

INSTALLATION INSTRUCTIONS

VERTICAL COMBUSTION AIR INLET KITS

CATEGORY III VENTING FOR SEPARATED COMBUSTION TUBULAR GAS FIRED DUCT FURNACES

USE 5" KIT FOR UNITS WITH CAPACITIES 100,000 TO 200,000 BTU/HR
USE 6" KIT FOR UNITS WITH CAPACITIES 250,000 TO 400,000 BTU/HR

Supplement to unit installation instructions – TDII

▲ WARNING Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read this supplement and the unit heater installation, operation and maintenance instructions thoroughly before installing or servicing this equipment.



This Combustion Air Inlet Kit utilizes a 5 or 6 inch collar (and gasketing) to convert a tubular duct furnace to separated combustion, as well as one 5 or 6 inch termination in which both the discharge flue gas and the combustion air inlet pass.

The location of the vent terminal must be in accordance with the National Fuel Code ANSI Z223.1 (NFPA 54) in the U.S. or the Natural Gas Installation Code CSA-B149.1 or the Propane Gas Installation Code CSA-B149.2 in Canada. Minimum clearances are shown in Table 1.

KIT CONTENTS:

Figure 1a – 5 Inch Combustion Air Inlet Kit

- #1 – Part No. 11J37R02222-002
(1) Vent Cap
- #2 – Part No. 11507R08560-DBL
(1) Combustion Air Inlet Box Assembly (see Figure 2a for dimensional data)
- #3 – Part No. 11J37R08964-DBL
(1) Air Inlet Vent Cap
- #4 – Part No. 11507R08568-DBL
(1) Deflector Disk*
- #5 – Part No. 11251R09199-001
(1) Air Inlet Collar – 5"
- #6 – Part No. 11251R09429-100
(1) Air Inlet Collar Gasket – 5"

Also Included:

- (1) Part No. J30-09443X8V Installation Instructions
- (1) Part No. 11H03R03612-002 Tube of High Temp Silicone Sealant
- (1) Part No. 11262R08614-006 Access Panel Gasket – 86.75"
- (3) Part No. 11H03R09471-005 Gasket, O-ring – 5"

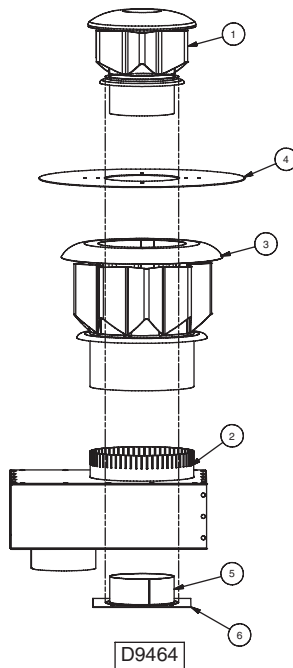
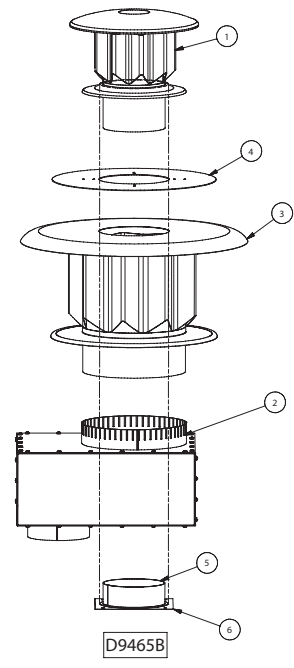


Figure 1b – 6 Inch Combustion Air Inlet Kit

- #1 – Part No. 11J37R02222-003
(1) Vent Cap
- #2 – Part No. 11507R08951-DBL
(1) Combustion Air Inlet Box Assembly (see Figure 2b for dimensional data)
- #3 – Part No. 11J37R08963-DBL
(1) Air Inlet Vent Cap
- #4 – Part No. 11507R09011-DBL
(1) Deflector Disk*
- #5 – Part No. 11251R09199-002
(1) Air Inlet Collar – 6"
- #6 – Part No. 11251R09429-250
(1) Air Inlet Collar Gasket – 6"

Also Included:

- (1) Part No. J30-09443X8V Installation Instructions
- (1) Part No. 11H03R03612-002 Tube of High Temp Silicone Sealant
- (1) Part No. 11262R08614-007 Access Panel Gasket – 112.75"
- (3) Part No. 11H03R09471-006 Gasket, O-ring – 6"



*Deflector Disk comes with brackets and screws for installation.



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DIMENSIONAL DATA

Figure 2a – 5 Inch Combustion Air Inlet Box Assembly

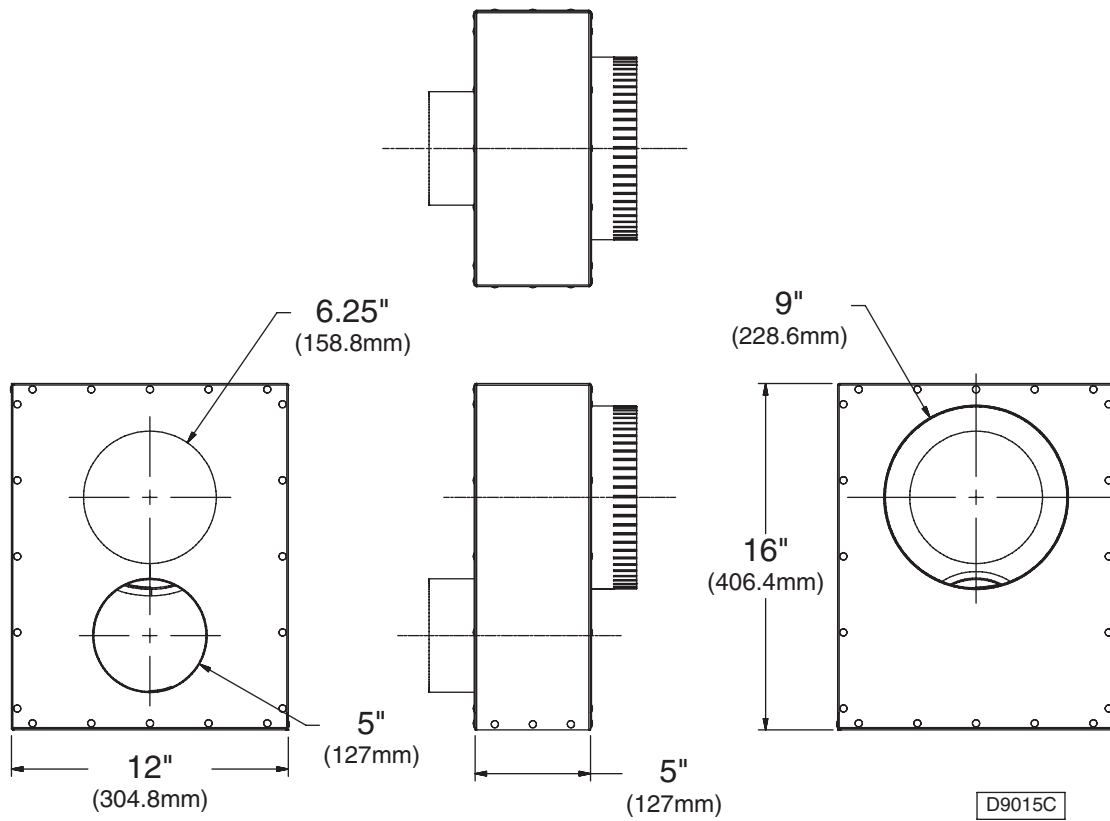
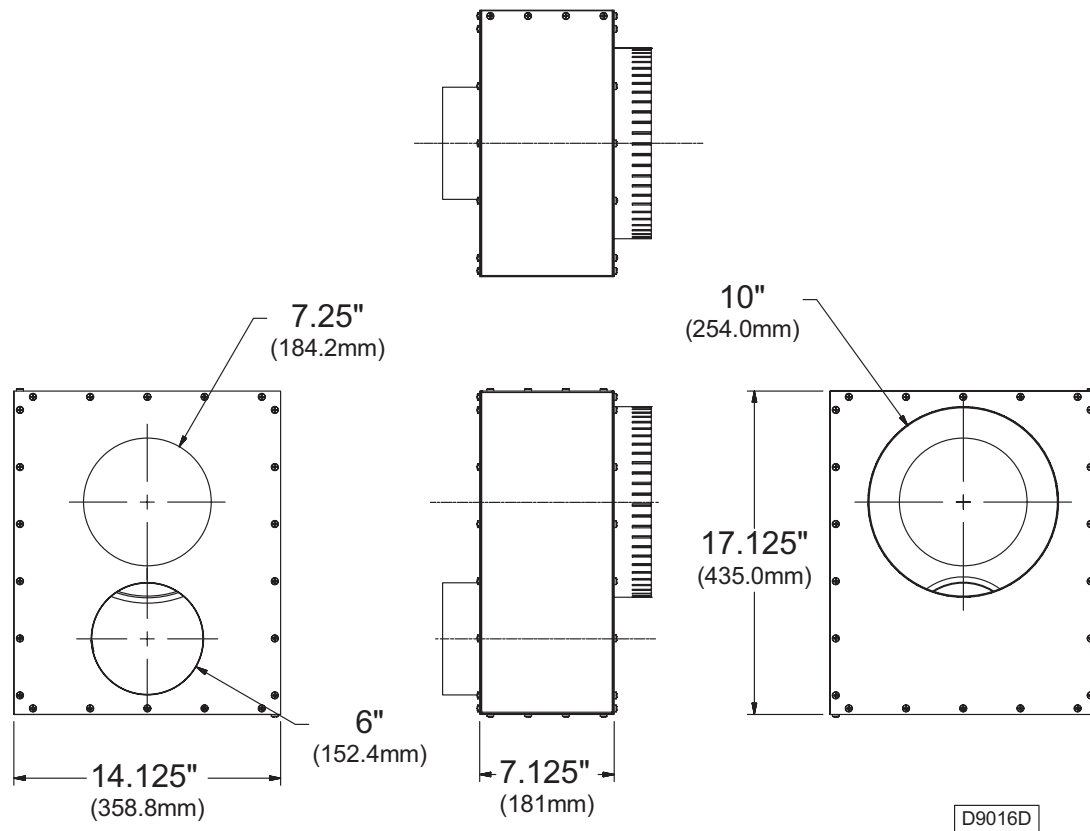


Figure 2b – 6 Inch Combustion Air Inlet Box Assembly



VENTING FOR POWER VENTED DUCT FURNACES (CATEGORY III)

GENERAL GUIDELINES

All unit heaters must be vented! All Venting installations shall be in accordance with the latest edition of Part 7, Venting of Equipment of the National Fuel Gas Code, ANSI Z223.1, or applicable provisions of local building codes. For installations in Canada, see below.

▲ WARNING CARBON MONOXIDE! Your venting system must not be blocked by any snow, snow drifts, or any foreign matter. Inspect your venting system to ensure adequate ventilation exists at all times! Failure to heed these warnings could result in Carbon Monoxide Poisoning (symptoms include grogginess, lethargy, inappropriate tiredness, or flu-like symptoms).

When an existing heater is removed or replaced in venting system, the venting system may not be properly sized to vent the attached appliances. An improperly sized vent system can cause formulation of condensate or leakage or spillage of flue gases.

The following steps shall be followed with each appliance connected to the venting system placed in operation, while any other appliances connected to the venting system are not in operation:

1. Seal any unused openings in the venting system.
2. Inspect the venting system for proper size and horizontal pitch, as required in the National Fuel Gas Code, ANSI Z223.1 (NFPA 54) and these instructions. Determine that there is no blockage or restriction, leakage, corrosion and other deficiencies, which could cause an unsafe condition.
3. In so far as practical, close all building doors and windows and all doors between the space in which the appliance(s) connected to the venting system are located and other spaces of the building. Turn on clothes dryers and any exhaust fans, such as range hoods and bathroom exhausts, so they shall operate at maximum speed. Do not operate a summer exhaust fan. Close fireplace damper.

4. Follow the lighting instructions. Place the appliance being inspected in operation. Adjust thermostat so that the appliance will operate continuously.
5. After it has been determined that each appliance connected to the venting system properly vents when tested as outline above, return doors, windows, exhaust fans, fireplace dampers, and any other gas-burning appliance to their previous condition of use.
6. If improper venting is observed during any of the above tests, the venting system must be corrected immediately so that the system conforms with the National Fuel Gas Code, ANSI Z223.1 (NFPA 54). When resizing any portion of the venting system, the venting system should be resized to approach the minimum size as determined using the appropriate tables in Appendix G of the National Fuel Gas Code, ANSI Z223.1 (NFPA 54).

The duct furnace shall be connected to a factory built chimney or vent complying with a recognized standard, or a masonry or concrete chimney lined with a lining material acceptable to the authority having jurisdiction.

Venting into an unlined masonry chimney is prohibited.

ADDITIONAL REQUIREMENTS FOR CANADIAN INSTALLATIONS

The following instructions apply to Canadian installations in addition to installation and operating instructions.

1. Installation must conform with local building codes, or in the absence of local codes, with current CSA-B149.1, Installation Codes for Natural Gas Burning Appliances and Equipment, or CSA-B149.2, Installation Codes for Propane Gas Burning Appliances and Equipment.
2. Any reference to U.S. standards or codes in these instructions are to be ignored and the applicable Canadian standards or codes applied.

VENTING FOR POWER VENTED DUCT FURNACES (CATEGORY III) GENERAL GUIDELINES (continued)

Do not damper or add heat recovery devices to the flue piping. Failure to open such a damper prior to operating the gas unit heater will result in the spillage of flue gas into the occupied space.

Avoid installing units in areas under negative pressure. When required, a flue vent fan should be installed in accordance with the instructions included with the fan.

Vent connectors serving Category I and Category II heaters shall not be connected into any portion of mechanical draft systems operating under positive vent pressure.

NOTICE: When using double wall vent pipe, O-ring gaskets are not required and should be discarded. When using single wall vent pipe, one O-ring should be inserted in each of the flue pipe openings in the Air Inlet Vent Cap, Deflector Disk and the top of the Combustion Air Inlet Box Assembly.

ANSI now organizes vented appliances into four categories:

Venting Categories

	Non Condensing	Condensing
Negative Vent Pressure	I	II
Positive Vent Pressure	III	IV

Category I

Includes non-condensing appliances with negative vent pressure, like the traditional atmospheric unit heater.

Category II

Groups condensing appliances with negative vent pressure.

Category III

Appliances are non-condensing and operate with a positive vent pressure.

Category IV

Covers condensing appliances with positive vent pressure.

NOTICE: Category II and IV do not apply to equipment specified within this manual.

Table 1

Vent Systems Termination Clearance Requirements		
Structure/Object	Minimum Clearances for Termination Locations	
	USA	CANADA
Door, window or gravity vent inlet; combustion air inlet for other appliances	9 in. for 10,000 to 50,000 BTU/Hr input; 12 in. for input exceeding 50,000 BTU/Hr	9 in. (230mm) for 10,000 to 50,000 BTU/Hr input; 12 in. (305mm) for input exceeding 50,000 BTU/Hr
Forced air inlet within 10 ft.	3 ft. above	6 ft. (1.8m)
Adjoining building or parapet ¹	10 ft.	10 ft. (3.04m)
Adjacent public walkways	7 ft. above grade	7 ft. (2.1m) above grade
Electric, gas meters & regulators	4 ft. horizontal	3 ft. (0.9m) horizontally from meter/regulator assembly. 6 ft. (1.8m), any direction, from a gas service regulator vent outlet
Above grade level ²	1 ft.	1 ft. (0.3m)

Notes:

1. For USA installations: Per NFPA 54, sections 12.6.2.1 and 12.7.2.1a, buildings are required to be a minimum of 10 feet (3.05m) from the flue termination. When using B-vent in a Category I applications, this clearance can be reduced to 8 feet (2.44m).

For Canadian installations: Per CSA B149.1 sections 8.14.2, 8.14.3, and 8.14.5, buildings are required to be a minimum of 10 feet (3.05m) from the flue termination in a Category I application, and a minimum of 6 feet (1.8m) in a Category III application.

2. Minimum above maximum snow depth, or per local code, whichever is greater.

INSTALLATION INSTRUCTIONS

AIR INLET COLLAR

Remove screen and mounting plate from air inlet on top panel of unit by removing 4 screws. Secure inlet collar and gasket to inlet opening by reusing the 4 screws removed in previous step.

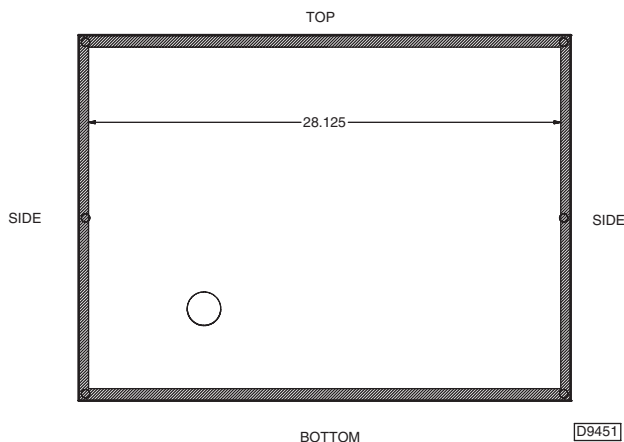
ACCESS PANEL SEAL

Cut gasket to lengths listed in Table 2. Remove paper backing and adhere to access panel making certain that the entire perimeter is covered (Figure 3).

Table 2 – Gasket Lengths

Unit Size	Top/Bottom Gasket Length (In)	Qty	Right/Left Gasket Length (In)	Qty
100	8-3/4	2	28-1/8	2
150	12	2	28-1/8	2
200	15-1/4	2	28-1/8	2
250	18-1/2	2	28-1/8	2
300	21-3/4	2	28-1/8	2
350	25	2	28-1/8	2
400	28-1/4	2	28-1/8	2

Figure 3 – Access Panel Seal



POWER SUPPLY INLET

After supply power line is run to main control board, seal the gap between the cord and the hole in rear panel with silicone sealant.

VERTICAL TERMINATION, 5 INCH KIT FOR USE WITH 100-200 MBH UNITS ONLY

Select a location on the roof for vent terminal ensuring adequate space inside for combustion air inlet box. Vent terminal must be at least 10 feet (3.04m) from any wall or adjoining building. See Table 1 and Figure 4a.

Cut hole through the roof for 9 inch (229mm) combustion air pipe. The combustion air inlet box is to be suspended from the underside of the roof using suitable brackets (field supplied). Before mounting vent box, cut a length of 9 inch pipe so that dimension "A" Figure 5, Step 1 is equal to the roof thickness plus 18 inches (457mm) or the roof thickness plus the expected snow depth, whichever is greater. Fasten the 9 inch pipe to the combustion air inlet on the combustion air inlet box. Seal the joint and fasten with sheet metal screws.

Insert the pipe through the roof and fasten vent box into place (See Figure 5, Step 2). Flash and/or caulk 9 inch pipe to roof (See Figure 5, Step 3). Install the inlet air cap and fasten with sheet metal screws.

Insert a length of 5 inch UL 1738 listed vent pipe in the direction of flow pointing upward through the air inlet vent cap. Vent pipe should be inserted into the combustion air inlet box so that the pipe extends a minimum of 6 inches (152mm) below the vent box for connection purposes. This will allow room to seal the flue pipe.

Secure the UL 1738 listed pipe in position with 3 small, evenly spaced sheet metal screws. With high temperature silicone, seal the space between the UL 1738 listed pipe and the combustion air inlet box as well as the space between the UL 1738 listed pipe and the air inlet cap (See Figure 5, Step 4).

Secure the vent cap to the UL 1738 listed pipe using sheet metal screws. Ensure there is a minimum of 12 inches (305mm) between the bottom of the flue vent cap and the top of the air inlet vent cap (See Figure 4a and Figure 5, Step 4). Connect flue pipe and combustion air pipe from the combustion air inlet box to the unit, following instructions in the manual provided with the unit and Combustion Air and Exhaust Venting instructions on pages 7 and 8.

⚠ WARNING Never use pipe other than 5 inch diameter. Never use PVC, ABS or any other nonmetallic pipe for exhaust venting! To do so may result in serious damage to the unit and or severe personal injury or death!

Figure 4a – Vertical 5 Inch Combustion Air Inlet Kit Installation

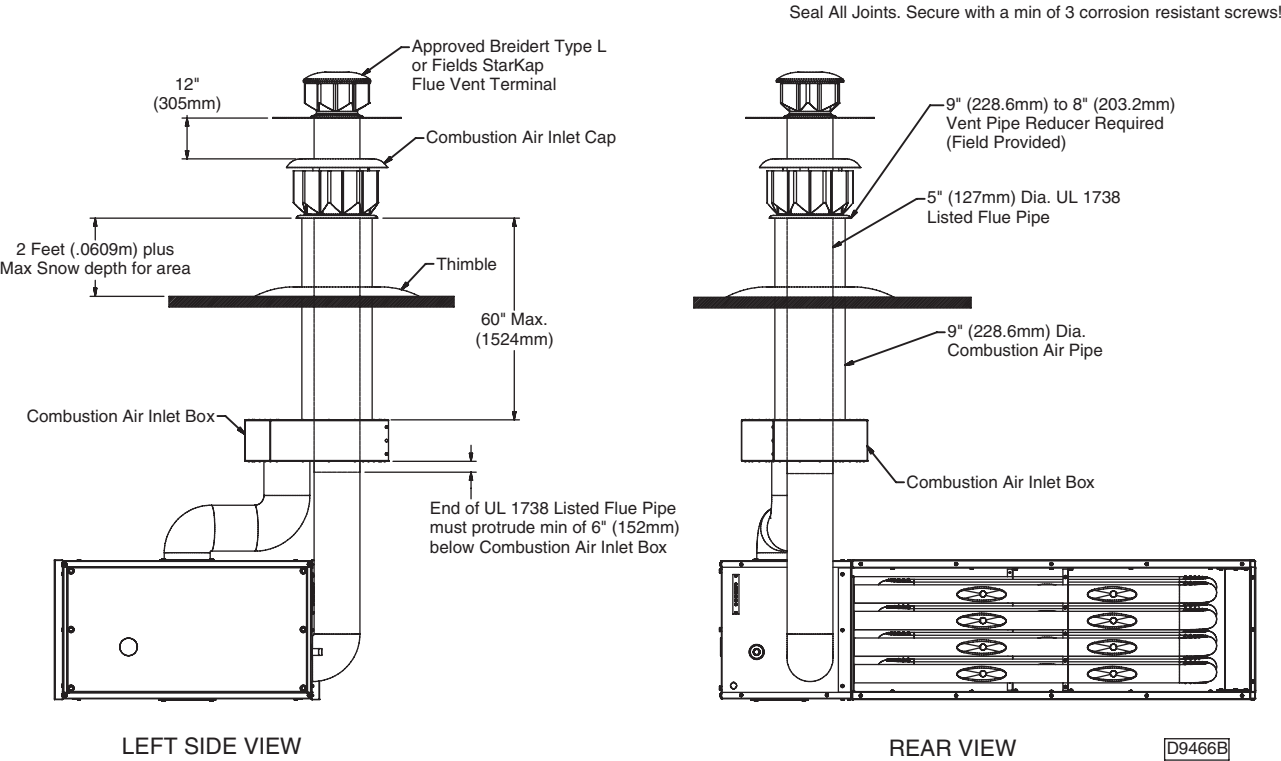
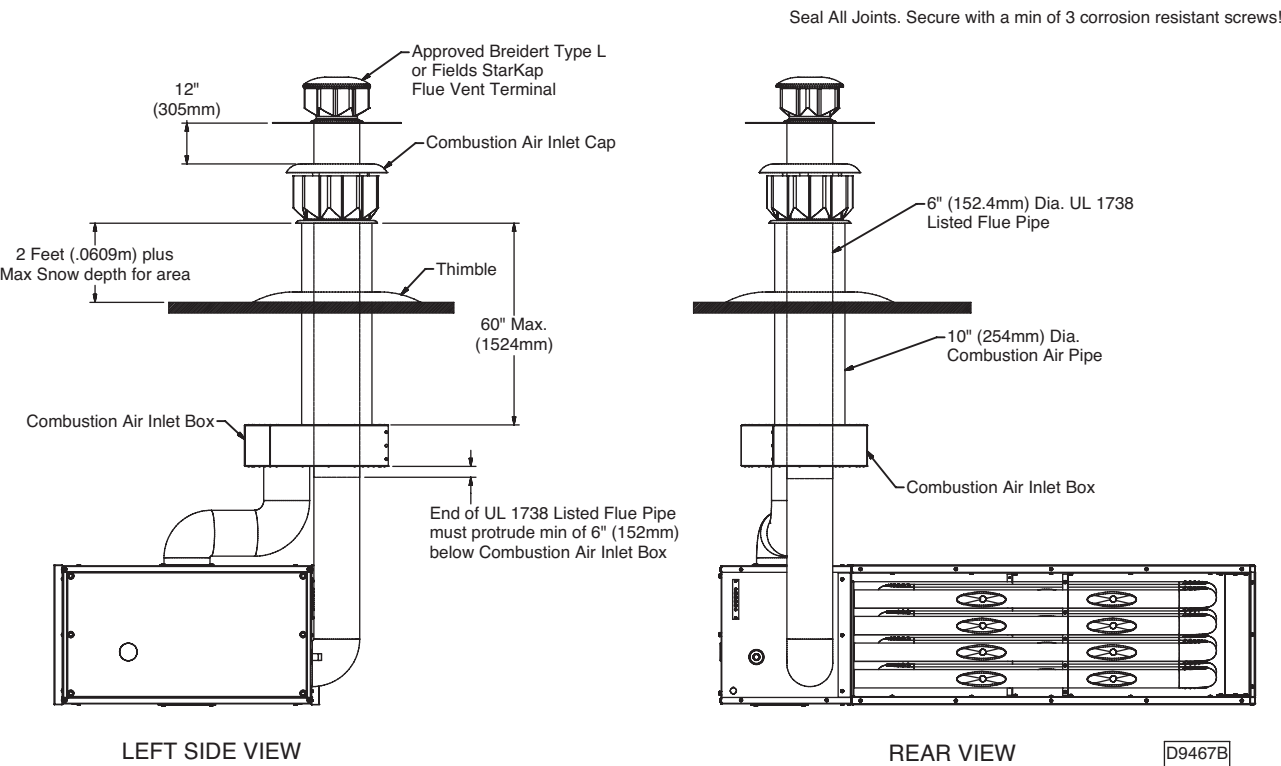


Figure 4b – Vertical 6 Inch Combustion Air Inlet Kit Installation



VERTICAL TERMINATION, 6 INCH KIT FOR USE WITH 250-400 MBH UNITS ONLY

Select a location on the roof for vent terminal ensuring adequate space inside for combustion air inlet box. Vent terminal must be at least 10 feet (3.04m) from any wall or adjoining building. See Table 1 and Figure 4b.

Cut hole through the roof for 10 inch (254mm) combustion air pipe. The combustion air inlet box is to be suspended from the underside of the roof using suitable brackets (field supplied). Before mounting vent box, cut a length of 10 inch pipe so that dimension "A" Figure 5, Step 1 is equal to the roof thickness plus 18 inches (457mm) or the roof thickness plus the expected snow depth, whichever is greater. Fasten the 10 inch pipe to the combustion air inlet on the combustion air inlet box. Seal the joint and fasten with sheet metal screws.

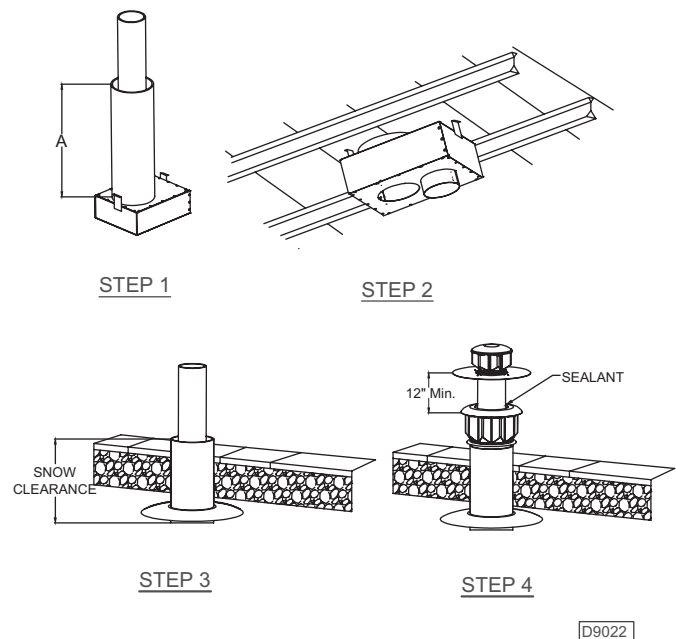
Insert the pipe through the roof and fasten vent box into place (See Figure 5, Step 2). Flash and/or caulk 10 inch pipe to roof (See Figure 5, Step 3). Install the inlet air cap and fasten with sheet metal screws.

Insert a length of 6 inch UL 1738 listed vent pipe in the direction of flow pointing upward through the air inlet vent cap. Vent pipe should be inserted into the combustion air inlet box so that the pipe extends a minimum of 6 inches (152mm) below the vent box for connection purposes. This will allow room to seal the flue pipe. Secure the UL 1738 listed pipe in position with 3 small, evenly spaced sheet metal screws. With high temperature silicone, seal the space between the UL 1738 listed pipe and the combustion air inlet box as well as the space between the UL 1738 listed pipe and the air inlet cap (See Figure 5, Step 4).

Secure the vent cap to the UL 1738 listed pipe using sheet metal screws. Ensure there is a minimum of 12 inches (305mm) between the bottom of the flue vent cap and the top of the air inlet vent cap (See Figure 4b and Figure 5, Step 4). Connect flue pipe and combustion air pipe from the combustion air inlet box to the unit, following instructions in the manual provided with the unit and Combustion Air and Exhaust Venting instructions on pages 7 and 8.

▲ WARNING Never use pipe other than 6 inch diameter. Never use PVC, ABS or any other nonmetallic pipe for exhaust venting! To do so may result in serious damage to the unit and or severe personal injury or death!

Figure 5 – Vertical Combustion Air Inlet Kit Installation



COMBUSTION AIR

▲ WARNING Never operate unit heaters without combustion air and flue gas piping in place or severe personal injury or death may occur!

▲ WARNING CARBON MONOXIDE!

Your venting system must not be blocked by any snow, snow drifts, or any foreign matter. Inspect your venting system to ensure adequate ventilation exists at all times! Failure to heed these warnings could result in Carbon Monoxide Poisoning (symptoms include grogginess, lethargy, inappropriate tiredness, or flu-like symptoms).

1. The combustion air system installation must be in accordance with the current edition of the National Fuel Gas Code-NFPA 54 or ANSI Z223.1 National Fuel Gas Code. In Canada, installation must be in accordance with CSA-B149.1 "Installation Code for Natural Gas Burning Appliances and Equipment" and CSA-B149.2 "Installation Code for Propane Burning Appliances and Equipment."
2. The combustion air inlet box, inlet air screen, deflector disk, and vent caps provided with the kit must be installed at the termination point of the combustion air/vent system. See Figures 1a/1b, 2a/2b, 4a/4b and 5.
3. Each unit heater MUST have its own combustion air system. It MUST NOT be connected to other air intake systems.

4. Combustion air intake duct may be PVC, CPVC, Type B vent, single wall, double wall or other material approved by local code authority. Never use duct size other than the diameter stated in these instructions.
5. Long runs of single or double wall combustion air piping passing through an unheated space may require insulating if condensation becomes noticeable.
6. The combustion air system must be installed to prevent collection of condensate. Pitch horizontal pipes downward 1/4 inch per foot (21 mm/m) toward the inlet cap to facilitate drainage.
7. The equivalent length of the combustion air system must not be less than 5 feet (1.5m) and must not exceed 50 feet (15.2m). Equivalent length equals the total length of straight pipe plus 10 feet (3.05m) for each 90° elbow and 4 feet (1.22m) for each 45° elbow.

NOTICE: For optimum performance keep the combustion air system as straight as possible.

8. Each joint must be secured with at least three corrosion resistant screws. Two full turns of 3M #425 Aluminum Foil Tape or its equivalent must then be used to seal each joint. General Electric RTV-108, Dow-Corning RTV-732 or an equivalent silicone sealant with a temperature rating of 500°F may be used instead of the tape.

EXHAUST VENTING

▲ WARNING Never operate unit heaters without combustion air and flue gas piping in place or severe personal injury or death may occur!

▲ WARNING CARBON MONOXIDE!

Your venting system must not be blocked by any snow, snow drifts, or any foreign matter. Inspect your venting system to ensure adequate ventilation exists at all times! Failure to heed these warnings could result in Carbon Monoxide Poisoning (symptoms include grogginess, lethargy, inappropriate tiredness, or flu-like symptoms).

1. Vent system installation must be in accordance with the current National Fuel Gas Code-NFPA 54 or ANSI Z223.1 National Fuel Gas Code. In Canada installation must be in accordance with CSA-B149.1 "Installation Code for Natural Gas Burning Appliances and Equipment" and CSA-B149.2. "Installation Code for Propane Burning Appliances and Equipment".

2. The combustion air inlet box, inlet air screen, deflector disk, and vent caps provided with the kit must be installed at the termination point of the combustion air/vent system. See Figures 1a/1b, 2a/2b, 4a/4b and 5.
3. Each unit heater MUST have its own vent system. It MUST NOT be connected to other vent systems or to a chimney.
4. Use UL 1738 listed single or double wall pipe for the vent system. For installations in Canada, use UL S636 listed vent pipe conforming with local building codes, or in the absence of local building codes, with current CSA-B149.1 "Installation Codes for Natural Gas Burning Appliances and Equipment" or CSA-B149.2, "Installation Codes for Propane Gas Burning Appliances and Equipment."

▲ WARNING Never use pipe of a diameter other than that specified in these instructions! Never use PVC, ABS, or any other non-metallic pipe for exhaust venting! To do so may result in serious damage to the unit and/or severe personal injury or death!

5. A single length of single or double wall vent pipe must be used to go through the combustion air inlet box and outside wall to the vent terminal.
6. Any run of single or double wall vent pipe passing through an unheated space must be insulated with insulation suitable to 550°F.
7. The vent system must be installed to prevent collection of condensate. Pitch horizontal pipes downward 1/4 inch per foot (21mm per meter) toward the vent cap to facilitate drainage.
8. The equivalent length of the vent system must not be less than 5 feet (1.5m) and must not exceed 50 feet (15.2m). The equivalent length equals the total length of straight pipe plus 10 feet (3.05m) for each 90° elbow and 4 feet (1.22m) for each 45° elbow.
9. The exhaust vent system must remain at a minimum distance of 1 inch (25mm) from all combustible materials. Any part of the vent system that passes through a combustible material must be properly insulated. See Table 1 for vent termination clearance requirements.

NOTICE: Increasing the clearance distances may be necessary if there is a possibility of distortion or discoloration of adjacent materials.