INSTALLATION INSTRUCTIONS

Concentric Vent Termination

These instructions cover the installation of the concentric vent termination kits, NAHA001CV & NAHA002CV that are approved for use on the N9MP2, N9MPD, *9MPD, *9UHX, *9MPT, *9MPV, *9MVX and WFHR series gas furnaces.
* Denotes Brand (T, H or C)

Please read these instructions completely before attempting installation.

Special Venting Requirements for Installations in Canada

Installation in Canada must conform to the requirements of CSA B149 code. Vent systems **must** be composed of pipe, fittings, cements, and primers listed to ULC S636. This concentric vent termination kit has been certified to ULC S636 for use with those IPEX PVC vent components which have been certified to this standard. In Canada, the primer and cement must be of the same manufacturer as the vent system; do not mix primers and cements from one manufacturer with a vent system from a different manufacturer. Follow the manufacturer's instructions in the use of primer and cement and never use primer or cement beyond its expiration date. The safe operation, as defined by ULC S636, of the vent system and this termination kit is based on following these installation instructions, the vent system manufacturer's installation instructions, and proper use of primer and cement. Acceptability under Canadian standard CSA B149 is dependent upon full compliance with all installation instructions. Under this standard, it is recommended that the vent system be checked once a year by qualified service personnel.
The authority having jurisdiction (gas inspection authority, municipal building department, fire department, etc) should be consulted before installation to determine the need to obtain a permit.

Consignes spéciales pour l'installation de ventillation au Canada

L'installation faite au Canada doit se conformer aux exigences du code CSA B149. Ce systême de ventillation **doit** se composer de tuyaux, raccords, ciments et apprêts conformes au ULC S636. Ce systême de ventillation concentrique a été certifié ULC S636 pour être utilisé avec les composantes IPEX PVC qui sont certifiés. Au Canada l'apprêt et le ciment **doivent** être du même manufacturier que le systême de ventillation; ne pas mélanger l'apprêt et le ciment d'un manufacturier avec le systême de ventillation d'un autre manufacturier. Bien suivre les indications du manufacturier lors de l'utilisation de l'apprêt et du ciment et ne pas utiliser ceux–ci si la date d'expiration est atteinte.
Le bon fonctionnement de ce systême de ventillation est conditionnel à l'installation tel que défini par le ULC S636 c'est à dire: bien suivre les consignes ci–haut mentionnées ainsi que les instructions du manufacturier et aussi une bonne utilisation de l'apprêt et du ciment. L'acceptation du standard Canadien CSA B419 est directement relié à l'installation conforme aux instructions ci–haut mentionnées. Le standard Canadien recommande l' inspection par un personel qualifié et ce, une fois par année.
Les autoritées ayant juridiction (inspecteurs de gas, inspecteurs en bâtiments, département des incendies, etc) devraient être consultées avant l'installation afin de déterminer si un permis est requis.

⚠ WARNING

ELECTRIC SHOCK HAZARD/FIRE AND/OR EXPLOSION HAZARD

Failure to follow this warning could result in personal injury, death, property damage and/or equipment damage.

Turn OFF gas supply at manual gas valve before turning OFF electric power supply and starting installation.

Turn OFF electric power supply at disconnect switch or service panel before starting installation.

⚠ WARNING

CARBON MONOXIDE POISONING, AND PROPERTY DAMAGE HAZARD

Failure to follow this warning could result in personal injury, death, property damage and/or equipment damage.

This kit is to be used for terminating condensing Category IV vent furnaces. DO NOT use kit to terminate Category I, II, or III vent furnaces.

⚠ WARNING

ELECTRIC SHOCK HAZARD/FIRE AND/OR EXPLOSION HAZARD

Failure to carefully read and follow all instructions in these instructions could result in personal injury, death, property damage and/or furnace malfunction.

Installation or repairs made by unqualified persons could result in hazards to you and others. Installation MUST conform with local codes or, in the absence of local codes, with codes of the country having jurisdiction.

The information contained in these instructions is intended for use by a qualified service technician familiar with safety procedures and equipped with the proper tools and test instruments.

Follow the furnace installation instructions for locating the furnace, clearances, operation and safety procedures. Use these instructions for installation of the concentric vent termination kit.

Read these instructions completely before attempting installation.

Field supplied pipe and fittings are required to complete installation.

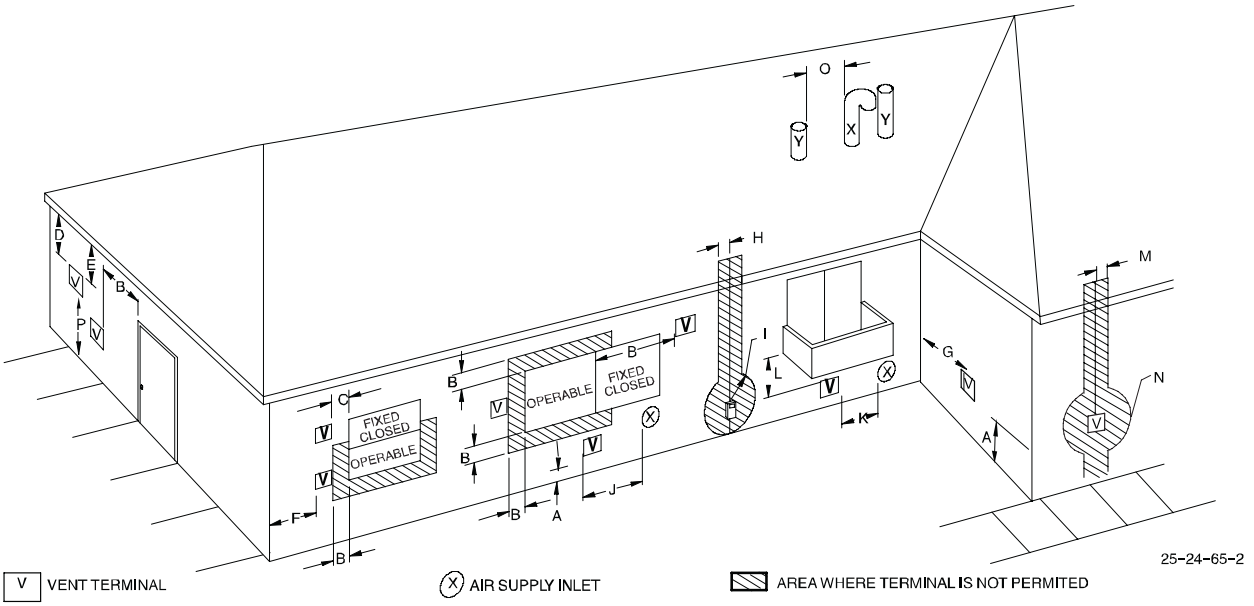
Note: All pipe, fittings, solvent cement, primers and procedures **MUST** conform to American National Standards Institute (ANSI) and American Society for Testing and Materials (ASTM) Standards:

Pipe and Fittings: – D1785, D2466, D2661, D2665, F–891, F628, D2665, D2241
PVC Primer & Solvent Cement – D2564 & D2235
Procedure for Cement Joints – D2855

Note: In order to create a seal that allows future removal of pipe, **RTV sealant MUST be used on the inlet pipe** where it joins to the furnace. PVC, CPVC, ABS and Cellular Core pipe and cement may be used on all other joints.

In Canada, construct all combustion–air and vent pipes for this unit of ULC certified Schedule–40 PVC, PVC–DWV, or ABS–DWV pipe and cement. **SDR pipe is not approved in Canada.**

Figure 1 Vent Termination Clearances



Item	Clearance Description	Canadian Installation (1)	U.S. Installation (2)
A	Clearance above grade, veranda, porch, deck, balcony, or anticipated snow level	12 inches (30cm) #	12 inches (30 cm)
B	Clearance to a window or door that may be opened	12 inches (30 cm) for appliances > 10,000 Btuh (3 kW) and ≤ 100,000 Btuh (30 kW), 36″ (91 cm) for appliances > 100,000 Btuh (30 kW)	9 inches (23 cm) for appliances > 10,000 Btuh (3 kW) and ≤ 50,000 Btuh (15 kW), 12 inches (30 cm) for appliances > 50,000 Btuh (15 kW)
C	Clearance to a permanently closed window	*	*
D	Vertical clearance to a ventilated soffit located above the terminal within a horizontal distance of 2 feet (61cm) from the centerline of the terminal	*	*
E	Clearance to an unventilated soffit	*	*
F	Clearance to an outside corner	*	*
G	Clearance to an inside corner	*	*
H	Clearance to each side of the centerline extended above electrical meter or gas service regulator assembly	3 feet (91 cm) within 15 feet (4.5 m) above the meter/regulator assembly	3 feet (91 cm) within 15 feet (4.5 m) above the meter/regulator assembly
I	Clearance to service regulator vent outlet	3 feet (91 cm)	*
J	Clearance to non-mechanical air supply inlet to building or the combustion air inlet to any other appliance	12 inches (30 cm) for appliances > 10,000 Btuh (3 kW) and ≤ 100,000 Btuh (30 kW), 36 inches (91 cm) for appliances > 100,000 Btuh (30 kW)	9 inches (23 cm) for appliances > 10,000 Btuh (3 kW) and ≤ 50,000 Btuh (15 kW), 12 inches (30 cm) for appliances > 50,000 Btuh (15 kW)
K	Clearance to a mechanical air supply inlet	6 feet (1.83 m)	3 feet (91 cm) above if within 10 feet (3m) horizontally
L	Clearance under a veranda, porch, deck, or balcony	12 inches (30 cm) +	*
M	Clearance to each side of the centerline extended above or below vent terminal of the furnace to a dryer or water heater vent, or other appliance's direct vent intake or exhaust.	12 inches (30 cm)	12 inches (30 cm)
N	Clearance to the vent terminal of a dryer vent, water hater vent, or other appliances direct vent intake or exhaust.	3 feet (91 cm)	3 feet (91 cm)
O	Clearance from a plumbing vent stack	3 feet (91 cm)	3 feet (91 cm)
P	Clearance above a paved sidewalk or paved driveway located on public property.	7 feet (2.13 m) **	*

(1.) In accordance with the current CSA B149.1, Natural Gas and Propane Installation Code

(2.) In accordance with the current ANSI Z223.1/NFPA 54, National Fuel Gas Code

\# 18 inches (46 cm) above roof surface

\+ Permitted only if veranda, porch, deck, or balcony is fully open on a minimum of two sides beneath the floor.

* For clearances not specified in ANSI Z223.1/NFPA 54 or CSA B149.1, clearances shall be in accordance with local installation codes and the requirements of the gas supplier and the manufacture's installation instructions.

** A vent shall not terminate above a sidewalk or paved driveway that is located between two single family dwellings and serves both dwellings.

Notes:

1. The vent for this appliance shall not terminate
   a. Over public walkways; or
   b. Near soffit vents or crawl space vents or other areas where condensate or vapor could create a nuisance or hazard or property damage; or
   c. Where condensate vapor could cause damage or could be detrimental to the operation of regulators, relief valves, or other equipment.
2. When locating vent terminations, consideration must be given to prevailing winds, location, and other conditions which may cause recirculation of the combustion products of adjacent vents. Recirculation can cause poor combustion, inlet condensate problems, and accelerated corrosion of the heat exchangers.
3. Avoid venting under a deck or large overhand. Recirculation could occur and cause performance or system problems.

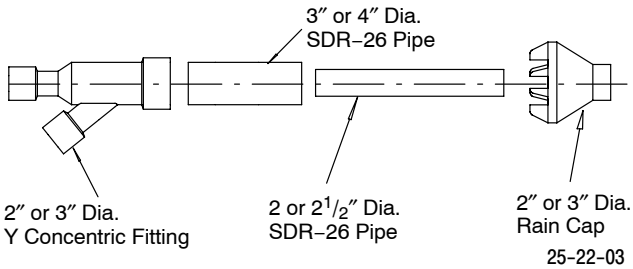
Vent Termination Clearances

1. Determine termination locations based on clearances specified in furnace installation instruction, and following steps as shown in **Figure 1, Figure 3, Figures 6 through 9.**
2. The vent termination must be located at least 12″ (304.8mm) above ground or normally expected snow accumulation levels.
3. Do **NOT** terminate over public walkways. Avoid areas where condensate may cause problems such as above planters, patios, or adjacent to windows where steam may cause fogging.
4. The vent termination shall be located at least 3′ (.9m) horizontally from any electric meter, gas meter, regulator, and any relief equipment (see Figure 1).
5. The vent termination is to be located at least 3′ (.9m) above any forced air inlet located within 10′ (3m); and at least 10′ (3m) from a combustion air intake of another appliance, except another direct vent furnace intake.
6. In Canada, the *National Standards of Canada, Natural Gas, Propane Installation Codes (NSCNGPIC)* takes precedence over the preceding termination instructions.

Concentric Vent Termination – Kit # NAHA001CV & NAHA002CV

Figure 2 **Kit Components**

Kit Contents:
3″ (76.2mm) Rain Cap or 2″ (50.8mm) Rain Cap
3″ (76.2mm) Diameter SDR–26 Pipe, $19^1/_2$″ (495.3mm) Long or
4″ (101.6mm) Diameter SDR–26 Pipe, 24″ (609.6mm) Long,
2″ (50.8mm) Diameter SDR–26 Pipe, $31^5/_8$″ (803.3mm) Long or
$2^1/_2$″ (63.5mm) Diameter SDR–26 Pipe, $37^1/_8$″ (943mm) Long,
3″ (76.2mm) Y Concentric Fitting or 2″ (50.8mm) Y Concentric Fitting



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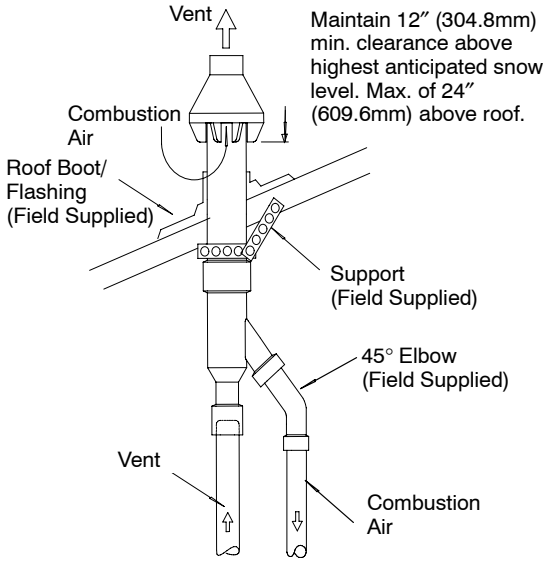
These kits are for vertical or horizontal termination of the combustion air inlet and the exhaust vent pipes on Category IV gas–fired condensing furnaces. The NAHA001CV kit can be used for 3″ (76.2mm) diameter pipe systems. The NAHA002CV kit can be used for 2″ (50.8mm) diameter pipe system. Refer to **Table 1** thru **Table 5** for the correct pipe size for the furnace. Both the combustion air inlet and the exhaust vent pipes must attach to the termination kit. The termination kit must terminate outside the structure and must be installed per the instructions outlined below for vertical or horizontal termination. Vertical termination is preferred. Field supplied pipe and fittings are required to complete the installation.

Vertical & Horizontal Termination

1. Determine the pipe diameters required for the installation from **Table 1, Table 2, Table 3, Table 4,** or **Table 5.**
2. Determine the best location for the termination kit. See **Figure 3** for vertical termination or **Figure 6** and **Figure 7** for horizontal termination. Roof termination is preferred since it is less susceptible to damage, has reduced intake contaminants and less visible vent vapor. For side wall termination, consideration should be given to: 1) possible damage from the vapors to plants/shrubs, other equipment and building materials, 2) possible damage to the terminal from foreign objects, 3) wind effects that may cause recirculation of flue products, debris or light snow and 4) visible vent vapor.
3. Cut one 5″ (127mm) diameter hole through the structure for the NAHA001CV Kit or one 4″ (101.6mm) diameter hole for the NAHA002CV Kit .
4. Dimension D may be lengthened to 60″ ⟨1524mm)max. or shortened by cutting the pipes to 12″ (304.8mm) min. Dimension A will change according to D dimension. (See **Figure 4)**

Figure 3 **Concentric Vent Roof Installation**



Note:
Support must be field installed to secure termination kit to structure.

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Table 1	Concentric Termination Kit NAHA001CV & NAHA002CV Venting Table for N9MPD and *9MPD Models
50,000, 75,000 & 80,000 Btuh Furnaces	
NAHA002CV – 35′ (10.7m) & (4) 90° elbows with 2″ (50.8mm) PVC pipe or **NAHA001CV – 65′ (19.8m)** & (4) 90° elbows with 3″ (76.2mm) PVC pipe	
100,000 Btuh Furnace	
NAHA001CV – 35′ (10.7m) & (4) 90° elbows with 3″ (76.2mm) PVC pipe or **NAHA001CV – 65′ (19.8m)** & (4) 90° elbows with 3″ (76.2mm) PVC pipe & Long Vent Kit (See Tech. Manual)	
125,000 Btuh Furnace	
NAHA001CV – 35′ (10.7m) & (4) 90° elbows with 3″ (76.2mm) PVC pipe	

1. Do not include the field supplied 45° elbow in the total elbow count.
2. If more than four elbows are required, reduce the length of both the inlet and the exhaust pipes five feet for each additional elbow used.
3. Elbows are DWV long radius type for 2″ and 3″ vents.
NOTE: Feet of pipe is whichever pipe run is the longest, either inlet *or* outlet side.

Table 2	Concentric Termination Kit NAHA001CV & NAHA002CV Venting Table for *9UHX & *9MVX Models
40,000 ‡ & 60,000 Btuh Furnaces	
NAHA002CV – 35′ (10.7m) & (4) 90° elbows with 2″ (50.8mm) PVC pipe or **NAHA001CV – 65′ (19.8m)** & (4) 90° elbows with 3″ (76.2mm) PVC pipe	
80,000 Btuh Furnace	
NAHA002CV – 35′ (10.7m) & (4) 90° elbows with 2″ (50.8mm) PVC pipe or **NAHA001CV – 35′ (10.7m)** & (4) 90° elbows with 3″ (76.2mm) PVC pipe	
100,000 Btuh Furnace	
NAHA002CV – 25′ (7.6m) & (3) 90° elbows with 2″ (50.8mm) PVC pipe or **NAHA001CV – 35′ (10.7m)** & (4) 90° elbows with 3″ (76.2mm) PVC pipe	

1. Do not include the field supplied 45° elbow in the total elbow count.
2. If more elbows are required, reduce the length of both the inlet and the exhaust pipes five feet for each additional elbow used.
3. Elbows are DWV long radius type for 2″ and 3″ vents.
NOTE: Feet of pipe is whichever pipe run is the longest, either inlet *or* outlet side.
‡ *9MVX40f12 Models only

Table 3	Concentric Termination Kit NAHA001CV & NAHA002CV Venting Table for N9MP2 Models
50,000 & 80,000 Btuh Furnaces	
NAHA002CV – 35′ (10.7m) & (4) 90° elbows with 2″ (50.8mm) PVC pipe or **NAHA001CV – 65′ (19.8m)** & (4) 90° elbows with 3″ PVC pipe	
75,000 Btuh Furnaces	
NAHA002CV – 20′ (6.1m) & (2) 90° elbows with 2″ (50.8mm) PVC pipe or **NAHA002CV – 35′ (10.7m)** & (4) 90° elbows with 2″ (50.8mm) PVC pipe & Long Vent Kit (See Tech. Manual) or **NAHA001CV – 65′ (19.8m)** & (4) 90° elbows with 3″ (76.2mm) PVC pipe	
100,000 Btuh Furnace	
NAHA001CV – 35′ (10.7m) & (4) 90° elbows with 3″ (76.2mm) PVC pipe or **NAHA001CV – 65′ (19.8m)** & (4) 90° elbows with 3″ (76.2mm) PVC pipe & Long Vent Kit (See Tech. Manual)	
125,000 Btuh Furnace	
NAHA001CV – 35′ (10.7m) & (4) 90° elbows with 3″ (76.2mm) PVC pipe	

1. Do not include the field supplied 45° elbow in the total elbow count.
2. If more than four elbows are required, reduce the length of both the inlet and the exhaust pipes five feet for each additional elbow used.
3. Elbows are DWV long radius type for 2″ and 3″ vents.
NOTE: Feet of pipe is whichever pipe run is the longest, either inlet *or* outlet side.

Table 4	Concentric Termination Kit NAHA001CV & NAHA002CV Venting Table for *9MPT and *9MPV Models
50,000 & 75,000 Btuh Furnaces	
NAHA002CV – 35′ (10.7m) & (4) 90° elbows with 2″ (50.8mm) PVC pipe	
100,000 & 125,000 Btuh Furnace	
NAHA001CV – 35′ (10.7m) & (4) 90° elbows with 3″ (76.2mm) PVC pipe	

1. Do not include the field supplied 45° elbow in the total elbow count.
2. If more than four elbows are required, reduce the length of both the inlet and the exhaust pipes five feet for each additional elbow used.
3. Elbows are DWV long radius type for 2″ and 3″ vents.

Table 5	Concentric Termination Kit NAHA001CV & NAHA002CV Venting Table for WFHR Models								
	Maximum Allowable Pipe Length ft/m								
ALTITUDE ft/m	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NUMBER OF 90 ELBOWS ft/m					
		TERMINATION TYPE	PIPE DIA in(mm)	1	2	3	4	5	6
0 to 2000/ 0 to 609	40,000	2 inch (50.8 mm) Concentric	1(25.4)	5/1.5	NA	NA	NA	NA	NA
			1.5(38.1)	70/21.3	70/21.3	55/19.8	60/18.3	60/18.3	55/16.8
			2(50.8)	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3
	60,000	2 inch (50.8 mm) Concentric	1.5(38.1)	20/6.1	15/4.6	10/3	5/1.5	NA	NA
			2(50.8)	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3
	80,000	2 inch (50.8 mm) Concentric	1.5(38.1)	10/3	NA	NA	NA	NA	NA
			2(50.8)	55/16.8	50/15.2	35/10.7	30/9.1	30/9.1	20/6.1
			2.5(63.5)	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3
	100,000	3 inch (76.2 mm) Concentric	2(50.8)	5/1.5)	NA	NA	NA	NA	NA
			2.5(63.5)	40/12.2)	30/9.1	20/6.1	20/6.1	10/3	NA
			3(76.2)	70/21.3)	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3
	120,000	3 inch (76.2 mm) Concentric	2.5(63.5) one disk	10/3)	NA	NA	NA	NA	NA
			3(76.2)†	45/13.7)	40/12.2	35/10.7	30/9.1	25/7.6	20/6.1
			3(76.2)† no disk	70/21.3)	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3
ALTITUDE ft/m	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NUMBER OF 90 ELBOWS ft/m					
		TERMINATION TYPE	PIPE DIA in(mm)	1	2	3	4	5	6
2001 to 3000/ 610 to 914	40,000	2 inch (50.8 mm) Concentric	1.5(38.1)	67/20.4	62/18.9	57/17.4	52/15.8	52/15.8	47/14.3
			2(50.8)	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3
	60,000	2 inch (50.8 mm) Concentric	1.5(38.1)	17/5.2	12/3.7	7/2.1	NA	NA	NA
			2(50.8)	70/21.3	67/20.4	66/20.1	61/18.6	61/18.6	61/18.6
	80,000	2 inch (50.8 mm) Concentric	2(50.8)	49/14.9	44/13.4	30/9.1	25/7.6	25/7.6	15/4.6
			2.5(63.5)	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3
	100,000	3 inch (76.2 mm) Concentric	2.5(63.5)	35/10.7	26/7.9	16/4.9	16/4.9	6/1.8	NA
			3(76.2)	70/21.3	70/21.3	70/21.3	70/21.3	66/20.1	61/18.6
	120,000	3 inch (76.2 mm) Concentric	3(76.2)	14/4.3	9/2.7	NA	NA	NA	NA
			3(76.2)† no disk	70/21.3	70/21.3	63/19.2	56/17.1	50/15.2	43/13.1
			4(101.6)† no disk	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3
ALTITUDE ft/m	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NUMBER OF 90 ELBOWS ft/m					
		TERMINATION TYPE	PIPE DIA in(mm)	1	2	3	4	5	6
3001 to 4000 915 to 1219	40,000	2 inch (50.8 mm) Concentric	1.5(38.1)	64/19.5	59/18.0	54/16.5	49/14.9	48/14.6	43/13.1
			2(50.8)	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3
	60,000	2 inch (50.8 mm) Concentric	1.5(38.1)	16/4.9	11/3.35	6/1.8	NA	NA	NA
			2(50.8)	68/20.7	63/19.2	62/18.9	57/17.4	57/17.4	56/17.1
	80,000	2 inch (50.8 mm) Concentric	2(50.8)	46/14.0	41/12.5	28/8.5	23/7.0	22/6.7	13/4.0
			2.5(63.5)	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3
	100,000	3 inch (76.2 mm) Concentric	2.5(63.5)	33/10.1	24/7.3	15/4.6	14/4.3	5/1.5	NA
			3(76.2)	70/21.3	70/21.3	70/21.3	66/20.1	61/18.6	56/17.1
	120,000	3 inch (76.2 mm) Concentric	3(76.2)† no disk	55/19.8	58/17.7	51/15.5	44/13.4	38/11.6	31/9.4
ALTITUDE ft/m	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NUMBER OF 90 ELBOWS ft/m					
		TERMINATION TYPE	PIPE DIA in(mm)	1	2	3	4	5	6
4001 to 5000‡/ 1220 to 1524‡	40,000	2 inch (50.8 mm) Concentric	1.5(38.1)	60/18.3	55/16.8	50/15.2	45/13.7	44/13.4	39/11.9
			2(50.8)	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3
	60,000	2 inch (50.8 mm) Concentric	1.5(38.1)	15/4.6	10/3	5/1.5	NA	NA	NA
			2(50.8)	64/19.5	59/18.0	58/17.7	53/16.2	52/15.8	52/15.8
	80,000	2 inch (50.8 mm) Concentric	2(50.8)	44/13.4	39/11.9	26/9.0	21/6.4	20/6.1	11/3.35
			2.5(63.5)	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3
	100,000	3 inch (76.2 mm) Concentric	2.5(63.5)	31/9.4	22/6.7	13/4.0	12/3.7	NA	NA
			3	70/21.3	70/21.3	67/20.4	62/18.9	57/17.4	52/15.8
	120,000	3 inch (76.2 mm) Concentric	3(76.2)† no disk	53/16.2	46/14.0	40/12.2	33/10.1	26/9	20/6.1
			4(101.6)† no disk	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3

See Legend and Notes following table.

– continued on next page –

Table 5 (Cont.)	Concentric Termination Kit NAHA001CV & NAHA002CV Venting Table for WFHR Models								
	Maximum Allowable Pipe Length ft/m								
ALTITUDE ft/m	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NUMBER OF 90 ELBOWS ft/m					
		TERMINATION TYPE	PIPE DIA in(mm)	1	2	3	4	5	6
5001 to 6000‡/ 1524 to 1828‡	40,000	2 inch (50.8 mm) Concentric	1.5(38.1)	57/17.4	52/15.8	47/14.3	42/12.8	40/12.2	35/10.7
			2(50.8)	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3
	60,000	2 inch (50.8 mm) Concentric	1.5(38.1)	14/4.3	9/2.7	NA	NA	NA	NA
			2(50.8)	60/18.3	55/16.8	54/16.5	49/14.9	48/14.6	47/14.3
	80,000	2 inch (50.8 mm) Concentric	2(50.8)	41/12.5	36/11.0	23/7.0	18/5.5	17/5.2	8/2.4
			2.5(63.5)	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3
	100,000	3 inch (76.2 mm) Concentric	2.5(63.5)	29/8.8	21/6.4	12/3.7	11/3.35	NA	NA
			3(76.2)	70/21.3	67/20.4	62/18.9	57/17.4	52/15.8	47/14.3
	120,000	3 inch (76.2 mm) Concentric	3(76.2)† no disk	4212.8	35/10.7	29/8.8	22/6.7	15/4.6	9/2.7
			4(101.6)† no disk	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3	70/21.3
ALTITUDE ft/m	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NUMBER OF 90 ELBOWS ft/m					
		TERMINATION TYPE	PIPE DIA in(mm)	1	2	3	4	5	6
6001 to 7000‡/ 1829 to 2133‡	40,000	2 inch (50.8 mm) Concentric	1.5(38.1)	53/16.2	48/14.6	43/13.1	38/11.6	37/11.3	32/9.8
			2(50.8)	70/21.3	70/21.3	68/20.7	67/20.4	66/20.1	64/19.5
	60,000	2 inch (50.8 mm) Concentric	1.5(38.1)	13/4.0	8/2.4	NA	NA	NA	NA
			2(50.8)	57/17.4	52/15.8	50/15.2	45/13.7	44/13.4	43/13.1
	80,000	2 inch (50.8 mm) Concentric	2(50.8)	38/11.6	33/10.1	21/6.4	16/4.9	15/4.6	6/1.8
			2.5(63.5)	70/21.3	70/21.3	68/20.7	67/20.4	66/20.1	64/19.5
	100,000	3 inch (76.2 mm) Concentric	2.5(63.5)	27/8.2	19/5.8	10/3	9/2.7	NA	NA
			3(76.2)	68/20.7	63/19.2	58/17.7	53/16.2	48/14.6	43/13.1
	120,000	3 inch (76.2 mm) Concentric	3(76.2)† no disk	31/9.4	24/7.3	18/5.5	11/3.35	NA	NA
			4(101.6)† no disk	70/21.3	70/21.3	70/21.3	70/21.3	67/20.4	62/18.9
ALTITUDE ft/m	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NUMBER OF 90 ELBOWS ft/m					
		TERMINATION TYPE	PIPE DIA in(mm)	1	2	3	4	5	6
7001 to 8000‡/ 2134 to 2438‡	40,000	2 inch (50.8 mm) Concentric	1.5(38.1)	49/14.9	44/13.4	39/11.9	34/10.4	33/10.1	28/8.5
			2(50.8)	66/20.1	55/19.8	63/19.2	62/18.9	60/18.3	59/18.0
	60,000	2 inch (50.8 mm) Concentric	1.5(38.1)	12/3.7	7/2.1	NA	NA	NA	NA
			2(50.8)	53/16.2	48/14.6	46/14.0	41/12.5	40/12.2	38/11.6
	80,000	2 inch (50.8 mm) Concentric	2(50.8)	36/11.0	31/9.4	19/5.8	14/4.3	12/3.7	NA
			2.5(63.5)	66/20.1	55/19.8	63/19.2	62/18.9	60/18.3	59/18.0
	100,000	3 inch (76.2 mm) Concentric	2.5(63.5)	25/7.6	17/5.2	8/2.4	7/2.1	NA	NA
			3(76.2)	63/19.2	58/17.7	53/16.2	48/14.6	43/13.1	38/11.6
	120,000	3 inch (76.2 mm) Concentric	3(76.2)† no disk	20/6.1	13/4.0	7/2.1	NA	NA	NA
			4(101.6)† no disk	61/18.6	56/17.1	51/15.5	46/14.0	41/12.5	36/11.0
ALTITUDE ft/m	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NUMBER OF 90 ELBOWS ft/m					
		TERMINATION TYPE	PIPE DIA in(mm)	1	2	3	4	5	6
8001 to 9000‡/ 2439 to 2743‡	40,000	2 inch (50.8 mm) Concentric	1.5(38.1)	46/14.0	41/12.5	36/11.0	31/9.4	29/8.8	24/7.3
			2(50.8)	62/18.9	60/18.3	58/17.7	56/17.1	55/16.8	53/16.2
	60,000	2 inch (50.8 mm) Concentric	1.5(38.1)	11/3.35	6/1.8	NA	NA	NA	NA
			2(50.8)	49/14.9	44/13.4	42/12.8	37/11.3	35/10.7	34
	80,000	2 inch (50.8 mm) Concentric	2(50.8)	33/10.1	28/8.5	17/5.2	12/3.7	10/3.0	NA
			2.5(63.5)	62/18.9	60/18.3	58/17.7	56/17.1	55/16.8	53/16.2
	100,000	3 inch (76.2 mm) Concentric	2.5(63.5)	23/7.0	15/4.6	7/2.1	5/1.5	NA	NA
			3(76.2)	59/18.0	54/16.5	49/14.9	44/13.4	39/11.9	34/10.4
	120,000	3 inch (76.2 mm) Concentric	3+(76.2+) no disk	10/3	NA	NA	NA	NA	NA
			4+(101.6+) no disk	35/10.7	30/9.1	25/7.6	20/6.1	15/4.6	10/3
ALTITUDE ft/m	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NUMBER OF 90 ELBOWS ft/m					
		TERMINATION TYPE	PIPE DIA in(mm)	1	2	3	4	5	6
9001 to 10,000‡/ 2744 to 3048‡	40,000	2 inch (50.8 mm) Concentric	1.5(38.1)	42/12.8	37/11.3	32/9.8	27/8.2	25/7.6	20/6.1
			2(50.8)	57/17.4	55/16.8	53/16.2	51/15.5	49/14.9	47/14.3
	60,000	2 inch (50.8 mm) Concentric	2(50.8)	45/13.7	40/12.2	38/11.6	33/10.1	31/9.4	29/8.8
	80,000	2 inch (50.8 mm) Concentric	2(50.8)	30/9.1	25/7.6	14/4.3	9/2.7	7/2.1	NA
			2.5(63.5)	57/17.4	55/16.8	53/16.2	51/15.5	49/14.9	47/14.3
	100,000	3 inch (76.2 mm) Concentric	2.5(63.5)	21/6.4	13/4.0	5/1.5	NA	NA	NA
			3(76.2)	54/16.5	49/14.9	44/13.4	39/11.9	34/10.4	29/8.8
	120,000	3 inch (76.2 mm) Concentric	4(101.6)† no disk	10/3.0	5/1.5	NA	NA	NA	NA

See Legend and Notes on following page.

Legend and Notes:

*Disk usage — Unless otherwise specified, use perforated disk assembly (factory-supplied in loose parts bag). If one disk is stated, separate 2 halves of perforated disk assembly and use shouldered disk half. When using shouldered disk half, install screen side toward inlet box.

†Wide radius elbow.

‡Vent sizing for Canadian installations over 4500 ft (1370 m) above sea level are subject to acceptance by the local authorities having jurisdiction.

NA — Not Allowed; pressure switch will not make.

NOTE:

1. Do not use pipe size greater than those specified in table or incomplete combustion, flame disturbance, or flame sense lockout may occur.
2. Size both the combustion-air and vent pipe independently, then use the larger diameter for both pipes.
3. Assume two 45° elbows equal one 90° elbow. Wide radius elbows are desirable and may be required in some cases.
4. Elbows and pipe sections within the furnace casing and at the vent termination should not be included in vent length or elbow count.
5. The minimum pipe length is 5 ft (1.5 m) for all applications.
6. Use 3-in. diameter vent termination kit for installations requiring 4-in diameter pipe.

⚠ CAUTION

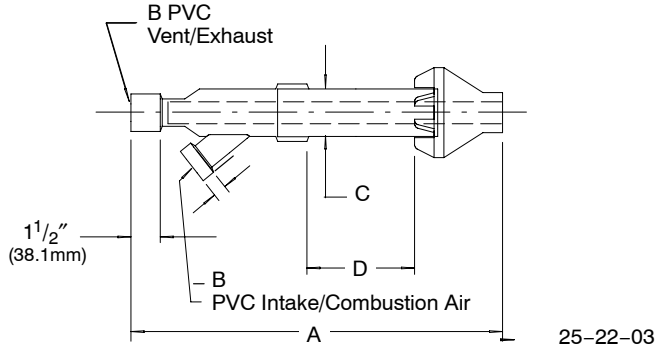
UNIT OPERATION HAZARD

Failure to follow this caution may result in intermittent unit operation.

Do not use field supplied couplings to extend the pipes. Airflow restriction will occur and the furnace pressure switch may cause intermittent operation.

If assembly needs to be extended to meet height or side wall thickness requirement, the two pipes supplied in the kit may be replaced by using the same diameter solid, single (no coupling connections) field supplied SDR–26 PVC (ASTM D2241) pipes. Do not extend dimension D more than 60″(1524mm). (See **Figure 4)**

Figure 4 — **Concentric Vent Dimensional Drawing in(mm)**



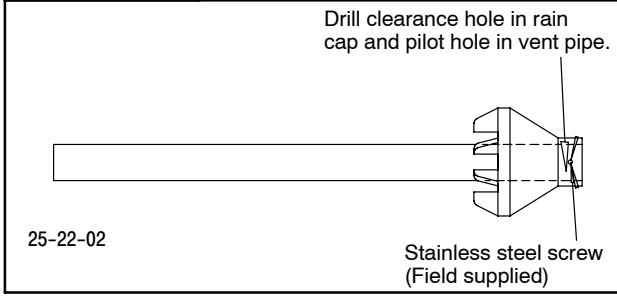
Model	A*	B	C	D**
NAHA001CV	38 7/8(987.4)	3(76.2)	4 1/2(114.3)	21 1/8(536.6)
NAHA002CV	33 3/8(847.7)	2(50.8)	3 1/2(88.9)	16 5/8(422.3)

* = Dimension will change accordingly as dimension D is lengthened or shortened.

** = Dimension D may be lengthened to 60″ (1524mm) may also be shortened by cutting the pipes provided in the kit to 12″ (304.8mm) minimum

5. Partially assemble the concentric vent termination kit. Clean and cement the parts using the procedures for Joining Pipe and Fittings section of the furnace installation manual. A) Cement the Y Concentric fitting to the larger diameter kit pipe. (See **Figure 2)** B) Cement the rain cap to the smaller diameter kit part. (See **Figure 2) NOTE:** A field supplied stainless steel screw may be used to secure the rain cap to the pipe instead of cementing when field disassembly is desired for cleaning (See **Figure 5)**

Figure 5 — **Rain Cap to Vent Pipe Assembly**



⚠ WARNING

CARBON MONOXIDE POISONING, FIRE AND EXPLOSION HAZARD

Failure to follow this warning could result in personal injury, death, and/or property damage.

When using the alternate screw assembly method, drill a clearance hole in the rain cap and a pilot hole in the vent pipe for the screw size being used. Failure to drill adequate holes may cause cracking of the PVC components, allowing flue gases to be recirculated.

⚠ WARNING

CARBON MONOXIDE POISONING, FIRE AND EXPLOSION HAZARD.

Failure to follow this warning could result in personal injury, death, and/or property damage.

Do not operate the furnace with the rain cap removed as recirculation of the flue gases may occur. Water may also collect inside the larger combustion air pipe and flow to the burner enclosure.

6. Install the Y concentric fitting and the pipe assembly through the structure's hole. For vertical termination, install the parts through the field supplied roof boot/flashing. **NOTE:** Do not allow insulation or other materials to accumulate inside the pipe assembly when installing through the structure's hole.
7. Secure the assembly to the structure as shown in **Figure 3** or **Figure 7** using field supplied metal strapping or equivalent material.

   NOTE: Ensure the termination height is above the roof surface or anticipated snow level as shown in **Figure 3** for vertical termination. Ensure the termination location clearance dimensions are as shown in **Figure 6** and **Figure 7** for horizontal termination.

Figure 6 **Concentric Vent and Combustion–Air Side Termination**

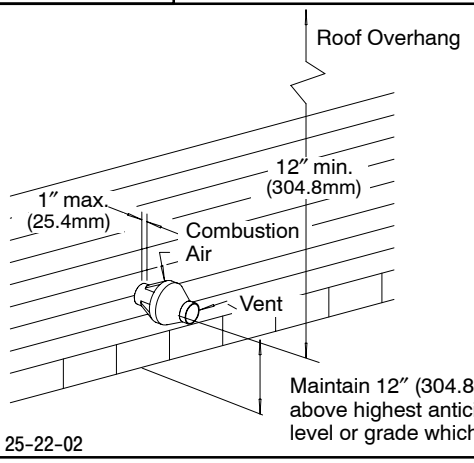
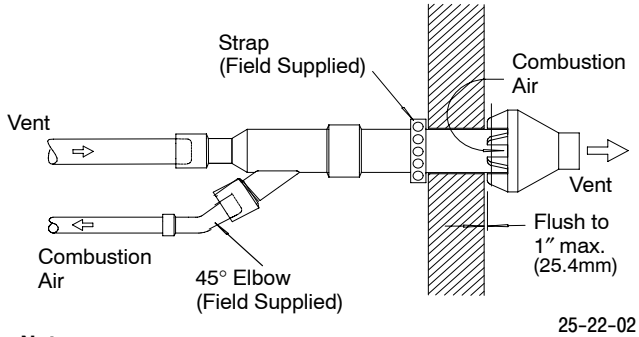


Figure 7 **Concentric Vent Sidewall Attachment**



Note:
Securing strap must be field installed to prevent movement of termination kit in side wall.

8. Install the rain cap and the small diameter pipe assembly in the Y concentric fitting and the large pipe assembly. Ensure that the small diameter pipe is bottomed out and securely cemented in the Y concentric fitting.
9. Cement the furnace combustion air and vent pipes to the concentric vent termination assembly. See **Figure 3** or **Figure 7** for proper pipe attachment.
10. Operate the furnace through one heat cycle to ensure combustion air and vent pipes are properly connected to the concentric termination connections.

Multi Vent Termination Clearances

When two (2) or more furnaces are vented near each other, each furnace must be individually vented.

Two (2) vent terminations may be installed as shown in **Figure 8** and **Figure 9**, but the next vent termination or pair of vent terminations, must be at least 36″ (914.4mm) away from first two (2) terminations. It is important that vent terminations guidelines are followed to avoid recirculation of flue gases.

Figure 8 **Concentric Vent and Combustion–Air Roof Termination**

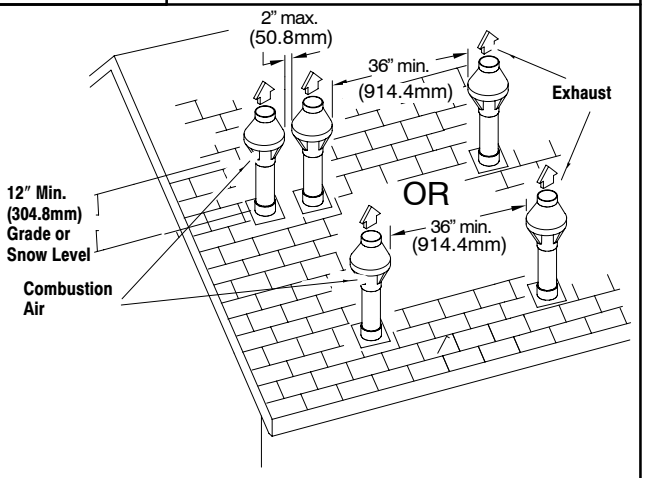
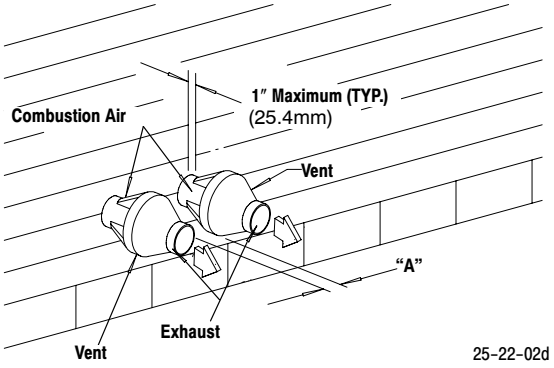


Figure 9 **Concentric Vent and Combustion–Air Sidewall Termination**



Dimension "A" is touching or 2″ (50.8) maximum separation.