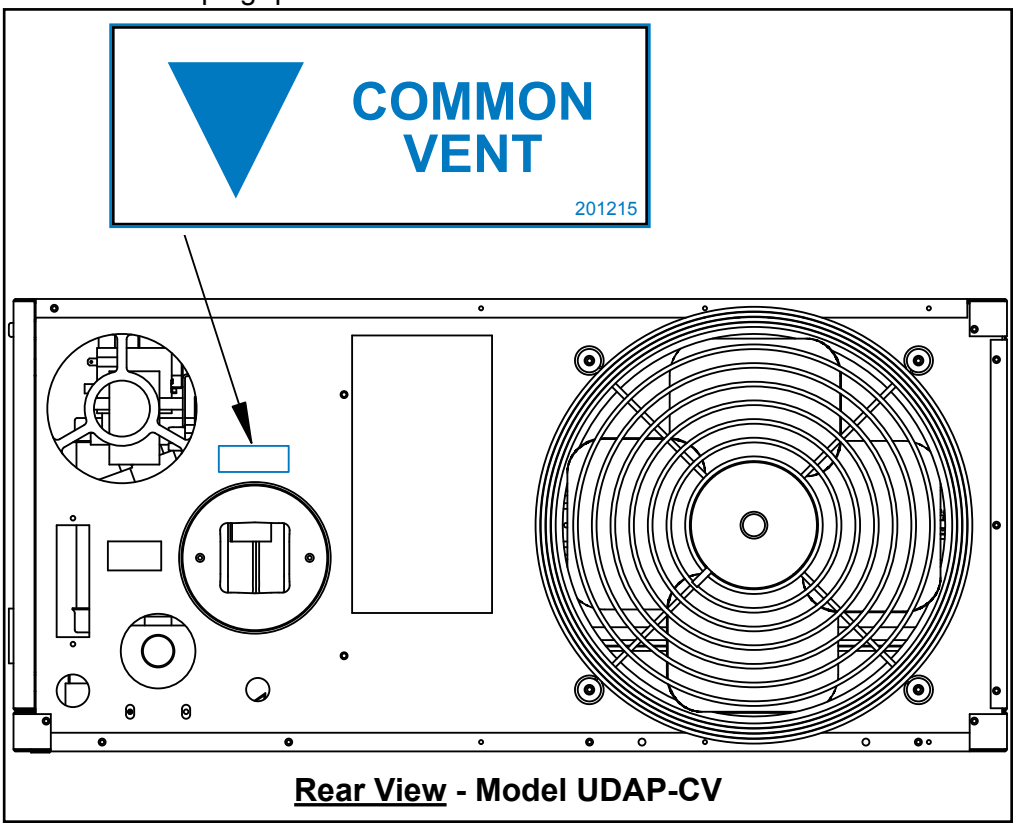
REZNOR®

Installation Instructions for Category I Single or Common Vent - Applies only to Indoor Fan Assisted Unit Heater Model UDAP-CV

Applies to: **Model UDAP-CV (Model UDAP with Option AV6)**

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 **only** to indoor fan assisted Model UDAP-CV.
Models UDAP-CV 30, 45, 60, 75, and 100 are certified as Category I heaters for residential or industrial/commercial 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.



Rear View - Model UDAP-CV

DANGER:

Check the Model No. on the rating plate. These instructions apply only to a Reznor Model UDAP with a suffix -CV, which is a Model UDAP heater with common vent Option AV6. If the Model No. does not have a suffix -CV, do NOT use these instructions. Failure to comply will result in severe personal injury or death and/or property damage.

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1.0 Venting Requirements for Model UDAP-CV

Venting must be in accordance with these instructions, the National Fuel Gas Code Z223.1 or CSA B149.1 and B149.2, Installation Code for Gas Burning Appliances and Equipment, and all local codes. Local requirements supersede national requirements.

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.

Model UDAP-CV heaters require a vertical vent. Common vertical venting is permitted when installed according to the instructions in SECTION 2. Venting instructions are divided into two sections. Select and follow the instructions in SECTION I or 2.

SECTION 1 Venting a Model UDAP-CV heater with a **dedicated vent** systems a single Category I appliance ..... **Begin below (Paragraph 2)**

SECTION 2 Venting a Model UDAP-CV heater in a **common vent** with other Category I appliance(s) ..... **Go to Page 5 (Paragraph 3)**

WARNING: Use only the venting instruction section that applies to the installation. Do not combine any requirements. Use these venting instructions only with Model UDAP heaters with -CV in the Model No. Failure to comply could result in severe personal injury of death and/or property damage.

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.

2.0 SECTION 1 - Requirements and Instructions for Venting a Single Category I Model UDAP-CV

Comply with these requirements to vent a Model UDAP-CV as a Category I appliance into a dedicated vertical vent.

2.1 SECTION 1 - Type of Pipe

Vertical Vent Pipe - Use Type B double-wall pipe for all installations.

Horizontal Vent Connector Pipe - Sizes 30 and 45 require Type B double-wall pipe for all installations.

Depending on the installation (Refer to **TABLE 1A** or **1B**), Sizes 60, 75, and 100 may use either Type B double-wall vent pipe or 26-gauge or heavier galvanized single-wall vent pipe.

2.2 SECTION 1 - Vent Diameter and Length

Vent diameter for Sizes 30, 45 60, and 75 is 4 inches (102mm).

Vent diameter for Size 100 is 5 inches (127mm).

Vent length requirements vary depending on size of heater and the type of pipe used in the vent connector. If using a double-wall vent connector, refer to **FIGURE 1A** and comply with vent lengths in **TABLE 1A.** If using a single-wall vent connector (Sizes 60, 75, 100 only), refer to **FIGURE 1B** and comply with vent lengths in **TABLE 1B**.

FIGURE 1A and TABLE 1A - Vent Lengths for Model UDAP-CV with a Category I Vent using all Type B Double-Wall Vent Pipe

FIGURE 1A

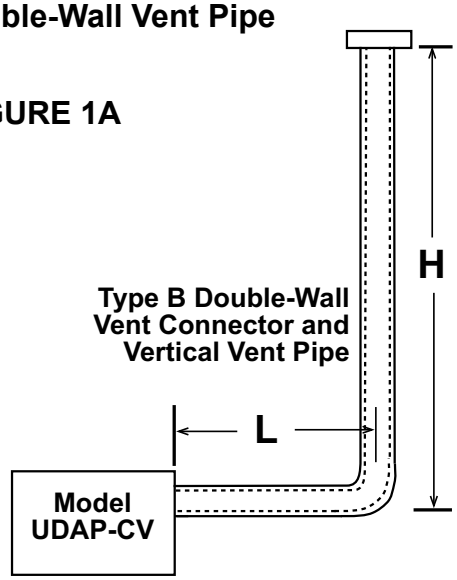


TABLE 1A - Vent Lengths of Category I Vent for Model UDAP-CV Using All Double-Wall Vent Pipe

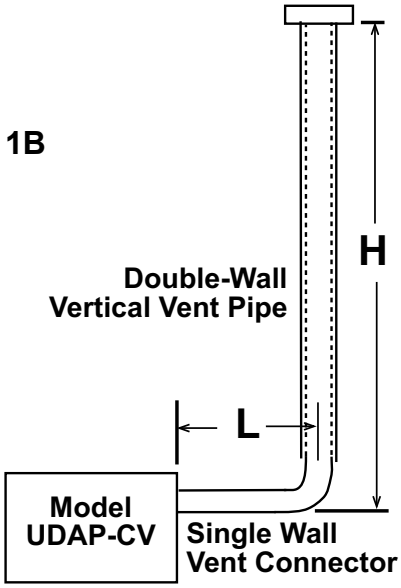
Model UDAP-CV Size	Vent Diameter		H		L	
	inches	mm	ft	M	ft	M
30	4	102	6	1.8	4	1.2
45, 60, 75			6	1.8	6	1.8
			8	2.4	8	1.5
30	4	102	10	3.0	2	0.6
45			10	3.0	5	1.5
60, 75			10	3.0	10	3.0
30, 45	4	102	15	4.6	5	1.5
60, 75			15	4.6	15	4.6
30, 45	4	102	20	6.1	5	1.5
60, 75			20	6.1	20	6.1
100	5	127	6	1.8	6	1.8
			8	2.4	8	2.4
			10	3.0	10	3.0
			15	4.6	15	4.6
			20	6.1	20	6.1
			30	9.1	30	9.1

H = Vertical Height of Double-Wall Vent

L = Maximum Horizontal Double-Wall Vent Connector Length

FIGURE 1B and TABLE 1B - Vent Lengths for Model UDAP-CV 60, 75, or 100 with a Category I Vent with a Single-Wall Vent Connector and a Type B Double-Wall Vertical Vent Pipe

FIGURE 1B



H = Vertical Height of Double-Wall Vent

L = Maximum Horizontal Single-Wall Vent Connector Length

TABLE 1B - Vent Lengths of Category I Vent with Single-Wall Connector to Double-Wall Vent for Model UDAP-CV 60, 75, or 100

Model UDAP-CV Size	Vent Diameter		H		L	
	inches	mm	ft	M	ft	M
60	4	102	6	1.8	2	0.6
			8	2.4	2	0.6
			10	3	2	0.6
			15	4.6	2	0.6
			20	6.1	2	0.6
75	4	102	6	1.8	2	0.6
			8	2.4	4	1.2
			10	3.0	4	1.2
			15	4.6	5	1.5
			20	6.1	5	1.5
100	5	127	6	1.8	4	1.2
			8	2.4	4	1.2
			10	3.0	5	1.5
			15	4.6	5	1.5
			20	6.1	5	1.5

2.0 SECTION 1 - Requirements and Instructions for Venting a Single Category I Model UDAP-CV (cont'd)

2.3 SECTION 1 - Vent System Joints/Sealing

Vent system joints depend on the type of pipe:

- **Single-wall pipe**, 26-gauge or heavier galvanized, secure each slip-fit connection with three sheetmetal screws or rivets. When connecting the single-wall pipe to the Type B double-wall pipe, use an adapter made by the Type B double-wall pipe manufacturer for connection of their Type B double-wall pipe to single-wall pipe. Follow the Type B double-wall pipe manufacturer's instructions.
- **Type B double-wall pipe**, follow the pipe manufacturer's instructions for joining and securing the pipe sections. If Type B double-wall pipe is connected to the vent collar on the Model UDAP-CV, use an adapter made by the Type B double-wall pipe manufacturer for that purpose. Follow the Type B double-wall pipe manufacturer's instructions.

2.4 SECTION 1 - 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 the vent pipe be fitted with a tee, a drip leg, and a cleanout cap to prevent moisture in the vent pipe from entering the unit. The drip leg should be inspected and cleaned out periodically during the heating season.

A single-wall vent pipe run 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.

The horizontal vent run **must be pitched down toward the terminal end** 1/4" per foot for condensate drainage. The 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.

2.5 SECTION 1 - Vent System Support

Use non-combustible supports on vent pipe. Support lateral runs every six feet (1.8M). Support vertical runs of Type B double-wall vent pipe in accordance with the requirements of the pipe manufacturer. Support lateral single-wall pipe in accordance with accepted industry practices. Do not rely on the heater for support of either horizontal or vertical vent pipe.

2.6 SECTION 1 - Vent Terminal

The vent terminal should be a minimum of six feet (1.8M) from adjoining buildings. The vent terminal should be six inches (152mm) higher than the anticipated snow depth but no less than two feet (610mm) above the roof. Where the vent extends through the roof, a clearance thimble is required when the flue pipe extends through combustible materials; follow the requirements of the double-wall pipe manufacturer.

Terminate with a Reznor Option CC1 vent cap.

2.7 SECTION 1 - Clearance to Combustibles

Maintain 6 inches (152 mm) clearance between a single-wall vent pipe and combustibles.

For Type B double-wall vent pipe, follow the pipe manufacturer's recommendations for clearance to combustibles.

3.0 SECTION 2 - Requirements and Instructions for Category I Common Venting of a Model UDAP-CV

Comply with these requirements to common vent a Model UDAP-CV as a Category I appliance with other Category I appliance(s).

DANGER: A Model UDAP-CV heater is designed for a Category I common venting application. Common venting is when two or more Category I appliances are vented into a single vertical vent. The installer must comply with the venting requirements listed in is this section, instructions provided with other appliances that are to be commonly vented with the Model UDAP-CV, and local codes. Verify that any appliances being commonly vented with the Model UDAP-CV are designed for Category I common venting. Failure to comply will result in severe personal injury or death and/or property damage.

3.1 SECTION 2 - Category I Common Vent General Definitions

Common Vent: The vertical portion of the venting system that conveys the vent gas streams from all the appliances connected in common. (See examples in **FIGURES 2A and 2B.**)

Vent Connector: The individual horizontal length of vent pipe from each appliance to the vertical common vent is the vent connector. (See **FIGURES 2A and 2B.**)

Vent Connector Rise: The vent connector rise is the vertical distance measurement from the appliance outlet to the centerline where the vent gas streams come together. The maximum rise permitted is three feet (.9M). (See **FIGURES 2A and 2B.**)

FIGURE 2A - Typical Common Vent Application of a Model UDAP-CV and another Category I appliance using a Type B Double-Wall Common Vent

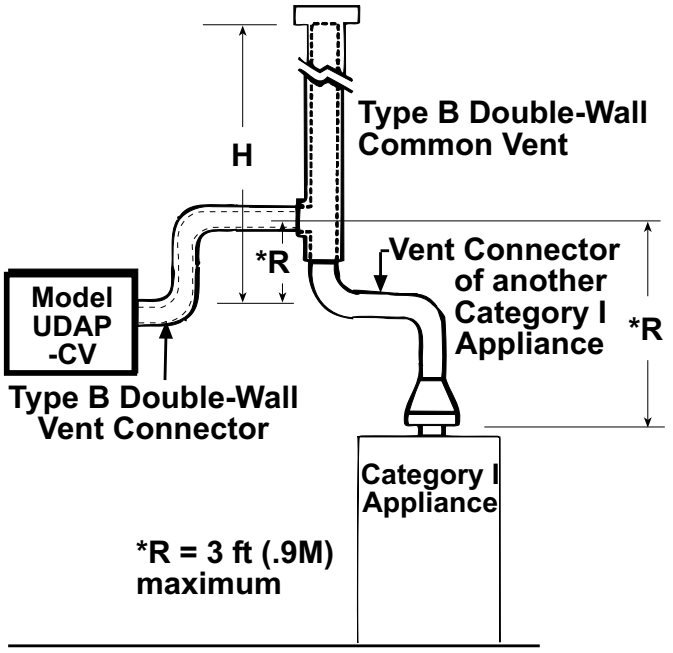
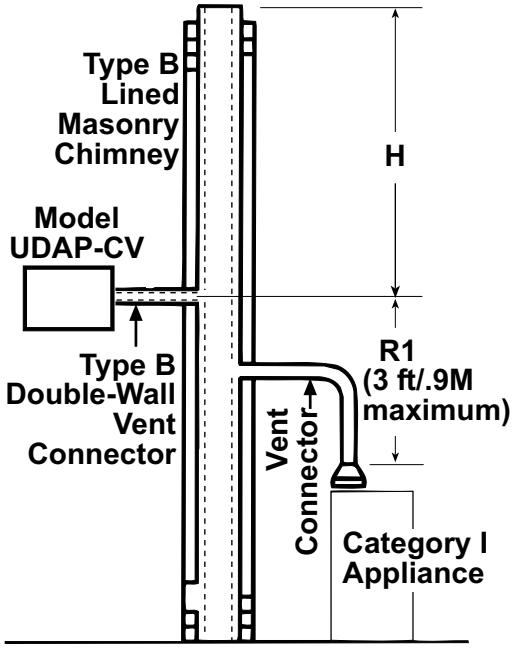


FIGURE 2B - Typical Common Vent Application of a Model UDAP-CV and another Category I appliance venting into a Type B double-wall lined masonry chimney



H = Common Vent Height

Definition - The common vent height is the vertical distance measurement from the highest drafthood outlet or flue collar to the vent cap or chimney outlet of the common vent.

R = Vent Connector Rise (3ft/.9M maximum)

Definition - The vent connector rise is the vertical distance measurement from each heater or appliance outlet to the centerline where the vent gas streams come together.

3.0 SECTION 2 - Requirements and Instructions for Category I Common Venting of a Model UDAP-CV (cont'd)

3.1 SECTION 2 - Model UDAP-CV Category I Common Venting Instructions

These instructions apply to the proper installation of a Model UDAP-CV in a common vent application. The information provided is based on material published in the National Fuel Gas Code and engineering calculations. The Model UDAP-CV is a fan assisted (FAN) Category I heater. Instructions for the proper installation of other appliances connected in common with the Model UDAP-CV unit heater should be obtained from the manufacturer's instructions or the National Fuel Gas Code. In the case of conflicting instructions the most conservative instruction must be applied.

The vertical portion of the common vent must be Type B double-wall or a masonry chimney lined with Type B double-wall pipe. Refer to **TABLE 4A** to determine the vent diameter required for the combined BTU/H input capacities of all appliances to be connected and the height of the common vent portion of the venting system. In **TABLE 4A**, "**FAN**" refers to fan assisted appliances and "**NAT**" refers to appliances that rely solely on the natural buoyancy of the vent gases for venting.

TABLE 4A - Common Vent Capacity when a Category I Model UDAP-CV is Installed with other Category I Appliance(s)*

Vertical Height of Vent		Type B Double-Wall Common Vertical Vent[1] Diameter					
		5 inches		6 inches		7 inches	
		Maximum Combined Input Rating of the Appliances (mbh)					
ft	M	FAN + FAN	FAN + NAT	FAN + FAN	FAN + NAT	FAN + FAN	FAN + NAT
6	1.8	NA	102	180	142	274	220
7	2.1	NA	108	188	149	286	231
8	2.4	147	113	196	156	298	242
10	3.0	170	123	213	170	321	263
15	4.6	187	143	248	199	374	309
20	6.1	212	159	275	222	417	345
30	9.1	241	182	315	257	480	401

* If a conflict in capacity occurs with other instructions, the more conservative capacity must be chosen.

[1] This table may also be used for Type B double-wall lined masonry chimneys.

If single-wall pipe is used in the horizontal vent connector, refer to **TABLE 4B** to determine the maximum horizontal vent connector length permitted.

If double-wall pipe is used in the horizontal vent connector, refer to **TABLE 4C** to determine the maximum horizontal vent connector length permitted. Two elbows may be used in the horizontal vent connection with a maximum rise of three feet (.9M).

NOTE: When two or more vent connectors enter a common vent, the smaller connector shall enter at the highest level consistent with available headroom or clearances to combustible material.

TABLE 4B - Maximum Horizontal Length of Single-Wall Connector Pipe for Model UDAP-CV* (Category I Common Vent)

Vertical Height of Vent		UDAP-CV Model Size				
		30	45	60	75	100
		Diameter of Vent Connector (inches)				
ft	M	4	4	4	4	5
6	1.8	0	0	2	3	3
7	2.1	2	2	2	3	3
8	2.4	3	3	3	3	3
10	3.0	3	4	4	4	4
15	4.6	3	4	5	5	6
20	6.1	3	4	5	5	6
30	9.1	3	4	5	5	6

* For the proper vent connector length and diameter of other appliances connected in common with the Model UDAP-CV unit heater, refer to the appliance manufacturer's instructions or the National Fuel Gas Code.

TABLE 4C - Maximum Horizontal Length of Type B Double-Wall Connector Pipe for Model UDAP-CV* (Category I Common Vent)						
Vertical Height of Vent		UDAP-CV Model Size				
		30	45	60	75	100
		Diameter of Vent Connector (inches)				
ft	M	**4**	**4**	**4**	**4**	**5**
6	1.8	2	2	2	2	3
7	2.1	3	3	3	3	4
8	2.4	4	4	4	4	5
10	3.0	5	5	5	5	6
15	4.6	5	5	6	6	7.5
20	6.1	5	6	6	6	7.5
30	9.1	5	6	6	6	7.5
* For the proper vent connector length and diameter of other appliances connected in common with the Model UDAP-CV unit heater, refer to the appliance manufacturer's instructions or the National Fuel Gas Code.						

3.2 SECTION 2 - Vent System Joints/Sealing

Vent system joints depend on the type of pipe:

- **Single-wall pipe**, 26-gauge or heavier galvanized, secure each slip-fit connection with three sheetmetal screws or rivets. When connecting the single-wall pipe to the Type B double-wall pipe, use an adapter made by the Type B double-wall pipe manufacturer for connection of their Type B double-wall pipe to single-wall pipe. Follow the Type B double-wall pipe manufacturer's instructions.
- **Type B double-wall pipe**, follow the pipe manufacturer's instructions for joining and securing the pipe sections. If Type B double-wall pipe is connected to the vent collar on the Model UDAP-CV, use an adapter made by the Type B double-wall pipe manufacturer for that purpose. Follow the Type B double-wall pipe manufacturer's instructions.

3.3 SECTION 2 - 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 the vent pipe be fitted with a tee, a drip leg, and a cleanout cap to prevent moisture in the vent pipe from entering the unit. The drip leg should be inspected and cleaned out periodically during the heating season.

A single-wall vent pipe run 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.

The horizontal vent run **must be pitched down toward the terminal end** 1/4" per foot for condensate drainage. The 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.

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3.0 SECTION 2 - Requirements and Instructions for Category I Common Venting of a Model UDAP-CV (cont'd)

3.5 SECTION 2 - Vent Terminal

The vent terminal should be a minimum of six feet (1.8M) from adjoining buildings. The vent terminal should be six inches (152mm) higher than the anticipated snow depth but no less than two feet (610mm) above the roof. Where the vent extends through the roof, a clearance thimble is required when the flue pipe extends through combustible materials; follow the requirements of the double-wall pipe manufacturer.

Terminate with a Reznor Option CC1 vent cap.

3.6 SECTION 2 - Clearance to Combustibles

Maintain 6 inches (152 mm) clearance between a single-wall vent pipe and combustibles.

For Type B double-wall vent pipe, follow the pipe manufacturer's recommendations for clearance to combustibles.

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