Installation and Maintenance Instructions

Saf-T Vent® Model EZ Seal and Model GC

Single Wall
AL 29-4C® Stainless Steel
Gas Vent Connector, Chimney Liner &
Special Gas Vent (USA) / Type BH Vent
Class I/II (Canada)

For Venting Residential, Commercial & Industrial Appliances
Condensing Appliances
Category I, II, III, IV Appliances

Model EZ (3"-16" Dia.) For Use on Positive, Neutral, and Negative Pressures up to 8" W.C.
Model GC (18"-32" Dia.) For Use on Positive, Neutral, and Negative Pressures up to 15" W.C.

Important: Do not install this product until you have read and fully understand these installation instructions. Failure to comply with these instructions may result in an improper installation and will void any stated warranty.

- Follow these instructions exactly as written.
- Examine all components for possible shipping damage prior to installation.
- Proper joint assembly is essential for a safe installation.
  Check integrity of joints upon completion of assembly.
- This venting system must be free to expand and contract.
- This venting system must be supported in accordance with these instructions.
- Check for unrestricted vent movement through the walls, ceilings, and roof penetrations.
- Different Manufacturers Have Different Joint Systems.
  Do Not Mix Pipe, Fittings, or Joining Methods from Different Manufacturers.

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Tested and Listed to
UL 1738, ULC S636 & UL441
by Underwriters Laboratories, Inc

heatfab®
High-performance chimneys and vents

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APPLICATION INFORMATION

The Saf-T Vent® Models EZ Seal and GC Special Gas Vent Systems may be used to vent appliances with a flue gas temperature of not more than 550° F (288° C) including Category II, III and IV appliances and certain direct vent gas appliances marked or labeled by Underwriters Laboratories International, Inc., CSA or other recognized agency. The connected appliance must be safety certified for use with a Type B Vent, a stainless steel special gas vent system or type BH vent (Canada). The Saf-T Vent EZ Seal system is for use only with safety certified appliances, including those with positive vent pressures of 8 inches of water column or less. Model GC is for pressures up to 15" W.C. Because these types of appliances may produce vent gases under positive pressure and/or at or near their dew point, special installation considerations may be required. Install in accordance with these instructions and those of the appliance manufacturer. Consult the appliance manufacturer's instructions for the maximum horizontal length of the vent connector, as well as any restriction on total vent height, proper sizing of the vent, common venting considerations and procedures for connecting the vent to the appliance. The installation must conform to applicable National, Regional, State or local codes. Contact the authority having jurisdiction prior to beginning any work to obtain any required permits.

Pre-Installation Considerations:

Proper planning prior to installation is essential as to avoid possible contact with concealed plumbing or electrical wiring inside walls, floors or ceilings as well as maintaining proper clearances. Be sure to plan a sufficient number of supports for the entire system to maintain the required straight-line pitch and hold the system in place. A continuous straight-line pitch of at least 1/4 inch (2 degrees) to the foot on horizontal runs must be maintained in order to properly rid the system of the corrosive condensate.

Personal Safety

Wear eye protection and heavy gloves throughout the installation. In addition, wear an approved dust and vapor respirator whenever in contact with building insulation. Proper and safe scaffolding and/or ladders should be used. Check overhead for antennas, power lines or other obstacles before erecting ladders or scaffolding and while working with conduit on any roof structure.

Tools Required for Installation

Measuring Tape Pliers; Screw & Nut Drivers; Saws and/or Snips; Drills; Carpentry Tools; Drop Cloth(s); Ladder/Scaffold; Safety and Personal Protective Clothing.

Other tools may be required for specific installations depending on building materials encountered.

Definitions:

AL 29-4C - A super ferritic stainless steel alloy designed by Allegheny Ludlum for extreme resistance to chloride ion pitting, crevice corrosion and stress corrosion cracking. Equivalent material made by other manufacturers may be identified by the UNS designator S44735.

Category I Appliance - An appliance which operates with a non-positive vent static pressure and with a vent gas temperature that avoids excessive condensate production in the appliance.

Category II Appliance - An appliance which operates with a non-positive vent static pressure and with a vent gas temperature that may cause excessive condensate production in the appliance.

Category III Appliance - An appliance that operates with a positive vent static pressure and with a vent gas temperature that avoids excessive condensate production in the appliance.

Category IV Appliance - An appliance that operates with a positive vent static pressure and with a vent gas temperature that may cause excessive condensate production in the appliance.

Chimney Liner - The vent or pipe used to reline an existing masonry chimney for the purpose of venting fuel-gas burning appliances.

Combustible Material - Any material made of or surfaced with wood, compressed paper, plant fibers, or other materials that are capable of being ignited or burned. Such material shall be considered combustible even though it is flame-proofed, fire-retardant treated, or plastered. (Source: NFPA54/ ANSI Z223.1-2006.)

Condensate - The liquid that separates from the vent gases due to a reduction in temperature or increase in pressure.

Condensing Type Appliance - Any Category II or IV appliance. During start-up, some Category III appliances may also produce condensate in the vent.

Non-Combustible Material - Any material that is not capable of being ignited and burned, such material consisting entirely of, or of a combination of, steel, iron, brick, tile, concrete, slate, asbestos, glass, and plaster. (Source: NFPA54/ ANSI Z223.1-2006).

Special Gas Vent - Gas vents for venting listed Category II, III, and IV, gas-burning appliances.

UL 1738 - A standard issued by Underwriters Laboratories that covers the requirements for venting systems intended for use on Category II, III, or IV gas- burning appliances.

Vent Connector - The vent or pipe which connects a fuel-gas burning appliance to a vent or chimney.

Clearance to Combustibles and Framing Requirements

Table 1 shows the required MINIMUM AIRSPACE CLEARANCE TO COMBUSTIBLES. "Combustibles" include framing lumber, drywall, plywood, paneling, insulation, wiring and other building materials. In addition to the airspace clearance specification, each section of vent is marked with an "UP" arrow indicating the intended direction of flow (i.e. end which should be oriented AWAY from the appliance). Auxiliary parts such as combination Ceiling Support/ Firestop Spacers, Trim Plates, Flashings and Wall Thimble outer shields are intended to be attached directly to the framing or to ceilings, floors, or walls in accordance with their respective instructions. These parts, which are installed in contact with wood or other combustibles, are designed and tested to assure that they do not overheat at points of contact.

Table 1

Clearance to Combustibles for 3"-5" EZ Seal Enclosed Systems

Pipe Size	Max Appliance Flue Gas Temperature	Orientation	Minimum Airspace Clearance to Combustibles	Minimum Framing Dimension Through Joist	
				With Wall Termination or Roof Jack Thimble	Without Wall Termination or Roof Jack Thimble
3"	480°F	Horizontal	8"	8" X 8"	N/A
3"	550°F	Vertical	4"	8" X 8"	11" X 11"
4"	480°F	Horizontal	8"	9" X 9"	N/A
4"	550°F	Vertical	4"	9" X 9"	12" X 12"
5"	400°F	Vertical	4"	10" X 10"	13" X 13"
5"	480°F	Vertical	5"	10" X 10"	15" X 15"
5"	550°F	Vertical	6"	10" X 10"	17" X 17"

Clearance to Combustibles for 5"-16" EZ Seal & 18" - 32" GC Unenclosed Systems

Pipe Size	Max Appliance Flue Gas Temperature	Orientation	Minimum Airspace Clearance to Combustibles	Minimum Framing Dimension Through Joist	
				With Wall Termination or Roof Jack Thimble	Without Wall Termination or Roof Jack Thimble
3"-5"	550°F	Vert. or Horiz.	1"	(ID + 5") X (ID + 5")	N/A
6"-10"	300°F	Vert. or Horiz.	1"	(ID + 5") X (ID + 5")	N/A
6"-12"	550°F	Vert. or Horiz.	2"	(ID + 5") X (ID + 5")	N/A
14"	550°F	Vert. or Horiz.	3"	(ID + 5") X (ID + 5")	N/A
16"	550°F	Vert. or Horiz.	4"	(ID + 5") X (ID + 5")	N/A
18"	550°F	Vert. or Horiz.	4"	(ID + 7") X (ID + 7")	N/A
20"-22"	550°F	Vert. or Horiz.	5"	(ID + 7") X (ID + 7")	N/A
24"-26"	550°F	Vert. or Horiz.	6"	(ID + 7") X (ID + 7")	N/A
28"-32"	550°F	Vert. or Horiz.	7"	(ID + 7") X (ID + 7")	N/A

Notes:

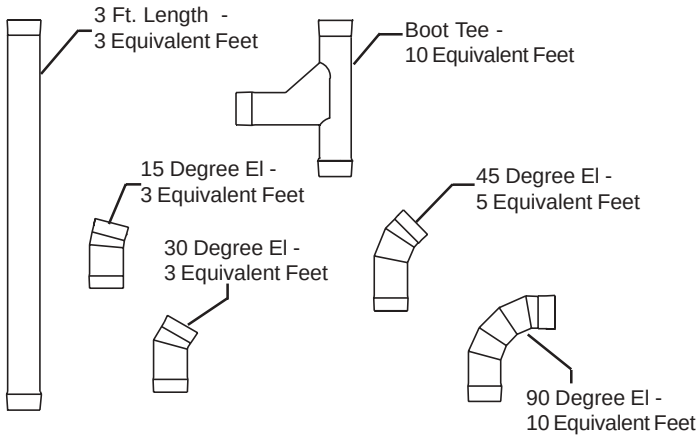
1. Unenclosed systems requires at least one side open (combustible material on maximum of 3 sides).
2. 6" - 32" systems are not permitted to be fully enclosed by combustible materials.
3. Reduced clearances may be attained by using noncombustible enclosures.
4. Combustible Material is any material made of or surfaced with wood, compressed paper, plant fibers or other materials that are capable of being ignited or burned. Such material shall be considered combustible even though it is flame-proofed, fire-retardant treated, or plastered. (Source: NFPA54/ANSI Z223.1)
5. Design any enclosure to permit inspection of the system.
6. Do not place insulation in any required clearance spaces surrounding the vent system unless these instructions suggest otherwise and the insulation is specified or supplied..
7. For venting systems that extend through any zone above that on which the connected appliance is located (except for one and two family dwellings), codes require that the vent system 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.

VENT ROUTING LIMITATIONS - MAXIMUM EQUIVALENT LENGTHS

In order to insure the vent system is not overly restrictive to flow, manufacturers specify the maximum length of vent that can be used on their appliances. Their guidelines must be followed in selecting any routing for the Saf-T Vent system. In order to account for turns in the system (which cause additional resistance to flow) most manufacturers recommend using an "Equivalent Length" method of determining the limitations. Via such method, elbows and tees are assigned an "equivalent length" (in feet). If the sum of straight length segments and additional "equivalent lengths" (due to turns) exceeds the limit specified by the manufacturer, the routing is not permitted. See appliance manufacturer's instructions for additional information.

Equivalent lengths are dependent on flue gas velocity, temperature and pressure, all of which are appliance related. Use this chart if the appliance manufacturer's instructions do not list equivalent lengths for standard fittings.

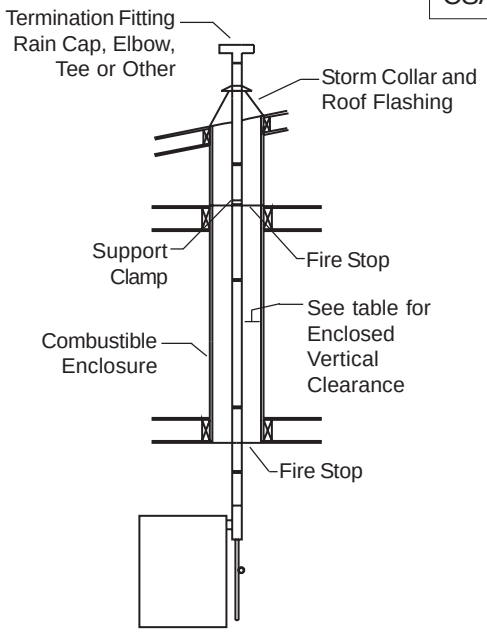
FITTING	EQUIV. LENGTH
Section	1' per foot
Boot Tee	10'
90 Degree Elbow	10'
70 Degree Elbow	8'
45 Degree Elbow	5'
30 Degree Elbow	3'
15 Degree Elbow	3'
Standard Tee (90 degree flow)	Not Recommended



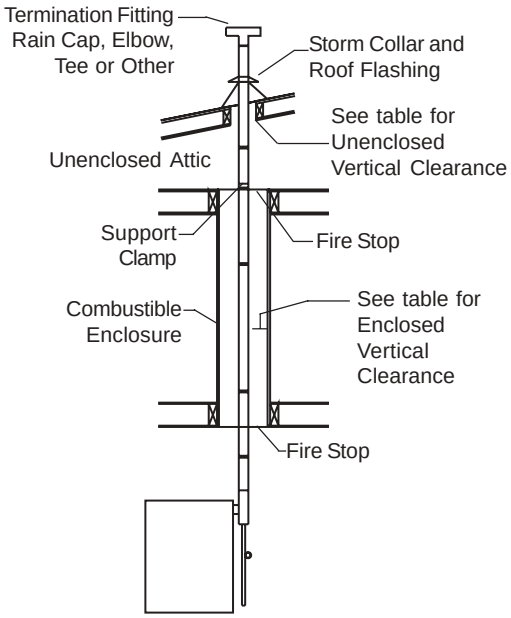
TYPICAL INSTALLATION CONFIGURATIONS

In addition to the configurations shown below, this system may be installed in any combination of vertical and horizontal, enclosed and unenclosed configurations as long as minimum clearances are maintained per clearance table on page 2 and the total length and number of fittings does not exceed the appliance manufactures recommendations. This system may also be installed within an existing masonry chimney structure.

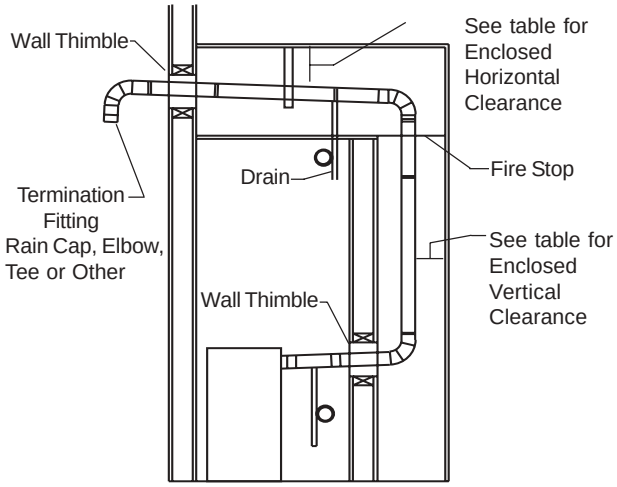
NOTICE: Canadian vent termination/location must follow CSA B149 requirements.



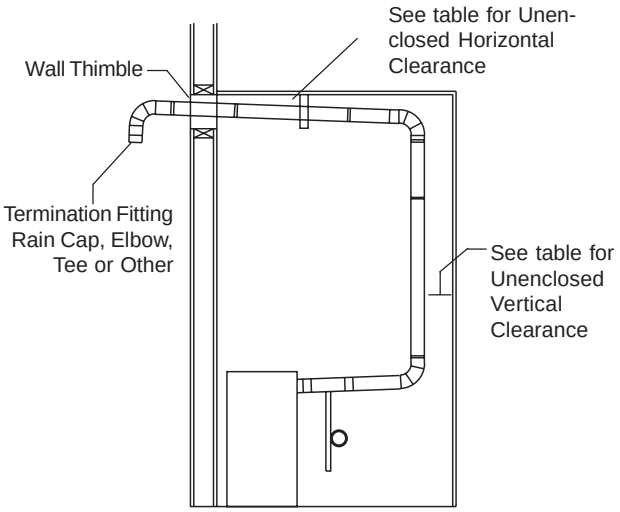
Fully Enclosed Vertical Vent with Vertical Termination



Enclosed Vertical Vent with Unenclosed Attic



Fully Enclosed Vertical Vent and Horizontal Termination



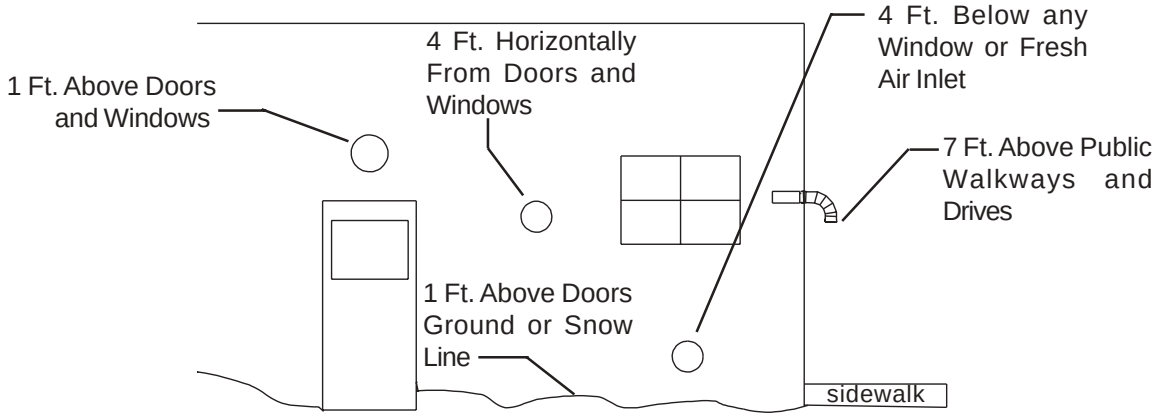
Unenclosed Vertical Vent and Horizontal Termination

GENERAL INSTALLATION REQUIREMENTS

1. The appliance manufacturer's instructions take precedence over this document.
2. Failure to conform to any of these requirements may violate local, state or national codes as well as create conditions which may cause catastrophic property damage or personal injury. Failure to conform to any of these requirements will also void any warranties, stated or implied.
3. Saf-T Vent EZ Seal and GC vent sections, or other Saf-T Vent products, must be used throughout the entire length of the system. Alternatives such as galvanized pipe, PVC, nonmetallic pipe, prefabricated chimney, field-fabricated vents or Type B vent sections must not be used. Do not mix pipes, fittings, or joining methods from different manufacturers.
4. The horizontal vent connector must slope continuously toward an appliance drain, a drain fitting or tee, or the termination. The vent must be pitched at least 1/4 inch per foot so that any condensate is not retained in any part of the venting system.
5. If called for by the appliance manufacturer's instructions, a drain fitting must be located as close as possible to the appliance flue outlet. Additional drains are required for each 30' of vent. If a drain fitting is not supplied with the appliance, install a Saf-T Vent in-line drain or a tee with a drain tee cover. Properly dispose of collected condensate.
6. Multiple Category III or IV appliance may not be interconnected to any part of the venting system unless the appliance manufacturer has specifically approved the engineering of the vent system and the appliances are designed for common venting. A Category III or IV appliance may not be interconnected to any part of a vent system used with a natural draft or draft hood appliance, except when a Listed mechanical draft system is installed.
7. The venting system must be planned so as to avoid possible contact with concealed plumbing or electrical wiring.
8. The venting system must maintain the proper air space clearance from combustibles. Refer to the appliance manufacturer's instructions and pages 2 and 3 of this manual.
9. For venting systems that extend through any zone above that on which the connected appliance is located (except for one and two family dwellings), codes require that the vent system 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. In one and two family residential construction the system must be enclosed whenever passing through occupied spaces. The enclosure should be fabricated to allow periodic inspection of the vent.
10. The total length and elbow count must be within the limits set by the appliance manufacturer. Refer to the appliance manufacturer's instructions for further information.
11. Whenever gas-burning equipment is installed in the same space where halogenated substances may exist (refrigerants, solvents, bleaches, salts, etc.), clean outside air must be utilized for combustion.
12. When passing 5' or more through an unheated area such as (attics, crawl spaces, building exteriors or above roof lines), it is recommended that the system be converted to double wall CI Plus to prevent condensation and freezing. Any penetrations of ceilings, floors, or walls must be properly fire-stopped.
13. The vent system shall not be routed into, through or within any other actively used vent or chimney.

HORIZONTAL INSTALLATION REQUIREMENTS

1. If the termination is through a combustible wall, the system must terminate with a Saf-T Vent Wall Thimble and a Saf-T Vent Termination or a Saf-T Vent Roof Termination, as required by the appliance manufacturer.
2. The horizontal termination shall be located not less than 12 inches above grade or anticipated snow line (remember to consider snow and ice falling from overhead objects), and not less than 7 feet above grade when located adjacent to a public walkway. It shall also terminate 4 feet below, 4 feet horizontally from, or 1 foot above any door, window, fresh air intake, utility meter or regulator unless the appliance is Listed differently. The termination must be 6 feet from the combustion air intake of any other appliance. Proper judgement may require greater distances depending on the size of the equipment installed or site conditions. Consult with the local authority having jurisdiction.
3. The termination should be away from trees, shrubs, or decorative items as flue gases could cause damage.
4. The total equivalent horizontal distance of the vent system from the appliance flue collar to the outside of the termination shall not be less than 14 inches.
5. A minimum of one (1) horizontal support is required for every 6 feet of run.



Horizontal Installation Requirements:

VERTICAL INSTALLATION REQUIREMENTS

1. The vent system must terminate at least 3 feet above the roof line and at least 2 feet higher than any portion of the building within 10 feet.

2. When terminated at a height of more than 6 feet the stack must be supported by a Saf-T Vent Guy Section, refer to the Guy Section installation instructions.

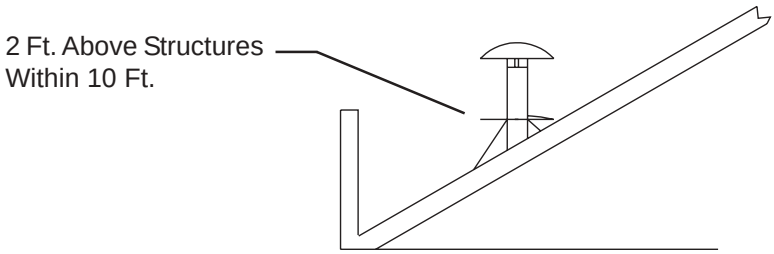
3. The vent system must terminate with one of the Saf-T Vent Terminations;
except:
   (a) Category I or II appliances (natural draft) must use a Saf-T Vent Rain Cap.
   (b) Vent systems without provisions for draining rain water must use a Saf-T Vent Rain Cap.
   (c) Terminations or approved mechanical vent devices specified or provided by the appliance manufacturer are permitted.

4. The total continuous distance of the vent system from the appliance flue collar to the termination shall not exceed that specified in the appliance manufacturer's installation instructions. When venting natural draft appliances the termination must be at least 5 feet above the topmost draft hood. Otherwise a Listed mechanical draft inducing device is required.

5. In general, systems installed in cold climates perform best, and condensation is reduced, when the system is fully enclosed by some part of the building structure.

6. In cold climates do not install a condensate drain on the exterior of the building. Doing so may result in dangerous icy conditions on surfaces near the drain and may cause damage to the vent system and/or the building exterior. Heat-fab, Inc. will ***NOT*** be held liable for any personal injury or property damage due to any formation of ice.

7. Vertical supports are required after every transition to vertical and as specified in Table 2. Vertical supports are also required after every offset elbow. See Table 2 for vertical support limits.



Vertical Installation Requirements:

JOINT SEALING AND CONNECTION METHOD

Joint Sealing

Heatfab Saf-T Vent may include two joint connection designs (Ring and Tab, Locking Strap) and both may employ one of two different sealing methods.

Model EZ (Diameters 3" thru 16") is manufactured with a factory adhered seal on the inside of the female (outlet) end making the use of any additional sealant unnecessary.

Model GC (Diameters 18" thru 32") is manufactured without a pre-installed seal. In such case RTV must be applied at each joint during the assembly process.

To install the RTV sealant wipe/clean the outlet and inlet ends of the GC with alcohol wipes. At 3/4" inside the outlet end, apply a 1/4" thick continuous, straight-line bead of high temperature sealant to the inside circumference. Do not use a zig-zag pattern when applying sealant. Smooth down the bead with a flat instrument or your moistened finger. (See Fig.1)

Note: Make sure the RTV sealant's "use by" date is still valid. If date has expired, discard and replace with new sealant.

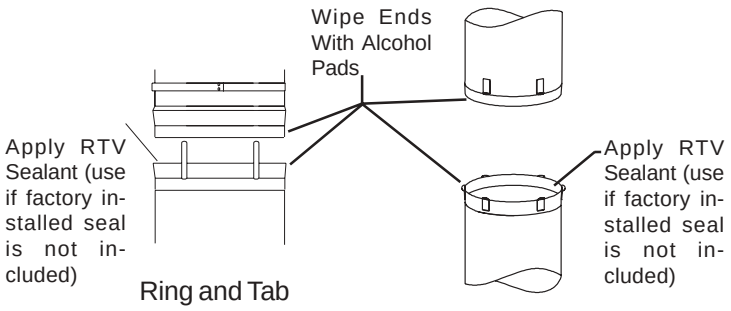


Figure 1

Connection

Note: Model EZ Seal may employ either the Ring and Tab or Locking Strap connection method while Model GC is produced solely with the Locking Strap connection method.

Ring and Tab Connection Method

1. After checking for/providing the proper seal (See section on Joint Sealing Method), join sections of conduit by inserting the smaller male (inlet) end into the flared female (outlet) end (with the projecting locking tabs) of the section below, making sure that the locking tabs stay on the outside (Figure 2-A).
2. Push the loose locking ring upward on the conduit. Using the fingers of both hands, press the ends of the locking tabs against the conduit. Let the locking ring fall over the tabs (Figure 2-B).
3. Push the locking ring downward as far as it will go. Bend the locking tabs tightly down over the locking ring and tap the ends against the conduit with a hammer and block of wood (Figures 2-C and 3).
4. Make sure that the sections are tightly joined and form a straight, continuous flue gas conduit. To eliminate snagging of the locking tabs as the liner is lowered down the chimney, you may wish to tape the ends flat against the conduit with foil tape.

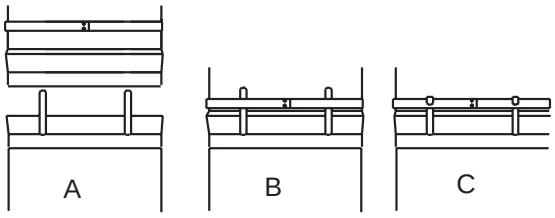


Figure 2

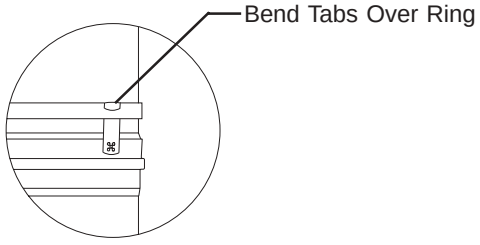


Figure 3

Locking Strap Joining Method

1. Begin by removing the Locking Strap from the vent. (See Fig 4)

2. After checking for/providing the proper seal (See section on Joint Sealing Method), insert the male (outlet) end into the female (inlet) end, lining up the Locking Tabs at the same time. If needed, use pliers or vice grips to squeeze together the Tabs so they will accept the slots in the Locking Strap. When assembling elbows and tees, the male end tabs will rotate around the vent to accommodate offsets and direction changes.

3. Position the Locking Strap slots over the Tabs, making sure each slot encompasses both Tabs. Tighten the Locking Strap with a 7/16" nut driver or socket. **CAUTION**: DO NOT over tighten the clamp, as it may cause the vent to collapse. (See Figure 5)

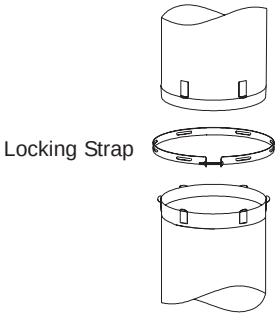


Figure 4

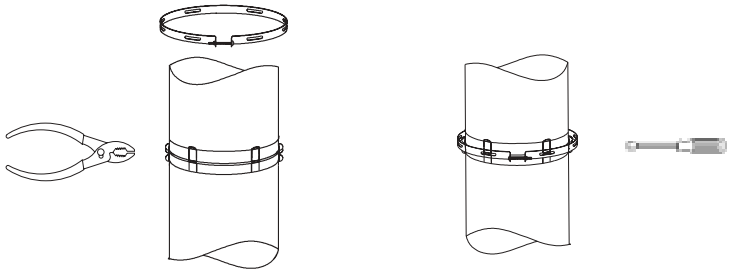
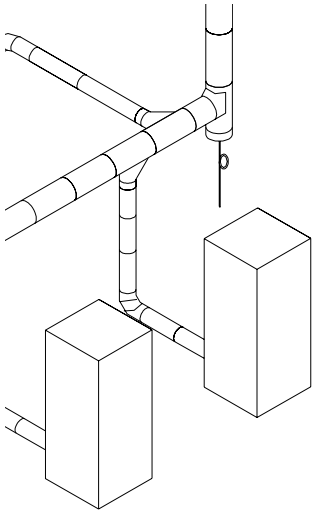


Figure 5

Condensate Drains:

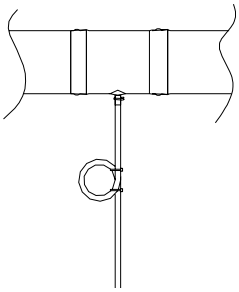
When An Internal Condensate Drain Is NOT Part of the Appliance:

- A Saf-T Vent In-Line Drain Section or Boot Tee with a separate Drain Tee Cover is strongly recommended. Install this drain fitting as close to the appliance flue collar as possible. (See Fig. 6a)
- A condensate drain is required for every 30 feet of horizontal vent and at/near the bottom of a vertical stack.
- Use the In-Line Drain Section for a straight horizontal run. Rotate the fitting so that the drain tube is as vertical as possible. (See Fig. 6b)
- Use the Boot Tee at a transition from horizontal to vertical, and attach the Drain Tee Cover to the appropriate leg of the tee. (See Fig 6a)
- A Condensate Drain Tube Kit is available to direct the condensate to an appropriate location, i.e. floor drain or vented sanitary sewer connection. A trap loop must be formed into the drain hose and must be a diameter that is at least four times the appliance's rated stack pressure in inches of water column or 3 inches, whichever is greater. Secure the loop with a cable tie. Prior to final assembly the trap loop must be 'primed' by pouring a small quantity of water into the drain hose. (See Fig. 6a)
- Follow all local and national codes and regulations for the draining of acidic condensate.
- In cold climates do not install a condensate drain on the exterior of the building. Doing so may result in dangerous icy conditions on surfaces near the drain and may cause damage to the vent system and/ or the building exterior. Heat-fab, Inc. will **NOT** be held liable for any injury or property damage due to formation of ice.



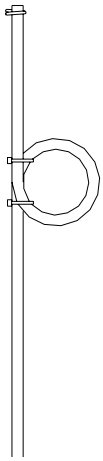
Boot Tee W/Drain Cover and Drain Tube

Fig. 6a



Horizontal In-Line Drain Section and Drain Tube

Fig. 6b



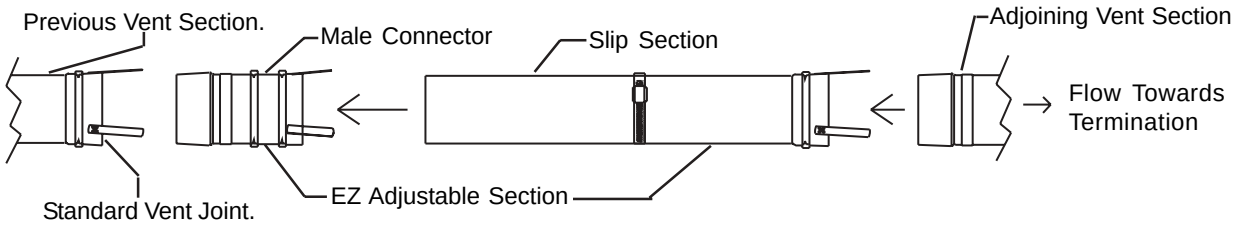
Drain Tube

Fig. 6c

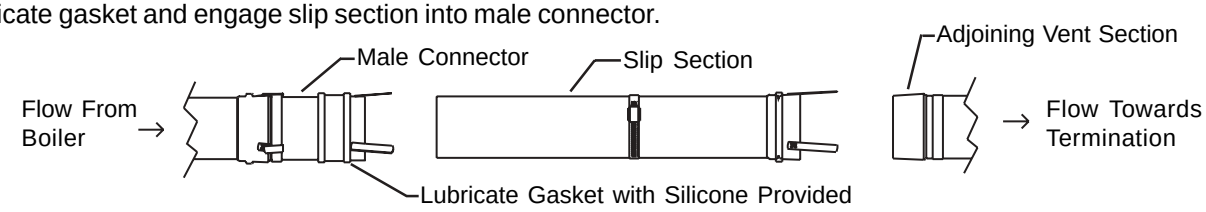
Saf-T Vent EZ Seal Adjustable Section:

The Saf-T Vent EZ Seal Adjustable Section serves as a variable length between other components when specific lengths cannot be utilized and eliminates the need to cut parts to length. The adjustable assembly consists of three components the male connector, the slip section, and a hose clamp. The installed length is from 6 to 19 inches. The adjustable works best in conjunction with another straight length of Saf-T Vent EZ Seal. If it has to be used with an elbow or a tee, do not insert the Slip Section so far that air flow within the vent becomes obstructed.

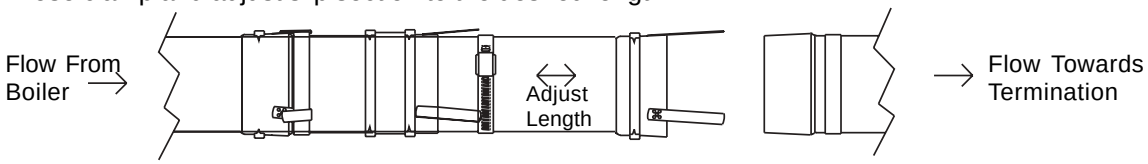
1. Connect Male Connector to previous vent section using standard ring & tab joint method.



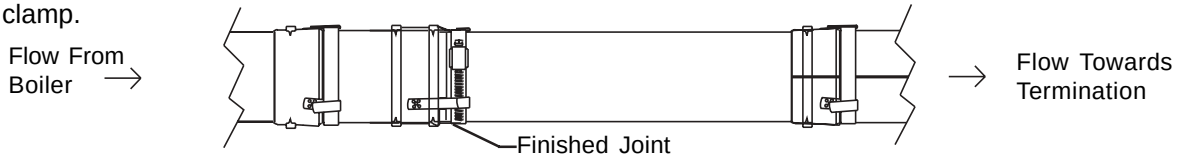
2. Lubricate gasket and engage slip section into male connector.



3. Loosen hose clamp and adjust slip section to the desired length.



4. Connect slip section to adjoining section and complete joint. Slide hose clamp over tabs and tighten clamp. Bend tabs over clamp.



Customized Lengths— Cutting Standard Lengths

The Saf-T Vent EZ Seal system is designed so that in most cases standard lengths will not need to be cut. There may arise, however, an occasional situation where standard lengths and adjustable length slip connectors are not adequate. In such cases, a standard length of Saf-T Vent may be field cut.

To custom cut a standard length part to make up the distance A (See Fig. 7), measure A and add 1-1/2 inches to the result. MEASURE TWICE — CUT ONCE. Only cut off the male end. Slide the ring away from the cut area and toward the female end of the pipe.

Starting at the female end of the section to be cut, measure out the distance A + 1-1/2" and mark it on the pipe. To help get a square cut, create a straightedge by wrapping masking tape around the waste side of the cut point. Cut the pipe with an abrasive cutoff, plasma, or compound snips.

If using snips, start the cut at the male end and follow a spiral path around the pipe until the cutoff mark is reached. File off any burrs that develop in the cutting process prior to assembling. If the cutting process distorts the roundness of the pipe carefully use your thumbs to re-round the end. The installer must to apply high-temperature silicone sealant to the field-cut joint.

Assemble the joint using the procedures above. A hose clamp must be used to retain the three tabs. (See Fig. 7)

Customized Lengths— Special Orders

Heat-fab will custom fabricate special lengths as required. Call for availability and pricing.

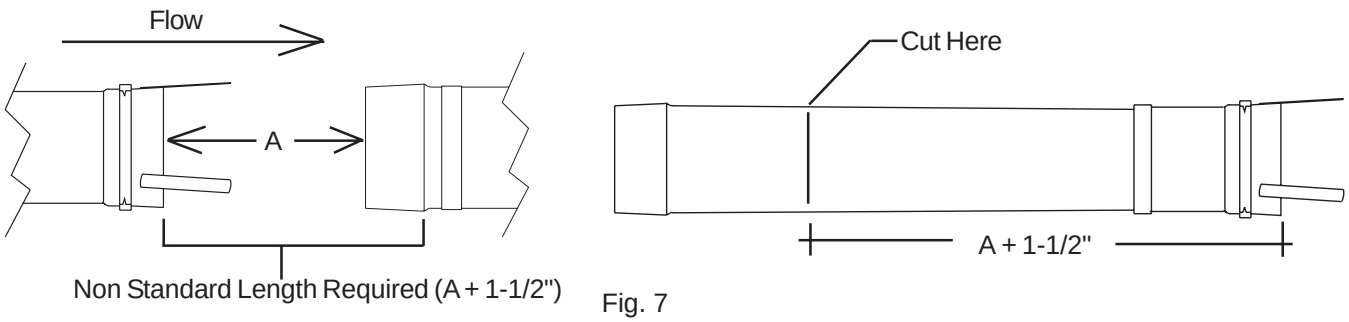


Fig. 7

Saf-T Vent GC Adjustable Section:

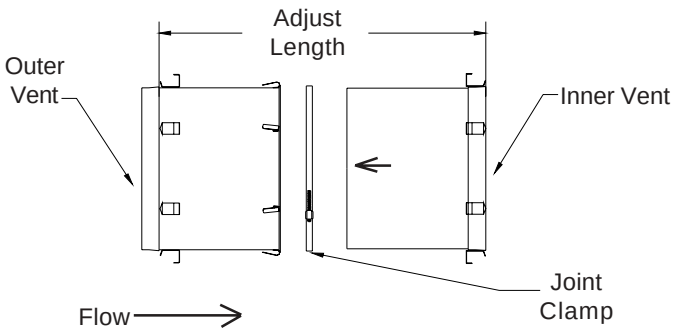
The Saf-T Vent GC Adjustable Section serves as a variable length between other components when specific lengths cannot be utilized. This is a 13 to 20 inch long adjustable section.

WARNING: The Adjustable Section is not designed to bear vertical force loads. Appropriate supports must be provided.

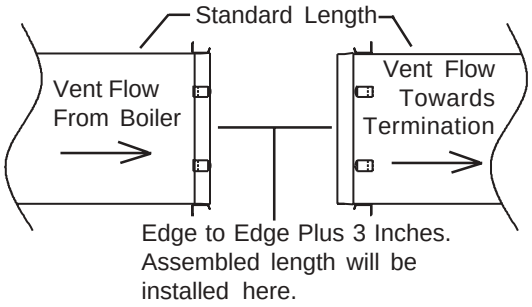
Installation Procedure

The Adjustable assembly consists of 5 components, the female Inner Vent, the male Outer Vent, a Clamp, the joint locking strap and an alcohol pad.

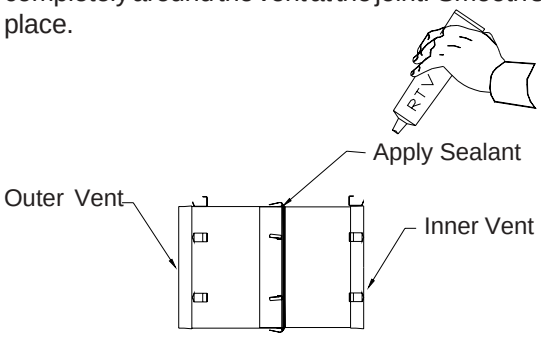
Step 1: Disassemble the packaged vent.



Step 2: Measure edge to edge the distance needed, then add 3 inches total for the joints. The installed length is 13 inches to 20 inches. **CAUTION:** DO NOT LENGTHEN PAST THE WARNING ARROW.

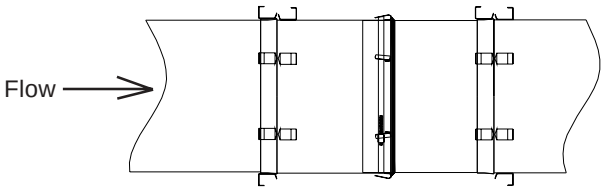


Step 3: Slide the Inner Vent into the Outer Vent to the desired overall length. Apply a 1/4" bead of RTV sealant completely around the vent at the joint. Smooth sealant into place.



Step 4: When the adjustable section is at its desired length, tighten the wormgear clamp securely around the vent to hold the adjustable in place. Do not overtighten, as it may distort the joint.

Install the completed Adjustable Section per the Joint Assembly instructions. After installation check the integrity of the RTV sealed joint.



Vertical and Horizontal Support.

For proper installation, Vertical and/or Horizontal supports must be installed to support the Saf-T Vent. Refer to **Table 2** for minimum spacing distances and the corresponding section for instructions for installing the support.

Note:

For all support options, ensure all minimum clearance to combustibles are maintained. Never drill or screw through the Saf-T Vent system.

Table 2 - Vertical and Horizontal Support Requirements

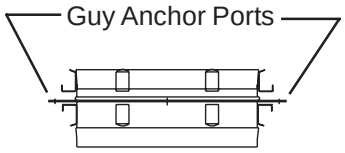
Spacing Between Supports		
Diameters	Vertical Spacing	Horizontal Spacing
3" thru 5"	30'	Every six (6) feet and after every transition from vertical to horizontal
6" thru 12"	20'	
14" thru 18"	12'	
20" thru 24"	10'	
26" thru 32"	6'	

Guy Support Section

The Guy Support is a short section of vent pipe with brackets protruding from it. These brackets provide a means for attaching a guy line, threaded rod or similar metal bracing to provide support to the vent system.

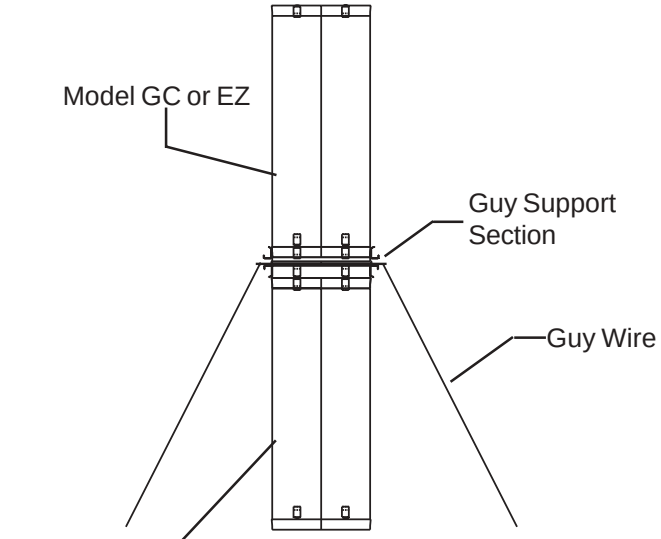
To Install:

Connect Guy Section to the vent using standard joint connection method. Attach guy wires or metal bracing to the brackets provided on the Guy Section. Anchor guy wires or bracing to the building infrastructure capable of supporting the load of the vent, using the best construction method. See Figures 9 and 10.



Guy Support Section

Fig. 9



Guy Support Assemblage

Fig. 10

Support Clamps:

Support Clamps may be suspended from rods or cables and used as a saddle to rest the vent in or they may be used in pairs to clamp around the vent and suspended from a single rod or cable. See Figs. 11 and 12.

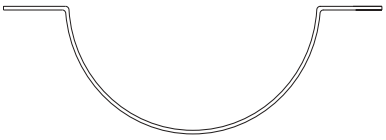


Fig. 11

Support Clamp as Saddle

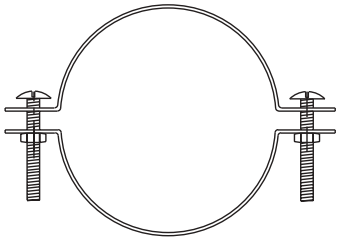


Fig. 12

Support Clamps

EZ Seal Vertical & Horizontal Clearance Support Clamps:

These clamps provide vertical or horizontal support for EZ Seal (size 3-16") pipe and establish the clearance specified per the corresponding support. Ensure the clearance established by the support is greater than or equal to the minimum clearance required by the corresponding Saf-T vent pipe.

To Install:

Using the included hardware, secure the mounting plate to the ceiling or wall at the necessary location. Route Saf-T Vent pipe through the clamp band and tighten worm gear to secure the vent. See Fig. 13

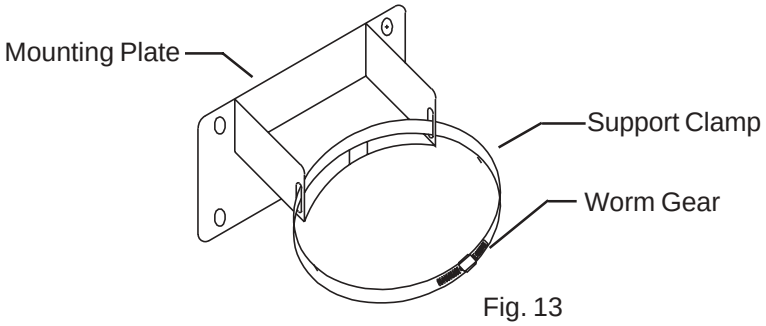


Fig. 13

Vertical (Roof, Ceiling) Penetrations:

Enclosed systems passing through a combustible ceiling or roof may be installed with or without the use of a Roof Jack thimble. Refer to Table 1 (Page 4) for framing dimensions for “Enclosed systems”.

Unenclosed systems require a Roof Jack when passing through a combustible ceiling or roof. Refer to Table 1 (Page 4) for framing dimensions for “Unenclosed Systems”.

Horizontal (Wall) Penetrations:

Enclosed and Unenclosed systems passing through a wall require the use of a Wall Termination. See Table 1 (Page 4) for proper joist framing dimensions.

Wall Termination -

The Saf-T Vent system can be installed through any type of wall using the Saf-T Vent Wall Termination Assembly. The wall termination requires mechanical support from the wall sufficient to support any incidental loads on the system. If the wall is not constructed with enough structural integrity to support the termination assembly, then appropriate additional framing and/or blocking is required.

To Install:

1. The Wall Termination Assembly is packed with the screen cover and end collar (Fig. 14). Before beginning, remove this screen cover. Prepare an opening for the Wall Termination Assembly in the wall. See Table 3 for framing dimensions. The opening may be either round or square so long as allowance for proper clearance to combustible material is made. When passing through solid, noncombustible construction, clearances may be reduced if necessary. If there are not sufficient support members to secure the Wall Termination Assembly or if there is a semirigid foam insulation layer under the sheathing, the opening must be blocked out or framed to provide support.

2. Position the Wall Termination Assembly into the enlarged hole from the outside (Fig. 15). Secure the assembly using common construction methods. Seal under the screw heads with caulking. Reinstall the decorative sheathing around the Wall Termination Assembly. The assembly may be painted to match the exterior decor.

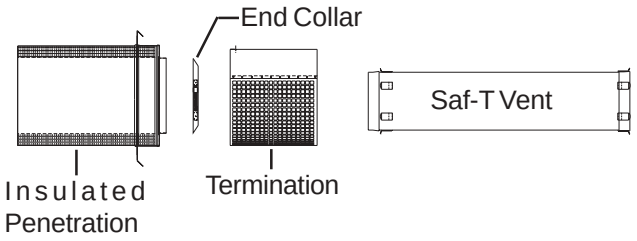


Fig. 14

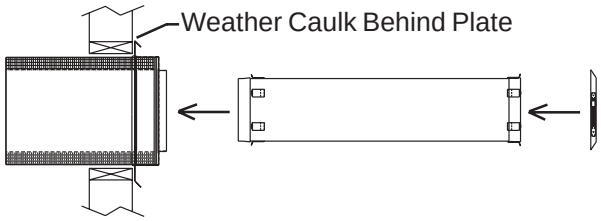


Fig. 15

3. Proceed with the installation of Saf-T Vent sections and terminate it through the Wall Termination Assembly (Fig. 16). Install the End Collar on the last section to close off the 1" air space around the inner vent. Seal between the vent and the End Collar for weather conditions. The assembly is constructed to allow for 2 degrees (1/4" per foot) of pitch in the vent sections. Seal the gap between the vent and the end plate of the Assembly using silicone caulk suitable for extended exposure to the elements.

4. The vent section must protrude at least 2 inches into the screened area beyond the end plate of the Wall Termination Assembly. Attach the screen cover using stainless screws. Align the hole in the top (solid) portion of the screen cover with the top of the assembly and securely screw the two pieces together. The screen cover may be easily removed for inspection of the venting system. (See Fig. 17)

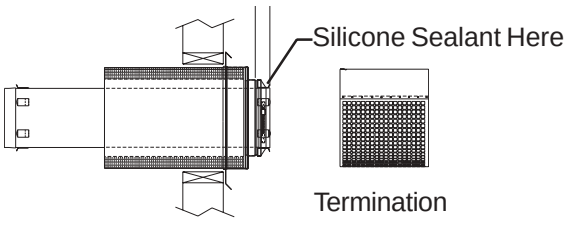


Fig. 16

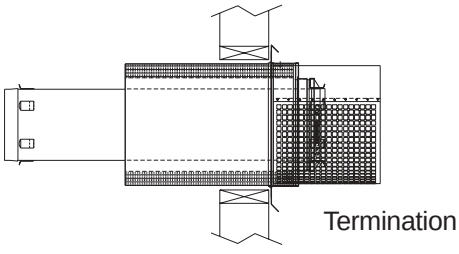


Fig. 17

Roof Jack –
The Roof Jack Support System is used for all vertical terminations through combustible and non-combustible roof structures. The Roof Jack supports all wind loading and incidental contact with the flue system as well as providing vertical support for up to 30 ft. of venting (see Table 3).

To Install:

1. Prepare the penetration location for the Roof Jack Support System on a flat roof by drilling a small hole up through the roof at the desired location. Refer to Table 1 for correct framing dimensions. Cut a square hole and remove any existing roofing materials to clear the roof jack. If any roof joists must be cut in order to locate the vent, follow local and national building codes for reframing the opening. If using a raised roof curb refer to Table 3, dimension A for correct framing dimensions. (See Figs. 18 and 19)
2. Drill or hand punch screw or nail holes around the perimeter of the Roof Jack plate. Apply weather resistant caulk to the bottom of the Roof Jack plate, gusset side down. Center the Roof Jack over the hole and secure to the roof deck or curb using screws or roofing nails with neoprene washers.
3. Flash over the Roof Jack utilizing normal roofing contractor methods. Flashing materials are not supplied with the Roof Jack.
4. Install the storm collar, supplied with the Roof Jack, around the vent pipe that passes through the Roof Jack. Tighten the storm collar using the screw clamp. The collar should be sitting on top of the Roof Jack to prevent the vent pipe from slipping downward..
5. Apply weather resistant sealant around the storm collar to prevent rainwater from entering the Roof Jack.
6. If the vent pipe protrudes more than 6 feet above the roof, guy sections must be used above and below the Roof Jack for stabilization. Refer to the section on guy supports for installation instructions if necessary.

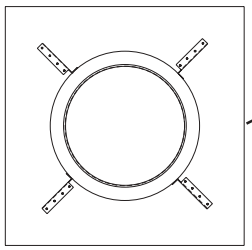


Fig. 18

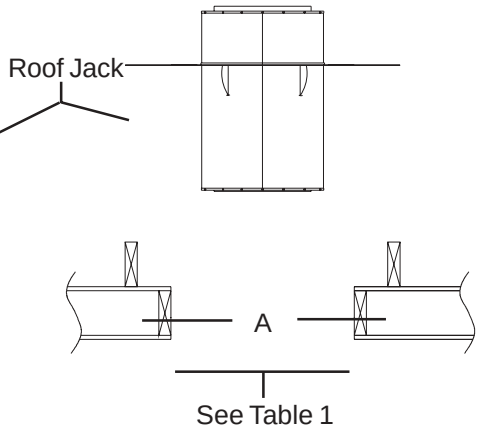


Fig. 19

Table 3

Vent Diameter	Dim A	Reccomended Height
3	18	30
4	18	30
5	18	30
6	24	30
7	24	30
8	24	30
9	24	30
10	24	30
12	24	30
14	24	20
16	27	20
18	30	15
20	32	15
22	34	10
24	36	10
26	36	6
28	36	6
30	40	6
32	42	6

Saf-T Vent Tall Cone Flashing with Rain Cap In Combustible Chase:

On Top Flat Roof (Fig. 20)- For Enclosed Systems Not Requiring a Thimble
Prepare a square or round opening. See table 1 (page 4) for Clearances / Framing dimensions.
Apply weather-stripping or outdoor caulk to the bottom of the cone plate. Attach the cone to the roof using common construction methods. Flash over the cone plate and seal the fastener heads using normal roofing requirements. When the vent pipe is in place through the Tall Cone, attach the Tall Cone storm collar around the pipe and position at least 2" above the top edge of the cone (figure 1). This 2" air space will release any built up heat from inside the cone. Apply RTV sealant around the top of the storm collar and the pipe. Install the Rain Cap on the last section of vent per the Rain Cap installation instructions. Position the Rain Cap Storm Collar 2" above the Ventilation Collar as shown in Fig. 20.

On Top Of Roof Curb (Fig. 21).

Before installing, place the cone on top of the curb and mark the outline of the curb on the bottom of the cone plate. Use snips to notch out the corners of the plate to match the curb. Bend down the extra material with duckbill pliers to create a cap which fits over the curb. Attach the cone to the curb using the same methods as described in the Flat Roof Tall Cone section.

Directly On Pitched Roof (Fig. 22)

Prepare a square or round opening per the framing chart. Apply weather-stripping or outdoor caulk to the bottom of the cone plate. Attach the cone to the roof using common construction methods. Flash over the cone plate and seal the fastener heads using normal roofing requirements. When the vent pipe is in place through the Tall Cone, attach the Tall Cone storm collar around the pipe. Apply RTV sealant around the top of the storm collar and the pipe. Install the Rain Cap on the last section of vent per the Rain Cap installation instructions. Position the Rain Cap Storm Collar 2" above the Ventilation Collar as shown in the figure below.

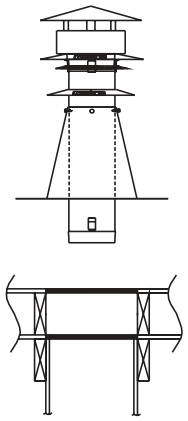


Fig. 20

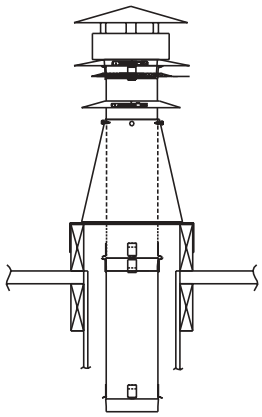


Fig. 21

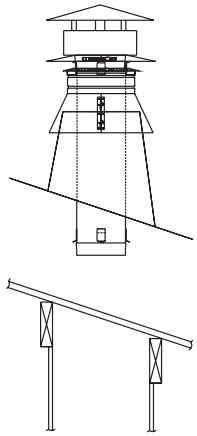


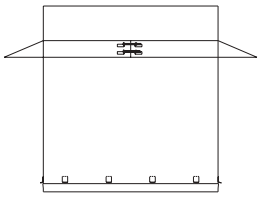
Fig. 22

Saf-T Vent Rain Cap and Storm Collar:

1. Remove the Bolts from the Rain Cap's Storm Collar. (Fig. 23a)
2. Place the Storm Collar over the last piece of stack vent. (Fig. 23b)
3. Install the Rain Cap on top of the last piece of stack per the Joint Assembly Instructions, except do not seal the joint with RTV sealant to permit removal of the Rain Cap for inspection of the system.
4. Raise the Storm Collar to just above the locking strap on Rain Cap.
5. Reinstall Collar bolts and tighten the Storm Collar around Rain Cap. (Figs. 23c and 23d)
6. Apply RTV sealant around the top of Storm Collar.
7. When installing the Rain Cap with the Tall Cone Flashing, the Ventilation Collar must be ordered separately.

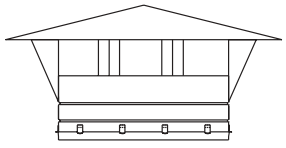
Storm Collar

Fig. 23a



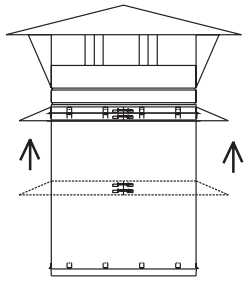
Storm Collar Over Pipe

Fig. 23b



Rain Cap

Fig. 23c



Slide Storm Collar Up and Attach Rain Cap

Fig. 23d

FITTINGS AND ACCESSORIES

Appliance Connectors

Connect the Saf-T Vent system to the appliance flue collar as directed in the appliance manufacturer's instructions. If the appliance flue collar is not designed for direct connection to the Saf-T Vent system, a special appliance adapter may be required. See the appliance manufacturer's instructions or contact Heat-fab for recommended adapters.

CHIMNEY LINER INSTALLATION

The Heat-Fab Saf-T Vent® is a masonry chimney lining and relining system intended for use with residential appliances burning natural gas and propane. Saf-T Vent is a high-quality, extremely durable lining system constructed of a special alloy of stainless steel high in both chromium and molybdenum. This alloy, plus Saf-T Vent's smooth-wall design, give it a unique combination of corrosion resistance, high temperature tolerance and desirable flow characteristics not found in any other chimney lining system.

As with any venting system, its installation must be properly planned and executed in order to ensure satisfactory results. Incorporation or substitution of parts or materials not manufactured or supplied by Heat-Fab, or failure to follow these instructions, may not provide a UL Listed system, and may result in appliance malfunction, fire or endanger the health and safety of people.

Heat-Fab recommends that the installation be performed by an experienced professional familiar with the installation of chimney lining systems. These instructions are intended as a guide to assist a professional installer. The installation must conform to the requirements of the appliance manufacturer's instructions, applicable National Fire Protection Association (NFPA) standards, and/or applicable US or Canadian codes. Check your local codes and contact local building or fire officials to obtain any required permits.

PRE-INSTALLATION INSPECTION

It is the installer's responsibility to inspect and verify the suitability of the chimney and related construction for installation of this product. Saf-T Vent is intended for installation in masonry chimneys which comply with the requirements of the Standard for Chimneys, Fireplaces, Vents and Solid Fuel Burning Appliances (NFPA 211) in the USA and the National Building Code in Canada. The chimney must be composed of solid masonry units, such as bricks or concrete block, at least 4 inches (nominal) in thickness. The chimney must extend at least 5 feet above the highest appliance flue collar, with a maximum height of 60 feet. The chimney must extend at least 3 feet above the point where it penetrates the roof, and 2 feet higher than any part of a structure within 10 feet (Figure1).

Inspect the interior of the chimney for loose or missing mortar, holes, and cracked, loose or missing bricks or unused thimbles. Repair any defects in the chimney. Thoroughly clean the chimney of combustible deposits. Particular attention should be given to deposits of tar glaze creosote, which may be resistant to normal cleaning methods. Remove any mortar projections or snags from the interior wall of the chimney. Heat-Fab recommends that an internal inspection be done with video inspection equipment such as a Chim-Scan™.

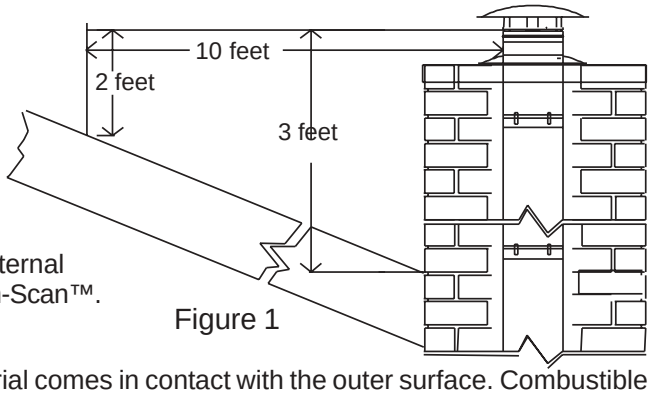


Figure 1

Saf-T Vent may be used in chimneys in which combustible material comes in contact with the outer surface. Combustible material must not be embedded or otherwise penetrate the chimney wall. If necessary, construct a barrier to prevent loose insulation from falling against the chimney. Any resulting gaps between the chimney and framing at floor or ceiling levels must be closed with a firestop. If the chimney is currently lined with a clay tile liner, dislodge any loose sections, shards or flakes and remove them. Make sure that the flue space is large enough, at its smallest point, to accommodate the Saf-T Vent flue diameter. The existing tile liner may be removed, if necessary, to provide the necessary space.

INSTALLATION PROCEDURE

A. Open The Chimney

Note: Wear eye protection and respirator.

An opening must be made in the chimney in the room in which the appliance is located. If the chimney already has a thimble hole, it will probably require expansion to facilitate installation of the base assembly. Locate the hole for the appliance breeching considering available headroom and clearance to combustibles. (Consult the appliance manufacturer's instructions and the applicable local code to determine clearance needed for the vent or chimney connector.) An additional opening may be needed for a cleanout tee. The size of the hole will depend on the type of support system to be used with the installation. Use the instructions packaged with the support for specifications on preparing the chimney and installing the support.

B. Connect the Tee or Elbow

When a tee is to be used for the appliance connection it may be pre-connected to the sections of vertical flue gas conduit and lowered down the chimney. Remove the horizontal take-off from the tee by loosening the retractable bands.

When a 90°, 70°, or 45° elbow is to be used for the appliance connection, it may also be possible to attach it to the liner and lower it down the chimney. The chimney flue space must, however, be large enough to accommodate the horizontal take-off from the elbow (which extends approximately 5 inches). If the flue space is not large enough, the elbow will have to be attached to the bottom of the vertical conduit after it is lowered down the chimney. Attach the support clamp to the tee or elbow, just below the expanded portion at the top of the fitting. The tabs on the support clamp should be facing down, and should be oriented 90 degrees from the horizontal take-off of the tee or elbow. Tighten the clamp by turning the screw

clockwise with a screwdriver. To make connection of the support clamp to the support brackets or legs easier, it is useful to pry the tabs on the support clamp out from the side of the conduit about 1/4 inch. Avoid bending them too far out, or they will tend to snag as the conduit is lowered down the chimney (Figure 2). Attach the tee or elbow (unless the elbow must be attached from the bottom opening) to a length of flue gas conduit using the locking ring and tabs (see Pre-assemble Lengths, below). Attach the tee cover to the bottom of the tee.

C. Pre-assemble Lengths of Conduit

Note: All parts needed for secure joining of conduit sections are supplied attached to each section. Never drill through the conduit wall or attempt to join sections using screws or pop rivets. Several sections of Saf-T Vent conduit may be pre-assembled to manageable lengths on the ground, to minimize trips up and down the ladder. Generally, lengths of 8 to 10 feet can be safely carried up the ladder and manipulated on the roof. Be sure to check for overhead power lines and other obstacles, and provide safe and stable footing, before working with long lengths of conduit.

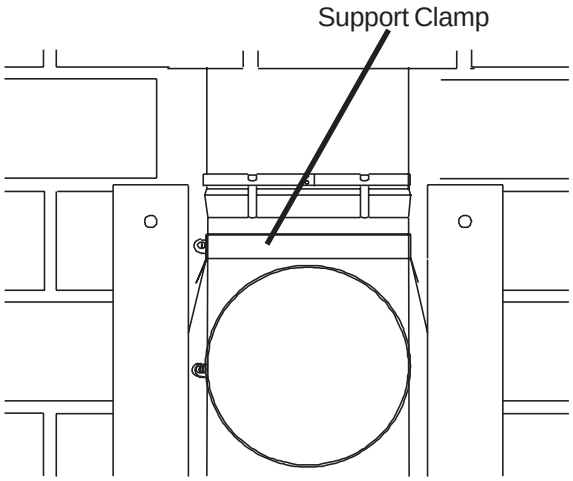


Figure 2

D. Attach Lowering Rope

The lowering rope will allow the liner to be safely and smoothly fed down the chimney, and held in position while additional lengths are attached. Attach the rope to the tee, elbow or lowest section of conduit by looping it around the outside of the section and securing it to the sides of the conduit with duct tape. Locate the tape so that it can be reached for easy removal from the bottom of the chimney. Never feed the rope up the inside of the conduit - it will be impossible to attach additional sections!

E. Lowering The Liner

Carefully lower the first length of conduit into the chimney, until the top is 6 to 12 inches above the chimney top. Secure the lowering rope or have a helper hold it fast. Attach the next length of conduit (see Figure 3) and again lower the liner. Continue lowering the liner and attaching lengths until the Tee, Elbow, or bottom section approaches the opening near the bottom of the chimney. Using a combination of 4 ft., 3 ft., 2 ft., 18 inch, 1 ft., or 6 inch sections, the conduit should end at least 3 inches but no more than 14 inches below the top of the chimney. This space is needed because the conduit expands as it is heated, and will be bridged by the slip connector part of the termination assembly.

F. Attach Tee Take-Off or Elbow

When a tee is attached to the bottom of the liner, extend the retractable bands on the tee take-off to the maximum by turning the screw counterclockwise. Do not screw the end of the band completely out. Position the take-off for the tee in the opening in the chimney. Lower the base assembly through the band until the hole in the tee is even with the take-off. With a long-handled flat head screwdriver, turn the screw clockwise until the take-off is pulled tightly against the tee. Make sure the take-off is centered over the hole, with the projecting lip around the tee hole inside the take-off at all points. Do not over-tighten the screw, or distortion of the tee body will result. Verify by looking in through the take-off that the sides have not been squeezed inward. When an elbow is to be attached to the bottom of the liner, hold it in the chimney opening and guide the bottom of the liner into it. Secure it to the liner with the locking ring and locking tabs per Figure 5.

G. Attach The Support System to the Tee or Elbow

Bend the tabs on the support clamp out about 1/2 to 3/4 inch away from the side of the tee or elbow. Raise or lower the liner until the tabs engage the edges of the support bracket or legs. Let the liner rest on the support system and remove the lowering rope.

H. Install The Termination Assembly

Trim the cover plate so that the hole is centered over the flue space. If a clay tile liner projects from the top of the chimney, trim the cover plate 2 to 4 inches larger than the outer dimensions of the tile. Cut a rectangular notch out of each corner and fold each side of the plate down 90 degrees, so that the top surface is slightly larger than the tile. Run a bead of silicone caulk on top of the tile and press the plate down into it. If there is no projecting tile, run a bead of caulk around the chimney top and press the cover plate flat on top of the chimney. Slide the storm collar, with the rounded surface facing up, onto the slip section up to the expanded end. Reaching in through the slip section, insert the small end through the cover plate and guide it into the top liner section. Continue sliding the slip section down until the storm collar rests on the cover plate and supports the slip section on the expanded end. Tighten the storm collar clamp. Finally, attach the rain cap to the slip section with the locking ring and locking tabs (Figure 6).

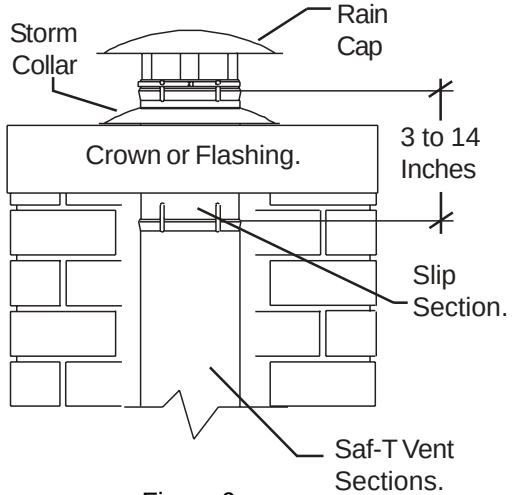


Figure 6

Maintenance Procedures:

- Normal operation of gas burning appliances does not result in deposits of combustible soot in venting systems. However, a poorly adjusted or malfunctioning appliance can deposit soot and other debris which can enter the vent system. As with all vents, the Saf-T Vent EZ Seal and GC systems should be inspected at least annually for the presence of deposits of soot or debris. Any such accumulation should be removed and the appliances adjusted to eliminate future accumulation.

- At regular periods the system should also be inspected for signs of leakage of condensate or combustion by-products at all joints. If any leakage is found the connected appliances should be turned off and the leaks repaired.

- If the system incorporates a drain hose from either an in-line fitting or from a drain tee then the hose must be inspected periodically to assure that water remains in the trap loop. If a proper trap loop is not maintained exhaust from the connected appliances may accumulate in the building area.

SAF-T VENT
15 YEAR LIMITED WARRANTY

Selkirk Corporation warrants to the original homeowner or ultimate purchaser that all Saf-T Vent products (EZ Seal, SC, GC & CI Plus) will be free from defects in material or workmanship when properly installed pursuant to the manufacturer's installation instructions and the appropriate building codes. Selkirk will, at its option: repair, replace or provide a full refund for all of its parts or components found to be defective or not in conformance with this limited warranty. Any defect arising from the improper installation, operation or maintenance of this system and/or connected appliance(s) is **not** covered by this warranty.

In order to obtain warranty service, the consumer **must give prompt written notice** of any defect to Selkirk following notice of the defect, and within Fifteen (15) years from the date of installation. Please notify:

Selkirk Corporation
1301 W. President George Bush Hwy.
Suite 330
Richardson, TX 75080

Selkirk Canada Corporation
375 Green Road
Stoney Creek, ON L8E 4A5

Selkirk is not responsible for the cost of inspecting, removing or reinstalling the parts subject hereto, nor shall it be liable for any special, incidental or consequential damages or expenses incurred by the consumer or its contractors. However, Selkirk reserves a right to reimburse reasonable and direct product reinstallation costs provided it agrees in writing to such costs in advance of those costs being spent by a claimant.

The warranty on any replacement part shall be for the unexpired term of the original warranty.

Some states do not allow for the exclusion of incidental and consequential damages, so the limitations above may not apply to you.

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