



HIGH EFFICIENCY POSITIVE PRESSURE VENTING SYSTEMS FOR CONDENSING APPLIANCES

CATEGORIES II, III AND IV
Single & Double Wall Construction

Installation Instructions

Models
CBH, CBHLA, CBHL1, CBHL, CBHL2



750-347





LISTED
28 KJ

This symbol shows that Cleaver-Brooks venting systems are listed in the US and certified for Canada under Underwriters Laboratories Inc. file no. MH48190. Tests are made in accordance with UL1738/ULC-S636-95 standards for venting systems.

IMPORTANT: READ THESE INSTRUCTIONS CAREFULLY PRIOR TO INSTALLATION.

- **EXAMINE ALL COMPONENTS FOR POSSIBLE SHIPPING DAMAGE PRIOR TO INSTALLATION.**
- **PROPER JOINT ASSEMBLY IS ESSENTIAL FOR A SAFE INSTALLATION. FOLLOW THESE INSTRUCTIONS EXACTLY AS WRITTEN. CHECK SECURENESS 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 MOVEMENTS THROUGH WALLS, CEILINGS, AND ROOF PENETRATIONS.**
- **DIFFERENT MANUFACTURERS HAVE DIFFERENT JOINT SYSTEMS AND ADHESIVES. DO NOT MIX PIPE, FITTINGS, OR JOINING METHODS FROM DIFFERENT MANUFACTURERS.**



Exhaust Solutions
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Elbows	17	Maintenance Notes:	
5° Elbow (E5)	17	Vent Cleaning: Other than for standard natural gas system applications where minimal maintenance is necessary. Keep your vent clean. Access should be provided for the inspection and cleaning of all sections of the vent. Have your system cleaned by a qualified vent system sweep. If you want to clean the vent yourself, clean with a nylon or metal system brush of the correct size. Do not use a brush that will scratch the stainless steel interior of the vent system.	
15° Elbow (E15)	17		
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WARNING

Failure to follow these installation instructions could cause FIRE, CARBON MONOXIDE POISONING, and/or DEATH. If you are unsure of installation requirements, contact Cleaver-Brooks.

A. GENERAL INFORMATION

LISTINGS:

Cleaver-Brooks venting models are listed by Underwriters Laboratories inc. (UL) under file MH48190 and tested in accordance with UL1738 Standard for Venting Systems for Gas-Burning Appliances, categories II, III and IV and the Canadian standard for type BH gas venting systems ULC- S636-95. Listings include the following vent product categories and diameters:

Table A1: UL/ULC Classifications

UL 1738		
Model	Classification	Diameters
CBH, CBHLA, CBHL, CBHL1, CBHL2	Gas-Burning Appliances 550°F	6" to 48" I.D.

CAN / ULC-S636-95		
Model	Classification	Diameters
CBH, CBHLA, CBHL, CBHL1, CBHL2	Type BH Gas Venting 550°F	6" to 48" I.D.

FEATURES

All models are part of the Industrial Positive Pressure products for industrial and commercial applications. They are prefabricated modular venting systems designed for quick assembly and using the same continuous laser welding stainless steel inner wall. All parts have a male and a female end and each model's parts fit into one another, eliminating the need for multiple kinds of adapters. This unique method of coupling provides an incomparable flexibility in selecting models of venting system. Model CBH is a single wall construction, models CBHLA and CBHL are a double wall construction with 1" and 2" air space between walls. Models CBHL1 and CBHL2 are also a double wall construction, but with 1" and 2" of mineral fiber insulation. The high quality of stainless steel inner wall construction using a continuous laser welding method for the longitudinal joints provides a high strength-to-weight ratio and low friction losses.

APPLICATIONS

UL 1738

1. Venting Systems for Gas-Burning Appliances, Categories II, III, and IV (550°F Vent Listing) - Under this category, models CBH, CBHLA, CBHL, CBHL1 and CBHL2 have been determined suitable for venting flue gases at a temperature not exceeding 288°C (550°F) above ambient, under continuous operating conditions, from gas, liquid, oil or solid fuel fired appliances.

2. Positive Pressure Listing - These models are rated for use at a maximum of 15 inch water column internal pressure when used in a positive pressure application.

CAN / ULC-S636-95

3. Standard for Type BH Gas Venting Systems (550°F Chimney Listing) - Under this category, models CBH, CBHLA, CBHL, CBHL1 and CBHL2 have been determined suitable for venting flue gases at a temperature not exceeding 288°C (550°F) above ambient, under continuous operating conditions, from gas, liquid, oil or solid fuel fired appliances.

SURROUNDINGS/ENCLOSURES

1. These venting systems are not intended for use in one or two-family dwellings.

2. Where the venting system extends through any zone of a building outside the area in which the heating appliance connected to it is located, it shall be provided with an enclosure having a fire resistance rating equal to or greater than the fire rating of the floor, wall or roof assemblies through which it passes.

3. Venting systems may penetrate a combustible roof or wall using the Ventilated Roof Flashing assembly or the Wall Firestop assembly. These are the only parts intended for use with combustible construction. All other parts, such as the Anchor Plate and Wall Support, Wall Guide and Floor Guide are for attachment to noncombustible construction.

4. See **CLEARANCES** for minimum clearances to combustible constructions. Contact local

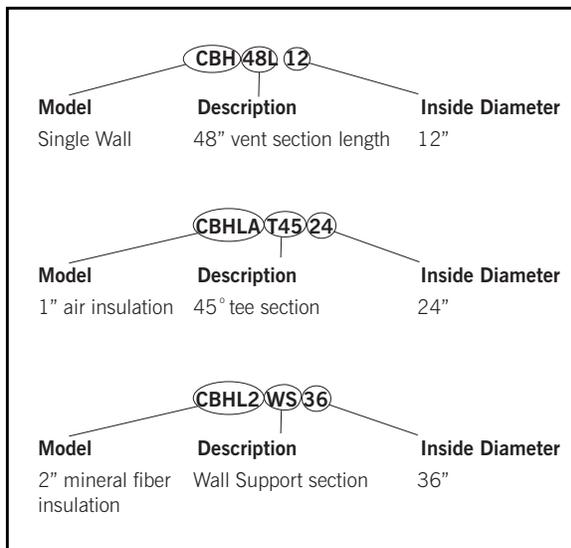
building or fire officials about restrictions and installation inspection in your area.

SYSTEM SIZING

Complete system sizing and capacity may be obtained from the "Chimney, Gas Vent, and Fireplace Systems" chapter of the ASHRAE Handbook or contact your C-B representative. In spite of any sizing guidelines, when sizing venting systems, it is most important that the appliance manufacturer's installation instructions be followed. Failure to follow these instructions may result in inadequate vent system performance and/or a violation of the equipment manufacturer's installation requirements. Proper operation of the venting system and appliance is dependent on the use of all parts specified by the manufacturer for use in the particular installation. The performance of the system may be affected if the proper assembly of all required parts is not accomplished.

PART NUMBERS

The examples below show how to identify models by part number.



CLEARANCES

The following tables give the minimum clearances to combustible constructions when

installing a venting system through a wall, floor, ceiling, joist or roof.

For unenclosed installation of models CBH/CBHLA/CBHL1 see Table A-2, for CBHL/CBHL2 see table A-3.

For enclosed installation of models CBHL and CBHL2 see table A-4.

Table A2: Clearances for unenclosed installations CBH/CBHLA/CBHL1

Inside Dia. (in)	CBH (in)		CBHLA (in)		CBHL1 (in)	
	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal
3	-	-	1	1	1	1
4	-	-	1	1	1	1
5	-	-	1	1	1	1
6	1.5	3	1	1	1	1
8	2	3	1	1	1	1
10	2	3	1.5	2	1.5	2
12	3	4	1.5	2	1.5	2
14	3	4	1.5	2	1.5	2
16	4	5	2	3	2	3
18	4	5	2	3	2	3
20	4	5	2	3	2	3
22	5	6	3	4	3	4
24	5	6	3	4	3	4
26	6	6	3	5	3	5
28	6	6	3	5	3	5
30	7	6	3	5	3	5
32	7	7	3	6	3	6
34	8	7	4	6	4	6
36	8	7	4	6	4	6
38	8	7	4	7	4	7
40	9	8	4	7	4	7
42	9	8	4	7	4	7
44	9	9	4	8	4	8
46	10	9	5	8	5	8
48	10	9	5	8	5	8

**Table A3: Clearances for unenclosed installations
CBHL/CBHL2**

Inside Dia. (in)	CBHL (in)		CBHL2 (in)	
	Vertical	Horizontal	Vertical	Horizontal
6	0.5	1	0.5	1
8	1.5	1	1	1
10	1.5	1	1	1
12	2	1.5	1.5	1.5
14	2	1.5	1.5	1.5
16	3	3	2	2
18	3	3	2	2
20	4	3	2	2
22	4	4	3	3
24	4	4	3	3
26	5	4	4	3
28	5	4	4	3
30	6	5	4	3
32	6	5	5	4
34	7	6	5	5
36	7	6	5	5
38	8	6	6	5
40	8	7	6	5
42	8	7	7	5
44	9	8	7	5
46	9	8	7	6
48	9	8	7	6

**Table A4: Clearances for enclosed installations CBHL/
CBHL2**

Diameter	Enclosed Vertical		Enclosed Horizontal	
	CBHL	CBHL2	CBHL	CBHL2
6" to 16"	1"	1"	3"	2"
18" to 32"	1"	1"	---	---

WARNING 
FOR ENCLOSED INSTALLATIONS, A VENTILATED FLASHING (VF) MUST BE USED (see Fig. E13 and Fig. E14)

OPENINGS

The following table serves to identify the minimum opening required when installing a venting system through a floor, ceiling, joist or roof made of combustible construction. For openings through a roof or wall, see details in section D.

Table A5: Chimney dimensions for 1" and 2" insulated models

Inside Diameter	1" thk. insul. O.D.	2" thk. insul. O.D.
A	B	B
6	8	10
8	10	12
10	12	14
12	14	16
14	16	18
16	18	20
18	20	22
20	22	24
22	24	26
24	26	28
26	28	30
28	30	32
30	32	34
32	34	36
34	36	38
36	38	40
38	40	42
40	42	44
42	44	46
44	46	48
46	48	50
48	50	52

Opening Dimension

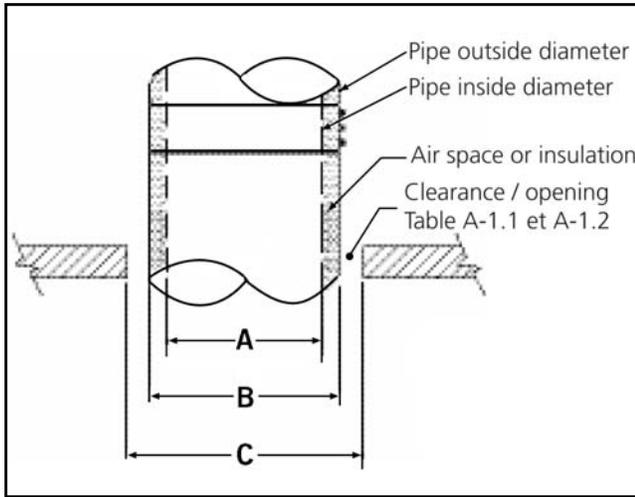
$B = A + (2x \text{ Insulation thk.})$

$C = B + (2x \text{ Clearance } *)$

*See table A-2 and A-3 for clearance

Note: for opening through roof or wall see section D of this manual.

Example: Opening through combustible construction:



WARNING 

DO NOT INSTALL ANY TYPE OF INSULATION IN THE CLEARANCE SPACES SURROUNDING THE VENT SYSTEM

Table A6: Minimum openings for enclosed installations

Ins. Diameter	Vertical		Horizontal	
	CBHL	CBHL2	CBHL	CBHL2
A	C	C	C	C
6	8	8	12	10
8	10	10	14	12
10	12	12	16	14
12	14	14	18	16
14	16	16	20	18
16	18	18	22	20
18	20	20	24	22
20	22	22	26	24
	Vertical		Horizontal	
Ins. Diameter	CBHL	CBHL2	CBHL	CBHL2

Table A6: Minimum openings for enclosed installations (Continued)

22	24	24	28	26
24	26	26	30	28
26	28	28	32	30
28	30	30	34	32
30	32	32	36	34
32	34	34	38	36
34	36	36	40	38
36	38	38	42	40
38	40	40	44	42
40	42	42	46	44
42	44	44	48	46
44	46	46	50	48
46	48	48	52	50
48	50	50	54	52

PIPE AND FITTING JOINT ASSEMBLY

All components have a male and a female end. The installation orientation is indicated on the labeling of each pipe section with an arrow. The arrow indicates the direction of the flue (See Fig. A-1). Clean all inner and outer surfaces of male and female ends with an appropriate organic solvent, such as acetone, MEK, or other commercial degreaser.

1. Before fitting the male and female ends in one another, a sealant is applied on the male end, at the gap between the inner band and the inner pipe (see Fig. A-1 and A-3, Table A-7).
2. After joining the male and female ends, a layer of sealant is applied inside the V-groove of the Assembly Band (AB) prior to its installation over the joint (see Fig. A-1, Table A-7).
3. The AB (Fig. A-2 and A-3 is installed and clamped in place with the 4 screws (supplied).
4. Insert the insulation strip around the inner joint assembly for insulated models CBHL1 and CBHL2.
5. The Finishing Band (FB) is then installed by slipping the edges of the band into the outer pipe edges and clamping it with the 3 screws (supplied).
6. Where the chimney passes outdoors, an exterior sealant (ES) is applied at the joint of the FB and the outer wall of the pipe for weather protection (see Fig. A-3, Table A-7).

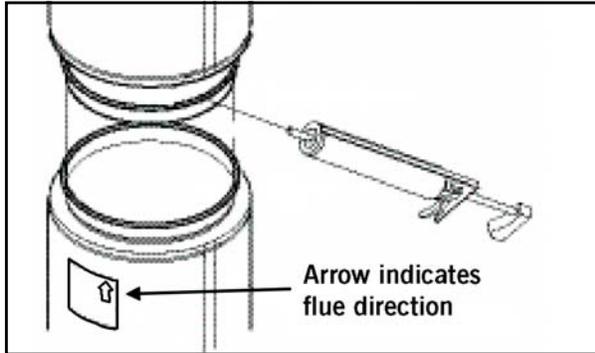


Figure A-1 - Flue Direction

CAUTION

THE FINISHING BANDS ARE DESIGNED TO SLIDE IN THEIR MATING GROOVES. DO NOT ATTACH BY SCREWS INTO THE OUTER CASING. THE SCREWS SUPPLIED ARE THE ONLY ONES NEEDED FOR PROPER ASSEMBLY.

DO NOT ALLOW SCREWS TO PENETRATE THE INNER PIPE. THIS CAN CAUSE CORROSION, GAS LEAKAGE, OR EXPANSION FAILURE.

NEVER USE SCREWS THROUGH THE OUTER JACKET OF A VARIABLE (VL) AND AN ADJUSTABLE (AL) LENGTH OR BELLOWS EXPANSION JOINT (EJ).

OBSERVE ADEQUATE SAFETY MEASURES WHEN USING A DEGREASER.

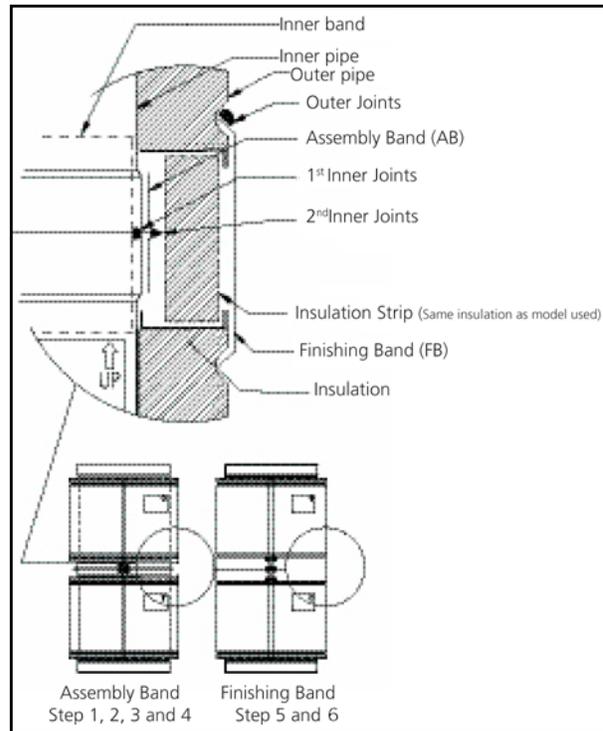


Figure A-3 - Assembled Joint

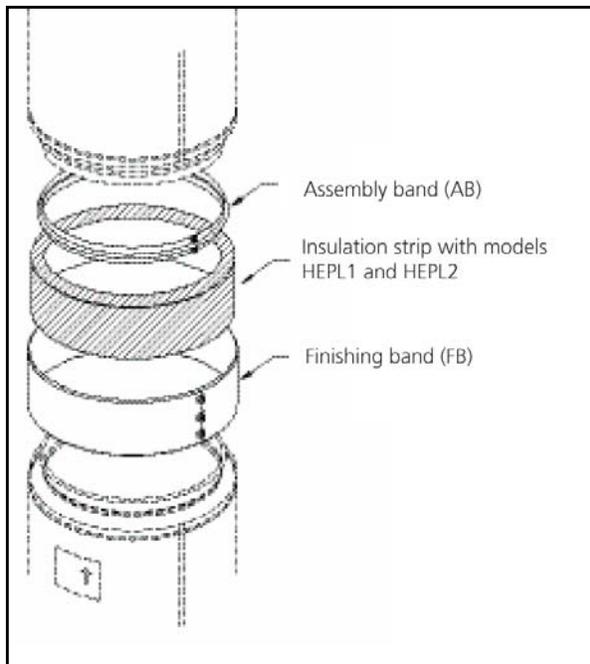


Figure A-2 - Joint Components

Table A7: Sealant Usage

Interior Installation				
Sealant Application	Supplier	Model	Color	Max. Temp.
Inner Joints	Adchem	X-Trasil H.T. 4706_3	red	500°F
[alternate]	GE	RTV-106	red	500°F
[alternate]	Dow Corning	RTV-736	red	500°F
Outer Joints	n/a	n/a	n/a	n/a
Exterior Installation				
Sealant Application	Supplier	Model	Color	Max. Temp.
Inner Joints	Adchem	X-Trasil H.T. 4706_3	red	500°F
[alternate]	GE	RTV-106	red	500°F
[alternate]	Dow Corning	RTV-736	red	500°F
Outer Joints	Adchem	Adsil 4809	Gray	375°F

SUPPORT METHODS AND HEIGHT LIMITS

1. Several support and guiding methods are used to anchor a vent against upward, downward and angular displacement.
2. These supports and guides used with thermal expansion devices prevent bending stresses on the vent system elbows and joints.
3. Supports and guiding installation methods are described in Section C. Certain limitations apply for proper installation of supports and guides. See Table A-8 and A-9.

Table A8: Maximum Vent Heights and Support Method

Support method	Code	CBH	CBHL/ CBHLA	CBHL1	CBHL2
Wall Support Assembly	WS				
Size 6" thru 12"		70'	70'	62'	55'
Size 14" thru 24"		45'	45'	40'	35'
Size 26" thru 36"		35'	35'	32'	30'
Size 38" thru 48"		30'	30'	26'	23'
Anchor Plate Assembly	AP				
Size 6" thru 48"		50'	50'	40'	30'
Tee Section	T				
Size 6" thru 24"		26'	26'	23'	20'
Size 26" thru 48"		20'	20'	17'	15'
Roof Support	RS				
Size 6" thru 48"		12'	12'	10'	8'
Suspension Band	SB				
Size 6" thru 48"		16'	16'	16'	10'

SUPPORT AND GUIDE SPACING

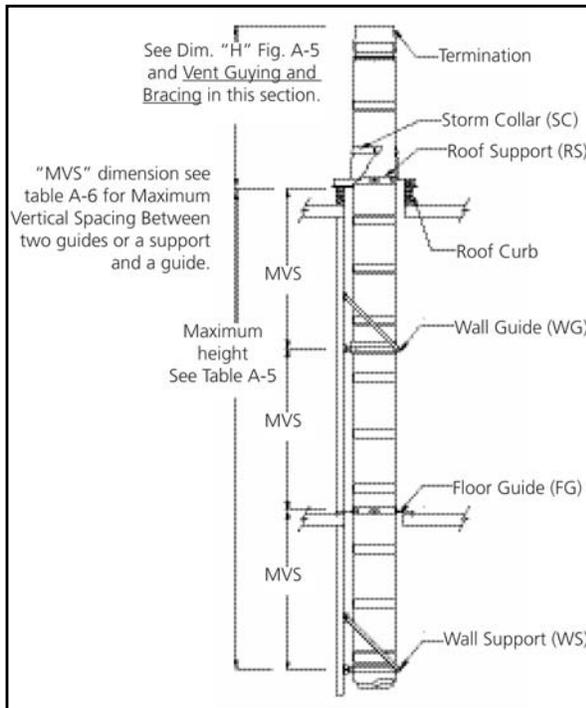


Figure A-4 - Maximum vent height and support

Note: When max. height from Table A-8 exceeded, re-support using another support.

Table A9: Maximum spacing between two guides or a support and a guide for all models

Inside Diameter (in)	CBH/CBHLA CBHL/CBHL1		CBHL2	
	MVS*	H**	MVS*	H**
6	11'-0"	10'-0"	10'-0"	10'-0"
8	11'-4"	10'-0"	10'-4"	10'-0"
10	11'-8"	10'-0"	10'-8"	10'-0"
12	12'-0"	10'-0"	11'-0"	10'-0"
14	12'-4"	10'-0"	11'-4"	10'-0"
16	12'-8"	10'-0"	11'-8"	10'-0"
18	13'-0"	10'-0"	12'-0"	10'-0"
20	13'-4"	10'-0"	12'-4"	10'-0"
22	13'-8"	10'-0"	12'-8"	10'-0"
24	14'-0"	10'-0"	13'-0"	10'-0"
26	14'-4"	10'-0"	13'-4"	10'-0"
28	14'-8"	10'-0"	13'-8"	10'-0"
30	15'-0"	10'-0"	14'-0"	10'-0"
32	15'-4"	10'-0"	14'-4"	10'-0"
34	15'-8"	10'-0"	14'-8"	10'-0"
36	16'-0"	10'-0"	15'-0"	10'-0"
38	15'-0"	10'-0"	14'-0"	10'-0"
40	14'-8"	10'-0"	13'-8"	10'-0"
42	14'-0"	10'-0"	13'-0"	10'-0"
44	13'-0"	10'-0"	12'-0"	10'-0"
46	12'-4"	10'-0"	11'-4"	10'-0"
48	11'-8"	10'-0"	10'-8"	10'-0"

* MVS = Maximum Vertical Spacing between two guides or a support and a guide in a vertical position.

** H = Maximum free standing Height above the roof.

MHS = Maximum Horizontal Spacing between two guides or a support and a guide is 10 Feet. Exception for Hanger Bracket assembly where max spacing is 5 feet.

PIPE WEIGHT

Pipe weight is given in pounds per foot of pipe for each diameter it is important to know the weight of the system section for vent support or guiding. Pipe weight (Table A-10) along with maximum vent system height (Table A-8) are necessary to calculate the proper anchor strength needed with Wall Supports (WS), Anchor Plate (AP) supports, Wall Guides (WG), Wall Bands (WB), and Suspension Bands (SB).

Table A10: Pipe weight in lb/ft

Inside diameter	Model				
	CBH	CBHLA	CBHL1	CBHL	CBHL2
6	2.2	4.5	5.8	5.1	8.0
8	2.9	5.8	7.4	6.3	10.0
10	3.6	7.1	9.1	7.6	12.0
12	4.3	8.4	10.8	8.9	14.1
14	5.1	9.7	12.4	10.2	16.1
16	5.8	11.0	14.1	11.5	18.1
18	6.5	12.3	15.7	12.8	20.2
20	7.2	13.6	17.4	14.1	22.2
22	7.9	14.9	19.1	15.4	24.2
24	8.7	16.2	20.7	16.7	26.3
26	9.4	17.5	22.4	18.0	28.3
28	10.1	18.8	24.1	19.3	30.3
30	10.8	20.1	25.7	20.6	32.4
32	11.5	21.4	27.4	21.9	34.4
34	12.3	22.7	29.1	23.2	36.4
36	13.0	24.0	30.7	24.5	38.5
38	13.7	25.3	32.4	25.8	40.5
40	14.4	26.6	34.1	27.1	42.3
42	15.2	34.1	42.0	35.0	51.1
44	15.9	35.7	44.0	36.6	53.5
46	16.6	37.3	45.9	38.2	55.8
48	17.3	38.9	47.9	39.8	58.1

Note: In general, no additional support is needed below the roof provided that the overall height of the chimney up to the roof support does not exceed the maximum height described in Table A-8.

Note: Max. height over the roof for single guying or roof band is $MVS + H$. For greater heights, see Fig. A-8.

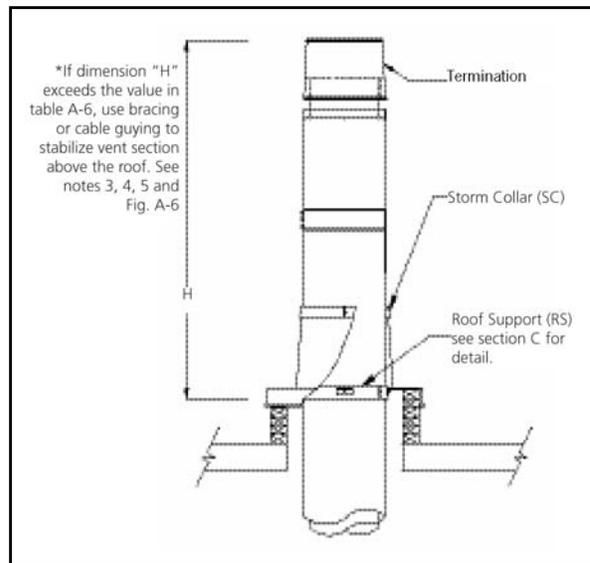


Figure A-5 - Maximum freestanding vent height

VENT GUYING AND SPACING

1. Proper guying and bracing is essential for the part of the vent system that extends above the roof or a parapet wall. The vent at this point is subject to wind conditions, and needs special attention for proper stabilization.

2. For low freestanding installations the system needs no special guying or bracing if overall height between the roof support and the top of the vent is no greater than 10 feet. See Fig. A-5 for detail.

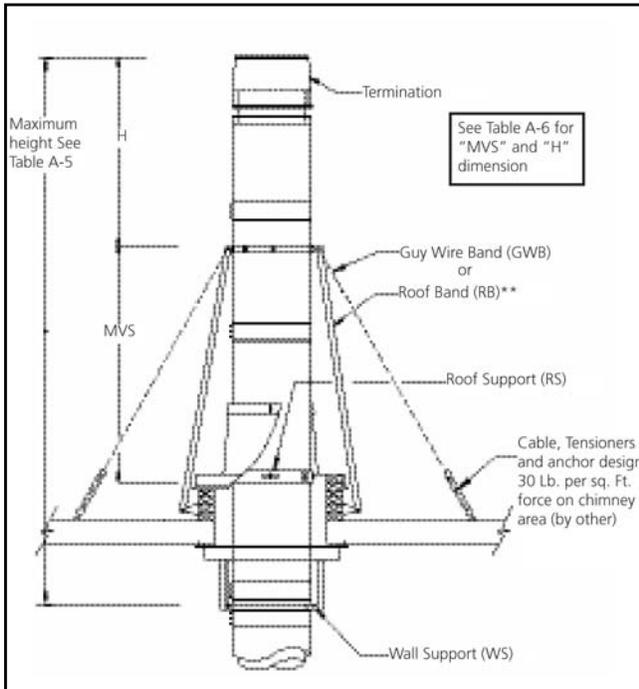


Figure A-6 - Vent height with rigid bracing or guying option

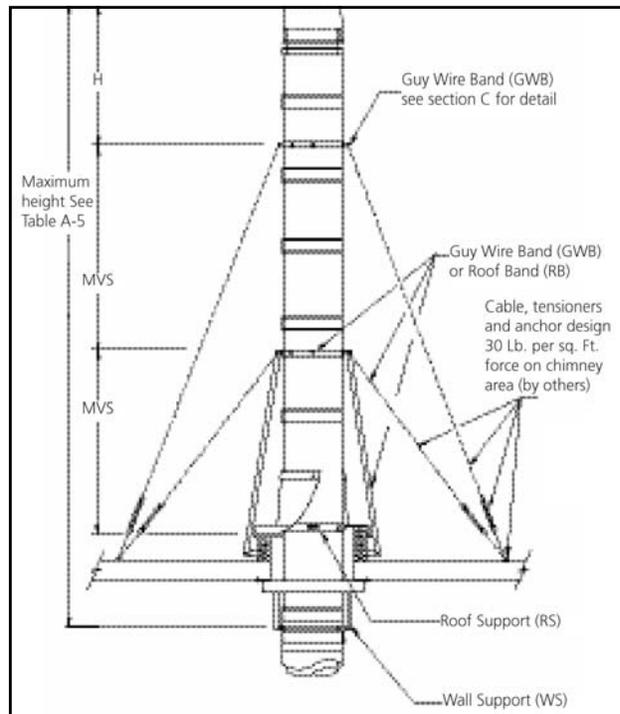


Figure A-7 - Maximum vent height with multi-level guying

3. For above-roof installations where freestanding height limits are exceeded, cables or bracing are needed to resist heavy wind conditions and to prevent structural damage. Rigid bracing can be used where chimney height above roof is relatively low.

4. Roof Band assembly (RB) model part is used for rigid bracing in above-roof installations. Guy Wire Band (GWB) model can also be used as an option, instead of the roof band assembly.

5. In addition to the roof support where freestanding height is exceeded, the vent needs to be secured below the roof with a support to protect the roof flashing against additional loads caused by wind on the exposed vent system (See Fig. A-6).

6. Greater height above the roof can be allowed by stabilizing the exposed vent with additional guying cables as seen in Fig.-A-7.

Note: Max. height over the roof is (2xMVS) + H. For greater height use of welded joints is necessary.

TERMINATION HEIGHT

Vent systems shall terminate above the roof level in accordance with the following requirements:

1. Five feet above the roof level or any adjacent flat roof, wall parapet or air intakes, and/or in accordance with the following NFPA 211 requirements.
2. Where chimney terminates at less than 10 feet from any adjacent ridge, wall or parapet, the chimney shall terminate at minimum 3 feet above the ridge, wall or parapet.
3. Where chimney terminates at more than 10 feet from ridge, wall or parapet, a minimum height of 2 feet shall be required above the ridge wall or parapet.

Vent systems that exit the structure through a sidewall or the like shall terminate in accordance with the following requirements:

1. Located above the snow line in geographical areas where snow accumulates.
2. Not located in traffic areas, such as walkways, unless the venting system is at least 7 feet (2.13m) above the ground.

C-B Exhaust Solutions

The installation of the venting system relative to appliances that incorporate combustion air inlet systems shall have a venting system that terminates:

1. 6 feet (1.8 m) or more from the combustion air intake of any appliance
2. More than 3 feet (0.91 m) from any other building opening, gas utility meter, service regulator, and the like.
3. Less distance if specified in the appliance's instructions.

The venting system shall not be routed into, through, or within any other vent such as an existing masonry or factory built chimney flue (exception: a masonry chimney flue may be used to route the venting system if no other appliance is vented into the same masonry chimney flue and the installation instructions specify such restrictions).

Contact local building or fire officials about restrictions and installation inspection in your area.

MULTI-BOILER EXHAUST NOT RECOMMENDED

A common exhaust system for multiple boiler installation is generally not recommended. Check with your boiler manufacturer prior to common exhaust system design, because exhaust gas from operating units tends to flow to stand-by units where condensation may form.

WATER IN BOILER AT START-UP MAY CAUSE DAMAGE. IN GENERAL, A SEPARATE EXHAUST SYSTEM SHOULD BE PROVIDED FOR EACH BOILER.

B. TEES, ELBOWS, INCREASERS & OFFSETS

90° TEE (T90)

1. Generally used to connect the horizontal length from an appliance to the vertical length in boiler exhaust systems.

2. The 90° Tee (T90) will support up to 20 to 30 feet of vertical chimney height when it is supported from below.

3. The assembly includes a Finishing Band (FB), Assembly Band (AB) and insulation strip (where applicable). Joint assembly for the tee, elbow, Tee Cap (TC) and connection to the pipe sections is done in the same manner as described in Section A, Piping and Fitting Assembly.

4. A Tee Cap (TC) or Drain-Tee Cap (DC) may be used to block one of the openings for purposes of cleaning, inspection, or drainage.

5. When used for drainage purposes, the Drain-Tee Cap (DC) is installed at the base of the tee and is piped to a suitable drain (3/4" diameter) and serves to collect rain or condensation water (see Fig. B-5).

90° TEE SUPPORT

When designing a boiler exhaust system, special care must be observed in supporting Tees and Elbows. Following are design guidelines for this purpose.

1. Provide access for easy removal of tee cap.
2. Never use the system outer casing for support.

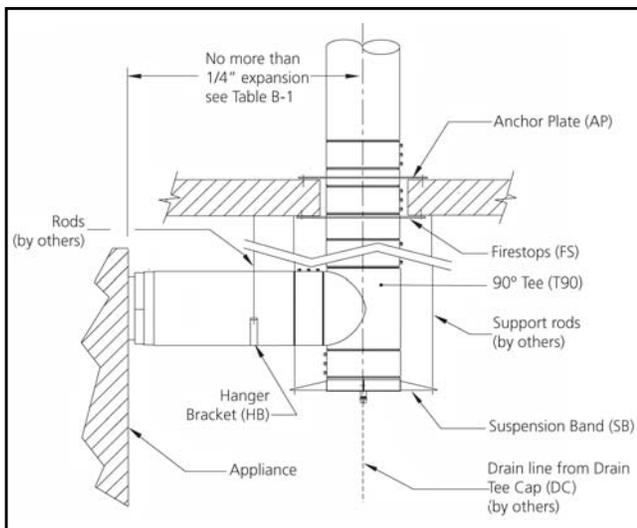


Figure B-1 - Single axis 90° Tee (T90) support from roof and ceiling

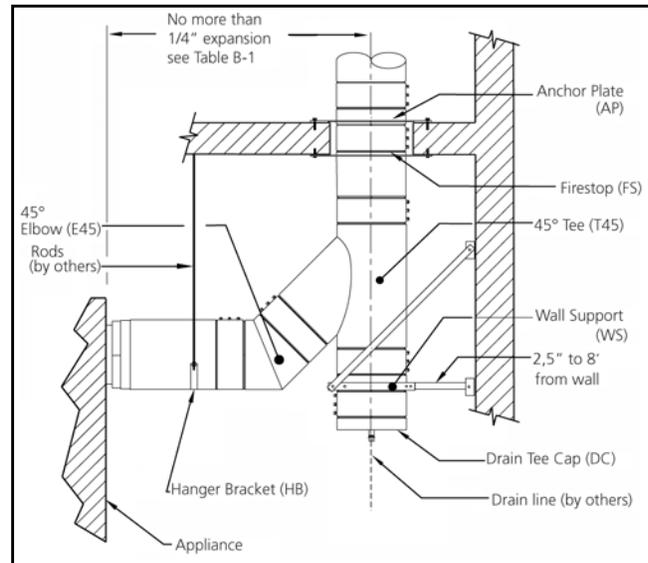


Figure B-2 - Single axis 45° Tee (T45) support from interior wall

45° TEE (T 45)

1. The use of this part will require an additional 45° Elbow (E45) to provide the low resistance 90° flow direction change.

2. The 45° Tee (T45) is also used for multiple appliance exhaust in manifold breaching. It allows lower friction losses those resulting in smaller manifold diameter. See Fig.B-7.

3. Like the 90° Tee (T90), a Tee Cap (TC) or Drain-Tee Cap (DC) may be used to block one of the openings for purposes of cleaning, inspection or drainage. See Fig B-4 and B-5 for tee caps installation.

4. The 45° Tee (T45) will support 20 to 30 feet of vertical vent height when it is supported from below. The assembly includes a Finishing Band (FB), Assembly Band (AB), and insulation strip (where applicable).

5. Joint assembly for the tee, elbow, tee cap and connection to the pipe sections is done in the same manner as described in Section A, Piping and Fitting Assembly.

45° TEE SUPPORT

1. Provide access for easy removal of tee cap.
2. Never use the system outer casing for support.

WYE 90° (W90)

Used for inspection or pipe cleaning, the Wye 90° (W90) is normally used in grease duct applications (see grease duct manual).

TEE CAP (TC)

1. Used to block one of the openings of a horizontal or vertical tee. Removable, it facilitates access for inspection and maintenance of the vent.
2. The assembly includes a Finishing Band (FB), Assembly Band (AB), and insulation strips (where applicable).
3. Joint assembly between the Tee Cap and the Tee is described in Section A, Piping and Fitting Assembly.

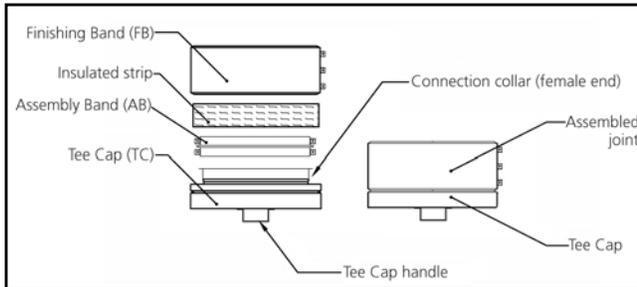


Figure B-3 - Tee Cap

DRAIN-TEE CAP

1. Used to block the lower vertical opening of a tee. It serves to collect rainwater that may enter the vent system or water caused by condensation.
2. Removable, it facilitates access for inspection and maintenance of the vent.
3. To be connected to a drain of 3/4" diameter NPT. It is connected to the tee with the joint assembly.
4. Joint assembly between the Drain-Tee Cap (DC) and the tee is done in the same manner as described in Section A, Piping and Fitting Assembly.

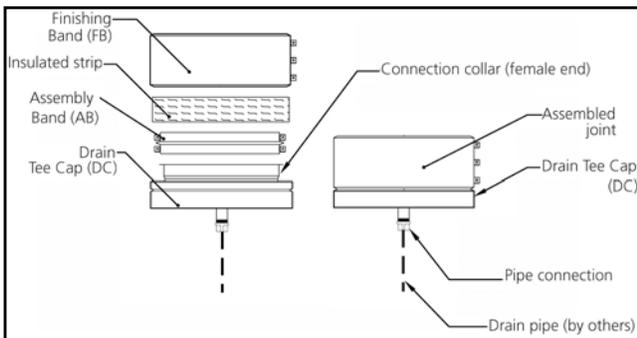


Figure B-4 - Drain Tee Cap

INCREASER (I)

1. Used to increase the diameter of the system.
2. The Increaser (I) can be connected directly to a 45° Tee (T45). (See Fig.B-6) and can be used in a multiple appliance manifold (see Fig.B-7).
3. The Increaser (I) includes a transition section tapered at a 14° angle, which provides a lower friction loss coefficient (see Fig.B-5).
4. Larger diameter Increasers (I) are available on order or as specified. The angle of the Increaser (I) is standard but the length of the fitting varies depending on the diameter to be increased.
5. Joint assembly between the Increaser (I) and the vent is done in the same manner as described in Section A Piping and Fitting Assembly.

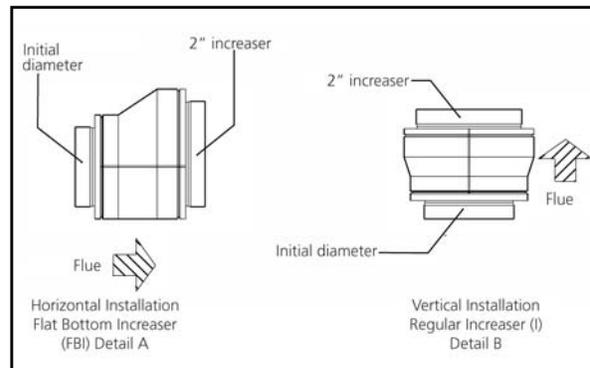


Figure B-5 - 2" Diameter Increaser

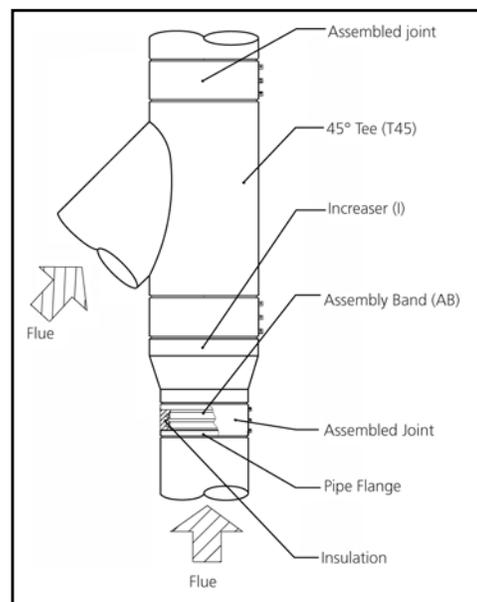


Figure B-6 - Increaser with 45° Tee

REDUCER

1. Used to reduce the diameter of the vent. It is used mainly at the inlet of the vent system.
2. Specify the diameter of the inlet and outlet of the fitting. It is connected to the vent in the same manner as for Increaser (I) model except that the ends are inverted.
3. Joint assembly between the Reduce (R) and the vent

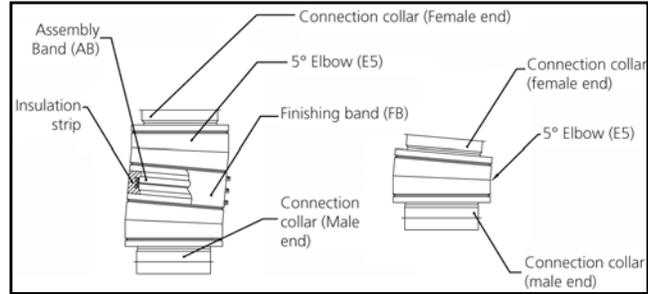


Figure B-8 - 5° Offset using 2 x 5° Elbows

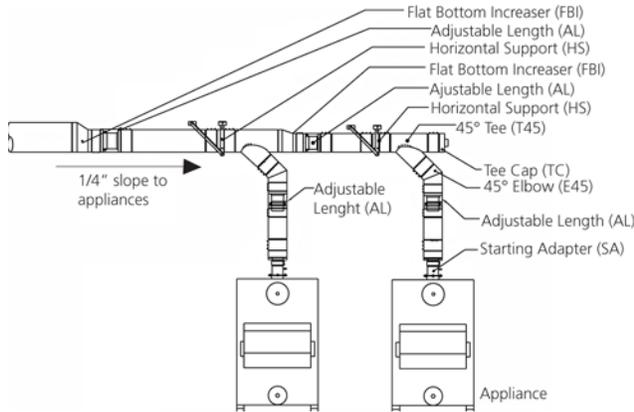


Figure B-7 - Manifold using 45° Tee and Increaser

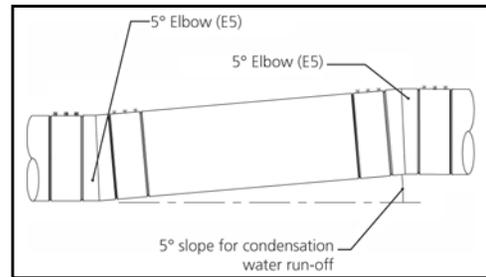


Figure B-9 - 5° Horizontal slope for condensation water run-off using 5° Elbows (E5)

ELBOWS

1. Elbows are used for changes in direction in horizontal or vertical portions of a vent system.
2. All elbows feature the standard joint assembly as described in Section A Piping and Fitting Assembly.
3. Elbows are used in combination to make up different angles ranging from 5° to 90° in horizontal and vertical breechings of the vent system.
4. When elbows are used for offsets in the main vertical portion of the vent, caution should be exercised to prevent excessive bending forces and/or design problems (see OFFSETS in this section for details).

Any horizontally installed portion of a venting system shall have a slope (upwards for Category II, III or IV appliances or downwards for Category III or IV appliances) not less than 1/4 inch (6.4mm) every 12 inches (305mm) to prevent collection of condensate at any location in the assembly.

Means shall be provided for draining the condensate. Due to ice build up and blockage, it is required that the proper sloping be employed when the vent is installed in a horizontal installation. Refer to the appliance manufacturer's installation instructions for further details regarding the installation of the condensate drain fittings.

5° ELBOW (E5)

1. Used for offset or deviation of the horizontal part of the vent system by 5°.
2. May be used to slope a vent to facilitate the run-off of condensation water from the vent system (see Fig.B-7).

15° ELBOW (E15)

Used for offset or deviation of the vent by 15°.

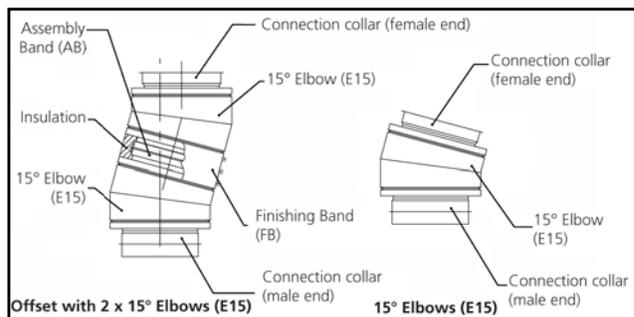


Figure B-10 - 15° Elbow

30° ELBOW (E30)

Used for deviation of the vent by 30°.

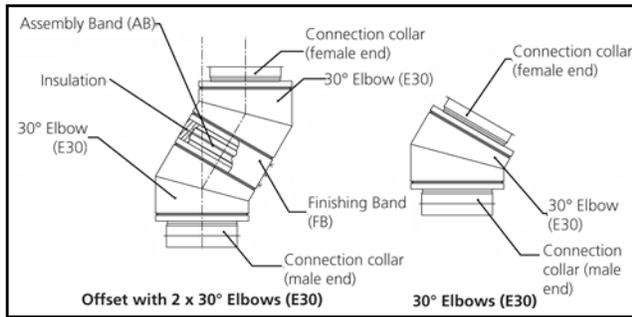


Figure B-11 - 30° Elbow

45° ELBOW (E45)

Used for deviation of the vent by 45°. Can also form a 90° elbow by using two (see fig. B-13).

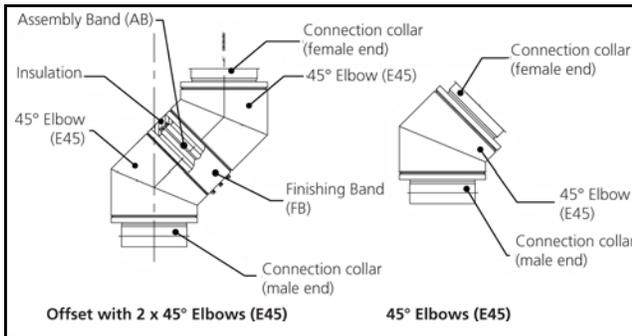


Figure B-12 - 45° Elbow

90° ELBOW (E90)

Used for deviation of the vent by 90°

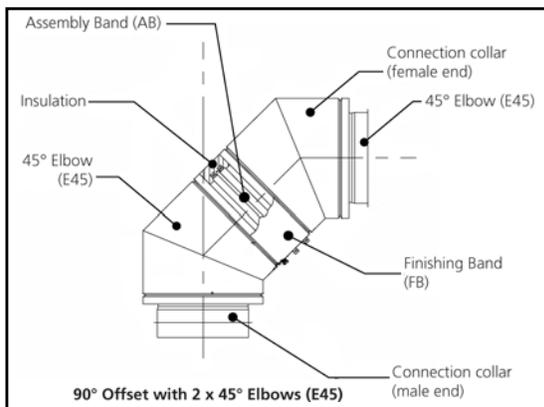


Figure B-13 - 90° Elbow 2 x (E45) or also 1 piece 90° Elbow (E90)

OFFSETS

1. Except where absolutely necessary, sloped or horizontal offsets in the vertical portion of a system above the breeching should be avoided.

2. Because elbows (and fittings) can only take limited forces due to any bending moments, special care should be exercised in designing the bracing for elbows.

3. Structural parts such as posts or beams may also be needed to hold vent supports in position.

4. Vent systems for combination fuel heating appliances that are capable of burning solid fuel or are convertible to solid fuel are limited to the same 30° slope even if the current choice of fuel is gas or oil.

5. The length of offset, if one is necessary, is determined by strength considerations. The maximum dimension between supports, given as the "MHS" dimension in Section A of these instructions, is applicable to all horizontal and sloped orientations. (See Fig.B-8)

6. With frequent re-support, there is no structural or operating limit to the length of horizontal or sloped portions of a vent, providing the system meets the capacity, pressure drop of available equipment.

7. The carrying capacity of supports and their structural attachments must take into account the weight of the offset plus whatever vertical pipe is carried by that support.

8. Height limits for supports are tabulated in Section A of these instructions.

9. The ends of any sloped or horizontal offset must be anchored to prevent overstressing elbows.

10. The vertical sections of system above the offset must also be supported or anchored and guided where necessary.

11. Roof Support (RS), Wall Support (WS), Wall Guide (WG) may be used in a variety of ways for offset support to achieve the structural stability of the vent system. Preferred methods of using supports are shown in Section C.

12. Re-supports such as those shown in Fig.B-8 must be securely anchored to walls, posts, or locally fabricated rigid framework. This framework must be designed to assure stability of attached supports, such as Anchor Plate (AP) supports and Wall Supports (WS).

13. Supports suspended by threaded rods or from small size angles or straps are usually not satisfactory to resist bending moments due to offsets.

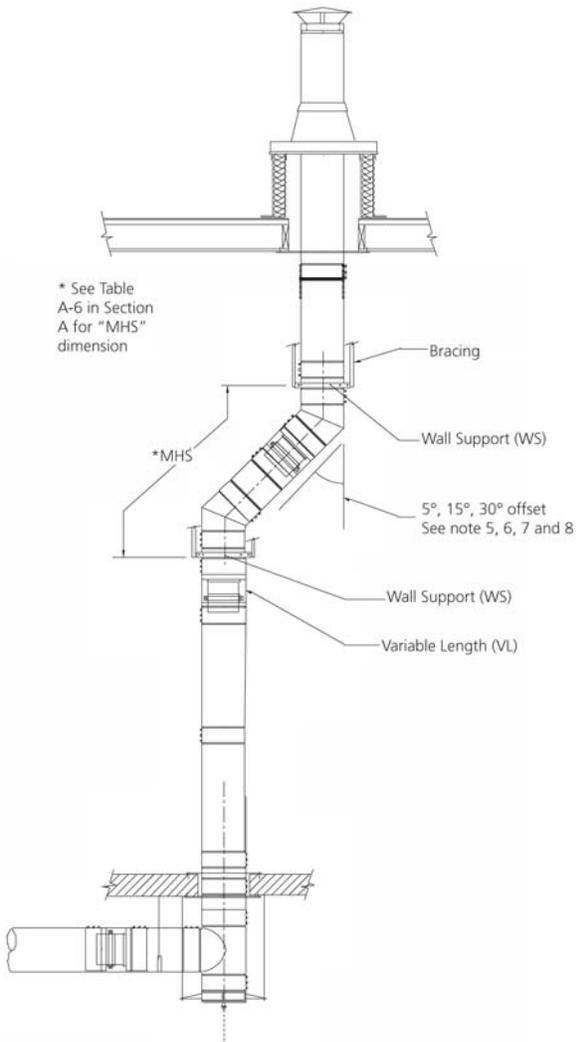


Figure B-14 - Maximum Horizontal Offset

SPECIAL PARTS

Available when specified, special parts or components for vent systems can be factory-built to accommodate field situations where standard parts cannot be used.

C. STRUCTURAL SUPPORT AND GUIDING

HANGER BRACKET ASSEMBLY (HB)

Used to support the flue in horizontal runs. To be installed by means of 3/8" diameter threaded suspension rods (by others). Generally installed every 5'-0" of chimney section (see Fig. C-1).

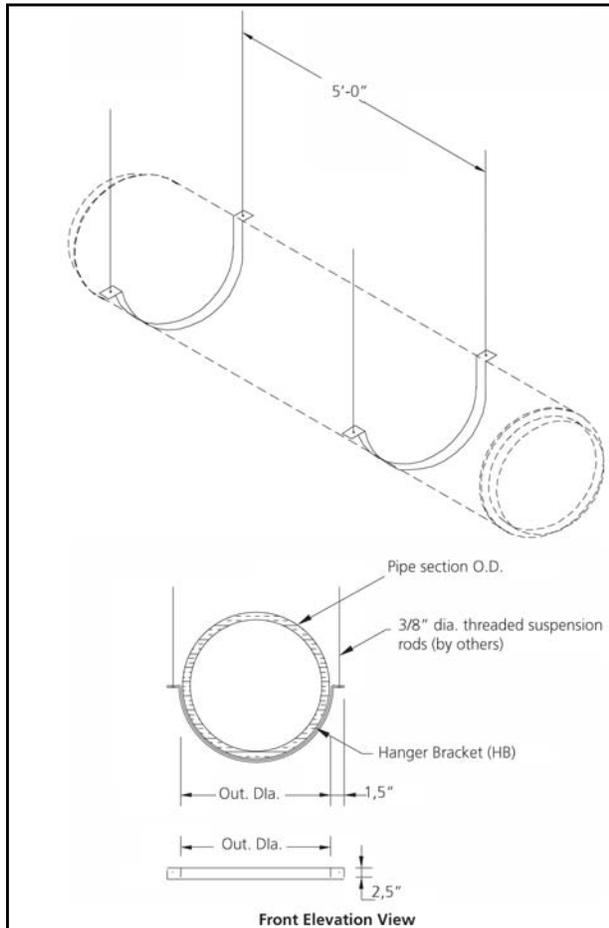


Figure C-1 - Hanger Bracket Support Assembly (HB)

WALL SUPPORT ASSEMBLY (WS)

1. The Wall Support (WS) Assembly consists of a 12" vent (11" effective length) section, continuous laser welding to a square support plate.
2. The vent section, which extends both above and under the support plate is used as connection collars for quick and easy joint assembly.
3. The assembly is supplied with mounting brackets and angle struts for diagonal bracing (See Fig. C-2), Assembly Band (AB) and Finishing Band (FB).
4. The vent sections are joined to the Wall Support (WS) in the same manner as described in Section A Pipe and Fitting Joint Assembly. Fig. A-1, 2 and 3. Also See Fig. C-2 in this Section.

5. Used to support the vent in vertical runs, it maintains the system at an adjustable distance between 2.5" and 10" from the wall.

6. The diagonal braces may be attached to the wall either above or below the supporting plate.

7. The Wall Support (WS) is the maximum strength support for vertical models. It is used to maintain joint alignment.

8. The support may be required to support both upstream and downstream parts of a tee, which will be protected from excessive bending stresses.

9. The wall support method is intended only for attachment to NON-COMBUSTIBLE surroundings such as steel structure, concrete blocks or other masonry, with clearances adequate for access and assembly. Heat conduction can be reduced by means of spacers. Wall Support (WS) is not suitable for attachment to wood or combustible wall structures. Wall Support must be secured to the building with rigid structural framework.

Height Limit: See Section A Table A-8 for maximum height of Wall Support (WS)

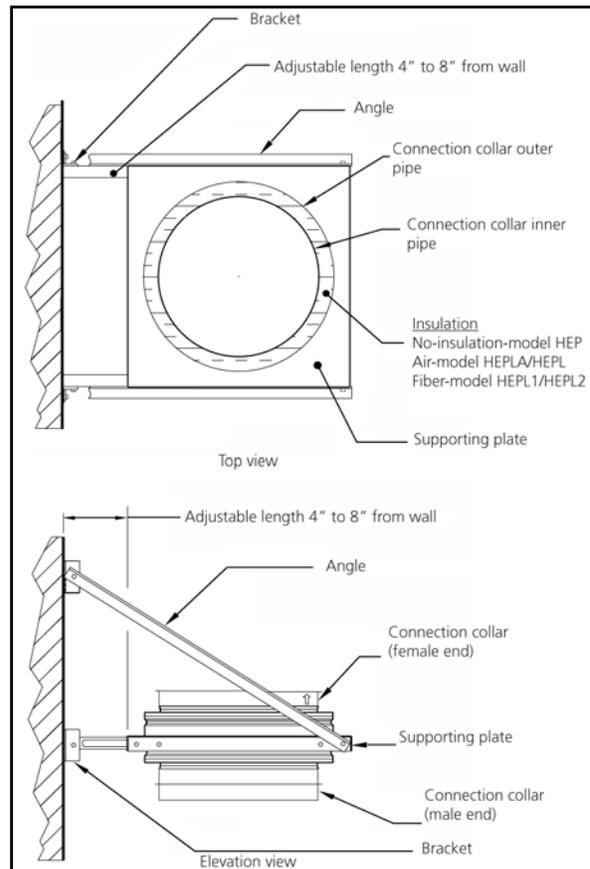
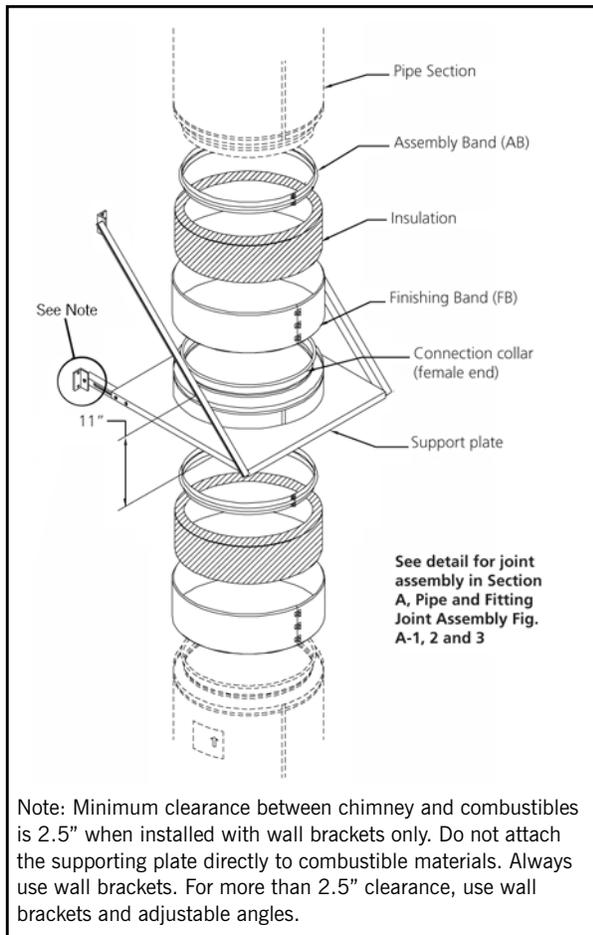


Figure C-2 - Wall Support assembly (WS)

Note: For connection of the Wall Support (WS), Horizontal Support (HS) and Anchor Plate (AP) support to the Vent system, see typical Installation detail (Fig. C-2a) on next page.



Note: Minimum clearance between chimney and combustibles is 2.5" when installed with wall brackets only. Do not attach the supporting plate directly to combustible materials. Always use wall brackets. For more than 2.5" clearance, use wall brackets and adjustable angles.

Figure C-3 - Typical joint for Wall (WS), Horizontal (HS), and Anchor Plate (AP) support.

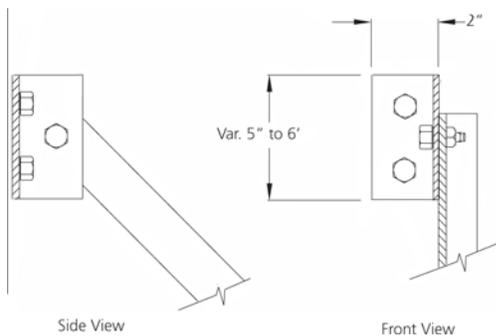


Figure C-4 - Wall Bracket Detail

HORIZONTAL SUPPORT (HS)

1. The Horizontal Support assembly (HS) consists of a 12" vent (11" effective length) section, continuous laser welding to a square support plate.
2. The vent system section, which extends both ahead and behind the support plate, is used as connection collars for quick and easy joint assembly.
3. The assembly is supplied with mounting brackets, an Assembly (AB) and Finishing Band (FB). See Fig.C-3.
4. The system sections are joined to the Horizontal Support in the same manner as described in Section A, Pipe and Fitting Joint Assembly. Fig. A-1, 2 and 3. Also See Fig.C-2 in this Section.
5. Used to support the vent in horizontal runs. It holds the vent system at an adjustable distance from the ceiling. The diagonal braces may be attached to the ceiling either ahead or behind the supporting surface. See Fig. C-3.
6. The horizontal support must be secured to the building with a rigid structure. Under no circumstance should a horizontal support be secured with threaded suspension rods, since this will not prevent pipe sway.

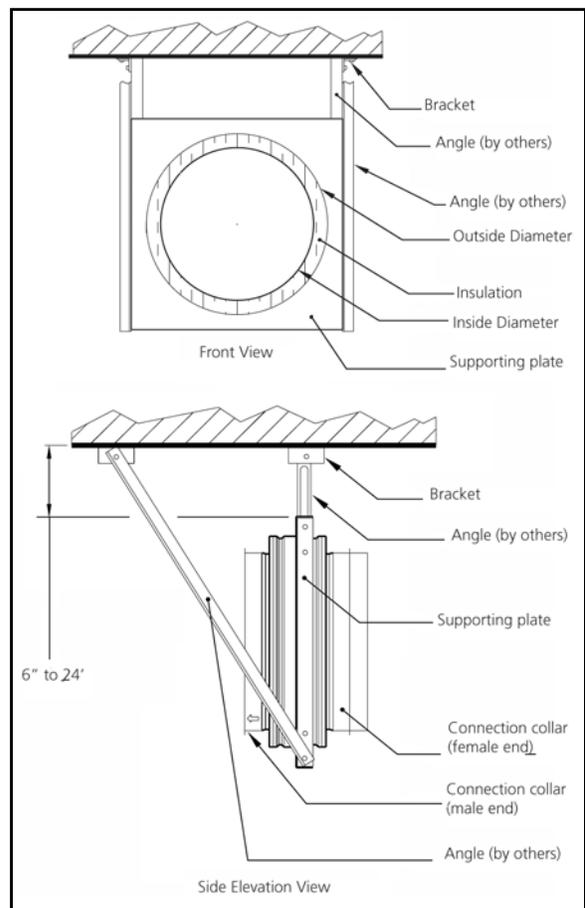


Figure C-5 - Horizontal Support Assembly (HS)

ANCHOR PLATE ASSEMBLY (AP)

1. The anchor plate assembly consists basically of a 12" vent (11" effective length) section that is welded to a steel plate.
2. The vent system section that extends both above and under the plate is used as connection collars for quick and easy joint assembly to the pipe sections.
3. It is supplied with both an Assembly Band (AB) and Finishing Band (FB).
4. Used to support the system in vertical runs. It is attached to the floor by means of anchors (by others) See Fig.C-4.
5. Pipe sections are then attached to the support collars in the same manner as described in Section A Pipe and Fitting joint assembly.

Height Limits: See Section A Table 8 for maximum support height of Anchor Plate.

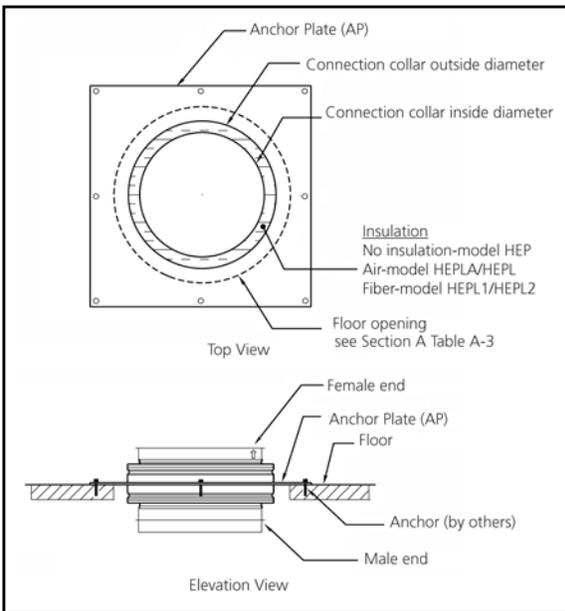


Figure C-6 - Anchor Plate Assembly (AP)

ROOF SUPPORT (RS)

Used to support and guide the portion of the vent which extends to the roof. It is attached to the roof box by means of four angles (See Fig.C-5). It

maintains a minimum distance between the vent system and combustible materials at the roof.

Height Limits: See Section D Roof and Wall Penetration for complete Roof Support (RS) assembly details and use.

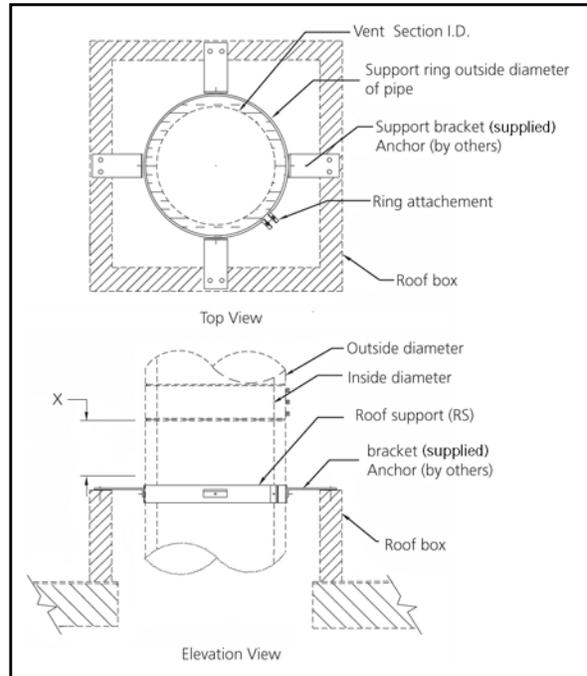


Figure C-7 - Roof Support (RS)

Keep joint away from support X = 6" Min. above and under

FLOOR GUIDE ASSEMBLY (FG)

Used as a guide at a floor penetration. It is attached to the floor by means of 4 angle brackets. It maintains a minimum distance between the vent system and combustible floor material.

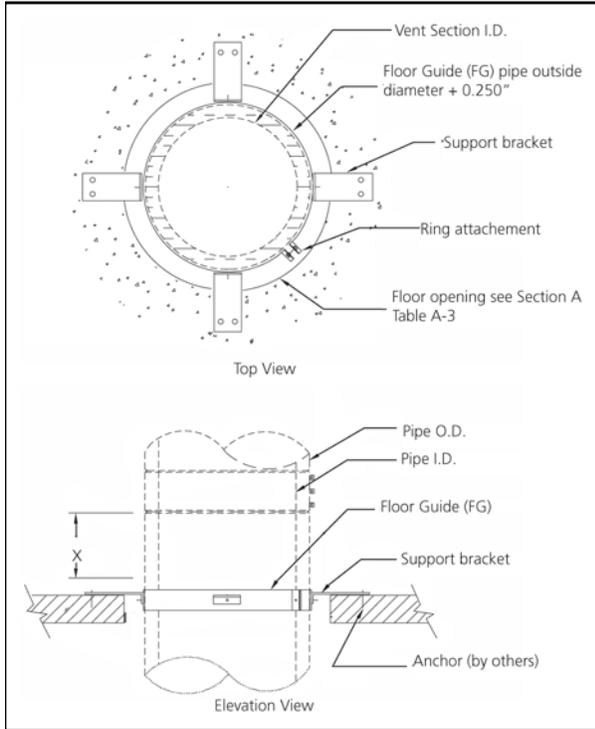


Figure C-8 - Floor Guide assembly (FG)

Keep joint away from support X = 6" Min. above and under

WALL AND CEILING GUIDE ASSEMBLY (WG)

Used to guide and allow the expansion of the vent. It holds the flue or vent system at an adjustable distance from ceiling or wall. The diagonal braces may be attached above or below the guide plate. The ring is 1/4" larger than the outside diameter of the system pipe to allow for sliding (see Fig.C-7).

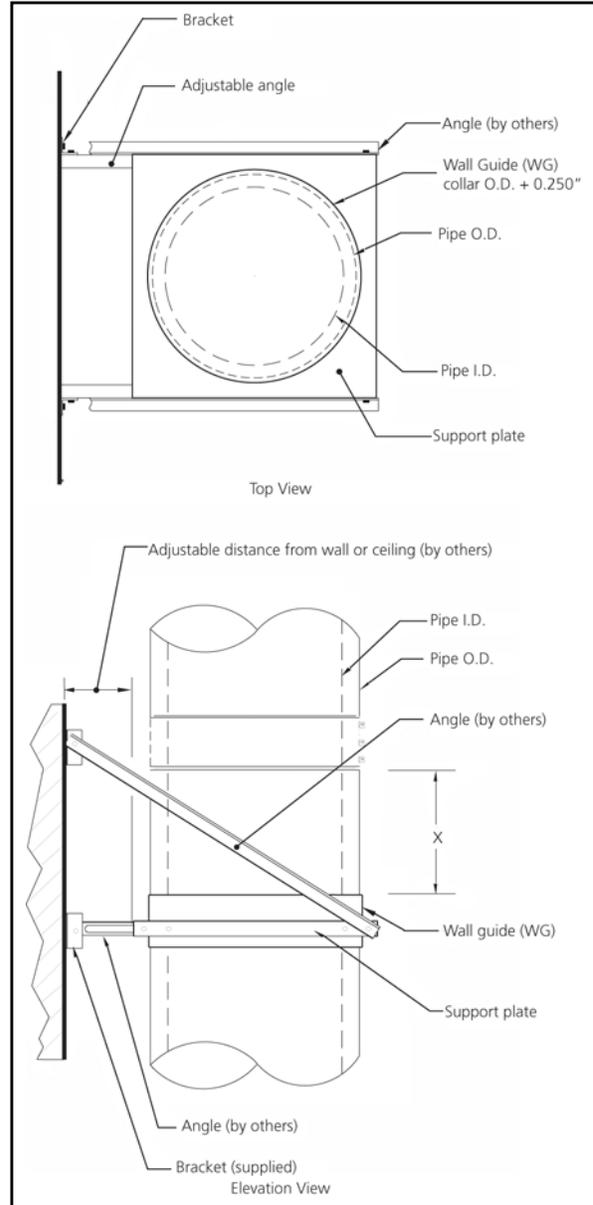


Figure C-9 - Wall and Ceiling Guide Assembly (WG)

Keep joint away from support X = 6" Min. above and under

WALL BAND ASSEMBLY (WB)

Stabilization of the vent along a vertical wall is obtained by the use of the Wall Band (WB) assembly. For maximum recommended distance between a Wall Band (WB) and another guide or support, see Table A-9 "MVS".

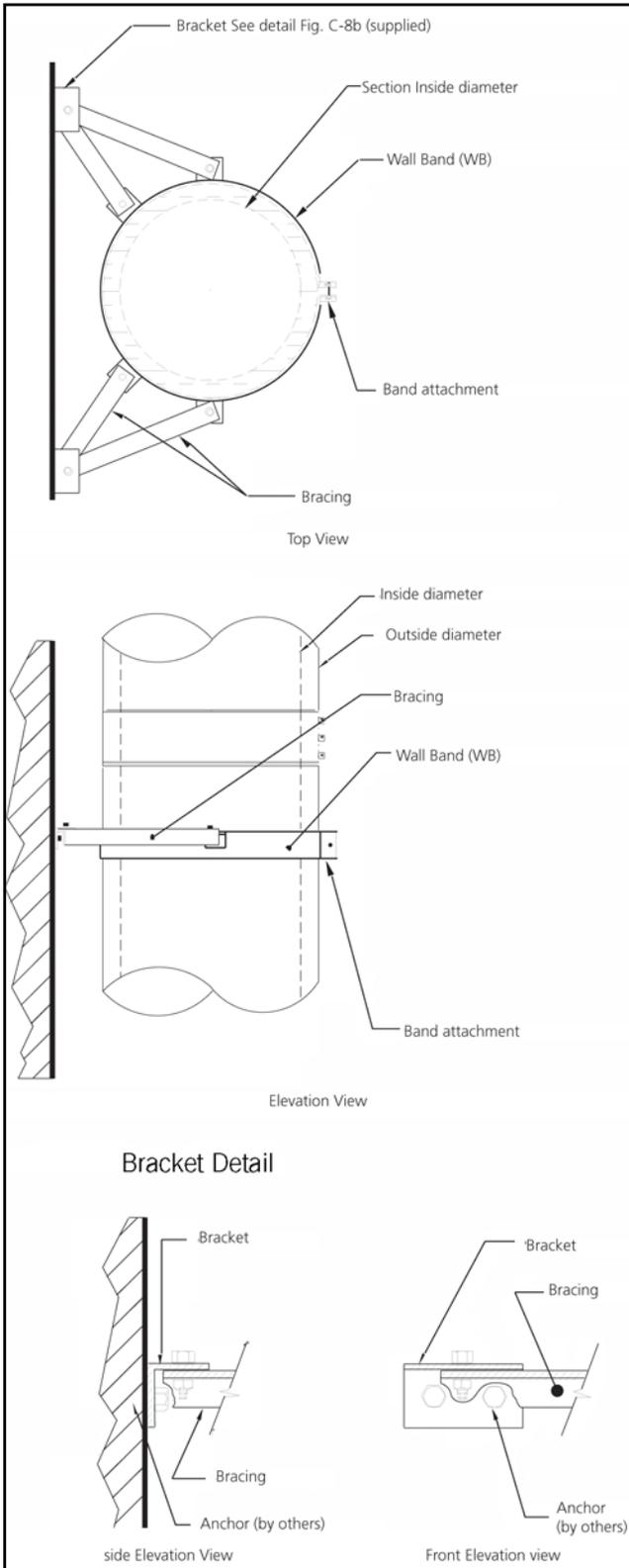


Figure C-10 - Wall Band Assembly (WB)

ROOF BAND (RB)

Used to stabilize the vent laterally where it extends rises more than 10'-0" beyond the roof or for places exposed to strong winds. It is attached to the vent system and the roof box, and does not require anchoring to the roof.

Height Limits: See Section A for maximum height of system using suspension band (SB) support.

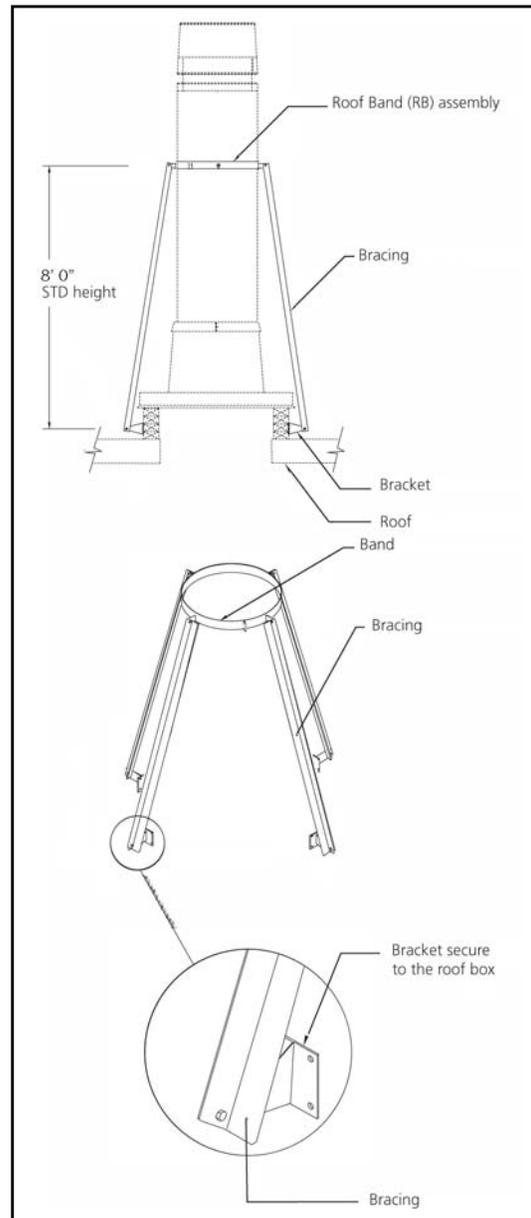


Figure C-11 - Roof Band Assembly

SUSPENSION BAND (SB)

Used to stabilize and support a flue or a vent in vertical runs. It avoids the transfer of the flue weight to the appliance. To be used with threaded rods (by others).

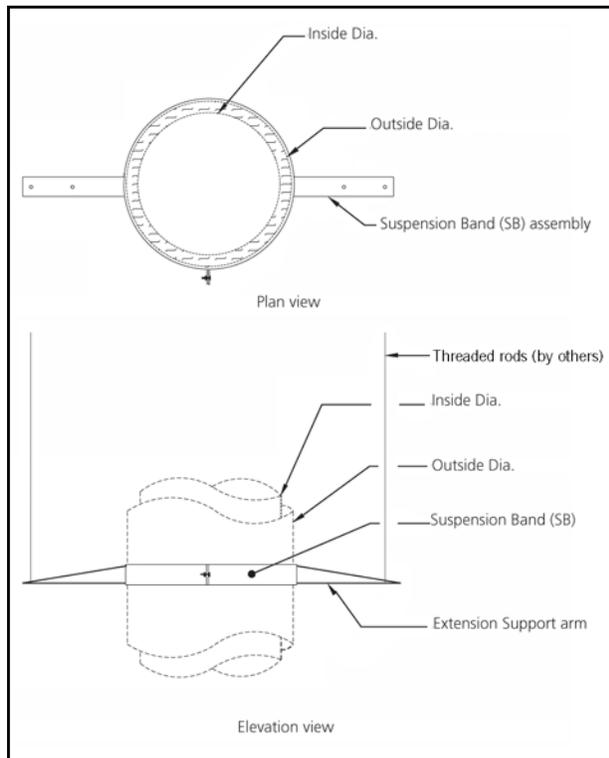


Figure C-12 - Suspension Band (SB)

Height Limits: See Table A-8 for maximum height of system using Suspension Band (SB) support.

GUY WIRE BAND (GWB)

Used to stabilize a vent laterally where it extends more than 10'- 0" beyond the roof or for places exposed to strong winds. It is attached to the vent system and is designed to receive 3 guy cables 120° apart. It may be manufactured to receive 4 guy cables 90° apart. See Fig.C-13.

Height Limits: See Section A, Vent Guying and Bracing for maximum height Guy Wire Band (GWB) assembly.

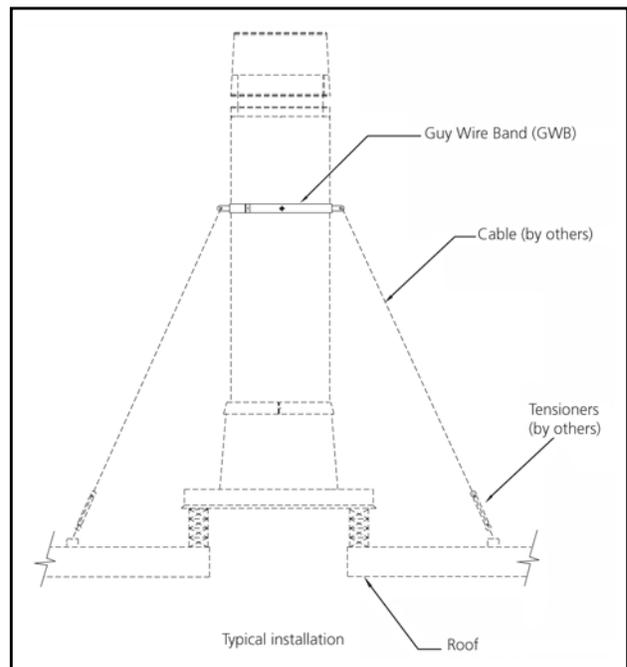


Figure C-13 - Guy Wire Band (GWB) typical installation

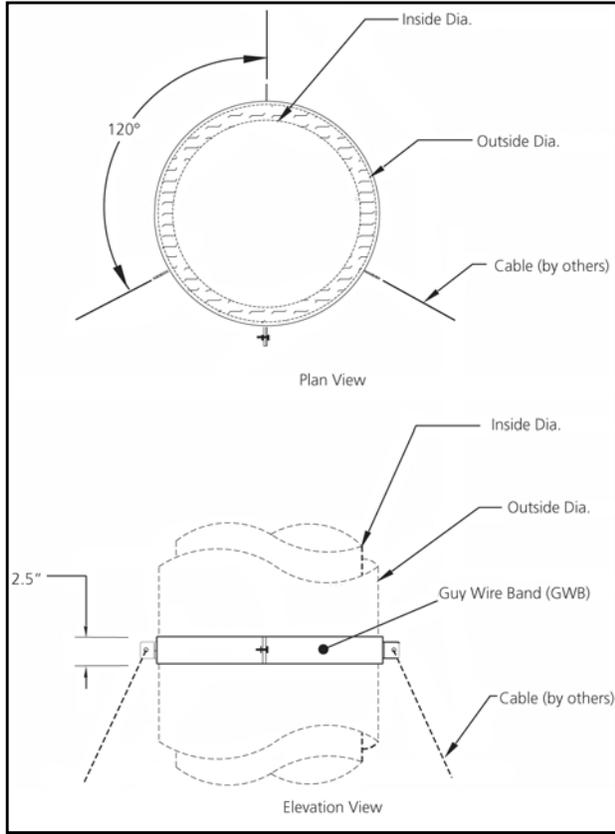


Figure C-14 - Guy Wire Band (GWB) Detail

D. ROOF AND WALL PENETRATION

FLAT FLASHING ASSEMBLY (F)

The Flat Flashing assembly (F) is primarily used for boiler or low temperature exhaust where a vent section passes through a roof made of combustible material. It is designed to be installed on a flat roof curb of a minimum height of 12" (See Fig. D-1). For some areas, greater heights may be needed according to local code requirements. The roof framing dimension must provide sufficient opening to comply with the minimum clearance from combustibles (see Section A for minimum clearance). The Roof Support (RS) is secured to the top of the roof curb using two 1/4" x 2 1/2" inch lag bolts in each support bracket. (See Section C for detail of Roof Support. The Flat Flashing (F) is then lowered on to the curb and the Storm Collar (SC) secured to the vent system section with the screws supplied. A Ventilated Flashing (VF) option is also available where air circulation between the system and the roof structure is wanted. The Ventilated Flashing option may serve as a ventilation outlet in small boiler rooms with gravity air supply.

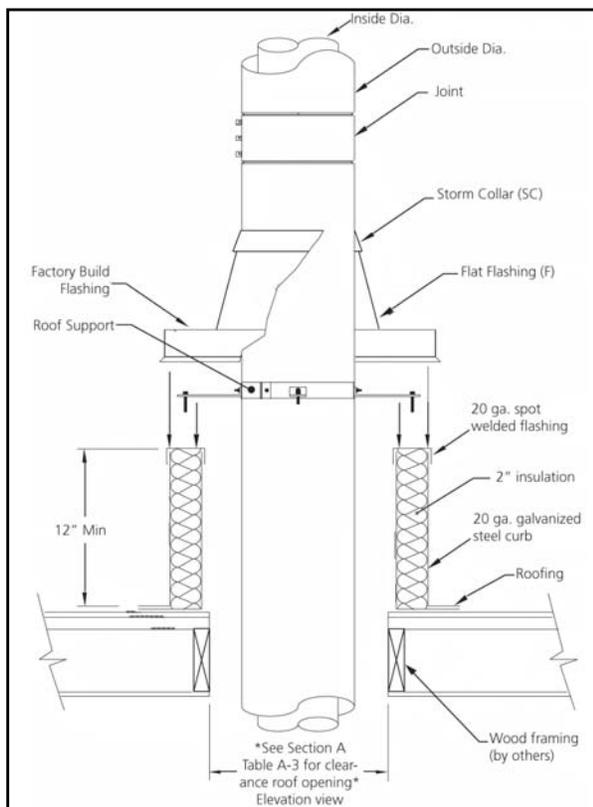


Figure D-1 - Flat Flashing Roof Assembly (F)

*Note: 1. May be used in non-combustible roof application, See Section A Table-A-3 for roof openings.

2. Framing of roof openings for combustible roof applications must meet specified clearances in Section A. Proper framing is the responsibility of the installing contractor.

FLAT FLASHING (F) WITHOUT ROOF CURB

The Flat Flashing (F) assembly is primarily used for low temperature exhaust where a vent section passes through a roof made of non-combustible material.

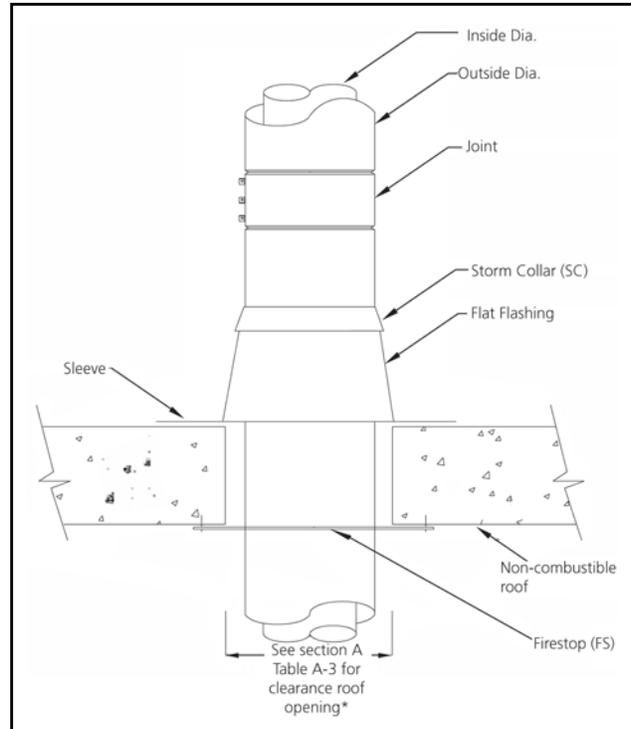


Figure D-2 - Flat Flashing Roof Assembly (F)

INSTALLATION

1. Install roof curb over the roof opening.
2. Secure the Vent Section to the roof curb with the Roof Support (RS).
3. Install the Flashing (F) over the roof curb.
4. Install the Storm Collar (SC) by securing it to the pipe section

WALL PENETRATION

1. Where a vent system section passes through a wall, the combustible material in the wall need to be protected from radiation heat from the system.
2. Table-D-1 shows the different parts that provide sufficient clearance between the vent and the combustibles in the wall.
3. Table-D-1 also shows required clearance between the vent system and the combustibles as well as the wall opening needed for each system model.

Table D1: Wall Penetrations

Model	Wall Penetration part Firestop Type	Max. wall Thickness	Wall opening	Clearance	See Detail
CBHLA,CBHL, L1,L2	Non-insulated (WFS)	18"	Table A-6	Table A-2 - A-4	Fig. D-3,4,5

Note: 1. Finishing collar is used only for exterior wall applications.

2. Clearances are calculated from I.D. to the combustibles.

WALL FIRESTOP (WFS)

The Wall Firestop assembly (WFS) is primarily used for wall penetration allowing a section to pass through a wall made of combustible material. It is used to maintain a minimum clearance between the combustible wall material and the Vent section passing through the wall.

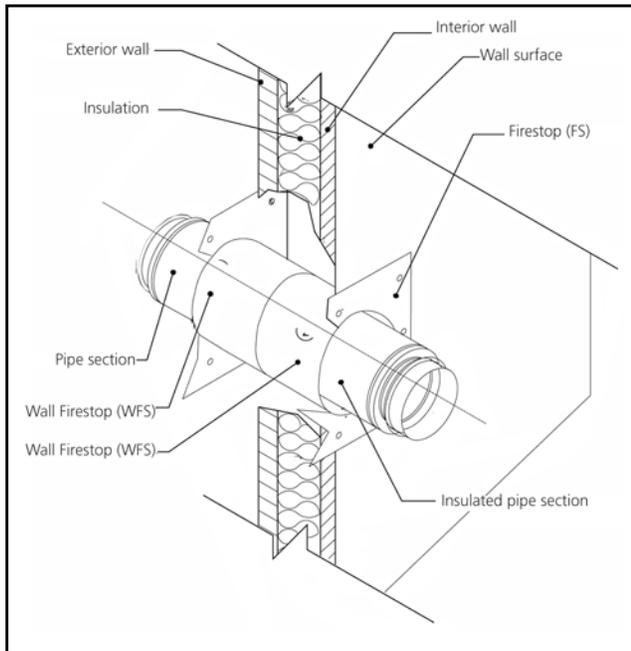


Figure D-3 - Wall Firestop assembly

Do not install insulation in the opening between the pipe outside wall and the firestop inner wall; allow for free air circulation at all times.

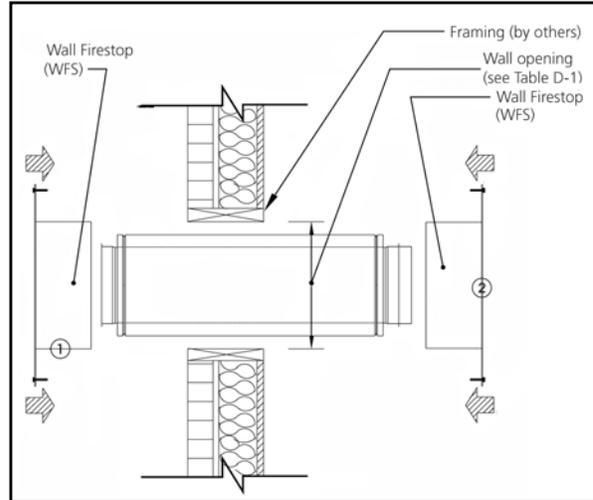


Figure D-4 - Wall Firestop (WFS) assembly

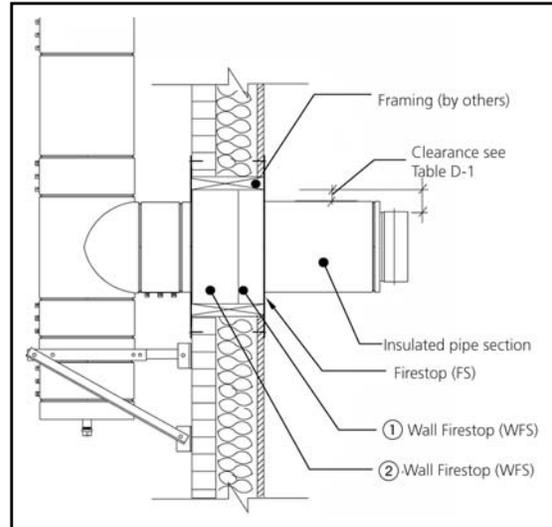


Figure D-5 - Wall Firestop (WFS) assembly

Do not install insulation in the opening between the pipe outside wall and the firestop inner wall; allow for free air circulation at all times

INSTALLATION FOR EXTERIOR WALL

1. From Table-D-1 (in this section) determine the wall opening for the system model to be installed.
2. From the interior wall side, put the Wall Firestop (1) in place before passing the pipe section in the opening (see Fig. D-9 and D-10)
3. From the exterior wall side, slide the Wall Firestop (2) (WFS) in the opening and secure to the exterior wall with anchors (by installer).

4. From interior wall side, secure Wall Firestop (1) to inside wall with anchors (by installer).

INSTALLATION FOR INTERIOR WALL

1. From Table-D-1 (in this section) determine the wall opening for the vent model to be installed.
2. Repeat steps 2, 3 and 4 as described in exterior wall installation.

FIRESTOP (FS)

Used to maintain a minimum space between any combustible material of a wall, floor or roof, where a vent system passes through.

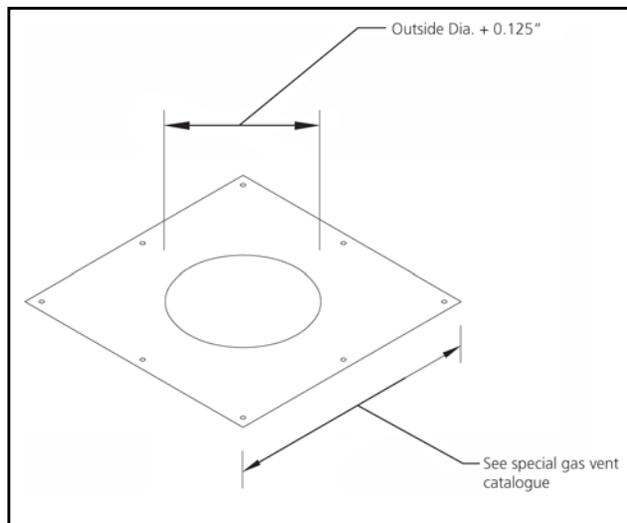


Figure D-6 - Firestop (FS) Detail

RADIANT FIRESTOP (RFS)

Used to protect combustible materials where a system passes through a floor, ceiling or attic. It ensures a minimum distance from combustible materials.

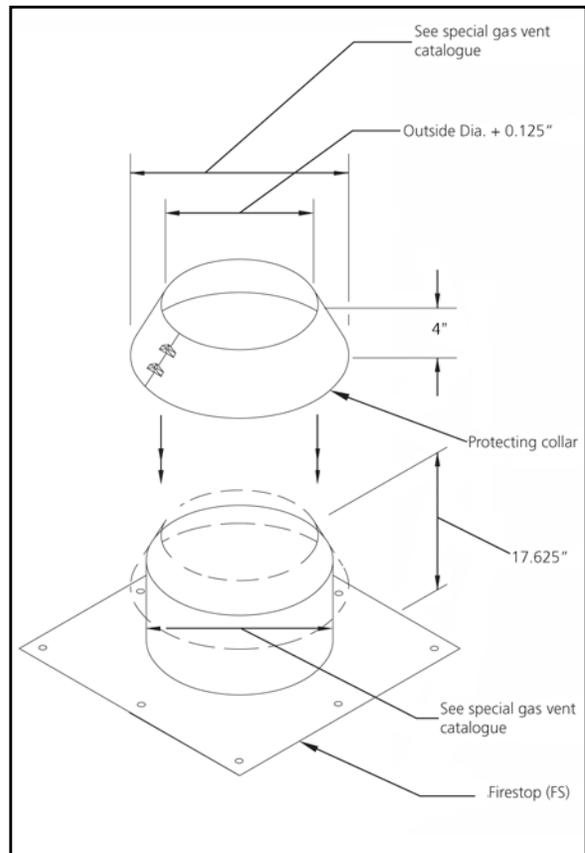


Figure D-7 - Radiant Firestop (RFS) Detail

E. TERMINATIONS, STARTING ADAPTERS

RAIN CAP (RC)

Installed at the top of the vent, it prevents entry of rain into the vent system (see Fig. E-11 for assembly).

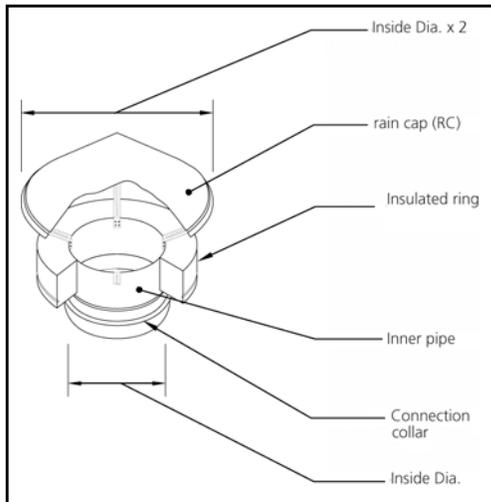


Figure E-1 - Rain Cap

EXHAUST CONE (EC)

Installed at the top of the system, it improves the draft and increases the speed of escaping gases by 50%. Installation of a Drain-Tee Cap (DC) at the base of the vent is required to collect rainwater. For installation details see Fig.E-11.

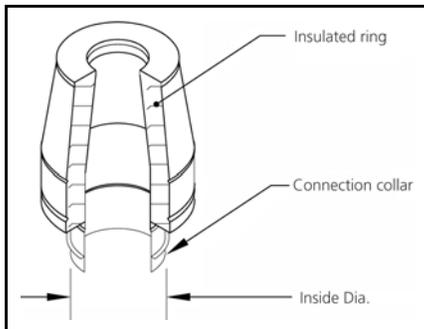


Figure E-2 - Exhaust Cone

CLOSURE SECTION (SC)

Installed at the vent system extremity. It protects the system against water infiltration in the insulation between the inner and outer wall of the system. The use of a Drain Section (DS) or Drain Tee Cap (DC) is necessary with this piece to collect any excess rain that may penetrate the vent.

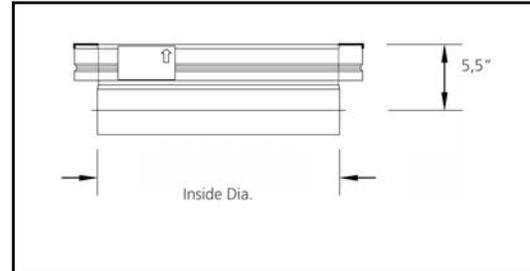


Figure E-3 - Closure Section Detail

STORM COLLAR (SC)

Used for sealing the opening between the vent and flashing. The Storm Collar (SC) must be sealed to the vent system with silicone putty. It is supplied with the Flat Flashing (F) roof assembly or Adjustable Flashing (AF) roof assembly.

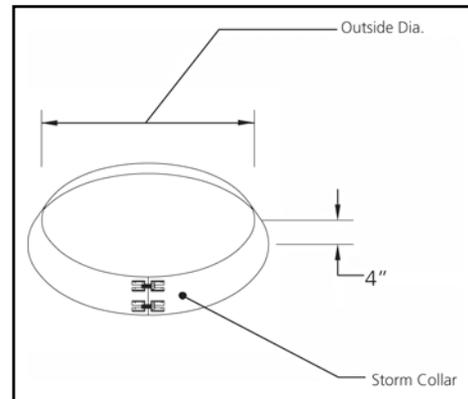


Figure E-4 - Storm Collar

MITER SECTION (MS)

Installed at the system extremity in horizontal exhaust application. To be used with boiler exhaust. Diameter range from 6" to 16". Material thickness is the same as the vent section it is used with.

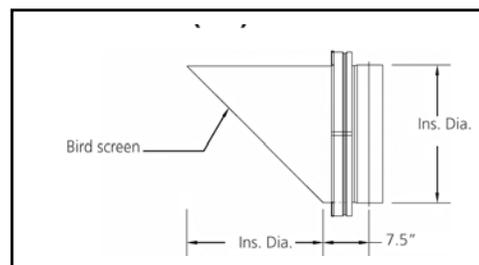


Figure E-5 - Miter Section

FAN ADAPTER (FA)

Installed at the vent extremity. It is used to connect the system to an up-blast or sidewall type exhaust fan.

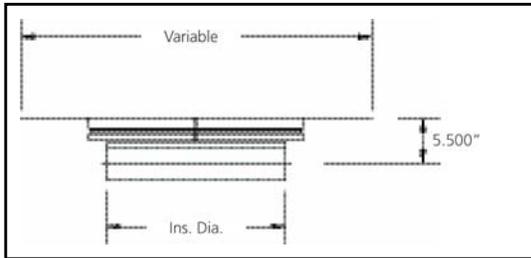


Figure E-6 - Fan Adapter

3. Also used for collection of condensation water by means of a 3/4" diameter drain connection.
4. Its elliptical collar construction also provides for improved condensation water drainage.
5. See Fig.E-9 and E-10 for assembly.
6. Flange is optional. Refer to boiler instructions or outlet connection detail.

TERMINATIONS — USE AND APPLICATION

Table E1: Terminations

Termination	Model	Temperature from 0°F to less than 550°F continuous
Rain Cap	CBH, CBHLA, CBHL, CBHL1, CBHL2	6" to 48" diameter
Exhaust Cone	CBH, CBHLA, CBHL, CBHL1, CBHL2	6" to 48" diameter
Rain-shield	CBH, CBHLA, CBHL, CBHL1, CBHL2	6" to 16" diameter
Miter Section	CBH, CBHLA, CBHL, CBHL1, CBHL2	6" to 16" diameter

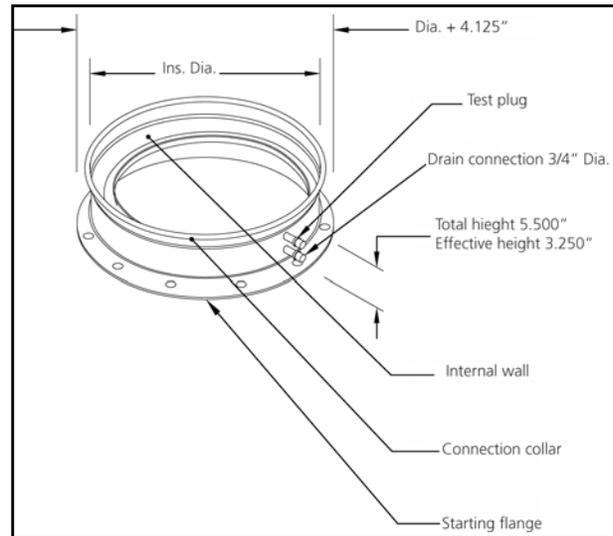


Figure E-8 - Starting Adapter-Drain

STARTING ADAPTER (SA)

1. Used to connect the flue to the appliance. It allows flue gas analysis by means of the verification plug.
2. See Fig.E-9 and E-10 for assembly.

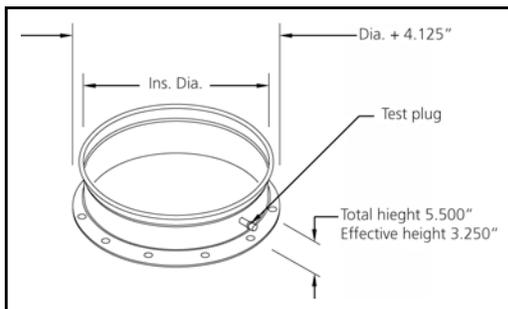


Figure E-7 - Starting Adapter

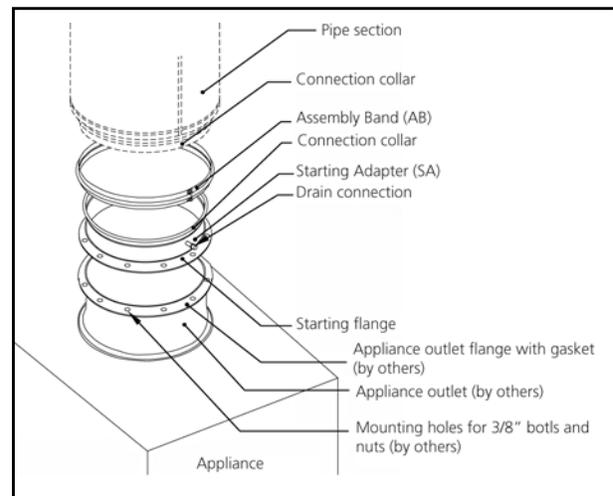


Figure E-9 - Typical installation for Starting Adapter (SA) and Starting Adapter-Drain (SAD)

STARTING ADAPTER-DRAIN (SAD)

1. Used to connect the system to the appliance.
2. It allows vent gases analysis by means of the verification plug.

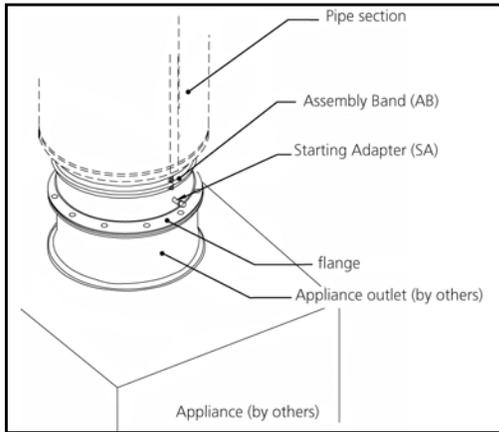


Figure E-10 - Typical finished assembly for Starting Adapter (SA) and Starting Adapter-Drain (SAD)

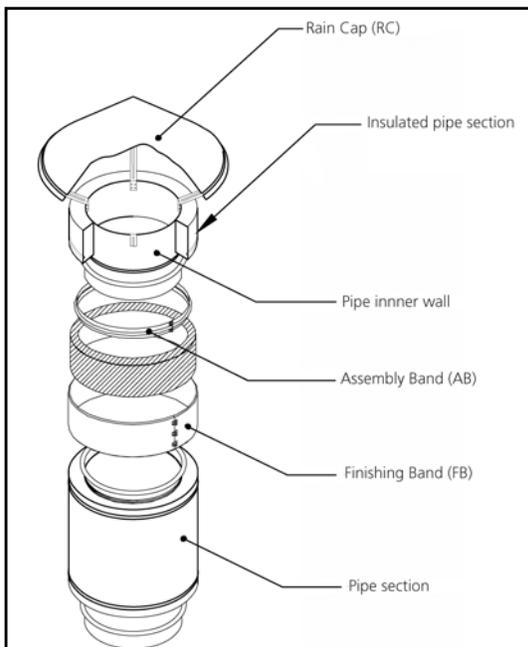


Figure E-11 - Typical installation for Rain Cap (RC) and Exhaust Cone (EC)

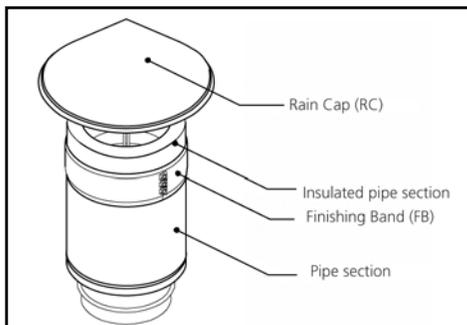


Figure E-12 - Finished assembly for Rain Cap (RC) and Exhaust Cone (EC)

ENCLOSED INSTALLATION TERMINATIONS

For enclosed installations, use only model CBHL (Fig. E-13 and Fig. E-15) and model CBHL2. (Fig. E-14 and Fig. E-16)

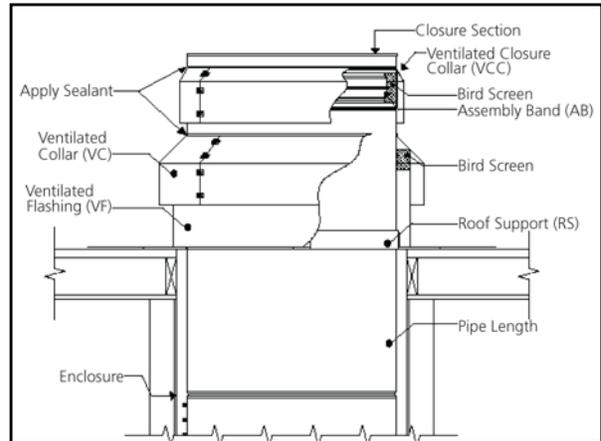


Figure E-13 - Roof termination for enclosed installation with model CBHL.

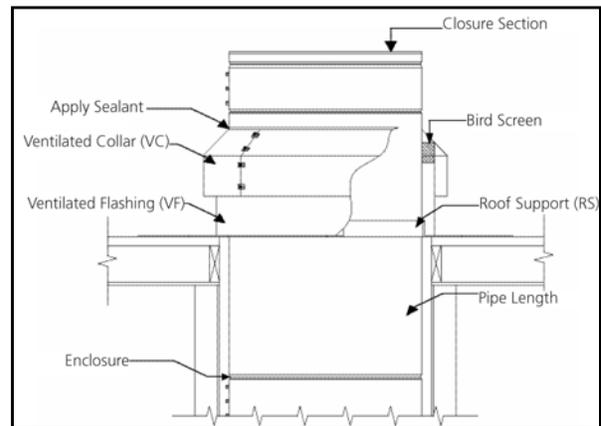


Figure E-14 - Roof termination for enclosed installation with model CBHL2.

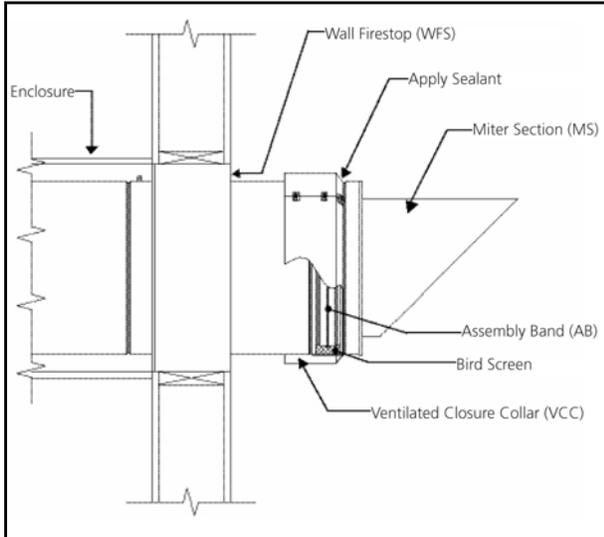


Figure E-15 - Wall termination for enclosed installation with model CBHL

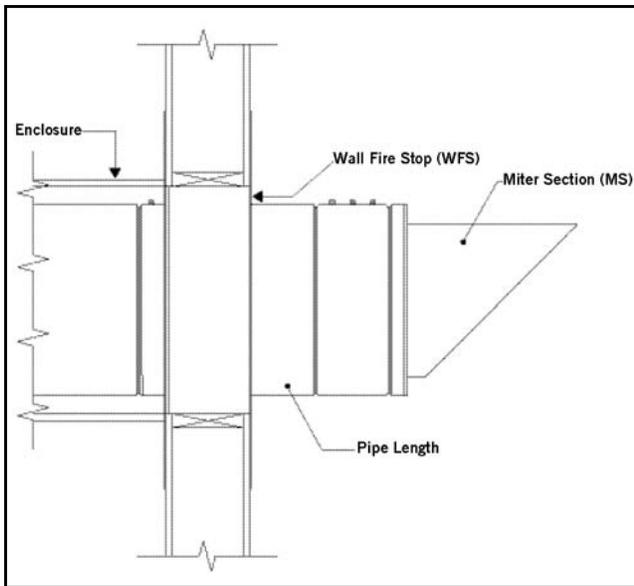


Figure E-16 - Wall termination for enclosed installation with model CBHL2

F. EXPANSION JOINTS

ADJUSTABLE LENGTH (AL)

1. Used in straight runs, the Adjustable Length (AL) serves two major functions:

- a) To make up for odd lengths of pipe in short runs.
- b) To provide for joint sealing.

7. It is placed around the assembled liner and finishes the appearance of the Adjustable Length (AL).

8. For detailed methods of installation see instructions contained elsewhere in this section.

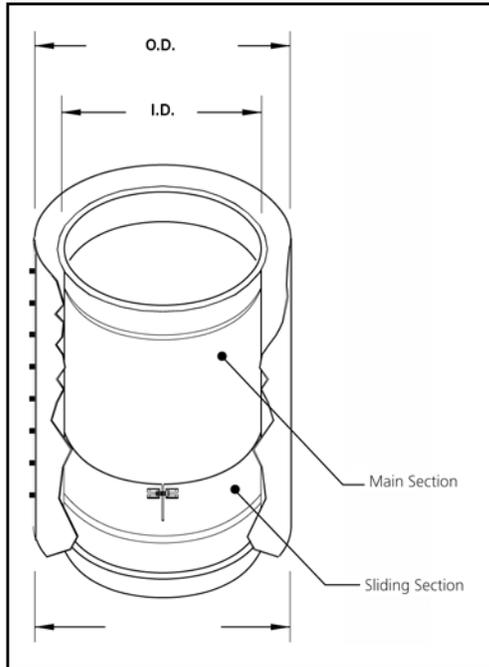


Figure F-1 - Adjustable Length (AL) Detail

2. This part is designed to be adjustable to any needed exact length. Its internal joint must be sealed by working sealant under the seal section, as well as at the joint between the male and the female end to be closed with the Assembly Band (AB).

3. The adjustable length includes a main section and an outer sliding section that can be secured in the desired length position. Cutting the main section may be required for proper fitting.

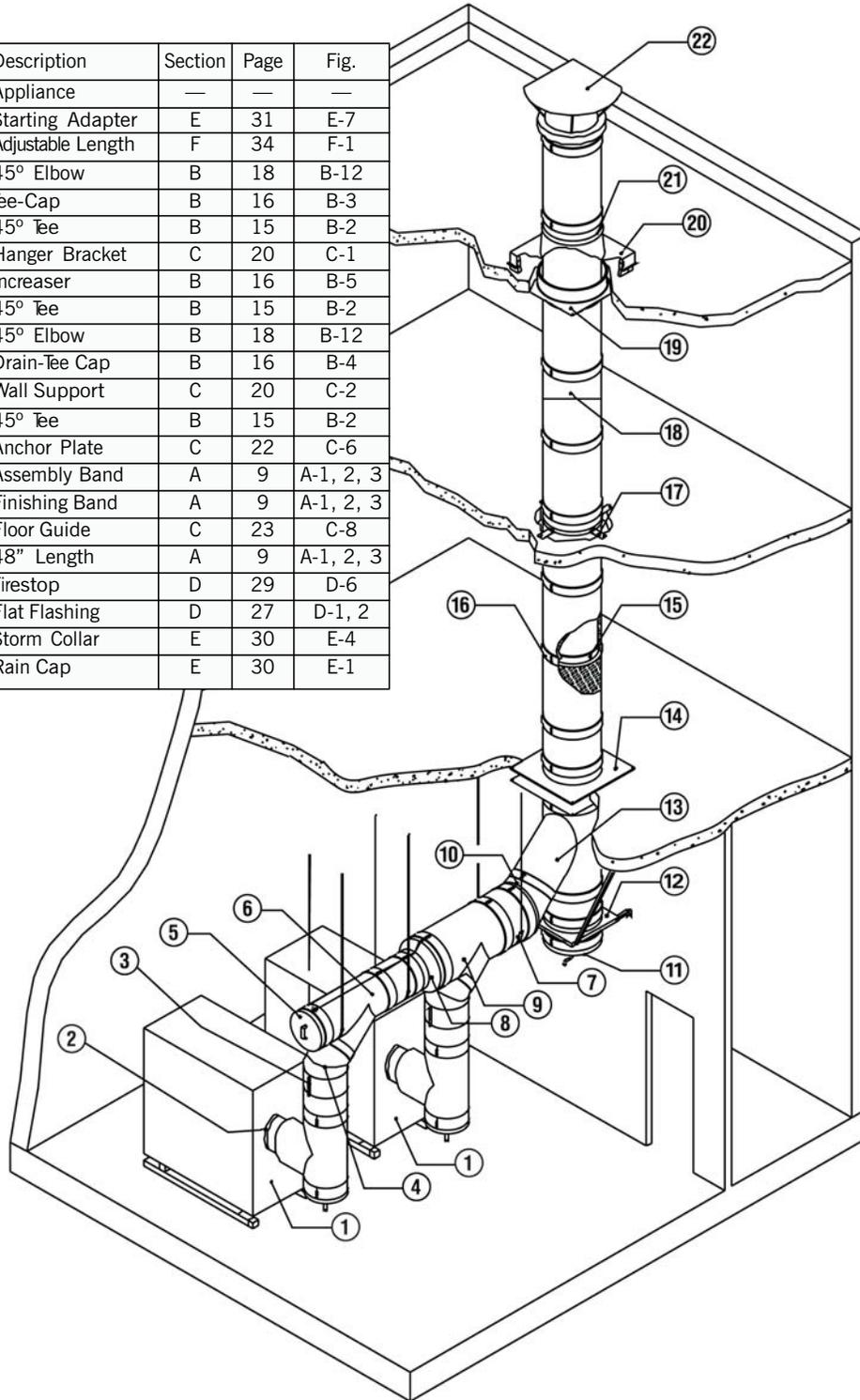
4. The sliding section is designed to fit outside the standard main section.

5. Once the final length of the section is set, it is secured using a single clamp and screw. This seal section will prevent the inner section from slipping after the assembly.

6. The sliding outer jacket is of the same thickness as that used on piping outer casings.

G. SAMPLE DRAWING — Boiler exhaust

No.	Part no.	Description	Section	Page	Fig.
1	—	Appliance	—	—	—
2	CBHL2 SA 16	Starting Adapter	E	31	E-7
3	CBHL2 AL 16	Adjustable Length	F	34	F-1
4	CBHL2 E45 16	45° Elbow	B	18	B-12
5	CBHL2 TC 16	Tee-Cap	B	16	B-3
6	CBHL2 T45 16	45° Tee	B	15	B-2
7	CBHL2 HB 16	Hanger Bracket	C	20	C-1
8	CBHL2 I 16	Increaser	B	16	B-5
9	CBHL2 T45 20	45° Tee	B	15	B-2
10	CBHL2 E45 20	45° Elbow	B	18	B-12
11	CBHL2 DC 20	Drain-Tee Cap	B	16	B-4
12	CBHL2 WS 20	Wall Support	C	20	C-2
13	CBHL2 T45 20	45° Tee	B	15	B-2
14	CBHL2 AP 12	Anchor Plate	C	22	C-6
15	CBHL2 AB 20	Assembly Band	A	9	A-1, 2, 3
16	CBHL2 FB 20	Finishing Band	A	9	A-1, 2, 3
17	CBHL2 FG 20	Floor Guide	C	23	C-8
18	CBHL2 48L 20	48" Length	A	9	A-1, 2, 3
19	CBHL2 FS 20	Firestop	D	29	D-6
20	CBHL2 F 20	Flat Flashing	D	27	D-1, 2
21	CBHL2 SC 20	Storm Collar	E	30	E-4
22	CBHL2 RC 20	Rain Cap	E	30	E-1



H.MARKINGS

Underwriters Laboratories symbol - indicates that this part meets UL / cUL standard.

UL Category Control number

UL listed categories

MODELS CBHLA CBHL1 CBHL CBHL2

UL LISTED 28 KJ

SPECIAL GAS VENT CATEGORY II, III, IV
SPECIAL GAS VENT TYPE BH
CLASS I / CLASS II
MAX 550°F / 288° C
SUITABLE FOR EXTERIOR INSTALLATION

WARNING
 "RISK OF CARBON MONOXIDE (CO) POISONING AND RISK OF FIRE IF IMPROPERLY INSTALLED. FOLLOW ALL CAUTIONS, WARNINGS AND INSTRUCTIONS REGARDING INSTALLATION OF THIS VENT PIPE SYSTEM."

Position	Inside diameter (in)	Model	DIAMETERS FOR EACH MINIMUM AIR SPACE CLEARANCE TO COMBUSTIBLE MATERIALS										
			0.5"	1"	1.5"	2"	3"	4"	5"	6"	7"	8"	9"
Unenclosed Vertical	Inside diameter (in)	CBHLA/CBHL1		3 to 8	10 to 14	16 to 20	22 to 32	34 to 44	46 to 48				
		CBHL	6		8 to 10	12 to 14	16 to 18	20 to 24	26 to 28	30 to 32	34 to 36	38 to 42	44 to 48
		CBHL2	6	8 to 10	12 to 14	16 to 20	22 to 24	26 to 30	32 to 36	38 to 40	42 to 48		
Unenclosed Horizontal	Inside diameter (in)	CBHLA/CBHL1		3 to 8		10 to 14	16 to 20	22 to 24	26 to 30	32 to 36	38 to 42	44 to 48	
		CBHL		6 to 10	12 to 14		16 to 20	22 to 28	30 to 32	34 to 38	40 to 42	44 to 48	
		CBHL2		6 to 10	12 to 14	16 to 20	22 to 30	32	34 to 44	46 to 48			

UP
 Direction of flue gas flow

CAUTION: SEAL ALL JOINTS WITH X-TRASIL H.T 4706. 3 RED SEALANT ALTERNATES: GE RTV 106 RED OR DOW CORNING 736. RATED FOR USE AT MAXIMUM 15 INCH WATER COLUMN INTERNAL PRESSURE WHEN USED IN POSITIVE PRESSURE APPLICATIONS.

CleaverBrooks  www.cleaverbrooks.com

Minimum clearance to combustibles for each model according to inside diameter

UL LISTED 28 KJ

MODEL CBH CBHLA CBHL1 CBHL CBHL2

APPLIANCE ADAPTER

WARNING
 "RISK OF INJURY TO PEOPLE: A SEPARATE CONDENSATE DRAIN FITTING MUST BE INSTALLED DOWNSTREAM OF THIS APPLIANCE ADAPTER. FOLLOW INSTALLATION INSTRUCTIONS."

SPECIAL GAS VENT CATEGORY II, III AND IV
SPECIAL GAS VENT TYPE BH
CLASS I / CLASS II
MAX 550 °F / 288 °C

CleaverBrooks  www.cleaverbrooks.com

UL LISTED 28 KJ

MODEL CBH CBHLA CBHL1 CBHL CBHL2

SYSTEM COMPONENT

MATERIAL FOR USE WITH FACTORY BUILT CHIMNEY MODEL CBH, CBHLA, CBHL1, CBHL OR CBHL2. INSTALL AND USE ONLY IN ACCORDANCE

"WITH CHEMINÉE LINING.E INC. INSTALLATION INSTRUCTIONS."

CleaverBrooks  www.cleaverbrooks.com

UL LISTED 28 KJ

MODEL CBH CBHLA CBHL1 CBHL CBHL2

DRAIN ASSEMBLY

WARNING / AVERTISSEMENT
 "RISK OF FLUE GAS LEAK: REFER TO INSTRUCTIONS FOR PROPER INSTALLATION."

SPECIAL GAS VENT CATEGORY II, III AND IV
SPECIAL GAS VENT TYPE BH
CLASS I / CLASS II
MAX 550 °F / 288 °C

RATED FOR USE AT MAXIMUM 15 INCH WATER COLUMN INTERNAL PRESSURE WHEN USED IN POSITIVE PRESSURE APPLICATIONS

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