





# Table of Contents

Diagram Abbreviations.....	4	Slip Dimension – Fittings.....	6
Product Nomenclature.....	4	Sizes, Gauge, Equivelant Round.....	7
Specification.....	5	Acoustical Performance.....	11

## Duct

FOSR .....	12
------------	----

## Elbows

FOBME, FOBMH.....	13
FOBE, FOBEA.....	14
FOBH, FOBHA.....	15

## Reducers

FORC, FORCE.....	16
FOR, FORE.....	17
FORF, FOREF.....	18
FORCF, FORCEF.....	19

## Transitions

FOROR, FORORE.....	20
FORCK.....	21

## Saddle Taps

FOST, FOSBT.....	22
FOSVT 45°.....	23

## Tees/Crosses

FOTCT, FORTCT.....	24
FOXCT, FORXCT.....	25
FOTST, FORTST.....	26
FOXST, FORXST.....	27
FOTM, FORTM.....	28
FOXM, FORXM.....	29
FOTMC, FORTMC.....	30
FOXMC, FORXMC.....	31

## more Tees/Crosses

FOT, FORT.....	32
FOX, FORX.....	33
FOTC, FORTC.....	34
FOXC, FORXC.....	35
FOTBS, FORTBS.....	36
FOXBS, FORXBS.....	37
FOTBSC, FORTBSC.....	38
FOXBS, FORXBS.....	39
FOTV, FORTV.....	40
FOXV, FORXV.....	41
FOTVC, FORTVC.....	42
FOXVC, FORXVC.....	43
FOTPSC, FORTPSC.....	44
FOXPC, FORXPC.....	45
FOBHT, FORBHT.....	46
FORBHTC.....	47

## Y-Branches

FOY, FORY.....	48
FORYC.....	49

## Offset

FOOH, FOOE.....	50
-----------------	----

## End Caps

FOEP, FOEF.....	51
-----------------	----

## Couplings

FONP, FOMF.....	52
-----------------	----

## Take-offs

FOIL, FOILR.....	53
------------------	----

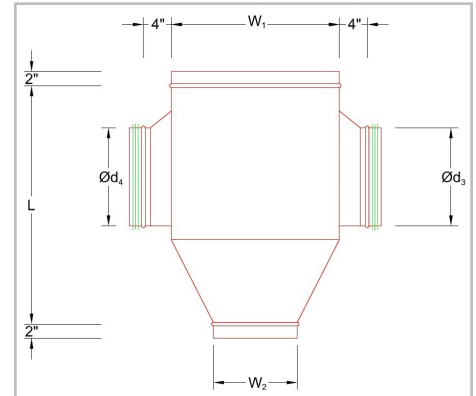
# Diagram Abbreviations and Nomenclature

4

This catalog was designed to include both single wall and double wall nomenclature. It is important to note that the dimensions shown represents single wall or in the case of double wall, free open (inside dimensions only).

It is also important to note, that although some oval fittings are designed to have gasketed round taps, EHG Flat Oval product is inherently nongasketed.

Flat oval major .....	$W_x$
Flat oval minor .....	$D_x$
Nominal outside round tap diameter... $\varnothing d_1, \varnothing d_2, \varnothing d_3, \varnothing d_4$	
Installed height .....	H
Center line radius .....	$R_c$
Center height .....	I
Installed length .....	L
Insertion length (slip dimension) .....	e
Material thickness (gauge) .....	t
Insulation thickness.....	$\hat{i}$



All measurements in inches (in or "). All angles in degrees (°).

## Elbows

B = elbow  
M = mitered  
E = easy bend  
H = hard bend  
A = 1.0 x radius

## Reducers

R = reducer  
C = round  
E = eccentric  
F = female

## Transitions

OR = rectangular to oval  
E = eccentric

## Saddle Taps

ST = saddle tap  
B = boot tap  
V = lateral tap

## Offset

O = offset  
E = easy bend  
H = hard bend

## Tees/Crosses

T = tee  
X = cross  
C = round  
R = reducing body  
ST = saddle tap  
M = tap on major axis  
BS = boot tap  
V = lateral tap  
PS = pressed tap  
BH = bullhead tee

## Y-Branches

Y = wye branches  
R = reducing  
C = round branch

## End Caps

E = end caps  
P = duct  
F = fittings

## Couplings

NP = duct coupling  
MF = fitting coupling

# Specification

MATERIAL ( \* ) not available in pressed construction

- Galvanized steel conforming to ASTM standards A653 and A924
- Stainless steel type 304 conforming to ASTM standard A240\*
- Stainless steel type 316 conforming to ASTM standard A240\*
- Aluminum T3003\*
- Insulation specifications:
  1. Standard inner liner is perforated for pipe and solid for fittings.
  2. Perforated liner will consist of 1/8" perforations on 1/4" staggered centers corresponding to an overall open area of 23%.
  3. Standard 1" thick x 1.0 pound per cubic foot (pcf) density, glass fiber insulation has a maximum conductivity factor (k) of 0.26 BTU-in/hr x ft<sup>2</sup> x °F at 75°F mean ambient temperature (R = 3.8).
  4. Available in 1" and 2" insulation thickness. Please call for thicknesses over 2".
  5. Retaining fabric will be 0.008" thick, 15.6 lb/ft<sup>3</sup> density non-woven polyester fabric with an air permeability rate of 9.2 ft<sup>3</sup>/ft<sup>2</sup>/s.

## SURFACE FINISH

- Galvanized steel (galvanized in accordance with SMACNA 2005 Duct Construction Standards).
- Stainless steel type 304 - Mill Finish
- Stainless steel type 316 - #2 Mill Finish
- ProCoat™ (outside only) or ProCoat™ Plus (inside and outside) on duct and/or fittings
  - Standard color = white (additional color options available)
  - Average coating thickness of 4 mils (0.004 inch)
  - Coating to meet or exceed 1,000 hour Salt Spray Test per ASTM B117-97
- Antimicrobial - EPA listed coating containing an antimicrobial compound complies with UL standard - not to exceed flame or smoke developed ratings of 25/50.

## THICKNESS

EHG Oval components are constructed from galvanized steel of thickness conforming to latest SMACNA's HVAC Duct Construction Standards for +10" water gauge pressure.

## CONNECTIONS

EHG Oval is available with two connection methods: Standard slip-fit or Flanged connections.

- Flanged connections can be factory installed or delivered loose.
- All fittings that are either spot-welded or button punched construction are internally sealed.
- All transitions and divided flow fittings which convert from flat-oval to round 60" diameter or less incorporate EHG's triple-lipped EPDM rubber gaskets as the duct sealing system.

# Specification

6

## CONSTRUCTION

Duct is of spiral lock seam construction with a mechanically formed seam locking indentation evenly spaced along the spiral seam. All spiral duct 8" diameter and larger incorporates multiple corrugations between spiral seams.

Double wall duct and fittings will consist of a perforated or solid inner liner; 1" thick x 1.0 lb/ft<sup>3</sup> (unless otherwise specified) layer of glass fiber insulation and a solid outer pressure shell. When a perforated inner liner is specified, the retaining fabric must be wrapped around the inside diameter, between the perforated inner and the glass fiber insulation. This is to prevent glass fiber tearing and maintains the desired acoustical properties.

Double wall has 1" thick insulation standard and 2" thick insulation available. The outer pressure shell dimensions shall be two times the insulation thickness larger than the inner liner. Inner and outer duct will be of spiral lock seam construction.

Fittings shall be manufactured using one or more of the following construction methods:

- Overlapped edges stitch welded along the entire length of the fitting
- Standing seam gore locked and internally sealed
- Button punched and internally sealed

*NOTE: For systems under negative pressure, please refer to the Industrial Catalog or a EHG representative.*

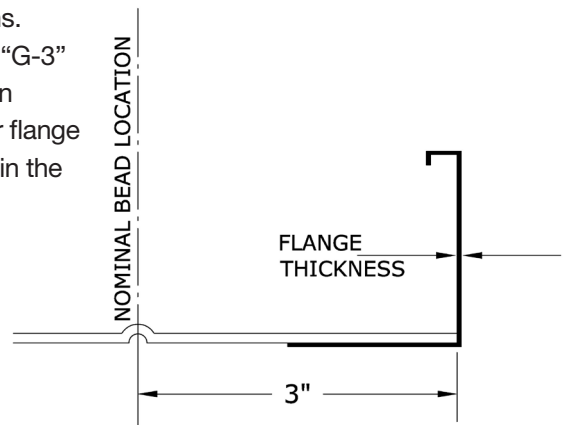
## JOINT SEALING

All joints must be sealed by the installer during the installation process. The type of sealant used as well as the method and level of application should be as directed by the specification and in accordance with the sealant manufacturer's published installation instructions.

# Fitting Slip Dimension

Standard EHG products are designed with a male/female slip connections. Nongasketed connections have a 2" slip fit connection. For gasketed, or "G-3" connections, refer to the "e" dimension listed in the TOLERANCE chart on page 10 in the EHG Single Wall Catalog. If flanges are utilized, add 3" per flange and the flange thickness to the published length (L) dimension as shown in the product catalog as depicted in the diagram on the right.

Factory-applied Flange	
Collar Length	Make-up Length
3"	3" + flange thickness



# Specification - Sizes

Minor Nom, in	Major Nom, in	Equiv Round, in	Max Pipe Length, ft	Weight/Line ar ft, lbs
4	10	6.6	6	2.6
6	9	7.6	6	2.6
6	10	8.1	6	2.9
6	12	8.9	8	3.2
6	14	9.6	8	3.5
6	15	9.9	8	3.8
6	17	10.5	8	4.2
6	19	11.1	8	4.5
6	20	11.3	8	4.8
6	22	11.8	12	5.1
6	23	12.1	12	5.5
6	25	12.5	12	7.0
6	26	12.7	12	7.4
6	28	13.1	12	7.8
6	29	13.3	12	8.2
6	31	13.7	12	8.6
6	34	14.3	12	9.4
6	37	14.8	12	10.1
6	41	15.4	12	10.9
6	44	15.9	12	11.7
6	47	16.3	12	12.5
6	50	16.8	12	15.6
6	53	17.2	12	16.5
6	56	17.5	12	17.5
6	59	17.9	12	18.4
6	63	18.4	12	19.3
6	66	18.7	12	20.2
6	69	19.1	12	21.1
6	72	19.4	12	28.7
6	75	19.7	12	29.9
8	10	9.2	6	2.9
8	11	9.7	6	3.2
8	12	10.2	8	3.5
8	14	11.0	8	3.8
8	16	11.8	8	4.2
8	17	12.2	8	4.5
8	19	12.9	8	4.8
8	21	13.5	12	5.1
8	22	13.8	12	5.5
8	24	14.4	12	5.8
8	25	14.7	12	7.4
8	27	15.2	12	7.8
8	28	15.4	12	8.2
8	30	15.9	12	8.6
8	33	16.6	12	9.4
8	36	17.3	12	10.1
8	39	17.9	12	10.9
8	43	18.6	12	11.7
8	46	19.2	12	12.5
8	49	19.7	12	15.6
8	52	20.2	12	16.5

Minor Nom, in	Major Nom, in	Equiv Round, in	Max Pipe Length, ft	Weight/Line ar ft, lbs
8	55	20.6	12	17.5
8	58	21.1	12	18.4
8	61	21.5	12	19.3
8	65	22.1	12	20.2
8	68	22.5	12	21.1
8	71	22.9	12	28.7
8	74	23.3	12	29.9
8	77	23.7	12	31.1
8	80	24.1	12	32.3
10	12	11.2	8	3.5
10	13	11.7	8	3.8
10	14	12.2	8	4.2
10	16	13.2	8	4.5
10	18	14.0	8	4.8
10	19	14.4	8	5.1
10	21	15.2	12	5.5
10	23	15.9	12	5.8
10	24	16.2	12	6.1
10	26	16.8	12	7.8
10	27	17.1	12	8.2
10	29	17.7	12	8.6
10	32	18.5	12	9.4
10	35	19.3	12	10.1
10	38	20.0	12	10.9
10	41	20.7	12	11.7
10	45	21.6	12	12.5
10	48	22.2	12	13.3
10	51	22.8	12	16.5
10	54	23.3	12	17.5
10	57	23.9	12	18.4
10	60	24.4	12	19.3
10	63	24.9	12	20.2
10	67	25.5	12	21.1
10	70	26.0	12	22.1
10	73	26.5	12	29.9
10	76	26.9	12	31.1
10	79	27.3	12	32.3
10	82*	27.7	12	33.5
12	14*	13.2	8	4.2
12	15	13.8	8	4.5
12	16	14.3	8	4.8
12	18	15.3	8	5.1
12	20	16.1	8	5.5
12	21	16.6	8	5.8
12	23	17.4	8	6.1
12	25	18.1	12	7.8
12	26	18.5	12	8.2
12	28	19.2	12	8.6
12	31	20.1	12	9.4
12	34	21.0	12	10.1
12	37	21.9	12	10.9

# Specification - Sizes

Minor Nom, in	Major Nom, in	Equiv Round, in	Max Pipe Length, ft	Weight/Line ar ft, lbs
12	40	22.7	12	11.7
12	43	23.4	12	12.5
12	47	24.4	12	13.3
12	50	25.0	12	16.5
12	53	25.7	12	17.5
12	56	26.3	12	18.4
12	59	26.9	12	19.3
12	62	27.5	12	20.2
12	65	28.0	12	21.1
12	69	28.7	12	22.1
12	72	29.3	12	29.9
12	75	29.8	12	31.1
12	78	30.3	12	32.3
12	81	30.7	12	33.5
12	84	31.2	12	34.7
14	17	15.8	8	5.1
14	18	16.3	8	5.5
14	20	17.3	8	5.8
14	22	18.3	12	6.1
14	23	18.7	12	6.4
14	25*	19.5	12	8.2
14	27	20.3	12	8.6
14	30	21.4	12	9.4
14	33	22.5	12	10.1
14	36	23.4	12	10.9
14	39	24.3	12	11.7
14	42	25.2	12	12.5
14	45	26.0	12	13.3
14	49	27.0	12	16.5
14	52	27.7	12	17.5
14	55	28.4	12	18.4
14	58	29.1	12	19.3
14	61	29.8	12	20.2
14	64	30.4	12	21.1
14	67	31.0	12	22.1
14	71	31.8	12	29.9
14	74	32.4	12	31.1
14	77	32.9	12	32.3
14	80	33.4	12	33.5
14	83*	34.0	12	34.7
16	18	17.2	6	5.5
16	19	17.8	6	5.8
16	20	18.3	6	6.1
16	22	19.4	6	6.4
16	24*	20.3	8	6.7
16	25	20.8	12	8.6
16	29	22.5	12	9.4
16	32	23.7	12	10.1
16	35	24.7	12	10.9
16	38	25.8	12	11.7
16	41	26.7	12	12.5

Minor Nom, in	Major Nom, in	Equiv Round, in	Max Pipe Length, ft	Weight/Line ar ft, lbs
16	44	27.6	12	13.3
16	47	28.5	12	14.0
16	51	29.6	12	17.5
16	54	30.4	12	18.4
16	57	31.1	12	19.3
16	60	31.8	12	20.2
16	63	32.5	12	21.1
16	66	33.2	12	22.1
16	69	33.9	12	23.0
16	73	34.7	12	31.1
16	76	35.3	12	32.3
16	79	35.9	12	33.5
16	82*	36.5	12	34.7
18	20*	19.2	6	6.1
18	21*	19.8	6	6.4
18	22*	20.4	6	6.7
18	24	21.4	12	7.1
18	27	22.9	12	9.4
18	31	24.6	12	10.1
18	34	25.9	12	10.9
18	37	27.0	12	11.7
18	40	28.1	12	12.5
18	43	29.1	12	13.3
18	46	30.0	12	14.0
18	49	30.9	12	17.5
18	53	32.1	12	18.4
18	56	32.9	12	19.3
18	59	33.7	12	20.2
18	62	34.5	12	21.1
18	65	35.2	12	22.1
18	68	35.9	12	23.0
18	71	36.6	12	31.1
18	75	37.5	12	32.3
18	78	38.2	12	33.5
18	81	38.8	12	34.7
18	84	39.4	12	35.9
20	26	23.5	12	9.4
20	29	25.0	12	10.1
20	33	26.8	12	10.9
20	36	28.0	12	11.7
20	39	29.2	12	12.5
20	42	30.3	12	13.3
20	45	31.4	12	14.0
20	48	32.4	12	14.8
20	51	33.3	12	18.4
20	55	34.5	12	19.3
20	58	35.4	12	20.2
20	61	36.2	12	21.1
20	64	37.1	12	22.1
20	67	37.8	12	23.0
20	70	38.6	12	23.9

# Specification - Sizes

Minor Nom, in	Major Nom, in	Equiv Round, in	Max Pipe Length, ft	Weight/Line ar ft, lbs
20	73	39.3	12	32.3
20	77	40.3	12	33.5
20	80	41.0	12	34.7
20	83*	41.6	12	35.9
22	28	25.5	12	10.1
22	31	27.0	12	10.9
22	35	28.9	12	11.7
22	38	30.2	12	12.5
22	41	31.4	12	13.3
22	44	32.5	12	14.0
22	47	33.6	12	14.8
22	50	34.7	12	18.4
22	53	35.7	12	19.3
22	57	36.9	12	20.2
22	60	37.8	12	21.1
22	63	38.7	12	22.1
22	66	39.6	12	23.0
22	69	40.4	12	23.9
22	72	41.2	12	32.3
22	75	42.0	12	33.5
22	79	42.9	12	34.7
22	82	43.7	12	35.9
24	30	27.5	12	10.9
24	33	29.1	12	11.7
24	37	31.0	12	12.5
24	40	32.3	12	13.3
24	43	33.5	12	14.0
24	46	34.7	12	14.8
24	49	35.9	12	18.4
24	52	36.9	12	19.3
24	55	38.0	12	20.2
24	59	39.3	12	21.1
24	62	40.2	12	22.1
24	65	41.2	12	23.0
24	68	42.0	12	23.9
24	71	42.9	12	32.3
24	74	43.7	12	33.5
24	77	44.5	12	34.7
24	81*	45.6	12	35.9
24	84*	46.3	12	37.1
26	29	27.9	8	10.9
26	32	29.5	8	11.7
26	35	31.1	8	12.5
26	39	33.0	8	13.3
26	42	34.4	8	14.0
26	45	35.7	8	14.8
26	48	36.9	8	15.6
26	51	38.1	8	19.3
26	54	39.2	8	20.2
26	57	40.3	8	21.1
26	61	41.6	8	22.1

Minor Nom, in	Major Nom, in	Equiv Round, in	Max Pipe Length, ft	Weight/Line ar ft, lbs
26	64	42.6	8	23.0
26	67	43.5	8	23.9
26	70	44.5	8	24.8
26	73	45.3	8	33.5
26	76	46.2	8	34.7
26	79	47.0	8	35.9
26	83*	48.1	8	37.1
28	31	29.9	8	11.7
28	34	31.6	8	12.5
28	37	33.2	8	13.3
28	41	35.1	8	14.0
28	44	36.5	8	14.8
28	47	37.8	8	15.6
28	50	39.1	8	19.3
28	53	40.3	8	20.2
28	56	41.4	8	21.1
28	59	42.5	8	22.1
28	63	43.9	8	23.0
28	66	44.9	8	23.9
28	69	45.9	8	24.8
28	72	46.8	8	33.5
28	75	47.8	8	34.7
28	78	48.7	8	35.9
28	81*	49.5	8	37.1
30	33*	31.9	8	12.5
30	36	33.6	8	13.3
30	39	35.2	8	14.0
30	43	37.2	8	14.8
30	46	38.6	8	15.6
30	49	39.9	8	19.3
30	52	41.2	8	20.2
30	55	42.4	8	21.1
30	58	43.6	8	22.1
30	61	44.7	8	23.0
30	65	46.2	8	23.9
30	68	47.2	8	24.8
30	71	48.2	8	33.5
30	74	49.2	8	34.7
30	77	50.1	8	35.9
30	80	51.1	8	37.1
30	83	52.0	8	38.3
32	38	35.6	6	14.0
32	41	37.2	6	14.8
32	45	39.2	6	15.6
32	48	40.7	6	16.4
32	51	42.0	6	20.2
32	54	43.3	6	21.1
32	57	44.6	6	22.1
32	60	45.8	6	23.0
32	63	46.9	6	23.9
32	67	48.4	6	24.8

# Specification - Sizes

Minor Nom, in	Major Nom, in	Equiv Round, in	Max Pipe Length, ft	Weight/Line ar ft, lbs
32	70	49.5	6	25.7
32	73	50.5	6	34.7
32	76	51.5	6	35.9
32	79	52.5	6	37.1
32	82*	53.4	6	38.3
34	40	37.6	6	14.8
34	43	39.3	6	15.6
34	47	41.3	6	16.4
34	50	42.7	6	20.2
34	53	44.1	6	21.1
34	56	45.5	6	22.1
34	59	46.7	6	23.0
34	65	49.1	6	24.8
34	69	50.6	6	25.7
34	72	51.7	6	34.7
34	75	52.8	6	35.9

Minor Nom, in	Major Nom, in	Equiv Round, in	Max Pipe Length, ft	Weight/Line ar ft, lbs
34	81	54.8	6	38.3
34	84*	55.8	6	39.5
36	42*	39.6	6	15.6
36	45*	41.3	6	16.4
36	49*	43.3	6	20.2
36	52*	44.8	6	21.1
36	55*	46.2	6	22.1
36	58*	47.6	6	23.0
36	61*	48.9	6	23.9
36	64*	50.1	6	24.8
36	67*	51.3	6	25.7
36	71*	52.9	6	34.7
36	74*	54.0	6	35.9
36	77*	55.1	6	37.1
36	80*	56.1	6	38.3
36	83*	57.1	6	39.5

## PLEASE NOTE

- The sizes outlined here are available in single and 1" double wall spiral unless noted with an asterisk (\*). An asterisk indicates the size is available in single wall only. 2" and 3" double wall is available but not represented in the dimensional chart.
- Pipe can be constructed in any minor/major combination using long seam construction.
- Fittings can be constructed in any minor/major combination under 83" major.
- Pipe and fitting gauge to meet or exceed SMACNA guidelines.

Major Dim (in)	Longitudinal Seam	Spiral Seam	Fitting
To 24	20	24	20
30	20	22	20
36	20	22	20
42	18	22	18
48	18	22	18
54	18	20	18
60	18	20	18
66	16	20	16
71 and up	16	18	16

Credit: SMACNA HVAC Duct Construction Standards Metal and Flexible (2005), Table 3-15 Flat Oval Duct Gauge, Positive Pressure to 10 iwg.

Flat Oval to Round 
$$D_e = 1.55 \times \frac{(A)^{0.625}}{(P)^{0.250}}$$

Rectangular to Round 
$$D_e = 1.3 \times \frac{(a \times b)^{0.625}}{(a + b)^{0.250}}$$

$D_e$  = Equivalent round diameter (equal pressure loss), in

A = Cross sectional area, in<sup>2</sup>

P = Flat oval perimeter, in

a = Rectangular dimension, in

b = Rectangular dimension, in

# Acoustical Performance - Net Insertion Loss

Standard 1" thick double wall spiral duct with perforated inner

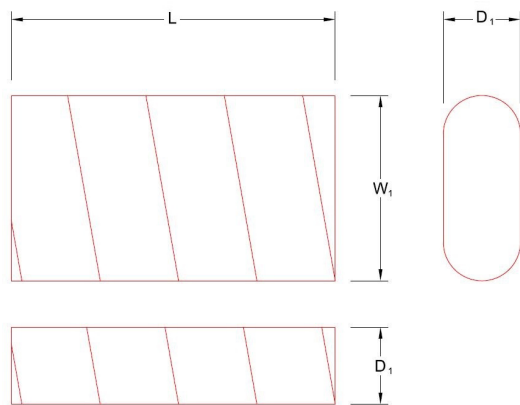
Round Equivalent Diameter (in)	Insulation Thickness (in)	Velocity (fpm)	Octave Band / Frequency (Hz)							
			1	2	3	4	5	6	7	8
			63	125	250	500	1000	2000	4000	8000
6	1	0	0.3	0.5	1.2	2.1	2.5	2.3	2.3	2.1
6	1	1000	0.2	0.5	1.2	2.1	2.3	2.3	2.3	2.2
6	1	2000	0.2	0.5	1.2	2.1	2.5	2.4	2.3	2.3
6	1	3000	0.1	0.5	1.2	2.1	2.2	2	2.3	2.3
12	1	0	0.1	0.3	0.7	1.7	2.5	2.5	1.9	1.6
12	1	1000	0.1	0.3	0.7	1.6	2.5	2.5	2	1.7
12	1	2000	0.1	0.3	0.7	1.6	2.4	2.5	2.1	1.8
12	1	3000	0.1	0.3	0.7	1.5	2	2.1	2.1	1.9
18	1	0	0.3	0.3	0.6	1.5	2.5	2.3	1.6	1.4
18	1	1000	0.3	0.3	0.6	1.4	2.6	2.4	1.6	1.4
18	1	2000	0.2	0.2	0.6	1.4	2.5	2.3	1.6	1.4
18	1	3000	0.2	0.1	0.6	1.3	2.3	2.3	1.5	1.4
24	1	0	0.2	0.2	0.5	1.2	2.7	1.7	1.3	1.4
24	1	1000	0.2	0.2	0.5	1.2	2.7	1.6	1.3	1.2
24	1	2000	0.2	0.2	0.5	1.2	2.7	1.6	1.2	1.2
24	1	3000	0.3	0.2	0.4	1.1	2.6	1.7	1.2	1.3
30	1	0	0.1	0.2	0.4	1.3	2.1	1.3	1.2	1.2
30	1	1000	0.1	0.2	0.4	1.3	2.1	1.2	1.1	1.1
30	1	2000	0.1	0.2	0.4	1.3	2.1	1.2	1.1	1.1
30	1	3000	0.1	0.2	0.4	1.3	2	1.2	1	1.1
36	1	0	0.1	0.2	0.3	1.1	1.6	1.2	1	0.9
36	1	1000	0.1	0.2	0.3	1.1	1.6	1.1	0.9	0.9
36	1	2000	0.1	0.2	0.3	1.1	1.6	1	0.9	0.9
36	1	3000	0.1	0.2	0.3	1	1.5	1	0.9	0.9
42	1	0	0.1	0.1	0.3	1.1	1.2	1	0.8	0.8
42	1	1000	0.1	0.2	0.3	1.1	1.1	1	0.7	0.6
42	1	2000	0.1	0.2	0.3	1.1	1	0.9	0.7	0.6
42	1	3000	0.1	0.2	0.3	1	1	0.9	0.7	0.6

- The chart represents tests performed by an independent testing laboratory in accordance with ASTM standard E477-96, entitled "Standard Method of Testing Duct Liner Materials and Prefabricated Silencers for Acoustical and Airflow Performance". Data for test specimens with inside diameters of 6", 12", 18", 24", 30", 36" and 42" were recorded for 20' lengths of duct and then divided to obtain the dB/foot ratings.
- Insertion loss gains of approximately 0.25 to 0.50 dB/ft in the 4th, 5th, and 6th octave bands were recorded for 24" diameter duct with 2" thick insulation. Gains were negligible in the 1st, 2nd, 3rd, 7th and 8th octave bands.
- Data recorded for a 30' section of 24" diameter duct indicates an average gain of 1 dB in the 2nd octave band, 3 dB in the 3rd octave band, 9 dB in the 4th octave band, 1 dB in the 5th octave band, 4 dB in the 6th octave band, 4 dB in the 7th octave band and 3 dB in the 8th octave band. These gains were the average for insertion loss data collected at 0, 1000, 2000 and 3000 fpm with 0.000, 0.006, 0.031, and 0.070 inch water gauge respectively.
- Data was not collected for duct lengths greater than 30'. However, the results for the 30' test indicate the insertion loss gains diminish with longer duct lengths. For this reason, the data in the above table should be considered valid only for sections of duct 20' or less in length. In addition, data was not collected for larger diameter duct. As the test data indicates, insertion loss decreases with increasing duct diameters.
- The self-generated noise for double wall duct is too low to be measured by ASTM E477-96. The measurements obtained for these ducts are equal to the corresponding single wall duct reference condition or are within +/- 10 dB per ASTM E477-96 section 9.1.2.
- Reduced breakout noise in double wall pipe with outer diameter 14" and larger is attributed to double corrugation which increases rigidity and minimizes the area of the outer shell that allows sound waves to break out of the system.

# Flat Oval Spiral Duct

# FOSR

12



## Description

Flat oval spiral duct. Note: All flat oval spiral duct is constructed with multiple corrugations between the seams.

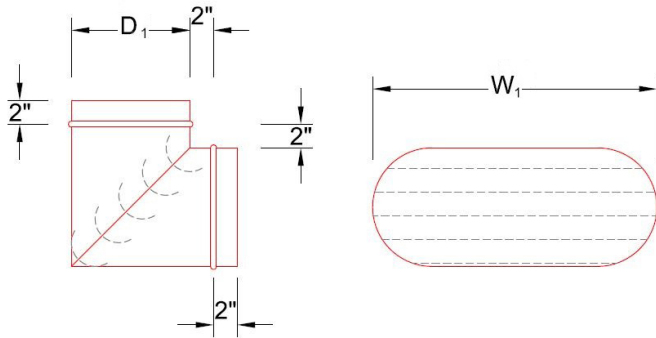
## Dimensions

Available dimensions are listed in table on pages 7-10.

## Order Example

Single Wall      FOSR -  $W_1/D_1$  - L  
 Double Wall      FOSRI -  $W_1/D_1$  - L -  $i$

# Elbows



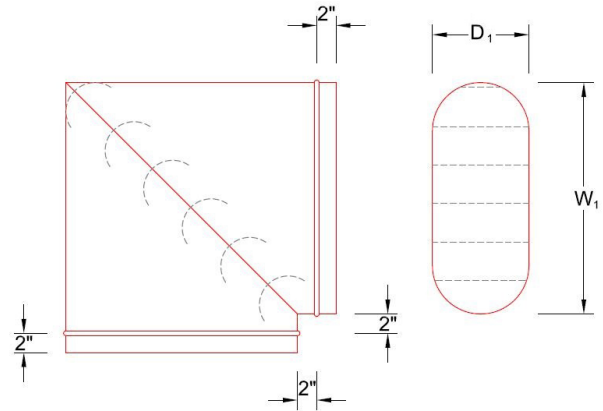
## Description

Mitered 90° easy bend elbow with turning vanes. Available without turning vanes upon request.

## Order Example

Single Wall      FOBME -  $W_1/D_1$   
 Double Wall     FOBMEI -  $W_1/D_1 - i$

# FOBME/FOBMH



## Description

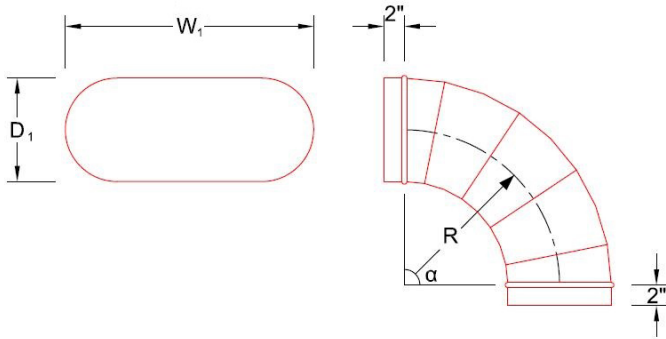
Mitered 90° hard bend elbow with turning vanes. Available without turning vanes upon request.

## Order Example

Single Wall      FOBMH -  $W_1/D_1$   
 Double Wall     FOBMHI -  $W_1/D_1 - i$

# Elbows

14



Description

Easy bend elbow with  $R = 1.5 \times D_1$

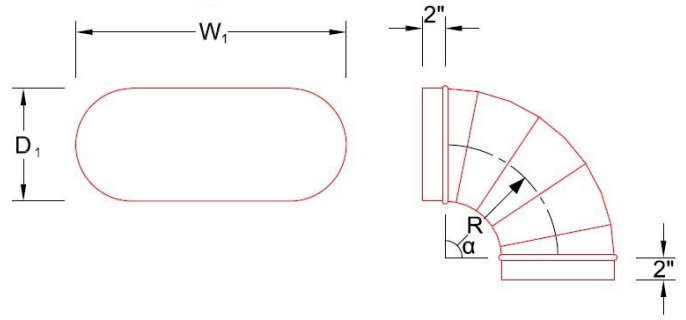
Dimensions

$\alpha$  = elbow angle

Order Example

Single Wall      FOBE $\alpha$  -  $W_1/D_1$   
 Double Wall     FOBEI $\alpha$  -  $W_1/D_1 - i$

# FOBE/FOBEA



Description

Easy bend elbow with  $R = 1.0 \times D_1$

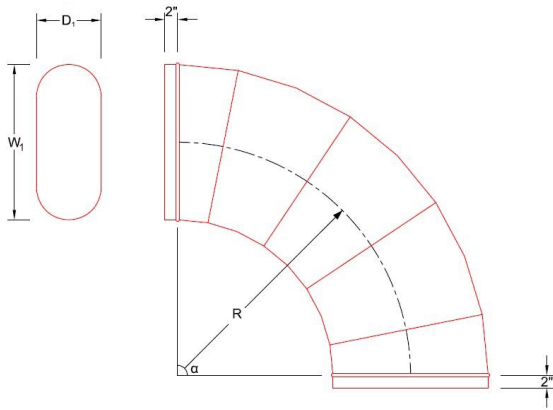
Dimensions

$\alpha$  = elbow angle

Order Example

Single Wall      FOBEA $\alpha$  -  $W_1/D_1$   
 Double Wall     FOBEAI $\alpha$  -  $W_1/D_1 - i$

# Elbows



## Description

Hard bend elbow with  $R = 1.5 \times W_1$ .  
For majors  $\geq 46$ ", FOBH/I 90° will be constructed of two FOBH/I 45°s.

## Dimensions

$\alpha$  = elbow angle

## NOTE:

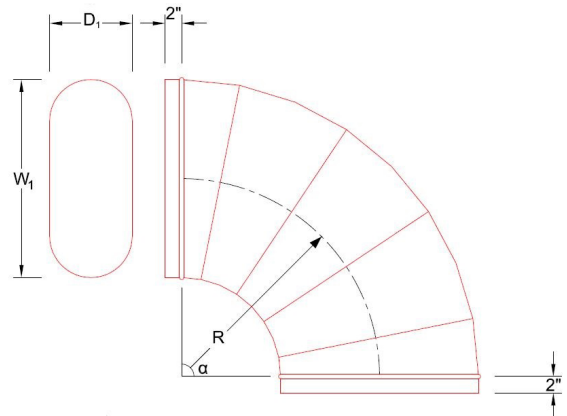
FOBH majors  $\geq 48$ ", construction is limited to 60°.

FOBHI majors  $\geq 40$ ", construction is limited to 60°.

## Order Example

Single Wall	FOBH $\alpha$ - $W_1/D_1$
Double Wall	FOBHI $\alpha$ - $W_1/D_1 - i$

# FOBH/FOBHA



## Description

Hard bend elbow with  $R = 1.0 \times W_1$ .  
For majors  $\geq 46$ ", FOBHA/I 90° will be constructed of two FOBHA/I 45°s.

## Dimensions

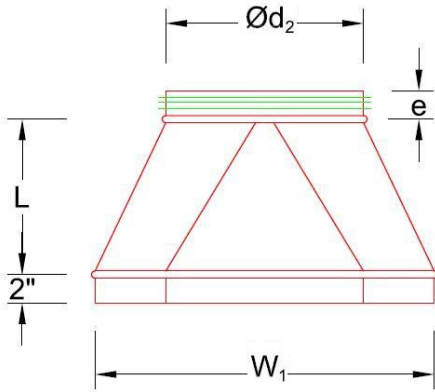
$\alpha$  = elbow angle

## Order Example

Single Wall	FOBHA $\alpha$ - $W_1/D_1$
Double Wall	FOBHA $\alpha$ - $W_1/D_1 - i$

# Reducers

16



Description

Oval to round concentric reducer.

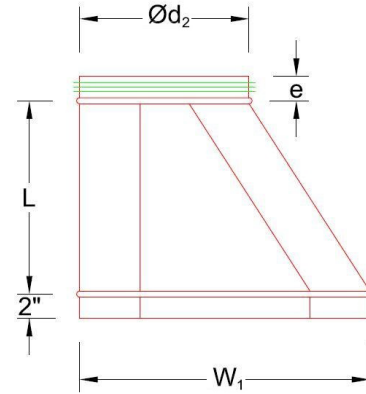
Dimensions

$$L = [(W_1 - \text{Ø}d_2) \times 0.5] + 6$$

Order Example

Single Wall	FORC - $W_1/D_1$ - $\text{Ø}d_2$
Double Wall	FORCI - $W_1/D_1$ - $\text{Ø}d_2$ - $i$

# FORC/FORCE



Description

Oval to round eccentric reducer

Dimensions

$$L = (W_1 - \text{Ø}d_2) + 6$$

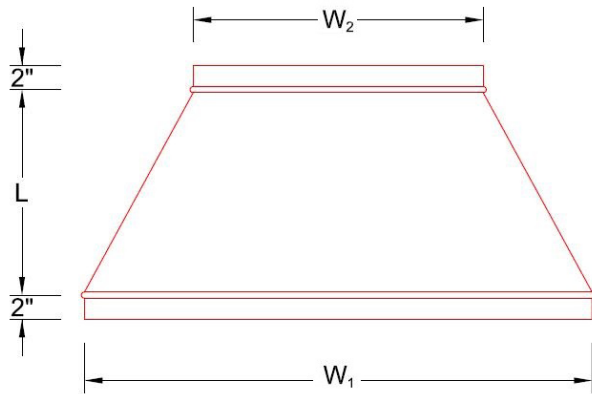
Configurations (when looking down from  $W_1$  to  $\text{Ø}d_2$ ):

- FOT = flat on top
- FOB = flat on bottom
- FOL = flat on left
- FOR = flat on right
- FOTR = flat on top right
- FOTL = flat on top left
- FOBR = flat on bottom right
- FOBL = flat on bottom left

Order Example

Single Wall	FORCE - $W_1/D_1$ - $\text{Ø}d_2$ - Config
Double Wall	FORCEI - $W_1/D_1$ - $\text{Ø}d_2$ - Config - $i$

# Reducers



## Description

Oval to oval concentric reducer.

## Dimensions

$$L = [(W_1 - W_2) \times 0.5] + 8$$

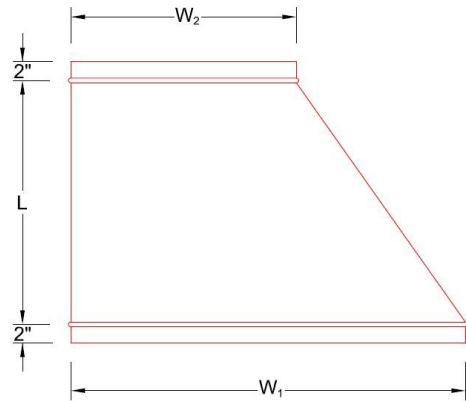
## Substitute:

$D_{1,2}$  for  $W_{1,2}$  if  $(D_1 - D_2) > (W_1 - W_2)$

## Order Example

Single Wall FOR -  $W_1/D_1 - W_2/D_2$   
 Double Wall FORI -  $W_1/D_1 - W_2/D_2 - i$

# FOR/FORE



## Description

Oval to oval eccentric reducer.

## Dimensions

$$L = (W_1 - W_2) + 8$$

## Substitute:

$D_{1,2}$  for  $W_{1,2}$  if  $(D_1 - D_2) > (W_1 - W_2)$

Configurations (when looking down from  $W_1$  to  $W_2$ ):

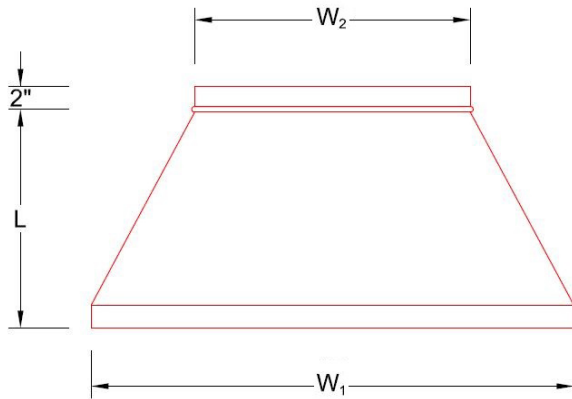
FOT = flat on top  
 FOB = flat on bottom  
 FOL = flat on left  
 FOR = flat on right  
 FOTR = flat on top right  
 FOTL = flat on top left  
 FOBR = flat on bottom right  
 FOBL = flat on bottom left

## Order Example

Single Wall FORE -  $W_1/D_1 - W_2/D_2$  - Config  
 Double Wall FOREI -  $W_1/D_1 - W_2/D_2$  - Config -  $i$

# Reducers

18



### Description

Oval to oval concentric reducer.  
Large end: duct size.

### Dimensions

$$L = [(W_1 - W_2) \times 0.5] + 10$$

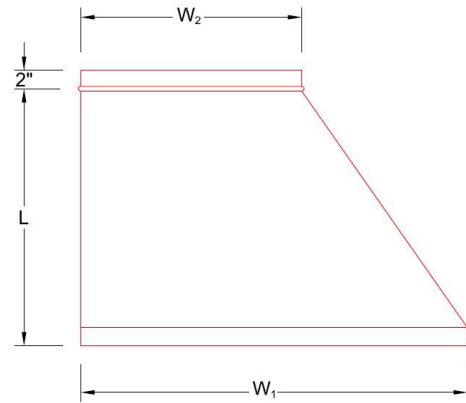
### Substitute:

$D_{1,2}$  for  $W_{1,2}$  if  $(D_1 - D_2) > (W_1 - W_2)$

### Order Example

Single Wall	FORF - $W_1/D_1$ - $W_2/D_2$
Double Wall	FORFI - $W_1/D_1$ - $W_2/D_2$ - $i$

# FORF/FOREF



### Description

Oval to oval eccentric reducer.  
Large end: duct size.

### Dimensions

$$L = (W_1 - W_2) + 10$$

### Substitute:

$D_{1,2}$  for  $W_{1,2}$  if  $(D_1 - D_2) > (W_1 - W_2)$

Configurations (when looking down from  $W_1$  to  $\emptyset d_2$ ):

FOT = flat on top

FOB = flat on bottom

FOL = flat on left

FOR = flat on right

FOTR = flat on top right

FOTL = flat on top left

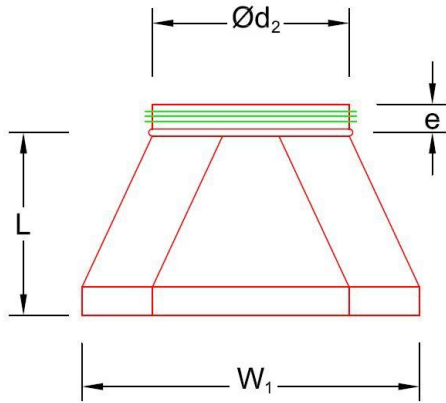
FOBR = flat on bottom right

FOBL = flat on bottom left

### Order Example

Single Wall	FOREF - $W_1/D_1$ - $W_2/D_2$ - Config
Double Wall	FOREFI - $W_1/D_1$ - $W_2/D_2$ - Config - $i$

# Reducers



## Description

Oval to round concentric reducer.  
Large end: duct size.

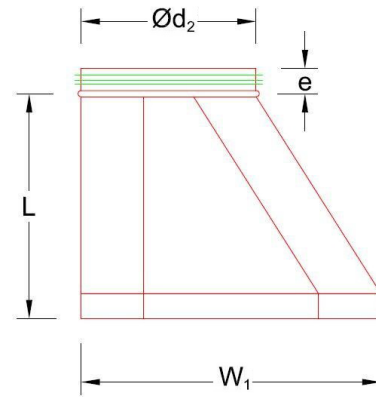
## Dimensions

$$L = [(W_1 - \varnothing d_2) \times 0.5] + 8$$

## Order Example

Single Wall    FORCF -  $W_1/D_1$  -  $\varnothing d_2$   
Double Wall    FORCFI -  $W_1/D_1$  -  $\varnothing d_2$  -  $i$

# FORCF/FORCEF



## Description

Oval to round eccentric reducer.  
Large end: duct size.

## Dimensions

$$L = (W_1 - \varnothing d_2) + 8$$

Configurations (when looking down from  $W_1$  to  $\varnothing d_2$ ):

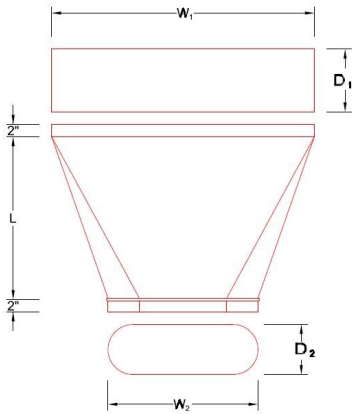
FOT = flat on top  
 FOB = flat on bottom  
 FOL = flat on left  
 FOR = flat on right  
 FOTR = flat on top right  
 FOTL = flat on top left  
 FOBR = flat on bottom right  
 FOBL = flat on bottom left

## Order Example

Single Wall    FORCEF -  $W_1/D_1$  -  $\varnothing d_2$  - Config  
 Double Wall    FORCEFI -  $W_1/D_1$  -  $\varnothing d_2$  - Config -  $i$

# Transitions

20



Description

Rectangular to oval concentric transition.  
Extended raw ends.

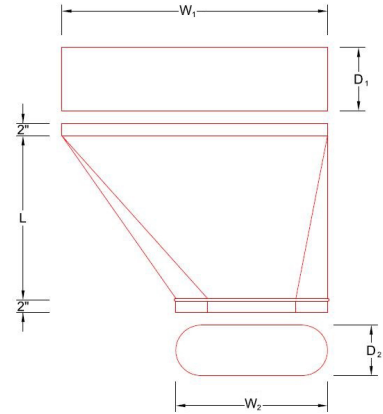
Dimensions

L can be any length as long as taper angle is less than or equal to 45°.

Order Example

Single Wall FOROR -  $W_1/D_1 - W_2/D_2 - L$   
 Double Wall FORORI -  $W_1/D_1 - W_2/D_2 - L - i$

# FOROR/FORORE



Description

Rectangular to oval eccentric transition.

Dimensions

L can be any length as long as taper angle is less than or equal to 45°.

Configurations (when looking down from  $W_1$  to  $\varnothing d_2$ ):

- FOT = flat on top
- FOB = flat on bottom
- FOL = flat on left
- FOR = flat on right
- FOTR = flat on top right
- FOTL = flat on top left
- FOBR = flat on bottom right
- FOBL = flat on bottom left

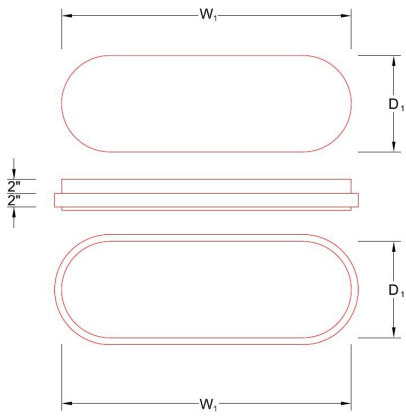
Order Example

Single Wall FORORE -  $W_1/D_1 - W_2/D_2 - L - \text{Config}$   
 Double Wall FOROREI -  $W_1/D_1 - W_2/D_2 - L - \text{Config} - i$

# Transitions

# FORCK

21



## Description

Double wall to single wall transition.  $W_1 \times D_1$  is the inner diameter of the double wall.

## Configurations:

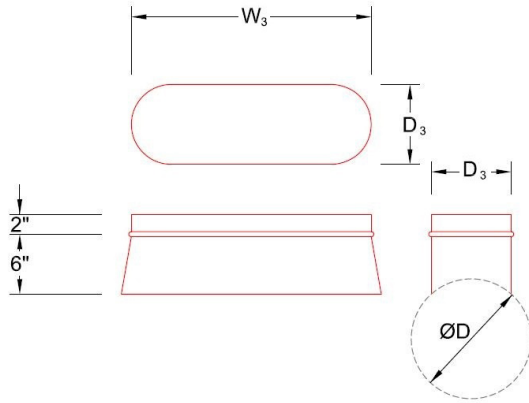
- FORCKMM: both male ends
- FORCKMF: small end male, large end female
- FORCKFM: small end female, large end male
- FORCKFF: both ends female

## Order Example

Double Wall FORCK -  $W_1/D_1$  - Config -  $i$

# Saddle Taps

22



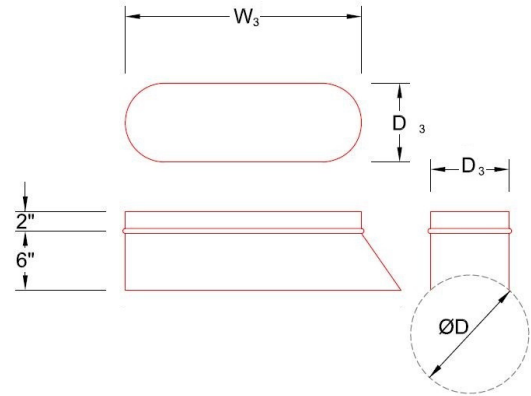
Description

Oval expanded base saddle tap for field installation on the minor axis of flat oval or on round duct.

Order Example

Single Wall FOST -  $W_3/D_3$  -  $\text{ØD}$

# FOST/FOSBT



Description

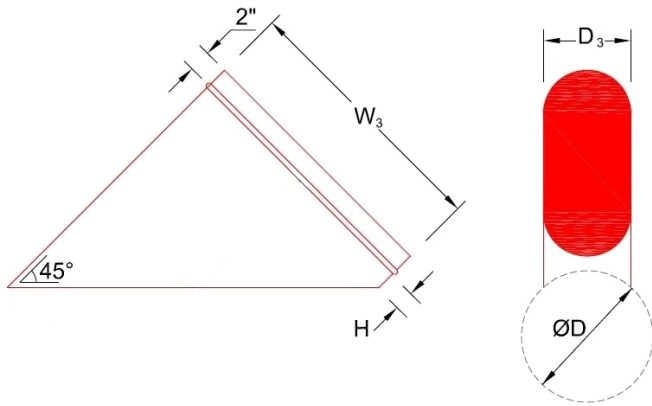
Oval boot saddle tap for field installation on the minor axis of flat oval or on round duct.

Order Example

Single Wall FOSBT -  $W_3/D_3$  -  $\text{ØD}$

# Saddle Taps

# FOSVT 45



## Description

Oval 45° lateral saddle tap for field installation on the minor axis of flat oval or on round duct.

## Dimensions

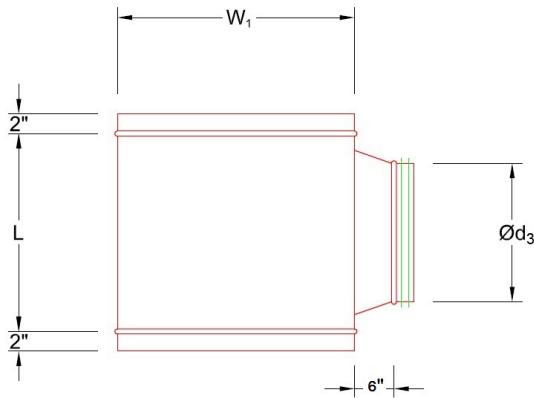
H = 2.5"(constant)(throat length)

## Order Example

Single Wall FOSVT 45 - W<sub>3</sub>/D<sub>3</sub> - ØD

# Tees/Crossing Tees

24



## Description

Oval tee with round conical concentric taps on minor axis. Taps are centered on fitting body.

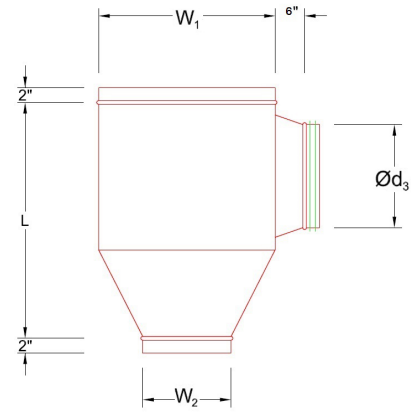
## Dimensions

$$L = \text{Ø}d_3 + 6$$

## Order Example

Single Wall	FOTCT - $W_1/D_1 - \text{Ø}d_3$
Double Wall	FOTCTI - $W_1/D_1 - \text{Ø}d_3 - i$

# FOTCT/FORTCT



## Description

Oval reducing tee with round conical concentric taps on minor axis.

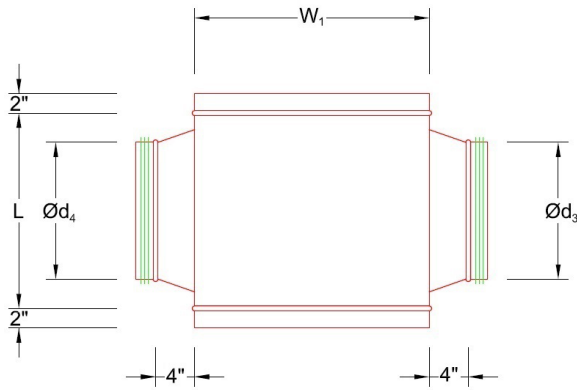
## Dimensions

$$L = (\text{Ø}d_3 + 6) + [(W_1 - W_2) \times 0.5] + 6$$

## Order Example

Single Wall	FORTCT - $W_1/D_1 - W_2/D_2 - \text{Ø}d_3$
Double Wall	FORTCTI - $W_1/D_1 - W_2/D_2 - \text{Ø}d_3 - i$

# Tees/Crossing Tees



### Description

Oval crossing tee with round conical concentric taps on minor axis. Tap is centered on fitting body.

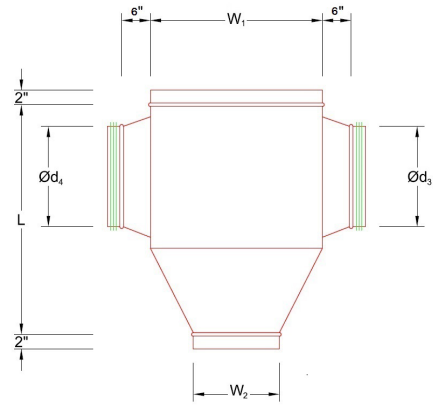
### Dimensions

$\text{Ød}_3$  is always greater than or equal to  $\text{Ød}_4$ .  
 $L = \text{Ød}_3 + 6$

### Order Example

Single Wall FOXCT -  $W_1/D_1 - \text{Ød}_3 - \text{Ød}_4$   
 Double Wall FOXCTI -  $W_1/D_1 - \text{Ød}_3 - \text{Ød}_4 - i$

# FOXCT/FORXCT



### Description

Oval reducing crossing tee with round conical concentric taps on minor axis.

### Dimensions

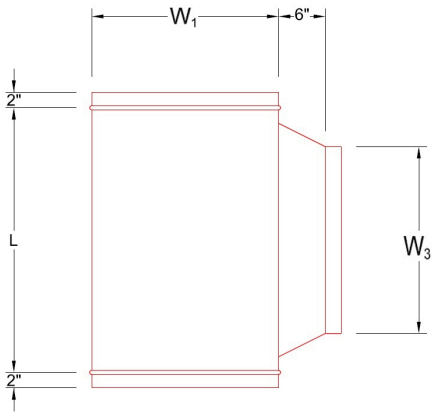
$\text{Ød}_3$  is always greater than or equal to  $\text{Ød}_4$ .  
 $L = (\text{Ød}_3 + 6) + [(W_1 - W_2) \times 0.5] + 6$

### Order Example

Single Wall FORXCT -  $W_1/D_1 - W_2/D_2 - \text{Ød}_3 - \text{Ød}_4$   
 Double Wall FORXCTI -  $W_1/D_1 - W_2/D_2 - \text{Ød}_3 - \text{Ød}_4 - i$

# Tees/Crossing Tees

26



Description

Oval tee with oval expanded base concentric tap on minor axis. Tap is centered on fitting body.

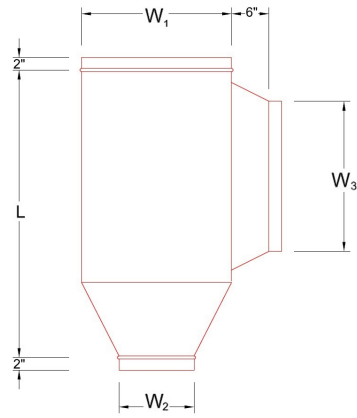
Dimensions

$$L = W_3 + 10$$

Order Example

Single Wall      FOTST -  $W_1/D_1 - W_3/D_3$   
 Double Wall     FOTSTI -  $W_1/D_1 - W_3/D_3 - i$

# FOTST/FORTST



Description

Oval reducing tee with oval expanded base concentric tap on minor axis.

Dimensions

$$L = (W_3 + 10) + [(W_1 - W_2) \times 0.5] + 6$$

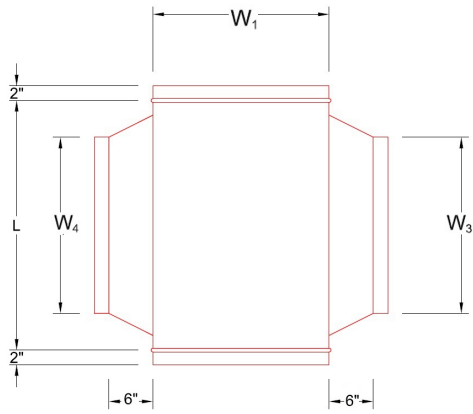
Substitute:

$$D_{1,2} \text{ for } W_{1,2} \text{ if } (D_1 - D_2) > (W_1 - W_2)$$

Order Example

Single Wall      FORTST -  $W_1/D_1 - W_2/D_2 - W_3/D_3$   
 Double Wall     FORTSTI -  $W_1/D_1 - W_2/D_2 - W_3/D_3 - i$

# Tees/Crossing Tees



### Description

Oval crossing tee with oval expanded base concentric taps on minor axis. Taps are centered on fitting body.

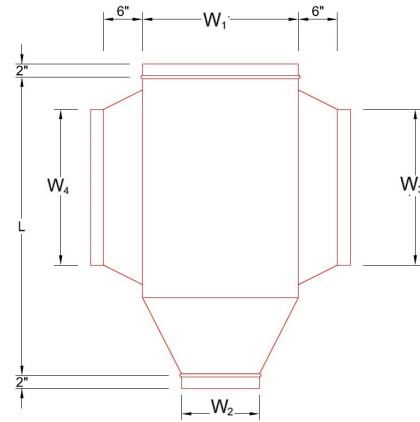
### Dimensions

$W_3$  is always greater than or equal to  $W_4$ .  
 $L = W_3 + 10$

### Order Example

Single Wall FOXST -  $W_1/D_1 - W_3/D_3 - W_4/D_4$   
 Double Wall FOXSTI -  $W_1/D_1 - W_3/D_3 - W_4/D_4 - i$

# FOXST/FORXST



### Description

Oval reducing tee with oval expanded base concentric taps on minor axis.

### Dimensions

$W_3$  is always greater than or equal to  $W_4$ .  
 $L = (W_3 + 10) + [(W_1 - W_2) \times 0.5] + 6$

### Substitute:

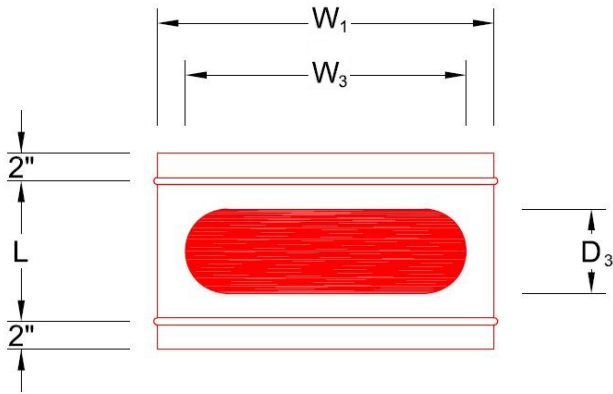
$D_{1,2}$  for  $W_{1,2}$  if  $(D_1 - D_2) > (W_1 - W_2)$

### Order Example

Single Wall FORXST -  $W_1/D_1 - W_2/D_2 - W_3/D_3 - W_4/D_4$   
 Double Wall FORXSTI -  $W_1/D_1 - W_2/D_2 - W_3/D_3 - W_4/D_4 - i$

# Tees/Crossing Tees

28



Description

Oval tee with oval straight tap on major axis. Tap is centered on fitting body.

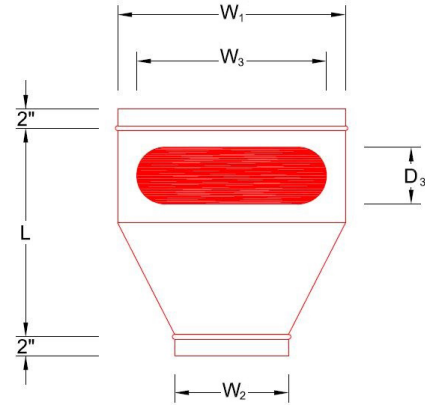
Dimensions

$L = D_3 + 4$   
Height from fitting body to tap bead = 2".

Order Example

Single Wall FOTM -  $W_1/D_1 - W_3/D_3$   
Double Wall FOTMI -  $W_1/D_1 - W_3/D_3 - i$

# FOTM/FORTM



Description

Oval reducing tee with oval straight tap on major axis.

Dimensions

$L = (D_3 + 4) + [(W_1 - W_2) \times 0.5] + 6$   
Height from fitting body to tap bead = 2".

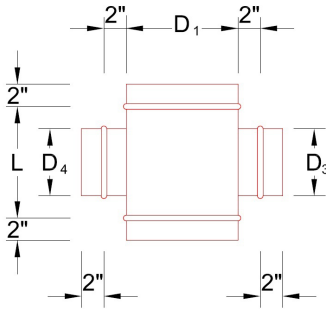
Substitute:

$D_{1,2}$  for  $W_{1,2}$  if  $(D_1 - D_2) > (W_1 - W_2)$

Order Example

Single Wall FORTM -  $W_1/D_1 - W_2/D_2 - W_3/D_3$   
Double Wall FORTMI -  $W_1/D_1 - W_2/D_2 - W_3/D_3 - i$

# Tees/Crossing Tees



## Description

Oval crossing tee with oval straight taps on major axis. Taps are centered on fitting body.

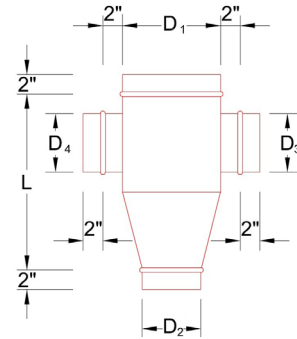
## Dimensions

$D_3$  is always greater than or equal to  $D_4$ .  
 $L = D_3 + 4$

## Order Example

Single Wall FOXM -  $W_1/D_1 - W_3/D_3 - W_4/D_4$   
 Double Wall FOXMI -  $W_1/D_1 - W_3/D_3 - W_4/D_4 - L - i$

# FOXM/FORXM



## Description

Oval reducing crossing tee with oval straight taps on major axis.

## Dimensions

$D_3$  is always greater than or equal to  $D_4$ .  
 $L = (D_3 + 4) + [(D_1 - D_2) \times 0.5] + 6$

## Substitute:

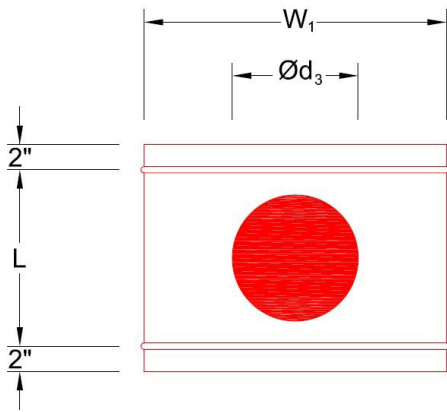
$W_{1,2}$  for  $D_{1,2}$  if  $(W_1 - W_2) > (D_1 - D_2)$

## Order Example

Single Wall FORXM -  $W_1/D_1 - W_2/D_2 - W_3/D_3 - W_4/D_4$   
 Double Wall FORXMI -  $W_1/D_1 - W_2/D_2 - W_3/D_3 - W_4/D_4 - i$

# Tees/Crossing Tees

30



Description

Oval tee with round straight tap on major axis. Tap is centered on fitting body.

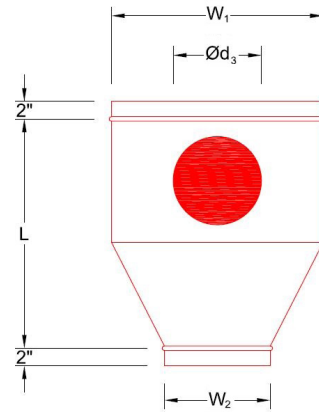
Dimensions

$L = \text{Ø}d_3 + 4$   
 Height from fitting body to tap bead = 2".

Order Example

Single Wall      FOTMC -  $W_1/D_1 - \text{Ø}d_3$   
 Double Wall     FOTMCI -  $W_1/D_1 - \text{Ø}d_3 - i$

# FOTMC/FORTMC



Description

Oval reducing tee with round straight tap on major axis. Tap is centered on fitting body.

Dimensions

$L = (\text{Ø}d_3 + 4) + [(W_1 - W_2) \times 0.5] + 6$   
 Height from fitting body to tap bead = 2".

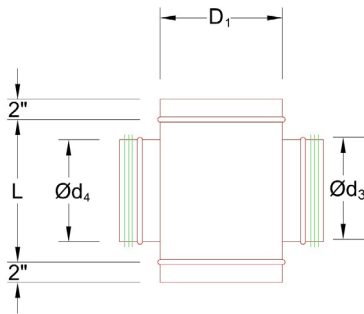
Substitute:

$D_{1,2}$  for  $W_{1,2}$  if  $(D_1 - D_2) > (W_1 - W_2)$

Order Example

Single Wall      FORTMC -  $W_1/D_1 - W_2/D_2 - \text{Ø}d_3$   
 Double Wall     FORTMCI -  $W_1/D_1 - W_2/D_2 - \text{Ø}d_3 - i$

# Tees/Crossing Tees



## Description

Oval crossing tee with round straight taps on major axis. Taps are centered on fitting body.

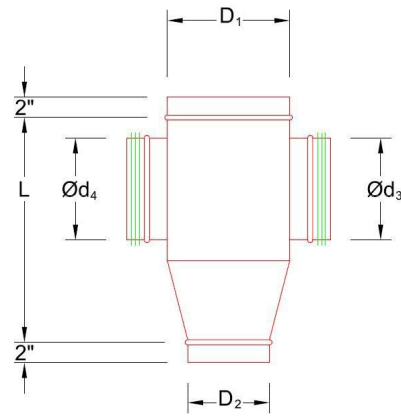
## Dimensions

$\text{Ø}d_3$  is always greater than or equal to  $\text{Ø}d_4$ .  
 $L = \text{Ø}d_3 + 4$

## Order Example

Single Wall FOXMC -  $W_1/D_1 - \text{Ø}d_3 - \text{Ø}d_4$   
 Double Wall FOXMCI -  $W_1/D_1 - \text{Ø}d_3 - \text{Ø}d_4 - i$

# FOXMC/FORXMC



## Description

Oval reducing crossing tee with oval straight taps on major axis.

## Dimensions

$\text{Ø}d_3$  is always greater than or equal to  $\text{Ø}d_4$ .  
 $L = (\text{Ø}d_3 + 4) + [(D_1 - D_2) \times 0.5] + 6$

## Substitute:

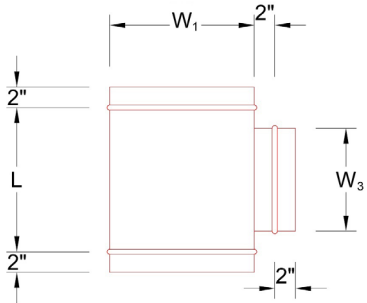
$W_{1,2}$  for  $D_{1,2}$  if  $(W_1 - W_2) > (D_1 - D_2)$

## Order Example

Single Wall FORXMC -  $W_1/D_1 - W_2/D_2 - \text{Ø}d_3 - \text{Ø}d_4$   
 Double Wall FORXMCI -  $W_1/D_1 - W_2/D_2 - \text{Ø}d_3 - \text{Ø}d_4 - i$

# Tees/Crossing Tees

32



## Description

Oval tee with oval straight tap on minor axis. Tap is centered on fitting body.

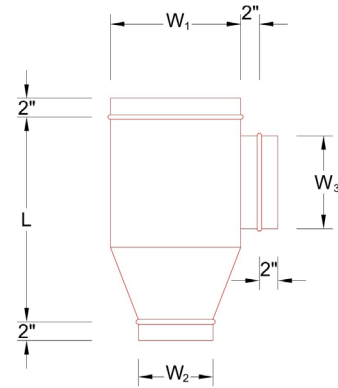
## Dimensions

$$L = W_3 + 4$$

## Order Example

Single Wall	FOT - $W_1/D_1 - W_3/D_3$
Double Wall	FOTI - $W_1/D_1 - W_3/D_3 - i$

# FOT/FORT



## Description

Oval reducing tee with oval straight tap on minor axis.

## Dimensions

$$L = (W_3 + 4) + [(W_1 - W_2) \times 0.5] + 6$$

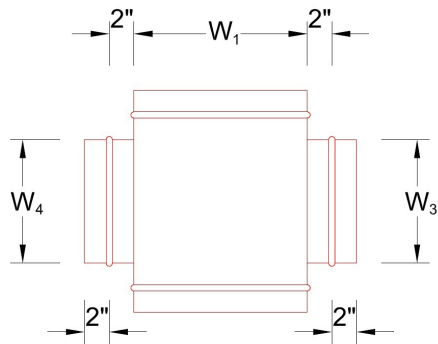
## Substitute:

$$D_{1,2} \text{ for } W_{1,2} \text{ if } (D_1 - D_2) > (W_1 - W_2)$$

## Order Example

Single Wall	FORT - $W_1/D_1 - W_2/D_2 - W_3/D_3$
Double Wall	FORTI - $W_1/D_1 - W_2/D_2 - W_3/D_3 - i$

# Tees/Crossing Tees



## Description

Oval tee with oval straight taps on minor axis. Taps are centered on fitting body.

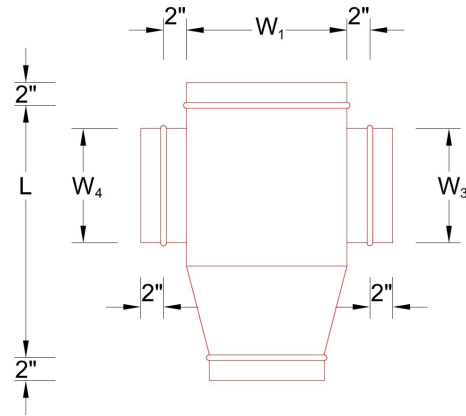
## Dimensions

$W_3$  is always greater than or equal to  $W_4$ .  
 $L = W_3 + 4$

## Order Example

Single Wall FOX -  $W_1/D_1 - W_3/D_3 - W_4/D_4$   
 Double Wall FOXI -  $W_1/D_1 - W_3/D_3 - W_4/D_4 - i$

# FOX/FORX



## Description

Oval reducing crossing tee with oval straight taps on minor axis.

## Dimensions

$W_3$  is always greater than or equal to  $W_4$ .  
 $L = (W_3 + 4) + [(W_1 - W_2) \times 0.5] + 6$

## Substitute:

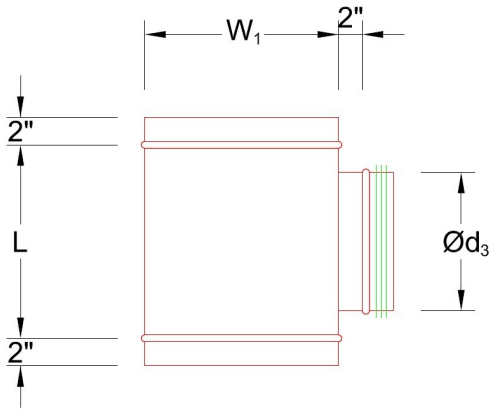
$D_{1,2}$  for  $W_{1,2}$  if  $(D_1 - D_2) > (W_1 - W_2)$

## Order Example

Single Wall FORX -  $W_1/D_1 - W_2/D_2 - W_3/D_3 - W_4/D_4$   
 Double Wall FORXI -  $W_1/D_1 - W_2/D_2 - W_3/D_3 - W_4/D_4 - i$

# Tees/Crossing Tees

34



## Description

Oval tee with round straight tap on minor axis. Tap is centered on fitting body.

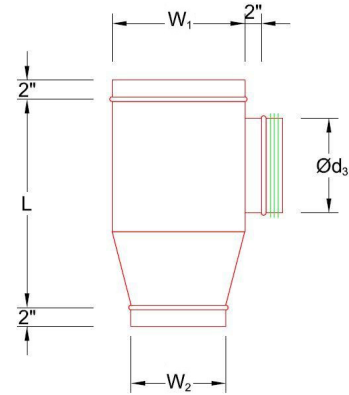
## Dimensions

$$L = \text{Ø}d_3 + 4$$

## Order Example

Single Wall	FOTC - $W_1/D_1 - \text{Ø}d_3$
Double Wall	FOTCI - $W_1/D_1 - \text{Ø}d_3 - i$

# FOTC/FORTC



## Description

Oval reducing tee with round straight tap on minor axis.

## Dimensions

$$L = (\text{Ø}d_3 + 4) + [(W_1 - W_2) \times 0.5] + 6$$

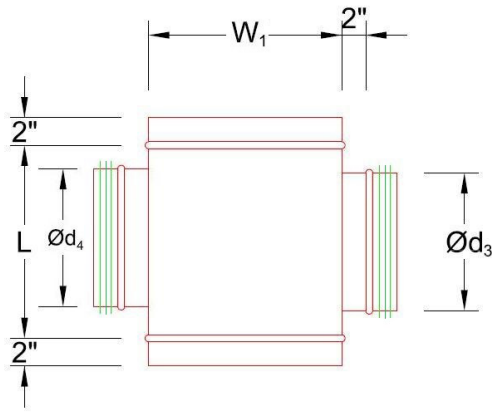
## Substitute:

$$D_{1,2} \text{ for } W_{1,2} \text{ if } (D_1 - D_2) > (W_1 - W_2)$$

## Order Example

Single Wall	FORTC - $W_1/D_1 - W_2/D_2 - \text{Ø}d_3$
Double Wall	FORTCI - $W_1/D_1 - W_2/D_2 - \text{Ø}d_3 - i$

# Tees/Crossing Tees



### Description

Oval crossing tee with round straight taps on minor axis. Taps are centered on fitting body.

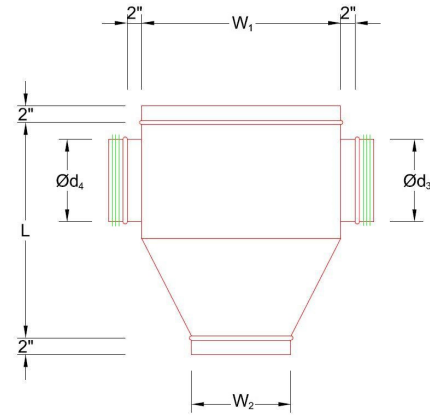
### Dimensions

$\text{Ø}d_3$  is always greater than or equal to  $\text{Ø}d_4$ .  
 $L = \text{Ø}d_3 + 4$

### Order Example

Single Wall      FOXC -  $W_1/D_1 - \text{Ø}d_3 - \text{Ø}d_4$   
 Double Wall     FOXCI -  $W_1/D_1 - \text{Ø}d_3 - \text{Ø}d_4 - i$

# FOXC/FORXC



### Description

Oval reducing crossing tee with round straight taps on minor axis.

### Dimensions

$\text{Ø}d_3$  is always greater than or equal to  $\text{Ø}d_4$ .  
 $L = (\text{Ø}d_3 + 4) + [(W_1 - W_2) \times 0.5] + 6$

### Substitute:

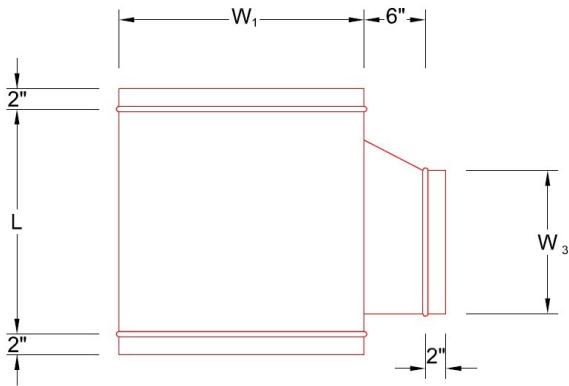
$D_{1,2}$  for  $W_{1,2}$  if  $(D_1 - D_2) > (W_1 - W_2)$

### Order Example

Single Wall      FORXC -  $W_1/D_1 - W_2/D_2 - \text{Ø}d_3 - \text{Ø}d_4$   
 Double Wall     FORXCI -  $W_1/D_1 - W_2/D_2 - \text{Ø}d_3 - \text{Ø}d_4 - i$

# Tees/Crossing Tees

36



Description

Oval tee with oval boot tap on minor axis.

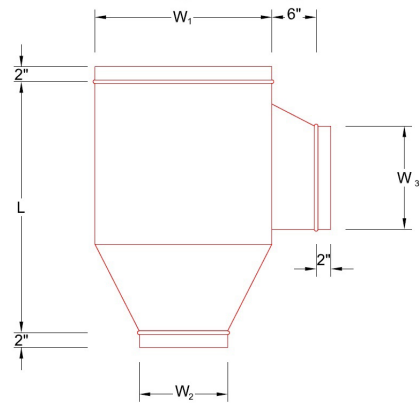
Dimensions

$$L = W_3 + 10$$

Order Example

Single Wall     FOTBS -  $W_1/D_1 - W_3/D_3$   
 Double Wall     FOTBSI -  $W_1/D_1 - W_3/D_3 - i$

# FOTBS/FORTBS



Description

Oval reducing tee with oval boot tap on minor axis.

Dimensions

$$L = (W_3 + 10) + [(W_1 - W_2) \times 0.5] + 6$$

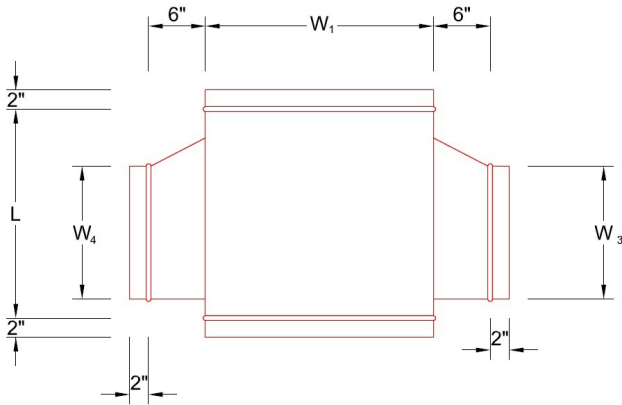
Substitute:

$D_{1,2}$  for  $W_{1,2}$  if  $(D_1 - D_2) > (W_1 - W_2)$

Order Example

Single Wall     FORTBS -  $W_1/D_1 - W_2/D_2 - W_3/D_3$   
 Double Wall     FORTBSI -  $W_1/D_1 - W_2/D_2 - W_3/D_3 - i$

# Tees/Crossing Tees



## Description

Oval crossing tee with oval boot taps on minor axis.

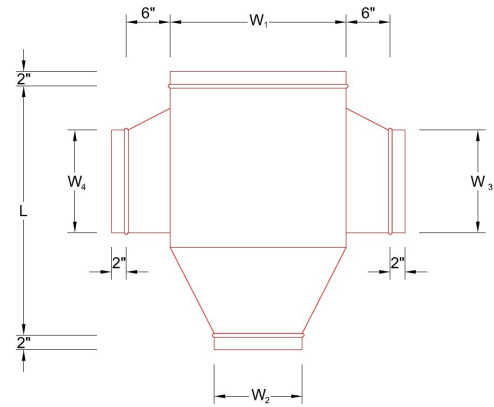
## Dimensions

$W_3$  is always greater than or equal to  $W_4$ .  
 $L = W_3 + 10$

## Order Example

Single Wall FOXBS -  $W_1/D_1 - W_3/D_3 - W_4/D_4$   
 Double Wall FOXBSI -  $W_1/D_1 - W_3/D_3 - W_4/D_4 - i$

# FOXBS/FORXBS



## Description

Oval crossing reducing tee with oval boot taps on minor axis.

## Dimensions

$W_3$  is always greater than or equal to  $W_4$ .  
 $L = (W_3 + 10) + [(W_1 - W_2) \times 0.5] + 6$

## Substitute:

$D_{1,2}$  for  $W_{1,2}$  if  $(D_1 - D_2) > (W_1 - W_2)$

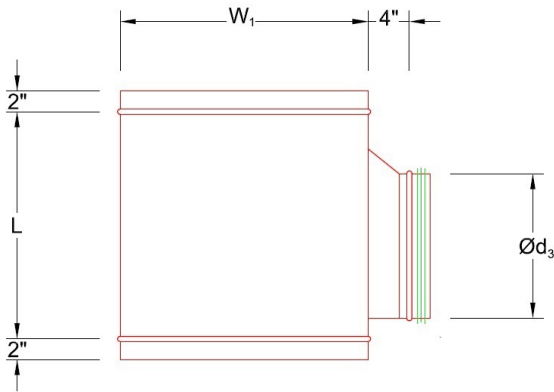
## Order Example

Single Wall FORXBS -  $W_1/D_1 - W_2/D_2 - W_3/D_3 - W_4/D_4$   
 Double Wall FORXBSI -  $W_1/D_1 - W_2/D_2 - W_3/D_3 - W_4/D_4 - i$

# Tees/Crossing Tees

# FOTBSC/FORTBSC

38



Description

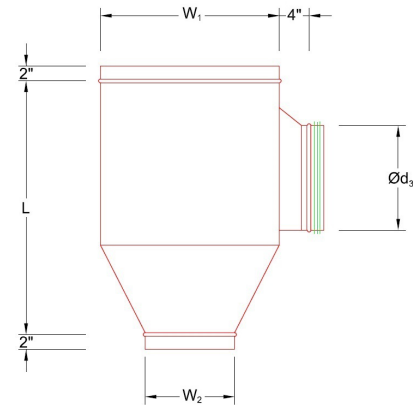
Oval tee with round boot tap on minor axis.

Dimensions

$$L = \text{Ø}d_3 + 8$$

Order Example

Single Wall      FOTBSC -  $W_1/D_1 - \text{Ø}d_3$   
 Double Wall     FOTBSCI -  $W_1/D_1 - \text{Ø}d_3 - i$



Description

Oval reducing tee with round boot tap on minor axis.

Dimensions

$$L = (\text{Ø}d_3 + 8) + [(W_1 - W_2) \times 0.5] + 6$$

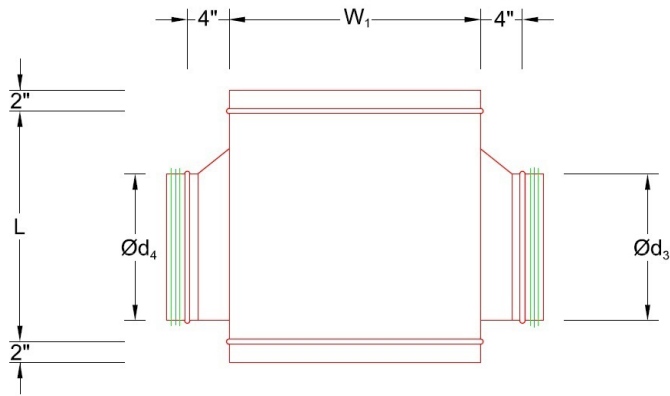
Substitute:

$D_{1,2}$  for  $W_{1,2}$  if  $(D_1 - D_2) > (W_1 - W_2)$

Order Example

Single Wall      FORTBSC -  $W_1/D_1 - W_2/D_2 - \text{Ø}d_3$   
 Double Wall     FORTBSCI -  $W_1/D_1 - W_2/D_2 - \text{Ø}d_3 - i$

# Tees/Crossing Tees



## Description

Oval crossing tee with round boot taps on minor axis.

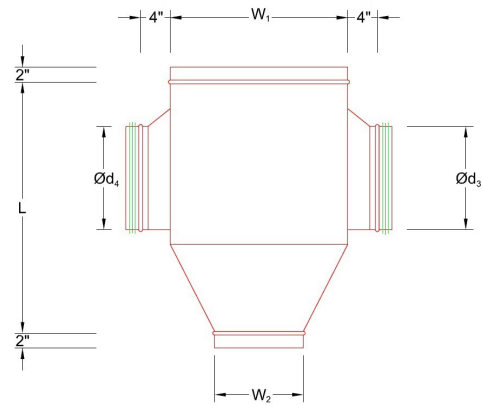
## Dimensions

$\text{Ød}_3$  is always greater than or equal to  $\text{Ød}_4$ .  
 $L = \text{Ød}_3 + 8$

## Order Example

Single Wall FOXBSC -  $W_1/D_1 - \text{Ød}_3 - \text{Ød}_4$   
 Double Wall FOXBSCI -  $W_1/D_1 - \text{Ød}_3 - \text{Ød}_4 - i$

# FOXBSC/FORXBSC



## Description

Oval reducing crossing tee with round boot taps on minor axis.

## Dimensions

$\text{Ød}_3$  is always greater than or equal to  $\text{Ød}_4$ .  
 $L = (\text{Ød}_3 + 8) + [(W_1 - W_2) \times 0.5] + 6$

## Substitute:

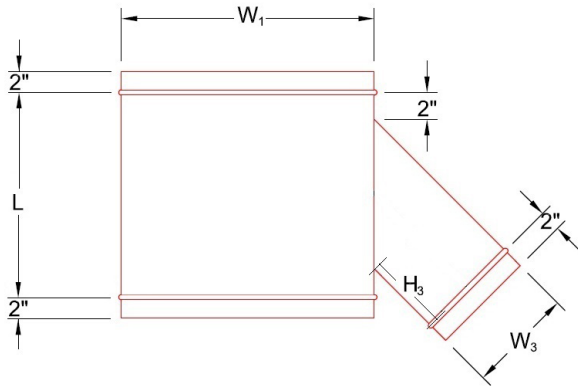
$D_{1,2}$  for  $W_{1,2}$  if  $(D_1 - D_2) > (W_1 - W_2)$

## Order Example

Single Wall FORXBSC -  $W_1/D_1 - W_2/D_2 - \text{Ød}_3 - \text{Ød}_4$   
 Double Wall FORXBSCI -  $W_1/D_1 - W_2/D_2 - \text{Ød}_3 - \text{Ød}_4 - i$

# Tees/Crossing Tees

40



## Description

Oval tee with lateral oval tap on minor axis. Tap is centered on fitting body.

## Dimensions

Available with  $\alpha = 15^\circ, 30^\circ, 45^\circ, 60^\circ$  taps.

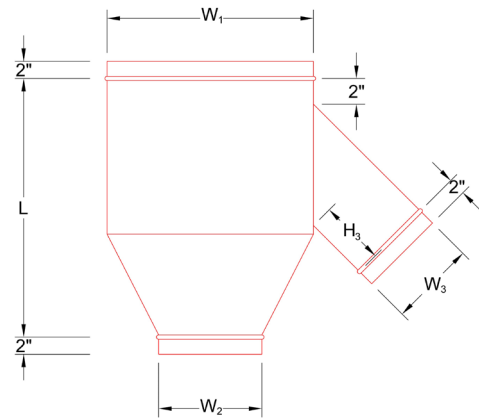
$$L = [W_3 \times (1/\sin\alpha)] + 4$$

$$H_3 = 2.5''(\text{constant})(\text{throat length})$$

## Order Example

Single Wall	FOTV $\alpha$ - W <sub>1</sub> /D <sub>1</sub> - W <sub>3</sub> /D <sub>3</sub>
Double Wall	FOTVI $\alpha$ - W <sub>1</sub> /D <sub>1</sub> - W <sub>3</sub> /D <sub>3</sub> - i

# FOTV/FORTV



## Description

Oval reducing tee with lateral oval tap on minor axis.

## Dimensions

Available with  $\alpha = 15^\circ, 30^\circ, 45^\circ, 60^\circ$  taps.

$$L = [W_3 \times (1/\sin\alpha)] + 4 + [(W_1 - W_2) \times 0.5] + 6$$

$$H_3 = 2.5''(\text{constant})(\text{throat length})$$

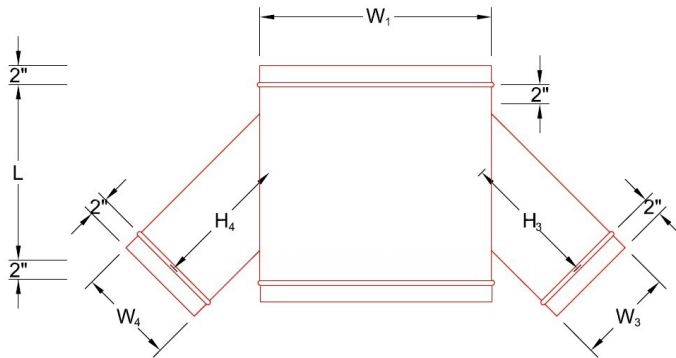
## Substitute:

$$D_{1,2} \text{ for } W_{1,2} \text{ if } (D_1 - D_2) > (W_1 - W_2)$$

## Order Example

Single Wall	FORTV $\alpha$ - W <sub>1</sub> /D <sub>1</sub> - W <sub>2</sub> /D <sub>2</sub> - W <sub>3</sub> /D <sub>3</sub>
Double Wall	FORTVI $\alpha$ - W <sub>1</sub> /D <sub>1</sub> - W <sub>2</sub> /D <sub>2</sub> - W <sub>3</sub> /D <sub>3</sub> - i

# Tees/Crossing Tees



## Description

Oval crossing tee with lateral oval taps on minor axis. Taps are centered on fitting body.

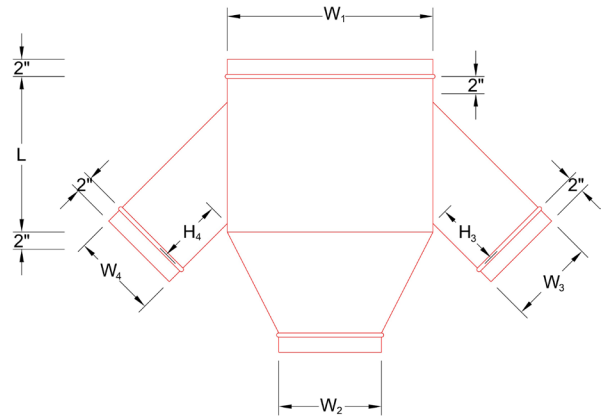
## Dimensions

Available with  $\alpha = 15^\circ, 30^\circ, 45^\circ, 60^\circ$  taps.  
 $W_3$  is always greater than or equal to  $W_4$ .  
 $L = [W_3 \times (1/\sin\alpha)] + 4$   
 $H_3 = 2.5$ "(constant)(throat length)

## Order Example

Single Wall FOXV $\alpha$  -  $W_1/D_1$  -  $W_3/D_3$  -  $W_4/D_4$   
 Double Wall FOXVI $\alpha$  -  $W_1/D_1$  -  $W_3/D_3$  -  $W_4/D_4$  -  $i$

# FOXV/FORXV



41

## Description

Oval reducing crossing tee with lateral oval taps on minor axis.

## Dimensions

Available with  $\alpha = 15^\circ, 30^\circ, 45^\circ, 60^\circ$  taps.  
 $W_3$  is always greater than or equal to  $W_4$ .  
 $L = [W_3 \times (1/\sin\alpha)] + 4 + [(W_1 - W_2) \times 0.5] + 6$   
 $H_3 = 2.5$ "(constant)(throat length)

## Substitute:

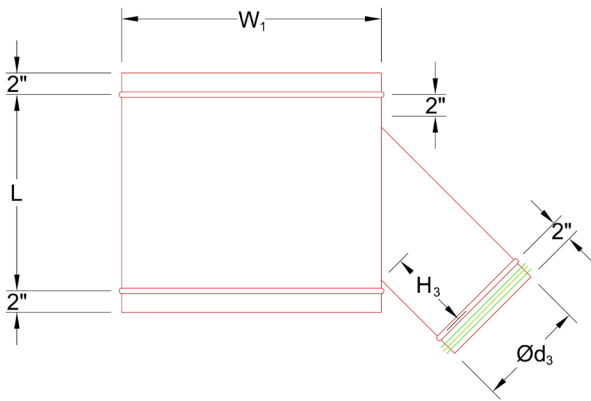
$D_{1,2}$  for  $W_{1,2}$  if  $(D_1 - D_2) > (W_1 - W_2)$

## Order Example

Single Wall FORXV $\alpha$  -  $W_1/D_1$  -  $W_2/D_2$  -  $W_3/D_3$  -  $W_4/D_4$   
 Double Wall FORXVI $\alpha$  -  $W_1/D_1$  -  $W_2/D_2$  -  $W_3/D_3$  -  $W_4/D_4$  -  $i$

# Tees/Crossing Tees

42



### Description

Oval tee with lateral round tap on minor axis. Tap is centered on fitting body.

### Dimensions

Available with  $\alpha = 15^\circ, 30^\circ, 45^\circ, 60^\circ$  taps.

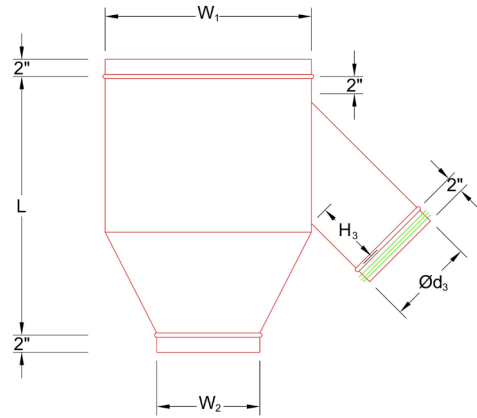
$$L = [\text{Ø}d_3 \times (1/\sin\alpha)] + 4$$

$$H_3 = 2.5''(\text{constant})(\text{throat length})$$

### Order Example

Single Wall	FOTVC $\alpha$ - W <sub>1</sub> /D <sub>1</sub> - Ød <sub>3</sub>
Double Wall	FOTVC1 $\alpha$ - W <sub>1</sub> /D <sub>1</sub> - Ød <sub>3</sub> - i

# FOTVC/FORTVC



### Description

Oval reducing tee with lateral round tap on minor axis. Tap is centered on fitting body.

### Dimensions

Available with  $\alpha = 15^\circ, 30^\circ, 45^\circ, 60^\circ$  taps.

$$L = [\text{Ø}d_3 \times (1/\sin\alpha)] + 4 + [(W_1 - W_2) \times 0.5] + 6$$

$$H_3 = 2.5''(\text{constant})(\text{throat length})$$

Substitute:

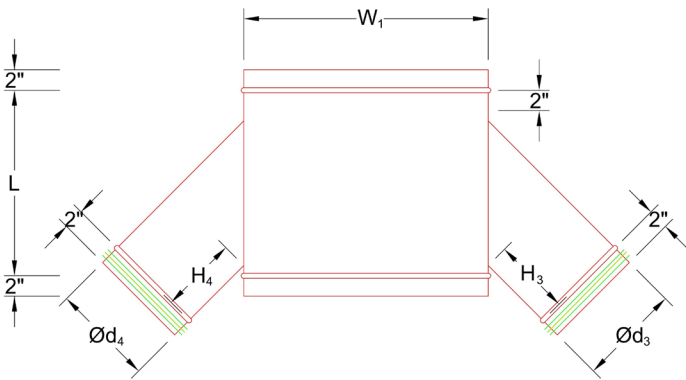
$$D_{1,2} \text{ for } W_{1,2} \text{ if } (D_1 - D_2) > (W_1 - W_2)$$

### Order Example

Single Wall	FORTVC $\alpha$ - W <sub>1</sub> /D <sub>1</sub> - W <sub>2</sub> /D <sub>2</sub> - Ød <sub>3</sub>
Double Wall	FORTVC1 $\alpha$ - W <sub>1</sub> /D <sub>1</sub> - W <sub>2</sub> /D <sub>2</sub> - Ød <sub>3</sub> - i

# Tees/Crossing Tees

# FOXVC/FORXVC



### Description

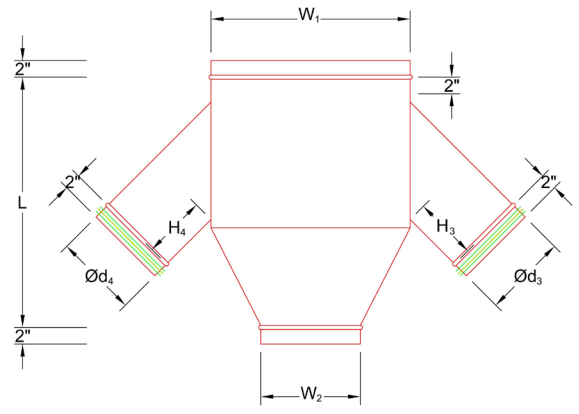
Oval crossing tee with lateral round taps on minor axis. Taps are centered on fitting body.

### Dimensions

Available with  $\alpha = 15^\circ, 30^\circ, 45^\circ, 60^\circ$  taps.  
 $\text{Ø}d_3$  is always greater than or equal to  $\text{Ø}d_4$ .  
 $L = [\text{Ø}d_3 \times (1/\sin\alpha)] + 4$   
 $H_3 = 2.5$ "(constant)(throat length)

### Order Example

Single Wall FOXVC $\alpha$  -  $W_1/D_1$  -  $\text{Ø}d_3$  -  $\text{Ø}d_4$   
 Double Wall FOXVC $\alpha$  -  $W_1/D_1$  -  $\text{Ø}d_3$  -  $\text{Ø}d_4$  -  $i$



### Description

Oval reducing crossing tee with lateral round taps on minor axis.

### Dimensions

Available with  $\alpha = 15^\circ, 30^\circ, 45^\circ, 60^\circ$  taps.  
 $\text{Ø}d_3$  is always greater than or equal to  $\text{Ø}d_4$ .  
 $L = [W_3 \times (1/\sin\alpha)] + 4 + [(W_1 - W_2) \times 0.5] + 6$   
 $H_3 = 2.5$ "(constant)(throat length)

### Substitute:

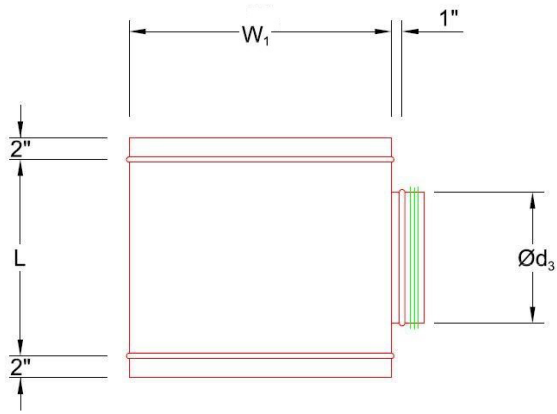
$D_{1,2}$  for  $W_{1,2}$  if  $(D_1 - D_2) > (W_1 - W_2)$

### Order Example

Single Wall FORXVC $\alpha$  -  $W_1/D_1$  -  $\text{Ø}d_3$  -  $\text{Ø}d_4$   
 Double Wall FORXVC $\alpha$  -  $W_1/D_1$  -  $\text{Ø}d_3$  -  $\text{Ø}d_4$  -  $i$

# Tees/Crossing Tees

44



## Description

Oval tee with round radiussed pressed tap on minor axis. Tap is centered on fitting body.

## Dimensions

$$L = \text{Ø}d_3 + 6$$

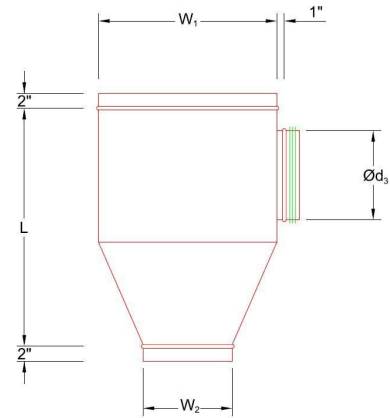
Maximum size for  $\text{Ø}d_3$  is 12".

Maximum size for  $D_1$  is 24".

## Order Example

Single Wall	FOTPSC $\alpha$ - $W_1/D_1$ - $\text{Ø}d_3$
Double Wall	FOTPSCl $\alpha$ - $W_1/D_1$ - $\text{Ø}d_3$ - $i$

# FOTPSC/FORTPSC



## Description

Oval reducing tee with round radiussed pressed tap on minor axis.

## Dimensions

$$L = (\text{Ø}d_3 + 6) + [(W_1 - W_2) \times 0.5] + 6$$

Maximum size for  $\text{Ø}d_3$  is 12".

Maximum size for  $D_1$  is 24".

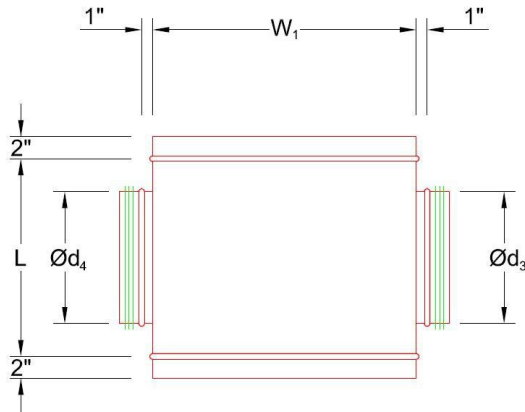
## Substitute:

$D_{1,2}$  for  $W_{1,2}$  if  $(D_1 - D_2) > (W_1 - W_2)$

## Order Example

Single Wall	FORTPSC $\alpha$ - $W_1/D_1$ - $W_2/D_2$ - $\text{Ø}d_3$
Double Wall	FORTPSCl $\alpha$ - $W_1/D_1$ - $W_2/D_2$ - $\text{Ø}d_3$ - $i$

# Tees/Crossing Tees



## Description

Oval crossing tee with round radiussed pressed taps on minor axis. Taps are centered on fitting body.

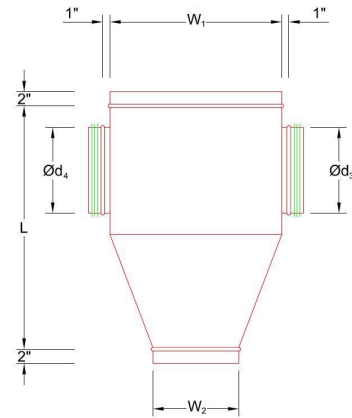
## Dimensions

$\text{Ød}_3$  is always greater than or equal to  $\text{Ød}_4$ .  
 $L = \text{Ød}_3 + 6$   
 Maximum size for  $\text{Ød}_3$  is 12".  
 Maximum size for  $D_1$  is 24".

## Order Example

Single Wall FOXPSC $\alpha$  -  $W_1/D_1 - \text{Ød}_3 - \text{Ød}_4$   
 Double Wall FOXPSCl $\alpha$  -  $W_1/D_1 - \text{Ød}_3 - \text{Ød}_4 - i$

# FOXPSC/FORXPSC



## Description

Oval reducing crossing tee with round radiussed pressed taps on minor axis.

## Dimensions

$\text{Ød}_3$  is always greater than or equal to  $\text{Ød}_4$ .  
 $L = (\text{Ød}_3 + 6) \times [(W_1 - W_2) \times 0.5] + 10$   
 Maximum size for  $\text{Ød}_3$  is 12".  
 Maximum size for  $D_1$  is 24".

## Substitute:

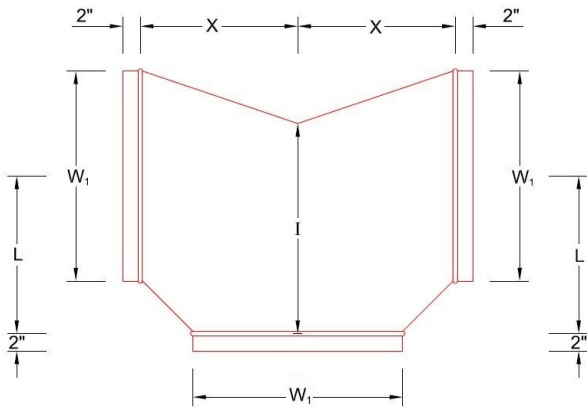
$D_{1,2}$  for  $W_{1,2}$  if  $(D_1 - D_2) > (W_1 - W_2)$

## Order Example

Single Wall FORXPSC $\alpha$  -  $W_1/D_1 - W_2/D_2 - \text{Ød}_3 - \text{Ød}_4$   
 Double Wall FORXPSCl $\alpha$  -  $W_1/D_1 - W_2/D_2 - \text{Ød}_3 - \text{Ød}_4 - i$

# Tees/Crossing Tees

46



### Description

Diverted flow oval bullhead tee.

### Dimensions

$$L = (0.5)W_1 + 6$$

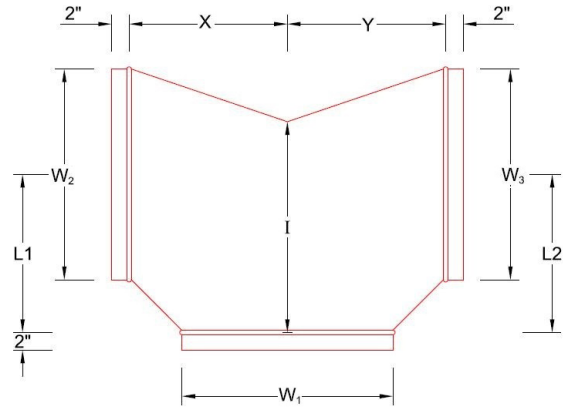
$$X = (0.5)W_1 + 6$$

$$I = W_1$$

### Order Example

Single Wall FOBHT -  $W_1/D_1$   
 Double Wall FOBHTI -  $W_1/D_1 - i$

# FOBHT/FORBHT



### Description

Reducing diverted flow oval bullhead tee.

### Dimensions

$W_2$  is always greater than or equal to  $W_3$ .

$$L_1 = 0.5(W_2) + 6$$

$$L_2 = L_1 + [0.5(W_2 - W_3)]$$

$$X = 0.5(W_1) + 6$$

$$Y = X + [0.5(W_2 - W_3)]$$

$$I = W_2$$

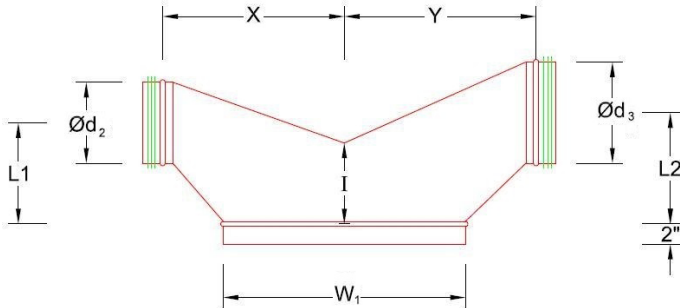
### Order Example

Single Wall FORBHT -  $W_1/D_1 - W_2/D_2 - W_3/D_3$   
 Double Wall FORBHTI -  $W_1/D_1 - W_2/D_2 - W_3/D_3 - i$

# Tees/Crossing Tees

# FORBHTC

47



## Description

Diverted flow oval to round bullhead tee.

## Dimensions

$\text{Ø}d_2$  is always greater than or equal to  $\text{Ø}d_3$ .

$$L_1 = (0.5)\text{Ø}d_2 + 6$$

$$L_2 = L_1 + [0.5(\text{Ø}d_2 - \text{Ø}d_3)]$$

$$X = 0.5(W_1) + 6$$

$$Y = X + [0.5(\text{Ø}d_2 - \text{Ø}d_3)]$$

$$I = \text{Ø}d_2$$

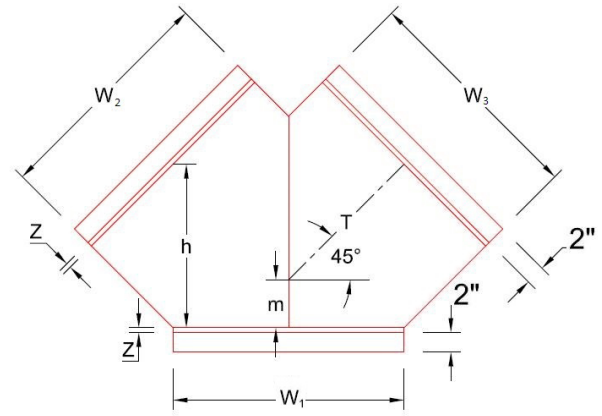
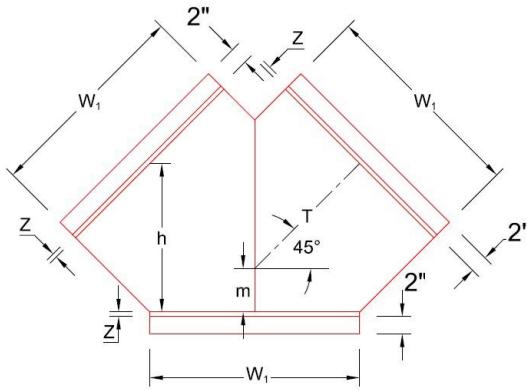
## Order Example

Single Wall	FORBHTC - $W_1/D_1 - \text{Ø}d_2 - \text{Ø}d_3$
Double Wall	FORBHTCI - $W_1/D_1 - \text{Ø}d_2 - \text{Ø}d_3 - i$

# Y-branches

# FOY/FORY

48



Description

45° hard oval wye branch. NOTE: these measurements are valid only for 45° “Y” branch fittings. Call for special angles.

Description

45° hard reducing oval wye branch. NOTE: these measurements are valid only for 45° “Y” branch fittings. Call for special angles.

Dimensions

$Z = \text{constant} = 0.5''$   
 $m = (0.207)(W_1)$   
 $O = 2.828 + 0.354 * W_1$   
 $h = O + m$

Dimensions

$\text{Ø}d_2 \text{ must be } \geq \text{Ø}d_3$   
 $Z = \text{constant} = 0.5''$   
 $m = (0.207)(W_1)$   
 $O = 2.828 + 0.354 * W_1$   
 $h = O + m$

Order Example

Single Wall FOY -  $W_1/D_1$   
 Double Wall FOYI -  $W_1/D_1 - i$

Order Example

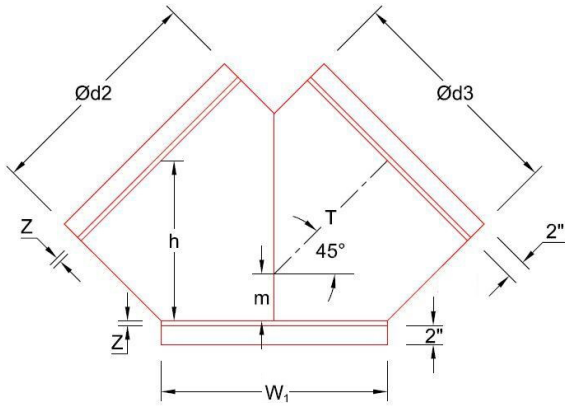
Single Wall FORY -  $W_1/D_1 - W_2/D_2 - W_3/D_3$   
 Double Wall FORYI -  $W_1/D_1 - W_2/D_2 - W_3/D_3 - i$



# Y-branches

# FORYC

49



## Description

45° oval to round wye branch. NOTE: these measurements are valid only for 45° “Y” branch fittings. Call for special angles.

## Dimensions

$\text{Ø}d_2$  must be  $\geq \text{Ø}d_3$

$Z = \text{constant} = 0.5''$

$m = (0.207)(W_1)$

$O = 2.828 + 0.354 * W_1$

$h = O + m$

## Order Example

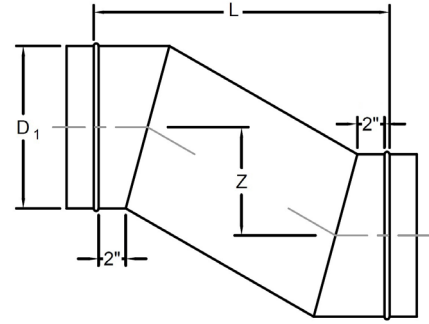
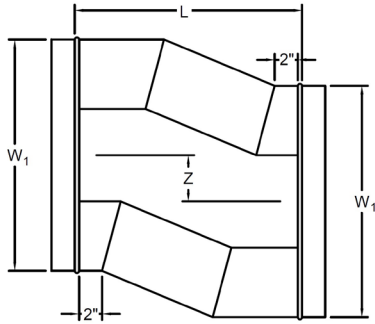
Single Wall FORYC -  $W_1/D_1 - \text{Ø}d_2 - \text{Ø}d_3$

Double Wall FORYCI -  $W_1/D_1 - \text{Ø}d_2 - \text{Ø}d_3 - i$

# Offsets

# FOOH/FOOE

50



Description

Flat oval hard bend offset.

Description

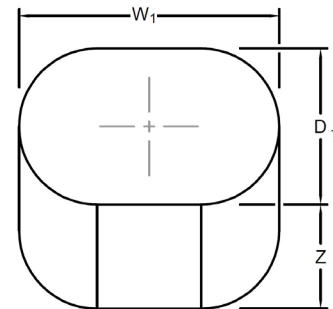
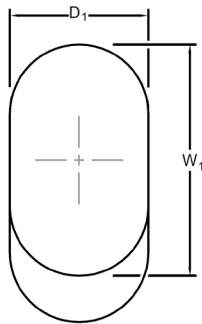
Flat oval easy bend offset.

Dimensions

Do not exceed 45°. Offsets resulting in severe angles may result in airflow restriction and may not be possible.

Dimensions

Do not exceed 45°. Offsets resulting in severe angles may result in airflow restriction and may not be possible.



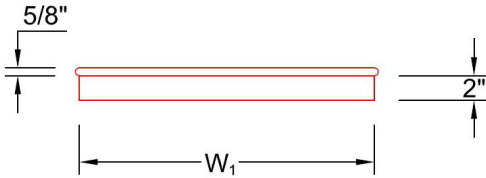
Order Example

Single Wall    FOOH -  $W_1/D_1 - Z - L$   
 Double Wall    FOOHI -  $W_1/D_1 - Z - L - i$

Order Example

Single Wall    FOOE -  $W_1/D_1 - Z - L$   
 Double Wall    FOOEI -  $W_1/D_1 - Z - L - i$

# End Caps



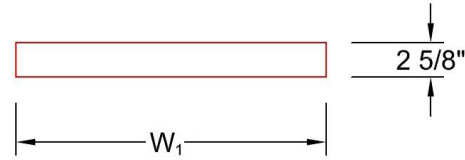
Description

Flat oval end cap for duct.

Order Example

Single Wall FOEP -  $W_1/D_1$   
 Double Wall FOEPI -  $W_1/D_1 - L - i$

# FOEP/FOEF



Description

Flat oval end cap for fittings.

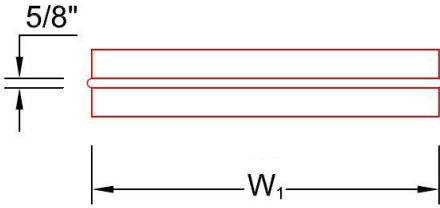
Order Example

Single Wall FOEF -  $W_1/D_1$   
 Double Wall FOEFI -  $W_1/D_1 - L - i$

# Couplings

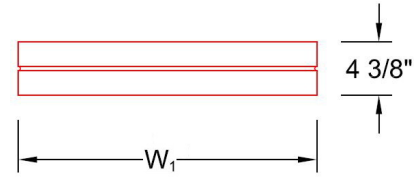
# FONP/FOMF

52



Description

Flat oval duct coupling.



Description

Flat oval fitting coupling.

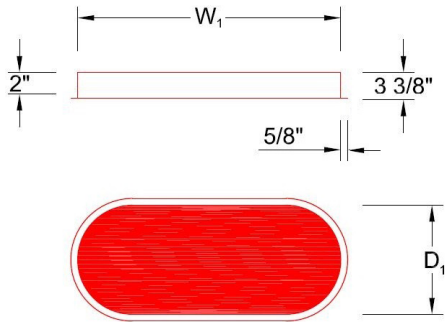
Order Example

Single Wall      FONP -  $W_1/D_1$   
Double Wall      FONPI -  $W_1/D_1 - i$

Order Example

Single Wall      FOMF -  $W_1/D_1$   
Double Wall      FOMFI -  $W_1/D_1 - i$

# Take-offs



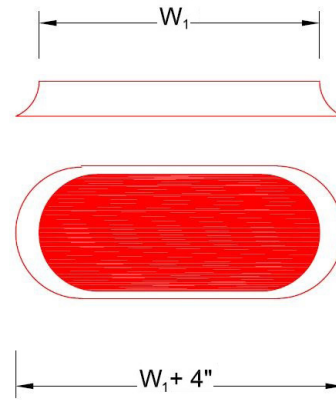
Description

Take-off / starting collar.

Order Example

Single Wall FOIL -  $W_1/D_1$   
 Double Wall FOILI -  $W_1/D_1 - i$

# FOIL/FOILR



Description

Bellmouth take-off. For 1" insulation, max I.D. for minor axis is 30".

Order Example

Single Wall FOILR -  $W_1/D_1$   
 Double Wall FOILRI -  $W_1/D_1 - i$



EHG | 2600 Airline Boulevard | Portsmouth, Virginia 23701 |  
www.ehgduct.com | Phone: 877-482-2344 | Fax: 757.488.4502 |