



Quality People. Building Solutions.

Comfort Systems USA (Arkansas), Inc.
P.O. Box 16620
Little Rock, AR 72231
Phone 501-834-3320
Fax 501-834-5416

Date: 2/21/2024

Return Request: 3/28/2024

Project: Little Rock West High School

Supplier: A/C Specialties

Manufacturer: Various

Submittal: Metal Ducts

Submittal Number: 23 31 13-01

Drawing # and Installation: Mechanical Drawings

ARCHITECT

Lewis Architects Engineers
11225 Huron Lane, Suite 104
Little Rock, AR 72211
501-223-9302

ENGINEER

Lewis Architects Engineers
11225 Huron Lane, Suite 104
Little Rock, AR 72211
501-223-9302

GENERAL CONTRACTOR

Baldwin & Shell
1000 W. Capitol Ave.
Little Rock, AR 72201
501-374-8677

MECHANICAL SUBCONTRACTOR

Comfort Systems USA (Arkansas), Inc.
9924 Landers Rd.
N. Little Rock, AR 72117
501-834-3320

Notes:

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chowell@comfortar.com

9924 Landers Rd.
No. Little Rock, AR 72117

- DWM Rectangular Duct & Fittings are available in the following materials

- Galvanized G60 & G90
- Phosphatized (Paint-Grip)
- 304L Stainless Steel
- 316L Stainless Steel
- Polyvinyl Coated
- Aluminum

- Special materials are available. Please contact representative for more information.

- DWM products are manufactured in accordance with applicable SMACNA, ASHRAE & ASTM A 653 standards.

HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE

THIRD EDITION – 2005



SHEET METAL AND AIR CONDITIONING CONTRACTORS'
NATIONAL ASSOCIATION, INC.
4201 Lafayette Center Drive
Chantilly, VA 20151-1209
www.smacna.org

Project: _____ Job No: _____

Location: _____ Date: _____

Mechanical Contractor: _____

HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE

THIRD EDITION – 2005

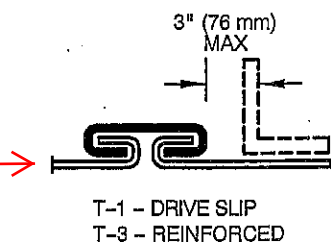


**SHEET METAL AND AIR CONDITIONING CONTRACTORS'
NATIONAL ASSOCIATION, INC.**

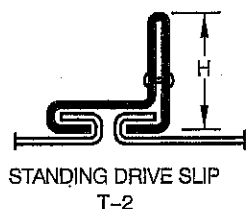
4201 Lafayette Center Drive
Chantilly, VA 20151-1209
www.smacna.org

RECTANGULAR DUCT CONSTRUCTION

All Duct under 24" wide

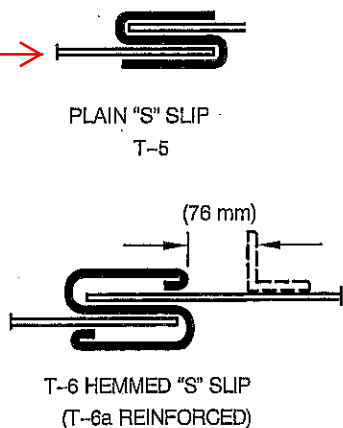


- Gage no less than two gages less than duct gage
- 24 ga minimum
- Qualification as reinforcement per Table 2-48
- T-3 - Slip Gage as per T-1
 - Any length at 2 in. wg
 - 36 in. maximum length at 3 in. wg
 - 30 in. maximum length at 4 in. wg
 - Not allowed above 4 in. wg

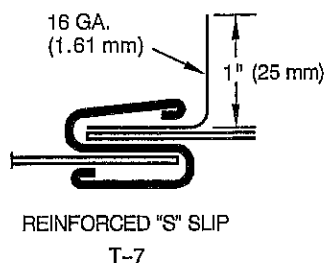


- Fasten standing portions within 2 in. of each end and elsewhere at 8 in. spacing or less
- Any length at 2 in. wg
- 36 in. maximum length at 3 in. wg
- 30 in. maximum length at 4 in. wg
- Not allowed above 4 in. wg

All Duct under 24" Wide

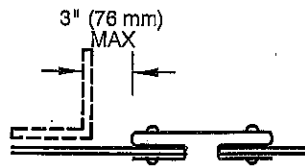


- Not less than two gages less than duct gage
- 24 ga minimum
- When used on all 4 sides, fasten within 2 in. of the corners and at 12 in. maximum intervals
- 2 in. wg maximum pressure



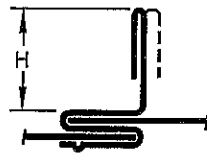
- Use slips conforming to T-6
- Use 16 ga angle of 1 in. height into slip pocket
- Fasten with screws at ends
- Angle used only for A, B, or C rigidity class
- 2 in. wg maximum pressure

FIGURE 2-1 RECTANGULAR DUCT/TRANSVERSE JOINTS

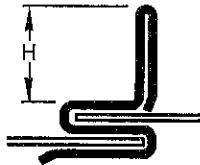


T-8 DOUBLE "S" SLIP
(T-8a REINFORCED)

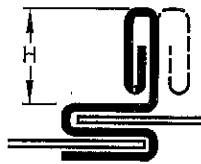
- 24 ga for 30 inch width or less
- 22 ga over 30 inch width
- Fasten to each section of the duct within 2 in. from corners and at 6 in. maximum intervals
- 5/8 in. minimum tabs to close corners



STANDING S
T-10

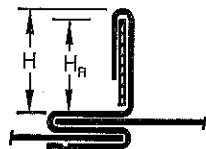


STANDING S (ALT.)
T-11



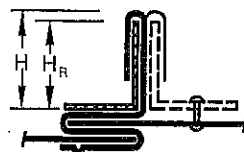
STANDING S (ALT.)
T-12

- When using S on all four sides, fasten slip to duct within 2 in. of the corner and at 12 in. maximum intervals
- Any length at 2 in. wg
- 36 in. maximum length at 3 in. wg
- 30 in. maximum length at 4 in. wg
- Not allowed above 4 in. wg



STANDING S
(BAR REINFORCED)
T-13

- Fasten as per Joint T-10
- Standing portion as per T-10 or T-11 to hold Flat Bar
- Fasten bar stock to the connector within 2 in. of the corner and at 12 in. maximum intervals
- Any length at 2 in. wg
- 36 in. maximum length at 3 in. wg
- 30 in. maximum length at 4 in. wg
- Not allowed above 4 in. wg

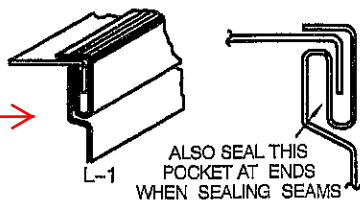


STANDING S
(ANGLE REINFORCED)
T-14

- Fasten as per Joint T-10
- Fasten angle to the connector or duct wall within 2 in. of the corner and at 12 in. maximum intervals
- Any length at 2 in. wg
- 36 in. maximum length at 3 in. wg
- 30 in. maximum length at 4 in. wg
- Not allowed above 4 in. wg

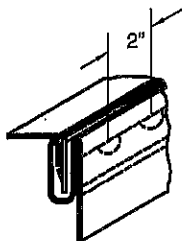
FIGURE 2-1 RECTANGULAR DUCT/TRANSVERSE JOINTS (CONTINUED)

All Duct →



PITTSBURGH LOCK

- Pocket depth from ¼ in. to ⅝ in.
- Use on straight duct and fittings
- To ± 10 in. wg



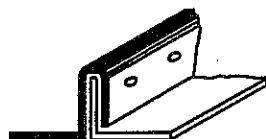
L-2
BUTTON PUNCH SNAP LOCK

- ⅝ in. pocket depth for 20, 22, and 24 ga
- ½ in. pocket depth for 24 and 26 ga
- To ± 4 in. wg
- Screws must be added at the ends of all duct of 4 in. wg and at the ends of 3 in. wg when the duct is over 48 in. width



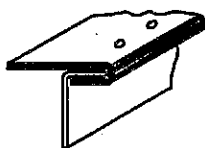
L-3
GROOVED SEAM
ALSO CALLED FLAT LOCK AND PIPE LOCK

- To ± 10 in. wg



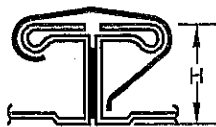
SEE FIG. 2-7 ALSO
L-4 STANDING SEAM

- To ± 10 in. wg
- 1 in. seam up to duct width of 42 in.
- 1 ½ in. seam for larger ducts
- May be used on duct interiors
- Fasten at 2 in. maximum from ends and at 8 in. maximum intervals



L-5 SINGLE CORNER SEAM

- To ± 10 in. wg
- Fasten as per L-4



FLANGED
(WITH GASKET)
T-25a



FLANGED
(WITH GASKET)
T-25b

- Assemble per Figure 2-17
- Ratings may be adjusted with EI-rated bar stock or members from Tables 2-29 and 2-30
- Supplemental members may be attached to the duct wall on both sides of the joint
- Single members may be used if they are fastened through both mating flanges
- Gasket to be located to form an effective seal

FIGURE 2-2 RECTANGULAR DUCT/LONGITUDINAL SEAMS

SEE TABLES 2-47 AND 2-48.
 DUCTS WITH FLAT SLIP CONNECTORS
 AND NO REINFORCEMENT
 SEE OTHER FIGURES AND TEXT
 FOR COMPLETE REQUIREMENTS
 AND LIMITATIONS

JOINT OPTIONS



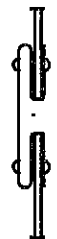
DRIVE SLIP
T-1



PLAIN "S" SLIP
T-5



HEMMED "S" SLIP
T-6



DOUBLE "S" SLIP
T-8

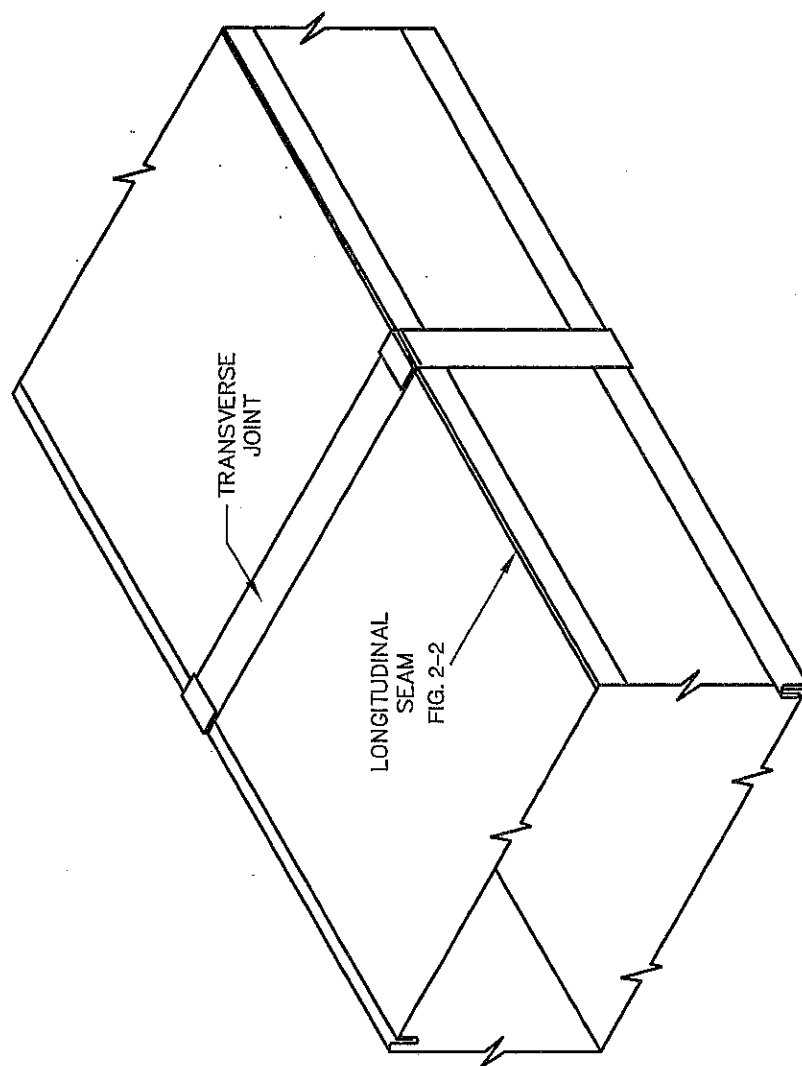
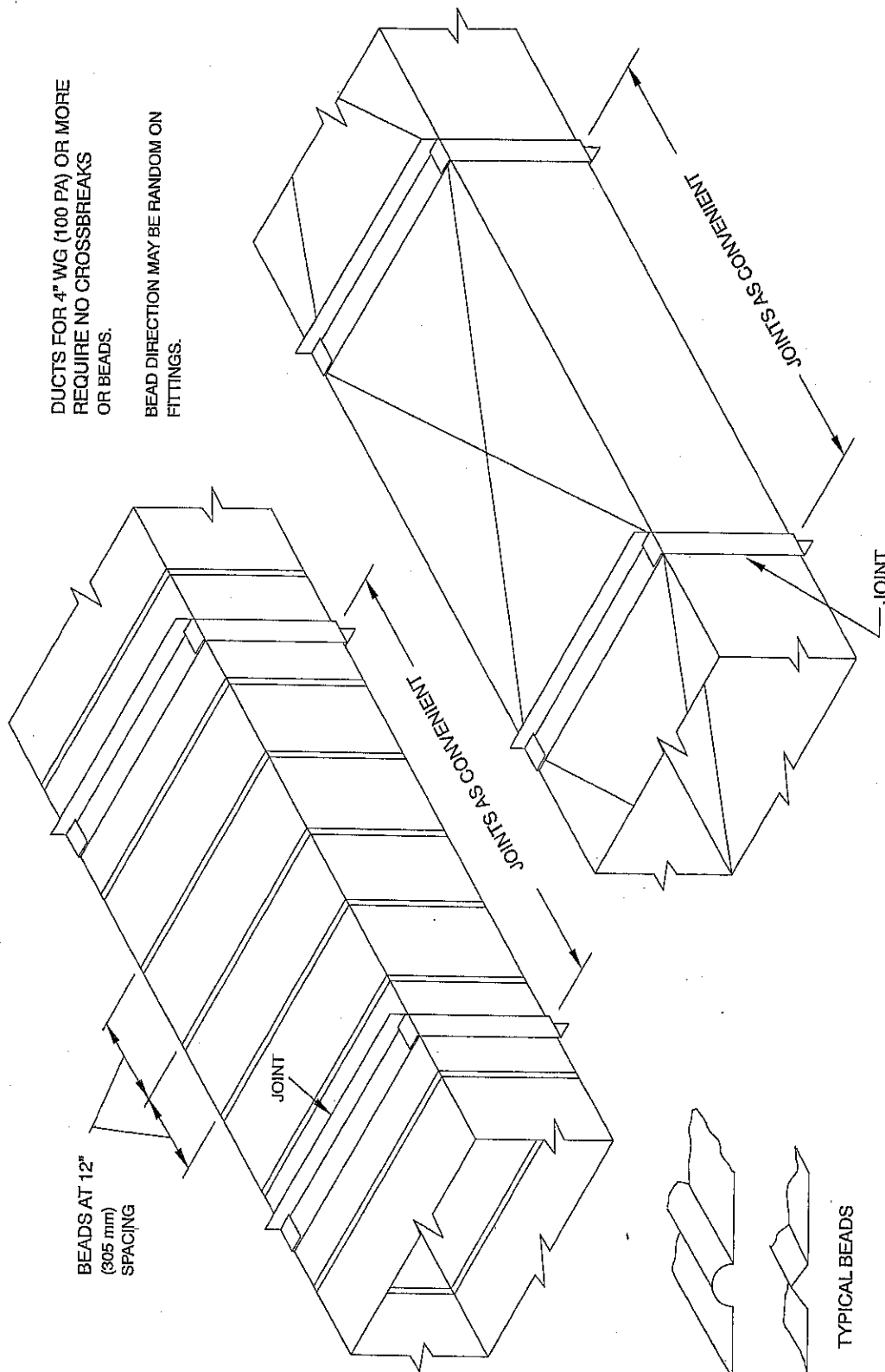


FIGURE 2-8 UNREINFORCED DUCT

DUCT SIZES 19" (483 mm) WIDE AND LARGER WHICH HAVE MORE THAN 10 SQUARE FEET (0.93 SQUARE METER) OF UNBRACED PANEL SHALL BE BEADED OR CROSS BROKEN UNLESS DUCTS WILL HAVE INSULATION COVERING OR ACOUSTICAL LINER. THIS REQUIREMENT IS APPLICABLE TO 20 GAGE (1.00 mm) OR LESS THICKNESS AND 3" WG (750 PA) OR LESS. IT IS UNNECESSARY TO BREAK OR BEAD ALL SIDES UNLESS EACH DUCT DIMENSION REQUIRES IT.

DUCTS FOR 4" WG (100 PA) OR MORE REQUIRE NO CROSSBREAKS OR BEADS.

BEAD DIRECTION MAY BE RANDOM ON FITTINGS.



NOTICE: NEITHER BEADS NOR CROSSBREAKS AFFECT REINFORCEMENT SPACING SCHEDULE.

FIGURE 2-9 CROSSBROKEN AND BEADED DUCT

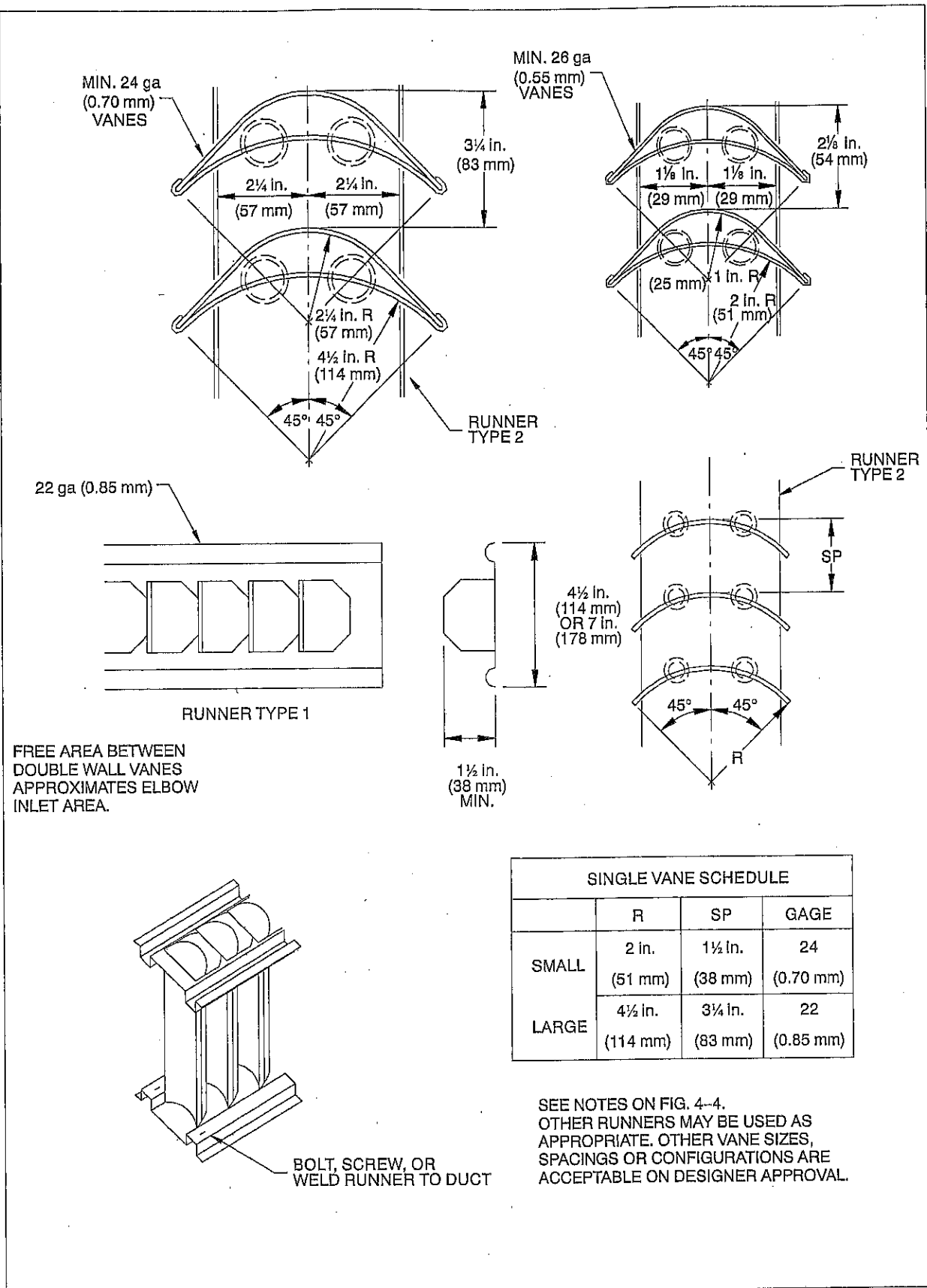
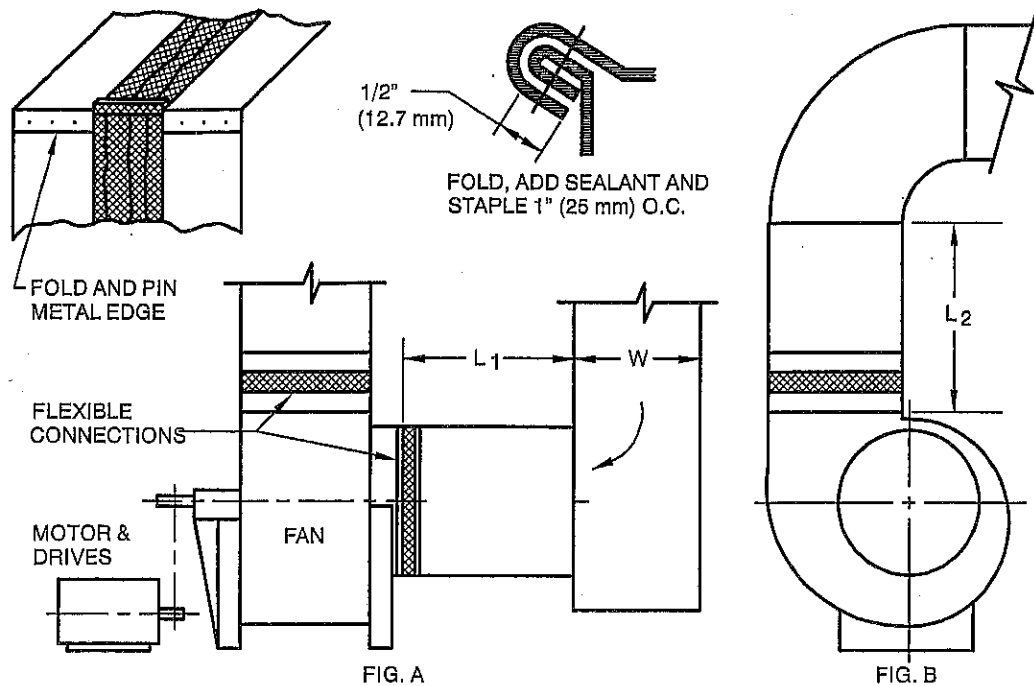


FIGURE 4-3 VANES AND VANE RUNNERS



NOTE: SMACNA DUCT DESIGN MANUAL, AND AMCA PUBLICATION 201 REVIEW PERFORMANCE OF VARIOUS INLET AND OUTLET CONDITIONS (L_1 , L_2 , W DIMENSIONS, ETC.)

SEE SMACNA HVAC SYSTEMS DUCT DESIGN MANUAL FOR INLET ARRANGEMENTS IN CRAMPED SPACE

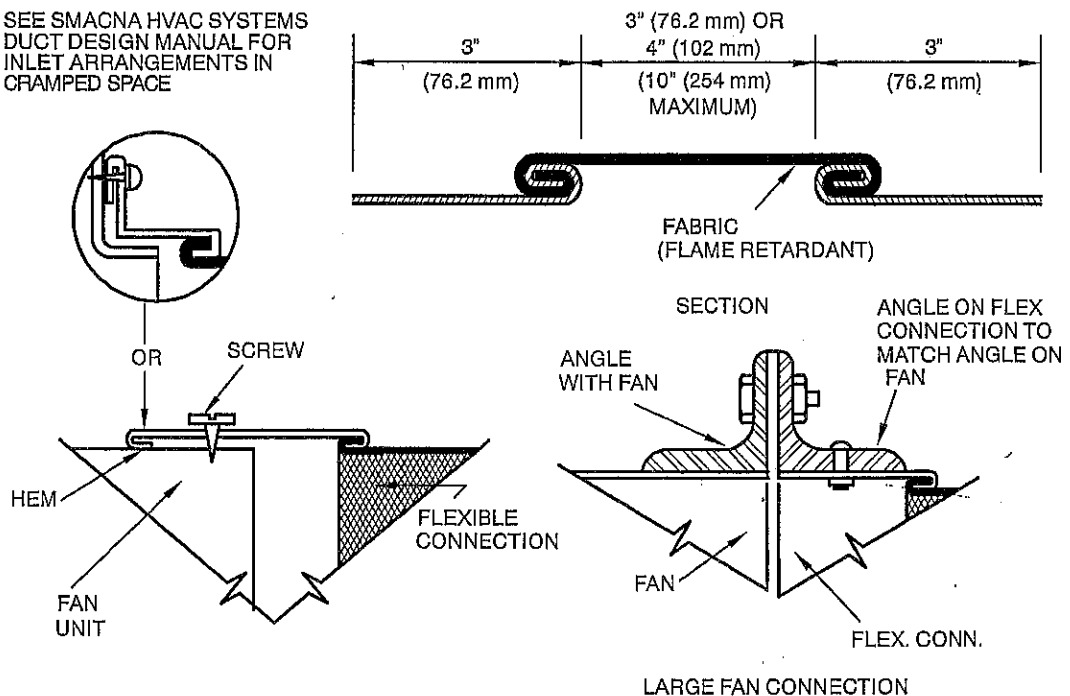
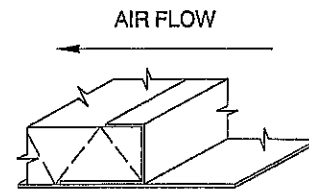


FIGURE 7-8 FLEXIBLE CONNECTIONS AT FAN

NOTE:

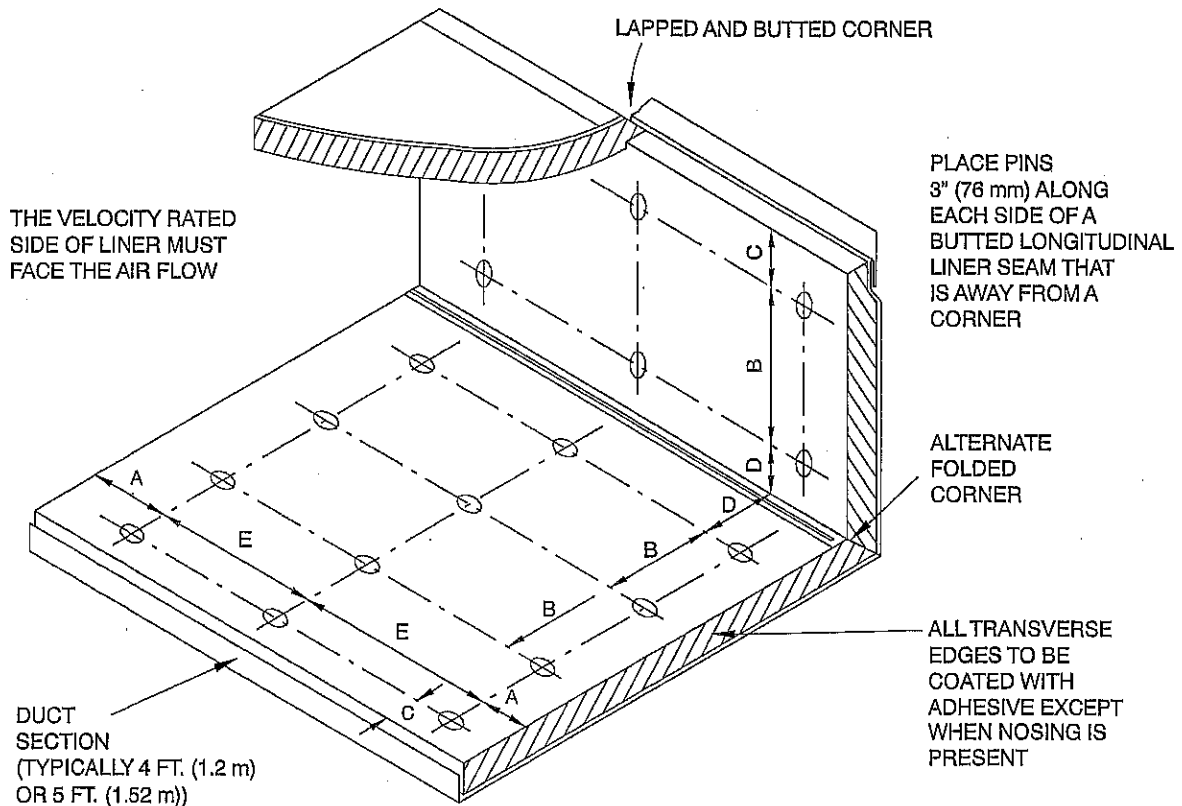
SEE TYPICAL DUCT BRANCH ENTRY CONDITION IN FIG. 4-6.

METAL NOSING MUST BE USED WHEREVER LINER IS PRECEDED BY UNLINED METAL; OTHERWISE WHEN VELOCITY EXCEEDS 4000 FPM (20.3 MPS) USE METAL NOSING ON EVERY LEADING EDGE. NOSING MAY BE FORMED ON DUCT OR BE CHANNEL OR ZEE ATTACHED BY SCREWS, RIVETS OR WELDS.



DETAIL - A
METAL NOSING
CHANNEL OR ZEE

INTERIOR WIDTH OF 8" (200 mm) AND LESS DOES NOT REQUIRE PINS.



THE VELOCITY RATED SIDE OF LINER MUST FACE THE AIR FLOW

PLACE PINS 3" (76 mm) ALONG EACH SIDE OF A BUTTED LONGITUDINAL LINER SEAM THAT IS AWAY FROM A CORNER

ALTERNATE FOLDED CORNER

ALL TRANSVERSE EDGES TO BE COATED WITH ADHESIVE EXCEPT WHEN NOSING IS PRESENT

DUCT SECTION
(TYPICALLY 4 FT. (1.2 m)
OR 5 FT. (1.52 m))

MAXIMUM SPACING FOR FASTENERS.
ACTUAL INTERVALS ARE APPROXIMATE.

"A" PIN ROW MAY BE OMITTED WHEN METAL NOSING IS USED. "E" THEN STARTS FROM THE NOSING.

LINER ADHERED TO THE DUCT WITH 90% MIN. AREA COVERAGE OF ADHESIVE

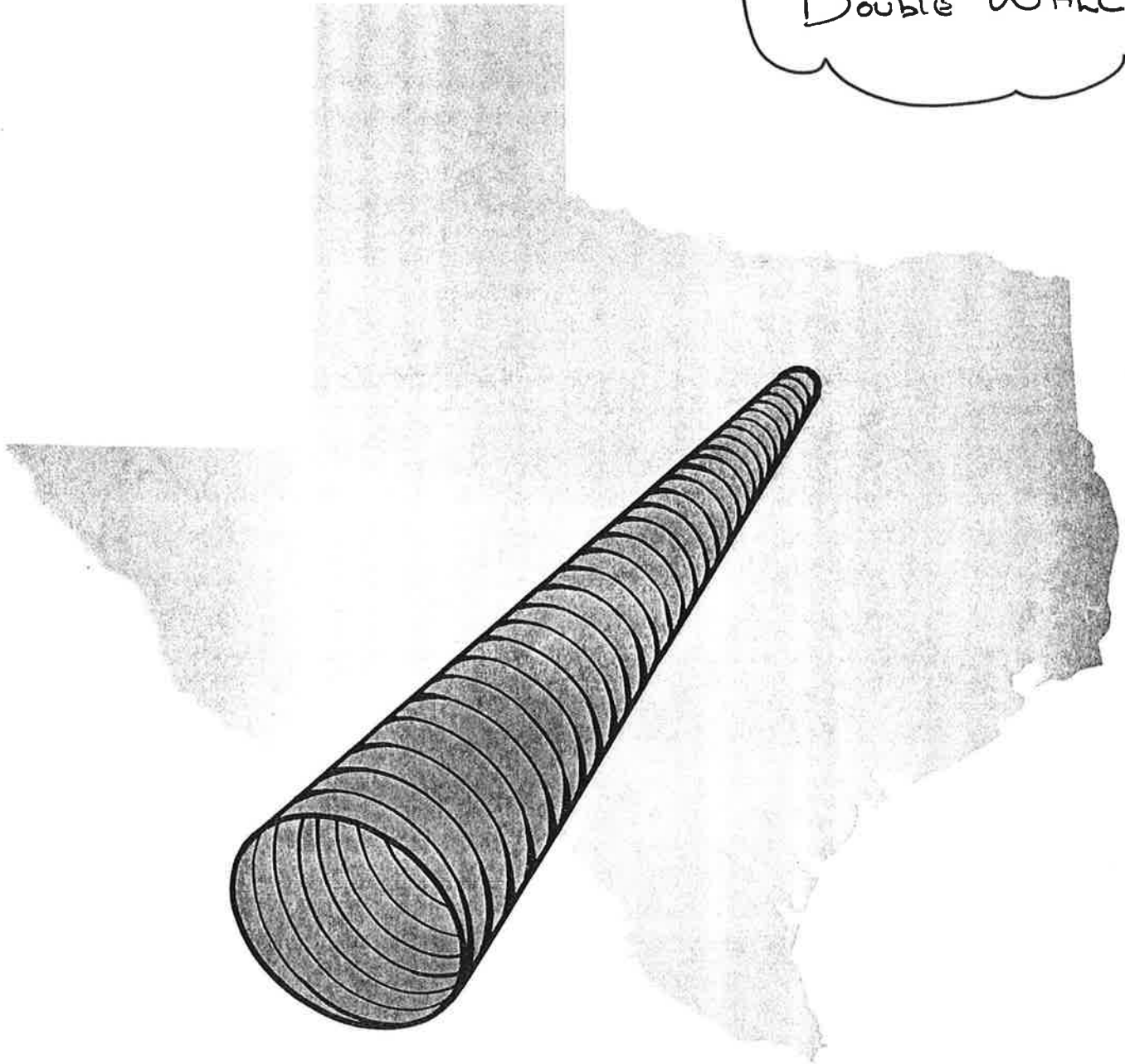
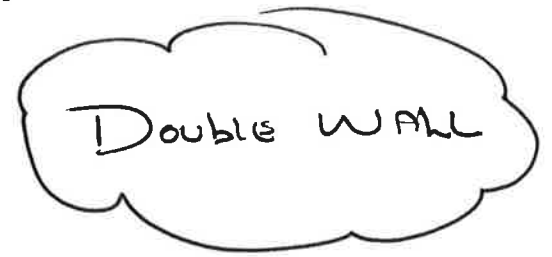
Velocity *	Dimensions				
	A	B	C	D	E
0 - 2500 FPM (0 - 12.7 MPS)	3" (76.2)	12" (305)	4" (102)	6" (152)	18" (457)
2501 - 6000 FPM (12.7 - 30.5 MPS)	3" (76.2)	6" (152)	4" (102)	6" (152)	16" (406)

* UNLESS A LOWER LEVEL IS SET BY MANUFACTURER OR LISTING AGENCY

FIGURE 7-11 FLEXIBLE DUCT LINER INSTALLATION

SPIRAL PIPE

OF TEXAS, INC.



FORT WORTH, TEXAS

817-838-6796

Spiral Pipe of Texas, Inc.
Double Wall Round
Standard Gauge Chart

Outer Pressure Shell (O.D.)			
Diameter	Spiral Pipe	Long Seam Pipe	Fittings
5" - 10"	28	26	26
11" - 14"	26	24	24
15" - 26"	24	22	22
27" - 36"	22	20	20
37" - 50"	20	20	20
51" - 60"	18	18	18
61" - 84"	18	16	16
Inner Liner (I.D.)			
3" - 36"	24	24	24
37" - 50"	24	22	22
51" - 60"	24	20	20
61" - 84"	20	20	20

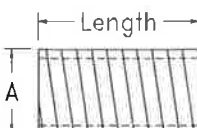
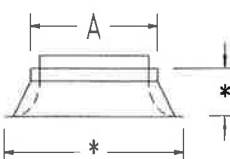
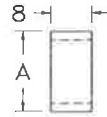
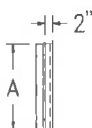
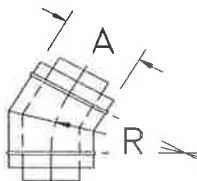
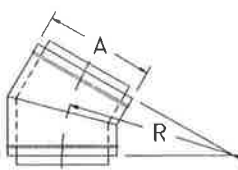
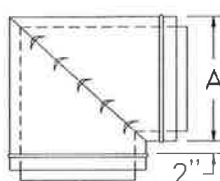
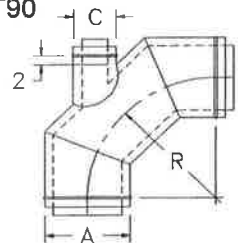
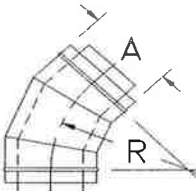
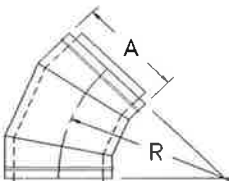
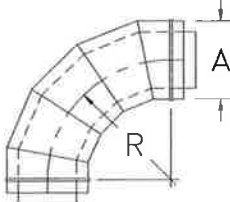
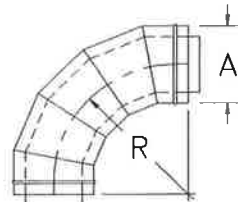
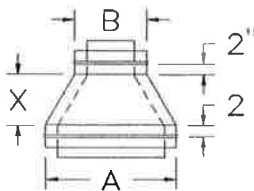
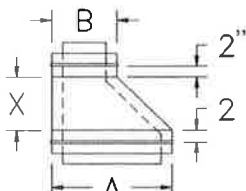
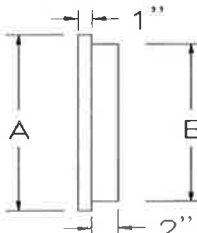
One inch insulation layer to meet requirements set forth in NFPA pamphlet #90A (catalogue NFPA #255) as to flame spread and smoke developed ratings. K-value at 75 degree M.T. = .26 BTU.

Spiral Pipe of Texas' Round Ductwork is available in the following materials:

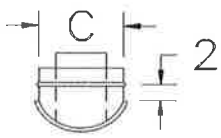
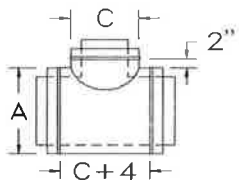
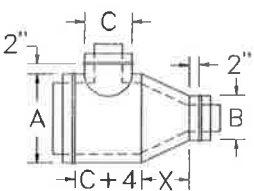
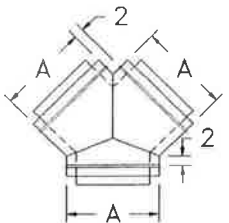
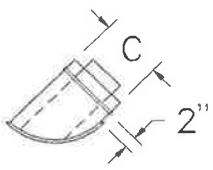
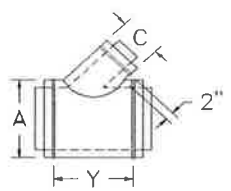
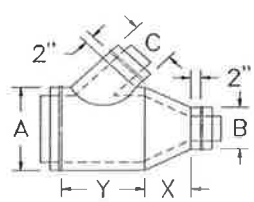
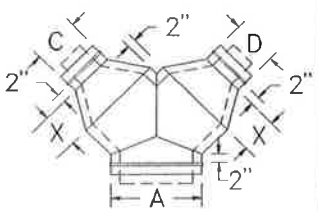
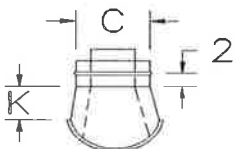
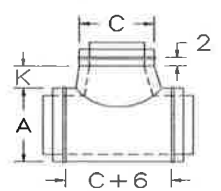
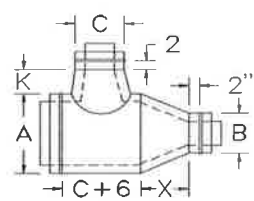
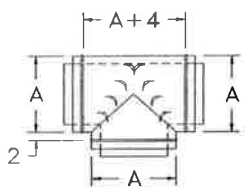
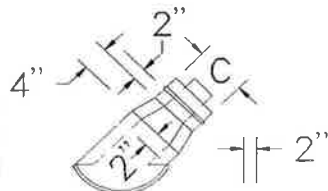
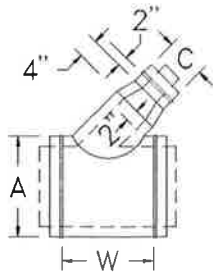
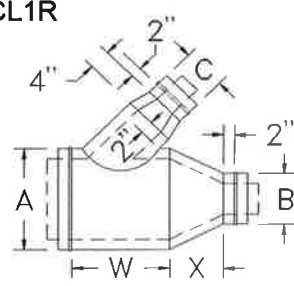
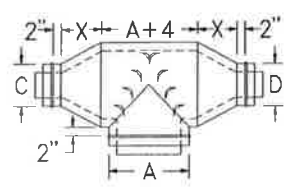
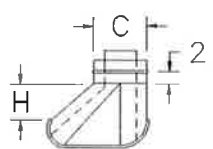
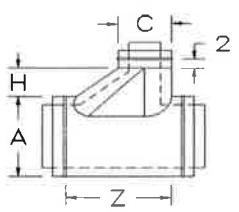
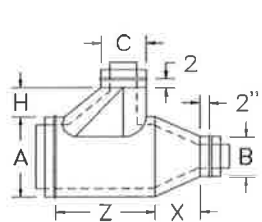
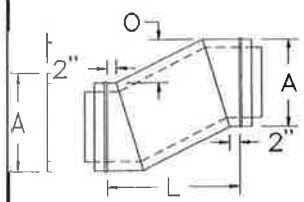
Galvanized G60 and G90
Phosphatized ("Paint-Grip")
304L Stainless Steel
316L Stainless Steel
Polyvinyl Coated
Aluminum

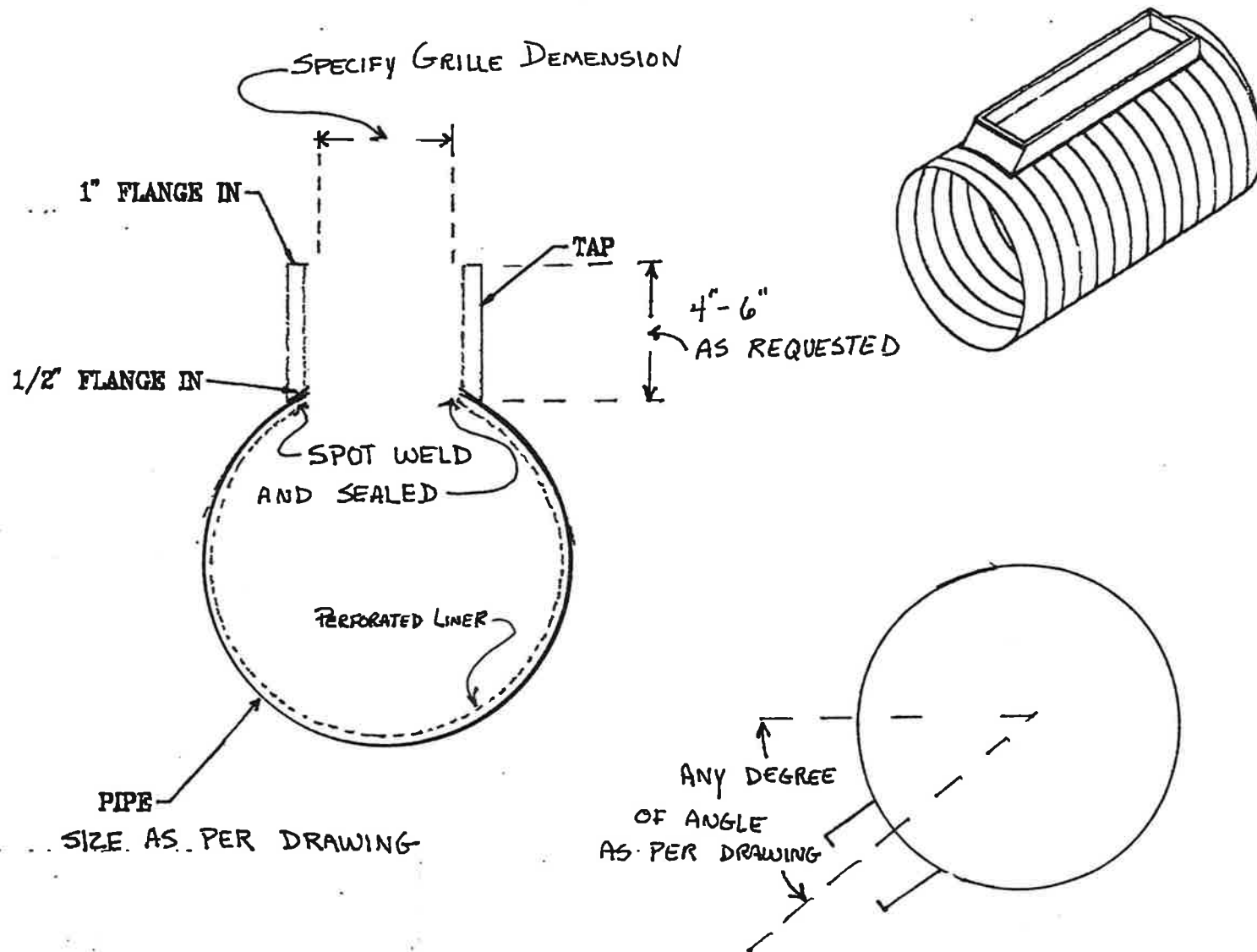
Special materials are available. Please contact your nearest representative for details.

Spiral Pipe of Texas' products are manufactured in accordance with applicable SMACNA, ASHRAE and SPIDA standards.

Double Wall Round Spiral Pipe and Fitting Standards					
SP	B1	PP	FF	EC	EP
		 PIPE TO PIPE	 FITTING TO FITTING	 END CAP	 END PLUG
Spiral Pipe	Bellmouth	Couplings		Caps & Plugs	
E1 Thru E36		EV90	ET90		
 A = 3" Thru 24"	 A = Greater than 24"	 A = 3" Thru 60"	 A = 3" Thru 60"		
2 Gore Elbows		Mitered Elbow	Elbow w/Tap		
E37 Thru E71		E72 Thru E90			
 A = 3" Thru 24"	 A = Greater than 24"	 A = 3" Thru 24"	 A = Greater than 24"		
3 Gore Elbows		5 Gore Elbows			
R1	ER1	SD			
					
Reducers		Stepdown			
Dimensions: A = Inlet Size B = Outlet Size C = Branch Size D = Branch Size H = 3" if C = 3" to 8" 6" if C = 9" to 16" 9" if C = 17" to 24" 12" if C = 25" & Up K = 5 1/4" L = Offset Length O = Offsetting Amount R = 1.5 x A S = 2 T = A/4+2 U = Ax2+2 V = (A/2x1.414)+((C+2)/2)+6 W = (C+2)x1.414+4 X = A - B (with 4" minimum) Y = (1.414 x C) + 4 Z = C+H+4 * = Consult Factory **Dimension of Liner = O.D. - (2 x Insulation Thickness) **End of Liner Extends 2" Past Ends of Fittings					

Double Wall Round Spiral Pipe and Fitting Standards

LT	T1	T1R	Y2
			
Straight 90 Degree Tees			"Y" Fitting
LL	L1	L1R	Y2R
			
45 Degree Lateral Tees			Reducing "Y" Fitting
LCT	CT1	CT1R	BT
			
Conical 90 Degree Tees			Bullhead Tee
LCL	CL1	CL1R	BTR
			
Conical 45 Degree Lateral Tees			Reducing Bullhead
LLL	LL1	LL1R	SET
			
Low Loss 90 Degree Tees			Offset



SPOT
America's Sheet Metal Source

DWG. BY:
TEL
DWG. FILE NAME:
SWTAPSS

TITLE
DOUBLE WALL MOUNTED
REGISTER TAP
SPOT AND SEALED

REF. CONTRACT DWG. NO.

-

BLDG. OR AREA:

-

SCALE:
NONE

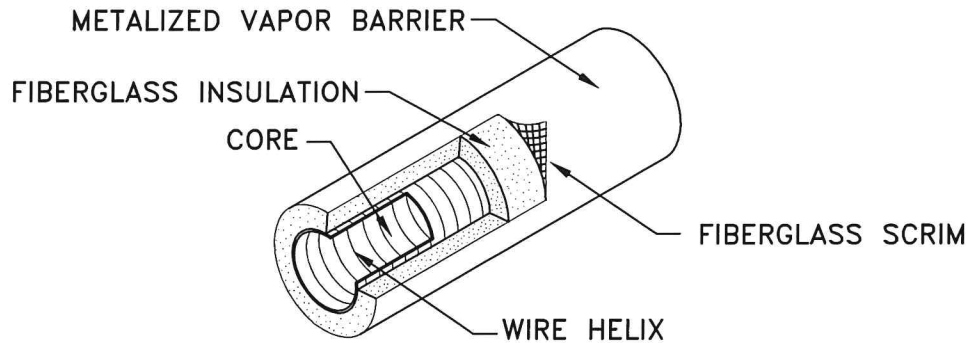
DATE:
1/30/96

JOB NO.:

-

SHEET NO.

1 OF 1



CORE

- Two plies of black polyester film encapsulate a steel wire helix.
- Rated pressures (UL-181): 12 in. W.C. positive, 3/4 in. W.C. negative ($\leq 12''\varnothing$) & 1/2" W.C. negative ($> 12''\varnothing$).
- Recommended maximum operating pressures (ADC Test FD 72-R1):
6 in. W.C. positive for 12 in. diameter and under.
4 in. W.C. positive for 14 in. diameter and over.
- Rated maximum air velocity: 5000 FPM.

THERMAL CHARACTERISTICS

- R-6.0 formaldehyde free insulation certified by UL and the Air Diffusion Council in accordance with ADC Flexible Duct Performance and Installation Standards using ASTM C-518 at installed wall thickness on flat insulation only.

VAPOR BARRIER

- This metalized vapor barrier is constructed using fiberglass scrim which provides an outstanding combination of strength and tear resistance.
- Perm rating of 0.04 perms when measured per ASTM E96, Method A.

SURFACE BURNING CHARACTERISTICS

- Flame Spread: Less than 25
- Smoke Developed: Less than 50

OPERATING TEMPERATURE RANGE

- -20°F to 140°F Continuous
- -20°F to 250°F Intermittent

SIZE AVAILABILITY

- Standard length: 25 feet
- Diameters offered: 4" - 10", 12", 14", 16", 18" & 20"
- Plain ends
- F216 - Packaged in boxes
- FB216 - Packaged in bags

APPROVALS/COMPLIANCE

- UL-181 (UL LISTED)
- NFPA 90A & 90B
- HUD, IMC, UMC
- California Bureau of Home Furnishings
- Most Federal, State, and Local Codes and Standards.
- GREENGUARD Children & Schools
- GREENGUARD Level 4 "Highly Microbial Resistant" Rated
- CHPS
- American Schools & Hospital Facilities Product Directory

JOB NAME: _____	SUBMITTED BY: _____	DATE: 7/17/2014	SD-5012
LOCATION: _____		F216, FB216	
ARCHITECT: _____		Insulated Flexible Air Duct	
ENGINEER: _____		Class 1, R-6.0	
CONTRACTOR: _____		Polyester Core Metalized Vapor Barrier	

PART NUMBERS

304093	1 Case w/ (24) 2" x 100' Rolls (Non-printed)
304094	1 Case w/ (16) 3" x 100' Rolls (Non-printed)
304095	1 Case w/ (12) 4" x 100' Rolls (Non-printed)
304096	1 Case w/ (8) 6" x 100' Rolls (Non-printed)
304083	1 Roll 36" x 100' (Non-printed)
304099	1 Case w/ (24) 2" x 100' Rolls (Printed)
304100	1 Case w/ (16) 3" x 100' Rolls (Printed)

TECHNICAL DATA

Appearance	Mill finish aluminum substrate with gray adhesive/sealant
Backing	Aluminum
Thickness	17 mils
Sealant Material	Modified butyl
Peal Strength	>10 lbs. per linear inch
Tensile Strength	955 psi avg.
Elongation	560% avg.
Flexibility	Excellent, no cracking
Bonding Time	Instant high tack, full bond 24 hours
Time to Test	Immediate
Service Temperature	-20°F to 180°F
Weather Resistance	Passes 2000 hours QUV (When tested in accordance with ASTM G53)
Mildew Resistance	Mold & mildew resistant
VOC	0 g/l
Pressure Classes	SMACNA ½, 1, 2, 3, 4, 6 and 10 inches w.g.
Seal Class	Meets Seal Class A
Packaging	100-ft. rolls in 2, 3, 4, 6 and 36-inch widths 400 ft. ² per case

SPECIFICATION/STANDARDS COMPLIANCE

Property	Method	Results
VOC Limitation	SCAQMD Rule 1168	Pass
City of Los Angeles Approval RR#8069		Pass

Foil-Grip 1402 is a pressure sensitive, 40-year cycle, duct joint and general purpose rolled sealant. It provides an instant water resistant grip to most surfaces including sheet metal, duct board, flex duct, PVC coated duct, and duct wrap vapor barriers. Foil-Grip 1402 is suitable for subgrade application on PVC coated duct and is ideal for replacement applications.

APPLICATION

Temperature	35°F to 110°F (1.7°C to 44°C)
Method	Cut desired length, peel off release liner, apply. Removal or repositioning may damage Foil-Grip 1402 and surface. Overlap at ends. Use squeegee with heavy pressure to assure complete contact.
Preparation	Surface must be dry and free of dirt, oil and grease.
Clean Up	UN-TACK™ or Solvent (Use safe handling practices.)
Painting	Use paint appropriate for aluminum

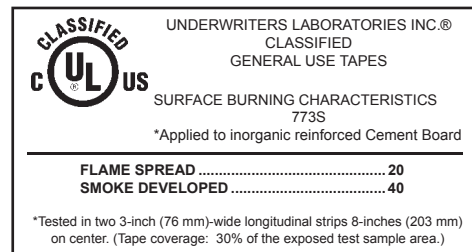
STORAGE

Temperature	35°F to 110°F (1.7°C to 44°C) DO NOT FREEZE
Shelf Life	24 months
Flammability	Non-flammable

PRECAUTIONS

Surfaces must be clean and free of moisture and contamination. Do not apply this product in areas where temperatures will exceed 200°F. Keep out of the reach of children. DO NOT use where acidic or alkaline chemicals are present (ie., lab fume hood, vents, etc.)

For Industrial Professional Use Only.



Submittal Record

Job: _____

Location: _____

Submitted To: _____

Submittal Prepared By: _____

Approved By: _____

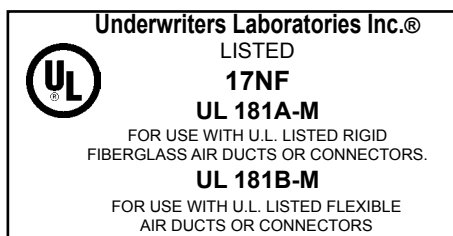
Date: _____

Compliant with
LEED Requirements

TECHNICAL DATA

Color	White & Gray
Consistency	Heavy textured
Base	Synthetic latex
Solvent	Water
Weight per Gallon	11.6 lbs.
Solids Content	70%
Viscosity	Thixotropic
Coverage (UL 181 A-M)	Apply 18 mil, scrim, addt. 18 mil
(UL 181 B-M)	Approximately 214 to 320 lin. ft. per gal. at 20 to 30 mil wet film thickness at 3" width.
Shore A Hardness	>20
Flexibility	Passes ¼ inch mandrel bend
Time to Test	48 hours*
Service Temperature	-20°F to 200°F
Mildew Resistance	Mold & Mildew resistant
VOC	45 g/l (less water)
Surface Burning	Flame Spread 0 Smoke Developed 0 (When tested in accordance with ASTM E84, UL 723)
Pressure Classes	SMACNA ½, 1, 2, 3, 4, 6 and 10 inches w.g.
Seal Classes	SMACNA A, B, C
Packaging	11 oz. cart.; 1, 2 & 5 gal. pails
Freeze/Thaw Stability	Passed 5 Cycles
Specification Compliance	Passes ASTM C-731, D-2202 USDA, EPA & FDA Approved. LEED compliant SCAQMD Rule 1168.

*May vary according to
temperature and humidity



City of Los Angeles Approval RR#8427

PRECAUTIONS

Surface must be clean and free of moisture, contamination and foreign matter. Do not allow this product to freeze. Do not apply when rain or freezing temperatures will occur within 36 hours. Do not apply this product where temperatures will exceed 200°F. Keep out of the reach of children. Review MSDS for complete safety information prior to use. DO NOT use where acidic or alkaline chemicals are present (ie., lab fume hood, vents, etc.)

For Industrial Professional Use Only.

CCWI-181

Indoor/Outdoor Water Based Duct Sealant

A versatile, **all purpose duct sealant** for use on all types of metal duct, glass fiber duct board, and flex duct, as well as duct fabric and flexible tubing runouts. CCWI 181 incorporates a built-in **polyester reinforcement** for **exceptional strength**, with UV inhibitors for outdoor use. UL 181A-M listed / UL 181B-M listed.

CCWI-181 PART NUMBERS

1 Case w/ (25) 11 oz. Cartridges (White)	304142
1 Case w/ (25) 11 oz. Cartridges (Gray)	304146
1 Case w/ (4) 1-Gallon Pails (White)	304144
1 Case w/ (4) 1-Gallon Pails (Gray)	304148
1 - 2-Gallon Pail (White)	304143
1 - 2-Gallon Pail (Gray)	304147
1 - 5-Gallon Pail (White)	304145
1 - 5-Gallon Pail (Gray)	304149

APPLICATION

Temperature	35°F. to 110°F. (1.7°C to 44°C)
Method	Brush, putty knife, caulk gun, pump
Preparation	Surface must be dry, dirt, oil, and grease free.
Rate (UL 181 A-M):	Apply 18 mil, scrim and 18 mil over scrim.
(UL 181 B-M):	Approx. 214 to 320 lin. ft. per gal. at 20 to 30 mil wet film thickness at 3" width.
Clean Up Wet	Soap and water
Clean Up Dry	UN-TACK™ or Solvent (Use safe handling practices.)
Painting	Only latex or epoxy paints
Ductboard ..	Scrim required for UL 181A-M
STORAGE	
Temperature	35°F. to 110°F. (1.7°C to 44°C)
	DO NOT FREEZE
Shelf Life	One year (unopened)
Flammability	Non-flammable

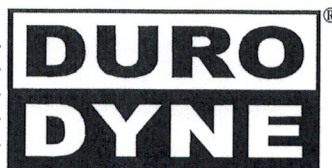
For additional information contact:



900 Hensley Lane
Wylie, Texas 75098
Phone: (800) 527-7092 FAX: (972) 442-0076
www.hardcast.com

SUBMITTAL RECORD

JOB _____
 LOCATION _____
 SUBMITTED TO _____
 SUBMITTAL PREPARED BY _____
 APPROVED BY _____
 DATE _____

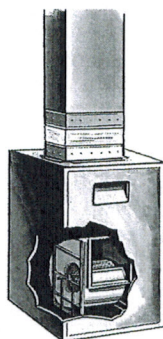


Submittal Form DDFDC Flexible Duct Connector

DESCRIPTION

All air duct installations for heating, cooling or ventilation are attached to mechanical equipment containing a fan or blower. Vibrations, noises and rattles resulting from operation of the fan or blower are transmitted into the metal ducts which carry the noises throughout the system.

In order to isolate the vibration and noises to the source, an air-tight flexible joint, consisting of a fabric which is attached to sheet metal on both side, must be inserted between the equipment and the ductwork. This vibration isolator is called a "Flexible Duct Connector".



RELATED NFPA 90A & 90B STANDARDS

2-3.2.2 Vibration isolation connectors in duct systems shall be made of an approved flame-retardant fabric or shall consist of sleeve joints with packing of approved material, each having a maximum flame spread index of 25 and a maximum smoke developed index of 50. Exception: Approved flame-retardant fabric having a maximum length of 10 in. (45.4 cm) in the direction of airflow-NFPA No. 90A 1999

2-1.1.1 Exception No. 3: Vibration isolation connectors in duct systems shall be made of approved flame-retardant fabric or shall consist of sleeve joints with packing of approved noncombustible material. The fabric shall not exceed 10 in. (254 mm) in length in direction of airflow-NFPA No. 90B 1999

FABRIC COMPARISONS	Excelon ⁴	Neoprene	Durolon	Insulflex [*]	Thermafab [®]	Envirofab	Teflon	Glasseal
UL Classified File #	R4462	R4462	R4462	R4462	R4462	R4462	n/a	R4462
Continuous Temp. Range	-40°F. to 180°F.	-40°F. to 200°F.	-40°F. to 250°F.	-40°F. to 180°F.	-65°F. to 500°F.	-40°F. to 200°F.	-150°F. to 500°F.	-40°F. - 180°F.
Color	Black or Spec Chek Orange	Black	White	Black	Grey	Black/White	Grey Outside/ Beige Inside	Grey & Black
Weight Per Square Yard	22	30	26	28 (composite weight)	17	18	16.5	16
Leakage Resistance ¹	350	595	250	125	400	350	650	120
Tear Strength ²	100/100	12/12	12/12	8/11	50/40	60/80	50/30	8/9
Tensile Strength ³	240/220	500/450	225/300	70/70	200/150	200/190	400/300	90/90
Base Fabric	Woven Nylon/ Polyester Blend	Woven Fiberglass	Woven Fiberglass	Polyester	Woven Fiberglass	Polyester	Fiberglass/ Satin Weave	Woven Fiberglass
Coating	Vinyl	Neoprene	Hypalon	Vinyl	Silicon Rubber	Proprietary Vinyl Blend	Teflon	Vinyl
Features	High Tear Strength High Abrasion Resistance	General Purpose	Excellent Ozone and Weathering Resistance Best Overall Acid Resistance	Low Smoke Emission Insulated 3-4-3 Configuration	Very Low Smoke Emission High Temperature Resistant	"Green" 10% Recycled Content UV Reflective Puncture Resistant	High Temperature Resistant High Corrosion Resistance Excellent Chemical Resistance	Resistant to Acids & Chemical Fumes Resistant to Grease & Alkalies Unaffected By Mildew
Codes	MBX (#10159) MSPX (#10263)	MFN (#10003)	MFD (#10002)	IDC (#10173) *Gauge: 28 +Guard Loc	MFT (#10005)	MEV4-100 (#10301)	MCT333 (#10278)	MGL (#10004)
Metal-Fab 3x3x3								
Grip Loc	MB6X (#10160)	MF6N (#10012)	MF6D (#10011)	Not Available	MF6T (#10013)	Not Available	Not Available	MF6G (#10016)
Super Metal-Fab 3x6x3	MSP6X (#10265)							
Grip Loc	MBX4x4x4 (#10210)	MFN4x4x4 (#10211)	MFD4x4x4 (#10237)	Not Available	Not Available	MEV4x4x4 (#10300)	MCT444 (#10279)	Not Available
TDC/TDF 4x4x4	MSPX4x4x4 (#10264)	MFN4x6x4 (#10246)	MFD4x6x4 (#10245)					
Grip Loc	MBX4x6x4 (#10214)							

All Metal-Fab, Super Metal-Fab and TDC/TDF Flexible Duct Connectors are manufactured with 24 gauge galvanized steel. Other materials are available upon request. Stainless Steel configurations utilize 304 or 316 grade material.

Notes:

- Leakage resistance as per Federal Test Standard 191 Method #5512. Results in P.S.I. (To convert inches of water multiply P.S.I. x 27.176.).
- Tear strength in tongue pounds as per Federal Test Standard 191 Method #5134.1 (warp/fill).
- Tensile strength in grab pounds as per Federal Test Standard 191 Method #5100 (warp/fill).
- Standard Excelon is not LA city approved. Use Excelon-LA when LA city approval is necessary. (See Specification Form Excelon-LA - 203)



The Duro Dyne standard 'single fold' metal to fabric grip has been tested by an independent testing laboratory to withstand a negative pressure of -10"WC and a positive pressure of +17.25" WC with no tearing or visible separation.

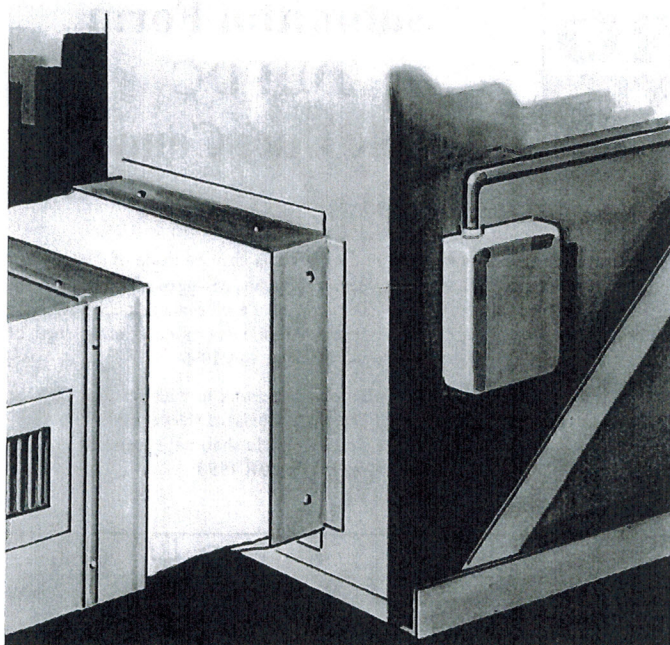
SUGGESTED SPECIFICATION

Vibration Isolating Flexible Duct Connector For Heating, Cooling & Exhaust Supplies & Returns.

At the inlet and discharge of all air handling equipment(unless otherwise noted) furnish and install vibration isolators. Vibration isolators shall be a coated woven fabric named _____ and shall be "Underwriters Laboratories Classified".

Vibration isolators shall have a tear strength of not less than _____, and a continuous temperature range of _____. Vibration isolators shall be preassembled metal to exposed fabric to metal. Fabric and metal shall be joined by means of a double lock seam.

Vibration isolators shall be code _____ (called Flexible Duct Connectors) as manufactured by Duro Dyne Corporation, Bay Shore, N.Y.



DURO DYNE®

Specifications

All Listed Duro Dyne Flexible Duct Connector Fabrics are designed to meet the following specifications:

1. MIL-C-20696B Para. 4.4.3. (Oil Resistance).
2. MIL-C-20696B Para. 4.4.4. (Hydro Carbon Resistance).
3. NFPA 90A Installation of Air Conditioning and Ventilating Systems Para. 2-3.2.2 1999 Edition.
4. NFPA 90B Warm air heating and air conditioning systems. Para. 2-1.1.1 exc. no 3 1999 Edition.
5. NFPA 701 Tests for Flame Propagation of Fabrics and film.
6. California State Fire Marshal Approved.
7. Los Angeles City Approved. (See note 1 below)
8. Denver City Approved.

All Duro Dyne Flexible Duct Connectors utilize galvanized steel meeting ASTM-A-525 G 60 or better.

Duro Dyne Flexible Duct Connectors are also available with 300 series stainless steel or 3003 aluminum upon request.

Note 1 - Standard Excelon is not LA city approved. Use Excelon-LA when LA city approval is necessary. (See Specification Form Excelon-LA - 203)

CHEMICAL RESISTANCE

(X = Extremely Resistant)

(~ = Not Recommended)

(O = No Data Available)

Chemical	Excelon	Neoprene	Durolon	Insulflex	Thermafab	Envirofab	Teflon	Glasscel	Chemical	Excelon	Neoprene	Durolon	Insulflex	Thermafab	Envirofab	Teflon	Glasscel
Acetic Acid	~	X	X	~	~	~	X	~	Hydrofluoric Acid (100%)	~	X	X	~	~	~	X	~
Aluminum Chloride	X	X	X	X	X	X	X	X	Hydrogen Peroxide	X	~	X	X	X	X	X	X
Aluminum Sulfate	X	X	X	X	X	X	X	X	Hydrogen Sulfide	X	X	X	X	O	X	X	X
Ammonia (Anhyd)	X	X	X	X	X	X	X	X	Lactic Acid	~	X	X	~	O	~	X	~
Ammonium Hydroxide	X	X	X	X	X	X	X	X	Linseed Oil	~	X	X	~	X	~	O	~
Ammonium Sulfate	X	X	X	X	X	X	X	X	Magnesium Chloride	~	X	X	~	~	~	X	~
Barium Sulfide	X	X	X	X	O	X	X	X	Maleic Acid	X	~	X	X	X	X	O	X
Black Sulfate Liquor	X	X	X	X	~	X	X	X	Methyl Alcohol	~	X	X	~	~	~	X	~
Boric Acid	X	X	X	X	X	X	X	X	Methyl Cellosolve	~	X	X	~	~	~	O	~
Butyl Alcohol	~	X	X	~	~	~	X	~	Mineral Oil	X	X	X	X	~	X	X	X
Cadmium Plating Solution	X	~	~	~	O	X	O	X	Naptha	~	~	~	~	X	~	X	~
Calcium Chloride	X	X	X	X	X	X	X	X	Nickel Chloride	X	X	X	X	O	X	X	X
Calcium Hypochlorite	X	~	X	X	O	X	X	X	Nickel Sulfate	X	X	X	X	X	X	X	X
Chlorine Water	X	~	~	X	~	X	O	X	Nitric Acid (40%)	X	~	X	X	~	X	X	X
Chromic Acid	X	~	X	X	O	X	X	X	Oleic Acid	X	~	~	X	~	X	X	X
Chromium Plating Solution	X	O	O	~	O	X	O	X	Oleum	~	~	X	~	O	~	X	~
Citric Acid	X	X	X	X	X	X	X	X	Oxalic Acid	X	X	X	X	X	X	X	X
Copper Chloride	X	X	X	X	O	X	X	X	Phosphoric Acid (85%)	~	X	X	~	X	~	X	~
Copper Sulfate	X	X	X	X	O	X	X	X	Pickling Solution	X	~	X	X	O	X	O	X
Cottonseed Oil	X	X	X	X	X	X	O	X	Potassium Chloride	X	X	X	X	O	X	O	X
Diacetone Alcohol	~	X	X	~	O	~	O	~	Potassium Cyanide	X	X	X	X	O	X	X	X
Disodium Phosphate	X	~	~	X	O	X	O	X	Potassium Dichromate	X	X	X	X	O	X	X	X
Ethyl Alcohol	~	X	X	~	~	~	X	~	Potassium Hydroxide (40%)	X	X	X	~	X	X	X	X
Ethylene Glycol	~	X	X	~	X	~	X	~	Potassium Sulfate	X	X	X	X	O	X	X	X
Ferric Chloride	X	X	X	X	X	X	X	X	Propyl Alcohol	~	X	X	~	~	~	O	~
Ferric Sulfate	X	X	X	X	X	X	X	X	Sodium Chloride	X	X	X	X	X	X	X	X
Fluoroboric Acid	X	X	X	~	O	X	O	X	Sodium Hydroxide (40%)	~	X	X	~	X	~	X	~
Formaldehyde (40%)	X	X	X	X	O	X	X	X	Sodium Hypochlorite	~	~	X	~	~	~	X	~
Formic Acid	X	X	X	X	O	X	X	X	Steam	~	X	~	~	O	~	X	~
Glucose	X	X	X	X	X	X	X	X	Sulfur Dioxide (Liquid)	~	X	X	~	X	~	X	~
Glycerine	~	X	X	~	X	~	X	~	Sulfuric Acid (50%)	X	~	X	~	~	X	X	X
Heptane	~	X	X	~	O	~	X	~	Sulfuric Acid (over 50%)	~	~	X	~	~	~	X	~
Hexane	~	X	X	~	O	~	X	~	Tannic Acid	X	X	X	X	O	X	X	X
Hydrobromic Acid (40%)	~	X	X	~	O	~	X	~	Vinegar	X	X	X	X	X	X	X	X
Hydrochloric Acid (conc)	~	X	X	~	~	~	X	~									

Duro Dyne East Division, Bay Shore, NY
Duro Dyne Midwest Division, Fairfield, OH
Duro Dyne West Division, Santa Fe Springs, CA
Duro Dyne Canada, Lachine, Quebec, Canada

www.durodyne.com E-mail: durodyne@durodyne.com

631-249-9000 Fax: 631-249-8346
513-870-6000 Fax: 513-870-6005
562-926-1774 Fax: 562-926-5778
514-422-9760 Fax: 514-636-0328

**DURO
DYNE®**

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Printed in USA 9/13
BO010403

DESIGN MANUAL

FACTORY-BUILT GREASE DUCT SYSTEMS



For Kitchen Ventilation Systems



Making The Right Choice For Your Client

DESCRIPTION	METAL-FAB "G".SERIES		
	Models 3G / 4G ALTERNATE TO FIRE RESISTIVE SHAFT ENCLOSURE Factory - Built	Models PIC / 1G / 2G REDUCED CLEARANCE TO COMBUSTIBLES Factory - Built	Models PSW SINGLE WALL STAINLESS STEEL Factory - Built
			
INSTALLED SPACE REQUIREMENTS 12" X 12" SQUARE DUCTS - 144 SQ. IN. 14" ROUND DUCT - 154 SQ. IN.	20" X 20"	20"/22" X 20"/22"	50" X 50"
CONSTRUCTION	Outer Casing (Integral Shaft Enclosure) Aluminized Carbon or Stainless Steel Insulation: 3" or 4" Ceramic Fiber Grease Duct - 20 Gauge Stainless Steel	Outer Casing - Aluminized Carbon or Stainless Steel Insulation: Air, 1" or 2" Ceramic Fiber Grease Duct - 20 Gauge Stainless Steel	Grease Duct - 20 Gauge Stainless Steel
CLEARANCES	Zero Clearance to Combustibles Zero Clearance to Limited Combustibles	See Chart for Reduced Clearances on Page 8	18 Inches to Combustibles 3 Inches to Limited Combustibles
CURRENT CODE ACCEPTANCE	YES 2015 IMC 2015 UMC 2017 NFPA96 New York City: MEA-86-07-E Los Angeles: RR-8441 Wisconsin: 990074-H	YES 2015 IMC 2015 UMC 2017 NFPA96 New York City: MEA-245-97-M	YES 2015 IMC 2015 UMC 2017 NFPA96
APPLICABLE LISTINGS	UL1978 - Standard for Grease Ducts UL2221 - Tests of Fire Resistive Duct Enclosures UL103HT 6"-14" Diameters ASTM E 814 - Standard Test Method for Through Penetration Firestops ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction UL Evaluation Report UL ER 15388-01 Acceptance Criteria for Grease Duct Systems, Self Enclosed	UL1978 - Standard for Grease Ducts UL2221 - Condition B, 2G Product Only, for 6"-18" Diameters UL103HT - 2G Product Only, for 6"-14" Diameters	UL1978 - Standard for Grease Ducts NFPA96 - Requires duct and fire wrap to be listed together as an assembly for the intended application. Must be installed per the manufacturer's listing and their installation instructions.
INSTALLED COSTS	\$\$\$	\$\$	\$
WARRANTY	LIMITED LIFETIME	LIMITED LIFETIME	LIMITED LIFETIME

CHART FOR REDUCED CLEARANCES



PSW Single Wall
6" - 48" Diameter - 18"



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"



1G 1" Insulation
6" Diameter - 2"
8" - 18" Diameter - 3"
20" - 32" Diameter - 4"
34" - 42" Diameter - 5"
44" - 48" Diameter - 6"



2G 2" Insulation
6" - 18" Diameter - 1"
20" - 32" Diameter - 2"
34" - 42" Diameter - 3"
44" - 48" Diameter - 4"



3G 3" Insulation
6" - 36" Diameter - 0"



4G 4" Insulation
6" - 38" Diameter - 0"
40" - 48" Diameter - 1"

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MODEL CODES

ICC/IMC: International Code Council/International Mechanical Code

The ICC/IMC are not-for-profit organizations 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

NFPA 96	Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations
UL 1978	Test Standard For Grease Ducts
UL HNOB	Classification for "Grease Duct Assemblies" (Metal-Fab File No. R15388)
UL 2221	Tests of Fire Resistive Duct Enclosure Assemblies
UL 103HT	Standard For Safety, Factory-Built Chimneys for Residential and Building Heating Appliances. Solid Fuel 2100°F, high temp appliances.
ASTM E119	Standard Test Methods for Fire Tests for Building Construction and Materials
ASTME814	Standard Test Method for Through-Penetration Fire Stops
AC121	ICC-ES Acceptance Criteria For Grease Duct Systems, Self-Enclosed
UL-ER	Evaluation Report No. ER15388-01*

* 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: www.metal-fabcommercial.com / www.greaseduct.com
Telephone: 316-943-2351
Toll Free Phone: 800-835-2830
Fax: 316-771-4168
E-mail: cvpcs@metal-fabinc.com

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 parentheses 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	PIC	PSW	1G (IPIC-1)	2G (IPIC-2)	3G (IPIC-3)	4G (IPIC-4)
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					2 Hr.	3 Hr.
UL 2221				2 Hr.*	2 Hr.	2 Hr.
ASTM E 119-Fire Engulfment					2 Hr.	3 Hr.
ASTM E 119-Fire Resistance						2 Hr.
ASTM E814-Fire Stop F&T				3 Hr.*	3 Hr.	3 Hr.
ICBO AC121						X
ICBO ER 5301 / UL ER15388-01						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

*Fire rated under UL 2221-Condition B, for diameters through 18". Reference UL Evaluation Report #ER15388-01 (P.11, Section 7.4).

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°C)
Intermittent	2000°F (1084°C)

MATERIAL THICKNESS						
Flue	PSW	PIC	1G	2G	3G	4G
6"-36" (152-914)	.035"(.9)	.035"(.9)	.035"(.9)	.035"(.9)	.035"(.9)	.035"(.9)
38"-48" (965-1219)	.048"(1.2)	.048"(1.2)	.048"(1.2)	.048"(1.2)	N/A	.048"(1.2)
Casing – Based on Flue Diameter – *Aluminized / Stainless						
6"-18" (152-457)	Not Applicable	*.024"(.6) / .024"(.6)	*.024"(.6) / .024"(.6)	*.024"(.6) / .024"(.6)	*.024"(.6) / .024"(.6)	*.024"(.6) / .024"(.6)
20"-22" (508-559)		*.024"(.6) / .024"(.6)	*.024"(.6) / .024"(.6)	*.024"(.6) / .024"(.6)	*.034"(.9) / .024"(.6)	*.034"(.9) / .024"(.6)
24" (610)		*.024"(.6) / .024"(.6)	*.024"(.6) / .024"(.6)	*.034"(.9) / .024"(.6)	*.034"(.9) / .024"(.6)	*.034"(.9) / .024"(.6)
26"-30" (660-762)		*.034"(.9) / .024"(.6)	*.034"(.9) / .024"(.6)	*.034"(.9) / .024"(.6)	*.034"(.9) / .024"(.6)	*.034"(.9) / .024"(.6)
32" (813)		*.034"(.9) / .024"(.6)	*.034"(.9) / .024"(.6)	*.034"(.9) / .024"(.6)	*.034"(.9) / .024"(.6)	*.034"(.9) / .035"(.9)
34" (864)		*.034"(.9) / .024"(.6)	*.034"(.9) / .024"(.6)	*.034"(.9) / .024"(.6)	*.034"(.9) / .035"(.9)	*.034"(.9) / .035"(.9)
36" (914)		*.034"(.9) / .024"(.6)	*.034"(.9) / .024"(.6)	*.034"(.9) / .035"(.9)	*.034"(.9) / .035"(.9)	*.034"(.9) / .035"(.9)
38"-48" (965-1219)		*.034"(.9) / .035"(.9)	*.034"(.9) / .035"(.9)	*.034"(.9) / .035"(.9)	N/A	*.034"(.9) / .035"(.9)

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

CASING TEMPERATURE CHART						
500° F Operating Temperature						
Temperature Rise Degrees Above Ambient						
Flue Diameter	PSW	PIC	1G	2G	3G	4G
6" (152)	N/A	252°F	102°F	64°F	30°F	30°F
12" (305)	N/A	252°F	109°F	70°F	38°F	38°F
18" (457)	N/A	252°F	114°F	75°F	43°F	43°F
24" (610)	N/A	252°F	118°F	78°F	49°F	49°F
30" (762)	N/A	252°F	121°F	83°F	58°F	58°F
36" (914)	N/A	252°F	126°F	87°F	64°F	64°F
(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: The organization, office, or individual responsible for approving equipment, an installation, or 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: Material subject to an increase in combustibility or flame spread rating beyond the limits established in the definition of limited combustibles.

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 - NFPA (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.

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:

[Length (feet)/100] X [Temperature Rise (°F)/100]

Example: 50'/100 X 75°F/100 = 0.375 inches

CHART FOR REDUCED 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					
	PSW	PIC	1G	2G	3G	4G
6" (152)	18" (457)	5" (127)	2" (51)	1" (25)	0"	0"
8" (203)	18" (457)	5" (127)	3" (76)	1" (25)	0"	0"
10" (254)	18" (457)	5" (127)	3" (76)	1" (25)	0"	0"
12" (305)	18" (457)	7" (178)	3" (76)	1" (25)	0"	0"
14" (356)	18" (457)	9" (229)	3" (76)	1" (25)	0"	0"
16" (406)	18" (457)	10" (254)	3" (76)	1" (25)	0"	0"
18" (457)	18" (457)	12" (305)	3" (76)	1" (25)	0"	0"
20" (508)	18" (457)	14" (356)	4" (102)	2" (51)	0"	0"
22"-24" (559-610)	18" (457)	18" (457)	4" (102)	2" (51)	0"	0"
26"-32" (660-813)	18" (457)	18" (457)	4" (102)	2" (51)	0"	0"
34"-36" (864-914)	18" (457)	18" (457)	5" (127)	3" (76)	0"	0"
38" (965)	18" (457)	18" (457)	5" (127)	3" (76)	N/A	0"
40"-42" (1016-1067)	18" (457)	18" (457)	5" (127)	3" (76)	N/A	1" (25)
44"-48" (1118-1219)	18" (457)	18" (457)	6" (152)	4" (102)	N/A	1" (25)
Clearance to Non-Combustibles: 0", all products						

DESIGN CONSIDERATIONS

NFPA 96: Requires provisions for the inspection of, and access for, cleaning of grease ducts. Openings are to be located on the top or side of the duct at changes or 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.

DESIGN CONSIDERATIONS (CONTINUED)

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.

SUPPORT DATA

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

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

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

GUIDES- VERTICAL		Maximum Spacing VERTICAL / OUTSIDE - Adjacent to Structure				
(See Components Section for guide selection)						
Flue Diameter - Inches	PSW	PIC	1G	2G	3G	4G
6" (152)	17' (5.2m)	17' (5.2m)	17' (5.2m)	10' 6" (3.2m)	8' 3" (2.5m)	8' 3" (2.5m)
8" (203)	17' 6" (5.3m)	17' 6" (5.3m)	17' 6" (5.3m)	12' (3.7m)	9' 7" (2.9m)	9' 7" (2.9m)
10" (254)	18' 6" (5.6m)	18' 6" (5.6m)	18' 6" (5.6m)	13' 3" (4.0m)	10' 9" (3.3m)	10' 9" (3.3m)
12" (305)	20' (6.1m)	20' (6.1m)	20' (6.1m)	14' 6" (4.4m)	11' 11" (3.6m)	11' 11" (3.6m)
14" (356)	21' (6.4m)	21' (6.4m)	21' (6.4m)	15' 11" (4.8m)	13' 2" (4.0m)	13' 2" (4.0m)
16" (406)	22' (6.7m)	22' (6.7m)	22' (6.7m)	17' (5.2m)	14' 2" (4.3m)	14' 2" (4.3m)
18" (457)	23' (7.0m)	23' (7.0m)	23' (7.0m)	18' 3" (5.6m)	15' 4" (4.7m)	15' 4" (4.7m)
20" (508)	24' (7.3m)	24' (7.3m)	24' (7.3m)	19' 6" (5.9m)	16' 4" (5.0m)	16' 4" (5.0m)
22" (559)	24' 6" (7.5m)	24' 6" (7.5m)	24' 6" (7.5m)	20' 2" (6.2m)	17' (5.2m)	17' (5.2m)
24" (610)	25' (7.6m)	25' (7.6m)	25' (7.6m)	20' 9" (6.3m)	17' 7" (5.4m)	17' 7" (5.4m)
26" (660)	26' (7.9m)	26' (7.9m)	26' (7.9m)	21' 5" (6.5m)	18' 2" (5.5m)	18' 2" (5.5m)
28" (711)	27' (8.2m)	27' (8.2m)	27' (8.2m)	22' 1" (6.9m)	18' 9" (5.7m)	18' 9" (5.7m)
30" (762)	27' (8.2m)	27' (8.2m)	27' (8.2m)	22' 8" (7.1m)	19' 4" (5.9m)	19' 4" (5.9m)
32" (813)	28' 6" (8.7m)	28' 6" (8.7m)	28' 6" (8.7m)	23' 4" (7.3m)	19' 11" (6.0m)	19' 11" (6.1m)
34" (864)	29' (8.8m)	29' (8.8m)	29' (8.8m)	24' (7.3m)	20' 6" (6.2m)	20' 6" (6.2m)
36" (914)	30' (9.1m)	30' (9.1m)	30' (9.1m)	24' 7" (7.5m)	21' (6.4m)	21' (6.4m)
38" (965)	30' 6" (9.3m)	30' 6" (9.3m)	30' 6" (9.3m)	24' 7" (7.5m)	N/A	21' (6.4m)
40" (1016)	31' (9.4m)	31' (9.4m)	31' (9.4m)	24' 7" (7.5m)	N/A	21' (6.4m)
42" (1067)	32' (9.8m)	32' (9.8m)	32' (9.8m)	24' 7" (7.5m)	N/A	21' (6.4m)
44" (1118)	32' 6" (9.9m)	32' 6" (9.9m)	32' 6" (9.9m)	24' 7" (7.5m)	N/A	21' (6.4m)
46" (1168)	33' 6" (10.2m)	33' 6" (10.2m)	33' 6" (10.2m)	24' 7" (7.5m)	N/A	21' (6.4m)
48" (1219)	34' 6" (10.5m)	34' 6" (10.5m)	34' 6" (10.5m)	24' 7" (7.5m)	N/A	21' (6.4m)

GUIDES - VERTICAL		Max. Vertical Spacing - VERTICAL / INTERNAL				
Below Roofline						
(See Components section for guide selection)						
PRODUCT	PSW	PIC	1G	2G	3G	4G
All Dia. Full Angle Ring (FAR)	25' (7.6m)	25' (7.6m)	21' (6.4m)	19' (5.8m)	18' (5.5m)	18' (5.5m)

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

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: $8 \times 0.95 = 7.6$ lbs. per lineal foot.

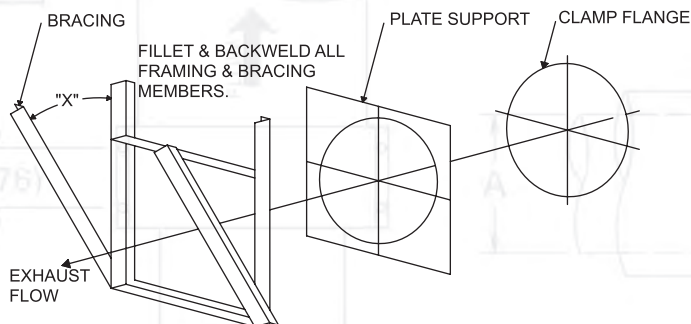
STACK LIFT CHART

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

	PSW	PIC	1G	2G	3G	4G
PIPE DIA.	Height	Height	Height	Height	Height	Height
6" (152)	220' (67.1m)	110' (33.5m)	90' (27.4m)	80' (24.4m)	60' (18.3m)	60' (18.3m)
8" (203)	190' (57.9m)	90' (27.4m)	80' (24.4m)	70' (21.3m)	50' (15.2m)	50' (15.2m)
10" (254)	170' (51.8m)	80' (24.4m)	70' (21.3m)	60' (18.3m)	40' (12.2m)	40' (12.2m)
12" (305)	150' (45.7m)	80' (24.4m)	70' (21.3m)	60' (18.3m)	40' (12.2m)	40' (12.2m)
14" (356)	140' (42.7m)	70' (21.3m)	60' (18.3m)	50' (15.2m)	40' (12.2m)	40' (12.2m)
16" (406)	130' (39.6m)	70' (21.3m)	60' (18.3m)	50' (15.2m)	40' (12.2m)	40' (12.2m)
18" (457)	120' (36.6m)	60' (18.3m)	50' (15.2m)	50' (15.2m)	40' (12.2m)	40' (12.2m)
20" (508)	110' (33.5m)	60' (18.3m)	50' (15.2m)	40' (12.2m)	30' (9.1m)	30' (9.1m)
22" (559)	110' (33.5m)	50' (15.2m)	40' (12.2m)	40' (12.2m)	30' (9.1m)	30' (9.1m)
24" (610)	100' (30.5m)	50' (15.2m)	40' (12.2m)	40' (12.2m)	30' (9.1m)	30' (9.1m)
26" (660)	90' (27.4m)	50' (15.2m)	40' (12.2m)	40' (12.2m)	30' (9.1m)	30' (9.1m)
28" (711)	90' (27.4m)	40' (12.2m)	40' (12.2m)	30' (9.1m)	20' (6.1m)	20' (6.1m)
30" (762)	80' (24.4m)	40' (12.2m)	40' (12.2m)	30' (9.1m)	20' (6.1m)	20' (6.1m)
32" (813)	80' (24.4m)	40' (12.2m)	30' (9.1m)	30' (9.1m)	20' (6.1m)	20' (6.1m)
34" (864)	70' (21.3m)	40' (12.2m)	30' (9.1m)	20' (6.1m)	20' (6.1m)	20' (6.1m)
36" (914)	70' (21.3m)	30' (9.1m)	30' (9.1m)	20' (6.1m)	15' (4.6m)	15' (4.6m)
38" (965)	60' (18.3m)	30' (9.1m)	20' (6.1m)	20' (6.1m)	N/A	15' (4.6m)
40" (1016)	60' (18.3m)	30' (9.1m)	20' (6.1m)	20' (6.1m)	N/A	15' (4.6m)
42" (1067)	60' (18.3m)	30' (9.1m)	20' (6.1m)	20' (6.1m)	N/A	15' (4.6m)
44" (1118)	60' (18.3m)	30' (9.1m)	20' (6.1m)	20' (6.1m)	N/A	15' (4.6m)
46" (1168)	50' (15.2m)	20' (6.1m)	20' (6.1m)	20' (6.1m)	N/A	10' (3.0m)
48" (1219)	50' (15.2m)	20' (6.1m)	20' (6.1m)	20' (6.1m)	N/A	10' (3.0m)

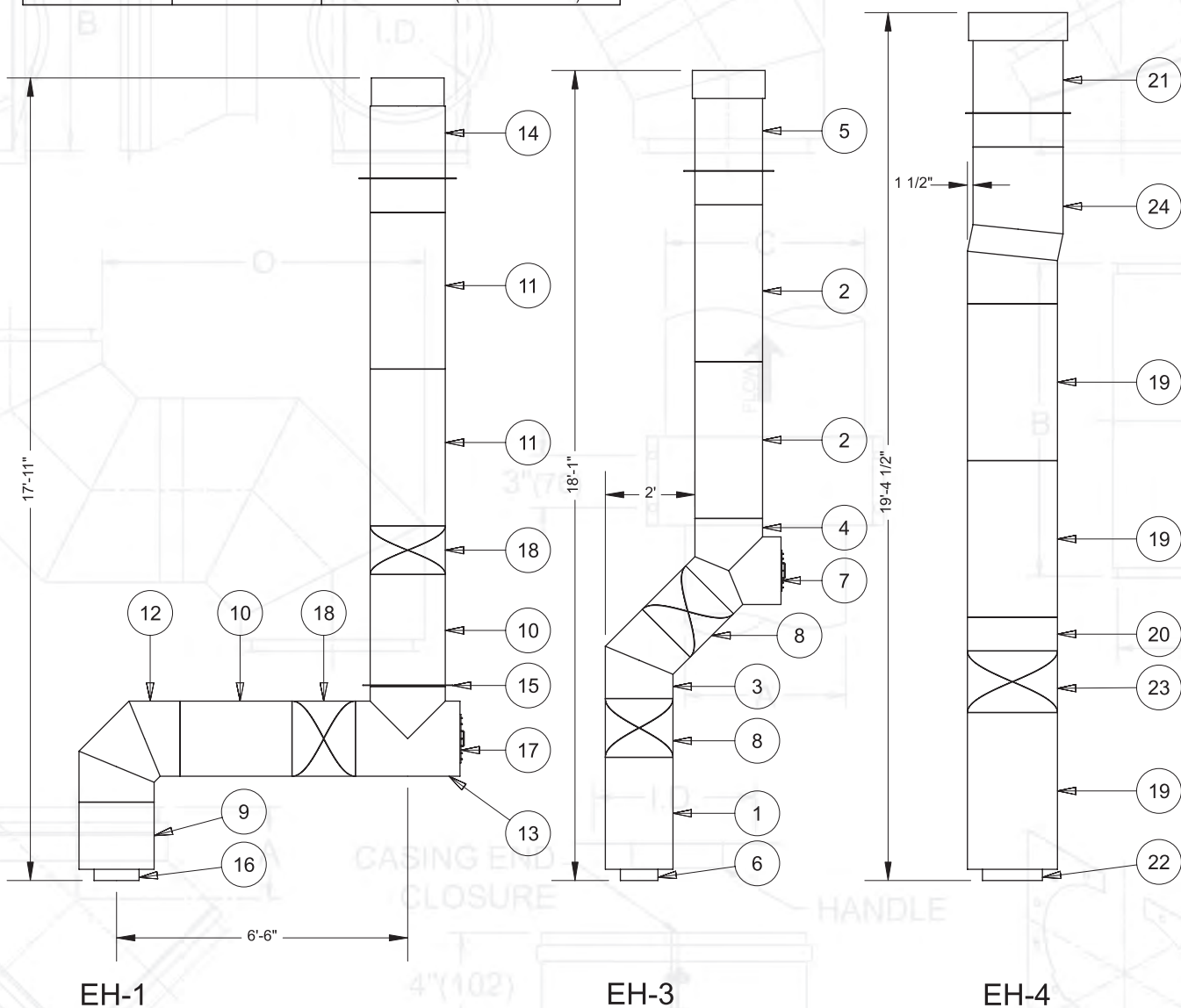
METAL-FAB GENERATED CAD

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")	

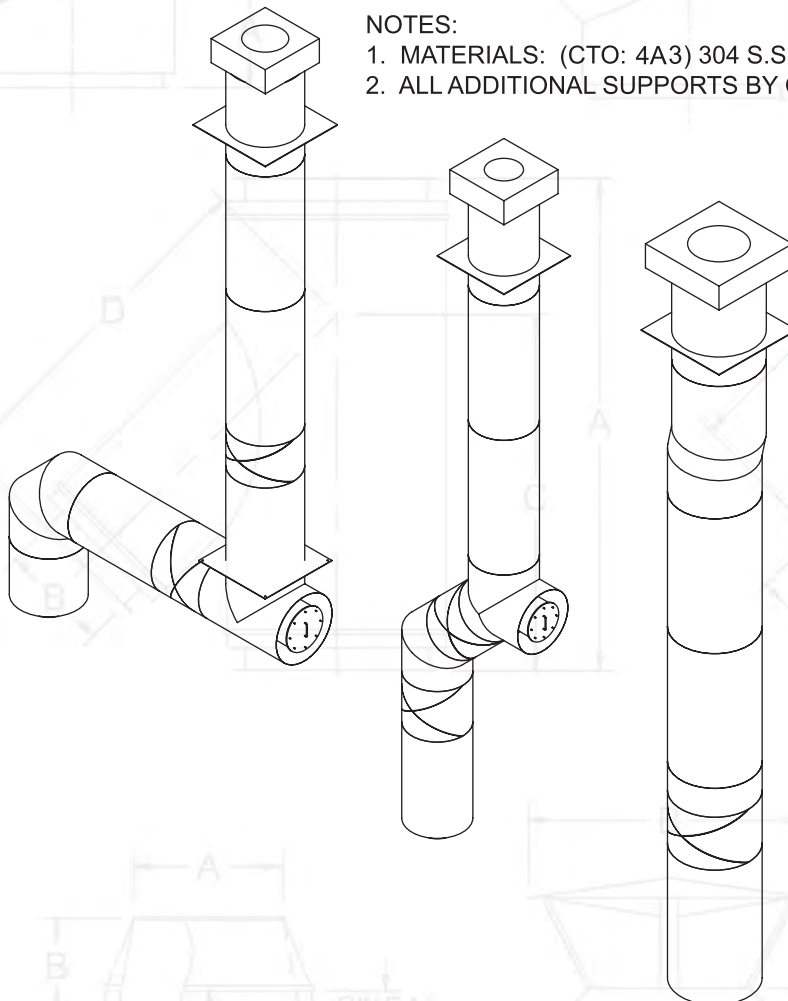


INCLUDES BILL OF MATERIALS & ISOMETRIC ILLUSTRATIONS

Parts List				
ITEM #	QTY	PART NUMBER	CTO	DESCRIPTION
1	1	10PIC30-4	4A3	PIPE LENGTH
2	2	10PIC42-4	4A3	PIPE LENGTH
3	1	10PIC45L-4	4A3	45 DEG ELBOW
4	1	10PIC90Y-4	4A3	90 DEG WYE
5	1	10PICFCT195	4A3	FAN CURB TERMINATION
6	1	10PICRHCK-4	4A3	ROUND HOOD COLLAR KIT
7	1	10PICTAP-4	4A3	TOOLESS ACCESS PANEL
8	2	10PICVL-4	4A3	VARIABLE LENGTH
9	1	12PIC18-4	4A3	PIPE LENGTH
10	2	12PIC30-4	4A3	PIPE LENGTH
11	2	12PIC42-4	4A3	PIPE LENGTH
12	1	12PIC90L-4	4A3	90 DEG ELBOW
13	1	12PIC90MT-4	4A3	90 DEG MANIFOLD TEE
14	1	12PICFCT195	4A3	FAN CURB TERMINATION
15	1	12PICPS-4	4A3	PLATE SUPPORT
16	1	12PICRHCK-4	4A3	ROUND HOOD COLLAR KIT
17	1	12PICTAP-4	4A3	TOOLESS ACCESS PANEL
18	2	12PICVL-4	4A3	VARIABLE LENGTH
19	3	16PIC42-4	4A3	PIPE LENGTH
20	1	16PIC9-4	4A3	PIPE LENGTH
21	1	16PICFCT265	4A3	FAN CURB TERMINATION
22	1	16PICRHCK-4	4A3	ROUND HOOD COLLAR KIT
23	1	16PICVL-4	4A3	VARIABLE LENGTH
24	1	16PICVOK-4	4A3	VARIABLE OFFSET KIT
	7	P080	4A3	GREASE DUCT SEALANT

NOTES:

1. MATERIALS: (CTO: 4A3) 304 S.S INNER/ ALUMINIZED OUTER/ 3" 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: GREASE DUCT			
DATE: 11/2/2017	SHEET SIZE: B	DRAWN BY: JONH	DRAWING NUMBER: S842C4N52
REVISION:			
SHEET:			

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 Stainless Steel	A = Aluminized Steel	0 = 1" Airspace
4 = 304 Stainless Steel	4 = 304 Stainless Steel	1 = 1" Ceramic
6 = 316 Stainless Steel	6 = 316 Stainless Steel	2 = 2" Ceramic
		3 = 3" Ceramic
		4 = 4" Ceramic

PIPE LENGTHS

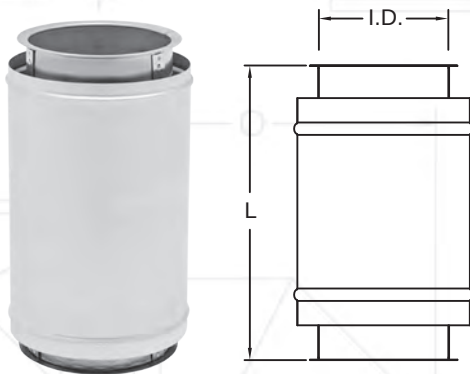
9" (229)
18" (457)
30" (762)
42" (1067)

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

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

L = pipe length (feet)

I.D. = pipe diameter (inches)



NOTE: Custom lengths available, please contact factory.

PIPE I.D.	PIPE O.D.			
PSW	PIC / 1G	2G	3G	4G
6" (152)	8" (203)	10" (254)	12" (305)	14" (356)
8" (203)	10" (254)	12" (305)	14" (356)	16" (406)
10" (254)	12" (305)	14" (356)	16" (406)	18" (457)
12" (305)	14" (356)	16" (406)	18" (457)	20" (508)
14" (356)	16" (406)	18" (457)	20" (508)	22" (559)
16" (406)	18" (457)	20" (508)	22" (559)	24" (610)
18" (457)	20" (508)	22" (559)	24" (610)	26" (660)
20" (508)	22" (559)	24" (610)	26" (660)	28" (711)
22" (559)	24" (610)	26" (660)	28" (711)	30" (762)
24" (610)	26" (660)	28" (711)	30" (762)	32" (813)
26" (660)	28" (711)	30" (762)	32" (813)	34" (864)
28" (711)	30" (762)	32" (813)	34" (864)	36" (914)
30" (762)	32" (813)	34" (864)	36" (914)	38" (965)
32" (813)	34" (864)	36" (914)	38" (965)	40" (1016)
34" (864)	36" (914)	38" (965)	40" (1016)	42" (1067)
36" (914)	38" (965)	40" (1016)	42" (1067)	44" (1118)
38" (965)	40" (1016)	42" (1067)	N/A	46" (1168)
40" (1016)	42" (1067)	44" (1118)	N/A	48" (1219)
42" (1067)	44" (1118)	46" (1168)	N/A	50" (1270)
44" (1118)	46" (1168)	48" (1219)	N/A	52" (1321)
46" (1168)	48" (1219)	50" (1270)	N/A	54" (1372)
48" (1219)	50" (1270)	52" (1321)	N/A	56" (1422)

ADJUSTABLE LENGTH EXPANSION JOINT (AL)

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

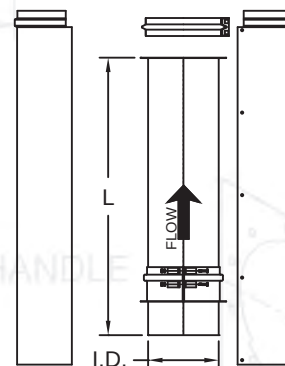
L = pipe length (feet)

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

INSTALLED LENGTH

Minimum: 5.5"

Maximum: 22"



COMPONENTS

VARIABLE LENGTH (VL)

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

L = pipe length (feet)

I.D. = flue diameter (inches)

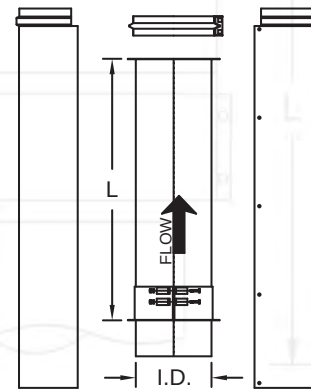
Fills gaps between standard length components.

INSTALLED LENGTH

Minimum: 4"

Maximum: 26"

NOTE: Does not allow for thermal expansion



TAPERED INCREASER (TI)

6" - 36" Diameters

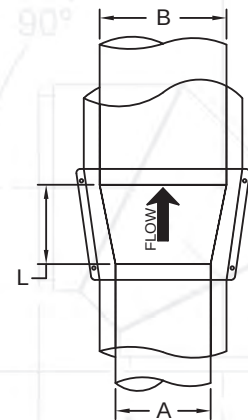
$$\text{Flow Resistance } K = .51 \frac{\left[1 - \left(\frac{A}{B} \right)^2 \right]^2}{\left(\frac{A}{B} \right)^4}$$

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

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

NOTES:

1. When ordering specify both diameters with small diameter first (ie. 18PICTI22 for 18" to 22").
2. Please contact factory for larger diameters.



ECCENTRIC TAPERED INCREASER (ETI)

6" - 36" Diameters

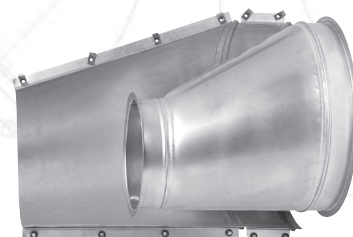
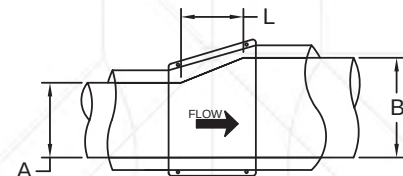
$$\text{Flow Resistance } K = .51 \frac{\left[1 - \left(\frac{A}{B} \right)^2 \right]^2}{\left(\frac{A}{B} \right)^4}$$

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

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

NOTES:

1. When ordering specify both diameters with small diameter first (ie. 18PICETI22 for 18" to 22").
2. Please contact factory for larger diameters.



COMPONENTS

15° ELBOW (15L)

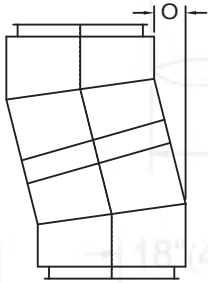
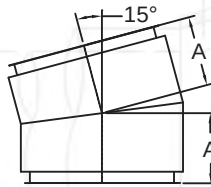
Flow Resistance K = 0.06

Offset Distance:

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

Offset distance with pipe length between elbows:

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



PIPE I.D.	A			
	PSW / PIC / 1G	2G	3G	4G
6" (152)	6.00" (152)	6.00" (152)	6.00" (152)	6.00" (152)
8" (203)	6.00" (152)	6.00" (152)	6.00" (152)	7.75" (197)
10" (254)	6.00" (152)	6.00" (152)	7.75" (197)	7.75" (197)
12" (305)	6.00" (152)	7.75" (197)	7.75" (197)	7.75" (197)
14" (356)	7.75" (197)	7.75" (197)	7.75" (197)	7.75" (197)
16" (406)	7.75" (197)	7.75" (197)	7.75" (197)	7.75" (197)

PIPE I.D.	A			
	PSW / PIC / 1G	2G	3G	4G
18" (457)	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" (660)	8.50" (216)	8.50" (216)	8.50" (216)	8.50" (216)
28" (711)	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" (279)
34" (864)	8.50" (216)	8.50" (216)	8.50" (216)	11.00" (279)
36" (914)	8.50" (216)	11.00" (279)	11.00" (279)	11.00" (279)
38" (965)	11.00" (279)	11.00" (279)	N/A	11.00" (279)
40" (1016)	11.00" (279)	11.00" (279)	N/A	11.00" (279)
42" (1067)	11.00" (279)	11.00" (279)	N/A	11.00" (279)
44" (1118)	11.00" (279)	11.00" (279)	N/A	11.00" (279)
46" (1168)	11.00" (279)	11.00" (279)	N/A	11.00" (279)
48" (1219)	11.00" (279)	11.00" (279)	N/A	11.00" (279)

30° ELBOW (30L)

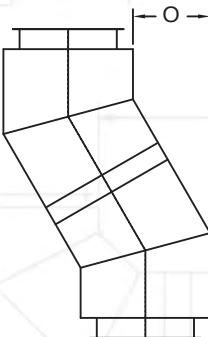
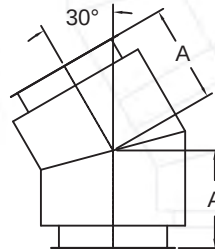
Flow Resistance K = 0.12

Offset Distance:

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

Offset distance with pipe length between elbows:

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



PIPE I.D.	A			
	PSW / PIC / 1G	2G	3G	4G
6" (152)	6.00" (152)	6.00" (152)	6.00" (152)	6.00" (152)
8" (203)	6.00" (152)	6.00" (152)	6.00" (152)	7.75" (197)
10" (254)	6.00" (152)	6.00" (152)	7.75" (197)	7.75" (197)
12" (305)	6.00" (152)	7.75" (197)	7.75" (197)	7.75" (197)
14" (356)	7.75" (197)	7.75" (197)	7.75" (197)	7.75" (197)
16" (406)	7.75" (197)	7.75" (197)	7.75" (197)	7.75" (197)

PIPE I.D.	A			
	PSW / PIC / 1G	2G	3G	4G
18" (457)	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" (660)	8.50" (216)	8.50" (216)	8.50" (216)	8.50" (216)
28" (711)	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" (279)
34" (864)	8.50" (216)	8.50" (216)	11.00" (279)	11.00" (279)
36" (914)	8.50" (216)	11.00" (279)	11.00" (279)	11.00" (279)
38" (965)	11.00" (279)	11.00" (279)	N/A	11.00" (279)
40" (1016)	11.00" (279)	11.00" (279)	N/A	11.00" (279)
42" (1067)	11.00" (279)	11.00" (279)	N/A	11.00" (279)
44" (1118)	11.00" (279)	11.00" (279)	N/A	11.00" (279)
46" (1168)	11.00" (279)	11.00" (279)	N/A	11.00" (279)
48" (1219)	11.00" (279)	11.00" (279)	N/A	11.00" (279)

45° ELBOW (45L)

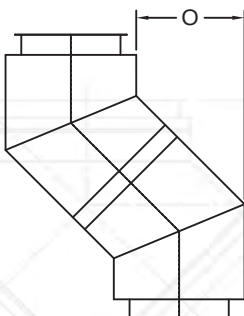
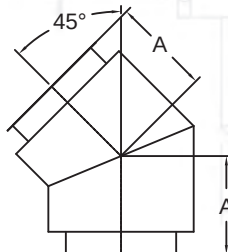
Flow Resistance K = 0.15

Offset Distance:

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

Offset distance with pipe length between elbows:

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



PIPE I.D.	A			
	PSW / PIC / 1G	2G	3G	4G
6" (152)	7.00" (178)	7.00" (178)	7.00" (178)	7.00" (178)
8" (203)	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" (260)
12" (305)	7.00" (178)	10.00" (254)	10.25" (260)	10.25" (260)
14" (356)	10.00" (254)	10.25" (260)	10.25" (260)	10.25" (260)
16" (406)	10.25" (260)	10.25" (260)	10.25" (260)	10.25" (260)

PIPE I.D.	A			
	PSW / PIC / 1G	2G	3G	4G
18" (457)	10.25" (260)	10.25" (260)	10.25" (260)	10.25" (260)
20" (508)	10.25" (260)	10.25" (260)	10.25" (260)	11.75" (298)
22" (559)	10.25" (260)	10.25" (260)	11.75" (298)	11.75" (298)
24" (610)	10.25" (260)	11.75" (298)	11.75" (298)	11.75" (298)
26" (660)	11.75" (298)	11.75" (298)	11.75" (298)	11.75" (298)
28" (711)	11.75" (298)	11.75" (298)	11.75" (298)	11.75" (298)
30" (762)	11.75" (298)	11.75" (298)	11.75" (298)	11.75" (298)
32" (813)	11.75" (298)	11.75" (298)	11.75" (298)	14.00" (356)
34" (864)	11.75" (298)	11.75" (298)	14.00" (356)	14.00" (356)
36" (914)	11.75" (298)	14.00" (356)	14.00" (356)	14.00" (356)
38" (965)	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" (1168)	14.00" (356)	14.00" (356)	N/A	15.25" (387)
48" (1219)	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" = 0.66

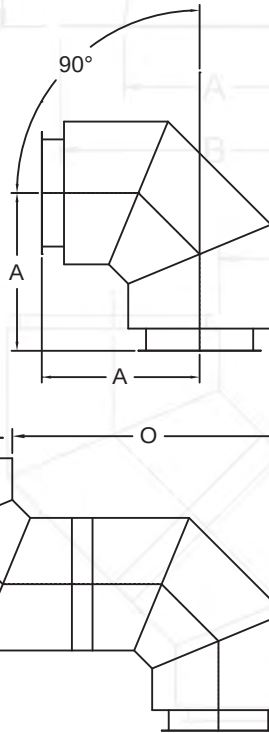
38" - 48" = 0.72

Offset Distance:

$O = 2 \times "A"$

Offset Distance with pipe length
between elbows:

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

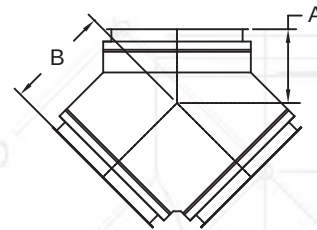


PIPE I.D.	A			
	PSW / PIC / 1G	2G	3G	4G
6" (152)	11" (279)	12" (305)	13" (330)	14" (356)
8" (203)	12" (305)	13" (330)	14" (356)	15" (381)
10" (254)	13" (330)	14" (356)	15" (381)	16" (406)
12" (305)	14" (356)	15" (381)	16" (406)	17" (432)
14" (356)	15" (381)	16" (406)	17" (432)	18" (457)
16" (406)	16" (406)	17" (432)	18" (457)	19" (483)
18" (457)	17" (432)	18" (457)	19" (483)	20" (508)
20" (508)	18" (457)	19" (483)	20" (508)	21" (533)
22" (559)	19" (483)	20" (508)	21" (533)	22" (559)
24" (610)	20" (508)	21" (533)	22" (559)	23" (584)
26" (660)	21" (533)	22" (559)	23" (584)	24" (610)
28" (711)	22" (559)	23" (584)	24" (610)	25" (635)
30" (762)	23" (584)	24" (610)	25" (635)	26" (660)
32" (813)	24" (610)	25" (635)	26" (660)	27" (686)
34" (864)	25" (635)	26" (660)	27" (686)	28" (711)
36" (914)	26" (660)	27" (686)	28" (711)	29" (737)
38" (965)	27" (686)	28" (711)	N/A	30" (762)
40" (1016)	28" (711)	29" (737)	N/A	31" (787)
42" (1067)	29" (737)	30" (762)	N/A	32" (813)
44" (1118)	30" (762)	31" (787)	N/A	33" (838)
46" (1168)	31" (787)	32" (813)	N/A	34" (864)
48" (1219)	32" (813)	33" (838)	N/A	35" (889)

90° WYE (90Y)

6" - 36" Diameters

Flow Resistance K = 0.6



PIPE I.D.	PSW / PIC / 1G		2G		3G		4G	
	A	B	A	B	A	B	A	B
6" (152)	5.12" (130)	9" (229)	5.62" (143)	10" (254)	6.00" (152)	11" (279)	6.50" (165)	12" (305)
8" (203)	5.62" (143)	10" (254)	6.00" (152)	11" (279)	6.50" (165)	12" (305)	7.00" (178)	13" (330)
10" (254)	6.00" (152)	11" (279)	6.50" (165)	12" (305)	7.00" (178)	13" (330)	7.25" (184)	14" (356)
12" (305)	6.50" (165)	12" (305)	7.00" (178)	13" (330)	7.25" (184)	14" (356)	7.75" (197)	15" (381)
14" (356)	7.00" (178)	13" (330)	7.25" (184)	14" (356)	7.75" (197)	15" (381)	8.12" (206)	16" (406)
16" (406)	7.25" (184)	14" (356)	7.75" (197)	15" (381)	8.12" (206)	16" (406)	8.50" (216)	17" (432)
18" (457)	7.75" (197)	15" (381)	8.12" (206)	16" (406)	8.50" (216)	17" (432)	9.00" (229)	18" (457)
20" (508)	8.12" (206)	16" (406)	8.50" (216)	17" (432)	9.00" (229)	18" (457)	9.37" (238)	19" (483)
22" (559)	8.50" (216)	17" (432)	9.00" (229)	18" (457)	9.37" (238)	19" (483)	9.75" (248)	20" (508)
24" (610)	9.00" (229)	18" (457)	9.37" (238)	19" (483)	9.75" (248)	20" (508)	10.25" (260)	21" (533)
26" (660)	9.37" (238)	19" (483)	9.75" (248)	20" (508)	10.25" (260)	21" (533)	10.62" (270)	22" (559)
28" (711)	9.75" (248)	20" (508)	10.25" (260)	21" (533)	10.62" (270)	22" (559)	11.12" (282)	23" (584)
30" (762)	10.25" (260)	21" (533)	10.62" (270)	22" (559)	11.12" (282)	23" (584)	11.50" (292)	24" (610)
32" (813)	10.62" (270)	22" (559)	11.12" (282)	23" (584)	11.50" (292)	24" (610)	11.87" (302)	25" (635)
34" (864)	11.12" (282)	23" (584)	11.50" (292)	24" (610)	11.87" (302)	25" (635)	12.25" (311)	26" (660)
36" (914)	11.50" (292)	24" (610)	11.87" (302)	25" (635)	12.25" (311)	26" (660)	12.62" (321)	27" (686)

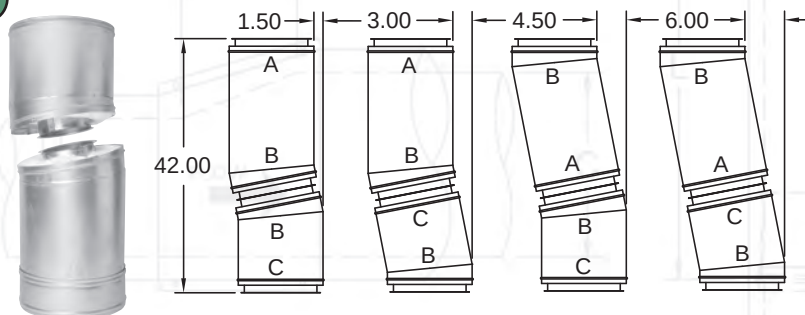
COMPONENTS

VARIABLE OFFSET KIT (VOK)

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

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

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



90° MANIFOLD TEE (90MT)

Flow Resistance $K = 1.25$

A = Pipe I.D.

B = "C" + (2 x "D")

C = Tap I.D.

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

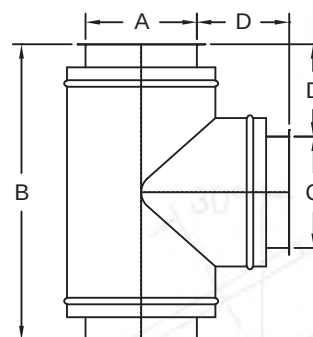
IPIC-2 = 6"

IPIC-3 = 7"

IPIC-4 = 8"

NOTES:

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



BOOT TEE (BT)

6" - 30" Diameters

Flow Resistance $K = 0.65$

A = Pipe I.D.

B = "C" + "E" + "F"

C = Tap I.D.

D, E, F =

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

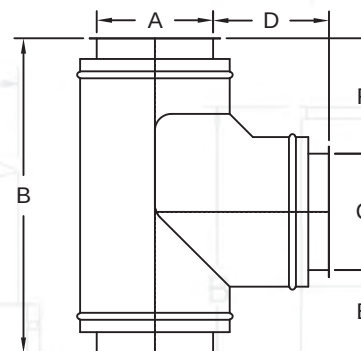
IPIC-2 = 7", 6" & 8"

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

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

NOTES:

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



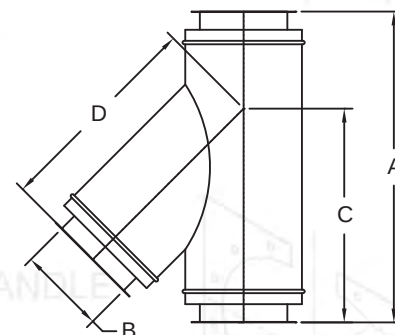
45° MANIFOLD TEE (45MT)

Flow Resistance $K = 0.4$

For low resistance flow into a vertical or horizontal run.

NOTES:

1. Specify tap diameter (B) when ordering.
2. Tap diameter can be reduced by 1-4 steps as standard.
3. For dimensional information see tables on pages 28-35.



COMPONENTS

DOUBLE LATERAL (DL)

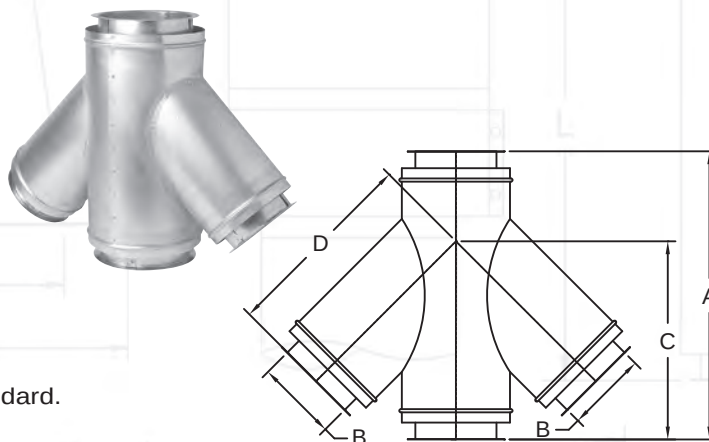
8" - 48" Diameters

Flow Resistance K = 0.4

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

NOTES:

1. Specify tap diameter (B) when ordering, tap diameter must be less than body diameter.
2. For dimensional information see tables on pages 28-35.
3. Tap diameter can be reduced by 1-4 steps as standard.

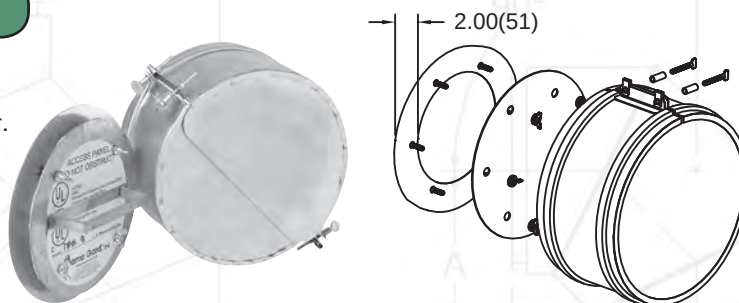


TOOLESS ACCESS PANEL (TAP)

6" - 36" Diameters

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

NOTE: Custom lengths available, please contact factory.



SIDEWALL TOOLESS ACCESS PANEL (STAP)

10" - 36" Diameters

Facilitates inspections and cleaning. Can be installed in horizontal/vertical runs.

NOTE: Horizontal run opening must be above the centerline of the duct.

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



DRAIN TEE CAP W/ CASING END CLOSURE (TC)

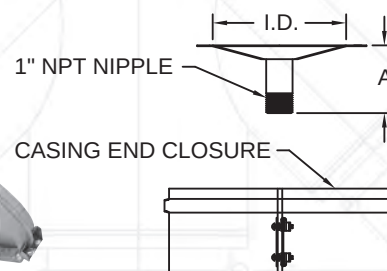
Provides drain port for rain or condensation.

NOTE: To compute length:

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

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

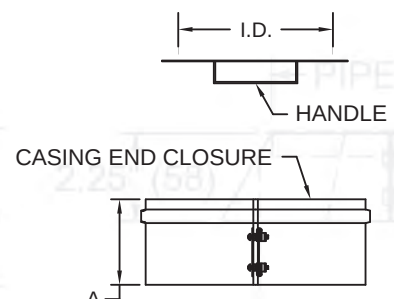
Add 5" for Nipple on IPIC-3 & IPIC-4



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

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

NOTE: A = 5.375" PIC/IPIC-1
6.375" IPIC-2
7.375" IPIC-3
8.375" IPIC-4



COMPONENTS

STACK CAP (C/CB)

6" - 36" Diameters

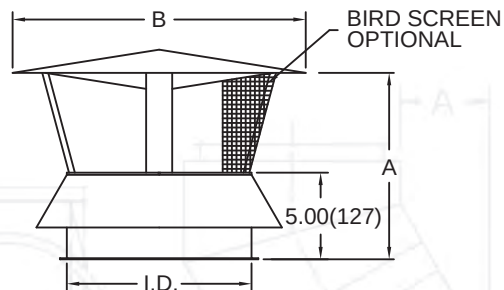
Flow resistance $K = 0.5$

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

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



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



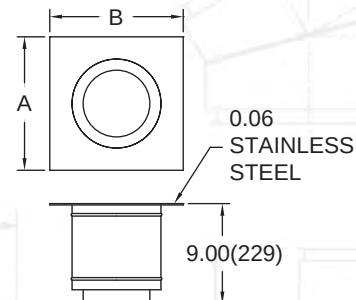
FAN ADAPTER PLATE (FAP)

6" - 36" Diameters

Connects to the inlet of an upblast fan.

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

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

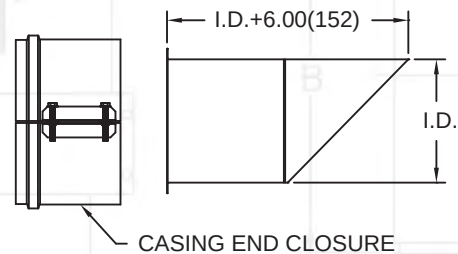
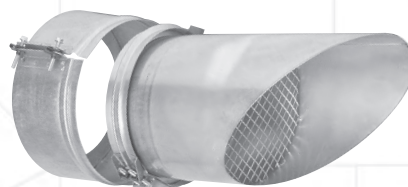


MITER CUT (MC)

6" - 36" Diameters

Horizontal termination;
standard with bird screen.

NOTE: Please contact factory
for larger diameters.



COMPONENTS

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

STORM COLLAR



SUPPORT COLLAR (RSA ONLY)



LATERAL SPACER RING



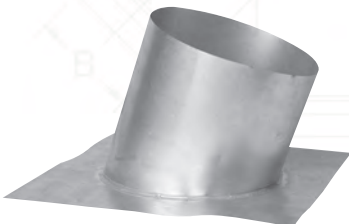
THIMBLE



FLASHING



FIXED PITCH FLASHING



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

Framing Dimensions:

- PIC/IPIC-1: I.D. + 8"
- IPIC-2: I.D. + 10"
- IPIC-3: I.D. + 12"
- IPIC-4: I.D. + 14"

NOTES:

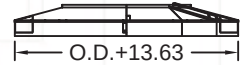
1. Thimble for flat roof extends 9" into flashing.
2. Use VTA / RSA on flat to 1/12 pitch applications.
3. Use FPVTA / FPRSA on 1/12 - 12/12 pitch applications.
4. Specify pitch when ordering
Example: 4/12 pitch = PICFPVTA4 or PICFPRSA4

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

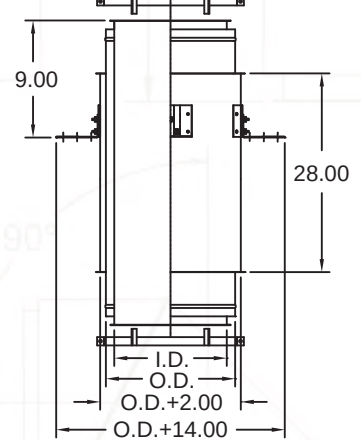
	PIC	IPIC-1	IPIC-2	IPIC-3	IPIC-4
6PICFPVTA & RSA	12/12	12/12	12/12	11/12	11/12
8PICFPVTA & RSA	12/12	12/12	12/12	10/12	10/12
10PICFPVTA & RSA	12/12	12/12	11/12	9/12	9/12
12PICFPVTA & RSA	11/12	11/12	10/12	9/12	9/12
14PICFPVTA & RSA	10/12	10/12	9/12	8/12	8/12
16PICFPVTA & RSA	9/12	9/12	9/12	8/12	8/12
18PICFPVTA & RSA	9/12	9/12	8/12	7/12	7/12
20PICFPVTA & RSA	8/12	8/12	8/12	7/12	7/12
22PICFPVTA & RSA	8/12	8/12	7/12	7/12	7/12
24PICFPVTA & RSA	7/12	7/12	7/12	6/12	6/12
26PICFPVTA & RSA	7/12	7/12	7/12	6/12	6/12
28PICFPVTA & RSA	7/12	7/12	6/12	6/12	6/12
30PICFPVTA & RSA	6/12	6/12	6/12	5/12	5/12
32PICFPVTA & RSA	6/12	6/12	6/12	5/12	5/12
34PICFPVTA & RSA	6/12	6/12	5/12	5/12	5/12
36PICFPVTA & RSA	5/12	5/12	5/12	5/12	5/12

NOTE: For pitches not listed, please contact factory.

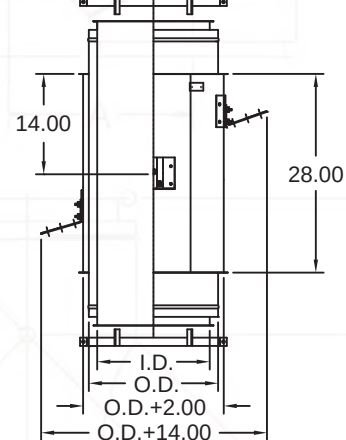
STORM COLLAR



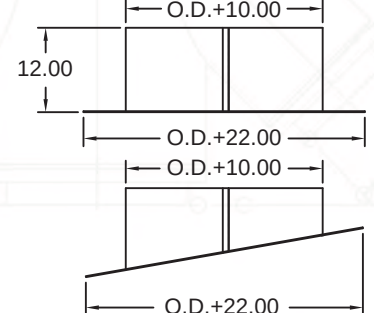
VTA/RSA



FPVTA/FPRSA



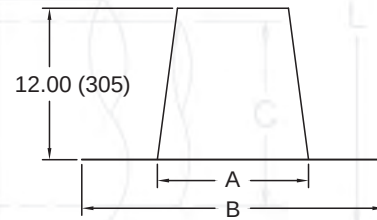
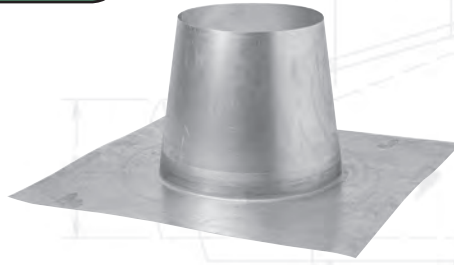
FLASHINGS



COMPONENTS

TALL CONE FLASHING (F)

Flat roof applications



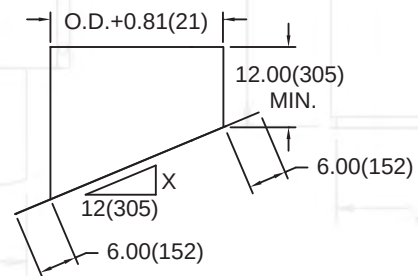
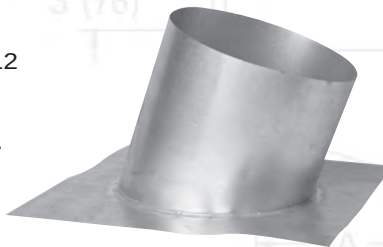
PIPE I.D.	PSW		PIC/1G		2G		3G		4G	
	A	B	A	B	A	B	A	B	A	B
6" (152)	10.00" (254)	22.00" (559)	12.00" (305)	24.00" (610)	14.00" (356)	26.00" (660)		28.00" (711)	18.00" (457)	30.00" (762)
8" (203)	12.00" (305)	24.00" (610)	14.00" (356)	26.00" (660)	16.00" (406)	28.00" (711)	18.00" (457)	30.00" (762)	20.00" (508)	32.00" (813)
10" (254)	14.00" (356)	26.00" (660)	16.00" (406)	28.00" (711)	18.00" (457)	30.00" (762)	20.00" (508)	32.00" (813)	22.00" (559)	34.00" (864)
12" (305)	16.00" (406)	28.00" (711)	18.00" (457)	30.00" (762)	20.00" (508)	32.00" (813)	22.00" (559)	34.00" (864)	24.00" (610)	36.00" (914)
14" (356)	18.00" (457)	30.00" (762)	20.00" (508)	32.00" (813)	22.00" (559)	34.00" (864)	24.00" (610)	36.00" (914)	26.00" (660)	38.00" (965)
16" (406)	20.00" (508)	32.00" (813)	22.00" (559)	34.00" (864)	24.00" (610)	36.00" (914)	26.00" (660)	38.00" (965)	28.00" (711)	40.00" (1016)
18" (457)	22.00" (559)	34.00" (864)	24.00" (610)	36.00" (914)	26.00" (660)	38.00" (965)	28.00" (711)	40.00" (1016)	30.00" (762)	42.00" (1067)
20" (508)	24.00" (610)	36.00" (914)	26.00" (660)	38.00" (965)	28.00" (711)	40.00" (1016)	30.00" (762)	42.00" (1067)	32.00" (813)	44.00" (1118)
22" (559)	26.00" (660)	38.00" (965)	28.00" (711)	40.00" (1016)	30.00" (762)	42.00" (1067)	32.00" (813)	44.00" (1118)	34.00" (864)	46.00" (1168)
24" (610)	28.00" (711)	40.00" (1016)	30.00" (762)	42.00" (1067)	32.00" (813)	44.00" (1118)	34.00" (864)	46.00" (1168)	36.00" (914)	48.00" (1219)
26" (660)	30.00" (762)	42.00" (1067)	32.00" (813)	44.00" (1118)	34.00" (864)	46.00" (1168)	36.00" (914)	48.00" (1219)	38.00" (965)	50.00" (1270)
28" (711)	32.00" (813)	44.00" (1118)	34.00" (864)	46.00" (1168)	36.00" (914)	48.00" (1219)	38.00" (965)	50.00" (1270)	40.00" (1016)	52.00" (1321)
30" (762)	34.00" (864)	46.00" (1168)	36.00" (914)	48.00" (1219)	38.00" (965)	50.00" (1270)	40.00" (1016)	52.00" (1321)	42.00" (1067)	54.00" (1372)
32" (813)	36.00" (914)	48.00" (1219)	38.00" (965)	50.00" (1270)	40.00" (1016)	52.00" (1321)	42.00" (1067)	54.00" (1372)	44.00" (1118)	56.00" (1422)
34" (864)	38.00" (965)	50.00" (1270)	40.00" (1016)	52.00" (1321)	42.00" (1067)	54.00" (1372)	44.00" (1118)	56.00" (1422)	46.00" (1168)	58.00" (1473)
36" (914)	40.00" (1016)	52.00" (1321)	42.00" (1067)	54.00" (1372)	44.00" (1118)	56.00" (1422)	46.00" (1168)	58.00" (1473)	48.00" (1219)	60.00" (1524)
38" (965)	42.00" (1067)	54.00" (1372)	44.00" (1118)	56.00" (1422)	46.00" (1168)	58.00" (1473)	N/A	N/A	50.00" (1270)	62.00" (1575)
40" (1016)	44.00" (1118)	56.00" (1422)	46.00" (1168)	58.00" (1473)	48.00" (1219)	60.00" (1524)	N/A	N/A	52.00" (1321)	64.00" (1626)
42" (1067)	46.00" (1168)	58.00" (1473)	48.00" (1219)	60.00" (1524)	50.00" (1270)	62.00" (1575)	N/A	N/A	54.00" (1372)	66.00" (1676)
44" (1118)	48.00" (1219)	60.00" (1524)	50.00" (1270)	62.00" (1575)	52.00" (1321)	64.00" (1626)	N/A	N/A	56.00" (1422)	68.00" (1727)
46" (1168)	50.00" (1270)	62.00" (1575)	52.00" (1321)	64.00" (1626)	54.00" (1372)	66.00" (1676)	N/A	N/A	58.00" (1473)	70.00" (1778)
48" (1219)	52.00" (1321)	64.00" (1626)	54.00" (1372)	66.00" (1676)	56.00" (1422)	68.00" (1727)	N/A	N/A	60.00" (1524)	72.00" (1829)

FIXED PITCH FLASHING (FPF)

6" - 36" Diameters

NOTES:

1. $X = \text{Pitch} \left(\frac{\text{Rise}}{\text{Run}} \right)$; Available in 1/12 - 12/12
2. Please specify pitch when ordering.
3. Storm Collar is included with Flashing.
Example: 4/12 pitch = PICFPF4

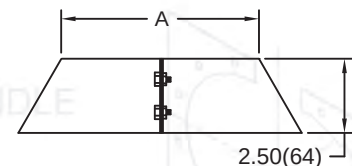


STACK CLOSURE RING (CR)

A = Pipe Diameter (I.D.)

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

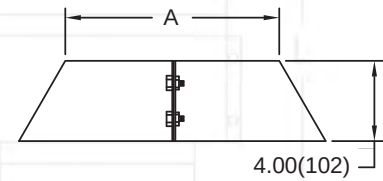
NOTE: Provide a Tee Cap or Drain Section for moisture removal.



COMPONENTS

STORM COLLAR (SC)

A = Pipe Diameter (O.D.)



FULL ANGLE RING (FAR)

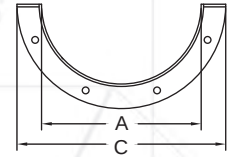
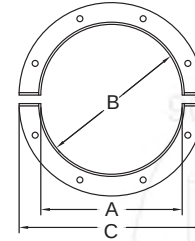
Provides lateral support for vertical runs.
(Zinc Plated)

NOTE: Allows pipe movement for thermal expansion.



FULL ANGLE RING

HALF ANGLE RING



HALF ANGLE RING (HAR)

Provides support for horizontal runs.
(Zinc Plated)



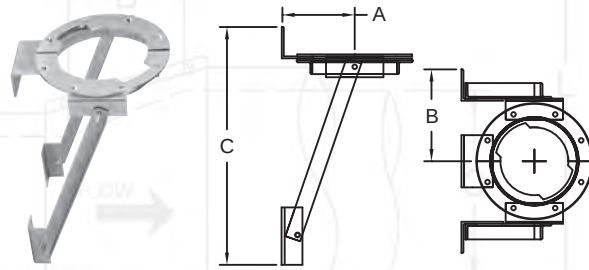
PRODUCT					DIMENSIONS			
PIPE I.D.					Inside	Hole Centerline	Outside	Hole Qty.
PSW	PIC/IPIC	IPIC-2	IPIC-3	IPIC-4	A	B	C	D
6" (152)	-	-	-	-	6.12" (155)	7.50" (191)	8.62" (219)	8
8" (203)	6" (152)	-	-	-	8.12" (206)	9.50" (241)	10.62" (270)	8
10" (254)	8" (203)	6" (152)	-	-	10.19" (259)	11.56" (294)	12.69" (322)	8
12" (305)	10" (254)	8" (203)	6" (152)	-	12.19" (310)	13.81" (351)	15.19" (386)	12
14" (356)	12" (305)	10" (254)	8" (203)	6" (152)	14.19" (360)	15.81" (402)	17.19" (437)	12
16" (406)	14" (356)	12" (305)	10" (254)	8" (203)	16.25" (413)	18.12" (460)	19.75" (502)	16
18" (457)	16" (406)	14" (356)	12" (305)	10" (254)	18.25" (464)	20.12" (511)	21.75" (552)	16
20" (508)	18" (457)	16" (406)	14" (356)	12" (305)	20.25" (514)	22.12" (562)	23.75" (603)	20
22" (559)	20" (508)	18" (457)	16" (406)	14" (356)	22.25" (565)	24.12" (613)	25.75" (654)	20
24" (610)	22" (559)	20" (508)	18" (457)	16" (406)	24.25" (616)	26.12" (663)	27.75" (705)	20
26" (660)	24" (610)	22" (559)	20" (508)	18" (457)	26.25" (667)	28.50" (724)	30.25" (768)	24
28" (711)	26" (660)	24" (610)	22" (559)	20" (508)	28.25" (718)	30.50" (775)	32.25" (819)	24
30" (762)	28" (711)	26" (660)	24" (610)	22" (559)	30.25" (768)	32.50" (826)	34.25" (870)	28
32" (813)	30" (762)	28" (711)	26" (660)	24" (610)	32.25" (819)	34.50" (876)	36.25" (921)	28
34" (864)	32" (813)	30" (762)	28" (711)	26" (660)	34.25" (870)	36.50" (927)	38.25" (972)	32
36" (914)	34" (864)	32" (813)	30" (762)	28" (711)	36.25" (921)	38.50" (978)	40.25" (1022)	32
38" (965)	36" (914)	34" (864)	32" (813)	30" (762)	38.25" (972)	40.50" (1029)	42.25" (1073)	36
40" (1016)	38" (965)	36" (914)	34" (864)	32" (813)	40.25" (1022)	42.50" (1080)	44.25" (1124)	36
42" (1067)	40" (1016)	38" (965)	36" (914)	34" (864)	42.25" (1073)	44.50" (1130)	46.25" (1175)	40
44" (1118)	42" (1067)	40" (1016)	38" (965)	36" (914)	44.25" (1124)	46.50" (1181)	48.25" (1226)	40
46" (1168)	44" (1118)	42" (1067)	40" (1016)	38" (965)	46.25" (1175)	48.50" (1232)	50.25" (1276)	44
48" (1219)	46" (1168)	44" (1118)	42" (1067)	40" (1016)	48.25" (1226)	50.50" (1283)	52.25" (1327)	44
-	48" (1219)	46" (1168)	44" (1118)	42" (1067)	50.25" (1276)	52.50" (1334)	54.25" (1378)	48
-	-	48" (1219)	46" (1168)	44" (1118)	52.25" (1327)	54.50" (1384)	56.25" (1429)	48
-	-	-	48" (1219)	46" (1168)	54.25" (1378)	56.50" (1435)	58.25" (1480)	48
-	-	-	-	48" (1219)	56.25" (1429)	58.50" (1486)	60.25" (1530)	50

COMPONENTS

WALL SUPPORT ASSEMBLY (WSA)

Provides vertical or horizontal rigid support.

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



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

PIPE I.D.	3G			4G		
	A	B	C	A	B	C
6" (152)	10.17" (258)	10.36" (263)	29.00" (737)	11.14" (283)	11.33" (288)	29.62" (752)
8" (203)	10.93" (278)	11.36" (289)	28.50" (724)	12.39" (314)	12.57" (319)	29.00" (737)
10" (254)	12.39" (315)	12.58" (320)	31.25" (794)	13.37" (340)	13.55" (344)	31.86" (809)
12" (305)	13.37" (340)	13.55" (344)	30.75" (781)	14.43" (367)	14.61" (371)	31.00" (787)
14" (356)	14.43" (367)	14.61" (371)	34.75" (883)	15.41" (391)	15.60" (396)	35.36" (898)
16" (406)	15.41" (391)	15.60" (396)	34.25" (870)	16.40" (417)	16.59" (421)	34.88" (886)
18" (457)	16.40" (417)	16.59" (421)	33.75" (845)	17.63" (448)	17.82" (453)	34.17" (868)
20" (508)	17.63" (448)	17.81" (452)	38.75" (984)	18.62" (473)	18.81" (478)	39.37" (1000)
22" (559)	18.62" (473)	18.81" (478)	38.25" (972)	19.65" (499)	19.83" (504)	38.78" (985)
24" (610)	19.65" (499)	19.83" (504)	37.75" (959)	20.64" (524)	20.43" (519)	38.14" (969)
26" (660)	20.64" (524)	20.83" (529)	45.25" (1149)	21.66" (550)	21.85" (555)	45.86" (1165)
28" (711)	21.66" (550)	21.85" (555)	44.75" (1137)	22.66" (576)	22.85" (580)	45.12" (1146)
30" (762)	22.66" (576)	22.85" (581)	44.00" (1118)	23.67" (601)	23.86" (606)	44.60" (1133)
32" (813)	23.67" (601)	23.86" (606)	53.75" (1365)	24.67" (627)	24.86" (631)	54.25" (1378)
34" (864)	24.67" (627)	25.86" (657)	53.25" (1353)	25.66" (652)	25.87" (657)	53.25" (1353)
36" (914)	25.68" (652)	25.87" (657)	52.75" (1340)	26.68" (678)	26.87" (682)	53.21" (1352)

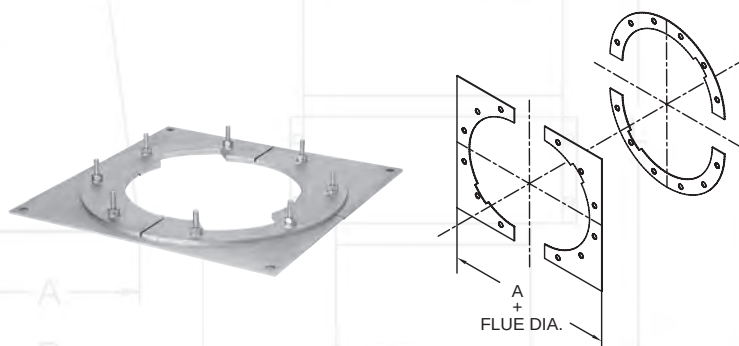
COMPONENTS

PLATE SUPPORT (PS)

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

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

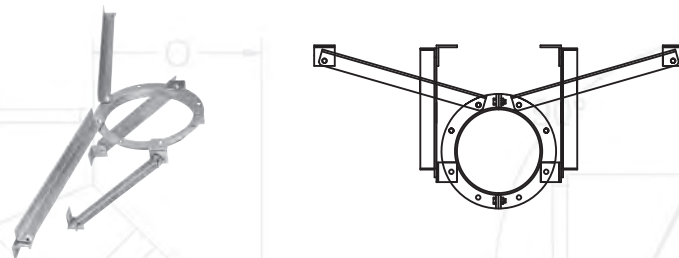
NOTE: Does not allow pipe movement for thermal expansion.



WALL GUIDE (WG)

Provides lateral support. (Zinc Plated)

NOTE: Allows pipe movement for thermal expansion.



FLOOR GUIDE (FG)

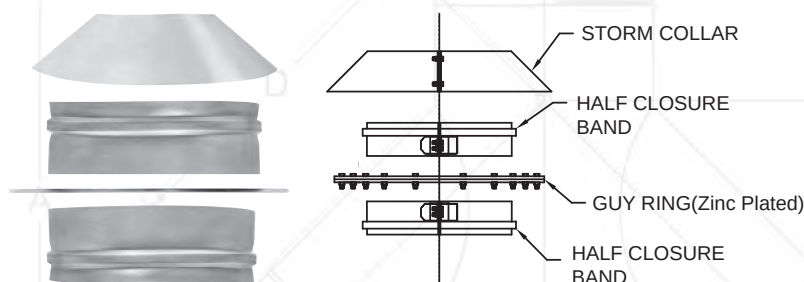
For use at each floor to ensure correct alignment through floor opening. (Zinc Plated)



GUY RING (GR)

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

NOTE: See installation instructions for correct location.



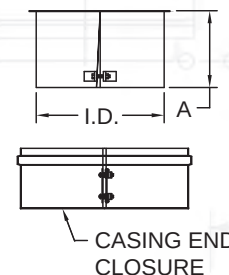
SINGLE WALL BOILER ADAPTER (SBA/SBA4)

Flow Resistance K= same as pipe

Attaches pipe to straight collar outlets. PIC and IPIC applications include Casing End Closure.

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

NOTE: Casing End Closure not used on PSW applications.

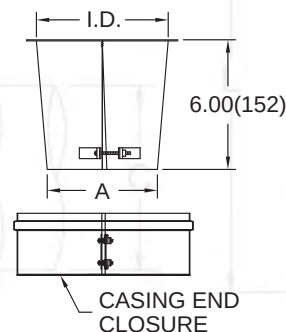


COMPONENTS

REDUCER COLLAR (RC)

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

NOTE: Maximum of 2" reduction recommended.

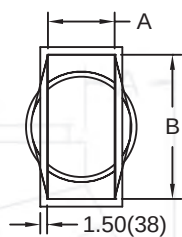


SQUARE TO ROUND (STR)

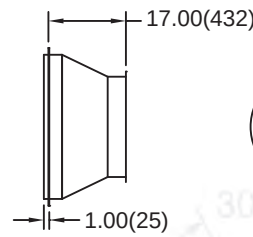
Transitions from square duct to round duct.

NOTES:

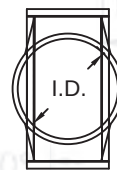
1. Specify dimensional data when ordering.
2. Eccentric and Offset STR's available as custom options upon request.



BOTTOM VIEW



FRONT VIEW

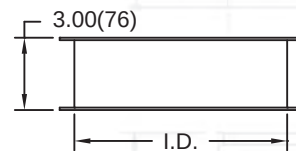


TOP VIEW

ROUND HOOD COLLAR (RHC)

NOTES:

1. Can be field welded to hood or supplied to hood manufacturer for installation.
2. Confirm dimensions with hood manufacturer.
3. Requires Round Hood Connection Kit (RHCK) to complete installation.



ROUND HOOD CONNECTION KIT (RHCK)

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

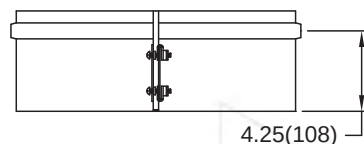


CASING END CLOSURE (CEC)

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

NOTE: When ordering, specify

PICCEC
IPICCEC-1
-2
-3
-4



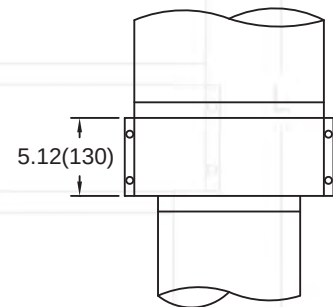
COMPONENTS

TRANSITION BAND (TB)

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

NOTE: When ordering, specify

PICTB-1-2	-2-3
-1-3	-2-4
-1-4	-3-4



FAN CURB TERMINATION (FCT)

Available for 3G & 4G systems only. Eliminates curb. With zero clearance to combustibles, roofing materials can be flashed directly to casings.

A = Pipe I.D.

B = Outer Casing Diameter

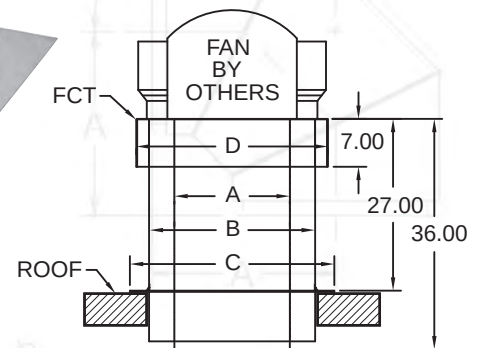
3G: Flue Diameter + 6"

4G: Flue Diameter + 8"

C = Square Mounting Support:

Casing Diameter + 6"

D = Fan Curb: See Table



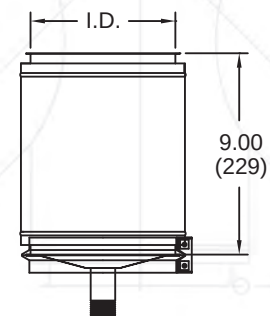
Curb Size - Inches	Pipe I.D.						
	8	10	12	14	16	18	20
18 X 18	X	X	X	3G			
19.5 X 19.5	X	X	X	3G	3G		
22 X 22	X	X	X	X	X		
23 X 23		X	X	X	X		
26.5 X 26.5				X	X	X	X
28 X 28					X	X	X
31.5 X 31.5							X

"3G" - Only available on 3G systems.
Specify Curb Dimensions when ordering.
Example: Curb 19.5" x 19.5" = FCT195

DRAIN BUCKET (DB)

6" - 36" Diameters

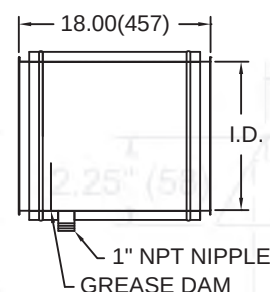
Used at the base of a vertical riser as a drain reservoir and provides cleanout access.



DUCT DRAIN (DR)

6" - 36" Diameters

Used as a drain point for horizontal runs.

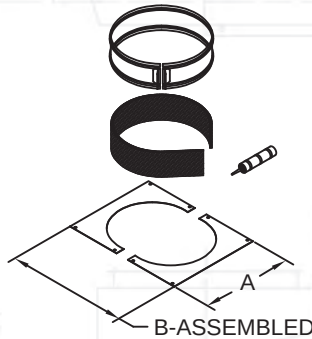
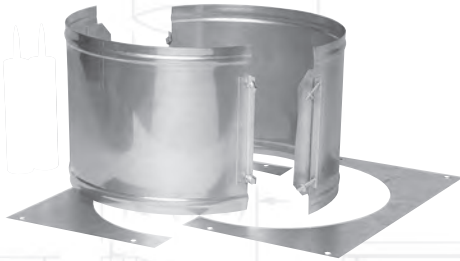


COMPONENTS

THROUGH PENETRATION FIRESTOP KIT (PPK)

6" - 36" Diameters

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".
4. Closure band height is 12"(306)
5. For use on 3G/4G products only.



NOTE: Wall penetration requires two kits; please consult factory.

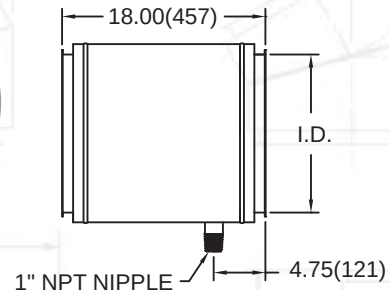
PIPE I.D.	A	B
6" (152)	18" (457)	18" (457)
8" (203)	20" (508)	20" (508)
10" (254)	22" (559)	22" (559)
12" (305)	24" (610)	24" (610)
14" (356)	26" (660)	26" (660)
16" (406)	28" (711)	28" (711)
18" (457)	30" (762)	30" (762)
20" (508)	32" (813)	32" (813)
22" (559)	34" (864)	34" (864)
24" (610)	36" (914)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

NOZZLE SECTION (NS)

6" - 36" Diameters

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

NOTE: Please contact factory for larger diameters.



SPRINKLER HEAD ACCESS PORT (9SHAP)

6" - 36" Diameters

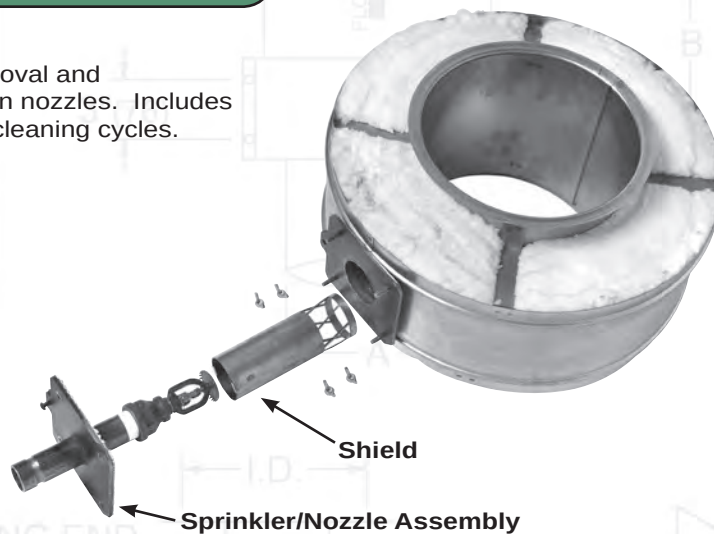
Toolless access for the installation, removal and inspection of the sprinkler or wash down nozzles. Includes shield to protect sprinkler head during cleaning cycles.

Pipe Length: 9"(229)

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

NOTES:

1. *Sprinkler Head* not included.
2. Not UL Listed



COMPONENTS

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.

P071 Joint Sealant, use for UL103HT Appliances

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

JOINT ASSEMBLY

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



COMPONENTS

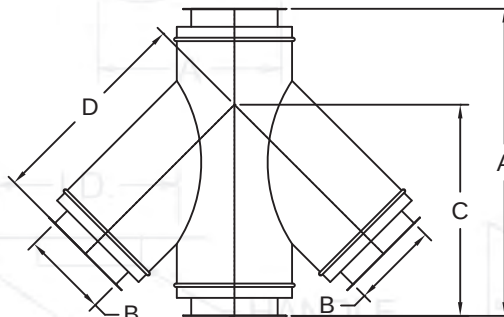
		TAP I.D.													
		48	46	44	42	40	38	36	34	32	30	28	26	24	
48PIC	"A"	80.71	77.88	75.05	72.22	69.40	66.57	63.74	60.91	58.08	55.26	52.43	50.60	48.77	
	"B"	48	46	44	42	40	38	36	34	32	30	28	26	24	
	"C"	65.35	63.94	62.53	61.11	59.70	58.28	56.87	55.46	54.04	52.63	51.21	49.80	48.39	
	"D"	65.35	64.35	63.35	62.35	61.35	60.35	59.35	58.35	57.35	56.35	55.35	54.35	53.35	
46PIC	"A"	77.88	75.05	72.22	69.40	66.57	63.74	60.91	58.08	55.26	52.43	49.60	47.77	46.94	
	"B"	46	44	42	40	38	36	34	32	30	28	26	24	22	
	"C"	62.94	61.53	60.11	58.70	57.28	55.87	54.46	53.04	51.63	50.21	48.80	47.39	45.97	
	"D"	62.94	61.94	60.94	59.94	58.94	57.94	56.94	55.94	54.94	53.94	52.94	51.94	50.94	
44PIC	"A"	75.05	72.22	69.40	66.57	63.74	60.91	58.08	55.26	52.43	49.60	46.77	45.94	44.11	
	"B"	44	42	40	38	36	34	32	30	28	26	24	22	20	
	"C"	60.53	59.11	57.70	56.28	54.87	53.46	52.04	50.63	49.21	47.80	46.39	44.97	43.56	
	"D"	60.53	59.53	58.53	57.53	56.53	55.53	54.53	53.53	52.53	51.53	50.53	49.53	48.53	
42PIC	"A"	72.22	69.40	66.57	63.74	60.91	58.08	55.26	52.43	49.60	46.77	44.94	43.11	41.28	
	"B"	42	40	38	36	34	32	30	28	26	24	22	20	18	
	"C"	58.11	56.70	55.28	53.87	52.46	51.04	49.63	48.21	46.80	45.39	43.97	42.56	41.14	
	"D"	58.11	57.11	56.11	55.11	54.11	53.11	52.11	51.11	50.11	49.11	48.11	47.11	46.11	
40PIC	"A"	69.40	66.57	63.74	60.91	58.08	55.26	52.43	49.60	46.77	43.94	42.11	40.28	39.46	
	"B"	40	38	36	34	32	30	28	26	24	22	20	18	16	
	"C"	55.70	54.28	52.87	51.46	50.04	48.63	47.21	45.80	44.39	42.97	41.56	40.14	38.73	
	"D"	55.70	54.70	53.70	52.70	51.70	50.70	49.70	48.70	47.70	46.70	45.70	44.70	43.70	
38PIC	"A"	66.57	63.74	60.91	58.08	55.26	52.43	49.60	46.77	43.94	41.11	39.28	38.46	37.63	
	"B"	38	36	34	32	30	28	26	24	22	20	18	16	14	
	"C"	53.28	51.87	50.46	49.04	47.63	46.21	44.80	43.39	41.97	40.56	39.14	37.73	36.31	
	"D"	53.28	52.28	51.28	50.28	49.28	48.28	47.28	46.28	45.28	44.28	43.28	42.28	41.28	
36PIC	"A"	63.74	60.91	58.08	55.26	52.43	49.60	46.77	43.94	41.11	38.28	37.46	36.63	34.80	
	"B"	36	34	32	30	28	26	24	22	20	18	16	14	12	
	"C"	50.87	49.46	48.04	46.63	45.21	43.80	42.39	40.97	39.56	38.14	36.73	35.31	33.90	
	"D"	50.87	49.87	48.87	47.87	46.87	45.87	44.87	43.87	42.87	41.87	40.87	39.87	38.87	
34PIC	"A"	60.91	58.08	55.26	52.43	49.60	46.77	43.94	41.11	38.28	36.46	35.63	33.80	31.97	
	"B"	34	32	30	28	26	24	22	20	18	16	14	12	10	
	"C"	48.46	47.04	45.63	44.21	42.80	41.39	39.97	38.56	37.14	35.73	34.31	32.90	31.49	
	"D"	48.46	47.46	46.46	45.46	44.46	43.46	42.46	41.46	40.46	39.46	38.46	37.46	36.46	
32PIC	"A"	58.08	55.26	52.43	49.60	46.77	43.94	41.11	38.28	35.46	34.63	32.80	30.97	29.14	
	"B"	32	30	28	26	24	22	20	18	16	14	12	10	8	
	"C"	46.04	44.63	43.21	41.80	40.39	38.97	37.56	36.14	34.73	33.31	31.90	30.49	29.07	
	"D"	46.04	45.04	44.04	43.04	42.04	41.04	40.04	39.04	38.04	37.04	36.04	35.04	34.04	
30PIC	"A"	55.26	52.43	49.60	46.77	43.94	41.11	38.28	35.46	32.63	31.80	29.97	28.14	27.31	
	"B"	30	28	26	24	22	20	18	16	14	12	10	8	6	
	"C"	43.63	42.21	40.80	39.39	37.97	36.56	35.14	33.73	32.31	30.90	29.49	28.07	26.66	
	"D"	43.63	42.63	41.63	40.63	39.63	38.63	37.63	36.63	35.63	34.63	33.63	32.63	31.63	
28PIC	"A"	52.43	49.60	46.77	43.94	41.11	38.28	35.46	32.63	30.80	28.97	27.14	26.31	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	20.42	19.59	18.76	
	"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	19.42	18.59	17.76	16.93	
	"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	18.42	17.59	16.76	15.93	15.10	
	"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	17.42	16.59	15.76	14.93	14.10	13.27	
	"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	16.42	15.59	14.76	13.93	13.10	12.27	11.44	
	"D"	24.31	23.31	22.31	21.31	20.31	19.31	18.31	17.31	16.31	15.31	14.31	13.31	12.31	
12PIC	"A"	29.80	26.97	24.14	22.31	21.48	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"	21.90	20.49	19.07	17.66	16.25	15.42	14.59	13.76	12.93	12.10	11.27	10.44	9.61	
	"D"	21.90	20.90	19.90	18.90	17.90	16.90	15.90	14.90	13.90	12.90	11.90	10.90	9.90	
10PIC	"A"	26.97	24.14	22.31	21.48	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	14.42	13.59	12.76	11.93	11.10					

COMPONENTS

		TAP I.D.														
BODY I.D.		TAP I.D.														
		48	46	44	42	40	38	36	34	32	30	28	26	24		
BODY I.D.	48PIC	"A" 2050	1978	1906	1834	1763	1691	1619	1547	1475	1404	1332	1260	1188	1285	1239
	"B"	1219	1168	1118	1067	1016	965	914	864	813	762	711	660	610		
	"C"	1660	1624	1588	1552	1516	1480	1444	1409	1373	1337	1301	1265	1229		
	"D"	1660	1634	1609	1584	1558	1533	1507	1482	1457	1431	1406	1380	1355		
	46PIC	46	44	42	40	38	36	34	32	30	28	26	24	22		
	"A"	1978	1906	1834	1763	1691	1619	1547	1475	1404	1332	1260	1213	1192		
	"B"	1168	1118	1067	1016	965	914	864	813	762	711	660	610	559		
	"C"	1599	1563	1527	1491	1455	1419	1383	1347	1311	1275	1240	1204	1168		
	"D"	1599	1573	1548	1522	1497	1472	1446	1421	1395	1370	1345	1319	1294		
	44PIC	44	42	40	38	36	34	32	30	28	26	24	22	20		
	"A"	1906	1834	1763	1691	1619	1547	1475	1404	1332	1260	1188	1167	1120		
	"B"	1118	1067	1016	965	914	864	813	762	711	660	610	559	508		
	"C"	1537	1501	1466	1430	1394	1358	1322	1286	1250	1214	1178	1142	1106		
	"D"	1537	1512	1487	1461	1436	1410	1385	1360	1334	1309	1283	1258	1233		
	42PIC	42	40	38	36	34	32	30	28	26	24	22	20	18		
	"A"	1834	1763	1691	1619	1547	1475	1404	1332	1260	1188	1141	1095	1049		
	"B"	1067	1016	965	914	864	813	762	711	660	610	559	508	457		
	"C"	1476	1440	1404	1368	1332	1296	1261	1225	1189	1153	1117	1081	1045		
	"D"	1476	1451	1425	1400	1374	1349	1324	1298	1273	1247	1222	1197	1171		
	40PIC	40	38	36	34	32	30	28	26	24	22	20	18	16		
	"A"	1763	1691	1619	1547	1475	1404	1332	1260	1188	1116	1070	1023	1002		
	"B"	1016	965	914	864	813	762	711	660	610	559	508	457	406		
	"C"	1415	1379	1343	1307	1271	1235	1199	1163	1128	1091	1056	1020	984		
	"D"	1415	1389	1364	1339	1313	1288	1262	1237	1212	1186	1161	1135	1110		
	38PIC	38	36	34	32	30	28	26	24	22	20	18	16	14		
	"A"	1691	1619	1547	1475	1404	1332	1260	1188	1116	1044	998	977	956		
	"B"	965	914	864	813	762	711	660	610	559	508	457	406	356		
	"C"	1353	1317	1282	1246	1210	1174	1138	1102	1066	1030	994	958	922		
	"D"	1353	1328	1303	1277	1252	1226	1201	1176	1150	1125	1099	1074	1049		
	36PIC	36	34	32	30	28	26	24	22	20	18	16	14	12		
	"A"	1619	1547	1475	1404	1332	1260	1188	1116	1044	972	951	930	884		
	"B"	914	864	813	762	711	660	610	559	508	457	406	356	305		
	"C"	1292	1256	1220	1184	1148	1113	1077	1041	1005	969	933	897	861		
	"D"	1292	1267	1241	1216	1190	1165	1140	1114	1089	1063	1038	1013	987		
	34PIC	34	32	30	28	26	24	22	20	18	16	14	12	10		
	"A"	1547	1475	1404	1332	1260	1188	1116	1044	972	926	905	859	812		
	"B"	864	813	762	711	660	610	559	508	457	406	356	305	254		
	"C"	1231	1195	1159	1123	1087	1051	1015	979	943	908	871	836	800		
	"D"	1231	1205	1180	1155	1129	1104	1078	1053	1028	1002	977	951	926		
	32PIC	32	30	28	26	24	22	20	18	16	14	12	10	8		
	"A"	1475	1404	1332	1260	1188	1116	1044	972	901	880	833	787	740		
	"B"	813	762	711	660	610	559	508	457	406	356	305	254	203		
	"C"	1169	1134	1098	1062	1026	990	954	918	882	846	810	774	738		
	"D"	1169	1144	1119	1093	1068	1042	1017	992	966	941	915	890	865		
	30PIC	30	28	26	24	22	20	18	16	14	12	10	8	6		
	"A"	1404	1332	1260	1188	1116	1044	972	901	829	808	761	715	694		
	"B"	762	711	660	610	559	508	457	406	356	305	254	203	152		
	"C"	1108	1072	1036	1001	964	929	893	857	821	785	749	713	677		
	"D"	1108	1083	1057	1032	1007	981	956	930	905	880	854	829	803		
	28PIC	28	26	24	22	20	18	16	14	12	10	8	6			
	"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	26	24	22	20	18	16	14	12	10	8	6				
	"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"	986	950	914	878	842	806	770	734	698	662	626				
	"D"	986	960	935	909	884	859	833	808	782	757	732				
	24PIC	24	22	20	18	16	14	12	10	8	6					
	"A"	1188	1116	1044	972	901	829	757	685	639	617					
	"B"	610	559	508	457	406	356	305	254	203	152					
	"C"	924	888	852	816	781	744	709	673	637	601					
	"D"	924	899	874	848	823	797	772	747	721	696					
	22PIC	22	20	18	16	14	12	10	8	6						
	"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	576						
	"D"	863	837	812	787	761	736	710	685	660						
	20PIC	20	18	16	14	12	10	8	6							
	"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	18	16	14	12	10	8	6								
	"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	16	14	12	10	8	6									
	"A"	901	829	757	685	613	541									
	"B"	406	356	305	254	203	152									
	"C"	679	643	607	571	535	499									
	"D"	679	654	628	603	577	552									
	14PIC	14	12	10	8	6										
	"A"	829	757	685	613	541										
	"B"	356	305	254	203	152										
	"C"	617	582	546	510	474										
	"D"	617	592	567	541	516										
	12PIC	12	10	8	6											

COMPONENTS

BODY I.D.		TAP I.D.											
		48	46	44	42	40	38	36	34	32	30	28	26
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
	"B"	48	46	44	42	40	38	36	34	32	30	28	26
	"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
	"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
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
	"B"	46	44	42	40	38	36	34	32	30	28	26	24
	"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
	"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
44PIC	"A"	77.87	75.05	72.22	69.39	66.56	63.73	60.91	58.08	55.25	52.42	49.59	46.77
	"B"	44	42	40	38	36	34	32	30	28	26	24	22
	"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
	"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
42PIC	"A"	75.05	72.22	69.39	66.56	63.73	60.91	58.08	55.25	52.42	49.59	46.77	43.94
	"B"	42	40	38	36	34	32	30	28	26	24	22	20
	"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
	"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
40PIC	"A"	72.22	69.39	66.56	63.73	60.91	58.08	55.25	52.42	49.59	46.77	43.94	41.11
	"B"	40	38	36	34	32	30	28	26	24	22	20	18
	"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
	"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
38PIC	"A"	69.39	66.56	63.73	60.91	58.08	55.25	52.42	49.59	46.77	43.94	41.11	38.28
	"B"	38	36	34	32	30	28	26	24	22	20	18	16
	"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
	"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
36PIC	"A"	66.56	63.73	60.91	58.08	55.25	52.42	49.59	46.77	43.94	41.11	38.28	35.45
	"B"	36	34	32	30	28	26	24	22	20	18	16	14
	"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
	"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
34PIC	"A"	63.73	60.91	58.08	55.25	52.42	49.59	46.77	43.94	41.11	38.28	35.45	32.63
	"B"	34	32	30	28	26	24	22	20	18	16	14	12
	"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
	"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
32PIC	"A"	60.91	58.08	55.25	52.42	49.59	46.77	43.94	41.11	38.28	35.45	32.63	29.80
	"B"	32	30	28	26	24	22	20	18	16	14	12	10
	"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
	"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
30PIC	"A"	58.08	55.25	52.42	49.59	46.77	43.94	41.11	38.28	35.45	32.63	29.80	26.97
	"B"	30	28	26	24	22	20	18	16	14	12	10	8
	"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
	"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
28PIC	"A"	55.25	52.42	49.59	46.77	43.94	41.11	38.28	35.45	32.63	29.80	26.97	24.14
	"B"	28	26	24	22	20	18	16	14	12	10	8	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
	"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
26PIC	"A"	52.42	49.59	46.77	43.94	41.11	38.28	35.45	32.63	29.80	26.97	24.14	21.31
	"B"	26	24	22	20	18	16	14	12	10	8	6	4
	"C"	41.21	39.80	38.38	36.97	35.56	34.14	32.73	31.31	29.90	28.49	27.07	25.66
	"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
24PIC	"A"	49.59	46.77	43.94	41.11	38.28	35.45	32.63	29.80	26.97	24.14	21.31	18.48
	"B"	24	22	20	18	16	14	12	10	8	6	4	2
	"C"	38.80	37.38	35.97	34.56	33.14	31.73	30.31	28.90	27.49	26.07	24.66	23.25
	"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
22PIC	"A"	46.77	43.94	41.11	38.28	35.45	32.63	29.80	26.97	24.14	21.31	18.48	15.65
	"B"	22	20	18	16	14	12	10	8	6	4	2	0
	"C"	36.38	34.97	33.56	32.14	30.73	29.31	27.90	26.49	25.07	23.66	22.25	20.84
	"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
20PIC	"A"	43.94	41.11	38.28	35.45	32.63	29.80	26.97	24.14	21.31	18.48	15.65	12.82
	"B"	20	18	16	14	12	10	8	6	4	2	0	-2
	"C"	33.97	32.56	31.14	29.73	28.31	26.90	25.49	24.07	22.66	21.25	19.84	18.43
	"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
18PIC	"A"	41.11	38.28	35.45	32.63	29.80	26.97	24.14	21.31	18.48	15.65	12.82	10.00
	"B"	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
	"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
16PIC	"A"	38.28	35.45	32.63	29.80	26.97	24.14	21.31	18.48	15.65	12.82	10.00	7.17
	"B"	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
	"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
14PIC	"A"	35.45	32.63	29.80	26.97	24.14	21.31	18.48	15.65	12.82	10.00	7.17	4.34
	"B"	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
	"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
12PIC	"A"	32.63	29.80	26.97	24.14	21.31	18.48	15.65	12.82	10.00	7.17	4.34	1.51
	"B"	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
	"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
10PIC	"A"	29.80	26.97	24.14	21.31	18.48	15.65	12.82	10.00	7.17	4.34	1.51	-1.31
	"B"	10	8	6	4	2	0	-2	-4	-6	-8	-10	-12
	"C"	21.90	20.49	19.07	17.66	16.25	14.84	13.43	12.02	10.61	9.20	7.79	6.38
	"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
8PIC	"A"	26.97	24.14	21.31	18.48	15.65	12.82	10.00	7.17	4.34	1.51	-1.31	-3.51
	"B"	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
	"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
6PIC	"A"	24.14	21.31	18.48	15.65	12.82	10.00	7.17	4.34	1.51	-1.31	-3.51	-5.71
	"B"	6	4	2	0	-2	-4	-6	-8	-10	-12	-14	-16
	"C"	17.07	15.66	14.25	12.84	11.43	10.02	8.61	7.20	5.79	4.38	2.97	1.56
	"D"	17.07	16.07	15.07	14.07	13.07	12.07	11.07	10.07	9.07	8.07	7.07	6.07

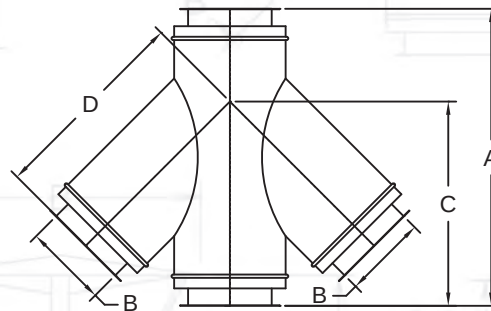


2G 45MT & DL TABLE IN INCHES

COMPONENTS

		TAP I.D.														
		48	46	44	42	40	38	36	34	32	30	28	26	24	22	
BODY I.D.	48PIC	"A"	2122	2050	1978	1906	1834	1763	1691	1619	1547	1475	1403	1357	1310	1290
	"B"	1219	1168	1118	1067	1016	965	914	864	813	762	711	660	610	559	
	"C"	1721	1685	1649	1613	1578	1542	1506	1470	1434	1398	1362	1326	1290	1254	
	"D"	1721	1696	1671	1645	1620	1594	1569	1544	1518	1493	1467	1442	1417	1391	
	46PIC	"A"	2050	1978	1906	1834	1763	1691	1619	1547	1475	1403	1331	1285	1264	1218
	"B"	1168	1118	1067	1016	965	914	864	813	762	711	660	610	559	508	
	"C"	1660	1624	1588	1552	1516	1480	1444	1408	1373	1337	1301	1265	1229	1193	
	"D"	1660	1634	1609	1584	1558	1533	1507	1482	1457	1431	1406	1380	1355	1330	
	44PIC	"A"	1978	1906	1834	1763	1691	1619	1547	1475	1403	1331	1260	1239	1192	1146
	"B"	1118	1067	1016	965	914	864	813	762	711	660	610	559	508	457	
	"C"	1599	1563	1527	1491	1455	1419	1383	1347	1311	1275	1240	1203	1168	1132	
	"D"	1599	1573	1548	1522	1497	1472	1446	1421	1395	1370	1345	1319	1294	1268	
	42PIC	"A"	1906	1834	1763	1691	1619	1547	1475	1403	1331	1260	1213	1167	1120	1099
	"B"	1067	1016	965	914	864	813	762	711	660	610	559	508	457	406	
	"C"	1537	1501	1466	1430	1394	1358	1322	1286	1250	1214	1178	1142	1106	1070	
	"D"	1537	1512	1486	1461	1436	1410	1385	1359	1334	1309	1283	1258	1232	1207	
	40PIC	"A"	1834	1763	1691	1619	1547	1475	1403	1331	1260	1188	1141	1095	1074	1032
	"B"	1016	965	914	864	813	762	711	660	610	559	508	457	406	356	
	"C"	1476	1440	1404	1368	1332	1296	1260	1225	1189	1153	1117	1081	1045	1009	
	"D"	1476	1451	1425	1400	1374	1349	1324	1298	1273	1247	1222	1197	1171	1146	
38PIC	"A"	1763	1691	1619	1547	1475	1403	1331	1260	1188	1116	1070	1049	1007	981	
"B"	965	914	864	813	762	711	660	610	559	508	457	406	356	305		
"C"	1415	1379	1343	1307	1271	1235	1199	1163	1127	1091	1056	1020	984	948		
"D"	1415	1389	1364	1339	1313	1288	1262	1237	1212	1186	1161	1135	1110	1085		
36PIC	"A"	1691	1619	1547	1475	1403	1331	1260	1188	1116	1044	1023	981	956	909	
"B"	914	864	813	762	711	660	610	559	508	457	406	356	305	254		
"C"	1353	1317	1281	1246	1210	1174	1138	1102	1066	1030	994	958	922	886		
"D"	1353	1328	1303	1277	1252	1226	1201	1176	1150	1125	1099	1074	1049	1023		
34PIC	"A"	1619	1547	1475	1403	1331	1260	1188	1116	1044	998	956	930	884	837	
"B"	864	813	762	711	660	610	559	508	457	406	356	305	254	203		
"C"	1292	1256	1220	1184	1148	1113	1076	1041	1005	969	933	897	861	825		
"D"	1292	1267	1241	1216	1190	1165	1140	1114	1089	1063	1038	1013	987	962		
32PIC	"A"	1547	1475	1403	1331	1260	1188	1116	1044	972	930	905	859	812	797	
"B"	813	762	711	660	610	559	508	457	406	356	305	254	203	152		
"C"	1231	1196	1159	1123	1087	1051	1015	979	943	908	871	836	800	764		
"D"	1231	1205	1180	1154	1129	1104	1078	1053	1027	1002	977	951	926	900		
30PIC	"A"	1475	1403	1331	1260	1188	1116	1044	972	900	880	833	787	772		
"B"	762	711	660	610	559	508	457	406	356	305	254	203	152			
"C"	1169	1134	1098	1062	1026	990	954	918	882	846	810	774	738			
"D"	1169	1144	1119	1093	1068	1042	1017	992	966	941	915	890	865			
28PIC	"A"	1403	1331	1260	1188	1116	1044	972	900	854	808	761	747			
"B"	711	660	610	559	508	457	406	356	305	254	203	152				
"C"	1108	1072	1036	1000	964	929	893	857	821	785	749	713				
"D"	1108	1083	1057	1032	1007	981	956	930	905	880	854	829				
26PIC	"A"	1331	1260	1188	1116	1044	972	900	829	782	736	721				
"B"	660	610	559	508	457	406	356	305	254	203	152					
"C"	1047	1011	975	939	903	867	831	795	759	724	688					
"D"	1047	1021	996	971	945	920	894	869	844	818	793					
24PIC	"A"	1260	1188	1116	1044	972	900	829	757	710	696					
"B"	610	559	508	457	406	356	305	254	203	152						
"C"	986	949	914	878	842	806	770	734	698	662						
"D"	986	960	935	909	884	859	833	808	782	757						
22PIC	"A"	1188	1116	1044	972	900	829	757	707	685	670					
"B"	559	508	457	406	356	305	254	203	152							
"C"	924	888	852	816	781	744	709	673	637							
"D"	924	899	873	848	822	797	772	746	721							
20PIC	"A"	1116	1044	972	900	829	757	685	613							
"B"	508	457	406	356	305	254	203	152								
"C"	863	827	791	755	719	683	647	611								
"D"	863	837	812	787	761	736	710	685								
18PIC	"A"	1044	972	900	829	757	685	613								
"B"	457	406	356	305	254	203	152									
"C"	802	766	730	694	658	622	586									
"D"	802	776	751	725	700	675	649									
16PIC	"A"	972	900	829	757	685	613									
"B"	406	356	305	254	203	152										
"C"	740	704	668	632	597	561										
"D"	740	715	689	664	639	613										
14PIC	"A"	900	829	757	685	613										
"B"	356	305	254	203	152											
"C"	679	643	607	571	535											
"D"	679	654	628	603	577											
12PIC	"A"	829	757	685	613											
"B"	305	254	203	152												
"C"	617	582	546	510												
"D"	617	592	567	541												
10PIC	"A"	757	685	613												
"B"	254	203	152													
"C"	556	520	484													
"D"	556	531	505													
8PIC	"A"	685	613													
"B"	203	152														
"C"	495	459														
"D"	495	470														
6PIC	"A"	613														
"B"	152															
"C"	434															
"D"	434															

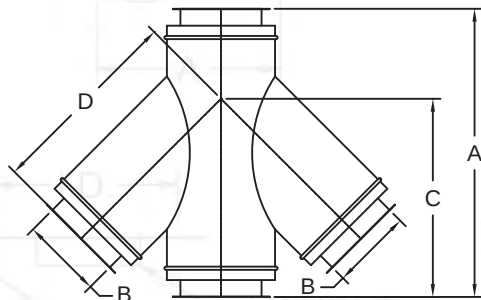
2G 45MT & DL TABLE IN METRIC



2G 45MT & DL TABLE IN METRIC

COMPONENTS

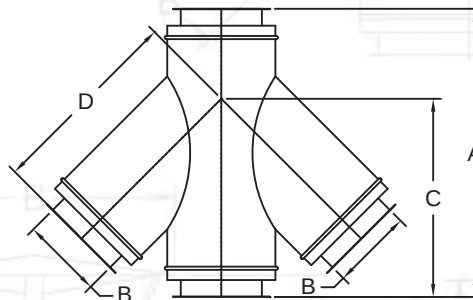
BODY I.D.		TAP I.D.									
		36	34	32	30	28	26	24	22	20	18
36PIC	"A"	69.39	66.57	63.74	60.91	58.08	55.25	52.43	49.59	46.76	43.93
	"B"	36	34	32	30	28	26	24	22	20	18
	"C"	55.70	54.28	52.87	51.46	50.04	48.63	47.21	45.80	44.38	42.96
	"D"	55.70	54.70	53.70	52.70	51.70	50.70	49.70	48.70	47.70	46.70
34PIC	"A"	66.57	63.74	60.91	58.08	55.25	52.43	49.59	46.76	43.93	42.10
	"B"	34	32	30	28	26	24	22	20	18	16
	"C"	53.28	51.87	50.46	49.04	47.63	46.21	44.80	43.38	41.96	40.55
	"D"	53.28	52.28	51.28	50.28	49.28	48.28	47.28	46.28	45.28	44.28
32PIC	"A"	63.74	60.91	58.08	55.25	52.43	49.59	46.76	43.93	41.10	38.27
	"B"	32	30	28	26	24	22	20	18	16	14
	"C"	50.87	49.46	48.04	46.63	45.21	43.80	42.38	40.96	39.55	38.14
	"D"	50.87	49.87	48.87	47.87	46.87	45.87	44.87	43.87	42.87	41.87
30PIC	"A"	60.91	58.08	55.25	52.43	49.59	46.76	43.93	41.10	38.27	35.44
	"B"	30	28	26	24	22	20	18	16	14	12
	"C"	48.46	47.04	45.63	44.21	42.80	41.38	39.96	38.55	37.14	35.72
	"D"	48.46	47.46	46.46	45.46	44.46	43.46	42.46	41.46	40.46	39.46
28PIC	"A"	58.08	55.25	52.43	49.59	46.76	43.93	41.10	38.27	35.44	32.61
	"B"	28	26	24	22	20	18	16	14	12	10
	"C"	46.04	44.63	43.21	41.80	40.38	38.96	37.55	36.14	34.72	33.31
	"D"	46.04	45.04	44.04	43.04	42.04	41.04	40.04	39.04	38.04	37.04
26PIC	"A"	55.25	52.43	49.59	46.76	43.93	41.10	38.27	35.45	32.62	29.79
	"B"	26	24	22	20	18	16	14	12	10	8
	"C"	43.63	42.21	40.80	39.38	37.96	36.55	35.14	33.72	32.31	30.89
	"D"	43.63	42.63	41.63	40.63	39.63	38.63	37.63	36.63	35.63	34.63
24PIC	"A"	52.43	49.59	46.76	43.93	41.10	38.27	35.45	32.62	29.79	26.97
	"B"	24	22	20	18	16	14	12	10	8	6
	"C"	41.21	39.80	38.38	36.96	35.55	34.14	32.72	31.31	29.89	28.48
	"D"	41.21	40.21	39.21	38.21	37.21	36.21	35.21	34.21	33.21	32.21
22PIC	"A"	49.59	46.76	43.93	41.10	38.27	35.45	32.62	29.79	26.97	24.14
	"B"	22	20	18	16	14	12	10	8	6	4
	"C"	38.80	37.38	35.96	34.55	33.14	31.72	30.31	28.89	27.48	26.07
	"D"	38.80	37.80	36.80	35.80	34.80	33.80	32.80	31.80	30.80	29.80
20PIC	"A"	46.76	43.93	41.10	38.27	35.45	32.62	29.79	26.97	24.14	21.31
	"B"	20	18	16	14	12	10	8	6	4	2
	"C"	36.38	34.96	33.55	32.14	30.72	29.31	27.89	26.48	25.07	23.66
	"D"	36.38	35.38	34.38	33.38	32.38	31.38	30.38	29.38	28.38	27.38
18PIC	"A"	43.93	41.10	38.27	35.45	32.62	29.79	26.97	24.14	21.31	18.48
	"B"	18	16	14	12	10	8	6	4	2	0
	"C"	33.96	32.55	31.14	29.72	28.31	26.89	25.48	24.07	22.66	21.25
	"D"	33.96	32.96	31.96	30.96	29.96	28.96	27.96	26.96	25.96	24.96
16PIC	"A"	41.10	38.27	35.45	32.62	29.79	26.97	24.14	21.31	18.48	15.65
	"B"	16	14	12	10	8	6	4	2	0	-2
	"C"	31.55	30.14	28.72	27.31	25.89	24.48	23.07	21.66	20.25	18.84
	"D"	31.55	30.55	29.55	28.55	27.55	26.55	25.55	24.55	23.55	22.55
14PIC	"A"	38.27	35.45	32.62	29.79	26.97	24.14	21.31	18.48	15.65	12.82
	"B"	14	12	10	8	6	4	2	0	-2	-4
	"C"	29.14	27.72	26.31	24.89	23.48	22.07	20.66	19.25	17.84	16.43
	"D"	29.14	28.14	27.14	26.14	25.14	24.14	23.14	22.14	21.14	20.14
12PIC	"A"	35.45	32.62	29.79	26.97	24.14	21.31	18.48	15.65	12.82	10.00
	"B"	12	10	8	6	4	2	0	-2	-4	-6
	"C"	26.72	25.31	23.89	22.48	21.07	19.66	18.25	16.84	15.43	14.02
	"D"	26.72	25.72	24.72	23.72	22.72	21.72	20.72	19.72	18.72	17.72
10PIC	"A"	32.62	29.79	26.97	24.14	21.31	18.48	15.65	12.82	10.00	7.17
	"B"	10	8	6	4	2	0	-2	-4	-6	-8
	"C"	24.31	22.89	21.48	20.07	18.66	17.25	15.84	14.43	13.02	11.61
	"D"	24.31	23.31	22.31	21.31	20.31	19.31	18.31	17.31	16.31	15.31
8PIC	"A"	29.79	26.97	24.14	21.31	18.48	15.65	12.82	10.00	7.17	4.34
	"B"	8	6	4	2	0	-2	-4	-6	-8	-10
	"C"	21.89	20.48	19.07	17.66	16.25	14.84	13.43	12.02	10.61	9.20
	"D"	21.89	20.89	19.89	18.89	17.89	16.89	15.89	14.89	13.89	12.89
6PIC	"A"	26.97	24.14	21.31	18.48	15.65	12.82	10.00	7.17	4.34	1.51
	"B"	6	4	2	0	-2	-4	-6	-8	-10	-12
	"C"	19.48	18.07	16.66	15.25	13.84	12.43	11.02	9.61	8.20	6.79
	"D"	19.48	18.48	17.48	16.48	15.48	14.48	13.48	12.48	11.48	10.48



3G 45MT & DL TABLE IN INCHES

COMPONENTS

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		34	32	30	28	26	24	22	20	18
	"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		32	30	28	26	24	22	20	18	16
	"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		30	28	26	24	22	20	18	16	14
	"A" 1547	1475	1403	1332	1260	1188	1116	1044	972	880
	"B" 762	711	660	610	559	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		28	26	24	22	20	18	16	14	12
	"A" 1475	1403	1332	1260	1188	1116	1044	972	854	808
	"B" 711	660	610	559	508	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		26	24	22	20	18	16	14	12	10
	"A" 1403	1332	1260	1188	1116	1044	972	900	782	782
	"B" 660	610	559	508	457	406	356	305	254	203
	"C" 1108	1072	1036	1000	964	928	893	856	821	785
	"D" 1108	1083	1057	1032	1007	981	956	930	904	878
24PIC		24	22	20	18	16	14	12	10	8
	"A" 1332	1260	1188	1116	1044	972	900	829	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		22	20	18	16	14	12	10	8	6
	"A" 1260	1188	1116	1044	972	900	829	757	685	
	"B" 559	508	457	406	356	305	254	203	152	
	"C" 986	949	913	878	842	806	770	734	698	
	"D" 986	960	935	909	884	859	833	808	782	
20PIC		20	18	16	14	12	10	8	6	
	"A" 1188	1116	1044	972	900	829	757	685		
	"B" 508	457	406	356	305	254	203	152		
	"C" 924	888	852	816	780	744	708	673		
	"D" 924	899	873	848	822	797	772	746		
18PIC		18	16	14	12	10	8	6		
	"A" 1116	1044	972	900	829	757	685			
	"B" 457	406	356	305	254	203	152			
	"C" 863	827	791	755	719	683	647			
	"D" 863	837	812	786	761	736	710			
16PIC		16	14	12	10	8	6			
	"A" 1044	972	900	829	757	685				
	"B" 406	356	305	254	203	152				
	"C" 801	766	729	694	658	622				
	"D" 801	776	751	725	700	674				
14PIC		14	12	10	8	6				
	"A" 972	900	829	757	685					
	"B" 356	305	254	203	152					
	"C" 740	704	668	632	596					
	"D" 740	715	689	664	639					
12PIC		12	10	8	6					
	"A" 900	829	757	685						
	"B" 305	254	203	152						
	"C" 679	643	607	571						
	"D" 679	653	628	602						
10PIC		10	8	6						
	"A" 829	757	685							
	"B" 254	203	152							
	"C" 617	581	546							
	"D" 617	592	567							
8PIC		8	6							
	"A" 757	685								
	"B" 203	152								
	"C" 556	520								
	"D" 556	531								
6PIC		6								
	"A" 685									
	"B" 152									
	"C" 495									
	"D" 495									



3G 45MT & DL TABLE IN METRIC

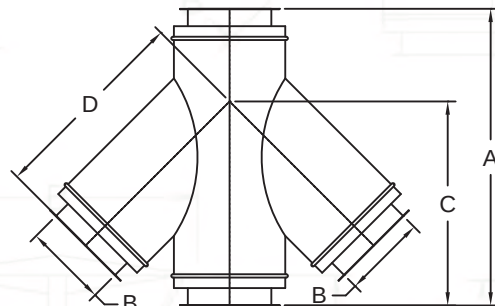
COMPONENTS

		TAP I.D.												
		48	46	44	42	40	38	36	34	32	30	28	26	24
48PIC	"A"	89.19	86.36	83.54	80.71	77.88	75.05	72.22	69.40	66.57	63.74	60.91	58.08	56.25
	"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	54.42
	"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	53.42	51.60
	"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	50.60	49.77
	"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	48.77	46.94
	"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	47.77	45.94	44.11
	"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	44.94	43.11	42.28
	"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	42.11	41.28	39.46
	"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	40.28	38.46	36.63
	"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	39.28	37.46	35.63	34.80
	"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	36.46	34.63	33.80	32.80
	"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	31.49
	"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	33.63	32.80	31.80	30.80
	"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	30.49	29.08
	"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	31.80	30.80	29.80	28.80
	"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	29.49	28.08	26.67
	"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	31.80	30.80	29.80	28.80	27.80
	"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	28.49	27.08	25.67	24.26
	"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	28.80	27.80	26.80	25.80	24.80
	"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	27.49	26.08	24.67	23.26	21.85
	"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	28.80	27.80	26.80	25.80	24.80	23.80
	"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	26.49	25.08	23.67	22.26	20.85	19.44
	"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	28.80	27.80	26.80	25.80	24.80	23.80	22.80
	"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	25.49	24.08	22.67	21.26	19.85	18.44	17.03
	"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	28.80	27.80	26.80	25.80	24.80	23.80	22.80	21.80
	"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	24.49	23.08	21.67	20.26	18.85	17.44	16.03	14.62
	"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	28.80	27.80	26.80	25.80	24.80	23.80	22.80	21.80	20.80
	"B"	12	10	8	6	4	2	0	-2	-4	-6	-8	-10	-12
	"C"	29.14	27.73	26.31	24.90	23.49	22.08	20.67	19.26	17.85	16.44	15.03	13.62	12.21
	"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	28.80	27.80	26.80	25.80	24.80	23.80	22.80	21.80	20.80	19.80
	"B"	10	8	6	4	2	0	-2	-4	-6	-8	-10	-12	-14
	"C"	26.73	25.31	23.90	22.49	21.08	19.67	18.26	16.85	15.44	14.03	12.62	11.21	9.80
	"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	28.80	27.80	26.80	25.80	24.80	23.80	22.80	21.80	20.80	19.80	18.80
	"B"	8	6	4	2	0	-2	-4						

COMPONENTS

		TAP I.D.													
BODY I.D.															
		48	46	44	42	40	38	36	34	32	30	28	26	24	
48PIC	"A"	2265	2194	2122	2050	1978	1906	1834	1763	1691	1619	1547	1475	1429	
	"B"	1219	1168	1118	1067	1016	965	914	864	813	762	711	660	610	
	"C"	1844	1808	1772	1736	1700	1664	1628	1593	1557	1521	1485	1449	1413	
	"D"	1844	1819	1793	1768	1742	1717	1692	1666	1641	1615	1590	1565	1539	
46PIC	"A"	46	44	42	40	38	36	34	32	30	28	26	24	22	
	"B"	2194	2122	2050	1978	1906	1834	1763	1691	1619	1547	1475	1403	1382	
	"C"	1168	1118	1067	1016	965	914	864	813	762	711	660	610	559	
	"D"	1783	1747	1711	1675	1639	1603	1567	1531	1495	1459	1423	1388	1352	
44PIC	"A"	44	42	40	38	36	34	32	30	28	26	24	22	20	
	"B"	2122	2050	1978	1906	1834	1763	1691	1619	1547	1475	1403	1357	1311	
	"C"	1118	1067	1016	965	914	864	813	762	711	660	610	559	508	
	"D"	1721	1685	1649	1614	1578	1542	1506	1470	1434	1398	1362	1326	1290	
42PIC	"A"	42	40	38	36	34	32	30	28	26	24	22	20	18	
	"B"	2050	1978	1906	1834	1763	1691	1619	1547	1475	1403	1331	1285	1264	
	"C"	1067	1016	965	914	864	813	762	711	660	610	559	508	457	
	"D"	1660	1624	1588	1552	1516	1480	1444	1408	1373	1337	1301	1265	1229	
40PIC	"A"	40	38	36	34	32	30	28	26	24	22	20	18	16	
	"B"	1978	1906	1834	1763	1691	1619	1547	1475	1403	1331	1260	1239	1192	
	"C"	1016	965	914	864	813	762	711	660	610	559	508	457	406	
	"D"	1599	1563	1527	1491	1455	1419	1383	1347	1311	1275	1240	1203	1168	
38PIC	"A"	38	36	34	32	30	28	26	24	22	20	18	16	14	
	"B"	1906	1834	1763	1691	1619	1547	1475	1403	1331	1260	1213	1167	1120	
	"C"	965	914	864	813	762	711	660	610	559	508	457	406	356	
	"D"	1537	1501	1466	1430	1394	1358	1322	1286	1250	1214	1178	1142	1106	
36PIC	"A"	36	34	32	30	28	26	24	22	20	18	16	14	12	
	"B"	1834	1763	1691	1619	1547	1475	1403	1331	1260	1188	1141	1095	1074	
	"C"	914	864	813	762	711	660	610	559	508	457	406	356	305	
	"D"	1476	1440	1404	1368	1332	1296	1261	1225	1189	1153	1117	1081	1045	
34PIC	"A"	34	32	30	28	26	24	22	20	18	16	14	12	10	
	"B"	1763	1691	1619	1547	1475	1403	1331	1260	1188	1116	1070	1049	1002	
	"C"	864	813	762	711	660	610	559	508	457	406	356	305	254	
	"D"	1415	1389	1364	1339	1313	1288	1262	1237	1212	1186	1161	1135	1110	
32PIC	"A"	32	30	28	26	24	22	20	18	16	14	12	10	8	
	"B"	1691	1619	1547	1475	1403	1331	1260	1188	1116	1044	1023	977	930	
	"C"	813	762	711	660	610	559	508	457	406	356	305	254	203	
	"D"	1353	1317	1281	1246	1210	1174	1138	1102	1066	1030	994	958	922	
30PIC	"A"	30	28	26	24	22	20	18	16	14	12	10	8	6	
	"B"	1619	1547	1475	1403	1331	1260	1188	1116	1044	998	951	905	884	
	"C"	762	711	660	610	559	508	457	406	356	305	254	203	152	
	"D"	1292	1256	1220	1184	1148	1113	1076	1041	1005	969	933	897	861	
28PIC	"A"	28	26	24	22	20	18	16	14	12	10	8	6		
	"B"	1547	1475	1403	1331	1260	1188	1116	1044	972	926	880	859		
	"C"	711	660	610	559	508	457	406	356	305	254	203	152		
	"D"	1231	1195	1159	1123	1087	1051	1015	979	943	908	871	836		
26PIC	"A"	26	24	22	20	18	16	14	12	10	8	6			
	"B"	1475	1403	1331	1260	1188	1116	1044	972	901	854	833			
	"C"	660	610	559	508	457	406	356	305	254	203	152			
	"D"	1169	1134	1098	1062	1026	990	954	918	882	846	810			
24PIC	"A"	24	22	20	18	16	14	12	10	8	6				
	"B"	1403	1331	1260	1188	1116	1044	972	901	829	808				
	"C"	610	559	508	457	406	356	305	254	203	152				
	"D"	1108	1072	1036	1000	964	929	893	857	821	785				
22PIC	"A"	22	20	18	16	14	12	10	8	6					
	"B"	1331	1260	1188	1116	1044	972	901	829	782					
	"C"	559	508	457	406	356	305	254	203	152					
	"D"	1047	1011	975	939	903	867	831	795	759					
20PIC	"A"	20	18	16	14	12	10	8	6						
	"B"	1260	1188	1116	1044	972	901	829	757						
	"C"	508	457	406	356	305	254	203	152						
	"D"	986	949	914	878	842	806	770	734						
18PIC	"A"	18	16	14	12	10	8	6							
	"B"	1188	1116	1044	972	901	829	757							
	"C"	457	406	356	305	254	203	152							
	"D"	924	888	852	816	781	744	709							
16PIC	"A"	16	14	12	10	8	6								
	"B"	1116	1044	972	901	829	757								
	"C"	406	356	305	254	203	152								
	"D"	863	827	791	755	719	683								
14PIC	"A"	14	12	10	8	6									
	"B"	1044	972	901	829	757									
	"C"	356	305	254	203	152									
	"D"	802	766	730	694	658									
12PIC	"A"	12	10	8	6										
	"B"	972	901	829	757										
	"C"	305	254	203	152										
	"D"	740	704	668	632										
10PIC	"A"	10	8	6											
	"B"	901	829	757											
	"C"	254	203	152											
	"D"	679	643	607											
8PIC	"A"	8	6												
	"B"	829	757												
	"C"	203	152												
	"D"	617	592												
6PIC	"A"	6													
	"B"	757													
	"C"	152													
	"D"	556													

4G 45MT & DL TABLE IN METRIC



4G 45MT & DL TABLE IN METRIC

DESIGN CHECKLIST

In order to quickly and accurately design a Grease Duct system, Metal-Fab's Application 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, or plans that are to scale, that 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.

Refer to Metal-Fab, Inc. Warranty form L2157 for complete information on claim procedures, exclusions and limitations. Available online at www.greaseduct.com and www.metal-fabcommercial.com.



— 800-835-2830 —