



BESTAR

盛仕达钢铁股份有限公司
SHINESTAR STEEL INDUSTRIES CORPORATION

湖南佰仕达钢管有限公司
BESTAR STEEL CO., LTD

| 管 | 件 |
STEEL PIPE FITTINGS



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BASED ON CHINA AND SERVING THE WORLD 立足中国 服务全球

打造钢材整体服务领域的百年标杆企业
BUILD A CENTURY OLD BENCHMARK ENTERPRISE IN
THE OVERALL SERVICE FIELD OF STEEL

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公司介绍 INTRODUCTION

盛仕达钢铁集团从 1993 年开始致力于管道系统，公司生产具有高技术含量和附加值的优质钢铁产品。公司主要从事钢铁、高新技术产业、国际贸易三大产业。

集团公司下属无缝钢管工厂生产油气用管、压力容器用管、机械加工用管等各种用途的碳钢、合金钢无缝钢管，钢管生产加工规格范围覆盖 $\phi 8$ - $\phi 1200\text{mm}$ ，壁厚为 1-200mm，年生产钢管能力 50 万吨，石油专用管加工生产能力 25 万吨，热处理生产能力 15 万吨。2005 年后集团公司斥巨资兴建了 $\phi 114$ 、 $\phi 219$ 、 $\phi 660$ 等 3 条 HFW 直缝高频电阻焊钢管生产线、 $\phi 813$ 、 $\phi 1422$ 等 2 条 JCOE 大口径直缝双面埋弧焊 SAWL 钢管生产线、 $\phi 219$ - $\phi 4330$ 高钢级 SAWH 螺旋埋弧焊钢管生产线，FBE/2PE/3PP/3PE 内外防腐生产线两条，焊管生产覆盖规格范围： $\phi 10.3$ - $\phi 4330$ ，壁厚为 1-50mm，年生产各类焊接钢管能力 100 万吨，防腐管年生产能力 200 万平方米。

佰仕达作为盛仕达钢铁集团的最大子公司之一，基于集团公司钢管产业的支撑，公司拓展出碳钢、不锈钢、合金钢等材质的法兰、弯头、三通、异径管、帽、承插焊管件、螺纹管件、阀门、定制管件等管件类产品。

我们的产品广泛应用于石油、化工、城建、造船、航道、消防和日常生活等领域，产品种类齐全，质量优良，先后通过了 ISO9001 质量管理体系、ISO 14001 环境管理体系、ISO45001 职业健康安全管理体系、CE 等认证，目前产品广泛出口到英国、意大利、西班牙、法国、俄罗斯、阿联酋、沙特阿拉伯、埃及、伊朗、阿曼、南非、突尼斯、卡塔尔、尼日利亚、巴基斯坦、印度尼西亚、新加坡、菲律宾、马来西亚、泰国、韩国、澳大利亚、秘鲁、智利、巴西、墨西哥等国家和地区，得到了广大客户的一致认可和良好口碑。

我们的目标是为客户提供专业的定制化服务，成为钢铁行业最可靠的合作伙伴。我们期待与您的合作！

Shinestar Steel Group, with its primary operation in steel piping system from 1993., produces premium steel products with hi-tech and added value. Our company mainly engages in three industries, steel, hi-tech industries, and international trade.

The group's seamless pipe mills mainly produce various carbon and alloy steel pipes including oil & gas pipe, pressure pipe and mechanical tubing, etc. The pipe size ranges at $\phi 8$ - $\phi 1200\text{mm}$ with wall thickness 1 - 200mm. Our annual production capacity is 500,000 tons with OCTG processing capacity 250,000 tons/year and heat treated pipe 150,000 tons/year. After 2005, the group founded 3 $\phi 114$, $\phi 219$ and $\phi 660$ HFW lines, 2 large diameter $\phi 813$ and $\phi 1422$ JCOE SAWL lines, $\phi 219$ - $\phi 4330$ high grade SAWH lines and 2 internal and external anti-corrosion FBE/2PE/3PP/3PE coating lines. The pipe size ranges at $\phi 10.3$ - $\phi 4330$ with wall thickness 1- 50mm, and annual production capacity is 1,000,000 tons/year for welded pipe, and 2,000,000 m²/year for anti-corrosion coated pipe.

Bestar, as one of the largest subsidiary companies under Shinestar Steel Industries Corporation, our main products are flanges, elbows, tees, reducers, caps, socket welded fittings, threaded fittings, valves, pipes, etc in carbon steel, stainless steel, alloy steel etc.

Our products are widely applied in the fields of petroleum, chemical industry, urban construction, shipbuilding, waterways, firefighting and daily life. By complete product types and good quality, we have obtained certifications of ISO 9001 Quality Management System, ISO 14001 Environment Management System, ISO45001 Occupational Health & Safety Management System, CE etc. Till now, our goods are widely exported to UK, Italy, Spain, France, Russia, UAE, Saudi Arabia, Egypt, Iran, Oman, South Africa, Tunisia, Qatar, Nigeria, Pakistan, Indonesia, Singapore, Philippines, Malaysia, Thailand, Korea, Australia, Peru, Chile, Brazil, Mexico, etc.

Our goal is to provide clients with professional & customized service, and become the most reliable partner in steel industry. We look forward to co-operating with you!

公司资质 CERTIFICATES



生产设备 PRODUCTION EQUIPMENT

法兰生产设备 Flange Production Equipment



16米大型辗环机 16m ring rolling machine



法兰钻孔设备 CNC vertical flange drilling machine



锻压机 13500 Ton forging press

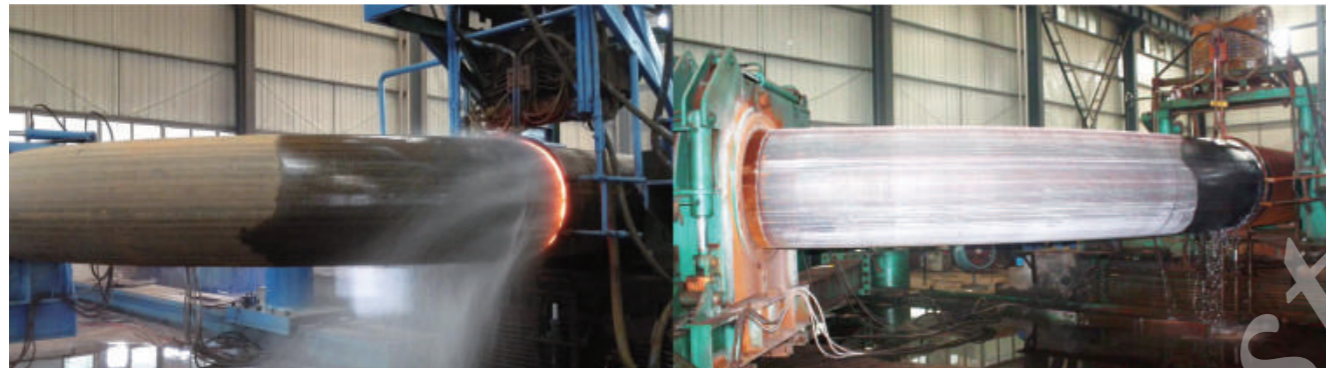


热处理设备 Heat treatment equipment

管件生产设备 Fitting Production Equipment

每件产品都是用自己的特殊工艺制造的。每个产品的最合适的制造工艺将根据其材料、尺寸、形状、用途、标准和特殊性能来决定。

Each product is manufactured with its own special process. The most appropriate manufacturing process for each product will be decided with consideration of its material, sizes, shape, use, standards and special properties.



Various methods are used to manufacture wrought fittings, these are the some types of Hot forming and cold forming processes:

- Hot forming or Extrusion Method
- Hydraulic Bulge method – Cold forming
- UO or Single weld seam Method
- Monaka or Double weld seam Method
- Deep Drawing Method for caps
- Flare Method for Stub ends

检测设备 Testing equipment

检测 TESTING

非破坏性测试 Non-Destructive Testing

Depending on the fitting type, we use different components in the non-destructive testing, like the ultrasonic, radiography (only for weld), magnetic particle test, liquid penetrant test.

破坏性测试 Destructive Testing

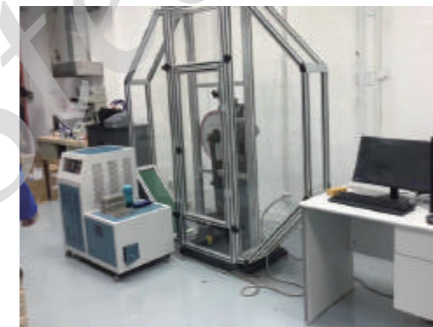
We conduct this test to check the strength and weld of our products. The destructive testing includes a series of tests like the hydrotest, proof test, tensile test, impact test, and hardness test.

金相测试 Metallurgical Test

We perform metallurgical tests on the fitting body and weld to confirm its standard requirements. The testing consists of two parts, microanalysis which is the chemical analysis of raw materials, product, weld, and the macro analysis of weld.

目检 Visual Inspection

Apart from all the tests, visual inspections are also carried out to ensure no surface imperfections. The fittings body and weld are checked for any visible issues like cracks, dents, etc., and the final product is accepted following the applicable standards.



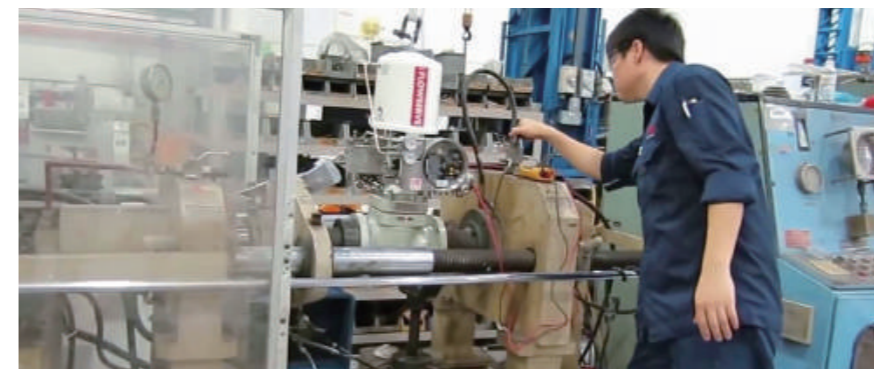
Charpy impact testing



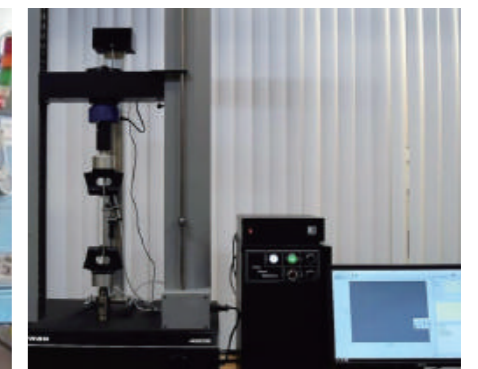
Chemical-analysis



Dimensional inspection



Hydrotest



Universal testing machine



Micrographic examination



Ultrasonic testing

成品展示 FINISHED PRODUCTS

公司产品严格按照国际标准，确保产品性能质量合格的基础上更加卓越。
Products in strict accordance with international standards, ensuring product performance and quality of qualified on the basis of more outstanding.

我们恪守“以质量求生存”的原则，不断追求产品质量的更精、更高水平。
We abide by the principle - "Survival by quality". And constantly pursuit of better and higher level product quality.

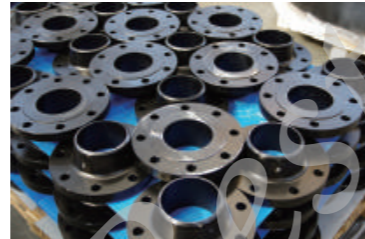
碳钢管件 CARBON STEEL FITTINGS



不锈钢及合金管件 STAINLESS & ALLOY STEEL FITTINGS



法兰 FLANGE

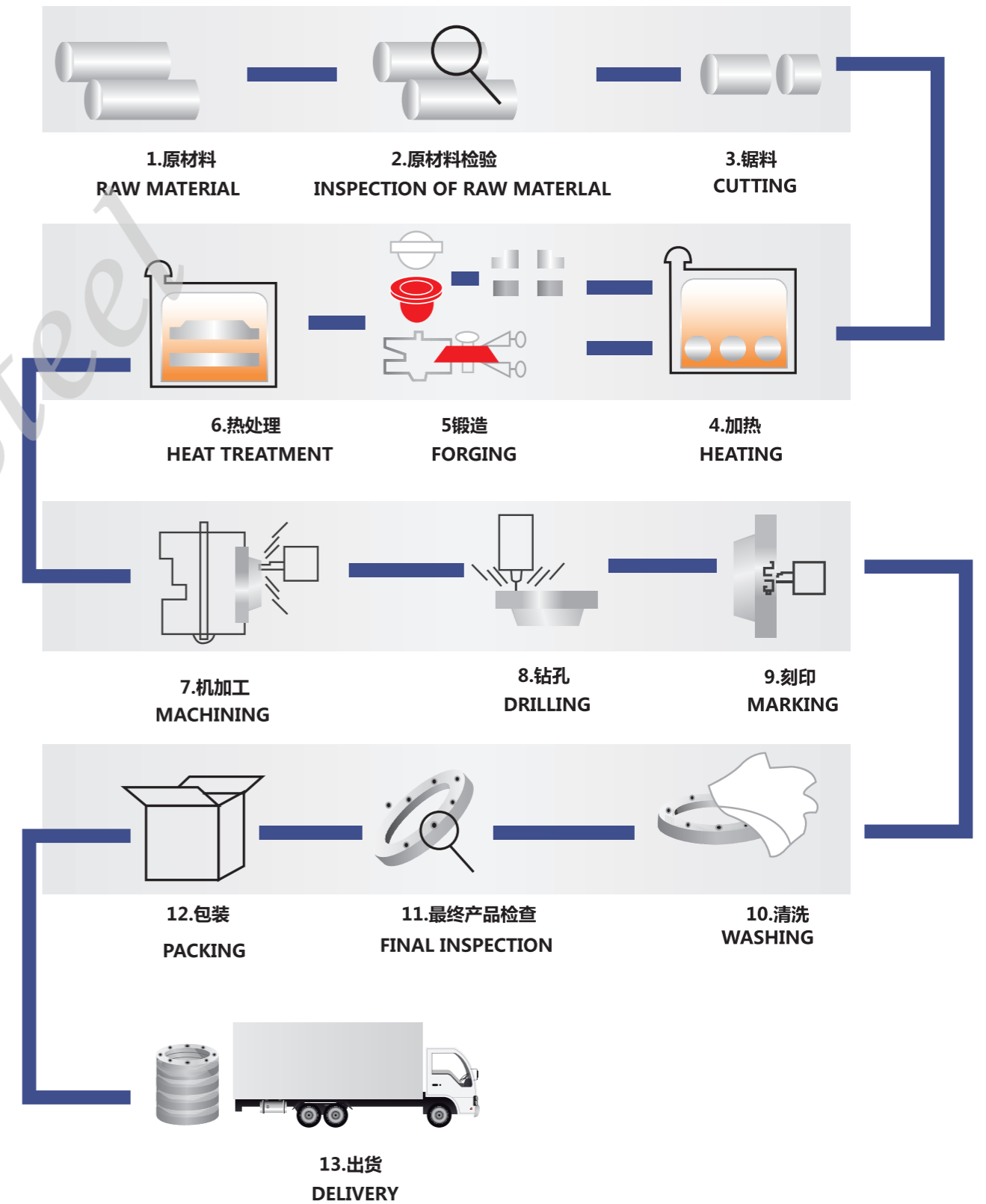
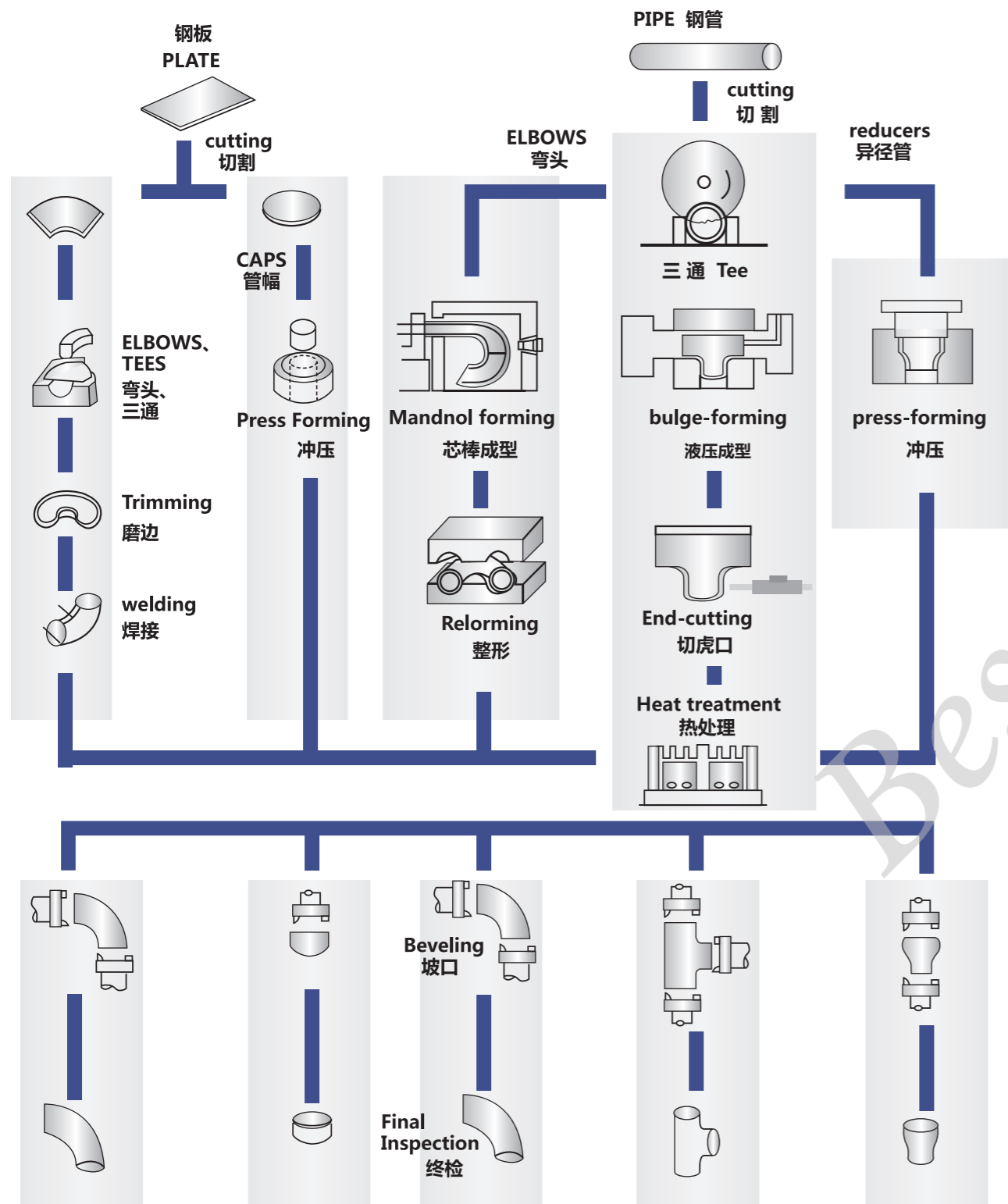


定制管件 CUSTOMIZED FITTINGS



工艺流程

PRODUCTION PROCESS FLOW CHART



规格 SPECIFICATION

KS : KOREAN INDUSTRIAL STANDARDS

- KS B 1522** Steel Butt Welding Pipe Fittings for Ordinary use and Fuel Gas.
- KS B 1541** Steel Butt Welding Pipe Fittings.
- KS B 1542** Steel Socket Welding Pipe Fittings.
- KS B 1543** Steel Plate Butt Welding Pipe Fittings

JIS : JAPANESE INDUSTRIAL STANDARDS

- JIS B 2311** Steel Butt Welding Pipe Fittings for Ordinary use
- JIS B 2312** Steel Butt Welding Pipe Fittings.
- JIS B 2313** Steel Plate Butt Welding Pipe Fittings.
- JIS B 2316** Steel Socket Welding Pipe Fittings.

ASTM : AMERICAN SOCIETY FOR TESTING AND MATERIALS

- ASTM A 105** Carbon Steel Forgings for Piping Applications
- ASTM A 182** Forged or Rolled Alloy Steel Pipe Flanges, Forged Fittings, and Valves and Parts for high Temperature Service
- ASTM A 234** Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service
- ASTM A 350** Carbon and Low-Alloy Steel Forgings. Requiring Notch Toughness Testing for Piping Components
- ASTM A 403** Wrought Austenitic Stainless Steel Piping Fittings
- ASTM A 420** Piping Fittings of Wrought Carbon Steel and Alloy Steel for Low-Temperature Service
- ASTM A 694** Carbon and Alloy Steel Forgings for Pipe Flanges, Fittings, Valves, and Parts for High-Pressure Transmission Service
- ASTM A 815** Wrought Ferritic, Ferritic/Austenitic, and Martensitic Stainless Steel Piping Fittings
- ASTM A 860** Wrought High-Strength Low-Alloy Steel Butt-Welding Fittings
- ASTM B 366** Factory-Made Wrought Nickel and Nickel Alloy Fittings

MSS : MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY

- MSS SP-25** Standard Marketing System for Valves, Fittings, Flanges and Unions.
- MSS SP-43** Wrought Stainless Steel Butt Welding Fittings.
- MSS SP-44** Standard for Steel Pipe Line Flanges.
- MSS SP 51** Class 150LW Corrosion Resistant Flanges and Cast Flanged Fittings
- MSS SP 65** High Pressure Chemical Industry Flanges and Threaded
- MSS SP-75** Specification for High Test Wrought Butt Welding Fittings.
- MSS SP-79** Socket Welding Reducer Inserts.
- MSS SP-83** Carbon Steel Pipe Union Socket Welding and Threaded.
- MSS SP-87** Factory-Made Butt Welding Fittings for Class 1 Nuclear Piping Applications.
- MSS SP-95** Swage(d) Nipples and Bull Plugs.
- MSS SP-97** Integrally Reinforced Forged Branch Outlet Fittings Socket Welding, Threaded and Butt Welding Ends.

ASME : AMERICAN SOCIETY OF MECHANICAL ENGINEERS ASME : ASME BOILER AND PRESSURE VESSEL CODE AN INTERNATIONAL CODE

- ASME B 16.5** Pipe Flanges and Flanged Fittings.
- ASME B 16.9** Factory Made Wrought Steel Butt Welding Fittings.
- ASME B 16.11** Forged Fittings, Socket welding and Threaded
- ASME B16.24** Cast Copper Alloy Pipe Flanges & Flanged Fittings: Class 150, 300, 400, 600, 900, 1500 & 2500
- ASME B 16.25** Butt Welding Ends.
- ASME B16.36** Orifice Flanges
- ASME B16.42** Ductile Iron Pipe Flanges and Flanged Fittings: Classes 150 and 300
- ASME B16.47** Large Diameter Steel Flanges: NPS 26 through NPS 60 Metric/Inch Standard
- ASME B 36.10** Welded and Seamless Wrought Steel Pipe.
- ASME B 36.19** Stainless Steel Pipe.
- ASME B 31.1** Power piping.
- ASME B 31.3** Process piping.
- ASME SECTION II** Materials.
- ASME SECTION III** Rules for Construction of Nuclear Facility Components.
- ASME SECTION V** Nondestructive Examination.
- ASME SECTION VIII** Rule for Construction of Pressure Vessels.
- ASME SECTION IX** Welding and Brazing Qualifications.

API : AMERICAN PETROLEUM INSTITUTE

- API 5L** Line Pipe.

产品范围 PRODUCT RANGE

1. 对焊管件 Butt Welding Fitting

材质 Material		名称 Product name	范围 Production Range		规格 Applicable Specifications
Ferrous Material	Carbon Steel	- Elbow - Tee - Reducer - Cap - Stub End - Lateral - Long Bend - Special Fittings (Fabrication Type)		Fab. Type	KS, JIS, ASTM JPI, MSS, AWWA DIN, BS, ASME, API
	Low Alloy Steel (WP11-WP92)		~82"	~150"	
	High Alloy Steel (Stainless Steel)		~72"	~150"	
			~48"	~150"	
Non-Ferrous Material	Ni Alloy Steel Cu Alloy Steel Al Alloy Steel	~150"	~152"		
			~16"	~60"	

2. 锻造管件 Forged Fitting

材质 Material		名称 Product name	范围 Production Range	规格 Applicable Specifications
Ferrous Material	Carbon Steel	- Elbow - Tee - Reducer/Insert - Cap - Coupling - Boss - Union	~4"	KS, JIS, ASTM JPI, MSS, AWWA DIN, BS, ASME, API
	Low Alloy Steel (F11-F92)			
	High Alloy Steel (Stainless Steel)			
Non-Ferrous Material	Ni Alloy Steel Cu Alloy Steel Al Alloy Steel	- Outlet	~36"	

3. 法兰 Flange

材质 Material		名称 Product name	范围 Production Range	规格 Applicable Specifications
Ferrous Material	Carbon Steel	- Welding Neck - Slip on/Treaded - Lap Joint - Ring Joint - Blind - Socket Welding	~24"	KS, JIS, ASTM JPI, MSS, AWWA DIN, BS, ASME, API
	Low Alloy Steel (F11-F92)			
	High Alloy Steel (Stainless Steel)			
Non-Ferrous Material	Ni Alloy Steel Cu Alloy Steel Al Alloy Steel	- Orifice - Long Neck		

4. 阀门 Valve

材质 Material	名称 Product name	范围 Production Range	规格 Applicable Specifications
Ferrous Material	Carbon Steel	Gate Valve Globe Valve Ball Valve Swing Check Valve Butterfly Valves Plug Valves	Size: 1/2" -60" Class:150-2500LBS
	Low Alloy Steel		
	High Alloy Steel (Stainless Steel)		
Non-Ferrous Material	Ni Alloy Steel Cu Alloy Steel Al Alloy Steel		

1. KS: Korean Industrial Standards
2. JIS: Japanese Industrial Standards
3. ASTM: American Society for Testing and Materials
4. JPI: Japan Petroleum Institute
5. MSS: Manufacturers Standardization Society
6. AWWA: American Water Works Association
7. DIN: Deutsches Institut für Normung
8. B.S: British Standards
9. ASME: American Society of Mechanical Engineers
10. API: American Petroleum Institute

材质 Materials

Ferrous Material					
Material Classification			Comparison as nations		
Large	Middle	Small	ASTM (U.S.A)		
			Designation	Identification	
Ferrous (Base Mat'I:Fe)	Carbon Steel	Ambient and Higher Temperature Service	A234	WPB WPC	
		Low Temperature Service	A420	WPL3 WPL6 WPL9	
			Low Alloy (1% Q 9%)	A234	WP1 WP12 WP11 WP22 WP23 WP9 WP91 WP92
	Martensitic Stainless Steel			A815	WP410 WP430
		Ferritic Stainless Steel		A403	WP304/L WP316/L WP317/L WP321/H WP347/H
	Super Austenitic Stainless Steel				A403	S31254 904L
		High Alloy (Q .12%) :Stainless Steel		Austenitic Stainless Steel	A815	S31803 S32750 S32760

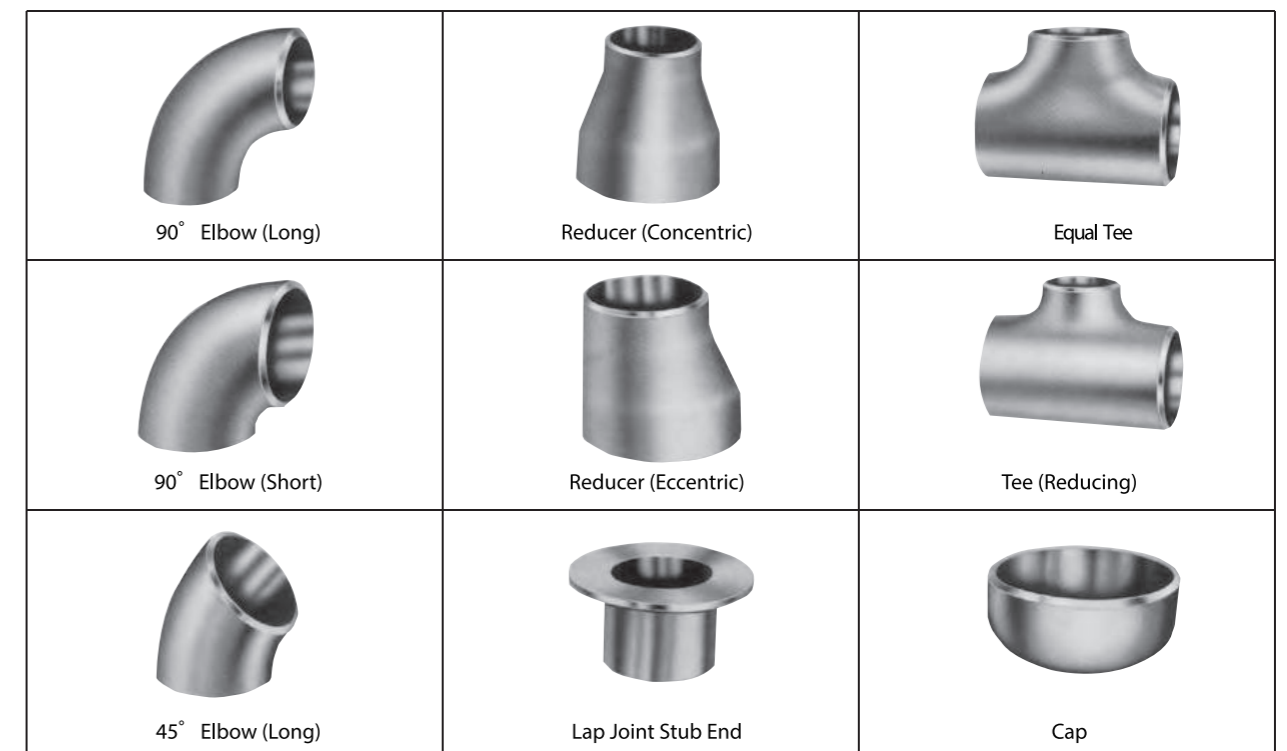
Non-Ferrous Material Comparison		
Material Classification	Trade Mark	UNS NO.
Non-Ferrous (Base Mat' I: Ni)	Inconel 600	N06600
	Inconel 690	N06690
	Inconel 800H / 800HT	N08810/N08811
	Inconel 625	N06625
	Incoloy 825	N08825
	Hastelloy 82	N10665
	Hastelloy C276	N10276
	Hastelloy C22	N06022
	Incoloy 020	N08020
	Monel 400	N04400
Non-Ferrous (Base Mat' I: Cu)	Cu-Ni 70/30	C71500
	Cu-Ni 90/10	C70600

WROUGHT STEEL BUTT WELD PIPE FITTINGS

(Carbon & Alloy Steel)

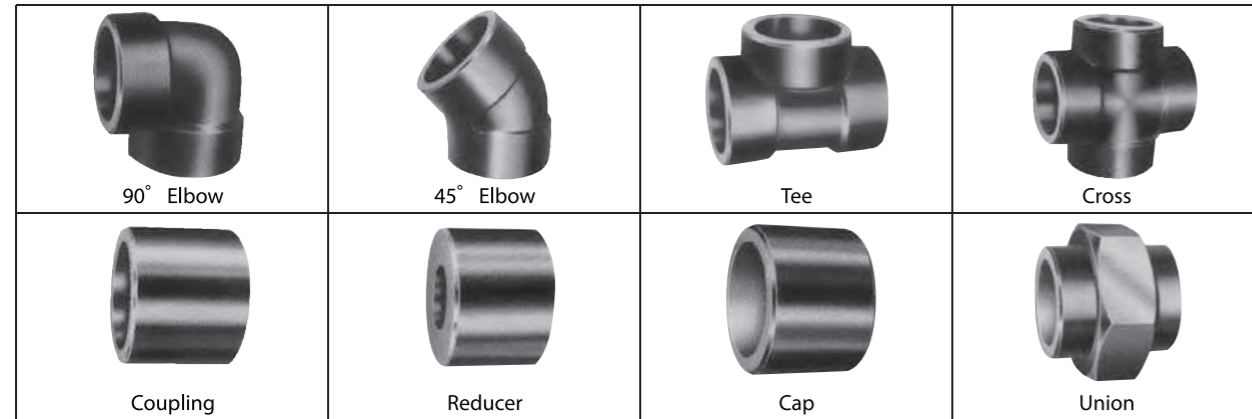


Stainless Steel Butt-Welding Fittings

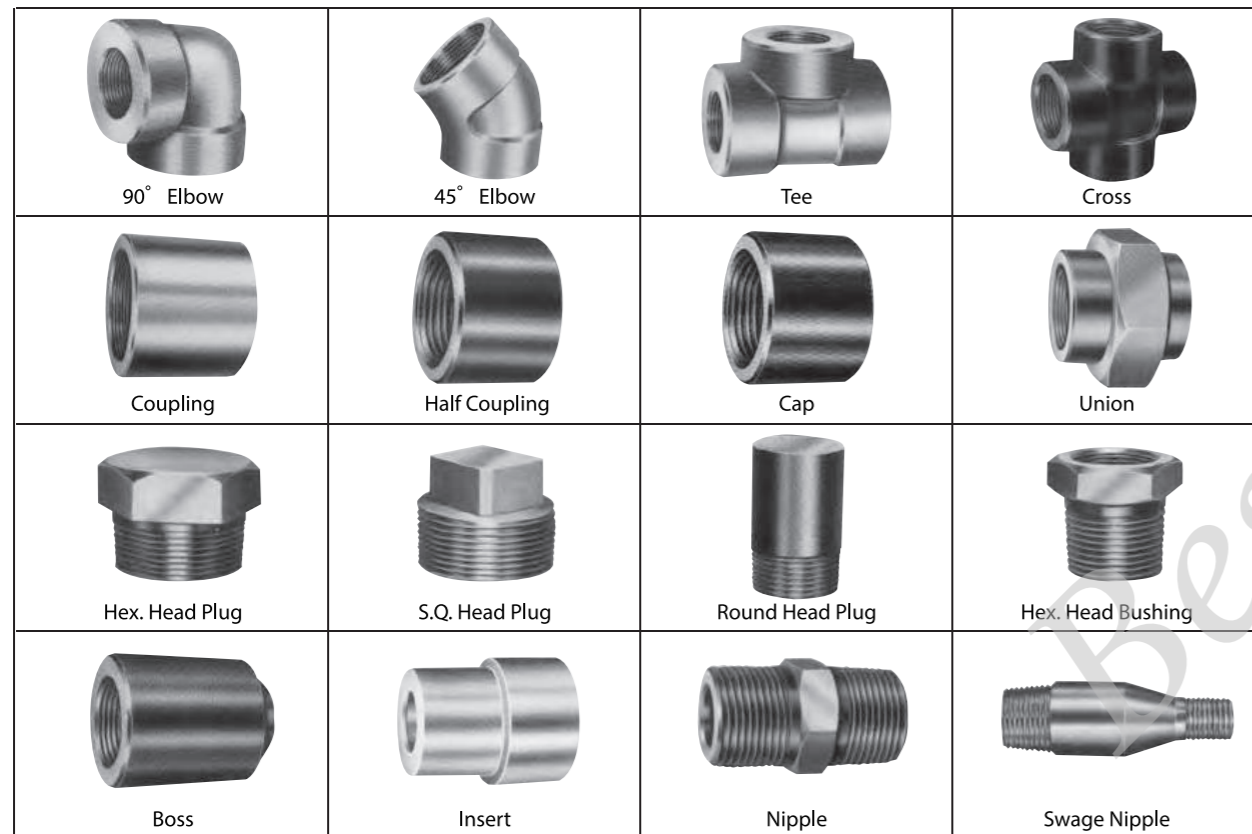


FORGED STEEL SOCKET-WELDING & THREADED FITTINGS

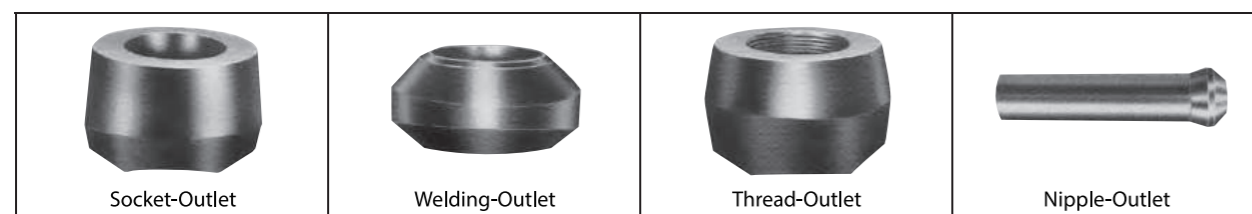
Socket Welding Fittings



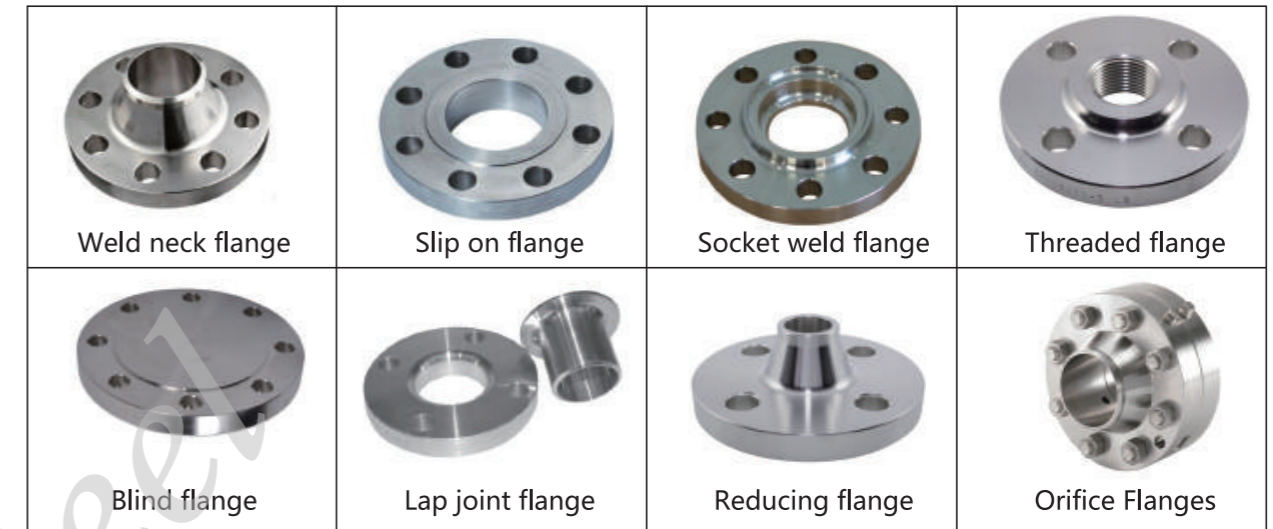
Threaded Fittings



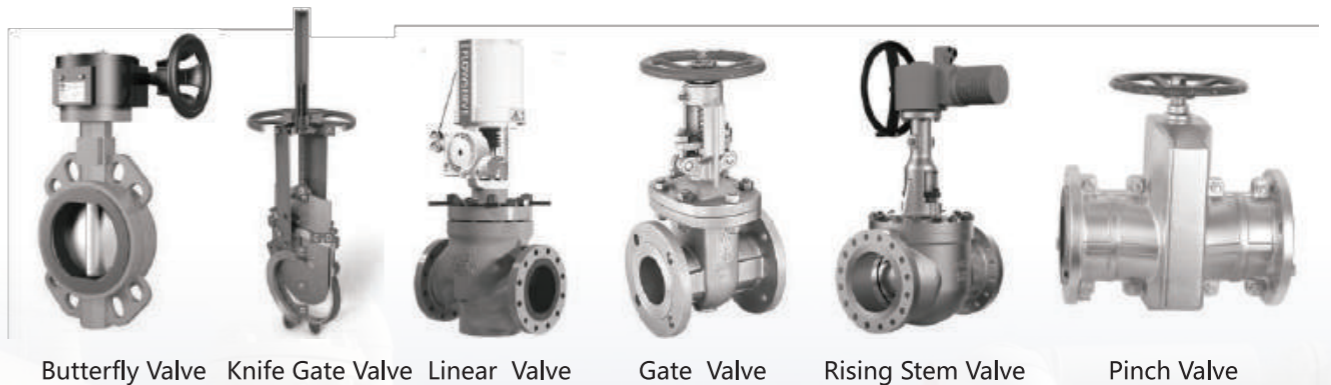
Outlets



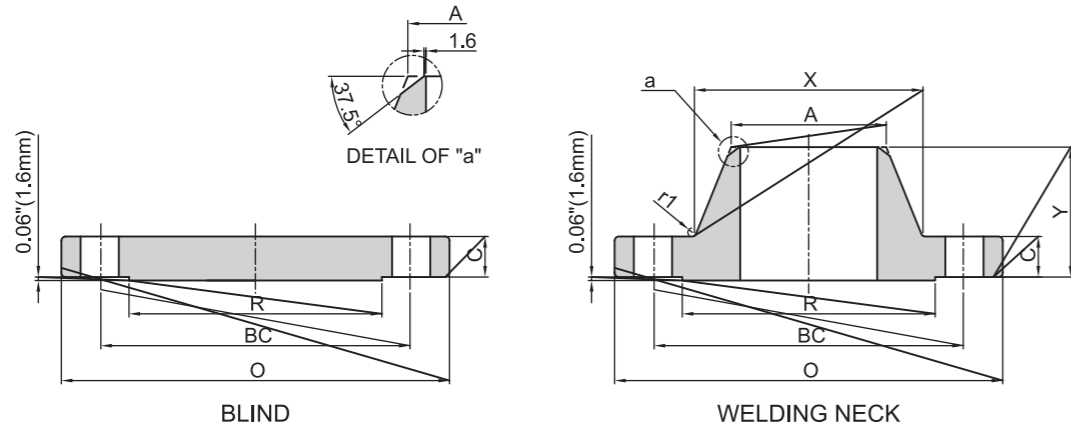
FLANGE(CARBON STEEL, STAINLESS STEEL, ALLOY STEEL)



VALVES(CARBON & ALLOY STEEL & STAINLESS STEEL & CAST IRON)



CLASS 150 FLANGES
ASME B16.47 SERIES A, MSS SP44

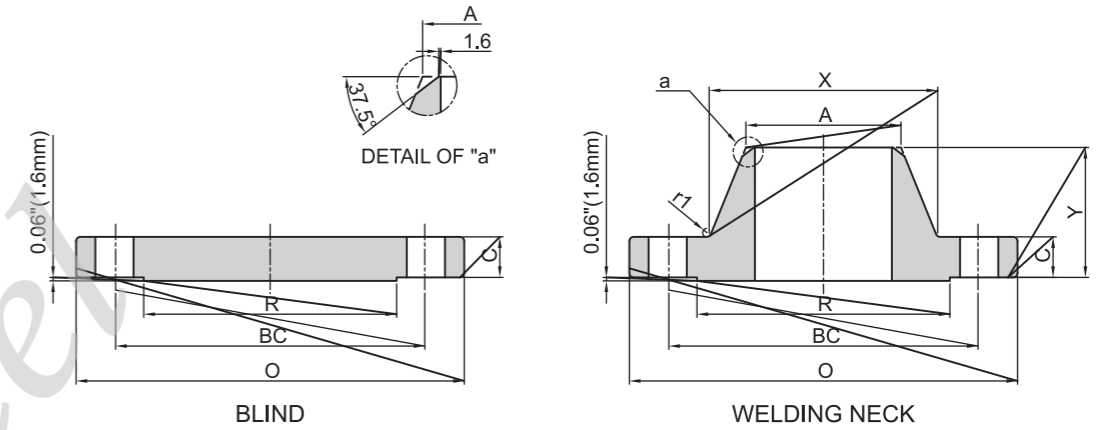


Unit : mm

Nominal Pipe Size	O.D. OF Flange	Thickness		Length Through Hub	Diam. of Hub	Hub Diam. Top	Raised Face Diam.	Drilling			Diam. of Bolt (inch)	Fillet Radius Min.
		W.N.F	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Holes		
		O	C										Y	X	A	R	r1
26	870.0	68.3	68.3	120.7	676.1	660.4	749.3	806.5	24	35.1	1 1/4	9.7
28	927.1	71.4	71.4	125.5	726.9	711.2	800.1	863.6	28	35.1	1 1/4	11.2
30	984.3	74.7	74.7	136.7	781.1	762.0	857.3	914.4	28	35.1	1 1/4	11.2
32	1060.5	81.0	81.0	144.5	831.9	812.8	914.4	977.9	28	41.1	1 1/2	11.2
34	1111.3	82.6	82.6	149.4	882.7	863.6	965.2	1028.7	32	41.1	1 1/2	12.7
36	1168.4	90.4	90.4	157.2	933.5	914.4	1022.4	1085.9	32	41.1	1 1/2	12.7
38	1238.3	87.4	87.4	157.2	990.6	965.2	1073.2	1149.4	32	41.1	1 1/2	12.7
40	1289.1	90.4	90.4	163.6	1041.4	1016.0	1124.0	1200.2	36	41.1	1 1/2	12.7
42	1346.2	96.8	96.8	171.5	1092.2	1066.8	1193.8	1257.3	36	41.1	1 1/2	12.7
44	1403.4	101.6	101.6	177.8	1143.0	1117.6	1244.6	1314.5	40	41.1	1 1/2	12.7
46	1454.2	103.1	103.1	185.7	1196.8	1168.4	1295.4	1365.3	40	41.1	1 1/2	12.7
48	1511.3	108.0	108.0	192.0	1247.6	1219.2	1358.9	1422.4	44	41.1	1 1/2	12.7
50	1568.5	111.3	111.3	203.2	1301.8	1270.0	1409.7	1479.6	44	47.8	1 3/4	12.7
52	1625.6	115.8	115.8	209.6	1352.6	1320.8	1460.5	1536.7	44	47.8	1 3/4	12.7
54	1682.8	120.7	120.7	215.9	1403.4	1371.6	1511.3	1593.9	44	47.8	1 3/4	12.7
56	1746.3	124.0	124.0	228.6	1457.5	1422.4	1574.8	1651.0	48	47.8	1 3/4	12.7
58	1803.4	128.5	128.5	235.0	1508.3	1473.2	1625.6	1708.2	48	47.8	1 3/4	12.7
60	1854.2	131.8	131.8	239.8	1559.1	1524.0	1676.4	1759.0	52	47.8	1 3/4	12.7

Note: The above size only according to the standard ASME B16.5, different standard the size is different.

CLASS 300 FLANGES
ASME B 16.47 SERIES A, MSS SP44



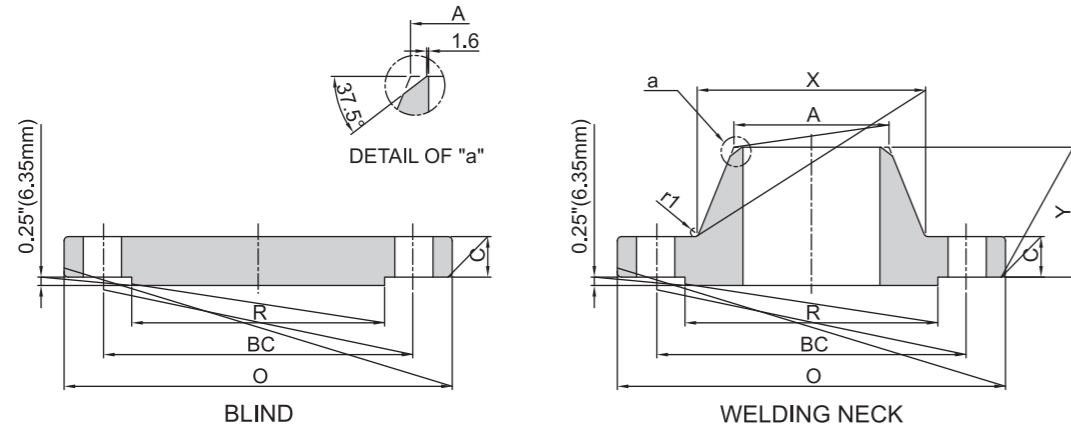
Unit : mm

Nominal Pipe Size	O.D. OF Flange	Thickness		Length Through Hub	Diam. of Hub	Hub Diam. Top	Raised Face Diam.	Drilling			Diam. of Bolt (inch)	Fillet Radius Min.
		W.N.F	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Holes		
		O	C										Y	X	A	R	r1
26	971.6	79.2	84.1	184.2	720.9	660.4	749.3	876.3	28	44.5	1 5/8	9.7
28	1035.1	85.9	90.4	196.9	774.7	711.2	800.1	939.8	28	44.5	1 5/8	11.2
30	1092.2	91.9	95.3	209.6	827.0	762.0	857.3	997.0	28	47.8	1 3/4	11.2
32	1149.4	98.6	100.1	222.3	881.1	812.8	914.4	1054.1	28	50.8	1 7/8	11.2
34	1206.5	101.6	104.6	231.6	936.8	863.6	965.2	1104.9	28	50.8	1 7/8	12.7
36	1270.0	104.6	111.3	241.3	990.6	914.4	1022.4	1168.4	32	53.8	2	12.7
38	1168.4	108.0	108.0	180.8	993.6	965.2	1028.7	1092.2	32	41.1	1 1/2	12.7
40	1238.3	114.3	114.3	193.5	1047.8	1016.0	1085.9	1155.7	32	44.5	1 5/8	12.7
42	1289.1	119.1	119.1	200.2	1098.6	1066.8	1136.7	1206.5	32	44.5	1 5/8	12.7
44	1352.6	124.0	124.0	206.2	1149.4	1117.6	1193.8	1263.7	32	47.8	1 3/4	12.7
46	1416.1	128.5	128.5	215.9	1203.5	1168.4	1244.6	1320.8	28	50.8	1 7/8	12.7
48	1466.9	133.4	133.4	223.8	1254.3	1219.2	1301.8	1371.6	32	50.8	1 7/8	12.7
50	1530.4	139.7	139.7	231.6	1305.1	1270.0	1358.9	1428.8	32	53.8	2	12.7
52	1581.2	144.5	144.5	238.3	1355.9	1320.8	1409.7	1479.6	32	53.8	2	12.7
54	1657.4	152.4	152.4	252.5	1409.7	1371.6	1466.9	1549.4	28	60.5	2 1/4	12.7
56	1708.2	153.9	153.9	260.4	1463.5	1422.4	1517.7	1600.2	28	60.5	2 1/4	12.7
58	1759.0	158.8	158.8	266.7	1514.3	1473.2	1574.8	1651.0	32	60.5	2 1/4	12.7
60	1809.8	163.6	163.6	273.1	1565.1	1524.0	1625.6	1701.8	32	60.5	2 1/4	12.7

Note: The above size only according to the standard ASME B16.5, different standard the size is different.

CLASS 600 FLANGES

ASME B 16.47 SERIES A, MSS SP44

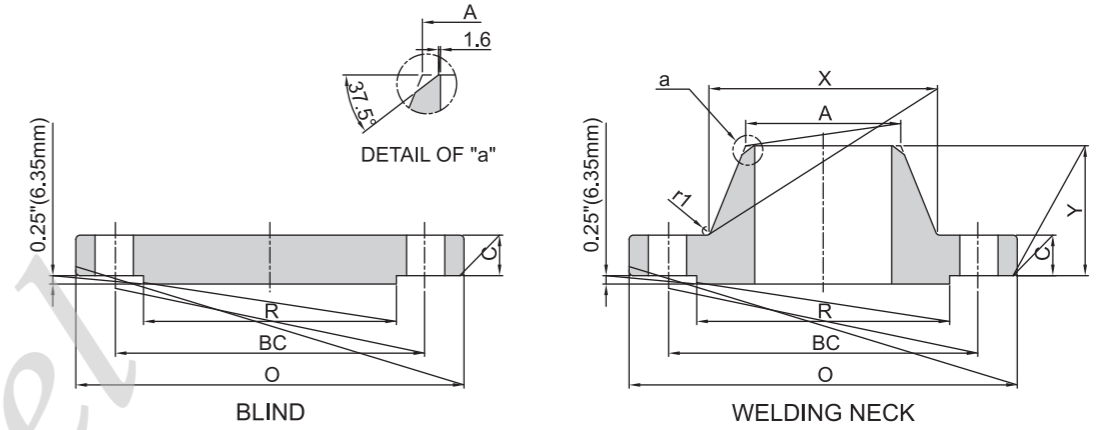


Unit : mm

Nominal Pipe Size	O.D. OF Flange	Thickness		Length Through Hub	Diam. of Hub	Hub Diam. Top	Raised Face Diam.	Drilling			Diam. of Bolt (inch)	Fillet Radius Min.
		W.N.F	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Holes		
		O	C										Y	X	A	R
26	1016.0	108.0	125.5	222.3	747.8	660.4	749.3	914.4	28	50.8	1 7/8	12.7
28	1073.2	111.3	131.8	235.0	803.1	711.2	800.1	965.2	28	53.8	2	12.7
30	1130.3	114.3	139.7	247.7	862.1	762.0	857.3	1022.4	28	53.8	2	12.7
32	1193.8	117.3	147.6	260.4	917.4	812.8	914.4	1079.5	28	60.5	2 1/4	12.7
34	1244.6	120.7	153.9	269.7	973.1	863.6	965.2	1130.3	28	60.5	2 1/4	14.2
36	1314.5	124.0	162.1	282.4	1031.7	914.4	1022.4	1193.8	28	66.5	2 1/2	14.2
38	1270.0	152.4	155.4	254.0	1022.4	965.2	1054.1	1162.1	28	60.5	2 1/4	14.2
40	1320.8	158.8	162.1	263.7	1073.2	1016.0	1111.3	1212.9	32	60.5	2 1/4	14.2
42	1403.4	168.1	171.5	279.4	1127.3	1066.8	1168.4	1282.7	28	66.5	2 1/2	14.2
44	1454.2	173.0	177.8	289.1	1181.1	1117.6	1225.6	1333.5	32	66.5	2 1/2	14.2
46	1511.3	179.3	185.7	300.0	1234.9	1168.4	1276.4	1390.7	32	66.5	2 1/2	14.2
48	1593.9	189.0	195.3	316.0	1289.1	1219.2	1333.5	1460.5	32	73.2	2 3/4	14.2
50	1670.1	196.9	203.2	328.7	1343.2	1270.0	1384.3	1524.0	28	79.2	3	14.2
52	1720.9	203.2	209.6	336.6	1394.0	1320.8	1435.1	1574.8	32	79.2	3	14.2
54	1778.0	209.6	217.4	349.3	1447.8	1371.6	1492.3	1632.0	32	79.2	3	14.2
56	1854.2	217.4	225.6	362.0	1501.6	1422.4	1543.1	1695.5	32	85.9	3 1/4	15.7
58	1905.0	222.3	231.6	369.8	1552.4	1473.2	1600.2	1746.3	32	85.9	3 1/4	15.7
60	1993.9	233.4	242.8	388.9	1609.9	1524.0	1657.4	1822.5	28	91.9	3 1/2	17.5

CLASS 900 FLANGES

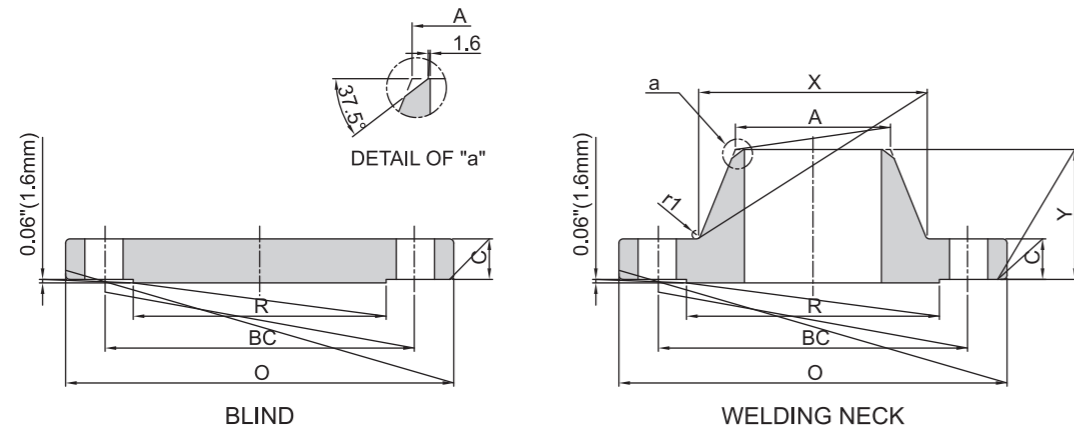
ASME B 16.47 SERIES A, MSS SP44



Unit : mm

Nominal Pipe Size	O.D. OF Flange	Thickness		Length Through Hub	Diam. of Hub	Hub Diam. Top	Raised Face Diam.	Drilling			Diam. of Bolt (inch)	Fillet Radius Min.
		W.N.F	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Holes		
		O	C										Y	X	A	R
26	1085.9	139.7	160.3	285.8	774.7	660.4	749.3	952.5	20	73.2	2 3/4	11.2
28	1168.4	142.7	171.5	298.5	831.9	711.2	800.1	1022.4	20	79.2	3	12.7
30	1231.9	149.4	182.4	311.2	889.0	762.0	857.3	1085.9	20	79.2	3	12.7
32	1314.5	158.8	193.5	330.2	946.2	812.8	914.4	1155.7	20	85.9	3 1/4	12.7
34	1397.0	165.1	204.7	349.3	1006.3	863.6	965.2	1225.6	20	91.9	3 1/2	14.2
36	1460.5	171.5	214.4	362.0	1063.8	914.4	1022.4	1289.1	20	91.9	3 1/2	14.2
38	1460.5	190.5	215.9	352.6	1073.2	965.2	1098.6	1289.1	20	91.9	3 1/2	19.1
40	1511.3	196.9	223.8	363.5	1127.3	1016.0	1162.1	1339.9	24	91.9	3 1/2	20.6
42	1562.1	206.2	231.6	371.3	1176.3	1066.8	1212.9	1390.7	24	91.9	3 1/2	20.6
44	1648.0	214.4	242.8	390.7	1234.9	1117.6	1270.0	1463.5	24	98.6	3 3/4	22.4
46	1733.6	225.6	255.5	411.0	1292.4	1168.4	1333.5	1536.7	24	104.6	4	22.4
48	1784.4	233.4	263.7	419.1	1343.2	1219.2	1384.3	1587.5	24	104.6	4	23.9
50	To be specified by customer.											
52	To be specified by customer.											

CLASS 75 FLANGES ASME B 16.47 SERIES B



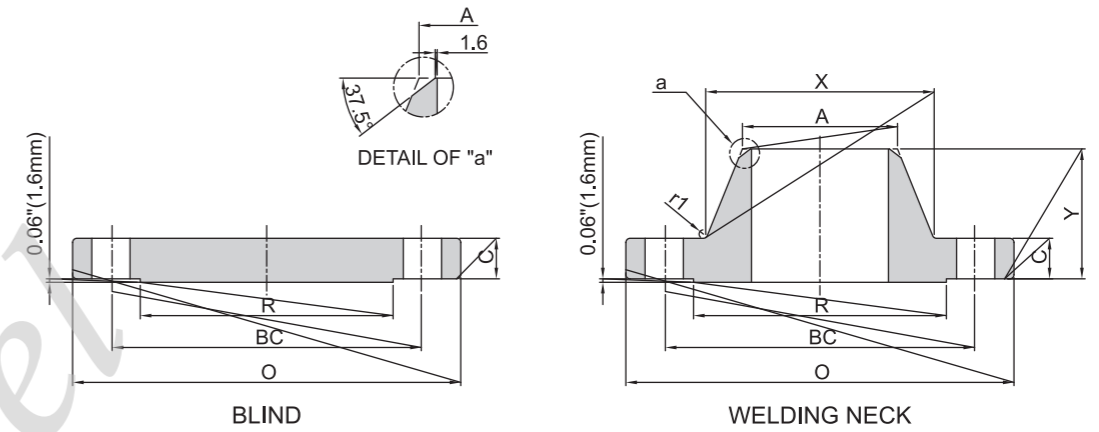
Unit : mm

Nominal Pipe Size	O.D. OF Flange	Thickness		Length Through Hub	Diam. of Hub at Base	Hub Diam. Top	Raised Face Diam.	Drilling			Diam. of Bolt (inch)	Fillet Radius Min.
		W.N.F	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Holes		
		O	C									C	Y	X	A	R	r1
26	762.0	33.3	33.3	58.7	676.1	661.9	704.9	723.9	36	19.1	5/8	7.9
28	812.8	33.3	33.3	62.0	726.9	712.7	755.7	774.7	40	19.1	5/8	7.9
30	863.6	33.3	33.3	65.0	777.7	763.5	806.5	825.5	44	19.1	5/8	7.9
32	914.4	35.1	36.6	69.9	828.5	814.3	857.3	876.3	48	19.1	5/8	7.9
34	965.2	35.1	38.1	73.2	879.3	865.1	908.1	927.1	52	19.1	5/8	7.9
36	1033.5	36.6	42.4	85.8	935.0	915.9	965.2	992.1	40	22.4	3/4	9.7
38	1084.3	38.1	44.5	88.9	985.8	966.7	1016.0	1042.9	40	22.4	3/4	9.7
40	1135.1	38.1	44.5	91.9	1036.6	1017.5	1066.8	1093.7	44	22.4	3/4	9.7
42	1185.9	39.6	47.8	95.3	1087.4	1068.3	1117.6	1144.5	48	22.4	3/4	9.7
44	1251.0	42.9	49.3	104.6	1140.0	1119.1	1174.8	1203.5	36	25.4	7/8	9.7
46	1301.8	44.5	50.8	108.0	1190.8	1169.9	1225.6	1254.3	40	25.4	7/8	9.7
48	1352.6	46.0	53.8	111.3	1241.6	1220.7	1276.4	1305.1	44	25.4	7/8	9.7
50	1403.4	47.8	55.4	115.8	1293.9	1271.5	1327.2	1355.9	44	25.4	7/8	9.7
52	1457.5	47.8	57.2	120.7	1344.7	1322.3	1378.0	1409.7	48	25.4	7/8	9.7
54	1508.3	49.3	60.5	125.5	1397.0	1373.1	1428.8	1460.5	48	25.4	7/8	9.7
56	1574.8	50.8	62.0	134.9	1450.8	1423.9	1485.9	1521.0	40	28.4	1	11.2
58	1625.6	52.3	63.5	138.2	1501.6	1474.7	1536.7	1571.8	44	28.4	1	11.2
60	1676.4	55.6	66.5	144.5	1552.4	1525.5	1587.5	1622.6	44	28.4	1	11.2

NOTES

- 1) Bore size to be specified by customer.
- 2) When these flanges are required with flat face removed may be furnished.
Users are reminded that removing the raised face will make the length through hub nonstandard.

CLASS 150 FLANGES ASME B 16.47 SERIES B



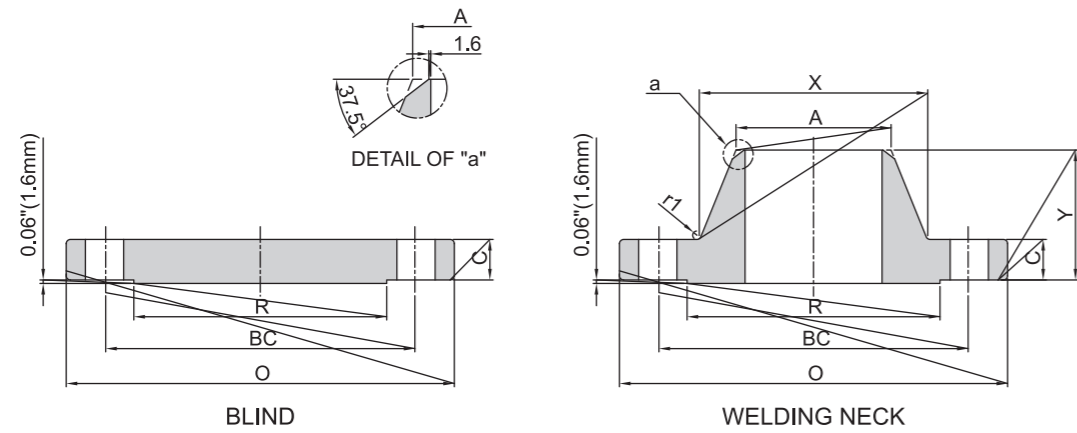
Unit : mm

Nominal Pipe Size	O.D. OF Flange	Thickness		Length Through Hub	Diam. of Hub at Base	Hub Diam. Top	Raised Face Diam.	Drilling			Diam. of Bolt (inch)	Fillet Radius Min.
		W.N.F	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Holes		
		O	C									C	Y	X	A	R	r1
26	785.9	41.1	44.5	88.9	684.3	661.9	711.2	744.5	36	22.4	3/4	9.7
28	836.7	44.5	47.8	95.3	735.1	712.7	762.0	795.3	40	22.4	3/4	9.7
30	887.5	44.5	50.8	100.1	787.4	763.5	812.8	846.1	44	22.4	3/4	9.7
32	941.3	46.0	53.8	108.0	839.7	814.3	863.6	900.2	48	22.4	3/4	9.7
34	1004.8	49.3	57.2	110.2	892.0	865.1	920.8	957.3	40	25.4	7/8	9.7
36	1057.1	52.3	58.7	117.3	944.6	915.9	971.6	1009.7	44	25.4	7/8	9.7
38	1124.0	53.8	63.5	124.0	997.0	968.2	1022.4	1069.8	40	28.4	1	9.7
40	1174.8	55.6	66.5	128.5	1049.3	1019.0	1079.5	1120.6	44	28.4	1	9.7
42	1225.6	58.7	68.3	133.4	1101.9	1069.8	1130.3	1171.4	48	28.4	1	11.2
44	1276.4	60.5	71.4	136.7	1152.7	1120.6	1181.1	1222.2	52	28.4	1	11.2
46	1341.4	62.0	74.7	144.5	1205.0	1171.4	1234.9	1284.2	40	31.8	1 1/8	11.2
48	1392.2	65.0	77.7	149.4	1257.3	1222.2	1289.1	1335.0	44	31.8	1 1/8	11.2
50	1443.0	68.3	80.8	153.9	1308.1	1273.0	1339.9	1385.8	48	31.8	1 1/8	11.2
52	1493.8	69.9	84.1	157.2	1360.5	1323.8	1390.7	1436.6	52	31.8	1 1/8	11.2
54	1549.4	71.4	87.4	162.1	1412.8	1374.6	1441.5	1492.3	56	31.8	1 1/8	11.2
56	1600.2	73.2	90.4	166.6	1465.4	1425.4	1492.3	1543.1	60	31.8	1 1/8	14.2
58	1674.9	74.7	93.5	174.8	1516.2	1476.2	1543.1	1611.4	48	35.1	1 1/4	14.2
60	1725.9	76.2	96.8	179.3	1570.0	1527.0	1600.2	1662.2	52	35.1	1 1/4	14.2

NOTES

- 1) Bore size to be specified by customer.
- 2) When these flanges are required with flat face removed may be furnished.
Users are reminded that removing the raised face will make the length through hub nonstandard.

CLASS 300 FLANGES ASME B 16.47 SERIES B



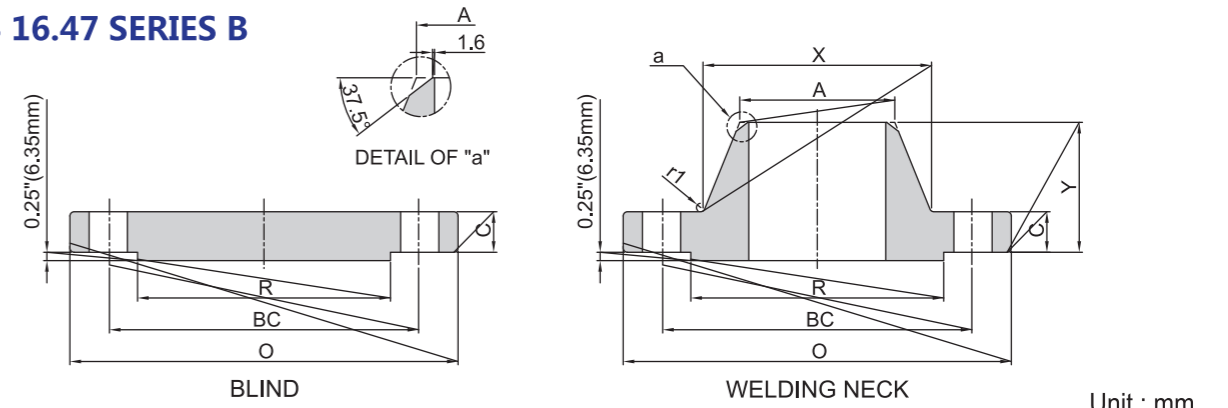
Unit : mm

Nominal Pipe Size	O.D. OF Flange	Thickness		Length Through Hub	Diam. of Hub at Base	Hub Diam. Top	Raised Face Diam.	Drilling			Diam. of Bolt (inch)	Fillet Radius Min.
		W.N.F	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Holes		
		O	C										C	Y	X	A	R
26	866.6	88.9	88.9	144.5	701.5	665.2	736.6	803.1	32	35.1	1 1/4	14.2
28	920.8	88.9	88.9	149.4	755.7	716.0	787.4	857.3	36	35.1	1 1/4	14.2
30	990.6	93.7	93.7	158.0	812.8	768.4	844.6	920.8	36	38.1	1 3/8	14.2
32	1054.1	103.1	103.1	168.1	863.6	819.2	901.7	977.9	32	41.1	1 1/2	15.7
34	1107.9	103.1	103.1	173.0	917.4	870.0	952.5	1031.7	36	41.1	1 1/2	15.7
36	1171.4	103.1	103.1	180.8	965.2	920.8	1009.7	1089.2	32	44.5	1 5/8	15.7
38	1222.2	111.3	111.3	192.0	1016.0	971.6	1060.5	1140.0	36	44.5	1 5/8	15.7
40	1273.0	115.8	115.8	198.4	1066.8	1022.4	1114.6	1190.8	40	44.5	1 5/8	15.7
42	1333.5	119.1	119.1	204.7	1117.6	1074.7	1168.4	1244.6	36	47.8	1 3/4	15.7
44	1384.3	127.0	127.0	214.4	1173.2	1125.5	1219.2	1295.4	40	47.8	1 3/4	15.7
46	1460.5	128.5	130.0	222.3	1228.9	1176.3	1270.0	1365.3	36	50.8	1 7/8	15.7
48	1511.3	128.5	134.9	223.8	1277.9	1227.1	1327.2	1416.1	40	50.8	1 7/8	15.7
50	1562.1	138.2	139.7	235.0	1330.5	1277.9	1378.0	1466.9	44	50.8	1 7/8	15.7
52	1612.9	142.7	144.3	242.8	1382.8	1328.7	1428.8	1517.7	48	50.8	1 7/8	15.7
54	1673.4	136.7	149.4	239.8	1435.1	1379.5	1479.6	1577.8	48	50.8	1 7/8	15.7
56	1765.3	153.9	157.0	268.2	1493.8	1430.3	1536.7	1651.0	36	60.5	2 1/4	17.5
58	1827.3	153.9	162.1	274.6	1547.9	1481.1	1593.9	1713.0	40	60.5	2 1/4	17.5
60	1878.1	150.9	166.6	271.5	1598.7	1531.9	1651.0	1763.8	40	60.5	2 1/4	17.5

NOTES

Bore size to be specified by customer.
When these flanges are required with flat face removed may be furnished.
Users are reminded that removing the raised face will make the length through hub nonstandard.

CLASS 600 FLANGES ASME B 16.47 SERIES B



Unit : mm

Nominal Pipe Size	O.D. OF Flange	Thickness		Length Through Hub	Diam. of Hub at Base	Hub Diam. Top	Raised Face Diam.	Drilling			Diam. of Bolt (inch)	Fillet Radius Min.
		W.N.F	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Holes		
		O	C										C	Y	X	A	R
26	889	111.3	111.3	180.8	698.5	660.4	726.9	806.5	28	44.5	1 5/8	12.7
28	952.5	115.8	115.8	190.5	752.3	711.2	784.4	863.6	28	47.8	1 3/4	12.7
30	1022.4	125.5	127.0	204.7	806.5	762.0	841.2	927.1	28	50.8	1 7/8	12.7
32	1085.9	130.0	134.9	215.9	860.6	812.8	895.4	984.3	28	53.8	2	12.7
34	1162.1	141.2	144.3	233.4	914.4	863.6	952.5	1054.1	24	60.5	2 1/4	14.2
36	1212.9	146.3	150.9	242.8	968.2	914.4	1009.7	1104.9	28	60.5	2 1/4	14.2
38-60	Size 38" thru 60" are identical to series A, Class 600 flanges.											

NOTES

1) Bore size to be specified by customer.
2) When these flanges are required with flat face removed may be furnished.
Users are reminded that removing the raised face will make the length through hub nonstandard.

CLASS 900 FLANGES ASME B 16.47 SERIES B

Unit : mm

Nominal Pipe Size	O.D. OF Flange	Thickness		Length Through Hub	Diam. of Hub at Base	Hub Diam. Top	Raised Face Diam.	Drilling			Diam. of Bolt (inch)	Fillet Radius Min.
		W.N.F	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Holes		
		O	C										C	Y	X	A	R
26	1022.4	134.9	153.9	258.8	743.0	660.4	762.0	901.7	20	66.5	2 1/2	11.2
28	1104.9	147.6	166.6	276.4	797.1	711.2	819.2	971.6	20	73.2	2 3/4	12.7
30	1181.1	155.4	176.0	289.1	850.9	762.0	876.3	1035.1	20	79.2	3	12.7
32	1238.3	160.3	185.7	303.3	908.1	812.8	927.1	1092.2	20	79.2	3	12.7
34	1314.5	171.5	195.1	319.0	962.2	863.6	990.6	1155.7	20	85.9	3 1/4	14.2
36	1346.2	173.0	201.7	325.4	1016.0	914.4	1028.7	1200.2	24	79.2	3	14.2
38-60	Size 38" thru 60" are identical to series A, Class 900 flanges.											

NOTES

Bore size to be specified by customer.
When these flanges are required with flat face removed may be furnished.
Users are reminded that removing the raised face will make the length through hub nonstandard.

重量公式 APPROX WEIGHT EQUATION

1. ELBOW

$$W = 15.4864 \times \theta / 360 \times F \times T \times (D - T) \times 10^{-5}$$

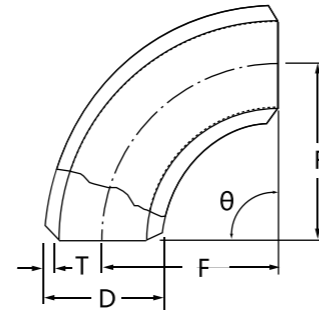
W = Weight (kg)

F = Center to End (mm)

D = Outside Diameter (mm)

T = Wall Thickness (mm)

θ = Angle



2. TEE

$$W = [0.02466 \{ 2Ct_1(OD_1 - t_1) + t_2(OD_2 - t_2) \times (M - OD_1/2) \}] \times 10^{-3} \times K$$

W = Weight (kg)

C = Center to End (mm)

OD₁ = Outside Diameter (mm)

t₁ = Wall Thickness (mm)

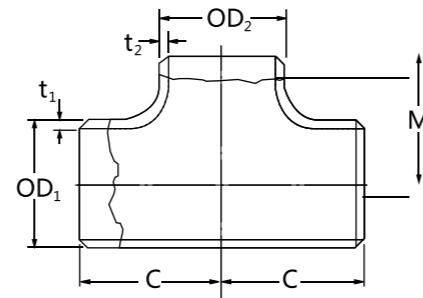
OD₂ = Outside Diameter (mm)

t₂ = Wall Thickness (mm)

M = Center to End (mm)

K = 1 (PLATE)

K = 1.363 (PIPE)



3. REDUCER

$$W = 1.232t_1(OD_1 + OD_2 - 2t_1)\ell \times 10^{-5}$$

$$\ell = \frac{\sqrt{H^2 + (OD_1 - OD_2)^2}}{2}$$

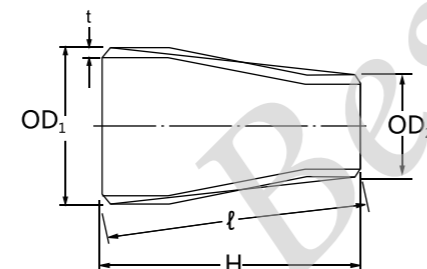
W = Weight (kg)

H = End to End (mm)

OD₁ = Large Size Outside Diameter (mm)

OD₂ = Small Size

t₁ = Wall Thickness (mm)



4. CAP

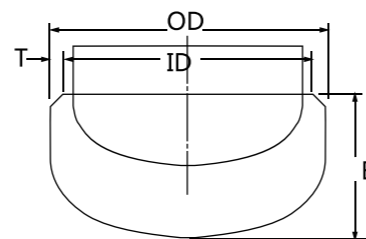
$$W = 7.85 \times \frac{\pi}{4} (OD + E)^2 \times T \times 10^{-6}$$

W = Weight (kg)

OD = Outside Diameter (mm)

T = Wall Thickness (mm)

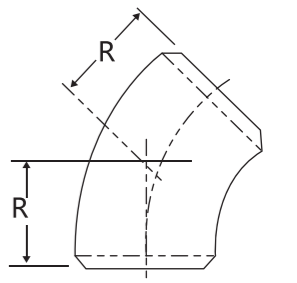
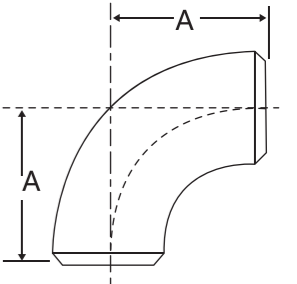
E = End to End (mm)



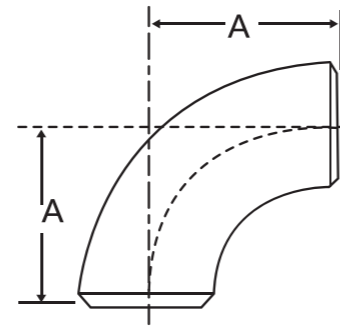
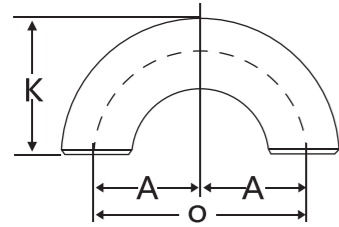
弯头 45,90,180° Elbow - ASME B16.9

DIMENSIONS OF LONG RADIUS ELBOWS

Nominal Pipe Size (NPS)	DN	Outside Diameter at Bevel	Center to End	
			90 Deg Elbows A	45 Deg Elbows B
1/2	15	21.3	38	16
1/4	20	26.7	38	19
1	25	33.4	38	22
1 1/4	32	42.2	48	25
1 1/2	40	48.3	57	29
2	50	60.3	76	35
2 1/2	65	73	95	44
3	80	88.9	114	51
3 1/2	90	101.6	133	57
4	100	114.3	152	64
5	125	141.3	190	79
6	150	168.3	229	95
8	200	219.1	305	127
10	250	273	381	159
12	300	323.8	457	190
14	350	355.6	533	222
16	400	406.4	610	254
18	450	457	686	286
20	500	508	762	318
22	550	559	838	343
24	600	610	914	381
26	650	660	991	405
28	700	711	1067	438
30	750	762	1143	470
32	800	813	1219	502
34	850	864	1295	533
36	900	914	1372	565
38	950	965	1448	600
40	1000	1016	1524	632
42	1050	1067	1600	660
44	1100	1118	1676	695
46	1150	1168	1753	727
48	1200	1219	1829	759



Notes:
The above size only according to the standard ASME B16.9, different standard the size is different .

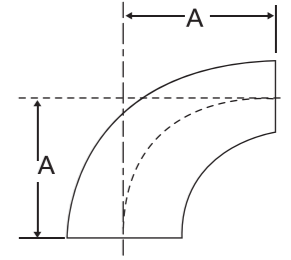


DIMENSIONS OF LONG RADIUS RETURNS

Nominal Pipe Size (NPS)	DN	Outside Diameter at Bevel	Center-to-Center, D	Back-to-Face, K
1/2	15	21.3	76	48
3/4	20	26.7	76	51
1	25	33.4	76	56
1 1/4	32	42.2	95	70
1 1/2	40	48.3	114	83
2	50	60.3	152	106
2 1/2	65	73.0	190	132
3	80	88.9	229	159
3 1/2	90	101.6	267	184
4	100	114.3	305	210
5	125	141.3	381	262
6	150	168.3	457	313
8	200	219.1	610	414
10	250	273	762	518
12	300	323.8	914	619
14	350	355.6	1067	711
16	400	406.4	1219	813
18	450	457	1372	914
20	500	508	1524	1016
22	550	559	1676	1118
24	600	610	1829	1219

Notes: All dimensions are in millimeters.
The above size only according to the standard ASME B16.9, different standard the size is different .

异径弯头 Reducing Elbow - ASME B16.9



DIMENSIONS OF LONG RADIUS-REDUCING ELBOWS

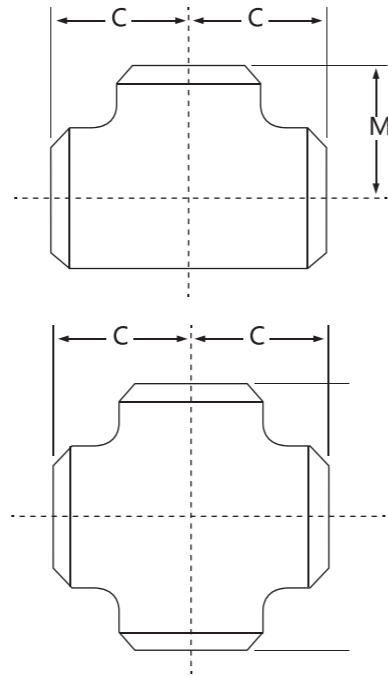
Nominal Pipe Size (NPS)	DN	Outside Diameter at Bevel		Center-to-End, A	Nominal Pipe Size (NPS)	DN	Outside Diameter at Bevel		Center-to-End, A
		Large End	Small End				Large End	Small End	
2 × 1 1/2	50 × 40	60.3	48.3	76	10 × 8	250 × 200	273	219.1	381
2 × 1 1/4	50 × 32	60.3	42.2	76	10 × 6	250 × 150	273	168.3	381
2 × 1	50 × 25	60.3	33.4	76	10 × 5	250 × 125	273	141.3	381
2 1/2 × 2	65 × 50	73	60.3	95	12 × 10	300 × 250	323.8	273	457
2 1/2 × 1 1/2	65 × 40	73	48.3	95	12 × 8	300 × 200	323.8	219.1	457
2 1/2 × 1 1/4	65 × 32	73	42.2	95	12 × 6	300 × 150	323.8	168.3	457
3 × 2 1/2	80 × 65	88.9	73	114	14 × 12	350 × 300	355.6	323.8	533
3 × 2	80 × 50	88.9	60.3	114	14 × 10	350 × 250	355.6	273	533
3 × 1 1/2	80 × 40	88.9	48.3	114	14 × 8	350 × 200	355.6	219.1	533
3 1/2 × 3	90 × 80	101.6	88.9	133	16 × 14	400 × 350	406.4	355.6	610
3 1/2 × 2 1/2	90 × 65	101.6	73	133	16 × 12	400 × 300	406.4	323.8	610
3 1/2 × 2	90 × 50	101.6	60.3	133	16 × 10	400 × 250	406.4	273	610
4 × 3 1/2	100 × 90	114.3	101.6	152	18 × 16	450 × 400	457	406.4	686
4 × 3	100 × 80	114.3	88.9	152	18 × 14	450 × 350	457	355.6	686
4 × 2 1/2	100 × 65	114.3	73	152	18 × 12	450 × 300	457	323.8	686
4 × 2	100 × 50	114.3	60.3	152	18 × 10	450 × 250	457	273	686
5 × 4	125 × 100	141.3	114.3	190	20 × 18	500 × 450	508	457	762
5 × 3 1/2	125 × 90	141.3	101.6	190	20 × 16	500 × 400	508	406.4	762
5 × 3	125 × 80	141.3	88.9	190	20 × 14	500 × 350	508	355.6	762
5 × 2 1/2	125 × 65	141.3	73	190	20 × 12	500 × 300	508	323.8	762
6 × 5	150 × 125	168.3	141.3	229	20 × 10	500 × 250	610	273	762
6 × 4	150 × 100	168.3	114.3	229	24 × 22	600 × 550	610	559	914
6 × 3 1/2	150 × 90	168.3	101.6	229	24 × 20	600 × 500	610	508	914
6 × 3	150 × 80	168.3	88.9	229	24 × 18	600 × 450	610	457	914
8 × 6	200 × 150	219.1	168.3	305	24 × 16	600 × 400	610	406.4	914
8 × 5	200 × 125	219.1	141.3	305	24 × 14	600 × 350	610	355.6	914
8 × 4	200 × 100	219.1	114.3	305	24 × 12	600 × 300	610	323.8	914

Notes: All dimensions are in millimeters.
The above size only according to the standard ASME B16.9, different standard the size is different .

三通&四通 Tee - ASME B16.9

DIMENSIONS OF STRAIGHT TEES

Nominal Pipe Size(NPS)	DN	Outside Diameter at Bevel	Center- to-End	
			Run,C	Outlet,M
1/2	15	21.3	25	25
3/4	20	26.7	29	29
1	25	33.4	38	38
1 1/4	32	42.2	48	48
1 1/2	40	48.3	57	57
2	50	60.3	64	64
2 1/2	65	73.0	76	76
3	80	88.9	86	86
3 1/2	90	101.6	95	95
4	100	114.3	105	105
5	125	141.3	124	124
6	150	168.3	143	143
8	200	219.1	178	178
10	250	273.0	216	216
12	300	323.8	254	254
14	350	355.6	279	279
16	400	406.4	305	305
18	450	457	343	343
20	500	508	381	381
22	550	559	419	419
24	600	610	432	432
26	650	660	495	495
28	700	711	521	521
30	750	762	559	559
32	800	813	597	597
34	850	864	635	635
36	900	914	673	673
38	950	965	711	711
40	1000	1016	749	749
42	1050	1067	762	711
44	1100	1118	813	762
46	1150	1168	851	800
48	1200	1219	889	838

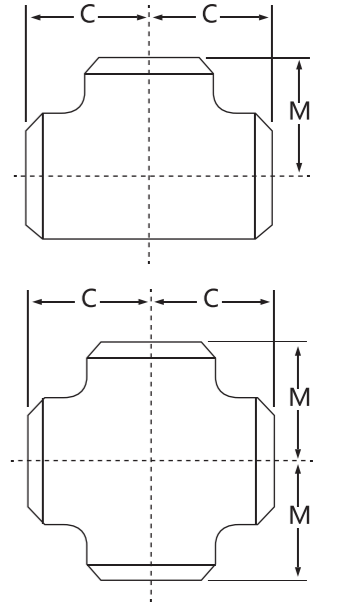


Notes: All dimensions are in millimeters.

- (1) Outlet dimension M for NPS 26 (DN 650) and larger is recommended but not required.
- (2) Dimensions applicable to crosses NPS 24 (DN 600) and smaller.
- (3)The above size only according to the standard ASME B16.9, different standard the size is different .

异径三通&四通 Reducing Tee - ASME B16.9

Nominal Pipe Size(NPS)	DN	Outside Diameter at Center-to-End Size Bevel		Center-to-End	
		Run	Outlet	Run,C	Outlet M
1/2×1/2×3/8	15 ×15 ×10	21.3	17.3	25	25
1/2×1/2×1/4	15 ×15 ×8	21.3	13.7	25	25
3/4×3/4×1/2	20 ×20 ×15	26.7	21.3	29	29
3/4×3/4×3/8	20 ×20 ×10	26.7	17.3	29	29
1×1×3/4	25 ×25 ×20	33.4	26.7	38	38
1×1×1/2	25 ×25 ×15	33.4	21.3	38	38
1 1/4×1 1/4×1	32 ×32 ×25	42.2	33.4	48	48
1 1/4×1 1/4×3/4	32 ×32 ×20	42.2	26.7	48	48
1 1/4×1 1/4×1/2	32 ×32 ×15	42.2	21.3	48	48
1 1/2×1 1/2×1 1/4	40 ×40 ×32	48.3	42.2	57	57
1 1/2×1 1/2×1	40 ×40 ×25	48.3	33.4	57	57
1 1/2×1 1/2×3/4	40 ×40 ×20	48.3	26.7	57	57
1 1/2×1 1/2×1/2	40 ×40 ×15	48.3	21.3	57	57
2×2×1 1/2	50 ×50 ×40	60.3	48.3	64	60
2×2×1 1/4	50 ×50 ×32	60.3	42.2	64	57
2×2×1	50 ×50 ×25	60.3	33.4	64	51
2×2×3/4	50 ×50 ×20	60.3	26.7	64	44
2 1/2×2 1/2×2	65 ×65 ×50	73	60.3	76	70
2 1/2×2 1/2×1 1/2	65 ×65 ×40	73	48.3	76	67
2 1/2×2 1/2×1 1/4	65 ×65 ×32	73	42.2	76	64
2 1/2×2 1/2×1	65 ×65 ×25	73	33.4	76	57
3×3×2 1/2	80 ×80 ×65	88.9	73	86	83
3×3×2	80 ×80 ×50	88.9	60.3	86	76
3×3×1 1/2	80 ×80 ×40	88.9	48.3	86	73
3×3×1 1/4	80 ×80 ×32	88.9	42.2	86	70
3 1/2×3 1/2×3	90 ×90 ×80	101.6	88.9	95	92
3 1/2×3 1/2×2 1/2	90 ×90 ×65	101.6	73	95	89
3 1/2×3 1/2×2	90 ×90 ×50	101.6	60.3	95	83
3 1/2×3 1/2×1 1/2	90 ×90 ×40	101.6	48.3	95	79
4×4×3 1/2	100 ×100 ×90	114.3	101.6	105	102
4×4×3	100 ×100 ×80	114.3	88.9	105	98
4×4×2 1/2	100 ×100 ×65	113.3	73	105	95
4×4×2	100 ×100 ×50	114.3	60.3	105	89
4×4×1 1/2	100 ×100 ×40	114.3	48.3	105	86
5×5×4	125 ×125 ×100	141.3	114.3	125	117
5×5×3 1/2	125 ×125 ×90	141.3	101.6	124	114
5×5×3	125 ×125 ×80	141.3	88.9	124	111
5×5×2 1/2	125 ×125 ×65	141.3	73	124	108
5×5×2	125 ×125 ×50	141.3	60.3	124	105

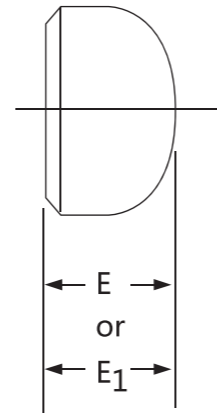


Notes:

The above size only according to the standard ASME B16.9, different standard the size is different .

管帽 Caps - ASME B16.9

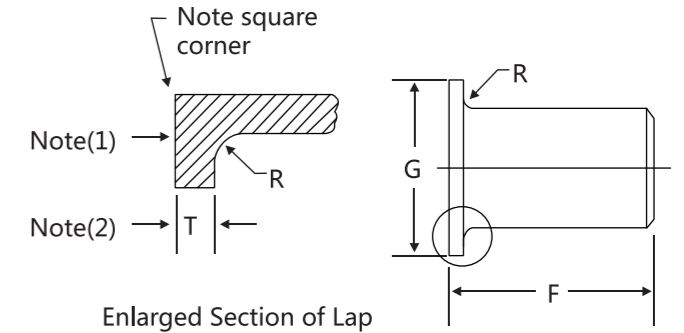
Nominal Pipe Size (NPS)	DN	Outside Diameter at Bevel	Length, E	Limiting Wall Thickness for	Length, E
			[Note (1)]	Length, E	[Note (2)]
1/2	15	21.3	25	4.57	25
3/4	20	26.7	25	3.81	25
1	25	33.4	38	4.57	38
1 1/4	32	42.2	38	4.83	38
1 1/2	40	48.3	38	5.08	38
2	50	60.3	38	5.59	44
2 1/2	65	73	38	7.11	51
3	80	88.9	51	7.62	64
3 1/2	90	101.6	64	8.13	76
4	100	114.3	64	8.64	76
5	125	141.3	76	9.65	89
6	150	168.3	89	10.92	102
8	200	219.1	102	12.7	127
10	250	273	127	12.7	152
12	300	323.8	152	12.7	178
14	350	355.6	165	12.7	191
16	400	406.4	178	12.7	203
18	450	457	203	12.7	229
20	500	508	229	12.7	254
22	550	559	254	12.7	254
24	600	610	267	12.7	305
26	650	660	267	...	...
28	700	711	267	...	...
30	750	762	267	...	...
32	800	813	267	...	...
34	850	864	267	...	...
36	900	914	267	...	...
38	950	965	305	...	...
40	1000	1016	305	...	...
42	1050	1067	305	...	...
44	1100	1118	343	...	...
46	1150	1168	343	...	...
48	1200	1219	343	...	...



Notes:
 (a) All dimensions are in millimeters.
 (b) The shape of these caps shall be ellipsoidal and shall conform to the shape requirements as given in the ASME Boiler and Pressure Vessel Code.
 (c) The above size only according to the standard ASME B16.9, different standard the size is different.

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 (DN 600) and smaller. For NPS 26 (DN 65) and larger, length E₁ shall be by agreement between manufacturer and purchaser.

翻边 Lap Joint Stub Ends - ASME B16.9

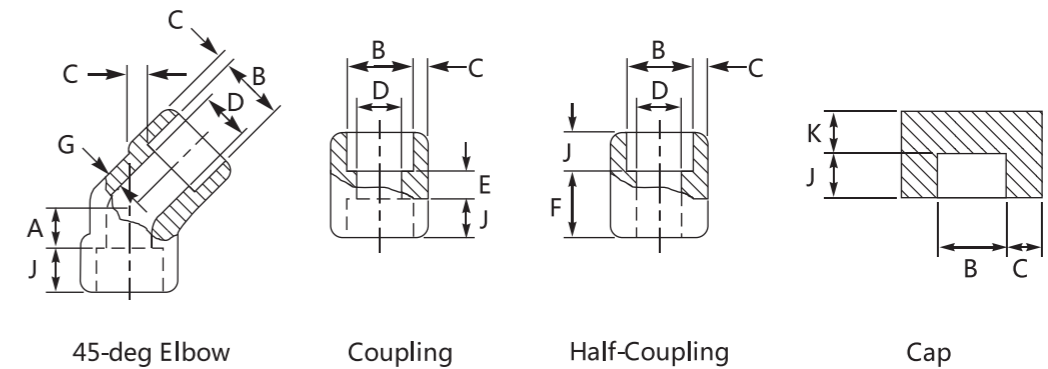
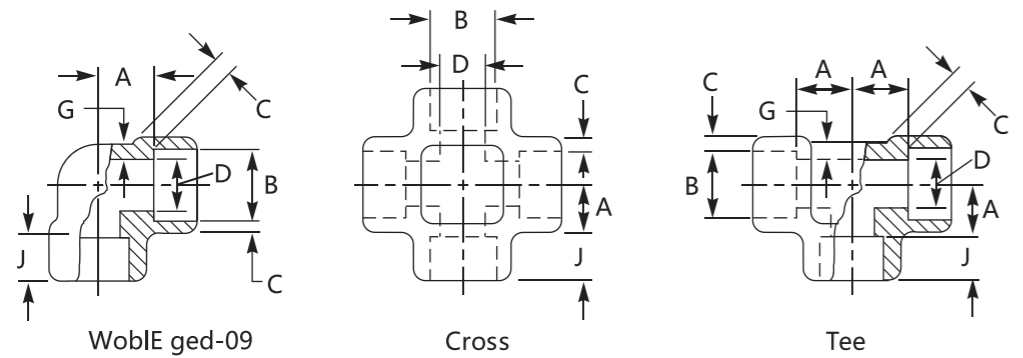


DIMENSIONS OF LAP JOINT STUB ENDS

Nominal Pipe Size(NPS)	DN	Outside Diameter of Barrel		Long Pattern Length,F	Short Pattern Length,F	Radius of Fillet,R	Diameter of Lap,G
		Max	Min				
1/2	15	22.8	20.5	76	51	3	35
3/4	20	28.1	25.9	76	51	3	43
1	25	35	32.6	102	51	3	51
1 1/4	32	43.6	41.4	102	51	5	64
1 1/2	40	49.9	47.5	102	51	6	73
2	50	62.4	59.5	152	64	8	92
2 1/2	65	75.3	72.2	152	64	8	106
3	80	91.3	88.1	152	64	10	127
3 1/2	90	104	100.8	152	76	10	140
4	100	116.7	113.5	152	76	11	157
5	125	144.3	140.5	203	76	11	185
6	150	171.3	167.5	203	89	13	218
8	200	222.1	218.3	203	102	13	270
10	250	277.2	272.3	254	127	13	324
12	300	328	323.1	254	152	13	381
14	350	359.9	354.8	305	152	13	413
16	400	411	405.6	305	152	13	470
18	450	462	456	305	152	13	533
20	500	514	507	305	152	13	584
22	550	565	558	305	152	13	641
24	600	616	609	305	152	13	692

Notes:
 (a) All dimensions are in millimeters.
 (b) The above size only according to the standard ASME B16.9, different standard the size is different.
 (c) Service conditions and joint construction often dictate stub end length requirements. Therefore, the purchaser must specify long or short pattern fitting when ordering.

承插管件 Socket Welding Fittings - ASME B16.11



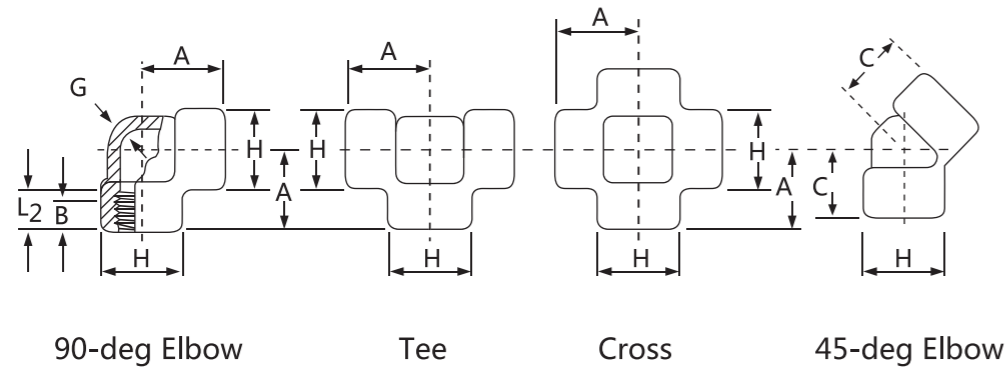
Nominal Pipe Size	Socket Bore Diameter, B [Note (1)]	Bore Diameter of Fittings, D [Note (1)]			Socket Wall Thickness, C [Note (2)]						Body Wall, G			Min. Depth of Socket, J
		Class Designation			Class Designation						Class Designation			
		3000	6000	9000	3000		6000		9000		3000	6000	9000	
					Avg.	Min.	Avg.	Min.	Avg.	Min.				
1/8	0.440	0.299	0.189	...	0.125	0.125	0.156	0.135	0.095	0.124	...	0.38
	0.420	0.239	0.126	...										
1/4	0.575	0.394	0.280	...	0.149	0.130	0.181	0.158	0.119	0.145	...	0.38
	0.555	0.334	0.220	...										
3/8	0.710	0.523	0.389	...	0.158	0.138	0.198	0.172	0.126	0.158	...	0.38
	0.690	0.463	0.329	...										
1/2	0.875	0.652	0.494	0.282	0.184	0.161	0.235	0.204	0.368	0.322	0.147	0.188	0.294	0.38
	0.855	0.592	0.434	0.222										
3/4	1.085	0.854	0.642	0.464	0.193	0.168	0.274	0.238	0.385	0.337	0.154	0.219	0.308	0.50
	1.065	0.794	0.582	0.404										
1 1/4	1.350	1.079	0.845	0.629	0.224	0.196	0.312	0.273	0.448	0.392	0.179	0.250	0.358	0.50
	1.330	1.019	0.785	0.569										
1 1/4	1.695	1.410	1.190	0.926	0.239	0.208	0.312	0.273	0.478	0.418	0.191	0.250	0.382	0.50
	1.675	1.350	1.130	0.866										
1 1/2	1.935	1.640	1.368	1.130	0.250	0.218	0.351	0.307	0.500	0.438	0.200	0.281	0.400	0.50
	1.915	1.580	1.308	1.070										
2	2.426	2.097	1.717	1.533	0.273	0.238	0.430	0.374	0.545	0.477	0.218	0.344	0.436	0.62
	2.406	2.037	1.657	1.473										
2 1/2	2.931	2.529	0.345	0.302	0.276	0.62
	2.906	2.409	...	...								
3	3.560	3.128	0.375	0.327	0.300	0.62
	3.535	3.008	...	...								
4	4.570	4.086	0.421	0.368	0.337	0.75
	4.545	3.966	...	...								

Notes: Dimensions are in inches.

90-deg Elbows, Tees, and Crosses	Center to Bottom of Socket, A						Laying Lengths	Tolerances, ±	End Wall Thickness, Kmin.							
	45-deg Elbows								Couplings, E	Half Couplings, F	Class Designation					
	Class Designation										A	E	F	3000	6000	9000
	3000	6000	9000	3000	6000	9000										
45-deg Elbow	0.44	0.44	...	0.31	0.31	...	0.25	0.62	0.03	0.06	0.03	0.19	0.25	...		
	0.44	0.53	...	0.31	0.31	...	0.25	0.62	0.03	0.06	0.03	0.19	0.25	...		
	0.53	0.62	...	0.31	0.44	...	0.25	0.69	0.06	0.12	0.06	0.19	0.25	...		
	0.62	0.75	1.00	0.44	0.50	0.62	0.38	0.88	0.06	0.12	0.06	0.25	0.31	0.44		
	0.75	0.88	1.12	0.50	0.56	0.75	0.38	0.94	0.06	0.12	0.06	0.25	0.31	0.50		
	0.88	1.06	1.25	0.56	0.69	0.81	0.50	1.12	0.08	0.16	0.08	0.38	0.44	0.56		
	1.06	1.25	1.38	0.69	0.81	0.88	0.50	1.19	0.08	0.16	0.08	0.38	0.44	0.56		
	1.25	1.50	1.50	0.81	1.00	1.00	0.50	1.25	0.08	0.16	0.08	0.44	0.50	0.62		
Coupling	1.50	1.62	2.12	1.00	1.12	1.12	0.75	1.62	0.08	0.16	0.08	0.50	0.62	0.75		
	1.62	...	...	1.12	...	...	0.75	1.69	0.10	0.20	0.10	0.62	0.75	...
Half-Coupling	2.25	...	...	1.25	...	...	0.75	1.75	0.10	0.20	0.10	0.75	0.88	...
	2.62	...	...	1.62	...	...	0.75	1.88	0.10	0.20	0.10	0.88	1.12	...

螺纹管件 Forged Threaded Fittings - ASME B16.11

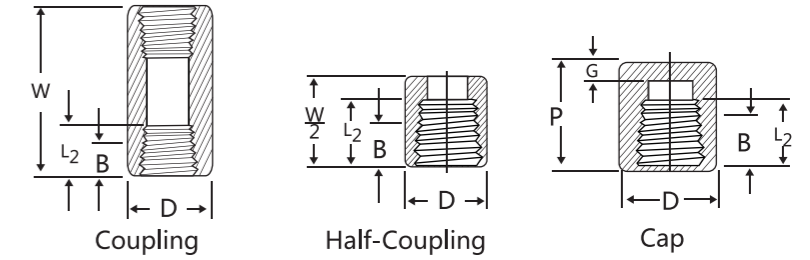
Threaded Fittings



Nominal Pipe Size	Center-to-End Elbows, Tees, Crosses			Center-to-End 45-deg Elbow			Outside Diameter of Band			Min. Wall Thickness			Min. Length of Thread	
	A			C			H			G			B	L ₂
	2000	3000	6000	2000	3000	6000	2000	3000	6000	2000	3000	6000		
1/8	0.81	0.81	0.97	0.69	0.69	0.75	0.88	0.88	1	0.125	0.125	0.25	0.25	0.2639
1/4	0.81	0.97	1.12	0.69	0.75	0.88	0.88	1	1.31	0.125	0.13	0.26	0.32	0.4018
3/8	0.97	1.12	1.31	0.75	0.88	1	1	1.31	1.5	0.125	0.138	0.275	0.36	0.4078
1/2	1.12	1.31	1.5	0.88	1	1.12	1.31	1.5	1.81	0.125	0.161	0.321	0.43	0.5337
3/4	1.31	1.5	1.75	1	1.12	1.31	1.5	1.81	2.19	0.125	0.17	0.336	0.5	0.5457
1	1.5	1.75	2	1.12	1.31	1.38	1.81	2.19	2.44	0.145	0.196	0.391	0.58	0.6828
1 1/4	1.75	2	2.38	1.31	1.38	1.69	2.19	2.44	2.97	0.153	0.208	0.417	0.67	0.7068
1 1/2	2	2.38	2.5	1.38	1.69	1.72	2.44	2.97	3.31	0.158	0.219	0.436	0.7	0.7235
2	2.38	2.5	3.25	1.69	1.72	2.06	2.97	3.31	4	0.168	0.281	0.476	0.75	0.7565
2 1/2	3	3.25	3.75	2.06	2.06	2.5	3.62	4	4.75	0.221	0.301	0.602	0.93	1.138
3	3.38	3.75	4.19	2.5	2.5	3.12	4.31	4.75	5.75	0.236	0.348	0.655	1.02	1.2
4	4.19	4.5	4.5	3.12	3.12	3.12	5.75	6	6	0.258	0.44	0.735	1.09	1.3

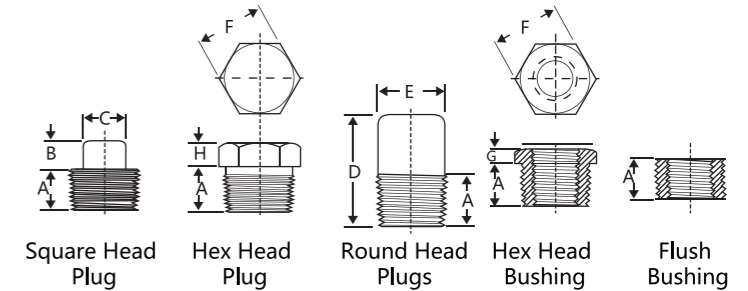
Notes: Dimensions are in inches.

Threaded Fittings



Nominal Pipe Size	End-to-End Couplings		End-to-End Caps		Outside Diameter		Min. Wall Thickness		Min. Length of Thread	
	W		P		D		G		B	L ₂
	3000 and 6000	3000	6000	3000	6000	3000	6000			
1/8	1.25	0.75	...	0.62	0.88	0.19	...	0.25	0.2639	
1/4	1.38	1	1.06	0.75	1	0.19	0.25	0.32	0.4018	
3/8	1.5	1	1.06	0.88	1.25	0.19	0.25	0.36	0.4078	
1/2	1.88	1.25	1.31	1.12	1.5	0.25	0.31	0.43	0.5337	
3/4	2	1.44	1.5	1.38	1.75	0.25	0.31	0.5	0.5457	
1	2.38	1.62	1.69	1.75	2.25	0.38	0.44	0.58	0.6828	
1 1/4	2.62	1.75	1.81	2.25	2.5	0.38	0.44	0.67	0.7068	
1 1/2	3.12	1.75	1.88	2.5	3	0.44	0.5	0.7	0.7235	
2	3.38	1.88	2	3	3.62	0.5	0.62	0.75	0.7565	
2 1/2	3.62	2.38	2.5	3.62	4.25	0.62	0.75	0.93	1.138	
3	4.25	2.56	2.69	4.25	5	0.75	0.88	1.02	1.2	
4	4.75	2.69	2.94	5.5	6.25	0.88	1.12	1.09	1.3	

Notes: Dimensions are in inches.



Plugs and Bushings

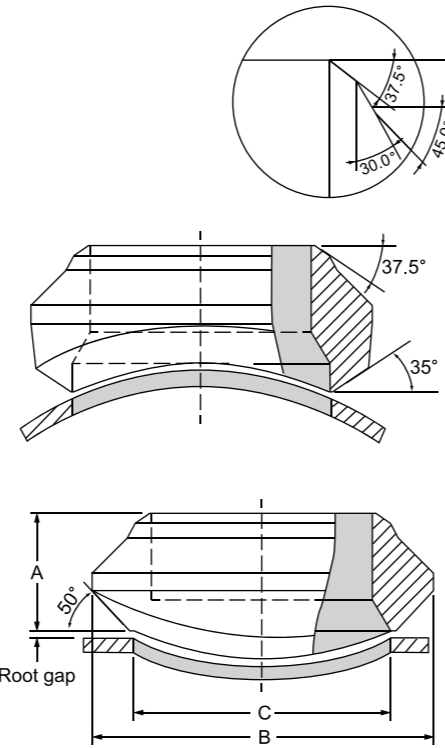
Nominal Pipe Size	Min. Length, A	Square Head Plugs		Round Head Plugs		Hex Plugs and Bushings		
		Min. Square Height, B	Min. Width Flats, C	Head Diameter, E	Min. Length, D	Nominal Width Flats, F	Hex Height	
							Min. Bushing, G	Plug, H
1/8	0.38	0.25	0.28	0.41	1.38	0.44	...	0.25
1/4	0.44	0.25	0.38	0.53	1.62	0.62	0.12	0.25
3/8	0.5	0.31	0.44	0.69	1.62	0.69	0.16	0.31
1/2	0.56	0.38	0.56	0.84	1.75	0.88	0.19	0.31
3/4	0.62	0.44	0.62	1.06	1.75	1.06	0.22	0.38
1	0.75	0.5	0.81	1.31	2	1.38	0.25	0.38
1 1/4	0.81	0.56	0.94	1.69	2	1.75	0.28	0.56
1 1/2	0.81	0.62	1.12	1.91	2	2	0.31	0.62
2	0.88	0.69	1.31	2.38	2.5	2.5	0.34	0.69
2 1/2	1.06	0.75	1.5	2.88	2.75	3	0.38	0.75
3	1.12	0.81	1.69	3.5	2.75	3.5	0.41	0.81
4	1.25	1	2.5	4.5	3	4.62	0.5	1

Notes: Dimensions are in inches.

Weldolet STD(SCH40),XS(SCH80),XXS(SCH160)

STD,XS

Outlet Size	A		B		C	
	STD	XS	STD	XS	STD	XS
1/2	19.1	19.1	34.9	34.9	23.8	23.8
3/4	22.2	22.2	44.5	44.5	30.2	30.2
1	27.0	27.0	54.0	54.0	36.5	36.5
1 1/4	31.8	31.8	65.1	65.1	44.5	44.5
1 1/2	33.3	33.3	73.0	73.0	50.8	50.8
2	38.1	38.1	88.9	88.9	65.1	65.1
2 1/2	41.3	41.3	103.2	103.2	76.2	76.2
3	44.5	44.5	122.2	122.2	93.7	93.7
4	50.8	50.8	152.4	152.4	120.7	120.7
5	57.2	57.2	179.4	179.4	141.3	141.3
6	60.3	77.8	215.9	225.4	169.9	169.9
8	69.9	98.5	263.5	292.1	220.7	220.7
10	77.8	93.7	322.3	323.9	274.7	265.1
12	85.7	103.2	377.8	397.4	325.4	317.5
14	88.9	100.0	409.6	431.8	357.2	350.8
16	93.7	106.4	463.6	466.7	408.0	403.2
18	96.8	111.1	520.7	523.9	458.0	455.6
20	101.6	119.1	571.5	582.6	508.0	509.6
24	115.9	139.7	689.0	708.0	614.4	638.2



XXS(SCH160)

Outlet Size	A		B		C	
	SCH160	XXS	SCH160	XXS	SCH160	XXS
1/2	28.6	28.6	34.9	34.9	14.3	14.3
3/4	31.8	31.8	44.5	44.5	19.1	19.1
1	38.1	38.1	50.8	50.8	25.4	25.4
1 1/4	44.5	44.5	61.9	61.9	33.3	33.3
1 1/2	50.8	50.8	69.9	69.9	38.1	38.1
2	55.6	55.6	81.0	81.0	42.9	42.9
2 1/2	61.9	61.9	96.8	96.8	54.0	54.0
3	73.0	73.0	120.7	120.7	73.0	73.0
4	84.1	84.1	152.4	152.4	98.4	98.4
5	93.7	93.7	187.3	187.3	122.2	122.2
6	104.8	104.8	220.7	220.7	146.1	146.1
8	111.1	111.1	284.2	284.2	173.0	173.0
10	125.4	125.4	312.7	312.7	215.9	215.9

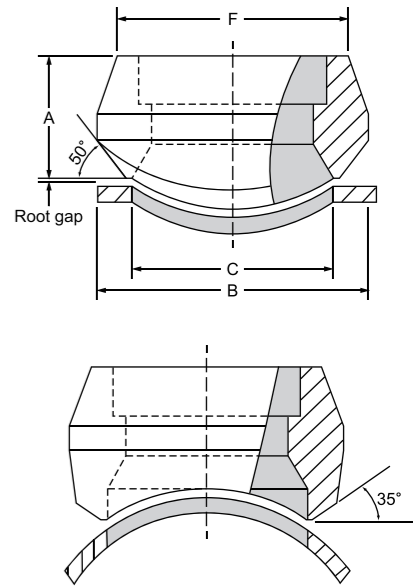
Notes:
Dimensions are in millimeters
Applicable Run Pipe Sizes are from
Out-Let size to 36 inch

Socketlet

3000# 6000#

Outlet Size	A		B		C		F	
	3000#	6000#	3000#	6000#	3000#	6000#	3000#	6000#
1/2	25.4	31.8	34.9	44.5	23.8	19.1	31.8	39.7
3/4	27.0	36.5	44.5	50.8	30.2	25.4	36.5	45.2
1	33.3	39.7	54.0	61.9	36.5	33.3	46.0	57.2
1 1/4	33.3	41.3	65.1	69.9	44.5	37.1	55.6	65.1
1 1/2	34.9	42.9	73.0	82.6	50.8	49.2	61.9	76.2
2	38.1	58.7	88.9	103.2	65.1	69.9	74.6	92.1
2 1/2	46.0	-	103.2	-	76.2	-	87.3	-
3	50.8	-	122.2	-	93.7	-	104.8	-
4	57.2	-	152.4	-	120.7	-	130.2	-

Notes: Dimensions are in millimeters

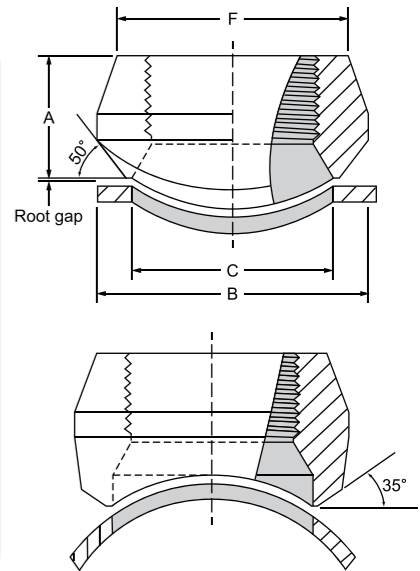


Threadolet

3000# 6000#

Outlet Size	A		B		C		F	
	3000#	6000#	3000#	6000#	3000#	6000#	3000#	6000#
1/2	25.4	31.8	34.9	44.5	23.8	19.1	31.8	39.7
3/4	27.0	36.5	44.5	50.8	30.2	25.4	36.5	45.2
1	33.3	39.7	54.0	61.9	36.5	33.3	46.0	57.2
1 1/4	33.3	41.3	65.1	69.9	44.5	38.1	55.6	65.1
1 1/2	34.9	42.9	73.0	82.6	50.8	49.2	61.9	76.2
2	38.1	52.4	88.9	103.2	65.1	69.9	74.6	92.1
2 1/2	46.0	-	103.2	-	76.2	-	87.3	-
3	50.8	-	122.2	-	93.7	-	104.8	-
4	57.2	-	152.4	-	120.7	-	130.2	-

Notes:
Dimensions are in millimeters
Applicable Run Pipe Sizes are from Out-Let size to 36 inch
For the 3000# and 6000# Socketlets and Threadolets, Inside Bore, Thread, Socket
Depth Dimensions are According to ASME B16.11



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