



SUBMITTAL RECORD
MODEL SECURE SEAL® LDCS AND LDCD
26 TO 36 INCH DIAMETERS
NOTE: REFER TO THE SUBMITTAL RECORD FOR 3" TO 24"
WHEN COMBINING SECURE SEAL VENTS



Single Wall or Double Wall AL29-4C®
Special Gas Vent for Category I, II, III or IV
Gas Fired Appliances
26" TO 36" DIAMETER VENT FOR USE ON POSITIVE,
NEGATIVE AND NEUTRAL PRESSURES UP TO 35" WC.

Reference to the Installation Instructions will enable you to obtain a safe, efficient and dependable installation of this vent system. Please read and understand these instructions before beginning your installation.

Do not alter or modify the components of this vent system under any circumstances. Any modification or alteration of the vent system or approved accessories, including but not limited to the appliance it is connected to, may void the warranty, listings and approvals of this system and could result in an unsafe and potentially dangerous installation.

- A. Examine all components for possible damage prior to installation
- B. Proper joint assembly is essential for a safe installation. Follow the Installation Instructions exactly. Check the precision of the joints upon completion of assembly.
- C. This venting system must be free to expand and contract. This venting system must be supported in accordance with the Installation Instructions.
- D. Check for unrestricted vent movement through walls, ceilings, floors and roof penetrations.
- E. Different manufacturers have dissimilar joint systems and adhesives. Do not mix pipe, fittings or joining methods from other manufacturers.

SUBMITTAL RECORD	
PREPARED FOR:	
REFERENCE:	
LOCATION:	
CONTACT:	
PHONE:	FAX:
EMAIL:	
PREPARED BY:	

SAVE THESE INSTRUCTIONS
FOR FUTURE REFERENCE

	<p>Listed to Standards: UL-1738 ULC-S636 Report # G100215896MTL-006</p>
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<p>WARNING</p> <p>FAILURE TO FOLLOW THESE INSTALLATION INSTRUCTIONS COULD CAUSE FIRE, CARBON MONOXIDE POISONING OR DEATH. IF YOU ARE UNSURE OF INSTALLATION REQUIREMENTS, CALL THE PHONE NUMBER ON THE BACK OF THE INSTALLATION INSTRUCTIONS.</p> <p>A MAJOR CAUSE OF CHIMNEY RELATED FIRE IS FAILURE TO MAINTAIN REQUIRED CLEARANCES (AIR SPACES) TO COMBUSTIBLE MATERIALS. IT IS OF THE UTMOST IMPORTANCE THAT THIS VENT SYSTEM BE INSTALLED ONLY IN ACCORDANCE WITH THE INSTALLATION INSTRUCTIONS</p>

INTRODUCTION

Secure Seal® single wall (LDCS) or double wall (LDCD) is a special stainless steel vent system for gas fired appliances listed as Category I,II,III or IV or in Canada as Type “BH” Gas Vent as noted in ULC-S636 with a maximum operating temperature of 550°F (288°C) and a maximum rated positive pressure of 35” WC.

Secure Seal must be installed by an experienced professional familiar with the operation and maintenance of heating appliances and venting. Before installing this product examine all components for possible shipping damage and read the Installation Instruction manual. Failure to follow proper installation procedures, including vent pitch and improper appliance connections may cause unsafe conditions. Security Chimneys International Limited recommends the system be inspected once a year by a qualified service technician.

TESTING | LISTING INFORMATION

Security Chimneys International Limited Secure Seal model LDCS and LDCD venting system is listed with Intertek Testing Services to UL/ULC standards:

USA

- **UL-1738**
 - Special Gas Vent for Category I, II, III and IV appliances

CANADA

- **ULC-S636**
 - Type BH Gas Vent Class I/II



This product must be installed in accordance with local building code requirements as well as National codes:

- **USA**
 - National Fuel Gas Code ANSI-Z223.1 or NFPA Standard 54 or NFPA 211.
- **CANADA**
 - CSA-B149.1 Natural Gas and Propane Installation Code

PART NUMBERS

Example: LDCS (single wall)

36” length with inside diameter of 28” made of AL29-4C flue

Model	Diameter	Part	Material
LDCS	28	L36	U

Example: LDCS (single wall)

30° elbow with inside diameter of 34” made of AL29-4C

Model	Diameter	Part	Material
LDCS	34	E30	U

Example: LDCD (double wall)

45° elbow with inside diameter of 32” made with AL29-4C flue and 441 stainless casing (outer wall)

Model	Diameter	Part	Material
LDCD	32	E45	UK

EFFECTIVE LENGTH

The effective length is the length of the part when it is assembled.

Example:

		Effective Length
L36	>	35 – 9/16”
L24	>	24 – 1/16”
L18	>	17 – 9/16”
L12	>	11 – 9/16”

CLEARANCE TO COMBUSTIBLES

Table 1 shows the required **MINIMUM AIRSPACE CLEARANCE TO COMBUSTIBLES**.

“COMBUSTIBLES” include framing lumber, drywall, plywood, panelling, insulation, wiring and other combustible building materials

Minimum Clearance to Combustibles Single Wall - LDCS						
Diameter	Rated Operating Temp.	Maximum Operating Temp.	Enclosed (4 sides)		Unenclosed (2 sides max.)	
			Horiz.	Vert.	Horiz.	Vert.
26” to 36”	480°F (250°C)	550°F (288°C)	N/A	N/A	6”	6”
Table 1: MINIMUM Clearance to Combustible LDCS						
Minimum Clearance to Combustibles Double Wall - LDCD						
Diameter	Rated Operating Temp.	Maximum Operating Temp.	Enclosed (4 sides)		Unenclosed (2 sides max.)	
			Horiz.	Vert.	Horiz.	Vert.
26” to 36”	480°F (250°C)	550°F (288°C)	N/A	2”	6”	2”
Table 1a: MINIMUM Clearance to Combustible LDCD						

Auxiliary parts such as combination Roof Supports, Roof Thimble, Flashings and Wall Thimble outer shields are intended to be attached directly to framing or to ceilings, floors or walls in accordance with their respective instructions. These parts are installed in contact with wood or other combustibles are **designed and tested to assure that they do not overheat at points of contact.**

CLEARANCE TO COMBUSTIBLE - NOTES

1. Unenclosed requires at least two sides open.
2. Single wall LDSC may be enclosed only in non-combustible enclosures.
3. Reduced clearances may be attained by using non-combustible enclosures
4. Combustible material is any material made of or surfaced with wood, compressed paper, plant fibers, or other materials that are capable of being ignited or burned. Such material shall be considered combustible even though it is flame-proofed, fire-retardant treated or plastered.
 - a. Source – NFPA 54 / ANSI Z223.1
5. Design any enclosure to permit inspection of the system.
6. Do not place insulation in any required clearance spaces surrounding the vent system unless these instructions suggest otherwise and the insulation is specified or supplied.

GENERAL INSTALLATION REQUIREMENTS

When venting Category I, II, III, or IV appliances, Secure Seal® **must** be used for the entire length of the system. Do not mix pipe, fittings, or joining methods from different manufacturers. **See the Secure Seal® catalog for a complete list of parts and products.** Every vent system must be planned and installed for optimum performance and safety. The venting system must be free to expand and contract and must be supported in accordance with these instructions (Check for unrestricted vent movement through walls, ceilings, and roof penetrations). Refer to the gas appliance manufacturer’s instructions to determine venting requirements and limitations with respect to installation and use of the appliance. **It is the responsibility of the installer to contact local building and fire officials concerning any installation restrictions and/or inspection requirements that may apply.** Permits may be required before starting an installation.

- If required by the appliance manufacturer, a Drain Tee Cap must be located as close as possible to the appliance flue outlet. Depending on the arrangement of the vent, **more than one drain may be required.** Unless a Drain Tee Cap is supplied with the appliance, install a Secure Seal® Drain Tee Cap.
- More than one Category II, III, IV appliance may not be connected into the same vent system, unless the appliance manufacturer specifically approved such a system and the appliance are designed for multiple venting. Cat. II, III or IV appliances MAY NOT be common vented with Cat. I, natural draft appliances. This limitation can be removed if an engineering analysis demonstrates normal and safe operation of appliances.
- Secure Seal® must not come in contact with plumbing or electrical systems.
- Maintain rated clearances to combustibles over the entire length of the vent system.
- Secure Seal® shall not be routed into, through, or within any vent such as an existing masonry or factory-built chimney, that is **connected to another appliance.**

CHIMNEY WEIGHTS LDCS and LDCD

Chimney Weight in LB/FT		
Inside Diameter	LDCS	LDCD
26"	10.4	17.9
28"	11.2	19.3
30"	12.0	20.7
32"	12.3	22.1
34"	13.6	23.5
36"	14.4	24.8

Table 2: Chimney Weight LDCS and LDCD

SUPPORT AND GUIDE SPACING FOR LDCS

SUPPORT AND GUIDE SPACING FOR MODEL LDCS						
Inside diameter	MVS		MHS	MDE	H	S
	Interior	Exterior				
26"	10	8	12	12	12	100
28"	10	8	12	12	12	100
30"	10	8	12	12	12	100
32"	10	8	12	12	12	100
34"	10	8	12	12	12	100
36"	10	8	12	12	12	100

Table 3: Support and Guide Spacing for Model SS & LDCS. Dimensions are in feet

MVS : Maximum Vertical Spacing between Guides/Supports
 MHS: Maximum Horizontal Spacing between Guides/Supports
 MDE: Maximum Distance between Elbows
 H: Maximum Freestanding Height above the Roof
 S: Maximum Suspended Length

SUPPORT AND GUIDE SPACING FOR LDCD

SUPPORT AND GUIDE SPACING FOR MODEL LDCD						
Inside diameter	MVS		MHS	MDE	H	S
	Interior	Exterior				
26"	10	8	12	12	12	50
28"	10	8	12	12	12	50
30"	10	8	12	12	12	50
32"	10	8	12	12	12	50
34"	10	8	12	12	12	50
36"	10	8	12	12	12	50

Table 4: Support and Guide Spacing for Model LDCD. Dimensions are in feet

MVS : Maximum Vertical Spacing between Guides/Supports
 MHS: Maximum Horizontal Spacing between Guides/Supports
 MDE: Maximum Distance between Elbows
 H: Maximum Freestanding Height above the Roof
 S: Maximum Suspended Length

OPENING DIMENSIONS FOR LDCS

OPENING DIMENSIONS FOR WALL/ROOF PENETRATION FOR MODEL LDCS				
Inside Diameter	Wall Thimble (WT)	Wall Thimble Insulated (WTI)	Roof Thimble (RT)	Roof Thimble Insulated (RTI)
26"	38 X 38	38 X 38	38 X 38	38 X 38
28"	40 X 40	40 X 40	40 X 40	40 X 40
30"	42 X 42	42 X 42	42 X 42	42 X 42
32"	46 X 46	44 X 44	44 X 44	44 X 44
34"	46 X 46	46 X 46	46 X 46	46 X 46
36"	48 X 48	48 X 48	48 X 48	48 X 48

Table 5: Opening Dimensions for Model LDCS. Dimensions are in inches.

OPENING DIMENSIONS FOR LDCD

OPENING DIMENSIONS FOR WALL/ROOF PENETRATION FOR MODEL LDCD				
Inside Diameter	Wall Thimble (WT)	Wall Thimble Insulated (WTI)	Roof Thimble (RT)	Roof Thimble Insulated (RTI)
26"	40 X 40	40 X 40	32 X 32	32 X 32
28"	42 X 42	42 X 42	34 X 34	34 X 34
30"	44 X 44	44 X 44	36 X 36	36 X 36
32"	46 X 46	46 X 46	38 X 38	38 X 38
34"	48 X 48	48 X 48	40 X 40	40 X 40
36"	50 X 50	50 X 50	42 X 42	42 X 42

Table 6: Opening Dimensions for Model LDCD. Dimensions are in inches.

JOINT ASSEMBLY

All components have a **MALE** and **FEMALE** end: the **MALE** end has a flue extension and a black Viton® O-ring gasket (see **Figure 1**) on it. The flue extension simplifies alignment and centering while the Viton O-ring provides a seal.

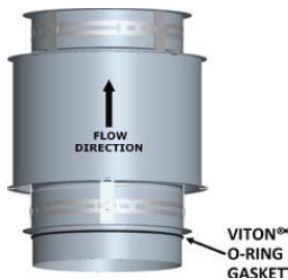


Figure 1 – Joint Assembly illustrated with LDCD

Place the inner V-Band (BSIK) on the spacers (see **Figure 2**) below the flange of the section. This will allow easier assembly. Squeeze the sections together and move the V-band up to and over the flanges.

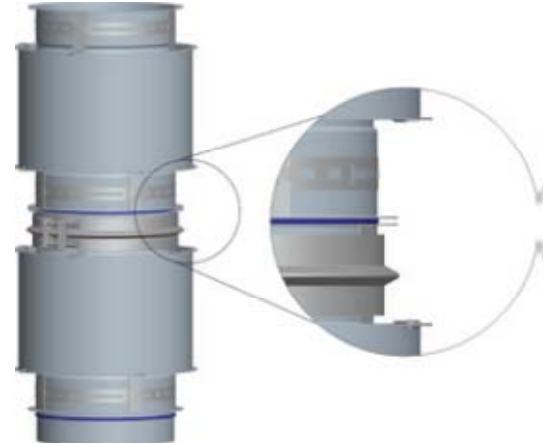


Figure 2 – V-Band at Section joint assembly

NOTE:

For illustration purposes the V-band is shown in blue so there is a visible difference between the o-ring and the black Viton caulking.

Tighten the screws of the V-Band with a screwdriver (see **Figure 3**).

NOTE:

Do not use a power drill driver as the torque may strip the threads.



Figure 3 – Install and tighten the V-Band

Secure the outer casing with the Outer Band (BSE) (see **Figure 4**) and use a screwdriver to tighten the screws (no power drill driver). Assembly is completed.



Figure 4 – Install and tighten the Outer Band

NOTE:

- Refer to **Table 7** for **S-375 and Viton® sealant** coverage when weathering on an exterior application.

Expected number of tubes (11oz.) of Viton® per joint assembly or of S-375 grey silicone for exterior weathering	
Inner Vent Diameter	Number of Tubes Per Joint
26	1 / 2
28	1 / 2
30	2 / 3
32	2 / 3
34	2 / 3
36	2 / 3

Table 7: Required Sealant of Viton or S-375 silicone

NOTE:

- **Viton caulking** is used as a sealant at the section joint for **HORIZONTAL INSTALLATIONS ONLY**
- S-375 is used as a sealant at the outer band for weathering protection

HORIZONTAL JOINT ASSEMBLY

SPECIAL CONSIDERATION MUST BE USED WHEN INSTALLING THE LDCS or LDCD IN A HORIZONTAL ORIENTATION – YOU MUST USE VITON CAULKING IN CONJUNCTION WITH THE O-RING.

On **HORIZONTAL installations**, add a bead of Viton® caulking **over** the Viton® O-ring. (See **Figure 5**)

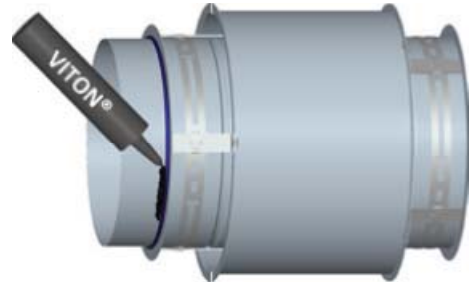


Figure 5 – Viton® caulking applied on HORIZONTAL installation

NOTE:

- Viton® caulking is supplied by Security Chimneys and tubes are marked Fluorodyn Caulk VITON®. The Viton® caulking must be ordered as a separate item.
- Refer to **Table 7** for coverage.

STRAIGHT LENGTHS

There are a variety of straight lengths that can be used to assemble the vent system. (see **Figure 6**)

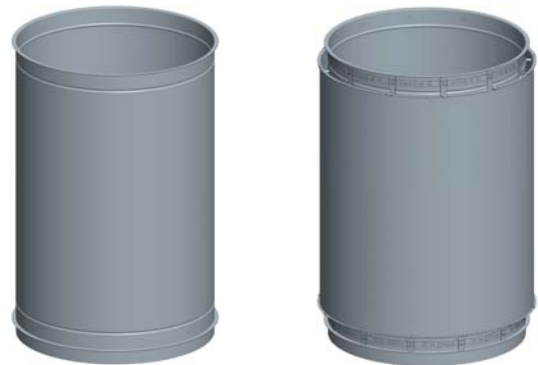


Figure 6 – Straight Length L36, L24, L18, L12 LDCS single wall (left) LDCD double wall (right)

HORIZONTAL DRAIN LENGTH (HDL)

1. Horizontal Drain length is equipped with a 1" (25mm) NPT nipple, which is attached to the inner flue and extends through the outer casing to provide a path to drain, condensate or water from the chimney. (See **Figure 7**)
2. A dam is attached to the inside of the inner flue adjacent to the nipple to channel the effluent to the drain.
3. The duct drain is intended for use at the end of a horizontal run where access and drainage is needed. (See **Figure 7**)
4. The drain coupling must be connected to a "P-trap" or approved container (supplied by others).

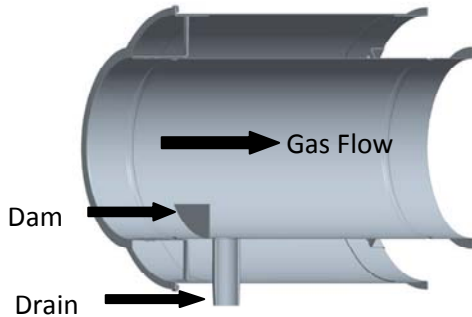


Figure 7 – Horizontal Drain Length (HDL)

VERTICAL DRAIN LENGTH (DL)

A Drain Section used to drain water on vertical line. It is a special variation of an 18" pipe length with provision to drain rain or condensate from the chimney. The pipe flue is equipped with an annular catch gutter wall and a 1" (25mm) NPT nipple extending through the casing for attachment of drain piping (See Figure 8) for detail. The drain piping should include a water leg of a height at least equal to the maximum expected operating pressure at the appliance outlet to avoid allowing flue gases to vent through the drain. Drain Length should be installed indoors to prevent freezing.

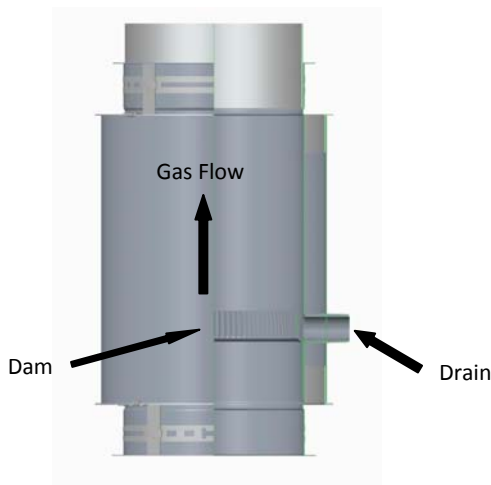


Figure 8 – Vertical Drain Section (DL)

VARIABLE LENGTH (LV)

The Variable Length (LV) has one major function. It makes up odd lengths of duct. It must not be used for expansion compensation. It is shipped with a flanged retaining band assembly on the inner sliding wall. (See **Figure 9**)

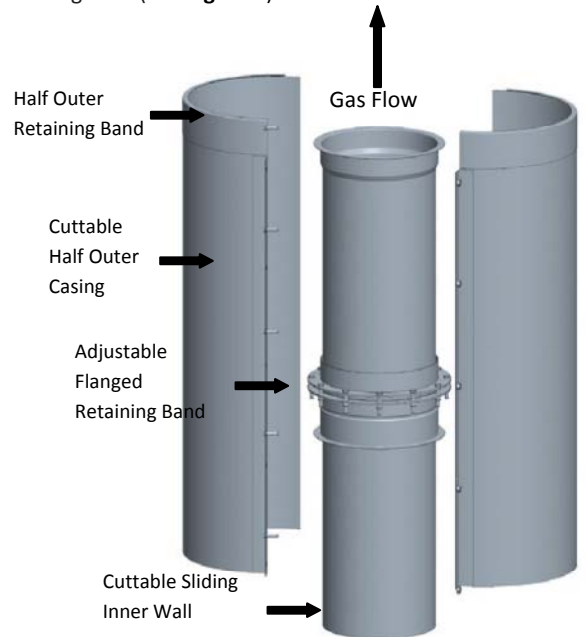


Figure 9 – Variable Length (LV)

The whole LV assembly includes:

- A sliding inner wall that fit closely inside a standard pipe section and it is flanged on one side.
- An adjustable flanged retaining band, composed of:
 - Double flanged sleeve
 - Retaining flanged collar
 - An inner V-Band (BSI)
 - A different Inner Band (BS)

LDCD Only

- Split outer casing with flanged half band on the top side only.

NOTE:

Viton® caulking must be applied on each Variable Length (LV) and must be supplied by Security Chimneys. Sealant must be ordered separately (Not included in the LV assembly).

Flange to flange length adjustment can range from 7" x 28 - 1/2"

NOTE:

If the flue is too long to fit into the adjacent section of duct without interfering with the flow path, it should be trimmed to desired flange to flange length plus an overlap of 4" with the inner wall of the inlet end duct section. The minimum overlap for the outer casing is 1" with the inlet end section outer wall. (See Figure 10)

NOTE 1:

If an LV joint must be joined to one of these fittings, the unflanged end of the tube should always point downward or towards downward slope.

BOOT TEE (BT) BOOT TEE 88 (BT88 not shown)

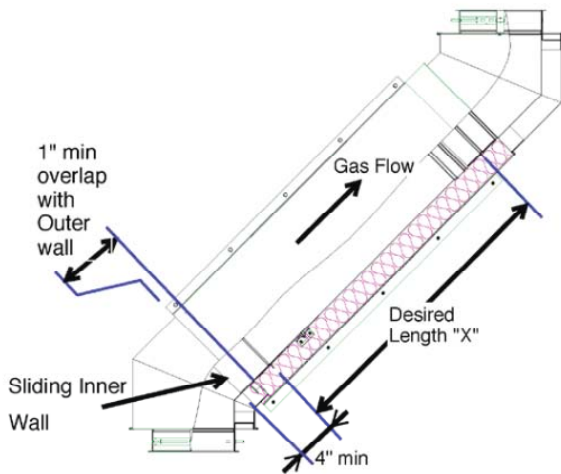


Figure 10 – Variable Length (LV) Overlap Detail

TEES

A variety of Tees have been design to allow various configurations and to have less resistance when the change in direction is required.

TEE 90 (T90) TEE 88 (T88 not shown)



Figure 11 – T-90

NOTE

All Tee (T90), Tee 88 (T88), Boot Tee (BT), Boot Tee 88 (BT88), Tee 45 (T45), Tee 43 (T43), Double Tee Y (DTY) and Tee Y (TY) can have smaller branches (connectors) to accommodate different diameter vents. This is a common practice in cascade (common vented) systems.

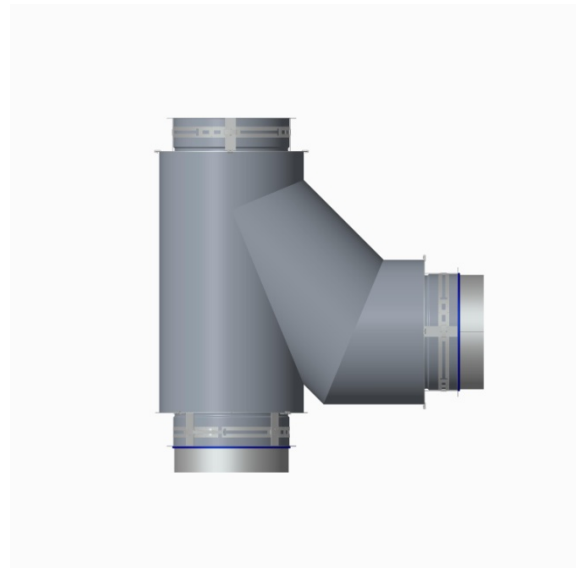


Figure 12 – Boot Tee (BT)

NOTE

Boot T88 (not shown) is designed to be installed at the base of the vertical rise and provides the minimum slope back to the appliance. It is typically used with Elbow 88 or other BT88 in the cascade.

TEE CAP (TC)

The Tee Cap provides access for cleaning and inspection. Usually on horizontal runs, the Tee Cap is used to close the unused port of any Tee and for clean out or access purposes only. When using clean-outs, always seal the connection to prevent leaks.

The part list includes;

1 - X Cap with one Handle

1 - X smaller V-Band (BSI)

The next Items are for the Model LDCD only:

1 - X Outer Casing

1 - X Larger

(See **Figure 13**)



Figure 13 – Tee Cap (TC) Parts

DRAIN TEE CAP (DTC)

The Drain Tee Cap (DTC) is used as a drain for the base of vertical installations and must be connected to a suitable disposable point. It can also be used as an access for clean outs or access purposes. (See **Figure 14**) Installation is the same as a Tee Cap (TC).

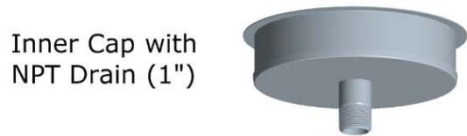


Figure 14 – Drain Tee Cap (DTC)

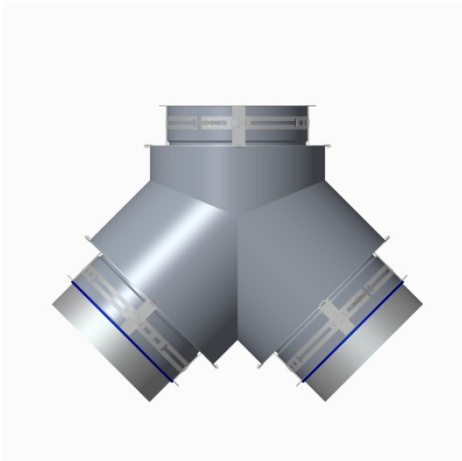


Figure 15 – Tee Y (TY)

NOTE:

The Tee Y can have smaller branches to accommodate different diameters

ELBOWS

ELBOWS {E2, E15, E30, E43, E45, E88, E90}
 Elbows are used for changes in direction in horizontal or vertical portions of a system. All elbows feature the standard joint assembly as described in JOINT ASSEMBLY section. Elbows are used in combination to make different angles ranging from 2° to 90° in horizontal and vertical segments of the system. (See **Figure 16a, 16b, 16c**)



Figure 16a – Elbow (E2 and E15)

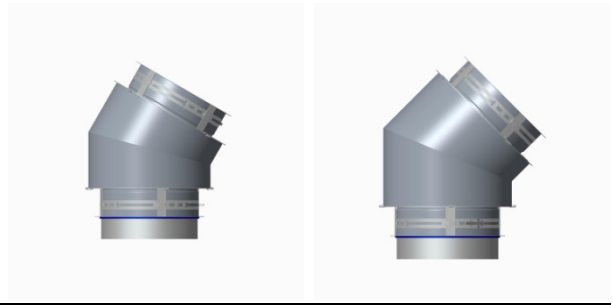


Figure 16b – Elbow (E30 and E45) – E43 not shown

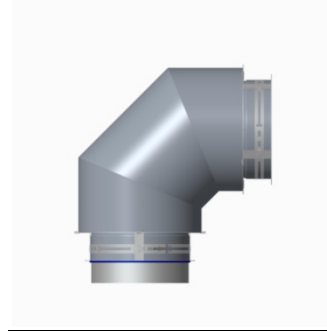


Figure 16c – Elbow (E88 and E90) – E88 not shown

NOTE:

The Elbow 88 and E43 (image not shown) are designed to provide a minimum 2° slope in horizontal installations to allow condensate to run back towards the appliance.

NOTE 1:

Elbows are not designed to take bending loads and must be structurally supported. Structural parts such as posts or beams may also be needed to hold chimney supports in position.

OFFSETS FOR MINIMUM DISTANCE

The tables below (8a and 8b) show the MINIMUM Offset for Elbows when combined

Flue Diameter Ø (in.)	LDCS				
	3°	15°	30°	45°	90°
26	3/8	2 5/8	6 7/8	12 7/16	34 1/4
28	3/8	2 11/16	7 1/8	13	36 1/4
30	3/8	2 3/4	7 3/8	13 9/16	38 1/4
32	3/8	2 7/8	7 5/8	14 1/8	40 1/4
34	3/8	2 15/16	7 15/16	14 3/4	42 1/4
36	3/8	3	8 3/16	15 5/16	44 1/4

TABLE 8: Minimum Offset for Each Elbow - LDCS

Dimensions are in inches

LDCD					
Flue Diameter Ø (in.)	3°	15°	30°	45°	90°
26	1/2	3 1/4	8 1/8	14 3/8	39 1/2
28	1/2	3 1/4	8 3/8	14 7/8	41 1/2
30	1/2	3 3/8	8 5/8	15 1/2	43 1/2
32	1/2	3 3/8	8 7/8	16 1/8	45 1/2
34	1/2	3 1/2	9 1/8	16 3/4	47 1/2
36	1/2	3 1/2	9 1/2	17 1/4	49 1/2

TABLE 8a: Minimum Offset for Each Elbow - LDCD

Dimensions are in inches



Figure 17 – Elbow Offset MINIMUM C/L to C/L

OFFSETS

1. The length of the offset is determined by strength considerations. The maximum dimension between supports is given in Table 8 & 9, and is applicable to all horizontal and sloped orientations.
2. The minimum offset is accomplished with two elbows directly connected to each other (see **Figure 17 and Table 8a, 8b**).
3. With frequent re-support, there is no structural or operating limit to the length of horizontal or sloped portions, providing the system meets the capacity, pressure drop of available equipment.
4. The carrying capacity of supports and their structural attachments must take into account the weight of the offset plus whatever vertical section is carried by that support.
5. Height limits for supports are tabulated in **Table 3 and 4**
6. The vertical sections above the offset must also be supported or anchored and guided where necessary.
7. Anchor Plate Wall Support (WSHD) and Wall Guide (WGHO) may be used in a variety of ways for offset support to achieve the structural stability of the system.
8. Re-supports must be securely anchored to walls, posts, or locally fabricated rigid framework. This framework must be designed to assure stability of supports, such as Ventilated anchor Plate (APV) supports and Heavy Duty Wall Supports (WSHD).
9. Supports suspended by threaded rods or from small size angles or straps are usually not satisfactory to resist bending moments due to offsets.

ADAPTERS

TAPERED INCREASER

The Tapered Increaser Adapter is used for a diameter change in duct system. Uses when there is a sufficient length for duct run available for the size change. The TIN is used uses 2” of length per 1 “increment diameter change. The TIN is considered to have the same load strength as a straight duct. (See Figure 18)



Figure 18 – Tapered Increaser (TINØ)

NOTE

Typically used in a vertical orientation to avoid condensate pooling.

ECCENTRIC TAPERED INCREASER (ETIN)

The Eccentric Tapered Increaser Adapter is similar as the Tapered Increaser Adapter except the smaller diameter is offset from the larger diameter. When installed horizontally, the ETIN keep a flat slope unlike the TIN on Figure 17. (See **Figure 18**)



Figure 19 – Eccentric Tapered Increaser (ETINØ)

GENERAL INSTALLATION GUIDELINES

1. Several support and guiding methods are used to anchor a chimney against upward, downward and angular placement.
2. These supports and guides prevent bending stresses on the chimney elbows and joints.
3. Certain limitations apply for proper installation of supports and guides. See **Table 9**.

MAXIMUM HEIGHT LIMITS for each TYPE of SUPPORT			
Parts	Flue Diameter Ø (in.)	Height (ft.)	
		LDCS	LDCD
Anchor Plate Ventilated (APV)	26" to 36"	161	82
Anchor Plate with length (APVL)	26" to 36"	172	87
Base Support Tee	26" to 36"	63	32
Wall Support Heavy Duty (WSHD)	26" to 36"	64	32

Table 9: MAXIMUM HEIGHTS and LIMITS for each Type of Support

Dimensions are in inches for the diameter and feet for distance

ANCHOR PLATE with LENGTH VENTILATED (APVL)

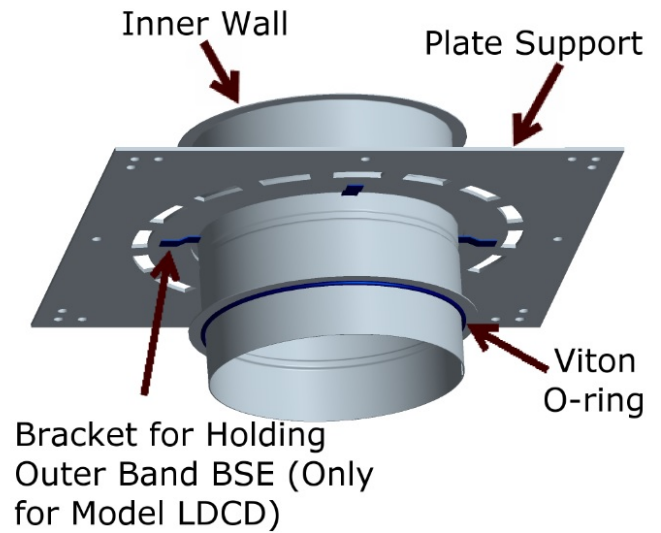


Figure 21 – APVL – Anchor Plate with Length Ventilated

ANCHOR PLATE VENTILATED

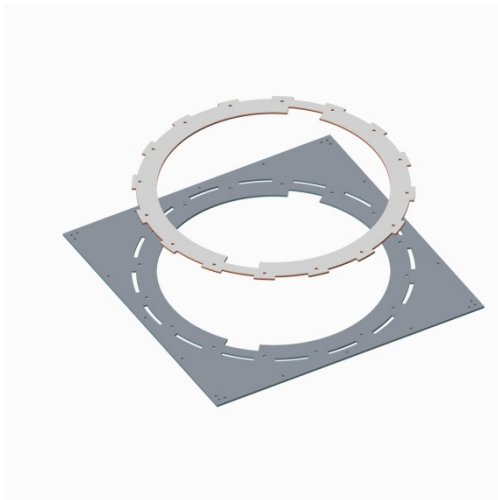


Figure 20 – APV – Ventilated Anchor Plate

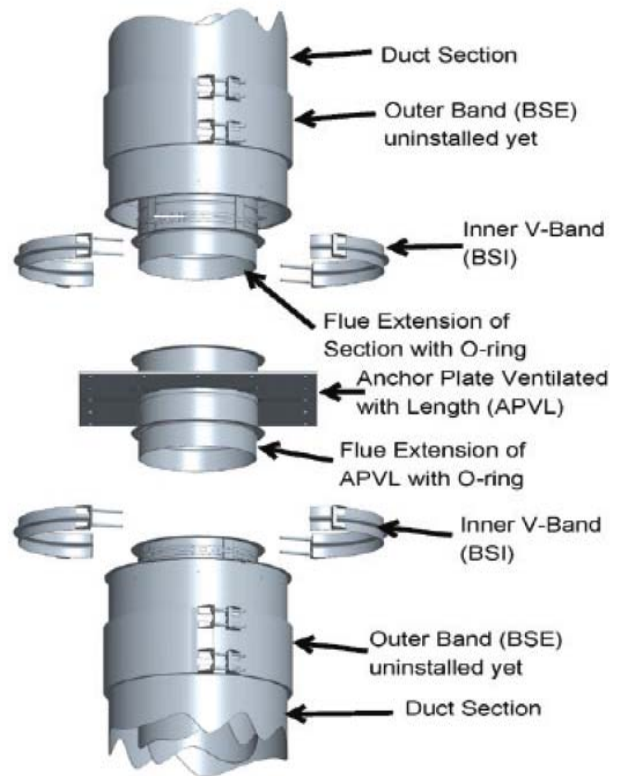


Figure 22 – Detail of Assembly - Anchor Plate with Length (APVL)

HEAVY DUTY WALL SUPPORT (WSHD)

When attached to a non-combustible wall with brackets and struts, a Heavy Duty Wall Support makes up a fixed-point. The clamp rings are installed with the splits 90° apart so that they support each other. The notches in the clamp rings are aligned with the draw screws of the flange band. The Heavy Duty Wall Support Assembly is bolted together with provided hardware. It is made with adjustable struts, which allows a variable clearance from the non-combustible wall to the grease duct outer casing.

The minimum clearance varies with the size of the wall support, but is between 2 and 2 W' (based on the angle shape of the Full Angle Ring (FAR)). (See **Figure 24a**)

The maximum clearance for all sizes is around 10". (See **Figure 24b**)

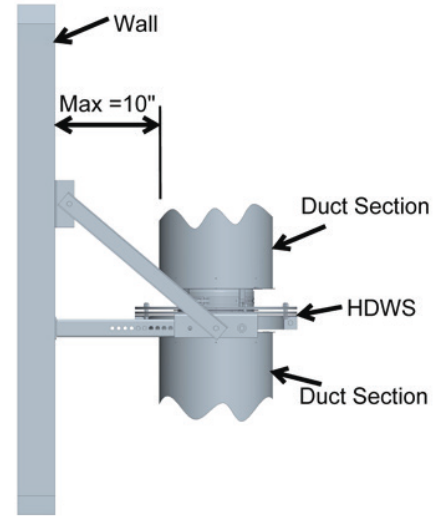


Figure 24b –Heavy Duty Wall Support MAXIMUM CLEARANCE

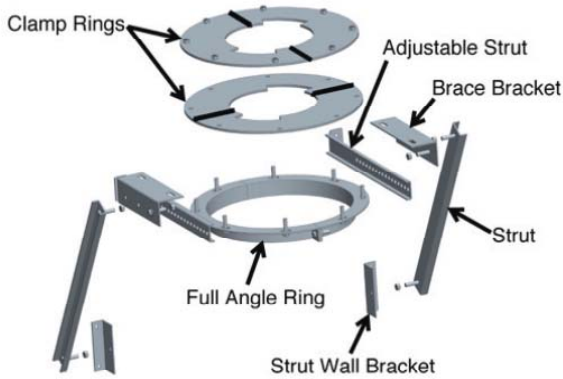


Figure 23 – Heavy Duty Wall Support (HDWS)

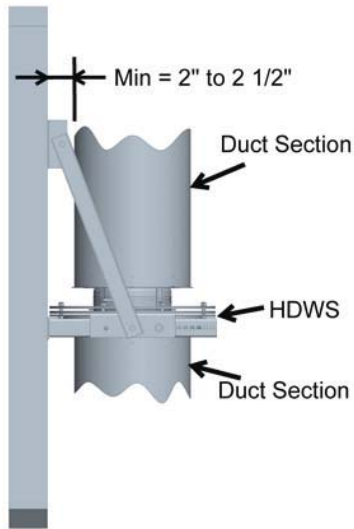


Figure 24a –Heavy Duty Wall Support MINIMUM CLEARANCE

HEAVY DUTY WALL GUIDE (WGHD)

The Heavy Duty Wall Guide is designed to complement the Heavy Duty Wall Support (See **Figure 23**). It is used as a lateral guide to prevent the duct from flexing due to lateral loading. The proper location for a WGHD is immediately below the outer closure band near the duct joint. The Heavy Duty Wall Guide is bolted together with hardware provided to form a rigid assembly. (See **Figure 25**)

NOTE:

Seal joint with S-375 sealant above and below support if exposed to weather.

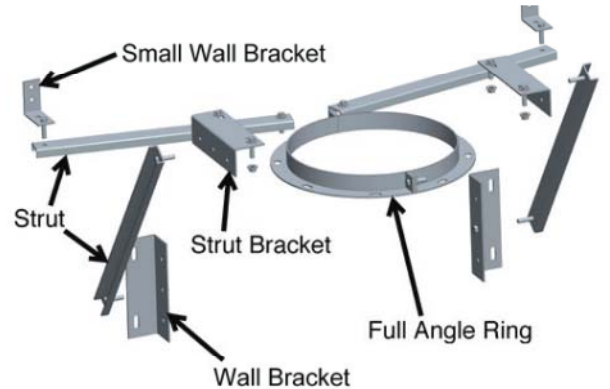


Figure 25 – Heavy Duty Wall Guide (WGHD)

FULL ANGLE RING (FAR)

A Full Angle Ring is used as a guide to prevent the duct from flexing due to lateral loading. The angle ring is split for ease of installation. It is 1/8" larger inside diameter than the outside diameter of the duct to allow movement of the duct inside the ring. (See **Figure 26**)



Figure 26 – Full Angle Ring (FAR)

HALF ANGLE RING (HAR)

A Half Angle Ring is used as a saddle in horizontal or sloped runs.



Figure 27 – Half Angle Ring (HAR)

GUYING AND BRACING

1. Proper guying and bracing is essential for part of the vent that extends above the roof or parapet wall. The vent at this point is subject to wind conditions and needs special attention for proper stabilization. (See **Figure 28**)
2. If the vent above the roof does not exceed dimension H, no special guying or bracing is required. However, to protect the flashing from lateral movement, a guide must be installed at the roof level. See **Figure 28a**)
3. For vent height above the roof that needs guying or bracing, a support, a small length and a expansion length must be installed near the roof level to absorb the thermal expansion and minimise this effect on the guy wire or brace.
4. When using guy wire, the cable must be slightly slack or loose to allow thermal expansion.
5. When using rigid bracing, the maximum vertical height between supports must be reduced to 5' to compensate thermal expansion.

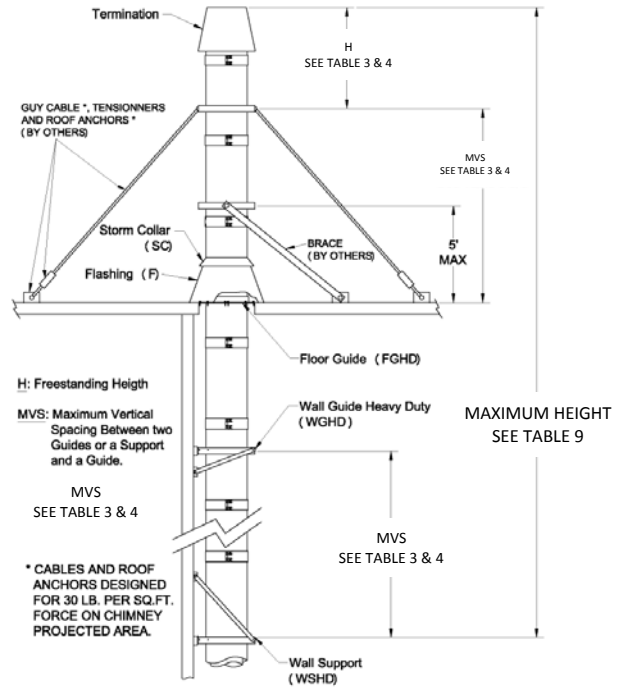


Figure 28 - Height with rigid bracing or guying option

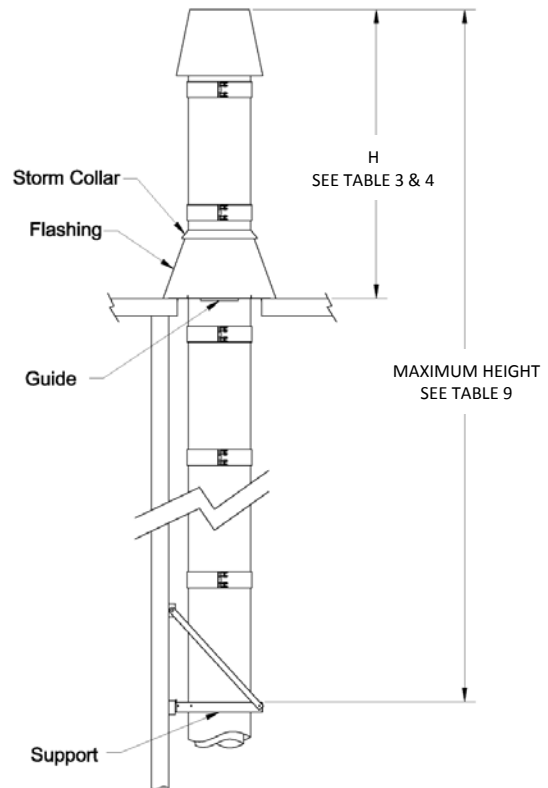


Figure 28a - Maximum freestanding Height

NOTE:

Recommended to use 1/2" threaded rod on Horizontal

STRUCTURAL BRACING AND FRAMING

Supported vent sections in a vertical position must be braced with diagonal members or gussets to prevent deflection of the supported joint as shown in Figure 27. "X" is a minimum of 30°.

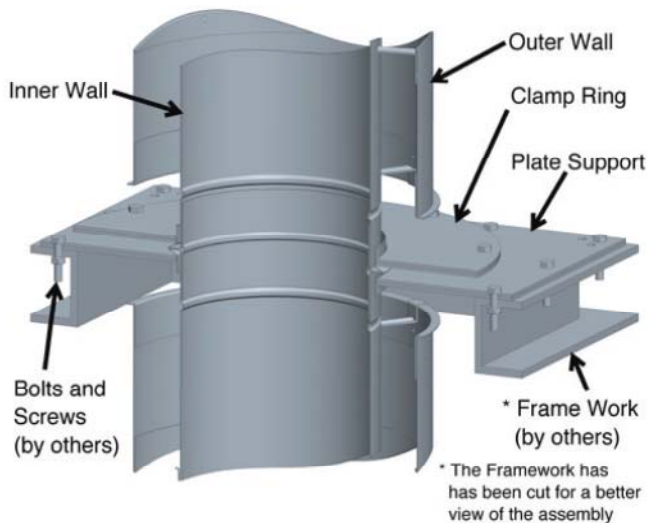


Figure 29 – Anchor Plate Vertical bracing

Anchor Plate Horizontal Bracing

Plate Supports are usually located adjacent to fittings, such as tees or elbows, to protect fitting from expansion stresses. **Table 10** shows Plate Support, bracing and framework requirements for duct size ranges.

NOTE: If bracing is used, minimum "X" angle is 30°. If there is no bracing, the framework must be attached to structural members to provide equivalent rigidity. (See **Figure 30**)

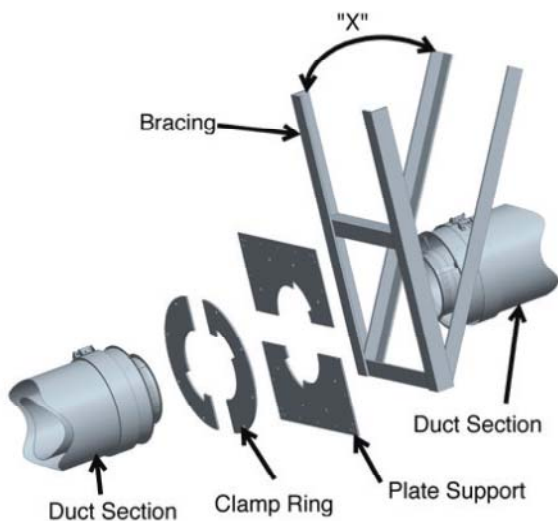


Figure 30 – Anchor Plate Horizontal bracing

Duct Diameter \emptyset (in)	Plate thickness (in)	Bracing (in)	Framework (in)
$\emptyset 26 @ \emptyset 36$	1/4	3 x 3 x 1/4 Channel or equivalent	3 x 3 x 1/4 Channel or equivalent

TABLE 10: Minimum Acceptable Size for Framework and Bracing for Model LDCS / LDCD

Dimensions are in inches

LOCATION OF SUPPORTS

Supports can be used in different combinations to secure the vent in place. See Figure 28 and 28a for typical support and guide locations.

VARIABLE LENGTH SUPPORT

To prevent the LV form sagging, it is recommended that the vent section adjacent to a LV is supported or guided. See Figure 31 for typical support locations for Variable Length.

When necessary, properly guide an adjustable length by installing a Heavy Duty Wall Guide (WGHD) or any supports immediately below duct join on adjacent section.

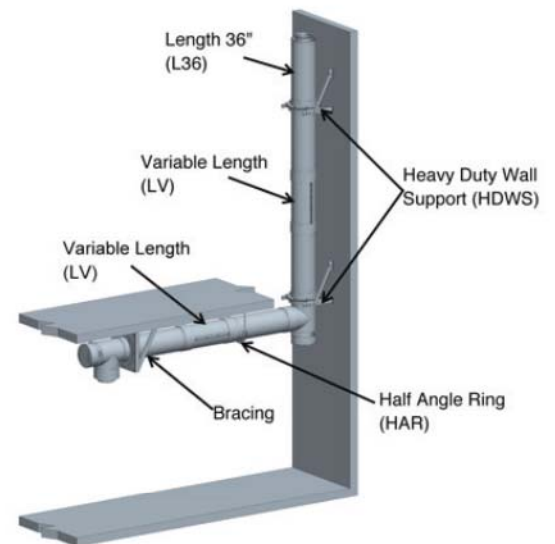


Figure 31 - Typical Installation locations for the Variable and Adjustable Lengths

NOTE:

LV overlapping joints are not intended to support any weight in the vertical position. The inlet and outlet ends must each be supported.

TEE SUPPORT

The Tees must be supported properly to protect them from bending. It can be done by means of Anchor Plate (AP), Anchor Plate with Length (APL) or Heavy Duty Wall Support (WSHD) When a tee is used at the base of the riser, the preferred location for support is above the Tee, thus suspending the Tee.

(See Figure 32)

A Heavy Duty Wall Support (WSHD), a Ventilated Anchor Plate (APV) or an Ventilated Anchor Plate with Length (APV)) can be used to support the TEE.

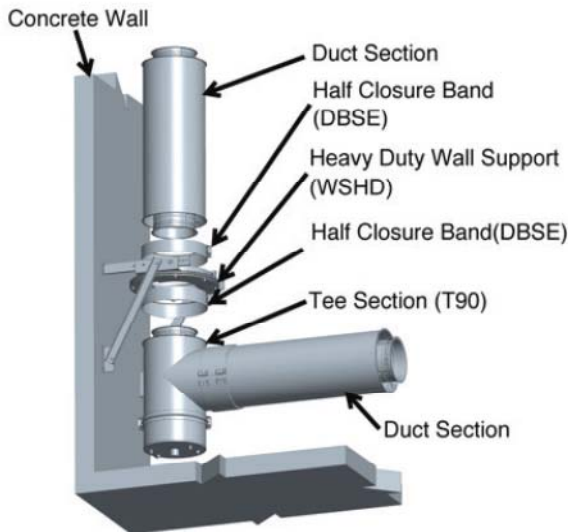


Figure 32 - Suspended Tee Support

NOTE:

In the case of an AP, Flange joint of vent and Tee are to be secured in place between the Clamp Rings. If it is not possible to suspend the Tee, it may be supported with a base (a structural steel stand).

When a Tee is used as a supported Tee, A Drain Tee Cap (DTC) must be used at the bottom of the Tee for draining condensate.

ELBOW SUPPORT

Elbows are to be supported on one end with either a Ventilated Anchor Plate (APV), a Ventilated Anchor Plate with Length (APVL), or a Heavy Duty Wall Support (WSHD). See Figure 33 for an example with an APV and Figure 34 for an example with a (WSHD).

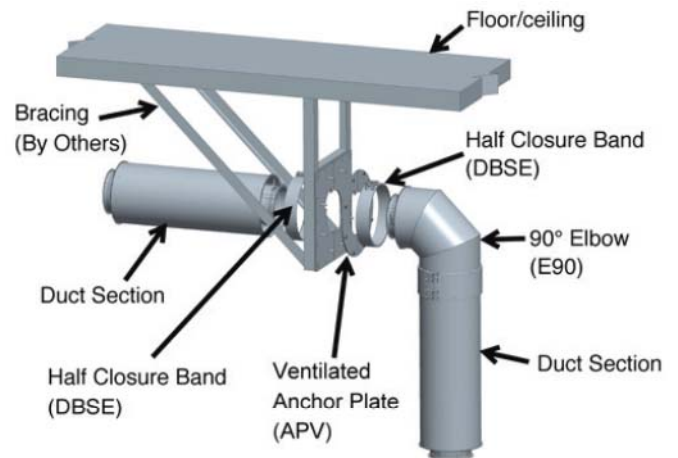


Figure 33 – Elbow Support

NOTE:

In the case of an AP, flange joint of duct and elbow are to be secured in place between the Clamp Ring and square plate Support.

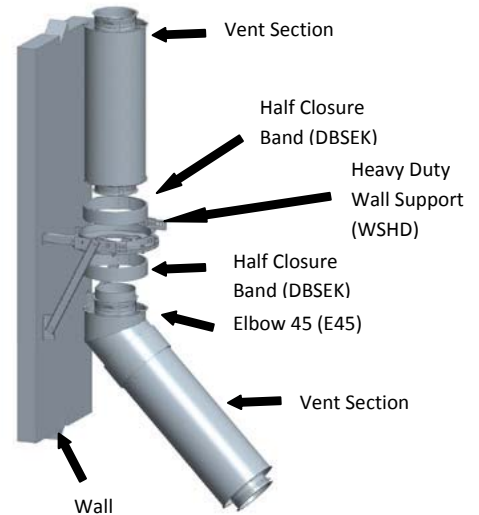


Figure 34 – Elbow with Heavy Duty Wall Support (WSHD)

NOTE:

Flange joint of duct and elbow are to be secured in place between the Clamp Rings

ROOF PENETRATION

Storm Collar (SC)

The Storm Collar (SC) is used above the flashing for complete weatherization above the roof. It has to be sealed with the outer joint sealant S-375 (not included). (See **Figure 35**)



Figure 35 – Storm Collar (SC)

Flashing (F)

The roof Flashing (F) is used in conjunction with Storm Collar (SC) for weatherization on a flat roof. (See **Figure 36**)



Figure 36 – Flat Flashing (F)

ADJUSTABLE FLASHING (F30)

The Adjustable Flashing (F30) is used in conjunction with Storm Collar (SC) for weatherization on a roof with a pitch 5° to 30°. (See **Figure 37**)

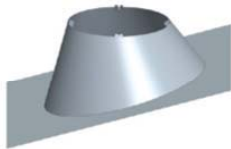


Figure 37 – Adjustable Flashing (F30)

NOTE:

Both Flashings are intended for installation on non-combustibles roofs only.

NOTE 1:

The flashings are non-ventilated and does not provide for any reduced clearance to combustible.

NOTE 3:

Maintain adequate spacing for expansion from the floor and the outer band (BSE) that is under the floor.

NOTE 4:

If the maximum freestanding duct height above the Anchor Plate (AP), Anchor plate with length (APL) or Full Angle Ring (FAR) exceeds that shown in the **Table 3 or 4** guying is required.



Figure 38 – Minimum Opening Flat Roof

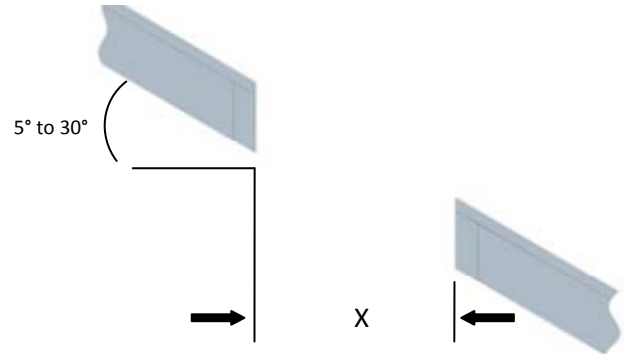


Figure 39 – Minimum Opening Pitched (Sloped) Roof

WARRANTY

These products have a limited warranty. Please read the warranty to be familiar with its coverage. Retain this manual. File it with your other documents for future reference.

PRODUCT REFERENCE INFORMATION

Please contact Security Chimneys International for the phone number of your nearest Security Chimneys International dealer who will answer your questions or address your concerns.

Normally, all parts should be ordered through your Security Chimneys International distributor or dealer. Parts will be shipped at prevailing prices at time of order.

When ordering repair parts, always give the following information:

1. The model number of the chimney system.
2. The part number.
3. The description of the part.
4. The quantity required.
5. The installation date of the chimney system.

If you encounter any problems or have any questions concerning the installation or application of this system, please contact our dealer.