



**Factory-Built  
Grease Duct Systems**



**NEW 3G  
ZERO CLEARANCE**

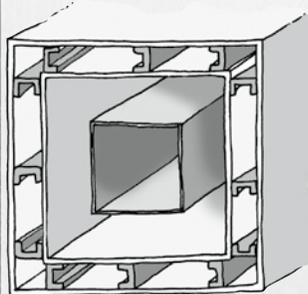
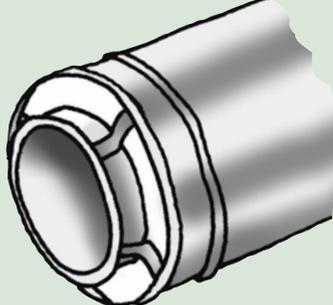
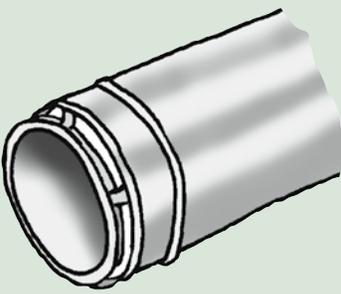
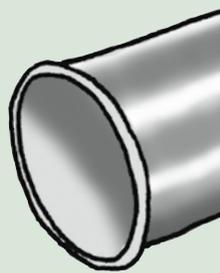
**More Choices  
Best Value  
Code Compliant**

June 2013 Edition

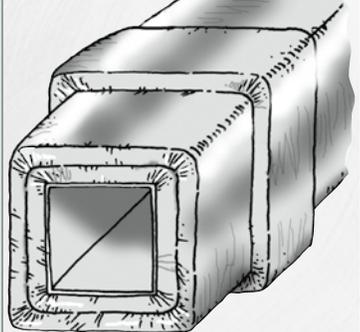
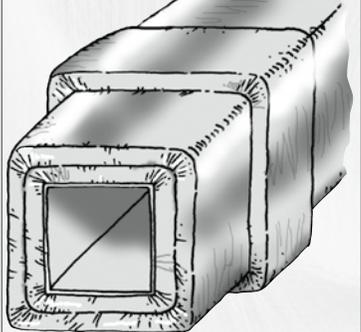
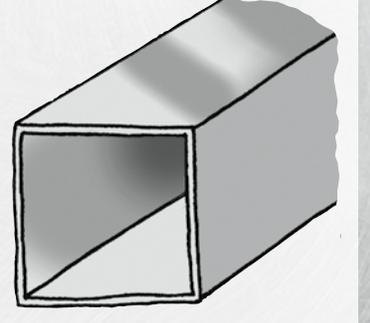
**Design Manual**



# Making The Right

DESCRIPTION	.....METAL-FAB "G" SERIES.....			
	<b>FIRE RESISTIVE SHAFT ENCLOSURE</b> Site - Built	<b>Models 3G / 4G</b> ALTERNATE TO FIRE RESISTIVE SHAFT ENCLOSURE Factory - Built	<b>Models PIC / 1G / 2G</b> REDUCED CLEARANCE TO COMBUSTIBLES Factory - Built	<b>Models P</b> SINGLE WALL STAINLESS S Factory - Bu
				
<b>INSTALLED SPACE REQUIREMENTS</b> 12" X 12" SQUARE DUCTS - 144 SQ. IN. 14" ROUND DUCT - 154 SQ. IN.	33" X 33"	20" X 20"	20"/22" X 20"/22"	50" X 50"
CONSTRUCTION	Shaft Enclosure - Fire rated gypsum board on both sides of non combustible studs. Grease Duct - 16 gage Carbon Steel or 18 gage Stainless Steel	Outer Casing (Integral Shaft enclosure) Aluminized Carbon or Stainless Steel Insulation: 3" or 4" Ceramic Fiber Grease Duct - 20 gage Stainless Steel	Outer Casing -Aluminized Carbon or Stainless Steel Insulation: Air, 1" or 2" Ceramic Fiber Grease Duct - 20 gage Stainless Steel	Grease Duct - 20 gage S
CLEARANCES	6 Inches to inner shaft wall	Zero Clearance to Combustibles Zero Clearance to Limited Combustibles	See Chart for Reduced Clearances on page 8	18 Inches to Comb 3 Inches to Limited C
CURRENT CODE ACCEPTANCE	YES 2009 IMC, 506.3.10.1 2006 UMC, 510.7.2.3 2008 NFPA 96, 7.7.2.2.2	YES 2009 IMC, 506.3.10.3 2006 UMC, 507.2.3 2008 NFPA 96, 4.3 New York City: MEA-86-07-E Los Angeles: RR-8441 Wisconsin: 990074-H	YES 2009 IMC, 506.3.6-1 2006 UMC, 507.2.1 2008 NFPA 96, 7.1.7 New York City: MEA-245-97-M	YES 2009 IMC, 506.3.6-1 2006 UMC, 507.2.1 2008 NFPA 96, 7.1.7
APPLICABLE LISTINGS	ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction	UL1978 - Standard for Grease Ducts UL2221 - Tests of Fire Resistive Duct Enclosures ASTM E 814 - Standard Test Method for Through Penetration Firestops ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction ESR 2627 ICC ES Acceptance Criteria for Grease Duct Systems, Self Enclosed	UL1978 - Standard for Grease Ducts	UL1978 - Standard for
INSTALLED COSTS	\$\$\$\$\$	\$\$\$	\$\$	\$
WARRANTY	1 Year	LIMITED LIFETIME	LIMITED LIFETIME	LIMITED LIFE

# Choice For Your Client

<p>SW ALL STEEL Built</p>	<p>ALTERNATE TO FIRE RESISTIVE SHAFT ENCLOSURE Site - Built</p>	<p>REDUCED CLEARANCE TO COMBUSTIBLES Site - Built</p>	<p>ABANDONED UL1978 - SBCCI SINGLE LAYER WRAP SYSTEMS Site - Built</p>	<p>FIRE RESISTIVE SHAFT NOT REQUIRED Site - Built</p>
				
	<p>24" X 24"</p>	<p>24" X 24"</p>		<p>48" X 48"</p>
<p>Stainless Steel</p>	<p>Exposed 2-3 layers of 1 1/2" or 2" Flexible wrap, taped, pinned and banded to grease duct Grease Duct - 16 gage Carbon Steel or 18 gage Stainless Steel</p>	<p>Exposed 2-3 layers of 1 1/2" or 2" Flexible wrap, taped, pinned and banded to grease duct Grease Duct - 16 gage Carbon Steel or 18 gage Stainless Steel</p>	<p>Single layer 1 1/2" or 2" Flexible Wrap insulation, applied to Grease Duct for reduced clearances Grease Duct - 16 gage Carbon Steel or 18 gage Stainless Steel</p>	<p>Grease Duct - 16 gage Carbon Steel or 18 gage Stainless Steel</p>
<p>Combustibles Combustibles</p>	<p>Zero Clearance to Combustibles Zero Clearance to Limited Combustibles</p>	<p>For Clearances less than 18 Inches</p>		<p>18 Inches to Combustibles 3 Inches to Limited Combustibles</p>
<p>5.3.6 7.2.1 7.1.7</p>	<p>YES 2009 IMC, 506.3.10.2 2006 UMC, 507.2.3 2008 NFPA 96, 4.3</p>	<p>YES 2009 IMC, 506.3.6 NOTE: UMC &amp; NFPA do not address clearance reduction utilizing flexible wraps</p>	<p>NO <u>All Flexible wrap listings</u> referencing UL 1978 have been withdrawn</p>	<p>YES 2009 IMC, 506.3.6 2006 UMC 507.2.1</p>
<p>Grease Ducts</p>	<p>ASTM E 2336-04 - Standard Test Methods For Fire Resistive Grease Duct Systems The Following ICC-ESR reports are in compliance with ASTM E2336-04 ESR-1255: 3M Fire Barrier 20A ESR-2213: Thermal Ceramics Firemaster FastWrap XL ESR-2832: Thermal Ceramics Pyroscat Duct Wrap XL ESR-2224: Unifrax Fyrewrap Max 2.0 &amp; Fyrewrap Elite 1.5</p>	<p>ASTM E 2336-04 - Standard Test Methods For Fire Resistive Grease Duct Systems All Flexible wrap systems must be in- stalled per their ASTM E 2336-04 listing The Following ICC-ESR reports are in compliance with ASTM E2336-04 ESR-1255: 3M Fire Barrier 20A ESR-2213: Thermal Ceramics Firemaster FastWrap XL ESR-2832: Thermal Ceramics Pyroscat Duct Wrap XL ESR-2224: Unifrax Fyrewrap Max 2.0 &amp; Fyrewrap Elite 1.5</p>	<p>Earlier versions of ICBO, IAPMO, SBCCI BOCA, ICC or other codes that require any materials used to reduce clearances to combustibles be "Listed to a nationally recognized Standard" must now be installed to ASTM E2336-04.</p>	
	<p>\$\$\$</p>	<p>\$\$\$</p>		<p>\$</p>
<p>TIME</p>	<p>Duct - 1 Year Insulation: 90 days - 1 Year</p>	<p>Duct - 1 Year Insulation: 90 days - 1 Year</p>		<p>Duct - 1 Year</p>

## CHART FOR REDUCED CLEARANCES



### 4G 4" Insulation

6" - 38" Diameter - 0"  
40" - 48" Diameter - 1"



### 3G 3" Insulation

6" - 36" Diameter - 0"



### PSW Single Wall

6" - 48" Diameter - 18"



### 2G 2" Insulation

6" - 18" Diameter - 1"  
20" - 32" Diameter - 2"  
34" - 40" Diameter - 3"  
44" - 48" Diameter - 4"



### 1G 1" Insulation

6" Diameter - 2"  
8" - 18" Diameter - 3"  
20" - 32" Diameter - 4"  
34" - 42" Diameter - 5"  
44" - 48" Diameter - 6"



### PIC 1" Air Space

6" - 10" Diameter - 5"  
12" Diameter - 7"  
14" Diameter - 9"  
16" Diameter - 10"  
18" Diameter - 12"  
20" Diameter - 14"  
22" - 48" Diameter - 18"

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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 2006 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.

## STANDARDS/LISTINGS/CLASSIFICATIONS

<b>NFPA 96</b>	Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations
<b>UL1978</b>	Test Standard For Grease Ducts
<b>UL HNOB</b>	Classification for "Grease Duct Assemblies" (Metal-Fab File No. R15388)
<b>UL 2221</b>	Tests of Fire Resistive Duct Enclosure Assemblies
<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 for Building Construction and Materials
<b>ASTM E814</b>	Standard Test Method for Through-Penetration Fire Stops
<b>AC121</b>	ICC-ES Acceptance Criteria For Grease Duct Systems, Self-Enclosed
<b>ICC-ES</b>	Evaluation Report No. ESR-2627*

\* See Evaluation Report for allowable values and/or conditions of use.

## 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 Sites:	<a href="http://www.metal-fabcommercial.com">www.metal-fabcommercial.com</a> / <a href="http://www.greaseduct.com">www.greaseduct.com</a>
Telephone:	316-943-2351
Toll Free Phone:	800-835-2830
Fax:	316-771-4168
E-mail:	<a href="mailto:info@metal-fabinc.com">info@metal-fabinc.com</a>

Complete information for proper and safe installations is found in the Metal-Fab Installation Instructions for each product.

Factory-Built G Series Grease Duct Systems are suitable for venting Type I and Type II kitchen ventilation hoods. G Series systems are manufactured in a controlled environment to exacting standards. No other product has been so thoroughly tested and determined to be in compliance with more codes.

**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.



CODE COMPLIANCE DATA						
PRODUCT MODEL	4G (IPIC-4G)	3G (IPIC-3)	2G (IPIC-2)	1G (IPIC-1)	PIC	PSW
ULFile No. MH25506	X	X	X	X	X	X
NFPA 96	X	X	X	X	X	X
UL 1978	X	X	X	X	X	X
UL HNOB.15388	3 Hr.	2 Hr.				
UL 2221	2 Hr.	2 Hr.				
ASTM E 119-Fire Engulfment	3 Hr.	2 Hr.				
ASTM E 119-Fire Resistance	2 Hr.					
ASTM E814-Fire Stop F&T	3 Hr.	3 Hr.				
ICBO AC121	X					
ICBO ER 5301 / ICC-ES ESR-2627	X					
SBCCI Eval Guide ON Fire Res. Const.	X					
City of New York MEA 86-07-E	X					
City of Los Angeles RR-8441	X					
State of Wisconsin 990074-H	X					

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

TEMPERATURE RATING	
Continuous	500°F (271)
Intermittent	2000°F (1084)

MATERIAL THICKNESS						
Flue	4G	3G	2G	1G	PIC	PSW
6-36 (152-194)	.035 (.9)	.035 (.9)	.035 (.9)	.035 (.9)	.035 (.9)	.035 (.9)
38-48 (965-1219)	.048 (1.2)	N/A	.048 (1.2)	.048 (1.2)	.048 (1.2)	.048 (1.2)
<b>Casing – (Based on Flue Diameter)</b>						
6"-18" (152-457)	.024"(.6)	.024"(.6)	.024"(.6)	.024"(.6)	.024"(.6)	<b>Not Applicable</b>
20"(508)	.034"(.9)	.024"(.6)	.024"(.6)	.024"(.6)	.024"(.6)	
22"(559)	.034"(.9)	.034"(.9)	.024"(.6)	.024"(.6)	.024"(.6)	
24"(610)	.034"(.9)	.034"(.9)	.034"(.9)	.024"(.6)	.024"(.6)	
26"-36" (660-914)	.034"(.9)	N/A	.034"(.9)	.034"(.9)	.034"(.9)	
38"-48" (965-1219)	.034"(.9)	N/A	.034"(.9)	.034"(.9)	.034"(.9)	

INSULATION THICKNESS					
4G	3G	2G	1G	PIC	PSW
4" Ceramic	3" Ceramic	2" Ceramic	1" Ceramic	1" Air Space	None

CASING TEMPERATURE CHART						
500F Operating Temperature						
Temperature Rise Degrees F Above Ambient						
Flue Diameter-Inches	4G	3G	2G	1G	PIC	PSW
6	30	30	64	102	252	N/A
12	38	38	70	109	252	N/A
18	43	43	75	114	252	N/A
24	49	49	78	118	252	N/A
30	58		83	121	252	N/A
36	64		87	126	252	N/A
(Values are approximate)						

## DEFINITIONS - NFPA

**Access Panel.** A closure device used to cover an opening into a duct, an enclosure, equipment or an appurtenance.

**Authority Having Jurisdiction (AHJ).** An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

**Classified.** Products or materials of a specific group category that are constructed, inspected, tested and subsequently reinspected in accordance with an established set of requirements. The classification process is performed by an organization acceptable to the authority having jurisdiction.

**Combustible Material.** A material capable of undergoing combustion.

**Continuous Enclosure.** A recognized architectural or mechanical component of a building having a fire resistance rating as required for the structure and whose purpose is to enclose the vapor removal duct for its full length to its termination point outside the structure without any portion of the enclosure having a fire resistance rating less than the required value.

**Continuous Weld.** A metal-joining method that produces a product without visible interruption or variation in quality.

**Factory-Built Grease Duct Enclosures.** A listed factory-built grease duct system evaluated as an enclosure system for reduced clearances to combustibles and as an alternative to a duct with its fire-rated enclosure.

**Field-Applied Grease Duct Enclosure.** A listed system evaluated for reduced clearances to combustibles and as an alternative to a duct with its fire-rated enclosure.

**Grease.** Rendered animal fat, vegetable shortening, and other such oily matter used for the purposes of and resulting from cooking and/or preparing foods.

**Grease Ducts.** A containment system for the transportation of air and grease vapors that is designed and installed to reduce the possibility of the accumulation of combustible condensation and the occurrence of damage if a fire occurs within the system.

**Grease-Tight.** Constructed and performing in such a manner as not to permit the passage of any grease under normal cooking conditions.

**Hood.** A device provided for a cooking appliance(s) to direct and capture grease-laden vapors and exhaust gases.

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

## DEFINITIONS (CONTINUED)

**Listed Equipment.** Materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with 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 appropriate designated standards or has been tested and found suitable for a specified purpose.

**Noncombustible Material.** A material not capable of supporting combustion.

**Standard.** A document, the main text of which contains only mandatory provisions using the word "shall" to indicate requirements and which is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions shall be located in an appendix or annex, footnote, or fine-print note and are not to be considered a part of the requirements of a standard.

## CLEARANCES

**NOTE:** All clearances shown in this table comply with UL listings and classifications.

UL Listed/Classified Grease Duct Clearance to Combustibles						
Inside Duct Diameters	Models					
	4G	3G	2G	1G	PIC	PSW
6" (152)	0"	0"	1" (25)	2" (51)	5" (127)	18" (457)
8" (203)	0"	0"	1" (25)	3" (76)	5" (127)	18" (457)
10" (250)	0"	0"	1" (25)	3" (76)	5" (127)	18" (457)
12" (305)	0"	0"	1" (25)	3" (76)	7" (178)	18" (457)
14" (356)	0"	0"	1" (25)	3" (76)	9" (229)	18" (457)
16" (406)	0"	0"	1" (25)	3" (76)	10" (250)	18" (457)
18" (457)	0"	0"	1" (25)	3" (76)	12" (305)	18" (457)
20" (508)	0"	0"	2" (51)	4" (102)	14" (356)	18" (457)
22"-24" (559-610)	0"	0"	2" (51)	4" (102)	18" (457)	18" (457)
26"-32" (660-813)	0"	N/A	2" (51)	4" (102)	18" (457)	18" (457)
34"-38" (864-914)	0"	N/A	3" (76)	5" (127)	18" (457)	18" (457)
40"-42" (965-1067)	1" (25)	N/A	3" (76)	5" (127)	18" (457)	18" (457)
44"-48" (1118-1219)	1" (25)	N/A	4" (102)	6" (152)	18" (457)	18" (457)

**Clearance to Non-Combustibles:** 0", all products

## DESIGN CONSIDERATIONS

**NFPA 96** requires provisions for inspection of, and access for, cleaning of grease ducts. Openings are to be located on the top or side of the duct at changes of direction, to access and inspect fire suppression components within the duct, within 3 ft. of the inlet and outlet of any inline fan. Horizontal portions of ducts 20 inches by 20 inches or larger shall provide at least one opening for personnel entry. Smaller horizontal ducts shall provide openings large enough for cleaning at 12 ft. intervals. Refer to NFPA 96, section 7 for complete information.

**Duct Slope.** Nationally recognized codes require horizontal ducts to slope at a minimum of 1/4 unit vertical in 12 units of horizontal toward the hood or grease reservoir. In addition, where horizontal ducts exceed 75 feet in length, the slope shall not be less than one unit vertical in 12 units horizontal. This general rule for duct slope is prescribed for grease ducts that are not listed and/or evaluated by an accredited third body testing agency. For factory-built grease ducts that are listed to UL1978 and have been further tested and/or analyzed to provide equivalent or better flow characteristics as compared to field-installed grease ducts, reduce duct slope is allowed per the factory-built grease duct listing.

For Metal-Fab factory built grease ducts listed to UL1978, install at a duct slope not less than 1/16 unit vertical slope in 12 units of horizontal toward the hood or toward the grease reservoir. Where Metal-Fab grease ducts listed to UL1978 exceed 75 feet in length, the slope shall not be less than 1/4 unit vertical slope in 12 units horizontal. This minimum slope is a result of tests and analysis performed by Underwriters Laboratories, where factory-built grease duct was compared to rectangular field-applied grease duct for performance of flow characteristics. Consult with AHJ for acceptance of this alternate method.

## DESIGN CONSIDERATIONS (CONTINUED)

**Thermal Expansion.** A change in temperature within a duct system, site-built or factory-built, causes thermal expansion of the duct. For example, when a grease duct temperature increases from ambient to a normal operating temperature of 75°F plus ambient, the duct expands 0.375 inches per 50 feet of duct length. Greater expansion and contraction under normal operating temperatures can fatigue welds causing leakage. If expansion is computed to exceed 0.375 inches between changes of direction or rigid supports, an Adjustable length (AL) should be installed.

The formula for computing expansion is:

$$[\text{Length (feet)/100}] \times [\text{Temperature Rise (°F) /100}]$$

$$\text{Example: } 50/100 \times 75^\circ\text{F}/100 = 0.375 \text{ inches}$$

## SUPPORT DATA

SUPPORTS - VERTICAL		Maximum Supported Height				
PRODUCT	4G	3G	2G	1G	PIC	PSW
Plate Support (PS)	73' (22.3m)	73' (22.3m)	75' (22.9m)	85' (25.9m)	100' (30.5m)	100' (30.5m)
Roof Support Assembly (RSA)	22' (6.7m)	22' (6.7m)	22' (6.7m)	25' (7.6m)	30' (9.1m)	30' (9.1m)
Wall Support (WS)	29' (8.8m)	29' (8.8m)	30' (9.1m)	34' (10.4m)	40' (12.2m)	40' (12.2m)
Stack Support Assembly (SSA)	100' (30.5m)	100' (30.5m)	100' (30.5m)	100' (30.5m)	100' (30.5m)	100' (30.5m)
Pier or Structural Support	73' (22.3m)	73' (22.3m)	75' (22.9m)	85' (25.9m)	100' (30.5m)	100' (30.5m)

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

Maximum installed height is 200'.

GUIDES - HORIZONTAL		Maximum Spacing-Horizontal				
(See Components Section for guide selection)						
PRODUCT	4G	3G	2G	1G	PIC	PSW
Component Choices:						
Half Angle Ring (HAR)	9' (2.7m)	9' (2.7m)	9' (2.7m)	10' (3.1m)	12' 6" (3.8m)	12' 6" (3.8m)
Full Angle Ring (FAR)	9' (2.7m)	9' (2.7m)	9' (2.7m)	10' (3.1m)	12' 6" (3.8m)	12' 6" (3.8m)
Plate Support (PS)	9' (2.7m)	9' (2.7m)	9' (2.7m)	10' (3.1m)	12' 6" (3.8m)	12' 6" (3.8m)

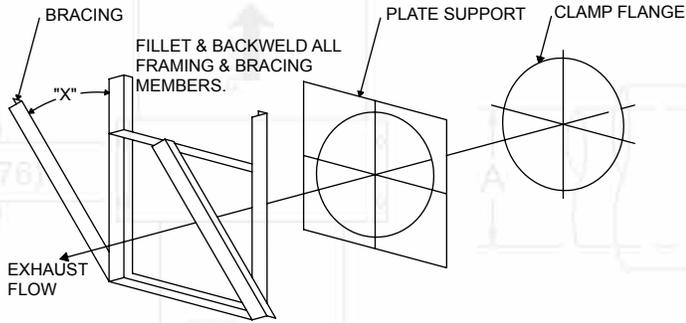
GUIDES - VERTICAL		Maximum Spacing-Vertical / OUTSIDE – Adjacent to Structure				
(See Components Section for guide selection)						
Flue Diameter - Inches	4G	3G	2G	1G	PIC	PSW
6	8' 3" (2.5m)	9' 4" (2.7m)	10' 6" (3.2m)	17' (5.2m)	17' (5.2m)	17' (5.2m)
8	9' 7" (2.9m)	10' 9" (3.3m)	12' (3.7m)	17' 6" (5.3m)	17' 6" (5.3m)	17' 6" (5.3m)
10	10' 9" (3.3m)	12' (3.7m)	13' 3" (4.0m)	18' 6" (5.6m)	18' 6" (5.6m)	18' 6" (5.6m)
12	11' 11" (3.6m)	13' 2" (4.0m)	14' 6" (4.4m)	20' (6.1m)	20' (6.1m)	20' (6.1m)
14	13' 2" (4.0m)	14' 6" (4.4m)	15' 11" (4.8m)	21' (6.4m)	21' (6.4m)	21' (6.4m)
16	14' 2" (4.3m)	15' 7" (4.7m)	17' (5.2m)	22' (6.7m)	22' (6.7m)	22' (6.7m)
18	15' 4" (4.7m)	16' 9" (5.1m)	18' 3" (5.6m)	23' (7.0m)	23' (7.0m)	23' (7.0m)
20	16' 4" (5.0m)	17' 11" (5.5m)	19' 6" (5.9m)	24' (7.3m)	24' (7.3m)	24' (7.3m)
22	17' (5.2m)	18' 7" (5.7m)	20' 2" (6.2m)	24' 6" (7.5m)	24' 6" (7.5m)	24' 6" (7.5m)
24	17' 7" (5.4m)	19' 2" (5.8m)	20' 9" (6.3m)	25' (7.6m)	25' (7.6m)	25' (7.6m)
26	18' 2" (5.5m)	18' 2" (5.5m)	21' 5" (6.5m)	26' (7.9m)	26' (7.9m)	26' (7.9m)
28	18' 9" (5.7m)	18' 9" (5.7m)	22' 1" (6.9m)	27' (8.2m)	27' (8.2m)	27' (8.2m)
30	19' 4" (5.9m)	19' 4" (5.9m)	22' 8" (7.1m)	27' (8.2m)	27' (8.2m)	27' (8.2m)
32	19' 11" (6.0m)	19' 11" (6.0m)	23' 4" (7.3m)	28' 6" (8.7m)	28' 6" (8.7m)	28' 6" (8.7m)
34	20' 6" (6.2m)	20' 6" (6.2m)	24' (7.5m)	29' (8.9m)	29' (8.9m)	29' (8.9m)
36	21' (6.4m)	21' (6.4m)	24' 7" (7.5m)	30' (9.1m)	30' (9.1m)	30' (9.1m)
38	21' (6.4m)	N/A	24' 7" (7.5m)	30' 6" (9.3m)	30' 6" (9.3m)	30' 6" (9.3m)
40	21' (6.4m)	N/A	24' 7" (7.5m)	31' (9.4m)	31' (9.4m)	31' (9.4m)
42	21' (6.4m)	N/A	24' 7" (7.5m)	32' (9.8m)	32' (9.8m)	32' (9.8m)
44	21' (6.4m)	N/A	24' 7" (7.5m)	32' 6" (9.9m)	32' 6" (9.9m)	32' 6" (9.9m)
46	21' (6.4m)	N/A	24' 7" (7.5m)	33' 6" (10.2m)	33' 6" (10.2m)	33' 6" (10.2m)
48	21' (6.4m)	N/A	24' 7" (7.5m)	34' 6" (10.5m)	34' 6" (10.5m)	34' 6" (10.5m)

GUIDES - VERTICAL		Max. Vertical Spacing-VERTICAL / INTERNAL				
Below Roofline						
(See Components Section for guide selection)						
PRODUCT	4G*	3G	2G	1G	PIC	PSW
All Diameters – Full Angle Ring	18' (5.5m)	18' (5.5m)	19' (5.7m)	21' (6.4m)	25' (7.6m)	25' (7.6m)

\*Per ICBO-ES Report ER5301/ICC-EESR-2627, spacing is reduced to 13' for 3G/4G.

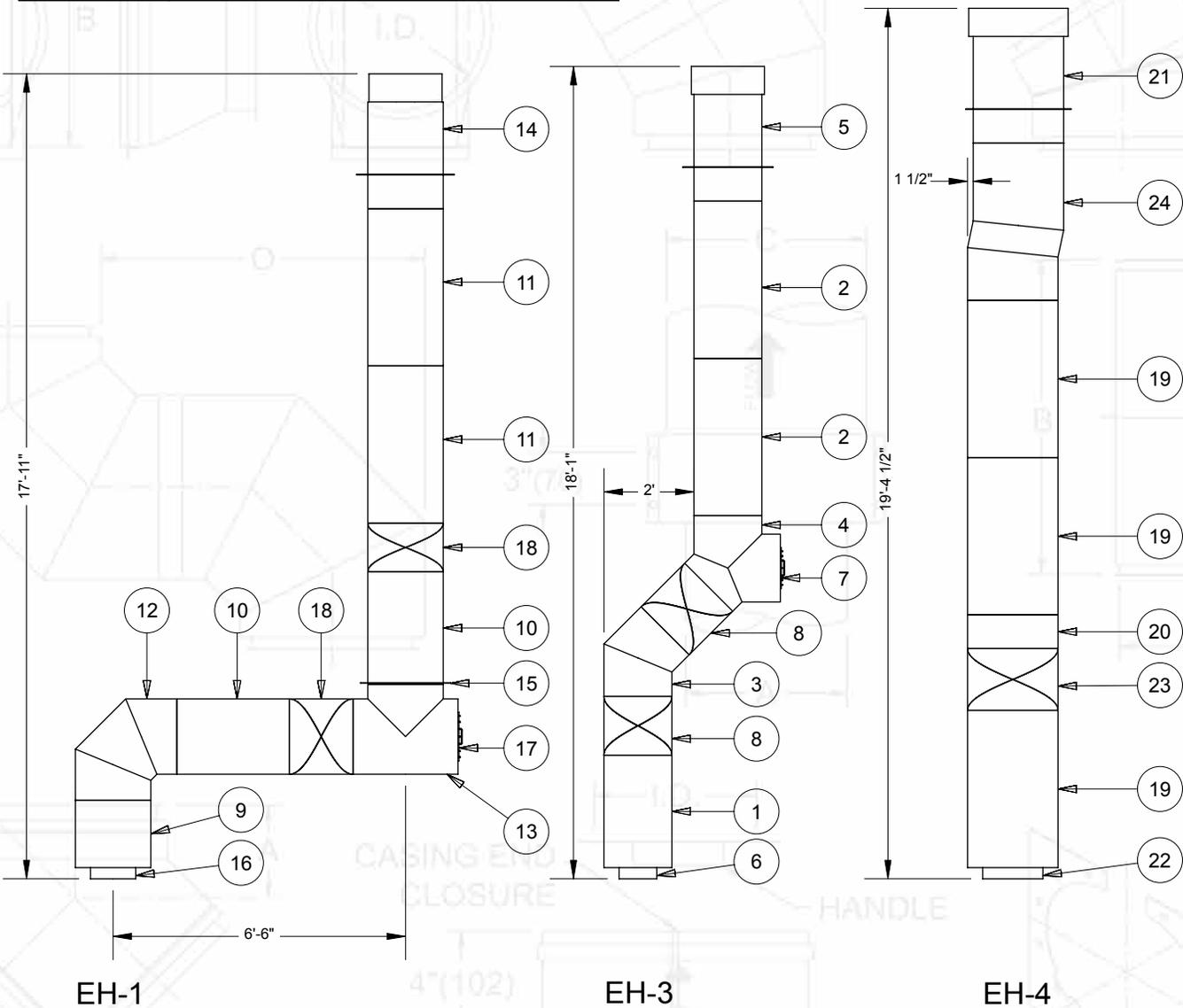
# METAL-FAB GENERATED CAD

## SUGGESTED BRACING FOR PLATE SUPPORT BY OTHERS.



"X" IS A MIN. OF 30 DEG. WHEN BRACING IS USED. A WELDED FRAME MUST BE ADEQUATELY ATTACHED TO STRUCTURAL MEMBER FOR FRAMEWORK RIGIDITY, IF BRACING ISN'T USED.

DIAMETER OF PIPE	PIC PS PLATE THICKNESS	BRACING FOR PIC PLATE SUPPORT HEIGHT OF STACK.	
		50'	100'
6" - 20"	3/16"	1 1/4" X 1 1/4" X 1/8"	2" X 2" X 1/4"
22" - 36"	1/4"	2" X 2" X 1/8"	3" X 3" X 1/4"
38" - 48"	1/4"	3" CHANNEL (3" X 1 1/2" X 1/4")	
DIAMETER OF PIPE	PIC PS PLATE THICKNESS	FRAMEWORK FOR PIC PLATE SUPPORT HEIGHT OF STACK.	
		50'	100'
6" - 20"	3/16"	1 3/4" X 1 3/4" X 1/8"	3" X 2" X 3/16"
22" - 36"	1/4"	2" X 2" X 1/4"	4" X 3" X 1/4"
38" - 48"	1/4"	3" CHANNEL (3" X 1 1/2" X 1/4")	

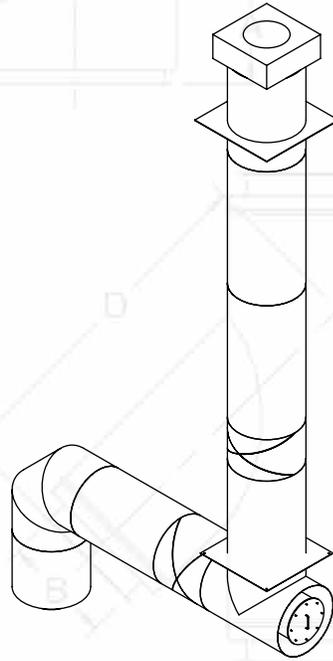


EH-1

EH-3

EH-4

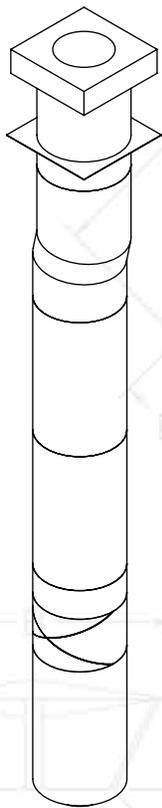
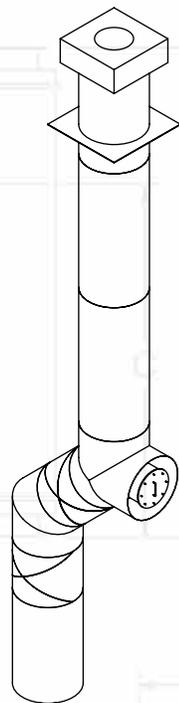
**INCLUDES BILL OF MATERIALS AND ISOMETRIC ILLUS.**



Parts List				
ITEM #	QTY	PART NUMBER	CTO	DESCRIPTION
1	1	10PIC30-4	4AG	PIPE LENGTH
2	2	10PIC42-4	4AG	PIPE LENGTH
3	1	10PIC45L-4	4AG	45 DEG ELBOW
4	1	10PIC90Y-4	4AG	90 DEG WYE
5	1	10PICFCT195	4AG	FAN CURB TERMINATION
6	1	10PICRHCK-4	4AG	ROUND HOOD COLLAR KIT
7	1	10PICTAP-4	4AG	TOOLESS ACCESS PANEL
8	2	10PICVL-4	4AG	VARIABLE LENGTH
9	1	12PIC18-4	4AG	PIPE LENGTH
10	2	12PIC30-4	4AG	PIPE LENGTH
11	2	12PIC42-4	4AG	PIPE LENGTH
12	1	12PIC90L-4	4AG	90 DEG ELBOW
13	1	12PIC90MT-4	4AG	90 DEG MANIFOLD TEE
14	1	12PICFCT195	4AG	FAN CURB TERMINATION
15	1	12PICPS-4	4AG	PLATE SUPPORT
16	1	12PICRHCK-4	4AG	ROUND HOOD COLLAR KIT
17	1	12PICTAP-4	4AG	TOOLESS ACCESS PANEL
18	2	12PICVL-4	4AG	VARIABLE LENGTH
19	3	16PIC42-4	4AG	PIPE LENGTH
20	1	16PIC9-4	4AG	PIPE LENGTH
21	1	16PICFCT265	4AG	FAN CURB TERMINATION
22	1	16PICRHCK-4	4AG	ROUND HOOD COLLAR KIT
23	1	16PICVL-4	4AG	VARIABLE LENGTH
24	1	16PICVOK-4	4AG	VARIABLE OFFSET KIT
	7	P080		GREASE DUCT SEALANT

**NOTES:**

1. MATERIALS: (CTO: 4AG) 304 S.S INNER/ ALUMINIZED OUTER/ 4" INSULATION.
2. ALL ADDITIONAL SUPPORTS BY OTHERS.



BASED ON INFORMATION PROVIDED, METAL-FAB INC. HAS CREATED THIS DRAWING FOR YOUR REVIEW.

THIS DRAWING IS PROVIDED FOR YOUR CONVENIENCE. METAL-FAB INC. ASSUMES NO LIABILITY FOR ACCURACY WITHOUT YOUR APPROVAL.

YOUR REVIEW AND APPROVAL ASSURES THAT THE INFORMATION PROVIDED IS CORRECT AND THAT ALL MATERIAL DETAILED ON THE BILL-OF-MATERIALS REPRESENT ALL COMPONENTS REQUIRED TO COMPLETE THE INSTALLATION.

APPROVED:

SPECIFYING ENGINEER \_\_\_\_\_

INSTALLING CONTRACTOR \_\_\_\_\_

METAL-FAB INC. REP. \_\_\_\_\_

DATE \_\_\_\_\_

THE SUBMITTAL DRAWING HAS BEEN PREPARED AT THE REQUEST OF A METAL-FAB REPRESENTATIVE. IT IS THE RESPONSIBILITY OF THE SPECIFYING ENGINEER OR END USER TO ASSURE COMPLIANCE WITH LOCAL CODES.

JOB: <b>GREASE DUCT</b>			
DATE: 11/13/2008	SHEET SIZE: B	DRAWN BY: BUTCHA	DRAWING NUMBER: S7977P145
REVISION:		<b>METAL-FAB</b> INC.	
SHEET:			

## 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	2G = 1.05
PIC = 0.80	3G = 1.45
1G = 0.95	4G = 1.45

Example: 8"1G Weight calculated: 8 x 0.95 = 7.6 lbs. per lineal foot.

## STACK LIFT CHART

This chart indicates maximum height that can be suspended from overhead.

	PSW	PIC	1G	2G	3G	4G
PIPE DIA.	Height	Height	Height	Height	Height	Height
6" (152mm)	220' (67m)	110' (34m)	90' (27m)	80' (24m)	60' (18m)	60' (18m)
8" (203mm)	190' (59m)	90' (27m)	80' (24m)	70' (21m)	50' (15m)	50' (15m)
10" (254mm)	170' (52m)	80' (24m)	70' (21m)	60' (18m)	40' (12m)	40' (12m)
12" (305mm)	150' (46m)	80' (24m)	70' (21m)	60' (18m)	40' (12m)	40' (12m)
14" (356mm)	140' (43m)	70' (21m)	60' (18m)	50' (15m)	40' (12m)	40' (12m)
16" (406mm)	130' (40m)	70' (21m)	60' (18m)	50' (15m)	40' (12m)	40' (12m)
18" (457mm)	120' (37m)	60' (18m)	50' (15m)	50' (15m)	40' (12m)	40' (12m)
20" (508mm)	110' (34m)	60' (18m)	50' (15m)	40' (12m)	30' (9m)	30' (9m)
22" (559mm)	110' (34m)	50' (15m)	40' (12m)	40' (12m)	30' (9m)	30' (9m)
24" (610mm)	100' (30m)	50' (15m)	40' (12m)	40' (12m)	30' (9m)	30' (9m)
26" (660mm)	90' (27m)	50' (15m)	40' (12m)	40' (12m)	30' (9m)	30' (9m)
28" (711mm)	90' (27m)	40' (12m)	40' (12m)	30' (9m)	20' (6m)	20' (6m)
30" (762mm)	80' (24m)	40' (12m)	40' (12m)	30' (9m)	20' (6m)	20' (6m)
32" (813mm)	80' (24m)	40' (12m)	30' (9m)	30' (9m)	20' (6m)	20' (6m)
34" (864mm)	70' (21m)	40' (12m)	30' (9m)	20' (6m)	20' (6m)	20' (6m)
36" (914mm)	70' (21m)	30' (9m)	30' (9m)	20' (6m)	15' (4.5m)	15' (4.5m)
38" (965mm)	60' (18m)	30' (9m)	20' (6m)	20' (6m)	N/A	15' (4.5m)
40" (1016mm)	60' (18m)	30' (9m)	20' (6m)	20' (6m)	N/A	15' (4.5m)
42" (1067mm)	60' (18m)	30' (9m)	20' (6m)	20' (6m)	N/A	15' (4.5m)
44" (1118mm)	60' (18m)	30' (9m)	20' (6m)	20' (6m)	N/A	15' (4.5m)
46" (1168mm)	50' (15m)	20' (6m)	20' (6m)	20' (6m)	N/A	10' (3m)
48" (1219mm)	50' (15m)	20' (6m)	20' (6m)	20' (6m)	N/A	10' (3m)

## COMPONENTS

Components are identified by Part number and CTO (Configured To Order) code. The part number identifies the flue diameter and the component. EXAMPLE: 24PIC30L = 24 diameter-30 degree Elbow. The CTO code indicates materials and insulation thickness. EXAMPLE: 4A2 = 304 Stainless Steel Flue, Aluminized Steel Casing, and 2 inches of ceramic insulation. See the table below for CTO options.

CTO CODES		
First Position (Flue Material)	Second Position (Casing Material)	Third Position (Insulation)
3 = 430 S/S	A = ALUMINIZED STEEL	0 = 1" AIRSPACE
4 = 304 S/S	4 = 304 S/S	1 = 1" CERAMIC
6 = 316 S/S	6 = 316 S/S	2 = 2" CERAMIC
	3 = 430 S/S	3 = 3" CERAMIC
		4 = 4" CERAMIC

### ROUND HOOD COLLAR (RHC)

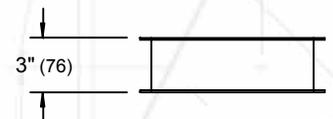
Available in 8" to 18" dia. (Other diameters are custom.)

Height: 3"

**NOTE:** Can be field welded to Hood or supplied to Hood manufacturer for installation.

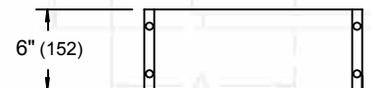
**NOTE:** Confirm dimensions with Hood manufacturer.

**NOTE:** Requires Round Hood Connection Kit to complete installation.



### ROUND HOOD CONNECTION KIT (RHCK)

**NOTE:** Required for Round Hood Collar (RHC). Enclose Round Hood Collar and connect first pipe section to collar.



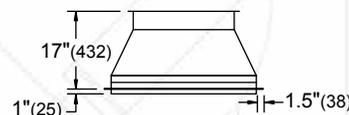
### SQUARE TO ROUND (STR)

**NOTE:** Specify dimensional data at order entry.

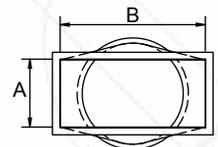
U.L. listed.



TOP VIEW



FRONT VIEW

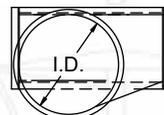


BOTTOM VIEW

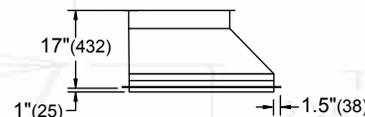
### ECCENTRIC SQUARE TO ROUND (ESTR) (CUSTOM PART)

**NOTE:** Specify dimensional data at order entry.

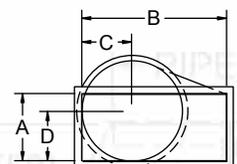
U.L. listed.



TOP VIEW



FRONT VIEW



BOTTOM VIEW

# COMPONENTS

## PIPE LENGTHS

- 9" (229)
- 18" (458)
- 30" (762)
- 42" (1067)

Flow Resistance  $K = .4 \left(\frac{L}{D}\right)$  for 6"(152) - 16"(606) diameters

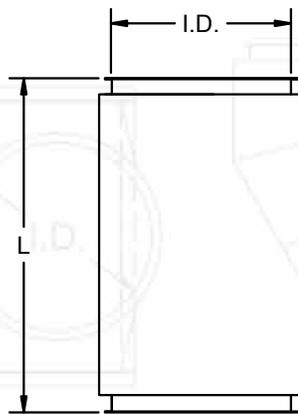
Flow Resistance  $K = .3 \left(\frac{L}{D}\right)$  for 18"(458) - 48"(1219) diameters

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

L = pipe length in feet

D = pipe diameter in inches

**NOTE:** Custom lengths available, contact factory.  
3G only available through 24" I.D.



PIPE I.D.	PIPE O.D.			
	PSW	1G	2G	3G
6" (153)	8" (204)	10" (254)	12" (305)	14" (356)
8" (204)	10" (254)	12" (305)	14" (356)	16" (407)
10" (254)	12" (305)	14" (356)	16" (407)	18" (458)
12" (305)	14" (356)	16" (407)	18" (458)	20" (508)
14" (356)	16" (407)	18" (458)	20" (508)	22" (559)
16" (407)	18" (458)	20" (508)	22" (559)	24" (610)
18" (458)	20" (508)	22" (559)	24" (610)	26" (661)
20" (508)	22" (559)	24" (610)	26" (661)	28" (712)
22" (559)	24" (610)	26" (661)	28" (712)	30" (762)
24" (610)	26" (661)	28" (712)	30" (762)	32" (813)
26" (661)	28" (712)	30" (762)	32" (813)	34" (864)
28" (712)	30" (762)	32" (813)	34" (864)	36" (915)
30" (762)	32" (813)	34" (864)	36" (915)	38" (966)
32" (813)	34" (864)	36" (915)	38" (966)	40" (1016)
34" (864)	36" (915)	38" (966)	40" (1016)	42" (1067)
36" (915)	38" (966)	40" (1016)	42" (1067)	44" (1118)
38" (966)	40" (1016)	42" (1067)	N/A	46" (1169)
40" (1016)	42" (1067)	44" (1118)	N/A	48" (1220)
42" (1067)	44" (1118)	46" (1169)	N/A	50" (1270)
44" (1118)	46" (1169)	48" (1220)	N/A	52" (1321)
46" (1169)	48" (1220)	50" (1270)	N/A	54" (1372)
48" (1220)	50" (1270)	52" (1321)	N/A	56" (1423)

## ADJUSTABLE LENGTH EXPANSION JOINT (AL)

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

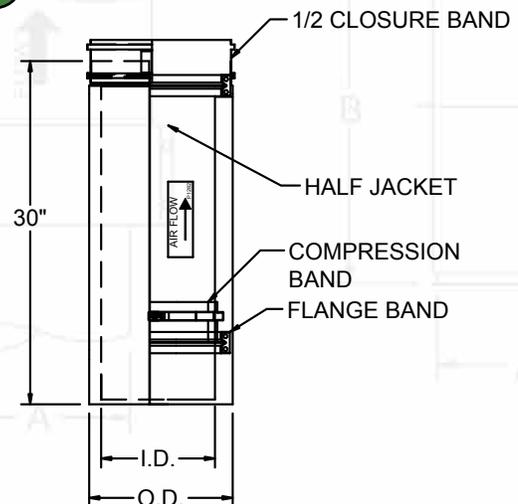
**NOTE:** This part can be field adjusted to fill gaps between standard length components or to compensate for thermal expansion and contraction between two fixed points.

### INSTALLED LENGTH

Minimum: 5 1/2" (140)

Maximum: 22" (559)

**NOTE:** Do not install within 8' downstream of clean out location.



# COMPONENTS

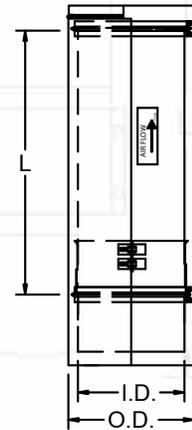
## VARIABLE LENGTH (VL)

Flow Resistance  $K = .4(\frac{L}{D})$   
 L = pipe length in feet  
 D = flue diameter

**NOTE:** Used to fill gaps between standard length components.  
 Does not allow for expansion.

### INSTALLED LENGTH

Minimum: **4"** (140)  
 Maximum: **26"** (559)

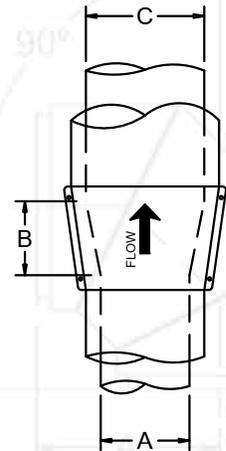


## TAPERED INCREASER (TI)

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

**NOTE:** For each 2" increase in diameter, the "B" length increases by 5". Minimum Length is 10". Tapered increasers are preferred over step increasers when space permits.

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



## ECCENTRIC TAPERED INCREASER (ETI)

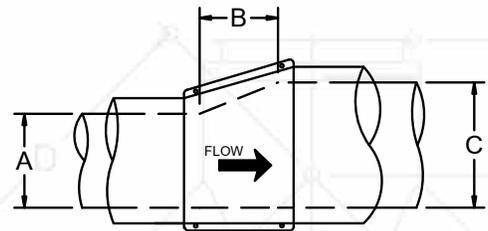
Flow Resistance  $K = .51 \frac{[1 - (\frac{A}{C})]^2}{(\frac{A}{C})^4}$

**NOTE:** The number of steps is determined by the number of pipe sizes the tapered increaser enlarges.

Each step increases "B" dimension 5" (127).

Tapered increasers are preferred over step increasers when space permits.

**NOTE:** When ordering, specify both diameters with small diameter first (ie. 18PICETI22 for 18" to 22")  
 For each 2" increase in diameter, the "B" Length increases by 5". Minimum Length is 10".

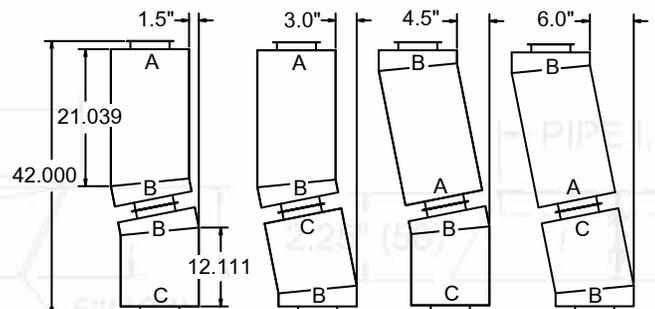


## VARIABLE OFFSET KIT (VOK)

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

ENDS JOINED	OFFSET
B-B	1.5"
B-C	3.0"
A-B	4.5"
A-C	6.0"

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



# COMPONENTS

## 15° ELBOW (15L)

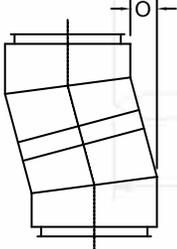
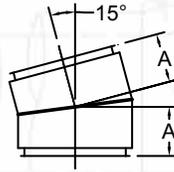
Flow Resistance  $K = 0.06$

Offset Distance:

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

Offset distance between 2 elbows with a straight length between is:

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



PIPE I.D.	A			
	PSW / PIC / 1G	2G	3G	4G
6" (153)	6.00 (153)	6.00 (153)	6.00 (153)	6.00 (153)
8" (204)	6.00 (153)	6.00 (153)	6.00 (153)	7.75 (197)
10" (254)	6.00 (153)	6.00 (153)	7.75 (197)	7.75 (197)
12" (305)	6.00 (153)	7.75 (197)	7.75 (197)	7.75 (197)
14" (356)	7.75 (197)	7.75 (197)	7.75 (197)	7.75 (197)
16" (407)	7.75 (197)	7.75 (197)	7.75 (197)	7.75 (197)

PIPE I.D.	A			
	PSW / PIC / 1G	2G	3G	4G
18" (458)	7.75 (197)	7.75 (197)	7.75 (197)	7.75 (197)
20" (508)	7.75 (197)	7.75 (197)	7.75 (197)	7.75 (197)
22" (559)	7.75 (197)	7.75 (197)	8.50 (216)	8.50 (216)
24" (610)	7.75 (197)	8.50 (216)	8.50 (216)	8.50 (216)
26" (661)	8.50 (216)	8.50 (216)	8.50 (216)	8.50 (216)
28" (712)	8.50 (216)	8.50 (216)	8.50 (216)	8.50 (216)
30" (762)	8.50 (216)	8.50 (216)	8.50 (216)	8.50 (216)
32" (813)	8.50 (216)	8.50 (216)	8.50 (216)	11.00 (280)
34" (864)	8.50 (216)	8.50 (216)	8.50 (216)	11.00 (280)
36" (915)	8.50 (216)	11.00 (280)	11.00 (280)	11.00 (280)
38" (966)	11.00 (280)	11.00 (280)	N/A	11.00 (280)
40" (1016)	11.00 (280)	11.00 (280)	N/A	11.00 (280)
42" (1067)	11.00 (280)	11.00 (280)	N/A	11.00 (280)
44" (1118)	11.00 (280)	11.00 (280)	N/A	12.75 (324)
46" (1169)	11.00 (280)	11.00 (280)	N/A	12.75 (324)
48" (1220)	11.00 (280)	12.75 (324)	N/A	12.75 (324)

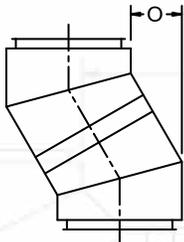
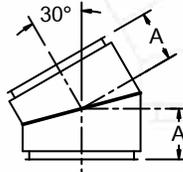
## 30° ELBOW (30L)

Flow Resistance  $K = 0.12$

Offset Distance = "A"

Offset distance between 2 elbows with a straight length between is:

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



PIPE I.D.	A			
	PSW / PIC / 1G	2G	3G	4G
6" (153)	6.00 (153)	6.00 (153)	6.00 (153)	6.00 (153)
8" (204)	6.00 (153)	6.00 (153)	6.00 (153)	7.75 (197)
10" (254)	6.00 (153)	6.00 (153)	7.75 (197)	7.75 (197)
12" (305)	6.00 (153)	7.75 (197)	7.75 (197)	7.75 (197)
14" (356)	7.75 (197)	7.75 (197)	7.75 (197)	7.75 (197)
16" (407)	7.75 (197)	7.75 (197)	7.75 (197)	7.75 (197)

PIPE I.D.	A			
	PSW / PIC / 1G	2G	3G	4G
18" (458)	7.75 (197)	7.75 (197)	7.75 (197)	7.75 (197)
20" (508)	7.75 (197)	7.75 (197)	7.75 (197)	8.50 (216)
22" (559)	7.75 (197)	7.75 (197)	8.50 (216)	8.50 (216)
24" (610)	7.75 (197)	8.50 (216)	8.50 (216)	8.50 (216)
26" (661)	8.50 (216)	8.50 (216)	8.50 (216)	8.50 (216)
28" (712)	8.50 (216)	8.50 (216)	8.50 (216)	8.50 (216)
30" (762)	8.50 (216)	8.50 (216)	8.50 (216)	8.50 (216)
32" (813)	8.50 (216)	8.50 (216)	8.50 (216)	11.00 (280)
34" (864)	8.50 (216)	8.50 (216)	11.00 (280)	11.00 (280)
36" (915)	8.50 (216)	11.00 (280)	11.00 (280)	11.00 (280)
38" (966)	11.00 (280)	11.00 (280)	N/A	11.00 (280)
40" (1016)	11.00 (280)	11.00 (280)	N/A	11.00 (280)
42" (1067)	11.00 (280)	11.00 (280)	N/A	11.00 (280)
44" (1118)	11.00 (280)	11.00 (280)	N/A	11.00 (280)
46" (1169)	11.00 (280)	11.00 (280)	N/A	11.00 (280)
48" (1220)	11.00 (280)	11.00 (280)	N/A	11.00 (280)

## 45° ELBOW (45L)

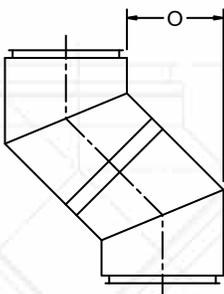
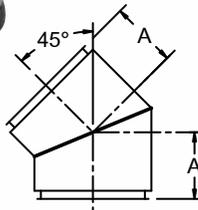
Flow Resistance  $K = 0.15$

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 / 1G	2G	3G	4G
6" (153)	7.00 (178)	7.00 (178)	7.00 (178)	7.00 (178)
8" (204)	7.00 (178)	7.00 (178)	7.00 (178)	10.00 (254)
10" (254)	7.00 (178)	7.00 (178)	10.00 (254)	10.25 (261)
12" (305)	7.00 (178)	10.00 (254)	10.25 (261)	10.25 (261)
14" (356)	10.00 (254)	10.25 (261)	10.25 (261)	10.25 (261)
16" (407)	10.25 (261)	10.25 (261)	10.25 (261)	10.25 (261)

PIPE I.D.	A			
	PSW / PIC / 1G	2G	3G	4G
18" (458)	10.25 (261)	10.25 (261)	10.25 (261)	10.25 (261)
20" (508)	10.25 (261)	10.25 (261)	10.25 (261)	11.75 (299)
22" (559)	10.25 (261)	10.25 (261)	11.75 (299)	11.75 (299)
24" (610)	10.25 (261)	11.75 (299)	11.75 (299)	11.75 (299)
26" (661)	11.75 (299)	11.75 (299)	11.75 (299)	11.75 (299)
28" (712)	11.75 (299)	11.75 (299)	11.75 (299)	11.75 (299)
30" (762)	11.75 (299)	11.75 (299)	11.75 (299)	11.75 (299)
32" (813)	11.75 (299)	11.75 (299)	11.75 (299)	14.00 (356)
34" (864)	11.75 (299)	11.75 (299)	11.75 (299)	14.00 (356)
36" (915)	11.75 (299)	14.00 (356)	11.75 (299)	14.00 (356)
38" (966)	14.00 (356)	14.00 (356)	N/A	14.00 (356)
40" (1016)	14.00 (356)	14.00 (356)	N/A	14.00 (356)
42" (1067)	14.00 (356)	14.00 (356)	N/A	14.00 (356)
44" (1118)	14.00 (356)	14.00 (356)	N/A	15.25 (387)
46" (1169)	14.00 (356)	14.00 (356)	N/A	15.25 (387)
48" (1220)	14.00 (356)	15.25 (387)	N/A	15.25 (387)

# COMPONENTS

## 90° ELBOW (90L)

Flow Resistance K:

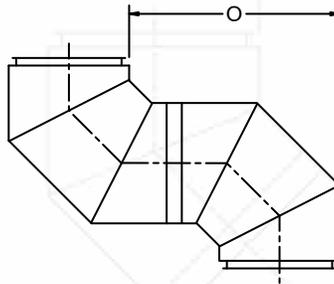
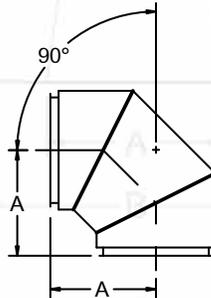
- 6" - 8" = 0.38
- 10" - 18" = 0.42
- 20" - 26" = 0.54
- 28" - 36" = 0.72
- 38" - 48" = 0.72

Offset Distance:

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

Offset Distance with pipe length between elbows:

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

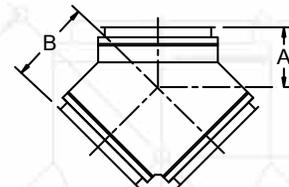


PIPE I.D.	A			
	PSW / PIC / 1G	2G	3G	4G
6" (153)	11" (280)	12" (305)	13" (331)	14" (356)
8" (204)	12" (305)	13" (331)	14" (356)	15" (381)
10" (254)	13" (331)	14" (356)	15" (381)	16" (407)
12" (305)	14" (356)	15" (381)	16" (407)	17" (432)
14" (356)	15" (381)	16" (407)	17" (432)	18" (458)
16" (407)	16" (407)	17" (432)	18" (458)	19" (483)
18" (458)	17" (432)	18" (458)	19" (483)	20" (508)
20" (508)	18" (458)	19" (483)	20" (508)	21" (534)
22" (559)	19" (483)	20" (508)	21" (534)	22" (559)
24" (610)	20" (508)	21" (534)	22" (559)	23" (585)
26" (661)	21" (534)	22" (559)	23" (585)	24" (610)
28" (712)	22" (559)	23" (585)	24" (610)	25" (635)
30" (762)	23" (585)	24" (610)	25" (635)	26" (661)
32" (813)	24" (610)	25" (635)	26" (661)	27" (686)
34" (864)	25" (635)	26" (661)	27" (686)	28" (712)
36" (915)	26" (661)	27" (686)	28" (712)	29" (737)
38" (966)	27" (686)	28" (712)	N/A	30" (762)
40" (1016)	28" (712)	29" (737)	N/A	31" (788)
42" (1067)	29" (737)	30" (762)	N/A	32" (813)
44" (1118)	30" (762)	31" (788)	N/A	33" (838)
46" (1169)	31" (788)	32" (813)	N/A	34" (864)
48" (1220)	32" (813)	33" (838)	N/A	35" (889)

## 90° WYE (90Y)

Flow Resistance K = 0.6

**NOTE:** Available in 6" - 36" diameters only.



PIPE I.D.	PSW / PIC / 1G		2G		3G		4G	
	A	B	A	B	A	B	A	B
6" (153)	5.12 (131)	9" (229)	5.62 (143)	10" (254)	6.00 (153)	11" (280)	6.50 (166)	12" (305)
8" (204)	5.62 (143)	10" (254)	6.00 (153)	11" (280)	6.50 (166)	12" (305)	7.00 (178)	13" (331)
10" (254)	6.00 (153)	11" (280)	6.50 (166)	12" (305)	7.00 (178)	13" (331)	7.25 (185)	14" (356)
12" (305)	6.50 (166)	12" (305)	7.00 (178)	13" (331)	7.25 (185)	14" (356)	7.75 (197)	15" (381)
14" (356)	7.00 (178)	13" (331)	7.25 (185)	14" (356)	7.75 (197)	15" (381)	8.12 (207)	16" (407)
16" (407)	7.25 (185)	14" (356)	7.75 (197)	15" (381)	8.12 (207)	16" (407)	8.50 (216)	17" (432)
18" (458)	7.75 (197)	15" (381)	8.12 (207)	16" (407)	8.50 (216)	17" (432)	9.00 (229)	18" (458)
20" (508)	8.12 (207)	16" (407)	8.50 (216)	17" (432)	9.00 (229)	18" (458)	9.37 (238)	19" (483)
22" (559)	8.50 (216)	17" (432)	9.00 (229)	18" (458)	9.37 (238)	19" (483)	9.75 (248)	20" (508)
24" (610)	9.00 (229)	18" (458)	9.37 (238)	19" (483)	9.75 (248)	20" (508)	10.25 (261)	21" (534)
26" (661)	9.37 (238)	19" (483)	9.75 (248)	20" (508)	10.25 (261)	21" (534)	10.62 (270)	22" (559)
28" (712)	9.75 (248)	20" (508)	10.25 (261)	21" (534)	10.62 (270)	22" (559)	11.12 (283)	23" (585)
30" (762)	10.25 (261)	21" (534)	10.62 (270)	22" (559)	11.12 (283)	23" (585)	11.50 (292)	24" (610)
32" (813)	10.62 (270)	22" (559)	11.12 (283)	23" (585)	11.50 (292)	24" (610)	11.87 (302)	25" (635)
34" (864)	11.12 (283)	23" (585)	11.50 (292)	24" (610)	11.87 (302)	25" (635)	12.25 (311)	26" (661)
36" (915)	11.50 (292)	24" (610)	11.87 (302)	25" (635)	12.25 (311)	26" (661)	12.62 (321)	27" (686)

## 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.

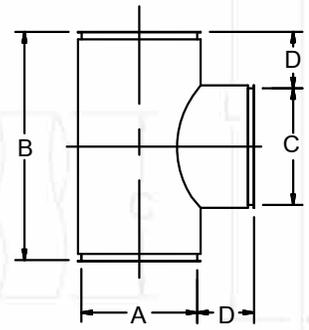
D = PSW/PIC/IPIC-1 = 5"

IPIC-2 = 6"

IPIC-3 = 7"

IPIC-4 = 8"

**NOTE:** Specify tap diameter (C) at time of order.



### BOOT TEE (BT)

Flow Resistance  $K = 0.65$

A = Pipe I.D.

B = "C" + 10" + (2 x insulation thickness)

C = Tap I.D.

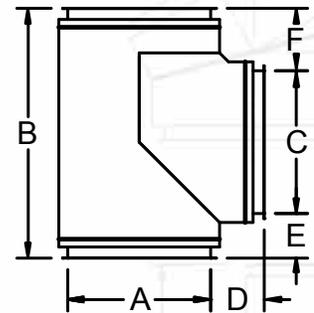
D, E, F = PSW/PIC/IPIC-1 = 6", 5" & 7"

IPIC-2 = 7", 6" & 8"

IPIC-3 = 8", 7" & 9"

IPIC-4 = 9", 8" & 10"

**NOTE:** Specify tap diameter (C) at time of order.



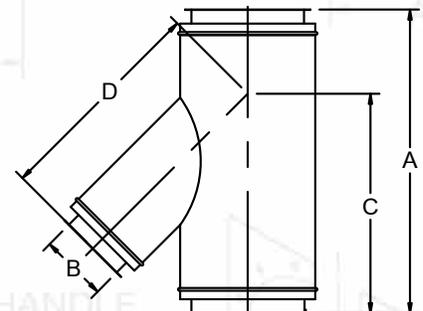
### 45° MANIFOLD TEE (45MT)

Available through 48" dia.

Flow Resistance  $K = 0.4$

**NOTE:** Used for low resistance flow into vertical or horizontal run. Specify Tap Diameter "B" when ordering.

**NOTE:** For dimensional information see tables on pages 29-35.



# COMPONENTS

## DOUBLE LATERAL (DL)

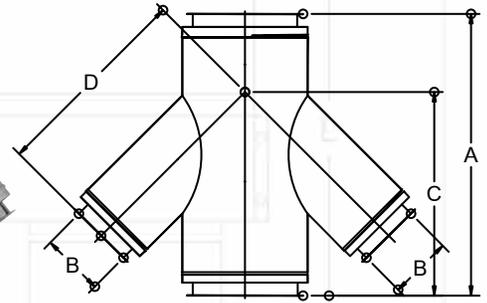
Available in 8" to 48" dia.

Flow Resistance  $K = 0.4$

**NOTE:** Used to centrally connect two appliance manifolds to a common chimney. Specify tap diameter "B" at time of order.

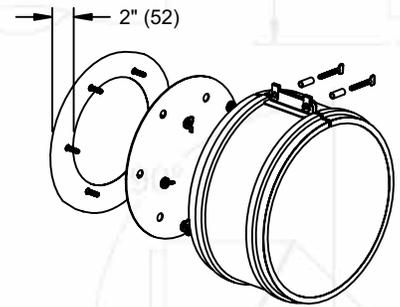
**NOTE:** Tap dia. must be less than Body dia.

**NOTE:** For dimensional information see tables on pages 29-35.



## TOOLESS ACCESS PANEL (TAP)

Provides toolless access for inspection and cleaning. Opening is 3" less than flue diameter.



## SIDEWALL TOOLES ACCESS PANEL (STAP)

Used to facilitate inspections and cleaning. Can be installed in horizontal or vertical runs. When installed in horizontal runs the opening must be above the centerline of the duct.

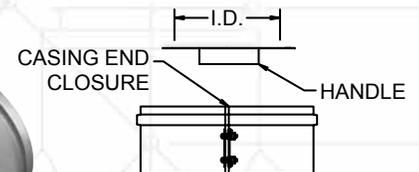
Duct Diameters	Opening Dimension	Minimum Pipe Length
10" - 14"	8" X 4"	18"
16" - 20"	12" X 8"	22"
22" - 36"	16" X 12"	26"

**NOTE:** Can be installed in any pipe length exceeding minimum.



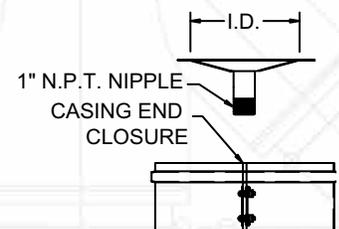
## TEE CAP LESS DRAIN W/ CASING END CLOSURE (TCN)

**NOTE:** Used to close and seal unused port of Tees, Wyes and Laterals.



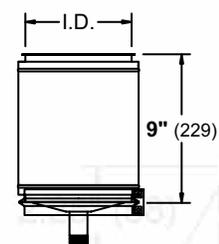
## DRAIN TEE CAP W/CASING END CLOSURE (TC)

**NOTE:** Provides drain port for rain or condensation.



## DRAIN BUCKET (DB)

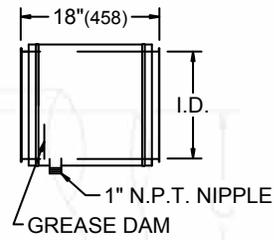
**NOTE:** Used at the base or a vertical riser as a drain reservoir and to provide cleanout access.



## COMPONENTS

### DUCT DRAIN (DR)

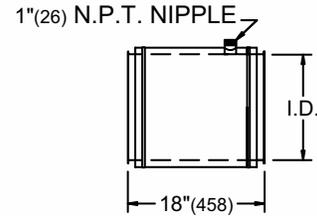
**NOTE:** Used as a point drain for horizontal runs.



### NOZZLE SECTION (NS)

**NOTE:** Used to insert a fire suppression or wash down nozzle or as a drain point in a horizontal run.

**NOTE:** Specify dimensional data at order entry.



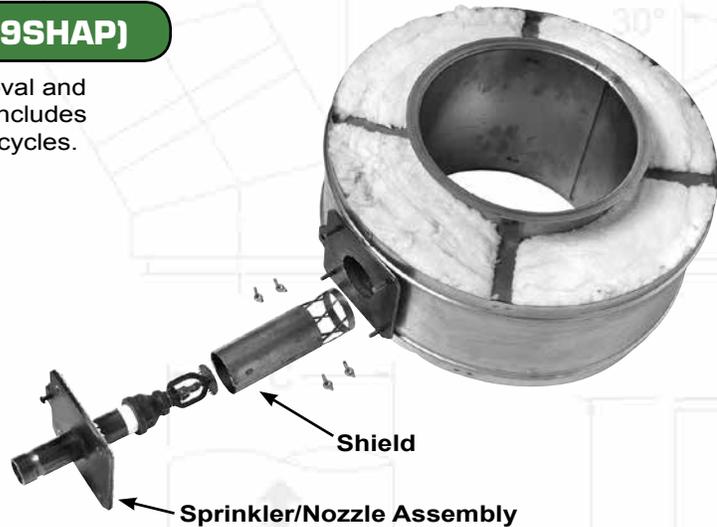
### SPRINKLER HEAD ACCESS PORT (9SHAP)

**NOTE:** Toolless access for the installation, removal and inspection of sprinkler or wash down nozzles. Includes shield to protect sprinkler head during cleaning cycles.  
*Sprinkler Head not included.*

Not UL Listed.

Duct Length: 9"

**Available in 3A3, 4A3, 4A4 ONLY!**



### CASING END CLOSURE (CEC)

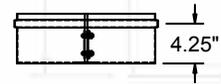
**NOTE:** Used as an end cover when transitioning from one insulation thickness to PSW. When ordering, specify PICCEC

I PICCEC-1

-2

-3

-4



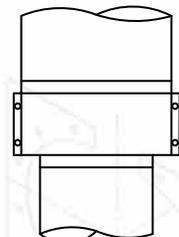
### TRANSITION BAND (TB)

**NOTE:** Used as a joint closure when transitioning from one insulation thickness to another. When ordering, specify

I PICTB-1-2 -2-3

-1-3 -2-4

-1-4 -3-4



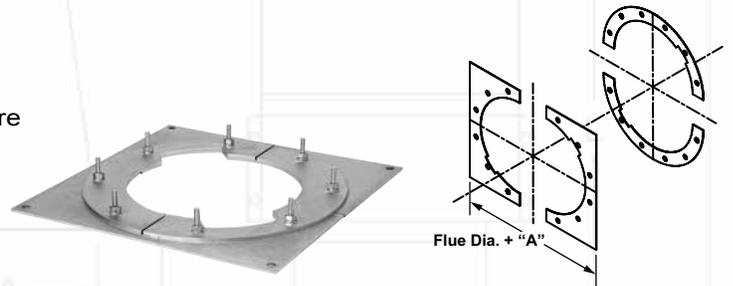
# COMPONENTS

## PLATE SUPPORT (PS)

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

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

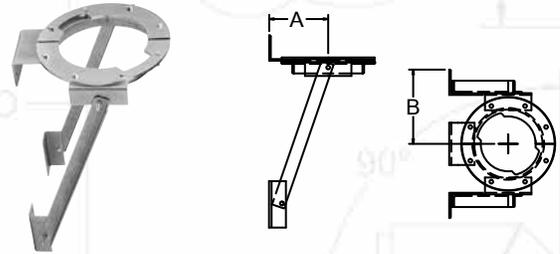
- PSW/PIC/IPIC-1 A=6"
- IPIC-2 A=8"
- IPIC-3 A=10"
- IPIC-4 A=12"



## WALL SUPPORT ASSEMBLY (WSA)

Used to provide vertical or horizontal rigid support point. (Zinc plated)

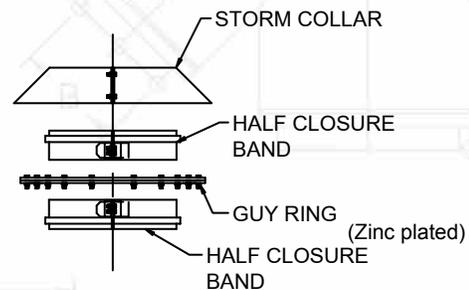
**NOTE:** Does not allow for thermal expansion.



PIPE I.D.	PSW / PIC / 1G		2G		3G		4G	
	A	B	A	B	A	B	A	B
6" (153)	7.87 (200)	7.25 (185)	8.87 (226)	8.12 (207)	11.12 (283)	10.50 (267)	11.12 (283)	10.50 (267)
8" (204)	8.87 (226)	8.12 (207)	10.12 (2.58)	9.50 (242)	12.37 (315)	11.75 (299)	12.37 (315)	11.75 (299)
10" (254)	10.12 (2.58)	9.50 (242)	11.12 (283)	10.50 (267)	13.37 (340)	12.75 (324)	13.37 (340)	12.75 (324)
12" (305)	11.12 (283)	10.50 (267)	12.37 (315)	11.75 (299)	14.37 (366)	13.75 (350)	14.37 (366)	13.75 (350)
14" (356)	12.37 (315)	11.75 (299)	13.37 (340)	12.75 (324)	15.37 (391)	14.75 (375)	15.37 (391)	14.75 (375)
16" (407)	13.37 (340)	12.75 (324)	14.37 (366)	13.75 (350)	16.37 (416)	15.75 (400)	16.37 (416)	15.75 (400)
18" (458)	14.37 (366)	13.75 (350)	15.37 (391)	14.75 (375)	17.62 (448)	17.00 (432)	17.62 (448)	17.00 (432)
20" (508)	15.37 (391)	14.75 (375)	16.37 (416)	15.75 (400)	18.62 (473)	18.00 (458)	18.62 (473)	18.00 (458)
22" (559)	16.37 (416)	15.75 (400)	17.62 (448)	17.00 (432)	19.62 (499)	19.00 (483)	19.62 (499)	19.00 (483)
24" (610)	17.62 (448)	17.00 (432)	18.62 (473)	18.00 (458)	20.62 (524)	20.00 (508)	20.62 (524)	20.00 (508)
26" (661)	18.62 (473)	18.00 (458)	19.62 (499)	19.00 (483)	21.62 (550)	21.00 (534)	21.62 (550)	21.00 (534)
28" (712)	19.62 (499)	19.00 (483)	20.62 (524)	20.00 (508)	23.12 (588)	22.50 (572)	23.12 (588)	22.50 (572)
30" (762)	20.62 (524)	20.00 (508)	21.62 (550)	21.00 (534)	24.12 (613)	23.50 (597)	24.12 (613)	23.50 (597)
32" (813)	21.62 (550)	21.00 (534)	23.12 (588)	22.50 (572)	25.12 (639)	24.50 (623)	25.12 (639)	24.50 (623)
34" (864)	23.12 (588)	22.50 (572)	24.12 (613)	23.50 (597)	26.12 (664)	25.50 (648)	26.12 (664)	25.50 (648)
36" (915)	24.12 (613)	23.50 (597)	25.12 (639)	24.50 (623)	27.12 (689)	26.50 (574)	27.12 (689)	26.50 (574)

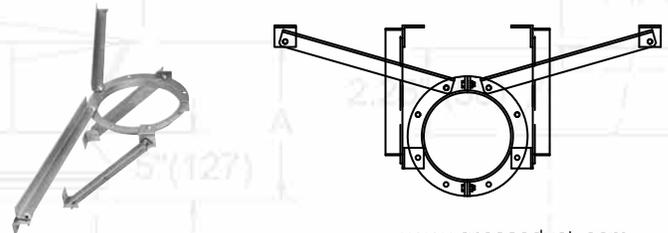
## GUY RING (GR)

**NOTE:** Guy Ring is installed at the flange to flange joint of two sections of pipe. Storm Collar and Half Closure Bands are included. See installation instructions for correct location.



## WALL GUIDE (WG)

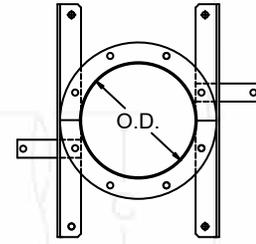
**NOTE:** Used to provide lateral guidance and allow for thermal expansion. (Zinc plated)



# COMPONENTS

## FLOOR GUIDE (FG)

**NOTE:** Used at each floor to insure correct alignment through floor opening. (Zinc plated)



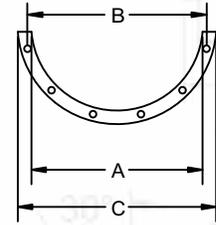
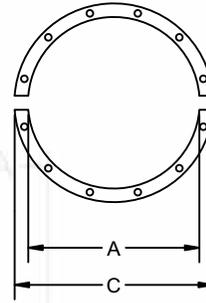
## FULL ANGLE RING (FAR)

Provides lateral support for vertical runs. Allows pipe movement for thermal expansion. (Zinc plated)



FULL ANGLE RING

HALF ANGLE RING



## HALF ANGLE RING (HAR)

Used to support horizontal runs. (Zinc plated)



PRODUCT					DIMENSIONS			
PIPE I.D.					Inside	Hole Centerline	Outside	Hole Qty.
PSW	PIC / 1G	2G	3G	4G	A	B	C	D
6" (153)	-	-	-	-	6.12 (156)	7.50 (191)	8.62 (220)	6
8" (204)	6" (153)	-	-	-	8.12 (207)	9.50 (242)	10.62 (270)	8
10" (254)	8" (204)	6" (153)	-	-	10.19 (259)	11.56 (294)	12.69 (322)	8
12" (305)	10" (254)	8" (204)	6" (153)	-	12.19 (310)	13.81 (351)	15.19 (386)	12
14" (356)	12" (305)	10" (254)	8" (204)	6" (153)	14.19 (360)	15.81 (401)	17.19 (437)	12
16" (407)	14" (356)	12" (305)	10" (254)	8" (204)	16.25 (413)	18.12 (461)	19.75 (502)	16
18" (458)	16" (407)	14" (356)	12" (305)	10" (254)	18.25 (464)	20.12 (512)	21.75 (553)	16
20" (508)	18" (458)	16" (407)	14" (356)	12" (305)	20.25 (515)	22.12 (562)	23.75 (604)	20
22" (559)	20" (508)	18" (458)	16" (407)	14" (356)	22.25 (566)	24.12 (613)	25.75 (654)	20
24" (610)	22" (559)	20" (508)	18" (458)	16" (407)	24.25 (616)	26.12 (664)	27.75 (705)	20
26" (661)	24" (610)	22" (559)	20" (508)	18" (458)	26.25 (667)	28.50 (724)	30.25 (769)	24
28" (712)	26" (661)	24" (610)	22" (559)	20" (508)	28.25 (718)	30.50 (775)	32.25 (820)	24
30" (762)	28" (712)	26" (661)	24" (610)	22" (559)	30.25 (769)	32.50 (826)	34.25 (870)	28
32" (813)	30" (762)	28" (712)	26" (661)	24" (610)	32.25 (820)	34.50 (877)	36.25 (921)	28
34" (864)	32" (813)	30" (762)	28" (712)	26" (661)	34.25 (870)	36.50 (928)	38.25 (972)	32
36" (915)	34" (864)	32" (813)	30" (762)	28" (712)	36.25 (921)	38.50 (978)	40.25 (1022)	32
38" (966)	36" (915)	34" (864)	32" (813)	30" (762)	38.25 (972)	40.50 (1029)	42.25 (1073)	36
40" (1016)	38" (966)	36" (915)	34" (864)	32" (813)	40.25 (1022)	42.50 (1080)	44.25 (1124)	36
42" (1067)	40" (1016)	38" (966)	36" (915)	34" (864)	42.25 (1073)	44.50 (1131)	46.25 (1175)	40
44" (1118)	42" (1067)	40" (1016)	-	36" (915)	44.25 (1124)	46.50 (1182)	48.25 (1226)	40
46" (1069)	44" (1118)	42" (1067)	-	38" (966)	46.25 (1175)	48.50 (1232)	50.25 (1276)	44
48" (1220)	46" (1069)	44" (1118)	-	40" (1016)	48.25 (1226)	50.50 (1283)	52.25 (1327)	44
-	48" (1220)	46" (1069)	-	42" (1067)	50.25 (1276)	52.25 (1327)	52.50 (1334)	48
-	-	48" (1220)	-	44" (1118)	52.25 (1327)	54.25 (1378)	54.50 (1384)	48
-	-	-	-	46" (1069)	54.25 (1378)	56.25 (1429)	56.50 (1435)	48
-	-	-	-	48" (1220)	56.25 (1429)	58.25 (1480)	58.50 (1486)	50

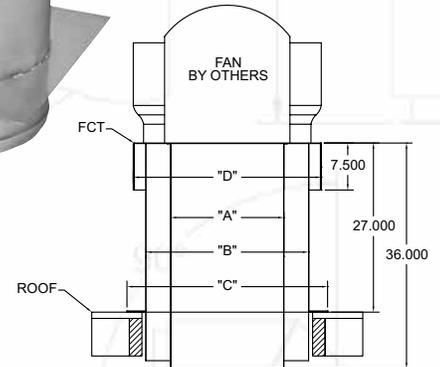
# COMPONENTS

## FAN CURB TERMINATION (FCT)

**NOTE:** Available for 3G & 4G systems only.  
Eliminates Curb. Zero Clearances to Combustibles.  
Roofing materials can be flashed directly to casings.

- A = Flue Diameter
- B = Outer Casing Diameter:
  - 3G: Flue Diameter Plus 6 Inches
  - 4G: Flue Diameter Plus 8 Inches
- C = Square Mounting Support:
  - Casing Diameter Plus 6 Inches
- D = Fan Curb: See Table

Curb Size - Inches	Flue Diameters						
	8	10	12	14	16	18	20
18 X 18	X	X	X	3G			
19.5 X 19.5	X	X	X	3G	3G		
22 X 22	X	X	X	X	X		
23 X 23		X	X	X	X		
26.5 X 26.5				X	X	X	X
28 X 28					X	X	X
31.5 X 31.5							X



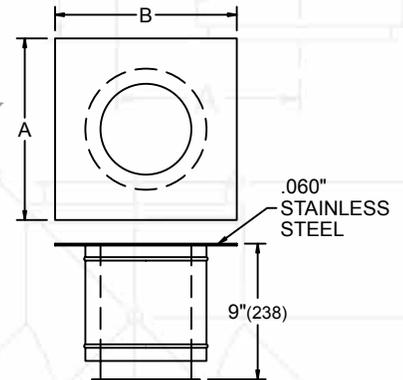
"3G" – Only available on 3G systems.  
Specify Curb Dimensions when ordering.  
Consult Factory for additional options.

## FAN ADAPTER PLATE (FAP)

Plate dimensions (AxB) = outside dimensions of curb less .25" (7).

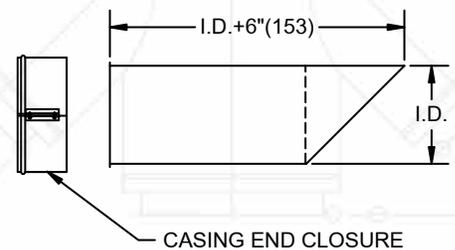
**NOTE:**

1. Used to connect to the inlet of an upblast fan.
2. Plate size may be varied to fit application. Advise outside dimensions of fan curb at the time of order. (AxB)



## MITER CUT (MC)

**NOTE:** Used for horizontal termination with inline fan.  
Standard with bird screen.



# COMPONENTS

## STACK CAP (C)

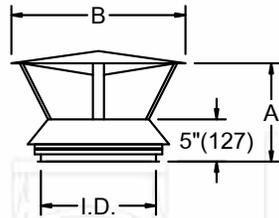
Flow resistance  $K = 0.5$

**NOTE:** Available through 36" diameter only.

**NOTE:** Provides partial rain protection. Use of Drain Tee Cap (TC) or Drain Section (DS) is recommended.

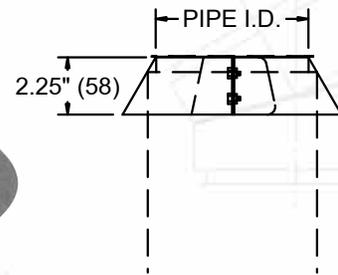
**NOTE:** Also available with bird screen order as (CB).

PIPE I.D.	A	B	PIPE I.D.	A	B
6" (153)	8" (204)	11" (280)	22" (559)	20" (508)	38" (966)
8" (204)	10" (254)	14" (356)	24" (610)	22" (559)	41" (1042)
10" (254)	12" (305)	17" (432)	26" (661)	23" (585)	44" (1118)
12" (305)	13" (331)	21" (534)	28" (712)	25" (635)	48" (1220)
14" (356)	14" (356)	24" (610)	30" (762)	27" (686)	52" (1321)
16" (407)	16" (407)	28" (712)	32" (813)	28" (712)	55" (1397)
18" (458)	17" (432)	31" (788)	34" (864)	30" (762)	58" (1474)
20" (508)	19" (483)	34" (864)	36" (915)	31" (788)	62" (1575)



## STACK CLOSURE RING (CR)

**NOTE:** Used to shield insulation from the weather when open stack is desired. Provide for moisture removal with a Drain Tee Cap (TC) or Drain Section (DS).

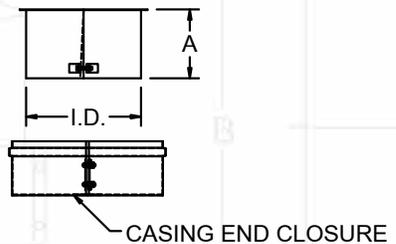


## SINGLE WALL BOILER ADAPTER (SBA)

Flow Resistance  $K =$  same as pipe

**NOTE:** A is 6" or 4" (opt.) specify when ordering  
e.g. 6PICSBA - A=6" 6PICSBA4 - A=4"

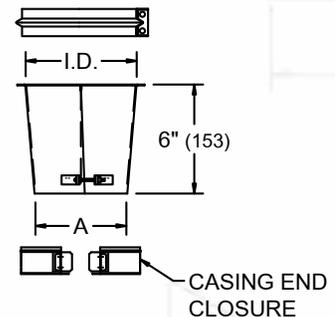
**NOTE:** Used to attach pipe to straight shank outlets. Closure band included with flange adapter on PIC and IPIC applications. Closure band not required on PSW applications.



## REDUCER COLLAR (RC)

Flow Resistance  $K =$  same as pipe  
Specify 'A' dimension when ordering.  
e.g. 6PIC4RC

**NOTE:** Used to attach pipe to an outlet source of a smaller diameter.  
2" (51) maximum reduction.



# 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



Used when pipe passes through a combustible roof structure to reduce clearances 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/1G: I.D. + 8"
- 2G: I.D. + 10"
- 3G: I.D. + 12"
- 4G: I.D. + 14"

**NOTES:**

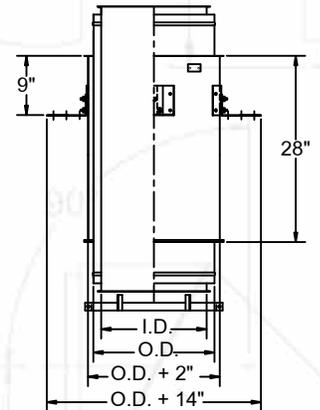
1. Thimbles extend 9" into flashings.
2. Use VTA / RSA on Flat to 1/12 pitch applications.
3. Use FPVTA / FPRSA on 1/12:12/12 pitch applications.

Specify Pitch when ordering.

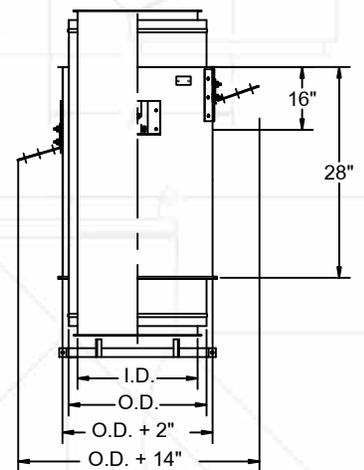
STORM COLLAR



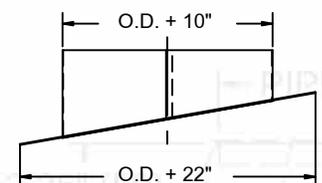
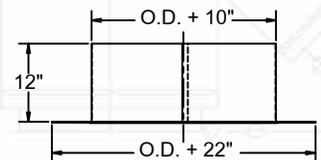
STANDARD THIMBLE



PITCHED THIMBLE



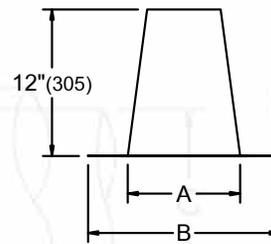
FLASHINGS



# COMPONENTS

## TALL CONE FLASHING (F)

Used for flat roof applications.

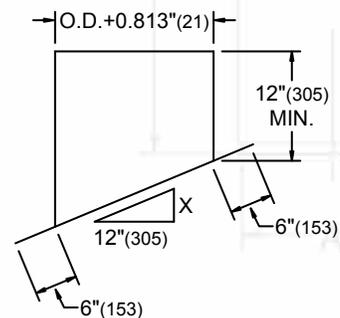


PIPE I.D.	PSW		PIC / 1G		2G		3G		4G	
	A	B	A	B	A	B	A	B	A	B
6" (153)	10" (254)	22" (559)	12" (305)	24" (610)	14" (356)	26" (661)	16" (407)	28" (712)	18" (458)	30" (762)
8" (204)	12" (305)	24" (610)	14" (356)	26" (661)	16" (407)	28" (712)	18" (458)	30" (762)	20" (508)	32" (813)
10" (254)	14" (356)	26" (661)	16" (407)	28" (712)	18" (458)	30" (762)	20" (508)	32" (813)	22" (559)	34" (864)
12" (305)	16" (407)	28" (712)	18" (458)	30" (762)	20" (508)	32" (813)	22" (559)	34" (864)	24" (610)	36" (915)
14" (356)	18" (458)	30" (762)	20" (508)	32" (813)	22" (559)	34" (864)	24" (610)	36" (915)	26" (661)	38" (966)
16" (407)	20" (508)	32" (813)	22" (559)	34" (864)	24" (610)	36" (915)	26" (661)	38" (966)	28" (712)	40" (1016)
18" (458)	22" (559)	34" (864)	24" (610)	36" (915)	26" (661)	38" (966)	28" (712)	40" (1016)	30" (762)	42" (1067)
20" (508)	24" (610)	36" (915)	26" (661)	38" (966)	28" (712)	40" (1016)	30" (762)	42" (1067)	32" (813)	44" (1118)
22" (559)	26" (661)	38" (966)	28" (712)	40" (1016)	30" (762)	42" (1067)	32" (813)	44" (1118)	34" (864)	46" (1169)
24" (610)	28" (712)	40" (1016)	30" (762)	42" (1067)	32" (813)	44" (1118)	34" (864)	46" (1169)	36" (915)	48" (1220)
26" (661)	30" (762)	42" (1067)	32" (813)	44" (1118)	34" (864)	46" (1169)	36" (915)	48" (1220)	38" (966)	50" (1270)
28" (712)	32" (813)	44" (1118)	34" (864)	46" (1169)	36" (915)	48" (1220)	38" (966)	50" (1270)	40" (1016)	52" (1321)
30" (762)	34" (864)	46" (1169)	36" (915)	48" (1220)	38" (966)	50" (1270)	40" (1016)	52" (1321)	42" (1067)	54" (1372)
32" (813)	36" (915)	48" (1220)	38" (966)	50" (1270)	40" (1016)	52" (1321)	42" (1067)	54" (1372)	44" (1118)	56" (1423)
34" (864)	38" (966)	50" (1270)	40" (1016)	52" (1321)	42" (1067)	54" (1372)	44" (1118)	56" (1423)	46" (1169)	58" (1474)
36" (915)	40" (1016)	52" (1321)	42" (1067)	54" (1372)	44" (1118)	56" (1423)	46" (1169)	58" (1474)	48" (1220)	60" (1524)
38" (966)	42" (1067)	54" (1372)	44" (1118)	56" (1423)	46" (1169)	58" (1474)	N/A	N/A	50" (1270)	62" (1475)
40" (1016)	44" (1118)	56" (1423)	46" (1169)	58" (1474)	48" (1220)	60" (1524)	N/A	N/A	52" (1321)	64" (1626)
42" (1067)	46" (1169)	58" (1474)	48" (1220)	60" (1524)	50" (1270)	62" (1475)	N/A	N/A	54" (1372)	66" (1677)
44" (1118)	48" (1220)	60" (1524)	50" (1270)	62" (1475)	52" (1321)	64" (1626)	N/A	N/A	56" (1423)	68" (1728)
46" (1169)	50" (1270)	62" (1475)	52" (1321)	64" (1626)	54" (1372)	66" (1677)	N/A	N/A	58" (1474)	70" (1778)
48" (1220)	52" (1321)	64" (1626)	54" (1372)	66" (1677)	56" (1423)	68" (1728)	N/A	N/A	60" (1524)	72" (1829)

## FIXED PITCH FLASHING (FPF)

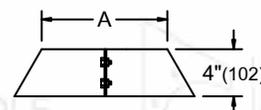
### NOTES:

1. X=PITCH RATE, AVAILABLE RATES 1/12 12/12. Please specify pitch rate with order.
2. Storm collar is included with flashing.
3. Fixed pitch flashing is available in sizes from 6" through 36".



## STORM COLLAR (SC)

A = Pipe Diameter (O.D.)

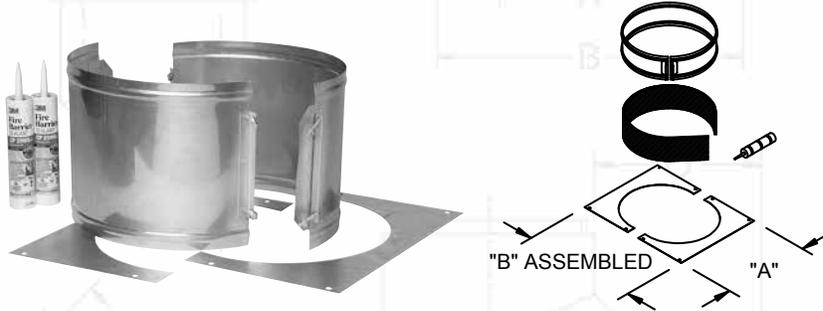


## COMPONENTS

### THROUGH PENETRATION FIRESTOP KIT (PPK)

**NOTE:**

1. Kit consists of closure band, plate, insulation and caulk.
2. Used to maintain fire resistance rating of floor or wall at duct penetration.
3. Diameter of penetration is casing diameter + 2 inches.
4. Closure band height is 12" (306).
5. For use on 3G/4G only.



PIPE I.D.	A	B
6" (153)	18" (458)	18" (458)
8" (204)	20" (508)	20" (508)
10" (254)	22" (559)	22" (559)
12" (305)	24" (610)	24" (610)
14" (356)	26" (661)	26" (661)
16" (407)	28" (712)	28" (712)
18" (458)	30" (762)	30" (762)
20" (508)	32" (813)	32" (813)
22" (559)	34" (864)	34" (864)
24" (610)	36" (915)	36" (915)
26" (661)	38" (966)	38" (966)
28" (712)	40" (1016)	40" (1016)
30" (762)	42" (1067)	42" (1067)
32" (813)	44" (1118)	44" (1118)
34" (864)	46" (1169)	46" (1169)
36" (915)	48" (1220)	48" (1220)

**NOTE:** 2 KITS required for wall penetration!  
Consult factory.

### SEALANT REQUIREMENTS

P080 Joint Sealant, use for flue connection – Type I Hoods.

P077 Joint Sealant, use for flue connection – Type II Hoods and casing bands exposed to moisture.

**NOTE:** Refer to the Installation Instructions for additional information relating to proper sealant selection.

Flue Diameter	Tubes / Joint	Joints / Tube
6"	0.20	5.00
8"	0.20	5.00
10"	0.20	5.00
12"	0.25	4.00
14"	0.25	4.00
16"	0.25	4.00
18"	0.33	3.00
20"	0.33	3.00
22"	0.33	3.00
24"	0.50	2.00
26"	0.50	2.00
28"	0.50	2.00
30"	0.67	1.00
32"	0.67	1.50
34"	0.67	1.50
36"	0.67	1.50
38"	1.00	1.00
40"	1.00	1.00
42"	1.00	1.00
44"	1.00	1.00
46"	1.20	0.80
48"	1.20	0.80

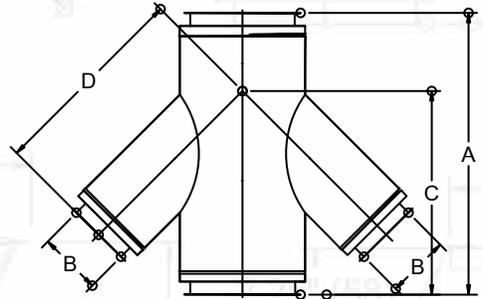


# 45MT DIMENSIONAL DATA

BODY I.D.	TAP I.D.													
	48	46	44	42	40	38	36	34	32	30	28	26	24	
48PIC	"A"	80.75	77.88	75.13	72.25	69.38	66.63	63.75	60.88	58.13	55.25	52.50	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	46.97
	"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	25.48
	"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	24.48	23.65
	"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	23.48	22.65	21.82
	"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	22.48	21.65	20.82	19.99
	"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	20.84	19.43	18.02
	"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	20.65	19.82	18.99	18.16
	"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	20.65	19.82	18.99	18.16	17.33
	"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	20.65	19.82	18.99	18.16	17.33	16.50
	"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	20.65	19.82	18.99	18.16	17.33	16.50	15.67
	"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"	29.79	26.97	24.14	22.31	21.48	20.65	19.82	18.99	18.16	17.33	16.50	15.67	14.84
	"B"	12	10	8	6	4	2	0	-2	-4	-6	-8	-10	-12
	"C"	21.89	20.48	19.07	17.65	16.24	14.83	13.42	12.01	10.60	9.19	7.78	6.37	4.96
	"D"	21.89	20.89	19.89	18.89	17.89	16.89	15.89	14.89	13.89	12.89	11.89	10.89	9.89
10PIC	"A"	26.97	24.14	22.31	21.48	20.65	19.82	18.99	18.16	17.33	16.50	15.67	14.84	14.01
	"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	21.31	20.48	19.65	18.82	17.99	17.16	16.33	15.50	14.67	13.84	13.01	12.18
	"B"	8	6	4	2	0	-2							

# 45MT DIMENSIONAL DATA

		TAP I.D.													
		48	46	44	42	40	38	36	34	32	30	28	26	24	
BODY I.D.	48PIC	"A"	2051	1978	1908	1835	1762	1692	1619	1546	1476	1403	1334	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	1635	1609	1584	1558	1533	1508	1482	1457	1431	1406	1381	1355
	46PIC	"A"	1978	1906	1834	1763	1691	1619	1547	1475	1403	1332	1260	1213	1192
		"B"	1168	1118	1067	1016	965	915	864	813	762	711	660	610	559
		"C"	1599	1563	1527	1491	1455	1419	1383	1347	1311	1275	1239	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	1403	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	1403	1332	1260	1188	1142	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	1403	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	1127	1091	1056	1020	984
		"D"	1415	1389	1364	1339	1313	1288	1262	1237	1212	1186	1161	1135	1110
	38PIC	"A"	1691	1619	1547	1475	1403	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	1403	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	1112	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	1403	1332	1260	1188	1116	1044	972	926	905	858	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	907	872	836	800	
	"D"	1231	1205	1180	1155	1129	1104	1078	1053	1028	1002	977	951	926	
32PIC	"A"	1475	1403	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"	1403	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	1000	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		
	"B"	711	660	610	559	508	457	406	356	305	254	203	152		
	"C"	1047	1011	975	939	903	867	831	795	759	724	688	652		
	"D"	1047	1021	996	971	945	920	894	869	844	818	793	767		
26PIC	"A"	1260	1188	1116	1044	972	901	829	757	710	664	643			
	"B"	660	610	559	508	457	406	356	305	254	203	152			
	"C"	985	950	914	878	842	806	770	734	698	662	626			
	"D"	985	960	935	909	884	858	833	808	782	757	731			
24PIC	"A"	1188	1116	1044	972	901	829	757	685	639	618				
	"B"	610	559	508	457	406	356	305	254	203	152				
	"C"	924	888	852	816	780	745	709	673	637	601				
	"D"	924	899	873	848	823	797	772	746	721	696				
22PIC	"A"	1116	1044	972	901	829	757	685	613	592					
	"B"	559	508	457	406	356	305	254	203	152					
	"C"	863	827	791	755	719	683	647	611	575					
	"D"	863	837	812	787	761	736	710	685	660					
20PIC	"A"	1044	972	901	829	757	685	613	567						
	"B"	508	457	406	356	305	254	203	152						
	"C"	802	766	730	694	658	622	586	550						
	"D"	802	776	751	725	700	675	649	624						
18PIC	"A"	972	901	829	757	685	613	541							
	"B"	457	406	356	305	254	203	152							
	"C"	740	704	668	632	597	561	525							
	"D"	740	715	689	664	639	613	588							
16PIC	"A"	901	829	757	685	613	541								
	"B"	406	356	305	254	203	152								
	"C"	679	643	607	571	535	499								
	"D"	679	653	628	603	577	552								
14PIC	"A"	829	757	685	613	541									
	"B"	356	305	254	203	152									
	"C"	618	582	546	510	474									
	"D"	618	592	567	541	516									
12PIC	"A"	757	685	613	541										
	"B"	305	254	203	152										
	"C"	556	520	484	448										
	"D"	556	531	505	480										
10PIC	"A"	685	613	541											
	"B"	254	203	152											
	"C"	495	459	423											
	"D"	495	470	444											
8PIC	"A"	613	541												
	"B"	203	152												
	"C"	434	398												
	"D"	434	408												
6PIC	"A"	541													
	"B"	152													
	"C"	372													
	"D"	372													



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

# 45MT DIMENSIONAL DATA

BODY I.D.	TAP I.D.	TAP I.D.													
		48	46	44	42	40	38	36	34	32	30	28	26	24	22
48PIC	"A"	83.53	80.70	77.87	75.05	72.22	69.39	66.56	63.73	60.91	58.08	55.25	53.42	51.59	50.77
	"B"	48	46	44	42	40	38	36	34	32	30	28	26	24	22
	"C"	67.77	66.35	64.94	63.52	62.11	60.70	59.28	57.87	56.45	55.04	53.63	52.21	50.80	49.38
	"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	54.77
46PIC	"A"	80.70	77.87	75.05	72.22	69.39	66.56	63.73	60.91	58.08	55.25	52.42	50.59	49.77	47.94
	"B"	46	44	42	40	38	36	34	32	30	28	26	24	22	20
	"C"	65.35	63.94	62.52	61.11	59.70	58.28	56.87	55.45	54.04	52.63	51.21	49.80	48.38	46.97
	"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	52.35
44PIC	"A"	77.87	75.05	72.22	69.39	66.56	63.73	60.91	58.08	55.25	52.42	49.59	48.77	46.94	45.11
	"B"	44	42	40	38	36	34	32	30	28	26	24	22	20	18
	"C"	62.94	61.52	60.11	58.70	57.28	55.87	54.45	53.04	51.63	50.21	48.80	47.38	45.97	44.56
	"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	49.94
42PIC	"A"	75.05	72.22	69.39	66.56	63.73	60.91	58.08	55.25	52.42	49.59	47.77	45.94	44.11	43.28
	"B"	42	40	38	36	34	32	30	28	26	24	22	20	18	16
	"C"	60.52	59.11	57.70	56.28	54.87	53.45	52.04	50.63	49.21	47.80	46.38	44.97	43.56	42.14
	"D"	60.52	59.52	58.52	57.52	56.52	55.52	54.52	53.52	52.52	51.52	50.52	49.52	48.52	47.52
40PIC	"A"	72.22	69.39	66.56	63.73	60.91	58.08	55.25	52.42	49.59	46.77	44.94	43.11	42.28	40.45
	"B"	40	38	36	34	32	30	28	26	24	22	20	18	16	14
	"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	39.73
	"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	45.11
38PIC	"A"	69.39	66.56	63.73	60.91	58.08	55.25	52.42	49.59	46.77	43.94	42.11	41.28	39.45	38.63
	"B"	38	36	34	32	30	28	26	24	22	20	18	16	14	12
	"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	37.31
	"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	42.70
36PIC	"A"	66.56	63.73	60.91	58.08	55.25	52.42	49.59	46.77	43.94	41.11	40.28	38.45	37.63	35.80
	"B"	36	34	32	30	28	26	24	22	20	18	16	14	12	10
	"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	34.90
	"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	40.28
34PIC	"A"	63.73	60.91	58.08	55.25	52.42	49.59	46.77	43.94	41.11	39.28	37.45	36.63	34.80	32.97
	"B"	34	32	30	28	26	24	22	20	18	16	14	12	10	8
	"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	32.49
	"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	37.87
32PIC	"A"	60.91	58.08	55.25	52.42	49.59	46.77	43.94	41.11	38.28	36.45	35.63	33.80	31.97	31.39
	"B"	32	30	28	26	24	22	20	18	16	14	12	10	8	6
	"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	31.49	30.07
	"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	35.45
30PIC	"A"	58.08	55.25	52.42	49.59	46.77	43.94	41.11	38.28	35.45	34.63	32.80	30.97	30.39	29.07
	"B"	30	28	26	24	22	20	18	16	14	12	10	8	6	6
	"C"	46.04	44.63	43.21	41.80	40.38	38.97	37.56	36.14	34.73	33.31	31.90	30.49	29.07	28.49
	"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	33.04
28PIC	"A"	55.25	52.42	49.59	46.77	43.94	41.11	38.28	35.45	33.63	31.80	29.97	29.39	28.07	27.39
	"B"	28	26	24	22	20	18	16	14	12	10	8	6	6	6
	"C"	43.63	42.21	40.80	39.38	37.97	36.56	35.14	33.73	32.31	30.90	29.49	28.07	27.07	26.39
	"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	30.63
26PIC	"A"	52.42	49.59	46.77	43.94	41.11	38.28	35.45	32.63	30.80	28.97	28.39	27.07	26.39	25.71
	"B"	26	24	22	20	18	16	14	12	10	8	6	6	6	6
	"C"	41.21	39.80	38.38	36.97	35.56	34.14	32.73	31.31	29.90	28.49	27.07	26.07	25.39	24.71
	"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	28.21
24PIC	"A"	49.59	46.77	43.94	41.11	38.28	35.45	32.63	29.80	27.97	27.39	26.07	25.39	24.71	24.03
	"B"	24	22	20	18	16	14	12	10	8	6	6	6	6	6
	"C"	38.80	37.38	35.97	34.56	33.14	31.73	30.31	28.90	27.49	26.07	25.07	24.39	23.71	23.03
	"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	25.80
22PIC	"A"	46.77	43.94	41.11	38.28	35.45	32.63	29.80	26.97	26.39	25.07	24.39	23.71	23.03	22.35
	"B"	22	20	18	16	14	12	10	8	6	6	6	6	6	6
	"C"	36.38	34.97	33.56	32.14	30.73	29.31	27.90	26.49	25.07	24.07	23.39	22.71	22.03	21.35
	"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	23.38
20PIC	"A"	43.94	41.11	38.28	35.45	32.63	29.80	26.97	24.14	23.56	22.24	21.56	20.88	20.20	19.52
	"B"	20	18	16	14	12	10	8	6	6	6	6	6	6	6
	"C"	33.97	32.56	31.14	29.73	28.31	26.90	25.49	24.07	23.07	22.39	21.71	21.03	20.35	19.67
	"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	20.97
18PIC	"A"	41.11	38.28	35.45	32.63	29.80	26.97	24.14	21.31	20.73	19.41	18.73	18.05	17.37	16.69
	"B"	18	16	14	12	10	8	6	6	6	6	6	6	6	6
	"C"	31.56	30.14	28.73	27.31	25.90	24.49	23.07	22.07	21.39	20.71	20.03	19.35	18.67	17.99
	"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	18.56
16PIC	"A"	38.28	35.45	32.63	29.80	26.97	24.14	21.31	18.48	17.90	16.58	15.90	15.22	14.54	13.86
	"B"	16	14	12	10	8	6	6	6	6	6	6	6	6	6
	"C"	29.14	27.73	26.31	24.90	23.49	22.07	21.07	20.39	19.71	19.03	18.35	17.67	16.99	16.31
	"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	16.14
14PIC	"A"	35.45	32.63	29.80	26.97	24.14	21.31	18.48	15.65	15.07	13.75	13.07	12.39	11.71	11.03
	"B"	14	12	10	8	6	6	6	6	6	6	6	6	6	6
	"C"	26.73	25.31	23.90	22.49	21.07	19.66	18.24	17.24	16.56	15.88	15.20	14.52	13.84	13.16
	"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	13.73
12PIC	"A"	32.63	29.80	26.97	24.14	21.31	18.48	15.65	12.82	12.24	10.92	10.24	9.56	8.88	8.20
	"B"	12	10	8	6	6	6	6	6	6	6	6	6	6	6
	"C"	24.31	22.90	21.49	20.07	18.66	17.24	16.24	15.56	14.88	14.20	13.52	12.84	12.16	11.48
	"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	11.31
10PIC</															

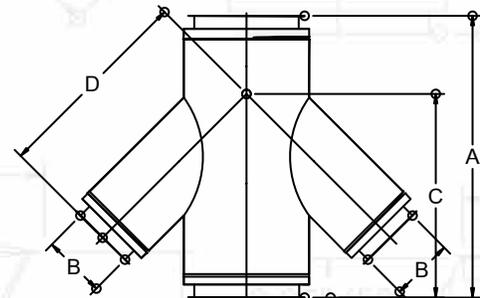
# 45MT DIMENSIONAL DATA

		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	1289
	"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	1670	1645	1620	1594	1569	1543	1518	1493	1467	1442	1416	1391
		46	44	42	40	38	36	34	32	30	28	26	24	22	20
46PIC	"A"	2050	1978	1906	1834	1763	1691	1619	1547	1475	1403	1332	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	1409	1373	1337	1301	1265	1229	1193
	"D"	1660	1635	1609	1584	1558	1533	1508	1482	1457	1431	1406	1381	1355	1330
		44	42	40	38	36	34	32	30	28	26	24	22	20	18
44PIC	"A"	1978	1906	1834	1763	1691	1619	1547	1475	1403	1332	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	1239	1204	1168	1132
	"D"	1599	1573	1548	1522	1497	1472	1446	1421	1395	1370	1345	1319	1294	1268
		42	40	38	36	34	32	30	28	26	24	22	20	18	16
42PIC	"A"	1906	1834	1763	1691	1619	1547	1475	1403	1332	1260	1213	1167	1120	1099
	"B"	1067	1016	965	914	864	813	762	711	660	610	559	508	457	406
	"C"	1537	1501	1465	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
		40	38	36	34	32	30	28	26	24	22	20	18	16	14
40PIC	"A"	1834	1763	1691	1619	1547	1475	1403	1332	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
		38	36	34	32	30	28	26	24	22	20	18	16	14	12
38PIC	"A"	1763	1691	1619	1547	1475	1403	1332	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	1338	1313	1288	1262	1237	1211	1186	1161	1135	1110	1084
		36	34	32	30	28	26	24	22	20	18	16	14	12	10
36PIC	"A"	1691	1619	1547	1475	1403	1332	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	1282	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
		34	32	30	28	26	24	22	20	18	16	14	12	10	8
34PIC	"A"	1619	1547	1475	1403	1332	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	1112	1077	1041	1005	969	933	897	861	825
	"D"	1292	1267	1241	1216	1190	1165	1140	1114	1089	1063	1038	1013	987	962
		32	30	28	26	24	22	20	18	16	14	12	10	8	6
32PIC	"A"	1547	1475	1403	1332	1260	1188	1116	1044	972	930	905	858	812	797
	"B"	813	762	711	660	610	559	508	457	406	356	305	254	203	152
	"C"	1231	1195	1159	1123	1087	1051	1015	979	943	907	872	836	800	764
	"D"	1231	1205	1180	1155	1129	1104	1078	1053	1028	1002	977	951	926	901
		30	28	26	24	22	20	18	16	14	12	10	8	6	6
30PIC	"A"	1475	1403	1332	1260	1188	1116	1044	972	901	880	833	787	772	722
	"B"	762	711	660	610	559	508	457	406	356	305	254	203	152	102
	"C"	1169	1133	1098	1062	1026	990	954	918	882	846	810	774	738	702
	"D"	1169	1144	1119	1093	1068	1042	1017	992	966	941	915	890	865	840
		28	26	24	22	20	18	16	14	12	10	8	6	6	6
28PIC	"A"	1403	1332	1260	1188	1116	1044	972	901	854	808	761	747	717	687
	"B"	711	660	610	559	508	457	406	356	305	254	203	152	102	52
	"C"	1108	1072	1036	1000	964	928	893	857	821	785	749	713	677	641
	"D"	1108	1083	1057	1032	1006	981	956	930	905	879	854	829	804	779
		26	24	22	20	18	16	14	12	10	8	6	6	6	6
26PIC	"A"	1332	1260	1188	1116	1044	972	901	829	782	736	689	675	645	615
	"B"	660	610	559	508	457	406	356	305	254	203	152	102	52	2
	"C"	1047	1011	975	939	903	867	831	795	759	724	688	652	616	580
	"D"	1047	1021	996	971	945	920	894	869	844	818	793	767	742	716
		24	22	20	18	16	14	12	10	8	6	6	6	6	6
24PIC	"A"	1260	1188	1116	1044	972	901	829	757	710	666	622	586	550	514
	"B"	610	559	508	457	406	356	305	254	203	152	102	52	2	2
	"C"	985	950	914	878	842	806	770	734	698	662	626	590	554	518
	"D"	985	960	935	909	884	858	833	808	782	757	732	707	682	657
		22	20	18	16	14	12	10	8	6	6	6	6	6	6
22PIC	"A"	1188	1116	1044	972	901	829	757	685	670	634	598	562	526	490
	"B"	559	508	457	406	356	305	254	203	152	102	52	2	2	2
	"C"	924	888	852	816	780	745	709	673	637	601	565	529	493	457
	"D"	924	899	873	848	823	797	772	746	721	696	671	646	621	596
		20	18	16	14	12	10	8	6	6	6	6	6	6	6
20PIC	"A"	1116	1044	972	901	829	757	685	613	613	577	541	505	469	433
	"B"	508	457	406	356	305	254	203	152	102	52	2	2	2	2
	"C"	863	827	791	755	719	683	647	611	575	539	503	467	431	395
	"D"	863	837	812	787	761	736	710	685	660	635	610	585	560	535
		18	16	14	12	10	8	6	6	6	6	6	6	6	6
18PIC	"A"	1044	972	901	829	757	685	613	541	541	505	469	433	397	361
	"B"	457	406	356	305	254	203	152	102	52	2	2	2	2	2
	"C"	801	766	730	694	658	622	586	550	514	478	442	406	370	334
	"D"	801	776	751	725	700	674	649	624	599	574	549	524	499	474
		16	14	12	10	8	6	6	6	6	6	6	6	6	6
16PIC	"A"	972	901	829	757	685	613	541	469	469	433	397	361	325	289
	"B"	406	356	305	254	203	152	102	52	2	2	2	2	2	2
	"C"	740	704	668	632	597	561	525	489	453	417	381	345	309	273
	"D"	740	715	689	664	639	614	589	564	539	514	489	464	439	414
		14	12	10	8	6	6	6	6	6	6	6	6	6	6
14PIC	"A"	901	829	757	685	613	541	469	397	397	361	325	289	253	217
	"B"	356	305	254	203	152	102	52	2	2	2	2	2	2	2
	"C"	679	643	607	571	535	499	463	427	391	355	319	283	247	211
	"D"	679	653	628	603	577	552	527	502	477	452	427	402	377	352
		12	10	8	6	6	6	6	6	6	6	6	6	6	6
12PIC	"A"	829	757	685	613	541	469	397	325	325	289	253	217	181	145
	"B"	305	254	203	152	102	52	2	2	2	2	2	2	2	2
	"C"	618	582	546	510	474	438	402	366	330	294	258	222	186	150
	"D"	618	592	567	541	516	491	466	441	416	391	366	341	316	291
		10	8	6	6	6	6	6	6	6	6	6	6	6	6
10PIC	"A"	757	685	613	541	469	397	325	253	253	217	181	145	109	73
	"B"	254	203	152	102	52	2	2	2	2	2	2	2	2	2
	"C"	556	520	484</											



# 45MT DIMENSIONAL DATA

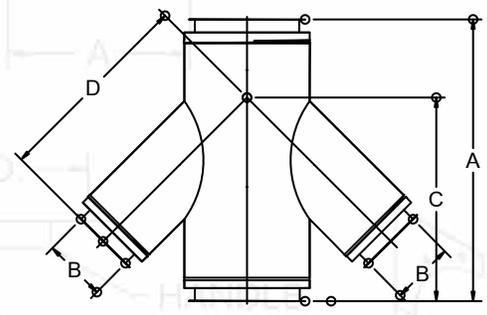
BODY I.D.	TAP I.D.										
	36	34	32	30	28	26	24	22	20	18	
36PIC	"A"	1763	1691	1619	1547	1475	1403	1332	1260	1188	1116
	"B"	914	864	813	762	711	660	610	559	508	457
	"C"	1415	1379	1343	1307	1271	1235	1199	1163	1127	1091
	"D"	1415	1389	1364	1339	1313	1288	1262	1237	1212	1186
34PIC	"A"	1691	1619	1547	1475	1403	1332	1260	1188	1116	1069
	"B"	864	813	762	711	660	610	559	508	457	406
	"C"	1353	1317	1282	1246	1210	1174	1138	1102	1066	1030
	"D"	1353	1328	1303	1277	1252	1226	1201	1176	1150	1125
32PIC	"A"	1619	1547	1475	1403	1332	1260	1188	1116	1044	930
	"B"	813	762	711	660	609	558	507	456	405	356
	"C"	1292	1256	1220	1184	1148	1113	1076	1040	1005	969
	"D"	1292	1267	1241	1216	1190	1165	1140	1114	1089	1063
30PIC	"A"	1547	1475	1403	1332	1260	1188	1116	1044	972	880
	"B"	762	711	660	610	610	508	457	406	356	305
	"C"	1231	1195	1159	1123	1087	1051	1015	979	943	907
	"D"	1231	1205	1180	1155	1129	1104	1078	1053	1028	1002
28PIC	"A"	1475	1403	1332	1260	1188	1116	1044	972	854	808
	"B"	711	660	610	559	559	457	406	356	305	254
	"C"	1169	1134	1098	1062	1026	990	954	918	882	846
	"D"	1169	1144	1119	1093	1068	1042	1017	992	966	941
26PIC	"A"	1403	1332	1260	1188	1116	1044	972	900	782	782
	"B"	660	610	559	508	508	406	356	305	254	203
	"C"	1108	1072	1036	1000	964	928	892	856	821	785
	"D"	1108	1083	1057	1032	1007	981	956	930	904	878
24PIC	"A"	1332	1260	1188	1116	1044	972	900	828	757	685
	"B"	610	559	508	457	406	356	305	254	203	152
	"C"	1047	1011	975	939	903	867	831	795	759	723
	"D"	1047	1021	996	971	945	920	894	869	844	818
22PIC	"A"	1260	1188	1116	1044	972	900	828	757	685	685
	"B"	559	508	457	406	356	305	254	203	152	152
	"C"	986	949	913	878	842	806	770	734	698	698
	"D"	986	960	935	909	884	859	833	808	782	782
20PIC	"A"	1188	1116	1044	972	900	828	757	685	685	685
	"B"	508	457	406	356	305	254	203	152	152	152
	"C"	924	888	852	816	780	744	709	673	637	637
	"D"	924	899	873	848	822	797	772	746	746	746
18PIC	"A"	1116	1044	972	900	828	757	685	685	685	685
	"B"	457	406	356	305	254	203	152	152	152	152
	"C"	863	827	791	755	719	683	647	611	575	575
	"D"	863	837	812	786	761	736	710	710	710	710
16PIC	"A"	1044	972	900	828	757	685	685	685	685	685
	"B"	406	356	305	254	203	152	152	152	152	152
	"C"	801	765	730	694	658	622	586	550	514	514
	"D"	801	776	751	725	700	674	674	674	674	674
14PIC	"A"	972	900	828	757	685	685	685	685	685	685
	"B"	356	305	254	203	152	152	152	152	152	152
	"C"	740	704	668	632	596	560	524	488	452	452
	"D"	740	715	689	664	638	638	638	638	638	638
12PIC	"A"	900	828	757	685	685	685	685	685	685	685
	"B"	305	254	203	152	152	152	152	152	152	152
	"C"	679	643	607	571	535	499	463	427	391	391
	"D"	679	653	628	603	603	603	603	603	603	603
10PIC	"A"	828	757	685	685	685	685	685	685	685	685
	"B"	254	203	152	152	152	152	152	152	152	152
	"C"	617	582	546	546	546	546	546	546	546	546
	"D"	617	592	567	567	567	567	567	567	567	567
8PIC	"A"	757	685	685	685	685	685	685	685	685	685
	"B"	203	152	152	152	152	152	152	152	152	152
	"C"	556	520	520	520	520	520	520	520	520	520
	"D"	556	531	531	531	531	531	531	531	531	531
6PIC	"A"	685	685	685	685	685	685	685	685	685	685
	"B"	152	152	152	152	152	152	152	152	152	152
	"C"	495	495	495	495	495	495	495	495	495	495
	"D"	495	495	495	495	495	495	495	495	495	495



3G 45MT & DL TABLE IN METRIC

# 45MT DIMENSIONAL DATA

		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"	48	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	49.60
	"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	49.60	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	49.60	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	49.60	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	49.60	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	49.60	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	49.60	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	49.60	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	49.60	46.77	43.94	41.11	38.28	35.46	32.63	29.80	27.00
	"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	49.60	46.77	43.94	41.11	38.28	35.46	32.63	29.80	27.00	24.20
	"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	29.06
	"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	49.60	46.77	43.94	41.11	38.28	35.46	32.63	29.80	27.00	24.20	21.40
	"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	28.06	26.64
	"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	49.60	46.77	43.94	41.11	38.28	35.46	32.63	29.80	27.00	24.20	21.40	18.60
	"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	27.06	25.64	24.22
	"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"	49.60	46.77	43.94	41.11	38.28	35.46	32.63	29.80	27.00	24.20	21.40	18.60	15.80
	"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	26.06	24.64	23.22	21.80
	"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	27.00	24.20	21.40	18.60	15.80	13.00
	"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	25.06	23.64	22.22	20.80	19.38
	"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	27.00	24.20	21.40	18.60	15.80	13.00	10.20
	"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	24.06	22.64	21.22	19.80	18.38	16.96
	"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	27.00	24.20	21.40	18.60	15.80	13.00	10.20	7.40
	"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	23.06	21.64	20.22	18.80	17.38	15.96	14.54
	"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	27.00	24.20	21.40	18.60	15.80	13.00	10.20	7.40	4.60
	"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	22.06	20.64	19.22	17.80	16.38	14.96	13.54	12.12
	"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	27.00	24.20	21.40	18.60	15.80	13.00	10.20	7.40	4.60	1.80
	"B"	10	8	6	4	2	0	-2	-4	-6	-8	-10	-12	-14
	"C"	26.73	25.31	23.90	22.48	21.06	19.64	18.22	16.80	15.38	13.96	12.54	11.12	9.70
	"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	27.00	24.20	21.40	18.60	15.80	13.00	10.20	7.40	4.60	1.80	-1.00
	"B"	8	6	4	2	0	-2	-4	-6	-8	-10	-12	-14	-16
	"C"	24.31	22.90	21.48	20.06	18.64	17.22	15.80	14.38	12.96	11.54	10.12	8.70	7.28
	"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	27.00	24.20	21.40	18.60	15.80	13.00	10.20	7.40	4.60	1.80	-1.00	-3.80
	"B"	6	4	2	0	-2	-4	-6	-8	-10	-12	-14	-16	-18
	"C"	21.90	20.48	19.06	17.64	16.22	14.80	13.38	11.96	10.54	9.12	7.70	6.28	4.86
	"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



# 45MT DIMENSIONAL DATA

BODY I.D.	TAP I.D.													
	48	46	44	42	40	38	36	34	32	30	28	26	24	
48PIC	"A"	2285	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	1387	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	1332	1285	1264
	"B"	1067	1016	965	914	864	813	762	711	660	610	559	508	457
	"C"	1660	1624	1588	1552	1516	1480	1444	1409	1373	1337	1301	1265	1229
	"D"	1660	1635	1609	1584	1558	1533	1508	1482	1457	1431	1406	1381	1355
40PIC	"A"	1978	1906	1834	1763	1691	1619	1547	1475	1403	1332	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	1239	1204	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	1332	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	1332	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	1260	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	1332	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	1055	1020	984
	"D"	1415	1389	1364	1339	1313	1288	1262	1237	1212	1186	1161	1135	1110
32PIC	"A"	1691	1619	1547	1475	1403	1332	1260	1188	1116	1044	1023	977	930
	"B"	813	762	711	660	610	559	508	457	406	356	305	254	203
	"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
30PIC	"A"	1619	1547	1475	1403	1332	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	1112	1077	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	1332	1260	1188	1116	1044	972	926	880	858	812
	"B"	711	660	610	559	508	457	406	356	305	254	203	152	101
	"C"	1231	1195	1159	1123	1087	1051	1015	979	943	907	872	836	800
	"D"	1231	1205	1180	1155	1129	1104	1078	1053	1028	1002	977	951	925
26PIC	"A"	1475	1403	1332	1260	1188	1116	1044	972	901	854	833	812	781
	"B"	660	610	559	508	457	406	356	305	254	203	152	101	50
	"C"	1169	1133	1098	1062	1026	990	954	918	882	846	810	774	738
	"D"	1169	1144	1119	1093	1068	1042	1017	992	967	942	917	892	867
24PIC	"A"	1403	1332	1260	1188	1116	1044	972	901	829	808	787	766	745
	"B"	610	559	508	457	406	356	305	254	203	152	101	50	0
	"C"	1108	1072	1036	1000	964	928	893	857	821	785	750	714	678
	"D"	1108	1083	1057	1032	1006	981	956	930	905	879	854	829	804
22PIC	"A"	1332	1260	1188	1116	1044	972	901	829	757	736	715	694	673
	"B"	559	508	457	406	356	305	254	203	152	101	50	0	0
	"C"	1047	1011	975	939	903	867	831	795	759	723	687	651	615
	"D"	1047	1021	996	971	945	920	894	869	844	819	794	769	744
20PIC	"A"	1260	1188	1116	1044	972	901	829	757	736	715	694	673	652
	"B"	508	457	406	356	305	254	203	152	101	50	0	0	0
	"C"	985	950	914	878	842	806	770	734	698	662	626	590	554
	"D"	985	960	935	909	884	858	833	808	783	758	733	708	683
18PIC	"A"	1188	1116	1044	972	901	829	757	736	715	694	673	652	631
	"B"	457	406	356	305	254	203	152	101	50	0	0	0	0
	"C"	924	888	852	816	780	744	708	672	636	600	564	528	492
	"D"	924	899	873	848	823	797	772	747	722	697	672	647	622
16PIC	"A"	1116	1044	972	901	829	757	736	715	694	673	652	631	610
	"B"	406	356	305	254	203	152	101	50	0	0	0	0	0
	"C"	863	827	791	755	719	683	647	611	575	539	503	467	431
	"D"	863	837	812	787	761	736	711	686	661	636	611	586	561
14PIC	"A"	1044	972	901	829	757	736	715	694	673	652	631	610	589
	"B"	356	305	254	203	152	101	50	0	0	0	0	0	0
	"C"	801	766	730	694	658	622	586	550	514	478	442	406	370
	"D"	801	776	751	725	700	675	650	625	600	575	550	525	500
12PIC	"A"	972	901	829	757	736	715	694	673	652	631	610	589	568
	"B"	305	254	203	152	101	50	0	0	0	0	0	0	0
	"C"	740	704	668	632	596	560	524	488	452	416	380	344	308
	"D"	740	715	689	664	639	614	589	564	539	514	489	464	439
10PIC	"A"	901	829	757	736	715	694	673	652	631	610	589	568	547
	"B"	254	203	152	101	50	0	0	0	0	0	0	0	0
	"C"	679	643	607	571	535	499	463	427	391	355	319	283	247
	"D"	679	653	628	603	578	553	528	503	478	453	428	403	378
8PIC	"A"	829	757	736	715	694	673	652	631	610	589	568	547	526
	"B"	203	152	101	50	0	0	0	0	0	0	0	0	0
	"C"	618	582	546	510	474	438	402	366	330	294	258	222	186
	"D"	618	592	567	542	517	492	467	442	417	392	367	342	317
6PIC	"A"	757	736	715	694	673	652	631	610	589	568	547	526	505
	"B"	152	101	50	0	0	0	0	0	0	0	0	0	0
	"C"	556	520	484	448	412	376	340	304	268	232	196	160	124
	"D"	556	530	505	480	455	430	405	380	355	330	305	280	255

## 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 Vee Band with a soft head mallet while tightening band to assure tight seal.
5. Insert insulation (IPIC-1, -2, -3, -4) between pipe sections
6. Install casing closure band. (Seal if external to structure to prevent moisture infiltration).



## DESIGN CHECKLIST

In order to quickly and accurately design a Grease Duct system, Metal-Fab's Engineering Department needs basic information about the system. Supplying the following data will speed the design process:

1. Determine if it is a Type I (Grease) or Type II (Heat and non-flammable vapors).
2. Provide CFM flow rate for each hood connection.
3. Advise available height above hood for ductwork.
4. What are hood outlet dimensions?
5. Supply a line drawing to reflect desired system layout.
6. Provide termination information. (Vertical / Horizontal, Roof Curb dimensions, etc.)
7. Will the ductwork penetrate combustible materials and/or fire-rated partitions?
8. Identify any obstructions and / or restrictions that will affect system design and supports.
9. Provide basic fan information (Upblast / Inline / Utility set).

Receipt of this information will speed the design process.  
Thank you.

## WARRANTY

### LIMITED LIFETIME WARRANTY

Metal-Fab Inc. warrants to owners of its Models PSW, PIC, 1G, 2G, 3G, and 4G grease duct systems that they are free from defects in material and workmanship in normal use for as long as the original consumer owns the grease duct system, provided the system has been designed, installed, maintained and used in accordance with Metal-Fab, Inc. specifications. Metal-Fab, Inc. further warrants any portion of such system repaired or replaced under this limited warranty for the remainder of the original warranty period.

Refer to Metal-Fab Warranty form L2157 for complete information on claim procedures, exclusions and limitations. Available on line at [www.greaseduct.com](http://www.greaseduct.com) and [www.metal-fabcommercial.com](http://www.metal-fabcommercial.com)

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