



KAO JUNG

KAO JUNG ENTERPRISE CO., LTD.

高容企業有限公司



**STAINLESS
STEEL
BUTT / WELDING
PIPE FITTING**

KAO JUNG

公司簡介 | Company prospectus

高容企業有限公司



本公司成立於民國七十年，即從事專業加工製造生產不銹鋼有縫、無縫之對焊彎頭、大小頭、三通、管帽等產品，至今承蒙各大五金公司的照顧，業績方能蒸蒸日上。

所使用之對象為：半導體、石化業、食品業、水電空調、扶手等行業。

本公司已取得ISO 9001品質認證，使不銹鋼配件的生產能更符合客戶需求及長期提供穩定的品質水準，提昇本公司的信譽，以達永續經營為目標。

The KaoJung Enterprise CO., LTD., founded in 1981, specializes in the production of seam/seamless stainless steel butt-welding pipe fittings, including elbows, reducers, tees, and caps. With the strong support from many customers, KaoJung has been prospering over the past twenty years.

The products could be widely applied in semiconductor, Petroleum & Products, Food Processing, Engineering and Air conditioning, Metal industries.

KaoJung is awarded the certification of ISO 9001 to ensure the satisfaction of the customers and the long-term quality control. Our target is "to be a reputable company and run it forever"

高容 KAO JUNG



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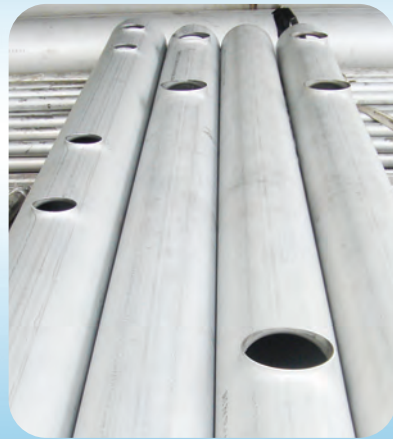
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Introduction to "Branching pipe"

分岐管之說明簡介

高容企業有限公司是專門製造不銹鋼管配件的製造商，多年來致力於提供各大產業各項管配件的需求，對於技術提昇與品質的進步更是不遺餘力。其領先業界的分岐管(見圖1、2、3)管路配件，更深獲各大半導體業、光電及生技產業廣泛使用，提供有效益又節省成本的工法。

The KaoJung Enterprise CO., LTD. is the professional manufacturer of stainless steel pipe fittings in Taiwan, having been devoted for many years to satisfying many industries' needs for various pipe fittings and enhancing techniques and product quality. Our industry-leading branching pipes (See Figure 1, 2, 3) have been successfully and widely applied in semiconductor, optoelectronic, and bio-tech industries for the economic and efficient purposes.



(Figure 1) Branching Outlets 分岐孔



(Figure 2) Branching Outlets 分岐孔



(Figure 3) Branching Outlets 分岐孔

Why Branching Pipes?

節省成本 & 提高效率

傳統的插管管路裝配技術(見圖4)會有直角產生，而造成管路的撓流問題；而三通焊接(見圖5)，雖無撓流困擾，但其成本過高而不易負擔。上述兩種配線管路皆有下列缺點：

1. 接合處強度不足
2. 增加 X-ray 的檢驗成本。

本公司創新研發之“分歧管”不但可降低組裝焊接數，進而提高管路裝配效率，可依施工需求，製作不同方向與口徑的分歧孔，進而節省成本與材料(見圖6)。

The conventional pipe assembly method, the pipe insertion (See Figure 4), could form a right angle that creates the flow problem. Another assembly method, the welding of tees (See Figure 5), improves the flow characteristics but might be too costly to burden. Both of the two assembly methods above have two disadvantages - more chance of leakage and more X-ray inspection cost. Yet, our unique branching pipes, in substitution for the current pipe fittings, not only eliminate the number of welded joints to increase the assembly efficiency but also minimize X-ray inspection cost. Moreover, the directions and diameters of the outlets in branching pipes (See Figure 6) could be manufactured as customers require. Thus, more money and material could be saved. °



(Figure 4) Insertion of Pipes 插管



(Figure 5) The Welding of Tees 三通焊接



(Figure 6) Different Directions and Diameters of Outlets 不同分歧孔方向與外徑

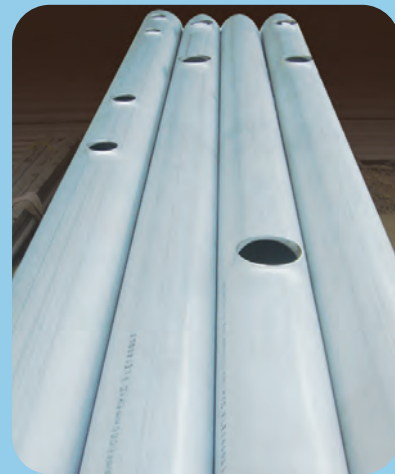
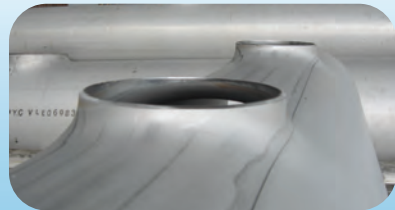
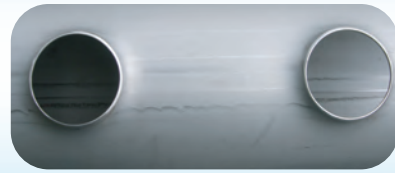
Technique Specifications

可加工條件

Material: Applicable in many materials including stainless, carbon, alloy steel, etc.

鋼管材質：如不銹鋼、碳鋼、合金鋼……等。

- OD Range of Run Tube: 2" to 48"
分岐管外徑：2" ~48"
- Length of Run Tube: Depend on the requests of Customers
分岐管長度：依客戶需求製作。
- Outside Diameter of Outlets: 1/2" to 36"
分岐孔外徑：1/2" ~36"
- Height of Outlets: Trimmed to the desired height, from 10mm~25mm
分岐管高度：材料的外徑、厚度、長度而有所不同，約10mm~25mm
- Wall thickness: Min. 2mm. Max. 20mm.
鋼管厚度：2mm~20mm



Our Customers

分枝管實績表

Longtan Science Park龍潭科技園區：

- 1.Quanta Display Inc. 廣輝電子
- 2.AU Optronics Corporation (Plant 4、6、8) 友達光電（第四、六、八廠）

Hsinchu Science Park新竹科技園區：

- 1.Powerchip semiconductor Corp. 力晶半導體
- 2.International Semiconductor Corporation. 世界先進
- 3.Lianhua Electronics Co., Ltd. 聯華電子
- 4.AU Optronics Corp. (Plant 3) 友達光電第三廠
- 5.Taiwan Semiconductor Manufacturing CO., Ltd. (Plant 4、7、8、12A、12B)
台灣積體電路（4、7、8、12A、12B廠）

Taichung Science Park台中科技園區：

- 1.AU Optronics Corp. (Plant 10, 8c) 友達光電（十廠、八C廠、十一廠）
2. Winbond Electronics華邦電子
- 3.ProMOS Technologies茂德電子
- 4.Coring Display Technologies康寧

Tainan Science park.台南科技園區：

- 1.Taiwan Semiconductor Manufacturing CO., Ltd. (Plant 6) 台積電第6 廠
- 2.HannStar Display瀚宇彩晶
- 3.Chi Mei Optoelectronics 奇美第5.6 廠

Tou-fen 頭份：

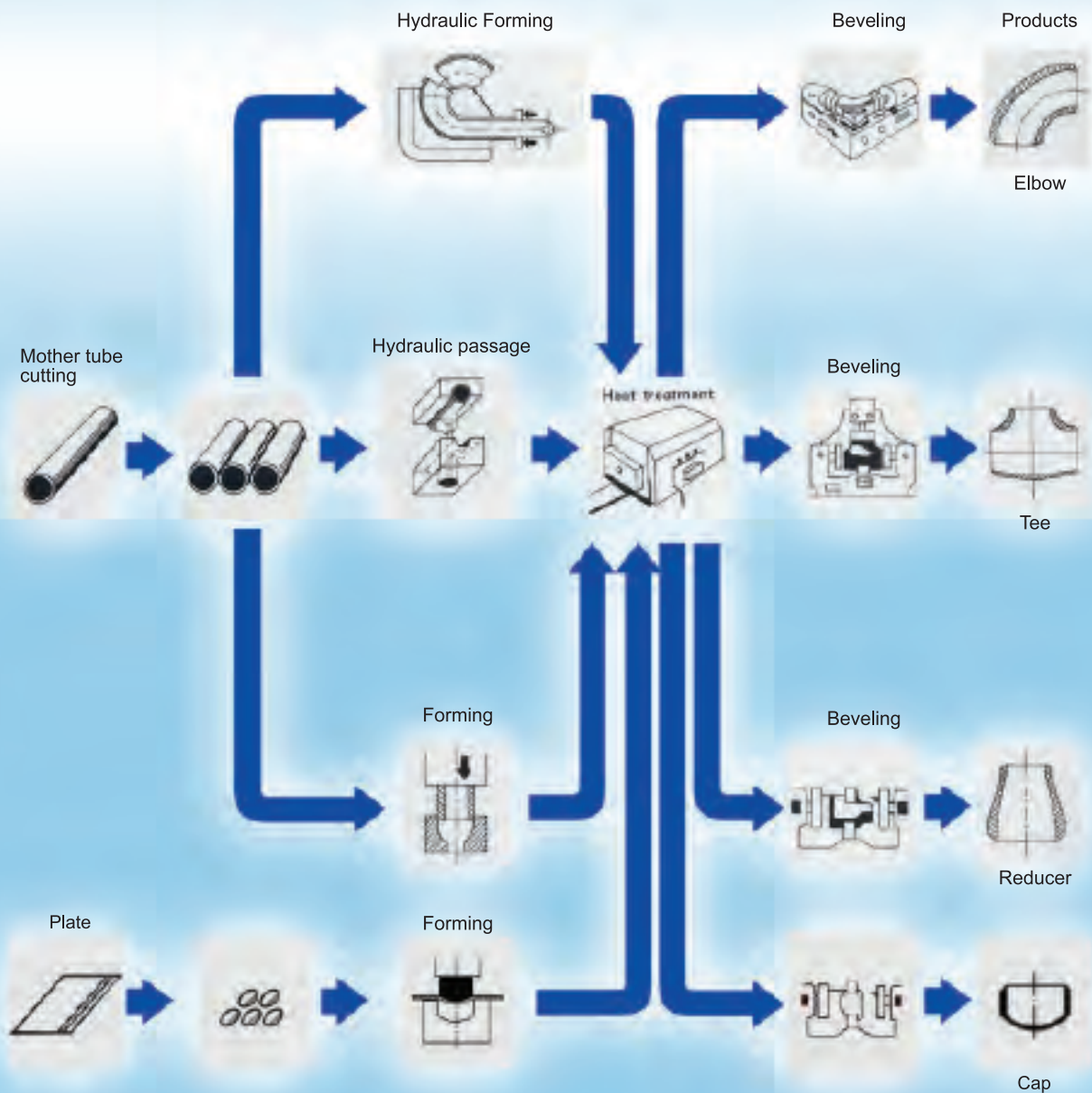
- 1.China Petroleum and Chemical Corp. 中國石油化工股份有限公司

Taipei 台北：

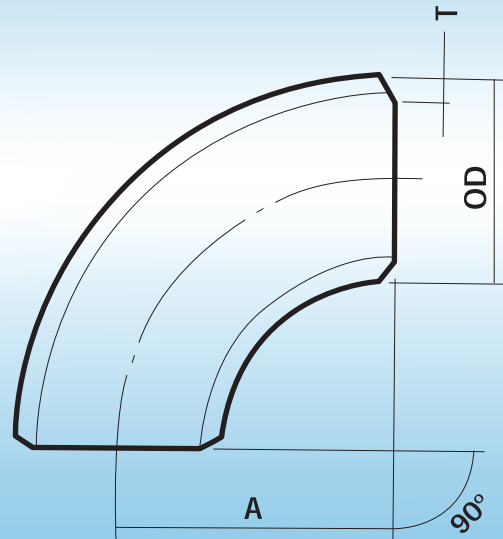
- 1.Dihua Sewage Treatment Plant 迪化污水處理廠

MANUFACTURING PROCESS OF

SEAMLESS AND SEAM STAINLESS STEEL BUTT-WELDING FITTINGS



90° LONG RADIUS ELBOWS



DIMENSIONS

(unit: mm)

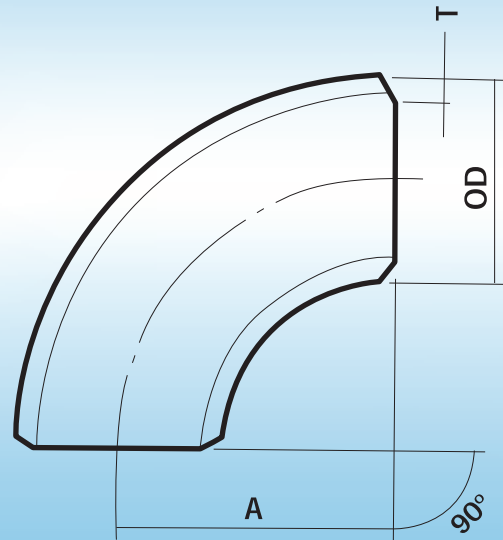
Nominal Pipe Size	Outside Dia. (OD)	Wall Thickness (T)				Center to End A
		Sch. 10S	Sch. 20S	Sch. 40	Sch. 80	
1/2	21.7	2.1	2.5	2.8	3.7	38.1
3/4	27.2	2.1	2.5	2.9	3.9	38.1
1	34	2.8	3.0	3.4	4.5	38.1
1 1/4	42.7	2.8	3.0	3.6	4.9	47.6
1 1/2	48.6	2.8	3.0	3.7	5.1	57.2
2	60.5	2.8	3.5	3.9	5.5	76.2
2 1/2	76.3	3.0	3.5	5.2	7.0	95.3
3	89.1	3.0	4.0	5.5	7.6	114.3
3 1/2	101.6	3.0	4.0	5.7	8.1	133.4
4	114.3	3.0	4.0	6.0	8.6	152.4
5	139.8	3.4	5.0	6.6	9.5	190.5
6	165.2	3.4	5.0	7.1	11.0	228.6
8	216.3	4.0	6.5	8.2	12.7	304.8
10	267.4	4.0	6.5	9.3	15.1	381
12	318.5	4.5	6.5	10.3	17.4	457.2

WEIGHTS

(unit: kg)

Nominal Pipe Size	Sch. 10S	Sch. 20S	Sch. 40	Sch. 80
1/2	0.061	0.071	0.078	0.100
3/4	0.078	0.082	0.103	0.104
1	0.128	0.137	0.154	0.204
1 1/4	0.206	0.219	0.260	0.349
1 1/2	0.283	0.303	0.368	0.507
2	0.478	0.590	0.652	0.938
2 1/2	0.812	0.941	1.37	1.79
3	1.14	1.50	2.04	2.87
3 1/2	1.53	2.01	2.82	4.10
4	1.87	2.60	3.84	5.62
5	3.42	4.97	6.48	9.69
6	4.87	7.09	9.94	15.99
8	10.00	16.1	20.10	32.16
10	15.50	25.0	35.40	49.83
12	25.90	35.9	56.20	72.48

90° LONG RADIUS ELBOWS



DIMENSIONS

(unit: mm)

Nominal Pipe Size	Outside Dia. (OD)	Wall Thickness (T)				Center to End A
		10S	STD	XS	Sch40	
14	355.6	4.8	9.5	12.7	11.1	533.4
16	406.4	4.8	9.5	12.7	12.7	609.6
18	457.2	4.8	9.5	12.7	14.3	685.8
20	508	★ 5.5	9.5	12.7	15.1	762
22	558.8	5.5	9.5	12.7	-	838.2
24	609.6	6.3	9.5	12.7	17.4	914.4
26	660.4		9.5	12.7	-	990.6
28	711.2		9.5	12.7	-	1066.8
30	762.0		9.5	12.7	-	1143
32	812.8		9.5	12.7	17.4	1219.2
34	863.6		9.5	12.7	17.4	1295.4
36	914.4		9.5	12.7	19.0	1371.6
38	965.2		9.5	12.7	-	1447.8
40	1016.0		9.5	12.7	-	1524
42						
44						
46						
48						

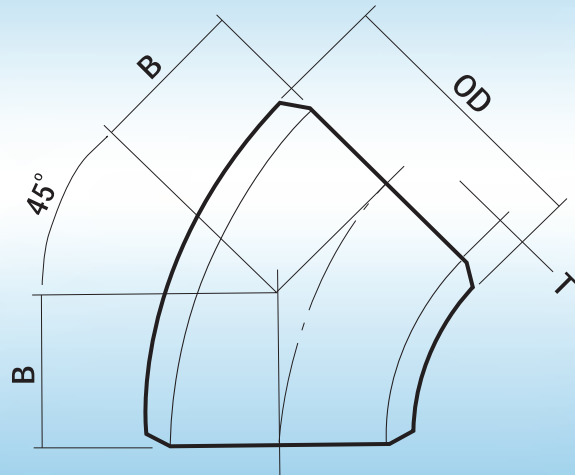
WEIGHTS

(unit: kg)

Nominal Pipe Size	10S	STD	XS	Sch. 40
14	28.54	57.58	66.36	85.53
16	37.40	70.03	87.11	112.34
18	47.48	89.01	110.67	142.79
20	67.30	136.99	136.99	176.90
22	80.01	163.03	163.03	210.83
24	97.17	198.05	198.05	256.13
26		296.76	229.17	296.53
28		345.05	266.50	344.96
30		397.15	306.59	396.74
32		453.00	349.53	452.68
34		512.16	395.24	511.98
36		575.13	443.71	574.95
38			497.71	644.75
40			551.98	715.51
42			606.16	785.77
44			669.04	867.40
46			731.69	948.81
48			797.28	1033.84

* 須與客戶協商而訂

45° LONG RADIUS ELBOWS



DIMENSIONS

(unit: mm)

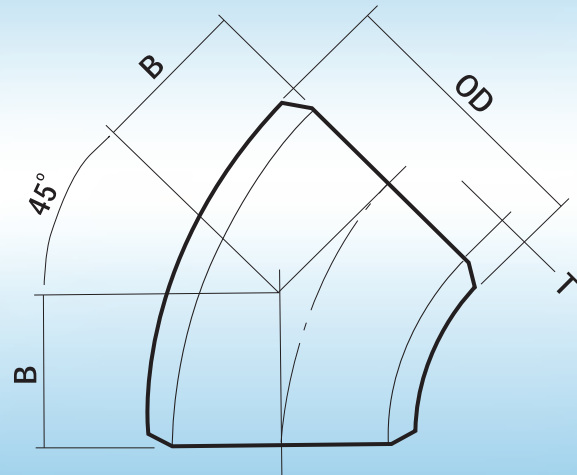
Nominal Pipe Size	Outside Dia. (OD)	Wall Thickness (T)				Center to End B
		Sch. 10S	Sch. 20S	Sch. 40	Sch. 80	
1/2	21.7	2.1	2.5	2.8	3.7	15.8
3/4	27.2	2.1	2.5	2.9	3.9	15.8
1	34	2.8	3.0	3.4	4.5	15.8
1 1/4	42.7	2.8	3.0	3.6	4.9	19.7
1 1/2	48.6	2.8	3.0	3.7	5.1	23.7
2	60.5	2.8	3.5	3.9	5.5	31.6
2 1/2	76.3	3.0	3.5	5.2	7.0	39.5
3	89.1	3.0	4.0	5.5	7.6	47.3
3 1/2	101.6	3.0	4.0	5.7	8.1	55.3
4	114.3	3.0	4.0	6.0	8.6	63.1
5	139.8	3.4	5.0	6.6	9.5	78.9
6	165.2	3.4	5.0	7.1	11.0	94.7
8	216.3	4.0	6.5	8.2	12.7	126.3
10	267.4	4.0	6.5	9.3	15.1	157.8
12	318.5	4.5	6.5	10.3	17.4	189.4

WEIGHTS

(unit: kg)

Nominal Pipe Size	Sch. 10S	Sch. 20S	Sch. 40	Sch. 80
1/2	0.030	0.035	0.039	0.050
3/4	0.039	0.045	0.052	0.078
1	0.064	0.069	0.077	0.100
1 1/4	0.103	0.110	0.130	0.177
1 1/2	0.142	0.152	0.184	0.254
2	0.239	0.295	0.326	0.471
2 1/2	0.406	0.470	0.683	0.897
3	0.571	0.752	1.02	1.44
3 1/2	0.764	1.01	1.41	2.05
4	0.985	1.30	1.92	2.81
5	1.71	2.49	3.24	4.85
6	2.43	3.54	4.97	8.02
8	5.01	8.05	10.10	16.22
10	7.77	12.5	17.70	25.37
12	12.50	17.9	28.10	36.69

45° LONG RADIUS ELBOWS



DIMENSIONS

(unit: mm)

Nominal Pipe Size	Outside Dia. (OD)	Wall Thickness (T)				Center to End B
		10S	STD	XS	Sch. 40	
14	355.6	4.8	9.5	12.7	11.1	220.9
16	406.4	4.8	9.5	12.7	12.7	252.5
18	457.2	4.8	9.5	12.7	14.3	284.1
20	508	★5.5	9.5	12.7	15.1	315.6
22	558.8	5.5	9.5	12.7	-	347.2
24	609.6	6.3	9.5	12.7	17.4	378.8
26	660.4		9.5	12.7	-	406.4
28	711.2		9.5	12.7	-	410.3
30	762.0		9.5	12.7	-	441.9
32	812.8		9.5	12.7	17.4	473.4
34	863.6		9.5	12.7	17.4	506.0
36	914.4		9.5	12.7	19.0	536.6
38	965.2		9.5	12.7	-	568.1
40	1016.0		9.5	12.7	-	599.7
42						
44						
46						
48						

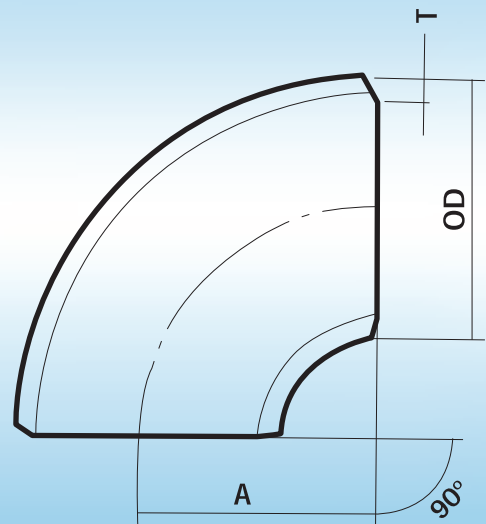
WEIGHTS

(unit: kg)

Nominal Pipe Size	10S	STD	XS	Sch. 40
14	14.18	28.63	32.93	42.40
16	18.49	34.84	43.31	55.76
18	23.15	44.21	54.99	70.94
20	33.49	68.13	68.13	88.02
22	39.86	81.13	81.13	104.87
24	54.98	98.57	98.57	127.52
26		147.63	114.11	147.68
28		171.82	132.73	171.82
30		197.78	152.75	197.78
32		225.59	156.24	225.59
34		255.22	196.96	255.13
36		286.66	221.20	286.57
38			248.15	321.58
40			257.35	356.69
42			301.34	391.85
44			333.68	432.66
46			365.07	473.25
48			397.69	515.74

* 須與客戶協商而訂

90° SHORT RADIUS ELBOWS



DIMENSIONS

(unit: mm)

Nominal Pipe Size	Outside Dia. (OD)	Wall Thickness (T)			Center to End A
		Sch. 10S	Sch. 40	Sch. 80	
1	34	2.8	3.4	4.5	25.4
1 1/4	42.7	2.8	3.6	4.9	31.8
1 1/2	48.6	2.8	3.7	5.1	38.1
2	60.5	2.8	3.9	5.5	50.8
2 1/2	76.3	3.0	5.2	7.0	63.5
3	89.1	3.0	5.5	7.6	76.2
3 1/2	101.6	3.0	5.7	8.1	88.9
4	114.3	3.0	6.0	8.6	101.6
5	139.8	3.4	6.6	9.5	127
6	165.2	3.4	7.1	11.0	152.4
8	216.3	4.0	8.2	12.7	203.2
10	267.4	4.0	9.3	15.1	254
12	318.5	4.5	10.3	17.4	304.8
14	355.6	4.8	*	**	355.6
16	406.4	4.8	*	**	406.4
18	457.2	4.8	*	**	457.2
20	508	5.5	*	**	508
22	558.8	5.5	*	**	558.8
24	609.6	6.4	*	**	609.6

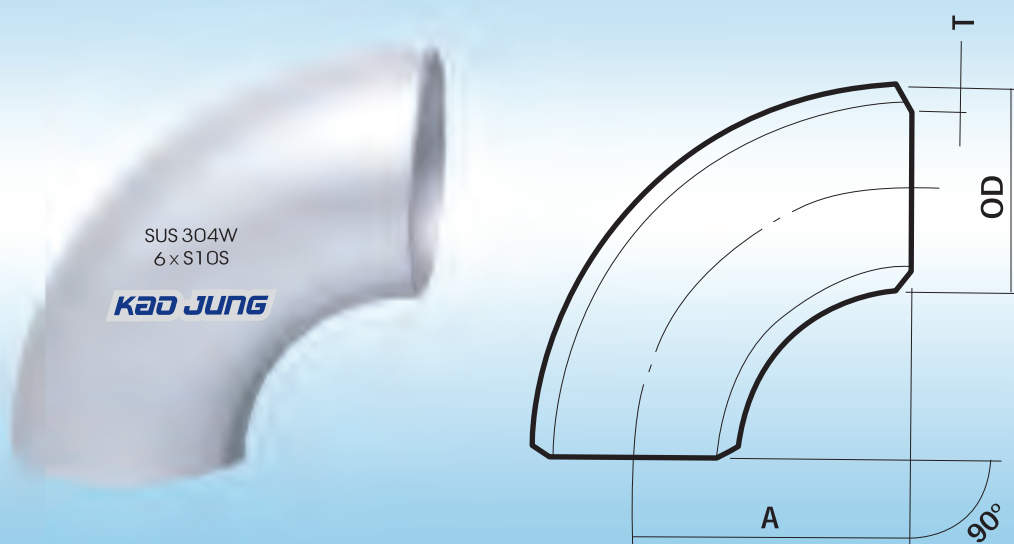
WEIGHTS

(unit: kg)

Nominal Pipe Size	Sch. 10S	Sch. 40	Sch. 80
1	0.094	0.118	0.122
1 1/4	0.159	0.204	0.217
1 1/2	0.189	0.245	0.317
2	0.318	0.434	0.593
2 1/2	0.541	0.909	1.13
3	0.761	1.36	1.82
3 1/2	1.02	1.88	2.61
4	1.31	2.56	3.56
5	2.28	4.32	6.20
6	3.24	6.63	10.26
8	6.68	13.40	20.84
10	10.40	23.60	39.16
12	16.70	37.5	64.8
14	24.55	* 48.33	** 59.25
16	32.00	* 63.37	** 81.81
18	40.40	* 73.57	** 103.96
20	60.25	* 99.66	** 128.79
22	73.02	* 120.83	** 156.29
24	101.56	* 144.06	** 186.41

* std=9.5 **XS=12.7

90° ELBOWS (TUBE)

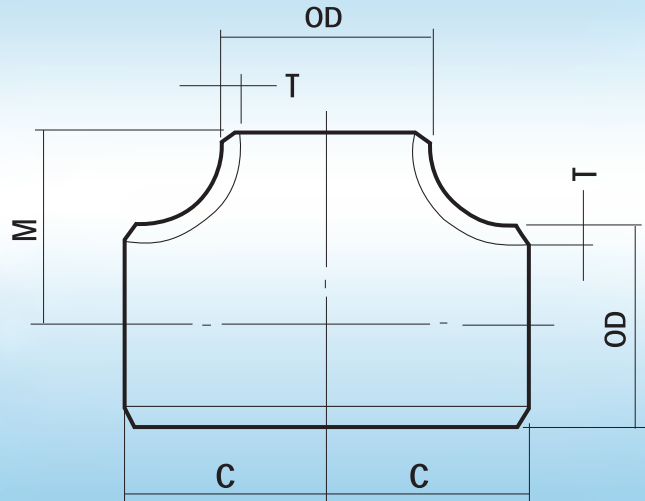


DIMENSIONS

(unit: mm) (unit: kg)

Nominal Pipe Size	Outside Dia. (OD)	Wall Thickness (T) Sch. 5S	Center to End A 1.5D	Weights
1	25.4	1.65	38.1	0.06
1 ¹ / ₄	31.8	1.65	47.6	0.1
1 ¹ / ₂	38.1	1.65	57.2	0.147
2	50.8	1.65	76.2	0.215
2 ¹ / ₂	63.5	2.1	95.3	0.336
3	76.2	2.1	114.3	0.55
3 ¹ / ₂	89.1	2.1	133.4	0.81
4	101.6	2.1	152.4	1.08
6	152.4	2.77	228.6	3.74

STRAIGHT TEES



DIMENSIONS

(unit: mm)

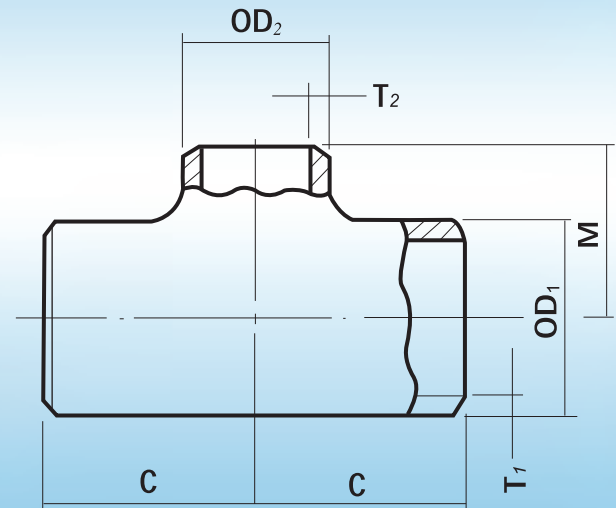
Nominal Pipe Size		Outside Dia. (OD)	Wall Thickness (T)				Center to End C, M
Run	Outlet		Sch. 10S	Sch. 20S	Sch. 40	Sch. 80	
1/2	1/2	21.7	2.1	2.5	2.8	3.7	25.4
3/4	3/4	27.2	2.1	2.5	2.9	3.9	28.6
1	1	34	2.8	3.0	3.4	4.5	38.1
1 1/4	1 1/4	42.7	2.8	3.0	3.6	4.9	47.6
1 1/2	1 1/2	48.6	2.8	3.0	3.7	5.1	57.2
2	2	60.5	2.8	3.5	3.9	5.5	63.5
2 1/2	2 1/2	76.3	3.0	3.5	5.2	7.0	76.2
3	3	89.1	3.0	4.0	5.5	7.6	85.7
4	4	114.3	3.0	4.0	6.0	8.6	104.8
5	5	139.8	3.4	5.0	6.6	9.5	123.8
6	6	165.2	3.4	5.0	7.1	11.0	142.9
8	8	216.3	4.0	6.5	8.2	12.7	177.8
10	10	267.4	4.0	6.5	9.3	15.1	215.9
12	12	318.5	4.5	6.5	10.3	17.4	254
14	14	355.6	4.8	7.9	11.1		279.4
16	16	406.4	4.8	-	12.7		304.8
18	18	457.2	4.8	-	14.3		342.9
20	20	508	5.5	-	15.1		381
22	22	558.8	5.5	-	15.1		419.1
24	24	609.6	6.4	-	17.5		431.8

WEIGHTS

(unit: kg)

Nominal Pipe Size	Sch. 10S	Sch. 20S	Sch. 40	Sch. 80
1/2	0.066	0.077	0.085	0.18
3/4	0.094	0.110	0.126	0.21
1	0.210	0.223	0.260	0.45
1 1/4	0.335	0.357	0.422	0.56
1 1/2	0.464	0.497	0.604	0.81
2	0.638	0.788	0.872	1.20
2 1/2	1.03	1.20	1.74	2.28
3	1.35	1.78	2.41	3.25
4	2.12	2.80	4.12	5.77
5	3.45	5.01	6.54	9.20
6	4.70	6.84	9.58	14.5
8	8.91	14.3	17.9	27.1
10	13.4	21.5	30.4	48.3
12	21.0	30.1	47.2	77.9
14	31.0			
16	39.0			
18	49.0			
20	60.0			
22	84.0			
24	110			

REDUCING OUTLET TEES



DIMENSIONS

(unit: mm)

Nominal Pipe Size	Run	Out-let	Out-side Dia. (OD ₁)	Out-side Dia. (OD ₂)	Wall Thickness (T ₁ , T ₂)								Center to End C	Center to End M
					Sch. 10S		Sch. 20S		Sch. 40		Sch. 80			
					T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂		
3/4	1/2		27.2	21.7	2.1	2.1	2.5	2.5	2.9	2.8	3.9	3.7	28.6	28.6
1	1/2	34	21.7		2.8	2.1	3.0	2.5	3.4	2.8	4.5	3.7	38.1	38.1
1	3/4	34	27.2		2.8	2.1	3.0	2.5	3.4	2.9	4.5	3.9	38.1	38.1
1 1/4	3/4	42.7	27.2		2.8	2.1	3.0	2.5	3.6	2.9	4.9	3.9	47.6	47.6
1 1/4	1	42.7	34		2.8	2.8	3.0	3.0	3.6	3.4	4.9	4.5	47.6	47.6
1 1/2	1/2	48.6	21.7		2.8	2.1	3.0	2.5	3.7	2.8	5.1	3.7	57.2	57.2
1 1/2	3/4	48.6	27.2		2.8	2.1	3.0	2.5	3.7	2.9	5.1	3.9	57.2	57.2
1 1/2	1	48.6	34		2.8	2.8	3.0	3.0	3.7	3.4	5.1	4.5	57.2	57.2
1 1/2	1 1/4	48.6	42.7		2.8	2.8	3.0	3.0	3.7	3.6	5.1	4.9	57.2	57.2

WEIGHTS

(unit: kg)

Nominal Pipe Size	Run	Out-let	Sch. 10S	Sch. 20S	Sch. 40	Sch. 80
3/4	1/2		0.071	0.085	0.097	0.20
1	1/2		0.156	0.158	0.162	0.40
1	3/4		0.159	0.162	0.168	0.43
1 1/4	3/4		0.276	0.311	0.328	0.49
1 1/4	1		0.319	0.340	0.398	0.52
1 1/2	1/2		0.356	0.425	0.460	0.7
1 1/2	3/4		0.368	0.430	0.465	0.7
1 1/2	1		0.433	0.461	0.553	0.73
1 1/2	1 1/4		0.452	0.483	0.583	0.78

REDUCING OUTLET TEES

DIMENSIONS

(unit: mm)

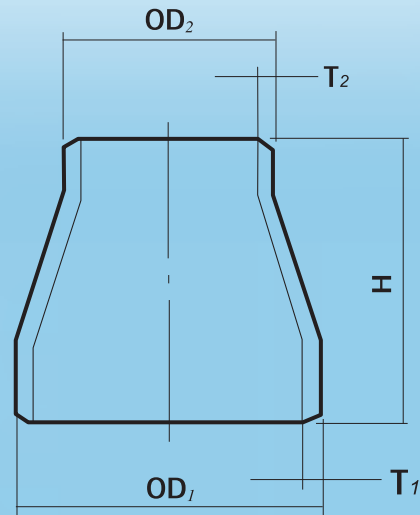
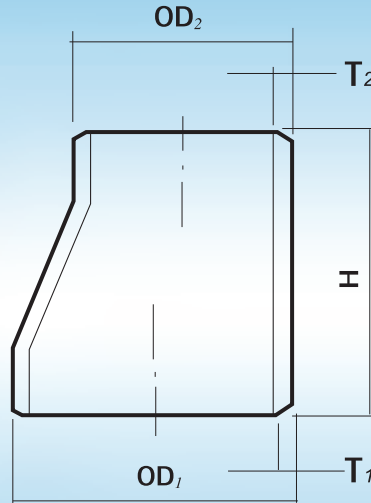
Nominal Pipe Size	Run	Out-let	Out-side Dia. OD ₁	Out-side Dia. OD ₂	Wall Thickness (T ₁ , T ₂)								Center to END C	Center to END M
					Sch. 10S		Sch. 20S		Sch. 40		Sch. 80			
					T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂		
2	3/4	60.5	27.2	2.8	2.1	3.5	2.5	3.9	2.9	5.5	3.9	63.5	44.5	
2	1	60.5	34	2.8	2.8	3.5	3.0	3.9	3.4	5.5	4.5	63.5	50.8	
2	1 1/4	60.5	42.7	2.8	2.8	3.5	3.0	3.9	3.6	5.5	4.9	63.5	57.2	
2	1 1/2	60.5	48.6	2.8	2.8	3.5	3.0	3.9	3.7	5.5	5.1	63.5	60.3	
2 1/2	1 1/2	76.3	48.6	3.0	2.8	3.5	3.0	5.2	3.7	7.0	5.1	76.2	66.7	
2 1/2	2	76.3	60.5	3.0	2.8	3.5	3.5	5.2	3.9	7.0	5.5	76.2	69.9	
3	1 1/2	89.1	48.6	3.2	2.8	4.0	3.0	5.5	3.7	7.6	5.1	85.7	73	
3	2	89.1	60.5	3.0	2.8	4.0	3.5	5.5	3.9	7.6	5.5	85.7	76.2	
3	2 1/2	89.1	76.3	3.0	3.0	4.0	3.5	5.5	5.2	7.6	7.0	85.7	82.6	
4	1 1/2	114.3	48.6	3.0	2.8	4.0	3.0	6.0	3.7	8.6	5.1	104.8	85.7	
4	2	114.3	60.5	3.0	2.8	4.0	3.5	6.0	3.9	8.6	5.5	104.8	88.9	
4	2 1/2	114.3	76.3	3.0	3.0	4.0	3.5	6.0	5.2	8.6	7.0	104.8	95.3	
4	3	114.3	89.1	3.0	3.0	4.0	4.0	6.0	5.5	8.6	7.6	104.8	98.4	
5	3	139.8	89.1	3.4	3.0	5.0	4.0	6.6	5.5	9.5	7.6	123.8	111.1	
5	4	139.8	114.3	3.4	3.0	5.0	4.0	6.6	6.0	9.5	8.6	123.8	117.5	
6	2 1/2	165.2	76.3	3.4	3.0	5.0	3.5	7.1	5.2	11	7.0	142.9	120.7	
6	3	165.2	89.1	3.4	3.0	5.0	4.0	7.1	5.5	11	7.6	142.9	123.8	
6	4	165.2	114.3	3.4	3.0	5.0	4.0	7.1	6.0	11	8.6	142.9	130.2	
6	5	165.2	139.8	3.4	3.4	5.0	5.0	7.1	6.6	11	9.5	142.9	136.5	
8	4	216.3	114.3	4.0	3.0	6.5	4.0	8.2	6.0	12.7	8.6	177.8	155.6	
8	5	216.3	139.8	4.0	3.4	6.5	5.0	8.2	6.6	12.7	9.5	177.8	161.9	
8	6	216.3	165.3	4.0	3.4	6.5	5.0	8.2	7.1	12.7	11	177.8	168.3	
10	5	267.4	139.8	4.0	3.4	6.5	5.0	9.3	6.6	15.1	9.5	215.9	190.5	
10	6	267.4	165.2	4.0	3.4	6.5	5.0	9.3	7.1	15.1	11	215.9	193.7	
10	8	267.4	216.3	4.0	4.0	6.5	6.5	9.3	8.2	15.1	12.7	215.9	203.2	
12	6	318.5	165.2	4.5	3.4	6.5	5.0	10.3	7.1	17.4	11	254	219.1	
12	8	318.5	216.2	4.5	4.0	6.5	6.5	10.3	8.2	17.4	12.7	254	228.6	
12	10	318.5	267.4	4.5	4.0	6.5	6.5	10.3	9.3	17.4	15.1	254	241.3	

WEIGHTS

(unit: kg)

Nominal Pipe Size	Run	Out-let	Sch.	Sch.	Sch.	Sch.
			10S	20S	40	80
2	3/4	0.453	0.586	0.684	1.44	
2	1	0.550	0.672	0.744	1.46	
2	1 1/4	0.580	0.704	0.785	1.51	
2	1 1/2	0.601	0.726	0.814	1.57	
2 1/2	1 1/2	0.917	1.05	1.510	2.61	
2 1/2	2	0.953	1.11	1.560	2.66	
3	1 1/2	1.18	1.53	2.06	3.84	
3	2	1.22	1.59	2.12	3.86	
3	2 1/2	1.30	1.68	2.29	3.97	
4	1 1/2	1.82	2.38	3.47	6.63	
4	2	1.85	2.44	3.53	6.70	
4	2 1/2	1.93	2.52	3.71	6.79	
4	3	1.99	2.63	3.83	6.93	
5	3	3.09	4.49	5.83	10.95	
5	4	3.22	4.63	6.13	11.18	
6	2 1/2	4.08	5.83	8.26	17.05	
6	3	4.14	5.99	8.38	17.07	
6	4	4.27	6.16	8.67	17.19	
6	5	4.49	6.54	9.08	17.47	
8	4	7.84	12.5	15.7	30.76	
8	5	8.06	12.9	16.1	30.85	
8	6	8.26	13.1	16.6	31.25	
10	5	11.8	18.4	26.6	47.47	
10	6	12.0	19.2	27.2	47.95	
10	8	12.7	20.4	28.5	48.39	
12	6	17.4	25.8	39.3	67.48	
12	8	19.2	27.7	42.7	67.92	
12	10	19.8	28.8	44.6	68.81	

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DIMENSIONS

(unit: mm)

Nominal Pipe Size	Outside Dia. (OD ₁)	Outside Dia. (OD ₂)	Wall Thickness (T ₁ , T ₂)								Length H
			Sch. 10S		Sch. 20S		Sch. 40		Sch. 80		
			T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	
3/4 x 1/2	27.2	21.7	2.1	2.1	2.5	2.5	2.9	2.8	3.9	3.7	38.1
1 x 1/2	34	21.7	2.8	2.1	3.0	2.5	3.4	2.8	4.5	3.7	50.8
1 x 3/4	34	27.2	2.8	2.1	3.0	2.5	3.4	2.9	4.5	3.9	50.8
1 1/4 x 1	42.7	34	2.8	2.8	3.0	3.0	3.6	3.4	4.9	4.5	50.8
1 1/2 x 1/2	48.6	21.7	2.8	2.1	3.0	2.5	3.7	2.8	5.1	3.7	63.5
1 1/2 x 3/4	48.6	27.2	2.8	2.1	3.0	2.5	3.7	2.9	5.1	3.9	63.5
1 1/2 x 1	48.6	34	2.8	2.8	3.0	3.0	3.7	3.4	5.1	4.5	63.5
1 1/2 x 1 1/4	48.6	42.7	2.8	2.8	3.0	3.0	3.7	3.6	5.1	4.9	63.5

WEIGHTS

(unit: kg)

Nominal Pipe Size	Sch. 10S	Sch. 20S	Sch. 40	Sch. 80
3/4 x 1/2	0.070	0.088	0.105	0.159
1 x 1/2	0.089	0.094	0.105	0.163
1 x 3/4	0.098	0.104	0.116	0.168
1 1/4 x 1	0.125	0.133	0.157	0.245
1 1/2 x 1/2	0.145	0.154	0.186	0.276
1 1/2 x 3/4	0.156	0.166	0.201	0.294
1 1/2 x 1	0.170	0.181	0.219	0.308
1 1/2 x 1 1/4	0.188	0.201	0.243	0.331

DIMENSIONS

(unit: mm)

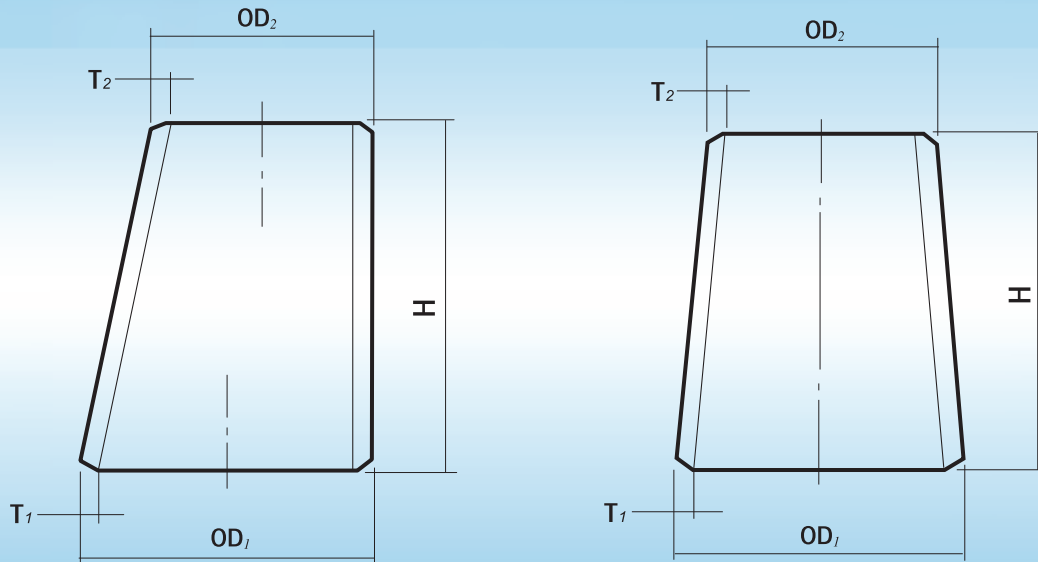
Nominal Pipe Size	Out-side Dia. OD ₁	Out-side Dia. OD ₂	Wall Thickness								Length H
			Sch. 10S		Sch. 20S		Sch. 40		Sch. 80		
			T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	
2 x 3/4	60.5	27.2	2.8	2.1	3.5	2.5	3.9	2.9	5.5	3.9	76.2
2 x 1	60.5	34	2.8	2.8	3.5	3.0	3.9	3.4	5.5	4.5	76.2
2 x 1 1/4	60.5	42.7	2.8	2.8	3.5	3.0	3.9	3.6	5.5	4.9	76.2
2 x 1 1/2	60.5	48.6	2.8	2.8	3.5	3.0	3.9	3.7	5.5	5.1	76.2
2 1/2 x 1	76.3	34	3.0	2.8	3.5	3.0	5.2	3.4	7.0	4.5	88.9
2 1/2 x 1 1/4	76.3	42.7	3.0	2.8	3.5	3.0	5.2	3.6	7.0	4.9	88.9
2 1/2 x 1 1/2	76.3	48.6	3.0	2.8	3.5	3.0	5.2	3.7	7.0	5.1	88.9
2 1/2 x 2	76.3	60.5	3.0	2.8	3.5	3.5	5.2	3.9	7.0	5.5	88.9
3 x 1	89.1	34	3.0	2.8	4.0	3.0	5.5	3.4	7.6	4.5	88.9
3 x 1 1/4	89.1	42.7	3.0	2.8	4.0	3.0	5.5	3.6	7.6	4.9	88.9
3 x 1 1/2	89.1	48.6	3.0	2.8	4.0	3.0	5.5	3.7	7.6	5.1	88.9
3 x 2	89.1	60.5	3.0	2.8	4.0	3.5	5.5	3.9	7.6	5.5	88.9
3 x 2 1/2	89.1	76.3	3.0	3.0	4.0	3.5	5.5	5.2	7.6	7.0	88.9
4 x 1 1/2	114.3	48.6	3.0	2.8	4.0	3.0	6.0	3.7	8.6	5.1	101.6
4 x 2	114.3	60.5	3.0	2.8	4.0	3.5	6.0	3.9	8.6	5.5	101.6
4 x 2 1/2	114.3	76.3	3.0	3.0	4.0	3.5	6.0	5.2	8.6	7.0	101.6
4 x 3	114.3	89.1	3.0	3.0	4.0	4.0	6.0	5.5	8.6	7.6	101.6
5 x 3	139.8	89.1	3.4	3.0	5.0	4.0	6.6	5.5	9.5	7.6	127
5 x 4	139.8	114.3	3.4	3.0	5.0	4.0	6.6	6.0	9.5	8.6	127
6 x 2 1/2	165.2	76.3	3.4	3.0	5.0	3.5	7.1	5.2	11.0	7.0	139.7
6 x 3	165.2	89.1	3.4	3.0	5.0	4.0	7.1	5.5	11.0	7.6	139.7
6 x 4	165.2	114.3	3.4	3.0	5.0	4.0	7.1	6.0	11.0	8.6	139.7
6 x 5	165.2	139.8	3.4	3.4	5.0	5.0	7.1	6.6	11.0	9.5	139.7
8 x 4	216.3	114.3	4.0	3.0	6.5	4.0	8.2	6.0	12.7	8.6	152.4
8 x 5	216.3	139.8	4.0	3.4	6.5	5.0	8.2	6.6	12.7	9.5	152.4
8 x 6	216.3	165.2	4.0	3.4	6.5	5.0	8.2	7.1	12.7	11.0	152.4
10 x 5	267.4	139.8	4.0	3.4	6.5	5.0	9.3	6.6	15.1	9.5	177.8
10 x 6	267.4	165.2	4.0	3.4	6.5	5.0	9.3	7.1	15.1	11.0	177.8
10 x 8	267.4	216.3	4.0	4.0	6.5	6.5	9.3	8.2	15.1	12.7	177.8
12 x 6	318.5	165.2	4.5	3.4	6.5	5.0	10.3	7.1	17.4	11.0	203.2
12 x 8	318.5	216.3	4.5	4.0	6.5	6.5	10.3	8.2	17.4	12.7	203.2
12 x 10	318.5	267.4	4.5	4.0	6.5	6.5	10.3	9.3	17.4	15.1	203.2

WEIGHTS

(unit: kg)

Nominal Pipe Size	Sch. 10S	Sch. 20S	Sch. 40	Sch. 80
2 x 3/4	0.214	0.288	0.298	0.458
2 x 1	0.237	0.292	0.322	0.458
2 x 1 1/4	0.258	0.318	0.352	0.525
2 x 1 1/2	0.273	0.337	0.372	0.544
2 1/2 x 1	0.352	0.407	0.585	0.793
2 1/2 x 1 1/4	0.378	0.437	0.630	0.825
2 1/2 x 1 1/2	0.396	0.458	0.661	0.856
2 1/2 x 2	0.432	0.5	0.724	0.938
3 x 1	0.405	0.533	0.715	0.888
3 x 1 1/4	0.427	0.561	0.752	1.037
3 x 1 1/2	0.444	0.583	0.783	1.105
3 x 2	0.478	0.629	0.846	1.178
3 x 2 1/2	0.525	0.692	0.933	1.291
4 x 1 1/2	0.598	0.791	1.12	1.730
4 x 2	0.658	0.864	1.27	1.780
4 x 2 1/2	0.706	0.931	1.37	2.007
4 x 3	0.748	0.987	1.45	2.129
5 x 3	1.20	1.74	2.27	3.547
5 x 4	1.32	1.92	2.50	3.769
6 x 2 1/2	1.31	1.96	2.92	4.51
6 x 3	1.50	2.18	3.04	5.03
6 x 4	1.62	2.36	3.30	5.44
6 x 5	1.75	2.55	3.57	5.71
8 x 4	2.56	4.10	5.10	8.43
8 x 5	2.70	4.33	5.40	8.83
8 x 6	2.85	4.57	5.71	9.24
10 x 5	3.30	5.7	8.21	13.00
10 x 6	3.87	6.22	8.78	13.50
10 x 8	4.21	6.77	9.58	14.22
12 x 6	5.73	7.81	12.40	18.39
12 x 8	6.11	8.77	13.70	19.07
12 x 10	6.55	9.4	14.70	19.48

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DIMENSIONS

(unit: mm)

Nominal Pipe Size	Out-side Dia. OD ₁	Out-side Dia. OD ₂	Wall Thickness								Length H	
			Sch. 10S		LG		STD		XS			
			T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂		
14	12	355.6	318.5	4.8	4.5	7.9	6.35	9.5	9.5	12.7	12.7	330.2
14	10	355.6	267.4	4.8	4.0	7.9	6.35	9.5	9.3	12.7	12.7	330.2
14	8	355.6	216.3	4.8	4.0	7.9	6.35	9.5	8.2	12.7	12.7	330.2
14	6	355.6	165.2	4.8	3.4	7.9	/	9.5	7.1	12.7	10.9	330.2
16	14	406.4	355.6	4.8	4.8	7.9	7.9	9.5	9.5	12.7	12.7	355.6
16	12	406.4	318.5	4.8	4.5	7.9	6.35	9.5	9.5	12.7	12.7	355.6
16	10	406.4	267.4	4.8	4.0	7.9	6.35	9.5	9.3	12.7	12.7	355.6
16	8	406.4	216.3	4.8	4.0	7.9	6.35	9.5	8.2	12.7	12.7	355.6
18	16	457.2	406.4	4.8	4.8	7.9	7.9	9.5	9.5	12.7	12.7	381
18	14	457.2	355.6	4.8	4.8	7.9	7.9	9.5	9.5	12.7	12.7	381
18	12	457.2	318.5	4.8	4.5	7.9	6.35	9.5	9.5	12.7	12.7	381
18	10	457.2	267.4	4.8	4.0	7.9	6.35	9.5	9.3	12.7	12.7	381
20	18	508	457.2	5.5	4.8	7.9	7.9	9.5	9.5	12.7	12.7	508
20	16	508	406.4	5.5	4.8	7.9	7.9	9.5	9.5	12.7	12.7	508
20	14	508	355.6	5.5	4.8	7.9	7.9	9.5	9.5	12.7	12.7	508
20	12	508	318.5	5.5	4.5	7.9	6.35	9.5	9.5	12.7	12.7	508
22	20	558.8	508	5.5	5.5	7.9	7.9	9.5	9.5	12.7	12.7	508
22	18	558.8	457.2	5.5	4.8	7.9	7.9	9.5	9.5	12.7	12.7	508
22	16	558.8	406	5.5	4.8	7.9	7.9	9.5	9.5	12.7	12.7	508
22	14	558.8	355.6	5.5	4.8	7.9	7.9	9.5	9.5	12.7	12.7	508
24	22	609.6	558.8	6.35	5.5	7.9	7.9	9.5	9.5	12.7	12.7	508
24	20	609.6	508	6.35	5.5	7.9	7.9	9.5	9.5	12.7	12.7	508
24	18	609.6	457.2	6.35	4.8	7.9	7.9	9.5	9.5	12.7	12.7	508
24	16	609.6	406.4	6.35	4.8	7.9	7.9	9.5	9.5	12.7	12.7	508
24	14	609.6	355.6	6.35	4.8	7.9	7.9	9.5	9.5	12.7	12.7	508

WEIGHTS

(unit: kg)

Nominal Pipe Size	Wall Thickness				
	Sch. 10S	LG	STD	XS	
14	12	14.27	25.65	28.55	37.18
14	10	13.21	23.73	26.41	34.40
14	8	12.07	21.70	24.15	31.44
14	6	11.01	19.78	22.01	28.66
16	14	17.24	30.98	34.48	44.90
16	12	16.52	29.69	33.05	43.03
16	10	15.37	27.62	30.75	40.04
16	8	14.15	25.43	28.30	36.86
18	16	20.94	37.62	41.87	54.52
18	14	19.71	35.41	39.41	51.32
18	12	18.94	34.02	37.87	49.32
18	10	17.70	31.81	35.41	46.11
20	18	38.01	62.40	62.40	81.25
20	16	36.01	59.11	59.11	76.97
20	14	33.98	55.83	55.83	72.70
20	12	32.76	53.78	53.78	70.02
22	20	42.01	68.96	68.96	89.80
22	18	40.01	65.68	65.68	85.53
22	16	38.01	62.40	62.40	81.25
22	14	36.01	59.08	59.08	76.97
24	22	52.91	75.53	75.53	98.36
24	20	50.61	72.25	72.25	94.08
24	18	48.31	68.96	68.96	89.80
24	16	46.01	65.68	65.68	85.53
24	14	43.71	62.40	62.40	81.25

DIMENSIONS

(unit: mm)

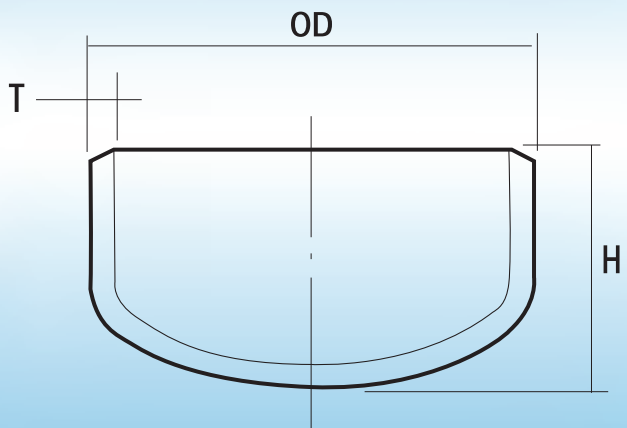
Nominal Pipe Size	Out-side Dia. OD ₁	Out-side Dia. OD ₂	Wall Thickness								Length H	
			Sch. 10S		LG		STD		XS			
			T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂		
26	24	660.4	609.6	7.9	6.35	7.9	7.9	9.5	9.5	12.7	12.7	609.6
26	20	660.4	508	7.9	5.5	7.9	7.9	9.5	9.5	12.7	12.7	609.6
26	18	660.4	457.2	7.9	4.8	7.9	7.9	9.5	9.5	12.7	12.7	609.6
26	16	660.4	406.4	7.9	4.8	7.9	7.9	9.5	9.5	12.7	12.7	609.6
28	26	711.2	660.4	7.9	7.9	7.9	7.9	9.5	9.5	12.7	12.7	609.6
28	24	711.2	609.6	7.9	6.35	7.9	7.9	9.5	9.5	12.7	12.7	609.6
28	20	711.2	508	7.9	5.5	7.9	7.9	9.5	9.5	12.7	12.7	609.6
28	18	711.2	457.2	7.9	4.8	7.9	7.9	9.5	9.5	12.7	12.7	609.6
30	28	762	711.2	7.9	7.9	7.9	7.9	9.5	9.5	12.7	12.7	609.6
30	26	762	660.4	7.9	7.9	7.9	7.9	9.5	9.5	12.7	12.7	609.6
30	24	762	609.6	7.9	6.35	7.9	7.9	9.5	9.5	12.7	12.7	609.6
30	20	762	508	7.9	5.5	7.9	7.9	9.5	9.5	12.7	12.7	609.6
32	30	812.8	762			7.9	7.9	9.5	9.5	12.7	12.7	609.6
32	28	812.8	711.2			7.9	7.9	9.5	9.5	12.7	12.7	609.6
32	26	812.8	660.4			7.9	7.9	9.5	9.5	12.7	12.7	609.6
32	24	812.8	609.6			7.9	7.9	9.5	9.5	12.7	12.7	609.6
34	32	863.6	812.8			7.9	7.9	9.5	9.5	12.7	12.7	609.6
34	30	863.6	762			7.9	7.9	9.5	9.5	12.7	12.7	609.6
34	28	863.6	711.2			7.9	7.9	9.5	9.5	12.7	12.7	609.6
34	26	863.6	660.4			7.9	7.9	9.5	9.5	12.7	12.7	609.6
36	34	914.4	863.6			7.9	7.9	9.5	9.5	12.7	12.7	609.6
36	32	914.4	812.8			7.9	7.9	9.5	9.5	12.7	12.7	609.6
36	30	914.4	762			7.9	7.9	9.5	9.5	12.7	12.7	609.6
36	28	914.4	711.2			7.9	7.9	9.5	9.5	12.7	12.7	609.6
38	36	965.2	914.4					9.5	9.5	12.7	12.7	609.6
38	34	965.2	863.6					9.5	9.5	12.7	12.7	609.6
38	32	965.2	812.8					9.5	9.5	12.7	12.7	609.6
38	32	965.2	762					9.5	9.5	12.7	12.7	609.6
38	28	965.2	711.2					9.5	9.5	12.7	12.7	609.6
38	26	965.2	660.4					9.5	9.5	12.7	12.7	609.6
40	38	1016	965.2					9.5	9.5	12.7	12.7	609.6
40	36	1016	914.4					9.5	9.5	12.7	12.7	609.6
40	34	1016	863.6					9.5	9.5	12.7	12.7	609.6
40	32	1016	812.8					9.5	9.5	12.7	12.7	609.6
40	30	1016	762					9.5	9.5	12.7	12.7	609.6
42	40	1066.8	1016					9.5	9.5	12.7	12.7	609.6
42	38	1066.8	965.2					9.5	9.5	12.7	12.7	609.6
42	36	1066.8	914.4					9.5	9.5	12.7	12.7	609.6
42	34	1066.8	863.6					9.5	9.5	12.7	12.7	609.6
42	32	1066.8	812.8					9.5	9.5	12.7	12.7	609.6
42	30	1066.8	762					9.5	9.5	12.7	12.7	609.6
44	42	1117.6	1066.8					9.5	9.5	12.7	12.7	609.6
44	40	1117.6	1016					9.5	9.5	12.7	12.7	609.6
44	38	1117.6	965.2					9.5	9.5	12.7	12.7	609.6
44	36	1117.6	914.4					9.5	9.5	12.7	12.7	609.6
46	44	1168.4	1117.6					9.5	9.5	12.7	12.7	711.2
46	42	1168.4	1066.8					9.5	9.5	12.7	12.7	711.2
46	40	1168.4	1016					9.5	9.5	12.7	12.7	711.2
46	38	1168.4	965.2					9.5	9.5	12.7	12.7	711.2
46	36	1168.4	914.4					9.5	9.5	12.7	12.7	711.2
48	44	1219.2	1117.6					9.5	9.5	12.7	12.7	711.2
48	42	1219.2	1066.8					9.5	9.5	12.7	12.7	711.2
48	40	1219.2	1016					9.5	9.5	12.7	12.7	711.2

WEIGHTS

(unit: kg)

Nominal Pipe Size	Wall Thickness			
	Sch. 10S	LG	Std.	XS
26	24	128.28	98.53	128.03
26	20	118.02	90.65	117.79
26	18	112.88	86.70	112.66
26	16	107.76	82.76	107.54
28	26	138.54	106.41	138.27
28	24	133.41	102.47	133.15
28	20	123.15	94.59	122.91
28	18	118.02	90.65	117.78
30	28	148.80	114.29	148.51
30	26	143.67	110.35	143.39
30	24	138.54	106.41	138.27
30	20	128.28	98.53	128.03
32	30	159.07	122.17	158.75
32	28	153.93	118.23	153.63
32	26	148.80	114.29	148.51
32	24	143.67	110.40	143.39
34	32	169.33	130.06	168.99
34	30	164.20	126.12	163.88
34	28	159.07	122.17	158.75
34	26	153.93	118.51	153.63
36	34	179.59	137.94	179.24
36	32	174.46	133.99	174.12
36	30	169.33	130.06	168.99
36	28	164.20	126.12	163.88
38	36		145.82	189.48
38	34		141.88	184.36
38	32		137.94	179.24
38	32		133.99	174.12
38	28		130.06	168.99
38	26		126.12	163.88
40	38		153.70	199.72
40	36		149.76	194.60
40	34		145.82	189.46
40	32		141.88	184.36
40	30		137.94	179.24
42	40		161.59	209.97
42	38		157.64	204.85
42	36		153.70	199.72
42	34		149.76	194.60
42	32		145.82	189.48
42	30		141.88	184.36
44	42		169.47	220.21
44	40		165.53	215.09
44	38		161.59	209.97
44	36		157.64	204.85
46	44		177.35	230.45
46	42		173.41	225.33
46	40		169.47	220.21
46	38		165.53	215.09
46	36		161.59	210.00
48	44		181.29	235.57
48	42		177.35	230.45
48	40		173.41	225.33

CAP



DIMENSIONS

(unit: mm)

Nominal Pipe Size	Outside Dia. (OD)	Wall Thickness (T)				Length H
		Sch. 10S	Sch. 20S	Sch. 40	Sch. 80	
1/2	21.7	2.1	2.5	2.8	3.7	25.4
3/4	27.2	2.1	2.5	2.9	3.9	25.4
1	34	2.8	3.0	3.4	4.5	38.1
1 1/4	42.7	2.8	3.0	3.6	4.9	38.1
1 1/2	48.6	2.8	3.0	3.7	5.1	38.1
2	60.5	2.8	3.5	3.9	5.5	38.1
2 1/2	76.3	3.0	3.5	5.2	7.0	38.1
3	89.1	3.0	4.0	5.5	7.6	50.8
4	114.3	3.0	4.0	6.0	8.6	63.5
5	139.8	3.4	5.0	6.6	9.5	76.2
6	165.2	3.4	5.0	7.1	11.0	88.9
8	216.3	4.0	6.5	8.2	12.7	101.6
10	267.4	4.0	6.5	9.3	**12.7	127
12	318.5	4.5	6.5	*9.5	**12.7	152.4
14	355.6	4.8		*9.5	**12.7	165.1
16	406.4	4.8		*9.5	**12.7	177.8
18	457.2	4.8		*9.5	**12.7	203.2
20	508	5.5		*9.5	**12.7	228.6
24	609.6	6.4		*9.5	**12.7	266.7

* std **XS

WEIGHTS

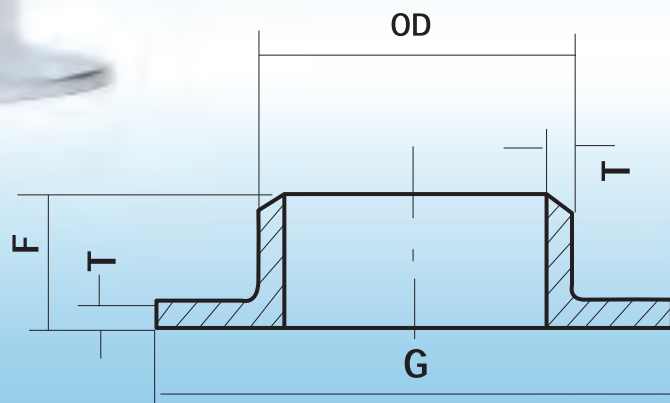
(unit: kg)

Nominal Pipe Size	Sch. 10S	Sch. 20S	Sch. 40	Sch. 80
1/2	0.040	0.043	0.046	0.045
3/4	0.052	0.054	0.059	0.086
1	0.090	0.096	0.109	0.109
1 1/4	0.113	0.121	0.145	0.159
1 1/2	0.130	0.139	0.171	0.222
2	0.168	0.210	0.234	0.344
2 1/2	0.242	0.282	0.420	0.512
3	0.362	0.483	0.664	0.888
4	0.585	0.780	1.17	1.51
5	0.978	1.44	1.90	2.89
6	1.35	1.99	2.83	4.24
8	2.49	4.05	5.11	7.76
10	3.84	6.23	8.92	13.11
12	6.15	8.89	14.10	17.94
14	7.85		16.35	21.11
16	9.56		18.60	25.73
18	12.10		23.54	32.57
20	17.90		29.06	40.21
24	30.15		41.85	57.86

LAP JOINT STUB ENDS



LJ (JIS TYPE)



DIMENSIONS

(unit: mm)

Nominal Pipe Size	Outside Dia. (OD)	Wall Thickness (T)			Die. of Lap (G)		Length F	Radius R
		Sch. 10S	Sch. 20S	Sch. 40	5K	10K		
3/8	17.3	1.65	2.0	2.3	39	46	30	3
1/2	21.7	2.1	2.5	2.8	44	51	30	3
3/4	27.2	2.1	2.5	2.9	49	56	30	3
1	34.0	2.8	3.0	3.4	59	67	50	3
1 1/4	42.7	2.8	3.0	3.6	70	76	50	3
1 1/2	48.6	2.8	3.0	3.7	75	81	50	3
2	60.5	2.8	3.5	3.9	85	96	50	4
2 1/2	76.3	3.0	3.5	5.2	110	116	50	4
3	89.1	3.0	4.0	5.5	121	126	50	5
4	114.3	3.0	4.0	6.0	141	151	50	5
5	139.8	3.4	5.0	6.6	176	182	50	5
6	165.2	3.4	5.0	7.1	206	212	50	5
8	216.3	4.0	6.5	8.2	252	262	65	5
10	267.4	4.0	6.5	9.3	317	324	65	5
12	318.5	4.5	6.5	10.3	360	368	65	5

WEIGHTS

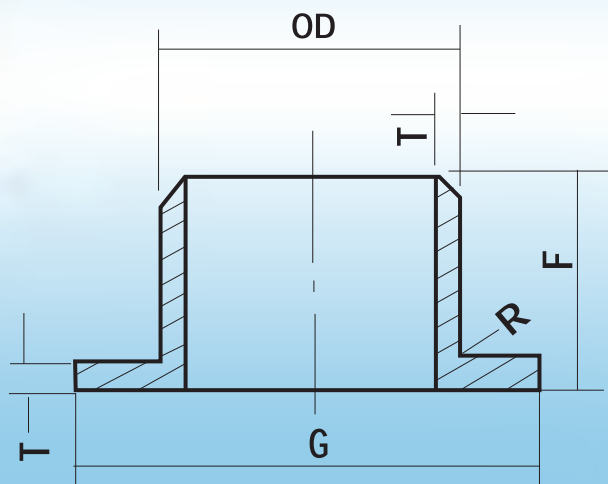
(unit: kg)

Nominal Pipe Size	Sch. 10S	Sch. 20S	Sch. 40
3/8	0.042	0.051	0.062
1/2	0.060	0.070	0.077
3/4	0.073	0.086	0.099
1	0.172	0.184	0.206
1 1/4	0.217	0.232	0.276
1 1/2	0.242	0.258	0.315
2	0.308	0.383	0.424
2 1/2	0.430	0.499	0.731
3	0.484	0.640	0.870
4	0.614	0.815	1.20
5	0.878	1.28	1.68
6	1.08	1.57	2.21
8	1.94	3.12	3.93
10	2.53	4.08	5.80
12	3.25	4.67	7.34

LAP JOINT STUB ENDS



LJ(JPI TYPE)



DIMENSIONS

(unit: mm)

Nominal Pipe Size	Outside Dia. (OD)	Wall Thickness (T)			dat to Imp (G)	Length F	Rack/ls R	
		Sch. 10S	Sch. 20S	Sch. 40			Type A (Max)	Type B (Max)
1/2	21.7	2.1	2.5	2.8	35	50	3	3.2
3/4	27.2	2.1	2.5	2.9	43	50	3	3.2
1	34.0	2.8	3.0	3.4	51	50	3	3.2
1 1/4	42.7	2.8	3.0	3.6	64	50	3	4.8
1 1/2	48.6	2.8	3.0	3.7	73	50	3	6.4
2	60.5	2.8	3.5	3.9	92	65	4	7.9
2 1/2	76.3	3.0	3.5	5.2	105	65	4	7.9
3	89.1	3.0	4.0	5.5	127	65	5	9.5
4	114.3	3.0	4.0	6.0	157	75	5	11.1
5	139.8	3.4	5.0	6.6	186	75	5	11.1
6	165.2	3.4	5.0	7.1	216	90	5	12.7
8	216.3	4.0	6.5	8.2	270	100	5	12.7
10	267.4	4.0	6.5	9.3	324	125	5	12.7
12	318.5	4.5	6.5	10.3	381	150	5	12.7

WEIGHTS

(unit: kg)

Nominal Pipe Size	Sch. 10S	Sch. 20S	Sch. 40
1/2	0.077	0.114	0.145
3/4	0.086	0.154	0.163
1	0.141	0.186	0.222
1 1/4	0.209	0.263	0.318
1 1/2	0.250	0.377	0.400
2	0.377	0.540	0.704
2 1/2	0.472	0.799	1.071
3	0.640	1.135	1.489
4	0.981	1.816	2.533
5	1.239	2.542	3.609
6	1.952	2.815	5.580
8	3.110	5.902	10.002
10	4.871	10.442	13.892
12	7.123	14.982	19.975

JIS Tolerance

JIS DIMENSIONAL TOLERANCE

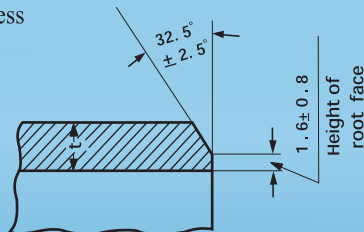
(unit: mm)

Items	Class of pipe fittings	Nominal diameter						
		1/2 to 2 1/2	3 to 4	5 to 8	10 to 18	20 to 24	26 to 30	32 to 36
		Tolerance						
Outside dia. at bevel	All pipe fittings	+1.6	±1.6	+2.4	+4	+6.4		
		-0.8		-1.6	-3.2	-4.8		
Inside dia. at end		±0.8	±1.6		±3.2		±4.8	
Wall thickness		+not specified -12.5%						
Bevel angle		Refer to JIS Welding Bevel for Fittings						
Root-face	Refer to JIS Welding Bevel for Fittings							
Center-to-end (A,B)	90° Elbow 45° Elbow	±1.6		±2.4		±3.2	±4.8	
End-to-end (H)	Reducer	±1.6		±2.4		±4.8		
Center-to-end (C,M)	Tee	±1.6		±2.4		±3.2	±4.8	
Back-to-face (E,E ₁)	Cap	±3.2		±6.4			-	
Outside circumference at ends	All pipe fittings	-					±0.5%	

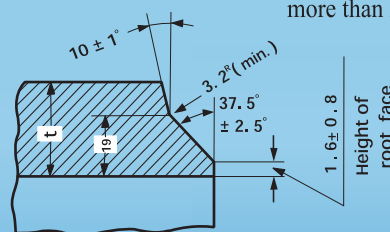
JIS Welding Bevel for Fittings

(unit: mm)

In the Case When it is 22 mm or Less



In the Case When it is more than 22 mm



DIMENSIONAL TOLERANCES AND WELDING ENDS

(MSS SP-43 1976 Edition)

Dimensions in Inches

Nominal Pipe Size	All Fittings		90 Elbows 45 Elbows Tees	Reducers Lap-Joint Stub Ends	180 Returns			Caps	Lap-Joint Stub Ends	
	Outside Diameter at Welding End	Wall Thickness	Center-to- End Dimension A B C M	Overall Length F H	Center-to- Center Dimension P	Back-to- Face Dimension K	Alignment of End U	Over Length E	Fillet Radius of Lap A	Outside Diameter of Lap G
1/2 to 1 1/2	± 0.03	Not less than 87.5% of nominal thickness	± 0.06	± 0.06	± 0.25	± 0.25	± 0.03	± 0.12	+ 0 ± 0.03	+ 0 - 0.03
2 to 3 1/2	± 0.03		± 0.06	± 0.06	± 0.25	± 0.25	± 0.03	± 0.12	+ 0 ± 0.03	+ 0 - 0.03
4	± 0.03		± 0.06	± 0.06	± 0.25	± 0.25	± 0.03	± 0.12	+ 0 ± 0.06	+ 0 - 0.03
5 to 8	+ 0.06 - 0.03		± 0.06	± 0.06	± 0.25	± 0.25	± 0.03	± 0.25	+ 0 - 0.06	+ 0 - 0.03
10 to 18	+ 0.09 - 0.03		± 0.09	± 0.09	± 0.38	± 0.25	± 0.06	± 0.25	+ 0 - 0.06	+ 0 - 0.06
20 to 24	+ 0.12 - 0.03		± 0.09	± 0.09	± 0.38	± 0.25	± 0.06	± 0.25	+ 0 - 0.06	+ 0 - 0.06

JIS-ASTM CONTRAST LIST OF RELATIVE MATERIALS

Steel Items	JIS Specification		A S T M Specification				BS Specification	DIN Specification	
	Steel Tube	Steel Plate	Steel Tube	Steel Plate	Steel Materials	Marks Of Tube Jointing Materials	Steel Tube	Steel Tube	
Carbon Steel	SGP	SS400	A53-TYPE F	A283-A	A235-A	-	3601 -320	1626 -st33	
	STPG370	SM410B	A53-A	A242	A105	-	3601 -360	1626 -st37	
	STPG410	SM410B	A53-B	A242	A105	-	3601 -410	1626 -st42	
	STS340	SB340	-	-	-	-	-	-	
	STS370	SB410	-	-	-	-	-	-	
	STS410	SB410	-	-	-	-	-	-	
	STS480	SB480	-	-	-	-	-	-	
	STPT370	SB410	A106-A	A285-B	A105	-	3602 -360	17175 -st35.8	
	STPT410	SB410	A106-B	A515-65 70	A105	WPB	3602 -410	17175 -st45.8	
STPT480	SB480	A106-C	-	-	WPC	3602 -460	-		
Alloy Steel	1/2 Mo Steel	STPA12	SB46M	A335-P1	A204-B	A182-F1	WP1	-	17175 -15Mo3
	1Cr-1/2 Mo Steel	STPA22	SCMV2	A335-P12	A387-12	A182-A12	WP12	3604 -620-440	17175 -13CrMo44
	1 1/4Cr-1/2 Mo Steel	STPA23	SCMV3	A335-P11	A387-11	A182-F11	WP11	3604 -621	-
	2 1/4Cr-1Mo Steel	STPA24	SCMV4	A335-P22	A387-22	A182-F22	WP22	3604 -6122	17175 -10CrMo910
	5Cr-1/2Mo Steel	STPA25	SCMV6	A335-P5	A387-5	A182-5	WP5	3604 -625	-
	9Cr-1Mo Steel	STPA26	-	A335-P9	A387-9	A182-9	WP9	-	-
Steel For Low Temperature	A / gilt Steel	STPL39	SLA33A	A333-6	A516 -60、65、70	A182-LF2	WPL6	3604 -410LT50	-
	3 1/2 Ni Steel	STPL46	-	A333-3	A203-D	A350-LF3	WPL3	3603 -503LT100	-
	9Ni Steel	STPL70	-	A333-8	A353	A522	WPL8	3603 -503LT196	-
Stainless Steel	18-8 Stainless Steel	SUS304TP	SUS304	A312 -TP304	A240 -Type304	A182 -F304	WP304	3605 -304S18、S25	17440 -X5CrNi189
	Hight Temperature 18-8 Stainless Steel	SUS304HTP	-	A312 -TP304H	A240 -Type304H	A182 -F304H	WP304H	3065 -304S59	-
	Low Carbon 18-8 Stainless Steel	SUS304LTP	SUS304L	A312 -TP304L	A240 -Type304L	A182 -F304L	WP304L	3065 -306S14、S22	17440 -X2CrNi189
	22-12 Stainless Steel	SUS309STP	SUS309S	A312 -TP309	A240 -Type309S	-	WP309	-	-
	25-20 Stainless Steel	SUS310STP	SUS310S	A312 -TP310	A240 -Type310S	A182 -F310	WP310	-	-
	18-8-(Nb+Ta) Stainless Steel	SUS347TP	SUS347	A312 -TP347	A240 -Type347	A182 -F347	WP347	3605 -347S18、S17	17440- X10CrNiNb189
	18-8-Mo Stainless Steel	SUS316TP	SUS316	A312 -TP316	A240 -Type316	A182 -F316	WP316	3605 316S18、S26	17440- X5CrNiMo1810
	High Temperature 18-8-Mo Stainless Steel	SUS316HTP	-	A312 -TP316H	A240 -Type316H	A182 -F316H	WP316H	3605 -316S59	-
	Low Carbon 18-8-Mo Stainless Steel	SUS316LTP	SUS316L	A312 -TP316L	A312 -Type316L	A182 -F316F	WP316L	3605 -316S14、S22	17440- X2CrNiMo1810
	18-8Ti Stainless Steel	SUS321TP	SUS321	A312 -TP321	A240 -Type321	A182 -F321	WP321	3605 -321S18、S22	17440- X10CrNiTi189
	High Temperature 18-8Ti Stainless Steel	SUS321HTP	-	A312 -TP321H	A240 -Type321H	A182 -F321H	WP321H	3605 -321S59	-
	High Temperature 18-8-(Nb+Ta) Stainless Steel	SUS347HTP	-	A312 -TP347H	A240 -Type347H	A182 -F347H	WP347H	3605 -347S59	-
	25-5-Mo Stainless Steel	SUS329J1TP	SUS329J1	A268 -TP329	-	-	-	-	-

Remarks: The materials of the stainless steel mentioned above are not necessarily the same; nevertheless, they are similar ones.

MATERIAL SPECIFICATIONS

FOR FITTINGS MADE FROM SHEETS
ASTM A240 SHALL BE APPLIED AS FOLLOWS.

Type	Carbon max percent	Mang-ness, max, percent	Phos-phorus max. percent	Sulfur, max percent	Silicon max, percent	Chromium, percent	Nickel percent	Other Elements	T.S Min ksi	Y.S Min ksi	Elong-ation percent	Hardness	
												HB	HRB
304	0.08	2.00	0.045	0.030	1.00	18.00 ~20.00	8.00 ~10.50		75	30	40	183	88
304L	0.03	2.00	0.045	0.030	1.00	18.00 ~20.00	8.00 ~12.00		70	25	40	183	88
316	0.08	2.00	0.045	0.030	1.00	16.00 ~18.00	10.00 ~14.00	Mo 2.00 ~3.00	75	30	40	217	95
316L	0.03	2.00	0.045	0.030	1.00	16.00 ~18.00	10.00 ~14.00	Mo 2.00 ~3.00	70	25	40	217	95
321	0.08	2.00	0.045	0.030	1.00	17.00 ~19.00	9.00 ~12.00	T1 min. max. Cx 5 0.70	75	30	40	183	88
347	0.08	2.00	0.045	0.030	1.00	17.00 ~19.00	9.00 ~13.00	Cb+Ta min. max. Cx10 1.10	75	30	40	183	88

304-316L N: 0.10Max

FOR FITTINGS MADE FROM SEAMLESS AND
WELDED PIPES ASTM A312 SHALL BE APPLIED AS FOLLOWS.

Grade	Carbon max percent	Mang-ness, max, percent	Phos-phorus max. percent	Sulfur, max, percent	Silicon max, percent	Chromium, percent	Nickel, percent	Other Elements	T.S Min ksi	Y.S Min ksi
TP 304	0.08	2.00	0.040	0.030	0.75	18.0~20.0	8.0~11.0		75	30
TP 304L	0.035	2.00	0.040	0.030	0.75	18.0~20.0	8.0~13.0		70	25
TP 316	0.08	2.00	0.040	0.030	0.75	16.0~18.0	11.0~14.0	Mo 2.0~3.0	75	30
TP 316L	0.035	2.00	0.040	0.030	0.75	16.0~18.0	10.0~15.0	Mo 2.00~3.00	70	25
TP 321	0.08	2.00	0.040	0.030	0.75	17.0~20.0	9.0~13.0	T1 min. max. Cx10 0.60	75	30
TP 347	0.08	2.00	0.040	0.030	0.75	17.0~20.0	9.0~13.0	Cb+Ta min. max. Cx10 1.00	75	30

TOLERANCE OF BUTT-WELDING FITTINGS IN JIS AND ASTM

Normal pipe size (Inch)	Outside Diameter (OD) JIS (mm)	Outside Diameter (OD) ASTM (mm)	Normal pipe size (Inch)	Outside Diameter (OD) JIS (mm)	Outside Diameter (OD) ASTM (mm)
1/2	20.9 - 21.7 - 23.3	20.5 - 21.3 - 22.9	5	138.2 - 139.8 - 142.2	139.7 - 141.3 - 143.7
3/4	26.4 - 27.2 - 28.8	25.9 - 26.7 - 28.3	6	163.6 - 165.2 - 167.6	166.7 - 168.3 - 170.7
1	33.2 - 34.0 - 35.6	32.6 - 33.4 - 35.0	8	214.7 - 216.3 - 218.7	217.5 - 219.1 - 221.5
1. 1/4	41.9 - 42.7 - 44.3	41.4 - 42.2 - 43.8	10	264.2 - 267.4 - 271.4	269.9 - 273.1 - 277.1
1. 1/2	47.8 - 48.6 - 50.2	46.5 - 48.3 - 49.9	12	315.3 - 318.5 - 322.5	320.7 - 323.9 - 327.9
2	59.7 - 60.5 - 62.1	59.5 - 60.3 - 61.9	14	352.4 - 355.6 - 359.6	352.4 - 355.6 - 359.6
2. 1/2	75.5 - 76.3 - 77.9	72.2 - 73.0 - 74.6	16	403.2 - 406.4 - 410.4	403.2 - 406.4 - 410.4
3	88.3 - 89.1 - 90.7	87.3 - 88.9 - 90.5	18	454 - 457.2 - 461.2	454 - 457.2 - 461.2
3. 1/2	100.8 - 101.6 - 103.2	100.0 - 101.6 - 103.2	20	503.2 - 508.0 - 514.4	503.2 - 508.0 - 514.4
4	113.5 - 114.3 - 115.9	112.7 - 114.3 - 115.9	24	604.8 - 609.6 - 616.0	604.8 - 609.6 - 616

Wall Thickness Standards Carbon, Alloy and Stainless Steel

(unit: mm)

Diameter		Sch No. mm	5S	10S	20S	GS	LG	S10	S20	S30	STD	40S	S40	S60	XS	80S	S80	S100	S120	S140	S160	XXS
A	B																					
6	1/8	10.5	1.0	1.2	1.5	2.0	-	-	-	-	1.7	1.7	1.7	2.2	2.4	2.4	2.4	-	-	-	-	-
8	1/4	13.8	1.2	1.65	2.0	2.3	-	-	-	-	2.2	2.2	2.2	2.4	3.0	3.0	3.0	-	-	-	-	-
10	3/8	17.3	1.2	1.65	2.0	2.3	-	-	-	-	2.3	2.3	2.3	2.8	3.2	3.2	3.2	-	-	-	-	-
15	1/2	21.7	1.65	2.1	2.5	2.8	-	-	-	-	2.8	2.8	2.8	3.2	3.7	3.7	3.7	-	-	-	4.7	7.5
20	3/4	27.2	1.65	2.1	2.5	2.8	-	-	-	-	2.9	2.9	2.9	3.4	3.9	3.9	3.9	-	-	-	5.5	7.8
25	1	34.0	1.65	2.8	3.0	3.2	-	-	-	-	3.4	3.4	3.4	3.9	4.5	4.5	4.5	-	-	-	6.4	9.1
32	1 1/4	42.7	1.65	2.8	3.0	3.5	-	-	-	-	3.6	3.6	3.6	4.5	4.9	4.9	4.9	-	-	-	6.	9.7
40	1 1/2	48.6	1.65	2.8	3.0	3.5	-	-	-	-	3.7	3.7	3.7	4.5	5.1	5.1	5.1	-	-	-	7.1	10.2
50	2	60.5	1.65	2.8	3.5	3.8	-	-	3.2	-	3.9	3.9	3.9	4.9	5.5	5.5	5.5	-	-	-	8.7	11.1
65	2 1/2	76.3	2.1	3.0	3.5	4.2	-	-	4.5	-	5.2	5.2	5.2	6.0	7.0	7.0	7.0	-	-	-	9.5	14.0
80	3	89.1	2.1	3.0	4.0	4.2	-	-	4.5	-	5.5	5.5	5.5	6.6	7.6	7.6	7.6	-	-	-	11.1	15.2
90	3 1/2	101.6	2.1	3.0	4.0	4.2	-	-	4.5	-	5.7	5.7	5.7	7.0	8.1	8.1	8.1	-	-	-	12.7	-
100	4	114.3	2.1	3.0	4.0	4.5	-	-	4.9	-	6.0	6.0	6.0	7.1	8.6	8.6	8.6	-	11.1	-	13.5	17.1
125	5	139.8	2.8	3.4	5.0	4.5	-	-	5.1	-	6.6	6.6	6.6	8.1	9.5	9.5	9.5	-	12.7	-	15.9	19.0
150	6	165.2	2.8	3.4	5.0	5.0	5.0	-	5.5	-	7.1	7.1	7.1	9.3	11.0	11.0	11.0	-	14.3	-	18.2	21.9
175	7	190.7	-	-	-	5.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200	8	216.3	2.8	4.0	6.5	5.8	5.8	-	6.4	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
225	9	241.8	-	-	-	6.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
250	10	267.4	3.4	4.0	6.5	6.6	6.6	-	6.4	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	4.0	4.5	6.5	6.9	6.9	-	6.4	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	4.0	4.8	7.9	7.9	7.9	6.4	7.9	9.5	9.5	-	11.1	15.1	12.7	-	19.0	23.8	27.8	31.8	35.7	-
400	16	406.4	4.2	4.8	7.9	7.9	7.9	6.4	7.9	9.5	9.5	-	12.7	16.7	12.7	-	21.4	26.2	30.9	36.5	40.5	-
450	18	457.2	4.2	4.8	7.9	7.9	7.9	6.4	7.9	11.1	9.5	-	14.3	19.0	12.7	-	23.8	29.4	34.9	39.7	45.2	-
500	20	508.0	4.8	5.5	7.9	7.9	7.9	6.4	9.5	12.7	9.5	-	15.1	20.6	12.7	-	26.2	32.5	38.1	44.4	50.0	-
550	22	558.8	4.8	5.5	-	-	7.9	6.4	9.5	12.7	9.5	-	-	22.2	12.7	-	28.6	34.9	41.3	47.6	54.0	-
600	24	609.6	5.5	6.4	-	-	7.9	6.4	9.5	14.3	9.5	-	17.4	24.6	12.7	-	31.0	38.9	46.0	52.4	59.5	-
650	26	660.4	-	-	-	-	7.9	7.9	12.7	-	9.5	-	-	-	12.7	-	-	-	-	-	-	-
700	28	711.2	-	-	-	-	7.9	7.9	12.7	15.9	9.5	-	-	-	12.7	-	-	-	-	-	-	-
750	30	762.0	6.4	7.9	-	-	7.9	7.9	12.7	15.9	9.5	-	-	-	12.7	-	-	-	-	-	-	-
800	32	812.8	-	-	-	-	7.9	7.9	12.7	15.9	9.5	-	17.4	-	12.7	-	-	-	-	-	-	-
850	34	863.6	-	-	-	-	7.9	7.9	12.7	15.9	9.5	-	17.4	-	12.7	-	-	-	-	-	-	-
900	36	914.4	-	-	-	-	7.9	7.9	12.7	15.9	9.5	-	19.0	-	12.7	-	-	-	-	-	-	-
950	38	965.2	-	-	-	-	7.9	7.9	-	-	9.5	-	-	-	12.7	-	-	-	-	-	-	-
1000	40	1016.0	-	-	-	-	7.9	7.9	-	-	9.5	-	-	-	12.7	-	-	-	-	-	-	-
1050	42	1066.8	-	-	-	-	7.9	7.9	-	-	9.5	-	-	-	12.7	-	-	-	-	-	-	-
1100	44	1117.6	-	-	-	-	7.9	7.9	-	-	9.5	-	-	-	12.7	-	-	-	-	-	-	-
1150	46	1168.4	-	-	-	-	7.9	7.9	-	-	9.5	-	-	-	12.7	-	-	-	-	-	-	-
1200	48	1219.2	-	-	-	-	7.9	7.9	-	-	9.5	-	-	-	12.7	-	-	-	-	-	-	-



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