
PVC Concentric Vent/Air Termination 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 appliance 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.

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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 appliance.



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



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



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

NOTICE

Indicates special instructions on installation, operation or maintenance, which are important to the appliance but not related to personal injury hazards.

BEST PRACTICE

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

INSTALLER



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

This document is a supplement to the appliance installation and maintenance manual and venting supplement manual. The purpose of this supplement is for the proper installation of the concentric vent kit.



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

NOTICE

This vent terminations kit is not applicable for use on PRESTIGE Solo 399 venting systems.

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 maintained near the appliance to be used by the qualified heating contractor or service technician.

SECTION I - PRE- INSTALLATION ITEMS

Removal of an Existing Boiler and or Water Heater from a Common Vent System



Do not install the appliance 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 and or water heater 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 and or water heater, the following steps shall be followed with each appliance that remains connected to the common venting system. Place each appliance 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 appliance being inspected. Follow the lighting instructions. Adjust thermostat so appliance will operate continuously.
5. Test for spillage at the draft hood relief opening after 5 minutes of main burner operation. Use the flame of a match or candle, or smoke from a cigarette, 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.

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 appliance requires a Category IV / Direct Vent venting system which is designed for pressurized venting and condensate.

The appliance must be installed with the combustion air piped directly from outdoors to the unit as described in this supplement.

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.

For installation of the concentric vent/air termination kit the vent and air piping must be PVC material only.

PVC Schedule 40 - ANSI/ASTM D1785

PVC-DWV - ANSI/ASTM D2665

Pipe Cement and Primer

For assembly of the concentric vent/air termination kit components the vent and combustion air piping as well as fittings must use PVC cement and primer only.

PVC - ANSI/ASTM D2564

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 vent system components with other vent systems materials and components. Use only PVC pipe or fittings and seal with the appropriate primer and cement. Failure to comply with this requirement could cause vent failure resulting in leakage of flue products into the living space.

Vent/Combustion Air Equivalent Lengths

- For all venting applications, the maximum allowable length should not exceed those lengths listed in Table 1.
- Reduce the maximum allowable length for each elbow as follows:
 - 3 Feet for every 45° elbow
 - 5 feet for every 90° elbow

2 Inch 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 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.

3 Inch Vent System Restrictions

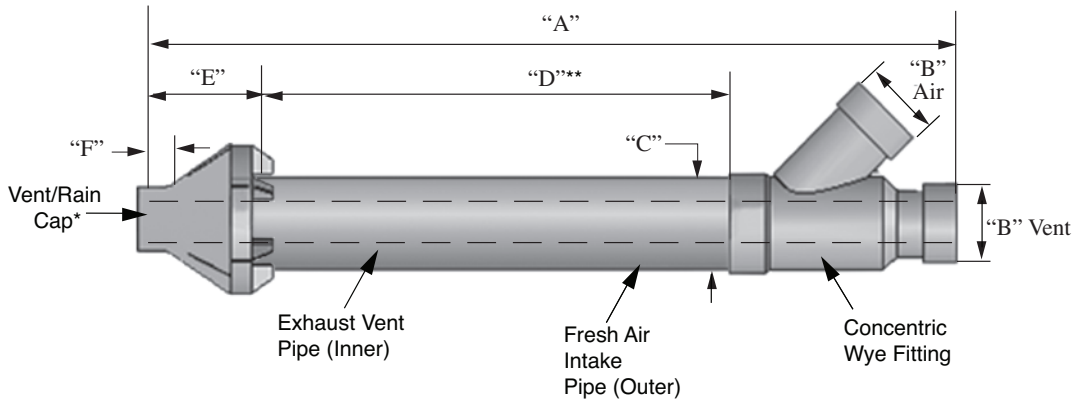
- Derate the maximum boiler input of the PRESTIGE Solo 250 by 3% when using the maximum equivalent length of 3 inch vent piping.

TABLE 1

PRESTIGE Model	Maximum Allowable Vent or Combustion Air Piping Length								
	2 Inch Piping		OR	3 Inch Piping		OR	4 Inch Piping		
	Feet [Meters]	Elbows		Feet [Meters]	Elbows		Feet [Meters]	Elbows	
60	55 [16.8]	0	OR	100 [30.5]	0	OR	100 [30.5]	0	
110	45 [13.7]	0		100 [30.5]	0		100 [30.5]	0	
175	Not Applicable	0		100 [30.5]	0		100 [30.5]	0	
250				60 [18.3]	0		80 [24.3]	0	
399				Not Applicable			Not Applicable		Not Applicable
EXCELLENCE	45 [13.7]	0		100 [30.5]	0		100 [30.5]	0	
CHALLENGER Model	Feet [Meters]	Elbows	OR	Feet [Meters]	Elbows	OR	Feet [Meters]	Elbows	
CC 85	Not Applicable	0		85 [25.9]	0		Not Applicable	0	Not Applicable
CC 105				85 [25.9]	0				
CC 125				85 [25.9]	0				
CC 150				85 [25.9]	0				

WARNING

The concentric vent/air termination may be extended or reduced to accommodate height or sidewall restrictions. If termination is reduced the inner pipe must be longer than the outer pipe by dimension “G” in figure 1. Cut pipe ends square. If termination is extended, replace the two pipes supplied in the kit using the same diameter SDR-26 (ASTM D-2241), solid, single PVC pipe. DO NOT use couplings to extend the length of pipes. DO NOT extend the length of pipes more than 24 inches [61 cm] from the original length as supplied in the kit and shown in Fig. 1. Failure to comply with these instructions could result in severe personal injury, death or substantial property damage.



* Bird Screen and Screws not Shown
 ** “D” Dimension can be shortened to a minimum of 12”. Inner pipe must remain longer than outer pipe by dimension “G”

Kit Part Number	“A”	“B” Nominal PVC Pipe Size	“C”	“D”	“E”	“F”	“G”
HMVKIT13	39” [99 cm]	3”	4.5” [11.5 cm]	21” [53.5 cm]	6.5” [16.5 cm]	1” [2.5 cm]	13” [33 cm]
PSVTERM06	29” [74 cm]	2”	3.5” [9 cm]	16” [40.5 cm]	6.5” [16.5 cm]	2.5” [6.5 cm]	7.5” [19 cm]

Fig. 1: Concentric Vent/Air Termination Components & Dimensions

 **WARNING**

On a concentrically vented appliance the combustion air must be piped directly from the outdoors to the appliance. If the combustion air inlet is located in any area likely to cause or contain contamination, or if products, which would contaminate the air cannot be removed, the combustion air must be repiped and terminated to another location. Contaminated combustion air will damage the appliance and its burner system, resulting in possible severe personal injury, death or substantial property damage.

 **DANGER**

Do not operate the appliance if its 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 can create corrosion of the heat exchanger, burner components and vent system, causing serious damage and presenting a possible threat of 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 area free of these chemicals.

Potential contaminating products

- Spray cans containing chloro/fluorocarbons
- Permanent Wave Solutions
- 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

SECTION II - INSTALLING VENT TERMINATION KIT

Vertical - Through the Roof

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.

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 could result in severe personal injury, death or substantial property damage.

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 1 on page 4.

NOTICE

Include the two concentric vent/air termination piping length when determining the total length of pipe.

2. The concentric vent/air assembly must terminate vertically and must be located 12 inches [30.5 cm] (18 inches [45.7 cm] for Canada) minimum above the highest anticipated snow level with a maximum of 24 inches [61 cm] above the roof as shown in Fig. 2.
3. The vent and combustion air piping connected to the concentric vent/air assembly must comply with the instructions listed in this supplement.
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 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, 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 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 or guard 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.

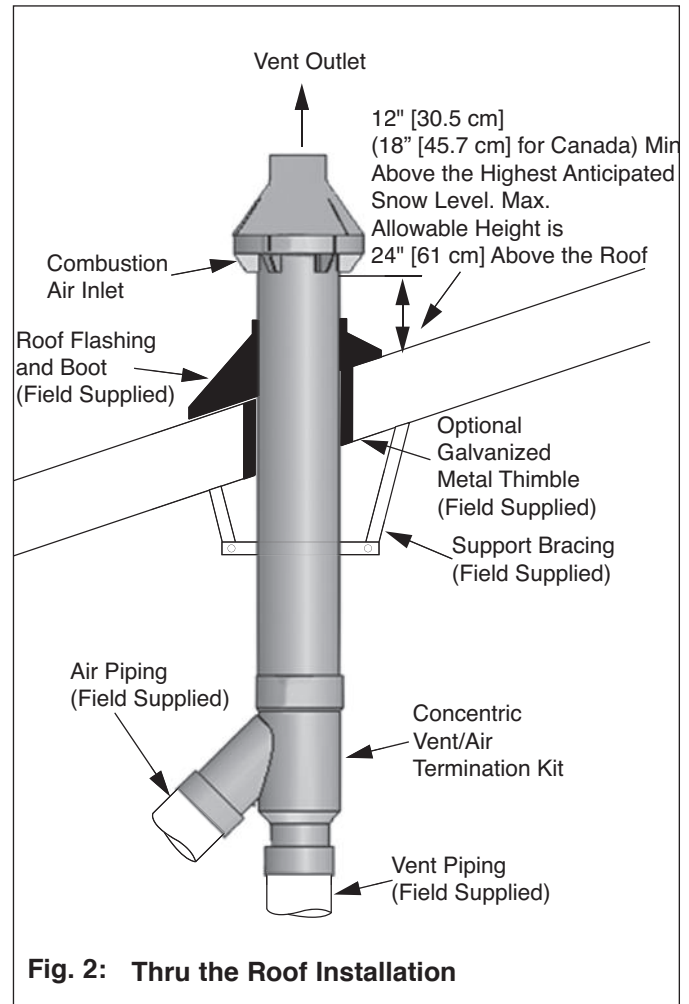


Fig. 2: Thru the Roof Installation

5. The vent termination must also maintain the following clearances; as shown in Fig.6, page 11.
 - a. At least 3 feet [0.9 M] from adjacent walls
 - b. No closer than 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] (does not apply to the combustion air inlet of a direct vent appliance).
 - e. No closer than 12 inches [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] (6 feet [1.8 M] Canada) 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] (6 feet [1.8 M] Canada) horizontally.
6. Locate the vent termination and combustion air inlet in a manner to protect them from damage by foreign objects, such as stones or balls or subject to buildup of leaves or sediment.
7. Do not connect any other appliance to the vent pipe or multiple appliances to a common vent pipe.

Vent Installation - Through the Roof

1. Roof Penetration
 - Cut a single 5 inch [12.7 cm] diameter hole for HMVKIT13 installations or 4 inch [10.2 cm] diameter hole for PSVTERM06 installations, through the building structure. The hole shape can vary based on roof pitch.
2. The installer must comply with all local codes for isolating the vent pipe as it passes through floors, ceilings and roofs.
3. The installer should provide adequate flashing and a sealing boot sized for the vent pipe and combustion air pipe.
4. Mount the termination assembly as shown in Fig. 2 page 6.
5. The termination may be installed through a wall thickness of up to 20" [50.8 cm] maximum.

Termination Assembly Support

1. If assembly needs to be extended to meet height requirements the two pipes supplied in the kit may be replaced using the same diameter, solid, single PVC pipe.



When extending the assembly length, DO NOT exceed the length of pipe supplied in the kit by more than 24 inches [61 cm]. DO NOT use couplings to extend the length of the termination assembly. Failure to comply could result in severe personal injury, death or substantial property damage.

2. Support the termination assembly at the roof penetration as shown in Fig. 2 page 6
 - Use support bracing to support the termination assembly and to prevent vertical slippage or horizontal movement.
 - Any clamps or bracing used to support the termination assembly must be such that it does not penetrate the assembly piping or cause stress and potential cracking of the assembly piping.

Multiple Installation - Through the Roof

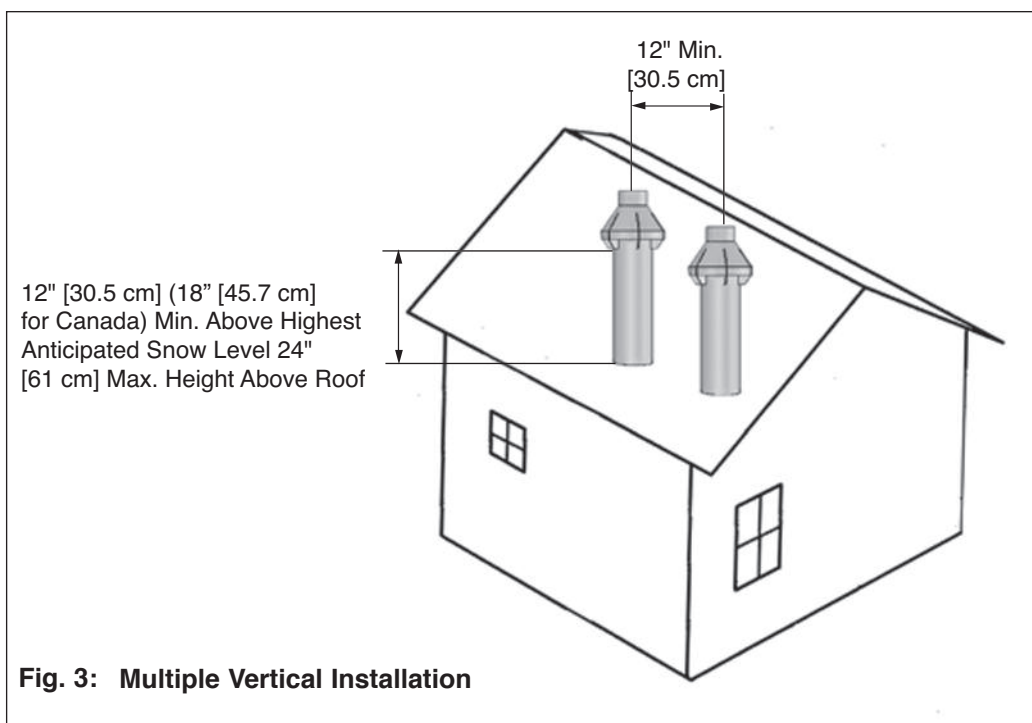
1. On installations of multiple appliances, install the concentric vent/air termination assemblies as described in this manual.
2. The roof penetration of the termination assemblies should be such that the vent outlet is a minimum 12 inches between centerlines from the adjacent termination assembly of the other boiler for installations in the U.S. as shown in Fig. 3. For installations in Canada, provide clearances as required by CAN/CSA B149.1.

! WARNING

All vent outlets of the termination assemblies must be of the same height to avoid flue gas recirculation and the possibility of severe personal injury, death or substantial property damage.

NOTICE

The combustion air inlet of the appliance 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 appliance vent to a forced air inlet does not apply in a multiple appliance installations.



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.

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 could result in severe personal injury, death or substantial property damage.

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 1 on page 4.
2. The concentric vent/air termination assembly must be installed 12 inches [30.5 cm] above grade or highest anticipated snow level as shown in Fig. 4.

3. The vent and combustion air piping connected to the concentric vent/air termination assembly must comply with the instructions listed in this supplement.

WARNING

Do not extend the vent pipe outside the sidewall beyond the given dimensions shown in Fig. 4. 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 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 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, building surfaces or combustion air inlet.

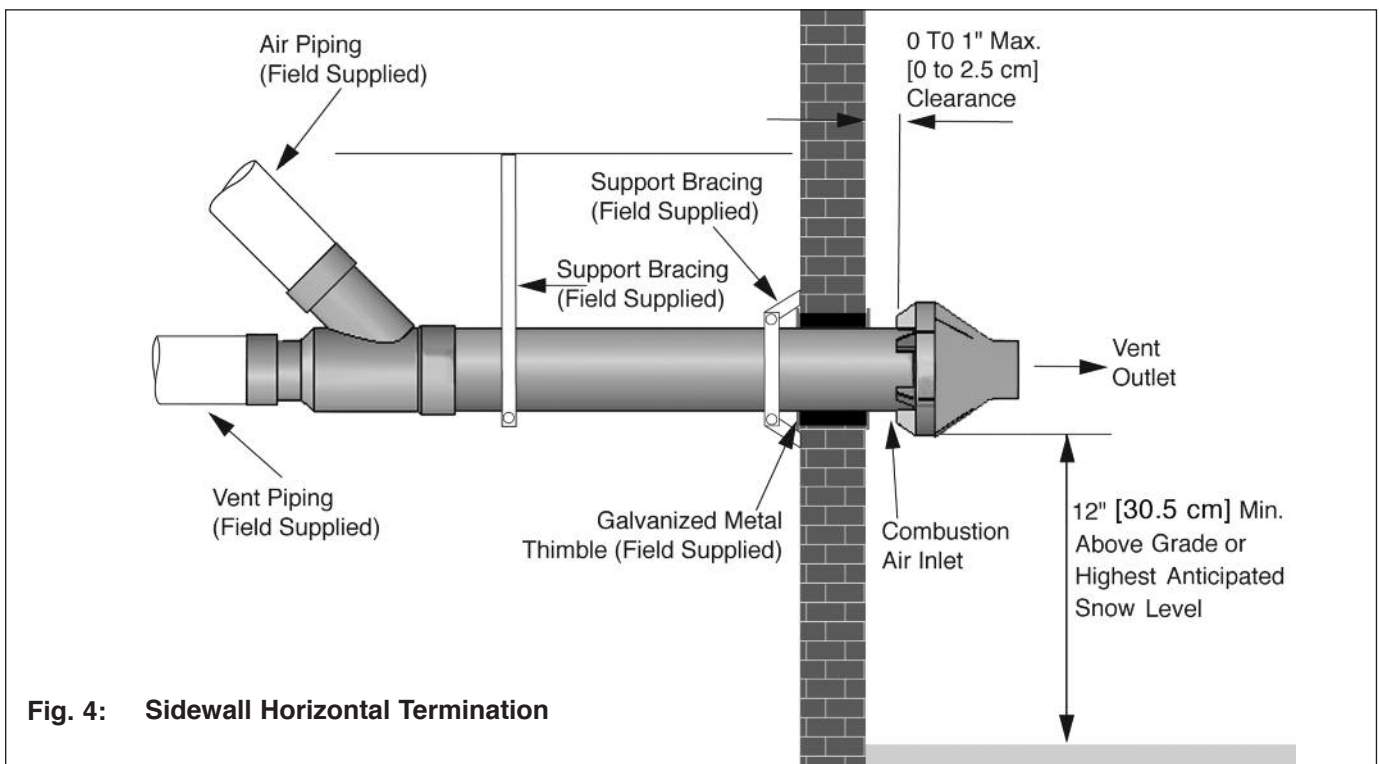


Fig. 4: Sidewall Horizontal Termination

- 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 or guard 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.6, page 11.
- a. At least 3 feet [0.9 M] from adjacent walls
 - b. No closer than 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] (does not apply to the combustion air inlet of a direct vent appliance).
 - e. No closer than 12 inches [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] (6 feet [1.8 M] Canada) 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] (6 feet [1.8 M] Canada) horizontally.
 - g. A maximum of 1 inches [2.5 cm] beyond the exterior wall as shown in Fig. 4, page 9.
6. Locate the vent termination and combustion air inlet in a matter to protect from damage by foreign objects, such as stones or balls or subject to buildup of leaves or sediment.
7. Do not connect any other appliance to the vent pipe or multiple appliances to a common vent pipe.

Vent Installation - Sidewall

1. Sidewall Penetration
 - Cut a single 5 inch [12.7 cm] diameter hole for HMVKIT13 installations or 4 inch [10.2 cm] diameter hole for PSVTERM06 installations through the building structure.
2. The installer must comply with all local codes for isolating the vent pipe as it passes through floors and walls.
3. The installer should seal all exterior openings with an exterior silicon caulk.
4. The termination may be installed through a wall thickness of up to 20" [50.8 cm] maximum.

Termination Assembly Support

1. If assembly needs to be extended to meet wall thickness requirements the two pipes supplied in the kit may be replaced using the same diameter, solid, single PVC pipe.



When extending the assembly length, DO NOT exceed the length of pipe supplied in the kit by more than 24 inches [61 cm]. DO NOT use couplings to extend the length of the termination assembly. Failure to comply could result in severe personal injury, death or substantial property damage.

2. Support the termination assembly at the wall penetration as shown in Fig. 4, page 9.
 - Use support bracing to support the termination assembly and to prevent horizontal slippage or vertical movement.
 - Any clamps or bracing used to support the termination assembly must be such that it does not penetrate the assembly piping or cause stress and potential cracking of the assembly piping.

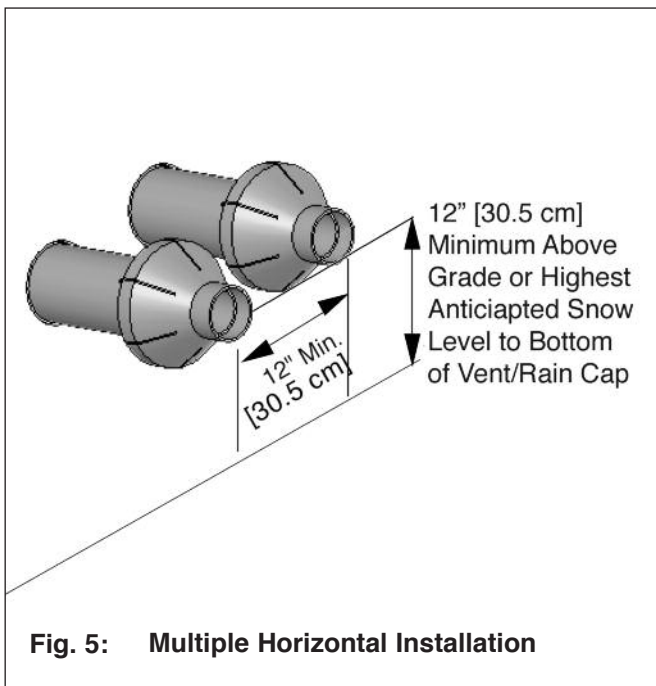


Fig. 5: Multiple Horizontal Installation

Multiple Installation - Sidewall

1. On installations of multiple appliances, install the concentric vent/air termination assemblies as described in this manual.
2. The wall penetration of the termination assemblies should be such that the vent outlet is a minimum 12 inches [30.5 cm] between centerlines from the adjacent termination assembly of the other boiler for installations in the U.S. as shown in Fig. 5. For installations in Canada, provide clearances as required by CAN/CSA B149.1.

NOTICE

The combustion air inlet of the appliance 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 appliance vent to a forced air inlet does not apply in a multiple installations.

NOTICE

Reference Fig. 4 page 9 for the configuration dimensions for the vent and combustion air inlet terminations for each unit installed in a multiple installation.

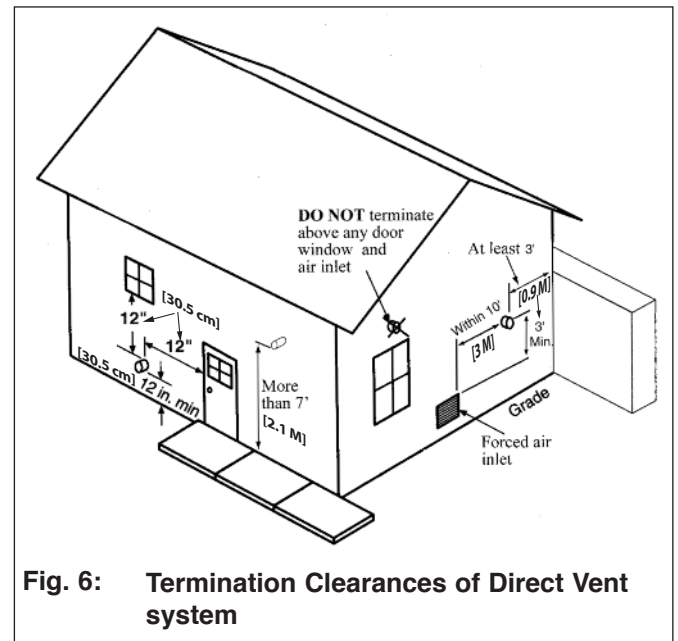
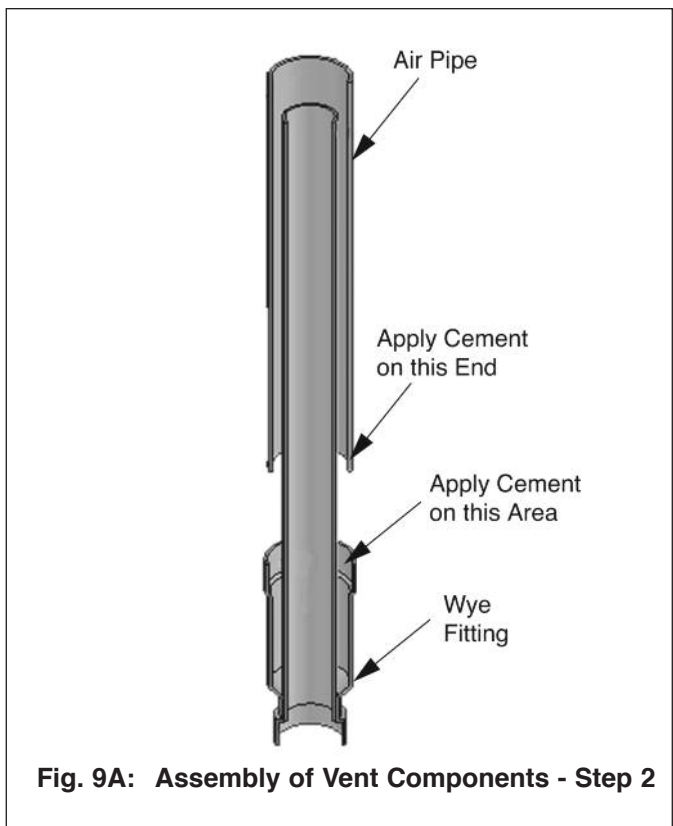
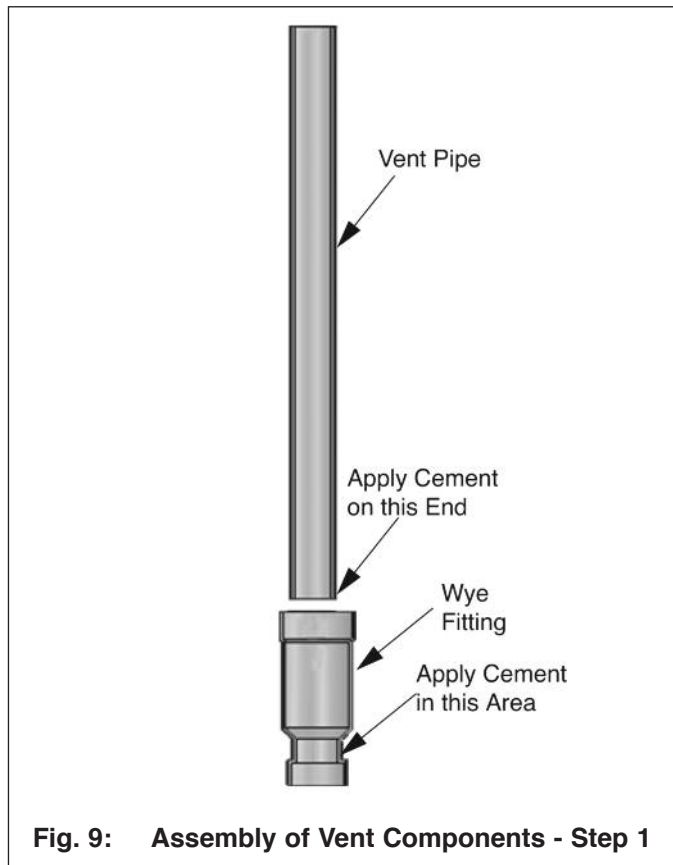


Fig. 6: Termination Clearances of Direct Vent system

Assembling Termination Components

1. Reference Fig.1 page 4 for component part description and dimensional information.
2. Install factory supplied bird screen between end of vent pipe and vent cap.
3. Begin partial assembly of the termination components in the sequence as shown in Fig. 9 thru Fig. 9B.
 - DO NOT install the vent cap with the bird screen until the assembly has been inserted through the roof or sidewall penetration and all support bracing has been installed.
4. Use the following procedures in preparing and cementing the termination components together:
 - a. Deburr inside and outside of the pipe ends.
 - b. To ensure an even distribution of PVC cement when joining the components, chamfer the outside edge of the pipe ends.
 - c. Clean all pipes ends and fittings, dry each component thoroughly.
 - d. Prior to cementing the components, dry assemble the entire vent piping and combustion air piping including the termination assembly.
5. For each pipe and fitting joint:
 - a. Handle the pipes and fittings with care not to contaminate the clean joint surfaces.
 - b. Apply PVC primer in a liberal matter to both joint surfaces (pipe end and fitting socket).
 - c. With the primer still wet, apply a light coat of PVC cement to both surfaces (pipe end and fitting socket) in a uniform matter.
 - d. A second coat of cement should be applied to both surfaces. Avoid using excessive of amount of cement on the surface of the sockets to prevent cement buildup 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.
6. Secure vent cap to vent pipe with factory supplied screws, see figure 9B.



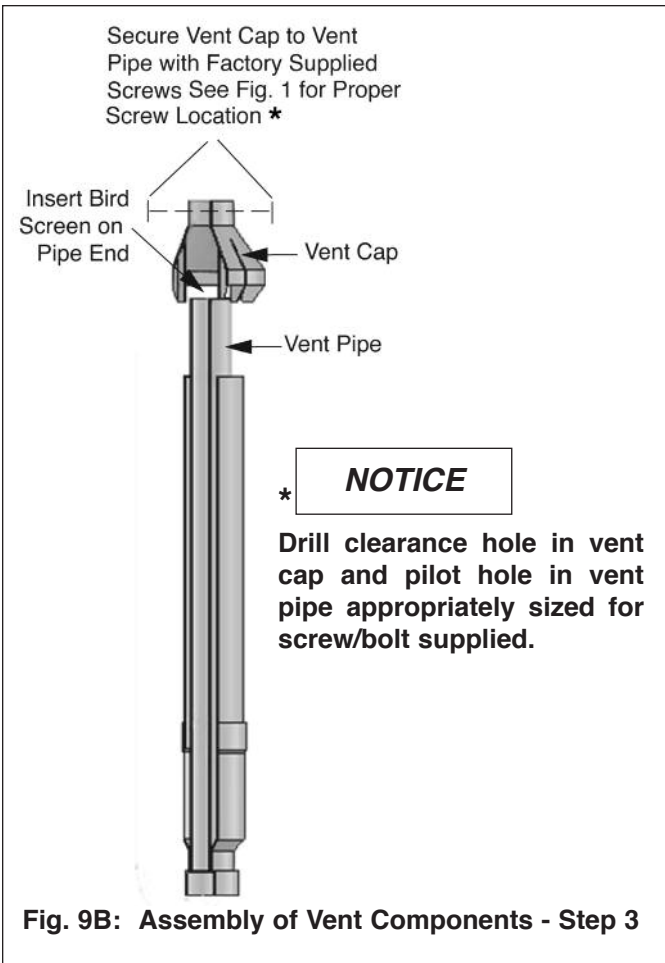


Fig. 9B: Assembly of Vent Components - Step 3

3" to 2" Vent/Combustion Air Transition

NOTICE

This section outlines the installation of Venting and Combustion Air for the PRESTIGE 60, 110 and EXCELLENCE where the vent system must transition from the 3" outlet of the boiler to the 2" vent system.

- The transition from 3" vent system to 2" vent system must occur at the boiler vent outlet.
- The transition from 3" vent to 2" vent must occur in a vertical run only.

WARNING

Transition of 3" vent to 2" 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.
- The 2" vent should not transition back to 3" vent at any point in the vent system.

- The combustion air piping shall transition from 3" to 2" in the same manner as the vent system.
- The total equivalent length of the 3" vent and 2" vent combined shall not exceed the length listed for a 2" vent system Table 1, page 4.
- The total equivalent length of 3" and 2" combustion air piping combined shall not exceed the length listed for combustion air in Table 1, page 4.

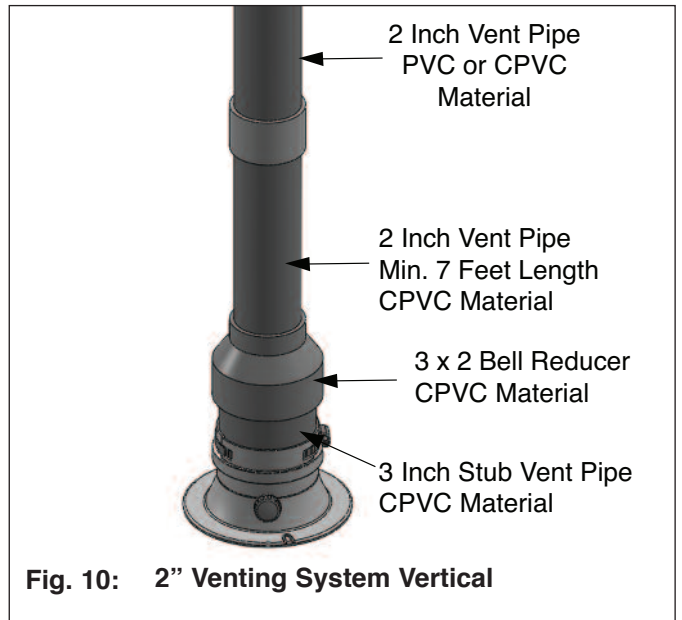


Fig. 10: 2" Venting System Vertical

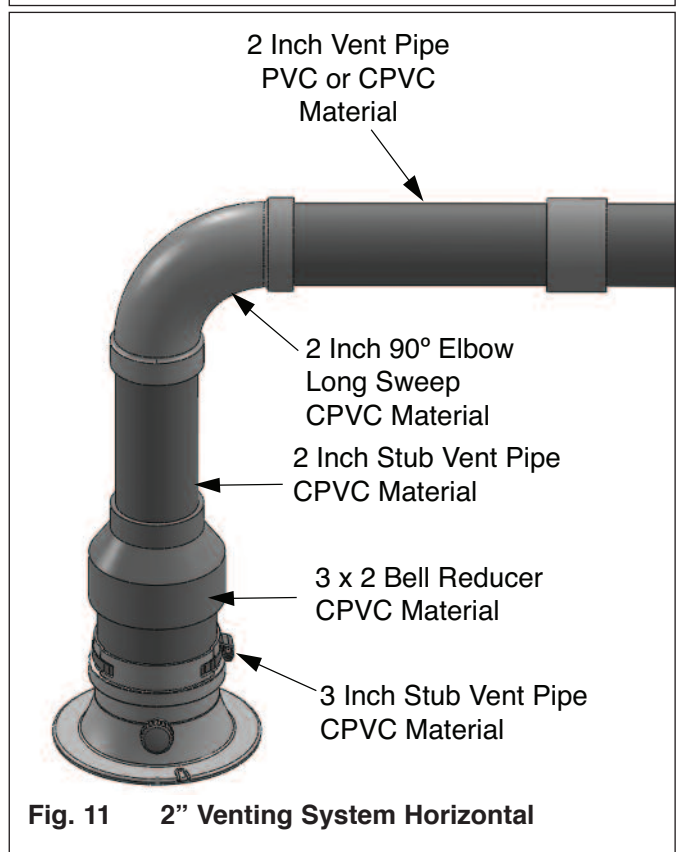


Fig. 11 2" Venting System Horizontal

3" to 4" Vent/Combustion Air Transition (Prestige Only)

NOTICE

Transitioning from 3" to 4" vent/air is not applicable for use on CHALLENGER appliances.

NOTICE

When venting with 4" diameter pipe, the venting and combustion air must transition from the 3" outlet of the appliance to the 4" vent system and then back to 3" at the concentric vent termination.

- The transition from 3" vent system to the 4" vent system must occur within 5 feet [1.5 M] of the appliance vent outlet.
- The transition from 3" vent to 4" vent from the appliance vent must occur in a vertical run only.

WARNING

Transition of 3" vent to 4" vent in a horizontal run may result in pooling of the condensate resulting in potential vent blockage. Failure to comply can result in death, serious injury or substantial injury.

- The 4" vent system may transition back to a 3" vent system within 5 feet [1.5 M] of the concentric vent termination. This transition may occur in a vertical or horizontal run.
- The combustion air piping shall transition from 3" to 4" in the same manner as the vent system.
- The total equivalent length of the 3" vent and 4" vent combined shall not exceed the length listed for a 4" vent system Table 1, page 4.
- The total equivalent length of 3" and 4" combustion air piping combined shall not exceed the length listed for combustion air in Table 1, page 4.

Insert Piping to Appliance Adapters

1. The installer must clean, deburr and chamfer the outside of the pipe ends.

WARNING

The pipe ends must be square, 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 piping, inspect the vent and combustion air adapters to verify there are no obstructions or packing material inside the adapter and the gaskets are in place.
3. Ensure the adapter banding strap is loosen prior to inserting the piping.
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 or twist or bend the adapter or vent / combustion air piping when inserting. The adapter gasket seal could be damaged resulting in possible flue gas leakage.

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

Vent and Combustion Air Piping Installation Guidelines

1. The installer should install the vent / combustion air piping working from the appliance to the piping termination. The piping should not exceed the lengths given in Table 1 page 16 for either the vent or combustion air.
2. The installer should cut the pipe ends square to the required lengths 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 and combustion air piping 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 fitting 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 or 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 tightly clamped to pipe to allow for thermal expansion/contraction movement. Pipe clamps or hangers should not contain any sharp edges which can damage the pipes.

8. The vent and combustion air piping should be sloped continuously from the termination back to the appliance with at least 1/4 inch 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 away from the appliance. 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 inch [6 mm] between the vent pipe and all materials, combustible or non-combustible. 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 system and the combustion air inlet.

NOTICE

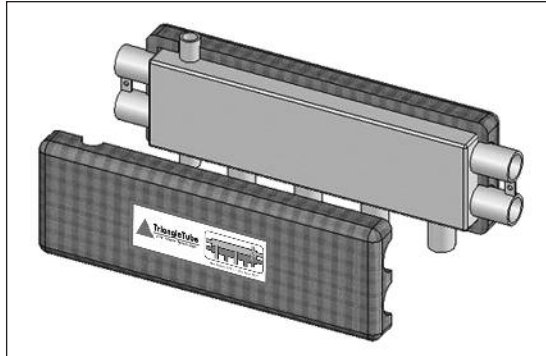
Covering PVC/CPVC vent pipe and fittings with thermal insulation is prohibited.

NOTICE

This vent termination kit is not applicable for use on PRESTIGE Solo 399 venting systems.

Additional quality water heating equipment available from Triangle Tube

PRIMARY / SECONDARY MANIFOLD



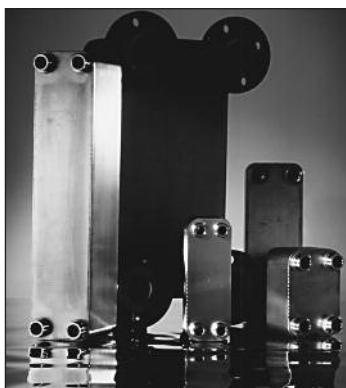
- Combination hydronic separator, pressure equalizer and distribution manifold
- Ensures a proper primary/secondary piping arrangement for up to three zones
- Easy to install and compact

SMART INDIRECT FIRED WATER HEATERS



- Exclusive tank-in-tank design
- Stainless steel construction
- Available in 8 sizes and 2 models
- Limited LIFETIME residential warranty
- 15 year limited commercial warranty
- Self cleaning/self descaling design

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- Plates made of stainless steel, with a 99.9 % copper and brazed, ensuring a high resistance to corrosion
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- Available in capacities from 25,000 BTU/hr to 5,000,000 BTU/hr



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