



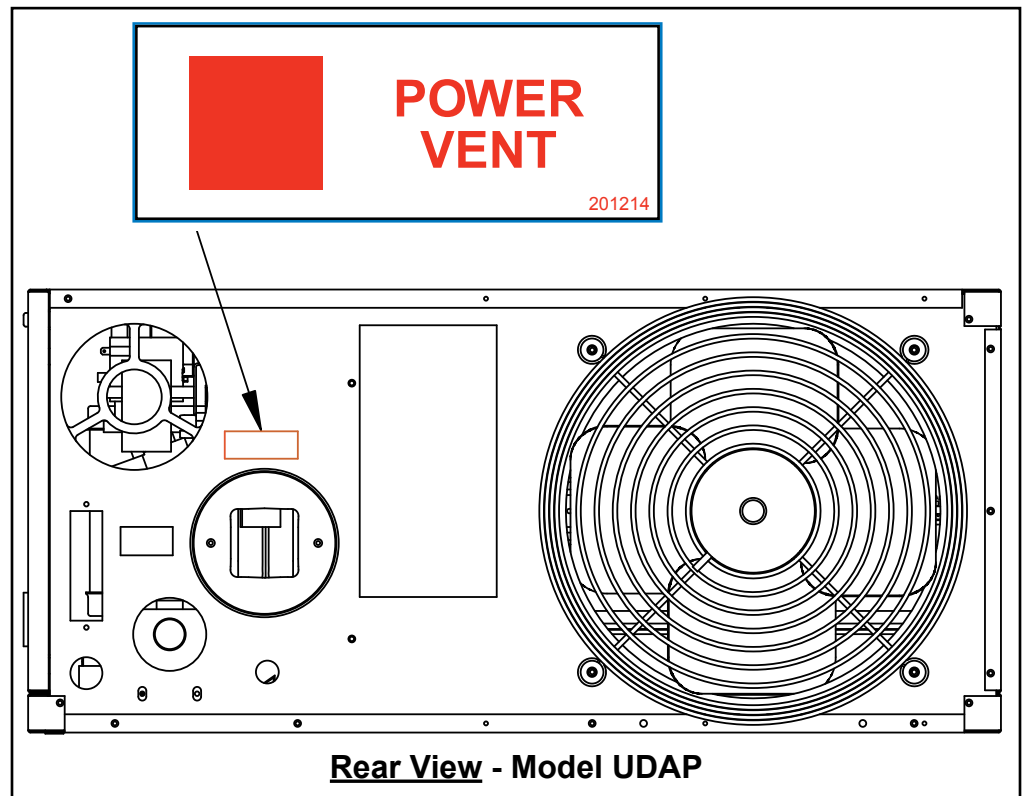
APPLIES TO:

## Venting Requirements for Indoor, Power Vent Model UDAP and Model UDBP

### General

This manual applies only to venting instructions and must be used with the installation manual. Both manuals are shipped with the heater. If either manual is missing, contact your distributor before beginning installation. The instructions in this manual apply to fan type Model UDAP and blower type Model UDBP.

Verify that the label near the vent outlet on the heater matches the label illustrated below. (Label P/N is 201214; color is red.)



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**WARNING:** Installation should be done by a qualified agency in accordance with these instructions. The qualified service agency installing this heater is responsible for the installation.

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**WARNING:** Each heater requires its own individual vent pipe run and vent cap. Manifolding of vent runs can cause recirculation of combustion products into the building. Failure to comply could result in severe personal injury or death and/or property damage.

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## 1.0 Venting Requirements

Model UDAP and UDBP heaters are certified as Category III heaters. Venting must be in accordance with local codes and the National Fuel Gas Code Z223.1 or CAN/CSA B149.1 and B149.2, Installation Code for Gas Burning Appliances and Equipment. Local requirements supersede national requirements.

These power-vented unit heaters are designed to operate safely and efficiently with either a horizontal or vertical vent. Comply with the specific requirements and instructions.

When an existing appliance is removed or replaced in a venting system, the venting system may not be properly sized to vent the attached appliances. An improperly sized venting system may result in the formation of condensate, leakage, and/or spillage.

Do not vent into an existing gravity vent or chimney.

Installation should be done by a qualified agency in accordance with these instructions. The qualified service agency installing this system is responsible for the installation.

**Requirements and instructions vary depending on whether the installation is residential or commercial/industrial. Select and follow the venting instructions that apply to the installation only. All sizes of Model UDAP and Model UDBP unit heaters are certified for commercial/industrial installation. Model UDAP Sizes 30, 45, 60, 75, 100, and 125 are also certified for residential installation.** Utility heaters certified for “residential use” are intended for heating of non-living spaces that are attached to, or part of, a structure that contains space for family living quarters. They are not intended to be the primary source of heat in residential applications or to be used in sleeping quarters.

## Is the Installation Residential or Commercial/Industrial?

Select and follow the venting instructions that apply. **Do not mix** any instructions or requirements.

- **Paragraph 2, Residential Installation Venting Requirements and Instructions (begins on page 3)**
- **Paragraph 3, Commercial/Industrial Installation Venting Requirements and Instructions (begins on page 6)**

# Residential Installation

## Only Model UDAP 30, 45, 60, 75, 100, 125

### 2.0 Venting Requirements & Instructions - Residential Installation

A Category III vent as defined by the National Fuel Gas Code Z223.1 or CAN/CSA B149.1 and B149.2 is required for a residential installation of a Model UDAP. Some venting requirements will vary, however, depending on whether the vent is horizontal or vertical.

Read and follow all of the requirements and instructions in Paragraphs 2.1 through 2.7.

### 2.1 Type of Vent Pipe Required for Vent Run

The type of vent pipe differs for standard horizontal and vertical vent configurations. Comply with the type that applies to the installation.

#### Type of Pipe for Standard Horizontal Vent (Category III)

- Vent pipe approved for Category III heater.

#### Type of Pipe for Standard Vertical Vent (Category III)

- Vent pipe approved for Category III heater.

**Or, if at least 75% of the equivalent length of the vent run is vertical**

- Double-wall (Type B) vent pipe, or
- 26-gauge or heavier galvanized steel single-wall pipe

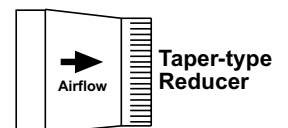
### 2.2 Vent Pipe Diameter and Total Vent Length

Vent pipe diameters and maximum vent lengths are shown in **TABLE 1**. Minimum vent length is 3 feet (1M). Add all straight sections and equivalent lengths for elbows. The total must not exceed the Maximum Vent Length listed. Use only one diameter of vent pipe on an installation.

<b>TABLE 1 - Vent Pipe Diameter and Maximum Vent Length for a Heater with either a Horizontal or Vertical Vent</b>									
UDAP Size	Vent Pipe Diameter		Maximum Vent Length		Equivalent Straight Length for 90° Elbow		Equivalent Straight Length for 45° Elbow		Field-supplied taper type reducer required at the venter outlet
	inches	mm	feet	M	feet	M	feet	M	
30	3	76	20	6.1	3	0.9	1.5	0.5	4" to 3" (102mm to 76mm)
	4	102	10	3.0	2	0.6	1	0.3	None
45	3	76	20	6.1	3	0.9	1.5	0.5	4" to 3" (102mm to 76mm)
	4	102	10	3.0	2	0.6	1	0.3	None
60	3	76	30	9.1	4	1.2	2	0.6	4" to 3" (102mm to 76mm)
	4	102	15	4.6	2	0.6	1	0.3	None
75	4	102	30	9.1	4	1.2	2	0.6	None
100	4	102	40	12.2	5	1.5	2.5	0.8	None
125	4	102	40	12.2	5	1.5	2.5	0.8	None

### 2.3 Venter (Flue) Outlet Diameter

Depending on the size of vent pipe (either 3 or 4 inch) as determined in Paragraph 2.2, attach a 4" vent pipe directly to the collar or use a taper-type reducer to attach a 3" pipe.



**NOTE:** If attaching double-wall pipe to the heater, follow instructions in Addendum, Section A, pages 10-11.

TABLE 2 - Venter Outlet Diameter	UDAP	30		45		60		75		100		125	
	Outlet Diameter	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm
		4	102	4	102	4	102	4	102	4	102	4	102

## Residential Installation

### Only Model UDAP Sizes 30, 45, 60, 75, 100, 125

#### 2.0 Venting Requirements and Instructions - Residential Installation (cont'd)

##### 2.4 Vent System Sealing

Vent system joints depend on the type of pipe being used:

- When using Category III vent pipe, follow the pipe manufacturer's instructions for joining pipe sections. When attaching Category III pipe to the vent outlet or the vent cap, make secure, sealed joints following a procedure that best suits the style of Category III pipe being used.
- If using double-wall (Type B) vent pipe, follow the pipe manufacturer's instructions for joining pipe sections.

For joining double-wall pipe to outlet collar, single-wall pipe, and vent cap, follow the illustrated instructions for attaching double-wall pipe (Type B) in Addendum Section A, pages 10-11.

- If using single wall, 26-gauge or heavier galvanized pipe, secure slip-fit connections using sheetmetal screws or rivets. Seal all joints and seams of single-wall vent pipe inside the building with aluminum tape or silicone sealant.

##### 2.5 Vent System Support

Support horizontal runs every six feet (1.8M). Support vertical runs of Type "B" double-wall or Category III vent pipe in accordance with the requirements of the pipe manufacturer.

Support vertical single-wall pipe in accordance with accepted industry practices.

Do not rely on the heater or the adapter box for support of either horizontal or vertical pipes. Use non-combustible supports on vent pipe.

##### 2.6 Condensation

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**CAUTION:**  
Exceeding the specified vent pipe diameter and length may result in condensate forming in the vent pipe.

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**On units with long vent runs (over 50% of maximum vent length allowed) or installed in low ambient conditions (below 50°F), it is recommended that vent pipes be fitted with a tee, a drip leg, and a clean out cap to prevent any moisture in the vent pipe from entering the unit. The drip leg should be inspected and cleaned out periodically during the heating season.**

Any length of single-wall vent pipe exposed to cold air or run through an unheated area or an area with an ambient temperature of 50°F or less, **must be insulated along its entire length** with a minimum of 1/2" foil-faced fiberglass, 1-1/2# density insulation.

On horizontal vent runs, the flue pipe **must be pitched down toward the terminal end** 1/4" per foot for condensate drainage. Slope applies to the entire length of the horizontal vent run. Failure to pitch the vent run properly may damage the heater due to condensate running back into the unit.

##### 2.7 Vent Terminal (Type of Pipe and Vent Cap)

The vent terminal pipe must be either Category III vent pipe or double-wall (Type B). Terminate the vent with a Reznor Option CC1 vent cap. A different style vent cap could cause nuisance problems or unsafe conditions. The vent cap must be the same size as the vent pipe.

See **TABLE 3** and **FIGURE 1** for requirements of a horizontal vent terminal. See **FIGURE 2**, page 6, for requirements of vertical vent termination.

See Addendum Section A, page 10, for illustrated instructions for attaching double-wall pipe (Type B) to the vent cap or to a vertical single-wall vent run.

For Category III vent pipe, follow the vent pipe manufacturer's instructions. See Addendum Section B, page 11, for instructions on installing Flex-L® Category III vent pipe (a specific brand of Category III vent pipe).

# Residential Installation

## Only Model UDAP Sizes 30, 45, 60, 75, 100, 125

**TABLE 3 - Horizontal Vent Terminal Clearances**

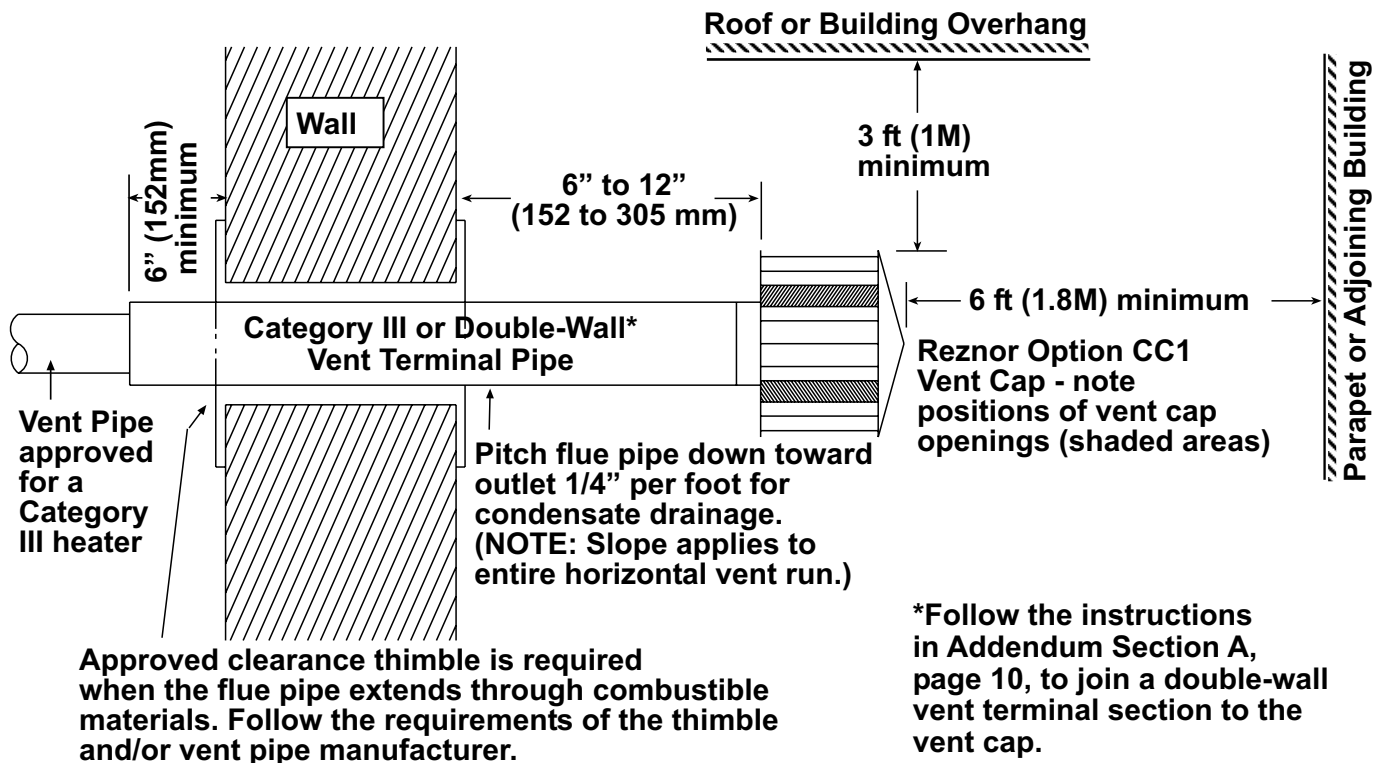
A Reznor Option CC1 vent cap is required. Maintain a clearance of 6 to 12 inches (152-305mm) from the wall to the vent terminal cap for stability under wind conditions.

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.

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 (305mm) above
Electric meter, gas meter*, gas regulator*,	U.S. - 4 ft (1.2M) horizontally
Gas regulator *	U.S. - 3 ft (0.9M)
Adjoining building or parapet	6 ft (1.8M)
Adjacent public walkways	7 ft (2.1M) above
Grade (ground level)	1 ft (305mm) above**
*Do not terminate the vent directly above a gas meter or service regulator.	
** Consider local snow depth conditions. The vent must be at least 6" (152mm) higher than anticipated snow depth.	

**FIGURE 1 - Horizontal Vent Terminal - Residential**

(NOTE: Read all measurements; drawing is not proportional.)



## Residential Installation

### Only Model UDAP Sizes 30, 45, 60, 75, 100, 125

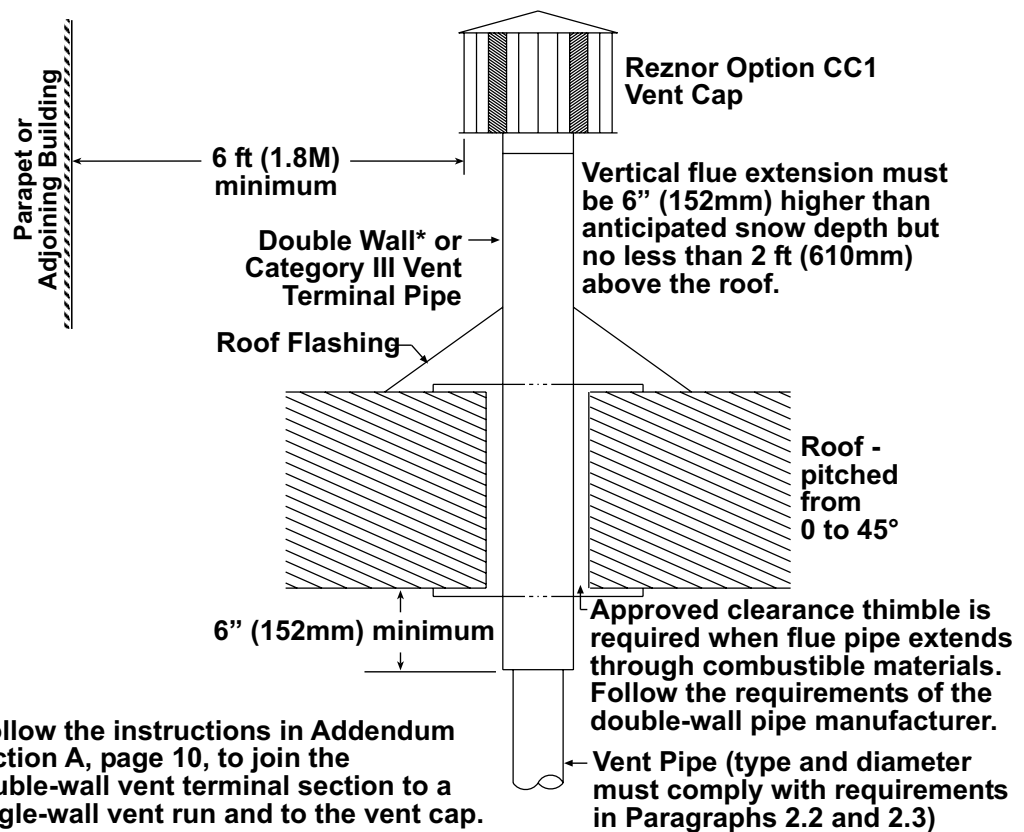
#### 2.0 Venting Requirements and Instructions - Residential Installation (cont'd)

#### 2.7 Vent Terminal (Pipe and Vent Cap) (cont'd)

**FIGURE 2 -**

#### **Vertical Vent Terminal - Residential Installation**

(NOTE: Read all measurements; drawing is not proportional.)



## Commercial/Industrial Installation

### Models UDAP and UDBP - ALL Sizes

#### 3.0 Venting Requirements and Instructions - Commercial/Industrial Installation

#### 3.1 Type of Vent Pipe Required for Vent Run

A commercial/industrial installation may have either a horizontal or a vertical vent run using one of the types of vent pipe listed.

#### Horizontal

- Vent pipe approved for a Category III appliance

#### Vertical

- Vent pipe approved for a Category III appliance, OR
- Appropriately sealed 26-gauge or heavier galvanized steel or equivalent single-wall pipe

**OR if at least 75% of the equivalent length of the vent run is vertical**

- Double-wall (Type B) vent pipe

#### 3.2 Vent Pipe Diameter and Length

Vent pipe diameters and maximum vent lengths in **TABLE 4** apply to both **Horizontal** and **Vertical** vents. Add **all** straight sections and equivalent lengths for elbows. The total combined length must not exceed the **Maximum Vent Length**. Minimum vent length is 3 feet (1M). Use only one diameter of vent pipe on an installation.



# Commercial/Industrial Installation

## Models UDAP and UDBP - ALL Sizes

**TABLE 4 - Vent Pipe Diameter and Length for Horizontal and Vertical Vents**

UDAP and UDBP	Vent Pipe Diameter		Maximum Vent Length		Equivalent Straight Length for 90° Elbow		Equivalent Straight Length for 45° Elbow		Field-supplied taper type connection required at the venter outlet
	inches	mm	feet	M	feet	M	feet	M	
30	3	76	20	6.1	3	0.9	1.5	0.5	4" to 3" (102mm to 76mm) reducer
	4	102	10	3	2	0.6	1	0.3	None
45	3	76	20	6.1	3	0.9	1.5	0.5	4" to 3" (102mm to 76mm) reducer
	4	102	10	3	2	0.6	1	0.3	None
60	3	76	30	9.1	4	1.2	2	0.6	4" to 3" (102mm to 76mm) reducer
	4	102	15	4.6	2	0.6	1	0.3	None
75	4	102	30	9.1	4	1.2	2	0.6	None
100	4	102	40	12.2	5	1.5	2.5	0.8	None
125	4	102	40	12.2	5	1.5	2.5	0.8	None
150	5	127	35	10.7	5	1.5	2.5	0.8	None
175	5	127	35	10.7	5	1.5	2.5	0.8	None
200	5	127	50	15.2	5	1.5	2.5	0.8	None
225	5	127	50	15.2	5	1.5	2.5	0.8	None
250	5	127	50	15.2	5	1.5	2.5	0.8	None
300	6	152	50	15.2	5	1.5	2.5	0.8	None
350	6	152	50	15.2	7	2.1	3.5	1.1	None
	7	178	50	15.2	4.5	1.4	2.25	0.7	6" to 7" (152 to 178mm) enlarger
400	6	152	50	15.2	8	2.4	4	1.2	None
	7	178	50	15.2	5	1.5	2.5	0.8	6" to 7" (152 to 178mm) enlarger

### 3.3 Venter (Flue) Outlet

#### Venter Outlet Attachment Requirements:

Depending on the size of vent pipe as determined in Paragraph 3.2, attach either the vent pipe directly to the collar or a taper-type connector.

TABLE 5 - Venter Outlet Size	UDAP or UDBP		30	45	60	75	100	125	150	175	200	225	250	300	350	400	
	Outlet Diameter	inches	4	4	4	4	4	4	4	5	5	5	5	5	6	6	6
		mm	102	102	102	102	102	102	102	127	127	127	127	127	152	152	152

**NOTE:** If attaching double-wall pipe to the heater, follow instructions in Addendum, Section A, pages 10-11.

### 3.4 Vent System Sealing

Vent system joints depend on the type of pipe being used (See "Type of Vent Pipe", Paragraph 3.1, page 6).

- When using Category III vent pipe, follow the pipe manufacturer's instructions for joining pipe sections. When attaching Category III pipe to the venter outlet or the vent cap, make secure, sealed joints following a procedure that best suits the style of Category III pipe being used.
- If using double-wall (Type B) vent pipe, follow the pipe manufacturer's instructions for joining pipe sections.

For joining double-wall pipe to heater collar, single-wall pipe, and vent cap, follow the illustrated instructions in Addendum Section A, pages 10-11.

- If using single wall, 26-gauge or heavier galvanized pipe, secure slip-fit connections using sheetmetal screws or rivets. Seal all joints and seams of single-wall vent pipe inside the building with aluminum tape or silicone sealant.

### 3.5 Vent System Support

Support horizontal runs every six feet (1.8M).

Support vertical runs of Type "B" double-wall or Category III vent pipe in accordance with the requirements of the pipe manufacturer.

# Commercial/Industrial Installation

## Models UDAP and UDBP - ALL Sizes

### 3. Venting Requirements and Instructions - Commercial/Industrial Installation - applies to ALL Sizes of Models UDAP and UDBP (cont'd)

#### 3.5 Vent System Support (cont'd)

Support vertical single-wall pipe in accordance with accepted industry practice. Do not rely on the heater or the adapter box for support of either horizontal or vertical pipes. Use non-combustible supports on vent pipe.

#### 3.6 Condensation

**CAUTION: Exceeding the specified vent pipe diameter and length may result in condensate forming in the vent pipe.**

On units with long vent runs (over 50% of maximum vent length allowed) or installed in low ambient conditions (below 50°F), it is recommended that vent pipes be fitted with a tee, a drip leg, and a cleanout cap to prevent any moisture in the vent pipe from entering the unit. The drip leg should be inspected and cleaned out periodically during the heating season.

On all Model Sizes, any length of single-wall vent pipe exposed to cold air or run through an unheated area or an area with an ambient temperature of 50°F or less **must be insulated along its entire length** with a minimum of 1/2" foil-faced fiberglass, 1-1/2# density insulation.

On horizontal vent runs, the flue pipe **must be pitched down toward the terminal end** 1/4" per foot for condensate drainage. Slope applies to entire length of horizontal vent run. Failure to pitch vent run properly may damage the heater due to condensate running back into the unit.

#### 3.7 Vent Terminal (Type of Pipe and Vent Cap)

The vent terminal pipe must be either Category III vent pipe or double-wall (Type B). Terminate the vent with a Reznor Option CC1 vent cap. A different style vent cap could cause nuisance problems or unsafe conditions. The vent cap must be the same size as the vent pipe.

See **TABLE 6** and **FIGURE 3** for requirements of a horizontal vent terminal. See **FIGURE 4** for requirements of a vertical vent termination.

**TABLE 6 - Horizontal Vent Terminal Clearances**

A Reznor Option CC1 vent cap is required. Maintain a clearance of 6 to 12 inches (152-305mm) from the wall to the vent terminal cap for stability under wind conditions.

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.

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 (305mm) above
Electric meter, gas meter*, gas regulator*	U.S. - 4 ft (1.2M) horizontally
Gas regulator *	U.S. - 3 ft (0.9M)
Adjoining building or parapet	6 ft (1.8M)
Adjacent public walkways	7 ft (2.1M) above
Grade (ground level)	1 ft (305mm) above**
*Do not terminate the vent directly above a gas meter or service regulator.	
** Consider local snow depth conditions. The vent must be at least 6" (152mm) higher than anticipated snow depth.	

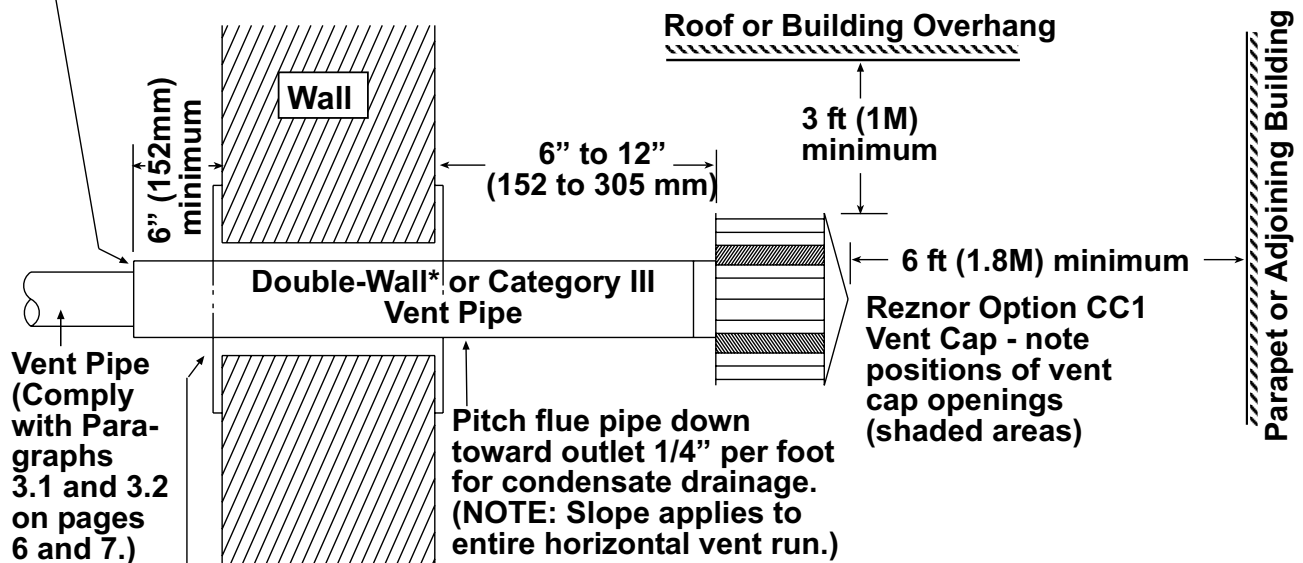


# Commercial/Industrial Installation Models UDAP and UDBP - ALL Sizes

**FIGURE 3 - Horizontal Vent Terminal - Commercial/Industrial Installation**

(NOTE: Read all measurements; drawing is not proportional.)

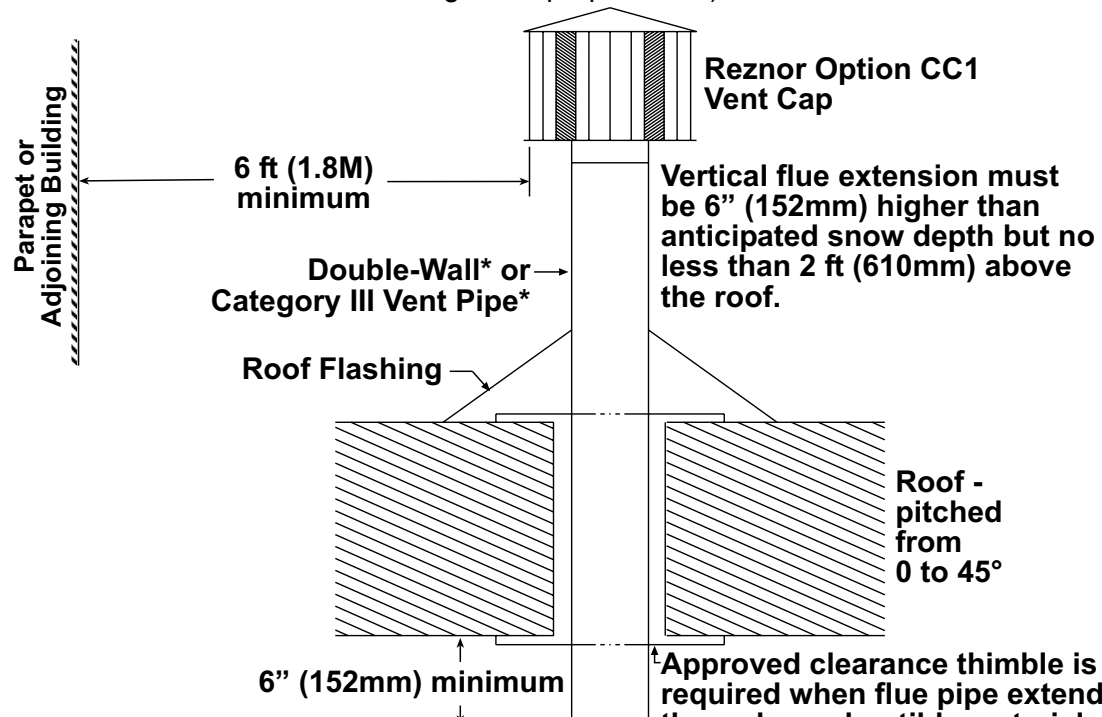
\*Follow the instructions in Addendum Section A, page 10, to join a double-wall vent terminal section to a single-wall vent run and to the vent cap.



Approved clearance thimble is required when flue pipe extends through combustible materials. Follow the requirements of the thimble and/or the vent pipe manufacturer.

**FIGURE 4 - Vertical Vent Terminal - Commercial/Industrial**

(NOTE: Read all measurements; drawing is not proportional.)



\*Follow the instructions in Addendum Section A, page 10, to join a double-wall vent terminal section to a single-wall vent run and to the vent cap.

Approved clearance thimble is required when flue pipe extends through combustible materials. Follow the requirements of the thimble and/or the vent pipe manufacturer.

Vent Pipe (Comply with Paragraphs 3.1 and 3.2 on pages 6 and 7.)

# ADDENDUM

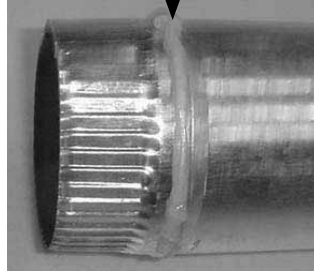
## Section A - Instructions for Attaching Double- Wall Vent Pipe (Type-B)

FIGURE 5 - Attaching  
Double-Wall (Type B)  
Pipe to Single Wall  
Pipe

**Figure 5 - STEP 1**

On the single-wall pipe, where illustrated, place a continual 1/4 inch bead of silicone sealant around the circumference. Do STEP 2 immediately following STEP 1.

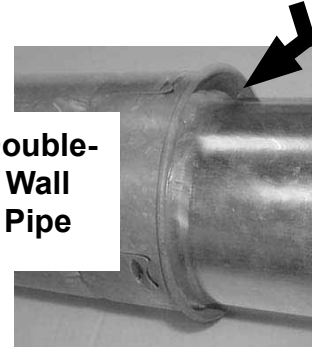
Single-  
Wall  
Vent  
Pipe



**Figure 5 - STEP 2**

Insert the single-wall pipe into the inner pipe of the double-wall pipe until the bead of sealant contacts the inner pipe creating a sealed joint.

Double-  
Wall  
Pipe



Single-  
Wall  
Vent  
Pipe  
with  
Sealant

**Figure 5 - STEP 3**

Spaced equally around the double-wall pipe, drill three small holes below the sealant ring. Insert 3/4 inch long sheetmetal screws to secure the joint. Do not over tighten screws.

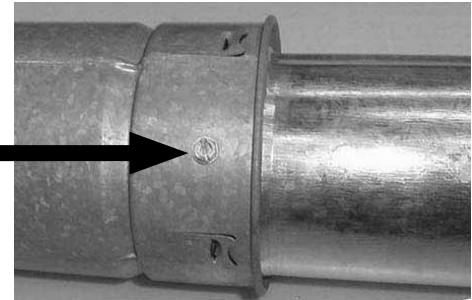
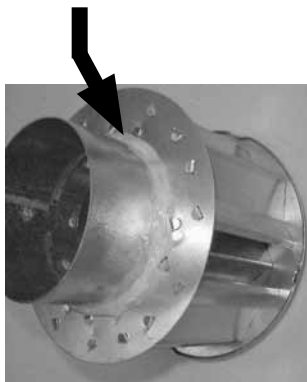


FIGURE 6 - Attaching Double-Wall (Type B) Pipe to a Vent Cap

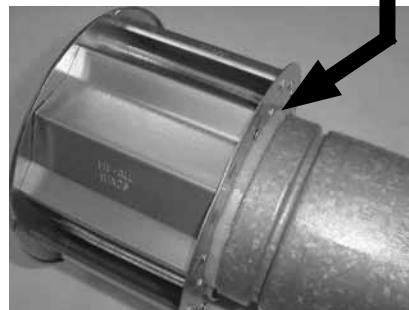
**Figure 6 - STEP 1**

Place a continual 3/8" bead of silicone sealant around the circumference of the vent cap collar. This will prevent any water inside the vent cap from running down the double-wall pipe. Do STEP 2 immediately following STEP 1.



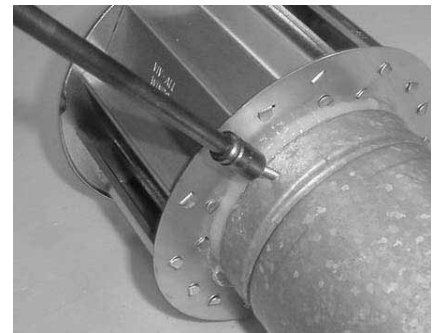
**Figure 6 - STEP 2**

Insert the collar on the vent cap inside the inner wall of the double-wall pipe. Insert as far as possible. Add additional silicone sealant to fully close any gaps between the vent cap and the double wall pipe. This is necessary to prevent water from entering the double wall pipe.



**Figure 6 - STEP 3**

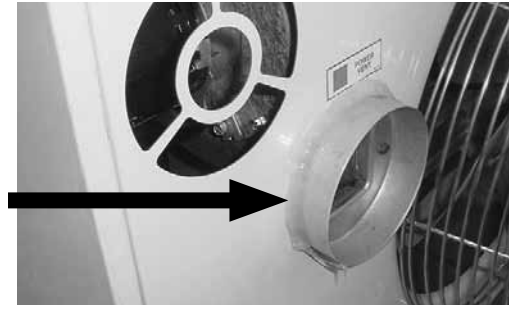
Secure the vent cap to the double wall pipe by drilling and inserting a 3/4" long sheetmetal screw into the vent cap collar. Do not over tighten screw.



**FIGURE 7 -  
Attaching Double-  
Wall (Type-B) Vent  
Pipe to the Heater**

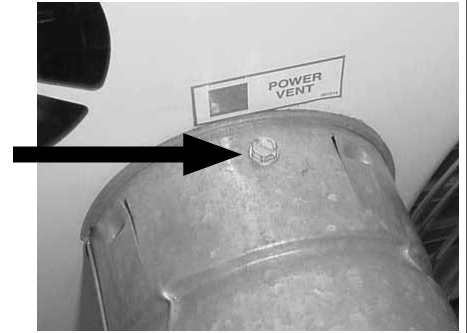
**Figure 7 - STEP 1**

Place a continual 1/4" bead of silicone sealant around the circumference of the venter outlet collar. Do STEP 2 immediately after STEP 1.



**Figure 7 - STEP 2**

Slide the double-wall pipe over the collar so that the collar is inside the inner pipe. Push the double-wall pipe tight to the heater cabinet. To secure the connection, spaced equal distance around the pipe, drill and insert three 3/4" long sheetmetal screws through the pipe and into the collar. Do not over tighten the screws.

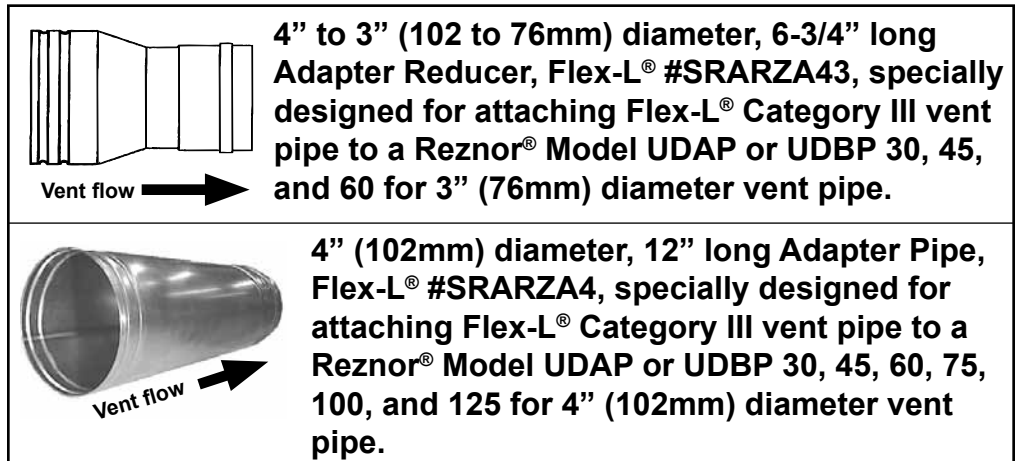


## **ADDENDUM**

### **Section B - Instructions for Installing \*Flex-L® Category III Vent Pipe on a Reznor® Model UDAP or UDBP Power-Vented Heater**

**FIGURE 8 - Flex-L®  
Vent Pipe Adapters**

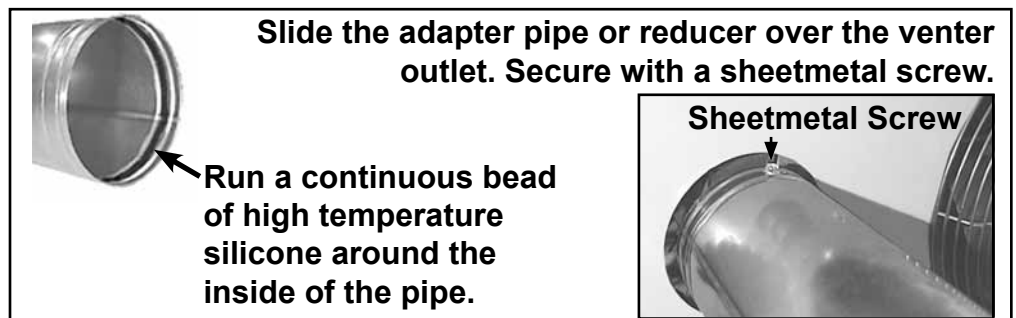
**SUPPLIER NOTE:** The adapters for Flex-L® vent pipe illustrated in Figure 8 are not available from Reznor® or Thomas & Betts; the adapters are available from a Flex-L® vent pipe distributor. These instructions are designed to assist the contractor who has selected to use Flex-L® brand Category III vent pipe to install a Reznor® power vented heater with a 4" (102mm) venter outlet.



#### **1. Attach the Adapter Pipe or Reducer to the Venter Collar**

- a) On the end of the adapter or reducer that attaches to the venter collar (the end of the adapter with the double emboss without the locking ring hole), run a continuous bead of high temperature silicone around the inside of the pipe. See **FIGURE 9**.

**FIGURE 9 - Attach to  
Venter Outlet**

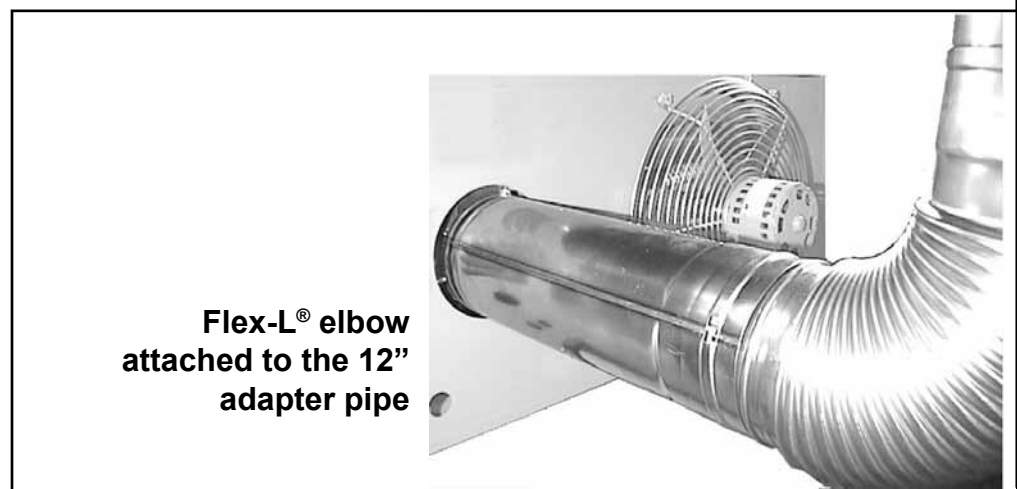


**ADDENDUM,**  
**Section B**  
**(cont'd)**

**Instructions for  
Installing Flex-L®  
Category III Vent  
Pipe (cont'd)**

**FIGURE 10 - Extend  
vent in any direction  
above horizontal**

- b) Push the adapter pipe or reducer over the flue collar.
  - c) On the top of the overlap, drill a 1/8" hole and insert a sheetmetal screw to secure the connection.
- 2. Run the Vent Pipe**
- a) Refer to either the residential or commercial/industrial venting instructions in this manual for vent length requirements.
  - b) **If using a 4" to 3" (102 to 76mm) reducer** - Following the vent pipe manufacturer's instructions, attach a straight piece of 3" diameter horizontal pipe or an elbow in any direction above horizontal.



**If using a 4" (102mm) diameter, 12" (305mm) long adapter pipe**  
- Following the vent pipe manufacturer's instructions, attach one of the following:

- an elbow in any direction above horizontal, or
- a straight horizontal pipe

- c) Follow the pipe manufacturer's instructions to connect the vent pipe sections and install the vent pipe run. The length of vent must not exceed the maximum allowed for the heater being installed.
- d) Extend the vent pipe through the wall or roof to the outdoors. An approved clearance thimble is required when flue pipe extends through combustible materials. Follow the requirements of the pipe and thimble manufacturer. Be sure to comply with local and national codes when selecting the vent terminal location. The vent pipe installer is responsible for following the manufacturer's instructions and complying with all applicable codes.

**FIGURE 11 - Attach  
Vent Cap**



**3. Attach the Vent Cap (FIGURE 11)**

- a) Use a Reznor Option CC1 vent cap.
- b) Slide the vent cap collar into the vent pipe.
- c) Around the end of the vent pipe, drill three evenly spaced 1/8" holes through the vent pipe and vent cap. Insert sheetmetal screws to secure the vent cap to the vent pipe.

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