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**营口辽河机械管件有限公司**  
Yingkou Liaohe Machinery & Pipe Fittings Co., Ltd.



## 企业简介

营口辽河机械管件有限公司，原营口辽河机械厂，是自行开发、研制、生产塔器、换热器、反应釜、储罐、旋风分离器等I、II、III类压力容器及各种弯头、三通、异径管、法兰、封头、管帽、绝缘接头、过滤器、汇气管、收发球筒、锻件、紧固件等管道元件的专业化制造厂，产品广泛用于石油、天然气、化工、冶金、食品、制药、造船、电力、水利、纺织、造纸、输油、输气管道等行业，年生产能力50000吨。

我公司自1976年建厂以来，在自身不断努力和社会各界同仁的关心支持下，依靠科技进步，加强科学管理，深化内部改革，"以质量为主，安全第一；顾客满意，信誉至上"的公司方针为宗旨，努力进取，开拓发展。现已拥有固定资产5000万元，工厂占地面积3.5万平方米，标准厂房10000平方米，标准库房5000平方米，综合建筑设施5000平方米。拥有工程技术人员30多人。拥有国内先进的弯管直径为DN1600mm的弯管生产线，最大压力4000吨的液压机及各种起重、切割、机加、热处理、表面除锈、成型设备，并拥有各种先进完善的检测设备。

我公司技术力量雄厚，工艺先进，设备齐全，拥有完善的管理体系，并有效运行。与中石油、中石化等大型企业建立了战略合作伙伴关系。多年以来为国家重点工程：大庆乙烯丙烯装置、西气东输工程、抚顺乙烯丙烯装置、吉化公司、沈阳蜡化、中国华电工程（集团）公司、涩宁兰复线工程、大庆-锦西原油管道工程（垂杨-铁岭段）、（大庆-新庙段）、中工-贵阳路线工程第一标段拔制汇气管、大连造船厂等用户提供了优质服务。近几年，产品又大量出口到美国、德国、加拿大、捷克、意大利、阿联酋、法国、沙特阿拉伯、马来西亚、伊朗、韩国、日本、印度、荷兰、新加坡、台湾等国家和地区，深受用户好评。

我公司坐落于滨城营口，地处辽东半岛南部，位于沈大路旁，地理位置优越。我公司以优质的质量、合理的价格、完善的服务赢得了广大国内外客户的认可和青睐，企业逐步发展壮大，现已成为我国压力容器及管道元件制造的骨干企业。

我公司在"集众智，求精务实"的办厂方针指导下，发展迅速，已具规模。在此，我们感谢多年来关心、支持我司发展的各界朋友、国内外合作伙伴，并真诚邀请新老朋友与我公司精诚合作、实现共赢！

## Company profile

Yingkou Liaohe Machinery & Pipe fittings Co.Ltd., which used to be Yingkou Liaohe Machinery Factory, is specialized in exploiting and manufacturing all kinds of pressure vessels and elbows, tees, reducers, flanges, caps and other pipe fitting. Our products are widely used in oil industry, chemical industry, power plants ect. The annual output is about 50000 tons.

From the year when we founded in 1976, we've been holding the idea of high quality for survival, product variety for development and first class service for reputation. Currently, our factory owns fixed assets 50,000,000 RMB. The mill occupies 350,000m<sup>2</sup> including 10,000 m<sup>2</sup> standard workshop and 5,000 m<sup>2</sup> standard warehouse as well as 5,000 m<sup>2</sup> comprehensive building for multi-purpose. We also have many advanced inspection and production equipments, such as hot forming machine for bends which outside diameter up to DN1600mm, and many relative equipments for material cutting, machining, heat treatment and surface treatment etc. We own abundant technical ability and advanced technology, well-maintained equipments, and the certification of ISO 9001 Quality Assurance System and perfect physical and chemical test equipments. We also have a group of sophisticated technicians who have strong responsibility and high passion for their jobs. Our company is appointed to produce for many projects. For a long time, we've been providing the services of high grade for National key projects, and other companies. For example, Ta-Ching Ethylene and Propylene setting Factory, Jilin Chemistry Company, and Dalian shipbuilding Factory. Export is also our another important battlefield. We've been exporting to many countries and regions, such as the United States, the UK, Germany, Italy, UAE, France, Saudi Arabia, Malaysia, Iran, South Korea, Taiwan, Singapore, Japan, and we received favorable comments from the customers.

Yingkou Liaohe Machinery & Pipe fittings Co., Ltd is located in south of Liaodong peninsula, by Ha-Da railway and Shen-Da express highway with convenient geographical position. Our factory's output is increasing year after year. Now, our factory has already become the leading manufacturers in the field of pressure vessels and the pipe fittings in the world.

With the idea of "Quality builds the future and Technology inspires the creation", our factory is developing rapidly, and has already formed experienced system of manufacturing and sale. We want to thank all our friends and partners all over the world for your constant supporting. Meanwhile, we invite cordially the new and old friends to our company; we will provide sincere service to you.



J 营口辽河机械管件有限公司

Yingkou Liaohe Machinery & Pipe Fittings Co., Ltd.

# ENTERPRISE QUALIFICATION 企业资质

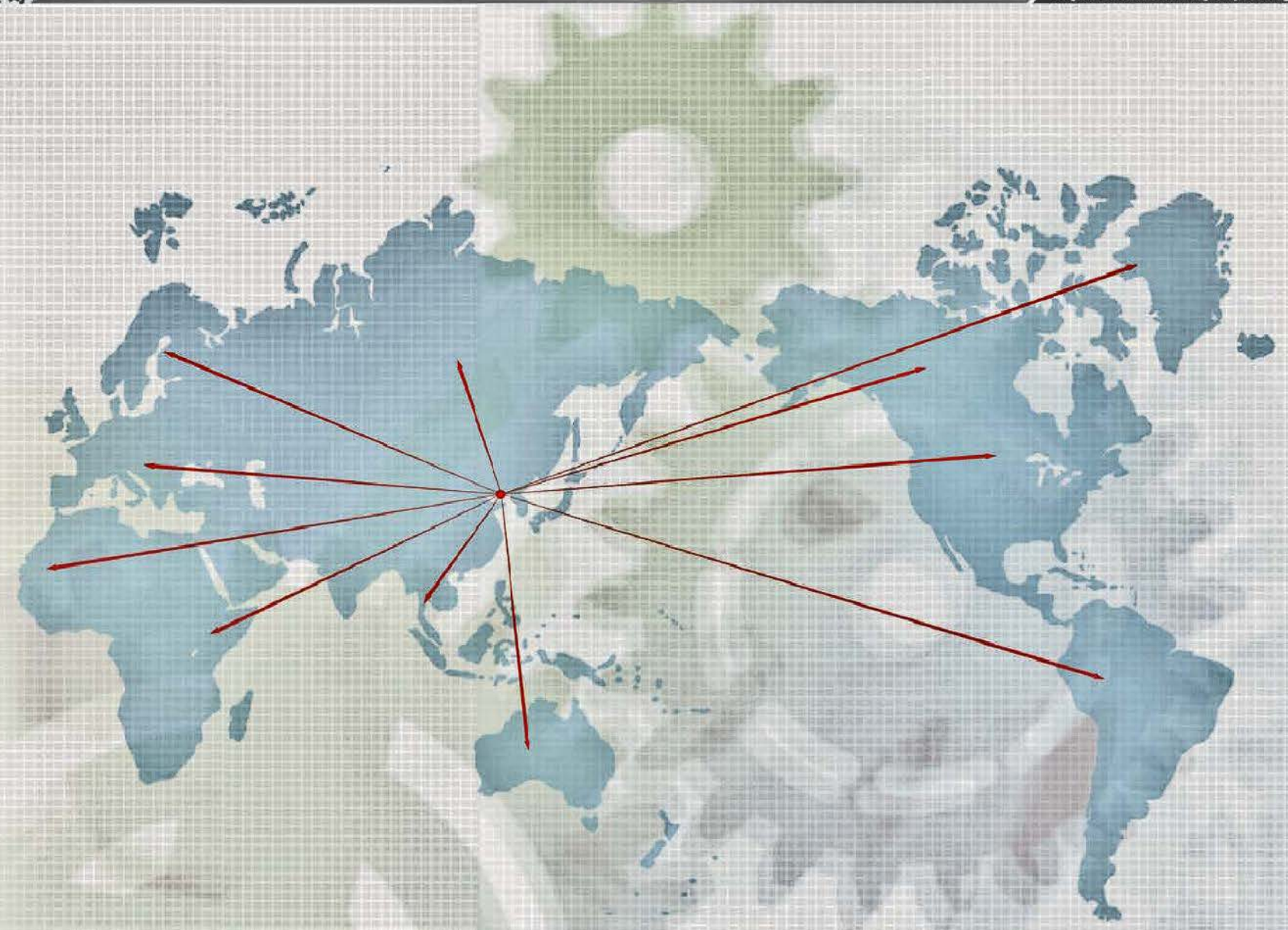


PRODUCT DISPLAY  
▶ 产品展示





SALES NETWORK  
销售网络



## PRODUCT APPLICATION RANGE

### ▶▶ 产品应用范围

石油、天然气、煤炭、化工、电力、机械、锅炉、造船、集装箱、制药、食品、航空航天、环保、军工、汽车、轻工业、造纸、建筑和装潢（市政工程、钢结构、房地产用、港口建设）等行业。

Petroleum industry, natural gas, coal, chemical industry, electricity generation, machinery, boiler, shipbuilding, container, pharmaceutical, food, aeronautics and aerospace, environmental protection, military industry, automobile, light industry, papermaking, building and decoration (municipal work, steel structure, real estate, port construction), etc.





工厂占地面积: 35,000m<sup>2</sup>

员工人数: 300人

主要产品: I、II、III类压力容器

弯头 (DN15-DN2000)	过滤器 (φ2000)
三通 (DN15-DN2000)	绝缘接头 (φ1400)
异径管 (DN15-DN2000)	收发球筒 (φ1600)
法兰 (DN15-DN2500)	汇气管 (φ1600)
封头、管帽 (DN15-DN3000)	弯管(DN15-DN1600)

年生产能力: 50,000T

主要生产设备及检测设备:

1、4000吨液压三通机一台	17、磁粉探伤机
2、2000吨液压机二台	18、喷砂机、大型抛丸机
3、1500吨液压机一台	19、3.5米立车、1.6米立车
4、1500T液压三通机	20、剪板机
5、500吨四柱液压机二台	21、3200*60 卷板机、2500*40卷板机
6、700吨液压机二台	22、弯头推制线五条
7、300吨液压机三台	(φ1620, φ1219, φ813, φ711, φ325)
8、100吨液压机多台	23、摇臂钻
9、热处理炉	24、普通车床、铣床、刨床等
5000X6000X3000	25、冲击试验机-JB-300W
3000X13900X3000	26、液压万能试验机---WAW-1000C
1000X1000X800	27、测厚仪--TT300
10、加热炉	28、电子布氏硬度仪-THBS-3000D
3500X5000X2500	29、光谱仪--SPECTRO TEST
2500X4000X2000	30、冲击试验低温仪-CDW-110T
11、32吨起重机	31、冲击试样缺口投影仪-CST-50
12、16吨吊车	32、拉伸试样标距仪-DX-30
13、自动焊机 15台	33、三目金相显微镜-MDS
14、自动切割机-16m	34、金相试样预磨机-M-2
15、超声波探伤机-V-22	35、金相试样抛光机-P-2T
16、X光探伤机	36、管件专用车床12台

型号: XXHZ-3305 XXHZ-2505

XXGHZ-3505D XXHZ-1605

Factory occupies area: 35,000m<sup>2</sup>

Employee quantity: 300

Main product: I,II, III pressure vessel

Elbow(DN15-DN2000)	Filter ( φ2000 )
Tee(DN15-DN2000)	Insulating joint ( φ 1400 )
Reducer(DN15-DN2000)	Transceiving ball tube(φ1600 )
Flange(DN15-DN2500)	Gas Distributor ( φ 1600 )
Cap(DN15-DN3000)	Bend ( DN15-DN1600 )

Annual output power: 50,000T

Main manufacturer equipment and detect equipment

1、4000T Hydraulic Press	17、Magnetic Particle Examination Instrument
2、2000T Hydraulic Press	18、Sand blast machine and shot blasting machine
3、1500T Hydraulic Press e	19、3.5meter lathe;1.6meter lathe;
4、1500T Hydraulic Press for tee	20、Shearing machine
5、500T Hydraulic Press	21、3200*60,2500*40 Roll plate machine
6、700T Hydraulic Press	22、Hot forming machines for elbows
7、200T Hydraulic Press	(φ1620, φ1219, φ813, φ711, φ325)
8、100T Hydraulic Press	23、Drilling machine
9、Heat Treatment Furnace	24、Common lathe、miller、planer
5000X6000X3000	25、Impulsion test machine-JB-300W
3000X13900X3000	26、Hydraulic omnipotence test machine--WAW-1000C
1000X1000X800	27、Thickness gauge-TT100
10、Furnace	28、Electronic sclerometer -THBS-3000D
3500X5000X2500	29、Spectrum instrument-TEST
2500X4000X2000	30、Low temperature impact tester-CDW-110T
11、32T Crane	31、Impact tester-CST-50
12、16T Hoist	32、Tensile specimen gauge instrument-DX-30
13、Automatic welding machines	33、Trinocular Microscope-MDS
14、Automatic cutting machines	34、Metallographic specimens grinder
15、Ultrasonic examination machine V22	35、Metallographic specimens polisher
16、X-Ray examination machine	36、Specialized lathes for fittings

Model: XXHZ-3005 XXHZ-2505

XXGHZ-3505D XXHZ-1605

SEAMLESS / WELDED PIPE WALL THICKNESS: ANSE B36.10、JIS、DIN

美标、日标、德标弯头外径与壁厚单位mm



营口江河机械管件有限公司

NOMINAL PIPE SIZE		OUTSIDE DIAMETER			NOMINAL WALL THICKNESS														NOMINAL PIPE SIZE				
A	B	ASME	JIS	DIN	JIS(1)	DIN(2)	SCH10	SCH20	SCH30	STD	SCH40	SCH60	XS	SCH80	SCH100	SCH120	SCH140	SCH160	XXS	A	B		
15	1/2"	21.3	21.7	21.3	2.8	2.0	2.11		2.41	2.77	2.77		3.73	3.73				4.78	7.47	15	1/2"		
20	3/4"	26.7	27.2	26.9	2.8	2.3	2.11		2.41	2.87	2.87		3.91	3.91				5.56	7.82	20	3/4"		
25	1"	33.4	34.0	33.7	3.2	2.6	2.77		2.90	3.38	3.38		4.55	4.55				6.35	9.09	25	1"		
32	1.1/4"	42.2	42.7	42.4	3.5	2.6	2.77		2.97	3.56	3.56		4.85	4.85				6.35	9.70	32	1-1/4"		
40	1.1/2"	48.3	48.6	48.3	3.5	2.6	2.77		3.18	3.68	3.68		5.08	5.08				7.14	10.15	40	1-1/2"		
50	2"	60.3	60.5	60.3	3.8	2.9	2.77		3.18	3.91	3.91		5.54	5.54				8.74	11.07	50	2"		
65	2.1/2"	73.0	76.3	76.1	4.2	2.9	3.05		4.78	5.16	5.16		7.01	7.01				9.53	14.02	65	2-1/2"		
80	3"	88.9	89.1	88.9	4.2	3.2	3.05		4.78	5.49	5.49		7.62	7.62				11.13	15.24	80	3"		
90	3.1/2"	101.6	101.6		4.2		3.05		4.78	5.74	5.74		8.08	8.08						90	3.1/2"		
100	4"	114.3	114.3	114.3	4.5	3.6	3.05		4.78	6.02	6.02		8.56	8.56		11.13		13.49	17.12	100	4"		
125	5"	141.3	139.8	139.7	4.5	4.0	3.40			6.55	6.55		9.53	9.53		12.70		15.88	19.05	125	5"		
150	6"	168.3	165.2	168.3	5.0	4.5	3.40			7.11	7.11		10.97	10.97	15.09	14.27		18.26	21.95	150	6"		
200	8"	219.1	216.3	219.1	5.8	6.3	3.76	6.35	7.04	8.18	8.18	10.31	12.70	12.70	18.26	18.26	20.62	23.01	22.23	200	8"		
250	10"	273.0	267.4	273.0	6.6	6.3	4.10	6.35	7.80	9.27	9.27	12.70	12.70	15.09	21.44	21.44	25.40	28.58	26.40	250	10"		
300	12"	323.8	318.5	323.9	6.9	7.1	4.57	6.35	8.38	9.53	9.53	10.31	14.27	12.70	17.48	23.83	25.40	28.58	33.32	25.40	300	12"	
350	14"	355.6	355.6	355.6	7.9	8.0	6.35	7.92	9.53	9.53	11.13	15.09	12.70	19.05	26.19	27.79	31.75	35.71			350	14"	
400	16"	406.4	406.4	406.4	7.9	8.8	6.35	7.92	9.53	9.53	12.70	16.66	12.70	21.44	29.36	30.96	36.53	40.49			400	16"	
450	18"	457.2	457.2	457.0	7.9	10.0	6.35	7.92	11.13	9.3	14.27	19.05	12.70	23.83	32.54	34.93	39.67	45.24			450	18"	
500	20"	508.0	508.0	508.0	7.9	11.0	6.35	9.53	12.70	9.53	15.09	20.62	12.70	26.19	34.93	38.10	44.45	50.01			500	20"	
550	22"	558.8	558.8				6.35	9.53	12.70	9.53		22.23	12.70	28.58	38.89	41.28	47.63	53.98			550	22"	
600	24"	609.6	609.6	610.0		12.5	6.35	9.53	14.27	9.53	17.48	24.61	12.70	30.96		46.02	52.37	59.54			600	24"	
650	26"	660.4	660.4				7.92	12.70		9.53			12.70									650	26"
700	28"	711.2	711.2	711.0		12.5	7.92	12.70	15.88	9.53			12.70									700	28"
750	30"	762.0	762.0				7.92	12.70	15.88	9.53			12.70									750	30"
800	32"	812.8	812.8	813.0		12.5	7.92	12.70	15.88	9.53	17.48		12.70									800	32"
850	34"	863.6	863.6				7.92	12.70	15.88	9.53	17.48		12.70									850	34"
900	36"	914.4	914.4	914.0		12.5	7.92	12.70	15.88	9.53	19.05		12.70									900	36"
950	38"	965.2	965.2							9.53			12.70									950	38"
1000	40"	1016.0	1016.0	1016.0		12.5				9.53			12.70									1000	40"
1050	42"	1066.8	1066.8							9.53			12.70									1050	42"
1100	44"	1117.6	1117.6							9.53			12.70									1100	44"
1150	46"	1168.4	1168.4							9.53			12.70									1150	46"
1200	48"	1219.2	1219.2	1220.0						9.53			12.70									1200	48"

NOTE: (1)THE WALL THICKNESS SPECIFIED IS GRADE TS GRADE FSGP OF JIS B2311  
 (2)THE WALL THICKNESS SPECIFIED IS FOR SERIES 3 OF DIN 2605(PART 1):02.91

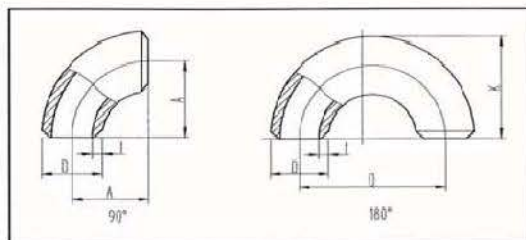
These fittings are also available in other sizes and wall thickness upon customers requirement.

Wall Thickness Schedule Of Seamless Steel Fittings  
 钢制无缝管件壁厚表

G312459

Nominal pipe size 公称尺寸	Outside Diameter 外径 D	Nominal Wall Thickness 公称厚度														
		Sch 5s	Sch 10s	Sch 20s	Sch 30	Sch 40	Sch 60	Sch 80	Sch 100	Sch 120	Sch 140	Sch 160				
DN 15	18	1.6	2.1	2.6		2.9		3.6								
20	25	1.6	2.1	2.6		2.9		3.6								
25	32	1.6	2.8	3.2		3.2		4.5								
32	38	1.6	2.8	3.2		3.6		4.5								
40	45	1.6	2.8	3.2		3.6		4.5								
50	57	1.6	2.8	3.6	3.2	4		5.6								
65	76	2	3	3.6	4.5	5		7.1								
80	89	2	3	4	4.5	5.6		8.8								
100	108	2	3	4	5	6.3		10								
125	133	2.9	3.4	5	5	6.3		10								
150	159	2.9	3.4	5	5.6	7.1		11								
200	219	2.9	4	6.3	6.3	7.1		12.5								
250	273	3.6	4	6.3	6.3	8		15								
300	325	4	4.5	6.3	6.3	8.8		17.5								
350	377	4	5		8	10		20								
400	425	4	5		8	10		22.2								
450	478	4	5		8	11		25								
500	529	5	5.6		10	12.5		28								

These fittings are also available in other sizes and wall thickness upon customers requirement.



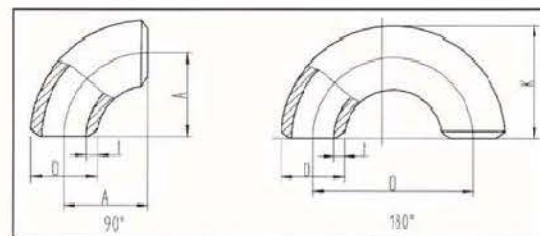
**Butt Welding Elbows**

**对焊弯头**

**Long Radius**

**长半径**

**ASME B16.9**



**Butt Welding Elbows**

**对焊弯头**

**Short Radius**

**短半径**

**ASME B16.9**

Nominal pipe size	Outside Diameter at Bevel: D	Center to End :A/B		Center to Center: O	Back to Face: K
		A	B	O	K
公称尺寸	坡口处外径	中心到端面		中心到中心	顶端到端面
NPS	MM	A MM	B MM	O MM	K MM
1/2	21.3	38.1	15.7	76.2	47.8
3/4	26.7	38.1	19.1	76.2	51
1	33.4	38.1	22.4	76.2	55.6
1 1/4	42	47.8	25.4	95.3	69.9
1 1/2	48.3	57.2	28.4	114.3	82.6
2	60.3	76.2	35.1	152.4	106.4
2 1/2	73	95.3	44.5	190.5	131.8
3	88.9	114.3	50.8	228.6	158.8
4	114	152.4	63.5	304.8	209.6
5	141.3	190.5	79.2	381.0	261.9
6	168.3	228.6	95.3	457.2	312.7
8	219.1	304.8	127.0	609.6	414.3
10	273	381.0	158.8	762	517.7
12	323.9	457.2	190.5	914.4	619.3
14	355.6	533.4	222.3	1066.8	711.2
16	406.4	609.6	254.0	1219.2	812.8
18	457.2	685.8	285.75	1371.6	914.4
20	508	762.0	317.50	1524.0	1016
22	558.8	838.20	342.90	1676.4	1117.6
24	609.6	914.40	381.00	1828.8	1219.2

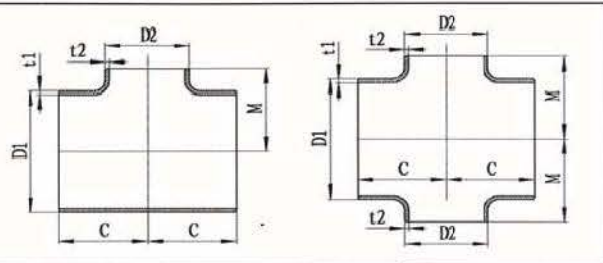
Nominal pipe size	Outside Diameter at Bevel: D	Center to End :A/B		Center to Center: O	Back to Face: K
		A	B	O	K
公称尺寸	坡口处外径	中心到端面		中心到中心	顶端到端面
NPS	MM	A MM	B MM	O MM	K MM
26	660.4	990.6	406.4	1320.8	1320.8
28	711.2	1066.8	438.2	1422.4	1422.4
30	762	1143.0	469.9	1524	1524
32	812.8	1219.2	501.7	1625.6	1625.6
34	863.60	1295.4	533.4	1727.2	1727.2
36	914.40	1371.6	565.1	1828.8	1828.8
38	965.20	1447.8	599.9	1930.4	1930.4
40	1016.00	1524.0	632.0	2032	2032
42	1066.80	1600.2	660.4	2133.6	2133.6
44	1117.60	1676.4	695.5	2235.2	2235.2
46	1168.40	1752.6	726.9	2336.8	2336.8
48	1219.20	1828.8	759.0	2438.4	2438.4
50	1270.00	1905.0	787.4	2540	2540
52	1320.80	1981.2	819.1	2641.6	2641.6
54	1371.60	2057.4	850.9	2743.2	2743.2
56	1422.40	2133.6	882.6	2844.8	2844.8
58	1473.20	2209.8	914.4	2946.4	2946.4
60	1524.00	2286.0	946.1	3048	3048

Nominal pipe size	Outside Diameter at Bevel: D	Center to End :A	Center to Center: O	Back to Face: K
		A	O	K
公称尺寸	坡口处外径	中心到端面	中心到中心	顶端到端面
NPS	MM	A MM	O MM	K MM
1	33.4	25	51	41
1 1/4	42.2	32	64	52
1 1/2	48.3	38	76	62
2	60.3	51	102	81
2 1/2	73.0	64	127	100
3	88.9	76	152	121
3 1/2	101.6	89	178	140
4	114.3	102	203	159
5	141.3	127	254	197
6	168.3	152	305	237
8	219.1	203	508	390.7
10	273	254	508	390.7
12	323.9	304.8	609.6	466.9
14	355.6	355.6	711.2	533.4
16	406.4	406.4	812.8	609.6
18	457.2	457.2	914.4	685.8
20	508	508	1016	762
22	558.8	558.8	1117.6	838.2
24	609.6	609.6	1219.2	914.4

Nominal pipe size	Outside Diameter at Bevel: D	Center to End :A	Center to Center: O	Back to Face: K
		A	O	K
公称尺寸	坡口处外径	中心到端面	中心到中心	顶端到端面
NPS	MM	A MM	O MM	K MM
26	660.4	660.4	1320.8	990.6
28	711.2	711.2	1422.4	1066.8
30	762.0	762	1524	1143
32	812.8	812.8	1625.6	1219.2
34	863.6	863.6	1727.2	1295.4
36	914.4	914.4	1828.8	1371.6
38	965.2	965.2	1930.4	1447.8
40	1016.0	1016	2032	1524
42	1066.8	1066.8	2133.6	1600.2
44	1117.6	1117.6	2235.2	1676.4
46	1168.4	1168.4	2336.8	1752.6
48	1219.2	1219.2	2438.4	1828.8
50	1270.0	1270	2540	1905
52	1320.8	1320.8	2641.6	1981.2
54	1371.6	1371.6	2743.2	2057.4
56	1422.4	1422.4	2844.8	2133.6
58	1473.2	1473.2	2946.4	2209.8
60	1524.0	1524	3048	2286

These fittings are also available in other sizes and wall thickness upon customers requirement.

These fittings are also available in other sizes and wall thickness upon customers requirement.



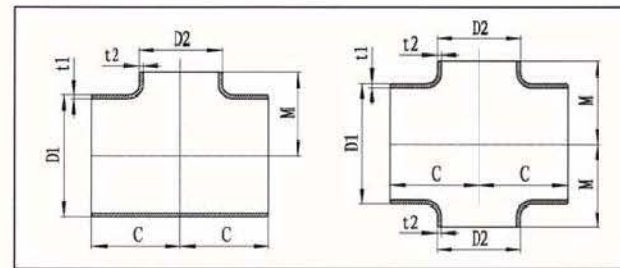
**Butt Welding**

**对焊**

**Tees/Cross**

**三通/四通**

**ASME B16.9**



**Butt Welding**

**对焊**

**Tees/Cross**

**三通/四通**

**ASME B16.9**

Nominal pipe size			Outside Diameter at Bevel: D1 D2 INCH		Center to End : C/M	
公称尺寸			坡口处外径 INCH		中心到端面	
NPS inch	DI RUN	D2 OUTLET	C	M		
1 1/2	* 1.5	48.3	48.3	57.2	57.2	
2	* 60.3	60.3	26.7	63.5	44.5	
2	* 1	60.3	33.4	63.5	50.8	
2	* 1.25	60.3	42.2	63.5	57.2	
2	* 1.5	60.3	48.3	63.5	60.5	
2	* 2	60.3	60.3	63.5	63.5	
2 1/2	* 1	73	33.4	76.2	57.2	
2 1/2	* 1.25	73	42.2	76.2	63.5	
2 1/2	* 1.5	73	48.3	76.2	66.5	
2 1/2	* 2	73	60.3	76.2	69.9	
2 1/2	* 2.5	73	73	76.2	76.2	
3	* 1.25	88.9	42.2	85.9	69.9	
3	* 1.5	88.9	48.3	85.9	73.2	
3	* 2	88.9	60.3	85.9	76.2	
3	* 2.5	88.9	73	85.9	82.6	
3	* 3	88.9	88.9	85.9	85.9	
4	* 1.5	114.3	48.3	104.6	85.9	
4	* 2	114.3	60.3	104.6	88.9	
4	* 2.5	114.3	73	104.6	95.3	
4	* 3	114.3	88.9	104.6	98.6	
4	* 4	114.3	114.3	104.6	104.6	
5	* 2	141.3	60.3	124	104.6	
5	* 2.5	141.3	73	124	108	
5	* 3	141.3	88.9	124	111.3	
5	* 4	141.3	114.3	124	117.3	
5	* 5	141.3	141.3	124	124	
6	* 2.5	168.3	73	142.7	120.7	

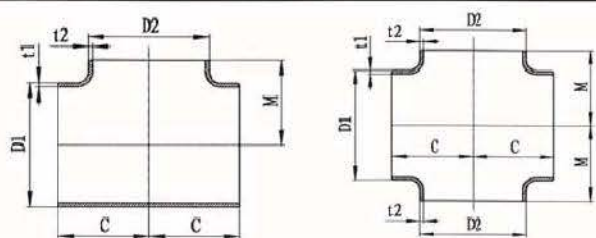
Nominal pipe size			Outside Diameter at Bevel: D1 D2 INCH		Center to End : C/M	
公称尺寸			坡口处外径 INCH		中心到端面	
NPS inch	DI RUN	D2 OUTLET	C	M		
6	* 3	168.3	88.9	142.7	124	
6	* 4	168.3	114.3	142.7	130	
6	* 5	168.3	141.3	142.7	136.7	
6	* 6	168.3	168	142.7	142.7	
8	* 3	219.1	88.9	177.8	155.4	
8	* 4	219.1	114.3	177.8	162.1	
8	* 5	219.1	141.3	177.8	168.1	
8	* 6	219.1	168	177.8	177.8	
8	* 8	219.1	218	177.8	184.2	
10	* 4	273	114.3	215.9	184.2	
10	* 5	273	141.3	215.9	190.5	
10	* 6	273	168	215.9	193.5	
10	* 8	273	219	215.9	203.2	
10	* 10	273	273	215.9	215.9	
12	* 5	323.9	141.3	254	215.9	
12	* 6	323.9	168.3	254	218.9	
12	* 8	323.9	219.1	254	228.6	
12	* 10	323.9	273	254	241.3	
12	* 12	323.9	323.9	254	254	
14	* 6	355.6	168.3	279.4	238.3	
14	* 8	355.6	219.1	279.4	247.7	
14	* 10	355.6	273	279.4	257	
14	* 12	355.6	323.9	279.4	269.7	
14	* 14	355.6	355.6	279.4	279.4	
16	* 6	406.4	168.1	304.8	263.7	
16	* 8	406.4	218.9	304.8	273.1	
16	* 10	406.4	273.1	304.8	282.4	

Nominal pipe size			Outside Diameter at Bevel: D1 D2 INCH		Center to End : C/M	
公称尺寸			坡口处外径 INCH		中心到端面	
NPS inch	DI RUN	D2 OUTLET	C	M		
16	* 12	406.4	323.8	304.8	295.1	
16	* 14	406.4	355.6	304.8	304.8	
16	* 16	406.4	406.4	304.8	304.8	
18	* 8	457.2	218.9	342.9	298.4	
18	* 10	457.2	273.1	342.9	307.8	
18	* 12	457.2	323.8	342.9	320.5	
18	* 14	457.2	355.6	342.9	330.2	
18	* 16	457.2	406.4	342.9	330.2	
18	* 18	457.2	457.2	342.9	342.9	
20	* 8	508.0	218.9	381.0	323.8	
20	* 10	508.0	273.1	381.0	333.2	
20	* 12	508.0	323.8	381.0	345.9	
20	* 14	508.0	355.6	381.0	355.6	
20	* 16	508.0	406.4	381.0	355.6	
20	* 18	508.0	457.2	381.0	368.3	
20	* 20	508.0	508.0	381.0	381.0	
22	* 12	558.8	323.8	419.1	371.3	
22	* 14	558.8	355.6	419.1	381.0	
22	* 16	558.8	406.4	419.1	381.0	
22	* 18	558.8	457.2	419.1	393.7	
22	* 20	558.8	508.0	419.1	406.4	
22	* 22	558.8	558.8	419.1	419.1	
24	* 14	609.6	355.6	431.8	406.4	
24	* 16	609.6	406.4	431.8	406.4	
24	* 18	609.6	457.2	431.8	419.1	
24	* 20	609.6	508.0	431.8	431.8	
24	* 22	609.6	558.8	431.8	431.8	

Nominal pipe size			Outside Diameter at Bevel: D1 D2 INCH		Center to End : C/M	
公称尺寸			坡口处外径 INCH		中心到端面	
NPS inch	DI RUN	D2 OUTLET	C	M		
24	* 24	609.6	609.6	431.8	431.8	
26	* 12	660.4	323.85	495.3	422.148	
26	* 14	660.4	355.6	495.3	431.8	
26	* 16	660.4	406.4	495.3	431.8	
26	* 18	660.4	457.2	495.3	444.5	
26	* 20	660.4	508	495.3	457.2	
26	* 22	660.4	558.8	495.3	469.9	
26	* 24	660.4	609.6	495.3	482.6	
26	* 26	660.4	660.4	495.3	482.6	
28	* 12	711.2	323.85	520.7	447.548	
28	* 14	711.2	355.6	520.7	457.2	
28	* 16	711.2	406.4	520.7	457.2	
28	* 18	711.2	457.2	520.7	469.9	
28	* 20	711.2	508	520.7	482.6	
28	* 22	711.2	558.8	520.7	495.3	
28	* 24	711.2	609.6	520.7	508	
28	* 26	711.2	660.4	520.7	520.7	
28	* 28	711.2	711.2	520.7	520.7	
30	* 10	762	273.05	558.8	460.248	
30	* 12	762	323.85	558.8	472.948	
30	* 14	762	355.6	558.8	482.6	
30	* 16	762	406.4	558.8	482.6	
30	* 18	762	457.2	558.8	495.3	
30	* 20	762	508	558.8	508	
30	* 22	762	558.8	558.8	520.7	
30	* 24	762	609.6	558.8	508	
30	* 26	762	660.4	558.8	546.1	

These fittings are also available in other sizes and wall thickness upon customers requirement.

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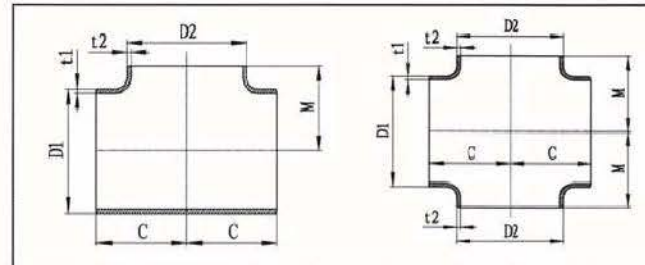
**Butt Welding**

**对焊**

**Tees/Cross**

**三通/四通**

**ASME B16.9**



**Butt Welding**

**对焊**

**Tees/Cross**

**三通/四通**

**ASME B16.9**

Nominal pipe size			Outside Diameter at Bevel: D1 D2 INCH		Center to End : C/M	
公称尺寸			坡口处外径 INCH		中心到端面	
NPS inch	DI RUN	D2 OUTLET	C	M		
30	* 28	762	711.2	558.8	546.1	
30	* 30	762	762	558.8	558.8	
32	* 14	812.8	355.6	596.9	508	
32	* 16	812.8	406.4	596.9	508	
32	* 18	812.8	457.2	596.9	520.7	
32	* 20	812.8	508	596.9	533.4	
32	* 22	812.8	558.8	596.9	546.1	
32	* 24	812.8	609.6	596.9	558.8	
32	* 26	812.8	660.4	596.9	571.5	
32	* 28	812.8	711.2	596.9	571.5	
32	* 30	812.8	762	596.9	584.2	
32	* 32	812.8	812.8	596.9	596.9	
34	* 16	863.6	406.4	635	533.4	
34	* 18	863.6	457.2	635	546.1	
34	* 20	863.6	508	635	558.8	
34	* 22	863.6	558.8	635.0	571.5	
34	* 24	863.6	609.6	635.0	584.2	
34	* 26	863.6	660.4	635.0	596.9	
34	* 28	863.6	711.2	635.0	596.9	
34	* 30	863.6	762.0	635.0	609.6	
34	* 32	863.6	812.8	635.0	622.3	
34	* 34	863.6	863.6	635.0	635.0	
36	* 16	914.4	406.4	673.1	558.8	
36	* 18	914.4	457.2	673.1	571.5	
36	* 20	914.4	508.0	673.1	584.2	
36	* 22	914.4	558.8	673.1	596.9	
36	* 24	914.4	609.6	673.1	609.6	
36	* 26	914.4	660.4	673.1	622.3	
36	* 28	914.4	711.2	673.1	635.0	
36	* 30	914.4	762.0	673.1	647.7	
36	* 32	914.4	812.8	673.1	660.4	
36	* 34	914.4	863.6	673.1	673.1	
36	* 36	914.4	914.4	673.1	673.1	
38	* 18	965.2	457.2	711.2	596.9	
38	* 20	965.2	508.0	711.2	609.6	
38	* 22	965.2	558.8	711.2	622.3	
38	* 24	965.2	609.6	711.2	635.0	
38	* 26	965.2	660.4	711.2	647.7	
38	* 28	965.2	711.2	711.2	647.7	
38	* 30	965.2	762.0	711.2	673.1	
38	* 32	965.2	812.8	711.2	685.8	
38	* 34	965.2	863.6	711.2	698.5	
38	* 36	965.2	914.4	711.2	711.2	
38	* 38	965.2	965.2	711.2	711.2	
40	* 18	1016.0	457.2	749.3	622.3	
40	* 20	1016.0	508.0	749.3	635.0	
40	* 22	1016.0	558.8	749.3	647.7	
40	* 24	1016.0	609.6	749.3	660.4	
40	* 26	1016.0	660.4	749.3	673.1	
40	* 28	1016.0	711.2	749.3	673.1	
40	* 30	1016.0	762.0	749.3	698.5	
40	* 32	1016.0	812.8	749.3	711.2	
40	* 34	1016.0	863.6	749.3	723.9	
40	* 36	1016.0	914.4	749.3	736.6	
40	* 38	1016.0	965.2	749.3	749.3	
40	* 40	1016.0	1016.0	749.3	749.3	

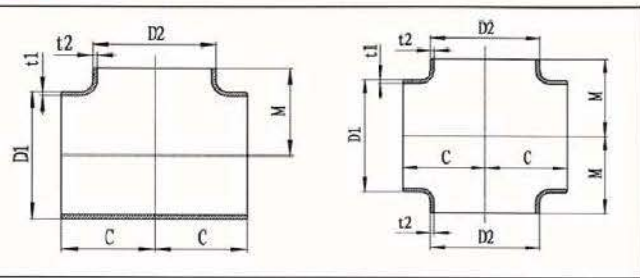
Nominal pipe size			Outside Diameter at Bevel: D1 D2 INCH		Center to End : C/M	
公称尺寸			坡口处外径 INCH		中心到端面	
NPS inch	DI RUN	D2 OUTLET	C	M		
36	* 26	914.4	660.4	673.1	622.3	
36	* 28	914.4	711.2	673.1	622.3	
36	* 30	914.4	762.0	673.1	635.0	
36	* 32	914.4	812.8	673.1	647.7	
36	* 34	914.4	863.6	673.1	660.4	
36	* 36	914.4	914.4	673.1	673.1	
38	* 18	965.2	457.2	711.2	596.9	
38	* 20	965.2	508.0	711.2	609.6	
38	* 22	965.2	558.8	711.2	622.3	
38	* 24	965.2	609.6	711.2	635.0	
38	* 26	965.2	660.4	711.2	647.7	
38	* 28	965.2	711.2	711.2	647.7	
38	* 30	965.2	762.0	711.2	673.1	
38	* 32	965.2	812.8	711.2	685.8	
38	* 34	965.2	863.6	711.2	698.5	
38	* 36	965.2	914.4	711.2	711.2	
38	* 38	965.2	965.2	711.2	711.2	
40	* 18	1016.0	457.2	749.3	622.3	
40	* 20	1016.0	508.0	749.3	635.0	
40	* 22	1016.0	558.8	749.3	647.7	
40	* 24	1016.0	609.6	749.3	660.4	
40	* 26	1016.0	660.4	749.3	673.1	
40	* 28	1016.0	711.2	749.3	673.1	
40	* 30	1016.0	762.0	749.3	698.5	
40	* 32	1016.0	812.8	749.3	711.2	
40	* 34	1016.0	863.6	749.3	723.9	
40	* 36	1016.0	914.4	749.3	736.6	
40	* 38	1016.0	965.2	749.3	749.3	
40	* 40	1016.0	1016.0	749.3	749.3	

Nominal pipe size			Outside Diameter at Bevel: D1 D2 INCH		Center to End : C/M	
公称尺寸			坡口处外径 INCH		中心到端面	
NPS inch	DI RUN	D2 OUTLET	C	M		
40	* 38	1016.0	965.2	749.3	749.3	
40	* 40	1016.0	1016.0	749.3	749.3	
42	* 16	1066.8	406.4	762	635	
42	* 18	1066.8	457.2	762	647.7	
42	* 20	1066.8	508	762	660.4	
42	* 22	1066.8	558.8	762	660.4	
42	* 24	1066.8	609.6	762	660.4	
42	* 26	1066.8	660.4	762	698.5	
42	* 28	1066.8	711.2	762	698.5	
42	* 30	1066.8	762	762	711.2	
42	* 32	1066.8	812.8	762	711.2	
42	* 34	1066.8	863.6	762	711.2	
42	* 36	1066.8	914.4	762	711.2	
42	* 38	1066.8	965.2	762	711.2	
42	* 40	1066.8	1016	762	711.2	
42	* 42	1066.8	1066.8	762	711.2	
44	* 20	1117.6	508	812.8	685.8	
44	* 22	1117.6	558.8	812.8	685.8	
44	* 24	1117.6	609.6	812.8	698.5	
44	* 26	1117.6	660.4	812.8	698.5	
44	* 28	1117.6	711.2	812.8	698.5	
44	* 30	1117.6	762	812.8	711.2	
44	* 32	1117.6	812.8	812.8	711.2	
44	* 34	1117.6	863.6	812.8	723.9	
44	* 36	1117.6	914.4	812.8	723.9	
44	* 38	1117.6	965.2	812.8	736.6	
44	* 40	1117.6	1016	812.8	749.3	

Nominal pipe size			Outside Diameter at Bevel: D1 D2 INCH		Center to End : C/M	
公称尺寸			坡口处外径 INCH		中心到端面	
NPS inch	DI RUN	D2 OUTLET	C	M		
44	* 42	1117.6	1066.8	812.8	762	
44	* 44	1117.6	1117.6	812.8	762	
46	* 22	1168.4	558.8	850.9	723.9	
46	* 24	1168.4	609.6	850.9	723.9	
46	* 26	1168.4	660.4	850.9	736.6	
46	* 28	1168.4	711.2	850.9	736.6	
46	* 30	1168.4	762	850.9	736.6	
46	* 32	1168.4	812.8	850.9	749.3	
46	* 34	1168.4	863.6	850.9	749.3	
46	* 36	1168.4	914.4	850.9	762	
46	* 38	1168.4	965.2	850.9	762	
46	* 40	1168.4	1016	850.9	774.7	
46	* 42	1168.4	1066.8	850.9	787.4	
46	* 44	1168.4	1117.6	850.9	800.1	
46	* 46	1168.4	1168.4	850.9	800.1	
48	* 16	1219.2	406.4	889.0	711.2	
48	* 18	1219.2	457.2	889.0	723.9	
48	* 20	1219.2	508.0	889.0	736.6	
48	* 22	1219.2	558.8	889.0	736.6	
48	* 24	1219.2	609.6	889.0	736.6	
48	* 26	1219.2	660.4	889.0	762.0	
48	* 28	1219.2	711.2	889.0	762.0	
48	* 30	1219.2	762.0	889.0	762.0	
48	* 32	1219.2	812.8	889.0	787.4	
48	* 34	1219.2	863.6	889.0	787.4	
48	* 36	1219.2	914.4	889.0	787.4	
48	* 38	1219.2	965.2	889.0	812.8	

These fittings are also available in other sizes and wall thickness upon customers requirement.

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**Butt Welding**

**对焊**

**Tees/Cross**

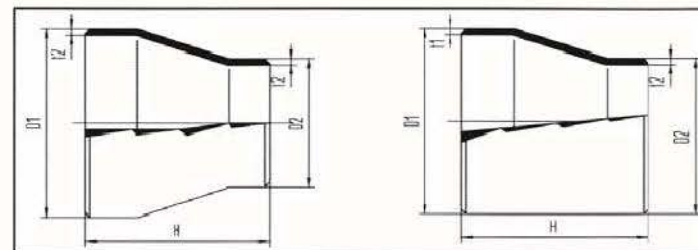
**三通/四通**

**ASME B16.9**

Nominal pipe size			Outside Diameter at Bevel: D1 D2 INCH		Center to End: C/M	
公称尺寸			坡口处外径 INCH		中心到端面	
NPS inch	DI RUN	D2 OUTLET	C	M		
48	*	40	1219.2	1016.0	889.0	812.8
48	*	42	1219.2	1066.8	889.0	812.8
48	*	44	1219.2	1117.6	889.0	838.2
48	*	46	1219.2	1168.4	889.0	838.2
48	*	48	1219.2	1219.2	889.0	838.2
50	*	20	1270.0	508.0	933.4	762.0
50	*	24	1270.0	609.6	933.4	762.0
50	*	30	1270.0	762.0	933.4	800.1
50	*	36	1270.0	914.4	933.4	825.5
50	*	42	1270.0	1066.8	933.4	838.2
50	*	48	1270.0	1219.2	933.4	876.3
50	*	50	1270.0	1270.0	933.4	876.3
52	*	24	1320.8	609.6	977.9	793.8
52	*	30	1320.8	762.0	977.9	831.8
52	*	36	1320.8	914.4	977.9	863.6
52	*	42	1320.8	1066.8	977.9	876.3
52	*	48	1320.8	1219.2	977.9	908.0
52	*	50	1320.8	1270.0	977.9	908.0
52	*	52	1320.8	1320.8	977.9	889.0
54	*	24	1371.6	609.6	1016.0	797.1
54	*	30	1371.6	762.0	1016.0	863.6
54	*	36	1371.6	914.4	1016.0	889.0
54	*	42	1371.6	1066.8	1016.0	905.0
54	*	48	1371.6	1219.2	1016.0	946.1
54	*	52	1371.6	1320.8	1016.0	946.1
54	*	54	1371.6	1371.6	1016.0	939.8
56	*	24	1422.4	609.6	1054.1	857.3

Nominal pipe size			Outside Diameter at Bevel: D1 D2 INCH		Center to End: C/M	
公称尺寸			坡口处外径 INCH		中心到端面	
NPS inch	DI RUN	D2 OUTLET	C	M		
56	*	30	1422.4	762.0	1054.1	857.3
56	*	36	1422.4	914.4	1054.1	901.7
56	*	42	1422.4	1066.8	1054.1	927.1
56	*	48	1422.4	1219.2	1054.1	939.8
56	*	54	1422.4	1371.6	1054.1	977.9
56	*	56	1422.4	1422.4	1054.1	1054.1
60	*	30	1524.0	762.0	1117.6	914.4
60	*	36	1524.0	914.4	1117.6	965.2
60	*	42	1524.0	1066.8	1117.6	990.6
60	*	48	1524.0	1219.2	1117.6	1016.0
60	*	54	1524.0	1371.6	1117.6	1028.7
60	*	58	1524.0	1473.2	1117.6	1054.1
60	*	60	1524.0	1524.0	1117.6	1041.4

These fittings are also available in other sizes and wall thickness upon customers requirement.



**Butt Welding Reducers**

**对焊 异径管**

**CON/ECC**

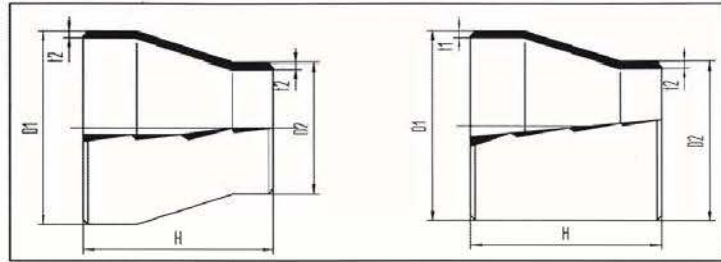
**同心/偏心**

**ASME B16.9**

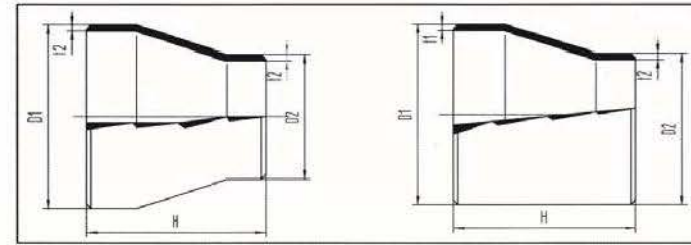
Nominal pipe size			Outside Diameter at Bevel: D1 D2		End to End; H
公称尺寸			坡口处外径		全长
NPS Inch	D1 mm	D2 mm	H mm		
1 1/2	*	1 1/2	48.3	48.3	63.5
2	*	3/4	60.3	26.7	76.2
2	*	1	60.3	33.4	76.2
2	*	1 1/4	60.3	42.2	76.2
2	*	1 1/2	60.3	48.3	76.2
2 1/2	*	1	73	33.4	88.9
2 1/2	*	1 1/4	73	42.2	88.9
2 1/2	*	1 1/2	73	48.3	88.9
2 1/2	*	2	73	60.3	88.9
3	*	1 1/4	88.9	42.2	88.9
3	*	1 1/2	88.9	48.3	88.9
3	*	2	88.9	60.3	88.9
3	*	2 1/2	88.9	73	88.9
4	*	1 1/2	114.3	48.3	101.6
4	*	2	114.3	60.3	101.6
4	*	2 1/2	114.3	73	101.6
4	*	3	114.3	88.9	101.6
5	*	2	141.3	60.3	127
5	*	2 1/2	141.3	73	127
5	*	3	141.3	88.9	127
5	*	4	141.3	114.3	127
6	*	2 1/2	168	73	139.7
6	*	3	168	88.9	139.7
6	*	4	168	114.3	139.7
6	*	5	168	141.3	139.7
8	*	3	219	88.9	152.4

These fittings are also available in other sizes and wall thickness upon customers requirement.

Nominal pipe size			Outside Diameter at Bevel: D1 D2		End to End; H
公称尺寸			坡口处外径		全长
NPS Inch	D1 mm	D2 mm	H mm		
8	*	4	219	114.3	152.4
8	*	5	219	141.3	152.4
8	*	6	219	168	152.4
10	*	4	273	114.3	177.8
10	*	5	273	141.3	177.8
10	*	6	273	168	177.8
10	*	8	273	219	177.8
12	*	5	323.9	141.3	203.2
12	*	6	323.9	168	203.2
12	*	8	323.9	219	203.2
12	*	10	323.9	273	203.2
14	*	6	355.6	168	330.2
14	*	8	355.6	219	330.2
14	*	10	355.6	273	330.2
14	*	12	355.6	323.9	330.2
16	*	8	406.4	219	355.6
16	*	10	406.4	273	355.6
16	*	12	406.4	323.9	355.6
16	*	14	406.4	355.6	355.6
18	*	10	457.2	254	381
18	*	12	457.2	304.8	381
18	*	14	457.2	355.6	381
18	*	16	457.2	406.4	381
20	*	12	508	304.8	508
20	*	14	508	355.6	508
20	*	16	508	406.4	508



**Butt Welding Reducers**  
**对焊 异径管**  
**CON/ECC**  
**同心/偏心**  
**ASME B16.9**



**Butt Welding Reducers**  
**对焊 异径管**  
**CON/ECC**  
**同心/偏心**  
**ASME B16.9**

Nominal pipe size			Outside Diameter at Bevel: D1 D2		End to End; H
公称尺寸			坡口处外径		全长
NPS Inch			D1 mm	D2 mm	H mm
20	*	18	508	457.2	508
22	*	14	558.8	355.6	508
22	*	16	558.8	406.4	508
22	*	18	558.8	457.2	508
22	*	20	558.8	508	508
24	*	16	609.6	406.4	508
24	*	18	609.6	457.2	508
24	*	20	609.6	508	508
24	*	22	609.6	558.8	508
26	*	18	660.4	457.2	609.6
26	*	20	660.4	508	609.6
26	*	22	660.4	558.8	609.6
26	*	24	660.4	609.6	609.6
28	*	20	711.2	508	609.6
28	*	22	711.2	558.8	609.6
28	*	24	711.2	609.6	609.6
28	*	26	711.2	660.4	609.6
30	*	20	762	508	609.6
30	*	22	762	558.8	609.6
30	*	24	762	609.6	609.6
30	*	26	762	660.4	609.6
30	*	28	762	711.2	609.6
32	*	20	812.8	508	609.6
32	*	22	812.8	558.8	609.6
32	*	24	812.8	609.6	609.6
32	*	26	812.8	660.4	609.6

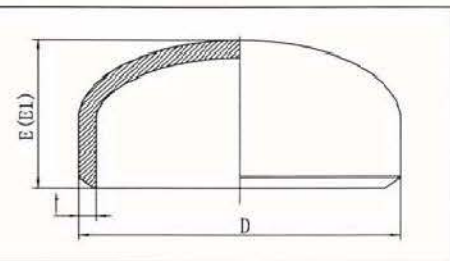
Nominal pipe size			Outside Diameter at Bevel: D1 D2		End to End; H
公称尺寸			坡口处外径		全长
NPS Inch			D1 mm	D2 mm	H mm
32	*	28	812.8	711.2	609.6
32	*	30	812.8	762	609.6
32	*	32	812.8	812.8	609.6
34	*	22	863.6	558.8	609.6
34	*	24	863.6	609.6	609.6
34	*	26	863.6	660.4	609.6
34	*	28	863.6	711.2	609.6
34	*	30	863.6	762	609.6
34	*	32	863.6	812.8	609.6
36	*	24	914.4	609.6	609.6
36	*	26	914.4	660.4	609.6
36	*	28	914.4	711.2	609.6
36	*	30	914.4	762	609.6
36	*	32	914.4	812.8	609.6
36	*	34	914.4	863.6	609.6
38	*	26	965.2	660.4	609.6
38	*	28	965.2	711.2	609.6
38	*	30	965.2	762	609.6
38	*	32	965.2	812.8	609.6
38	*	34	965.2	863.6	609.6
38	*	36	965.2	914.4	609.6
40	*	28	1016	711.2	609.6
40	*	30	1016	762	609.6
40	*	32	1016	812.8	609.6
40	*	34	1016	863.6	609.6
40	*	36	1016	914.4	609.6

Nominal pipe size			Outside Diameter at Bevel: D1 D2		End to End; H
公称尺寸			坡口处外径		全长
NPS Inch			D1 mm	D2 mm	H mm
40	*	38	1016	965.2	609.6
42	*	30	1066.8	762	609.6
42	*	32	1066.8	812.8	609.6
42	*	34	1066.8	863.6	609.6
42	*	36	1066.8	914.4	609.6
42	*	38	1066.8	965.2	609.6
42	*	40	1066.8	1016	609.6
44	*	32	1117.6	812.8	609.6
44	*	34	1117.6	863.6	609.6
44	*	36	1117.6	914.4	609.6
44	*	38	1117.6	965.2	609.6
44	*	40	1117.6	1016	609.6
44	*	42	1117.6	1066.8	609.6
46	*	34	1168.4	863.6	609.6
46	*	36	1168.4	914.4	609.6
46	*	38	1168.4	965.2	609.6
46	*	40	1168.4	1016	609.6
46	*	42	1168.4	1066.8	609.6
46	*	44	1168.4	1117.6	609.6
48	*	36	1219.2	914.4	711.2
48	*	38	1219.2	965.2	711.2
48	*	40	1219.2	1016	711.2
48	*	42	1219.2	1066.8	711.2
48	*	44	1219.2	1117.6	711.2
48	*	46	1219.2	1168.4	711.2
50	*	40	1270	1016	711.2

Nominal pipe size			Outside Diameter at Bevel: D1 D2		End to End; H
公称尺寸			坡口处外径		全长
NPS Inch			D1 mm	D2 mm	H mm
50	*	42	1270	1066.8	711.2
50	*	44	1270	1117.6	711.2
50	*	46	1270	1168.4	711.2
50	*	48	1270	1219.2	711.2
52	*	44	1320.8	1117.6	711.2
52	*	46	1320.8	1168.4	711.2
52	*	48	1320.8	1219.2	711.2
52	*	50	1320.8	1270	711.2
54	*	46	1371.6	1168.4	711.2
54	*	48	1371.6	1219.2	711.2
54	*	50	1371.6	1270	711.2
54	*	52	1371.6	1320.8	711.2
56	*	48	1422.4	1219.2	711.2
56	*	50	1422.4	1270	711.2
56	*	52	1422.4	1320.8	711.2
56	*	54	1422.4	1371.6	711.2
58	*	50	1473.2	1270	711.2
58	*	52	1473.2	1320.8	711.2
58	*	54	1473.2	1371.6	711.2
58	*	56	1473.2	1422.4	711.2
60	*	52	1524	1320.8	711.2
60	*	54	1524	1371.6	711.2
60	*	56	1524	1422.4	711.2

These fittings are also available in other sizes and wall thickness upon customers requirement.

These fittings are also available in other sizes and wall thickness upon customers requirement.



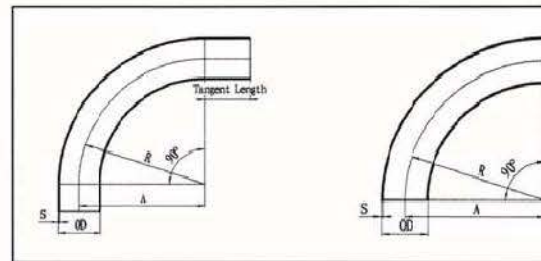
**Butt Welding**

**对焊**

**Caps**

**管帽**

**ASME B16.9**



**Butt Welding**

**对焊**

**Bend**

**弯管**

**ASME B16.49**

Nominal Pipe Size 公称尺寸	Dimensions 尺寸		
	Outside Diameter at Bevel: D 坡口处外径: D		Length: E/E1 全高: E/E1
	inch	mm	
	inch	mm	mm
1	1.315	33.4	38.1
1 1/4	1.660	42.2	38.1
1 1/2	1.900	48.3	38.1
2	2.375	60.3	38.1/44
2 1/2	2.875	73.0	38.1/51
3	3.500	88.9	50.8/64
4	4.500	114.3	63.5/76
5	5.563	141.3	76.2/89
6	6.625	168.3	88.9/102
8	8.625	219.1	101.6/127
10	10.750	273.0	127.0/152
12	12.750	323.9	152.4/178
14	14.000	355.6	165.1/191
16	16.000	406.4	178.0/203
18	18.000	457.0	203.2/229
20	20.000	508.0	229.0/254
22	22.000	559.0	254.0/254
24	24.000	610.0	266.7/305
26	26.000	660.0	266.7/305
28	28.000	711.0	266.7/305
30	30.000	762.0	266.7/305
32	32.000	813.0	266.7/305
34	34.000	864.0	266.7/305
36	36.000	914.0	266.7/305
38	38.000	965.0	305/343
40	40.000	1016.0	305/343
42	42.000	1067.0	305/343
44	44.000	1118.0	343/381
46	46.000	1168.0	343/381
48	48.000	1219.0	343/381

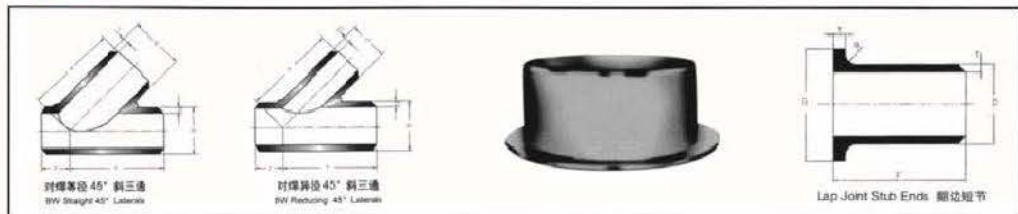
Nominal Pipe Size 公称尺寸	Dimensions 尺寸		
	Outside Diameter at Bevel: D 坡口处外径: D		Length: E/E1 全高: E/E1
	inch	mm	
	inch	mm	mm
50	50.000	1270.0	368.3/406.4
52	52.000	1320.0	368.3/406.4
54	54.000	1371.0	406.4/444.5
56	56.000	1422.0	406.4/444.5
58	58.000	1473.0	419.1/457.2
60	60.000	1524.0	419.1/457.2
62	62.000	1575.0	431.8
64	64.000	1626.0	444.5
66	66.000	1676.0	457.0
68	68.000	1727.0	469.8
70	70.000	1778.0	482.5
72	72.000	1828.0	495.0
74	74.000	1880.0	508.0
76	76.000	1930.0	520.5
78	78.000	1981.0	533.3
80	80.000	2032.0	546.0
82	82.000	2083.0	558.8
84	84.000	2134.0	571.5
86	86.000	2184.0	584.0
88	88.000	2235.0	596.8
90	90.000	2286.0	609.5
92	92.000	2336.0	622.0
94	94.000	2388.0	635.0
96	96.000	2438.0	647.5
98	98.000	2489.0	660.3
100	100.000	2540.0	673.0

备注: 管帽高度不超过XS壁厚时高度采用E值;  
管帽高度超过XS壁厚时高度采用E1值。

Nominal pipe size 公称尺寸	Outside Diameter at Bevel: D 坡口处外径		Center to End : A mm 中心到端面 : mm				TOLERANCE 公差				
			R=3D	R=5D	R=7D	R=10	ANGLE 度	RADIUS 半径	PLANE平 面度	SQUARNESS端 面垂直度	LINEAR DIMENSION 线性尺寸
			90	90	90	90					
1/2"	1/2"	21.3	75	125	175	250	±0.5°	±1.0°	±1.0°	±2.4mm	±5mm
3/4"	3/4"	26.7	75	125	175	250					
1"	1"	33.4	75	125	175	250					
1 1/4"	1 1/4"	42	96	160	224	320					
1 1/2"	1 1/2"	48.3	114	190	256	380					
2"	2"	60.3	152	254	356	508					
2 1/2"	2 1/2"	73	191	318	445	635					
3"	3"	88.9	229	381	533	762					
4"	4"	114	305	508	711	1016					
5"	5"	141.3	381	635	889	1270					
6"	6"	168.3	457	762	1067	1524					
8"	8"	219.1	610	1016	1422	2032					
10"	10"	273	762	1270	1778	2540					
12"	12"	323.9	914	1524	2134	3048					
14"	14"	355.6	1057	1778	2489	3556					
16"	16"	406.4	1219.2	2032	2844.8	4064					
18"	18"	457.2	1371.6	2286	3200.4	4572					
20"	20"	508	1524	2540	3556	5080					
22"	22"	558.8	1676.4	2794	3911.6	5588					
24"	24"	609.6	1828.8	3048	4267.2	6096					
26"	26"	660.4	1981.2	3302	4622.8	6604					
28"	28"	711.2	2133.6	3556	4978.4	7112					
30"	30"	762	2286	3810	5334	7620					
32"	32"	812.8	2438.4	4064	5689.6	8128					
34"	34"	863.6	2590.8	4318.0	6045.2	8636.0					
36"	36"	914.4	2743.2	4572.0	6400.8	9144.0					
38"	38"	965.2	2895.6	4826.0	6756.4	9652.0					
40"	40"	1016	3048.0	5080.0	7112.0	10160.0					
42"	42"	1066.8	3200.4	5334.0	7467.6	10668.0					
44"	44"	1117.6	3352.8	5588.0	7823.2	11176.0					
46"	46"	1168.4	3505.2	5842.0	8178.8	11684.0					
48"	48"	1219.2	3657.6	6096.0	8534.4	12192.0					
50"	50"	1270	3810.0	6350.0	8890.0	12700.0					
52"	52"	1320.8	3962.4	6604.0	9245.6	13208.0					
54"	54"	1371.6	4114.8	6858.0	9601.2	13716.0					
56"	56"	1422.4	4267.2	7112.0	9956.8	14224.0					
58"	58"	1473.2	4419.6	7366.0	10312.4	14732.0					
60"	60"	1524	4572.0	7620.0	10668.0	15240.0					

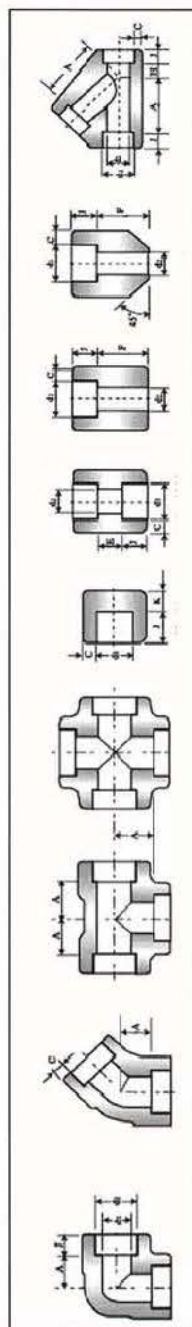
These fittings are also available in other sizes and wall thickness upon customers requirement.

These fittings are also available in other sizes and wall thickness upon customers requirement.



BW 45DEG Laterals 对焊45度斜三通				
Nominal pipe size		Outside Diameter at Bevel: D mm	DIMENSION	
公称尺寸		坡口外径 mm	尺寸 mm	
DN mm	NPS inch	OD mm	X mm	Y mm
25	1	33.5	146	45
32	1 1/4	42.2	159	45
40	1 1/2	48.3	178	51
50	2	60.3	203	64
65	2 1/2	73	241	64
80	3	88.9	254	76
90	3 1/2	101.6	292	76
100	4	114.3	305	76
125	5	141.3	343	89
150	6	168.3	368	89
200	8	219.1	445	114
250	10	273	521	127
300	12	323.9	622	140
350	14	355.6	686	152
400	16	406.4	762	165
450	18	457.2	813	178
500	20	508	889	203
600	24	609.6	1029	229
650	26	660.4	1308	267
700	28	711.2	1442	286
750	30	762	1524	299
800	32	812.8	1626	311
850	3 4	863.6	1727	330
900	36	914.4	1829	350

Lap Joint Stub Ends ASME B16.9 塔接/翻边短节						
Nominal pipe size	Outside Diameter at Bevel: D mm		Long Pattern length	Short Pattern length	Radius of Fillet	Diameter of Lap
公称尺寸 inch	坡口外径 mm		长型长度 mm	短型长度 mm	圆角半径 mm	塔接直径 mm
DN	Max	Min	F	F	R	G
1/2	22.8	20.5	76	51	3	35
3/4	28.1	25.9	76	51	3	43
1	35	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	10	105
3	91.3	88.1	152	64	10	127
3 1/2	104	100.8	152	76	11	140
4	116.7	113.5	152	76	11	157
5	144.9	140.5	203	76	13	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	323.1	305	152	13	381
14	359.5	354.8	305	152	13	413
16	411	405.6	305	152	13	470
18	462	456	305	152	13	533
20	514	507	305	152	13	584
24	565	558	305	152	13	641
	616	609	305	152	13	692



Socket Welding Fittings 承插焊接件 ASME B16.11												Unit:mm	
Nominal Pipe size 公称尺寸	Socket Bore Diameter 承插口直径	Fittings D 口直径	Socket Welding Thickness 承插壁厚			Body Wall 主体壁厚	承插升 深度	Center to Bottom of Socket A 中心至承插孔底	Laying Lengths 安装长度	Tolerances 公差	End Wall Thickness 等墙厚度	Class Designation 等级	
			Class Designation 等级	3000 Avg 3.18	6000 Min 3.18								9000 Avg 3.18
6	11.2	7.6	4.8	-	-	3.000	9000	15.0	±0.15	1.0	3000 6000 9000		
8	14.6	10.0	7.1	-	-	3.000	9000	16.0	±0.15	1.0	3000 6000 9000		
10	17.6	11.8	8.4	-	-	3.000	9000	17.5	±0.15	1.0	3000 6000 9000		
15	22.2	16.6	12.5	7.2	4.67	3.000	9000	22.5	±0.15	1.0	3000 6000 9000		
20	27.6	21.7	16.3	11.8	4.90	3.000	9000	24.5	±0.15	1.0	3000 6000 9000		
25	34.3	27.4	21.5	16.0	5.69	3.000	9000	28.5	±0.15	1.0	3000 6000 9000		
32	43.1	35.8	30.2	23.5	6.07	3.000	9000	30.0	±0.15	1.0	3000 6000 9000		
40	49.2	41.6	34.7	28.7	6.35	3.000	9000	32.0	±0.15	1.0	3000 6000 9000		
50	61.7	53.3	43.6	36.9	6.93	3.000	9000	41.0	±0.15	1.0	3000 6000 9000		
65	74.4	64.2	51.7	42.1	7.62	3.000	9000	43.0	±0.15	1.0	3000 6000 9000		
80	90.3	79.4	61.2	50.8	8.25	3.000	9000	44.5	±0.15	1.0	3000 6000 9000		
100	115.7	103.8	81.2	66.0	10.66	3.000	9000	48.0	±0.15	1.0	3000 6000 9000		

These fittings are also available in other sizes and wall thickness upon customers requirement.

These fittings are also available in other sizes and wall thickness upon customers requirement.



法兰类型	
	1、中国标准 (Chinese standard) HG/T 20592-20635 SH/T 3406 NB/T 47020-47023 GB/T 9112-9125 GB/T 13402
	2、美国标准 (American standard) ASME B16.5 API605, 6A, 6B MSS SP44 AWWA C207
	3、德国标准 (German standard) DIN 2527, 2528, 2561, 2565, 2566, 2573, 2576, 2627-2630, 2641, 2642, 2655, 2656, 2673, 2680, 2918, 86030
	4、英国标准 (British standard) BS 4504 PN16, 25, 40 BS10 TABLE E, TABLE D
	5、日本标准 (Japanese standard) JIS/KS 5K, 10K, 16K, 20K
	6、意大利标准 (Italian standard) UNI 2253/2254/2276-2278/2281-2284/6084/6089-6093
	7、锻件 (Forgings) NB/T 47008-47010
	8、非标 (Nonstandard) 直径3米以下, 单件重量4吨以下

Footnote: All flanges are made as per the customers Requirements. Common product standard NO. is The end directs to the plane. Tolerance diagram

注: ①法兰均按用户提出的标准制做。  
②常用产品的标准号是:  
GB/T 9112-9125  
GB/T 20592-20635  
SH/T 3406  
ASME B16.5

These fittings are also available in other sizes and wall thickness upon customers requirement.

Tolerances for Fittings acc.to ASME B 16.9 (Elbows, Reducers, Tees, Caps, Lap Joint Stub Ends)  
管件公差符合ASME B 16.9 (弯头, 异径管, 三通, 管帽, 搭接)

All Fittings [Notes (1) and (2)] 所有管件				Center-to-End					
Nominal	Pipe Size	Outside Diameter at bevel 坡口处外径	Inside Diameter at End 坡口处内径	Dimensions of	Overall	180 deg Returns 180° 回转管			
				90deg and 45 deg	Length of Reducers and	Overall Length	Center-to-	Back-	
(NPS)	DN	[Notes (3) and (4)]	[Notes (3) and (5)]	Elbows	Lap Joint	of	Center 中心至中心尺寸	Face 顶端至端面尺寸	Alignment 端面平面度
公称尺寸				A, B, C, M	F, H	E	O	K	U
1/2 to 2 1/2	15-65	+1.6, -0.8	0.8	2	2	3	6	6	1
3 to 3 1/2	80-90	1.6	1.6	2	2	3	6	6	1
4	100	1.6	1.6	2	2	3	6	6	1
5 to 8	125-200	+2.4, -1.6	1.6	2	2	6	6	6	1
10 to 18	250-450	+4.0, -3.2	3.2	2	2	6	10	6	2
20 to 24	500-600	+6.4, -4.8	4.8	2	2	6	10	6	2
26 to 30	650-750	+6.4, -4.8	4.8	3	5	10	...	...	...
32 to 48	800-1200	+6.4, -4.8	4.8	5	5	10	...	...	...
Lap joint Stub Ends [Note (6)] 搭接									
Nominal	Outside	Fillet		Nominal			Angularity Tolerances		
Pipe Size	Diameter	Radius		Pipe Size			Off	Off	
(NPS)	DN	of Lap, 搭接外径	of Lap, 搭接圆角半径	Lap	(NPS)	DN	Angle, 角的	Plane, 平面的	
公称尺寸		G	R	Thickness 搭接厚度	公称尺寸		Q	P	
1/2 to 2 1/2	15-65	+0, -1	+0, -1	+1.6, -0	1/2 to 4	15-100	1	2	
3 to 3 1/2	80-90	+0, -1	+0, -1	+1.6, -0	5 to 8	125-200	2	4	
4	100	+0, -1	+0, -2	+1.6, -0	10 to 12	250-300	3	5	
5 to 8	125-200	+0, -1	+0, -2	+1.6, -0	14 to 16	350-400	3	6	
10 to 18	250-450	+0, -2	+0, -2	+3.2, -0	18 to 24	450-600	4	10	
20 to 24	500-600	+0, -2	+0, -2	+3.2, -0	26 to 30	650-750	5	10	
26 to 30	650-750	...	...	...	32 to 42	800-1050	5	13	
32 to 48	800-1200	...	...	...	44 to 48	1100-1200	5	19	

GENERAL NOTES:

- (a) For reference, see Table 2 illustration on page 6.
- (b) All dimensions are in millimeters.
- (c) Tolerances are equal plus and minus except as noted.

NOTES:

- (1) The inside diameter and the nominal wall thicknesses at ends are to be specified by the purchaser.
- (2) A minimum wall thickness of 87.5% applies unless the purchaser specifies a different wall thickness tolerance. See Fig. 1, Note (1)(a).
- (3) Out-of-round is the sum of absolute values of plus and minus tolerances.
- (4) This tolerance may not apply in localized areas of formed fittings where increased wall thickness is required to meet design requirement of para. 2.2.
- (5) Unless otherwise specified by the purchaser, these tolerances apply to the nominal inside diameter, which equals the difference between the nominal outside diameter and twice the nominal wall thickness.
- (6) See Table 10 for limiting dimensions of outside diameter of barrel.

These fittings are also available in other sizes and wall thickness upon customers requirement.



**Tolerances for Fittings acc.to MSS\_SP75  
(Elbows,Reducers,Tees,Caps,Lap Joint Stub Ends)  
管件公差符合MSS-SP75(弯头, 异径管, 三通, 管帽, 搭接)**

NPS	Inside <sup>(1)</sup> Diameter At End	Minimum <sup>(2)</sup> Wall Thickness	Out-of-Roundness <sup>(2)</sup>			90°, 60°, 45° & 30° Elbows&Tees Center-to- End Dimension A,B,G,M		Reducers Overall Length H	Caps Overall Length E	Angularity Off Angle Q	Elbows Off Plane P	Eccentric and Concentric Reducers Off Plane P <sup>(6)</sup>
			At Ends of Fittings		Throughout <sup>(4)</sup> Body of Elbows	1-1/2R&Tee	3R					
			Elbows <sup>(5)</sup>	Other								
16-24	±0.09	Nominal	0.19	0.12	2.5%	±0.09	±0.12	±0.09	±0.25	0.09	0.25	2.5%
26-36	±0.09		(5)	0.12	2.5%	±0.12	±0.25	±0.19	±0.38	0.09	0.50	2.5%
38-48	±0.12	-0.01	(5)	0.12	2.5%	±0.19	±0.38	±0.38	±0.38	0.12	0.75	2.5%
50-60	±0.25		(5)	0.19	2.5%	±0.25	±0.38	±0.38	±0.38	0.19	0.75	2.5%

Note:

- The inside diameter at end shall be determined by circumferential measurement, and the tolerance refers to variations from nominal I.D. calculation by  $(CD\ nom - 2t\ nom)$ .
- Out-of-roundness tolerances shall be the difference between the maximum and minimum diameters measured on any radial cross-section.
- Minus 0.01 in. except that isolated non-continuous reductions are permitted in accordance with Section 13.2. Excess thickness whether on inside or outside is to be treated in accordance with sketches given in Figure 3.
- When elbows are intended for field segmenting, out-of-roundness tolerance may be furnished to 1% by agreement between the Manufacturer and the Purchaser. It is recognized that extra thickness, if any, may be on the I.D.
- Out-of-roundness tolerances at ends shall be 1% of diameter for NPS 26 and larger.
- Percent of O.D.

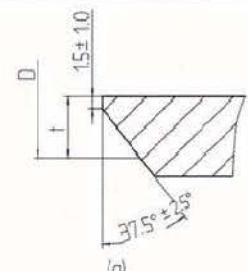
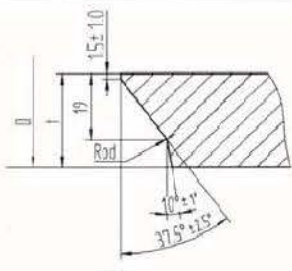
Note: Outside diameter may be tapered at angle up to 30° beyond weld bevel.

**Tolerances for Fittings acc.to GB/T12459(Elbows,Reducers,Tees,Caps)  
管件公差符合GB/T12459 (弯头, 异径管, 三通, 管帽)**

All Fittings所有管件				45° 90° Elbows and Tees, 45° 90° 弯头, 三通	Reducers 异径管	Caps 管帽	180° Returns 180° 回转管			Angularity 角度公差	
Nominal Pipe Size 公称尺寸	Outside Diameter at Bevel 坡口处外径	Inside Diameter at End 端面处 内径	Wall Thickness 壁厚	Center to End Dimension 中心 至端面 尺寸	Overall Length 全长	Overall Length 全长	Center to Center Dimension 中心至 中心尺寸	Back to Face Dimension 顶端至 端面尺寸	Alignment of End 端面的平 面度	Off Angle 角的	Off Plane 平面的
DN	D		T	H,F,C,M	L	E,E1	P	K	U	X	Y
15 to 65	+1.6, -0.8	±0.8	Not Less Than 87.5% of Nominal Thickness 不小于公 称壁厚的 87.5%	±2	±2	±4	±7	±7	1	1	2
80 to 100	±1.6	±1.6		±2	±2	±4	±7	±7	1	1	2
125 to 200	+2.4, -1.6	±1.6		±2	±2	±7	±7	±7	1	2	4
250 to 300	+4.0, -3.2	±3.2		±3	±4	±7	±10	±7	2	3	5
350 to 400	+4.0, -3.2	±3.2		±3	±3	±7	±10	±7	2	3	7
450	+4.0, -3.2	±3.2		±3	±3	±7	±10	±7	2	4	10
500	+6.4, -4.8	±4.8	±3	±3	±7	±10	±7	2	4	10	

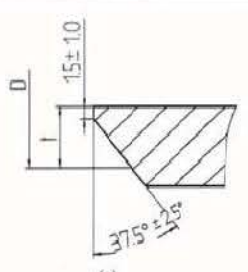
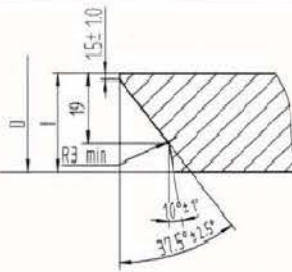
These fittings are also available in other sizes and wall thickness upon customers requirement.

**Welding Bevel acc.to ASME B16.9  
焊接坡口符合 ASME B16.9**

Nominal Wall Thickness: t 公称壁厚: t	End Preparation 端面预加工
t < 5mm (for austenitic steel t < 4mm) (奥氏体不锈钢 t < 4mm)	Cut square or slightly chamfer at manufacturer's option 切成直角或轻微倒角, 制造厂任选
5 < t ≤ 22mm (4 < t ≤ 22mm)	Plain Bevel as in sketch (a) above 如图 (a) 中的普通坡口
t > 22mm	Compound Bevel as in sketch (b) above 如图 (b) 中的复合坡口

**Welding Bevel acc.to GB/T 12459  
焊接坡口符合 GB/T 12459**

Nominal Wall Thickness: t 公称壁厚: t	End Preparation 端面预加工
t < 4.8mm (for austenitic steel t < 3.2mm) (奥氏体不锈钢 t < 3.2mm)	Cut square or slightly chamfer at manufacturer's option 切成直角或轻微倒角, 制造厂任选
4.8 < t ≤ 22mm (3.2 < t ≤ 22mm)	Plain Bevel as in sketch (a) above 如图 (a) 中的普通坡口
t > 22mm	Compound Bevel as in sketch (b) above 如图 (b) 中的复合坡口

These fittings are also available in other sizes and wall thickness upon customers requirement.



# MATERIAL SPECIFICATIONS

## COMMONLY USED MATERIALS FOR BUTTWELD FITTINGS

### ASTM A234/A234M

Grade & Marking Symbols	Chemical Composition 化学成分										Mechanical requirements 力学性能			Charpy
	C %	Si %	Mn %	P %	S %	Cr %	Mo %	Ni %	Cu %	Other	Tensile	Yield	Elongation	V-Test
	max			max	max						Mpa	Mpa/Mil	Long/Trans	°C/J
WPB <sup>D</sup>	0.30 max	0.10 min	0.29-1.06	0.050	0.058	0.40 max	0.15 max	0.40 max	0.40 max	V:0.08 max	415-655	240	22	14
WPC <sup>D</sup>	0.35 max	0.10 min	0.29-1.06	0.050	0.058	0.40 max	0.15 max	0.40 max	0.40 max	V:0.08 max	485-655	275	22	14
WP1	0.28 max	0.10-0.50	0.30-0.90	0.045	0.045	...	0.44-0.65	...	...	...	380-550	205	22	14
WP12 CL1	0.05-0.20	0.60 max	0.30-0.80	0.045	0.045	0.80-1.25	0.44-0.65	...	...	...	415-585	220	22	14
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	...	...	...	415-585	205	22	14
WP22 CL1	0.05-0.15	0.50 max	0.30-0.60	0.040	0.040	1.90-2.60	0.87-1.13	...	...	...	415-585	205	22	14
WP5 CL1	0.15 max	0.50 max	0.30-0.60	0.040	0.030	4.0-6.0	0.44-0.65	...	...	...	415-585	205	22	14
WP9 CL1	0.15 max	1.00 max	0.30-0.60	0.030	0.030	8.0-10.0	0.90-1.10	...	...	...	415-585	205	22	14
WP91	0.08-0.12	0.20-0.50	0.30-0.60	0.020	0.010	8.0-9.5	0.85-1.05	0.40 max	...	see standard	585-760	415	20	...
WP911	0.09-0.13	0.10-0.50	0.30-0.60	0.020	0.010	8.5-9.5	0.90-1.10	0.40 max	...	see standard	620-840	440	20	...

D. For each reduction of 0.01% below the specified carbon maximum, an increase of 0.06% manganese above the specified maximum will be permitted, up to a maximum of 1.35%.  
 当含碳量在规定最大含碳量以下时，每降低0.01%碳，则含锰量可在规定的最大含量以上递增0.06%，直至最大含锰量为1.35%。

### ASTM A403/A403M

Grade & Marking Symbols	Chemical Composition 化学成分										Mechanical requirements 力学性能			Charpy
	C %	Si %	Mn %	P %	S %	Cr %	Mo %	Ni %	Cu %	Other	Tensile	Yield	Elongation	V-Test
	max			max	max						Mpa	Mpa/Mil	Long/Trans	°C/J
WP304	0.08	1.00	2.00	0.045	0.030	18.0-20.0	...	8.0-11.0	...	...	515 min	205 min	28	20
WP304L	0.03	1.00	2.00	0.045	0.030	18.0-20.0	...	8.0-12.0	...	...	485 min	170 min	28	20
WP316	0.08	1.00	2.00	0.045	0.030	16.0-18.0	2.00-3.00	10.0-14.0	...	...	515 min	205 min	28	20
WP316L	0.03	1.00	2.00	0.045	0.030	16.0-18.0	2.00-3.00	10.0-14.0	...	...	485 min	170 min	28	20
WP321	0.08	1.00	2.00	0.045	0.030	17.0-19.0	...	9.0-12.0	...	...	515 min	205 min	28	20

These fittings are also available in other sizes and wall thickness upon customers requirement.

### ASTM A420/A420M

Grade & Marking Symbols	Chemical Composition 化学成分										Mechanical requirements 力学性能			Charpy	
	C %	Si %	Mn %	P %	S %	Cr %	Mo %	Ni %	Cu %	Other	Tensile	Yield	Elongation	V-Test	
	max			max	max						Mpa	Mpa/Mil	Long/Trans	°C/J	
WPL6	0.3	0.15-0.40	0.50-1.35	0.035	0.04	0.30	0.12	0.40	0.40	Cb:0.02 <sup>B</sup> , V:0.08	415-585	240	30	16.5	-45° C/17.6J
WPL9	0.20	...	0.40-1.06	0.030	0.030	..	..	1.60-2.24	..	..	435-610	315	28	18	-100° C/17.6J
WPL3 <sup>C</sup>	0.20	0.13-0.37	0.31-0.64	0.050	0.050	..	..	3.20-3.80	..	..	450-620	240	30	20	-195° C/33.9J
WPL8 <sup>D</sup>	0.13	0.13-0.37	0.90	0.030	0.030	..	..	8.40-9.60	..	..	690-865	515	22	...	-75° C/17.6J

B. By agreement, the limit for Columbium may be increased up to 0.05% on heat analysis and 0.06% on product analysis.  
 C. Fittings made from plate or forgings may have 0.09% max manganese.  
 D. Fittings made from plate may have 0.98% max manganese.

### ASTM A860

Grade & Marking Symbols	Chemical Composition 化学成分										Mechanical requirements 力学性能			Charpy	
	C %	Si %	Mn %	P %	S %	Cr %	Mo %	Ni %	Cu %	Other	Tensile	Yield	Elongation	V-Test	
	max			max	max						Mpa	Mpa/Mil	Long/Trans	°C/J	
WPHY-42	0.20	0.15-0.4	1.0-1.45	0.030	0.010	0.30 max	0.25 max	0.50 max	0.35 max	...	415 min	290	25	...	-46° C/34-40J
WPHY-46	0.20	0.15-0.4	1.0-1.45	0.030	0.010	0.30 max	0.25 max	0.50 max	0.35 max	...	435 min	315	25	...	-46° C/34-40J
WPHY-52	0.20	0.15-0.4	1.0-1.45	0.030	0.010	0.30 max	0.25 max	0.50 max	0.35 max	...	455 min	360	25	...	-46° C/34-40J
WPHY-60	0.20	0.15-0.4	1.0-1.45	0.030	0.010	0.30 max	0.25 max	0.50 max	0.35 max	...	515 min	415	20	...	-46° C/34-40J
WPHY-65	0.20	0.15-0.4	1.0-1.45	0.030	0.010	0.30 max	0.25 max	0.50 max	0.35 max	...	530 min	450	20	...	-46° C/34-40J
WPHY-70	0.20	0.15-0.4	1.0-1.45	0.030	0.010	0.30 max	0.25 max	0.50 max	0.35 max	...	550 min	485	20	...	-46° C/34-40J

These fittings are also available in other sizes and wall thickness upon customers requirement.

