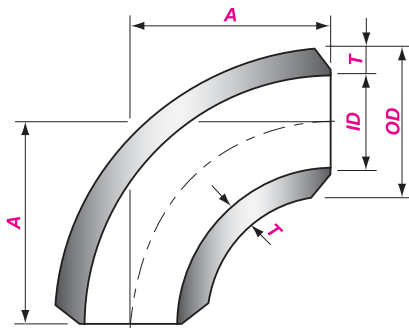
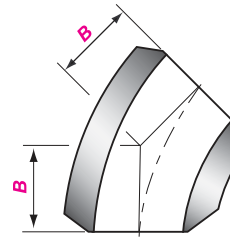


# BUTT-WELDING ELBOWS



对焊90° 长半径/短半径弯头  
BW 90° LR/SR Elbow



对焊45° 长半径弯头  
BW 45° LR Elbow

GB/T 12459, GB/T 13401, ASME B16.9

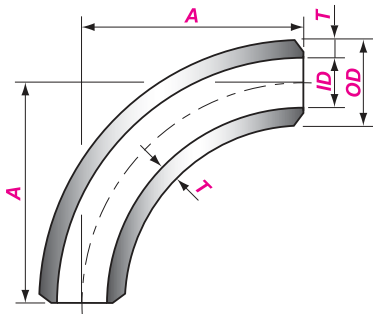
公称尺寸 Nominal Size		端部外径 Outside Diameter at Bevel	中心至端面 Center to End		
DN	NPS		90° Elbows		45° Elbows
		A		B	
			长半径 LR	短半径 SR	长半径 LR
15	1/2	21.3	38	-	16
20	3/4	26.7	38	-	19
25	1	33.4	38	25	22
32	1 1/4	42.2	48	32	25
40	1 1/2	48.3	57	38	29
50	2	60.3	76	51	35
65	2 1/2	73.0	95	64	44
80	3	88.9	114	76	51
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

注释:

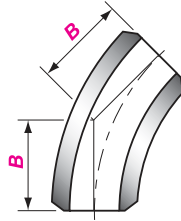
- 1) 除上述标准外,还可按 GB/T 10752、SH 3408、SH 3409、HG/T 21635、HG/T 21631、SY/T 0510、DL/T 695、EN 10253 等标准制造。
- 2) 更大规格的弯头,可根据采购方与制造商协商一致的尺寸制造。

Notes:

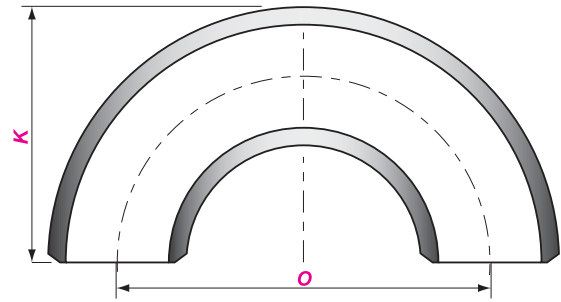
- 1) Besides these, GB/T 10752、SH 3408、SH 3409、HG/T 21635、HG/T 21631、SY/T 0510、DL/T 695、EN 10253 etc. are also applied.
- 2) The elbow with NPS over 80 shall be made subject to the sizes agreed by purchaser and manufacturer.



对焊 90° 3D 弯头  
BW 90° 3D Elbow



对焊 45° 3D 弯头  
BW 45° 3D Elbow



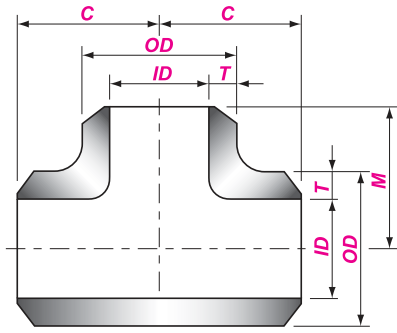
对焊 180° 长半径/短半径弯头  
BW 180° LR/SR Return

GB/T 12459、GB/T 13401、ASME B16.9

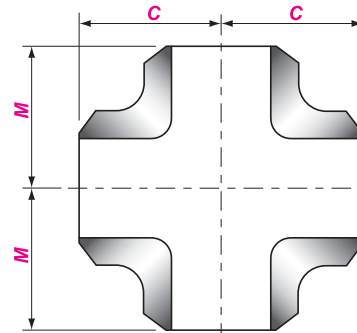
公称尺寸 Nominal Size		端部外径 Outside Diameter at Bevel	中心至端面 Center to End		中心至中心 Center to Center		背面至端面 Back to Face	
DN	NPS	OD	90° Elbows	45° Elbows	180° Returns			
			A	B	O		K	
			3D	3D	长半径 LR	短半径 SR	长半径 LR	短半径 SR
15	1/2	21.3	-	-	76	-	48	-
20	3/4	26.7	57	24	76	-	51	-
25	1	33.4	76	31	76	51	56	41
32	1 1/4	42.2	95	39	95	64	70	52
40	1 1/2	48.3	114	47	114	76	83	62
50	2	60.3	152	63	152	102	106	81
65	2 1/2	73.0	190	79	190	127	132	100
80	3	88.9	229	95	229	152	159	121
90	3 1/2	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



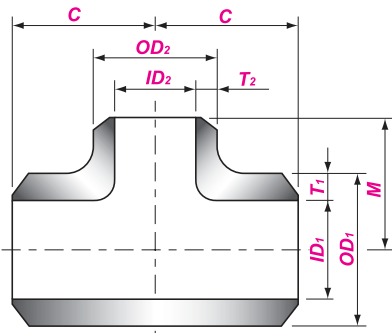
对焊 等径三通  
BW Straight Tee



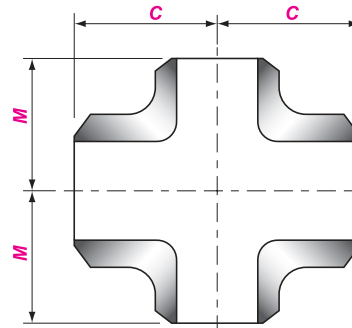
对焊等径四通  
BW Straight Cross

GB/T 12459, GB/T 13401, ASME B16.9

公称尺寸 Nominal Size		端部外径 Outside Diameter at Bevel	中心至端面 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	1 1/4	42.2	48	48
32 × 25	1 1/4 × 1	42.2 × 33.4		48
32 × 20	1 1/4 × 3/4	42.2 × 26.7		48
32 × 15	1 1/4 × 1/2	42.2 × 21.3		48
40	1 1/2	48.3	57	57
40 × 32	1 1/2 × 1 1/4	48.3 × 42.2		57
40 × 25	1 1/2 × 1	48.3 × 33.4		57
40 × 20	1 1/2 × 3/4	48.3 × 26.7		57
40 × 15	1 1/2 × 1/2	48.3 × 21.3		57
50	2	60.3	64	64
50 × 40	2 × 1 1/2	60.3 × 48.3		64
50 × 32	2 × 1 1/4	60.3 × 42.2		64
50 × 25	2 × 1	60.3 × 33.4		64
50 × 20	2 × 3/4	60.3 × 26.7		64
65	2 1/2	73.0	76	76
65 × 50	2 1/2 × 2	73.0 × 60.3		76
65 × 40	2 1/2 × 1 1/2	73.0 × 48.3		76
65 × 32	2 1/2 × 1 1/4	73.0 × 42.2		76
65 × 25	2 1/2 × 1	73.0 × 33.4		76
80	3	88.9	86	86
80 × 65	3 × 2 1/2	88.9 × 73.0		86
80 × 50	3 × 2	88.9 × 60.3		86
80 × 40	3 × 1 1/2	88.9 × 48.3		86
80 × 32	3 × 1 1/4	88.9 × 42.2		86
90	3 1/2	101.6	95	95
90 × 80	3 1/2 × 3	101.6 × 88.9		95
90 × 65	3 1/2 × 2 1/2	101.6 × 73.0		95
90 × 50	3 1/2 × 2	101.6 × 60.3		95
90 × 40	3 1/2 × 1 1/2	101.6 × 48.3		95
100	4	114.3	105	105
100 × 90	4 × 3 1/2	114.3 × 101.6		105
100 × 80	4 × 3	114.3 × 88.9		105
100 × 65	4 × 2 1/2	114.3 × 73.0		105
100 × 50	4 × 2	114.3 × 60.3		105
100 × 40	4 × 1 1/2	114.3 × 48.3		105



对焊异径三通  
BW Reducing Tee



对焊异径四通  
BW Reducing Cross

GB/T 12459, GB/T 13401, ASME B16.9

公称尺寸 Nominal Size		端部外径 Outside Diameter at Bevel	中心至端面 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
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	
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
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	
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

公称尺寸 Nominal Size		端部外径 Outside Diameter at Bevel	中心至端面 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
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

对焊三通、四通

BW TEES & CROSSES

公称尺寸 Nominal Size		端部外径 Outside Diameter at Bevel	中心至端面 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

公称尺寸 Nominal Size		端部外径 Outside Diameter at Bevel	中心至端面 Center to End	
DN	NPS	$OD_1 \times OD_2$	C	M
1050	42	1067.0	762	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		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	813	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		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		851
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	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	889	
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		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

## 对焊三通、四通

### BW TEES & CROSSES

公称尺寸 Nominal Size		端部外径 Outside Diameter at Bevel	中心至端面 Center to End	
DN	NPS	OD <sub>1</sub> × OD <sub>2</sub>	C	M
1300	52	1321.0	965	914
1300 × 1200	52 × 48	1321.0 × 1219.0		864
1300 × 1100	52 × 44	1321.0 × 1118.0		813
1300 × 1000	52 × 40	1321.0 × 1016.0		762
1400	56	1422.0	1041	965
1400 × 1300	56 × 52	1422.0 × 1321.0		914
1400 × 1200	56 × 48	1422.0 × 1219.0		864
1400 × 1100	56 × 44	1422.0 × 1118.0		813
1500	60	1524.0	1118	1016
1500 × 1400	60 × 56	1524.0 × 1422.0		965
1500 × 1300	60 × 52	1524.0 × 1321.0		914
1500 × 1200	60 × 48	1524.0 × 1219.0		864
1600	64	1626.0	1194	1092
1600 × 1500	64 × 60	1626.0 × 1524.0		1067
1600 × 1400	64 × 56	1626.0 × 1422.0		1016
1600 × 1300	64 × 52	1626.0 × 1321.0		965
1600 × 1200	64 × 48	1626.0 × 1219.0		914
1700	68	1727.0	1270	1168
1700 × 1600	68 × 64	1727.0 × 1626.0		1143
1700 × 1500	68 × 60	1727.0 × 1524.0		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	1320	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		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	1422	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		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	1499	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		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	

注释:

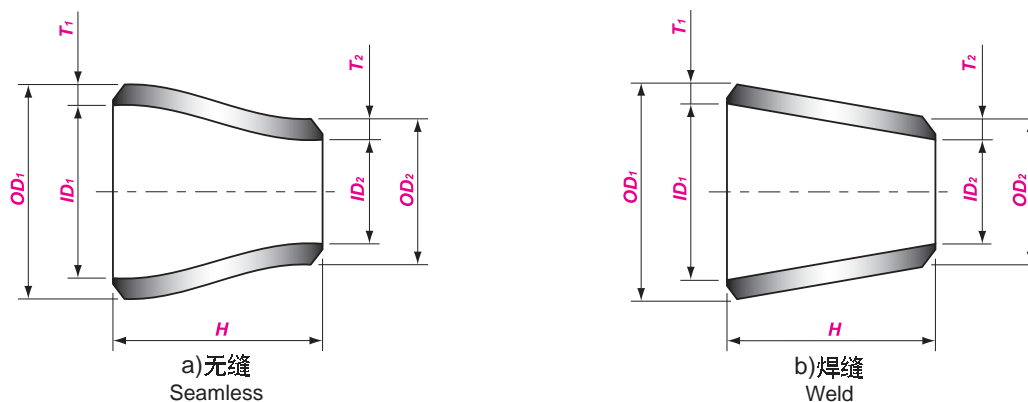
- 1) 除上述标准外, 还可按 GB/T 10752、SH 3408、SH 3409、HG/T 21635、HG/T 21631、SY/T 0510、DL/T 695、EN 10253 等标准制造。
- 2) 对于 ≥ DN 650 (NPS 26) 的等径三通、四通和 ≥ DN 350 (NPS 14) 的异径三通、四通, 推荐但不一定要采用出口尺寸 M。
- 3) 更大规格的三通、四通, 按采购方与制造商协商的尺寸制造, 或按制造商的尺寸供货。

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.



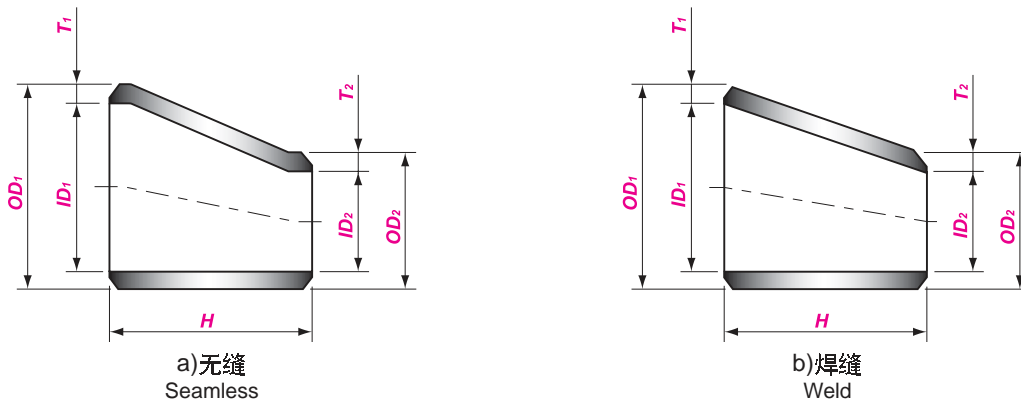
# BUTT-WELDING REDUCERS



对焊同心异径管  
BW Concentric Reducer

GB/T 12459、GB/T 13401、ASME B16.9

公称尺寸 Nominal Size		端部外径 Outside Diameter at Bevel	端面至端面 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	



对焊偏心异径管  
BW Eccentric Reducer

GB/T 12459、GB/T 13401、ASME B16.9

公称尺寸 Nominal Size		端部外径 Outside Diameter at Bevel	端面至端面 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	
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

### 对焊同心、偏心异径管

### BW CONCENTRIC & ECCENTRIC REDUCERS

公称尺寸 Nominal Size		端部外径 Outside Diameter at Bevel	端面至端面 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	

对焊同心、偏心异径管

BW CONCENTRIC & ECCENTRIC REDUCERS

公称尺寸 Nominal Size		端部外径 Outside Diameter at Bevel	端面至端面 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	
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	

注释:

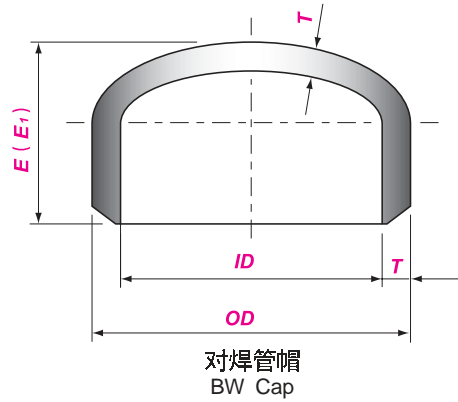
- 1) 除上述标准外, 还可按 GB/T 10752、SH 3408、SH 3409、HG/T 21635、HG/T 21631、SY/T 0510、DL/T 695、EN 10253 等标准制造。
- 2) 更大规格的同心或偏心异径管, 按采购方与制造商协商的尺寸制造, 或按制造商的尺寸供货。

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



GB/T 12459、GB/T 13401、ASME B16.9

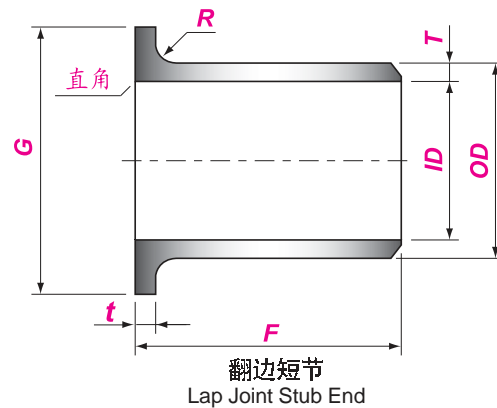
公称尺寸 Nominal Size		端部外径 Outside Diameter at Bevel	长度 Length		对尺寸 $E$ 的限制厚度 Limiting Wall Thickness for Length $E$
DN	NPS	OD	$E$	$E_1$	
15	1/2	21.3	25	25	4.57
20	3/4	26.7	25	25	3.81
25	1	33.4	38	38	4.57
32	1 1/4	42.2	38	38	4.83
40	1 1/2	48.3	38	38	5.08
50	2	60.3	38	44	5.59
65	2 1/2	73.0	38	51	7.11
80	3	88.9	51	64	7.62
90	3 1/2	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	---	---

**注释:**

- 管帽形状为标准椭圆形。
- 管帽的长度不大于限制厚度时为  $E$ ，大于限制厚度时为  $E_1$ ；当管帽的公称尺寸  $\geq$  DN 650 (NPS 26) 时，长度  $E_1$  按采购方与制造商协商的尺寸制造，或按制造商的尺寸供货。

**Notes:**

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



## GB/T 12459、ASME B16.9、MSS SP-43

公称尺寸 Nominal Size		筒体外径 OD of Cylinder		长度 Length		圆角半径 Radius of Fillet		搭接直径 Diameter of Lap
DN	NPS	OD		F		R		
		Max.	Min.	长型 Long Type	短型 Short Type	A	B <sub>max</sub>	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	1 1/4	43.6	41.4	102	51	5	0.8	64
40	1 1/2	49.9	47.5	102	51	6	0.8	73
50	2	62.4	59.5	152	64	8	0.8	92
65	2 1/2	75.3	72.2	152	64	8	0.8	105
80	3	91.3	88.1	152	64	10	0.8	127
90	3 1/2	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

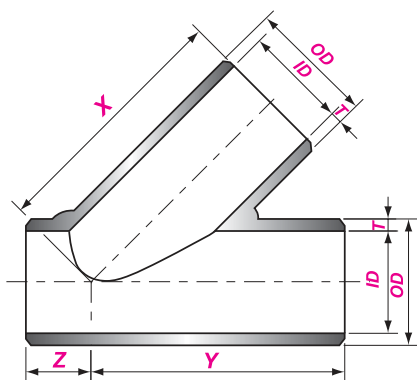
### 注释:

- 当短型翻边短节用于 PN 50 和 PN 110(300 和 600 级)的较大法兰以及大于等于 PN 150(900 级)的大部分规格的法兰时, 或当长型翻边短节用于 PN 260 和 PN 420(1500 和 2500 级)的较大法兰时, 为了避免法兰可能影响焊接, 或许需要增加筒体的长度。长度增加量由制造商与采购方双方协商。
- 当采用榫槽面和凹凸密封面时, 必须增加搭接边的厚度。增加厚度应附加(不包括)在基本长度 F 上。
- A 型圆角半径 R 与 GB/T 9118.1~9118.2 或 ASME B16.5 中的松套法兰的圆角半径相符合。B 型的圆角半径 R 仅用于 MSS SP-43 标准中, 其长度 F 为短型。
- 搭接直径 G 与 ASME B16.5 中表示的标准机加工面相符合。搭接边的背面应进行机加工, 使其与安装表面一致。当采用环连接密封面时, 使用 ASME B16.5 中给出的尺寸 K。
- 搭接厚度 t 应不小于管子的公称壁厚。

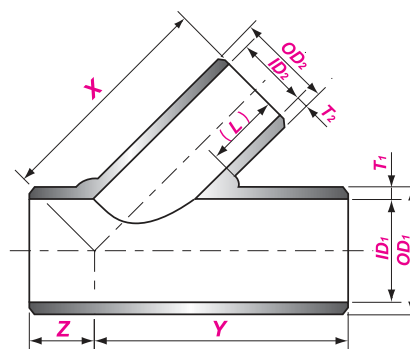
### Notes:

- 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.
- 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.
- 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.
- 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.
- The minimum lap joint thickness t shall not be less than the nominal pipe wall thickness.

## BUTT-WELDING LATERAL TEES



对焊等径 45° 斜三通  
BW Straight 45° Lateral Tee



对焊异径 45° 斜三通  
BW Reducing 45° Lateral Tee

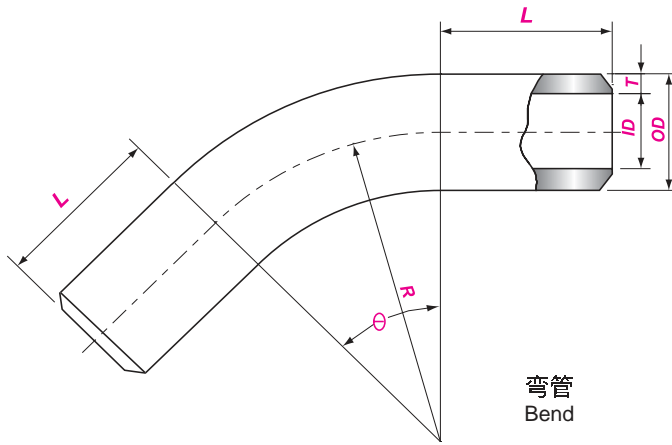
公称尺寸 Nominal Size		端部外径 Outside Diameter at Bevel	中心至端面 Center to End	
DN	NPS	OD	X and Y	Z
15	1/2	21.3	90	50
20	3/4	26.7	108	50
25	1	33.4	133	50
32	1 1/4	42.2	184	57
40	1 1/2	48.3	216	64
50	2	60.3	230	64
65	2 1/2	73.0	267	64
80	3	88.9	280	76
90	3 1/2	101.6	292	76
100	4	114.3	343	76
125	5	141.3	381	90
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

注释:

1) 异径三通的 X 值按支管公称尺寸对应的 X 值制造, 但当支管变径超过 2 档 (例如 NPS 20 × 14) 时, 45 度夹角处的长度 L 应等于或大于支管外径 OD<sub>2</sub>。

Note:

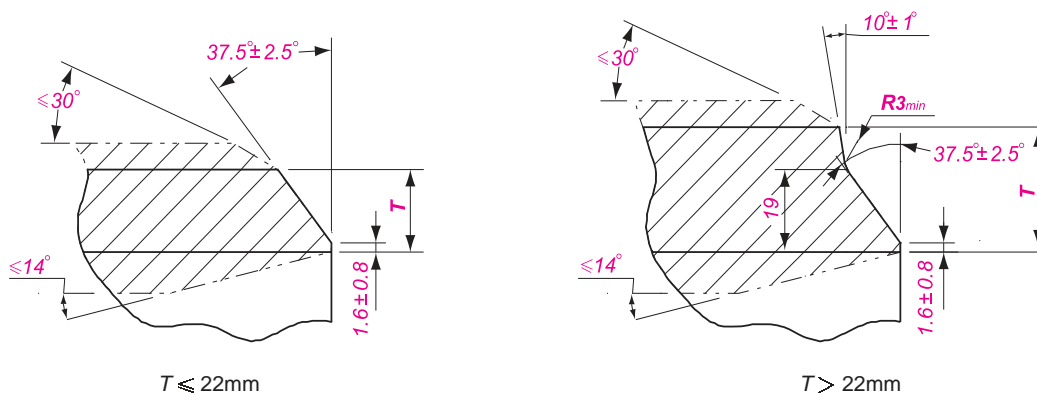
1) The value X of the reducing tee shall be according to the one matching to the nominal size of branch pipe, but when the varying diameter of branch exceeds and includes two levels (for example NPS 20 × 14), the length L near the 45° angle shall be equal or larger than the OD<sub>2</sub> of branch pipe.



项 目 Item	内 容 Content
标 准 Standard	DL/T 515 《电站弯管》、SY/T 5257 《油气输送用钢制弯管》、ASME B16.49 《用于输送和分配的管道系统中的工厂制造的钢制感应弯管》或采购文件规定 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
材 料 Material	碳素钢、合金钢、不锈钢 Carbon Steel、Alloy Steel、Stainless Steel
弯曲半径 $R$ Bend Radius	$R \geq 3OD$ ( $OD$ 为管子外径) $R \geq 3OD$ ( $OD$ is outside diameter of pipe)
弯曲角度 $\theta$ Bend Angle	按设计文件规定 According to the specification of design documentation.
直段长度 $L$ Straight Length	按标准或设计文件规定的长度；或两端直段长度为 500 mm Per standard or specified length in the design documentation, or both straight lengths are 500mm.
外径 $OD$ Outside Diameter	$OD \leq 1220\text{mm}$
壁厚 $T$ Wall Thickness	按设计文件规定 According to the specification of design documentation.
端部坡口 Bevel at Ends	按对焊管件端部坡口型式；或按设计文件规定 According to the bevel ends of BW fittings or per specification of design documentation.

### 对焊管件端部坡口型式

#### BEVEL ENDS OF BW FITTINGS



注释:

1) 图示为对焊管件常用的端部焊接坡口型式。当采购文件对端部坡口有另外规定时, 按采购文件规定的型式加工。

Note:

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





# TOLERANCES FOR BW FITTINGS

## 对焊管件的公差

### TOLERANCES FOR BW FITTINGS

公称尺寸 Nominal Size		所有管件 <sup>1)2)</sup> All Fittings		45°、90° 弯头、三通、四通 45° & 90° Elbows & Tees, Crosses	3D 弯头 3D Radius Elbows	180° 弯头 Returns			管帽 Caps	异径管、翻边短节 Reducers & Lap Joint Stub Ends	翻边短节 Lap Joint Stub Ends		
DN	NPS	OD <sup>3)4)</sup>	ID <sup>3)</sup>	A, B, C, M	A, B	O	K	U	E, E <sub>r</sub>	H, F	G	R	t
15-65	1/2 - 2 <sup>1</sup> / <sub>2</sub>	+1.6 -0.8	± 0.8	± 2	± 3	± 6	± 6	± 1	± 3	± 2	0 -1	0 -1	+1.6 0
80-90	3-3 <sup>1</sup> / <sub>2</sub>	± 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	---	---	---	---	---	---	---	---	---

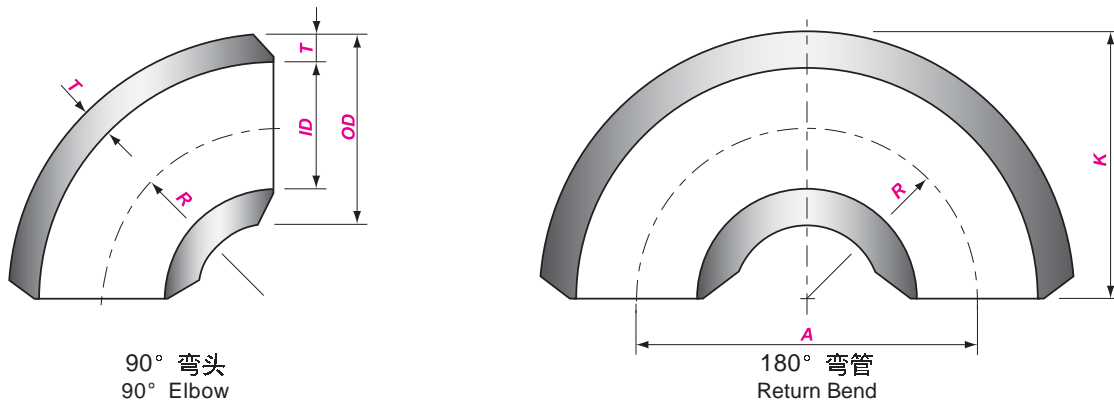
注释:

- 1) 端部内径和公称壁厚由采购方指定。
- 2) 如采购方未规定壁厚公差, 则适用 87.5% 的最小壁厚。
- 3) 圆度为正负偏差绝对值之和。
- 4) 当需要增加壁厚以满足设计要求时, 该项公差可超过表列值。

Note:

- 1) The inside diameter and the nominal wall thickness shall be specified by purchaser.
- 2) If purchaser doesn'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 exceed the ones indicated in the above list.

公称尺寸 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	



## SH/T 3065 石油化工管式炉急弯弯管

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

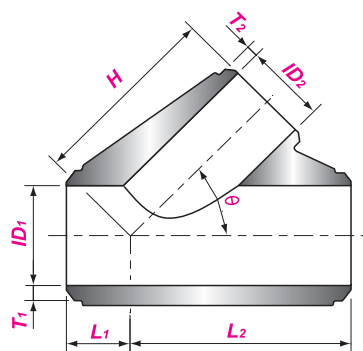
项 目 Item	内 容 Content
材 料 Material	碳素钢、合金钢、不锈钢 Carbon steel、Alloy steel、Stainless steel
90° 弯头弯曲半径 $R$ Bending radius(90° Elbow)	按设计文件规定 Specified according to the design documentation.
180° 弯管中心距离 $A$ Center to center(Return Bend)	按设计文件规定 Specified according to the design documentation.
壁厚 $T$ Wall thickness	按设计文件规定 Specified according to the design documentation.
端部坡口 Bevel at ends	按对焊管件端部坡口型式；或按设计文件规定 According to the bevel ends of BW fittings or the specification of design documentation.

## 急弯弯头的公差

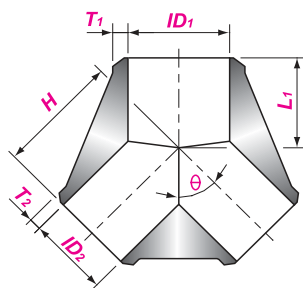
### TOLERANCES FOR RETURN BENDS & ELBOWS

项 目 Item	$OD \leq 76$		$OD=89 \sim 127$		$OD=141 \sim 193$		$OD=219 \sim 237$	
	90°	180°	90°	180°	90°	180°	90°	180°
$OD$	+1.50 -0.75	+1.50 -0.75	$\pm 1.50$	$\pm 1.50$	+2.00 -0.75	+2.00 -1.50	+2.00 -1.50	+2.00 -1.50
$ID$	$\pm 0.75$	$\pm 0.75$	$\pm 1.50$	$\pm 1.50$	$\pm 1.50$	$\pm 1.50$	$\pm 1.50$	$\pm 1.50$
$R$	$\pm 1.00$	-	$\pm 1.50$	-	$\pm 2.00$	-	$\pm 2.00$	-
$A$	-	$\pm 2.00$	-	$\pm 2.50$	-	$\pm 2.50$	-	$\pm 3.00$
$K$	-	+6.00	-	+6.00	-	+6.00	-	+6.00
$U$	-	$\pm 1.00$	-	$\pm 1.00$	-	$\pm 1.00$	-	$\pm 2.00$
$P$	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；对于设计文件规定 T 为最小壁厚的急弯弯管，T 的负偏差为零。 - 12.5%T ;if T is the min.one,the minus tolerance shall be zero.							

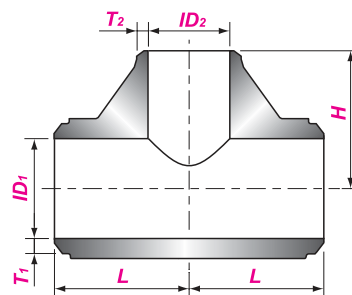
## FORGED LARGE SIZE TEES



锻制45°三通  
Forged Lateral 45° Tee



锻制Y型三通  
Forged WYE

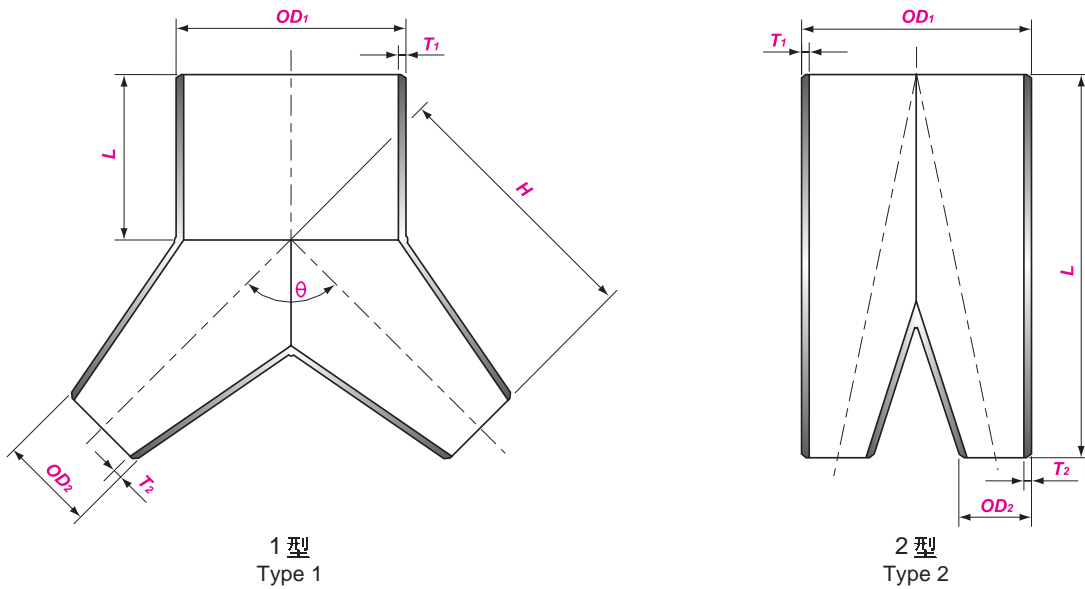


锻制T型三通  
Forged Tee

### 大直径锻制三通

## FORGED LARGE SIZE TEES

项目 Item	内容 Content
标准 Standard	JB 4726~4728 压力容器用钢锻件 JB 4726~4728 Steel forgings for pressure vessels DL 473 大直径三通锻件技术条件 DL 473 Standard specification for large size tees. ASTM A105 管道元件用碳钢锻件 ASTM A105 Standard Specification for Carbon Steel Forgings for Piping Applications ASTM A182 高温用锻制或轧制合金钢和不锈钢管法兰、锻制管件、阀门和零件 ASTM A182 Standard Specification for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service ASTM A336 高温承压件用合金钢锻件 ASTM A336 Standard Specification for Alloy Steel Forgings for Pressure and High-Temperature Parts ASTM A965 高温承压件用奥氏体钢锻件 ASTM A965 Standard Specification for Austenitic Steel Forgings for Pressure and High Temperature Parts
制造工艺 Fabrication Process	采用锻件镗孔、热处理、超声波检测和精加工成形的工艺制造 Using the processes of forging boring、heat treatment、ultrasonic examination and finishing.
材料 Material	碳素钢、合金钢、不锈钢 Carbon steel、Alloy steel、Stainless steel
尺寸 Size	按设计文件规定；或制造商与采购方协商确定 Per the specification of design documentation or the agreement between manufacturer and purchaser.
公差 Tolerance	按对焊管件公差执行；或按设计文件规定 Per the tolerance of BW fittings or the specification of design documentation.
端部坡口 Bevelends	按对焊管件端部坡口型式；或按设计文件规定 Per the bevel ends of BW fittings or specification of design documentation.
注释： 1) 除图示形状外，还可按采购文件规定的形状制造。 2) 确定产品形状和尺寸的通常作法如下： a) 由采购方提供制造图纸，制造商按提供的图纸制造。 b) 由采购方提出需要的形状、外径，壁厚和夹角等技术要求，由制造商提供制造图纸，经采购方批准后制造。	Note: 1) Besides the above figures, others can also be manufactured per the purchase specification.. 2) Generally, the figures and the sizes will be specified per the following: a) Purchaser provides the drawings and manufacturer will fabricate them accordingly. b) Per the provided specifications by purchasers such as figures, outside diameters, wall thicknesses, angels and etc, manufacturer provides the drawings for purchaser's review, then manufacture after approval.



### 钢板制Y型三通

#### WYE MADE UP OF STEEL PLATES

项目 Item	内容 Content
成形工艺 Forming Process	采用钢板下料、卷制和焊接的成形工艺制造 Using the processes of cutting steel plate、rolling and welding.
材料 Material	碳素钢、合金钢、不锈钢 Carbon steel、Alloy steel、Stainless steel
结构长度 L Structure length	按设计文件规定；或制造商与采购方协商确定 According to the specification of design documentation or the agreement between manufacturer and purchaser.
外径 OD Outside Diameter	按设计文件规定 According to the specification of design documentation.
夹角 $\theta$ Included Angle	按设计文件规定 According to the specification of design documentation.
壁厚 T Thickness	按设计文件规定 According to the specification of design documentation.
公差 Tolerance	按对焊管件公差执行；或按设计文件规定 According to the tolerance of BW fittings or the specification of design documentation.
端部坡口 Bevel at ends	按对焊管件端部坡口型式；或按设计文件规定 According to the bevel ends of BW fittings or specification of design documentation.
注释： 1) 除图示形状外，还可按采购文件规定的形状制造。 2) 确定产品形状和尺寸的通常作法如下： a) 由采购方提供制造图纸，制造商按提供的图纸制造。 b) 由采购方提出需要的形状、外径，壁厚和夹角等技术要求，由制造商提供制造图纸，经采购方批准后制造。	Note: 1) Besides the above figures, others can also be manufactured per the purchase specification.. 2) Generally, the figures and the sizes will be specified per the following: a) Purchaser provides the drawings and manufacturer will fabricate them accordingly. b) Per the provided specifications by purchaser such as figures, outside diameters, wall thicknesses, angels and etc, manufacturer provides the drawings for purchaser's review, then manufacture after approval.



## OUTSIDE DIAMETER AND WALL THICKNESS

GB、ASME、MSS 管件标准中的接管外径和壁厚表(适用于所有材料)															
OUTSIDE DIAMETER AND WALL THICKNESS OF THE CONNECTING PIPE FOR FITTING FER STANDARDS GB、ASME、MSS (APPLYING FOR ALL MATERIALS)															
公称尺寸 Nominal Size		外径 OD	公称壁厚 <i>T</i> Nominal Wall Thickness <i>T</i>												
DN	NPS		OD	Sch10	Sch20	Sch30	STD	Sch40	Sch60	XS	Sch80	Sch100	Sch120	Sch140	Sch160
6	1/8	10.3	1.24	-	1.45	1.73	1.73	-	2.41	2.41	-	-	-	-	-
8	1/4	13.7	1.65	-	1.85	2.24	2.24	-	3.02	3.02	-	-	-	-	-
10	3/8	17.1	1.65	-	1.85	2.31	2.31	-	3.20	3.20	-	-	-	-	-
15	1/2	21.3	2.11	-	2.41	2.77	2.77	-	3.73	3.73	-	-	-	4.78	7.47
20	3/4	26.7	2.11	-	2.41	2.87	2.87	-	3.91	3.91	-	-	-	5.56	7.82
25	1	33.4	2.77	-	2.90	3.38	3.38	-	4.55	4.55	-	-	-	6.35	9.09
32	1 1/4	42.2	2.77	-	2.97	3.56	3.56	-	4.85	4.85	-	-	-	6.35	9.70
40	1 1/2	48.3	2.77	-	3.18	3.68	3.68	-	5.08	5.08	-	-	-	7.14	10.15
50	2	60.3	2.77	-	3.18	3.91	3.91	-	5.54	5.54	-	-	-	8.74	11.07
65	2 1/2	73.0	3.05	-	4.78	5.16	5.16	-	7.01	7.01	-	-	-	9.53	14.02
80	3	88.9	3.05	-	4.78	5.49	5.49	-	7.62	7.62	-	-	-	11.13	15.24
90	3 1/2	101.6	3.05	-	4.78	5.74	5.74	-	8.08	8.08	-	-	-	-	-
100	4	114.3	3.05	-	4.78	6.02	6.02	-	8.56	8.56	-	11.13	-	13.49	17.12
125	5	141.3	3.40	-	-	6.55	6.55	-	9.53	9.53	-	12.70	-	15.88	19.05
150	6	168.3	3.40	-	-	7.11	7.11	-	10.97	10.97	-	14.27	-	18.26	21.95
200	8	219.1	3.76	6.35	7.04	8.18	8.18	10.31	12.70	12.70	15.09	18.26	20.62	23.01	22.23
250	10	273.0	4.19	6.35	7.80	9.27	9.27	12.70	12.70	15.09	18.26	21.44	25.40	28.58	25.40
300	12	323.8	4.57	6.35	8.38	9.53	10.31	14.27	12.70	17.48	21.44	25.40	28.58	33.32	25.40
350	14	355.6	6.35	7.92	9.53	9.53	11.13	15.09	12.70	19.05	23.83	27.79	31.75	35.71	-
400	16	406.4	6.35	7.92	9.53	9.53	12.70	16.66	12.70	21.44	26.19	30.96	36.53	40.49	-
450	18	457.0	6.35	7.92	11.13	9.53	14.27	19.05	12.70	23.83	29.36	34.93	39.67	45.24	-
500	20	508.0	6.35	9.53	12.70	9.53	15.09	20.62	12.70	26.19	32.54	38.10	44.45	50.01	-
550	22	559.0	6.35	9.53	12.70	9.53	-	22.23	12.70	28.58	34.93	41.28	47.63	53.98	-
600	24	610.0	6.35	9.53	14.27	9.53	17.48	24.61	12.70	30.96	38.89	46.02	52.37	59.54	-
650	26	660.0	7.92	12.70	-	9.53	-	-	12.70	-	-	-	-	-	-
700	28	711.0	7.92	12.70	15.88	9.53	-	-	12.70	-	-	-	-	-	-
750	30	762.0	7.92	12.70	15.88	9.53	-	-	12.70	-	-	-	-	-	-
800	32	813.0	7.92	12.70	15.88	9.53	17.48	-	12.70	-	-	-	-	-	-
850	34	864.0	7.92	12.70	15.88	9.53	17.48	-	12.70	-	-	-	-	-	-
900	36	914.0	7.92	12.70	15.88	9.53	19.05	-	12.70	-	-	-	-	-	-
950	38	965.0	-	-	-	9.53	-	-	12.70	-	-	-	-	-	-
1000	40	1016.0	-	-	-	9.53	-	-	12.70	-	-	-	-	-	-
1050	42	1067.0	-	-	-	9.53	-	-	12.70	-	-	-	-	-	-
1100	44	1118.0	-	-	-	9.53	-	-	12.70	-	-	-	-	-	-
1150	46	1168.0	-	-	-	9.53	-	-	12.70	-	-	-	-	-	-
1200	48	1219.0	-	-	-	9.53	-	-	12.70	-	-	-	-	-	-
1300	52	1321.0	-	-	-	-	-	-	-	-	-	-	-	-	-
1400	56	1422.0	-	-	-	-	-	-	-	-	-	-	-	-	-
1500	60	1524.0	-	-	-	-	-	-	-	-	-	-	-	-	-
1600	64	1626.0	-	-	-	-	-	-	-	-	-	-	-	-	-
1700	68	1727.0	-	-	-	-	-	-	-	-	-	-	-	-	-
1800	72	1829.0	-	-	-	-	-	-	-	-	-	-	-	-	-
1900	76	1930.0	-	-	-	-	-	-	-	-	-	-	-	-	-
2000	80	2032.0	-	-	-	-	-	-	-	-	-	-	-	-	-

注释:

- 1) 表中数值选自 ASME B36.10M; 适用于 GB 和 ASME、MSS 管件标准中的接管壁厚。
- 2) 如果产品要求的接管外径和壁厚本表中没有列出的话, 可在订货中直接给出要求的数值。

Note:

- 1) The above digits quoted from B36.10M. The connecting pipe thickness of fittings per standards GB, ASME and MSS also apply them.
- 2) If the outside diameter and wall thickness of the connecting pipe aren't included in the above table, these sizes can be specified directly in the purchase order.

### GB、ASME、MSS 管件标准中的接管外径和壁厚表(适用于不锈钢材料)

OUTSIDE DIAMETER AND WALL THICKNESS OF THE CONNECTING PIPE FOR FITTING PER STANDARDS GB, ASME, MSS (APPLYING FOR STAINLESS STEEL MATERIALS)

公称尺寸 Nominal Size		外径 OD	公称壁厚 <i>T</i> Nominal Wall Thickness <i>T</i>			
DN	NPS		Sch5S	Sch10S	Sch40S	Sch80S
6	1/8	10.3	-	1.24	1.73	2.41
8	1/4	13.7	-	1.65	2.24	3.02
10	3/8	17.1	-	1.65	2.31	3.20
15	1/2	21.3	1.65	2.11	2.77	3.73
20	3/4	26.7	1.65	2.11	2.87	3.91
25	1	33.4	1.65	2.77	3.38	4.55
32	1 1/4	42.2	1.65	2.77	3.56	4.85
40	1 1/2	48.3	1.65	2.77	3.68	5.08
50	2	60.3	1.65	2.77	3.91	5.54
65	2 1/2	73.0	2.11	3.05	5.16	7.01
80	3	88.9	2.11	3.05	5.49	7.62
90	3 1/2	101.6	2.11	3.05	5.74	8.08
100	4	114.3	2.11	3.05	6.02	8.56
125	5	141.3	2.77	3.40	6.55	9.53
150	6	168.3	2.77	3.40	7.11	10.97
200	8	219.1	2.77	3.76	8.18	12.70
250	10	273.0	3.40	4.19	9.27	12.70
300	12	323.8	3.96	4.57	9.53	12.70
350	14	355.6	3.96	4.78	9.53	12.70
400	16	406.4	4.19	4.78	9.53	12.70
450	18	457.0	4.19	4.78	9.53	12.70
500	20	508.0	4.78	5.54	9.53	12.70
550	22	559.0	4.78	5.54	-	-
600	24	610.0	5.54	6.35	9.53	12.70
650	26	660.0	-	-	-	-
700	28	711.0	-	-	-	-
750	30	762.0	6.35	7.92	-	-

注释:

- 1) 表中数值选自 ASME B36.19M; 适用于 GB 和 ASME、MSS 管件标准中的接管壁厚。
- 2) 如果产品要求的接管外径和壁厚本表中没有列出的话, 可在订货中直接给出要求的数值。

Note:

- 1) The above digits quoted from B36.19M. The connecting pipe thickness of fittings per standards GB, ASME and MSS also apply them.
- 2) If the outside diameter and wall thickness of the connecting pipe aren't included in the above table, these sizes can be specified directly in the purchase order.



## OUTSIDE DIAMETER AND WALL THICKNESS

GB/T 12459、GB/T 13401 的 II 系列外径 和 HG/T 21631 的 II 系列外径与壁厚表 OUTSIDE DIAMETER (II SERIES) OF GB/T 12459 & GB/T 13401 AND OUTSIDE DIAMETER AND WALL THICKNESS (II SERIES) OF HG/T 21631								HG/T 21635 的公制系列外径与壁厚表 OUTSIDE DIAMETER AND WALL THICKNESS (METRIC SYSTEM) OF HG/T 21635					
公称尺寸 Nominal Size	外径 OD	公称压力 Nominal Pressure PN(MPa)						公称尺寸 Nominal Size	外径 OD	公称压力 Nominal Pressure PN(MPa)			
DN	OD	1.0		1.6		2.5		DN	OD	2.5	4.0	6.4	10.0
		碳钢 CS	不锈钢 SS	碳钢 CS	不锈钢 SS	碳钢 CS	不锈钢 SS						
15	18	-	-	-	-	-	-	15	18	-	-	-	-
20	25	-	-	-	-	-	-	20	25	-	-	-	-
25	32	-	-	-	-	-	-	25	32	3.0	3.0	3.0	4.0
32	38	-	-	-	-	-	-	32	38	3.0	3.0	3.5	4.5
40	45	-	-	-	-	-	-	40	45	3.5	3.5	3.5	4.5
50	57	-	-	-	-	-	-	50	57	3.5	3.5	3.5	5.0
65	76	-	-	-	-	-	-	65	76	4.0	4.0	4.5	6.0
80	89	-	-	-	-	-	-	80	89	4.0	4.0	5.0	7.0
100	108	-	-	-	-	-	-	100	108	4.0	4.0	6.0	8.0
125	133	-	-	-	-	-	-	125	133	4.0	4.0	6.0	9.0
150	159	5	3.5	5.5	4.0	6.0	5.0	150	159	4.5	4.5	7.0	10
200	219	5	3.5	6.0	4.0	7.0	5.0	200	219	6.0	6.0	9.0	12
250	273	5	3.5	6.0	4.5	8.0	6.0	250	273	7.0	7.0	11	-
300	325	6	4.0	7.0	5.0	8.0	7.0	300	325	8.0	8.0	12	-
350	377	6	4.5	7.0	6.0	9.0	8.0	350	377	9.0	9.0	-	-
400	426	6	4.5	8.0	6.0	10	9.0	400	426	9.0	11	-	-
450	480	7	5.0	8.0	7.0	11	9.0	450	480	9.0	-	-	-
500	530	7	5.5	9.0	7.0	12	10	500	530	9.0	-	-	-
600	630	8	6.0	10	8.0	13	12	600	630	9.0	-	-	-
700	720	8	7.0	11	9.0	15	13	700	720	-	-	-	-
800	820	9	7.0	12	10	16	15	800	820	-	-	-	-
900	920	9	8.0	13	-	-	-	900	920	-	-	-	-
1000	1020	10	-	14	-	-	-	1000	1020	-	-	-	-
1100	1120	-	-	-	-	-	-	1100	1120	-	-	-	-
1200	1220	-	-	-	-	-	-	1200	1220	-	-	-	-

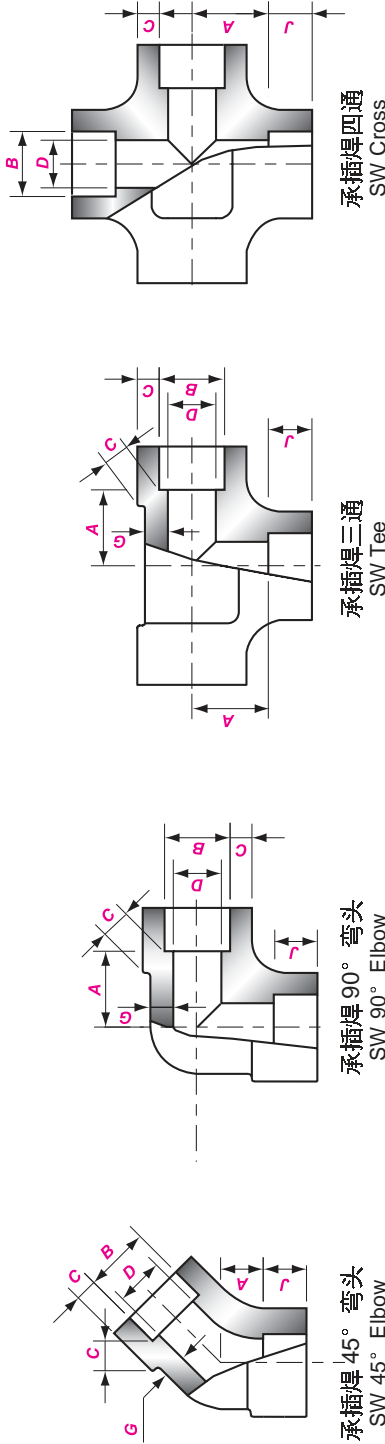
<p>注释:</p> <p>1) GB/T 12459 和 GB/T 13401 标准的 II 系列外径见本表中的外径值; II 系列的壁厚可选择 26~27 页壁厚表的数值, 也可在订货中直接给出要求的壁厚值。</p> <p>2) HG/T 21631 (原 HGJ 528) 标准中外径和壁厚分为 I、II 两个系列; 其中 I 系列的外径和壁厚按 26~27 页表中的数值。</p> <p>3) HG/T 21635 (原 HGJ 514) 标准中外径和壁厚分为公制、英制两个系列; 其中英制系列的外径和壁厚按 26~27 页表中的数值。</p>	<p>Note:</p> <p>1) The outside diameter( II series)of GB/T 12459 and GB/T 13401 standards shall be per the one indicated in the above table; The wall thickness of II series can be per the table in page 26~27 or be specified directly in the purchase order.</p> <p>2) The outside diameter and wall thickness of HG/T 21631 (previously HGJ 528) standards have the series of I system and II system, and the outside diameter and wall thickness of I series are in accordance with the ones in the table of page 26~27.</p> <p>3) The outside diameter and wall thickness of HG/T 21635 (previously HGJ 514) standard have the series of metric system and inch system, and the outside diameter and wall thickness of inch system are in accordance with the ones in the table of page 26~27.</p>
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SH管件标准中的接管外径和壁厚表 OUTSIDE DIAMETER AND WALL THICKNESS OF THE CONNECTING PIPE FOR FITTING PER STANDARDS SH																
公称尺寸 Nominal Size	外径 OD	公称壁厚 $T$ Nominal Wall Thickness $T$														
		Sch 5s	Sch 10s	Sch 20s	Sch 40s	Sch 80s	Sch 20	Sch 30	Sch 40	Sch 60	Sch 80	Sch 100	Sch 120	Sch 140	Sch 160	XXS
10	17	1.2	1.6	2.0	2.5	3.2	-	-	2.5	-	3.5	-	-	-	-	-
15	22	1.6	2.0	2.5	3.0	4.0	-	-	3.0	-	4.0	-	-	-	5.0	7.5
20	27	1.6	2.0	2.5	3.0	4.0	-	-	3.0	-	4.0	-	-	-	5.5	8.0
25	34	1.6	2.8	3.0	3.5	4.5	-	-	3.5	-	4.5	-	-	-	6.5	9.0
(32)	42	1.6	2.8	3.0	3.5	5.0	-	-	3.5	-	5.0	-	-	-	6.5	10.0
40	48	1.6	2.8	3.0	4.0	5.0	-	-	4.0	-	5.0	-	-	-	7.0	10.0
50	60	1.6	2.8	3.5	4.0	5.5	3.5	-	4.0	5.0	5.5	-	7.0	-	8.5	11.0
(65)	76	2.0	3.0	3.5	5.0	7.0	4.5	-	5.0	6.0	7.0	-	8.0	-	9.5	14.0
80	89	2.0	3.0	4.0	5.5	7.5	4.5	-	5.5	6.5	7.5	-	9.0	-	11.0	15.0
100	114	2.0	3.0	4.0	6.0	8.5	5.0	-	6.0	7.0	8.5	-	11.0	-	14.0	17.0
(125)	140	2.8	3.5	5.0	6.5	9.5	5.0	-	6.5	8.0	9.5	-	13.0	-	16.0	19.0
150	168	2.8	3.5	5.0	7.0	11.0	5.5	6.5	7.0	9.5	11.0	-	14.0	-	18.0	22.0
200	219	2.8	4.0	6.5	8.0	13.0	6.5	7.0	8.0	10.0	13.0	15.0	18.0	20.0	24.0	23.0
250	273	3.5	4.0	6.5	9.5	15.0	6.5	8.0	9.5	13.0	15.0	18.0	22.0	25.0	28.0	25.0
300	325	4.0	4.5	6.5	9.5	17.0	6.5	8.5	10.0	14.0	17.0	22.0	25.0	28.0	34.0	26.0
350	356	4.0	5.0	-	-	-	8.0	9.5	11.0	15.0	19.0	24.0	28.0	32.0	36.0	-
400	406	4.5	5.0	-	-	-	8.0	9.5	13.0	17.0	22.0	26.0	32.0	36.0	40.0	-
450	457	-	-	-	-	-	8.0	11.0	14.0	19.0	24.0	30.0	35.0	40.0	45.0	-
500	508	-	-	-	-	-	9.5	13.0	15.0	20.0	26.0	32.0	38.0	45.0	50.0	-
550	559	-	-	-	-	-	9.5	13.0	17.0	22.0	28.0	35.0	42.0	48.0	54.0	-
600	610	-	-	-	-	-	9.5	14.0	18.0	25.0	32.0	38.0	45.0	52.0	60.0	-
650	660	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
700	711	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
750	762	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
800	813	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
850	864	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
900	914	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
950	965	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1000	1016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1100	1118	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1200	1220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1300	1321	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1400	1420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1500	1524	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1600	1620	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1700	1727	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1800	1820	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1900	1930	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2000	2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

注释：  
1) 表号后带 S 者仅适用于不锈钢管件。

Note:  
1) Schedule with the suffix "s" only applies for stainless steel.



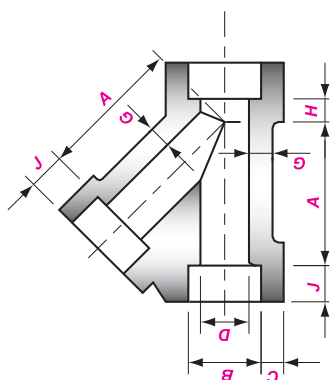


GB/T 14383, ASME B16.11

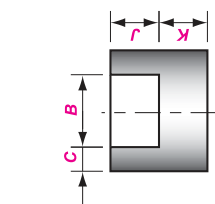
公称尺寸 Nominal Size	承插孔径 Socket Bore Dia.	流通孔径 Bore Dia. of Fittings		承插孔壁厚 Socket Wall Thickness						本体壁厚 Body Wall		承插孔深度 Depth of Socket					
		D		C		C		G <sub>min</sub>		A							
DN	NPS	3000	6000	3000	6000	9000	ave	min	3000	6000	9000	90° Elbow, Tee, Cross		45° Elbow			
6	1/8	6.1	3.2	3.18	3.18	3.18	3.18	3.18	2.41	3.15	-	11.0	11.0	8.0	8.0		
8	1/4	8.5	5.6	3.78	3.30	4.01	-	-	3.02	3.68	-	11.0	13.5	8.0	8.0		
10	3/8	11.8	8.4	4.01	3.50	4.37	-	-	3.20	4.01	-	13.5	15.5	8.0	11.0		
15	1/2	15.0	11.0	4.67	4.09	5.18	9.53	8.18	3.73	4.78	7.47	15.5	19.0	11.0	12.5		
20	3/4	20.2	14.8	4.90	4.27	6.04	9.78	8.56	3.91	5.56	7.82	19.0	22.5	13.0	14.0		
25	1	25.9	19.9	5.69	4.98	6.93	11.38	9.96	4.55	6.35	9.09	22.5	27.0	14.0	17.5		
32	1 1/4	34.3	28.7	6.07	5.28	7.92	12.14	10.62	4.85	6.35	9.70	27.0	32.0	17.5	20.5		
40	1 1/2	40.1	33.2	6.35	5.54	8.92	12.70	11.12	5.08	7.14	10.15	32.0	38.0	20.5	25.5		
50	2	51.7	42.1	6.93	6.04	10.92	13.84	12.12	5.54	8.74	11.07	38.0	41.0	25.5	28.5		
65	2 1/2	73.9	61.2	8.76	7.62	-	-	-	7.01	-	-	41.0	-	28.5	-		
80	3	89.9	76.4	9.52	8.30	-	-	-	7.62	-	-	57.0	-	32.0	-		
100	4	115.5	100.7	10.69	9.35	-	-	-	8.56	-	-	66.5	-	41.0	-		

注释:

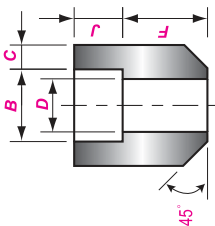
- 沿承插孔周边的平均壁厚不应小于平均值, 局部允许达到最小值。
  - 考虑到管子外径公差的原因, 有的承插孔径比 B16.11 规定略大。
  - 当选用的接管尺寸与样本的接管表规定不一致时, 请在采购文件中说明接管尺寸。
- Note:
- The even thickness around the socket bore shall not be less than the average value, the thickness at partial areas can be the min. one.
  - Considering the tolerance of outside diameter of pipe, the diameters of some socket bore can be a little larger than the ones specified in B16.11.
  - When the sizes of the connecting pipes aren't conformed to the ones specified in this catalog, the sizes of the connecting pipes shall be provided in the purchase specification.



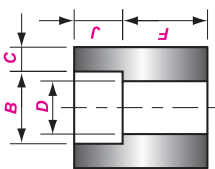
承插焊 45° 三通  
SW 45° Lateral



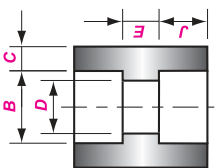
承插焊管帽  
SW Cap



半管接头  
Boss



单承口管箍  
SW Half-Coupling



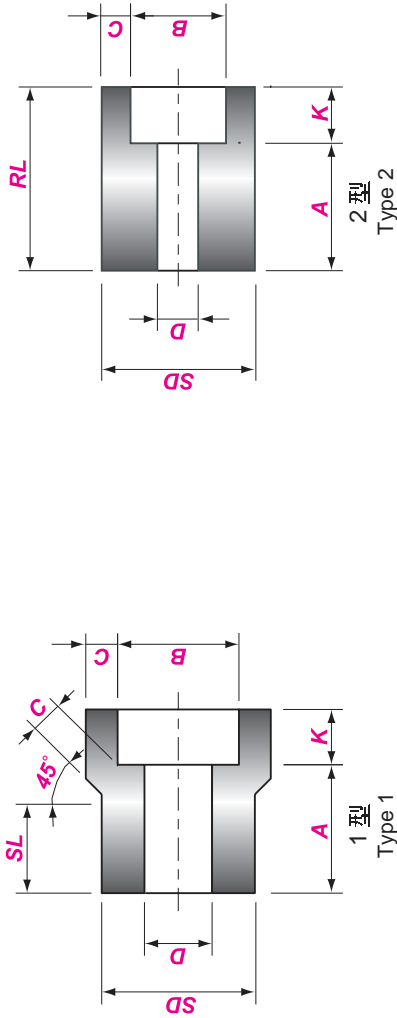
双承口管箍  
SW Coupling

GB/T 14383, ASME B16.11

公称尺寸 Nominal Size	承插 孔径 Socket Bore Dia.	流通孔径 Bore Dia. of Fittings		承插孔壁厚 Socket Wall Thickness			本体壁厚 Body Wall		承插孔 深度 Socket Depth of Socket	长度 Laying Lengths	顶部厚度 End Wall Thickness			中心至承插孔底 Center to Bottom of Socket			
		DN	NPS	3000	ave	min	6000	ave			min	9000	ave	min	3000	6000	9000
6	10.9	6.1	3.2	3.18	3.96	3.43	3.15	2.41	9.5	6.5	4.8	6.4	-	-	-	-	-
8	14.3	8.5	5.6	3.78	4.60	4.01	3.68	3.02	9.5	6.5	4.8	6.4	-	-	-	-	-
10	17.7	11.8	8.4	4.01	5.03	4.37	4.01	3.20	9.5	6.5	4.8	6.4	-	-	37	9.5	-
15	21.9	15.0	11.0	4.67	5.97	5.18	4.78	3.73	9.5	9.5	6.4	7.9	11.2	41	51	9.5	11
20	27.3	20.2	14.8	4.90	6.96	6.04	5.56	3.91	12.5	9.5	6.4	7.9	12.7	51	60	11	13
25	34.0	25.9	19.9	5.69	7.92	6.93	6.35	4.55	12.5	12.5	9.6	11.2	14.2	60	71	13	16
32	42.8	34.3	28.7	6.07	7.92	6.93	6.35	4.85	12.5	12.5	9.6	11.2	14.2	71	81	16	17
40	48.9	40.1	33.2	6.35	8.92	7.80	7.14	5.08	12.5	12.5	11.2	12.7	15.7	81	98	17	21
50	61.2	51.7	42.1	6.93	10.92	9.50	8.74	5.54	16.0	19.0	12.7	15.7	19.0	98	151	21	30
65	73.9	61.2	-	8.76	7.62	-	-	7.01	16.0	19.0	15.7	19.0	-	151	-	30	-
80	89.9	76.4	-	9.52	8.30	-	-	7.62	16.0	19.0	19.0	22.4	-	184	-	57	-
100	115.5	100.7	-	10.69	9.35	-	-	8.56	19.0	19.0	22.4	28.4	-	201	-	66	-

注释(续):

- 4) 当产品为异径时, 其外形尺寸与等径管件相同, 异径端的 B、J、D 按异径端的尺寸加工。
  - 5) 双承口管箍也可加工成同心异径或偏心异径型式。
  - 6) 管件也可按要求加工成承插焊和螺纹混合的连接型式。
- Note(continued):
- 4) When the fittings are reducing, the structure sizes shall be same as the ones of the straight fittings and B、J、D shall be machined per the according reducing ends.
  - 5) Couplings can be the concentric or eccentric type.
  - 6) Fitting can also be manufactured as the mixed connectings of SW and THRD.



MSS SP-79 承插焊异径插入件  
MSS SP-79 SW REDUCER INSERTS

公称尺寸 Nominal Size	型式 Type		主体直径 Shank Dia.	承插孔深度 Depth of Socket	承插孔径 Socket Bore Dia.	流通孔径 Bore	壁厚 Wall		结构长度 Laying Length		长度 Length	
	DN	NPS					A	C <sub>min</sub>	A	SL	RL <sub>min</sub>	
		3000	SD	K <sub>min</sub>	B	D	3000	6000	3000	6000	3000	6000
10 × 8	3/8 × 1/4	1	17.1	9.5	14.3	9.2	3.8	6.4	19.1	21.3	14.2	15.7
15 × 10	1/2 × 3/8	1	21.3	9.5	17.7	12.5	4.0	9.1	20.6	23.1	15.7	15.7
× 8	× 1/4	1	21.3	9.5	14.3	9.2	3.8	6.4	20.6	20.6	15.7	15.7
20 × 15	3/4 × 1/2	1	26.7	9.5	21.9	15.8	4.7	11.8	22.4	25.4	17.5	19.1
× 10	× 3/8	2	26.7	9.5	17.7	12.5	4.0	9.1	15.7	22.4	-	19.1
× 8	× 1/4	2	26.7	9.5	14.3	9.2	3.8	6.4	17.5	22.4	-	-
25 × 20	1 × 3/4	1	33.4	12.5	27.3	20.9	4.9	15.5	23.9	28.5	19.1	20.6
× 15	× 1/2	2	33.4	9.5	21.9	15.8	4.7	11.8	15.7	28.5	-	20.6
× 10	× 3/8	2	33.4	9.5	17.7	12.5	4.0	9.1	17.5	22.4	-	-
× 8	× 1/4	2	33.4	9.5	14.3	9.2	3.8	6.4	19.1	23.9	-	28.5
32 × 25	1 1/4 × 1	1	42.2	12.5	34.0	26.6	5.7	20.7	25.4	30.2	20.6	22.4
× 20	× 3/4	2	42.2	12.5	27.3	20.9	4.9	15.5	17.5	20.6	-	-
× 15	× 1/2	2	42.2	9.5	21.9	15.8	4.7	11.8	19.1	22.4	-	31.8
× 10	× 3/8	2	42.2	9.5	17.7	12.5	4.0	9.1	20.6	23.9	-	31.8
× 8	× 1/4	2	42.2	9.5	14.3	9.2	3.8	6.4	22.4	25.4	-	31.8

MSS SP-79 承插焊异径插入件  
MSS SP-79 SW REDUCER INSERTS

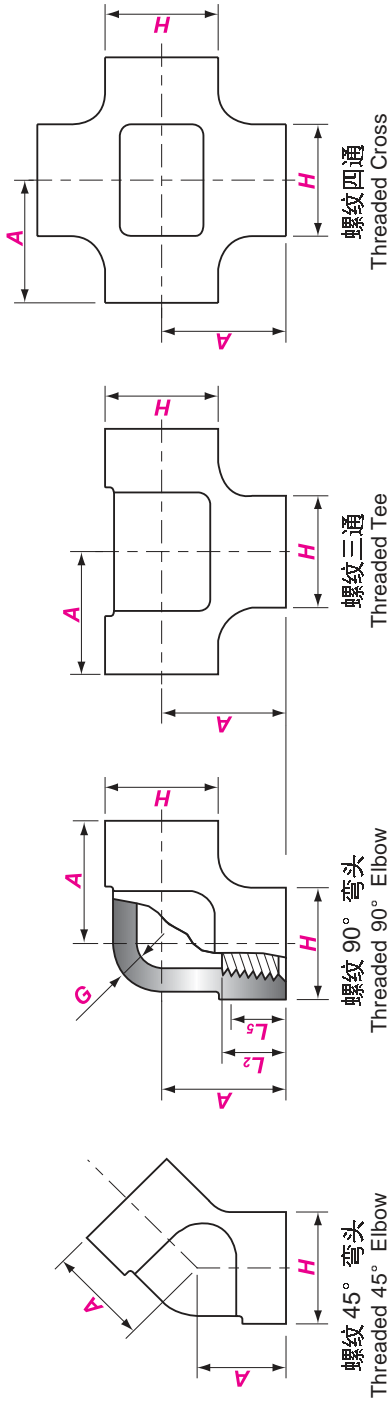
公称尺寸 Nominal Size	型式 Type	承插孔径 Socket Bore Dia.	承插孔深度 Depth of Socket	主体直径 Shank Dia.	结构长度 Laying Length	流通孔径 Bore		壁厚 Wall	长度 Length				
						A	D		SL	RL <sub>min</sub>			
DN	NPS	B	K <sub>min</sub>	SD	3000	6000	3000	6000	3000	6000			
40 × 32	1 1/2 × 1 1/4	42.8	12.5	SD	28.5	35.1	35.1	29.5	6.1	22.4	25.4	-	-
× 25	× 1	34.0	12.5		17.5	29.2	29.2	20.7	5.7	-	25.4	33.3	-
× 20	× 3/4	27.3	12.5	48.3	19.1	25.4	25.4	15.5	4.9	-	-	33.3	39.6
× 15	× 1/2	22.0	9.5		20.6	26.9	26.9	11.8	4.7	-	-	33.3	39.6
× 10	× 3/8	17.7	9.5		22.4	28.5	28.5	9.1	4.0	-	-	33.3	39.6
50 × 40	2 × 1 1/2	48.9	12.5	SD	31.8	38.9	38.9	34.0	6.4	25.4	28.7	-	-
× 32	× 1 1/4	42.8	12.5		20.6	23.9	23.9	29.5	6.1	-	-	38.1	41.2
× 25	× 1	34.0	12.5	60.3	22.4	25.4	25.4	20.7	5.7	-	-	38.1	41.2
× 20	× 3/4	27.3	12.5		23.9	26.9	26.9	15.5	4.9	-	-	38.1	41.2
× 15	× 1/2	21.9	9.5		25.4	28.5	28.5	11.8	4.7	-	-	38.1	41.2
65 × 50	2 1/2 × 2	61.4	16.0	SD	46.0	42.7	42.7	42.9	6.9	38.1	31.8	-	-
× 40	× 1 1/2	48.9	12.5		35.1	35.1	35.1	34.0	6.4	-	-	53.9	53.9
× 32	× 1 1/4	42.8	12.5	73.0	36.6	36.6	36.6	29.5	6.1	-	-	53.9	53.9
× 25	× 1	34.0	12.5		38.1	38.1	38.1	20.7	5.7	-	-	53.9	53.9
× 20	× 3/4	27.3	12.5		39.6	38.1	38.1	15.5	4.9	-	-	53.9	53.9
80 × 65	3 × 2 1/2	74.1	16.0	SD	38.1	57.2	57.2	54.0	8.8	31.8	44.5	-	-
× 50	× 2	61.4	16.0		25.4	31.8	31.8	42.9	6.9	-	-	47.5	53.9
× 40	× 1 1/2	48.9	12.5	88.9	28.5	31.8	31.8	34.0	6.4	-	-	47.5	53.9
× 32	× 1 1/4	42.8	12.5		30.2	31.8	31.8	29.5	6.1	-	-	47.5	53.9
× 25	× 1	34.0	12.5		31.8	31.8	31.8	20.7	5.7	-	-	47.5	53.9
100 × 80	4 × 3	90.0	16.0	SD	33.3	54.0	54.0	66.6	9.5	-	-	60.5	-
× 65	× 2 1/2	74.1	16.0		38.1	54.0	54.0	54.0	8.8	-	-	60.5	-
× 50	× 2	61.4	16.0	114.3	38.1	54.0	54.0	42.9	6.9	-	-	60.5	-
× 40	× 1 1/2	48.9	12.5		41.2	57.0	57.0	34.0	6.4	-	-	60.5	-
× 32	× 1 1/4	42.8	12.5		42.9	57.0	57.0	29.5	6.1	-	-	60.5	-

Note:

- 1) At option of the manufacturer, type 2 reducers may be furnished instead of type 1.
- 2) The nominal size is showed as SD × B.

注释:

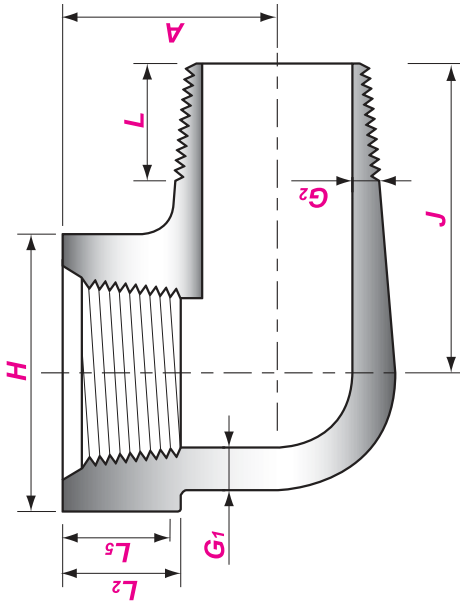
- 1) 制造商选择可以用型式 1 代替型式 2。
- 2) 公称尺寸的表示方式为 SD × B。



GB/T 14383, ASME B16.11

公称尺寸 Nominal Size	中心至端面 Center-to-End		端部外径 Outside Diameter of Band		本体壁厚 Wall Thickness		螺纹长度 Length of Thread			
	A		H		G <sub>min</sub>		L <sub>5min</sub>	L <sub>2min</sub>		
DN	90° Elbows, Tees, Crosses		45° Elbows		2000	3000	6000	2000	3000	6000
6	21	25	17	17	22	19	25	22	25	25
8	21	28	17	19	22	22	33	22	25	33
10	25	33	19	22	25	25	38	25	33	38
15	28	38	22	25	33	28	46	33	38	46
20	33	44	25	28	38	33	56	38	46	56
25	38	51	28	33	46	35	62	46	56	62
32	44	60	33	35	56	43	75	56	62	75
40	51	64	35	43	62	44	84	62	75	84
50	60	83	43	44	75	52	102	75	84	102
65	76	95	52	52	92	64	121	92	102	121
80	86	106	64	64	109	79	146	109	121	146
100	106	114	79	79	146	79	152	146	152	152

注：  
1) 螺纹按 GB/T 12716 (等同于 ASME B1.20.1) 中的 NPT 螺纹加工。  
Note:  
1) Thread shall be machined per GB/T 12716 (equivalent to ASME B1.20.1).



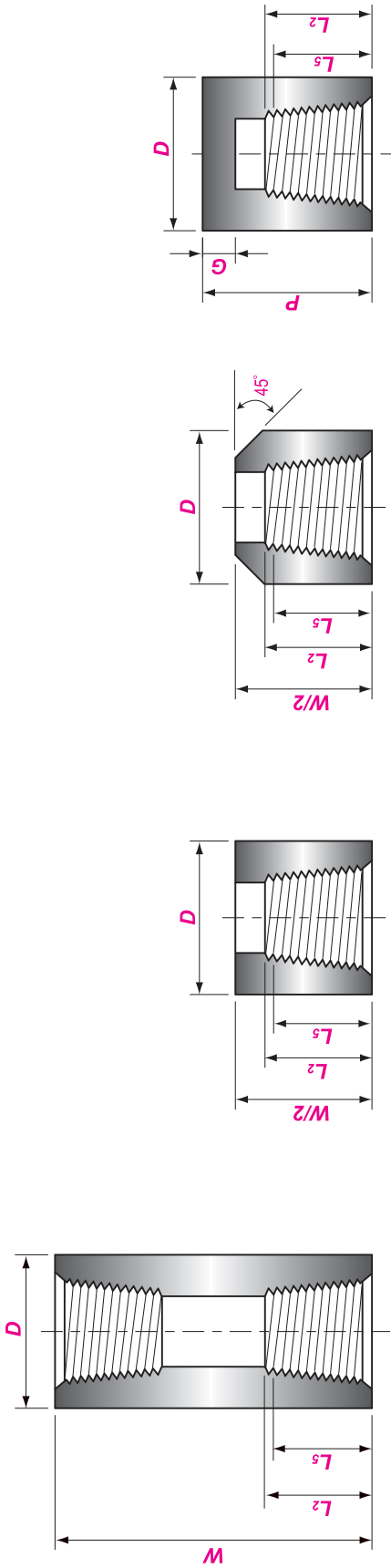
内外螺纹 90° 弯头  
Female and Male Threaded 90° Elbow

GB/T 14383, ASME B16.11

公称尺寸 Nominal Size	中心至内螺纹端面 Center to Female End Street Ells		中心至外螺纹端面 Center to Male End Street Ells		端部外径 Outside Diameter of End		本体壁厚 Wall Thickness		本体壁厚 Wall Thickness		内螺纹长度 Length Internal Thread		外螺纹长度 Length Male Thread
	A	J	H	H	$G_{1\min}$	$G_{2\min}$	$L_{-5\min}$	$L_{-2\min}$	$L_{\min}$				
DN	NPS	3000	6000	3000	6000	3000	6000	3000	6000	3000	6000	6000	6000
6	1/8	19	22	25	32	19	25	3.18	5.08	2.74	4.22	6.4	6.7
8	1/4	22	25	32	38	25	32	3.30	5.66	3.22	5.28	8.1	10.2
10	3/8	25	28	38	41	32	38	3.51	6.98	3.50	5.59	9.1	10.4
15	1/2	28	35	41	48	38	44	4.09	8.15	4.16	6.53	10.9	13.6
20	3/4	35	44	48	57	44	51	4.32	8.53	4.88	6.86	12.7	13.9
25	1	44	51	57	66	51	62	4.98	9.93	5.56	7.95	14.7	17.3
32	1 1/4	51	54	66	71	62	70	5.28	10.59	5.56	8.48	17.0	18.0
40	1 1/2	54	64	71	84	70	84	5.56	11.07	6.25	8.89	17.8	18.4
50	2	64	83	84	105	84	102	7.14	12.09	7.64	9.70	19.0	19.2

注释:

- 1) 制造商也可以选择使用 34 页中螺纹 90° 弯头的 A 和 H 尺寸。
  - 2) 螺纹按 GB/T 12716 (等同于 ASME B1.20.1) 中的 NPT 螺纹加工。
- Note:  
1) At the option of manufacturer, the sizes A and H of threaded 90° elbow in the page of 34 can be applied.  
2) Thread shall be machined per GB/T 12716 (equivalent to ASME B1.20.1).



双螺口管箍  
Coupling

单螺口管箍  
Half-Coupling

半管接头  
Boss

管帽  
Cap

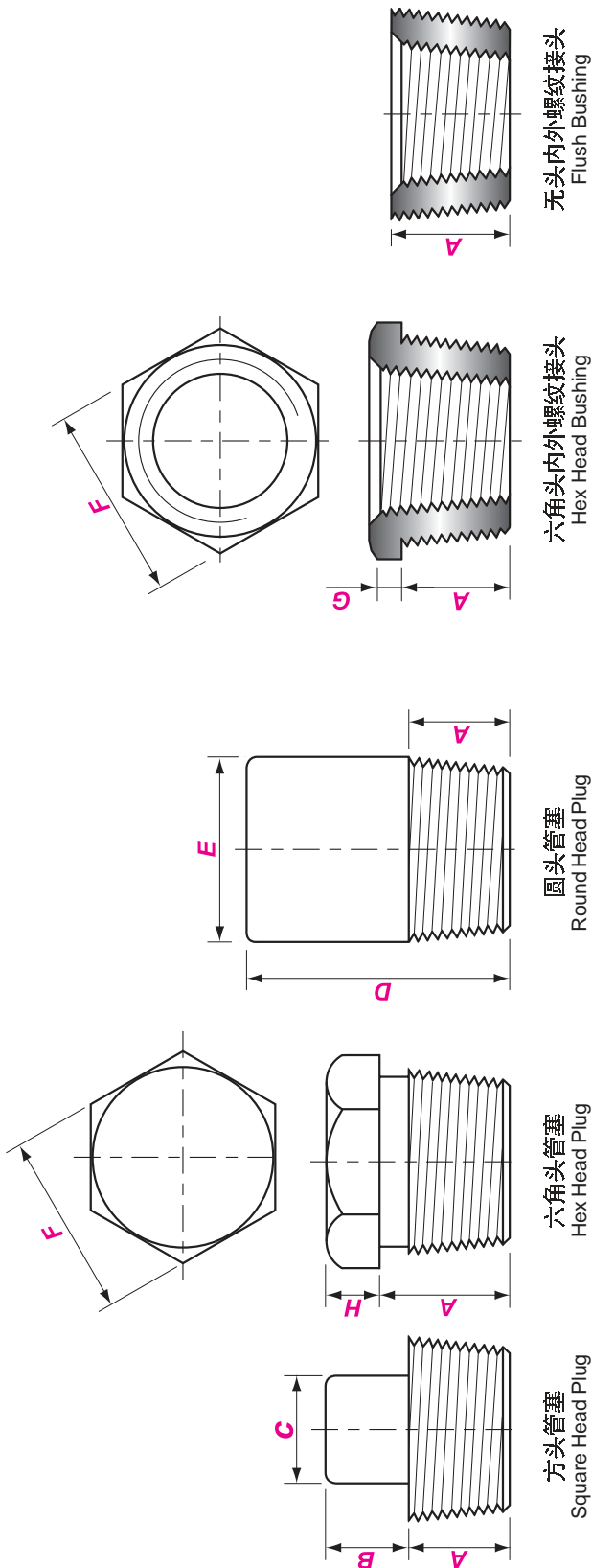
GB/T 14383, ASME B16.11

公称尺寸 Nominal Size	端面至端面 End-to-End	外径 Outside Diameter		顶部厚度 End Wall		螺纹长度 Length of Thread	
	W	D		G <sub>min</sub>		L <sub>5 min</sub>	L <sub>2 min</sub>
DN	3000 & 6000	3000	6000	3000	6000		
6	32	16	22	4.8	-	6.4	6.7
8	35	19	25	4.8	6.4	8.1	10.2
10	38	22	32	4.8	6.4	9.1	10.4
15	48	28	38	6.4	7.9	10.9	13.6
20	51	35	44	6.4	7.9	12.7	13.9
25	60	44	57	9.7	11.2	14.7	17.3
32	67	57	64	9.7	11.2	17.0	18.0
40	79	64	76	11.2	12.7	17.8	18.4
50	86	76	92	12.7	15.7	19.0	19.2
65	92	92	108	15.7	19.0	23.6	28.9
80	108	108	127	19.0	22.4	25.9	30.5
100	121	140	159	22.4	28.4	27.7	33.0

Note:

1) Thread shall be machined per GB/T 12716 (equivalent to ASME B1.20.1).

注：1) 螺纹按 GB/T 12716 (等同于 ASME B1.20.1) 中的 NPT 螺纹加工。



GB/T 14383, ASME B16.11

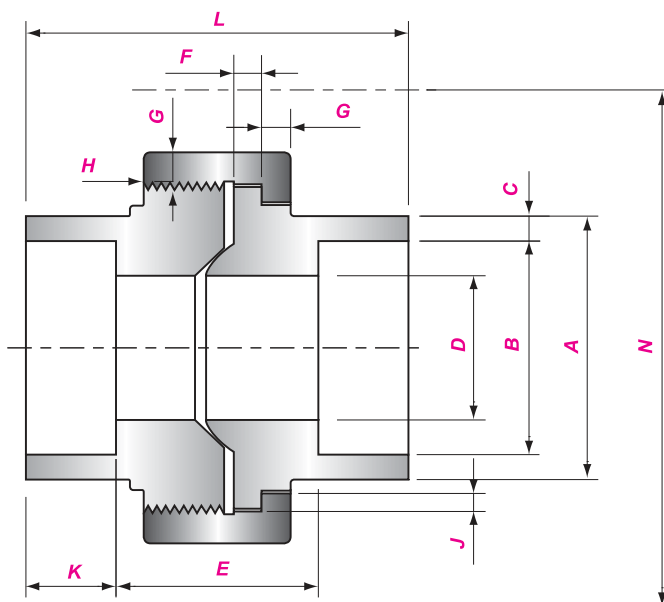
公称尺寸 Nominal Size	长度 Length	方头高度 Square Height	方头对边宽度 Width Flats	圆头直径 Head Diameter	总长 Length	六角头厚度 Hex Height	六角头对边宽度 Hex Width Flats	DN	NPS
6	10	6	7	10	35	6	-	6	1/8
8	11	6	10	14	41	6	3	6	1/4
10	13	8	11	18	41	8	4	8	3/8
15	14	10	14	21	44	8	5	10	1/2
20	16	11	16	27	44	10	6	10	3/4
25	19	13	21	33	51	10	6	10	1
32	21	14	24	43	51	14	7	14	1 1/4
40	21	16	28	48	51	16	8	16	1 1/2
50	22	18	32	60	64	18	9	18	2
65	27	19	36	73	70	19	10	19	2 1/2
80	28	21	41	89	70	21	10	21	3
100	32	25	65	114	76	25	13	25	4

注：  
1) 螺纹按 GB/T 12716 (等同于 ASME B1.20.1) 中的 NPT 螺纹加工。

Note:  
1) Thread shall be machined per GB/T 12716 (equivalent to ASME B1.20.1).



# UNIONS



3000 级别承插焊活接头  
Class 3000 Unions of SW Ends

## MSS SP-83

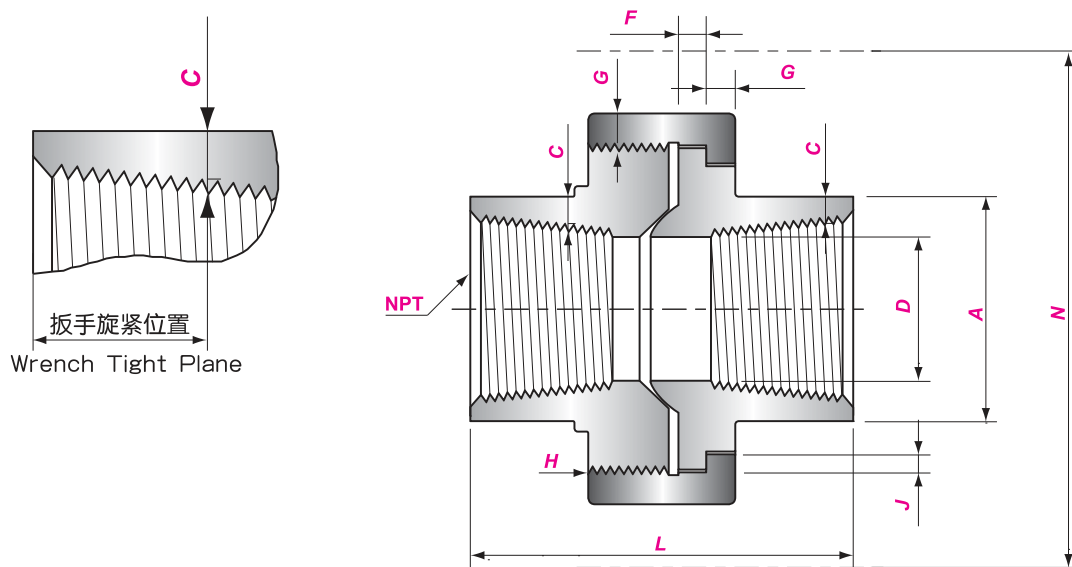
公称尺寸 Nominal Size		端部 外径 Pipe End	承插 孔径 Socket Bore Dia.	承插孔 壁厚 Socket Wall	流通 孔径 Water Way Bore	结构 长度 Laying Length	突缘 厚度 Male Flange	螺母 厚度 Nut	每英寸 螺纹数 THRD Per Inch	螺母承 缘高度 Bearing	插口 深度 Depth of Socket	组 装 长度 Length Assem	螺母组 装空间 Clear Assem. Nut
DN	NPS	$A_{min}$	$B$	$C_{min}$	$D$	$E$	$F_{min}$	$G_{min}$	$H$	$J_{min}$	$K_{min}$	$L_{nom}$	$N$
6	1/8	21.8	10.9	3.2	6.1	20.7	3.2	3.2	16	1.2	9.7	41.4	51
8	1/4	21.8	14.3	3.3	8.5	20.7	3.2	3.2	16	1.2	9.7	41.4	51
10	3/8	25.9	17.7	3.5	11.8	23.8	3.4	3.4	14	1.4	9.7	46.0	56
15	1/2	31.2	21.9	4.1	15.0	23.8	3.7	3.7	14	1.5	9.7	49.0	59
20	3/4	37.1	27.3	4.3	20.2	28.6	4.1	4.1	11	1.7	12.7	56.9	66
25	1	45.5	34.0	5.0	25.9	30.2	4.6	4.4	11	1.9	12.7	62.0	79
32	1 1/4	54.9	42.8	5.3	34.3	36.6	5.3	5.2	10	2.1	12.7	71.1	94
40	1 1/2	61.5	48.9	5.5	40.1	38.1	5.8	5.6	10	2.3	12.7	76.5	112
50	2	75.2	61.2	6.0	51.7	41.4	6.6	6.4	10	2.7	15.7	86.1	132
65	2 1/2	91.7	73.9	7.7	61.2	56.9	7.5	7.1	8	3.1	15.7	102.4	150
80	3	109.2	89.9	8.3	76.4	58.7	8.3	8.0	8	3.5	15.7	109.0	176

注释:

1)  $H$  为每英寸螺纹牙数, 应至少 4 整圈螺纹啮合。此处的内外螺纹按 ASME B1.1 2A/2B 加工。

Note:

1)  $H$  is the number of threads per inch with the min. of 4 tightening turns, and the female and male thread herein shall be machined per ASME B1.1 2A/2B.



3000 级别螺纹活接头  
Class 3000 Unions of THRD Ends

MSS SP-83

公称尺寸 Nominal Size		端部外径 Pipe End	壁厚 Wall	流通孔径 Bore	突缘厚度 Male Flange	螺母厚度 Nut	每英寸 螺纹数 THRD Per Inch	螺母承 缘高度 Bearing	组装长度 Length Assem	螺母 组装空间 Clear Assem. Nut
DN	NPS	$A_{min}$	$C_{min}$	$D$	$F_{min}$	$G_{min}$	$H$	$J_{min}$	$L_{nom}$	$N$
6	1/8	14.7	2.4	8.4 6.4	3.2	3.2	16	1.2	41.4	51
8	1/4	19.1	3.0	11.1 9.4	3.2	3.2	16	1.2	41.4	51
10	3/8	22.9	3.2	14.3 13.5	3.4	3.4	14	1.4	46.0	56
15	1/2	27.7	3.7	17.9 17.1	3.7	3.7	14	1.5	49.0	59
20	3/4	33.5	3.9	23.0 21.4	4.1	4.1	11	1.7	56.9	66
25	1	41.4	4.5	29.0 27.7	4.6	4.4	11	1.9	62.0	79
32	1 1/4	50.5	4.9	37.7 35.4	5.3	5.2	10	2.1	71.1	94
40	1 1/2	57.2	5.1	43.5 41.2	5.8	5.6	10	2.3	76.5	112
50	2	70.1	5.5	55.6 52.1	6.6	6.4	10	2.7	86.1	132
65	2 1/2	85.3	7.0	66.3 64.3	7.5	7.1	8	3.1	102.4	150
80	3	102.4	7.6	82.6 77.3	8.3	8.0	8	3.5	109.0	176

注释:

- 1)  $H$  为每英寸螺纹牙数, 应至少 4 整圈螺纹啮合。此处的内外螺纹按 ASME B1.1 2A/2B 加工。
- 2) 端部螺纹按 GB/T 12716 (等同于 ASME B1.20.1) 中的 NPT 螺纹加工。

Note:

- 1)  $H$  is the number of threads per inch with the min. of 4 tightening turns, and the female and male thread herein shall be machined per ASME B1.1 2A/2B.
- 2) Thread shall be machined per GB/T 12716 (equivalent to ASME B1.20.1).



## TOLERANCES FOR SW/THRD FITTINGS

### 承接焊管件的公差

#### TOLERANCES FOR SW FITTINGS

公称尺寸 Nominal Size		所有管件 All Fittings		弯头、三通 和四通 Elbows, Tees & Crosses	双承口 管箍 Couplings	单承口 管箍 Half- Couplings	异径插入件 Reducer Inserts			活接头 Unions
		承插孔径 Socket Bore Dia.	流通孔径 Bore Dia. of Fittings	中心至承插 孔底 Center to Bottom of Socket	承插孔底 距离 Laying Lengths	承插孔底 至端面 Laying Lengths	结构 长度 Laying Length	主体 直径 Shank Dia.	长度 Length	结构长度 Laying Length
DN	NPS	B	D	A、H	E	F	A	SD	SL	E
6~8	1/8~1/4	+0.4 0	+1.5 0	± 1.0	± 1.5	± 1.0	+1.5 0	± 0.25	0 -1.5	± 1.5
10~20	3/8~3/4	+0.4 0	+1.5 0	± 1.5	± 3.0	± 1.5	+1.5 0	± 0.25	0 -1.5	± 3.0
25~40	1~1 1/2	+0.4 0	+1.5 0	± 2.0	± 4.0	± 2.0	+2.0 0	± 0.25	0 -2.0	± 4.0
50	2	+0.5 0	+1.5 0	± 2.0	± 4.0	± 2.0	+2.0 0	± 0.5	0 -2.0	± 4.0
65~80	2 1/2~3	+0.5 0	+3.0 0	± 2.5	± 5.0	± 2.5	+2.5 0	± 0.5	0 -2.5	± 5.0
100	4	+0.5 0	+3.0 0	± 2.5	± 5.0	± 2.5	+2.5 0	± 0.7	0 -2.5	-

### 螺纹管件的公差

#### TOLERANCES FOR THRD FITTINGS

公称尺寸 Nominal Size		弯头、三通和四通 Elbows, Tees & Crosses	双螺口管箍 Couplings	单螺口管箍 Half-couplings
		中心至端面 Center-to-End	端面至端面 End-to-End	端面至端面 End-to-End
DN	NPS	A、J	W	W/ 2
6~8	1/8~1/4	± 1.0	± 1.0	± 1.0
10~20	3/8~3/4	± 1.5	± 1.5	± 1.5
25~50	1~2	± 2.0	± 2.0	± 2.0
65~100	2 1/2~4	± 2.5	± 2.5	± 2.5

### 管件级别和与之适配的管子壁厚等级的关系

#### CLASS OF THE FITTINGS VS THE GRADE OF THE CONNECTING PIPES

连接型式 Joint Type	级别代号 Class	适配的管子壁厚等级 Grade of Connecting Pipes	连接型式 Joint Type	级别代号 Class	适配的管子壁厚等级 Grade of Connecting Pipes
承插焊 SW	3000	Sch80、XS	螺纹 THRD	2000	Sch80、XS
	6000	Sch160		3000	Sch160
	9000	XXS		6000	XXS

注释:

1) 本表并未限制与管件连接时使用更厚或更薄的管子。实际使用的管子可以比表中所示的更厚或更薄。当使用更厚的管子时, 管件的强度决定承压能力; 当使用更薄的管子时, 管子的强度决定承压能力。

Note:

1) In this table, it isn't restricted to use the pipes with thinner or thicker thickness than the connecting fittings. The actually used pipes can be thinner or thicker than the ones indicated in the table. When using thicker pipes, the fittings shall govern the pressure bearing; when using thinner pipes, the pipes shall govern the pressure bearing.

### Sch160 和双加厚管的公称壁厚

#### NOMINAL WALL THICKNESS OF SCHEDULE 160 AND DOUBLE EXTRA STRONG PIPE

公称尺寸 Nominal Size		公称壁厚 Nominal Wall Thickness	
DN	NPS	Sch160	XXS
6	1/8	3.15	4.83
8	1/4	3.68	6.05
10	3/8	4.01	6.40

注释:

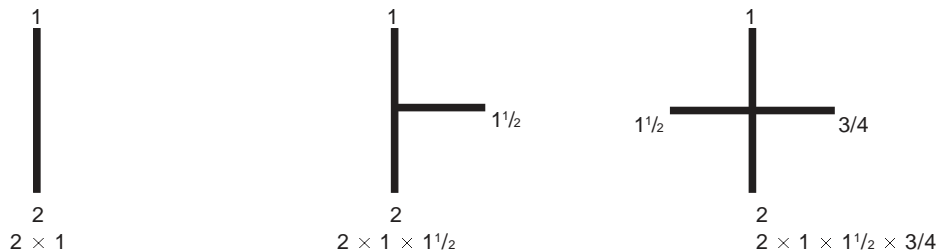
1) 由于 ASME B36.10M 未包括上述规格的 Sch160 和 XXS 的壁厚, 表列数值可作为确定额定值时管子的公称壁厚。

Note:

1) Since ASME B36.10M doesn't include the thickness for Sch160 nor XXS, The values indicated in the table may be used as the nominal wall thickness of pipe.

### 异径管件公称尺寸表示方法

#### SYMBOLS OF NOMINAL SIZE OF REDUCING FITTINGS



说明:

- 对于异径弯头、双接口管箍、异径插入件、内外螺纹接头等具有两个端面的产品, 首先给出大端的公称尺寸, 然后给出小端的公称尺寸。
- 对于异径三通等具有三个端面的产品, 首先给出主管大端的公称尺寸, 然后给出主管相对端的公称尺寸。最后给出支管端的公称尺寸。
- 对于异径四通, 首先给出主管大端的公称尺寸, 然后给出主管相对端的公称尺寸。第三个尺寸是支管大端的公称尺寸, 最后给出支管相对端的公称尺寸。

Note:

- For products with two ends such as reducing elbows, couplings, reducer inserts, unions and etc, the size of the large end shall be given first, followed by the size of the small end.
- For the products with three ends such as reducing tees and etc., the size of the largest run opening shall be given first followed by the size of the opposite end of the run and the size of the outlet is given last.
- For reducing crosses, the size of the largest run opening shall be given first, followed by the size of the opposite end of the run, the largest side-outlet opening is the third given followed by the opposite opening.

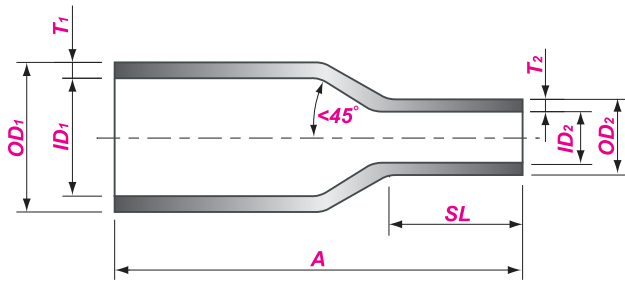
### 异径短节的端部连接型式说明

#### END TYPES OF SWAGED NIPPLES

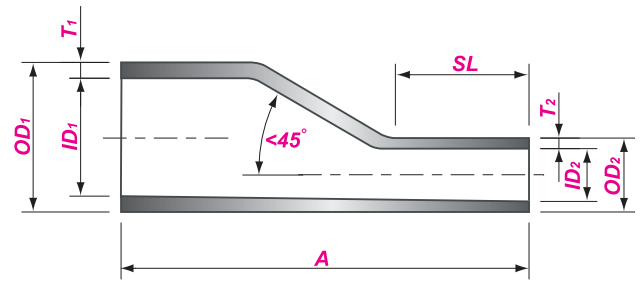
- 异径短节的端部连接型式包括坡口端 (BE)、平口端 (PE)、锥管螺纹端 (TE) 或其它型式。常用的连接型式 (代号) 如下:
  - 两端坡口 (BBE)
  - 两端平口 (PBE)
  - 两端螺纹 (TBE)
  - 大端坡口/小端平口 (BLE/PSE)
  - 大端坡口/小端螺纹 (BLE/TSE)
  - 大端平口/小端坡口 (PLE/BSE)
  - 大端平口/小端螺纹 (PLE/TSE)
  - 大端螺纹/小端坡口 (TLE/BSE)
  - 大端螺纹/小端平口 (TLE/PSE)
  - 小端坡口/大端平口 (BSE/PLE)
  - 小端坡口/大端螺纹 (BSE/TLE)
  - 小端平口/大端坡口 (PSE/BLE)
  - 小端平口/大端螺纹 (PSE/TLE)
  - 小端螺纹/大端坡口 (TSE/BLE)
  - 小端螺纹/大端平口 (TSE/PLE)
- 端部坡口型式见 21 页图示; 螺纹端按 GB/T 12716 (等同于 ASME B1.20.1) 中的 NPT 螺纹加工。

- The end types of swaged nipples include bevel end (BE), plain end (PE), thread end (TE) and other types, the following indicates the common:
  - bevel of both ends (BBE)
  - plain of both ends (PBE)
  - thread of both ends (TBE)
  - bevel of large end/plain of small end (BLE/PSE)
  - bevel of large end/thread of small end (BLE/TSE)
  - plain of large end/bevel of small end (PLE/BSE)
  - plain of large end/thread of small end (PLE/TSE)
  - thread of large end/bevel of small end (TLE/BSE)
  - bevel of large end/plain of small end (TLE/PSE)
  - bevel of small end/plain of large end (BSE/PLE)
  - bevel of small end/thread of large end (BSE/TLE)
  - plain of small end/bevel of large end (PSE/BLE)
  - plain of small end/thread of large end (PSE/TLE)
  - thread of small end/bevel of large end (TSE/BLE)
  - thread of small end/plain of large end (TSE/PLE)
- Refer the drawings in the page of 21 for the bevel end. Thread shall be machined per GB/T 12716 (equivalent to ASME B1.20.1).

# SWAGED NIPPLES



同心异径短节  
Concentric Swaged Nipple



偏心异径短节  
Eccentric Swaged Nipple

## MSS SP-95, SH/T 3419

公称尺寸 Nominal Size		端部外径 OD at End	小端长度 Length of Small End	端面至 端面 End to End	公称尺寸 Nominal Size		端部外径 OD at End	小端长度 Length of Small End	端面至 端面 End to End
DN	NPS	$OD_1 \times OD_2$	$SL_{min}$	A	DN	NPS	$OD_1 \times OD_2$	$SL_{min}$	A
8 × 6	1/4 × 1/8	13.7 × 10.3	20	57	65 × 6 65 × 8 65 × 10 65 × 15 65 × 20 65 × 25 65 × 32 65 × 40 65 × 50	2 1/2 × 1/8	73.0 × 10.3	22	178
10 × 6	3/8 × 1/8	17.1 × 10.3	20	64		2 1/2 × 1/4	73.0 × 13.7	22	
10 × 8	3/8 × 1/4	17.1 × 13.7	20	70		2 1/2 × 3/8	73.0 × 17.1	22	
15 × 6	1/2 × 1/8	21.3 × 10.3	20	76		2 1/2 × 1/2	73.0 × 21.3	25	
15 × 8	1/2 × 1/4	21.3 × 13.7	20	89		2 1/2 × 3/4	73.0 × 26.7	25	
15 × 10	1/2 × 3/8	21.3 × 17.1	20	102		2 1/2 × 1	73.0 × 33.4	30	
20 × 6	3/4 × 1/8	26.7 × 10.3	20	114		2 1/2 × 1 1/4	73.0 × 42.2	30	
20 × 8	3/4 × 1/4	26.7 × 13.7	20	203		2 1/2 × 1 1/2	73.0 × 48.3	40	
20 × 10	3/4 × 3/8	26.7 × 17.1	22	203		2 1/2 × 2	73.0 × 60.3	40	
20 × 15	3/4 × 1/2	26.7 × 21.3	22	229		80 × 6	3 × 1/8	88.9 × 10.3	
25 × 6	1 × 1/8	33.4 × 10.3	20	203	80 × 8	3 × 1/4	88.9 × 13.7	22	
25 × 8	1 × 1/4	33.4 × 13.7	20	203	80 × 10	3 × 3/8	88.9 × 17.1	22	
25 × 10	1 × 3/8	33.4 × 17.1	22	203	80 × 15	3 × 1/2	88.9 × 21.3	25	
25 × 15	1 × 1/2	33.4 × 21.3	22	203	80 × 20	3 × 3/4	88.9 × 26.7	25	
25 × 20	1 × 3/4	33.4 × 26.7	22	203	80 × 25	3 × 1	88.9 × 33.4	30	
32 × 6	1 1/4 × 1/8	42.2 × 10.3	20	203	80 × 32	3 × 1 1/4	88.9 × 42.2	30	
32 × 8	1 1/4 × 1/4	42.2 × 13.7	20	203	80 × 40	3 × 1 1/2	88.9 × 48.3	40	
32 × 10	1 1/4 × 3/8	42.2 × 17.1	22	203	80 × 50	3 × 2	88.9 × 60.3	40	
32 × 15	1 1/4 × 1/2	42.2 × 21.3	22	203	80 × 65	3 × 2 1/2	88.9 × 73.0	40	
32 × 20	1 1/4 × 3/4	42.2 × 26.7	25	203	90 × 6	3 1/2 × 1/8	101.6 × 10.3	22	
32 × 25	1 1/4 × 1	42.2 × 33.4	25	203	90 × 8	3 1/2 × 1/4	101.6 × 13.7	22	
40 × 6	1 1/2 × 1/8	48.3 × 10.3	20	203	90 × 10	3 1/2 × 3/8	101.6 × 17.1	22	
40 × 8	1 1/2 × 1/4	48.3 × 13.7	20	203	90 × 15	3 1/2 × 1/2	101.6 × 21.3	25	
40 × 10	1 1/2 × 3/8	48.3 × 17.1	22	203	90 × 20	3 1/2 × 3/4	101.6 × 26.7	25	
40 × 15	1 1/2 × 1/2	48.3 × 21.3	25	203	90 × 25	3 1/2 × 1	101.6 × 33.4	30	
40 × 20	1 1/2 × 3/4	48.3 × 26.7	25	203	90 × 32	3 1/2 × 1 1/4	101.6 × 42.2	30	
40 × 25	1 1/2 × 1	48.3 × 33.4	25	203	90 × 40	3 1/2 × 1 1/2	101.6 × 48.3	40	
40 × 32	1 1/2 × 1 1/4	48.3 × 42.2	25	203	90 × 50	3 1/2 × 2	101.6 × 60.3	40	
50 × 6	2 × 1/8	60.3 × 10.3	20	203	90 × 65	3 1/2 × 2 1/2	101.6 × 73.0	40	
50 × 8	2 × 1/4	60.3 × 13.7	22	203	90 × 80	3 1/2 × 3	101.6 × 88.9	40	
50 × 10	2 × 3/8	60.3 × 17.1	22	203	100 × 8	4 × 1/4	114.3 × 13.7	25	
50 × 15	2 × 1/2	60.3 × 21.3	25	203	100 × 10	4 × 3/8	114.3 × 17.1	25	
50 × 20	2 × 3/4	60.3 × 26.7	30	203	100 × 15	4 × 1/2	114.3 × 21.3	25	
50 × 25	2 × 1	60.3 × 33.4	30	203	100 × 20	4 × 3/4	114.3 × 26.7	30	
50 × 32	2 × 1 1/4	60.3 × 42.2	30	203	100 × 25	4 × 1	114.3 × 33.4	30	
50 × 40	2 × 1 1/2	60.3 × 48.3	30	203	100 × 32	4 × 1 1/4	114.3 × 42.2	40	

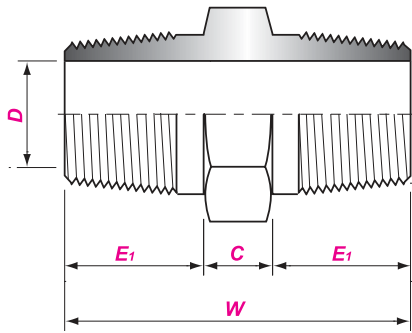
异径短节 SWAGED NIPPLES					异径短节 SWAGED NIPPLES					
公称尺寸 Nominal Size		端部外径 OD at End	小端长度 Length of Small End	端面至 端面 End to End	公称尺寸 Nominal Size		端部外径 OD at End	小端长度 Length of Small End	端面至 端面 End to End	
DN	NPS	$OD_1 \times OD_2$	$SL_{min}$	A	DN	NPS	$OD_1 \times OD_2$	$SL_{min}$	A	
100 × 40	4 × 1½	114.3 × 48.3	40	229	200 × 25	8 × 1	219.1 × 33.4	40	330	
100 × 50	4 × 2	114.3 × 60.3	45		200 × 32	8 × 1¼	219.1 × 42.2	40		
100 × 65	4 × 2½	114.3 × 73.0	45		200 × 40	8 × 1½	219.1 × 48.3	45		
100 × 80	4 × 3	114.3 × 88.9	45		200 × 50	8 × 2	219.1 × 60.3	45		
100 × 90	4 × 3½	114.3 × 101.6	45		200 × 65	8 × 2½	219.1 × 73.0	45		
125 × 8	5 × 1/4	141.3 × 13.7	25	279	200 × 80	8 × 3	219.1 × 88.9	50		
125 × 10	5 × 3/8	141.3 × 17.1	25		200 × 90	8 × 3½	219.1 × 101.6	50		
125 × 15	5 × 1/2	141.3 × 21.3	25		200 × 100	8 × 4	219.1 × 114.3	50		
125 × 20	5 × 3/4	141.3 × 26.7	30		200 × 125	8 × 5	219.1 × 141.3	60		
125 × 25	5 × 1	141.3 × 33.4	30		200 × 150	8 × 6	219.1 × 168.3	60		
125 × 32	5 × 1¼	141.3 × 42.2	40		381	250 × 50	10 × 2	273.0 × 60.3		45
125 × 40	5 × 1½	141.3 × 48.3	40			250 × 65	10 × 2½	273.0 × 73.0		45
125 × 50	5 × 2	141.3 × 60.3	45			250 × 80	10 × 3	273.0 × 88.9		50
125 × 65	5 × 2½	141.3 × 73.0	45			250 × 90	10 × 3½	273.0 × 101.6		50
125 × 80	5 × 3	141.3 × 88.9	45			250 × 100	10 × 4	273.0 × 114.3		60
125 × 90	5 × 3½	141.3 × 101.6	45	250 × 125		10 × 5	273.0 × 141.3	60		
125 × 100	5 × 4	141.3 × 114.3	50	250 × 150		10 × 6	273.0 × 168.3	65		
150 × 15	6 × 1/2	168.3 × 21.3	30	304		250 × 200	10 × 8	273.0 × 219.1	65	
150 × 20	6 × 3/4	168.3 × 26.7	30			406	300 × 50	12 × 2	323.8 × 60.3	50
150 × 25	6 × 1	168.3 × 33.4	40				300 × 65	12 × 2½	323.8 × 73.0	50
150 × 32	6 × 1¼	168.3 × 42.2	40		300 × 80		12 × 3	323.8 × 88.9	60	
150 × 40	6 × 1½	168.3 × 48.3	45		300 × 90		12 × 3½	323.8 × 101.6	60	
150 × 50	6 × 2	168.3 × 60.3	45		300 × 100		12 × 4	323.8 × 114.3	65	
150 × 65	6 × 2½	168.3 × 73.0	45		300 × 125		12 × 5	323.8 × 141.3	65	
150 × 80	6 × 3	168.3 × 88.9	45		300 × 150		12 × 6	323.8 × 168.3	65	
150 × 90	6 × 3½	168.3 × 101.6	50		300 × 200		12 × 8	323.8 × 219.1	70	
150 × 100	6 × 4	168.3 × 114.3	50		300 × 250		12 × 10	323.8 × 273.0	70	
150 × 125	6 × 5	168.3 × 141.3	60							

注释: 1) 当按 SH/T 3419 标准订货时, 其外径应使用 SH/T 3405 《石油化工企业钢管外径系列》中规定的外径。

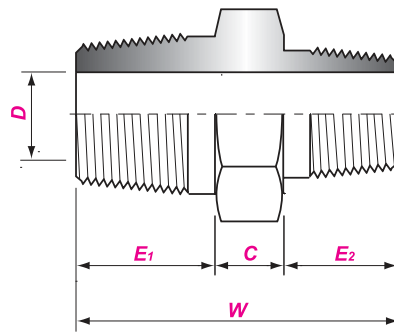
Note: 1) If ordering per SH/T 3419, the outside diameter specified in SH/T 3405 《tube outside diameter in petrochemical industry》 shall be applied.

异径短节的公差 TOLERANCES OF SWAGED NIPPLES						
公称尺寸 Nominal Size		端部外径 OD at End		端部内径 ID at End	端面至端面 End to End	壁厚 Wall
DN	NPS	OD		ID	A	T
		平口端部 Plain End	其它端部 Other Ends			
6~10	1/8~3/8	+0.4 -0.8	±0.8	±0.8	±1.6	不小于公称 壁厚的 87.5% Not less than 87.5% Nominal Wall Thickness
15~40	1/2~1½	+0.4 -0.8	+1.6 -0.8	±0.8	±1.6	
50~65	2~2½	±0.8	+1.6 -0.8	±0.8	±3.2	
80~100	3~4	±0.8	±1.6	±1.6	±3.2	
125~150	5~6	+2.4 -1.6	+2.4 -1.6	±1.6	±4.8	
200~300	8~12	+4.0 -3.2	+4.0 -3.2	±3.2	±6.4	

# HEXAGONAL NIPPLES



同径六角双丝头  
straight Hexagonal Nipple



异径六角双丝头  
Reducing Hexagonal Nipple

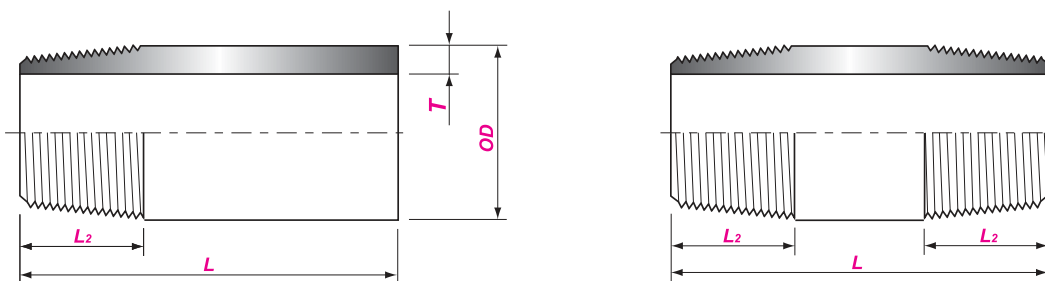
公称尺寸 Nominal Size		尺寸 Size					
DN	NPS	$C_{nom}$	$E_{1nom}$	$E_{2nom}$	W	D	
						Sch80	Sch160
6	1/8	6	10	-	26	5	4
8	1/4	6	15	-	36	7	6
8 × 6	1/4 × 1/8	6	15	10	31	5	4
10	3/8	8	16	-	40	10	8
10 × 8	3/8 × 1/4	8	16	15	39	7	6
15	1/2	8	20	-	48	13	10
15 × 10	1/2 × 3/8	8	20	16	44	10	8
15 × 8	1/2 × 1/4	8	20	15	43	7	6
20	3/4	10	21	-	52	18	14
20 × 15	3/4 × 1/2	10	21	20	51	13	10
20 × 10	3/4 × 3/8	10	21	16	47	10	8
25	1	10	25	-	60	23	19
25 × 20	1 × 3/4	10	25	21	56	18	14
25 × 15	1 × 1/2	10	25	20	55	13	10
32	1 1/4	12	25	-	62	31	28
32 × 25	1 1/4 × 1	12	25	25	62	23	19
32 × 20	1 1/4 × 3/4	12	25	21	58	18	14
32 × 15	1 1/4 × 1/2	12	25	20	57	13	10
40	1 1/2	16	26	-	68	36	32
40 × 32	1 1/2 × 1 1/4	16	26	25	67	31	28
40 × 25	1 1/2 × 1	16	26	25	67	23	19
40 × 20	1 1/2 × 3/4	16	26	21	63	18	14
40 × 15	1 1/2 × 1/2	16	26	20	62	13	10
50	2	18	27	-	72	47	40
50 × 40	2 × 1 1/2	18	27	26	71	36	32
50 × 32	2 × 1 1/4	18	27	25	70	31	28
50 × 25	2 × 1	18	27	25	70	23	19
50 × 20	2 × 3/4	18	27	21	66	18	14
50 × 15	2 × 1/2	18	27	20	65	13	10
65	2 1/2	20	38	-	96	57	51
65 × 50	2 1/2 × 2	20	38	27	85	47	40
65 × 40	2 1/2 × 1 1/2	20	38	26	84	36	32
65 × 32	2 1/2 × 1 1/4	20	38	25	83	31	28
65 × 25	2 1/2 × 1	20	38	25	83	23	19
65 × 20	2 1/2 × 3/4	20	38	21	79	18	14
80	3	20	40	-	100	70	63
80 × 65	3 × 2 1/2	20	40	38	98	57	51
80 × 50	3 × 2	20	40	27	87	47	40
80 × 40	3 × 1 1/2	20	40	26	86	36	32
80 × 32	3 × 1 1/4	20	40	25	85	31	28
80 × 25	3 × 1	20	40	25	85	23	19

注释:

1) 端部螺纹按 GB/T 12716 (等同于 ASME B1.20.1) 中的 NPT 螺纹加工。

Note:

1) Thread shall be machined per GB/T 12716 (equivalent to ASME B1.20.1).



单头螺纹短节  
Pipe Nipple(TOE)

双头螺纹短节  
Pipe Nipple(TBE)

ASTMA733

公称尺寸 Nominal Size		管子外径 OD of Pipes	螺纹长度 Lengths of Thread	管子壁厚 Wall of pipes	长度 Pipe Nipple Lengths.		
DN	NPS	OD	$L_{2\min}$	T	L		
					I	II	III
6	1/8	10.3	6.7	STD, XS Sch40,Sch80	50	75	100
8	1/4	13.7	10.2				
10	3/8	17.1	10.4	STD, XS Sch40,Sch80	50	75	100
15	1/2	21.3	13.6				
20	3/4	26.7	13.9				
25	1	33.4	17.3	STD, XS Sch40,Sch80	75	100	150
32	1 1/4	42.2	18.0				
40	1 1/2	48.3	18.4				
50	2	60.3	19.2	STD, XS Sch40,Sch80	100	150	200
65	2 1/2	73.0	28.9				
80	3	88.9	30.5				
90	3 1/2	101.6	31.8	STD, XS Sch40,Sch80	150	200	250
100	4	114.3	33.0				
125	5	141.3	35.7				
150	6	168.3	38.4	STD, XS Sch40,Sch80	200	250	300
200	8	219.1	43.5				
250	10	273.0	48.9				
300	12	323.8	54.0	STD, XS Sch40,Sch80	150	200	250

注释:  
1) 表中的长度为常用的参考长度; 制造商应按采购文件规定的长度制造。当采购文件未规定长度时, 制造商可选择 I、II、III 型中的任一长度型号供货。  
2) 端部螺纹按 GB/T 12716 (等同于 ASME B1.20.1) 中的 NPT 螺纹加工。

Note:  
1) The lengths indicated in the above table are the generally referenced ones. Manufacturer shall conform to the ones specified in the purchase specification. If not specified, manufacturer can select one of the above three series.  
2) Thread shall be machined per GB/T 12716 (equivalent to ASME B1.20.1).

六角双丝头和螺纹短节的公差

TOLERANCES OF HEXAGONAL NIPPLES & PIPE NIPPLES

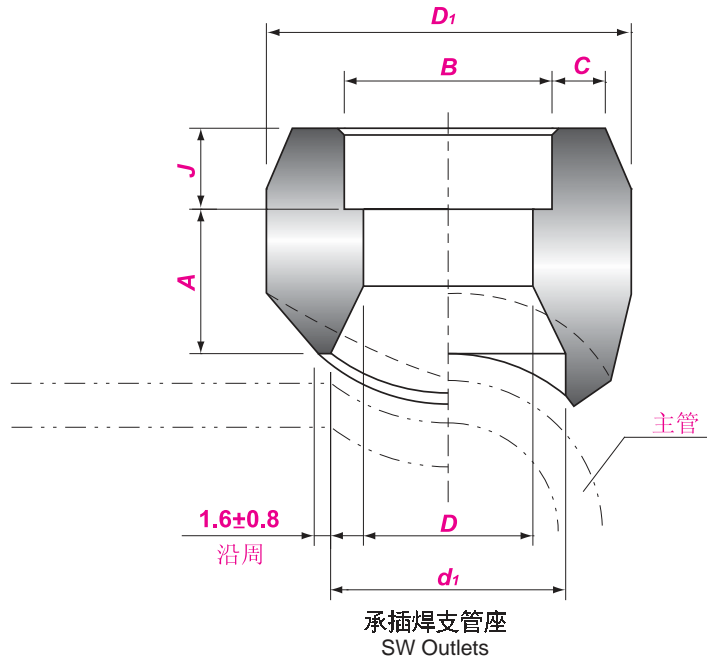
公称尺寸 Nominal Size		六角双丝头 Hexagonal Nipple		螺纹短节 Pipe Nipple
DN	NPS	w	D	L
6~20	1/8~3/4	± 1.6	0 - 0.8	± 1.6
25~80	1~3	± 1.6	0 - 1.6	± 1.6
90~300	3 1/2~12	-	-	± 1.6

注释 Note:  
1) 当螺纹短节的长度  $L \geq 305\text{mm}$  (12") 时, 公差为  $\pm 3.2\text{mm}$ 。

Note:  
1) If the length L of the thread nipple is more than and including 305mm (12"), the tolerance shall be  $\pm 3.2\text{mm}$ .



# OUTLETS



GB/T 19326、MSS SP-97

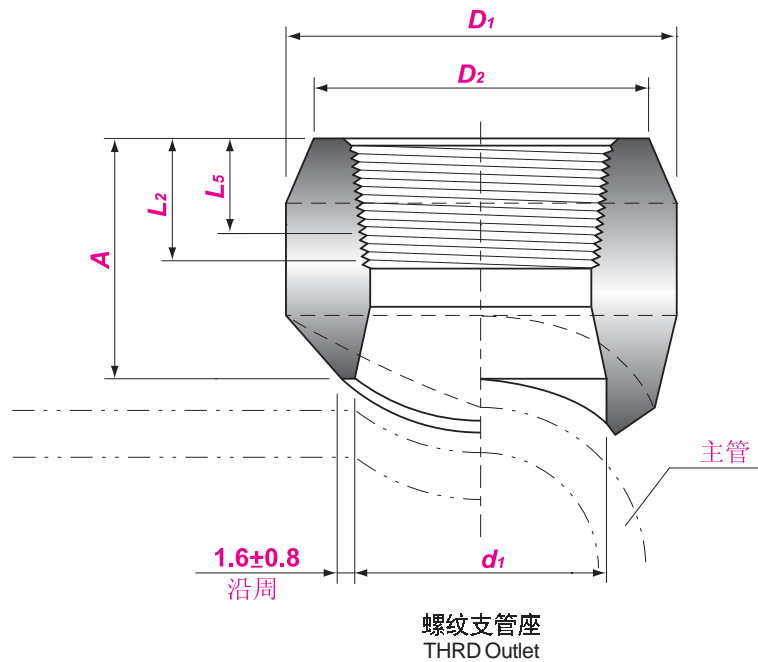
公称尺寸 Nominal Size		支管公称尺寸 Branch Nominal Size		承插孔 深度 Depth of Socket $J_{min}$	结构长度 Face of Fitting to Crotch $A_{max}$		本体直径 OD of Fitting $D_{1min}$		承插孔壁厚 Socket Wall Thickness $C_{min}$		开孔直径 Cut Hole Dia. $d_{1nom}$	
DN	NPS	DN	NPS		3000	6000	3000	6000	3000	6000	3000	6000
8~900	1/4~36	6	1/8	9.5	10	-	27	-	3.18	-	16	-
10~900	3/8~36	8	1/4	9.5	10	-	27	-	3.78	-	16	-
15~900	1/2~36	10	3/8	9.5	13	-	30	-	4.01	-	19	-
20~900	3/4~36	15	1/2	9.5	16	24	38	47	4.67	5.97	24	19
25~900	1~36	20	3/4	12.5	16	25	47	53	4.90	6.96	30	25
32~900	1 1/4~36	25	1	12.5	22	29	56	63	5.69	7.92	36	33
40~900	1 1/2~36	32	1 1/4	12.5	22	30	66	74	6.07	7.92	45	38
50~900	2~36	40	1 1/2	12.5	24	32	75	83	6.35	8.92	51	49
65~900	2 1/2~36	50	2	16.0	24	37	90	104	6.93	10.92	65	59
80~900	3~36	65	2 1/2	16.0	25	-	105	-	8.76	-	76	-
100~900	4~36	80	3	16.0	30	-	124	-	9.52	-	94	-
125~900	5~36	100	4	19.0	30	-	154	-	10.69	-	121	-

注释:

1) 承插孔径 B 和流通孔径 D 尺寸见第 30 页。

Note:

1) As for the sizes of socket diameter B and bore D, please refer to the ones in the page of 30.



GB/T 19326、MSS SP-97

主管公称尺寸 Run Pipes Nominal Size		支管公称尺寸 Branch Nominal Size		长度 Length		本体直径 OD of Fitting		支管端部外径 OD at End of Branch		螺纹 长度 Length of Thread	开孔直径 Cut Hole Dia.	
DN	NPS	DN	NPS	A		D <sub>1 min</sub>		D <sub>2 min</sub>		L <sub>2 min</sub>	d <sub>1 nom</sub>	
				3000	6000	3000	6000	3000	6000		3000	6000
8~900	1/4~36	6	1/8	19		27		22		6.7	16	
10~900	3/8~36	8	1/4	19		27		22		10.2	16	
15~900	1/2~36	10	3/8	21		30		25		10.4	19	
20~900	3/4~36	15	1/2	25	32	38	45	33	42	13.6	24	19
25~900	1~36	20	3/4	27	37	47	52	39	48	13.9	30	25
32~900	1 1/4~36	25	1	33	40	56	63	48	58	17.3	36	33
40~900	1 1/2~36	32	1 1/4	33	41	66	72	58	67	18.0	45	38
50~900	2~36	40	1 1/2	35	43	75	83	64	77	18.4	51	49
65~900	2 1/2~36	50	2	38	52	90	104	77	93	19.2	65	59
80~900	3~36	65	2 1/2	46		105		94		28.9	76	
100~900	4~36	80	3	51		124		114		30.5	94	
125~900	5~36	100	4	57		154		140		33.0	121	

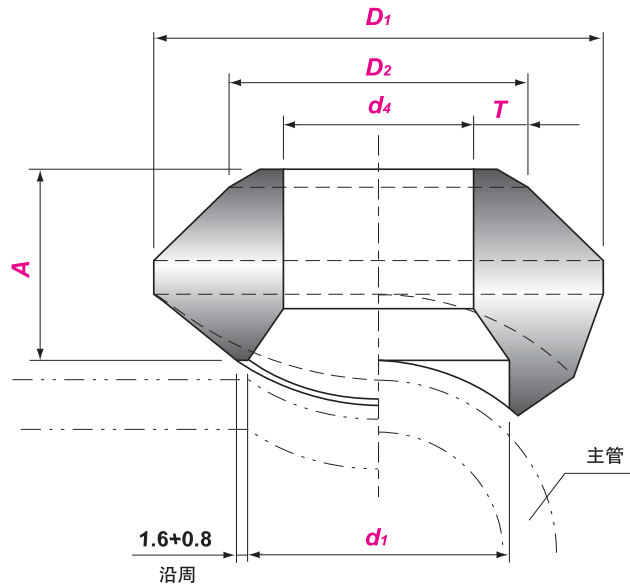
注释:

1) 端部螺纹按 GB/T 12716 (等同于 ASME B1.20.1) 中的 NPT 螺纹加工。

Note:

1) Thread shall be machined per GB/T 12716 (equivalent to ASME B1.20.1).

# OUTLETS



对焊支管座  
BW Outlet

GB/T 19326, MSS SP-97

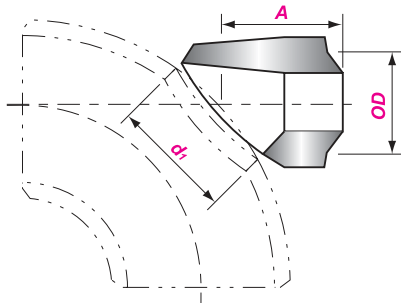
主管公称尺寸 Run Pipes Nominal Size		支管公称尺寸 Branch Nominal Size		长度 Length			本体直径 OD of Fitting			开孔直径 Cut Hole Dia.		
DN	NPS	DN	NPS	A			$D_{2\ min}$			$d_{1\ nom}$		
				STD	XS	Sch160	STD	XS	SCH160	STD	XS	SCH160
8~900	1/4~36	6	1/8	16	16		24	24		16	16	
10~900	3/8~36	8	1/4	16	16		26	26		16	16	
15~900	1/2~36	10	3/8	19	19		30	30		19	19	
20~900	3/4~36	15	1/2	19	19	28	36	36	36	24	24	14
25~900	1~36	20	3/4	22	22	32	43	43	46	30	30	19
32~900	1 1/4~36	25	1	27	27	38	55	55	51	36	36	25
40~900	1 1/2~36	32	1 1/4	32	32	44	66	66	63	45	45	33
50~900	2~36	40	1 1/2	33	33	51	74	74	71	51	51	38
65~900	2 1/2~36	50	2	38	38	55	90	90	82	65	65	43
80~900	3~36	65	2 1/2	41	41	62	104	104	98	76	76	54
90~900	3 1/2~36	80	3	44	44	73	124	124	122	93	93	73
100~900	4~36	90	3 1/2	48	48		138	138		113	113	
125~900	5~36	100	4	51	51	84	154	154	154	120	120	98
150~900	6~36	125	5	57	57	94	187	187	188	141	141	122
200~900	8~36	150	6	60	78	105	213	227	222	170	170	146
250~900	10~36	200	8	70	99		265	292		220	220	
300~900	12~36	250	10	78	94		323	325		275	265	
350~900	14~36	300	12	86	103		379	381		325	317	
400~900	16~36	350	14	89	100		411	416		357	351	
450~900	18~36	400	16	94	106		465	468		408	403	
500~900	20~36	450	18	97	111		522	525		459	455	
550~900	22~36	500	20	102	119		573	584		508	509	
650~900	26~36	600	24	116	140		690	708		614	612	

注释:

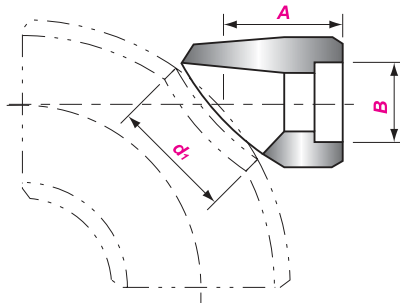
- $D_2$  与支管接管外径相等、 $d_4$  与支管接管内径相等、 $T$  与支管接管壁厚相等。
- 支管端部焊接坡口型式见 21 页图示。

Note:

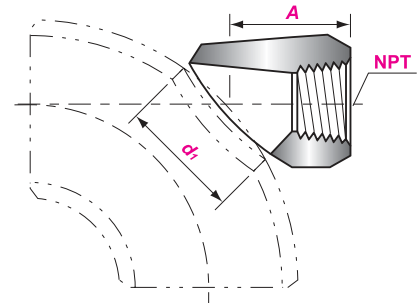
- $D_2$  is same to the outside diameter of branch pipe,  $d_4$  is same to the inside diameter of branch pipe,  $T$  is same to the wall thickness of branch pipe.
- As for the bevel ends of the branch pipe, please refers to the figure in the page of 21.



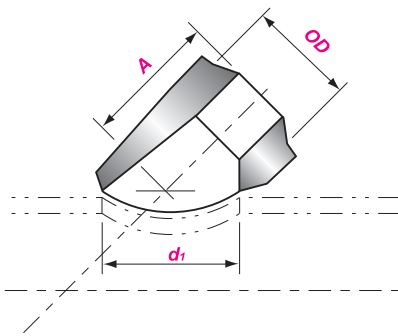
对焊弯头支管座  
BW Elbolet



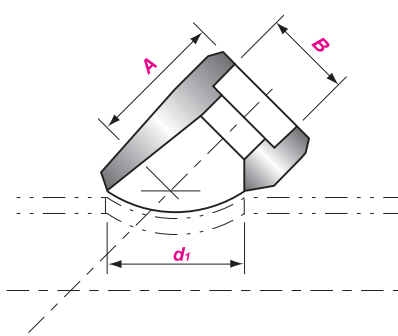
承插焊弯头支管座  
SW Elbolet



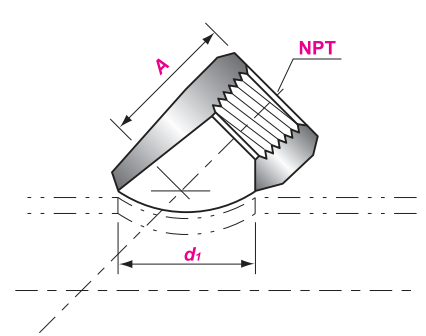
螺纹弯头支管座  
THRDElbolet



对焊45°支管座  
BW Latrolet



承插焊45°支管座  
SW Latrolet



螺纹45°支管座  
THRD Latrolet

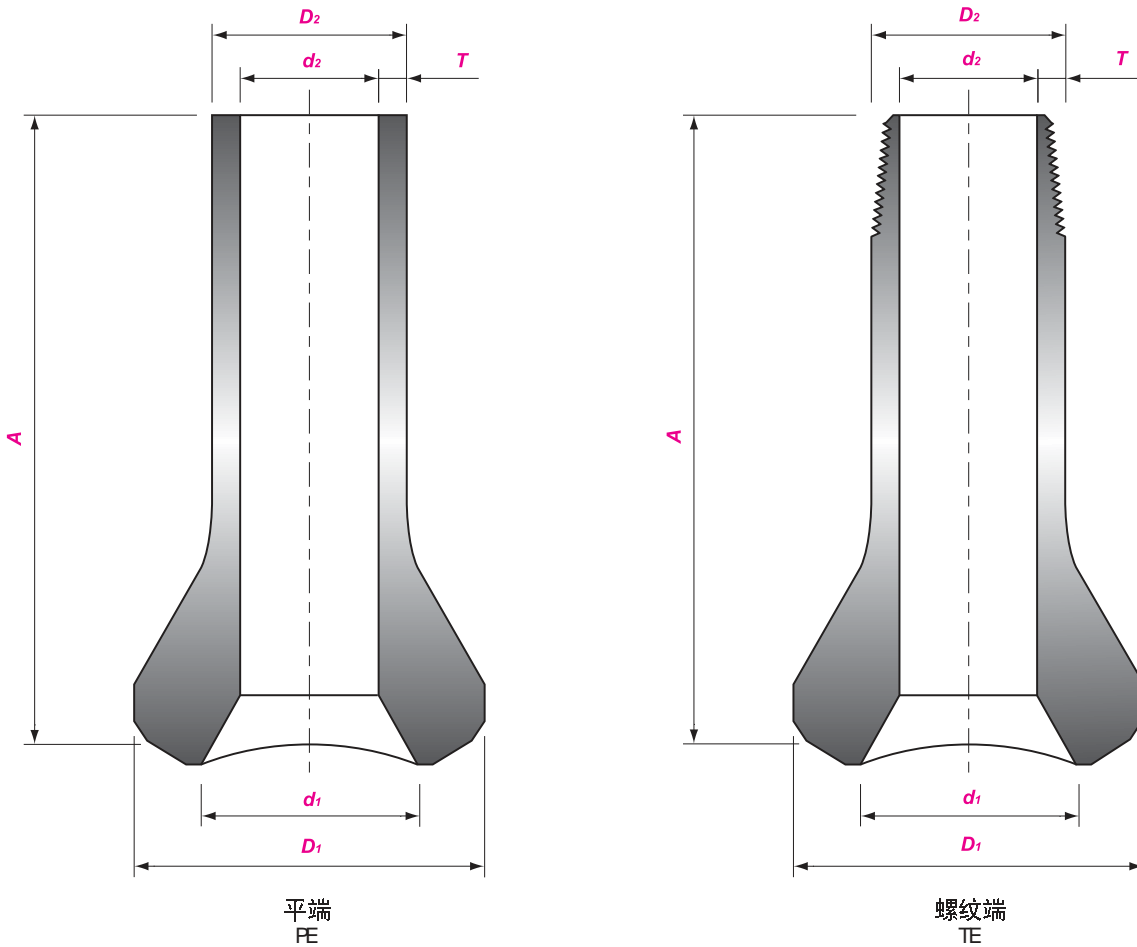
### 弯头支管座和45°支管座 ELBOLETS AND LATROLETS

主管公称尺寸 Run Pipes Nominal Size		支管公称尺寸 Branch Nominal Size		长度 Length				开孔直径 Cut Hole Dia.			
DN	NPS	DN	NPS	A				$d_{1\text{ nom}}$			
				对焊 BW		承插焊和螺纹 SW and THRD		对焊 BW		承插焊和螺纹 SW and THRD	
				STD、XS	Sch160	3000	6000	STD、XS	Sch160	3000	6000
20~900	3/4~36	15	1/2	45	50	45	50	31	30	31	30
25~900	1~36	20	3/4	50	58	50	58	42	40	42	40
32~900	1 1/4~36	25	1	60	70	60	70	54	50	54	50
40~900	1 1/2~36	32	1 1/4	68	76	68	76	61	58	61	58
50~900	2~36	40	1 1/2	75	83	75	83	76	66	76	66
65~900	2 1/2~36	50	2	90	98	90	98	90	83	90	83
80~900	3~36	65	2 1/2	95	105	-	-	100	95	-	-
90~900	3 1/2~36	80	3	120	130	-	-	132	115	-	-
125~900	5~36	100	4	140	150	-	-	168	150	-	-
200~900	8~36	150	6	195	210	-	-	238	225	-	-
250~900	10~36	200	8	220	-	-	-	338	-	-	-
300~900	12~36	250	10	270	-	-	-	432	-	-	-
350~900	14~36	300	12	290	-	-	-	498	-	-	-

注释:  
1) 其它尺寸参照46~48页。

Note:  
1) As for other sizes, please refer to the ones in the page of 46~48.

# NIPOLETS



## 加长支管座

### NIPOLETS

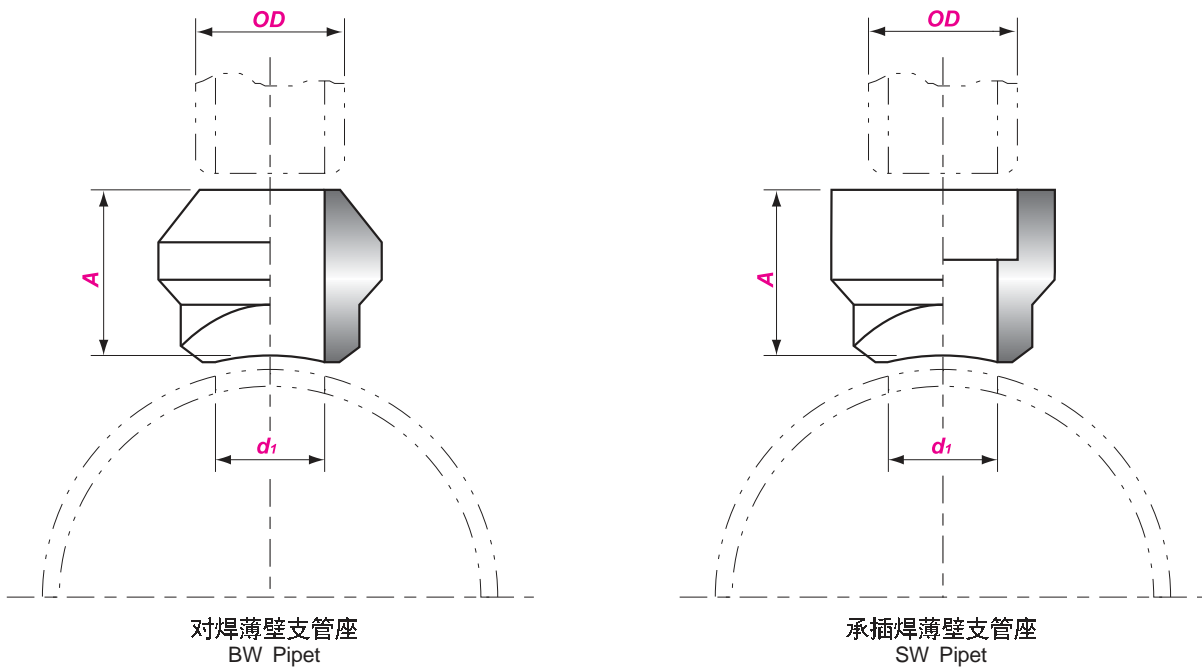
主管公称尺寸 Run Pipes Nominal Size		支管公称尺寸 Branch Nominal Size		长度 Length	端部外径 OD at End	本体直径 OD of Fitting		开孔直径 Cut Hole Dia.	
DN	NPS	DN	NPS	A	D <sub>2</sub>	D <sub>1 min</sub>		d <sub>1 nom</sub>	
						XS	Sch160	XS	Sch160
20~900	3/4~36	15	1/2		21.3	38	47	24	19
25~900	1~36	20	3/4	89	26.7	47	53	30	25
32~900	1 1/4~36	25	1		33.4	56	63	36	33
40~900	1 1/2~36	32	1 1/4		42.2	66	72	45	38
50~900	2~36	40	1 1/2	89	48.3	75	83	51	49
65~900	2 1/2~36	50	2		60.3	90	104	65	59
80~900	3~36	65	2 1/2		73.0	105		76	
90~900	3 1/2~36	80	3	89	88.9	124		94	
125~900	5~36	100	4		114.3	154		121	

**注释:**

- 1) 本产品用于支管端部与阀门连接の場合。
- 2) D<sub>2</sub>的公差: DN15~40 (NPS1/2~1 1/2) 为 ± 0.25mm, DN50~100(NPS2~4)为 ± 0.5mm; T为XS或Sch160等级的壁厚, d<sub>1</sub> = D<sub>2</sub>-2T。
- 3) 根据采购要求, 端部可加工成平头或螺纹端的型式; 其中螺纹按GB/T 12716 (等同于ASME B1.20.1) 中的NPT 螺纹加工。
- 4) A尺寸亦可按采购要求加工成114mm、140mm及165mm的长度。

**Note:**

- 1) This nipolet is used to connect the valve at the the end of the branch pipe.
- 2) The tolerance of D<sub>2</sub> shall be as: DN15~40 (NPS1/2~11/2): ± 0.25mm, DN50~100(NPS2~4): ± 0.5mm.T is the thickness of XS or Sch160, d<sub>1</sub> = D<sub>2</sub>-2T.
- 3) Per the purchase specification, the ends can be machined as plain or threaded type, and the thread shall be machined per GB/T 12716(equivalent to ASME B1.20.1)
- 4) Per the purchase specification, the size of A can be machined as 114mm、140mm and 165mm.



薄壁支管座  
PIPETS

主管公称尺寸 Run Pipes Nominal Size		支管公称尺寸 Branch Nominal Size		长度 Length		开孔直径 Cut Hole Dia.	
DN	NPS	DN	NPS	A		$d_{1\text{ nom}}$	
				对焊 BW	承插焊 SW	Sch5s	Sch10s
8~900	1/4~36	6	1/8	16	-	-	7.8
10~900	3/8~36	8	1/4	16	-	-	10.4
15~900	1/2~36	10	3/8	19	-	-	13.8
20~900	3/4~36	15	1/2	19	26	18.0	17.1
25~900	1~36	20	3/4	22	27	23.4	22.5
32~900	1 1/4~36	25	1	27	33	30.1	27.9
40~900	1 1/2~36	32	1 1/4	32	33	38.9	36.7
50~900	2~36	40	1 1/2	33	35	45.0	42.8
65~900	2 1/2~36	50	2	38	38	57.0	54.8
80~900	3~36	65	2 1/2	42	46	68.8	66.9
90~900	3 1/2~36	80	3	45	51	84.7	82.8
100~900	4~36	90	3 1/2	48	-	97.4	95.5
125~900	5~36	100	4	51	57	110.1	108.2
150~900	6~36	125	5	57	-	135.8	134.5
200~900	8~36	150	6	60	-	162.8	161.5
250~900	10~36	200	8	70	-	213.6	211.6
300~900	12~36	250	10	78	-	266.2	264.6
350~900	14~36	300	12	86	-	315.9	314.7
400~900	16~36	350	14	89	-	347.7	346.0
450~900	18~36	400	16	94	-	398.8	396.8
500~900	20~36	450	18	97	-	448.6	447.4
550~900	22~36	500	20	102	-	498.4	496.9
650~900	26~36	600	24	116	-	598.9	597.3
800~900	32~36	750	30	137	-	749.3	746.2

注释:

- 薄壁支管座通常用于主管壁厚为 Sch5s 或 Sch10s 的情况。
- OD 为支管接管外径; 焊接坡口型式见 21 页图示。

Note:

- The pipets are usually used for connection when the schedule of the run pipe is Sch5s or Sch10s.
- OD is the outside diameter of the connecting branch pipe. As for the bevel ends, please refer the figure in page of 21.



## TOLERANCES OF OUTLETS

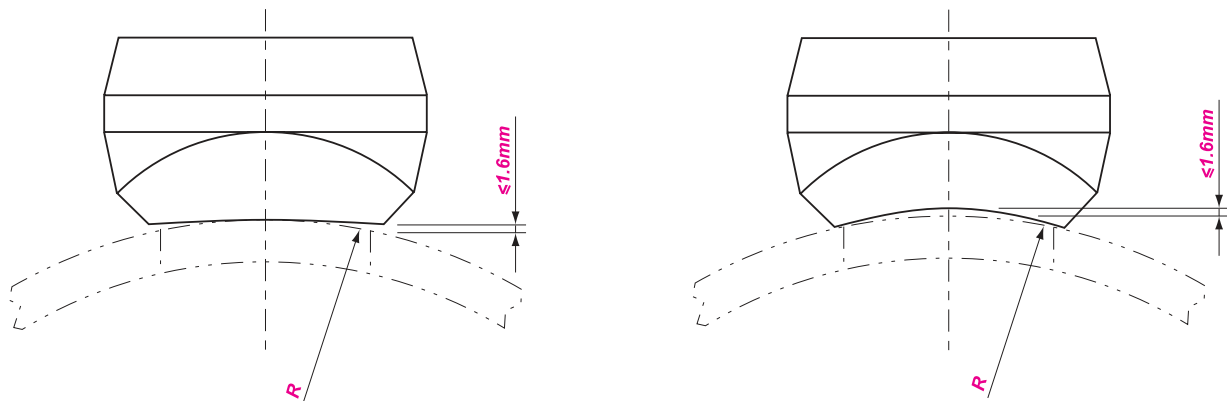
### 支管座的公差

### TOLERANCES OF OUTLETS

支管公称尺寸 Branch Nominal Size		螺纹、对焊 Outlet of THRD & BW	承插焊 SW Outlet		对焊 BW Outlet	
DN	NPS	A	B	D	D <sub>2</sub>	d <sub>4</sub>
6~20	1/8~3/4	± 0.8	↓ 0.5 0	↓ 1.5 0	↓ 0.8 - 0.4	± 0.4
25~100	1~4	± 1.6	↓ 0.5 0	↓ 1.5 0	↓ 0.8 - 0.4	± 0.4
125~300	5~12	± 3.2	-	-	↓ 1.6 - 0.8	± 0.8
350~600	14~24	± 4.8	-	-	↓ 1.6 - 0.8	± 0.8

支管座与主管之间的间隙允许偏差如下图所示。

The following figures show the allowable spacing tolerances between outlet and the running pipe:



### 支管座的级别与主管壁厚的关系

### CLASS OF OUTLETS VS SCHEDULE OF THE CONNECTING RUN PIPE

支管公称尺寸 Branch Nominal Size		连接形式 Type	支管座的级别 Class of Outlet	适用的主管壁厚 Schedule of the Connecting Run Pipe
DN	NPS			
6~100	1/8~4	承插焊、螺纹 Socket Welding & Threaded	3000	XS
15~50	1/2~2	承插焊、螺纹 Socket Welding & Threaded	6000	SCH160
6~600	1/8~24	对焊 Buttwelding	STD	STD
6~600	1/8~24	对焊 Buttwelding	XS	XS
15~150	1/2~6	对焊 Buttwelding	SCH160	SCH160

注释:

1) 当支管或主管的厚度超出本表规定时, 经制造商和采购方协商, 支管座可以制成特殊的厚度、尺寸和形状。

Note:

1) When the schedule of branch or running pipe is out of the scope indicated in the above table, the outlet can be fabricated with special thickness, size and configuration on the basis of the agreement between purchaser and manufacturer.



法兰 Flanges

项目 Item	内容 Content	
标准 Standard	GB/T 9112 ~ GB/T 9124 SH 3406 HG 20592 ~ HG 20605, HG 20615 ~ HG 20626 ASME B16.5 ASME B16.47 或按客户要求标准或技术条件 or according to the client's standards or technical requirements	
材料 Material	碳素钢, 合金钢, 不锈钢 Carbon steel, alloy steel and stainless steel	
规格 Size	DN15 ~ DN2000 NPS 1/2 ~ NPS 80	
公称压力 Class	欧洲体系(European system): PN0.25MPa, PN0.6MPa, PN1.0MPa, PN1.6MPa, PN2.5MPa, PN4.0MPa, PN6.3MPa, PN10.0MPa, PN16.0MPa	
	美洲体系(American system): PN2.0MPa, PN5.0MPa, PN11.0MPa, PN15.0MPa, PN26.0MPa, PN42.0MPa/ Class 150, Class 300, Class 400, Class 600, Class 900, Class 1500, Class 2500	
密封面 Contact Surface	密封面型式 Type of contact surface	代号 Symbol
	平面 flat face	FF
	突面 raised face	RF
	凹凸面 male and female	MF
	榫槽面 tongue and groove	TG
	环连接面 ring joint face	RJ



中国标准中的压力管道常用金属材料

THE GENERAL METALLIC MATERIALS OF CHINESE PRESSURE PIPING CODE

标准 Standard	现用牌号 New Grade	原用牌号 Old Grade	化学成分 Chemical Composition % , max										力学性能 Mechanical Requirement					
			C	Si	Mn	P	S	Cr	Ni	Mo	Other	T.S. min MPa	Y.S. min MPa	EL. min %	HB max	Other		
GB/T 699	20	-	0.17-0.23	0.17-0.37	0.35-0.65	0.035	0.035	0.25	0.30	-	-	-	-	410	245	25	156	Z ≥ 55%
GB/T 711	20	-	0.17-0.24	0.17-0.37	0.35-0.65	0.035	0.040	0.25	0.25	-	-	-	-	410	-	28	-	-
GB/T 713 <sup>1)</sup>	Q245R <sup>2)3)4)</sup>	20g, 20R	0.20	0.35	0.50-1.00	0.025	0.015	0.30	0.30	0.080	Alt ≥ 0.020; Cu:0.30	Alt ≥ 0.020; Cu:0.30	Alt ≥ 0.020; Cu:0.30	400-520	245	25	-	A <sub>Kv</sub> ≥ 31J
	Q345R <sup>2)3)4)</sup>	16Mnq, 16MnR	0.20	0.55	1.20-1.60	0.025	0.015	0.30	0.30	0.080	Alt ≥ 0.020; Cu:0.30	Alt ≥ 0.020; Cu:0.30	510-640	345	21	-	A <sub>Kv</sub> ≥ 34J	
	15Cr1MoR	15Cr1MoR, 15Cr1MoR	0.12-0.18	0.15-0.40	0.40-0.70	0.025	0.010	0.80-1.20	0.30	0.45-0.60	Cu:0.30	V:0.15-0.30; Cu:0.30	450-590	295	19	-	A <sub>Kv</sub> ≥ 31J	
	12Cr1MoVR	12Cr1MoVR	0.08-0.15	0.15-0.40	0.40-0.70	0.025	0.010	0.90-1.20	0.30	0.25-0.35	Cu:0.30	V:0.15-0.30; Cu:0.30	440-590	245	19	-	A <sub>Kv</sub> ≥ 34J	
GB/T 3077	15Cr1Mo	-	0.12-0.18	0.17-0.37	0.40-0.70	0.035	0.035	0.80-1.10	0.30	0.40-0.55	Cu:0.30	Cu:0.30	440	295	22	179	Z ≥ 60%; A <sub>Kuz</sub> ≥ 94J	
GB/T 3087	12Cr1MoV	-	0.08-0.15	0.17-0.37	0.40-0.70	0.035	0.035	0.90-1.20	0.30	0.25-0.35	V:0.15-0.30; Cu:0.30	V:0.15-0.30; Cu:0.30	490	245	22	179	Z ≥ 50%; A <sub>Kuz</sub> ≥ 71J	
	20 <sup>1)</sup>	-	0.17-0.23	0.17-0.37	0.35-0.65	0.035	0.035	0.25	0.30	-	-	-	410-550	245	20	-	-	
	Q235A	-	0.22	0.35	1.40	0.045	0.050	0.30	0.30	-	-	-	370-500	235	26	-	-	
	Q235B	-	0.20	0.35	1.40	0.045	0.045	0.30	0.30	-	-	-	370-500	235	26	-	A <sub>Kv</sub> ≥ 27J	
	Q275A	-	0.24	0.35	1.50	0.045	0.050	0.30	0.30	-	-	-	410-540	275	22	-	-	
GB 3531 <sup>1)</sup>	Q275B	-	0.21	0.35	1.50	0.045	0.045	0.30	0.30	-	-	-	410-540	275	22	-	A <sub>Kv</sub> ≥ 27J	
	16MnDR	-	0.20	0.15-0.50	1.20-1.60	0.025	0.012	0.25	0.40	0.08	Cu:0.25; Al: ≥ 0.020	Cu:0.25; Al: ≥ 0.020	490-620	315	21	-	K <sub>V2</sub> ≥ 34J (-40°C)	
	09MnNiDR	-	0.12	0.15-0.50	1.20-1.60	0.020	0.012	0.25	0.30-0.80	0.08	Cu:0.25; Nb:0.04, Al: ≥ 0.020	Cu:0.25; Nb:0.04, Al: ≥ 0.020	440-570	300	23	-	K <sub>V2</sub> ≥ 34J (-70°C)	
GB5310	20G	-	0.17-0.24	0.17-0.37	0.35-0.65	0.030	0.030	0.25	0.25	0.15	Cu:0.20; V:0.08	Cu:0.20; V:0.08	410-550	245	24	-	A <sub>Kv</sub> ≥ 35J	
	15CrMoG	-	0.12-0.18	0.17-0.37	0.40-0.70	0.030	0.030	0.80-1.10	-	0.40-0.55	-	-	440-640	235	21	-	A <sub>Kv</sub> ≥ 35J	
	12Cr1MoVG	-	0.08-0.15	0.17-0.37	0.40-0.70	0.030	0.030	0.90-1.20	-	0.25-0.35	V:0.15-0.30	V:0.15-0.30	470-640	255	21	-	A <sub>Kv</sub> ≥ 35J	
	410	-	0.21	0.35	0.40-1.20	0.035	0.035	0.25	0.30	0.10	Cu:0.30	Cu:0.30	410-530	235	22	-	-	
GB/T5312 <sup>2)</sup>	460	-	0.22	0.35	0.80-1.40	0.035	0.035	0.25	0.30	0.10	Cu:0.30	Cu:0.30	460-580	265	21	-	-	
	490	-	0.23	0.35	0.80-1.50	0.035	0.035	0.25	0.30	0.10	Cu:0.30	Cu:0.30	490-610	285	21	-	-	
	20	-	0.17-0.24	0.17-0.37	0.35-0.65	0.030	0.030	0.25	0.25	0.15	Cu:0.20; V:0.08	Cu:0.20; V:0.08	410-550	245	24	-	A <sub>Kuz</sub> ≥ 39J	
GB 6479 <sup>3)</sup>	16Mn	-	0.12-0.20	0.20-0.60	1.20-1.60	0.030	0.030	0.30	0.30	-	Cu:0.20	Cu:0.20	490-670	320	21	-	A <sub>Kuz</sub> ≥ 47J A <sub>Kv</sub> ≥ 21J(-40°C)	
	15CrMo	-	0.12-0.18	0.17-0.37	0.40-0.70	0.030	0.030	0.80-1.10	0.30	0.40-0.55	Cu:0.20	Cu:0.20	440-640	235	21	-	A <sub>Kuz</sub> ≥ 47J	
	1Cr5Mo	-	0.15	0.50	0.60	0.030	0.030	4.00-6.00	0.60	0.45-0.60	Cu:0.20	Cu:0.20	390-590	195	22	-	A <sub>Kuz</sub> ≥ 94J	

注:

- 1) 当厚度不同时, 规定的力学性能数值将有变化, 详见标准。
  - 2) Cr, Ni, Cu和Mo的含量总不应大于0.70%。
  - 3) Q245R、Q345R中可添加微量Nb, V, Ti元素, 这3个元素的含量分别不应大于0.050%、0.10%、0.12%。
  - 4) 如钢中添加Nb, V, Ti等微量元素, Al:含量的下限不适用。
  - 5) 当壁厚大于16~40mm时, 屈服强度允许降低10MPa。
- NOTE:
- 1) The mechanical properties may vary because of the different thickness, See the standards.
  - 2) The sum of Cr, Ni, Cu and Mo shall not exceed 0.70%.
  - 3) The microelements of Nb, V and Ti can be added in Q245R, Q345R and the content shall not exceed 0.050%, 0.10%, 0.12% accordingly.
  - 4) When the microelements Nb, V & Ti are added in steel, the lower limitation of Al: dosen't apply.
  - 5) When the thickness exceeds 16~40mm, the yield strength can be reduced by 10MPa.

标准 Standard	现用牌号 New Grade	原用牌号 Old Grade	化学成分 Chemical Composition % , max										力学性能 Mechanical Requirement						
			C	Si	Mn	P	S	Cr	Ni	Mo	Other	T.S. min MPa	Y.S. min MPa	EL. min %	HB max	Other			
GB/T 8163 <sup>1)</sup>	20	-	0.17-0.23	0.17-0.37	0.35-0.65	0.035	0.035	0.25	0.30	-	-	-	-	410-530	245	20	-	-	
	Q345B	16Mn, 16MnRE	0.20	0.55	1.0-1.60	0.040	0.040	-	-	-	-	-	-	470-630	345	20	-	-	
GB/T 9711.1 <sup>7)8)9)</sup>	L360	-	0.30	-	1.25	0.030	0.030	-	-	-	-	-	460	360	19	-	-	-	
	L415	-	0.26	-	1.35	0.030	0.030	-	-	-	-	-	520	415	17	-	-	-	
	L450	-	0.26	-	1.40	0.030	0.030	-	-	-	-	-	535	450	17	-	-	-	
	L485	-	0.23	-	1.60	0.030	0.030	-	-	-	-	-	570	485	16	-	-	-	
	L555	-	0.18	-	1.80	0.030	0.030	-	-	-	-	-	625-825	555	15	-	-	-	
GB/T 9711.2 <sup>7)9)10)</sup>	L360**	-	0.20	0.45	1.60	0.025	0.020	-	-	-	-	-	460	360-515	20	-	-	$R_{0.5}/R_{m}:0.88max$	
	L415**	-	0.21	0.45	1.60	0.025	0.020	-	-	-	-	-	520	415-565	18	-	-	$R_{0.5}/R_{m}:0.88max$	
	L450**	-	0.16	0.45	1.60	0.025	0.020	-	-	-	-	-	535	450-570	18	-	-	$R_{0.5}/R_{m}:0.90max$	
	L485**	-	0.16	0.45	1.70	0.025	0.020	-	-	-	-	-	570	485-605	18	-	-	$R_{0.5}/R_{m}:0.90max$	
	L555**	-	0.16	0.45	1.80	0.025	0.020	-	-	-	-	-	625	555-675	18	-	-	$R_{0.5}/R_{m}:0.90max$	
GB 9948 <sup>16)</sup>	20	-	0.17-0.23	0.17-0.37	0.35-0.65	0.030	0.020	0.25	0.25	0.15	0.25	0.15	0.15	410-550	245	24	-	-	$A_{kv} \geq 35J$
	15CrMo	-	0.12-0.18	0.17-0.37	0.40-0.70	0.030	0.020	0.80-1.10	0.30	0.40-0.55	0.80-1.10	0.30	0.40-0.55	440-640	235	21	170	-	$A_{kv} \geq 35J$
	1Cr5Mo	-	0.15	0.50	0.60	0.030	0.020	4.00-6.00	0.60	0.45-0.60	4.00-6.00	0.60	0.45-0.60	390-590	195	22	187	-	$A_{kv} \geq 35J$
	1Cr19Ni9	-	0.04-0.10	1.00	2.00	0.030	0.020	18.00-20.00	8.00-11.00	-	-	-	-	520	205	35	-	-	-
GB/T 18984 <sup>16)</sup>	16MnDG	-	0.12-0.20	0.20-0.55	1.20-1.60	0.025	0.020	-	-	-	-	-	-	490-665	325	30	-	-	$A_{kv} \geq 21J$ (-45°C)
	09Mn2V DG	-	0.12	0.17-0.37	1.85	0.025	0.020	-	-	-	-	-	-	450	300	30	-	-	$A_{kv} \geq 21J$ (-70°C)

注:

- 6) 力学性能中的屈服强度值为下屈服强度 ReL。
- 7) 这些钢级与 API 5L 规范中的钢级类似对应如下 (然而, 所列对应钢级在其它方面可能不同): L360-X52, L415-X60, L450-X65, L485-X70, L555-X80
- 8) 列出的是焊接钢管的化学成分要求。其中, 对于 L450 级以下钢级, 最大 C 含量比规定值每降低 0.01%, 允许在规定的最大 Mn 含量上增加 0.05% Mn 含量。但不超过 L360 的钢级, Mn 含量不应超过 1.45%; 对于 L360 的钢级, Mn 含量不应超过 1.60%。对于 L485 和 L555 钢级, 最大 C 含量比规定值每降低 0.01%, 允许在规定的最大 Mn 含量上增加 0.05% Mn 含量。但最大 Mn 含量不应超过 0.2%。其它微量化学元素的规定等要求等详见标准。
- 9) 力学性能中的屈服强度值为规定总伸长强度 (proof strength, total extension) R<sub>t0.5</sub>。屈服比及冲击试验规定等要求详见标准。
- 10) 在规定的最大 C 含量以下, 每降低 0.01% C 含量, 允许在规定的最大 Mn 含量上增加 0.05% Mn 含量。但最大 Mn 含量不应超过 0.2%。其它微量化学元素的规定及 CEV 要求等详见标准。

Note:

- 6) The value of yield strength is the lower one.
- 7) The comparison between these steel grades and the specification of API 5L shall be as the following: (however, the accordingly grades may be different at other factors) L360-X52, L415-X60, L450-X65, L485-X70, L555-X80
- 8) The above table indicates the chemical requirements of the welded pipes. For grades below L450, the max. C content decreases each 0.01% than the specified one, an increase of 0.05 % Mn. may be permitted on the specified max. one. However, for the grades below L360, the max. Mn. content is 1.45%, and for the grades above L360, a max. Mn content is 1.60%. For L485 and L555, the max. C content decreases each 0.01% than the specified one, an increase of 0.05 % Mn. may be permitted on the specified max. one up to 0.20%. As for the details for the other microelements, please refer the standards.
- 9) The value of yield strength is the specified total extension strength R<sub>t0.5</sub>. As for the ratio of yield strength and the requirements of impact test, please refer the standards.
- 10) Under the specified max. C content, if decreasing each 0.01% C, an increase of 0.05 % Mn. may be permitted on the specified max. one up to max. Mn 0.20%, as for other microelements and the CEV, please refer the standards.

中国标准中的压力管道常用金属材料(续)

THE GENERAL METALLIC MATERIALS OF CHINESE PRESSURE PIPING CODE (CONTINUED)

标准 Standard	现用牌号 New Grade	原用牌号 Old Grade	化学成分 Chemical Composition % , max										力学性能 Mechanical Requirement					
			C	Si	Mn	P	S	Cr	Ni	Mo	Other	T.S. (R <sub>m</sub> ) min MPa	Y.S. (R <sub>p0.2</sub> ) min MPa	EL. (A) min %	HB max	Other		
GB/T 1220	022Cr19Ni10	00Cr19Ni10	0.030	1.00	2.00	0.045	0.030	18.00-20.00	8.00-12.00	-	-	-	-	480	175	40	187	Z ≥ 60%
	022Cr17Ni12Mo2	00Cr17Ni14Mo2	0.030	1.00	2.00	0.045	0.030	16.00-18.00	10.00-14.00	2.00-3.00	-	-	-	480	175	40	187	Z ≥ 60%
	06Cr19Ni10	0Cr18Ni9	0.08	1.00	2.00	0.045	0.030	18.00-20.00	8.00-11.00	-	-	-	-	520	205	40	187	Z ≥ 60%
GB/T 1220, GB/T 1221	06Cr17Ni12Mo2	0Cr17Ni12Mo2	0.08	1.00	2.00	0.045	0.030	16.00-18.00	10.00-14.00	2.00-3.00	-	-	-	520	205	40	187	Z ≥ 60%
	06Cr18Ni11Ti	0Cr18Ni10Ti	0.08	1.00	2.00	0.045	0.030	17.00-19.00	9.00-12.00	-	-	Ti:5C-0.70	-	520	205	40	187	Z ≥ 50%
	06Cr18Ni11Nb	0Cr18Ni11Nb	0.08	1.00	2.00	0.045	0.030	17.00-19.00	9.00-12.00	-	-	Nb:10C-1.10	-	520	205	40	187	Z ≥ 50%
GB/T 4237	022Cr19Ni10	00Cr19Ni10	0.030	0.75	2.00	0.045	0.030	18.00-20.00	8.00-12.00	-	-	-	-	485	170	40	201	-
	022Cr17Ni12Mo2	00Cr17Ni14Mo2	0.030	0.75	2.00	0.045	0.030	16.00-18.00	10.00-14.00	2.00-3.00	-	-	-	485	170	40	217	-
	06Cr19Ni10	0Cr18Ni9	0.08	0.75	2.00	0.045	0.030	18.00-20.00	8.00-10.50	-	-	-	-	515	205	40	201	-
GB/T 4237, GB/T 4238	06Cr17Ni12Mo2	0Cr17Ni12Mo2	0.08	0.75	2.00	0.045	0.030	16.00-18.00	10.00-14.00	2.00-3.00	-	-	-	515	205	40	217	-
	06Cr18Ni11Ti <sup>1)</sup>	0Cr18Ni10Ti <sup>1)</sup>	0.08	0.75	2.00	0.045	0.030	17.00-19.00	9.00-12.00	-	-	N:0.10;Ti ≥ 5C	-	515	205	40	217	-
	06Cr18Ni11Nb	0Cr18Ni11Nb	0.08	0.75	2.00	0.045	0.030	17.00-19.00	9.00-13.00	-	-	Nb:10C-1.00	-	515	205	40	201	-
GB/T 12271	06Cr19Ni10	0Cr18Ni9	0.08	0.75	2.00	0.040	0.030	18.00-20.00	8.00-11.00	-	-	-	-	520	210	35	-	-
	022Cr19Ni10	00Cr19Ni10	0.030	0.75	2.00	0.040	0.030	18.00-20.00	8.00-12.00	-	-	-	-	480	180	35	-	-
	06Cr18Ni11Ti	0Cr18Ni10Ti	0.08	0.75	2.00	0.040	0.030	17.00-19.00	9.00-12.00	-	-	Ti: ≥ 5C-0.70	-	520	210	35	-	-
GB 13296	06Cr18Ni11Nb	0Cr18Ni11Nb	0.08	0.75	2.00	0.040	0.030	17.00-19.00	9.00-12.00	-	-	-	-	520	210	35	-	-
	06Cr17Ni12Mo2	0Cr17Ni12Mo2	0.08	0.75	2.00	0.040	0.030	16.00-18.00	10.00-14.00	2.00-3.00	-	-	-	520	210	35	-	-
	022Cr17Ni12Mo2	00Cr17Ni14Mo2	0.030	0.75	2.00	0.040	0.030	16.00-18.00	10.00-14.00	2.00-3.00	-	-	-	480	180	35	-	-
GB 14976	06Cr19Ni10	0Cr18Ni9	0.07	1.00	2.00	0.035	0.030	17.00-19.00	8.00-11.00	-	-	-	-	520	205	35	-	-
	022Cr19Ni10	00Cr19Ni10	0.030	1.00	2.00	0.035	0.030	18.00-20.00	8.00-12.00	-	-	-	-	480	175	35	-	-
	06Cr18Ni11Ti	0Cr18Ni10Ti	0.08	1.00	2.00	0.035	0.030	17.00-19.00	9.00-12.00	-	-	Ti: ≥ 5C	-	520	205	35	-	-
GB 14976	06Cr18Ni11Nb	0Cr18Ni11Nb	0.08	1.00	2.00	0.035	0.030	17.00-19.00	9.00-13.00	-	-	Nb + Ta:10C-1.00	-	520	205	35	-	-
	06Cr17Ni12Mo2	0Cr17Ni12Mo2	0.08	1.00	2.00	0.035	0.030	16.00-18.00	11.00-14.00	2.00-3.00	-	-	-	520	205	35	-	-
	022Cr17Ni12Mo2	00Cr17Ni14Mo2	0.030	1.00	2.00	0.035	0.030	16.00-18.00	12.00-15.00	2.00-3.00	-	-	-	480	175	40	-	-
GB 14976	06Cr19Ni10	0Cr18Ni9	0.07	1.00	2.00	0.035	0.030	17.00-19.00	8.00-11.00	-	-	-	-	520	205	35	-	-
	022Cr19Ni10	00Cr19Ni10	0.030	1.00	2.00	0.035	0.030	18.00-20.00	8.00-12.00	-	-	-	-	480	175	35	-	-
	06Cr18Ni11Ti	0Cr18Ni10Ti	0.08	1.00	2.00	0.035	0.030	17.00-19.00	9.00-12.00	-	-	Ti: ≥ 5C	-	520	205	35	-	-
GB 14976	06Cr18Ni11Nb	0Cr18Ni11Nb	0.08	1.00	2.00	0.035	0.030	17.00-19.00	9.00-12.00	-	-	-	-	520	205	35	-	-
	06Cr17Ni12Mo2	0Cr17Ni12Mo2	0.08	1.00	2.00	0.035	0.030	16.00-18.50	10.00-14.00	2.00-3.00	-	-	-	520	205	35	-	-
	022Cr17Ni12Mo2	00Cr17Ni14Mo2	0.030	1.00	2.00	0.035	0.030	16.00-18.00	12.00-15.00	2.00-3.00	-	-	-	480	175	35	-	-

注：  
11) GB/T 4238 对该牌号中的元素 N 含量未加限定。  
Note:  
11) GB/T 4238 doesn't have any limitation to the content of Ni of this item grade.

标准 Standard	现用牌号 New Grade	原用牌号 Old Grade	化学成分 Chemical Composition % max										力学性能 Mechanical Requirement							
			C	Si	Mn	P	S	Cr	Ni	Mo	Other	T.S. min MPa	Y.S. min MPa	EL. min %	HB max	Other				
JB 4726 <sup>(2)(3)(4)</sup>	20	-	0.17-0.23	0.17-0.37	0.60-1.00	0.030	0.020	0.25	0.25	0.25	0.25	0.25	-	Cu:0.25	390-540	215	24	106-159	$A_{KV} \geq 34J$	
	16Mn	-	0.13-0.19	0.20-0.60	1.20-1.60	0.030	0.020	0.30	0.30	0.30	0.30	0.30	-	Cu:0.25	450-600	275	20	121-178	$A_{KV} \geq 31J(0^{\circ}C)$	
	15CrMo	-	0.12-0.18	0.10-0.60	0.30-0.80	0.030	0.020	0.80-1.25	0.30	0.80-1.25	0.30	0.45-0.65	0.25-0.35	V:0.15-0.30; Cu:0.25	440-610	275	20	118-180	$A_{KV} \geq 34J$	
	12Cr1MoV	-	0.09-0.15	0.17-0.37	0.40-0.70	0.030	0.020	0.90-1.20	0.30	0.90-1.20	0.30	0.90-1.10	0.25-0.35	Cu:0.25	440-610	255	19	118-180	$A_{KV} \geq 34J$	
	12Cr2Mo1	-	0.15	0.50	0.30-0.60	0.025	0.015	2.00-2.50	0.30	2.00-2.50	0.30	0.90-1.10	0.25-0.35	Cu:0.25	510-680	310	18	136-201	$A_{KV} \geq 41J$	
JB 4727 <sup>(2)(4)(5)</sup>	1Cr5Mo	-	0.15	0.50	0.60	0.030	0.020	4.00-6.00	0.30	4.00-6.00	0.50	0.45-0.65	-	Nb:0.030; Cu:0.25; Als: $\geq 0.015$	590-760	390	18	174-229	$A_{KV} \geq 34J$	
	16MnD	-	0.13-0.18	0.20-0.60	1.20-1.60	0.025	0.015	0.30	0.30	0.30	0.40	-	-	Nb:0.030; Cu:0.25; Als: $\geq 0.015$	450-600	275	20	-	$A_{KV} \geq 27J(-40^{\circ}C)$	
	09MnD	-	0.12	0.15-0.35	1.20-1.60	0.025	0.015	0.30	0.30	0.30	0.45-0.85	-	-	Nb:0.050; Cu:0.25; Als: $\geq 0.015$	420-570	260	23	-	$A_{KV} \geq 47J(-70^{\circ}C)$	
	0Cr18Ni9	-	0.07	1.00	2.00	0.035	0.030	17.00-19.00	0.030	17.00-19.00	8.00-11.00	-	-	-	520	205	35	139-187	-	
	00Cr19Ni10	-	0.03	1.00	2.00	0.035	0.030	18.00-20.00	0.030	18.00-20.00	8.00-12.00	-	-	-	480	175	35	128-187	-	
JB 4728 <sup>(3)(4)</sup>	0Cr17Ni12Mo2	-	0.08	1.00	2.00	0.035	0.030	16.00-18.00	0.030	16.00-18.00	10.00-14.00	2.00-3.00	-	-	520	205	35	139-187	-	
	00Cr17Ni14Mo2	-	0.03	1.00	2.00	0.035	0.030	16.00-18.00	0.030	16.00-18.00	12.00-15.00	2.00-3.00	-	-	480	175	35	128-187	-	
	0Cr18Ni10Ti	-	0.08	1.00	2.00	0.035	0.030	17.00-19.00	0.030	17.00-19.00	9.00-12.00	-	-	Ti: $\geq 5C$	520	205	35	139-187	-	
	0Cr18Ni12Mo2Ti	-	0.08	1.00	2.00	0.035	0.030	16.00-19.00	0.030	16.00-19.00	11.00-14.00	1.80-2.50	-	-	Ti: $\geq 5C-0.7$	520	205	35	139-187	-
	06Cr19Ni10	0Cr18Ni9	0.08	1.00	2.00	0.045	0.030	18.00-20.00	0.030	18.00-20.00	8.00-11.00	-	-	-	-	-	-	-	-	-
YB/T 5089	022Cr19Ni10	00Cr19Ni10	0.030	1.00	2.00	0.045	0.030	18.00-20.00	0.030	18.00-20.00	8.00-12.00	-	-	-	-	-	-	-	-	-
	06Cr18Ni11Ti	0Cr18Ni10Ti	0.08	1.00	2.00	0.045	0.030	17.00-19.00	0.030	17.00-19.00	9.00-12.00	-	-	-	Ti: $\geq 5C-0.7$	-	-	-	-	-
	06Cr18Ni11Nb	0Cr18Ni11Nb	0.08	1.00	2.00	0.045	0.030	17.00-19.00	0.030	17.00-19.00	9.00-12.00	-	-	-	Nb $\geq 10C-1.10$	-	-	-	-	-
	06Cr17Ni12Mo2	0Cr17Ni12Mo2	0.08	1.00	2.00	0.045	0.030	16.00-18.00	0.030	16.00-18.00	10.00-14.00	2.00-3.00	-	-	-	-	-	-	-	-
	022Cr17Ni12Mo2	00Cr17Ni14Mo2	0.030	1.00	2.00	0.045	0.030	16.00-18.00	0.030	16.00-18.00	10.00-14.00	2.00-3.00	-	-	-	-	-	-	-	-
DL 473	20	-	0.17-0.24	0.17-0.37	0.35-0.65	0.035	0.035	0.25	0.25	0.25	0.25	0.25	-	Cu:0.20	412-549	245	24	117-156	$A_{KV} \geq 27J$	
	12Cr1MoV	-	0.08-0.15	0.17-0.37	0.40-0.70	0.035	0.035	0.90-1.20	0.30	0.90-1.20	0.30	0.25-0.35	-	V:0.15-0.30; Cu:0.20	440-610	255	21	132-183	$A_{KV} \geq 34J$	
	12Cr2Mo1	-	0.08-0.15	0.50	0.30-0.60	0.030	0.030	2.00-2.50	0.30	2.00-2.50	0.30	0.90-1.10	-	Cu:0.20	450-600	280	20	135-180	$A_{KV} \geq 41J$	

注:

12) 对真空碳脱氧钢, 允许 Si 含量小于或等于 0.12%。

13) 锻件分为 I、II、III、IV 共 4 个级别, 每个级别的检验项目规定不同。

14) 锻件的厚度不同时, 其力学性能规定不同, 详见标准。

15) 锻件分为 II、III、IV 共 3 个级别, 每个级别的检验项目规定不同。

Note:

12) For the deoxidizing steel with vacuum carbon, the content of Si may be up to 0.12%.

13) The forgings have the grades of I, II, III and IV, and the inspection items for each grade are different.

14) The mechanical properties vary with the different thickness for forgings, details, please refer the standards.

15) The forgings have the grades of II, III and IV, and the inspection items for each grade are different.

ASME 规范中的压力管道常用金属材料  
THE GENERAL METALLIC MATERIALS OF ASME PRESSURE PIPING CODE

规范 Code	牌号 Grade	化学成分 Chemical Composition % , max										力学性能 Mechanical Requirement			
		C	Si	Mn	P	S	Cr	Ni	Mo	Other	T.S. min MPa	Y.S. min MPa	EL. min %	HB max	Other
ASTM A 53/ ASME SA 53	B <sup>1)</sup> 无缝/S	0.30	-	1.20	0.05	0.045	0.40	0.40	0.15	Cu:0.40;V:0.08	415	240	e <sup>2)</sup>	-	-
	B <sup>1)</sup> 电阻焊/ERW	0.30	-	1.20	0.05	0.045	0.40	0.40	0.15	Cu:0.50;V:0.08	415	240	e <sup>2)</sup>	-	-
ASTM A 105/ ASME SA 105/ ASTM A 106/ ASME SA 106	A105 <sup>1)3)4)</sup>	0.35	0.10-0.35	0.60-1.05	0.035	0.040	0.30	0.40	0.12	Cu:0.40;V:0.08	485	250	22	187	Z ≥ 30%
	B <sup>1)3)</sup>	0.30	0.10 min	0.29-1.06	0.035	0.035	0.40	0.40	0.15	Cu:0.40;V:0.08	415	240	22	-	-
	C <sup>1)3)</sup>	0.35	0.10 min	0.29-1.06	0.035	0.035	0.40	0.40	0.15	Cu:0.40;V:0.08	485	275	20	-	-
	F5	0.15	0.50	0.30-0.60	0.030	0.030	4.0-6.0	0.50	0.44-0.65	-	485	275	20	143-217	Z ≥ 35%
	F9	0.15	0.50-1.00	0.30-0.60	0.030	0.030	8.0-10.0	-	0.90-1.10	-	585	380	20	179-217	Z ≥ 40%
	F91	0.08-0.12	0.20-0.50	0.30-0.60	0.020	0.010	8.0-9.5	0.40	0.85-1.05	5)	585	415	20	248	Z ≥ 40%
	F11 CL1	0.05-0.15	0.50-1.00	0.30-0.60	0.030	0.030	1.00-1.50	-	0.44-0.65	-	415	205	20	121-174	Z ≥ 45%
	F11 CL2	0.10-0.20	0.50-1.00	0.30-0.80	0.040	0.040	1.00-1.50	-	0.44-0.65	-	485	275	20	143-207	Z ≥ 30%
	F11 CL3	0.10-0.20	0.50-1.00	0.30-0.80	0.040	0.040	1.00-1.50	-	0.44-0.65	-	515	310	20	156-207	Z ≥ 30%
	F12 CL1	0.05-0.15	0.50	0.30-0.60	0.045	0.045	0.80-1.25	-	0.44-0.65	-	415	220	20	121-174	Z ≥ 45%
F12 CL2	0.10-0.20	0.10-0.60	0.30-0.80	0.040	0.040	0.80-1.25	-	0.44-0.65	-	485	275	20	143-207	Z ≥ 30%	
F22 CL1	0.05-0.15	0.50	0.30-0.60	0.040	0.040	2.00-2.50	-	0.87-1.13	-	415	205	20	170	Z ≥ 35%	
F22 CL3	0.05-0.15	0.50	0.30-0.60	0.040	0.040	2.00-2.50	-	0.87-1.13	-	515	310	20	156-207	Z ≥ 30%	
F304 <sup>6)</sup>	0.08	1.00	2.00	0.045	0.030	18.0-20.0	8.0-11.0	-	-	515	205	30	-	Z ≥ 50%	
F304H	0.04-0.10	1.00	2.00	0.045	0.030	18.0-20.0	8.0-11.0	-	-	515	205	30	-	Z ≥ 50%	
F304L <sup>6)</sup>	0.030	1.00	2.00	0.045	0.030	18.0-20.0	8.0-13.0	-	-	485	170	30	-	Z ≥ 50%	
F316 <sup>6)</sup>	0.08	1.00	2.00	0.045	0.030	16.0-18.0	10.0-14.0	2.00-3.00	-	515	205	30	-	Z ≥ 50%	
F316H	0.04-0.10	1.00	2.00	0.045	0.030	16.0-18.0	10.0-14.0	2.00-3.00	-	515	205	30	-	Z ≥ 50%	
F316L <sup>6)</sup>	0.030	1.00	2.00	0.045	0.030	16.0-18.0	10.0-15.0	2.00-3.00	-	485	170	30	-	Z ≥ 50%	
F321	0.08	1.00	2.00	0.045	0.030	17.0-19.0	9.0-12.0	-	Ti:5C-0.7	515	205	30	-	Z ≥ 50%	
F321H	0.04-0.10	1.00	2.00	0.045	0.030	17.0-19.0	9.0-12.0	-	Ti:4C-0.7	515	205	30	-	Z ≥ 50%	
F347	0.08	1.00	2.00	0.045	0.030	17.0-20.0	9.0-13.0	-	Nb:10C-1.10	515	205	30	-	Z ≥ 50%	
F347H	0.04-0.10	1.00	2.00	0.045	0.030	17.0-20.0	9.0-13.0	-	Nb:8C-1.10	515	205	30	-	Z ≥ 50%	
F51	0.030	1.00	2.00	0.030	0.020	21.0-23.0	4.5-6.5	2.5-3.5	N:0.08-0.20	620	450	25	-	Z ≥ 45%	
F60	0.030	1.00	2.00	0.030	0.020	22.0-23.0	4.5-6.5	3.0-3.5	N:0.14-0.20	655	485	25	-	Z ≥ 45%	

注:

- 1) Cu, Ni, Cr, Mo 和 V 的含量总合不应大于 1.00%。
  - 2) e = 1940A<sup>0.2</sup>/U<sup>0.8</sup>; 详见规范。
  - 3) 在规定的最大 C 含量以下, 每降低 0.01% C 含量, 允许在规定的最大 Mn 含量上增加 0.06% Mn 含量, 直到 1.35% 为止。
  - 4) Cr 和 Mo 的含量总合不应大于 0.32%。
  - 5) Nb:0.06-0.10, Ni:0.03-0.07, Al:0.02, V:0.18-0.25, Ti:0.01, Zr:0.01。
  - 6) F304, F304L, F316 和 F316L 的 N 含量不应大于 0.10%。
- NOTE:
- 1) The sum of Cu, Ni, Cr, Mo and V shall not exceed 1.00 %.
  - 2) e = 1940A<sup>0.2</sup>/U<sup>0.8</sup>; Details refer the specification.
  - 3) Below the specified max.C, If the content C decreases each 0.01 %, an increase of 0.06% manganese will be permitted up to a maximum of 1.35%.
  - 4) The sum of chromium and molybdenum shall not exceed 0.32 %.
  - 5) Nb:0.06-0.10, Ni:0.03-0.07, Al:0.02, V:0.18-0.25, Ti:0.01, Zr:0.01.
  - 6) Grades F304, F304L, F316 and F316L shall have a maximum nitrogen content of 0.10%.

规范 Code	牌号 Grade	化学成分 Chemical Composition % ,max											力学性能 Mechanical Requirement						
		C	Si	Mn	P	S	Cr	Ni	Mo	Other	T.S. min MPa	Y.S. min MPa	EL. min %	HB max	Other				
ASTM A 234/ ASME SA 234	WPB <sup>7)</sup> 9/10/11	0.30	0.10 min	0.29-1.06	0.050	0.058	0.40	0.40	0.15	Cu:0.40;V:0.08	0.40	0.40	0.15	Cu:0.40;V:0.08	415-655	240	22	197	-
	WPC <sup>8)</sup> 9/10/11	0.35	0.10 min	0.29-1.06	0.050	0.058	0.40	0.40	0.15	Cu:0.40;V:0.08	0.40	0.40	0.15	Cu:0.40;V:0.08	485-655	275	22	197	-
	WP5 CL1	0.15	0.50	0.30-0.60	0.040	0.030	4.0-6.0	-	0.44-0.65	-	0.44-0.65	-	-	-	415-585	205	22	217	-
	WP5 CL3	0.15	0.50	0.30-0.60	0.040	0.030	4.0-6.0	-	0.44-0.65	-	0.44-0.65	-	-	-	520-690	310	22	217	-
	WP9 CL1	0.15	1.00	0.30-0.60	0.030	0.030	8.0-10.0	-	0.90-1.10	-	0.90-1.10	-	-	-	415-585	205	22	217	-
	WP9 CL3	0.15	1.00	0.30-0.60	0.030	0.030	8.0-10.0	-	0.90-1.10	-	0.90-1.10	-	-	-	520-690	310	22	217	-
	WP91	0.08-0.12	0.20-0.50	0.30-0.60	0.020	0.010	8.0-9.5	0.40	0.85-1.05	<sup>12)</sup>	0.85-1.05	-	0.40	0.85-1.05	585-760	415	20	248	-
	WP11 CL1	0.05-0.15	0.50-1.00	0.30-0.60	0.030	0.030	1.00-1.50	-	0.44-0.65	-	0.44-0.65	-	-	-	415-585	205	22	197	-
	WP11 CL2	0.05-0.20	0.50-1.00	0.30-0.80	0.040	0.040	1.00-1.50	-	0.44-0.65	-	0.44-0.65	-	-	-	485-655	275	22	197	-
	WP11 CL3	0.05-0.20	0.50-1.00	0.30-0.80	0.040	0.040	1.00-1.50	-	0.44-0.65	-	0.44-0.65	-	-	-	520-690	310	22	197	-
	WP12 CL1	0.05-0.20	0.60	0.30-0.80	0.045	0.045	0.80-1.25	-	0.44-0.65	-	0.44-0.65	-	-	-	415-585	220	22	197	-
	WP12 CL2	0.05-0.20	0.60	0.30-0.80	0.045	0.045	0.80-1.25	-	0.44-0.65	-	0.44-0.65	-	-	-	485-655	275	22	197	-
	WP22 CL1	0.05-0.15	0.50	0.30-0.60	0.040	0.040	1.90-2.60	-	0.87-1.13	-	0.87-1.13	-	-	-	415-585	205	22	197	-
WP22 CL3	0.05-0.15	0.50	0.30-0.60	0.040	0.040	1.90-2.60	-	0.87-1.13	-	0.87-1.13	-	-	-	520-690	310	22	197	-	
304	0.08	0.75	2.00	0.045	0.030	18.0-20.0	8.0-10.5	-	N:0.10	-	-	-	-	515	205	40	201	-	
304H	0.04-0.10	0.75	2.00	0.045	0.030	18.0-20.0	8.0-10.5	-	-	-	-	-	-	515	205	40	201	-	
304L	0.030	0.75	2.00	0.045	0.030	18.0-20.0	8.0-12.0	-	N:0.10	-	-	-	-	485	170	40	201	-	
316	0.08	0.75	2.00	0.045	0.030	16.0-18.0	10.0-14.0	2.00-3.00	N:0.10	-	-	-	-	515	205	40	217	-	
316H	0.04-0.10	0.75	2.00	0.045	0.030	16.0-18.0	10.0-14.0	2.00-3.00	-	-	-	-	-	515	205	40	217	-	
316L	0.030	0.75	2.00	0.045	0.030	16.0-18.0	10.0-14.0	2.00-3.00	N:0.10	-	-	-	-	485	170	40	217	-	
321	0.08	0.75	2.00	0.045	0.030	17.0-19.0	9.0-12.0	-	N:0.10; Ti:5(C+N)-0.7	-	-	-	-	515	205	40	217	-	
321H	0.04-0.10	0.75	2.00	0.045	0.030	17.0-19.0	9.0-12.0	-	Ti:4(C+N)-0.7	-	-	-	-	515	205	40	217	-	
347	0.08	0.75	2.00	0.045	0.030	17.0-19.0	9.0-13.0	-	Nb:10C-1.00	-	-	-	-	515	205	40	201	-	
TP347H	0.04-0.10	0.75	2.00	0.045	0.030	17.0-20.0	9.0-13.0	-	Nb:8C-1.00	-	-	-	-	515	205	40	201	-	
TP304	0.08	1.00	2.00	0.045	0.030	18.0-20.0	8.0-11.0	-	-	-	-	-	-	515	205	35	-	-	
TP304H	0.04-0.10	1.00	2.00	0.045	0.030	18.0-20.0	8.0-11.0	-	-	-	-	-	-	515	205	35	-	-	
TP304L	0.035	1.00	2.00	0.045	0.030	18.0-20.0	8.0-13.0	-	-	-	-	-	-	485	170	35	-	-	
TP316 <sup>13)</sup>	0.08	1.00	2.00	0.045	0.030	16.0-18.0	11.0-14.0	2.00-3.00	-	-	-	-	-	515	205	35	-	-	
TP316H <sup>13)</sup>	0.04-0.10	1.00	2.00	0.045	0.030	16.0-18.0	11.0-14.0	2.00-3.00	-	-	-	-	-	515	205	35	-	-	
TP316L	0.035	1.00	2.00	0.045	0.030	16.0-18.0	10.0-14.0	2.00-3.00	-	-	-	-	-	485	170	35	-	-	

注:

- 7) 采用棒料或板料制造的管件, C 含量不应大于 0.35%。
- 8) 采用锻件制造的管件, C 含量不应大于 0.35%, Si 含量不应大于 0.35%, 且无最小值限制。
- 9) 在规定的最大 C 含量以下, 每降低 0.01% C 含量, 允许在规定的最大 Mn 含量上增加 0.06% Mn 含量, 直到 1.35% 为止。
- 10) Cu, Ni, Cr 和 Mo 的含量总和不应大于 1.00%。
- 11) Cr 和 Mo 的含量总和不应大于 0.32%。
- 12) V:0.18-0.25, Nb:0.06-0.10, N:0.03-0.07, Al:0.02, Ti:0.01, Zr:0.01。
- 13) TP316 和 TP316H 的牌号, Ni 含量的范围可为 10.0-14.0%。

NOTE:

- 7) Fittings made from bars or plates shall have max.C 0.35.
- 8) Fittings made from forgings shall have C max.0.35 and Si max. 0.35 without min.limitation.
- 9) Below the specified max.C, if the content C decreases each 0.01 %, an increase of 0.06% Mn will be permitted up to a maximum of 1.35%.
- 10) The sum of Cu, Ni, Cr, and Mo shall not exceed 1.00 %.
- 11) The sum of Cr and Mo shall not exceed 0.32 %.
- 12) V:0.18-0.25, Nb:0.06-0.10, N:0.03-0.07, Al:0.02, Ti:0.01, Zr:0.01.
- 13) For welded TP316 and TP316H pipe, the range of Ni shall be 10.0 14.0 %.

ASME 规范中的压力管道常用金属材料(续)

THE GENERAL METALLIC MATERIAL FOR ASME PRESSURE PIPING CODE (CONTINUED)

规范 Code	牌号 Grade	化学成分 Chemical Composition % , max										力学性能 Mechanical Requirement			
		C	Si	Mn	P	S	Cr	Ni	Mo	Other	T.S. min MPa	Y.S. min MPa	EL. min %	HB max	Other
ASTM A 312/ ASME SA 312	TP321 <sup>14)</sup>	0.08	1.00	2.00	0.045	0.030	17.0-19.0	9.0-12.0	-	N:0.10;Ti:5C-0.70	515	205	35	-	-
	TP321H <sup>14)</sup>	0.04-0.10	1.00	2.00	0.045	0.030	17.0-19.0	9.0-12.0	-	Ti:4C-0.60	515	205	35	-	-
	TP347	0.08	1.00	2.00	0.045	0.030	17.0-19.0	9.0-13.0	-	Nb:10C-1.00	515	205	35	-	-
	TP347H	0.04-0.10	1.00	2.00	0.045	0.030	17.0-19.0	9.0-13.0	-	Nb:8C-1.0	515	205	35	-	-
ASTM A 333/ ASME SA 333 <sup>25)</sup>	6 <sup>15)</sup>	0.30	0.10 min	0.29-1.06	0.025	0.025	-	-	-	-	415	240	22	-	-
	9	0.20	-	0.40-1.06	0.025	0.025	-	1.60-2.24	-	Cu:0.75-1.25	435	315	(28)	-	-
	3	0.19	0.18-0.37	0.31-0.64	0.025	0.025	-	3.18-3.82	-	-	450	240	22	-	-
	8	0.13	0.13-0.32	0.90	0.025	0.025	-	8.40-9.60	-	-	690	515	16	-	-
ASTM A 335/ ASME SA 335	P5	0.15	0.50	0.30-0.60	0.025	0.025	4.00-6.00	-	0.45-0.65	-	415	205	22	-	-
	P5b	0.15	1.00-2.00	0.30-0.60	0.025	0.025	4.00-6.00	-	0.44-0.65	-	415	205	22	-	-
	P5c	0.12	0.50	0.30-0.60	0.025	0.025	4.00-6.00	-	0.45-0.65 <sup>16)</sup>	-	415	205	22	-	-
	P9	0.15	0.25-1.00	0.30-0.60	0.025	0.025	8.0-10.0	-	0.90-1.10	-	415	205	22	-	-
	P91	0.08-0.12	0.20-0.50	0.30-0.60	0.020	0.010	8.00-9.50	0.40	0.85-1.05	<sup>17)</sup>	585	415	20	250	-
	P11	0.05-0.15	0.50-1.00	0.30-0.60	0.025	0.025	1.00-1.50	-	0.44-0.65	-	415	205	22	-	-
ASTM A 350/ ASME SA 350 <sup>25)</sup>	P12	0.05-0.15	0.50	0.30-0.61	0.025	0.025	0.80-1.25	-	0.44-0.65	-	415	220	22	-	-
	P22	0.05-0.15	0.50	0.30-0.60	0.025	0.025	1.90-2.60	-	0.87-1.13	-	415	205	22	-	-
	LF2 CL1 & CL2 <sup>18)19)20)</sup>	0.30	0.15-0.30	0.60-1.35	0.035	0.040	0.30	0.40	0.12	Cu:0.40;Nb:0.02 V:0.08,	485-655	250	22	197	-
	LF9 <sup>19)</sup>	0.20	-	0.40-1.06	0.035	0.040	0.30	1.60-2.24	0.12	Cu:0.75-1.25, Nb:0.02;V:0.03	435-605	315	25	197	-
	LF3 CL1 & CL2 <sup>19)</sup>	0.20	0.20-0.35	0.90	0.035	0.040	0.30	3.3-3.7	0.12	Cu:0.40;Nb:0.02 V:0.03	485-655	260	22	197	-

注:

- 14)壁厚 > 9.53mm (3/8 in.)的 TP321 无缝管和壁厚 > 4.76mm (3/16 in.)的 TP321H 无缝管, 其抗拉强度最小为 485MPa (70ksi), 屈服强度最小为 170MPa (25ksi)。  
 15)在规定的最大 C 含量以下, 每降低 0.01% C 含量, 允许在规定的最大 Mn 含量上增加 0.05% Mn 含量, 直到 1.35% 为止。  
 16)P5c 应有  $4 \times C - 0.7\%$  的 Ti 含量, 或应有  $(8-10) \times C\%$  的 Nb 含量。  
 17)P91 应有 V:0.18-0.25, N:0.03-0.07, Al:0.02, Nb:0.06-0.10, Ti:0.01, Zr:0.01。  
 18)在熔炼分析中, Cu, Ni, Cr, V 和 Mo 的总含量不超过 1.00%。  
 19)在熔炼分析中, Cr 和 Mo 的总含量不超过 0.32%。  
 20)经协商, Nb 的含量熔炼分析时可为 0.05%, 产品分析时可为 0.06%。  
 NOTE:  
 14) For TP321 SMLS pipes with thickness(T) > 9.53mm (3/8 in.) and TP321H SMLS pipes with T > 4.76mm (3/16 in.), the min. tension strength is 485MPa (70ksi) and the min. yield strength is 170MPa (25ksi).  
 15) Below the specified max.C, if the content C decreases each 0.01%, an increase of 0.06% manganese will be permitted up to a maximum of 1.35%.  
 16) Grade P5c shall have a Ti content  $4 \times C - 0.7\%$ ; or a Nb content  $(8-10) \times C\%$ .  
 17) Grade P91 shall have V:0.18-0.25, N:0.03-0.07, Al:0.02, Nb:0.06-0.10, Ti:0.01, Zr:0.01.  
 18) The sum of Cu, Ni, Cr, V and Mo shall not exceed 1.00% during heat analysis.  
 19) The sum of Cr and Mo shall not exceed 0.32% during heat analysis.  
 20) Per agreement, the content of Nb may be 0.05% during heat analysis and 0.06% during product analysis.



规范 Code	牌号 Grade	化学成分 Chemical Composition % , max											力学性能 Mechanical Requirement				
		C	Si	Mn	P	S	Cr	Ni	Mo	Other	T.S. min MPa	Y.S. min MPa	EL. min %	HB max	Other		
	5	0.15	0.55	0.25-0.66	0.035	0.030	3.90-6.10	-	0.40-0.70	-	-	-	415-585 (515-690)	205 (310)	18	-	Z ≥ 40%
	9	0.15	1.05	0.25-0.66	0.030	0.030	7.90-10.10	-	0.85-1.15	-	-	-	415-585 (515-690)	205 (310)	18	-	Z ≥ 40%
ASTM A 387/ ASME SA 387 <sup>26)</sup>	91	0.06-0.15	0.18-0.56	0.25-0.66	0.025	0.012	7.90-9.60	0.43	0.80-1.10	-	-	V:0.16-0.27 Nb:0.05-0.11 N:0.025-0.080 Al:0.02;Ti:0.01 Zr:0.01	585-760	415	18	-	-
	11	0.04-0.17	0.44-0.86	0.35-0.73	0.035	0.035	0.94-1.56	-	0.40-0.70	-	-	-	415-585 (515-690)	240 (310)	22	-	-
	12	0.04-0.17	0.13-0.45	0.35-0.73	0.035	0.035	0.74-1.21	-	0.40-0.65	-	-	-	380-550 (450-585)	230 (275)	22	-	-
	22	0.04-0.15	0.50	0.25-0.66	0.035	0.035	1.88-2.62	-	0.85-1.15	-	-	-	415-585 (515-690)	205 (310)	18	-	Z ≥ 40%
	WP304	0.08	1.00	2.00	0.045	0.030	18.0-20.0	8.0-11.0	-	-	-	-	515	205	28	-	-
	WP304H	0.04-0.10	1.00	2.00	0.045	0.030	18.0-20.0	8.0-11.0	-	-	-	-	515	205	28	-	-
	WP304L	0.030	1.00	2.00	0.045	0.030	18.0-20.0	8.0-12.0	-	-	-	-	485	170	28	-	-
	WP316	0.08	1.00	2.00	0.045	0.030	16.0-18.0	10.0-14.0	2.00-3.00	-	-	-	515	205	28	-	-
ASTM A 403/ ASME SA 403	WP316H	0.04-0.10	1.00	2.00	0.045	0.030	16.0-18.0	10.0-14.0	2.00-3.00	-	-	-	515	205	28	-	-
	WP316L	0.030	1.00	2.00	0.045	0.030	16.0-18.0	10.0-14.0	2.00-3.00	-	-	-	485	170	28	-	-
	WP321	0.08	1.00	2.00	0.045	0.030	17.0-19.0	9.0-12.0	-	-	-	Ti:5(C+N) <sub>2</sub> +0.70	515	205	28	-	-
	WP321H	0.04-0.10	1.00	2.00	0.045	0.030	17.0-19.0	9.0-12.0	-	-	-	Ti:4(C+N) <sub>2</sub> +0.70	515	205	28	-	-
	WP347	0.08	1.00	2.00	0.045	0.030	17.0-19.0	9.0-12.0	-	-	-	Nb:10C-1.10	515	205	28	-	-
	WP347H	0.04-0.10	1.00	2.00	0.045	0.030	17.0-19.0	9.0-12.0	-	-	-	Nb:8C-1.10	515	205	28	-	-
ASTM A 420/ ASME SA 420 <sup>25)</sup>	WPL6 <sup>21)</sup>	0.30	0.15-0.40	0.50-1.35	0.035	0.040	0.30	0.40	0.12	-	-	Cu:0.40;V:0.08, Nb:0.02	415-655	240	22	-	-
	WPL9	0.20	-	0.40-1.06	0.030	0.030	-	1.60-2.24	-	-	-	Cu:0.75-1.25	435-610	315	20	-	-
	WPL3 <sup>22)</sup>	0.20	0.13-0.37	0.31-0.64	0.05	0.05	-	3.2-3.8	-	-	-	-	450-620	240	22	-	-
	WPL8 <sup>23)</sup>	0.13	0.13-0.37	0.90	0.030	0.030	-	8.4-9.6	-	-	-	-	690-865	515	16	-	-
ASTM A 515/ ASME SA 515	65 <sup>24)</sup>	0.28	0.13-0.45	0.98	0.035	0.035	-	-	-	-	-	-	450-585	240	23	-	-
	70 <sup>24)</sup>	0.31	0.13-0.45	1.30	0.035	0.035	-	-	-	-	-	-	485-620	260	21	-	-
ASTM A 516/ ASME SA 516	65 <sup>24)</sup>	0.24	0.13-0.45	0.79-1.30	0.035	0.035	-	-	-	-	-	-	450-585	240	23	-	-
	70 <sup>24)</sup>	0.27	0.13-0.45	0.79-1.30	0.035	0.035	-	-	-	-	-	-	485-620	260	21	-	-
ASTM A 815/ ASME SA 815	S31803	0.030	1.00	2.00	0.030	0.020	21.0-23.0	4.5-6.5	2.5-3.5	N:0.08-0.20	-	-	620	450	20	290	-
	S32205	0.030	1.00	2.00	0.030	0.020	22.0-23.0	4.5-6.5	3.0-3.5	N:0.14-0.20	-	-	655	450	20	290	-

注:

- 21) 经协商, Nb 的含量熔炼分析时可为 0.05%, 产品分析时可为 0.06%。
  - 22) 用钢板或锻件制造的管件, Mn 含量最大为 0.90%。
  - 23) 用钢板制造的管件, Mn 含量最大为 0.98%。
  - 24) C 和 Mn 的含量因钢板的厚度不同而有所不同, 请查阅相关规范。
  - 25) 这些低温材料的冲击试验温度和冲击试验性能要求详见标准规定。
  - 26) 因钢板的级别不同, 力学性能要求不同, 详见规范。
- Note:
- 21) Per agreement, the content of Nb may be 0.05 % during heat analysis and 0.06% during product analysis.
  - 22) Fittings made from plates or forgings shall have Mn Max.0.90 %.
  - 23) Fittings made from plates shall have Mn Max 0.98 %.
  - 24) The contents of C and Mn may vary with the different thickness, please refer the relevant standards.
  - 25) As for the impact test temperature and the test properties, please refer the relevant standards.
  - 26) Because of the different Class, the plates' properties are different, refer the standards.





REFERENCED WEIGHT LISTS

参考重量表

Referenced Weight Lists

对焊 90° 长半径弯头

BW 90° LR Elbow

kg

公称尺寸 Nominal Size		Sch10	Sch20	Sch30	STD	Sch40	Sch60	XS	Sch80	Sch100	Sch120	Sch140	Sch160	XXS
DN	NPS													
15	1/2	0.06	-	0.07	0.08	0.08	-	0.11	0.11	-	-	-	0.13	0.17
20	3/4	0.08	-	0.09	0.11	0.11	-	0.14	0.14	-	-	-	0.19	0.24
25	1	0.13	-	0.14	0.16	0.16	-	0.12	0.12	-	-	-	0.28	0.36
32	1 1/4	0.21	-	0.24	0.28	0.28	-	0.24	0.24	-	-	-	0.47	0.64
40	1 1/2	0.28	-	0.35	0.40	0.40	-	0.53	0.53	-	-	-	0.71	0.94
50	2	0.47	-	0.59	0.71	0.71	-	0.98	0.98	-	-	-	1.46	1.76
65	2 1/2	0.79	-	1.32	1.42	1.42	-	1.87	1.87	-	-	-	2.45	3.35
80	3	1.16	-	1.95	2.22	2.22	-	3.01	3.01	-	-	-	4.20	5.45
90	3 1/2	1.55	-	2.62	3.12	3.12	-	4.28	4.28	-	-	-	-	-
100	4	2.02	-	3.39	4.22	4.22	-	5.86	5.86	-	7.44	-	8.81	10.8
125	5	3.46	-	-	7.15	7.15	-	10.2	10.2	-	13.2	-	16.1	18.9
150	6	4.98	-	-	11.2	11.2	-	16.8	16.8	-	21.4	-	26.7	31.3
200	8	9.57	17.6	19.4	22.4	22.4	28.0	34.1	34.1	40.0	47.7	53.2	58.6	56.9
250	10	16.7	27.5	33.6	39.7	39.7	53.7	53.7	63.2	75.5	87.6	102	113	102
300	12	25.9	39.3	51.5	58.3	62.9	86.0	76.9	104	126	148	164	188	148
350	14	34.7	62.5	74.9	74.9	87.1	117	98.9	146	180	207	234	259	-
400	16	45.4	82.0	98.3	98.3	130	169	130	215	259	302	351	385	-
450	18	56.2	104	145	125	185	244	165	302	367	431	484	545	-
500	20	82.2	154	204	154	242	326	204	410	502	581	669	744	-
550	22	143	187	248	187	-	426	248	541	654	763	870	974	-
600	24	170	223	331	223	403	561	295	698	865	1011	1137	1277	-
650	26	200	347	-	262	-	-	347	-	-	-	-	-	-
700	28	232	403	478	304	-	-	403	-	-	-	-	-	-
750	30	267	464	577	349	-	-	464	-	-	-	-	-	-
800	32	304	528	658	398	722	-	528	-	-	-	-	-	-
850	34	343	597	743	449	817	-	597	-	-	-	-	-	-
900	36	386	669	834	504	997	-	669	-	-	-	-	-	-
950	38	-	-	-	562	-	-	746	-	-	-	-	-	-
1000	40	-	-	-	623	-	-	828	-	-	-	-	-	-
1050	42	-	-	-	687	-	-	913	-	-	-	-	-	-
1100	44	-	-	-	754	-	-	1003	-	-	-	-	-	-
1150	46	-	-	-	825	-	-	1096	-	-	-	-	-	-
1200	48	-	-	-	898	-	-	1194	-	-	-	-	-	-
1300	52	-	-	-	1107	-	-	-	-	-	-	-	-	-
1400	56	-	-	-	1284	-	-	-	-	-	-	-	-	-
1500	60	-	-	-	1475	-	-	-	-	-	-	-	-	-
1600	64	-	-	-	1679	-	-	-	-	-	-	-	-	-
1700	68	-	-	-	1869	-	-	-	-	-	-	-	-	-
1800	72	-	-	-	2126	-	-	-	-	-	-	-	-	-
1900	76	-	-	-	2372	-	-	-	-	-	-	-	-	-
2000	80	-	-	-	2626	-	-	-	-	-	-	-	-	-

注释: 大于 DN1200 (NPS 48) 的 STD 重量为按公称壁厚 9.53mm 计算的重量。

Note: the weight for the size more than DN1200(NPS48) is calculated on the basis of thickness 9.53mm.

参考重量表

Referenced Weight Lists

对焊 90° 短半径弯头

BW 90° SR Elbow

kg

公称尺寸 Nominal Size		Sch20	Sch30	STD	Sch40	Sch60	XS	Sch80	Sch100	Sch120	Sch140	Sch160	XXS
DN	NPS												
25	1	-	0.09	0.11	0.11	-	0.14	0.14	-	-	-	0.18	0.24
32	1¼	-	0.16	0.19	0.19	-	0.25	0.25	-	-	-	0.31	0.43
40	1½	-	0.23	0.27	0.27	-	0.36	0.36	-	-	-	0.48	0.63
50	2	-	0.39	0.48	0.48	-	0.66	0.66	-	-	-	0.98	1.18
65	2½	-	0.89	0.95	0.95	-	1.26	1.26	-	-	-	1.65	2.26
80	3	-	1.30	1.48	1.48	-	2.01	2.01	-	-	-	2.80	3.64
90	3½	-	1.76	2.09	2.09	-	2.87	2.87	-	-	-	-	-
100	4	-	2.28	2.83	2.83	-	3.93	3.93	-	4.99	-	5.91	7.23
125	5	-	-	4.78	4.78	-	6.80	6.80	-	8.84	-	10.8	12.6
150	6	-	-	7.42	7.42	-	11.2	11.2	-	14.2	-	17.7	20.8
200	8	11.7	12.9	14.9	14.9	18.6	22.7	22.7	26.6	31.7	35.4	39.0	37.9
250	10	18.3	22.4	26.5	26.5	35.8	35.8	42.1	50.3	58.4	68.1	75.6	68.1
300	12	26.2	34.4	38.9	42.0	57.4	51.4	69.6	84.3	98.5	110	126	98.5
350	14	41.8	50.0	50.0	58.2	78.0	66.1	97.3	120	138	156	173	-
400	16	54.6	65.4	65.4	86.5	112	86.5	143	172	201	234	256	-
450	18	69.3	96.6	83.0	123	162	110	201	245	287	322	363	-
500	20	103	136	103	161	218	136	273	335	388	466	496	-
550	22	125	165	125	-	284	165	361	436	509	580	649	-
600	24	149	221	149	269	374	197	466	577	675	759	852	-
650	26	231	-	174	-	-	231	-	-	-	-	-	-
700	28	269	334	203	-	-	269	-	-	-	-	-	-
750	30	309	385	233	-	-	309	-	-	-	-	-	-
800	32	352	439	265	482	-	352	-	-	-	-	-	-
850	34	398	496	300	545	-	398	-	-	-	-	-	-
900	36	446	555	336	664	-	446	-	-	-	-	-	-
950	38	-	-	374	-	-	497	-	-	-	-	-	-
1000	40	-	-	415	-	-	552	-	-	-	-	-	-
1050	42	-	-	458	-	-	609	-	-	-	-	-	-
1100	44	-	-	503	-	-	669	-	-	-	-	-	-
1150	46	-	-	550	-	-	730	-	-	-	-	-	-
1200	48	-	-	599	-	-	796	-	-	-	-	-	-
1300	52	-	-	738	-	-	-	-	-	-	-	-	-
1400	56	-	-	854	-	-	-	-	-	-	-	-	-
1500	60	-	-	983	-	-	-	-	-	-	-	-	-
1600	64	-	-	1116	-	-	-	-	-	-	-	-	-
1700	68	-	-	1264	-	-	-	-	-	-	-	-	-
1800	72	-	-	1418	-	-	-	-	-	-	-	-	-
1900	76	-	-	1581	-	-	-	-	-	-	-	-	-
2000	80	-	-	1751	-	-	-	-	-	-	-	-	-

注释: 大于 DN1200 (NPS 48) 的 STD 重量为按公称壁厚 9.53mm 计算的重量。

Note: the weight for the size more than DN1200(NPS48) is calculated on the basis of thickness 9.53mm.



# REFERENCED WEIGHT LISTS

## 参考重量表

### Referenced Weight Lists

#### 对焊 90° 3D 弯头

#### BW 90° 3D Elbow

kg

公称尺寸 Nominal Size		Sch20	Sch30	STD	Sch40	Sch60	XS	Sch80	Sch100	Sch120	Sch140	Sch160	XXS
DN	NPS												
20	3/4	-	0.14	0.17	0.17	-	0.22	0.22	-	-	-	0.29	0.36
25	1	-	0.29	0.33	0.33	-	0.43	0.43	-	-	-	0.56	0.72
32	1 1/4	-	0.47	0.56	0.56	-	0.48	0.73	-	-	-	0.92	1.28
40	1 1/2	-	0.70	0.80	0.80	-	1.07	1.07	-	-	-	1.43	1.88
50	2	-	1.18	1.43	1.43	-	1.97	1.97	-	-	-	2.92	3.53
65	2 1/2	-	2.64	2.83	2.83	-	3.75	3.75	-	-	-	4.90	6.70
80	3	-	3.92	4.47	4.47	-	6.04	6.04	-	-	-	8.45	11.0
90	3 1/2	-	5.27	6.26	6.26	-	8.60	8.60	-	-	-	-	-
100	4	-	6.80	8.47	8.47	-	11.8	11.8	-	14.9	-	17.7	21.6
125	5	-	-	14.3	14.3	-	20.4	20.4	-	26.5	-	32.3	37.8
150	6	-	-	22.3	22.3	-	33.6	33.6	-	42.8	-	53.4	62.6
200	8	35.1	38.8	44.8	44.8	56.0	68.1	68.1	80.0	95.3	106	117	114
250	10	55.0	67.2	79.4	79.4	107	107	126	151	175	204	227	204
300	12	78.5	103	117	126	172	154	209	252	295	329	377	295
350	14	125	150	150	174	234	198	292	359	414	468	519	-
400	16	164	196	196	260	337	260	429	517	604	702	770	-
450	18	208	290	249	369	488	330	604	734	862	968	1089	-
500	20	309	409	309	483	653	409	819	1005	1163	1338	1487	-
550	22	374	496	374	-	852	496	1083	1307	1526	1740	1947	-
600	24	446	663	446	807	1123	591	1397	1731	2023	2276	2554	-
650	26	694	-	523	-	-	694	-	-	-	-	-	-
700	28	806	1004	608	-	-	806	-	-	-	-	-	-
750	30	927	1154	699	-	-	927	-	-	-	-	-	-
800	32	1056	1315	796	1445	-	1056	-	-	-	-	-	-
850	34	1194	1487	899	1634	-	1194	-	-	-	-	-	-
900	36	1338	1667	1008	1993	-	1338	-	-	-	-	-	-
950	38	-	-	1124	-	-	1493	-	-	-	-	-	-
1000	40	-	-	1246	-	-	1655	-	-	-	-	-	-
1050	42	-	-	1374	-	-	1826	-	-	-	-	-	-
1100	44	-	-	1509	-	-	2006	-	-	-	-	-	-
1150	46	-	-	1649	-	-	2191	-	-	-	-	-	-
1200	48	-	-	1797	-	-	2388	-	-	-	-	-	-

参考重量表

Referenced Weight Lists

对焊等径三通

BW Straight Tee

kg

公称尺寸 Nominal Size		Sch20	Sch30	STD	Sch40	Sch60	XS	Sch80	Sch100	Sch120	Sch140	Sch160	XXS
DN	NPS												
15	1/2	-	0.15	0.16	0.16	-	0.20	0.20	-	-	-	0.25	0.35
20	3/4	-	0.18	0.20	0.20	-	0.30	0.30	-	-	-	0.35	0.45
25	1	-	0.27	0.28	0.28	-	0.45	0.45	-	-	-	0.54	0.77
32	1 1/4	-	0.46	0.55	0.55	-	0.70	0.70	-	-	-	0.91	1.26
40	1 1/2	-	0.68	0.78	0.78	-	1.25	1.25	-	-	-	1.39	1.83
50	2	-	0.96	1.17	1.17	-	1.61	1.61	-	-	-	2.39	2.89
65	2 1/2	-	2.06	2.21	2.21	-	2.92	2.92	-	-	-	3.81	5.21
80	3	-	2.87	3.23	3.23	-	4.42	4.42	-	-	-	6.17	8.01
90	3 1/2	-	3.65	4.33	4.33	-	5.95	5.95	-	-	-	-	-
100	4	-	4.56	5.68	5.68	-	7.88	7.88	-	10.0	-	11.8	14.5
125	5	-	-	9.08	9.08	-	12.9	12.9	-	16.8	-	20.5	24.0
150	6	-	-	13.6	13.6	-	20.5	20.5	-	26.1	-	32.5	38.1
200	8	17.5	22.0	25.5	25.5	31.8	38.7	38.7	45.4	54.1	60.4	66.6	64.6
250	10	28.0	37.1	44.8	44.8	59.2	59.2	69.7	83.3	96.6	113	125	113
300	12	42.6	55.7	63.1	68.1	93.0	83.2	112	137	160	178	204	160
350	14	64.5	76.3	76.3	88.7	119	101	148	183	211	238	264	-
400	16	78.2	95.7	95.7	126	164	126	191	252	294	342	375	-
450	18	102	141	121	179	237	160	269	357	419	471	529	-
500	20	168	198	150	235	317	190	365	489	566	651	724	-
550	22	185	241	182	-	414	241	482	636	743	846	947	-
600	24	222	305	205	340	516	272	589	796	930	1046	1174	-
650	26	340	-	254	-	-	337	-	-	-	-	-	-
700	28	390	478	289	-	-	383	-	-	-	-	-	-
750	30	420	549	332	-	-	441	-	-	-	-	-	-
800	32	480	627	379	631	-	503	-	-	-	-	-	-
850	34	540	709	429	714	-	569	-	-	-	-	-	-
900	36	610	796	481	872	-	639	-	-	-	-	-	-
950	38	-	-	537	-	-	713	-	-	-	-	-	-
1000	40	-	-	598	-	-	791	-	-	-	-	-	-
1050	42	-	-	636	-	-	846	-	-	-	-	-	-
1100	44	-	-	712	-	-	946	-	-	-	-	-	-
1150	46	-	-	779	-	-	995	-	-	-	-	-	-
1200	48	-	-	850	-	-	1080	-	-	-	-	-	-
1300	52	-	-	917	-	-	-	-	-	-	-	-	-
1400	56	-	-	1065	-	-	-	-	-	-	-	-	-
1500	60	-	-	1226	-	-	-	-	-	-	-	-	-
1600	64	-	-	1398	-	-	-	-	-	-	-	-	-
1700	68	-	-	1580	-	-	-	-	-	-	-	-	-
1800	72	-	-	1740	-	-	-	-	-	-	-	-	-
1900	76	-	-	1980	-	-	-	-	-	-	-	-	-
2000	80	-	-	2290	-	-	-	-	-	-	-	-	-

注释: 大于 DN1200 (NPS 48) 的 STD 重量为按公称壁厚 9.53mm 计算的重量。

Note: the weight for the size more than DN1200(NPS48) is calculated on the basis of thickness 9.53mm.



REFERENCED WEIGHT LISTS

参考重量表

Referenced Weight Lists

对焊异径管

BW Straight Tee

kg

大端公称尺寸 Large End Nominal Size		Sch20	Sch30	STD	Sch40	Sch60	XS	Sch80	Sch100	Sch120	Sch140	Sch160	XXS
DN	NPS												
20	3/4	-	0.06	0.07	0.07	-	0.09	0.09	-	-	-	0.12	0.15
25	1	-	0.12	0.14	0.14	-	0.18	0.18	-	-	-	0.24	0.31
32	1 1/4	-	0.16	0.19	0.19	-	0.25	0.25	-	-	-	0.32	0.45
40	1 1/2	-	0.25	0.29	0.29	-	0.38	0.38	-	-	-	0.51	0.70
50	2	-	0.37	0.46	0.46	-	0.63	0.63	-	-	-	0.93	1.20
65	2 1/2	-	0.79	0.85	0.85	-	1.12	1.12	-	-	-	1.46	2.00
80	3	-	0.97	1.11	1.11	-	1.50	1.50	-	-	-	2.09	2.71
90	3 1/2	-	1.28	1.52	1.52	-	2.09	2.09	-	-	-	-	-
100	4	-	1.45	1.81	1.81	-	2.51	2.51	-	3.18	-	3.76	4.60
125	5	-	-	3.04	3.04	-	4.33	4.33	-	5.63	-	6.86	8.02
150	6	-	-	4.35	4.35	-	6.55	6.55	-	8.35	-	10.4	12.2
200	8	5.57	6.16	7.12	7.12	8.88	10.8	10.8	12.7	15.1	16.9	18.6	18.0
250	10	8.18	9.99	11.8	11.8	16.0	16.0	18.8	22.5	26.0	30.4	33.7	30.4
300	12	11.1	14.6	16.5	17.8	24.3	21.8	29.5	35.7	41.7	46.5	53.3	41.7
350	14	24.6	29.5	29.6	34.3	46.0	39.0	57.4	70.8	81.5	92.0	102	-
400	16	30.5	36.5	36.6	48.3	62.7	48.3	79.7	96.2	112	130	143	-
450	18	36.8	51.3	44.1	65.3	86.2	58.3	107	130	152	171	193	-
500	20	65.5	86.7	65.5	102	138	86.7	174	213	247	284	316	-
550	22	72.2	95.6	72.2	-	164	95.6	209	252	294	336	376	-
600	24	78.9	117	78.9	143	199	105	247	306	358	402	452	-
650	26	136	-	103	-	-	136	-	-	-	-	-	-
700	28	147	183	111	-	-	147	-	-	-	-	-	-
750	30	157	196	119	-	-	158	-	-	-	-	-	-
800	32	168	209	127	230	-	168	-	-	-	-	-	-
850	34	179	223	135	245	-	179	-	-	-	-	-	-
900	36	189	236	143	282	-	190	-	-	-	-	-	-
950	38	-	-	151	-	-	200	-	-	-	-	-	-
1000	40	-	-	159	-	-	211	-	-	-	-	-	-
1050	42	-	-	167	-	-	222	-	-	-	-	-	-
1100	44	-	-	175	-	-	232	-	-	-	-	-	-
1150	46	-	-	213	-	-	283	-	-	-	-	-	-
1200	48	-	-	222	-	-	296	-	-	-	-	-	-
1300	52	-	-	241	-	-	-	-	-	-	-	-	-
1400	56	-	-	259	-	-	-	-	-	-	-	-	-
1500	60	-	-	278	-	-	-	-	-	-	-	-	-

注释: 大于 DN1200 (NPS 48) 的 STD 重量为按公称壁厚 9.53mm 计算的重量。 Note: the weight for the size more than DN1200(NPS48) is calculated on the basis of thickness 9.53mm.

参考重量表

Referenced Weight Lists

对焊管帽

BW Cap

kg

公称尺寸 Nominal Size		Sch20	Sch30	STD	Sch40	Sch60	XS	Sch80	Sch100	Sch120	Sch140	Sch160	XXS
DN	NPS												
15	1/2	-	0.04	0.04	0.04	-	0.06	0.06	-	-	-	0.08	0.11
20	3/4	-	0.05	0.05	0.05	-	0.07	0.07	-	-	-	0.11	0.15
25	1	-	0.10	0.12	0.12	-	0.16	0.16	-	-	-	0.22	0.32
32	1 1/4	-	0.13	0.16	0.16	-	0.22	0.22	-	-	-	0.28	0.43
40	1 1/2	-	0.16	0.19	0.19	-	0.26	0.26	-	-	-	0.36	0.52
50	2	-	0.21	0.26	0.26	-	0.36	0.36	-	-	-	0.57	0.73
65	2 1/2	-	0.40	0.44	0.44	-	0.59	0.59	-	-	-	0.80	1.18
80	3	-	0.65	0.73	0.73	-	1.08	1.08	-	-	-	1.48	2.02
90	3 1/2	-	0.90	1.07	1.07	-	1.51	1.51	-	-	-	-	-
100	4	-	1.04	1.30	1.30	-	1.85	1.85	-	2.40	-	2.91	3.69
125	5	-	-	2.10	2.10	-	3.06	3.06	-	4.07	-	5.09	6.10
150	6	-	-	3.19	3.19	-	4.93	4.93	-	6.41	-	8.20	9.86
200	8	4.45	4.92	5.72	5.72	7.21	8.88	8.88	10.6	12.8	14.5	16.1	15.6
250	10	6.89	8.46	10.1	10.1	13.9	13.8	16.4	19.8	23.3	27.6	31.0	27.6
300	12	9.75	12.9	14.6	15.9	21.9	19.5	26.9	32.9	39.0	43.9	51.2	39.0
350	14	14.6	17.6	17.5	20.5	27.7	23.3	35.0	43.8	51.1	58.4	65.7	-
400	16	18.3	22.1	22.1	29.4	38.6	29.4	49.7	60.7	71.7	84.6	93.8	-
450	18	23.4	32.9	28.2	42.2	56.3	37.5	70.4	86.8	103	117	134	-
500	20	35.1	46.8	35.1	55.6	76.0	46.8	96.5	120	141	164	184	-
550	22	42.7	56.9	42.7	-	99.7	57.0	128	157	185	214	242	-
600	24	49.7	74.5	49.7	91.2	129	66.3	162	203	240	273	311	-
650	26	74.0	-	55.6	-	-	74.1	-	-	-	-	-	-
700	28	82.4	103	61.8	-	-	82.4	-	-	-	-	-	-
750	30	91.2	114	68.5	-	-	91.2	-	-	-	-	-	-
800	32	101	126	75.4	138	-	101	-	-	-	-	-	-
850	34	110	138	82.7	152	-	110	-	-	-	-	-	-
900	36	120	150	90.2	180	-	120	-	-	-	-	-	-
950	38	-	-	104	-	-	139	-	-	-	-	-	-
1000	40	-	-	113	-	-	150	-	-	-	-	-	-
1050	42	-	-	122	-	-	162	-	-	-	-	-	-
1100	44	-	-	138	-	-	184	-	-	-	-	-	-
1150	46	-	-	148	-	-	197	-	-	-	-	-	-
1200	48	-	-	158	-	-	210	-	-	-	-	-	-

注释：表中为按管帽高度 E 值计算的重量。

Note: the weight for the above listed caps is calculated on the basis of E height.

# REFERENCED WEIGHT LISTS

## 参考重量表

### Referenced Weight Lists

#### 对焊等径 45° 斜三通

#### BW Straight 45° Lateral Tee

kg

公称尺寸 Nominal Size		Sch10	Sch20	Sch30	STD	Sch40	Sch60	XS	Sch80	Sch100	Sch120	Sch140	Sch160	XXS
DN	NPS													
15	1/2	0.25	-	0.28	0.32	0.32	-	0.41	0.41	-	-	-	0.49	0.64
20	3/4	0.37	-	0.42	0.49	0.49	-	0.64	0.64	-	-	-	0.85	1.07
25	1	0.73	-	0.76	0.87	0.87	-	1.13	1.13	-	-	-	1.47	1.89
32	1 1/4	1.26	-	1.34	1.59	1.59	-	2.09	2.09	-	-	-	2.62	3.63
40	1 1/2	1.7	-	1.93	2.21	2.21	-	2.95	2.95	-	-	-	3.95	5.21
50	2	2.27	-	2.58	3.13	3.13	-	4.31	4.31	-	-	-	6.41	7.75
65	2 1/2	3.46	-	5.29	5.68	5.68	-	7.50	7.50	-	-	-	9.81	13.4
80	3	4.52	-	6.94	7.90	7.90	-	10.7	10.7	-	-	-	14.9	19.4
90	3 1/2	5.38	-	8.29	9.85	9.85	-	13.5	13.5	-	-	-	-	-
100	4	7.01	-	10.8	13.5	13.5	-	18.7	18.7	-	23.7	-	28.1	34.4
125	5	10.8	-	-	20.4	20.4	-	29.0	29.0	-	37.8	-	46.0	53.8
150	6	15.1	-	-	30.8	30.8	-	46.4	46.4	-	59.2	-	73.7	86.5
200	8	25.6	42.8	47.3	54.6	54.6	68.2	83.0	83.0	97.5	116	130	143	139
250	10	41.6	62.5	76.3	90.2	90.2	122	122	144	172	199	232	258	232
300	12	61.4	84.9	111	126	136	186	166	225	273	319	355	408	319
350	14	105	130	156	156	181	242	205	302	373	430	485	539	-
400	16	133	165	198	198	262	340	262	432	521	609	707	776	-
450	18	164	204	284	244	361	477	323	591	718	844	947	1066	-
500	20	197	293	388	293	459	620	388	778	954	1105	1271	1413	-
550	22	234	348	462	348	-	794	462	1009	1218	1422	1621	1814	-
600	24	277	414	615	414	750	1043	549	1298	1608	1879	2114	2372	-
650	26	404	643	-	485	-	-	643	-	-	-	-	-	-
700	28	473	753	937	568	-	-	753	-	-	-	-	-	-
750	30	542	864	1076	651	-	-	864	-	-	-	-	-	-
800	32	616	982	1224	740	1344	-	982	-	-	-	-	-	-
850	34	696	1110	1383	836	1519	-	1110	-	-	-	-	-	-
900	36	780	1245	1551	937	1854	-	1245	-	-	-	-	-	-
950	38	-	-	-	1073	-	-	1425	-	-	-	-	-	-
1000	40	-	-	-	1190	-	-	1580	-	-	-	-	-	-
1050	42	-	-	-	1313	-	-	1744	-	-	-	-	-	-
1100	44	-	-	-	1441	-	-	1915	-	-	-	-	-	-
1150	46	-	-	-	1575	-	-	2093	-	-	-	-	-	-
1200	48	-	-	-	1716	-	-	2280	-	-	-	-	-	-

参考重量表

Referenced Weight Lists

翻边短节

Lap Joint Stub End

kg

公称尺寸 Nominal Size		Sch10S		Sch40S		Sch80S	
DN	NPS	短型 Long Pattern	长型 Short Pattern	短型 Short Pattern	长型 Long Pattern	短型 Short Pattern	长型 Long Pattern
15	1/2	0.07	0.09	0.09	0.12	0.12	0.16
20	3/4	0.09	0.12	0.12	0.16	0.15	0.21
25	1	0.15	0.25	0.18	0.32	0.24	0.43
32	1¼	0.19	0.34	0.25	0.43	0.33	0.57
40	1½	0.22	0.39	0.31	0.52	0.43	0.75
50	2	0.35	0.71	0.52	1.02	0.73	1.49
65	2½	0.46	0.95	0.81	1.60	1.10	2.22
80	3	0.62	1.22	1.10	2.11	1.50	2.98
90	3½	0.70	1.36	1.52	2.55	2.09	3.65
100	4	0.94	1.59	1.80	3.05	2.58	4.44
125	5	1.30	2.80	2.25	5.42	3.60	7.86
150	6	1.75	3.30	3.59	7.02	5.76	11.3
200	8	2.90	4.95	5.98	10.6	9.18	16.2
250	10	4.79	8.50	10.2	18.4	13.7	24.9
300	12	7.20	10.9	14.9	22.8	19.5	30.2
350	14	7.95	15.0	15.8	28.7	21.6	38.6
400	16	9.50	17.3	18.9	33.1	25.2	44.5
450	18	11.1	19.8	22.0	38.0	29.3	51.1
500	20	14.1	25.9	24.3	42.3	32.6	56.8
550	22	16.5	28.2	-	-	-	-
600	24	19.8	35.0	29.6	51.2	39.7	68.8

异径短节

Swaged Nipple

kg

大端公称尺寸 Large End Nominal Size		Sch10	Sch20	Sch30	STD	Sch40	Sch60	XS	Sch80	Sch100	Sch120	Sch140	Sch160	XX
DN	NPS													
8	1/4	0.03	-	0.03	0.03	0.03	-	0.04	0.04	-	-	-	-	-
10	3/8	0.04	-	0.04	0.05	0.05	-	0.07	0.07	-	-	-	-	-
15	1/2	0.07	-	0.08	0.09	0.09	-	0.11	0.11	-	-	-	0.13	0.17
20	3/4	0.09	-	0.11	0.12	0.12	-	0.16	0.16	-	-	-	0.21	0.27
25	1	0.18	-	0.19	0.21	0.21	-	0.28	0.28	-	-	-	0.36	0.47
32	1¼	0.27	-	0.28	0.33	0.33	-	0.44	0.44	-	-	-	0.55	0.76
40	1½	0.35	-	0.39	0.44	0.44	-	0.59	0.59	-	-	-	0.79	1.05
50	2	0.62	-	0.71	0.86	0.86	-	1.19	1.19	-	-	-	1.76	2.13
65	2½	0.90	-	1.37	1.48	1.48	-	1.95	1.95	-	-	-	2.55	3.48
80	3	1.26	-	1.93	2.2	2.2	-	2.98	2.98	-	-	-	4.16	5.39
90	3½	1.45	-	2.22	2.64	2.64	-	3.63	3.63	-	-	-	-	-
100	4	1.84	-	2.84	3.53	3.53	-	4.91	4.91	-	6.23	-	7.37	9.02
125	5	3.10	-	-	5.83	5.83	-	8.29	8.29	-	10.8	-	13.2	15.4
150	6	4.04	-	-	8.25	8.25	-	12.4	12.4	-	15.8	-	19.7	23.1
200	8	6.35	10.6	11.7	13.5	13.5	16.8	20.5	20.5	24.1	28.7	32.0	35.2	34.2
250	10	10.2	15.3	18.7	22.1	22.1	29.8	29.8	35.1	42.0	48.6	56.7	63.0	56.7
300	12	14.0	19.4	25.4	28.8	31.1	42.5	38.0	51.5	62.3	72.8	81.1	93.0	72.8





# REFERENCED WEIGHT LISTS

## 参考重量表

### Referenced Weight Lists

#### 承插焊 90° 弯头和 45° 弯头

SW 90° Elbow & 45° Elbow

kg

公称尺寸 Nominal Size		承插焊 90° 弯头 SW 90° Elbow			承插焊 45° 弯头 SW 45° Elbow		
DN	NPS	3000	6000	9000	3000	6000	9000
6	1/8	0.09	0.15	-	0.08	0.16	-
8	1/4	0.09	0.15	-	0.08	0.16	-
10	3/8	0.12	0.32	-	0.12	0.28	-
15	1/2	0.26	0.40	0.85	0.22	0.30	0.78
20	3/4	0.35	0.65	1.48	0.28	0.72	1.25
25	1	0.52	1.25	2.20	0.55	0.90	1.85
32	1 1/4	0.85	1.40	2.90	0.71	1.15	2.62
40	1 1/2	1.05	2.35	3.50	0.89	1.90	3.45
50	2	1.75	2.96	4.35	1.30	2.95	5.80
65	2 1/2	2.80	-	-	2.68	-	-
80	3	4.60	-	-	4.90	-	-
100	4	9.60	-	-	8.80	-	-

#### 承插焊三通和四通

SW Tee & Cross

kg

公称尺寸 Nominal Size		承插焊三通 SW Tee			承插焊四通 SW Cross		
DN	NPS	3000	6000	9000	3000	6000	9000
6	1/8	0.13	0.22	-	0.15	0.21	-
8	1/4	0.13	0.22	-	0.15	0.25	-
10	3/8	0.16	0.45	-	0.19	0.54	-
15	1/2	0.35	0.55	1.15	0.46	0.64	1.32
20	3/4	0.48	0.90	1.80	0.59	1.09	2.25
25	1	0.66	1.46	2.25	0.81	1.97	2.69
32	1 1/4	1.00	1.90	3.95	1.19	2.34	4.68
40	1 1/2	1.40	2.80	4.87	1.67	3.90	7.84
50	2	2.00	3.70	8.89	2.59	6.15	10.5
65	2 1/2	4.10	-	-	4.95	-	-
80	3	5.55	-	-	7.25	-	-
100	4	15.6	-	-	18.8	-	-

#### 承插焊管箍和管帽

SW Coupling & Cap

kg

公称尺寸 Nominal Size		承插焊管箍 SW Coupling			承插焊管帽 SW Cap		
DN	NPS	3000	6000	9000	3000	6000	9000
6	1/8	0.05	0.06	-	0.03	0.04	-
8	1/4	0.06	0.07	-	0.04	0.05	-
10	3/8	0.08	0.10	-	0.05	0.07	-
15	1/2	0.13	0.16	0.29	0.08	0.13	0.23
20	3/4	0.20	0.28	0.47	0.15	0.22	0.35
25	1	0.28	0.48	0.68	0.22	0.34	0.52
32	1 1/4	0.48	0.65	1.08	0.35	0.47	0.71
40	1 1/2	0.52	0.94	1.12	0.42	0.63	0.95
50	2	0.95	1.65	1.95	0.72	1.14	1.55
65	2 1/2	1.52	-	-	1.25	-	-
80	3	1.75	-	-	2.05	-	-
100	4	2.80	-	-	3.28	-	-

参考重量表

Referenced Weight Lists

螺纹 90° 弯头和 45° 弯头

HTRD 90° Elbow & 45° Elbow

kg

公称尺寸 Nominal Size		螺纹 90° 弯头 THR90° Elbow			螺纹 45° 弯头 THR45° Elbow		
DN	NPS	2000	3000	6000	2000	3000	6000
6	1/8	0.08	0.10	0.18	0.08	0.08	0.14
8	1/4	0.08	0.15	0.33	0.08	0.12	0.27
10	3/8	0.13	0.30	0.48	0.11	0.26	0.49
15	1/2	0.22	0.45	0.72	0.23	0.42	0.69
20	3/4	0.32	0.70	1.29	0.29	0.59	1.12
25	1	0.50	1.21	1.65	0.43	0.96	1.47
32	1 1/4	0.80	1.47	2.70	0.67	1.15	2.65
40	1 1/2	0.93	2.60	3.90	0.82	2.02	3.60
50	2	1.60	3.05	6.05	1.32	2.50	4.60
65	2 1/2	2.95	5.80	9.88	3.30	3.81	7.81
80	3	5.60	8.85	16.4	5.40	6.30	13.1
100	4	10.5	14.9	23.5	9.00	9.80	17.0

螺纹三通和四通

THR Tee & Cross

kg

公称尺寸 Nominal Size		螺纹三通 THR Tee			螺纹四通 THR Cross		
DN	NPS	2000	3000	6000	2000	3000	6000
6	1/8	0.13	0.22	0.35	0.16	0.26	0.42
8	1/4	0.13	0.22	0.57	0.16	0.26	0.68
10	3/8	0.16	0.40	0.66	0.20	0.48	0.79
15	1/2	0.35	0.58	1.15	0.42	0.70	1.38
20	3/4	0.45	0.90	1.80	0.54	1.08	2.16
25	1	0.66	1.46	2.25	0.79	1.75	2.70
32	1 1/4	1.00	1.90	3.95	1.20	2.28	4.74
40	1 1/2	1.40	3.40	4.87	1.68	4.08	5.85
50	2	2.20	3.80	8.89	2.64	4.66	10.7
65	2 1/2	4.20	7.20	12.8	5.05	8.64	15.4
80	3	6.15	10.7	21.6	7.38	12.8	26.5
100	4	14.7	17.9	29.5	17.6	21.5	35.4

螺纹双接口管箍和管帽

THR Coupling & Cap

kg

公称尺寸 Nominal Size		螺纹双接口管箍 THR Coupling		螺纹管帽 THR Cap	
DN	NPS	3000	6000	3000	6000
6	1/8	0.06	0.09	0.03	-
8	1/4	0.08	0.13	0.05	0.11
10	3/8	0.11	0.24	0.07	0.17
15	1/2	0.22	0.40	0.14	0.29
20	3/4	0.30	0.52	0.24	0.42
25	1	0.55	1.06	0.41	0.76
32	1 1/4	0.86	1.32	0.71	0.96
40	1 1/2	1.26	2.20	0.88	1.42
50	2	1.65	3.37	1.25	2.24
65	2 1/2	3.00	4.81	2.29	3.80
80	3	4.25	7.25	3.29	5.43
100	4	7.80	12.0	5.65	9.26

## REFERENCED WEIGHT LISTS

### 参考重量表

### Referenced Weight Lists

#### 活接头和六角头双丝头

#### Union & Hexagonal Nipple

kg

公称尺寸 Nominal Size		活接头 Union	六角头双丝头 Hexagonal Nipple	
DN	NPS	3000	Sch80	Sch160
6	1/8	0.25	0.02	0.02
8	1/4	0.30	0.03	0.04
10	3/8	0.35	0.05	0.06
15	1/2	0.46	0.10	0.12
20	3/4	0.61	0.13	0.17
25	1	0.85	0.22	0.29
32	1 1/4	1.35	0.34	0.41
40	1 1/2	1.92	0.47	0.58
50	2	2.85	0.69	0.91
65	2 1/2	4.90	1.35	1.69
80	3	7.10	2.03	2.55

#### 管塞

#### Head Plug

kg

公称尺寸 Nominal Size		方头管塞 Square Head Plug	六角头管塞 Hex Head Plug	圆头管塞 Round Head Plug
DN	NPS			
6	1/8	0.01	0.02	0.02
8	1/4	0.02	0.03	0.05
10	3/8	0.03	0.05	0.08
15	1/2	0.06	0.08	0.12
20	3/4	0.10	0.14	0.20
25	1	0.18	0.25	0.34
32	1 1/4	0.30	0.49	0.59
40	1 1/2	0.41	0.65	0.73
50	2	0.67	1.16	1.44
65	2 1/2	1.11	1.83	2.36
80	3	1.69	2.92	3.50
100	4	3.48	5.50	6.08

#### 螺纹接头

#### Hex Head Bushing & Flush Bushing

kg

公称尺寸 Nominal Size		六角头内外螺纹接头 Hex Head Bushing	无头内外螺纹接头 Flush Bushing
DN	NPS		
8	1/4	0.01	0.01
10	3/8	0.02	0.01
15	1/2	0.03	0.02
20	3/4	0.04	0.02
25	1	0.07	0.04
32	1 1/4	0.12	0.05
40	1 1/2	0.14	0.06
50	2	0.22	0.09
65	2 1/2	0.36	0.17
80	3	0.46	0.22
100	4	0.78	0.33

参考重量表

Referenced Weight Lists

支管座

Outlet

kg

支管公称尺寸 Branch Nominal Size		对焊支管座 BW Outlet			承插焊支管座 SW Outlet		螺纹支管座 THRD Outlet	
DN	NPS	STD	XS	Sch160	3000	6000	3000	6000
6	1/8	0.04	0.05	-	0.05	-	0.05	-
8	1/4	0.04	0.05	-	0.05	-	0.05	-
10	3/8	0.06	0.07	-	0.09	-	0.09	-
15	1/2	0.11	0.13	0.18	0.16	0.35	0.17	0.32
20	3/4	0.16	0.18	0.20	0.20	0.47	0.22	0.47
25	1	0.32	0.34	0.40	0.42	0.68	0.43	0.65
32	1 1/4	0.38	0.42	0.50	0.59	1.10	0.61	0.96
40	1 1/2	0.57	0.60	0.70	0.70	1.30	0.69	1.28
50	2	0.85	0.90	1.10	1.10	2.45	1.10	2.15
65	2 1/2	1.28	1.35	2.00	1.40	-	1.52	-
80	3	1.88	2.00	3.20	2.30	-	2.50	-
90	3 1/2	2.20	2.40	-	-	-	-	-
100	4	2.80	3.20	6.00	4.20	-	4.10	-
125	5	5.70	6.80	9.80	-	-	-	-
150	6	7.20	11.0	16.0	-	-	-	-
200	8	10.8	19.2	31.0	-	-	-	-
250	10	17.0	19.5	-	-	-	-	-
300	12	25.6	29.6	-	-	-	-	-
350	14	27.0	32.0	-	-	-	-	-
400	16	36.0	41.7	-	-	-	-	-
450	18	48.2	55.8	-	-	-	-	-
500	20	58.5	76.0	-	-	-	-	-
600	24	149	152	-	-	-	-	-

斜支管座 / 弯头支管座

Latrolet & Elbolet

kg

支管公称尺寸 Branch Nominal Size		对焊斜支管座和弯头支管座 BW Latrolet & BW Elbolet			承插焊、螺纹斜支管座和弯头支管座 SW/THRD Latrolet & Elbolet	
DN	NPS	STD	XS	Sch160	3000	6000
15	1/2	0.25	0.28	0.38	0.32	0.48
20	3/4	0.40	0.42	0.61	0.54	0.81
25	1	0.73	0.77	1.10	0.93	1.20
32	1 1/4	1.10	1.15	1.41	1.32	2.23
40	1 1/2	1.47	1.60	2.35	1.59	3.12
50	2	2.50	2.60	3.35	3.06	4.95
65	2 1/2	3.20	3.40	3.70	-	-
80	3	6.05	6.35	7.20	-	-
100	4	10.5	11.8	13.6	-	-
150	6	23.6	33.5	38.0	-	-
200	8	32.9	50.3	-	-	-
250	10	58.5	76.5	-	-	-
300	12	86.0	112	-	-	-

## REFERENCED WEIGHT LISTS

### 参考重量表

#### Referenced Weight Lists

#### 焊接和无缝钢管(ASME B36.10M)

#### Welded and Seamless Steel Pipe(ASME B36.10M)

kg

公称尺寸 Nominal Size		外径 OD	每米重量, kg/m												
DN	NPS	OD	Sch10	Sch20	Sch30	STD	Sch40	Sch60	XS	Sch80	Sch100	Sch120	Sch140	Sch160	XXS
6	1/8	10.3	0.28	-	0.32	0.37	0.37	-	0.47	0.47	-	-	-	-	-
8	1/4	13.7	0.49	-	0.54	0.63	0.63	-	0.80	0.80	-	-	-	-	-
10	3/8	17.1	0.63	-	0.70	0.84	0.84	-	1.10	1.10	-	-	-	-	-
15	1/2	21.3	1.00	-	1.12	1.27	1.27	-	1.62	1.62	-	-	-	1.95	2.55
20	3/4	26.7	1.28	-	1.44	1.69	1.69	-	2.20	2.20	-	-	-	1.90	3.64
25	1	33.4	2.09	-	2.18	2.50	2.50	-	3.24	3.24	-	-	-	4.24	5.45
32	1 1/4	42.2	2.70	-	2.87	3.39	3.39	-	4.47	4.47	-	-	-	5.16	7.77
40	1 1/2	48.3	3.11	-	3.53	4.05	4.05	-	5.41	5.41	-	-	-	7.25	9.56
50	2	60.3	3.93	-	4.48	5.44	5.44	-	7.48	7.48	-	-	-	11.11	13.44
65	2 1/2	73.0	5.26	-	8.04	8.63	8.63	-	11.41	11.41	-	-	-	14.92	20.39
80	3	88.9	6.45	-	9.92	11.29	11.29	-	15.72	15.72	-	-	-	21.35	27.68
90	3 1/2	101.6	7.40	-	11.41	13.57	13.57	-	18.63	18.63	-	-	-	-	-
100	4	114.3	8.36	-	12.91	16.07	16.07	-	22.32	22.32	-	28.32	-	33.54	41.03
125	5	141.3	11.57	-	-	21.77	21.77	-	30.97	30.97	-	40.28	-	49.11	57.43
150	6	168.3	13.48	-	-	28.26	28.26	-	42.56	42.56	-	54.20	-	67.56	79.22
200	8	219.1	19.96	33.31	36.81	42.55	42.55	53.08	64.64	64.64	75.92	90.44	100.9	111.3	107.9
250	10	273.0	27.78	41.77	51.03	60.31	60.31	81.55	81.55	96.01	114.8	133.1	155.2	172.3	155.2
300	12	323.9	36.00	49.73	65.20	73.88	79.73	109.0	97.46	132.1	159.9	187.0	208.1	238.8	187.0
350	14	355.6	54.69	67.90	81.33	81.33	94.55	126.7	107.4	158.1	195.0	224.7	253.6	281.7	-
400	16	406.4	62.64	77.83	93.27	93.27	123.3	160.1	123.3	203.5	245.6	286.7	333.2	365.4	-
450	18	457.0	70.57	87.71	122.4	105.2	155.8	205.7	139.2	254.6	309.6	363.6	408.3	459.4	-
500	20	508	78.55	117.2	155.1	117.2	183.4	247.8	155.1	311.2	381.5	441.5	508.1	564.8	-
550	22	559	86.54	129.1	171.1	129.1	-	294.3	171.1	373.8	451.4	527.0	611.6	672.3	-
600	24	610	94.53	141.1	209.6	141.1	255.4	355.3	187.1	442.1	547.7	640.0	720.2	808.2	-
650	26	660	127.4	202.7	-	152.9	-	-	202.7	-	-	-	-	-	-
700	28	711	137.3	218.7	271.2	164.9	-	-	218.7	-	-	-	-	-	-
750	30	762	147.3	234.7	292.2	176.8	-	-	234.7	-	-	-	-	-	-
800	32	813	157.2	250.6	312.2	188.8	342.9	-	250.6	-	-	-	-	-	-
850	34	864	167.2	266.6	332.1	200.3	364.9	-	266.6	-	-	-	-	-	-
900	36	914	177.0	282.3	351.7	212.6	420.4	-	282.3	-	-	-	-	-	-
950	38	965	-	-	-	224.5	-	-	298.2	-	-	-	-	-	-
1000	40	1016	-	-	-	236.5	-	-	314.2	-	-	-	-	-	-
1050	42	1067	-	-	-	248.5	-	-	330.2	-	-	-	-	-	-
1100	44	1118	-	-	-	261.5	-	-	346.2	-	-	-	-	-	-
1150	46	1168	-	-	-	272.3	-	-	351.8	-	-	-	-	-	-
1200	48	1219	-	-	-	284.2	-	-	377.8	-	-	-	-	-	-

参考重量表

Referenced Weight Lists

不锈钢管(ASME B36.19M)

Stainless Steel Pipe(ASME B36.19M)

kg

公称尺寸 Nominal Size		外径 OD	Sch5s		Sch10s		Sch40s		Sch80s	
DN	NPS	OD	T	kg/m	T	kg/m	T	kg/m	T	kg/m
6	1/8	10.3	-	-	1.24	0.28	1.73	0.37	2.41	0.47
8	1/4	13.7	-	-	1.65	0.49	2.24	0.63	3.02	0.80
10	3/8	17.1	-	-	1.65	0.63	2.31	0.84	3.20	1.10
15	1/2	21.3	1.65	0.80	2.11	1.00	2.77	1.27	3.73	1.62
20	3/4	26.7	1.65	1.03	2.11	1.28	2.87	1.69	3.91	2.20
25	1	33.4	1.65	1.30	2.77	2.09	3.38	2.50	4.55	3.24
32	1¼	42.2	1.65	1.65	2.77	2.70	3.56	3.39	4.85	4.47
40	1½	48.3	1.65	1.91	2.77	3.11	3.68	4.05	5.08	5.41
50	2	60.3	1.65	2.40	2.77	3.93	3.91	5.44	5.54	7.48
65	2½	73.0	2.11	3.69	3.05	5.26	5.16	8.63	7.01	11.41
80	3	88.9	2.11	4.51	3.05	6.45	5.49	11.29	7.62	15.27
90	3½	101.6	2.11	5.18	3.05	7.40	5.74	13.57	8.08	18.63
100	4	114.3	2.11	5.84	3.05	8.36	6.02	16.07	8.56	22.32
125	5	141.3	2.77	9.47	3.40	11.57	6.55	21.77	9.53	30.97
150	6	168.3	2.77	11.32	3.40	13.48	7.11	28.26	10.97	42.56
200	8	219.1	2.77	14.79	3.76	19.96	8.18	42.55	12.70	64.64
250	10	273.0	3.40	22.63	4.19	27.78	9.27	60.31	12.70	96.01
300	12	323.9	3.96	31.25	4.57	36.00	9.53	73.88	12.70	132.08
350	14	355.6	3.96	34.36	4.78	41.30	-	-	-	-
400	16	406.4	4.19	41.56	4.78	47.29	-	-	-	-
450	18	457.0	4.19	46.81	4.78	53.26	-	-	-	-
500	20	508	4.78	59.25	5.54	68.61	-	-	-	-
550	22	559	4.78	65.24	5.54	75.53	-	-	-	-
600	24	610	5.54	82.47	6.35	94.45	-	-	-	-
750	30	762	6.35	118.31	7.92	147.36	-	-	-	-

# CALCULATION EQUATION AND CONVERSION OF UNIT

## 常用计算公式及单位换算 Calculation equation and conversion of unit

### 1) 钢管重量计算公式

Equation for calculation the weight of steel pipes

$$W = 0.02466 T (OD - T)$$

式中:

where:

- W** 每米钢管的重量, kg/m;  
pipe weight per meter, kg/m;
- T** 钢管壁厚, mm;  
thickness of the pipe, mm;
- OD** 钢管外径, mm。  
outer diameter of the pipe, mm。

### 2) 90° 弯头 / 弯管重量计算公式

Equation for calculation the weight of 90° elbows

$$W = 9.685 \times 10^{-6} R (OD^2 - ID^2)$$

式中:

where:

- W** 90° 弯头 / 弯管的重量, kg;  
weight of the elbow and/or bend, kg;
- R** 弯头 / 弯管曲率半径, mm;  
radius of the elbow and/or bend, mm;
- OD** 弯头 / 弯管外径, mm;  
outer diameter of the elbow and/or bend, mm;
- ID** 弯头 / 弯管内径, mm。  
inter diameter of the elbow and/or bend, mm。

### 3) 单位换算

Conversion between units

长度 length	1 mm = 0.03937 in	1 in = 25.4 mm
	1 m = 3.2808 ft	1 ft = 12 in = 0.3048 m
面积 area	1 cm <sup>2</sup> = 0.155 in <sup>2</sup>	1 in <sup>2</sup> = 6.452 cm <sup>2</sup>
	1 m <sup>2</sup> = 10.764 ft <sup>2</sup>	1 ft <sup>2</sup> = 0.093 m <sup>2</sup>
体积 volume	1 cm <sup>3</sup> = 0.061 in <sup>3</sup>	1 in <sup>3</sup> = 16.3871 cm <sup>3</sup>
	1 m <sup>3</sup> = 35.315 ft <sup>3</sup>	1 ft <sup>3</sup> = 0.0283 m <sup>3</sup>
质量 weight	1 kg = 2.2046 lb	1 lb = 0.4536 kg
密度 density	1 kg/m <sup>3</sup> = 0.0624 lb/ft <sup>3</sup>	1 lb/ft <sup>3</sup> = 16.02 kg/m <sup>3</sup>
压力 pressure	1 MPa = 0.145 ksi = 145 psi	1 psi = 0.006895 MPa
力 force	1 N = 0.225 lbf	1 lbf = 4.45 N
功 power	1 J = 0.73756 ft · lbf	1 ft · lbf = 1.35582 J
温度 temperature	n °C = (9/5 · n + 32) °F	n °F = [5/9 · (n - 32)] °C

# 锻制管件生产工艺流程及质量控制图

## FORGED FITTINGS PRODUCTION PROCESS AND QUALITY CONTROL CHART

