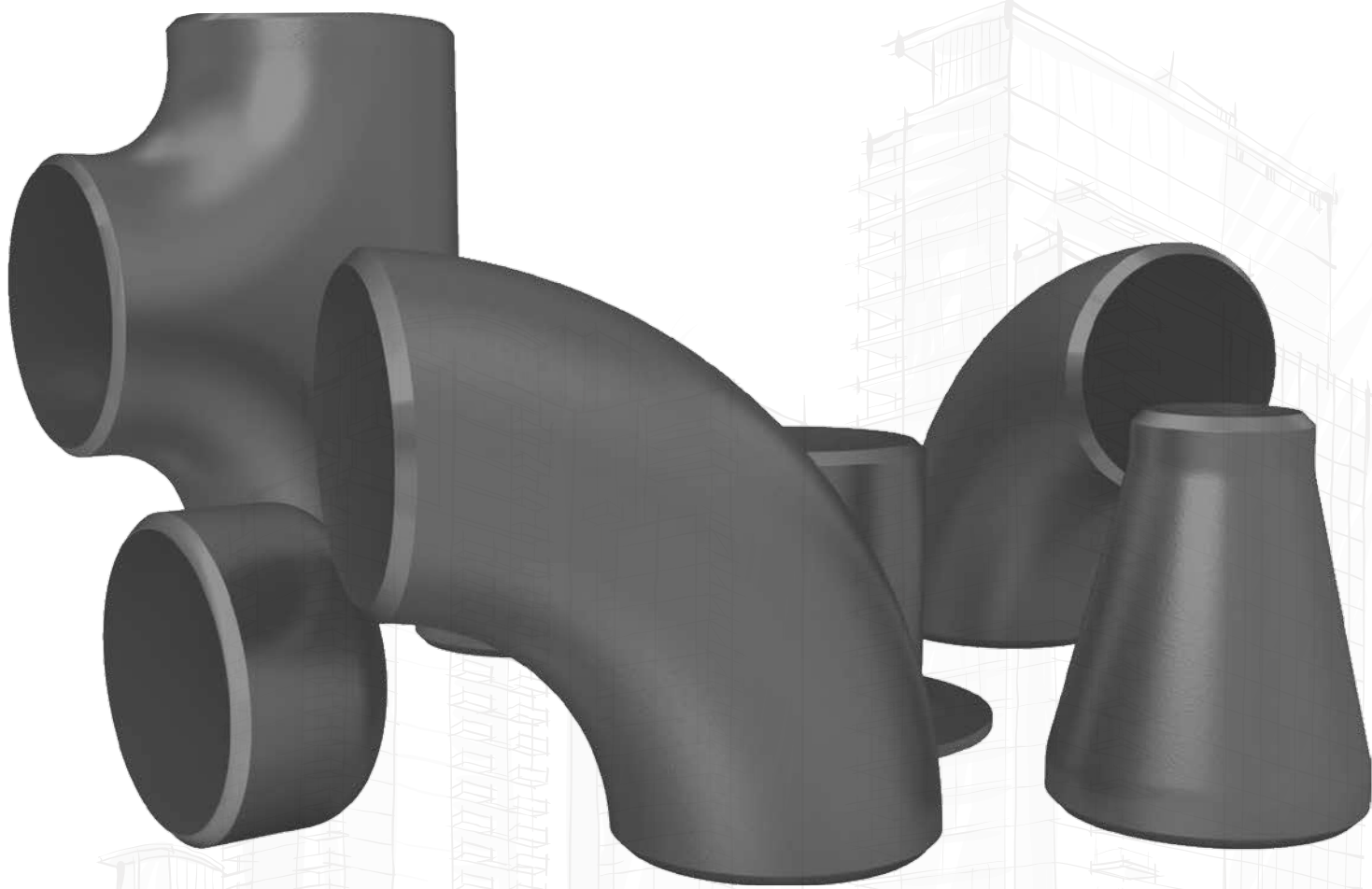




# SHIELD<sup>®</sup>

## **BUTT-WELDED** Fittings & Flanges





**SHIELD**



# Introduction

SHIELD is a company created to cater to the infrastructure, fire protection and building services industries with a comprehensive range of products designed to be competitive and of assured quality.

We stay ahead of today's evolving market requirements by committing to a program of continued research and development.

We are able to maintain our high standards by ensuring that our worldwide manufacturing networks are the most advanced in the industry in Europe, Asia and America in terms of quality and delivery lead time. Our fully experienced and professional staff is there to provide engineering expertise and after sales service exactly when you need it.

Combine this with highly responsive and customer focused network of distribution centres around the world, you will find that customer satisfaction is what we excel at.

We are justifiably proud of our global client base. With offices and facilities in the UK and Middle East, we are able to comprehend the specific needs of your particular region.



SHIELD  
PIPING  
SYSTEM

*Trusted Worldwide*

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# Shield Butt-Welded Fittings

Butt-welded fittings are used in a piping system for changing direction, branching and to mechanically joined to the system. A piping system using Butt-welded fittings has many inherent advantages over other forms. Butt-welded fittings are used widely in high pressure and high temperature application.



## Material

Material specification is totally in compliance with ASTM A 234. This standard covers wrought carbon steel fittings of seamless and welded construction which are manufactured to the dimensional specifications of ASME B16.9. These fittings are primarily for use in pressure piping and in pressure vessel fabrication for service at moderate and elevated temperatures. The starting material for fittings consist of killed (deoxidized) steel, forgings, bars, plates; seamless or fusion-welded tubular products with filler metal added and conform to the Mechanical & Chemical requirements of ASTM A 234.

## Dimensions

Butt-welded fittings are manufactured in accordance with this specification conforms to the dimensions and tolerances given in the latest revision of ASME B16.9 & B16.28.

## Chemical Requirements (in %):

C (max)	Mn	P (max)	S (max)	Si (min)	Cr (max)	Mb (max)	Ni (max)	Cu (max)	V (max)
0.30	0.29-1.06	0.050	0.058	0.10	0.40	0.15	0.40	0.40	0.08

## Mechanical Requirements:

Tensile Strength (min)	Yield Strength (min)	Elongation (min)
60,000 psi	35,000 psi	17%

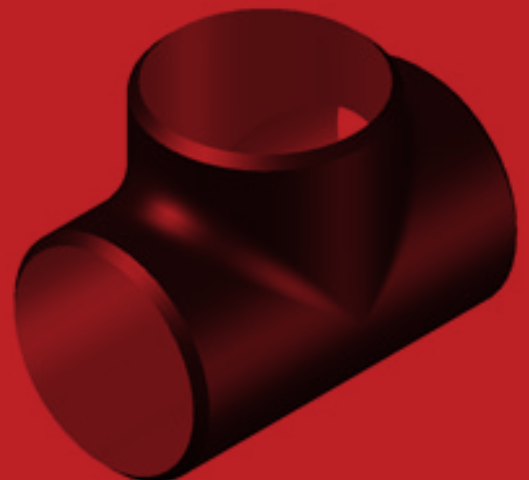
Note: SHIELD reserves the right to change the contents without notice.

## Manufacturing Process

Forging or shaping operations are performed by hammering, pressing, piercing, extruding, upsetting, rolling, bending, fusion welding or by combination of two or more of these operations.

## Heat Treatment

Hot-formed WPB fittings, upon which the final forming operation is completed at a temperature above 1150 °F (620 °C) and below 1800 °F (980 °C), need not be heat-treated (provided they are cooled in air). Cold-Formed WPB fittings, upon which the final forming operation is completed at a temperature below 1150 °F (620 °C), and normalized, or stress relieved at 1100 °F (595 °C) to 1275 °F (690 °C).



# Butt-welded Fittings

# Wall Thickness



## Schedule of Wall Thickness

Nominal Pipe Size (inch)	Wall Thickness (mm)		
	SCH 40	SCH STD	SCH 80
1/4	2.24	2.24	3.02
1/2	2.77	2.77	3.73
3/4	2.87	2.87	3.91
1	3.38	3.38	4.55
1-1/4	3.56	3.56	4.85
1-1/2	3.68	3.68	5.08
2	3.91	3.91	5.54
2-1/2	5.16	5.16	7.01
3	5.49	5.49	7.62
3-1/2	5.74	5.74	8.08
4	6.02	6.02	8.56
5	6.55	6.55	9.52
6	7.11	7.11	10.97
8	8.18	8.18	12.70
10	9.27	9.27	15.09
12	10.31	9.52	17.48
14	11.13	9.52	19.05
16	12.70	9.52	21.44
18	14.27	9.52	23.83
20	15.09	9.52	26.19
24	17.48	9.52	30.96
26	-	9.52	-
28	-	9.52	-
30	-	9.52	-
32	-	9.52	-
34	-	9.52	-
36	-	9.52	-
38	-	9.52	-
40	-	9.52	-
42	-	9.52	-
44	-	9.52	-
46	-	9.52	-
48	-	9.52	-

# Shield 90° Elbow Long Radius

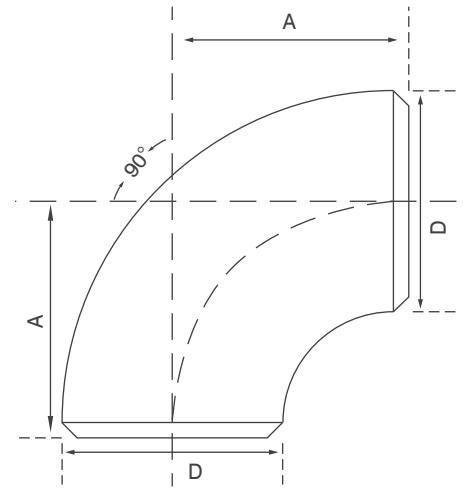
Model : SD-BLRE 90

**Functions:**

The function of the elbow is to change direction or flow in a piping system. Elbows are split as follows, the distance over which they change direction; the centre line of one end to the opposite face, this is known as the "centre to face" distance and is equivalent to the radius through which the elbow is bent.

**Material:** ASTM A234 Grade WPB

**Dimension:** ASME B16.9



*A pipe fitting is defined as a part used in a piping system to change direction or function and to mechanically joined to the system.*

Nominal Pipe Size (inch)	Outside Diameter D (mm)	Centre to End A (mm)
1/2	21.30	38.00
3/4	26.70	38.00
1	33.40	38.00
1-1/4	42.20	48.00
1-1/2	48.30	57.00
2	60.30	76.00
2-1/2	73.00	95.00
3	88.90	114.00
3-1/2	101.60	133.00
4	114.30	152.00
5	141.30	190.00
6	168.30	229.00
8	219.10	305.00
10	273.00	381.00
12	323.80	457.00
14	355.60	533.00
16	406.40	610.00
18	457.00	686.00
20	508.00	762.00
22	559.00	838.00
24	610.00	914.00
26	660.00	991.00
28	711.00	1067.00
30	762.00	1143.00
32	813.00	1219.00
34	864.00	1295.00
36	914.00	1372.00
38	965.00	1448.00
40	1016.00	1524.00
42	1067.00	1600.00
44	1118.00	1676.00
46	1168.00	1753.00
48	1219.00	1829.00



# Shield 45° Elbow Long Radius

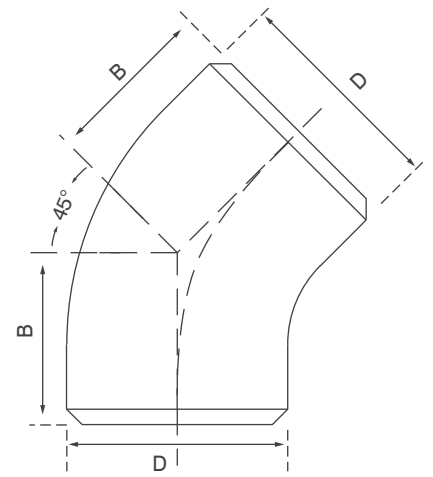
Model : SD-BLRE 45

**Functions:**

The function of a 45° elbow is the same as a 90° elbow, but the measurement of dimensions. The radius of a 45° elbow is the same as the radius of the 90° L.R. elbow where 'R' equals 1-½ D. However, the centre to face dimension is measured from each face to the point of intersection of the centre lines perpendicular to each other. This is due to the smaller degree of bend.

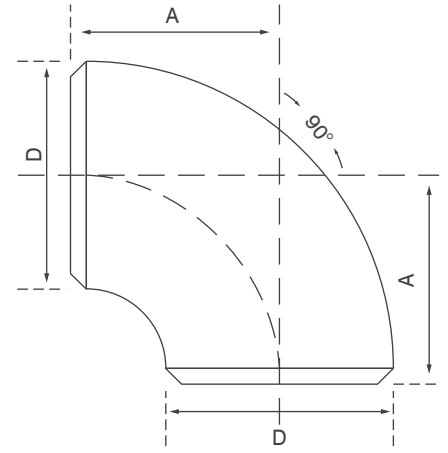
**Material:** ASTM A234 Grade WPB

**Dimension:** ASME B16.9



Nominal Pipe Size (inch)	Outside Diameter D (mm)	Centre to End B (mm)
1/2	21.30	16.00
3/4	26.70	19.00
1	33.40	22.00
1-1/4	42.20	25.00
1-1/2	48.30	29.00
2	60.30	35.00
2-1/2	73.00	44.00
3	88.90	51.00
3-1/2	101.60	57.00
4	114.30	64.00
5	141.30	79.00
6	168.30	95.00
8	219.10	127.00
10	273.00	159.00
12	323.80	190.00
14	355.60	222.00
16	406.40	254.00
18	457.00	286.00
20	508.00	318.00
22	559.00	343.00
24	610.00	381.00
26	660.00	406.00
28	711.00	438.00
30	762.00	470.00
32	813.00	502.00
34	864.00	533.00
36	914.00	565.00
38	965.00	600.00
40	1016.00	632.00
42	1067.00	660.00
44	1118.00	695.00
46	1168.00	727.00
48	1219.00	759.00

# Shield 90° Elbow Short Radius



Model : SD-BSRE 90

**Functions:**

A Short radius elbow gives a sharpen turn to the piping system as compared to long radius elbow. Short radius elbow is less in space consumption than long radius elbow, cost effective and high efficiency.

**Material:** ASTM A234 Grade WPB

**Dimension:** ASME B16.9 & B16.28

Nominal Pipe Size (inch)	Outside Diameter D (mm)	Centre to End A (mm)
1	33.40	25.00
1-1/4	42.20	32.00
1-1/2	48.30	38.00
2	60.30	51.00
2-1/2	73.00	64.00
3	88.90	76.00
3-1/2	101.60	89.00
4	114.30	102.00
5	141.30	127.00
6	168.30	152.00
8	219.10	203.00
10	273.00	254.00
12	323.80	305.00
14	355.60	356.00
16	406.40	406.00
18	457.00	457.00
20	508.00	508.00
22	559.00	559.00
24	610.00	610.00



Shield  
P i p i n g   S y s t e m

# Shield Equal & Cross Tee



## Model (Equal): SD-BET

### Functions:

The function of a tee is to permit flow at 90° to the main direction of flow. The main flow passes through the 'run' while the 90° outlet is known as the 'branch'. The equal tee is manufactured with all three outlets being the same size.

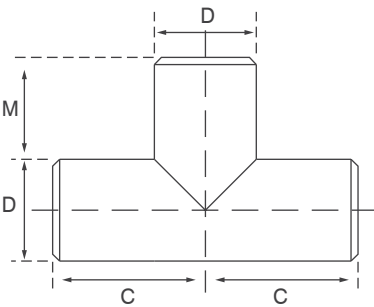
## Model (Cross): SD-BCT

### Function:

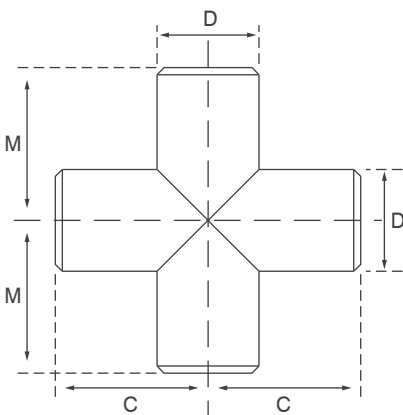
The function of a cross is similar to that of equal tee with the exception of providing two 90° outlets opposite each other. Equal crosses have all four outlets of equal size.

**Material:** ASTM A234 Grade WPB

**Dimension:** ASME B16.9



Equal Tee



Cross Tee

Nominal Pipe Size (inch)	Outside Diameter D (mm)	Centre to End	
		C (mm)	M (mm)
1/2	21.30	25.00	25.00
3/4	26.70	29.00	29.00
1	33.40	38.00	38.00
1-1/4	42.20	48.00	48.00
1-1/2	48.30	57.00	57.00
2	60.30	64.00	64.00
2-1/2	73.00	76.00	76.00
3	88.90	86.00	86.00
3-1/2	101.60	95.00	95.00
4	114.30	105.00	105.00
5	141.30	124.00	124.00
6	168.30	143.00	143.00
8	219.10	178.00	178.00
10	273.00	216.00	216.00
12	323.80	254.00	254.00
14	355.60	279.00	279.00
16	406.40	305.00	305.00
18	457.00	343.00	343.00
20	508.00	381.00	381.00
22	559.00	419.00	419.00
24	610.00	432.00	432.00
26	660.00	495.00	495.00
28	711.00	521.00	521.00
30	762.00	559.00	559.00
32	813.00	597.00	597.00
34	864.00	635.00	635.00
36	914.00	673.00	673.00
38	965.00	711.00	711.00
40	1016.00	749.00	749.00
42	1067.00	762.00	711.00
44	1118.00	813.00	762.00
46	1168.00	851.00	800.00
48	1219.00	889.00	838.00

# Shield Reducer Tee & Cross

Model (Tee) : SD-BRT  
& Model (Cross) : SD-BRC

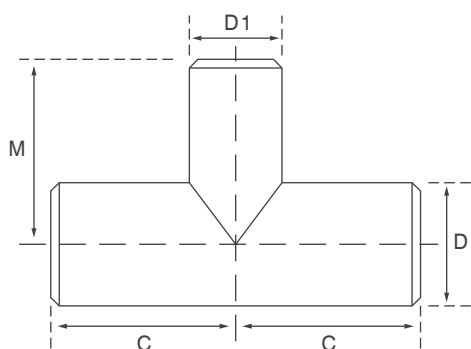
Shield  
Piping System

## Functions:

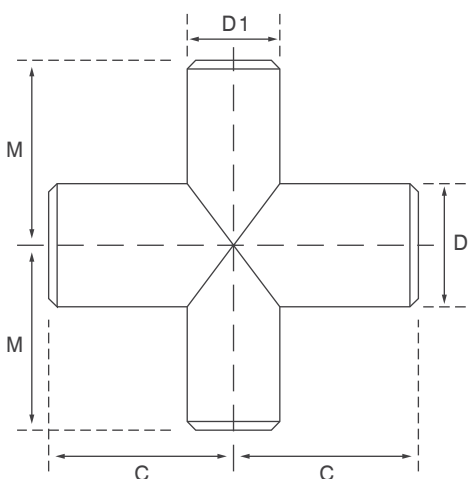
The reducing tee is manufactured with the branch outlet smaller than the run to obtain the desired flow and pressure through the system.

**Material:** ASTM A234  
Grade WPB

**Dimension:** ASME B16.9



Reducer Tee

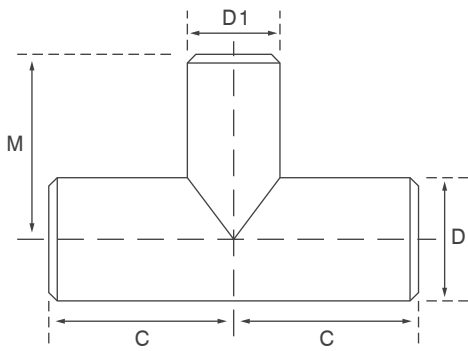


Reducer Cross

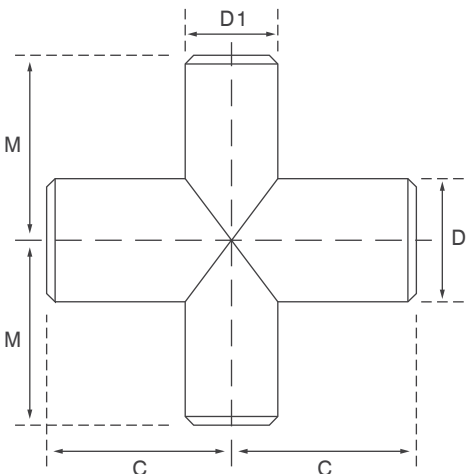
Nominal Pipe Size (inch)	Outside Diameter		Centre to End	
	D (mm)	D1 (mm)	C (mm)	M (mm)
1/2 x 1/4	21.30	13.70	25.00	25.00
1/2 x 3/8	21.30	17.30	25.00	25.00
3/4 x 3/8	26.70	17.30	29.00	29.00
3/4 x 1/2	26.70	21.30	29.00	29.00
1 x 1/2	33.40	21.30	38.00	38.00
1 x 3/4	33.40	26.70	38.00	38.00
1-1/4 x 1/2	42.20	21.30	48.00	48.00
1-1/4 x 3/4	42.20	26.70	48.00	48.00
1-1/4 x 1	42.20	33.40	48.00	48.00
1-1/2 x 1/2	48.30	21.30	57.00	57.00
1-1/2 x 3/4	48.30	26.70	57.00	57.00
1-1/2 x 1	48.30	33.40	57.00	57.00
1-1/2 x 1-1/4	48.30	42.20	57.00	57.00
2 x 3/4	60.30	26.70	64.00	44.00
2 x 1	60.30	33.40	64.00	51.00
2 x 1-1/4	60.30	42.20	64.00	57.00
2 x 1-1/2	60.30	48.30	64.00	60.00
2-1/2 x 1	73.00	33.40	76.00	57.00
2-1/2 x 1-1/4	73.00	42.20	76.00	64.00
2-1/2 x 1-1/2	73.00	48.30	76.00	67.00
2-1/2 x 2	73.00	60.30	76.00	70.00
3 x 1-1/4	88.90	42.20	86.00	70.00
3 x 1-1/2	88.90	48.30	86.00	73.00
3 x 2	88.90	60.30	86.00	76.00
3 x 2-1/2	88.90	73.00	86.00	83.00
3-1/2 x 1-1/2	101.60	48.30	95.00	79.00
3-1/2 x 2	101.60	60.30	95.00	83.00
3-1/2 x 2-1/2	101.60	73.00	95.00	89.00
3-1/2 x 3	101.60	88.90	95.00	92.00
4 x 1-1/2	114.30	48.30	105.00	86.00
4 x 2	114.30	60.30	105.00	89.00
4 x 2-1/2	114.30	73.00	105.00	95.00
4 x 3	114.30	88.90	105.00	98.00
4 x 3-1/2	114.30	101.60	105.00	102.00
5 x 2	141.30	60.30	124.00	105.00
5 x 2-1/2	141.30	73.00	124.00	108.00
5 x 3	141.30	88.90	124.00	111.00

# Shield Reducer Tee & Cross

Model (Tee) : SD-BRT  
& Model (Cross) : SD-BRC



Reducer Tee



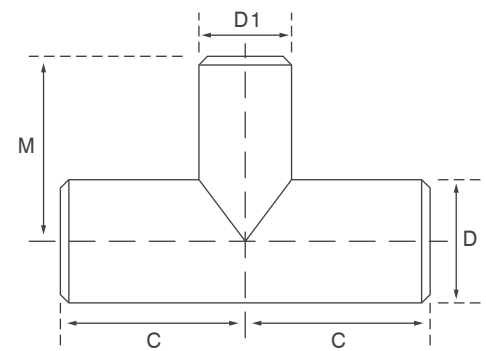
Reducer Cross

Nominal Pipe Size (inch)	Outside Diameter		Centre to End	
	D (mm)	D1 (mm)	C (mm)	M (mm)
5 x 3-1/2	141.30	101.60	124.00	114.00
5 x 4	141.30	114.30	124.00	117.00
6 x 2-1/2	168.30	73.00	143.00	121.00
6 x 3	168.30	88.90	143.00	124.00
6 x 3-1/2	168.30	101.60	143.00	127.00
6 x 4	168.30	114.30	143.00	130.00
6 x 5	168.30	141.30	143.00	137.00
8 x 3-1/2	219.10	101.60	178.00	152.00
8 x 4	219.10	114.30	178.00	156.00
8 x 5	219.10	141.30	178.00	162.00
8 x 6	219.10	168.30	178.00	168.00
10 x 4	273.00	114.30	216.00	184.00
10 x 5	273.00	141.30	216.00	191.00
10 x 6	273.00	168.30	216.00	194.00
10 x 8	273.00	219.10	216.00	203.00
12 x 5	323.80	141.30	254.00	216.00
12 x 6	323.80	168.30	254.00	219.00
12 x 8	323.80	219.10	254.00	229.00
12 x 10	323.80	273.00	254.00	241.00
14 x 6	355.60	168.30	279.00	238.00
14 x 8	355.60	219.10	279.00	248.00
14 x 10	355.60	273.00	279.00	257.00
14 x 12	355.60	323.80	279.00	270.00
16 x 6	406.40	168.30	305.00	264.00
16 x 8	406.40	219.10	305.00	273.00
16 x 10	406.40	273.00	305.00	283.00
16 x 12	406.40	323.80	305.00	295.00
16 x 14	406.40	355.60	305.00	305.00
18 x 8	457.00	219.10	343.00	298.00
18 x 10	457.00	273.00	343.00	308.00
18 x 12	457.00	323.80	343.00	321.00
18 x 14	457.00	355.60	343.00	330.00
18 x 16	457.00	406.40	343.00	330.00
20 x 8	508.00	219.10	381.00	324.00
20 x 10	508.00	273.00	381.00	333.00
20 x 12	508.00	323.80	381.00	346.00
20 x 14	508.00	355.60	381.00	356.00
20 x 16	508.00	406.40	381.00	356.00
20 x 18	508.00	457.00	381.00	368.00
22 x 10	559.00	273.00	419.00	359.00
22 x 12	559.00	323.80	419.00	371.00
22 x 14	559.00	355.60	419.00	381.00
22 x 16	559.00	406.40	419.00	381.00
22 x 18	559.00	457.00	419.00	394.00
22 x 20	559.00	508.00	419.00	406.00
24 x 10	610.00	273.00	432.00	384.00
24 x 12	610.00	323.80	432.00	397.00
24 x 14	610.00	355.60	432.00	406.00

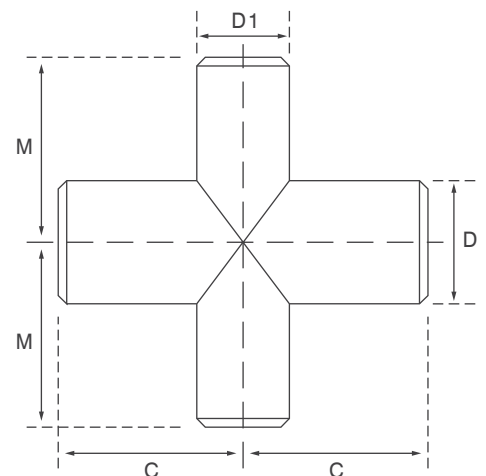
# Shield Reducer Tee & Cross

Model (Tee) : SD-BRT  
& Model (Cross) : SD-BRC

Nominal Pipe Size (inch)	Outside Diameter		Centre to End	
	D (mm)	D1 (mm)	C (mm)	M (mm)
24 x 16	610.00	406.40	432.00	406.00
24 x 18	610.00	457.00	432.00	419.00
24 x 20	610.00	508.00	432.00	432.00
24 x 22	610.00	559.00	432.00	432.00
26 x 12	660.00	323.80	495.00	422.00
26 x 14	660.00	355.60	495.00	432.00
26 x 16	660.00	406.40	495.00	432.00
26 x 18	660.00	457.00	495.00	444.00
26 x 20	660.00	508.00	495.00	457.00
26 x 22	660.00	559.00	495.00	470.00
26 x 24	660.00	610.00	495.00	483.00
28 x 12	711.00	323.80	521.00	448.00
28 x 14	711.00	355.60	521.00	457.00
28 x 16	711.00	406.40	521.00	457.00
28 x 18	711.00	457.00	521.00	470.00
28 x 20	711.00	508.00	521.00	483.00
28 x 22	711.00	559.00	521.00	495.00
28 x 24	711.00	610.00	521.00	508.00
28 x 26	711.00	660.00	521.00	521.00
30 x 10	762.00	273.00	559.00	460.00
30 x 12	762.00	323.80	559.00	473.00
30 x 14	762.00	355.60	559.00	483.00
30 x 16	762.00	406.40	559.00	483.00
30 x 18	762.00	457.00	559.00	495.00
30 x 20	762.00	508.00	559.00	508.00
30 x 22	762.00	559.00	559.00	521.00
30 x 24	762.00	610.00	559.00	533.00
30 x 26	762.00	660.00	559.00	546.00
30 x 28	762.00	711.00	559.00	546.00
32 x 14	813.00	355.60	597.00	508.00
32 x 16	813.00	406.40	597.00	508.00
32 x 18	813.00	457.00	597.00	521.00
32 x 20	813.00	508.00	597.00	533.00
32 x 22	813.00	559.00	597.00	546.00
32 x 24	813.00	610.00	597.00	559.00
32 x 26	813.00	660.00	597.00	572.00
32 x 28	813.00	711.00	597.00	572.00
32 x 30	813.00	762.00	597.00	584.00
34 x 16	864.00	406.40	635.00	533.00
34 x 18	864.00	457.00	635.00	546.00
34 x 20	864.00	508.00	635.00	559.00
34 x 22	864.00	559.00	635.00	572.00
34 x 24	864.00	610.00	635.00	584.00
34 x 26	864.00	660.00	635.00	597.00
34 x 28	864.00	711.00	635.00	597.00
34 x 30	864.00	762.00	635.00	610.00
34 x 32	864.00	813.00	635.00	622.00



Reducer Tee



Reducer Cross

# Shield Concentric & Eccentric Reducer

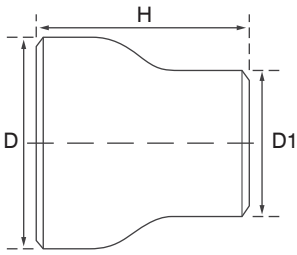
Model (Concentric) : SD-BCOR  
& Model (Eccentric) : SD-BECR

## Functions:

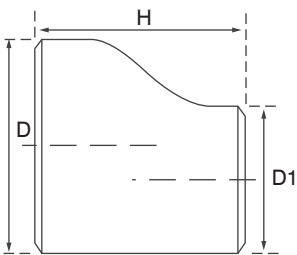
A reducer is a fitting that can be used to connect between two different sizes of pipes. A concentric reducer shapes like a cone where eccentric reducer has an edge which is parallel to the joining pipe, this parallel edge outcomes in the two pipes having balanced centre lines.

**Material:** ASTM A234  
Grade WPB

**Dimension:** ASME B16.9



Concentric Reducer

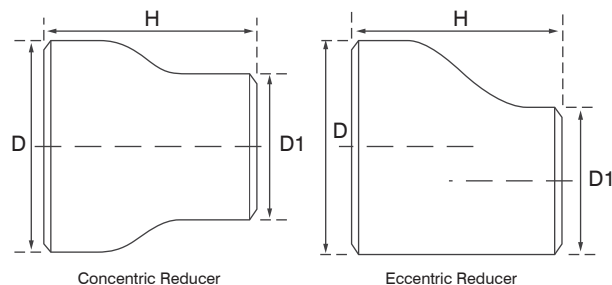


Eccentric Reducer

Nominal Pipe Size (inch)	Outside Diameter		End to end (mm)
	D (mm)	D1 (mm)	
3/4 x 3/8	26.7	17.3	38
3/4 x 1/2	26.7	21.3	38
1 x 1/2	33.4	21.3	51
1 x 3/4	33.4	26.7	51
1-1/4 x 1/2	42.2	21.3	51
1-1/4 x 3/4	42.2	26.7	51
1-1/4 x 1	42.2	33.4	51
1-1/2 x 1/2	48.3	21.3	64
1-1/2 x 3/4	48.3	26.7	64
1-1/2 x 1	48.3	33.4	64
1-1/2 x 1-1/4	48.3	42.2	64
2 x 3/4	60.3	26.7	76
2 x 1	60.3	33.4	76
2 x 1-1/4	60.3	42.2	76
2 x 1-1/2	60.3	48.3	76
2-1/2 x 1	73.0	33.4	89
2-1/2 x 1-1/4	73.0	42.2	89
2-1/2 x 1-1/2	73.0	48.3	89
2-1/2 x 2	73.0	60.3	89
3 x 1-1/4	88.9	42.2	89
3 x 1-1/2	88.9	48.3	89
3 x 2	88.9	60.3	89
3 x 2-1/2	88.9	73.0	89
3-1/2 x 1-1/4	101.6	42.2	102
3-1/2 x 1-1/2	101.6	48.3	102
3-1/2 x 2	101.6	60.3	102
3-1/2 x 2-1/2	101.6	73.0	102
3-1/2 x 3	101.6	88.9	102
4 x 1-1/2	114.3	48.3	102
4 x 2	114.3	60.3	102
4 x 2-1/2	114.3	73.0	102
4 x 3	114.3	88.9	102
4 x 3-1/2	114.3	101.6	102
5 x 2	141.3	60.3	127
5 x 2-1/2	141.3	73.0	127
5 x 3	141.3	88.9	127
5 x 3-1/2	141.3	101.6	127
5 x 4	141.3	114.3	127
6 x 2-1/2	168.3	73.0	140
6 x 3	168.3	88.9	140
6 x 3-1/2	168.3	101.6	140
6 x 4	168.3	114.3	140
6 x 5	168.3	141.3	140
8 x 3-1/2	219.1	101.6	152
8 x 4	219.1	114.3	152
8 x 5	219.1	141.3	152

# Shield Concentric & Eccentric Reducer

Model (Concentric) : SD-BCOR  
& Model (Eccentric) : SD-BECR

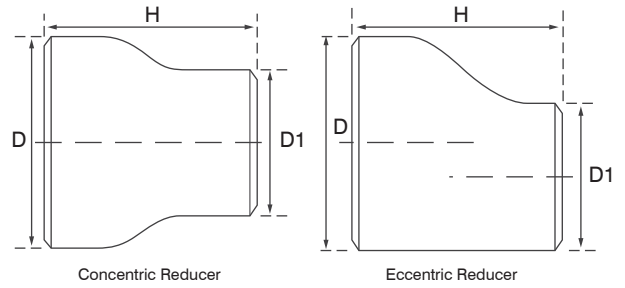


Nominal Pipe Size (inch)	Outside Diameter		End to end H (mm)
	D (mm)	D1 (mm)	
8 x 6	219.1	168.3	152
10 x 4	273.0	114.3	178
10 x 5	273.0	141.3	178
10 x 6	273.0	168.3	178
10 x 8	273.0	219.1	178
12 x 5	323.8	141.3	203
12 x 6	323.8	168.3	203
12 x 8	323.8	219.1	203
12 x 10	323.8	273.0	203
14 x 6	355.6	168.3	330
14 x 8	355.6	219.1	330
14 x 10	355.6	273.0	330
14 x 12	355.6	323.8	330
16 x 8	406.4	219.1	356
16 x 10	406.4	273.0	356
16 x 12	406.4	323.8	356
16 x 14	406.4	355.6	356
18 x 10	457.0	273.0	381
18 x 12	457.0	323.8	381
18 x 14	457.0	355.6	381
18 x 16	457.0	406.4	381
20 x 12	508.0	323.8	508
20 x 14	508.0	355.6	508
20 x 16	508.0	406.4	508
20 x 18	508.0	457.0	508
22 x 14	559.0	355.4	508
22 x 16	559.0	406.4	508
22 x 18	559.0	457.0	508
22 x 20	559.0	508.0	508
24 x 16	610.0	406.4	508
24 x 18	610.0	457.0	508
24 x 20	610.0	508.0	508
24 x 22	610.0	559.0	508
26 x 18	660.0	457.0	610
26 x 20	660.0	508.0	610
26 x 22	660.0	559.0	610
26 x 24	660.0	610.0	610
28 x 18	711.0	457.0	610
28 x 20	711.0	508.0	610
28 x 24	711.0	610.0	610
28 x 26	711.0	660.0	610
30 x 20	762.0	508.0	610
30 x 24	762.0	610.0	610
30 x 26	762.0	660.0	610
30 x 28	762.0	711.0	610
32 x 24	813.0	610.0	610



# Shield Concentric & Eccentric Reducer

Model (Concentric) : SD-BCOR  
& Model (Eccentric) : SD-BECR



Nominal Pipe Size (inch)	Outside Diameter		End to end H (mm)
	D (mm)	D1 (mm)	
32 x 26	813.0	660.0	610
32 x 28	813.0	711.0	610
32 x 30	813.0	762.0	610
34 x 24	864.0	610.0	610
34 x 26	864.0	660.0	610
34 x 30	864.0	762.0	610
34 x 32	864.0	813.0	610
36 x 24	914.0	610.0	610
36 x 26	914.0	660.0	610
36 x 30	914.0	762.0	610
36 x 32	914.0	813.0	610
36 x 34	914.0	864.0	610
38 x 26	965.0	660.0	610
38 x 28	965.0	711.0	610
38 x 30	965.0	762.0	610
38 x 32	965.0	813.0	610
38 x 34	965.0	864.0	610
38 x 36	965.0	914.0	610
40 x 30	1016.0	762.0	610
40 x 32	1016.0	813.0	610
40 x 34	1016.0	864.0	610
40 x 36	1016.0	914.0	610
40 x 38	1016.0	965.0	610
42 x 30	1067.0	762.0	610
42 x 32	1067.0	813.0	610
42 x 34	1067.0	864.0	610
42 x 36	1067.0	914.0	610
42 x 38	1067.0	965.0	610
42 x 40	1067.0	1016.0	610
44 x 36	1118.0	914.0	610
44 x 38	1118.0	965.0	610
44 x 40	1118.0	1016.0	610
44 x 42	1118.0	1067.0	610
46 x 38	1168.0	965.0	711
46 x 40	1168.0	1016.0	711
46 x 42	1168.0	1067.0	711
46 x 44	1168.0	1118.0	711
48 x 40	1219.0	1016.0	711
48 x 42	1219.0	1067.0	711
48 x 44	1219.0	1118.0	711
48 x 46	1219.0	1168.0	711

# Shield Reducing Elbow

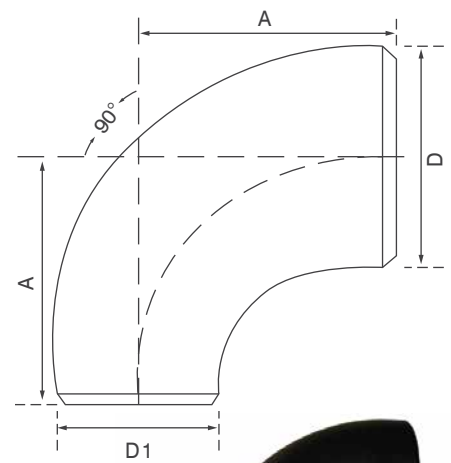
Model : SD-BRE 90

**Functions:**

90° Reducing elbow is to change direction or flow in a piping system from one size to another size. The Reducing Elbows have got different sized openings on both the end and hence can fit into two different pipes of varying end openings.

**Material:** ASTM A234 Grade WPB

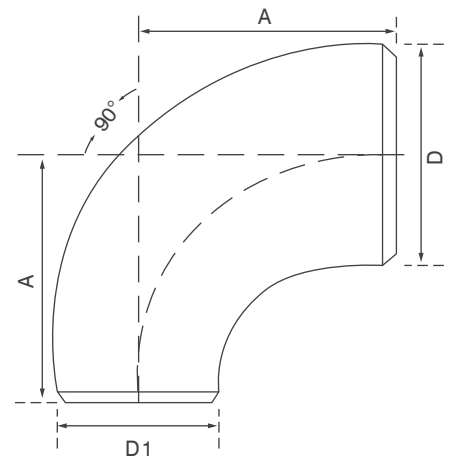
**Dimension:** ASME B16.9



Nominal Pipe Size (inch)	Outside Diameter		Centre to End A (mm)
	D (mm)	D1 (mm)	
2 x 1	60.30	33.40	76.00
2 x 1-1/4	60.30	42.20	76.00
2 x 1-1/2	60.30	48.30	76.00
2-1/2 x 1-1/4	73.00	42.20	95.00
2-1/2 x 1-1/2	73.00	48.30	95.00
2-1/2 x 2	73.00	60.30	95.00
3 x 1-1/2	88.90	48.30	114.00
3 x 2	88.90	60.30	114.00
3 x 2-1/2	88.90	73.00	114.00
3-1/2 x 2	101.60	60.30	133.00
3-1/2 x 2-1/2	101.60	73.00	133.00
3-1/2 x 3	101.60	88.90	133.00
4 x 2	114.30	60.30	152.00
4 x 2-1/2	114.30	73.00	152.00
4 x 3	114.30	88.90	152.00
4 x 3-1/2	114.30	101.60	152.00
5 x 2-1/2	141.30	73.00	190.00
5 x 3	141.30	88.90	190.00
5 x 3-1/2	141.30	101.60	190.00
5 x 4	141.30	114.30	190.00
6 x 3	168.30	88.90	229.00
6 x 3-1/2	168.30	101.60	229.00
6 x 4	168.30	114.30	229.00
6 x 5	168.30	141.30	229.00
8 x 4	219.10	114.30	305.00
8 x 5	219.10	141.30	305.00
8 x 6	219.10	168.30	305.00
10 x 5	273.00	141.30	381.00
10 x 6	273.00	168.30	381.00
10 x 8	273.00	219.10	381.00
12 x 6	323.80	168.30	457.00

# Shield Reducing Elbow

Model : SD-BRE 90



Nominal Pipe Size (inch)	Outside Diameter		Centre to End A (mm)
	D (mm)	D1 (mm)	
12 x 8	323.80	219.10	457.00
12 x 10	323.80	273.00	457.00
14 x 8	355.60	219.10	533.00
14 x 10	355.60	273.00	533.00
14 x 12	355.60	323.80	533.00
16 x 10	406.40	273.00	610.00
16 x 12	406.40	323.80	610.00
16 x 14	406.40	355.60	610.00
18 x 10	457.00	273.00	686.00
18 x 12	457.00	323.80	686.00
18 x 14	457.00	355.60	686.00
18 x 16	457.00	406.40	686.00
20 x 10	508.00	273.00	762.00
20 x 12	508.00	323.80	762.00
20 x 14	508.00	355.60	762.00
20 x 16	508.00	406.40	762.00
20 x 18	508.00	457.00	762.00
24 x 12	610.00	323.80	914.00
24 x 14	610.00	355.60	914.00
24 x 16	610.00	406.40	914.00
24 x 18	610.00	457.00	914.00
24 x 20	610.00	508.00	914.00
24 x 22	610.00	559.00	914.00

Shield  
P i p i n g   S y s t e m

# Shield 180° Bend Long Radius

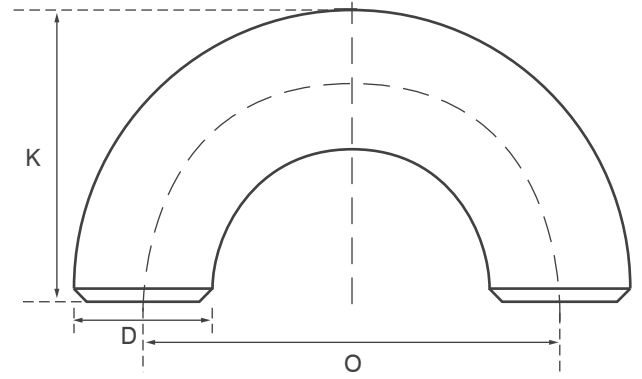
Model : SD-BLRB 180

## Functions:

The function of a 180° return bend is to change direction of flow through 180°. The long radius type has a centre to centre dimension double the matching 90° long radius elbow. The primary application for this fitting is in heater coils, heat exchangers and boilers etc.

**Material:** ASTM A234 Grade WPB

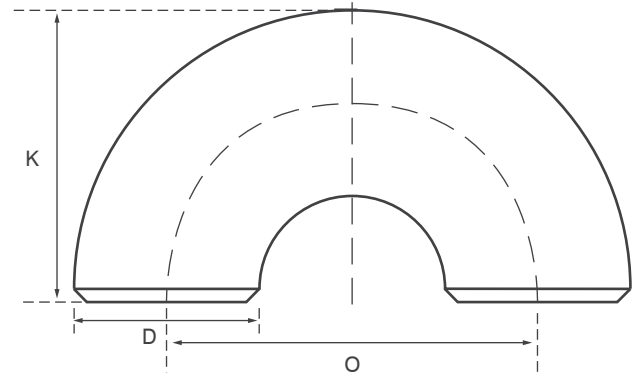
**Dimension:** ASME B16.9



Nominal Pipe Size (inch)	Outside Diameter D (mm)	Centre to Centre O (mm)	Back to Face K (mm)
1/2	21.30	76.00	48.00
3/4	26.70	76.00	51.00
1	33.40	76.00	56.00
1-1/4	42.20	95.00	70.00
1-1/2	48.30	114.00	83.00
2	60.30	152.00	106.00
2-1/2	73.00	190.00	132.00
3	88.90	229.00	159.00
4	114.30	305.00	210.00
5	141.30	381.00	262.00
6	168.30	457.00	313.00
8	219.10	610.00	414.00
10	273.00	762.00	518.00
12	323.80	914.00	619.00
14	355.60	1067.00	711.00
16	406.40	1219.00	813.00
18	457.00	1372.00	914.00
20	508.00	1524.00	1016.00
22	559.00	1676.00	1118.00
24	610.00	1829.00	1219.00

# Shield 180° Bend Short Radius

Model : SD-BSRB 180



## Functions:

The function of a 180° return bend is to change direction of flow through 180°. The short radius type has a centre to centre dimension double the matching 90° short radius elbow. The short radius bend is less in cost and space consumption than long radius bend. The primary application for this fitting is in heater coils, heat exchangers and boilers etc.

**Material:** ASTM A234 Grade WPB

**Dimension:** ASME B16.9 & B16.28



Nominal Pipe Size (inch)	Outside Diameter D (mm)	Centre to Centre O (mm)	Back to Face K (mm)
1	33.40	51.00	41.00
1-1/4	42.20	64.00	52.00
1-1/2	48.30	76.00	62.00
2	60.30	102.00	81.00
2-1/2	73.00	127.00	100.00
3	88.90	152.00	121.00
3-1/2	101.60	178.00	140.00
4	114.30	203.00	159.00
5	141.30	254.00	197.00
6	168.30	305.00	237.00
8	219.10	406.00	313.00
10	273.00	508.00	391.00
12	323.80	610.00	467.00
14	355.60	711.00	533.00
16	406.40	813.00	610.00
18	457.00	914.00	686.00
20	508.00	1016.00	762.00
22	559.00	1118.00	838.00
24	610.00	1219.00	914.00

# Shield End Cap

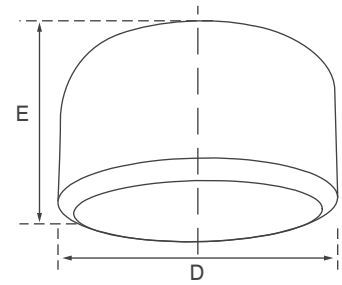
Model : SD-BCP

**Functions:**

The function of an end cap is to block off the end of a line in piping systems. This is achieved by placing the end cap over the open line and welding around the joint.

**Material:** ASTM A234 Grade WPB

**Dimension:** ASME B16.9



Nominal Pipe Size (inch)	Outside Diameter D (mm)	Length E (mm)
1/2	21.30	25.00
3/4	26.70	25.00
1	33.40	38.00
1-1/4	42.20	38.00
1-1/2	48.30	38.00
2	60.30	38.00
2-1/2	73.00	38.00
3	88.90	51.00
3-1/2	101.60	64.00
4	114.30	64.00
5	141.30	76.00
6	168.30	89.00
8	219.10	102.00
10	273.00	127.00
12	323.80	152.00
14	355.60	165.00
16	406.40	178.00
18	457.00	203.00
20	508.00	229.00
22	559.00	254.00
24	610.00	267.00
26	660.00	267.00
28	711.00	267.00
30	762.00	267.00
32	813.00	267.00
34	864.00	267.00
36	914.00	267.00
38	965.00	305.00
40	1016.00	305.00
42	1067.00	305.00
44	1118.00	343.00
46	1168.00	343.00
48	1219.00	343.00

# Shield Flanges

Flanges are mainly used to connect valves, pumps and pipes to make a complete piping system. Flanges are classified into three types based on faces, Raised Face (RF), Flat Face (FF) and Ring-Type Joint Face (RTJ). The most commonly used type is Raised Face flange. Flanges can be connected to the piping system either welded or screwed. Flanged joints are fixed by bolting together, with a gasket in between where as required.

## Material

The material specification is totally in compliance with ASTM A105. This standard covers forged carbon steel piping components to use in ambient and high temperature service in pressure systems.

## Dimensions

Flanges are manufactured in accordance with the specification conforms to the dimensions & tolerance given in the international standards ASME B16.5 & BS 4504.

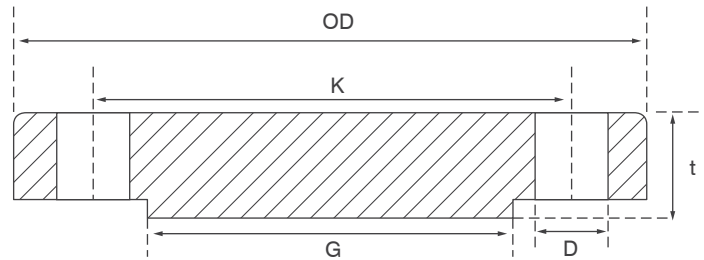
## Chemical Requirements (in %):

C (max)	Mn	P (max)	S (max)	Si (min)	Cr (max)	Mb (max)	Ni (max)	Cu (max)	V (max)
0.35	0.6-1.05	0.035	0.04	0.1-0.35	0.30	0.12	0.40	0.40	0.08

## Mechanical Requirements:

Tensile Strength (min)	Yield Strength (min)	Elongation (min)
60,000 psi	35,000 psi	22%

# Shield Blind Flange



## Model : SD-BF 150

### Functions:

The Blind flange is manufactured using a bore (a round steel plate) with appropriate bolt holes. It is a highly stressed flange, however, most of the stresses are near the centre. It is suitable for high pressure applications. Blind flange is commonly used to close off end for piping system and pressure vessel openings.

### Material:

ASTM A105, Carbon Steel

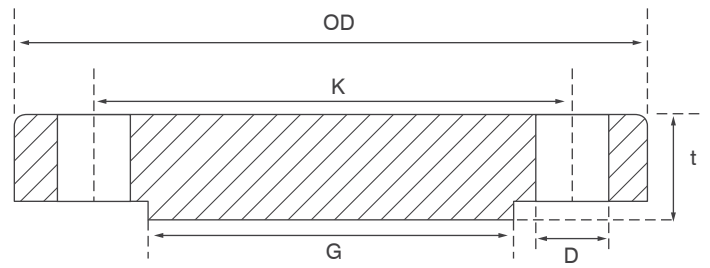
### Standard:

ASME B16.5, Class 150



Nominal Pipe Size	Outer Diameter	Thickness (min)	Raised Face	No. of Holes	PCD	Dia. of Bolt holes	Suitable bolt dia
DN (inch)	OD (mm)	t (mm)	G (mm)		K (mm)	D (inch)	(inch)
1/2	90	11.2	34.9	4	60.3	5/8	1/2
3/4	100	12.7	42.9	4	69.9	5/8	1/2
1	110	14.3	50.8	4	79.4	5/8	1/2
1-1/4	115	15.9	63.5	4	88.9	5/8	1/2
1-1/2	125	17.5	73.0	4	98.4	5/8	1/2
2	150	19.1	92.1	4	120.7	3/4	5/8
2-1/2	180	22.3	104.8	4	139.7	3/4	5/8
3	190	23.9	127.0	4	152.4	3/4	5/8
3-1/2	215	23.9	139.7	8	177.8	3/4	5/8
4	230	23.9	157.2	8	190.5	3/4	5/8
5	255	23.9	185.7	8	215.9	7/8	3/4
6	280	25.4	215.9	8	241.3	7/8	3/4
8	345	28.6	269.9	8	298.5	7/8	3/4
10	405	30.2	323.8	12	362.0	1	7/8
12	485	31.8	381.0	12	431.8	1	7/8
14	535	35.0	412.8	12	476.3	1-1/8	1
16	595	36.6	469.9	16	539.8	1-1/8	1
18	635	39.7	533.4	16	577.9	1-1/4	1-1/8
20	700	42.9	584.2	20	635.0	1-1/4	1-1/8
24	815	47.7	692.2	20	749.3	1-3/8	1-1/4

# Shield Blind Flange



Model : SD-BF 300

Nominal Pipe Size	Outer Diameter	Thickness (min)	Raised Face	No. of Holes	PCD	Dia. of Bolt holes	Suitable bolt dia
DN (inch)	OD (mm)	t (mm)	G (mm)		K (mm)	D (inch)	(inch)
1/2	95	12.7	34.9	4	66.7	5/8	1/2
3/4	115	14.3	42.9	4	82.6	3/4	5/8
1	125	15.9	50.8	4	88.9	3/4	5/8
1-1/4	135	17.5	63.5	4	98.4	3/4	5/8
1-1/2	155	19.1	73.0	4	114.3	7/8	3/4
2	165	20.7	92.1	8	127.0	3/4	5/8
2-1/2	190	23.9	104.8	8	149.2	7/8	3/4
3	210	27.0	127.0	8	168.3	7/8	3/4
3-1/2	230	28.6	139.7	8	184.2	7/8	3/4
4	255	30.2	157.2	8	200.0	7/8	3/4
5	280	33.4	185.7	8	235.0	7/8	3/4
6	320	35.0	215.9	12	269.9	7/8	3/4
8	380	39.7	269.9	12	330.2	1	7/8
10	445	46.1	323.8	16	387.4	1-1/8	1
12	520	49.3	381.0	16	450.8	1-1/4	1-1/8
14	585	52.4	412.8	20	514.4	1-1/4	1-1/8
16	650	55.6	469.9	20	571.5	1-3/8	1-1/4
18	710	58.8	533.4	24	628.6	1-3/8	1-1/4
20	775	62.0	584.2	24	685.8	1-3/8	1-1/4
24	915	68.3	692.2	24	812.8	1-5/8	1-1/2

**Material:**  
ASTM A105, Carbon Steel

**Standard:**  
ASME B16.5, Class 300





# Shield Slip-on Flange

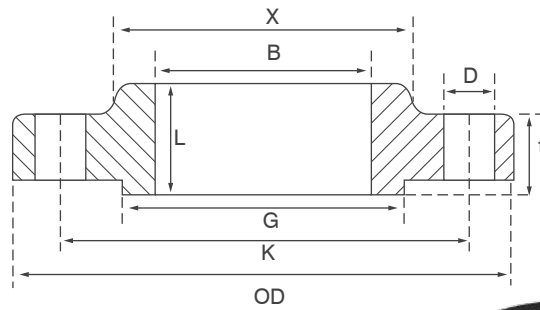
Model : SD-SOF-RF 150

**Functions:**

A Slip-On Flange is slightly larger than the outer diameter of the pipe it is to be used with. The pipe is slipped into the Flange prior to welding both inside and outside. It is easy to install and weld, therefore significantly reduce fabrication cost.

**Material:** ASTM A105, Carbon Steel

**Dimension:** ASME B16.5, Class 150



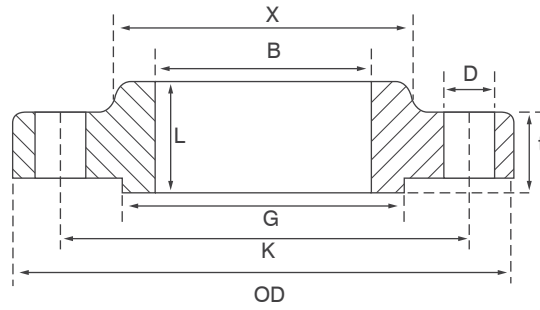
Nominal Pipe Size	Outer Dia.	Thickness (Min)	Raised Face	Dia. of Hub	Bore	Length thru Hub	No. of Holes	PCD	Dia. of Bolt holes	Suitable Bolt Dia.
DN (inch)	OD (mm)	t (mm)	G (mm)	X (mm)	B (mm)	L (mm)		K (mm)	D (inch)	(inch)
1/2	90	11.2	34.9	30	22.2	14	4	60.3	5/8	1/2
3/4	100	12.7	42.9	38	27.7	14	4	69.9	5/8	1/2
1	110	14.3	50.8	49	34.5	16	4	79.4	5/8	1/2
1-1/4	115	15.9	63.5	59	43.2	19	4	88.9	5/8	1/2
1-1/2	125	17.5	73.0	65	49.5	21	4	98.4	5/8	1/2
2	150	19.1	92.1	78	61.9	24	4	120.7	3/4	5/8
2-1/2	180	22.3	104.8	90	74.6	27	4	139.7	3/4	5/8
3	190	23.9	127.0	108	90.7	29	4	152.4	3/4	5/8
3-1/2	215	23.9	139.7	122	103.4	30	8	177.8	3/4	5/8
4	230	23.9	157.2	135	116.1	32	8	190.5	3/4	5/8
5	255	23.9	185.7	164	143.8	35	8	215.9	7/8	3/4
6	280	25.4	215.9	192	170.7	38	8	241.3	7/8	3/4
8	345	28.6	269.9	246	221.5	43	8	298.5	7/8	3/4
10	405	30.2	323.8	305	276.2	48	12	362.0	1	7/8
12	485	31.8	381.0	365	327.0	54	12	431.8	1	7/8
14	535	35.0	412.8	400	359.2	56	12	476.3	1-1/8	1
16	595	36.6	469.9	457	410.5	62	16	539.8	1-1/8	1
18	635	39.7	533.4	505	461.8	67	16	577.9	1-1/4	1-1/8
20	700	42.9	584.2	559	513.1	71	20	635.0	1-1/4	1-1/8
24	815	47.7	692.2	663	616.0	81	20	749.3	1-3/8	1-1/4

# Shield Slip-on Flange

Model : SD-SOF-RF 300

**Material:** ASTM A105, Carbon Steel

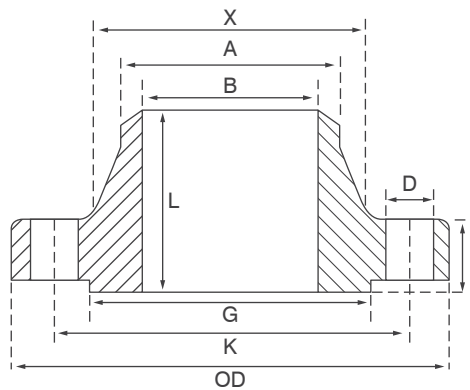
**Dimension:** ASME B16.5, Class 300



Nominal Pipe Size	Outer Dia.	Thickness (Min)	Raised Face	Dia. of Hub	Bore	Length thru Hub	No. of Holes	PCD	Dia. of Bolt holes	Suitable Bolt Dia.
DN (inch)	OD (mm)	t (mm)	G (mm)	X (mm)	B (mm)	L (mm)		K (mm)	D (inch)	(inch)
1/2	95	12.7	34.9	38	22.2	21	4	66.7	5/8	1/2
3/4	115	14.3	42.9	48	27.7	24	4	82.6	3/4	5/8
1	125	15.9	50.8	54	34.5	25	4	88.9	3/4	5/8
1-1/4	135	17.5	63.5	64	43.2	25	4	98.4	3/4	5/8
1-1/2	155	19.1	73.0	70	49.5	29	4	114.3	7/8	3/4
2	165	20.7	92.1	84	61.9	32	8	127.0	3/4	5/8
2-1/2	190	23.9	104.8	100	74.6	37	8	149.2	7/8	3/4
3	210	27.0	127.0	117	90.7	41	8	168.3	7/8	3/4
3-1/2	230	28.6	139.7	133	103.4	43	8	184.2	7/8	3/4
4	255	30.2	157.2	146	116.1	46	8	200.0	7/8	3/4
5	280	33.4	185.7	178	143.8	49	8	235.0	7/8	3/4
6	320	35.0	215.9	206	170.7	51	12	269.9	7/8	3/4
8	380	39.7	269.9	260	221.5	60	12	330.2	1	7/8
10	445	46.1	323.8	321	276.2	65	16	387.4	1-1/8	1
12	520	49.3	381.0	375	327.0	71	16	450.8	1-1/4	1-1/8
14	585	52.4	412.8	425	359.2	75	20	514.4	1-1/4	1-1/8
16	650	55.6	469.9	483	410.5	81	20	571.5	1-3/8	1-1/4
18	710	58.8	533.4	533	461.8	87	24	628.6	1-3/8	1-1/4
20	775	62.0	584.2	587	513.1	94	24	685.8	1-3/8	1-1/4
24	915	68.3	692.2	702	616.0	105	24	812.8	1-5/8	1-1/2

# Shield Welded Flange

Model : SD-WF-RF 150



## Functions:

Welded flange is bored to match the inside diameter of the mating pipe or fitting to ensure uninterrupted flow. This prevents turbulence at the joint and reduces erosion. It also provides excellent stress distribution through the tapered hub and is easily radiographed for flaw detection. It is welded to a pipe or fitting with a single full penetration.

## Material:

ASTM A105, Carbon Steel

## Standard:

ASME B16.5, Class 150

Nominal Pipe Size	Outer Dia.	Thickness (Min)	Raised Face	Dia. of Hub	Bore	Dia. of chamfer Welded Neck	Length thru Hub	No. of Holes	PCD	Dia. of Bolt holes	Suitable Bolt Dia.
DN (inch)	OD (mm)	t (mm)	G (mm)	X (mm)	B (mm)	A (mm)	L (mm)		K (mm)	D (inch)	(inch)
1/2	90	11.2	34.9	30	15.8	21.3	46	4	60.3	5/8	1/2
3/4	100	12.7	42.9	38	20.9	26.7	51	4	69.9	5/8	1/2
1	110	14.3	50.8	49	26.6	33.4	54	4	79.4	5/8	1/2
1-1/4	115	15.9	63.5	59	35.1	42.2	56	4	88.9	5/8	1/2
1-1/2	125	17.5	73.0	65	40.9	48.3	60	4	98.4	5/8	1/2
2	150	19.1	92.1	78	52.5	60.3	62	4	120.7	3/4	5/8
2-1/2	180	22.3	104.8	90	62.7	73.0	68	4	139.7	3/4	5/8
3	190	23.9	127.0	108	77.9	88.9	68	4	152.4	3/4	5/8
3-1/2	215	23.9	139.7	122	90.1	101.6	70	8	177.8	3/4	5/8
4	230	23.9	157.2	135	102.3	114.3	75	8	190.5	3/4	5/8
5	255	23.9	185.7	164	128.2	141.3	87	8	215.9	7/8	3/4
6	280	25.4	215.9	192	154.1	168.3	87	8	241.3	7/8	3/4
8	345	28.6	269.9	246	202.7	219.1	100	8	298.5	7/8	3/4
10	405	30.2	323.8	305	254.6	273.0	100	12	362.0	1	7/8
12	485	31.8	381.0	365	304.8	323.8	113	12	431.8	1	7/8
14	535	35.0	412.8	400	-	355.6	125	12	476.3	1-1/8	1
16	595	36.6	469.9	457	-	406.4	125	16	539.8	1-1/8	1
18	635	39.7	533.4	505	-	457.0	138	16	577.9	1-1/4	1-1/8
20	700	42.9	584.2	559	-	508.0	143	20	635.0	1-1/4	1-1/8
24	815	47.7	692.2	663	-	610.0	151	20	749.3	1-3/8	1-1/4

# Shield Welded Flange

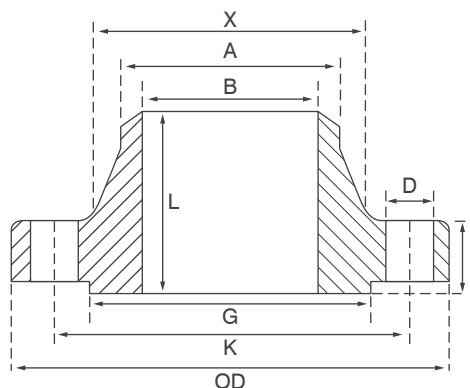
Model : SD-WF-RF 300

**Material:**

ASTM A105, Carbon Steel

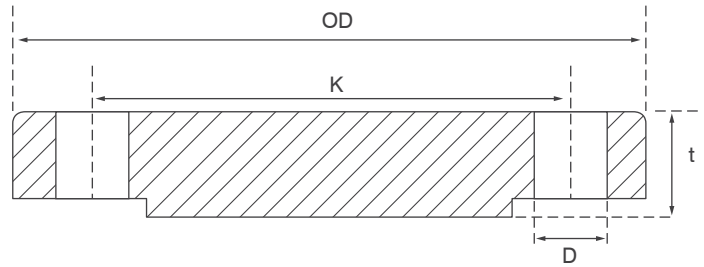
**Standard:**

ASME B16.5, Class 300



Nominal Pipe Size	Outer Dia.	Thickness (Min)	Raised Face	Dia. of Hub	Bore	Dia. of chamfer Welded Neck	Length thru Hub	No. of Holes	PCD	Dia. of Bolt holes	Suitable Bolt Dia.
DN (inch)	OD (mm)	t (mm)	G (mm)	X (mm)	B (mm)	A (mm)	L (mm)		K (mm)	D (inch)	(inch)
1/2	95	12.7	34.9	38	15.8	21.3	51	4	66.7	5/8	1/2
3/4	115	14.3	42.9	48	20.9	26.7	56	4	82.6	3/4	5/8
1	125	15.9	50.8	54	26.6	33.4	60	4	88.9	3/4	5/8
1-1/4	135	17.5	63.5	64	35.1	42.2	64	4	98.4	3/4	5/8
1-1/2	155	19.1	73.0	70	40.9	48.3	67	4	114.3	7/8	3/4
2	165	20.7	92.1	84	52.5	60.3	68	8	127.0	3/4	5/8
2-1/2	190	23.9	104.8	100	62.7	73.0	75	8	149.2	7/8	3/4
3	210	27.0	127.0	117	77.9	88.9	78	8	168.3	7/8	3/4
3-1/2	230	28.6	139.7	133	90.1	101.6	79	8	184.2	7/8	3/4
4	255	30.2	157.2	146	102.3	114.3	84	8	200.0	7/8	3/4
5	280	33.4	185.7	178	128.2	141.3	97	8	235.0	7/8	3/4
6	320	35.0	215.9	206	154.1	168.3	97	12	269.9	7/8	3/4
8	380	39.7	269.9	260	202.7	219.1	110	12	330.2	1	7/8
10	445	46.1	323.8	321	254.6	273.0	116	16	387.4	1-1/8	1
12	520	49.3	381.0	375	304.8	323.8	129	16	450.8	1-1/4	1-1/8
14	585	52.4	412.8	425	-	355.6	141	20	514.4	1-1/4	1-1/8
16	650	55.6	469.9	483	-	406.4	144	20	571.5	1-3/8	1-1/4
18	710	58.8	533.4	533	-	457.0	157	24	628.6	1-3/8	1-1/4
20	775	62.0	584.2	587	-	508.0	160	24	685.8	1-3/8	1-1/4
24	915	68.3	692.2	702	-	610.0	167	24	812.8	1-5/8	1-1/2

# Shield Blind Flange



Model : SD-BF

## Functions:

The Blind flange is manufactured using a bore (a round steel plate) with appropriate bolt holes. It is a highly stressed flange, however, most of the stresses are near the centre. It is suitable for high pressure applications. Blind flange is commonly used to close off end for piping system and pressure vessel openings.

**Material:** ASTM A105, Carbon Steel

**Standard:** BS 4504

**PN Chart:** PN10

**Model:** SD-BF10

Nominal Size		Outside Diameter	PCD	Thick-ness	No. of Holes	Hole Diameter	Suitable Thread
(mm)	(inch)	OD (mm)	K (mm)	t (mm)		D (mm)	
15	1/2	95	65	14	4	14	M12
20	3/4	105	75	16	4	14	M12
25	1	115	85	16	4	14	M12
32	1-1/4	140	100	16	4	18	M16
40	1-1/2	150	110	16	4	18	M16
50	2	165	125	18	4	18	M16
65	2-1/2	185	145	18	4	18	M16
80	3	200	160	20	8	18	M16
100	4	220	180	20	8	18	M16
125	5	250	210	22	8	18	M16
150	6	285	240	22	8	22	M20
200	8	340	295	24	8	22	M20
250	10	395	350	26	12	22	M20
300	12	445	400	26	12	22	M20
350	14	505	460	26	16	22	M20
400	16	565	515	26	16	26	M24
450	18	615	565	28	20	26	M24
500	20	670	620	28	20	26	M24
600	24	780	725	34	20	30	M27



**PN Chart:** PN16

**Model:** SD-BF16

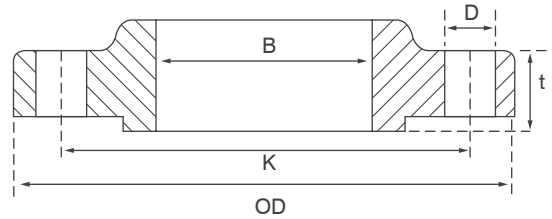
Nominal Size		Outside Diameter	PCD	Thick-ness	No. of Holes	Hole Diameter	Suitable Thread
(mm)	(inch)	OD (mm)	K (mm)	t (mm)		D (mm)	
15	1/2	95	65	14	4	14	M12
20	3/4	105	75	16	4	14	M12
25	1	115	85	16	4	14	M12
32	1-1/4	140	100	16	4	18	M16
40	1-1/2	150	110	16	4	18	M16
50	2	165	125	18	4	18	M16
65	2-1/2	185	145	18	4	18	M16
80	3	200	160	20	8	18	M16
100	4	220	180	20	8	18	M16
125	5	250	210	22	8	18	M16
150	6	285	240	22	8	22	M20
200	8	340	295	24	12	22	M20
250	10	405	355	26	12	26	M24
300	12	460	410	28	12	26	M24
350	14	520	470	30	16	26	M24
400	16	580	525	32	16	30	M27
450	18	640	585	34	20	30	M27
500	20	715	650	36	20	33	M30
600	24	840	770	44	20	36	M33

**PN Chart:** PN25

**Model:** SD-BF25

Nominal Size		Outside Diameter	PCD	Thick-ness	No. of Holes	Hole Diameter	Suitable Thread
(mm)	(inch)	OD (mm)	K (mm)	t (mm)		D (mm)	
15	1/2	95	65	16	4	14	M12
20	3/4	105	75	18	4	14	M12
25	1	115	85	18	4	14	M12
32	1-1/4	140	100	18	4	18	M16
40	1-1/2	150	110	18	4	18	M16
50	2	165	125	20	4	18	M16
65	2-1/2	185	145	22	8	18	M16
80	3	200	160	24	8	18	M16
100	4	235	190	24	8	22	M20
125	5	270	220	26	8	26	M24
150	6	300	250	28	8	26	M24
200	8	360	310	30	12	26	M24
250	10	425	370	32	12	30	M27
300	12	485	430	34	16	30	M27
350	14	555	490	38	16	33	M30
400	16	620	550	40	16	36	M33
450	18	670	600	42	20	36	M33
500	20	730	660	45	20	36	M33
600	24	845	770	54	20	39	M36

# Shield Slip-On Flange



Model : SD-SOF-RF

**Functions:**

A Slip-On Flange is slightly larger than the outer diameter of the pipe it is to be used with. The pipe is slipped into the Flange prior to welding both inside and outside. It is easy to install and weld, therefore significantly reduce fabrication cost.

**Material:** ASTM A105, Carbon Steel

**Standard:** BS 4504

**PN Chart:** PN10

**Model:** SD-SOF-RF10

Nominal Size		Outside Diameter	PCD	Thick-ness	Bore	No. of Holes	Hole Diameter	Suitable Thread
(mm)	(inch)	OD (mm)	K (mm)	t (mm)	B (mm)		D (mm)	
15	½	95	65	14	22.0	4	14	M12
20	¾	105	75	16	27.5	4	14	M12
25	1	115	85	16	34.5	4	14	M12
32	1-¼	140	100	16	43.5	4	18	M16
40	1-½	150	110	16	49.5	4	18	M16
50	2	165	125	18	61.5	4	18	M16
65	2-½	185	145	18	77.5	4	18	M16
80	3	200	160	20	90.5	8	18	M16
100	4	220	180	20	116.0	8	18	M16
125	5	250	210	22	141.5	8	18	M16
150	6	285	240	22	170.5	8	22	M20
200	8	340	295	24	221.5	8	22	M20
250	10	395	350	26	276.5	12	22	M20
300	12	445	400	26	327.5	12	22	M20
350	14	505	460	26	359.5	16	22	M20
400	16	565	515	26	411.0	16	26	M24
450	18	615	565	28	462.0	20	26	M24
500	20	670	620	28	513.5	20	26	M24
600	24	780	725	28	616.5	20	30	M27



**PN Chart:** PN16

**Model:** SD-SOF-RF16

Nominal Size		Outside Diameter	PCD	Thick-ness	Bore	No. of Holes	Hole Diameter	Suitable Thread
(mm)	(inch)	OD (mm)	K (mm)	t (mm)	B (mm)		D (mm)	
15	½	95	65	14	22.0	4	14	M12
20	¾	105	75	16	27.5	4	14	M12
25	1	115	85	16	34.5	4	14	M12
32	1-¼	140	100	16	43.5	4	18	M16
40	1-½	150	110	16	49.5	4	18	M16
50	2	165	125	18	61.5	4	18	M16
65	2-½	185	145	18	77.5	4	18	M16
80	3	200	160	20	90.5	8	18	M16
100	4	220	180	20	116.0	8	18	M16
125	5	250	210	22	141.5	8	18	M16
150	6	285	240	22	170.5	8	22	M20
200	8	340	295	24	221.5	12	22	M20
250	10	405	355	26	276.5	12	26	M24
300	12	460	410	28	327.5	12	26	M24
350	14	520	470	30	359.0	16	26	M24
400	16	580	525	32	411.0	16	30	M27
450	18	640	585	34	462.0	20	30	M27
500	20	715	650	34	513.5	20	33	M30
600	24	840	770	36	616.5	20	36	M33

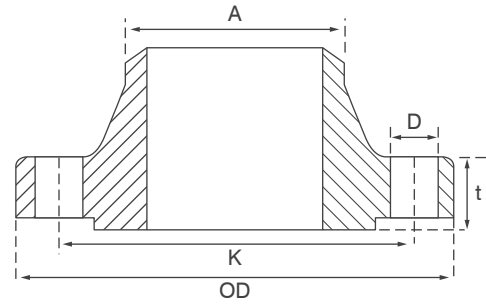
**PN Chart:** PN25

**Model:** SD-SOF-RF25

Nominal Size		Outside Diameter	PCD	Thick-ness	Bore	No. of Holes	Hole Diameter	Suitable Thread
(mm)	(inch)	OD (mm)	K (mm)	t (mm)	B (mm)		D (mm)	
15	½	95	65	16	22.0	4	14	M12
20	¾	105	75	18	27.5	4	14	M12
25	1	115	85	18	34.5	4	14	M12
32	1-¼	140	100	18	43.5	4	18	M16
40	1-½	150	110	18	49.5	4	18	M16
50	2	165	125	20	61.5	4	18	M16
65	2-½	185	145	22	77.5	8	18	M16
80	3	200	160	24	90.5	8	18	M16
100	4	235	190	24	116.0	8	22	M20
125	5	270	220	26	141.5	8	26	M24
150	6	300	250	28	170.5	8	26	M24
200	8	360	310	30	221.5	12	26	M24
250	10	425	370	32	276.5	12	30	M27
300	12	485	430	34	327.5	16	30	M27
350	14	555	490	38	359.5	16	33	M30
400	16	620	550	40	411.0	16	36	M33
450	18	670	600	42	462.0	20	36	M33
500	20	730	660	44	513.5	20	36	M33
600	24	845	770	46	616.5	20	39	M36

# Shield Welded Flange

Model : SD-WF-RF



**Functions:**

Welded flange is bored to match the inside diameter of the mating pipe or fitting to ensure uninterrupted flow. This prevents turbulence at the joint and reduces erosion. It also provides excellent stress distribution through the tapered hub and is easily radiographed for flaw detection. It is welded to a pipe or fitting with a single full penetration.

**Material:**

ASTM A105, Carbon Steel

**Standard:**

BS 4504

**PN Chart:** PN10

**Model:** SD-WF-RF10

Nominal Size		Outside Diameter	PCD	Thick-ness	Neck Dia.	No. of Holes	Hole Dia.	Suitable Thread
(mm)	(inch)	OD (mm)	K (mm)	t (mm)	A (mm)		D (mm)	
15	½	95	65	14	21.30	4	14	M12
20	¾	105	75	16	26.90	4	14	M12
25	1	115	85	16	33.70	4	14	M12
32	1-¼	140	100	16	42.40	4	18	M16
40	1-½	150	110	16	48.30	4	18	M16
50	2	165	125	18	60.30	4	18	M16
65	2-½	185	145	18	76.10	4	18	M16
80	3	200	160	20	88.90	8	18	M16
100	4	220	180	20	114.30	8	18	M16
125	5	250	210	22	139.70	8	18	M16
150	6	285	240	22	168.30	8	22	M20
200	8	340	295	24	219.10	8	22	M20
250	10	395	350	26	273.00	12	22	M20
300	12	445	400	26	323.90	12	22	M20
350	14	505	460	26	355.60	16	22	M20
400	16	565	515	26	406.40	16	26	M24
450	18	615	565	28	457.00	20	26	M24
500	20	670	620	28	508.00	20	26	M24
600	24	780	725	28	610.00	20	30	M27



**PN Chart:** PN16

**Model:** SD-WF-RF16

Nominal Size		Outside Diameter	PCD	Thick-ness	Neck Dia.	No. of Holes	Hole Dia.	Suitable Thread
(mm)	(inch)	OD (mm)	K (mm)	t (mm)	A (mm)		D (mm)	
15	½	95	65	14	21.30	4	14	M12
20	¾	105	75	16	26.90	4	14	M12
25	1	115	85	16	33.70	4	14	M12
32	1-¼	140	100	16	42.40	4	18	M16
40	1-½	150	110	16	48.30	4	18	M16
50	2	165	125	18	60.30	4	18	M16
65	2-½	185	145	18	76.10	4	18	M16
80	3	200	160	20	88.90	8	18	M16
100	4	220	180	20	114.30	8	18	M16
125	5	250	210	22	139.70	8	18	M16
150	6	285	240	22	168.30	8	22	M20
200	8	340	295	24	219.10	12	22	M20
250	10	405	355	26	273.00	12	26	M24
300	12	460	410	28	323.90	12	26	M24
350	14	520	470	30	355.60	16	26	M24
400	16	580	525	32	406.40	16	30	M27
450	18	640	585	34	457.00	20	30	M27
500	20	715	650	34	508.00	20	33	M30
600	24	840	770	36	610.00	20	36	M33

**PN Chart:** PN25

**Model:** SD-WF-RF25

Nominal Size		Outside Diameter	PCD	Thick-ness	Neck Dia.	No. of Holes	Hole Dia.	Suitable Thread
(mm)	(inch)	OD (mm)	K (mm)	t (mm)	A (mm)		D (mm)	
15	½	95	65	16	21.30	4	14	M12
20	¾	105	75	18	26.90	4	14	M12
25	1	115	85	18	33.70	4	14	M12
32	1-¼	140	100	18	42.40	4	18	M16
40	1-½	150	110	18	48.30	4	18	M16
50	2	165	125	20	60.30	4	18	M16
65	2-½	185	145	22	76.10	8	18	M16
80	3	200	160	24	88.90	8	18	M16
100	4	235	190	24	114.30	8	22	M20
125	5	270	220	26	139.70	8	26	M24
150	6	300	250	28	168.30	8	26	M24
200	8	360	310	30	219.10	12	26	M24
250	10	425	370	32	273.00	12	30	M27
300	12	485	430	34	323.90	16	30	M27
350	14	555	490	38	355.60	16	33	M30
400	16	620	550	40	406.40	16	36	M33
450	18	670	600	42	457.00	20	36	M33
500	20	730	660	44	508.00	20	36	M33
600	24	845	770	46	610.00	20	39	M36

For further information on any aspect of the  
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