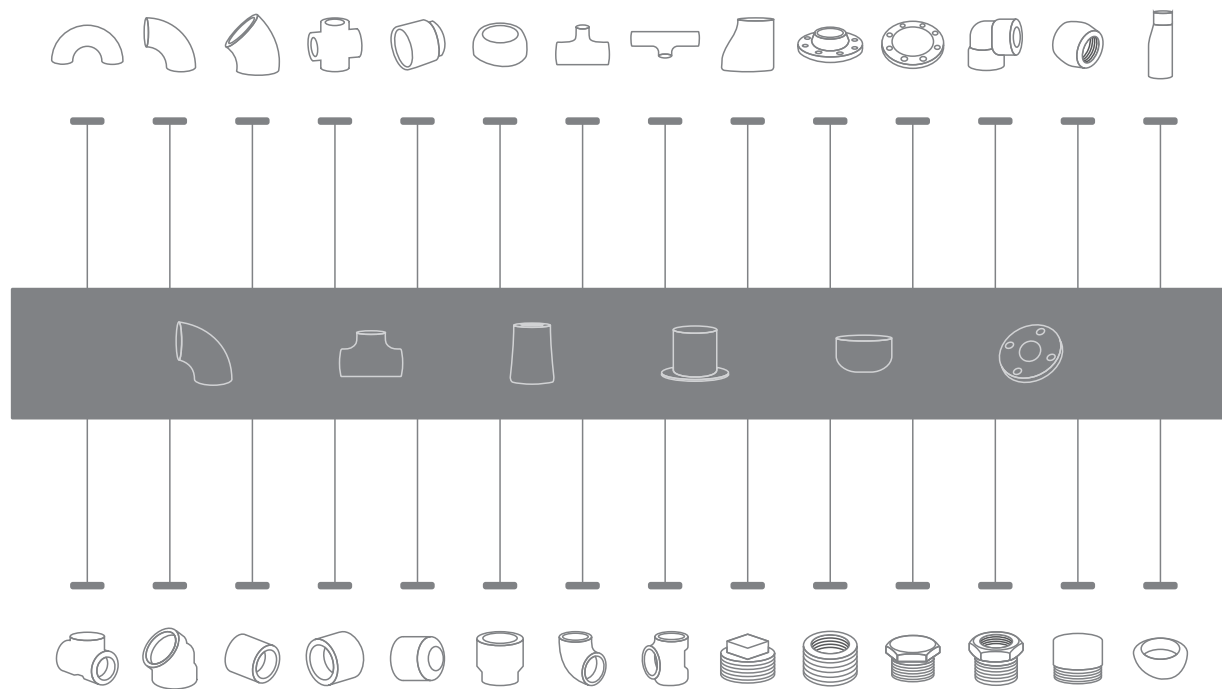




湖南格润德管业有限公司  
HUNAN GREAT STEEL PIPE CO.,LTD

One-stop Procurement



Stainless Steel  
Pipe Fittings

 湖南格润德管业有限公司  
HUNAN GREAT STEEL PIPE CO.,LTD

ООО «ТИ-СИСТЕМС» ИНЖИНИРИНГ И ПОСТАВКА ТЕХНОЛОГИЧЕСКОГО ОБОРУДОВАНИЯ  
Интернет: [www.tisys.ru](http://www.tisys.ru) [www.tisys.kz](http://www.tisys.kz) [www.tisys.by](http://www.tisys.by) [www.tesec.ru](http://www.tesec.ru) [www.ти-системс.рф](http://www.ти-системс.рф)  
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**BASED IN CHINA, SERVING THE WORLD**

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# PROFILE



With strong technical force, advanced equipment and skilled craftsmanship, we can supply various type of fittings with quality guaranteed. The production of industrial pipe fittings Outside Diameter ranges from 12mm to 508mm, and the Wall Thickness ranges from 1mm to 40mm, covering type such as 45 degree, 80 degree and 180 degree stainless steel elbow, equal tee, reducing tee, cross, concentric reducer, eccentric reducer, cap stub end and flanges. The production of industrial pipe fittings is strictly in accordance with the international and domestic standard, such as GB standard, ASTM B16.9/16.5, ASTM A403, DIN 2605, EN 10253, BS 1965, JISB2312, with material TP304L, TP304H, TP316L, TP321H, TP317L, TP310, Duplex stainless SS31803/2205 and special materials as 904L, TP347H, TP316Ti etc. We use high quality raw materials and technical advanced equipment to ensure the quality of pipe fittings. There are three branches and 12 advanced production lines for pipe fittings and flanges, including forging machine, intermediate frequency pushing machine, cold forming machine, hot extrusion machine, heat treatment machine and other craftsmanship. The Production capacity is over 20,000 tons.

**20,000<sup>+</sup>  
tons**

## Pipe Fittings Manufacture

SHINESTAR STEEL GROUP is specialized in manufacturing superior quality steel products, and providing outstanding service for valued clients all over the world. Founded in 1993, our business covers from steel pipe and fittings manufacturing, stocking and one-stop purchasing.

Hunan Great Steel Pipe Co., Ltd is THE LONGEST ESTABLISHED and THE LARGEST OPERATED subsidiary under the group. Starting from the selling of carbon steel pipes, after years of developing, now we have a complete product matrix for meeting the needs of different clients in piping system area. Pipe fittings is used for piping connection, control, change of direction, diversion, sealing, supporting, etc. Stainless steel is relatively durable and have a strong resistance to various chemicals. Therefore stainless steel pipe fittings play a very important role in the whole steel piping system. Hunan Great Steel Pipe Co., Ltd is dedicated in offering one-stop procurement service for the steel piping system area.



Our industrial pipe fittings are widely applied to paper making, shipping line, petroleum transporting, chemical industrial, machinery, electric power, pharmacy line, construction industry, food line etc. Based on the principle of QUALITY FIRST CUSTOMER FOREMOST, we sincerely hope to be your reliable and long term partner.



# EQUIPMENTS



5T Forging machine



2000t Hydraulic press



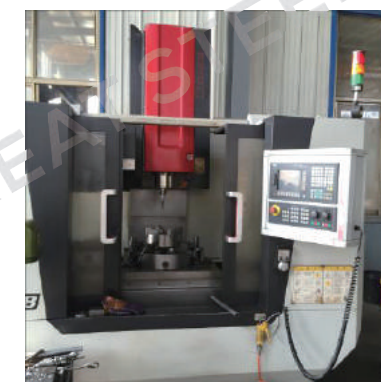
Workshop

There are three branches and 12 advanced production lines for pipe fittings and flanges, including forging machine, intermediate frequency pushing machine, cold forming machine, hot extrusion machine, heat treatment machine and other craftsmanship. The Production capacity is over 20,000 tons.

**20,000<sup>+</sup>**  
**tons**



Ring rolling machine



Machining center



CNC lathe



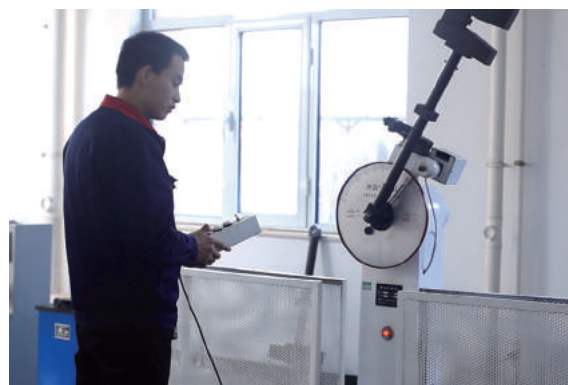
# QUALITY



QUALITY

In order to ensure the quality of pipe fittings, we established an independent laboratories to make kinds of testing. Under the strict control system - ISO 9001 certified, we demonstrate our ability to consistently provide products and service that meet customer and applicable statutory and

regulatory requirements. We aim to enhance customer satisfaction through the effective application of the system, including processes for improvement of the system and the assurance of the conformity to customer and applicable statutory and regulatory requirements.



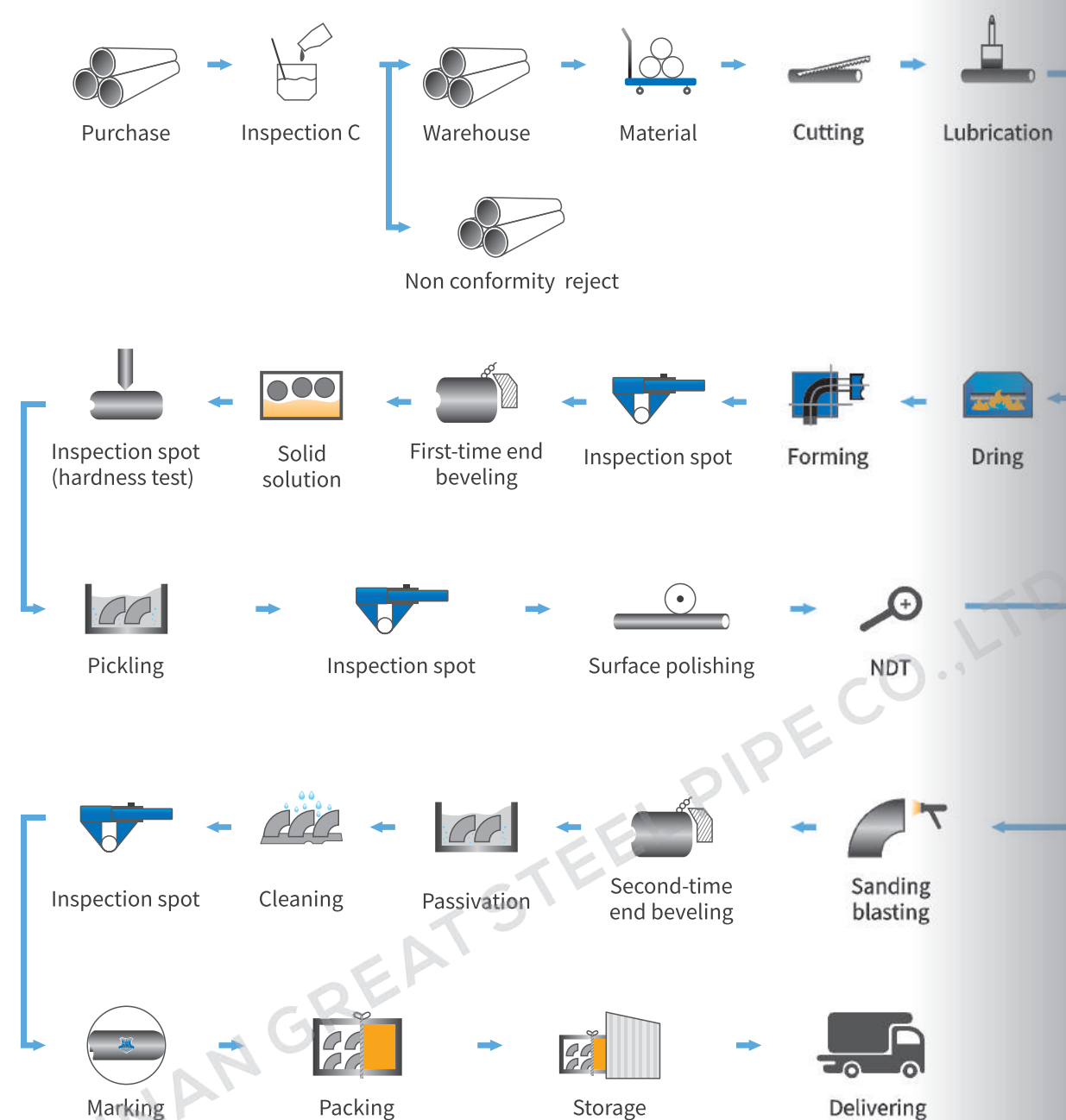
We have a full set of testing equipment and methods, such as Hydraulic Universal Testing, Bend Tests, Eddy-Current Testing, Tensile Test, Weld Decay Test, Weld Decay Test, Ultrasonic Test, Rockwell Hardness Test, Ultrasonic Testing etc.



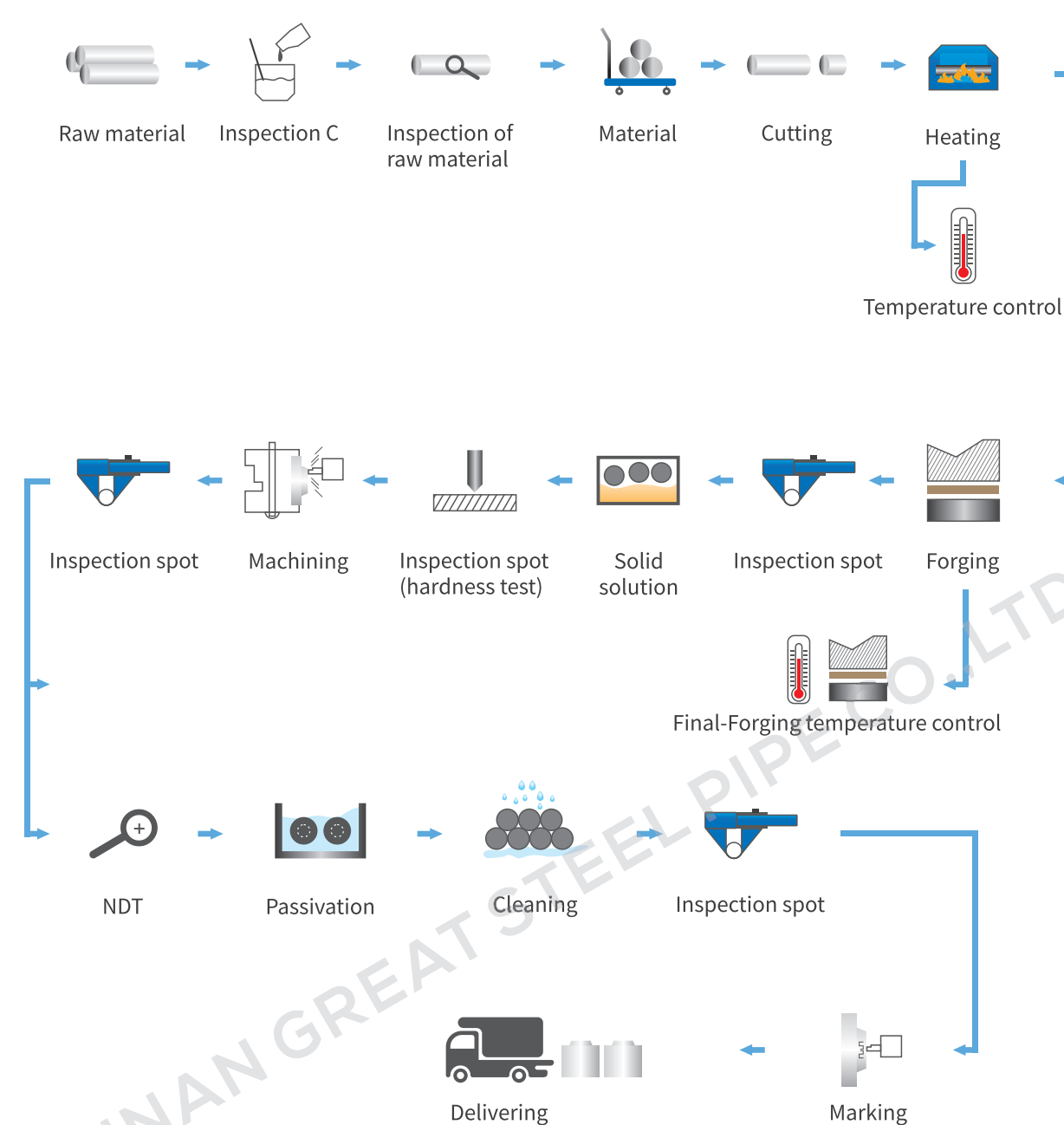


# PROCESS

## Production Process Flow Chart of Steel Pipe Fittings



## Production Process Flow Chart of Forged Flange





# PRODUCTS

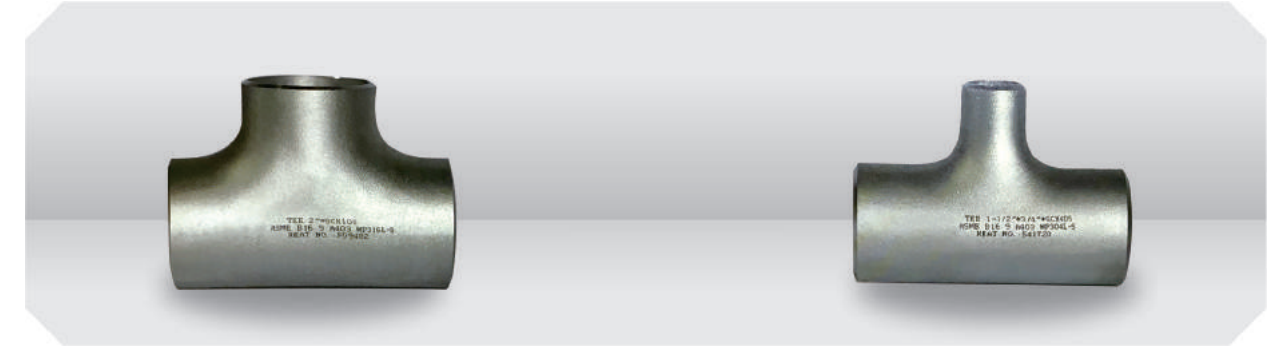


## 45° Long Radius Elbow

<b>workmanship</b>	Mandrel forming
<b>size</b>	seamless 1/2"-24" (DN15-DN600) Welded 1/2"-48" (DN15-DN1200)
<b>standard</b>	ASME B16.9, DIN 2605, JIS B2313, GB/T 12459, GB/T 13401, SH3408, SH3409, HG/T21635, HG/T21631, MSS SP-43
<b>wall thickness</b>	SCH5S-SCH160
<b>material</b>	317/L, 304/L, 316/L, 310S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60 S31803/F51, S32760/F55

## 90° Short Radius Elbow

<b>workmanship</b>	Mandrel forming
<b>size</b>	seamless 1/2"-24" (DN15-DN600) Welded 1/2"-48" (DN15-DN1200)
<b>standard</b>	ASME B16.9, DIN 2605, JIS B2313, GB/T 12459, GB/T 13401, SH3408, SH3409, HG/T21635, HG/T21631, MSS SP-43
<b>wall thickness</b>	SCH5S-SCH160
<b>material</b>	317/L, 304/L, 316/L, 310S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60 S31803/F51, S32760/F55



## Equal Tee

<b>workmanship</b>	Bulge forming
<b>size</b>	seamless 1/2"-24" (DN15-DN600) Welded 1/2"-48" (DN15-DN1200)
<b>standard</b>	ASME B16.9, DIN 2605, JIS B2313, GB/T 12459, GB/T 13401, SH3408, SH3409, HG/T21635, HG/T21631, MSS SP-43
<b>wall thickness</b>	SCH5S-SCH160
<b>material</b>	317/L, 304/L, 316/L, 310S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60 S31803/F51, S32760/F55

## Reducing Tee

<b>workmanship</b>	Bulge forming
<b>size</b>	seamless 1/2"-24" (DN15-DN600) Welded 1/2"-48" (DN15-DN1200)
<b>standard</b>	ASME B16.9, DIN 2605, JIS B2313, GB/T 12459, GB/T 13401, SH3408, SH3409, HG/T21635, HG/T21631, MSS SP-43
<b>wall thickness</b>	SCH5S-SCH160
<b>material</b>	317/L, 304/L, 316/L, 310S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60 S31803/F51, S32760/F55

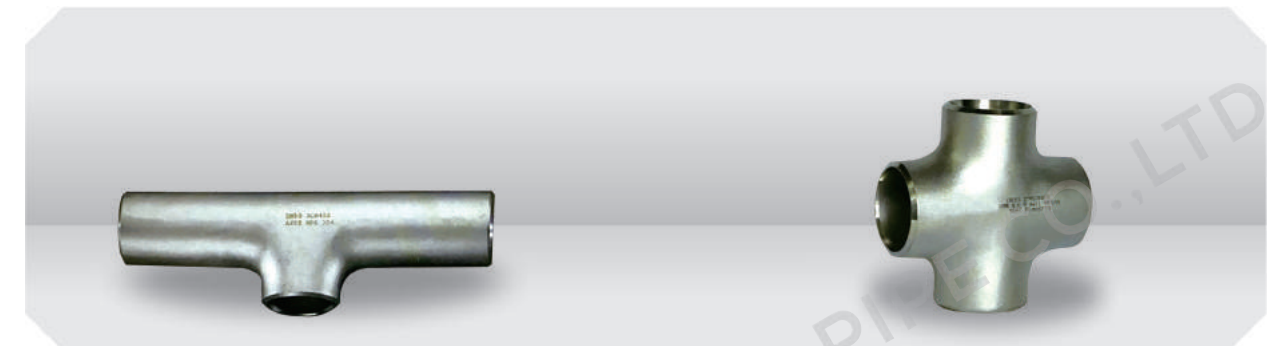


## 90° Long Radius Elbow

<b>workmanship</b>	Mandrel forming
<b>size</b>	seamless 1/2"-24" (DN15-DN600) Welded 1/2"-48" (DN15-DN1200)
<b>standard</b>	ASME B16.9, DIN 2605, JIS B2313, GB/T 12459, GB/T 13401, SH3408, SH3409, HG/T21635, HG/T21631, MSS SP-43
<b>wall thickness</b>	SCH5S-SCH160
<b>material</b>	317/L, 304/L, 316/L, 310S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60 S31803/F51, S32760/F55

## 180° Elbow

<b>workmanship</b>	Ball forming/Hot forming
<b>size</b>	seamless 1/2"-12" (DN15-DN300) Welded 1/2"-12" (DN15-DN300)
<b>standard</b>	ASME B16.9, DIN 2605, JIS B2313, GB/T 12459, GB/T 13401, SH3408, SH3409, HG/T21635, HG/T21631, MSS SP-43
<b>wall thickness</b>	SCH5S-SCH160
<b>material</b>	317/L, 304/L, 316/L, 310S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60 S31803/F51, S32760/F55



## Non-standard Tee

<b>workmanship</b>	Bulge forming
<b>size</b>	seamless 1/2"-24" (DN15-DN600) Welded 1/2"-48" (DN15-DN1200)
<b>standard</b>	ASME B16.9, DIN 2605, JIS B2313, GB/T 12459, GB/T 13401, SH3408, SH3409, HG/T21635, HG/T21631, MSS SP-43
<b>wall thickness</b>	SCH5S-SCH160
<b>material</b>	317/L, 304/L, 316/L, 310S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60 S31803/F51, S32760/F55

## Cross

<b>workmanship</b>	Bulge forming
<b>size</b>	seamless 1/2"-24" (DN15-DN600) Welded 1/2"-48" (DN15-DN1200)
<b>standard</b>	ASME B16.9, DIN 2605, JIS B2313, GB/T 12459, GB/T 13401, SH3408, SH3409, HG/T21635, HG/T21631, MSS SP-43
<b>wall thickness</b>	SCH5S-SCH160
<b>material</b>	317/L, 304/L, 316/L, 310S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60 S31803/F51, S32760/F55



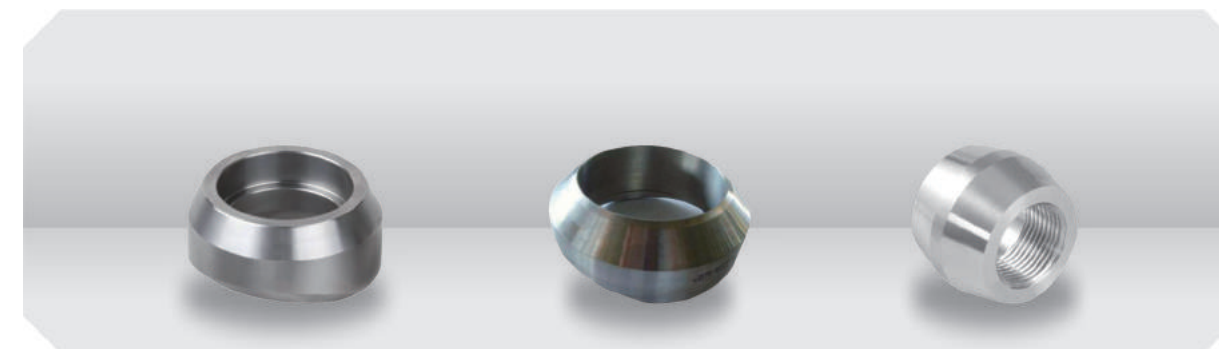


### Concentric Reducer

<b>workmanship</b>	Cold extrusion
<b>size</b>	seamless 1/2"-24" (DN15-DN600) Welded 1/2"-48" (DN15-DN1200)
<b>standard</b>	ASME B16.9, DIN 2605, JIS B2313, GB/T 12459, GB/T 13401, H3408, SH3409, HG/T21635, HG/T21631, MSS SP-43
<b>wall thickness</b>	SCH5S-SCH160
<b>material</b>	317/L, 304/L, 316/L, 310S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60 S31803/F51, S32760/F55

### Eccentric Reducer

<b>workmanship</b>	Cold extrusion
<b>size</b>	seamless 1/2"-24" (DN15-DN600) Welded 1/2"-48" (DN15-DN1200)
<b>standard</b>	ASME B16.9, DIN 2605, JIS B2313, GB/T 12459, GB/T 13401, SH3408, SH3409, HG/T21635, HG/T21631, MSS SP-43
<b>wall thickness</b>	SCH5S-SCH160
<b>material</b>	317/L, 304/L, 316/L, 310S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60 S31803/F51, S32760/F55



### Sockolet

<b>workmanship</b>	Forging
<b>size</b>	DN6-DN600
<b>standard</b>	MSS SP 97
<b>material</b>	317/L, 304/L, 316/L, 310/S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60, S31803/F51, S32760/F55

### Weldolet

### Thread

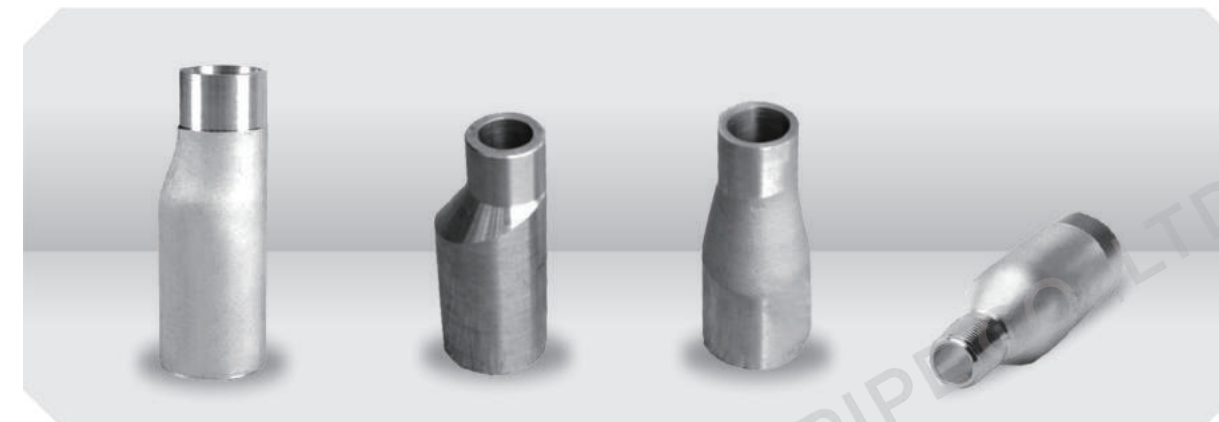


### Cap

<b>workmanship</b>	Press forming
<b>size</b>	seamless 1/2"-48" (DN15-DN600)
<b>standard</b>	ASME B16.9, DIN 2605, JIS B2313, GB/T 12459, GB/T 13401, SH3408, SH3409, HG/T21635, HG/T21631, MSS SP-43
<b>wall thickness</b>	SCH5S-SCH160
<b>material</b>	317/L, 304/L, 316/L, 310S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60 S31803/F51, S32760/F55

### Stub Ends

<b>workmanship</b>	Press forming
<b>size</b>	seamless 1/2"-24" (DN15-DN600) Welded 1/2"-48" (DN15-DN1200)
<b>standard</b>	ASME B16.9, HG/T 205099, HG/T 20621, MSS SP-43
<b>wall thickness</b>	SCH5S-SCH160
<b>material</b>	317/L, 304/L, 316/L, 310S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60 S31803/F51, S32760/F55



### Swaged Nipples

<b>workmanship</b>	Press forming
<b>size</b>	DN6-DN300
<b>standard</b>	MSS SP 95
<b>material</b>	317/L, 304/L, 316/L, 310/S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60, S31803/F51, S32760/F55





### Welding Neck Flange

<b>workmanship</b>	Forging
<b>size</b>	DN10-DN4000
<b>standard</b>	ASME B16.47, ASME B16.5, GB9112-9131, SH3406, DIN2576/27/66, DIN2632-2638, EN 1092-1
<b>material</b>	317/L, 304/L, 316/L, 310/S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60, S31803/F51, S32760/F55

### Slip-on Flange

<b>workmanship</b>	Forging
<b>size</b>	DN10-DN800
<b>standard</b>	ASME B16.5 GB9112-9131, SH3406, DIN2576/27/66, DIN2632-2638
<b>material</b>	317/L, 304/L, 316/L, 310/S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60, S31803/F51, S32760/F55



### Lap Joint Flange

<b>workmanship</b>	Forging
<b>size</b>	DN15-DN600
<b>standard</b>	ASME B16.5, EN1092-1
<b>material</b>	317/L, 304/L, 316/L, 310/S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60, S31803/F51, S32760/F55

### Blind Flange

<b>workmanship</b>	Forging
<b>size</b>	DN15-DN1500
<b>standard</b>	ASME B16.5, EN1092-1, ASME B16.47
<b>material</b>	317/L, 304/L, 316/L, 310/S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60, S31803/F51, S32760/F55



### Socket Welding Flange

<b>workmanship</b>	Forging
<b>size</b>	DN15-DN600
<b>standard</b>	ASME B16.5
<b>material</b>	317/L, 304/L, 316/L, 310/S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60, S31803/F51, S32760/F55

### Threaded Flange

<b>workmanship</b>	Forging
<b>size</b>	DN15-DN600
<b>standard</b>	ASME B16.5, EN1092-1
<b>material</b>	317/L, 304/L, 316/L, 310/S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60, S31803/F51, S32760/F55



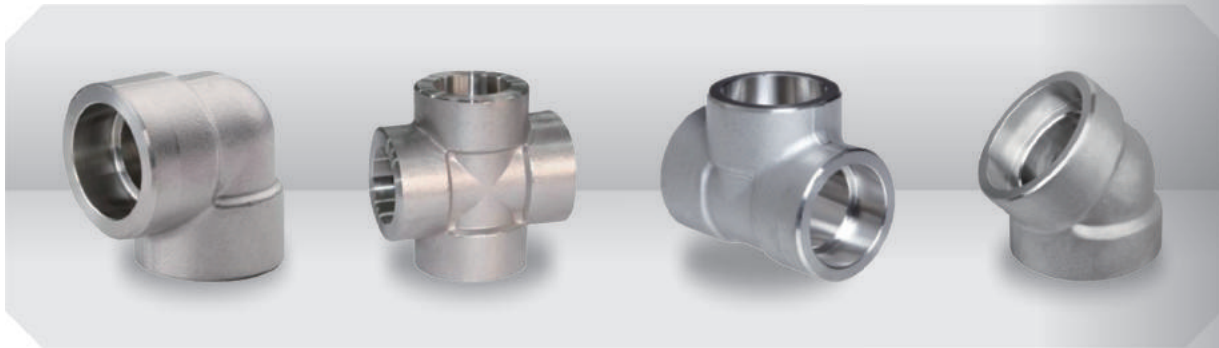
### Bend

<b>workmanship</b>	Hot expanding
<b>size</b>	DN6-DN650
<b>standard</b>	ASME B36.1M, API 5L, EN10210-1, DL/T515, SY5257, API 5L ASTM A106, ASTM A53, EN10219-1, EN 10210-1
<b>material</b>	317/L, 304/L, 316/L, 310/S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60, S31803/F51, S32760/F55

### Lateral

<b>workmanship</b>	Bulge forming
<b>size</b>	DN15-DN1500
<b>standard</b>	ASME B16.9
<b>material</b>	317/L, 304/L, 316/L, 310/S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60, S31803/F51, S32760/F55





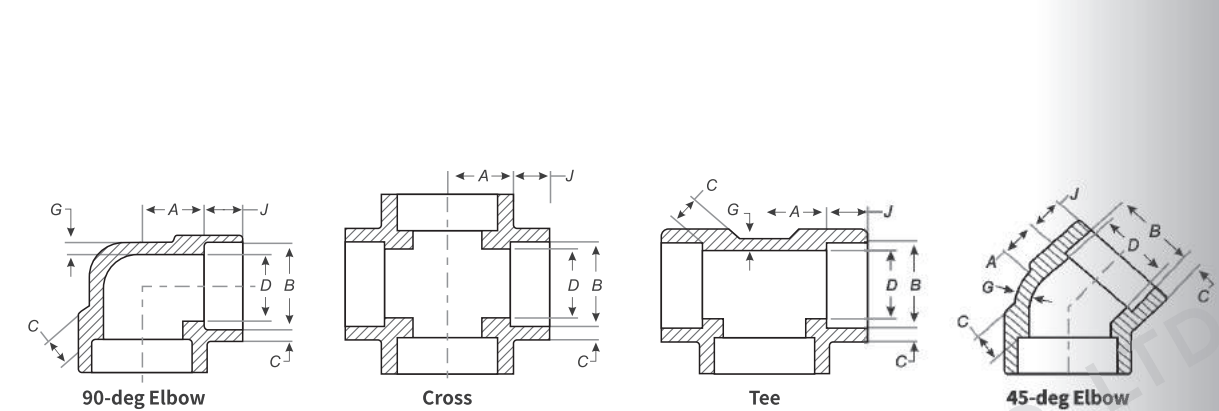
## Socket-Welding Elbows, Tees and Crosses

**workmanship** Forging

**size** DN6-DN100

**standard** ASME B16.11

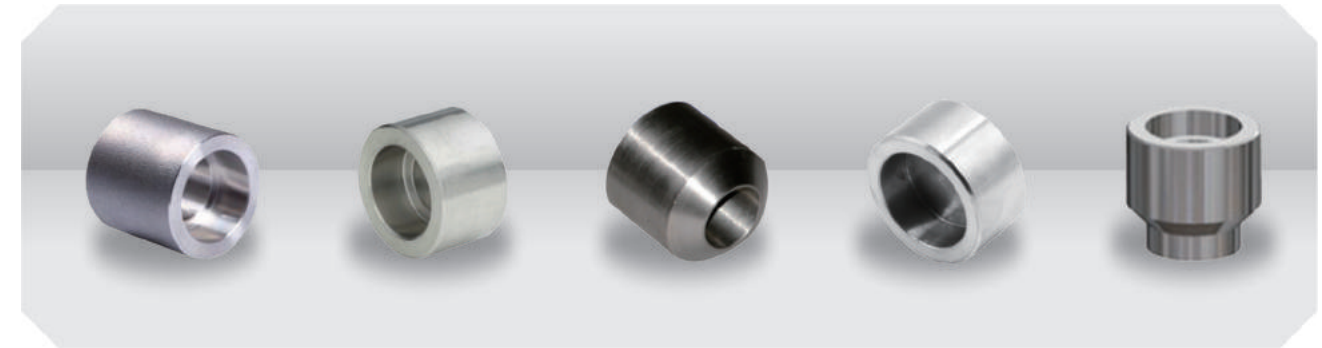
**material** 317/L, 304/L, 316/L, 310/S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60, S31803/F51, S32760/F55



Nominal pipe size	Socket Bore Diam., B		Bore Diameter of fittings, D			Socket Wall Thickness, C {Note(1)}			Body Wall, G		Socket depth, J	Center-to-Bottom of Socket, A													
	Max.	Min.	3000	6000	9000	3000	6000	9000	3000	6000		9000	90EL, Cross, Tee	45-deg Elbow	Tol										
1/8	11.2	10.8	7.6	6.1	4.8	3.2	...	...	3.18	3.18	3.96	3.43	...	...	2.41	3.15	...	9.5	11.0	11.0	...	8.0	8.0	...	1.0
1/4	14.6	14.2	10.0	8.5	7.1	5.6	...	...	3.78	3.30	4.60	4.01	...	...	3.02	3.68	...	9.5	11.0	13.5	...	8.0	8.0	...	1.0
3/8	18.0	17.6	13.3	11.8	9.9	8.4	...	...	4.01	3.50	5.03	4.37	...	...	3.20	4.01	...	9.5	13.5	15.5	...	8.0	11.0	...	1.5
1/2	22.2	21.8	16.6	15.0	12.5	11.0	7.2	5.6	4.67	4.09	5.97	5.18	9.35	8.18	3.37	4.78	7.47	9.5	15.5	19.0	25.5	11.0	12.5	15.5	1.5
3/4	27.6	27.2	21.7	20.2	16.3	14.8	11.8	10.3	4.90	4.27	6.96	6.04	9.78	8.56	3.91	5.56	7.82	12.5	19.0	22.5	28.5	13.0	14.0	19.0	1.5
1	34.3	33.9	27.4	25.9	21.5	19.9	16.0	14.4	5.69	4.98	7.92	6.93	11.38	9.96	4.55	6.35	9.09	12.5	22.5	27.0	32.0	14.0	17.5	20.5	2.0
1 1/4	43.1	42.7	35.8	34.3	30.2	28.7	23.5	22.0	6.07	5.28	7.92	6.93	12.14	10.62	4.85	6.35	9.70	12.5	27.0	32.0	35.0	17.5	20.5	22.5	2.0
1 1/2	49.2	48.8	41.6	40.1	34.7	33.2	28.7	27.2	6.35	5.54	8.92	7.80	12.70	11.12	5.08	7.14	10.15	12.5	32.0	38.0	38.0	20.5	25.5	25.5	2.0
2	61.7	61.2	53.3	51.7	43.6	42.1	38.9	37.4	6.93	6.04	10.92	9.50	13.84	12.12	5.54	8.74	11.07	16.0	38.0	41.0	54.0	25.5	28.5	28.5	2.0
2 1/2	74.4	73.9	64.2	61.2	...	...	...	...	8.76	7.67	...	...	...	...	7.01	...	...	16.0	41.0	...	...	28.5	...	...	2.5
3	90.3	89.8	79.4	76.4	...	...	...	...	9.52	8.30	...	...	...	...	7.62	...	...	16.0	57.0	...	...	32.0	...	...	2.5
4	115.7	115.2	103.8	100.7	...	...	...	...	10.69	9.35	...	...	...	...	8.56	...	...	19.0	66.5	...	...	41.0	...	...	2.5

GENERAL NOTE: Dimensions are in millimeters.

NOTE: (1) Average of socket wall thickness around periphery shall not be less than listed values. The minimum values are permitted in localized areas.



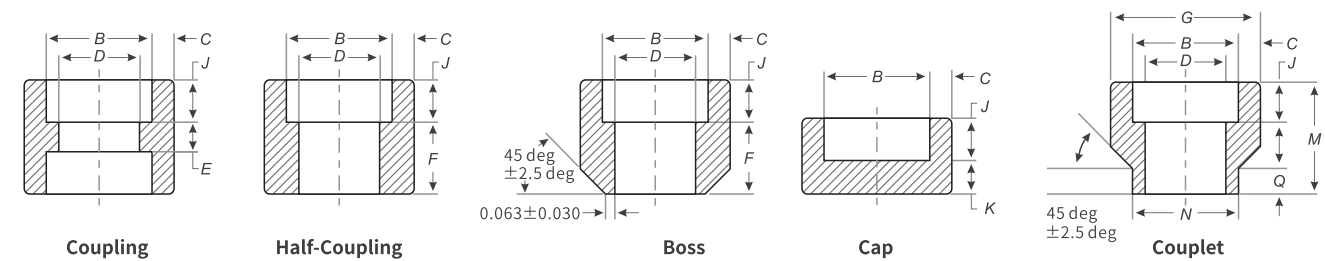
## Socket-Welding Couplings, Bosses, Caps and Couplets

**workmanship** Forging

**size** DN6-DN100

**standard** ASME B16.11

**material** 317/L, 304/L, 316/L, 310/S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60, S31803/F51, S32760/F55



Nominal pipe size	Socket Bore Dia., B		Bore Diameter of fittings, D			Socket Wall Thickness, {Note(1)} C			Outside Dia. Couplet, G		Socket depth, J	Laying Lgth., E Tol.	Laying Lgth., F Tol.	End Wall Thickness, K			End To End Couplet, M	End Ring Diameter, N	Weld Ring Length Q														
	Max.	Min.	3000	6000	9000	3000	6000	9000	3000	6000				±	Min.	Min.				Min.	±	±	±										
1/8	11.2	10.8	7.6	6.1	4.8	3.2	...	...	3.18	3.18	3.96	3.43	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1/4	14.6	14.2	10.0	8.5	7.1	5.6	...	...	3.78	3.30	4.60	4.01	...	...	23.8	25.4	±15/0.0	9.5	6.5	1.5	16.0	1.5	4.8	6.4	...	30.2	±0.8/0.0	17.5	±15/0.0	9.5	0.8		
3/8	18.0	17.6	13.3	11.8	9.9	8.4	...	...	4.01	3.50	5.03	4.37	...	...	27.0	31.8	±15/0.0	9.5	6.5	3.0	17.5	3.0	4.8	6.4	...	30.2	±0.8/0.0	20.7	±15/0.0	9.5	0.8		
1/2	22.2	21.8	16.6	15.0	12.5	11.0	7.2	5.6	4.67	4.09	5.97	5.18	9.35	8.18	33.4	38.1	±15/0.0	9.5	9.5	3.0	22.5	3.0	6.4	7.9	11.2	33.4	±0.8/0.0	23.8	±15/0.0	9.5	0.8		
3/4	27.6	27.2	21.7	20.2	16.3	14.8	11.8	10.3	4.90	4.27	6.96	6.04	9.78	8.56	38.1	44.5	±15/0.0	12.5	9.5	3.0	24.0	3.0	6.4	7.9	12.7	34.9	±0.8/0.0	27.0	±15/0.0	9.5	0.8		
1	34.3	33.9	27.4	25.9	21.5	19.9	16.0	14.4	5.69	4.98	7.92	6.93	11.38	9.96	46.1	57.2	±15/0.0	12.5	12.5	4.0	28.5	4.0	9.6	11.2	14.2	47.6	±0.8/0.0	42.9	±15/0.0	9.5	0.8		
1 1/4	43.1	42.7	35.8	34.3	30.2	28.7	23.5	22.0	6.07	5.28	7.92	6.93	12.14	10.62	55.6	63.5	±15/0.0	12.5	12.5	4.0	30.0	4.0	9.6	11.2	14.2	47.6	±0.8/0.0	42.9	±15/0.0	9.5	0.8		
1 1/2	49.2	48.8	41.6	40.1	34.7	33.2	28.7	27.2	6.35	5.54	8.92	7.80	12.70	11.12	63.5	76.2	±15/0.0	12.5	12.5	4.0	32.0	4.0	11.2	12.7	15.7	50.8	±0.8/0.0	49.2	±15/0.0	9.5	0.8		
2	61.7	61.2	53.3	51.7	43.6	42.1	38.9	37.4	6.93	6.04	10.92	9.50	13.84	12.12	79.4	92.1	±15/0.0	16.0	19.0	4.0	41.0	4.0	12.7	15.7	19.0	57.2	±15/0.0	61.9	±15/0.0	9.5	0.8		
2 1/2	74.4	73.9	64.2	61.2	...	...	...	...	8.76	7.67	...	...	...	...	92.1	108.0	±15/0.0	16.0	19.0	5.0	43.0	5.0	15.7	19.0	...	63.5	±15/0.0	73.0	±15/0.0	9.5	0.8		
3	90.3	89.8	79.4	76.4	...	...	...	...	9.52	8.30	...	...	...	...	111.1	127.0	±15/0.0	16.0	19.0	5.0	44.5	5.0	19.0	22.4	...	69.9	±15/0.0	88.9	±15/0.0	9.5	0.8		
4	115.7	115.2	103.8	100.7	...	...	...	...	10.69	9.35	...	...	...	...	141.3	158.8	±15/0.0	19.0	19.0	5.0	48.0	5.0	22.4	28.4	...	76.2	±15/0.0	114.3	±15/0.0	9.5	0.8		

GENERAL NOTE: Dimensions are in millimeters.

NOTE: (1) Average of socket wall thickness around periphery shall not be less than listed values. The minimum values are permitted in localized areas.





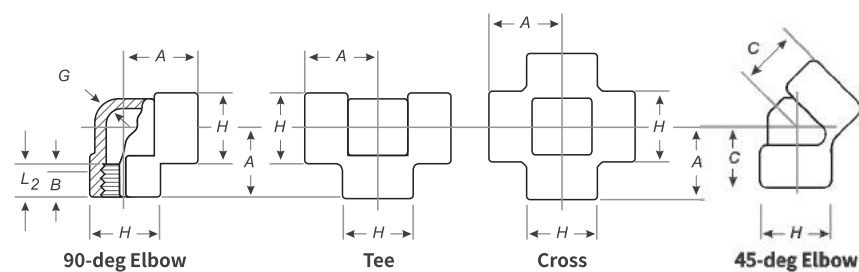
## Threaded Elbows, Tees and Crosses

**workmanship** Forging

**size** DN6-DN100

**standard** ASME B16.11

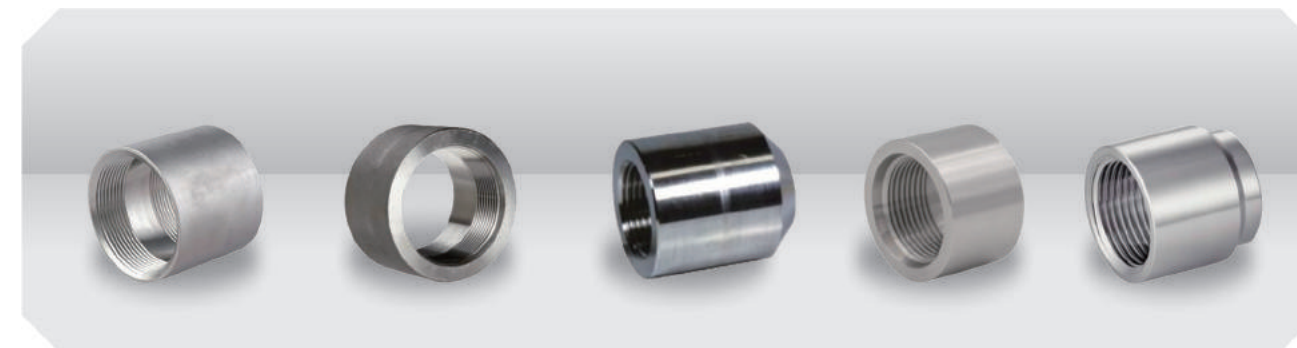
**material** 317/L, 304/L, 316/L, 310/S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60, S31803/F51, S32760/F55



Nominal pipe size	Center-to-End Elbows, Tees, and Crosses, A			Center-to-End 45-deg Elbow, C			Outside Diameter of Band, H			Minimum Wall Thickness, G			Minimum Length of Thread, [Note (1)]	
	2000	3000	6000	2000	3000	6000	2000	3000	6000	2000	3000	6000	B	L <sub>2</sub>
1/8	21	21	25	17	17	19	22	22	25	3.18	3.18	6.35	6.4	6.7
1/4	21	25	28	17	19	22	22	25	33	3.18	3.30	6.60	8.1	10.2
3/8	25	28	33	19	22	25	25	33	38	3.18	3.51	6.98	9.1	10.4
1/2	28	33	38	22	25	28	33	38	46	3.18	4.09	8.15	10.9	13.6
3/4	33	38	44	25	28	33	38	46	56	3.18	4.32	8.53	12.7	13.9
1	38	44	51	28	33	35	46	56	62	3.68	4.98	9.93	14.7	17.3
1 1/4	44	51	60	33	35	43	56	62	75	3.89	5.28	10.59	17.0	18.0
1 1/2	51	60	64	35	43	44	62	75	84	4.01	5.56	11.07	17.8	18.4
2	60	64	83	43	44	52	75	84	102	4.27	7.14	12.09	19.0	19.2
2 1/2	76	83	95	52	52	64	92	102	121	5.61	7.65	15.29	23.6	28.9
3	86	95	106	64	64	79	109	121	146	5.99	8.84	16.64	25.9	30.5
4	106	114	114	79	79	79	146	152	152	6.55	11.18	18.67	27.7	33.0

GENERAL NOTE: Dimensions are in millimeters.

NOTE: (1) Dimension B is minimum length of perfect thread. The length of useful thread (B plus threads with fully formed roots and flat crests) shall not be less than L<sub>2</sub> (effective length of external thread) required by American National Standard for Pipe Threads (ASME B1.20.1; see para 6.3).



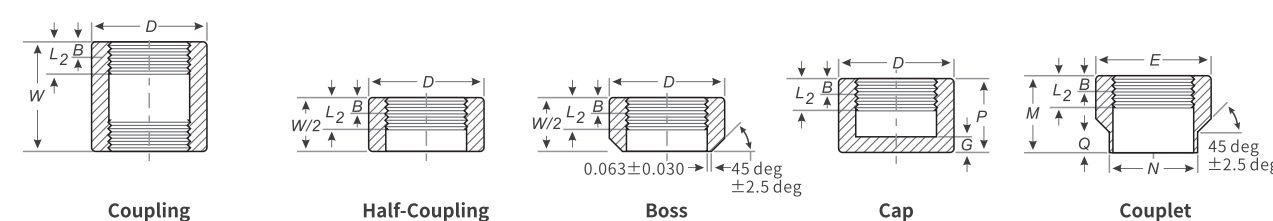
## Threaded Couplings, Bosses, Caps and Couplets

**workmanship** Forging

**size** DN6-DN100

**standard** ASME B16.11

**material** 317/L, 304/L, 316/L, 310/S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60, S31803/F51, S32760/F55



Nominal pipe size	Outside Diameter, D		Outside Diameter Couplet, E		End-to-End Coupling, W		End-to-End Caps, P		End-to-End Couplings, Tol.		Minimum End Wall Thickness, G		Weld Ring Length, Q		Weld Ring Diameter, N		Minimum Length of Thread, [Note (1)]	
	3000	6000	3000	6000	3000/6000	3000/6000	3000/6000	3000/6000	±	±	3000	6000	3000/6000	±	3000/6000	±	B	L <sub>2</sub>
1/8	16	22	...	...	...	32	19	22	...	...	4.8	6.4	...	...	...	...	6.4	6.7
1/4	19	25	23.8	25.4	±1.5/-0.0	35	25	27	30.2	±0.8/-0.0	4.8	6.4	9.5	0.8	17.5	±1.5/-0.0	8.1	10.2
3/8	22	32	27.0	31.8	±1.5/-0.0	48	32	27	30.2	±0.8/-0.0	4.8	6.4	9.5	0.8	20.7	±1.5/-0.0	9.1	10.4
1/2	28	38	33.4	38.1	±1.5/-0.0	48	32	33	33.4	±0.8/-0.0	6.4	7.9	9.5	0.8	23.8	±1.5/-0.0	10.9	13.6
3/4	35	44	38.1	44.5	±1.5/-0.0	51	37	38	34.9	±0.8/-0.0	6.4	7.9	9.5	0.8	27.0	±1.5/-0.0	12.7	13.9
1	44	57	46.1	57.2	±1.5/-0.0	60	41	43	42.9	±0.8/-0.0	9.7	11.2	9.5	0.8	33.4	±1.5/-0.0	14.7	17.3
1 1/4	57	64	55.6	63.5	±1.5/-0.0	67	44	46	47.6	±0.8/-0.0	9.7	11.2	9.5	0.8	42.9	±1.5/-0.0	17.0	18.4
1 1/2	64	76	63.5	76.2	±1.5/-0.0	79	44	48	50.8	±0.8/-0.0	11.2	12.7	9.5	0.8	49.2	±1.5/-0.0	17.8	18.4
2	76	92	79.4	79.4	±1.5/-0.0	86	48	51	57.2	±1.5/-0.0	12.7	15.7	9.5	0.8	61.9	±1.5/-0.0	19.0	19.2
2 1/2	92	108	92.1	92.1	±1.5/-0.0	92	60	64	63.5	±1.5/-0.0	15.7	19.0	9.5	0.8	73.0	±1.5/-0.0	23.6	28.9
3	108	127	111.1	111.1	±1.5/-0.0	108	65	68	69.9	±1.5/-0.0	19.0	22.4	9.5	0.8	114.3	±1.5/-0.0	25.9	30.5
4	140	159	141.3	141.3	±1.5/-0.0	121	68	75	76.2	±1.5/-0.0	22.4	28.4	9.5	0.8	114.3	±1.5/-0.0	27.7	33.0

GENERAL NOTES: (a) Dimensions are in millimeters.

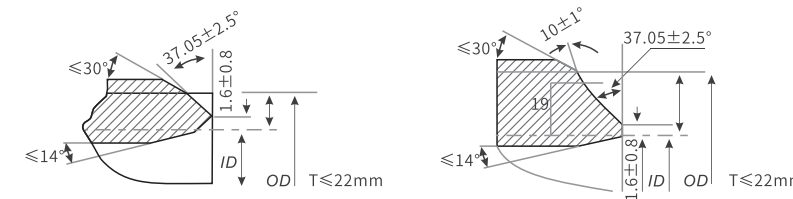
(b) The wall thickness away from the threaded ends shall meet the minimum wall thickness requirements of Table 1-2 for the appropriate NPS and Class Designation fitting.

NOTE: (1) Dimension B is minimum length of perfect thread. The length of useful thread (B plus threads with fully formed roots and flat crests) shall not be less than L<sub>2</sub> (effective length of external thread) required by American National Standard for Pipe Threads (ASME B1.20.1; see para 6.3).



# TECHNICAL PARAMETERS

## Welding Bevel of Fittings



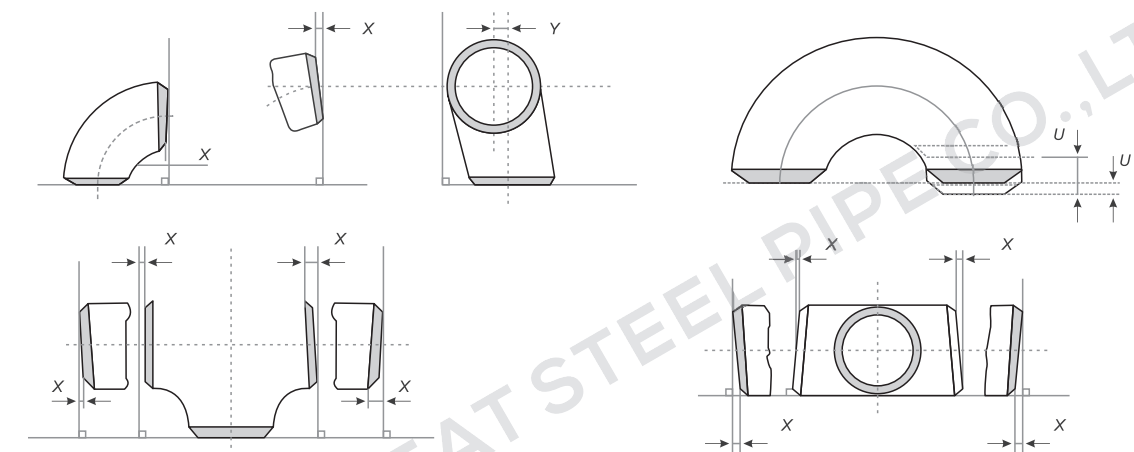
Limiting tolerances can be slightly different between the different standards and codes.

GB12459, GB/T 13401, ASME/ANSI B169, B16.28

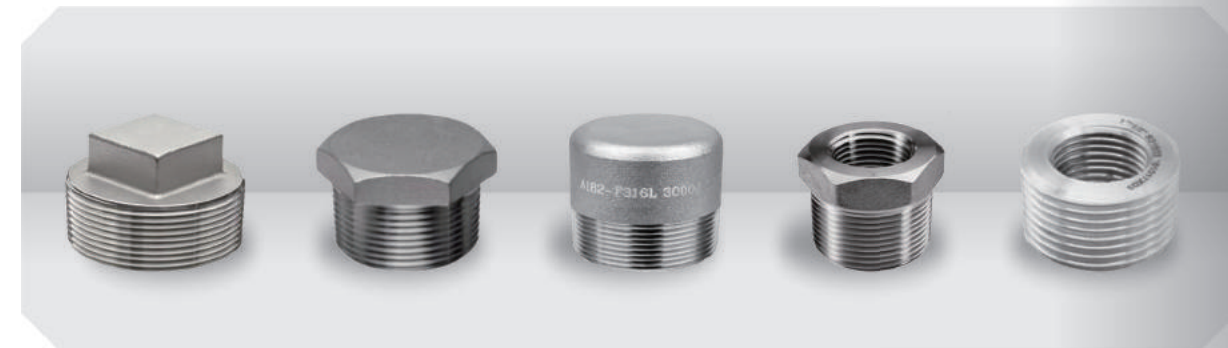
## Tolerances for butt-welding fittings

Item	Types of pipe fittings	DN				
		15-65	80-100	125-200	250-450	500
		Limit deviation				
D1, D2, D3	All pipe fittings	±1.6	±1.6	±2.4	±4.0	±6.4
d1		-0.8		-1.6	-3.2	-4.8
T, T1, T2		±0.8		±1.6	±3.2	±4.8
		Not less than 87.5% of the nominal wall thickness				
B, A	45° elbow, 90° elbow		±2			±3
P	180° elbow		±7			±7
K				±7		
L	Reducer		±2			±3
C, M	Tee, Cross		±2			±3
E, E1	Caps		±4			±7

## Angularity tolerance of butt-welding fittings GB12459



Item	Types of pipe fittings	DN				
		15-100	125-200	250-300	350-400	450-500
		Tolerance				
X	Elbow, Tee, Reducer, Cross	1	2	3		4
Y	Elbow, Tee, Cross	2	4	5	7	10
U	180° elbow		1		2	



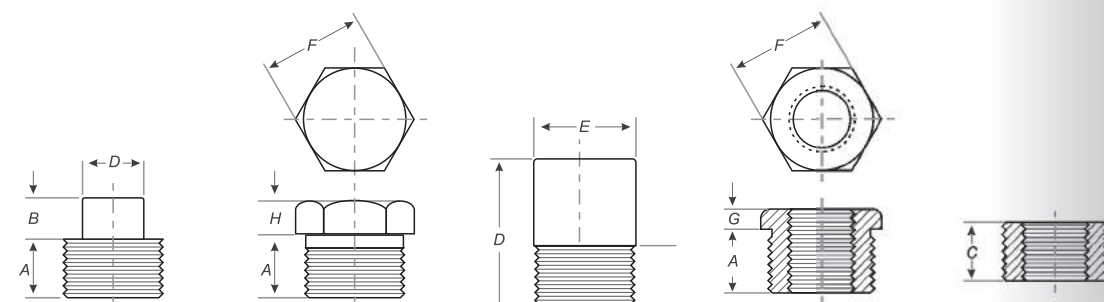
## Plugs and Bushings

workmanship Forging

size DN6-DN100

standard ASME B16.11

material 317/L, 304/L, 316/L, 310/S, 309/S, 347/H, 321/321H, 904/L, S32750/F53/SAF2507, S32205/F60, S31803/F51, S32760/F55



Square Head Plug    Hex Head Plug    Round Head Plug    Hex Head Bushing [Note(1)]    Flush Bushing

Nominal pipe size	Square Head Plugs			Round Head Plugs		Hex Plugs and Bushings		
	Minimum Length, A	Minimum Square Head Height, B	Minimum Width Flats, C [Note(2)]	Nominal Head Diameter, E	Minimum Length, D	Nominal Width Flats, F [Note(2)]	Minimum Hex Height Bushing, G	Plug, H
1/8	10	6	7.15	10	35	11.11	...	6
1/4	11	6	9.55	14	41	15.88	3	6
3/8	13	8	11.11	18	41	17.46	4	8
1/2	14	10	14.29	21	44	22.23	5	8
3/4	16	11	15.88	27	44	26.99	6	10
1	19	13	20.64	33	51	34.93	6	10
1 1/4	21	14	23.81	43	51	44.45	7	14
1 1/2	21	16	28.58	48	51	50.80	8	16
2	22	18	33.27	60	64	63.50	9	18
2 1/2	27	19	38.10	73	70	76.20	10	19
3	28	21	42.86	89	70	88.90	10	21
4	32	25	63.50	114	76	117.48	13	25

GENERAL NOTE: Dimensions are in millimeters

NOTES: (1) Cautionary Note Regarding Hex Bushings: Hex head bushings of one-size reduction should not be used in services where they might be subject to harmful loads and forces other than internal pressures.

(2) Manufacturer's applied tolerance shall ensure dimension will fit U.S. Customary tooling.



## Angularity Tolerance of Butt-welding Fittings

GB/T 12459-90

Item	Types of pipe fittings	DN				
		15-65	80-100	125-200	250-450	500
		<b>Limit deviation</b>				
End outer diameter	All pipe fittings	±1.6	±1.6	±2.4	±4.0	±6.4
End inner diameter		-0.8		-1.6	-3.2	-4.8
Wall thickness		Not less than 87.5% of the nominal wall thickness				
H, F	45° elbow, 90° elbow				±3	
P	180° elbow				±10	
K						
L	Reducer				±3	
C, M	Tee				±3	
E, E1	Caps				±7	

Item	Types of pipe fittings	DN				
		15-65	80-100	125-200	250-450	500
		<b>Tolerance</b>				
X	Elbow, Tee, Reducer, Cross	1	4	3		4
Y	Elbow, Tee, Cross	2		5	7	10
U	180° elbow	1			2	

GB/T 13401-92

Item	Types of pipe fittings	DN				
		150-200	250-450	500-600	650-750	800-1200
		<b>Limit deviation</b>				
End outer diameter	All pipe fittings	±2.4	±4.0		±6.4	
End inner diameter ①		-1.6	-3.2		-4.8	
Wall thickness		Not less than 87.5% of the nominal wall thickness				
H, F	45° elbow, 90° elbow	-		±3		±5
L	Reducer	-		±3		±5
C, M	Tee, Cross	-		±3		±5
E	Caps		±7			±10
The minimum and maximum outer diameter difference of the end	All pipe fittings	Not more than 0.01DN, and not more than S				

Item	Types of pipe fittings	DN				
		350-400	400-600	650-750	800-1050	1100-1200
		<b>Tolerance</b>				
X	Elbow, Reducing tee, Tee	3	4		5	
Y	Elbow, Tee, Cross	7	10		13	19

NOTES: (1) Unless the customer has special requirements, priority should be given to the limit deviation of the end outer diameter and the nominal wall thickness.

(2) For reducing pipe fittings, the dimensional deviation is given according to the nominal cut of the large diameter end.

## Angularity Tolerance of Butt-welding Fittings

ASME/ANSI B16.9, B16.28

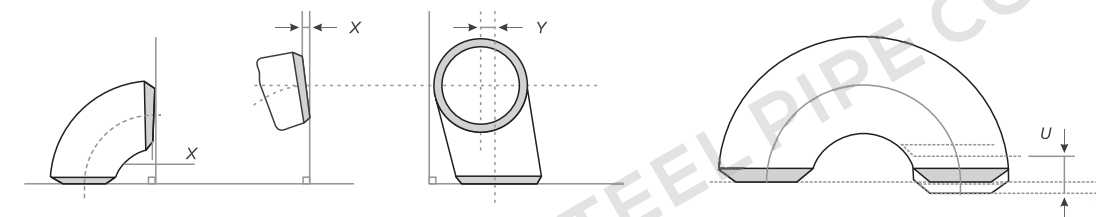
Item	Types of pipe fittings	DN							
		1/2-2(1/2)	3-3(1/2)	4	5-8	10-18	20-24	26-30	32-48
		<b>Limit deviation</b>							
D, D1, D2	All pipe fittings	±1.52	±1.52	+2.29	+4.06	+6.35			
End inner diameter ①②		-0.76		-1.52	-3.05	-4.83			
T, T1, T2		Not less than 87.5% of the nominal wall thickness							
H, F, C, M	45° elbow, 90° elbow Tee, Cross	±1.52			±2.29	±3.05	±4.83		
P	180° elbow	±6.35			±9.65	-			
K		±6.35							
U	Reducer, Stub	±0.76			±1.52	-			
L		±1.52			±2.29	±4.83			
E, E1	Caps	±3.05			±6.35	±9.65			
G	Stub	-0.76			0	-1.25			
t					+1.52				
R		-0.76			0	-1.25			

DN		1/2-4	5-8	10-12	14-16	18-24	26-30	32-42	44-48
Elbow, Tee	X	0.76	1.52	2.29	2.29	3.05		4.83	
Cross	Y	1.52	3.05	4.83	6.35	9.65	9.65	12.70	19.05

NOTES: (1) Unless the customer has special requirements, priority should be given to the limit deviation of the end outer diameter and the nominal wall thickness.

(2) The difference between the inner diameter of the end and the nominal wall thickness twice the outer diameter of the end.

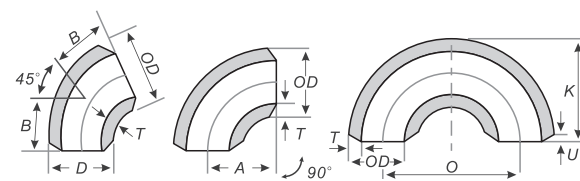
(3) The roundness is the sum of the absolute values of the positive and negative deviations of the outer diameter.





## Long Radius Elbows

45° 90° 180°



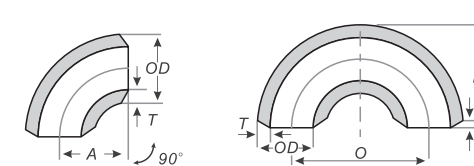
Above dimensions acc. to GB/T 12459, GB/T 13401, SH3408, SH 3409, HG/T 21635, HG/T 21631, SY/T 05010, ASME B16.9.

Weights are approximate and based on manufacture's data, according to ASME B36.10M, B36.19M, (sch20S/LG, weights are approximate and based on manufacture's data, according to GB/T 12459, GB/T13401.)

Nominal diameter	Outside diameter	Center to end	Center to center	90°/R elbow approx weight (kg/pc)							
				sch5S	sch10S	sch20S/LG	sch40S/STD	sch80S/XS	sch80		
15	1/2	18 21.3	16	38	76	0.04	0.05	0.06	0.06	0.08	0.08
						0.05	0.06	0.07	0.08	0.10	0.10
20	3/4	25 26.7	19	38	76	0.06	0.07	0.09	0.09	0.12	0.12
						0.06	0.08	0.09	0.10	0.13	0.13
25	1	32 33.4	22	38	76	0.07	0.12	0.14	0.14	0.19	0.19
						0.08	0.13	0.14	0.15	0.19	0.19
32	1(1/4)	38 42.2	25	48	96	0.11	0.18	0.21	0.23	0.30	0.30
						0.13	0.20	0.23	0.26	0.34	0.34
40	1(1/2)	45 48.3	29	57	114	0.16	0.26	0.30	0.34	0.45	0.45
						0.17	0.28	0.32	0.37	0.49	0.49
50	2	57 60.3	35	76	152	0.27	0.45	0.57	0.62	0.85	0.85
						0.29	0.47	0.61	0.65	0.90	0.90
65	2(1/2)	76 73	44	95	190	0.58	0.82	0.97	1.35	1.79	1.79
						0.55	0.79	0.93	1.30	1.71	1.71
80	3	89	51	114	228	0.82	1.17	1.51	2.04	2.76	2.76
						1.09	1.56	2.03	2.85	3.92	3.92
90	3(1/2)	101.6	57	133	266	1.32	1.90	2.47	3.64	5.05	5.05
						1.40	2.01	2.61	3.85	5.35	5.35
100	4	108 114	64	152	304	2.67	3.27	4.74	6.14	8.72	8.72
						2.84	3.47	5.05	6.54	9.31	9.31
125	5	141.3 139.7	79	190	380	4.10	5.01	7.29	10.24	15.41	15.41
						3.86	4.72	6.88	9.64	14.50	14.50
150	6	159 165	95	229	458	7.12	9.63	15.94	20.51	31.17	31.17
						4.01	4.91	7.14	10.03	15.09	15.09
200	8	219 216	127	305	610	7.03	9.49	15.71	20.22	30.71	30.71
						13.62	16.74	24.97	36.33	49.12	57.83
250	10	273 267.4	159	381	762	13.34	16.39	24.44	35.56	48.06	56.57
						22.66	26.10	35.79	53.58	70.69	95.81
300	12	323.9 318	190	457	914	22.58	26.01	35.66	53.40	70.44	95.46
						22.16	25.53	35.00	52.39	49.11	93.63
350	14	377 355.6	222	533	1066	30.71	36.98	61.36	72.80	96.17	141.75
						28.95	34.86	57.80	68.56	90.52	133.27
400	16	426 406.4	254	610	1220	42.05	47.90	79.55	94.42	124.87	206.35
						40.09	45.67	75.82	89.98	118.95	196.35
450	18	478 457.2	286	686	1372	53.11	60.52	100.60	199.44	158.10	298.56
						50.78	57.86	96.14	114.14	151.03	276.29
500	20	529 508	318	762	1524	74.47	86.18	123.86	147.12	194.86	391.34
						71.48	82.72	118.87	141.17	186.94	375.00
550	22	559 630	343	838	1676	86.58	100.21	144.06	171.14	226.75	495.44
						123.32	141.21	177.37	210.78	279.45	661.10
600	24	610	381	914	1828	119.37	136.64	171.67	203.98	270.40	-
						-	-	-	-	-	-
650	26	660	406	991	1982	-	-	201.59	239.58	317.72	-
						-	-	237.03	281.75	373.80	-
700	28	711	438	1067	2134	-	-	234.03	278.18	369.04	-
						-	-	-	-	-	-
750	30	762	470	1143	2286	213.9	266.23	268.89	319.66	424.20	-
						-	-	308.83	367.20	487.42	□
800	32	820	502	1219	2438	-	-	306.16	364.02	483.20	-
						-	-	345.86	411.27	546.04	-
850	34	864 813	533	1295	2590	-	-	390.39	464.28	616.56	-
						-	-	387.83	461.22	612.48	-
900	36	920 914	565	1372	2744	-	-	432.25	514.21	682.98	-
						-	-	479.29	570.09	757.33	-
950	38	965	600	1448	2896	-	-	481.19	572.36	760.35	□
						-	-	528.65	628.85	835.51	-
1000	40	1016 1020	632	1524	3048	-	-	580.43	690.49	917.53	-
						-	-	581.48	491.73	9191.19	-
1050	42	1167	660	1600	3200	-	-	634.45	754.79	1003.10	□
						-	-	-	-	-	-
1100	44	1118 1120	695	1676	3352	-	-	691.63	822.86	1093.70	-
						-	-	-	-	-	-
1150	46	1168	727	1753	3506	-	-	-	-	-	-
						-	-	-	-	-	-
1200	48	1220	759	1829	3658	-	-	-	-	-	-
						-	-	-	-	-	-

## Short Radius Elbows

90° 180°



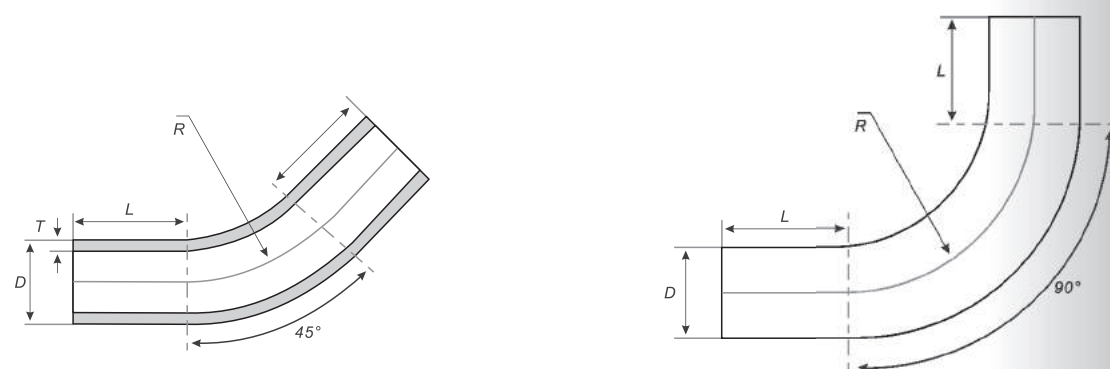
Above dimensions acc. to GB/T 12459, GB/T 13401, SH3408, SH 3409, HG/T 21635, HG/T 21631, SY/T 05010, ASME B16.9.

Weights are approximate and based on manufacture's data, according to ASME B36.10M, B36.19M, (sch20S/LG, weights are approximate and based on manufacture's data, according to GB/T 12459, GB/T13401.)

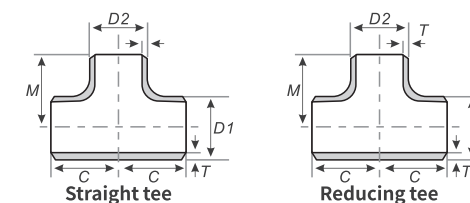
Nominal diameter	Outside diameter	Center to end	Center to center	90°S/R elbow approx weight (kg/pc)						
				sch5S	sch10S	sch20S/LG	sch40S/STD	sch80S/XS	sch80	
25	1	32 33.4	25	50	0.05	0.08	0.09	0.09	0.12	0.12
					0.05	0.08	0.09	0.10	0.13	0.13
32	1(1/4)	38 42.2	32	64	0.07	0.12	0.14	0.15	0.20	0.20
					0.08	0.14	0.16	0.17	0.23	0.23
40	1	45 48.3	38	76	0.11	0.17	0.20	0.23	0.30	0.30
					0.11	0.19	0.21	0.24	0.33	0.33
50	2	57 60.3	51	102	0.18	0.30	0.38	0.41	0.57	0.57
					0.19	0.32	0.41	0.44	0.60	0.60
65	2(1/2)	76 73	64	128	0.39	0.56	0.65	0.91	1.21	1.21
					0.37	0.53	0.62	0.87	1.15	1.15
80	3	89	76	152	0.54	0.78	1.01	1.36	1.84	1.84
					0.73	1.04	1.36	1.91	2.62	2.62
90	3(1/2)	101.6	89	178	0.89	1.27	1.65	2.44	3.39	3.39
					0.94	1.35	1.75	2.59	3.59	3.59
100	4	108 114	102	204	1.79	2.18	3.17	4.10	5.83	5.83
					1.90	2.32	3.38	4.37	6.22	6.22
125	5	133 141.3	127	254	1.88	2.30	3.34	4.32	6.14	6.14
					2.72	3.32	4.84	6.79	10.23	10.23
150	6	159 165	152	304	2.57	3.14	4.56	6.40	9.63	9.63
					2.66	3.26	4.74	6.65	10.02	10.02
200	8	219 216	203	406	4.74	6.41	10.61	13.65	20.74	20.74
					4.68	6.32	10.46	13.46	20.44	20.44
250	10	273 267.4	254	508	9.08	11.16	16.64	24.22	32.75	38.55
					8.89	10.92	16.29	23.70	32.04	37.72
300	12	325 323.9	305	610	15.12	17.42	23.88	35.76	47.18	63.94
					15.07	17.36	23.80	35.64	47.01	63.71
350	14	377 355.6	356	712	14.79	17.04	23.36	34.97	46.12	62.49
					20.51	24.70	40.99	48.62	64.24	94.67
400	16	426 406.4	406	812	19.33	23.28	38.61	45.79	60.46	89.01
					27.98	31.88	52.95	62.84	83.11	137.34
450	18	478 457.2	457	914	26.68	30.40	50.47	59.89	79.17	130.69
					35.38	40.32	67.01	79.57	105.32	192.90
500	20	529 508	508	1016	33.38	38.54	64.05	76.04	100.61	184.06
					49.64	57.45	82.58	98.08	129.91	260.90
550	22	559 630	559	1118	47.66	55.15	79.25	94.12	124.62	250.00
					57.75	66.85	93.10	114.16	151.26	330.49
600	24	610	610	1220	82.30	94.21	118.38	140.67	186.51	441.22
					79.67	91.19	114.57	136.14	180.46	-
650	26	660	660	1320	-	-	134.26	159.56	211.60	-
					-	-	157.94	187.75	249.08	-
700	28	711	711	1422	-	-	155.95	175.37	245.91	-
					-	-	179.26	213.11	282.80	-
750	30	762	762	1524	142.60	117.49	-	-	-	-
					-	-	205.97	244.90		



## Bend



## Tees (Straight and Reducing)



Above dimensions acc. to GB/T 12459, GB/T 13401, SH3408, SH 3409, HG/T 21635, HG/T 21631, SY/T 05010, ASME B16.9.

Weights are approximate and based on manufacture's data, according to ANSI B16.19

Nominal diameter	Outside diameter	Center to end	Center to center	Approx weight (kg/pc)						
DN	NPS	D1xD2	C	M	sch5S	sch10S	sch40S/STD	sch40	sch80S/XS	sch80
20x20	3/4x3/4	25x25	29	29	0.07	0.10	0.13	0.13	0.16	0.16
		26.7x26.7			0.08	0.11	0.15	0.15	0.18	0.18
20x15	3/4x1/2	25x18	29	29	0.06	0.09	0.12	0.12	0.15	0.15
		26.7x21.3			0.07	0.10	0.13	0.13	0.16	0.16
25x25	1x1	32x32	38	38	0.11	0.19	0.23	0.23	0.30	0.30
		33.4x33.4			0.12	0.20	0.25	0.25	0.32	0.32
25x20	1x3/4	32x25	38	38	0.10	0.18	0.22	0.22	0.28	0.28
		33.4x26.7			0.11	0.19	0.24	0.24	0.31	0.31
25x15	1x1/2	32x18	38	38	0.09	0.17	0.21	0.21	0.27	0.27
		33.4x21.3			0.10	0.18	0.23	0.23	0.30	0.30
32x32	1.1/4x1.1/4	38x38	48	48	0.19	0.36	0.42	0.42	0.63	0.63
		42.2x42.2			0.20	0.39	0.52	0.52	0.73	0.73
32x25	1.1/4x1	38x32	48	48	0.18	0.33	0.40	0.40	0.58	0.58
		42.2x33.4			0.19	0.35	0.42	0.42	0.68	0.68
32x20	1.1/4x3/4	38x25	48	48	0.17	0.31	0.38	0.38	0.55	0.55
		42.2x26.7			0.18	0.32	0.40	0.40	0.65	0.65
32x15	1.1/4x1/2	38x18	48	48	0.16	0.30	0.36	0.36	0.52	0.52
		42.2x21.3			0.17	0.31	0.38	0.38	0.62	0.62
40x40	1.1/2x1.1/2	45x45	57	57	0.35	0.59	0.78	0.78	1.08	1.08
		48.3x48.3			0.45	0.69	0.88	0.88	1.18	1.18
40x32	1.1/2x1.1/4	45x38	57	57	0.32	0.54	0.72	0.72	0.99	0.99
		48.3x42.2			0.42	0.65	0.82	0.82	1.09	1.09
40x25	1.1/2x1	45x32	57	57	0.27	0.45	0.60	0.60	0.83	0.83
		48.3x33.4			0.37	0.65	0.80	0.80	1.08	1.08
40x20	1.1/2x3/4	45x25	57	57	0.26	0.44	0.58	0.58	0.80	0.80
		48.3x26.7			0.36	0.64	0.68	0.68	1.00	1.00
40x15	1.1/2x1/2	45x18	57	57	0.25	0.42	0.56	0.56	0.78	0.78
		48.3x21.3			0.35	0.62	0.66	0.66	0.78	0.78
50x50	2x2	57x57	64	64	0.49	1.03	1.15	1.15	1.65	1.65
		60.3x60.3			0.50	1.05	1.18	1.18	1.67	1.67
50x40	2x1.1/2	57x45	64	60	0.44	0.93	1.04	1.04	1.48	1.48
		60.3x48.3			0.45	0.95	1.06	1.06	1.50	1.50
50x32	2x1.1/4	57x38	64	57	0.40	0.81	0.98	0.98	1.37	1.37
		60.3x42.2			0.43	0.89	1.00	1.00	1.42	1.42
50x25	2x1	57x32	64	51	0.39	0.72	0.92	0.92	1.31	1.31
		60.3x33.4			0.40	0.84	0.94	0.94	1.34	1.34
50x20	2x3/4	57x25	64	44	0.37	0.70	0.87	0.87	1.24	1.24
		60.3x26.7			0.38	0.80	0.90	0.90	1.27	1.27
65x65	2.1/2x2.1/2	76x76	76	76	0.87	1.21	2.10	2.10	2.80	2.80
		73.0x73.0			0.86	1.25	2.12	2.12	2.88	2.88
65x50	2.1/2x2	76x57	76	70	0.82	1.17	2.00	2.00	2.70	2.70
		73.0x60.3			0.81	1.16	1.98	1.98	2.65	2.65
65x40	2.1/2x1.1/2	76x45	76	67	0.77	1.11	1.89	1.89	2.56	2.56
		73.0x48.3			0.76	1.10	1.88	1.88	2.55	2.55
65x32	2.1/2x1.1/4	76x38	76	64	0.75	1.10	1.80	1.80	2.50	2.50
		73.0x42.2			0.74	1.08	1.89	1.89	2.25	2.25
65x25	2.1/2x1	76x32	76	57	0.76	1.10	1.86	1.86	2.53	2.53
		73.0x33.4			0.70	1.07	1.81	1.81	2.08	2.08
80x80	3x3	89x89	86	86	1.16	1.68	3.02	3.02	4.19	4.19
		89x76			1.11	1.62	2.89	2.89	4.02	4.02
80x65	3x2.1/2	88.9x73.0	86	83	1.10	1.60	2.87	2.87	3.98	3.98
		88.9x60.3			1.06	1.53	2.76	2.76	3.81	3.81
80x50	3x2	88.9x57	86	76	1.07	1.55	2.79	2.79	3.85	3.85
		88.9x45			1.01	1.49	2.67	2.67	3.70	3.70
80x40	3x1.1/2	88.9x48.3	86	73	1.03	1.50	2.69	2.69	3.73	3.73
		89x38			1.00	1.48	2.65	2.65	3.68	3.68
80x32	3x1.1/4	88.9x42.2	86	70	1.00	1.45	2.60	2.60	3.60	3.60
		88.9x33.4			1.00	1.45	2.60	2.60	3.60	3.60
90x90	3.1/2x3.1/2	101.6x101.6	95	95	1.33	1.92	3.61	3.61	5.08	5.08
90x80	3.1/2x3	101.6x88.9	95	92	1.26	1.82	3.43	3.43	4.83	4.83

Item	Description
standard	according to DL/T515 《power station bend》, Sy5257 《steel bend》, or customer's technical drawing
material	carbon steel, alloy steel, stainless steel
bend radius R	$R \leq 6000\text{mm}$ , $R \geq 3D$ ( $R=3D, 4D, 5D, 6D, 7D, 8D, 9D, 10D$ ), $D$ : outside diameter
bend angle $\theta$	normally 15°, 30°, 45°, 60°, 90°, 135°, 180°, or at customer's option
length of straight L	normally between 300mm and 1500mm in length of straight, it is at customer's option
outside diameter D	$D \leq 1220\text{mm}$
wall thickness T	$T \leq 120\text{mm}$
end bevel	according to welding bevel of butt welding fitting
weight	weight/kg $\frac{0.043(D-T)TR\theta}{100000} + L$ (weight of double side straight length)



Nominal diameter		Outside diameter	Center to end	Center to center	Approx weight (kg/pc)					
DN	NPS	D1xD2	C	M	sch5S	sch10S	sch40S/STD	sch40	sch80S/XS	sch80
90×65	3.1/2×2.1/2	101.6×73.0	95	89	1.22	1.76	3.32	3.32	4.67	4.67
90×50	3.1/2×2	101.6×60.3	95	83	1.20	1.73	3.25	3.25	4.57	4.57
90×40	3.1/2×1.1/2	101.6×48.3	95	79	1.17	1.70	3.21	3.21	4.51	4.51
100×100	4×4	108×108	105	105	1.66	2.41	4.75	4.75	6.75	6.75
		114.3×114.3			1.75	2.54	5.01	5.01	7.12	7.12
100×90	4×3.1/2	114.3×101.6	105	102	1.70	2.46	4.85	4.85	6.89	6.89
100×80	4×3	108×89	105	98	1.55	2.24	4.42	4.42	6.27	6.27
		114.3×88.9			1.61	2.33	4.60	4.60	6.52	6.52
100×65	4×2.1/2	108×76	105	95	1.53	2.21	4.36	4.36	6.50	6.50
		114.3×73.0			1.60	2.31	4.56	4.56	6.50	6.50
100×50	4×2	108×57	105	89	1.51	2.19	4.32	4.32	6.13	6.13
		114.3×60.3			1.57	2.29	4.41	4.41	6.12	6.12
100×40	4×1.1/2	108×45	105	86	1.50	2.09	4.22	4.22	6.03	6.03
		114.3×48.3			1.55	2.24	4.00	4.00	6.02	6.02
125×125	5×5	133×133	124	124	3.18	3.91	7.53	7.53	10.9	10.9
		141.3×141.3			3.37	4.14	7.98	7.98	11.6	11.6
125×100	5×4	133×108	124	117	3.03	3.73	7.20	7.20	10.4	10.4
		141.3×114.3			3.15	3.90	7.52	7.52	10.8	10.8
125×90	5×3.1/2	141.3×101.6	124	114	3.09	3.83	7.39	7.39	10.6	10.6
		133×89			2.90	3.59	6.29	6.92	10.0	10.0
125×80	5×3	141.3×88.9	124	111	3.02	3.74	7.21	7.21	10.4	10.4
		133×76			2.85	3.59	6.92	6.92	10.0	10.0
125×65	5×2.1/2	141.3×73.0	124	108	3.00	3.73	7.20	7.20	10.4	10.4
		133×57			2.80	3.58	6.92	6.92	10.0	10.0
125×50	5×2	141.3×60.3	124	105	3.92	3.73	7.20	7.20	10.4	10.4
		159×159			4.09	5.03	10.5	10.5	16.2	16.2
150×150	6×6	168.3×168.3	143	143	4.32	5.31	11.1	11.1	17.1	17.1
		159×133			3.84	4.73	9.88	9.88	15.2	15.2
150×25	6×5	168.3×141.3	143	137	4.13	5.08	10.6	10.6	16.3	16.3
		159×108			3.76	4.64	9.70	9.70	14.9	14.9
150×100	6×4	168.3×114.3	143	130	3.95	4.87	10.2	10.2	15.6	15.6
		168.3×101.6			3.91	4.82	10.1	10.1	15.5	15.5
150×90	6×3.1/2	159×89	143	124	3.72	4.56	9.56	9.56	14.7	14.7
		168.3×88.9			3.93	4.82	10.0	10.0	15.3	15.3
150×80	6×3	159×76	143	121	3.70	4.51	9.51	9.51	14.6	14.6
		168.3×73.0			3.81	4.72	10.0	10.0	15.2	15.2
200×200	8	219×219	178	178	7.72	10.40	22.8	22.8	35.4	35.4
		219×159			6.74	9.20	19.9	19.9	30.9	30.9
200×150	8×6	219.1×168.3	178	168	7.17	9.74	21.1	21.1	32.8	32.8
		219×133			6.61	8.98	19.5	19.5	30.2	30.2
200×125	8×5	219.1×141.3	178	162	7.03	9.55	20.7	20.7	32.2	32.2
		219×108			6.43	8.73	19.0	20.5	29.4	29.4
200×100	8×4	219.1×114.3	178	156	6.84	9.39	19.9	20.2	31.3	31.3
		219.1×101.6			6.84	9.18	19.8	20.1	31.1	31.1
250×250	10×10	273×273	216	216	14.6	18.04	40.04	40.04	52.8	65.12
		273×219			13.3	16.40	36.4	36.4	49.8	59.2
250×200	10×8	273×159	216	203	11.4	15.0	31.4	31.4	42.7	50.7
		273.1×168.3			12.1	15.0	33.4	33.4	45.4	54.0
250×150	10×6	273.1×141.3	216	194	11.2	14.6	30.7	30.7	41.8	49.7
		273.1×114.3			11.9	14.6	32.7	32.7	44.5	52.9
250×125	10×5	273×108	216	184	11.0	14.4	30.3	30.3	41.2	49.0
		273.1×114.3			11.7	14.4	32.2	32.2	42.9	52.1
300×300	12×12	325×325	254	241	21.5	24.8	51.8	56.1	69.0	95.0
		323.9×323.9			21.5	24.8	51.8	56.0	69.0	95.0
300×250	12×10	325×273	254	241	20.4	23.6	49.2	53.3	65.6	90.3
		323.9×273.1			20.3	23.4	49.1	53.1	65.2	90.2
300×200	12×8	325×219	254	229	20.2	23.3	48.4	52.4	64.4	88.6
		323.9×219.1			20.0	23.1	48.2	52.2	64.2	88.4
300×150	12×6	325×159	254	219	18.4	22.5	44.3	47.9	59.0	81.2
		323.9×168.3			19.5	22.7	47.1	51.0	62.7	86.4
300×125	12×5	325×133	254	216	18.0	20.8	43.6	47.1	57.8	79.6
		323.9×141.3			19.1	22.1	46.3	50.2	61.5	84.6
350×350	14×14	377×377	279	279	27.4	33.1	66.1	77.2	88.0	132
		355.6×355.6			25.7	31.1	62.0	72.5	82.7	124
360×300	14×12	377×325	279	270	25.8	31.1	62.1	72.5	82.7	124
		355.6×323.9			24.2	29.2	58.3	68.2	77.7	116
350×250	14×10	377×273	279	257	25.1	30.3	60.5	70.8	80.7	121
		355.6×273.1			23.7	28.6	57.0	66.7	76.0	114
350×200	14×8	377×219	279	248	24.6	29.7	59.2	69.2	78.0	118
		355.6×219.1			23.1	27.9	55.7	65.2	74.2	111
350×150	14×6	377×159	279	238	24.0	29.0	57.9	67.8	77.1	115
		355.6×168.3			22.3	27.1	54.2	64.8	77.8	110
400×400	16×16	426×426	305	305	33.1	38.0	75.95	101	101	170
		406.4×406.4			31.4	36.0	72.3	96.4	96.1	162
400×350	16×14	426×377	305	305	32.0	36.8	73.6	98.1	97.8	179
		406.4×355.6			30.4	34.9	70.1	93.4	92.9	162
400×300	16×12	426×325	305	295	31.0	35.6	71.4	95.2	94.7	173
		406.4×323.9			28.2	34.4	69.1	90.8	89.2	168
400×250	10×10	426×273	305	283	30.2	34.7	69.9	93.1	92.5	169
		406.4×273.1			28.7	33.0	66.6	88.7	87.8	161
400×200	16×8	426×219	305	273	29.5	33.9	68.4	91.1	90.2	165
		406.4×273.1			28.1	32.3	65.1	86.8	86.0	157

## Tees (Straight and Reducing)

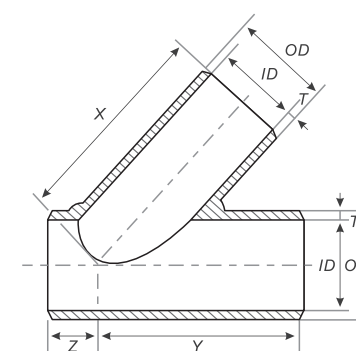
Nominal diameter		Outside diameter	Center to end	Center to center	Approx weight (kg/pc)					
DN	NPS	D1xD2	C	M	sch5S	sch10S	sch40S/STD	sch40	sch80S/XS	sch80
400×150	16×6	426×159	305	264	29.2	33.5	67.6	217	89.2	90.1
		406.4×168.3			27.7	31.8	64.4	206	84.8	85.8
450×450	18×18	478×476	343	343	41.9	47.8	95.3	349	127	142
		457×457			39.8	45.5	90.7	332	120	136
450×400	18×16	478×426	343	330	41.0	46.8	93.3	342	144	140
		457×406.4			39.0	44.5	88.9	325	118	133
450×350	18×14	478×377	343	330	40.4	46.1	91.9	336	142	137
		406.4×355.6			38.3	43.8	87.3	320	135	130
450×300	18×12	478×325	343	321	39.8	45.4	90.6	331	140	135
		406.4×323.9			37.3	42.6	85.0	216	131	127
450×250	18×10	478×273	343	308	39.3	44.9	89.6	228	138	134
		457×273.1			37.3	42.6	85.0	216	131	127
450×200	18×8	478×219	343	298	38.8	44.3	89.1	225	137	132
		457×219.1			36.9	42.1	84.7	213	130	126
500×500	20×20	529×529	381	381	58.9	68.2	117	469	156	186
		508×508			56.3	65.3	112	449	149	178
500×450	20×18	529×478	381	368	57.9	67.1	115	462	154	183
		508×457			55.4	64.2	110	441	147	175
500×400	20×16	529×426	381	356	57.0	66.0	113	454	151	180
		507×406.4			54.7	63.4	109	436	145	173
500×350	20×14	529×377	381	356	56.0	64.9	111	446	148	177
		508×355.6			53.7	62.3	107	428	142	170
500×300	20×12	529×325	381	346	55.0	63.8	109	438	146	174
		508×323.9			52.8	61.2	105	421	140	167
500×250	20×10	529×273	381	333	54.4	63.0	108	433	144	172
		508×273.1			52.2	60.5	104	416	138	165
500×200	20×8	529×219	381	324	53.7	62.3	107	428	142	170
		508×219.1			51.5	59.7	102	410	137	163
550×550	22×22	559×559	419	419	73.5	85.2	146	635	195	-
		559×508			419	406	70.7	81.9	141	610
550×500	22×20	559×508	419	406	70.7	81.9	141	610	187	-
		559×457			419	394	67.7	78.5	135	584
550×450	22×18	559×457	419	381	66.2	76.7	132	571	179	-
		559×406.4			419	381	66.2	76.7	132	571
550×350	22×14	559×355.6	419	381	65.5	75.9	130	565	174	-
		559×323.9			419	371	64.0	74.2	127	552
550×250	22×10	559×273.1	419	359	62.5	72.5	124	540	166	-
		630×630			432	432	96.0	110	165	797
600×600	24×24	610×610	432	432	93.9	107	161	779	215	296
		610×559			432	432	90.1	103	155	748
6										



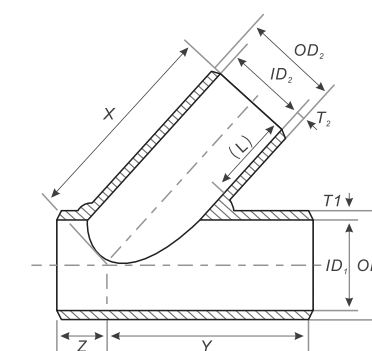
## Tees (Straight and Reducing)

Nominal diameter		Outside diameter	Center to end	Center to center	Approx weight (kg/pc)					
DN	NPS	D1xD2	C	M	sch5S	sch10S	sch40S/STD	sch40	sch80S/XS	sch80
750×350	30×14	732×355.6	559	483	141	166	211	-	285	-
750×300	30×12	762×323.9	559	473	137	156	206	-	275	-
750×250	33×10	762×273	559	460	132	150	198	-	264	-
800×800	32×32	820×820	597	597	-	-	303	-	405	-
		813×813			-	-	302	-	402	-
800×750	32×30	813×762	597	584	-	-	290	-	386	-
		820×720			-	-	291	-	388	-
800×700	32×28	713×711	597	572	-	-	277	-	370	-
		820×630			-	-	279	-	356	-
800×600	32×24	813×610	597	559	-	-	268	-	358	-
		813×559			-	-	262	-	350	-
800×500	32×20	820×529	597	533	-	-	273	-	364	-
		813×508			-	-	256	-	342	-
800×450	32×18	820×478	597	521	-	-	270	-	360	-
		813×457			-	-	250	-	334	-
800×400	32×16	820×426	597	508	-	-	264	-	352	-
		813×406.4			-	-	241	-	322	-
800×350	32×14	820×377	597	508	-	-	258	-	344	-
		813×355.6			-	-	235	-	314	-
850×850	34×34	864×864	635	635	-	-	341	-	415	-
850×800	34×32	864×813	635	622	-	-	328	-	437	-
850×750	34×30	864×762	635	610	-	-	314	-	419	-
850×700	34×28	864×711	635	597	-	-	307	-	409	-
850×650	34×26	864×660	635	597	-	-	304	-	405	-
850×600	34×24	864×610	635	584	-	-	297	-	396	-
850×550	34×22	864×599	635	572	-	-	290	-	387	-
850×500	34×20	864×508	635	559	-	-	283	-	378	-
850×450	34×18	864×457	635	546	-	-	273	-	364	-
850×400	34×16	864×406.7	635	533	-	-	266	-	355	-
900×900	36×36	920×920	673	673	-	-	648	-	543	-
		914×914			-	-	639	-	511	-
900×850	36×34	914×864	673	660	-	-	619	-	511	-
		920×820			-	-	370	-	594	-
900×800	36×32	914×813	673	648	-	-	353	-	470	-
		914×762			-	-	345	-	460	-
900×750	36×30	920×720	673	635	-	-	355	-	473	-
		914×711			-	-	341	-	455	-
900×700	36×28	914×660	673	622	-	-	333	-	447	-
		914×610			-	-	326	-	434	-
900×650	36×26	914×599	673	597	-	-	318	-	424	-
		920×529			-	-	347	-	462	-
900×600	36×24	914×508	673	584	-	-	306	-	409	-
		914×457			-	-	299	-	398	-
900×550	36×22	920×478	673	572	-	-	343	-	457	-
		914×426			-	-	287	-	383	-
900×500	36×20	914×406.4	673	559	-	-	287	-	383	-

## Lateral



BW Straight 45° Lateral Tee



BW Reducing 45° Lateral Tee

## ASME B 16.9

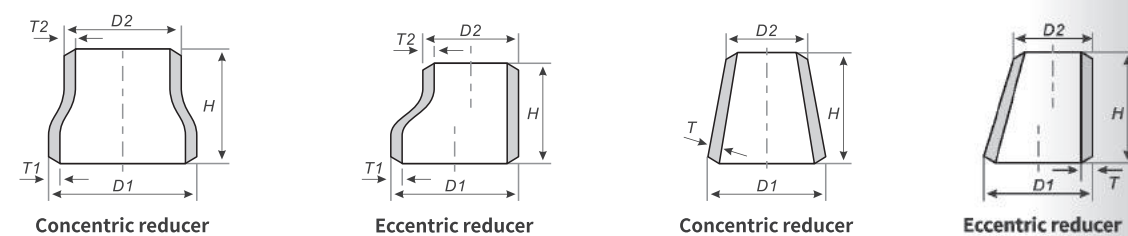
Nominal size		Outside diameter at bevel	Center to end	
DN	NPS	OD	X AND Y	Z
15	1/2	21.3	90	50
20	3/4	26.7	108	50
25	1	33.4	133	50
32	1 (1/4)	42.2	184	57
40	1 (1/2)	48.3	216	64
50	2	60.3	230	64
65	2 (1/2)	73.0	267	64
80	3	88.9	280	76
90	3 (1/2)	101.6	292	76
100	4	114.3	343	76
125	5	141.3	381	90
150	6	168.3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

Note:

1) The value X of the reducing tee shall be according to the one matching the nominal size of branch pipe, but when the varying diameter of branch exceeds and includes two levels (for example NPS20 x 14), the length near the 45° angle shall be equal or larger than the OD<sub>2</sub> of branch pipe.



## Reducers(Concentric and Eccentric)



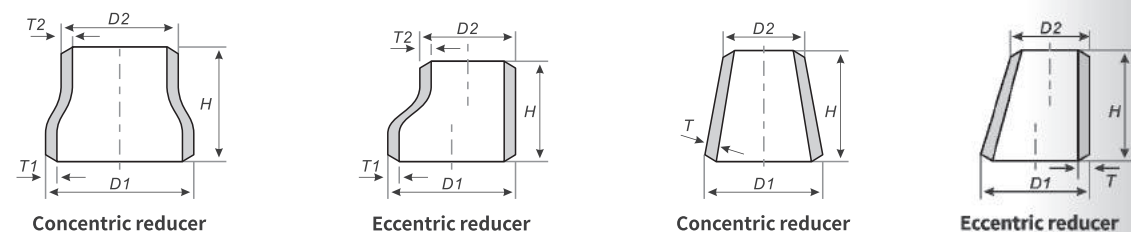
Above dimensions acc. to GB/T 12459, GB/T 13401, SH3408, SH 3409, HG/T 21635, HG/T 21631, SY/T 05010, ASME B16.9.

Weights are approximate and based on manufacture's data, according to ASME B36.10M, B36.19M, (sch20S/LG, weights are approximate and based on manufacture's data, according to GB/T 12459, GB/T13401.)

Nominal diameter		Outside diameter D1XD2	End to end H	Approx weight (kg/pc)					
DN	NPS			sch5S	sch10S	sch40S/STD	sch40	sch80S/XS	sch80
20	3/4	25×18 26.7×21.3	38	0.03	0.04	0.05	0.05	0.07	0.07
25	1	32×25 33.4×26.7	51	0.06	0.09	0.11	0.11	0.14	0.14
25	1	32×8 33.4×21.3	51	0.05	0.08	0.09	0.09	0.12	0.12
32	1.1/4	38×32 42.2×33.4	51	0.06	0.09	0.10	0.10	0.13	0.13
32	1.1/4	38×25 42.2×26.7	51	0.07	0.11	0.14	0.14	0.18	0.18
32	1.1/4	38×18 42.2×21.3	51	0.08	0.12	0.15	0.15	0.20	0.20
40	1.1/2	45×38 48.3×33.4	64	0.06	0.10	0.13	0.13	0.16	0.16
40	1.1/2	45×32 48.3×33.4	64	0.07	0.11	0.14	0.14	0.18	0.18
40	1.1/2	45×25 48.3×26.7	64	0.06	0.09	0.11	0.11	0.14	0.14
40	1.1/2	45×18 48.3×21.3	64	0.07	0.11	0.13	0.13	0.17	0.17
50	2	57×45 60.3×48.3	76	0.11	0.17	0.22	0.22	0.29	0.29
50	2	57×38 60.3×42.2	76	0.11	0.19	0.24	0.24	0.32	0.32
50	2	57×32 60.3×33.4	76	0.10	0.16	0.20	0.20	0.27	0.27
65	2.1/2	76×57 73.0×60.3	89	0.09	0.15	0.18	0.18	0.24	0.24
65	2.1/2	76×45 73.0×48.3	89	0.10	0.16	0.20	0.20	0.26	0.26
65	2.1/2	76×38 73.0×42.2	89	0.08	0.13	0.16	0.16	0.21	0.21
65	2.1/2	76×32 73.0×33.4	89	0.09	0.15	0.19	0.19	0.24	0.24
80	3	89×76 88.9×73.0	89	0.16	0.26	0.35	0.35	0.47	0.47
80	3	89×60.3 89×57	89	0.17	0.27	0.37	0.37	0.51	0.51
80	3	89×45 88.9×48.3	89	0.15	0.24	0.32	0.32	0.44	0.44
90	3.1/2	101.6×88.9 101.6×73.0	102	0.16	0.26	0.35	0.35	0.48	0.48
90	3.1/2	101.6×60.3 101.6×57	102	0.14	0.22	0.30	0.30	0.41	0.41
90	3.1/2	101.6×48.3 101.6×42.2	102	0.14	0.22	0.30	0.30	0.41	0.41
100	4	114.3×88.9 114.3×89	102	0.30	0.43	0.70	0.70	0.92	0.92
100	4	114.3×73.0 114.3×60.3	102	0.28	0.40	0.64	0.64	0.84	0.84
100	4	114.3×57 114.3×48.3	102	0.28	0.40	0.63	0.63	0.83	0.83
125	5	141.3×108 141.3×114.3	127	0.26	0.38	0.60	0.60	0.79	0.79
125	5	141.3×88.9 141.3×73.0	127	0.27	0.38	0.60	0.60	0.79	0.79
125	5	141.3×76 141.3×60.3	127	0.25	0.36	0.57	0.57	0.75	0.75
150	6	168.3×133 168.3×141.3	152	0.25	0.35	0.56	0.56	0.73	0.73
150	6	168.3×101.6 168.3×89	152	0.38	0.54	0.93	0.93	1.26	1.26
200	8	219.1×159 219.1×168.3	152	0.37	0.53	0.91	0.91	1.23	1.23
200	8	219.1×133 219.1×141.3	152	0.34	0.48	0.83	0.83	1.11	1.11
250	10	273.1×159 273.1×168.3	178	0.35	0.49	0.84	0.84	1.13	1.13
250	10	273.1×133 273.1×141.3	178	0.31	0.45	0.76	0.76	1.02	1.02
300	12	323.9×159 323.9×168.3	203	0.32	0.45	0.78	0.78	1.05	1.05
300	12	323.9×133 323.9×141.3	203	0.46	0.66	1.12	1.12	1.63	1.63
350	14	377×159 377×168.3	230	0.43	0.62	1.10	1.10	1.51	1.51
350	14	377×133 377×141.3	230	0.41	0.58	1.03	1.03	1.40	1.40
400	16	426×159 426×168.3	254	0.57	0.82	1.55	1.55	2.41	2.41
400	16	426×133 426×141.3	254	0.52	0.75	1.41	1.41	1.94	1.94
450	18	478×159 478×168.3	281	0.54	0.77	1.46	1.46	2.02	2.02
450	18	478×133 478×141.3	281	0.49	0.70	1.32	1.32	1.82	1.82
500	20	529×159 529×168.3	308	0.50	0.72	1.35	1.35	1.87	1.87
500	20	529×133 529×141.3	308	0.44	0.64	1.19	1.19	1.64	1.64
500	20	529×125 529×133	308	0.48	0.68	1.27	1.27	1.75	1.75
600	24	610×159 610×168.3	368	1.04	1.27	2.35	2.35	3.33	3.33
600	24	610×133 610×141.3	368	1.11	1.35	2.50	2.50	3.55	3.55
600	24	610×125 610×133	368	1.06	1.29	2.38	2.38	3.38	3.38
700	28	711×159 711×168.3	427	0.97	1.18	2.17	2.17	3.07	3.07
700	28	711×133 711×141.3	427	1.01	1.23	2.27	2.27	3.22	3.22
700	28	711×125 711×133	427	0.92	1.12	2.06	2.06	2.91	2.91
800	36	813×159 813×168.3	508	0.95	1.16	2.14	2.14	3.02	3.02

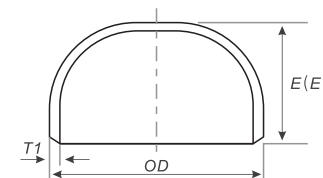
Nominal diameter		Outside diameter D1XD2	End to end H	Approx weight (kg/pc)					
DN	NPS			sch5S	sch10S	sch40S/STD	sch40	sch80S/XS	sch80
150	6	159×133 168.3×141.3	140	1.40	1.71	3.42	3.42	5.14	5.14
150	6	159×108 168.3×114.3	140	1.48	1.81	3.64	3.64	5.47	5.47
150	6	159×89 168.3×88.9	140	1.29	1.58	3.15	3.15	4.72	4.72
200	8	219×159 219.1×168.3	152	1.37	1.67	3.36	3.36	5.03	5.03
200	8	219×133 219.1×141.3	152	1.32	1.61	3.23	3.23	4.83	4.83
250	10	273×159 273.1×168.3	178	1.21	1.48	2.96	2.96	4.41	4.41
250	10	273×133 273.1×141.3	178	1.26	1.53	3.07	3.07	4.58	4.58
300	12	323.9×159 323.9×168.3	203	2.00	2.70	5.65	5.65	8.55	8.55
300	12	323.9×133 323.9×141.3	203	2.04	2.75	5.77	5.77	8.73	8.73
350	14	377×159 377×168.3	230	1.90	2.56	5.35	5.35	8.09	8.09
350	14	377×133 377×141.3	230	1.93	2.60	5.44	5.44	8.23	8.23
400	16	426×159 426×168.3	254	3.38	4.15	8.83	8.83	14.0	14.0
400	16	426×133 426×141.3	254	3.43	4.21	8.96	8.96	14.2	14.2
450	18	478×159 478×168.3	281	3.25	3.99	8.47	8.47	13.4	13.4
450	18	478×133 478×141.3	281	3.29	4.04	8.59	8.59	13.6	13.6
500	20	529×159 529×168.3	308	1.80	2.43	5.07	5.07	7.64	7.64
500	20	529×133 529×141.3	308	1.83	2.46	5.14	5.14	7.75	7.75
600	24	610×159 610×168.3	368	3.72	4.56	9.74	9.74	15.5	15.5
600	24	610×133 610×141.3	368	5.98	6.89	13.9	13.9	20.3	20.3
700	28	711×159 711×168.3	427	5.97	6.88	13.9	13.9	20.3	20.3
700	28	711×133 711×141.3	427	5.57	6.42	12.9	12.9	18.3	18.3
800	36	813×159 813×168.3	508	5.56	6.41	12.9	12.9	18.3	18.3
800	36	813×133 813×141.3	508	5.17	5.95	12.0	12.0	17.0	17.0
900	42	914×159 914×168.3	608	5.22	6.00	12.1	12.1	17.1	17.1
900	42	914×133 914×141.3	608	5.22	6.00	12.1	12.1	17.1	17.1
1000	48	1016×159 1016×168.3	720	11.4	13.7	26.6	26.6	35.1	35.1
1000	48	1016×133 1016×141.3	720	11.0	13.2	25.6	25.6	33.8	33.8
1200	54	1219×159 1219×168.3	840	10.6	12.8	24.8	24.8	32.7	32.7
1200	54	1219×133 1219×141.3	840	10.2	12.3	23.8	23.8	31.4	31.4
1400	60	1413×159 1413×168.3	1000	9.89	11.9	23.0	23.0	30.3	30.3
1400	60	1413×133 1413×141.3	1000	9.46	11.4	22.0	22.0	29.0	29.0
1600	72	1616×159 1616×168.3	1200	9.63	11.0	21.1	21.1	28.5	28.5
1600	72	1616×133 1616×141.3	1200	9.22	10.5	20.2	20.2	27.6	27.6
1800	84	1814×159 1814×168.3	1440	14.9	16.9	32.9	32.9	43.5	43.5
1800	84	1814×133 1814×141.3	1440	14.1	16.1	31.2	31.2	41.2	41.2
2000	96	2013×159 2013×168.3	1728	14.0	16.0	31.0	31.0	40.9	40.9
2000	96	2013×133 2013×141.3	1728	13.6	15.4	29.9	29.9	38.5	38.5
2200	108	2216×159 2216×168.3	2016	13.2	15.0	29.1	29.1	38.4	38.4
2200	108	2216×133 2216×141.3	2016	12.7	14.5	28.1	28.1	37.1	37.1
2400	120	2413×159 2413×168.3	2304	12.4	14.1	27.3	27.3	36.0	36.0
2400	120	2413×133 2413×141.3	2304	11.9	13.6	26.2	26.2	34.6	34.6
2600	132	2616×159 2616×168.3	2784	11.5	13.1	25.3	25.3	33.3	33.3
2600	132	2616×133 2616×141.3	2784	9.96	12.7	24.5	24.5	32.3	32.3
2800	156	2816×159 2816×168.3	3360	17.9	20.4	39.7	39.7	52.6	52.6
2800	156	2816×133 2816×141.3	3360	17.1	19.5	37.9	37.9	50.1	50.1
3000	180	3016×159 3016×168.3	4032	17.1	19.4	37.7	37.7	50.1	50.1
3000	180	3016×133 3016×141.3	4032	16.2	18.5	35.8	35.8	47.4	47.4
3200	204	3216×159 3216×168.3	4800	16.2	18.5	35.8	35.8	47.4	47.4
3200	204	3216×133 3216×141.3	4800	15.7	17.9	34.7	34.7	45.8	45.8
3400	228	3416×159 3416×168.3	5664	15.4	17.6	34.1	34.1	45.0	45.0
3400	228	3416×133 3416×141.3	5664	14.8	16.9	32.8	32.8	43.3	43.3
3600	264	3616×159 3616×168.3	6720	14.5	16.5	32.0	32.0	42.3	42.3
3600	264	3616×133 3616×141.3	6720	14.0	15.9	30.8	30.8	40.7	40.7
4000	324	4016×159 4016×168.3	8064	30.4	35.2	59.1	59.1	78.2	78.2
4000	324	4016×133 4016×141.3	8064	29.1	33.7	56.6	56.6	74.9	74.9
4200	360	42							

## Reducers(Concentric and Eccentric)



Nominal diameter		Outside diameter	End to end	Approx weight (kg/pc)					
DN	NPS	D1XD2	H	sch5S	sch10S	sch40S/STD	sch40	sch80S/XS	sch80
500×300	20×12	529×325	508	26.2	30.3	50.8	79.4	67.2	134
		508×23.9		25.45	29.4	49.3	77.0	65.1	130
500×250	20×10	529×273	508	24.8	28.7	48.2	75.2	63.7	127
		508×273.1		24.0	27.8	26.7	72.8	61.7	123
500×200	20×8	529×219	508	23.5	27.1	45.5	70.9	60.1	119
		508×219.1		22.7	26.2	43.9	68.5	58.0	115
550×500	22×20	559×508	508	32.1	37.3	62.7	-	83.0	182
550×450	22×18	559×457	508	30.8	35.0	59.9	-	79.3	174
550×400	22×16	559×406.4	508	29.4	34.0	57.2	-	75.7	165
550×350	22×14	559×355.6	508	28.0	32.5	54.5	-	72.1	157
600×550	24×22	610×559	508	28.0	46.8	68.8	-	91.2	215
600×500	24×20	630×529	508	40.4	46.2	68.0	123	90.1	212
		610×508		29.2	44.9	66.0	119	87.4	206
600×450	24×18	630×478	508	39.1	44.7	65.8	119	87.1	205
		610×457		37.6	43.1	63.3	114	83.9	197
600×400	24×16	630×426	508	37.5	43.0	63.1	114	83.6	197
		610×406.4		36.1	41.3	60.7	110	80.4	189
650×600	26×24	660×610	610	-	-	89.8	-	119	-
650×550	26×22	660×559	610	-	-	86.3	-	114	-
660×500	26×20	660×508	610	-	-	83.0	-	110	-
650×450	26×18	660×457	610	-	-	89.0	-	105	-
700×650	28×26	711×660	610	-	-	97.1	-	129	-
700×600	28×24	720×630	610	-	-	95.7	-	127	-
		711×610		-	-	93.6	-	124	-
700×550	28×22	711×559	610	-	-	90.4	-	120	-
750×700	30×28	762×711	610	-	-	104	-	139	-
750×650	30×26	762×660	610	-	-	101	-	133	-
750×600	30×24	762×610	610	66.4	82.7	97.8	-	130	-
750×550	30×22	762×559	610	63.9	80.0	94.5	-	125	-
800×750	32×30	813×762	610	-	-	112	-	148	-
800×700	32×28	820×720	610	-	-	109	-	145	-
		812×711		-	-	108	-	144	-
800×650	32×26	812×660	610	-	-	105	-	139	-
		820×630		-	-	104	-	138	-
800×600	32×24	813×610	610	-	-	102	-	135	-
		864×813		-	-	119	-	158	-
850×800	34×32	864×813	610	-	-	116	-	153	-
850×750	34×30	864×762	610	-	-	112	-	149	-
850×700	34×28	864×711	610	-	-	109	-	145	-
850×650	34×26	864×660	610	-	-	109	-	145	-
900×850	36×34	914×846	610	-	-	126	-	168	-
900×800	36×32	920×820	610	-	-	124	-	164	-
		914×813		-	-	123	-	163	-
900×750	36×30	914×762	610	-	-	120	-	159	-
900×700	36×28	920×720	610	-	-	118	-	156	-
		914×711		-	-	117	-	155	-

## Caps



Above dimensions acc. to GB/T 12459, GB/T 13401, SH3408, SH 3409, HG/T 21635, HG/T 21631, SY/T 05010, ASME B16.9.

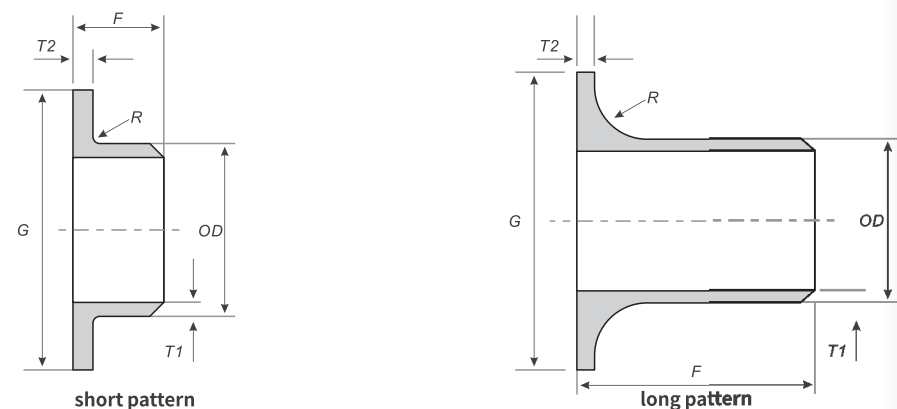
Weights are approximate and based on manufacture's data, according to ASME B36.10M, B36.19M, (sch20S/LG, weights are approximate and based on manufacture's data, according to GB/T 12459, GB/T13401.)

Nominal diameter		Outside diameter	Back to end		Approx weight (kg/pc)					
DN	NPS	OD	E	E1	sch5S	sch10S	sch40S/STD	sch40	sch80S/XS	sch80
15	1/2	18	25	25	0.019	0.024	0.031	0.031	0.042	0.042
		21.3			0.022	0.028	0.037	0.037	0.050	0.050
20	3/4	25	25	25	0.027	0.033	0.045	0.045	0.060	0.060
		26.7			0.029	0.035	0.048	0.048	0.065	0.065
25	1	32	38	38	0.049	0.083	0.101	0.101	0.136	0.136
		33.7			0.052	0.087	0.106	0.106	0.143	0.143
32	1.1/4	38	38	38	0.058	0.099	0.126	0.126	0.173	0.173
		42.4			0.065	0.110	0.141	0.141	0.193	0.193
40	1.1/2	45	38	38	0.071	0.118	0.158	0.158	0.218	0.218
		48.3			0.076	0.127	0.169	0.169	0.234	0.234
50	2	57	38	44	0.094	0.156	0.221	0.221	0.313	0.313
		60.3			0.099	0.165	0.234	0.234	0.331	0.331
65	2.1/2	76	38	51	0.167	0.241	0.409	0.409	0.555	0.555
		73			0.161	0.232	0.393	0.393	0.534	0.534
80	3	89	51	64	0.254	0.367	0.660	0.660	0.917	0.917
		90			0.355	0.512	0.965	0.965	1.36	1.36
100	4	108	64	76	0.387	0.561	1.11	1.11	1.58	1.58
		114.3			0.410	0.594	1.17	1.17	1.67	1.67
125	5	133	76	89	0.769	0.945	1.82	1.82	2.65	2.65
		139.7			0.808	0.993	1.91	1.91	2.78	2.78
150	6	141.3	89	102	0.817	1.00	1.93	1.93	2.81	2.81
		159			1.07	1.31	2.74	2.74	4.22	4.22
200	8	168.3	102	127	1.13	1.39	2.90	2.90	4.47	4.47
		165.2			1.11	1.36	2.85	2.85	4.39	4.39
250	10	219	127	152	1.76	2.38	5.19	5.19	8.05	8.05
		216.1			1.74	2.35	5.13	5.13	7.95	7.95
300	12	273	152	187	3.36	4.14	9.15	9.15	12.5	12.5
		267.4			3.29	4.05	8.96	8.96	12.2	12.2
350	14	325	165	191	5.12	6.40	13.5	13.5	17.9	17.9
		323.9			5.11	6.39	13.3	13.3	17.7	17.7
400	16	318.5	178	203	5.02	6.27	13.2	13.2	17.3	17.3
		377			6.00	8.46	16.9	16.9	22.5	22.5
450	18	355.6	203	229	5.66	7.87	15.9	15.9	21.2	21.2
		426			6.93	7.91	21.0	21.0	28.2	28.2
500	20	406.4	229	254	6.60	7.53	20.0	20.0	26.7	26.7
		478			7.90	9.01	26.9	26.9	35.8	35.8
550	22	457.2	254	254	7.52	8.58	25.6	25.6	34.1	34.1
		529			10.5	12.02	33.2	33.2	57.6	57.6
600	24	508	267	305	10.1	11.7	31.9	31.9	42.5	42.5
		559			12.1	22.6	38.8	38.8	51.7	51.7
650	26	630	267	-	14.8	16.9	46.5	46.5	61.9	61.9
		610			14.3	16.4	45.1	45.1	60.1	60.1
700	28	660	267	-	23.3	26.1	50.5	50.5	67.3	67.3
		720			27.1	32.4	56.9	56.9	75.6	75.6
750	30	711	267	-	38.7	49.7	56.2	56.2	74.9	74.9
		762			41.4	51.7	62.1	62.1	82.8	82.8
800	32	820	267	-	43.4	58.3	70.6	70.6	92.0	92.0
		813			43.1	57.7	70.0	70.0	91.2	91.2
850	34	864	267	-	57.2	68.5	78.7	78.7	105	105
		920			60.3	74.6	86.6	86.6	115	115
900	36	914	267	-	59.1	72.1	85.7	85.7	114	114



## Stub End

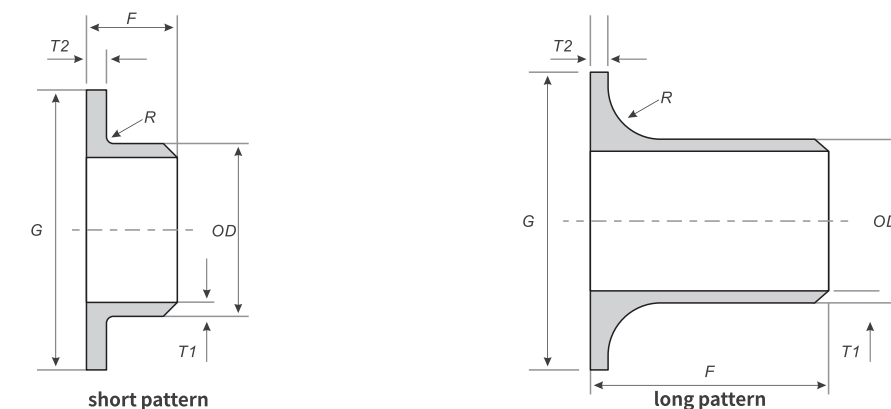
Above dimensions acc. to GBMSS SP-43, ASME B16.9.



Nominal diameter		Outside diameter	Length F		Diameter of lap nominal&maximum	Radius of fillet R		Approx weight (kg/pc)					
DN	NPS	OD	SP	LP		G	A max	B max	sch5S		sch10S		sch40S
								SP	LP	SP	LP	SP	LP
15	1/2	21.3	50.8	76.2	35.1	3	0.75	0.049	0.067	0.062	0.084	0.079	0.106
20	3/4	26.7	50.8	76.2	42.9	3	0.75	0.064	0.087	0.081	0.109	0.101	0.144
25	1	33.4	50.8	101.6	50.8	3	0.75	0.082	0.144	0.134	0.233	0.160	0.279
32	1.1/4	42.4	50.8	101.6	63.5	5	0.75	0.109	0.188	0.178	0.307	0.225	0.386
40	1.1/2	48.3	50.8	101.6	73.2	6	0.75	0.129	0.219	0.213	0.358	0.279	0.467
50	2	60.3	63.5	152.4	91.9	8	0.75	0.204	0.406	0.338	0.667	0.471	0.924
65	2.1/2	73.0	63.5	152.4	104.6	8	0.75	0.313	0.626	0.448	0.893	0.740	1.465
80	3	88.9	63.5	152.4	127.0	10	0.75	0.400	0.781	0.574	1.117	1.01	1.954
90	3.1/2	101.6	76.2	152.4	139.7	10	0.75	0.522	0.896	0.650	1.283	1.38	2.35
100	4	114.3	76.2	152.4	157.2	11	0.75	0.606	1.024	0.870	1.474	1.68	2.822
125	5	141.3	76.2	203.2	185.7	11	1.5	0.985	2.153	1.21	2.635	2.08	4.957
150	6	168.3	88.9	203.0	215.9	13	1.5	1.34	2.591	1.64	3.174	3.374	6.482
200	8	219.1	101.6	203.2	269.7	13	1.5	1.96	3.409	2.65	4.607	5.67	9.819
250	10	273.1	127.0	254.0	323.9	13	1.5	3.57	6.389	4.38	7.843	9.55	17.023
300	12	323.9	152.4	254.0	381.0	13	1.5	5.85	8.922	6.74	10.275	13.8	21.075
350	14	355.6	152.4	304.8	412.8	13	1.5	6.55	11.571	7.49	13.912	16.88	
400	16	406.4	152.4	304.8	469.9	13	1.5	7.778	14.216	8.797	16.078	-	
450	18	457.2	152.4	304.8	533.4	13	1.5	9.009	16.216	10.252	18.453	-	
500	20	508	152.4	304.8	584.2	13	1.5	11.102	19.984	13.202	23.764	-	
550	22	559	152.4	304.8	641.4	13	1.5	12.763	22.81	14.779	26.413	-	
600	24	610	152.4	304.8	692.2	13	1.5	16.132	28.839	18.476	33.028	-	

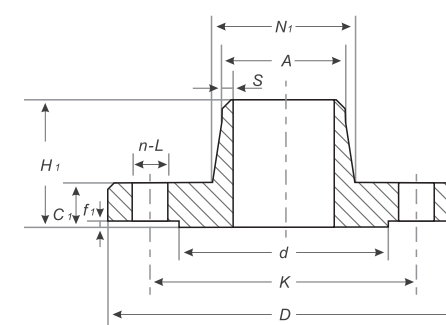
Sizes one the following table is applied to SE central-song sets of welded stell pipe flanges (HG20599-97) PN1.6Mpa.

Different pressures and models required by customer, should be indicated on the contract.

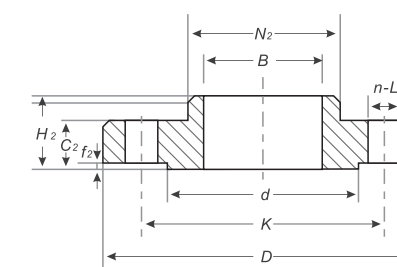


Nominal diameter	Outside diameter at bevel D		End to end	Radius of fillet R	Diameter of lap
DN	series A	series B	L	R	G
15	21.3	18	38	2	46
20	26.9	25	40	2	56
25	33.7	32	40	3	65
32	42.4	38	42	3	76
40	48.3	45	45	3	84
50	60.3	57	48	3	99
65	76.1	76	48	3	118
80	88.9	89	50	4	132
100	114.3	108	52	4	156
125	139.7	133	55	4	184
150	168.3	159	55	4	211
200	219.1	219	62	5	266
250	273	273	70	5	319
300	323.9	325	78	5	370
350	355.6	377	82	5	429
400	406.4	426	85	5	480
450	457	478	87	5	548
500	508	529	90	6	609
600	610	630	95	6	720

## Steel Flange(American System)



(WN) Welding Neck Flange ①



(SO) Slip-on Flange ②






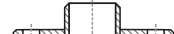



### American System Flange Class 150(PN2.0Mpa)

Nominal diameter	Hub Diam. Top	O.D. of Flange	Raised Face Diam.	Diam. of Bolt Circle	Diam. of Bolt Holes	No. of Bolt Holes	Diam. of Bolt (inch)	Thickness of Flange	Diam. of Hub	Length Through Hub				Approximate Weight of Flange			
										C1-4	N	H1	H2	H3	W1	W2	W3
DN	NPS	A	D	d	K	L	n	Th	C1-4	N	H1	H2	H3	W1	W2	W3	W4
15	1/2	21.3	90	35	60.5	16	4	M14	11.5	30	48	16	16	0.65	0.42	0.53	0.43
20	3/4	26.9	100	43	70	16	4	M14	13	38	52	16	16	0.91	0.6	0.73	0.63
25	1	33.7	110	51	79.5	16	4	M14	14.5	49	56	17	17	1.14	0.83	0.89	0.89
(32)	1(1/4)	42.4	120	63.5	89	16	4	M14	16	59	57	21	21	1.46	1.12	1.17	1.2
40	1(1/2)	48.3	130	73	98.5	16	4	M14	17.5	65	62	22	22	1.86	1.43	1.48	1.58
50	2	60.3	150	92	120.5	18	4	M16	19.5	78	64	25	25	2.72	2.07	2.1	2.39
(65)	2(1/2)	76.1	180	105	139.5	18	4	M16	22.5	90	70	29	29	4.45	3.53	3.56	4.07
80	3	88.9	190	127	152.5	18	4	M16	24	108	70	30	30	5.22	4.01	3.96	4.92
(90)	3(1/2)	101.6	216	140	178	18	8	M16	24	122	71	-	32	5.45	-	4.99	5.9
100	4	114.3	230	157.5	190.5	18	8	M16	24	135	76	33	33	7.49	5.4	5.57	7.13
125	(5)	139.7	255	186	216	22	8	M20	24	164	89	36	36	9.53	6.29	6.33	9.31
(150)	6	168.3	280	216	241.5	22	8	M20	25.5	192	89	40	40	11.8	7.82	7.67	11.7
200	8	219.1	345	270	298.5	22	8	M20	29	246	102	44	45	19.17	12.75	12.67	20.46
250	10	273	405	324	362	26	12	M24	30.5	305	102	49	49	25.67	16.78	16.56	29.19
300	12	323.9	485	381	432	26	12	M24	32	365	114	56	56	39.9	26.91	27.2	44.11
350	14	355.6	535	413	476	29.5	12	M27	35	400	127	57	79	53.3	35.24	39.29	58.83
400	16	406.4	600	470	540	29.5	16	M27	37	457	127	64	87	68.5	46.46	52	78.19
450	18	457	635	533.5	578	32.5	16	M30	40	505	140	68	97	79.99	49.26	56.21	94.72
500	20	508	700	584	635	32.5	20	M30	43	559	145	73	103	101	62.94	73.4	123.6
550	22	559	750	641	692	35.5	20	M33	46	610	149	-	-	113.5	-	-	150.7
600	24	610	816	692	749.5	35.5	20	M33	48	664	152	83	111	139	88.11	99.83	187.1

Note:

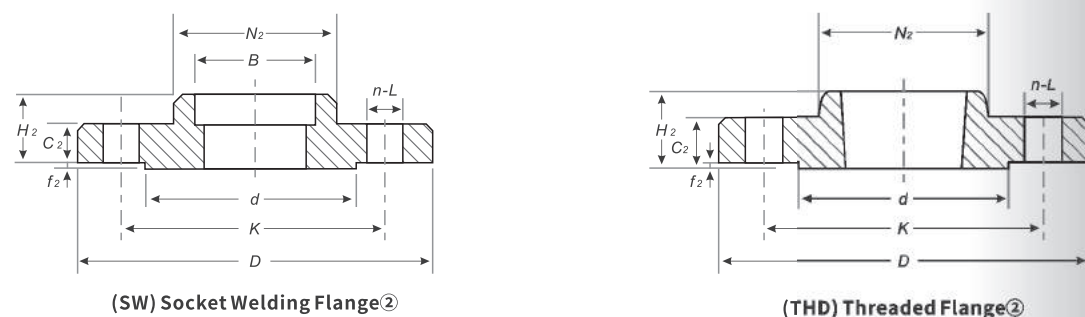
1) ①Welding Neck Flange(WN), ②Slip-on Flange(SO), Threaded Flange(THD), Socket Welding Flange(SW), ③Lap Joint Flange(LJ), ④Blind Flange(BL).

2)ASME B16.5, HG20615-20622, ASME B16.36, ASME B16.48, SH3406, GB9112-9124, GB/T2506, GB/T4450 specifications are available.

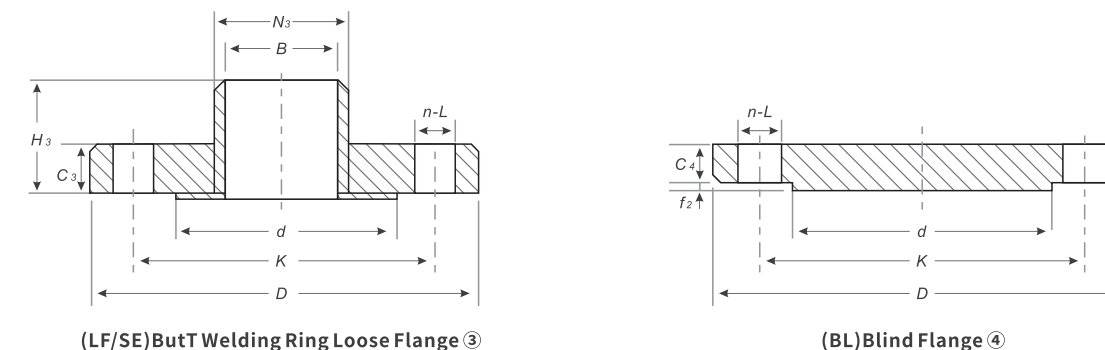
Type of Flange	Type of Sealing Surface	Pressure Class(Mpa)	Manufacturing Standard
 (PL) Plate Flange	(RF)	0.25-2.5	Manufacturing standard can be GB/T9112-9124 HG20592-20635 SH3406 ANSIB16.5 JISB2220 ASME B16.47 etc.
	(FF)	0.25-1.6	
 (SO) Slip-on Flange	(RF)	0.6-0.4	
	(MFM)	1.0-4.0	
	(TG)	0.6-1.6	
	(FF)	1.0-25.0	
 (WN) Welding Neck Flange	(RF)	1.0-16.0	
	(MFM)	1.0-16.0	
	(TG)	6.3-25.0	
	(RJ)	1.0-1.6	
	(FF)	1.0-10.0	
 (SW) Socket Welding Flange	(RF)	1.0-10.0	
	(MFM)	1.0-10.0	
	(TG)	0.6-0.4	
 (THD) Threaded Flange	(RF)	0.6-1.6	
	(FF)	0.6-4.0	
 (LF/SE) Butt Welding Ring Loose Flange	(RF)	0.6-1.6	
 (RJ/RJ) Flat Welding Ring Loose Flange	(RF)	1.6-1.6	
	(MFM)	1.0-1.6	
	(TG)	1.0-1.6	
 (BL) Blind Flange	(RF)	0.25-0.25	
	(MFM)	1.0-16.0	
	(TG)	1.0-16.0	
	(RJ)	6.3-25.0	
	(FF)	0.25-1.6	
 (BL(S)) Lining Blind Flange	(RF)	0.6-4.0	
	(MFM)	1.0-4.0	
	(TG)	1.0-4.0	



## Steel Flange(American System)



## Steel Flange(American System)



### American System Flange Class 300(PN5.0Mpa)

Nominal diameter	Hub Diam. Top	O.D. of Flange	Raised Face Diam.	Diam. of Bolt Circle	Diam. of Bolt Holes	No. of Bolt Holes	Diam. of Bolt (inch)	Thickness of Flange	Diam. of Hub	Length Through Hub			Approximate Weight of Flange				
										H1	H2	H3	W1	W2	W3	W4	
DN	NPS	A	D	d	K	L	n	Th	C1-4	N	H1	H2	H3	W1	W2	W3	W4
15	1/2	21.3	95	35	66.5	16	4	M14	14.5	38	52	22	22	0.91	0.64	0.71	0.63
20	3/4	26.9	120	43	82.5	18	4	M16	16	48	57	25	25	1.36	1.16	1.26	1.15
25	1	33.7	125	51	89	18	4	M16	17.5	54	62	27	27	1.82	1.37	1.47	1.4
(32)	1(1/4)	42.4	135	63.5	98.5	18	4	M16	19.5	64	65	27	27	2.27	1.76	1.86	1.88
40	1(1/2)	48.3	155	73	114.5	22	4	M20	21	70	68	30	30	3.18	2.53	2.65	2.65
50	2	60.3	165	92	127	18	8	M16	22.5	84	70	33	33	3.79	2.91	2.98	3.38
(65)	2(1/2)	76.1	190	105	149	22	8	M20	25.5	100	76	38	38	5.74	4.43	4.47	5.09
80	3	88.9	210	127	168.5	22	8	M20	29	118	79	43	43	8.17	6.16	6.14	7.22
(90)	3(1/2)	101.6	229	140	184	22	8	M20	30	140	81	45	45	9.1	7.72	7.26	9.53
100	4	114.3	255	157.5	200	22	8	M20	32	146	86	48	48	12.1	9.74	10.05	11.62
(125)	(5)	139.7	280	186	235	22	8	M20	35	178	98	51	51	16.3	12.4	12.56	15.76
150	6	168.3	320	216	270	22	12	M20	37	206	98	52	52	21.29	16.76	16.42	22.16
200	8	219.1	380	270	330	26	12	M24	41.5	260	111	62	62	32.2	24.93	24.42	35.14
250	10	273	445	324	387.5	29.5	16	M27	48	321	117	67	95	47.01	35.59	38.85	54.99
300	12	323.9	520	381	451	32.5	16	M30	51	375	130	73	102	66.64	50.91	55.75	79.96
350	14	355.6	585	413	514.5	32.5	20	M30	54	426	143	76	111	95.69	72.6	81	108.4
400	16	406.4	650	470	571.5	35.5	20	M33	57.5	483	146	83	121	121	91.63	104.9	141.2
450	18	457	710	533.5	628.5	35.5	24	M33	60.5	533	159	89	130	150.2	111.6	128.6	178.8
500	20	508	775	584	686	35.5	24	M33	63.5	587	162	95	140	181.6	136	156	223.3
(550)	(22)	559	840	641	743	42	24	M39	66.5	640	165	-	-	199.4	-	-	268.7
600	24	610	915	692	813	42	24	M39	70	702	168	104	152	265	202.1	235.1	342

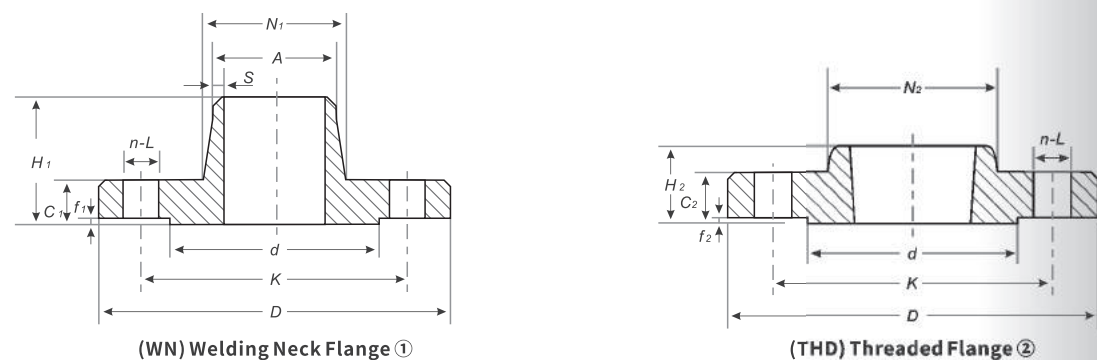
### American System Flange Class 600(PN11.0Mpa)

Nominal diameter	Hub Diam. Top	O.D. of Flange	Raised Face Diam.	Diam. of Bolt Circle	Diam. of Bolt Holes	No. of Bolt Holes	Diam. of Bolt (inch)	Thickness of Flange	Diam. of Hub	Length Through Hub			Approximate Weight of Flange				
										H1	H2	H3	W1	W2	W3	W4	
DN	NPS	A	D	d	K	L	n	Th	C1-4	N	H1	H2	H3	W1	W2	W3	W4
15	1/2	21.3	95	35	66.5	16	4	M14	14.5	38	52	22	22	1.36	0.75	0.76	0.77
20	3/4	26.9	120	43	82.5	18	4	M16	16	48	57	25	25	1.59	1.35	1.38	1.37
25	1	33.7	125	51	89	18	4	M16	17.5	54	62	27	27	1.86	1.58	1.62	1.66
(32)	1(1/4)	42.4	135	63.5	98.5	18	4	M16	21	64	67	29	29	2.57	2.15	2.23	2.37
40	1(1/2)	48.3	155	73	114.5	22	4	M20	22.5	70	70	32	32	3.63	2.99	3.09	3.29
50	2	60.3	165	92	127	18	8	M16	22.5	84	73	37	37	4.54	3.71	3.85	4.24
(65)	2(1/2)	76.1	190	105	149	22	8	M20	29	100	79	41	41	6.39	5.2	5.5	6.24
80	3	88.9	210	127	168.5	22	8	M20	32	117	83	46	46	8.49	7.13	7.74	8.63
(90)	3(1/2)	101.6	229	140	184	26	8	M24	35	133	86	49	49	11.8	9.53	9.08	13.17
100	4	114.3	275	157.5	216	26	8	M24	38.5	152	102	54	54	17.46	14.9	15.4	17.74
(125)	(5)	139.7	330	186	267	29.5	8	M27	44.5	189	114	60	60	30.9	24.99	25.1	29.98
150	6	168.3	355	216	292	29.5	12	M27	48	222	117	67	67	33.96	29.96	29.8	37.35
200	8	219.1	420	270	349	32.5	12	M30	55.5	273	133	76	76	52.23	44.87	45.2	60.65
250	10	273	510	324	432	35.5	16	M33	63.5	343	152	86	111	86.02	72.84	80.2	100.2
300	12	323.9	560	381	489	35.5	20	M33	67	400	156	92	117	102.9	85.89	97.1	126.5
350	14	355.6	605	413	527	39	20	M36	70	432	165	94	127	157.5	101.7	116.2	154.3
400	16	406.4	685	470	603	42	20	M39	76.5	495	178	106	140	218.4	144.1	164.2	216.9
450	18	457	745	533.5	654	45	20	M42	83	546	184	117	152	252	177.4	218.5	278
500	20	508	815	584	724	45	24	M42	89	610	190	127	165	313.3	225.3	275.7	355.5
(550)	(22)	559	870	641	778	48	24	M45	95	665	197	-	-	376.5	-	-	428.5
600	24	610	940	692	838	51	24	M48	102	718	203	140	184	443.6	314	367.1	537.1

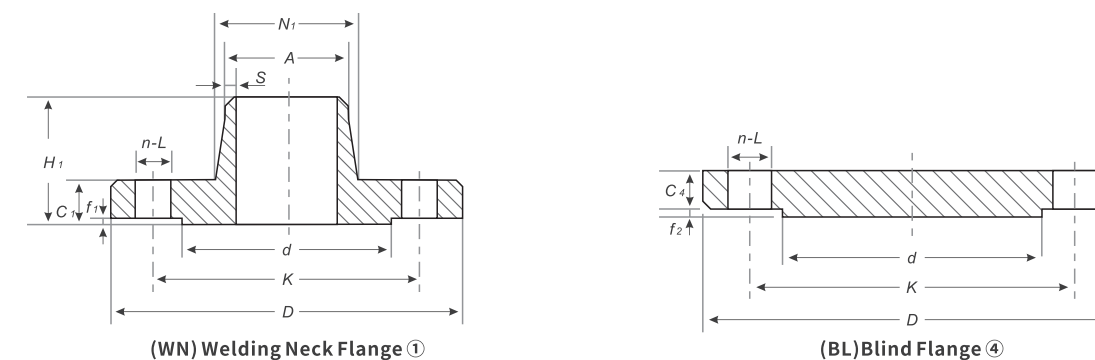
Note:  
1) ①Welding Neck Flange(WN), ②Slip-on Flange(SO), Threaded Flange(THD), Socket Welding Flange(SW), ③Lap Joint Flange(LJ), ④Blind Flange(BL).

Note:  
1) ①Welding Neck Flange(WN), ②Slip-on Flange(SO), Threaded Flange(THD), Socket Welding Flange(SW), ③Lap Joint Flange(LJ), ④Blind Flange(BL).

## Steel Flange(American System)



## Steel Flange(American System)



### American System Flange Class 900(PN15.0Mpa)

Nominal diameter	Hub Diam. Top	O.D. of Flange	Raised Face Diam.	Diam. of Bolt Circle	Diam. of Bolt Holes	No. of Bolt Holes	Diam. of Bolt (inch)	Thickness of Flange	Diam. of Hub	Length Through Hub		Approximate Weight of Flange			
										H1	H2	W1	W2	W3	
DN	NPS	A	D	d	K	L	n	Th	C1-4	N	H1	H2	W1	W2	W3
15	1/2	21.3	120	35	82.5	22	4	M20	22.5	38	60	32	3.18	1.75	1.78
20	3/4	26.9	130	43	89	22	4	M20	25.5	44	70	35	3.18	2.35	2.43
25	1	33.7	150	51	101.5	26	4	M24	29	52	73	41	3.86	3.5	3.65
(32)	1(1/4)	42.4	160	63.5	111	26	4	M24	29	64	73	41	4.54	4.01	4.27
40	1(1/2)	48.3	180	73	124	29.5	4	M27	32	70	83	44	6.36	5.52	5.94
50	2	60.3	215	92	165	26	8	M24	38.5	105	102	57	10.9	9.81	10.05
(65)	2(1/2)	76.1	245	105	190.5	29.5	8	M27	41.5	124	105	64	16.3	13.5	14.05
80	3	88.9	240	127	190.5	26	8	M24	38.6	127	102	54	13.44	11.5	18.09
100	4	114.3	290	157.5	235	32.5	8	M30	44.5	159	114	-	23.2	-	21.83
(125)	(5)	139.7	350	186	279.5	35.5	8	M33	51	190	127	-	39.1	-	37.36
150	6	168.3	380	216	317.5	32.5	12	M30	56	235	140	-	49.9	-	48.63
200	8	219.1	470	270	393.5	39	12	M36	63.5	298	162	-	86.91	-	91
250	10	273	545	324	470	39	16	M36	70	368	184	-	121.7	-	124
300	12	323.9	610	381	533.5	39	20	M36	79.5	419	200	-	168.9	-	174.8
350	14	355.6	640	413	559	42	20	M39	86	451	213	-	255.2	-	208
400	16	406.4	705	470	616	45	20	M42	89	508	216	-	311.0	-	262.8
450	18	457	785	533.5	686	51	20	M48	102	565	229	-	419.5	-	369.6
500	20	508	855	584	749.5	55	20	M52	108	672	248	-	528.5	-	461
600	24	610	1040	692	901.5	68	20	M64	140	749	267	-	956.6	-	874.5

### American System Flange Class 1500(PN26.0Mpa)

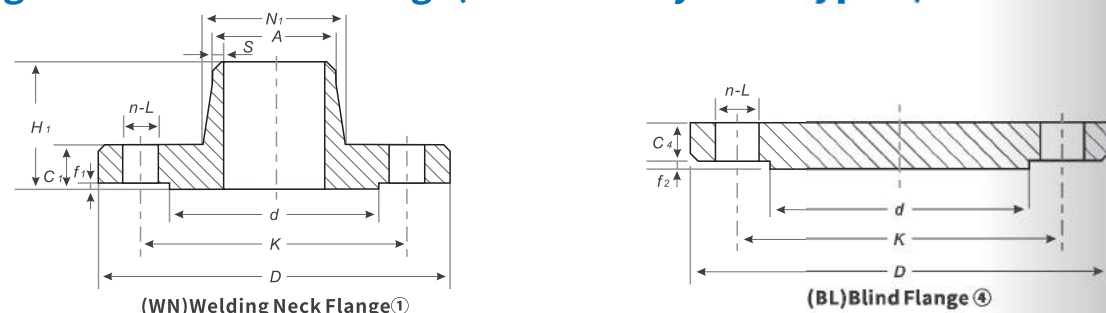
Nominal diameter	Hub Diam. Top	O.D. of Flange	Raised Face Diam.	Diam. of Bolt Circle	Diam. of Bolt Holes	No. of Bolt Holes	Diam. of Bolt (inch)	Thickness of Flange	Diam. of Hub	Length Through Hub		Approximate Weight of Flange		
										H1	H2	W1	W4	
DN	NPS	A	D	d	K	L	n	Th	C1-4	N	H1	H2	W1	W4
15	1/2	21.3	120	35	82.5	22	4	M20	22.5	38	60	-	3.18	1.78
20	3/4	26.9	130	43	89	22	4	M20	22.5	44	70	-	3.18	2.43
25	1	33.7	150	51	101.5	26	4	M24	29	52	73	82.5	3.86	3.65
(32)	1(1/4)	42.4	160	63.5	111	26	4	M24	29	64	73	-	4.54	4.27
40	1(1/2)	48.3	180	73	124	29.5	4	M27	32	70	83	89	6.36	5.94
50	2	60.3	215	92	165	26	8	M24	38.5	105	102	102	10.9	10.0
(65)	2(1/2)	76.1	245	105	190.5	29.5	8	M27	41.5	124	105	105	16.34	14.0
80	3	88.9	240	127	203	32.5	8	M30	48	133	117	117	21.8	19.98
100	4	114.3	310	157.5	241.5	35.5	8	M33	54	162	124	124	31.3	29.71
(125)	(5)	139.7	375	186	292	42	8	M39	73.5	197	155	-	59.9	58.82
150	6	168.3	395	216	317.5	39	12	M36	83	229	171	171	74.5	72.5
200	8	219.1	485	270	393.5	45	12	M42	92	292	213	213	123.9	122.8
250	10	273	585	324	482.5	51	12	M48	108	368	254	254	206.1	211.6
300	12	323.9	675	381	571.5	55	16	M52	124	451	283	283	313.3	317.6
350	14	355.6	750	413	635	60	16	M56	133.5	495	298	298	406.5	422.9
400	16	406.4	825	470	705	68	16	M64	146.5	552	311	311	525.0	557.5
450	18	457	915	533.5	774.5	74	16	M70	162	597	327	327	687.2	761
500	20	508	985	584	832	80	16	M76	178	641	356	356	852.6	967
600	24	610	1170	692	990.5	94	16	M90	203.5	762	406	406	1366.8	1561

Note:  
1) ①Welding Neck Flange(WN), ②Socket Welding Flange(SW), ④Blind Flange(BL).

Note:  
1) ①Welding Neck Flange(WN), ④Blind Flange(BL).



## Large Diameter Steel Flange(American System Type A)



(WN)Welding Neck Flange①

(BL)Blind Flange②

### American System Large Diameter Flanges Class 600(PN11.0Mpa) ASME B16.47 A

Nominal diameter	Hub Diam. Top	O.D. of Flange	Raised Face Diam.	Diam. of Bolt Circle	Diam. of Bolt Holes	No. of Bolt Holes	Diam. of Bolt (inch)	Minimum Thickness of Flange	Diam. of Hub	Length Through Hub	Approximate Weight of Flange			
DN	NPS	A	D	d	K	L	n	Th	C1	C2	N	H	W1	W2
650	26	660.4	1015	749	914.4	2	28	M48[1(7/8)]	108.0	125.5	748	222	-	-
700	28	711.2	1075	800	965.2	2(1/8)	28	M52(2)	111.2	131.8	803	235	-	-
750	30	762.0	1130	857	1022.4	2(1/8)	28	M52(2)	114.3	139.7	862	248	-	-
800	32	812.8	1195	914	1079.5	2(3/8)	28	M56[2(1/4)]	117.5	148.0	918	260	-	-
850	34	863.6	1245	965	1130.3	2(3/8)	28	M56[2(1/4)]	120.7	154.0	973	270	-	-
900	36	914.4	1315	1022	1193.8	2(5/8)	28	M64[2(1/2)]	123.9	162.0	1032	283	-	-
950	38	965.2	1270	1054	1162.0	2(3/8)	28	M56[2(1/4)]	152.4	155.0	1022	254	-	-
1000	40	1016.0	1320	1111	1212.8	2(3/8)	32	M56[2(1/4)]	158.8	162.0	1073	264	-	-
1050	42	1066.8	1405	1168	1282.7	2(5/8)	28	M64[2(1/2)]	168.3	171.5	1127	279	-	-
1100	44	1117.6	1455	1226	1333.5	2(5/8)	32	M64[2(1/2)]	173.1	177.8	1181	289	-	-
1150	46	1168.4	1510	1276	1390.6	2(5/8)	32	M64[2(1/2)]	179.4	185.8	1235	300	-	-
1200	48	1219.2	1595	1334	1460.5	2(7/8)	32	M70[2(3/4)]	189.0	195.3	1289	316	-	-
1250	50	1270.0	1670	1384	1524.0	3(1/8)	28	M76(3)	196.9	203.2	1343	329	-	-
1300	52	1320.8	1720	1435	1574.8	3(1/8)	32	M76(3)	203.2	209.6	1394	337	-	-
1350	54	1371.6	1780	1492	1632.0	3(1/8)	32	M76(3)	209.6	217.5	1448	349	-	-
1400	56	1422.4	1855	1543	1695.4	3(3/8)	32	M82[3(1/4)]	217.5	225.5	1502	362	-	-
1450	58	1473.2	1905	1600	1746.2	3(3/8)	32	M82[3(1/4)]	222.3	231.8	1553	370	-	-
1500	60	1524.0	1995	1657	1822.4	3(5/8)	28	M90[3(1/2)]	233.4	242.9	1610	389	-	-

### American System Large Diameter Flanges Class 900(PN15.0Mpa) ASME B16.47 A

Nominal diameter	Hub Diam. Top	O.D. of Flange	Raised Face Diam.	Diam. of Bolt Circle	Diam. of Bolt Holes	No. of Bolt Holes	Diam. of Bolt (inch)	Minimum Thickness of Flange	Diam. of Hub	Length Through Hub	Approximate Weight of Flange			
DN	NPS	A	D	d	K	L	n	Th	C1	C2	N	H	W1	W2
650	26	660.4	1085	749	952.5	2(7/8)	20	M70[2(3/4)]	139.7	160.4	775	286	-	-
700	28	711.2	1170	800	1022.4	3(1/8)	20	M76(3)	142.9	171.5	832	298	-	-
750	30	762.0	1230	857	1085.8	3(1/8)	20	M76(3)	149.3	182.6	889	311	-	-
800	32	812.8	1315	914	1155.7	3(3/8)	20	M82[3(1/4)]	158.8	193.7	946	330	-	-
850	34	863.6	1395	965	1225.6	3(5/8)	20	M90[3(1/2)]	165.1	204.8	1006	349	-	-
900	36	914.4	1460	1022	1289.0	3(5/8)	20	M90[3(1/2)]	171.5	214.4	1064	362	-	-
950	38	965.2	1460	1099	1289.0	3(5/8)	20	M90[3(1/2)]	190.5	215.9	1073	352	-	-
1000	40	1016.0	1510	1162	1339.8	3(5/8)	24	M90[3(1/2)]	196.9	223.9	1127	364	-	-
1050	42	1066.8	1560	1213	1390.6	3(5/8)	24	M90[3(1/2)]	206.4	231.8	1176	371	-	-
1100	44	1117.6	1650	1270	1463.7	3(7/8)	24	M95[3(3/4)]	214.4	242.9	1235	391	-	-
1150	46	1168.4	1735	1334	1536.7	4(1/8)	24	M100(4)	225.5	255.6	1292	411	-	-
1200	48	1219.2	1785	1384	1587.5	4(1/8)	24	M100(4)	233.4	263.6	1343	419	-	-

## Large Diameter Steel Flange(American System Type A)

### American System Large Diameter Flanges Class 150(PN2.0Mpa) ASME B16.47 A

Nominal diameter	Hub Diam. Top	O.D. of Flange	Raised Face Diam.	Diam. of Bolt Circle	Diam. of Bolt Holes	No. of Bolt Holes	Diam. of Bolt (inch)	Minimum Thickness of Flange	Diam. of Hub	Length Through Hub	Approximate Weight of Flange			
DN	NPS	A	D	d	K	L	n	Th	C1	C2	N	H	W1	W2
650	26	660.4	870	749	806.4	1(3/8)	24	M33[1(1/4)]	66.7	66.7	676	119	-	-
700	28	711.2	925	800	863.6	1(3/8)	28	M33[1(1/4)]	69.9	69.9	727	124	-	-
750	30	762.0	985	857	914.4	1(3/8)	28	M33[1(1/4)]	73.1	73.1	781	135	-	-
800	32	812.8	1060	914	977.9	1(5/8)	28	M39[1(1/2)]	79.4	79.4	832	143	-	-
850	34	863.6	1110	965	1028.7	1(5/8)	32	M39[1(1/2)]	81.0	81.0	883	148	-	-
900	36	914.4	1170	1022	1085.8	1(5/8)	32	M39[1(1/2)]	88.9	88.9	933	156	-	-
950	38	965.2	1240	1073	1149.4	1(5/8)	32	M39[1(1/2)]	85.8	85.8	991	156	-	-
1000	40	1016.0	1290	1124	1200.2	1(5/8)	36	M39[1(1/2)]	88.9	88.9	1041	162	-	-
1050	42	1066.8	1345	1194	1257.3	1(5/8)	36	M39[1(1/2)]	95.3	95.3	1092	170	-	-
1100	44	1117.6	1405	1245	1314.4	1(5/8)	40	M39[1(1/2)]	100.1	100.1	1143	176	-	-
1150	46	1168.4	1455	1295	1365.2	1(5/8)	40	M39[1(1/2)]	101.6	101.6	1197	184	-	-
1200	48	1219.2	1510	1359	1422.4	1(5/8)	44	M39[1(1/2)]	106.4	106.4	1248	191	-	-
1250	50	1270.0	1570	1410	1479.6	1(7/8)	44	M45[1(3/4)]	109.6	109.6	1302	202	-	-
1300	52	1320.8	1625	1461	1536.7	1(7/8)	44	M45[1(3/4)]	114.3	114.3	1353	208	-	-
1350	54	1371.6	1685	1511	1593.8	1(7/8)	44	M45[1(3/4)]	119.1	119.1	1403	214	-	-
1400	56	1422.4	1745	1575	1651.0	1(7/8)	48	M45[1(3/4)]	122.3	122.3	1457	227	-	-
1450	58	1473.2	1805	1626	1708.2	1(7/8)	48	M45[1(3/4)]	127.0	127.0	1508	233	-	-
1500	60	1524.0	1855	1676	1759.0	1(7/8)	52	M45[1(3/4)]	130.2	130.2	1559	238	-	-

### American System Large Diameter Flanges Class 300(PN5.0Mpa) ASME B16.47 A

Nominal diameter	Hub Diam. Top	O.D. of Flange	Raised Face Diam.	Diam. of Bolt Circle	Diam. of Bolt Holes	No. of Bolt Holes	Diam. of Bolt (inch)	Minimum Thickness of Flange	Diam. of Hub	Length Through Hub	Approximate Weight of Flange			
DN	NPS	A	D	d	K	L	n	Th	C1	C2	N	H	W1	W2
650	26	660.4	970	749	876.3	1(3/4)	28	M42[1(5/8)]	77.8	82.6	721	183	-	-
700	28	711.2	1305	800	939.8	1(3/4)	28	M42[1(5/8)]	84.2	88.9	775	195	-	-
750	30	762.0	1090	857	997.0	1(7/8)	28	M45[1(3/4)]	90.5	93.7	827	208	-	-
800	32	812.8	1150	914	1054.1	2	28	M48[1(7/8)]	96.9	98.5	881	221	-	-
850	34	863.6	1205	965	1104.9	2	28	M48[1(7/8)]	100.1	103.2	937	230	-	-
900	36	914.4	1270	1022	1168.4	2(1/8)	32	M52(2)	103.2	109.6	991	240	-	-
950	38	965.2	1170	1029	1092.2	1(5/8)	32	M39[1(1/2)]	106.4	106.4	994	179	-	-
1000	40	1016.0	1240	1086	1155.7	1(3/4)	32	M42[1(5/8)]	112.8	112.8	1048	192	-	-
1050	42	1066.8	1290	1137	1206.5	1(3/4)	32	M42[1(5/8)]	117.5	117.5	1099	198	-	-
1100	44	1117.6	1355	1194	1263.6	1(7/8)	32	M45[1(3/4)]	122.3	122.3	1149	205	-	-
1150	46	1168.4	1415	1245	1320.8	2	28	M48[1(7/8)]	127.0	127.0	1203	214	-	-
1200	48	1219.2	1465	1302	1371.6	2	32	M48[1(7/8)]	131.8	131.8	1254	222	-	-
1250	50	1270.0	1530	1359	1428.8	2(1/8)	32	M52(2)	138.2	138.2	1305	230	-	-
1300	52	1320.8	1580	1410	1479.6	2(1/8)	32	M52(2)	142.9	142.9	1356	237	-	-
1350	54	1371.6	1660	1467	1549.4	2(3/8)	28	M56[2(1/4)]	150.9	150.9	1410	251	-	-
1400	56	1422.4	1710	1518	1600.2	2(3/8)	28	M56[2(1/4)]	152.4	152.4	1464	259	-	-
1450	58	1473.2	1760	1575	1651.0	2(3/8)	32	M56[2(1/4)]	157.2	157.2	1514	265	-	-
1500	60	1524.0	1810	1626	1701.8	2(3/8)	32	M56[2(1/4)]	162.0	162.0	1565	271	-	-

Note:

1) ①Welding Neck Flange(WN), ②Blind Flange (BL).

2) HG 20623, GB 13402, MSS SP 44 specifications are available.

## Large Diameter Steel Flange(American System Type B)

### American System Large Diameter Flanges Class 75(PN1.0Mpa) ASME B16.47 B

Nominal diameter		Hub Diam. Top	O.D. of Flange	Raised Face Diam.	Diam. of Bolt Circle	Diam. of Bolt Holes	No. of Bolt Holes	Diam. of Bolt (inch)	Minimum Thickness of Flange		Diam. of Hub	Length Through Hub	Approximate Weight of Flange	
DN	NPS	A	D	d	K	L	n	Th	C1	C2	N	H	W1	W2
650	26	661.9	760	705	723.9	3/4	36	M16(5/8)	31.9	31.9	676	57	29	-
700	28	712.7	815	756	774.7	3/4	40	M16(5/8)	31.9	31.9	727	60	31	-
750	30	763.5	865	806	825.5	3/4	44	M16(5/8)	31.9	31.9	778	64	35	-
800	32	814.3	915	857	876.3	3/4	48	M16(5/8)	33.5	35.0	829	68	48	-
850	34	865.1	965	908	927.1	3/4	52	M16(5/8)	33.5	36.6	879	72	50	-
900	36	915.9	1035	965	992.2	7/8	40	M20(3/4)	35.0	40.9	935	84	62	-
950	38	966.7	1085	1016	1043	7/8	40	M20(3/4)	36.6	43.0	986	87	70	-
1000	40	1017.5	1135	1067	1093.8	7/8	44	M20(3/4)	36.6	43.0	1037	91	74	-
1050	42	1068.3	1185	1118	1144.6	7/8	48	M20(3/4)	38.2	46.3	1087	94	77	-
1100	44	1119.1	1250	1175	1203.3	1	36	M24(7/8)	41.4	47.7	1140	103	82	-
1150	46	1169.9	1300	1226	1254.1	1	40	M24(7/8)	43.0	49.3	1191	106	105	-
1200	48	1220.7	1355	1276	1304.9	1	44	M24(7/8)	44.6	52.5	1241	110	120	-
1250	50	1271.5	1405	1327	1355.7	1	44	M24(7/8)	46.2	54.1	1294	114	120	-
1300	52	1322.3	1455	1378	1409.7	1	48	M24(7/8)	44.2	55.7	1345	119	120	-
1350	54	1373.1	1510	1429	1460.5	1	48	M24(7/8)	47.8	58.9	1397	124	180	-
1400	56	1423.9	1575	1486	1520.8	1(1/8)	40	M27(1)	49.3	60.4	1451	133	180	-
1450	58	1474.7	1625	1537	1571.6	1(1/8)	44	M27(1)	50.9	62.0	1502	137	180	-
1500	60	1525.5	1675	1588	1622.4	1(1/8)	44	M27(1)	54.1	65.2	1553	143	210	-

### American System Large Diameter Flanges Class 150(PN2.0Mpa) ASME B16.47 B

Nominal diameter		Hub Diam. Top	O.D. of Flange	Raised Face Diam.	Diam. of Bolt Circle	Diam. of Bolt Holes	No. of Bolt Holes	Diam. of Bolt (inch)	Minimum Thickness of Flange		Diam. of Hub	Length Through Hub	Approximate Weight of Flange	
DN	NPS	A	D	d	K	L	n	Th	C1	C2	N	H	W1	W2
650	26	661.9	785	711	744.5	7/8	36	M20(3/4)	39.8	43.0	684	87	52	-
700	28	712.7	835	762	795.3	7/8	40	M20(3/4)	43.0	46.2	735	94	58	-
750	30	763.5	885	813	846.1	7/8	44	M20(3/4)	43.0	49.3	787	98	65	-
800	32	814.3	940	864	900.1	7/8	48	M20(3/4)	44.6	52.5	840	106	85	-
850	34	865.1	1005	921	957.3	1	40	M24(7/8)	47.7	55.7	892	109	100	-
900	36	915.9	1055	972	1009.6	1	44	M24(7/8)	50.9	57.3	945	116	115	-
950	38	968.2	1124	1022	1070.0	1(1/8)	40	M27(1)	52.5	62.0	997	122	135	-
1000	40	1019.0	1175	1080	1120.8	1(1/8)	44	M27(1)	54.1	65.2	1049	127	150	-
1050	42	1069.8	1225	1130	1171.6	1(1/8)	48	M27(1)	57.3	66.8	1102	132	165	-
1100	44	1120.6	1275	1181	1222.4	1(1/8)	52	M27(1)	58.9	70.0	1153	135	200	-
1150	46	1171.4	1340	1235	1284.3	1(1/4)	40	M30[1(1/8)]	60.4	73.1	1205	143	210	-
1200	48	1222.2	1390	1289	1335.1	1(1/4)	44	M30[1(1/8)]	63.6	76.3	1257	148	240	-
1250	50	1273.0	1445	1340	1385.9	1(1/4)	48	M30[1(1/8)]	66.8	79.5	1308	152	240	-
1300	52	1323.8	1495	1391	1436.7	1(1/4)	52	M30[1(1/8)]	68.4	82.7	1360	156	240	-
1350	54	1374.6	1550	1441	1492.2	1(1/4)	56	M30[1(1/8)]	70.0	85.8	1413	160	310	-
1400	56	1425.4	1600	1492	1543.0	1(1/4)	60	M30[1(1/8)]	71.6	89.0	1465	165	310	-
1450	58	1476.2	1675	1543	1611.3	1(3/8)	48	M33[1(1/4)]	73.1	91.9	1516	173	310	-
1500	60	1527.0	1725	1600	1662.1	1(3/8)	52	M33[1(1/4)]	74.7	95.4	1570	178	410	-

Note:  
 1) ①Welding Neck Flange(WN),  
 2) HG 20623, GB 13402, MSS SP 44 specifications are available.

## Large Diameter Steel Flange(American System Type B)

### American System Large Diameter Flanges Class 300(PN5.0Mpa) ASME B16.47 B

Nominal diameter		Hub Diam. Top	O.D. of Flange	Raised Face Diam.	Diam. of Bolt Circle	Diam. of Bolt Holes	No. of Bolt Holes	Diam. of Bolt (inch)	Minimum Thickness of Flange		Diam. of Hub	Length Through Hub	Approximate Weight of Flange	
DN	NPS	A	D	d	K	L	n	Th	C1	C2	N	H	W1	W2
650	26	665.2	865	737	803.3	1(3/8)	32	M33[1(1/4)]	87.4	87.4	702	168	200	-
700	28	716.0	920	787	857.2	1(3/8)	36	M33[1(1/4)]	87.4	87.4	756	148	210	-
750	30	768.4	990	845	920.8	1(1/2)	36	M36[1(3/8)]	92.1	92.1	813	156	270	-
800	32	819.2	1055	902	977.9	1(5/8)	32	M39[1(1/2)]	101.6	101.6	864	167	330	-
850	34	870.0	1110	953	1031.9	1(5/8)	36	M39[1(1/2)]	101.6	101.6	918	171	360	-
900	36	920.8	1170	1010	1089.0	1(3/4)	32	M42[1(5/8)]	101.6	101.6	965	179	410	-
950	38	971.6	1220	1060	1139.8	1(3/4)	36	M42[1(5/8)]	109.6	109.6	1016	165	570	-
1000	40	1022.4	1275	1114	1190.6	1(3/4)	40	M42[1(5/8)]	114.3	114.3	1067	197	660	-
1050	42	1074.7	1335	1168	1244.6	1(7/8)	36	M45[1(3/4)]	117.5	117.5	1118	203	720	-
1100	44	1125.5	1385	1219	1295.4	1(7/8)	40	M45[1(3/4)]	125.5	125.5	1173	213	800	-
1150	46	1176.3	1460	1270	1365.2	2	36	M48[1(7/8)]	127.0	128.6	1229	221	970	-
1200	48	1227.1	1510	1327	1416.0	2	40	M48[1(7/8)]	127.0	133.4	1278	222	990	-
1250	50	1277.9	1560	1378	1466.8	2	44	M48[1(7/8)]	136.6	138.2	1330	233	990	-
1300	52	1328.7	1615	1429	1517.6	2	48	M48[1(7/8)]	141.3	142.6	1383	241	990	-
1350	54	1379.5	1675	1480	1578.0	2	48	M48[1(7/8)]	145.0	147.7	1435	238	1160	-
1400	56	1430.3	1765	1537	1651.0	2(3/8)	36	M56[2(1/4)]	152.4	155.4	1494	267	1160	-
1450	58	1481.1	1825	1594	1712.9	2(3/8)	40	M56[2(1/4)]	152.4	160.4	1548	273	1160	-
1500	60	1557.3	1880	1651	1763.7	2(3/8)	40	M56[2(1/4)]	149.3	165.1	1599	270	1450	-

### American System Large Diameter Flanges Class 600(PN11.0Mpa) ASME B16.47 B

Nominal diameter		Hub Diam. Top	O.D. of Flange	Raised Face Diam.	Diam. of Bolt Circle	Diam. of Bolt Holes	No. of Bolt Holes	Diam. of Bolt (inch)	Minimum Thickness of Flange		Diam. of Hub	Length Through Hub	Approximate Weight of Flange	
DN	NPS	A	D	d	K	L	n	Th	C1	C2	N	H	W1	W2
650	26	660.4	890	727	806.4	1(3/4)	28	M42[1(5/8)]	111.2	111.3	698	181	-	-
700	28	711.2	950	784	863.6	4(7/8)	28	M45[1(3/4)]	115.9	125.9	752	190	-	-
750	30	762.0	1020	841	927.1	2	28	M48[1(7/8)]	125.5	127.0	806	205	-	-
800	32	812.8	1085	985	984.2	2(1/8)	28	M52(2)	130.2	134.9	860	216	-	-
850	34	863.6	1160	953	1054.1	3(3/8)	24	M56[2(1/4)]	141.3	144.2	914	233	-	-
900	36	914.4	1215	1010	1104.9	2(3/8)	28	M56[2(1/4)]	146.1	150.9	968	243	-	-

### American System Large Diameter Flanges Class 900(PN15.0Mpa) ASME B16.47 B

Nominal diameter		Hub Diam. Top	O.D. of Flange	Raised Face Diam.	Diam. of Bolt Circle	Diam. of Bolt Holes	No. of Bolt Holes	Diam. of Bolt (inch)	Minimum Thickness of Flange		Diam. of Hub	Length Through Hub	Approximate Weight of Flange	
DN	NPS	A	D	d	K	L	n	Th	C1	C2	N	H	W1	W2
650	26	660.4	1020	762	901.7	2(5/8)	20	M46[2(1/2)]	135.0	154.0	743	259	-	-
700	28	711.2	1105	819	971.6	2(7/8)	20	M72[2(3/4)]	147.7	166.7	797	276	-	-
750	30	762.0	1180	876	1035.0	3(1/8)	20	M76(3)	155.6	176.1	851	289	-	-
800	32	812.8	1240	927	1092.2	3(1/8)	20	M76(3)	160.4	186.0	908	303	-	-
850	34	863.6	1315	991	1155.7	3(3/8)	20	M85[3(1/4)]	171.5	195.0	962	319	-	-
900	36	914.4	1345	1029	1200.2	3(1/8)	24	M76(3)	173.1	201.7	1016	325	-	-



### Outside Diameter and Wall Thickness GB/T 12459、GB/T 13401

Nominal diameter	Outside diameter		Nominal wall thickness (T)														
	A	B	Sch5S	Sch10S	Sch20S	LG	Sch20	Sch30	STD	Sch40	Sch60	XS	Sch80	Sch100	Sch120	Sch140	Sch160
15	21.3	18	1.6	2.1	2.6	-	-	-	-	2.9	-	-	3.6	-	-	-	4.5
20	26.9	25	1.6	2.1	2.6	-	-	-	-	2.9	-	-	4.0	-	-	-	5.6
25	33.74	32	1.6	2.8	3.2	-	-	-	-	3.2	-	-	4.5	-	-	-	6.3
32	42.4	38	1.6	2.8	3.2	-	-	-	-	3.6	-	-	5.0	-	-	-	6.3
40	48.3	45	1.6	2.8	3.2	-	-	-	-	3.6	-	-	5.0	-	-	-	7.1
50	60.3	57	1.6	2.8	3.2	-	3.6	-	-	4.0	-	-	5.6	-	-	-	8.8
65	76.1(73)	76	2.0	3.0	3.6	-	4.5	-	-	5.0	-	-	7.1	-	-	-	10.0
80	88.9	89	2.0	3.0	4.0	-	4.5	-	-	5.6	-	-	8.0	-	-	-	11.0
90	101.6	-	2.0	3.0	4.0	-	4.5	-	-	5.6	-	-	8.0	-	-	-	12.5
100	114.3	108	2.0	3.0	4.0	-	5.0	-	-	5.9	-	-	8.8	-	11.0	-	14.2
125	139.7	133	2.9	3.4	5.0	-	5.0	-	-	6.3	-	-	10.0	-	12.5	-	16.0
150	168.3	159	2.9	3.4	5.0	-	5.6	-	-	7.1	-	-	11.0	-	14.2	-	17.5
200	219.1	219	2.9	4.0	6.3	-	6.3	7.1	-	8.0	10.0	-	12.5	16.0	17.5	20.0	22.2
250	273.0	273	3.6	4.0	6.3	-	6.3	8.0	-	8.8	12.5	-	16.0	17.5	22.2	25.0	28.0
300	323.9	325	4.0	4.5	6.3	-	6.3	8.8	-	10.0	14.2	-	17.5	22.2	25.0	28.0	32.0
350	355.6	377	4.0	5.0	-	8.0	8.0	10.0	10.0	11.0	16.0	13.0	20.0	25.8	28.0	32.0	36.0
400	406.4	426	4.0	5.0	-	8.0	8.8	10.0	10.0	12.5	17.5	13.0	22.2	28.0	30.0	36.0	40.0
450	457.2	478	4.0	5.0	-	8.0	10.0	11.0	10.0	14.2	20.0	13.0	25.0	30.0	36.0	40.0	45.0
500	508.0	529	5.0	5.6	-	8.0	-	12.5	10.0	16.0	20.0	13.0	28.0	32.0	40.0	45.0	50.0
550	559	-	5.0	5.6	-	8.0	-	-	10.0	-	-	13.0	30.0	-	-	-	-
600	610	630	5.6	6.3	-	8.0	-	-	10.0	17.5	-	13.0	32.0	-	-	-	-
650	660	-	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
700	711	720	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
750	762	-	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
800	813	820	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
850	864	-	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
900	914	920	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
950	965	-	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
1000	1016	1020	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
1050	1067	-	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
1100	1118	1120	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
1150	1168	-	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
1200	1220	1120	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-

### Outside Diameter and Wall Thickness SH3408、SH3409

Nominal diameter	Outside diameter	Nominal wall thickness (T)														
		Sch5S	Sch10S	Sch20S	Sch40S	Sch80S	Sch20	Sch30	Sch40	Sch60	Sch80	Sch100	Sch120	Sch140	Sch160	XXS
10	17	1.2	1.6	2.0	2.5	3.2	-	-	2.5	-	3.5	-	-	-	-	-
15	22	1.6	2.0	2.5	3.0	4.0	-	-	3.0	-	4.0	-	-	-	5.0	7.5
20	27	1.6	2.0	2.5	3.0	4.0	-	-	3.0	-	4.0	-	-	-	5.5	8.0
25	34	1.6	2.8	3.0	3.5	4.5	-	-	3.5	-	4.5	-	-	-	6.5	9.0
(32)	42	1.6	2.8	3.0	3.5	5.0	-	-	3.5	-	5.0	-	-	-	6.5	10.0
40	48	1.6	2.8	3.0	4.0	5.0	-	-	4.0	-	5.0	-	-	-	7.0	10.0
50	60	1.6	2.8	3.5	4.0	5.5	3.5	-	4.0	5.0	5.5	-	7.0	-	8.5	11.0
(65)	76	2.0	3.0	3.5	5.0	7.0	4.5	-	5.0	6.0	7.0	-	8.0	-	9.5	14.0
80	89	2.0	3.0	4.0	5.5	7.5	4.5	-	5.5	6.5	7.5	-	9.0	-	11.0	15.0
100	114	2.0	3.0	4.0	6.0	8.5	5.0	-	6.0	7.0	8.5	-	11.0	-	14.0	17.0
(125)	140	2.8	3.5	5.0	6.5	9.5	5.0	-	6.5	8.0	9.5	-	13.0	-	16.0	19.0
150	168	2.8	3.5	5.0	7.0	11.0	5.5	6.5	7.0	9.5	11.0	-	14.0	-	18.0	22.0
200	219	2.8	4.0	6.5	7.0	13.0	6.5	7.0	8.0	10.0	13.0	15.0	18.0	20.0	24.0	23.0
250	273	3.5	4.0	6.5	9.5	15.0	6.5	8.0	9.5	13.0	15.0	18.0	22.0	25.0	28.0	25.0
300	325	4.0	4.5	6.5	9.5	17.0	6.5	8.5	10.0	14.0	17.0	22.0	25.0	28.0	34.0	26.0
350	356	4.0	5.0	-	-	-	8.0	9.5	11.0	15.0	19.0	24.0	28.0	32.0	36.0	-
400	406	4.5	5.0	-	-	-	8.0	9.5	13.0	17.0	22.0	26.0	32.0	36.0	40.0	-
450	457	-	-	-	-	-	8.0	11.0	14.0	19.0	24.0	30.0	35.0	40.0	45.0	-
500	508	-	-	-	-	-	9.5	13.0	15.0	20.0	26.0	32.0	38.0	45.0	50.0	-
550	559	-	-	-	-	-	9.5	13.0	17.0	22.0	28.0	35.0	42.0	48.0	54.0	-
600	610	-	-	-	-	-	9.5	14.0	18.0	25.0	32.0	38.0	45.0	52.0	60.0	-
650	660	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
700	711	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
750	762	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
800	913	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
850	864	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
900	914	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
950	965	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1000	1016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1050	1067	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1100	1118	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1150	1168	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1200	1220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

### Outside Diameter and Wall Thickness ASME B36.10M,B36.19M

Nominal diameter		Outside diameter	Nominal wall thickness (T)																	
DN	NPS		D	Sch5S	Sch10S	Sch10	Sch20	Sch30	Sch40S	STD	Sch40	Sch60	Sch80S	XS	Sch80	Sch100	Sch120	Sch140	Sch160	XXS
6	1/8	10.3	-	1.24	-	-	-	1.73	1.73	1.73	-	2.41	2.41	2.41	-	-	-	-	-	-
8	1/4	13.7	-	1.65	-	-	-	2.24	2.24	2.24	-	3.02	3.02	3.02	-	-	-	-	-	-
10	3/8	17.1	-	1.65	-	-	-	2.31	2.31	2.31	-	3.20	3.20	3.20	-	-	-	-	-	-
15	1/2	21.3	1.65	2.11	-	-	-	2.77	2.77	2.77	-	3.73	3.73	3.73	-	-	-	4.78	7.47	-
20	3/4	26.7	1.65	2.11	-	-	-	2.87	2.87	2.87	-	3.91	3.91	3.91	-	-	-	5.56	7.82	-
25	1	33.4	1.65	2.77	-	-	-	3.38	3.38	3.38	-	4.55	4.55	4.55	-	-	-	6.35	9.09	-
32	1(1/4)	42.2	1.65	2.77	-	-	-	3.56	3.56	3.56	-	4.85	4.85	4.85	-	-	-	6.35	9.70	-
40	1(1/2)	48.3	1.65	2.77	-	-	-	3.68	3.68	3.68	-	5.08	5.08	5.08	-	-	-	7.14	10.15	-
50	2	60.3	1.65	2.77	-	-	-	3.91	3.91	3.91	-	5.54	5.54	5.54	-	-	-	8.74	11.07	-
65	2(1/2)	73.0	2.11	3.05	-	-	-	5.16	5.16	5.16	-	7.01	7.01	7.01	-	-	-	9.53	14.02	-
80	3	88.9	2.11	3.05	-	-	-	5.49	5.49	5.49	-	7.62	7.62	7.62	-	-	-	11.13	15.24	-
90	3(1/2)	101.6	2.11	3.05	-	-	-	5.74	5.74	5.74	-	8.08	8.08	8.08	-	-	-	-	-	-
100	4	114.3	2.11	3.05	-	-	-	6.02	6.02	6.02	-	8.56	8.56	8.56	-	11.13	-	13.49	17.12	-
125	5	141.3	2.77	3.40	-	-	-	6.55	6.55	6.55	-	9.53	9.53	9.53	-	12.70	-	15.88	19.05	-
150	6	168.3	2.77	3.40	-	-	-	7.11	7.11	7.11	-	10.97	10.97	10.97	-	14.27	-	18.26	21.95	-
200	8	219.1	2.77	3.76	-	6.35	7.04	8.18	8.18	8.18	10.31	12.70	12.70	12.70	15.09	18.26	20.62	23.01	22.23	-
250	10	273.1	3.40	4.19	-	6.35	7.80	9.27	9.27	9.27	12.70	12.70	12.70	15.09	18.26	21.44	25.40	28.58	25.40	-
300	12	323.9	3.96	4.57	-	6.35	8.38	9.53	9.53	10.31	14.27	12.70	12.70	17.48	21.44	25.40	28.58	33.32	25.40	-
350	14	355.6	3.96	4.78	6.35	7.92	9.53	-	9.53	11.13	15.09	-	12.70	19.05	23.83	27.79	31.75	35.71	-	-
400	16	406.4	4.19	4.78	6.35	7.92	8.53	-	9.53	12.70	16.66	-	12.70	21.44	26.19	30.96	36.53	40.49	-	-
450	18	457.2	4.19	4.78	6.35	7.92	11.13	-	9.53	14.27	19.05	-	12.70	23.83	29.36	34.93	39.67	45.24	-	-
500	20	508	4.78	5.54	6.35	9.543	12.70	-	9.53	15.09	20.62	-	12.70	26.19	32.54	38.10	44.45	50.01	-	-
-	22	559	4.78	5.54	6.35	9.53	12.70	-	9.53	-	22.23	-	12.70	28.58	34.93	41.28	47.63	53.98	-	-
600	24	610	5.54	6.35	6.35	9.53	14.27	-	9.53	17.48	24.61	-	12.70	30.96	38.89	46.02	52.37	59.54	-	-
-	26	660	-	-	7.92	12.70	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-	-
700	28	711	-	-	7.92	12.70	15.88	-	9.53	-	-	-	12.70	-	-	-	-	-	-	-
-	30	762	6.35	7.92	7.92	12.70	15.88	-	9.53	-	-	-	12.70	-	-	-	-	-	-	-
800	32	813	-	-	7.92	12.70	15.88	-	9.53	17.48	-	-	12.70	-	-	-	-	-	-	-
-	34	864	-	-	7.92	12.70	15.88	-	9.53	17.48	-	-	12.70	-	-	-	-	-	-	-
900	36	914	-	-	7.92	12.70	15.88	-	9.53	19.05	-	-	12.70	-	-	-	-	-	-	-
-	38	965	-	-	-	-	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-	-
1000	40	1016	-	-	-	-	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-	-
-	42	1067	-	-	-	-	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-	-
1100	44	1118	-	-	-	-	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-	-
-	46	1168	-	-	-	-	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-	-
1200	48	1219	-	-	-	-	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-	-

### Outside Diameter and Wall Thickness JIS B2311,B2312,B2313

Nominal diameter		Outside diameter	Nominal wall thickness (T)																		
DN	NPS		D	SGP	Sch5S	Sch10S	Sch10	Sch20S	Sch30	Sch40S	STD	Sch40	Sch60	Sch80S	XS	Sch80	Sch100	Sch120	Sch140	Sch160	XXS
15	1/2	21.7	2.8	1.65	2.1	-	2.5	-	2.8	2.8	2.8	-	3.7	3.7	3.7	-	-	-	4.8	7.5	-
20	3/4	27.2	2.8	1.65	2.1	-	2.5	-	2.9	2.9	2.9	-	3.9	3.9	3.9	-	-	-	5.6	7.8	-
25	1	34.0	3.2	1.65	2.8	-	3.0	-	3.4	3.4	3.4	-	4.5	4.5	4.5	-	-	-	6.4	9.1	-
32	1(1/4)	42.7	3.5	1.65	2.8	-	3.0	-	3.6	3.6	3.6	-	4.9	4.9	4.9	-	-	-	6.4	9.7	-
40	1(1/2)	48.6	3.5	1.65	2.8	-	3.0	-	3.7	3.7	3.7	-	5.1	5.1	5.1	-	-	-	7.1	10.2	-
50	2	60.5	3.8	1.65	2.8	-	3.5	-	3.9	3.9	3.9	-	5.5	5.5	5.5	-	-	-	8.7	11.1	-
65	2(1/2)	76.3	4.2	2.1	3.0	-	3.5	-	5.2	5.2	5.2	-	7.0	7.0	7.0	-	-	-	9.5	14.0	-
80	3	89.1	4.2	2.1	3.0	-	4.0	-	5.5	5.5	5.5	-	7.6	7.6	7.6	-	-	-	11.1	15.2	-
90	3(1/2)	101.6	4.2	2.1	3.0	-	4.0	-	5.7	5.7	5.7	-	8.1	8.1	8.1	-	-	-	-	-	-
100	4	114.3	4.5	2.1	3.0	-	4.0	-	6.0	6.0	6.0	-	8.6	8.6	8.6	-	11.1	-	13.5	17.1	-
125	5	139.8	4.5	2.8	3.4	-	5.0	-	6.6	6.6	6.6	-	9.5	9.5	9.5	-	12.7	-	15.9	19.0	-
150	6	165.2	5.0	2.8	3.4	-	5.0	-	7.1	7.1	7.1	-	11.0	11.0	11.0	-	14.3	-	18.2	21.9	-
200	8	216.3	5.8	2.8	4.0	-	6.5	7.0	8.2	8.2	8.2	10.3	12.7	12.7	12.7	15.1	18.2	20.6	23.0	22.2	-
250	10	267.4	6.6	3.4	4.0	-	6.5	7.8	9.3	9.3	9.3	12.7	12.7	12.7	15.1	18.3	21.4	25.4	28.6	25.4	-
300	12	318.5	6.9	4.0	4.5	-	6.5	8.4	9.5	9.5	10.3	14.3	12.7	12.7	17.4	21.4	25.4	28.6	33.3	25.4	-
350	14	355.6	7.9	4.0	5.0	6.4	8.0	9.5	9.5	9.5	11.1	15.1	-	12.7	19.0	23.8	27.8	31.8	35.7	-	-
400	16	406.4	7.9	4.5	5.0	6.4	8.0	9.5	9.5	9.5	12.7	16.7	-	12.7	21.4	26.2	30.9	36.5	40.5	-	-
450	18	457.2	7.9	4.5	5.0	6.4	8.0	11.1	9.5	9.5	14.3	19.0	-	12.7	23.8	29.4	34.9	39.7	45.2	-	-
500	20	508.0	7.9	5.0	5.5	6.4	9.5	12.7	9.5	9.5	15.1	20.6	-	12.7	26.2	32.5	38.1	44.4	50.0	-	-
-	22	558.8	-	5.0	5.5	6.4	9.5	12.7	9.5	9.5	15.9	22.2	-	12.7	28.6	34.9	41.3	47.6	54.0	-	-
600	24	609.6	-	5.5	6.5	6.4	9.5	14.3	-	9.5	17.5	24.6	-	12.7	31.0	38.9	46.0	52.4	59.5	-	-
-	26	660.4	-	5.5	8.0	7.9	12.7	-	-	9.5	-	-	-	12.7	34.0	-	-	-	-	-	-
700	28	711.2	-	5.5	8.0	7.9	12.7	15.9	9.5	9.5	17.5	-	-	12.7	-	-	-	-	-	-	-
-	30	762.0	-	6.5	8.0	7.9	12.7	15.9	9.5	9.5	17.5	-	-	12.7	-	-	-	-	-	-	-
800	32	812.8	-	-	8.0	7.9	12.7	15.9	-	9.5	17.5	-	-	12.7	-	-	-	-	-	-	-
-	34	863.6	-	-	8.0	7.9	12.7	15.9	-	9.5	17.5	-	-	12.7	-	-	-	-	-	-	-
900	36	914.4	-	-	8.0	7.9	12.7	15.9	-	9.5	19.1	-	-	12.7	-	-	-	-	-	-	-
-	38	965.2	-	-	-	-	-	-	-	9.5	-	-	-	12.7	-	-	-	-	-	-	-
1000	40	1016.0	-	-	9.5	-	14.3	-	-	9.5	26.2	-	-	12.7	-	-	-	-	-	-	-
-	42	1066.8	-	-	-	-	-	-	-	9.5	-	-	-	12.7	-	-	-	-	-	-	-
1100	44	1117.6	-	-	-	-	-	-	-	9.5	-	-	-	12.7	-	-	-	-	-	-	-
-	46	1168.4	-	-	-	-	-	-	-	9.5	-	-	-	12.7	-	-	-	-	-	-	-
1200	48	1219.2	-	-	-	-	-	-	-	9.5	-	-	-	12.7	-	-	-	-	-	-	-



## Tolerances for Socket-Welding Fittings

Nominal diameter		All fittings		45°, 90°, elbows, tees, crosses, 45° laterals	Couplings	Half couplings reducer inserts	Unions (including thread)
		Socket bore	Water way bore				
DN	NPS	D1	D2	A, H	E	F	L
6-8	1/8-1/4			±0.8	±1.5	±0.8	±1.5
10-20	3/8-3/4	+0.3 0	±0.4	±1.5	±3.0	±1.5	±1.5
25-50	1-2			±2.0	±4.0	±2.0	±1.5
65-100	2(1/2)-4	+0.4 0	±0.8	±2.5	±5.0	±2.5	±1.5

## Tolerances for threaded fittings

Nominal diameter		45°, 90°, elbows, tees, crosses, 45° laterals	Coupling cap		Half couplings, boss
			Center to end	End to end	End to end
DN	NPS	A	E, F	E/2	
6-8	1/8-1/4	±0.7	±0.7	±0.4	
10-20	3/8-3/4	±1.5	±1.5	±0.8	
25-50	1-2	±2.0	±2.0	±1.0	
65-100	2(1/2)-4	±2.5	±2.5	±1.3	

## The correlation of thread and socket-welding fittings with pressure class designation or schedule NO. of pipe

Code of pressure grad	Wall thickness class			
	Socket	Thread	Socket	Thread
2000	—	sch80	—	XS
3000	sch80	sch160	XS	—
6000	sch160	—	—	—XS
9000	—	—	—XS	—

## Chemical Composition Table of Stainless Steel

Country	Standard	Gb	Chemical Composition(%)								Mechanical properties				
			C≤	Mn≤	Si≤	S≤	P≤	Cr	Ni	Mo	Others	σ <sub>b</sub> (Mpa)	σ <sub>0.2</sub> (Mpa)	δ (%)	HRB ≤
China	GB	0Cr18Ni9	0.08	2.00	1.00	0.03	0.035	17.00-19.00	8.00-10.00			520	210		200
		00Cr18Ni10	0.03	2.00	1.00	0.03	0.035	17.00-19.00	8.00-12.00				180	40	200
		1Cr18Ni9Ti (0Cr18Ni9Ti)	0.12	2.00	1.00	0.03	0.035	17.00-19.00	8.00-11.00		Ti:5x(C%-0.02)-0.8			40	200
		0Cr17Ni12Mo2	0.08	2.00	1.00	0.03	0.035	16.00-18.00	10.00-14.00	1.80-2.50		520	210	40	200
		00Cr17Ni14Mo2	0.03	2.00	1.00	0.03	0.035	16.00-18.00	12.00-16.00	1.80-2.50		480	180	40	200
		0Cr18Ni12Mo2Ti	0.08	2.00	1.00	0.03	0.035	16.00-18.00	11.00-14.00	2.50-3.50	Ti:5xC-0.7				35
		0Cr18Ni11Nb	0.10	2.00	0.03	0.03	0.035	17.00-20.00	9.00-13.00		Nb:8xC-1.50	510	205	38	
America	ASTM	TP304	0.08	2.00	1.00	0.03	0.045	18.00-20.00	8.00-10.50			586	241	55	80
		TP304L	0.03	2.00	1.00	0.03	0.045	18.00-20.00	8.00-12.00			517	193	55	79
		TP321	0.08	2.00	0.75	0.03	0.045	17.00-19.00	9.00-12.00		Ti:5xC-0.6	620	241	45	80
		TP316	0.08	2.00	1.00	0.03	0.045	16.00-18.00	10.00-14.00	2.0-3.0		620	276	50	79
		TP316L	0.03	2.00	1.00	0.03	0.045	16.00-18.00	10.00-14.00	2.0-3.0		517	220	50	79
		TP317	0.08	2.00	1.00	0.03	0.045	18.00-20.00	11.00-15.00	3.0-4.0		620	276	45	85
		TP317L	0.03	2.00	1.00	0.03	0.045	18.00-20.00	11.00-15.00	3.0-4.0		586	241	55	85
Germany	DIN	TP310S	0.25	2.00	1.00	0.03	0.045	24.00-26.00	19.00-22.00			655	310	45	85
		TP347H	0.08	2.00	1.00	0.03	0.045	17.00-19.00	9.00-13.00		(Nb+Ta)≥10C	655	276	45	85
		1.4301	0.07	2.00	1.00	0.03	0.045	17.00-19.00	8.50-10.50			500-700	195	40	
		1.4306	0.03	2.00	1.00	0.03	0.045	18.00-20.00	10.00-12.50			460-680	180	40	
		1.4541	0.08	2.00	1.00	0.03	0.045	17.00-19.00	9.00-12.00			500-730	200	35	
		1.4401	0.07	2.00	1.00	0.03	0.045	16.50-18.50	10.50-13.50			510-710	205	40	
		1.4435	0.03	2.00	1.00	0.025	0.045	17.00-18.50	12.50-15.00	2.50-3.00		490-690	190	40	
Japan	JIS	1.4571	0.08	2.00	1.00	0.03	0.045	16.50-18.50	10.50-13.50	2.00-2.50	Ti:5xC-0.8	500-730	210	35	
		1.4550	0.08	2.00	1.00	0.03	0.045	17.00-19.00	9.00-12.00			510-740	205	35	
		SUS304	0.08	2.00	1.00	0.03	0.04	18.00-20.00	8.00-11.00			480	175	35	90
		SUS304L	0.03	2.00	1.00	0.03	0.04	18.00-20.00	9.00-13.00						
		SUS321	0.08	2.00	1.00	0.03	0.04	17.00-19.00	9.00-13.00		Ti:5xC-0.7	520	205	35	90
		SUS316	0.03	2.00	1.00	0.03	0.04	16.00-18.00	12.00-16.00	2.00-3.00		480	175	35	90
		SUS316L	0.03	2.00	1.00	0.03	0.04	16.00-18.00	12.00-16.00	2.00-3.00					
SUS317	0.03	2.00	1.00	0.03	0.04	18.00-20.00	11.00-15.00	3.00-4.00		480	175	35			
SUS317L	0.03	2.00	1.00	0.03	0.04	18.00-20.00	11.00-15.00	3.00-4.00							
SUS310S	0.05	2.00	1.50	0.03	0.04	24.00-26.00	19.00-22.00			520	205	35			
SUS347L	0.04-0.10	2.00	1.00	0.03	0.03	17.00-20.00	9.00-13.00		Nb:8xC-1.00	520	205	35			