SUBMITTAL RECORD:
PROJECT NAME:
LOCATION:
PREPARED BY:
APPROVED BY:
DATE:

SUBMITTAL RECORD

AMPCO BY duravent

Models VSI/IVSI

Stainless Steel Double Wall Positive Pressure Venting Systems

Complete guide to the identification and selection of AMPCO Products

POSITIVE PRESSURE VENTING APPLICATIONS WITH MAXIMUM 60" WATER COLUMN INTERNAL STATIC PRESSURE AT 1000 DEGREES F

Model VSI
Model IVSI–C1
Model IVSI–C2
Model IVSI–C4
Model IVSI–Z3
Model IVSI–Z4

c UL us LISTED

Venting/Exhaust Applications Commercial & Industrial

- *Boilers*
- *Generators/Engines/Turbines*
- *CHP (Co-Generation)*
- *Dryer Exhaust*
- *Laboratory Fume Hoods*
- *Kitchen Exhaust/Grease Duct*
- *Pizza Ovens*
- *Coffee Roasters*
- *Water Heaters*
- *Furnaces*

AV

UNDERWRITERS LABORATORIES LISTINGS

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

(USA)

Grease Duct (UL1978) (UL2221)
Building Heating Appliance Chimney (UL103)
(Industrial) 1400° F Chimney (UL2561)
Type L Vent (Model IVSI only) (UL641)
Type B Gas Vent (UL441)
Special Gas Vent (UL1738)*

(Canada)

Grease Duct (ULC-S662) (ULC-S144)
540°C (1000°F) Industrial Chimney (ULC-C959)
760°C (1400°F) Industrial Chimney
Type BH Gas Vent (ULC-S636)*

*For Special Gas Vent application, please reference AMPCO SGV catalog and instructions for proper material selection and installation requirements; application requires grade 316 stainless steel inner wall and SGV-550 sealant.

UL file numbers for VSI and IVSI include MH6673, MH11382, MH16161 and R21679.

CODE AND STANDARD COMPLIANCE

NFPA (NFPA, 31, 37, 54, 96, 211)
ICC (IMC, IFGC)
IAMPO (UMC)
NBC

Model VSI and IVSI have been approved by the City of New York Department of Buildings, Materials and Equipment Acceptance Division under the following MEA numbers:

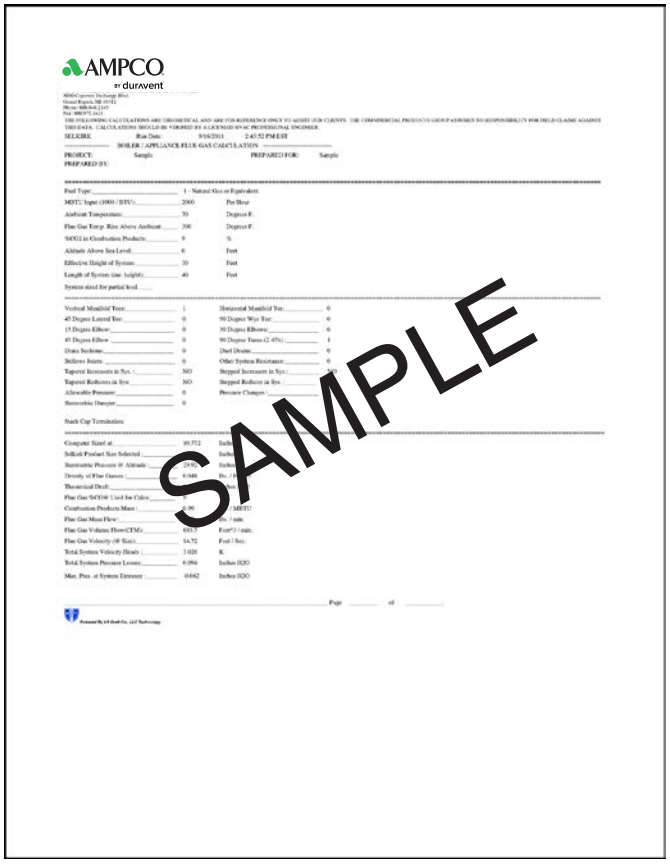
	Model VSI	Model IVSI
Building Heating Appliance Chimney	MEA 132-90M	MEA 135-90M
1400° F Chimney	MEA 133-90M	MEA 181-90M
Grease Duct	MEA 134-90M	MEA 134-90M

ASSOCIATION/COMMITTEE PARTICIPATION

Table of Contents

- System Overview 4-5
- Guide to Component Parts 6
- Product Identification 7
- Joint Assembly Parts 8-9
- Sealants 9
- Double Wall Pipe 10
- Adjustable/Variable Pipe 10-11
- Double Wall Fittings 11-17
- Support/Guide Accessories 18-19
- Connection Accessories 19-21
- Roof Penetrations 22-24
- Terminations 25-27
- Miscellaneous 28-30
- Special Parts 31
- Technical Data 32-33

AMPCO Sizing/Pressure Calculations



AMPCO Model VSI and IVSI are modular, prefabricated piping systems which embody flanged joints designed for both quick assembly and pressure-sealing capabilities. They offer a combination of insulated piping components as well as the structural accessories needed for support and attachment to building structures. Expansion joints are available both in gasket designs and in pressure tight, all-welded bellows designs.

Standard gas-carrying piping parts are usable for a wide variety of applications:

- Chimneys and stacks for all types of building heating equipment.
- Chimneys for industrial ovens, furnaces and processing equipment.
- Exhaust piping for engines or turbine units.
- Ducting in restaurants for compliance with Type 1 hood requirements.
- Ducting for heated air and combustion products.
- Ducting for light duty pollution control equipment.
- Venting for engine exhaust.
- Venting for offshore drilling rigs.

Complete Line of Fittings

Model VSI and IVSI are available in eighteen sizes, from 5" I.D. to 48" I.D. 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.

Thermal Expansion Aspects

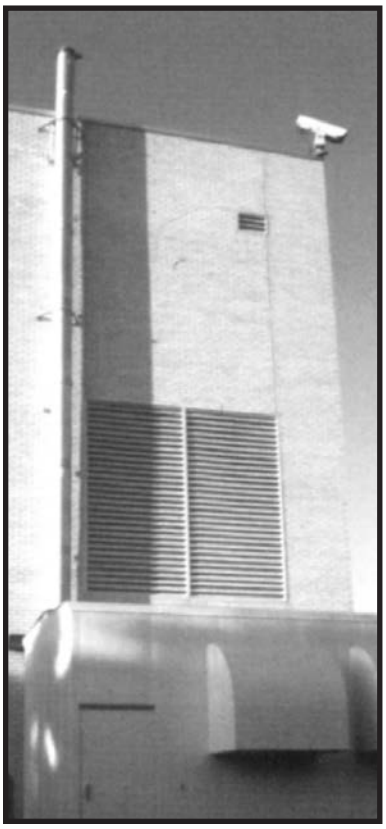
The flange-to-flange joints of the Model IVSI inner pipe transmit axial thermal expansion movements and forces in the same manner as continuous welded pipe. In addition, the expansion of the 300 Series Stainless Steel is approximately 50% greater than that of ordinary low carbon steel and can be estimated as one inch per 100°F rise in gas temperature per 100' (50' at 300°F will expand 1.5"). It is important to calculate this expansion and allow for it by using a suitable Bellows Joint (Part No. BJ) or an Adjustable Length (Part No. AG) wherever the expansion might exceed 1/4". This AG fitting, which comprises a closely fitting sliding internal section with a graphite packing seal and a sliding outer section, can be used to absorb these movement.

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 60" w.c.) against leakage in the presence of UL inspectors. Results of these tests are impressive. Using the OSHA occupation standard-of-leakage rate of 50 parts per million over an eight hour period as criterion for acceptance, the AMPCO system was tested to a leakage rate of only .144 parts per million, or three-tenths of one percent (.3%) of the maximum allowable leakage per UL103 test standard.

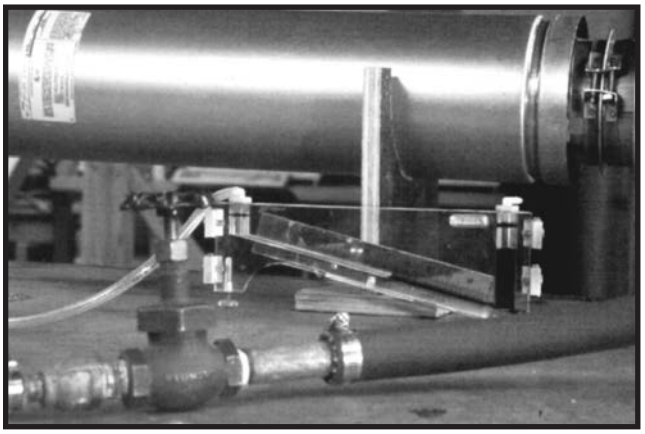


Seismic Tests

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 (installed in strict accordance with the UL103 Listing) 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.



Skin Temperature Rise Tests

Among other things, UL103 covers the temperature rise limits of the surrounding combustible materials in an unenclosed chimney installation - and it defines the test set-up to measure the actual temperature rise of those materials at the OEM recommended clearances. Our published Model IVSI skin temperatures were obtained during these tests.

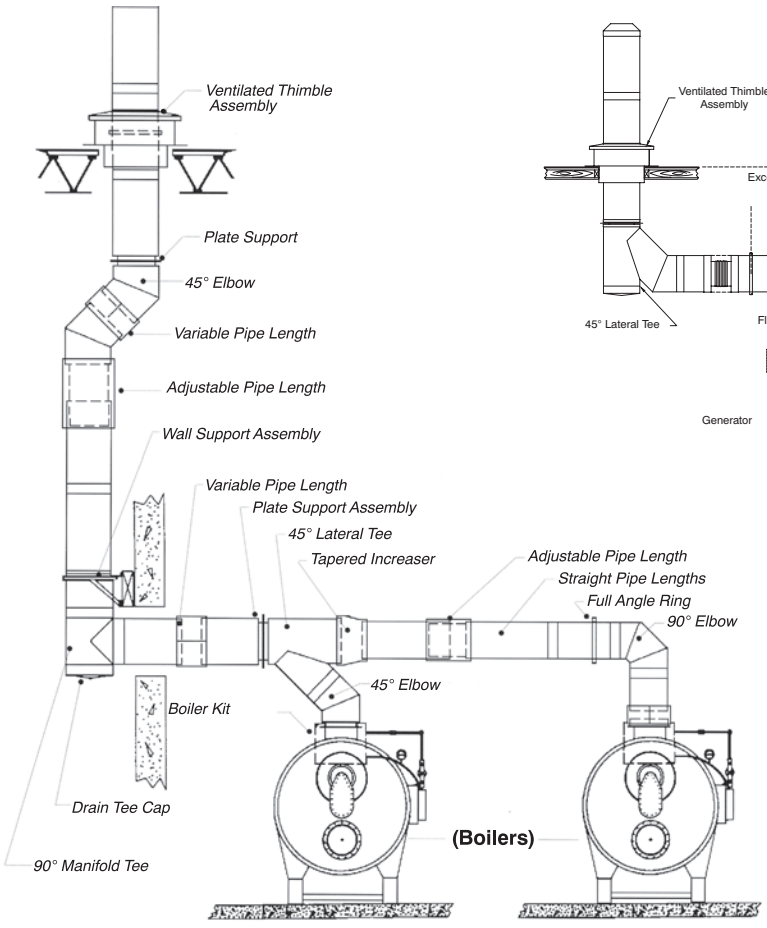
This page illustrates some of the major parts described on pages 8-30.

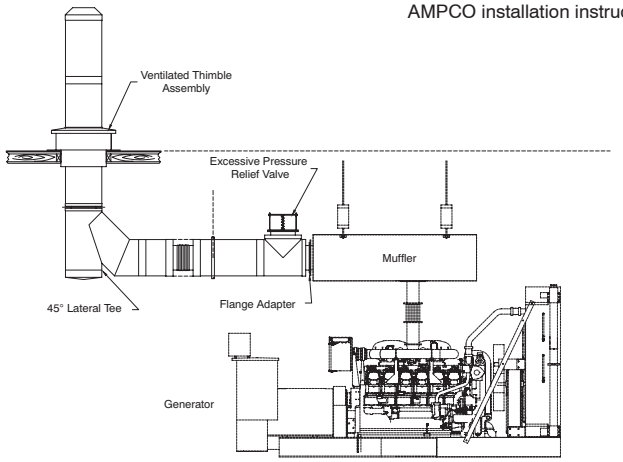
Product	Code	page
Joint Assembly Parts		
Overlapping Vee Band	VB	8
Alignment Sleeve	AS	8
Channel Band	CB	8
Half Channel Band	HCB	8
Low Temperature Sealant	P600	8
High Temperature Sealant	P2000	8
Special Gas Vent Sealant	SGV550	8
Double Wall Pipe		
59.13" Pipe Length	59	10
42" Pipe Length	42	10
30" Pipe Length	30	10
18" Pipe Length	18	10
Adjustable/Variable Pipe		
30" Adjustable Pipe	AG30	10
18" Adjustable Pipe	AG18	10
Bellows Joint	BJ	11
30" Variable Pipe	VL30	11
18" Variable Pipe	VL18	11
Double Wall Fittings		
90° Tee	MT	11
Combination Lateral Tee	CL	12
45° Tee - Lateral	JL	12
90° Wye	JY	13

Product	Code	page
Double Wall Fittings (cont)		
Drain Tee Cap	TC	13
Clean Out Tee Cap	TCN	14
15° Elbow	EL15	14
30° Elbow	EL30	15
45° Elbow	EL45	15
90° Elbow	EL90	16
Tapered Increaser	OT	16
Step Increaser	OS	17
Drain Section	DS	17
Support/Guide Accessories		
Half Angle Ring	HR	18
Full Angle Ring	FR	18
Plate Support Assembly	PA	18
Wall Support Assembly	WA	18
Wall Guide Assembly	WG	19
Floor Guide Assembly	FG	19
Support Strap	SS	19
Connection Accessories		
Boiler Kit	BK	19
Seal Ring	SR	20
Flange Adapter	FD	20
Clamp Flange	CF	20
Flanged Hood Transition	TS	21
Unflanged Hood Transition	TSU	21
Fan Adapter	FA	21

Product	Code	page
Roof Penetrations		
Storm Collar	SC	22
Tall Flashing	TF	22
Pitched Tall Flashing	PTF	22
Ventilated Thimble	THB	23
Ventilated Tall Flashing	VTF	23
Ventilated Storm Collar	VSC	23
Ventilated Thimble Assembly	MVT	23
Ventilated Support Assembly	MRS	24
Pitched Ventilated Thimble	PVT	24
Terminations		
Closure Ring	CR	25
Chimney Top	CT	25
Stack Cap	SK	26
Exit Cone	EC	26
Flip Top	FL	27
Miter Cut	MC	27
Miscellaneous		
Excessive Pressure Relief Valve	ER	28
Guy Section	GS	28
No Tool Access Cap	NTAC	29
Special Manifold Tee (Sprinkler)		29
Through-Penetration Fire Stop	TPF	30
Inline Access Door	IAD	30

Note: For details on parts usage, refer to the AMPCO installation instructions.





Model VSI vs. Model IVSI

Ceramic fiber insulation increases the diameter of the outer wall:

Model VSI: 1" air insulation (no ceramic fiber)
Model IVSI-C: 1", 2" and 4" ceramic fiber insulation
Model IVSI-Z 3" and 4" dense fiber insulation

OD Calculation	
Model(s)	**OD (Inches)**
VSI, IVSIC1	OD=ID+2
IVSIC2	OD=ID+4
IVSI-Z3	OD=ID+6
IVSIC4, Z4	OD=ID+8

(Reference AMPCO installation instructions for the clearance to combustibles for specific applications)

Understanding Product Codes and Part Numbers

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 8, 22, 36, etc.
2. This is followed by the Model designation, VSI for air-insulated (Model VSI), or IVSI for parts that are fiber insulated (Model IVSIC1, C2, Z3,C4, or Z4).
3. Next, is the product's Material designation, such as 316 or 304/304. The first item indicates the makeup of the inner liner, while the second half indicates the material content of the outer wall, if stainless. If aluminized steel outer (Alum), the part number indicates inner material only.

   (Alternate material and custom outer wall treatments are also available, please contact customer service for information.)
4. Then, following a long dash, the product's Code name is listed, such as AG30, JY, or MVT. If the product is air insulated, the product identification ends with this code.

   (For Product Code listings, refer to page 2.)
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; Z3, 3-inches; Z4/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 304 Stainless Steel inner and aluminized steel outer, packed with 2-inch ceramic fiber insulation, is listed:

6IVSI304- AG30C2*

* 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:

42VSI304-30MT

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:

8VSI304-16OT

Overlapping Vee Band
Code:
VB

Vee Band for connecting inner 1/2" rolled flanges. Capable of holding 60" w.c. of pressure when properly installed.

Materials Available:

All Stainless Construction

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

Alignment Sleeve
Code:
AS

Used in centering adjacent components in horizontal and vertical orientations to facilitate installation.

Materials Available:

All Stainless Construction

Notes:
1.AS included with pipe sections.

Channel Band
Code:
CB

Used to seal the Outer Jackets of two adjoining components.

(CB height is 4 ¾")

Materials Available:

Aluminized Steel	316

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:

Aluminized Steel	316

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

Low Temperature Sealant
Code: P600

High Temperature Sealant
Code: P2000

High Efficiency Condensing Sealant
Code: SGV550

Depending upon application, appropriate sealants are applied to the VB before connecting two Inner Pipes at installation.

As designated, P600 Sealant is for 600° F. maximum flue gas temperatures, and also for exterior weathering of pipe, while P2000 is capable for flue gases up to 2,000° F (Not to be used externally); SGV550 is for 550° F maximum flue gas temperature for all SGV applications.

Sealant Coverage
Expected Number of Joints Sealed Per Tube

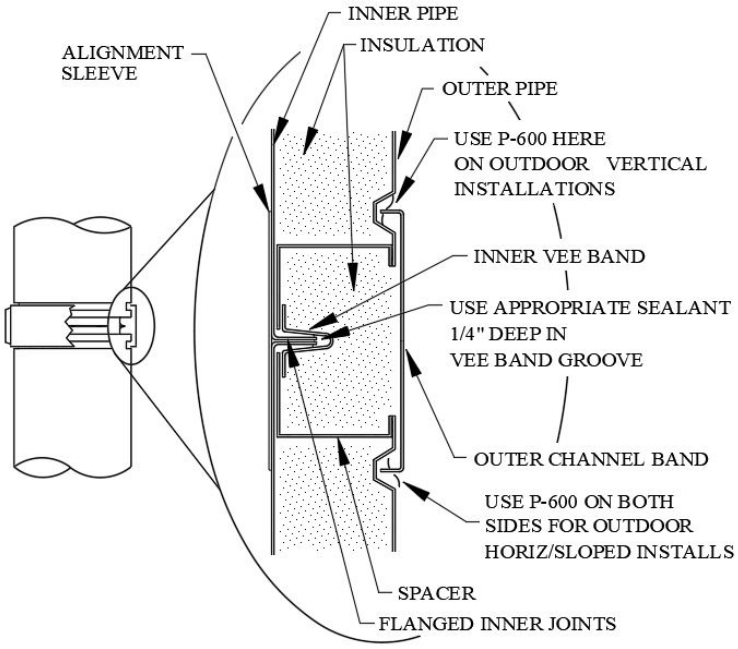
Inner Dia. (inches)	P600 P2000 SGV550
5/6	5
8/10	5
12	4
14/16	4
18/20	3
22/24	3
26/28	2
30/32	2
36	1
42/48	.5

Quick and Easy Component Assembly

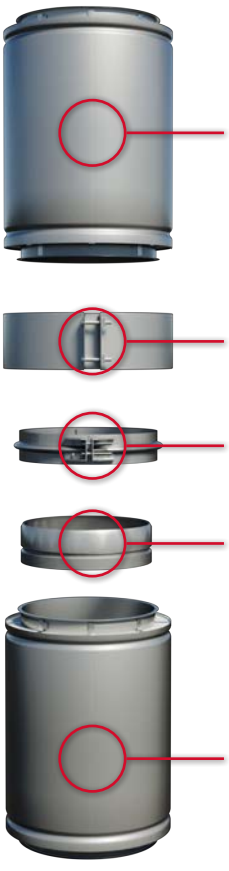
For all AMPCO pipe and fittings, the flange-to-flange inner pipe joints are identical for each pipe inside diameter.

Temperature of gases carried in the system determines the proper sealant used.*

Quick and easy component assembly using only standard tools.



*Illustrations shown are for reference only.
(Refer to Installation Instructions for detailed sealant application and use.)



Straight Length Component

Used horizontally and vertically – array of components available, designed to make a complete installation simple and quick.

Channel Band Assembly

Used to enclose the inner-wall conduit and component locking system, providing a clean finished appearance for the overall installation; factory-assembled components with a one-piece assembly facilitates field installation.

V-Band Component Locking Assembly

Used to secure adjacent components for a strong secure joint; factory-assembled components with a one-piece assembly facilitates field installation.

Alignment Sleeve

Used to provide easier and quicker component assembly in centering adjacent components in the horizontal and vertical orientations and provides a backing for sealant applied to the flange keeping it in the intended location, along with adding strength to the overall joint connection.

Straight Length Component

Used horizontally and vertically – array of components available, designed to make a complete installation simple and quick.

Finished Assembly

Completed installation provides a strong, uniformly aligned pressure stack.

Straight Pipe Lengths

Codes:

59, 42, 30, 18

Standard pipe lengths for all AMPCO exhaust systems.

Materials Available:

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

Note: Alum is aluminized steel

- 59.13" lengths available in:
  – 6-24" inner diameter for VSI and IVSIC1
  – 6-22" inner diameter for IVSIC2
  – 6-20" inner diameter for Z3
  – 6-18" inner diameter for IVSIC4 and Z4
- 42" lengths available in:
  – 5-42" inner diameter for VSI and IVSIC1
  – 5-40" inner diameter for IVSIC2
  – 5-36" inner diameter for IVSIC4, Z3 and Z4
- 18" & 30" lengths available in:
  – 5-48" Inner diameter for VSI, IVSIC1, C2, C4
  – 5-36" Inner diameter for IVSIZ3 and Z4

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

Notes:
1. Special pipe lengths from 6" to 59.13" available upon special request.

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

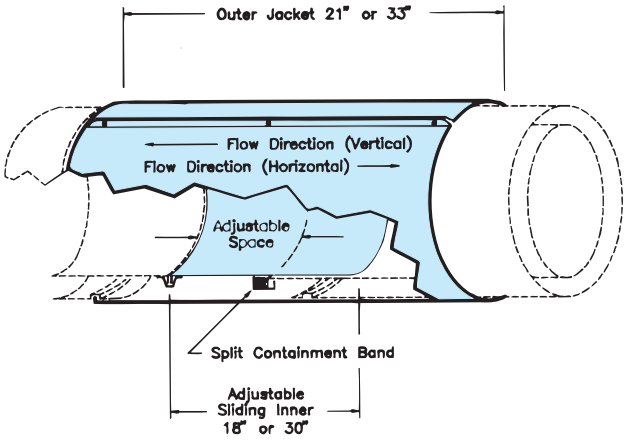
$$K=0.25\ \frac{50}{10}=1.25$$

Adjustable Pipe Lengths

Codes:

AG30, AG18

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



Materials Available:

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

Note: Alum is aluminized steel

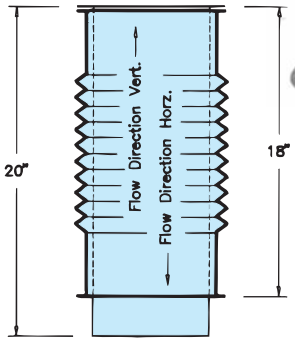
Ordered Part Includes:
Pipe, plus one 30" or 18" inner Slip Section, one TSU, one Packing Seal, one two-piece Compression Band, one two-piece Containment Ring, one two-piece Outer Jacket, and one VB.
Ceramic fiber insulation provided for IVSI models.

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.

Lined Bellows Joint

Code:
BJ

Provides a pressure tight expansion joint for engine exhaust and other high pressure applications.



Materials Available:

316/Alum	316/316

Note: Alum is aluminized steel

Ordered Part Includes:
BJ, plus one Liner, one Outer Jacket, and one VB.

Ceramic fiber insulation provided for IVSI models.

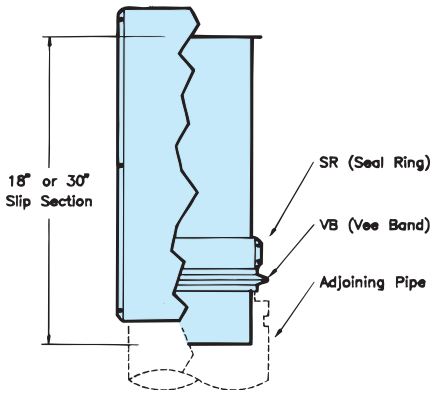
Notes:
1. Optional to standard adjustable pipe lengths.
2. Liner protects Bellows but limits movement to liner expansions only.
3. Flow Resistance Factor (K) is the same as insulated pipe.

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:

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

Note: Alum is aluminized steel

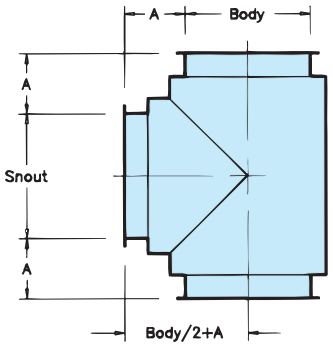
Ordered Part Includes:
VL30 or VL18, plus one 30" or 18" Inner Slip Section, one two-piece Outer Jacket, one Custom SR, and one VB.
Ceramic fiber insulation provided for IVSI models.

Notes:
1. The Custom 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-C1	IVSI-C2	IVSI-Z3	IVSI-C4/IVSI-Z4
4"	5"	6"	7"

Materials Available:

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

Note: Alum is aluminized steel

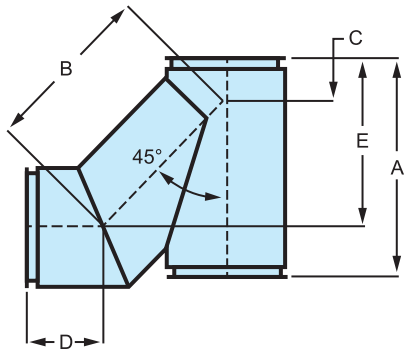
Ordered Part Includes:
MT, plus one VB for the body diameter, one VB for the snout diameter, one AS for the body diameter, and one CB for the body diameter.

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

Combination Lateral Tee

Code:

CL



Materials Available:

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

Note: Alum is aluminized steel

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

Notes:
1. K = 0.55 Flow Resistance Factor

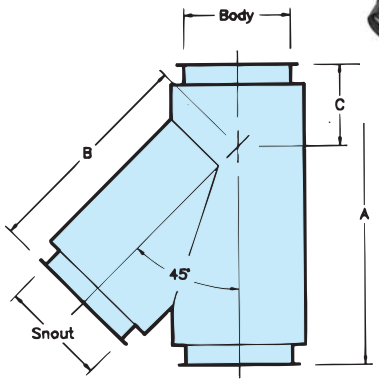
Product (Pipe I. D.)				Dimensions (Inches)					
VSI/IVSI C1	IVSI C2	IVSI Z3	IVSI C4/Z4	A	B	C	D	E	(O. D.)
5	–	–	–	19-1/2	13-3/4	5-3/4	8-1/2	15-3/8	7
6	5	–	–	19-1/2	13-3/4	5-3/4	8-1/2	15-3/8	8/9
8	6	–	–	22-7/8	16-5/8	6-1/4	8-15/16	18	10
–	–	5	–	23-1/2	17-3/4	5-3/4	9-1/8	18-5/16	11
10	8	6	–	24-1/16	19	5-1/16	9-5/16	18-1/2	12
–	–	–	5	26-15/16	21-7/16	5-1/2	10-1/4	20-9/16	13
12	10	8	6	26-15/16	21-7/16	5-1/2	10-1/4	20-9/16	14
14	12	10	8	29-3/4	23-7/8	5-7/8	10-11/16	22-3/4	16
16	14	12	10	32-9/16	26-1/4	6-5/16	11-5/8	24-7/8	18
18	16	14	12	35-3/8	28-3/4	6-3/4	12-1/16	27	20
20	18	16	14	38-3/16	31-1/16	7-1/8	13	29-1/16	22
22	20	18	16	43-7/8	35-7/8	8	13-5/16	33-3/8	24
24	22	20	18	43-7/8	35-7/8	8	14-5/16	33-3/8	26
26	24	22	20	49-9/16	40-3/4	8-13/16	14-7/8	37-5/8	28
28	26	24	22	49-9/16	40-3/4	8-13/16	15-11/16	37-5/8	30
30	28	26	24	55-3/16	45-9/16	9-5/8	16-1/4	41-13/16	32
32	30	28	26	55-3/16	45-9/16	9-5/8	17	41-13/16	34
–	32	30	28	60-13/16	50-3/8	10-7/16	17-9/16	46-1/16	36
36	–	32	30	60-13/16	50-3/8	10-7/16	18-3/8	46-1/16	38
–	36	–	32	69-15/16	58-1/4	11-3/4	18-7/8	52-15/16	40
–	–	36	–	69-15/16	58-1/4	11-3/4	19-5/16	52-15/16	42
42	–	–	36	69-15/16	58-1/4	11-3/4	19-11/16	52-9/16	44
–	42	–	–	79-3/16	66-1/8	13	20-1/8	59-11/16	46
48	–	–	42	79-3/16	66-1/8	13	21-7/16	59-11/16	50
–	48	–	–	88-5/8	74-1/4	14-7/16	21-7/16	64-1/2	52
–	–		48	88-5/8	74-1/4	14-7/16	21-7/16	66-15/16	56

45° Lateral Tee

Code:

JL

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



Materials Available:

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

Note: Alum is aluminized steel

Ordered Part Includes:
JL, plus one VB for the body diameter, one VB for the snout diameter, one AS for the body 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 Resistance Factor

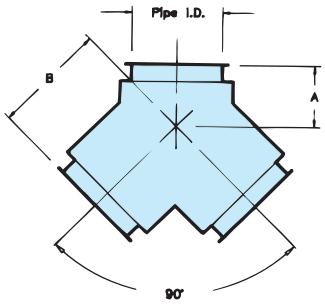
Product (Pipe I. D.)				Dimensions (Inches)			
VSI/IVSI C1	IVSI C2	IVSI Z3	IVSI C4/Z4	A	B	C	(O. D.)
5	–	–	–	19-1/2	13-3/4	5-3/4	7
6	5	–	–	19-1/2	13-3/4	5-3/4	8/9
8	6	–	–	22-7/8	16-5/8	6-1/4	10
–	–	5	–	23-1/2	17-3/4	5-3/4	11
10	8		–	24-1/16	19	5-1/16	12
–	–	–	5	26-15/16	21-7/16	5-1/2	13
12	10	8	6	26-15/16	21-7/16	5-1/2	14
14	12	10	8	29-3/4	23-7/8	5-7/8	16
16	14	12	10	32-9/16	26-1/4	6-5/16	18
18	16	14	12	35-3/8	28-3/4	6-3/4	20
20	18	16	14	38-3/16	31-1/16	7-1/8	22
22	20	18	16	43-7/8	35-7/8	8	24
24	22	20	18	43-7/8	35-7/8	8	26
26	24	22	20	49-9/16	40-3/4	8-13/16	28
28	26	24	22	49-9/16	40-3/4	8-13/16	30
30	28	26	24	55-3/16	45-9/16	9-5/8	32
32	30	28	26	55-3/16	45-9/16	9-5/8	34
–	32	30	28	60-13/16	50-3/8	10-7/16	36
36	–	32	30	60-13/16	50-3/8	10-7/16	38
–	36	–	32	69-15/16	58-1/4	11-3/4	40
42	–	–	36	69-15/16	58-1/4	11-3/4	44
–	42	–	–	79-3/16	66-1/8	13	46
48	–	–	42	79-3/16	66-1/8	13	50
–	48	–	–	88-5/8	74-1/4	14-7/16	52
–	–	–	48	88-5/8	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:

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

Note: Alum is aluminized steel

Ordered Part Includes:
JY, plus two VB's, one AS, and one CB

Notes:
1. All openings are the same diameter.
2. Can be used with TCN/NTAC to provide asingle 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

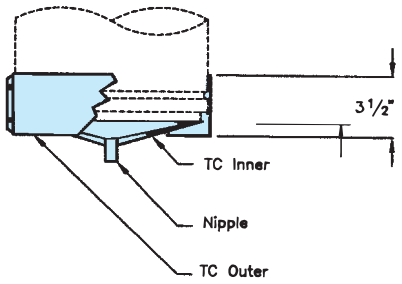
Product (Pipe I. D.)				Dimensions (Inches)		
VSI/IVSI C1	IVSI C2	IVSI Z3	IVSI C4/Z4	A	B	(O. D.)
5	–	–	–	4-5/8	9	7
6	5	–	–	4-5/8	9	8/9
8	6	–	–	5-1/16	10	10
–	–	5	–	5	11	11
10	8	6	–	5	11	12
–	–	–	5	5-1/2	12	13
12	10	8	6	5-1/2	12	14
14	12	10	8	5-7/8	13	16
16	14	12	10	6-3/8	14	18
18	16	14	12	6-5/8	15	20
20	18	16	14	7-1/8	17	22
22	20	18	16	8	19	24
24	22	20	18	8	19	26
26	24	22	20	8-3/4	22	28
28	26	24	22	8-3/4	22	30
30	28	26	24	9-5/8	24	32
32	30	28	26	9-5/8	24	34
–	32	30	28	10-1/2	27	36
36	–	32	30	10-1/2	27	38
–	36	–	32	11-3/4	31	40
–	–	36	–	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:

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

Note: Alum is aluminized steel

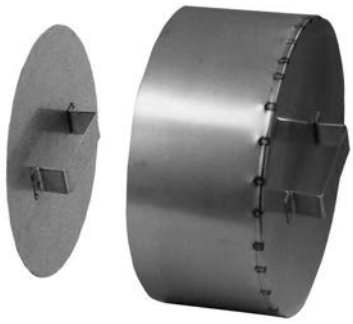
Ordered Part Includes:
TC, plus one 1" N.P.T. Nipple (5"-20" sizes), or 2" N.P.T. Nipple (22"-48" sizes), one Inner Section, one Outer Jacket, and one VB. Ceramic fiber insulation provided for IVSI models.

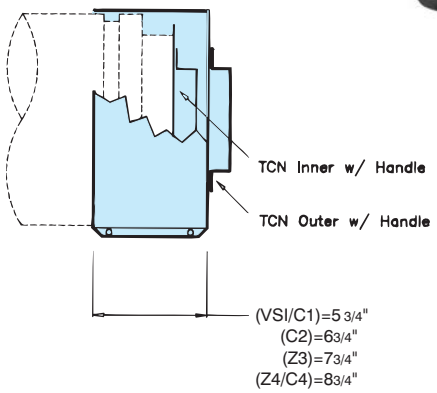
Cleanout Tee Cap

Code:

TCN

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





Materials Available:

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

Note: Alum is aluminized steel

Ordered Part Includes:
TCN, plus one Inner Section (with handle), one Outer Jacket (with handle), and one VB.
Ceramic fiber insulation provided for IVSI models

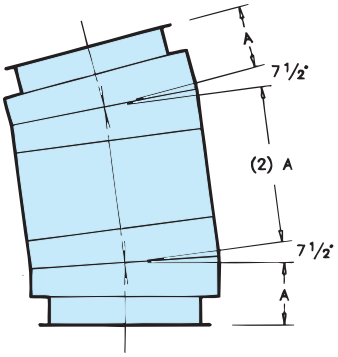
Also available as a No Tool Access Cap (NTAC), good for use with grease duct. See pg. 29.

15° Elbow

Code:

EL15

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



Materials Available:

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

Note: Alum is aluminized steel

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

Notes:
1. K = 0.06 Flow Resistance Factor

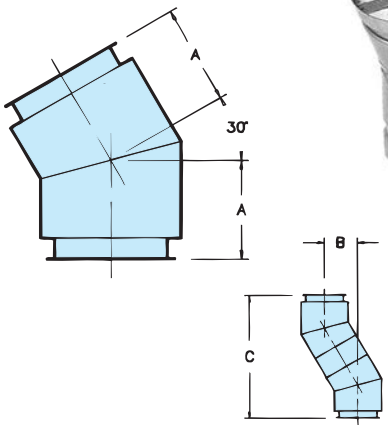
(Pipe I. D.)				Dimensions (Inches)	
VSI/IVSI C1	IVSI C2	IVSI Z3	IVSI C4/Z4	A	(O. D.)
5	–	–	–	4-3/16	7
6	5	–	–	4-3/16	8/9
8	6	–	–	4-1/4	10
–	–	5	–	4-5/16	11
10	8	6	–	4-5/16	12
–	–	–	5	4-7/16	13
12	10	8	6	4-7/16	14
14	12	10	8	4-1/2	16
16	14	12	10	4-9/16	18
18	16	14	12	4-5/8	20
20	18	16	14	4-11/16	22
22	20	18	16	4-3/4	24
24	22	20	18	4-13/16	26
26	24	22	20	4-7/8	28
28	26	24	22	4-15/16	30
30	28	26	24	5	32
32	30	28	26	5-1/16	34
–	32	30	28	5-1/8	36
36		32	30	5-3/16	38
–	36	–	32	5-5/16	40
–	–	36	–	5-3/8	42
42	–	–	36	5-3/8	44
–	42	–	–	5-1/2	46
48	–	–	42	5-9/16	50
–	48	–	–	5-9/16	52
–	–	–	48	5-9/16	56

30° Elbow

Code:

EL30

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



Materials Available:

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

Note: Alum is aluminized steel

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

Notes:
1. K = 0.12 Flow Resistance Factor

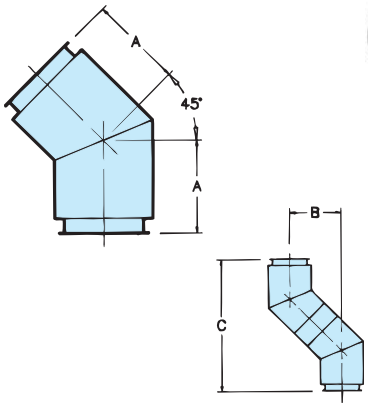
Product (Pipe I. D.)				Dimensions (Inches)			
VSI/IVSI C1	IVSI C2	IVSI Z3	IVSI C4/Z4	A	B	C	(O. D.)
5	–	–	–	6-1/8	6-1/8	22-3/8	7
6	5	–	–	6-1/8	6-1/8	22-7/8	8/9
8	6	–	–	6-3/8	6-3/8	23-7/8	10
–	–	5	–	6-9/16	6-9/16	24-3/8	11
10	8	6	–	6-11/16	6-11/16	24-7/8	12
–	–	–	5	7-5/16	7-5/16	27-1/4	13
12	10	8	6	7-5/16	7-5/16	27-1/4	14
14	12	10	8	7-7/8	7-7/8	29-5/8	16
16	14	12	10	8-1/4	8-1/4	30-5/8	18
18	16	14	12	8-5/8	8-5/8	31-5/8	20
20	18	16	14	9-1/8	9-1/8	34-1/8	22
22	20	18	16	9-3/8	9-3/8	35	24
24	22	20	18	10-1/16	10-1/16	37-1/2	26
26	24	22	20	10-5/16	10-5/16	38-1/2	28
28	26	24	22	11	11	40-7/8	30
30	28	26	24	11-1/4	11-1/4	41-7/8	32
32	30	28	26	11-7/8	11-7/8	44-3/8	34
–	32	30	28	12-3/16	12-3/16	45-3/8	36
36	–	32	30	12-7/8	12-3/4	47-3/4	38
–	36	–	32	13-1/8	13-1/8	48-7/8	40
–	–	36	–	13-9/16	13-9/16	50-5/8	42
42	–	–	36	14	14	52-1/2	44
–	42	–	–	14-1/4	14-1/4	53-1/8	46
48	–	–	42	14-3/16	14-3/16	56-7/16	50
–	48	–	–	15-5/16	15-5/16	57-1/8	52
–	–	–	48	15-5/16	15-5/16	57-1/8	56

45° Elbow

Code:

EL45

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



Materials Available:

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

Note: Alum is aluminized steel

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

Notes:
1. K = 0.15 Flow Resistance Factor

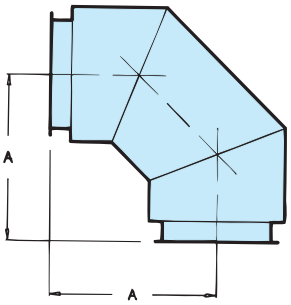
Product (Pipe I. D.)				Dimensions (Inches)			
VSI/IVSI C1	IVSI C2	IVSI Z3	IVSI C4/Z4	A	B	C	(O. D.)
5	–	–	–	8-1/2	12	29	7
6	5	–	–	8-1/2	12	29	8/9
8	6	–	–	8-15/16	12-5/8	30-7/16	10
–	–	5	–	9-1/8	12-7/8	31-1/8	11
10	8	6	–	9-5/16	13-3/16	31-7/8	12
–	–	–	5	10-1/4	14-1/2	35	13
12	10	8	6	10-1/4	14-1/2	36	14
14	12	10	8	10-11/16	15-1/8	36-1/2	16
16	14	12	10	11-5/8	16-7/16	39-5/8	18
18	16	14	12	12-1/16	17-1/16	41-1/8	20
20	18	16	14	13	18-3/8	44-1/4	22
22	20	18	16	13-5/16	18-13/16	45-1/2	24
24	22	20	18	14-5/16	20-1/4	48-1/8	26
26	24	22	20	14-7/8	21-1/16	50-7/8	28
28	26	24	22	15-11/16	22-3/16	53-1/2	30
30	28	26	24	16-1/4	22-15/16	53-3/8	32
32	30	28	26	17	24	58	34
–	32	30	28	17-9/16	24-3/4	59-7/8	36
36	–	32	30	18-3/8	25-15/16	62-5/8	38
–	36	–	32	18-7/8	26-11/16	64-1/2	40
–	–	36	–	19-5/16	27-5/16	65-15/16	42
42	–	–	36	19-11/16	27-7/8	67	44
–	42	–	–	20-1/8	28-7/16	68-5/8	46
48	–	–	42	21-7/16	30-5/16	74-7/8	50
–	48	–	–	21-7/16	30-5/16	74-7/8	52
–	–	–	48	21-7/16	30-5/16	74-7/8	56

90° Elbow

Code:

EL90

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



Materials Available:

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

Note: Alum is aluminized steel

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

Notes:
1. K = 0.30 Flow Resistance Factor

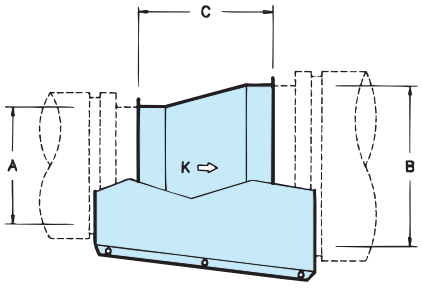
Product (Pipe I. D.)				Dimensions (Inches)	
VSI/IVSI C1	IVSI C2	IVSI Z3	IVSI C4/Z4	A	(O. D.)
5	–	–	–	11-1/2	7
6	5	–	–	11-1/2	8/9
8	6	–	–	12-1/2	10
–	–	5	–	13-1/2	11
10	8	6	–	13-1/2	12
–	–	–	5	14-1/2	13
12	10	8	6	14-1/2	14
14	12	10	8	15-1/2	16
16	14	12	10	16-1/2	18
18	16	14	12	17-1/2	20
20	18	16	14	18-1/2	22
22	20	18	16	19-1/2	24
24	22	20	18	20-1/2	26
26	24	22	20	21-1/2	28
28	26	24	22	22-1/2	30
30	28	26	24	23-1/2	32
32	30	28	26	24-1/2	34
–	32	30	28	25-1/2	36
36	–	32	30	26-1/2	38
–	36	–	32	27-1/2	40
–	–	36	–	28-1/2	42
42	–	–	36	29-1/2	44
–	42	–	–	30-1/2	46
48	–	–	42	32-1/2	50
–	48	–	–	33-1/2	52
–	–	–	48	35-1/2	56

Tapered Increaser/Reducer

Code:

OT

Used when a pipe diameter change is required.



Materials Available:

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

Note: Alum is aluminized steel

Dimensions:
A = Smaller Diameter
B = Larger Diameter
C = Installed Length = [(B-A) 2] + 2 (see Note 1 below)

Example:
Installed Length for 12VSI304-180T 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.

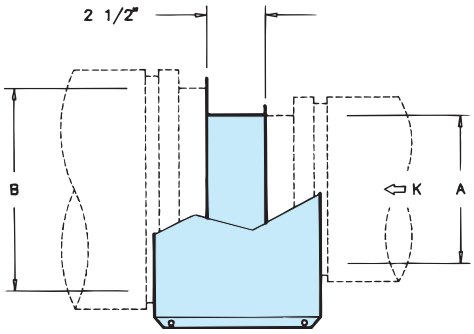
Notes:
1. Installed length shall not be greater than longest available straight pipe length (see page 10) for each diameter.
2. K = N [1-(A/B)2]2
   where N = 0.47 for one step OT
   N = 0.53 for two step OT

Step Increaser/Reducer

Code:

OS

Used when pipe diameter change is required in a small space.



Materials Available:

316/Alum	316/316

Note: Alum is aluminized steel

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 IPS models.

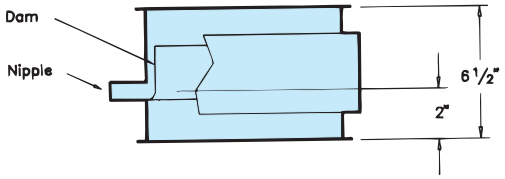
Notes:
1. This is a non-structural part; use only if OT will not fit within the allowable space.
2. $K = N\,[1-(A/B)^2]^2$

Drain Section

Code:

DS

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



Materials Available:

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

Note: Alum is aluminized steel

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.

Half Ring (HR)

Full Ring (HR)

Materials Available:

Painted Steel

Notes:
1. Model VSI part used for IVSIC1 applications.

Product (Pipe I. D.)				Dimensions (Inches) HR				
VSI/IVSI C1	IVSI C2	IVSI Z3	IVSI C4/Z4	Bolt Hole Circle	I.D. of Ring	No of Holes (HR)	Size of Angles	Angle of Holes
5	–	–	–	9	7-1/8	6	(1)	45
6	5	–	–	10	8-1/8	6	(1)	45
8	6	–	–	12	10-1/8	6	(1)	45
–	–	5	–	13	11-1/8	6	(1)	45
10	8	6	–	14	12-1/8	6	(1)	45
–	–	–	5	15	13-1/8	6	(1)	45
12	10	8	6	16	14-1/8	6	(1)	45
14	12	10	8	18	16-1/8	6	(1)	45
16	14	12	10	20	18-1/8	6	(1)	45
18	16	14	12	22	20-1/8	6	(1)	45
20	18	16	14	24	22-1/8	6	(1)	45
22	20	18	16	26	24-1/8	10	(2)	22.5
24	22	20	18	28	26-1/8	10	(2)	22.5
26	24	22	20	30	28-1/8	10	(2)	22.5
28	26	24	22	32	30-1/8	10	(2)	22.5
30	28	26	24	34	32-1/8	10	(2)	22.5
32	30	28	26	36	34-1/8	10	(2)	22.5
–	32	30	28	38	36-1/8	10	(2)	22.5
36	–	32	30	40	38-1/8	10	(2)	22.5
–	36	–	32	42	40-1/8	10	(2)	22.5
–	–	36	–	44	42-1/8	10	(2)	22.5
42	–	–	36	46	44-1/8	10	(2)	22.5
–	42	–	–	48	48-1/8	10	(2)	22.5
48	–	–	42	52	50-1/8	10	(2)	22.5
–	48	–	–	54	62-1/8	10	(2)	22.5
–	–	–	48	58	66-1/8	10	(2)	22.5

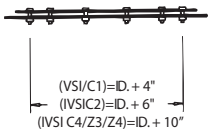
(1) Size of Angles = 1½ x 1½ x 3/16
(2) Size of Angles = 2 x 2 x 3/16

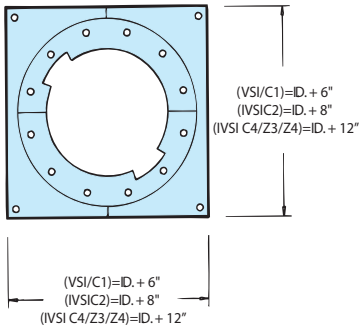
Plate Support Assembly

Code:

PA

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





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

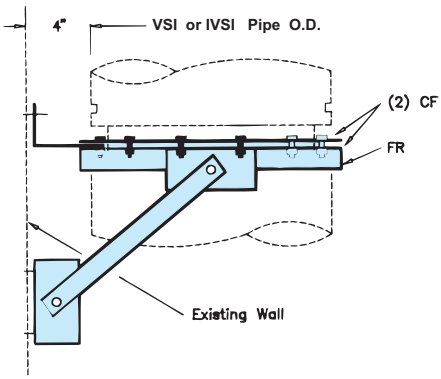
Notes:
1. Two 316 Stainless Steel HCB's are provided for stainless steel outer projects.
2. PA plate fabricated from Stainless Steel is available upon special request for an additional cost; allow additional time for manufacturing.

Wall Support Assembly

Code:

WA

"Limited" support assembly with factory supplied bracing.



Materials Available:

Painted Steel

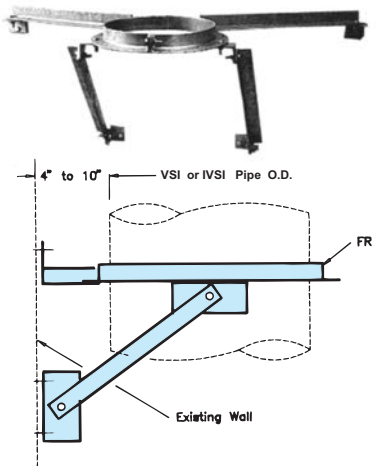
Ordered Part Includes:
One FR, two CF's, two HCB's, five brackets, two struts, and all hardware except connection at wall.

Notes:
1. Assembly will maintain a 4" clearance between pipe O.D. and supporting structure.
2. WA fabricated from Stainless Steel is available upon special request for an additional cost; allow additional time for manufacturing.

Wall Guide Assembly

Code:
WG

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



Materials Available:

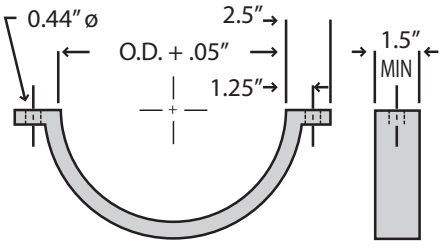
Painted Steel

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 IVSIC1 applications.

Support Strap

Code:
SS



Materials Available:

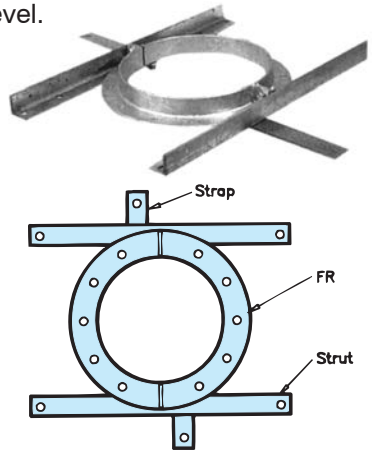
Painted Steel

Notes:
Available in 5 through 26" VSI 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 IVSIC1 applications.

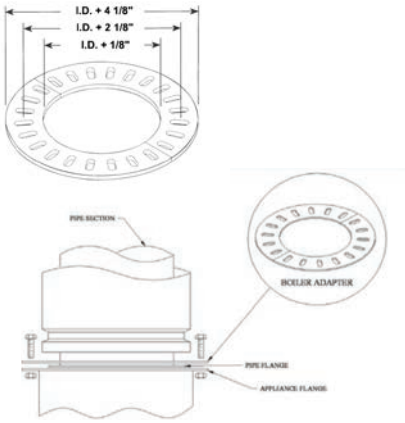
Pipe I. D. (Inches)				Material (Inches)	
VSI/IVSI C1	IVSI C2	IVSI Z3	IVSI C4/Z4	Strut Length	Strut Size
5	–	–	–	17-1/2	(1)
6	–	–	–	18	(1)
–	5	–	–	19-1/2	(1)
8	6	–	–	21	(1)
–	–	5	-	21-1/2	(1)
–	–	–	5	22-1/2	(1)
10	8	6	–	24	(1)
12	10	8	6	27	(1)
14	12	10	8	29	(2)
16	14	12	10	30	(2)
18	16	14	12	32	(2)
20	18	16	14	33	(2)
22	20	18	16	34-1/2	(3)
24	22	20	18	36	(3)
26	24	22	20	37	(3)
28	26	24	22	38	(3)
30	28	26	24	39-1/2	(3)
32	30	28	26	41	(3)
–	32	30	28	42-1/2	(3)
36	–	32	30	44	(3)
–	36	–	32	46	(3)
–	–	36	–	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.



Materials Available:

Painted Steel

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.

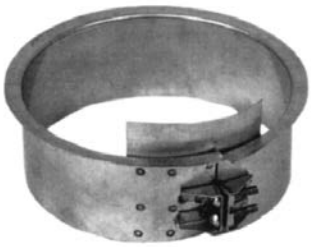
Notes:

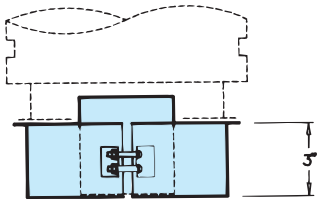
1. Model VSI part used for all IVSI applications.

Seal Ring

Code:
SR

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





Materials Available:

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

Note: Alum is aluminized steel

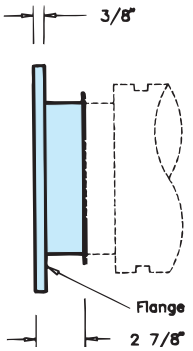
Ordered Part Includes:
SR, one CB, and one VB & hardware

Notes:
1. Ceramic fiber insulation provided for IVSI models.

Flange Adapter

Code:
FD

Provides a rigid connection to a 125 lb. or 150 lb. ANSI flange.



Materials Available:

316/Alum	316/316

Note: Alum is aluminized steel

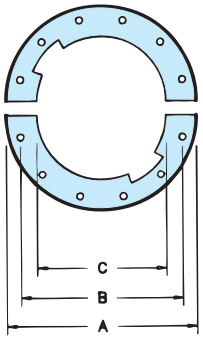
Ordered Part Includes:
Painted Carbon Steel Flange welded to stainless TS, one special CB, and one VB. Ceramic fiber insulation provided for IVSI models.

Product	Dimensions (Inches)			
Pipe I.D.	No of Bolts	Bolt Hole Dia.	Flange O. D.	Bolt Circle
5	8	7/8	10	8-1/2
6	8	7/8	11	9-1/2
8	8	7/8	13-1/2	11-3/4
10	12	1	16	14-1/4
12	12	1	19	17
14	12	1-1/8	21	18-3/4
16	16	1-1/8	23-1/2	21-1/4
18	16	1-1/4	25	22-3/4
20	20	1-1/4	27-1/2	25
22	20	1-3/8	29-1/2	27-1/4
24	20	1-3/8	32	29-1/2
28	28	1-3/8	36-1/2	34
30	28	1-3/8	38-1/2	36
32	28	1-5/8	41-3/4	38-1/2
36	32	1-5/8	46	42-3/4
42	36	1-5/8	53	49-1/2
48	44	1-5/8	59-1/2	56

Clamp Flange

Code:
CF

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



A = Flange O.D.
VSI/IVSIC1 = I.D. + 5"
C2 = I.D. + 7"
Z3/Z4/C4 = I.D. + 11"

B = Bolt Hole Circle
VSI/IVSIC1 = I.D. + 4"
C2 = I.D. + 6"
Z3/Z4/C4 = I.D. + 10"

C = Flange I.D.
VSI/IVSIC1 = I.D. + 1/2"
C2,C4
Z3,Z4

Materials Available:

Painted Steel

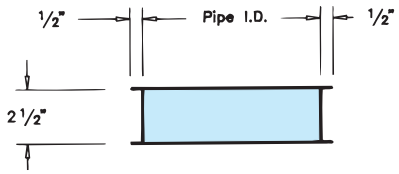
Ordered Part Includes:
Two half clamp flange plates.

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 IVSIC1 applications.
5. Order HCB's separetely if needed.

Flanged Hood Transition

Code:
TS

Used on standard appliances such as kitchen hood exhausts. Flanged at both ends.



Materials Available:

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

Note: Alum is aluminized steel

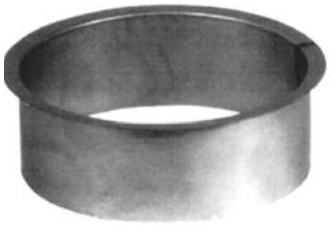
Ordered Part Includes:
TS, plus one CB and one VB.
Ceramic fiber insulation provided with IVSI models.

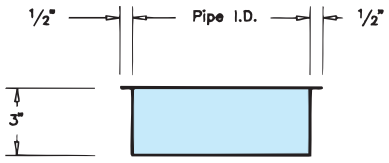
Notes:
1. Can be used for welding to equipment or transitions fabricated in the field.

Unflanged Hood Transition

Code:
TSU

Used on standard appliances such as kitchen hood exhausts. Flanged at one end.





Materials Available:

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

Note: Alum is aluminized steel

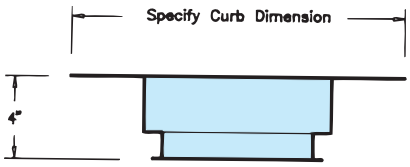
Ordered Part Includes:
TSU, plus one CB and one VB.
Ceramic fiber insulation provided with IVSI models.

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:

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

Note: Alum is aluminized steel

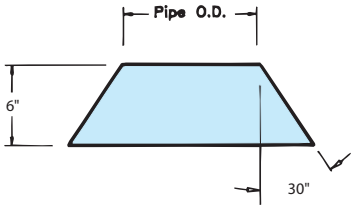
Ordered Part Includes:
FA, plus one VB and one CB.

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

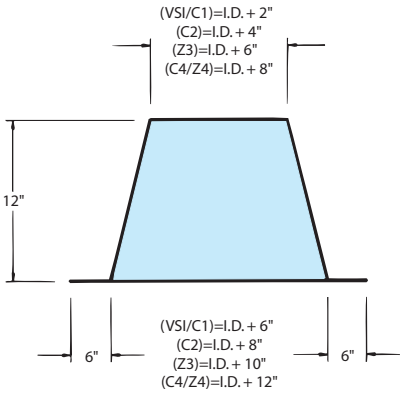
Ordered Part Includes:
SC, plus hardware.

Notes:
1. Requires P600 sealant when installing.
2. Model VSI part used for IVSIC1 applications.

Tall Flashing

Code:
TF

Used in conjunction with SC for weatherization at the roof.



Materials Available:

Aluminized or Galvanized Steel		304	316

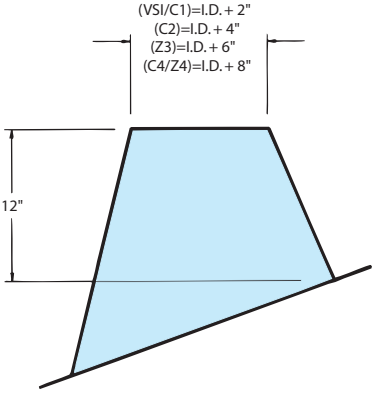
Ordered Part Includes:
TF only.

Notes:
1. Use limited to installations where complete roof penetration is non-combustible.
2. Model VSI part used for IVSIC1 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

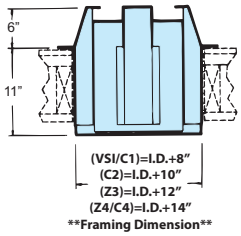
Ordered Part Includes:
PTF only (specify pitch when ordering).

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 IVSIC1 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:

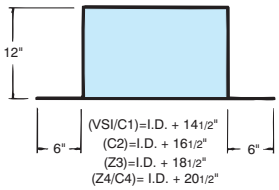
Galvanized Steel

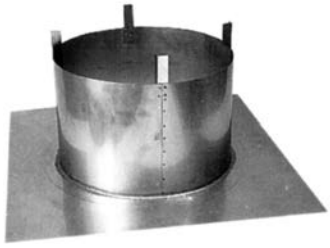
Notes:
1. Model VSI part used for IVSIC1 applications.

Ventilated Tall Flashing

Code: VTF

Encloses the THB, offers protection from weather and moisture penetration





Materials Available:

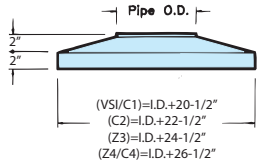
Aluminized or Galvanized Steel		304	316

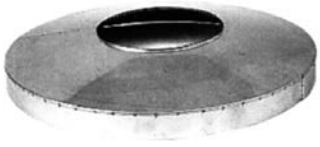
Notes:
1. Model VSI part used for IVSIC1 applications.

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:

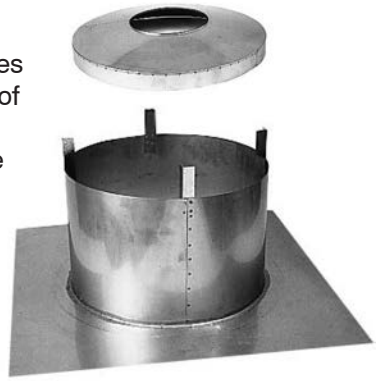
Aluminized or Galvanized Steel		304	316

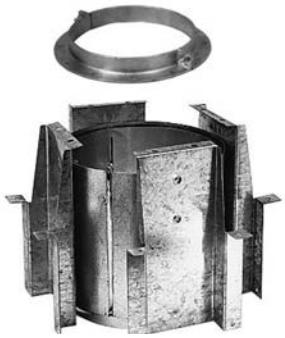
Notes:
1. Model IVS part used for IVSIC1 applications.

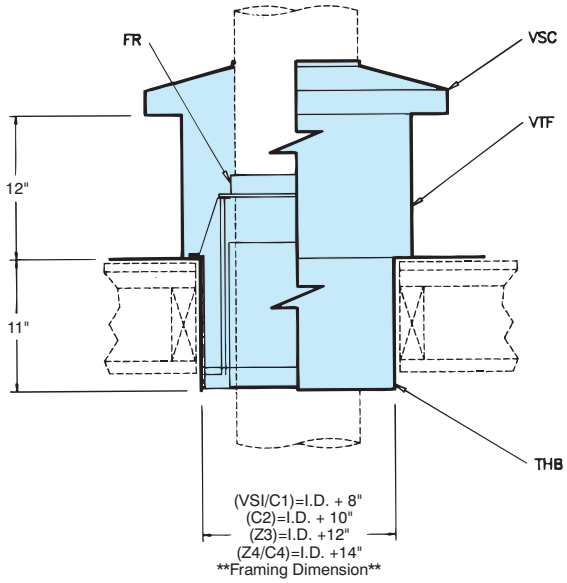
Ventilated Roof Thimble Assembly

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

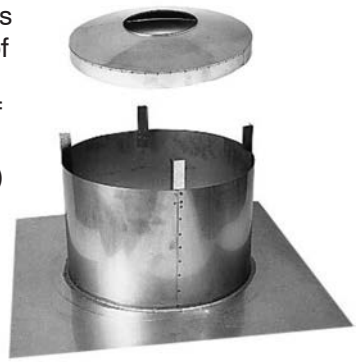
Ordered Part Includes:
One THB, one FR, one VTF, and one VSC.

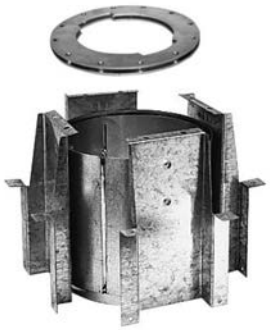
Notes:
1. Model VSI part used for IVSIC1 applications.

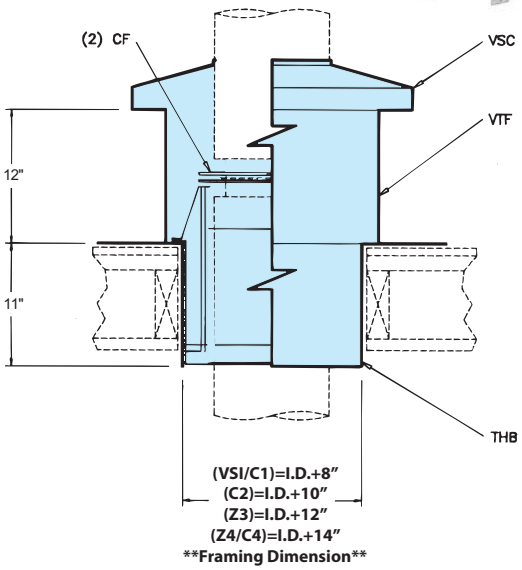
Ventilated Roof Support Assembly

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:

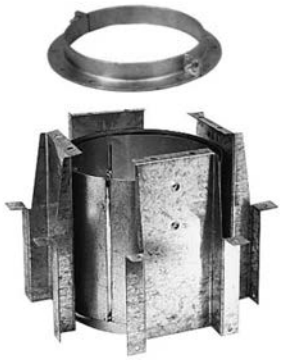
Aluminized or Galvanized Steel		304	316

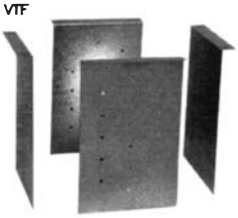
Ordered Part Includes:
One THB, two CF's, one VTF, and one VSC.

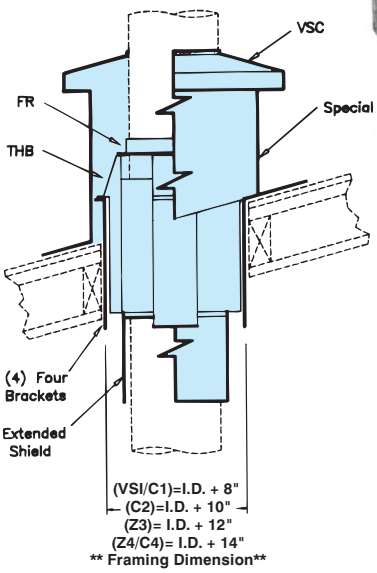
Pitched Ventilated Roof Thimble

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

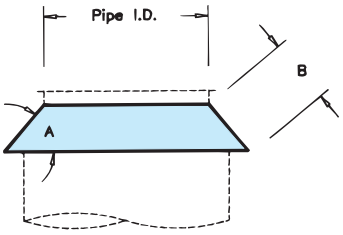
Ordered Part Includes:
One THB, 4 brackets, extended shield, special VTF, one FR, and one VSC.

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 IVSIC1 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.

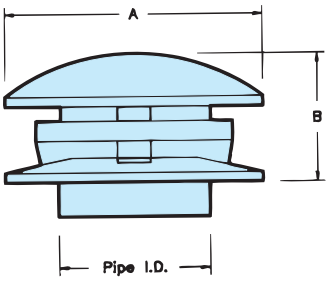
Notes:
1. Model VSI part used for IVSIC1 applications.

Product	Dimensions	
	A	B
VSI/-C1	50°	3"
IVSI-C2	32°	3-1/2"
IVSI-Z3	25°	4-1/2"
IVSI-C4/Z4	17°	5-1/4"

Chimney Round Top

Code:
CT

Provides the greatest degree of rain protection. Available only in 5", 6", 8", 10", 12", and 14" sizes.



Materials Available:

430 Stainless Steel

Ordered Part Includes:
CT, plus hardware.

Notes:
1. Model VSI part used for IVSIC1 applications.
2. Part not available for IVSIC2 and IVSIC4 applications.
3. K = 0.5 Flow Resistance Factor

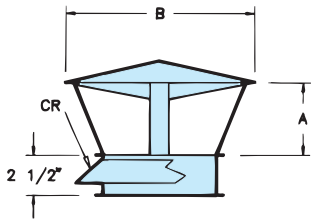
Product	Dimensions		
(I.D.)	(Inches)		(O.D.)
VSI IVSI-C1 Only	A	B	
5	12	5-1/2	**7**
6	12	5-1/2	**8/9**
8	16	7	**10**
10	20	8-1/2	**12**
12	24	10	**14**
14	28	11-1/2	**16**

Stack Cap

Code:

SK

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



Materials Available:

304/304	316

Ordered Part Includes:
SK, plus one CR, one HCB and one VB.

Notes:
1. Model VSI part used for IVSIC1 applications.
2. K = 0.5 Flow Resistance Factor
3. Optional Birdscreen available

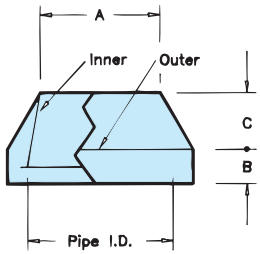
Product (Pipe I.D.)	Dimensions (Inches)	
VSI IVSI-C1 IVSI-C2 IVSI-C4 IVSI-Z3 IVSI-Z4	A	B
5	2-1/2	10-1/4
6	3	10-1/4
8	4	13-5/8
10	5	17
12	6	20-1/2
14	7	24
16	8	27-3/8
18	9	30-3/4
20	10	34-1/8
22	11	37-5/8
24	12	41
26	13	44-3/8
28	14	47-7/8
30	15	51-1/4
32	16	54-5/8
36	18	61-1/2
42	21	71-3/4
48	24	82

Insulated Exit Cone

Code:

EC

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



Materials Available:

316

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

Notes:
1. K = 1.25 Flow Resistance

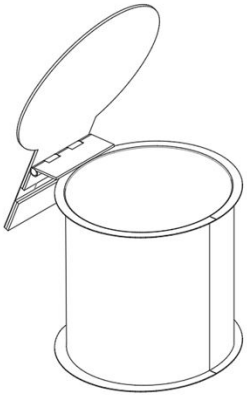
Product (Pipe I.D.)	Dimensions (Inches)		
All Models	A	B	C
5	4-7/8	4	1-3/8
6	4-7/8	4	1-1/2
8	6-9/16	4	1-3/4
10	8-3/16	4	3-3/8
12	9-7/8	4	3-3/4
14	11-1/2	4	4
16	13-1/16	6	4-3/8
18	14-3/4	6	4-5/8
20	16-5/16	6	5
22	18	6	5-1/4
24	19-5/8	6	5-5/8
26	21-1/4	6	6
28	22-7/8	8	6-1/4
30	24-1/2	8	6-5/8
32	26-1/8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

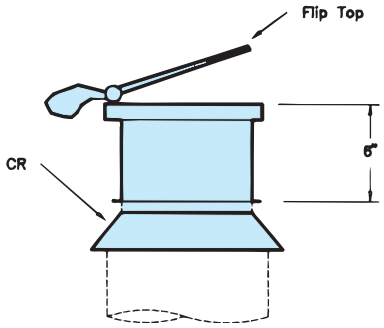
Flip Top

Code:

FL

Termination that prevents moisture and debris from entering system. Flip top opens with internal pressure and closes when pressure is absent.





Materials Available:

Stainless Steel

Ordered Part Includes:
FL connected to a 316 stainless steel TS (6” high), plus one CR, one VB, and one HCB.

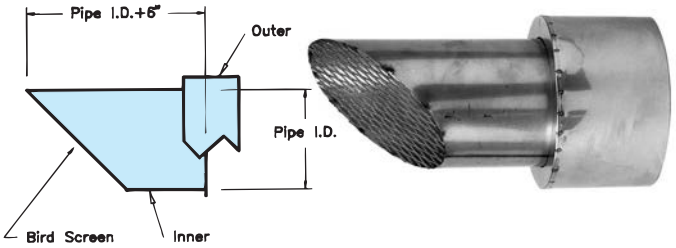
Notes:
1. Available in sizes 5" through 24" only.
2. Model VSI part used for IVSIC1 applications.

Miter Cut

Code:

MC

Used for horizontal engine exhaust termination.



Materials Available:

316

Ordered Part Includes:
One inner with bird screen, one outer finish collar, and one VB.

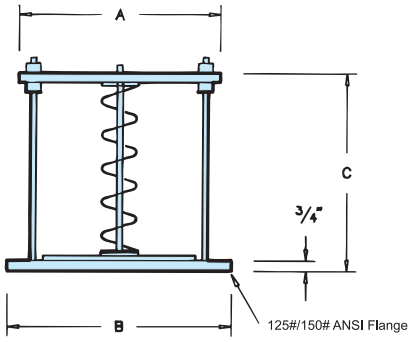
Notes:
1. The 1/2" mesh-pattern bird screen has a 60 percent open area.
2. K = 1.25 Flow Resistance Factor

Excessive Pressure Relief Valve

Code:
ER

For use on all engine exhaust. Helps control the venting pressure should a backfire occur.

Recommended orientation as shown.



Ordered Part Includes:
Painted steel ER valve, plus bolt flange gasket, bolts, washers and nuts for attachment to FD. Painted steel construction.

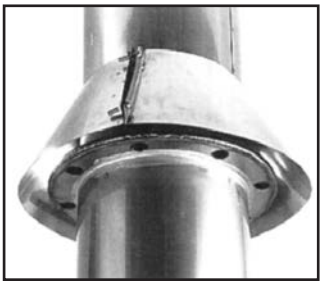
Notes:
1. Excessive Pressure Relief Valves are recommended in accordance with NFPA 37.
2. Caution must be used in locating valve in an exhaust system. Hot gases and high velocity could cause injury.
3. Number of Snubber Springs, Tension Springs, Support Rods, and Guide Rods vary with valve size.
4. Model VSI part used for all IVSI applications.

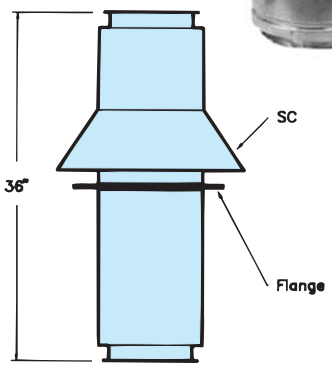
VSI IVSI (Pipe I.D.)	Dimensions (Inches)			No. of Springs
	A	B	C	
5	8-5/8	10	10-3/4	1
6	9-5/8	11	10-3/4	1
8	12-5/8	13-1/2	10-3/4	1
10	14	16	10-3/4	1
12	16-3/4	19	10-3/4	2
14	18-1/4	21	10-3/4	2
16	20-1/4	23-1/2	10-3/4	3
18	22-1/4	25	10-3/4	3
20	24-1/4	27-1/2	10-3/4	4
22	26-1/4	29-1/2	10-3/4	4
24	28-1/2	32	10-3/4	4

Guy Section

Code:
GS

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





Materials Available:

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

Note: Alum is aluminized steel

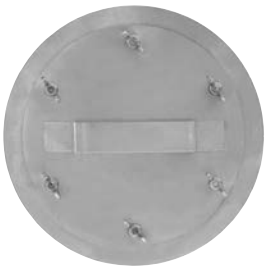
Ordered Part Includes:
Welded pipe section with painted carbon steel flange and storm collar, one CB, and one VB.

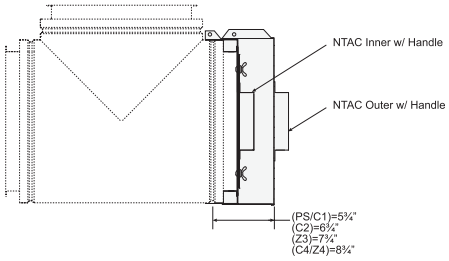
Notes:
1. Flange has 13/16" diameter holes, 30° apart.
2. Flow Resistance Factor (K) is the same as insulated pipe.

No Tool Access Cap

Code:
NTAC

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





Materials Available:

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

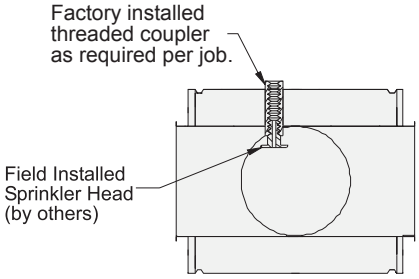
Note: Alum is aluminized steel

Ordered Part Includes:
NATC, plus one dam, insulation shield, outer cover, and one VB. Ceramic fiber Insulation provided for IVSI models.

Special Manifold Tee

(Sprinkler)

Provides access for installation/ inspection of sprinkler head.



Materials Available:

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

Note: Alum is aluminized steel

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

Notes:
1. Use NTAC for access cover.
2. Snout available in any standard diameter equal to or smaller then the body diameter.
3. For dimension see 90° Manifold Tee in this booklet.
4. K= straight pipe plus an unknown for the sprinkler head. Contact sprinkler head manufacturer.

Through-Penetration Firestop

Code:

TPF

Use when penetrating a 2 hour fire-rated floor or wall with IVSI-Z3 or IVSI-Z4 grease duct.

Materials Available:

Aluminized Steel	304 or 316 Stainless Steel

Ordered Part Includes:
One closure band, two cover plate halves, 12-inch wide insulation strip and one 4-inch insulation strip.

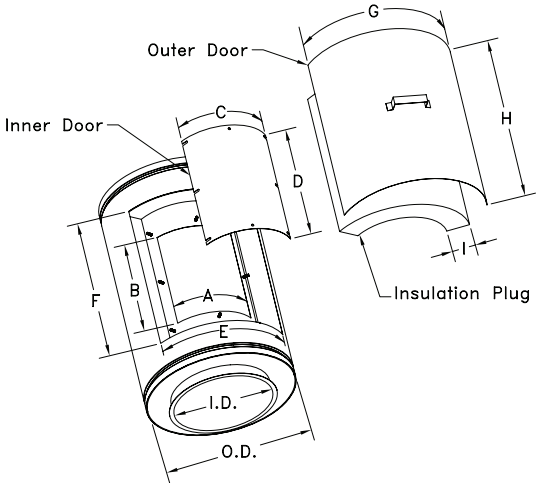
Notes:
1. For use with IVSI-Z3 and IVSI-Z4 grease duct only
2. One kit required for a floor penetration and two kits requires for wall penetrations.

Inline Access Door

Code:

IAD

Provides access for inspection and cleaning; incorporates a flush mount door on a 30” duct section.



Materials Available:

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

Note: Alum is aluminized steel

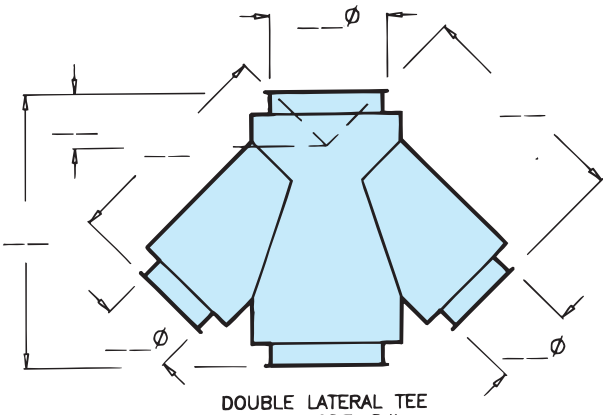
Ordered Part Includes:
IAD component, plus one VB, one AS, and one CB.

Product	Inner Hole Size (inches)		Inner Door Size (inches)		Outer Hole Size (inches)		Outer Door Size (inches)	
Pipe I.D.	A	B	C	D	E	F	G	H
5 & 6	3½	12	6	14½	9½	18½	12	21
8 & 10	6	12	8½	14½	12	18½	14½	21
12 - 16	9	12	11½	14½	15	18½	17½	21
18 - 22	13	12	15½	14½	19	18½	21½	21
24 - 30	18	12	20½	14½	24	18½	26½	21
32 & 36	24	12	26½	14½	30	18½	32½	21

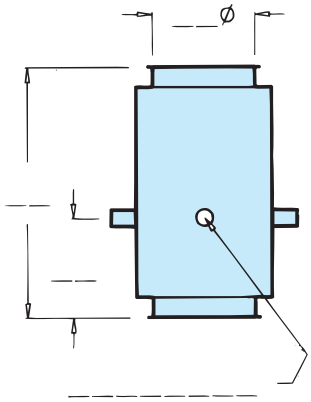
Notes:
1. IAD available on 30" Pipe Lengths only.
2. Inner door is secured in place with wing nuts.
3. Outer door is secured in place with snap–down latches.
4. Outer door for double wall models only (VSI, IVSI & ZC).

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

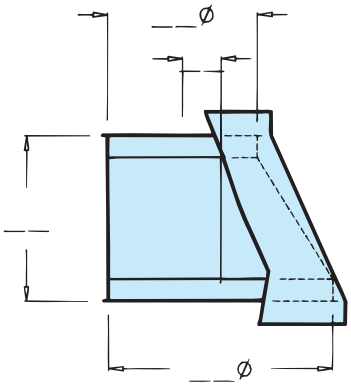
Please provide detail of the required part if not already designed by AMPCO, and allow extra manufacturing time. Special parts are nonreturnable.



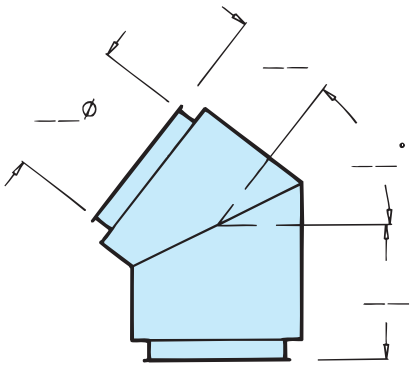
DOUBLE LATERAL TEE
PART CODE: DJL



TEST & MONTORING
PORTS AT ANY LOCATION

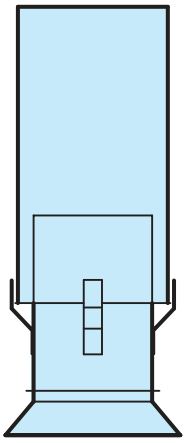


ECCENTRIC
TAPERED INCREASER

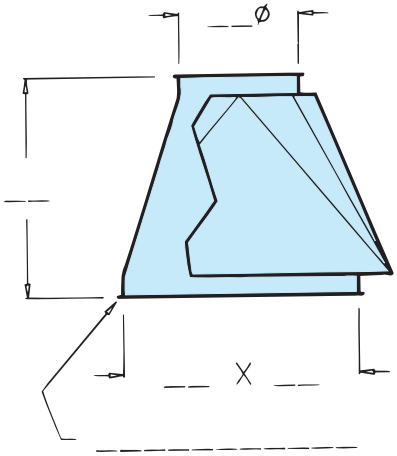


SPECIAL DIMENSIONS
ON ANY FITTING

SPECIAL DIMENSIONS
ON ANY FITTING



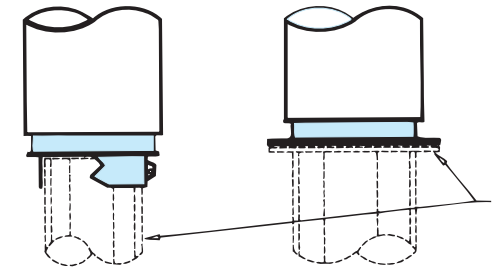
WEATHERHEAD



RECTANGULAR/SQUARE TO
ROUND TRANSITIONS

SINGLE WALL PART CODE: ___x___SWA

DOUBLE WALL PART CODE: ___x___DWA



PROVIDE PRECISE DETAIL
OF EXISTING PIPE OR
FLANGE FOR ATTACHIMENT

SPECIAL DIAMETER
SEAL RING

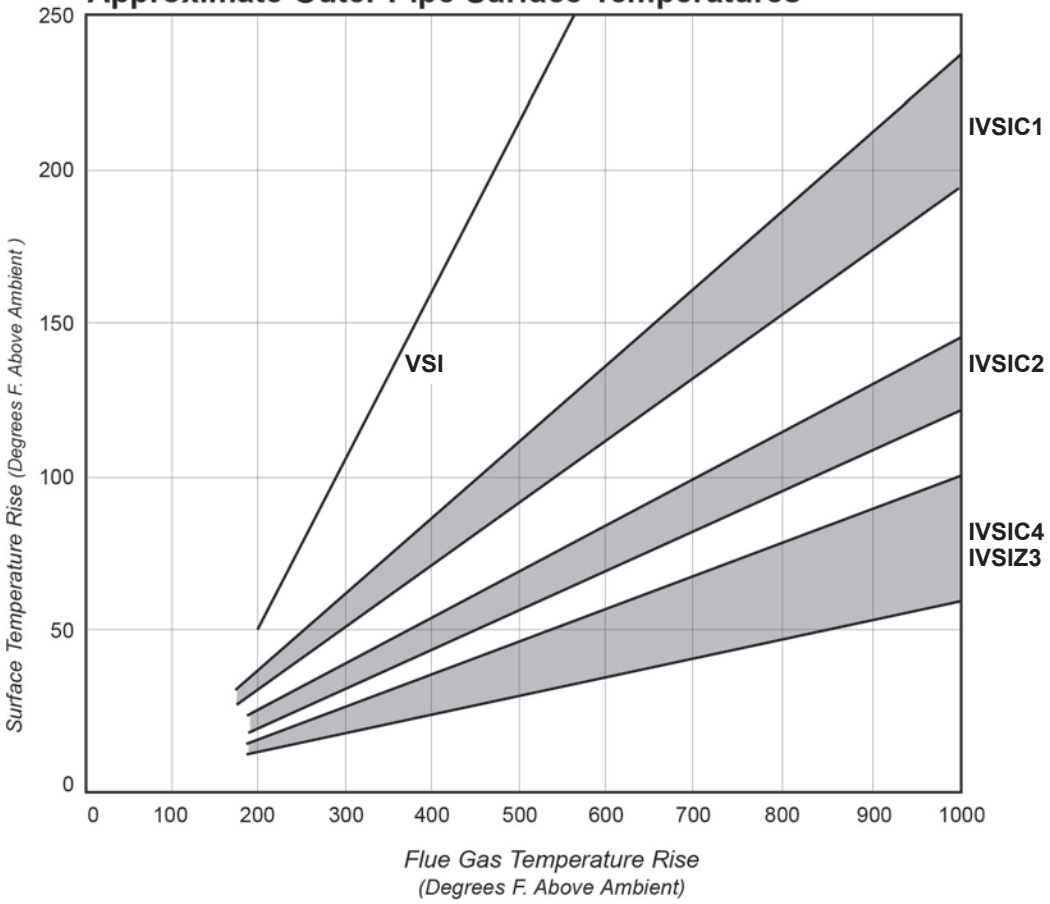
SPECIAL
FLANGE ADAPTER

Material Thickness - Model VSI/IVSI

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

* Gauge is approximate.

Approximate Outer Pipe Surface Temperatures



Operating Temperatures and Clearances to Combustibles

Criteria	Restaurant Grease Duct	Type L Vent	1400º F. Factory-Built Chimney	Building Heating Appliance Chimney*
Application	Cooking Appliances Ventilation Hoods Restaurant Grease Ducts Pizza Oven Exhausts	Chimneys and stacks for appliances listed suitable for venting with Type L or Type B venting systems.	Industrial Furnaces Processing Equipment Kilns and Ovens Diesel and Turbine Exhausts Coffee Roasters	Low and High Pressure Steam Boilers Diesel and Turbine Exhausts Building Heating Equipment Coffee Roasters
Maximum Operating Temperatures	500° F. Continuous 2000° F. Intermittent	550° F Continuous 1700° F. Intermittent	1400° F. Continuous 1800° F. Intermittent	1000° F. Continuous 1400° F. Intermittent
Clearances To Combustibles: Model VSI	5", 6", 8", 10" I.D. = 5" 12" I.D. = 6" 14" I.D. = 7" 16" I.D. = 8" 18" I.D. = 9" 20" I.D. = 10" 22"-24" I.D. = 11" 26"-28" I.D. = 12" 30"-32" I.D. = 13 36" I.D. = 14" 42" I.D. = 16" 48" I.D. = 17"	VSI not listed as L-Vent	5"-16" I.D.=6" 18" I.D.=8" 20" I.D.=9" 22" I.D.= 10" 24" I.D.=12" 26" I.D.=13" 28" I.D.=14" 30" I.D.=16" 32" I.D.=17" 34" I.D.=19" 36"-48" I.D. = 20	5"-16" I.D.= 6" 18"-20" I.D.= 7" 22"-26" I.D.= 8" 28"-30" I.D.= 9" 32"-36" I.D.= 10" 42" I.D.=11" 48" I.D.=12"
Model IVSIC1	5"-6" I.D. = 2" 8"-16" I.D. = 3" 18"-24" I.D. = 4" 26"-32" I.D. = 5" 36" I.D. = 6" 42"-48" I.D. = 7"	5"-24" I.D. = 3"	5"-6" I.D. = 1" 8"-16" I.D. = 2" 18"-24" I.D. = 3" 26"-32" I.D.= 4" 36" I.D. = 5" 42"-48" I.D. = 6"	5"-8" I.D. = 1" 10"-16" I.D. = 2" 18"-24" I.D. = 3" 26"-32" I.D. = 4" 36" I.D. = 5" 42"-48" I.D. = 6"
Models IVSI C2 & C4	5"-16" I.D. = 1" 18"-20" I.D. = 2" 22"-24" I.D.= 3" 26"-32" I.D.= 4" 36" I.D. = 5" 42"-48" I.D.= 6"	5"-24" I.D. = 2"	5"-16" I.D. = .5" 18"-24" I.D. = 2" 26"-32" I.D. = 3" 36" I.D. = 4" 42"-48" I.D. = 5"	5"-16" I.D. = .5" 18" I.D. = 1" 20" I.D. = 1.5" 22"-24" I.D.= 2" 26"-32" I.D. =3" 36" I.D.= 4" 42"-48" I.D.=5"
Model IVSI Z3 & Z4	5"-36" I.D. = 0"			
Clearance to non-combustibles - as required for installation, access for inspection or per local code.				

1. Enclosure - Grease Ducts, Building Heating applicance Chimneys and 1400 F chimneys are intended for use unenclosed or enclosed in an appropriate non-combustible chase.
2. Under the "Building Heating Appliance Chimney" Listing, 5" through 24" Model IVSI has qualified for UL's additional, optional "Type HT" rating for chimneys for certain appliance venting applications; especially solid fuel.

AMPCO
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AMP_VSI-IVSI_SR-001E_12-23