

# MODEL SW

## Single Wall Chimney Installation Guidelines

Tested to: UL 103, UL 2561, & UL 641

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### WARNING

A MAJOR CAUSE OF CHIMNEY RELATED FIRES IS FAILURE TO MAINTAIN REQUIRED CLEARANCES (AIR SPACES) TO COMBUSTIBLE MATERIALS. IT IS OF UTMOST IMPORTANCE THAT THIS CHIMNEY BE INSTALLED ONLY IN ACCORDANCE WITH THESE INSTRUCTIONS. A chimney should always be sized in accordance with the appliance manufacturers instructions. It is important to read and understand these instructions fully before installing this chimney/vent system. Failure to comply with these instructions will result in a hazardous installation and will void the warranty.

### STANDARD WARRANTY

When this system, provided by the Van-Packer Company, is installed per these instructions, we warrant the parts be free from defects in material and workmanship for a period of 12 months from the date of shipment. For warranty questions please contact the technical service department for further details and stipulations.

## LISTING & CODE COMPLIANCE

Van-Packer's Model SW chimney/vent system is listed by UL as 18" inch clearance to combustibles for: Building Heating Appliance Chimney, Industrial Type 540°C chimney, Industrial Type 760°C chimney and type "L" low-temperature venting system, when installed in accordance with these instructions and NFPA 211 Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances, International Mechanical Code, Uniform Mechanical Code, or other local codes.

## TESTING, CLASSIFICATION, & APPLICATIONS

Model SW has been tested in accordance with the procedures and methods set forth by:

1. UL 103 (*Standard Building Heating Appliance Chimney*). Continuous operating temperatures not exceeding 1000°F (540°C), intermittent temperatures of 1400°F (760°C) for 60 minutes and 1700°F (930°C) for 10 minutes.
2. UL 2561 (*Standard Building Heating Appliance Chimney*). Continuous operating temperatures not exceeding 1400°F (760°C), intermittent temperatures of 1800°F (980°C) for 10 minutes.
3. UL 641 (*Standard Type "L" Low-temperature Venting System*). Continuous operating temperatures not exceeding 570°F (299°C).

Model SW is Rated for:

1. Continuous operation at 18 inch clearance to combustibles.
2. Continuous operation at zero inch clearance to non-combustibles.
3. Venting negative, neutral, and positive pressure applications.
4. Venting flue gasses from gas, liquid, and solid fuel fired appliances.
4. Positive pressures up to 60 inches water column.

Model SW chimney/vents are intended to be part of a complete system which connects the appliance with the outdoors by means of natural draft or mechanical draft.

## GENERAL INFORMATION

**WARNING:** Code compliant clearances must be followed where any components are in direct contact with the liner. Examples of this would be support assemblies, drain pipes, or any other similar items.

Do not apply wraps or enclosure materials in direct contact with Van-Packer's products in a manner that adds additional weight to our chimney/vent. Model SW has not been tested, listed, designed, etc. to carry additional weight from such materials.

Model SW chimney/vent is intended to be installed unenclosed or with-in a non-combustible enclosure. A chimney that extends through any zone above that which the connected appliance is located is to be provided with an enclosure having a fire resistance rating equal to or greater than that of the floor or roof assemblies through which it passes. Always refer to other codes / authorities having jurisdiction for specific chimney/vent requirements for enclosures and floor/roof penetrations.

## CODES & AUTHORITIES

Installation must be made in accordance with local and national code requirements. Follow these instructions carefully and contact local building and fire officials about restrictions and installation inspection in your area. Refer to NFPA 211 (Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances) and additional NFPA standards as required.

## INSTALLATION CONSIDERATIONS

Follow Van-Packer's written installation instructions carefully. Each part of the chimney/vent system must be installed correctly. Improper or lack of required parts may result in the improper function of the chimney/vent system. Always contact the technical service department with any questions.

The chimney/vent layout should be carefully planned to allow adequate space for assembly, installation of supports, connection of support framing, access for drains, accommodate standard fitting dimensions, rough openings for penetrations, inspection, cleaning etc. Do not assume all appliances within a facility can be exhausted with a single chimney/vent system. Consult a chimney/vent design professional as required.

One prime coat and finish coat of appropriate heat resistant paint is recommended on any non-stainless steel accessories that are in areas subject to cleaning or exposed to the weather. Stainless steel accessories are available upon special request.

## GENERAL INFORMATION - CONTINUED

### MIXING SYSTEMS & PARTS

Do not connect a chimney/vent system with building grease duct system. Do not connect parts from other chimney/vent manufacturers with Model SW components without the expressed consent of Van-Packer.

Components from other Van-Packer product lines, (for example Model DW or DWplus), may be mixed with Model SW components to complete a chimney/vent system as long as: clearances, limitations, codes, etc. are followed. Contact Van-Packer for more information concerning product lines which are listed for use as chimney/vents.

Van-Packer chimney/vent components are designed to complete the entire system. However, we realize conditions occur where systems must be mixed. In these cases, in accordance with *good construction methods and codes* it is permissible to transition to/from a code compliant system (by others) to/from Van-Packer chimney/vent components. Connection must be an approved joint assembly method as described within installation instructions, and/or applicable codes. Transition (by others) cannot connect in a manner that adds additional weight/stress to our system. Van-Packer's products have not been tested, listed, designed, etc. to carry additional weight from such transitions. **WARNING:** Listings / warranties may be affected when transitioning to/from chimney/vent by others. Consult Van-Packer technical service department for additional information.

### CHIMNEY/VENT SLOPE

Model SW chimneys/vents must be installed accordingly to comply with the requirements as described in order to maintain a listed installation. UL states that these chimneys/vents must comply with requirements as set forth by UL, NFPA 211 (Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances), and the International Mechanical Code. Model SW chimneys/vents should be installed at a slope not less than 1/4 unit vertical in 12 units horizontal toward the appliance or the drain. Contact Van-Packer for additional information.

### DRAINS

Van-Packer offers a variety of standard factory built sections for draining off any moisture and/or condensation. Position drain by using *Good Engineering Practices*, never allowing moisture to puddle or accumulate in the system.

### APPLICATIONS

Model SW chimneys/vents are suitable for interior or exterior installations. Model SW chimney/vents can be used in many venting applications: boilers, water heaters, engines, turbines, dryers, fume or particle ventilation, chutes, incinerators, ovens, etc, and many other applications. Model SW chimney/vent systems have various components which are readily available for your venting needs (or by request custom sections can be factory built). Van-Packer products are also suitable for use as grease ducts; however specific grease duct installation instructions, clearances, listing, etc, are not covered by these instructions. Always contact Van-Packer for additional uses and information, refer to NFPA 211 and additional codes / authorities having jurisdiction for specific chimney/vent system requirements. **Please note** if being used with engines or turbines special provisions are required. Contact Van-Packer for additional information, refer to NFPA 37 (Standard for Installation and use of Stationary Combustion Engines and Gas Turbines) and any other codes / authorities having jurisdiction for specific chimney/vent requirements.

## RECEIVING INSPECTION

Compare the packing list items and quantities with the contents of the containers to ensure completeness of the shipment. If the shipment is missing components, please contact Van-Packer's order entry department at 888-877-8225.

### TYPICAL COMPONENT LOCATIONS

Straight sections, fittings, etc. will be positioned and stacked accordingly to fill the shipping container. Sections of smaller dimensions may be slipped into sections of larger dimensions. Bags of fasteners, sealant, etc. may also be located inside the liner of the various pieces.

### FREIGHT DAMAGE

Inspect each box as it is unloaded from the carrier for damage which may have occurred during transit. Should there be any damaged components, the delivery receipt must be signed damaged in order for Van-Packer to file a claim with the carrier. If the delivery receipt is signed damaged, contact Van-Packer immediately. If there are damaged parts and the delivery receipt is not signed damaged, Van-Packer or the carrier will not be liable, and damaged parts will be replaced at the customer's expense. Do not return any parts to the factory without prior authorization from Van-Packer Company

## PART IDENTIFICATION & MATERIAL CODES

Model SW part numbers will typically have the letter "S" prefix, followed by the chimney diameter (I.D.), then the part description code, next a special qualifier code and last the liner material designation. Part description codes are generally three characters and are either alpha or alpha numeric. Qualifier codes are most often used to designate section lengths, tee projection dimensions, and the large I.D. end of increasers. The following are a couple examples of part numbers with their associated description and part number breakdown.

### S12STR30A

Refers to a Model SW 12" I.D., 30" long straight section constructed with a 304 S.S. liner.

**S** = Model SW  
**12** = Section I.D.  
**STR** = Part Code, Straight Section  
**30** = Section length, 30" long  
**A** = Liner Material Code, 304 S.S.

### S1290T08B

Refers to a Model SW 12" I.D. 90 degree centered tee section with an 08" I.D. projection constructed with a 316 S.S. liner.

**S** = Model SW  
**12** = Tee Body, 12" I.D.  
**90T** = Part Code, 90 Degree Tee Section  
**08** = Tee Projection, 08" I.D.  
**B** = Liner Material Code, 316 S.S.

### LINER MATERIAL CODES

**A** = 304 S.S.  
**B** = 316 S.S.  
**C** = 430 S.S.

## JOINT ASSEMBLY

The following steps are to be used to ensure this system has liquid tight joints.

**Operating Temperature up to 600°F** Use high temperature silicone sealant, Van-Packer part number 101087A. **Warning:** allow sealant to cure 72 hours before use. Sealant will not bond to flanges if moisture is introduced into system before sealant has cured.

**Operating Temperature above 600°F** Use high temperature sealant, Van-Packer part number 101091F. **Warning:** sealant remains water soluble until fully cured. Cure sealant by introducing warm moving air into the chimney/vent for 24 hours.

### STEP 1

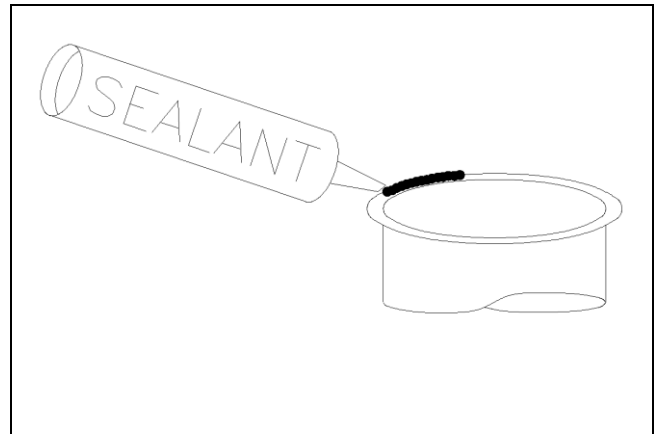
Inspect all liner flanges and straighten any mild deformations that may have occurred during shipping.

### STEP 2

To ensure sealant adhesion, degrease and remove any dirt and debris from the liner flanges. Use an acetone based cleaner applied to a rag.

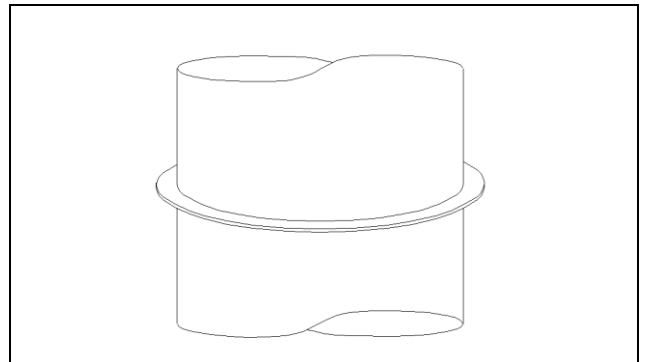
### STEP 3

Apply a continuous bead of sealant (1/8" to 1/4") to one or both of the liner flanges to be joined.



### STEP 4

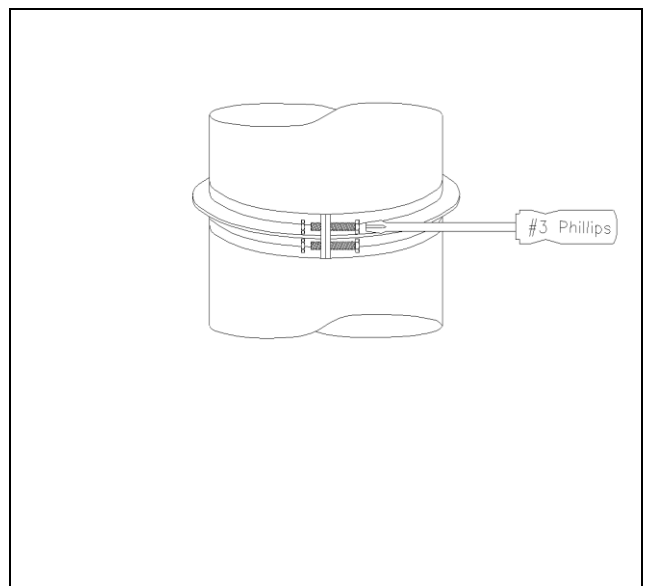
Butt the flanged ends of the sections being joined, being careful not to smear off the sealant. Re-apply if this happens.



### STEP 5

Apply a bead of sealant into the groove of the vee band. It is **necessary** to lightly tap the vee band while tightening, this will ensure a snug fit.

Wipe smooth any excess sealant on the inside of the assembled chimney/vent to prevent sealant dams.



**Failure to follow our instructions could lead to leaking joints.**

**APPROXIMATE SEALANT USAGE**

Section I.D.	6"	7"	8"	9"	10"	12"	14"-16"	18"-20"	22"-30"	32"-38"	40"-48"
Joints per Tube	12	10	9	8	7	6	5	4	3	2	1

**APPROXIMATE INSTALLED WEIGHT**

Inside Diameter	Lbs/Ft
6"	3
7"	3
8"	4
9"	4
10"	5
12"	6
14"	6
16"	7

Inside Diameter	Lbs/Ft
18"	8
20"	9
22"	10
24"	11
26"	12
28"	12
30"	13
32"	14

Inside Diameter	Lbs/Ft
34"	15
36"	16
38"	22
40"	23
42"	24
44"	25
46"	26
48"	27

**APPROXIMATE HEIGHT LIMITATIONS in Feet**

Inside Dia	STR	TEE	PLS	WSA
6"	625	209	788	486
7"	562	200	706	424
8"	512	193	643	375
9"	473	188	593	337
10"	441	184	553	306
12"	385	174	481	253
14"	351	169	422	219
16"	321	164	371	191
18"	301	143	336	171
20"	281	126	304	153
22"	269	112	281	140
24"	255	100	259	128

Inside Dia	STR	TEE	PLS	WSA
26"	246	84	243	119
28"	239	69	229	111
30"	230	57	215	103
32"	224	46	205	97
34"	217	36	194	87
36"	213	27	186	80
38"	161	21	135	55
40"	160	21	129	50
42"	160	20	125	45
44"	159	20	120	41
46"	159	20	116	38
48"	158	20	112	34

## SECTIONS & FITTINGS

Van-Packer makes a wide range of prefabricated adapters, fittings, elbows, wyes, tees, transitions, increasers, terminations, etc. Refer to the Model SW brochure for additional information on part number designations and the wide range of parts and fittings we offer to complete a system from start to finish. In general, all sections are assembled with a standard flange connection; however, below are a few examples of parts that may require special attention.

### ADAPTERS

Adapters connect to the liner flange per the joint assembly instructions.

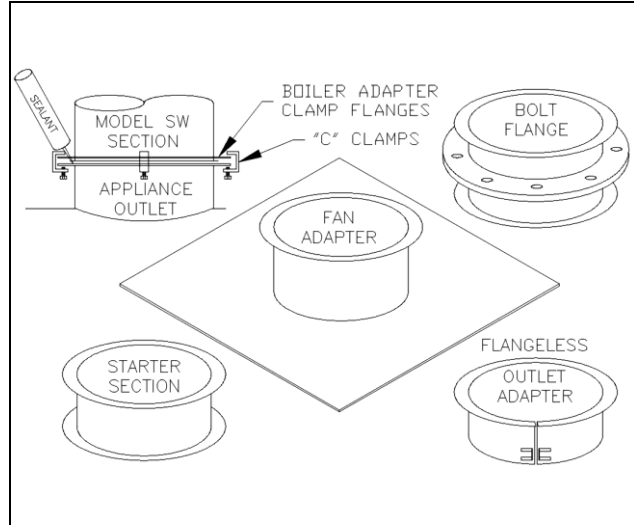
**FAN/HOOD - PART FAS** is intended to be used with a roof curb (provided by others) connection to a hood or an exhaust fan. Field connect the plate to the hood, curb or fan (drilling / fasteners & sealant by others as required). Refer to the hood, fan unit or the roof curb manufacturer's installation requirements.

**STARTER SECTION - PART S/S** is a short liner piece flanged on each end. This part is intended to have one end connected to a hood, duct/transition, fan unit, etc.

**FLANGELESS OUTLET ADAPTER - PART FOA** is a split liner piece with draw-up tabs. This adapter is intended to be slipped over a smooth collar, then drawn tight with the included fasteners.

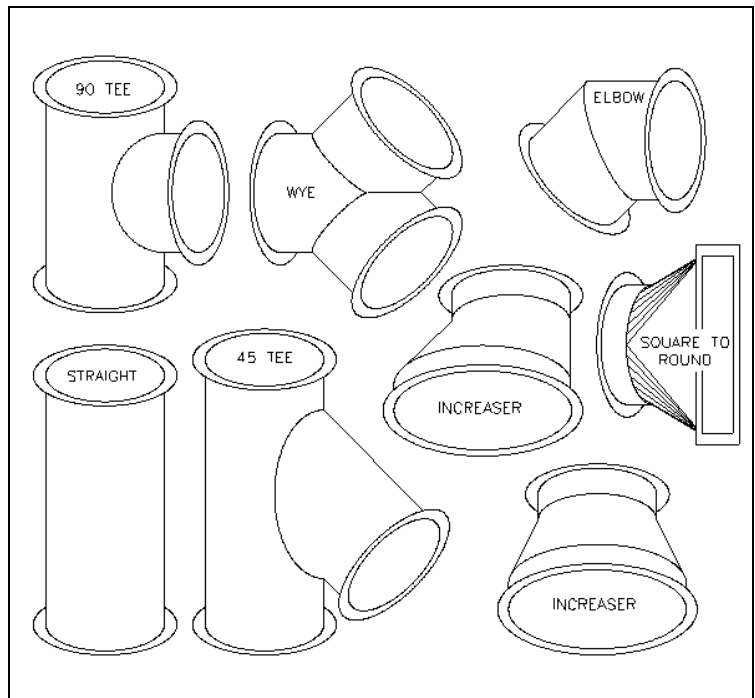
**BOLT FLANGE - PART BFA** is a short liner piece flanged on each end with a preassembled 1/4" thick van-stone (free floating) type bolt flange. This adapter is intended to be connected to a companion flange with appropriate fasteners (fasteners by others).

**BOILER ADAPTER FLANGE – PART BAF** Use the BAF when the appliance has a blank flanged outlet. Place a bead of sealant around flanged outlet about 1/8 inch from inside diameter. Next place flue on top of outlet, align, set clamp flange around liner flange of flue pipe, and fasten down with "C" clamps



### FITTINGS & STRAIGHT SECTIONS

Fittings and Straight sections are fixed degrees, lengths, etc., joined together to complete desired chimney/vent runs. These sections may also be equipped (must be factory installed) with nipples or couplings to accommodate test probes, drainage, etc. Refer to the Model SW brochure for designation of part lengths and options for adding pipe nipples / couplings.

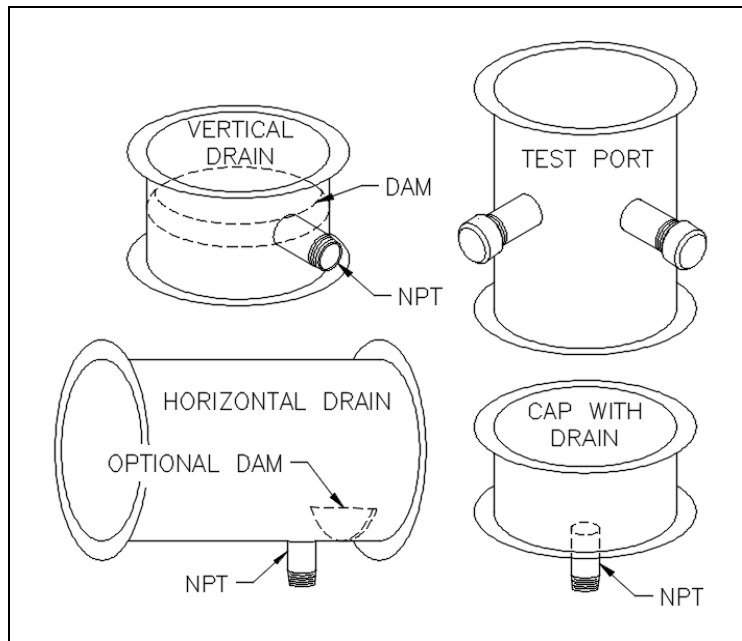




## SECTIONS & FITTINGS CONTINUED

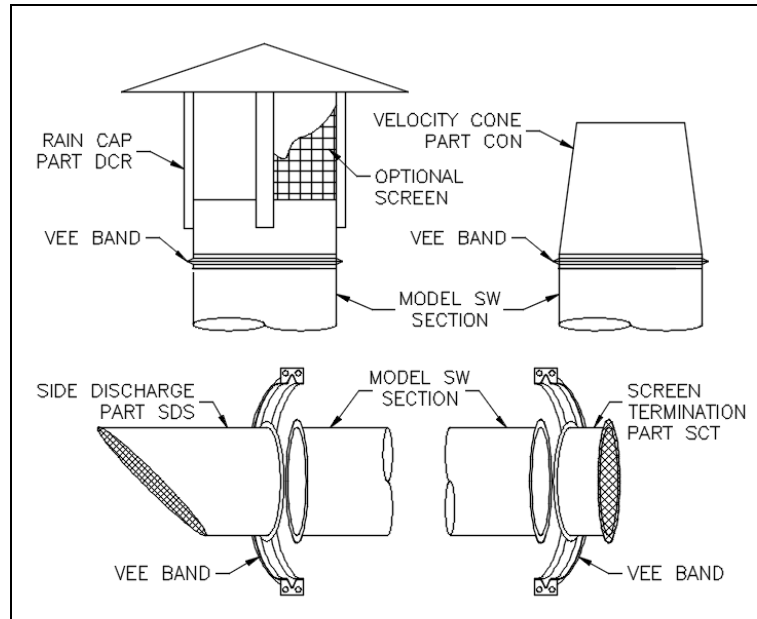
### TEST PROBES & DRAINS

Some uses for these fitting are: test probes, drainage, etc. Please refer to the Model SW brochure for additional information and part number designation.



### TERMINATIONS

Terminations connect to the liner flange per the joint assembly instructions. Van-Packer makes several terminations. Refer to the Model SW brochure for additional information on part number designations and the wide range of parts we offer to complete a system.



**Warning:** Terminations must be arranged so flue gasses do not jeopardize people, enter building openings or overheat combustible structures. In general a chimney must terminate 3' min. above the roof and be 2' above the highest part of the building within a 10' radius. In horizontal applications the vent must terminate 3' min. above any forced air inlet within 10' radius, 1' min. above any door, window or gravity air inlet, 2' min. from an adjacent building, and 7' above grade. Always refer to appliance manufacturer's recommendations, NFPA 211 and additional codes / authorities having jurisdiction for specific chimney/vent termination requirements.

## SECTIONS & FITTINGS - CONTINUED

### ADJUSTABLE EXPANSION AND VARIABLE LENGTH SECTIONS

These components cannot be installed in series and are non-load bearing. For some installations, I.E. between two fittings, field cutting of the slip liner may be required. The raw end of the slip liner must slide into the mating section a minimum of 2", more is better. The raw end must always be down-hill from the rolled flange end. Do not cut slip liners to the exact "flange to flange" distance of the components being joined. Carefully cut and position slip liners accordingly when installed near tee sections, elbows, etc. as to not restrict/obstruct the flow of the chimney/vent system.

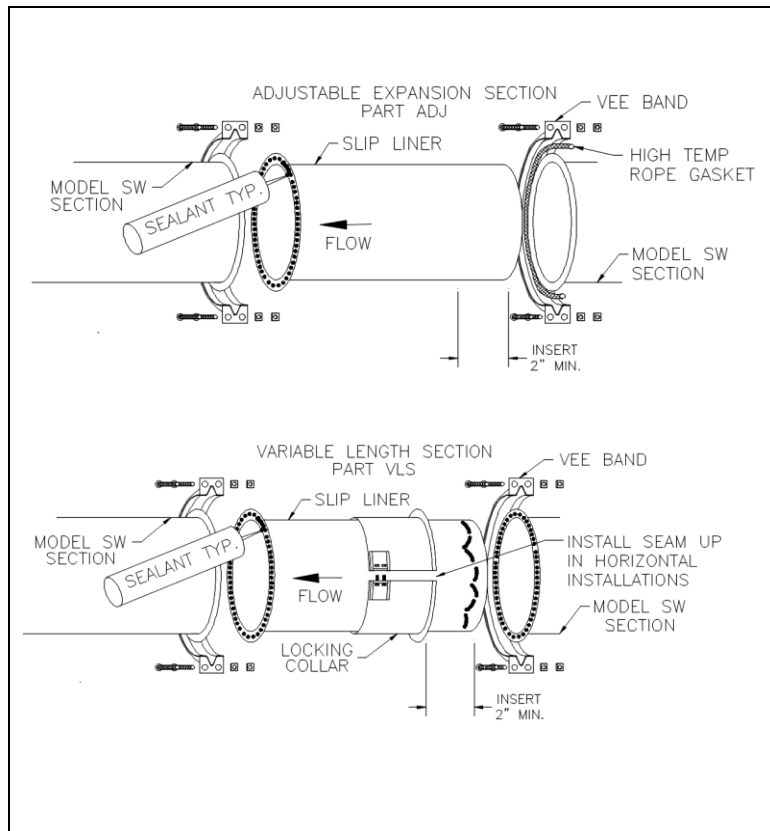
**NOTE:** Apply sealant per the pictures to the right and the joint assembly instructions. Slide the slip liner into the previous installed section before installing the following sections. On the variable length section remember to slide the locking collar on the slip liner before sliding it into the previous section.

#### PART – ADJ

Adjustable expansion section is intended to be used to span distances between 1-1/2" to 19-1/2" and compensates for thermal expansion. These components are comprised of a slip liner and rope gasket.

#### PART – VLS

Variable length sections are intended to be used to span distances between 4-1/2" to 19-1/2". These components are comprised of a slip liner and locking collar. This part simulates a custom length straight section.



## SUPPORTS & GUIDES

NOTES: The structural engineer for the project should select support member channels, beams, rods, wires/cables, etc. and joining methods in accordance with *Good Engineering Practices* to suite each specific application. Rods, wires/cables should only be used for hangers, NOT structural supports. Van-Packer accepts no responsibility for the design and/or modification of buildings or structures to accept the given load. All support framing, anchoring methods, etc. are by others.

### STRUCTURAL SUPPORTS

#### PLATE SUPPORT ASSEMBLY – PART PLS

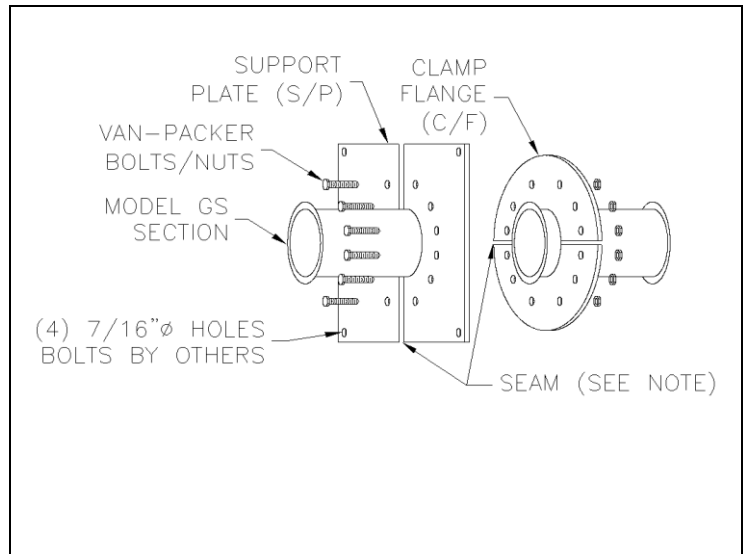
Plate support assemblies are used for vertical & horizontal structural anchor points. The PLS is to be used with structural support members, which are designed by the building structural engineer, not Van-Packer. Refer to page 7 for structural support limitations.

#### NOTE

The PLS consists of 4 pieces, 2 rectangular support plates and 2 round clamp flange halves. The PLS, in conjunction with field fabricated support members, provides support for the chimney/vent (The seam in the S/P must be rotated 90 degrees from the C/F seam)

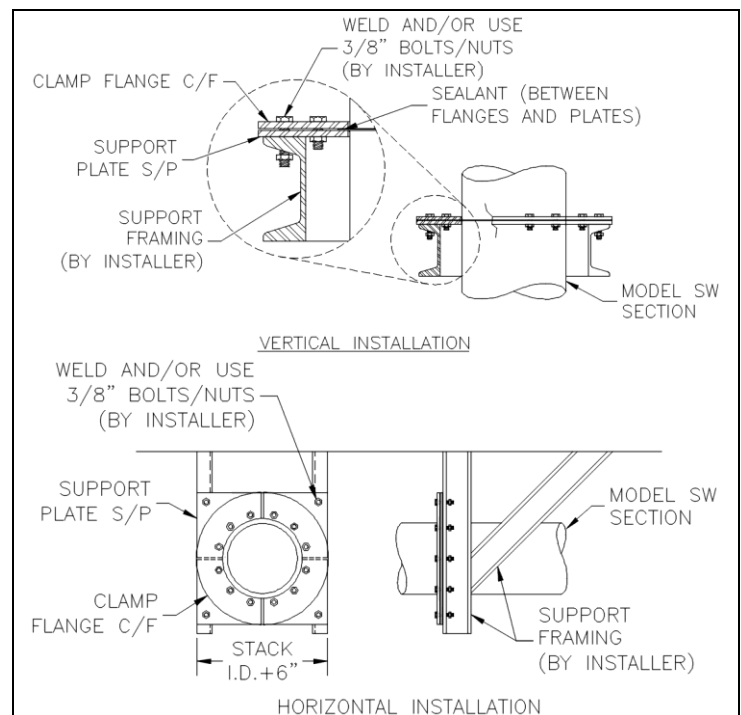
#### STEP 1

Apply sealant on the liner flange. Join the two liners together (no Vee Band is required) to capture the flanges between the support plate and the clamp flange. Bolt together the S/P and the C/F with the 3/8" bolts provided. Fully tighten the bolts.



#### STEP 2

Support all four sides of the support plate. Design support member and fasteners in accordance with good engineering practices to suit each specific application. Van-Packer assumes no responsibility for the design and/or modification of buildings or structures to accept the given loads



## SUPPORTS & GUIDES - CONTINUED

### WALL SUPPORT – PART WSA

The wall support (WSA) is intended to provide a rigid support location. In some instances, additional field fabricated support members from the building wall structure to the wall bracket may be required. Anchor bolts and design by others. This rigid support location is intended to withstand the weight of chimney/vent components, forces from thermal expansion & exhaust velocities, etc. Design support member and fasteners in accordance with good engineering practices to suit each specific application. Van-Packer assumes no responsibility for the design and/or modification of buildings or structures to accept the given loads. Do not install near combustible material. Refer to chart on page 7 for support limitations.

#### NOTE:

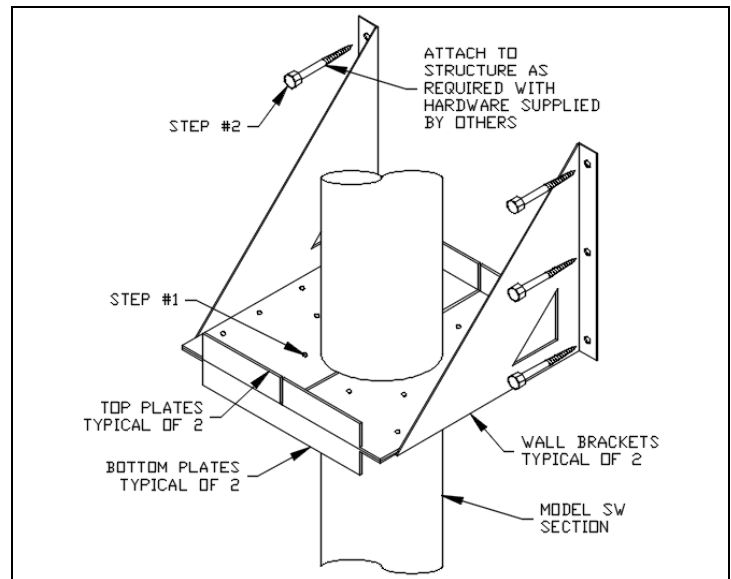
The WSA consists of 6 pieces, 2 wall brackets, (left and right), 2 bottom plates and 2 top plates.

#### STEP 1

Apply sealant on the liner flange. Join the two liners together (no Vee Band is required) to capture the flanges between the top and bottom plates. Bolt together the top and bottom plates with the 3/8" bolts provided. Fully tighten the bolts. These plates install just like the plate support assembly (page 11)

#### STEP 2

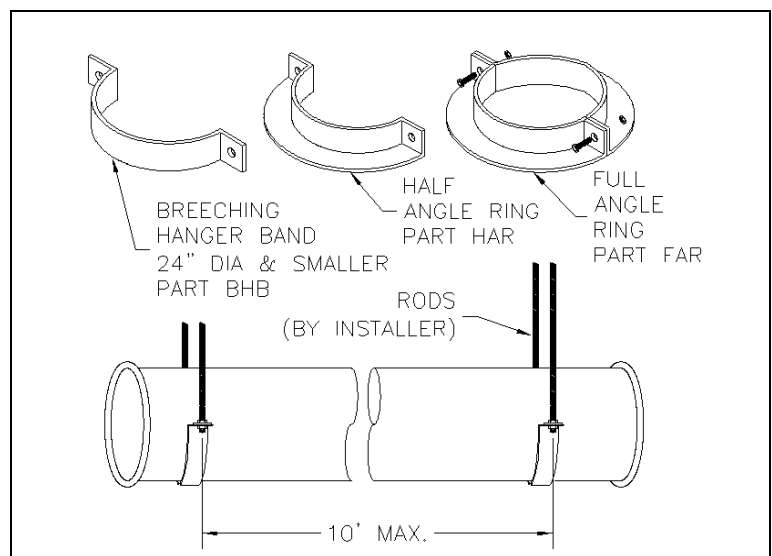
Anchor the wall brackets to the wall or additional field fabricated support members accordingly.



## HORIZONTAL SUPPORT HANGER

### HANGER SUPPORTS

Van-Packer offers a few options for Horizontal Hanger Supports. They support the weight of horizontal assembled chimney/vent lengths while also maintaining alignment as the chimney/vent expands and contracts. Use hangers in conjunction with support rods or other field fabricated support members that attach to the building or structure. Position hanger away from joint to allow for unrestricted expansion and contraction of the chimney/vent system.

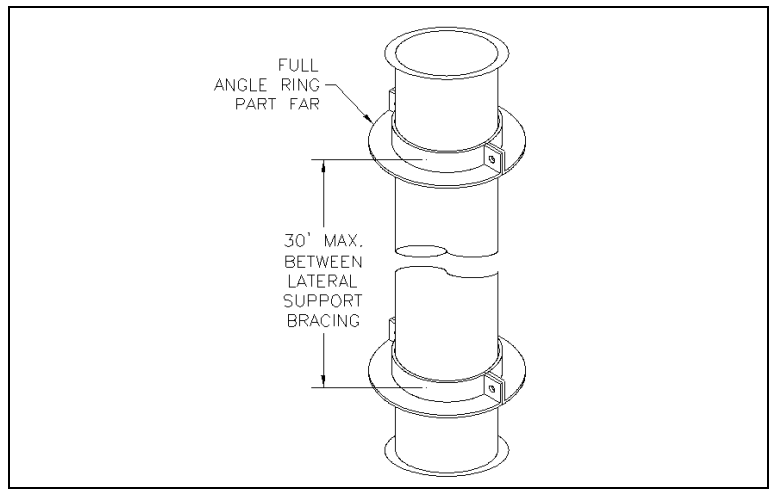


## SUPPORTS & GUIDES - CONTINUED

### LATERAL BRACES

#### FULL ANGLE RING – PART FAR

Full angle ring, in conjunction with field fabricated support members from the FAR attached to the building or structure, are intended to laterally brace the vertical assembled chimney/vent lengths from wind loads and to also maintain alignment. The FAR is comprised of (2) halves when bolted together fit loose around the chimney/vent to allow for expansion and contractions. Position the FAR away from the joint to allow for unrestricted expansion and contraction of the chimney/vent system.



#### GUY ATTACHMENT RING – PART GAR

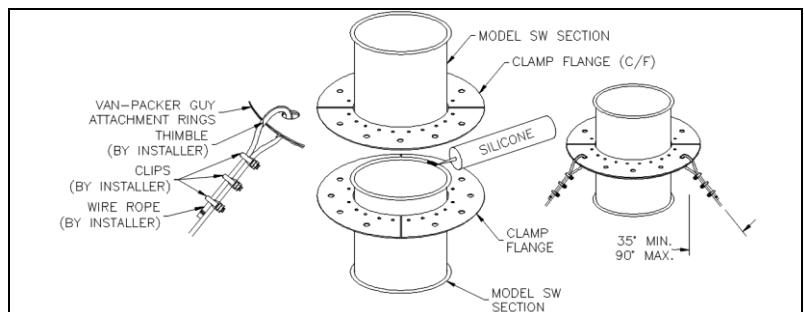
Guy attachment ring, in conjunction with cables, tensioners, anchors, and other miscellaneous hardware from the GAR attached to the building structure, are intended to laterally brace the vertical assembled chimney/vent lengths from wind loads and to also maintain alignment as the chimney/vent expands and contracts.

#### NOTE

The GAR consists of 4 clamp flanges (Do NOT line up seams of the clamp flanges. They should be rotated by 90 deg). Minimum of three cables spaced at 120 deg apart is required for one GAR. Cables, anchors and all other miscellaneous hardware is by installing contractor. Please note the cables must have tension on them at all times. (Do not over tension the wires) Some type of a tensioner must be used to keep the cables tight while still allowing for expansion and contraction

#### STEP 1

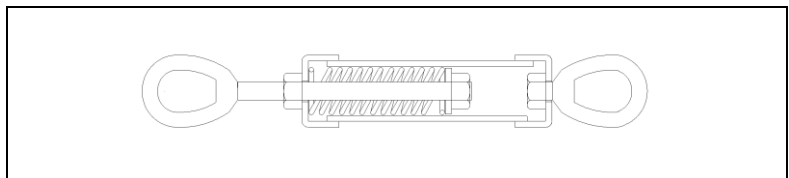
Apply sealant on the liner flange. Join the two liners together (no Vee Band is required) to capture the flanges between the clamp flanges. Bolt together the flanges with the 3/8" bolts provided. Fully tighten the bolts



#### GUY TENSIONER – PART 1500GUY

Van-Packer offers a 1500 pound Guy Tensioner that is good for up to 3" of expansion. Use the guy tensioner in conjunction with the guy attachment ring. The guy tensioner allows you to keep tension on the guy cables while still allowing for expansion and contraction. Cables, anchors, and other miscellaneous hardware is to be by the installing contractor. (Do not over tension the wires.)

**NOTE:** Van-Packer accepts no responsibility for the design and/or modification of buildings or structures to accept the given load.

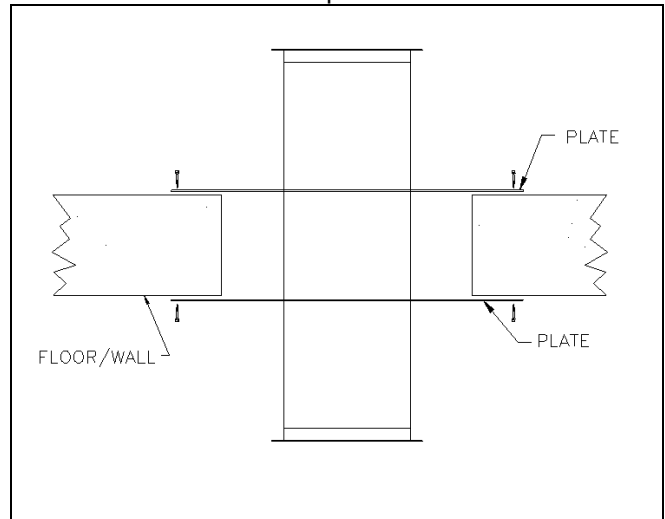


## PENETRATIONS FLOORS/CEILINGS & WALLS - FIRE RATING NOT REQUIRED

### FINISHING PLATE - PART FPL

The finishing plate can be used when the chimney/vent passes through a floor/ceiling or wall where a fire rating is not required. The minimum rough opening (square or round opening allowed) must be enough to allow the chimney/vent to pass through, approximately chimney/vent O.D. +2". The maximum rough opening is chimney/vent O.D. +8" (Max. opening size when chimney/vent is centered through the opening). The FPL includes (1) plate assembly. Please note two plate assemblies shown below in the picture.

Cut the rough opening accordingly and assemble the chimney/vent through. Position the plate halves (allow slight clearance to the chimney/vent O.D. to accommodate any expansion as needed). Anchor the plates with appropriate fasteners (by others) at hole locations. Do not locate joint near finishing plate (FPL). Must allow for unrestricted expansion and contraction of the chimney/vent system.



## ROOF PENETRATION

### FLASHING & COUNTER FLASHING - PARTS FLS & CFL

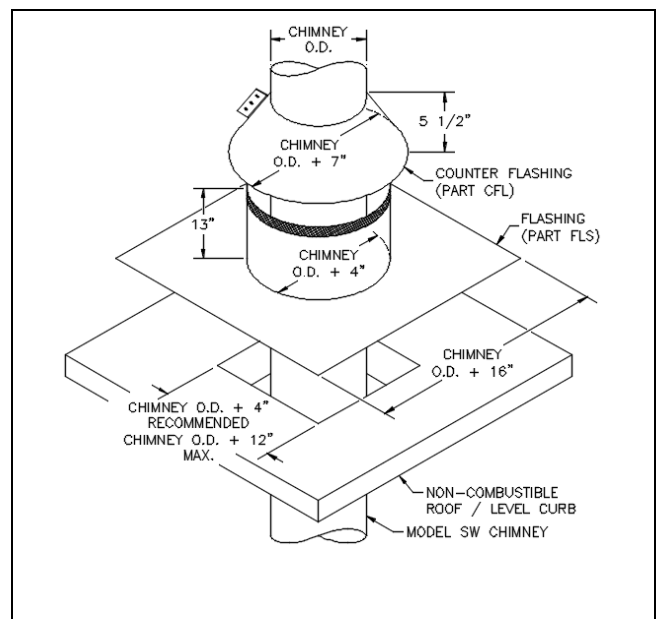
The flashing and counter flashing can be used when the chimney/vent passes through a non-combustible roof or curb. Pitched flashings are available upon special request. The minimum rough opening (square or round opening allowed) must be enough to allow the chimney to pass through, approximate chimney O.D. +4". The maximum recommended rough opening is chimney/vent O.D. +12" (reflects flat roof only with the chimney/vent centered through opening).

#### STEP 1

Cut the rough roof opening. Center the flashing around the opening and with appropriate fasteners attach it to the roof. Roofing materials to complete a weather tight seal should be installed over the square base of the flashing. (**Note:** Consult the roofing contractor)

#### STEP 2

Assemble the chimney/vent through the flashing accordingly. Next, install the counter flashing by positioning it around the chimney and against the screen at the top of the flashing. Then, with the provided fasteners draw up the counter flashing. Last, apply a bead of sealant at the seam of the counter flashing and chimney. **Notes:** Always clean any parts with acetone before applying sealant. Roofing materials must not fill the entire space between the roof and the bottom of the counter flashing.



## SYSTEM INSTALLATION EXAMPLE

Below shows an installation example. This example is intended to reflect general requirements for support locations, with respect to fittings and to also show standard support locations for an installation in accordance with its design listing. This example may not reflect all necessary supports, drains, etc. which may be required to meet applicable codes and to help ensure a well functioning chimney/vent system (refer to applicable codes as required).

