

ADDRESS

Luzhuangzi Industrial Area, Niujinzhuang Town,
Mengcun County, Hebei Province, China

CONTACT INFORMATION

Tel: +86-317-5307218

Mobile: +86 15127720688 Jenny Liu

Email: sales@czhaoguan.com

[Http://www.czhaoguan.com](http://www.czhaoguan.com)

[Http://www.hgffgroup.com](http://www.hgffgroup.com)

HGFF

PIPE•FITTINGS

Cangzhou Haoguan Pipe Fittings
Flanges Manufacturing Co.,Ltd



Mobile: +86 15127720688 Jenny Liu

Email: sales@czhaoguan.com



企业简介 ENTERPRISE IDEA

Cangzhou HaoGuan Pipe Fittings Flanges Manufacturing Co., Ltd (HGFF) is a group company established in 2006 and specializing in production and stock of butt weld pipe fittings and steel pipes. Our factory covers an area of 150000 m², and about 100000 m² are built up as plant and office building. We have 190 regular employees, including 3 engineers, and 25 QC staffs. 8000 tons annual output and 1000 tons in stock, our fittings are applicable for various international standards like ASME, EN, DIN, JIS, GB and customized design by the end user.

Over the years, we had been working to solve production problems of fittings and improving QC systems for better performance. A strict quality management system is implemented to control every process of production. The advanced production equipment guarantees the best fittings quality both in visual check and lab tests. Being of excellent quality and reasonable price, our fittings are well received in many countries such as UK, ITALY, Germany, USA, Chile, UAE, Brazil, Vietnam, Malaysia and so on.

HGFF

沧州皓冠管业有限公司

Cangzhou HaoGuan Pipe Fittings Flanges Manufacturing Co., LTD

Catalog

ASTM/ASME A/SA 234

WPB · WPC · WP1 · WP11 · WP12 · WP22 · WP5
WP9 · WP91 · WP92

MSS SP75/ASTM A 860

WPH42 · WPHY52 · WPHY60 · WPHY65 · WPHY70

ASTM/ASME A/SA 420

WPL6

SHORT RADIUS ELBOWS	1/2" -72"
LONG RADIUS ELBOWS	1/2" -72"
3D ELBOWS	1/2" -48"
5D ELBOWS	1/2" -48"
CONC&ECC REDUCERS	1/2" -48"
TEES	1/2" -48"
CAPS	1/2" -48"

EN/ASTM STEEL GRADES TO BE PROPOSED AS ALTERNATIVE

USE	According to EN10253-2	According to DIN2609	According to ASTM/ASME and API 5L
Use in pressure room temperature	P235TR1	St. 37.0	
	P235TR2	/	
	P265TR2	St. 44.0	
Use in pressure high temperature	P235GH TC1 or TC2	St35.8/I or III	WPB ASTM A234
	P265GH	st45.8	WPHY52 ASTM A860
	P355NH		WP1 ASTM A234
	16Mo3	15Mo3	WP11 ASTM A234
	10CrMo5-5	/	WP12 ASTM A234
	13CrMo4-5	13CrMo4-4	WP22 ASTM A234
	10CrMo9-10	10CrMo9-10	WP5 ASTM A234
	X11CrMo5		WP9 ASTM A234
	X11CrMo9-1		WP91 ASTM A234
	X10CrMoVNb9-1		WP92 ASTM A234
Use in pressure low temperature	P215NL		WPL6 ASTM A420
	P265NL	TstE285	WPHY52 ASTM A860
	P355NL		
Use in pressure combustible fluids	L290NB	StE290.7	WPHY42 ASTM A860
	L360NB	StE360.7	WPHY52 ASTM A860
	L360QB		WPHY52 ASTM A860
	L415NB		WPHY60 ASTM A860
	L415QB		WPHY60 ASTM A860
	L415QB		WPHY65 ASTM A860

-03-



-03-

-03-

-03-



From start to finish, HGFF strives to be "The Standard" to which weld fittings are manufactured, stored, organized, and shipped. Weld-bend manufactures stock for large inventories and prompt and precise shipments.



Made from TPCO, Valin and other pipes manufacturer.

The elbows hot formed at HGFF are done to the highest quality standards in HGFF's advance processes.



HGFF uses timely calibrated tools to continually check the tolerance of all fittings.

All dimensions are checked both by the operator and our quality control department to ensure the highest quality.

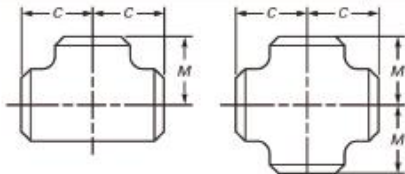
Control Plan for Quality Test

Product	Elbow		No.		HG-QC1-090101-06						
Name	Elbow		Dimension Standard		ASTM B 16.9-12						
Material Standard	A 234 WPB		Original Material Standard		A 106						
Material Request	Chemical Composition (%)										
	C	Mn	Si	Mo	S	P	Cr	Ni	Cu	V	
	≤0.3	0.29-1.06	≥0.10	≤0.15	≤0.058	≤0.50	≤0.40	≤0.40	≤0.40	≤0.08	
	Mechanical Property										
	T S (Mpa)			E/L (%)			Y/S (Mpa)				
	415-655			≥30			≥240				
3.1 Mill Test Certificate											
Manufacture & Process	Process name		Process details& tools					Inspection method			
	Cutting		Saw (saw machine)					10% casual inspection			
	Forming		Hot forming (850±25℃)					10% casual inspection			
	Rough Sizing		Hot process					10% casual inspection			
	End Beveling		Beveling machine (37.5° ±2.5°)					10% casual inspection			
	Surface rough process		Rub surface defect					10% casual inspection			
Quality Inspection	Surface treatment		Sand blasting & painting Surface quality according to ASTM B 16.9					10% casual inspection			
	Size		According to ASTM B16.9					100% casual inspection			
Marking& Packaging	Marking		Manufacturer name material heat No. size specification and so on					10% casual inspection			
	Painting		According with client's requirement					10% casual inspection			
	Packaging		Fumigation-free wooden cases, pallet					10% casual inspection			
Sketch Pictures											
	Note (2)										

Prepared by: Dai Ruxiao

Approved by: Tian Guozhong

Control Plan for Quality Test

Product		Tee		No.		HG-QC1-090101-07				
Name		Tee (above 8'')		Dimension Standard		ASTM B 16.9-12				
Material Standard		A 234 WPB		Original Material Standard		A 106				
Material Request	Chemical Composition (%)									
	C	Mn	Si	Mu	S	P	Cr	Ni	Cu	V
	≤0.3	0.29-1.06	≥0.10	≤0.15	≤0.058	≤0.50	≤0.40	≤0.40	≤0.40	≤0.08
	Mechanical Property									
	T S (Mpa)			E/L (%)			Y/S (Mpa)			
	415-655			≥30			≥240			
	3.1 Mill Test Certificate									
Manufacture & Process	Process name		Process details& tools				Inspection method			
	Cutting		Saw (saw machine)				10% casual inspection			
	Forming		Hot forming (750-850℃)				10% casual inspection			
	Rough Sizing		Hot process				10% casual inspection			
	End Beveling		Beveling machine (37.5º ±2.5º)				10% casual inspection			
	Surface rough process		Rub surface defect				10% casual inspection			
Quality Inspection	Surface treatment		Sand blasting & painting Surface quality according to ASTM B16.9				10% casual inspection			
	Size		According to ASTM B16.9				100%casual inspection			
Marking & Packaging	Marking		Manufacturer name material heat No. size specification and so on				10% casual inspection			
	Painting		According with client's requirement				10% casual inspection			
	Packaging		Fumigation-free wooden cases, pallet				10% casual inspection			
Sketch Pictures										

Prepared by : Dai Ruxiao

Approved by: Tian Guozhong

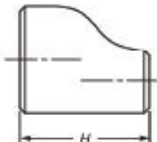
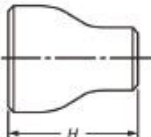
Control Plan for Quality Test

Product	Tee				No.			HG-QC1-090101-08			
Name	Tee (8" and below)				Dimension Standard			ASTM B 16.9-12			
Material Standard	A 234 WPB				Original Material Standard			A 106			
Material Request	Chemical Composition (%)										
	C	Mn	Si	Mo	S	P	Cr	Ni	Cu	V	
	≤0.3	0.29-1.06	≥0.10	≤0.15	≤0.058	≤0.50	≤0.40	≤0.40	≤0.40	≤0.08	
	Mechanical Property										
	T S (Mpa)			E/L (%)				T S (Mpa)			
	415-655			≥30				≥240			
Manufacture & Process	3.1 Mill Test Certificate										
	Process name			Process details& tools				Inspection method			
	Cutting			Saw (saw machine)				10% casual inspection			
	Forming			Cold forming (595-690°C)				10% casual inspection			
	Rough Sizing			Cold process				10% casual inspection			
	End Beveling			Beveling machine (37.5° ±2.5°)				10% casual inspection			
	Surface rough process			Rub surface defect				10% casual inspection			
Quality Inspection	Surface treatment			Sand blasting & painting Surface quality accord with ASTM B16.9				10% casual inspection			
	Size			According with the ASTM B16.9				100% casual inspection			
	NDT			Penetrate test / magnetic powder test Products accord with the specification of ASME section V				100% casual inspection			
Marking & Packaging	Marking			Manufacturer name material heat No. size specification and so on				10% casual inspection			
	Painting			According with client's requirement				10% casual inspection			
	Packaging			Fumigation-free wooden cases, pallet				10% casual inspection			
Sketch Pictures											

Prepared by: Dai Ruxiao

Approved by: Tian Guozhong

Control Plan for Quality Test

Product		Reducer			No.		HG-QC1-090101-10				
Name		Con/Ecc Reducer			Dimension Standard		ASTM B 16.9-12				
Material Standard		A 234 WPB			Original Material Standard		A 106				
Material Request	Chemical Composition (%)										
	C	Mn	Si	Mo	S	P	Cr	Ni	Cu	V	
	≤0.3	0.29-1.06	≤0.10	≤0.15	≤0.058	≤0.50	≤0.40	≤0.40	≤0.40	≤0.08	
	Mechanical Property										
	T S (Mpa)			E/L (%)			Y S (Mpa)				
	415-655			≥30			≥240				
	3.1 Mill Test Certificate										
Manufacture & Process	Process name		Process details& tools				Inspection method				
	Cutting		Saw (saw machine)				10% casual inspection				
	Forming		Hot forming (850±25℃)				10% casual inspection				
	Rough Sizing		Hot process				10% casual inspection				
	End Beveling		Beveling machine (37.5º ±2.5º)				10% casual inspection				
	Surface rough process		Rub surface defect				10% casual inspection				
Inspection	Quality	Surface treatment		Sand blasting & painting Surface quality according to ASTM B16.9				10% casual inspection			
		Size		According to ASTM B16.9				100%casual inspection			
Marking & Packaging		Marking		Manufacturer name material heat No. size specification and so on				10% casual inspection			
		Painting		According with client's requirement				10% casual inspection			
		Packaging		Fumigation-free wooden cases, pallet				10% casual inspection			
Sketch Pictures											

Prepared by: Dai Ruxiao

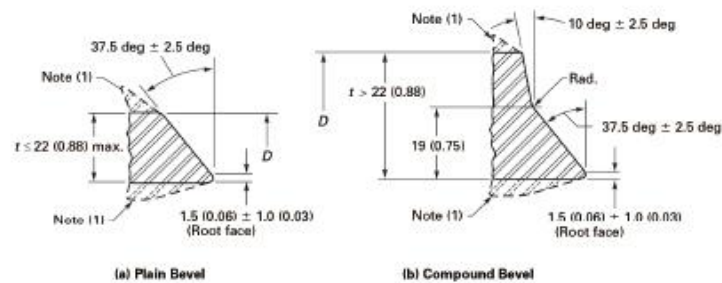
Approved by: Tian Guozhong

Control Plan for Quality Test

Product		Cap		No.		HG-QC1-090101-06				
Name		Cap		Dimension Standard		ASTM B 16.9-12				
Material Standard		A 234 WPB		Original Material Standard		A 106				
Material Request	Chemical Composition (%)									
	C	Mn	Si	Mo	S	P	Cr	Ni	Cu	V
	≤0.3	0.29-1.06	≥0.10	≤0.15	≤0.058	≤0.50	≤0.40	≤0.40	≤0.40	≤0.08
	Mechanical Property									
	T S (Mpa)			E/L (%)			Y/S (Mpa)			
	415-655			≥30			≥240			
	3.1 Mill Test Certificate									
Manufacture & Process	Process name		Process details& tools				Inspection method			
	Cutting		Saw (saw machine)				10% casual inspection			
	Forming		Hot forming (850±25°C)				10% casual inspection			
	Rough Sizing		Hot process				10% casual inspection			
	End Beveling		Beveling machine (37.5º ±2.5º)				10% casual inspection			
	Surface rough process		Rub surface defect				10% casual inspection			
Quality Inspection	Surface treatment		Sand blasting & painting Surface quality according to ASTM B 16.9				10% casual inspection			
	Size		According to ASTM B16.9				100% casual inspection			
Marking& Packaging	Marking		Manufacturer name material heat No. size specification and so on				10% casual inspection			
	Painting		According with client's requirement				10% casual inspection			
	Packaging		Fumigation-free wooden cases, pallet				10% casual inspection			
Sketch Pictures										

Prepared by: Dai Ruxiao

Approved by: Tian Guozhong



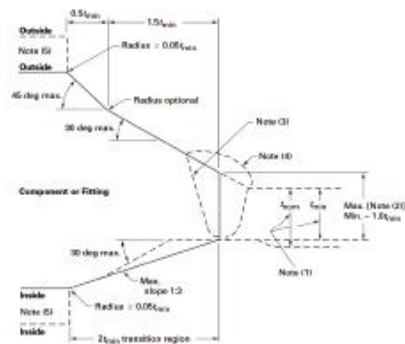
Nominal Wall Thickness, t	End Preparation
Less than x [Note (2)]	Cut square or slightly chamfer, at manufacturer's option (not illustrated)
x to 22 (0.88), inclusive	Plain bevel as in illustration (a) above
More than 22 (0.88)	Compound bevel as in illustration (b) above

GENERAL NOTES:

- (a) Dimensions in parentheses are in inches.
 (b) Other dimensions are in millimeters.

NOTES:

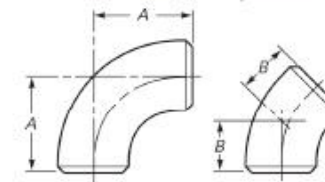
- (1) See section 8 and Fig. 1 for transition contours.
 (2) $x = 5$ (0.19) for carbon steel or ferritic alloy steel and 3 (0.12) for austenitic alloy steel.



NOTES:

- (1) The value of t_{min} is whichever of the following is applicable:
 (a) the minimum ordered wall thickness of the pipe, to include pipe that is purchased to a nominal wall thickness with an under-
 tolerance other than 12.5%
 (b) 0.875 times the nominal wall thickness of pipe ordered to a pipe schedule wall thickness that has an under-tolerance of 12.5%
 (2) The maximum thickness at the end of the component is:
 (a) the greater of $t_{max} = t_{min}$ or $t_{min} + 1.25t_{min}$ when ordered as a minimum wall bevel
 (b) the greater of $t_{max} = t_{min} + 1.25t_{min}$ or $1.5t_{min}$ when ordered as a nominal wall bevel
 (3) Weld bevel shown is for illustration only.
 (4) The weld reinforcement permitted by applicable code may be outside the maximum envelope.
 (5) Where transitions using maximum slope do not intersect the inside or outside surface within the transition region, as shown by cham-
 ber outlines, maximum slopes shall be used. Alternatively, radii lying within the envelope may be used.

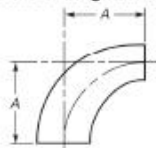
Dimensions of Long Radius Elbows



Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Center-to-End	
		90-deg Elbows, A	45-deg Elbows, B
1/2	21.3	38	16
3/4	26.7	38	19
1	33.4	38	22
1 1/4	42.2	48	25
1 1/2	48.3	57	29
2	60.3	76	35
2 1/2	73.0	95	44
3	88.9	114	51
3 1/2	101.6	133	57
4	114.3	152	64
5	141.3	190	79
6	168.3	229	95
8	219.1	305	127
10	273.0	381	159
12	323.8	457	190
14	355.6	533	222
16	406.4	610	254
18	457.0	686	286
20	508.0	762	318
22	559.0	838	343
24	610.0	914	381
26	660.0	991	406
28	711.0	1 067	438
30	762.0	1 143	470
32	813.0	1 219	502
34	864.0	1 295	533
36	914.0	1 372	565
38	965.0	1 448	600
40	1 016.0	1 524	632
42	1 067.0	1 600	660
44	1 118.0	1 676	695
46	1 168.0	1 753	727
48	1 219.0	1 829	759

GENERAL NOTE: All dimensions are in millimeters.

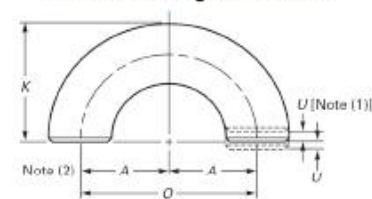
Dimensions of Long Radius Reducing Elbows



Nominal Pipe Size (NPS)	Outside Diameter at Bevel		Center- to-End, A	Nominal Pipe Size (NPS)	Outside Diameter at Bevel		Center- to-End, A
	Large End	Small End			Large End	Small End	
2 × 1½	60.3	48.3	76	10 × 8	273.0	219.1	381
2 × 1¼	60.3	42.2	76	10 × 6	273.0	168.3	381
2 × 1	60.3	33.4	76	10 × 5	273.0	141.3	381
2½ × 2	73.0	60.3	95	12 × 10	323.8	273.0	457
2½ × 1½	73.0	48.3	95	12 × 8	323.8	219.1	457
2½ × 1¼	73.0	42.2	95	12 × 6	323.8	168.3	457
3 × 2½	88.9	73.0	114	14 × 12	355.6	323.8	533
3 × 2	88.9	60.3	114	14 × 10	355.6	273.0	533
3 × 1½	88.9	48.3	114	14 × 8	355.6	219.1	533
3½ × 3	101.6	88.9	133	16 × 14	406.4	355.6	610
3½ × 2½	101.6	73.0	133	16 × 12	406.4	323.8	610
3½ × 2	101.6	60.3	133	16 × 10	406.4	273.0	610
4 × 3½	114.3	101.6	152	18 × 16	457.0	406.4	686
4 × 3	114.3	88.9	152	18 × 14	457.0	355.6	686
4 × 2½	114.3	73.0	152	18 × 12	457.0	323.8	686
4 × 2	114.3	60.3	152	18 × 10	457.0	273.0	686
5 × 4	141.3	114.3	190	20 × 18	508.0	457.0	762
5 × 3½	141.3	101.6	190	20 × 16	508.0	406.4	762
5 × 3	141.3	88.9	190	20 × 14	508.0	355.6	762
5 × 2½	141.3	73.0	190	20 × 12	508.0	323.8	762
5 × 2	141.3	60.3	190	20 × 10	508.0	273.0	762
6 × 5	168.3	141.3	229	24 × 22	610.0	559.0	914
6 × 4	168.3	114.3	229	24 × 20	610.0	508.0	914
6 × 3½	168.3	101.6	229	24 × 18	610.0	457.0	914
6 × 3	168.3	88.9	229	24 × 16	610.0	406.4	914
8 × 6	219.1	168.3	305	24 × 14	610.0	355.6	914
8 × 5	219.1	141.3	305	24 × 12	610.0	323.8	914
8 × 4	219.1	114.3	305	...	...	...	...

GENERAL NOTE: All dimensions are in millimeters.

Dimensions of Long Radius Returns



Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Center- to- Center, O	Back- to- Face, K
1/8	21.3	76	48
1/4	26.7	76	51
1/2	33.4	76	56
3/4	42.2	95	70
1	48.3	114	83
2	60.3	152	106
2½	73.0	190	132
3	88.9	229	159
3½	101.6	267	184
4	114.3	305	210
5	141.3	381	262
6	168.3	457	313
8	219.1	610	414
10	273.0	762	518
12	323.8	914	619
14	355.6	1067	711
16	406.4	1219	813
18	457.0	1372	914
20	508.0	1524	1016
22	559.0	1676	1118
24	610.0	1829	1219

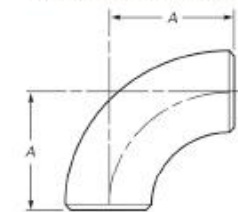
GENERAL NOTE: All dimensions are in millimeters.

NOTES:

(1) See Table 13 for tolerance for alignment of ends U.

(2) Dimension A is equal to one-half of dimension O.

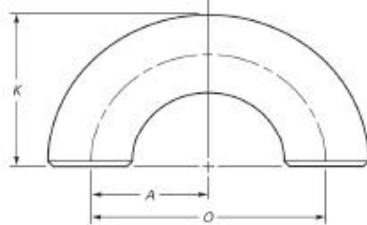
Dimensions of Short Radius Elbows



Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Center- to- End, A
1	33.4	25
1¼	42.2	32
1½	48.3	38
2	60.3	51
2½	73.0	64
3	88.9	76
3½	101.6	89
4	114.3	102
5	141.3	127
6	168.3	152
8	219.1	203
10	273.0	254
12	323.8	305
14	355.6	356
16	406.4	406
18	457.0	457
20	508.0	508
22	559.0	559
24	610.0	610

GENERAL NOTE: All dimensions are in millimeters.

Dimensions of Short Radius 180-deg Returns

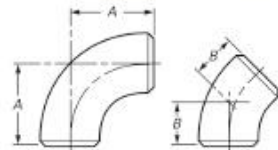


Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Center-to-Center, O	Back-to-Face, K
1	33.4	51	41
1 1/4	42.2	64	52
1 1/2	48.3	76	62
2	60.3	102	81
2 1/2	73.0	127	100
3	88.9	152	121
3 1/2	101.6	178	140
4	114.3	203	159
5	141.3	254	197
6	168.3	305	237
8	219.1	406	313
10	273.0	508	391
12	323.8	610	467
14	355.6	711	533
16	406.4	813	610
18	457.0	914	686
20	508.0	1 016	762
22	559.0	1 118	838
24	610.0	1 219	914

GENERAL NOTES:

- (a) All dimensions are in millimeters.
 (b) Dimension A is equal to one-half of dimension O.

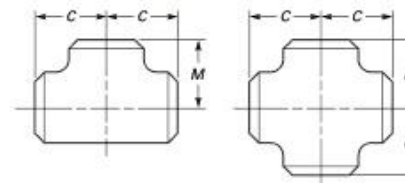
Dimensions of 3D Elbows



Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Center-to-End	
		90-deg Elbows, A	45-deg Elbows, B
3/4	26.7	57	24
1	33.4	76	31
1 1/4	42.2	95	39
1 1/2	48.3	114	47
2	60.3	152	63
2 1/2	73.0	190	79
3	88.9	229	95
3 1/2	101.6	267	111
4	114.3	305	127
5	141.3	381	157
6	168.3	457	189
8	219.1	610	252
10	273.0	762	316
12	323.8	914	378
14	355.6	1 067	441
16	406.4	1 219	505
18	457.0	1 372	568
20	508.0	1 524	632
22	559.0	1 676	694
24	610.0	1 829	757
26	660.0	1 981	821
28	711.0	2 134	883
30	762.0	2 286	964
32	813.0	2 438	1 010
34	864.0	2 591	1 073
36	914.0	2 743	1 135
38	965.0	2 896	1 200
40	1 016.0	3 048	1 264
42	1 067.0	3 200	1 326
44	1 118.0	3 353	1 389
46	1 168.0	3 505	1 453
48	1 219.0	3 658	1 516

GENERAL NOTE: All dimensions are in millimeters.

Dimensions of Straight Tees and Crosses



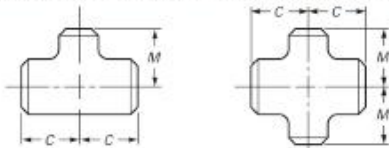
Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Center-to-End	
		Run, C	Outlet, M [Notes (1) and (2)]
1/2	21.3	25	25
3/4	26.7	29	29
1	33.4	38	38
1 1/4	42.2	48	48
1 1/2	48.3	57	57
2	60.3	64	64
2 1/2	73.0	76	76
3	88.9	86	86
3 1/2	101.6	95	95
4	114.3	105	105
5	141.3	124	124
6	168.3	143	143
8	219.1	178	178
10	273.0	216	216
12	323.8	254	254
14	355.6	279	279
16	406.4	305	305
18	457.0	343	343
20	508.0	381	381
22	559.0	419	419
24	610.0	432	432
26	660.0	495	495
28	711.0	521	521
30	762.0	559	559
32	813.0	597	597
34	864.0	635	635
36	914.0	673	673
38	965.0	711	711
40	1 016.0	749	749
42	1 067.0	762	711
44	1 118.0	813	762
46	1 168.0	851	800
48	1 219.0	889	838

GENERAL NOTE: All dimensions are in millimeters.

NOTES:

- (1) Outlet dimension M for NPS 26 and larger is recommended but not required.
 (2) Dimensions applicable to crosses NPS 24 and smaller.

Dimensions of Reducing Outlet Tees and Reducing Outlet Crosses



Nominal Pipe Size (NPS)	Outside Diameter at Bevel		Center-to-End Outlet, M [Note (1)]		Nominal Pipe Size (NPS)	Outside Diameter at Bevel		Center-to-End Outlet, M [Note (1)]	
	Run	Outlet	Run, C			Run	Outlet	Run, C	
1/2 x 1/2 x 1/8	21.3	17.3	25	25	4 x 4 x 3 1/2	114.3	101.6	105	102
1/2 x 1/2 x 1/4	21.3	13.7	25	25	4 x 4 x 3	114.3	88.9	105	98
3/4 x 3/4 x 1/2	26.7	21.3	29	29	4 x 4 x 2 1/2	114.3	73.0	105	95
3/4 x 3/4 x 3/8	26.7	17.3	29	29	4 x 4 x 2	114.3	60.3	105	89
1 x 1 x 3/4	33.4	26.7	38	38	4 x 4 x 1 1/2	114.3	48.3	105	86
1 x 1 x 1/2	33.4	21.3	38	38					
					5 x 5 x 4	141.3	114.3	124	117
1 1/4 x 1 1/4 x 1	42.2	33.4	48	48	5 x 5 x 3 1/2	141.3	101.6	124	114
1 1/4 x 1 1/4 x 3/4	42.2	26.7	48	48	5 x 5 x 3	141.3	88.9	124	111
1 1/4 x 1 1/4 x 1/2	42.2	21.3	48	48	5 x 5 x 2 1/2	141.3	73.0	124	108
					5 x 5 x 2	141.3	60.3	124	105
1 1/2 x 1 1/2 x 1 1/4	48.3	42.2	57	57	6 x 6 x 5	168.3	141.3	143	137
1 1/2 x 1 1/2 x 1	48.3	33.4	57	57	6 x 6 x 4	168.3	114.3	143	130
1 1/2 x 1 1/2 x 3/4	48.3	26.7	57	57	6 x 6 x 3 1/2	168.3	101.6	143	127
1 1/2 x 1 1/2 x 1/2	48.3	21.3	57	57	6 x 6 x 3	168.3	88.9	143	124
					6 x 6 x 2 1/2	168.3	73.0	143	121
2 x 2 x 1 1/2	60.3	48.3	64	60	8 x 8 x 6	219.1	168.3	178	168
2 x 2 x 1 1/4	60.3	42.2	64	57	8 x 8 x 5	219.1	141.3	178	162
2 x 2 x 1	60.3	33.4	64	51	8 x 8 x 4	219.1	114.3	178	156
2 x 2 x 3/4	60.3	26.7	64	44	8 x 8 x 3 1/2	219.1	101.6	178	152
2 1/2 x 2 1/2 x 2	73.0	60.3	76	70	10 x 10 x 8	273.0	219.1	216	203
2 1/2 x 2 1/2 x 1 1/2	73.0	48.3	76	67	10 x 10 x 6	273.0	168.3	216	194
2 1/2 x 2 1/2 x 1 1/4	73.0	42.2	76	64	10 x 10 x 5	273.0	141.3	216	191
2 1/2 x 2 1/2 x 1	73.0	33.4	76	57	10 x 10 x 4	273.0	114.3	216	184
3 x 3 x 2 1/2	88.9	73.0	86	83	12 x 12 x 10	323.8	273.0	254	241
3 x 3 x 2	88.9	60.3	86	76	12 x 12 x 8	323.8	219.1	254	229
3 x 3 x 1 1/2	88.9	48.3	86	73	12 x 12 x 6	323.8	168.3	254	219
3 x 3 x 1 1/4	88.9	42.2	86	70	12 x 12 x 5	323.8	141.3	254	216
3 1/2 x 3 1/2 x 3	101.6	88.9	95	92	14 x 14 x 12	355.6	323.8	279	270
3 1/2 x 3 1/2 x 2 1/2	101.6	73.0	95	89	14 x 14 x 10	355.6	273.0	279	257
3 1/2 x 3 1/2 x 2	101.6	60.3	95	86	14 x 14 x 8	355.6	219.1	279	248
3 1/2 x 3 1/2 x 1 1/2	101.6	48.3	95	79	14 x 14 x 6	355.6	168.3	279	238

Dimensions of Reducing Outlet Tees and Reducing Outlet Crosses (Cont'd)

Nominal Pipe Size (NPS)	Outside Diameter at Bevel		Center-to-End Outlet, M [Note (1)]		Nominal Pipe Size (NPS)	Outside Diameter at Bevel		Center-to-End Outlet, M [Note (1)]	
	Run	Outlet	Run, C			Run	Outlet	Run, C	
16 x 16 x 14	406.4	355.6	305	305	28 x 28 x 26	711	660.0	521	521
16 x 16 x 12	406.4	323.8	305	295	28 x 28 x 24	711	610.0	521	508
16 x 16 x 10	406.4	273.0	305	283	28 x 28 x 22	711	559.0	521	495
16 x 16 x 8	406.4	219.1	305	273	28 x 28 x 20	711	508.0	521	483
16 x 16 x 6	406.4	168.3	305	264					
					28 x 28 x 18	711	457.0	521	470
18 x 18 x 16	457.0	406.4	343	330	28 x 28 x 16	711	406.4	521	457
18 x 18 x 14	457.0	355.6	343	330	28 x 28 x 14	711	355.6	521	457
18 x 18 x 12	457.0	323.8	343	321	28 x 28 x 12	711	323.8	521	448
18 x 18 x 10	457.0	273.0	343	308					
18 x 18 x 8	457.0	219.1	343	298	30 x 30 x 28	762	711.0	559	546
					30 x 30 x 26	762	660.0	559	546
20 x 20 x 18	508.0	457.0	381	368	30 x 30 x 24	762	610.0	559	533
20 x 20 x 16	508.0	406.4	381	356	30 x 30 x 22	762	559.0	559	521
20 x 20 x 14	508.0	355.6	381	356	30 x 30 x 20	762	508.0	559	508
20 x 20 x 12	508.0	323.8	381	346					
20 x 20 x 10	508.0	273.0	381	333	30 x 30 x 18	762	457.0	559	495
20 x 20 x 8	508.0	219.1	381	324	30 x 30 x 16	762	406.4	559	483
					30 x 30 x 14	762	355.6	559	483
22 x 22 x 20	559.0	508.0	419	406	30 x 30 x 12	762	323.8	559	473
22 x 22 x 18	559.0	457.0	419	394	30 x 30 x 10	762	273.0	559	460
22 x 22 x 16	559.0	406.4	419	381					
22 x 22 x 14	559.0	355.6	419	381	32 x 32 x 30	813	762.0	597	584
22 x 22 x 12	559.0	323.8	419	371	32 x 32 x 28	813	711.0	597	572
22 x 22 x 10	559.0	273.0	419	359	32 x 32 x 26	813	660.0	597	572
					32 x 32 x 24	813	610.0	597	559
24 x 24 x 22	610.0	559.0	432	432					
24 x 24 x 20	610.0	508.0	432	432	32 x 32 x 22	813	559.0	597	546
24 x 24 x 18	610.0	457.0	432	419	32 x 32 x 20	813	508.0	597	533
					32 x 32 x 18	813	457.0	597	521
24 x 24 x 16	610.0	406.4	432	406	32 x 32 x 16	813	406.4	597	508
24 x 24 x 14	610.0	355.6	432	406	32 x 32 x 14	813	355.6	597	508
24 x 24 x 12	610.0	323.8	432	397					
24 x 24 x 10	610.0	273.0	432	384	34 x 34 x 32	864	813.0	635	622
					34 x 34 x 30	864	762.0	635	610
26 x 26 x 24	660.0	610.0	495	483	34 x 34 x 28	864	711.0	635	597
26 x 26 x 22	660.0	559.0	495	470	34 x 34 x 26	864	660.0	635	597
26 x 26 x 20	660.0	508.0	495	457					
					34 x 34 x 24	864	610.0	635	584
26 x 26 x 18	660.0	457.0	495	444	34 x 34 x 22	864	559.0	635	572
26 x 26 x 16	660.0	406.4	495	432	34 x 34 x 20	864	508.0	635	559
26 x 26 x 14	660.0	355.6	495	432	34 x 34 x 18	864	457.0	635	546
26 x 26 x 12	660.0	323.8	495	422	34 x 34 x 16	864	406.4	635	533

Dimensions of Reducing Outlet Tees and Reducing Outlet Crosses (Cont'd)

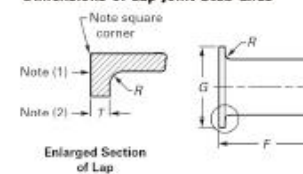
Nominal Pipe Size (NPS)	Outside Diameter at Bevel		Center-to-End Outlet, M [Note (1)]		Nominal Pipe Size (NPS)	Outside Diameter at Bevel		Center-to-End Outlet, M [Note (1)]	
	Run	Outlet	Run, C			Run	Outlet	Run, C	
36 x 36 x 34	914	864.0	673	660	42 x 42 x 24	1 067	610.0	762	660
36 x 36 x 32	914	813.0	673	648	42 x 42 x 22	1 067	559.0	762	660
36 x 36 x 30	914	762.0	673	635	42 x 42 x 20	1 067	508.0	762	660
36 x 36 x 28	914	711.0	673	622	42 x 42 x 18	1 067	457.0	762	648
36 x 36 x 26	914	660.0	673	622	42 x 42 x 16	1 067	406.4	762	635
					44 x 44 x 42	1 118	1 067.0	813	762
36 x 36 x 24	914	610.0	673	610	44 x 44 x 40	1 118	1 016.0	813	749
36 x 36 x 22	914	559.0	673	597	44 x 44 x 38	1 118	965.0	813	737
36 x 36 x 20	914	508.0	673	584	44 x 44 x 36	1 118	914.0	813	724
36 x 36 x 18	914	457.0	673	572	44 x 44 x 34	1 118	864.0	813	724
36 x 36 x 16	914	406.4	673	559	44 x 44 x 32	1 118	813.0	813	711
					44 x 44 x 30	1 118	762.0	813	711
38 x 38 x 36	965	914.0	711	711	44 x 44 x 28	1 118	711.0	813	698
38 x 38 x 34	965	864.0	711	698	44 x 44 x 26	1 118	660.0	813	698
38 x 38 x 32	965	813.0	711	686	44 x 44 x 24	1 118	610.0	813	698
38 x 38 x 30	965	762.0	711	673	44 x 44 x 22	1 118	559.0	813	686
38 x 38 x 28	965	711.0	711	648	44 x 44 x 20	1 118	508.0	813	686
					46 x 46 x 44	1 168	1 118.0	851	800
38 x 38 x 26	965	660.0	711	648	46 x 46 x 42	1 168	1 067.0	851	787
38 x 38 x 24	965	610.0	711	635	46 x 46 x 40	1 168	1 016.0	851	775
38 x 38 x 22	965	559.0	711	622	46 x 46 x 38	1 168	965.0	851	762
38 x 38 x 20	965	508.0	711	610	46 x 46 x 36	1 168	914.0	851	762
38 x 38 x 18	965	457.0	711	597	46 x 46 x 34	1 168	864.0	851	749
					46 x 46 x 32	1 168	813.0	851	749
40 x 40 x 38	1 016	965.0	749	749	46 x 46 x 30	1 168	762.0	851	737
40 x 40 x 36	1 016	914.0	749	737	46 x 46 x 28	1 168	711.0	851	737
40 x 40 x 34	1 016	864.0	749	724	46 x 46 x 26	1 168	660.0	851	737
40 x 40 x 32	1 016	813.0	749	711	46 x 46 x 24	1 168	610.0	851	724
40 x 40 x 30	1 016	762.0	749	698	46 x 46 x 22	1 168	559.0	851	724
					48 x 48 x 46	1 219	1 168.0	889	838
40 x 40 x 28	1 016	711.0	749	673	48 x 48 x 44	1 219	1 118.0	889	838
40 x 40 x 26	1 016	660.0	749	673	48 x 48 x 42	1 219	1 067.0	889	813
40 x 40 x 24	1 016	610.0	749	660	48 x 48 x 40	1 219	1 016.0	889	813
40 x 40 x 22	1 016	559.0	749	648					
40 x 40 x 20	1 016	508.0	749	635	48 x 48 x 38	1 219	965.0	889	813
40 x 40 x 18	1 016	457.0	749	622	48 x 48 x 36	1 219	914.0	889	787
					48 x 48 x 34	1 219	864.0	889	787
42 x 42 x 40	1 067	1 016.0	762	711	48 x 48 x 32	1 219	813.0	889	787
42 x 42 x 38	1 067	968.0	762	711					
42 x 42 x 36	1 067	914.0	762	711	48 x 48 x 30	1 219	762.0	889	762
42 x 42 x 34	1 067	864.0	762	711	48 x 48 x 28	1 219	711.0	889	762
					48 x 48 x 26	1 219	660.0	889	762
42 x 42 x 32	1 067	813.0	762	711	48 x 48 x 24	1 219	610.0	889	737
42 x 42 x 30	1 067	762.0	762	711	48 x 48 x 22	1 219	559.0	889	737
42 x 42 x 28	1 067	711.0	762	698					
42 x 42 x 26	1 067	660.0	762	698					

GENERAL NOTE: All dimensions are in millimeters.

NOTE:

(1) Outlet dimension M for run sizes NPS 14 and larger is recommended but not required.

Dimensions of Lap Joint Stub Ends



Nominal Pipe Size (NPS)	Outside Diameter of Barrel		Long Pattern Length, F [Notes (3), (4)]	Short Pattern Length, F [Notes (3), (4)]	Radius of Fillet, R [Note (5)]	Diameter of Lap, G [Note (6)]
	Max.	Min.				
1/2	22.8	20.5	76	51	3	35
3/4	28.1	25.9	76	51	3	43
1	35.0	32.6	102	51	3	51
1 1/4	43.6	41.4	102	51	5	64
1 1/2	49.9	47.5	102	51	6	73
2	62.4	59.5	152	64	8	92
2 1/2	75.3	72.2	152	64	8	105
3	91.3	88.1	152	64	10	127
3 1/2	104.0	100.8	152	76	10	140
4	116.7	113.5	152	76	11	157
5	144.3	140.5	203	76	11	186
6	171.3	167.5	203	89	13	216
8	222.1	218.3	203	102	13	270
10	277.2	272.3	254	127	13	324
12	328.0	323.1	254	152	13	381
14	359.9	354.8	305	152	13	413
16	411.0	405.6	305	152	13	470
18	462.0	456.0	305	152	13	533
20	514.0	507.0	305	152	13	584
22	565.0	558.0	305	152	13	641
24	616.0	609.0	305	152	13	692

GENERAL NOTES:

(a) All dimensions are in millimeters.

(b) See Table 13 for tolerances.

(c) Service conditions and joint construction often dictate stub end length requirements. Therefore, the purchaser must specify long or short pattern fitting when ordering.

NOTES:

(1) Gasket face finish shall be in accordance with ASME B16.5 for raised face flanges.

(2) The lap thickness T shall not be less than nominal pipe wall thickness. See Table 13 for maximum tolerance.

(3) When short pattern stub ends are used with larger flanges in Classes 300 and 600, with most sizes in Classes 900 and higher, and when long pattern stub ends are used with larger flanges in Classes 1500 and 2500, it may be necessary to increase the length of the stub ends in order to avoid covering the weld with the flange. Such increases in length shall be a matter of agreement between the manufacturer and purchaser.

(4) When special facings such as tongue and groove, male and female, etc., are employed, additional lap thickness must be provided and such additional thickness shall be in addition to (not included in) the basic length F.

(5) These dimensions conform to the radius established for lap joint flanges in ASME B16.5.

(6) This dimension conforms to standard machined facings shown in ASME B16.5. The back face of the lap shall be machined to conform to the surface on which it seats. Where ring joint facings are to be applied, use dimension K as given in ASME B16.5.

Dimensions of Caps



Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Length, E [Note (1)]	Limiting Wall Thickness for Length, E	Length, E ₁ [Note (2)]
1/2	21.3	25	4.57	25
3/4	26.7	25	3.81	25
1	33.4	38	4.57	38
1 1/4	42.2	38	4.83	38
1 1/2	48.3	38	5.08	38
2	60.3	38	5.59	44
2 1/2	73.0	38	7.11	51
3	88.9	51	7.62	64
3 1/2	101.6	64	8.13	76
4	114.3	64	8.64	76
5	141.3	76	9.65	89
6	168.3	89	10.92	102
8	219.1	102	12.70	127
10	273.0	127	12.70	152
12	323.8	152	12.70	178
14	355.6	165	12.70	191
16	406.4	178	12.70	203
18	457.0	203	12.70	229
20	508.0	229	12.70	254
22	559.0	254	12.70	254
24	610.0	267	12.70	305
26	660.0	267	...	...
28	711.0	267	...	...
30	762.0	267	...	...
32	813.0	267	...	...
34	864.0	267	...	...
36	914.0	267	...	...
38	965.0	305	...	...
40	1 016.0	305	...	...
42	1 067.0	305	...	...
44	1 118.0	343	...	...
46	1 168.0	343	...	...
48	1 219.0	343	...	...

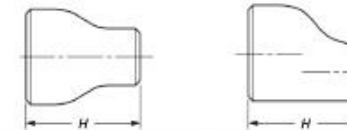
GENERAL NOTES:

- (a) All dimensions are in millimeters.
 (b) The shape of these caps shall be ellipsoidal and shall conform to the requirements given in the ASME Boiler and Pressure Vessel Code.

NOTES:

- (1) Length E applies for thickness not exceeding that given in column "Limiting Wall Thickness for Length, E."
 (2) Length E₁ applies for thickness greater than that given in column "Limiting Wall Thickness" for NPS 24 and smaller. For NPS 26 and larger, length E₁ shall be by agreement between the manufacturer and purchaser.

Dimensions of Reducers



Nominal Pipe Size (NPS)	Outside Diameter at Bevel		End-to-End, H	Nominal Pipe Size (NPS)	Outside Diameter at Bevel		End-to-End, H
	Large End	Small End			Large End	Small End	
1/4 x 1/2	26.7	21.3	38	5 x 6	141.3	114.3	127
1/4 x 3/4	26.7	17.3	38	5 x 3 1/2	141.3	101.6	127
1 x 1/4	33.4	26.7	51	5 x 3	141.3	88.9	127
1 x 1/2	33.4	21.3	51	5 x 2 1/2	141.3	73.0	127
1 1/4 x 1	42.2	33.4	51	5 x 2	141.3	60.3	127
1 1/4 x 3/4	42.2	26.7	51	6 x 5	168.3	141.3	140
1 1/4 x 1/2	42.2	21.3	51	6 x 4	168.3	114.3	140
1 1/2 x 1 1/4	48.3	42.2	64	6 x 3 1/2	168.3	101.6	140
1 1/2 x 1	48.3	33.4	64	6 x 3	168.3	88.9	140
1 1/2 x 3/4	48.3	26.7	64	6 x 2 1/2	168.3	73.0	140
1 1/2 x 1/2	48.3	21.3	64	8 x 6	219.1	168.3	152
2 x 1 1/2	60.3	48.3	76	8 x 5	219.1	141.3	152
2 x 1 1/4	60.3	42.2	76	8 x 4	219.1	114.3	152
2 x 1	60.3	33.4	76	8 x 3 1/2	219.1	101.6	152
2 x 3/4	60.3	26.7	76	10 x 8	273.0	219.1	178
2 1/2 x 2	73.0	60.3	89	10 x 6	273.0	168.3	178
2 1/2 x 1 1/2	73.0	48.3	89	10 x 5	273.0	141.3	178
2 1/2 x 1 1/4	73.0	42.2	89	10 x 4	273.0	114.3	178
2 1/2 x 1	73.0	33.4	89	12 x 10	323.8	273.0	203
3 x 2 1/2	88.9	73.0	89	12 x 8	323.8	219.1	203
3 x 2	88.9	60.3	89	12 x 6	323.8	168.3	203
3 x 1 1/2	88.9	48.3	89	12 x 5	323.8	141.3	203
3 x 1 1/4	88.9	42.2	89	14 x 12	355.6	323.8	330
3 1/2 x 3	101.6	88.9	102	14 x 10	355.6	273.0	330
3 1/2 x 2 1/2	101.6	73.0	102	14 x 8	355.6	219.1	330
3 1/2 x 2	101.6	60.3	102	14 x 6	355.6	168.3	330
3 1/2 x 1 1/2	101.6	48.3	102	16 x 14	406.4	355.6	356
3 1/2 x 1 1/4	101.6	42.2	102	16 x 12	406.4	323.8	356
3 1/2 x 1	101.6	33.4	102	16 x 10	406.4	273.0	356
4 x 3 1/2	114.3	101.6	102	16 x 8	406.4	219.1	356
4 x 3	114.3	88.9	102	18 x 16	457	406.4	381
4 x 2 1/2	114.3	73.0	102	18 x 14	457	355.6	381
4 x 2	114.3	60.3	102	18 x 12	457	323.8	381
4 x 1 1/2	114.3	48.3	102	18 x 10	457	273.0	381

Dimensions of Reducers (Cont'd)

Nominal Pipe Size (NPS)	Outside Diameter at Bevel		End-to-End, H	Nominal Pipe Size (NPS)	Outside Diameter at Bevel		End-to-End, H
	Large End	Small End			Large End	Small End	
20 × 18	508	457.0	508	36 × 34	914	864	610
20 × 16	508	406.4	508	36 × 32	914	813	610
20 × 14	508	355.6	508	36 × 30	914	762	610
20 × 12	508	323.8	508	36 × 26	914	660	610
				36 × 24	914	610	610
22 × 20	559	508.0	508	38 × 36	965	914	610
22 × 18	559	457.0	508	38 × 34	965	864	610
22 × 16	559	406.4	508	38 × 32	965	813	610
22 × 14	559	355.4	508	38 × 30	965	762	610
				38 × 28	965	711	610
24 × 22	610	559.0	508	38 × 26	965	660	610
24 × 20	610	508.0	508				
24 × 18	610	457.0	508	40 × 38	1016	965	610
24 × 16	610	406.4	508	40 × 36	1016	914	610
				40 × 34	1016	864	610
26 × 24	660	610.0	610	40 × 32	1016	813	610
26 × 22	660	559.0	610	40 × 30	1016	762	610
26 × 20	660	508.0	610				
26 × 18	660	457.0	610	42 × 40	1067	1016	610
				42 × 38	1067	965	610
28 × 26	711	660.0	610	42 × 36	1067	914	610
28 × 24	711	610.0	610	42 × 34	1067	864	610
28 × 20	711	508.0	610	42 × 32	1067	813	610
28 × 18	711	457.0	610	42 × 30	1067	762	610
30 × 28	762	711.0	610	44 × 42	1118	1067	610
30 × 26	762	660.0	610	44 × 40	1118	1016	610
30 × 24	762	610.0	610	44 × 38	1118	965	610
30 × 20	762	508.0	610	44 × 36	1118	914	610
32 × 30	813	762.0	610	46 × 44	1168	1118	711
32 × 28	813	711.0	610	46 × 42	1168	1067	711
32 × 26	813	660.0	610	46 × 40	1168	1016	711
32 × 24	813	610.0	610	46 × 38	1168	965	711
34 × 32	864	813.0	610	48 × 46	1219	1168	711
34 × 30	864	762.0	610	48 × 44	1219	1118	711
34 × 26	864	660.0	610	48 × 42	1219	1067	711
34 × 24	864	610.0	610	48 × 40	1219	1016	711

GENERAL NOTES:

(a) All dimensions are in millimeters.

(b) While the figure illustrates a bell-shaped reducer, the use of a conical reducer is not prohibited.





服务领域 SERVICE AREA

- OIL&GAS
- SHIP BUILDING
- POWER
- CHEMICAL
- WATER
- INFRASTRUCTURE CONSTRUCTION



Markets Distribution

