McGill AirFlow Corporation

An enterprise of United McGill Corporation - Founded in 1951

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Single-Wall, and Single-Wall Lined, Rectangular Duct and Fittings Dimensions

McGill AirFlow Corporation has a complete line of single-wall and single-wall lined, rectangular duct and fittings. The internally- lined product incorporates a flexible fiberglass insulation with an erosion-resistant coating on the air-side surface. The insulation is available in ½, 1, 1 ½ and 2-inch thicknesses and has thermal and acoustical properties comparable to the double-wall duct construction.[1]

Table 1 - Single-wall, Rectangular Duct - Available Sizes, Materials, and Thicknesses

Construction [2]	Materials	Thicknesses
UNI-SEAL™ Duct (Pittsburgh lockseam)	Galvanized Steel	28-18 gauge[3]
	Stainless Steel	26-22 gauge[3]
	Aluminum	0.032-0.050 inch
UNI-SEAL Duct (Button Punch Snap Lock)	Galvanized Steel	28-20 gauge
	Stainless Steel	26-22 gauge

Table 2 - Single-wall, Rectangular Duct and Fittings - Available Connectors

End Connectors	5-Foot Duct Length	6-Foot Duct Length
Raw End	60 inches	72 inches
S and Drive Slips	59 inches	71 inches
TDC™	56 1/4 inches	68 1/4 inches
Applied Connectors	60 1/4 inches	72 1/4 inches

1. The standard insulation density is approximately 1.5 pcf. Other insulation densities may be available, dependent on the insulation thickness; check with you local sales office.
2. Fully welded rectangular duct is available on special order.
3. Standard rectangular duct is made on an automated coil line and is limited to the gauges shown in Table 1. Fittings and non-standard duct with the Pittsburgh lockseam are available in heavier gauges. Galvanized steel fittings are available to 14 ga with the Pittsburgh lockseam construction at some locations. Check with your local sales office for pricing and availability.

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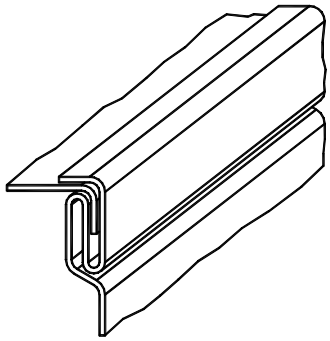
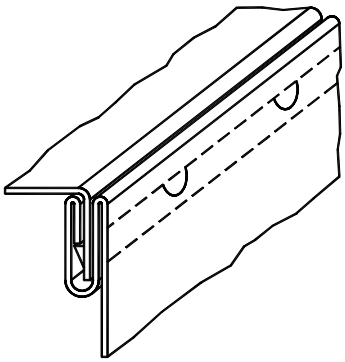
Duct and Fitting Construction

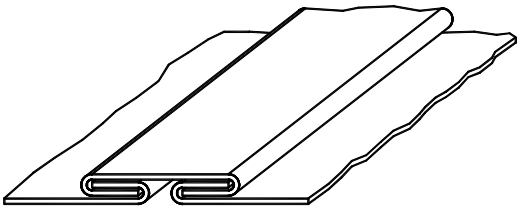
Pittsburgh Lockseam



Button Punch Snap Lock

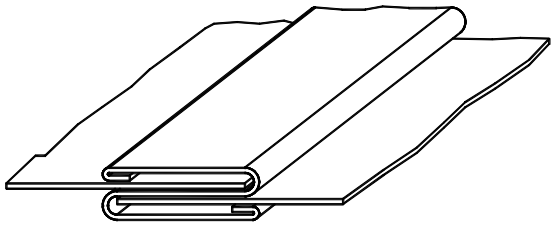


T-1 Drive Slip Connector



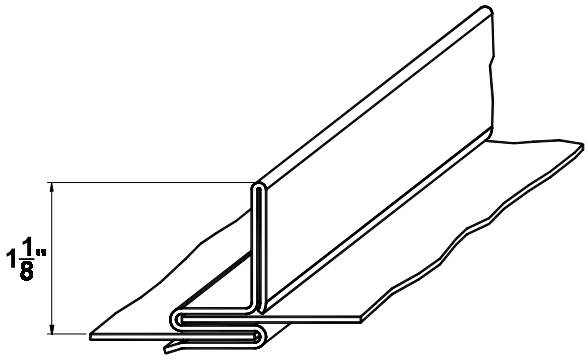
Galvanized - 20 ga Max
Stainless - 24 ga Max
Aluminum - 0.050 in Max

T-6 Hemmed S Slip Connector



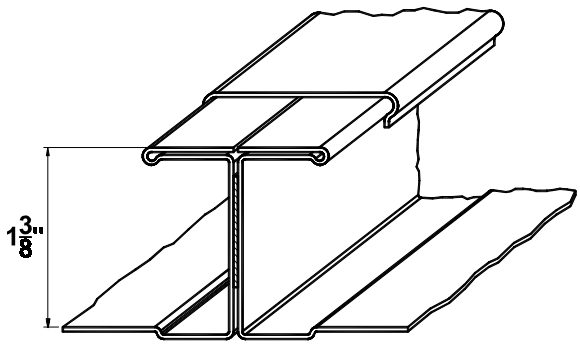
Galvanized - 22 ga Max
Stainless - 24 ga Max
Aluminum - 0.050 in Max

T-11 Standing S Slip Connector



Galvanized - 20 ga Max
Stainless - 22 ga Max
Aluminum - 0.050 in Max

Lockformer TDC Duct Connector



Duct and Fitting Construction

Applied Duct Connector

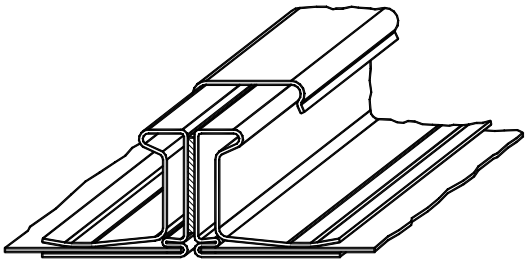


Table 3 - Single Wall, Rectangular Duct - Assembly Options

Construction	Size Limitations[1]
Fully Assembled	none
L-Shaped	20 inches $\leq$ W + H $\leq$ 120 inches[2,3]
Wrap Around	W + H < 20

[1] Check with your local sales office for pricing and availability.
[2] Unfinished dimension. With longitudinal seam, finished maximum will be about 1- to 2- inch less. Some plant's minimum W + H dimension may be larger than 20 inches.
[3] W is the main width. H is the main depth. See dimensioning below.

Dimensioning

(All alphanumeric dimensions are in inches, all angles are in degrees)

W1 - Main width (larger) as seen in plan view
H1 - Main depth associated with W1
W2 - Main width (smaller) as seen in plan view
H2 - Main depth associated with W2
W3, W4 - Branch widths as seen in plan view
H3, H4 - Branch depths associated with W3 and W4
SA, SB, SC, SD - Fitting straight length extensions
THR - Throat radius (W1 standard)
V - Fitting length = 2*W1, standard
Z, LZ, RZ - Fitting offset in plan view
TD, TD3, TD4 - Fitting offset in elevation (top down) [If TD = 0, then fitting will be flat on top {FOT}]
θ - Angular measurements (refer to specific drawings**)**

General Notes:

- Unless ordered otherwise, all UNI-SEAL single-wall, rectangular duct and fittings shall be constructed in accordance with the 1995 SMACNA *HVAC Duct Construction Standards(DCS) and Addendum No. 1 dated November 1997.*
- Dimensions other than the standard dimensions shown are to be specified.
- Dimensions other than width and depth are held within a 1/4-inch tolerance.
- Width (W) and depth (H) dimensions are based on the orientation of the ductwork as shown in plan view of the drawing. The width is the dimension seen and the depth is the dimension unseen (refer to elevation details to see dimension). For example, a duct dimension of 24 x 12 in the plan view means W = 24 inches and H = 12 inches, whereas a duct dimension of 12 x 24 means W = 12 inches and H = 24 inches.
- W1 ≥ W2 regardless of the direction of airflow. Directional orientation of the fitting is determined when viewing the fitting from the W1 end.
- Single-wall lined, rectangular duct dimensions are for the metal shell.
- All drawings are shown with the TDC end connector. For other end configurations, replace the T in the third designation as described below. End connectors are illustrated on pages 2 and 3.
- Unless otherwise specified, lined rectangular ductwork will incorporate a 1-inch flexible fiberglass insulation with an erosion-resistant coating on the air-side surface.
- Round and flat oval taps are available in lieu of rectangular. Specify dimensions.

Designations:

McGill AirFlow uses a designation system that simplifies product nomenclature. Most of our products can be accurately identified using a concise alphanumeric designator. Each character in the designation defines a characteristic of the product.

Example: IAT4TBR refers to a single-wall, lined (I), rectangular (A), TDC end connectors(T), 4 in wg pressure class (4), reducing bullhead tee (TBR).

1st Character: **Wall Configuration - I**AT4TBR

S = Single-wall
I = Single-wall, lined (½, 1, 1 ½, or 2 inch only)

2nd Character: **Shape -** I**A**T4TBR

A = Rectangular

3rd Character: **End Configuration -** IA**T**4TBR

T = TDC Transverse Duct Connector
S = S and drive slips
F = Four-bolt applied connector
R = Raw end

4TH Character: **Pressure Class -** IAT**4**TBR

A = ± ½ inch wg
1 = ± 1 inch wg
2 = ± 2 inches wg
3 = ± 3 inches wg
4 = ± 4 inches wg
6 = ± 6 inches wg
0 = ± 10 inches wg
N = Nonstandard gauge

Notes: 1. When ordering duct or fittings, specify A, 1, 2, 3, 4, 6, 0, or N in the * position of the designation.
2. Pressure ranges listed for A, 1, 2, 3, 4, 6, and 0 are based on 1995 SMACNA Duct Construction Standards (galvanized only).
3. SMACNA is the Sheet Metal and Air Conditioning Contractors National Association.

5th and Subsequent Characters: **Product Type -** IAT4**TBR**

TBR = Reducing Bullhead Tee

Table 4 - Thickness/Weight Relationships of Standard Materials

Gauge	Galvanized and Paintable Galvanized Steel			Nongalvanized Carbon Steel			Stainless Steel (304 or 316)		
	Minimum Thickness (inches)	Nominal Thickness (inches)	Nominal Weight (lb/sq ft)	Minimum Thickness (inches)	Nominal Thickness (inches)	Nominal Weight (lb/sq ft)	Minimum Thickness (inches)	Nominal Thickness (inches)	Nominal Weight (lb/sq ft)
28	0.0157	0.0187	0.781	0.0129	0.0149	0.625	0.0136	0.0156	0.656
26	0.0187	0.0217	0.906	0.0159	0.0179	0.750	0.0158	0.0188	0.788
24	0.0236	0.0276	1.156	0.0209	0.0239	1.000	0.0220	0.0250	1.050
22	0.0296	0.0336	1.406	0.0269	0.0299	1.250	0.0273	0.0313	1.313
20	0.0356	0.0396	1.656	0.0329	0.0359	1.500	0.0335	0.0375	1.575
18	0.0466	0.0516	2.156	0.0438	0.0478	2.000	0.0450	0.0500	2.100
16	0.0575	0.0635	2.656	0.0548	0.0598	2.500	0.0565	0.0625	2.625
14	0.0705	0.0785	3.281	0.0697	0.0747	3.125	0.0711	0.0781	3.281
12	0.0994	0.1084	4.531	0.0986	0.1046	4.375	0.1000	0.1094	4.594
10	0.1292	0.1382	5.781	0.1285	0.1345	5.625	0.1286	0.1406	5.906

Aluminum 3003-H14		
Minimum Thickness (inches)	Nominal Thickness (inches)	Nominal Weight (lb/sq ft)
0.0230	0.025	0.356
0.0295	0.032	0.456
0.0365	0.040	0.570
0.0465	0.050	0.713
0.0595	0.063	0.898
0.0755	0.080	1.140
0.0855	0.090	1.283
0.0945	0.100	1.426
0.1195	0.125	1.782

Table 5 - ASTM Material Specifications

Standard material	Type	ASTM Number
Galvanized Steel	———	A653, A924
Stainless Steel	304, 304L, 316, 316L	A167, A480
Nongalvanized Carbon Steel	18 - 28 gauge	A366, A568, A569
Aluminum	3003-H14	B209
Aluminized	Type 1	A463

BEADING

(Crossbreaking available)

Duct or Fitting Width (inches)	12	24	36	48	60	72	84	96	108	120
Minimum Duct or Fitting Length Where Beading is Required (inches)	None	60	40	30	24	20	17	15	13	12

Note:

1. Crossbreaking may be used instead of beading
2. Beading shall be 6 inches in from duct or fitting end and 12 inches between beads.
3. It is not necessary to bead (or crossbreak) all sides unless each dimension requires it.
4. Bead direction may be random for fittings.
5. Beading or crossbreaking does not affect reinforcement spacing.
6. Beading (or crossbreaking) is not required for the following:
   - Duct or fitting dimensions less than 19 inches in width.
   - Sides which have less than 10 square feet.
   - Internally lined duct or fittings.
   - Externally wrapped duct or fittings.
   - Duct or fittings heavier than 20 gauge.
   - Duct or fittings for 4 inch wg or more pressure class.

Gauge/Reinforcement Tables:

The gauge of rectangular duct and fittings is based on the pressure classification, the major dimension, and the reinforcement (type and quantity) used per SMACNA(DCS) and Addendum No. 1 dated November 1997 for internal reinforcement. Tables 6 through 11 were developed for specific lengths of 5- or 6- foot lengths. Tables 6 through 9 use angle iron external reinforcement. Tables 10 and 11 use tie rod internal reinforcement. A 'light gauge/heavy reinforcement' and a 'heavy gauge/light reinforcement' combination are given for external reinforcement for the 5- and 6-feet. These tables are illustrative of the possible combinations of gauge/reinforcement and are not all inclusive. Other combinations may be more economical depending on size range, manufacturing capabilities, reinforcement availability and cost. In addition, shorter lengths may require less reinforcement. Fittings must have gauge/reinforcements similar to duct but are often shorter in length.

Table 6 - UNI-SEAL Rectangular Light Gauge/Heavy Reinforcement for 5-Foot Joints Using External Angle Reinforcement

Maximum Major Axis (inches)	Pressure Classification (nominal 60-inch duct lengths)													
	±½ inch wg		±1 inch wg		±2 inch wg		±3 inch wg		±4 inch wg		±6 inch wg		±10 inch wg	
	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR
10	26	T6/T1	26	T6/T1	26	T6/T1	26	T11/T1	26	T11/T1	26	T11/T1(R)	26	T11/T1(R)
												1R		1R
12	26	T6/T1	26	T6/T1	26	T11/T1	26	T11/T1	26	T11/T1	26	T11/T1(R)	26	T11/T1(R)
												1R		1R
18	26	T6/T1	26	T11/T1	26	T11/T1	26	T11/T1	26	TDC	26	TDC	24	TDC
								R1		1R		1R		1R
24	26	TDC	26	TDC	26	TDC	26	TDC	26	TDC	24	TDC	22	TDC
								R1		1R		1R		1R
26	26	TDC	26	TDC	26	TDC	26	TDC	26	TDC	24	TDC	22	TDC
								R1		2R		1R		1R
28	26	TDC	26	TDC	26	TDC	26	TDC	26	TDC	22	TDC	24	TDC
						1R		R1		2R		1R		2R
30	26	TDC	26	TDC	26	TDC	24	TDC	26	TDC	22	TDC	24	TDC
						1R		R1		2R		1R		2R
36	26	TDC	26	TDC	26	TDC	24	TDC	26	TDC	20	TDC	22	TDC
				1R		1R		R1		2R		1R		2R
42	26	TDC	26	TDC	24	TDC	22	TDC	24	TDC	22	TDC	20	TDC
				1R		1R		R1		2R		2R		2R1
48	26	TDC	24	TDC	22	TDC	24	TDC	24	TDC	22	TDC	18	TDC
		1R		1R		1R		2R		2R		2R1		2R1
54	26	TDC	24	TDC	22	TDC	24	TDC	22	TDC	20	TDC	18	TDC
		1R		1R		1R		2R		2R		2R1		2R1
60	24	TDC	24	TDC	24	TDC	22	TDC	22	TDC	20	TDC	18	TDC
				1R		2R		2R		2R1		2R1		2R2
72	24	TDC	22	TDC	22	TDC	22	TDC	20	TDC	18	TDC	18	TDC
		1R		1R		2R		2R1		2R1		2R1		3R2
84	22	TDC	22	TDC	22	TDC	20	TDC	18	TDC	18	TDC	N/A	
		1R		2R		2R1		2R1		2R1		3R2		
96	22	TDC	18	TDC	20	TDC	18	TDC	18	TDC	18	TDC	N/A	
		1R		1R		2R1		2R1		2R2		3R2		
108	18	TDC	18	TDC	18	TDC	18	TDC	18	TDC	18	TDC	N/A	
		1R		2R1		2R1		2R2		2R2		3R2		
120	18	TDC	18	TDC	18	TDC	18	TDC	18	TDC	18	TDC	N/A	
		1R		2R1		2R2		2R2		2R2		3R2t		

The above table meets SMACNA 1995 duct construction standards for galvanized or stainless steel duct and fittings. **EC** is the end connector type. See page 2 for a description of the end connector types used in the table (**T1, T6, T11 and TDC)**. When **T1, T6 or T11** are listed, the **T1** is used on the minor dimension and the **T6 or T11** are used on the major dimension. The **T1** and **T6** end connectors are manufactured from 24 ga (0.040 inch for aluminum) or heavier. The **T11** end connector is manufactured from 22 ga (0.050 inch for aluminum) or heavier. When **TDC** (transverse duct connector by Lockformer) is indicated, it is an integral part of the duct or fitting and is roll formed on all sides of the end connections. **IR** is the intermediate reinforcement required. See Table 12 for a description of reinforcements and how they are applied. Both the major and the minor dimensions need to be checked for reinforcement requirements. Table 12 illustrates reinforcement when just the major dimension needs reinforced and when both the major and minor dimensions need reinforced. Fittings must be reinforced the same as duct. Determine the equivalent aluminum thickness requirements by multiplying the thickness in the above table by 1.44 and using the next heaviest available material. See Table 4 to determine the thickness by gauge and Table 1 to determine the gauge/thickness availability for various constructions.

Table 7 - UNI-SEAL Rectangular Heavy Gauge/Light Reinforcement for 5-Foot Joints Using External Angle Reinforcement

Maximum Major Axis (inches)	Pressure Classification (nominal 60-inch duct lengths)													
	±½ inch wg		±1 inch wg		±2 inch wg		±3 inch wg		±4 inch wg		±6 inch wg		±10 inch wg	
	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR
10	26	T6/T1	26	T6/T1	26	T6/T1	26	T11/T1	26	T11/T1	24	T11/T1	22	T11/T1(R)
12	26	T6/T1	26	T6/T1	26	T11/T1	26	T11/T1	26	T11/T1	24	T11/T1	22	T11/T1(R)
18	26	T6/T1	26	T11/T1	26	T11/T1	24	T11/T1	24	TDC	22	TDC	20	TDC
24	26	TDC	26	TDC	26	TDC	24	TDC	22	TDC	22	TDC	18	TDC
26	26	TDC	26	TDC	26	TDC	24	TDC	22	TDC	20	TDC	18	TDC
28	26	TDC	26	TDC	24	TDC	22	TDC	22	TDC	18	TDC	20	TDC / 1R
30	26	TDC	26	TDC	24	TDC	22	TDC	20	TDC	18	TDC	18	TDC / 1R
36	26	TDC	24	TDC	22	TDC	20	TDC	18	TDC	20	TDC / 1R	18	TDC / 1R
42	26	TDC	24	TDC	20	TDC	18	TDC	20	TDC / 1R	18	TDC / 1R	20	TDC / 2R1
48	24	TDC	22	TDC	18	TDC	20	TDC / 1R	18	TDC / 1R	22	TDC / 2R1	18	TDC / 2R1
54	24	TDC	22	TDC	18	TDC	20	TDC / 1R	18	TDC / 1R	20	TDC / 2R1	18	TDC / 2R1
60	24	TDC	20	TDC	20	TDC / 1R	18	TDC / 1R	22	TDC / 2R1	20	TDC / 2R1	18	TDC / 2R2
72	22	TDC	18	TDC	18	TDC / 1R	22	TDC / 2R1	20	TDC / 2R1	18	TDC / 2R1	18	TDC / 3R2
84	18	TDC	18	TDC / 1R	22	TDC / 2R1	20	TDC / 2R1	18	TDC / 2R1	18	TDC / 3R2	N/A	
96	18	TDC	18	TDC / 1R	20	TDC / 2R1	18	TDC / 2R1	18	TDC / 2R2	18	TDC / 3R2	N/A	
108	18	TDC / 1R	18	TDC / 2R1	18	TDC / 2R1	18	TDC / 2R2	18	TDC / 2R2	18	TDC / 3R2	N/A	
120	18	TDC / 1R	18	TDC / 2R1	18	TDC / 2R2	18	TDC / 2R2	18	TDC / 2R2	18	TDC / 3R2t	N/A	

The above table meets SMACNA 1995 duct construction standards for galvanized or stainless steel duct and fittings. **EC** is the end connector type. See page 2 for a description of the end connector types used in the table (**T1, T6, T11 and TDC)**. When **T1, T6 or T11** are listed, the **T1** is used on the minor dimension and the **T6 or T11** are used on the major dimension. The **T1** and **T6** end connectors are manufactured from 24 ga (0.040 inch for aluminum) or heavier. The **T11** end connector is manufactured from 22 ga (0.050 inch for aluminum) or heavier. When **TDC** (transverse duct connector by Lockformer) is indicated, it is an integral part of the duct or fitting and is roll formed on all sides of the end connections. **IR** is the intermediate reinforcement required. See Table 12 for a description of reinforcements and how they are applied. Both the major and the minor dimensions need to be checked for reinforcement requirements. Table 12 illustrates reinforcement when just the major dimension needs reinforced and when both the major and minor dimensions need reinforced. Fittings must be reinforced the same as duct. Determine the equivalent aluminum thickness requirements by multiplying the thickness in the above table by 1.44 and using the next heaviest available material. See Table 4 to determine the thickness by gauge and Table 1 to determine the gauge/thickness availability for various constructions.

Table 8 - UNI-SEAL Rectangular Light Gauge/Heavy Reinforcement for 6-Foot Joints Using External Angle Reinforcement

Maximum Major Axis (inches)	Pressure Classification (nominal 72-inch duct lengths)													
	±½ inch wg		±1 inch wg		±2 inch wg		±3 inch wg		±4 inch wg		±6 inch wg		±10 inch wg	
	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR
10	26	T6/T1	26	T6/T1	26	T6/T1	26	T11/T1	24	T11/T1	26	T11/T1(R)	26	T11/T1(R)
										1R		1R		1R
12	26	T6/T1	26	T6/T1	24	T6/T1	26	T11/T1	24	T11/T1	26	T11/T1(R)	26	T11/T1(R)
								1R		1R		1R		1R
18	26	T6/T1	26	T11/T1	24	T11/T1	24	T11/T1	26	TDC	26	TDC	24	TDC
								1R		1R		1R		1R
24	26	TDC	26	TDC	26	TDC	26	TDC	26	TDC	24	TDC	22	TDC
						1R		1R		2R		1R		2R
26	26	TDC	26	TDC	26	TDC	26	TDC	26	TDC	24	TDC	22	TDC
						1R		1R		2R		2R		2R
28	26	TDC	26	TDC	26	TDC	26	TDC	26	TDC	24	TDC	22	TDC
						1R		2R		2R		2R		2R
30	26	TDC	26	TDC	26	TDC	26	TDC	26	TDC	24	TDC	22	TDC
						1R		2R		2R		2R		2R
36	26	TDC	26	TDC	24	TDC	24	TDC	24	TDC	22	TDC	24	TDC
				1R		1R		2R		2R		2R		3R
42	26	TDC	26	TDC	24	TDC	24	TDC	22	TDC	22	TDC	22	TDC
		1R		1R		1R		2R		2R		3R		3R1
48	26	TDC	26	TDC	24	TDC	22	TDC	20	TDC	22	TDC	22	TDC
		1R		1R		2R		2R		2R		3R		3R1
54	26	TDC	24	TDC	22	TDC	20	TDC	24	TDC	22	TDC	20	TDC
		2R		1R		2R		2R		3R1		3R1		3R1
60	26	TDC	22	TDC	22	TDC	20	TDC	24	TDC	22	TDC	20	TDC
		2R		1R		2R		2R		3R1		3R1		3R1
72	24	TDC	22	TDC	22	TDC	24	TDC	22	TDC	20	TDC	18	TDC
		2R		1R		2R		3R1		3R1		3R1		3R2
84	22	TDC	20	TDC	22	TDC	22	TDC	20	TDC	18	TDC	N/A	
		1R		2R		3R1		3R1		3R1		3R2		
96	22	TDC	20	TDC	22	TDC	20	TDC	20	TDC	18	TDC	N/A	
		2R		2R1		3R1		3R1		3R1		3R2		
108	18	TDC	18	TDC	18	TDC	18	TDC	18	TDC	18	TDC	N/A	
		1R		2R1		2R2		3R2		3R2		3R2		
120	18	TDC	18	TDC	18	TDC	18	TDC	18	TDC	18	TDC	N/A	
		2R		2R1		3R1		3R2		3R2		3R2t		

The above table meets SMACNA 1995 duct construction standards for galvanized or stainless steel duct and fittings. **EC** is the end connector type. See page 2 for a description of the end connector types used in the table (**T1, T6, T11 and TDC)**. When **T1, T6 or T11** are listed, the **T1** is used on the minor dimension and the **T6 or T11** are used on the major dimension. The **T1** and **T6** end connectors are manufactured from 24 ga (0.040 inch for aluminum) or heavier. The **T11** end connector is manufactured from 22 ga (0.050 inch for aluminum) or heavier. When **TDC** (transverse duct connector by Lockformer) is indicated, it is an integral part of the duct or fitting and is roll formed on all sides of the end connections. **IR** is the intermediate reinforcement required. See Table 13 for a description of reinforcements and how they are applied. Both the major and the minor dimensions need to be checked for reinforcement requirements. Table 13 illustrates reinforcement when just the major dimension needs reinforced and when both the major and minor dimensions need reinforced. Fittings must be reinforced the same as duct. Determine the equivalent aluminum thickness requirements by multiplying the thickness in the above table by 1.44 and using the next heaviest available material. See Table 4 to determine the thickness by gauge and Table 1 to determine the gauge/thickness availability for various constructions.

Table 9 - UNI-SEAL Rectangular Heavy Gauge/Light Reinforcement for 6-Foot Joints Using External Angle Reinforcement

Maximum Major Axis (inches)	Pressure Classification (nominal 72-inch duct lengths)													
	±½ inch wg		±1 inch wg		±2 inch wg		±3 inch wg		±4 inch wg		±6 inch wg		±10 inch wg	
	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR
10	26	T6/T1	26	T6/T1	26	T6/T1	26	T11/T1	22	T11/T1	22	T11/T1(R)	26	T11/T1(R) / 1R
12	26	T6/T1	26	T6/T1	24	T6/T1	24	T11/T1	22	T11/T1	22	T11/T1(R)	26	T11/T1(R) / 1R
18	26	T6/T1	22	T6/T1	24	T11/T1	18	T11/T1	22	TDC	20	TDC	18	TDC
24	26	TDC	26	TDC	24	TDC	22	TDC	22	TDC	20	TDC	18	TDC
26	26	TDC	26	TDC	24	TDC	22	TDC	22	TDC	18	TDC	20	TDC / 1R
28	26	TDC	26	TDC	22	TDC	20	TDC	20	TDC	18	TDC	18	TDC / 1R
30	26	TDC	26	TDC	22	TDC	20	TDC	18	TDC	18	TDC	18	TDC / 1R
36	26	TDC	24	TDC	20	TDC	18	TDC	18	TDC	18	TDC / 1R	20	TDC / 2R
42	24	TDC	22	TDC	18	TDC	18	TDC	20	TDC / 1R	18	TDC / 1R	18	TDC / 2R1
48	24	TDC	20	TDC	18	TDC	20	TDC / 1R	18	TDC / 1R	18	TDC / 2R1	18	TDC / 2R1
54	22	TDC	20	TDC	20	TDC / 1R	18	TDC / 1R	18	TDC / 2R	18	TDC / 2R1	20	TDC / 3R1
60	22	TDC	20	TDC	20	TDC / 1R	18	TDC / 1R	20	TDC / 2R	18	TDC / 2R1	20	TDC / 3R1
72	20	TDC	18	TDC	18	TDC / 1R	20	TDC / 2R1	18	TDC / 2R	20	TDC / 3R1	18	TDC / 3R2
84	18	TDC	18	TDC / 1R	20	TDC / 2R1	18	TDC / 2R1	20	TDC / 3R1	18	TDC / 3R2	N/A	
96	20	TDC / 1R	20	TDC / 1R	18	TDC / 2R1	18	TDC / 2R2	20	TDC / 3R1	18	TDC / 3R2	N/A	
108	18	TDC / 1R	18	TDC / 2R1	18	TDC / 2R2	18	TDC / 3R2	18	TDC / 3R2	18	TDC / 3R2	N/A	
120	18	TDC / 2R	18	TDC / 2R1	18	TDC / 3R1	18	TDC / 3R2	18	TDC / 3R2	18	TDC / 3R2t	N/A	

The above table meets SMACNA 1995 duct construction standards for galvanized or stainless steel duct and fittings. **EC** is the end connector type. See page 2 for a description of the end connector types used in the table (**T1, T6, T11 and TDC)**. When **T1, T6 or T11** are listed, the **T1** is used on the minor dimension and the **T6 or T11** are used on the major dimension. The **T1** and **T6** end connectors are manufactured from 24 ga (0.040 inch for aluminum) or heavier. The **T11** end connector is manufactured from 22 ga (0.050 inch for aluminum) or heavier. When **TDC** (transverse duct connector by Lockformer) is indicated, it is an integral part of the duct or fitting and is roll formed on all sides of the end connections. **IR** is the intermediate reinforcement required. See Table 13 for a description of reinforcements and how they are applied. Both the major and the minor dimensions need to be checked for reinforcement requirements. Table 13 illustrates reinforcement when just the major dimension needs reinforced and when both the major and minor dimensions need reinforced. Fittings must be reinforced the same as duct. Determine the equivalent aluminum thickness requirements by multiplying the thickness in the above table by 1.44 and using the next heaviest available material. See Table 4 to determine the thickness by gauge and Table 1 to determine the gauge/thickness availability for various constructions.

Table 10 - UNI-SEAL Rectangular Reinforcement for 5-Foot Joints Using Internal Tie Rod Reinforcement

Maximum Major Axis (inches)	Pressure Classification (nominal 60-inch duct lengths)											
	±½ inch wg		±1 inch wg		±2 inch wg		±3 inch wg		±4 inch wg		+6 inch wg	
	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR
10	26	T6/T1	26	T6/T1	26	T6/T1	26	T11/T1	26	T11/T1	24	T11/T1
12	26	T6/T1	26	T6/T1	26	T11/T1	26	T11/T1	26	T11/T1	24	T11/T1
18	26	T6/T1	26	T11/T1	26	T11/T1	24	T11/T1	24	TDC	22	TDC
24	26	TDC	26	TDC	26	TDC	24	TDC	22	TDC	22	TDC
26	26	TDC	26	TDC	26	TDC	24	TDC	22	TDC	20	TDC
28	26	TDC	26	TDC	24	TDC	22	TDC	22	TDC	18	TDC
30	26	TDC	26	TDC	24	TDC	22	TDC	20	TDC	18	TDC
36	26	TDC	24	TDC	22	TDC	20	TDC	18	TDC	18	TDC JTR
42	26	TDC	26	TDC CTR	24	TDC CTR	18	TDC	22	TDC CTR/JTR	22	TDC CTR/JTR
48	26	TDC CTR	24	TDC CTR	22	TDC CTR	22	TDC CTR/JTR	22	TDC CTR/JTR	22	TDC CTR/JTR
54	26	TDC CTR	24	TDC CTR	22	TDC CTR	22	TDC CTR/JTR	22	TDC 2CTR/JTR	20	TDC CTR/JTR
60	24	TDC	24	TDC CTR	22	TDC CTR/JTR	22	TDC 2CTR/JTR	22	TDC 2CTR/JTR	18	TDC CTR/JTR
72	24	TDC CTR	22	TDC CTR	22	TDC CTR/JTR	22	TDC 2CTR/JTR	20	TDC 2CTR/JTR	18	TDC CTR/JTR
84	22	TDC CTR	22	TDC 2CTR/JTR	22	TDC 2CTR/JTR	20	TDC 2CTR/JTR	18	TDC 2CTR/JTR	N/A	
96	22	TDC CTR	20	TDC 2CTR/JTR	20	TDC 2CTR/JTR	18	TDC 2CTR/JTR	18	TDC 2CTR/JTR	N/A	

The above table meets SMACNA 1995 duct construction standards for galvanized or stainless steel duct and fittings. When intermediate reinforcement is required, the Addendum No. 1, November, 1997, to HVAC Duct Construction Standards, Second Edition, 1995, is used for duct construction standards. For maximum major axis dimensions ≤ 36 inches, the gauges which do not require intermediate reinforcement are given. See Tables 6 and 7 for other options. **EC** is the end connector type. See page 2 for a description of the end connector types used in the table (**T1, T6, T11 and TDC)**. When **T1, T6 or T11** are listed, the **T1** is used on the minor dimension and the **T6 or T11** are used on the major dimension. The **T1** and **T6** end connectors are manufactured from 24 ga (0.040 inch for aluminum) or heavier. The **T11** end connector is manufactured from 22 ga (0.050 inch for aluminum) or heavier. When **TDC** (transverse duct connector by Lockformer) is indicated, it is an integral part of the duct or fitting and is roll formed on all sides of the end connections. **IR** is the intermediate tie rod reinforcement required. **CTR** means a center tie rod is used at midspan. **JTR** means a tie rod is used on each side of a joint. **2CTR/JTR** means two tie rods are used at midspan and one tie rod on each side of a joint. The **2CTR** tie rods are spaced at W/3. See Table 14 for a description of reinforcements and how they are applied. Both the major and the minor dimensions need to be checked for reinforcement requirements. Table 14 illustrates reinforcement when just the major dimension needs reinforced and when both the major and minor dimensions need reinforced. Fittings must be reinforced the same as duct. Determine the equivalent aluminum thickness requirements by multiplying the thickness in the above table by 1.44 and using the next heaviest available material. See Table 4 to determine the thickness by gauge and Table 1 to determine the gauge/thickness availability for various constructions.

Note: Internal tie rods at midspan are not allowed in the following applications:

- In ducts outside of buildings when the ducts do not have waterproof external insulation or waterproof and corrosion resistant duct wall penetrations.
- In ducts in which condensation or grease would collect except where no wall penetrations occur or the penetration is waterproof.
- In underground, in-slab or under-slab ducts.
- In fittings on non-parallel duct sides unless they do not penetrate the duct or they use load distributing means such as shims or wedges.
- When the air velocity exceeds 2500 fpm.
- Near centrifugal and axial flow fans where SYSTEM EFFECT FACTORS apply.

In these cases, use external reinforcement.

Table 11 - UNI-SEAL Rectangular Reinforcement for 6-Foot Joints Using Internal Tie Rod Reinforcement

Maximum Major Axis (inches)	Pressure Classification (nominal 72-inch duct lengths)											
	±½ inch wg		±1 inch wg		±2 inch wg		±3 inch wg		±4 inch wg		+6 inch wg	
	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR	GA	EC / IR
10	26	T6/T1	26	T6/T1	26	T6/T1	26	T11/T1	24	T11/T1	22	T11/T1(R)
12	26	T6/T1	26	T6/T1	24	T11/T1	24	T11/T1	24	T11/T1	22	T11/T1(R)
18	26	T6/T1	26	T11/T1	24	T11/T1	24	T11/T1	22	TDC	20	TDC
24	26	TDC	26	TDC	24	TDC	22	TDC	20	TDC	20	TDC
26	26	TDC	26	TDC	24	TDC	22	TDC	20	TDC	20	TDC
28	26	TDC	26	TDC	22	TDC	22	TDC	20	TDC	18	TDC
30	26	TDC	26	TDC	22	TDC	20	TDC	18	TDC	18	TDC
36	26	TDC	24	TDC	20	TDC	18	TDC	18	TDC	20	TDC / CTR/JTR
42	26	TDC	26	TDC / CTR	24	TDC / CTR	22	TDC / CTR/JTR	22	TDC / CTR/JTR	20	TDC / CTR/JTR
48	26	TDC / CTR	24	TDC / CTR	22	TDC / CTR	22	TDC / CTR/JTR	22	TDC / CTR/JTR	18	TDC / CTR/JTR
54	24	TDC / CTR	24	TDC / CTR	22	TDC / CTR/JTR	22	TDC / 2CTR/JTR	20	TDC / 2CTR/JTR	18	TDC / CTR/JTR
60	24	TDC / CTR	22	TDC / CTR	22	TDC / CTR/JTR	20	TDC / 2CTR/JTR	20	TDC / 2CTR/JTR	18	TDC / 2CTR/JTR
72	24	TDC / CTR	22	TDC / CTR/JTR	22	TDC / 2CTR/JTR	20	TDC / 2CTR/JTR	18	TDC / 2CTR/JTR	N/A	
84	22	TDC / CTR	22	TDC / 2CTR/JTR	20	TDC / 2CTR/JTR	18	TDC / 2CTR/JTR	18	TDC / 2CTR/JTR	N/A	
96	22	TDC / CTR	20	TDC / 2CTR/JTR	18	TDC / 2CTR/JTR	N/A		N/A		N/A	

The above table meets SMACNA 1995 duct construction standards for galvanized or stainless steel duct and fittings. When intermediate reinforcement is required, the Addendum No. 1, November, 1997, to HVAC Duct Construction Standards, Second Edition, 1995, is used for duct construction standards. For maximum major axis dimensions $\leq$ 36 inches, the gauges which do not require intermediate reinforcement are given. See Tables 8 and 9 for other options. **EC** is the end connector type. See page 2 for a description of the end connector types used in the table (**T1, T6, T11 and TDC)**. When **T1, T6 or T11** are listed, the **T1** is used on the minor dimension and the **T6 or T11** are used on the major dimension. The **T1** and **T6** end connectors are manufactured from 24 ga (0.040 inch for aluminum) or heavier. The **T11** end connector is manufactured from 22 ga (0.050 inch for aluminum) or heavier. When **TDC** (transverse duct connector by Lockformer) is indicated, it is an integral part of the duct or fitting and is roll formed on all sides of the end connections. **IR** is the intermediate tie rod reinforcement required. **CTR** means a center tie rod is used at midspan. **JTR** means a tie rod is used on each side of a joint. **2CTR/JTR** means two tie rods are used at midspan and one tie rod on each side of a joint. The **2CTR** tie rods are spaced at W/3. See Table 15 for a description of reinforcements and how they are applied. Both the major and the minor dimensions need to be checked for reinforcement requirements. Table 15 illustrates reinforcement when just the major dimension needs reinforced and when both the major and minor dimensions need reinforced. Fittings must be reinforced the same as duct. Determine the equivalent aluminum thickness requirements by multiplying the thickness in the above table by 1.44 and using the next heaviest available material. See Table 4 to determine the thickness by gauge and Table 1 to determine the gauge/thickness availability for various constructions.

Note: Internal tie rods at midspan are not allowed in the following applications:

- In ducts outside of buildings when the ducts do not have waterproof external insulation or waterproof and corrosion resistant duct wall penetrations.
- In ducts in which condensation or grease would collect except where no wall penetrations occur or the penetration is waterproof.
- In underground, in-slab or under-slab ducts.
- In fittings on non-parallel duct sides unless they do not penetrate the duct or they use load distributing means such as shims or wedges.
- When the air velocity exceeds 2500 fpm.
- Near centrifugal and axial flow fans where SYSTEM EFFECT FACTORS apply.

In these cases, use external reinforcement.

Table 12 - Reinforcement Diagrams for 5-Foot Joints Using External Angle

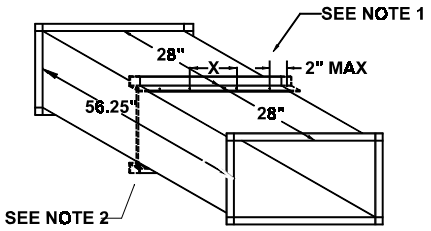
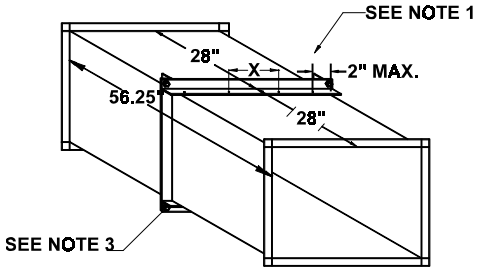
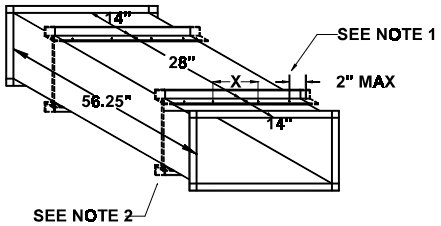
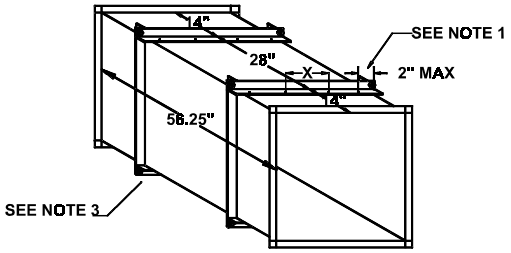
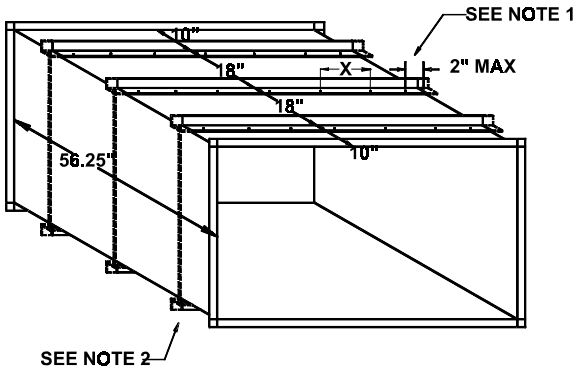
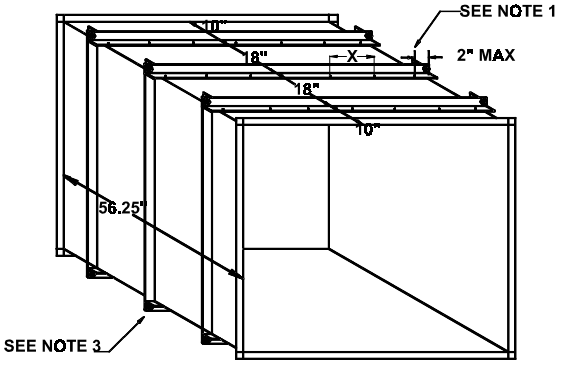
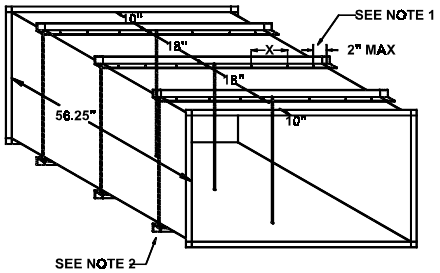
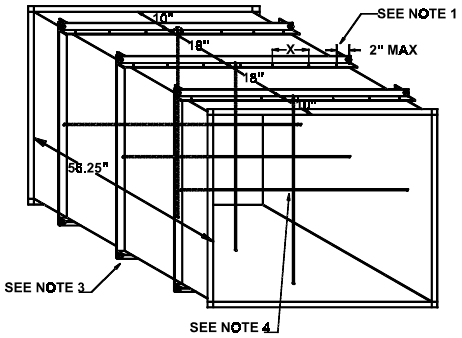
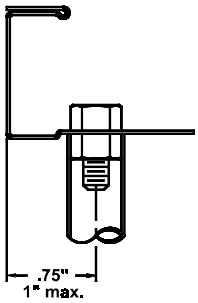
2 Sides Reinforced	4 Sides Reinforced
	
1R = ONE 2" X 10 GAUGE ANGLE LOCATED AT MIDSPAN	
	
2R = TWO 2" X 10 GAUGE ANGLES LOCATED AS SHOWN **2R1 = TWO 2" X 1/4" ANGLES LOCATED AS SHOWN** **2R2 = TWO 2.5" X 1/4" ANGLES LOCATED AS SHOWN**	
	
3R1 = THREE 2" X 1/4" ANGLES LOCATED AS SHOWN **3R2 = THREE 2.5" X 1/4" ANGLES LOCATED AS SHOWN**	

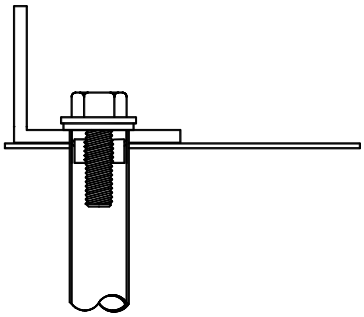
Table 12 - Reinforcement for 5-Foot Joints Using External Angle (continued)

2 Sides Reinforced	4 Sides Reinforced
	

3R2t = THREE 2.5" X 1/4" ANGLES WITH ½" EMT CONDUIT AT EACH REINFORCEMENT LOCATION AS SHOWN



DETAIL OF CONDUIT TIE ROD



DETAIL OF TIE ROD THROUGH REINFORCEMENT

NOTES:

1. X = tack weld spacing at 12" maximum starting at a maximum of 2" from the edge. When end ties are used the 2" maximum interval may be omitted.
2. Outside tie rods are required when the pressure classification is at 4" wg or more with two sides reinforced.
3. Tie ends with 5/16" bolts or adequate welds when duct is at 4" wg or more with four sides reinforced. When welding use two parallel welds.
4. When tie rods are required in both directions, space apart ½" to 1" maximum to avoid contact.
5. When T6/T1 or T11/T1 end connectors are used, the overall dimension for 5-ft. duct is 59" and the distance to reinforcement is midspan for 1R; 15" for 2R, 2R1, and 2R2; and 9" for 3R2 or 3R2t.
6. For T11/T1(R), a 2" x 10 gauge angle must be included at the end connector as well on all four sides.

Table 13 - Reinforcement for 6-Foot Joints Using External Angle

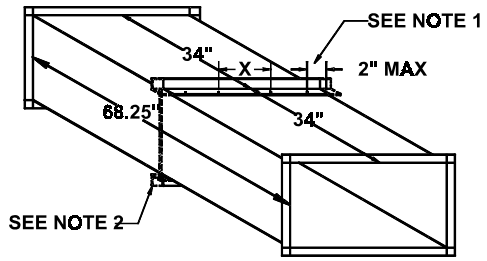
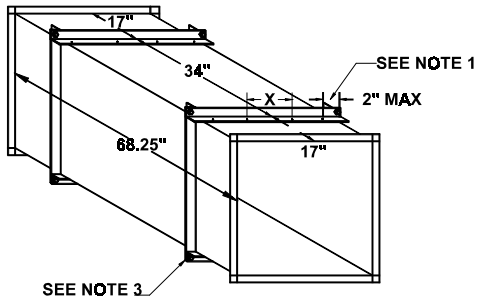
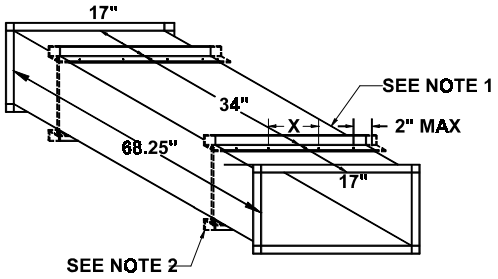
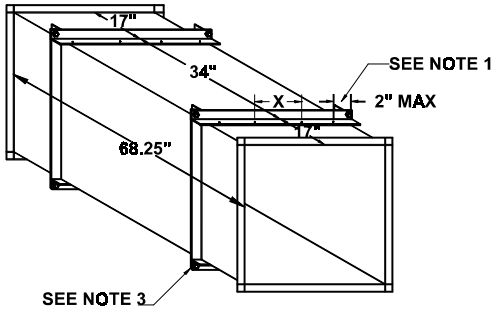
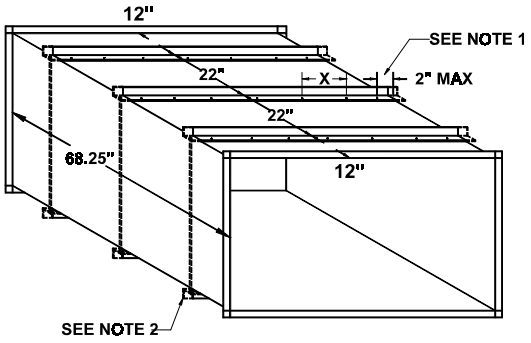
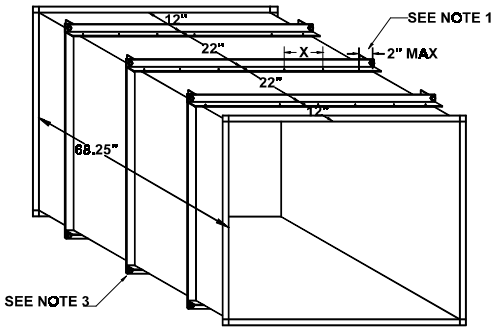
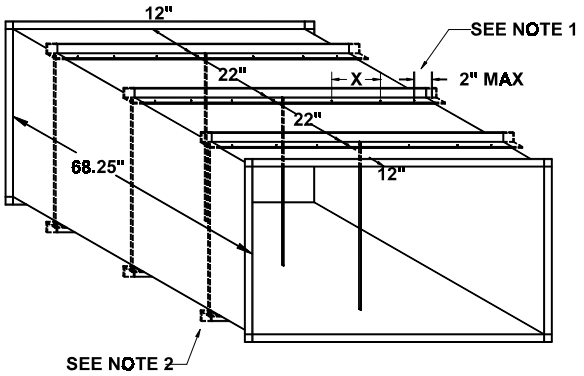
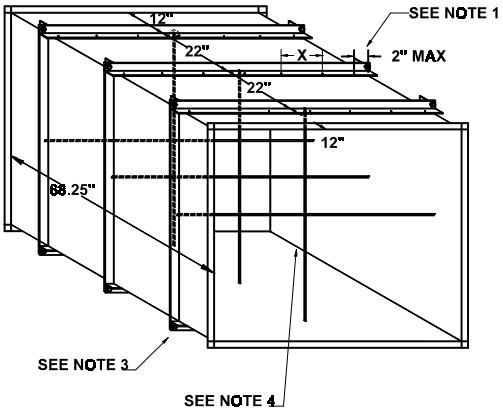
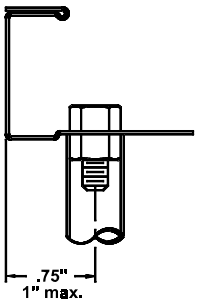
2 Sides Reinforced	4 Sides Reinforced
	
1R = ONE 2" X 10 GAUGE ANGLE LOCATED AT MIDSPAN	
	
2R = TWO 2" X 10 GAUGE ANGLES LOCATED AS SHOWN **2R1 = TWO 2" X 1/4" ANGLES LOCATED AS SHOWN** **2R2 = TWO 2.5" X 1/4" ANGLES LOCATED AS SHOWN**	
	
3R1 = THREE 2" X 1/4" ANGLES LOCATED AS SHOWN **3R2 = THREE 2.5" X 1/4" ANGLES LOCATED AS SHOWN**	

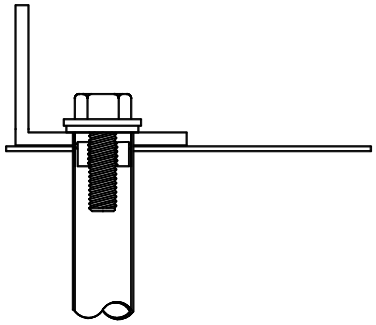
Table 13 - Reinforcement for 6-Foot Joints Using External Angle (continued)

2 Sides Reinforced	4 Sides Reinforced
	

3R2t = THREE 2.5" X 1/4" ANGLES WITH ½" EMT CONDUIT AT EACH REINFORCEMENT LOCATION AS SHOWN



DETAIL OF CONDUIT TIE ROD

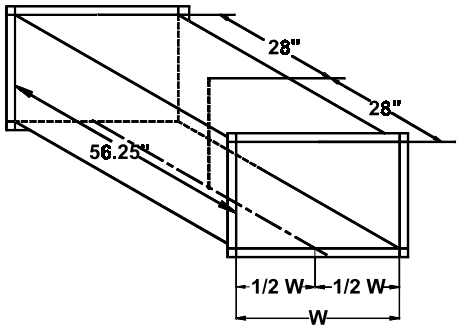
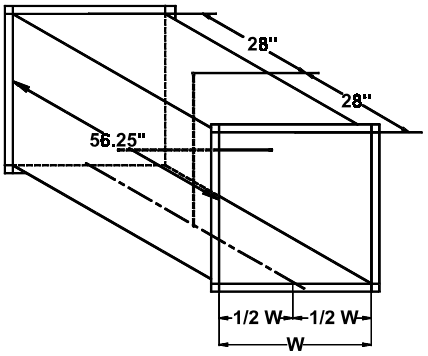
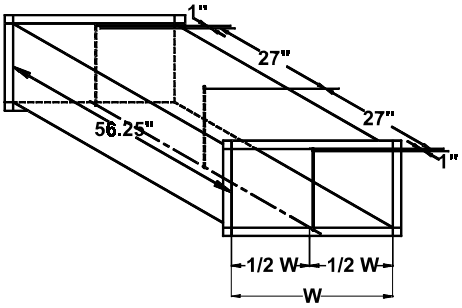
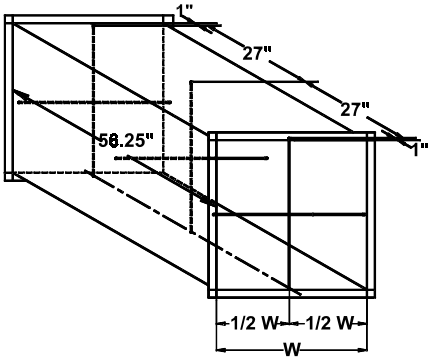
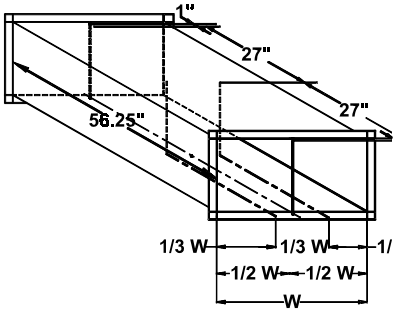
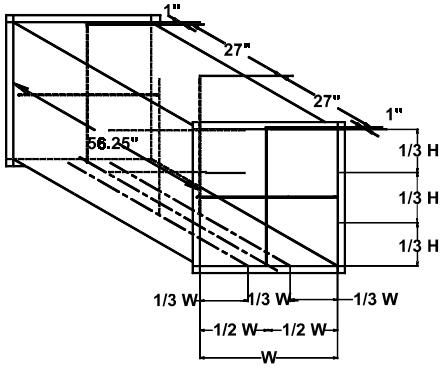


DETAIL OF TIE ROD THROUGH REINFORCEMENT

NOTES:

1. X = tack weld spacing at 12" maximum starting at a maximum of 2" from the edge. When end ties are used the 2" maximum interval may be omitted.
2. Outside tie rods are required when the pressure classification is at 4" wg or more with two sides reinforced.
3. Tie ends with 5/16" bolts or adequate welds when duct is at 4" wg or more with four sides reinforced. When welding use two parallel welds.
4. When tie rods are required in both directions, space apart ½" to 1" maximum to avoid contact.
5. When T6/T1 or T11/T1 end connectors are used, the overall dimension for 6-ft. duct is 71" and the distance to reinforcement is midspan for 1R; 18" for 2R, 2R1, and 2R2; and 12" for 3R2 or 3R2t.
6. For T11/T1(R), a 2" x 10 gauge angle must be included at the end connector as well on all four sides.

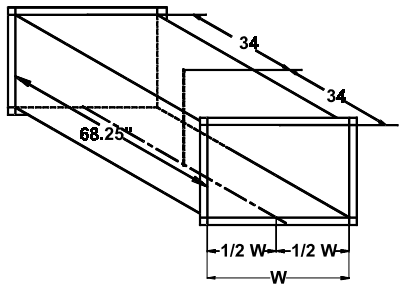
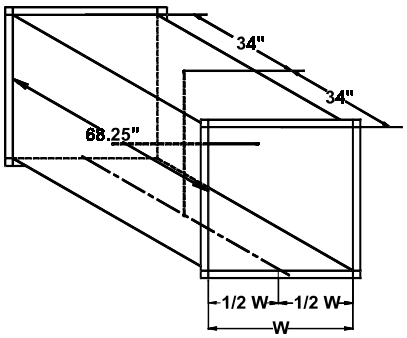
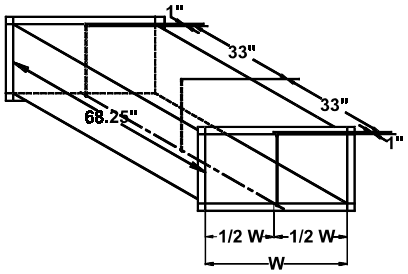
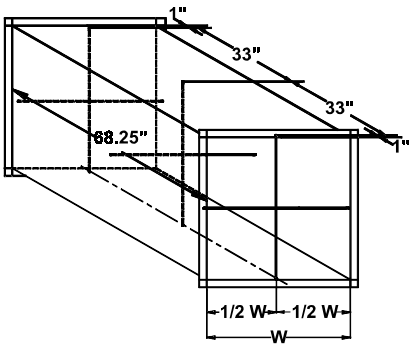
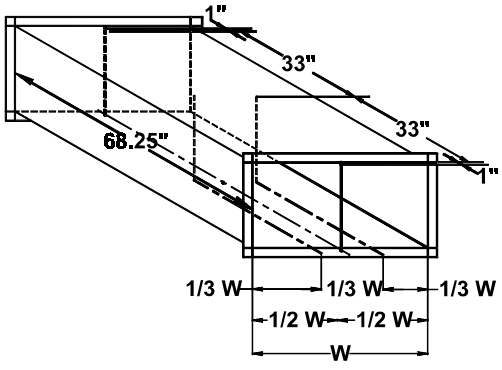
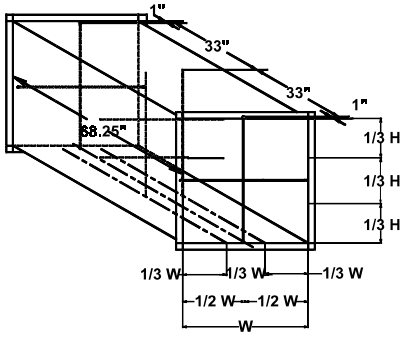
Table 14 - Reinforcement for 5-Foot Joints Using Internal Tie Rods

2 Sides Reinforced	4 Sides Reinforced
	
CTR = ONE TIE ROD CENTERED ON 5' DUCT SECTION	
	
CTR/JTR = TIE ROD AT EACH JOINT AND CENTERED ON 5' SECTION	
	
2CTR/JTR = ONE TIE ROD AT EACH JOINT AND TWO TIE RODS AT MIDSPAN, SPACED AT 1/3W AND 1/3H	

NOTES:

1. Tie rods should be spaced no more than 48" apart in a cross section. Use one tie rod, in each direction required, for duct 96" wide or less.
2. When tie rods are required in both directions, space apart ½" to 1" maximum to avoid contact.
3. When T6/T1 or T11/T1 end connectors are used, the overall dimension for 5-ft. duct is 59".
4. Tie rods are 1/2" EMT conduit. See Table 12 or 13 for detail of conduit tie rod.
5. For T11/T1(R), a 2" x 10 gauge angle must be included at the end connector as well on all four sides.

Table 15 - Reinforcement for 6-Foot Joints Using Internal Tie Rods

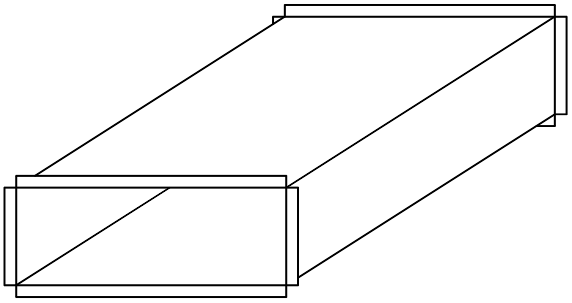
2 Sides Reinforced	4 Sides Reinforced
	
CTR = ONE TIE ROD CENTERED ON 6' DUCT SECTION	
	
CTR/JTR = TIE ROD AT EACH JOINT AND CENTERED ON 6' SECTION	
	
2CTR/JTR = ONE TIE ROD AT EACH JOINT AND TWO TIE RODS AT MIDSPAN, SPACED AT 1/3W AND 1/3H	

NOTES:

1. Tie rods should be spaced no more than 48" apart in a cross section. Use one tie rod, in each direction required, for duct 96" wide or less.
2. When tie rods are required in both directions, space apart ½" to 1" maximum to avoid contact.
3. When T6/T1 or T11/T1 end connectors are used, the overall dimension for 5-ft. duct is 59".
4. Tie rods are 1/2" EMT conduit. See Table 12 or 13 for detail of conduit tie rod.
5. For T11/T1(R), a 2" x 10 gauge angle must be included at the end connector as well on all four sides.

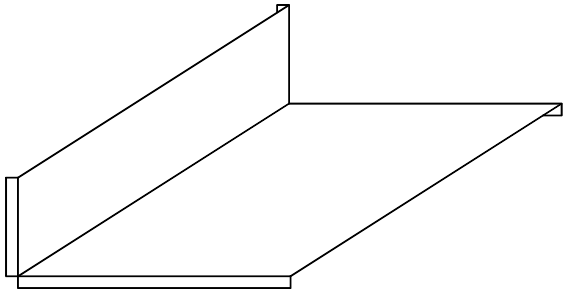
UNI-SEAL DUCT
(Assembled)

DESIGNATION:
AD



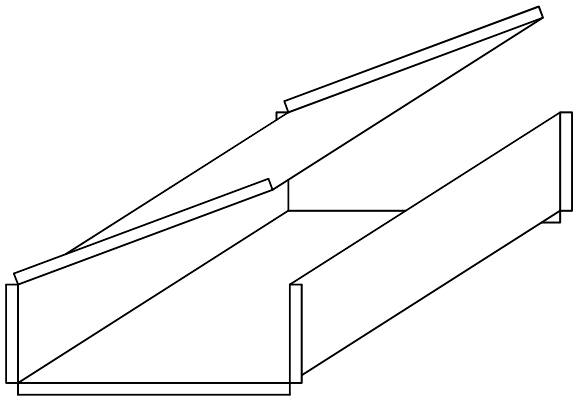
UNI-SEAL DUCT
(L - Shaped or knocked down)

DESIGNATION:
LD

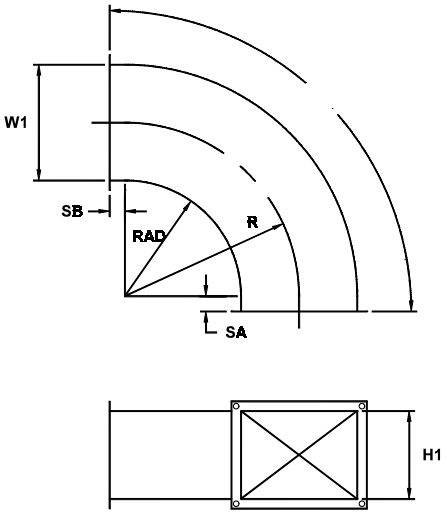


UNI-SEAL DUCT
(Wrap around)

DESIGNATION:
WD



RADIUS ELBOW



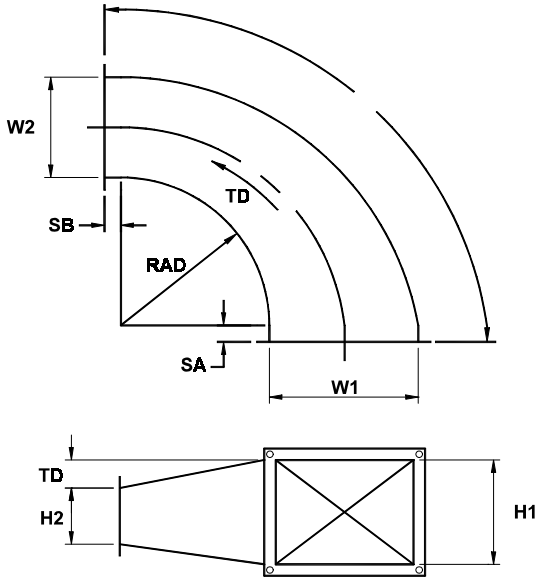
DESIGNATION:
SAT(*)E-θ

DIMENSIONS:
User Specified
W1, H1, RAD, SA, SB,
θ = 1° to 90°

Defaults
SA, SB = 0
RAD = W1

REDUCING RADIUS ELBOW

(Left Turning)



DESIGNATION:
SAT(*)ELR-θ

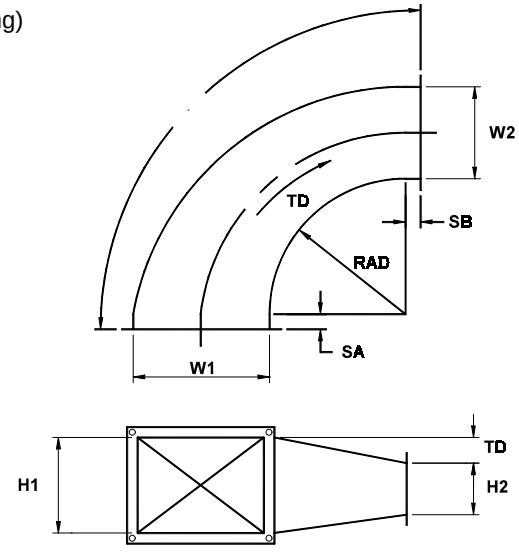
DIMENSIONS:
User Specified
W1, H1, W2, H2,
RAD, TD, SA, SB,
θ = 1° to 90°

Defaults
SA, SB = 0
RAD = W1
TD = 0

Note: When TD = 0, then fitting

REDUCING RADIUS ELBOW

(Right Turning)



DESIGNATION:
SAT(*)ER-θ

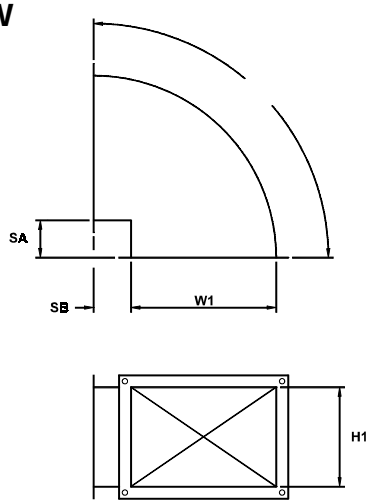
DIMENSIONS:
User Specified
W1, H1, W2, H2,
RAD, TD, SA, SB,
θ = 1° to 90°

Defaults
SA, SB = 0
RAD = W1
TD = 0

Note: When TD = 0, then fitting will be FOT.

RADIUS ELBOW

(With square throat)



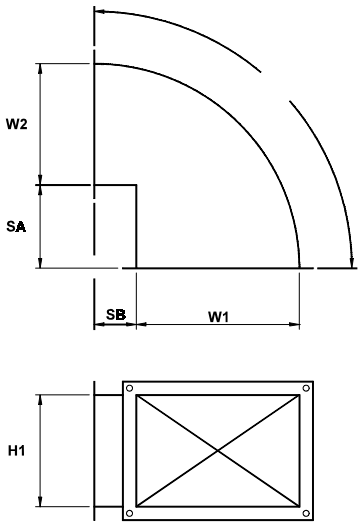
DESIGNATION:
SAT(*)ES-θ

DIMENSIONS:
User Specified
W1, H1, SA, SB,
θ = 1° to 90°

Defaults
SA, SB = 4"

REDUCING RADIUS ELBOW

(With square throat)

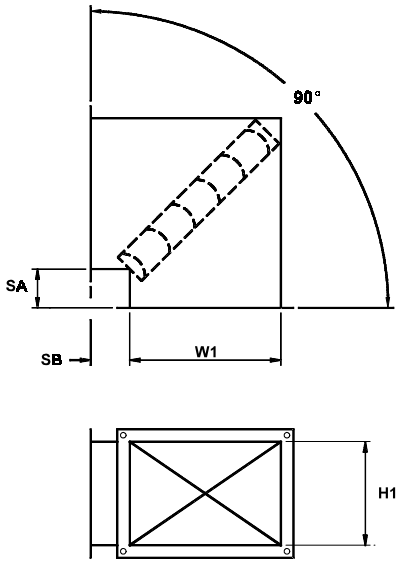


DESIGNATION:
SAT(*)ESR-θ

DIMENSIONS:
User Specified
W1, H1, W2, SA, SB,
θ = 1° to 90°

Defaults
SA, SB = 4"

MITERED ELBOW



DESIGNATION:
SAT(*)EMV-90
with turning vanes
(shown)
SAT(*)EM-θ
without turning vanes
(not shown)

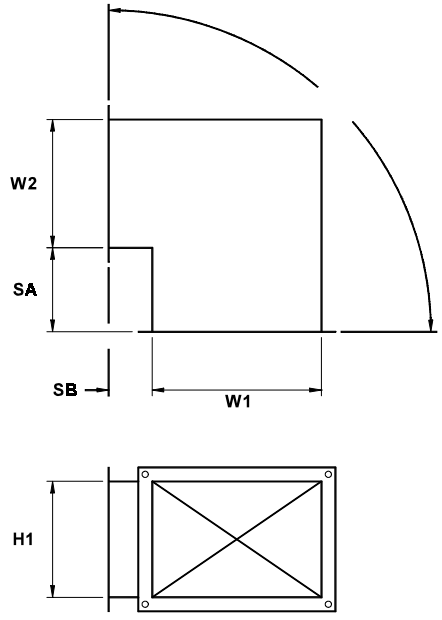
DIMENSIONS:
User Specified
W1, H1, SA, SB,
Type of Vane(see table below),
θ = 1° to 90°(only for elbows without turning vanes)

Defaults
SA, SB = 4"

Types of Vanes (Must be Specified)

Type	Radius (inches)	Approximate spacing (inches)	Gauge
Single Thickness	2	1 1/2	24
Single Thickness	4 1/2	3 1/4	22
Double Thickness (default)	2	2 1/8-2 1/2	26
Double Thickness	4 1/2	3 1/4-3 1/2	24

REDUCING MITERED ELBOW



DESIGNATION:
SAT(*)EMR-θ

DIMENSIONS:
User Specified
W1, W2, H1, SA, SB,
θ = 1° to 90°

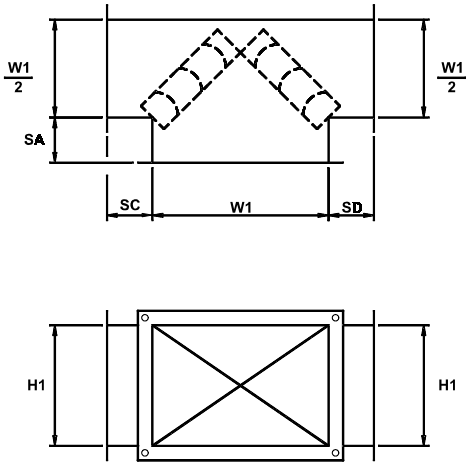
Defaults
SA, SB = 4"

Note: For a reducing mitered elbow with turning vanes (W2 < W1), use a standard mitered elbow with turning vanes and a reducing transition.

BULLHEAD TEES and Y-BRANCHES

McGill AirFlow Corporation

BULLHEAD TEE



DESIGNATION:

SAT(*)TBV
with turning vanes
(shown)

SAT(*)TB
without turning vanes
(not shown)

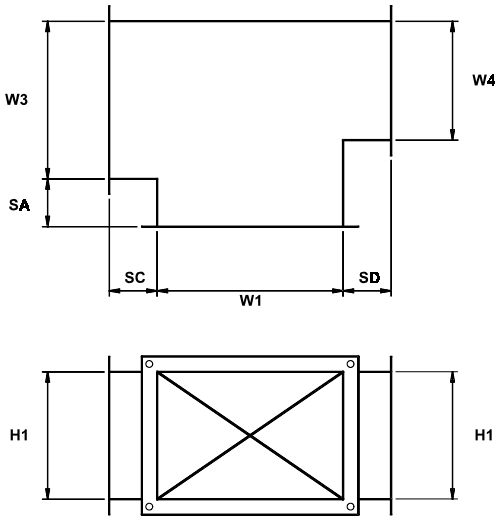
DIMENSIONS:

User Specified
W1, H1, SA, SC, SD,
Type of vane

Defauts
SA, SC, SD = 4"

See page 22 for Types of Vanes table.

REDUCING BULLHEAD TEE



DESIGNATION:
SAT(*)TBR

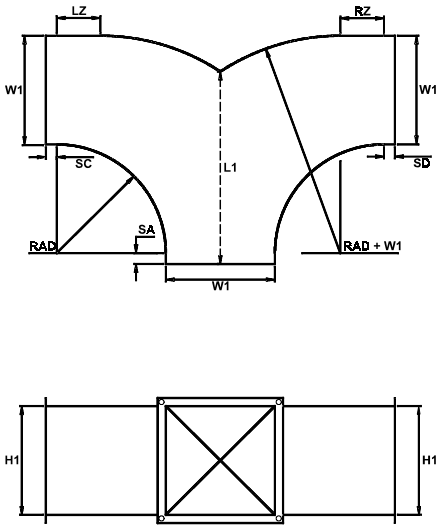
DIMENSIONS:

User Specified
W1, H1, W3, W4,
SA, SC, SD

Defaults
SA, SC, SD = 4"

Note: For a reducing bullhead tee with turning vanes (W3 or W4≠W1/2)), use a standard bullhead tee with turning vanes and reducing transitions.

Y-BRANCH



DESIGNATION:
SAT(*)YC

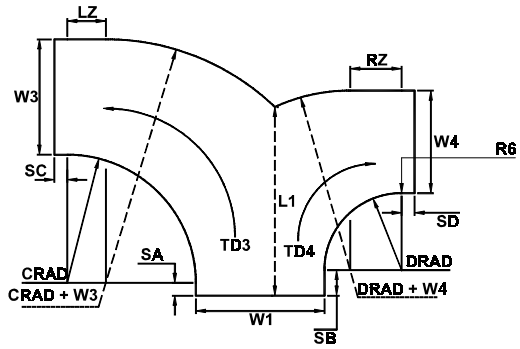
DIMENSIONS:

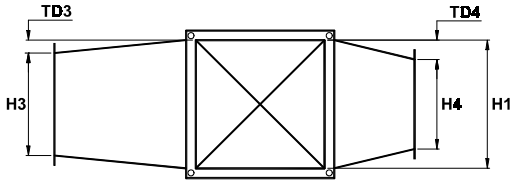
User Specified
W1, H1, RAD,
SA, SC, SD

Defaults
SA, SC, SD, LZ, RZ = 0
RAD = W1

Notes: L1 is the crotch height. If it is too low, RZ and LZ will be adjusted to raise it. This will not affect the overall dimensions of the fitting.

REDUCING Y-BRANCH





DESIGNATION:
SAT(*)YCR

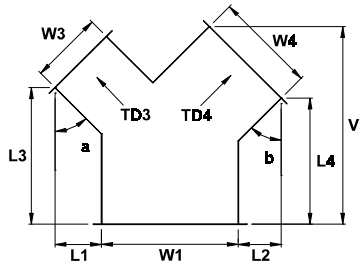
DIMENSIONS:
User Specified
W1, H1, W3, H3, W4,H4, CRAD, DRAD, SA, SB, SC, SD, LZ, RZ

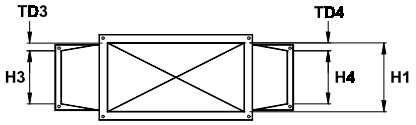
Defaults
SA, SB, SC, SD, LZ, RZ, TD3, TD4 = 0
CRAD, DRAD = W1

Notes:
1. When TD3 = 0, W3 is FOT.
   When TD4 = 0, W4 is FOT.

2. L1 is the crotch height. If it is too low, RZ and/or LZ will be adjusted to raise it. This will not affect the overall dimensions of the fitting.

REDUCING YV





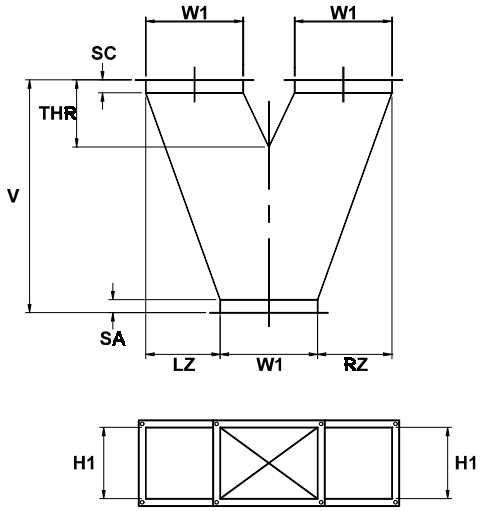
DESIGNATION:
SAT(*)YV

DIMENSIONS:
User Specified
W1, H1, W3, H3, W4, H4, θ_a, θ_b, L1, L2, L3, L4, V

Defaults
$TD3 = \frac{(H1 - H3)}{2}$
$TD4 = \frac{(H1 - H4)}{2}$
$\theta_a, \theta_b = 45^\circ$

Note: L3 > L1, L4 > L2
When TD3, TD4 = 0 then fitting will be FOT.

PANTS



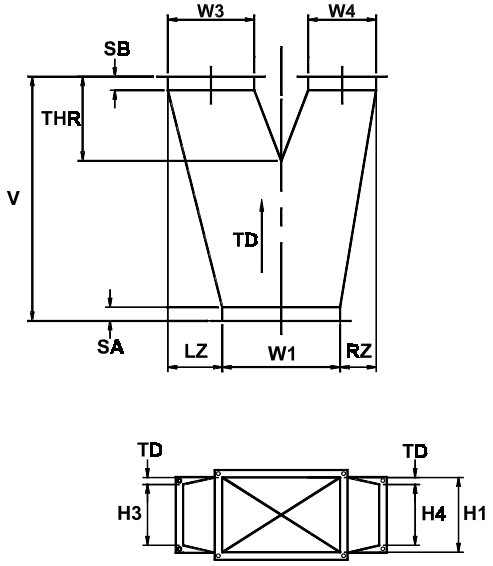
DESIGNATION:
SAT(*)YS

DIMENSIONS:

User Specified
W1, H1, THR, LZ, RZ,
V, SA, SC, SD

Defaults
SA, SC, SD = 0
V = 2W1

REDUCING PANTS



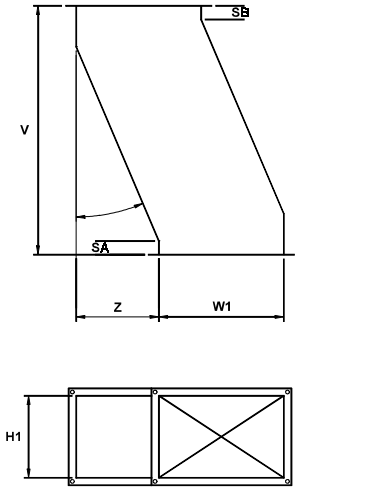
DESIGNATION:
SAT(*)YSR

DIMENSIONS:

User Specified
W1, H1, W3, H3, W4,
THR, LZ, RZ, SA, SC,
SD, TD, V

Defaults
SA, SC, SD, TD = 0
V = 2W1
Note: When TD = 0, then fitting will be FOT.

OFFSET



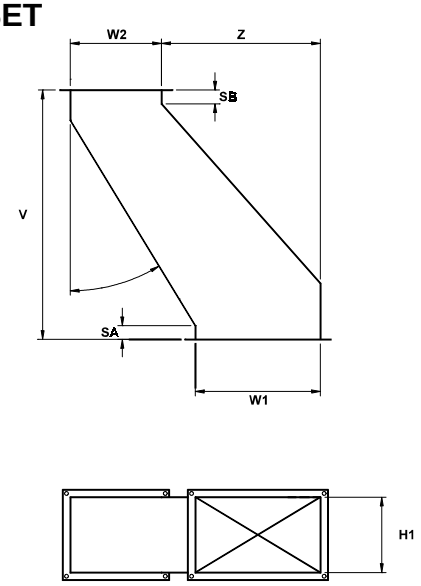
DESIGNATION:
SAT(*)Z

DIMENSIONS:
User Specified
W1, H1, Z, SA, SB, V

Defaults
SA, SB = 0
V = 2W1

Note: Z should not exceed .75 W1 or θ > 60°. If larger, use fabricated elbows and a straight length of duct.

REDUCING OFFSET



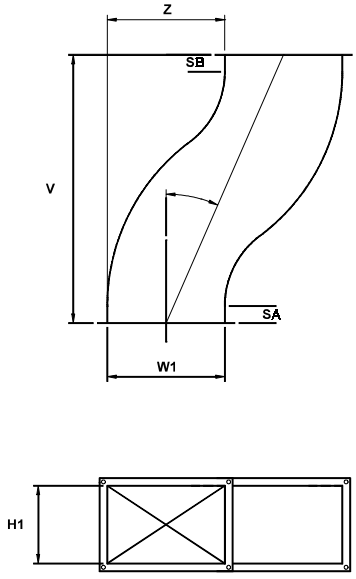
DESIGNATION:
SAT(*)ZR

DIMENSIONS:
User Specified
W1, H1, W2, Z,
SA, SB,V

Defaults
SA, SB = 0
V = 2W1

Note: Z should not exceed .75 W1 or θ > 60°. If larger, use fabricated elbows and a straight length of duct.

RADIUS OFFSET



DESIGNATION:
SAT(*)ZC

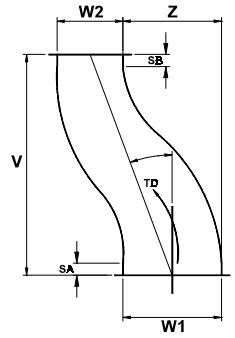
DIMENSIONS:
User Specified
W1, H1, Z, SA, SB, V

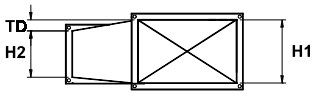
Defaults
SA, SB = 0
V = 2W1

Note: Z should not exceed .75 W1 or θ > 60°. If larger, use fabricated elbows and a straight length of duct.

REDUCING RADIUS OFFSET

(Left turning)





DESIGNATION:
SAT(*)ZCLR

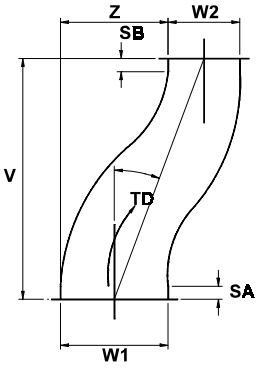
DIMENSIONS:
User Specified
W1, H1, W2, H2, Z,
SA, SB, V, TD

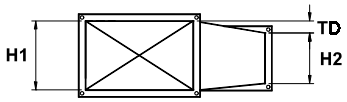
Defaults
SA, SB = 0
V = 2W1
TD = 0

Note: When TD = 0, then fitting will be FOT.

REDUCING RADIUS OFFSET

(Right turning)





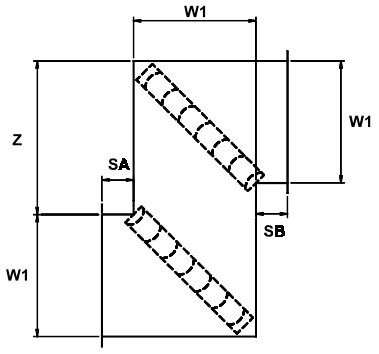
DESIGNATION:
SAT(*)ZCR

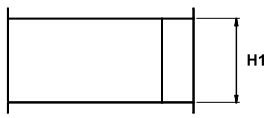
DIMENSIONS:
User Specified
W1, H1, W2, H2, Z,
SA, SB, V, TD

Defaults
SA, SB = 0
V = 2W1
TD = 0

Note: When TD = 0, then fitting will be FOT.

MITERED ELBOW OFFSET





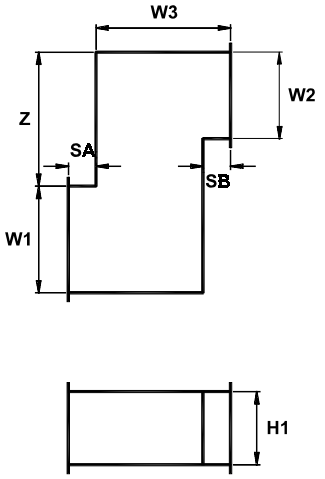
DESIGNATION:
SAT(*)ZEV
with turning vanes
(shown)
SAT(*)ZE
without turning vanes
(not shown)

DIMENSIONS:
User Specified
W1, H1, Z, SA, SB,
Type of vanes

Defaults
SA, SB = 4"

See page 22 for Types of Vanes table.

REDUCING MITERED ELBOW OFFSET



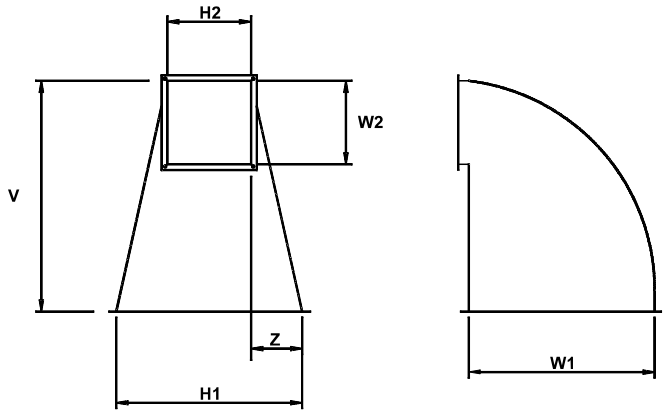
DESIGNATION:
SAT(*)ZER

DIMENSIONS:
User Specified
W1, H1, W2, W3, Z,
SA, SB

Defaults
SA, SB = 4"

Note: For a reducing mitered elbow offset with turning vanes (W2 < W1), use a standard mitered elbow offset with turning vanes and a reducing transition.

PARKER

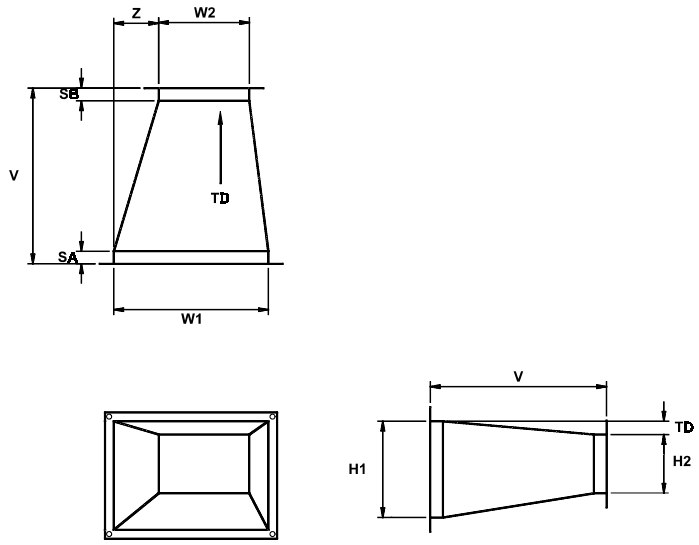


DESIGNATION:
SAT(*)K

DIMENSIONS:
User Specified
W1, H1, W2, H2, V, Z

Defaults
$Z = \frac{H1 - H2}{2}$

GENERAL TRANSITION



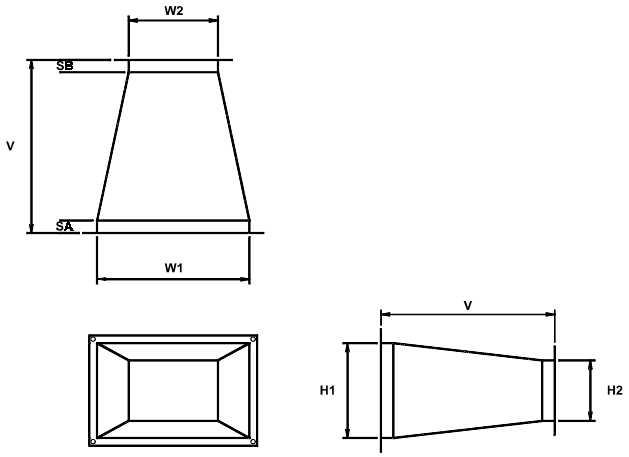
DESIGNATION:
SAT(*)R-20

DIMENSIONS:
User Specified
W1, H1, W2, H2, V, Z, TD

Defaults
SA, SB = 0

Note: When TD = 0, the fitting will be FOT

CONCENTRIC TRANSITION



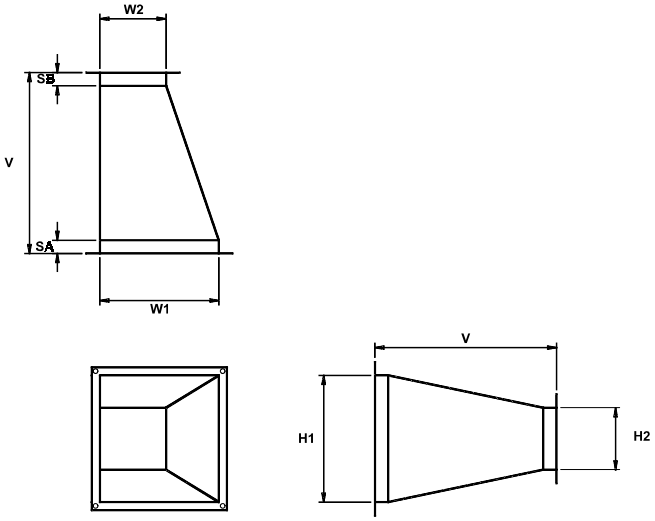
DESIGNATION:
SAT(*)R-30

DIMENSIONS:
User Specified
W1, H1, W2, H2, V

Defaults
SA, SB = 0

ECCENTRIC TRANSITION

(Left side flat and elevation concentric)



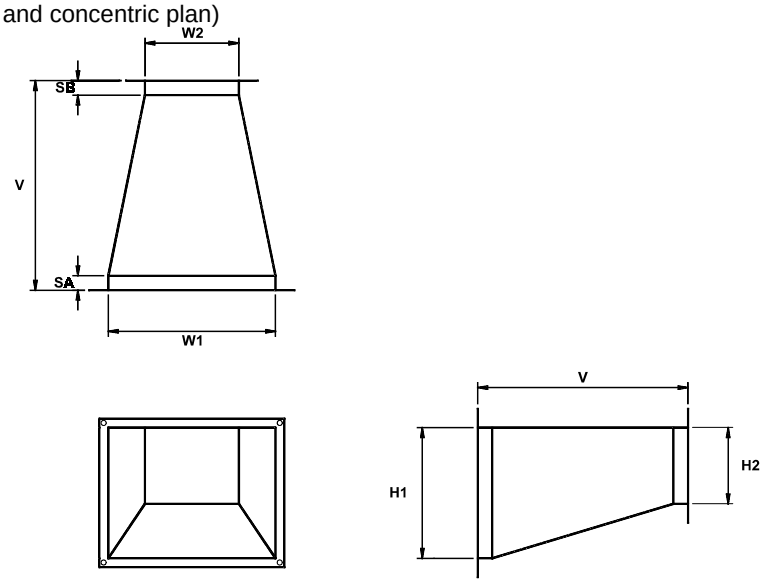
DESIGNATION:
SAT(*)R-31

DIMENSIONS:
User Specified
W1, H1, W2, H2, V

Defaults
SA, SB = 0

ECCENTRIC TRANSITION

(Top flat and concentric plan)



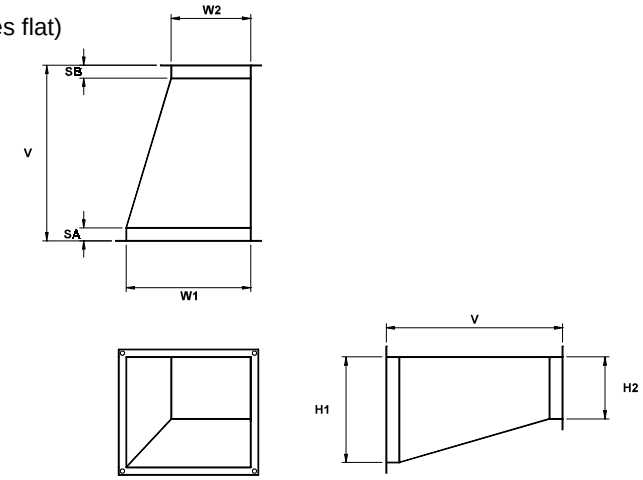
DESIGNATION:
SAT(*)R-32

DIMENSIONS:
User Specified
W1, H1, W2, H2, V

Defaults
SA, SB = 0

ECCENTRIC TRANSITION

(Top and right sides flat)



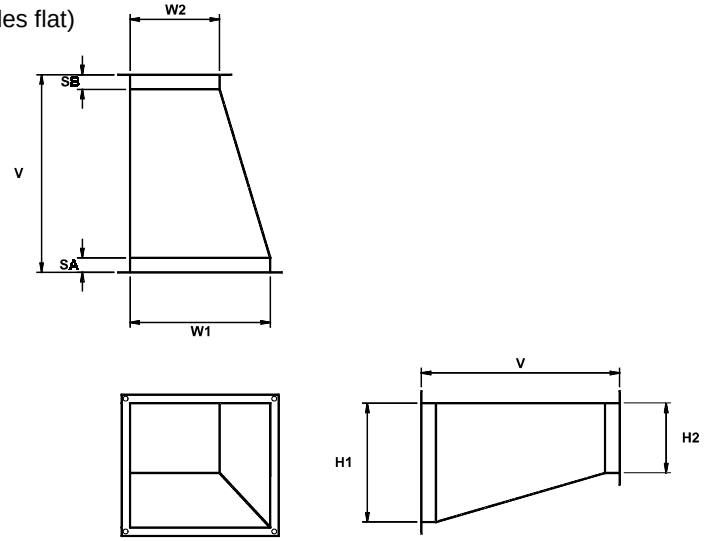
DESIGNATION:
SAT(*)R-331

DIMENSIONS:
User Specified
W1, H1, W2, H2, V

Defaults
SA, SB = 0

ECCENTRIC TRANSITION

(Top and left sides flat)

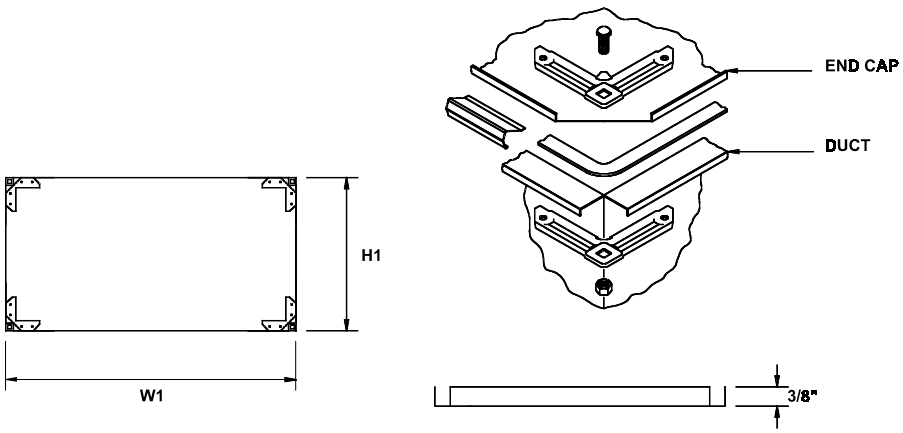


DESIGNATION:
SAT(*)R-332

DIMENSIONS:
User Specified
W1, H1, W2, H2, V

Defaults
SA, SB = 0

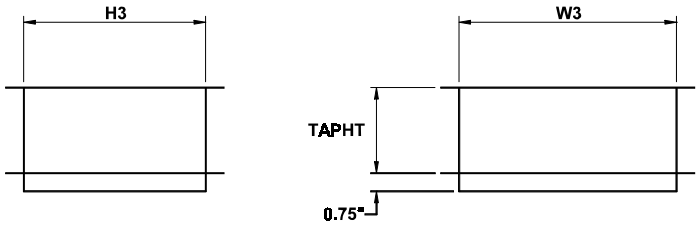
END CAP



DESIGNATION:
SAT(*)EC

DIMENSIONS:
User Specified
W1, H1

90° TAP

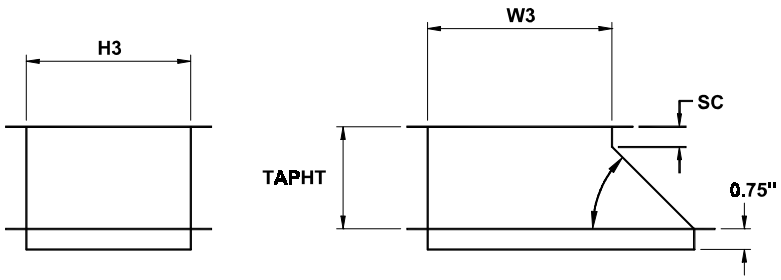


DESIGNATION:
SAT(*)PT

DIMENSIONS:
User Specified
W3, H3, TAPHT

Defaults
TAPHT = 3 inches

LOLOSS™ TAP



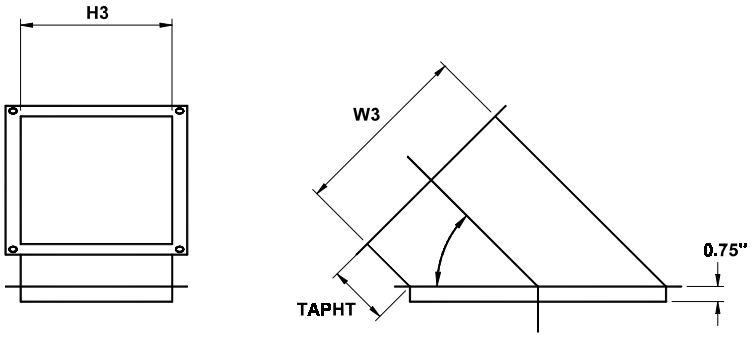
DESIGNATION:
SAT(*)PTL
SAT(*)PTL-θ
(if θ ≠ 45°)

DIMENSIONS:
User Specified
W3, H3, TAPHT,
θ = 1° to 90° if θ ≠ 45°

Defaults
SC = 0
TAPHT = 6 inches
θ = 45

Note: Use SC to extend the tap height rather than connecting to short pieces of ductwork.

ANGLED TAP

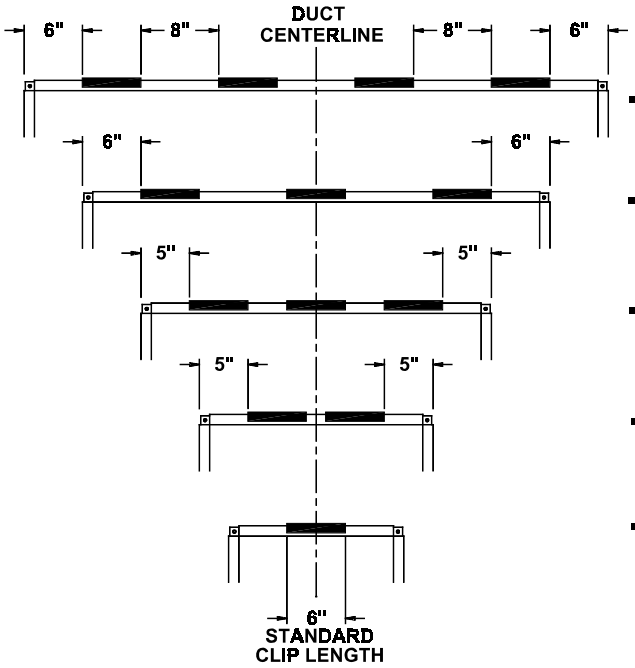


DESIGNATION:
SAT(*)PL
SAT(*)PL-θ
(if θ ≠ 45°)

DIMENSIONS:
User Specified
W3, H3, TAPHT,
θ = 1° to 90° if θ ≠ 45°

Defaults
TAPHT = 3 inches
θ = 45

DUCT CLIP REQUIREMENTS



60" width, 4 clips required

48" width, 3 clips required

36" width, 3 clips required

24" width, 2 clips required

18" width, 1 clip required

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