



# Models VSI/IVSI

Stainless Steel Double Wall  
Positive Pressure Venting Systems  
Special Gas Vent Applications



AMPCO Commercial & Industrial Models VSI/IVSI are modular, prefabricated piping systems which embody flanged joints designed for both quick assembly and pressure-sealing capabilities.

## **SPECIAL GAS VENT APPLICATIONS**

- *Boilers*
- *Water Heaters*
- *Furnaces*



Tested and listed to  
UL1738/ULC-S636



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### UNDERWRITERS LABORATORIES LISTINGS

Models VSI and IVSI in sizes 5" through 48" diameters have been tested and Listed (Safety Certified) by Underwriters Laboratories, Inc. (ULI) and bears the UL and/or c-UL logo signifying compliance with U.S. and/or Canadian standards. UL Listing product categories include:

(USA)

Special Gas Vent (UL1738)

(Canada)

Type BH Gas Vent (ULC-S636)

UL file numbers for PS and IPS include MH16161

### CODE AND STANDARD COMPLIANCE

NFPA

ICC (IMC, IFGC)

IAMPO (UMC)

NBC (Canadian National Building Code)

### ASSOCIATION/COMMITTEE PARTICIPATION



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## AMPCO Sizing/Pressure Calculations



Grand Rapids, MI 49512  
Phone: 800-524-5524  
www.ampcostacks.com

THE FOLLOWING CALCULATIONS ARE THEORETICAL AND ARE FOR REFERENCE ONLY TO ASSIST OUR CLIENTS. AMPCO ASSUMES NO RESPONSIBILITY FOR FIELD CLAIMS AGAINST THIS DATA. CALCULATIONS SHOULD BE VERIFIED BY A LICENSED HVAC PROFESSIONAL ENGINEER.

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----- BOILER / APPLIANCE FLUE GAS CALCULATION -----

Fuel Type	1 - Natural Gas or Equivalent
MBTU Input (1000 / BTU)	3450 Per Hour
Ambient Temperature	70 Degrees F.
Flue Gas Temp. Rise Above Amb	280 Degrees F.
%CO2 in Combustion Products	9 %
Altitude Above Sea Level	0 Feet
Effective Height of System	19.5 Feet
Length of System (inc. height)	30 Feet

System sized for partial load

Vertical Manifold Tee:	0	Horizontal Manifold Tee:	0
45 Degree Lateral Tee:	0	90 Degree Tee:	0
15 Degree Elbow:	0	90 Degree Elbow:	0
45 Degree Elbow:	0	45 Degree Elbow:	3
Drain Sections:	0	Stack Drains:	0
Tapered Reducers in Sys:	0	Equal System Resistance:	0
Allowable Pressure:	0	Stepped Reducers in Sys:	NO
Barometric Damper:	0	Pressure Changes:	0

Stack Cap Termination

Computer Sized at:	13.905 Inches
Ampco Product Size Selected	16 Inches
Barometric Pressure @ Altitude:	29.92 Inches Hg
Density of Flue Gases:	0.049 lbs. / Foot <sup>3</sup>
Theoretical Draft:	0.097 Inches H2O
Flue Gas %CO2 Used for Calcs:	9 %
Combustion Products Mass:	0.99 lbs. / MBTU
Flue Gas Mass Flow:	55.93 lbs. / min.
Flue Gas Volume Flow (CFM):	1150.8 Feet <sup>3</sup> / min
Flue Gas Velocity (@ Size):	13.74 Feet / Sec.
Total System Velocity Heads:	1.866 K
Total System Pressure Losses:	0.051 Inches H2O
Max. Press. at System Entrance:	-0.046 Inches H2O

## System Overview

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AMPCO Model VSI and IVSI are modular, prefabricated venting systems which embody flanged joints designed for both quick assembly and pressure-sealing capabilities. They offer a combination of insulated venting components as well as the structural accessories needed for support and attachment to building structures.

Standard gas-carrying venting parts are usable for category I, II, III, & IV Boiler, Water Heater, and Furnace applications.

### Features and Benefits

- Factory-built for high quality, durability and long life
- Stainless steel double-wall construction with up to 4" ceramic fiber insulation for strength and stringent temperature requirements
- Safety tested and listed to multiple UL standards, signifying compliance with U.S. and Canadian codes
- 5" to 48" diameters (ID) to fit the wide range of commercial applications and customer specifications
- Array of components and accessories designed to make a complete installation simple and quick
- AMPCO 5-year limited warranty for Special Gas Vent applications

### Complete Line of Fittings

Fittings include various elbows, tees, supports and terminations, as well as a variety of accessory fittings designed to make installation simple and quick.

Each component is shipped complete and ready for installation. Each ordered part includes Inner Vee Bands, Outer Channel Bands and all the necessary hardware.

All items included with each order are listed in this catalog under the part description.



### Exceeding the Requirements

AMPCO, inventors of the positive pressure system concept, far exceeds the requirements of codes and other manufacturers. Results of our testing programs illustrate this fact.

#### Leak Tests

AMPCO conducted system pressure testing (to 15" w.c.) against leakage tests in UL1738/ULC-S636.

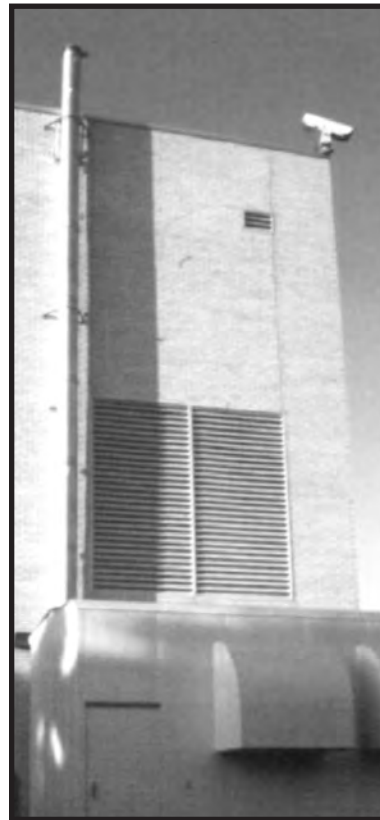
#### Seismic Tests

We further demonstrated the superiority of the Model VSI and IVSI concept by conducting seismic load tests. These tests proved the structural integrity of our products under severe stress by showing that a guyed stack measuring 20 inches in diameter and exceeding 10 feet above the guying location, per our UL testing, could withstand the rigors of all seismic zones.



### Structural Tests

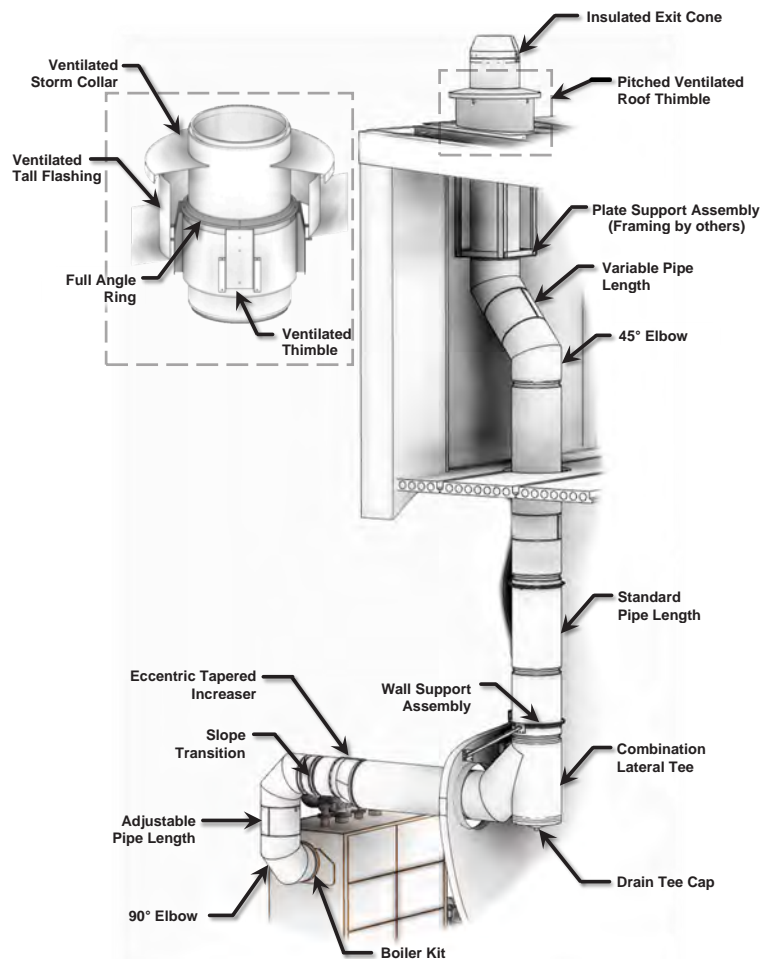
AMPCO recently tested for greater freestanding limits (termination height above a guide point). These tests, simulating stack performance under 110 mph wind conditions, again demonstrated the superiority of AMPCO products.



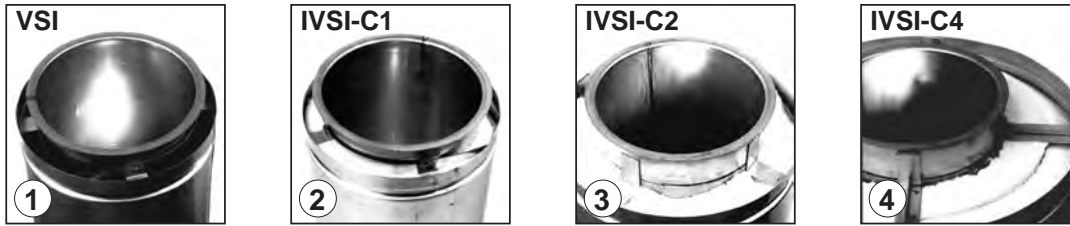
# Guide to Component Parts

This page illustrates some of the major parts described on pages 8-30.

Product	Code	page	Product	Code	page	Product	Code	page
<b>Joint Assembly Parts</b>			<b>Double Wall Fittings (cont)</b>			<b>Roof Penetrations</b>		
Overlapping Vee Band	VB	8	Drain Tee Cap	TC	13	Storm Collar	SC	22
Channel Band	CB	8	Clean Out Tee Cap	TCN	13	Tall Flashing	TF	22
Half Channel Band	HCB	8	15° Elbow	EL15	14	Pitched Tall Flashing	PTF	22
Special Gas Vent Sealant	SGV-550	8	30° Elbow	EL30	14	Ventilated Thimble	THB	23
			45° Elbow	EL45	15	Ventilated Tall Flashing	VTF	23
			90° Elbow	EL90	15	Ventilated Storm Collar	VSC	23
<b>Double Wall Pipe</b>			Eccentric Increaser	EOT	16	Ventilated Thimble Assembly	MVT	23
60" Pipe Length	60	10	Tapered Increaser	OT	16	Ventilated Support Assembly	MRS	24
42" Pipe Length	42	10	Step Increaser	OS	17	Pitched Ventilated Thimble	PVT	24
30" Pipe Length	30	10	Drain Section	DS	17			
18" Pipe Length	18	10						
<b>Adjustable/Variable Pipe</b>			<b>Support/Guide Accessories</b>			<b>Terminations</b>		
30" Adjustable Pipe	AG30	10	Half Angle Ring	HR	18	Closure Ring	CR	25
18" Adjustable Pipe	AG18	10	Full Angle Ring	FR	18	Stack Cap	SK	25
30" Variable Pipe	VL30	11	Plate Support Assembly	PA	18	Exit Cone	EC	26
18" Variable Pipe	VL18	11	Wall Support Assembly	WA	18	Rain Cap	CCA	26
			Wall Guide Assembly	WG	19	Miter Cut	MC	27
			Floor Guide Assembly	FG	19			
			Support Strap	SS	19			
<b>Double Wall Fittings</b>			<b>Connection Accessories</b>			<b>Miscellaneous</b>		
90° Tee	MT	11	Boiler Kit	BK	19	Guy Section	GS	28
45° Tee - Lateral	JL	12	Seal Ring	SR	20	Guy Tensioner	GT	28
90° Wye	JY	12	Clamp Flange	CF	20	Slope Transition	ST	28
			Flanged Hood Transition	TS	21			
			Unflanged Hood Transition	TSU	21			
			Fan Adapter	FA	21			



Model VSI vs. Model IVSI



OD Calculation	
Model(s)	OD (Inches)
VSI, IVSI1	OD=ID+2
IVSIC2	OD=ID+4
IVSIC4	OD=ID+8

Understanding Product Codes and Part Numbers (Example: 6IVSI316/316-AG30C2)

All parts manufactured by AMPCO are identified by a series of numbers and letters which describe their makeup and function.

Here is how to interpret the Part Number designation for Model VSI and IVSI products.

1. It begins with the pipe or fitting's internal diameter (in inches) such as 6, 22, 36, etc.
2. This is followed by the Model designation, VSI for air-insulated, or IVSI for parts that are fiber insulated.
3. Next, is the product's Material designation, 316/316, 316/304, or 316/Alum. The first number indicates the material of the inner wall, while the second half indicates the material of the outer wall, if stainless. If aluminized steel outer wall (Alum), the part number will indicate the inner wall only.
4. Then, following a long dash, the product Code is listed, such as AG30, JY, or MVT. If the product is air insulated, the product identification ends with this code.
5. Finally, when a product is fiber insulated, a designation is added at the end to indicate insulation thickness. C1 means a thickness of 1-inch; C2, 2-inches; C4 4 inches.

(For comparison, see photos above.)

Thus, the Ordered Part Number for a 30-inch Adjustable Pipe, with a 6-inch I.D., made of 316 Stainless Steel inner and aluminized steel outer, packed with 2-inch ceramic fiber insulation, is listed:

6IVSI316-AG30-C2

\* Note: For products with reduction or increaser parts, the part number changes as follows:

MT and JL - Diameter of Body listed in front of Model VSI or IVSI.  
Diameter of Snout listed in front of Code designation.

Example - For a Manifold Tee with a 42" dia. Body and 30" dia. Snout:

42VSI316-30MT

OT and OS - Smaller diameter listed first (before Model designation)  
Larger diameter listed before Code designation

Example - For a Tapered Increaser with an 8" to 16" dia. Body:

8VSI316-16OT



## Overlapping Vee Band

Code:  
VB

Vee Band for connecting inner 1/2" rolled flanges. Capable of holding 15" w.c. of pressure when properly installed.



Materials Available:

<b>All Stainless Construction</b>
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Notes:

1. VB's are a one or two-piece design. Included with pipe sections.
2. Model VSI part used for all IVSI applications.

## Channel Band

Code:  
CB

Used to seal the Outer Jackets of two adjoining components.



(CB height is 4 3/4")

Materials Available:

<b>Aluminized Steel</b>	<b>316</b>
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Notes:

1. Ceramic fiber insulation provided for IVSI models with the CB and HCB.

## Half Channel Band

Code:  
HCB

Used to seal the Outer Jackets of two adjoining components when the VB must remain open (such as PA's).



Materials Available:

<b>Aluminized Steel</b>	<b>316</b>
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Notes:

1. Ceramic fiber insulation provided for IVSI models with the CB and HCB.

## Sealant Code: SGV550

SGV550 Sealant is for 550° F. maximum flue gas temperatures, and is applied to the VB and pipe flange before connecting two Inner Pipes at installation.



### Sealant Coverage

*Expected Number of Joints Sealed Per Tube*

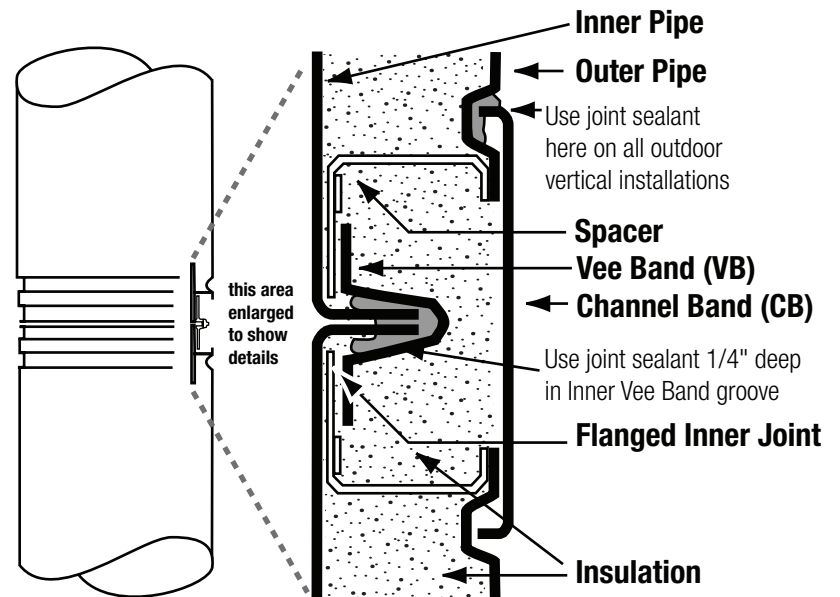
Inner Dia. (inches)	SGV550
5/6	10
8/10	9
12	8
14/16	7
18/20	6
22/24	5
26/28	4
30/32	3
36	2
42/48	1



## The Four Easy Steps to Joint Assembly

For all AMPCO pipe and fittings, the flange-to-flange inner pipe joints are identical for each pipe inside diameter.

As shown in the adjoining illustration and photos, assembly is accomplished in four easy steps, using only standard tools.



\*Illustrations shown are for reference only.

See Installation Instructions for detailed sealant application and use.



**Step 1**

Apply proper sealant to pipe flange and Vee Band (VB) channel.



**Step 2**

Position Inner VB below flange of pipe or fitting.



**Step 3**

Mate flanges of two pipes. Position Inner VB over both flanges and tighten.



**Step 4**

Position Outer Channel Band around outer casing. Align with pipe grooves and tighten.

# Straight Pipe Lengths

Codes:  
60, 42, 30, 18

Standard pipe lengths for all AMPCO exhaust systems.



Materials Available:

- 316/Alum
- 316/304
- 316/316

- 59.13" lengths available in
  - 6" dia. through 24" dia., VSI and IVSI-C1
  - 6" dia. through 22" dia., IVSI-C2
  - 6" dia. through 18" dia., IPSC4
- 42" lengths available in:
  - 5" dia. through 42" dia., VSI/IVSI-C1
  - 5" dia. through 40" dia., IVSI-C2
  - 5" dia. through 36" dia., IVSI-C4
- 18" & 30" lengths available in all diameters (5"-48") of all products (VSI, IVSI-C1, IVSI-C2, and IVSI-C4).

Ordered Part Includes:  
Pipe, plus one VB and one CB.

- Notes:
1. Special pipe lengths from 6" to 59.13" available upon special request.  
(i.e. 25.5" length)

2. K Factors  
(Where L = pipe length in feet and D = pipe diameter in inches)

a. For Boiler Stacks and Chimneys:

$$K=0.30 \frac{L}{D}$$

b. For Diesel and Turbine Exhausts and Grease Ducts:

$$K=0.25 \frac{L}{D}$$

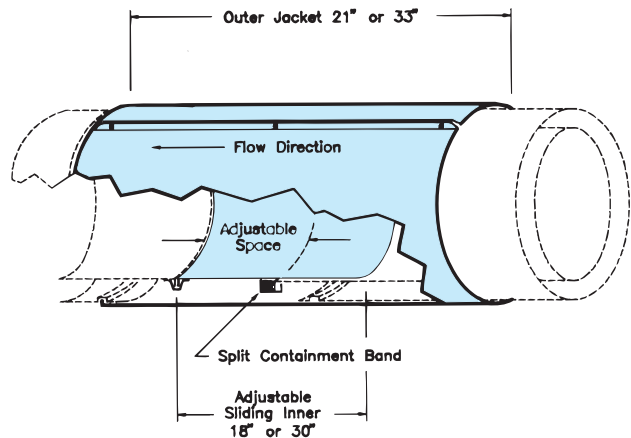
e.g. for 50 feet of 10 inch diameter pipe

$$K=0.25 \frac{50}{10} = 1.25$$

# Adjustable Pipe Lengths

Codes:  
AG30, AG18

Fills odd dimensions and compensates for expansion between two fixed points on low pressure applications.



Materials Available:

- 316/Alum
- 316/304
- 316/316

Ordered Part Includes:  
Pipe, plus one 30" or 18" inner Slip Section, one TSU, one Packing Seal, one two-piece Compression Band, one two-piece Containment Ring, one two-piece Outer Jacket, and one VB.  
Ceramic fiber insulation provided for IVSI models.

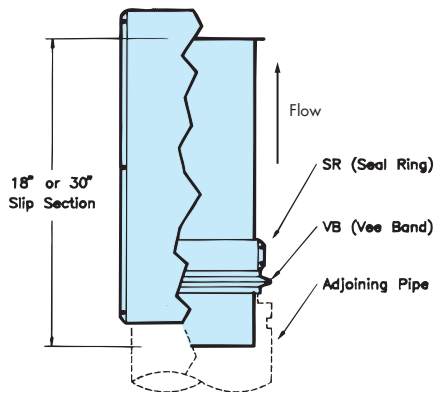
- Notes:
1. Minimum installed length is 4".
  2. AG18 not available for 28" diameter and above.
  3. Maximum installed space is when the inner slip section protrudes at least 1/2 pipe diameter into the adjacent pipe.
  4. Flow Resistance Factor (K) is the same as insulated pipe lengths.

# Variable Pipe Lengths

Codes:  
VL30, VL18

Fills odd dimensions between standard lengths. (Not used to compensate for thermal expansion.)

- VL30 fills 4"- 26" space.
- VL18 fills 4"-14" space.



Materials Available:

- 316/Alum
- 316/304
- 316/316

Ordered Part Includes:  
VL30 or VL18, plus one 30" or 18" Inner Slip Section, one two-piece Outer Jacket, one SR, and one VB.

Ceramic fiber insulation provided for IVSI models.

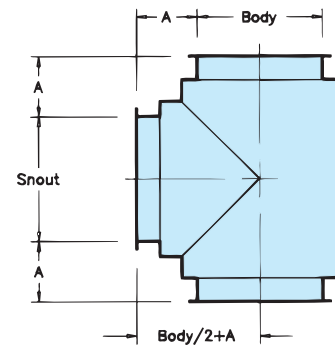
Notes:

1. The SR is sealed with supplied sealant, not allowing the VL to compensate for expansion.
2. Flow Resistance Factor (K) is the same as insulated pipe.

# 90° Manifold Tee

Code:  
MT

Joins vertical and horizontal sections to affect a change of direction. Also provides for connection of drain or inspection fittings.



Dimension A		
VSI/IVSI	IVSI-C2	IVSI-C4
4"	5"	7"

Materials Available:

- 316/Alum
- 316/304
- 316/316

Ordered Part Includes:  
MT, plus one VB for the body diameter, one VB for the snout diameter, and one CB for the body diameter.

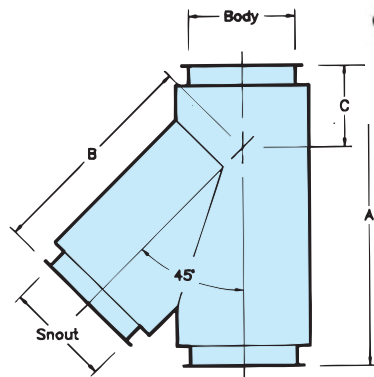
Notes:

1. Use TCN/NTAC for clean out or inspection, or TC for drain at base of vertical stack.
2. Snout available in any standard diameter equal to or smaller than the body diameter.
3. K = 1.25 Flow Resistance Factor

# 45° Lateral Tee

Code:  
JL

Provides a low resistance entry into manifolds. Combine with EL45 for low resistance 90° direction change.



Materials Available:

- 316/Alum
- 316/304
- 316/316

Ordered Part

Includes:

JL, plus one VB for the body diameter, one VB for the snout diameter, and one CB for the body diameter.

Notes:

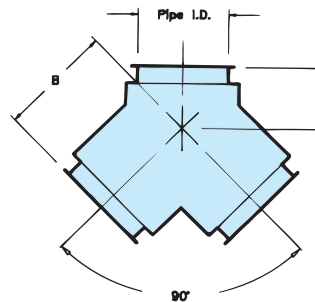
1. Snout available in any standard diameter equal to or smaller than the body diameter.
2. K = 0.4 Flow

Product			Dimensions			
Pipe I. D.			Inches			
VSI/IVSI-C1	IVSI C2	IVSI C4	A	B	C	(O. D.)
5	-	-	19 1/2	13 3/4	5 3/4	7
6	5	-	19 1/2	13 3/4	5 3/4	8/9
8	6	-	22 7/8	16 5/8	6 1/4	10
10	8	-	24 1/16	19	5 1/16	12
-	-	5	26 5/16	21 7/16	5 1/2	13
12	10	6	26 5/16	21 7/16	5 1/2	5 1/2
14	12	8	29 3/4	23 7/8	5 7/8	16
16	14	10	32 9/16	26 1/4	6 1/16	18
18	16	12	35 3/8	28 3/4	6 1/4	20
20	18	14	38 3/16	31 1/16	7 1/8	22
22	20	16	43 7/8	35 7/8	8	24
24	22	18	43 7/8	35 7/8	8	26
26	24	20	49 9/16	40 3/4	8 3/16	28
28	26	22	49 9/16	40 3/4	8 3/16	30
30	28	24	55 3/16	45 9/16	9 5/8	32
32	30	26	55 3/16	45 9/16	9 5/8	34
-	32	28	60 3/16	50 3/8	10 7/16	36
36	-	30	60 3/16	50 3/8	10 7/16	38
-	36	32	69 3/16	58 1/4	11 3/4	40
-	-	-	69 3/16	58 1/4	11 3/4	42
42	-	36	69 3/16	58 1/4	11 3/4	44
-	42	-	79 3/16	66 3/8	13	46
48	-	42	79 3/16	66 3/8	13	50
-	48	-	88 3/8	74 1/4	14 7/16	52
-	-	48	88 3/8	74 1/4	14 7/16	56

# 90° WYE

Code:  
JY

Provides low pressure drop for joining appliances in the horizontal and vertical position.



Materials Available:

- 316/Alum
- 316/304
- 316/316

Ordered Part

Includes:

JY, plus two VB's and one CB.

Notes:

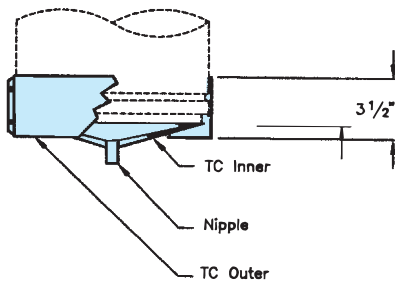
1. All openings are the same diameter.
2. Can be used with TCN/NTAC to provide a single clean out toward each 90° direction change.
3. Use OT or OS as needed for smaller branch connections.
4. K = 0.6 Flow Resistance Factor

Product			Dimensions		
Pipe I. D.			inches		
VSI/IVSI-C1	IVSI-C2	IVSI-C4	A	B	(O. D.)
5	-	-	4 5/8	9	7
6	5	-	4 5/8	9	8/9
8	6	-	5 1/16	10	10
-	-	-	5	11	11
10	8	-	5	11	12
-	-	-	5 1/2	12	14
12	10	6	5 1/2	12	14
14	12	8	5 7/8	13	16
16	14	10	6 3/8	14	18
18	16	12	6 3/8	15	20
20	18	14	7 1/8	17	22
22	20	16	8	19	24
24	22	18	8	19	26
26	24	20	8 3/4	22	28
28	26	22	8 3/4	22	30
30	28	24	9 5/8	24	32
32	30	26	9 5/8	24	34
-	32	28	10 1/2	27	36
36	-	30	10 1/2	27	38
-	36	32	11 3/4	31	40
-	-	-	11 3/4	31	42
42	-	36	11 3/4	31	44
-	42	-	13	34	46
48	-	42	13	34	50
-	48	-	14 1/4	38	52
-	-	48	14 1/4	38	56

## Drain Tee Cap

Code:  
TC

Provides a drain at the base of a vertical chimney when connected to the MT or JL.



Materials Available:



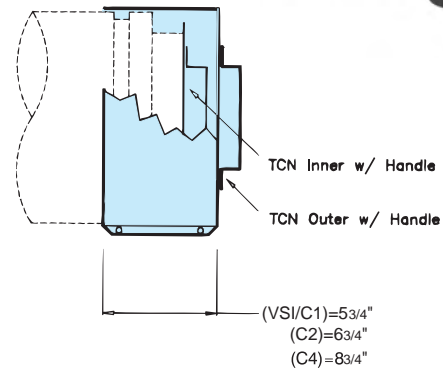
Ordered Part Includes:

TC, plus one 1" N.P.T. Nipple (5"-20" sizes), or 2" N.P.T. Nipple (22"-48" sizes), one Inner Section, one Outer Jacket, and one VB. Ceramic fiber insulation provided for IVSI models.

## Cleanout Tee Cap

Code:  
TCN

Provides for cleanout at end of manifold when connected to MT or JL.



Materials Available:



Ordered Part Includes:

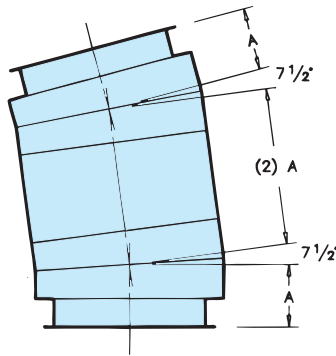
TCN, plus one Inner Section (with handle), one Outer Jacket (with handle), and one VB.

Ceramic fiber insulation provided for IPS models

# 15° Elbow

Code:  
EL15

This two-piece Elbow can establish many different degrees when combined with other standard Elbows.



Materials Available:

- 316/Alum
- 316/304
- 316/316

Ordered Part Includes:  
Two 7 1/2" Elbows, plus  
two CB's, and two VB's.

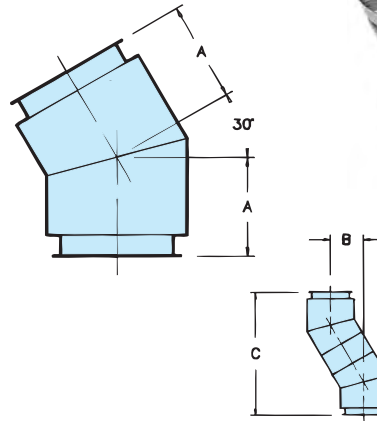
Notes:  
1. K = 0.06 Flow  
Resistance Factor

Product		Dimensions		
(Pipe I. D.)		(Inches)		
VSI/ IVSI-C1	IVSI-C2	IVSI-C4	A	(O. D.)
5	-	-	4 <sup>3</sup> / <sub>16</sub>	7
6	5	-	4 <sup>7</sup> / <sub>16</sub>	8/9
8	6	-	4 <sup>1</sup> / <sub>4</sub>	10
-	-	-	4 <sup>5</sup> / <sub>16</sub>	11
10	8	-	4 <sup>9</sup> / <sub>16</sub>	12
-	-	5	4 <sup>7</sup> / <sub>16</sub>	14
12	10	6	4 <sup>7</sup> / <sub>16</sub>	14
14	12	8	4 <sup>1</sup> / <sub>2</sub>	16
16	14	10	4 <sup>9</sup> / <sub>16</sub>	18
18	16	12	4 <sup>3</sup> / <sub>8</sub>	20
20	18	14	4 <sup>11</sup> / <sub>16</sub>	22
22	20	16	4 <sup>3</sup> / <sub>4</sub>	24
24	22	18	4 <sup>13</sup> / <sub>16</sub>	26
26	24	20	4 <sup>7</sup> / <sub>8</sub>	28
28	26	22	4 <sup>15</sup> / <sub>16</sub>	30
30	28	24	5	32
32	30	26	5 <sup>1</sup> / <sub>16</sub>	34
-	32	28	5 <sup>5</sup> / <sub>8</sub>	36
36	-	30	5 <sup>1</sup> / <sub>8</sub>	38
-	36	32	5 <sup>5</sup> / <sub>16</sub>	40
-	-	-	5 <sup>3</sup> / <sub>8</sub>	42
42	-	36	5 <sup>3</sup> / <sub>8</sub>	44
-	42	-	5 <sup>1</sup> / <sub>24</sub>	46
48	-	42	5 <sup>7</sup> / <sub>16</sub>	50
-	48	-	5 <sup>1</sup> / <sub>8</sub>	52
-	-	48	5 <sup>9</sup> / <sub>16</sub>	56

# 30° Elbow

Code:  
EL30

Used for a vertical or horizontal  
direction change of 30°.



Materials Available:

- 316/Alum
- 316/304
- 316/316

Ordered Part Includes:  
EL30, plus one CB  
and one VB.

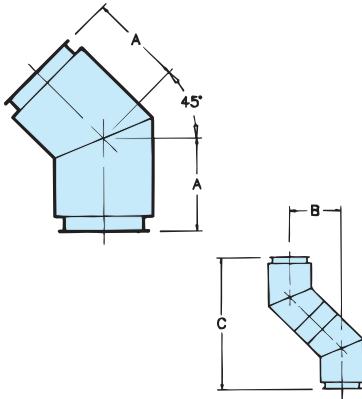
Notes:  
1. K = 0.12 Flow  
Resistance Factor

Product		Dimensions				
(Pipe I. D.)		(Inches)				
VSI/ IVSI-C1	IVSI-C2	IVSI-C4	A	B	C	(O. D.)
5	-	-	6 <sup>1</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>8</sub>	22 <sup>3</sup> / <sub>8</sub>	7
6	5	-	6 <sup>1</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>8</sub>	22 <sup>7</sup> / <sub>8</sub>	8/9
8	6	-	6 <sup>3</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>8</sub>	23 <sup>1</sup> / <sub>8</sub>	10
-	-	-	6 <sup>5</sup> / <sub>16</sub>	6 <sup>9</sup> / <sub>16</sub>	24 <sup>3</sup> / <sub>8</sub>	11
10	8	-	6 <sup>11</sup> / <sub>16</sub>	6 <sup>11</sup> / <sub>16</sub>	24 <sup>7</sup> / <sub>8</sub>	12
-	-	5	7 <sup>1</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>16</sub>	27 <sup>1</sup> / <sub>4</sub>	13
12	10	6	7 <sup>5</sup> / <sub>16</sub>	7 <sup>5</sup> / <sub>16</sub>	27 <sup>1</sup> / <sub>4</sub>	14
14	12	8	7 <sup>7</sup> / <sub>8</sub>	7 <sup>7</sup> / <sub>8</sub>	29 <sup>3</sup> / <sub>8</sub>	16
16	14	10	8 <sup>1</sup> / <sub>4</sub>	8 <sup>1</sup> / <sub>4</sub>	30 <sup>5</sup> / <sub>8</sub>	18
18	16	12	8 <sup>5</sup> / <sub>8</sub>	8 <sup>5</sup> / <sub>8</sub>	31 <sup>5</sup> / <sub>8</sub>	20
20	18	14	9 <sup>1</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>8</sub>	34 <sup>1</sup> / <sub>8</sub>	22
22	20	16	9 <sup>3</sup> / <sub>8</sub>	9 <sup>3</sup> / <sub>8</sub>	35	24
24	22	18	10 <sup>1</sup> / <sub>16</sub>	10 <sup>1</sup> / <sub>16</sub>	37 <sup>1</sup> / <sub>2</sub>	26
26	24	20	10 <sup>3</sup> / <sub>16</sub>	10 <sup>3</sup> / <sub>16</sub>	38 <sup>1</sup> / <sub>2</sub>	28
28	26	22	11	11	40 <sup>7</sup> / <sub>8</sub>	30
30	28	24	11 <sup>1</sup> / <sub>4</sub>	11 <sup>1</sup> / <sub>4</sub>	41 <sup>7</sup> / <sub>8</sub>	32
32	30	26	11 <sup>3</sup> / <sub>8</sub>	11 <sup>3</sup> / <sub>8</sub>	44 <sup>3</sup> / <sub>8</sub>	34
-	32	28	12 <sup>3</sup> / <sub>16</sub>	12 <sup>3</sup> / <sub>16</sub>	45 <sup>3</sup> / <sub>8</sub>	36
36	-	30	12 <sup>7</sup> / <sub>8</sub>	12 <sup>7</sup> / <sub>8</sub>	47 <sup>3</sup> / <sub>4</sub>	38
-	36	32	13 <sup>3</sup> / <sub>8</sub>	13 <sup>3</sup> / <sub>8</sub>	48 <sup>3</sup> / <sub>8</sub>	40
-	-	-	13 <sup>9</sup> / <sub>16</sub>	13 <sup>9</sup> / <sub>16</sub>	50	42
42	-	36	14	14	52 <sup>1</sup> / <sub>2</sub>	44
-	42	-	14 <sup>1</sup> / <sub>4</sub>	14 <sup>1</sup> / <sub>4</sub>	53 <sup>3</sup> / <sub>8</sub>	46
48	-	42	14 <sup>3</sup> / <sub>16</sub>	14 <sup>3</sup> / <sub>16</sub>	56 <sup>1</sup> / <sub>16</sub>	50
-	48	-	15 <sup>5</sup> / <sub>16</sub>	15 <sup>5</sup> / <sub>16</sub>	57 <sup>1</sup> / <sub>8</sub>	52
-	-	48	15 <sup>9</sup> / <sub>16</sub>	15 <sup>9</sup> / <sub>16</sub>	57 <sup>1</sup> / <sub>8</sub>	56

## 45° Elbow

Code:  
EL45

Used for a vertical or horizontal direction change of 45°.



Materials Available:

316/Alum

316/304

316/316

Ordered Part Includes:  
EL45, plus one CB  
and one VB.

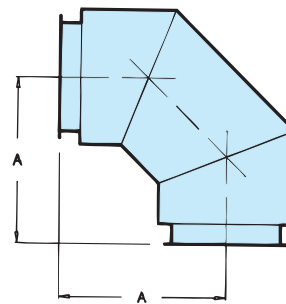
Notes:  
1. K = 0.15 Flow  
Resistance Factor

Product			Dimensions			
(Pipe I. D.)			(Inches)			
VSI/ IVSI-C1	IVSI-C2	IVSI-C4	A	B	C	(O. D.)
5	-	-	8 <sup>1/2</sup>	12	29	7
6	5	-	8 <sup>1/2</sup>	12	29	8/9
8	6	-	8 <sup>5/16</sup>	12 <sup>5/8</sup>	30 <sup>7/16</sup>	10
-	-	-	9 <sup>1/8</sup>	12 <sup>7/8</sup>	31 <sup>1/8</sup>	11
10	8	-	9 <sup>9/16</sup>	13 <sup>7/16</sup>	31 <sup>7/8</sup>	12
-	-	5	10 <sup>1/4</sup>	14 <sup>1/2</sup>	35	13
12	10	6	10 <sup>1/4</sup>	14 <sup>1/2</sup>	35	14
14	12	8	10 <sup>11/16</sup>	15 <sup>1/8</sup>	36 <sup>1/2</sup>	16
16	14	10	11 <sup>5/8</sup>	16 <sup>7/16</sup>	39 <sup>5/8</sup>	18
18	16	12	12 <sup>1/16</sup>	17 <sup>1/16</sup>	41 <sup>1/8</sup>	20
20	18	14	13	18 <sup>3/8</sup>	44 <sup>1/4</sup>	22
22	20	16	13 <sup>5/16</sup>	18 <sup>13/8</sup>	45 <sup>1/2</sup>	24
24	22	18	14 <sup>9/16</sup>	20 <sup>1/4</sup>	48 <sup>1/8</sup>	26
26	24	20	14 <sup>7/8</sup>	21 <sup>1/16</sup>	50 <sup>7/8</sup>	28
28	26	22	15 <sup>11/16</sup>	22 <sup>3/16</sup>	53 <sup>1/2</sup>	30
30	28	24	16 <sup>1/4</sup>	22 <sup>5/16</sup>	53 <sup>3/8</sup>	32
32	30	26	17	24	58	34
-	32	28	17 <sup>9/16</sup>	24 <sup>3/4</sup>	59 <sup>3/8</sup>	36
36	-	30	18 <sup>3/8</sup>	25 <sup>5/16</sup>	62 <sup>5/8</sup>	38
-	36	32	18 <sup>7/8</sup>	26 <sup>11/16</sup>	64 <sup>1/2</sup>	40
-	-	-	19 <sup>5/16</sup>	27 <sup>5/16</sup>	65 <sup>15/16</sup>	42
42	-	36	19 <sup>11/16</sup>	27 <sup>7/8</sup>	67	44
-	42	-	20 <sup>1/8</sup>	28 <sup>1/16</sup>	68 <sup>5/8</sup>	46
48	-	42	21 <sup>7/16</sup>	30 <sup>3/16</sup>	74 <sup>7/8</sup>	50
-	48	-	21 <sup>7/16</sup>	30 <sup>3/16</sup>	74 <sup>7/8</sup>	52
-	-	48	21 <sup>7/16</sup>	30 <sup>3/16</sup>	74 <sup>7/8</sup>	56

## 90° Elbow

Code:  
EL90

Used for a vertical or horizontal direction change of 90°.



Materials Available:

316/Alum

316/304

316/316

Ordered Part Includes:  
EL90, plus one CB and  
one VB.

Notes:  
1. K = 0.30 Flow  
Resistance Factor

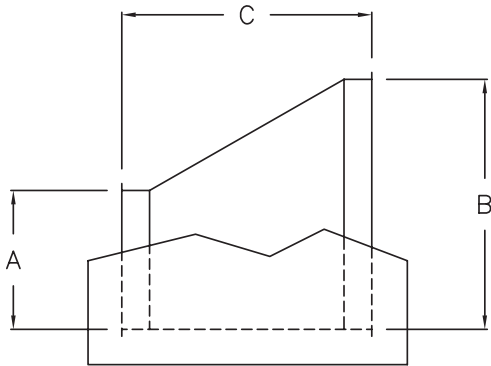
Product			Dimensions		
(Pipe I. D.)			(Inches)		
VSI/ IVSI-C1	IVSI-C2	IVSI-C4	A	(O. D.)	
5	-	-	11 <sup>1/2</sup>	7	
6	5	-	11 <sup>1/2</sup>	8/9	
8	6	-	12 <sup>1/2</sup>	10	
-	-	-	13 <sup>1/2</sup>	11	
10	8	-	13 <sup>1/2</sup>	12	
-	-	5	14 <sup>1/2</sup>	13	
12	10	6	14 <sup>1/2</sup>	14	
14	12	8	15 <sup>1/2</sup>	16	
16	14	10	16 <sup>1/2</sup>	18	
18	16	12	17 <sup>1/2</sup>	20	
20	18	14	18 <sup>1/2</sup>	22	
22	20	16	19 <sup>1/2</sup>	24	
24	22	18	20 <sup>1/2</sup>	26	
26	24	20	21 <sup>1/2</sup>	28	
28	26	22	22 <sup>1/2</sup>	30	
30	28	24	23 <sup>1/2</sup>	32	
32	30	26	24 <sup>1/2</sup>	34	
-	32	28	25 <sup>1/2</sup>	36	
36	-	30	26 <sup>1/2</sup>	38	
-	36	32	27 <sup>1/2</sup>	40	
-	-	-	28 <sup>1/2</sup>	42	
42	-	36	29 <sup>1/2</sup>	44	
-	42	-	30 <sup>1/2</sup>	46	
48	-	42	32 <sup>1/2</sup>	50	
-	48	-	33 <sup>1/2</sup>	52	
-	-	48	35 <sup>1/2</sup>	56	



## Eccentric Increaser

Code:  
EOT

The primary increaser used for changing diameters, due to flat bottom for effective condensate flow back to drain.



Materials Available:

316/Alum

316/304

316/316

Dimensions:

A = Smaller Diameter

B = Larger Diameter

C = Installed Length =  $[(B-A) 2] + 2$  (see Note 1 below)

Example:

Installed Length for 12VSI316-18EOT equals  $[(18-12)2] + 2 = 14$  inches.

Ordered Part Includes:

EOT, plus one two-piece Outer Jacket, and one VB for smaller diameter.

Ceramic fiber insulation provided for IVSI models.

Notes:

1. Installed length shall not be greater than longest available straight pipe length (see page 10) for each diameter.

2.  $K = N [1-(A/B)2]2$

where  $N = 0.47$  for one step EOT

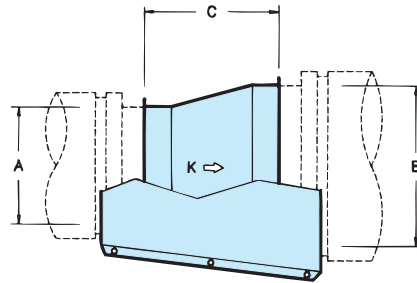
$N = 0.53$  for two step EOT

## Tapered Increaser/Reducer

Code:  
OT

Used when a pipe diameter change is required.

Make sure condensate build-up in larger diameter is drained away downstream of increaser.



Materials Available:

316/Alum

316/304

316/316

Dimensions:

A = Smaller Diameter

B = Larger Diameter

C = Installed Length =  $[(B-A) 2] + 2$  (see Note 1 below)

Example:

Installed Length for 12VSI316-18OT equals  $[(18-12)2] + 2 = 14$  inches.

Ordered Part Includes:

OT, plus one two-piece Outer Jacket, and one VB for smaller diameter.

Ceramic fiber insulation provided for IVSI models.

Notes:

1. Installed length shall not be greater than longest available straight pipe length (see page 10) for each diameter.

2.  $K = N [1-(A/B)2]2$

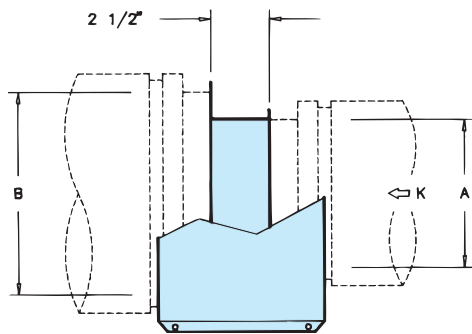
where  $N = 0.47$  for one step OT

$N = 0.53$  for two step OT

## Step Increaser/Reducer

Code:  
OS

Used when pipe diameter change is required in a small space. Make sure condensate build-up in large diameter is drained away downstream of increaser.



Materials Available:

316/Alum

316/304

316/316

Ordered Part Includes:

OS (Inner Stepped Pipe), plus one two-piece Outer Jacket, and one VB for the smaller diameter.

Ceramic fiber insulation provided for IVSI models.

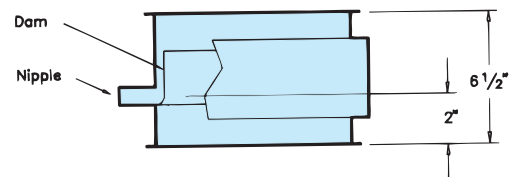
Notes:

1. This is a non-structural part; use only if OT will not fit within the allowable space.
2.  $K = N [1 - (A/B)^2]^2$

## Drain Section

Code:  
DS

Used with open stack terminations for draining off rain water from inside vertical or horizontal flue.



Materials Available:

316/Alum

316/304

316/316

Ordered Part Includes:

DS, plus one Drain Dam within the pipe length, one 1" Nipple, one CB, and one VB.

Notes:

1.  $K = 0.25$  Flow Resistance Factor

# Angle Rings

Codes:  
HR & FR

Used for guiding and/or supporting horizontal installations.



Materials Available:

**Painted Steel**

Notes:

1. Model IVS part used for IVSI-C1 applications.

Product (Pipe I. D.)		Dimensions (Inches) HR					
VSI/ IVSI-C1	IVSI-C2	IVSI-C4	Bolt Hole Circle	I.D. of Ring	No of Holes (HR)	Size of Angles	Angle of Holes
5	-	-	9	7 <sup>1</sup> / <sub>8</sub>	6	(1)	45
6	5	-	10	8 <sup>1</sup> / <sub>8</sub>	6	(1)	45
8	6	-	12	10 <sup>1</sup> / <sub>8</sub>	6	(1)	45
-	-	-	13	11 <sup>1</sup> / <sub>8</sub>	6	(1)	45
10	8	-	14	12 <sup>1</sup> / <sub>8</sub>	6	(1)	45
-	-	5	15	13 <sup>1</sup> / <sub>8</sub>	6	(1)	45
12	10	6	16	14 <sup>1</sup> / <sub>8</sub>	6	(1)	45
14	12	8	18	16 <sup>1</sup> / <sub>8</sub>	6	(1)	45
16	14	10	20	18 <sup>1</sup> / <sub>8</sub>	6	(1)	45
18	16	12	22	20 <sup>1</sup> / <sub>8</sub>	6	(1)	45
20	18	14	24	22 <sup>1</sup> / <sub>8</sub>	6	(1)	45
22	20	16	26	24 <sup>1</sup> / <sub>8</sub>	10	(2)	22.5
24	22	18	28	26 <sup>1</sup> / <sub>8</sub>	10	(2)	22.5
26	24	20	30	28 <sup>1</sup> / <sub>8</sub>	10	(2)	22.5
28	26	22	32	30 <sup>1</sup> / <sub>8</sub>	10	(2)	22.5
30	28	24	34	32 <sup>1</sup> / <sub>8</sub>	10	(2)	22.5
32	30	26	36	34 <sup>1</sup> / <sub>8</sub>	10	(2)	22.5
-	32	28	38	36 <sup>1</sup> / <sub>8</sub>	10	(2)	22.5
36	-	30	40	38 <sup>1</sup> / <sub>8</sub>	10	(2)	22.5
-	36	32	42	40 <sup>1</sup> / <sub>8</sub>	10	(2)	22.5
-	-	-	44	42 <sup>1</sup> / <sub>8</sub>	10	(2)	22.5
42	-	36	46	44 <sup>1</sup> / <sub>8</sub>	10	(2)	22.5
-	42	-	48	48 <sup>1</sup> / <sub>8</sub>	10	(2)	22.5
48	-	42	52	50 <sup>1</sup> / <sub>8</sub>	10	(2)	22.5
-	48	-	54	62 <sup>1</sup> / <sub>8</sub>	10	(2)	22.5
-	-	48	58	66 <sup>1</sup> / <sub>8</sub>	10	(2)	22.5

(1) Size of Angles = 1 1/2 x 1 1/2 x 3/16  
(2) Size of Angles = 2 x 2 x 3/16

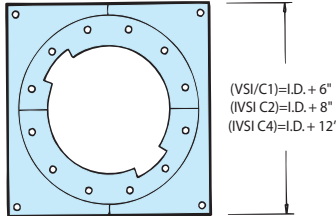
# Plate Support Assembly

Code:  
PA

Used for supporting the load of the stack, and as a fixed point anchor near fittings.



(VSI/C1)=I.D. + 4"  
(IVSI C2)=I.D. + 6"  
(IVSI C4)=I.D. + 10"



(VSI/C1)=I.D. + 6"  
(IVSI C2)=I.D. + 8"  
(IVSI C4)=I.D. + 12"

Materials Available:

**Painted Steel**

Ordered Part Includes:

Split (square) plate, one CF, two HCB's and hardware.

Plate Thickness:

0.188" for sizes 6" through 20" diameters  
0.250" for sizes 22" through 36" diameters  
0.375" for sizes 42" through 48" diameters

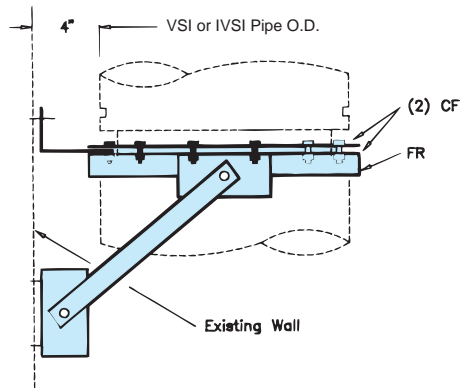
Notes:

- Two 316 Stainless Steel HCB's are provided for stainless steel outer projects.
- PA fabricated from 304 Stainless Steel is available upon request and is non-returnable. Allow extra manufacturing time.

# Wall Support Assembly

Code:  
WA

"Limited" support assembly with factory supplied bracing.



Materials Available:

**Painted Steel**

Ordered Part Includes:

One FR, two CF's, two HCB's, five brackets, two struts, and all hardware except connection at wall.

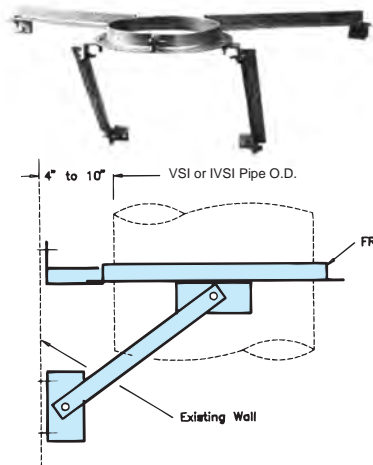
Notes:

- Assembly will maintain a 4" clearance between pipe O.D. and supporting structure.

## Wall Guide Assembly

Code:  
**WG**

Same use as FR, but with factory-supplied bracing.



Materials Available:

**Painted Steel**

Ordered Part Includes:

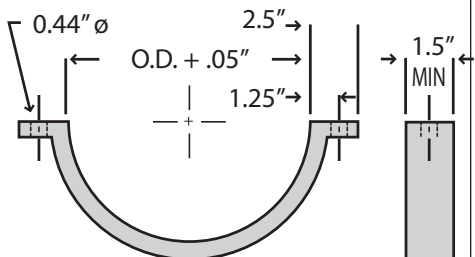
One FR, four struts, and six brackets.

Notes:

1. Assembly will maintain a 4" to 10" clearance between pipe O.D. and supporting structure.
2. Model VSI part used for IVSI-C1 applications.

## Support Strap

Code:  
**SS**



Materials Available:

**Painted Steel**

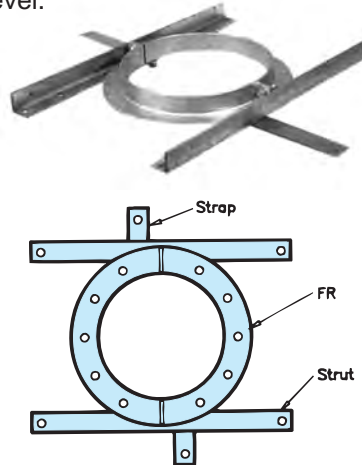
Notes:

Available in 5 through 26" PS only.  
0.188" Thick Hot Rolled Steel

## Floor Guide Assembly

Code:  
**FG**

Same use as FR, but with factory-supplied bracing for use at floor level.



Materials Available:

**Painted Steel**

Ordered Part Includes:

One FR, two struts, and two straps.

Notes:

1. Maximum hole through floor should not exceed the pipe O.D. plus 8".
2. Model VSI part used for IVSI-C1 applications.

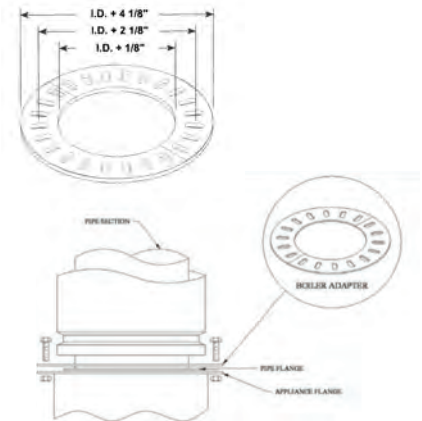
Pipe I.D. (Inches)			Dimensions	
VSI/IVSI-C1	IVSI-C2	IVSI-C4	I.D. of Ring	Size of Angles
5	-	-	17 1/2	(1)
6	-	-	18	(1)
-	5	-	19 1/2	(1)
8	6	-	21	(1)
-	-	-	21 1/2	(1)
-	-	5	22 1/2	(1)
10	8	-	24	(1)
12	10	6	27	(1)
14	12	8	29	(2)
16	14	10	30	(2)
18	16	12	32	(2)
20	18	14	33	(2)
22	20	16	34 1/2	(3)
24	22	18	36	(3)
26	24	20	37	(3)
28	26	22	38	(3)
30	28	24	39 1/2	(3)
32	30	26	41	(3)
-	32	28	42 1/2	(3)
36	-	30	44	(3)
-	36	32	46	(3)
-	-	-	47	(3)
42	-	-	48	(3)
-	42	36	50	(3)
-	-	42	52	(3)
48	-	-	53	(3)
-	48	-	54	(3)
-	-	48	58	(3)

- (1) Steel Angle = 1-1/2 x 1-1/2 x 3/16
- (2) Steel Angle = 1-3/4 x 1-3/4 x 3/16
- (3) Steel Angle = 2 x 2 x 3/16

## Flanged Boiler Kit

Code:  
**BK**

Used to transition to a flanged appliance. Features 24 connection slots to mate 4, 6, 8 or 12 bolt hole patterns.



24 Holes .375 x 1.0 at 15 degrees.  
Constructed of 1/4" hot-rolled steel.

Ordered Part Includes:

Two Half Boiler Adapter Flange Plates.  
Order HCB's separately if needed.

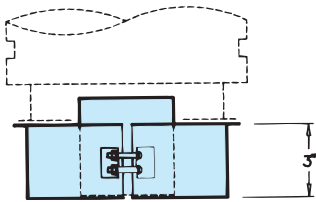
Notes:

1. Model VSI part used for all IVSI applications.

## Seal Ring

Code:  
SR

Used for non-welded attachment to appliances having an unflanged or collar outlet.



Materials Available:

**316/Alum**   **316/304**   **316/316**

Ordered Part Includes:  
SR, one CB, and one VB & hardware

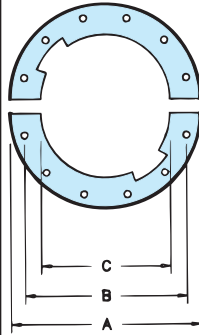
Notes:

1. Model VSI part used for all IVSI applications.

## Clamp Flange

Code:  
CF

Can be used as an attachment to flanged equipment (also part of PA and WA).



**A = Flange O.D.**

VSI/IVSI-C1 = I.D. + 5"  
C2 = I.D. + 7"  
C4 = I.D. + 11"

**B = Bolt Hole Circle**

VSI/IVSI-C1 = I.D. + 4"  
C2 = I.D. + 6"  
C4 = I.D. + 10"

**C = Flange I.D.**

VSI/IVSI-C1 = I.D. + 1/2"  
C2, C4 = I.D. + 1/2"

Materials Available:

**Painted Steel**

Ordered Part Includes:  
Two half clamp flange plates.

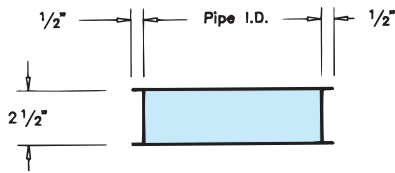
Notes:

1. 0.139" minimum thickness for sizes 5" to 8" diameters.
2. 0.188" minimum thickness for sizes 10" through 36" diameters.
3. 0.375" minimum thickness for sizes 42" and 48" diameters.
4. Model VSI part used for IVSI-C1 applications.
5. Order HCB's separately if needed.

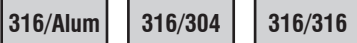
## Flanged Transition

Code:  
TS

Flanged at both ends.



Materials Available:



Ordered Part Includes:  
TS, plus one CB and one VB.  
Ceramic fiber insulation provided with IVSI models.

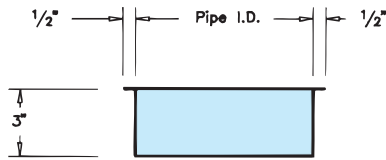
Notes:

1. Can be used for welding to equipment or transitions fabricated in the field.

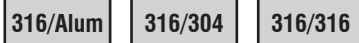
## Unflanged Transition

Code:  
TSU

Flanged at one end.



Materials Available:



Ordered Part Includes:  
TSU, plus one CB and one VB.  
Ceramic fiber insulation provided with IVSI models.

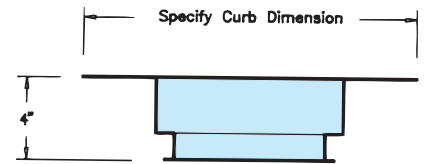
Notes:

1. Can be used for welding to equipment or transitions fabricated in the field.

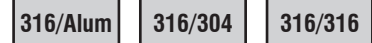
## Fan Adapter

Code:  
FA

Used for connection to an "up-blast" kitchen exhaust fan.



Materials Available:



Ordered Part Includes:  
FA, plus one VB and one CB.

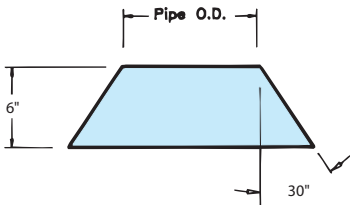
Notes:

1. Dimension of square plate (which is sandwiched between curb and fan housing) must be specified when ordering.

## Storm Collar

Code:  
SC

Used above the TF and PTF for complete weatherization above the roof.



Materials Available:

Aluminized or Galvanized Steel		304	316
--------------------------------	--	-----	-----

Ordered Part Includes:  
SC, plus hardware.

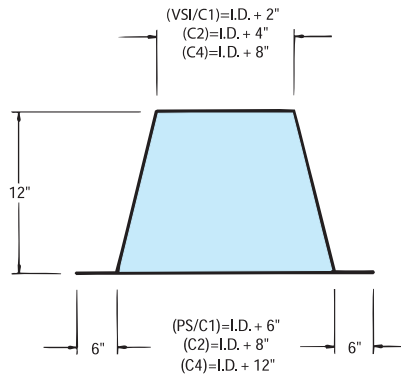
Notes:

1. Requires P600 sealant when installing.
2. Model VSI part used for IVSI-C1 applications.

## Tall Flashing

Code:  
TF

Used in conjunction with SC for weatherization at the roof.



Materials Available:

Aluminized or Galvanized Steel		304	316
--------------------------------	--	-----	-----

Ordered Part Includes:  
TF only.

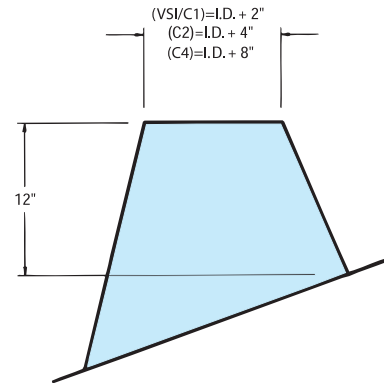
Notes:

1. Use limited to installations where complete roof penetration is non-combustible.
2. Model VSI part used for IVSI-C1 applications

## Pitched Tall Flashing

Code:  
PTF

Same function as TF, except for use on a pitched roof.



Materials Available:

Aluminized or Galvanized Steel		304	316
--------------------------------	--	-----	-----

Ordered Part Includes:  
PTF only (specify pitch when ordering).

Notes:

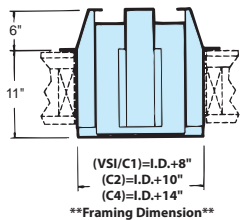
1. Part is non-returnable and may require extra manufacturing time.
2. Use limited to installations where complete roof penetration is non-combustible.
3. Model VSI part used for IVSI-C1 applications.



## Ventilated Thimble

Code: THB

Body part of MVT, MRS, and PVT. Also can be used by itself for a wall penetration (see installation instructions).



Materials Available:

<b>Galvanized Steel</b>
-------------------------

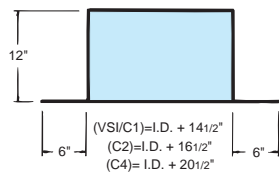
Notes:

1. Model VSI part used for IVSI-C1 applications.

## Ventilated Tall Flashing

Code: VTF

Encloses the THB, offers protection from weather and moisture penetration



Materials Available:

Aluminized or Galvanized Steel	304	316
--------------------------------	-----	-----

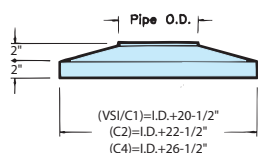
Notes:

1. Model VSI part used for IVSI-C1 applications.

## Ventilated Storm Collar

Code: VSC

Protects the VTF from weather and moisture penetration. Also used with THB for wall penetration (see installation instructions).



Materials Available:

Aluminized or Galvanized Steel	304	316
--------------------------------	-----	-----

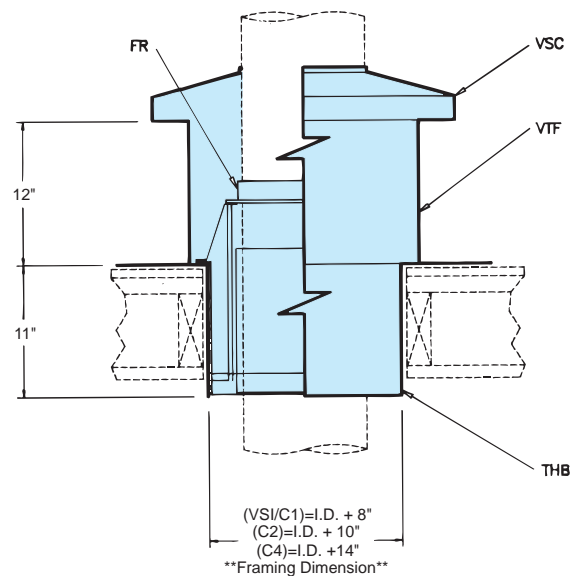
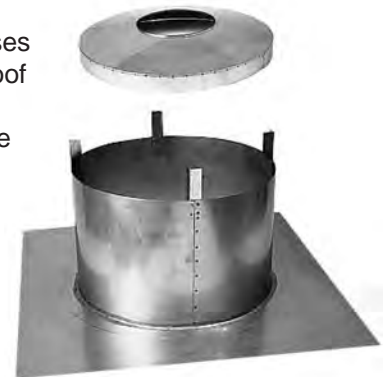
Notes:

1. Model VSI part used for IVSI-C1 applications.

## Ventilated Roof Thimble Assembly

Code:  
MVT

For use where pipe passes through a combustible roof or structure. Also guides the chimney 6" above the roof line.



Materials Available:

Aluminized or Galvanized Steel	304	316
--------------------------------	-----	-----

Ordered Part Includes:

One THB, one FR, one VTF, and one VSC.

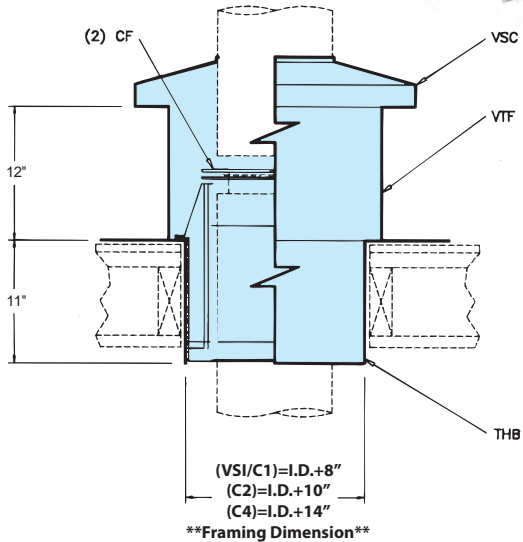
Notes:

1. Model VSI part used for IVSI-C1 applications.

# Ventilated Roof Support Assembly

Code:  
MRS

For use where pipe passes through a combustible roof or structure. Supports the chimney 6" above the roof line which may require an expansion joint (AG or BJ) below the roof.



Materials Available:

Aluminized or Galvanized Steel	304	316
--------------------------------	-----	-----

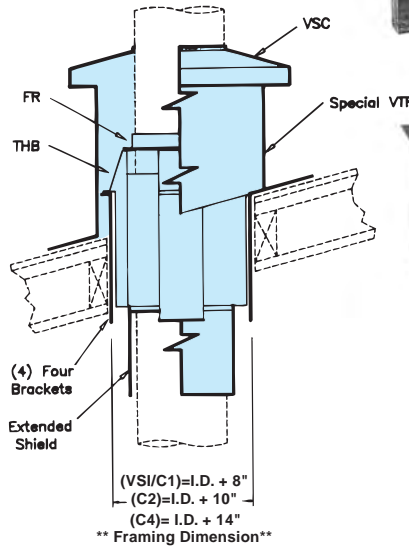
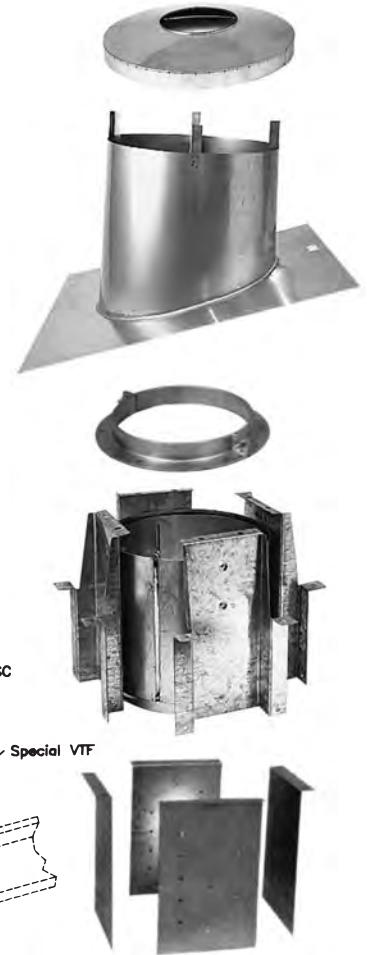
Ordered Part Includes:

One THB, two CF's, one VTF, and one VSC.

# Pitched Ventilated Roof Thimble

Code:  
PVT

For use when pipe passes through a combustible pitched roof or structure. Above 24" sizes and steep pitches are not available.



Materials Available:

Aluminized or Galvanized Steel	304	316
--------------------------------	-----	-----

Ordered Part Includes:

One THB, 4 brackets, extended shield, special VTF, one FR, and one VSC.

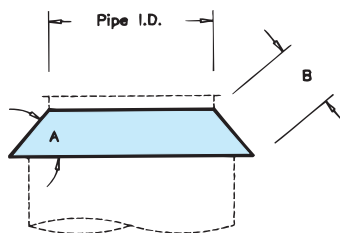
Notes:

1. Does not provide lateral support. An additional FR is required below the roof.
2. May require extra manufacturing time and is non-returnable.
3. Model VSI part used for IVSI-C1 applications.

# Open Stack Closure Ring

Code:  
CR

Protects the insulated space between standard pipe inner and outer. Requires a drain at base of stack.



Materials Available:

316
-----

Ordered Part Includes:  
CR, plus hardware.

Notes:

1. Model VSI part used for IVSI-C1 applications.

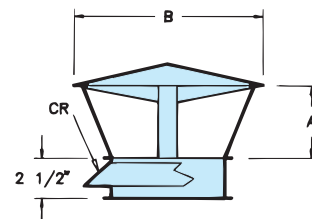
Product	Dimensions	
	A	B
VSI/C1	50°	3"
IVSI-C2	32°	31/2"
IVSI-C4	17°	51/4"

# Stack Cap

Code:  
SK

Provides partial protection with low flow resistance. May require a drain at base of stack.

Note: Not permitted for CATII applications.



Materials Available:

316
-----

Ordered Part Includes:

SK, plus one CR, one HCB and one VB.

Notes:

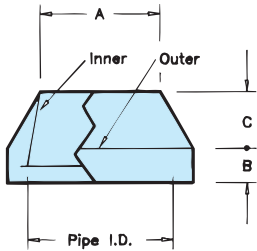
1. Model VSI part used for IVSI-C1 applications.
2. K = 0.5 Flow Resistance Factor
3. Optional Birdscreen available

Product (Pipe I. D.)	Dimensions (Inches)	
	A	B
VSI		
IVSI-C1		
IVSI-C2		
IVSI-C4		
5	2 1/2	10 1/4
6	3	10 1/4
8	4	13 5/8
10	5	17
12	6	20 1/2
14	7	24
16	8	27 3/8
18	9	30 3/4
20	10	34 1/8
22	11	37 5/8
24	12	41
26	13	44 3/8
28	14	47
30	15	51 1/4
32	16	54 5/8
36	18	61 1/2
42	21	71 3/4
48	24	82

# Insulated Exit Cone

Code:  
EC

Will increase stack exit velocity 1 1/2 times. Requires a drain at bottom of stack.



Materials Available:

- 316
- 316/316

Ordered Part Includes:  
One inner cone, one outer finish collar, and one VB.

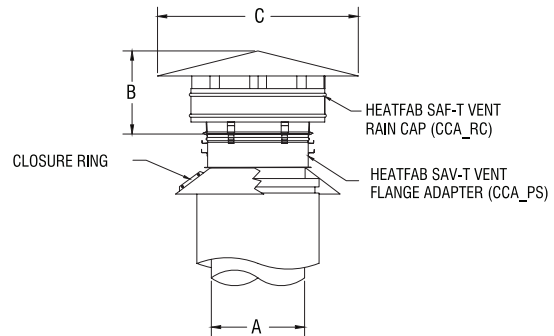
Notes:  
1.  $K = 1.25$   
Flow Resistance

Product (Pipe I. D.)	Dimensions (Inches)		
	A	B	C
All Models			
5	4 <sup>7</sup> / <sub>8</sub>	4	1 <sup>3</sup> / <sub>8</sub>
6	4 <sup>7</sup> / <sub>8</sub>	4	1 <sup>1</sup> / <sub>2</sub>
8	6 <sup>9</sup> / <sub>16</sub>	4	1 <sup>3</sup> / <sub>4</sub>
10	8 <sup>3</sup> / <sub>16</sub>	4	3 <sup>3</sup> / <sub>8</sub>
12	9 <sup>7</sup> / <sub>8</sub>	4	3 <sup>3</sup> / <sub>4</sub>
14	11 <sup>1</sup> / <sub>2</sub>	4	4
16	13 <sup>1</sup> / <sub>16</sub>	6	4 <sup>3</sup> / <sub>8</sub>
18	14 <sup>9</sup> / <sub>4</sub>	6	4 <sup>5</sup> / <sub>8</sub>
20	16 <sup>6</sup> / <sub>16</sub>	6	5
22	18	6	5 <sup>1</sup> / <sub>4</sub>
24	19 <sup>9</sup> / <sub>8</sub>	6	5 <sup>5</sup> / <sub>8</sub>
26	21 <sup>1</sup> / <sub>4</sub>	6	6
28	22 <sup>7</sup> / <sub>8</sub>	6	6 <sup>1</sup> / <sub>4</sub>
30	24 <sup>1</sup> / <sub>2</sub>	6	6 <sup>5</sup> / <sub>8</sub>
32	26 <sup>7</sup> / <sub>8</sub>	6	6 <sup>7</sup> / <sub>8</sub>
36	29 <sup>9</sup> / <sub>8</sub>	10	7 <sup>1</sup> / <sub>2</sub>
42	34 <sup>7</sup> / <sub>16</sub>	12	8 <sup>1</sup> / <sub>2</sub>
48	39 <sup>9</sup> / <sub>16</sub>	12	9 <sup>1</sup> / <sub>2</sub>

# Rain Cap

Code:  
CCA

Provides the greatest degree of wind protection and required for use on Category II applications. Sizes available are from 5"-32". Rain cap adapts to VSI/IVSI pipe models via the following parts ordered separately: Saf-T Vent Double Flange Adapter (CCA\_PS), Open Stack Closure Ring (CR) and Vee-Band (VB). Reference illustration and table below.



Materials Available:

- AL29-4C

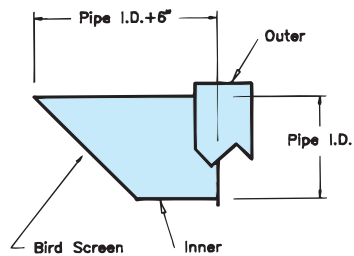
Product (Pipe I.D.)	Saf-T Vent Rain Cap Part Number	Saf-T Vent Flange Adapter Part Number	Dimensions		
			A	B	C
5	CCA05RC	CCA05PS	5	8.5	14
6	CCA06RC	CCA06PS	6	8.5	14
8	CCA08RC	CCA08PS	8	9.5	18
10	CCA10RC	CCA10PS	10	9.5	20
12	CCA12RC	CCA12PS	12	9.5	24
14	CCA14RC	CCA14PS	14	11.5	28
16	CCA16RC	CCA16PS	16	13.5	32
18	CCA18RC	CCA18PS	18	15.5	36
20	CCA20RC	CCA20PS	20	17.5	36
22	CCA22RC	CCA22PS	22	19.5	44
24	CCA24RC	CCA24PS	24	19.5	48
26	CCA26RC	CCA26PS	26	25	52
28	CCA28RC	CCA28PS	28	25	52
30	CCA30RC	CCA30PS	30	25	52
32	CCA32RC	CCA32PS	32	25	52

# Miter Cut

Code:

MC

Used for horizontal engine exhaust termination.



Materials Available:

316/316

Ordered Part Includes:

One inner with bird screen, one outer finish collar, and one VB.

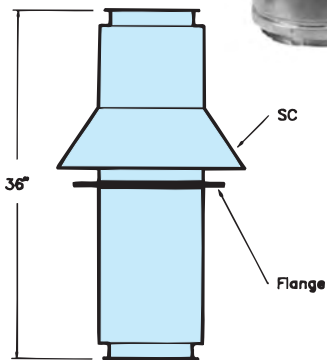
Notes:

1. The 1/2" mesh-pattern bird screen has a 60 percent open area.
2.  $K = 1.25$  Flow Resistance Factor

# Guy Section

Code:  
GS

A rigid, factory-welded section for attaching guys to chimney stack.



Materials Available:

**316/Alum** **316/304** **316/316**

Ordered Part Includes:

Welded pipe section with flange and storm collar, one CB, and one VB.

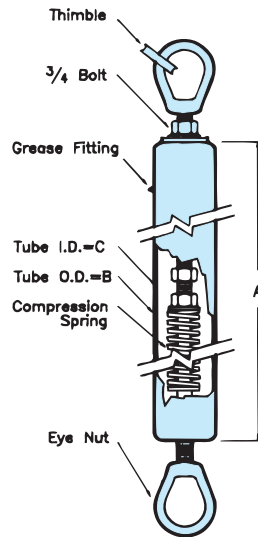
Notes:

1. Flange has 13/16" diameter holes, 30° apart.
2. Flow Resistance Factor (K) is the same as insulated pipe.

# Guy Tensioner

Code:  
GT

Used with GS to allow the stack to expand without stretching the guy wire or buckling the stack.



Notes:

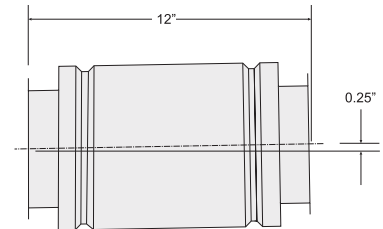
1. Available in four tension capacities as shown below.
2. Contact factory for guy calculations before ordering.

Dimensions (inches)				
Tension Capacity (lb.)	1050	1350	2100	2700
Tube Length - A	24	24	38	38
Tube O.D.	17/8	17/8	23/8	23/8
Tube I.D.	15/16	15/16	15/8	21/16
Maximum Compression Travel	3	3	3	3
Weight (lb.)	15	22	25	37

# Slope Transition

Code:  
ST

Used to create immediate 1/4" on 12" slope on horizontal runs. Typically used in pairs (one at lower (inlet) end, other at upper (outlet) end of sloped [1/4 on 12] horizontal run).



Materials Available:

**316/Alum** **316/304** **316/316**

Ordered Part Includes:

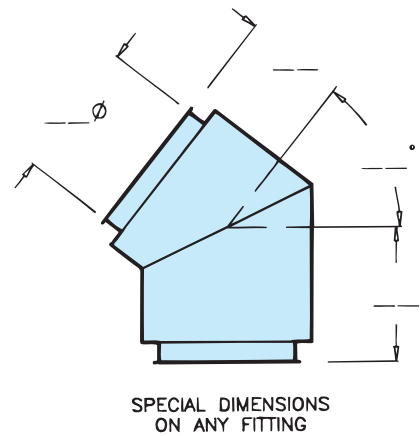
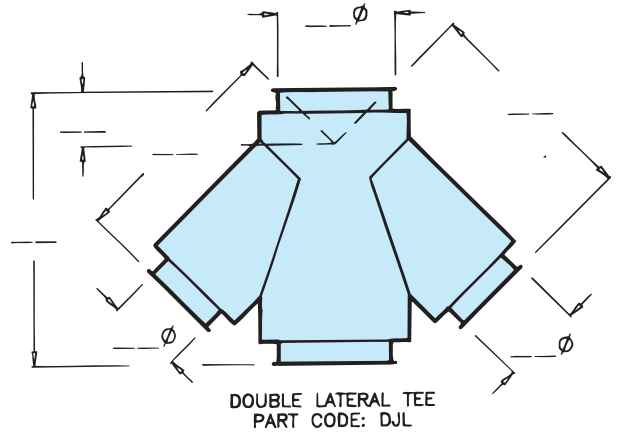
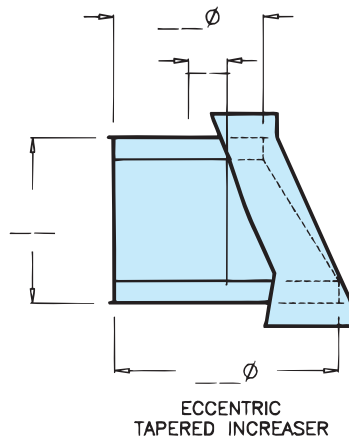
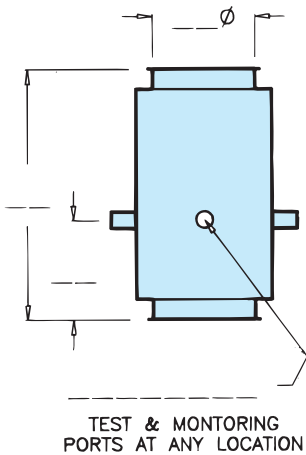
Slope Transition, plus one VB and one CB.

Notes:

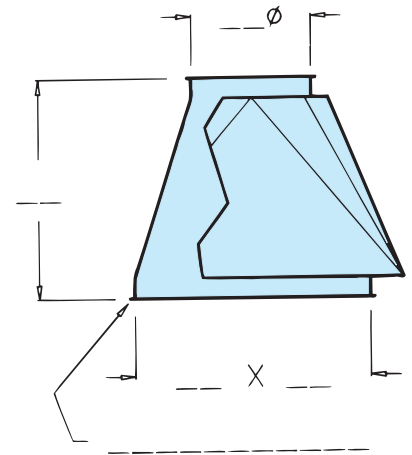
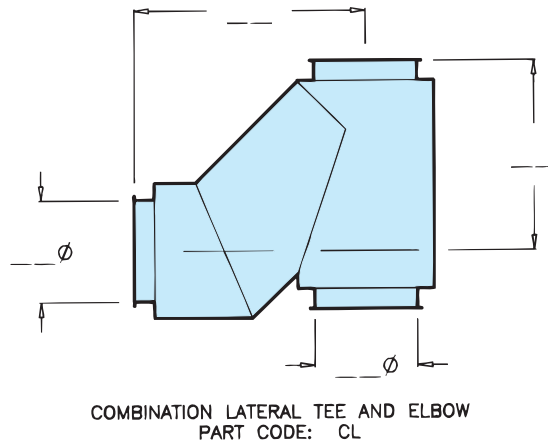
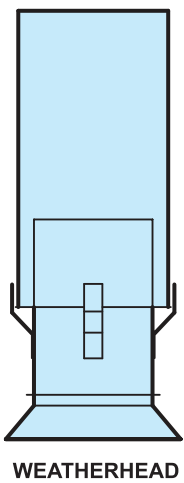
1. Use same formula as Straight Pipe Lengths for approximate K factor.

Several special parts, such as those shown here, are available upon request.

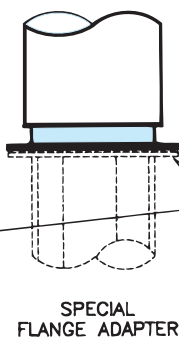
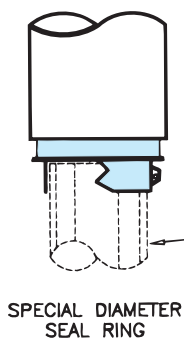
Please provide detail of the required part if not already designed by AMPCO, and allow extra manufacturing time. Special parts are non-returnable.



SPECIAL DIMENSIONS ON ANY FITTING



SINGLE WALL PART CODE: \_\_\_x\_\_\_SWA  
DOUBLE WALL PART CODE: \_\_\_x\_\_\_DWA



PROVIDE PRECISE DETAIL OF EXISTING PIPE OR FLANGE FOR ATTACHMENT

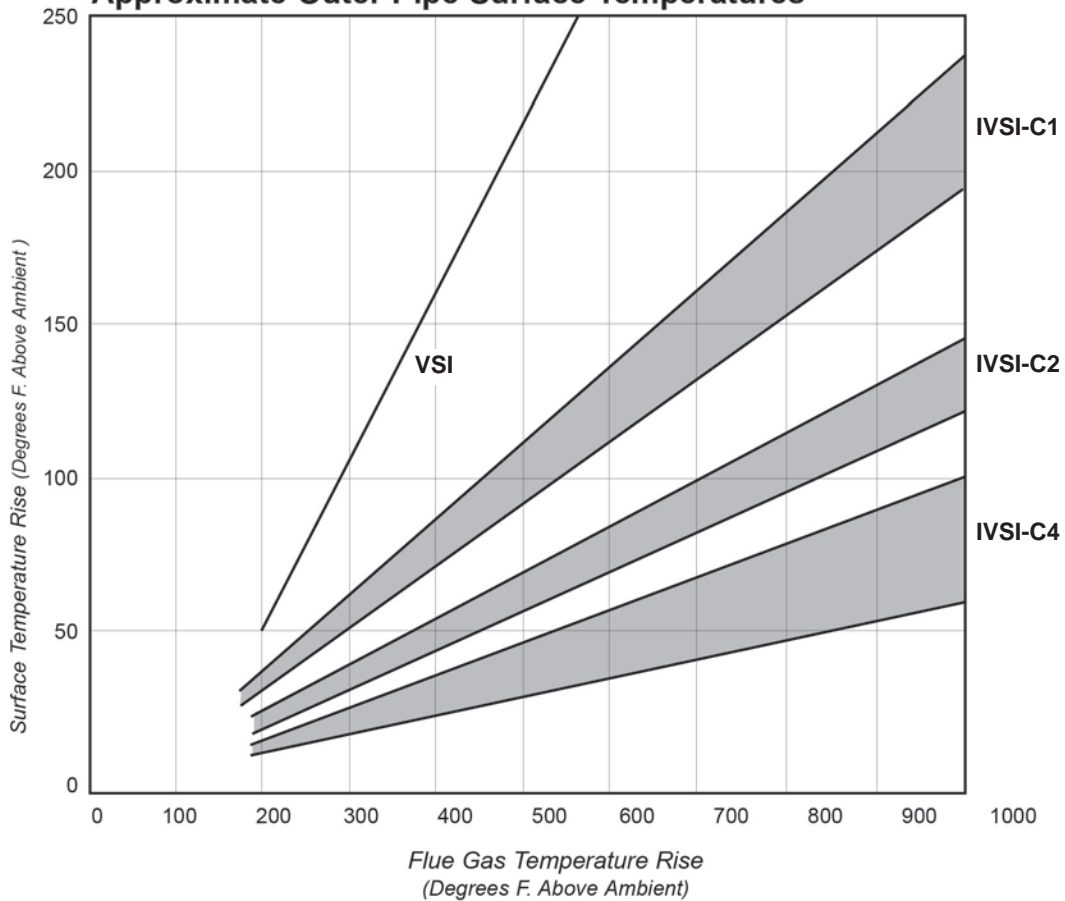


**Material Thickness - Model VSI/IVSI**

Diameter	Inner		Outer	
	Gauge *	Material	Gauge*	Material
5"-32"	20	.035" - 316 SS	24	.025" Alum Steel or 304 & 316 SS
	20		24	
36"	20	.035" - 316 SS	21	.034" Alum Steel or .034" 304 & 316 SS
	20		20	
38"-48"	18	.048" - 304 & 316 SS	21	.034" Alum Steel or .035" 304 & 316 SS
	18		20	

\* Gauge is approximate.

**Approximate Outer Pipe Surface Temperatures**



Operating Temperatures and Clearances to Combustibles

<b>Table I-1: Model VSI316 and IVSI316</b> <b>Min. Airspace Clearance-to-Combustible Construction</b>					
Model	Pipe ID	Max. Appliance Operating Temperature	Clearance to Combustible Material	Orientation	Enclosure
VSI/IVSI	5-12"	230°F*	0"	Vert. & Horiz.	Fully Enclosed
VSI/IVSI	14-48"	194°F*			
VSI/IVSI	5-24"	550°F	1"	Vert.	Fully Enclosed
VSI	26-48"	480°F	2"	Vert.	Fully Enclosed
VSI	26-48"		1"		
VSI	5-24"	550°F	3"	Vert. & Horiz.	Fully Enclosed
VSI/IVSI	5-8"	550°F	1"	Horiz.	Unenclosed
VSI/IVSI	10-12"		2"		
VSI/IVSI	14-32"		3"		
VSI/IVSI	34-48"		6"		

\* Permitted to be fully enclosed with combustibles at 0" clearance per ULC-S636

# WE BUILD TO YOUR DESIGN



Models VSI/IVSI  
Stainless Steel Double Wall  
Positive Pressure Venting Systems

Special Gas Vent  
UL1738 Applications

- Boilers
- Water Heaters
- Furnaces



AMPCO manufactures engineered solutions for venting today's high-efficiency combustion installations. AMPCO engineered systems are manufactured of high technology materials which resist the highly corrosive effects of combustion exhaust. Traditional methods require time-consuming, labor-intensive installations which consume valuable building space and which later require expensive routine maintenance. Utilizing a system of both standard pre-engineered products with custom-manufactured components, AMPCO engineers a cost-effective venting system which consumes little space and which assembles easily in the field.

A full line of the finest products is yours  
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Ward Industries  
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Portals Plus  
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Stoney Creek, ON L8E 4A5  
1.888.735.5475 phone  
1.866.835.9624 fax