

PRESSURE INDUSTRIAL CHIMNEY



For Heating Appliances,  
Generator & Fume Exhaust

## SELECTION GUIDE

### PRESSURE RATED CHIMNEYS & VENTS

MODELS	PSW Single Wall	PIC Double Wall 1" Air Insulated	IPIC-1 Double Wall 1" Ceramic Insulation	IPIC-2 Double Wall 2" Ceramic Insulation	IPIC-4 Double Wall 4" Ceramic Insulation
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#### CONSTRUCTION

Flues	304 or 316 Stainless Steel
Casings	Aluminized Steel, 304 or 316 Stainless Steel

#### PRESSURES

Positive – Neutral – Negative

#### APPLICATIONS

Chimney	Vents	Stationary Combustion Engines
Stacks	Solid Fuel Burning Appliances	Stationary Gas Turbines
Commercial Fireplaces	Building Heating Appliances	Fume Exhausts / Venting*
Air Duct	1400° F Chimney	

\*Consult appropriate authority to determine fume compatibility with 304 or 316 stainless steel & silicone sealants.

### KITCHEN VENTILATION

In addition to the products listed above, Metal-Fab offers "G Series" Factory-Built Grease Duct Systems in full compliance with the current requirements. Additional components include Fan Curb Terminations, clean out access, and transitions. For more information, request the "G Series" Factory-Built Grease Duct Design Manual (L2084) Visit our website: [www.metal-fabcommercial.com](http://www.metal-fabcommercial.com)

#### CONDENSING APPLICATIONS

For condensing appliances and other acidic/caustic applications select Corr/Guard®. Flues are constructed from AL29-4C stainless steel, the choice for corrosive environments. Additional information is available by requesting the Corr/Guard® Design Manual (L2610) or visit our website: [www.metal-fabcommercial.com](http://www.metal-fabcommercial.com)

#### MISCELLANEOUS

Metal-Fab manufactures a complete line of products for Category I gas-burning appliances, a variety of Hearth and HVAC applications. Visit our website [www.metal-fabinc.com](http://www.metal-fabinc.com)

## STANDARDS AND LISTINGS

<b>NFPA 37</b>	Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines.
<b>NFPA 54</b>	National Fuel Gas Code
<b>NFPA 211</b>	Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning appliances.
<b>UL 103</b>	Standard for Safety, Factory-Built Chimneys for Residential and Building Heating Appliances.
<b>ASTM E119</b>	Standard Test Methods for Fire Tests of Building Construction and Materials.



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### MODEL CODES

**ICC:** International Code Council

The ICC is a not-for-profit organization established by the International Conference of Building Officials, Building Officials and Code Administrators International, and the Southern Building Code Congress International to create a single set of comprehensive and coordinated international codes. This set is called the International Codes. ICBO, BOCA, and SBCCI no longer publish separate codes. Codes regarding chimneys and vents are in the International Mechanical Code (IMC).

**IAPMO:** International Association of Plumbing & Mechanical Officials

IAPMO publishes the Uniform Plumbing Code® (UPC), Uniform Mechanical Code® (UMC), and a number of other life safety codes. IAPMO is most recognized for their development of the Uniform Plumbing Code.

**NFPA:** National Fire Protection Association

NFPA develops codes and standards for fire safety. There are over 300 NFPA codes and standards.

### GENERAL INFORMATION

Pertinent information is consolidated in this publication to assist you with application information, codes and standards, dimensional information, support requirements and other data of special interest. It is our goal to enable you to select the proper product to meet the requirements of your project confidently and efficiently.

For additional information you may contact us via:

Web Site: [www.metal-fabcommercial.com](http://www.metal-fabcommercial.com)  
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Complete information for proper and safe installations is found in the Metal-Fab Installation Instructions for each product.

Model PIC and IPIC building heating appliance chimneys are suitable for use with building heating appliances and other low heat appliances as described in NFPA 211; Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances, that produce exhaust flue gas temperatures not exceeding 1000°F continuous or 1400°F intermittently. The PIC and IPIC chimneys are also suitable for higher heat applications where continuous temperatures do not exceed 1400°F and where the intermittent maximum temperature is less than 1800°F.

**NOTE:** Dimensions are American Standard (feet & inches), with metric in parenthesis except where stated otherwise. Always consult appliance installation instructions for exhaust temperatures, pressures, and operating conditions. Appliance manufacturer may limit horizontal runs, elbows, offsets, vertical heights, etc.



PRODUCT MODEL	PSW	PIC	IPIC-1	IPIC-2	IPIC-4
UL File No. - Chimney	MH17528	MH8251	MH8251	MH8251	MH8251
<b>UL Listings</b>					
Building Heating Appliance		X	X	X	X
1400°F Factory-Built Chimney		X	X	X	X
<b>Standards</b>					
NFPA 37		X	X	X	X
NFPA 211	X	X	X	X	X
UL 103		X	X	X	X
UL 1777	X				
<b>Regional Acceptance</b>					
California State Fire Marshall					
Chimney No.: 4146-296:100		X			
City of New York					
Chimney No.: MEA245-97-M		X	X	X	X
Massachusetts					
Chimney No.: G3-0207-314		X	X	X	X

FUEL TYPES	
All Models	Natural and LP Gas, #2-6 Fuel Oil, Coal, Wood, Fumes

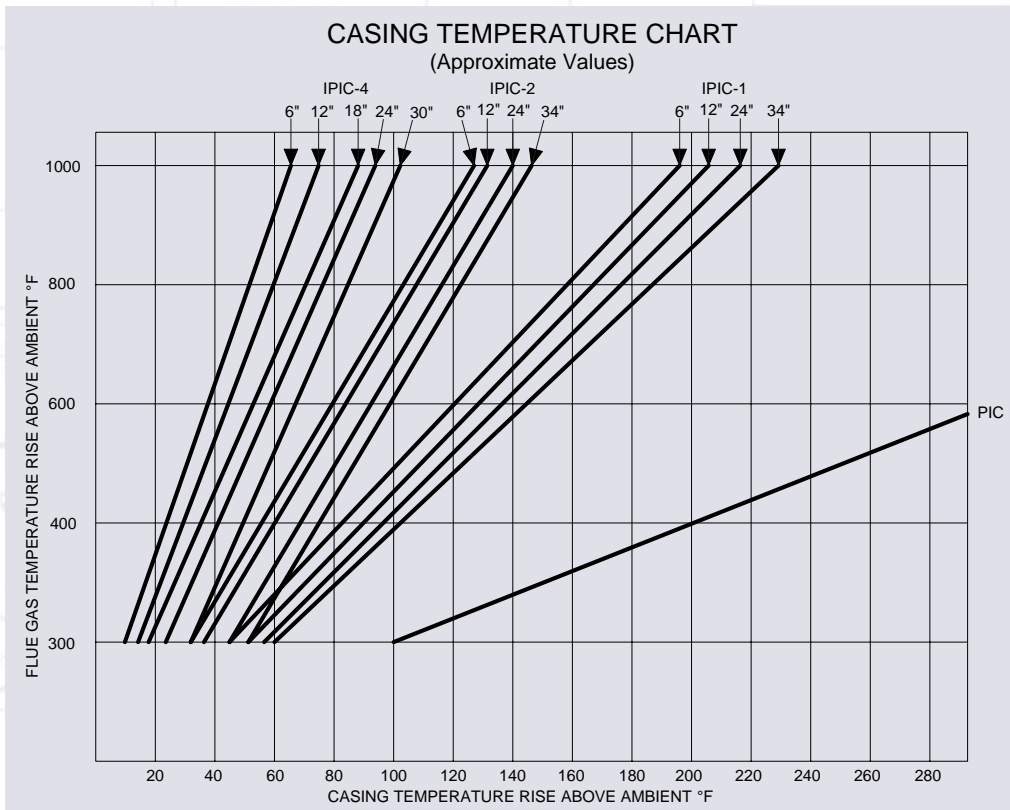
EXHAUST PRESSURE	
All Models	Positive, Neutral, Negative

MATERIAL SELECTIONS	
FLUE	CASING
304 Stainless Steel	Aluminized Steel
316 Stainless Steel	304 Stainless Steel
	316 Stainless Steel

TEMPERATURE RATINGS		
	Building Heating Appliances	Factory-Built Chimneys
Continuous	1000°F (538C)	1400°F (760C)
Intermittent	1400°F (760C)	1800°F (982C)

MATERIAL THICKNESS					
Flue	PSW	PIC	IPIC-1	IPIC-2	IPIC-4
6"-36" (152-914)	.035"(.9)	.035"(.9)	.035"(.9)	.035"(.9)	.035"(.9)
38"-48" (965-1219)	.048" (1.2)	.048" (1.2)	.048" (1.2)	.048" (1.2)	.048" (1.2)
<b>Casing – Based on Flue Diameter – *Aluminized / Stainless</b>					
6"-18" (152-457)	Not Applicable	*.024"(.6) / .024(.6)	*.024"(.6) / .024(.6)	*.024"(.6) / .024(.6)	*.024"(.6) / .024(.6)
20"-22" (508-559)		*.024"(.6) / .024(.6)	*.024"(.6) / .024(.6)	*.024"(.6) / .024(.6)	*.034"(.9) / .024(.6)
24" (610)		*.024"(.6) / .024(.6)	*.024"(.6) / .024(.6)	*.034"(.9) / .024(.6)	*.034"(.9) / .024(.6)
26"-30" (660-762)		*.034"(.9) / .024(.6)	*.034"(.9) / .024(.6)	*.034"(.9) / .024(.6)	*.034"(.9) / .024(.6)
32"-34" (813-864)		*.034"(.9) / .024(.6)	*.034"(.9) / .024(.6)	*.034"(.9) / .024(.6)	*.034"(.9) / .035(.9)
36" (914)		*.034"(.9) / .024(.6)	*.034"(.9) / .024(.6)	*.034"(.9) / .035(.9)	*.034"(.9) / .035(.9)
38"-48" (965-1219)		*.034"(.9) / .035(.9)	*.034"(.9) / .035(.9)	*.034"(.9) / .035(.9)	*.034"(.9) / .035(.9)

INSULATION THICKNESS				
PSW	PIC	IPIC-1	IPIC-2	IPIC-4
None	1" Air Space	1" Ceramic	2" Ceramic	4" Ceramic



## DEFINITIONS

**Alternative Methods:** The use of other methods or devices for the compliance with a standard, provided that sufficient technical data are submitted to the Authority Having Jurisdiction to demonstrate that the proposed method or device is equivalent in quality, strength, fire endurance, effectiveness, durability and safety to that of the standard.

**Authority Having Jurisdiction:** The organization, office, or individual responsible for approving equipment, an installation, or procedure.

**Breeching:** That portion of the system that conveys products of combustion from the appliance(s) to the chimney. Also referred to as vent connector.

**Chimney:** A primarily vertical passageway for removing products of combustion from a structure. Factory-built chimneys shall be listed by an accredited testing agency.

**Combustible Material:** Material subject to an increase in combustibility or flame spread rating beyond the limits established in the definition of limited combustibles.

**Limited Combustibles:** Building combustible material that does not comply with the definition of a non combustible material, that in the form used, has a potential heat value not exceeding 3500 Btu/lb. (Abbreviated... see NFPA for full definition)

**Liquid-tight:** Constructed and performing in such a manner as not to permit the passage of any liquid at any temperature.

**Listed:** Equipment, materials, or services included in a list published by an organization that is acceptable to the Authority Having Jurisdiction and concerned with the evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material or service meets the identified standards or has been tested and found suitable for a specific purpose.



## DEFINITIONS (CONTINUED)

**Non Combustibles:** A material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors when subjected to fire or heat. Materials that are reported to pass ASTM E 136 *Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750C* shall be considered noncombustible materials.

**Special Gas Vent:** A vent constructed and listed to UL 1738. This standard refers to venting Category II, and IV appliances, considered to be condensing types. Metal-Fab Corr/Guard is recommended for these appliances.

**Vents, Type B:** Factory made vents listed by a nationally recognized testing agency for venting listed gas appliances with draft hoods and other Category I gas appliances listed for use with Type-B gas vents.

## CLEARANCE TO COMBUSTIBLES

Refer to the table clearances. Consideration in design should be given to allow adequate clearances for installation. Roof Support Assemblies and Ventilated Thimble Assemblies are used to penetrate a combustible roof. All other parts are for attachment to noncombustible construction (i.e. floor guides, wall guides, plate and wall support assemblies).

### DO NOT ENCLOSE WITH COMBUSTIBLE CONSTRUCTION

#### CLEARANCE: 1000°F (538°C) CONTINUOUS, 1400°F (760°C) INTERMITTENT BUILDING HEATING APPLIANCE

DIAMETER	PSW		PIC		IPIC-1		IPIC-2		IPIC-4	
	INT.	EXT.	INT.	EXT.	INT.	EXT.	INT.	EXT.	INT.	EXT.
6" (152)	18" (457)	18" (457)	4" (102)	4" (102)	1" (25)	1" (25)	1" (25)	1" (25)	1" (25)	1" (25)
8"-16" (203-406)	18" (457)	18" (457)	4" (102)	4" (102)	2" (51)	2" (51)	1" (25)	1" (25)	1" (25)	1" (25)
18" (457)	18" (457)	18" (457)	5" (127)	5" (127)	3" (76)	3" (76)	1" (25)	1" (25)	1" (25)	1" (25)
20" (508)	18" (457)	18" (457)	6" (152)	6" (152)	3" (76)	3" (76)	1" (25)	1" (25)	1" (25)	1" (25)
22" (559)	18" (457)	18" (457)	7" (178)	6" (152)	3" (76)	3" (76)	1" (25)	1" (25)	1" (25)	1" (25)
24" (610)	18" (457)	18" (457)	8" (203)	6" (152)	3" (76)	3" (76)	1" (25)	1" (25)	1" (25)	1" (25)
26" (660)	18" (457)	18" (457)	9" (229)	6" (152)	3" (76)	3" (76)	1" (25)	1" (25)	1" (25)	1" (25)
28"-32" (711-813)	18" (457)	18" (457)	10" (254)	6" (152)	4" (102)	4" (102)	1" (25)	1" (25)	1" (25)	1" (25)
34" (864)	18" (457)	18" (457)	10" (254)	6" (152)	5" (127)	5" (127)	1" (25)	1" (25)	1" (25)	1" (25)
36"-40" (914-1016)	18" (457)	18" (457)	10" (254)	6" (152)	5" (127)	5" (127)	3" (76)	1" (25)	3" (76)	1" (25)
42"-44" (1067-1118)	18" (457)	18" (457)	10" (254)	6" (152)	6" (152)	6" (152)	3" (76)	1" (25)	3" (76)	1" (25)
46" (1168)	18" (457)	18" (457)	10" (254)	6" (152)	6" (152)	6" (152)	3" (76)	1" (25)	3" (76)	1" (25)
48" (1219)	18" (457)	18" (457)	10" (254)	6" (152)	6" (152)	6" (152)	3" (76)	1" (25)	3" (76)	1" (25)

#### CLEARANCE: 1400°F (760°C) CONTINUOUS, 1800°F (982°C) INTERMITTENT FACTORY-BUILT CHIMNEY

DIAMETER	PSW		PIC		IPIC-1		IPIC-2		IPIC-4	
	INT.	EXT.	INT.	EXT.	INT.	EXT.	INT.	EXT.	INT.	EXT.
6" (152)	18" (457)	18" (457)	4" (102)	4" (102)	1" (25)	1" (25)	1" (25)	1" (25)	1" (25)	1" (25)
8"-16" (203-406)	18" (457)	18" (457)	4" (102)	4" (102)	2" (51)	2" (51)	1" (25)	1" (25)	1" (25)	1" (25)
18" (457)	18" (457)	18" (457)	6" (152)	6" (152)	3" (76)	3" (76)	1" (25)	1" (25)	1" (25)	1" (25)
20" (508)	18" (457)	18" (457)	8" (203)	8" (203)	3" (76)	3" (76)	1" (25)	1" (25)	1" (25)	1" (25)
22" (559)	18" (457)	18" (457)	9" (229)	9" (229)	3" (76)	3" (76)	1" (25)	1" (25)	1" (25)	1" (25)
24" (610)	18" (457)	18" (457)	10" (254)	10" (254)	3" (76)	3" (76)	1" (25)	1" (25)	1" (25)	1" (25)
26" (660)	18" (457)	18" (457)	10" (254)	10" (254)	3" (76)	3" (76)	1" (25)	1" (25)	1" (25)	1" (25)
28"-32" (711-813)	18" (457)	18" (457)	10" (254)	10" (254)	4" (102)	4" (102)	1" (25)	1" (25)	1" (25)	1" (25)
34" (864)	18" (457)	18" (457)	10" (254)	10" (254)	5" (127)	5" (127)	1" (25)	1" (25)	1" (25)	1" (25)
36"-40" (914-1016)	18" (457)	18" (457)	10" (254)	10" (254)	5" (127)	5" (127)	3" (76)	1" (25)	3" (76)	1" (25)
42"-48" (1067-1219)	18" (457)	18" (457)	10" (254)	10" (254)	6" (152)	6" (152)	3" (76)	1" (25)	3" (76)	1" (25)

## SUPPORT DATA

**NOTE:** Thermal expansion between supports should always be determined. If the computed expansion between fixed points is greater than 0.375", we recommend an Adjustable Length or Bellows Joint be installed.

The formula for computing expansion is:

[Length (feet)/100] X [Temperature Rise degreesF/100]

Example [50' / 100] X [500F/100] = 2.5" Expansion.

SUPPORTS - VERTICAL		Maximum Supported Height			
PRODUCT	PSW	PIC	IPIC-1	IPIC-2	IPIC-4
Plate Support (PS)	100' (30.5m)	100' (30.5m)	85' (25.9m)	75' (22.9m)	73' (22.3m)
Roof Support Assembly (RSA)	30' (9.1m)	30' (9.1m)	25' (7.6m)	22' (6.7m)	22' (6.7m)
Wall Support Assembly (WSA)	40' (12.2m)	40' (12.2m)	34' (10.4m)	30' (9.1m)	29' (8.8m)
Stack Support Assembly (SSA)	100' (30.5m)	100' (30.5m)	100' (30.5m)	100' (30.5m)	100' (30.5m)
Pier or Structural Support	100' (30.5m)	100' (30.5m)	85' (25.9m)	75' (22.9m)	73' (22.3m)

Values shown are the maximum distance between supports. Guides are also required.

GUIDES - HORIZONTAL		Maximum Spacing-Horizontal			
(See Components Section for guide selection)					
PRODUCT	PSW	PIC	IPIC-1	IPIC-2	IPIC-4
Component Choices:					
Half Angle Ring (HAR)	12' 6" (3.8m)	12' 6" (3.8m)	10' (3.1m)	9' (2.7m)	9' (2.7m)
Full Angle Ring (FAR)	12' 6" (3.8m)	12' 6" (3.8m)	10' (3.1m)	9' (2.7m)	9' (2.7m)
Plate Support (PS)	12' 6" (3.8m)	12' 6" (3.8m)	10' (3.1m)	9' (2.7m)	9' (2.7m)

GUIDES - VERTICAL		Maximum Spacing-Vertical / OUTSIDE			
Adjacent to Structure					
(See Components Section for guide selection)					
Flue Diameter - Inches	PSW	PIC	IPIC-1	IPIC-2	IPIC-4
6" (152)	17' (5.2m)	17' (5.2m)	17' (5.2m)	10' 6" (3.2m)	8' 3" (2.5m)
8" (203)	17' 6" (5.3m)	17' 6" (5.3m)	17' 6" (5.3m)	12' (3.7m)	9' 7" (2.9m)
10" (254)	18' 6" (5.6m)	18' 6" (5.6m)	18' 6" (5.6m)	13' 3" (4.0m)	10' 9" (3.3m)
12" (305)	20' (6.1m)	20' (6.1m)	20' (6.1m)	14' 6" (4.4m)	11' 11" (3.6m)
14" (356)	21' (6.4m)	21' (6.4m)	21' (6.4m)	15' 11" (4.8m)	13' 2" (4.0m)
16" (406)	22' (6.7m)	22' (6.7m)	22' (6.7m)	17' (5.2m)	14' 2" (4.3m)
18" (457)	23' (7.0m)	23' (7.0m)	23' (7.0m)	18' 3" (5.6m)	15' 4" (4.7m)
20" (508)	24' (7.3m)	24' (7.3m)	24' (7.3m)	19' 6" (5.9m)	16' 4" (5.0m)
22" (559)	24' 6" (7.5m)	24' 6" (7.5m)	24' 6" (7.5m)	20' 2" (6.2m)	17' (5.2m)
24" (610)	25' (7.6m)	25' (7.6m)	25' (7.6m)	20' 9" (6.3m)	17' 7" (5.4m)
26" (660)	26' (7.9m)	26' (7.9m)	26' (7.9m)	21' 5" (6.5m)	18' 2" (5.5m)
28" (711)	27' (8.2m)	27' (8.2m)	27' (8.2m)	22' 1" (6.9m)	18' 9" (5.7m)
30" (762)	27' (8.2m)	27' (8.2m)	27' (8.2m)	22' 8" (7.1m)	19' 4" (5.9m)
32" (813)	28' 6" (8.7m)	28' 6" (8.7m)	28' 6" (8.7m)	23' 4" (7.3m)	19' 11" (6.1m)
34" (864)	29' (8.8m)	29' (8.9m)	29' (8.9m)	24' (7.3m)	20' 6" (6.2m)
36" (914)	30' (9.1m)	30' (9.1m)	30' (9.1m)	24' 7" (7.5m)	21' (6.4m)
38" (965)	30' 6" (9.3m)	30' 6" (9.3m)	30' 6" (9.3m)	24' 7" (7.5m)	21' (6.4m)
40" (1016)	31' (9.4m)	31' (9.4m)	31' (9.4m)	24' 7" (7.5m)	21' (6.4m)
42" (1067)	32' (9.8m)	32' (9.8m)	32' (9.8m)	24' 7" (7.5m)	21' (6.4m)
44" (1118)	32' 6" (9.9m)	32' 6" (9.9m)	32' 6" (9.9m)	24' 7" (7.5m)	21' (6.4m)
46" (1168)	33' 6" (10.2m)	33' 6" (10.2m)	33' 6" (10.2m)	24' 7" (7.5m)	21' (6.4m)
48" (1219)	34' 6" (10.5m)	34' 6" (10.5m)	34' 6" (10.5m)	24' 7" (7.5m)	21' (6.4m)

GUIDES - VERTICAL		Max. Vertical Spacing - VERTICAL/INTERNAL			
Below Roofline					
(See components section for guide selection)					
PRODUCT	PSW	PIC	IPIC-1	IPIC-2	IPIC-4
All Diameters - Full Angle Ring	25' (7.6m)	25' (7.6m)	21' (6.4m)	19' (5.8m)	18' (5.5m)

## WEIGHT/LIFT INFORMATION

The average weight of the chimney, per foot of length, can be calculated using the following formula:

$$\text{Weight (lbs. per lineal foot)} = \text{pipe dia. in inches} \times \text{"weight factor"}$$

Weight Factor:

PSW	= 0.40	IPIC-2	= 1.05
PIC	= 0.80	IPIC-4	= 1.45
IPIC-1	= 0.95		

Example: 8" IPIC-1 weight calculated: 8 x 0.95 = 7.6 lbs. per lineal foot.

## STACK LIFT CHART

This chart indicates maximum height that can be suspended without support.

	PSW	PIC	IPIC-1	IPIC-2	IPIC-4
PIPE DIA.	Height	Height	Height	Height	Height
6" (152)	220' (67.1m)	110' (33.5m)	90' (27.4m)	80' (24.4m)	60' (18.3m)
8" (203)	190' (57.9m)	90' (27.4m)	80' (24.4m)	70' (21.3m)	50' (15.2m)
10" (254)	170' (51.8m)	80' (24.4m)	70' (21.3m)	60' (18.3m)	40' (12.2m)
12" (305)	150' (45.7m)	80' (24.4m)	70' (21.3m)	60' (18.3m)	40' (12.2m)
14" (356)	140' (42.7m)	70' (21.3m)	60' (18.3m)	50' (15.2m)	40' (12.2m)
16" (406)	130' (39.6m)	70' (21.3m)	60' (18.3m)	50' (15.2m)	40' (12.2m)
18" (457)	120' (36.6m)	60' (18.3m)	50' (15.2m)	50' (15.2m)	40' (12.2m)
20" (508)	110' (33.5m)	60' (18.3m)	50' (15.2m)	40' (12.2m)	30' (9.1m)
22" (559)	110' (33.5m)	50' (15.2m)	40' (12.2m)	40' (12.2m)	30' (9.1m)
24" (610)	100' (30.5m)	50' (15.2m)	40' (12.2m)	40' (12.2m)	30' (9.1m)
26" (660)	90' (27.4m)	50' (15.2m)	40' (12.2m)	40' (12.2m)	30' (9.1m)
28" (711)	90' (27.4m)	40' (12.2m)	40' (12.2m)	30' (9.1m)	20' (6.1m)
30" (762)	80' (24.4m)	40' (12.2m)	40' (12.2m)	30' (9.1m)	20' (6.1m)
32" (813)	80' (24.4m)	40' (12.2m)	30' (9.1m)	30' (9.1m)	20' (6.1m)
34" (864)	70' (21.3m)	40' (12.2m)	30' (9.1m)	20' (6.1m)	20' (6.1m)
36" (914)	70' (21.3m)	30' (9.1m)	30' (9.1m)	20' (6.1m)	15' (4.6m)
38" (965)	60' (18.3m)	30' (9.1m)	20' (6.1m)	20' (6.1m)	15' (4.6m)
40" (1016)	60' (18.3m)	30' (9.1m)	20' (6.1m)	20' (6.1m)	15' (4.6m)
42" (1067)	60' (18.3m)	30' (9.1m)	20' (6.1m)	20' (6.1m)	15' (4.6m)
44" (1118)	60' (18.3m)	30' (9.1m)	20' (6.1m)	20' (6.1m)	15' (4.6m)
46" (1168)	50' (15.2m)	20' (6.1m)	20' (6.1m)	20' (6.1m)	10' (3.0m)
48" (1219)	50' (15.2m)	20' (6.1m)	20' (6.1m)	20' (6.1m)	10' (3.0m)

## CHIMNEY ENVIRONMENT

When a chimney is exposed to a corrosive atmosphere, consideration should be given to the types of materials used in the chimney construction. Chemical vapors, when passed through the combustion process, may produce acids, which can corrode the heating equipment and chimney.

316 stainless steel is more resistant to corrosion than 304 stainless steel. It is recommended that aluminized steel casings, exposed to an atmosphere high in pollutants, be protected with one base coat and one finish coat of heat resistant primer and paint. 304 and 316 stainless steel is also available for flue and casing material and does not require painting.



## ENGINE/TURBINE EXHAUSTS

Metal-Fab Metal-Fab product models PSW, PIC, IPIC-1, -2, and -4, are suitable for exhausting gasoline, natural gas/LP, diesel and turbine type engines. Installations comply with NFPA 37, "Standard for Installation and Use of Stationary Combustion Engines and Gas Turbines," when installed in accordance with Metal-Fab Installation Instructions.

Special consideration should be given to engine exhaust systems. There is the possibility of delayed fuel ignition in the exhaust system that may result in an explosion. It is important to protect all changes in direction with additional supports.

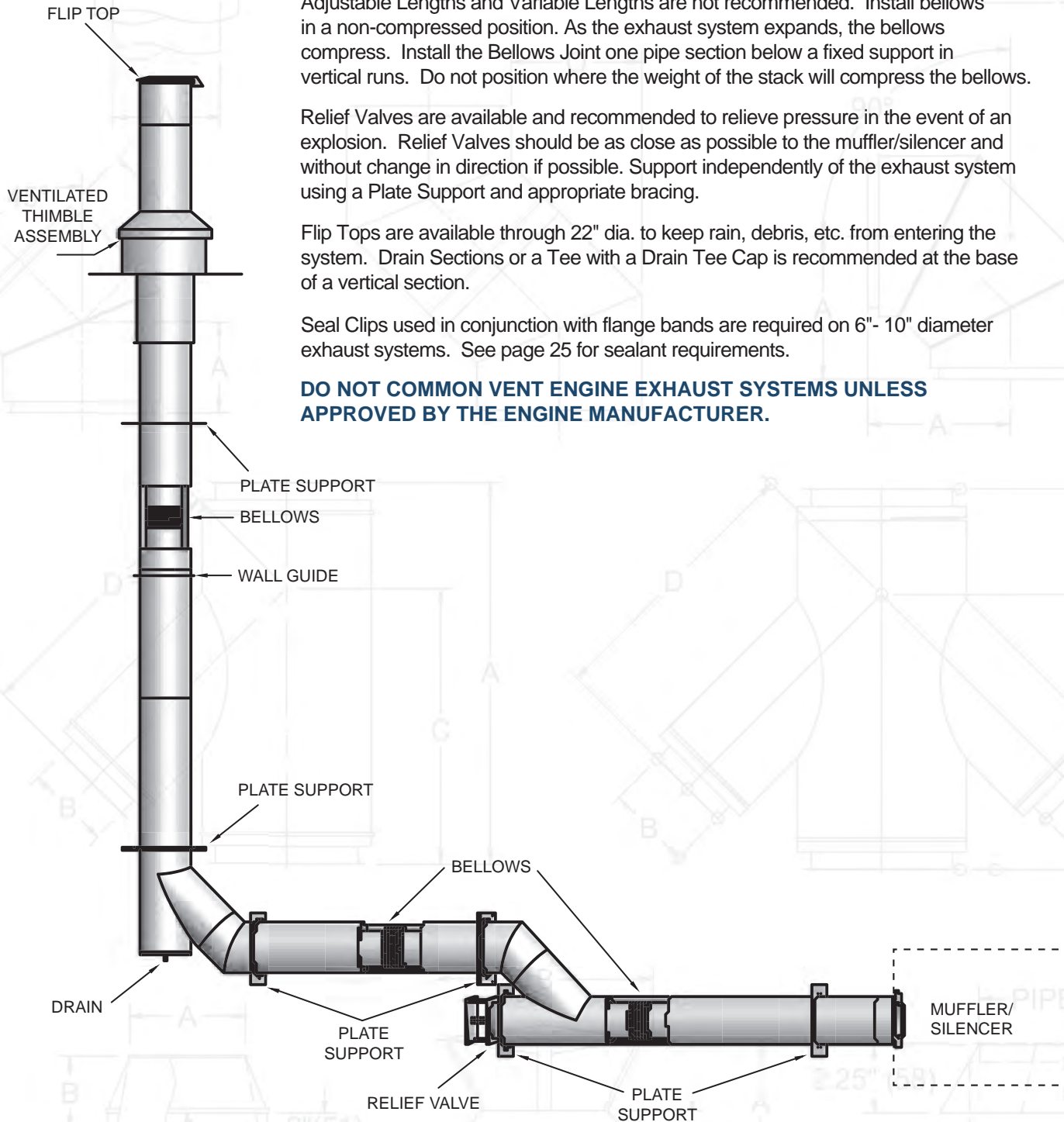
Bellows Joints are recommended for expansion and to minimize vibrations. Adjustable Lengths and Variable Lengths are not recommended. Install bellows in a non-compressed position. As the exhaust system expands, the bellows compress. Install the Bellows Joint one pipe section below a fixed support in vertical runs. Do not position where the weight of the stack will compress the bellows.

Relief Valves are available and recommended to relieve pressure in the event of an explosion. Relief Valves should be as close as possible to the muffler/silencer and without change in direction if possible. Support independently of the exhaust system using a Plate Support and appropriate bracing.

Flip Tops are available through 22" dia. to keep rain, debris, etc. from entering the system. Drain Sections or a Tee with a Drain Tee Cap is recommended at the base of a vertical section.

Seal Clips used in conjunction with flange bands are required on 6" - 10" diameter exhaust systems. See page 25 for sealant requirements.

**DO NOT COMMON VENT ENGINE EXHAUST SYSTEMS UNLESS APPROVED BY THE ENGINE MANUFACTURER.**



## COMPONENTS

Components are identified by part number AND a CTO Code. The part number consists of three sections: first the diameter, second the model designation, and third the component designation. Example: 24 inch diameter, Pressure Industrial Chimney, 42 inch long pipe section = 24PIC42. Several material options are available, and defined by the CTO code. The CTO code consists of three sections: first the flue material, second the casing material, and third the insulation thickness. Example: 304 Stainless Steel flue, Aluminized Steel casing, 0" of insulation (1" air space) = 4A0. See table below.

CTO CODES		
First Position	Second Position	Third Position
(Flue Material)	(Casing Material)	(Insulation)
4 = 304 STAINLESS STEEL	A = ALUMINIZED STEEL	1 = 1" AIR SPACE
6 = 316 STAINLESS STEEL	4 = 304 STAINLESS STEEL	1 = 1" CERAMIC
	6 = 316 STAINLESS STEEL	2 = 2" CERAMIC
		4 = 4" CERAMIC

## PIPE LENGTHS

- 9" (229)
- 18" (457)
- 30" (762)
- 42" (1067)

Flow Resistance  $K = .4 \left( \frac{L}{I.D.} \right)$  for 6" - 16" diameters

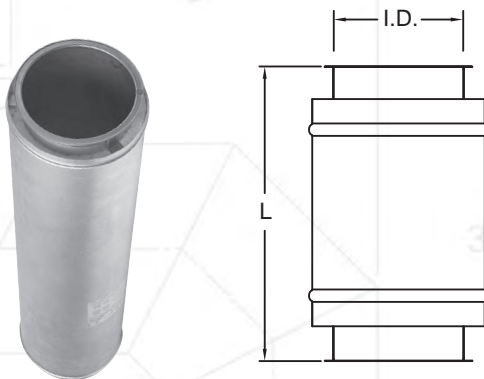
Flow Resistance  $K = .3 \left( \frac{L}{I.D.} \right)$  for 18" - 48" diameters

Flow Resistance  $K = .25 \left( \frac{L}{I.D.} \right)$  for engine and turbine exhausts,

L = pipe length (feet)

I.D. = pipe diameter (inches)

**NOTE:** Custom lengths available, please contact factory.



PIPE I.D.	PIPE O.D.		
	PSW	PIC / IPIC-1	IPIC-2
6" (152)	8" (203)	10" (254)	14" (356)
8" (203)	10" (254)	12" (305)	16" (406)
10" (254)	12" (305)	14" (356)	18" (457)
12" (305)	14" (356)	16" (406)	20" (508)
14" (356)	16" (406)	18" (457)	22" (559)
16" (406)	18" (457)	20" (508)	24" (610)
18" (457)	20" (508)	22" (559)	26" (660)
20" (508)	22" (559)	24" (610)	28" (711)
22" (559)	24" (610)	26" (660)	30" (762)
24" (610)	26" (660)	28" (711)	32" (813)
26" (660)	28" (711)	30" (762)	34" (864)
28" (711)	30" (762)	32" (813)	36" (914)
30" (762)	32" (813)	34" (864)	38" (965)
32" (813)	34" (864)	36" (914)	40" (1016)
34" (864)	36" (914)	38" (965)	42" (1067)
36" (914)	38" (965)	40" (1016)	44" (1118)
38" (965)	40" (1016)	42" (1067)	46" (1168)
40" (1016)	42" (1067)	44" (1118)	48" (1219)
42" (1067)	44" (1118)	46" (1168)	50" (1270)
44" (1118)	46" (1168)	48" (1219)	52" (1321)
46" (1168)	48" (1219)	50" (1270)	54" (1372)
48" (1219)	50" (1270)	52" (1321)	56" (1422)

## ADJUSTABLE LENGTH EXPANSION JOINT (AL)

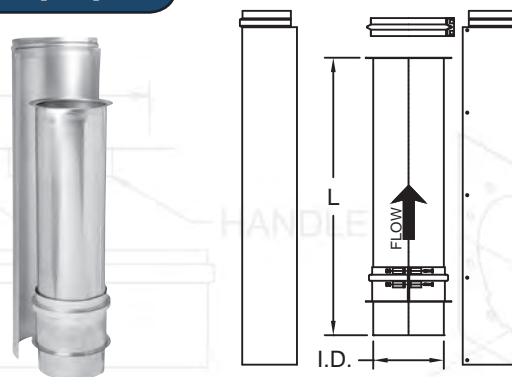
Flow Resistance  $K = .4 \left( \frac{L}{I.D.} \right)$

L = pipe length (feet)

Field adjusted to fill gaps between standard length components and compensates for thermal expansion or contraction between two fixed points.

### INSTALLED LENGTH

- Minimum: 5.5"
- Maximum: 22"



# COMPONENTS

## VARIABLE LENGTH (VL)

$$\text{Flow Resistance } K = .4 \left( \frac{L}{\text{I.D.}} \right)^2$$

L = pipe length (feet)

I.D. = flue diameter (inches)

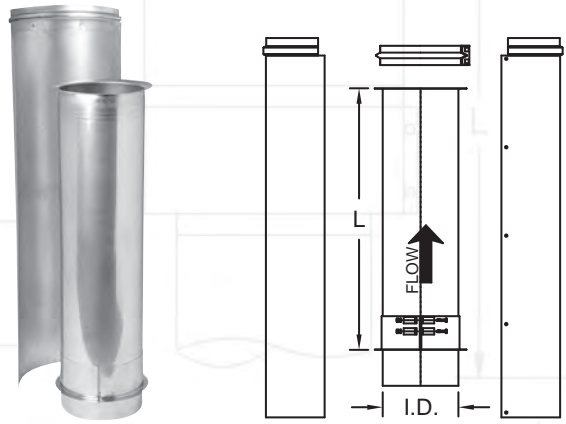
Fills gaps between standard length components.

### INSTALLED LENGTH

Minimum: 4"

Maximum: 26"

**NOTE:** Does not allow for thermal expansion



## TAPERED INCREASER (TI)

### 6" - 36" Diameters

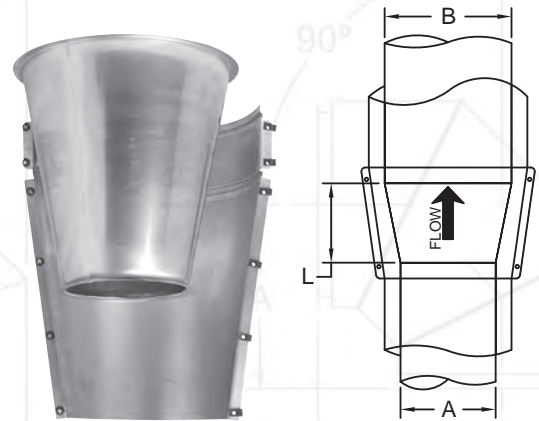
$$\text{Flow Resistance } K = .51 \frac{[1 - (\frac{A}{B})^2]^2}{(\frac{A}{B})^4}$$

Tapered increasers are preferred over step increasers when space permits. Refer to the table below to determine component length. One-step equals 2" increase in flue diameter.

Step	1	2	3	4	5	6
"L" Length	5" (127)	10" (254)	15" (381)	20" (508)	25" (635)	30" (762)

**NOTE:** When ordering specify both diameters with small diameter first (ie. 18PICI22 for 18" to 22").

**NOTE:** Please contact factory for larger diameters.



## ECCENTRIC TAPERED INCREASER (ETI)

### 6" - 36" Diameters

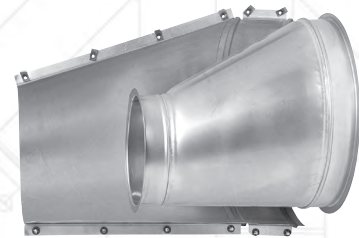
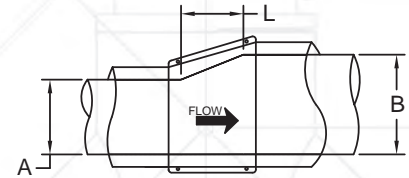
$$\text{Flow Resistance } K = .51 \frac{[1 - (\frac{A}{B})^2]^2}{(\frac{A}{B})^4}$$

Tapered increasers are preferred over step increasers when space permits. Refer to the table below to determine component length. One-step equals 2" increase in flue diameter.

Step	1	2	3	4	5	6
"L" Length	10" (254)	10" (254)	15" (381)	20" (508)	25" (635)	30" (762)

**NOTE:** When ordering specify both diameters with small diameter first (ie. 18PICETI22 for 18" to 22").

**NOTE:** Please contact factory for larger diameters.



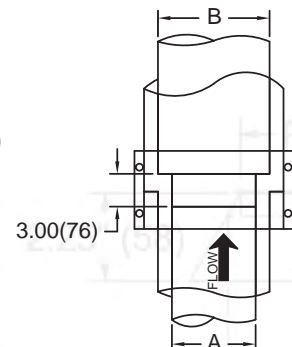
## STEP INCREASER (SI)

$$\text{Flow Resistance } K = [1 - (\frac{A}{B})^2]^2 \frac{1}{(\frac{A}{B})^4}$$

LENGTH:

Step Increaser installs at 3",  
1-6 steps is standard.

**NOTE:** When ordering, specify both diameters with small diameter first (ie. 18PICS122 for 18" to 22").





# COMPONENTS

## 15° ELBOW (15L)

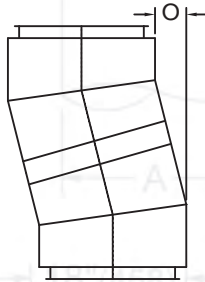
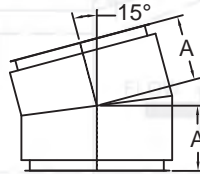
Flow Resistance  $K = 0.06$

Offset Distance:

$$O = 2 \times "A" \times 0.259$$

Offset distance with pipe length between elbows:

$$O = (2 \times "A" + \text{pipe length}) \times 0.259$$



PIPE I.D.	A		
	PSW / PIC / IPIC-1	IPIC-2	IPIC-4
6" (152)	6.00" (152)	6.00" (152)	6.00" (152)
8" (203)	6.00" (152)	6.00" (152)	7.75" (197)
10" (254)	6.00" (152)	6.00" (152)	7.75" (197)
12" (305)	6.00" (152)	7.75" (197)	7.75" (197)
14" (356)	7.75" (197)	7.75" (197)	7.75" (197)
16" (406)	7.75" (197)	7.75" (197)	7.75" (197)

PIPE I.D.	A		
	PSW / PIC / IPIC-1	IPIC-2	IPIC-4
18" (457)	7.75" (197)	7.75" (197)	7.75" (197)
20" (508)	7.75" (197)	7.75" (197)	8.50" (216)
22" (559)	7.75" (197)	7.75" (197)	8.50" (216)
24" (610)	7.75" (197)	8.50" (216)	8.50" (216)
26" (660)	8.50" (216)	8.50" (216)	8.50" (216)
28" (711)	8.50" (216)	8.50" (216)	8.50" (216)
30" (762)	8.50" (216)	8.50" (216)	8.50" (216)
32" (813)	8.50" (216)	8.50" (216)	11.00" (279)
34" (864)	8.50" (216)	8.50" (216)	11.00" (279)
36" (914)	8.50" (216)	11.00" (279)	11.00" (279)
38" (965)	11.00" (279)	11.00" (279)	11.00" (279)
40" (1016)	11.00" (279)	11.00" (279)	11.00" (279)
42" (1067)	11.00" (279)	11.00" (279)	11.00" (279)
44" (1118)	11.00" (279)	11.00" (279)	11.00" (279)
46" (1168)	11.00" (279)	11.00" (279)	11.00" (279)
48" (1219)	11.00" (279)	11.00" (279)	11.00" (279)

## 30° ELBOW (30L)

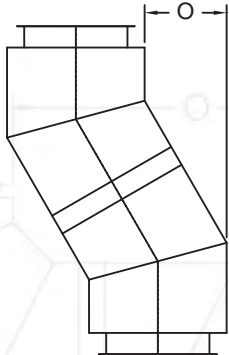
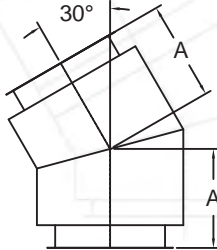
Flow Resistance  $K = 0.12$

Offset Distance:

$$O = 2 \times "A" \times 0.5$$

Offset distance with pipe length between elbows:

$$O = (2 \times "A" + \text{pipe length}) \times 0.5$$



PIPE I.D.	A		
	PSW / PIC / IPIC-1	IPIC-2	IPIC-4
6" (152)	6.00" (152)	6.00" (152)	6.00" (152)
8" (203)	6.00" (152)	6.00" (152)	7.75" (197)
10" (254)	6.00" (152)	6.00" (152)	7.75" (197)
12" (305)	6.00" (152)	7.75" (197)	7.75" (197)
14" (356)	7.75" (197)	7.75" (197)	7.75" (197)
16" (406)	7.75" (197)	7.75" (197)	7.75" (197)

PIPE I.D.	A		
	PSW / PIC / IPIC-1	IPIC-2	IPIC-4
18" (457)	7.75" (197)	7.75" (197)	7.75" (197)
20" (508)	7.75" (197)	7.75" (197)	8.50" (216)
22" (559)	7.75" (197)	7.75" (197)	8.50" (216)
24" (610)	7.75" (197)	8.50" (216)	8.50" (216)
26" (660)	8.50" (216)	8.50" (216)	8.50" (216)
28" (711)	8.50" (216)	8.50" (216)	8.50" (216)
30" (762)	8.50" (216)	8.50" (216)	8.50" (216)
32" (813)	8.50" (216)	8.50" (216)	11.00" (279)
34" (864)	8.50" (216)	8.50" (216)	11.00" (279)
36" (914)	8.50" (216)	11.00" (279)	11.00" (279)
38" (965)	11.00" (279)	11.00" (279)	11.00" (279)
40" (1016)	11.00" (279)	11.00" (279)	11.00" (279)
42" (1067)	11.00" (279)	11.00" (279)	11.00" (279)
44" (1118)	11.00" (279)	11.00" (279)	11.00" (279)
46" (1168)	11.00" (279)	11.00" (279)	11.00" (279)
48" (1219)	11.00" (279)	12.75" (324)	11.00" (279)

## 45° ELBOW (45L)

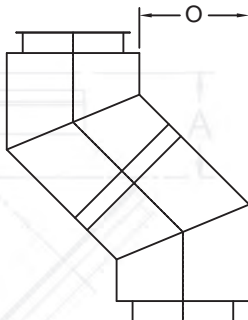
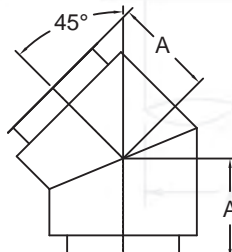
Flow Resistance  $K = 0.15$

Offset Distance:

$$O = 2 \times "A" \times 0.707$$

Offset distance with pipe length between elbows:

$$O = (2 \times "A" + \text{pipe length}) \times 0.707$$



PIPE I.D.	A		
	PSW / PIC / IPIC-1	IPIC-2	IPIC-4
6" (152)	7.00" (178)	7.00" (178)	7.00" (178)
8" (203)	7.00" (178)	7.00" (178)	10.00" (254)
10" (254)	7.00" (178)	7.00" (178)	10.25" (260)
12" (305)	7.00" (178)	10.00" (254)	10.25" (260)
14" (356)	10.00" (254)	10.25" (260)	10.25" (260)
16" (406)	10.25" (260)	10.25" (260)	10.25" (260)

PIPE I.D.	A		
	PSW / PIC / IPIC-1	IPIC-2	IPIC-4
18" (457)	10.25" (260)	10.25" (260)	10.25" (260)
20" (508)	10.25" (260)	10.25" (260)	11.75" (298)
22" (559)	10.25" (260)	10.25" (260)	11.75" (298)
24" (610)	10.25" (260)	11.75" (298)	11.75" (298)
26" (660)	11.75" (298)	11.75" (298)	11.75" (298)
28" (711)	11.75" (298)	11.75" (298)	11.75" (298)
30" (762)	11.75" (298)	11.75" (298)	11.75" (298)
32" (813)	11.75" (298)	11.75" (298)	14.00" (356)
34" (864)	11.75" (298)	11.75" (298)	14.00" (356)
36" (914)	11.75" (298)	14.00" (356)	14.00" (356)
38" (965)	14.00" (356)	14.00" (356)	14.00" (356)
40" (1016)	14.00" (356)	14.00" (356)	14.00" (356)
42" (1067)	14.00" (356)	14.00" (356)	14.00" (356)
44" (1118)	14.00" (356)	14.00" (356)	15.25" (387)
46" (1168)	14.00" (356)	14.00" (356)	15.25" (387)
48" (1219)	14.00" (356)	15.25" (387)	15.25" (387)

# COMPONENTS

## 90° ELBOW (90L)

Flow Resistance K:

6" - 8" = 0.38

10" - 18" = 0.42

20" - 26" = 0.54

28" - 36" = 0.66

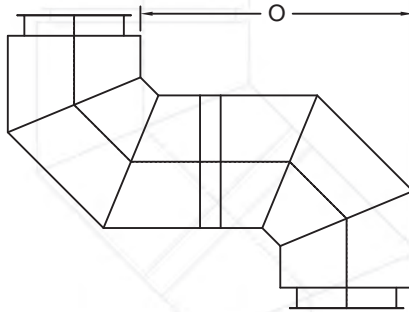
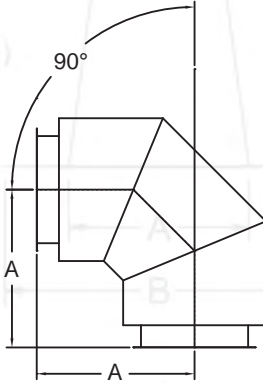
38" - 48" = 0.72

Offset Distance:

$O = 2 \times "A"$

Offset Distance with pipe length between elbows:

$O = 2 \times "A" + \text{pipe length}$

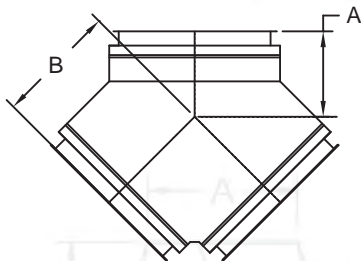


PIPE I.D.	A		
	PSW / PIC / IPIIC-1	IPIIC-2	IPIIC-4
6" (152)	11" (279)	12" (305)	14" (356)
8" (203)	12" (305)	13" (330)	15" (381)
10" (254)	13" (330)	14" (356)	16" (406)
12" (305)	14" (356)	15" (381)	17" (432)
14" (356)	15" (381)	16" (406)	18" (457)
16" (406)	16" (406)	17" (432)	19" (483)
18" (457)	17" (432)	18" (457)	20" (508)
20" (508)	18" (457)	19" (483)	21" (533)
22" (559)	19" (483)	20" (508)	22" (559)
24" (610)	20" (508)	21" (533)	23" (584)
26" (660)	21" (533)	22" (559)	24" (610)
28" (711)	22" (559)	23" (584)	25" (635)
30" (762)	23" (584)	24" (610)	26" (660)
32" (813)	24" (610)	25" (635)	27" (686)
34" (864)	25" (635)	26" (660)	28" (711)
36" (914)	26" (660)	27" (686)	29" (737)
38" (965)	27" (686)	28" (711)	30" (762)
40" (1016)	28" (711)	29" (737)	31" (787)
42" (1067)	29" (737)	30" (762)	32" (813)
44" (1118)	30" (762)	31" (787)	33" (838)
46" (1168)	31" (787)	32" (813)	34" (864)
48" (1219)	32" (813)	33" (838)	35" (889)

## 90° WYE (90Y)

6" - 36" Diameters

Flow Resistance K = 0.6



PIPE I.D.	PSW / PIC / 1G		IPIIC-2		IPIIC-4	
	A	B	A	B	A	B
6" (152)	5.12" (130)	9" (229)	5.62" (143)	10" (254)	6.50" (165)	12" (305)
8" (203)	5.62" (143)	10" (254)	6.00" (152)	11" (279)	7.00" (178)	13" (330)
10" (254)	6.00" (152)	11" (279)	6.50" (165)	12" (305)	7.25" (184)	14" (356)
12" (305)	6.50" (165)	12" (305)	7.00" (178)	13" (330)	7.75" (197)	15" (381)
14" (356)	7.00" (178)	13" (330)	7.25" (184)	14" (356)	8.12" (206)	16" (406)
16" (406)	7.25" (184)	14" (356)	7.75" (197)	15" (381)	8.50" (216)	17" (432)
18" (457)	7.75" (197)	15" (381)	8.12" (206)	16" (406)	9.00" (229)	18" (457)
20" (508)	8.12" (206)	16" (406)	8.50" (216)	17" (432)	9.37" (238)	19" (483)
22" (559)	8.50" (216)	17" (432)	9.00" (229)	18" (457)	9.75" (248)	20" (508)
24" (610)	9.00" (229)	18" (457)	9.37" (238)	19" (483)	10.25" (260)	21" (533)
26" (660)	9.37" (238)	19" (483)	9.75" (248)	20" (508)	10.62" (270)	22" (559)
28" (711)	9.75" (248)	20" (508)	10.25" (260)	21" (533)	11.12" (282)	23" (584)
30" (762)	10.25" (260)	21" (533)	10.62" (270)	22" (559)	11.50" (292)	24" (610)
32" (813)	10.62" (270)	22" (559)	11.12" (282)	23" (584)	11.87" (302)	25" (635)
34" (864)	11.12" (282)	23" (584)	11.50" (292)	24" (610)	12.25" (311)	26" (660)
36" (914)	11.50" (292)	24" (610)	11.87" (302)	25" (635)	12.62" (321)	27" (686)

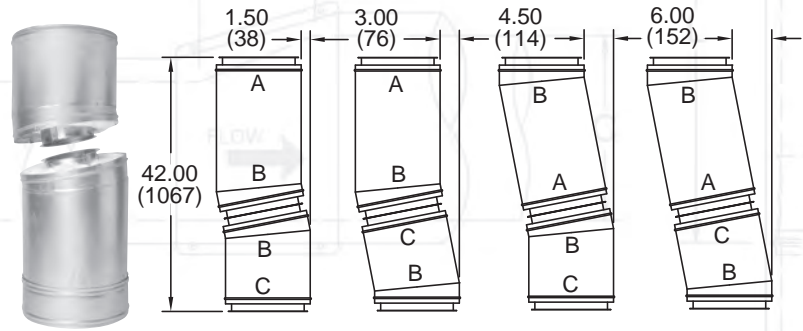
# COMPONENTS

## VARIABLE OFFSET KIT (VOK)

Flow Resistance  $K = 0.09$   
 Assembled Length = 42"

ENDS JOINED	OFFSET
B-B	1.50"
B-C	3.00"
A-B	4.50"
A-C	6.00"

Provides offsets of 1.5", 3.0", 4.5", & 6" by rotating components.

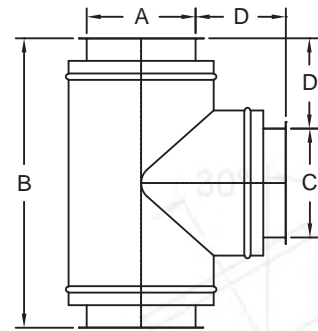


## 90° MANIFOLD TEE (90MT)

Flow Resistance  $K = 1.25$

- A = Pipe I.D.
- B = "C" I.D. + (2 x "D")
- C = Tap I.D.
- D = PSW/PIC/IPIC-1 = 5"
- IPIC-2 = 6"
- IPIC-4 = 8"

**NOTE:** Specify tap diameter (C) at time of order.  
**NOTE:** Tap can be reduced by 1-4 steps as standard.



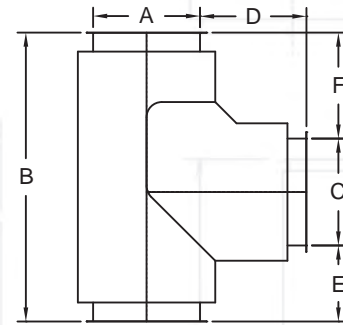
## BOOT TEE (BT)

6" - 30" Diameters

Flow Resistance  $K = 0.65$

- A = Pipe I.D.
- B = "C" + 10" + (2 x insulation thickness)
- C = Tap I.D.
- D, E, F =
- PSW/PIC/IPIC-1 = 6", 5" & 7"
- IPIC-2 = 7", 6" & 8"
- IPIC-4 = 9", 8" & 10"

**NOTE:** Specify tap diameter (C) at time of order  
**NOTE:** Tap can be reduced by 1-4 steps as standard.

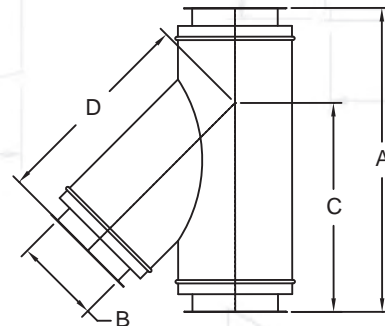


## 45° MANIFOLD TEE (45MT)

Flow Resistance  $K = 0.4$

For low resistance flow into a vertical or horizontal run.

**NOTE:** Specify tap diameter (B) when ordering.  
**NOTE:** Tap can be reduced by 1-4 steps as standard.  
**NOTE:** For dimensional information see tables on pages 26-31.





# COMPONENTS

## DOUBLE LATERAL (DL)

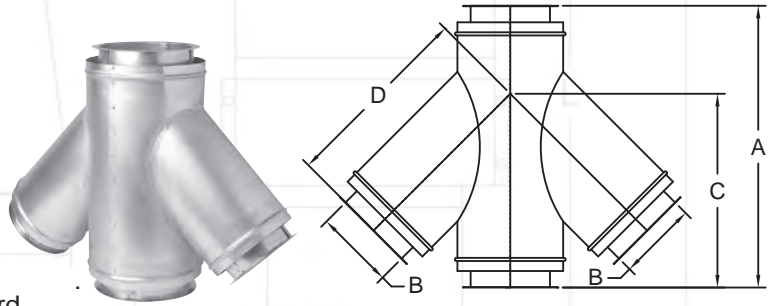
Flow Resistance K = 0.4

For use when centrally connecting two appliances being manifolded into a common chimney.

**NOTE:** Specify tap diameter (B) when ordering, tap diameter must be less than body diameter.

**NOTE:** For dimensional information see tables on pages 26-31.

**NOTE:** Tap can be reduced by 1-4 steps as standard.



## DRAIN TEE CAP W/CASING END CLOSURE (TC)

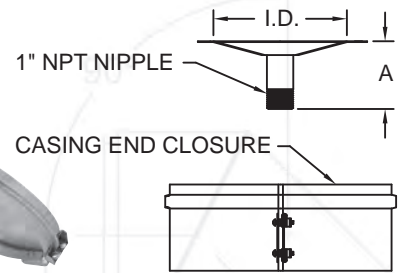
Provides drain port for rain or condensation.

**NOTE:** To compute length:

$$A = \frac{(I.D. - 1.343)}{2} \times .268 + \text{Nipple Length}$$

Add 3" for Nipple on PSW/PIC/IPIC-1/IPIC-2

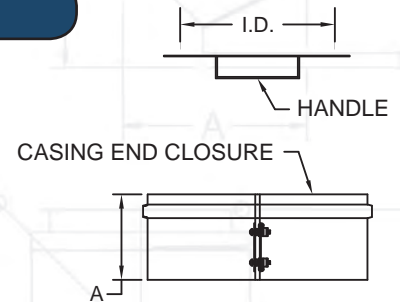
Add 5" for Nipple on IPIC-4



## TEE CAP LESS DRAIN W/ CASING END CLOSURE (TCN)

Closes and seals unused port of Tees, Wyes, and Laterals.

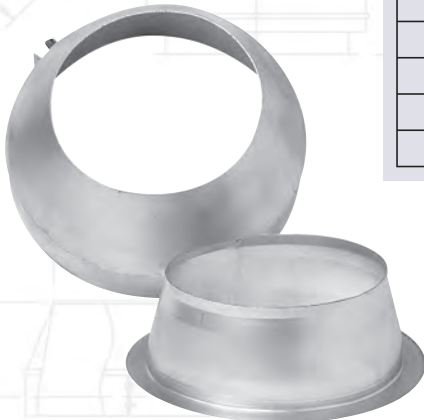
**NOTE:** A = 5.375" PIC/IPIC-1  
6.375" IPIC-2  
8.375" IPIC-4



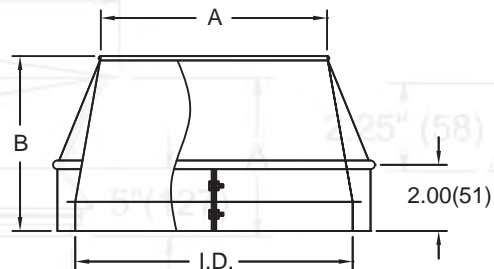
## EXIT CONE (EC)

Flow resistance K = 1.25

Increases velocity of exiting flue gases. Provide for moisture removal with Tee Cap or Drain Section.



PIPE I.D.	A	B	PIPE I.D.	A	B
6" (152)	4.87" (124)	2.25" (57)	28" (711)	22.87" (581)	10.25" (260)
8" (203)	6.50" (165)	3.00" (76)	30" (762)	24.75" (629)	11.00" (279)
10" (254)	8.12" (206)	3.75" (95)	32" (813)	26.37" (670)	11.75" (298)
12" (305)	9.75" (248)	4.37" (111)	34" (864)	28.00" (711)	12.12" (308)
14" (356)	11.37" (289)	5.12" (130)	36" (914)	29.62" (752)	13.12" (333)
16" (406)	13.00" (330)	5.87" (149)	38" (965)	30.87" (784)	14.25" (362)
18" (457)	14.75" (375)	6.62" (168)	40" (1016)	32.50" (826)	15.00" (381)
20" (508)	16.37" (416)	7.37" (187)	42" (1067)	34.12" (867)	15.75" (400)
22" (559)	17.87" (454)	8.12" (206)	44" (1118)	35.75" (908)	16.50" (419)
24" (610)	19.62" (498)	8.87" (225)	46" (1168)	37.37" (949)	17.25" (438)
26" (660)	21.12" (536)	9.50" (241)	48" (1219)	39.00" (991)	18.00" (457)



# COMPONENTS

## STACK CAP (C/CB)

6" - 36" Diameters

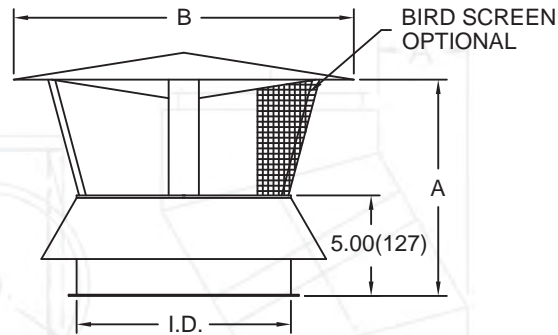
Flow resistance  $K = 0.5$

Provides partial rain protection.  
Use of Tee Cap or Drain Section is recommended.

**NOTE:** Also available with bird screen; order as (CB).



PIPE I.D.	A	B	PIPE I.D.	A	B
6" (152)	8.00" (203)	11.00" (279)	22" (559)	20.00" (508)	38.00" (965)
8" (203)	10.00" (254)	14.00" (356)	24" (610)	22.00" (559)	41.00" (1041)
10" (254)	12.00" (305)	17.00" (432)	26" (660)	23.00" (584)	44.00" (1118)
12" (305)	13.00" (330)	21.00" (533)	28" (711)	25.00" (635)	48.00" (1219)
14" (356)	14.00" (356)	24.00" (610)	30" (762)	27.00" (686)	52.00" (1321)
16" (406)	16.00" (406)	28.00" (711)	32" (813)	28.00" (711)	56.00" (1422)
18" (457)	17.00" (432)	31.00" (787)	34" (864)	30.00" (762)	60.00" (1524)
20" (508)	19.00" (483)	34.00" (864)	36" (914)	31.00" (787)	64.00" (1626)

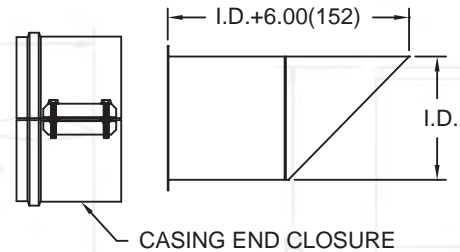
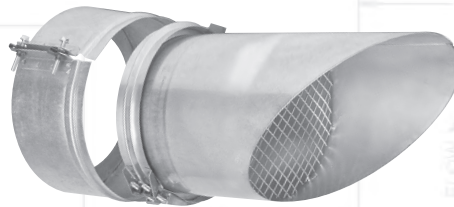


## MITER CUT (MC)

6" - 36" Diameters

Horizontal termination;  
standard with bird screen.

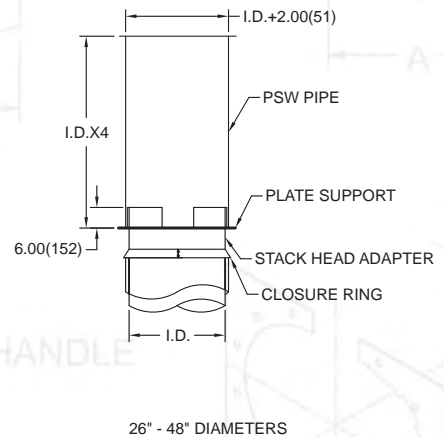
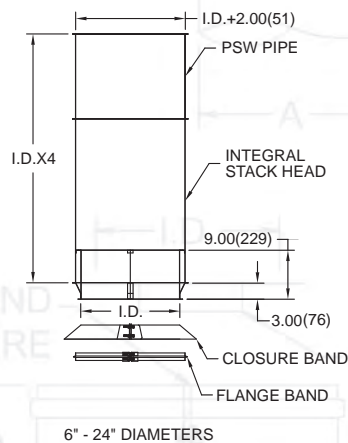
**NOTE:** Please contact factory for larger diameters.



## STACK HEAD ASSEMBLY (SHA)

Low loss stack termination to reduce rain entry.

**NOTE:** Conforms to Industrial Ventilation Handbook Standards. 26" - 48" requires field-fabricated support.



# COMPONENTS

## VENTILATED THIMBLE ASSEMBLIES (VTA-FPVTA) ROOF SUPPORT ASSEMBLIES (RSA-FPRSA)

STORM COLLAR



SUPPORT COLLAR (RSA ONLY)



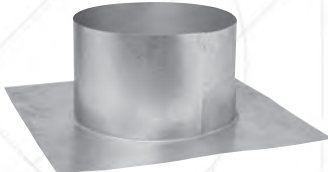
LATERAL SPACER RING



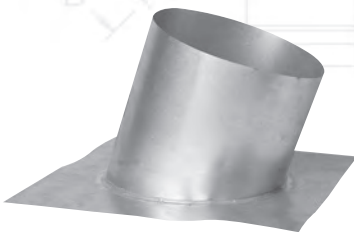
THIMBLE



FLASHING



FIXED PITCH FLASHING



For use when pipe passes through a combustible roof structure to reduce clearance to combustibles. The VTA allows for pipe expansion and contraction through the roof. The RSA will support up to 30 ft. of pipe from the roof structure.

**Framing Dimensions:**

- PIC/IPIC-1: I.D. + 8"
- IPIC-2: I.D. + 10"
- IPIC-4: I.D. + 14"

**NOTES:**

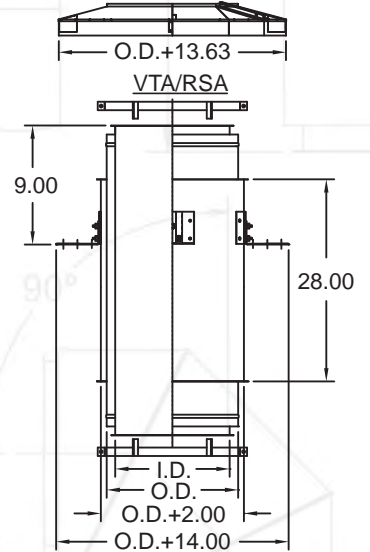
1. Thimble for flat roof extends 9" into flashing.
2. Use VTA / RSA on flat to 1/12 pitch applications.
3. Use FPVTA / FPRSA on 1/12 - 12/12 pitch applications.
4. Specify pitch when ordering

**MAXIMUM PITCH FOR FPVTA & FPRSA (28" LENGTH THIMBLE)**

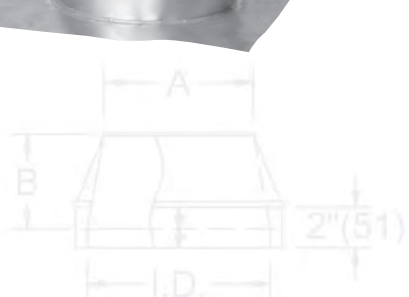
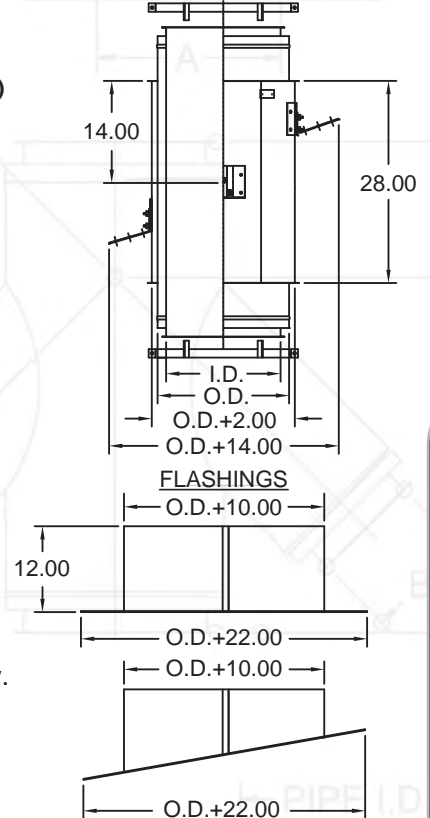
	PIC	IPIC 4A1	IPIC 4A2	IPIC 4A4
6PICFPVTA & RSA	12/12	12/12	12/12	11/12
8PICFPVTA & RSA	12/12	12/12	12/12	10/12
10PICFPVTA & RSA	12/12	12/12	11/12	9/12
12PICFPVTA & RSA	11/12	11/12	10/12	9/12
14PICFPVTA & RSA	10/12	10/12	9/12	8/12
16PICFPVTA & RSA	9/12	9/12	9/12	8/12
18PICFPVTA & RSA	9/12	9/12	8/12	7/12
20PICFPVTA & RSA	8/12	8/12	8/12	7/12
22PICFPVTA & RSA	8/12	8/12	7/12	7/12
24PICFPVTA & RSA	7/12	7/12	7/12	6/12
26PICFPVTA & RSA	7/12	7/12	7/12	6/12
28PICFPVTA & RSA	7/12	7/12	6/12	6/12
30PICFPVTA & RSA	6/12	6/12	6/12	5/12
32PICFPVTA & RSA	6/12	6/12	6/12	5/12
34PICFPVTA & RSA	6/12	6/12	5/12	5/12
36PICFPVTA & RSA	5/12	5/12	5/12	5/12

**NOTE:** For pitches not listed, please contact factory.

STORM COLLAR



FPVTA/FPRSA



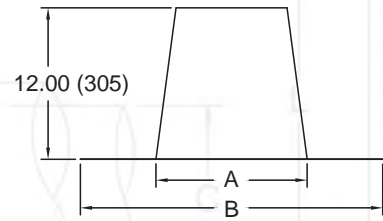
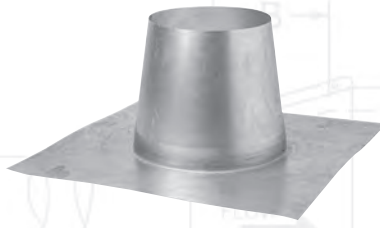
2.25" (58)



# COMPONENTS

## TALL CONE FLASHING (F)

Flat roof applications.



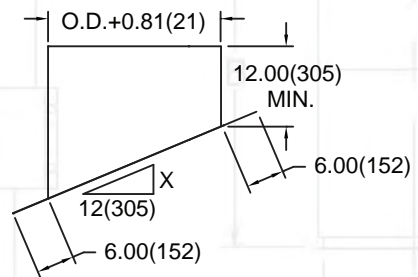
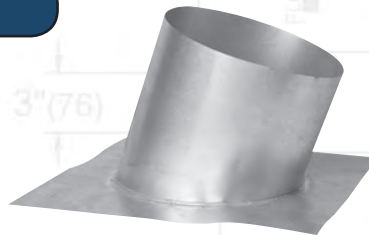
PIPE I.D.	PSW		PIC / IPIC-1		IPIC-2		IPIC-4	
	A	B	A	B	A	B	A	B
6" (152)	10.00" (254)	22.00" (559)	12.00" (305)	24.00" (610)	14.00" (356)	26.00" (660)	18.00" (457)	30.00" (762)
8" (203)	12.00" (305)	24.00" (610)	14.00" (356)	26.00" (660)	16.00" (406)	28.00" (711)	20.00" (508)	32.00" (813)
10" (254)	14.00" (356)	26.00" (660)	16.00" (406)	28.00" (711)	18.00" (457)	30.00" (762)	22.00" (559)	34.00" (864)
12" (305)	16.00" (406)	28.00" (711)	18.00" (457)	30.00" (762)	20.00" (508)	32.00" (813)	24.00" (610)	36.00" (914)
14" (356)	18.00" (457)	30.00" (762)	20.00" (508)	32.00" (813)	22.00" (559)	34.00" (864)	26.00" (660)	38.00" (965)
16" (406)	20.00" (508)	32.00" (813)	22.00" (559)	34.00" (864)	24.00" (610)	36.00" (914)	28.00" (711)	40.00" (1016)
18" (457)	22.00" (559)	34.00" (864)	24.00" (610)	36.00" (914)	26.00" (660)	38.00" (965)	30.00" (762)	42.00" (1067)
20" (508)	24.00" (610)	36.00" (914)	26.00" (660)	38.00" (965)	28.00" (711)	40.00" (1016)	32.00" (813)	44.00" (1118)
22" (559)	26.00" (660)	38.00" (965)	28.00" (711)	40.00" (1016)	30.00" (762)	42.00" (1067)	34.00" (864)	46.00" (1168)
24" (610)	28.00" (711)	40.00" (1016)	30.00" (762)	42.00" (1067)	32.00" (813)	44.00" (1118)	36.00" (914)	48.00" (1219)
26" (660)	30.00" (762)	42.00" (1067)	32.00" (813)	44.00" (1118)	34.00" (864)	46.00" (1168)	38.00" (965)	50.00" (1270)
28" (711)	32.00" (813)	44.00" (1118)	34.00" (864)	46.00" (1168)	36.00" (914)	48.00" (1219)	40.00" (1016)	52.00" (1321)
30" (762)	34.00" (864)	46.00" (1168)	36.00" (914)	48.00" (1219)	38.00" (965)	50.00" (1270)	42.00" (1067)	54.00" (1372)
32" (813)	36.00" (914)	48.00" (1219)	38.00" (965)	50.00" (1270)	40.00" (1016)	52.00" (1321)	44.00" (1118)	56.00" (1422)
34" (864)	38.00" (965)	50.00" (1270)	40.00" (1016)	52.00" (1321)	42.00" (1067)	54.00" (1372)	46.00" (1168)	58.00" (1473)
36" (914)	40.00" (1016)	52.00" (1321)	42.00" (1067)	54.00" (1372)	44.00" (1118)	56.00" (1422)	48.00" (1219)	60.00" (1524)
38" (965)	42.00" (1067)	54.00" (1372)	44.00" (1118)	56.00" (1422)	46.00" (1168)	58.00" (1473)	50.00" (1270)	62.00" (1575)
40" (1016)	44.00" (1118)	56.00" (1422)	46.00" (1168)	58.00" (1473)	48.00" (1219)	60.00" (1524)	52.00" (1321)	64.00" (1626)
42" (1067)	46.00" (1168)	58.00" (1473)	48.00" (1219)	60.00" (1524)	50.00" (1270)	62.00" (1575)	54.00" (1372)	66.00" (1676)
44" (1118)	48.00" (1219)	60.00" (1524)	50.00" (1270)	62.00" (1575)	52.00" (1321)	64.00" (1626)	56.00" (1422)	68.00" (1727)
46" (1168)	50.00" (1270)	62.00" (1575)	52.00" (1321)	64.00" (1626)	54.00" (1372)	66.00" (1676)	58.00" (1473)	70.00" (1778)
48" (1219)	52.00" (1321)	64.00" (1626)	54.00" (1372)	66.00" (1676)	56.00" (1422)	68.00" (1727)	60.00" (1524)	72.00" (1829)

## FIXED PITCH FLASHING (FPF)

6" - 36" Diameters

### NOTES:

1.  $X = \text{Pitch} \left( \frac{\text{Rise}}{\text{Run}} \right)$ ; Available in 1/12 - 12/12
2. Please specify pitch when ordering.
3. Storm Collar is included with Flashing.

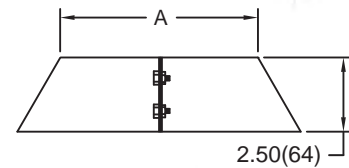


## STACK CLOSURE RING (CR)

A = Pipe Diameter (I.D.)

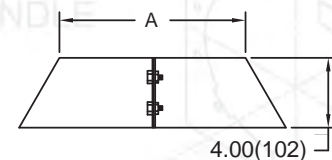
Attaches to flue and shields insulation from the weather when open stack is desired.

**NOTE:** Provide a Tee Cap or Drain Section for moisture removal.



## STORM COLLAR (SC)

A = Pipe Diameter (O.D.)



# COMPONENTS

## FULL ANGLE RING (FAR)

Provides lateral support for vertical runs.  
(Zinc Plated)

**NOTE:** Allows pipe movement for thermal expansion.

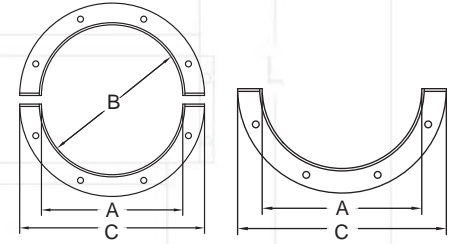
## HALF ANGLE RING (HAR)

Provides support for horizontal runs.  
(Zinc Plated)



FULL ANGLE RING

HALF ANGLE RING



PRODUCT				DIMENSIONS			
PIPE I.D.				Inside	Hole Centerline	Outside	Hole Qty.
PSW	PIC/IPIC	IPIC-2	IPIC-4	A	B	C	D
6" (152)	-	-	-	6.12" (155)	7.50" (191)	8.62" (219)	8
8" (203)	6" (152)	-	-	8.12" (206)	9.50" (241)	10.62" (270)	8
10" (254)	8" (203)	6" (152)	-	10.19" (259)	11.56" (294)	12.69" (322)	8
12" (305)	10" (254)	8" (203)	-	12.19" (310)	13.81" (351)	15.19" (386)	12
14" (356)	12" (305)	10" (254)	6" (152)	14.19" (360)	15.81" (402)	17.19" (437)	12
16" (406)	14" (356)	12" (305)	8" (203)	16.25" (413)	18.12" (460)	19.75" (502)	16
18" (457)	16" (406)	14" (356)	10" (254)	18.25" (464)	20.12" (511)	21.75" (552)	16
20" (508)	18" (457)	16" (406)	12" (305)	20.25" (514)	22.12" (562)	23.75" (603)	20
22" (559)	20" (508)	18" (457)	14" (356)	22.25" (565)	24.12" (613)	25.75" (654)	20
24" (610)	22" (559)	20" (508)	16" (406)	24.25" (616)	26.12" (663)	27.75" (705)	20
26" (660)	24" (610)	22" (559)	18" (457)	26.25" (667)	28.50" (724)	30.25" (768)	24
28" (711)	26" (660)	24" (610)	20" (508)	28.25" (718)	30.50" (775)	32.25" (819)	24
30" (762)	28" (711)	26" (660)	22" (559)	30.25" (768)	32.50" (826)	34.25" (870)	28
32" (813)	30" (762)	28" (711)	24" (610)	32.25" (819)	34.50" (876)	36.25" (921)	28
34" (864)	32" (813)	30" (762)	26" (660)	34.25" (870)	36.50" (927)	38.25" (972)	32
36" (914)	34" (864)	32" (813)	28" (711)	36.25" (921)	38.50" (978)	40.25" (1022)	32
38" (965)	36" (914)	34" (864)	30" (762)	38.25" (972)	40.50" (1029)	42.25" (1073)	36
40" (1016)	38" (965)	36" (914)	32" (813)	40.25" (1022)	42.50" (1080)	44.25" (1124)	36
42" (1067)	40" (1016)	38" (965)	34" (864)	42.25" (1073)	44.50" (1130)	46.25" (1175)	40
44" (1118)	42" (1067)	40" (1016)	36" (914)	44.25" (1124)	46.50" (1181)	48.25" (1226)	40
46" (1168)	44" (1118)	42" (1067)	38" (965)	46.25" (1175)	48.50" (1232)	50.25" (1276)	44
48" (1219)	46" (1168)	44" (1118)	40" (1016)	48.25" (1226)	50.50" (1283)	52.25" (1327)	44
-	48" (1219)	46" (1168)	42" (1067)	50.25" (1276)	52.50" (1334)	54.25" (1378)	48
-	-	48" (1219)	44" (1118)	52.25" (1327)	54.50" (1384)	56.25" (1429)	48
-	-	-	46" (1168)	54.25" (1378)	56.50" (1435)	58.25" (1480)	48
-	-	-	48" (1219)	56.25" (1429)	58.50" (1486)	60.25" (1530)	50

## WALL PENETRATOR (WP)

Horizontal wall penetration designed for non-fire rated walls. (Zinc Plated)

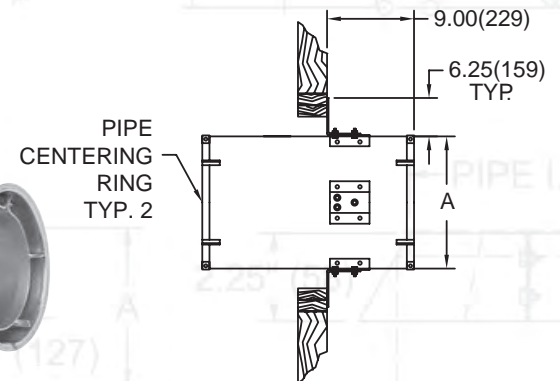
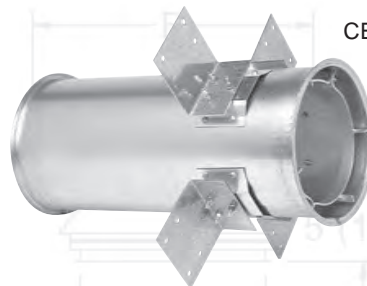
LENGTH = 30"

PIC/IPIC-1: A=PIPE I.D.+ 4"

IPIC-2: A=PIPE I.D.+ 6"

IPIC-4: A=PIPE I.D.+10"

**NOTE:** Not available for PSW.

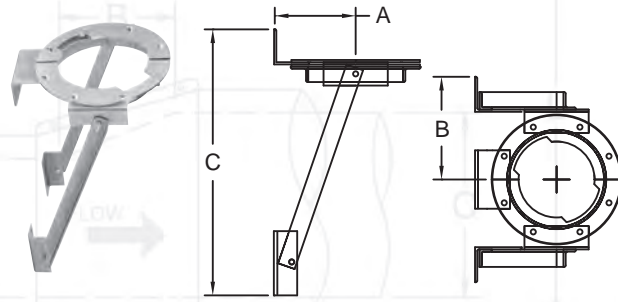


# COMPONENTS

## WALL SUPPORT ASSEMBLY (WSA)

Provides vertical or horizontal rigid support

**NOTE:** Does not allow pipe movement for thermal expansion. (Zinc Plated)



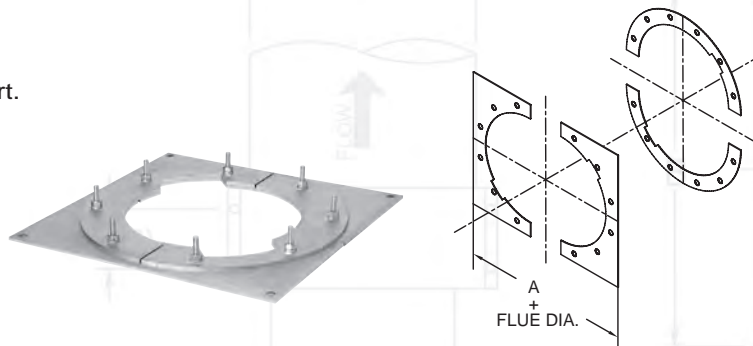
PIPE I.D.	PSW / PIC / IPIC-1			IPIC-2			IPIC-4		
	A	B	C	A	B	C	A	B	C
6" (152)	7.87" (200)	7.25" (184)	26.25" (667)	8.87" (225)	8.12" (206)	26.00" (660)	11.12" (282)	10.50" (267)	29.00" (737)
8" (203)	8.87" (225)	8.12" (206)	26.00" (660)	10.12" (257)	9.50" (241)	29.50" (749)	12.37" (314)	11.75" (298)	28.50" (724)
10" (254)	10.12" (257)	9.50" (241)	29.50" (749)	11.12" (282)	10.50" (267)	29.00" (737)	13.37" (340)	12.75" (324)	31.25" (794)
12" (305)	11.12" (282)	10.50" (267)	29.00" (737)	12.37" (314)	11.75" (298)	28.50" (724)	14.37" (365)	13.75" (349)	30.75" (781)
14" (356)	12.37" (314)	11.75" (298)	28.50" (724)	13.37" (340)	12.75" (324)	31.25" (794)	15.37" (390)	14.75" (375)	34.75" (883)
16" (406)	13.37" (340)	12.75" (324)	31.25" (794)	14.37" (365)	13.75" (349)	30.75" (781)	16.37" (416)	15.75" (400)	34.25" (870)
18" (457)	14.37" (365)	13.75" (349)	30.75" (781)	15.37" (390)	14.75" (375)	34.75" (883)	17.62" (448)	17.00" (432)	33.75" (857)
20" (508)	15.37" (390)	14.75" (375)	34.75" (883)	16.37" (416)	15.75" (400)	34.25" (870)	18.62" (473)	18.00" (457)	38.75" (984)
22" (559)	16.37" (416)	15.75" (400)	34.25" (870)	17.62" (448)	17.00" (432)	33.75" (857)	19.62" (498)	19.00" (483)	38.25" (972)
24" (610)	17.62" (448)	17.00" (432)	33.75" (857)	18.62" (473)	18.00" (457)	38.75" (984)	20.62" (524)	20.00" (508)	37.75" (959)
26" (660)	18.62" (473)	18.00" (457)	38.75" (984)	19.62" (498)	19.00" (483)	38.25" (972)	21.62" (549)	21.00" (533)	45.25" (1149)
28" (711)	19.62" (498)	19.00" (483)	38.25" (972)	20.62" (524)	20.00" (508)	37.75" (959)	23.12" (587)	22.50" (572)	44.75" (1137)
30" (762)	20.62" (524)	20.00" (508)	37.75" (959)	21.62" (549)	21.00" (533)	45.25" (1149)	24.12" (613)	23.50" (597)	44.00" (1118)
32" (813)	21.62" (549)	21.00" (533)	45.25" (1149)	23.12" (587)	22.50" (572)	44.75" (1137)	25.12" (638)	24.50" (622)	53.75" (1365)
34" (864)	23.12" (587)	22.50" (572)	44.75" (1137)	24.12" (613)	23.50" (597)	44.00" (1118)	26.12" (663)	25.50" (648)	53.25" (1353)
36" (914)	24.12" (613)	23.50" (597)	44.00" (1118)	25.12" (638)	24.50" (622)	53.75" (1365)	27.12" (689)	26.50" (673)	52.75" (1340)

## PLATE SUPPORT (PS)

Provides vertical or horizontal rigid support. Includes split plates (Zinc Plated), clamp flanges, and 1/2 closure bands.

PSW/PIC/IPIC-1    A=6"  
 IPIC-2            A=8"  
 IPIC-4            A=12"

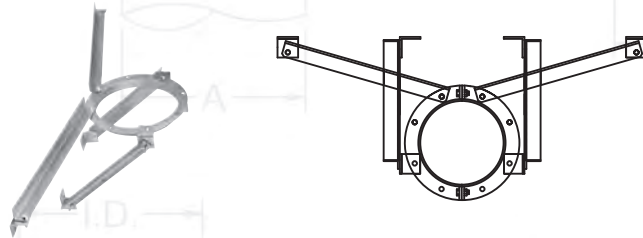
**NOTE:** Does not allow pipe movement for thermal expansion.



## WALL GUIDE (WG)

Provides lateral support. (Zinc Plated)

**NOTE:** Allows pipe movement for thermal expansion.



## FLOOR GUIDE (FG)

For use at each floor to ensure correct alignment through floor opening. (Zinc Plated)





# COMPONENTS

## STACK SUPPORT ASSEMBLY (SSA)

Supports vertical stack at floor level; includes moisture drain.

PSW / PIC / IPIC-1 / IPIC-2 / IPIC-4

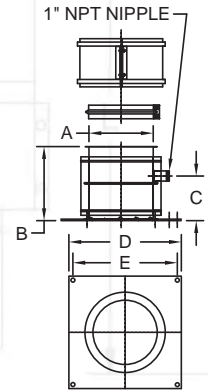
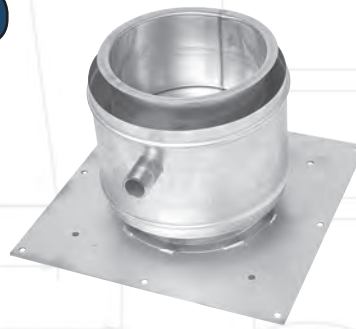
A = PIPE I.D.

B = 9" (229)

C = 5.5" (140)

D = A+7" (178)

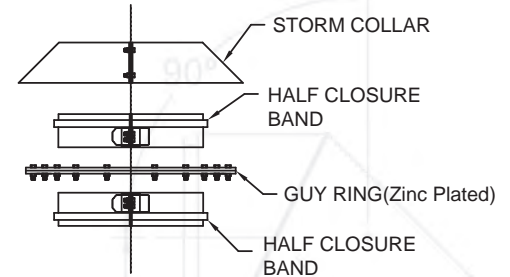
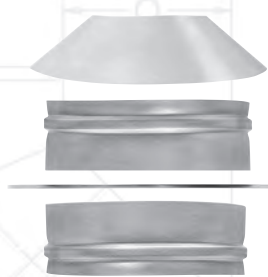
E = A+6" (152)



## GUY RING (GR)

Installed at the flange to flange joint of two sections of pipe. Storm Collar and half closure bands are included.

**NOTE:** See installation instructions for correct location.

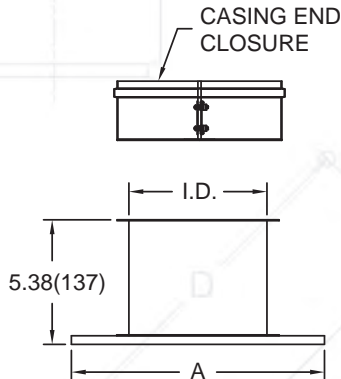


## FLANGE ADAPTER (FA)

6" - 36" Diameters

Flow Resistance K= same as pipe

Attaches flue components incorporating flanged connections, i.e. engine exhaust, mufflers, etc. Includes Casing End Closure.



PIPE I.D.	A
6" (152)	11.00" (279)
8" (203)	13.50" (343)
10" (254)	16.00" (406)
12" (305)	19.00" (483)
14" (356)	21.00" (533)
16" (406)	23.50" (597)
18" (457)	25.00" (635)
20" (508)	27.50" (699)
22" (559)	29.50" (749)
24" (610)	32.00" (813)
30" (762)	38.75" (984)
36" (914)	46.00" (1168)

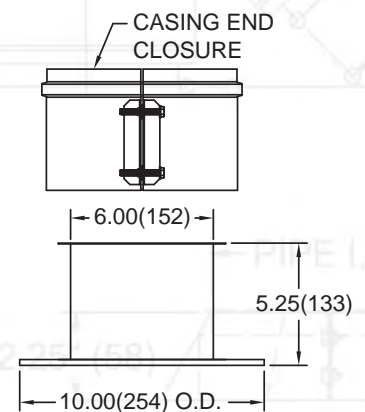
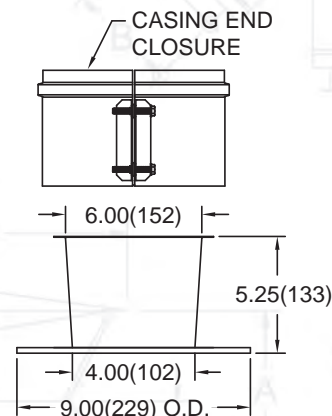
**NOTE:** Bolt hole pattern, and hole quantity per 125 lb. ANSI.

## FLANGE ADAPTER (4FA & 5FA)

6" Diameter Only

Flow Resistance K= same as pipe

Attaches flue components incorporating flanged connections, i.e. engine exhaust, mufflers, etc. Includes Casing End Closure.



**NOTE:** Bolt hole pattern, and hole quantity per 125 lb. ANSI.

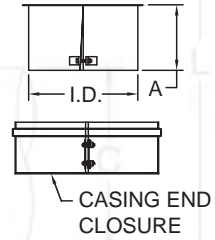
# COMPONENTS

## SINGLE WALL BOILER ADAPTER (SBA/SBA4)

Flow Resistance K= same as pipe  
 Attaches pipe to straight collar outlets.  
 PIC and IPIC applications include Casing  
 End Closure.

A = 6" or 4" (opt.), specify when ordering  
 e.g. 6PICSBA - A=6" or 6PICSBA4 - A=4"

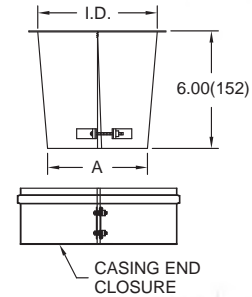
**NOTE:** Casing End Closure not used on PSW applications.



## REDUCER COLLAR (RC)

Flow Resistance K= same as pipe  
 Attaches pipe to an outlet source of  
 smaller diameter. Specify "A" dimension  
 when ordering e.g. 6PIC4RC

**NOTE:** Maximum of 2" reduction recommended.

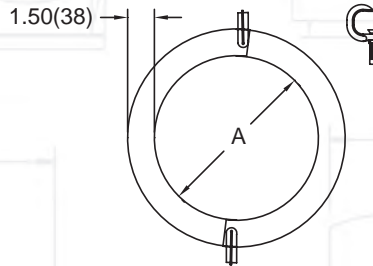


## BOILER FLANGE ADAPTER (BFA)

Flow Resistance = N/A  
 Secures pipe flange to heating equipment.  
 (Zinc Plated)

A= Pipe I.D.

**NOTE:** Clamps included.

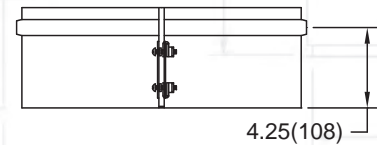


CLAMP QUANTITY			
PIPE I.D.	QUANTITY	PIPE I.D.	QUANTITY
6" (152)	4	28" (711)	14
8" (203)	4	30" (762)	14
10" (254)	5	32" (813)	16
12" (305)	6	34" (864)	16
14" (356)	7	36" (914)	18
16" (406)	8	38" (965)	18
18" (457)	9	40" (1016)	18
20" (508)	10	42" (1067)	18
22" (559)	10	44" (1118)	18
24" (610)	12	46" (1168)	18
26" (660)	12	48" (1219)	18

## CASING END CLOSURE (CEC)

For use as an end cover when transitioning  
 from double wall to single wall.

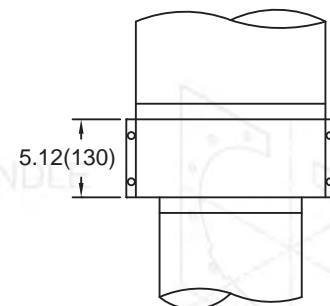
**NOTE:** When ordering, specify  
 PICCEC  
 IPICCEC-1  
 -2  
 -4



## TRANSITION BAND (TB)

For use as a joint closure when transitioning  
 from one insulation thickness to another.

**NOTE:** When ordering, specify  
 PICTB-1-2  
 -1-4  
 -2-4



## COMPONENTS

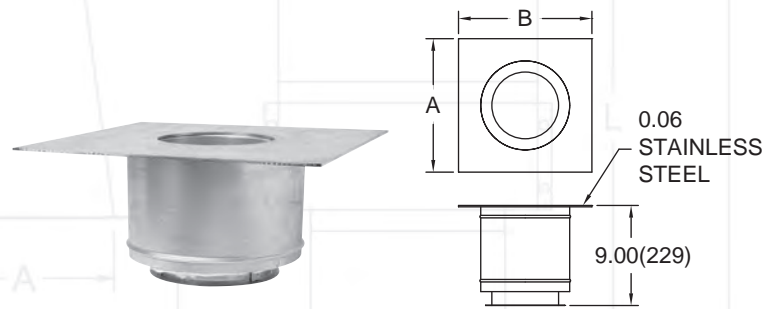
### FAN ADAPTER PLATE (FAP)

6" - 36" Diameters

Connects to the inlet of an upblast fan.

Plate dimensions (A by B) = outside dimensions of curb less .25".

**NOTE:** Provide dimensions at order entry. Specify O.D. of curb or plate.

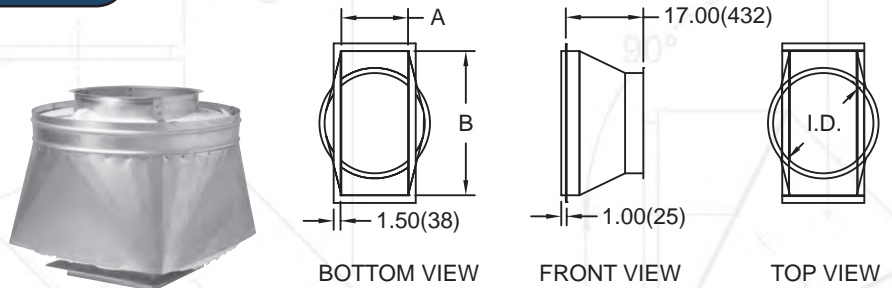


### SQUARE TO ROUND (STR)

Transitions from square duct to round duct.

**NOTES:**

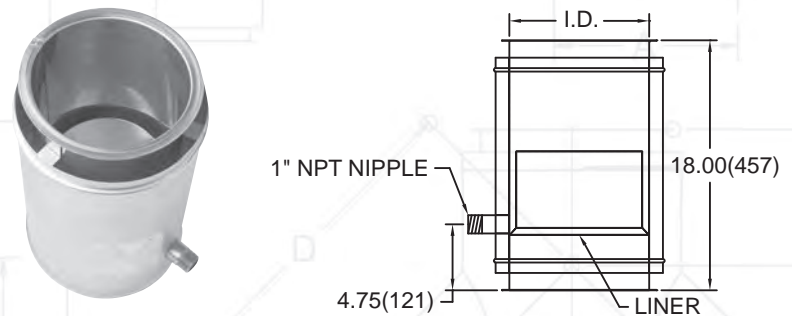
1. Specify dimensional data when ordering.
2. Eccentric and Offset STR's available as custom options upon request.



### DRAIN SECTION (DS)

Flow Resistance  $K = 0.25$

Drains rain water or condensation from inside the stack.

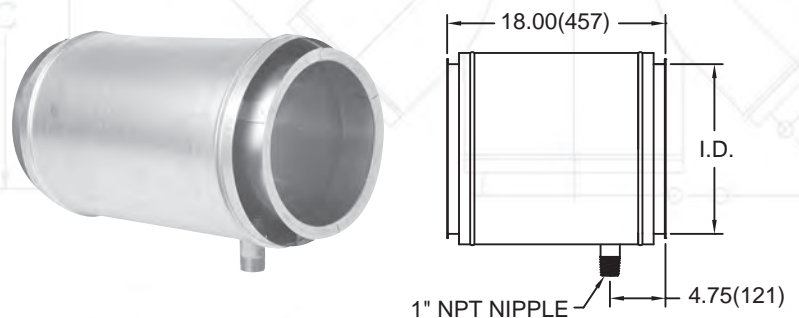


### NOZZLE SECTION (NS)

6" - 36" Diameters

For use with wash down nozzles, fire suppression systems or as a drain section in a horizontal run.

**NOTE:** Please contact factory for larger diameters.





# COMPONENTS

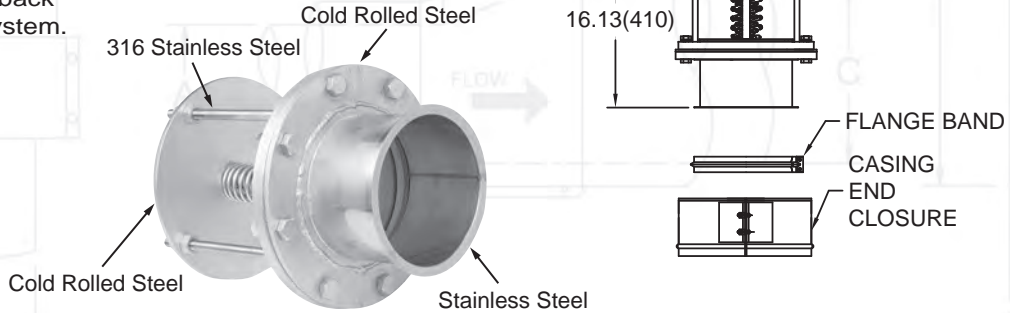
## RELIEF VALVE ASSEMBLY (RV)

### 6" - 24" Diameters

Aids to relieve excessive back pressure in an exhaust system.

Assembly includes:

- Relief Valve
- Flange band
- Casing End Closure

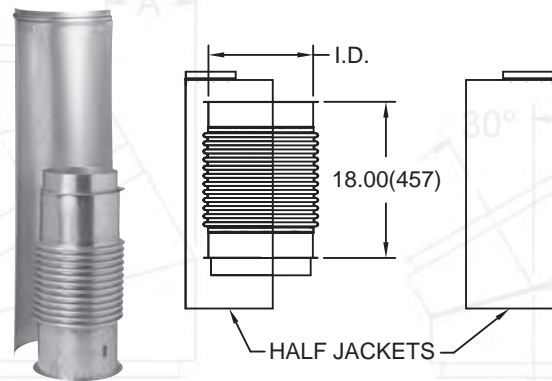


## LINED BELLOWS JOINT (BJ)

Flow Resistance  $K = 0.08$

Recommended for engine/turbine exhausts. Expansion joint to compensate for linear thermal expansion in generator exhaust systems. Maximum compressive travel is 3". Liner extends 2" beyond the installed length of the Bellows Joint.

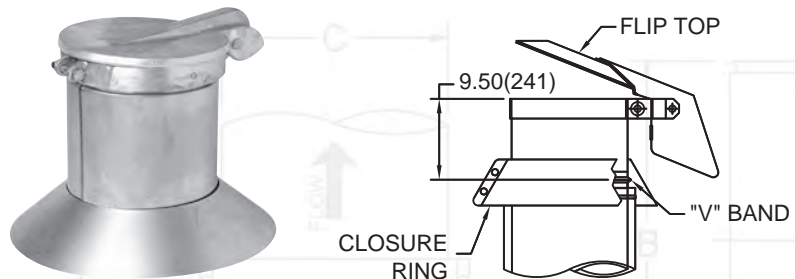
**NOTE:** PSW/PIC/IPIC-1 (6" - 48" Diameters)  
IPIC-2/IPIC-4 (6" - 36" Diameters)



## FLIP TOP (FT)

### 6" - 22" Diameters

Prevents rain from entering generator exhaust pipe. Opens with internal pressure.



## SEAL CLIPS (SCK)

### 6" - 10" Diameters

Order Seal Clips when installing engine exhaust and other high pressure applications.

**NOTE:** Refer to Metal-Fab installation instructions L2592 (PIC & IPIC) and L2609 (PSW) for additional information.

### SEAL CLIPS PER JOINT

Part Number	Number of Clips
SCK6-8	2ea.
SCK10	1ea.

# COMPONENTS

## SEALANT REQUIREMENTS

P077 Joint Sealant, use for temperatures up to 600°F.

P071 Joint Sealant, use for flue temperatures above 600°F and high pressure applications.

**NOTE:** Refer to the Installation Instructions for additional information relating to proper sealant selection and special requirements for high pressure applications.

Flue Diameter	Tubes / Joint	Joints / Tube	Tubes / Joint	Joints / Tube
			High Pressure	High Pressure
6"	0.20	5	0.60	1.70
8"	0.20	5	0.70	1.40
10"	0.20	5	0.90	1.10
12"	0.25	4	1.00	1.00
14"	0.25	4	1.10	0.90
16"	0.25	4	1.33	0.75
18"	0.33	3	1.50	0.70
20"	0.33	3	1.67	0.60
22"	0.33	3	1.80	0.60
24"	0.50	2	2.10	0.50
26"	0.50	2	2.20	0.50
28"	0.50	2	2.40	0.40
30"	0.67	1 1/2	2.67	0.40
32"	0.67	1 1/2	2.90	0.30
34"	0.67	1 1/2	3.00	0.30
36"	0.67	1 1/2	3.20	0.30
38"	1.00	1	3.60	0.30
40"	1.00	1	3.70	0.25
42"	1.00	1	3.80	0.25
44"	1.00	1	4.10	0.25
46"	1.20	4/5	4.30	0.20
48"	1.20	4/5	4.50	0.20

## JOINT ASSEMBLY

1. Apply continuous bead of sealant 1/4" wide to one flange.
2. Join to next section.
3. Fill the flange vee band with sealant and install around flanges.
4. Gently tap flange vee band with a soft mallet while tightening band to assure tight seal.
5. Insert insulation strips (IPIC-1, -2, -4) between pipe sections.
6. Install casing closure band. (Seal if external to structure to prevent moisture infiltration).



# COMPONENTS

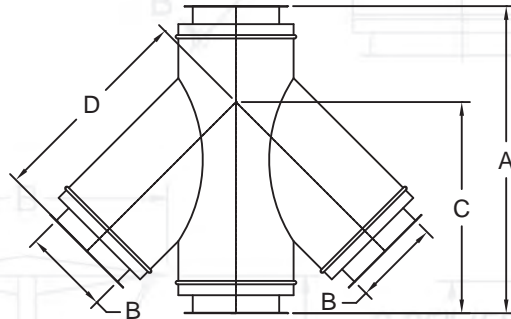
TAP I.D.

BODY I.D.		TAP I.D.												
		48	46	44	42	40	38	36	34	32	30	28	26	24
48PIC	"A"	80.71	77.88	75.05	72.22	69.40	66.57	63.74	60.91	58.08	55.26	52.43	50.60	48.77
	"B"	48	46	44	42	40	38	36	34	32	30	28	26	24
	"C"	65.35	63.94	62.53	61.11	59.70	58.28	56.87	55.46	54.04	52.63	51.21	49.80	48.39
	"D"	65.35	64.35	63.35	62.35	61.35	60.35	59.35	58.35	57.35	56.35	55.35	54.35	53.35
46PIC	"A"	77.88	75.05	72.22	69.40	66.57	63.74	60.91	58.08	55.26	52.43	49.60	47.77	46.94
	"B"	46	44	42	40	38	36	34	32	30	28	26	24	22
	"C"	62.94	61.53	60.11	58.70	57.28	55.87	54.46	53.04	51.63	50.21	48.80	47.39	45.97
	"D"	62.94	61.94	60.94	59.94	58.94	57.94	56.94	55.94	54.94	53.94	52.94	51.94	50.94
44PIC	"A"	75.05	72.22	69.40	66.57	63.74	60.91	58.08	55.26	52.43	49.60	46.77	45.94	44.11
	"B"	44	42	40	38	36	34	32	30	28	26	24	22	20
	"C"	60.53	59.11	57.70	56.28	54.87	53.46	52.04	50.63	49.21	47.80	46.39	44.97	43.56
	"D"	60.53	59.53	58.53	57.53	56.53	55.53	54.53	53.53	52.53	51.53	50.53	49.53	48.53
42PIC	"A"	72.22	69.40	66.57	63.74	60.91	58.08	55.26	52.43	49.60	46.77	44.94	43.11	41.28
	"B"	42	40	38	36	34	32	30	28	26	24	22	20	18
	"C"	58.11	56.70	55.28	53.87	52.46	51.04	49.63	48.21	46.80	45.39	43.97	42.56	41.14
	"D"	58.11	57.11	56.11	55.11	54.11	53.11	52.11	51.11	50.11	49.11	48.11	47.11	46.11
40PIC	"A"	69.40	66.57	63.74	60.91	58.08	55.26	52.43	49.60	46.77	43.94	42.11	40.28	39.46
	"B"	40	38	36	34	32	30	28	26	24	22	20	18	16
	"C"	55.70	54.28	52.87	51.46	50.04	48.63	47.21	45.80	44.39	42.97	41.56	40.14	38.73
	"D"	55.70	54.70	53.70	52.70	51.70	50.70	49.70	48.70	47.70	46.70	45.70	44.70	43.70
38PIC	"A"	66.57	63.74	60.91	58.08	55.26	52.43	49.60	46.77	43.94	41.11	39.28	38.46	37.63
	"B"	38	36	34	32	30	28	26	24	22	20	18	16	14
	"C"	53.28	51.87	50.46	49.04	47.63	46.21	44.80	43.39	41.97	40.56	39.14	37.73	36.31
	"D"	53.28	52.28	51.28	50.28	49.28	48.28	47.28	46.28	45.28	44.28	43.28	42.28	41.28
36PIC	"A"	63.74	60.91	58.08	55.26	52.43	49.60	46.77	43.94	41.11	38.28	37.46	36.63	34.80
	"B"	36	34	32	30	28	26	24	22	20	18	16	14	12
	"C"	50.87	49.46	48.04	46.63	45.21	43.80	42.39	40.97	39.56	38.14	36.73	35.31	33.90
	"D"	50.87	49.87	48.87	47.87	46.87	45.87	44.87	43.87	42.87	41.87	40.87	39.87	38.87
34PIC	"A"	60.91	58.08	55.26	52.43	49.60	46.77	43.94	41.11	38.28	36.46	35.63	33.80	31.97
	"B"	34	32	30	28	26	24	22	20	18	16	14	12	10
	"C"	48.46	47.04	45.63	44.21	42.80	41.39	39.97	38.56	37.14	35.73	34.31	32.90	31.49
	"D"	48.46	47.46	46.46	45.46	44.46	43.46	42.46	41.46	40.46	39.46	38.46	37.46	36.46
32PIC	"A"	58.08	55.26	52.43	49.60	46.77	43.94	41.11	38.28	35.46	34.63	32.80	30.97	29.14
	"B"	32	30	28	26	24	22	20	18	16	14	12	10	8
	"C"	46.04	44.63	43.21	41.80	40.39	38.97	37.56	36.14	34.73	33.31	31.90	30.49	29.07
	"D"	46.04	45.04	44.04	43.04	42.04	41.04	40.04	39.04	38.04	37.04	36.04	35.04	34.04
30PIC	"A"	55.26	52.43	49.60	46.77	43.94	41.11	38.28	35.46	32.63	31.80	29.97	28.14	27.31
	"B"	30	28	26	24	22	20	18	16	14	12	10	8	6
	"C"	43.63	42.21	40.80	39.39	37.97	36.56	35.14	33.73	32.31	30.90	29.49	28.07	26.66
	"D"	43.63	42.63	41.63	40.63	39.63	38.63	37.63	36.63	35.63	34.63	33.63	32.63	31.63
28PIC	"A"	52.43	49.60	46.77	43.94	41.11	38.28	35.46	32.63	30.80	28.97	27.14	26.31	24.48
	"B"	28	26	24	22	20	18	16	14	12	10	8	6	4
	"C"	41.21	39.80	38.39	36.97	35.56	34.14	32.73	31.31	29.90	28.49	27.07	25.66	24.25
	"D"	41.21	40.21	39.21	38.21	37.21	36.21	35.21	34.21	33.21	32.21	31.21	30.21	29.21
26PIC	"A"	49.60	46.77	43.94	41.11	38.28	35.46	32.63	29.80	27.97	26.14	25.31	23.48	21.65
	"B"	26	24	22	20	18	16	14	12	10	8	6	4	2
	"C"	38.80	37.39	35.97	34.56	33.14	31.73	30.31	28.90	27.49	26.07	24.66	23.25	21.84
	"D"	38.80	37.80	36.80	35.80	34.80	33.80	32.80	31.80	30.80	29.80	28.80	27.80	26.80
24PIC	"A"	46.77	43.94	41.11	38.28	35.46	32.63	29.80	26.97	25.14	24.31	22.48	20.65	18.82
	"B"	24	22	20	18	16	14	12	10	8	6	4	2	0
	"C"	36.39	34.97	33.56	32.14	30.73	29.31	27.90	26.49	25.07	23.66	22.25	20.84	19.43
	"D"	36.39	35.39	34.39	33.39	32.39	31.39	30.39	29.39	28.39	27.39	26.39	25.39	24.39
22PIC	"A"	43.94	41.11	38.28	35.46	32.63	29.80	26.97	24.14	23.31	21.48	19.65	17.82	15.99
	"B"	22	20	18	16	14	12	10	8	6	4	2	0	-2
	"C"	33.97	32.56	31.14	29.73	28.31	26.90	25.49	24.07	22.66	21.25	19.84	18.43	17.02
	"D"	33.97	32.97	31.97	30.97	29.97	28.97	27.97	26.97	25.97	24.97	23.97	22.97	21.97
20PIC	"A"	41.11	38.28	35.46	32.63	29.80	26.97	24.14	22.31	21.48	19.65	17.82	15.99	14.16
	"B"	20	18	16	14	12	10	8	6	4	2	0	-2	-4
	"C"	31.56	30.14	28.73	27.31	25.90	24.49	23.07	21.66	20.25	18.84	17.43	16.02	14.61
	"D"	31.56	30.56	29.56	28.56	27.56	26.56	25.56	24.56	23.56	22.56	21.56	20.56	19.56
18PIC	"A"	38.28	35.46	32.63	29.80	26.97	24.14	22.31	21.48	19.65	17.82	15.99	14.16	12.33
	"B"	18	16	14	12	10	8	6	4	2	0	-2	-4	-6
	"C"	29.14	27.73	26.31	24.90	23.49	22.07	20.66	19.25	17.84	16.43	15.02	13.61	12.20
	"D"	29.14	28.14	27.14	26.14	25.14	24.14	23.14	22.14	21.14	20.14	19.14	18.14	17.14
16PIC	"A"	35.46	32.63	29.80	26.97	24.14	22.31	21.48	19.65	17.82	15.99	14.16	12.33	10.50
	"B"	16	14	12	10	8	6	4	2	0	-2	-4	-6	-8
	"C"	26.73	25.31	23.90	22.49	21.07	19.66	18.25	16.84	15.43	14.02	12.61	11.20	9.79
	"D"	26.73	25.73	24.73	23.73	22.73	21.73	20.73	19.73	18.73	17.73	16.73	15.73	14.73
14PIC	"A"	32.63	29.80	26.97	24.14	22.31	21.48	19.65	17.82	15.99	14.16	12.33	10.50	8.67
	"B"	14	12	10	8	6	4	2	0	-2	-4	-6	-8	-10
	"C"	24.31	22.90	21.49	20.07	18.66	17.25	15.84	14.43	13.02	11.61	10.20	8.79	7.38
	"D"	24.31	23.31	22.31	21.31	20.31	19.31	18.31	17.31	16.31	15.31	14.31	13.31	12.31
12PIC	"A"	29.80	26.97	24.14	22.31	21.48	19.65	17.82	15.99	14.16	12.33	10.50	8.67	6.84
	"B"	12	10	8	6	4	2	0	-2	-4	-6	-8	-10	-12
	"C"	21.90	20.49	19.07	17.66	16.25	14.84	13.43	12.02	10.61	9.20	7.79	6.38	4.97
	"D"	21.90	20.90	19.90	18.90	17.90	16.90	15.90	14.90	13.90	12.90	11.90	10.90	9.90
10PIC	"A"	26.97	24.14	22.31	21.48	19.65	17.82	15.99	14.16	12.33	10.50	8.67	6.84	5.01
	"B"	10	8	6	4	2	0	-2	-4	-6	-8	-10	-12	-14
	"C"	19.49	18.07	16.66	15.25	13.84	12.43	11.02	9.61	8.20	6.79	5.38	3.97	2.56
	"D"	19.49	18.49	17.49	16.49	15.49	14.49	13.49	12.49	11.49	10.49	9.49	8.49	7.49
8PIC	"A"	24.14	22.31	21.48	19.65	17.82	15.99	14.16	12.33	10.50	8.67	6.84	5.01	3.18
	"B"	8	6	4	2	0	-2	-4	-6	-8	-10	-12	-14	-16
	"C"	17.07	15.66	14.25	12.84	11.43	10.02	8.61	7.20	5.79	4.38	2.97	1.56	0.15
	"D"	17.07	16.07	15.07	14.07	13.07	12.07	11.07	10.07	9.07	8.07	7.07	6.07	5.07
6PIC	"A"	21.31	21.31	21.31	21.31	21.31	21.31	21.31	21.31	21.31	21.31	21.31	21.31	21.31
	"B"	6	6	6	6	6	6	6	6	6	6	6	6	6
	"C"	14.66	14.66	14.66	14.66	14.66	14.66	14.66	14.66	14.66	14.66	14.66	14.66	14.66
	"D"	14.66	14.66	14.66	14.66	14.66	14.66	14.66	14.66	14.66	14.66	14.66	14.66	14.66



# COMPONENTS

BODY I.D.	TAP I.D.													
	48	46	44	42	40	38	36	34	32	30	28	26	24	
48PIC	"A"	2050	1978	1906	1834	1763	1691	1619	1547	1475	1404	1332	1285	1239
	"B"	1219	1168	1118	1067	1016	965	914	864	813	762	711	660	610
	"C"	1660	1624	1588	1552	1516	1480	1444	1409	1373	1337	1301	1265	1229
	"D"	1660	1634	1609	1584	1558	1533	1507	1482	1457	1431	1406	1380	1355
46PIC	"A"	1978	1906	1834	1763	1691	1619	1547	1475	1404	1332	1280	1213	1192
	"B"	1168	1118	1067	1016	965	914	864	813	762	711	660	610	559
	"C"	1599	1563	1527	1491	1455	1419	1383	1347	1311	1275	1240	1204	1168
	"D"	1599	1573	1548	1522	1497	1472	1446	1421	1395	1370	1345	1319	1294
44PIC	"A"	1906	1834	1763	1691	1619	1547	1475	1404	1332	1260	1188	1167	1120
	"B"	1118	1067	1016	965	914	864	813	762	711	660	610	559	508
	"C"	1537	1501	1466	1430	1394	1358	1322	1286	1250	1214	1178	1142	1106
	"D"	1537	1512	1487	1461	1436	1410	1385	1360	1334	1309	1283	1258	1233
42PIC	"A"	1834	1763	1691	1619	1547	1475	1404	1332	1260	1188	1141	1095	1049
	"B"	1067	1016	965	914	864	813	762	711	660	610	559	508	457
	"C"	1476	1440	1404	1368	1332	1296	1261	1225	1189	1153	1117	1081	1045
	"D"	1476	1451	1425	1400	1374	1349	1324	1298	1273	1247	1222	1197	1171
40PIC	"A"	1763	1691	1619	1547	1475	1404	1332	1260	1188	1116	1070	1023	1002
	"B"	1016	965	914	864	813	762	711	660	610	559	508	457	406
	"C"	1415	1379	1343	1307	1271	1235	1199	1163	1128	1091	1056	1020	984
	"D"	1415	1389	1364	1339	1313	1288	1262	1237	1212	1186	1161	1135	1110
38PIC	"A"	1691	1619	1547	1475	1404	1332	1260	1188	1116	1044	998	977	956
	"B"	965	914	864	813	762	711	660	610	559	508	457	406	356
	"C"	1353	1317	1282	1246	1210	1174	1138	1102	1066	1030	994	958	922
	"D"	1353	1328	1303	1277	1252	1226	1201	1176	1150	1125	1099	1074	1049
36PIC	"A"	1619	1547	1475	1404	1332	1260	1188	1116	1044	972	951	930	884
	"B"	914	864	813	762	711	660	610	559	508	457	406	356	305
	"C"	1292	1256	1220	1184	1148	1113	1077	1041	1005	969	933	897	861
	"D"	1292	1267	1241	1216	1190	1165	1140	1114	1089	1063	1038	1013	987
34PIC	"A"	1547	1475	1404	1332	1260	1188	1116	1044	972	926	905	859	812
	"B"	864	813	762	711	660	610	559	508	457	406	356	305	254
	"C"	1231	1195	1159	1123	1087	1051	1015	979	943	908	871	836	800
	"D"	1231	1205	1180	1155	1129	1104	1078	1053	1028	1002	977	951	926
32PIC	"A"	1475	1404	1332	1260	1188	1116	1044	972	901	880	833	787	740
	"B"	813	762	711	660	610	559	508	457	406	356	305	254	203
	"C"	1169	1134	1098	1062	1026	990	954	918	882	846	810	774	738
	"D"	1169	1144	1119	1093	1068	1042	1017	992	966	941	915	890	865
30PIC	"A"	1404	1332	1260	1188	1116	1044	972	901	829	808	761	715	694
	"B"	762	711	660	610	559	508	457	406	356	305	254	203	152
	"C"	1108	1072	1036	1001	964	929	893	857	821	785	749	713	677
	"D"	1108	1083	1057	1032	1007	981	956	930	905	880	854	829	803
28PIC	"A"	1332	1260	1188	1116	1044	972	901	829	782	736	689	668	668
	"B"	711	660	610	559	508	457	406	356	305	254	203	152	152
	"C"	1047	1011	975	939	903	867	831	795	759	724	688	652	652
	"D"	1047	1021	996	971	945	920	894	869	844	818	793	767	767
26PIC	"A"	1260	1188	1116	1044	972	901	829	757	710	664	643	643	643
	"B"	660	610	559	508	457	406	356	305	254	203	152	152	152
	"C"	986	950	914	878	842	806	770	734	698	662	626	626	626
	"D"	986	960	935	909	884	859	833	808	782	757	732	732	732
24PIC	"A"	1188	1116	1044	972	901	829	757	685	639	617	617	617	617
	"B"	610	559	508	457	406	356	305	254	203	152	152	152	152
	"C"	924	888	852	816	781	744	709	673	637	601	601	601	601
	"D"	924	899	874	848	823	797	772	747	721	696	696	696	696
22PIC	"A"	1116	1044	972	901	829	757	685	613	592	592	592	592	592
	"B"	559	508	457	406	356	305	254	203	152	152	152	152	152
	"C"	863	827	791	755	719	683	647	611	575	575	575	575	575
	"D"	863	837	812	787	761	736	710	685	660	660	660	660	660
20PIC	"A"	1044	972	901	829	757	685	613	567	567	567	567	567	567
	"B"	508	457	406	356	305	254	203	152	152	152	152	152	152
	"C"	802	766	730	694	658	622	586	550	550	550	550	550	550
	"D"	802	776	751	725	700	675	649	624	624	624	624	624	624
18PIC	"A"	972	901	829	757	685	613	541	541	541	541	541	541	541
	"B"	457	406	356	305	254	203	152	152	152	152	152	152	152
	"C"	740	704	668	632	597	561	525	525	525	525	525	525	525
	"D"	740	715	689	664	639	613	588	588	588	588	588	588	588
16PIC	"A"	901	829	757	685	613	541	541	541	541	541	541	541	541
	"B"	406	356	305	254	203	152	152	152	152	152	152	152	152
	"C"	679	643	607	571	535	499	499	499	499	499	499	499	499
	"D"	679	654	628	603	577	552	552	552	552	552	552	552	552
14PIC	"A"	829	757	685	613	541	541	541	541	541	541	541	541	541
	"B"	356	305	254	203	152	152	152	152	152	152	152	152	152
	"C"	617	582	546	510	474	474	474	474	474	474	474	474	474
	"D"	617	592	567	541	516	516	516	516	516	516	516	516	516
12PIC	"A"	757	685	613	541	541	541	541	541	541	541	541	541	541
	"B"	305	254	203	152	152	152	152	152	152	152	152	152	152
	"C"	556	520	484	449	449	449	449	449	449	449	449	449	449
	"D"	556	531	505	480	480	480	480	480	480	480	480	480	480
10PIC	"A"	685	613	541	541	541	541	541	541	541	541	541	541	541
	"B"	254	203	152	152	152	152	152	152	152	152	152	152	152
	"C"	495	459	423	444	444	444	444	444	444	444	444	444	444
	"D"	495	470	444	444	444	444	444	444	444	444	444	444	444
8PIC	"A"	613	541	541	541	541	541	541	541	541	541	541	541	541
	"B"	203	152	152	152	152	152	152	152	152	152	152	152	152
	"C"	434	398	408	408	408	408	408	408	408	408	408	408	408
	"D"	434	408	408	408	408	408	408	408	408	408	408	408	408
6PIC	"A"	541	541	541	541	541	541	541	541	541	541	541	541	541
	"B"	152	152	152	152	152	152	152	152	152	152	152	152	152
	"C"	372	372	372	372	372	372	372	372	372	372	372	372	372
	"D"	372	372	372	372	372	372	372	372	372	372	372	372	372

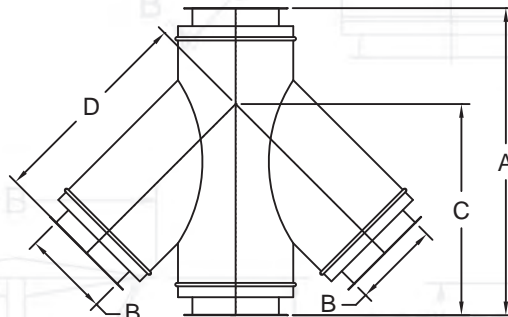


PSW, PIC AND IPIC-1 45MT & DL TABLE IN METRIC



# COMPONENTS

BODY I.D.		TAP I.D.													
		48	46	44	42	40	38	36	34	32	30	28	26	24	22
48PIC	"A"	2122	2050	1978	1906	1834	1763	1691	1619	1547	1475	1403	1357	1310	1290
	"B"	1219	1168	1118	1067	1016	965	914	864	813	762	711	660	610	559
	"C"	1721	1685	1649	1613	1578	1542	1506	1470	1434	1398	1362	1326	1290	1254
	"D"	1721	1696	1671	1645	1620	1594	1569	1544	1518	1493	1467	1442	1417	1391
46PIC	"A"	2050	1978	1906	1834	1763	1691	1619	1547	1475	1403	1331	1285	1264	1218
	"B"	1168	1118	1067	1016	965	914	864	813	762	711	660	610	559	508
	"C"	1660	1624	1588	1552	1516	1480	1444	1408	1373	1337	1301	1265	1229	1193
	"D"	1660	1634	1609	1584	1558	1533	1507	1482	1457	1431	1406	1380	1355	1330
44PIC	"A"	1978	1906	1834	1763	1691	1619	1547	1475	1403	1331	1260	1239	1192	1146
	"B"	1118	1067	1016	965	914	864	813	762	711	660	610	559	508	457
	"C"	1599	1563	1527	1491	1455	1419	1383	1347	1311	1275	1240	1203	1168	1132
	"D"	1599	1573	1548	1522	1497	1472	1446	1421	1395	1370	1345	1319	1294	1268
42PIC	"A"	1906	1834	1763	1691	1619	1547	1475	1403	1331	1260	1213	1187	1120	1099
	"B"	1067	1016	965	914	864	813	762	711	660	610	559	508	457	406
	"C"	1537	1501	1466	1430	1394	1358	1322	1286	1250	1214	1178	1142	1106	1070
	"D"	1537	1512	1486	1461	1436	1410	1385	1359	1334	1309	1283	1258	1232	1207
40PIC	"A"	1834	1763	1691	1619	1547	1475	1403	1331	1260	1188	1141	1095	1074	1032
	"B"	1016	965	914	864	813	762	711	660	610	559	508	457	406	356
	"C"	1476	1440	1404	1368	1332	1296	1260	1225	1189	1153	1117	1081	1045	1009
	"D"	1476	1451	1425	1400	1374	1349	1324	1298	1273	1247	1222	1197	1171	1146
38PIC	"A"	1763	1691	1619	1547	1475	1403	1331	1260	1188	1116	1070	1049	1007	981
	"B"	965	914	864	813	762	711	660	610	559	508	457	406	356	305
	"C"	1415	1379	1343	1307	1271	1235	1199	1163	1127	1091	1055	1020	984	948
	"D"	1415	1389	1364	1339	1313	1288	1262	1237	1212	1186	1161	1135	1110	1085
36PIC	"A"	1691	1619	1547	1475	1403	1331	1260	1188	1116	1044	1023	981	956	909
	"B"	914	864	813	762	711	660	610	559	508	457	406	356	305	254
	"C"	1353	1317	1281	1246	1210	1174	1138	1102	1066	1030	994	958	922	886
	"D"	1353	1328	1303	1277	1252	1226	1201	1176	1150	1125	1099	1074	1049	1023
34PIC	"A"	1619	1547	1475	1403	1331	1260	1188	1116	1044	998	956	930	884	837
	"B"	864	813	762	711	660	610	559	508	457	406	356	305	254	203
	"C"	1292	1256	1220	1184	1148	1113	1076	1041	1005	969	933	897	861	825
	"D"	1292	1267	1241	1216	1190	1165	1140	1114	1089	1063	1038	1013	987	962
32PIC	"A"	1547	1475	1403	1331	1260	1188	1116	1044	972	930	905	859	812	797
	"B"	813	762	711	660	610	559	508	457	406	356	305	254	203	152
	"C"	1231	1196	1159	1123	1087	1051	1015	979	943	908	871	836	800	764
	"D"	1231	1205	1180	1154	1129	1104	1078	1053	1027	1002	977	951	926	900
30PIC	"A"	1475	1403	1331	1260	1188	1116	1044	972	900	880	833	787	772	
	"B"	762	711	660	610	559	508	457	406	356	305	254	203	152	
	"C"	1169	1134	1098	1062	1026	990	954	918	882	846	810	774	738	
	"D"	1169	1144	1119	1093	1068	1042	1017	992	966	941	915	890	865	
28PIC	"A"	1403	1331	1260	1188	1116	1044	972	900	854	808	761	747		
	"B"	711	660	610	559	508	457	406	356	305	254	203	152		
	"C"	1108	1072	1036	1000	964	929	893	857	821	785	749	713		
	"D"	1108	1083	1057	1032	1007	981	956	930	905	880	854	829		
26PIC	"A"	1331	1260	1188	1116	1044	972	900	829	782	736	721			
	"B"	660	610	559	508	457	406	356	305	254	203	152			
	"C"	1047	1011	975	939	903	867	831	795	759	724	688			
	"D"	1047	1021	996	971	945	920	894	869	844	818	793			
24PIC	"A"	1260	1188	1116	1044	972	900	829	757	710	696				
	"B"	610	559	508	457	406	356	305	254	203	152				
	"C"	986	949	914	878	842	806	770	734	698	662				
	"D"	986	960	935	909	884	859	833	808	782	757				
22PIC	"A"	1188	1116	1044	972	900	829	757	685	670					
	"B"	559	508	457	406	356	305	254	203	152					
	"C"	924	888	852	816	781	744	709	673	637					
	"D"	924	899	873	848	822	797	772	746	721					
20PIC	"A"	1116	1044	972	900	829	757	685	613						
	"B"	508	457	406	356	305	254	203	152						
	"C"	863	827	791	755	719	683	647	611						
	"D"	863	837	812	787	761	736	710	685						
18PIC	"A"	1044	972	900	829	757	685	613							
	"B"	457	406	356	305	254	203	152							
	"C"	802	766	730	694	658	622	586							
	"D"	802	776	751	725	700	675	649							
16PIC	"A"	972	900	829	757	685	613								
	"B"	406	356	305	254	203	152								
	"C"	740	704	668	632	597	561								
	"D"	740	715	689	664	639	613								
14PIC	"A"	900	829	757	685	613									
	"B"	356	305	254	203	152									
	"C"	679	643	607	571	535									
	"D"	679	654	628	603	577									
12PIC	"A"	829	757	685	613										
	"B"	305	254	203	152										
	"C"	617	582	546	510										
	"D"	617	592	567	541										
10PIC	"A"	757	685	613											
	"B"	254	203	152											
	"C"	556	520	484											
	"D"	556	531	505											
8PIC	"A"	685	613												
	"B"	203	152												
	"C"	495	459												
	"D"	495	470												
6PIC	"A"	613													
	"B"	152													
	"C"	434													
	"D"	434													

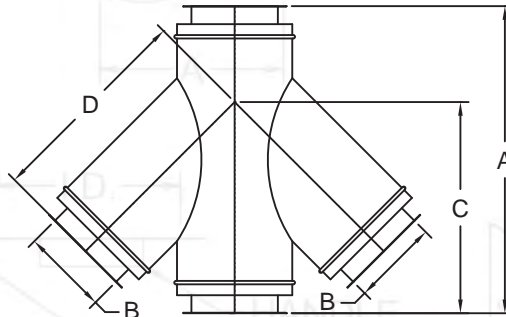


IPI-2 45MT & DL TABLE IN METRIC



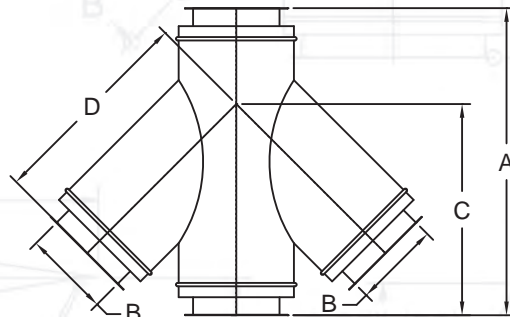
# COMPONENTS

		TAP I.D.												
		48	46	44	42	40	38	36	34	32	30	28	26	24
48PIC	*A*	89.19	86.36	83.54	80.71	77.88	75.05	72.22	69.40	66.57	63.74	60.91	58.08	55.25
	*B*	46	46	44	42	40	38	36	34	32	30	28	26	24
	*C*	72.60	71.18	69.77	68.35	66.94	65.53	64.11	62.70	61.28	59.87	58.45	57.04	55.63
	*D*	72.60	71.60	70.60	69.60	68.60	67.60	66.60	65.60	64.60	63.60	62.60	61.60	60.60
46PIC	*A*	86.36	83.54	80.71	77.88	75.05	72.22	69.40	66.57	63.74	60.91	58.08	55.25	52.42
	*B*	46	44	42	40	38	36	34	32	30	28	26	24	22
	*C*	70.18	68.77	67.35	65.94	64.53	63.11	61.70	60.28	58.87	57.45	56.04	54.63	53.21
	*D*	70.18	69.18	68.18	67.18	66.18	65.18	64.18	63.18	62.18	61.18	60.18	59.18	58.18
44PIC	*A*	83.54	80.71	77.88	75.05	72.22	69.40	66.57	63.74	60.91	58.08	55.25	52.42	49.59
	*B*	44	42	40	38	36	34	32	30	28	26	24	22	20
	*C*	67.77	66.35	64.94	63.53	62.11	60.70	59.28	57.87	56.45	55.04	53.63	52.21	50.80
	*D*	67.77	66.77	65.77	64.77	63.77	62.77	61.77	60.77	59.77	58.77	57.77	56.77	55.77
42PIC	*A*	80.71	77.88	75.05	72.22	69.40	66.57	63.74	60.91	58.08	55.25	52.42	49.59	46.77
	*B*	42	40	38	36	34	32	30	28	26	24	22	20	18
	*C*	65.35	63.94	62.53	61.11	59.70	58.28	56.87	55.45	54.04	52.63	51.21	49.80	48.38
	*D*	65.35	64.35	63.35	62.35	61.35	60.35	59.35	58.35	57.35	56.35	55.35	54.35	53.35
40PIC	*A*	77.88	75.05	72.22	69.40	66.57	63.74	60.91	58.08	55.25	52.42	49.59	46.77	43.94
	*B*	40	38	36	34	32	30	28	26	24	22	20	18	16
	*C*	62.94	61.53	60.11	58.70	57.28	55.87	54.45	53.04	51.63	50.21	48.80	47.38	45.97
	*D*	62.94	61.94	60.94	59.94	58.94	57.94	56.94	55.94	54.94	53.94	52.94	51.94	50.94
38PIC	*A*	75.05	72.22	69.40	66.57	63.74	60.91	58.08	55.25	52.42	49.59	46.77	43.94	41.11
	*B*	38	36	34	32	30	28	26	24	22	20	18	16	14
	*C*	60.53	59.11	57.70	56.28	54.87	53.45	52.04	50.63	49.21	47.80	46.38	44.97	43.56
	*D*	60.53	59.53	58.53	57.53	56.53	55.53	54.53	53.53	52.53	51.53	50.53	49.53	48.53
36PIC	*A*	72.22	69.40	66.57	63.74	60.91	58.08	55.25	52.42	49.59	46.77	43.94	41.11	38.28
	*B*	36	34	32	30	28	26	24	22	20	18	16	14	12
	*C*	58.11	56.70	55.28	53.87	52.45	51.04	49.63	48.21	46.80	45.38	43.97	42.56	41.14
	*D*	58.11	57.11	56.11	55.11	54.11	53.11	52.11	51.11	50.11	49.11	48.11	47.11	46.11
34PIC	*A*	69.40	66.57	63.74	60.91	58.08	55.25	52.42	49.59	46.77	43.94	41.11	38.28	35.46
	*B*	34	32	30	28	26	24	22	20	18	16	14	12	10
	*C*	55.70	54.28	52.87	51.45	50.04	48.63	47.21	45.80	44.38	42.97	41.56	40.14	38.73
	*D*	55.70	54.70	53.70	52.70	51.70	50.70	49.70	48.70	47.70	46.70	45.70	44.70	43.70
32PIC	*A*	66.57	63.74	60.91	58.08	55.25	52.42	49.59	46.77	43.94	41.11	38.28	35.46	32.63
	*B*	32	30	28	26	24	22	20	18	16	14	12	10	8
	*C*	53.28	51.87	50.45	49.04	47.63	46.21	44.80	43.38	41.97	40.56	39.14	37.73	36.31
	*D*	53.28	52.28	51.28	50.28	49.28	48.28	47.28	46.28	45.28	44.28	43.28	42.28	41.28
30PIC	*A*	63.74	60.91	58.08	55.25	52.42	49.59	46.77	43.94	41.11	38.28	35.46	32.63	29.80
	*B*	30	28	26	24	22	20	18	16	14	12	10	8	6
	*C*	50.87	49.45	48.04	46.63	45.21	43.80	42.38	40.97	39.56	38.14	36.73	35.31	33.90
	*D*	50.87	49.87	48.87	47.87	46.87	45.87	44.87	43.87	42.87	41.87	40.87	39.87	38.87
28PIC	*A*	60.91	58.08	55.25	52.42	49.59	46.77	43.94	41.11	38.28	35.46	32.63	29.80	26.97
	*B*	28	26	24	22	20	18	16	14	12	10	8	6	4
	*C*	48.45	47.04	45.63	44.21	42.80	41.38	39.97	38.56	37.14	35.73	34.31	32.90	31.48
	*D*	48.45	47.45	46.45	45.45	44.45	43.45	42.45	41.45	40.45	39.45	38.45	37.45	36.45
26PIC	*A*	58.08	55.25	52.42	49.59	46.77	43.94	41.11	38.28	35.46	32.63	29.80	26.97	24.14
	*B*	26	24	22	20	18	16	14	12	10	8	6	4	2
	*C*	46.04	44.63	43.21	41.80	40.38	38.97	37.56	36.14	34.73	33.31	31.90	30.48	29.07
	*D*	46.04	45.04	44.04	43.04	42.04	41.04	40.04	39.04	38.04	37.04	36.04	35.04	34.04
24PIC	*A*	55.25	52.42	49.59	46.77	43.94	41.11	38.28	35.46	32.63	29.80	26.97	24.14	21.31
	*B*	24	22	20	18	16	14	12	10	8	6	4	2	0
	*C*	43.63	42.21	40.80	39.38	37.97	36.56	35.14	33.73	32.31	30.90	29.48	28.07	26.65
	*D*	43.63	42.63	41.63	40.63	39.63	38.63	37.63	36.63	35.63	34.63	33.63	32.63	31.63
22PIC	*A*	52.42	49.59	46.77	43.94	41.11	38.28	35.46	32.63	29.80	26.97	24.14	21.31	18.48
	*B*	22	20	18	16	14	12	10	8	6	4	2	0	-2
	*C*	41.21	39.80	38.38	36.97	35.56	34.14	32.73	31.31	29.90	28.48	27.07	25.65	24.24
	*D*	41.21	40.21	39.21	38.21	37.21	36.21	35.21	34.21	33.21	32.21	31.21	30.21	29.21
20PIC	*A*	49.59	46.77	43.94	41.11	38.28	35.46	32.63	29.80	26.97	24.14	21.31	18.48	15.65
	*B*	20	18	16	14	12	10	8	6	4	2	0	-2	-4
	*C*	38.80	37.38	35.97	34.56	33.14	31.73	30.31	28.90	27.48	26.07	24.65	23.24	21.82
	*D*	38.80	37.80	36.80	35.80	34.80	33.80	32.80	31.80	30.80	29.80	28.80	27.80	26.80
18PIC	*A*	46.77	43.94	41.11	38.28	35.46	32.63	29.80	26.97	24.14	21.31	18.48	15.65	12.82
	*B*	18	16	14	12	10	8	6	4	2	0	-2	-4	-6
	*C*	36.38	34.97	33.56	32.14	30.73	29.31	27.90	26.48	25.07	23.65	22.24	20.82	19.41
	*D*	36.38	35.38	34.38	33.38	32.38	31.38	30.38	29.38	28.38	27.38	26.38	25.38	24.38
16PIC	*A*	43.94	41.11	38.28	35.46	32.63	29.80	26.97	24.14	21.31	18.48	15.65	12.82	10.00
	*B*	16	14	12	10	8	6	4	2	0	-2	-4	-6	-8
	*C*	33.97	32.56	31.14	29.73	28.31	26.90	25.48	24.07	22.65	21.24	19.82	18.41	17.00
	*D*	33.97	32.97	31.97	30.97	29.97	28.97	27.97	26.97	25.97	24.97	23.97	22.97	21.97
14PIC	*A*	41.11	38.28	35.46	32.63	29.80	26.97	24.14	21.31	18.48	15.65	12.82	10.00	7.17
	*B*	14	12	10	8	6	4	2	0	-2	-4	-6	-8	-10
	*C*	31.56	30.14	28.73	27.31	25.90	24.48	23.07	21.65	20.24	18.82	17.41	16.00	14.58
	*D*	31.56	30.56	29.56	28.56	27.56	26.56	25.56	24.56	23.56	22.56	21.56	20.56	19.56
12PIC	*A*	38.28	35.46	32.63	29.80	26.97	24.14	21.31	18.48	15.65	12.82	10.00	7.17	4.35
	*B*	12	10	8	6	4	2	0	-2	-4	-6	-8	-10	-12
	*C*	29.14	27.73	26.31	24.90	23.48	22.07	20.65	19.24	17.82	16.41	15.00	13.58	12.17
	*D*	29.14	28.14	27.14	26.14	25.14	24.14	23.14	22.14	21.14	20.14	19.14	18.14	17.14
10PIC	*A*	35.46	32.63	29.80	26.97	24.14	21.31	18.48	15.65	12.82	10.00	7.17	4.35	1.52
	*B*	10	8	6	4	2	0	-2	-4	-6	-8	-10	-12	-14
	*C*	26.73	25.31	23.90	22.48	21.07	19.65	18.24	16.82	15.41	14.00	12.58	11.17	9.75
	*D*	26.73	25.73	24.73	23.73	22.73	21.73	20.73	19.73	18.73	17.73	16.73	15.73	14.73
8PIC	*A*	32.63	29.80	26.97	24.14	21.31	18.48	15.65	12.82	10.00	7.17	4.35	1.52	-1.30
	*B*	8	6	4	2	0	-2	-4	-6	-8	-10	-12	-14	-16
	*C*	24.31	22.90	21.48	20.07	18.65	17.24	15.82	14.41	13.00	11.58	10.17	8.75	7.34
	*D*	24.31	23.31	22.31	21.31	20.31	19.31	18.31	17.31	16.31	15.31	14.31	13.31	12.31
6PIC	*A*	29.80	26.97	24.14	21.31	18.48	15.65	12.82	10.00	7.17	4.35	1.52	-1.30	-3.48
	*B*	6	4	2	0	-2	-4	-6	-8	-10	-12	-14	-16	-18
	*C*	21.90	20.48	19.07	17.65	16.24	14.82	13.41	12.00	10.58	9.17	7.75	6.34	4.92
	*D*	21.90	20.90	19.90	18.90	17.90	16.90	15.90	14.90	13.90	12.90	11.90	10.90	9.90



# COMPONENTS

BODY I.D.		TAP I.D.												
		48	46	44	42	40	38	36	34	32	30	28	26	24
48PIC	"A"	2265	2194	2122	2050	1978	1906	1834	1763	1691	1619	1547	1475	1429
	"B"	1219	1168	1118	1067	1016	965	914	864	813	762	711	660	610
	"C"	1844	1808	1772	1736	1700	1664	1628	1593	1557	1521	1485	1449	1413
	"D"	1844	1819	1793	1768	1742	1717	1692	1666	1641	1615	1590	1565	1539
46PIC	"A"	2194	2122	2050	1978	1906	1834	1763	1691	1619	1547	1475	1403	1382
	"B"	1168	1118	1067	1016	965	914	864	813	762	711	660	610	559
	"C"	1783	1747	1711	1675	1639	1603	1567	1531	1495	1459	1423	1388	1352
	"D"	1783	1757	1732	1706	1681	1656	1630	1605	1579	1554	1529	1503	1478
44PIC	"A"	2122	2050	1978	1906	1834	1763	1691	1619	1547	1475	1403	1357	1311
	"B"	1118	1067	1016	965	914	864	813	762	711	660	610	559	508
	"C"	1721	1685	1649	1614	1578	1542	1506	1470	1434	1398	1362	1326	1290
	"D"	1721	1696	1671	1645	1620	1594	1569	1544	1518	1493	1467	1442	1417
42PIC	"A"	2050	1978	1906	1834	1763	1691	1619	1547	1475	1403	1331	1285	1264
	"B"	1067	1016	965	914	864	813	762	711	660	610	559	508	457
	"C"	1660	1624	1588	1552	1516	1480	1444	1408	1373	1337	1301	1265	1229
	"D"	1660	1634	1609	1584	1558	1533	1507	1482	1457	1431	1406	1380	1355
40PIC	"A"	1978	1906	1834	1763	1691	1619	1547	1475	1403	1331	1260	1239	1192
	"B"	1016	965	914	864	813	762	711	660	610	559	508	457	406
	"C"	1599	1563	1527	1491	1455	1419	1383	1347	1311	1275	1240	1203	1168
	"D"	1599	1573	1548	1522	1497	1472	1446	1421	1395	1370	1345	1319	1294
38PIC	"A"	1906	1834	1763	1691	1619	1547	1475	1403	1331	1260	1213	1167	1120
	"B"	965	914	864	813	762	711	660	610	559	508	457	406	356
	"C"	1537	1501	1466	1430	1394	1358	1322	1286	1250	1214	1178	1142	1106
	"D"	1537	1512	1487	1461	1436	1410	1385	1360	1334	1309	1283	1258	1233
36PIC	"A"	1834	1763	1691	1619	1547	1475	1403	1331	1260	1188	1141	1095	1074
	"B"	914	864	813	762	711	660	610	559	508	457	406	356	305
	"C"	1476	1440	1404	1368	1332	1296	1261	1225	1189	1153	1117	1081	1045
	"D"	1476	1451	1425	1400	1374	1349	1324	1298	1273	1247	1222	1197	1171
34PIC	"A"	1763	1691	1619	1547	1475	1403	1331	1260	1188	1116	1070	1049	1002
	"B"	864	813	762	711	660	610	559	508	457	406	356	305	254
	"C"	1415	1379	1343	1307	1271	1235	1199	1163	1127	1091	1056	1020	984
	"D"	1415	1389	1364	1339	1313	1288	1262	1237	1212	1186	1161	1135	1110
32PIC	"A"	1691	1619	1547	1475	1403	1331	1260	1188	1116	1044	1023	977	930
	"B"	813	762	711	660	610	559	508	457	406	356	305	254	203
	"C"	1353	1317	1281	1246	1210	1174	1138	1102	1066	1030	994	958	922
	"D"	1353	1328	1303	1277	1252	1226	1201	1176	1150	1125	1099	1074	1049
30PIC	"A"	1619	1547	1475	1403	1331	1260	1188	1116	1044	998	951	905	884
	"B"	762	711	660	610	559	508	457	406	356	305	254	203	152
	"C"	1292	1256	1220	1184	1148	1113	1076	1041	1005	969	933	897	861
	"D"	1292	1267	1241	1216	1190	1165	1140	1114	1089	1063	1038	1013	987
28PIC	"A"	1547	1475	1403	1331	1260	1188	1116	1044	972	926	880	859	
	"B"	711	660	610	559	508	457	406	356	305	254	203	152	
	"C"	1231	1195	1159	1123	1087	1051	1015	979	943	908	871	836	
	"D"	1231	1205	1180	1154	1129	1104	1078	1053	1027	1002	977	951	
26PIC	"A"	1475	1403	1331	1260	1188	1116	1044	972	901	854	833		
	"B"	660	610	559	508	457	406	356	305	254	203	152		
	"C"	1169	1134	1098	1062	1026	990	954	918	882	846	810		
	"D"	1169	1144	1119	1093	1068	1042	1017	992	967	942	917		
24PIC	"A"	1403	1331	1260	1188	1116	1044	972	901	829	808			
	"B"	610	559	508	457	406	356	305	254	203	152			
	"C"	1108	1072	1036	1000	964	929	893	857	821	785			
	"D"	1108	1083	1057	1032	1007	981	956	930	905	880			
22PIC	"A"	1331	1260	1188	1116	1044	972	901	829	782				
	"B"	559	508	457	406	356	305	254	203	152				
	"C"	1047	1011	975	939	903	867	831	795	759				
	"D"	1047	1021	996	971	945	920	894	869	844				
20PIC	"A"	1260	1188	1116	1044	972	901	829	757					
	"B"	508	457	406	356	305	254	203	152					
	"C"	986	949	914	878	842	806	770	734					
	"D"	986	960	935	909	884	859	833	808					
18PIC	"A"	1188	1116	1044	972	901	829	757						
	"B"	457	406	356	305	254	203	152						
	"C"	924	888	852	816	781	744	709						
	"D"	924	899	873	848	822	797	772						
16PIC	"A"	1116	1044	972	901	829	757							
	"B"	406	356	305	254	203	152							
	"C"	863	827	791	755	719	683							
	"D"	863	837	812	787	761	736							
14PIC	"A"	1044	972	901	829	757								
	"B"	356	305	254	203	152								
	"C"	802	766	730	694	658								
	"D"	802	776	751	725	700								
12PIC	"A"	972	901	829	757									
	"B"	305	254	203	152									
	"C"	740	704	668	632									
	"D"	740	715	689	664									
10PIC	"A"	901	829	757										
	"B"	254	203	152										
	"C"	679	643	607										
	"D"	679	654	628										
8PIC	"A"	829	757											
	"B"	203	152											
	"C"	617	582											
	"D"	617	592											
6PIC	"A"	757												
	"B"	152												
	"C"	556												
	"D"	556												



**IPIC-4 45MT & DL TABLE IN METRIC**



## DESIGN CHECKLIST

In order to quickly and accurately design a chimney installation, Metal-Fab's Engineering Department needs basic information about the system. Listed below are those items about which information is needed:

1. Application (Boilers, Exhaust, Diesel Engine Exhaust, etc.).
2. Type of fuel to be used (LP Gas, Natural Gas, Number 2 Oil, etc.).
3. BTU Input or Boiler H.P.
4. Equipment Outlet Pressure:
  - a. Draft hood
  - b. Forced draft with positive, negative or zero inches of water at appliance outlet.
  - c. Induced draft capability and how much.
  - d. Barometric damper
5. Total Vertical Stack Height figured from:
  - a. Top of the draft hood.
  - b. Flue outlet top of boiler (direct connect).
  - c. At barometric damper.
6. Connector rise (piping from the appliance to the center line of breeching).
7. The total length of breeching for one appliance application, or the system length between the flue outlet center line for multiple boiler installations.
8. Single wall or double wall breeching.
9. Type of roof penetration or chase installation.
10. Type of construction - combustible, noncombustible, or fire-rated.
11. Type of chimney support.
12. Obstructions or dimensional restrictions that may exist.

Receipt of this information will speed the design process.

Thank you.

## WARRANTIES

### ONE YEAR

Metal-Fab warrants PSW, PIC, IPIC-1, -2, and -4 when used in chimney, and exhaust systems for a period of one (1) year from date of original installation when designed, installed, and maintained in accordance with Metal-Fab specifications.

### TWELVE YEAR

Metal-Fab further warrants PSW, PIC, IPIC-1, -2, and -4 when used in chimney and exhaust systems for a period of twelve (12) years from date of original application when designed, installed, maintained, and registered as defined in the full warranty with Metal-Fab in accordance with Metal-Fab specifications.

Refer to Metal-Fab Warranty forms L865 and L961 for complete information on claim procedures, exclusions, and limitations. Visit [www.metal-fabcommercial.com](http://www.metal-fabcommercial.com).



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