

## VENTING OF INDIRECT GAS FIRED AND OIL FIRED HEATING APPLIANCES

The single most important factor in the installation and use of an indirect gas fired appliance is proper venting of the flue products. The gases that are generated during the burning cycle can be dangerous if they are released into a space occupied by humans or animals. One of two things may occur under these conditions:

1. The oxygen in the space may be displaced - or
2. Poisonous gas by-products may be accumulated.

Another by-product of combustion is moisture (water vapor in the flue gases) which can be detrimental, if not handled properly. When chilled, these vapors will condense, resulting in acids that can attack metals in the building structure or equipment within the building.

Therefore it is very important that these combustion gases be completely evacuated from the building. The following text will deal with the different vent systems available on Reznor indirect fired products and how each is designed for efficient disposal of these harmful gases and vapors. It should be noted that each type of unit has been certified by approval agencies with specific venting requirements. There should be absolutely no deviation from the approved methods described unless required by accepted building code.

The following data is intended to provide accurate design information for most installations. Because of the complexities of some vent systems, it is recommended that the vent designer (installer) always refer to the installation manual for more detailed information. In addition, all vent systems should conform to building codes and the National Fuel Gas Code.

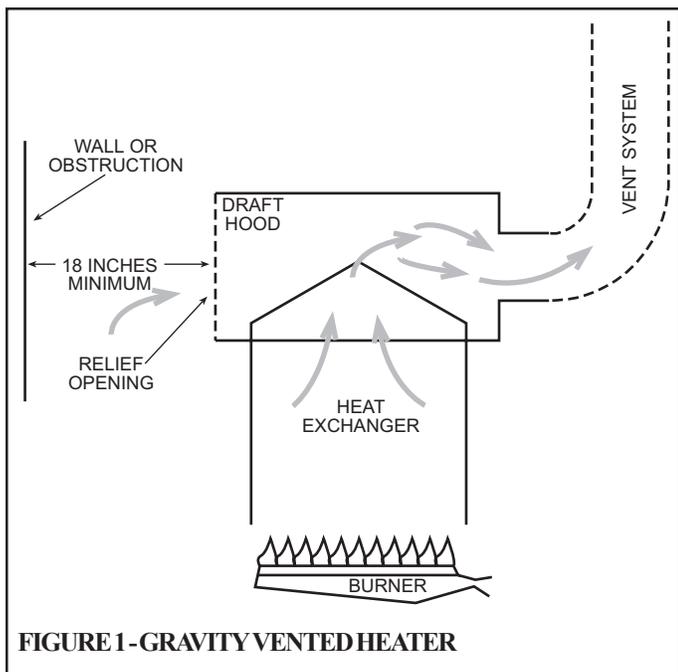
## INDOOR GRAVITY VENTED UNIT HEATERS AND PACKAGED SYSTEMS

Indoor gravity vented appliances are equipped with a built-in apparatus called a draft hood (see Figure 1).

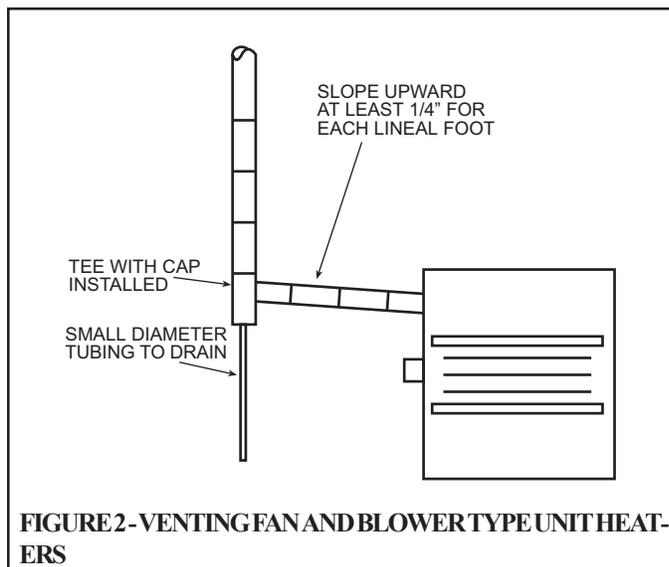
When equipped with properly designed vent, these draft hoods decouple the heat exchanger for venting system and:

1. Provide optimum efficiency of the appliance during varying flue stack conditions caused by changed wind velocities.
2. Prevent down drafts (wind forcing down the vent stack) from disturbing the flame during combustion cycles.
3. Protect the standing pilot from nuisance outages often caused by changing wind pressures.

Additionally, the draft hood provides a means of attaching the proper sized vent pipe. A collar is supplied that is designed to accept the correct flue pipe size.



**FIGURE 1- GRAVITY VENTED HEATER**



**FIGURE 2- VENTING FAN AND BLOWER TYPE UNIT HEATERS**

### INDOOR GRAVITY VENTED UNIT HEATERS AND PACKAGED SYSTEMS (cont'd)

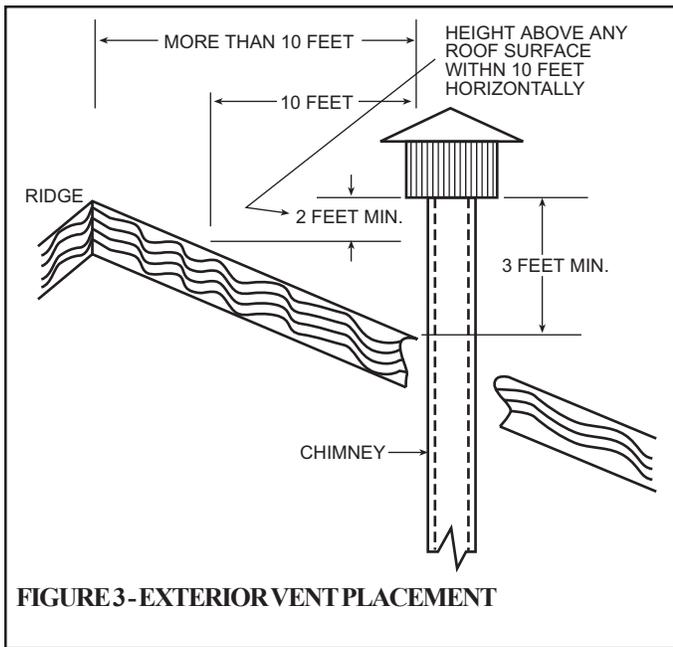
A few basic rules must be followed when designing a flue system for indoor gravity vented appliances.

1. Never use flue pipe that is smaller than the flue discharge opening of the unit.
2. Never extend a horizontal run of flue pipe beyond the length that is given in Tables 1 and 2.
3. Always slope horizontal runs of the flue pipe upward from the appliance 1/4" per lineal foot - a horizontal run of 10 feet must be raised 2-1/2" at the end farthest from the appliance.
4. Avoid using flue pipe that is larger than the manufacturer has specified. This practice can increase potential for harmful condensation within the flue pipe.
5. Flue terminals should be at least 3 feet above the highest point where it passes through the roof of a building and at least 2 feet higher than any portion of a building within a horizontal distance of 10 feet (see Figure 3).
6. Vertical runs of flue pipe should be no less than 5 feet high, measured from the top of the highest portion of the draft hood collar. Most installation will require more than this dimension to satisfy #5 above.
7. When gas vents are directed into masonry chimneys, such chimneys must have fire clay, tile flue liners, or other approved liner material, that will resist corrosion, cracking or softening.
8. Always provide a minimum clearance of 18 inches between the draft hood relief opening (see Figure 1) and any obstruction.
9. Do not allow the relief opening to be exposed to wind drafts coming from open doorways or from other air moving apparatus.

10. Type B double wall vent is recommended instead of a single wall vent.
11. When using single wall pipe, a minimum of 24 gauge, galvanized steel must be used.
12. Do not rely on the flue connection of the heater to support either horizontal or vertical runs of vent pipe. All vents must be supported with noncombustible materials such as steel chains or straps.
13. Never connect gravity vented flues into any portion of mechanical draft vent systems that normally operate under positive pressure.
14. When more than one gravity vented gas appliance is connected to a common flue, the cross section area of the final flue must equal the area of the largest vent PLUS 50% of the area of each additional vent.

**TABLE 1: MAXIMUM HORIZONTAL RUN FOR DOUBLE-WALL TYPE B CONNECTOR AND DOUBLE-WALL TYPE B VENT**

VERTICAL HEIGHT OF VENT	MODELS F and B SIZES (Vent Diameter in Inches)						
	25/50 4"	75 5"	100 6"	130 7"	165/200 8"	250/300 10"	400 12"
6 Feet	2 Feet	6 Feet	6 Feet	6 Feet	6 Feet	6 Feet	6 Feet
8 Feet	6 Feet	8 Feet	8 Feet	16 Feet	16 Feet	16 Feet	16 Feet
10 Feet	8 Feet	10 Feet	16 Feet	20 Feet	20 Feet	20 Feet	20 Feet
15 Feet	12 Feet	16 Feet	16 Feet	30 Feet	30 Feet	30 Feet	30 Feet
20 Feet	16 Feet	20 Feet	30 Feet	30 Feet	30 Feet	30 Feet	30 Feet
30 Feet	18 Feet	20 Feet	40 Feet	40 Feet	40 Feet	40 Feet	40 Feet



**FIGURE 3- EXTERIOR VENT PLACEMENT**

## ADD ON REZTOR POWER VENTER - USED ON GRAVITY VENTED UNIT HEATERS, PACKAGED SYSTEMS AND DUCT FURNACES

There may be occasions when a gravity vent flue system is difficult to design due to the location of the unit or the construction of the building in which the unit is installed. Such adverse conditions usually occur when the gas appliance is being installed as a replacement for dissimilar systems or where it is being added to supplement an existing heating system. Negative pressures within the building may also create a need for an add-on mechanical exhauster. The Reznor venter can be used to circumvent such venting problems. By using the proper flue adapter, these venters may be attached to the discharge of the unit or package and then wired to operate in connection with the safety devices of the appliance. These venters also permit either vertical or horizontal venting of the appliance. New wiring diagrams may be necessary and are available from Reznor on request.

Guidelines that should be followed when designing a vent system that includes a field installed, add-on exhauster:

## INDOOR GRAVITY VENTED UNIT HEATERS AND PACKAGED SYSTEMS (cont'd)

- Condensation traps (Figure 2) are recommended when condensate is anticipated. Condensation occurs when flue gases are cooled below their dew point temperature. This can occur in spaces that are deliberately maintained at temperatures below normal (68°F) set point or when flues or portions of flues are directed through unheated spaces.
- Never add an external draft diverter to Reznor gravity vented appliances because these units are already factory equipped with built-in drafthoods (diverters).
- Do not install a manual damper or other device that might restrict the flue passageway.
- When flue pipes are routed through combustible material, a thimble providing 6 inch clearance from the combustible material must be used. Double wall pipe must be installed according to the pipe manufacturer's recommendations for clearance to combustible material.
- If the unit is installed in space served by an exhaust fan, be certain that the negative pressure does not adversely affect the vent system. If the vent system is affected, you may elect to an add-on mechanical exhauster, or it may be necessary to provide makeup air capability to the building.

- The Reznor venter and flue adapter are purchased separately for all units prior to the F and B Models. When equipping F or B Models with a Reznor venter, one part number provides all the necessary hardware including venter, adapter and wiring.
- Use only single wall vent pipe (minimum thickness 24 gauge) constructed of galvanized steel or other noncorrosive material.
- Do not use double wall pipe.
- Refer to Table 3 for correct venter sizes and for maximum flue pipe lengths.
- Add-on Reznor venter flue systems may be terminated in either a vertical or horizontal direction. For the most efficient system, terminal caps on vertical discharge should be located no less than 2 feet above the roof or 6 inches above anticipated snow lines. On horizontal discharge the vent terminal should extend no less than 18 inches from the outside wall and should be provided with clearances as outlined on Table 6. Clearance requirements must be observed so that wind shear and resulting vent interference is minimized.
- Runs that terminate in a horizontal direction must be pitched downward toward the terminal 1/4 inch per foot. This allows condensate to drain from the system.
- Vertical runs should be equipped with condensate drains as illustrated in Figure 2.

<b>TABLE 2: MAXIMUM HORIZONTAL RUN FOR SINGLE-WALL METAL PIPE</b>							
<b>VERTICAL HEIGHT OF VENT</b>	<b>MODELS F and B SIZES (Vent Diameter in Inches)</b>						
	<b>25/50 4"</b>	<b>75 5"</b>	<b>100 6"</b>	<b>130 7"</b>	<b>165/200 8"</b>	<b>250/300 10"</b>	<b>400 12"</b>
<b>6 Feet</b>	2 Feet	2 Feet	2 Feet	2 Feet	2 Feet	2 Feet	2 Feet
<b>8 Feet</b>	2 Feet	5 Feet	5 Feet	10 Feet	10 Feet	10 Feet	10 Feet
<b>10 Feet</b>	2 Feet	5 Feet	10 Feet	15 Feet	15 Feet	15 Feet	15 Feet
<b>15 Feet</b>	2 Feet	5 Feet	10 Feet	15 Feet	20 Feet	20 Feet	20 Feet
<b>20 Feet</b>	N.R.	N.R.	10 Feet	15 Feet	20 Feet	20 Feet	20 Feet

**ADD ON REZNOR POWER VENTER - USED ON GRAVITY VENTED UNIT HEATERS, PACKAGED SYSTEMS AND DUCT FURNACES (cont'd)**

8. Each pipe joint must be fastened with at least three (3) noncorrosive screws.
9. Each pipe joint must be sealed to prevent leakage of flue products into the building. Aluminum tape or other sealing material suitable for 550°F must be used.
10. Insulation of the vent pipe is recommended if extreme condensation is anticipated (see item #15, Gravity Vented Systems). Use foil faced insulation having an R factor of 7 or higher.
11. The Reznor vent cap is recommended. It is designed to minimize effects from wind conditions. Other terminal caps are available; however, a simple rain cap should not be used.
12. Combination vertical and horizontal systems may be designed, provided the equivalent length does not exceed the lengths given in Table 3. Equivalent length includes allowances for elbows in the system.
13. Use elbow between adapter and venter inlet when top flue connection is used. Attach adapter to flue collar and use 4 inch or 6 inch elbow between adapter and venter.
14. Reznor venter must be installed and wired in accordance with Reznor installation manual. Flow switch must be wired in series with thermostat to interrupt main gas valve circuit. Flow switch must be checked before and after installation of the venter for proper operation.

**UNIT HEATERS, PACKAGED SYSTEMS AND DUCT FURNACES WITH INTEGRAL POWER VENTER**

Power vented appliances have integral (built-in) means to insure that the flue gases are positively discharged from the unit. This is accomplished through the use of a factory installed centrifugal fan that collects the products of combustion and forces them from the unit under positive pressure. These flue gases are then directed to the outdoors by means of single wall vent pipe in sizes specified by Reznor.

Rules that must be followed when designing a vent system for these power vented appliances.

1. Each unit includes an approved flue discharge opening. Never attach vent pipes that are not the same measurement.
  2. Never exceed the maximum equivalent length of vent pipe (50 feet) nor use less vent pipe than the minimum (5 feet) prescribed. Equivalent lengths:
    - 90 degree elbow = 15 feet of straight pipe
    - 45 degree elbow = 8 feet of straight pipe
  3. Never use double wall (Class B vent). Double wall vent pipe is not suitable for flue gasses under positive pressure.
- NOTE: Double wall pipe may be used as the final terminal joint that is exposed to outdoor air. This can appreciably reduce the amount of condensation that otherwise might occur with single wall pipe at this position.
4. Never attach an elbow directly to the discharge of the integral venter. This can sharply reduce the capacity of the venter and cause the flow sensing device within the unit to short cycle the burner. Instead, attach a straight run of no less than 12 inch vent pipe to the venter discharge before attaching the elbow.
  5. Each pipe joint must be fastened with at least three noncorrosive screws.
  6. Each pip joint must be sealed to prevent leakage of flue products into the building. Aluminum tape or other sealing material suitable for 550°F must be used.

7. Vent pipe that is exposed to cold air or is directed through unheated areas must be insulated. Foil faced insulation having an R factor of 7 or greater should be used (Double wall pipe should not be used except as described in item #3 above).

8. Where extreme conditions of condensation are anticipated, provide condensate removal similar to Figure 2.
9. Vent terminal must be used. The Reznor vent cap is recommended. IT is designed to minimize effects from wind conditions. Other terminal caps are available; however, a simple rain cap should not be used.

SIZE MBH	VENTER	MAXIMUM VENT LENGTH (without condensation*)	MAXIMUM VENT LENGTH (possible condensation*)
25	301	3" diameter - 30'	3" diameter - 50'
		4" diameter - 30'	4" diameter - 50'
3" diameter - 30'		4" diameter - 75'	
4" diameter - 30'			
75		4" diameter - 50'	5" diameter - 75'
100		4" diameter - 50'	5" diameter - 75'
130		4" diameter - 75'	5" diameter - 100'
165		4" diameter - 75'	5" diameter - 100'
200		4" diameter - 50'	6" diameter - 100'
250		401	4" diameter - 15'
	5" diameter - 40'		
6" diameter - 75'			
300	6" diameter - 100'		7" diameter - 100'
400	6" diameter - 100'		7" diameter - 125'
	7" diameter - 125'		

**TABLE 4: VENT LENGTH TABLE FOR MODEL TR  
USING SINGLE-WALL METAL VENT PIPE**

MODEL NO.	50			75			100			150			175			200														
LENGTH - FEET	20	25	30	20	25	30	35	40	30	35	40	45	50	50	55	60	50	55	60	65	70	50	55	60	65	70				
VENT DIAMETER - INCHES	4			4			4			4			4			4			4			4			4			4		
VENT LENGTH - FEET	MINIMUM	5			5			5			5			5			5			5			5			5				
	MAXIMUM	20			45	35		20	45	35		20	60	60			60			60			60			60				
EQUIVALENT LENGTH - FEET, FOR:	90 DEG. ELBOW	3			6	5		3	6	5		3	12	12			12			12			12			12				
	45 DEG. ELBOW	1.5			3.0	2.5		1.5	3.0	2.5		1.5	6.0	6.0			6.0			6.0			6.0			6.0				
	DUAL VENT ADAPTER	3			6	5		3	6	5		3	12	12			12			12			12			12				

**UNIT HEATERS, PACKAGED SYSTEMS AND DUCT FURNACES WITH INTEGRAL POWER VENTER (cont'd)**

10. Vents for power vented appliances may be routed from the building in either vertical or horizontal direction. Vertical vent terminals protruding through the roof should be at least 2 feet above the roof or 6 inches above anticipated snow line in order to reduce wind shear and nuisance burner cycling. Horizontal terminals should clear the outside wall by at least 18 inches and should satisfy additional clearances stated in Table 6.

11. Models FE and BE installed in multiples require individual vent pipe runs and vent caps. Manifolding of vent runs is not permitted due to possible back pressure effects on combustion air proving switch, and possible recirculation of combustion products into the building.

**VENTING OF SEPARATED COMBUSTION UNITS**

The Reznor SC series unit heaters and packaged units are designed to isolate the combustion process from the space or building in which they are installed. The SC design utilizes a built-in blower that positively moves metered fresh air from the outdoors to the appliance and then delivers combustion products (flue gases) back to the outdoors through parallel single wall vent pipes. In so doing, the entire combustion process is isolated from the inside of the building.

Even though separation of the combustion process is accomplished, separated combustion units are not to be used when halogenated hydrocarbons are present in or around the building.

Rules that must be followed when installing an SC unit:

1. All vent pipe must be a least 24 gauge thickness.
2. All vent pipe must be constructed of galvanized steel or material with equal corrosion resistance.
3. Double wall pipe may not be used.
4. A concentric adapter must be used and is provided by Reznor. This device eliminates the need for two wall or roof openings.
5. All pipe joints must be sealed using aluminum tape or other sealing material suitable for 550°F.
6. Each pipe joint must be fastened with at least three noncorrosive screws.
7. For maximum vent pipe lengths, refer to Table 5. Note the equivalent lengths that apply when inserting elbows into the system. Also note that using oversized pipe is acceptable providing the guidelines in Table 3 are followed.

Due to the complexities of installation, particularly the concentric adapter requirements, do not attempt to design the flue vent system for this product without first reviewing the installation manual that is provided with each unit.

**TABLE 5: COMBUSTION AIR PIPE AND EXHAUST PIPE CONNECTING THE HEATER TO THE CONCENTRIC ADAPTER**

<b>PIPE MATERIAL</b>	24 Gauge or heavier galvanized steel (or a material of equivalent durability and corrosion resistance) Single wall required for exhaust pipe Single wall recommended for combustion air pipe
<b>DIAMETERS AND LENGTHS</b>	6 inch diameter: maximum length of each pipe is 30 feet; minimum length is 6 feet 7 inch diameter: maximum length of each pipe is 65 feet; minimum length is 6 feet (Using 7 inch diameter pipe requires four field-supplied, taper-type reducers) Calculate 8 feet for a 90 degree elbow and 4 feet for a 45 degree elbow.
<b>JOINTS</b>	Secure slip-fit connects using sheet metal screws, rivets or solder. Seal all joints. Seal combustion air pipe with pressure sensitive tape ordinarily used for war-air ductwork. Seal flue exhaust pipe with solder to tape suitable for 550 degrees F (such as Reznor Option FA1, P/N 98266).
<b>CLEARANCES</b>	Exhaust pipe to combustibles - 6 inches (Do not enclose exhaust pipe).
<b>SUPPORT</b>	Support horizontal runs every 6 feet; do not rely on heater or concentric adapter for support of either horizontal or vertical pipes.

## HIGH INTENSITY INFRARED UNITS

Reznor high intensity infrared units have no means by which they may be vented. Therefore, these units actually free burn and release the products of combustion into the space. Flue products can be hazardous. Total ventilation of the space is necessary. The following guidelines MUST be observed to be certain that all flue gases are removed from the space in which these units are installed:

1. For positive evacuation of flue products, a powered exhaust system must be used.
2. A minimum of 4 CFM of both supply and exhaust air must be available for each 1,000 BTUH of natural gas input and 5 CFM for each 1,000 BTUH of LP gas input of installed heaters.
3. Any exhaust opening in the building must be located above the level of the highest heater.
4. Fresh air inlet openings should be sized based on a rate of one square inch for each 1,000 BTUH input. Such inlets should be limited to one or two square feet in size and additional openings should be utilized as necessary.
5. Fresh air inlet openings are typically located high on the building side wall at the same level as the heaters.
6. Mechanical exhaust fans of the proper CFM capacity may be wired into the thermostat circuit to turn on when matching units are energized.
7. An alternate on-off control for mechanical exhausters is a humidistat that turns exhausters on when the relative humidity reaches 40% to 50% (Humidity is raised with the presence of water vapor in the flue gases). Be certain that local codes permit this method of control.

## LOW INTENSITY TUBULAR INFRARED HEATERS

Low intensity gas fired infrared units are designed to provide radiated heat from the surface of a horizontal firing tube and matching tail pipe. Combustion is accomplished in the firing tube by a factory mounted powered blower in the burner box. Because of the blower assisted combustion, aeration and venting of this device is flexible and will vary with the application. There are three modes of installation available:

1. Combustion air piped in from the outdoors and flue products directed to the outdoors through a vent system.
2. Combustion air obtained from within the building and flue products directed to the outdoors through a vent system.
3. Combustion air from within the building with flue products directed into the building.

NOTE: This mode may be selected only when the building has ample ventilation. The same ventilation guidelines that exist for high intensity infrared units must be followed.

The following guidelines should be observed when equipping low intensity infrared units with a vent system:

1. Each vent mode listed above requires a terminal vent cap. The Reznor vent cap is recommended. It is designed to minimize effects from wind conditions. Other terminal caps are available; however, a simple rain cap should not be used.
2. A) Use single wall metal vent pipe (at least 24 gauge in thickness), constructed of galvanized steel or materials of equal corrosion resistance.  
B) Plexvent® plastic pipe may be used as outlined in the vent chart in Table 4.
3. All joint connections in metal pipe must be made with at least three equally spaced noncorrosive sheet-metal screws.
4. All joint connections in metal pipe must be sealed using aluminum tape or other sealing material suitable for 550°F.
5. When using Plexvent® pipe, joint connections must be sealed using a mastic recommended by the pipe manufacturer. Do not drill Plexvent® pipe or attempt to fasten with screws or bolts.
6. Single wall pipe exposed to cold air must be insulated with foil backed material having an R factor of at least 7.
7. Combustion air duct may also require insulation, particularly when the space through which it travels contains high levels of moisture.
8. Vent and fresh air inlet (when used) may protrude through wall or roof.
9. Vertical vent terminal and combustion air inlet must clear roof line by at least 2 feet or 6 inches above the anticipated snow line.
10. Horizontal terminals directed through an outside wall must extend beyond the wall by at least 18 inches (Clearances given in both 9 and 10 are required to reduce potential for wind shear and pressure pack).
11. Horizontal turns that are directed through outside walls must be sloped downward 1/4 inch per lineal foot at the end farthest from the heater. This is to allow any condensation to be directed to the outdoors.
12. Means should be provided to drain off condensate from vertical runs of vent (See Figure 2).
13. Never exceed the equivalent vent lengths as stated in Table 4.
14. A dual vent kit is available from Reznor that will permit the venting of two units to a single discharge fitting. Refer to the installation data provided with this product for proper installation.

<b>TABLE 6</b>	
<b>STRUCTURE</b>	<b>MINIMUM CLEARANCE FOR TERMINATION LOCATION</b>
Forced air inlet within 10 feet	3 feet above
	4 feet horizontally
Door, window or any gravity air inlet	4 feet below
	1 foot above
Adjacent public walkways	7 feet above grade
Adjoining building or parapet	6 feet

## VENTING OF OIL FIRED UNIT HEATERS

Reznor oil fired unit heaters are equipped with power burners. Unlike gas fired systems, they do not have draft hoods. They require a DRAFT REGULATOR that must be installed in the vent system. The by-products of oil combustion are just as dangerous as the by-products of gas combustion, therefore vent design and installation are extremely important. Following are guidelines for venting oil units:

1. Refer to the installation manual to determine the proper location for the draft regulator.
2. Triple-wall stainless steel vent pipe is recommended; however, single wall vent pipe of galvanized steel at least 24 gauge thickness may be used.
3. Always install a clean-out tee at the bottom of any vertical run of flue pipe.
4. Never use vent pipe that is smaller than the pipe connection at the unit flue discharge.
5. When connecting the vent to a masonry chimney, be certain that the chimney has adequate cross section area and that it has a clay, tile or other approved liner material that will resist corrosion, cracking or softening.
6. Great care must be exercised when the flue is directed through a combustible wall or ceiling. Use a thimble that is at least 12 inches larger in diameter than the flue size.
7. Do not allow a horizontal run to exceed 10 feet in length, nor to be longer than 1/2 the height of the chimney or vent.
8. All chimneys or vents must be at least 3 feet above the highest point of exit or 2 feet higher than any portion of the building within 10 feet.
9. Minimum flue height is 8 feet.

**IMPORTANT:** Once the vent system has been installed, the unit must be test fired. The draft over the fire has been specified and must be set at this time. Following these adjustments, the smoke and CO<sub>2</sub> test must be conducted. The oil fired unit differs considerable from the gas fired equipment since extensive adjustments are necessary. These adjustments can only be made with the PROPER test instruments.

## AIR FOR COMBUSTION

If the building volume provides 50 cubic feet or more of combustion air for each 1,000 BTUH of input, then further provisions for combustion air are unnecessary; however, when the volume of the building does not meet this standard, additional provisions are necessary and are outlined in the installation manual for each appliance. This applies to the units that are direct vented from the space and are using internal air for combustion.

## CODES

FOR NATIONAL STANDARDS COVERING VENTING OF GAS FIRED APPLIANCES, REFER TO NFPA 54, 1998 (ANSI Z223.1, 1988)

STANDARDS FOR CHIMNEYS CAN BE FOUND IN NFPA STANDARD NO. 211 WHICH IS PRINTED IN THE NATIONAL FIRE CODES AND THE NATIONAL BUILDING CODE.

## NOTICE

This bulletin is intended for general information only. In all cases, local and national mechanical and electrical codes must be followed. Also refer to and abide by the manufacturer's specific installation, operation and maintenance instructions for all equipment. Installation and service of equipment should be by licensed, qualified professionals only.

## IMPORTANT

Read manufacturer's installation, operation and maintenance manuals thoroughly regarding all INSTRUCTIONS, CAUTIONS, WARNINGS and NOTICE STATEMENTS before specifying, installing, operating or servicing equipment.

## WARNING

Improper specification, installation, operation or maintenance of equipment may cause:

- severe personal injury or death and/or
- conditions that may result in property damage.

The following precautions MUST be observed:

- Proper venting, gas and electrical supply according to national and local codes.
- Proper supply of combustion air for all gas and oil appliances.
- Proper application, setup and operation of all direct-fired heating equipment to eliminate buildup of CO (carbon monoxide) or other combustion gases in the conditioned space.
- Proper venting of indirect-fired heating equipment to exhaust all flue products to the outside atmosphere.
- Proper installation to prevent harmful gases in the discharged air caused by entrained liquid vapors (such as chlorinated or halogenated hydrocarbons) drawn across burner flames or hot surfaces.
- Proper environment/atmosphere or application to avoid fire or explosion from hazardous atmospheres containing flammable vapors or combustible dust.
- Avoiding the use, storage, containment and handling of gasoline or other flammable vapors and liquids in the vicinity of heating equipment.
- Specification of the proper equipment for the particular application.

## OTHER TECHNICAL APPLICATION BULLETINS AVAILABLE FOR REZNOR HVAC PRODUCTS

You may also wish to refer to these other Reznor Technical Application Bulletins

- SEPARATED COMBUSTION HEATING EQUIPMENT
- HEATING INDUSTRIAL AND COMMERCIAL BUILDINGS
- MAKEUP AIR AND VENTILATION FOR COMMERCIAL KITCHENS AND RESTAURANTS
- HEATING AND VENTILATING INDOOR SWIMMING POOLS
- VENTILATION FOR INDUSTRIAL BUILDINGS
- VENTILATION AND MAKEUP AIR FOR COMMERCIAL BUILDINGS
- WAREHOUSE HEATING AND VENTILATING
- MAKEUP AIR FOR PAINT BOOTHS
- GREENHOUSE HEATING AND VENTILATING
- INFRARED FLUX DENSITY (HEATING) CHARTS
- AIR TURNOVER: THE AIR MOVEMENT CONCEPT