

# INSTALLATION INSTRUCTIONS

## HORIZONTAL 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 and Figure 3.

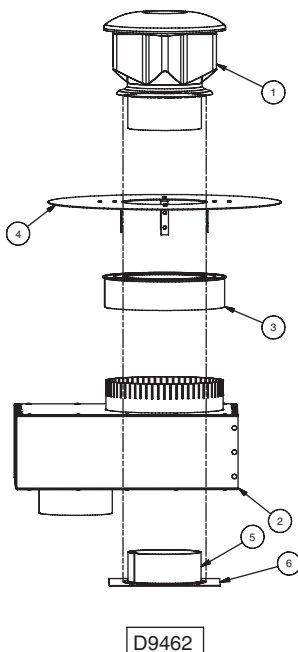
#### KIT CONTENTS:

##### 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. 11J37R08572-DBL  
(1) Air Inlet Screen
- #4 – Part No. 11507R08569-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. J30-09443X8H 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"

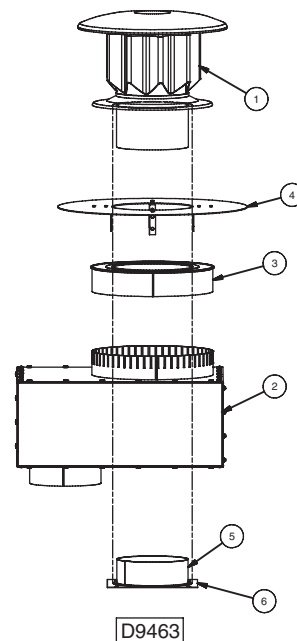


##### Figure 1b – 6 Inch Combustion Air Inlet Kit

- #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. 11J37R08957-DBL  
(1) Air Inlet Screen
- #4 – Part No. 11507R09012-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. J30-09443X8H 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"



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## DIMENSIONAL DATA

Figure 2a – 5 Inch Combustion Air Inlet Box Assembly

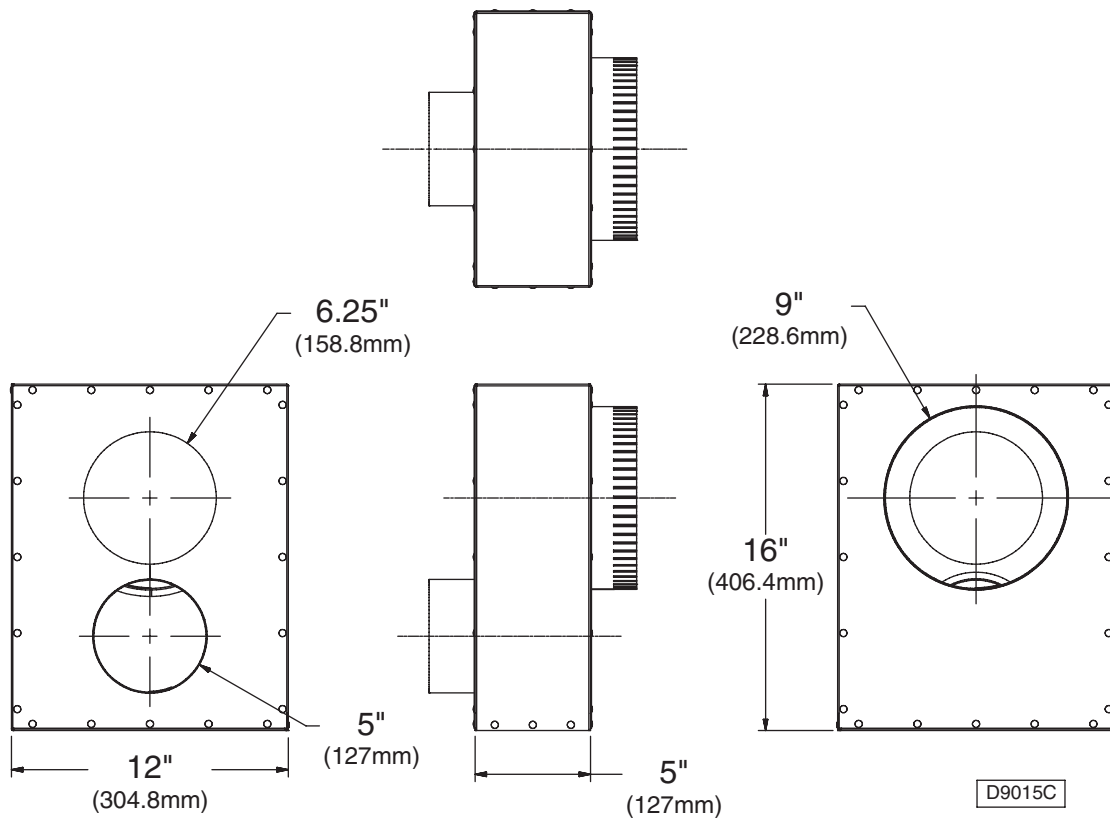
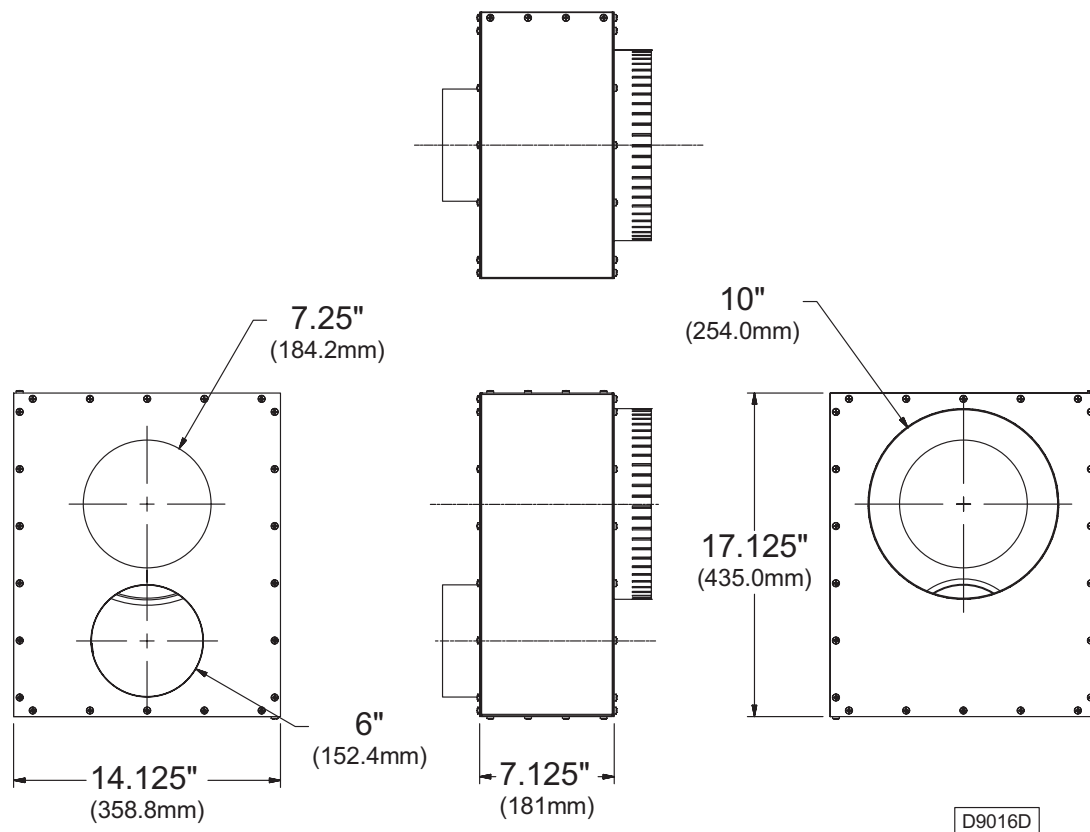


Figure 2b – 6 Inch Combustion Air Inlet Box Assembly



# 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 (NFPA 54), 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).

Vent pipe material must be in compliance with UL 1738 for installations in the United States, and UL S636 for installations in Canada.

Refer to Table 1 for vent termination clearance requirements.

Through the wall vents for these appliances shall NOT terminate over public walkways, or over an area where condensate or vapor could create a nuisance or hazard or could be detrimental to the operation of regulators, relief valves, or other equipment.

Maintain 1 inch (25mm) between vent pipe and combustible materials. A minimum of 12 inch (305mm) of straight pipe is required from the venter outlet before installing an elbow in the vent system. An elbow should never be attached directly to the venter!

**▲ WARNING** Never use a pipe of a diameter other than that specified in Table 1! Never use PVC or other nonmetallic pipe for exhaust venting! To do so may result in serious damage to the unit, severe personal injury, or death.

Any run of single or double wall vent pipe exposed to cold air or passing through an unheated space must be insulated with insulation suitable to 550°F (288°C).

The vent system must be installed to prevent collection of condensate. Vertical vent pipes should be equipped with condensate drains. Pitch horizontal pipes downward 1/4 inch per foot (21mm/m) toward outlet for condensate drainage.

Horizontal portions of the venting system shall be supported at maximum intervals of 4 feet (1.2m) to prevent sagging. In Canada, support at a maximum of 3 feet (1m) intervals.

**Each unit must have an individual vent pipe and vent terminal per furnace section!** Each unit MUST NOT be connected to other vent systems or to a chimney.

## 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.

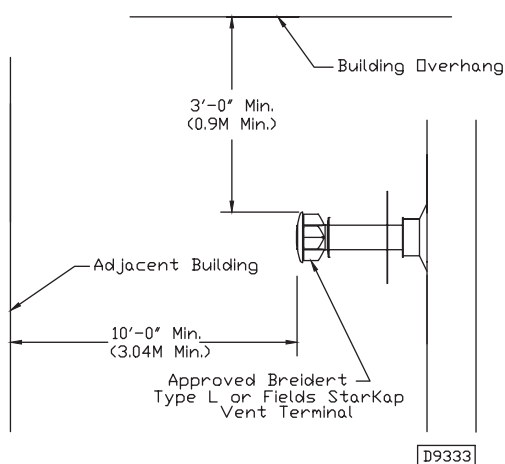
# VENTING FOR POWER VENTED DUCT FURNACES (CATEGORY III) GENERAL GUIDELINES (continued)

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.

**Figure 3 – Side View Horizontal Vent**



ANSI now organizes vented appliances into four categories:

## Venting Categories

|                           | Non<br>Condensing | Condensing |
|---------------------------|-------------------|------------|
| Negative<br>Vent Pressure | I                 | II         |
| Positive<br>Vent Pressure | III               | IV         |

### Category I

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

### Category II

Covers 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.**

**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 Screen, Deflector Disk and the top of the Combustion Air Inlet Box Assembly.**

**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;<br>12 in. for input exceeding 50,000 BTU/Hr | 9 in. (230mm) for 10,000 to 50,000 BTU/Hr input;<br>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 <sup>1</sup>                                    | 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.<br>6 ft. (1.8m), any direction, from a gas service regulator vent outlet |
| Above grade level <sup>2</sup>                                                | 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.

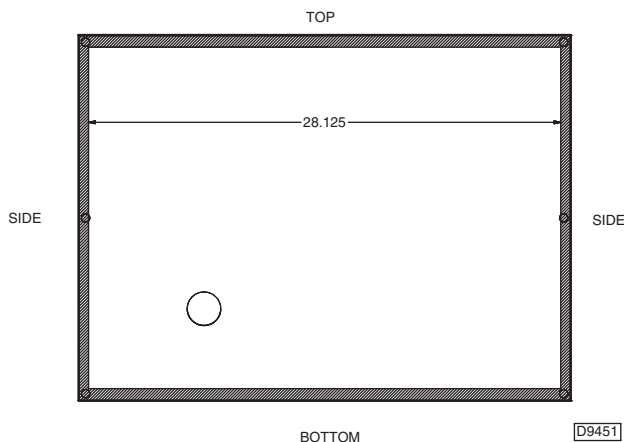
## ACCESS PANEL SEAL

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 4).

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 4 – 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.

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

Select a location on outside wall for vent terminal. In most applications, the terminal should be on level with the flue outlet of the unit, less a 1/4 inch per foot (21mm/m) pitch for condensate drainage toward the outside of the building. See Table 1 and Figures 3 and 5.

Cut hole through wall for 9 inch (229mm) combustion air pipe. Install thimble if required by local codes or type of wall construction.

Combustion air inlet box may be fastened directly to wall or spaced away from wall using suitable brackets (field supplied). Cut length of 9 inch pipe so that it will protrude 4 inches (102mm) through the wall when the box is mounted in position. Fasten pipe to box with sheet metal screws, using at least 3 screws per joint. Seal joint with high temperature silicone sealant.

**▲ 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!

Insert pipe through wall and fasten adaptor box in place so that the pipe pitches downward 1/4 inch per foot (21mm/m) toward the outside. Flash and/or caulk 9 inch pipe on outside wall. Install inlet air screen assembly and fasten to 9 inch pipe with screws. Insert a continuous length of 5 inch UL 1738 listed vent pipe through the 6-1/4 inch opening with the "UP" arrow pointing toward the outside. Position the pipe to extend a minimum of 12 inches (305mm) beyond the inlet air screen. Seal the space between the UL 1738 listed vent pipe and 6-1/4 inch opening of the combustion air inlet box using high temperature silicone sealant. Install deflector disk on UL 1738 listed vent pipe 2-1/2 inches (63.5mm) from inlet air screen and fasten with screws.

Install vent cap on end of UL 1738 listed vent pipe, fasten with screws and seal joint (see Figure 5).

Connect flue pipe and combustion air pipe from combustion air inlet box to unit following Combustion Air and Exhaust Venting instructions on pages 7 and 8. Joints between UL 1738 listed vent pipe and single wall vent pipe must be sealed with high temperature silicone sealant (see Figure 5).

Collars on unit and on combustion air inlet box are sized so that crimped ends of combustion air pipes go toward the unit and crimped ends of flue pipes go away from the unit.

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

Select a location on outside wall for vent terminal. In most applications, the terminal should be on level with the flue outlet of the unit, less a 1/4 inch per foot (21mm/m) pitch for condensate drainage toward the outside of the building. See Table 1 and Figures 3 and 5.

Cut hole through wall for 10 inch (254mm) combustion air pipe. Install thimble if required by local codes or type of wall construction.

Combustion air inlet box may be fastened directly to wall or spaced away from wall using suitable brackets (field supplied). Cut length of 10 inch pipe so that it will protrude 4 inches (102mm) through the wall when the box is mounted in position. Fasten pipe to box with sheet metal screws, using at least 3 screws per joint. Seal joint with high temperature silicone sealant.

**▲ 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!

Insert pipe through wall and fasten adaptor box in place so that the pipe pitches downward 1/4 inch per foot (21mm/m) toward the outside. Flash and/or caulk 10 inch pipe on outside wall. Install inlet air screen assembly and fasten to 10 inch pipe with screws. Insert a continuous length of 6 inch UL 1738 listed vent pipe through the 7-1/4 inch opening with the "UP" arrow pointing toward the outside. Position the pipe to extend a minimum of 12 inches (305mm) beyond the inlet air screen. Seal the space between the UL 1738 listed vent pipe and 7-1/4 inch opening of the combustion air inlet box using high temperature silicone sealant. Install deflector disk on UL 1738 listed vent pipe 2-1/2 inches (63.5mm) from inlet air screen and fasten with screws.

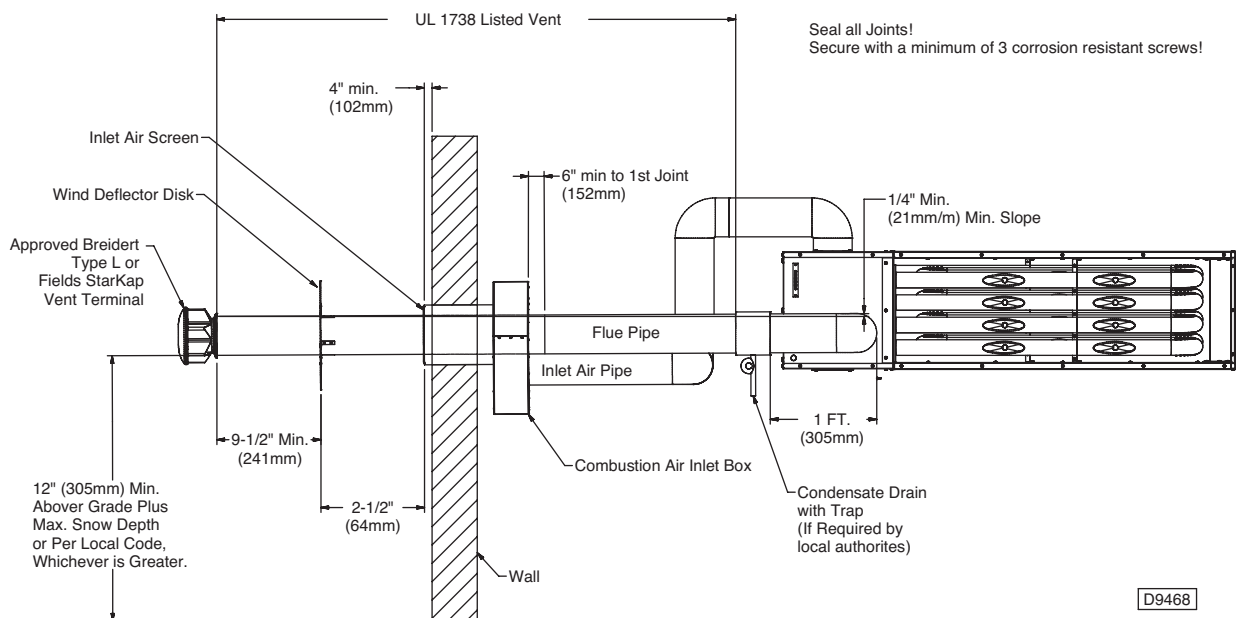
Install vent cap on end of UL 1738 listed vent pipe, fasten with screws and seal joint (see Figure 5).

Connect flue pipe and combustion air pipe from combustion air inlet box to unit following Combustion Air and Exhaust Venting instructions on pages 7 and 8. Joints between UL 1738 listed vent pipe and single wall vent pipe must be sealed with high temperature silicone sealant (see Figure 5).

Collars on unit and on combustion air inlet box are sized so that crimped ends of combustion air pipes go toward the unit and crimped ends of flue pipes go away from the unit.

**Figure 5 – Horizontal 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 cap provided with the kit must be installed at the termination point of the combustion air/vent system. See Figures 1a/1b, 2a/2b, 3 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.
9. For horizontal combustion air systems longer than 5 feet (1.5m), the system must be supported from overhead building structures at 4 foot (1.2m) intervals in the U.S. and at 3 foot (0.91m) intervals in Canada.

## 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 cap provided with the kit must be installed at the termination point of the combustion air/vent system. See Figures 1a/1b, 2a/2b, 3 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 corrosion resistant and gas-tight, 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. Any run of single or double wall vent pipe passing through an unheated space must be insulated with insulation suitable to 550° F.
6. 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.
7. 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.
8. For horizontal vent systems longer than 5 feet (1.5m), the system must be supported from overhead building structures at 4 foot (1.2m) intervals in the U.S. and at 3 foot (0.91m) intervals in Canada.
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.**