



Model SHE
Gas-Fired, High Efficiency
Condensing, Separated-
Combustion Unit Heaters

REZNOOR *Thomas & Betts*

INSTALLATION FORM RGM 439
 New

APPLIES TO: Installation/Operation/Service

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FOR YOUR SAFETY

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 your fire department.

FOR YOUR SAFETY

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

WARNING: Improper installation, adjustment, alteration, service, or maintenance can cause property damage, injury, or death. Refer to this manual. For assistance or additional information, consult a qualified installer, service agency, or the gas supplier.

WARNING: Gas-fired appliances are not designed for use in hazardous atmospheres containing flammable vapors or combustible dust, in atmospheres containing chlorinated or halogenated hydrocarbons, or in applications with airborne silicone substances. See Hazard Levels, page 2.

GENERAL

Installation should be done by a qualified agency in accordance with the instructions in this manual and in compliance with all codes and requirements of authorities having jurisdiction. The instructions in this manual apply to the high-efficiency condensing unit heater model shown below.

Model	Description
SHE	High Efficiency, Condensing, Fan-Type, Separated-Combustion, Power-Vented Unit Heater

General (cont'd)

Model SHE heaters are design-certified by the American Gas Association for commercial/industrial installation. Heaters are available for use with either natural or propane gas. The type of gas, the firing rate, the electrical characteristics, and the A.G.A. seal are on the unit rating plate.

WARNING: Model SHE units are not designed or approved for use in atmospheres containing flammable vapors or atmospheres highly laden with chlorinated vapors. See Hazard Levels, below.

WARNING: Should overheating occur, or the gas supply fail to shut off, shut off the manual gas valve to the appliance before shutting off the electrical supply.

WARNING: Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and replace any gas control which has been under water.

HAZARD INTENSITY LEVELS

1. **DANGER: Failure to comply will result in severe personal injury or death and/or property damage.**
 2. **WARNING: Failure to comply could result in severe personal injury or death and/or property damage.**
 3. **CAUTION: Failure to comply could result in minor personal injury and/or property damage.**
-

1. Installation Codes

These units must be installed in accordance with local building codes. In the absence of local codes, the unit must be installed in accordance with the National Fuel Gas Code ANSI Z223.1a (latest edition). The National Fuel Gas Code is available from CSA Information Services, 1-800-463-6727.

Local authorities having jurisdiction should be consulted before installation is made to verify local codes and installation procedure requirements.

Special Commercial Installations (Aircraft Hangars/Repair Garages/Parking Garages)

Installations in aircraft hangars should be in accordance with ANSI/NFPA No. 409 (latest edition), Standard for Aircraft Hangars; in public garages in accordance with ANSI/NFPA No. 88A (latest edition), Standard for Parking Structures; and for repair garages in accordance with ANSI/NFPA No. 88B (latest edition), Standard for Repair Garages. ANSI/NFPA-88 (latest edition) specifies overhead heaters must be installed at least eight feet (2.5 m) above the floor.

ANSI/NFPA 409 (latest edition) specifies a clearance of ten feet (3 m) to the bottom of the heater from the highest surface of the top of the wing or engine enclosure of whatever aircraft would be the highest to be housed in the hangar, and a minimum clearance of eight feet (2.5 m) from the floor in other sections of aircraft hangars, such as the offices, and shops which communicate with areas used for servicing or storage. The heaters must be located so as to be protected from damage by aircraft or other objects such as cranes and movable scaffolding. In addition, the heaters must be located so as to be accessible for servicing, adjustment, etc.

2. Warranty

Refer to the limited warranty information on the Warranty Card in the "Owner's Envelope".

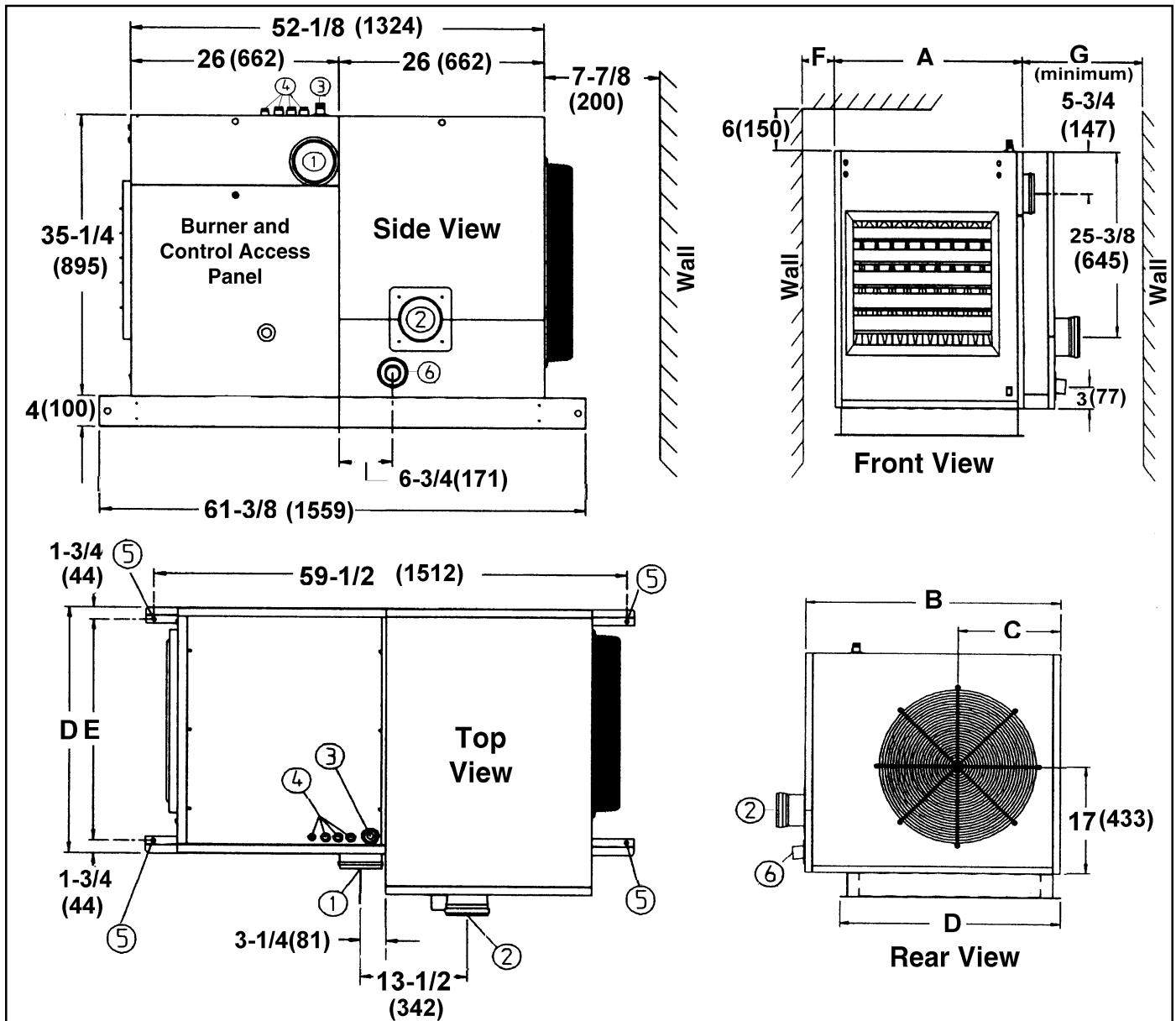
Warranty is void if ...

- a. Model SHE heater is used in an atmosphere containing flammable vapors or an atmosphere containing chlorinated or halogenated hydrocarbons or any contaminant (silicone, aluminum oxide, etc.) that adheres to the flame sensor.
 - b. The unit is modified or used in a manner not intended by the manufacturer or installed in a manner contrary to the instructions in this manual.
 - c. Wiring is not in accordance with the diagram furnished with the heater.
 - d. The unit is installed without proper clearance to combustible materials.
 - e. The heater is connected to a duct system.
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3. Dimensions - inches (mm)



Key and Dimensions:

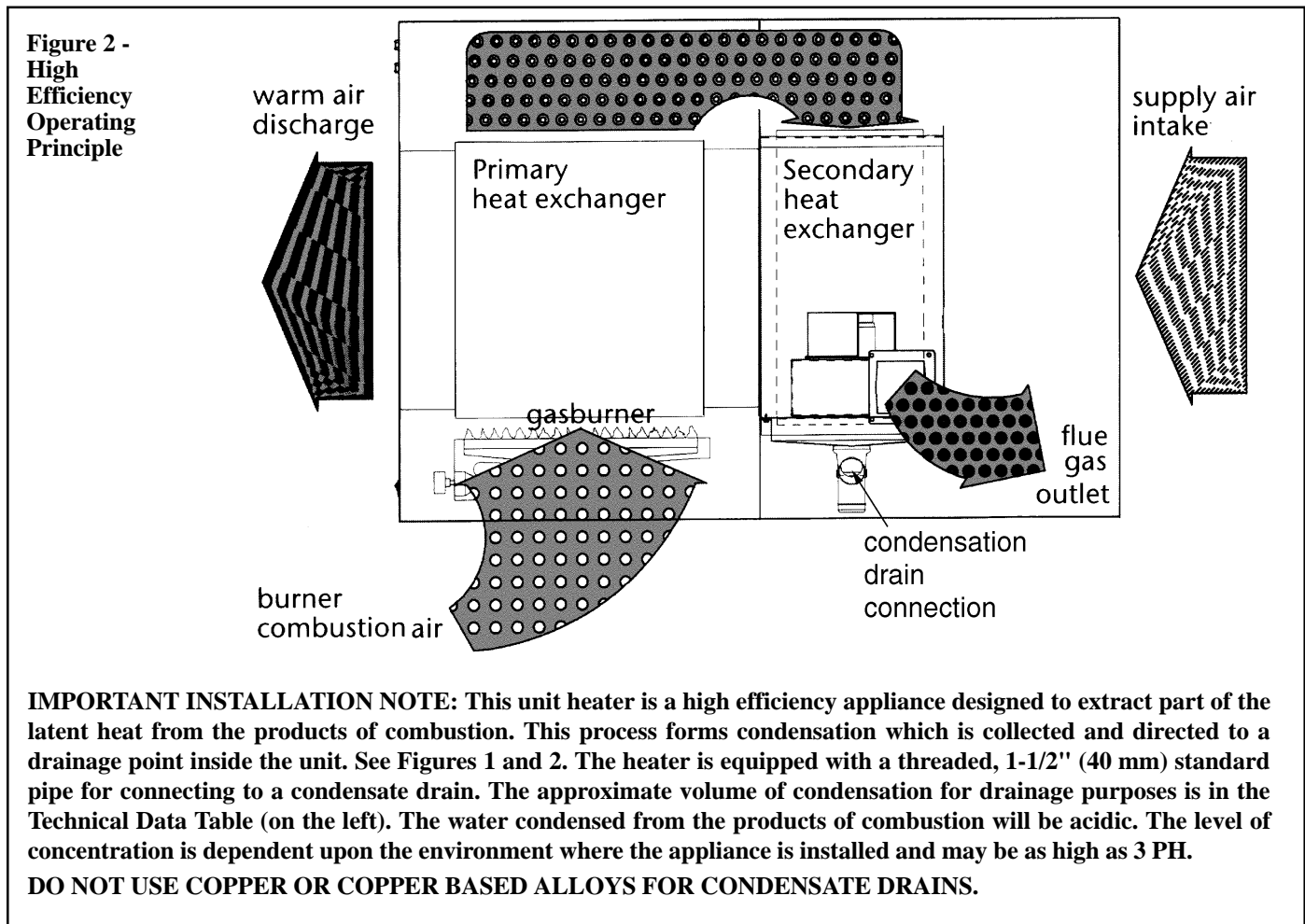
- ① Combustion Air Intake -- 6" (170 mm) PVC Pipe
- ② Flue Outlet -- 6" (170 mm) PVC Pipe
- ③ Inlet Gas Service Connection -- 3/4" (19 mm)
- ④ Electrical Supply and Control Inlets
- ⑤ Suspension Points - 1/2" (13 mm) diameter -- E x 59-1/2" (1512 mm)
- ⑥ Condensation Drain Connection -- 1-1/2" ID (41 mm OD)

Figure 1 - Dimensions of Model SHE - inches (mm)

Dimensions and Clearances - inches ± 1/8" (mm)

Size	225	300	400
A - Width of heating section	34-1/4 (870)	42-1/2 (1080)	53-1/2 (1360)
B - Width of fan cabinet	39-7/8 (1013)	48-1/8 (1223)	59-1/8 (1503)
C - Center of fan to opposite side	16 (405)	20 (510)	25-1/2 (650)
D - Width overall of base frame	34-3/8 (874)	42-5/8 (1084)	53-3/4 (1364)
E - Width of suspension points	31 (786)	39-1/4 (996)	50-1/4 (1276)
F - Opposite side clearance	6 (150)	6 (150)	6 (150)
G - Minimum service clearance	35-3/8 (900)	43-1/4 (1100)	55 (1400)

4. Operating Principle



5. Uncrating, Handling, and Preparation

This unit was test operated and inspected at the factory prior to crating and was in operating condition. If the heater has incurred any damage in shipment, file a claim with the transporting agency. After unpacking, leave the heater attached to the base until it has been suspended or until just before base mounting. Figure 3 illustrates the correct method of handling this heater.

Check the rating plate for the gas specifications and electrical characteristics of the heater to be sure that they are compatible with the gas and electric supplies at the installation site.

This heater has specific installation requirements. Before beginning installation, read this booklet and become familiar with those requirements. If you do not have knowledge of local codes, check with the local gas company or any other local agencies who might have requirements concerning this installation.

Verify that the following items are with the heater:

- venter outlet collar (see Figure 4, page 6)
- a concentric adapter/terminal kit (refer to Paragraph 9);
- condensate drain parts (refer to Paragraph 10).

If optional thermostat is ordered, it is shipped separately. Before beginning, make preparations for necessary supplies, tools, and manpower.

6. Unit Heater Location

For best results, the heater should be placed with certain rules in mind. Units should always be arranged to blow toward or along exposed wall surfaces, if possible. Where two or more units are installed in the same room, a general scheme of air circulation should be maintained.

Suspended heaters are most effective when located as close to the working zone as possible, and this fact should be kept in mind when determining mounting height. However, care should be exercised to avoid discharging air directly on the room occupants.

Partitions, columns, counters, or other obstructions should be taken into consideration when locating the unit heater so that a minimum quantity of airflow will be deflected by such obstacles.

When units are located in the center of the space to be heated, the air should be discharged toward the exposed walls. In large areas, units should be located to discharge air along exposed walls with extra units provided to discharge air in toward the center of the area.

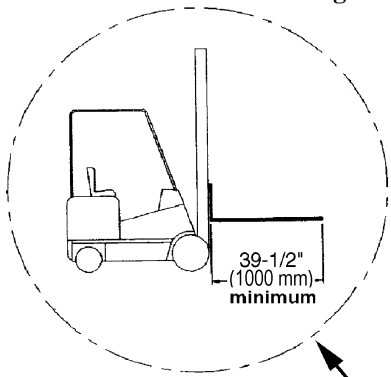
At those points where infiltration of cold air is excessive, such as at entrance doors and shipping doors, it is desirable to locate the heater so that it will discharge directly toward the source of cold air from a distance of 15 to 20 feet (5 to 6 m).

LOCATION CAUTIONS:

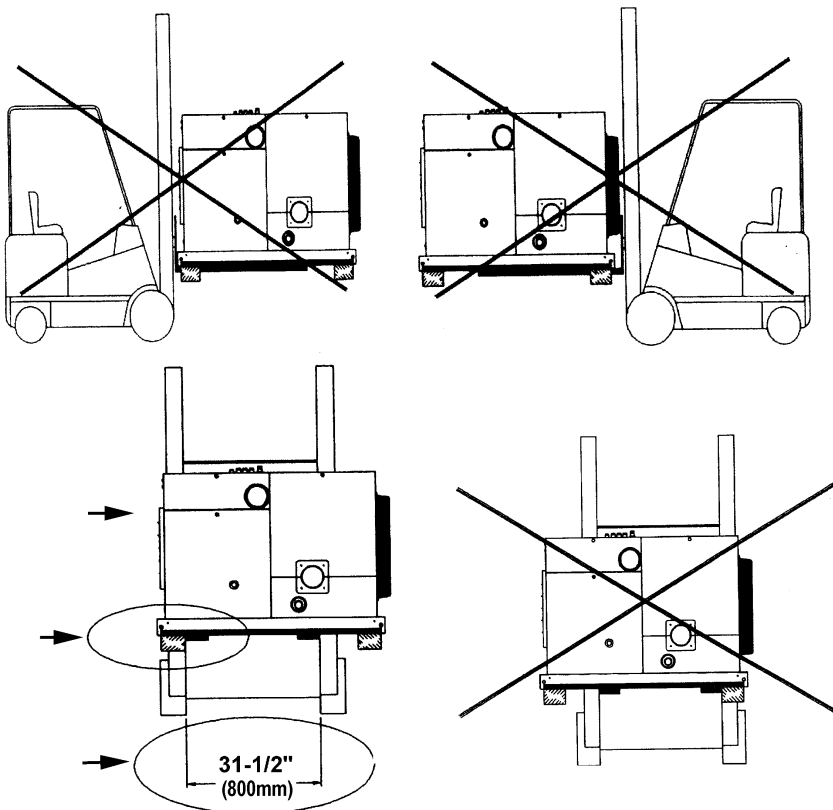
Do not locate the heater where it may be exposed to water spray, rain or dripping water.

To avoid stratification problems in air throw, allow a minimum of 15 feet (5 m) between the air outlet and the first obstacle.

Figure 3 - Recommended Handling Procedures



- Use a lift truck with no less than 39-1/2" (1000 mm) long forks and a 31-1/2" (800 mm) wide spread
- Load unit with collars facing away from truck
- Position forks so that the fork closest the heater discharge (opposite the fan) is parallel and against the crate brace
- To protect the cabinet, do not remove the base before suspending the unit or until just before mounting



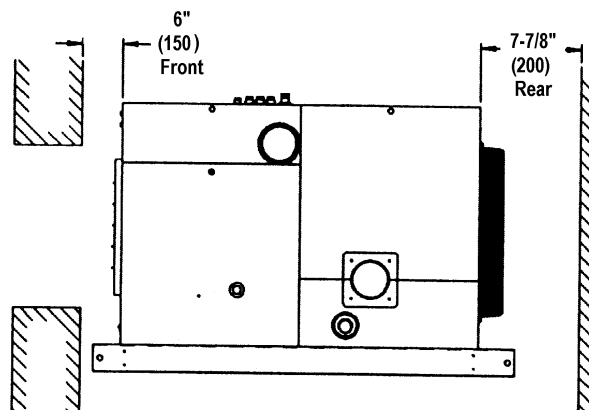
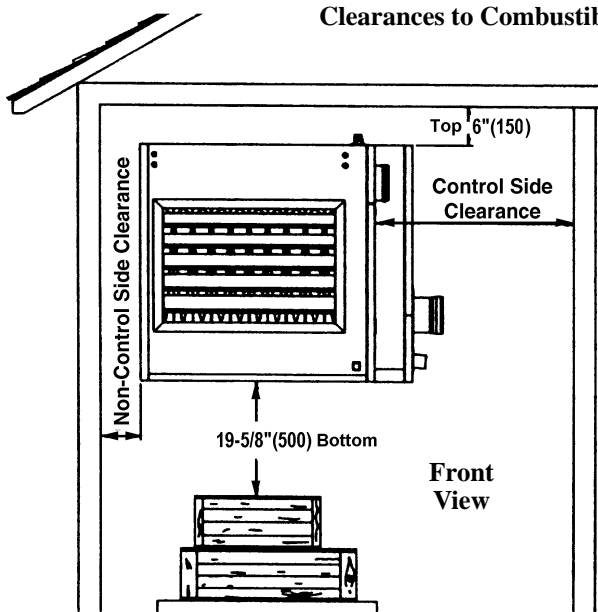
7. Clearances

Unit must be installed in compliance with the clearances in the table on the right. Clearances are required for service and inspection and for safe spacing from combustible construction.

Required Clearances (See Figure 4.) - inches (mm)			
Model Sizes	225	300	400
Control Side	35-3/8 (900)	43-1/4 (1100)	55-1/8 (1400)
Non-Control Side	6 (150)	6 (150)	6 (150)
Rear (fan side)	7-7/8 (200)	7-7/8 (200)	7-7/8 (200)
Top	6 (150)	6 (150)	6 (150)
Bottom	19-5/8 (500)	19-5/8 (500)	19-5/8 (500)

Figure 4 - Required Clearances

Clearances to Combustibles and for Service Access



Control Side View

8. Suspending or Mounting the Heater

Before suspending or mounting the heater, check the supporting structure to verify that it has sufficient load-carrying capacity to support the weight of the unit.

Net Weight - lbs (kg)

Size	225	300	400
Weight	397 (180)	485 (220)	640 (290)

Comply with required clearances to combustibles (Paragraph 7). Do not remove the base from the unit until after it is suspended or until just before mounting.

WARNING: Whether suspended or mounted, the unit must be level for proper operation. Do not place or add additional weight to the heater. See Hazard Levels, page 2.

Suspension

Refer to Figure 1, page 3, and locate the four suspension holes in the base frame of the heater. Securely attach suspension rods to the unit at each of the four holes. After suspension, the heater should be rigid so as to avoid placing a strain on the flue system, the condensate drain, the gas line, or the electrical wiring.

WARNING: Suspend the heater only from the holes provided. Do not suspend from the heater cabinet panels.

Mounting

Securely fasten the base of the heater to a non-combustible mounting surface.

9. Venting and Combustion Air

WARNING: The vent must be installed in accordance with national and local regulations. Failure to provide proper venting could result in death, serious injury and/or property damage. This unit must be installed with a vent to the outside of the building. Safe operation of any power vented gas equipment requires a properly operating vent system, correct provision for combustion air, and regular maintenance and inspection.

Venting must be in accordance with the National Fuel Gas Code Z223.1 and all local codes. Local requirements supersede national requirements. Combustion air for this heater must be ducted from the outside using an approved vent/combustion air intake system. Flue products must always be vented to the outdoors.

Installation should be done by a qualified agency in accordance with these instructions. The qualified service agency installing the vent/combustion air system is responsible for the installation. The venting/combustion air systems illustrated in this manual are the only ones approved for a Model SHE heater.

IMPORTANT: The products of combustion from this heater contain moisture, some of which will condense inside the flue pipe. **The vent system must be constructed from materials that will not leak.** Hori-

zontal vent runs must rise 1/4" (6mm) for each 12" (305mm) of pipe length to ensure that the liquid runs back toward the condensate drain.

Install a condensate drain in the plastic vent pipe (See Figure 7, page 10).

Venting and Combustion Air Requirements for Power Vent with Separated-Combustion, Ducting Combustion Air from Outside and Venting Flue Products to the Outdoors

Specific Requirements (read all before installing)

Comply with the specific requirements and instructions in the following paragraphs and illustrations. Refer to Figures 5A-5D.

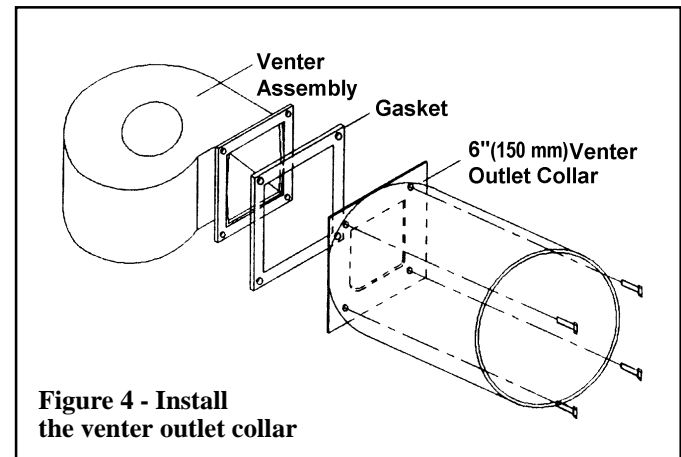
1. Combustion Air Pipe, Joints, and Support

Combustion air pipe may be any type of smooth wall pipe. The diameter of the combustion air pipe must be the same as the vent pipe - 6" (150mm) for Size 400 and either 4" (100mm) or 6" (150mm) for Sizes 225 and 300. Use the adapters included in the concentric adapter/terminal kit for attaching the combustion air pipe to the heater and the adapter.

Joints must be secure and sealed. Support lateral runs every six feet (2m).

2. Venter (Flue) Outlet

The venter outlet size is 6" (150mm). The venter outlet collar is shipped with the heater for field installation. Install as shown in Figure 4.



3. Pitch of Horizontal Vent Run

As it leaves the heater a horizontal vent run must rise 1/4" (6mm) for every 12" (305mm) to ensure that the condensation water in the vent pipe runs back to the condensate drain.

4. Vent Pipe Type, Joints, and Support

Use Schedule 40 PVC or CPVC pipe. Size 400 requires 6" (150mm) vent pipe; Sizes 225 and 300 may use either 4" (100mm) or 6" (150mm) pipe. Use the adapters included in the concentric adapter/terminal kit for attaching the vent pipe to the heater and the adapter.

Join pipe fittings using solvent/adhesives suitable for Schedule 40 PVC or CPVC pipe. Joints must be leak free.

Support lateral runs every six feet (2m). Do not rely on the heater for support of either horizontal or vertical vent or combustion air pipe.

5. Vent Pipe Length

Maximum Permissible <i>Horizontal</i> Length from the Heater to the Concentric Adapter				
Size	Pipe Diameter	Maximum Vent Length	Equivalent Straight Length *	
			90° Elbow	45° Elbow
225	4"	27 ft	5 ft	3.5 ft
	6"	30 ft	5 ft	3.5 ft
300	4"	27 ft	5 ft	3.5 ft
	6"	30 ft	5 ft	3.5 ft
400	6"	30 ft	5 ft	3.5 ft

* Reduce the maximum vent length by the amount indicated for each elbow used.

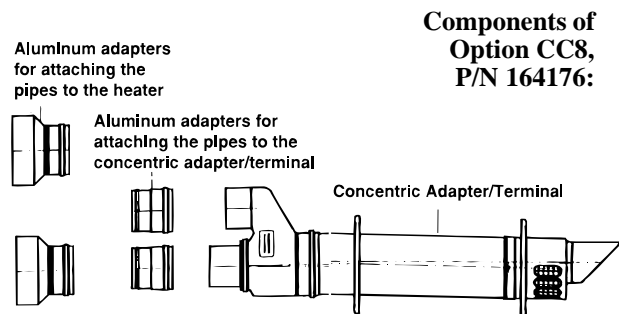
NOTE: If the system contains all vertical pipe or a combination of horizontal and vertical pipe, six feet (2m) of vertical rise is equivalent to three feet (1m) of horizontal run.

7. Concentric Adapter/Terminal Kits

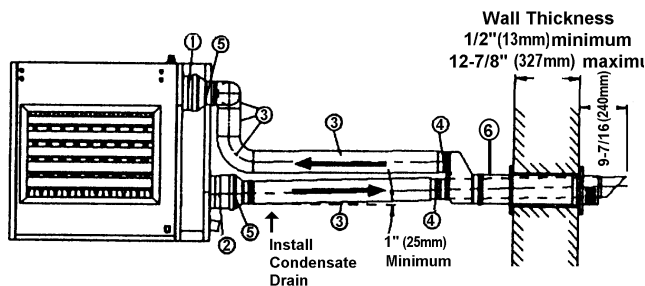
Concentric Adapter/Terminal (See Figures 5A-5D) - One of the concentric adapter/terminal kits listed below must be used; install as illustrated. Use the lubricant provided when connecting adapters to pipes. All joints must be free of leaks.

	Vent Size	Option	Pkg P/N	See Figure	Applies to Model
Horizontal	4" (100mm)	CC8	164176	5A	SHE 225 and 300
	6" (150mm)	CC9	164178	5B	SHE 225, 300 and 400
Vertical	4" (100mm)	CC10	164175	5C	SHE 225 and 300
	6" (150mm)	CC11	164177	5D	SHE 225, 300 and 400

Figure 5A - Horizontal 4" (100mm) Vent/Combustion Air System (Option CC8) - Applies to Models SHE 225 and 300

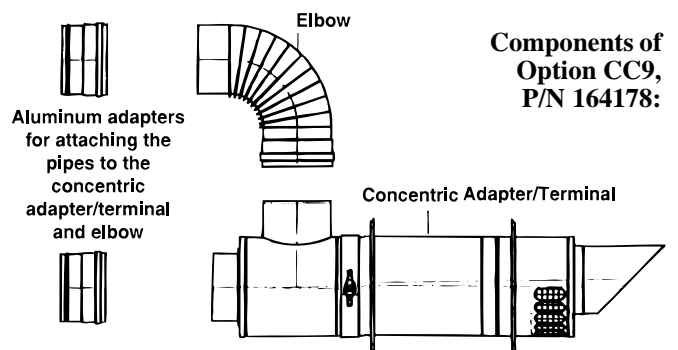


Option CC8 Installed:

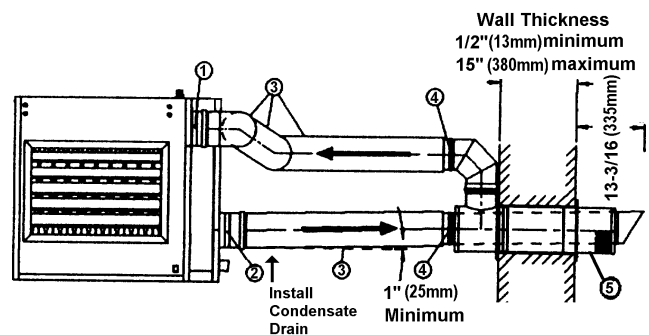


- ① Combustion Air Connection - 6" diameter
- ② Vent Connection - 6" diameter
- ③ Pipe - 4" diameter (field supplied)
- ④ Adapter (aluminum) - 4" diameter
- ⑤ Taper-type Reducer (aluminum) - 6" to 4" diameter
- ⑥ 4" Horizontal Concentric Adapter/Terminal

Figure 5B - Horizontal 6" (150mm) Vent/Combustion Air System (Option CC9) - Applies to Models SHE 225, 300, and 400



Option CC9 Installed:



- ① Combustion Air Connection - 6" diameter
- ② Vent Connection - 6" diameter
- ③ Pipe - 6" diameter (field supplied)
- ④ Adapter (aluminum) - 6" diameter
- ⑤ 6" Horizontal Concentric Adapter/Terminal

6. Condensate Drain (Refer to Paragraph 10)

Both horizontal and vertical vent pipe systems must have a condensate drain.

Installation of the condensate drain requires a tee in the vent pipe. **Before installing vent pipe**, refer to Figure 7, page 10, for placement of the tee.

Follow instructions in Paragraph 10 for condensate drain installation.

9. Venting and Combustion Air (cont'd)

7. Concentric Adapter/Terminal Kits (cont'd)

Figure 5C - Vertical 4" (100mm) Vent /Combustion Air System (Option CC10) - Applies to Models SHE 225 and 300

Components of Option CC10, P/N 164175:

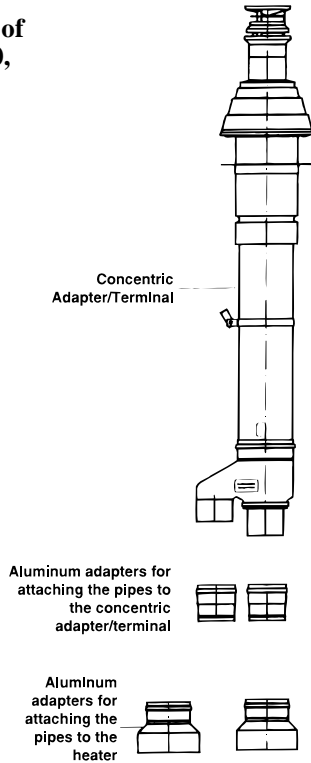
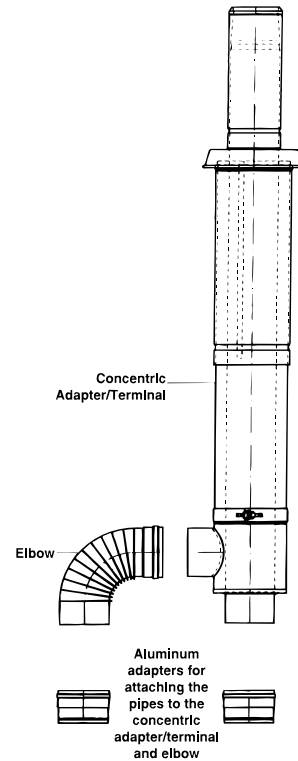


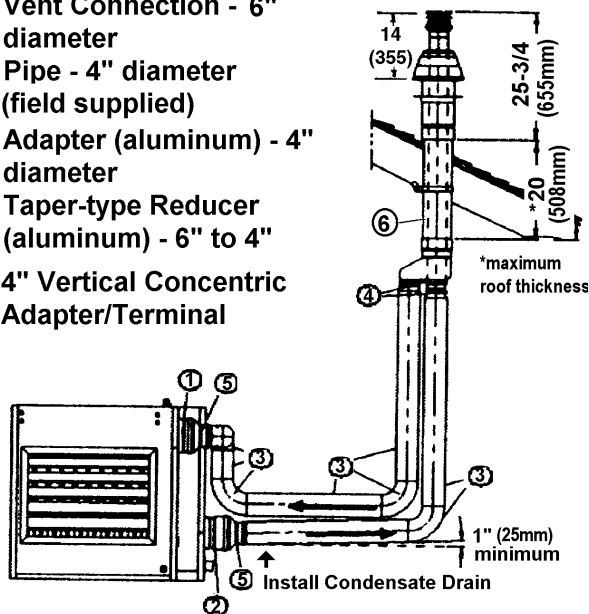
Figure 5D - Vertical 6" (150mm) Vent /Combustion Air System (Option CC11) - Applies to Models SHE 225, 300, and 400

Components of Option CC11, P/N 164177:



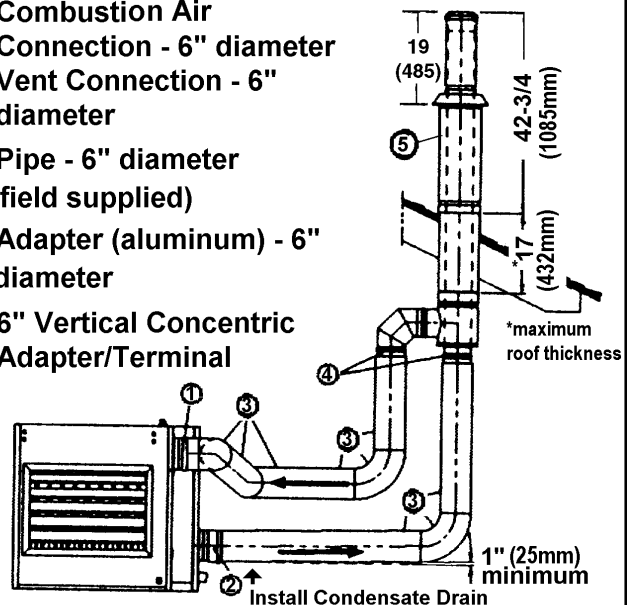
Option CC10 Installed:

- ① Combustion Air Connection - 6" diameter
- ② Vent Connection - 6" diameter
- ③ Pipe - 4" diameter (field supplied)
- ④ Adapter (aluminum) - 4" diameter
- ⑤ Taper-type Reducer (aluminum) - 6" to 4"
- ⑥ 4" Vertical Concentric Adapter/Terminal



Option CC11 Installed:

- ① Combustion Air Connection - 6" diameter
- ② Vent Connection - 6" diameter
- ③ Pipe - 6" diameter (field supplied)
- ④ Adapter (aluminum) - 6" diameter
- ⑤ 6" Vertical Concentric Adapter/Terminal



WARNING: All vent terminals must be positioned or located away from fresh air intakes, doors and windows to preclude combustion products from entering occupied space. See Hazard Levels, Page 2.

Terminal Location - Vent terminals on condensing gas appliances are prone to icing in cold conditions. In locating the vent, take into consideration the hazards of forming and dropping or melting icicles.

Vertical Vent - The fresh air intake of a vertical vent system must be six inches above the maximum anticipated snow depth.

The 4" adapter/terminal extends beyond the roof 25-3/4" with the fresh air intake approximately 11-3/4" above the roof. If using 4" pipe and the 4" concentric adapter/terminal does not provide enough height, install the 6" vertical adapter/terminal and transition from 4" to 6" using plastic pipe fittings.

The 6" adapter terminal extends beyond the roof 42-3/4" with the fresh air intake at a height of approximately 23-3/4" above the roof. If the maximum anticipated snow depth is greater than 17-3/4", do not install a vertical adapter/terminal system; install a horizontal system.

Horizontal Vent - Products of combustion can cause discoloration of some building finishes and deterioration of masonry materials. Applying a clear silicone sealant that is normally used to protect concrete driveways can protect masonry materials. If discoloration is an esthetic problem, relocate the vent or install a vertical vent.

The distance of the termination of the horizontal vent from adjacent public walkways, adjacent buildings, openable windows, and building openings must be in accordance with local codes or, in the absence of local codes, must conform with National Fuel Gas code Z223.2. Local codes supersede all provisions in these instructions and in the National Fuel Gas Code.

Structure	Minimum Clearances for Vent Termination Location (all directions unless specified)	
Forced air inlet within 10 ft (3.1m)	3 ft (0.9m) above	
Combustion air inlet of another appliance	6 ft (1.8m)	
Door, window, or gravity air inlet (any building opening)	4 ft (1.2m) horizontally	
	4 ft (1.2m) below	
	1 ft (30cm) above	
Electric meter, gas meter * and relief equipment	4 ft (1.2m) horizontally	*Do not terminate the vent directly above a gas meter or service regulator.
Gas regulator *	3 ft (0.9m)	
Adjoining building or parapet	6 ft (1.8m)	
Adjacent public walkways	7 ft (2.1m) above	
Grade (ground level)	7 ft (2.1m) above	

10. Condensate Drain

The approximate volume of condensation for drainage purposes is 1 gph (4 liter) for Size 225 and 1.5 gph (6 liter) for Sizes 300 and 400. The water condensed from the products of combustion will be acidic. The level of concentration is dependent upon the environment where the appliance is installed and may be as high as 3 PH. The condensate drainage system must be cleanable. Use plastic pipe for the condensate drain; do not use copper or copper based alloys.

The following parts are shipped with the heater:

Qty	Item	See Figure
1	Sealing Ring for Drain Connection	6, Item 2
1	Sealing Ring Clamp	6, Item 3
1	Nut	6, Item 4
1	Tubing, 3/8 I.D.	7, page 10
2	Fittings, 1/2 MPT x 3/8 tubing	7, page 10

The following parts must be field supplied:

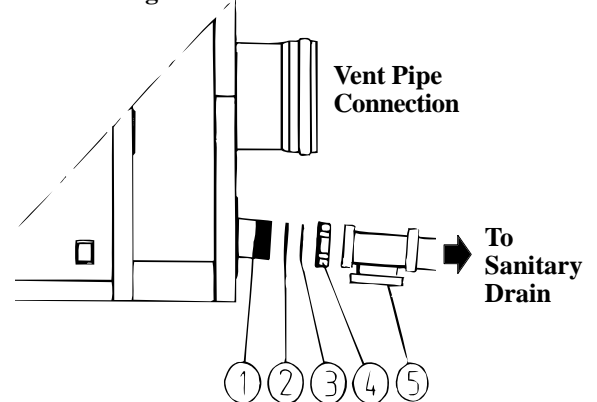
Qty	Item	See Figure	Vent Size
1	Plastic Tee, 1-1/2x1-1/2x1-1/2	6 (Item 5) & 7	4" and 6"
1	Fitting, 1-1/2 dia. x 1/2 FPT	7, page 10	4" and 6"
1	Plastic Tee, 6 x 6 x 4	7, page 10	6"
	Plastic Tee, 4 x 4 x 4	7, page 10	4"
1	4 x 1-1/2 Adapter, 1-1/2x1/2 FPT	7, page 10	4" and 6"

IMPORTANT: Condensate formed in the plastic vent pipe must not be allowed to flow back into the heater. As a condition of the product warranty, the vent pipe tee and drain MUST be installed as illustrated in Figure 7.

Heater Condensate Drain Connection

Locate the horizontal condensate drain connection; refer to the illustration in Figure 6. Install the parts listed in the sequence illustrated.

Figure 6 - Connect the Condensate Drain to the Heater Using Parts Shown



Items/Key:

- ① Threaded, 1-1/2" ID (41mm OD) plastic pipe outlet
- ② Sealing Ring
- ③ Sealing Ring Clamp
- ④ Nut
- ⑤ Field-supplied 1-1/2 x 1-1/2 x 1-1/2 /tee (See Figure 7)

Use plastic pipe to connect to a sanitary drain. **(DO NOT USE COPPER OR COPPER BASED ALLOYS FOR CONDENSATE DRAINS).**

10. Condensate Drain (cont'd)

Vent Pipe Condensate Drain Connection

Refer to Figure 7; install the parts as illustrated.

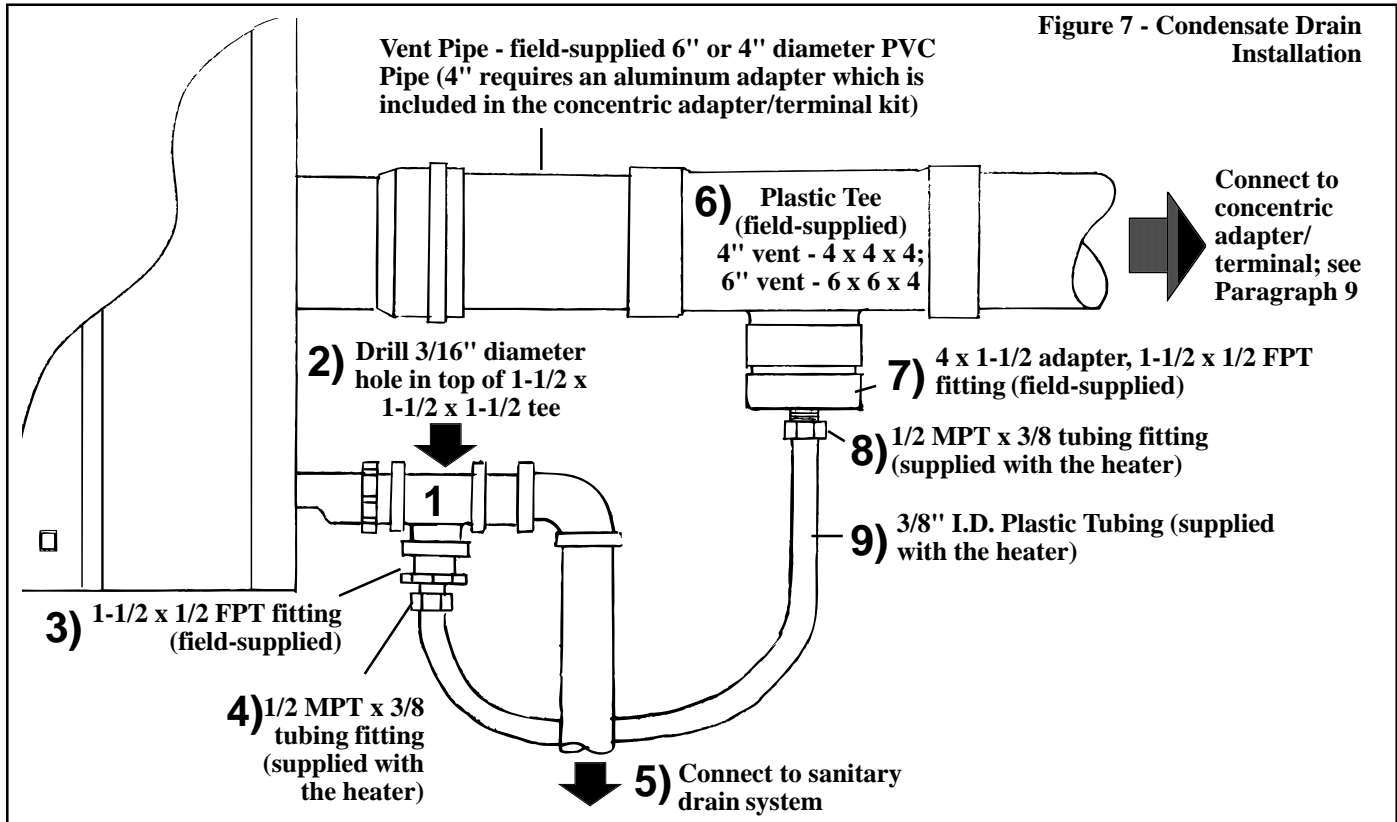


Figure 7 - Condensate Drain Installation

INSTRUCTIONS:

Condensate Drain Connection (See Figures 6 & 7):

- 1) Install field-supplied 1-1/2 x 1-1/2 x 1-1/2 tee
- 2) Drill a 3/16" diameter hole in top of tee
- 3) Attach 1-1/2 x 1/2 FPT fitting to tee
- 4) Attach 1/2 MPT x 3/8 tubing fitting to tee
- 5) Using plastic pipe, connect to sanitary pipe system

Vent Pipe Condensate Drain:

- 6) Install tee in vent pipe
- 7) Attach 4 x 1/2 FPT fitting
- 8) Attach 1/2 MPT x 3/8 tubing fitting
- 9) Attach tubing to the fitting on the vent pipe and the condensate drain as illustrated.

Before the unit is fired the condensate drain traps must be filled with water so that flue products do not exhaust into the condensate drain. Follow the illustrated instructions in Figures 8 and 9 to fill the drain trap inside the heater and the drain trap in the tubing from the vent pipe.

Figure 8 - Before firing the unit, fill the condensate drain trap inside the heater with clean water.

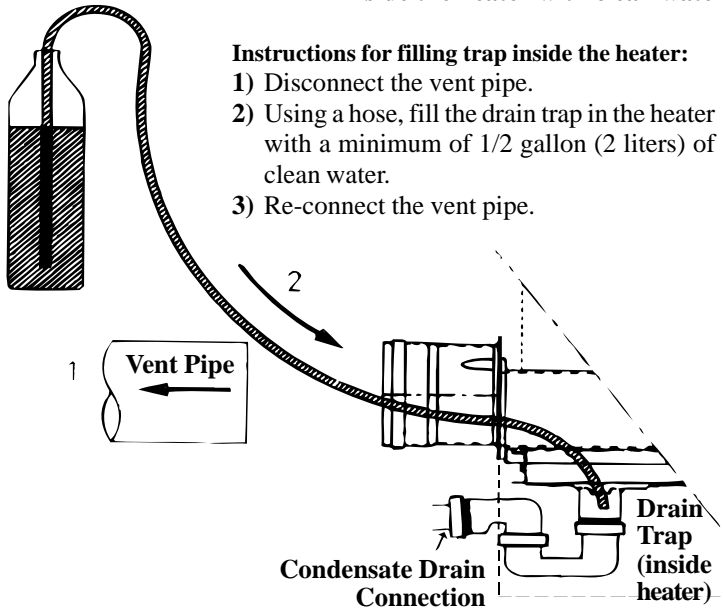
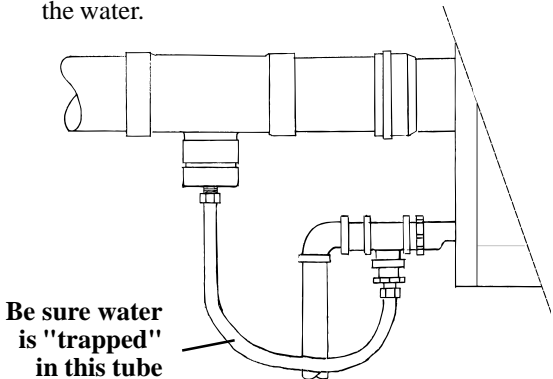


Figure 9 - Before firing the heater, fill the tubing from the vent pipe to the condensate drain with water

Instructions for filling tubing:

- 1) Disconnect the tubing from either the vent pipe or the condensate drain.
- 2) Pour water into the tube allowing it to collect in the tube.
- 3) Re-connect the tubing being careful not to drain the water.



11. Gas Piping and Pressures

WARNING: This appliance is equipped for a maximum gas supply pressure of 1/2 pound, 8 ounces, or 14 inches water column. Supply pressure higher than 1/2 pound requires installation of an additional lockup-type service regulator external to the unit.

PRESSURE TESTING SUPPLY PIPING

Test Pressures Above 1/2 PSI: Disconnect the heater and manual valve from the gas supply line which is to be tested. Cap or plug the supply line.

Test Pressures Below 1/2 PSI: Before testing, close the manual valve on the heater.

All piping must be in accordance with requirements outlined in the National Fuel Gas Code ANSI/Z223.1a (latest edition), published by the American Gas Association (See Paragraph 1). Gas supply piping installation should conform with good practice and with local codes.

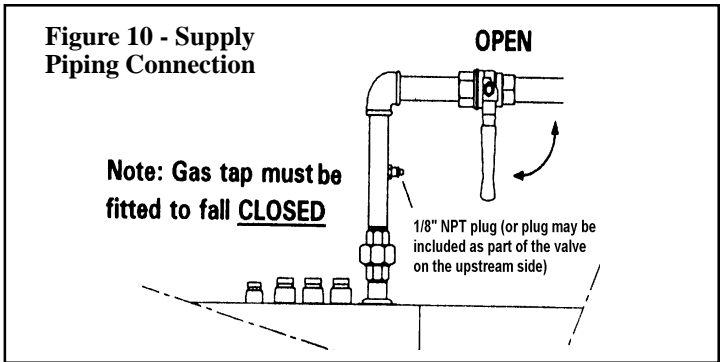
Unit heaters are orificed for operation with natural gas having a heating value of 1000 (± 50) BTUH per cubic ft or propane gas with a heating value of 2550 BTUH per cubic ft. If the gas at the installation does not meet these specifications, consult the factory for proper orificing.

Pipe joint compounds (pipe dope) shall be resistant to the action of liquefied petroleum gas or any other chemical constituents of the gas being supplied.

Install a ground joint union and manual shut-off valve upstream of the unit control system, as shown in Figure 10. The 1/8" plugged tapping provides connection for a supply line pressure test gauge. The National Fuel Gas Code requires the installation of a trap with a minimum 3" (76 mm) drip leg. Local codes may require a minimum drip leg longer than 3" (76mm), typically 6"(152mm).

Gas connection is 3/4" for all sizes. Leak-test all connections by brushing on a leak-detecting solution.

WARNING: All components of a gas supply system must be leak tested prior to placing equipment in service. NEVER TEST FOR LEAKS WITH AN OPEN FLAME. Failure to comply could result in personal injury, property damage or death.



Manifold or Orifice Pressure Settings

Measuring manifold gas pressure cannot be done until the heater is in operation. It is included in the steps of the "Check-Test-Start" procedure in Paragraph 18. The following warnings and instructions apply.

WARNING: Manifold gas pressure must never exceed 2.08" w.c. for natural gas and 9" w.c. for propane gas.

For Natural Gas: Manifold gas pressure is regulated by the combination valve to **2.08" w.c.** Inlet pressure to the valve must be a minimum of 5" w.c. or as noted on the rating plate and a maximum of 14" w.c.

For Propane Gas: Manifold gas pressure is regulated by the combination valve to **9" w.c.** Inlet pressure to the valve must be a minimum of 11" w.c. and a maximum of 14" w.c.

Before attempting to measure or adjust manifold gas pressure, the inlet (supply) pressure must be within the specified range for the gas being used both when the heater is in operation and on standby. Incorrect inlet pressure could cause excessive manifold gas pressure immediately or at some future time.

Instructions to Check Manifold Pressure:

- 1) With the manual valve positioned to prevent flow to the main burners, connect a manometer to the 1/8" pipe outlet pressure tap in the valve. NOTE: A manometer (fluid-filled gauge) is recommended rather than a spring type gauge due to the difficulty of maintaining calibration of a spring type gauge.
- 2) Open the valve and operate the heater. Measure the gas pressure to the manifold. Normally adjustments should not be necessary to the factory preset regulator.

If adjustment is necessary, set pressure to correct settings by turning the regulator screw IN (clockwise) to increase pressure. Turn regulator screw OUT (counterclockwise) to decrease pressure.

Sizing a Gas Supply Line

Capacity of Piping - Cubic Feet per Hour based on 0.3" w.c. Pressure Drop Specific Gravity for Natural Gas -- 0.6 (Natural Gas -- 1000 BTU/Cubic Ft) Specific Gravity for Propane Gas -- 1.6 (Propane Gas -- 2550 BTU/Cubic Ft)												
Length of Pipe	Diameter of Pipe											
	1/2"		3/4"		1"		1-1/4"		1-1/2"		2"	
	Natural	Propane	Natural	Propane	Natural	Propane	Natural	Propane	Natural	Propane	Natural	Propane
20'	92	56	190	116	350	214	730	445	1100	671	2100	1281
30'	73	45	152	93	285	174	590	360	890	543	1650	1007
40'	63	38	130	79	245	149	500	305	760	464	1450	885
50'	56	34	115	70	215	131	440	268	670	409	1270	775
60'	50	31	105	64	195	119	400	244	610	372	1105	674
70'	46	28	96	59	180	110	370	226	560	342	1050	641
80'	43	26	90	55	170	104	350	214	530	323	990	604
90'	40	24	84	51	160	98	320	195	490	299	930	567
100'	38	23	79	48	150	92	305	186	460	281	870	531
125'	34	21	72	44	130	79	275	168	410	250	780	476
150'	31	19	64	39	120	73	250	153	380	232	710	433
175'	28	17	59	36	110	67	225	137	350	214	650	397
200'	26	16	55	34	100	61	210	128	320	195	610	372

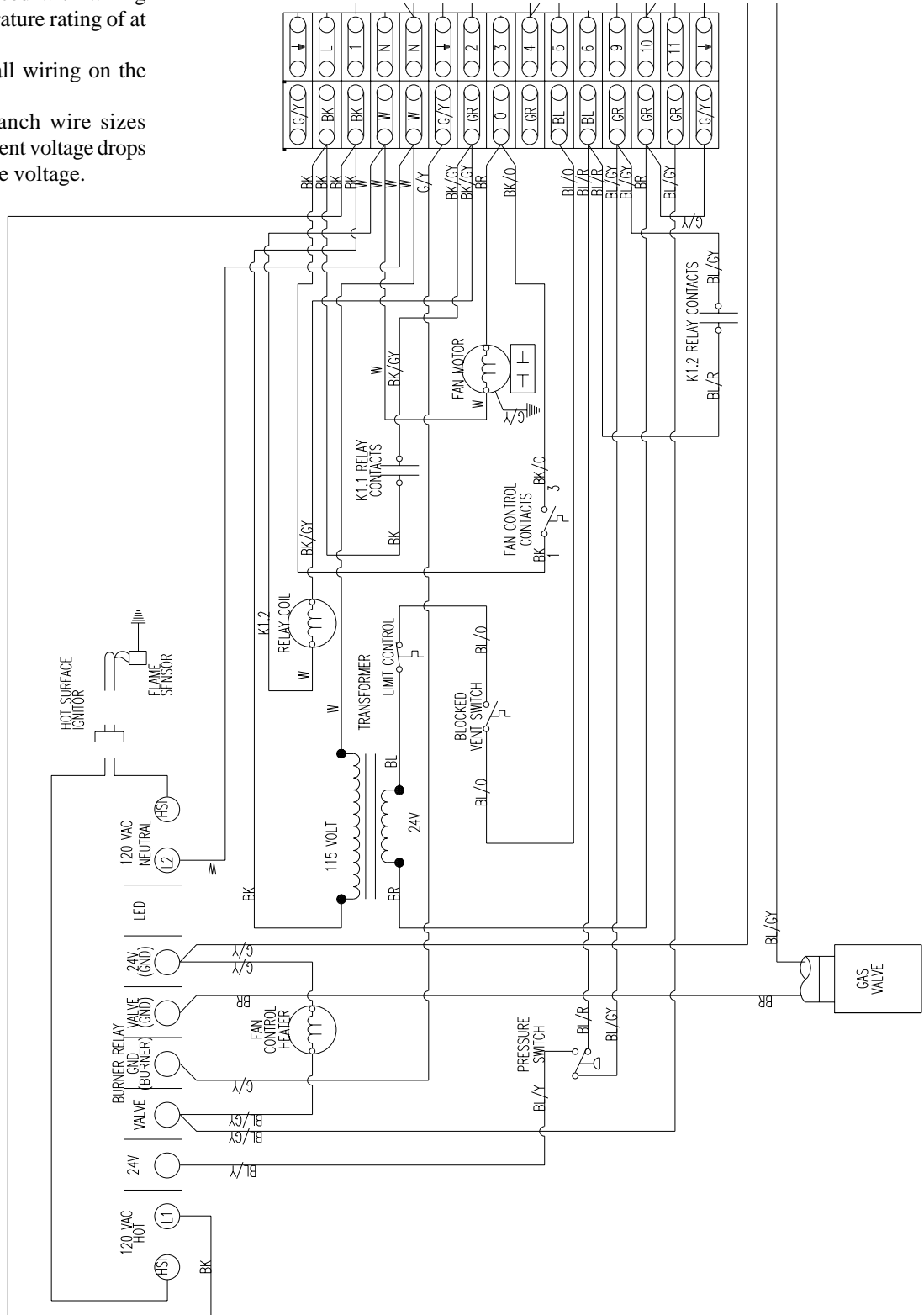
Note: When sizing supply lines, consider possibilities of future expansion and increased requirements. Refer to National Fuel Gas Code for additional information on line sizing.

12. Electrical

Figure 11 - Wiring Diagram

NOTES:

1. Following controls are field installed options: thermostat and summer/winter switch
2. Dotted wiring: installed by others
3. **CAUTION:** If any of the original wiring as supplied with the appliance must be replaced, it must be replaced with wiring material having a temperature rating of at least 105°C
4. Use AWG 18 wire for all wiring on the unit.
5. Line and fan motor branch wire sizes should be of a size to prevent voltage drops beyond 5% of supply line voltage.



CAUTION: Use the disconnect switch to shutdown the heater only in an emergency. Using the disconnect switch to shut down the burner will turn off the fan prematurely and may damage the heat exchanger.

Wiring and Connections

All electrical wiring and connections, including electrical grounding MUST be made in accordance with the National Electric Code ANSI/NFPA No. 70 (latest edition). In addition, the installer should be aware of any local ordinances or gas company requirements.

Check the rating plate on the heater for the supply voltage and current requirements. A separate line voltage supply with fused disconnect switch should be run directly from the main electrical panel to the heater. All external wiring must be within approved conduit and have a minimum temperature rise of 60°C (140°F). Conduit from the disconnect switch must be run so as not to interfere with the service panels of the heater.

The electrical supply and control wiring enter at the top of the heater. See Figure 1, page 3.

Consult the wiring diagram supplied with your heater.

CAUTION: If any of the original wire as supplied with the appliance must be replaced, it must be replaced with wiring material having a temperature rating of at least 105°C, except for limit control and sensor lead wires which must be 150°C. See Hazard Levels, page 2.

13. Controls

External controls are required to provide timed heat cycles, room comfort temperature level, frost protection, and/or override air circulation. Controls are not included with the heater. Select controls required for the installation. Install controls according to the manufacturer's instructions.

NOTE: The heater is shipped with the control circuit bridged. The heater will operate continuously unless the jumper is removed and the thermostat wires attached.

Make sure that the heat anticipator setting on the thermostat is in accordance with the amperage value noted on the wiring diagram of your heater.

Field Control Wiring

Total Wire Length	Distance from Unit to Control	Minimum Recommended Wire Gauge
150 ft	75 ft	18
250 ft	125 ft	16
350 ft	175 ft	14

14. Fan Motor

The fan motor is equipped with thermal overload protection of the automatic reset type. Should the motor refuse to run, it may be because of improper current characteristics. Make certain that the correct voltage is supplied to the motor.

15. Combustion Air Proving Switch

The combustion air proving switch is a differential pressure switch that functions to ensure that proper combustion air flow is available. The switch is designed to close when a decreasing pressure is sensed at the flue gas pressure point.

Switch Points:

Size	225	300	400
ON	.64" w.c.	.36" w.c.	.40" w.c.
OFF	.61" w.c.	.33" w.c.	.37" w.c.

If a restriction or excessive flue length or turns cause the sensing pressure to become less than the switch setpoint, the pressure switch will function to shut off the main burners. The main burners will remain off until the system has cooled and/or the flue system resistance is reduced.

DANGER: Safe operation of this unit requires proper venting flow. NEVER bypass combustion air proving switch or attempt to operate the unit without the venter running and the proper flow in the vent system. Hazardous conditions could result. See Hazard Levels, page 2.

16. Gas Valve

The main operating gas valve is powered by the 24-volt control circuit through the thermostat and safety controls. The main control valve is of the diaphragm type providing regulated gas flow preset at the factory.

WARNING: The operating valve is the prime safety shutoff. All gas supply lines must be free of dirt or scale before connecting the unit to ensure positive closure. See Hazard Levels, page 2.

17. Ignition System

This heater is equipped with a direct burner ignition system. The hot surface ignitor will glow for approximately 40 seconds, after which the gas valve will open, the burner will light, and the flame sensor will verify the presence of flame. Flame failure protection depends on the ability of a flame to pass an electrical current between the ignitor and the grounded burner assembly. If the burner does not light, the module initiates a purge cycle followed by warm-up and a second trial for ignition. After three trials, the module will lockout requiring manual reset of the control circuit.

18. Check Installation, Start-Up, and Operation

Check the installation prior to start-up:

- Check suspension. Unit must be secure and level.
- Check clearances from combustibles. Requirements are shown in Paragraph 7.
- Check the vent/combustion air system to be sure that it is installed according to the instructions in Paragraph 9.
- Verify that the condensate drains are installed and filled with water according to the instructions in Paragraph 10.
- Check piping for leaks and proper gas line pressure. Bleed gas lines of trapped air. See Paragraph 11.
- Check electrical wiring. Check for proper grounding. Be sure all wire gauges are as recommended. A disconnect switch should be used. Verify that fusing or circuit breakers are adequate for the load.
- Be sure all panels are in place and secure.

CAUTION: For the heater to operate properly, all access panels must be secured.

Start-Up

Lighting and Operation

1. Set thermostat at lowest setting.
2. Turn on main manual gas valve.
3. Turn on the power to the unit.
4. Set the thermostat to desired setting.
5. Thermostat calls for heat, energizing the venter motor.
6. Venter pressure switch closes. After 30 second prepurge, the hot surface ignition system activates. The hot surface ignitor glows for approximately 40 seconds, the gas valve opens, and the burner lights.
7. Burner flame is sensed. If no flame is sensed by the end of the first trial period, the gas valve closes and the module initiates a 30-second purge cycle followed by warm-up and a second trial for ignition. If no flame is established, the purge, warm-up and trials for ignition cycle are repeated a third time. If flame is then still not established, lockout occurs. Manual interruption of the control circuit is required to re-activate the ignitor system.
8. At the same time that the ignition circuit and the gas valve circuit are energized, electrical power is supplied to an anticipator within the fan control. After about two minutes, the fan motor is energized.
9. When the set temperature or the heating time period has been reached, electrical power to the ignition controller will be switched off and the burner will extinguish. The fan will continue to run until the heat exchanger is cooled to a safe level.

Operation Safety Controls

- In the event that the combustion air volume falls below a safe level, the burner will be extinguished. After adequate combustion air volume is sensed, a re-start cycle will commence.
- If the burner flame is extinguished for any reason during a run cycle, an automatic attempt for re-ignition will occur. After the third trial if the burner does not relight, safety shut-down and lockout will occur. Manual interruption of the circuit is necessary to re-start the heater. Turn the thermostat below room temperature for a minimum of 45 seconds.
- In the event of overheating for any reason, the limit controls will activate to turn off the heater. The first limit control (LC1) is located in the control compartment and is an automatically reset limit. When the unit cools, the lighting sequence re-starts automatically. The second limit control (LC4) which is located near the venter discharge, operates at a higher temperature setting to turn off the burner. It is designed to protect the PVC vent system. The high limit is a manual reset type. Find and correct the cause for the high limit activating before resetting. A cooling time of one minute is required.

Check installation after start-up:

- With the unit in operation, measure manifold gas pressure. **Manifold pressure for natural gas should be 2.08" w.c. or 9" w.c. for propane gas.** Follow instructions in Paragraph 11.
- Turn the unit off and on (using the thermostat), pausing two minutes between each cycle. Observe for smooth ignition.
- Place the "Owner's Envelope" containing the Limited Warranty, this booklet, and any control or optional information in an accessible location near the heater. Follow the instructions on the envelope.

Turn off the heater:

For a short period -- Turn the room thermostat to its lowest setting. To relight, reset the thermostat.

For a prolonged period -

- a) Turn room thermostat to low setting.
- b) Turn gas supply off.
- c) After the fan has stopped, turn off electrical power.
- d) To relight, follow the lighting instructions.

The manual gas supply valve should only be turned off in an emergency, for servicing, or prolonged periods of shutdown.

DANGER: The gas burner in this gas-fired equipment is designed and equipped to provide safe and economically controlled complete combustion. However, if the installation does not permit the burner to receive the proper supply of combustion air, complete combustion may not occur. The result is incomplete combustion which produces carbon monoxide, a poisonous gas that can cause death. Safe operation of separated-combustion, indirect-fired gas burning equipment requires a sealed, properly operating vent system which vents all flue products to the outside atmosphere. FAILURE TO PROVIDE PROPER VENTING WILL RESULT IN A HEALTH HAZARD WHICH COULD CAUSE SERIOUS PERSONAL INJURY OR DEATH.

Install one of the vent systems illustrated in Paragraph 9 using the components specified. Always comply with the combustion air requirements in the installation codes and instructions. Combustion air at the burner should be regulated only by manufacturer-provided equipment. NEVER RESTRICT OR OTHERWISE ALTER THE SUPPLY OF COMBUSTION AIR TO ANY HEATER. CHECK THE VENT/COMBUSTION SYSTEM FOR SOUNDNESS AND FUNCTION; MAINTAIN IT IN PROPER OPERATING CONDITION.

SERVICE AND MAINTENANCE

WARNING: Should overheating occur, or the gas supply fail to shut off, shut off the manual gas valve to the appliance before shutting off the electrical supply.

WARNING: Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and replace any gas control which has been under water.

WARNING: If you turn off the power supply, turn off the gas. See Hazard Levels, page 2.

19. Maintenance Schedule

This unit will operate with a minimum of maintenance. To ensure long life and satisfactory performance, a heater that is operated under normal conditions should be inspected and cleaned at the start of each heating season. If the heater is operating in an area where an unusual amount of dust or soot or other impurities are present in the air, more frequent maintenance is recommended.

When any service is completed, be careful to reassemble correctly to ensure that no unsafe conditions are created. Follow the Check Test/Startup/Operation procedures in Paragraph 18. When re-lighting, follow the lighting instructions on the heater.

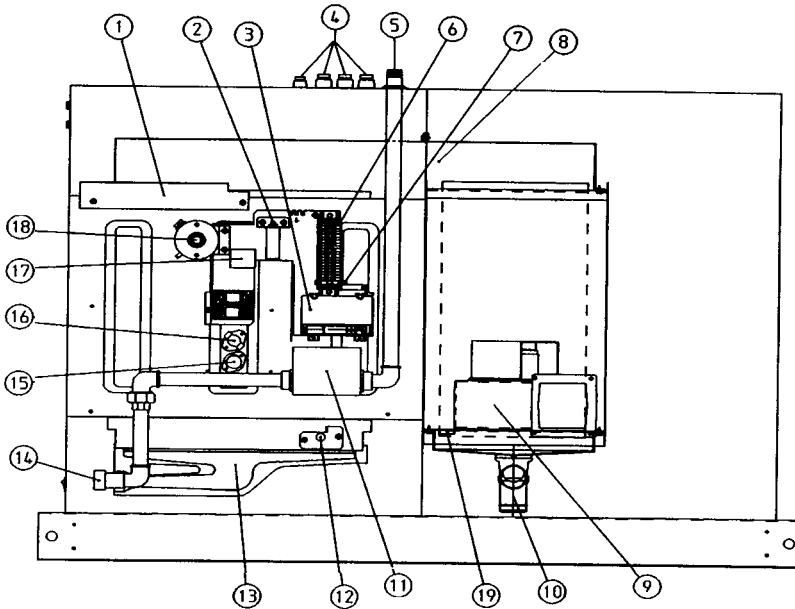
The following procedures should be carried out at least annually (Follow instructions in Paragraphs 20-27):

- Check the integrity of the suspension or mounting system.
- Check the vent/combustion air system for soundness. Replace any parts that do not appear sound.
- Clean the fan blade, fan guard, and motor. (Do not lubricate the fan motor.)
- Inspect the hot surface ignitor.
- Check the burners and remove scale, dust, or lint accumulation.
- Inspect the primary heat exchanger and clean as necessary, both internally and externally.
- Inspect the secondary heat exchanger for excessive amounts of oxide debris.
- Clean the condensate drain system.
- Clean the power venter.
- Check the wiring for any damaged wire. Replace damaged wiring. See Paragraph 12 for replacement wiring requirements.

NOTE: Use only factory-authorized replacement parts.

SERVICE AND MAINTENANCE (cont'd)

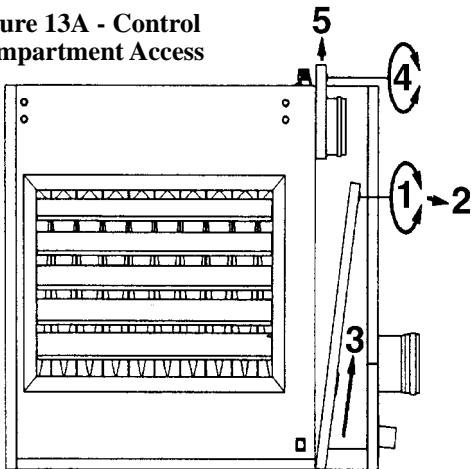
Figure 12 - Control Locations



Key:

1. Air baffle front side
2. Capacitor for power venter motor
3. Ignition controller (electronic flame relay)
4. Electrical connections
5. Gas connection
6. Electrical terminals
7. Appliance fuse
8. Flue gas pressure point
9. Power venter assembly
10. Condensate discharge trap
11. Gas valve
12. Hot surface ignitor/flame sensor
13. Burner rack assembly
14. Manifold pressure test point
15. Fan control (24V)
16. Limit control (LC1)
17. Transformer 115V/24V
18. Combustion air pressure switch
19. High temperature limit control (LC4) for PVC protection - manual reset

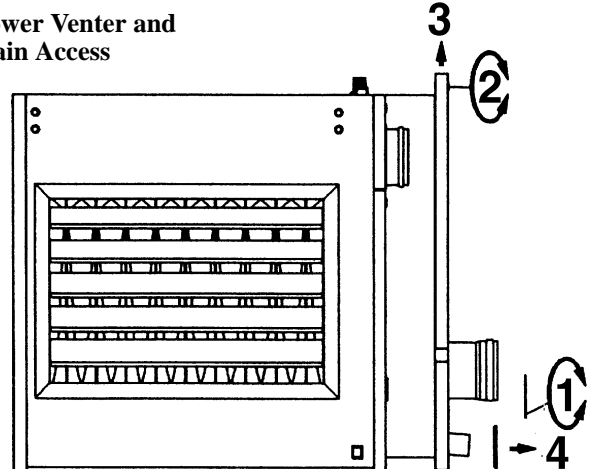
Figure 13A - Control Compartment Access



Instructions for removing access panel(s) to service burners, primary heat exchanger and controls.

1. Undo latch on large access panel.
2. Pull top of panel.
3. Lift panel to clear bottom retainer and remove.
4. Undo upper panel latch.
5. Remove upper access panel.

Figure 13B - Power Venter and Condensate Drain Access



Instructions for removing panels to service power venter and condensate drain.

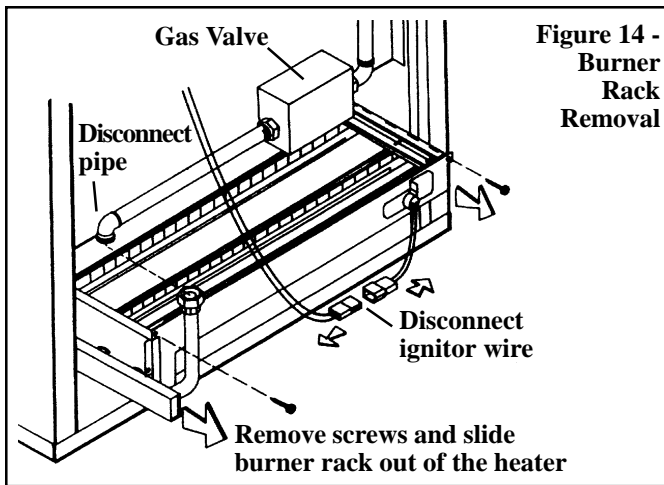
1. Remove the trim plate.
2. Undo latch on large access panel.
3. Remove large panel.
4. Remove drain pipe panel seal, being careful not to damage gasket.
5. Remove lower access panel.

CAUTION: For the heater to operate properly, all access panels must be secured.

20. Burner Removal

Instructions for Burner Removal (See Figures 13A and 14)

1. Shut the gas supply off ahead of the combination gas valve.
2. Turn off electric supply (after fan has stopped).
3. Open service access panel (Figure 13A).
4. Disconnect ignitor wire.
5. Disconnect pipe fittings between the gas valve and the burner.
6. Remove the screws holding the burner tray. Pull burner assembly forward; the burner slides on the side rails.



**Figure 14 -
Burner
Rack
Removal**

Clean the Burner

CAUTION: Wear eye protection.

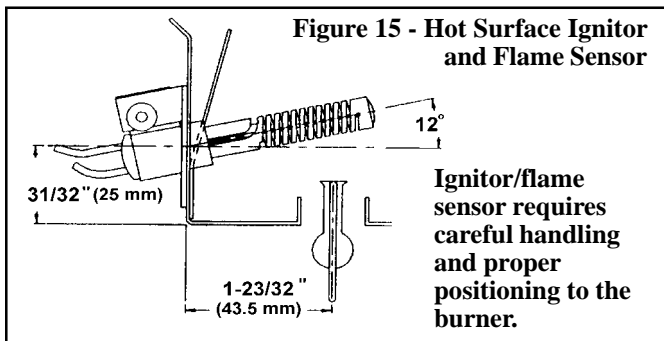
Clean main burners using air pressure. Use an air nozzle to blow out scale and dust accumulation from the burner ports. Alternately blow through the burner ports and the venturi. Use a fine wire to dislodge any stubborn particles. Do not use anything that might change the port size.

Clean the burner rack carryover systems with air pressure.

21. Ignition System

To access the ignition system, remove the large access panel as illustrated in Figure 13A.

Ignitor - Refer to Figure 12 and locate the ignitor (Item 12) on the side of the burner rack. Disconnect the ignitor wire (Figure 14); remove the screw and the ignitor (handle the ignitor very carefully). Inspect and replace if any deterioration is present.



Flame Sensor - After glowing for approximately 40 seconds to light the burner, the ignitor then functions as the flame sensor. Burner flame must be present for an electrical current to pass between the ignitor and the grounded burner assembly.

Ignition Controller (Figure 12, Item 3) - The ignition controller (electronic flame relay) monitors the ignition and sensor processes. Do not attempt to disassemble the ignition controller. Each heating season check the lead wires for insulation deterioration and good connections.

22. Primary Heat Exchanger

With the burner assembly removed (Paragraph 20), clean the primary heat exchanger. An air hose; an 18-24" long, 1/2" diameter furnace brush (or heavy wire with steel wool securely attached); a flashlight; and a mirror are needed.

CAUTION: Wear eye protection.

Clean the outer surfaces. Use a brush and an air hose to remove accumulated dust and soot.

Brush inside each heat exchanger tube until all foreign material is removed. Use a flashlight and a mirror to examine the inside of the tubes.

23. Fan

Remove dirt and grease from the motor. Remove dirt and grease from the fan guard and blades. Use care when cleaning the fan blades to prevent causing misalignment or imbalance. Check that the fan blade hub is secure to the shaft.

24. Operating Gas Valve

The gas valve requires no field maintenance except careful removal of external dirt accumulation and checking of wiring connections. Instructions for testing pressure settings are in Paragraph 11.

CAUTION: The operating valve is the primary safety shutoff. All gas supply lines must be free of dirt or scale before connecting to the unit to ensure positive closure. See Hazard Levels, page 2.

25. Fan and Limit Controls

See Figure 12 (Items 15, 16 and 19) for control locations. If it is determined that a control needs replacing, use only the factory-authorized replacement part that is designed for the heater.

26. Combustion Air Pressure Switch

See Figure 12, page 15, for switch location (Item 18). If it is determined that the pressure switch needs replacing, use only the factory-authorized replacement part that is designed for this heater.

27. Venter & Condensate Drain System

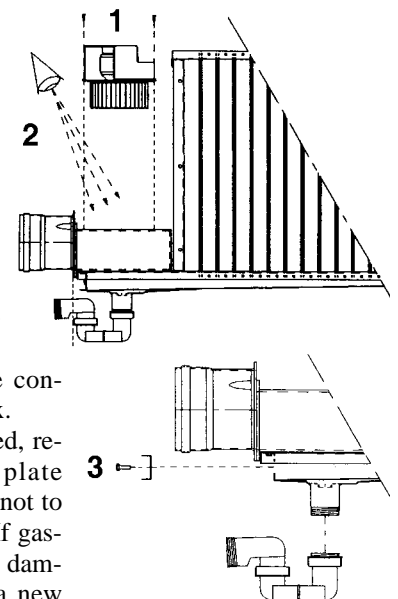
Follow the instructions in Figures 13B and 16 to access the power venter and the condensate drain.

Remove the four screws that secure the venter housing. Remove any dirt from the power venter wheel and fan being careful not to damage the fan blades. Check that the fan and wheel are secure and rotate freely.

Remove dirt and grease from the motor. Do not lubricate the power venter motor.

Check the condensate drain system. If cleaning is needed, remove the inspection plate and trap. Remove any oxide debris from the collector box, the trap, and the drainage system. Replace all parts and flush with a minimum of 1/2 gallon (2 liters) of clean water.

**Figure 16 -
Access to the
Power Venter
and Condensate
Drain (Refer to
Figure 13B, page
15, for outer
panel removal.)**



Instructions

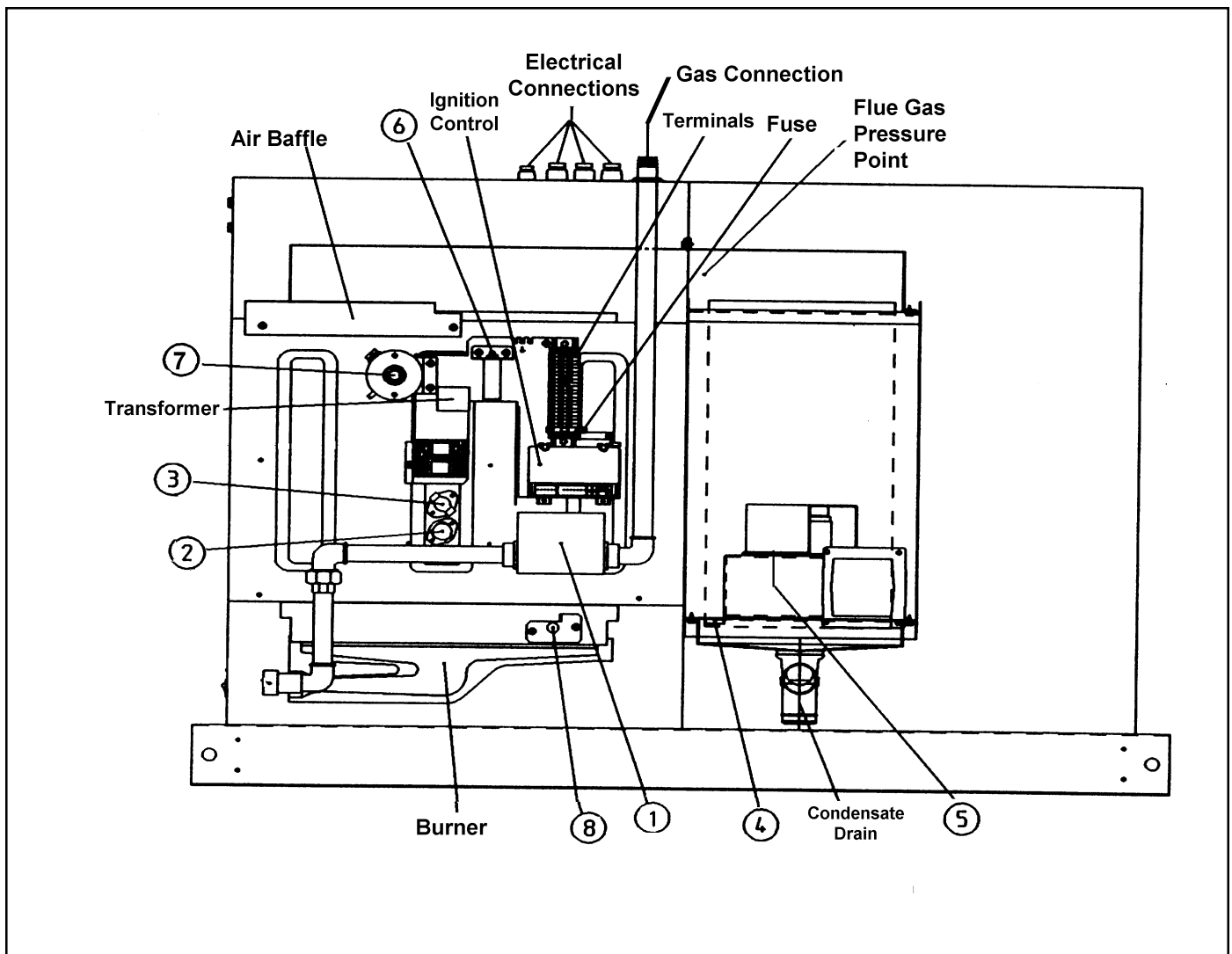
1. Remove power venter; clean as needed.
2. Visually inspect the condensate collector box.
3. If cleaning is required, remove inspection plate cover, being careful not to damage the gasket. If gasket is deteriorated or damaged, replace with a new factory-authorized replacement gasket.

28. Troubleshooting

PROBLEM	PROBABLE CAUSE	REMEDY
Burner does not ignite	<ol style="list-style-type: none"> 1. Thermostat set too low or time switch not correctly set (no power to Terminals 10 and 5) 2. Air sensing tube blocked. 3. Faulty combustion air pressure switch 4. Flue too long or blocked. 5. Power venter not operating. 6. High water level in condensation collector box. 7. Ignition controller in lockout. 8. Faulty limit control (no power to Terminals 10 and 5). 9. High limit control in lockout (no power to Terminal 5 and 10) 	<ol style="list-style-type: none"> 1. Reset control. 2. Unblock or replace tube. 3. Replace switch. 4. Shorten vent run or remove blockage. 5. Check and remove any blockage. Repair or replace as needed. 6. Clean condensation drain system. 7. See below. Replace if needed. 8. Replace control. 9. Correct reason for overheating. Reset limit.
Ignition controller in lockout; doesn't respond to reset	<ol style="list-style-type: none"> 1. Air in gas line 2. Low gas pressure 3. Faulty hot surface igniter 4. Faulty combustion air pressure switch 5. Gas valve does not open; no power to Terminals 10 and 11. 6. Insufficient current for flame sensing. 7. Incorrect wiring. 	<ol style="list-style-type: none"> 1. Bleed gas line. 2. Correct supply pressure. 3. Replace. 4. Replace switch. 5. Replace valve. 6. Replace ignition controller 7. Check wiring against diagram and correct.
Power venter does not start	<ol style="list-style-type: none"> 1. Faulty motor or capacitor. 2. Faulty ignition controller. 3. Faulty pressure switch. 	<ol style="list-style-type: none"> 1. Replace. 2. Replace. 3. Replace.
Combustion air pressure switch turns burner off	<ol style="list-style-type: none"> 1. Incorrect pressure settings. 2. No differential pressure in flue system 3. Faulty power venter or capacitor. 	<ol style="list-style-type: none"> 1. Correct settings; see Paragraph 13. 2. Check flue and air inlet. 3. Replace defective parts.
Heater does not provide sufficient warm air	<ol style="list-style-type: none"> 1. Low supply gas pressure. 2. Low burner gas pressure. 3. Limit control cycling. 	<ol style="list-style-type: none"> 1. Correct supply gas pressure. 2. Check manifold pressure; see Paragraph 11. 3. See below.
Limit control (automatic reset) switches burner off	<ol style="list-style-type: none"> 1. Incorrect control temperature setting. 2. Insufficient air flow. 3. Burner overload. 4. Faulty fan control. 5. Ambient temperature too high 6. Louvers closed (beyond stops) 7. Fan motor overload 	<ol style="list-style-type: none"> 1. Correct setting is 124°F(51°C). Replace control. 2. Remove any obstructions. 3. Check supply and burner gas pressure. 4. Replace fan control. 5. Maximum temperature for proper operation is 86°F(30°C). 6. Adjust louvers. 7. Check amp draw; replace motor if needed.
High temperature limit control (manually reset) switches burner off	<ol style="list-style-type: none"> 1. Incorrect control temperature setting. 3. Ambient temperature too high. 4. Faulty limit control. 5. Fan switches off with burner 6. Faulty fan control 7. Faulty fan motor 	<ol style="list-style-type: none"> 1. Correct setting is 205°F(96°C). Replace control. 3. Maximum temperature for proper operation is 86°F(30°C). 4. Replace limit control. 5. Check fan and limit control wiring. 6. Replace fan control. 7. Replace motor.
Fan does not start	<ol style="list-style-type: none"> 1. No power to Terminals L and 4 2. Faulty fan control 3. Faulty motor or capacitor. 4. Overload in motor switching. 	<ol style="list-style-type: none"> 1. Check wiring and correct. 2. Replace fan control. 3. Replace part(s) as needed. 4. Replace motor.
Fan starts and stops intermittently (burner on)	<ol style="list-style-type: none"> 1. Faulty fan control 2. Overload in motor switching. 3. Ambient temperature too low. 4. Loose wiring connection. 	<ol style="list-style-type: none"> 1. Replace fan control. 2. Replace motor. 3. Minimum ambient temperature is 40°F (4°C) - (will correct as space temperature rises). 4. Check terminals.

29. Replacement Parts

Code	Description	225	300	400
1	Gas Valve, Honeywell VR8305M (EURO #30 60781 24V)	164174	164174	164174
2	Fan Control, TOD 29T12 (24 volt)	164167 02 26010 09 115	164168 02 26010 12 115	164169 02 26010 16 115
3	Limit Control (automatic), TOD 60T11 (EURO # 03 24970)	164172	164172	164172
4	High Limit Control (manual reset), TOD 16T24 (EURO #03 25510)	164173	164173	164173
5	Power Venter Motor, 115V, 60Hz (EURO #01 25867 01 115)	164166	164166	164166
6	Capacitor for Venter Motor, 8mF (EURO 01 25603 08 115)	164165	164165	164165
7	Combustion Air Pressure Switch, HUBA 604.9 (EURO # 30 60615)	164170	164170	164170
8	Hot Surface Ignitor/Flame Sensor, Carborundum (EURO # 36 25213)	164171	164171	164171
	Replacement Hot Surface Controller, Honeywell #S890G-1003-2	173319	173319	173319
9	4" Horizontal Concentric Adapter/Terminal Kit (Same as Option CC8) (EURO 60 80805 100)	N/A	164176	164176
10	6" Horizontal Concentric Adapter/Terminal Kit (Same as Option CC9) (EURO 60 80805 150)	164178	164178	164178
11	4" Vertical Concentric Adapter/Terminal Kit (Same as Option CC10) (EURO 60 80805 100)	N/A	164175	164175
12	6" Vertical Concentric Adapter/Terminal Kit (Same as Option CC11) (EURO 60 80805 150)	164177	164177	164177
13	Gas Conversion Kit, Natural to Propane	165168	165168	165168
14	Gas Conversion Kit, Propane to Natural	165169	165169	165169



FOR SERVICE OR REPAIR, FOLLOW THESE STEPS IN ORDER:

FIRST: Contact the Installer

Name _____
Address _____

Phone _____

SECOND: Contact the nearest distributor (See telephone yellow pages.)

THIRD: Contact REZNOR®/ Thomas & Betts Corporation
150 McKinley Avenue
Mercer, PA 16137
Phone: (724) 662-4400

Model No. _____
Unit Serial No. _____
Date of Installation _____

Thomas & Betts