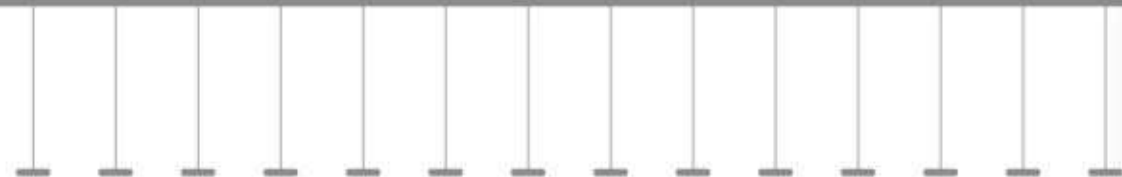
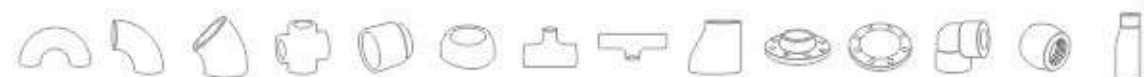




**SINOTEC**  
**湖南格润德管业有限公司**  
HUNAN GREAT STEEL PIPE CO.,LTD

**One-stop Procurement**



Sole Agent: Essential Trading Co.,Ltd  
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Address:  
No.9 Xiangfu Rd, Yuhua District, Changsha, Hunan, China



**Stainless Steel  
Pipe Fittings**





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. Thanks to the unwavering dedication of our team, we are proud to be a designated supplier for PetroChina and a qualified supplier for esteemed organizations such as China General Nuclear Power, Three Gorges Group, Datang Power, and Water Supplies Department and Drainage Services Department in Hong Kong SAR.



# EQUIPMENTS



5T Forging machine



2000t Hydraulic press



Workshop



Ring rolling machine



Machining center



CNC lathe



# 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.



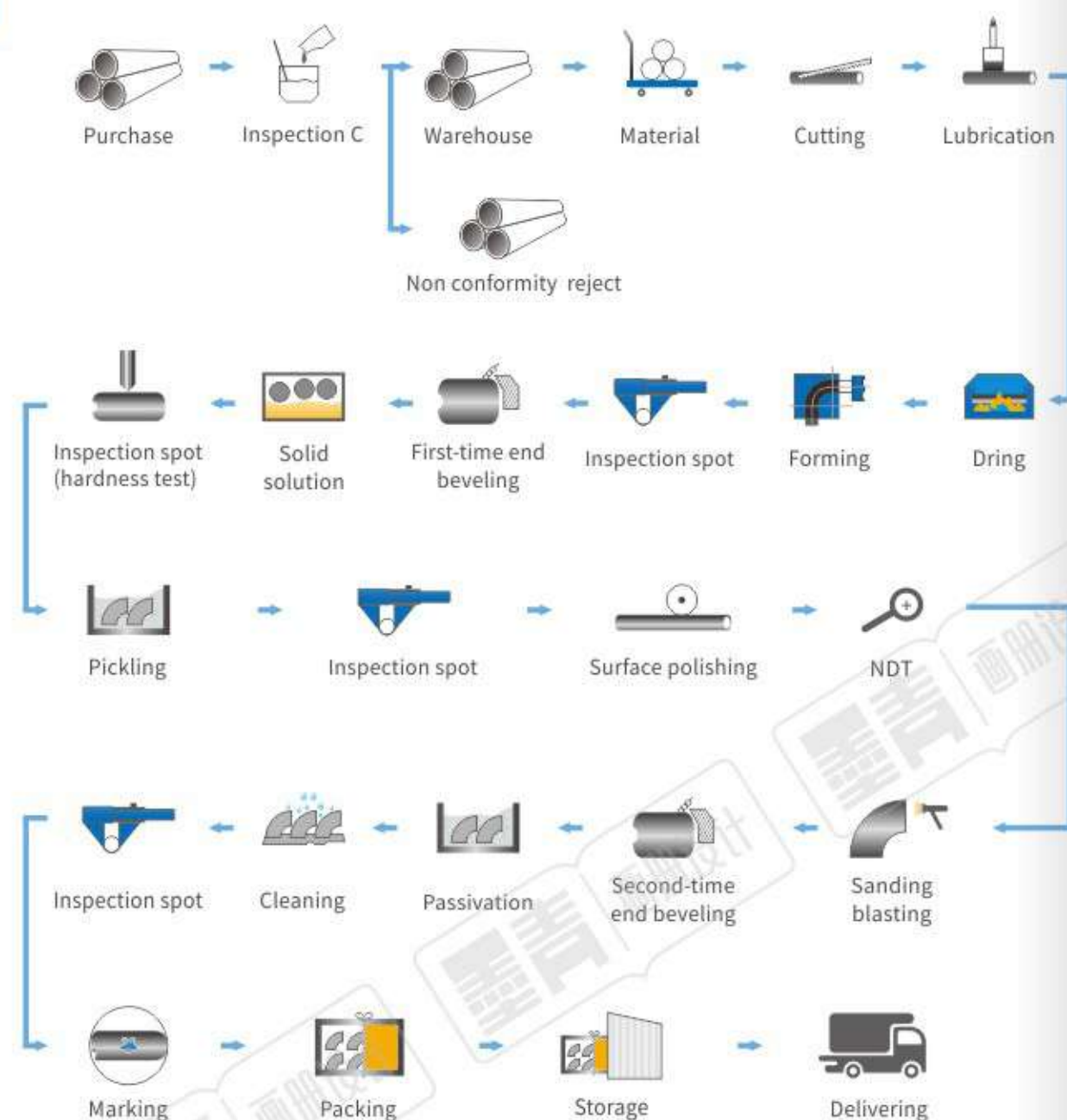
We have a full set of testing equipment and methods, such as Hydraulic Universal Testing, Bend Tests, Eddy-Current Testing, Tensile Test, Weld Decay Test, Weld Decay Test, Ultrasonic Test, Rockwell Hardness Test, Ultrasonic Testing etc.



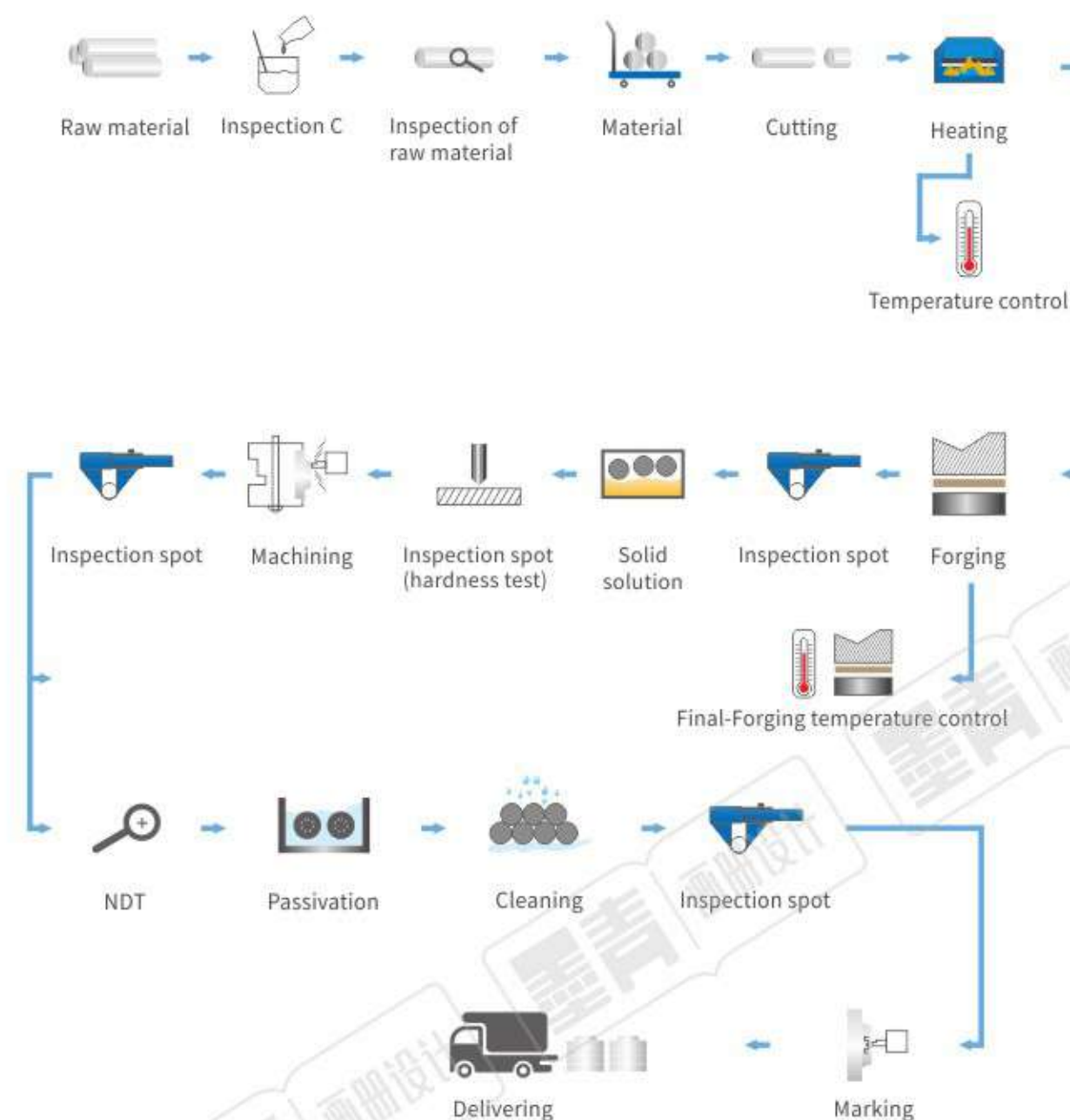


# PROCESS

## Production Process Flow Chart of Steel Pipe Fittings



## Production Process Flow Chart of Forged Flange



# PRODUCTS



## 45° Long Radius Elbow

**workmanship** 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

**workmanship** 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° Long Radius Elbow

**workmanship** 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

**workmanship** 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



## Equal Tee

**workmanship** 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

**workmanship** 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



## Non-standard Tee

**workmanship** 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

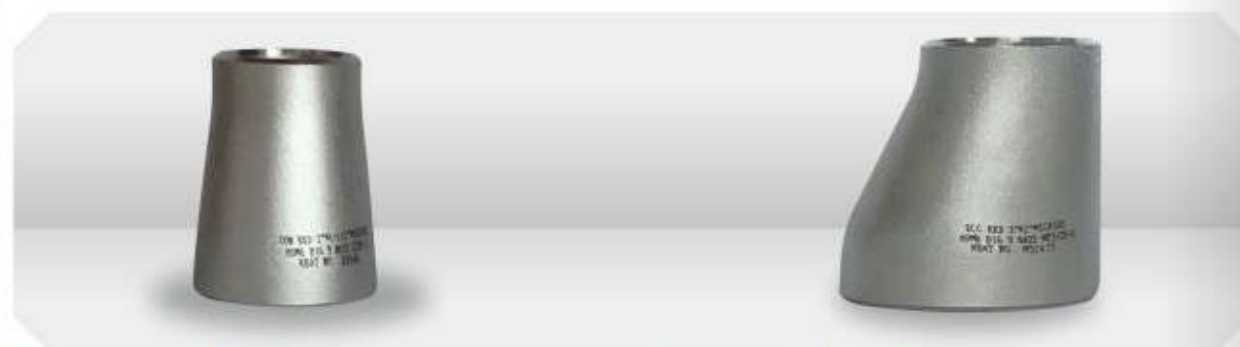


## Cross

**workmanship** 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

**workmanship** 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

**workmanship** 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



### Cap

**workmanship** 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

**workmanship** 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



### Sockolet

### Weldolet

### Thread

**workmanship** 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



### Swaged Nipples

**workmanship** 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





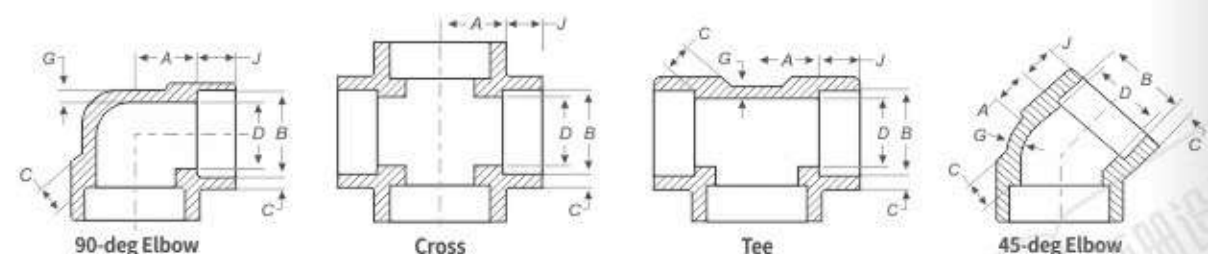
## Socket-Welding Elbows, Tees and Crosses

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., <i>B</i>		Bore Diameter of fittings, <i>D</i>						Socket Wall Thickness, <i>C</i> (Note 1)						Body Wall, <i>G</i>			Socket depth, / 90° EL	Center-to-Bottom of Socket, <i>A</i>						
			3000		6000		9000		3000		6000		9000		3000	6000	9000		Cross, Tee	45-deg Elbow		Tol			
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Avg.	Min.	Avg.	Min.	Avg.	Min.	Min.	Min.	Min.		3000	6000	9000	3000	6000	9000	±
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.



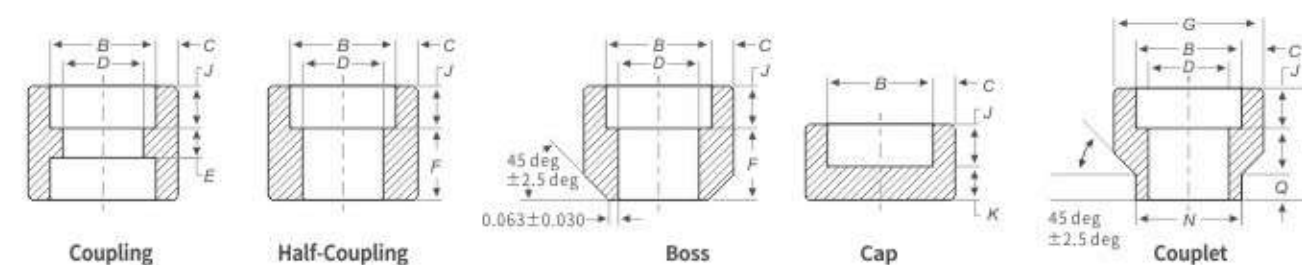
## Socket-Welding Couplings, Bosses, Caps and Couplets

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., <i>B</i>		Bore Diameter of fittings, <i>D</i>						Socket Wall Thickness, (Note 1) <i>C</i>						Outside Dia. Couplet, <i>G</i>		Socket depth, <i>J</i>	Laying Light, <i>E</i>	Laying Light, <i>F</i>	End Wall Thickness, <i>K</i>			End To End Couplet, <i>M</i>		End Ring Diameter, <i>N</i>		Weld Ring Length		
			3000		6000		9000		3000		6000		9000							3000 6000 9000			Tol.		Tol.		3000 6000		
	Max.	Min.	Max.	Min.	Max.	Min.	Avg.	Min.	Avg.	Min.	Avg.	Min.	Avg.	3000	6000	±	Min.	±	±	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	...	...	...	±15/0.0	9.5	6.5	15	16.0	15	4.8	6.4	...	...	...	...	...	...
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	15	16.0	15	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	30	17.5	30	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	30	22.5	30	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	30	24.0	30	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	40	28.5	40	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	40	30.0	40	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	40	32.0	40	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	40	41.0	40	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	50	43.0	50	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	50	44.5	50	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	50	48.0	50	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.





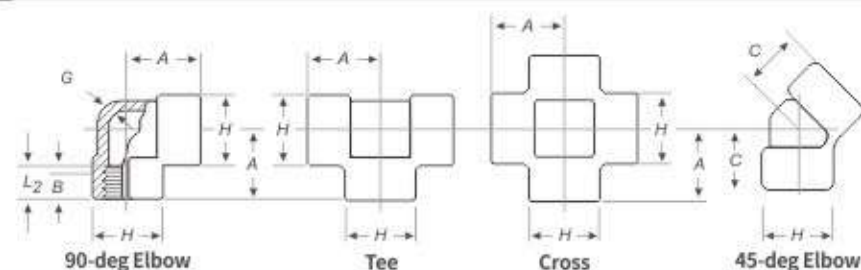
## Threaded Elbows, Tees and Crosses

**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 crest) 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).



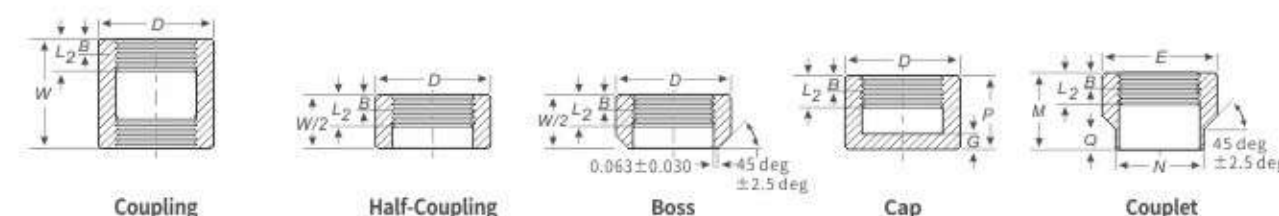
## Threaded Couplings, Bosses, Caps and Couplets

**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	Coupling		Half-Coupling		Boss		Cap		Couplet	
	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	3000/6000
1/8	16	22	...	32	19	22	...	...	...	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.

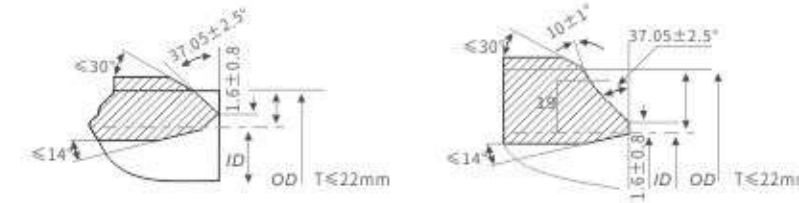
(b) The wall thickness away from the threaded ends shall meet the minimum wall thickness requirements of Table 1-2 for the appropriate NPS and Class Designation fitting.

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



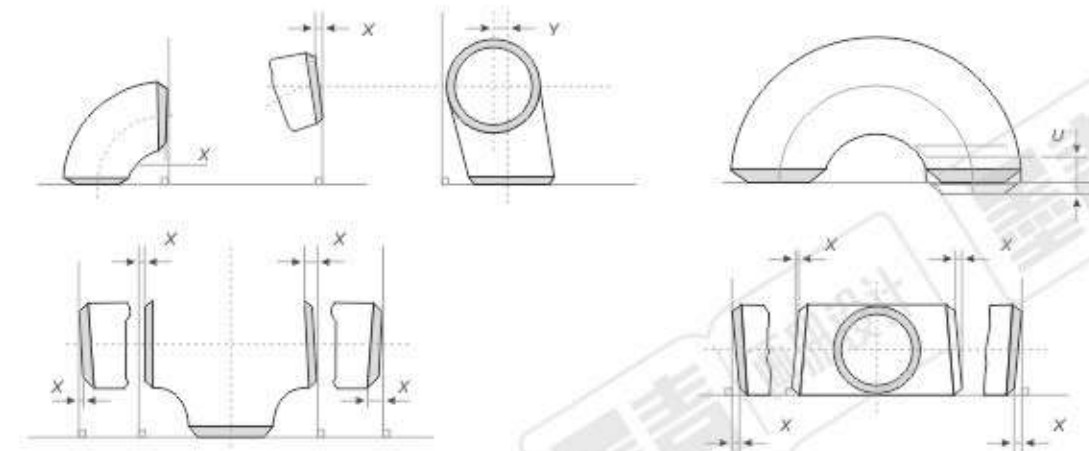
Limiting tolerances can be slightly difference between the different standards and codes.

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
B, A	45° elbow, 90° elbow	Not less than 87.5% of the nominal wall thickness				
P	180° elbow	±2			±3	
K		±7			±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		

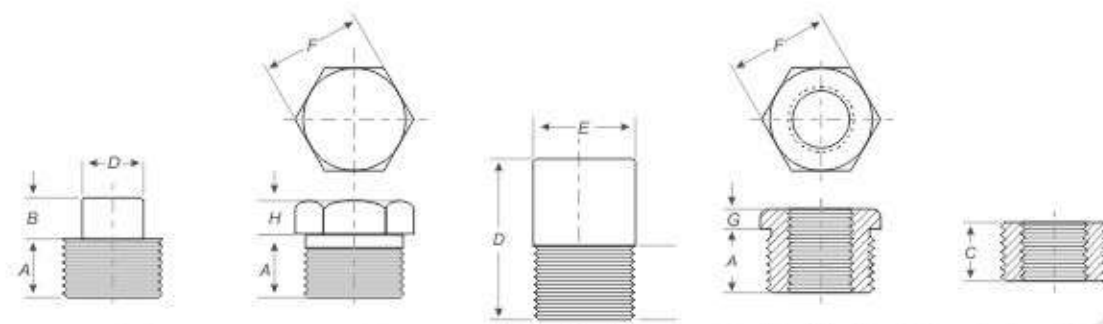
## Plugs and Bushings

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 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, G
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
		Limit deviation				
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		±0.8		±1.6	±3.2	±4.8
		Not less than 87.5% of the nominal wall thickness				
H, F	45° elbow, 90° elbow	±2			±3	
P	180° elbow	±7			±10	
K						
L	Reducer	±2			±3	
C, M	Tee	±2			±3	
E, E1	Caps	±4		±7		

Item	Types of pipe fittings	DN				
		15-65	80-100	125-200	250-450	500
		Tolerance				
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
		Limit deviation				
End outer diameter	All pipe fittings	±2.4	±4.0		±4.0	
End inner diameter ①		—1.6	—3.2		—3.2	
		±1.6	±3.2		±3.2	
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 5				

Item	Types of pipe fittings	DN				
		350-400	400-600	650-750	800-1050	1100-1200
		Tolerance				
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

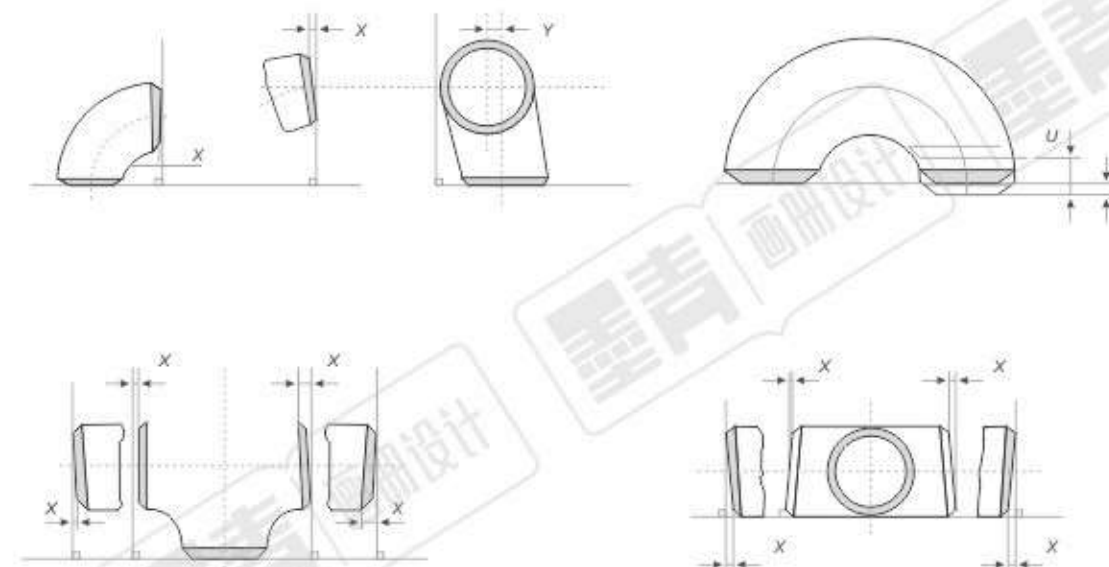
Item	Types of pipe fittings	DN							
		1/5-2(1/2)	3-3(1/2)	4	5-8	10-18	20-24	26-30	32-48
		Limit deviation							
D, D1, D2	All pipe fittings	±1.52	±1.52		+2.29	+4.06		+6.35	
End inner diameter①②		-0.76			-1.52	-3.05		-4.83	
T, T1, T2		±0.76				±3.05		±4.83	
H, F, C, M	45° elbow, 90° elbow Tee, Cross	Not less than 87.5% of the nominal wall thickness							
P	180° elbow	±1.52			±2.29		±3.05	±4.83	
K		±6.35			±9.65		—		
U		±0.76			±1.52		—		
L	Reducer, Stub	±1.52			±2.29		±4.83		
E, E1	Caps	±3.05			±6.35		±9.65		
G	Stub	-0.76 <sup>0</sup>			-1.25 <sup>0</sup>				
t		+1.52 <sup>0</sup>							
R		-0.76 <sup>0</sup>			-1.25 <sup>0</sup>				

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.

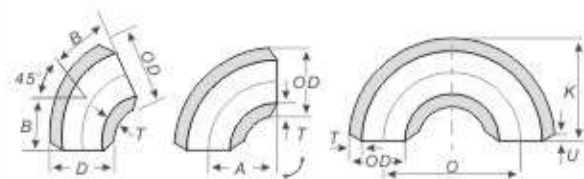
(3) The roundness is the sum of the absolute values of the positive and negative deviations of the outer diameter.





## Long Radius Elbows

45° 90° 180°



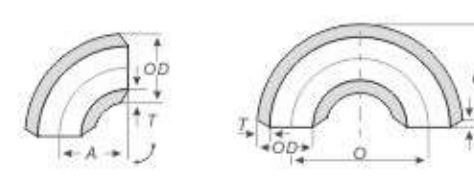
Above dimensions acc. to GB/T 12459, GB/T 13401, SH3408, SH 3409, HG/T 21635, HG/T 21631, SY/T 05010, ASME B16.9.

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°L/R elbow approx weight (kg/pc)					
DN	NPS	OD	B	A	O	sch5S	sch10S	sch20S/LG	sch40S/STD	sch80S/XS	sch80
15	1/2	18	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	19	38	76	0.06	0.07	0.09	0.09	1.12	1.12
		0.06				0.08	0.09	0.10	0.13	0.13	
25	1	32	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	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	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	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	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
90	3(1/2)	101.6	57	133	266	1.09	1.56	2.03	2.85	3.92	3.92
100	4	108	64	152	304	1.32	1.90	2.47	3.64	5.05	5.05
		1.40				2.01	2.61	3.85	5.35	5.35	
125	5	113	79	190	380	2.67	3.27	4.74	6.14	8.72	8.72
		2.84				3.47	5.05	6.54	9.31	9.31	
150	6	139.7	95	229	458	2.81	3.43	4.99	6.46	9.19	9.19
		168.3				4.10	5.01	7.29	10.24	15.41	15.41
200	8	159	127	305	610	3.86	4.72	6.88	9.64	14.50	14.50
		165				4.01	4.91	7.14	10.03	15.09	15.09
250	10	219	159	381	762	7.12	9.63	15.94	20.51	31.17	31.17
		216				7.03	9.49	15.71	20.22	30.71	30.71
300	12	273	190	457	914	13.62	16.74	24.97	36.33	49.12	57.83
		267.4				13.34	16.39	24.44	35.56	48.06	56.57
350	14	325	222	533	1066	22.66	26.10	35.79	53.58	70.69	95.81
		323.9				22.58	26.01	35.66	53.40	70.44	95.46
400	16	318	254	610	1220	22.16	25.53	35.00	52.39	69.11	93.63
		377				30.71	36.98	61.36	72.80	96.17	141.75
450	18	355.6	286	686	1372	28.95	34.86	57.80	68.56	90.52	133.27
		426				42.05	47.90	79.55	94.42	124.87	206.35
500	20	406.4	318	762	1524	40.09	45.67	75.82	89.98	118.95	196.35
		478				53.11	60.52	100.60	199.44	158.10	298.56
550	22	457.2	343	838	1676	50.78	57.86	96.14	114.14	151.03	276.29
		529				74.47	86.18	123.86	147.12	194.86	391.34
600	24	508	381	914	1828	71.48	82.72	118.87	141.17	186.94	375.00
		559				86.58	100.21	144.06	171.14	226.75	495.44
650	26	630	406	991	1982	123.32	141.21	177.37	210.78	279.45	661.10
		610				119.37	136.64	171.67	203.98	270.40	-
700	28	660	438	1067	2134	-	-	201.59	239.58	317.72	-
		720				-	-	237.03	281.75	373.80	-
750	30	711	470	1143	2286	-	-	234.03	278.18	369.04	-
		762				213.9	266.23	268.89	319.66	424.20	-
800	32	820	502	1219	2438	-	-	308.83	367.20	487.42	□
		813				-	-	306.16	364.02	483.20	-
850	34	864	533	1295	2590	-	-	345.86	411.27	546.04	-
		920				-	-	390.39	464.28	616.56	-
900	36	914	565	1372	2744	-	-	387.83	461.22	612.48	-
		965				-	-	432.25	514.21	682.98	-
950	38	1016	600	1448	2896	-	-	479.29	570.09	757.33	-
		1020				-	-	481.19	572.36	760.35	□
1000	40	1168	660	1600	3200	-	-	528.65	628.85	835.51	-
		1118				-	-	580.43	690.49	917.53	-
1100	44	1120	695	1676	3352	-	-	581.48	491.73	9191.19	-
		1150				-	-	634.45	754.79	1003.10	□
1200	48	1168	727	1753	3506	-	-	634.45	754.79	1003.10	-
		1220				-	-	691.63	822.86	1093.70	-

## Long 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.)

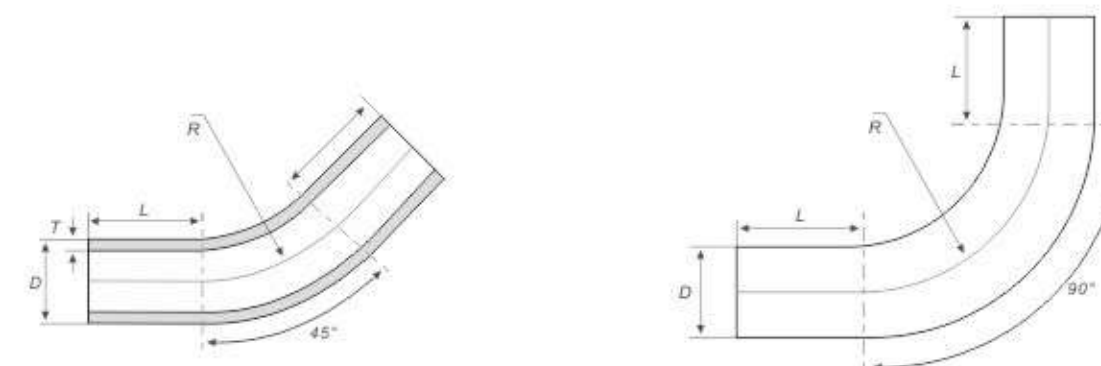
Nominal diameter	Outside diameter	Center to end	Center to center	90°L/R elbow approx weight (kg/pc)						
DN	NPS	OD	A	O	sch5S	sch10S	sch20S/LG	sch40S/STD	sch80S/XS	sch80
25	1	32 33.4	25	50	0.05 0.05	0.08 0.08	0.09 0.09	0.09 0.10	0.12 0.13	0.12 0.13
32	1(1/4)	38 42.2	32	64	0.07 0.08	0.12 0.14	0.14 0.16	0.15 0.17	0.20 0.23	0.20 0.23
40	1	45 48.3	38	76	0.11 0.11	0.17 0.19	0.20 0.21	0.23 0.24	0.30 0.33	0.30 0.33
50	2	57 60.3	51	102	0.18 0.19	0.30 0.32	0.38 0.41	0.41 0.44	0.57 0.60	0.57 0.60
65	2(1/2)	76 73	64	128	0.39 0.37	0.56 0.53	0.65 0.62	0.91 0.87	1.21 1.15	1.21 1.15
80	3	89	76	152	0.54	0.78	1.01	1.36	1.84	1.84
90	3(1/2)	101.6	89	178	0.73	1.04	1.36	1.91	2.62	2.62
100	4	108 114	102	204	0.89 0.94	1.27 1.35	1.65 1.75	2.44 2.59	3.39 3.59	3.39 3.59
125	5	113 141.3 139.7	127	254	1.79 1.90 1.88	2.18 2.32 2.30	3.17 3.38 3.34	4.10 4.37 4.32	5.83 6.22 6.14	5.83 6.22 6.14
150	6	168.3 159 165	152	304	2.72 2.57 2.66	3.32 3.14 3.26	4.84 4.56 4.74	6.79 6.40 6.65	10.23 9.63 10.02	10.23 9.63 10.02
200	8	219 216	203	406	4.74 4.68	6.41 6.32	10.61 10.46	13.65 13.46	20.74 20.44	20.74 20.44
250	10	273 267.4	254	508	9.08 8.89	11.16 10.92	16.64 16.29	24.22 23.70	32.75 32.04	38.55 37.72
300	12	325 323.9 318	305	610	15.12 15.07 14.79	17.42 17.36 17.04	23.88 23.80 23.36	35.76 35.64 34.97	47.18 47.01 46.12	63.94 93.71 62.49
350	14	377 355.6	356	712	20.51 19.33	24.70 23.28	40.99 38.61	48.62 45.79	64.24 60.46	94.67 89.01
400	16	426 406.4	406	812	27.98 26.68	31.88 30.40	52.95 50.47	62.84 59.89	83.11 79.17	137.34 130.69
450	18	478 457.2	457	914	35.38 33.38	40.32 38.54	67.01 64.05	79.57 76.04	105.32 100.61	192.90 184.06
500	20	529 508	508	1016	49.64 47.66	57.45 55.15	82.58 79.25	98.08 94.12	129.91 124.62	260.90 250.00
550	22	559 508	559	1118	57.75 82.30	66.85 94.21	93.10 118.38	114.16 140.67	151.26 186.51	330.49 441.22
600	24	630 610	610	1220	79.67 -	91.19 -	114.57 134.26	136.14 159.56	180.46 211.60	- -
650	26	660 720	660	1320	- -	- -	157.94 155.95	187.75 175.37	249.08 245.91	- -
700	28	711 711	711	1422	- -	- -	179.26 179.26	213.11 213.11	282.80 282.80	- -
750	30	762 820	762	1524	142.60 -	117.49 -	205.97 204.19	244.90 242.78	325.08 322.26	- -
800	32	813 813	813	1626	- -	- -	230.75 230.75	274.39 274.39	364.30 364.30	- -
850	34	864 920	864	1728	- -	- -	260.07 260.07	309.29 309.29	410.74 410.74	- -
900	36	914 914	914	1828	- -	- -	258.36 258.36	307.25 307.25	408.02 408.02	- -
950	38	965 1016	965	1930	- -	- -	288.13 319.53	342.69 380.06	455.17 504.89	- -
1000	40	1020 1020	1016	2032	- -	- -	320.80 320.80	381.57 381.57	506.90 506.90	- -
1050	42	1168 1168	1067	2134	- -	- -	352.55 352.55	419.36 419.36	557.18 557.18	- -
1100	44	1118 1120	1118	2236	- -	- -	387.19 387.88	460.60 461.43	612.05 613.16	- -
1150	46	1168 1168	1168	2336	- -	- -	422.72 422.72	502.90 502.90	668.35 668.35	- -
1200	48	1220 1220	1220	2440	- -	- -	461.34 461.34	548.87 548.87	729.53 729.53	- -



## Long Radius Elbows

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	-
800×800	32×32	813×813	597	597	-	-	302	-	402	-
800×750	32×30	813×762	597	584	-	-	290	-	386	-
800×700	32×28	820×720	597	572	-	-	291	-	388	-
800×700	32×28	713×711	597	572	-	-	277	-	370	-
800×650	32×26	813×660	597	572	-	-	271	-	362	-
800×600	32×24	820×630	597	559	-	-	279	-	356	-
800×600	32×24	813×610	597	559	-	-	268	-	358	-
800×550	32×22	813×559	597	546	-	-	262	-	350	-
800×500	32×20	820×529	597	533	-	-	273	-	364	-
800×500	32×20	813×508	597	533	-	-	256	-	342	-
800×450	32×18	820×478	597	521	-	-	270	-	360	-
800×450	32×18	813×457	597	521	-	-	250	-	334	-
800×400	32×16	820×426	597	508	-	-	264	-	352	-
800×400	32×16	813×406.4	597	508	-	-	241	-	322	-
800×350	32×14	820×377	597	508	-	-	258	-	344	-
800×350	32×14	813×355.6	597	508	-	-	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	-
900×900	36×36	914×914	673	673	-	-	639	-	511	-
900×850	36×34	914×864	673	660	-	-	619	-	511	-
900×800	36×32	920×820	673	648	-	-	370	-	594	-
900×800	36×32	914×813	673	648	-	-	353	-	470	-
900×750	36×30	914×762	673	635	-	-	345	-	460	-
900×700	36×28	920×720	673	622	-	-	355	-	473	-
900×700	36×28	914×711	673	622	-	-	341	-	455	-
900×650	36×26	914×660	673	622	-	-	333	-	447	-
900×600	36×24	914×610	673	610	-	-	326	-	434	-
900×550	36×22	914×599	673	597	-	-	318	-	424	-
900×500	36×20	920×529	673	584	-	-	347	-	462	-
900×500	36×20	914×508	673	584	-	-	306	-	409	-
900×450	36×18	920×478	673	572	-	-	343	-	457	-
900×450	36×18	914×457	673	572	-	-	299	-	398	-
900×400	36×16	920×426	673	559	-	-	335	-	447	-
900×400	36×16	914×406.4	673	559	-	-	287	-	383	-

## Bend



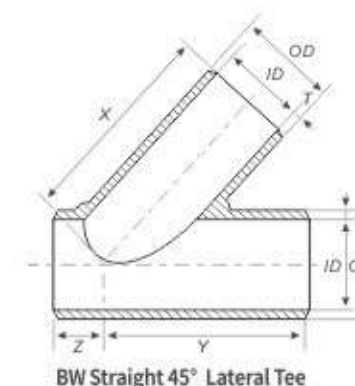
Item	Description
standard	according to DL/T515《power station bend》, Sy5257《steel bend》, or customer's technical drawing
material	carbon steel, alloy steel, stainless steel
bend radius	$R \leq 6000\text{mm}$ , $R \geq 3D$ , ( $R=3D, 4D, 5D, 6D, 7D, 8D, 9D, 10D$ ), D: outside diameter
bend angle $\theta$	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)



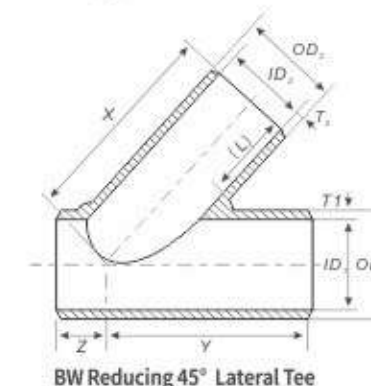
## Tees (Straight and Reducing)

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
		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
		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
		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
		38.3			43.8	87.3	320	135	130	
450×300	18×12	478×325	343	321	39.0	45.4	90.6	331	140	135
		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
		37.3			42.6	85.0	216	131	127	
450×200	18×18	478×219	343	298	38.8	44.3	89.1	225	137	132
		36.9			42.1	84.7	213	130	120	
500×500	20×20	529×529	381	381	58.9	68.2	117	469	156	186
		56.3			65.3	112	449	149	178	
500×450	20×18	529×478	381	368	57.9	67.1	115	462	154	183
		55.4			64.2	110	441	147	175	
500×400	20×16	529×426	381	356	57.0	66.0	113	454	151	180
		54.7			63.4	109	436	145	173	
500×350	20×14	529×377	381	356	56.0	64.9	111	446	148	177
		53.7			62.3	107	428	142	170	
500×300	20×12	529×325	381	346	55.0	63.8	109	438	146	174
		52.8			61.2	105	421	140	167	
500×250	20×10	529×273	381	333	54.4	63.0	108	433	144	172
		52.2			60.5	104	416	138	165	
500×200	20×8	529×219	381	324	53.7	62.3	107	428	142	170
		51.5			59.7	102	410	137	163	
550×550	22×22	559×559	419	419	73.5	85.2	146	635	195	-
550×500	22×20	559×508	419	406	70.7	81.9	141	610	187	-
550×450	22×18	559×457	419	394	67.7	78.5	135	584	180	-
550×400	22×16	559×406.4	419	381	66.2	76.7	132	571	179	-
550×350	22×14	559×355.6	419	381	65.5	75.9	130	565	174	-
550×300	22×12	559×323.9	419	371	64.0	74.2	127	552	170	-
550×250	22×10	559×273.1	419	359	62.5	72.5	124	540	166	-
600×600	24×24	630×630	432	432	96.0	110	165	797	220	303
		93.9			107	161	779	215	296	
600×550	24×22	610×559	432	432	90.1	103	155	748	206	-
600×500	24×20	630×529	432	432	92.2	105	157	765	211	291
		610×508			86.4	99.4	148	701	198	272
600×450	24×18	630×478	432	419	88.4	101	152	734	202	278
		610×457			84.5	96.9	145	694	193	266
600×400	24×16	630×426	432	406	86.4	99.1	148	718	198	272
		610×404			83.2	95.7	143	690	191	263
600×350	24×14	630×377	432	406	85.5	98.0	147	710	195	269
		610×355.6			81.7	93.5	140	678	187	257
600×300	24×12	630×325	432	397	83.5	95.8	143	678	191	263
		610×323.9			79.8	91.5	137	662	182	251
600×250	24×10	630×273	432	384	81.6	93.6	140	662	187	267
		610×273.1			77.9	89.3	134	647	178	245
650×650	26×26	660×660	495	495	-	-	206	-	274	-
650×600	26×24	660×610	495	483	-	-	197	-	263	-
650×550	26×22	660×559	495	470	-	-	189	-	252	-
650×500	26×20	660×508.0	495	457	-	-	185	-	246	-
650×450	26×18	660×457.2	495	444	-	-	183	-	244	-
650×400	26×16	660×406.4	495	432	-	-	179	-	238	-
650×350	26×14	660×355.6	495	432	-	-	175	-	233	-
650×300	26×12	660×323.9	495	422	-	-	171	-	227	-
700×700	28×28	720×720	521	521	-	-	232	-	300	-
		711×711			-	-	229	-	305	-
700×650	28×26	711×660	521	521	-	-	222	-	293	-
		720×630			-	-	222	-	296	-
700×600	28×24	711×610	510	508	-	-	211	-	275	-
700×550	28×22	711×559	521	495	-	-	204	-	272	-
700×500	28×20	720×529	521	483	-	-	222	-	296	-
		711×508			-	-	199	-	265	-
700×450	28×18	720×478	521	470	-	-	208	-	275	-
		711×457			-	-	195	-	263	-
700×400	28×16	720×426	521	457	-	-	206	-	268	-
		711×406.4			-	-	190	-	259	-
700×350	28×14	720×377	521	457	-	-	201	-	260	-
		711×355.6			-	-	183	-	253	-
700×300	28×12	720×325	521	448	-	-	197	-	256	-
		711×323.9			-	-	179	-	244	-
750×750	30×30	762×762	559	559	176	200	264	-	352	-
750×700	30×28	762×711	559	546	-	-	254	-	338	-
750×650	30×26	762×660	559	546	-	-	243	-	323	-
750×600	30×24	762×610	559	533	158	197	238	-	317	-
750×550	30×22	762×559	559	521	157	195	235	-	314	-
750×500	30×20	762×508	559	508	153	174	230	-	306	-
750×450	30×18	762×457	559	495	149	170	224	-	299	-
750×400	30×16	762×406.4	559	483	146	166	219	-	292	-

## Lateral



BW Straight 45° Lateral Tee



BW Reducing 45° Lateral Tee

## ASME B 16.9

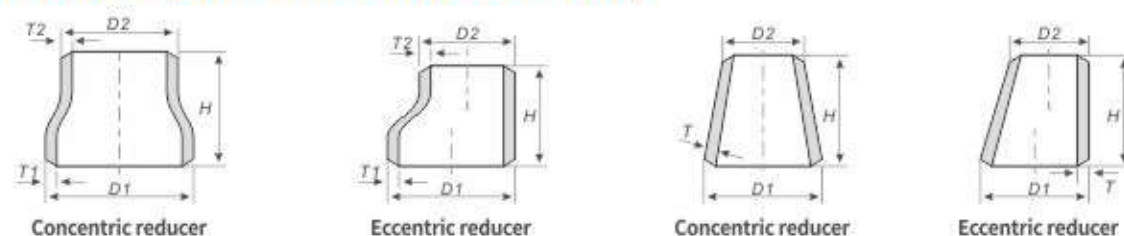
Nominal size		Outside diameter at bevel	Center to end	
DN	NPS	OD	X AND Y	Z
15	1/2	21.3	90	50
20	3/4	26.7	108	50
25	1	33.4	133	50
32	1 (1/4)	42.2	184	57
40	1 (1/2)	48.3	216	64
50	2	60.3	230	64
65	2 (1/2)	73.0	267	64
80	3	88.9	280	76
90	3 (1/2)	101.6	292	76
100	4	114.3	343	76
125	5	141.3	381	90
150	6	168.3	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.

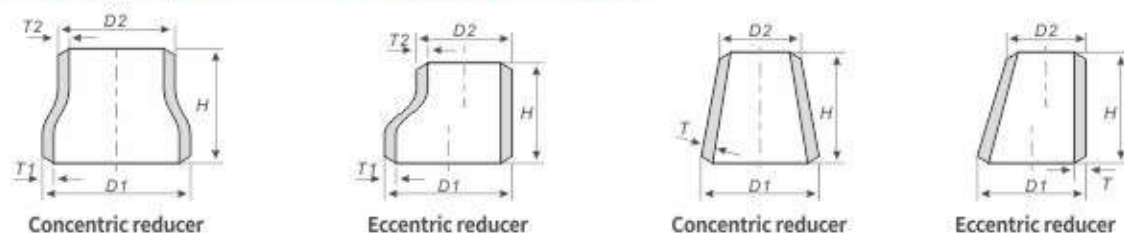
Weights are approximate and based on manufacture's data, according to ASME B36.10M, B36.19M, (sch20S/LG, weights are approximate and based on manufacture's data, according to GB/T 12459, GB/T13401.)

Nominal diameter		Outside diameter	End to end	Approx weight (kg/pc)					
DN	NPS	D1X2	H	sch5S	sch10S	sch40S/STD	sch40	sch80S/XS	sch80
20×15	3/4×1/2	25×18 26.7×21.3	38	0.03	0.04	0.05	0.05	0.07	0.07
25×20	1×3/4	32×25 33.4×26.7	51	0.06	0.09	0.11	0.11	0.14	0.14
25×15	1×1/2	32×8 33.4×21.3	51	0.05	0.08	0.09	0.09	0.12	0.12
32×25	1.1/4×1	38×32 42.2×33.4	51	0.06	0.09	0.10	0.10	0.13	0.13
32×20	1.1/4×3/4	38×25 42.2×26.7	51	0.07	0.11	0.14	0.14	0.18	0.18
32×15	1.1/4×1/2	38×18 42.2×21.3	51	0.06	0.09	0.11	0.11	0.14	0.14
40×32	1.1/2×1.1/4	45×38 48.3×33.4	64	0.07	0.11	0.13	0.13	0.17	0.17
40×25	1.1/2×1	45×32 48.3×33.4	64	0.11	0.17	0.22	0.22	0.29	0.29
40×20	1.1/2×3/4	45×25 48.3×26.7	64	0.10	0.16	0.20	0.20	0.27	0.27
40×15	1.1/2×1/2	45×18 48.3×21.3	64	0.10	0.15	0.18	0.18	0.24	0.24
50×40	2×1.1/2	57×45 60.3×48.3	76	0.08	0.13	0.16	0.16	0.21	0.21
50×32	2×1.1/4	57×38 60.3×42.2	76	0.09	0.15	0.19	0.19	0.24	0.24
50×25	2×1	57×32 60.3×33.4	76	0.16	0.26	0.35	0.35	0.47	0.47
65×50	2.1/2×2	76×57 73.0×60.3	89	0.17	0.27	0.37	0.37	0.51	0.51
65×40	2.1/2×1.1/2	76×45 73.0×48.3	89	0.15	0.24	0.32	0.32	0.44	0.44
65×32	2.1/2×1.1/4	76×38 73.0×42.2	89	0.16	0.26	0.35	0.35	0.48	0.48
65×25	2.1/2×1	76×32 73.0×33.4	89	0.14	0.22	0.30	0.30	0.41	0.41
80×65	3×2.1/2	89×76 88.9×73.0	89	0.14	0.24	0.32	0.32	0.44	0.44
80×50	3×2	89×57 88.9×60.3	89	0.30	0.43	0.70	0.70	0.92	0.92
80×40	3×1.1/2	89×45 88.9×48.3	89	0.28	0.40	0.64	0.64	0.84	0.84
90×80	3.1/2×3	101.6×88.9	102	0.26	0.38	0.60	0.60	0.79	0.79
90×65	3.1/2×2.1/2	101.6×73.0	102	0.27	0.38	0.60	0.60	0.79	0.79
90×50	3.1/2×2	101.6×60.3	102	0.25	0.36	0.57	0.57	0.75	0.75
90×40	4×3.1/2	101.6×48.3	102	0.25	0.35	0.56	0.56	0.73	0.73
100×90	3.1/2×1.1/2	114.3×101.6	102	0.38	0.54	0.93	0.93	1.26	1.26
100×80	4×3	108×89 114.3×88.9	102	0.37	0.53	0.91	0.91	1.23	1.23
100×65	4×2.1/2	108×76 114.3×73.0	102	0.34	0.48	0.83	0.83	1.11	1.11
100×50	4×2	108×57 114.3×60.3	102	0.35	0.49	0.84	0.84	1.13	1.13
125×100	5×4	133×108 141.3×114.3	127	0.31	0.45	0.76	0.76	1.02	1.02
125×90	5×3.1/2	141.3×101.6	127	0.32	0.45	0.78	0.78	1.05	1.05
125×80	5×3	133×89 141.3×88.9	127	0.50	0.72	1.29	1.29	1.77	1.77
125×65	5×2.1/2	133×76 141.3×73.0	127	0.46	0.66	1.12	1.12	1.63	1.63
				0.43	0.62	1.10	1.10	1.51	1.51
				0.41	0.58	1.03	1.03	1.40	1.40
				0.57	0.82	1.55	1.55	2.41	2.41
				0.52	0.75	1.41	1.41	1.94	1.94
				0.54	0.77	1.46	1.46	2.02	2.02
				0.49	0.70	1.32	1.32	1.82	1.82
				0.50	0.72	1.35	1.35	1.87	1.87
				0.44	0.64	1.19	1.19	1.64	1.64
				0.48	0.68	1.27	1.27	1.75	1.75
				1.04	1.27	2.35	2.35	3.33	3.33
				1.11	1.35	2.50	2.50	3.55	3.55
				1.06	1.29	2.38	2.38	3.38	3.38
				0.97	1.18	2.17	2.17	3.07	3.07
				1.01	1.23	2.27	2.27	3.22	3.22
				0.92	1.12	2.06	2.06	2.91	2.91
				0.95	1.16	2.14	2.14	3.02	3.02

Nominal diameter		Outside diameter	End to end	Approx weight (kg/pc)					
DN	NPS	D1X2	H	sch5S	sch10S	sch40S/STD	sch40	sch80S/XS	sch80
150×125	6×5	159×133 168.3×141.3	140	1.40	1.71	3.42	3.42	5.14	5.14
150×100	6×4	159×108 168.3×114.3	140	1.48	1.81	3.64	3.64	5.47	5.47
150×90	6×3.1/2	159×89 168.3×101.6	140	1.29	1.58	3.15	3.15	4.72	4.72
150×80	6×3	159×89 168.3×88.9	140	1.37	1.67	3.36	3.36	5.03	5.03
200×150	8×6	219×159 219.1×168.3	152	1.32	1.61	3.23	3.23	4.83	4.83
200×125	8×5	219×133 219.1×141.3	152	1.21	1.48	2.96	2.96	4.41	4.41
250×150	10×6	273×159 273.1×168.3	178	1.26	1.53	3.07	3.07	4.58	4.58
250×125	10×5	273×133 273.1×141.3	178	2.00	2.70	5.65	5.65	8.55	8.55
200×100	8×4	219×108 219.1×114.3	152	2.04	2.75	5.77	5.77	8.73	8.73
250×200	10×8	273×219 273.1×219	178	1.90	2.56	5.35	5.35	8.09	8.09
300×250	12×10	325×273 323.9×273.1	203	1.93	2.60	5.44	5.44	8.23	8.23
300×200	12×8	325×219 323.9×219.1	203	3.38	4.15	8.83	8.83	14.0	14.0
300×160	12×6	323.9×168.3	203	3.43	4.21	8.96	8.96	14.2	14.2
350×300	14×2	377×325 355.6×323.9	330	3.25	3.99	8.47	8.47	13.4	13.4
350×250	14×10	377×273 355.6×273.1	330	3.29	4.04	8.59	8.59	13.6	13.6
350×200	14×8	377×219 355.6×219.1	330	1.80	2.43	5.07	5.07	7.64	7.64
350×150	14×6	377×159 355.6×168.3	330	1.83	2.46	5.14	5.14	7.75	7.75
400×350	16×14	426×377 406.4×355.6	356	3.72	4.56	9.74	9.74	15.5	15.5
400×300	16×12	426×325 406.4×323.9	356	5.98	6.89	13.90	13.90	20.8	20.8
400×250	16×10	426×273 406.4×273.1	356	5.97	6.88	13.90	13.90	20.8	20.8
400×200	16×8	426×219 406.4×219.1	356	5.57	6.42	12.90	12.90	19.0	19.0
400×150	16×6	426×159 406.4×168.3	356	5.56	6.41	12.90	12.90	19.0	19.0
450×400	18×16	478×426 457×406.4	381	5.17	5.95	12.00	12.00	17.0	17.0
450×350	18×14	478×377 457×355.6	381	5.22	6.00	12.10	12.10	17.0	17.0
450×300	18×12	478×325 457×323.9	381	11.40	13.70	26.60	26.60	35.1	35.1
450×250	18×10	478×273 457×273.1	381	11.00	13.20	25.60	25.60	33.8	33.8
450×200	18×8	478×219 457×219.1	381	10.60	12.80	24.80	24.80	32.7	32.7
500×450	20×18	529×478 508×457	508	10.20	12.30	23.80	23.80	31.4	31.4
500×400	20×16	529×426 508×406.4	508	9.89	11.90	23.00	23.00	30.3	30.3
500×350	20×14	529×377 508×355.6	508	9.46	11.40	22.00	22.00	29.0	29.0
				9.63	11.00	21.10	21.10	28.5	28.5
				9.22	10.50	20.20	20.20	27.8	27.8
				14.9	16.90	32.90	32.90	43.5	43.5
				14.1	16.10	31.20	31.20	41.2	41.2
				14.0	16.00	31.00	31.00	40.9	40.9
				13.6	15.40	29.90	29.90	39.5	39.5
				13.2	15.00	29.10	29.10	38.4	38.4
				12.7	14.50	28.10	28.10	37.1	37.1
				12.4	14.10	27.30	27.30	36.0	36.0
				11.9	13.60	26.20	26.20	34.6	34.6
				11.5	13.10	25.30	25.30	33.3	33.3
				10.0	12.70	24.50	24.50	32.3	32.3
				17.9	20.40	39.70	39.70	58.8	58.8
				17.1	19.50	37.90	37.90	56.1	56.1
				17.1	19.40	37.70	37.70	55.8	55.8
				16.2	18.50	35.80	35.80	53.0	53.0
				16.2	18.50	35.80	35.80	53.0	53.0
				15.7	17.90	34.70	34.70	51.2	51.2
				15.4	17.60	34.10	34.10	50.3	50.3
				14.8	16.90	32.80	32.80	48.4	48.4
				14.5	16.50	32.00	32.00	47.3	47.3
				14.0	15.90	30.80	30.80	45.5	45.5
				30.4	35.20	59.10	59.10	92.5	92.5
				29.1	33.70	56.60	56.60	88.6	88.6
				28.9	33.40	56.20	56.20	87.9	87.9
				27.7	32.00	53.80	53.80	84.1	84.1
				27.6	31.90	53.60	53.60	83.8	83.8
				26.3	30.40	51.00	51.00	79.7	79.7

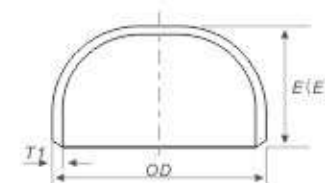


## Reducers(Concentric and Eccentric)



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	30.30	50.80	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	-	-	104.0	-	139	-
750×650	30×26	762×660	610	-	-	101.0	-	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	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	-
800×600	32×24	820×630	610	-	-	104	-	138	-
		813×610		-	-	102	-	135	-
850×800	34×32	864×813	610	-	-	119	-	158	-
850×750	34×30	864×762	610	-	-	116	-	153	-
850×700	34×28	864×711	610	-	-	112	-	149	-
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.

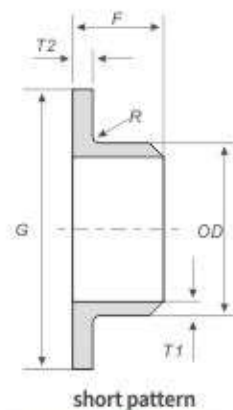
Weights are approximate and based on manufacture's data, according to ASME B36.10M, B36.19M, (sch20S/LG, weights are approximate and based on manufacture's data, according to GB/T 12459, GB/T13401.)

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	0.05
20	3/4	25	25	25	0.027	0.033	0.045	0.045	0.060	0.06
		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	38	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	38	0.167	0.241	0.409	0.409	0.555	0.555
80	3	73	38	38	0.161	0.232	0.393	0.393	0.534	0.534
		89			0.254	0.367	0.66	0.66	0.917	0.917
90	3.1/2	101.6	64	76	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			0.41	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	16.3
		267.4			3.29	4.05	8.96	8.96	12.2	16.4
350	14	325	165	191	5.12	6.4	13.5	14.6	17.9	28.3
		323.9			5.11	6.39	13.3	14.4	17.7	27.1
400	16	318.5	178	203	5.02	6.27	13.2	14.2	17.3	26.8
		377			6.00	8.46	16.9	19.9	22.5	38.5
450	18	426	203	229	5.66	7.87	15.9	18.8	21.2	35.2
		406.4			6.93	7.91	21.0	28.2	28.0	52
500	20	478	229	254	6.60	7.53	20.0	20.0	26.7	49.1
		457.2			7.52	8.58	25.6	41.4	34.1	69.1
550	22	529	254	254	10.5	12.02	33.2	57.6	44.2	103
		508			10.1	11.7	31.9	54.0	42.5	93.7
600	24	559	267	305	12.1	22.6	38.8	78.3	51.7	116
		630			14.8	16.9	46.5	92.3	61.9	177
650	26	610	267	-	14.3	16.4	45.1	90.1	60.1	160
		660			23.3	26.1	50.5	103.5	67.3	-
700	28	720	267	-	27.1	32.4	56.9	151.1	75.6	-
		711			38.7	49.7	56.2	121.3	74.9	-
750	30	762	267	-	41.4	51.7	62.1	117.3	82.8	-
800	32	820	267	-	43.4	58.3	70.6	127	92.0	-
850	34	813	267	-	43.1	57.7	70.0	126	91.2	-
		864			57.2	68.5	78.7	144	105	-
900	36	920	267	-	60.3	74.6	86.6	172	115	-
		914			59.1	72.1	85.7	171	114	-

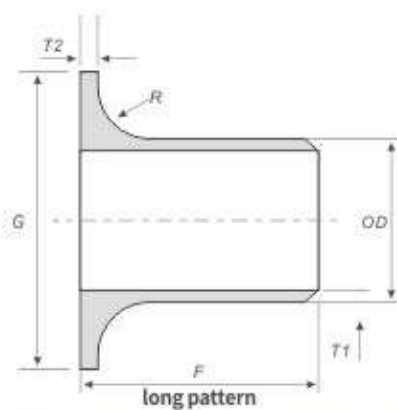


## Stub End

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



short pattern

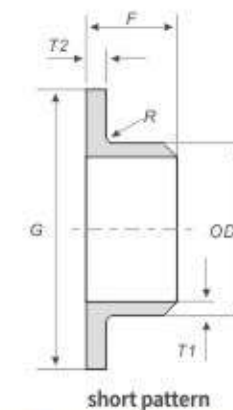


long pattern

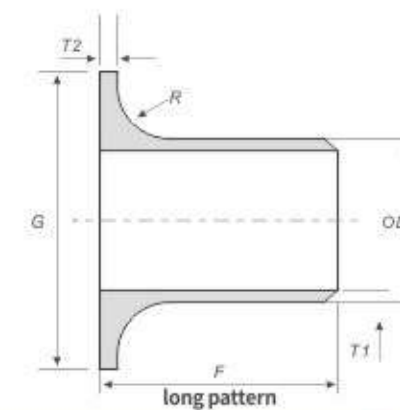
Nominal diameter		Outside diameter	Length F		Diameter of lap nominal&maximum	Radius of fillet R		Approx weight (kg/pc)					
DN	NPS	OD	SP	LP	G	A max	B max	sch5S		sch10S		sch40S	
								SP	LP	SP	LP	SP	LP
15	1/2	21.3	50.8	76.2	35.1	3	0.75	0.049	0.067	0.062	0.084	0.079	0.106
20	3/4	26.7	50.8	76.2	42.9	3	0.75	0.064	0.087	0.081	0.109	0.101	0.144
26	1	33.4	50.8	101.6	50.8	3	0.75	0.082	0.144	0.134	0.233	0.16	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	0.74	1.465
80	3	88.9	63.5	152.4	127	10	0.75	0.4	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	0.65	1.283	1.38	2.35
100	4	114.3	76.2	152.4	157.2	11	0.75	0.606	1.024	0.87	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	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.



short pattern

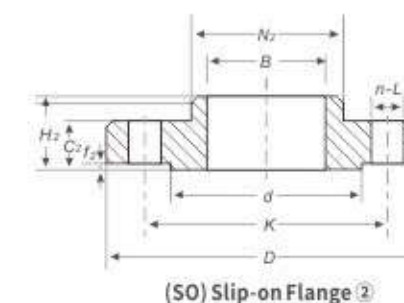
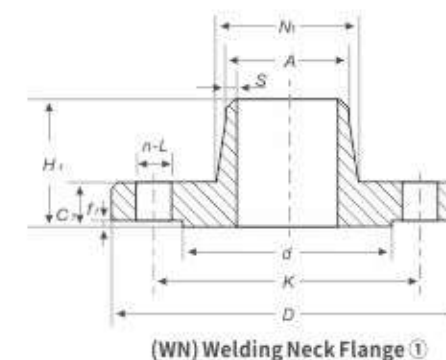


long pattern

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)



### 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			
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	7.57	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	19	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	83	111	88.11	99.83	187.1

Note:

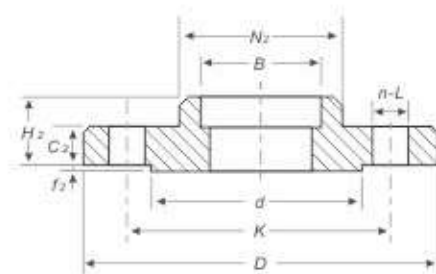
1) ①Weiding Neck Flange(WN), ②Slip-on Flange(SO), Threaded Flange(THD), Socket Welding Flange(SW),③Lap Joint Flange(LJ), ④Blind Flange(BL).

2)ASME B16.5, HG20615-20622, ASME16.36, ASME B16.48, SH3406, GB912-9124, GB/T2506, GB/T4450 specifications are available.

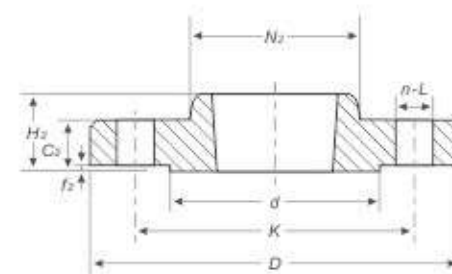
Type of Flange	Type of Sealing Surface	Pressure Class(Mpa)	Manufacturing Standard
 (PL) Plate Flange	(RF)	0.25-2.5	Manufacturing standard can be GB/T9112-9124 HG20592-20635 SH3406 ANSI B16.5 JIS B2220 ASME B16.47 etc.
	(FF)	0.25-1.6	
 (SO) Slip-on Flange	(RF)	0.6-0.4	
	(MFM)	1.0-4.0	
	(TG)	0.6-1.6	
	(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	



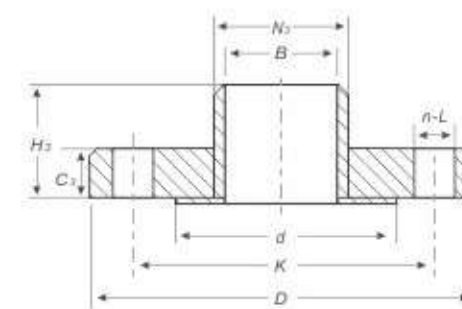
## Steel Flange(American System)



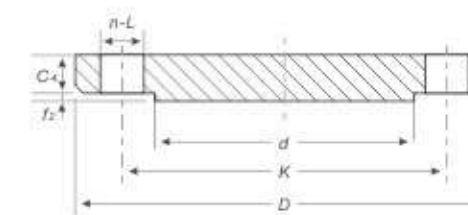
(SW) Socket Welding Flange ②



(THD) Threaded Flange ②



(LF/SE) ButT Welding Ring Loose Flange ③



(BL) Blind Flange ④

### 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			
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	60.5	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	687.5	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	19.96
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	507	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

Note:

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

## Steel Flange(American System)

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