

Single Wall Oval Spiral Duct and Fittings Construction Standards

Standard Fitting Construction

Gauge selection for G90 galvanized steel (ASTM A653) and paint grip steel (A40). 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																
	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	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

MAJOR AXIS

Actual Spiral Oval Pipe Sizes

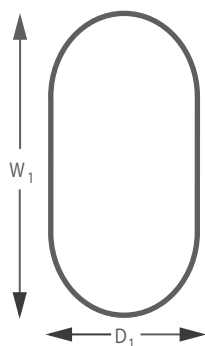
Initial Spiral Size	MINOR AXIS																
	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36
8	10.28																
9	11.85	10.71															
10	13.42	12.28	11.14														
11	15.00	13.85	12.71														
12	16.57	15.42	14.28	13.14													
13	18.14	17.00	15.85	14.71	13.57												
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
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

MAJOR AXIS

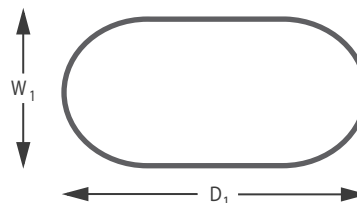
Example: To convert 18"x34" oval to a smaller size, first note the equivalent round size listed as 25.7". This means that 18"x34" oval spiral will have the same friction loss as 25.7" round spiral. Next, find 25.7" for an oval with a smaller minor axis. Two choices are 16"x38" with an equivalent round 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.

Initial Spiral Size	MINOR 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				

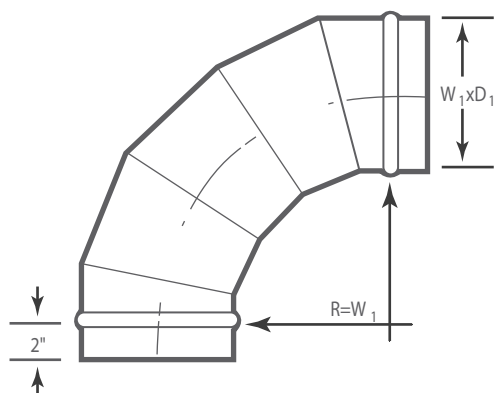
Hard Bend



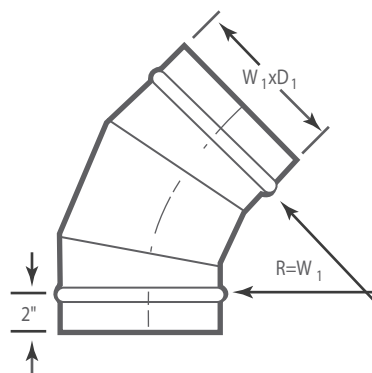
Easy Bend



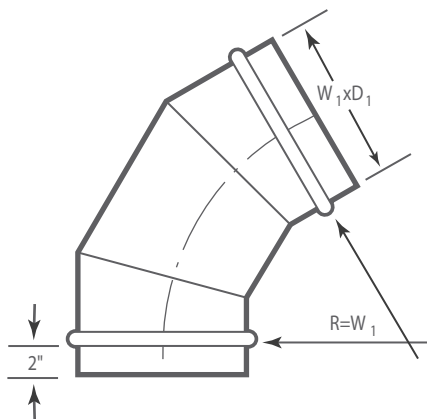
90° 5-Piece Elbow



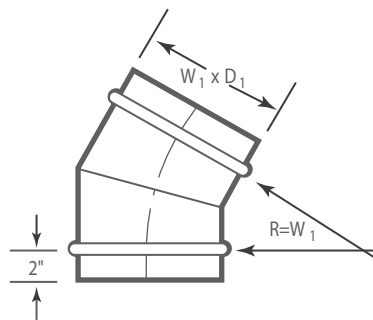
45° 3-Piece Elbow



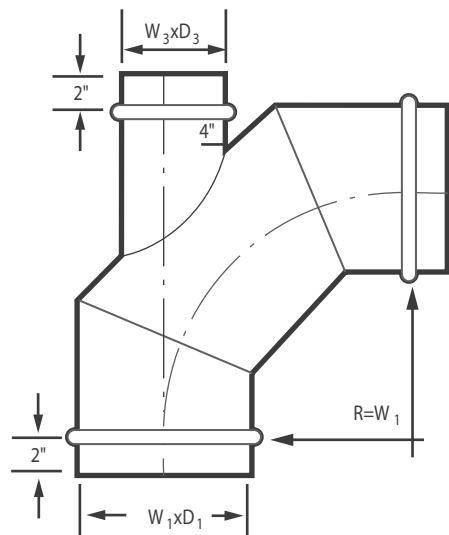
60° 3-Piece Elbow



22½° and 30° 2-Piece Elbow

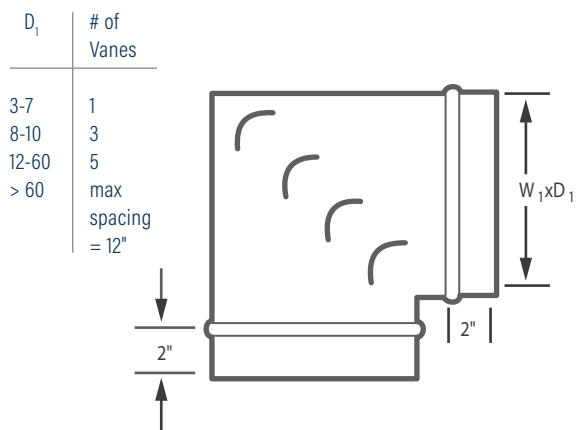


90° 3-Piece Elbow with Heel Tap

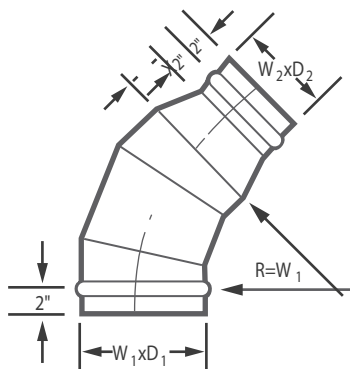


90° 2-Piece Mitered Elbow

With or without vanes



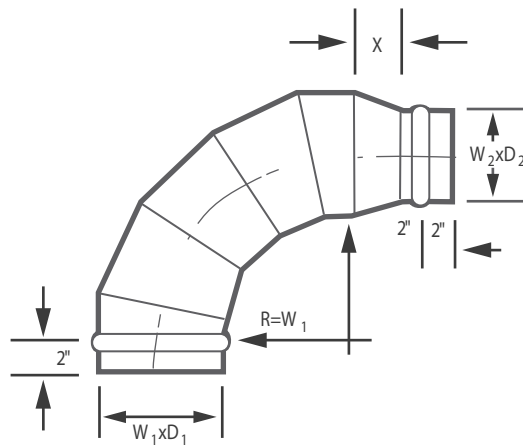
45° 3-Piece Elbow with Reducer



$$X = W_1 - W_2$$

4" Minimum

90° 5-Piece Elbow with Reducer

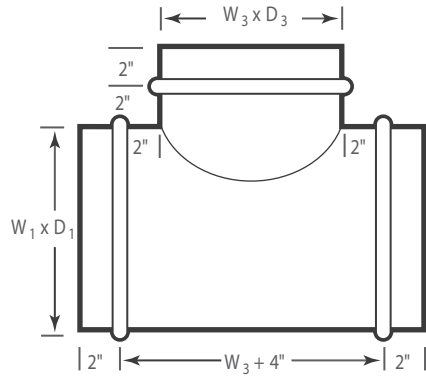


$$X = W_1 - W_2$$

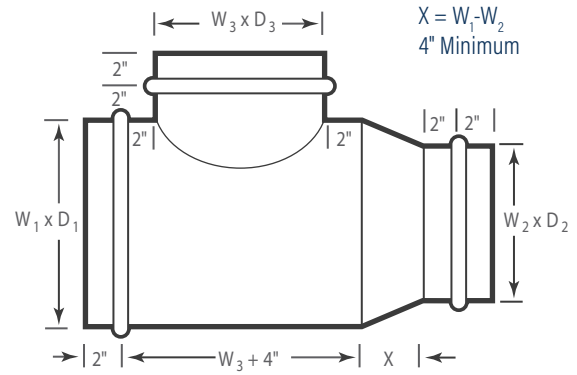
4" Minimum

Straight Tees

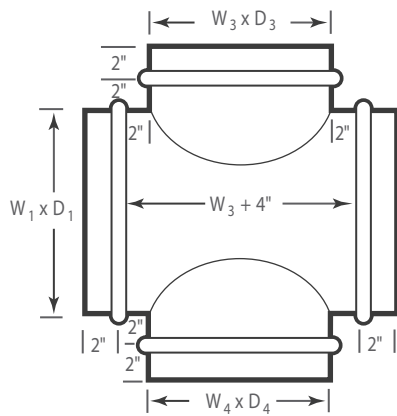
Tee



Reducing Tee

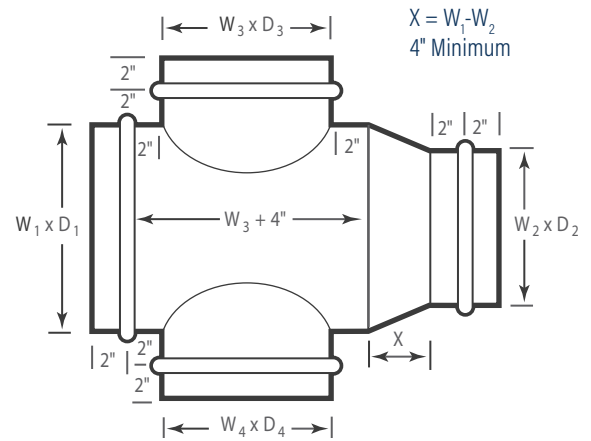


Cross Tee



$$W_3 \geq W_4$$

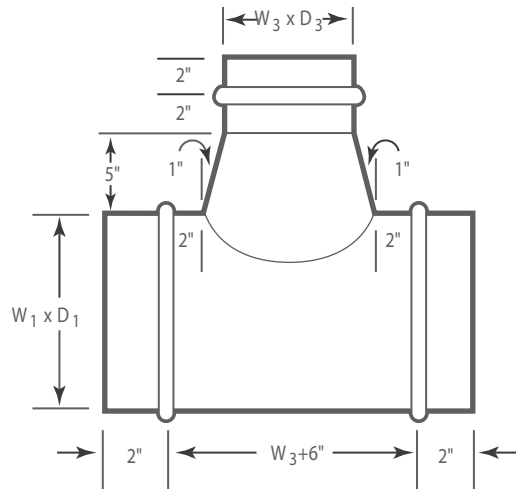
Reducing Cross Tee



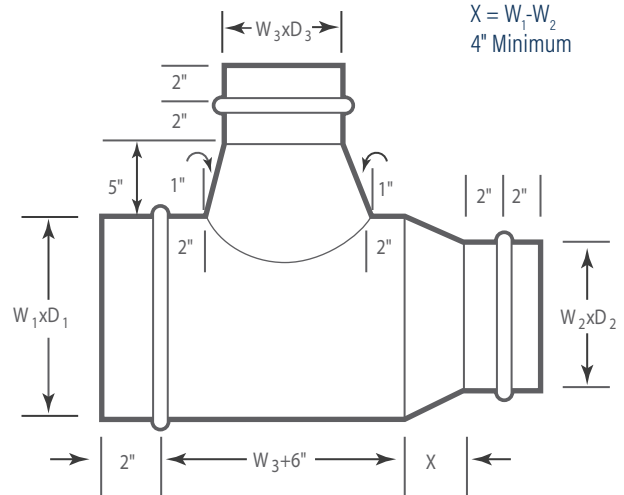
$$W_3 \geq W_4$$

Conical Tees

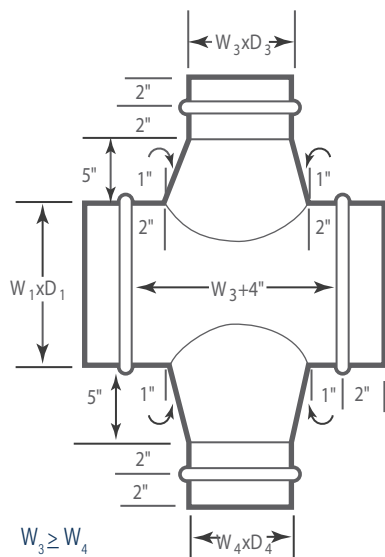
Combination Tee



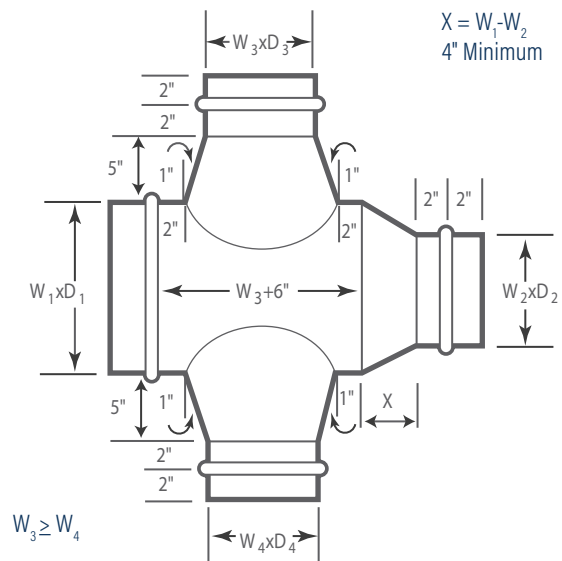
Reducing Conical Tee



Conical Cross

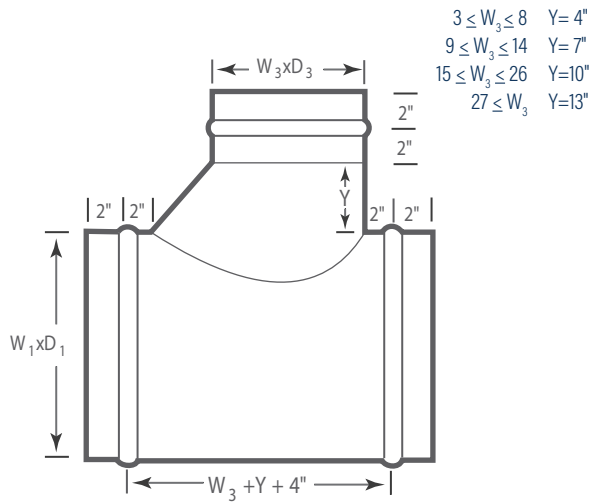


Reducing Conical Cross

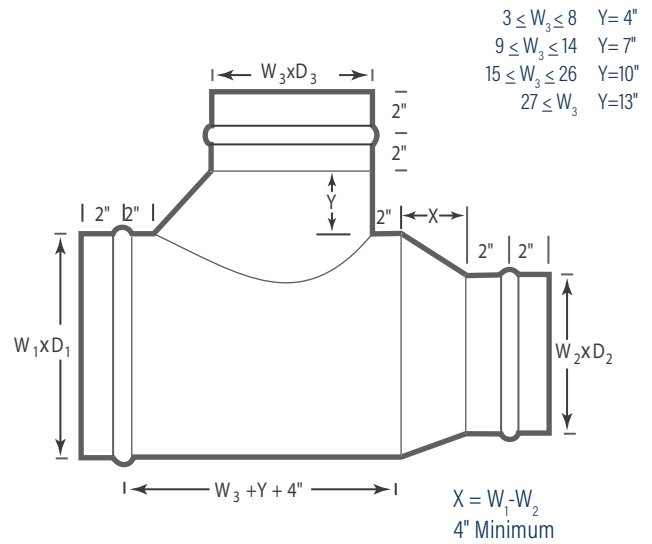


Combination Tees

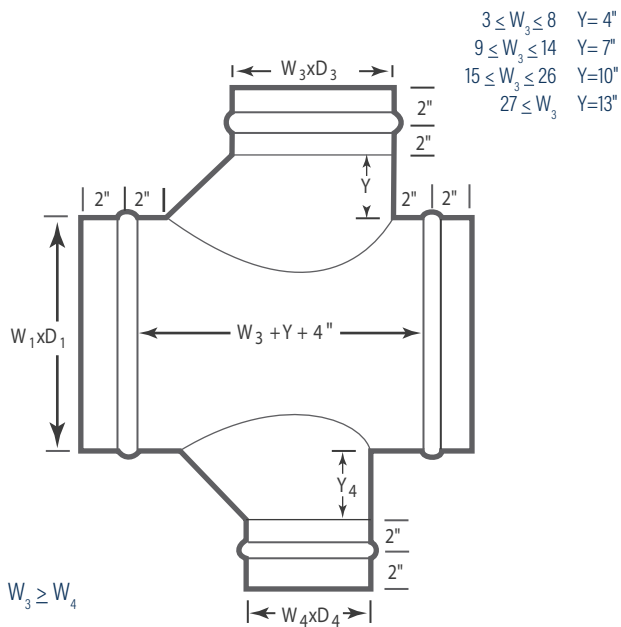
Combination Tee



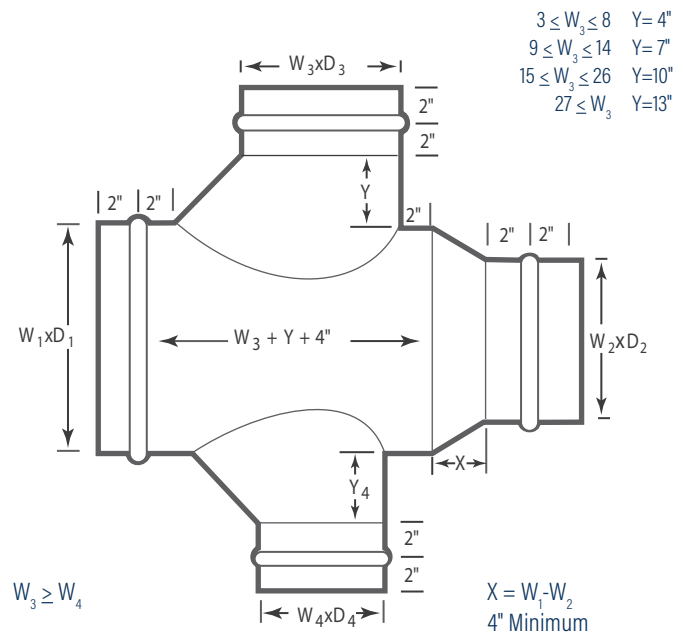
Reducing Combination Tee



Combination Cross

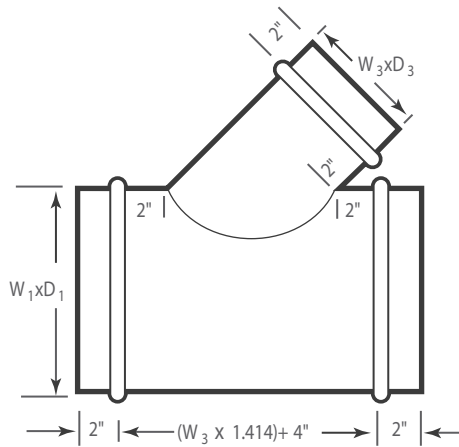


Reducing Combination Cross

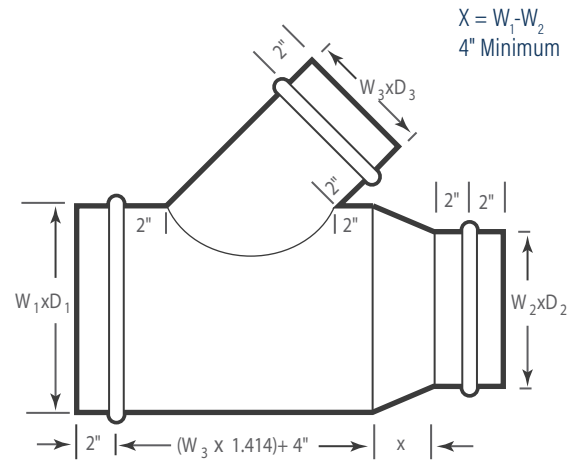


Straight Laterals

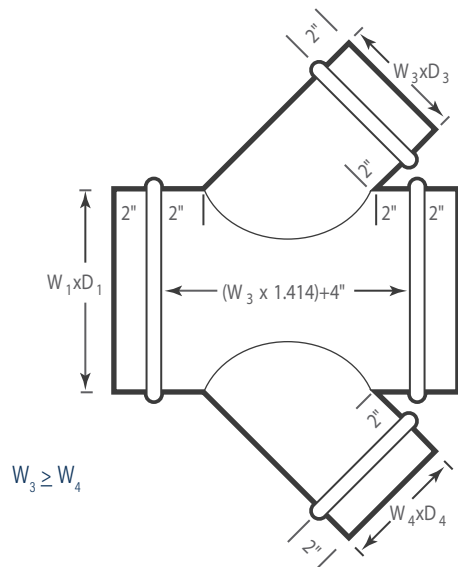
Lateral 45°



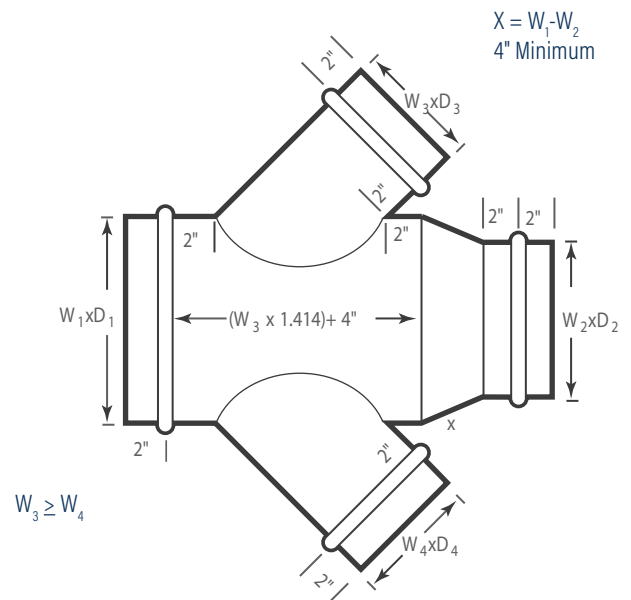
Reducing Lateral 45°



Lateral Cross 45°

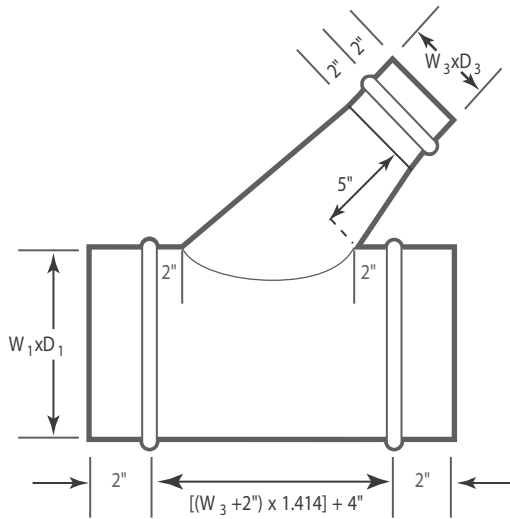


Reducing 45° Lateral Cross

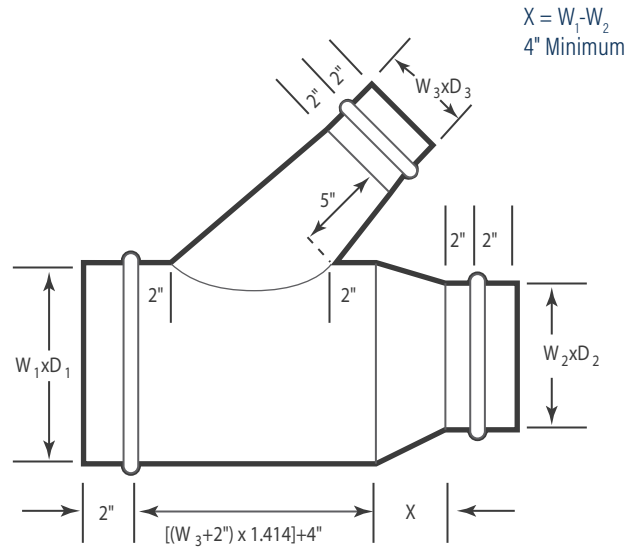


Conical Laterals

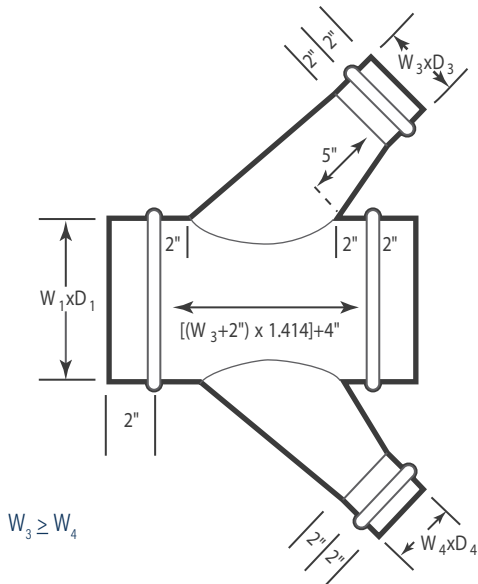
Conical Lateral 45°



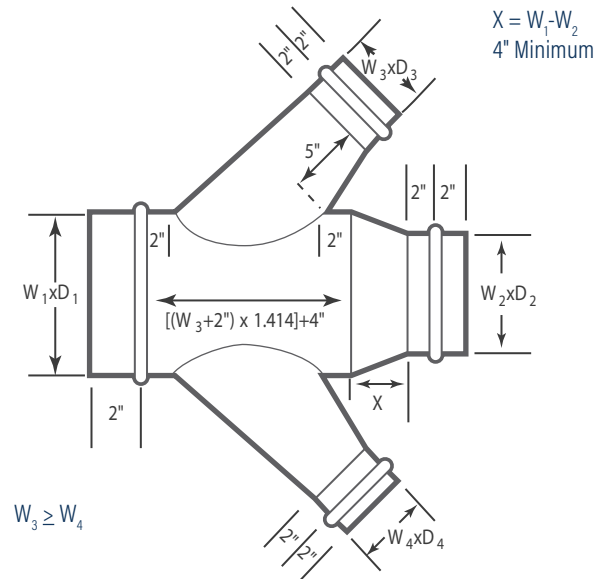
Reducing Conical Lateral 45°



Conical Lateral 45° Cross

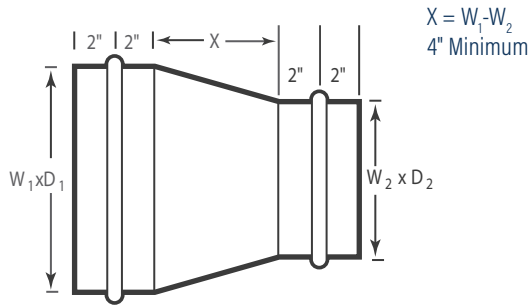


Reducing Conical 45° Lateral Cross

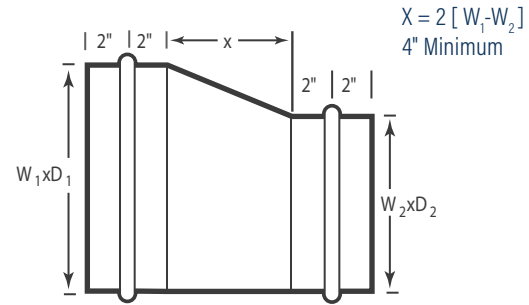


Miscellaneous

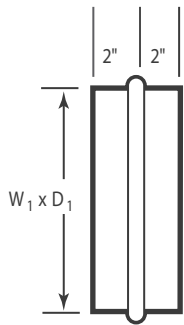
Concentric Reducer



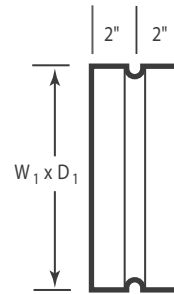
Eccentric Reducer



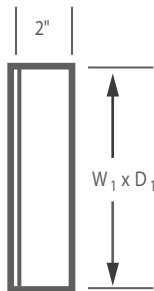
Pipe Couplings



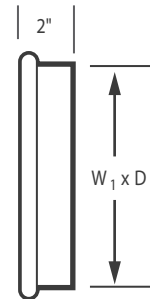
Fitting Couplings



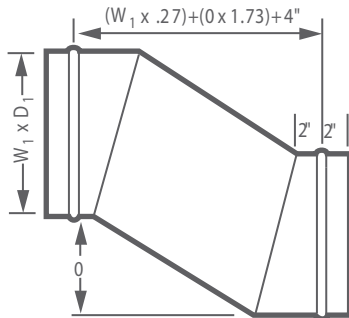
Spun End Cap



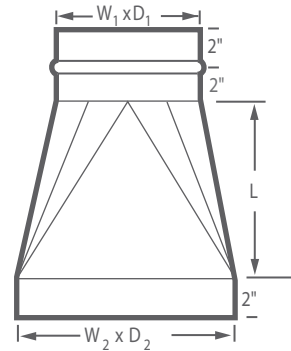
End Cap



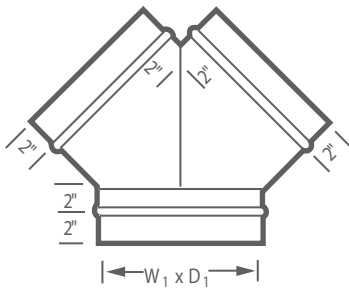
30° Offset



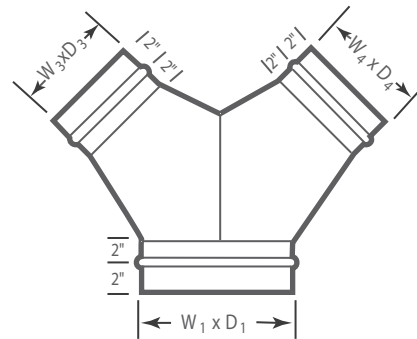
Rectangle to Oval



Wye Branch

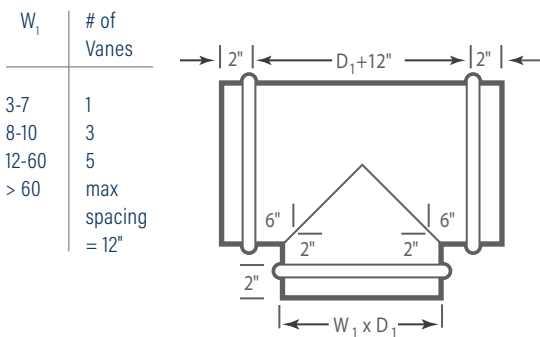


Reducing Wye Branch



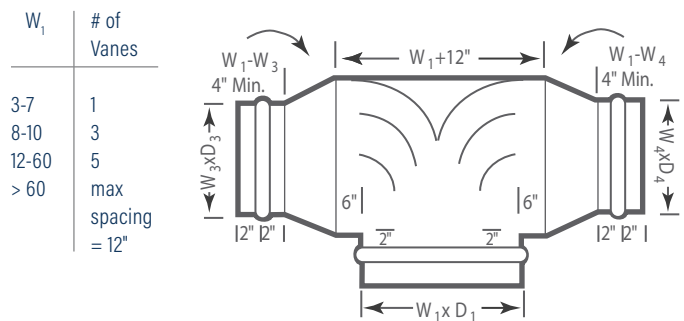
Bullhead Tee

With or without vanes



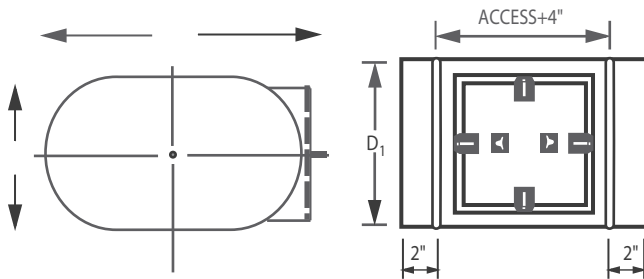
Reducing Bullhead Tee

With or without vanes



Rectangular Access Section

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

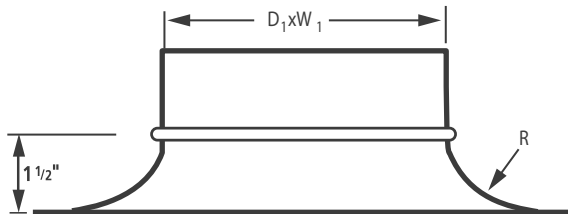


D ₁	Access Size
8" to 12"	8" x 8"
13" to 17"	12" x 12"
18" and over	18" x 18"

Negative and positive pressure.

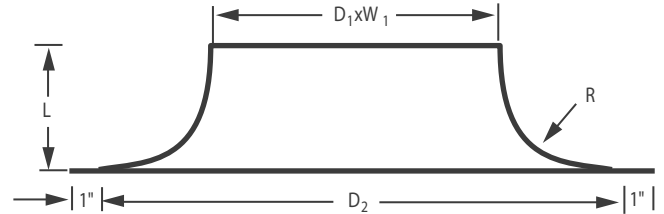
Pressed Bellmouth

Galvanized only



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

Spun Bellmouth

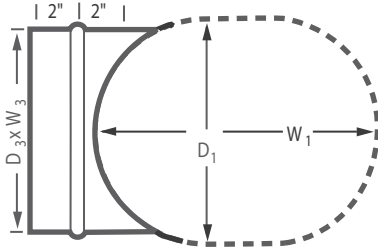


D ₁	D ₂	L	R	D ₁	D ₂	L
13"	19"	4"	3"	12"	14"	3 1/2"
14"	21"	4"	3"	14"	16"	3 1/2"
15"	24"	5"	4"	16"	18"	3 1/2"
16"	26"	5"	4"	18"	20"	3 1/2"
17"	25"	5"	4"	20"	22"	3 1/2"
18"	26"	5"	4"	22"	24"	3 1/2"
20"	28"	5"	4"	24"	26"	3 1/2"
21"	29"	5"	4"	26"	28"	3 1/2"
22"	32"	6"	5"	28"	30"	3 1/2"
23"	33"	6"	5"	30"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

Accessories

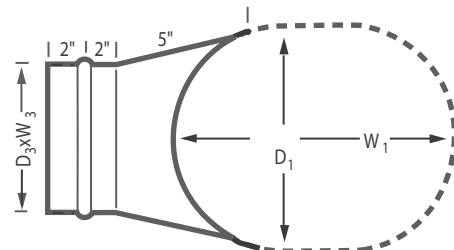
Shop Installed / Field Installed

Shop/Field Installed Tap



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

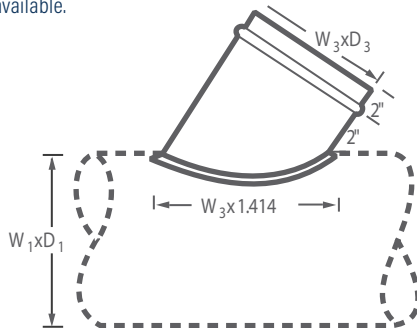
Shop/Field Installed Conical Tap



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

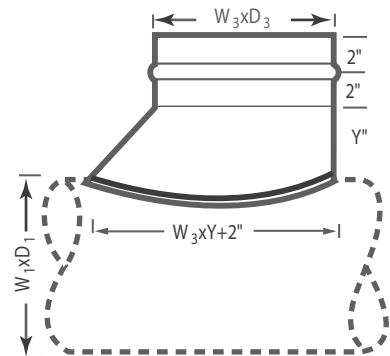
Shop/Field Installed Lateral Tap

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

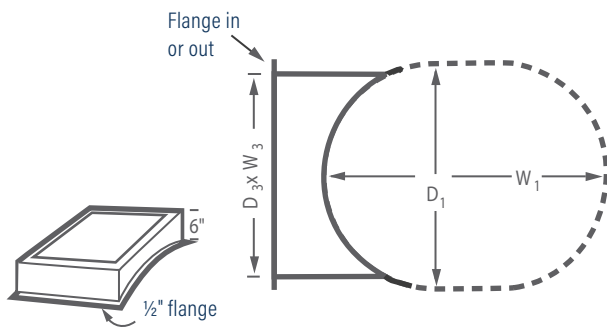


Shop/Field Installed Combination Tap

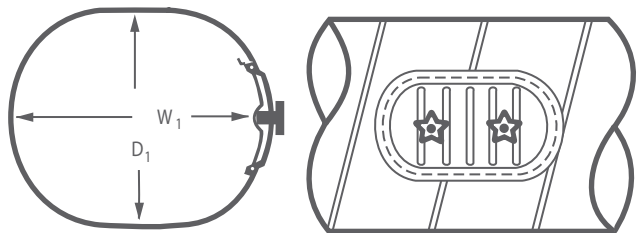
Standard flange is 1/2".
2" flange is also available.



Shop/Field Rectangle on Round



Field Installed Standard Door



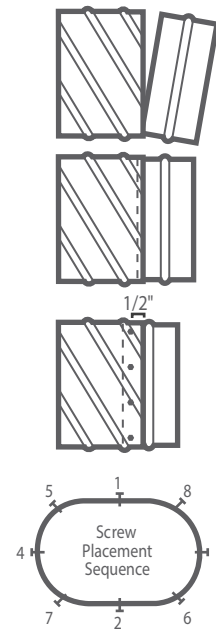
Installation

SINGLE WALL SLIP JOINT

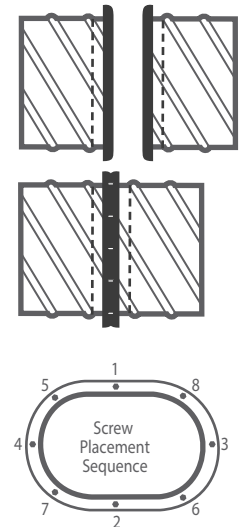
Metal fittings are sized to slip into, and should be used with, spiral duct. A tight fit is necessary to minimize friction loss and to promote proper sealing. Care should be taken during handling and installation to avoid dents and distortions that can cause improper fit or difficult installation.

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 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