



C&N INDUSTRIAL GROUP LIMITED

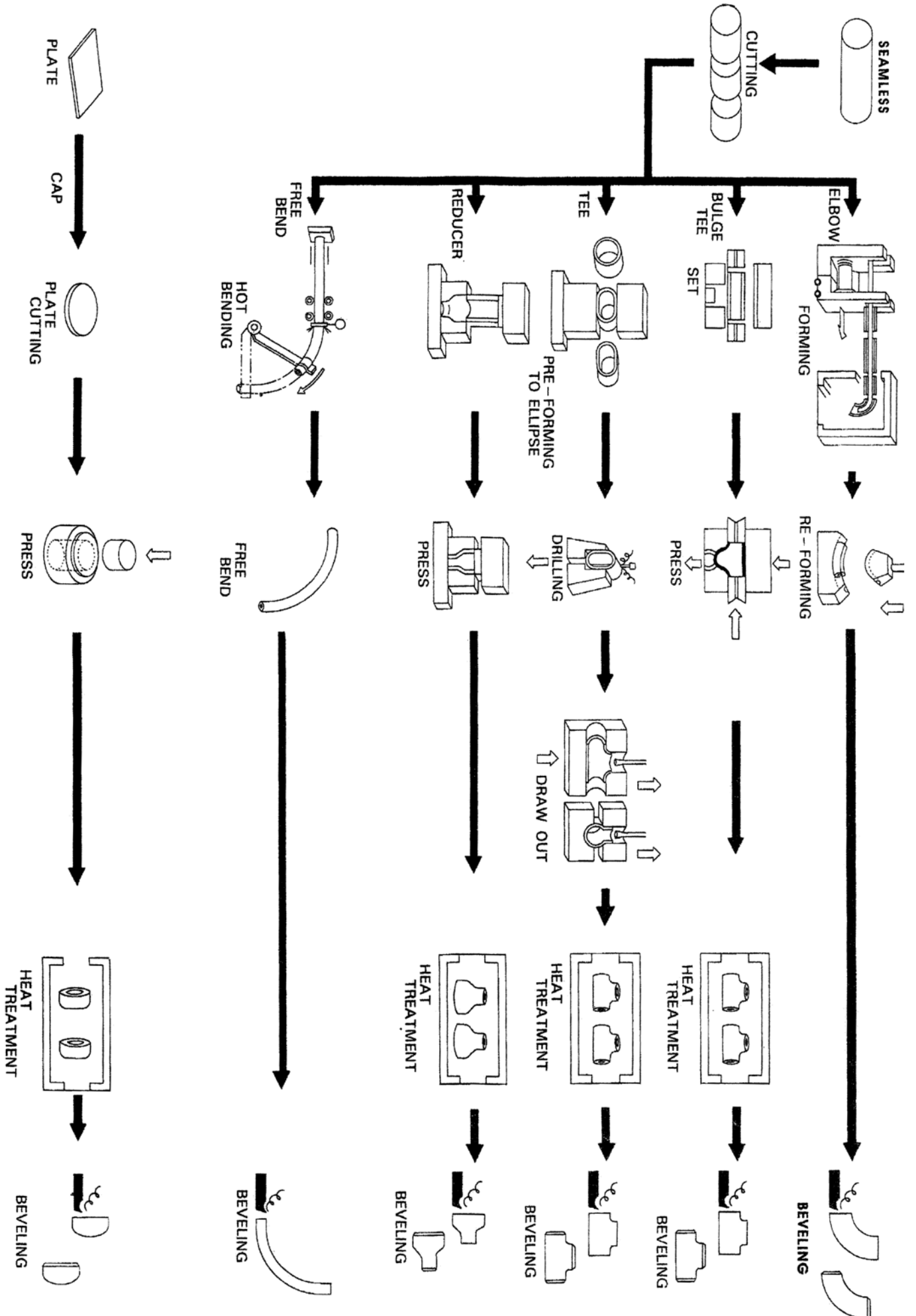


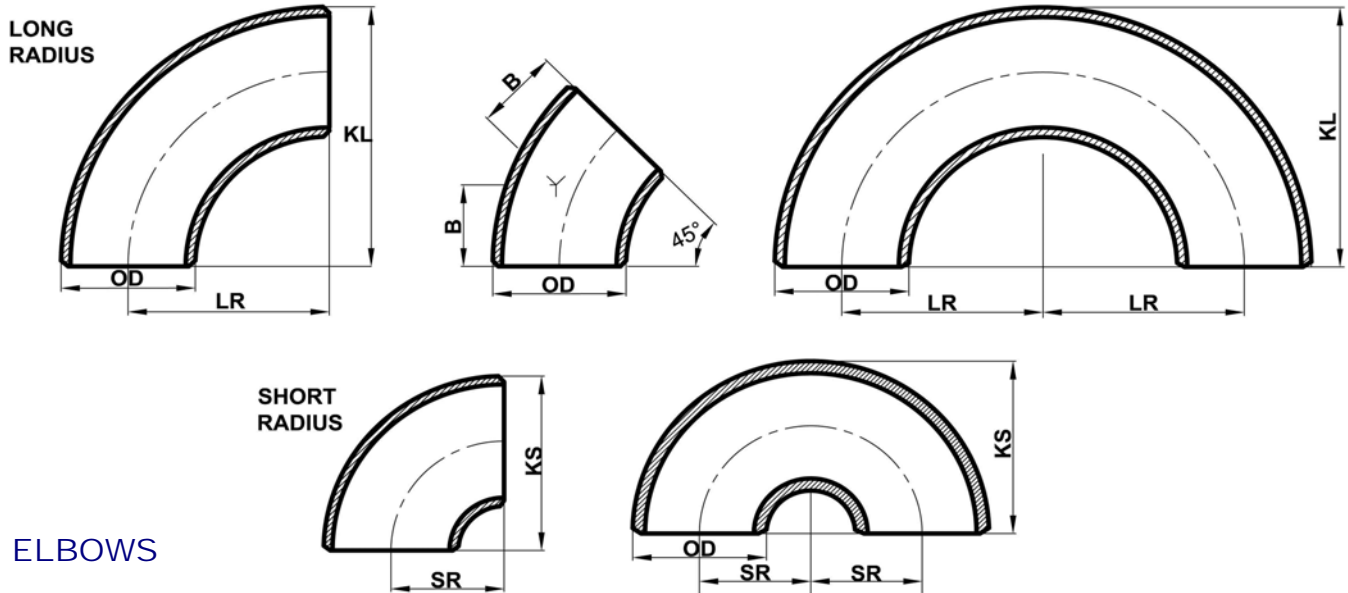
BETTER PIPELINE BETTER CONNECTION

• Steel pipe • Pipe fitting • Flange

2012-2013

www.cnpipefitting.com
www.steelpipe.me

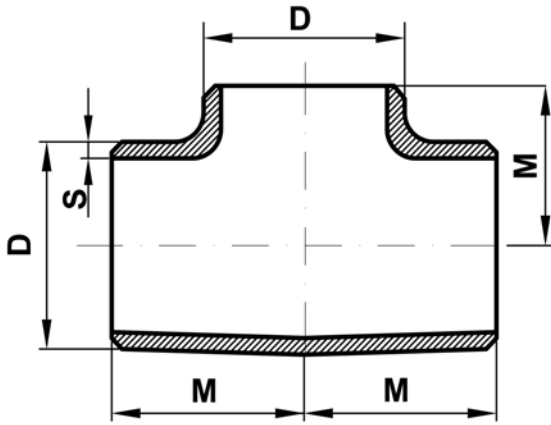




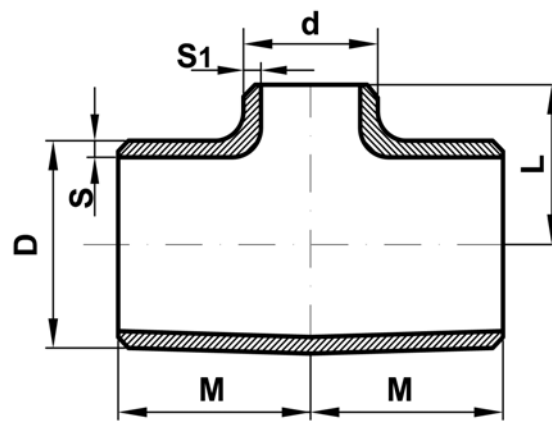
ELBOWS

NPS	OD	LR (R=1.5D)	KL	SR (R=1D)	KS	B	Wall Thickness		90 LR ELBOW Weights(kg)	
							SCH.STD	SCH.XS	SCH.STD	SCH.XS
1/2"	21.34	38.10	47.60	-	-	15.90	2.77	3.73	0.07	0.10
3/4"	26.67	28.60	42.90	-	-	11.10	2.87	3.91	0.07	0.10
1"	33.40	38.10	55.60	25.40	41.30	22.20	3.38	4.55	0.15	0.19
1 1/4"	42.16	47.60	69.80	31.80	52.40	25.40	3.56	4.85	0.26	0.34
1 1/2"	48.26	57.20	82.50	38.10	61.90	28.60	3.68	5.08	0.38	0.48
2"	60.32	76.20	106.40	50.80	81.00	34.90	3.91	5.54	0.68	0.91
2 1/2"	73.02	95.20	131.80	63.50	100.00	44.40	5.16	7.01	1.30	1.73
3"	88.90	114.30	158.80	76.20	120.60	50.80	5.49	7.62	2.08	2.78
3 1/2"	101.60	133.40	184.20	88.90	139.70	57.20	5.74	8.08	2.92	3.96
4"	114.30	152.40	209.60	101.60	158.80	63.50	6.02	8.56	3.95	5.40
5"	141.30	190.50	261.90	127.00	196.80	79.40	6.55	9.53	6.67	9.34
6"	168.28	228.60	312.70	152.40	235.50	95.20	7.11	10.97	10.40	15.50
8"	219.08	304.80	414.30	203.20	312.70	127.00	8.18	12.70	20.90	31.30
10"	273.05	381.00	517.50	254.00	390.50	158.80	9.27	12.70	37.00	49.40
12"	323.85	457.20	619.10	304.80	466.70	190.50	9.52	12.70	54.00	71.20
14"	355.60	533.40	711.20	355.60	533.40	222.20	9.52	12.70	69.90	91.60
16"	406.40	609.60	812.80	406.40	609.60	254.00	9.52	12.70	91.20	120.20
18"	457.20	685.80	914.40	457.20	685.80	285.80	9.52	12.70	116.10	153.30
20"	508.00	762.00	1016.00	508.00	762.00	317.50	9.52	12.70	143.80	190.10
22"	558.80	838.20	1117.60	558.80	838.20	342.90	9.52	12.70	174.60	230.40
24"	609.60	914.40	1219.20	609.60	914.00	381.00	9.52	12.70	207.70	274.90
26"	660.40	990.60	1320.80	660.40	990.60	406.40	9.52	12.70	249.34	346.93
28"	711.20	1066.80	1422.40	711.20	1066.80	438.10	9.52	12.70	289.49	402.98
30"	762.00	1143.00	1524.00	762.00	1143.00	469.90	9.52	12.70	332.64	463.22
32"	812.00	1219.20	1625.60	812.80	1218.80	501.60	9.52	12.70	378.79	527.66
34"	863.60	1295.40	1727.20	863.80	1295.60	533.40	9.52	12.70	427.93	596.29
36"	914.40	1371.60	1828.80	914.40	1371.60	565.10	9.52	12.70	480.06	669.12
38"	965.20	1448.00	1930.60	965.20	1447.80	600.00	9.52	12.70	535.20	746.14
40"	1016.00	1524.00	2032.00	1016.00	1524.00	632.00	9.52	12.70	593.33	827.35
42"	1066.80	1600.00	2133.40	1066.80	1600.20	660.00	9.52	12.70	654.45	912.77
44"	1117.60	1676.00	2234.80	1117.60	1676.40	695.00	9.52	12.70	718.57	1002.37
46"	1168.40	1753.00	2337.20	1168.40	1752.60	727.00	9.52	12.70	785.69	1096.17
48"	1219.20	1829.00	2438.60	1219.20	1828.80	759.00	9.52	12.70	855.81	1194.16

EQUAL TEES

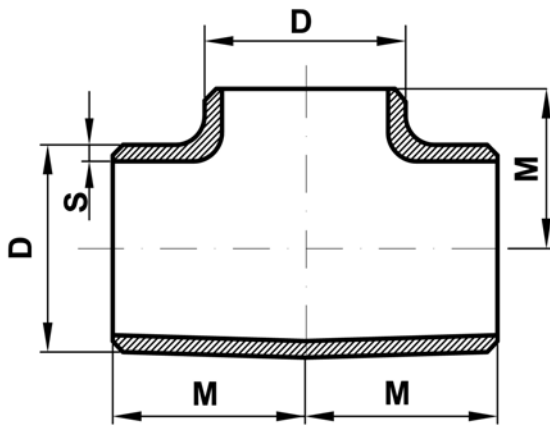


REDUCING TEES

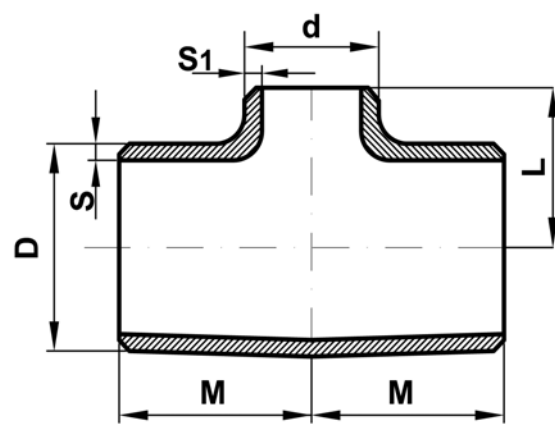


NPS	D	d	M	L	Wall Thickness				Weights(kg)	
					SCH STD		SCH XS		SCH STD	SCH XS
					S	S1	S	S1		
1/2"	21.3	-	25.4	25.4	2.77	-	3.73	-	0.16	0.18
3/4"	26.7	-	28.5	28.5	2.87	-	3.91	-	0.2	0.25
3/4"X1/2"		21.3			2.87	2.77	3.91	3.73	0.2	0.25
1"	33.4	-	38.1	38.1	3.38	-	4.55	-	0.34	0.32
1"X3/4"		26.7			3.38	2.87	4.55	3.91	0.34	0.32
1"X1/2"		21.3			3.38	2.77	4.55	3.73	0.34	0.32
1 1/4"	42.2	-	47.6	47.6	3.56	-	4.85	-	0.63	0.73
1 1/4"X1"		33.4			3.56	3.38	4.85	4.55	0.63	0.73
1 1/4"X3/4"		26.7			3.56	2.87	4.85	3.91	0.63	0.73
1 1/4"X1/2"		21.3			3.56	2.77	4.85	3.73	0.63	0.73
1 1/2"	48.3	-	57.1	57.1	3.68	-	5.08	-	0.92	1.18
1 1/2"X1 1/4"		42.2			3.68	3.56	5.08	4.85	0.92	1.18
1 1/2"X1"		33.4			3.68	3.38	5.08	4.55	0.92	1.18
1 1/2"X3/4"		26.7			3.68	2.87	5.08	3.91	0.92	1.18
1 1/2"X1/2"		21.3			3.68	2.77	5.08	3.73	0.92	1.18
2"	60.3	-	63.5	63.5	3.91	-	5.54	-	1.49	1.67
2"X1 1/2"		48.3			3.91	3.68	5.54	5.08	1.49	1.67
2"X1 1/4"		42.4			3.91	3.56	5.54	4.85	1.49	1.67
2"X1"		33.4			3.91	3.38	5.54	4.55	1.49	1.67
2"X3/4"		26.7			3.91	2.87	5.54	3.91	1.49	1.67
2"X1/2"		21.3			3.91	2.77	5.54	3.73	1.49	1.67
2 1/2"	73	-	76.2	76.2	5.16	-	7.01	-	2.68	2.88
2 1/2"X2"		60.3			5.16	3.91	7.01	5.54	2.68	2.88
2 1/2"X1 1/2"		48.3			5.16	3.68	7.01	5.08	2.68	2.88
2 1/2"X1 1/4"		42.2			5.16	3.56	7.01	4.85	2.68	2.88
2 1/2"X1"		33.4			5.16	3.38	7.01	4.55	2.68	2.88
3"	88.9	-	85.7	85.7	5.49	-	7.62	-	3.75	4.19
3"X2 1/2"		73			5.49	5.16	7.62	7.01	3.75	4.19
3"X2"		60.3			5.49	3.91	7.62	5.54	3.75	4.19
3"X1 1/2"		48.3			5.49	3.68	7.62	5.08	3.75	4.19
3"X1 1/4"		42.2			5.49	3.56	7.62	4.85	3.75	4.19
3"X1"		33.4			5.49	3.38	7.62	4.55	3.75	4.19
3 1/2"	101.6	-	95.2	95.2	5.74	-	8.08	-	5	6.15
3 1/2"X3"		88.9			5.74	5.49	8.08	7.62	5	6.15
3 1/2"X2 1/2"		73			5.74	5.16	8.08	7.01	5	6.15
3 1/2"X2"		60.3			5.74	3.91	8.08	5.54	5	6.15
3 1/2"X1 1/2"		48.3			5.74	3.68	8.08	5.08	5	6.15
3 1/2"X1 1/4"		42.2			5.74	3.56	8.08	4.85	5	6.15

EQUAL TEES

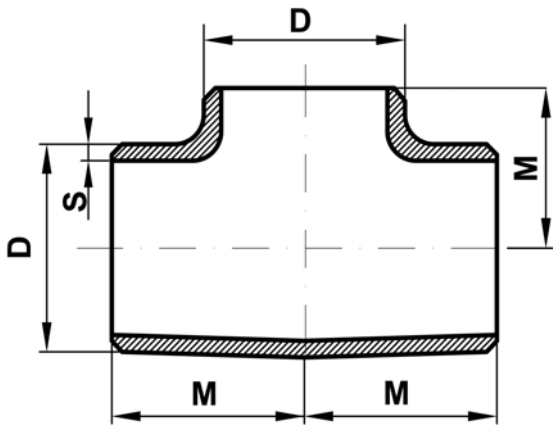


REDUCING TEES

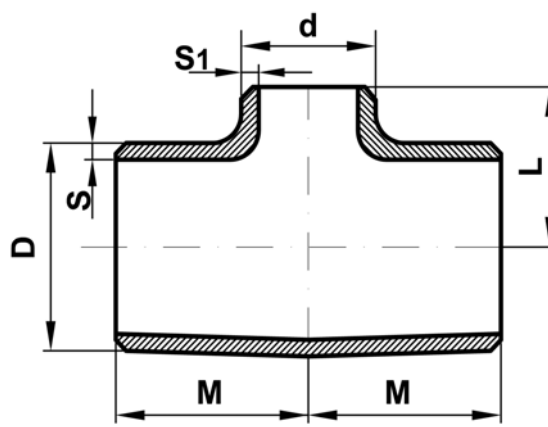


NPS	D	d	M	L	Wall Thickness				Weights(kg)			
					SCH STD		SCH XS		SCH STD	SCH XS		
					S	S1	S	S1				
4"		-		104.8	6.02	-	8.56	-	6.5	7.12		
4"X3 1/2"		101.6		101.6	6.02	5.74	8.56	8.08	6.5	7.12		
4"X3"		88.9		98.4	6.02	5.49	8.56	7.62	6.5	7.12		
4"X2 1/2"	114.3	73	104.8	95.2	6.02	5.16	8.56	7.01	6.5	7.12		
4"X2"		60.3		88.9	6.02	3.91	8.56	5.54	6.5	7.12		
4"X1 1/2"		48.3		85.7	6.02	3.68	8.56	5.08	6.5	7.12		
4"X1 1/4"		42.2		83.7	6.02	3.56	8.56	4.85	6.5	7.12		
4"X1"		33.4		78.6	6.02	3.38	8.56	4.55	6.5	7.12		
5"				-		123.8	6.55	-	9.52	-	10	11.6
5"X4"		141.3		114.3	123.8	117.4	6.55	6.02	9.52	8.56	10	11.6
5"X3 1/2"				101.6		114.3	6.55	5.74	9.52	8.08	10	11.6
5"X3"	88.9		111.1	6.55		5.49	9.52	7.62	10	11.6		
5"X2 1/2"	73		107.9	6.55		5.16	9.52	7.01	10	11.6		
5"X2"	60.3		104.7	6.55		3.91	9.52	5.54	10	11.6		
6"			-			142.8	7.11	-	10.97	-	15	15
6"X5"	168.3	141.3	142.8	136.5	7.11	6.55	10.97	9.52	15	15		
6"X4"		114.3		130.1	7.11	6.02	10.97	8.56	14	15		
6"X3 1/2"		101.6		127	7.11	5.74	10.97	8.08	14	15		
6"X3"		88.9		123.8	7.11	5.49	10.97	7.62	14	15		
6"X2 1/2"		73		120.6	7.11	5.16	10.97	7.01	14	15		
6"X2"		60.3		115.9	7.11	3.91	10.97	5.54	14	15		
8"				-		177.8	8.18	-	12.7	-	24.5	29
8"X6"	219.1	168.3	177.8	168.2	8.18	7.11	12.7	10.97	24.5	29		
8"X5"		141.3		161.9	8.18	6.55	12.7	9.52	24.5	29		
8"X4"		114.3		155.5	8.18	6.02	12.7	8.56	24.5	29		
8"X3 1/2"		101.6		152.4	8.18	5.74	12.7	8.08	24.5	29		
8"X3"		88.9		150.8	8.18	5.49	12.7	7.62	24.5	29		
10"				-		215.9	9.27	-	12.7	-	31.3	48
10"X8"	273	219.1	215.9	203.2	9.27	8.18	12.7	12.7	31.3	48		
10"X6"		168.3		193.7	9.27	7.11	12.7	10.97	31.3	48		
10"X5"		141.3		190.5	9.27	6.55	12.7	9.52	31.3	48		
10"X4"		114.3		184.2	9.27	6.02	12.7	8.56	31.3	48		
10"X3"		88.9		-	9.27	5.49	12.7	7.62	31.3	48		
12"				-		254	9.52	-	12.7	-	47	68
12"X10"	323.8	273	254	241.3	9.52	9.27	12.7	12.7	47	68		
12"X8"		219.1		228.6	9.52	8.18	12.7	12.7	47	68		
12"X6"		168.3		219.1	9.52	7.11	12.7	10.97	47	68		
12"X5"		141.3		215.9	9.52	6.55	12.7	9.52	47	68		
12"X4"		114.3		214.1	9.52	6.02	12.7	8.56	47	68		

EQUAL TEES

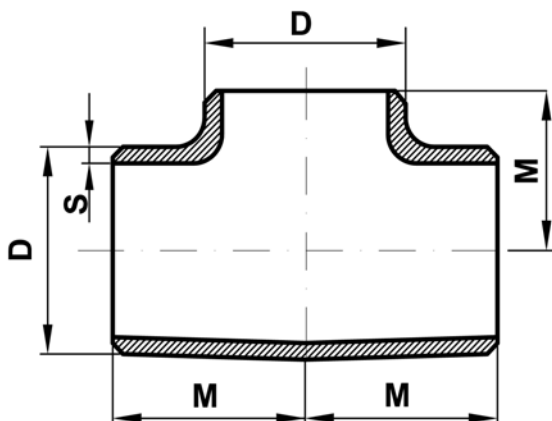


REDUCING TEES

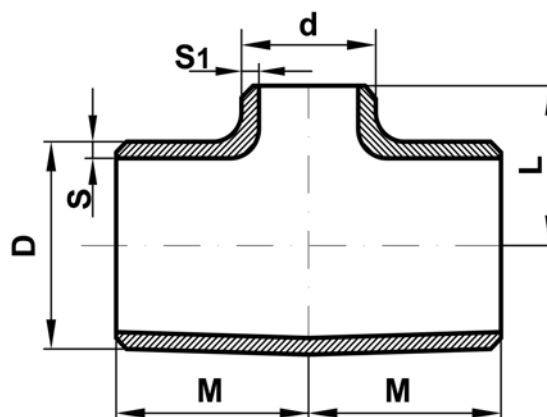


NPS	D	d	M	L	Wall Thickness				Weights(kg)	
					SCH STD		SCH XS		SCH STD	SCH XS
					S	S1	S	S1		
14"		-		279.4	9.52	-	12.7	-	60	85
14"X12"		323.8		269.9	9.52	9.52	12.7	12.7	60	85
14"X10"	355.6	273	279.4	257.2	9.52	9.27	12.7	12.7	60	85
14"X8"		219.1		247.7	9.52	8.18	12.7	12.7	60	85
14"X6"		168.3		238.1	9.52	7.11	12.7	10.97	60	85
16"		-		304.9	9.52	-	12.7	-	75	103
16"X14"		355.6		304.9	9.52	9.52	12.7	12.7	75	103
16"X12"	406.4	323.8	304.8	295.6	9.52	9.52	12.7	12.7	75	103
16"X10"		273		282.6	9.52	9.27	12.7	12.7	75	103
16"X8"		219.1		273.1	9.52	8.18	12.7	12.7	75	103
16"X6"		168.3		263.5	9.52	7.11	12.7	10.97	75	103
18"		-		342.9	9.52	-	12.7	-	105	125
18"X16"		406.4		330.2	9.52	9.52	12.7	12.7	105	125
18"X14"	457.2	355.6	342.9	330.2	9.52	9.52	12.7	12.7	105	125
18"X12"		323.8		320.7	9.52	9.52	12.7	12.7	105	125
18"X10"		273		308	9.52	9.27	12.7	12.7	105	125
18"X8"		219.1		298.5	9.52	8.18	12.7	12.7	105	125
20"		-		381	9.52	-	12.7	-	125	150
20"X18"		457.2		368.3	9.52	9.52	12.7	12.7	125	150
20"X16"		406.4		355.6	9.52	9.52	12.7	12.7	125	150
20"X14"	508	355.6	381	355.6	9.52	9.52	12.7	12.7	125	150
20"X12"		323.8		346.1	9.52	9.52	12.7	12.7	125	150
20"X10"		273		333.4	9.52	9.27	12.7	12.7	125	150
20"X8"		219.1		322.3	9.52	8.18	12.7	12.7	125	150
22"		-		419.1	9.52	-	12.7	-	158.8	205.3
22"X20"		508		406.4	9.52	9.52	12.7	12.7	158.80	205.3
22"X18"	558	457.2	419.1	393.7	9.52	9.52	12.7	12.7	158.80	205.3
22"X16"		406.4		381	9.52	9.52	12.7	12.7	158.80	205.3
22"X14"		355.6		381	9.52	9.52	12.7	12.7	158.80	205.3
22"X12"		323.8		371.5	9.52	9.52	12.7	12.7	158.80	205.3
24"		-		431.8	9.52	-	12.7	-	185	235
24"X22"		558.8		431.8	9.52	9.52	12.7	12.7	185	235
24"X20"		508.8		431.8	9.52	9.52	12.7	12.7	185	235
24"X18"	609.6	457.2	431.8	419.1	9.52	9.52	12.7	12.7	185	235
24"X16"		406.4		406.4	9.52	9.52	12.7	12.7	185	235
24"X14"		355.6		406.4	9.52	9.52	12.7	12.7	185	235
24"X12"		323.8		396.9	9.52	9.52	12.7	12.7	185	235

EQUAL TEES

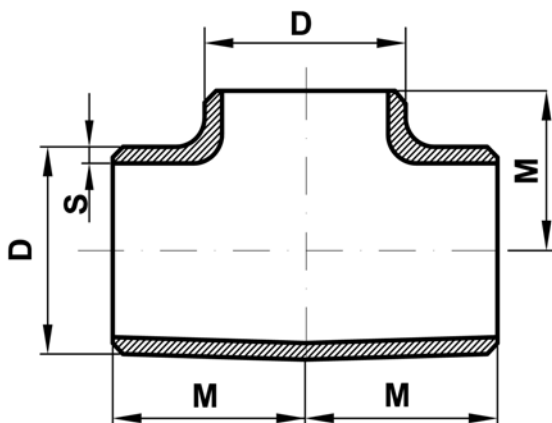


REDUCING TEES

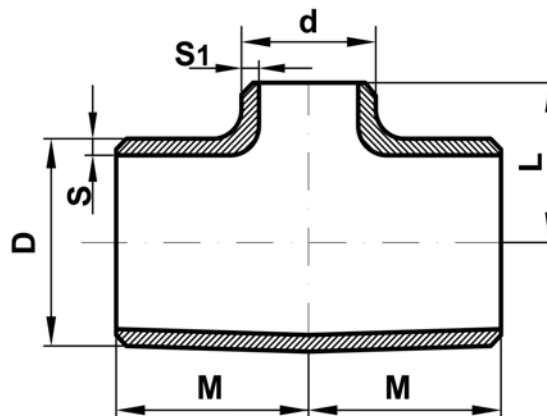


NPS	D	d	M	L	Wall Thickness				Weights(kg)	
					SCH STD		SCH XS		SCH STD	SCH XS
					S	S1	S	S1		
26"		-		495.3	9.52	-	12.7	-	222.3	287.65
26"X24"		609.6		482.6	9.52	9.52	12.7	12.7	222.3	287.65
26"X22"		558.8		469.9	9.52	9.52	12.7	12.7	222.3	287.65
26"X20"	660.4	508	495.3	457.2	9.52	9.52	12.7	12.7	222.3	287.65
26"X18"		457.2		444.5	9.52	9.52	12.7	12.7	222.3	287.65
26"X16"		406.4		431.8	9.52	9.52	12.7	12.7	222.3	287.65
26"X14"		355.6		431.8	9.52	9.52	12.7	12.7	222.3	287.65
28"		-		520.7	9.52	-	12.7	-	250.57	324.35
28"X26"		660.4		520.7	9.52	9.52	12.7	12.7	250.57	324.35
28"X24"		609.6		508	9.52	9.52	12.7	12.7	250.57	324.35
28"X22"	711.2	558.8	520.7	495.3	9.52	9.52	12.7	12.7	250.57	324.35
28"X20"		508		482.6	9.52	9.52	12.7	12.7	250.57	324.35
28"X18"		457.2		469.9	9.52	9.52	12.7	12.7	250.57	324.35
28"X16"		406.4		457.2	9.52	9.52	12.7	12.7	250.57	324.35
30"		-			9.52	-	12.7	-	288.45	373.48
30"X26"		660		546	9.52	9.52	12.7	12.7	288.45	373.48
30"X24"		610		533	9.52	9.52	12.7	12.7	288.45	373.48
30"X22"	762	559	559	521	9.52	9.52	12.7	12.7	288.45	373.48
30"X20"		508		508	9.52	9.52	12.7	12.7	288.45	373.48
30"X18"		457		495	9.52	9.52	12.7	12.7	288.45	373.48
30"X16"		406		483	9.52	9.52	12.7	12.7	288.45	373.48
30"X14"		356		483	9.52	9.52	12.7	12.7	288.45	373.48
32"		-			9.52	-	12.7	-	329	426.08
32"X30"		762		584	9.52	9.52	12.7	12.7	329	426.08
32"X28"		711		572	9.52	9.52	12.7	12.7	329	426.08
32"X26"	813	660	597	572	9.52	9.52	12.7	12.7	329	426.08
32"X24"		610		559	9.52	9.52	12.7	12.7	329	426.08
32"X20"		508		533	9.52	9.52	12.7	12.7	329	426.08
32"X18"		457		521	9.52	9.52	12.7	12.7	329	426.08
32"X16"		406		508	9.52	9.52	12.7	12.7	329	426.08
34"		-			9.52	-	12.7	-	372.2	518.6
34"x16"		406		533	9.52	9.52	12.7	12.7	372.2	518.6
34"x18"		457		546	9.52	9.52	12.7	12.7	372.2	518.6
34"x20"		508		559	9.52	9.52	12.7	12.7	372.2	518.6
34"x24"	864	610	635	584	9.52	9.52	12.7	12.7	372.2	518.6
34"x26"		660		597	9.52	9.52	12.7	12.7	372.2	518.6
34"x28"		711		597	9.52	9.52	12.7	12.7	372.2	518.6
34"x30"		762		610	9.52	9.52	12.7	12.7	372.2	518.6
34"x32"		813		622	9.52	9.52	12.7	12.7	372.2	518.6

EQUAL TEES

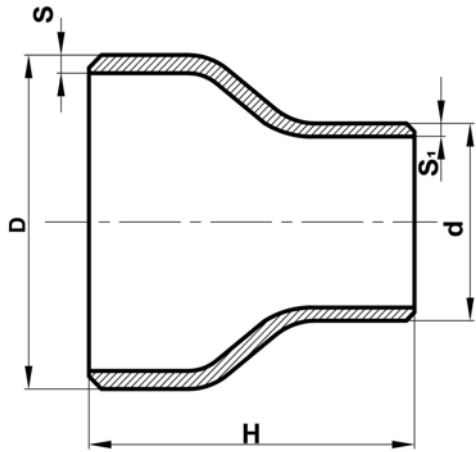


REDUCING TEES

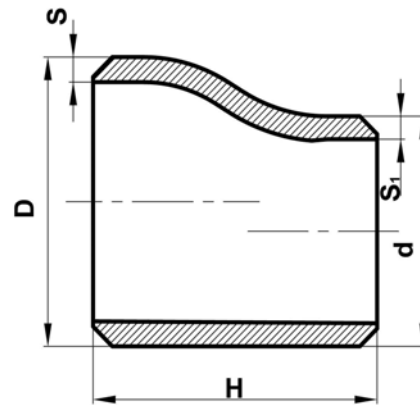


NPS	D	d	M	L	Wall Thickness				Weights(kg)	
					SCH STD		SCH XS		SCH STD	SCH XS
					S	S1	S	S1		
36"		-		-	9.52	-	12.7	-	418.05	582.68
36"x16"		406		559	9.52	9.52	12.7	12.7	418.05	582.68
36"x18"		457		572	9.52	9.52	12.7	12.7	418.05	582.68
36"x20"		508		584	9.52	9.52	12.7	12.7	418.05	582.68
36"x24"	914	610	673	610	9.52	9.52	12.7	12.7	418.05	582.68
36"x26"		660		622	9.52	9.52	12.7	12.7	418.05	582.68
36"x28"		771		622	9.52	9.52	12.7	12.7	418.05	582.68
36"x30"		762		635	9.52	9.52	12.7	12.7	418.05	582.68
36"x32"		813		648	9.52	9.52	12.7	12.7	418.05	582.68
36"x34"		864		660	9.52	9.52	12.7	12.7	418.05	582.68
38"				-		-	9.52	-	12.7	-
38"x18"		457		597	9.52	9.52	12.7	12.7	466.58	650.48
38"x20"		508		610	9.52	9.52	12.7	12.7	466.58	650.48
38"x24"	965	610	711	635	9.52	9.52	12.7	12.7	466.58	650.48
38"x26"		660		648	9.52	9.52	12.7	12.7	466.58	650.48
38"x28"		711		648	9.52	9.52	12.7	12.7	466.58	650.48
38"x30"		762		673	9.52	9.52	12.7	12.7	466.58	650.48
38"x32"		813		686	9.52	9.52	12.7	12.7	466.58	650.48
38"x34"		864		698	9.52	9.52	12.7	12.7	466.58	650.48
38"x36"		914		711	9.52	9.52	12.7	12.7	466.58	650.48
40"		-		-	9.52	-	12.7	-	517.77	722.00
40"x20"		508		635	9.52	9.52	12.7	12.7	517.77	722.00
40"x24"		610		660	9.52	9.52	12.7	12.7	517.77	722.00
40"x26"	1016	660	749	673	9.52	9.52	12.7	12.7	517.77	722.00
40"x28"		711		673	9.52	9.52	12.7	12.7	517.77	722.00
40"x30"		752		698	9.52	9.52	12.7	12.7	517.77	722.00
40"x32"		813		711	9.52	9.52	12.7	12.7	517.77	722.00
40"x34"		864		724	9.52	9.52	12.7	12.7	517.77	722.00
40"x36"		914		737	9.52	9.52	12.7	12.7	517.77	722.00
40"x38"		965		749	9.52	9.52	12.7	12.7	517.77	722.00
42"		-		-	9.52	-	12.7	-	532.22	742.29
42"x24"		610		660	9.52	9.52	12.7	12.7	532.22	742.29
42"x26"		660		698	9.52	9.52	12.7	12.7	532.22	742.29
42"x28"	1067	711	762	698	9.52	9.52	12.7	12.7	532.22	742.29
42"x30"		762		711	9.52	9.52	12.7	12.7	532.22	742.29
42"x32"		813		711	9.52	9.52	12.7	12.7	532.22	742.29
42"x34"		864		711	9.52	9.52	12.7	12.7	532.22	742.29
42"x36"		914		711	9.52	9.52	12.7	12.7	532.22	742.29
42"x38"		965		711	9.52	9.52	12.7	12.7	532.22	742.29
42"x40"		1016		711	9.52	9.52	12.7	12.7	532.22	742.29

CONCENTRIC REDUCERS

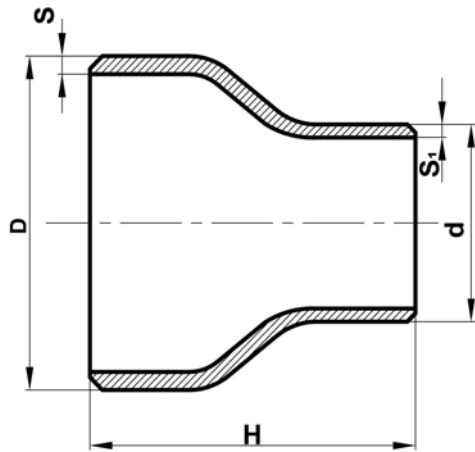


ECCENTRIC REDUCERS

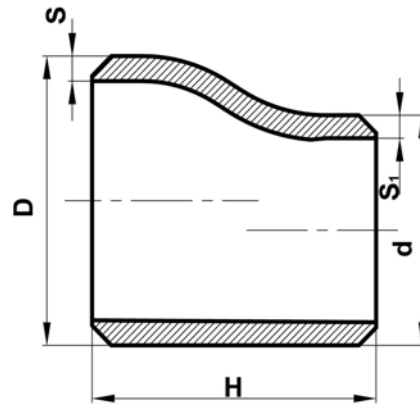


NPS	D	d	H	Wall Thickness				Weights(kg)	
				SCH STD		SCH XS		SCH STD	SCH XS
				S	S1	S	S1		
3/4"X1/2"	26.7	21.3	38	2.87	2.77	3.91	3.73	0.10	0.15
1"X3/4"	33.4	26.7	51	3.38	2.87	4.55	3.91	0.14	0.17
1"X1/2"		3.38		2.77	4.55	3.73	0.14	0.16	
1-1/4"X1"	42.2	33.4	51	3.56	3.38	4.85	4.55	0.20	0.24
1-1/4"X3/4"		26.7		3.56	2.87	4.85	3.91	0.20	0.23
1-1/4"X1/2"		21.3		3.56	2.77	4.85	3.73	0.19	0.22
1-1/2"X1-1/4"	48.3	42.2	64	3.68	3.56	5.08	4.85	0.26	0.33
1-1/2"X1"		33.4		3.68	3.38	5.08	4.55	0.24	0.31
1-1/2"X3/4"		26.7		3.68	2.87	5.08	3.91	0.22	0.27
1-1/2"X1/2"		21.3		3.68	2.77	5.08	3.73	0.20	0.26
2"X1-1/2"	60.3	48.3	76	3.91	3.68	5.54	5.08	0.41	0.54
2"X1-1/4"		42.4		3.91	3.56	5.54	4.85	0.39	0.53
2"X1"		33.4		3.91	3.38	5.54	4.55	0.37	0.48
2"X3/4"		26.7		3.91	2.87	5.54	3.91	0.33	0.46
2"X1/2"		21.3		3.91	2.77	5.54	3.73	0.31	0.42
2-1/2"X2"	73	60.3	89	5.16	3.91	7.01	5.54	0.73	0.94
2-1/2"X1-1/2"		48.3		5.16	3.68	7.01	5.08	0.68	0.86
2-1/2"X1-1/4"		42.2		5.16	3.56	7.01	4.85	0.67	0.79
2-1/2"X1"		33.4		5.16	3.38	7.01	4.55	0.59	0.79
3"X2-1/2"	88.9	73	89	5.49	5.16	7.62	7.01	0.98	1.29
3"X2"		60.3		5.49	3.91	7.62	5.54	0.91	1.18
3"X1-1/2"		48.3		5.49	3.68	7.62	5.08	0.86	1.04
3"X1-1/4"		42.2		5.49	3.56	7.62	4.85	0.77	1.04
3"X1"		33.4		5.49	3.38	7.62	4.55	0.73	1.04
3-1/2"X3"	101.6	88.9	102	5.74	5.49	8.08	7.62	1.38	1.85
3-1/2"X2-1/2"		73		5.74	5.16	8.08	7.01	1.34	1.75
3-1/2"X2"		60.3		5.74	3.91	8.08	5.54	1.23	1.61
3-1/2"X1-1/2"		48.3		5.74	3.68	8.08	5.08	1.14	1.43
3-1/2"X1-1/4"		42.2		5.74	3.56	8.08	4.85	1.14	1.43
4"X3-1/2"	114.3	101.6	102	6.02	5.74	8.56	8.08	1.64	2.21
4"X3"		88.9		6.02	5.49	8.56	7.62	1.59	2.13
4"X2-1/2"		73		6.02	5.16	8.56	7.01	1.52	2.01
4"X2"		60.3		6.02	3.91	8.56	5.54	1.44	1.78
4"X1-1/2"		48.3		6.02	3.68	8.56	5.08	1.24	1.73
4"X1-1/4"		42.2		6.02	3.56	8.56	4.85	1.20	1.71
4"X1"		33.4		6.02	3.38	8.56	4.55	1.12	1.70
5"X4"	141.3	114.3	127	6.55	6.02	9.52	8.56	2.72	3.78
5"X3-1/2"		101.6		6.55	5.74	9.52	8.08	2.65	3.65

CONCENTRIC REDUCERS

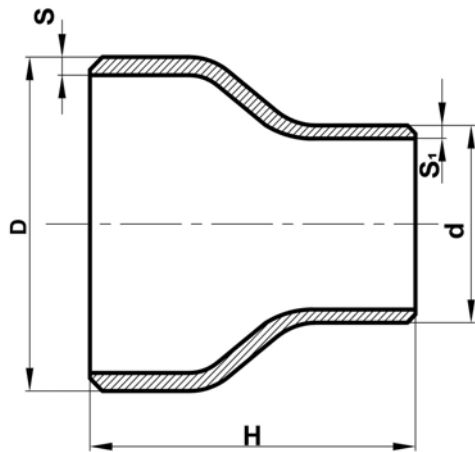


ECCENTRIC REDUCERS

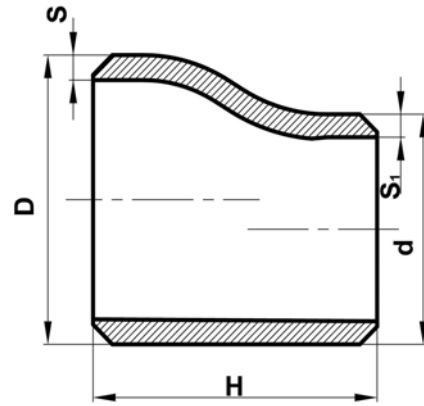


NPS	D	d	H	Wall Thickness				Weights(kg)	
				SCH STD		SCH XS		SCH STD	SCH XS
				S	S1	S	S1		
5"X3" 5"X2-1/2" 5"X2"	141.3	88.9	127	6.55	5.49	9.52	7.62	2.60	3.55
73		6.55		5.16	9.52	7.01	2.51	3.30	
60.3		6.55		3.91	9.52	5.54	2.29	3.00	
6"X5" 6"X4" 6"X3-1/2" 6"X3" 6"X2-1/2" 6"X2"	168.3	141.3	140	7.11	6.55	10.97	9.52	3.93	5.72
114.3		7.11		6.02	10.97	8.56	3.72	5.45	
101.6		7.11		5.74	10.97	8.08	3.69	5.27	
88.9		7.11		5.49	10.97	7.62	3.63	5.04	
73		7.11		5.16	10.97	7.01	3.45	4.52	
60.3		7.11		3.91	10.97	5.54	3.30	4.45	
8"X6" 8"X5" 8"X4" 8"X3-1/2" 8"X3"	219.1	168.3	152	8.18	7.11	12.7	10.97	6.31	9.26
141.3		8.18		6.55	12.7	9.52	6.08	8.85	
114.3		8.18		6.02	12.7	8.56	5.95	8.44	
101.6		8.18		5.74	12.7	8.08	5.81	7.31	
88.9		8.18		5.49	12.7	7.62	5.81	7.31	
10"X8" 10"X6" 10"X5" 10"X4" 10"X3"	273	219.1	178	9.27	8.18	12.7	12.7	10.50	14.20
168.3		9.27		7.11	12.7	10.97	10.10	13.50	
141.3		9.27		6.55	12.7	9.52	9.90	13.00	
114.3		9.27		6.02	12.7	8.56	9.58	11.50	
88.9		9.27		5.49	12.7	7.62	9.30	11.0	
12"X10" 12"X8" 12"X6" 12"X5" 12"X4"	323.8	273	203	9.52	9.27	12.7	12.7	15.20	19.80
219.1		9.52		8.18	12.7	12.7	14.60	19.08	
168.3		9.52		7.11	12.7	10.97	14.10	18.40	
141.3		9.52		6.55	12.7	9.52	13.80	17.70	
114.3		9.52		6.02	12.7	8.56	13.30	17.2	
14"X12" 14"X10" 14"X8" 14"X6"	355.6	323.8	330	9.52	9.52	12.7	12.7	28.80	37.70
273		9.52		9.27	12.7	12.7	27.40	36.10	
219.1		9.52		8.18	12.7	12.7	26.00	34.90	
168.3		9.52		7.11	12.7	10.97	25.30	33.70	
16"X14" 16"X12" 16"X10" 16"X8" 16"X6"	406.4	355.6	356	9.52	9.52	12.7	12.7	35.2	46.3
323.8		9.52		9.52	12.7	12.7	34.3	45	
273		9.52		9.27	12.7	12.7	33.1	43.7	
219.1		9.52		8.18	12.7	12.7	31.9	42.6	
168.3		9.52		7.11	12.7	10.97	31.9	42.6	
18"X16" 18"X14" 18"X12" 18"X10"	457.2	406.4	381	9.52	9.52	12.7	12.7	42.70	55.80
355.6		9.52		9.52	12.7	12.7	41.30	54.50	
323.8		9.52		9.52	12.7	12.7	40.50	53.60	
273		9.52		9.27	12.7	12.7	39.40	51.80	

CONCENTRIC REDUCERS



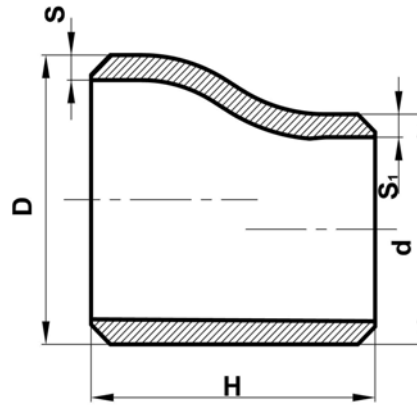
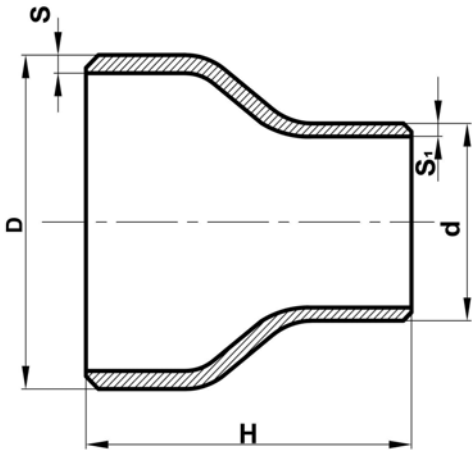
ECCENTRIC REDUCERS



NPS	D	d	H	Wall Thickness				Weights(kg)	
				SCH STD		SCH XS		SCH STD	SCH XS
				S	S1	S	S1		
18"X8"	457.2	219.1	381	9.52	8.18	12.7	12.7	39.4	51.8
20"X18"	508	457.2	508	9.52	9.52	12.7	12.7	64.50	84.40
20"X16"		406.4		9.52	9.52	12.7	12.7	62.60	82.60
20"X14"		355.6		9.52	9.52	12.7	12.7	61.30	81.30
20"X12"		323.8		9.52	9.52	12.7	12.7	60.80	79.90
20"X10"		273		9.52	9.27	12.7	12.7	60.80	79.90
20"X8"		219.1		9.52	8.18	12.7	12.7	60.8	79.9
22"X20"		558		508	508	9.52	9.52	12.7	12.7
22"X18"	457.2		9.52	9.52		12.7	12.7	69.9	91.7
22"X16"	406.4		9.52	9.52		12.7	12.7	68.5	89.9
22"X14"	355.6		9.52	9.52		12.7	12.7	67.2	88.5
24"X22"	609.6	558.8	508	9.52	9.52	12.7	12.7	75.80	99.90
24"X20"		508.8		9.52	9.52	12.7	12.7	75.80	99.90
24"X18"		457.2		9.52	9.52	12.7	12.7	74.00	97.60
24"X16"		406.4		9.52	9.52	12.7	12.7	72.60	95.80
24"X14"		355.6		9.52	9.52	12.7	12.7	72.60	95.80
26"X24"	660	609.6	610	9.52	9.52	12.7	12.7	98.00	123
26"X22"		558.8		9.52	9.52	12.7	12.7	98.00	123
26"X20"		508		9.52	9.52	12.7	12.7	98.00	123
26"X18"		457.2		9.52	9.52	12.7	12.7	98.00	123
26"X16"		406.4		9.52	9.52	12.7	12.7	98.00	123
26"X14"		355.6		9.52	9.52	12.7	12.7	98.00	123
28"X26"	711	660.4	610	9.52	9.52	12.7	12.7	105	132
28"X24"		609.6		9.52	9.52	12.7	12.7	105	132
28"X22"		558.8		9.52	9.52	12.7	12.7	105	132
28"X20"		508		9.52	9.52	12.7	12.7	105	132
28"X18"		457.2		9.52	9.52	12.7	12.7	105	132
28"X16"		406.4		9.52	9.52	12.7	12.7	105	132
30"X26"	762	660	610	9.52	9.52	12.7	12.7	113	143
30"X24"		610		9.52	9.52	12.7	12.7	113	143
30"X22"		559		9.52	9.52	12.7	12.7	113	143
30"X20"		508		9.52	9.52	12.7	12.7	113	143
30"X18"		457		9.52	9.52	12.7	12.7	113	143
30"X16"		406		9.52	9.52	12.7	12.7	113	143
30"X14"		356		9.52	9.52	12.7	12.7	113	143

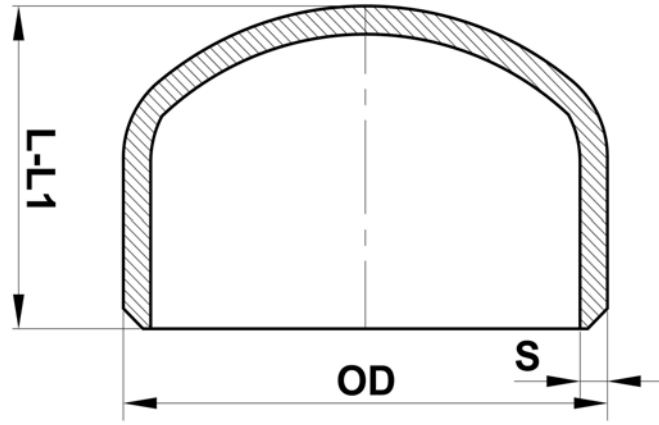
CONCENTRIC REDUCERS

ECCENTRIC REDUCERS



NPS	D	d	H	Wall Thickness				Weights(kg)	
				SCH STD		SCH XS		SCH STD	SCH XS
				S	S1	S	S1		
32"x16"	813	406	610	9.52	9.52	12.7	12.7	115	150
32"x18"		457		9.52	9.52	12.7	12.7	115	150
32"x20"		508		9.52	9.52	12.7	12.7	115	150
32"x24"		610		9.52	9.52	12.7	12.7	115	150
32"x26"		660		9.52	9.52	12.7	12.7	115	150
32"x28"		711		9.52	9.52	12.7	12.7	115	150
32"x30"		762		9.52	9.52	12.7	12.7	115	150
34"x16"	864	406	610	9.52	9.52	12.7	12.7	122	157
34"x18"		457		9.52	9.52	12.7	12.7	122	157
34"x20"		508		9.52	9.52	12.7	12.7	122	157
34"x22"		559		9.52	9.52	12.7	12.7	122	157
34"x24"		610		9.52	9.52	12.7	12.7	122	157
34"x26"		660		9.52	9.52	12.7	12.7	122	157
34"x28"		711		9.52	9.52	12.7	12.7	122	157
34"x30"		762		9.52	9.52	12.7	12.7	122	157
34"x32"		813		9.52	9.52	12.7	12.7	122	157
36"x16"	914	406	610	9.52	9.52	12.7	12.7	136	172
36"x18"		457		9.52	9.52	12.7	12.7	136	172
36"x20"		508		9.52	9.52	12.7	12.7	136	172
36"x22"		559		9.52	9.52	12.7	12.7	136	172
36"x24"		610		9.52	9.52	12.7	12.7	136	172
36"x26"		660		9.52	9.52	12.7	12.7	136	172
36"x28"		711		9.52	9.52	12.7	12.7	136	172
36"x30"		762		9.52	9.52	12.7	12.7	136	172
36"x32"		813		9.52	9.52	12.7	12.7	136	172
36"x34"		864		9.52	9.52	12.7	12.7	136	172
38"x18"		965		457	610	9.52	9.52	12.7	12.7
38"x20"	508		9.52	9.52		12.7	12.7	143	186
38"x24"	610		9.52	9.52		12.7	12.7	143	186
38"x26"	660		9.52	9.52		12.7	12.7	143	186
38"x28"	711		9.52	9.52		12.7	12.7	143	186
38"x30"	762		9.52	9.52		12.7	12.7	143	186
38"x32"	813		9.52	9.52		12.7	12.7	143	186
38"x34"	864		9.52	9.52		12.7	12.7	143	186
38"x36"	914		9.52	9.52		12.7	12.7	143	186

END CAPS



NPS	OD	L	L1	Wall Thickness		Weights(kg)	
				SCH STD	SCH XS	SCH STD	SCH XS
				S	S		
1/2"	21.34	25.90	25.90	2.77	3.73		
3/4"	26.67	31.70	31.70	2.87	3.91		
1"	33.40	38.10	38.10	3.38	4.55	0.10	0.13
1 1/4"	42.16	38.10	38.10	3.56	4.85	0.14	0.19
1 1/2"	48.26	38.10	38.10	3.68	5.08	0.20	0.23
2"	60.32	38.10	44.40	3.91	5.54	0.25	0.30
2 1/2"	73.02	38.10	50.80	5.16	7.01	0.35	0.45
3"	88.90	50.80	63.50	5.49	7.62	0.70	0.85
3 1/2"	101.60	63.50	76.20	5.74	8.08	1.00	1.30
4"	114.30	63.50	76.20	6.02	8.56	1.10	1.60
5"	141.30	76.20	88.90	6.55	9.53	2.00	2.70
6"	168.28	88.90	101.60	7.11	10.97	3.00	4.40
8"	219.08	101.60	127.00	8.18	12.70	5.50	6.35
10"	273.05	127.00	152.40	9.27	12.70	9.00	13.60
12"	323.85	152.40	177.80	9.52	12.70	15.00	22.50
14"	355.60	165.10	190.50	9.52	12.70	16.00	27.00
16"	406.40	177.80	203.20	9.52	12.70	21.00	31.50
18"	457.20	203.20	228.60	9.52	12.70	26.00	36.00
20"	508.00	228.60	254.00	9.52	12.70	32.00	42.00
22"	558.80	254.00	279.40	9.52	12.70	39.00	51.00
24"	609.60	266.70	304.80	9.52	12.70	46.00	60.00
26"	660.40	266.70	266.70	9.52	12.70	49.80	66.10
28"	711.20	266.70	266.70	9.52	12.70	56.00	74.81
30"	762.00	266.70	266.70	9.52	12.70	62.00	82.80
32"	812.00	266.70	266.70	9.52	12.70	68.00	93.40
34"	863.60	266.70	266.70	9.52	12.70	72.60	96.91
36"	914.40	266.70	266.70	9.52	12.70	79.40	107.00
38"	965.20			9.52	12.70	86.20	124.70
40"	1016.00			9.52	12.70	95.30	129.30
42"	1066.80			9.52	12.70	104.00	136.00
44"	1117.60			9.52	12.70	120.20	167.80
46"	1168.40			9.52	12.70	136.00	186.00
48"	1219.20			9.52	12.70	159.00	215.50

L for thicknesses up to XS.

L1 for thicknesses over XS.

INDUCTION PIPE BENDS

Nominal Pipe Size in.	Outside Diameter O.D.(mm)	BENDING RADIUS (mm)						Angle Bending	Tangent length at each end	Wall Thickness (mm)
		3D	4D	5D	6D	8D	10D			
3"	89.00	267.00	356.00	445.00	534.00	712.00	890.00		350.00	
4"	114.00	342.00	456.00	570.00	684.00	912.00	1140.00	90°	350.00	STD
6"	168.00	504.00	672.00	840.00	1008.00	1344.00	1680.00	60°	350.00	SCH40
8"	219.00	657.00	876.00	1095.00	1314.00	1752.00	2190.00	45°	700.00	XS
10"	273.00	819.00	1092.00	1365.00	1638.00	2184.00	2730.00	30°	700.00	SCH80
12"	325.00	975.00	1300.00	1625.00	1950.00	2600.00	3250.00	22.5°	700.00	or as
14"	356.00	1068.00	1424.00	1780.00	2136.00	2848.00	3560.00	or	700.00	per the
16"	406.00	1218.00	1624.00	2030.00	2436.00	3248.00	4060.00	as	700.00	choice of
18"	457.00	1371.00	1828.00	2285.00	2742.00	3656.00	4570.00	per	1000.00	purchaser
20"	508.00	1524.00	2032.00	2540.00	3048.00	4064.00	5080.00	the	1000.00	
22"	559.00	1677.00	2236.00	2795.00	3354.00	4472.00	5590.00	choice	1000.00	
24"	610.00	1830.00	2440.00	3050.00	3660.00	4880.00	6100.00	of	1000.00	
26"	660.00	1980.00	2640.00	3300.00	3960.00	5280.00	6600.00	purchaser		
28"	711.00	2133.00	2844.00	3555.00	4266.00	5688.00	7110.00		1D	
30"	762.00	2286.00	3048.00	3810.00	4572.00	6096.00	7620.00		(Outside	
32"	813.00	2439.00	3252.00	4065.00	4878.00	6504.00	8130.00		diameter	
34"	864.00	2592.00	3456.00	4320.00	5184.00	6912.00	8640.00		of bend)	
36"	914.00	2742.00	3656.00	4570.00	5484.00	7312.00	9140.00		or as	
38"	965.00	2895.00	3860.00	4825.00	5790.00	7720.00	9650.00		per the	
40"	1016.00	3048.00	4064.00	5080.00	6096.00	8128.00	10160.00		choice of	
42"	1067.00	3201.00	4268.00	5335.00	6402.00	8536.00	10670.00		purchaser	
44"	1118.00	3354.00	4472.00	5590.00	6708.00	8944.00	11180.00			
46"	1168.00	3504.00	4672.00	5840.00	7008.00	9344.00	11680.00			
48"	1219.00	3657.00	4876.00	6095.00	7314.00	9752.00	12190.00			
50"	1270.00	3810.00	5080.00	6350.00	7620.00	10160.00	12700.00			
52"	1321.00	3963.00	5248.00	6605.00	7926.00	10568.00	13210.00			
54"	1372.00	4116.00	5488.00	6860.00	8232.00	10976.00	13720.00			
56"	1422.00	4266.00	5688.00	7110.00	8532.00	11376.00	14220.00			

Bend end preparation: Welding ends to be beveled as per ASME B16.25 or as per specified by purchaser

**Induction Pipe Bending
Standard Bend Tolerances**

Bend Angle: ± 1/2°

Bend Radius ± 1%

Bend Plane: ± 1°

End squareness

Size NPS 36" and smaller: 2.4mm(0.09")

Size Greater than NPS 36": 3.0mm(0.12")

Linear Dimensions

Size NPS 24" and smaller: ± 5mm(0.19")

Size Greater than NPS 24": ±6mm(0.25")

Thinning: <0.10% of the bend nominal wall thickness

or ≤ 50D/R (%) (R=bend centerline radius,
D=nominal outside diameter of starter stock)

or ≤ 0.05% of the nominal wall thickness of the matching pipe.

Ovality within bends : 2.5% of the mating pipe outside diameter

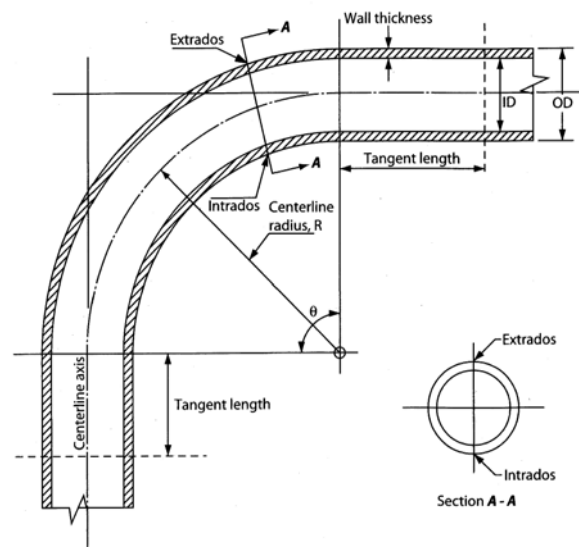
Ovality at Ends: ≤1% of the outside diameter

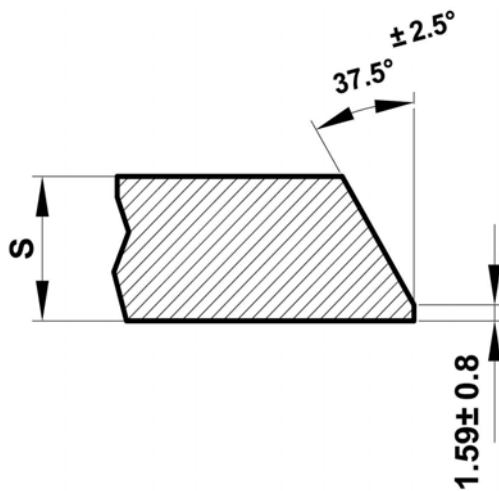
Outside diameter at each welding end: ±1% of the mating pipe outside diameter

Inside diameter at each welding end : Size NPS 36" and smaller:+2.5 mm(0.10")

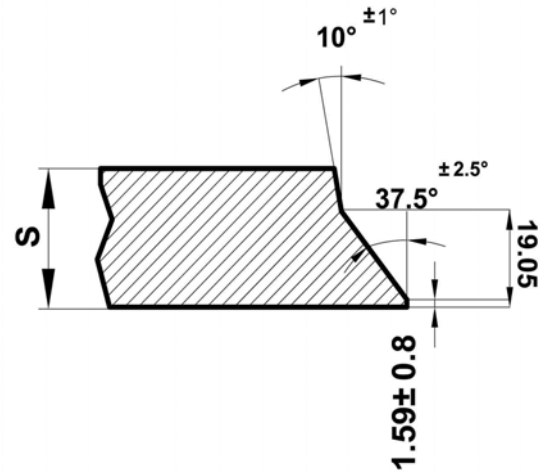
Size larger than NPS 36":±3.0 mm(0.12")

Closer tolerance than those given above are available when required.





Detail of the bevel for fittings having thickness up to 19.05mm



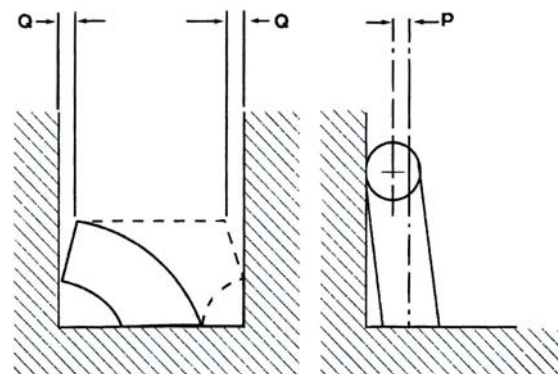
Detail of the bevel for fittings having thickness higher than 19.05mm

DIMENSIONAL TOLERANCES ACCORDING TO ANSI B16.9 STANDARD

For all fittings				45-90 elbows / tees	Reducer		180deg elbows		Caps
Pipe nominal size	Outside dia. at the bevel	Inside diam. at end.	Thickness	Centre to end	Length	centre to centre	Height	Alignment of ends	Height
1/2"-2-1/2"	+1.59 -0.59	±0.79	Not less than 87.5% of the nom.thickness	±1.59	±1.59	±6.35	±6.35	±0.79	±3.17
3"-3-1/2"	+1.59	±1.59		±1.59	±1.59	±6.35	±6.35	±0.79	±3.17
4"	+1.59	±1.59		±1.59	±1.59	±6.35	±6.35	±0.79	±3.17
5"-8"	+2.38 -1.59	±1.59		±1.59	±1.59	±6.35	±6.35	±0.79	±6.35
10"-18"	+3.97 -3.17	±3.17		±2.38	±2.38	±9.53	±6.35	±1.59	±6.35
20"-24"	+6.35 -4.76	±4.76		±2.38	±2.38	±9.53	±6.35	±1.59	±6.35
26"-32"	+6.35 -4.76	±4.76		±3.2	±4.76	±9.53	±6.35	±1.59	±9.53
34"-36"	+6.35 -4.76	±4.76		±4.76	±4.76	±9.53	±6.35	±1.59	±6.35

Angularity tolerances, ANSI B16.9
Unit (mm)

NOMINAL PIPE SIZE		OFF ANGLE Q	OFF PLANE P
NPS	DN		
1/2"-4"	15-100	±1	±2
5"-8"			
10"-12"	125-200	±2	±4
14"-16"			
18"-24"	250-300	±3	±5
26"-30"			
32"-36"	350-400	±3	±7
	450-600	±4	±10
	650-750	±5	±10
	800-900	±5	±13

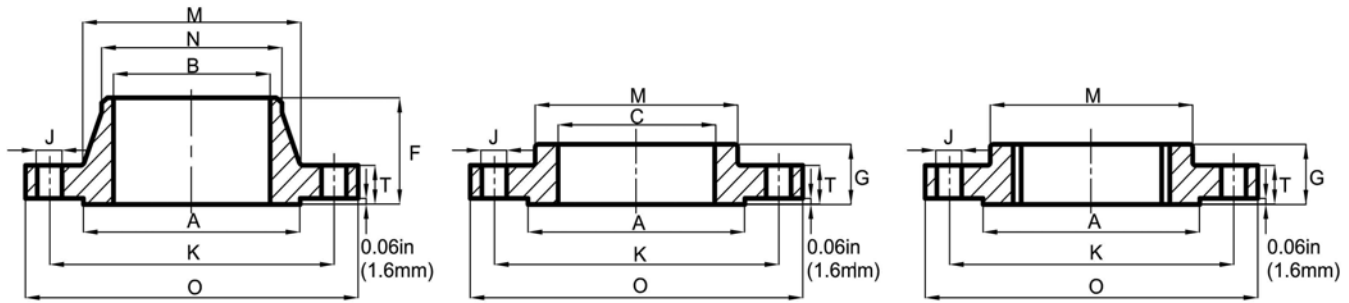


PIPE SIZE AND WALL THICKNESS (ANSI B36.10,B36.19)

DN	NPS	OD	ANSI B36.10 B36.19																	
			Sch5s	Sch10s	Sch10	Sch20	Sch30	Sch40s	STD	Sch40	Sch60	Sch80s	XS	Sch80	Sch100	Sch120	Sch140	Sch160	XXS	
6	1/8"	10.3	-	1.24	-	-	-	1.73	1.73	1.73	-	2.41	2.41	2.41	-	-	-	-	-	
8	1/4"	13.7	-	1.65	-	-	-	1.73	1.73	1.73	-	3.02	3.02	3.02	-	-	-	-	-	
10	3/8"	17.1	-	1.65	-	-	-	2.31	2.31	2.31	-	3.20	3.20	3.20	-	-	-	-	-	
15	1/2"	21.3	1.65	2.11	-	-	-	2.77	2.77	2.77	-	3.73	3.73	3.73	-	-	-	4.78	7.47	
20	3/4"	26.7	1.65	2.11	-	-	-	2.87	2.87	2.87	-	3.91	3.91	3.91	-	-	-	5.56	7.82	
25	1"	33.4	1.65	2.77	-	-	-	3.38	3.38	3.38	-	4.55	4.55	4.55	-	-	-	6.35	9.09	
32	1 1/4"	42.2	1.65	2.77	-	-	-	3.56	3.56	3.56	-	4.85	4.85	4.85	-	-	-	6.35	9.70	
40	1 1/2"	48.3	1.65	2.77	-	-	-	3.68	3.68	3.68	-	5.08	5.08	5.08	-	-	-	7.14	10.16	
50	2"	60.3	1.65	2.77	-	-	-	3.91	3.91	3.91	-	5.54	5.54	5.54	-	-	-	8.14	11.07	
65	2 1/2"	73.0	2.11	3.05	-	-	-	5.16	5.16	5.16	-	7.01	7.01	7.01	-	-	-	9.52	14.02	
80	3"	88.9	2.11	3.05	-	-	-	5.49	5.49	5.49	-	7.62	7.62	7.62	-	-	-	11.12	15.24	
90	3 1/2"	101.6	2.11	3.05	-	-	-	5.74	5.74	5.74	-	8.08	8.08	8.08	-	-	-	-	-	
100	4"	114.3	2.11	3.05	-	-	-	6.02	6.02	6.02	-	8.56	8.56	8.56	-	11.12	-	13.49	17.12	
125	5"	141.3	2.77	3.40	-	-	-	6.55	6.55	6.55	-	9.53	9.53	9.53	-	12.70	-	15.88	19.05	
150	6"	168.3	2.77	3.40	-	-	-	7.11	7.11	7.11	-	10.97	10.97	10.97	-	14.27	-	18.26	21.94	
200	8"	219.1	2.77	3.40	-	6.35	7.04	8.18	8.18	8.18	10.31	12.70	12.70	12.70	15.09	18.26	20.62	23.01	22.22	
250	10"	273.1	3.40	3.76	-	6.35	7.80	9.27	9.27	9.27	12.70	12.70	12.70	15.09	18.26	21.44	25.40	28.58	25.40	
300	12"	323.9	3.96	4.57	-	6.35	8.38	9.52	9.52	9.52	10.31	14.27	12.70	12.70	17.48	21.44	25.40	28.58	33.32	25.40
350	14"	355.6	3.96	4.78	6.35	7.92	9.52	9.52	9.52	11.13	15.09	12.70	12.70	19.05	23.83	27.79	31.75	35.71	-	
400	16"	406.4	4.19	4.78	6.35	7.92	9.52	9.52	9.52	12.70	16.66	12.70	12.70	21.44	26.19	30.96	36.52	40.49	-	
450	18"	457.2	4.19	4.78	6.35	7.92	11.12	9.52	9.52	14.27	19.05	12.70	12.70	23.82	29.36	34.92	39.47	45.24	-	
500	20"	508.0	4.78	5.54	6.35	9.52	12.70	9.52	9.52	15.09	20.62	12.70	12.70	26.19	32.54	38.10	44.45	50.01	-	
550	22"	558.8	4.78	5.54	6.35	9.52	12.70	9.52	9.52	-	22.22	12.70	12.70	28.58	34.92	41.28	47.62	53.98	-	
600	24"	609.6	5.54	6.35	6.35	9.52	14.27	9.52	9.52	17.48	24.61	12.70	12.70	30.96	38.89	46.02	52.37	59.54	-	
650	26"	660.4	-	7.92	7.92	12.70	-	9.52	9.52	-	-	12.70	12.70	-	-	-	-	-	-	
700	28"	711.2	-	7.92	7.92	12.70	15.88	9.52	9.52	-	-	12.70	12.70	-	-	-	-	-	-	
750	30"	762.0	6.35	7.92	7.92	12.70	15.88	9.52	9.52	-	-	12.70	12.70	-	-	-	-	-	-	
800	32"	812.0	-	7.92	7.92	12.70	15.88	9.52	9.52	17.48	-	12.70	12.70	-	-	-	-	-	-	
850	34"	863.6	-	7.92	7.92	12.70	15.88	9.52	9.52	17.48	-	12.70	12.70	-	-	-	-	-	-	
900	36"	914.4	-	7.92	7.92	12.70	15.88	9.52	9.52	19.05	-	12.70	12.70	-	-	-	-	-	-	
950	38"	965.2	-	7.92	-	-	-	9.52	9.52	-	-	12.70	12.70	-	-	-	-	-	-	
1000	40"	1016.0	-	7.92	-	-	-	9.52	9.52	-	-	12.70	12.70	-	-	-	-	-	-	
1050	42"	1066.8	-	7.92	-	-	-	9.52	9.52	-	-	12.70	12.70	-	-	-	-	-	-	
1100	44"	1117.6	-	7.92	-	-	-	9.52	9.52	-	-	12.70	12.70	-	-	-	-	-	-	
1150	46"	1168.4	-	7.92	-	-	-	9.52	9.52	-	-	12.70	12.70	-	-	-	-	-	-	
1200	48"	1219.2	-	7.92	-	-	-	9.52	9.52	-	-	12.70	12.70	-	-	-	-	-	-	
1300	52"	1320.8	-	-	-	-	-	-	9.52	-	-	-	12.70	-	-	-	-	-	-	
1350	54"	1371.6	-	-	-	-	-	-	9.52	-	-	-	12.70	-	-	-	-	-	-	
1400	56"	1422.4	-	-	-	-	-	-	9.52	-	-	-	12.70	-	-	-	-	-	-	
1500	60"	1524.0	-	-	-	-	-	-	9.52	-	-	-	12.70	-	-	-	-	-	-	
1600	64"	1625.6	-	-	-	-	-	-	9.52	-	-	-	12.70	-	-	-	-	-	-	
1700	68"	1727.2	-	-	-	-	-	-	9.52	-	-	-	12.70	-	-	-	-	-	-	
1800	72"	1828.8	-	-	-	-	-	-	9.52	-	-	-	12.70	-	-	-	-	-	-	
1900	76"	1930.4	-	-	-	-	-	-	9.52	-	-	-	12.70	-	-	-	-	-	-	
2000	80"	2032.0	-	-	-	-	-	-	9.52	-	-	-	12.70	-	-	-	-	-	-	

CLASS 150 (PN 20)

ANSI B16.5



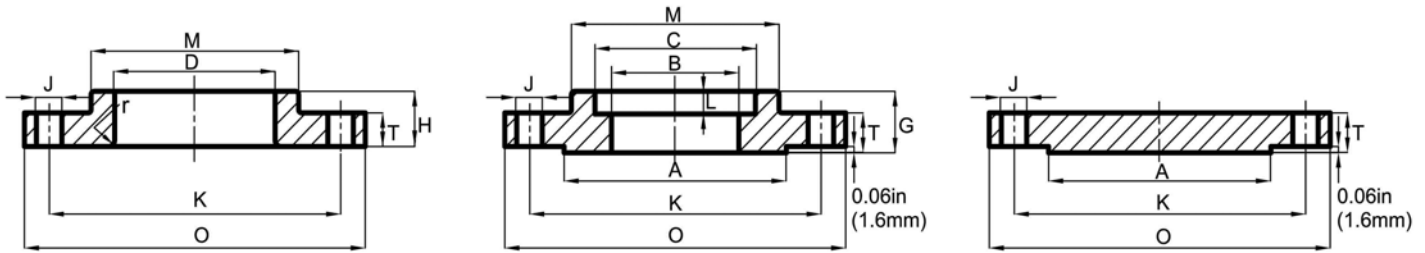
WELDING NECK

SLIP-ON

THREADED

NPS	FLANGE OUTSIDE DIAMETER	FLANGE THICKNESS MIN.	RAISED FACE DIA.	BORE			LENGTH THRU HUB		
				WELDING NECK & SOCKET MIN.	SLIP-ON & SOCKET-WELDING MIN.	LAP JOINT MIN.	WELDING NECK	SLIP-ON, THREADED & SOCKET-WELDING	LAP JOINT
DN	O	T	A	B	C	D	F	G	H
1/2"	3.5	0.44	1.38	0.62	0.88	0.9	1.88	0.62	0.62
15	89	11.5	34.9	15.8	22.2	22.9	47.6	16	16
3/4"	3.88	0.5	1.69	0.82	1.09	1.11	2.06	0.62	0.62
20	98	13	42.9	20.8	27.8	28.2	52.4	16	16
1"	4.25	0.56	2	1.05	1.36	1.38	2.19	0.69	0.69
25	108	14.5	50.8	26.7	34.5	34.9	55.6	17	17
1 1/4"	4.62	0.62	2.5	1.38	1.7	1.72	2.25	0.81	0.81
32	117	16	63.5	35.1	43.2	43.7	57.1	21	21
1 1/2"	5	0.69	2.88	1.61	1.95	1.97	2.44	0.88	0.88
40	127	17.5	73	40.9	49.5	50	61.9	22	22
2"	6	0.75	3.62	2.07	2.44	2.46	2.5	1	1
50	152	19.5	92.1	52.6	61.9	62.5	63.5	25	25
2 1/2"	7	0.88	4.12	2.47	2.94	2.97	2.75	1.12	1.12
65	178	22.5	104.8	62.7	74.6	75.4	69.8	29	29
3"	7.5	0.94	5	3.07	3.57	3.6	2.75	1.19	1.19
80	191	24	127	78	90.7	91.4	69.8	30	30
3 1/2"	8.5	0.94	5.5	3.55	4.07	4.1	2.81	1.25	1.25
90	216	24	139.7	90.2	103.4	104.1	71.4	32	32
4"	9	0.94	6.19	4.03	4.57	4.6	3	1.31	1.31
100	229	24	157.2	102.4	116.1	116.8	76.2	33	33
5"	10	0.94	7.31	5.05	5.66	5.69	3.5	1.44	1.44
125	254	24	185.7	128.3	143.7	144.5	88.9	36	36
6"	11	1	8.5	6.07	6.72	6.75	3.5	1.56	1.56
150	279	25.5	215.9	154.2	170.7	171.4	88.9	40	40
8"	13.5	1.12	10.62	7.98	8.72	8.75	4	1.75	1.75
200	343	29	269.9	202.7	221.5	222.2	101.6	44	44
10"	16	1.19	12.75	10.02	10.88	10.92	4	1.94	1.94
250	406	30.5	323.8	254.5	276.2	277.4	101.6	49	49
12"	19	1.25	15	12	12.88	12.92	4.5	2.19	2.19
300	483	32	381	304.8	327	328.2	1143	56	56
14"	21	1.38	16.25	-	14.14	14.18	5	2.25	3.12
350	535	35	412.8	-	359.2	360.2	127	57	79
16"	23.5	1.44	18.5	-	16.16	16.19	5	2.5	3.44
400	595	37	469.9	-	410.4	411.2	127	64	87
18"	25	1.56	21	-	18.18	18.2	5.5	2.69	3.81
450	635	40	533.4	-	461.8	462.3	139.7	68	97
20"	27.5	1.69	23	-	20.2	20.25	5.69	2.88	4.06
500	700	43	584.2	-	513.1	514.3	144.5	73	103
24"	32	1.88	27.25	-	24.25	24.25	6	3.25	4.38
600	815	48	692.2	-	615.9	615.9	152.4	83	111

INCHES
MILLIMETRES



LAP JOINT

SOCKET WELDING

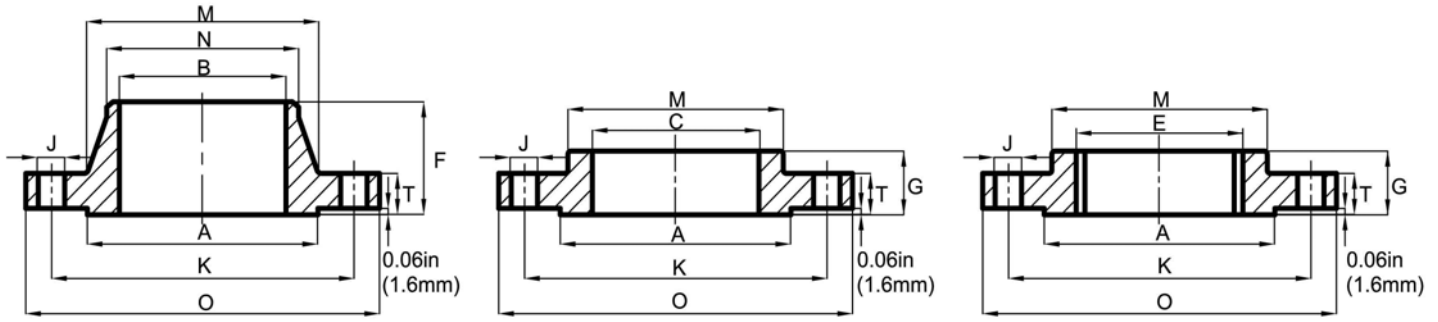
BLIND

NPS	DRILLING			DEPTH OF SOCKET	DIAMETER OF HUB		LAP JOINT FILLET RADIUS	APPROXIMATE WEIGHT			
	NO.OF HOLES	DIA.OF HOLES	DIA.OF BOLT CIRCLE		AT BASE	AT CHAMFER		WELDING NECK	SLIP-ON, THREADED & SOCKET WELDING	BLIND	LAP JOINT
DN		J	K	L	M	N	r				
1/2"	4	0.62	2.38	0.38	1.19	0.84	0.12	2	1	1	1
15	4	16	60.3	10	30.2	21.4	3	0.9	0.05	0.5	0.5
3/4"	4	0.62	2.75	0.44	1.5	1.05	0.12	2	2	2	2
20	4	16	69.8	11	38.1	26.6	3	0.9	0.9	0.9	0.9
1"	4	0.62	3.12	0.5	1.94	1.32	0.12	3	2	2	2
25	4	16	79.4	13	49.2	33.5	3	1.4	0.9	0.9	0.9
1 1/4"	4	0.62	3.5	0.56	2.31	1.66	0.19	3	3	3	3
32	4	16	88.9	14	58.7	42.1	5	1.4	1.4	1.4	1.4
1 1/2"	4	0.62	3.88	0.62	2.56	1.9	0.25	4	3	4	3.00
40	4	16	98.4	16	65.1	48.3	6	1.8	1.4	1.8	1.4
2"	4	0.75	4.75	0.69	3.06	2.38	0.31	6	5	5	5
50	4	20	120.6	17	77.6	60.4	8	2.7	2.3	2.3	2.3
2 1/2"	4	0.75	5.5	0.75	3.56	2.88	0.31	8	7	7	7
65	4	20	139.7	19	90.5	73	8	3.6	3.2	3.2	3.2
3"	4	0.75	6	0.81	4.25	3.5	0.38	10	8	9	8
80	4	20	152.4	21	107.9	88.9	10	4.5	3.6	4.1	3.6
3 1/2"	8	0.75	7	-	4.81	4	0.38	12	11	13	11
90	8	20	177.8	-	122.2	101.6	10	5.4	5.0	5.9	5.0
4"	8	0.75	7.5	-	5.31	4.5	0.44	15	13	17	13
100	8	20	190.5	-	134.9	114.3	11	6.8	5.9	7.7	5.9
5"	8	0.88	8.5	-	6.44	5.56	0.44	19	15	20	15
125	8	23	215.9	-	163.5	141.3	11	8.6	6.8	9.1	6.8
6"	8	0.88	9.5	-	7.56	6.63	0.5	24	19	26	19
150	8	23	241.3	-	192.1	168.3	13	10.9	8.6	11.8	8.6
8"	8	0.88	11.75	-	9.69	8.63	0.5	39	30	45	30
200	8	23	298.4	-	246.1	219.1	13	17.7	13.6	20.4	13.6
10"	12	1	14.25	-	12	10.75	0.5	52	43	70	43
250	12	26	361.9	-	304.8	273	13	23.6	19.5	31.8	19.5
12"	12	1	17	-	14.38	12.75	0.5	80	64	110	64
300	12	26	431.8	-	365.1	323.8	13	36.3	29	49.9	29
14"	12	1.12	18.75	-	15.75	14	0.5	110	90	140	105
350	12	29	476.2	-	400	355.6	13	50	41	63.5	47.6
16"	16	1.12	21.25	-	18	16	0.5	140	98	180	140
400	16	29	539.7	-	457.2	406.4	13	64	44.5	81.6	63.5
18"	16	1.25	22.75	-	19.88	18	0.5	150	130	220	160
450	16	32	577.8	-	504.8	457.2	13	68	59	99.8	72.6
20"	20	1.25	25	-	22	20.00	0.5	180	165	285	195
500	20	32	635	-	558.8	508	13	81.6	75	129	88.6
24"	20	1.38	29.5	-	26.12	24	0.5	260	220	430	275
600	20	35	749.3	-	663.6	609.6	13	118	99.8	195	125

INCHES	POUNDS
MILLIMETRES	KILOGRAMS

CLASS 300 (PN 50)

ANSI B16.5



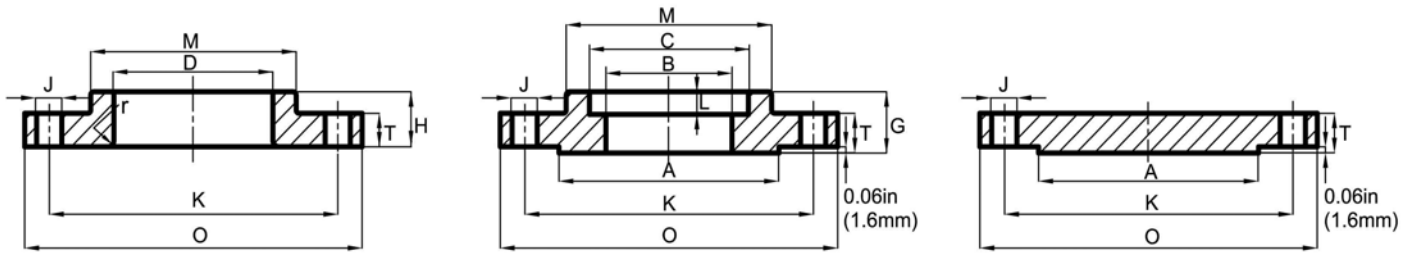
WELDING NECK

SLIP-ON

THREADED

NPS	FLANGE OUTSIDE DIAMETER	FLANGE THICKNESS MIN.	RAISED FACE DIA.	BORE				LENGTH THRU HUB		
				WELDING NECK & SOCKET WELDING	SLIP-ON & SOCKET WELDING MIN.	LAP JOINT MIN.	THREADED COUNTER-BORE MIN.	WELDING NECK	SLIP-ON, THREADED & SOCKET WELDING	LAP JOINT
DN	O	T	A	B	C	D	E	F	G	H
1/2"	3.75	0.56	1.38	0.62	0.88	0.9	0.93	2.06	0.88	0.88
15	95	14.5	34.9	15.8	22.2	22.9	23.5	52.4	22	22
3/4"	4.62	0.62	1.69	0.82	1.09	1.11	1.14	2.25	1	1
20	117	16	42.9	20.8	27.8	28.2	29	57.1	25	25
1"	4.88	0.69	2	1.05	1.36	1.38	1.41	2.44	1.06	1.06
25	124	17.5	50.8	26.6	34.5	34.9	36	61.9	27	27
1 1/4"	5.25	0.75	2.5	1.38	1.7	1.72	1.75	2.56	1.06	1.06
32	133	19.5	63.5	35.1	43.3	43.7	44.5	65.1	27	27
1 1/2"	6.12	0.81	2.88	1.61	1.95	1.97	1.99	2.69	1.19	1.19
40	156	21	73	40.9	49.6	50	50.5	68.3	30	30
2"	6.5	0.88	3.62	2.07	2.44	2.46	2.5	2.75	1.31	1.31
50	165	22.5	92.1	52.6	61.9	62.5	63.5	69.8	33	33
2 1/2"	7.5	1	4.12	2.47	2.94	2.97	3	3	1.5	1.5
65	191	25.5	104.8	62.7	74.6	75.4	76	76.2	38	38
3"	8.25	1.12	5	3.07	3.57	3.6	3.63	3.12	1.69	1.69
80	210	29	127	77.9	90.7	91.4	92	79.4	43	43
3 1/2"	9	1.19	5.5	3.55	4.07	4.1	4.13	3.19	1.75	1.75
90	229	30.5	139.7	90.1	103.4	104.1	105	81	44	44
4"	10	1.25	6.19	4.03	4.57	4.6	4.63	3.38	1.88	1.88
100	254	32	157.2	102.3	116.1	116.8	118	85.7	48	48
5"	11	1.38	7.31	5.05	5.66	5.69	5.69	3.88	2	2
125	279	35	185.7	128.2	143.7	144.5	145	98.4	51	51
6"	12.5	1.44	8.5	6.07	6.72	6.75	6.75	3.88	2.06	2.06
150	318	37	215.9	154.1	170.7	171.4	171	98.4	52	52
8"	15	1.62	10.62	7.98	8.72	8.75	8.75	4.38	2.44	2.44
200	381	41.5	269.9	202.7	221.5	222.2	222	111.1	62	62
10"	17.5	1.88	12.75	10.02	10.88	10.92	10.88	4.62	2.62	3.75
250	445	48	323.8	254.5	276.2	277.4	276	117.5	67	95
12"	20.5	2.00	15	12	12.88	12.92	12.94	5.12	2.88	4
300	520	51	381	304.8	327	328.2	329	130.2	73	102
14"	23	2.12	16.25	-	14.14	14.18	14.19	5.62	3	4.38
350	585	54	412.8	-	359.2	360.2	360	142.9	76	111
16"	25.5	2.25	18.5	-	16.16	16.19	16.19	5.75	3.25	4.75
400	650	57.5	469.9	-	410.4	411.2	411	146	83	121
18"	28	2.38	21	-	18.18	18.2	18.19	6.25	3.5	5.12
450	710	60.5	533.4	-	461.8	462.3	462	158.7	89	130
20"	30.5	2.5	23	-	20.2	20.25	20.19	6.38	3.75	5.5
500	775	63.5	584.2	-	513.1	514.3	513	161.9	95	140
24"	36	2.75	27.25	-	24.25	24.25	24.19	6.62	4.19	6
600	915	70	692.2	-	615.9	615.9	614	168.3	106	152

INCHES
MILLIMETRES



LAP JOINT

SOCKET WELDING

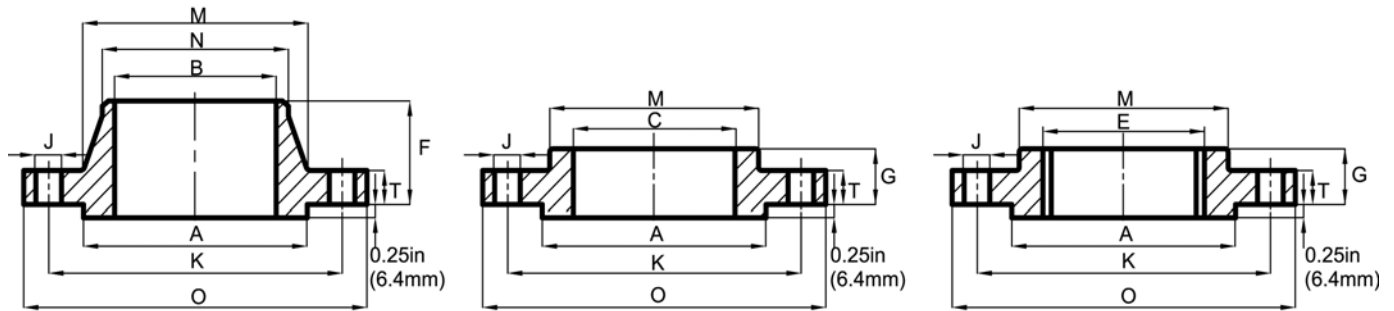
BLIND

NPS	DRILLING			DEPTH OF SOCKET	DIAMETER OF HUB		LAP JOINT FILLET RADIUS	APPROXIMATE WEIGHT			
	NO.OF HOLES	DIA.OF HOLES	DIA.OF BOLT CIRCLE		AT BASE	AT CHAMFER		WELDING NECK	SLIP-ON, THREADED & SOCKET. WELDING	BLIND	LAP JOINT
DN		J	K	L	M	N	r				
1/2"	4	0.62	2.62	0.38	1.5	0.84	0.12	2	2	2	2
15	4	16	66.7	10	38.1	21.4	3	0.9	0.9	0.9	0.9
3/4"	4	0.75	3.25	0.44	1.88	1.05	0.12	3	3	3	3
20	4	20	82.5	11	47.6	26.6	3	1.4	1.4	1.4	1.4
1"	4	0.75	3.5	0.5	2.12	1.32	0.12	4	3	3	3
25	4	20	88.9	13	53.8	33.5	3	1.8	1.4	1.4	1.4
1 1/4"	4	0.75	3.88	0.56	2.5	1.66	0.19	5	4	4	4
32	4	20	98.4	14	63.5	42.1	5	2.3	1.8	1.8	1.8
1 1/2"	4	0.88	4.5	0.62	2.75	1.9	0.25	7	6	6	6
40	4	23	114.3	16	69.9	48.3	6	3.2	2.7	2.7	2.7
2"	8	0.75	5	0.69	3.31	2.38	0.31	9	7	8	7
50	8	20	127	17	84.1	60.3	8	4.1	3.2	3.6	3.2
2 1/2"	8	0.88	5.88	0.75	3.94	2.88	0.31	12	10	12	10
65	8	23	149.2	19	100	73	8	5.4	4.5	5.4	4.5
3"	8	0.88	6.62	0.81	4.62	3.5	0.38	15	13	16	13
80	8	23	168.3	21	117.5	88.9	10	6.8	5.9	7.3	5.9
3 1/2"	8	0.88	7.25	-	5.25	4	0.38	18	17	21	17
90	8	23	184.1	-	133.3	101.6	10	8.2	7.7	9.5	7.7
4"	8	0.88	7.88	-	5.75	4.5	0.44	25	22	27	22
100	8	23	200	-	146	114.3	11	11.3	10	12.2	10
5"	8	0.88	9.25	-	7	5.56	0.44	32	28	35	28
125	8	23	234.9	-	177.8	141.3	11	14.5	12.7	15.9	12.7
6"	12	0.88	10.62	-	8.12	6.63	0.5	42	39	50	39
150	12	23	269.9	-	206.4	168.3	13	19	17.7	22.7	17.7
8"	12	1	13	-	10.25	8.63	0.5	67	58	81	58
200	12	26	330.2	-	260.3	219.1	13	30.4	26.3	36.7	26.3
10"	16	1.12	15.25	-	12.62	10.75	0.5	91	81	125	91
250	16	29	387.3	-	320.7	273	13	41.3	36.7	56.7	41.3
12"	16	1.25	17.75	-	14.75	12.75	0.5	140	115	185	140
300	16	32	450.8	-	374.6	323.8	13	63.5	52.2	83.9	63.5
14"	20	1.25	20.25	-	16.75	14	0.5	180	165	250	190
350	20	32	514.3	-	425.5	355.6	13	81.6	74.8	113	86.2
16"	20	1.38	22.5	-	19	16	0.5	250	190	295	250
400	20	35	571.5	-	482.6	406.4	13	113	86.2	134	113
18"	24	1.38	24.75	-	21	18	0.5	320	250	395	295
450	24	35	628.6	-	533.4	457.2	13	145	113	179	134
20"	24	1.38	27	-	23.12	20.00	0.5	400	315	505	370
500	24	35	685.8	-	587.4	508	13	181	143	229	168
24"	24	1.62	32	-	27.62	24	0.5	580	475	790	550
600	24	42	812.8	-	701.7	609.6	13	263	215	358	249

INCHES	POUNDS
MILLIMETRES	KILOGRAMS

CLASS 400 (PN 64)

ANSI B16.5



WELDING NECK

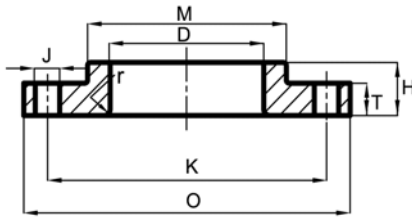
SLIP-ON

THREADED

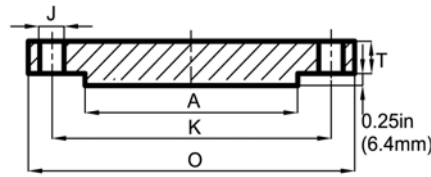
For Sizes NPS 1/2(DN 15)through NPS 3 1/2(DN 90) use Class 600 (PN 64) flanges.

NPS	FLANGE OUTSIDE DIAMETER	FLANGE THICKNESS MIN.	RAISED FACE DIA.	BORE				LENGTH THRU HUB		
				WELDING NECK	SLIP-ON MIN.	LAP JOINT MIN.	THREADED COUNTER-BORE MIN.	WELDING NECK	SLIP-ON, THREADED	LAP JOINT
DN	O	T	A	B	C	D	E	F	G	H
4"	10	1.38	6.19		4.57	4.6	4.63	3.50	2.00	2.00
100	254	35.00	157.20	To	116.1	116.8	118	88.90	51.00	51.00
5"	11	1.50	7.31	be	5.66	5.69	5.69	4.00	2.12	2.12
125	279	38.50	185.70	specified	143.7	144.5	145	101.60	54.00	54.00
6"	12.5	1.62	8.50	by	6.72	6.75	6.75	4.06	2.25	2.25
150	318	41.50	215.90	Customer	170.7	171.4	171	103.20	57.00	57.00
8"	15	1.88	10.62		8.72	8.75	8.75	4.62	2.69	2.69
200	381	48.00	269.90		221.5	222.2	222	117.50	68.00	68.00
10"	17.5	2.12	12.75		10.88	10.92	10.88	4.88	2.88	4.00
250	445	54.00	323.80		276.2	277.4	276	123.80	73.00	102.00
12"	20.5	2.25	15.00		12.88	12.92	12.94	5.38	3.12	4.25
300	520	57.50	381.00		327	328.2	329	136.50	79.00	108.00
14"	23	2.38	16.25		14.14	14.18	14.19	5.88	3.31	4.62
350	585	60.50	412.80		359.2	360.2	360	149.20	84.00	117.00
16"	25.5	2.50	18.50		16.16	16.19	16.19	6.00	3.69	5.00
400	650	63.50	469.90		410.4	411.2	411	152.40	94.00	127.00
18"	28	2.62	21.00		18.18	18.2	18.19	6.50	3.88	5.38
450	710	67.00	533.40		461.8	462.3	462	165.10	98.00	137.00
20"	30.5	2.75	23.00		20.2	20.25	20.19	6.62	4.00	5.75
500	775	70.00	584.20		513.1	514.3	513	168.30	102.00	146.00
24"	36	3.00	27.25		24.25	24.25	24.19	6.88	4.50	6.25
600	915	76.50	692.20		615.9	615.9	614	174.60	114.00	159.00

INCHES
MILLIMETRES



LAP JOINT



BLIND

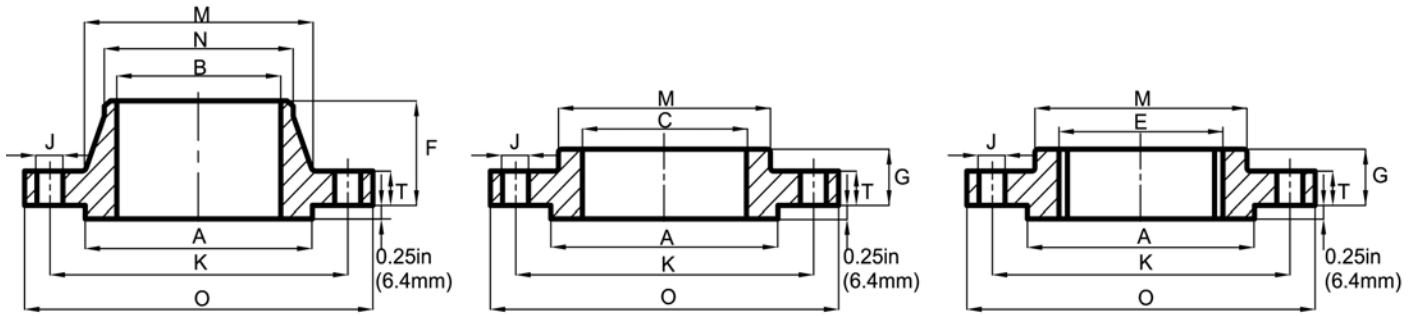
For Sizes NPS 1/2 (DN 15) through NPS 3 1/2 (DN 90) use Class 600 (PN 64) flanges.

NPS	DRILLING			DIAMETER OF HUB		LAP JOINT FILLET RADIUS	APPROXIMATE WEIGHT			
	NO.OF HOLES	DIA.OF HOLES	DIA.OF BOLT CIRCLE	AT BASE	AT CHAMFER		WELDING NECK	SLIP-ON, THREADED	BLIND	LAP JOINT
DN		J	K	M	N	r				
4"	8	1.00	7.88	5.75	4.5	0.44	35.00	26.00	33.00	25.00
100	8	26.00	200	146	114.3	11	15.80	11.70	15.00	11.30
5"	8	1.00	9.25	7	5.56	0.44	43.00	31.00	44.00	29.00
125	8	26.00	234.9	177.8	141.3	11	19.00	14.00	20.00	13.00
6"	12	1.00	10.62	8.12	6.63	0.5	57.00	44.00	61.00	42.00
150	12	26.00	269.9	206.4	168.3	13	25.50	20.00	27.50	19.00
8"	12	1.12	13	10.25	8.63	0.5	89.00	67.00	100.00	64.00
200	12	29.00	330.2	260.3	219.1	13	40.00	30.00	45.00	29.00
10"	16	1.25	15.25	12.62	10.75	0.5	126.00	91.00	155.00	112.00
250	16	32.00	387.3	320.7	273	13	57.00	41.00	70.00	50.00
12"	16	1.38	17.75	14.75	12.75	0.5	177.00	129.00	226.00	152.00
300	16	35.00	450.8	374.70	323.8	13	80.00	58.00	102.00	68.00
14"	20	1.38	20.25	16.75	14	0.5	233.00	191.00	310.00	210.00
350	20	35.00	514.3	425.5	355.6	13	105.00	86.00	140.00	95.00
16"	20	1.50	22.5	19	16	0.5	294.00	253.00	398.00	280.00
400	20	39.00	571.5	482.6	406.4	13	132.00	114.00	179.00	126.00
18"	24	1.50	24.75	21	18	0.5	360.00	310.00	502.00	345.00
450	24	39.00	628.70	533.4	457.2	13	162.00	140.00	226.00	155.00
20"	24	1.62	27	23.12	20.00	0.5	445.00	378.00	621.00	420.00
500	24	42.00	685.8	587.4	508	13	200.00	170.00	279.00	189.00
24"	24	1.88	32	27.62	24	0.5	640.00	539.00	936.00	615.00
600	24	48.00	812.8	701.7	609.6	13	288.00	243.00	421.00	277.00

INCHES	POUNDS
MILLIMETRES	KILOGRAMS

CLASS 600 (PN 100)

ANSI B16.5



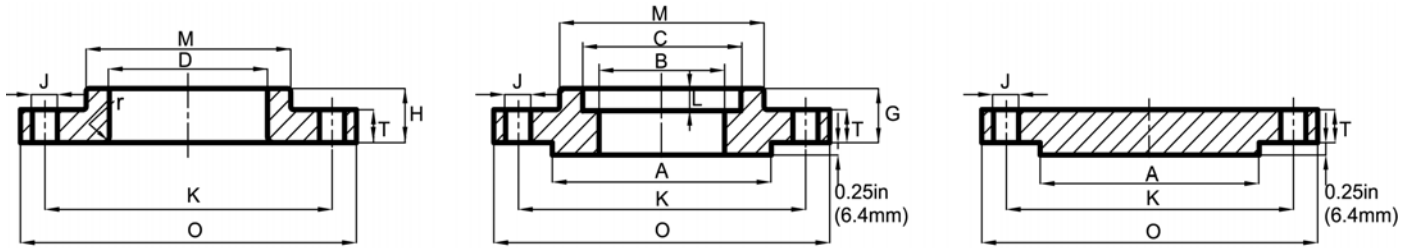
WELDING NECK

SLIP-ON

THREADED

NPS	FLANGE OUTSIDE DIAMETER	FLANGE THICKNESS MIN.	RAISED FACE DIA.	BORE				LENGTH THRU HUB		
				WELDING NECK & SOCKET WELDING	SLIP-ON & SOCKET WELDING MIN.	LAP JOINT MIN.	THREADED COUNTER-BORE MIN.	WELDING NECK	SLIP-ON, THREADED & SOCKET WELDING	LAP JOINT
DN	O	T	A	B	C	D	E	F	G	H
1/2"	3.75	0.56	1.38	To	0.88	0.9	0.93	2.06	0.88	0.88
15	95	14.5	34.9	be	22.2	22.9	23.5	52.4	22	22
3/4"	4.62	0.62	1.69	specified	27.8	28.2	29	57.1	25	25
20	117	16	42.9	by	34.5	34.9	36	61.9	27	27
1"	4.88	0.69	2	Customer	34.5	34.9	36	61.9	27	27
25	124	17.5	50.8		34.5	34.9	36	61.9	27	27
1 1/4"	5.25	0.81	2.5		1.7	1.72	1.75	2.62	1.12	1.12
32	133	21	63.5		43.3	43.7	44.5	66.7	29	29
1 1/2"	6.12	0.88	2.88		1.95	1.97	1.99	2.75	1.25	1.25
40	156	22.5	73		49.6	50	50.5	69.8	32	32
2"	6.5	1	3.62		2.44	2.46	2.5	2.88	1.44	1.44
50	165	25.5	92.1		61.9	62.5	63.5	73	37	37
2 1/2"	7.5	1.12	4.12		2.94	2.97	3	3.12	1.62	1.62
65	191	29	104.8		74.6	75.4	76	79.4	41	41
3"	8.25	1.25	5		3.57	3.6	3.63	3.25	1.81	1.81
80	210	32	127		90.7	91.4	92	82.5	46	46
3 1/2"	9	1.38	5.5		4.07	4.1	4.13	3.38	1.94	1.94
90	229	35	139.7		103.4	104.1	105	85.7	49	49
4"	10.75	1.5	6.19		4.57	4.6	4.63	4	2.12	2.12
100	273	38.5	157.2		116.1	116.8	118	101.6	54	54
5"	13	1.75	7.31		5.66	5.69	5.69	4.5	2.38	2.38
125	330	44.5	185.7		143.7	144.5	145	114.3	60	60
6"	14	1.88	8.5		6.72	6.75	6.75	4.62	2.62	2.62
150	356	48	215.9		170.7	171.4	171	117.3	67	67
8"	16.5	2.19	10.62		8.72	8.75	8.75	5.25	3	3
200	419	55.5	269.9		221.5	222.2	222	133.3	76	76
10"	20	2.5	12.75		10.88	10.92	10.88	6	3.38	4.38
250	510	63.5	323.8		276.2	277.4	276	152.4	86	111
12"	22	2.62	15		12.88	12.92	12.94	6.12	3.62	4.62
300	560	66.5	381		327	328.2	329	155.6	92	117
14"	23.75	2.75	16.25		14.14	14.18	14.19	6.5	3.69	5
350	605	70	412.8		359.2	360.2	360	165.1	94	127
16"	27	3	18.5		16.16	16.19	16.19	7	4.19	5.5
400	685	76.5	469.9		410.4	411.2	411	177.5	106	140
18"	29.25	3.25	21		18.18	18.2	18.19	7.25	4.62	6
450	745	83	533.4		461.8	462.3	462	184.1	117	152
20"	32	3.5	23		20.2	20.25	20.19	7.5	5	6.5
500	815	89	584.2		513.1	514.3	513	190.5	127	165
24"	37	4	27.25		24.25	24.25	24.19	8	5.5	7.25
600	940	102	692.2		615.9	615.9	614	203.2	140	184

INCHES
MILLIMETRES



LAP JOINT

SOCKET WELDING

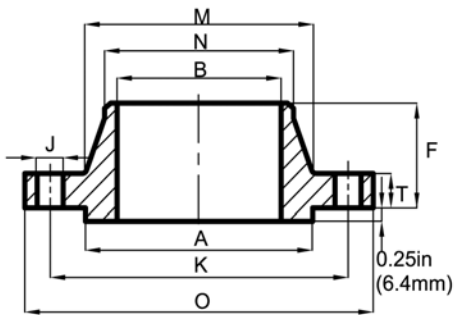
BLIND

NPS	DRILLING			DEPTH OF SOCKET	DIAMETER OF HUB		LAP JOINT FILLET RADIUS	APPROXIMATE WEIGHT			
	NO.OF HOLES	DIA.OF HOLES	DIA.OF BOLT CIRCLE		AT BASE	AT CHAMFER		WELDING NECK	SLIP-ON, THREADED & SOCKET. WELDING	BLIND	LAP JOINT
DN		J	K	L	M	N	r				
1/2"	4	0.62	2.62	0.38	1.5	0.84	0.12	2	2	2	2
15	4	16	66.7	10	38.1	21.4	3	0.9	0.9	0.9	0.9
3/4"	4	0.75	3.25	0.44	1.88	1.05	0.12	4	3	3	3
20	4	20	82.5	11	47.6	26.6	3	1.8	1.4	1.4	1.4
1"	4	0.75	3.5	0.5	2.12	1.32	0.12	4	4	4	4
25	4	20	88.9	13	54	33.5	3	1.8	1.8	1.8	1.8
1 1/4"	4	0.75	3.88	0.56	2.5	1.66	0.19	6	5	5	5
32	4	20	98.4	14	63.9	42.1	5	2.7	2.3	2.3	2.3
1 1/2"	4	0.88	4.5	0.62	2.75	1.9	0.25	8	7	8	7
40	4	23	114.3	16	69.8	48.3	6	3.6	3.2	3.6	3.2
2"	8	0.75	5	0.69	3.31	2.38	0.31	12	9	10	9
50	8	20	127	17	84.1	60.3	8	5.4	4.1	4.5	4.1
2 1/2"	8	0.88	5.88	0.75	3.94	2.88	0.31	18	13	15	12
65	8	23	149.2	19	100	73	8	8.2	5.9	6.8	5.4
3"	8	0.88	6.62	0.81	4.62	3.5	0.38	23	16	20	15
80	8	23	168.3	21	117.5	88.9	10	10.4	7.3	9.1	6.8
3 1/2"	8	1	7.25	-	5.25	4	0.38	26	21	29	20
90	8	26	184.1	-	133.3	101.6	10	11.8	9.5	13.2	9.1
4"	8	1	8.5	-	6	4.5	0.44	42	37	41	36
100	8	26	215.9	-	152.4	114.3	11	19	16.8	18.6	16.3
5"	8	1.12	10.5	-	7.44	5.56	0.44	68	63	68	61
125	8	29	266.7	-	188.9	141.3	11	31	28.6	30.8	27.7
6"	12	1.12	11.5	-	8.75	6.63	0.5	81	80	86	78
150	12	29	292.1	-	222.2	168.3	13	36.7	36.3	39	35.4
8"	12	1.25	13.75	-	10.75	8.63	0.5	120	115	140	110
200	12	32	349.2	-	273	219.1	13	54.4	52.2	63.5	49.9
10"	16	1.38	17	-	13.5	10.75	0.5	190	170	230	170
250	16	35	431.8	-	342.9	273	13	86.2	77.1	104	77.1
12"	20	1.38	19.25	-	15.75	12.75	0.5	225	200	295	200
300	20	35	488.9	-	400	323.8	13	102	90.7	134	90.7
14"	20	1.5	20.75	-	17	14	0.5	280	230	355	250
350	20	39	527	-	431.8	355.6	13	127	104	161	113
16"	20	1.62	23.75	-	19.5	16	0.5	390	330	495	365
400	20	42	603.2	-	495.2	406.4	13	177	150	225	166
18"	20	1.75	25.75	-	21.5	18	0.5	475	400	630	435
450	20	45	654	-	546.1	457.2	13	215	181	286	197
20"	24	1.75	28.5	-	24	20.00	0.5	590	510	810	570
500	24	45	723.9	-	609.6	508	13	268	231	367	259
24"	24	2	33	-	28.25	24	0.5	830	730	1250	810
600	24	51	838.2	-	717.5	609.6	13	376	331	567	367

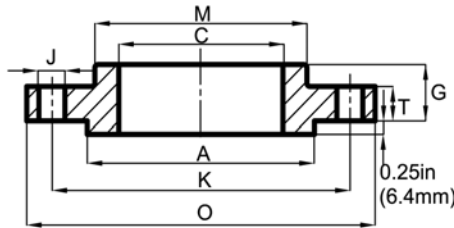
INCHES	POUNDS
MILLIMETRES	KILOGRAMS

CLASS 900 (PN 160)

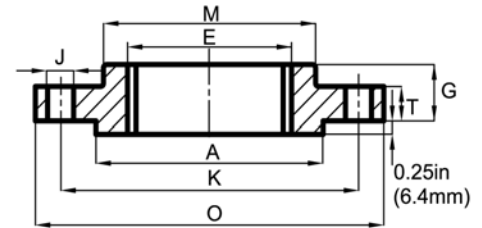
ANSI B16.5



WELDING NECK



SLIP-ON

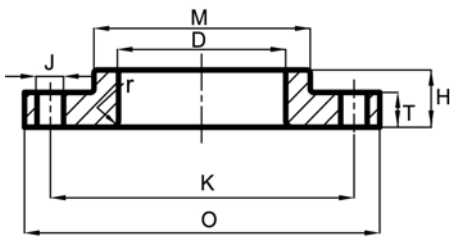


THREADED

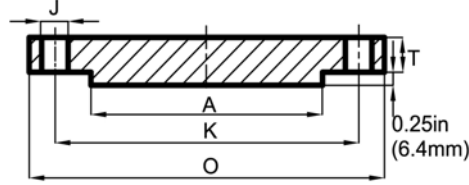
For sizes NPS 1/2 (DN 15) through NPS 2 1/2 (DN 65) use Class 1500 (PN 250) flanges.

NPS	FLANGE OUTSIDE DIAMETER	FLANGE THICKNESS MIN.	RAISED FACE DIA.	BORE				LENGTH THRU HUB		
				WELDING NECK MIN.	SLIP-ON MIN.	LAP JOINT MIN.	THREADED COUNTERBORE MIN.	WELDING NECK	SLIP-ON, THREADED	LAP JOINT
DN	O	T	A	B	C	D	E	F	G	H
3"	9.50	1.50	5.00		3.57	3.60	3.63	4.00	2.12	2.12
80	241	38.5	127.0	To	90.7	91.4	92	101.6	54	54
4"	11.50	1.75	6.19	be	4.57	4.6	4.63	4.50	2.75	2.75
100	292	44.5	157.2	specified	116.1	116.8	118	114.3	70	70
5"	13.75	2.0	7.31	by	5.66	5.69	5.69	5.00	3.12	3.12
125	349	51.0	185.7	Customer	143.7	144.5	145	127.0	79	79
6"	15.00	2.19	8.5		6.72	6.75	6.75	5.50	3.38	3.38
150	381	56.0	215.9		170.7	171.4	171	139.7	86	86
8"	18.50	2.5	10.62		8.72	8.75	8.75	6.38	4.00	4.5
200	470	63.5	269.9		221.5	222.2	222	161.9	102	114
10"	21.5	2.75	12.75		10.88	10.92	10.88	7.25	4.25	5
250	545	70.0	323.8		276.2	277.4	276	184.2	108	127
12"	24	3.12	15		12.88	12.92	12.94	7.88	4.62	5.62
300	610	79.5	381		327	328.2	329	200.0	117	143
14"	25.25	3.38	16.25		14.14	14.18	14.19	8.38	5.12	6.12
350	640	86	412.8		359.2	360.2	360	212.7	130	156
16"	27.75	3.5	18.5		16.16	16.19	16.19	8.50	5.25	6.5
400	705	89	469.9		410.4	411.2	411	215.9	133	165
18"	31.00	4.0	21		18.18	18.2	18.19	9.00	6.00	7.5
450	785	102.0	533.4		461.8	462.3	462	228.8	152	191
20"	33.75	4.25	23		20.2	20.25	20.19	9.75	6.25	8.25
500	855	108.0	584.2		513.1	514.3	513	247.6	159	210
24"	41.00	5.5	27.25		24.25	24.25	24.19	11.5	8.00	10.5
600	1040	140.0	692.2		615.9	615.9	614	292.1	203	267

INCHES
MILLIMETRES



LAP JOINT



BLIND

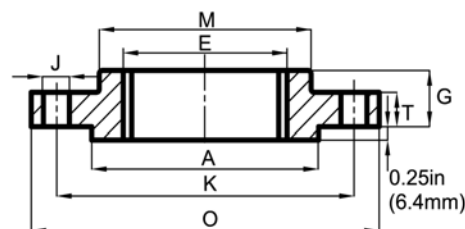
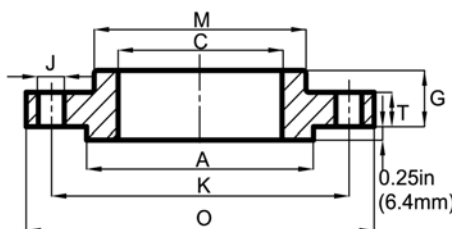
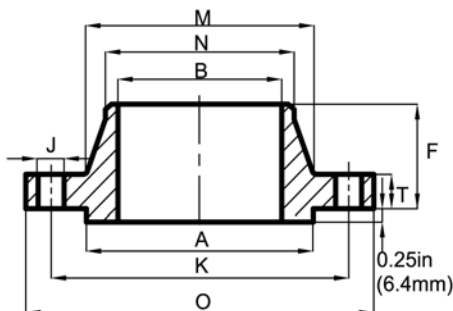
For sizes NPS 1/2 (DN 15) through NPS 2 1/2 (DN 65) use Class 1500 (PN 250) flanges.

NPS	DRILLING			DIAMETER OF HUB		LAP JOINT FILLET RADIUS	APPROXIMATE WEIGHT			
	NO.OF HOLES	DIA.OF HOLES	DIA.OF BOLT CIRCLE	AT BASE	AT CHAMFER		WELDING NECK	SLIP-ON, THREADED	BLIND	LAP JOINT
DN		J	K	M	N	r				
3"	8	1.00	7.50	5.00	3.50	0.38	31	31	31	47
80	8	26	190.5	127.0	88.9	10	14.1	14.1	14.1	21.3
4"	8	1.25	9.25	6.25	4.50	0.44	51	53	54	51
100	8	32	234.9	158.7	114.3	11	23.1	24.0	24.5	23.1
5"	8	1.38	11.00	7.50	5.56	0.44	86	83	87	81
125	8	35	279.4	190.5	141.3	11	39.0	37.6	39.5	36.7
6"	12	1.25	12.50	9.25	6.63	0.50	110	110	115	105
150	12	32	317.5	234.9	168.3	13	49.9	49.9	52.2	47.6
8"	12	1.50	15.5	11.75	8.63	0.50	175	170	200	190
200	12	39	393.7	298.4	219.1	13	79.4	77.1	90.7	86.2
10"	16	1.50	18.50	14.50	10.75	0.50	260	245	290	275
250	16	39	469.9	368.3	273.0	13	118	111	132	125
12"	20	1.50	21.00	16.5	12.75	0.50	325	325	415	370
300	20	39	533.4	419.1	323.8	13	147	147	188	168
14"	20	1.62	22.00	17.75	14.00	0.50	400	400	520	415
350	20	42	558.8	450.8	355.6	13	181	181	236	188
16"	20	1.75	24.25	20.00	16.00	0.50	495	425	600	465
400	20	45	615.9	508.0	406.4	13	225	193	272	211
18"	20	2.00	27.00	22.25	18.00	0.50	680	600	850	650
450	20	51	685.8	565.1	457.2	13	308	272	386	295
20"	20	2.12	29.50	24.5	20.00	0.50	830	730	1075	810
500	20	54	749.3	622.3	508.0	13	376	331	488	367
24"	20	2.62	35.5	29.5	24.00	0.50	1500	1400	2025	1550
600	20	67	901.7	749.3	609.6	13	680	635	918	703

INCHES	POUNDS
MILLIMETRES	KILOGRAMS

CLASS 1500 (PN 250)

ANSI B16.5



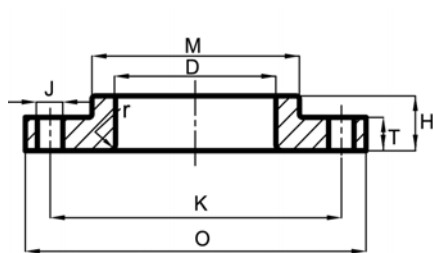
WELDING NECK

SLIP-ON

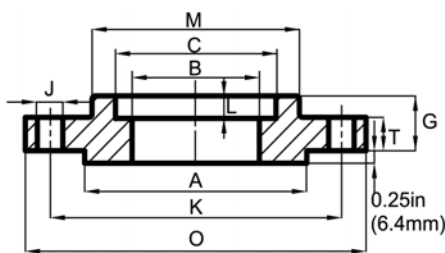
THREADED

NPS	FLANGE OUTSIDE DIAMETER	FLANGE THICKNESS MIN.	RAISED FACE DIA.	BORE				LENGTH THRU HUB		
				WELDING NECK & SOCKET WELDING	SLIP-ON & SOCKET WELDING MIN.	LAP JOINT MIN.	THREADED COUNTER-BORE MIN.	WELDING NECK	SLIP-ON, THREADED & SOCKET WELDING	LAP JOINT
DN	O	T	A	B	C	D	E	F	G	H
1/2"	4.75	0.88	1.38		0.88	0.90	93	2.38	1.25	1.25
15	121	22.5	34.9	To	22.2	22.9	23.5	60.3	32	32
3/4"	5.12	1.00	1.69	be	1.09	1.11	1.14	2.75	1.38	1.38
20	130	25.5	42.9	specified	27.8	28.2	29.0	69.8	35	35
1"	5.88	1.12	2.00	by	1.36	1.38	1.41	2.88	1.62	1.62
25	149	29.0	50.8	Customer	34.5	34.9	36.0	73.0	41	41
1 1/4"	6.25	1.12	2.5		1.70	1.72	1.75	2.88	1.62	1.62
32	159	29.0	63.5		43.3	43.7	44.5	73.0	41	41
1 1/2"	7.00	1.25	2.88		1.95	1.97	1.99	3.25	1.75	1.75
40	178	32.0	73.0		49.6	50.0	50.5	82.5	44	44
2"	8.50	1.50	3.62		2.44	2.46	2.50	4.00	2.25	2.25
50	216	38.5	92.1		61.9	62.5	63.5	101.6	57	57
2 1/2"	9.62	1.62	4.12		2.94	2.97	3.00	4.12	2.50	2.50
65	244	41.5	104.8		74.6	75.4	76.0	104.8	64	64
3"	10.50	1.88	5.00		-	3.60	3.63	4.62	2.88	2.88
80	267	48.0	127.0		-	91.4	92.0	117.5	73	73
4"	12.25	2.12	6.19		-	4.60	4.63	4.88	3.56	3.56
100	311	54.0	157.2		-	116.8	118	123.8	90	90
5"	14.75	2.88	7.31		-	5.69	5.69	6.12	4.12	4.12
125	375	73.5	185.7		-	144.5	145	155.6	105	105
6"	15.50	3.25	8.50		-	6.75	6.75	6.75	4.69	4.69
150	394	83.0	215.9		-	171.4	171	171.4	119	119
8"	19.00	3.62	10.62		-	8.75	8.75	8.38	5.62	5.62
200	483	92.0	269.9		-	222.2	222	212.7	143	143
10"	23.00	4.25	12.75		-	10.92	10.88	10.00	6.25	7.00
250	585	108.0	323.8		-	277.4	276	254.0	159	178
12"	26.50	4.88	15.00		-	12.92	12.94	11.12	7.12	8.62
300	675	124.0	381.0		-	328.2	329	282.6	181	219
14"	29.50	5.25	16.25		-	14.18	-	11.75	-	9.50
350	750	133.5	412.8		-	360.2	-	298.4	-	241
16"	32.50	5.75	18.50		-	16.19	-	12.25	-	10.25
400	825	146.5	469.9		-	411.2	-	311.1	-	260
18"	36.00	6.38	21.00		-	18.20	-	12.88	-	10.88
450	915	162.0	533.4		-	462.3	-	327	-	276
20"	38.75	7.00	23.00		-	20.25	-	14.00	-	11.50
500	985	178.0	584.2		-	514.3	-	355.6	-	292
24"	46	8.00	27.25		-	24.25	-	16.00	-	13.00
600	1170	203.5	692.2		-	615.9	-	406.4	-	330

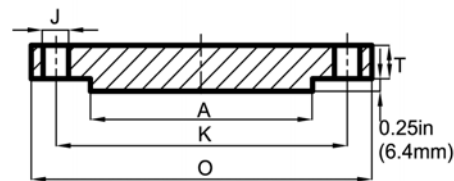
INCHES
MILLIMETRES



LAP JOINT



SOCKET WELDING



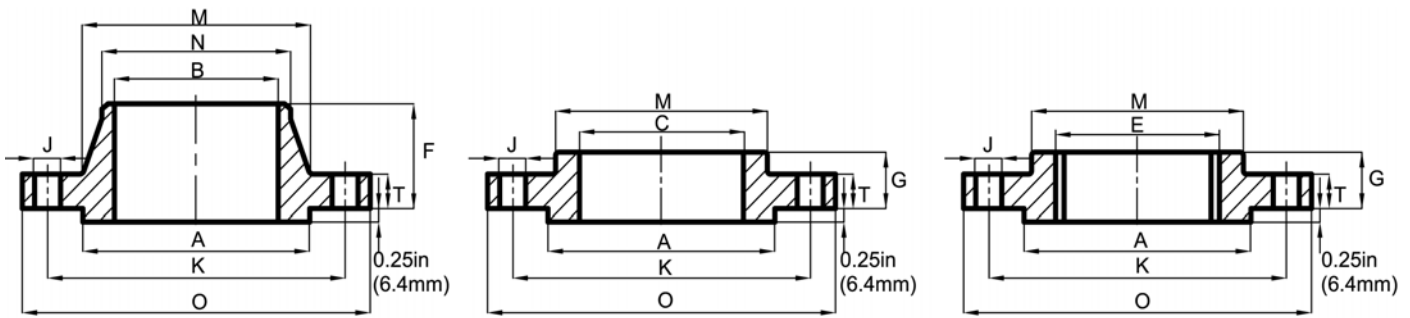
BLIND

NPS	DRILLING			DEPTH OF SOCKET	DIAMETER OF HUB		LAP JOINT FILLET RADIUS	APPROXIMATE WEIGHT			
	NO.OF HOLES	DIA.OF HOLES	DIA.OF BOLT CIRCLE		AT BASE	AT CHAMFER		WELDING NECK	SLIP-ON, THREADED & SOCKET. WELDING	BLIND	LAP JOINT
DN		J	K	L	M	N	r				
1/2"	4	0.88	3.25	0.38	1.50	0.84	0.12	5	4	4	4
15	4	23	82.5	10	38.1	21.4	3	2.3	1.8	1.8	1.8
3/4"	4	0.88	3.50	0.44	1.75	1.05	0.12	6	5	6	5
20	4	23	88.9	11	44.4	26.6	3	2.7	2.3	2.7	2.3
1"	4	1.00	4.00	0.50	2.06	1.32	0.12	9	8	8	8
25	4	26	101.6	13	52.4	33.5	3	4.1	3.6	3.6	3.6
1 1/4"	4	1.00	4.38	0.56	2.50	1.66	0.19	10	9	9	9
32	4	26	111.1	14	63.5	42.1	5	4.5	4.1	4.1	4.1
1 1/2"	4	1.12	4.88	0.62	2.75	1.90	0.25	13	12	13	12
40	4	29	123.8	16	69.8	48.3	6	5.9	5.4	5.9	5.4
2"	8	1.00	6.50	0.69	4.12	2.38	0.31	25	25	25	25
50	8	26	165.1	17	104.8	60.3	8	11.3	11.3	11.3	11.3
2 1/2"	8	1.12	7.50	0.75	4.88	2.88	0.31	36	36	35	35
65	8	29	190.5	19	123.8	73.0	8	16.3	16.3	15.9	16.0
3"	8	1.25	8.00	-	5.25	3.50	0.38	48	48	48	47
80	8	32	203.2	-	133.3	88.9	10	21.8	21.8	21.8	21.3
4"	8	1.38	9.50	-	6.38	4.50	0.44	73	73	73	75
100	8	35	241.3	-	161.9	114.3	11	33.1	33.1	33.1	34.0
5"	8	1.62	11.50	-	7.75	5.56	0.44	130	130	140	140
125	8	42	292.1	-	196.8	141.3	11	59.0	59.0	63.5	63.5
6"	12	1.50	12.50	-	9.00	6.63	0.50	165	165	160	170
150	12	39	317.5	-	228.6	168.3	13	75	75	72.6	77.1
8"	12	1.75	15.50	-	11.50	8.63	0.50	275	260	300	285
200	12	45	393.7	-	292.1	219.1	13	125	118	136	129
10"	12	2.00	19.00	-	14.50	10.75	0.50	455	435	510	485
250	12	51	482.6	-	368.3	273.0	13	206	197	231	220
12"	16	2.12	22.50	-	17.75	12.75	0.50	690	580	690	630
300	16	54	571.5	-	450.6	323.8	13	313	263	313	286
14"	16	2.38	25.00	-	19.50	14.00	0.50	940	-	975	890
350	16	61	635.0	-	495.3	355.6	13	426	-	442	404
16"	16	2.62	27.75	-	21.75	16.00	0.50	1250	-	1300	1150
400	16	67	704.8	-	552.4	406.4	13	567	-	590	522
18"	16	2.88	30.50	-	23.50	18.00	0.50	1625	-	1750	1475
450	16	74	774.7	-	596.9	457.2	13	737	-	794	669
20"	16	3.12	32.75	-	25.25	20.00	0.50	2050	-	2225	1775
500	16	80	831.8	-	641.3	508.0	13	930	-	1010	805
24"	16	3.62	39.00	-	30.00	24.00	0.50	3325	-	3625	2825
600	16	92	990.6	-	762.0	609.6	13	1510	-	1644	1326

INCHES	POUNDS
MILLIMETRES	KILOGRAMS

CLASS 2500 (PN 400)

ANSI B16.5



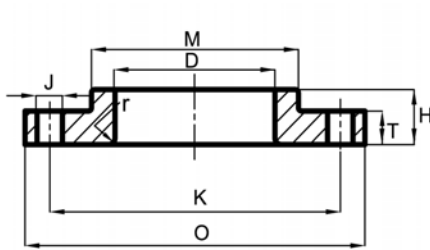
WELDING NECK

SLIP-ON

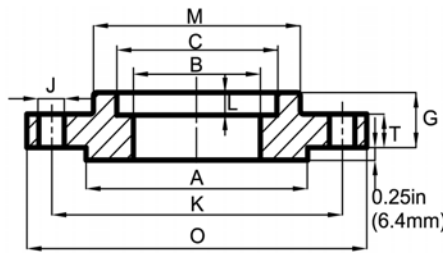
THREADED

NPS	FLANGE OUTSIDE DIAMETER	FLANGE THICKNESS MIN.	RAISED FACE DIA.	BORE				LENGTH THRU HUB		
				WELDING NECK & SOCKET WELDING	SLIP-ON & SOCKET WELDING MIN.	LAP JOINT MIN.	THREADED COUNTER-BORE MIN.	WELDING NECK	SLIP-ON, THREADED & SOCKET WELDING	LAP JOINT
DN	O	T	A	B	C	D	E	F	G	H
1/2"	5.25	1.19	1.38		0.88	0.90	0.93	2.88	1.56	1.56
15	133	30.5	34.9	To	22.2	22.9	23.5	73.0	40	40
3/4"	5.50	1.25	1.69	be	1.09	1.11	1.14	3.12	1.69	1.69
20	140	32.0	42.9	specified	27.8	28.2	29.0	79.4	43	43
1"	6.25	1.38	2.00	by	1.36	1.38	1.41	3.50	1.88	1.88
25	159	35.0	50.8	Customer	34.5	34.9	36.0	88.9	48	48
1 1/4"	7.25	1.50	2.50		1.70	1.72	1.75	3.75	2.06	2.06
32	184	38.5	63.5		43.3	43.7	44.5	95.2	52	52
1 1/2"	8.00	1.75	2.88		1.95	1.97	1.99	4.38	2.38	2.38
40	203	44.5	73.0		49.6	50.0	50.5	111.4	60	60
2"	9.25	2.00	3.62		2.44	2.46	2.50	5.00	2.75	2.75
50	235	51.0	92.1		61.9	62.5	63.5	127.0	70	70
2 1/2"	10.50	2.25	4.12		2.94	2.97	3.00	5.62	3.12	3.12
65	267	57.5	104.8		74.6	75.4	76	142.9	79	79
3"	12.00	2.62	5.00		3.57	3.6	3.63	6.62	3.62	3.62
80	305	67.0	127.0		90.7	91.4	92	168.2	92	92
4"	14.00	3.00	6.19		4.57	4.60	4.63	7.50	4.25	4.25
100	356	76.5	157.2		116.1	116.8	118	190.5	108	108
5"	16.50	3.62	7.31		5.66	5.69	5.69	9.00	5.12	5.12
125	419	92.5	185.7		143.7	144.5	145	228.6	130	130
6"	19.00	4.25	8.50		6.72	6.75	6.75	10.75	6.0	6.0
150	483	108.0	215.9		170.7	171.4	171	273	152	152
8"	21.75	5.00	10.62		8.72	8.75	8.75	12.50	7.0	7.0
200	552	127.0	269.9		221.5	222.2	222	317.5	178	178
10"	26.50	6.50	12.75		10.88	10.92	10.88	16.50	9.0	9.0
250	675	165.5	323.8		276.2	277.4	276	419.4	229	229
12"	30.00	7.25	15.00		12.88	12.92	12.94	18.25	10.0	10.0
300	760	184.5	381.0		327	328.2	329	463.6	254	254

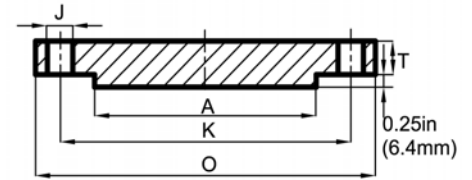
INCHES
MILLIMETRES



LAP JOINT



SOCKET WELDING

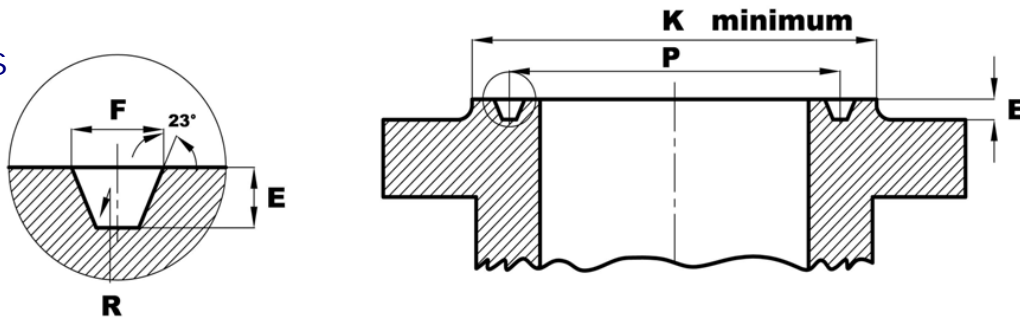


BLIND

NPS	DRILLING			DEPTH OF SOCKET	DIAMETER OF HUB		LAP JOINT FILLET RADIUS	APPROXIMATE WEIGHT			
	NO.OF HOLES	DIA.OF HOLES	DIA.OF BOLT CIRCLE		AT BASE	AT CHAMFER		WELDING NECK	SLIP-ON, THREADED& SOCKET. WELDING	BLIND	LAP JOINT
DN		J	K	L	M	N	r				
1/2"	4	0.88	3.50	0.38	1.69	0.84	0.12	7	7	7	7
15	4	23	88.9	10	42.9	21.4	3	3.2	3.2	3.2	3.2
3/4"	4	0.88	3.75	0.44	2.00	1.05	0.12	8	8	8	8
20	4	23	95.2	11	50.8	26.6	3	3.6	3.6	3.6	3.6
1"	4	1	4.25	0.50	2.25	1.32	0.12	12	11	11	11
25	4	26	107.9	13	57.1	33.5	3	5.4	5.0	5.0	5.0
1 1/4"	4	1.12	5.12	0.56	2.88	1.66	0.19	17	16	17	16
32	4	29	130.2	14	73.0	42.1	5	7.7	7.3	7.7	7.3
1 1/2"	4	1.25	5.75	0.62	3.12	1.90	0.25	25	22	23	22
40	4	32	146.0	16	79.4	48.3	6	11.3	10	10.4	10
2"	8	1.12	6.75	0.69	3.75	2.38	0.31	42	38	39	37
50	8	29	171.4	17	95.2	60.3	8	19.0	17.2	17.7	16.8
2 1/2"	8	1.25	7.75	0.75	4.50	2.88	0.31	52	55	56	53
65	8	32	196.8	19.0	114.3	73.0	8	23.6	24.9	25.4	24
3"	8	1.38	9.00		5.25	3.50	0.38	94	83	86	80
80	8	35	228.6		133.3	88.9	10	42.6	37.6	39	36.3
4"	8	1.62	10.75		6.50	4.50	0.44	145	125	135	120
100	8	42	273.0		165.1	114.3	11	65.8	56.7	61.2	54.4
5"	8	1.88	12.75		8.00	5.56	0.44	245	210	225	205
125	8	48	323.8		203.2	141.3	11	111	95.3	102	93.0
6"	8	2.12	14.50		9.25	6.63	0.50	380	325	345	315
150	8	54	368.3		234.9	168.3	13	172	147	156	143
8"	12	2.12	17.25		12.00	8.63	0.50	580	485	530	470
200	12	54	438.1		304.8	219.1	13	263	220	240	213
10"	12	2.62	21.25		14.75	10.75	0.50	1075	930	1025	900
250	12	67	539.7		374.8	273.0	13	488	422	465	408
12"	12	2.88	24.38		17.38	12.75	0.50	1525	1100	1300	1100
300	12	74	619.1		441.45	323.8	13	692	499	590	499

INCHES	POUNDS
MILLIMETRES	KILOGRAMS

RING JOINT
DIMENSIONS
ANSI B16.5



CLASS PN	NORMAL PIPE SIZE							RING NUMBER	GROOVE DIMENSIONS				DIAMETER OF RAISED FACE K				
	150 20	300 50	400 64	600 100	900 160	1500 250	2500 400		PITCH DIA. P	DEPTH E	WIDTH F	BOTT RADIUS R	150 20	300, 400,600 50,64,100	900 160	1500 250	2500 400
NPS		1/2		1/2				R11	1.344	0.219	0.281	0.03		2			
DN		15		15				R11	34.14	5.56	7.14	0.8		51			
NPS						1/2		R12	1.562	0.250	0.344	0.03				2.38	
DN						15		R12	39.67	6.35	8.74	0.8				60.5	
NPS		3/4		3/4			1/2	R13	1.688	0.25	0.344	0.03		2.5			2.56
DN		20		20			15	R13	42.88	6.35	8.74	0.8		63.5			65
NPS						3/4		R14	1.750	0.25	0.344	0.03				2.62	
DN						20		R14	44.45	6.35	8.74	0.8				66.5	
NPS	1							R15	1.875	0.25	0.344	0.03	2.5				
DN	25							R15	47.62	6.35	8.74	0.8	63.5				
NPS		1		1		1	3/4	R16	2	0.25	0.344	0.03		2.75		2.81	2.88
DN		25		25		25	20	R16	50.80	6.35	8.74	0.8		70		71.5	73
NPS	1 1/4							R17	2.25	0.25	0.344	0.03	2.88				
DN	32							R17	57.15	6.35	8.74	0.8	73				
NPS		1 1/4		1 1/4		1 1/4	1	R18	2.375	0.25	0.344	0.03		3.12		3.19	3.25
DN		32		32		32	25	R18	60.32	6.35	8.74	0.8		79.5		81	82.5
NPS	1 1/2							R19	2.562	0.25	0.344	0.03	3.25				
DN	40							R19	65.07	6.35	8.74	0.8	82.5				
NPS		1 1/2		1 1/2		1 1/2		R20	2.688	0.25	0.344	0.03		3.56		3.62	
DN		40		40		40		R20	68.28	6.35	8.74	0.8		90.5		92	
NPS							1 1/4	R21	2.844	0.312	0.469	0.03					4
DN							32	R21	72.24	7.92	11.91	0.8					102
NPS	2							R22	3.250	0.25	0.344	0.03	4				
DN	50							R22	82.55	6.35	8.74	0.8	102				
NPS		2		2			1 1/2	R23	3.250	0.312	0.469	0.03		4.25			4.5
DN		50		50			40	R23	82.55	7.92	11.91	0.8		108			114
NPS						2		R24	3.750	0.312	0.469	0.03				4.88	
DN						50		R24	95.25	7.92	11.91	0.8				124	
NPS	2 1/2							R25	4	0.25	0.344	0.03	4.75				
DN	65							R25	101.6	6.35	8.74	0.8	121				
NPS		2 1/2		2 1/2			2	R26	4	0.312	0.469	0.03		5			5.25
DN		65		65			50	R26	101.6	7.92	11.91	0.8		127			133
NPS						2 1/2		R27	4.25	0.312	0.469	0.03				5.38	
DN						65		R27	107.95	7.92	11.91	0.8				137	
NPS							2 1/2	R28	4.375	0.375	0.531	0.06					5.88
DN							65	R28	111.12	9.52	13.49	1.5					149
NPS	3							R29	4.5	0.25	0.344	0.03	5.25				
DN	80							R29	114.3	6.35	8.74	0.8	133				
NPS		(1)		(1)				R30	4.625	0.312	0.469	0.03					
DN		(1)		(1)				R30	117.48	7.92	11.91	0.8					
NPS		3(1)		3(1)	3			R31	4.875	0.312	0.469	0.03		5.75	6.12		
DN		80		80	80			R31	123.82	7.92	11.91	0.8		146	156		
NPS							3	R32	5	0.375	0.531	0.06					6.62
DN							80	R32	127	9.52	13.49	1.5					168

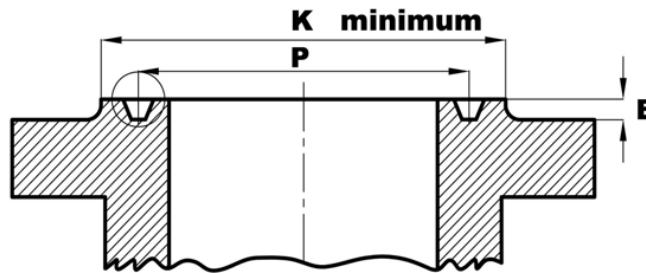
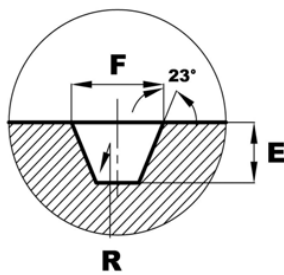
1 For NPS 3 (DN 80) Lap Joint Stub Ends (ANSI b16.9) class 300&600 (PN50&100), Ring Number R30 is used instead of R31.

2 For sizes NPS 1/2-NPS 3 1/2 (DN15-DN90), use same data as Class 600 (PN100).

3 For sizes NPS 1/2-NPS 2 1/2 (DN15-DN65) use same data as Class 1500 (PN 250).

INCHES
MILLIMETRES

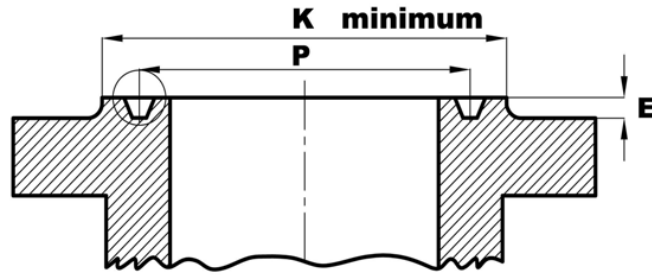
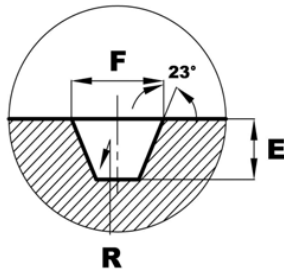
RING JOINT
DIMENSIONS
ANSI B16.5



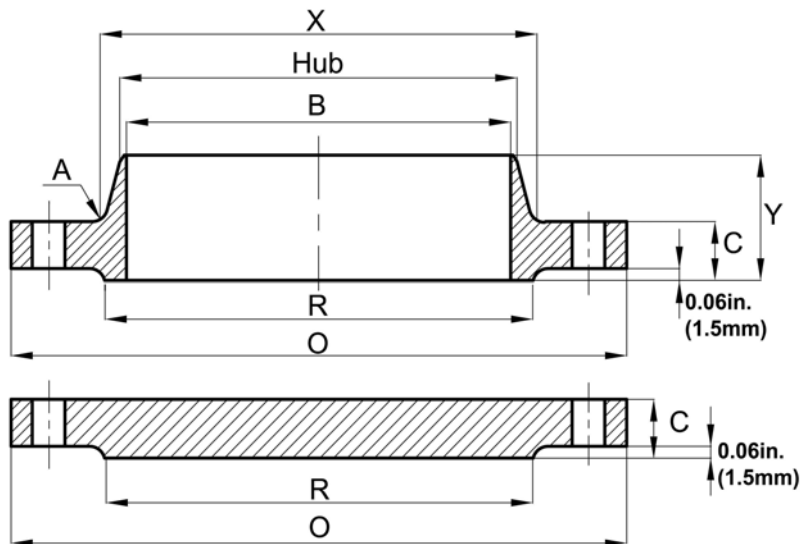
CLASS PN	NORMAL PIPE SIZE							RING NUMBER	GROOVE DIMENSIONS				DIAMETER OF RAISED FACE K				
	150 20	300 50	400 64	600 100	900 160	1500 250	2500 400		PITCH DIA. P	DEPTH E	WIDTH F	BOTT RADIUS R	150 20	300, 400,600 50,64,100	900 160	1500 250	2500 400
NPS 3 1/2								R33	5.188	0.25	0.344	0.03	6.06				
DN 90								R33	131.78	6.35	8.74	0.8	154				
NPS 3 1/2				3 1/2				R34	5.188	0.312	0.469	0.03		6.25			
DN 90				90				R34	131.78	7.92	11.91	0.8		159			
NPS 3						3		R35	5.375	0.312	0.469	0.03					6.62
DN 80						80		R35	136.52	7.92	11.91	0.8					168
NPS 4								R36	5.875	0.25	0.344	0.03	6.75				
DN 100								R36	149.22	6.35	8.74	0.8	171				
NPS 4		4	4	4	4			R37	5.875	0.312	0.469	0.03		6.88	7.12		
DN 100		100	100	100	100			R37	149.22	7.92	11.91	0.8		175	181		
NPS 4							4	R38	6.188	0.438	0.656	0.06					8
DN 100							100	R38	157.18	11.13	16.66	1.5					203
NPS 4							4	R39	6.375	0.312	0.469	0.03					7.62
DN 100							100	R39	161.92	7.92	11.91	0.8					194
NPS 5								R40	6.75	0.250	0.344	0.03	7.62				
DN 125								R40	171.45	6.35	8.74	0.8	194				
NPS 5		5	5	5	5			R41	7.125	0.312	0.469	0.03		8.25	8.5		
DN 125		125	125	125	125			R41	180.98	7.92	11.91	0.8		210	216		
NPS 5							5	R42	7.50	0.50	0.781	0.06					9.5
DN 125							125	R42	190.50	12.70	19.84	1.5					241
NPS 6								R43	7.625	0.25	0.344	0.03	8.62				
DN 150								R43	193.68	6.35	8.74	0.8	219				
NPS 6							5	R44	7.625	0.312	0.469	0.03					9
DN 125							125	R44	193.68	7.92	11.91	0.8					229
NPS 6		6	6	6	6			R45	8.312	0.312	0.469	0.03		9.5	9.5		
DN 150		150	150	150	150			R45	211.12	7.92	11.91	0.8		241	241		
NPS 6							6	R46	8.312	0.375	0.531	0.06					9.75
DN 150							150	R46	211.12	9.52	13.49	1.5					248
NPS 6							6	R47	9.000	0.50	0.781	0.06					11
DN 150							150	R47	228.60	12.70	19.84	1.5					279
NPS 8								R48	9.750	0.25	0.344	0.03	10.75				
DN 200								R48	247.65	6.35	8.74	0.8	273				
NPS 8		8	8	8	8			R49	10.625	0.312	0.469	0.03		11.88	12.12		
DN 200		200	200	200	200			R49	269.88	7.92	11.91	0.8		302	308		
NPS 8							8	R50	10.625	0.438	0.656	0.06					12.5
DN 200							200	R50	269.88	11.13	16.66	1.5					318
NPS 8							8	R51	11.00	0.562	0.906	0.06					13.38
DN 200							200	R51	279.40	14.27	23.01	1.5					340
NPS 10								R52	12.00	0.25	0.344	0.03	13				
DN 250								R52	304.80	6.35	8.74	0.8	330				
NPS 10		10	10	10	10			R53	12.75	0.312	0.469	0.03		14	14.25		
DN 250		250	250	250	250			R53	323.85	7.92	11.91	0.8		356	362		
NPS 10							10	R54	12.75	0.438	0.656	0.06					14.62
DN 250							250	R54	323.85	11.13	18.66	1.5					371
NPS 10							10	R55	13.50	0.688	1.188	0.09					16.75
DN 250							250	R55	342.90	17.48	30.18	2.4					425

FOR FOOTNOTES, REFER TO PAGE 30

RING JOINT
DIMENSIONS
ANSI B16.5



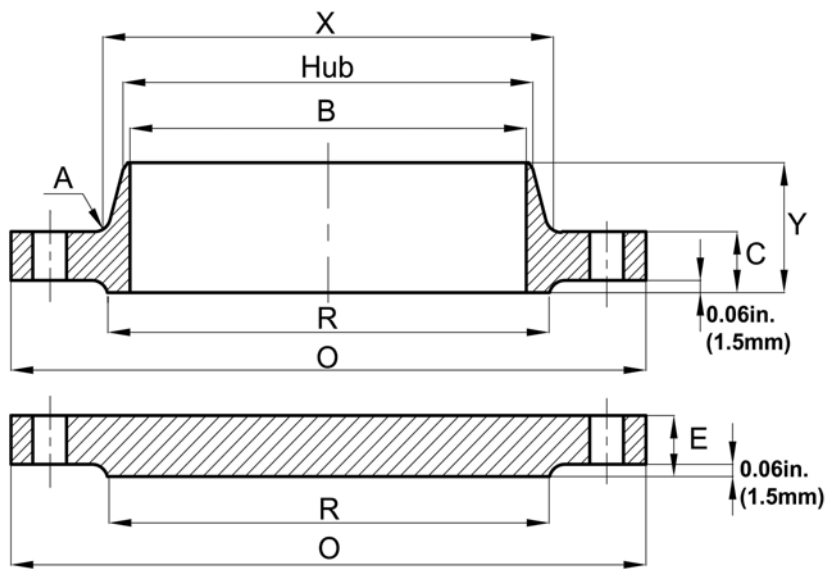
CLASS	NORMAL PIPE SIZE							RING NUMBER	GROOVE DIMENSIONS				DIAMETER OF RAISED FACE K				
	150	300	400	600	900	1500	2500		PITCH DIA. P	DEPTH E	WIDTH F	BOTT RADIUS R	150	300, 400,600, 900, 1500, 2500	900	1500	2500
PN	20	50	64	100	160	250	400					20	50,64,100	160	250	400	
NPS	12							R56	15	0.25	0.344	0.03	16				
DN	300							R56	381	6.35	8.74	0.8	406				
NPS		12	12	12	12			R57	15	0.312	0.469	0.03		16.25	16.5		
DN		300	300	300	300			R57	381	7.92	11.91	0.8		413	419		
NPS						12		R58	15	0.562	0.906	0.06				17.25	
DN						300		R58	381	14.27	23.01	1.5				438	
NPS	14							R59	15.625	0.25	0.344	0.03	16.75				
DN	350							R59	396.88	6.35	8.74	0.8	425				
NPS							12	R60	16	0.688	1.312	0.09					19.5
DN							300	R60	406.4	17.48	33.32	2.4					495
NPS		14	14	14				R61	16.5	0.312	0.469	0.03		18			
DN		350	350	350				R61	419.1	7.92	11.91	0.8		457			
NPS					14			R62	16.5	0.438	0.656	0.06			18.38		
DN					350			R62	419.1	11.13	16.66	1.5			467		
NPS						14		R63	16.5	0.625	1.062	0.09				19.25	
DN						350		R63	419.1	15.88	26.97	2.4				489	
NPS	16							R64	17.875	0.25	0.344	0.03	19				
DN	400							R64	454.02	6.35	8.74	0.8	483				
NPS		16	16	16				R65	18.5	0.312	0.469	0.03		20			
DN		400	400	400				R65	469.9	7.92	11.91	0.8		508			
NPS					16			R66	18.5	0.438	0.656	0.06		2	20.6		
DN					400			R66	469.9	11.13	16.66	1.5			524		
NPS						16		R67	18.5	0.688	1.188	0.09				21.5	
DN						400		R67	469.9	17.48	30.18	2.4				546	
NPS	18							R68	20.375	0.25	0.344	0.03	21.5				
DN	450							R68	517.52	6.35	8.74	0.8	546				
NPS		18	18	18				R69	21	0.312	0.469	0.03		22.62			
DN		450	450	450				R69	533.4	7.92	11.91	0.8		575			
NPS					18			R70	21	0.5	0.781	0.06			23.38		
DN					450			R70	533.4	12.7	19.84	1.5			594		
NPS						18		R71	21	0.688	1.188	0.09				24.12	
DN						450		R71	533.4	17.48	30.18	2.4				613	
NPS	20							R72	22	0.25	0.344	0.03	23.5				
DN	500							R72	558.8	6.35	8.74	0.8	597				
NPS		20	20	20				R73	23	0.375	0.531	0.06		25			
DN		500	500	500				R73	584.2	9.52	13.49	1.5		635			
NPS					20			R74	23	0.5	0.781	0.06			25.5		
DN					500			R74	584.2	12.7	19.84	1.5			648		
NPS						20		R75	23	0.688	1.312	0.09				26.5	
DN						500		R75	584.2	17.48	33.32	2.4				673	
NPS	24							R76	26.5	0.25	0.344	0.03	28				
DN	600							R76	673.1	6.35	8.74	0.8	711				
NPS		24	24	24				R77	27.25	0.438	0.656	0.06		29.5			
DN		600	600	600				R77	692.15	11.13	16.66	1.5		749			
NPS					24			R78	27.25	0.625	1.062	0.09			30.38		
DN					600			R78	692.15	15.88	26.97	2.4			772		
NPS						24		R79	27.25	0.812	1.438	0.09				31.25	
DN						600		R79	692.15	20.62	36.53	2.4				794	



**LARGE DIAMETER
FORGED STEEL FLANGES
ANSI B16.47 SERIES A (MSS SP 44)
PIPE LINE FLANGES
CLASS 150 (PN20)
WELDING NECK & BLIND**

NPS	FLANGE OUTSIDE DIA.	FLANGE THICKNESS MIN	LENGTH THRU HUB	HUB DIA. AT BASE	BORE DIA.	RAISED FACE DIA.	DRILLING			FILLET RADIUS (MIN)	APPROXIMATE WEIGHT	
							NO.OF BOLT HOLES	DIA.OF BOLT HOLES	DIA.OF BOLT CIRCLE		WELDING NECK	BLIND
DN	O	C	Y	X	B	R				A		
22	29.5	1.81	5.88	24.00		25.25	20	1.38	27.25	0.38	220	350
550	750	46.0	149	610	To	641	20	35	692	10	99	158
26	34.25	2.69	4.75	26.62	be	29.50	24	1.38	31.75	0.38	300	677
650	870	68.5	121	675	specified	749	24	35	806	10	136	307
28	36.5	2.81	4.94	28.62	by	31.50	28	1.38	34.00	0.44	315	833
700	925	71.5	125	725	Customer	800	28	35	863	11	143	378
30	38.75	2.94	5.38	30.75		33.75	28	1.38	36.00	0.44	360	963
750	985	74.5	137	780		857	28	35	914	11	163	437
32	41.75	3.18	5.69	32.75		36.00	28	1.62	38.50	0.44	435	1200
800	1060	81.0	144	830		914	28	41	978	11	197	544
34	43.75	3.25	5.88	34.75		38.00	32	1.62	40.50	0.50	465	1342
	1110	82.5	149	880		965	32	41	1029	13	211	609
36	46.00	3.56	6.18	36.75		40.25	32	1.62	42.75	0.50	520	1540
900	1170	90.5	157	935		1022	32	41	1086	13	236	698
38	48.75	3.44	6.19	39.00		42.25	32	1.62	45.25	0.50	778	1780
	1240	87.4	157	990		1073	32	41	1150	13	353	807
40	50.75	3.56	6.44	41.00		44.25	36	1.62	47.25	0.50	831	1992
1000	1290	90.5	164	1040		1124	36	41	1200	13	377	903
42	53.00	3.81	6.75	43.00		47.00	36	1.62	49.50	0.50	966	2332
1100	1345	97.0	171	1090		1194	36	41	1257	13	438	1058
44	55.25	4.00	7.00	45.00		49.00	40	1.62	51.75	0.50	1058	2656
	1405	102.0	178	1145		1245	40	41	1314	13	480	1205
46	57.25	4.06	7.31	47.12		51.00	40	1.62	53.75	0.50	1131	2903
	1455	103.0	186	1195		1295	40	41	1365	13	513	1317
48	59.50	4.25	7.56	49.12		53.50	44	1.62	56.00	0.50	1248	3276
1200	1510	108.0	192	1250		1359	44	41	1422	13	566	1486
50	61.75	4.38	8.00	51.25		55.50	44	1.88	58.25	0.50	1351	3605
	1570	111.0	203	1300		1410	44	48	1480	13	613	1635
52	64.00	4.56	8.25	53.25		57.50	44	1.88	60.50	0.50	1508	4043
1300	1625	116.0	210	1355		1460	44	48	1537	13	684	1834
54	66.25	4.75	8.50	55.25		59.5	44	1.88	62.75	0.50	1667	4521
1400	1685	121.0	216	1405		1511	44	48	1594	13	756	2051
56	68.75	4.88	9.00	57.38		62.00	48	1.88	65.00	0.50	1817	4981
	1745	124.0	229	1455		1575	48	48	1651	13	824	2259
58	71.00	5.06	9.25	59.38		64.00	48	1.88	67.25	0.50	2006	5540
	1805	129.0	235	1510		1626	48	48	1708	13	910	2513
60	73.00	5.19	9.44	61.38		66.00	52	1.88	69.25	0.50	2108	6000
1500	1855	132.0	240	1560		1676	52	48	1759	13	956	2722

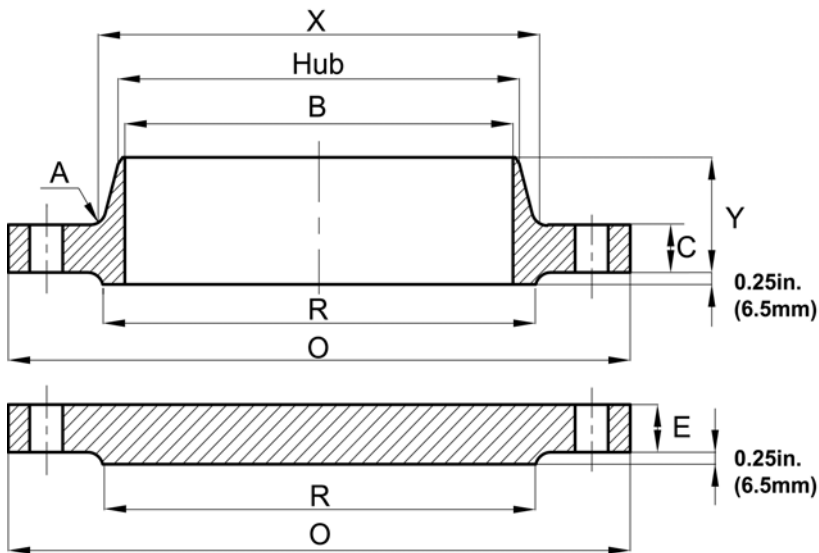
INCHES	POUNDS
MILLIMETRES	KILOGRAMS



**LARGE DIAMETER
FORGED STEEL FLANGES
ANSI B16.47 SERIES A (MSS SP 44)
PIPE LINE FLANGES
CLASS 300 (PN50)
WELDING NECK & BLIND**

NPS	FLANGE OUTSIDE DIA.	FLANGE THICKNESS		LENGTH THRU HUB	HUB DIA. AT BASE	BORE DIA.	RAISED FACE DIA.	DRILLING			FILLET RADIUS (MIN)	APPROXIMATE WEIGHT	
		WELDING NECK	BLIND					NO. OF BOLT HOLES	DIA. OF BOLT HOLES	DIA. OF BOLT CIRCLE		WELDING NECK	BLIND
DN	O	C	E	Y	X	B	R				A		
22	33.00	2.62	2.62	6.50	25.25		25.25	24	1.62	29.25	0.38	490	640
550	840	66.5	66.5	165	640	To	641	24	41	743	10	220	288
26	38.25	3.12	3.31	7.25	28.38	be	29.50	28	1.75	34.50	0.38	615	1116
650	970	79.5	84.0	184	720	specified	749	28	44	876	10	279	506
28	40.75	3.38	3.56	7.75	30.50	by	31.50	28	1.75	37.00	0.44	750	1362
700	1035	85.5	90.5	197	775	Customer	800	28	44	940	11	340	618
30	43.00	3.62	3.75	8.25	32.56		33.75	28	1.88	39.25	0.44	858	1590
750	1090	92.0	95.0	210	825		857	28	48	997	11	390	721
32	45.25	3.88	3.94	8.75	34.69		36	28	2.00	41.50	0.44	960	1862
800	1150	98.5	100	222	880		914	28	51	1054	11	435	845
34	47.50	4.00	4.12	9.12	36.88		38	28	2.00	43.50	0.50	1110	2134
	1205	102	105	232	935		965	28	51	1105	13	504	968
36	50.00	4.12	4.38	9.50	39.00		40.25	32	2.12	46.00	0.50	1223	2586
900	1270	105	111	241	990		1022	32	54	1168	13	560	1173
38	46.00	4.25	4.25	7.12	39.12		40.50	32	1.62	43.00	0.50		
	1170	108	108	181	995		1029	32	41	1092	13		
40	48.75	4.50	4.50	7.62	41.25		42.75	32	1.75	45.50	0.50		
1000	1240	114	114	194	1050		1086	32	44	1156	13		
42	50.75	4.69	4.69	7.88	43.25		44.75	32	1.75	47.50	0.50		
1100	1290	119	119	200	1100		1137	32	44	1206	13		
44	53.25	4.88	4.88	8.12	45.25		47.00	32	1.88	49.75	0.50		
	1355	124	124	206	1150		1194	32	48	1264	13		
46	55.75	5.06	5.06	8.50	47.38		49.00	28	2.00	52.00	0.50		
	1415	129	129	216	1205		1245	28	51	1321	13		
48	57.75	5.25	5.25	8.81	49.38		51.25	32	2.00	54.00	0.50		
1200	1465	133	133	224	1255		1314	32	51	1372	13		
50	60.25	5.50	5.50	9.12	51.38		53.50	32	2.12	56.25	0.50		
	1530	140	140	232	1305		1359	32	54	1429	13		
52	62.25	5.69	5.69	9.38	53.38		55.50	32	2.12	58.25	0.50		
1300	1580	144	144	238	1355		1410	32	54	1480	13		
54	65.25	6.00	6.00	9.94	55.50		57.75	28	2.38	61.00	0.50		
1400	1660	152	152	252	1410		1467	28	60	1549	13		
56	67.25	6.06	6.06	10.25	57.62		59.75	28	2.38	63.00	0.50		
	1710	154	154	260	1465		1518	28	60	1600	13		
58	69.25	6.25	6.25	10.50	59.62		62.00	32	2.38	65.00	0.50		
	1760	159	159	267	1515		1575	32	60	1651	13		
60	71.25	6.44	6.44	10.75	61.62		64.00	32	2.38	67.00	0.50		
1500	1810	164	164	273	1565		1626	32	60	1702	13		

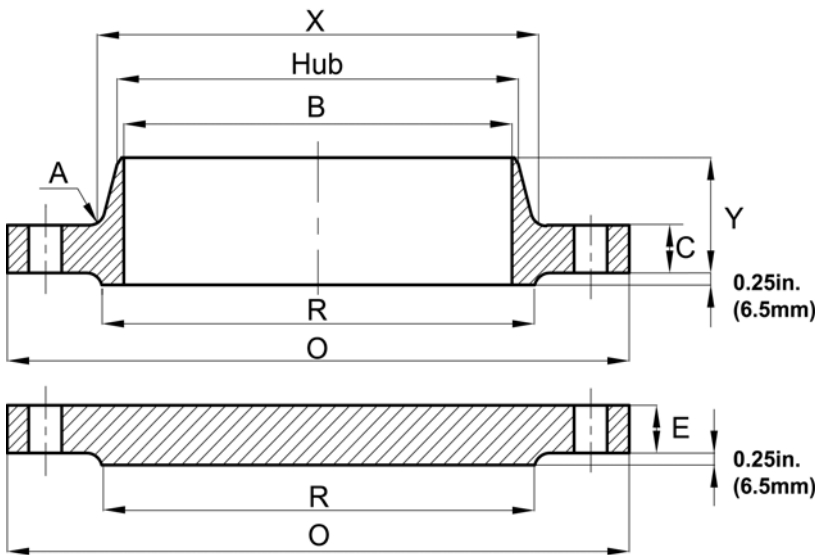
INCHES	POUNDS
MILLIMETRES	KILOGRAMS



**LARGE DIAMETER
FORGED STEEL FLANGES
ANSI B16.47 SERIES A (MSS SP 44)
PIPE LINE FLANGES
CLASS 400 (PN64)
WELDING NECK & BLIND**

NPS	FLANGE OUTSIDE DIA.	FLANGE THICKNESS		LENGTH THRU HUB	HUB DIA. AT BASE	BORE DIA.	RAISED FACE DIA.	DRILLING			FILLET RADIUS (MIN)	APPROXIMATE WEIGHT	
		WELDING NECK	BLIND					NO. OF BOLT HOLES	DIA. OF BOLT HOLES	DIA. OF BOLT CIRCLE		WELDING NECK	BLIND
DN	O	C	E	Y	X	B	R				A		
22	33.00	2.88	2.88	6.75	25.25		25.25	24	1.75	29.25	0.44	580	750
550	840	73.0	73.0	171	640	To	641	24	44	743	11	261	338
26	38.25	3.50	3.88	7.62	28.62	be	29.50	28	1.88	34.50	0.44	769	1226
650	970	89.0	98.5	194	725	specified	749	28	48	876	11	349	556
28	40.75	3.75	4.12	8.12	30.81	by	31.50	28	2.00	37.00	0.50	902	1483
700	1035	95.0	105	206	785	Customer	800	28	51	940	13	409	673
30	43.00	4.00	4.38	8.62	32.94		33.75	28	2.12	39.25	0.50	1025	1760
750	1090	102	111	219	835		857	28	54	997	13	465	798
32	45.25	4.25	4.56	9.12	35.00		36.00	28	2.12	41.50	0.50	1188	2036
800	1150	108	116	232	890		914	28	54	1054	13	539	924
34	47.50	4.38	4.81	9.50	37.19		38.00	28	2.12	43.50	0.56	1340	2374
	1205	111	122	241	945		965	28	54	1105	14	608	1077
36	50.00	4.50	5.06	9.88	39.38		40.25	32	2.12	46.00	0.56	1520	2756
900	1270	114	129	251	1000		1022	32	54	1168	14	689	1250
38	47.5	4.88	4.88	8.12	39.50		40.75	32	1.88	44.00	0.56		
	1205	124	124	206	1005		1035	32	48	1118	14		
40	50.00	5.12	5.12	8.50	41.50		43.00	32	2.00	46.25	0.56		
1000	1270	130	130	216	1055		1092	32	51	1175	14		
42	52.00	5.25	5.25	8.81	43.62		45.00	32	2.00	48.25	0.56		
1100	1320	133	133	224	1110		1143	32	251	1226	14		
44	54.50	5.50	5.50	9.18	45.62		47.25	32	2.12	50.50	0.56		
	1385	140	140	233	1160		1200	32	54	1283	14		
46	56.75	5.75	5.75	9.62	47.75		49.50	36	2.12	52.75	0.56		
	1440	146	146	244	1215		1257	36	54	1340	14		
48	59.50	6.00	6.00	10.12	49.88		51.50	28	2.38	55.25	0.56		
1200	1510	152	152	257	1265		1308	28	60	1403	14		
50	61.75	6.19	6.25	10.56	52.00		53.62	32	2.38	57.50	0.56		
	1570	157	159	268	1320		1362	32	60	1460	14		
52	63.75	6.38	6.44	10.88	54.00		55.62	32	2.38	59.50	0.56		
1300	1620	162	164	276	1370		1413	32	60	1511	14		
54	67.00	6.69	6.75	11.38	56.12		57.88	28	2.62	62.25	0.56		
1400	1700	170	171	289	1425		1470	28	67	1581	14		
56	69.00	6.88	6.94	11.75	58.25		60.12	32	2.62	64.25	0.56		
	1755	175	176	298	1480		1527	32	67	1632	14		
58	71.00	7.00	7.12	12.06	60.25		62.12	32	2.62	66.25	0.56		
	1805	178	181	306	1530		1527	32	68	1683	14		
60	74.25	7.31	7.44	12.56	62.38		64.38	32	2.88	69.00	0.56		
1500	1885	186	189	319	1585		1527	32	73	1753	14		

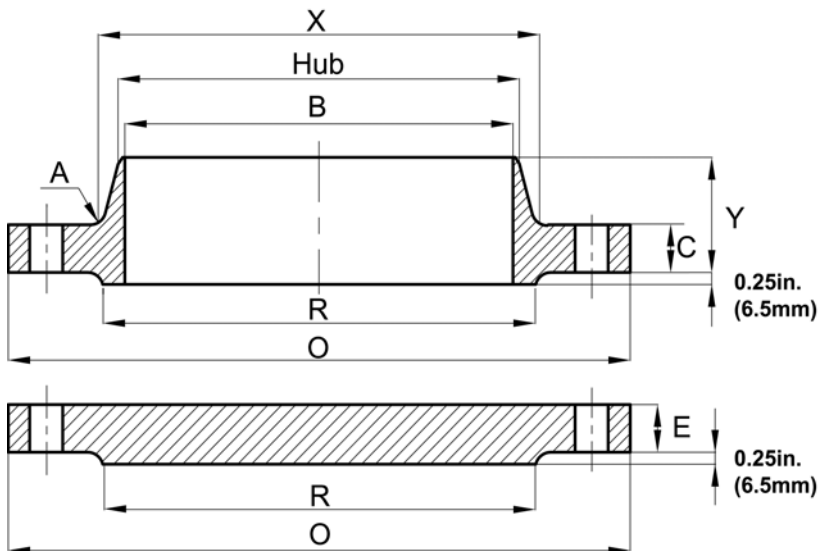
INCHES	POUNDS
MILLIMETRES	KILOGRAMS



**LARGE DIAMETER
FORGED STEEL FLANGES
ANSI B16.47 SERIES A (MSS SP 44)
PIPE LINE FLANGES
CLASS 600 (PN100)
WELDING NECK & BLIND**

NPS	FLANGE OUTSIDE DIA.	FLANGE THICKNESS		LENGTH THRU HUB	HUB DIA. AT BASE	BORE DIA.	RAISED FACE DIA.	DRILLING			FILLET RADIUS (MIN)	APPROXIMATE WEIGHT	
		WELDING NECK	BLIND					NO. OF BOLT HOLES	DIA. OF BOLT HOLES	DIA. OF BOLT CIRCLE		WELDING NECK	BLIND
DN	O	C	E	Y	X	B	R				A		
22	34.25	3.75	3.75	7.75			25.25	24	1.88	30.62	0.44	760	975
550	870	95.0	95.0	197		To	641	24	47	778	11	342	439
26	40.00	4.25	4.94	8.75	29.44	be	29.50	28	2.00	36.00	0.50	963	1734
650	1015	108	125	222	747.8	specified	749	28	51	914	13	437	786
28	42.25	4.38	5.19	9.25	31.62	by	31.50	28	2.12	38.00	0.50	1120	2019
700	1075	111	132	235	803.1	Customer	800	28	54	965	13	508	916
30	44.50	4.50	5.50	9.75	33.94		33.75	28	2.12	40.25	0.50	1232	2398
750	1130	114	140	248	862.1		857	28	54	1022	13	559	1088
32	47.00	4.62	5.81	10.25	36.12		36.00	28	2.38	42.50	0.50	1500	2815
800	1195	117	148	260	917.4		914	28	60	1080	13	680	1277
34	49.00	4.75	6.06	10.62	38.31		38.00	28	2.38	44.50	0.56	1580	3206
	1245	121	154	270	973.1		965	28	60	1130	14	717	1454
36	51.75	4.88	6.38	11.12	40.62		40.25	28	2.38	47.00	0.56	1750	3744
900	1315	124	162	283	1031.7		1022	28	60	1194	14	794	1698
38	50.00	6.00	6.12	10.00	40.25		41.50	28	2.38	45.75	0.56		
	1270	152	156	254	1022.4		1054	28	60	1162	14		
40	52.00	6.25	6.38	10.38	42.25		43.75	32	2.38	47.75	0.56		
1000	1320	159	162	264	1073.2		1111	32	60	1213	14		
42	55.25	6.62	6.75	11.00	44.38		46.00	28	2.62	50.50	0.56		
1100	1405	168	171	279	1127.3		1168	28	67	1283	14		
44	57.25	6.81	7.00	11.38	46.50		48.25	32	2.62	52.50	0.56		
	1455	173	178	289	1181.1		1226	32	67	1327	14		
46	59.50	7.06	7.31	11.81	48.62		50.25	32	2.62	54.75	0.56		
	1510	179	186	300	1234.9		1276	32	67	1391	14		
48	62.75	7.44	7.69	12.44	50.75		52.5	32	2.88	57.50	0.56		
1200	1595	189	195	316	1289.05		1283	32	73	1467	14		
50	65.75	7.75	8.00	12.94	52.88		54.50	28	3.12	60.00	0.56		
	1670	197	203	329	1343.2		1384	28	79	1524	14		
52	67.75	8.00	8.25	13.25	54.88		56.50	32	3.12	62.00	0.56		
1300	1720	203	210	337	1394		1435	32	79	1575	14		
54	70.00	8.25	8.56	13.75	57		58.75	32	3.12	64.25	0.56		
	1400	1780	210	217	349	1447.8	1492	32	79	1632	14		
56	73.00	8.56	8.88	14.25	59.12		60.75	32	3.38	66.75	0.62		
	1855	217	225	362	1501.65		1543	32	86	1695	16		
58	75.00	8.75	9.12	14.56	61.12		63.00	32	3.38	68.75	0.62		
	1905	222	232	370	1552.4		1600	32	86	1746	16		
60	78.50	9.19	9.56	15.31	63.38		65.25	28	3.62	71.75	0.69		
1500	1995	233	243	389	1609.9		1657	28	92	1822	17		

INCHES	POUNDS
MILLIMETRES	KILOGRAMS

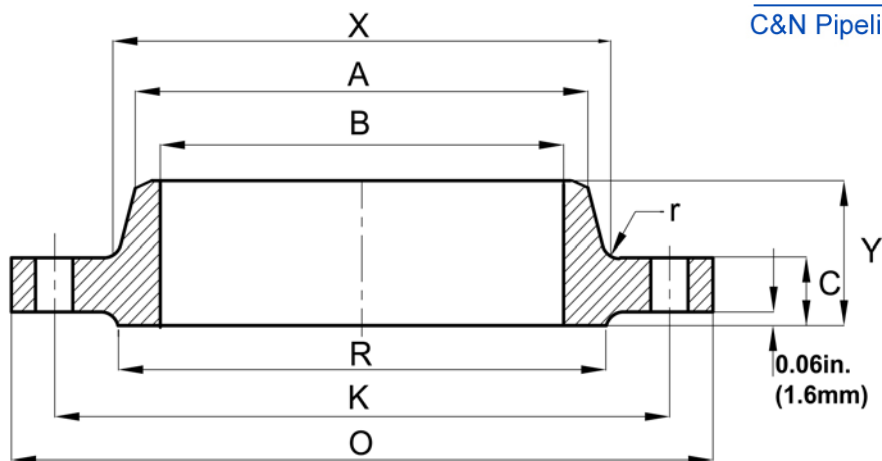


**LARGE DIAMETER
FORGED STEEL FLANGES
ANSI B16.47 SERIES A (MSS SP 44)
PIPE LINE FLANGES
CLASS 900 (PN160)
WELDING NECK & BLIND**

NPS	FLANGE OUTSIDE DIA.	FLANGE THICKNESS		LENGTH THRU HUB	HUB DIA. AT BASE	BORE DIA.	RAISED FACE DIA.	DRILLING			FILLET RADIUS (MIN)	APPROXIMATE WEIGHT	
		WELDING NECK	BLIND					NO. OF BOLT HOLES	DIA. OF BOLT HOLES	DIA. OF BOLT CIRCLE		WELDING NECK	BLIND
DN	O	C	E	Y	X	B	R				A		
26	42.75	5.50	6.31	11.25	30.50		29.50	20	2.88	37.50	0.44	1614	2423
650	1085	140	160	286	774.7	To	749	20	73	952	11	732	1099
28	46.00	5.62	6.75	11.75	32.75	be	31.50	20	3.12	40.25	0.50	1894	3012
700	1170	143	171	298	831.85	specified	800	20	79	1022	13	859	1366
30	48.50	5.88	7.18	12.25	35.00	by	33.75	20	3.12	42.75	0.50	2196	3564
750	1230	149	183	311	889	Customer	857	20	79	1086	13	996	1617
32	51.75	6.25	7.62	13.00	37.25		36.00	20	3.38	45.50	0.50	2628	4286
800	1315	159	194	330	946.15		914	20	86	1156	13	1192	1944
34	55.00	6.50	8.06	13.75	39.62		38.00	20	3.62	48.25	0.56	3100	5207
	1395	165	205	349	1006.35		965	20	92	1226	14	1407	2362
36	57.50	6.75	8.44	14.25	41.88		40.25	20	3.62	50.75	0.56	3535	6003
900	1460	171	214	362	1063.75		1022	20	92	1289	14	1603	2723
38	57.50	7.50	8.50	13.88	42.25		43.25	20	3.62	50.75	0.75		
	1460	190	216	352	1073.15		1099	20	92	1289	19		
40	59.50	7.75	8.81	14.31	44.38		45.75	24	3.62	52.75	0.81		
1000	1510	197	224	364	1127.25		1162	24	92	1340	21		
42	61.50	8.12	9.12	14.62	46.31		47.75	24	3.62	54.75	0.81		
1100	1560	206	232	371	1176.27		1213	24	92	1391	21		
44	64.88	8.44	9.56	15.38	48.62		50.00	24	3.88	57.62	0.88		
	1650	214	243	391	1234.95		1270	24	98	1464	22		
46	68.25	8.88	10.06	16.18	50.88		52.50	24	4.12	60.50	0.88		
	1735	225	256	411	1292.35		1334	24	105	1537	22		
48	70.25	9.19	10.38	16.50	52.88		54.50	24	4.12	62.50	0.94		
1200	1785	233	264	419	1343.15		1384	24	105	1588	24		

INCHES	POUNDS
MILLIMETRES	KILOGRAMS

**LARGE DIAMETER
FORGED STEEL FLANGES
ANSI B16.47 SERIES B
(API 605)
WELDING NECK
CLASS 150 AND 300**



NPS	FLANGE OUTSIDE DIA.	FLANGE THICKNESS	RAISED FACE DIA.	BORE	HUB DIA. AT POINT OF WELDING	HUB DIA. AT BASE	LENGTH THRU HUB	FILLET RADIUS (MIN)	DRILLING			APPROX. WEIGHT
									NO.OF BOLT HOLES	DIA.OF BOLT HOLES	DIA.OF BOLT CIRCLE	
DN	O	C	R	B	A	X	Y	r			K	

Class 150

26		30.94	1.62	28.00		26.06	26.94	3.50	0.38	36	0.88	29.31	139
	650	786	41.3	711.2	To	662.0	684.2	88.9	9.5	36	22.2	744.5	63
28		32.94	1.75	30.00	be	28.06	28.94	3.75	0.38	40	0.88	31.31	163
	700	837	44.4	762.0	specified	712.8	735.0	95.2	9.5	40	22.2	795.3	74
30		34.94	1.75	32.00	by	30.06	31.00	394	0.38	44	0.88	33.31	176
	750	887	44.4	812.8	Customer	763.6	787.4	100.0	9.5	44	22.2	846.1	80
32		37.06	1.81	34.00		32.06	33.06	4.25	0.38	48	0.88	35.44	203
	800	941	46.0	863.6		814.4	839.8	108.0	9.5	48	22.2	900.1	92
34		39.56	1.94	36.25		34.06	35.12	4.34	0.38	40	1.00	37.69	249
	850	1005	49.2	920.8		865.2	892.2	110.3	9.5	40	25.4	957.3	113
36		41.62	2.06	38.25		36.06	37.19	4.62	0.38	44	1.00	39.75	284
	900	1057	52.4	971.6		916.0	944.6	117.5	9.5	44	25.4	1009.6	129
42		48.25	2.31	44.50		42.12	43.38	5.25	0.44	48	1.12	46.12	406
	1100	1226	58.7	1130.3		1070.0	1101.7	133.4	11.1	48	28.6	1171.6	184
48		54.81	2.56	50.75		48.12	49.50	5.88	0.44	44	1.25	52.56	509
	1200	1392	65.1	1289.0		1222.4	1257.3	149.2	11.1	44	31.8	1335.1	231
54		61.00	2.81	56.75		54.12	55.62	6.38	0.44	56	1.25	58.75	632
	1400	1549	71.4	1441.4		1374.8	1412.9	161.9	11.1	56	31.8	1492.2	287
60		67.94	3.00	63.00		60.12	61.81	7.06	0.56	52	1.38	65.44	855
	1500	1726	76.2	1600.2		1527.2	1570.0	179.4	14.3	52	34.9	1662.1	388

Class 300

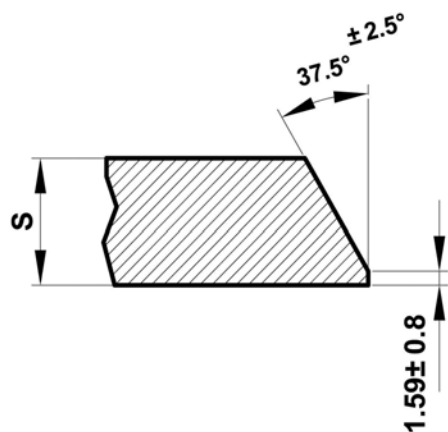
26		34.12	3.50	29.00		26.19	27.62	5.69	0.56	32	1.38	31.62	399
	650	867	88.9	736.6	To	665.2	701.7	144.5	14.3	32	34.9	803.3	181
28		36.25	3.50	31.00	be	28.19	29.75	5.88	0.56	36	1.38	33.75	447
	700	921	88.9	787.4	specified	716.0	755.6	149.2	14.3	36	34.9	857.2	203
30		39.00	3.69	33.25	by	30.25	32.00	6.22	0.56	36	1.50	36.25	590
	750	991	93.7	844.6	Customer	768.4	812.8	158.0	14.3	36	38.1	920.8	268
32		41.50	4.06	35.50		32.25	34.00	6.62	0.62	32	1.62	38.50	727
	800	1054	103.2	901.7		819.2	863.6	168.3	15.9	32	41.3	977.9	330
34		43.62	4.06	37.50		34.25	36.12	6.81	0.62	36	1.62	40.62	787
	850	1108	103.2	952.5		870.0	917.6	173.0	15.9	36	41.3	1031.9	357
36		46.12	4.06	39.75		36.25	38.00	7.12	0.62	32	1.75	42.88	893
	900	1172	103.2	1009.6		920.8	965.2	181.0	15.9	32	44.4	1089.0	405
42		52.50	4.69	46.00		42.31	44.00	8.06	0.62	36	1.88	49.00	1252
	1100	1334	119.1	1168.4		1074.7	1117.6	204.8	15.9	36	47.6	1244.6	568
48		59.50	5.06	52.25		48.31	50.31	8.81	0.62	40	2.00	55.75	1611
	1200	1511	128.6	1327.2		1227.1	1277.9	223.8	15.9	40	50.8	1416.0	731
54		65.88	5.38	58.25		54.31	56.50	9.44	0.62	48	2.00	62.12	1979
	1400	1673	136.5	1479.6		1379.5	1435.1	239.7	15.9	48	50.8	1578.0	898
60		73.94	5.94	65.00		60.31	62.94	10.69	0.69	40	2.38	69.44	2890
	1500	1878	150.8	1651.0		1531.9	1598.6	271.5	17.5	40	60.3	1763.7	1311

INCHES	POUNDS
MILLIMETRES	KILOGRAMS

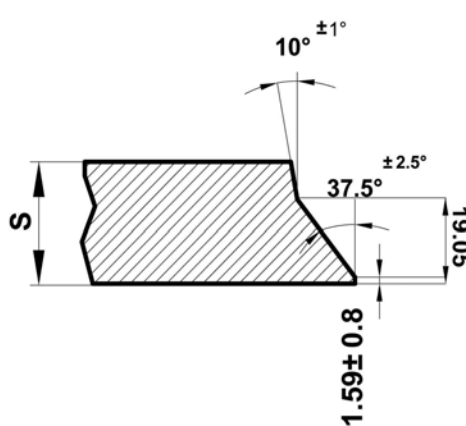
FORGED FLANGE TOLERANCES
Millimetres in brackets

DIMENSION		WELDING NECK & SOCKET WELDING	SLIP-ON & SOCKET WELDING	THREADED	LAP JOIN	BLIND
Outside Diameter	Flange O.D.24 or less(609.6)	±0.06(1.6)	±0.06(1.6)	±0.06(1.6)	±0.06(1.6)	±0.06(1.6)
	Flange O.D.over 24(609.6)	±0.12(3.2)	±0.12(3.2)	±0.12(3.2)	±0.12(3.2)	±0.12(3.2)
Bore	NPS 10(DN250)& less	±0.03(0.8)	+0.03 (0.8) -0	+0.03 (0.8) -0	+0.03 (0.8) -0	- -
	NPS 12-18(DN300-450)	±0.06(1.6)	+0.06(1.6) -0	+0.06(1.6) -0	+0.06(1.6) -0	- -
	NPS 20(DN 500) & over	+0.12(3.2) -0.06(1.6)	+0.06(1.6) -0	+0.06(1.6) -0	+0.06(1.6) -0	- -
Flange Thickness	NPS 18 (DN450) & l ess	+0.12(3.2) -0	+0.12(3.2) -0	+0.12(3.2) -0	+0.12(3.2) -0	+0.12(3.2) -0
	NPS 20(DN 500) & over	+0.19(4.8) -0	+0.19(4.8) -0	+0.19(4.8) -0	+0.19(4.8) -0	+0.19(4.8) -0
Raised Face Diameter	0.06 (1.6) raised face	±0.03(0.8)	±0.03(0.8)	±0.03(0.8)	-	±0.03(0.8)
	0.25 (6.4) raised face	±0.02(0.5)	±0.02(0.5)	±0.02(0.5)	-	±0.02(0.5)
Drilling	Bolt circle	±0.06(1.6)	±0.06(1.6)	±0.06(1.6)	±0.06(1.6)	±0.06(1.6)
	Bolt hole spacing	±0.03(0.8)	±0.03(0.8)	±0.03(0.8)	±0.03(0.8)	±0.03(0.8)
Eccentricity	NPS 2 1/2(DN65)&less	0.03(0.8)max.	0.03(0.8)max.	0.03(0.8)max.	0.03(0.8)max.	-
	NPS 3(DN80) & lager	0.06(1.6)max.	0.06(1.6)max.	0.06(1.6)max.	0.06(1.6)max.	-
Length Thru Hub	NPS 10(DN250)& less	±0.06(1.6)	±0.06(1.6)	±0.06(1.6)	±0.06(1.6)	-
	NPS 12(DN300)&over	±0.12(3.2)	+0.12(3.2)	+0.12(3.2)	+0.12(3.2)	-
Diameter of Hub at Base	NPS 12(DN300)&less	+0.09(2.4) -0.06(1.6)	+0.09(2.4) -0.06(1.6)	+0.09(2.4) -0.06(1.6)	+0.09(2.4) -0.06(1.6)	- -
	NPS 14(DN 350) & over	±0.12(3.2)	±0.12(3.2)	±0.12(3.2)	±0.12(3.2)	-
Diameter of Hub at Bevel	NPS 5(DN 125) & LESS	+0.09(2.4) -0.03(0.8)	- -	- -	- -	- -
	NPS 6(DN150)& over	+0.16(4.0) -0.03(0.8)	- -	- -	- -	- -

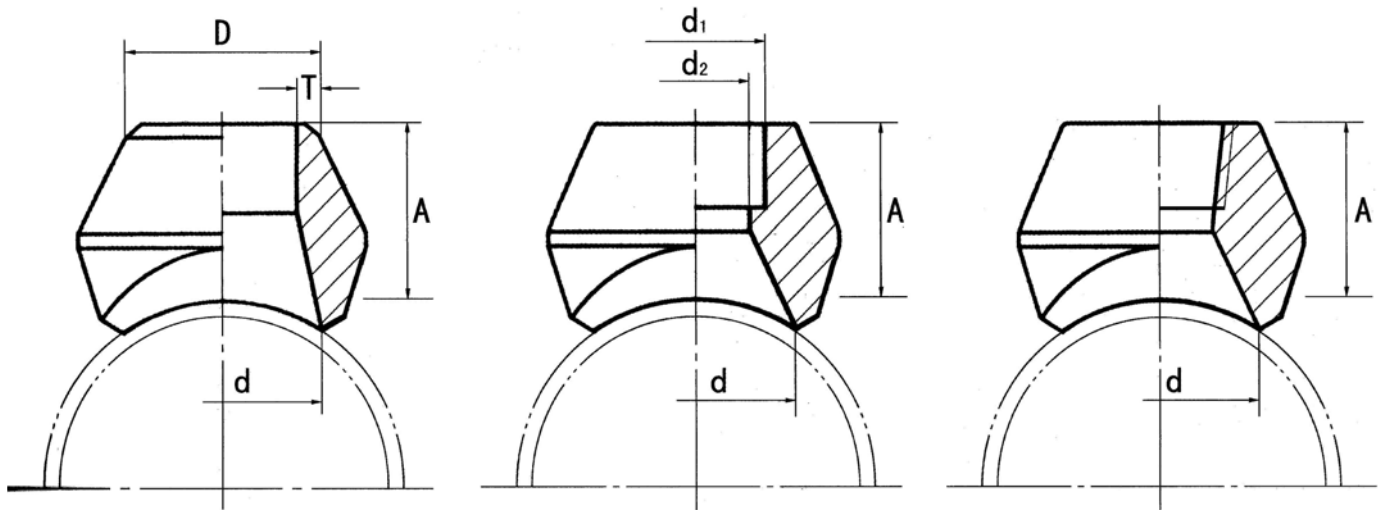
WELDING BEVELS



Plain Bevel



Compound Bevel



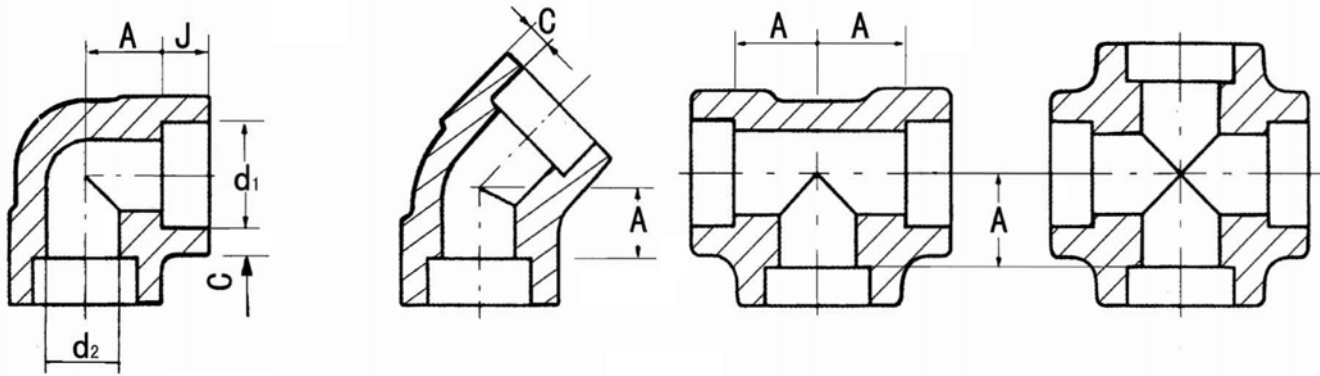
Butt-welding Outlet

Socket Welding Outlet

Threaded Outlet

Outlets (MSS SP-97)

Nominal Pipe Size DN				Height A					
Run Pipe		Branch Outlet		Butt-welding		Socket welding		Threaded	
A	B(in.)	A	B(in.)	STD.XS	sch160	3000#	6000#	3000#	6000#
8-900	1/4-36	6	1/8	16	-	20	-	19	-
10-900	3/8-36	8	1/4	16	-	20	-	19	-
15-900	1/2-36	10	3/8	19	-	23	-	21	-
20-900	3/4-36	15	1/2	19	19	26	24	25	32
25-900	1-36	20	3/4	22	22	29	25	27	37
32-900	1 1/4-36	25	1	27	27	35	29	33	40
40-900	1 1/2-36	32	1 1/4	32	32	35	30	33	41
50-900	2-36	40	1 1/2	33	33	37	32	35	43
65-900	2 1/2-36	50	2	38	38	40	37	38	52
80-900	3-36	65	2 1/2	41	41	41	-	46	-
100-900	4-36	80	3	44	44	46	-	51	-
125-900	5-36	100	4	51	51	49	-	57	-



90° ELBOW

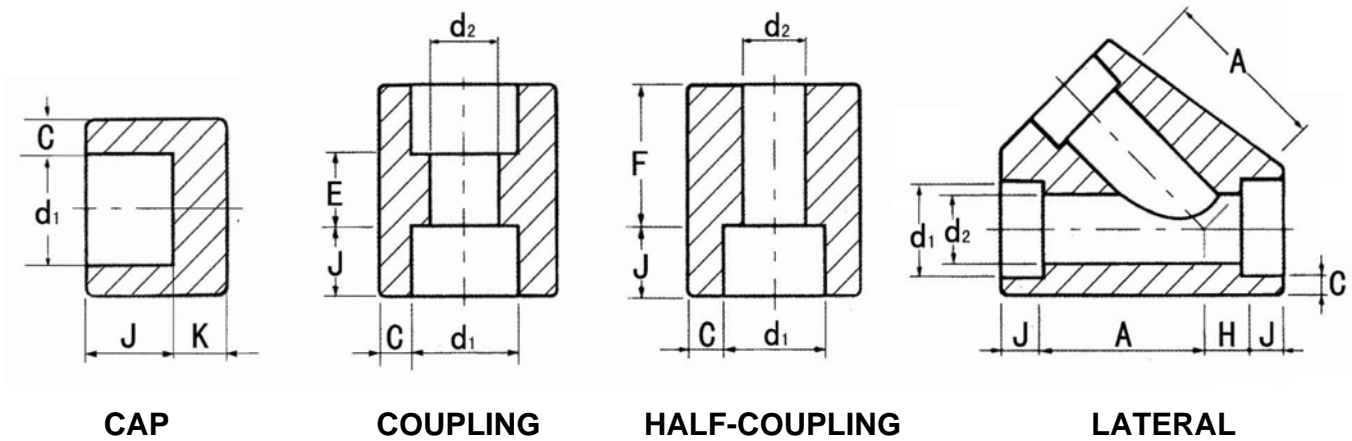
45° ELBOW

TEE

CROSS

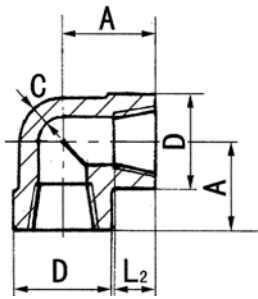
Socket Welding Fittings (ASME B16.11)

Nominal Pipe Size DN		Depth of Socket J(min)	Wall Thickness			Center to Bottom of Socket					
						A					
			C (min)			90° ELBOWS TEES COSSES			45° ELBOWS		
A	B(in)		3000# sch80	6000# sch160	9000# XXS	3000# sch80	6000# sch160	9000# XXS	3000# sch80	6000# sch160	9000# XXS
6	1/8	10	3.2	4.0	-	11	11	-	8	8	-
8	1/4	10	3.8	4.6	-	11	14	-	8	8	-
10	3/8	10	4.0	5.1	-	14	16	-	8	11	-
15	1/2	10	4.5	5.6	9.4	16	19	25	11	13	16
20	3/4	13	5.0	7.0	9.8	19	22	29	13	14	19
25	1	13	5.6	7.9	11.4	22	27	32	14	18	21
32	1 1/4	13	6.3	7.9	12.2	27	32	35	18	21	22
40	1 1/2	13	6.3	8.9	12.7	32	38	38	21	25	25
50	2	16	7.0	11	13.9	38	41	54	25	29	29
65	2 1/2	16	8.9	12.5	-	41	57	-	29	32	-
80	3	16	10.0	13.8	-	57	64	-	32	35	-
100	4	19	10.7	-	-	67	-	-	41	-	-

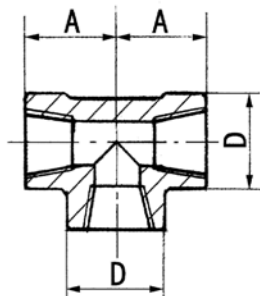


Socket Welding Fitting (ASME B16.11)

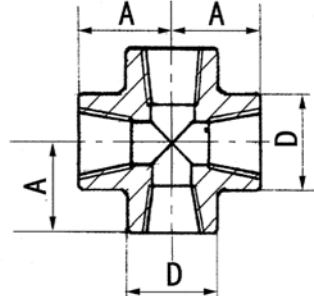
Nominal Pipe Size		Depth of Socket	Wall Thickness			Endwall Thickness			Laying Length		Center to Bottom of Socket			
			C (min)			K (min)			Couplings	Half-Couplings	Lateral		H	
DN		J(min)	3000# SCH80	6000# SCH160	9000# XXS	3000# SCH80	6000# SCH160	9000# XXS	E	F	3000# SCH80	6000# SCH160	3000# SCH80	6000# SCH160
6	1/8	10	3.2	4.0	-	5.0	6.5	-	6	16	-	-	-	-
8	1/4	10	3.8	4.6	-	5.0	6.5	-	6	16	32	-	8	-
10	3/8	10	4.0	5.1	-	5.0	6.5	-	6	18	37	-	8	-
15	1/2	10	4.5	5.6	9.4	6.5	8.0	11.0	10	22	41	51	11	13
20	3/4	13	5.0	7.0	9.8	7.0	9.0	13.0	10	24	51	60	13	14
25	1	13	5.6	7.9	11.4	10.0	11.0	14.0	13	29	60	71	14	18
32	1 1/4	13	6.3	7.9	12.2	10.0	12.0	14.0	13	30	71	81	18	21
40	1 1/2	13	6.3	8.9	12.7	11.0	13.5	16.0	13	32	81	98	21	25
50	2	16	7.0	11.0	13.9	13.0	16.5	19.0	19	41	98	120	25	29
65	2 1/2	16	8.9	12.5	-	16.0	19.5	-	19	43	-	-	-	-
80	3	16	10.0	13.8	-	19.0	23.0	-	19	45	-	-	-	-
100	4	19	10.7	-	-	22.0	28.5	-	19	48	-	-	-	-



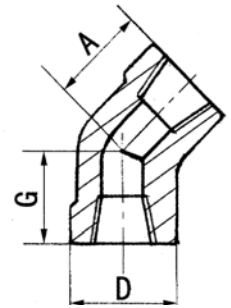
90° ELBOW



TEE



CROSS

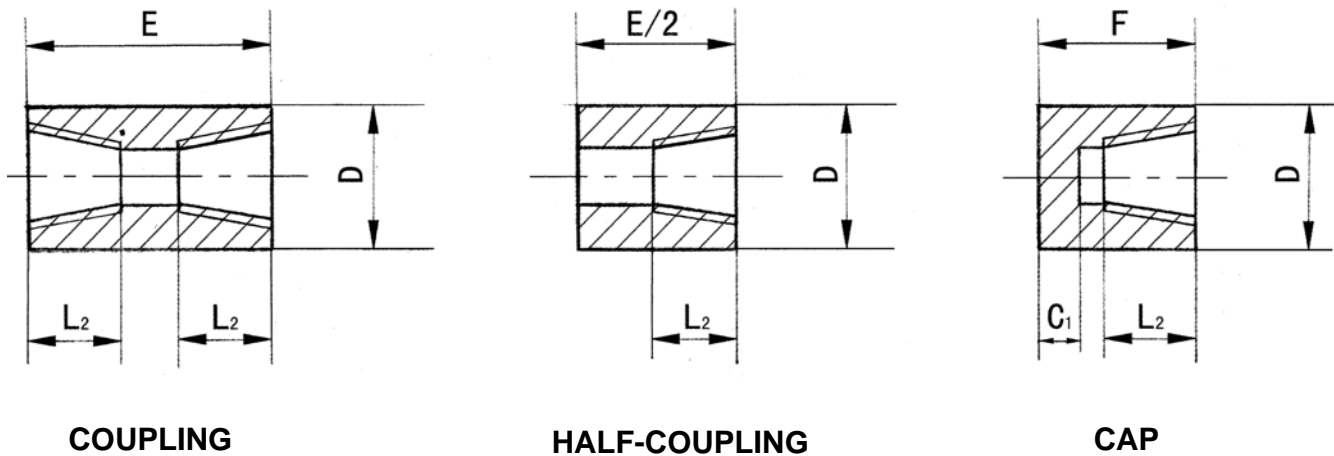


45° ELBOW

Threaded Fittings

90°Elbows Tees Crosses 45°Elbows (ASME B16.11)

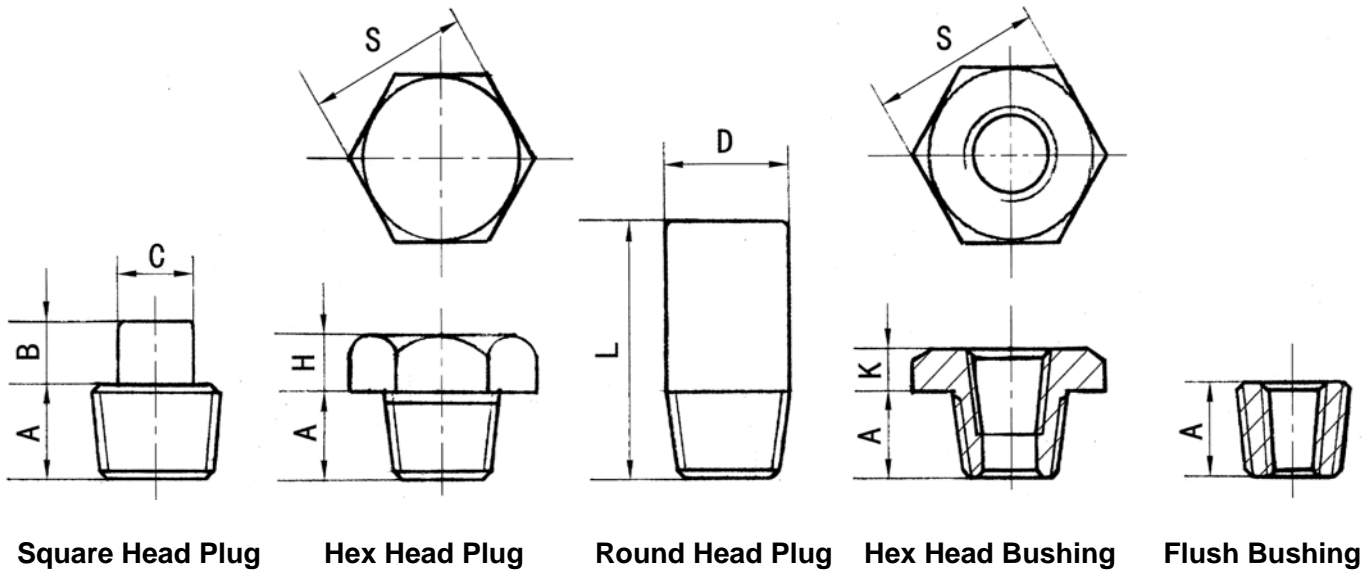
NPS IN	A Center to End						Outside Diameter D			Wall Thickness C(min)			Length of Thread L ₂ (min)
	90°Elbows Tees Crosses			45°Elbow			D			C(min)			
	2000#	3000#	6000#	2000#	3000#	6000#	2000#	3000#	6000#	2000#	3000#	6000#	
1/8	21	21	25	17	17	19	22	22	25	3.0	3.0	6.5	6.5
1/4	21	25	29	17	19	22	22	25	33	3.0	3.5	6.5	10.0
3/8	25	29	33	19	22	25	25	33	38	3.0	3.5	7.0	10.5
1/2	29	33	38	22	25	29	33	38	46	3.0	4.0	8.0	13.5
3/4	33	38	44	25	29	33	38	46	56	3.0	4.5	8.5	14.0
1	38	44	51	29	33	35	46	56	62	3.5	5.0	10.0	17.5
1 1/4	44	51	60	33	35	43	56	62	75	4.0	5.5	10.5	18.0
1 1/2	51	60	64	35	43	44	62	75	84	4.0	5.5	11.0	18.5
2	60	64	83	43	45	52	75	84	102	4.5	7.0	12.0	19.0
2 1/2	76	83	95	52	52	64	92	102	121	5.5	7.5	15.5	29.0
3	86	95	106	64	64	79	110	121	146	6.0	9.0	16.5	30.5
4	106	114	114	79	79	79	146	152	152	6.5	11.0	18.5	33.0



Threaded Fittings

Coupling Half-Coupling Cap (ASME B16.11)

NPS IN	E	F		D		C ₁ (min)		L ₂ (min)
	Coupling	Cap						
	3000#,6000#	3000#	6000#	3000#	6000#	3000#	6000#	
1/8	32	19		16	22	5.0		6.5
1/4	35	25	27	19	25	5.0	6.5	10.0
3/8	38	25	27	22	32	5.0	6.5	10.5
1/2	48	32	33	29	38	6.5	8.0	13.5
3/4	51	37	38	35	44	6.5	8.0	14.0
1	60	41	43	44	57	9.5	11.0	17.5
1 1/4	67	44	46	57	64	9.5	11.0	18.0
1 1/2	79	44	48	64	76	11.0	12.5	18.5
2	86	48	51	76	92	12.5	16.0	19.0
2 1/2	92	60	64	92	108	16.0	19.0	29.0
3	108	65	68	108	127	19.0	22.0	30.5
4	121	68	75	140	159	22.0	28.5	33.0



Square Head Plug

Hex Head Plug

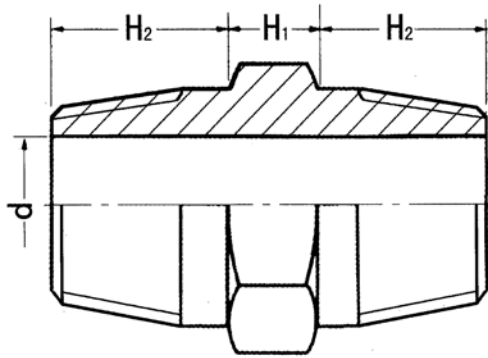
Round Head Plug

Hex Head Bushing

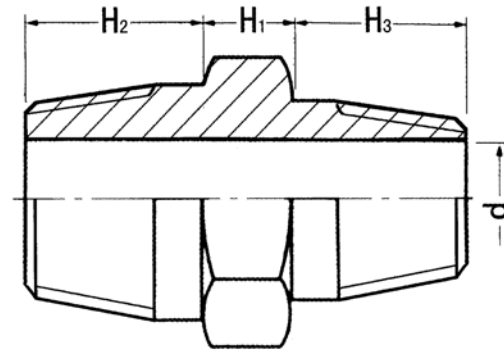
Flush Bushing

Plug Bushing (ASME B16.11)

NPS IN	Length of	Square Head Plugs		Round Head Plugs		Hex Head Plugs		
	Thread	Height of Square	Width of Flats	Diameter of Round Head	End to End	Width of Flats	Hex Height	
	A	B	C	D	L(min)	S	K	H
1/8	9.5	6	7.0	10	35	11.0		6
1/4	11.0	6	9.5	13	41	16.0	3	6
3/8	12.5	8	11.0	17	41	17.5	4	8
1/2	14.5	10	14.5	21	44	22.0	5	8
3/4	16.0	11	16.0	27	44	27.0	6	10
1	19.0	13	20.5	33	51	35.0	6	10
1 1/4	20.5	14	24.0	43	51	44.5	7	14
1 1/2	20.5	16	28.5	48	51	51.0	8	16
2	22.0	17	33.5	60	64	63.5	9	17
2 1/2	27.0	19	38.0	73	70	76.0	10	19
3	28.5	21	43.0	89	70	89.0	10	21
4	32.0	25	63.5	114	76	117.5	13	25



Straight Nipple

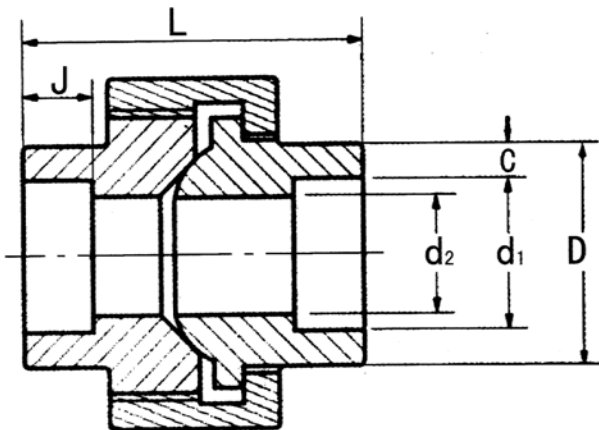


Reducing Outlet Nipple

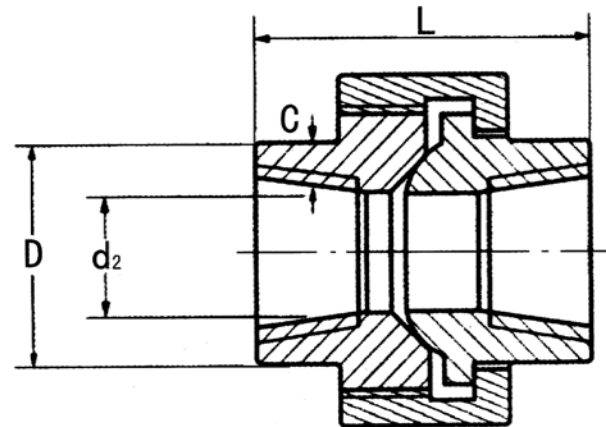
Nipples

Nominal Pipe Size DN		Size			
A	B (in)	d	H1	H2	H3
6	1/8	4.1	6	10	-
8	1/4	7.1	8	14	-
10	3/8	8.9	8	14	-
10X8	3/8X1/4	7.1	8	14	14
15	1/2	11.9	9	19	-
15X10	1/2X3/8	8.9	9	19	14
15X8	1/2X1/4	7.1	9	19	14
20	3/4	16.0	10	19	-
20X15	3/4X1/2	11.9	10	19	19
20X10	3/4X3/8	8.9	10	19	14
20X8	3/4X1/4	7.1	10	19	14
25	1	20.1	11	24	-
25X20	1X3/4	16.0	11	24	19
25X15	1X1/2	11.9	11	24	19
25X10	1X3/8	8.9	11	24	14
32	1 1/4	27.9	12	24	-
32X25	1 1/4X1	20.1	12	24	24
32X20	1 1/4X3/4	16.0	12	24	19

Nominal Pipe Size DN		Size			
A	B (in)	d	H1	H2	H3
32X15	1 1/4X1/2	11.9	12	24	19
40	1 1/2	32.0	14	25	-
40X32	1 1/2X1/1/4	27.9	14	25	24
40X25	1 1/2X1	20.1	14	25	24
40X20	1 1/2 X 3/4	16.0	14	25	19
50	2	39.9	16	26	-
50X40	2X1 1/2	32.0	16	26	25
50X32	2X1 1/4	27.9	16	26	24
50X25	2X1	20.1	16	26	24
65	2 1/2	55.1	18	38	-
65X50	2 1/2X2	39.9	18	38	26
65X40	2 1/2X1 1/2	32.0	18	38	25
65X32	2 1/2X1 1/4	27.9	18	38	24
80	3	65.0	20	40	-
80X65	3X2 1/2	55.1	20	40	38
80X50	3X2	39.9	20	40	26
80X40	3X1 1/2	32.0	20	40	25



Socket Union



Threaded Union

Socket Unions & Threaded Unions (MSS SP-83)

Nominal Pipe Size DN		Outside Diameter		Wall		Socket Bore d ₁	Water Way d ₂	Depth of Socket J (min)	Length Assem Normal L
		Socket	Threaded	Socket	Socket&Threaded				
A	B (in)	Socket	Threaded	Socket	Socket&Threaded	Socket	Socket&Threaded	Socket	Socket&Threaded
6	1/8	21.8	14.7	3.2	2.5	10.65	6.43	10	41.4
8	1/4	21.8	19.0	3.3	3.1	14.1	9.45	10	41.4
10	3/8	25.9	22.9	3.5	3.2	17.55	13.51	10	46.0
15	1/2	31.2	27.7	4.1	3.8	21.7	17.07	10	49.0
20	3/4	37.1	33.5	4.3	4.0	27.05	21.39	13	56.9
25	1	45.5	41.4	5.0	4.6	33.8	27.74	13	62.0
32	1 1/4	54.9	50.5	5.3	4.9	42.55	35.36	13	71.1
40	1 1/2	61.5	57.2	5.6	5.1	48.65	41.2	13	76.5
50	2	75.2	70.1	6.1	5.6	61.10	52.12	16	86.1
65	2 1/2	91.7	85.3	7.7	7.1	73.8	64.31	16	102.4
80	3	109.2	102.4	8.4	7.7	89.8	77.27	16	109.0

CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES OF MATERIAL FOR FITTINGS AND FLANGES

TYPE OF THE STEEL	ASTM GRADE	Chemical Composition(%)										Mechanical Properties			
		C max	Mn	P max	S max	Si	Cr	Mo max	Ni max	Cu max	Nb max	tensile strength Mpa(min)	yield strength Mpa(min)	A%min.(2"/4D) elongation	
														long.(min)	trav.(min)
CARBON STEEL	A234 WPB	0.3	0.29-1.06	0.05	0.058	0.1min	0.4max	0.15	0.4	0.4	0.08	415	240	30	20
	A234WPC	0.35	0.29-1.06	0.05	0.058	0.1min	0.4max	0.15	0.4	0.4	0.08	485	275	30	20
LOW ALLOY STEEL	A860WPHY42	0.2	1-1.45	0.03	0.01	0.15-0.4	0.3max	0.25	0.5	0.35	0.04	415	290	32	
	A860WPHY46	0.2	1-1.45	0.03	0.01	0.15-0.4	0.3max	0.25	0.5	0.35	0.04	435	315	32	
	A860WPHY52	0.2	1-1.45	0.03	0.01	0.15-0.4	0.3max	0.25	0.5	0.35	0.04	455	360	32	
	A860WPHY60	0.2	1-1.45	0.03	0.01	0.15-0.4	0.3max	0.25	0.5	0.35	0.04	515	415	28	
	A860WPHY65	0.2	1-1.45	0.03	0.01	0.15-0.4	0.3max	0.25	0.5	0.35	0.04	530	450	28	
	A860WPHY70	0.2	1-1.45	0.03	0.01	0.15-0.4	0.3max	0.25	0.5	0.35	0.04	550	485	28	
STAINLESS STEEL	A403 WP316	0.08	2max	0.045	0.03	1max	16-18	2-3	10-14	-	-	515	205	35	25
	A403 WP316L	0.03	2max	0.045	0.03	1max	16-18	2-3	10-14	-	-	485	170	35	25
	A403WP304	0.08	2max	0.045	0.03	1max	18-20		8-11			515	205	35	25
	A403WP304L	0.03	2max	0.045	0.03	1max	18-20		8-12			485	170	35	25
	A403WP321	0.08	2max	0.045	0.03	1max	17-19		9-12			515	205	35	25
	A403WP321H	0.04-0.1	2max	0.045	0.03	1max	17-19		9-12			515	205	35	25

CARBON STEEL FORGINGS	A105	0.35	0.6-1.05	0.035	0.04	0.1-0.35	0.3max	0.12	0.4	0.4	0.02	485	250	30	30
ALLOY STEEL FORGINGS	A694F42	0.265	1.44max	0.03	0.03	0.1-0.4	-	-	-	-	-	415	290	20	-
	A694F46	0.265	1.44max	0.03	0.03	0.1-0.4	-	-	-	-	-	415	315	20	-
	A694F48	0.265	1.44max	0.03	0.03	0.1-0.4	-	-	-	-	-	425	330	20	-
	A694F50	0.265	1.44max	0.03	0.03	0.1-0.4	-	-	-	-	-	440	345	20	-
	A694F52	0.265	1.44max	0.03	0.03	0.1-0.4	-	-	-	-	-	455	360	20	-
	A694F56	0.265	1.44max	0.03	0.03	0.1-0.4	-	-	-	-	-	470	385	20	-
	A694F60	0.265	1.44max	0.03	0.03	0.1-0.4	-	-	-	-	-	515	415	20	-
	A694F65	0.265	1.44max	0.03	0.03	0.1-0.4	-	-	-	-	-	530	450	20	-
	A694F70	0.265	1.44max	0.03	0.03	0.1-0.4	-	-	-	-	-	565	485	18	-
STAINLESS STEEL FORGING	A182 F316	0.08	2max	0.04	0.03	1max	16-18	2-3	10-14	-	-	515	205	30	30
	A182 F316L	0.035	2max	0.04	0.03	1max	16-18	2-3	10-15	-	-	485	170	30	30
	A182F304	0.08	2max	0.04	0.03	1max	18-20		8-11			515	205	30	30
	A182F304L	0.035	2max	0.04	0.03	1max	18-20		8-13			485	170	30	30
	A182F321	0.08	2max	0.04	0.03	1max	17min		9-12			515	205	30	30
	A182F321H	0.04-0.1	2max	0.04	0.03	1max	17min		9-12			515	205	30	30



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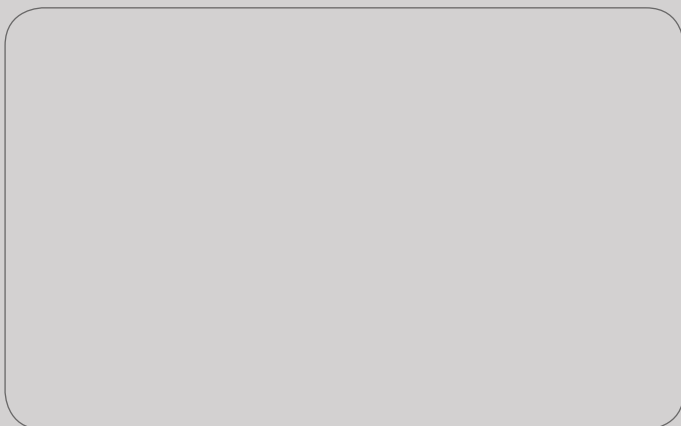
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