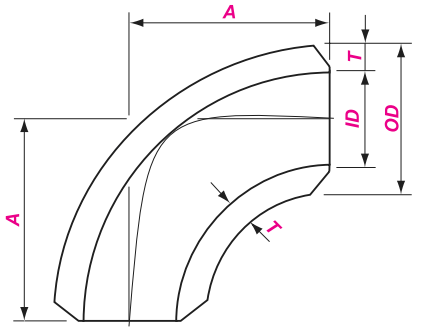
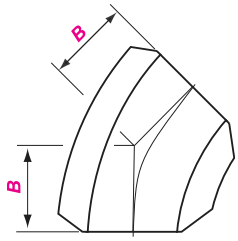
ZIZI ENGINEERING CO LTD

BUTT-WELDING ELBOWS



BW 90 LR/SR Elbow



BW 45 LR Elbow

GB/T 12459、GB/T 13401、ASME B16.9

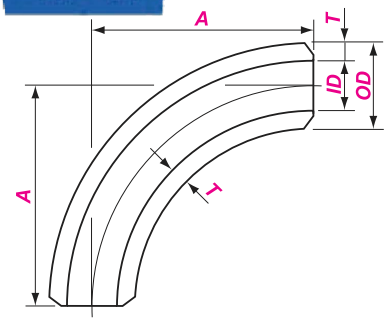
Nominal Size		Outside Diameter at Bevel	Center to End		
			90 Elbows		45° Elbows
DN	NPS	*OD*	*A*		*B*
			LR	SR	LR
15	1/2	21.3	38	-	16
20	3/4	26.7	38	-	19
25	1	33.4	38	25	22
32	1 1/4	42.2	48	32	25
40	1 1/2	48.3	57	38	29
50	2	60.3	76	51	35
65	2 1/2	73.0	95	64	44
80	3	88.9	114	76	51
90	3 1/2	101.6	133	89	57
100	4	114.3	152	102	64
125	5	141.3	190	127	79
150	6	168.3	229	152	95
200	8	219.1	305	203	127
250	10	273.0	381	254	159
300	12	323.8	457	305	190
350	14	355.6	533	356	222
400	16	406.4	610	406	254
450	18	457.0	686	457	286
500	20	508.0	762	508	318
550	22	559.0	838	559	343
600	24	610.0	914	610	381
650	26	660.0	991	660	406
700	28	711.0	1067	711	438
750	30	762.0	1143	762	470
800	32	813.0	1219	813	502
850	34	864.0	1295	864	533
900	36	914.0	1372	914	565
950	38	965.0	1448	965	600
1000	40	1016.0	1524	1016	632
1050	42	1067.0	1600	1067	660
1100	44	1118.0	1676	1118	695
1150	46	1168.0	1753	1168	727
1200	48	1219.0	1829	1219	759
1300	*52*	*1321.0*	*1981*	*1321*	*821*
1400	*56*	*1422.0*	*2134*	*1422*	*883*
1500	*60*	*1524.0*	*2286*	*1524*	*947*
1600	*64*	*1626.0*	*2438*	*1626*	*1010*
1700	*68*	*1727.0*	*2591*	*1727*	*1073*
1800	*72*	*1829.0*	*2743*	*1829*	*1137*
1900	*76*	*1930.0*	*2896*	*1930*	*1199*
2000	*80*	*2032.0*	*3048*	*2032*	*1263*

Notes:

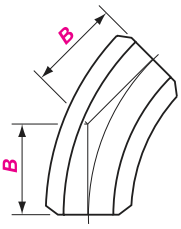
1) Besides these, GB/T 10752、SH 3408、SH 3409、HG/T 21635、HG/T 21631、SY/T 0510、DL/T 695、EN 10253 etc.are also applied.
2) The elbow with NPS over 80 shall be made subject to the sizes agreed by purchaser and manufacturer.

ZIZI ENGINEERING CO LTD

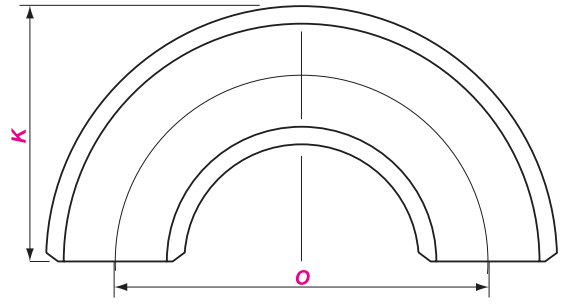
BUTT-WELDING ELBOWS



BW 90° 3D Elbow



BW 45° 3D Elbow

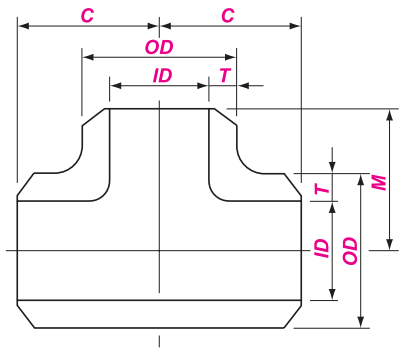


BW 180° LR/SR Return

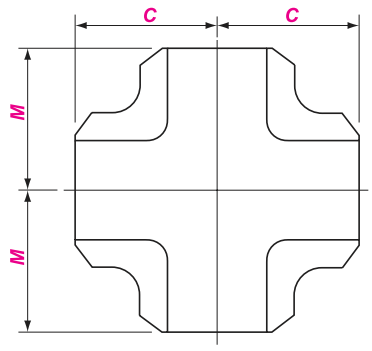
GB/T 12459、GB/T 13401、ASME B16.9

Nominal Size		Outside Diameter at Bevel	Center to End		Center to Center		Back to Face	
			90° Elbows	45° Elbows	180° Returns			
DN	NPS	OD	A	B	O		K	
			3D	3D	LR	SR	LR	SR
15	1/2	21.3	-	-	76	-	48	-
20	3/4	26.7	57	24	76	-	51	-
25	1	33.4	76	31	76	51	56	41
32	1¼	42.2	95	39	95	64	70	52
40	1½	48.3	114	47	114	76	83	62
50	2	60.3	152	63	152	102	106	81
65	2½	73.0	190	79	190	127	132	100
80	3	88.9	229	95	229	152	159	121
90	3½	101.6	267	111	267	178	184	140
100	4	114.3	305	127	305	203	210	159
125	5	141.3	381	157	381	254	262	197
150	6	168.3	457	189	457	305	313	237
200	8	219.1	610	252	610	406	414	313
250	10	273.0	762	316	762	508	518	391
300	12	323.8	914	378	914	609	619	467
350	14	355.6	1067	441	1067	711	711	533
400	16	406.4	1219	505	1219	813	813	610
450	18	457.0	1372	568	1372	914	914	686
500	20	508.0	1524	632	1524	1016	1016	762
550	22	559.0	1676	694	1676	1118	1118	838
600	24	610.0	1829	757	1829	1219	1219	914
650	26	660.0	1981	821	-	-	-	-
700	28	711.0	2134	883	-	-	-	-
750	30	762.0	2286	964	-	-	-	-
800	32	813.0	2438	1010	-	-	-	-
850	34	864.0	2591	1073	-	-	-	-
900	36	914.0	2743	1135	-	-	-	-
950	38	965.0	2896	1200	-	-	-	-
1000	40	1016.0	3048	1264	-	-	-	-
1050	42	1067.0	3200	1326	-	-	-	-
1100	44	1118.0	3353	1389	-	-	-	-
1150	46	1168.0	3505	1453	-	-	-	-
1200	48	1219.0	3658	1516	-	-	-	-

BUTT-WELDING TEES AND CROSSES



BW Straight Tee

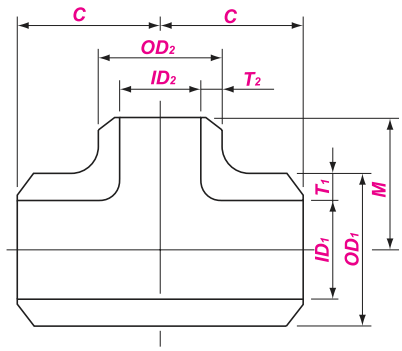


BW Straight Cross

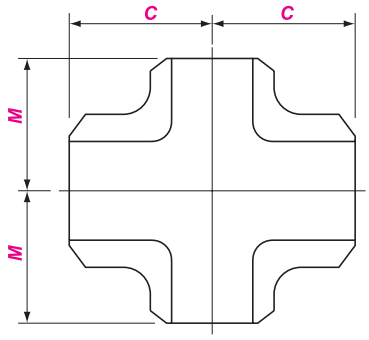
GB/T 12459、GB/T 13401、ASME B16.9

Nominal Size		Outside Diameter at Bevel	Center to End	
DN	NPS	$OD_1 \times OD_2$	C	M
15	1/2	21.3	25	25
15 × 10	1/2 × 3/8	21.3 × 17.1		25
15 × 8	1/2 × 1/4	21.3 × 13.7		25
20	3/4	26.7	29	29
20 × 15	3/4 × 1/2	26.7 × 21.3		29
20 × 10	3/4 × 3/8	26.7 × 17.1		29
25	1	33.4	38	38
25 × 20	1 × 3/4	33.4 × 26.7		38
25 × 15	1 × 1/2	33.4 × 21.3		38
32	1¼	42.2	48	48
32 × 25	1¼ × 1	42.2 × 33.4		48
32 × 20	1¼ × 3/4	42.2 × 26.7		48
32 × 15	1¼ × 1/2	42.2 × 21.3		48
40	1½	48.3	57	57
40 × 32	1½ × 1¼	48.3 × 42.2		57
40 × 25	1½ × 1	48.3 × 33.4		57
40 × 20	1½ × 3/4	48.3 × 26.7		57
40 × 15	1½ × 1/2	48.3 × 21.3		57
50	2	60.3	64	64
50 × 40	2 × 1½	60.3 × 48.3		60
50 × 32	2 × 1¼	60.3 × 42.2		57
50 × 25	2 × 1	60.3 × 33.4		51
50 × 20	2 × 3/4	60.3 × 26.7		44
65	2½	73.0	76	76
65 × 50	2½ × 2	73.0 × 60.3		70
65 × 40	2½ × 1½	73.0 × 48.3		67
65 × 32	2½ × 1¼	73.0 × 42.2		64
65 × 25	2½ × 1	73.0 × 33.4		57
80	3	88.9	86	86
80 × 65	3 × 2½	88.9 × 73.0		83
80 × 50	3 × 2	88.9 × 60.3		76
80 × 40	3 × 1½	88.9 × 48.3		73
80 × 32	3 × 1¼	88.9 × 42.2		70
90	3½	101.6	95	95
90 × 80	3½ × 3	101.6 × 88.9		92
90 × 65	3½ × 2½	101.6 × 73.0		89
90 × 50	3½ × 2	101.6 × 60.3		83
90 × 40	3½ × 1½	101.6 × 48.3		79
100	4	114.3	105	105
100 × 90	4 × 3½	114.3 × 101.6		102
100 × 80	4 × 3	114.3 × 88.9		98
100 × 65	4 × 2½	114.3 × 73.0		95
100 × 50	4 × 2	114.3 × 60.3		89
100 × 40	4 × 1½	114.3 × 48.3		86

BUTT-WELDING TEES AND CROSSES



BW Reducing Tee



BW Reducing Cross

GB/T 12459、GB/T 13401、ASME B16.9

Nominal Size		Outside Diameter at Bevel	Center to End	
DN	NPS	$OD_1 \times OD_2$	C	M
125	5	141.3	124	124
125 × 100	5 × 4	141.3 × 114.3		117
125 × 90	5 × 3½	141.3 × 101.6		114
125 × 80	5 × 3	141.3 × 88.9		111
125 × 65	5 × 2½	141.3 × 73.0		108
125 × 50	5 × 2	141.3 × 60.3		105
150	6	168.3	143	143
150 × 125	6 × 5	168.3 × 141.3		137
150 × 100	6 × 4	168.3 × 114.3		130
150 × 90	6 × 3½	168.3 × 101.6		127
150 × 80	6 × 3	168.3 × 88.9		124
150 × 65	6 × 2½	168.3 × 73.0		121
200	8	219.1	178	178
200 × 150	8 × 6	219.1 × 168.3		168
200 × 125	8 × 5	219.1 × 141.3		162
200 × 100	8 × 4	219.1 × 114.3		156
200 × 90	8 × 3½	219.1 × 101.6		152
250	10	273.0	216	216
250 × 200	10 × 8	273.0 × 219.1		203
250 × 150	10 × 6	273.0 × 168.3		194
250 × 125	10 × 5	273.0 × 141.3		191
250 × 100	10 × 4	273.0 × 114.3		184
300	12	323.8	254	254
300 × 250	12 × 10	323.8 × 273.0		241
300 × 200	12 × 8	323.8 × 219.1		229
300 × 150	12 × 6	323.8 × 168.3		219
300 × 125	12 × 5	323.8 × 141.3		216
350	14	355.6	279	279
350 × 300	14 × 12	355.6 × 323.8		270
350 × 250	14 × 10	355.6 × 273.0		257
350 × 200	14 × 8	355.6 × 219.1		248
350 × 150	14 × 6	355.6 × 168.3		238
400	16	406.4	305	305
400 × 350	16 × 14	406.4 × 355.6		305
400 × 300	16 × 12	406.4 × 323.8		295
400 × 250	16 × 10	406.4 × 273.0		283
400 × 200	16 × 8	406.4 × 219.1		273
400 × 150	16 × 6	406.4 × 168.3		264

BUTT-WELDING TEES AND CROSSES

BW TEES & CROSSES

Nominal Size		Outside Diameter at Bevel	Center to End	
DN	NPS	$OD_1 \times OD_2$	C	M
450	18	457.0	343	343
450 × 400	18 × 16	457.0 × 406.4		330
450 × 350	18 × 14	457.0 × 355.6		330
450 × 300	18 × 12	457.0 × 323.8		321
450 × 250	18 × 10	457.0 × 273.0		308
450 × 200	18 × 8	457.0 × 219.1		298
500	20	508.0	381	381
500 × 450	20 × 18	508.0 × 457.0		368
500 × 400	20 × 16	508.0 × 406.4		356
500 × 350	20 × 14	508.0 × 355.6		356
500 × 300	20 × 12	508.0 × 323.8		346
500 × 250	20 × 10	508.0 × 273.0		333
500 × 200	20 × 8	508.0 × 219.1		324
550	22	559.0	419	419
550 × 500	22 × 20	559.0 × 508.0		406
550 × 450	22 × 18	559.0 × 457.0		394
550 × 400	22 × 16	559.0 × 406.4		381
550 × 350	22 × 14	559.0 × 355.6		381
550 × 300	22 × 12	559.0 × 323.8		371
550 × 250	22 × 10	559.0 × 273.0		359
600	24	610.0	432	432
600 × 550	24 × 22	610.0 × 559.0		432
600 × 500	24 × 20	610.0 × 508.0		432
600 × 450	24 × 18	610.0 × 457.0		419
600 × 400	24 × 16	610.0 × 406.4		406
600 × 350	24 × 14	610.0 × 355.6		406
600 × 300	24 × 12	610.0 × 323.8		397
600 × 250	24 × 10	610.0 × 273.0		384
650	26	660.0	495	495
650 × 600	26 × 24	660.0 × 610.0		483
650 × 550	26 × 22	660.0 × 559.0		470
650 × 500	26 × 20	660.0 × 508.0		457
650 × 450	26 × 18	660.0 × 457.0		444
650 × 400	26 × 16	660.0 × 406.4		432
650 × 350	26 × 14	660.0 × 355.6		432
650 × 300	26 × 12	660.0 × 323.8		422
700	28	711.0	521	521
700 × 650	28 × 26	711.0 × 660.0		521
700 × 600	28 × 24	711.0 × 610.0		508
700 × 550	28 × 22	711.0 × 559.0		495
700 × 500	28 × 20	711.0 × 508.0		483
700 × 450	28 × 18	711.0 × 457.0		470
700 × 400	28 × 16	711.0 × 406.4		457
700 × 350	28 × 14	711.0 × 355.6		457
700 × 300	28 × 12	711.0 × 323.8		448
750	30	762.0	559	559
750 × 700	30 × 28	762.0 × 711.0		546
750 × 650	30 × 26	762.0 × 660.0		546
750 × 600	30 × 24	762.0 × 610.0		533
750 × 550	30 × 22	762.0 × 559.0		521
750 × 500	30 × 20	762.0 × 508.0		508
750 × 450	30 × 18	762.0 × 457.0		495
750 × 400	30 × 16	762.0 × 406.4		483
750 × 350	30 × 14	762.0 × 355.6		483
750 × 300	30 × 12	762.0 × 323.8		473
750 × 250	30 × 10	762.0 × 273.0		460

BUTT-WELDING TEES AND CROSSES

BW TEES & CROSSES

Nominal Size		Outside Diameter at Bevel	Center to End	
DN	NPS	$OD_1 \times OD_2$	C	M
800	32	813.0	597	597
800 × 750	32 × 30	813.0 × 762.0		584
800 × 700	32 × 28	813.0 × 711.0		572
800 × 650	32 × 26	813.0 × 660.0		572
800 × 600	32 × 24	813.0 × 610.0		559
800 × 550	32 × 22	813.0 × 559.0		546
800 × 500	32 × 20	813.0 × 508.0		533
800 × 450	32 × 18	813.0 × 457.0		521
800 × 400	32 × 16	813.0 × 406.4		508
800 × 350	32 × 14	813.0 × 355.6		508
850	34	864.0	635	635
850 × 800	34 × 32	864.0 × 813.0		622
850 × 750	34 × 30	864.0 × 762.0		610
850 × 700	34 × 28	864.0 × 711.0		597
850 × 650	34 × 26	864.0 × 660.0		597
850 × 600	34 × 24	864.0 × 610.0		584
850 × 550	34 × 22	864.0 × 559.0		572
850 × 500	34 × 20	864.0 × 508.0		559
850 × 450	34 × 18	864.0 × 457.0		546
850 × 400	34 × 16	864.0 × 406.4		533
900	36	914.0	673	673
900 × 850	36 × 34	914.0 × 864.0		660
900 × 800	36 × 32	914.0 × 813.0		648
900 × 750	36 × 30	914.0 × 762.0		635
900 × 700	36 × 28	914.0 × 711.0		622
900 × 650	36 × 26	914.0 × 660.0		622
900 × 600	36 × 24	914.0 × 610.0		610
900 × 550	36 × 22	914.0 × 559.0		597
900 × 500	36 × 20	914.0 × 508.0		584
900 × 450	36 × 18	914.0 × 457.0		572
900 × 400	36 × 16	914.0 × 406.4		559
950	38	965.0	711	711
950 × 900	38 × 36	965.0 × 914.0		711
950 × 850	38 × 34	965.0 × 864.0		698
950 × 800	38 × 32	965.0 × 813.0		686
950 × 750	38 × 30	965.0 × 762.0		673
950 × 700	38 × 28	965.0 × 711.0		648
950 × 650	38 × 26	965.0 × 660.0		648
950 × 600	38 × 24	965.0 × 610.0		635
950 × 550	38 × 22	965.0 × 559.0		622
950 × 500	38 × 20	965.0 × 508.0		610
950 × 450	38 × 18	965.0 × 457.0		597
1000	40	1016.0	749	749
1000 × 950	40 × 38	1016.0 × 965.0		749
1000 × 900	40 × 36	1016.0 × 914.0		737
1000 × 850	40 × 34	1016.0 × 864.0		724
1000 × 800	40 × 32	1016.0 × 813.0		711
1000 × 750	40 × 30	1016.0 × 762.0		698
1000 × 700	40 × 28	1016.0 × 711.0		673
1000 × 650	40 × 26	1016.0 × 660.0		673
1000 × 600	40 × 24	1016.0 × 610.0		660
1000 × 550	40 × 22	1016.0 × 559.0		648
1000 × 500	40 × 20	1016.0 × 508.0		635
1000 × 450	40 × 18	1016.0 × 457.0		622

BUTT-WELDING TEES AND CROSSES

BW TEES & CROSSES

Nominal Size		Outside Diameter at Bevel	Center to End	
DN	NPS	$OD_1 \times OD_2$	C	M
1050	42	1067.0		711
1050 × 1000	42 × 40	1067.0 × 1016.0		711
1050 × 950	42 × 38	1067.0 × 965.0		711
1050 × 900	42 × 36	1067.0 × 914.0		711
1050 × 850	42 × 34	1067.0 × 864.0		711
1050 × 800	42 × 32	1067.0 × 813.0		711
1050 × 750	42 × 30	1067.0 × 762.0	762	711
1050 × 700	42 × 28	1067.0 × 711.0		698
1050 × 650	42 × 26	1067.0 × 660.0		698
1050 × 600	42 × 24	1067.0 × 610.0		660
1050 × 550	42 × 22	1067.0 × 559.0		660
1050 × 500	42 × 20	1067.0 × 508.0		660
1050 × 450	42 × 18	1067.0 × 457.0		648
1050 × 400	42 × 16	1067.0 × 406.4		635
1100	44	1118.0		762
1100 × 1050	44 × 42	1118.0 × 1067.0		762
1100 × 1000	44 × 40	1118.0 × 1016.0		749
1100 × 950	44 × 38	1118.0 × 965.0		737
1100 × 900	44 × 36	1118.0 × 914.0		724
1100 × 850	44 × 34	1118.0 × 864.0		724
1100 × 800	44 × 32	1118.0 × 813.0	813	711
1100 × 750	44 × 30	1118.0 × 762.0		711
1100 × 700	44 × 28	1118.0 × 711.0		698
1100 × 650	44 × 26	1118.0 × 660.0		698
1100 × 600	44 × 24	1118.0 × 610.0		698
1100 × 550	44 × 22	1118.0 × 559.0		686
1100 × 500	44 × 20	1118.0 × 508.0		686
1150	46	1168.0		800
1150 × 1100	46 × 44	1168.0 × 1118.0		800
1150 × 1050	46 × 42	1168.0 × 1067.0		787
1150 × 1000	46 × 40	1168.0 × 1016.0		775
1150 × 950	46 × 38	1168.0 × 965.0		762
1150 × 900	46 × 36	1168.0 × 914.0		762
1150 × 850	46 × 34	1168.0 × 864.0	851	749
1150 × 800	46 × 32	1168.0 × 813.0		749
1150 × 750	46 × 30	1168.0 × 762.0		737
1150 × 700	46 × 28	1168.0 × 711.0		737
1150 × 650	46 × 26	1168.0 × 660.0		737
1150 × 600	46 × 24	1168.0 × 610.0		724
1150 × 550	46 × 22	1168.0 × 559.0		724
1200	48	1219.0		838
1200 × 1150	48 × 46	1219.0 × 1168.0		838
1200 × 1100	48 × 44	1219.0 × 1118.0		838
1200 × 1050	48 × 42	1219.0 × 1067.0		813
1200 × 1000	48 × 40	1219.0 × 1016.0		813
1200 × 950	48 × 38	1219.0 × 965.0		813
1200 × 900	48 × 36	1219.0 × 914.0		787
1200 × 850	48 × 34	1219.0 × 864.0	889	787
1200 × 800	48 × 32	1219.0 × 813.0		787
1200 × 750	48 × 30	1219.0 × 762.0		762
1200 × 700	48 × 28	1219.0 × 711.0		762
1200 × 650	48 × 26	1219.0 × 660.0		762
1200 × 600	48 × 24	1219.0 × 610.0		737
1200 × 550	48 × 22	1219.0 × 559.0		737

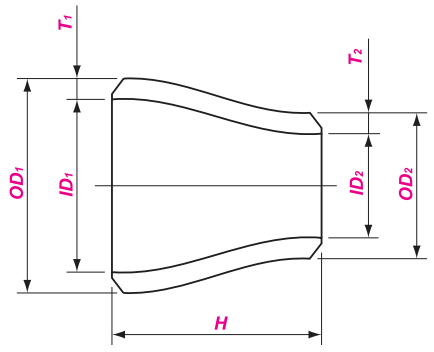
BW TEES & CROSSES

Nominal Size		Outside Diameter at Bevel	Center to End	
DN	NPS	$OD_1 \times OD_2$	C	M
1300	52	1321.0		914
1300 × 1200	52 × 48	1321.0 × 1219.0		864
1300 × 1100	52 × 44	1321.0 × 1118.0	965	813
1300 × 1000	52 × 40	1321.0 × 1016.0		762
1400	56	1422.0		965
1400 × 1300	56 × 52	1422.0 × 1321.0	1041	914
1400 × 1200	56 × 48	1422.0 × 1219.0		864
1400 × 1100	56 × 44	1422.0 × 1118.0		813
1500	60	1524.0		1016
1500 × 1400	60 × 56	1524.0 × 1422.0	1118	965
1500 × 1300	60 × 52	1524.0 × 1321.0		914
1500 × 1200	60 × 48	1524.0 × 1219.0		864
1600	64	1626.0		1092
1600 × 1500	64 × 60	1626.0 × 1524.0		1067
1600 × 1400	64 × 56	1626.0 × 1422.0	1194	1016
1600 × 1300	64 × 52	1626.0 × 1321.0		965
1600 × 1200	64 × 48	1626.0 × 1219.0		914
1700	68	1727.0		1168
1700 × 1600	68 × 64	1727.0 × 1626.0		1143
1700 × 1500	68 × 60	1727.0 × 1524.0	1270	1118
1700 × 1400	68 × 56	1727.0 × 1422.0		1067
1700 × 1300	68 × 52	1727.0 × 1321.0		1016
1700 × 1200	68 × 48	1727.0 × 1219.0		965
1800	72	1829.0		1245
1800 × 1700	72 × 68	1829.0 × 1727.0		1219
1800 × 1600	72 × 64	1829.0 × 1626.0		1194
1800 × 1500	72 × 60	1829.0 × 1524.0	1320	1168
1800 × 1400	72 × 56	1829.0 × 1422.0		1118
1800 × 1300	72 × 52	1829.0 × 1321.0		1067
1800 × 1200	72 × 48	1829.0 × 1219.0		1016
1900	76	1930.0		1320
1900 × 1800	76 × 72	1930.0 × 1829.0		1295
1900 × 1700	76 × 68	1930.0 × 1727.0		1270
1900 × 1600	76 × 64	1930.0 × 1626.0	1422	1245
1900 × 1500	76 × 60	1930.0 × 1524.0		1219
1900 × 1400	76 × 56	1930.0 × 1422.0		1168
1900 × 1300	76 × 52	1930.0 × 1321.0		1118
1900 × 1200	76 × 48	1930.0 × 1219.0		1067
2000	80	2032.0		1397
2000 × 1900	80 × 76	2032.0 × 1930.0		1372
2000 × 1800	80 × 72	2032.0 × 1829.0		1346
2000 × 1700	80 × 68	2032.0 × 1727.0		1321
2000 × 1600	80 × 64	2032.0 × 1626.0	1499	1295
2000 × 1500	80 × 60	2032.0 × 1524.0		1270
2000 × 1400	80 × 56	2032.0 × 1422.0		1219
2000 × 1300	80 × 52	2032.0 × 1321.0		1168
2000 × 1200	80 × 48	2032.0 × 1219.0		1118

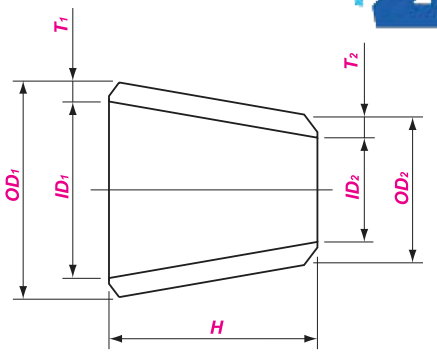
Notes:

1) Besides the above mentioned standards, the standards of GB/T 10752、SH 3408、SH 3409、HG/T 21635、HG/T 21631、SY/T 0510、DL/T 695、EN 10253 etc.are also applied.
2) For the straight tees and crosses with DN≥650(NPS 26)and the reducing tees and crosses with DN≥350(NPS 14), the outlet sizes are recommended to use (that mean the other sizes may be applied).
3) For the tees and crosses with the sizes larger than that listed in the above table, they will be supplied subject to the sized agreed by purchaser and manufacturer or according to manufacturer's size.

BUTT-WELDING REDUCERS



Seamless



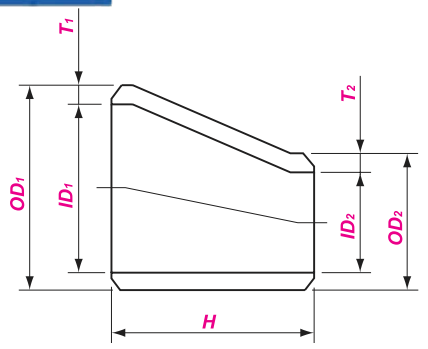
Weld

BW Concentric Reducer

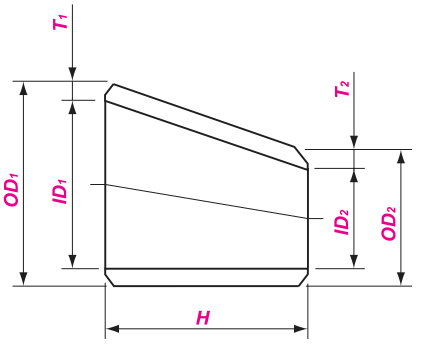
GB/T 12459、GB/T 13401、ASME B16.9

Nominal Size		Outside Diameter at Bevel	End to End
DN	NPS	$OD_1 \times OD_2$	H
20 × 15	3/4 × 1/2	26.7 × 21.3	38
20 × 10	3/4 × 3/8	26.7 × 17.1	
25 × 20	1 × 3/4	33.4 × 26.7	51
25 × 15	1 × 1/2	33.4 × 21.3	
32 × 25	1 1/4 × 1	42.2 × 33.4	51
32 × 20	1 1/4 × 3/4	42.2 × 26.7	
32 × 15	1 1/4 × 1/2	42.2 × 21.3	
40 × 32	1 1/2 × 1 1/4	48.3 × 42.2	64
40 × 25	1 1/2 × 1	48.3 × 33.4	
40 × 20	1 1/2 × 3/4	48.3 × 26.7	
40 × 15	1 1/2 × 1/2	48.3 × 21.3	
50 × 40	2 × 1 1/2	60.3 × 48.3	76
50 × 32	2 × 1 1/4	60.3 × 42.2	
50 × 25	2 × 1	60.3 × 33.4	
50 × 20	2 × 3/4	60.3 × 26.7	
65 × 50	2 1/2 × 2	73.0 × 60.3	89
65 × 40	2 1/2 × 1 1/2	73.0 × 48.3	
65 × 32	2 1/2 × 1 1/4	73.0 × 42.2	
65 × 25	2 1/2 × 1	73.0 × 33.4	
80 × 65	3 × 2 1/2	88.9 × 73.0	89
80 × 50	3 × 2	88.9 × 60.3	
80 × 40	3 × 1 1/2	88.9 × 48.3	
80 × 32	3 × 1 1/4	88.9 × 42.2	
90 × 80	3 1/2 × 3	101.6 × 88.9	102
90 × 65	3 1/2 × 2 1/2	101.6 × 73.0	
90 × 50	3 1/2 × 2	101.6 × 60.3	
90 × 40	3 1/2 × 1 1/2	101.6 × 48.3	
90 × 32	3 1/2 × 1 1/4	101.6 × 42.2	
100 × 90	4 × 3 1/2	114.3 × 101.6	102
100 × 80	4 × 3	114.3 × 88.9	
100 × 65	4 × 2 1/2	114.3 × 73.0	
100 × 50	4 × 2	114.3 × 60.3	
100 × 40	4 × 1 1/2	114.3 × 48.3	
125 × 100	5 × 4	141.3 × 114.3	127
125 × 90	5 × 3 1/2	141.3 × 101.6	
125 × 80	5 × 3	141.3 × 88.9	
125 × 65	5 × 2 1/2	141.3 × 73.0	
125 × 50	5 × 2	141.3 × 60.3	

BUTT-WELDING REDUCERS



Seamless



Weld

BW Eccentric Reducer

GB/T 12459、GB/T 13401、ASME B16.9

Nominal Size		Outside Diameter at Bevel	End to End
DN	NPS	$OD_1 \times OD_2$	H
150 × 125	6 × 5	168.3 × 141.3	140
150 × 100	6 × 4	168.3 × 114.3	
150 × 90	6 × 3½	168.3 × 101.6	
150 × 80	6 × 3	168.3 × 88.9	
150 × 65	6 × 2½	168.3 × 73.0	
200 × 150	8 × 6	219.1 × 168.3	152
200 × 125	8 × 5	219.1 × 141.3	
200 × 100	8 × 4	219.1 × 114.3	
200 × 90	8 × 3½	219.1 × 101.6	
250 × 200	10 × 8	273.0 × 219.1	178
250 × 150	10 × 6	273.0 × 168.3	
250 × 125	10 × 5	273.0 × 141.3	
250 × 100	10 × 4	273.0 × 114.3	
300 × 250	12 × 10	323.8 × 273.0	203
300 × 200	12 × 8	323.8 × 219.1	
300 × 150	12 × 6	323.8 × 168.3	
300 × 125	12 × 5	323.8 × 141.3	
350 × 300	14 × 12	355.6 × 323.8	330
350 × 250	14 × 10	355.6 × 273.0	
350 × 200	14 × 8	355.6 × 219.1	
350 × 150	14 × 6	355.6 × 168.3	
400 × 350	16 × 14	406.4 × 355.6	356
400 × 300	16 × 12	406.4 × 323.8	
400 × 250	16 × 10	406.4 × 273.0	
400 × 200	16 × 8	406.4 × 219.1	
400 × 150	16 × 6	406.4 × 168.3	
450 × 400	18 × 16	457.0 × 406.4	381
450 × 350	18 × 14	457.0 × 355.6	
450 × 300	18 × 12	457.0 × 323.8	
450 × 250	18 × 10	457.0 × 273.0	
450 × 200	18 × 8	457.0 × 219.1	
500 × 450	20 × 18	508.0 × 457.0	508
500 × 400	20 × 16	508.0 × 406.4	
500 × 350	20 × 14	508.0 × 355.6	
500 × 300	20 × 12	508.0 × 323.8	
500 × 250	20 × 10	508.0 × 273.0	
550 × 500	22 × 20	559.0 × 508.0	508
550 × 450	22 × 18	559.0 × 457.0	
550 × 400	22 × 16	559.0 × 406.4	
550 × 350	22 × 14	559.0 × 355.6	
550 × 300	22 × 12	559.0 × 323.8	

BUTT-WELDING REDUCERS

BW CONCENTRIC & ECCENTRIC REDUCERS

Nominal Size		Outside Diameter at Bevel	End to End
DN	NPS	$OD_1 \times OD_2$	H
600 × 550	24 × 22	610.0 × 559.0	508
600 × 500	24 × 20	610.0 × 508.0	
600 × 450	24 × 18	610.0 × 457.0	
600 × 400	24 × 16	610.0 × 406.4	
600 × 350	24 × 14	610.0 × 355.6	
600 × 300	24 × 12	610.0 × 323.8	
650 × 600	26 × 24	660.0 × 610.0	610
650 × 550	26 × 22	660.0 × 559.0	
650 × 500	26 × 20	660.0 × 508.0	
650 × 450	26 × 18	660.0 × 457.0	
650 × 400	26 × 16	660.0 × 406.4	
650 × 350	26 × 14	660.0 × 355.6	
700 × 650	28 × 26	711.0 × 660.0	610
700 × 600	28 × 24	711.0 × 610.0	
700 × 550	28 × 22	711.0 × 559.0	
700 × 500	28 × 20	711.0 × 508.0	
700 × 450	28 × 18	711.0 × 457.0	
700 × 400	28 × 16	711.0 × 406.4	
700 × 350	28 × 14	711.0 × 355.6	
750 × 700	30 × 28	762.0 × 711.0	610
750 × 650	30 × 26	762.0 × 660.0	
750 × 600	30 × 24	762.0 × 610.0	
750 × 550	30 × 22	762.0 × 559.0	
750 × 500	30 × 20	762.0 × 508.0	
750 × 450	30 × 18	762.0 × 457.0	
750 × 400	30 × 16	762.0 × 406.4	
750 × 350	30 × 14	762.0 × 355.6	
800 × 750	32 × 30	813.0 × 762.0	610
800 × 700	32 × 28	813.0 × 711.0	
800 × 650	32 × 26	813.0 × 660.0	
800 × 600	32 × 24	813.0 × 610.0	
800 × 550	32 × 22	813.0 × 559.0	
800 × 500	32 × 20	813.0 × 508.0	
850 × 800	34 × 32	864.0 × 813.0	610
850 × 750	34 × 30	864.0 × 762.0	
850 × 700	34 × 28	864.0 × 711.0	
850 × 650	34 × 26	864.0 × 660.0	
850 × 600	34 × 24	864.0 × 610.0	
850 × 550	34 × 22	864.0 × 559.0	
900 × 850	36 × 34	914.0 × 864.0	610
900 × 800	36 × 32	914.0 × 813.0	
900 × 750	36 × 30	914.0 × 762.0	
900 × 700	36 × 28	914.0 × 711.0	
900 × 650	36 × 26	914.0 × 660.0	
900 × 600	36 × 24	914.0 × 610.0	
900 × 550	36 × 22	914.0 × 559.0	
950 × 900	38 × 36	965.0 × 914.0	610
950 × 850	38 × 34	965.0 × 864.0	
950 × 800	38 × 32	965.0 × 813.0	
950 × 750	38 × 30	965.0 × 762.0	
950 × 700	38 × 28	965.0 × 711.0	
950 × 650	38 × 26	965.0 × 660.0	
950 × 600	38 × 24	965.0 × 610.0	

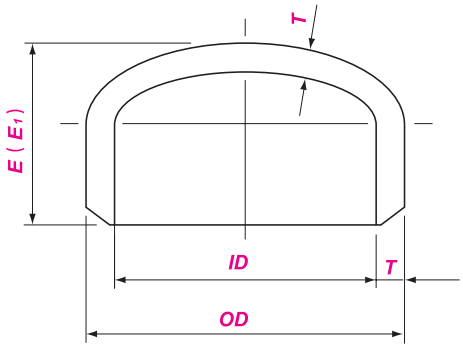
BW CONCENTRIC & ECCENTRIC REDUCERS

Nominal Size		Outside Diameter at Bevel	End to End
DN	NPS	$OD_1 \times OD_2$	H
1000 × 950	40 × 38	1016.0 × 965.0	610
1000 × 900	40 × 36	1016.0 × 914.0	
1000 × 850	40 × 34	1016.0 × 864.0	
1000 × 800	40 × 32	1016.0 × 813.0	
1000 × 750	40 × 30	1016.0 × 762.0	
1000 × 700	40 × 28	1016.0 × 711.0	
1050 × 1000	42 × 40	1067.0 × 1016.0	610
1050 × 950	42 × 38	1067.0 × 965.0	
1050 × 900	42 × 36	1067.0 × 914.0	
1050 × 850	42 × 34	1067.0 × 864.0	
1050 × 800	42 × 32	1067.0 × 813.0	
1050 × 750	42 × 30	1067.0 × 762.0	
1050 × 700	42 × 28	1067.0 × 711.0	
1100 × 1050	44 × 42	1118.0 × 1067.0	610
1100 × 1000	44 × 40	1118.0 × 1016.0	
1100 × 950	44 × 38	1118.0 × 965.0	
1100 × 900	44 × 36	1118.0 × 914.0	
1100 × 850	44 × 34	1118.0 × 864.0	
1100 × 800	44 × 32	1118.0 × 813.0	
1150 × 1100	46 × 44	1168.0 × 1118.0	711
1150 × 1050	46 × 42	1168.0 × 1067.0	
1150 × 1000	46 × 40	1168.0 × 1016.0	
1150 × 950	46 × 38	1168.0 × 965.0	
1150 × 900	46 × 36	1168.0 × 914.0	
1150 × 850	46 × 34	1168.0 × 864.0	
1200 × 1150	48 × 46	1219.0 × 1168.0	711
1200 × 1100	48 × 44	1219.0 × 1118.0	
1200 × 1050	48 × 42	1219.0 × 1067.0	
1200 × 1000	48 × 40	1219.0 × 1016.0	
1200 × 950	48 × 38	1219.0 × 965.0	
1200 × 900	48 × 36	1219.0 × 914.0	
1300 × 1200	52 × 48	1321.0 × 1219.0	711
1300 × 1150	52 × 46	1321.0 × 1168.0	
1300 × 1100	52 × 44	1321.0 × 1118.0	
1300 × 1050	52 × 42	1321.0 × 1067.0	
1300 × 1000	52 × 40	1321.0 × 1016.0	
1400 × 1300	56 × 52	1422.0 × 1321.0	711
1400 × 1200	56 × 48	1422.0 × 1219.0	
1400 × 1100	56 × 44	1422.0 × 1118.0	
1400 × 1000	56 × 40	1422.0 × 1016.0	
1500 × 1400	60 × 56	1524.0 × 1422.0	711
1500 × 1300	60 × 52	1524.0 × 1321.0	
1500 × 1200	60 × 48	1524.0 × 1219.0	
1500 × 1100	60 × 44	1524.0 × 1118.0	

Notes:

1) Besides the above mentioned standards, the standards of GB/T 10752、SH 3408、SH 3409、HG/T 21635、HG/T 21631、SY/T 0510、DL/T 695、EN 10253 etc.are also applied.
2) For the concentric and eccentric reducers with the sizes larger than that listed in the above table, they will be supplied subject to the sizes agreed by purchaser and manufacturer or according to manufacturer's size.

BUTT-WELDING CAPS



BW Cap

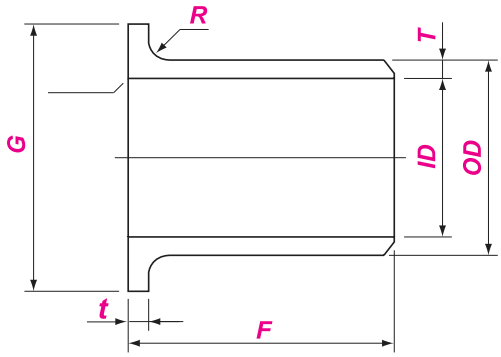
GB/T 12459、GB/T 13401、ASME B16.9

Nominal Size		Outside Diameter at Bevel	Length		Limiting Wall Thickness for Length *E*
DN	NPS	*OD*	*E*	E_1	
15	1/2	21.3	25	25	4.57
20	3/4	26.7	25	25	3.81
25	1	33.4	38	38	4.57
32	1¼	42.2	38	38	4.83
40	1½	48.3	38	38	5.08
50	2	60.3	38	44	5.59
65	2½	73.0	38	51	7.11
80	3	88.9	51	64	7.62
90	3½	101.6	64	76	8.13
100	4	114.3	64	76	8.64
125	5	141.3	76	89	9.65
150	6	168.3	89	102	10.92
200	8	219.1	102	127	12.70
250	10	273.0	127	152	12.70
300	12	323.8	152	178	12.70
350	14	355.6	165	191	12.70
400	16	406.4	178	203	12.70
450	18	457.0	203	229	12.70
500	20	508.0	229	254	12.70
550	22	559.0	254	254	12.70
600	24	610.0	267	305	12.70
650	26	660.0	267	---	---
700	28	711.0	267	---	---
750	30	762.0	267	---	---
800	32	813.0	267	---	---
850	34	864.0	267	---	---
900	36	914.0	267	---	---
950	38	965.0	305	---	---
1000	40	1016.0	305	---	---
1050	42	1067.0	305	---	---
1100	44	1118.0	343	---	---
1150	46	1168.0	343	---	---
1200	48	1219.0	343	---	---

Notes:

1) The configuration of the cap is normal ellipse.
2) Length E applies for the thickness not exceeding the Limiting Wall Thickness, Length E_1 applies for the thickness exceeding the Limitting Wall Thickness.For the caps with DN ⩾ 650 (NPS26), they will be made subject to the sizes agreed between purchaser and manufacturer or be supplied according to manufacturer’s size.

BUTT-WELDING LAP JOINT STUB END



Lap Joint Stub End

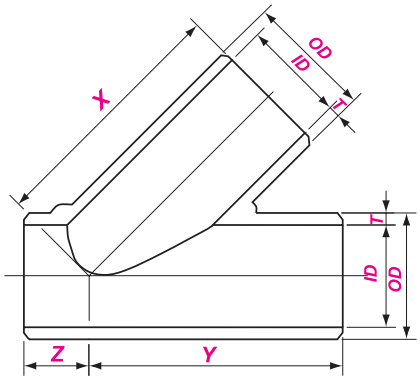
GB/T 12459、ASME B16.9、MSS SP-43

Nominal Size		OD of Cylinder		Length		Radius of Fillet		Diameter of Lap
DN	NPS	*OD*		*F*		*R*		
		Max.	Min.	Long Type	Short Type	A	B_{max}	*G*
15	1/2	22.8	20.5	76	51	3	0.8	35
20	3/4	28.1	25.9	76	51	3	0.8	43
25	1	35.0	32.6	102	51	3	0.8	51
32	1¼	43.6	41.4	102	51	5	0.8	64
40	1½	49.9	47.5	102	51	6	0.8	73
50	2	62.4	59.5	152	64	8	0.8	92
65	2½	75.3	72.2	152	64	8	0.8	105
80	3	91.3	88.1	152	64	10	0.8	127
90	3½	104.0	100.8	152	76	10	0.8	140
100	4	116.7	113.5	152	76	11	0.8	157
125	5	144.3	140.5	203	76	11	1.6	186
150	6	171.3	167.5	203	89	13	1.6	216
200	8	222.1	218.3	203	102	13	1.6	270
250	10	277.2	272.3	254	127	13	1.6	324
300	12	328.0	323.1	254	152	13	1.6	381
350	14	359.9	354.8	305	152	13	1.6	413
400	16	411.0	405.6	305	152	13	1.6	470
450	18	462.0	456.0	305	152	13	1.6	533
500	20	514.0	507.0	305	152	13	1.6	584
550	22	565.0	558.0	305	152	13	1.6	641
600	24	616.0	609.0	305	152	13	1.6	692

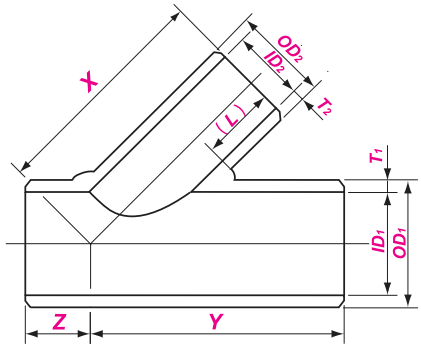
Notes:

1) When the short type is used on the larger flanges with PN 50 and PN 110 (300 and 600 LB) and on flanges with PN 150(900 LB) and above, or the long type is used on the larger flange with PN 260 and PN 420(1500 and 2500LB), the length of the cylinder may be added to be feasible the welding, the adding length shall be negotiated by manufacturer and purchaser.
2) The thickness of joint shall be added if the TG and MFM contact surface of flange are used, and the adding thickness shall increase (not be included in) the base length *F*.
3) The radius of fillet *R*(type A) shall conform to the ones of loose flanges according to GB/T 9118.1～9118.2 or ASME B16.5. The radius of fillet *R* (type B) is only applied for the standards of MSS SP-43 with short length *F*.
4) The lap joint diameter *G* shall conform to the standard machined face indicated in ASME B16.5 , and the back of joint shall be machined to conform to the surface of installation.When RJ used, the size *K* specified in ASME B 16.5 Shall apply.
5) The minimum lap joint thickness *t* shall not be less than the nominal pipe wall thickness.

BUTT-WELDING LATERAL TEES



BW Straight 45°Lateral Tee



BW Reducing 45°Lateral Tee

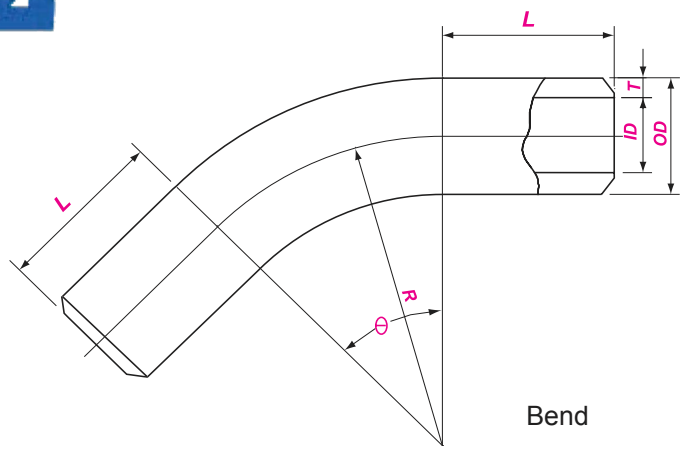
Nominal Size		Outside Diameter at Bevel	Center to End	
DN	NPS	*OD*	*X* and *Y*	*Z*
15	1/2	21.3	90	50
20	3/4	26.7	108	50
25	1	33.4	133	50
32	1 1/4	42.2	184	57
40	1 1/2	48.3	216	64
50	2	60.3	230	64
65	2 1/2	73.0	267	64
80	3	88.9	280	76
90	3 1/2	101.6	292	76
100	4	114.3	343	76
125	5	141.3	381	90
150	6	168.3	445	102
200	8	219.1	520	127
250	10	273.0	610	140
300	12	323.8	700	152
350	14	355.6	787	165
400	16	406.4	876	178
450	18	457.0	953	203
500	20	508.0	1029	216
550	22	559.0	1112	229
600	24	610.0	1207	254
650	26	660.0	1308	267
700	28	711.0	1422	286
750	30	762.0	1524	299
800	32	813.0	1626	311
850	34	864.0	1727	330
900	36	914.0	1829	350
950	38	965.0	1930	483
1000	40	1016.0	2032	508
1050	42	1067.0	2134	533
1100	44	1118.0	2235	559
1150	46	1168.0	2337	584
1200	48	1219.0	2438	610
1250	50	1270.0	2540	635
1300	52	1321.0	2642	660
1350	54	1372.0	2743	686
1400	56	1422.0	2845	711
1450	58	1473.0	2946	737
1500	60	1524.0	3048	762

Note:

1) The value *X* of the reducing tee shall be according to the one matching to the nominal size of branch pipe, but when the varying diameter of branch exceeds and includes two levels (for example NPS 20 × 14), the length *L* near the 45° angle shall be equal or larger than the OD_2 of branch pipe.

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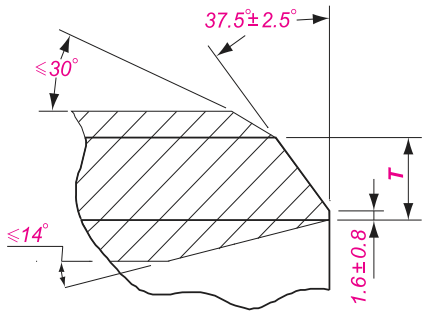
BUTT-WELDING BENDS



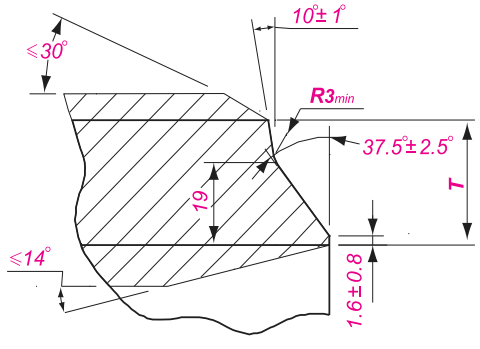
Bend

Item	Content
Standard	DL/T 515 Pipe Bends for Power Station, SY/T 5257 Steel Bend for Oil and Gas Transmission, ASME B16.49 Factory-Made Wrought Steel Induction Bends for Transportation and Distribution Systems and or purchasing specification
Material	Carbon Steel Alloy Steel Stainless Steel
Bend Radius	$R \geqslant 3OD$ (OD is outside diameter of pipe)
Bend Angle	According to the specification of design documentation.
Straight Length	Per standard or specified length in the design documentation,or both straight lengths are 500mm.
Outside Diameter	$OD \leqslant$ 1220mm
Wall Thickness	According to the specification of design documentation.
Bevel at Ends	According to the bevel ends of BW fittings or per specification of design documentation.

BEVEL ENDS OF BW FITTINGS



$T \leqslant$ 22mm



$T >$ 22mm

Note:

1) The general bevel ends are as the above.If specially required, the purchase specification shall be performed.

TOLERANCES FOR BW FITTINGS

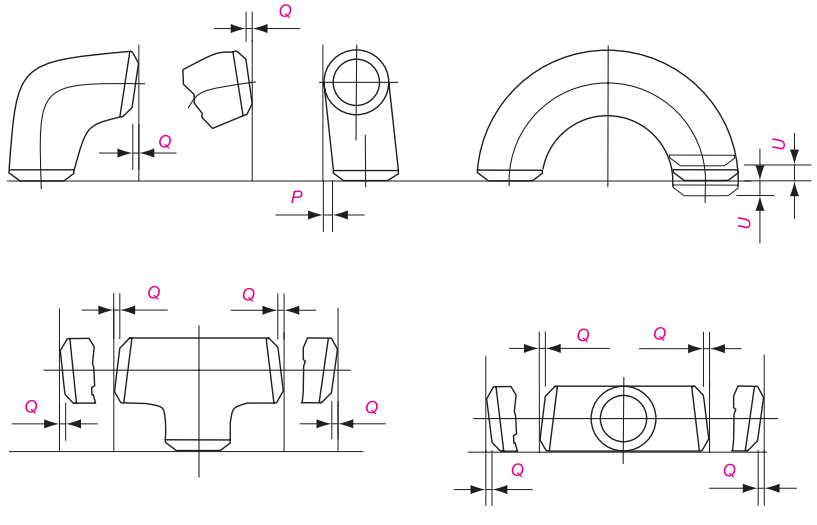
TOLERANCES FOR BW FITTINGS

Nominal Size		All Fittings 1)2)		Elbows Tees Crosses	Radius Elbows	Returns			Caps	Reducers & Lap Joint Stub Ends	Lap Joint Stub Ends		
DN	NPS	OD 3) 4)	ID 3)	A、B、C、M	A、B	O	K	U	E、E_1	H、F	G	R	t
15-65	1/2 -2½	+1.6 -0.8	± 0.8	± 2	± 3	± 6	± 6	± 1	± 3	± 2	0 -1	0 -1	+1.6 0
80-90	3-3½	± 1.6	± 1.6	± 2	± 3	± 6	± 6	± 1	± 3	± 2	0 -1	0 -1	+1.6 0
100	4	± 1.6	± 1.6	± 2	± 3	± 6	± 6	± 1	± 3	± 2	0 -1	0 -2	+1.6 0
125-200	5-8	+2.4 -1.6	± 1.6	± 2	± 3	± 6	± 6	± 1	± 6	± 2	0 -1	0 -2	+1.6 0
250-450	10-18	+4.0 -3.2	± 3.2	± 2	± 3	± 10	± 6	± 2	± 6	± 2	0 -2	0 -2	+3.2 0
500-600	20-24	+6.4 -4.8	± 4.8	± 2	± 3	± 10	± 6	± 2	± 6	± 2	0 -2	0 -2	+3.2 0
650-750	26-30	+6.4 -4.8	± 4.8	± 3	± 6	---	---	---	± 10	± 5	---	---	---
800-1200	32-48	+6.4 -4.8	± 4.8	± 5	± 6	---	---	---	± 10	± 5	---	---	---
1300-1500	52-60	+6.4 -4.8	± 4.8	± 5	---	---	---	---	---	---	---	---	---
1600-1700	64-68	+6.4 -4.8	± 4.8	± 5	---	---	---	---	---	---	---	---	---
1800-2000	72-80	+6.4 -4.8	± 4.8	± 5	---	---	---	---	---	---	---	---	---

Note:

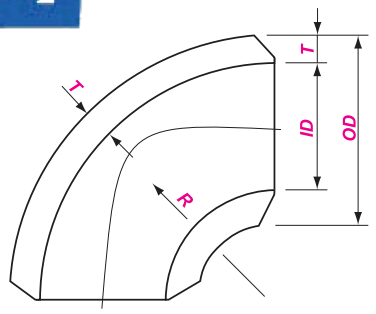
1) The inside diameter and the nominal wall thickness shall be specified by purchaser.
2) If purchaser dosen't specify the thickness tolerance, 87.5% of the nominal thickness shall be the min. thickness.
3) Out of-roundness is the sum of absolute values of plus and minus tolerance.
4) When the wall thickness needs increasing to meet the design requirement,the tolerance may excced the ones indicated in the above list.

Nominal Size		Q	P
DN	NPS		
15-100	1/2 -4	1	2
125-200	5-8	2	4
250-300	10-12	3	5
350-400	14-16	3	6
450-600	18-24	4	10
650-750	26-30	5	10
800-1050	32-42	5	13
1100-1200	44-48	5	19
1300-2000	50-80	5	19

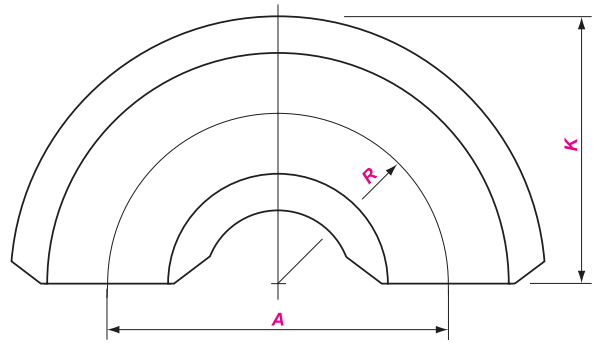


ZIZI ENGINEERING CO LTD

RETURN BENDS & ELBOWS



90° Elbow



Return Bend

SH/T 3065 RETURN BENDS & ELBOWS OF TUBULAR HEATER IN PETROCHEMICAL INDUSTRY

Item	Content
Material	Carbon steel Alloy steel Stainless steel
Bending radius(90Elbow)	Specified according to the design documentation.
Center to center(Return Bend)	Specified according to the design documentation.
Wall thickness	Specified according to the design documentation.
Bevel at ends	According to the bevel ends of BW fittings or the specification of design documentation.

TOLERANCES FOR RETURN BENDS & ELBOWS

Item	*OD* ⩽ *76*		*OD=89～127*		*OD=141～193*		*OD=219～237*	
	90°	180°	90°	180°	90°	180°	90°	180°
OD	+1.50 -0.75	+1.50 -0.75	± 1.50	± 1.50	+2.00 -0.75	+2.00 -1.50	+2.00 -1.50	+2.00 -1.50
ID	± 0.75	± 0.75	± 1.50	± 1.50	± 1.50	± 1.50	± 1.50	± 1.50
R	± 1.00	-	± 1.50	-	± 2.00	-	± 2.00	-
A	-	± 2.00	-	± 2.50	-	± 2.50	-	± 3.00
K	-	+6.00	-	+6.00	-	+6.00	-	+6.00
U	-	± 1.00	-	± 1.00	-	± 1.00	-	± 2.00
P	1.50	2.00	1.50	2.00	3.00	4.00	3.00	4.00
Q	0.75				1.50			
T	– 12.5%T ;If T is the min.one,the minus tolerance shall be zero.							