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Inspections Division
Approved with Conditions

Date: 12/08/14

prestige

PVC, CPVC, PP & SS Vent Supplement

WARNING **This document is intended to be used by a qualified heating contractor or service technician. Read all instructions within this document and within the PRESTIGE Boiler Installation and Maintenance Manual, before proceeding with the installation. It is recommended to follow the procedures in the steps given, skipping or missing procedural steps could result in severe personal injury, death or substantial property damage.**

NOTICE **The installation must conform to the requirements of the authority having jurisdiction or, in the absence of such requirements, to the National Fuel Gas Code, ANSI Z223.1/ NFPA 54, and/or Natural Gas and Propane Installation Code, CAN/CSA B149.1.**

Revised Date: 10/24/13

2010-6 Prestige Vent Supl.

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DEFINITIONS

The following terms are used throughout this manual to bring attention to the presence of potential hazards or to important information concerning the product.

DANGER

Indicates the presence of a hazardous situation which, if ignored, will result in death, serious injury or substantial property damage.

WARNING

Indicates a potentially hazardous situation which, if ignored, can result in death, serious injury or substantial property damage.

CAUTION

Indicates a potentially hazardous situation which, if ignored, may result in minor injury or substantial property damage.

NOTICE

Indicates special instructions on tion or maintenance, which are equipment but not related to personal injury hazards.

BEST PRACTICE

Indicates recommendations made by ACV-Triangle Tube for the installers which will help to ensure optimum operation and longevity of the equipment.

INSTALLER

WARNING

Read all instructions as outlined in this manual and in the boiler installation manual. Failure to comply with these instructions in the order presented could result in personal injury or death.

This document is a supplement to the PRESTIGE boiler installation and maintenance manual. The purpose of this supplement is for the proper installation of the vent and combustion air piping to the boiler.

WARNING

All PRESTIGE vent and combustion air piping must be installed, terminated and joints sealed as outlined in this manual. Failure to comply with installation procedures outlined in this manual can result in severe personal injury, death or substantial property damage.

NOTICE

This vent supplement outlines Direct Vent and Category IV (Indoor Air) installations using PVC, CPVC, PP and SS materials, for other venting options (materials, terminations, etc.) contact ACV-Triangle Tube.

HOMEOWNER

- This manual is intended for use by a qualified heating contractor or service technician.
- Please reference the User Information manual for additional information.
- Ensure this document and all pertaining documents are kept near the boiler to be used by the qualified heating contractor or service technician for future reference.

NOTICE

Triangle Tube reserves the right to modify the technical specifications and components of its products without prior notice.

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SECTION I - PRE- INSTALLATION REQUIREMENTS

Removal of an Existing Boiler from a Common Vent System

DANGER

Do not install the PRESTIGE into a common vent with any other gas or oil appliances. This will cause flue gas spillage or appliance malfunction, resulting in possible severe personal injury, death or substantial property damage.

When an existing boiler is removed from a common venting system, the common venting system is likely to be too large for proper venting of the remaining appliances. At the time of removal of an existing boiler, the following steps shall be followed with each appliance remaining connected to the common venting system placed in operation, while the other appliances remaining connected to the common venting system are not in operation.

1. Seal any unused openings in the common venting system.
2. Visually inspect the venting system for proper size and horizontal pitch and determine there is no blockage or restriction, leakage, corrosion and other deficiencies which could cause an unsafe condition.
3. Insofar as is practical close all building doors and windows and all doors between the space in which the appliances remaining connected to the common venting system are located and other spaces of the building. Turn on clothes dryers and any appliance not connected to the common venting system. Turn on any exhaust fans, such as range hoods and bathroom exhausts, so they will operate at maximum speed. Do not operate a summer exhaust fan. Close fireplace dampers.
4. Place in operation the appl
   Follow the lighting instructior
   appliance will operate contin
5. Test for spillage at the draft h
   5 minutes of main burner op
   of a match or candle, or sr
   cigar or pipe.
6. After it has been determined that each appliance remaining connected to the common venting system properly vents when tested as outlined above, return doors, windows, exhaust fans, fireplace dampers and any other gas-burning appliance to their previous condition of use.
7. Any improper operation of the common venting system should be corrected so the installation conforms with the National Fuel Gas Code, ANSI Z223.1/NFPA 54 and/or CAN/CSA B149.1 , Installation Codes. When resizing any portion of the common venting system, the common venting system should be resized to approach the minimum size as determined using the appropriate tables in Part 11 of the National Fuel Gas Code, ANSI Z223.1/NFPA 54 and/or CAN/CSA B149.1, Installation Codes.

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Vent/Combustion Air Piping and Materials

NOTICE

The installation must conform to the requirements of the authority having jurisdiction or, in the absence of such requirements, to the National Fuel Gas Code, ANSI Z223.1/ NFPA 54, and/or Natural Gas and Propane Installation Code, CAN/CSA B149.1.

The PRESTIGE is certified per ANSI Z21.13 as a Category IV (indoor air) or Direct Vent (sealed combustion) appliance. A Category IV appliance utilizes uncontaminated indoor or outdoor air (surrounding the appliance) for combustion. A Direct Vent appliance utilizes uncontaminated outdoor air (piped directly to the appliance) for combustion.

BEST PRACTICE

To reduce the potential risks associated with indoor contaminates (listed on page 6), flammable vapors and tight housing construction (little or no infiltration air), it is recommended to pipe uncontaminated combustion air directly from the outdoors to the appliance. This practice also promotes higher system efficiency by reducing heated indoor air from being exhausted from the building and replaced by cold infiltration air.

The PRESTIGE requires a Category IV venting system which is designed for pressurized venting and condensate.

⚠ WARNING

The vent and combustion air materials (piping, fittings and cement) must meet the listed requirements in this manual. Failure to comply with these material requirements could result in severe personal injury, death or substantial property damage.

PVC and CPVC Vent and Combus
Fittings:

PVC Schedule 40 - ANSI/ASTM

PVC-DWV - ANSI/ASTM D2665

CPVC Schedule 40 - ANSI/AST

PVC and CPVC Pipe Cement and Primer

PVC - ANSI/ASTM D2564

CPVC - ANSI/ASTM F493

NOTICE

For installations in Canada, all piping, fittings and cement/primer material must be certified and listed to ULC-S636. Ipex Inc. is an approved manufacturer of ULC S636 vent components.

NOTICE

Use of cellular core PVC (ASTM F891) cellular core CPVC, or Radel® (polyphenolsulfone) in venting systems is prohibited. Cellular core pipe may be used for combustion air piping.

⚠ WARNING

DO NOT mix a PVC/CPVC vent system & components with other vent system materials & components. Seal all PVC and CPVC pipe and fittings with the appropriate primer and cement. Failure to comply with this requirement could cause the venting system to fail resulting in leakage of flue products into the living space.

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AL29-4C® Stainless Steel Vent Piping and Fittings

The following is a list of approved vent manufacturers and vent systems:

- Heat-Fab
- ProTech Systems
- Z-FLEX

Reference Table 1 for a listing of approved stainless steel vent adapters and terminations.

NOTICE

A specific vent adapter is required to transition from the boiler vent outlet adapter to specific stainless steel vent system. Contact the appropriate AL29-4C® vent manufacturer for transition adapter information.

NOTICE

The stainless steel AL29-4C® vent system must be installed per the vent manufacturer instructions. Contact the vent manufacturer for appropriate vent adapters, materials, terminations, clearance and installation instructions.

NOTICE

When using stainless steel for
or CPVC pipe meeting the liste
manual may be utilized for the c

Polypropylene (PP) Vent Piping and Fittings

The following is a list of approved vent manufacturers and vent systems:

- Centrotherm Eco Systems, LLC
- Muelink and Grol B.V./Dura Vent

Reference Table 2 through 7 pages 5 through 7 for a listing of approved polypropylene vent adapters, terminations and supports.

NOTICE

A specific vent adapter may be required to transition from the boiler vent outlet adapter to the specific polypropylene vent system. Contact the appropriate PP vent manufacturer for transition adapter information.

NOTICE

When using Polypropylene for the vent system, PVC or CPVC pipe meeting the listed requirements in this manual may be utilized for the combustion air piping.

TABLE 1

Description	Approved Stainless Steel Vent Adapters and Terminations		
	Heatfab (SelKirk Corp.) Saf-T Vent, EZ Seal or Saf-T Vent SC	ProTech Systems (M&G/DuraVent) FasNSeal or FasNSeal CVS	Z-Flex (Nova Flex Group) Z-Vent
3” Vent Adapter	9301PVC	FSA-ULT3	2SVSTTA03
3” Roof & Side Wall Straight Termination	9392	300186	2SVSTPF03
3” Side Wall &45° Elbow Termination	9311TERM	300130 & 300186	2SVSTEX0345
3” Side Wall Tee Termination	9390TEE	300311	2SVSTTF03
3” to 4” Vent Adapter	9401PVC3	FSA-ULT3*	2SVSTTA04
4” Vent Adapter	9401PVC	FSA-ULT4	SVSTTA04.5
4” Roof & Side Wall Straight Termination	9492	300187	2SVSTPF04
4” Side Wall & 45° Elbow Termination	9411TERM	300131 & 300187	2SVSTEX0445
4” Side Wall Tee Termination	9490TEE	300312	2SVSTTF04

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TABLE 2

Description	Approved 2" (60 mm) Rigid Polypropylene Ven Terminations and Supports	
	Centrotherm Eco Systems, LLC	Muelink and Gr
3" (80 mm) Appliance Vent Adapter	ISAAL0303	3PPS-03P
3" (80 mm) to 2" (60 mm) Reducer	ISRD0302	3PP
2" (60 mm) Roof Termination - UV Resistant	ISEP02 (20" or 51cm) or ISEP0239 (39" or 99cm)	2PPS-12B (12" or 30cm) or 2PPS-36B (36" or 91cm)
2" (60 mm) Side Wall, 45° Elbow Termination - UV Resistant	ISELL0245UV	2PPS-E45B
2" (60 mm) Side Wall, Tee Termination - UV Resistant	ISTT0220	2PPS-TB
2" (60 mm) Side Wall Pipe Lengths - UV Resistant	ISVL022UV (26.5" or 67cm)	2PPS-12B (12" or 30cm) or 2PPS-36B (36" or 91cm)
2" (60 mm) Side Wall, 90° Elbow - UV Resistant	ISELL0287UV	2PPS-E90B or 2PPS-E90EB
2" (60 mm) Bird Guard Screen - UV Resistant	IASPP02	2PPS-BG
2" (60 mm) Locking Band Clamp or Connector Ring	IANS02	2PPS-LBC
2" (60 mm) Wall Strap or Support Clamp	IASC02	2PPS-WSM (galvanized) & 2PPS-WSM-SS (stainless steel)
2" (60mm) Wall Plate	IAWP02B (black)	22" (60mm)PPS-WPB (black)

TABLE 3

Description	Approved 3" (80 mm) Rigid Polypropylene Vent Adapters, Terminations and Supports	
	Centrotherm Eco Systems, LLC	Muelink and Grol B.V./Dura Vent
3" (80mm) Appliance Vent Adapter	ISAAL0303	3PPS-03PVCM-3PPF
3" (80mm) Roof Termination - UV Resistant	ISEP03 (20" or 51cm) or ISEP0339 (39" or 99cm)	3PPS-12B (12" or 30cm) or 3PPS-36B (36" or 91cm)
3" (80mm) Side Wall, 45° Elbow Termination - UV Resistant	ISELL0345UV	3PPS-E45B
3" (80mm) Side Wall, Tee Termination - UV Resistant	ISTT0320	3PPS-TB
3" (80mm) Side Wall Pipe Lengths - UV Resistant	ISVL032UV (26.5" or 67cm)	3PPS-12B (12" or 30cm) or 3PPS-36B (36" or 91cm)
3" (80mm) Side Wall, 90° Elbow - UV Resistant	ISELL0387UV	3PPS-E90B or 3PPS-E90EB
3" (80mm) Bird Guard Screen - UV Resistant	IASPP03	3PPS-BG
3" (80mm) Locking Band Clamp or Connector Ring	IANS03	3PPS-LBC
3" (80mm) Wall Strap or Support Clamp	IASC03	3PPS-WSM (galvanized) & 3PPS-WSM-SS (stainless steel)
3" (80mm) Wall Plate	IAWP03B (black) or IAWP03W (white)	3PPS-WPB (black)

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TABLE 4

Description	Approved 4" (100 mm) Rigid Polypropylene Terminations and Supports	
	Centrotherm Eco Systems, LLC	Muelink and G
3" (80 mm) Appliance Vent Adapter	ISAAL0303	3PPS-03
3" (80 mm) to 4" (100 mm) Increaser	ISIA0304 or ISEI0304	3[illegible]
4" (100mm) Appliance Vent Adapter	ISAAL0404	4PPS-04PVCM-4PPF
4" (100mm) Roof Termination - UV Resistant	ISEP04 (20" or 51cm) or ISEP0439 (39" or 99cm)	4PPS-12B (12" or 30cm) or 4PPS-36B (36" or 91cm)
4" (100mm) Side Wall, 45° Elbow Termination - UV Resistant	ISELL0445UV	4PPS-E45B
4" (100mm) Side Wall, Tee Termination - UV Resistant	ISTT0420	4PPS-TB
4" (100mm) Side Wall Pipe Lengths - UV Resistant	ISVL042UV (26.5" or 67cm)	4PPS-12B (12" or 30cm) or 4PPS-36B (36" or 91cm)
4" (100mm) Side Wall, 90° Elbow - UV Resistant	ISELL0487UV	4PPS-E90B or 4PPS-E90EB
4" (100mm) Bird Guard Screen - UV Resistant	IASPP04	4PPS-BG
4" (100mm) Locking Band Clamp or Connector Ring	IANS04	4PPS-LBC
4" (100mm) Wall Strap or Support Clamp	IASC04	4PPS-WSM (galvanized) & 4PPS-WSM-SS (stainless steel)
4" (100mm) Wall Plate	IAWP04B (black)	4PPS-WPB (black)

TABLE 5

Description	Approved 2" (60 mm) Flex Polypropylene Vent Adapters, Terminations and Supports	
	Centrotherm Eco Systems, LLC	Muelink and Grol B.V./Dura Vent
3" (80mm) Appliance Vent Adapter	ISAAL0303	3PPS-03PVCM-3PPF
3" (80 mm) to 2" (60 mm) Reducer	ISRD0302	3PPS-R2
2" (60mm) Wall Plate	IAWP02B (black)	2PPS-WPB (black)
2" (60mm) Chimney Support Elbow or Base Support	ISBS0287	2PPS-SE90X
2" (60mm) Support Bracket - Bottom of Chimney or Chase	Included with Base Support	PPS-SUP or 2PPS-SUP (Chimney)
2" (60mm) Flex Support Bracket - Top of Chimney or Chase	N/A	2PPS-FSB
2" (60mm) Spacer	IASP02	2PPS-S
2" (60mm) Chimney Cap or Cover & End Pipe - UV Resistant	ISCP02 & IFEP02	2PPS-FCT

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TABLE 6

Description	Approved 3" (80 mm) Flex Polypropylene Vent A Terminations and Supports	
	Centrotherm Eco Systems, LLC	Muelink and G
3" (80mm) Appliance Vent Adapter	ISAAL0303	3PPS-03
3" (80mm) Wall Plate	IAWP03B (black) or IAWP03W (white)	3PPS-WPB (black)
3" (80mm) Chimney Support Elbow or Base Support	ISBS0387	3PPS-SE90X
3" (80mm) Support Bracket - Bottom of Chimney or Chase	Included with Base Support	PPS-SUP or 3PPS-SUP (Chimney)
3" (80mm) Flex Support Bracket - Top of Chimney or Chase	N/A	3PPS-FSB
3" (80mm) Spacer	IASP03	3PPS-S
3" (80mm) Chimney Cap or Cover & End Pipe - UV Resistant	ISCP03 & IFEP03	3PPS-FCT

TABLE 7

Description	Approved 4" (100 mm) Flex Polypropylene Vent Adapters, Terminations and Supports	
	Centrotherm Eco Systems, LLC	Muelink and Grol B.V./Dura Vent
3" (80mm) Appliance Vent Adapter	ISAAL0303	3PPS-03PVCM-3PPF
3" (80 mm) to 4" (100 mm) Increaser	ISIAO304 or ISEIO304	3PPS-X4
4" (100mm) Appliance Vent Adapter	ISAAL0404	4PPS-04PVCM-4PPF
4" (100mm) Wall Plate	IAWP04B (black)	4PPS-WPB (black)
4" (100mm) Chimney Support Elbow or Base Support	ISBS0487	4PPS-SE90X
4" (100mm) Support Bracket - Bottom of Chimney or Chase	Included with Base Support	PPS-SUP or 4PPS-SUP (Chimney)
4" (100mm) Flex Support Bracket - Top of Chimney or Chase	N/A	4PPS-FSB
4" (100mm) Spacer	IASP04	4PPS-S
4" (100mm) Chimney Cap or Cover & End Pipe - UV Resistant	ISCP04 & IFEP04	4PPS-FCT

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Vent/Combustion Air Equivalent Lengths

- For all venting applications, PVC/CPVC, AL29-4C®, SS or Polypropylene, the maximum allowable length should not exceed those lengths listed in Table 8.
- For PVC/CPVC or AL29-4C® vent systems reduce the maximum allowable length for each elbow as follows:
  - 3 Feet for every 45º elbow
  - 5 feet for every 90º elbow
- For polypropylene vent systems reduce the maximum allowable length for each elbow as follows:
  - 5 Feet for every 45º elbow
  - 10 feet for every 90º elbow

2 Inch (60 mm) Vent Systems Restrictions for the PRESTIGE 60, 110 & Excellence.

- Derate the maximum boiler input by 3% when using the maximum equivalent length of 2 inch (60 mm) vent piping on Solo 110 & Excellence 110.
- The 2 inch vent system requires a 1 inch clearance to combustibles
- Use long sweep elbow to limit pressure drop and to avoid excessive vent temperatures.
- In 2 inch PVC vent applications, the first 7 equivalent feet of the vent system must utilize CPVC material.

WARNING

To avoid vent failure the installer must use CPVC vent material for the first 7 equivalent feet of a 2 inch PVC vent system. The installer must also utilize primer and glue that is certified for both PVC/CPVC materials. Failure to properly install the vent system can lead to carbon monoxide posoning or fire due to joint separtion or pipe breakage.

3 Inch Vent System Restriction

- Derate the maximum boiler i
  Solo 250 by 3% when using
  lent length of 3 inch (80 mm)

Rigid Polypropylene Vent Syst

WARNING

Contact approved polypropylene vent manufacturer for a copy of their installation instructions. Read, understand and follow all of the vent manufacturer's instructions before beginning the installation. Contact vent manufacturer if you require any technical support. Failure to properly install and support vent system can lead to carbon monoxide poisoning or fire due to joint separation or pipe breakage.

- Rigid polypropylene vent pipe must be installed with locking band clamps or connector rings and supports (wall strap or clamp, elbow or base, etc.). Consult vent manufacturer for complete list of other parts required.
- Maintain 5/8" per foot slope back toward appliance on all horizontal runs.
- The use of a wall plate is required to seal rigid polypropylene vent pipe at the entrance of the chimney or chase to prevent mortar or cement from contacting the polypropylene vent pipe.
- Any termination piping external to the building must be UV resistant (black).
- Do not apply insulation directly to vent. Maintain vent manufacturers clearances to combustibles.
- Plastic venting systems shall not pass through rated fire separations without approved fire stopping installed in accordance with fire stopping manufacturers instructions.
- Prior to assembly of any joints, ensure joint gasket is present and properly installed. Contact vent manufacturer if gasket is missing or damaged. Verify the integrity of joints upon completion of the vent system.

TABLE 8

PRESTIGE Model	Maximum Allowable Vent or Combustion Air Piping Length							
	2 Inch [60 mm] Piping			3 Inch [80 mm] Piping			4 Inch [100 mm] Piping	
	Feet	Elbows		Feet	Elbows		Feet	Elbows
60	55	0		100	0		100	0
110	45	0	OR	100	0	OR	100	0
175	Not Applicable			100	0		100	0
250				60	0		80	0
399				Not Applicable			100	0
EXCELLENCE	45	0		100	0		100	0

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Flex Polypropylene Vent System Restrictions

- 3” Flex venting is limited up to the PRESTIGE Solo 175.
- 2” Flex venting is limited up to the PRESTIGE Solo 110 & Excellence 110.

WARNING

Contact approved polypropylene vent manufacturer for a copy of their installation instructions. Read, understand and follow all of the vent manufacturer’s instructions before beginning the installation. Contact vent manufacturer if you require any technical support. Failure to properly install and support vent system can lead to carbon monoxide poisoning or fire due to joint separation or pipe breakage.

- Approved for vertical installations only, where a clean, structurally sound unused chimney or chase is used as a raceway.
- Vertical offsets must not exceed 45° and are limited to a maximum number of 2.
- Requires rigid polypropylene vent pipe with locking band clamps or connector rings and wall straps or support clamps from the appliance to the entrance of the chimney or chase.
- Maintain 5/8" per foot slope back all horizontal runs of rigid polypr
- The use of a wall plate is re polypropylene vent pipe at the e ney or chase to prevent mortar tacting the polypropylene vent p
- Requires supports (elbow or base, flex chimney and bracket), spacers, chimney cap and end pipe. Consult vent manufacturer for complete list of other parts required.
- Any termination piping external to the building must be UV resistant (black).
- Do not apply insulation directly to vent. Maintain vent manufacturers clearances to combustibles.
- Flex plastic venting systems shall not pass through rated fire separations.
- Prior to assembly of any joints, ensure joint gasket is present and properly installed. Contact vent manufacturer if gasket is missing or damaged. Verify the integrity of joints upon completion of the vent system.

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Combustion Air Contamination

WARNING

If the PRESTIGE combustion air inlet is located in an area likely to cause or contain contamination, the combustion air must be repiped and terminated at another location. Contaminated combustion air will damage the unit and its burner system, resulting in possible severe personal injury, death or substantial property damage.

DANGER

Do not operate the PRESTIGE if it's combustion air inlet is located near a laundry room or pool facility. These areas will always contain hazardous contaminants.

Pool and laundry products, common household and hobby products often contain fluorine or chlorine compounds. When these chemicals pass through the burner and vent system, they can form strong acids. These acids will corrode the heat exchanger, burner components and vent system, causing serious damage and presenting possible flue gas spillage or water leakage into the surrounding area.

Please read the information listed below. If contaminating chemicals are located near the area of the combustion air inlet, the installer should pipe the combustion air inlet to an outside area free of these chemicals.

Potential contaminating produ

- Spray cans containing ch
- Permanent Wave Solutio
- Chlorinated wax
- Chlorine - based swimming pool chemicals / cleaners
- Calcium Chloride used for thawing ice
- Sodium Chloride used for water softening
- Refrigerant leaks
- Paint or varnish removers
- Hydrochloric acid / muriatic acid
- Cements and glues
- Antistatic fabric softeners used in clothe dryers
- Chlorine-type bleaches, detergents, and cleaning solvents found in household laundry rooms
- Adhesives used to fasten building products and other similar products

Areas likely to contain these products

- Dry cleaning / laundry areas and establishments
- Beauty salons
- Metal fabrication shops
- Swimming pools and health spas
- Refrigeration Repair shops
- Photo processing plants
- Auto body shops
- Plastic manufacturing plants
- Furniture refinishing areas and establishments
- New building construction
- Remodeling areas
- Garages with workshops

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SECTION II - DIRECT VENT INSTALLATION OF VENT/AIR PIPING

A Direct Vent appliance utilizes uncontaminated outdoor air (piped directly to the appliance) for combustion.

Direct Vent - Vertical - Through the Roof or Unused Chimney

NOTICE

The installation must conform to the requirements of the authority having jurisdiction or, in the absence of such requirements, to the National Fuel Gas Code, ANSI Z223.1/ NFPA 54, and/or Natural Gas and Propane Installation Code, CAN/CSA B149.1.

NOTICE

When using an inoperative chimney as a means of a chase for the vent, the surrounding space within the chimney cannot be used to draw combustion air or vent another appliance.

⚠ WARNING

A gas vent extending through a roof should not terminate near an adjacent wall or below any building extensions such as roof eaves, balconies or decks. Failure to comply with the required clearances in this manual could result in severe personal injury, death or substantial property damage.

NOTICE

The information and diagrams outlining the fittings and method of terminating the vent/combustion air are directly related to PVC/CPVC vent systems. When utilizing and AL29-4C® or Polypropylene vent system there may be some variations. Consult the appropriate vent manufacturer for recommendations and clarifications.

Determine Termination Location

Locate the vent and combustion air termination using the following guidelines:

1. The total length of the vent or combustion air piping must not exceed the limits given in Table 8 on page 8.

NOTICE

Do not include the two 90º elbow minate the combustion air inlet e ing when determining the total le

2. The combustion air piping m upside down "U" shape fashion using two 90º elbows as shown in Fig. 1 page 12 or with a tee as shown in Fig. 2 page 12. The termination must be installed 12" [30.5 cm] (18" [45.7 cm] Canada) above the highest anticipated snow level.
3. The vent must terminate vertically with a coupling to accept the bird screen and must be located 12" to 24" [30.5 cm to 61 cm] above the combustion air inlet as shown in Fig. 1 & Fig. 2 on page 12.
4. The vent and combustion air terminations must be located a radial distance of 12" to 24" [30.5 cm to 61 cm] from centerline of vent termination to centerline of air termination as shown in Figs. 1 & 2 on page 12.
5. The following should be considered when determining the location of the vent and combustion air terminations:
   a. Locate the vent termination where flue vapors will not damage surrounding shrubs, plants or air conditioning equipment or be objectionable to the homeowner.
   b. The flue products will form a noticeable plume of water vapor as they condense in colder air. Avoid terminating the vent in areas where the plume could obstruct window views.
   c. Prevailing winds could cause freezing of flue gas condensation and a buildup of water / ice on surrounding plants, building surfaces or combustion air inlet.
   d. Avoid locations where prevailing winds could affect the performance of the boiler or cause recirculation of the flue gases, such as inside corners of buildings, near adjacent buildings, vertical surfaces, window wells, stairwells, alcoves, courtyards, or other recessed areas.
   e. Do not terminate the vent above doors or windows: flue condensate could freeze causing ice formations.
   f. Locate the vent termination to prevent possible condensate damage to exterior finishes.
   g. Avoid locations of possible accidental contact of flue vapors with people or pets.

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Fig. 1: **Direct Vent - Vertical Termination of Vent and Combustion Air Piping.**

Fig. 2: **Direct Vent - Vertical Termination of Vent and Combustion Air Piping.**

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6. The vent termination must also maintain the following clearances; as shown in Fig.3.
   a. At least 3 feet [0.9 m] from adjacent walls
   b. At least 3 feet [0.9 m] below roof over hangs
   c. At least 7 feet [2.1 m] above any public walkways
   d. At least 3 feet [0.9 m] above any forced air intake within 10 feet [3 m] (does not apply to the combustion air inlet of a direct vent appliance).
   e. No closer than 12" [30.5 cm] below or horizontally from any door or window or gravity air inlet.
   f. Must be at least 4 feet [1.2 m] from any electric meters, gas meters-regulators, relief valves or other equipment. Never terminate the vent above or below any of these items within 4 feet [1.2 m] horizontally.
   g. A minimum 12 inches [30.5 cm] horizontal spacing from other fan assisted appliance vents such as clothes dryer vent, kitchen exhaust vent etc. Never terminate the vent above or below any fan assisted vent within 12 inches [30.5 cm] horizontally.
7. Locate the vent and combustion air terminations in a manner to protect from damage by foreign objects, such as stones, balls, or buildup of leaves or sediment.

Fig. 3: Termination Clearances of Direct Vent System

8. Do not connect any other appliance to the vent pipe or multiple boilers to a common vent pipe.

Direct Vent - Vent Installation - Th

1. Vent and Combustion Air Penetra
   - Vent pipe penetration thro non-combustible wall mater minimum 1/4" [6 mm] clea PVC/CPVC vent or 1" [2.5c vents. The diameter of the penetration hole should be 4" [10.2 cm] minimum for 2" and 3" pipe or 5" [12.7 cm] minimum for 4" pipe. When using Polypropylene or Stainless Steel Vent refer to vent manufacture's installation instructions, supplied with the vent for clearances.
   - Combustion air pipe penetration can maintain zero clearance. The diameter of the penetration hole should be 2-3/8" [6 cm] minimum for 2" pipe or 3-1/2" [8.9 cm] minimum for 3" pipe or 4-1/2" [11.4 cm] minimum for 4" pipe.
2. The installer must use a galvanized metal thimble for the vent pipe penetration.
3. Locate the vent and combustion air pipe penetrations to provide clearances as described in Fig. 1 & Fig. 2 on page 12.
4. The installer must comply with all local codes for isolating the vent and combustion air pipes as they pass through floors, ceilings and roofs.
5. The installer should provide adequate flashing and sealing boots sized for the vent pipe and combustion air pipe.

Termination Fittings - Through the Roof

1. The vent and combustion air terminations must include a factory supplied "bird screen" installed as shown in Figs. 4, 5 & 6 on page 14.
2. The combustion air piping must terminate in an upside down "U" shape fashion using two 90° elbows as shown in Fig. 1 page 12 or with a tee as shown in Fig. 2 on page 12.
3. The vent piping must terminate vertically with a coupling as shown in Figs. 1 & 2 page 12.

⚠ WARNING

Do not extend the vent pipe above the roof beyond the dimensions shown in Fig. 1 & Fig. 2 on page 12 Extended exposure of the vent pipe could cause condensate to freeze and block the vent pipe.

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Fig. 4: Vertical Vent Bird Screen Installation

Fig. 5: Vertical Combustion Air Bird Screen Installation with 90° Elbow Termination

Fig. 6: Vertical Combustion Air Bird Screen Installation with Tee Termination

NOTICE

Installer must install the factory supplied "bird screens" on the vent and combustion air terminations.

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Direct Vent - Multiple Boiler Installation - Through the Roof

1. On installations of multiple PRESTIGE boilers, terminate the vent and combustion air piping as described in this manual.
2. The roof penetration of the vent and combustion air piping should be such that the combustion air inlet is a minimum 12" [30.5 cm] from the adjacent vent pipe of the other boiler for installations in the U.S. as shown in Fig. 7. For installations in Canada, provide clearances as required by CAN/CSA B149.1.

NOTICE

The combustion air inlet of the P as being part of a direct vent sy sidered as a forced air intake. ance of an adjacent boiler vent does not apply in a multiple installation of PRESTIGE boilers.

Fig. 7: Direct Vent - Vertical Termination of Multiple Boilers

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Direct Vent - Horizontal - Sidewall

NOTICE

The installation must conform to the requirements of the authority having jurisdiction or, in the absence of such requirements, to the National Fuel Gas Code, ANSI Z223.1/ NFPA 54, and/or Natural Gas and Propane Installation Code, CAN/CSA B149.1.

NOTICE

For direct vent (sidewall) installations in the Commonwealth of Massachusetts, the installer must comply with the additional requirements outlined on page 37 and 38.

WARNING

A gas vent extending through a sidewall should not terminate near an adjacent wall or below any building extensions such as roof eaves, balconies or decks. Failure to comply with the required clearances in this manual could result in severe personal injury, death or substantial property damage.

BEST PRACTICE

To reduce the potential of the combustion air inlet freezing up it is recommended to separate the vent and air terminations in both a horizontal and vertical plain as shown in figures 8 through 12 on pages 17 and 18.

BEST PRACTICE

If the vent is terminated on a sidewall which is subject to high winds it is recommended to terminate the vent using a 45º elbow or tee. A tee provides the best protection against wind but can expose the exterior of the house to condensate, while a 45º elbow provides improved protection from both wind and condensate.

NOTICE

The information and diagrams outlining the fittings and method of terminating the vent/combustion air are directly related to PVC/CPVC vent systems. When utilizing and AL29-4C® or Polypropylene vent system there may be some variations. Consult the appropriate vent manufacturer for recommendations and clarifications.

Determine Termination Locatio

Locate the vent and combustion a
following guidelines:

1. The total length of the vent c
must not exceed the limits given in Table 8 on page 8.

NOTICE

DO NOT include the 45º or 90º elbows or tee used to terminate the combustion air inlet and vent exterior of the building when determining the total length of pipe.

2. The combustion air pipe must terminate using a 90º elbow directed away from the vent termination. The combustion air termination must be installed 12" [30.5 cm] minimum above grade / highest anticipated snow level and as shown in Figs. 8 through 15 pages 17 & 18.

NOTICE

The combustion air termination can be placed on either side of the vent termination. The vent and combustion air terminations must be a minimum 12" [30.5 cm] apart. The vent and combustion air terminations are not required to be in the same pressure zone. The combustion air termination must be directed away from the vent see Figs. 10 through 15 pages 17 & 18. The combustion air termination must be directed down for Figs. 8 and 9 page 17.

3. The vent pipe can terminate:

- Using a 90º elbow as shown in Figs. 8 or 10, page 17.
- Using coupling as shown in Figs. 9 or 13, pages 17 or 18.
- Using a tee as shown in Figs. 11 or 14, pages 17 or 18.
- Using a 45º elbow as shown in Figs. 12 or 15, page 18.

The vent termination must be installed 12" [30.5 cm] minimum above grade / highest anticipated snow level.

WARNING

Do not extend the vent pipe outside the sidewall beyond the dimensions shown in Figs 8 through 15. Extended exposure of the vent pipe could cause condensate to freeze and block the vent pipe.

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Fig. 8: **Direct Vent - Sidewall Termination of Vent and Combustion Air Piping**

Fig. 9: **Direct Vent - Alternate Sidewall Termination of Vent and Combustion Air Piping**

Fig. 10: **Direct Vent - Sidewall Snorkel Termination of Vent and Combustion Air Piping**

Fig. 11: **Direct Vent - Sidewall Snorkel Termination of Vent and Combustion Air Piping with Tee Vent Termination**

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Fig. 12: Direct Vent - Sidewall Snorkel Termination of Vent and Combustion Air Piping with 45° Vent Termination

Fig. 13: Direct Vent - Sidewall Termination of Vent and Combustion Air Piping with Coupling Vent Termination

Fig. 14: Direct Vent - Sidewall Termination of Vent and Combustion Air Piping with Tee Vent Termination

Fig. 15: Direct Vent - Sidewall Termination of Vent and Combustion Air Piping with 45° Vent Termination

NOTICE

*** Combustion Air Termination should slope downward at 15° angle.**

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4. The combustion air and vent pipe center lines must be a minimum of 12" [30.5 cm] apart as shown in Figs. 8 through 15 pages 17 & 18.

5. The following should be considered when determining the location of the vent and combustion air termination:

   a. Locate the vent termination where flue vapors will not damage surrounding shrubs, plants, air conditioning equipment or be objectionable to the homeowner.

   b. The flue products will form a noticeable plume of water vapor as they condense in colder air. Avoid terminating the vent in areas where the plume could obstruct window views.

   c. Prevailing winds could cause freezing of flue gas condensation and a buildup of water / ice on surrounding plants, building surfaces or combustion air inlet.

   d. Avoid locations where prevailing winds could affect the performance of the boiler or cause recirculation of the flue gases, such as inside corners of buildings, near adjacent buildings, vertical surfaces, window wells, stairwells, alcoves, courtyards, or other recessed areas.

   e. Do not terminate the vent above doors or windows: flue condensate could freeze causing ice formations.

   f. Locate the vent termination to prevent possible condensate damage to exterior finishes.

   g. Avoid locations of possible accidental contact of flue vapors with people or pets.

6. The vent termination must also
   ing clearances; as shown in Fig

   a. At least 3 feet [0.9 m] from

   b. At least 3 feet [0.9 m] below

   c. At least 7 feet [2.1 m] abo
   ways

   d. At least 3 feet [0.9 m] above any forced air intake within 10 feet [3 m] (does not apply to the combustion air inlet of a direct vent appliance).

   e. No closer than 12" [30.5 cm] below or horizontally from any door, window or gravity air inlet.

   f. Must be at least 4 feet [1.2 cm] from electric meters, gas meters-regulators, relief valves or other equipment. Never terminate the vent above or below any of these items or within 4 feet [1.2 cm] horizontally.

   g. A minimum of 12" [30.5 cm] or a maximum of 24" [61 cm] beyond the exterior wall.

   h. A minimum 12 inches [30.5 cm] horizontal spacing from other fan assisted appliance vents (see page 13).

7. The edge of the combustion air termination coupling must extend 1" [2.5 cm] beyond the exterior wall as shown in Figs. 8 through 15 pages 17 & 18.

8. Locate the vent and combustion air terminations in a manner so as to protect from damage by foreign objects, such as stones, balls, buildup of leaves or sediment.

9. Do not connect any other appliance to the vent pipe or multiple boilers to a common vent pipe.

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Direct Vent - Vent Installation - Sidewall

1. Vent and Combustion Air Penetration

   - Vent pipe penetration through combustible or non-combustible wall material should maintain a minimum 1/4" [6mm] clearance for 3" and 4" PVC/CPVC vents or 1" for 2" PVC/CPVC Vents. The diameter of the penetration hole should be 4" [10.2 cm] minimum for 2" and 3" pipe or 5" [12.7 cm] minimum for 4" pipe. When using Polypropylene or Stainless Steel vent refer to vent manufacture's installation instructions, supplied with the vent for clearances.

   - Combustion air pipe penetration can maintain zero clearance. The diameter of the penetration hole should be 2-3/8" [6 cm] minimum for 2" pipe or 3-1/2" [8.9 cm] minimum for 3" pipe or 4-1/2" [11.4 cm] minimum for 4" pipe.

2. The installer must use a galvanized metal thimble for the vent pipe penetration.

3. Locate the vent and combustion air pipe penetrations to provide clearances as described in Figs. 8 through 15 pages 17 and 18.

4. The installer must comply with all local codes for isolating the vent pipe as it passes through floors and walls.

5. The installer should seal all exterior openings around penetration with an exterior silicon caulk.

Termination Fittings - Sidewall

1. The vent and combustion
   include a factory supplied "b
   shown in Figs. 16 through 19

2. The combustion air pipe mus
   elbow as shown in Figs. 8 th
   18.

3. The vent pipe can terminate:

- Using a 90º elbow as shown in Figs. 8 or 10 page 17.
- Using coupling as shown in Figs. 9 or 13 pages 17 or 18.
- Using a tee as shown in Figs. 11 or 14 pages 17 or 18.
- Using a 45º elbow as shown in Figs. 12 or 15 page 18.

The vent termination must be installed 12" [30.5 cm] minimum above grade / highest anticipated snow level.

⚠ WARNING

Do not extend the vent pipe outside the sidewall beyond the dimensions shown in Figs. 8 through 15. Extended exposure of the vent pipe could cause condensate to freeze and block the vent pipe.

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Fig. 16: Horizontal Vent Bird Screen Installation with Coupling Termination

Fig. 17: Horizontal Vent Bird Screen Installation with 45° Elbow Termination

Fig. 18: Horizontal Vent Bird Screen Installation with Tee Termination

Fig. 19: Horizontal Combustion Air Bird Screen Installation with 90° Elbow Termination

NOTICE

Installer must install the factory supplied "bird screens" on the vent and combustion air inlet terminations.

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Direct Vent - Multiple Boiler Installation - Sidewall

1. On installations of multiple PRESTIGE boilers, terminate each vent and combustion air pipe as described in this manual.
2. The wall penetration of the vent and combustion air pipe should be such that the combustion air inlet is a minimum 12" [30.5 cm] from the adjacent vent pipe of the other boiler for installations in the U.S as shown in Fig. 20. For installations in Canada, provide clearances as required by CAN/CSA B149.1.

NOTICE

The combustion air inlet of the PRESTIGE is defined as being part of a direct vent system. It is not considered as a forced air intake. The required clearance of an adjacent boiler vent to a forced air inlet does not apply in a multiple installation of PRESTIGE boilers.

NOTICE

Fig. 20 shows one option for air terminations of multiple Either termination option show 17 can be used for multiple Pl 12" [30.5 cm] minimum distance between centerlines of the combustion air and vent piping must be maintained for any chosen option.

NOTICE

Reference Figs. 8 or 9 page 17 for the configuration dimensions for the vent and combustion air inlet terminations for each unit installed in a multiple installation.

Fig. 20: Direct Vent - Horizontal Termination of Multiple Boilers

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Direct Vent - Vertical Vent and Sidewall Combustion Air

NOTICE

The installation must conform to the requirements of the authority having jurisdiction or, in the absence of such requirements, to the National Fuel Gas Code, ANSI Z223.1/ NFPA 54, and/or Natural Gas and Propane Installation Code, CAN/CSA B149.1.

NOTICE

When using an inoperative chimney as a means of a chase for the vent, the surrounding space within the chimney cannot be used to draw combustion air or vent another appliance.

⚠ WARNING

A gas vent extending through a roof should not terminate near an adjacent wall or below any building extensions such as roof eaves, balconies or decks. Failure to comply with the required clearances in this manual could result in severe personal injury, death or substantial property damage.

Determine Termination Location

Locate the vent and combustion air
following guidelines:

1. The total length of the vent or
must not exceed the limits given in Table 8 on page 8.

NOTICE

Do not include the 90º elbow or coupling used to terminate the combustion air inlet or vent exterior of the building when determining the total length of pipe.

2. The combustion air piping must terminate with a 90º elbow. Fig. 21 shows a snorkel termination option. The combustion air pipe can also terminate using a 90º elbow directed down or to the left or right as shown in Fig. 8 page 17 or Fig. 13 page 18. The termination must be installed 12" [30.5 cm] minimum above grade / highest anticipated snow level and as shown in Fig. 8 page 17 or Fig. 13 page 18 or Fig. 21.
3. The vent must terminate vertically with a coupling to accept the bird screen and must be located 12" [30.5 cm] (18" [45.7 cm] Canada) above the highest anticipated snow level.

Fig. 21: Direct Vent - Vertical Vent and Side Wall Combustion Air

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4. The following should be considered when determining the location of the vent and combustion air termination:
   a. Locate the vent termination where flue vapors will not damage surrounding shrubs, plants or air conditioning equipment or be objectionable to the homeowner.
   b. The flue products will form a noticeable plume of water vapor as they condense in colder air. Avoid terminating the vent in areas where the plume could obstruct window views.
   c. Prevailing winds could cause freezing of flue gas condensation and a buildup of water / ice on surrounding plants, building surfaces or combustion air inlet.
   d. Avoid locations where prevailing winds could affect the performance of the boiler or cause recirculation of the flue gases, such as inside corners of buildings, near adjacent buildings, vertical surfaces, window wells, stairwells, alcoves, courtyards, or other recessed areas.
   e. Do not terminate the vent above doors or windows: flue condensate could freeze causing ice formations.
   f. Locate the vent termination to prevent possible condensate damage to exterior finishes.
   g. Avoid locations of possible accidental contact of flue vapors with people or pets.
5. The vent termination must also maintain the following clearances; as shown in Fig.3, page 13.
   a. At least 3 feet [0.9 m] from adjacent walls
   b. At least 3 feet [0.9 m] below roof over hangs
   c. At least 7 feet [2.1 m] above any public walkways
   d. At least 3 feet [0.9 m] above any forced air intake within 10 feet [3 m] (does not apply to the combustion air inlet of a direct vent appliance).
   e. No closer than 12” [30.5 cm] below or horizontally from any door or window or gravity air inlet.
   f. Must be at least 4 feet [1.2 m] from any electric meters, gas meters-regulators, relief valves or other equipment. Never terminate the vent above or below any of these items within 4 feet [1.2 m] horizontally.
6. The edge of the combustion
   must extend to 1” [2.5 cm] b
   as shown in Fig. 21 page 23
7. Locate the vent termination ar
   a manner to protect from dan
   such as stones, balls, or buildu
8. Do not connect any other appliance to the vent pipe or multiple boilers to a common vent pipe.

Direct Vent - Vent Installation - Through the Roof

1. Vent pipe penetration through combustible or non-combustible wall material should maintain a minimum 1/4” [6 mm] clearance for 3” or 4” PVC/CPVC vents or 1” [2.5 cm] for 2” PVC/CPVC vents. The diameter of the penetration hole should be 4” [10.2 cm] minimum for 2” and 3” pipe or 5” [12.7 cm] minimum for 4” pipe. When using Polypropylene or Stainless Steel vent refer to the vent manufacture’s installation instructions, supplied with the vent for clearances.
2. The installer must use a galvanized metal thimble for the vent pipe penetration.
3. The vent must terminate 12” [30.5 cm] (18” [45.7 cm] Canada) above the highest anticipated snow level.
4. The installer must comply with all local codes for isolating the vent pipe as it passes through floors, ceilings and roofs.
5. The installer should provide adequate flashing and sealing boots sized for the vent pipe.

Direct Vent - Combustion Air Installation - Sidewall

1. Combustion air pipe penetration can maintain zero clearance. The diameter of the penetration hole should be 2 3/8” [6 cm] minimum for 2” pipe or 3 1/2” [8.9 cm] minimum for 3” pipe or 4 1/2” [11.4 cm] minimum for 4” pipe.
2. The combustion air termination must be installed 12” [30.5 cm] minimum above grade / highest anticipated snow level and as shown in Figs. 8 or 10 or 13 pages 17 and 18.
3. The installer must comply with all local codes for isolating the combustion air pipe as it passes through floors and walls.
4. The installer should seal all exterior openings around penetration with an exterior silicon caulk.

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Termination Fittings

1. The vent and combustion air terminations must include a factory supplied "bird screen" installed as shown in Fig. 4 page 14 & Fig. 19 page 21.
2. The combustion air piping must terminate through the sidewall using a 90° elbow as shown in Figs. 8 or 10 or 13 pages 17 and 18.
3. The vent piping must terminate vertically through the roof with a coupling to accept the bird screen and must be located 12" [30.5 cm] (18" [45.7 cm] Canada) above the highest anticipated snow level.

⚠ WARNING

Do not extend the vent pipe above the roof beyond the dimension shown in Fig. 21 on page 23. Extended exposure of the vent pipe could cause condensate to freeze and block the vent pipe.

Direct Vent - Multiple Boiler Ins
Vent and Sidewall Combustion A

1. On installations of multiple PR
minate each vent and combu
described in this manual.
2. Each vent and combustion air termination must be a minimum 12" [30.5 cm] from the adjacent termination for installations in the U.S. as shown in Fig. 22. For installations in Canada, provide clearances as required by CAN/CSA B149.1.

NOTICE

The combustion air inlet of the PRESTIGE is defined as being part of a direct vent system. It is not considered as a forced air intake. The required clearance of an adjacent boiler vent to a forced air inlet does not apply in a multiple installation of PRESTIGE boilers.

Fig. 22: Direct Vent - Vertical Termination of Vent and Sidewall Termination of Combustion Air of Multiple Boilers

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SECTION III - CATEGORY IV (INDOOR AIR) INSTALLATION OF VENT/AIR PIPING

A Category IV appliance utilizes uncontaminated indoor or outdoor air (surrounding the appliance) for combustion.

Category IV - Vertical - Through the Roof or Unused Chimney

NOTICE

The installation must conform to the requirements of the authority having jurisdiction or, in the absence of such requirements, to the National Fuel Gas Code, ANSI Z223.1/ NFPA 54, and/or Natural Gas and Propane Installation Code, CAN/CSA B149.1.

NOTICE

When using an inoperative chimney as a means of a chase for the vent, the surrounding space within the chimney cannot be used to draw combustion air or vent another appliance.

⚠ WARNING

A gas vent extending through a roof should not terminate near an adjacent wall or below any building extensions such as roof eaves, balconies or decks. Failure to comply with the required clearances in this manual could result in severe personal injury, death or substantial property damage.

NOTICE

The information and diagrams outlining the fittings and method of terminating the vent/combustion air are directly related to PVC/CPVC vent systems. When utilizing an AL 29-4C® or Polypropylene vent system there maybe some variations. Consult the appropriate vent manufacturer for recommendations and clarifications.

Determine Termination Locatio

Locate the vent and combustion a
following guidelines:

1. The total length of the vent mu
given in Table 8 on page 8.

NOTICE

Do not include the coupling used to terminate the vent exterior of the building when determining the total length of pipe.

2. The combustion air piping must terminate at the boiler with a 90° elbow.
3. The vent must terminate vertically with a coupling and must be located 12" [30.5 cm] (18" [45.7 cm] Canada) above the highest anticipated snow level as shown in Fig. 23.
4. The following should be considered when determining the location of the vent termination:
   a. Locate the vent termination where flue vapors will not damage surrounding shrubs, plants or air conditioning equipment or be objectionable to the homeowner.
   b. The flue products will form a noticeable plume as they condense in colder air. Avoid terminating the vent in areas where the plume could obstruct window views.
   c. Prevailing winds could cause freezing of flue condensation and a buildup of water / ice on surrounding plants or building surfaces.

Fig. 23: Category - IV - Vertical Termination of Vent Pipe

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d. Avoid locations where prevailing winds could affect the performance of the boiler or cause recirculation of the flue gases, such as inside corners of buildings or near adjacent buildings or vertical surfaces, window wells, stairwells, alcoves, courtyards, or other recessed areas.

e. Do not terminate the vent above any doors or windows: flue condensate could freeze causing ice formations.

f. Locate the vent termination to prevent possible condensate damage to exterior finishes.

g. Avoid locations of possible accidental contact of flue vapors with people or pets.

5. The vent termination must also maintain the following clearances; as shown in Fig.24.

   a. At least 3 feet [0.9 m] from adjacent walls

   b. At least 3 feet [0.9 m] below roof over hangs

   c. At least 7 feet [2.1 cm] above any public walkways

   d. At least 3 feet [0.9 m] above any forced air intake within 10 feet [3 m].

   e. No closer than 4 feet [1.2 m] below or horizontally from any door or window or gravity air inlet.

6. Locate the vent termination in a manner to protect from damage by foreign objects, such as stones, balls, or to buildup of leaves and sediment.

7. Do not connect any other appliance to the vent pipe or multiple boilers to a common vent pipe.

Fig. 24: Termination Clearances of Category IV System

Category IV - Vent Installation - T

1. Vent Penetration

   - Vent pipe penetration thro non-combustible wall mater minimum 1/4" [6 mm] cle PVC/CPVC vents or 1" [2.5 c vents. The diameter of the penetration hole should be 4" [10.2 cm] minimum for 2" and 3" pipe or 5" [12.7 cm] minimum for 4" pipe. When using Polypropylene or Stainless Steel Vent refer to vent manufactures installation instructions, supplied with the vent for clearances.

2. The installer must use a galvanized metal thimble for the vent pipe penetration.

3. Locate the vent pipe penetration to provide clearances as described in Fig. 23 page 26.

4. The installer must comply with all local codes for isolating the vent pipe as it passes through floors, ceilings and roofs.

5. The installer should provide adequate flashing and a sealing boot sized for the vent pipe.

Termination Fittings - Through the Roof

1. The vent pipe and combustion air pipe terminations must include a factory supplied "bird screen" installed as shown in Figs. 4 & 5 page 14.

2. The combustion air piping must terminate at the boiler with a 90° elbow.

3. The vent piping must terminate vertically with a coupling as shown in Fig. 23 page 26.

⚠ WARNING

Do not extend the vent pipe above the roof beyond the given dimensions shown in Fig. 23 page 26. Extended exposure of the vent pipe could cause condensate to freeze and block the vent pipe.

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Category IV - Multiple Boiler Installation - Through the Roof

1. On installations of multiple PRESTIGE boilers, terminate each vent pipe as described in this manual.
2. Each vent termination must be a minimum 12" [30.5 cm] from the adjacent termination for installations in the U.S. as shown in Fig. 25. For installations in Canada, provide clearances as required by CAN/CSA B149.1.

Fig. 25: Category IV- Vertical Termination of Multiple Boilers

Category IV - Horizontal - Side

NOTICE

The installation must conform t the authority having jurisdicti of such requirements, to the National Fuel Gas Code, ANSI Z223.1/ NFPA 54, and/or Natural Gas and Propane Installation Code, CAN/CSA B149.1.

NOTICE

For direct vent (sidewall) installations in the Commonwealth of Massachusetts, the installer must comply with the additional requirements outlined on pages 37 and 38.

⚠ WARNING

A gas vent extending through a sidewall should not terminate near an adjacent wall or below any building extensions such as roof eaves, balconies or decks. Failure to comply with the required clearances in this manual could result in severe personal injury, death or substantial property damage.

BEST PRACTICE

If the vent is terminated on a sidewall which is subject to high winds it is recommended to terminate the vent using a 45º elbow or tee. A tee provides the best protection against wind but can expose the exterior of the house to condensate, while a 45º elbow provides improved protection from both wind and condensate.

NOTICE

The information and diagrams outlining the fittings and method of terminating the vent/combustion air are directly related to PVC/CPVC vent systems. When utilizing and AL29-4C® or Polypropylene vent system there may be some variations. Consult the appropriate vent manufacturer for recommendations and clarifications.

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Determine Termination Location

Locate the vent and combustion air termination using the following guidelines:

1. The total length of the vent must not exceed the limits given in Table 8 on page 8.

NOTICE

DO NOT include the 45º or 90º elbow or tee used to terminate the vent exterior of the building when determining the total length of pipe.

2. The combustion air piping must terminate at the boiler with a 90º elbow.
3. The vent pipe can terminate:

- Using a 90º elbow as shown in Fig. 29 page 30.
- Using a coupling as shown in Fig. 26 page 30.
- Using a tee as shown in Fig. 27 page 30 or Fig. 30 page 31 .
- Using a 45º elbow as shown in Fig. 28 page 30 or Fig. 31 page 31.

The vent termination must be installed 12" [30.5 cm] minimum above grade / highest anticipated snow level.

⚠ WARNING

Do not extend the vent pipe outside the sidewall beyond the dimensions shown in Figs. 26 through 31 pages 30 and 31. Extended exposure of the vent pipe could cause condensate to freeze and block the vent pipe.

4. The following should be considered when determining the location of the vent termination:
   a. Locate the vent termination where flue vapors will not damage surrounding shrubs, plants or air conditioning equipment or be objectionable to the homeowner.
   b. The flue products will form a noticeable plume as they condense in colder air. Avoid terminating the vent in areas where the plume could obstruct window views.
   c. Prevailing winds could ca condensation and a buildup rounding plants or building
   d. Avoid locations where pre affect the performance of recirculation of the flue ga corners of buildings or near adjacent buildings or vertical surfaces, window wells, stairwells, alcoves, courtyards, or other recessed areas.
   e. Do not terminate the vent above any doors or windows: flue condensate could freeze causing ice formations.
   f. Locate the vent termination to prevent possible condensate damage to exterior finishes.
   g. Avoid locations of possible accidental contact of flue vapors with persons or pets.
5. The vent termination must also maintain the following clearances; as shown in Fig.24, page 27.
   a. At least 3 feet [0.9 m] from adjacent walls
   b. At least 3 feet [0.9 m] below roof overhangs
   c. At least 7 feet [2.1 m] above any public walkways
   d. At least 3 feet [0.9 m] above any forced air intake within 10 feet [3 m].
   e. No closer than 4 feet [1.2 m] below or horizontally from any door or window or gravity air inlet.
   f. Must be at least 4 feet [1.2 m] from any electric meters, gas meters-regulators, relief valves or other equipment. Never terminate the vent above or below any of these items within 4 feet [1.2 m] horizontally.
   g. A minimum 12" [30.5 cm] or a maximum 24" [61 cm] beyond the exterior wall.
6. The combustion air must terminate at the boiler with a 90º elbow.
7. Locate the vent termination in a matter to protect from damage by foreign objects, such as stones or balls or subject to buildup of leaves or sediment.
8. Do not connect any other appliance to the vent pipe or multiple boilers to a common vent pipe.

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Fig. 26: Category IV - Sidewall Termination of Vent Pipe with Coupling Termination

Fig. 27: Category IV - Sidewall Termination of Vent Pipe with Tee Termination

Fig. 28: Category IV - Sidewall Termination of Vent Pipe with 45º Termination

Fig. 29: Category IV - Sidewall Snorkel Termination of Vent Pipe with 90º Elbow Termination

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Fig. 30: Category IV - Sidewall Snorkel Termination of Vent Pipe with Tee Termination

Fig. 31: Category IV - Sidewall Snorkel Termination of Vent Pipe with 45º Elbow Termination

Category IV - Vent Installation - S

1. Vent Penetration

   - Vent pipe penetration thro non-combustible wall mater minimum 1/4" [6 mm] clea PVC/CPVC vents or 1" for The diameter of the penetration hole should be 4" [10.2 cm] minimum for 2" and 3" pipe or 5" [12.7 cm] minimum for 4" pipe. When using Polypropylene or Stainless Steel vent, refer to the vent manufacture's installation instructions, supplied with the vent for clearances.

2. The installer must use a galvanized metal thimble for the vent pipe penetration.

3. Locate the vent pipe penetration to provide minimum clearances as described in Figs. 26 through 31 pages 30 and 31.

4. The installer must comply with all local codes for isolating the vent pipe as it passes through floors and walls.

5. The installer should seal all exterior openings around penetrations with an exterior silicon caulk.

Termination Fittings - Sidewall

1. The vent and combustion air terminations must include a factory supplied "bird screen" installed as shown in Figs: 16 through 19 page 21.

2. The combustion air piping must terminate at the boiler with a 90º elbow.

3. The vent pipe can terminate:

- Using a 90º elbow as shown in Fig. 29 page 30.
- Using a coupling as shown in Fig. 26 page 30.
- Using a tee as shown in Fig. 27 page 30 or Fig. 30 page 31 .
- Using a 45º elbow as shown in Fig. 28 page 30 or Fig. 31 page 31.

The vent termination must be installed 12" [30.5 cm] minimum above grade / highest anticipated snow level.

⚠ WARNING

Do not extend the vent pipe outside the sidewall beyond the dimensions shown in Figs. 26 through 31 pages 30 and 31. Extended exposure of the vent pipe could cause condensate to freeze and block the vent pipe.

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Category IV - Multiple Boiler Installation - Sidewall

1. On installations of multiple PRESTIGE boilers, terminate each vent pipe as described in this manual.
2. The wall penetration of the vent should be a minimum 12” [30.5 cm] from the adjacent vent pipe of another boiler for installations in the U.S as shown Fig. 32. For installations in Canada, provide clearances as required by CAN/CSA B149.1.

NOTICE

Fig. 32 shows one option for vent terminations of multiple PRESTIGE boilers. Any vent termination option shown in Figs. 26 through 31 pages 30 and 31 can be used for multiple PRESTIGE boilers. The 12” [30.5 cm] minimum distance between centerlines of the vent piping must be maintained for any chosen option.

NOTICE

Reference Figs. 26 through 31 pages 30 and 31 for the configuration dimensions of the vent for each unit installed in a multiple installation.

Fig. 32: Category IV - Multiple Boiler Sidewall Vent Terminations

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SECTION IV- INSTALLATION REQUIREMENTS

3” to 2” (60 mm) Vent/Combustion Air Transition

NOTICE

This section outlines the installation of Venting and Combustion Air for the PRESTIGE 60, 110 and EXCELLENCE when the vent system must transition from the 3” outlet of the boiler to the 2” (60 mm) vent system.

- The transition from 3” vent system to 2” (60 mm) vent system must occur at the boiler vent outlet.
- The transition from 3” vent to 2” (60 mm) vent must occur in a vertical run only.

WARNING

Transition of 3” vent to 2” (60 mm) vent in a horizontal run may result in pooling of the condensate and potential vent blockage. Failure to comply can result in death, serious injury or substantial property damage.

- Use a 3 x 2 bell reducer to make the transition to 2” CPVC/PVC vent, see Figures 33 and 34.
- * Use a 3 (80 mm) appliance vent adapter and 3” (80 mm) to 2” (60 mm) reducer to make the transition to 2” (60 mm) Polypropylene vent see Table 2 on page 5.
- The 2” (60 mm) vent should not transition back to 3” (80 mm) vent at any point in the vent system.
- The PVC combustion air piping shall transition from 3” to 2” using a 3 x 2 bell reducer and shall transition in a similar manner as the vent system.
- The total equivalent length of the 3” (80 mm) vent and 2” (60 mPVC m) vent combined shall not exceed the length listed for a 2” (60 mm) vent system Table 8, page 8.
- The total equivalent length of 3” (80 mm) and 2” (60 mm) combustion air piping combined shall not exceed the length listed for combustion air in Table 8, page 8.

Fig. 33: 2” CPVC/PVC Venting System Vertical

Fig. 34: 2” CPVC/PVC Venting System Horizontal

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3” to 4” (100 mm) Vent/Combustion Air Transition

NOTICE

This section outlines the installation of Venting and Combustion Air for the PRESTIGE 60, 110, 175, 250 and EXCELLENCE. Where the vent system must transition from the 3” outlet of the boiler to the 4” (100 mm) vent system.

- The transition from 3” vent system to 4” (100 mm) vent system must occur within 5 feet [1.5 m] of the boiler vent outlet.
- The transition from 3” vent to 4” (100 mm) vent must occur in a vertical run only.

WARNING

Transition of 3” vent to 4” (100 mm) vent in a horizontal run may result in pooling of the condensate and potential vent blockage. Failure to comply can result in death, serious injury or substantial property damage.

- The 4” (100 mm) vent should not transition back to 3” (80 mm) vent at any point in the vent system except when using ACV - Triangle Tube’s optional PVC concentric vent termination kit, see kit instructions for details.
- The combustion air piping shall transition from 3” to 4” (100 mm) in the same manner as the vent system.
- The total equivalent length of the 3” (80 mm) vent and 4” (100 mm) vent combined shall not exceed the length listed for a 4” (100 mm) vent system Table 8, page 8.
- The total equivalent length of 3” (80 mm) and 4” (100 mm) combustion air piping combined shall not exceed the length listed for combustion air in Table 8, page 8.

Insert Piping to PRESTIGE Ada

1. The installer must clean, de pipe ends.

WARNING

The pipe ends must be smooth, free of sharp edges chamfer and wiped clean to prevent possible damage to the sealing gasket in the vent and combustion air adapters. Failure to comply with this requirement could result in leakage of flue products causing possible severe personal injury or death.

2. Prior to inserting the pipe, inspect the vent and combustion air adapters to verify there are no obstructions or packing material inside the adapters and the gaskets are in place.
3. Ensure the adapter banding strap is loose prior to inserting the pipe.
4. Apply a small amount of silicon grease or water to the insertion end of the pipe to ease insertion into the adapter.
5. Insert the pipe into the adapter until it is fully seated.

WARNING

Do not apply excessive force, twist or bend the adapter or vent / combustion air pipe when inserting. The adapter gasket could be damaged resulting in possible flue gas leakage.

6. Secure the vent and combustion air pipe by tightening the adapter banding strap. Do not over tighten the strap. The seal is made with gasket inside the adapter.

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Vent and Combustion Air Piping Installation Guidelines

PVC/CPVC Vent System

1. The installer should install the vent / combustion air piping working from the boiler to the piping termination. The piping should not exceed the lengths given in Table 8 page 8 for either the vent or combustion air.
2. The installer should cut the pipe to the required length and deburr the inside and outside of both ends.
3. The installer should chamfer the outside of the pipe ends to allow even distribution of cement when joining.
4. The installer should dry assemble the vent system prior to assembling any joints to ensure proper fit.
5. The pipe ends and fittings should be cleaned and dried thoroughly prior to assembly of the joint.
6. When assembling a joint the installer should:
   a. Handle fittings and pipes carefully to prevent contamination of surfaces
   b. Apply a liberal amount of primer to both surfaces - the end of the pipe and the insert socket of the fitting.
   c. Apply a light uniform coating of approved cement to both surfaces - the end of the pipe and the insert socket of the fitting, while the primer is still wet.
   d. A second coat of approved cement should be applied to the mating surfaces. The installer should avoid, however, using too much cement on the socket of the fitting to prevent a buildup of cement on the inside.
   e. With the cement still wet, the pipe end should be inserted into the socket of the fitting and twisted 1/4 of a full turn. Ensure the pipe end is inserted fully into the socket of the fitting.
   f. Any excess cement should be wiped clean from the joint. Inspect the joint to ensure a smooth bead of cement is noticed around the entire joint seam.
7. The installer should use perforated metal strap hangers or equivalent pipe hangers suitable for plastic pipe to support the piping. The hangers must be spaced at a maximum of every 5 feet [1.5 m] of horizontal and vertical run of piping. A support must be placed at the boiler and at every change in direction vertical or horizontal (i.e elbow). Do not penetrate any part of the piping or vent system with fastener.

NOTICE

Pipe hangers should not be tigh to allow for thermal expansion ment. Pipe clamps or hangers any sharp edges which can dam

8. The vent and combustion air piping should be sloped continuously from the termination back to the boiler with at least 1/4" drop per foot [6 mm/30 cm] of run. Do not allow any sags in the run of piping.

⚠ WARNING

Do not pitch the vent or combustion air piping downward away from the boiler. Potential condensate damage to the building exterior or to the surrounding landscape and/or potential risks of icing and blockage of the vent piping could occur.

9. Maintain a minimum clearance of 1/4" [6 mm] between the vent pipe and all materials, combustible or non-combustible for 3" and 4" PVC/CPVC vents or 1" [2.5 cm] for 2" PVC/CPVC vents. The installer must seal any wall, floor or ceiling penetrations as per local code requirements.

BEST PRACTICE

It is recommended that the installer uses the same number of elbows and length of piping on the venting and the combustion air inlet systems.

NOTICE

Covering PVC/CPVC or Polypropylene vent pipe and fittings with thermal insulation is prohibited.

Polypropylene or Stainless Steel Vent Systems

NOTICE

When using Polypropylene or Stainless Steel Vent refer to vent manufacture's installation instructions, supplied with the vent for proper installation.

NOTICE

Covering Polypropylene vent pipe and fittings with thermal insulation is prohibited.

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SECTION V - MANIFOLD COMBUSTION AIR

Manifold Combustion Air Option for Multiple Prestige Boilers

- Common combustion air manifold is restricted to horizontal/side wall terminations only.
- The number of Prestige boilers connected to a common combustion air manifold system is limited to the maximum boiler input shown in Table 9.
- The combustion air manifold must be constructed of round solid core PVC pipe with minimum diameter based on combined maximum boiler input capacity. See Table 9.

Maximum Boiler Input (MBH)	Minimum Diameter of Combustion Air Piping
<400	4”
400-600	5”
601-800	6”
801-1600	8”
1601 -2000	10”

Table 9: Common Combustion Air Piping

Equivalent Length of Combustion Air Manifold

- The maximum equivalent length of the combustion air manifold must not exceed the smallest maximum equivalent length allowable for the boilers connected to the manifold per Table 8, page 8.
- Reduce the maximum equivalent length of combustion air manifold as follows:
  - The equivalent length of the transition piping from the boiler to the manifold.
  - 5 Feet for every 45° elbow
  - 10 feet for every 90° elbow

Horizontal Air Termination

- The common combustion air manifold must terminate on a horizontal/side wall using a 90 degree elbow pointed downward.
- The inlet of the common combustion air termination elbow must include a corrosion resistant field supplied bird screen.
- The edge of the combustion air termination coupling must extend 1” (2.5 cm) beyond the finished exterior wall as shown in Fig. 8, page 17.
- The bottom of the comm nation (inlet) must be loc mum above grade/highest
- The common combustion minimum of 3 feet (0.9 n appliance vent termination izontally.
- The common combustion air termination must be a minimum of 3 feet (0.9 m) horizontally from any appliance vent termination.
- Avoid locating the common combustion air termination in a location where prevailing winds could affect the performance of the boilers or cause recirculation of flue gases, such as inside corners of buildings, near adjacent buildings, vertical surfaces, window wells, stairwells, alcoves, courtyards, or other recessed areas. The common air termination must be installed a minimum of 6 feet horizontally from any such locations.
- Locate the combustion air termination in a manner so as to protect from damage from foreign objects, such as stones, balls, buildup of leaves or sediment.

Installation Guidelines

- Use perforated metal strap hangers or equivalent pipe hangers suitable for plastic pipe to support the common air manifold. Hangers must be placed at a maximum of every 5 ft [1.5 m] of horizontal and vertical run of piping. A support must be placed at every boiler and at every change in direction vertically or horizontally.

Transition Boiler Air Piping to Manifold Guidelines

- The transitions piping from the boiler adapter to the combustion air manifold must be 3 inch or 4 inch pipe.
- Reference Table 8 page 8 for reductions in allowable equivalent lengths.

BEST PRACTICE

To maintain the maximum allowable equivalent length of the combustion air manifold, keep the boiler transition vent piping to a minimum using the least amount of fittings and pipe lengths as possible.

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SECTION VI - COMMONWEALTH OF MASSACHUSETTS

Installations with the Direct Vent Termination Elevation At or Below 4 feet of Grade:

NOTICE

The following instructions apply to the installation of a direct vented appliance whose vent termination and combustion air inlet are installed at or below a four foot elevation (above the grade).

1. If not already present in the structure of the building, a carbon monoxide detector and alarm must be installed in the living area outside the bedroom(s). The carbon monoxide detector and alarm is provided by the installer.

NOTICE

The carbon monoxide detector and alarm installed in the living space outside the bedrooms shall comply with NFPA 720 (2005 edition).

2. A carbon monoxide detector and alarm shall be installed in the mechanical room in which the direct vent appliance is located. The carbon monoxide detector and alarm shall:
   - Be installed on the same 120 volt service circuit as the appliance such that only one service switch services both the appliance and the carbon monoxide detector.
   - Provide battery back-up power in case of power failure

NOTICE

The carbon monoxide detector a within the same room as the di must meet ANSI/UL 2034 standar NFPA 720 (2005 edition). The detector and alarm must be tested, approved and listed with a Nationally Recognized Testing Lab as recognized under 527 cm.

3. The direct vent termination must be approved for the appliance and when applicable the combustion air inlet must be approved for the appliance. Installation of the vent termination and combustion air inlet shall be in strict compliance with the installation instructions provided with the appliance.

NOTICE

The installer must leave the appliance installation manual and any documentation regarding the installation of the venting, vent termination and combustion air inlet with the appliance upon completion of the installation.

4. A metal or plastic identification plate (provided by the installer) must be mounted on the exterior wall of the building 4 feet directly above the location of the vent termination and combustion air inlet. The identification plate shall read **"Gas Vent Directly Below"**. The size of the plate and lettering shall be of sufficient size to be easily read from a distance of 8 feet.

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Installations with the Direct Vent Termination Elevation Above 4 feet of Grade:

NOTICE

The following instructions apply to the installation of a direct vented appliance whose vent termination and combustion air inlet are installed above a four foot elevation above the grade.

1. If not already present in the structure of the building, a carbon monoxide detector and alarm must be installed in the living area outside the bedroom(s). The carbon monoxide detector and alarm is provided by the installer.

NOTICE

The carbon monoxide detector and alarm installed in the living space outside the bedrooms must comply with NFPA 720 (2005 edition).

2. A carbon monoxide detector and alarm shall be installed in the mechanical room in which the direct vent appliance is located. The carbon monoxide detector and alarm shall:
   - Be either hard wired or battery powered or both

NOTICE

The carbon monoxide detector and alarm installed within the same room as the direct vent appliance must comply with NFPA 720 (2005 edition).

3. The direct vent termination m
   appliance and when applica
   inlet must be approved
   Installation of the vent termi
   air inlet shall be in strict com
   lation instructions provided w

NOTICE

The installer must leave the appliance installation manual and any documentation regarding the installation of the venting, vent termination and combustion air inlet with the appliance upon completion of the installation.

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