

The Modulating **delta** OR

The **delta** performance

Saf-T-Vent SC Concentric Vent



* INSTALLATION AND MAINTENANCE * M A N U A L

NOTICE

Any claims for damage or shortage in shipment of the vent kit must be filed immediately against the transportation company by the consignee.

Leave all vent kit documentation with the owner for future reference.

WARNING

Read and understand all instructions including those shipped with the vent kit before installing, the product. Failure to comply with all instructions can cause personal injury or death.

Installation must be performed by a qualified installer.

PRODUCT AND SAFETY INFORMATION

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

WARNING

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

NOTICE

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

NOTICE

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

SECTION I - Pre-Installation Items

General Requirements

Installation of the vent system must comply with local codes and requirements and with the National Fuel Gas Code NFPA 54, ANSI Z223.1 for installations in the U.S. For installations in Canada, the installation must comply with CSA B149.1 or B149.2.

The vent system must be constructed of Saf-T Vent SC or other Saf-T Vent systems components. Do not mix other vent components or joining methods from other manufacturers.

WARNING

Do not mix vent components or joining methods from other vent manufacturers with the Saf-T SC vent system. Do not use galvanized, nonmetallic vent piping, field-fabricated or B-vent components in the vent system. Failure to comply with this requirement could cause vent failure resulting in leakage of flue products into the living space of the building.

Do not connect more than a single appliance into the vent system.

All penetrations of the vent system through ceilings, floors or walls must be properly fire stopped. Check with local codes and requirements regarding fire stops and vent penetrations.

The vent system must not penetrate or be routed through any active vent system or chimney. An UNUSED chimney may be used as a raceway for vertical vent systems.

The installer must consider the following when determining the location of the vent termination:

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

- 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.
- Prevailing winds could cause freezing of flue condensation and a buildup of water/ice on surrounding plants, building surfaces or combustion air inlet.
- Avoid locations of possible accidental contact of flue vapors with persons or pets.
- Avoid locations where prevailing winds could affect the performance of the unit 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.
- Do not terminate the vent above any doors or windows; flue condensate could freeze causing ice formations.
- Locate or guard the vent termination to prevent possible condensate damage to exterior finishes.

The maximum equivalent length of pipe should not exceed 60 feet for the MODULATING DELTA (PG & PG PLUS 150 & 199) or 100 feet or the DELTA PERFORMANCE or PERFORMANCE PLUS (PG & PG PLUS 25,30, 35, 40 & 45) (excluding termination). For each 90° elbow the equivalent feet of pipe should be reduced by 10 feet.

Vent Clearance Requirements

The vent system must maintain 1-inch minimum clearance to combustible material. This applies to any enclosure constructed with combustible materials.

NOTICE

Combustible materials are defined as materials made of or surfaced with wood, compressed paper, plant fibers or other materials capable of being ignited or burned. Per NFPA 54 these materials are considered as combustible even if the material is flame-proof, fire-retardant or plastered.

The vent system may maintain zero clearance to non-combustible material.

NOTICE

Non-combustible materials are defined as materials not capable of being ignited or burned. Per NFPA 54 these materials consist entirely of or a combination of steel, iron, brick, concrete, glass, plaster or asbestos.

If the vent system extends through any zone above the zone in which the appliance is located on, the vent system shall be enclosed with an enclosure having a fire resistance rating equal to or greater than that of the floor or roof assemblies through which it passes. This does not apply for single or two family dwellings.

The vent system enclosure must be designed in a manner that permits inspection of the vent system.

Do not insulate the clearance space of the enclosure surrounding the vent system.

Vent Kits

Prior to installation of vent system check to ensure all parts required for the completion of the system are present. See Table 1 for complete breakdown of vent kit parts.

PART NUMBER	CONCENTRIC DIRECT VENT KITS
HMVKIT09	<p>Vertical Concentric Vent Kit Appliance Vent Adapter, Air Intake & Condensate Connector Condensate Drain Hose Kit - 3/8 Inch X 5 Foot 3 Inch Hose Clamp 3 Inch Hose Clamp 3 Inch Flexible Air Intake Adjustable Length 12.5 to 19.5 Inches Fire Stop/Wall Thimble/Support 3 Foot Length Tall Cone Flashing, 12/12 Roof Pitch 3 Foot Length 5 Inch Storm Collar Vertical Termination Adapter Rain Cap</p>
HMVKIT10	<p>Horizontal Concentric Vent Kit Appliance Vent Adapter, Air Intake & Condensate Connector Condensate Drain Hose Kit - 3/8 Inch X 5 Foot 3 Inch Hose Clamp 3 Inch Hose Clamp 3 Inch Flexible Air Intake 1 Foot Length 90 Degree Elbow Adjustable Length 12.5 to 19.5 Inches Fire Stop/Wall Thimble/Support Horizontal Termination Adapter Straight Termination</p>
HMVKIT11	<p>Horizontal Concentric 3 Foot Snorkel Kit (Order With HMVKIT10) 90 Degree Elbow 90 Degree Elbow 2 Foot Length Support Leg, Vertical</p>
HMVKIT12	<p>Support Kit- Concentric Support Clamp, 1 Inch Clearance Support Clamp, 1 Inch Clearance Fire Stop/Wall Thimble/Support</p>
HMVELB03	<p>90 Degree Elbow - Concentric 90 Degree Elbow</p>
HMVPIP03	<p>3 Foot Length - Concentric 3 Foot Length</p>
PART NUMBER	SINGLE WALL VENT - For Extension of Vertical Vent (If Required)
HMVPIP04	<p>Adjustable Length - Single Wall Vent Adjustable Length - 6 to 19 Inches</p>

Table 1: Vent Kit Part Numbers

SECTION II - Vent/Combustion Air Installation

Vent Joint Assembly

1. Wipe and clean the joint area of the mating components inner pipe with an alcohol pad before joining the sections together. When joining the components and installing the vent system, the female end of the pipe or fitting should face-up away from the appliance.
2. Insert the male end of the inner pipe into the female end of the previous pipe section. It may be helpful and aid in the insertion of the vent, to moisten the gasket seal with clean water prior to assembly.
3. Push the sections together firmly until the outer jacket of the new section has made contact with the snap ring located inside the female end of the previous section. When fully assembled the outer female end of the previous section will overlap the male end by 1-inch.
4. Using 3 self-tapping screws provided in the vent kit, secure the outer vent sections together. No pre-drilling is required for the screws.
3. Disassemble the inner pipe from the outer pipe prior to cutting the vent section to length.
 - a. Stand the section up on end with the outer jacket holes up (female end).
 - b. Pry the end of the snap ring out of its groove, being carefully not to damage the ends of the vent pipe.
 - c. Once the snap ring is removed the inner pipe can be separated from the outer jacket pipe.
4. Add 2 inches to the previous measure length required and mark the cut line towards the male end of the outer jacket pipe.
5. Add 3 inches to the previous measure length required and mark the cut line towards the male end (end without the gasket seal) of the inner pipe.
6. Cut the pipes using an abrasive cutoff saw, hacksaw (minimum 32 teeth per inch) or compound snips. **FILE OFF ANY BURRS OR ROUGH EDGES AND CLEAN OFF ANY DUST OR GIRT.** If the cutting process distorts the roundness of the pipes, carefully use your thumbs to re-round the pipes.

WARNING

Do not over tighten the self-tapping screws into the vent sections. Use a low torque screw drive to prevent stripping out the holes. If a hole becomes stripped due to over tightening, a larger diameter screw (length of screw must not exceed 1/2") or a short pop rivet may be used.

Cutting Vent to Length

1. If a custom length of straight vent pipe is required, a standard vent section may be cut.
2. Select a standard vent length that is longer than the measure distance from the end of outer jacket to the beginning of the outer jacket on the section to connect to.
7. Reassemble the inner pipe into the outer jacket pipe. The inner pipe must be inserted completely into the outer jacket pipe so that the triangle bracket of the inner pipe is seated firmly against the outer pipe bead.
8. Reinstall the snap ring into the groove. Slowly turn and feed the snap ring into the groove in a spiral motion. Continue the ring around the pipe until the snap ring is fully inserted into the groove.

WARNING

When cutting or re-rounding the pipes WEAR GLOVES. The vent pipes ends can become very sharp when cut.

Horizontal Installation Requirements

Maintain the following clearances to the vent termination:

- At least 6 feet from adjacent walls
- No closer than 5 feet below roof overhangs
- At least 7 feet above any public walkways
- At least 3 feet above any forced air intake (does not include the combustion air inlet) within 10 feet.
- The vent termination must be at least 4 feet from any electric meters, gas meters, gas meter-regulators, relief valves or other equipment. Never terminate the vent above or below any of these items within 4 feet.
- Must maintain 12-inch clearances below and horizontally from doors and windows.
- Vent must terminate at least 12 inches above grade or common snow line.
- The vent termination and vent pipe must not extend more than 24 inches beyond the exterior wall.

Horizontal runs of the vent system must be supported at least every 5 feet of length and after any transitions.

The vent system must terminate using the straight termination supplied in the kit.

The vent system must be pitched back to the appliance at minimum 1/4 inch per foot on any horizontal runs.

The vent pipe seam must be positioned on the upside of the vent when installed on a horizontal run.

Vertical Installation Requirements

The vent system must terminate at least 3 feet above the roofline.

The vent system must terminate at least 2 feet higher than any portion of the building within 10 feet horizontally.

If the vent system terminates at a height of more than 6 feet above the roofline, then a support bracket must support the vent stack.

The vertical runs of the vent system must be supported every 10 feet of length and after any transitions.

The horizontal runs of the vent system must be supported every 5 feet of length and after any transitions.

The vent system must terminate using the rain cap as supplied in the kit.

The vent system must be pitched back to the appliance at minimum 1/4 inch per foot on any horizontal runs.

The vent pipe seam must be positioned on the upside of the vent when installed on a horizontal run.

Appliance Vent Adapter, Air Intake & Condensate Connection

Install appliance adapter over flue outlet and secure with attached clamp.

Attach flexible air hose to appliance adapter and combustion air inlet with hose clamps provided in kit.

Fashion the drain hose into a 3" diameter trap loop with cable ties provide in kit and as shown in Figure 1.

Prime the trap loop with a small quantity of water.

Connect drain hose to condensate connection on appliance adapter with spring clip provided in kit and direct hose to a suitable drain.

NOTICE

Check with local codes and requirements on the draining of acidic condensate from the vent system.

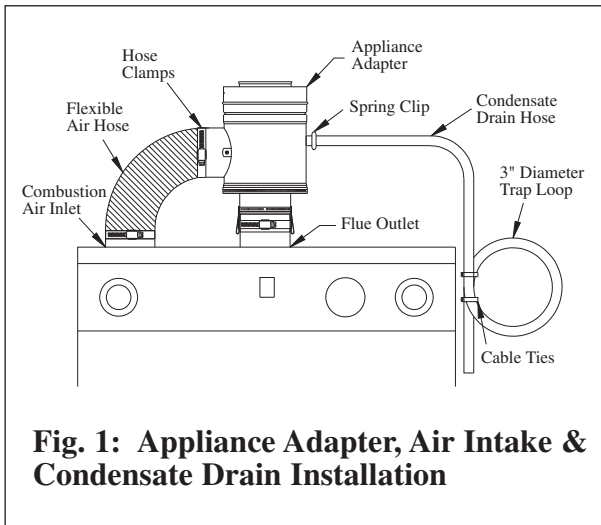


Fig. 1: Appliance Adapter, Air Intake & Condensate Drain Installation

Vertical / Horizontal Vent Supports

The vertical runs of the vent system must be supported every 10 feet of length and after any transitions.

The horizontal runs of the vent system must be supported every 5 feet of length and after any transitions.

The vent system supports must maintain the 1/4 inch per foot pitch back to the appliance on any horizontal runs.

The vent system support hangers may not maintain the required clearances to combustible materials; provisions should be made by the installer to maintain the clearances.

The vent system supports must be secured to solid material using at minimum #10 type fasteners.

Do not attach vent system supports to drywall material without using hollow wall anchors.

Fire Stop / Wall Thimble / Support Plate

The Fire Stop / Wall Thimble / Support Plate must be used when passing through any floors, ceilings, enclosed chase or exterior walls. This plate can be used for vertical or horizontal penetrations.

1. Prepare a 7-inch (combustible) or 5 1/4-inch (non-combustible) round or square opening. Remove any insulation from the opening.
2. Secure the plate at the corners using at minimum #10 fasteners.
3. Install the vent section through the plate. Secure the vent section to the plate using self-tapping screws through the plate tabs into the vent section outer jacket.
4. Seal around wall thimble where attached to exterior of building and around pipe penetration through thimble with silicone sealant.

Horizontal Vent Termination

On the last section of vent pipe install the horizontal termination adapter included in the vent termination kit, with the air openings facing downward as shown in Figures 2 or 3.

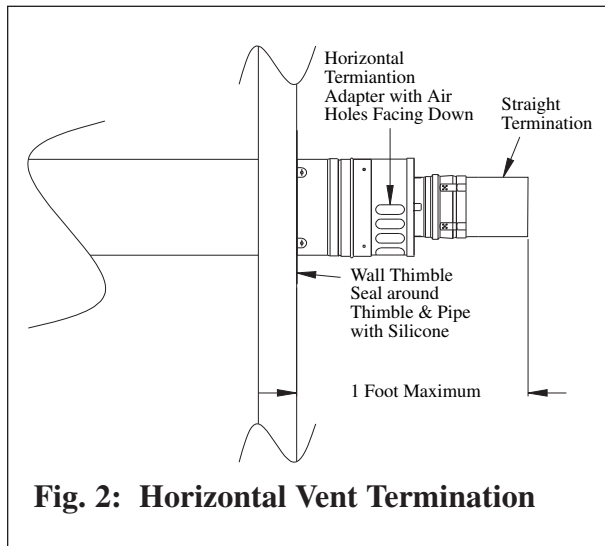


Fig. 2: Horizontal Vent Termination

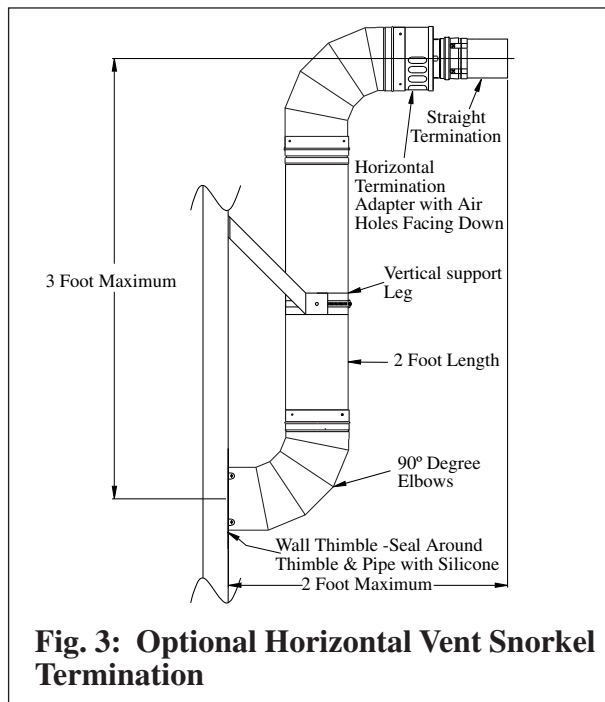


Fig. 3: Optional Horizontal Vent Snorkel Termination

All exposed vent section joints must be sealed with aluminum foil tape or high temperature silicone sealant.

Do not seal the vent exhaust termination to allow for inspection of the vent system

Tall Cone Flashing (Vertical Venting)

Determine the roof pitch of the installation and ensure the proper vent termination kit is used.

1. Prepare the roof opening with a 7-inch (combustible) or 5 1/4 -inch (non-combustible) round or square opening. Ensure all insulation is removed from the opening.
2. Apply weather-stripping or outdoor caulk to the bottom of the cone plate and attach the plate to the roof using standard construction methods.
3. Apply flashing over the cone plate and seal the plate and fasteners using standard roofing methods.
4. Insert the vent pipe section through the cone plate and attach a storm collar around the vent pipe section. Apply a bead of high temperature silicone sealant around the vent pipe where it passes through the top of the storm collar.
5. Continue installing vent pipe sections as needed to meet the height requirements as required by code. Seal all exposed vent pipe joints with aluminum foil tape or high temperature silicone sealant.

Attach the straight termination, included in the vent kit, to the end of the horizontal termination adapter, with the screen openings facing outward.

Vertical Vent Termination

On the last section of vent pipe install the vertical termination adapter, included in the vent termination kit, as shown in Fig. 4.

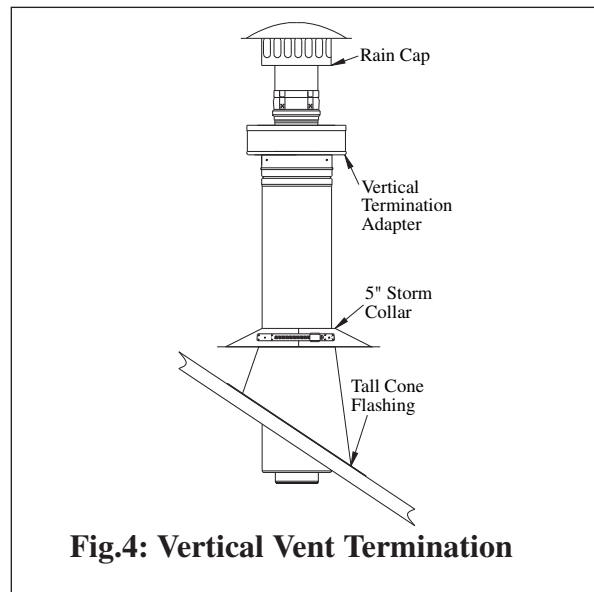
Attach the rain cap, included in the vent kit, to the end of the vertical termination adapter. If the vent exhaust requires additional extension, a section of single wall Saf-T-Vent EZ Seal vent pipe can be connected directly to the vertical termination adapter.

All exposed vent section joints must be sealed with aluminum foil tape or high temperature silicone sealant.

Do not seal the rain cap termination to allow for inspection of the vent system.

Multiple Vent Terminations

For multiple boiler vent system installations maintain a minimum of 18 inches from centerlines. For horizontal vent systems also maintain the vent systems on the same horizontal centerline.



SECTION III - Maintenance Procedures

Inspect Vent System

Visually inspect the vent system and combustion air piping annually for blockage, deterioration or leakage. Immediately repair any joints that show signs of deterioration with the appliance turned off.

WARNING

Failure to inspect the vent system and combustion air inlet piping and have any conditions repaired can result in severe personal injury or death.

Inspect Condensate Trap

NOTICE

Periodically inspect the condensate drain hose and trap loop to ensure water remains in the trap loop. If low, add water as needed to maintain trap level.

If water in the drain hose evaporates to rapidly due to ambient conditions, propylene glycol may be added or substituted to reduce evaporation.

**Additional quality water heating equipment available
from
Triangle Tube/Phase III**

Phase III 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
- 2" polyurethane Insulation

TTP Brazed Plate Heat Exchangers



- For domestic water, snow melting, radiant floor, refrigeration
- Plates made of stainless steel, with a 99.9 % copper and brazed, ensuring a high resistance to corrosion
- Self cleaning and self descaling
- Computerized sizing available from Triangle Tube/Phase III
- Available in capacities from 25,000 BTU/hr to 5,000,000 BTU/hr

Maxi-flo Pool and Spa Heat Exchangers



- Construction of high quality corrosion resistant stainless steel (AISI 316)
- Also available in Titanium
- Specially designed built-in flow restrictor to assure maximum heat exchange
- Compact and light weight
- Available in 5 sizes that can accommodate any size pool or spa



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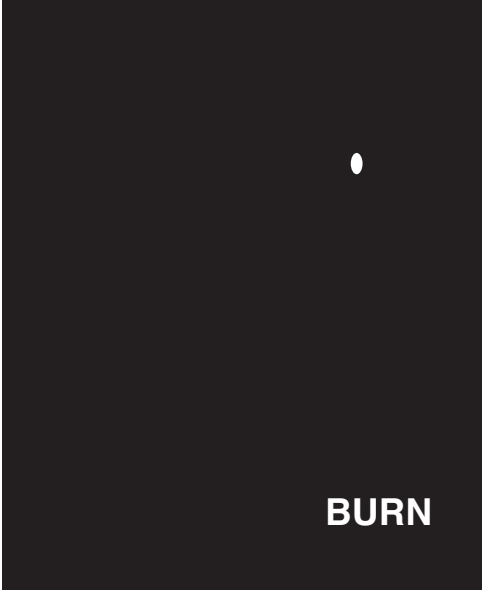


DANGER

HOT WATER CAN SCALD!

- Water temperatures over 125°F can cause severe burns instantly or death from scalding
- Children, disable and elderly are at highest risk of being scald
- Never leave them unattended in or near shower, bathtub or sink.
- Never allow small children to use a hot water faucet or draw their own bath.
- If anyone using hot water in the building fits the above description or if local codes or state laws require specific water temperatures at hot water faucet, it is recommended:
 - To install a thermostatic mixing valve at this unit or at each water faucet.
 - To set the temperature setting for the lowest temperature, which satisfies your hot water needs.

- Water drained from the system drain valves may be extremely hot. To avoid injury:
 - Make sure all connections are tight
 - Direct water flow away from any person



QUALIFIED INSTALLER

WARNING

Prior to installing this product read all instructions included in this manual. Perform all installation steps required in this manual in the proper order given. Failure to adhere to the guidelines within this manual can result in severe personal injury, death or substantial property damage.

NOTICE

Please reference the unit's model number and serial number from the rating label when inquiring about service or troubleshooting.

HOMEOWNER

NOTICE

This manual is intended for use by a qualified Installer / Service Technician. This product should be maintained / serviced and installed by a qualified installer / service technician.

NOTICE

Triangle Tube accepts no liability for any damage resulting from incorrect installation or from the use of components or fittings not specified by Triangle Tube.

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 - Make sure all connections are tight
 - Direct water flow away from any person

**IWH SENSOR PARAMETER**

1. Once the access code number has been stored and accepted in the control module, change the display readout to "Parameter" mode by pressing MODE until the display shows P A R A.
2. Press STEP to enter the first parameter setting. Continue pressing STEP until the display shows P_35 .

NOTICE

By pressing STEP you will sequence through the parameter settings as follows: 1140, 2_01, 3_01 , 4186, P_05, P_06, P_07.... P_35 . The display readout will continue showing "P" followed by a 2 digit number that increases after each press of the STEP button after the fourth parameter setting.

NOTICE

The parameter setting will continue for 42 different parameter setting. By continuing to press the STEP button, the display readout will rollover to the first parameter setting.

WARNING

Do not attempt to revise any other control parameter setting except those listed in this supplement. Perform only those parameter revisions described in this supplement. Failure to comply could result in erratic or unreliable operation of the PRESTIGE resulting in severe personal injury, death or substantial property damage.

3. When the display readout shows P_35, stop pressing the STEP button. Wait a second and the display will flip over to the current setting of parameter 35 in the right two digits of the display.
4. Press the + or - button to revise the setting until the display shows _12.