



Single-Wall  
**FLAT OVAL**



# SPIRAL DUCT & FITTINGS



# Single-Wall FLAT OVAL

## SINGLE-WALL FLAT 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 galvanized duct is corrugated.

MAJOR AXIS	2005 SMACNA POSITIVE PRESSURE	
	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 FLAT OVAL DUCT 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	18											
19	28	26	25	24	23	22	21	20	19										
20	29	28	27	26	25	23	22	21	20	19									
21	31	30	28	27	26	25	24	23	22	21									
22	32	31	30	29	28	27	25	24	23	22									
23		33	32	30	29	28	27	26	25	24									
24		34	33	32	31	30	29	27	26	25									
25		36	35	34	32	31	30	29	28	27									
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						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									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																87	86		
70																	91	89	
72																		93	



# Single-Wall FLAT OVAL

## ACTUAL SPIRAL FLAT OVAL DUCT SIZES

INITIAL SPIRAL SIZE	MINOR AXIS																MAJOR AXIS
	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	
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						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									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																87.41	86.27
70																90.55	89.41
72																	92.55



# Single-Wall FLAT OVAL

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

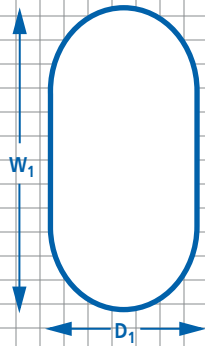
Example: Change 18" x 34" flat oval to a smaller size. To change the size, first note the equivalent round size listed for 18" x 34", it is 25.7". This means 18" x 34" flat oval spiral duct will have the same friction loss as 25.7" round spiral duct. Next, find 25.7" for a flat oval with a smaller minor axis. Two choices are 16" x 38", with an equivalent round of 25.8", or 14" x 45", with an equivalent round size of 26.1". Either choice would be acceptable. (See our website for automated calculations, or download our app "Equivalent Round".) The initial spiral diameter gets larger as the minor axis gets smaller, making the duct more expensive.

## NOMINAL SPIRAL FLAT OVAL DUCT SIZES AND ROUND EQUIVALENT

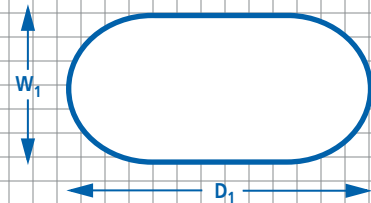
INITIAL SPIRAL DIA.	MINOR AXIS																MAJOR AXIS	
	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34		36
8	6.7/10																	
9	7.2/12	8.4/11																
10	7.6/13	9.0/12	9.8/11															
11	8.0/15	9.5/14	10.5/13															
12	8.3/17	10.0/15	11.2/14	11.8/13														
13	8.7/18	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						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									40.9/80	42.8/79	44.6/77	46.3/76	47.8/75	49.2/74	50.5/73	51.6/72	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															56.9/87	58.2/86	59.5/85	
70																57.8/91	59.2/89	
72																	60.2/93	

# Single-Wall Flat Oval ELBOWS

**HARD BEND**

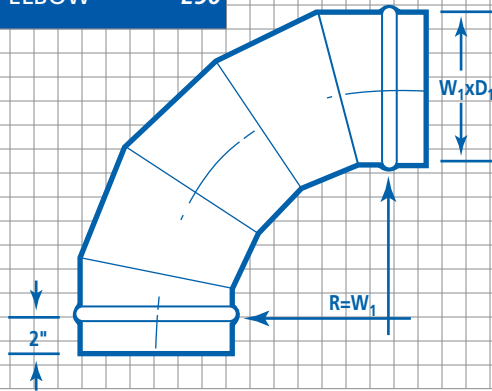


**EASY BEND**



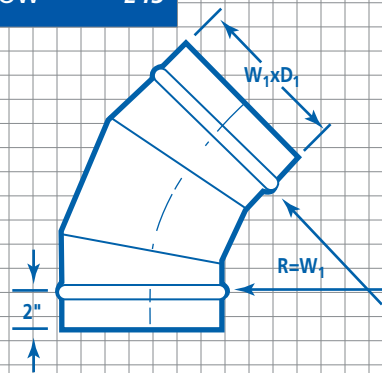
**90° 5-PC. ELBOW**

**E90**



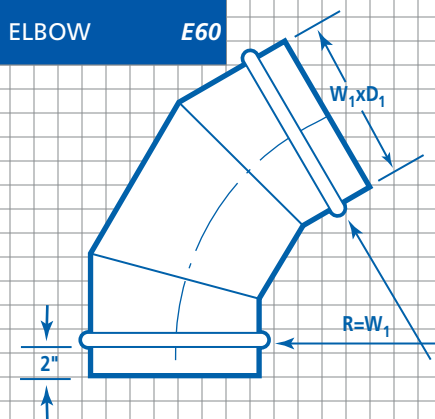
**45° 3-PC. ELBOW**

**E45**



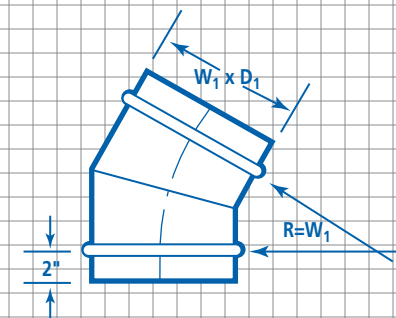
**60° 3-PC. ELBOW**

**E60**



**22 1/2° AND 30° 2-PC.  
ELBOW**

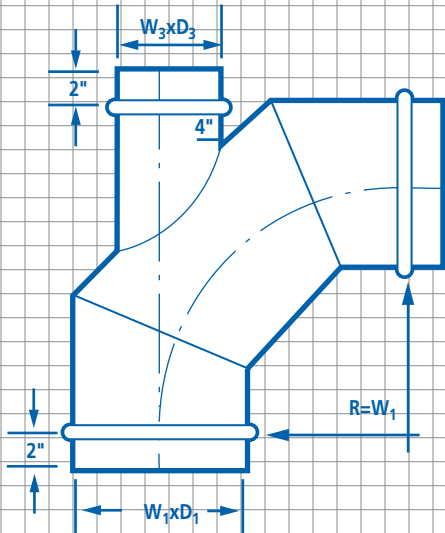
**E22/E30**





# Single-Wall Flat Oval ELBOWS

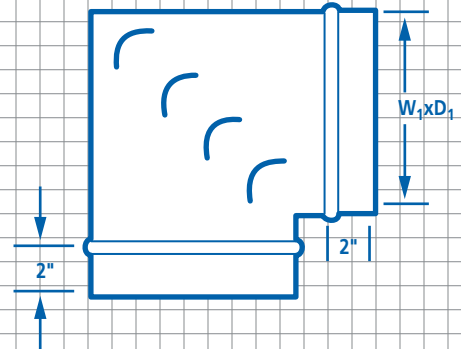
90° 3-PC. ELBOW WITH  
HEEL TAP *E90L*



90° 2-PC. ELBOW  
*E290/EV290*

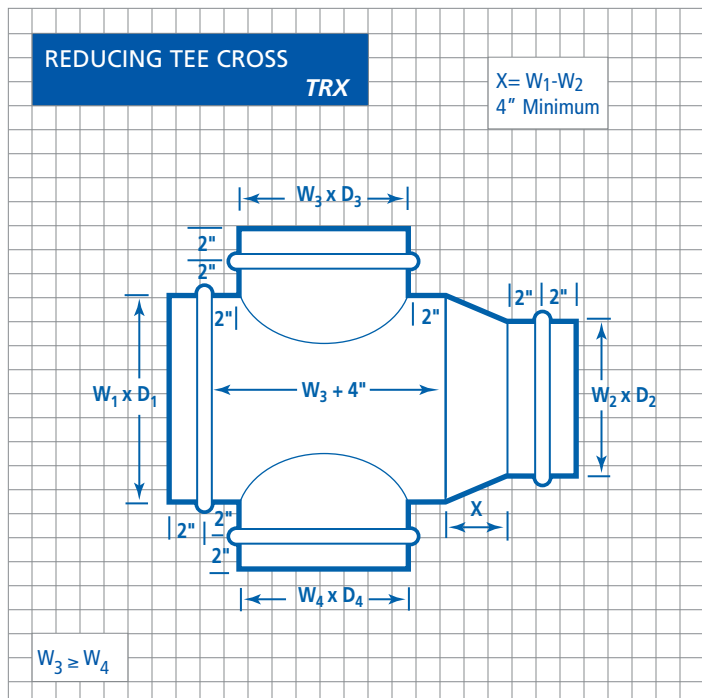
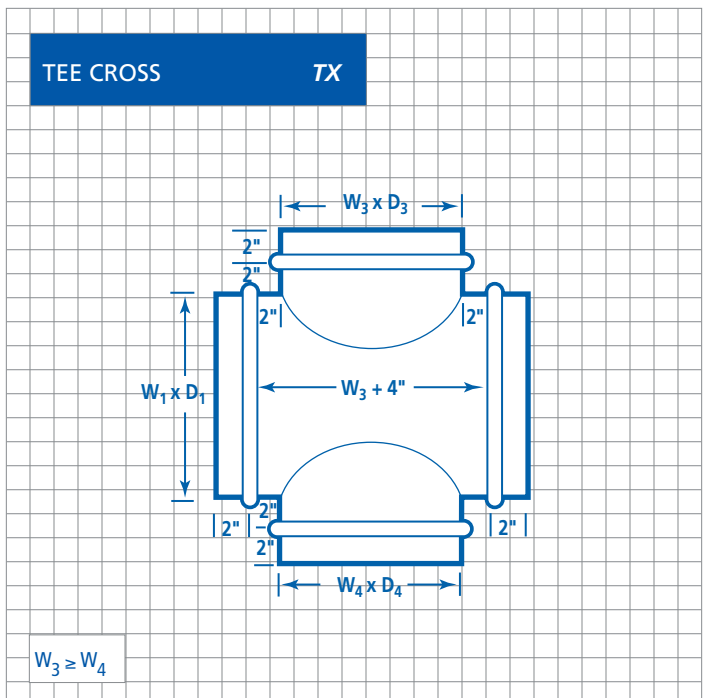
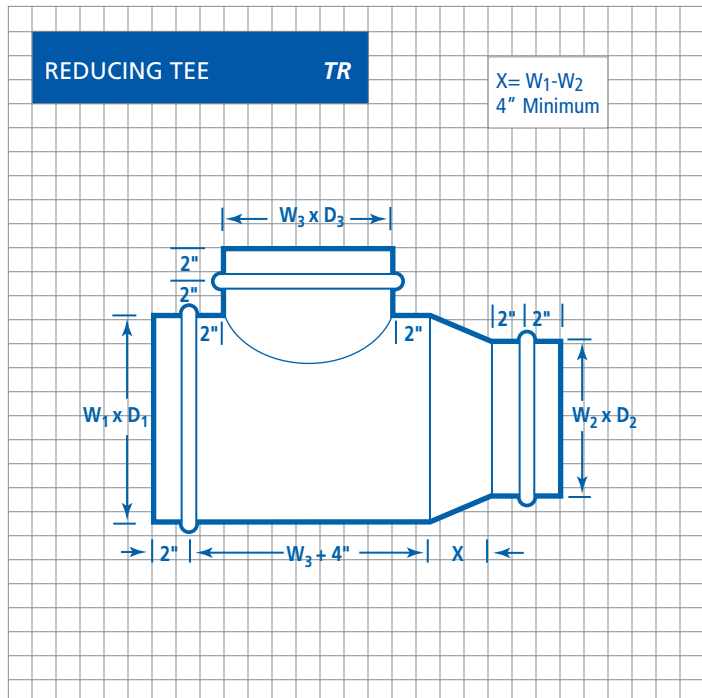
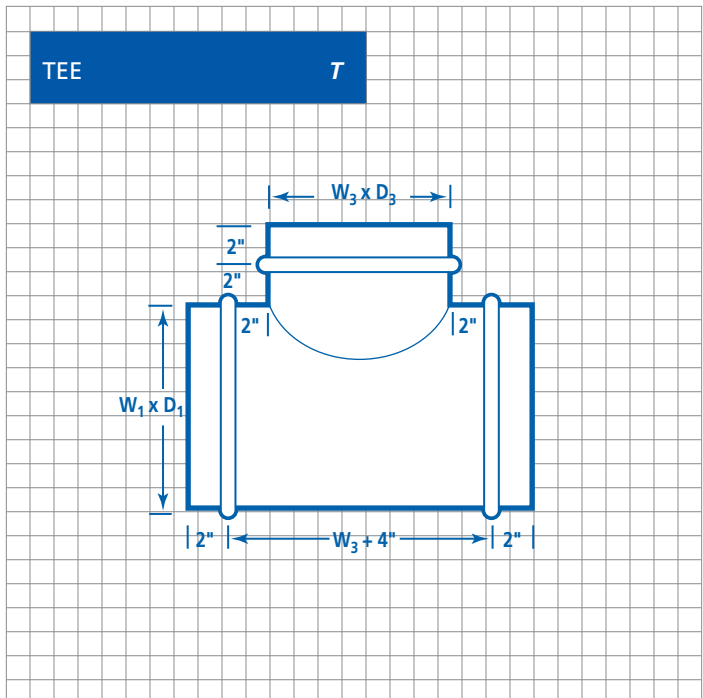
With or without vanes.

$D_1$	No. of Vanes
3-7	1
8-10	3
10-60	5
> 60	max spacing = 12"





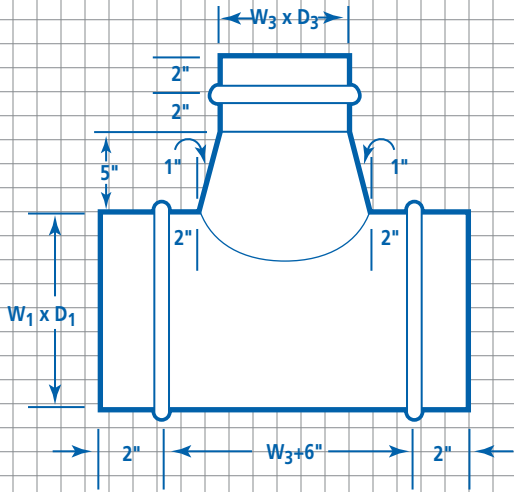
# Single-Wall Flat Oval STRAIGHT TEES





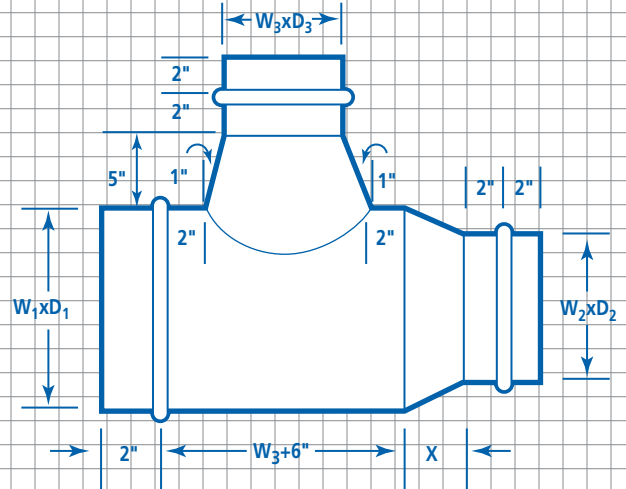
# Single-Wall Flat Oval CONICAL TEES

COMBINATION TEE *CT*

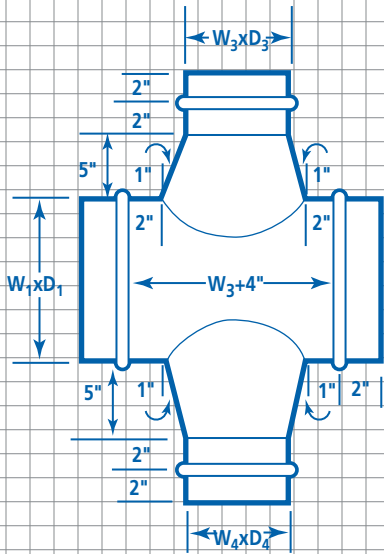


REDUCING CONICAL TEE *CTR*

$X = W_1 - W_2$   
4" Minimum



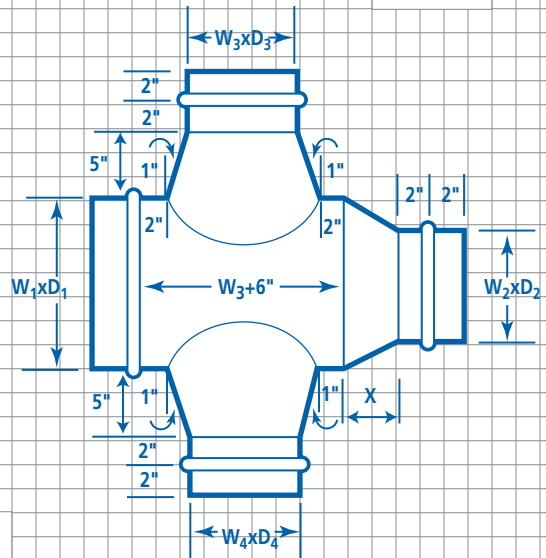
CONICAL CROSS *CTX*



$W_3 \geq W_4$

REDUCING CONICAL CROSS *CTRX*

$X = W_1 - W_2$   
4" Minimum

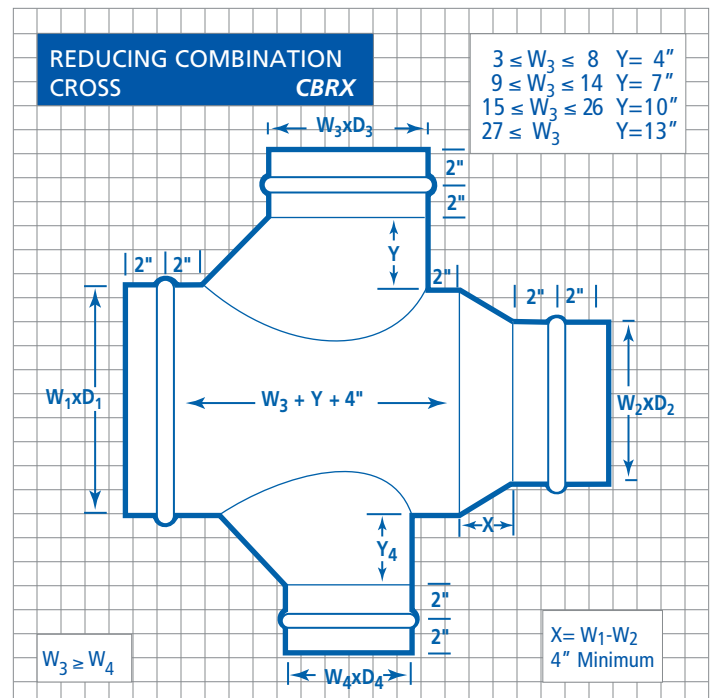
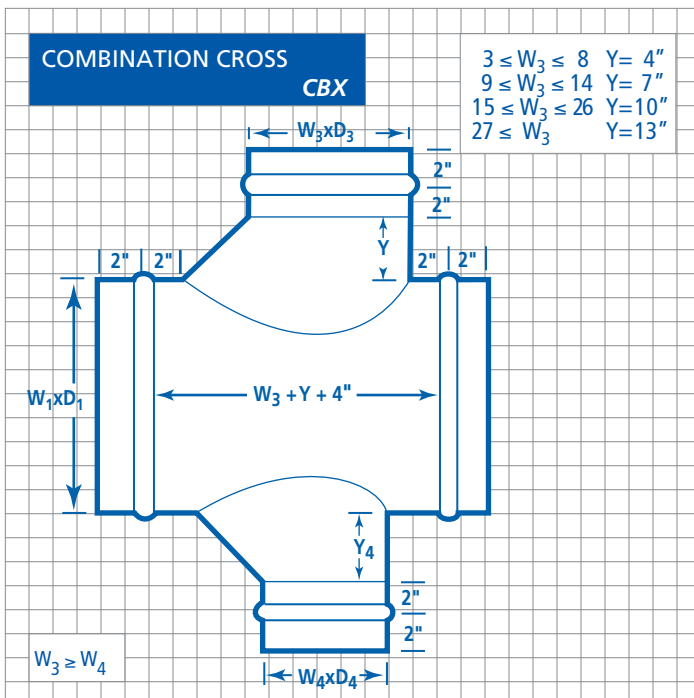
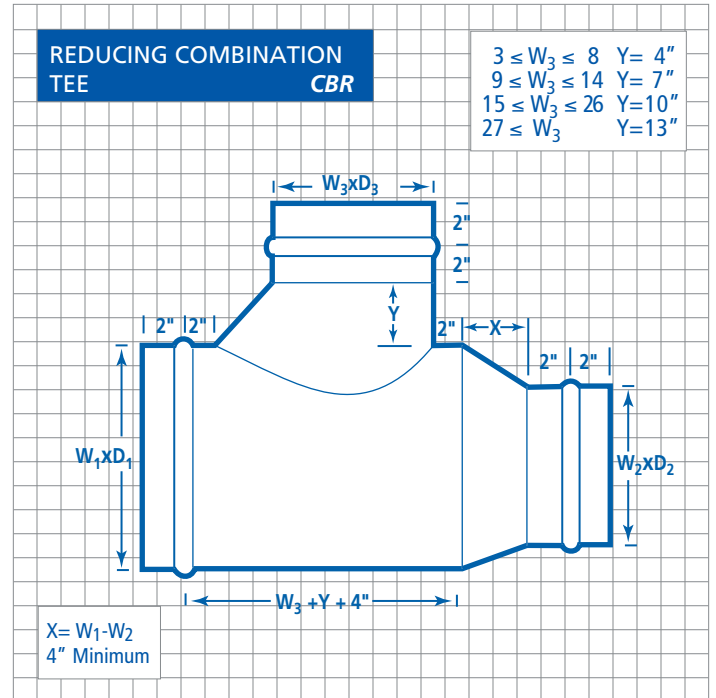
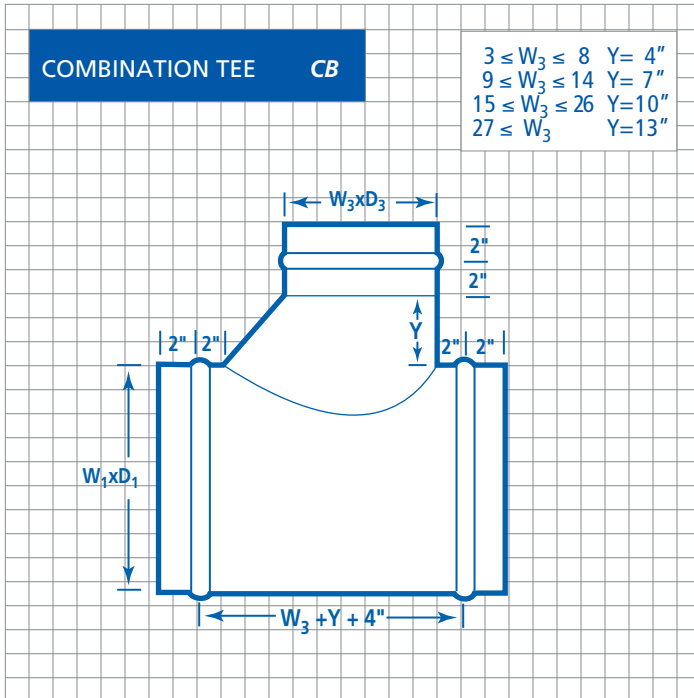


$W_3 \geq W_4$





# Single-Wall Flat Oval COMBINATION TEES

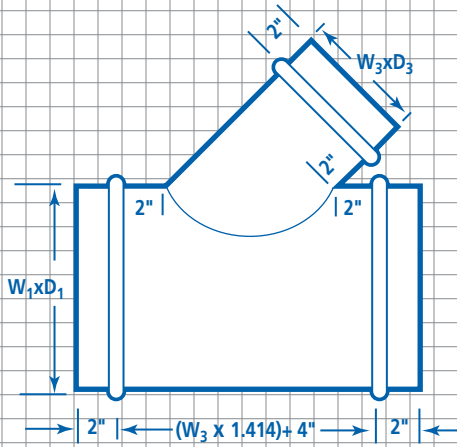




# Single-Wall Flat Oval STRAIGHT LATERALS

LATERAL 45°

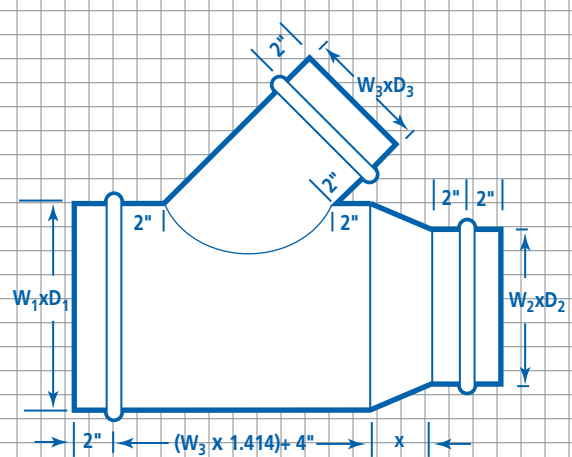
L



REDUCING LATERAL 45°

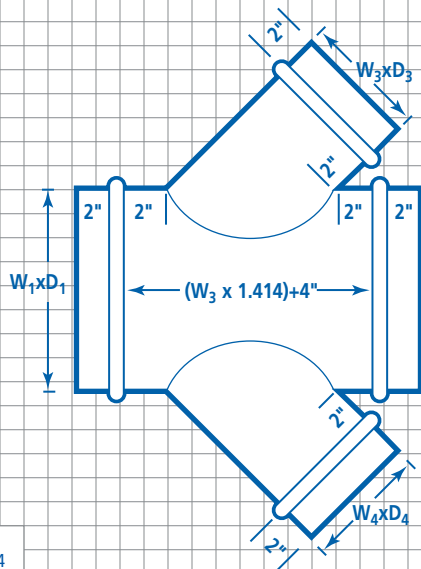
LR

X = W<sub>1</sub> - W<sub>2</sub>  
Minimum



LATERAL CROSS 45°

LX

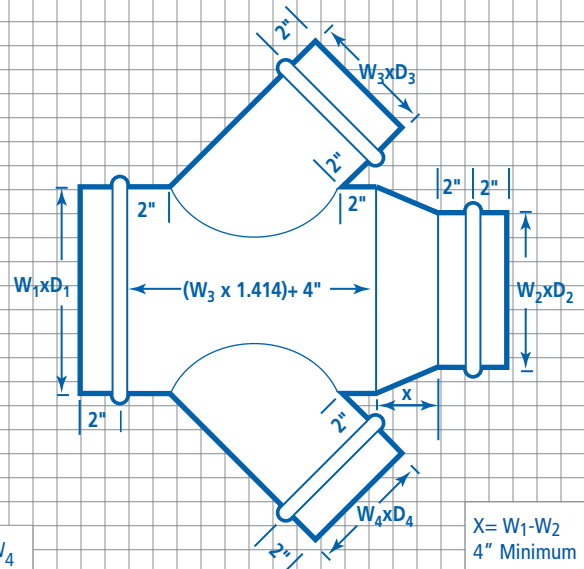


REDUCING 45° LATERAL  
CROSS

LRX

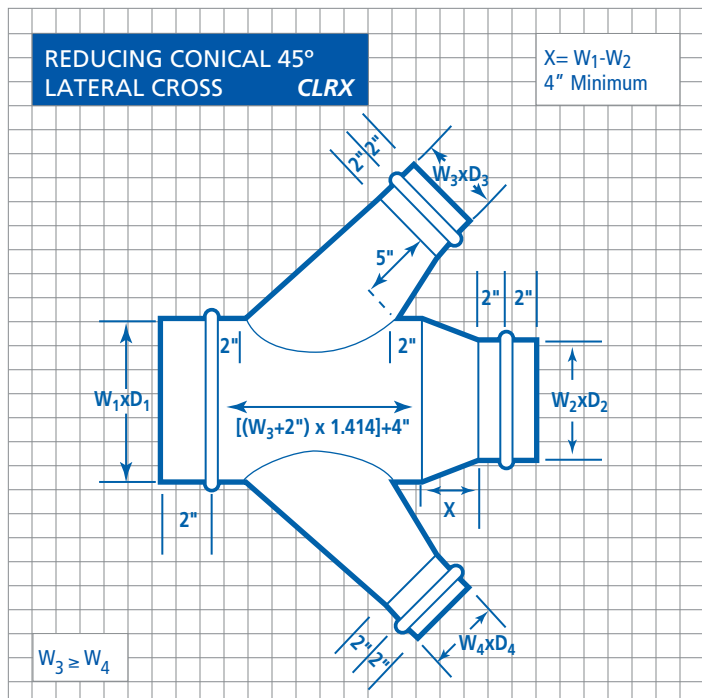
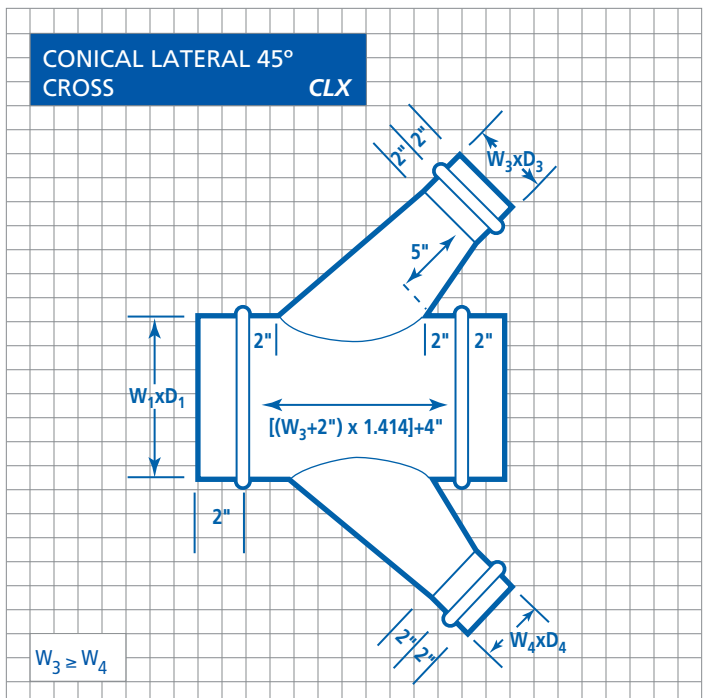
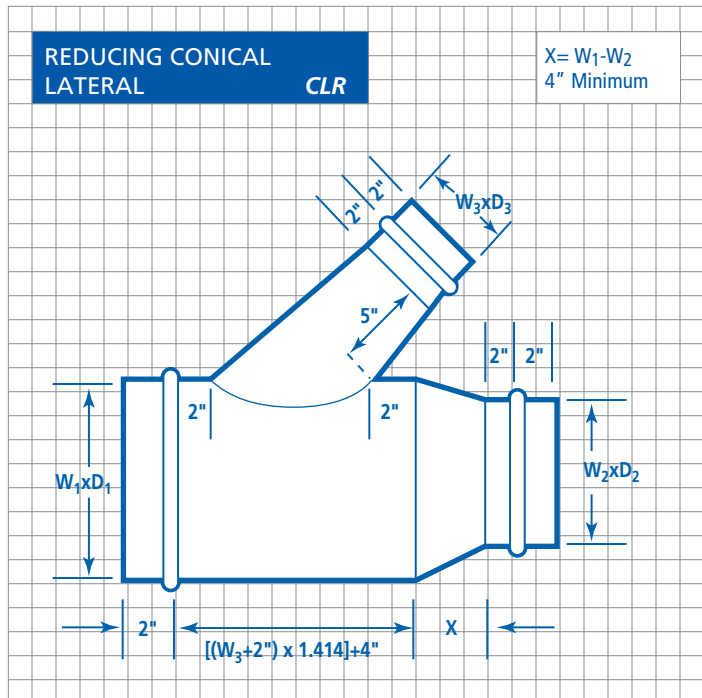
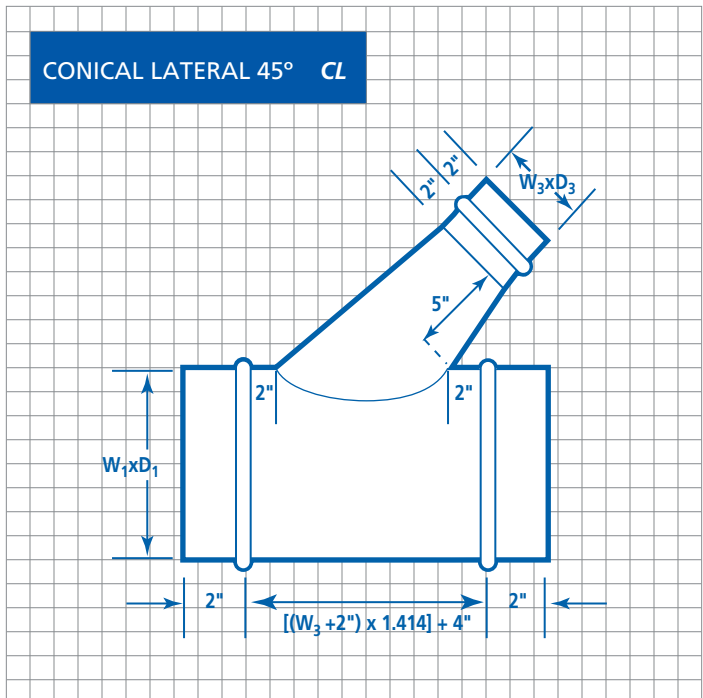
W<sub>3</sub> ≥ W<sub>4</sub>

X = W<sub>1</sub> - W<sub>2</sub>  
4" Minimum





# Single-Wall Flat Oval CONICAL LATERALS

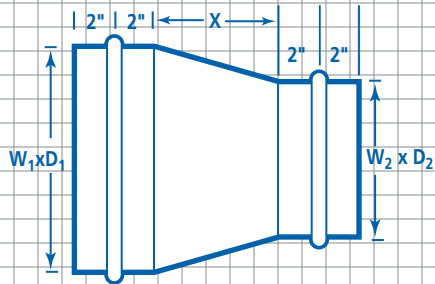




# Single-Wall Flat Oval MISCELLANEOUS

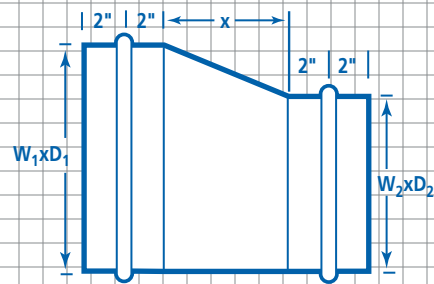
CONCENTRIC REDUCER *RD*

$X = W_1 - W_2$   
4" Minimum

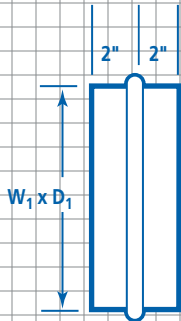


ECCENTRIC REDUCER *RDE*

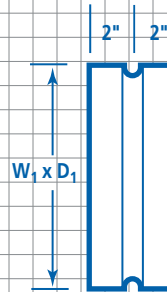
$X = 2 [W_1 - W_2]$   
4" Minimum



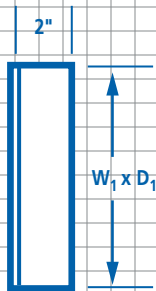
PIPE COUPLINGS *PCP*



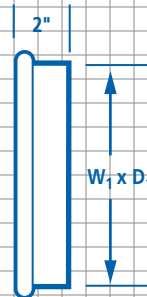
FITTING COUPLINGS *FCP*



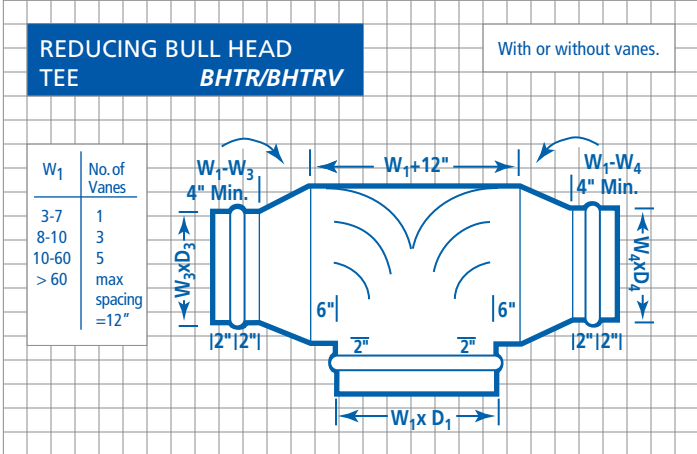
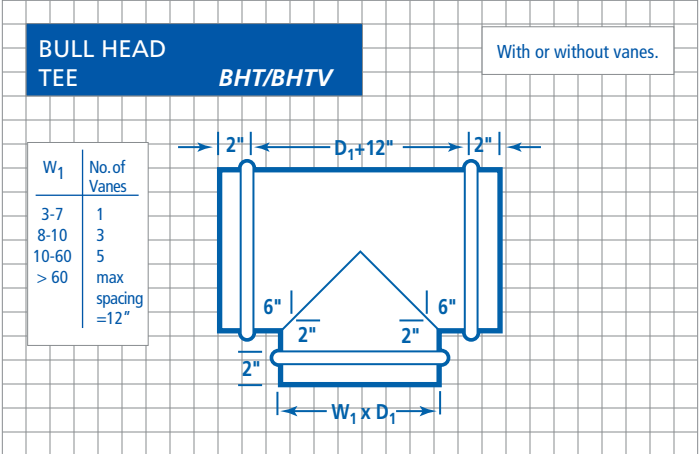
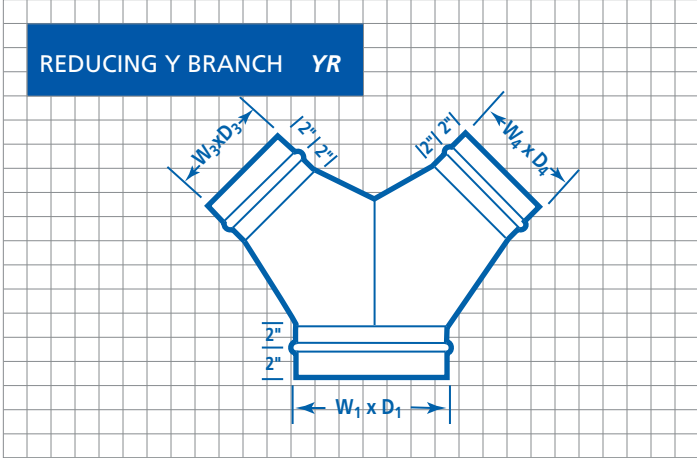
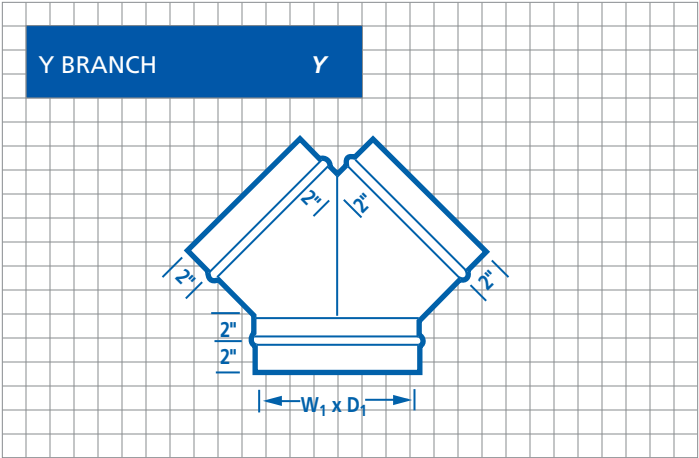
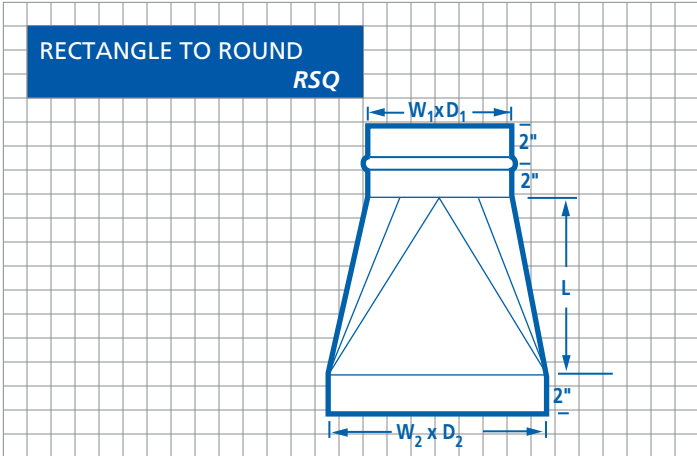
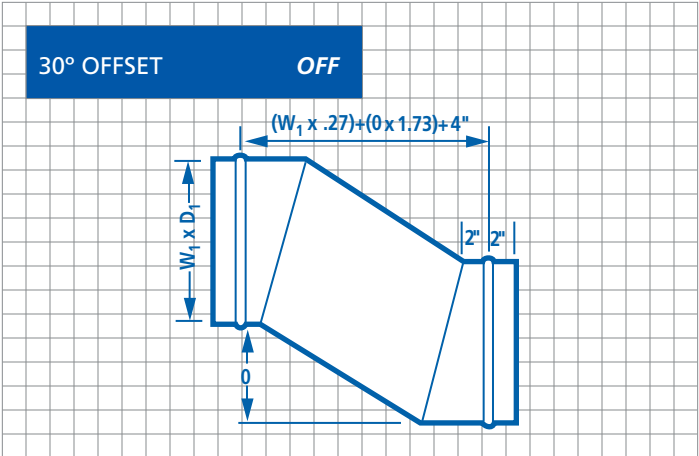
SPUN END CAP *EC*



END CAP *EC*



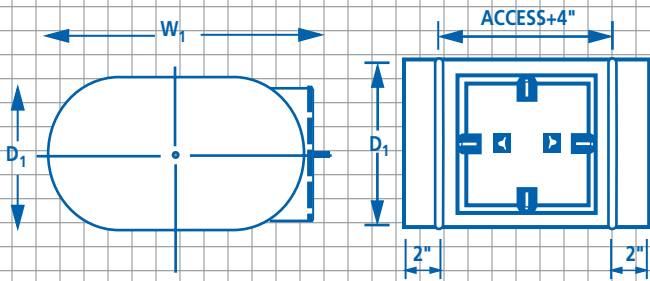
# Single-Wall Flat Oval MISCELLANEOUS



# Single-Wall Flat Oval MISCELLANEOUS

**RECTANGULAR ACCESS SECTION RTAX**

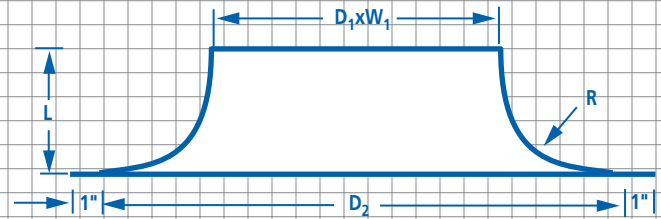
Also available as shop-installed SRTA or field-installed accessory FRTA.



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 BELL MOUTH SB**



**STANDARD BELL MOUTH**

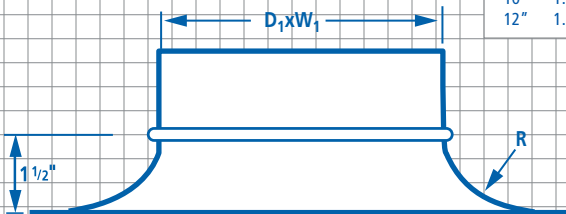
D <sub>1</sub>	D <sub>2</sub>	L	R
13"	19"	4"	3"
14"	21"	4"	3"
15"	24"	5"	4"
16"	26"	5"	4"
17"	25"	5"	4"
18"	26"	5"	4"
19"	27"	5"	4"
20"	28"	5"	4"
21"	29"	5"	4"
22"	32"	6"	5"
23"	33"	6"	5"
24"	34"	6"	5"
26"	38"	7"	6"
28"	40"	7"	6"
30"	42"	7"	6"
32"	46"	8"	7"
34"	48"	8"	7"
36"	50"	8"	7"
38"	52"	8"	7"
40"	56"	9"	8"
42"	58"	9"	8"
44"	60"	9"	8"
46"	62"	9"	8"
48"	64"	9"	8"

**SHORT RADIUS BELL MOUTH**

D <sub>1</sub>	D <sub>2</sub>	L
13"	15"	3 1/2"
14"	16"	3 1/2"
15"	17"	3 1/2"
16"	18"	3 1/2"
17"	19"	3 1/2"
18"	20"	3 1/2"
19"	21"	3 1/2"
20"	22"	3 1/2"
21"	23"	3 1/2"
22"	24"	3 1/2"
23"	25"	3 1/2"
24"	26"	3 1/2"
26"	28"	3 1/2"
28"	30"	3 1/2"
30"	32"	3 1/2"
32"	34"	3 1/2"
34"	36"	3 1/2"
36"	38"	3 1/2"
38"	40"	3 1/2"
40"	42"	3 1/2"
42"	44"	3 1/2"
44"	46"	3 1/2"
46"	48"	3 1/2"
48"	50"	3 1/2"
50"	52"	3 1/2"
52"	54"	3 1/2"
54"	56"	3 1/2"
56"	58"	3 1/2"
56"	60"	3 1/2"
60"	62"	3 1/2"

**PRESSED BELL MOUTH GALVANIZED ONLY PB**

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"

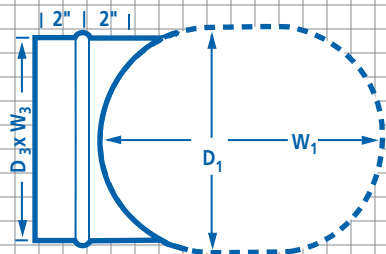




# Single-Wall Flat Oval ACCESSORIES

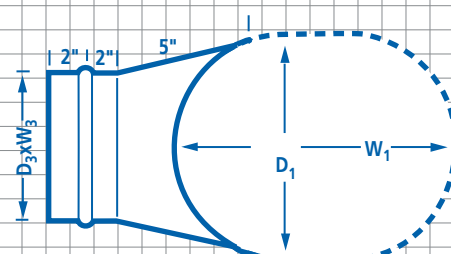
SHOP INSTALLED/ FIELD INSTALLED

SHOP/FIELD INSTALLED TAP *ST/FT*



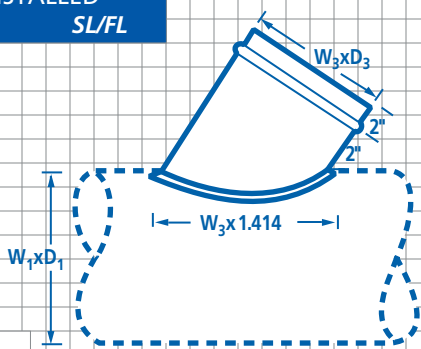
Standard flange is 1/2".  
2" flange is also available.

SHOP/FIELD INSTALLED CONICAL TAP *STC/FTC*



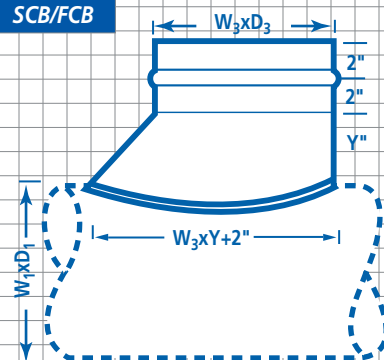
Standard flange is 1/2".  
2" flange is also available.

SHOP/FIELD INSTALLED LATERAL TAP *SL/FL*



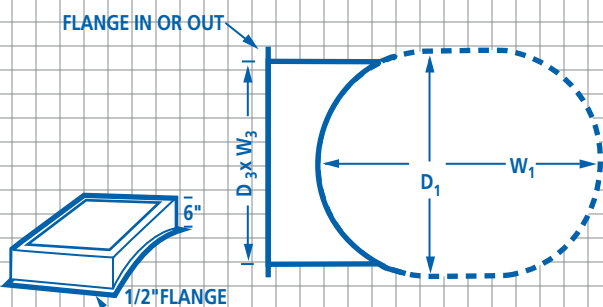
Standard flange is 1/2".  
2" flange is also available.

SHOP/FIELD INSTALLED COMBINATION TAP *SCB/FCB*

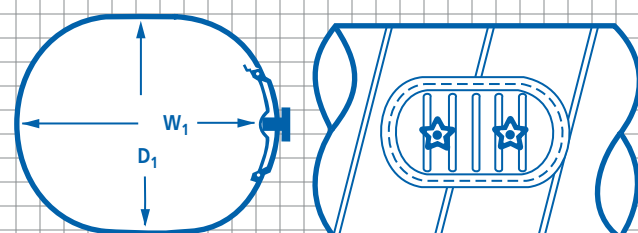


Standard flange is 1/2".  
2" flange is also available.

SHOP/FIELD INSTALLED *SRR/FRR* RECTANGLE ON ROUND



FIELD INSTALLED STANDARD DOOR *FA*



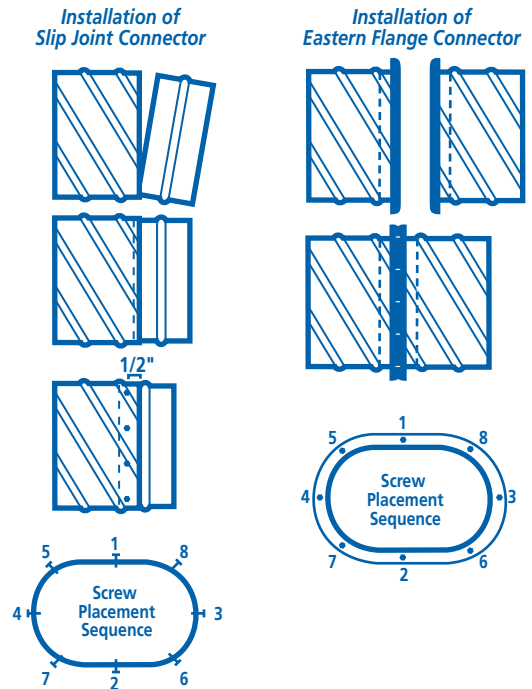


# Single-Wall Flat Oval INSTALLATION

## SINGLE-WALL SLIP JOINT

Eastern Sheet Metal fittings are sized to slip into, and should be used with, Eastern Sheet Metal 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.
3. Push the fitting into the spiral duct until the stop bead meets the edge of the spiral duct.
4. 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.



## EASTERN FLANGE

Eastern Flanges come factory-mounted on fittings and spiral duct. Eastern Flanges are standard for all duct over 71" major axis, but are available on smaller sizes. Stainless steel Eastern Flanges are only available for minor axes of 16" and larger.

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.

Protected by the following U.S. Patents: 7,287,407; D518,885; D517,679; D516,698; D516,697.

DUCT PERIMETER ROUND EQUIV.	#OF SCREWS	
	SLIP FIT	EASTERN FLANGE
4"-9"	3	NA
10"	3	4
11"-16"	3	6
17"-21"	4	8
22"-26"	5	10
27"-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