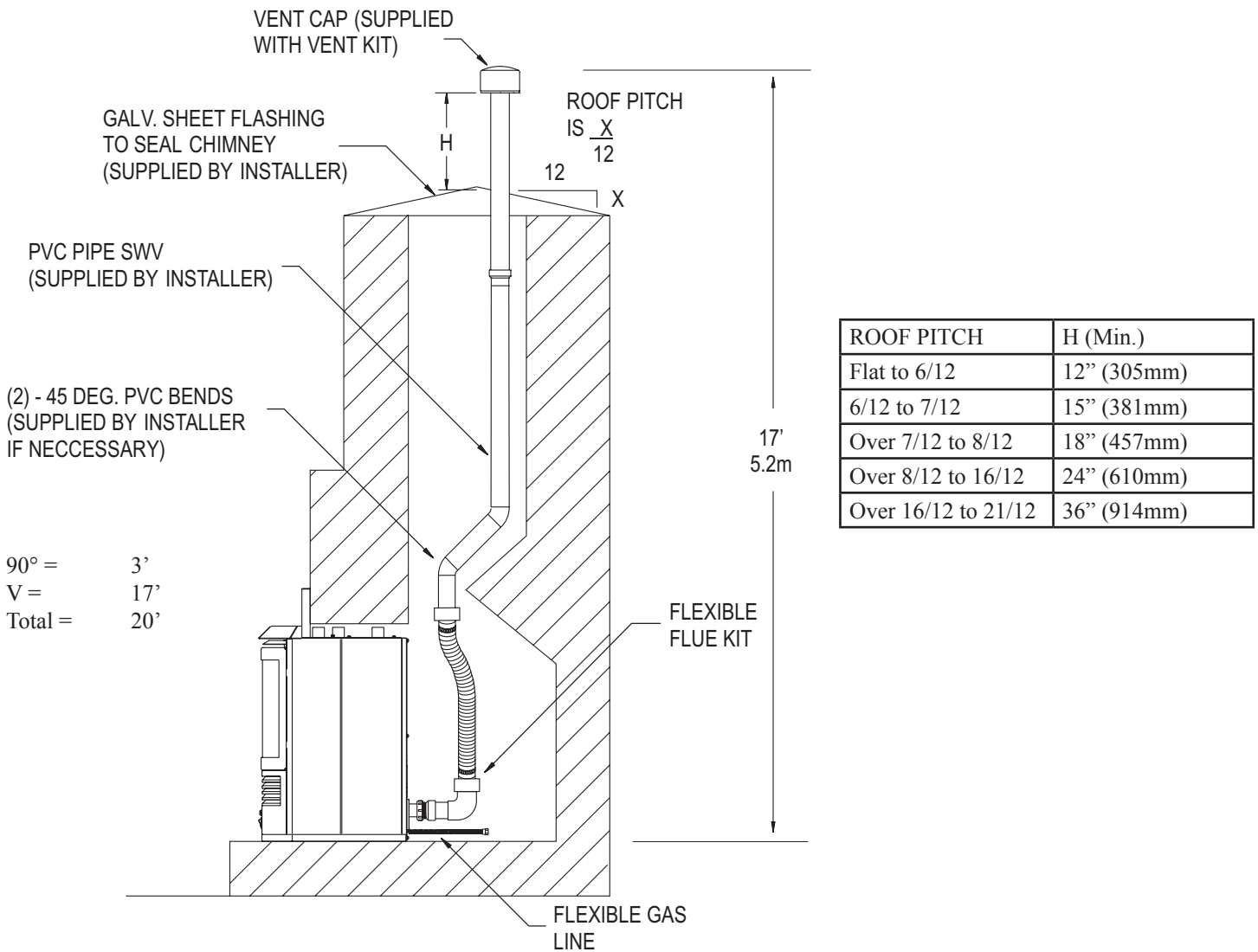


**Figure 21**  
**Flex Vent Tubing**  
Must have minimum 3ft vertical upward

# VENT EXAMPLES FOR SINGLE FLUE (cont.)

## Determining Minimum Vent Height Above the Roof

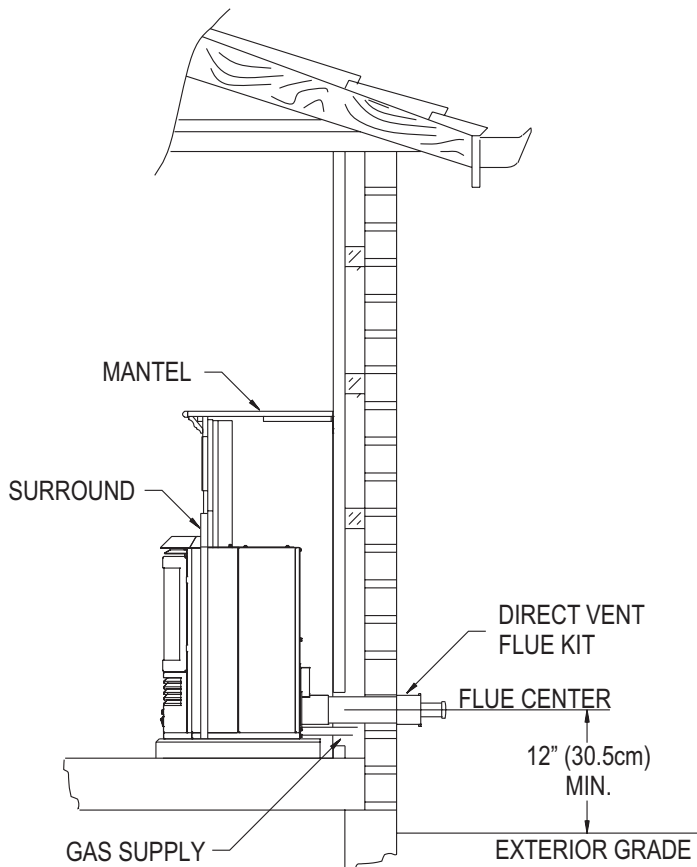
**WARNING:** Major U.S. building codes specify minimum chimney and/or vent height above the rooftop. These minimum heights are necessary in the interest of safety. These specifications are summarized in Figure 22.



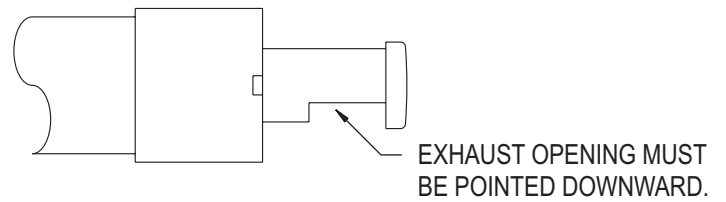
**Figure 22**  
**Venting for Existing Fireplace Installation**

# DIRECT VENT INSTALLATION INSTRUCTIONS

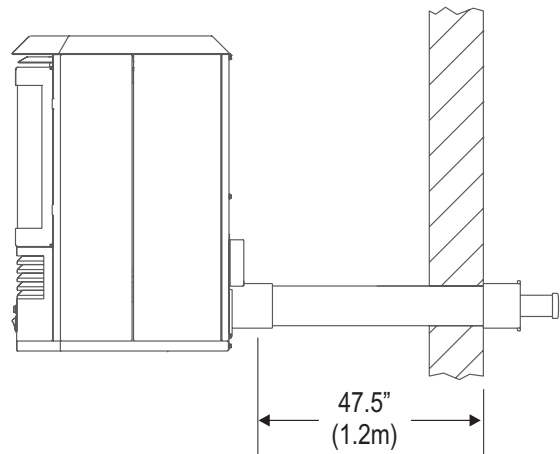
Note: Do not glue intake or exhaust pipes to Direct Vent Adaptor for serviceability.



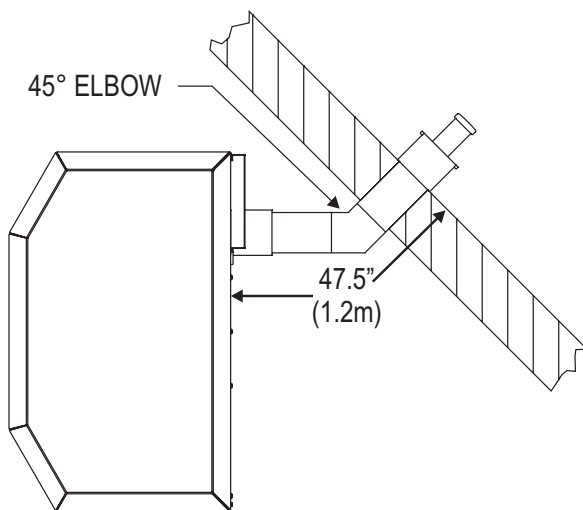
**Figure 23**  
Horizontal Venting



**Figure 25**  
Direct Vent System Building Exterior View



**Figure 26**  
Maximum Horizontal Venting - 47 1/2" (1.2m)  
Minimum Horizontal Venting - 4 1/2" (11.4cm)



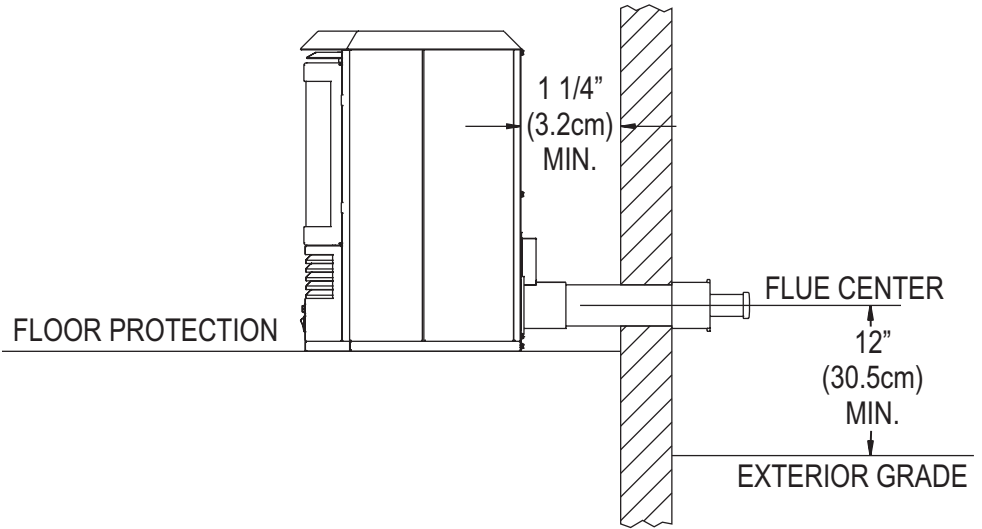
**Figure 24**  
Horizontal Venting Maximum 47.5" (1.2m) with 45° elbow  
45° elbow can be purchased from a local hardware store

# DIRECT VENT INSTALLATION INSTRUCTIONS (cont.)

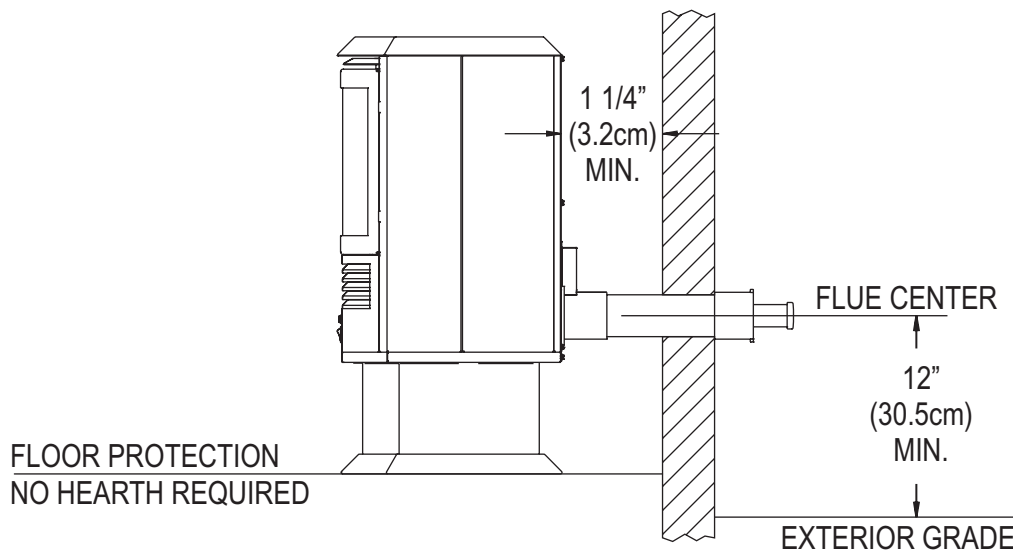
## Installation on Rugs and Tile

If this appliance is to be installed directly on carpeting, tile, or other combustible material, other than wood flooring, the appliance shall be installed on a metal or wood panel extending the full width and depth of the appliance.

The base referred to above does not mean the fire-proof base as used on wood stoves. The protection is primarily for rugs that may be extremely thick and light-color tile that can discolor.



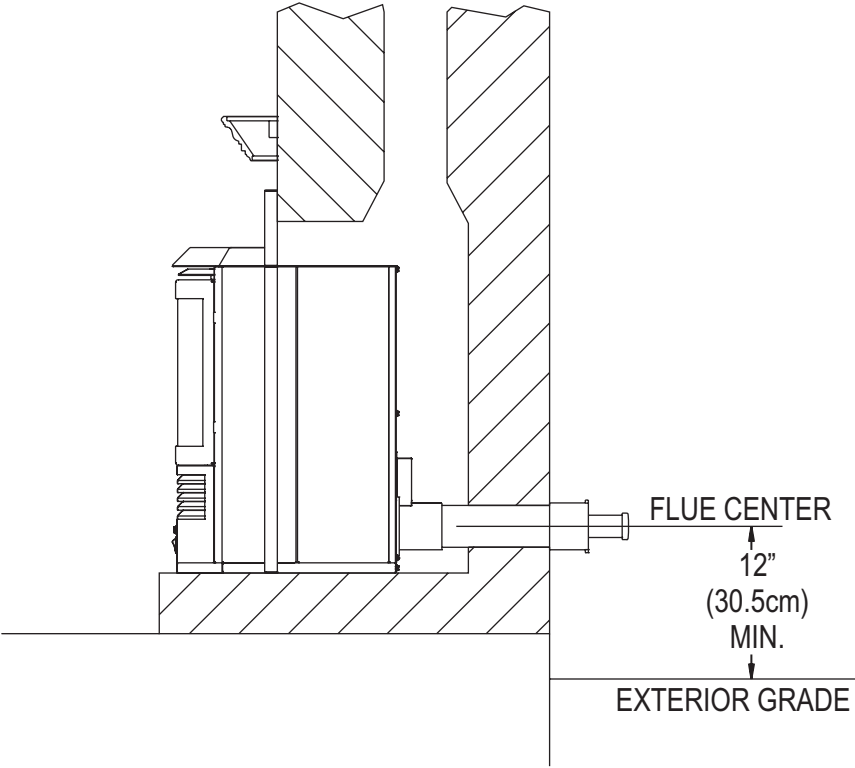
**Figure 27**  
**Minimum Exterior Grade Dimension - Unit Without Pedestal**



**Figure 28**  
**Minimum Exterior Grade Dimension - Unit With Pedestal**



# DIRECT VENT INSTALLATION INSTRUCTIONS (cont.)



**Figure 29**  
**Minimum Exterior Grade Dimension - Existing Fireplace Installation**

# GAS CONNECTION INSTALLATION INSTRUCTIONS

## GAS CONNECTION (Line Supply)

A 3/8" Flair gas line connection is supplied in the heater

### GAS SUPPLY LINE TO HEATER

- a. Remove top panel from heater by lifting top panel.
- b. Remove front and rear panel.
- c. Remove rubber grommet from back panel of heater and insert gas supply line through back panel of heater.
- d. Connect gas supply line to flexible gas hose. Ensure that flexible gas hose is not kinked after fitting gas supply line.
- e. After gas supply line has been brought through from rear of heater, place rubber grommet supplied over gas line and install panels.

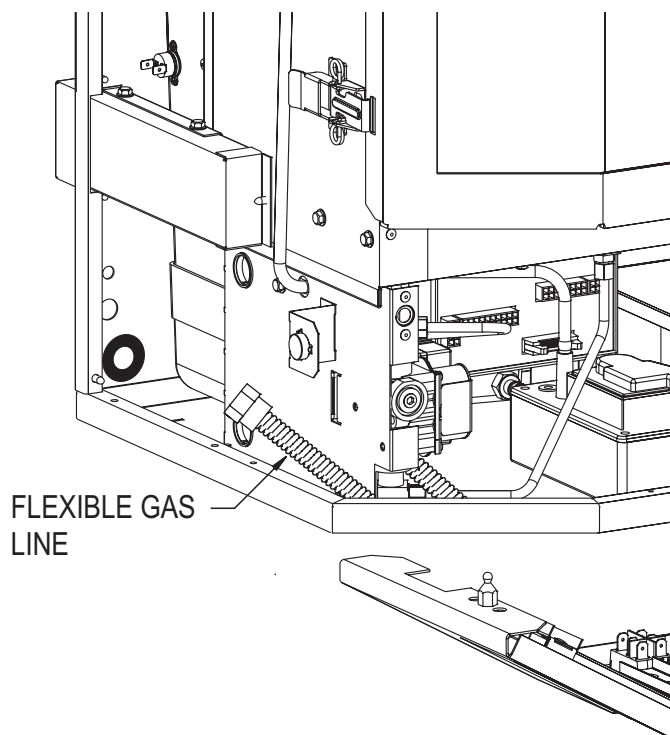


Figure 30

**Note:** The gas supply line to the heater must be installed under conditions which will allow for easy removal of the heater from its location for servicing of the heater. For fireplace insert installations, incorporate either a copper loop into the supply line or flexible hose being used for the gas supply to the heater to allow for easy removal of the appliance.

**Note:** Under no circumstances should the gas supply line to the appliance be installed under conditions, which would not allow for easy removal of the appliance to carry out routine inspection and service to the appliance.

# OPERATING INSTRUCTIONS CHECKLIST

## BEFORE OPERATING THIS APPLIANCE, CAREFULLY PROCEED THROUGH THE FOLLOWING CHECKLIST

1. Read and understand these instructions before installing or operating this appliance.
2. This appliance should be installed and repaired by a fully qualified service person who must be familiar with the installation of the Mantis Power-Vent High-Efficiency Fireplace.
3. Installers who are not familiar with the installation of this appliance should contact Empire Comfort Systems, Inc. prior to installing the appliance to avoid creating hazardous operating conditions.
4. Check and inspect the appliance for gas leaks. In the event of gas leaks, cut off the gas supply to the heater immediately and call your gas supplier or installer.
5. Check and verify that all flue venting combustion air intakes and flue outlets are unobstructed.
6. Refer to pages 19 to 22 for Single Flue pipe and pages 23 to 25 for Co-axial Flue installations. Check that correct flue pipe and cap has been fitted in line with the manufacturer's specifications as illustrated in this manual pages 11 to 25.
7. Do not use alternative Flue or cap on installation other than that specified in this manual - otherwise heater will malfunction and cause hazardous operating conditions and will void the manufacturer's warranty.
8. Check and verify that flue pipe connection to the appliance when using single 1 1/2" flue pipe installation is correctly installed and secured in line with instruction in this manual, Pages 19 to 22.
9. Prior to operating the appliance, check for dust or debris on the burners. Refer to Page 37, Figure 47.
10. Check and verify that logs are placed correctly as per instructions on Pages 16 to 17 of this manual. If logs are incorrectly positioned, it can create a hazardous situation, and in most instances, the heater will not operate correctly.
11. Do not light heater without logs installed, as heater will not operate properly.
12. Check and verify prior to starting the appliance, that all panels are secured in place and that the main door has been locked in position.
13. After verifying and checking all the above points, proceed to lighting instructions. Refer to pages 28 to 29.

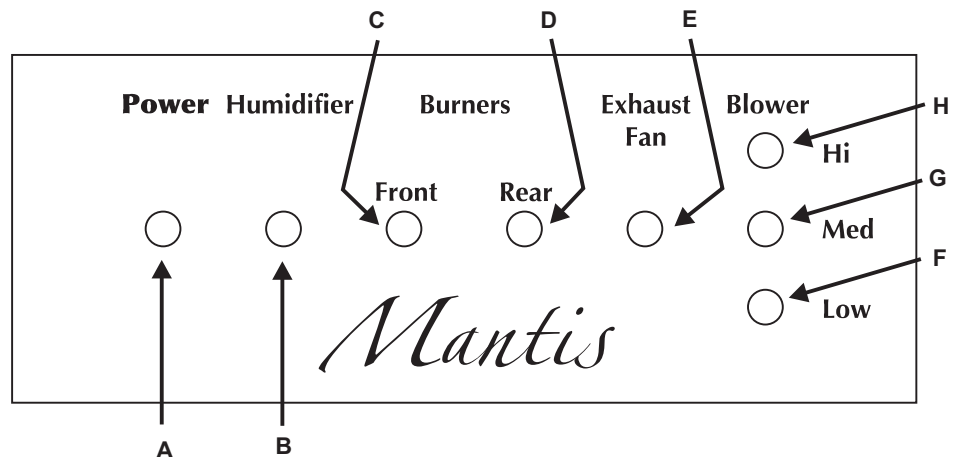
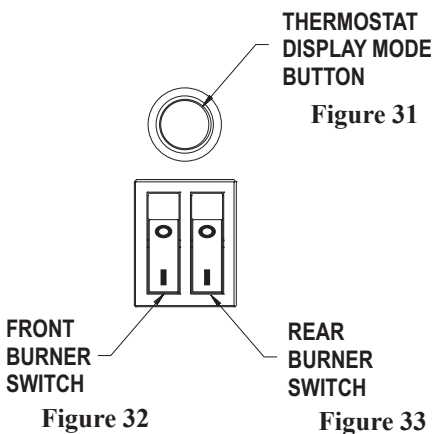
# LIGHTING INSTRUCTIONS

1. Main Electrical power supply must always be switched on to the unit with the two burner switches in the off position (up) before lighting the heater.
2. Turn on main gas supply.
3. Verify that main electrical supply is switched on by checking the 115V AC power status display (Figures 32 and 33) indicator is on.
4. Burner selection: select low burn (front burner), medium burn (rear burner), or high burn (both burners). Low burn switch (Figure 32) controls the front burner only. Medium burn switch (Figure 33) controls the rear burner only. When both switches are down, they will activate both the low and medium burners, which is the high setting.
5. Heater operating LED sequence (Front Display Panel). Before starting ensure that the power L.E.D (Figure 34A) is on and burner switches are off. Switch on the heater by engaging the low and medium burner switch, this will activate the pressure switch and the exhaust fan L.E.D (Figure 34E) will be on. Also the two burner L.E.D's (Figure 34C and 34D) will start flashing for 35 seconds prior to ignition. Once both burners have ignited, the burner L.E.D's will remain on. If you can't see flame on the rear burner, but the burner L.E.D is on, then there will be flame there which will become more visible as the heater warms up. Once the heater warms up the low speed L.E.D (Figure 34F) will light and the convection fan will blow warm air from the heater. As the heater

becomes warmer, the medium L.E.D (Figure 34G) will come on. When the heater has reached its highest operating temperature, all three L.E.D's will light up and the convection fan will now be running at its high speed. Refer to page 30 - Fan Operation. When the heater has been running for some time, the water pump L.E.D (Figure 34B) may come on to signal that the pump has been activated. Refer to page 33 - Automatic Humidifier Operation.

**Note:** Three heat settings are available for operating your Mantis heater - low, medium and high.

- a. Low setting (front burner only) - engage low burn switch only (Figure 32)
- b. Medium setting (rear burner only) - engage medium burner switch only (Figure 33)
- c. High setting (front and rear burners).



**Caution:** When switching from the front burner to the rear burner, be sure to activate the rear burner first, then turn off the front burner. When switching from rear burner to the front burner, be sure to activate the front burner first. Simple rule - always activate the desired burner first, then switch the other burner off. If it is switched the wrong way, the burner(s) will go out and the heater may need to be reset. Refer to page 38 - Resetting the Heater.

# LIGHTING INSTRUCTIONS

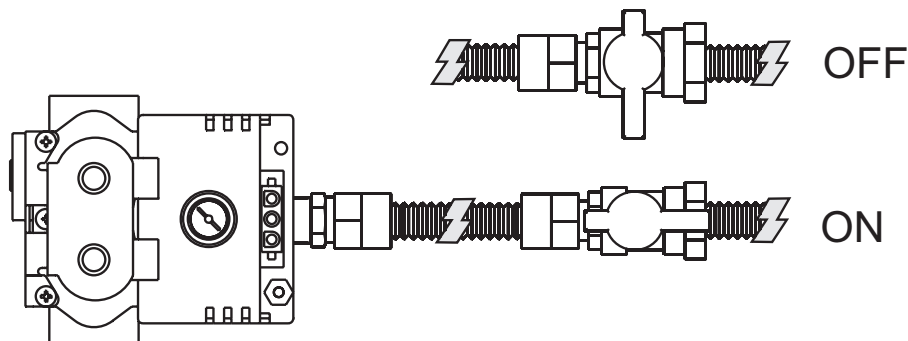
## FOR YOUR SAFETY READ BEFORE LIGHTING

**WARNING: IF YOU DO NOT FOLLOW THESE INSTRUCTIONS EXACTLY, A FIRE OR EXPLOSION MAY RESULT CAUSING PROPERTY DAMAGE, PERSONAL INJURY, OR LOSS OF LIFE.**

- A. BEFORE LIGHTING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.
- WHAT TO DO 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 can not reach your gas supplier, call the fire department.
- B. Use on the wall switch or remote control switch to turn the gas control on/off. Any attempted repairs or adjustments should be performed by a qualified service technician. Applying force or attempted repair may result in a fire or explosion.
- C. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

# LIGHTING INSTRUCTIONS

1. STOP! Read the safety information above on this label.
2. Set the thermostat, if used, to the lowest setting.
3. Turn off all electric power to the appliance. Turn off electrical control switches to "O."
4. This appliance is equipped with an ignition device that automatically lights the burner. Do not try to light the burner by hand.
5. Remove the front access panel below the glass door by pulling both sides forward simultaneously.
6. Turn gas line valve to "ON."
7. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow "A" in the safety information above. If you do not smell gas, go to the next step.
8. Replace the front access panel, press both sides of the panel until both lock position.
9. Turn on electric power to the appliance. Turn on electric control switches to "I."
10. Set thermostat to desired setting (if available).
11. If the appliance will not operate, follow the instructions "TO TURN OFF GAS TO APPLIANCE," and call your service technician or gas supplier.



## TO TURN OFF GAS TO APPLIANCE

1. STOP! Read the safety information above.
2. Set the thermostat, if used, to the lowest setting.
3. Turn off electric power to the appliance.
4. Remove front access panel.
5. Turn gas line valve to "OFF."
6. Replace front access panel.

# FAN OPERATION

The 3-speed main convection fan will automatically start approximately 3 to 5 minutes after the heater has warmed up.

**Note:** The 3-speed main convection fan is automatically controlled and will operate on three preset speeds. Depending on your burner setting and the surrounding ambient temperature, the L.E.D lights (Page 28, Figure 34) for the fan will light up. The bottom L.E.D light (Figure 34F) is low speed setting, and middle L.E.D lights (Figure 34G) is the medium speed setting, the bottom, middle and top L.E.D lights (Figure 34H) is the high-speed setting (both burners on).

Note: The fan will operate totally independent of burner setting - it is controlled by temperature only.

- a. Front burner only - low fan speed
  - b. Rear burner only - medium fan speed
  - c. Both front and rear burners - high fan speed
- } These are approximates only

On changing the burner setting from high to medium, or from high to low, there will be a delay on the operating speed of the fan until the firebox has cooled down sufficiently for the fan to change speed.

**Note:** It can take up to approximately 20-30 minutes before the fan speed will change and settle on the next setting. The firebox temperature and the outside ambient temperature will regulate how quickly the fan responds to speed changes.

## HEATER SHUT DOWN INSTRUCTIONS

Turn medium burner switch (Figure 33) and low burner switch (Figure 32) to the "OFF" position.

**Note:** Do not cut main electrical supply to the heater after the heater has been switched off to stop main fan operating. Main fan will stop operating automatically after the heater has cooled down sufficiently.

# GAS CONVERSION INSTRUCTIONS

**Warning:** Conversion must be done by a qualified service technician. Main burner orifices, front burner bushing, and gas conversion label are provided in conversion kit attached to manifold pipe.

## CONVERSION INSTRUCTIONS FROM (LP) PROPANE GAS TO NATURAL GAS

1. Turn OFF gas supply and electrical power to fireplace.
2. Remove lower front panel.
3. Unscrew regulator stem from gas valve and reverse regulator stem to the natural gas position and screw stem back into gas valve. See Figure 35
4. Open four (4) door latches in order to pivot open the front door.
5. Remove logs from fireplace.

**Caution:** Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

6. Disconnect caps and plugs on flame sensor and hot surface ignitor.
7. Remove log plate from interior of fireplace by removing twelve (12) screws. See Figure 47.
8. Remove front burner (one (1) screw).
9. Use 3/8" socket or wrench to remove propane gas front burner orifice marked 1.10 from orifice fitting. Replace with natural gas front burner orifice marked 1.50 into orifice fitting.
10. Insert natural gas front burner bushing into throat (Venturi) of front burner. See Figure 36.
11. Replace front burner with one (1) screw from Step 8.
12. Remove rear burner (one (1) screw).
13. Use 3/8" socket or wrench to remove propane gas rear burner orifice marked 1.45 from orifice fitting. Replace with natural gas rear burner orifice marked 2.35 into orifice fitting.
14. Replace rear burner with one (1) screw from Step 12.
15. Connect caps and plugs on flame sensor and hot surface ignitor.
16. Install log plate into fireplace with twelve (12) screws from Step 7.
17. Replace logs into fireplace. Refer to page 12, Log Placement for correct placement of logs.
18. Close front door by securing four (4) door latches.
19. Replace lower panel.
20. Place Propane gas burner orifice(s) into conversion kit. Attach conversion kit to manifold pipe. Attach gas conversion label adjacent to fireplace nameplate indicating that the fireplace was converted to Natural gas.
21. Turn ON gas supply to fireplace and check all gas connections for leaks with soap solution, watching for bubbles on all gas connections.
22. Turn ON electrical power to fireplace and turn on fireplace to verify proper operation. It may take several tries for ignition to completely purge all the air from the gas line.

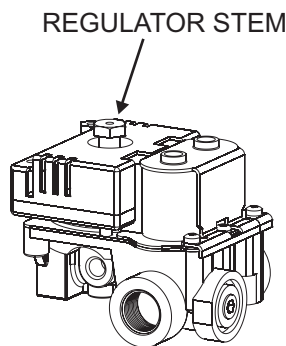


Figure 35

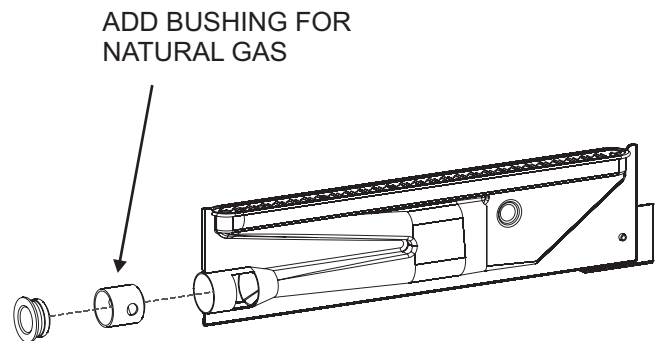


Figure 36

# GAS CONVERSION INSTRUCTIONS

**Warning:** Conversion must be done by a qualified service technician. Main burner orifice(s) and new gas conversion label are provided in conversion kit attached to manifold pipe.

## CONVERSION INSTRUCTIONS FROM NATURAL GAS TO (LP) PROPANE GAS

1. Turn OFF gas supply and electrical power to fireplace.
2. Remove lower front panel.
3. Unscrew regulator stem from gas valve and reverse regulator stem to the propane gas position and screw stem back into gas valve. The propane gas arrow will be pointing at the gas valve in the propane gas position. See Figure 37.
4. Open four (4) door latches in order to pivot open the front door.
5. Remove logs from fireplace.

**Caution:** Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

6. Disconnect caps and plugs on flame sensor and hot surface ignitor.
7. Remove log plate from interior of fireplace by removing twelve (12) screws. See Figure 47.
8. Remove front burner (one (1) screw).
9. Use 3/8" socket or wrench to remove natural gas front burner orifice marked 1.50 from orifice fitting. Replace with propane gas front burner orifice marked 1.10 into orifice fitting.
10. Remove natural gas front burner bushing from throat (Venturi) of front burner. See Figure 38.
11. Replace front burner with one (1) screw from Step 8.
12. Remove rear burner (one (1) screw).
13. Use 3/8" socket or wrench to remove natural gas rear burner orifice marked 2.35 from orifice fitting. Replace with propane gas rear burner orifice marked 1.45 into orifice fitting.
14. Replace rear burner with one (1) screw from Step 12.
15. Connect caps and plugs on flame sensor and hot surface ignitor.
16. Install log plate into fireplace with twelve (12) screws from Step 7.
17. Replace logs into fireplace. Refer to page 12, Log Placement, for correct placement of logs.
18. Close front door by securing four (4) door latches.
19. Replace front panel.
20. Place Natural gas main burner orifices and front burner bushing into conversion kit. Attach conversion kit to manifold pipe. Attach gas conversion label adjacent to fireplace nameplate indicating that the fireplace was converted to Propane gas.
21. Turn ON gas supply to Fireplace and check all gas connections for leaks with soap solution, watching for bubbles on all gas connections.
22. Turn ON electrical power to fireplace and turn on fireplace to verify proper operation. It may take several tries for ignition to completely purge all the air from the gas line.

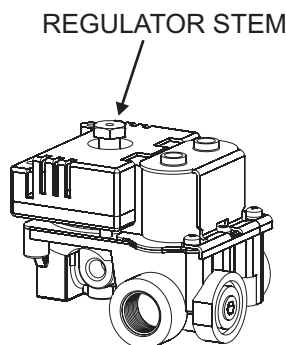


Figure 37

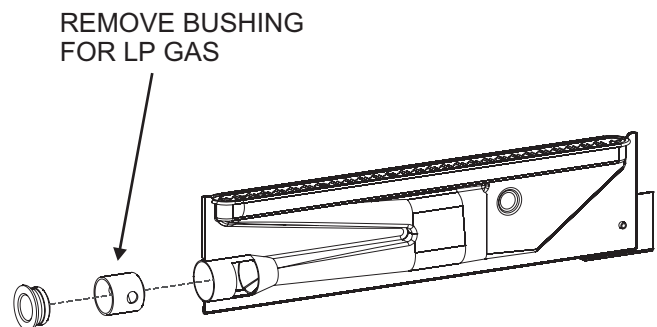


Figure 38



# AUTOMATIC HUMIDIFIER OPERATION

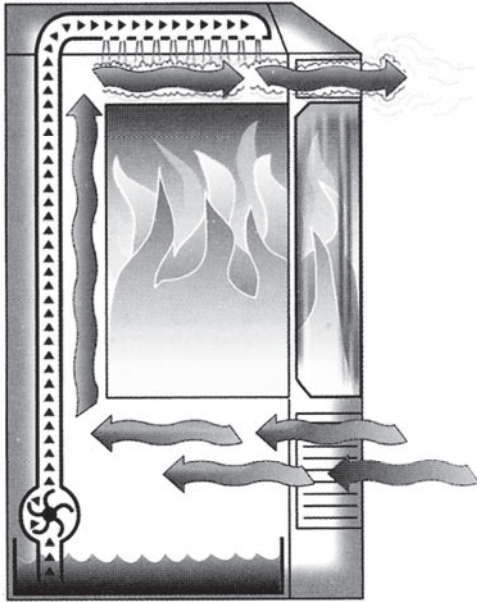


Figure 39

Most gas heaters dry out the air in the room. The Mantis has ingeniously solved this problem with an Automatic Humidifier. Gas contains moisture which is normally expelled out the flue or chimney after combustion. But the Mantis is so efficient by taking 92% of the heat out of the burnt gases that the moisture drops out and condenses in the back of the heater. This water is collected in a tank which is then pumped up to a stainless steel condensate tray, where it evaporates in the stream of hot air which is blowing into your home. Air humidity is automatically restored!

1. The amount of condensate build up in the water sump is dependent on outside temperature, length and height of the flue pipe. The automatic humidifier can operate from approximately 10 minute to 6 hour intervals, depending on ambient temperature, style and type of flue. Long single vertical flues can cause the humidifier to come on more often depending on heater settings.
2. When the automatic humidifier is engaged and is transferring the condensate into the holding tank, a hissing sound may be noticeable. This occurs when the condensate enters the holding tank and is quite normal. The duration of the sound may vary from 3 to 30 seconds until the holding tank has been filled with the condensate.
3. When the automatic humidifier pump comes on to pump condensate into the stainless steel tray (located on the top of the heater), the L.E.D. light (Page 28, Figure 34B) on the front panel will light up and flash while the condensate pump is operating, and then extinguish after the pump has stopped operating. This means water has been pumped into the tank, and the automatic humidifier operation will begin.

# OPTIONAL REMOTE CONTROL THERMOSTAT

An optional programmable Remote Control Thermostat can be fitted to the heater at the factory when ordered or even after the heater has been installed. See your Mantis dealer for correct type.

**Installation:** The Remote Control can be installed by the owner of the heater if required. The Remote Control is a battery operated device, which requires a small amount of low voltage wiring. A wiring loom package is supplied by Empire Comfort Systems, Inc. which simply attaches onto the junction box. See Figure 35.

Remove blue jumper wire from junction block and save for future use. From the remote control receiver, cut and strip one black wire 1/4" terminal from wire. Attach the stripped black wire to the blue wire connector from the transformer on the junction box. From the remote control receiver, attach the Y wiring lead to the 1/4" terminal on the black wire. Attach the one white wire to the red wire connection from "T1" on the junction block. Attach the other white wire from the remote control receiver to the black wire connection from "T2" on the junction block.

In basic terms the red button acts as a Remote Control override switch for the front burner only. Also the Remote can switch the heater on and off in the high setting, medium setting or low setting.

**Note:** When the heater or the Remote Control is not being used for long periods the burner switches should be in the off position, also in summer the heater should be turned off at the power point.

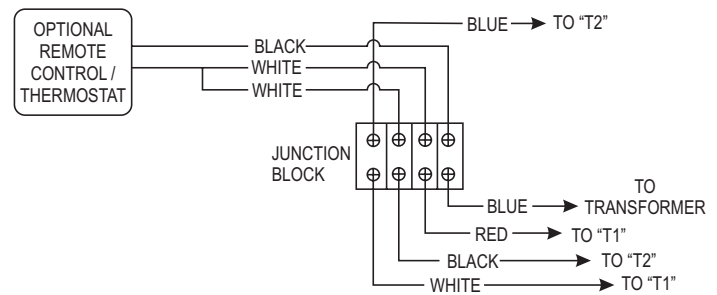


Figure 43

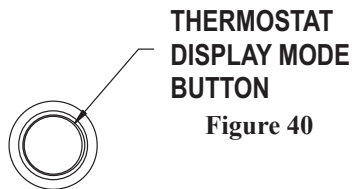


Figure 40

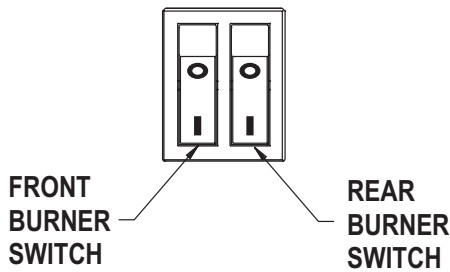


Figure 41

Figure 42

Economy Display Mode (Red Button Operation): The red button above the two burner switches is called the economy display mode and will only function when a Remote Control Thermostat has been installed in the heater. The most common way this button is used to have the Remote Control set on Thermo mode with a desired temperature set for the heater to turn on and off, which is dependant on the ambient temperature, location and the area the appliance is positioned in. When using a Remote Control Thermostat both burner switches need to be in the on position. When the red button is pressed with both burner switches on, the front burner only will ignite or if already alight, it will now remain on regardless of what function or temperature is set on the Remote Control.

In this situation only the back burner will turn on and off according to the setting on the Remote Control. By running the heater this way you will use less gas and still have the aesthetic effect of the front burner. However, if the appliance is in a small area, this setting may get to warm for you. To change the setting, press the red button so that it is not illuminated and the heater will revert back to its normal operation.

# WIRING

The appliance, when installed, must be electrically grounded in accordance with local codes or, in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70 or Canadian Electrical Code, CSA C22.1, if an external electrical source is utilized. **This appliance is equipped with a three-prong [grounding] plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle. Do not cut or remove the grounding prong from this plug.** For an ungrounded receptacle, an adapter, which has two prongs and a wire for grounding, can be purchased, plugged into the ungrounded receptacle and its wire connected to the receptacle mounting screw. With this wire completing the ground, the appliance cord plug can be plugged into the adapter and be electrically grounded.

**CAUTION:** Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

**Note:** For testing flame sensor circuit use a micro-amp meter in series with sensor. Minimum current should be 1 micro-amp during operation. Be careful as flame sensor is in the 115VAC circuit. If current is below 1 micro-amp, remove sensor, clean with light sandpaper and retest.

**Note:** This heater is equipped with a remote bulb electronic thermistor control located low on the back of the furnace. Sometimes due to field locations different air currents may effect the control sensing of the thermistor. This sensing bulb can be re-located if necessary to provide for better air sensing and control.

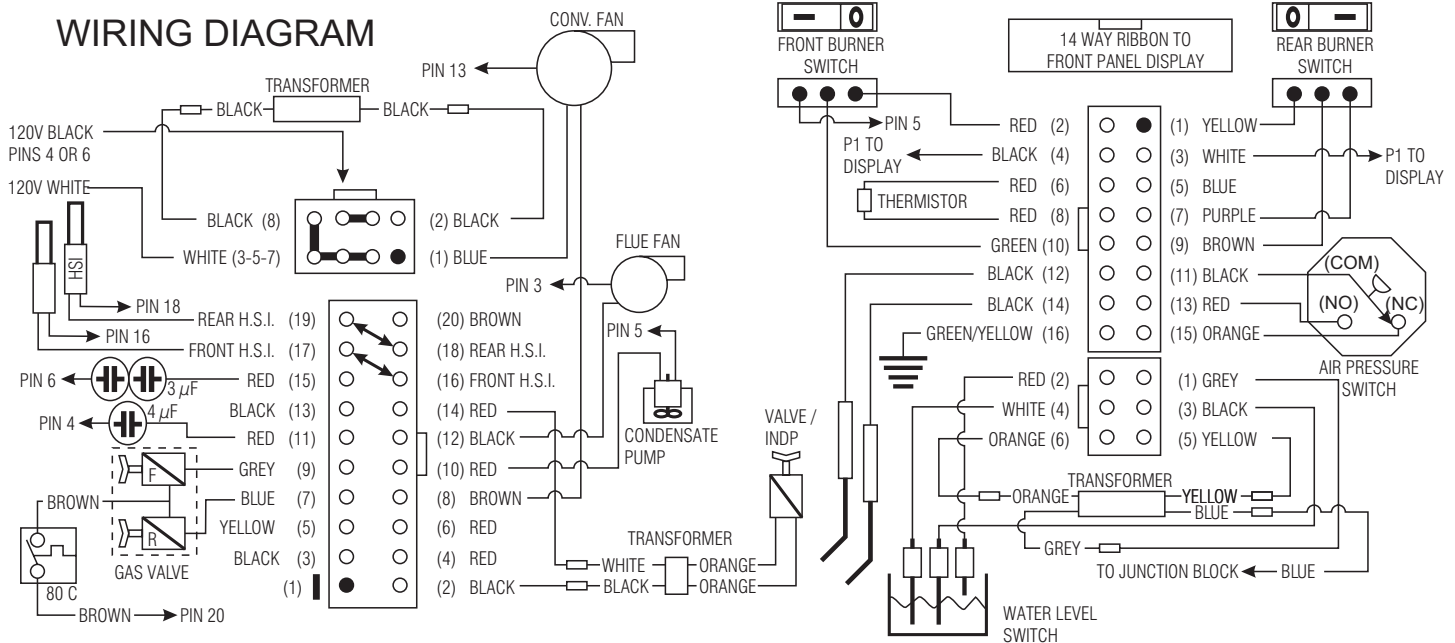


Figure 44

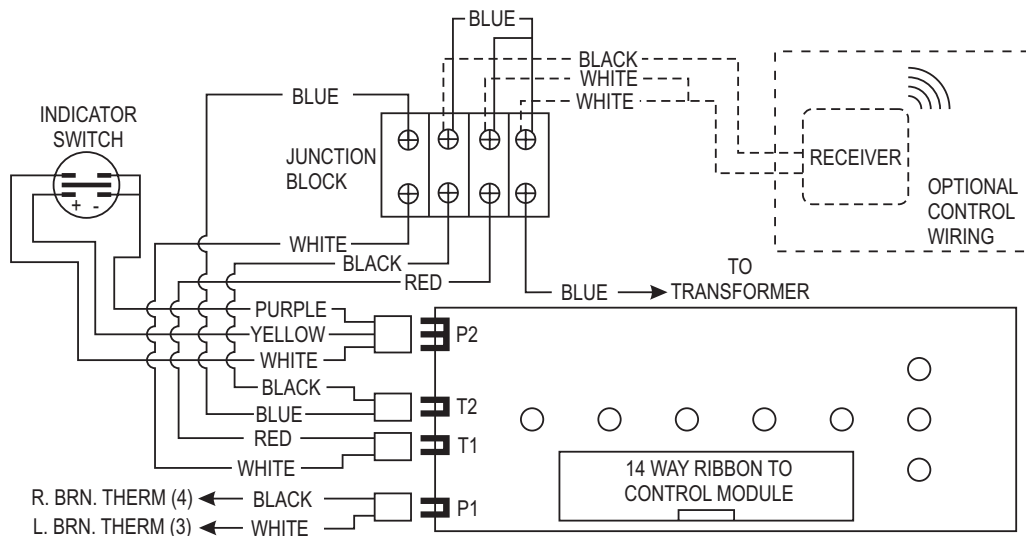


Figure 45

# GENERAL INFORMATION

## Over Temperature Cut Out

The Mantis Power-Vent High-Efficiency Fireplace is protected against overheating with a high temperature 80°C (176°F) cut off switch to protect the heat exchanger, plastic sump and flue fan.

The high temperature cut off switch will automatically switch off the gas supply to the heater, if the temperature in the room where the heater is located reaches approximately 28°C (82.4°F). The heater will go into lock out mode. An allowance of 15 minutes minimum must be made to allow for the main fan to cool down the heater prior to restarting the appliance.

**Note:** In most instances, overheating of the heater is a direct result of too much lint and dust having accumulated in the main convection fan. This makes the fan unable to supply sufficient air to cool down the heat exchanger. It is recommended that you inspect your main convection fan prior to the start of the heating season and if necessary have it serviced by a qualified service technician (refer to Page 37 - Maintenance).

## Paint Curing - First Firing

The first fire in your heater is part of the paint curing process. Your Mantis Power-Vent High-Efficiency Fireplace has been painted with the highest quality heat resistant silicon paint available in the world.

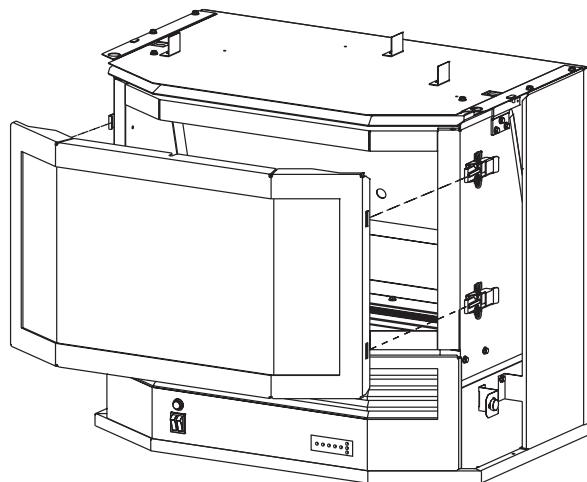
To ensure that the paint is properly cured, light the unit and leave it burning on high burn for approximately 1 hour.

1. During initial firing of this unit, its paint will bake out, and smoke will occur. To prevent triggering of smoke alarms, ventilate the room in which the unit is installed. During initial firing of logs, you will detect an odor as the logs are cured. Also, during the curing process the logs will burn with a yellow flame.
2. Don't touch the surface of the heater. It will be soft during this paint-curing phase. Once cured it will not be soft again.
3. The paint finish of the heater should not be cleaned with any caustic or abrasive cleaning solutions.
4. Any damage to painted surface should be repaired with special touch paint available from your Mantis Dealer.

# MAINTENANCE

**Note:** Your appliance should be inspected, serviced and checked annually by a qualified service person to ensure that your appliance is operating safe and efficiently. Should you detect any abnormality in the operation of your appliance call a qualified service person who has been trained and approved to inspect and service the appliance. This may be your installer or dealer (routine service is not covered under warranty).

# MAINTENANCE



**Figure 46**  
**Front door removal drawing**

## Glass Cleaning

It will be necessary to clean the glass periodically. During start-up, condensation, which is normal, forms on the inside of the glass and causes lint, dust and other airborne particles to cling to the glass surface. Also, initial paint curing may deposit a slight film on the glass. It is therefore recommended that the glass be cleaned two or three times with a non-abrasive household cleaner and warm water (we recommend gas fireplace glass cleaner) after the initial burn. We do not recommend using packaged spray type household glass cleaner. After that, the glass should be cleaned two or three times during each heating season depending on the circumstances present.

## General Glass Information

Only glass approved for use in Empire Comfort Systems, Inc. fireplace may be used for replacement. The glass replacement must be done by a licensed or qualified service person.

### WARNING:

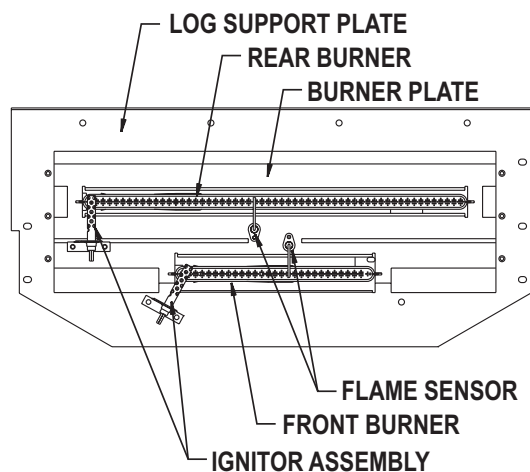
1. The use of substitute glass will void all product warranties.
2. Care must be taken to avoid breakage of the glass.
3. Under no circumstances should this appliance be operated without the glass front or with a broken glass front. Replacement of the glass (with gasket) as supplied by the manufacturer must be done by a qualified service person.
4. Do not abuse the glass by striking or hitting the glass.

**WARNING: Do not use abrasive cleaners on glass. Do not attempt to clean glass when glass is hot.**

## Glass Assembly Replacement

1. Remove cabinet top.
2. Pivot left and right front panels open.
3. Release two door latches on left and right of firebox.
4. Grasp glass frame and carefully pull toward you.
5. Place glass frame assembly on non-abrasive surface. The exterior of the glass frame assembly should be facing the non-abrasive surface.

6. Insert a putty knife between glass and bottom corners on frame. Carefully separate glass from frame.
7. Use putty knife to remove silicone and gasket material from frame. Surface of frame must be clean and dry.
8. At each corner of frame apply two (2) three inch beads of high temperate (orange) silicone.
9. With thin gasket on glass facing silicone on frame, insert glass into frame. Carefully press the glass onto frame in order to have contact between glass and silicone.
10. Allow silicone to set-up for an adequate time.
11. Gently place glass frame back into firebox.
12. Close the 2 door latches on left and right of firebox.
13. Pivot left and right front panels closed.
14. Replace cabinet top.



**Figure 47**  
**Main Burner Drawing**

## Cleaning Main Burner

Remove main burner and apply air pressure inside the throat and ports of the main burner.

## Removing HSI Flame Sensor, Blower and Orifice

1. Remove front door assembly. See Figure 46.
2. Remove logs from firebox.
3. Remove installation bracket and gasket from underside of firebox (1 screw).
4. Disconnect flame sensor and HSI connector from wiring harness.
5. Remove log support from inside firebox (13 screws).
6. Remove HSI from log support (13 screws).
7. Remove flame sensor from log support (1 screw).
8. Remove burners from firebox (1 screw).
9. Once burners are removed, orifices are exposed.

## UNIT OPERATING FAULTS

**SERVICE AND INSTALLATION OF THE APPLIANCE SHOULD BE CARRIED OUT BY AUTHORIZED PERSONNEL ONLY.**

**THE MAJOR CAUSE OF OPERATING PROBLEMS WITH GAS FIREPLACE HEATERS IS IMPROPER GAS PRESSURE, INCORRECT LOG PLACEMENT, IMPROPER INSTALLATION, INCORRECT FLUE INSTALLATION, INCORRECT SWITCHING OF BURNERS, DIPS/SPIKES IN THE INCOMING POWER OR REVERSE POLARITIES.**

The above situations can cause such problems as changes in flame color or configuration, intermittent operations, changes in

heat output, carbon build up or sooting, bad odors, rattles or other sounds, start up failures and burner(s) switching themselves off. These are nearly always the result of improper installation or incorrect operation and it may take sometime for these problems to show themselves. Before calling out a technician you must be able to repeat the fault, try resetting the heater. Read below.

**Note:** Incorrect installation of the unit, logs, flue pipe, gas pressure or operation, which cause the above mentioned faults, are not covered under warranty and a service call fee will be charged to correct such problems.

## RESETTING THE HEATER

There are a number of reasons why sometimes the heater will switch itself off and is the correct thing for the heater to do in certain situations (i.e. overheating, power failure or dips, windy conditions, pump failure, partial or full blockage of flue pipe or no gas. All of these operations are monitored by the electronic control box inside the heater, which is heat sensitive, pressure switch sensitive, flame sensitive and water sensitive. If one of these items is not correct, the heater will shut itself down.

To reset, turn both burner switches to the OFF position, ensure the red button above the two burner switches is not illuminated (if a Remote Control is fitted, have it in the off mode). Then turn the power off at the power point for approximately 10 seconds. Then turn the power point back on and the power L.E.D. should be illu-

minated. If you have a Remote burner switch and the rear burner L.E.D. should start flashing, with the flue fan L.E.D. remaining steady. Wait approximately 60 seconds for the rear burner to ignite. You can tell when it has lit, even if you can't see any flames, by looking at the rear burner L.E.D. which should remain steady. Repeat the same process with the front burner. Turn on the front burner switch and wait approximately 60 seconds and the front burner L.E.D. will remain steady.

In approximately 5 minutes the convection fan should start and the heater has been successfully reset.

**Note:** if the heater is still warm when reset the convection fan may already be running when the unit is powered up.

## LOG PLACEMENT

If for any reason a log should need replacement, you must use the proper replacement log. Consult your Mantis dealer for correct replacement logs.

Replacement logs must be installed and positioned as outlined on pages 16 through 17 under Log Installation.

**Note:** Improper positioning of logs can create carbon build up and will alter the unit's performance and operation.

## MAIN CONVECTION FAN

The main convection fan in the heater should be checked, serviced and cleaned annually by a qualified service person to ensure that your appliance is operating efficiently.

**Note:** If the main convection fan becomes clogged with lint and dust an over-temperature situation will occur through the heater exchange system and the over-temperature safety switch will stop the heater from operating.

## HEAT EXCHANGER

The heat exchanger of the unit is located at the rear of the heater. The heat exchanger should be inspected annually by a qualified service person for lint and dust build up. Excessive dust and lint build-up in the heat exchanger can alter the unit's performance and operation.

**Note:** This appliance (Insert and Freestanding Models) needs to be installed in such a way that the heater (especially with models built into a fireplace) can be removed at all times to service the heat exchanger and flue fan, which

are located at the rear section of the heater.

Under no circumstances should the appliance be installed under conditions that would not allow for easy removal of the appliance to carry out routine inspection and service work on the appliance.

**DISCONNECT MAIN POWER PRIOR TO STARTING ANY WORK ON THE APPLIANCE.**

# SURROUND INSTALLATION INSTRUCTIONS

1. Remove Fireplace Insert Surround assembly from carton, handle insert surround with care to avoid paint damage.
2. Assemble Fireplace Insert Surround as per diagram with four (4) 10 x 1/2" screws supplied.
3. Install surround assembly around fireplace.
4. Install either slim or short top. **Note:** Top will hold surround in place.

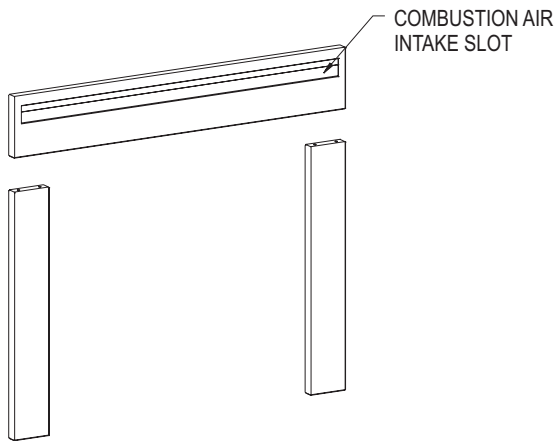


Figure 48

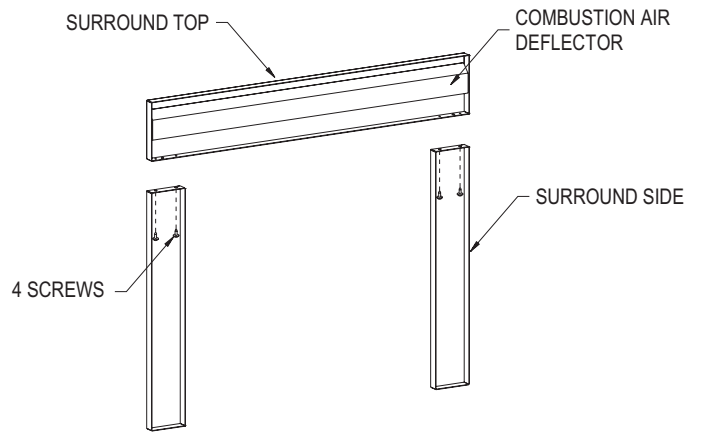


Figure 49

PARTS LIST		
Part Number	Description	Quantity Supplied
22754	Top, Surround Assembly	1
21859	Side, Surround 6"	2

Replacement 10 x 1/2" screws can be purchased from a local hardware store.



# PEDESTAL INSTALLATION INSTRUCTIONS

## Optional Pedestal Assembly Installation

1. Remove pedestal assembly from carton. Handle pedestal with care to avoid paint damage.
2. Place pedestal assembly into position where heater is to be located.
3. Lift and place main body of heater on top of pedestal assembly and align main body of heater with locating tabs provided on pedestal assembly (refer to diagram).

**NOTE:** To avoid accidents and damage to main heater body and paint-work, it is recommended that main body of heater should be located on top of pedestal assembly by 2 people.

4. Secure pedestal assembly to main body of heater with three (3) 1/2"- 10 x 24 screws supplied (refer to diagram).

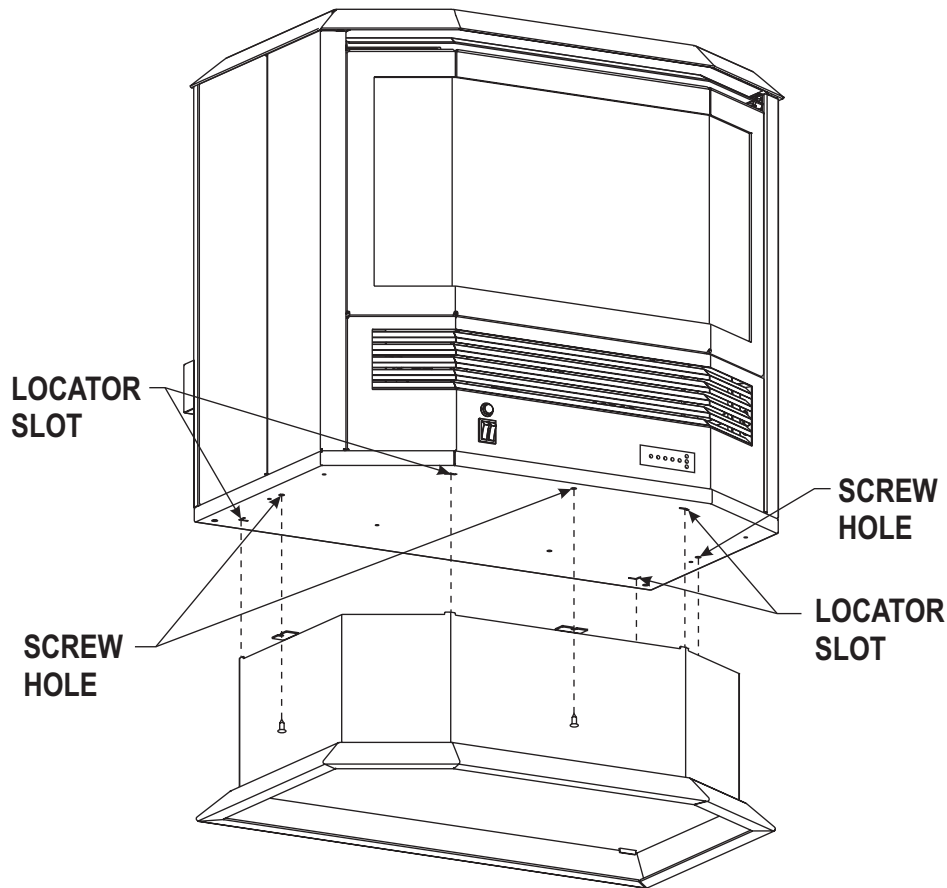


Figure 50

Note: Use the three (3) 1/2"- 10 x 24 screws and washers provided to secure pedestal assembly to base of heater.

# PARTS LIST

PLEASE NOTE: When ordering parts, it is very important that part number and description of part coincide.

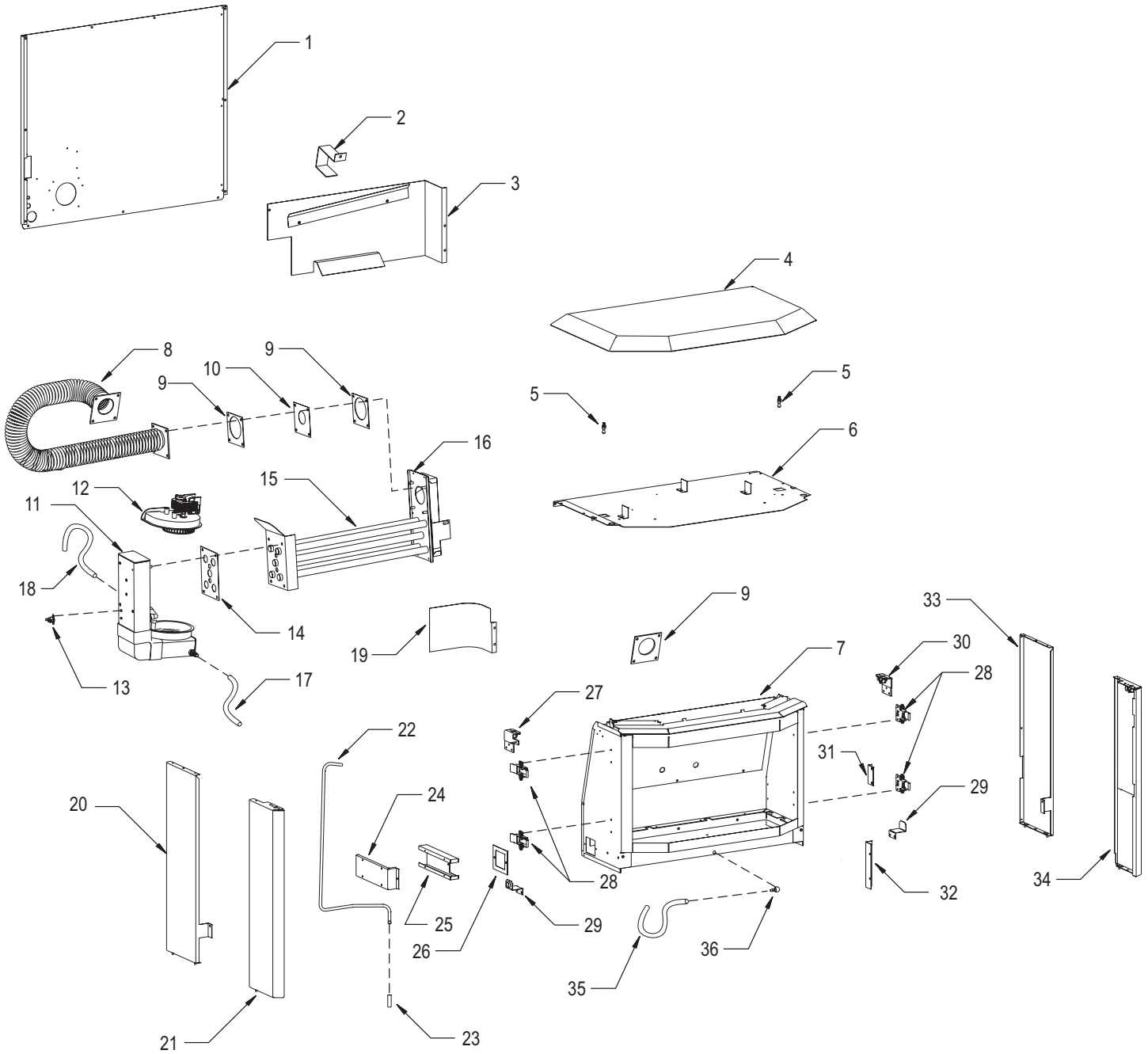
Index Number	Part Number	Description
1	22868	REAR PANEL ASSEMBLY
2	21654	BRACKET, PIPE ASSEMBLY
3	22670	REAR HEAT SHIELD ASSEMBLY
4	21664	TOP COVER ASSEMBLY (INCLUDES #5)
5	R8854	BALL STUD
6	22693	TOP HEAT SHIELD ASSEMBLY
7	22859	FIREBOX ASSEMBLY (INCLUDES #9 & #26)
8	22860	HEAT EXCHANGER TUBE ASSEMBLY (INCLUDES 3 OF #9)
9	R8855	GASKET, END PLATE
10	22861	PLATE, RESTRICTOR ASSEMBLY (INCLUDES 2 OF #9)
11	22862	INDUCER ASSEMBLY (INCLUDES #12 & #14)
12	22863	BLOWER ASSEMBLY (INCLUDES #14)
13	R8802	SWITCH, BIMETALIC
14	R8795	GASKET, SUMP
15	22864	HEAT EXCHANGER ASSEMBLY (INCLUDES 2 OF #9, MUST ORDER #14)
16	R8811	GASKET, INLET HEADER
17	21650	TUBING (SUMP TO PUMP)
18	21652	TUBING (SUMP TO PRESSURE SWITCH)
19	21627	SHIELD, REAR INNER
20	22779	LEFT REAR PANEL ASSEMBLY (INCLUDES INSULATION)
21	21667	LEFT SIDE DOOR ASSEMBLY
22	22642	TUBE, CONDENSATE
23	21647	CONNECTOR TUBING ASSEMBLY (PUMP TO CONDENSATE TUBE)
24	21605	COVER, INLET AIR DUCT
25	22780	INLET AIR DUCT ASSEMBLY
26	R8810	GASKET, INLET AIR DUCT
27	21641	BRACKET ASSEMBLY THERMISTER (SPRING CLIP INCLUDED)
28	R4053	CLAMP, DOOR (4 USED ON UNIT)
29	22694	BRACKET, MAGNET HOLDER ASSEMBLY (2 USED ON UNIT)
30	21640	BRACKET ASSEMBLY (SPRING CLIP INCLUDED)
31	21615	ANGLE, HEAT EXCHANGER BRACKET
32	21609	ANGLE, REAR HEAT SHIELD BRACKET
33	22668	RIGHT REAR PANEL ASSEMBLY (INCLUDES INSULATION)
34	21665	RIGHT SIDE DOOR ASSEMBLY
35	21651	TUBING (FIREBOX TO PRESSURE SWITCH)
36	R8835	FITTING, BARBED HOSE
37	22865	IGNITOR, HOT SURFACE ASSEMBLY
38	21611	BRACKET, IGNITOR
39	R8807	FLAME SENSOR
40	22656	LOG PLATE ASSEMBLY
41	22657	SMALL BURNER ASSEMBLY NAT (INCLUDES #43 AND #44)
41	22753	SMALL BURNER ASSEMBLY LPG (INCLUDES #44)
42	22658	LARGE BURNER ASSEMBLY (INCLUDES #44))
43	R8791	BUSHING, AIR SHUTTER (NAT ONLY)
44	R8790	BUSHING, BURNER
45	P208	REAR ORIFICE, LPG
45	P294	REAR ORIFICE, NAT
46	P293	FRONT ORIFICE, NAT
46	P295	FRONT ORIFICE, LPG
47	R8793	HOLDER, ORIFICE
48	R7572	JAMB NUT
49	22627	GAS LINE - REAR

# PARTS LIST

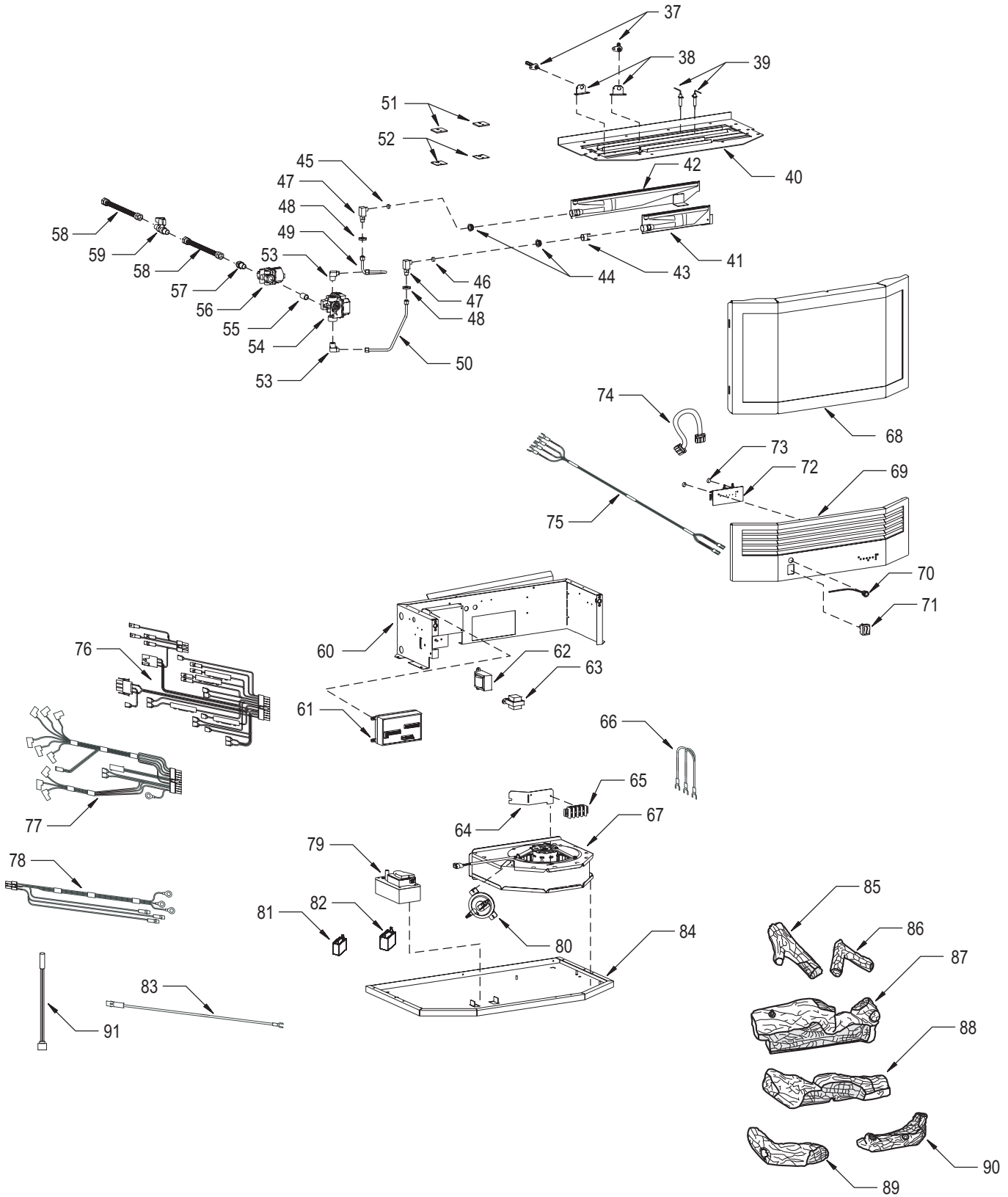
PLEASE NOTE: When ordering parts, it is very important that part number and description of part coincide.

Index Number	Part Number	Description
50	22628	GAS LINE - FRONT
51	M174	GASKET
52	11269	GAS LINE BRACKET
53	R8886	COMPRESSION FITTING
54	R8812	VALVE, NAT
54	R8869	VALVE, LPG
55	R8898	PIPE NIPPLE
56	R8825	SOLENOID
57	R3312	CONNECTOR, MALE 3/8 X 3/8
58	R8827	FLEX LIINE (2 USED)
59	R8846	SHUT-OFF VALVE
60	22866	FIREBOX BASE ASSEMBLY
61	21645	CONTROL BOX ASSEMBLY
62	R8889	TRANSFORMER 12-24V
63	R8804	TRANSFORMER 24V
64	21572	MOUNTING BRACKET, TERMINAL
65	R8817	TERMINAL STRIP
66	R8894	JUMPER WIRE
67	22778	AIR CIRCULATOR ASSEMBLY
68	21663	DOOR ASSEMBLY, BLACK
68	22758	DOOR ASSEMBLY, CHROME
68	22759	DOOR ASSEMBLY, GOLD
69	22867	FRONT PANEL ASSEMBLY (INCLUDES #70 AND #71)
70	R8840	WIRE HARNESS (WITH RED BUTTON SWITCH)
71	R8809	SWITCH, DOUBLE ROCKER
72	R8803	CIRCUIT BOARD ASSEMBLY
73	R8838	NUT, NYLON 4-40 (3 REQUIRED)
74	R8905	RIBBON CABLE
75	R8872	CIRCUIT BOARD WIRE HARNESS
76	R8829	WIRE HARNESS, 120V
77	R8830	WIRE HARNESS 12V
78	R8831	WIRE HARNESS 12V
79	21646	PUMP ASSEMBLY
80	R8805	AIR PRESSURE SWITCH
81	R8881	CAPACITOR 3uF
82	R8880	CAPACITOR 4uF
83	R8911	TRANSFORMER WIRE ASSEMBLY
84	22727	BOTTOM PAN ASSEMBLY
85	R8822	LOG, TOP LEFT
86	R8824	LOG, TOP RIGHT
87	R8823	LOG, REAR
88	R8820	LOG, CENTER
89	R8821	LOG, FRONT LEFT
90	R8819	LOG, FRONT RIGHT
91	22773	THERMISTOR ASSEMBLY (TEMPERATURE CONTROL)

# PARTS VIEW



# PARTS VIEW



# WARRANTY TERMS



Empire Comfort Systems

Purchase Date: \_\_\_\_\_

Dealer Name/Phone: \_\_\_\_\_

Installer - Place Serial Number  
Sticker Here and Leave this Manual  
with the Consumer.

## Limited Ten-Year Heat Exchanger Warranty

Empire promises to the owner that if the heat exchanger (see parts list) fails because of defective workmanship or material within ten years from the date of purchase, Empire will repair, or at Empire's option, replace the defective heat exchanger.

## Limited Five-Year Parts Warranty

Should any part fail because of defective workmanship or material within five years from the date of purchase, Empire will repair or replace it, at Empire's option.

## Limited Two-Year Labor Warranty

Should any part fail because of defective workmanship or material within two years from the date of purchase, Empire will repair or replace it, at Empire's option. All labor must be performed by a qualified gas appliance technician.

## Duties Of The Owner

The heating appliance must be installed by a qualified installer and operated in accordance with the written instructions furnished with the appliance.

Ready access to the appliance for service is the responsibility of the owner.

Travel, diagnostic cost, service labor, labor to repair the defective appliance, and freight charges on warranty parts to and from the factory will be the responsibility of the owner.

A bill of sale, cancelled check, or payment record should be kept to verify purchase date and establish warranty period.

## What is Not Covered

This warranty does not imply or assume any responsibility for damages resulting from the use, misuse, or improper installation of this heating appliance.

This warranty covers only claims involving defective workmanship or materials.

## How To Get Service

Service under this warranty must be obtained by contacting your Empire dealer. Provide your dealer with the model number, serial number, type of gas and purchase verification information.

If contacting your Empire dealer does not provide satisfactory service, contact: Consumer Relations Department, Empire Comfort Systems Inc., P.O. Box 529, Belleville, Illinois 62222, or call 618-233-7420.

## Your Rights Under State Law

This warranty gives you specific legal rights. You may have other rights, which vary from state to state.





Empire Comfort Systems

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Empire Comfort Systems, Inc.  
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PH: 618-233-7420 or 800-851-3153  
FAX: 618-233-7097 or 800-443-8648  
info@empirecomfort.com

[www.empirecomfort.com](http://www.empirecomfort.com)



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