



## Single Wall Oval Spiral Duct and Fittings Construction Standards

### Standard Fitting Construction

Gauge selection for galvanized steel (ASTM A653) and paint grip steel. Other materials are available. All pipe is corrugated.

**2005 SMACNA POSITIVE PRESSURE**

Major Axis	Spiral Seam	Fittings
10"-24"	24	20
25"-36"	22	20
37"-48"	22	18
49"-60"	20	18
61"-70"	20	16
71" & up	18	16

Other materials and gauges are available.

### Nominal Spiral Oval Pipe Sizes

Initial Spiral Size	MINOR AXIS																MAJOR AXIS	
	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34		36
8	10																	
9	12	11																
10	13	12	11															
11	15	14	13															
12	17	15	14	13														
13	18	17	16	15	14													
14	20	19	17	16	15													
15	21	20	19	18	17	16												
16	23	22	21	19	18	17												
17	24	23	22	21	20	19	18											
18	26	25	24	23	21	20	19											
19	28	26	25	24	23	22	21											
20	29	28	27	26	25	23	22	21										
21	31	30	28	27	26	25	24	23										
22	32	31	30	29	28	27	26	25										
23		33	32	30	29	28	27	26	25									
24		34	33	32	31	30	29	27	26									
25		36	35	34	32	31	30	29	28									
26		37	36	35	34	33	32	31	29	28								
27		39	38	37	36	34	33	32	31	30								
28		41	39	38	37	36	35	34	33	31	30							
29		42	41	40	39	38	36	35	34	33	32							
30		44	42	41	40	39	38	37	36	35	33	32						
32		47	46	45	43	42	41	40	39	38	37	35	34					
34		50	49	48	47	45	44	43	42	41	40	39	37	36				
36		53	52	51	50	49	47	46	45	44	43	42	41	39	38			
38		56	55	54	53	52	51	49	48	47	46	45	44	43	41	40		
40		59	58	57	56	55	54	53	51	50	49	48	47	46	45	43	42	
42		63	61	60	59	58	57	56	55	53	52	51	50	49	48	47	45	
44		66	65	63	62	61	60	59	58	57	55	54	53	52	51	50	49	
46		69	68	67	65	64	63	62	61	60	59	57	56	55	54	53	52	
48		72	71	70	69	67	66	65	64	63	62	61	59	58	57	56	55	
50			74	73	72	71	69	68	67	66	65	64	63	61	60	59	58	
52				75	74	73	71	70	69	68	67	66	65	63	62	61		
54					76	75	73	72	71	70	69	68	67	66	65	64		
56						79	78	77	75	74	73	72	71	70	69	67		
58							81	80	79	77	76	75	74	73	72	71		
60									82	81	79	78	77	76	75	74		
62										85	84	83	81	80	79	78	77	
64												86	85	83	82	81	80	
66														87	85	84	83	
68															89	87	86	
70																91	89	
72																	93	



Actual Spiral Oval Pipe Sizes

Initial Spiral Size	MINOR AXIS																	MAJOR AXIS
	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	
8	10.28																	
9	11.85	10.71																
10	13.42	12.28	11.14															
11	15.00	13.85	12.71															
12	16.57	15.42	14.28	13.14														
13	18.14	17.00	15.85	14.71	13.57													
14	19.71	18.57	17.42	16.28	15.14													
15	21.28	20.14	19.00	17.85	16.71	15.57												
16	22.85	21.71	20.57	19.42	18.28	17.14												
17	24.42	23.28	22.14	21.00	19.85	18.71	17.57											
18	25.99	24.85	23.71	22.57	21.42	20.28	19.14											
19	27.56	26.42	25.28	24.14	23.00	21.85	20.71											
20	29.13	27.99	26.85	25.71	24.57	23.42	22.28	21.14										
21	30.70	29.56	28.42	27.28	26.14	25.00	23.85	22.71										
22	32.27	31.13	29.99	28.85	27.71	26.57	25.42	24.28										
23		32.70	31.56	30.42	29.28	28.14	27.00	25.85	24.71									
24		34.27	33.13	31.99	30.85	29.71	28.57	27.42	26.28									
25		35.85	34.70	33.56	32.42	31.28	30.14	29.00	27.85									
26		37.42	36.27	35.13	33.99	32.85	31.71	30.57	29.42	28.28								
27		38.99	37.85	36.70	35.56	34.42	33.28	32.14	31.00	29.85								
28		40.56	39.42	38.27	37.13	35.99	34.85	33.71	32.57	31.42	30.28							
29		42.13	40.99	39.85	38.70	37.56	36.42	35.28	34.14	33.00	31.85							
30		43.70	42.56	41.42	40.27	39.13	37.99	36.85	35.71	34.57	33.42	32.28						
32		46.84	45.70	44.56	43.42	42.27	41.13	39.99	38.85	37.71	36.57	35.42	34.28					
34		49.98	48.84	47.70	46.56	45.42	44.27	43.13	41.99	40.85	39.71	38.57	37.42	36.28				
36		53.12	51.98	50.84	49.70	48.56	47.42	46.27	45.13	43.99	42.85	41.71	40.57	39.42	38.28			
38		56.27	55.12	53.98	52.84	51.70	50.56	49.42	48.27	47.13	45.99	44.85	43.71	42.57	41.42	40.28		
40		59.41	58.27	57.12	55.98	54.84	53.70	52.56	51.42	50.27	49.13	47.99	46.85	45.71	44.57	43.42	42.28	
42		62.55	61.41	60.27	59.12	57.98	56.84	55.70	54.56	53.42	52.27	51.13	49.99	48.85	47.71	46.57	45.42	
44		65.69	64.55	63.41	62.27	61.12	59.98	58.84	57.70	56.56	55.42	54.27	53.13	51.99	50.85	49.71	48.57	
46		68.83	67.69	66.55	65.41	64.27	63.12	61.98	60.84	59.70	58.56	57.42	56.27	55.13	53.99	52.85	51.71	
48		71.87	70.83	69.69	68.55	67.41	66.27	65.12	63.98	62.84	61.70	60.56	59.42	58.27	57.13	55.99	54.85	
50			73.97	72.83	71.69	70.55	69.41	68.27	67.12	65.98	64.84	63.70	62.56	61.42	60.27	59.13	57.99	
52					74.83	73.69	72.55	71.41	70.27	69.12	67.98	66.84	65.70	64.56	63.42	62.27	61.13	
54							75.69	74.55	73.41	72.27	71.12	69.98	68.84	67.70	66.56	65.42	64.27	
56							78.83	77.69	76.55	75.41	74.27	73.12	71.98	70.84	69.70	68.56	67.42	
58								80.83	79.69	78.55	77.41	76.27	75.12	73.98	72.84	71.71	70.56	
60									81.69	80.55	79.41	78.27	77.12	75.98	74.84	73.70	72.56	
62										84.83	83.69	82.55	81.41	80.27	79.12	77.98	76.84	
64												85.69	84.55	83.41	82.27	81.12	79.98	
66														86.55	85.41	84.27	83.12	
68															88.55	87.41	86.27	
70																	90.55	89.41
72																		92.55



Sometimes it is desirable to change oval size due to height restrictions or because a given size oval is not available in spiral. The chart below lists nominal oval sizes with the equivalent round size for friction loss to the left.

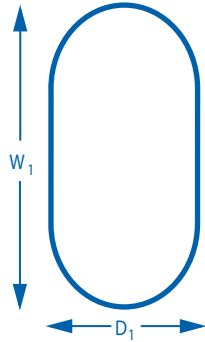
Example: To convert 18"x34" oval to a smaller size, first note the equivalent round size listed as 25.7". This means that 18"x34" oval spiral will have the same friction loss as 25.7" round spiral. Next, find 25.7" for an oval with a smaller minor axis. Two choices are 16"x38" with an equivalent round of 25.8", or 14"x45" with an equivalent round of 26.1". Either choice would be acceptable, but please note the initial spiral size increases as the minor axis decreases, thus adding to cost.

## Nominal Spiral Oval Pipe Sizes and Round Equivalent

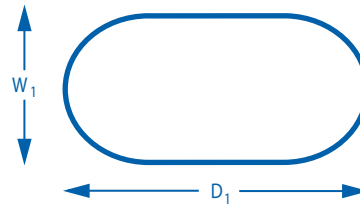
Initial Spiral Size	MINOR AXIS																	MAJOR AXIS	
	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36		
8	6.7/10																		
9	7.2/12	8.4/11																	
10	7.6/13	9.0/12	9.8/11																
11	8.0/15	9.5/14	10.5/13																
12	8.3/17	10.0/15	11.2/14	11.8/13															
13	8.7/18	10.5/17	11.8/16	12.6/15	13.0/14														
14	9.0/20	10.9/19	12.3/17	13.6/16	13.8/15														
15	9.3/21	11.4/20	12.9/19	14.0/18	14.6/17	15.0/16													
16	9.6/23	11.8/22	13.4/21	14.6/19	15.4/18	15.9/17													
17	9.8/24	12.1/23	13.9/22	15.2/21	16.2/20	16.7/19	17.0/18												
18	10.1/26	12.5/25	14.3/24	15.7/23	16.7/21	17.5/20	17.9/19												
19	10.3/28	12.8/26	14.7/25	16.2/24	17.4/23	18.2/22	18.7/21												
20	10.6/29	13.1/28	15.1/27	16.7/26	18.0/25	18.9/23	19.5/22	19.9/21											
21	10.8/31	13.5/30	15.5/28	17.2/27	18.5/26	19.5/25	20.3/24	20.8/23											
22	11.0/32	13.8/31	15.9/30	17.7/29	19.1/28	20.2/27	21.0/25	21.6/24											
23		14.0/33	16.3/32	18.1/30	19.6/29	20.8/28	21.7/27	22.3/26	22.8/25										
24		14.3/34	16.6/33	18.5/32	20.1/31	21.3/30	22.3/29	23.1/27	23.6/26										
25		14.6/36	17.0/35	18.9/34	20.6/32	21.9/31	22.9/30	23.8/29	24.4/28										
26		14.9/37	17.3/36	19.3/35	21.0/34	22.4/33	23.6/32	24.5/31	25.2/29	25.6/28									
27		15.1/39	17.6/38	19.7/37	21.5/36	22.9/34	24.1/33	25.1/32	25.9/31	26.4/30									
28		15.2/41	17.9/39	20.1/38	21.9/37	23.4/36	24.7/35	25.7/34	26.6/33	27.2/31	27.7/30								
29		15.6/42	18.2/41	20.4/40	22.3/39	23.9/38	25.2/36	26.3/35	27.3/34	28.0/33	28.5/32								
30		15.9/44	18.5/42	20.8/41	22.7/40	24.4/39	25.8/38	26.9/37	27.9/36	28.7/35	29.3/33	29.7/32							
32		16.3/47	19.1/46	21.5/45	23.5/43	25.3/42	26.8/41	28.1/40	29.1/39	30.0/38	30.8/37	31.3/35	31.7/34						
34		16.8/50	19.7/49	22.1/48	24.2/47	26.1/45	27.7/44	29.1/43	30.3/42	31.3/41	32.2/40	32.8/39	33.4/37	33.7/36					
36		17.2/53	20.2/52	22.7/51	25.0/50	26.9/49	28.6/47	30.1/46	31.4/45	32.5/44	33.5/43	34.3/42	34.9/41	35.4/39	35.8/38				
38		17.6/56	20.7/55	23.3/54	25.6/53	27.7/52	29.5/51	31.1/49	32.5/48	33.7/47	34.7/46	35.6/45	36.4/44	37.0/43	37.4/41	37.8/40			
40		18.0/59	21.1/58	23.9/57	26.3/56	28.4/55	30.3/54	32.0/53	33.5/51	34.8/50	35.9/49	36.9/48	37.8/47	38.5/46	39.0/45	39.5/43	39.8/42		
42		18.3/63	21.6/61	24.4/60	26.9/59	29.1/58	31.1/57	32.8/56	34.4/55	35.8/53	37.0/52	38.1/51	39.1/50	39.9/49	40.5/48	41.1/47	41.5/45		
44		18.7/66	22.1/65	25.0/63	27.5/62	29.8/61	31.8/60	33.7/59	35.3/58	36.8/57	38.1/55	39.3/54	40.3/53	41.2/52	42.0/51	42.6/50	43.1/49		
46		19.1/69	22.5/68	25.5/67	28.1/65	30.5/64	32.6/63	34.5/62	36.2/61	37.8/60	39.2/59	40.4/57	41.5/56	42.5/55	43.3/54	44.1/53	44.7/52		
48		19.4/72	22.9/71	26.0/70	28.7/69	31.1/67	33.3/66	35.3/65	37.1/64	38.7/63	40.1/62	41.5/61	42.7/59	43.7/58	44.6/57	45.5/56	46.2/55		
50			23.3/74	26.4/73	29.2/72	31.7/71	34.0/69	36.0/68	37.9/67	39.6/66	41.1/65	42.5/64	43.8/63	44.9/61	45.9/60	46.8/59	47.6/58		
52					29.7/75	32.3/74	34.6/73	36.7/71	38.7/70	40.4/69	42.0/68	43.5/67	44.8/66	46.0/65	47.1/63	48.1/62	48.9/61		
54							35.3/76	37.4/75	39.4/73	43.1/72	42.9/71	44.4/70	45.8/69	47.1/68	48.3/67	49.3/65	50.2/64		
56							35.9/79	38.1/78	40.2/77	42.1/75	43.8/74	45.4/73	46.8/72	48.2/71	49.4/70	50.5/69	51.5/67		
58								38.8/81	40.9/80	42.8/79	44.6/77	46.3/76	47.8/75	49.2/74	50.5/73	55.6/72	52.7/71		
60										43.6/82	45.4/81	47.2/79	48.7/78	50.2/77	51.5/76	52.7/75	53.9/74		
62										44.3/85	46.2/84	48.0/83	49.6/81	51.1/80	52.5/79	53.8/78	55.0/77		
64												48.8/86	50.5/85	52.1/83	53.5/82	54.9/81	56.1/80		
66														53.0/87	54.5/85	55.9/84	57.2/83		
68															55.4/89	56.9/87	58.2/86		
70																	57.8/91	59.2/89	
72																		60.2/93	



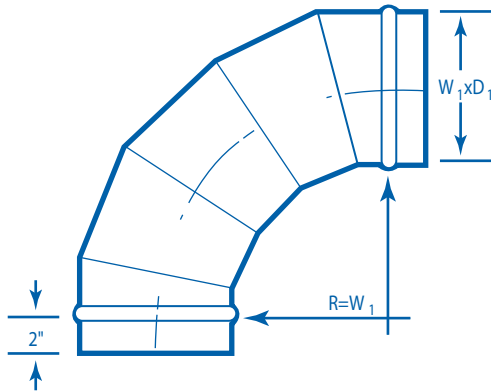
Hard Bend



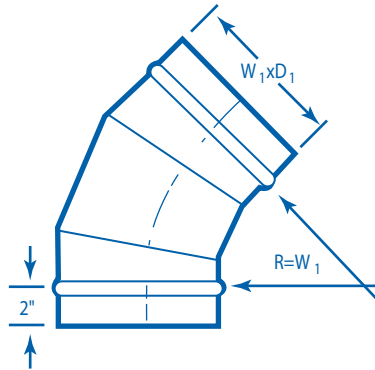
Easy Bend



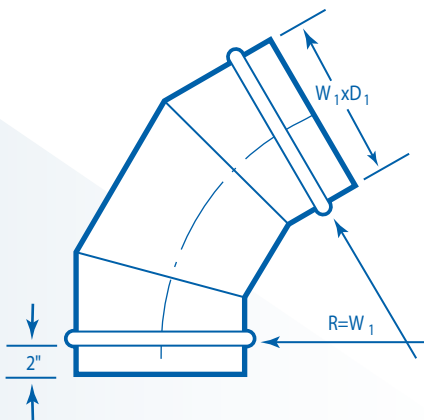
90° 5-Piece Elbow



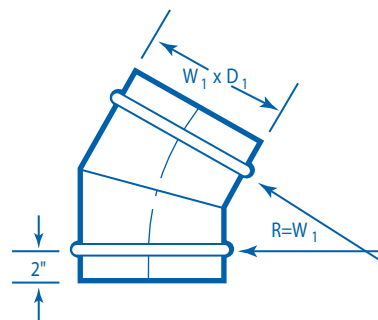
45° 3-Piece Elbow



60° 3-Piece Elbow

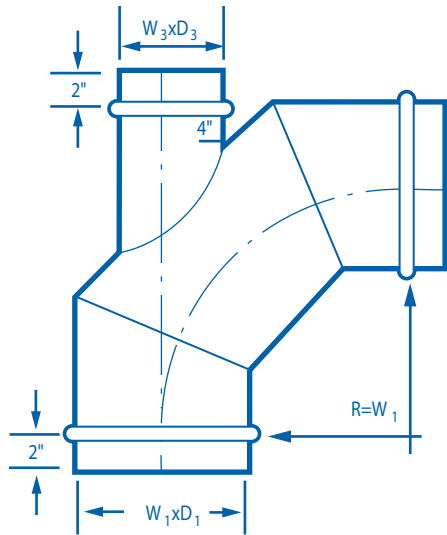


22½° and 30° 2-Piece Elbow

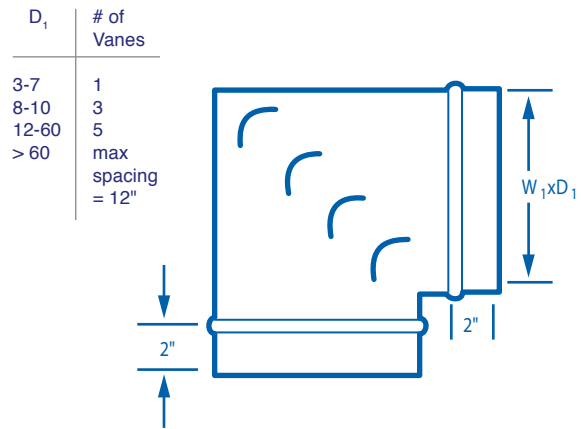




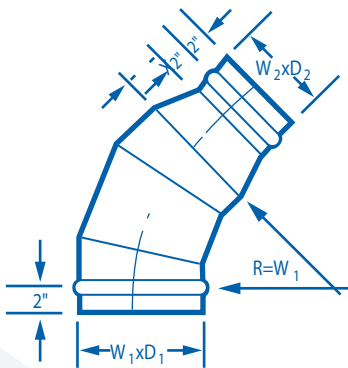
### 90° 3-Piece Elbow with Heel Tap



### 90° 2-Piece Mitered Elbow With or without vanes

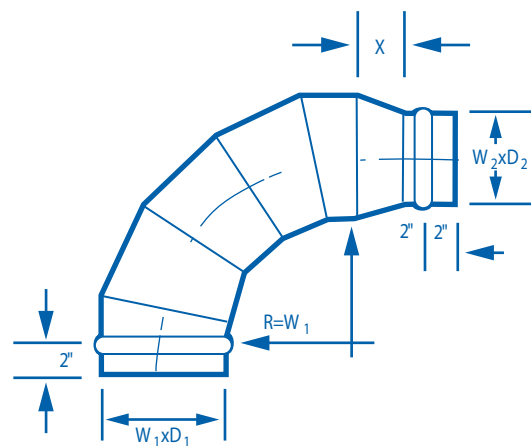


### 45° 3-Piece Elbow with Reducer



$X = W_1 - W_2$   
4" Minimum

### 90° 5-Piece Elbow with Reducer

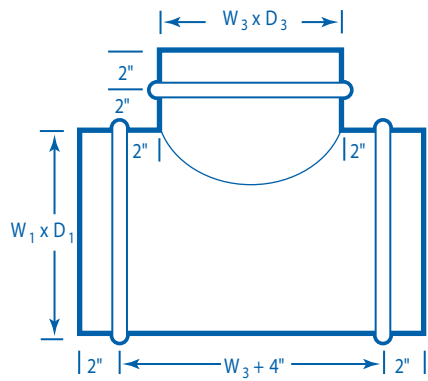


$X = W_1 - W_2$   
4" Minimum

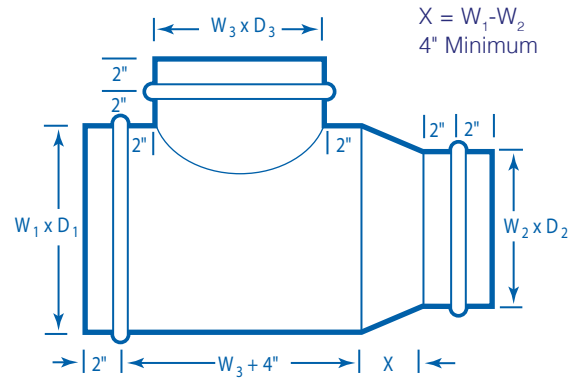


Straight Tees

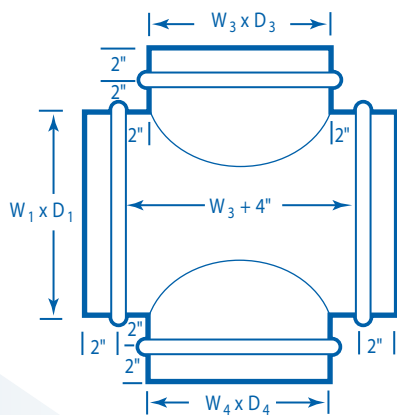
Tee



Reducing Tee

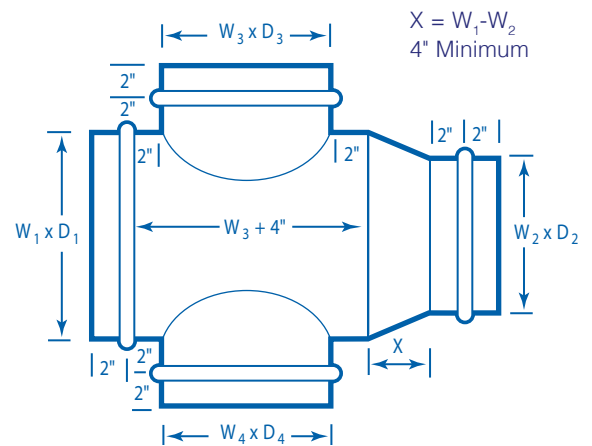


Cross Tee



$W_3 \geq W_4$

Reducing Cross Tee

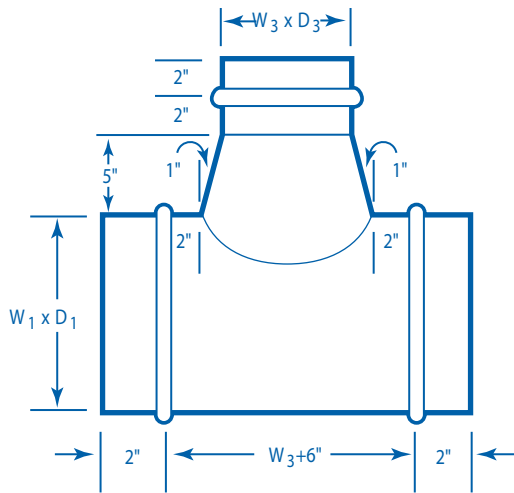


$W_3 \geq W_4$

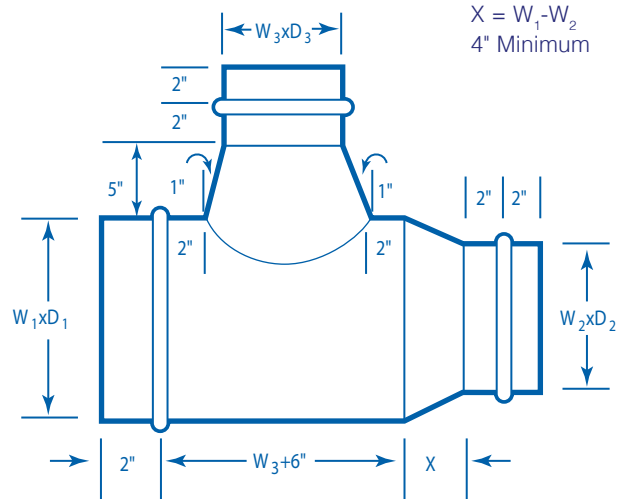


Conical Tees

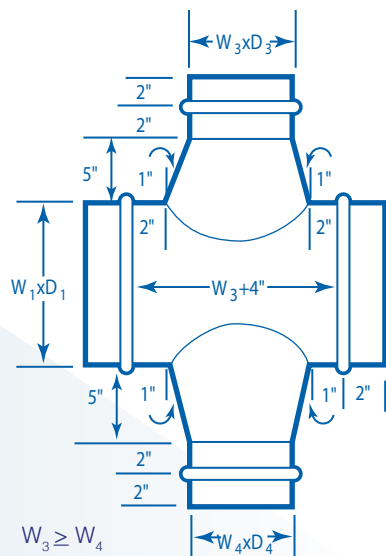
Combination Tee



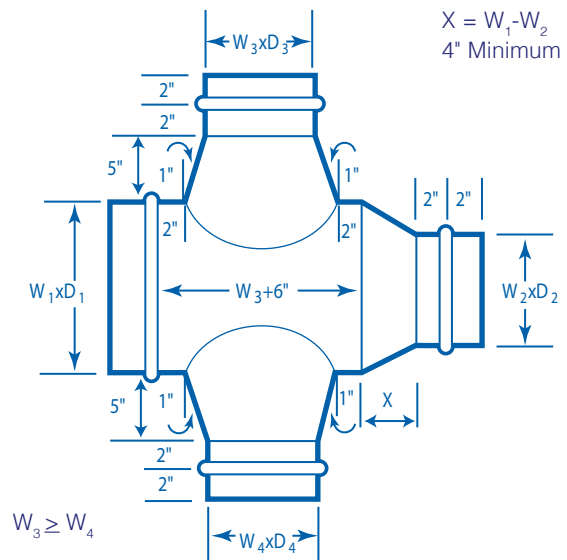
Reducing Conical Tee



Conical Cross



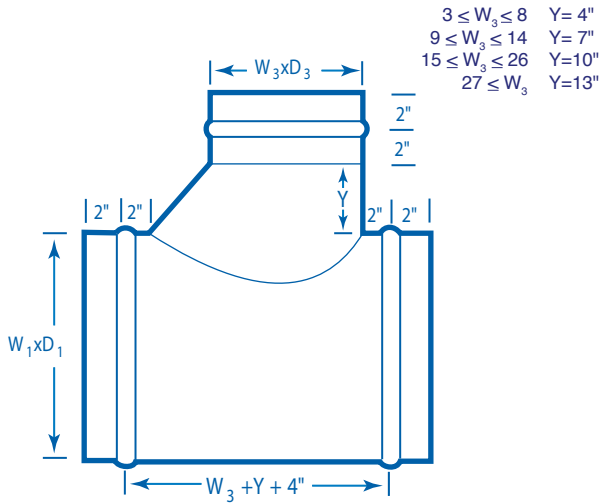
Reducing Conical Cross



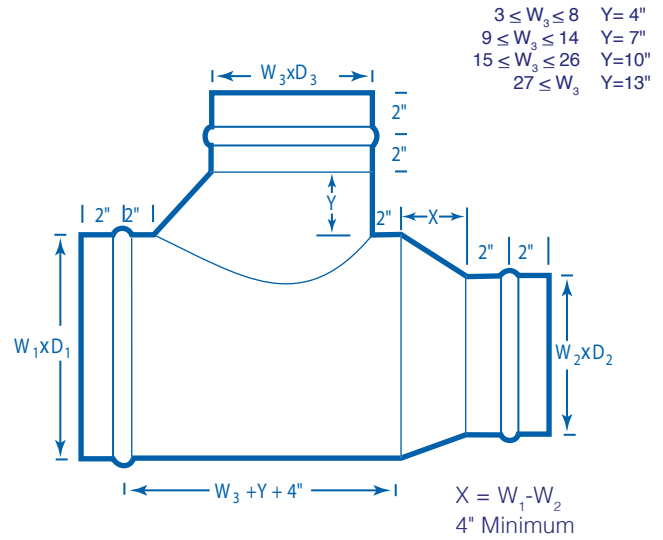


## Combination Tees

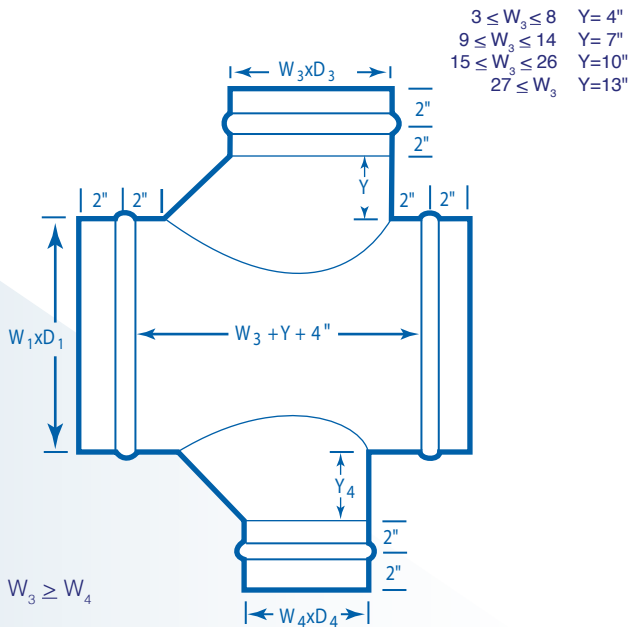
### Combination Tee



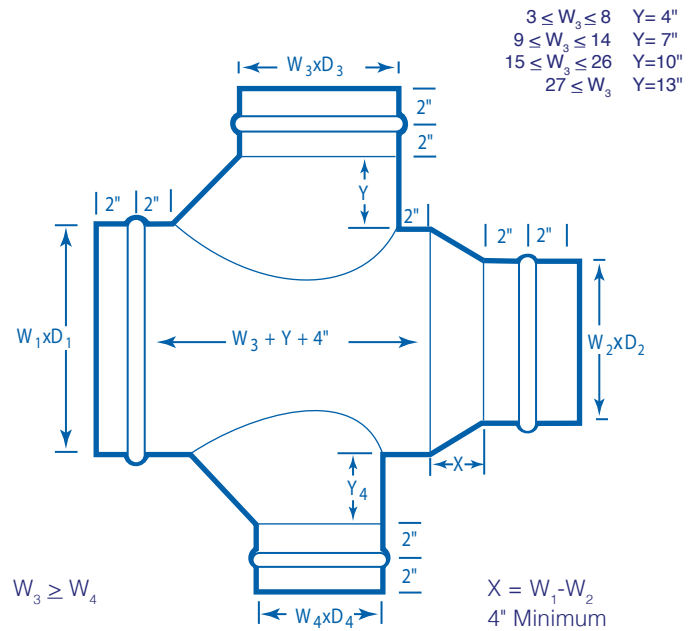
### Reducing Combination Tee



### Combination Cross



### Reducing Combination Cross

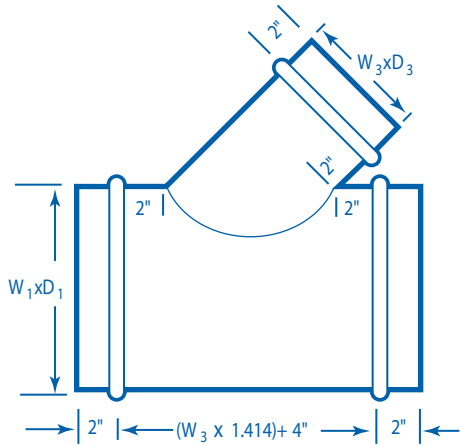




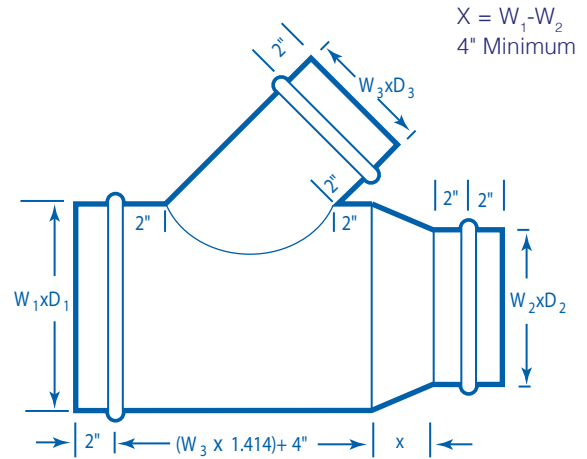


Straight Laterals

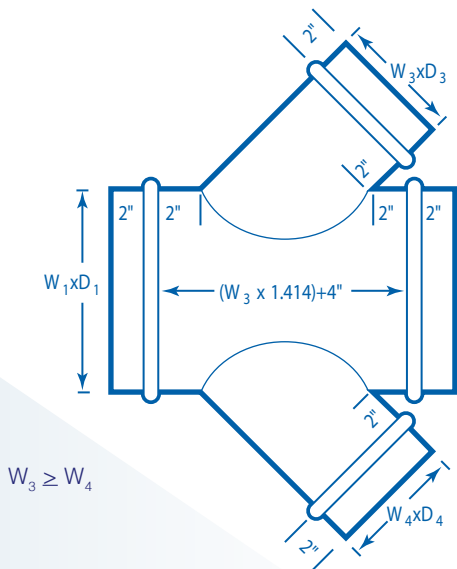
Lateral 45°



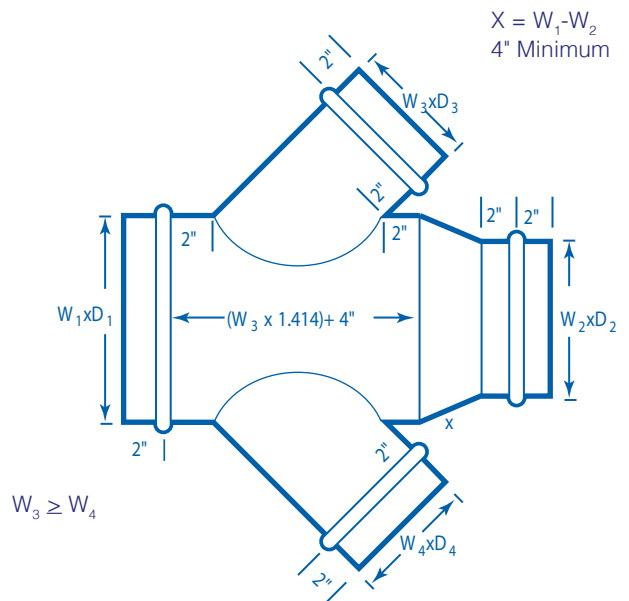
Reducing Lateral 45°



Lateral Cross 45°



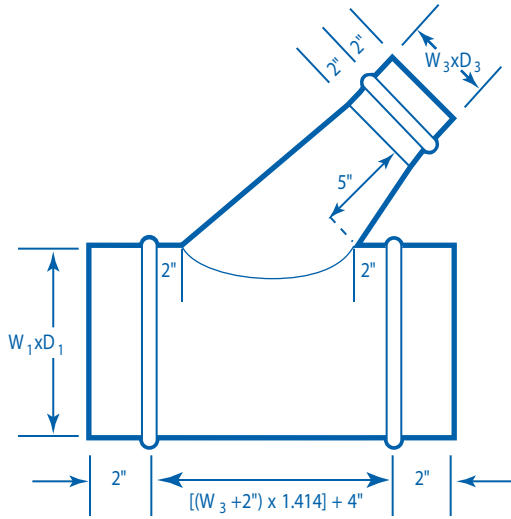
Reducing 45° Lateral Cross



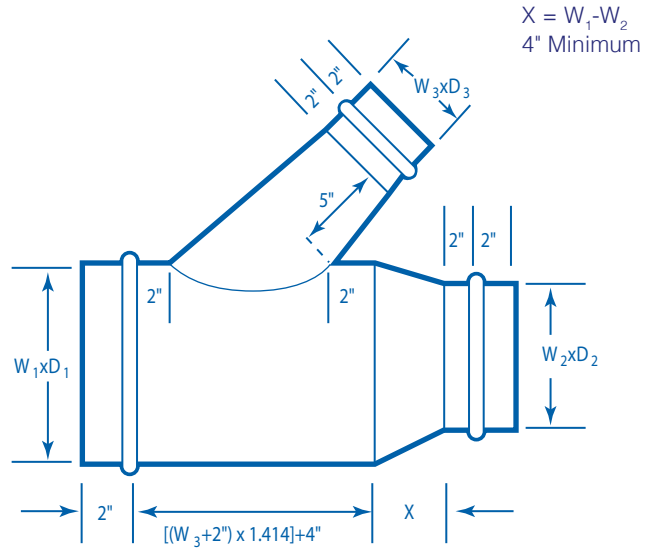


Conical Laterals

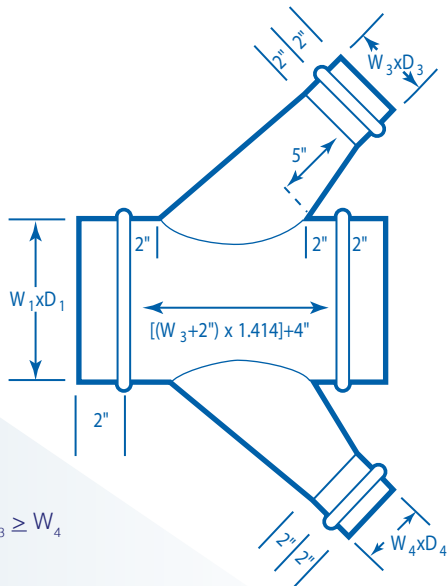
Conical Lateral 45°



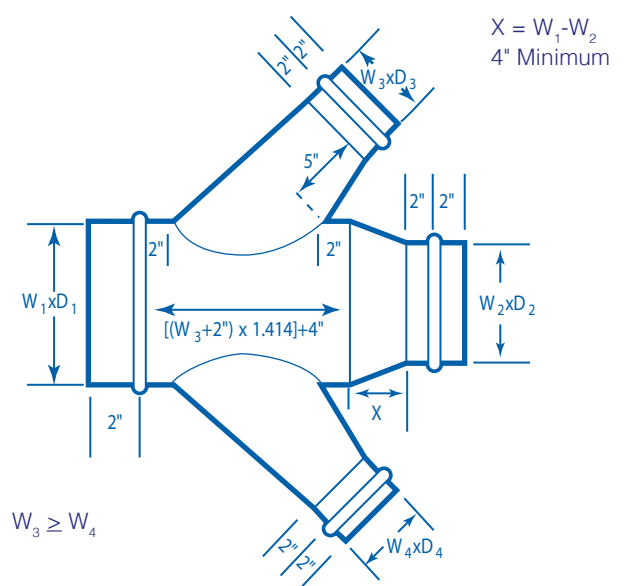
Reducing Conical Lateral 45°



Conical Lateral 45° Cross

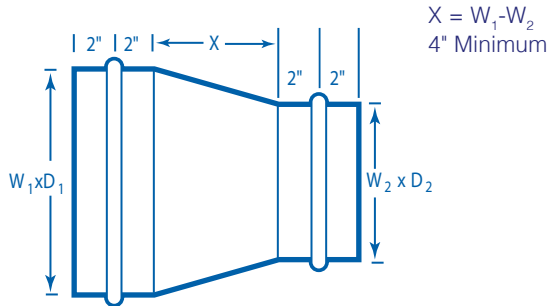


Reducing Conical 45° Lateral Cross

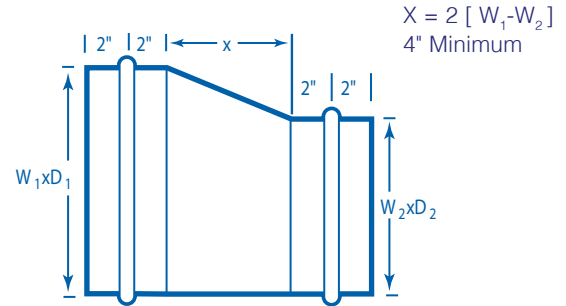




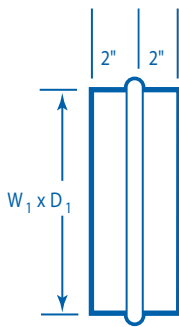
Concentric Reducer



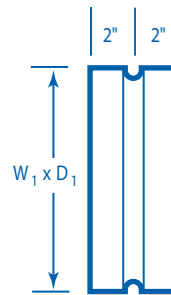
Eccentric Reducer



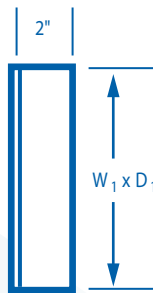
Pipe Couplings



Fitting Couplings



Spun End Cap

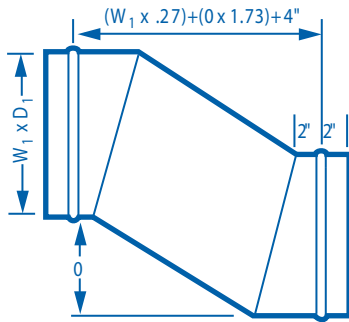


End Cap

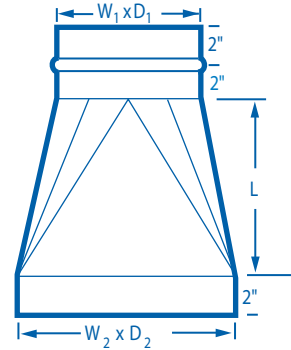




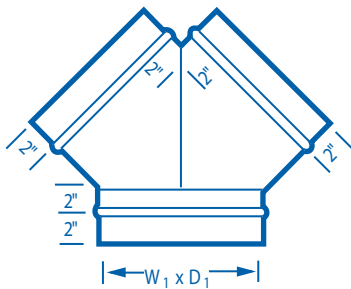
### 30° Offset



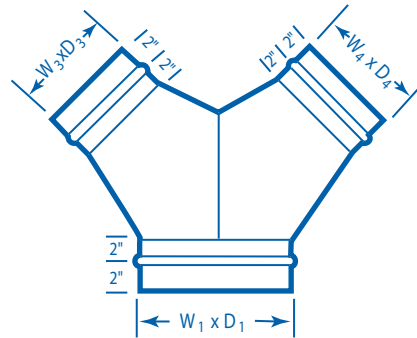
### Rectangle to Oval



### Wye Branch



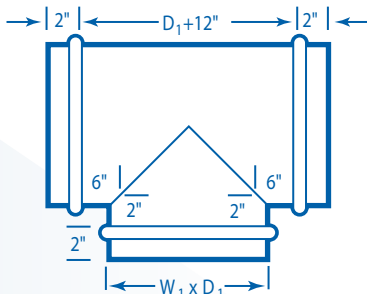
### Reducing Wye Branch



### Bullhead Tee

With or without vanes

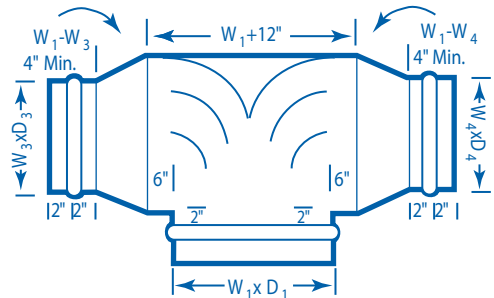
$W_1$	# of Vanes
3-7	1
8-10	3
12-60	5
> 60	max spacing = 12"



### Reducing Bullhead Tee

With or without vanes

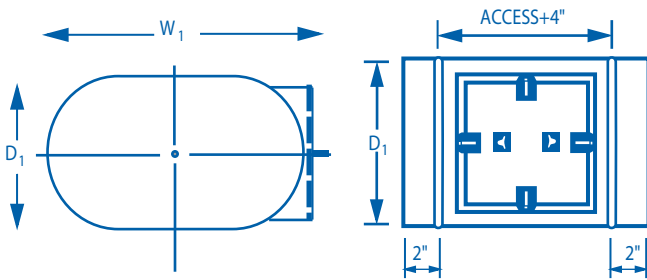
$W_1$	# of Vanes
3-7	1
8-10	3
12-60	5
> 60	max spacing = 12"





**Rectangular Access Section**

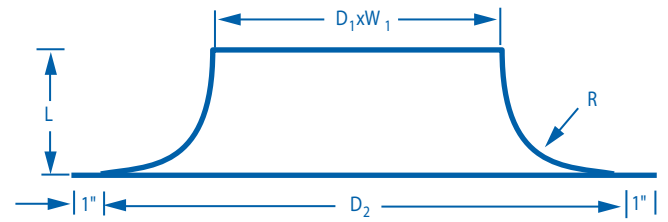
Also available as shop-installed SRTA or field-installed accessory FRTA.



D <sub>1</sub>	Access Size
8" to 12"	8" x 8"
13" to 17"	12" x 12"
18" and over	18" x 18"

Negative and positive pressure.

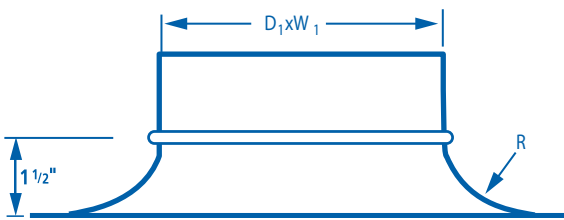
**Spun Bellmouth**



D <sub>1</sub>	D <sub>2</sub>	L	R	D <sub>1</sub>	D <sub>2</sub>	L
13"	19"	4"	3"	12"	14"	3½"
14"	21"	4"	3"	14"	16"	3½"
15"	24"	5"	4"	16"	18"	3½"
16"	26"	5"	4"	18"	20"	3½"
17"	25"	5"	4"	20"	22"	3½"
18"	26"	5"	4"	22"	24"	3½"
20"	28"	5"	4"	24"	26"	3½"
21"	29"	5"	4"	26"	28"	3½"
22"	32"	6"	5"	28"	30"	3½"
23"	33"	6"	5"	30"	32"	3½"
24"	34"	6"	5"	32"	34"	3½"
26"	38"	7"	6"	34"	36"	3½"
28"	40"	7"	6"	36"	38"	3½"
30"	42"	7"	6"	38"	40"	3½"
32"	46"	8"	7"	40"	42"	3½"
34"	48"	8"	7"	42"	44"	3½"
36"	50"	8"	7"	44"	46"	3½"
38"	52"	8"	7"	46"	48"	3½"
40"	56"	9"	8"	48"	40"	3½"
42"	58"	9"	8"	50"	52"	3½"
44"	60"	9"	8"	52"	54"	3½"
46"	62"	9"	8"	54"	56"	3½"
48"	64"	9"	8"	56"	58"	3½"
				58"	60"	3½"
				60"	62"	3½"

**Pressed Bellmouth**

Galvanized only



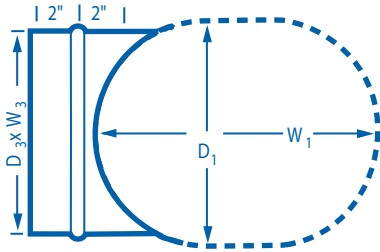
D <sub>1</sub>	R
4"	.394"
5"	.472"
6"	.787"
7"	1.0"
8"	1.0"
9"	1.0"
10"	1.0"
12"	1.0"



## Accessories

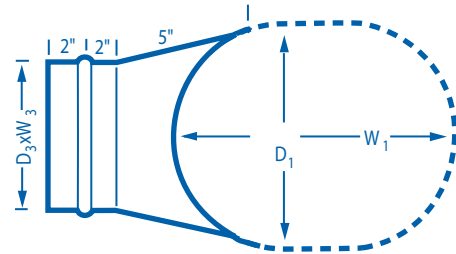
Shop Installed / Field Installed

### Shop/Field Installed Tap



Standard flange is 1/2".  
2" flange is also available.

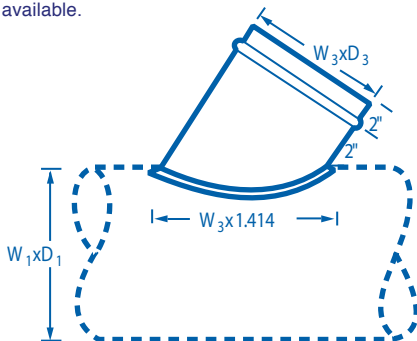
### Shop/Field Installed Conical Tap



Standard flange is 1/2".  
2" flange is also available.

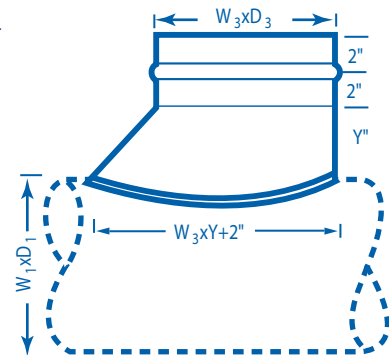
### Shop/Field Installed Lateral Tap

Standard flange is 1/2".  
2" flange is also available.

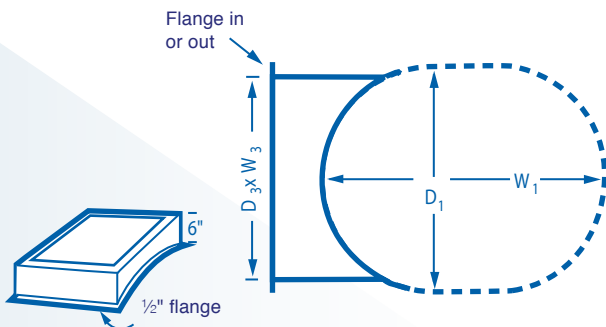


### Shop/Field Installed Combination Tap

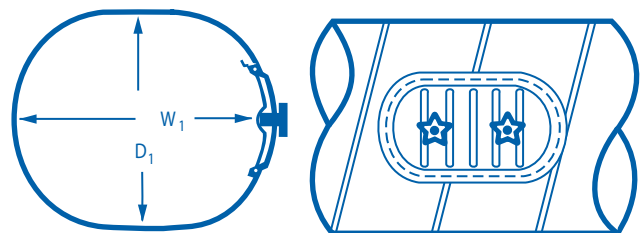
Standard flange is 1/2".  
2" flange is also available.



### Shop/Field Rectangle on Round



### Field Installed Standard Door



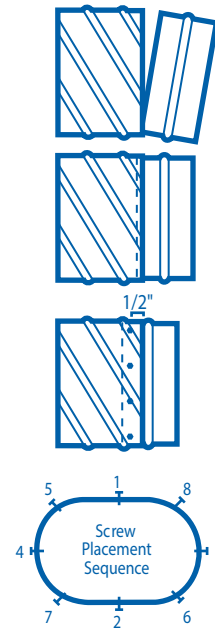


### SINGLE WALL SLIP JOINT

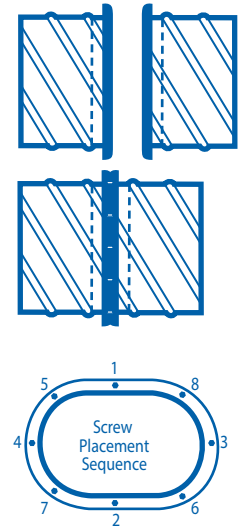
Metal fittings are sized to slip into, and should be used with, spiral duct. A tight fit is necessary to minimize friction loss and to promote proper sealing. Care should be taken during handling and installation to avoid dents and distortions that can cause improper fit or difficult installation.

1. Bring the bottom of the fitting collar into the spiral duct at a slight angle.
2. Carefully work the rest of the collar into the spiral duct until approximately one inch of the collar remains exposed between the end of the spiral duct and the stop bead of the fitting collar. Do not use a screwdriver or knife to help make the connection. Apply pressure with the heel of your hand or with your fist to help slip the fitting into the duct.
3. Apply duct sealer to this exposed area.
4. Push the fitting into the spiral duct until the stop bead meets the edge of the spiral duct.
5. Fasten the fitting into the spiral duct with screws per the chart at right. The screws should be evenly spaced around the perimeter of the connection, approximately  $\frac{1}{2}$ " back from the stop bead. Placement of the screws should be opposite of each other as demonstrated in the diagram.

Installation of Slip Joint Connector



Installation of Flange Connector



### FLANGE

Flanges come factory-mounted on fittings and spiral duct. Flanges are standard for all duct 61" in diameter, but are available in smaller sizes.

1. Place closed cell neoprene gasket on the face of one of the mating flanges.
2. Push the flanges together keeping the edges of the flanges aligned
3. Clamp the flanges to help hold them in place.
4. Screw the flanges together with self-tapping screws per the chart at right. The screws should be evenly spaced around the perimeter of the connection. Placement of the screws should be opposite of each other as demonstrated in the diagram.

Duct Perimeter Round Equiv.	# of Screws	
	Slip Fit	Flange
4"-9"	3	NA
10"	3	4
12"-16"	3	6
18"-20"	4	8
22"-26"	5	10
28"-30"	6	12
32"-36"	7	14
38"-42"	8	16
44"-46"	9	18
48"-52"	10	20
54"-56"	11	22
58"-60"	12	24
62"-66"	NA	26
68"-72"	NA	28
74"-76"	NA	30
78"-84"	NA	32