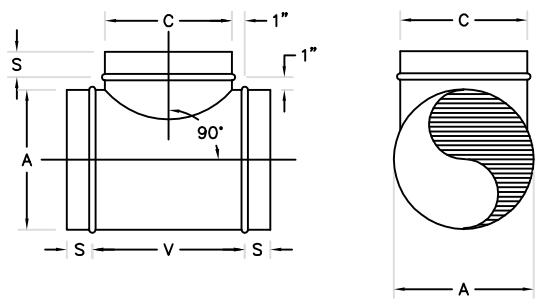


# FITTING STANDARDS

## SINGLE WALL STRAIGHT TEES

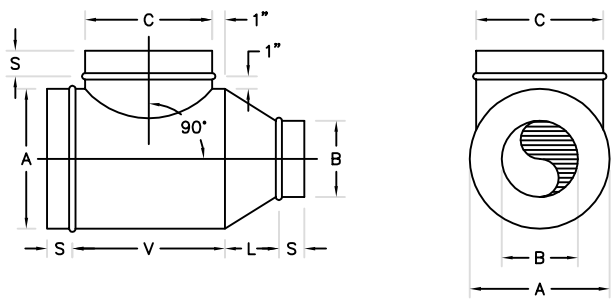
### STRAIGHT TEE T1



#### DIMENSIONAL DATA:

- $S=2"$
- $V=C+2"$

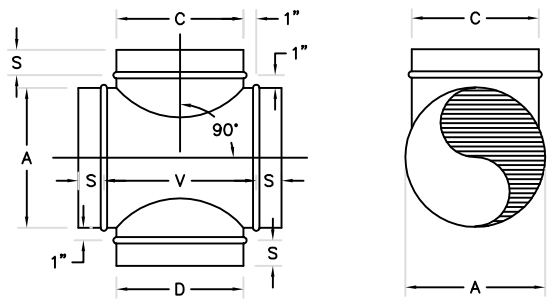
### REDUCING TEE T1R



#### DIMENSIONAL DATA:

- $S=2"$
- $V=C+2"$
- $L=A-B$  (4" MIN.-12" MAX.)

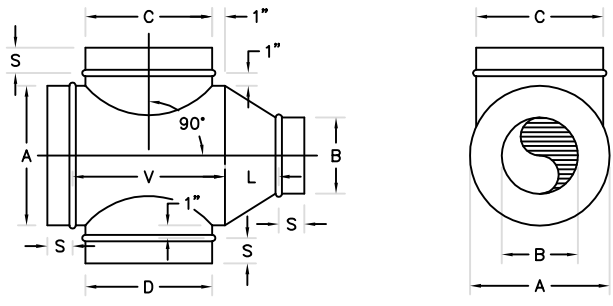
### STRAIGHT CROSS T2



#### DIMENSIONAL DATA:

- $S=2"$
- $V=\text{LARGEST TAP}+2"$

### REDUCING CROSS T2R

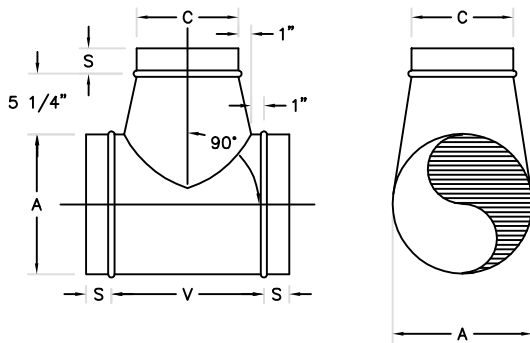


#### DIMENSIONAL DATA:

- $S=2"$
- $V=\text{LARGEST TAP}+2"$
- $L=A-B$  (4" MIN.-12" MAX.)

# FITTING STANDARDS SINGLE WALL CONICAL TEES

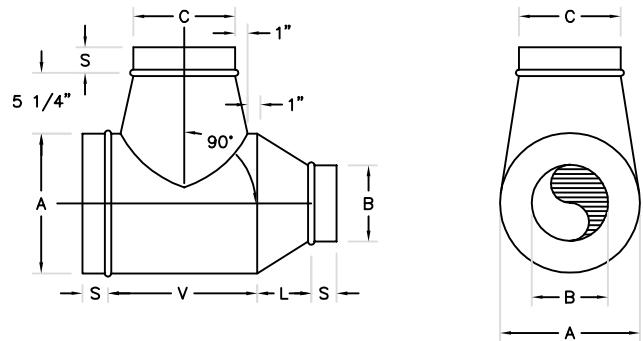
## CONICAL TEE CT1



### DIMENSIONAL DATA:

- $S=2''$
- $V=C+4''$

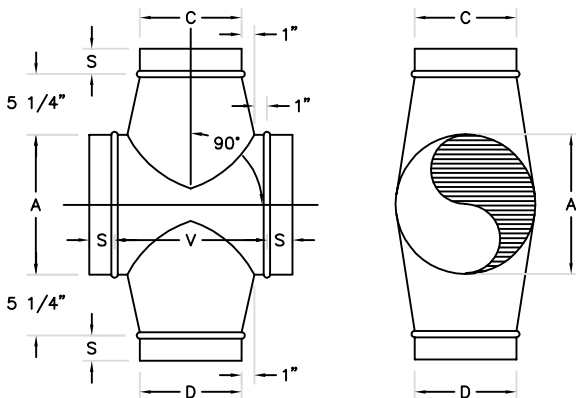
## REDUCING CONICAL TEE CT1R



### DIMENSIONAL DATA:

- $S=2''$
- $V=C+4''$
- $L=A-B$  (4" MIN.-12" MAX.)

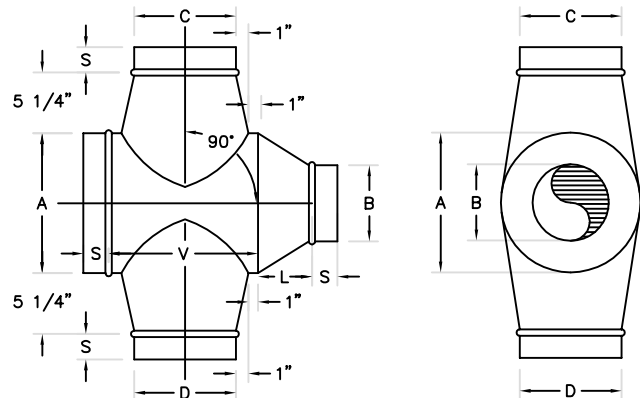
## CONICAL CROSS CT2



### DIMENSIONAL DATA:

- $S=2''$
- $V=\text{LARGEST TAP}+4''$

## REDUCING CONICAL CROSS CT2R

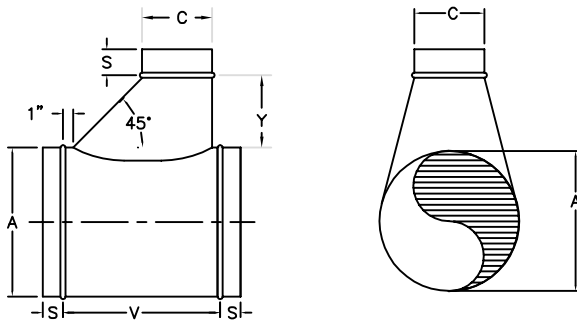


### DIMENSIONAL DATA:

- $S=2''$
- $V=\text{LARGEST TAP}+4''$
- $L=A-B$  (4" MIN.-12" MAX.)

# FITTING STANDARDS SINGLE WALL COMBINATION TEES

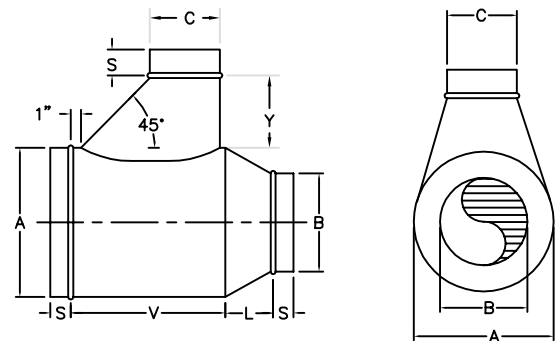
## COMBINATION TEE CMBT1



### DIMENSIONAL DATA:

- S=2"
- $V=(C+6)+2$
- C= 3-16 Y=6"
- C= 17-24 Y=9"
- C= 25-UP Y=12"

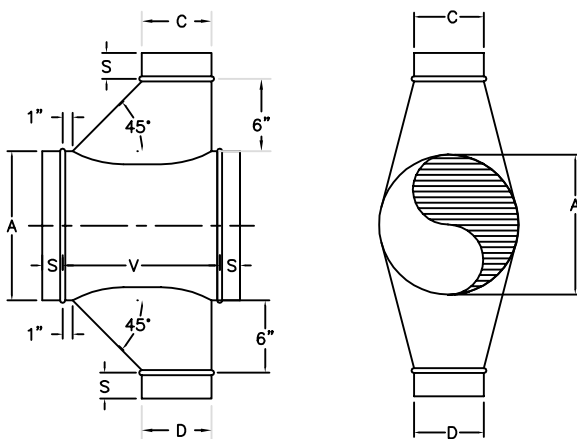
## REDUCING COMBINATION TEE CMBT1R



### DIMENSIONAL DATA:

- S=2"
- $V=(C+6)+2$
- $L=A-B$  (4" MIN.-12" MAX.)
- C= 3-16 Y=6"
- C= 17-24 Y=9"
- C= 25-UP Y=12"

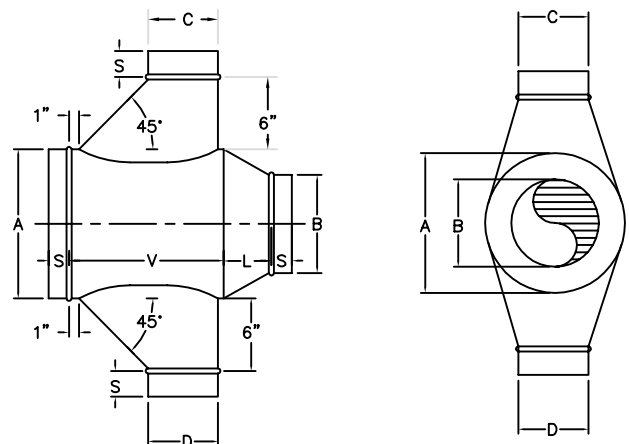
## COMBINATION CROSS CMBT2



### DIMENSIONAL DATA:

- S=2"
- $V=(\text{LARGEST TAP}+6)+2$
- C= 3-16 Y=6"
- C= 17-24 Y=9"
- C= 25-UP Y=12"

## REDUCING COMBINATION CROSS CMBT2R

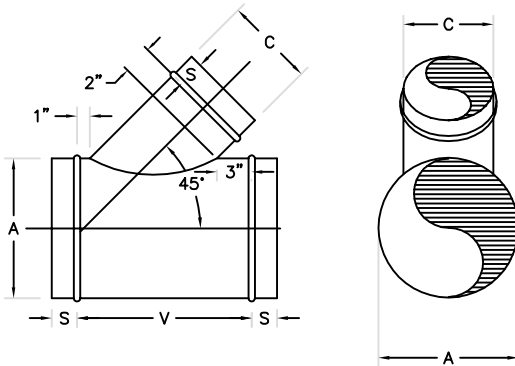


### DIMENSIONAL DATA:

- S=2"
- $V=(\text{LARGEST TAP}+6)+2$
- $L=A-B$  (4" MIN.-12" MAX.)
- C= 3-16 Y=6"
- C= 17-24 Y=9"
- C= 25-UP Y=12"

# FITTING STANDARDS SINGLE WALL LATERALS

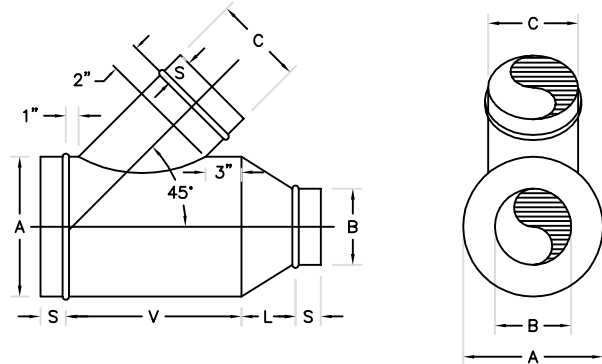
## LATERAL L1



### DIMENSIONAL DATA:

- $S=2"$
- $V=(1.414 \times C)+4"$

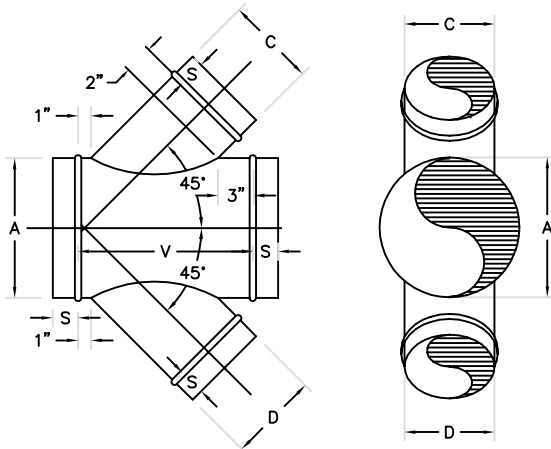
## REDUCING LATERAL L1R



### DIMENSIONAL DATA:

- $S=2"$
- $V=(1.414 \times C)+4"$
- $L=A-B$  (4" MIN.-12" MAX.)

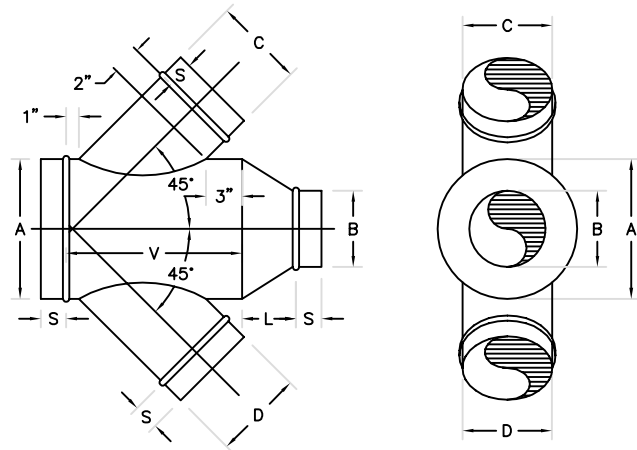
## LATERAL CROSS L2



### DIMENSIONAL DATA:

- $S=2"$
- $V=(1.414 \times C)+4"$

## REDUCING LATERAL CROSS L2R

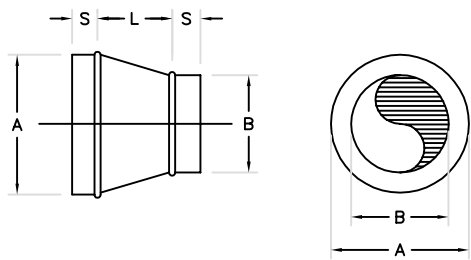


### DIMENSIONAL DATA:

- $S=2"$
- $V=(1.414 \times C)+4"$
- $L=A-B$  (4" MIN.-12" MAX.)

# FITTING STANDARDS REDUCERS

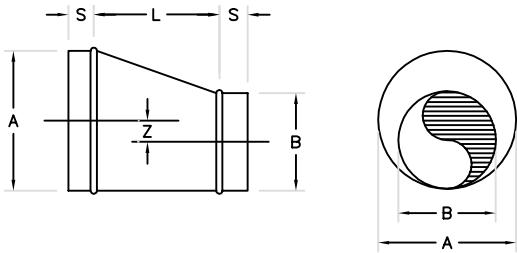
## CONCENTRIC REDUCER R1



### DIMENSIONAL DATA:

- S=2"
- L=A-B (4" MIN.-12" MAX.)

## ECCENTRIC REDUCER ER1



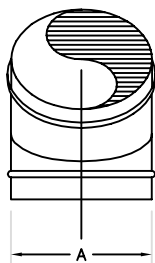
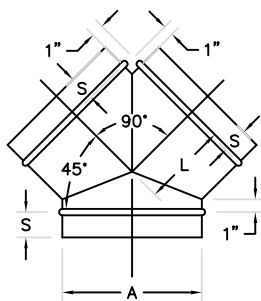
### DIMENSIONAL DATA:

- S=2"
- L=A-B (4" MIN.-12" MAX.)
- Z=(A-B)/2

# FITTING STANDARDS

## Y-BRANCH

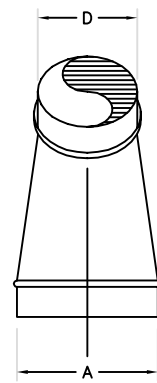
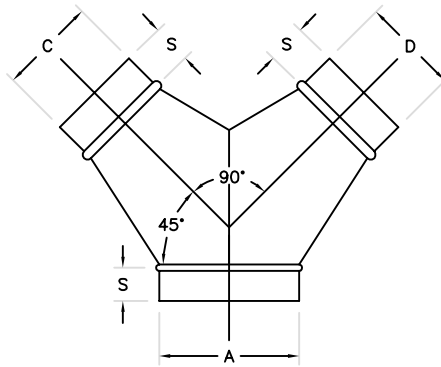
Y-BRANCH  
Y2



DIMENSIONAL DATA:

- $S=2"$
- $L=(A/2)+1"$

REDUCING Y-BRANCH  
Y2R

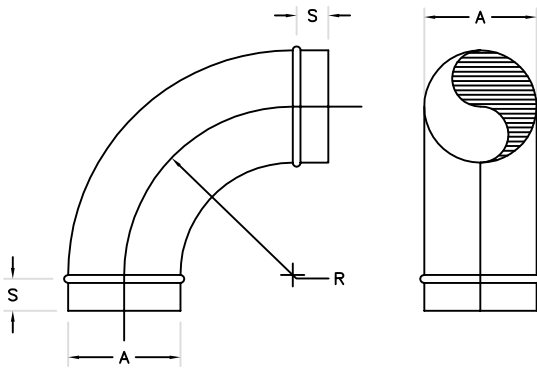


DIMENSIONAL DATA:

- $S=2"$

# FITTING STANDARDS SINGLE WALL ELBOWS

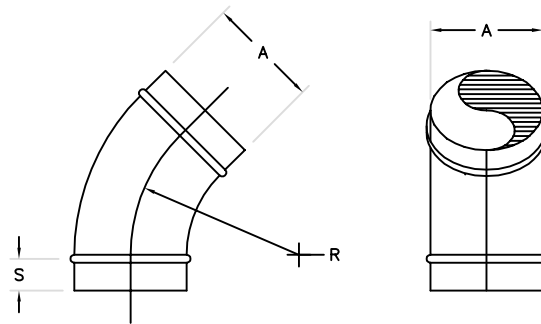
## DIE STAMPED 90° SE90



### DIMENSIONAL DATA:

- S=2"
- R=1.5xA
- 3" THRU 10" DIAMETER

## DIE STAMPED 45° SE45

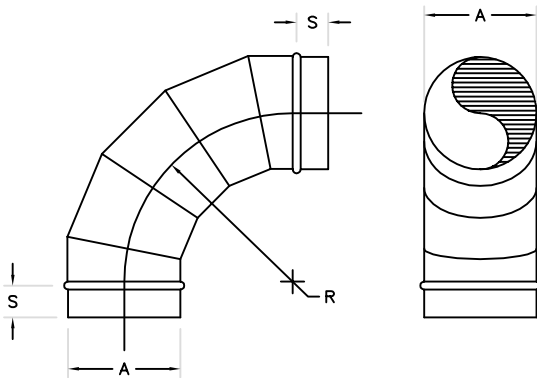


### DIMENSIONAL DATA:

- S=2"
- R=1.5xA
- 3" THRU 10" DIAMETER

## GORED ELBOW E90-5 E45-3

E(ANGLE)-(NUMBER OF GORES)

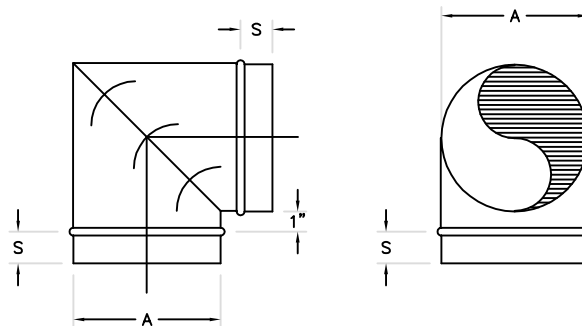


### DIMENSIONAL DATA:

- S=2"
- R=1.5xA
- ANY ANGLE
- 3" DIA. AND OVER

0-35° - 2 PIECE  
36-71° - 3 PIECE  
72-90° - 5 PIECE

## MITERED 90° EV90



### DIMENSIONAL DATA:

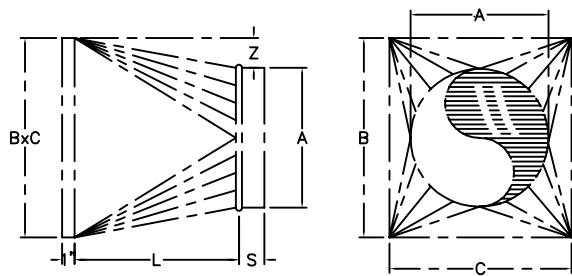
- S=2"
- 90° TYPICAL
- 3" DIA. AND OVER

DIAMETER	NUMBER OF VANES
3"-9"	2
10"-14"	3
15"-19"	4
20"-60"	5
OVER 60"	12" SPACING

# FITTING STANDARDS

## MISC. FITTINGS

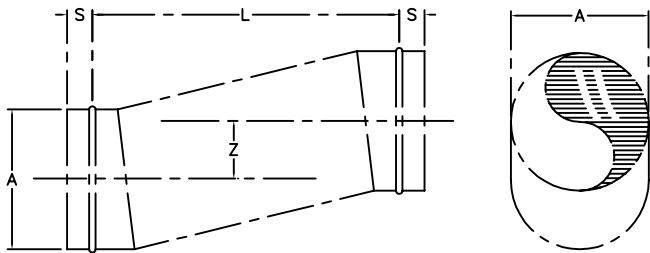
### SQUARE TO ROUND SQR



#### DIMENSIONAL DATA:

- S=2"
- SPECIFY BxC CONNECTION TYPE  
IE.- RAW, FLANGE, TDC,...ETC

### ROUND OFFSET SET

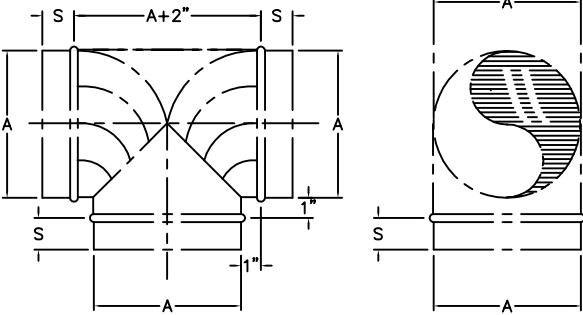
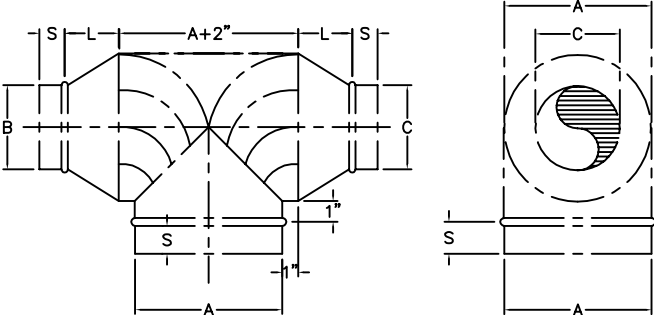


#### DIMENSIONAL DATA:

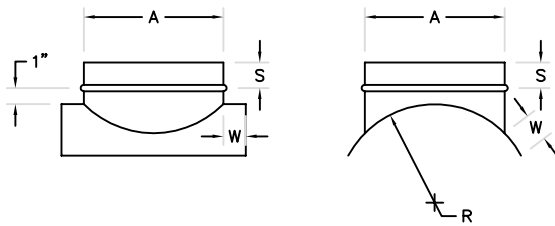
- S=2"

FITTING STANDARDS

BULLHEAD TEE

<div> <div>BULLHEAD TEE</div> <div>BHT</div> <div>  </div> <div> <div>DIMENSIONAL DATA:</div> <div> <div> <ul style="list-style-type: none"> <li>S=2"</li> <li>WITH OR WITHOUT TURNING VANES</li> </ul> </div> <table> <tr> <th>DIAMETER</th><th>NUMBER OF VANES</th></tr> <tr> <td>3"-5"</td><td>1</td></tr> <tr> <td>6"-9"</td><td>2</td></tr> <tr> <td>10"-14"</td><td>3</td></tr> <tr> <td>15"-19"</td><td>4</td></tr> <tr> <td>20"-60"</td><td>5</td></tr> <tr> <td>OVER 60"</td><td>12" SPACING</td></tr> </table> </div> </div> </div>	DIAMETER	NUMBER OF VANES	3"-5"	1	6"-9"	2	10"-14"	3	15"-19"	4	20"-60"	5	OVER 60"	12" SPACING	<div> <div>REDUCING BULLHEAD TEE</div> <div>BTR</div> <div>  </div> <div> <div>DIMENSIONAL DATA:</div> <div> <div> <ul style="list-style-type: none"> <li>S=2"</li> <li>WITH OR WITHOUT TURNING VANES</li> </ul> </div> <table> <tr> <th>DIAMETER</th><th>NUMBER OF VANES</th></tr> <tr> <td>3"-5"</td><td>1</td></tr> <tr> <td>6"-9"</td><td>2</td></tr> <tr> <td>10"-14"</td><td>3</td></tr> <tr> <td>15"-19"</td><td>4</td></tr> <tr> <td>20"-60"</td><td>5</td></tr> <tr> <td>OVER 60"</td><td>12" SPACING</td></tr> </table> </div> </div> </div>	DIAMETER	NUMBER OF VANES	3"-5"	1	6"-9"	2	10"-14"	3	15"-19"	4	20"-60"	5	OVER 60"	12" SPACING
DIAMETER	NUMBER OF VANES																												
3"-5"	1																												
6"-9"	2																												
10"-14"	3																												
15"-19"	4																												
20"-60"	5																												
OVER 60"	12" SPACING																												
DIAMETER	NUMBER OF VANES																												
3"-5"	1																												
6"-9"	2																												
10"-14"	3																												
15"-19"	4																												
20"-60"	5																												
OVER 60"	12" SPACING																												

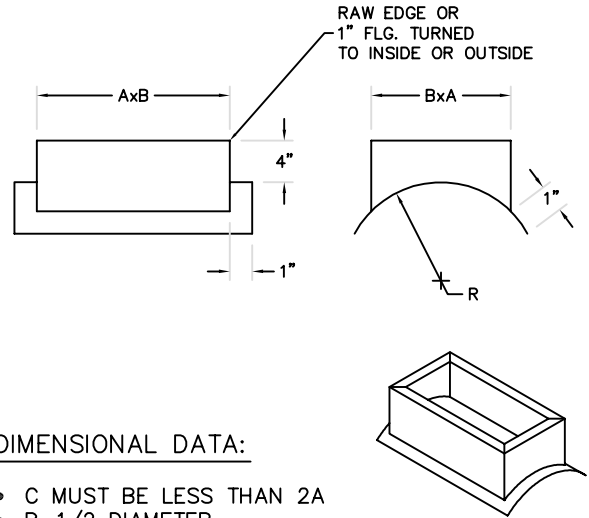
### STRAIGHT SADDLE TAP TST



#### DIMENSIONAL DATA:

- S=2"
- W=2 1/2"
- R=1/2 DIAMETER

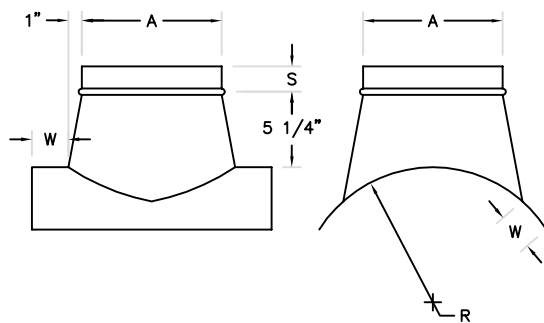
### GRILL BOX TAP GBST



#### DIMENSIONAL DATA:

- C MUST BE LESS THAN 2A
- R=1/2 DIAMETER

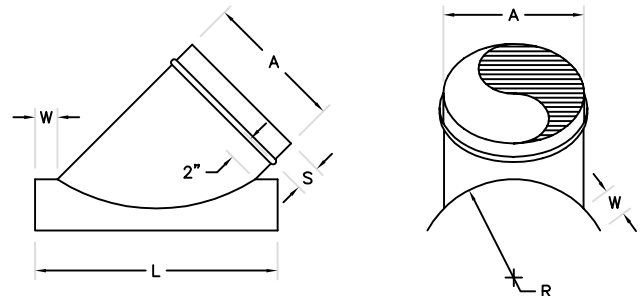
### CONICAL SADDLE TAP CST



#### DIMENSIONAL DATA:

- S=2"
- W=2 1/2"
- R=1/2 DIAMETER

### CONICAL LATERAL SADDLE TAP CLST

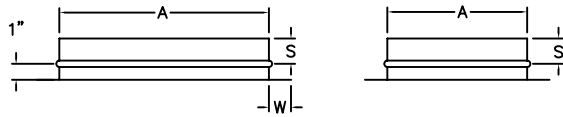


#### DIMENSIONAL DATA:

- S=2"
- L=(Bx1.414)+2W
- R=1/2 DIAMETER

# FITTING STANDARDS MISC. TAPS OFF FLAT

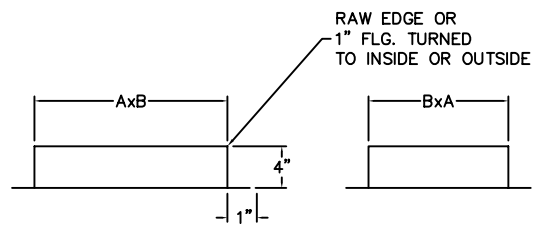
## STRAIGHT SADDLE TAP ON FLAT TST ON FLAT



### DIMENSIONAL DATA:

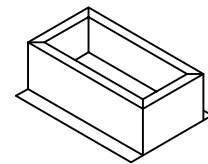
- $S=2''$
- $W=2''$

## GRILL BOX TAP ON FLAT GBST ON FLAT

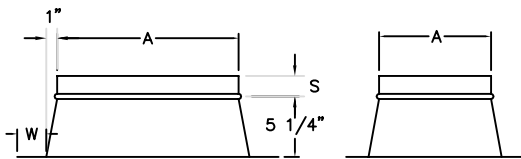


### DIMENSIONAL DATA:

- C MUST BE LESS THAN 2A



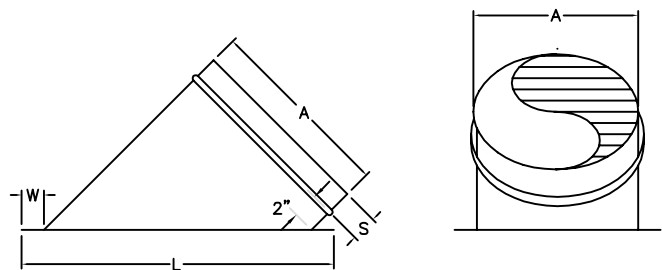
## CONICAL SADDLE TAP ON FLAT CST ON FLAT



### DIMENSIONAL DATA:

- $S=2''$
- $W=2''$

## LATERAL SADDLE TAP ON FLAT LST ON FLAT



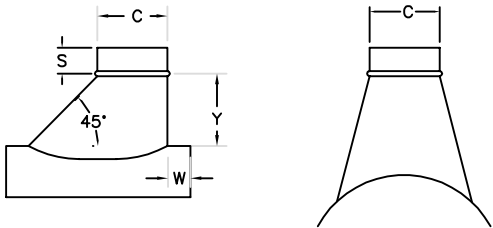
### DIMENSIONAL DATA:

- $S=2''$
- $L=(A \times 1.414) + 2W$
- $W=2''$

# FITTING STANDARDS

## MISC. COMBINATION TAPS

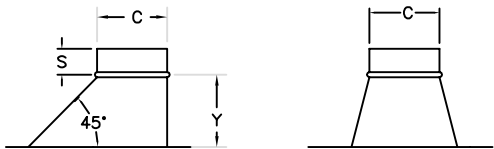
### COMBINATION SADDLE CMBST



#### DIMENSIONAL DATA:

- S=2"
- $V=(C+6)+2$
- C= 3-16    Y=6"
- C= 17-24    Y=9"
- C= 25-UP    Y=12"

### COMBINATION SADDLE CMBST ON FLAT



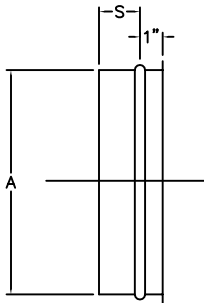
#### DIMENSIONAL DATA:

- S=2"
- $V=(C+6)+2$
- C= 3-16    Y=6"
- C= 17-24    Y=9"
- C= 25-UP    Y=12"

# FITTING STANDARDS

## MISC. FITTINGS

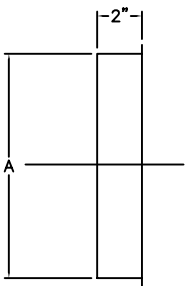
INSIDE PLUG  
EP



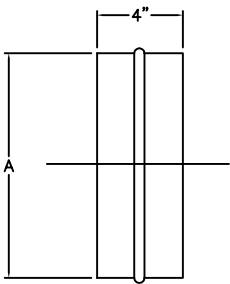
DIMENSIONAL DATA:

- S=2"

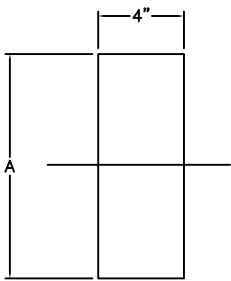
OUTSIDE CAP  
EC



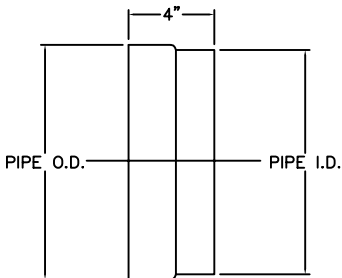
PIPE COUPLING  
S1  
(INSIDE COUPLING)



FITTING COUPLING  
S2  
(OUTSIDE COUPLING)



SPUN INSIDE-  
OUTSIDE COUPLING  
S3

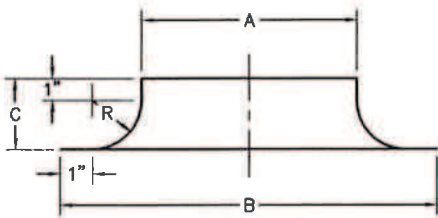




# FITTING STANDARDS MISC. FITTINGS

Sheet Metal Fabricators

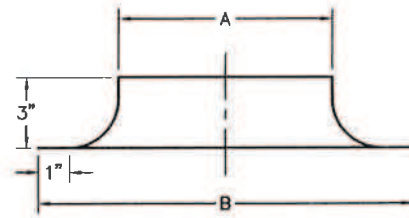
## STANDARD BELLMOUTH BM



### DIMENSIONAL DATA:

"A"	"B"	"C"	"R"	OPENING
4	9"	2.5"	1.5"	7"
5	10"	2.5"	1.5"	8"
6	12"	3"	2"	10"
7	13"	3"	2"	11"
8	14"	3"	2"	12"
9	15"	3"	2"	13"
10	16"	3"	2"	14"
11	19"	4"	3"	17"
12	20"	4"	3"	18"
13	21"	4"	3"	19"
14	22"	4"	3"	20"
15	23"	4"	3"	21"
16	26"	5"	4"	24"
17	27"	5"	4"	25"
18	28"	5"	4"	26"
19	29"	5"	4"	27"
20	30"	5"	4"	28"
21	31"	5"	4"	29"
22	34"	6"	5"	32"
23	35"	6"	5"	33"
24	36"	6"	5"	34"
26	40"	7"	6"	38"
28	42"	7"	6"	40"
30	44"	7"	6"	42"
32	48"	8"	7"	46"
34	50"	8"	7"	48"
36	52"	8"	7"	50"
38	54"	8"	7"	52"
40	58"	9"	8"	56"
42	60"	9"	8"	58"
44	62"	9"	8"	60"
46	64"	9"	8"	62"
48	66"	9"	8"	64"

## SHORT RADIUS BELLMOUTH SRBM



### DIMENSIONAL DATA:

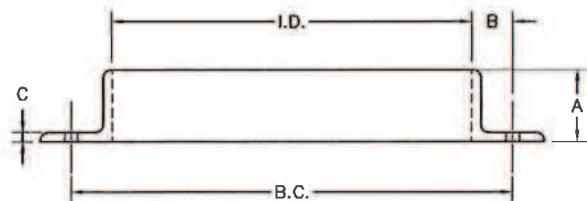
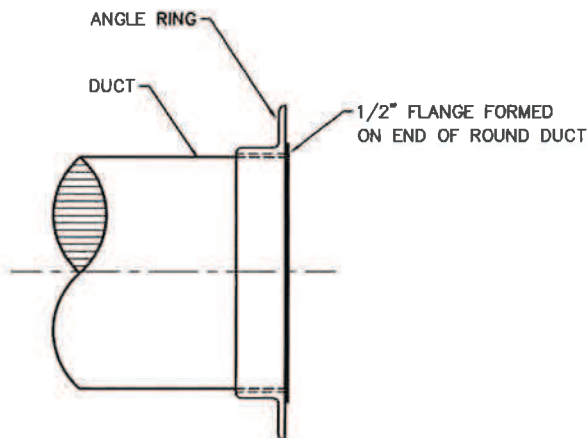
"A"	"B"
6"	10"
7"	11"
8"	12"
9"	13"
10"	14"
11"	15"
12"	16"
13"	17"
14"	18"
15"	19"
16"	20"
17"	21"
18"	22"
19"	23"
20"	24"
21"	25"
22"	26"
23"	27"
24"	28"
26"	30"
28"	32"
30"	34"
32"	36"
34"	38"
36"	40"
38"	42"
40"	44"
42"	46"
44"	48"
46"	50"
48"	52"
50"	56"
52"	58"



# FITTING STANDARDS MISC. FITTINGS

Sheet Metal Fabricators

## VAN STONE FLANGE JOINT ARV



### DIMENSIONAL DATA:

"I. D."	"A"	"B"	"C"	"B. C."	# HOLES	HOLE SIZE	LBS.	"I. D."	"A"	"B"	"C"	"B. C."	# HOLES	HOLE SIZE	LBS.
3 1/16"	7/8"	1"	11 GA	4 5/16"	6	9/32"	.70	27 1/8"	2"	2"	3/16"	29 3/8"	16	7/16"	17.38
4 1/16"	15/16"	1"	11 GA	5 5/16"	6	9/32"	.85	28 1/8"	2"	2"	3/16"	30 3/8"	16	7/16"	18.00
5 1/16"	1"	1"	11 GA	6 5/16"	6	9/32"	1.18	29 1/8"	2"	2"	3/16"	31 3/8"	16	7/16"	18.75
6 3/32"	1"	1"	11 GA	7 5/16"	6	9/32"	1.38	30 1/8"	2"	2"	3/16"	32 3/8"	16	7/16"	19.50
7 1/8"	1"	1 1/8"	11 GA	8 1/2"	6	3/8"	1.73	31 1/8"	2"	2"	3/16"	33 3/8"	16	7/16"	20.38
8 1/8"	1"	1 1/8"	11 GA	9 9/16"	6	3/8"	1.90	32 1/8"	2"	2"	3/16"	34 3/8"	16	7/16"	20.75
9 1/8"	1 1/8"	1 1/4"	11 GA	10 5/8"	6	7/16"	2.55	33 1/8"	2"	2"	3/16"	35 3/8"	16	7/16"	21.25
10 1/8"	1 1/4"	1 3/8"	11 GA	11 13/16"	6	7/16"	3.05	34 1/8"	2"	2"	3/16"	36 3/8"	16	7/16"	22.00
11 1/8"	1 1/4"	1 1/2"	11 GA	12 3/4"	6	7/16"	3.25	35 1/8"	2"	2"	3/16"	37 3/8"	16	7/16"	22.50
12 1/8"	1 1/4"	1 1/2"	11 GA	14"	8	7/16"	3.88	36 1/8"	2"	2"	3/16"	38 3/8"	16	7/16"	23.00
13 1/8"	1 1/2"	1 1/2"	11 GA	15"	8	7/16"	4.25	37 1/8"	2"	2"	3/16"	39 3/8"	24	7/16"	23.75
14 1/8"	1 1/2"	1 1/2"	11 GA	16"	8	7/16"	4.75	38 1/8"	2"	2"	3/16"	40 3/8"	24	7/16"	24.50
15 1/8"	1 1/2"	1 1/2"	3/16"	17"	8	7/16"	7.25	39 1/8"	2"	2"	3/16"	41 3/8"	24	7/16"	25.00
16 1/8"	1 1/2"	1 1/2"	3/16"	18"	8	7/16"	8.00	40 1/8"	2"	2"	3/16"	42 3/8"	24	7/16"	25.75
17 1/8"	1 1/2"	1 1/2"	3/16"	19"	8	7/16"	8.25	41 1/8"	2"	2"	3/16"	43 3/8"	24	7/16"	26.13
18 1/8"	1 1/2"	1 1/2"	3/16"	20"	8	7/16"	8.50	42 1/8"	2"	2"	3/16"	44 3/8"	24	7/16"	26.50
19 1/8"	1 1/2"	1 1/2"	3/16"	20 3/4"	12	7/16"	8.75	43 1/8"	2"	2"	3/16"	45 3/8"	24	7/16"	27.38
20 1/8"	1 1/2"	1 1/2"	3/16"	21 3/4"	12	7/16"	9.50	44 1/8"	2"	2"	3/16"	46 3/8"	24	7/16"	28.00
21 1/8"	1 1/2"	1 1/2"	3/16"	22 3/4"	12	7/16"	10.25	45 1/8"	2"	2"	3/16"	47 3/8"	24	7/16"	28.63
22 1/8"	1 1/2"	1 1/2"	3/16"	23 3/4"	12	7/16"	10.75	46 1/8"	2"	2"	3/16"	48 3/8"	24	7/16"	29.00
23 1/8"	1 1/2"	1 1/2"	3/16"	24 7/8"	12	7/16"	11.25	47 1/8"	2"	2"	3/16"	49 3/8"	24	7/16"	29.88
24 1/8"	1 1/2"	1 1/2"	3/16"	25 7/8"	12	7/16"	11.50	48 1/8"	2"	2"	3/16"	50 3/8"	24	7/16"	30.75
25 1/8"	1 1/2"	1 1/2"	3/16"	26 7/8"	16	7/16"	12.00	49 1/8"	2"	2"	3/16"	51 3/8"	24	7/16"	31.50
26 1/8"	2"	2"	3/16"	28 3/8"	16	7/16"	16.75	50 1/8"	2"	2"	3/16"	52 3/8"	24	7/16"	32.00



## SPIRAL PIPE & FITTINGS CONSTRUCTION STANDARDS

### SUBMITTAL DATA GALVANIZED, PAINT GRIP, HCD/PVS, STAINLESS STEEL PIPE & FITTINGS

#### SPIRAL PIPE AND FITTING GAGES FOR POSITIVE PRESSURES EXCEPT UNDERGROUND

MAXIMUM +10" W.G.		
SIZE	PIPE GA.	FITTINGS GA.
3"- 14"	28	26
15"- 18"	26	26
19"- 24"	26	24
25"- 42"	24	22
43"- 60"	22	20
61"- 66"	22	18
67"- 96"	20	18

PIPE AND FITTINGS are fabricated from G-60 or G-90 galvanized steel sheet or A-60 paint grip specification specific, meeting ASTM A-924 standards (formerly A-653 standards). Stainless steel fabricated from Type 304 or 316 sheet metal meeting ASTM A-167 standards. HCD fabricated from G-60 galvanized steel sheet with a four mil plastic coating available on either one side with a one mil available on the other or four mils on both sides which provides the chemical inertness of plastic and the durability of steel.

SPIRAL PIPE is roll formed, continuous interlocked pipe which combines the economics of light metal and a spiral lockseam construction that assures maximum strength and rigidity. The lockseam combines four plies of metal to form a continuous interlocking rib on the outside which permits the fabrication of long lengths of pipe with a smooth interior. All pipe is available up to 20' lengths and is stocked in 10' lengths.

FITTINGS - Construction features both standing gorelocked seams or spot welds with all joints shop sealed. Optional construction features solid welds with weld area coated for protection when specified. HCD fittings are factory fabricated using SMACNA approved lap seams and stainless steel pop rivets. All seams are sealed on the inside using HCD #8 selaer. Any damage to the coating shall be repaired using HCD aerosol spray or touch up paint.

ELBOWS - Die formed elbows in both 90 and 45 degree are used for 3" thru 8" sizes for galvanized and paint grip material. Elbows above 8" are gored type with the number of gores in accordance with SMACNA 2005, 3rd Edition. Die formed elbows are available in 9" thru 12" sizes upon request. All elbows have standard 1.5 x diameter center line radius.

ALL CONSTRUCTION STANDARDS ARE IN ACCORDANCE WITH SMACNA 2005 AND ASHRAE STANDARDS. U.L. ratings for HCD available upon request. HSM IS A MEMBER OF SPIRAL DUCT MANUFACTURERS ASSOCIATION (SPIDA).

JOB _____	
LOCATION _____	
ARCHITECT _____	JOB NO. _____
ENGINEER _____	REPRESENTATIVE _____
CONTRACTOR _____	DATE _____



# SPIRAL PIPE & FITTINGS CONSTRUCTION STANDARDS

## SUBMITTAL DATA ALUMINUM SPIRAL PIPE & FITTING GAGES

MAXIMUM +2" W.G. STATIC PRESSURE			MAXIMUM -2" W.G. STATIC PRESSURE		
PIPE SIZE	PIPE GAGE	FITTING GAGE	PIPE SIZE	PIPE GAGE	FITTING GAGE
3" thru 8"	.025	.032	3" thru 8"	.025	.040
9" thru 14"	.025	.032	9" thru 14"	.032	.040
15" thru 26"	.032	.040	15" thru 26"	.040	.050
27" thru 36"	.040	.050	27" thru 36"	.050	.063
37" thru 50"	.050	.063	37" thru 50"	.063	.071
51" thru 60"	.063	.071	51" thru 60"	NA	.090

PIPE AND FITTINGS are fabricated from 3003-H14 aluminum sheet meeting ASTM B209 standards. All sizes above 60" for positive 2" pressures are to be fabricated in longitudinal seam form. The same holds true for all sizes above 50" for negative 2" pressure systems.

SPIRAL PIPE is roll formed, continuous interlocked pipe which combines the economics of light metal and a spiral lockseam construction that assures maximum strength and rigidity. The lockseam combines four plys of metal to form a continuous interlocking rib on the outside which permits the fabrication of long lengths of pipe with a smooth interior. All pipe is available up to 20' lengths.

FITTINGS - Construction features both standing gorelock seams or spot welds with all joints shop sealed. Optional construction features solid welds when specified.

ELBOWS - are gored type with the number of gores in accordance with SMACNA 2005. All elbows have standard 1.5 x diameter center line radius.

NOTE: NA means not readily available or not assigned.

ALL CONSTRUCTION STANDARDS IN ACCORDANCE WITH SMACNA 2005 AND ASHRAE STANDARDS.  
HSMIS A MEMBER OF SPIRAL DUCT MANUFACTURERS ASSOCIATION (SPIDA).

JOB \_\_\_\_\_

LOCATION \_\_\_\_\_

ARCHITECT \_\_\_\_\_ JOB NO. \_\_\_\_\_

ENGINEER \_\_\_\_\_ REPRESENTATIVE \_\_\_\_\_

CONTRACTOR \_\_\_\_\_ DATE \_\_\_\_\_



# SPIRAL PIPE & FITTINGS CONSTRUCTION STANDARDS

## SUBMITTAL DATA 4 x 4 HCD / PVS HAMLIN COATED PIPE & FITTINGS SPIRAL PIPE AND FITTING GAGES FOR UNDERGROUND

MAXIMUM 10" W.G. STATIC PRESSURE			LOAD SPECIFICATIONS
PIPE SIZE	PIPE GAGE	FITTING GAGE	
3" thru 8"	26	24	
9" thru 16"	24	22	
17" thru 24"	22	20	
26" thru 32"	20	20	
34" thru 60"	18	20	

PIPE AND FITTINGS are fabricated from G-60 galvanized steel sheet with a four mil plastic coat on each side which provides the chemical inertness of plastic and the durability of steel.

HCD PIPE is roll formed, continuous interlocked pipe which combines the economics of light metal and a spiral lockseam construction that assures maximum strength and rigidity. The lockseam combines four plys of metal to form a continuous interlocking rib on the outside which permits the fabrication of long lengths of pipe with a smooth interior. All pipe 14" round and larger is to be corrugated. All pipe is available up to 20' lengths.

FITTINGS are factory fabricated using SMACNA approved lap seams and stainless steel pop rivets. All seams are sealed on the inside using HCD #8 sealer. Any damage to the coating shall be repaired using HCD arrosol spray or touch up paint. All fittings are fabricated using a Gorelock construction. A swedge and seal construction is available in 18 ga. material.

BACKFILL should be sand or pea gravel with proper compaction during backfilling. Ducts should always be above the water table. The designer should carefully evaluate the exposure to moisture or ground water.

U. L. ratings available upon request.

ALL CONSTRUCTION STANDARDS IN ACCORDANCE WITH SMACNA 2005 AND ASHRAE STANDARDS.  
HSMIS A MEMBER OF SPIRAL DUCT MANUFACTURERS ASSOCIATION (SPIDA).

JOB \_\_\_\_\_

LOCATION \_\_\_\_\_

ARCHITECT \_\_\_\_\_ JOB NO. \_\_\_\_\_

ENGINEER \_\_\_\_\_ REPRESENTATIVE \_\_\_\_\_

CONTRACTOR \_\_\_\_\_ DATE \_\_\_\_\_



## SPIRAL PIPE & FITTINGS CONSTRUCTION STANDARDS

### SUBMITTAL DATA

#### 4 x 4 HCD / PVS

#### HAMLIN COATED PIPE & FITTINGS

#### SPIRAL PIPE AND FITTING GAGES FOR POSITIVE PRESSURE EXCEPT UNDERGROUND

MAXIMUM +2" W.G.			MAXIMUM +4" W.G.			MAXIMUM +10" W.G.		
SIZE	PIPE GA.	FITTING GA.	SIZE	PIPE GA.	FITTING GA.	SIZE	PIPE GA.	FITTING GA.
3" - 14"	26	24	3"- 12"	26	24	3" - 14"	26	24
15"- 26"	26	24	13"- 16"	26	24	15"- 26"	24	22
28"- 36"	24	22	17"- 26"	24	22	28"- 36"	22	20
38"- 50"	22	20	28"- 36"	22	20	38"- 50"	20	20
52"- 60"	20	18	38"- 50"	20	20	52"- 60"	18	20
62"- 84"	18	16	52"- 60"	18	18	62"- 84"	18	20

PIPE AND FITTINGS are fabricated from G-60 galvanized steel sheet with a four mil plastic coat on each side which provides the chemical inertness of plastic and the durability of steel.

HCD PIPE is roll formed, continuous interlocked pipe which combines the economics of light metal and a spiral lockseam construction that assures maximum strength and rigidity. The lockseam combines four plys of metal to form a continuous interlocking rib on the outside which permits the fabrication of long lengths of pipe with a smooth interior. All pipe is available up to 20' lengths.

FITTINGS are factory fabricated using SMACNA approved lap seams and stainless steel pop rivets. All seams are sealed on the inside using HCD #8 sealer. Any damage to the coating shall be repaired using HCD aerosol spray or touch up paint. All fittings are fabricated using a Gorelock construction. A swedge and seal construction is available in 18 ga. material.

U. L. ratings available upon request.

ALL CONSTRUCTION STANDARDS IN ACCORDANCE WITH SMACNA AND ASHRAE STANDARDS.  
HSM IS A MEMBER OF SPIRAL DUCT MANUFACTURERS ASSOCIATION (SPIDA).

JOB \_\_\_\_\_

LOCATION \_\_\_\_\_

ARCHITECT \_\_\_\_\_ JOB NO. \_\_\_\_\_

ENGINEER \_\_\_\_\_ REPRESENTATIVE \_\_\_\_\_

CONTRACTOR \_\_\_\_\_ DATE \_\_\_\_\_



# SINGLE WALL SPIRAL PIPE MAXIMUM +10" W. G.

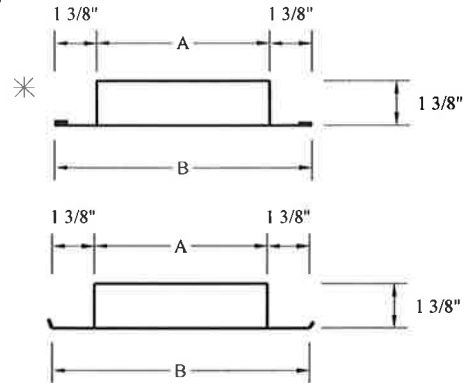
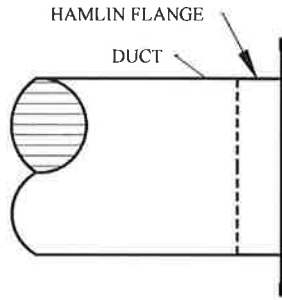
	28 GA	26 GA	24 GA	22 GA	20 GA	18 GA	16 GA	14 GA
DIA	#/FT	#/FT	#/FT	#/FT	#/FT	#/FT	#/FT	#/FT
3 "	.68	.79	1.01	1.23	1.44	1.92	2.32	2.86
4 "	.91	1.06	1.35	1.64	1.93	2.56	3.10	3.83
5 "	1.14	1.32	1.69	2.05	2.42	3.21	3.88	4.79
6 "	1.37	1.59	2.03	2.47	2.91	3.86	4.66	5.76
7 "	1.60	1.86	2.37	2.88	3.39	4.50	5.44	6.73
8 "	1.83	2.12	2.71	3.30	3.88	5.15	6.23	7.69
9 "	2.06	2.39	3.05	3.71	4.37	5.80	7.01	8.66
10 "	2.29	2.66	3.39	4.12	4.85	6.45	7.79	9.62
11 "	2.52	2.92	3.73	4.54	5.34	7.09	8.57	10.59
12 "	2.75	3.19	4.07	4.95	5.83	7.74	9.35	11.56
13 "	2.98	3.46	4.41	5.37	6.32	8.39	10.14	12.52
14 "	3.21	3.72	4.75	5.78	6.80	9.03	10.92	13.49
15 "	3.44	3.99	5.09	6.19	7.29	9.68	11.70	14.45
16 "	3.67	4.25	5.43	6.61	7.78	10.33	12.48	15.42
18 "	4.13	4.79	6.11	7.43	8.75	11.62	14.05	17.35
20 "	4.59	5.32	6.79	8.26	9.73	12.92	15.61	19.28
22 "	5.05	5.85	7.47	9.09	10.70	14.21	17.17	21.22
24 "	5.51	6.39	8.15	9.92	11.68	15.51	18.74	23.15
26 "	5.97	6.92	8.82	10.75	12.65	16.80	20.30	25.08
28 "	6.43	7.45	9.50	11.57	13.63	18.09	21.87	27.01
30 "	6.89	7.99	10.18	12.40	14.60	19.39	23.43	28.94
32 "	7.35	8.52	10.86	13.23	15.57	20.68	24.99	30.88
34 "	7.81	9.05	11.54	14.06	16.55	21.98	26.56	32.81
36 "	8.27	9.59	12.22	14.89	17.52	23.27	28.12	34.74
38 "	8.73	10.12	12.90	15.71	18.50	24.56	29.69	36.67
40 "	9.19	10.65	13.58	16.54	19.47	25.86	31.25	38.61
42 "	9.65	11.19	14.26	17.37	20.45	27.15	32.81	40.54
44 "	10.11	11.72	14.94	18.20	21.42	28.45	34.38	42.47
46 "	10.57	12.25	15.62	19.02	22.40	29.74	35.94	44.40
48 "	11.03	12.78	16.30	19.85	23.37	31.04	37.51	46.33
50 "	11.49	13.32	16.98	20.68	24.35	32.33	39.07	48.27
52 "	11.95	13.85	17.66	21.51	25.32	33.62	40.63	50.20
54 "	12.41	14.38	18.34	22.34	26.29	34.92	42.20	52.13
56 "	12.86	14.92	19.02	23.16	27.27	36.21	43.76	54.06
58 "	13.32	15.45	19.70	23.99	28.24	37.51	45.33	55.99
60 "	13.78	15.98	20.38	24.82	29.22	38.80	46.89	57.93

NOTE: 2005 SMACNA +10"WG STANDARD

ODD DIAMETERS AVAILABLE THRU 31"

## HAMLIN FLANGE

### HAMLIN FLANGE HF



### DIMENSIONAL DATA:

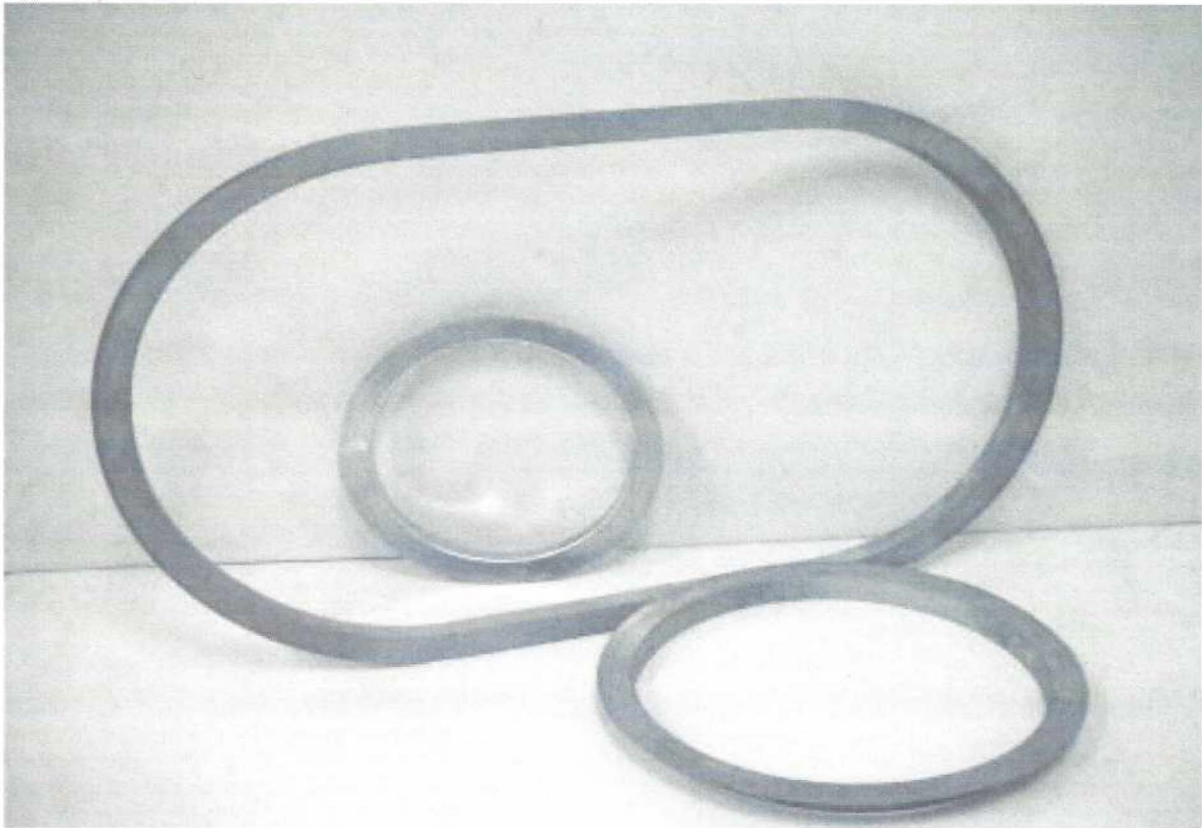
A-NOMINAL	A-ACTUAL	B	A-NOMINAL	A-ACTUAL	B
10" *	9.88"	12.63"	29"	28.88"	31.63"
11" *	10.88"	13.63"	30"	29.88"	32.63"
12" *	11.88"	14.63"	32"	31.88"	34.63"
13" *	12.88"	15.63"	34"	33.88"	36.63"
14" *	13.88"	16.63"	36"	35.88"	38.63"
15" *	14.88"	17.63"	38"	37.88"	40.63"
16"	15.88"	18.63"	40"	39.88"	42.63"
17"	16.88"	19.63"	42"	41.88"	44.63"
18"	17.88"	20.63"	44"	43.88"	46.63"
19"	18.88"	21.63"	46"	45.88"	48.63"
20"	19.88"	22.63"	48"	47.88"	50.63"
21"	20.88"	23.63"	50"	49.88"	52.63"
22"	21.88"	24.63"	52"	51.88"	54.63"
23"	22.88"	25.63"	54"	53.88"	56.63"
24"	23.88"	26.63"	56"	55.88"	58.63"
25"	24.8"	27.63"	58"	57.88"	60.63"
26"	25.88"	28.63"	60"	59.88"	62.63"
27"	26.88"	29.63"	62"	61.88"	64.63"
28"	27.88"	30.63"	64"	63.88"	66.63"

MATERIALS AVAILABLE: GALVANIZED, PAINT GRIP, STAINLESS STEEL AND ALUMINUM- 18 GA. TYP.



## ***Hamlin Flange***

***The Perfect Match***



## ***Spiral Duct Connection System***

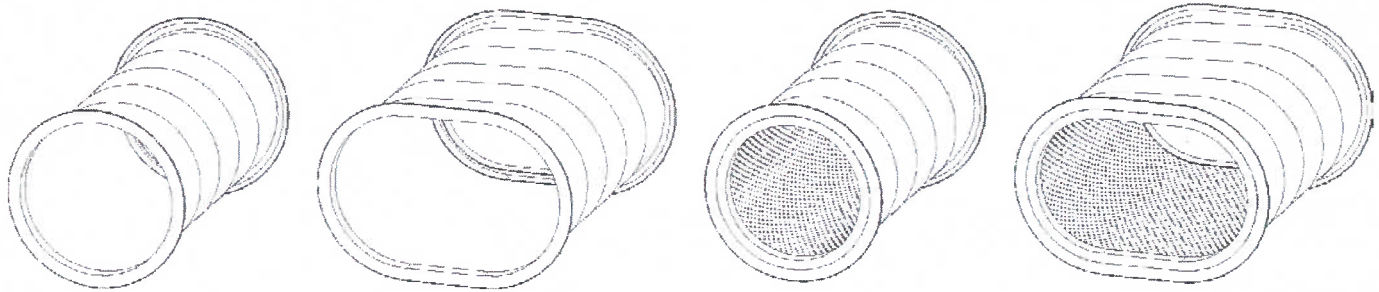
Phone: 800-659-8969

[www.hamlinco.com](http://www.hamlinco.com)

Fax: 919-207-0528

# HAMLIN FLANGE DUCT CONNECTION SYSTEM

The Hamlin Flange duct connection system provides a simple and effective method of joining round and flat oval duct with little effort by eliminating the use of conventional connecting couplings. The Hamlin Flange is available for both single wall and double wall duct products, regardless of positive or negative operating pressure. Hamlin Flanges are fabricated of the same material as the duct unless otherwise instructed. Hamlin Flanges are available factory installed or shipped loose.

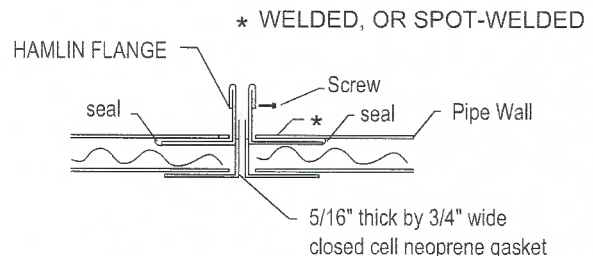
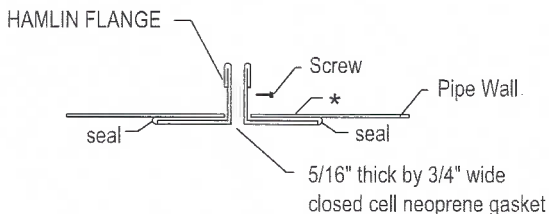


## Single Wall Construction

The flange is fabricated from 18 gauge material and is attached to the duct with welds, or spot-welded 6" on center. The inner leg of the flange is sealed internally with an HVAC approved duct sealer.

## Double Wall Construction

The outer flange is fabricated from 18 gauge material, the inner flange is fabricated of 16 gauge material. The outer flange is attached to the outer duct wall by tack welds and welded, or spot-welded 6" on center. The inner leg of the outer flange is sealed internally with an appropriate HVAC duct sealer. All inner flanges are galvanized unless otherwise specified.



## Material:

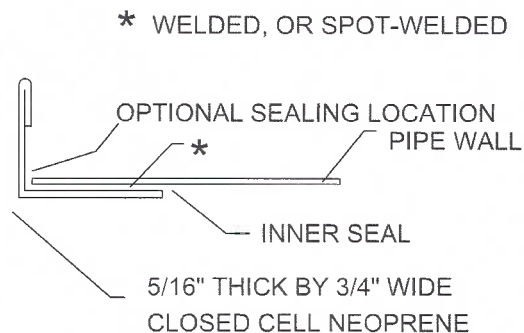
- |                        |                       |                       |
|------------------------|-----------------------|-----------------------|
| ▫ Galvanized           | ▫ Aluminum            | ▫ 316 Stainless Steel |
| ▫ Paint Grip/Galvaneal | ▫ 304 Stainless Steel | ▫ PVC Coated          |

# HAMLIN FLANGE FIELD ERECTION INSTRUCTIONS

## SINGLE WALL

STEP 1. INSPECT INNER SEAL TO ENSURE THAT FACTORY APPLIED SEALER IS INTACT AND NOT DAMAGED DURING SHIPMENT. IF CRACK OR LACK OF SEALER ARE PRESENT REPAIR SEALER AS REQUIRED.

STEP 2. APPLY THE PROVIDED NEOPRENE GASKET TO THE FACE OF THE FLANGE, KEEPING GASKET PARALLEL WITH THE INSIDE EDGE OF THE FLANGE.



THE GASKET SHOULD BE COMPLETELY AROUND THE CIRCUMFERENCE OF THE FLANGE. WHERE THE GASKET MEETS, MAKE A SQUARE CUT SO THAT THE ENDS BUTT UP AGAINST EACH OTHER SO THAT NO VOIDS IN GASKET EXISTS.

STEP 3. ALIGN MATCHING FLANGES ENSURING ALIGNMENT ALL THE WAY AROUND THE FLANGE.

STEP 4. USING A SELF LOCKING C CLAMP, CLAMP THE MATCHING FLANGES, COMPRESSING THE GASKET UNTIL THE FLANGES TOUCH.

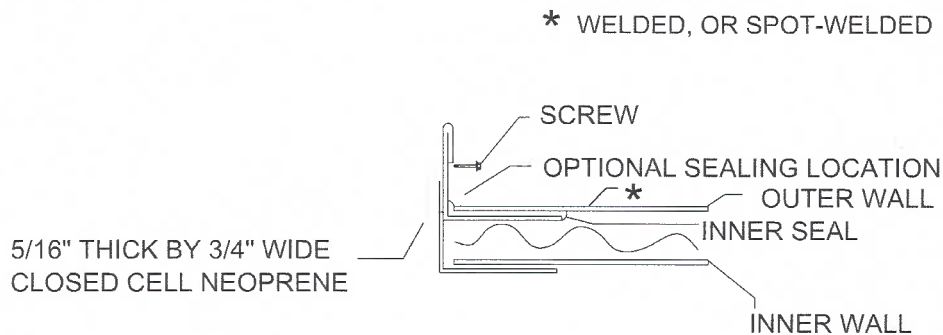
STEP 5. INSERT #10 SCREWS 6" ON CENTERS AROUND THE FLANGE. THE POSITION OF THE SCREWS SHOULD NOT PENETRATE THE GASKET. TO ENSURE A PROPERLY CLOSED JOINT, THE FLANGES SHOULD BE COMPLETELY CLAMPED TIGHTLY TOGETHER WITH THE FACES TOUCHING PRIOR TO INSERTING THE SCREWS. THE SCREWS SHOULD BE INSTALLED SO AS TO PROVIDE PROPER HOLDING STRENGTH.

NOTE: SHOULD THE INTERNAL SEAL NOT PROVIDE THE LEAKAGE REQUIRED, YOU MAY SEAL IN THE FIELD IN THE OPTIONAL SEALING LOCATION.

# HAMLIN FLANGE FIELD ERECTION INSTRUCTIONS

## DOUBLE WALL

- STEP 1. APPLY THE PROVIDED NEOPRENE GASKET TO THE FACE OF THE HAMLIN FLANGE. OVERLAP THE INNER FLANGE BY 1/4" , ENSURING THAT THE GASKET IS PARALLEL WITH FLANGE EDGES.



THE GASKET SHOULD BE COMPLETELY AROUND THE CIRCUMFERENCE OF THE FLANGE. WHERE THE GASKETS MEETS, MAKE A SQUARE CUT SO THAT THE GASKET ENDS BUTT UP AGAINST EACH OTHER SO THAT NO VOIDS IN GASKET EXIST.

- STEP 2. ALIGN MATCHING FLANGES ENSURING ALIGNMENT ALL THE WAY AROUND THE FLANGE.
- STEP 3. USING A SELF LOCKING C CLAMP, CLAMP THE MATCHING FLANGES, COMPRESSING THE GASKET UNTIL THE FLANGES TOUCH.
- STEP 4. INSERT #10 SCREWS 6" ON CENTERS AROUND THE FLANGE. THE POSITION OF THE SCREWS SHOULD NOT PENETRATE THE GASKET. TO ENSURE A PROPERLY CLOSED JOINT, THE FLANGES SHOULD BE COMPLETELY CLAMPED TIGHTLY TOGETHER WITH THE FACES TOUCHING PRIOR TO INSERTING THE SCREWS. THE SCREWS SHOULD BE INSTALLED SO AS TO PROVIDE PROPER HOLDING STRENGTH.

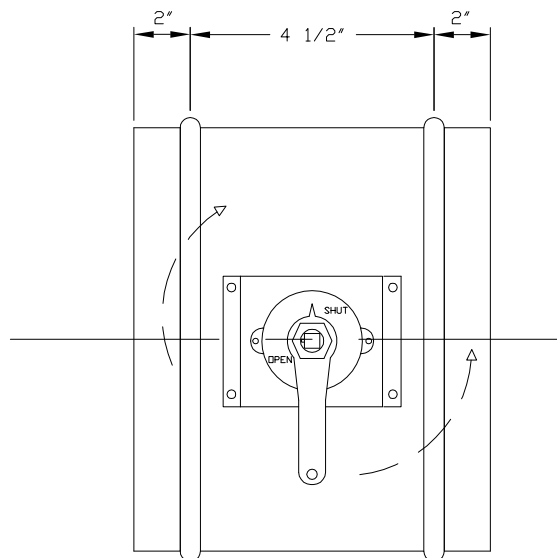
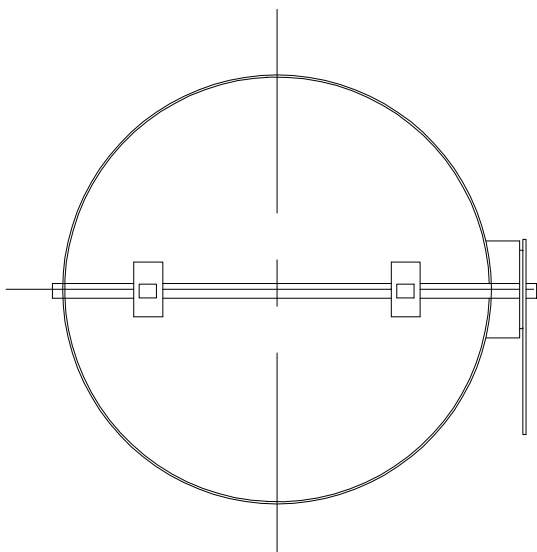
NOTE: SHOULD THE INTERNAL SEAL NOT PROVIDE THE LEAKAGE REQUIRED, YOU MAY SEAL IN THE FIELD IN THE OPTIONAL SEALING LOCATION.

# Low Pressure Volume Damper

## Galvanized Steel Balancing Damper

This damper is designed for low velocity, low pressure clean air systems. It is developed specifically for use in spiral branch ducts to balance air flow.

**LPVD**



### Standard Construction Details:

**Available Dia. : 4",5",6",7",8",9",10",11",12",13",14",15",16",17",18",19",20"**

**Max. Face Velocity:** 1500 FPM

**Max. Pressure:** 2" WG.

**Max. Temp.:** 250° F

**Dimensions:** Dia. Less 1/16"

**Body:** 24 ga. G-90 Galvanized  
(Optional: 24 ga. A-60 Paint Grip)

**Blades:** 20 ga. G-90 Galvanized

**Axles:** 3/8" Cad plated square rod - continuous

**Regulator:** 1" Elevated - Duro Dyne # SRST-1

**Blade Attachment:** 2" Tack welds 4" on Center

**Axle Length:** Dia. + 2 3/4"

**Bearing:** None included  
(Options Available) : Brass & Nylon Bearings

# Submittal



- \*\*\* Made with spiral lockseams --- sealing of seams is not required to meet ASHRAE 90.1-2010 standards
- \*\*\* 0% metal loss in production
- \*\*\* Male-sized on both ends for slip-fit connection
- \*\*\* Loss coefficient is 0.145 (comparable to stamped elbows)
- \*\*\* Material --- G-90 galvanized steel
- \*\*\* Radius --- centerline is 1.5 X diameter
- \*\*\* Gauges --- meet SMACNA standards for +10" WG
- \*\*\* Stop bead included for alignment with ends of pipe
- \*\*\* Available in 90 and 45 degree configuration

Size	Gauge
4"f	26
5"f	26
6"f	26
7"f	26
8"f	26
9"f	26
10"f	26
12"f	26
14"f	26
16"f	24
18"f	24

Project:

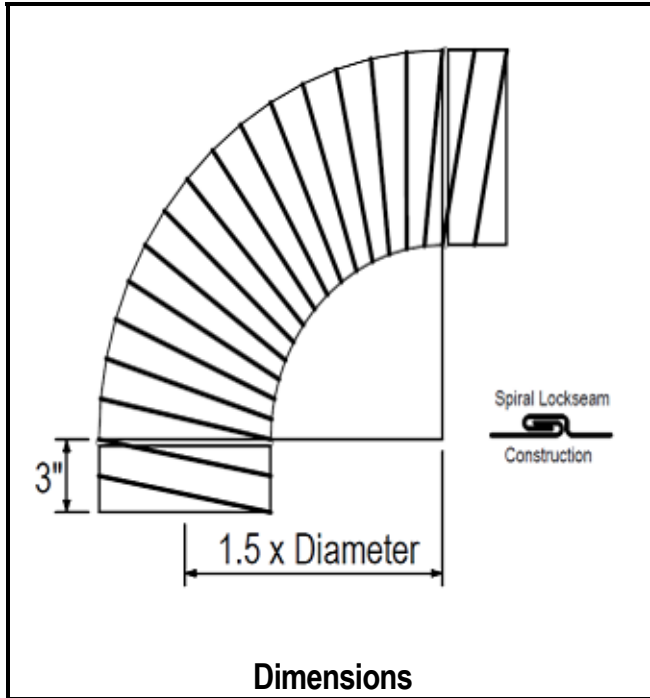
Location:

Date:

Contractor:

Engineer:

## Engineering Data



### Loss Coefficient

$$c = 0.145$$

Testing performed at AgTech Centre / Government of Alberta ---  
Project# DL0411 (November 2011). Test report available upon request.

Comparative Loss Coefficients (per ASHRAE Duct Fitting Database) \*

Fitting	Loss Coefficient
Die Stamped Elbow --- CLR = 1.5 x D	0.11
<b>SPIRAL ELBOW --- CLR = 1.5 x D</b>	<b>0.145</b>
5-Gore Elbow --- CLR = 1.5 x D	0.24
Die Stamped Elbow --- CLR = 1.0 x D	0.24
Pleated Elbow --- CLR = 1.5 x D	0.34
5-Gore Elbow --- CLR = 1.0 x D	0.37
3-Gore Adjustable Elbow --- CLR = 0.75 x D	0.54

\* --- All above numbers based upon 8" diameter 90-degree elbows

### Leakage Class

$$C_L = 0.212$$

CFM of Leakage per 100 sq.ft. Duct Surface @ 1" WG

Testing performed at OriFlow, Inc. / Clearwater, FL --- November 2011.

There are no current comparative test standards for duct component leakage other than AMCA 511 --- Spiral Duct Leakage Rating Requirements. Similar methods were utilized and a component sample of ten --- 8" f 90-degree spiral elbows was assembled with 12" spiral pipe segments between each elbow and caps on both ends. All joints, caps and instrument penetrations were sealed to eliminate their leakage and sealing was allowed up to 1" within the stop beads of the elbows (consistent with normal external sealing methods). The component sample was tested at +15" WG and total leakage of 0.405 CFM was recorded. Test report available on request. The component sample tested had a very high ratio of Spiral Elbows to surface area, unlikely to occur in a typical project. Even so, the reported leakage is very low in relation to the current ASHRAE 90.1-2010 "sealed duct" Leakage Class 4 and supports an exemption from additional seam sealing.

### Size Tolerances

There is not yet an industry-wide standard for spiral duct and component. Spiral lockseam pipe I.D. varies between manufacturers based upon gauge type and maintenance of the machines. Sizes tolerances of SPIRAL produced by Tradesman Manufacturing are based upon industry published spiral pipe tolerances from various manufacturers and "friction fit" throughout the range of those spiral pipe I.D.s.

Size	Spiral Pipe Minimum ID	Spiral Pipe Maximum ID
4"f	3.950"	3.970"
6"f	5.950"	5.970"
8"f	7.950"	7.970"
10"f	9.950"	9.970"
12"f	11.950"	11.970"
14"f	13.950"	13.970"
16"f	15.936"	15.972"
18"f	17.936"	17.972"



## ROUND SINGLE WALL FITTINGS

### LEGEND

BT - BULLHEAD TEE	R - REDUCER
T2 - CROSS	S - COUPLING
C - CONICAL	SET - OFFSET
CMB - COMBINATION	DSA - SPUN INSULATION END
E - ELBOW	SIO - SPUN INSIDE-OUTSIDE COUPLING
ER - ECCENTRIC REDUCER	GBST - GRILLE BOX
L - LATERAL	TST - SADDLE TAP
EC - END CAP	T - TEE
EP - PLUG	Y - WYE BRANCH

### DIMENSIONING CODE

A	- Diameter of Main Inlet
B	- Diameter of Main Outlet, if Reducing
C, D, E, F	- Diameters of Take Off Taps
P	- Angle Between Cross Tap Centerlines
R	- Radius
S	- Length of Male End of Fittings
Z	- Offset Height

### ORDERING

Specify type of fittings and list the following dimensions:

ELBOWS	- A, (B, C)
TEES	- A, C, (B, D)
LATERALS	- A, C, (B, D)
CROSSES	- A, C, D, (B, E, F, P)
ACCESSORIES	- As Noted

The drawings shown are illustrative of the types fabricated.

All fittings, unless noted, are fabricated as a male part on each end for slip-joint assembly with spiral pipe.

Van Stone anglering, Solid welded flange, Accuflange, Hamlin flange, or Spiralmate flanges are available on special order.