

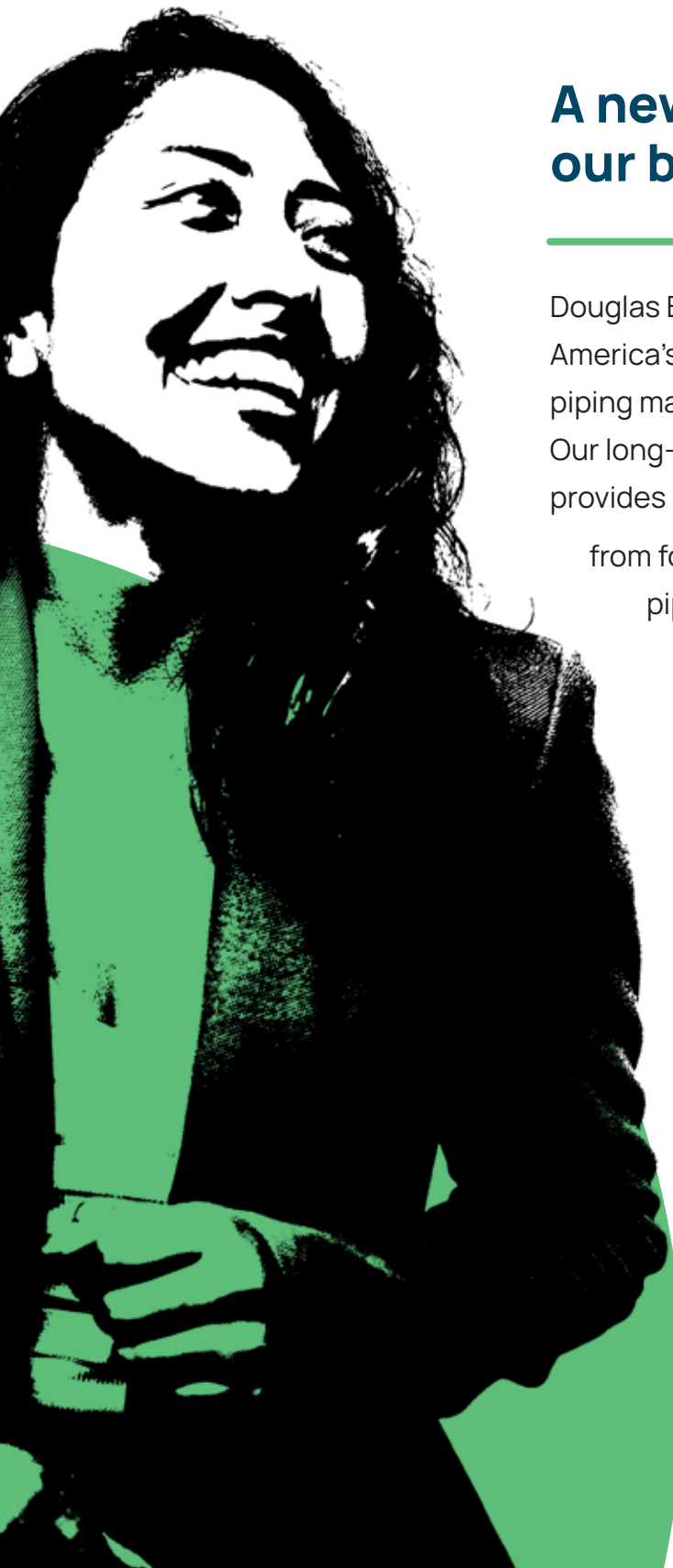


At the forefront of quality!

PRODUCT GUIDE **2026 / 2027**



MANUFACTURED PIPE + FITTINGS + SPOOLING | CANADIAN MADE

A woman with dark hair, wearing a black blazer over a blue top, is smiling and looking upwards and to the right. She is holding a black folder or portfolio.

A new chapter launches for our business after 55+ Years.

Douglas Barwick is the culmination of two of North America's most respected light-wall stainless steel piping manufacturers, with history dating back to 1875. Our long-standing experience in steel pipe fabrication provides us with a wealth of skill and expertise to draw

from for unparalleled quality in manufacturing custom pipe, fittings, and accessories.

As the only Canadian manufacturer of custom, welded stainless steel piping, we are proud to say that all of our products are manufactured in Canada, using only North American inputs and materials, fully traceable to the original mills, from suppliers we trust to uphold our quality standards.

Douglas Barwick's business focuses on engineered projects, spooling and end-user requirements for pipe and fittings. With an experienced workforce, we can manage both small- and large-scale contracts for companies in the mining, oil and gas, renewable energy, and forestry sectors, among others.

PRODUCTS

Douglas Barwick Inc. stands at the North American forefront in terms of standards, diversity and product range. Items listed in this standard products catalogue are commonly kept in stock in grades 304L & 316L and in the thicknesses common to the North American market.

Douglas Barwick's expertise extends far beyond standard products. It also includes the fabrication of piping products that meet our customers special needs in terms of size, thickness and special alloys such as 317L, 904L, 254SMO, Duplex, Monel, Inconel, etc.

Specifications include ASTM, A778 and A774 with larger diameter pipe manufactured in single random 20 ft lengths. Our pipe and fittings are acid pickled to conform with specification ASTM A380. Upon request our stainless steel products may include NSF 61 and G372 certification.

DRAWING

Douglas Barwick Inc. can provide isometric drawings per customer's specifications at a low cost, using both CADPIPE and AUTOCAD software. This service allows our customer better planning of priorities and improves production lead-time. Shop sketches are also prepared for every spool assembly, facilitating assembly operations and eliminating most errors that could otherwise take place.

SPOOLING / FABRICATION

Douglas Barwick Inc. offers shop spooling of pipelines in accordance with drawings and specifications. This is, by far, more economical than field assembly and assures a timely supply and quality of workmanship. When our companies supply spooling, several additional cost savings are achieved:

- Scrap reduction.
- Site inventory control
- Re -stocking charges & transportation of surplus material in both directions.

We also offer our expertise in the following areas:

- ASME B31.1 & B31.3
- Cotton ball finish
- Capacity for major projects
- Custom made pieces manufactured to our customer's specifications

QUALITY ASSURANCE

Douglas Barwick values product quality and customer satisfaction. Our technicians design quality assurance procedures and ensure that they are rigorously applied.

We have quality personnel on site to ensure that inspections of both material and workmanship are carried out in accordance with the required quality assurance programs.



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O.D. ASTM A778 & A774

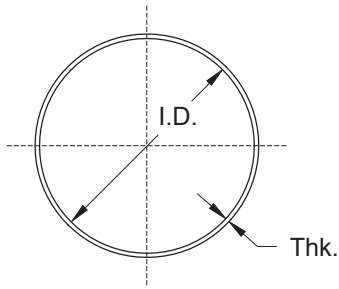
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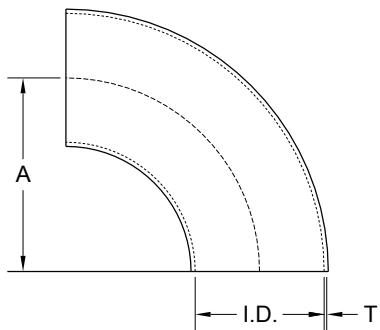
I.D. Inside Diameter		Thickness and Weight									
		14 gauge 0.078 in / 2.0mm		11 gauge 0.125 in / 3.2 mm		10 gauge 0.140 in / 3.6 mm		3/16" 0.1875 in / 4.7 mm		1/4" 0.25 in / 6.3 mm	
Inches	mm	lb / ft	kg / m	lb / ft	kg / m	lb / ft	kg / m	lb / ft	kg / m	lb / ft	kg / m
1 1/2	38	1.3	2.0	2.2	3.3						
2	51	1.8	2.6	2.9	4.3						
2 1/2	64	2.2	3.3	3.6	5.3						
3	76	2.6	3.9	4.3	6.4						
4	102	3.5	5.2	5.6	8.4						
5	127	4.3	6.4	7.0	10.4						
6	152	5.2	7.7	8.4	12.5						
8	203	6.9	10.2	11.1	16.5						
10	254			13.8	20.6						
12	305			16.6	24.7						
14	356			19.3	28.7	21.6	32.2				
16	406			22.0	32.8	24.7	36.7	33.1	49.3		
18	457			24.8	36.9	27.7	41.3	37.2	55.3		
20	508			27.5	40.9	30.8	45.8	41.3	61.4	55.3	82.4
24	610			33.0	49.1			49.5	73.6	66.3	98.6
30	762			41.2	61.3			61.7	91.9	82.7	123.0
36	914			49.4	73.5			74.0	110.1	99.1	147.4
42	1067			57.6	85.7			86.3	128.4	115.5	171.8
48	1219			65.8	97.9			98.5	146.6	131.9	196.3

General Notes:

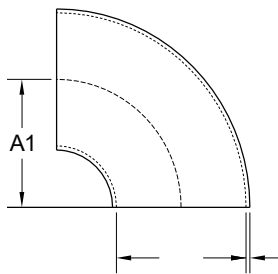
- Material: Stainless Steel 304L, 316L, 317L. Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Other diameter and thickness available upon request.



I.D. 90° Elbows ASTM A774



90° Elbow
Long Radius



90° Elbow
Short Radius

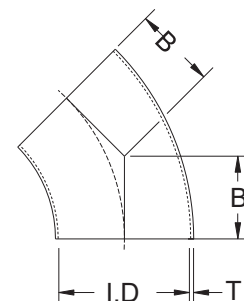
I.D. Inside Diameter		T [Nominal Thickness]			90° Elbow, Long Radius				90° Elbow, Short Radius			
					A		Weight		A1		Weight	
In	mm	Gauge	In	mm	In	mm	lb	kg	in	mm	lb	kg
1 1/2	38	14 11	0.078 0.125	2.0 3.2	2.250	57	0.4 0.7	0.2 0.3				
2	51	14 11	0.078 0.125	2.0 3.2	3.000	76	0.7 1.1	0.3 0.5				
2 1/2	64	14 11	0.078 0.125	2.0 3.2	3.750	95	1.1 1.8	0.5 0.8				
3	76	14 11	0.078 0.125	2.0 3.2	4.500	114	1.5 2.5	0.7 1.1				
4	102	14 11	0.078 0.125	2.0 3.2	6.000	152	2.7 4.4	1.2 2.0				
5	127	14 11	0.078 0.125	2.0 3.2	7.500	191	4.3 6.9	1.9 3.1				
6	152	14 11	0.078 0.125	2.0 3.2	9.000	229	6.1 9.9	2.8 4.5				
8	203	14 11	0.078 0.125	2.0 3.2	12.000	305	10.8 17.4	4.9 7.9	8.000	203	~ 11.6	~ 5.3
10	254	11	0.125 0.188	3.2 4.8	15.000	381	27.2 53.1	12.3 24.1	10.000	254	18.1 53.3	8.2 24.2
12	305	11	0.125 0.188	3.2 4.8	18.000	457	39 77.6	17.7 35.2	12.000	305	26 51.7	11.8 23.5
14	356	11 3/16"	.125 .188	3.2 4.8	21.000	533	53.1 79.9	24.1 36.3	14.000	356	~ 53.3	~ 24.2
16	406	11 10 3/16"	.125 .140 .188	3.2 3.6 4.8	24.000	610	69.2 77.6 104.2	31.4 35.2 47.3	16.000	406	~ 51.7 69.5	~ 23.5 31.5
18	457	11 3/16" 1/4"	.125 .188 .250	3.2 4.8 6.4	27.000	686	87.5 131.8 176.3	39.7 59.8 80.0	18.000	457	~ 87.8 117.5	~ 39.8 53.3
20	508	11 3/16" 1/4"	.125 .188 .250	3.2 4.8 6.4	30.000	762	108.0 162.5 217.3	49.0 73.7 98.6	20.000	508	~ 108.3 144.9	~ 49.1 65.7
24	610	3/16" 1/4"	.188 .250	4.8 6.4	36.000	914	233.6 312.3	106.0 141.7	24.000	610	~ 208.2	~ 94.5
30	762	3/16" 1/4"	.188 .250	4.8 6.4	45.000	1143	364.5 487.0	165.3 220.9	30.000	762	~ 324.7	~ 147.3

General Notes:

- Material: Stainless Steel 304L, 316L, 317., Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.

I.D. 45° Elbows ASTM A774

I.D. Inside Diameter		T [Nominal Thickness]			45° Elbow				S/R 45° Elbow			
					B		Weight		B		Weight	
In	mm	Gauge	In	mm	In	mm	lb	kg	In	mm	Lb	kg
1 1/2	38	14	0.078	2.0	1.120	28	0.2	0.1				
		11	0.125	3.2			0.3	0.1				
2	51	14	0.078	2.0	1.375	35	0.3	0.2				
		11	0.125	3.2			0.6	0.3				
2 1/2	64	14	0.078	2.0	1.750	44	0.5	0.2				
		11	0.125	3.2			0.9	0.4				
3	76	14	0.078	2.0	2.000	51	0.8	0.4				
		11	0.125	3.2			1.3	0.6				
4	102	14	0.078	2.0	2.500	64	1.4	0.6				
		11	0.125	3.2			2.2	1.0				
5	127	14	0.078	2.0	3.120	79	2.1	1.0				
		11	0.125	3.2			3.4	1.6				
6	152	14	0.078	2.0	3.750	95	3.1	1.4				
		11	0.125	3.2			4.9	2.2				
8	203	14	0.078	2.0	5.000	127	5.4	2.5	4.000	102	~	~
		11	0.125	3.2			8.7	4.0			5.8	2.7
10	254	11	0.125	3.2	6.250	159	13.6	6.2	5.000	127	9.1	4.1
12	305	11	0.125	3.2	7.500	191	19.5	8.9	6.000	153	13	5.9
14	356	11	0.125	3.2	8.750	222	26.5	12.0	7.000	178	~	~
		3/16"	0.188	4.8			40.0	18.1			20.0	9.1
16	406	11	0.125	3.2	10.000	254	34.6	15.7	8.000	203	17.3	7.9
		10	0.140	3.6			38.8	17.6			19.4	8.8
		3/16"	0.188	4.8			52.1	23.6			26.1	11.8
18	457	11	0.125	3.2	11.250	286	43.8	19.9	9.000	229	21.9	10.0
		3/16"	0.188	4.8			65.9	29.9			33.0	15.0
		1/4"	0.250	6.4			88.1	40.0			44.1	20.0
20	508	11	0.125	3.2	12.500	318	54.0	24.5	10.000	254	~	~
		3/16"	0.188	4.8			81.3	36.9			54.2	19.9
		1/4"	0.250	6.4			108.7	49.3			72.5	32.9
24	610	3/16"	0.188	4.8	15.000	381	116.8	53.0	12.000	305	116.8	53.0
		1/4"	0.250	6.4			156.2	70.8			156.2	70.8
30	762	3/16"	0.188	4.8	18.625	473	182.3	82.7	15.000	361	159.7	72.4
		1/4"	0.250	6.4			243.5	110.5			198.9	90.2



General Notes:

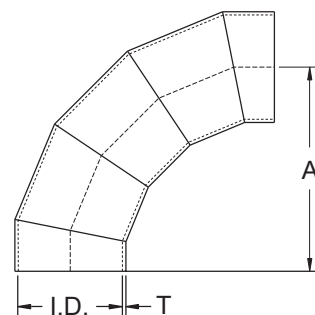
- Material: Stainless Steel 304L, 316L, 317L. Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.

I.D. Mitred Elbows ASTM A 774 Weight Table

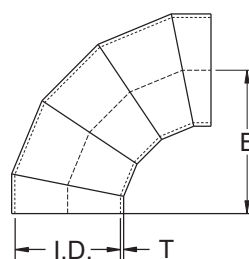


I.D. Inside Diameter		T	90° Elbow Long Radius		90° Elbow Short Radius		45° Elbow	
In	mm	Gauge	lb	kg	lb	kg	lb	kg
1 1/2	38	14	1.1	0.5	0.7	0.3	0.5	0.2
		11	1.8	0.8	1.2	0.5	0.8	0.4
2	51	14	1.5	0.7	1.1	0.5	0.7	0.3
		11	2.5	1.1	1.7	0.8	1.2	0.5
3	64	14	2.0	0.9	1.5	0.7	1.1	0.5
		11	3.3	1.5	2.4	1.1	1.7	0.8
3	76	14	2.7	1.2	1.9	0.9	1.3	0.6
		11	4.4	2.0	3.1	1.4	2.1	0.9
4	102	14	4.2	1.9	3.0	1.4	2.2	1.0
		11	6.7	3.1	4.9	2.2	3.6	1.6
5	127	14	5.9	2.7	4.3	2.0	3.1	1.4
		11	9.5	4.3	7.0	3.2	5.0	2.3
6	152	14	7.9	3.6	5.5	2.5	4.1	1.9
		11	12.8	5.8	8.9	4.0	6.7	3.0
8	203	14	12.8	5.8	8.2	3.7	6.1	2.8
		11	20.6	9.4	13.3	6.0	9.8	4.4
10	254	11	30.3	13.7	20.2	9.2	14.4	6.5
12	305	11	41.7	18.9	26.4	12.0	19.9	9.0
14	356	11	55.0	25.0	35.8	16.3	23.2	10.5
		10	61.7	28.0	40.2	18.2	26.0	11.8
16	406	11	70.1	31.8	43.8	19.9	28.2	12.8
		10	78.6	35.7	49.1	22.3	31.6	14.3
18	457	3/16	105.6	47.9	66.0	29.9	42.5	19.3
		11	87.0	39.5	54.2	24.6	33.7	15.3
20	508	10	97.6	44.3	60.8	27.6	37.8	17.1
		3/16	131.0	59.4	81.6	37.0	50.7	23.0
24	610	11	148.6	67.4	96.2	43.6	58.1	26.3
		10	166.6	75.6	107.8	48.9	65.1	29.5
30	762	3/16	223.5	101.4	144.6	65.6	87.3	39.6
		1/4	298.8	135.6	193.4	87.7	116.7	52.9
36	914	3/16	340.5	154.5	205.1	93.1	148.6	67.4
		1/4	455.0	206.4	274.1	124.3	198.5	90.0
42	1067	3/16	482.0	218.6	275.4	124.9	213.7	97.0
		1/4	643.8	292.0	367.9	166.9	285.5	129.5
48	1219	3/16	647.9	293.9	355.5	161.3	290.7	131.9
		1/4	865.2	392.5	474.7	215.3	388.2	176.1
		3/16	838.3	380.3	445.4	202.0	379.5	172.1
		1/4	1119.2	507.7	594.6	269.7	506.6	229.8

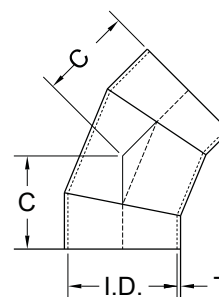
I.D. Inside Diameter		T [Nominal Thickness]			90° Elbow Long Radius		90° Elbow Short Radius		45° Elbow	
					A		B		C	
In	mm	Gauge	In	mm	In	mm	In	mm	In	mm
1 1/2	38	14	0.078	2.0	6.000	152	4.000	102	2.250	57
		11	0.125	3.2						
2	51	14	0.078	2.0	6.500	165	4.500	114	2.500	64
		11	0.125	3.2						
2 1/2	64	14	0.078	2.0	7.000	178	5.000	127	3.000	76
		11	0.125	3.2						
3	76	14	0.078	2.0	7.750	197	5.500	140	3.000	76
		11	0.125	3.2						
4	102	14	0.078	2.0	9.000	229	6.500	165	4.000	102
		11	0.125	3.2						
5	127	14	0.078	2.0	10.250	260	7.500	191	4.500	114
		11	0.125	3.2						
6	152	14	0.078	2.0	11.500	292	8.000	203	5.000	127
		11	0.125	3.2						
8	203	14	0.078	2.0	14.000	356	9.000	229	5.500	140
		11	0.125	3.2						
10	254	11	0.125	3.2	16.500	419	11.000	279	6.500	165
12	305	11	0.125	3.2	19.000	483	12.000	305	7.500	191
14	356	11	0.125	3.2	21.500	546	14.000	356	7.500	191
		10	0.140	3.6						
16	406	11	0.125	3.2	24.000	610	15.000	381	8.000	203
		10	0.140	3.6						
		3/16	0.188	4.8						
18	457	11	0.125	3.2	26.500	673	16.500	419	8.500	216
		10	0.140	3.6						
		3/16	0.188	4.8						
20	508	11	0.125	3.2	29.000	737	18.000	457	9.500	241
		10	0.140	3.6						
		3/16	0.188	4.8						
		1/4	0.250	6.4						
24	610	11	0.125	3.2	34.000	864	22.000	559	11.000	279
		10	0.140	3.6						
		3/16	0.188	4.8						
		1/4	0.250	6.4						
30	762	3/16	0.188	4.8	41.500	1054	25.000	635	15.000	381
		1/4	0.250	6.4						
36	914	3/16	0.188	4.8	49.000	1245	28.000	711	18.000	457
		1/4	0.250	6.4						
42	1067	3/16	0.188	4.8	56.500	1435	31.000	787	21.000	533
		1/4	0.250	6.4						
48	1219	3/16	0.188	4.8	64.000	1626	34.000	864	24.000	610
		1/4	0.250	6.4						



90° Mitred Elbow
Long Radius



90° Mitred Elbow
Short Radius

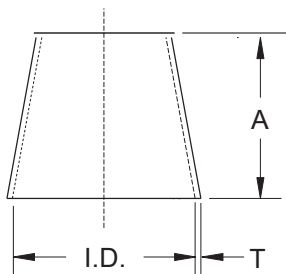


45° Mitred Elbow

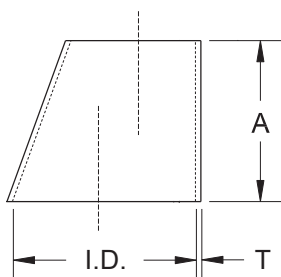
General Notes:

- Material: Stainless Steel 304L, 316L, 317L. Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Other diameter and thickness available upon request.

I.D. Reducers ASTM A774



Concentric reducer



Eccentric Reducer

I.D. Inside Diameter		T [Nominal Thickness]			A		Weight	
In	mm	Gauge	In	mm	In	mm	lb	kg
1 1/2	38	14	0.078	2.0	4.500	114	0.5	0.2
		11	0.125	3.2			0.8	0.4
2	51	14	0.078	2.0	5.000	127	0.7	0.3
		11	0.125	3.2			1.2	0.5
2 1/2	64	14	0.078	2.0	5.500	140	1.0	0.5
		11	0.125	3.2			1.6	0.7
3	76	14	0.078	2.0	6.000	152	1.3	0.6
		11	0.125	3.2			2.1	1.0
4	102	14	0.078	2.0	7.000	178	2.0	0.9
		11	0.125	3.2			3.3	1.5
5	127	14	0.078	2.0	8.000	203	2.9	1.3
		11	0.125	3.2			4.7	2.1
6	152	14	0.078	2.0	9.000	229	3.9	1.8
		11	0.125	3.2			6.3	2.8
8	203	14	0.078	2.0	11.000	279	6.3	2.9
		11	0.125	3.2			10.2	4.6
10	254	11	0.125	3.2	12.000	305	13.8	6.3
		11	0.125	3.2			19.3	8.8
12	305	11	0.125	3.2	14.000	356	25.7	11.7
		10	0.140	3.6			28.9	13.1
14	356	11	0.125	3.2	16.000	406	33.1	15.0
		10	0.140	3.6			37.1	16.8
16	406	11	0.125	3.2	18.000	457	49.8	22.6
		3/16	0.188	4.8			59.0	26.8
18	457	11	0.125	3.2	19.000	483	39.2	17.8
		10	0.140	3.6			44.0	19.9
20	508	3/16	0.188	4.8	20.000	508	51.4	23.3
		1/4	0.250	6.4			69.0	31.3
24	610	11	0.125	3.2	24.000	610	92.2	41.8
		10	0.140	3.6			132.6	60.1
30	762	3/16	0.188	4.8	30.000	762	154.7	70.2
		1/4	0.250	6.4			206.7	93.8
36	914	3/16	0.188	4.8	36.000	914	222.5	100.9
		1/4	0.250	6.4			297.2	134.8
42	1067	3/16	0.188	4.8	42.000	1067	302.7	137.3
		1/4	0.250	6.4			404.2	183.3
48	1219	3/16	0.188	4.8	48.000	1219	395.1	179.2
		1/4	0.250	6.4			527.5	239.3

General Notes:

- Material: Stainless Steel 304L, 316L, 317L. Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Other diameter and thickness available upon request.

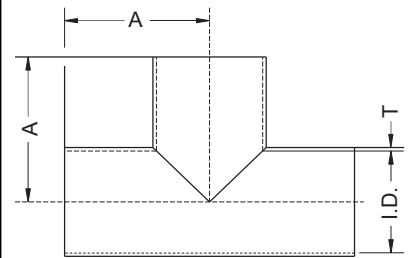
I.D. Inside Diameter		T [Nominal Thickness]			A		Weight			
							Tee		Cross	
In	mm	Gauge	In	mm	In	mm	lb	kg	lb	kg
1 1/2	38	14	0.078	2.0	4.000	102	1.3	0.6	1.8	0.8
		11	0.125	3.2			2.2	1.0	3.0	1.3
2	51	14	0.078	2.0	4.500	114	2.0	0.9	2.7	1.2
		11	0.125	3.2			3.3	1.5	4.4	2.0
2 1/2	64	14	0.078	2.0	5.000	127	2.7	1.2	3.7	1.7
		11	0.125	3.2			4.5	2.0	6.0	2.7
3	76	14	0.078	2.0	5.500	140	3.6	1.6	4.8	2.2
		11	0.125	3.2			5.9	2.7	7.8	3.6
4	102	14	0.078	2.0	6.500	165	5.7	2.6	7.5	3.4
		11	0.125	3.2			9.2	4.2	12.2	5.5
5	127	14	0.078	2.0	7.500	191	8.1	3.7	10.8	4.9
		11	0.125	3.2			13.1	6.0	17.5	7.9
6	152	14	0.078	2.0	8.000	203	10.4	4.7	13.8	6.3
		11	0.125	3.2			16.7	7.6	22.3	10.1
8	203	14	0.078	2.0	9.000	229	15.5	7.0	20.7	9.4
		11	0.125	3.2			25.0	11.4	33.3	15.1
10	254	11	0.125	3.2	11.000	279	38.1	17.3	50.7	23.0
12	305	11	0.125	3.2	12.000	305	49.7	22.6	66.3	30.1
14	356	11	0.125	3.2	14.000	356	67.6	30.7	90.1	40.9
		10	0.140	3.6			75.7	34.4	101.0	45.8
16	406	11	0.125	3.2	15.000	381	82.6	37.6	110.2	50.0
		10	0.140	3.6			92.6	42.1	123.5	56.0
18	457	3/16	0.188	4.8			124.4	56.6	165.9	75.3
18	457	11	0.125	3.2	16.500	419	102.2	46.4	136.2	61.8
		10	0.140	3.6			114.5	52.1	152.7	69.3
20	508	3/16	0.188	4.8			153.8	69.9	205.1	93.0
20	508	11	0.125	3.2	18.000	457	123.8	56.3	165.0	74.9
		10	0.140	3.6			138.7	63.1	185.0	83.9
24	610	3/16	0.188	4.8			186.2	84.6	248.3	112.6
		1/4	0.250	6.4			249.1	113.2	332.1	150.6
24	610	11	0.125	3.2	22.000	559	181.3	82.4	241.8	109.7
		10	0.140	3.6			203.2	92.4	271.0	122.9
30	762	3/16	0.188	4.8			272.7	124.0	363.6	164.9
		1/4	0.250	6.4			364.5	165.7	486.1	220.5
30	762	3/16	0.188	4.8	25.000	635	386.8	175.8	515.7	233.9
		1/4	0.250	6.4			516.7	234.9	689.0	312.5
36	914	3/16	0.188	4.8	28.000	711	519.3	236.0	692.4	314.1
		1/4	0.250	6.4			693.5	315.2	924.7	419.5
42	1067	3/16	0.188	4.8	31.000	787	670.2	304.6	893.6	405.3
		1/4	0.250	6.4			894.9	406.8	1193.3	541.3
48	1219	3/16	0.188	4.8	34.000	864	839.6	381.6	1119.5	507.8
		1/4	0.250	6.4			1121.0	509.5	1494.6	678.0

General Notes:

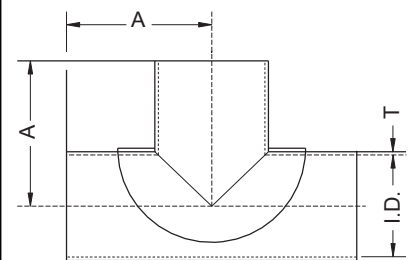
- Material: Stainless Steel 304L, 316L, 317L. Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Other diameter and thickness available upon request.

Note:

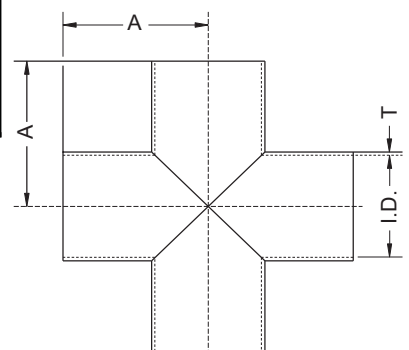
- The addition of reinforcement may be necessary. Upon request, the verification can be performed by our quality department. Please contact a technical representative for more information.



Tee

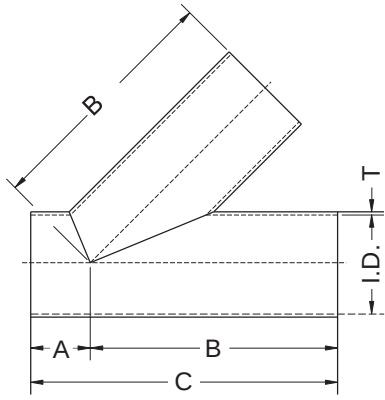


Tee with reinforcement

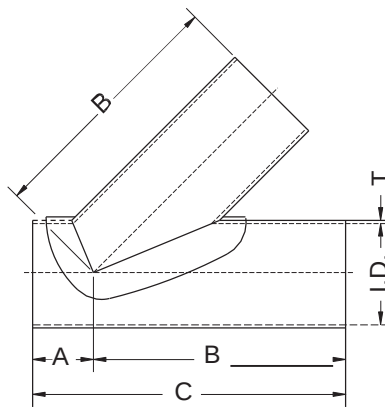


Cross [Note (1)]

I.D. Laterals ASTM A774



45° Lateral



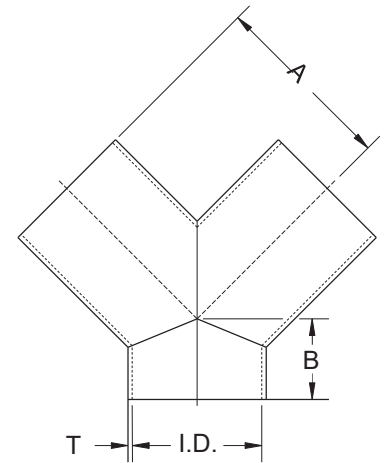
45° Lateral
with reinforcement

I.D.		T			A		B		C		Weight	
Inside Diameter		[Nominal Thickness]										
In	mm	Gauge	In	mm	In	mm	In	mm	In	mm	lb	kg
3	76	14	0.078	2.0	3.000	76	10.000	254	13.000	330	5.0	2.3
		11	0.125	3.2							8.2	3.7
4	102	14	0.078	2.0	3.000	76	12.000	305	15.000	381	7.8	3.5
		11	0.125	3.2							2.7	5.8
5	127	14	0.078	2.0	3.500	89	13.500	343	17.000	432	11.0	5.0
		11	0.125	3.2							17.8	8.1
6	152	14	0.078	2.0	3.500	89	14.500	368	18.000	457	14.0	6.4
		11	0.125	3.2							22.7	10.3
8	203	14	0.078	2.0	4.500	114	17.500	445	22.000	559	22.7	10.3
		11	0.125	3.2							36.5	16.6
10	254	11	0.125	3.2	5.000	127	20.500	521	25.500	648	53.0	24.1
12	305	11	0.125	3.2	5.500	140	24.500	622	30.000	762	75.3	34.1
14	356	11	0.125	3.2	6.000	152	27.000	686	33.000	838	96.5	43.8
		10	0.140	3.6							108.2	49.1
16	406	11	0.125	3.2	6.500	165	30.000	762	36.500	927	122.1	55.4
		10	0.140	3.6							136.9	62.1
18	457	3/16	0.188	4.8	7.000	187	32.000	813	39.000	1000	183.9	83.4
		11	0.125	3.2							146.6	66.5
20	508	10	0.140	3.6	8.000	203	35.000	889	43.000	1092	164.3	74.5
		3/16	0.188	4.8							220.6	100.1
24	610	11	0.125	3.2	9.000	229	40.500	1029	49.500	1258	178.8	81.1
		10	0.140	3.6							200.4	90.9
30	762	3/16	0.188	4.8	10.000	254	49.000	1245	59.000	1499	269.0	122.0
		1/4	0.250	6.4							2598.0	163.2
36	914	11	0.125	3.2	9.000	229	40.500	1029	49.500	1258	247.3	112.2
		10	0.140	3.6							277.1	125.7
42	1067	3/16	0.188	4.8	10.000	254	49.000	1245	59.000	1499	371.9	168.7
		1/4	0.250	6.4							497.1	225.5
48	1219	3/16	0.188	4.8	10.000	254	49.000	1245	59.000	1499	556.9	252.6
		1/4	0.250	6.4							744.1	337.5
48	1219	3/16	0.188	4.8	24.000	610	60.000	1524	84.000	2134	890.2	403.8
		1/4	0.250	6.4							1188.9	539.3
48	1219	3/16	0.188	4.8	26.000	660	69.000	1753	95.000	2413	1181.9	536.1
		1/4	0.250	6.4							1578.2	715.9
48	1219	3/16	0.188	4.8	27.000	686	77.000	1956	104.000	2642	1489.9	675.8
		1/4	0.250	6.4							1989.1	902.3

General Notes:

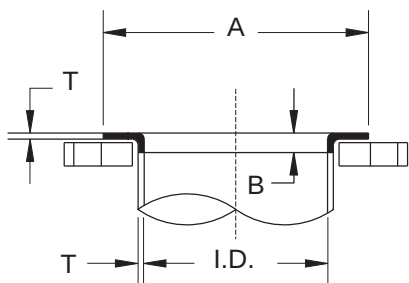
- Material: Stainless Steel 304L, 316L, 317L. Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Other diameter and thickness available upon request.

I.D. Inside Diameter		T [Nominal Thickness]			A		B		Weight	
In	mm	Gauge	In	mm	In	mm	In	mm	lb	kg
1 1/2	38	14	0.078	2.0	3.375	86	2.000	51	1.0	0.4
		11	0.125	3.2					1.6	0.7
2	51	14	0.078	2.0	4.500	114	2.500	64	1.7	0.8
		11	0.125	3.2					2.8	1.3
2 1/2	64	14	0.078	2.0	5.000	127	2.500	64	2.3	1.0
		11	0.125	3.2					3.7	1.7
3	76	14	0.078	2.0	5.500	140	3.000	76	3.1	1.4
		11	0.125	3.2					5.0	2.3
4	102	14	0.078	2.0	6.500	165	3.000	76	4.6	2.1
		11	0.125	3.2					7.5	3.4
5	127	14	0.078	2.0	7.500	191	3.500	89	6.7	3.0
		11	0.125	3.2					10.8	4.9
6	152	14	0.078	2.0	8.000	203	3.500	89	8.4	3.8
		11	0.125	3.2					13.6	6.2
8	203	14	0.078	2.0	9.000	229	4.500	114	12.9	5.9
		11	0.125	3.2					20.8	9.4
10	254	11	0.125	3.2	11.000	279	5.000	127	31.1	14.1
12	305	11	0.125	3.2	12.000	305	5.500	140	40.7	18.5
14	356	11	0.125	3.2	14.000	356	6.000	152	54.7	24.8
		10	0.140	3.6					61.3	27.8
16	406	11	0.125	3.2	15.000	381	6.500	165	67.0	30.4
		10	0.140	3.6					75.1	34.1
		3/16	0.188	4.8					100.9	45.8
18	457	11	0.125	3.2	16.500	419	7.000	178	82.6	37.5
		10	0.140	3.6					92.5	42.0
		3/16	0.188	4.8					124.3	56.4
20	508	11	0.125	3.2	18.000	457	8.000	203	100.8	45.7
		10	0.140	3.6					113.0	51.3
		3/16	0.188	4.8					151.7	68.8
		1/4	0.250	6.4					202.9	92.1
24	610	11	0.125	3.2	22.000	559	9.000	229	145.6	66.1
		10	0.140	3.6					163.2	74.0
		3/16	0.188	4.8					219.0	99.3
		1/4	0.250	6.4					292.7	132.8
30	762	3/16	0.188	4.8	25.000	635	10.000	254	309.4	140.3
		1/4	0.250	6.4					413.4	187.5
36	914	3/16	0.188	4.8	28.000	711	24.000	610	494.5	224.3
		1/4	0.250	6.4					660.5	299.6
42	1067	3/16	0.188	4.8	31.000	787	26.000	660	634.2	287.7
		1/4	0.250	6.4					846.8	384.1
48	1219	3/16	0.188	4.8	34.000	864	27.000	686	782.0	354.7
		1/4	0.250	6.4					1044.0	473.6

**General Notes:**

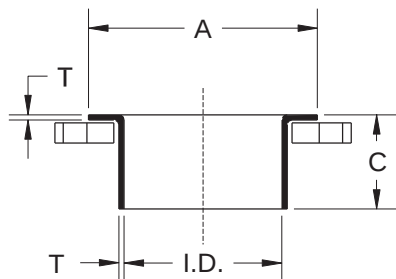
- Material: Stainless Steel 304L, 316L, 317L. Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Other diameter and thickness available upon request.
- The addition of reinforcement may be necessary. Upon request, the verification can be performed by our quality department. Please contact a technical representative for more information.

I.D. Pressed Collars ASTM A774



Pressed Collars

I.D. Inside Diameter		T [Nominal Thickness]			A		B		Weight	
In	mm	Gauge	In	mm.	In	mm	In	mm	lb	kg
1 1/2	38	11	0.125	3.2	2.875	73	0.625	16	0.2	0.1
2	51	11	0.125	3.2	3.500	89	0.625	16	0.3	0.1
2 1/2	64	11	0.125	3.2	4.000	102	0.625	16	0.4	0.2
3	76	11	0.125	3.2	5.000	127	0.625	16	0.6	0.3
4	102	11	0.125	3.2	6.500	165	0.625	16	0.9	0.4
5	127	11	0.125	3.2	7.500	191	0.625	16	1.0	0.5
6	152	11	0.125	3.2	8.500	216	0.625	16	1.3	0.6
8	203	11	0.125	3.2	10.750	273	0.625	16	1.8	0.8
10	254	11	0.125	3.2	13.000	330	0.625	16	2.4	1.1
12	305	11	0.125	3.2	15.000	381	0.625	16	3.5	1.6
14	356	11	0.125	3.2	17.500	445	0.725	19	4.0	1.8
16	406	11	0.125	3.2	19.750	502	0.725	19	5.0	2.3



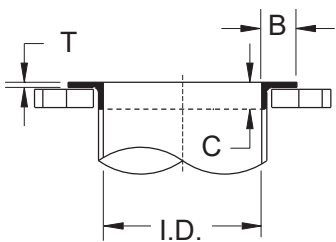
Long Neck Collars
Type "C"

I.D. [Inside Diameter]		T [Nominal Thickness]			A		C		Weight	
In	mm	Gauge	In	mm.	In	mm	In	mm	lb	kg
2	51	11	0.125	3.2	3.500	89	2.000	51	1.1	0.5
3	76	11	0.125	3.2	5.000	127	2.500	64	1.3	0.6
4	102	11	0.125	3.2	6.500	165	3.000	76	2.0	0.9
6	152	11	0.125	3.2	8.500	216	3.500	89	3.6	1.6
8	203	11	0.125	3.2	10.625	270	4.000	102	5.2	2.4
10	254	11	0.125	3.2	12.750	324	5.000	127	7.9	3.6
12	305	11	0.125	3.2	15.000	381	6.000	152	10.4	4.7

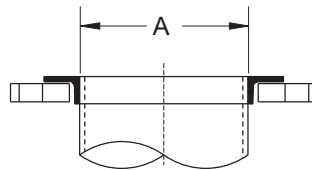
General Notes:

- Material: Stainless Steel 304L, 316L, 317L. Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.

I.D. Inside Diameter		A	Angle Dimension B-C-T		Weight	
In	mm		In	mm.	lb	kg
3	76	Outside of pipe diameter + 1/16" (1.8 mm)	3/4 x 3/4 x 1/8	19 x 19 x 3.2	0.5	0.2
4	102		1 x 1 x 1/8	25 x 25 x 3.2	0.8	0.4
5	127		1 x 1 x 1/8	25 x 25 x 3.2	1.0	0.5
6	152		1 x 1 x 1/8	25 x 25 x 3.2	1.3	0.6
			1 x 1 x 3/16	25 x 25 x 4.8	1.8	0.8
8	203		1 1/4 x 1 1/4 x 1/8	32 x 32 x 3.2	2.1	1.0
			1 1/4 x 1 1/4 x 3/16	32 x 32 x 4.8	3.2	1.4
10	254		1 1/2 x 1 1/2 x 1/8	38 x 38 x 3.2	2.6	1.2
			1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8	4.0	1.8
12	305		1 1/2 x 1 1/2 x 1/8	38 x 38 x 3.2	3.9	1.8
			1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8	5.7	2.6
14	356		1 1/2 x 1 1/2 x 1/8	38 x 38 x 3.2	4.5	2.0
			1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8	6.6	3.0
16	406		1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8	7.5	3.4
			1 1/2 x 1 1/2 x 1/4	38 x 38 x 6.3	9.8	4.4
18	457	Outside of pipe diameter + 1/8" (3.2 mm)	1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8	8.5	3.8
			1 1/2 x 1 1/2 x 1/4	38 x 38 x 6.3	11.0	5.0
20	508		1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8	9.4	4.3
			1 1/2 x 1 1/2 x 1/4	38 x 38 x 6.3	12.3	5.6
24	610		2 x 2 x 3/16	51 x 51 x 4.8	15.3	7.0
			2 x 2 x 1/4	51 x 51 x 6.3	20.0	9.1
30	762		2 x 2 x 1/4	51 x 51 x 6.3	25.1	11.4
			2 x 2 x 3/8	51 x 51 x 9.5	36.9	16.7
36	914		2 x 2 x 1/4	64 x 64 x 6.3	38.6	17.5
			2 x 2 x 3/8	64 x 64 x 9.5	65.0	29.5
42	1067		2 1/2 x 2 1/2 x 1/4	64 x 64 x 6.3	45.1	20.4
			2 1/2 x 2 1/2 x 3/8	64 x 64 x 9.5	75.9	34.4
48	1219		2 1/2 x 2 1/2 x 1/4	64 x 64 x 6.3	51.5	23.4
			2 1/2 x 2 1/2 x 3/8	64 x 64 x 9.5	86.7	39.3



Butt Weld Angle Collars
For use with Backing Flanges
See P. 2-15



Slip-on Angle Collars
For use with Slip-on Backing Flange
See P. 2-16

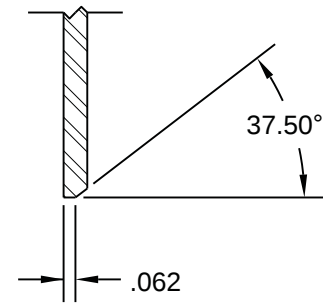
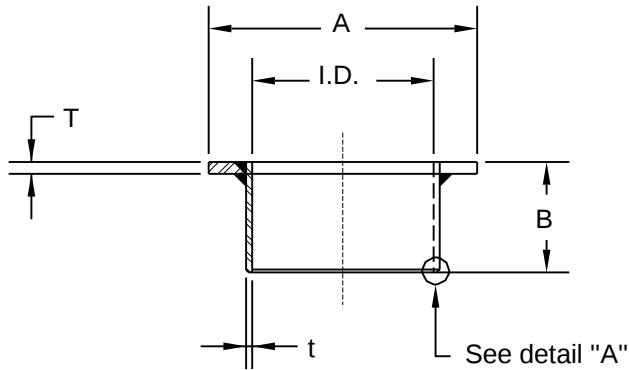


General Notes:

- Material: Stainless Steel 304L, 316L, 317L. Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Other diameter and thickness available upon request.

I.D. Stub-End "Type B"

I.D. Inside Diameter		t [Nominal Thickness]		T	A		B		Weight	
In	mm	In	mm.		In	mm	In	mm	lb	kg
6	152	0.125	3.2	"T" Not less than "t"	8.500	216	3.500	89	3.4	1.5
8	203	0.125	3.2		10.625	270	4.000	102	5.0	2.3
10	254	0.125	3.2		12.750	324	5.000	127	7.5	3.4
12	305	0.125	3.2		15.000	381	6.000	152	10.5	4.8
14	356	0.140	3.6		16.250	413	6.000	152	12.9	5.9
16	406	0.187	4.7		18.500	470	6.000	152	19.5	8.8
18	457	0.187	4.7		21.000	533	6.000	152	22.8	10.3
20	508	0.250	6.4		23.000	584	6.000	152	33.5	15.2
24	610	0.250	6.4		27.500	699	6.000	152	40.9	18.6
30	762	0.312	7.9		33.750	857	6.000	152	65.4	29.7
36	914	0.312	7.9		40.250	1022	6.000	152	96.5	43.8



Detail "A" [Note 1]



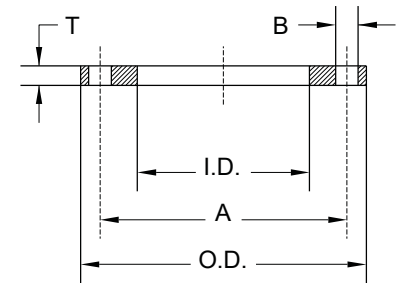
General Notes:

- Material: Stainless Steel 304L, 316L, 317L. Other alloys available upon request.
- [T] not less than [t].
- The two faces are machined, the contact face is machined between 125 and 250 microinches (AARH).
- Solution Annealing on request.
- Other diameter, thicknesses and sizes available upon request.

Note:

- Bevel for thickness (t) > 1/8" (3mm).

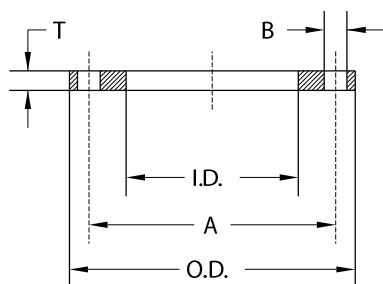
Nominal Diameter	O.D.	I.D.	A	# of holes	B	T	Weight
In mm	In mm	In mm	In mm		In mm	In mm	lb kg
1 1/2	5.000	2.000	3.875	4	0.625	0.750	3.6
38	127	51	98		16	19	1.6
2	6.000	2.500	4.750	4	0.750	0.750	4.7
51	152	64	121		19	19	2.1
2 1/2	7.000	3.000	5.500	4	0.750	0.750	6.2
64	178	76	140		19	19	2.8
3	7.500	3.625	6.000	4	0.750	0.750	7.1
76	191	92	152		19	19	3.2
4	9.000	4.625	7.500	8	0.750	0.750	9.5
102	229	117	191		19	19	4.3
5	10.000	5.625	8.500	8	0.875	0.750	10.7
127	254	143	216		22	19	4.9
6	11.000	6.625	9.500	8	0.875	0.750	12.3
152	279	168	241		22	19	5.6
8	13.500	8.625	11.750	8	0.875	0.750	17.7
203	343	219	298		22	19	8.0
10	16.000	10.750	14.250	12	1.000	1.000	30.2
254	406	273	362		25	25	13.7
12	19.000	12.750	17.000	12	1.000	1.000	43.5
305	483	324	432		25	25	19.7
14	21.000	14.750	18.750	12	1.125	1.125	55.0
356	533	375	476		29	29	24.9
16	23.500	16.750	21.250	16	1.125	1.125	66.0
406	597	425	540		29	29	29.9
18	25.000	18.750	22.750	16	1.250	1.250	81.4
457	635	476	578		32	32	36.9
20	27.500	20.875	25.000	20	1.250	1.250	86.3
508	699	530	635		32	32	39.1
24	32.000	24.875	29.500	20	1.375	1.375	121.0
610	813	632	749		35	35	54.9
30	38.750	31.000	36.000	28	1.375	1.625	176.0
762	984	787	914		35	41	79.8
36	46.000	37.000	42.750	32	1.625	1.625	237.0
914	1168	940	1086		41	41	107.5
42	53.000	43.000	49.500	36	1.625	1.750	337.0
1067	1346	1092	1257		41	44	152.9
48	59.500	49.000	56.000	44	1.625	2.000	455.0
1219	1511	1245	1422		41	51	206.4



General Notes:

- Material: Carbon Steel with chemical composition and mechanical strength equivalent to ASTM A 105.
- Finish: Galvanized to ASTM A 123.
- Drilling: 1 1/2" to 24" ASME B16.5 Class150, 30" to 48" ASME B16.47 Class150 serie "A".
- Suggested Maximum Working Pressure : See technical section.
- Other diameter and thickness available upon request.

I.D. Slip-on Backing Flanges

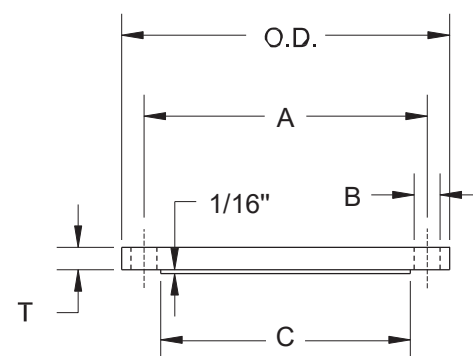


Nominal Diameter	O.D.	I.D.	A	# of holes	B	T	Weight
In mm	In mm	In mm	In mm		In mm	In mm	lb kg
3 76	7.500 191	3.875 98	6.000 152	4	0.750 19	0.750 19	7.1 3.2
4 102	9.000 229	4.875 124	7.500 191	8	0.750 19	0.750 19	9.5 4.3
5 127	10.000 254	5.875 149	8.500 216	8	0.875 22	0.750 19	10.7 4.9
6 152	11.000 279	6.875 175	9.500 241	8	0.875 22	0.750 19	12.3 5.6
8 203	13.500 343	8.875 225	11.750 298	8	0.875 22	0.750 19	17.7 8.0
10 254	16.000 406	11.000 279	14.250 362	12	1.000 25	1.000 25	30.2 13.7
12 305	19.000 483	13.000 330	17.000 432	12	1.000 25	1.000 25	43.5 19.7
14 356	21.000 533	15.000 381	18.750 476	12	1.125 29	1.125 29	55.0 24.9
16 406	23.500 597	17.000 432	21.250 540	16	1.125 29	1.125 29	66.0 29.9
18 457	25.000 635	19.250 489	22.750 578	16	1.250 32	1.250 32	81.4 36.9
20 508	27.500 699	21.375 543	25.000 635	20	1.250 32	1.250 32	86.3 39.1
24 610	32.000 813	25.375 645	29.500 749	20	1.375 35	1.375 35	121.0 54.9
30 762	38.750 984	31.750 806	36.000 914	28	1.375 35	1.625 41	176.0 79.8
36 914	46.000 1168	37.750 959	42.750 1086	32	1.625 41	1.625 41	237.0 107.5
42 1067	53.000 1346	43.750 1111	49.500 1257	36	1.625 41	1.750 44	337.0 152.9
48 1219	59.500 1511	49.750 1264	56.000 1422	44	1.625 41	2.000 51	455.0 206.4

General Notes:

- Material: Carbon Steel with chemical composition and mechanical strength equivalent to ASTM A 105.
- Finish: Galvanized to ASTM A 123.
- Drilling: 1 1/2" to 24" ASME B16.5 Class150, 30" to 48" ASME B16.47 Class150 serie "A".
- Suggested Maximum Working Pressure : See technical section.
- Other diameter and thickness available upon request.

Nominal Diameter	O.D.	A	# of holes	B	C	T	Weight
In mm	In mm	In mm		In mm	In mm	In mm	lb kg
1 1/2	5.000	3.875	4	0.625	3.000	0.750	4.3
38	127	98		16	76	19	2.0
2	6.000	4.750	4	0.750	3.500	0.750	6.2
51	152	121		19	89	19	2.8
2 1/2	7.000	5.500	4	0.750	4.500	0.750	8.5
64	178	140		19	114	19	3.9
3	7.500	6.000	4	0.750	5.000	0.750	9.8
76	191	152		19	127	19	4.4
4	9.000	7.500	8	0.750	6.500	0.750	14.0
102	229	191		19	165	19	6.4
5	10.000	8.500	8	0.875	7.375	0.750	17.6
127	254	216		22	187	19	8.0
6	11.000	9.500	8	0.875	8.375	0.750	21.0
152	279	241		22	213	19	9.5
8	13.500	11.750	8	0.875	10.625	0.750	32.2
203	343	298		22	270	19	14.6
10	16.000	14.250	12	1.000	13.000	1.000	58.0
254	406	362		25	330	25	26.3
12	19.000	17.000	12	1.000	15.625	1.000	83.1
305	483	432		25	397	25	37.7
14	21.000	18.750	12	1.125	17.250	1.125	113.0
356	533	476		29	438	29	51.3
16	23.500	21.250	16	1.125	19.750	1.125	142.0
406	597	540		29	502	29	64.4
18	25.000	22.750	16	1.250	21.125	1.250	179.0
457	635	578		32	537	32	81.2
20	27.500	25.000	20	1.250	23.375	1.250	217.5
508	699	635		32	594	32	98.7
24	32.000	29.500	20	1.375	27.750	1.375	323.0
610	813	749		35	705	35	146.5
30	38.750	36.000	28	1.375	34.250	1.500	530.0
762	984	914		35	870	38	240.4
36	46.000	42.750	32	1.625	40.750	1.500	755.0
914	1168	1086		41	1035	38	342.5
42	53.000	49.500	36	1.625	46.750	1.500	906.0
1067	1346	1257		41	1187	38	411.0
48	59.500	56.000	44	1.625	52.750	1.750	1334.0
1219	1511	1422		41	1340	44	605.1



General Notes:

- Material: Carbon Steel with chemical composition and mechanical strength equivalent to ASTM A 105 and 316L Stainless Steel liner.
- Finish: Galvanized to ASTM A 123.
- Drilling: 1 1/2" to 24" ASME B16.5 Class150, 30" to 48" ASME B16.47 Class150 serie "A".
- Suggested Maximum Working Pressure : See technical section.
- Other diameter and thickness available upon request.

Summary of specification

Our NPS⁽¹⁾ (Nominal Pipe Size) pipes and fittings in austenitic stainless steel are manufactured as per specification ASTM A 778 for pipe and ASTM A 774 for fittings.

With our high-tech equipment, pipe and fittings offer an excellent price/quality ratio. Pipe and fittings in inventory of this class are manufactured from ASTM A 240 304L & 316L base material. Other alloys are available upon request.

Pipes and fittings manufactured as per ASTM A778 & ASTM A774 specifications are commonly used in pulp and paper mills, water treatment plants and other industries where corrosion resistance is not essential⁽²⁾.

Longitudinal seams are welded as per our qualified welding procedures using automatic or semi-automatic state of the art plasma welding torches in a single or double set-up. This welding procedure reduces greatly the effects of carbide reprecipitation in the heated affected zone.

Pipe and fittings can be supplied in a wide range of diameters and wall thicknesses.

For each lot of pipe, a tensile, reverse, forward bend test is performed.

Welded elbows can be supplied as smooth flow or mitered construction; tees, crosses and laterals are supplied as nozzle-welded. Reducers are supplied as either conical or bell-shaped.

Dimensions and tolerances of fabricated fittings are in the technical section, see (P.7-6). Special fittings can be supplied to customer design and size when required.

Only visual examination is performed on fitting.

Pipe and fittings are also pickled and passivated as per ASTM A 380 to maintain corrosion resistance and to prevent surface discoloration from free iron oxidation.

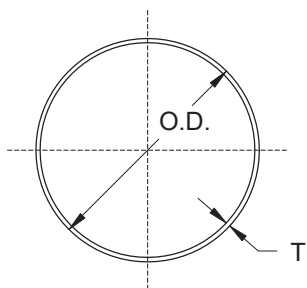
Base metal analysis is traceable to the original mill certificates.

As per ASTM A 778 & A 774, tolerance of nominal thickness permissible shall be $\pm 12.5\%$

Pipe and fittings are normally furnished in square cut ends but can also be provided with beveled ends.

Notes:

1. See also section 4.0 for NPS ASTM A 312 & ASTM A 403.
2. For pipe and fitting heat treatment please refer to section 4.0 NPS ASTM A 312 & A 403.

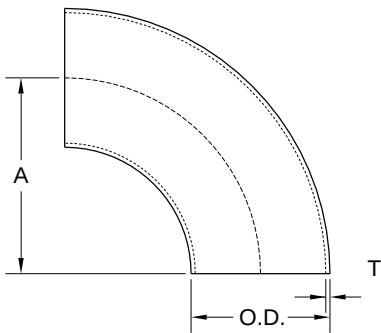


NPS Nominal Pipe Size		O.D. Outside Diameter		Nominal Thickness and Weight											
				Schedule 5S				Schedule 10S				Schedule 40S			
				T		Weight		T		Weight		T		Weight	
In	mm	In	mm	In	mm	lb / ft	kg / m	In	mm	lb / ft	kg / m	In	mm	lb / ft	kg / m
3/4	19	1.050	27	0.065	1.7	0.7	1.0	0.083	2.1	0.9	1.3	0.113	2.9	1.2	1.7
1	25	1.315	33	0.065	1.7	0.9	1.3	0.109	2.8	1.4	2.1	0.133	3.4	1.7	2.6
1 1/4	32	1.660	42	0.065	1.7	1.1	1.7	0.109	2.8	1.8	2.8	0.140	3.6	2.3	3.5
1 1/2	38	1.900	48	0.065	1.7	1.3	1.9	0.109	2.8	2.1	3.2	0.145	3.7	2.8	4.1
2	51	2.375	60	0.065	1.7	1.6	2.4	0.109	2.8	2.7	4.0	0.154	3.9	3.7	5.6
2 1/2	64	2.875	73	0.083	2.1	2.5	3.8	0.120	3.0	3.6	5.4	0.203	5.2	5.9	8.8
3	76	3.500	89	0.083	2.1	3.1	4.6	0.120	3.0	4.4	6.6	0.216	5.5	7.8	11.6
4	102	4.500	114	0.083	2.1	4.0	6.0	0.120	3.0	5.7	8.6	0.237	6.0	11.0	16.5
5	127	5.563	141	0.109	2.8	6.5	9.7	0.134	3.4	8.0	11.9	0.258	6.6	15.0	22.3
6	152	6.625	168	0.109	2.8	7.8	11.6	0.134	3.4	9.5	14.2	0.280	7.1	19.4	29.0
8	203	8.625	219	0.109	2.8	10.1	15.1	0.148	3.8	13.7	20.4	0.322	8.2	29.2	43.6
10	254	10.750	273	0.134	3.4	15.6	23.2	0.165	4.2	19.1	28.5	0.365	9.3	41.4	61.8
12	305	12.750	324	0.156	4.0	21.5	32.0	0.180	4.6	24.7	36.9	0.375	9.5	50.7	75.6
14	356	14.000	356	0.156	4.0	23.6	35.2	0.188	4.8	28.4	42.3	0.375	9.5	55.9	83.3
16	406	16.000	406	0.165	4.2	28.6	42.6	0.188	4.8	32.5	48.5	0.375	9.5	64.1	95.5
18	457	18.000	457	0.165	4.2	32.2	48.0	0.188	4.8	36.6	54.6	0.375	9.5	72.3	107.7
20	508	20.000	508	0.188	4.8	40.6	60.6	0.218	5.5	47.1	70.3	0.375	9.5	80.5	120.0
24	610	24.000	610	0.218	5.5	56.7	84.5	0.250	6.4	64.9	96.8	0.375	9.5	96.9	144.4
30	762	30.000	762	0.188	4.8	61.1	98.0	0.250	6.4	81.3	130.4	0.312	7.9	101.3	176.9
36	914	36.000	914	0.188	4.8	73.4	117.7	0.250	6.4	97.7	156.6	0.312	7.9	121.7	212.6
42	1067	42.000	1067	0.188	4.8	85.7	137.4	0.250	6.4	114.1	182.9	0.312	7.9	142.2	228.0
48	1219	48.000	1219	0.188	4.8	98.0	157.1	0.250	6.4	130.5	209.2	0.312	7.9	162.7	284.3

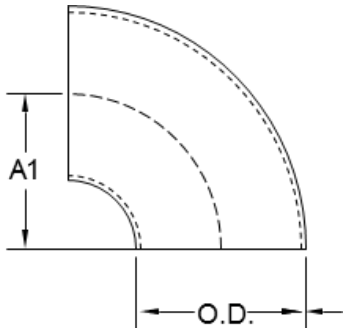
Notes:

1. Material: Stainless Steel 304L, 316L, 317L. Other alloys available upon request.
2. Suggested Maximum Working Pressure : See technical section.
3. Fabrication Tolerance: See technical section.
4. Other diameter and thickness available upon request.
5. Available in select gauge thickness.
6. Available in additional diameters.

NPS 90° Elbows ASTM A774



**90° Elbow
(Long Radius)**



**90° Elbow
(Short Radius)**

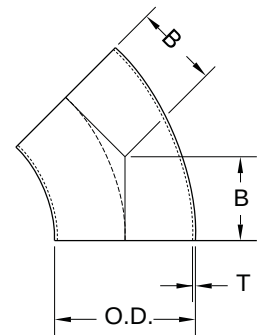
NPS Nominal Pipe Size		O.D. Outside Diameter		T [Nominal Thickness]			90° Elbow Long Radius				90° Elbow Short Radius			
							A		Weight		A1		Weight	
In	mm	In	mm	Ga / S h	In	mm	In	mm	lb	kg	In	mm	lb	kg
3	76	3.500	89	14	0.078	2.0	4.500	114	1.7	0.8				
				11	0.125	3.2			2.7	1.2				
				Sch 5S	0.083	2.1			1.8	0.8				
				Sch 10S	0.120	3.0			2.6	1.2				
4	102	4.500	114	14	0.078	2.0	6.000	152	3.0	1.3				
				11	0.125	3.2			4.7	2.1				
				Sch 5S	0.083	2.1			3.1	1.4				
				Sch 10S	0.120	3.0			4.5	2.0				
5	127	5.563	141	14	0.078	2.0	7.500	191	4.6	2.1				
				11	0.125	3.2			7.3	3.3				
				Sch 5S	0.109	2.8			6.4	2.9				
				Sch 10S	0.134	3.4			7.8	3.5				
6	152	6.625	168	14	0.078	2.0	9.000	229	6.6	3.0				
				11	0.125	3.2			10.5	4.7				
				Sch 5S	0.109	2.8			9.1	4.1				
				Sch 10S	0.134	3.4			11.2	5.1				
8	203	8.625	219	14	0.078	2.0	12.000	305	11.4	5.2	8.000	203	-----	-----
				11	0.125	3.2			18.2	8.3			-----	-----
				Sch 5S	0.109	2.8			15.9	7.2			10.6	4.8
				Sch 10S	0.148	3.8			21.5	9.8			14.4	6.5
10	254	10.750	273	11	0.125	3.2	15.000	381	28.5	12.9	10.000	254	-----	-----
				Sch 5S	0.134	3.4			30.5	13.9			20.4	9.2
				Sch 10S	0.165	4.2			37.5	17.0			25.0	11.3
12	305	12.750	324	11	0.125	3.2	18.000	457	40.7	18.4	12.000	305	-----	-----
				Sch 5S	0.156	4.0			50.6	23.0			33.7	15.3
				Sch 10S	0.180	4.6			58.3	26.4			38.9	17.6
14	356	14.000	356	11	0.125	3.2	21.000	533	52.1	23.6	14.000	356	-----	-----
				Sch 5S	0.156	4.0			64.9	29.4			43.3	19.6
				Sch 10S	0.188	4.8			78.0	35.4			52.0	23.6
16	406	16.000	406	11	0.125	3.2	24.000	610	68.2	30.9	16.000	406	-----	-----
				10	0.140	3.6			76.3	34.6			-----	-----
				Sch 5S	0.165	4.2			89.7	40.7			59.8	27.1
				Sch 10S	0.188	4.8			102.1	46.3			68.1	30.9
18	457	18.000	457	11	0.125	3.2	27.000	686	86.3	39.2	18.000	457	-----	-----
				10	0.140	3.6			96.6	43.8			-----	-----
				Sch 5S	0.165	4.2			113.7	51.6			75.8	34.4
				Sch 10S	0.188	4.8			129.4	58.7			86.3	39.1
20	508	20.000	508	10	0.140	3.6	30.000	762	119.4	54.1	20.000	508	-----	-----
				1/4"	0.250	6.4			212.0	96.2			-----	-----
				Sch 5S	0.188	4.8			159.5	72.3			106.3	48.2
				Sch 10S	0.218	5.5			185.1	84.0			123.4	56.0
24	610	24.000	610	10	0.140	3.6	36.000	914	172.1	78.1	24.000	610	-----	-----
				3/16"	0.188	4.8			230.0	104.3			-----	-----
				Sch 5S	0.218	5.5			267.1	121.2			178.1	80.8
				Sch 10S	0.250	6.4			305.9	138.8			203.9	92.5
30	762	30.000	762	10	0.140	3.6	45.000	1143	269.2	122.1	30.000	762	-----	-----
				3/16"	0.188	4.8			360.0	163.3			-----	-----
				Sch 5S	0.250	6.4			479.0	217.3			319.3	144.8
				Sch 10S	0.312	7.9			59 270.6				397.7	180.4

General Notes:

- Material: Stainless Steel 304L, 316L, 317L. Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Short Radius Elbows are available only in Sch 5S and 10S.

NPS 45° Elbows ASTM A774

NPS Nominal Pipe Size		O.D. Outside Diameter		T [Nominal Thickness]			45° Elbow				S/R 45°			
							B		Weight		B		Weight	
In	mm	In	mm	Ga / Sch	In	mm	In	mm	lb	kg	In	mm	lb	kg
3	76	3.500	89	14	0.078	2.0	1.875	48	0.9	0.4				
				11	0.125	3.2			1.4	0.6				
				Sch 5S	0.083	2.1			0.9	0.4				
				Sch 10S	0.120	3.0			1.3	0.6				
4	102	4.500	114	14	0.078	2.0	2.500	64	1.5	0.7				
				11	0.125	3.2			2.3	1.1				
				Sch 5S	0.083	2.1			1.6	0.7				
				Sch 10S	0.120	3.0			2.3	1.0				
5	127	5.563	141	14	0.078	2.0	3.120	79	2.3	1.0				
				11	0.125	3.2			3.6	1.7				
				Sch 5S	0.109	2.8			3.2	1.4				
				Sch 10S	0.134	3.4			3.9	1.8				
6	152	6.625	168	14	0.078	2.0	3.750	95	3.3	1.5				
				11	0.125	3.2			5.2	2.4				
				Sch 5S	0.109	2.8			4.6	2.1				
				Sch 10S	0.134	3.4			5.6	2.5				
8	203	8.625	219	14	0.078	2.0	5.000	127	5.7	2.6	4.000	102	-----	-----
				11	0.125	3.2			9.1	4.1			-----	-----
				Sch 5S	0.109	2.8			8.0	3.6			5.3	2.4
				Sch 10S	0.148	3.8			10.8	4.9			7.2	3.3
10	254	10.750	273	11	0.125	3.2	6.250	159	14.3	6.5	5.000	127	-----	-----
				Sch 5S	0.134	3.4			15.3	6.9			10.2	4.6
				Sch 10S	0.165	4.2			18.7	8.5			12.5	5.7
12	305	12.750	324	11	0.125	3.2	7.500	191	20.3	9.2	6.000	153	-----	-----
				Sch 5S	0.156	4.0			25.3	11.5			16.9	7.7
				Sch 10S	0.180	4.6			29.1	13.2			19.5	8.8
14	356	14.000	356	11	0.125	3.2	8.750	222	26.1	11.8	7.000	178	-----	-----
				Sch 5S	0.156	4.0			32.5	14.7			21.6	9.8
				Sch 10S	0.188	4.8			39.0	17.7			26.0	11.8
16	406	16.000	406	11	0.125	3.2	10.000	254	34.1	15.5	8.000	203	-----	-----
				10	0.140	3.6			38.1	17.3			-----	-----
				Sch 5S	0.165	4.2			44.9	20.4			29.9	13.6
				Sch 10S	0.188	4.8			51.0	23.2			34.1	15.5
18	457	18.000	457	11	0.125	3.2	11.250	286	43.2	19.6	9.000	229	-----	-----
				10	0.140	3.6			48.3	21.9			-----	-----
				Sch 5S	0.165	4.2			56.9	25.8			37.9	17.2
				Sch 10S	0.188	4.8			64.7	29.3			43.2	19.6
20	508	20.000	508	10	0.140	3.6	12.500	318	59.7	27.1	10.000	254	-----	-----
				1/4"	0.250	6.4			106.0	48.1			-----	-----
				Sch 5S	0.188	4.8			79.7	36.2			37.9	24.1
				Sch 10S	0.218	5.5			92.6	42.0			61.7	28.0
24	610	24.000	610	10	0.140	3.6	15.000	381	86.0	39.0	12.000	305	-----	-----
				3/16"	0.188	4.8			115.0	52.2			-----	-----
				Sch 5S	0.218	5.5			133.6	60.6			89.1	40.4
				Sch 10S	0.250	6.4			152.9	69.4			102.0	46.3
30	762	30.000	762	10	0.140	3.6	18.625	473	134.6	61.1	15.000	361	-----	-----
				3/16"	0.188	4.8			180.0	81.6			-----	-----
				Sch 5S	0.250	6.4			239.5	108.6			159.7	72.4
				Sch 10S	0.312	7.9			298.3	135.3			198.9	90.2



General Notes:

- Material: Stainless Steel 304L, 316L, 317. Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.

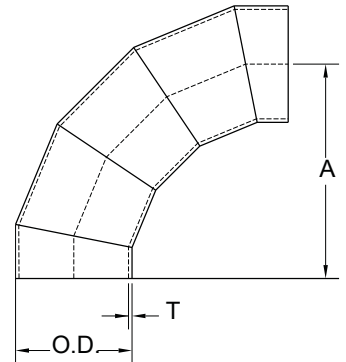
NPS Mitred Elbows ASTM A 774 Weight Table



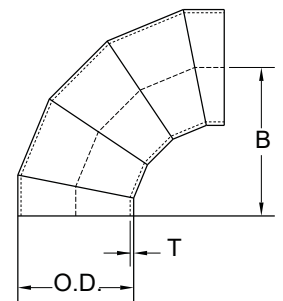
NPS Nominal Pipe Size		T	90° Elbow Long Radius		90° Elbow Short Radius		45° Elbow	
In	mm		lb	kg	lb	kg	lb	kg
3	76	14	1.7	0.8	1.2	0.5	0.9	0.4
		11	2.8	1.3	1.8	0.8	1.4	0.6
		Sch 5S	1.9	0.8	1.2	0.6	0.9	0.4
		Sch 10S	2.6	1.2	1.8	0.8	1.3	0.6
4	102	14	3.0	1.4	2.0	0.9	1.5	0.7
		11	4.8	2.2	3.2	1.4	2.4	1.1
		Sch 5S	3.2	1.4	2.1	1.0	1.6	0.7
		Sch 10S	4.6	2.1	3.0	1.4	2.3	1.0
5	127	14	4.7	2.1	3.1	1.4	2.3	1.1
		11	7.4	3.4	4.9	2.2	3.7	1.7
		Sch 5S	6.5	2.9	4.3	2.0	3.2	1.5
		Sch 10S	7.9	3.6	5.3	2.4	4.0	1.8
6	152	14	6.7	3.0	4.4	2.0	3.3	1.5
		11	10.6	4.8	7.1	3.2	5.3	2.4
		Sch 5S	9.3	4.2	6.2	2.8	4.6	2.1
		Sch 10S	11.3	5.2	7.6	3.4	5.7	2.6
8	203	14	11.6	5.3	7.7	3.5	5.8	2.6
		11	18.5	8.4	12.3	5.6	9.2	4.2
		Sch 5S	16.1	7.3	10.8	4.9	8.1	3.7
		Sch 10S	21.8	9.9	14.6	6.6	10.9	5.0
10	254	11	28.9	13.1	19.3	8.7	14.4	6.6
		Sch 5S	30.9	14.1	20.6	9.4	15.5	7.0
		Sch 10S	38.0	17.3	25.3	11.5	19.0	8.6
12	305	11	41.2	18.7	27.5	12.5	20.6	9.3
		Sch 5S	51.3	23.3	34.2	15.5	25.6	11.6
		Sch 10S	59.0	26.8	39.4	17.9	29.5	13.4
14	356	11	52.8	24.0	35.2	16.0	26.4	12.0
		Sch 5S	65.8	29.9	43.8	19.9	32.9	14.9
		Sch 10S	79.1	35.9	52.7	23.9	39.5	17.9
16	406	11	69.0	31.4	46.0	20.9	34.5	15.7
		10	77.3	35.1	51.5	23.4	38.6	17.5
		Sch 5S	90.9	41.3	60.6	27.5	45.5	20.6
		Sch 10S	103.4	47.0	69.0	31.3	51.7	23.5
18	457	11	87.5	39.8	58.3	26.4	43.7	19.8
		10	97.9	44.5	65.3	29.6	48.9	22.2
		Sch 5S	115.2	52.4	76.8	34.8	57.6	26.1
		Sch 10S	131.1	59.6	87.4	39.6	65.5	29.7
20	508	10	120.9	55.0	80.6	36.6	60.5	27.4
		1 1/4"	214.7	97.6	143.2	64.9	107.4	48.7
		Sch 5S	161.6	73.4	107.7	48.9	80.8	36.6
		Sch 10S	187.6	85.3	125.0	56.7	93.8	42.5
24	610	10	174.3	79.2	116.2	52.7	87.2	39.5
		3/16"	233.0	105.9	155.4	70.5	116.5	52.9
		Sch 5S	270.6	123.0	180.4	81.8	135.3	61.4
		Sch 10S	309.9	140.9	206.6	93.7	154.9	70.3
30	762	3/16"	364.7	165.8	243.1	110.3	182.3	82.7
		Sch 5S	485.2	220.6	323.5	146.7	242.6	110.0
		Sch 10S	604.3	274.7	402.9	182.7	302.1	137.1
36	914	3/16"	438.1	199.1	292.1	132.5	219.0	99.4
		Sch 5S	699.7	318.0	466.5	211.6	349.8	158.7
		Sch 10S	871.7	396.2	581.1	263.6	435.9	197.7
42	1067	3/16"	716.1	325.5	477.4	216.5	358.0	162.4
		1 1/4"	953.3	433.3	635.5	288.3	476.7	216.2
		5/16"	1189.9	540.8	793.2	359.8	594.9	269.9
48	1219	3/16"	935.8	425.4	623.9	283.0	467.9	212.2
		1 1/4"	1246.1	566.4	830.7	376.8	623.0	282.6
		5/16"	1555.6	707.1	1037.0	470.4	777.8	352.8

NPS Mitred Elbows ASTM A 774

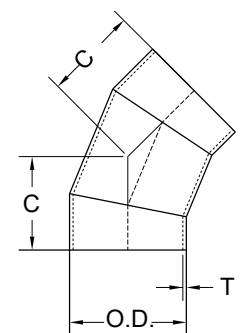
NPS Nominal Pipe Size		O.D. Outside Diameter		T [Nominal Thickness]			90° Elbow Long Radius		90° Elbow Short Radius		45° Elbow	
							A		B		C	
In	mm	In	mm	Ga / Sch	In	mm	In	mm	In	mm	In	mm
3	76	3.500	89	14	0.078	2.0	4.500	114	3.000	76	1.875	48
				11	0.125	3.2						
				Sch 5S	0.083	2.1						
				Sch 10S	0.120	3.0						
4	102	4.500	114	14	0.078	2.0	6.000	152	4.000	102	2.500	64
				11	0.125	3.2						
				Sch 5S	0.083	2.1						
				Sch 10S	0.120	3.0						
5	127	5.563	141	14	0.078	2.0	7.500	191	5.000	127	3.120	79
				11	0.125	3.2						
				Sch 5S	0.109	2.8						
				Sch 10S	0.134	3.4						
6	152	6.625	168	14	0.078	2.0	9.000	229	6.000	152	3.750	95
				11	0.125	3.2						
				Sch 5S	0.109	2.8						
				Sch 10S	0.134	3.4						
8	203	8.625	219	14	0.078	2.0	12.000	305	8.000	203	5.000	127
				11	0.125	3.2						
				Sch 5S	0.109	2.8						
				Sch 10S	0.148	3.8						
10	254	10.750	273	11	0.125	3.2	15.000	381	10.000	254	6.250	159
				Sch 5S	0.134	3.4						
				Sch 10S	0.165	4.2						
				11	0.125	3.2						
12	305	12.750	324	Sch 5S	0.156	4.0	18.000	457	12.000	305	7.500	191
				Sch 10S	0.180	4.6						
				11	0.125	3.2						
				Sch 5S	0.156	4.0						
14	356	14.000	356	Sch 10S	0.188	4.8	21.000	533	14.000	356	8.750	222
				11	0.125	3.2						
				Sch 5S	0.156	4.0						
				Sch 10S	0.188	4.8						
16	406	16.000	406	11	0.125	3.2	24.000	610	16.000	406	10.000	254
				10	0.140	3.6						
				Sch 5S	0.165	4.2						
				Sch 10S	0.188	4.8						
18	457	18.000	457	11	0.125	3.2	27.000	686	18.000	457	11.250	286
				10	0.140	3.6						
				Sch 5S	0.165	4.2						
				Sch 10S	0.188	4.8						
20	508	20.000	508	10	0.140	3.6	30.000	762	20.000	508	12.500	318
				1/4"	0.250	6.4						
				Sch 5S	0.188	4.8						
				Sch 10S	0.218	5.5						
24	610	24.000	610	10	0.140	3.6	36.000	914	24.000	610	15.000	381
				3/16"	0.188	4.8						
				Sch 5S	0.218	5.5						
				Sch 10S	0.250	6.4						
30	762	30.000	762	3/16"	0.188	4.8	45.000	1143	30.000	762	18.750	476
				Sch 5S	0.250	6.4						
				Sch 10S	0.312	7.9						
				3/16"	0.188	4.8						
36	914	36.000	914	Sch 5S	0.250	6.4	54.000	1372	36.000	914	22.500	572
				Sch 10S	0.312	7.9						
				3/16"	0.188	4.8						
				1/4"	0.250	6.4						
42	1067	42.000	1067	5/16"	0.313	7.9	63.000	1600	42.000	1067	26.000	660
				3/16"	0.188	4.8						
				1/4"	0.250	6.4						
				5/16"	0.313	7.9						
48	1219	48.000	1219	3/16"	0.188	4.8	72.000	1829	48.000	1219	30.000	762
				1/4"	0.250	6.4						
				5/16"	0.313	7.9						
				3/16"	0.188	4.8						



90° Mitred Elbow
Long Radius



90° Mitred Elbow
Short Radius

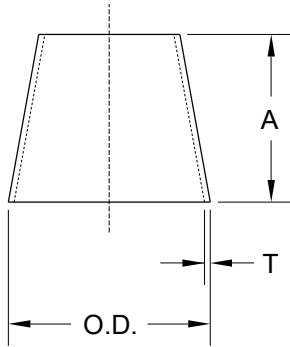


45° Mitred Elbow

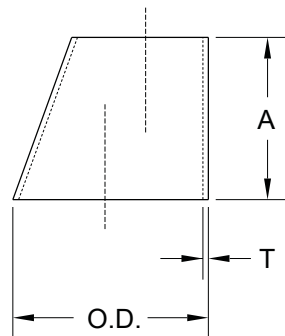
General Notes:

- Material: Stainless Steel 304L, 316L, 317L. Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Other diameter and thickness available upon request.

NPS Reducers ASTM A774



Concentric Reducer



Eccentric Reducer

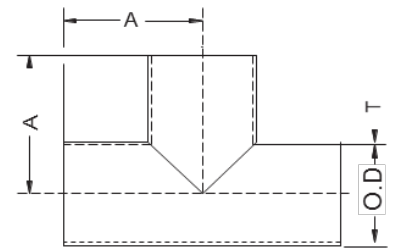
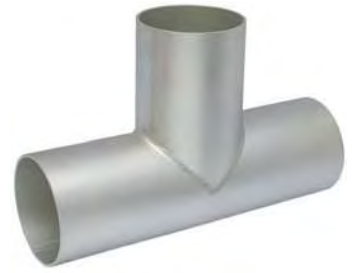
NPS Nominal Pipe Size		O.D. Outside Diameter		T [Nominal Thickness]			A		Weight	
In	mm	In	mm	Ga / Sch	In	mm	In	mm	lb	Kg
3	76	3.500	89	14	0.078	2.0	3.500	89	0.9	0.4
				11	0.125	3.2			1.3	0.6
				Sch 5S	0.083	2.1			0.9	0.4
				Sch 10S	0.120	3.0			1.3	0.6
4	102	4.500	114	14	0.078	2.0	4.000	102	1.3	0.6
				11	0.125	3.2			2.0	0.9
				Sch 5S	0.083	2.1			1.3	0.6
				Sch 10S	0.120	3.0			1.9	0.9
5	127	5.563	141	14	0.078	2.0	5.000	127	1.9	0.9
				11	0.125	3.2			3.1	1.4
				Sch 5S	0.109	2.8			2.7	1.2
				Sch 10S	0.134	3.4			3.3	1.5
6	152	6.625	168	14	0.078	2.0	5.500	140	2.6	1.2
				11	0.125	3.2			4.1	1.8
				Sch 5S	0.109	2.8			3.6	1.6
				Sch 10S	0.134	3.4			4.4	2.0
8	203	8.625	219	14	0.078	2.0	6.000	152	3.6	1.7
				11	0.125	3.2			5.8	2.6
				Sch 5S	0.109	2.8			5.1	2.3
				Sch 10S	0.148	3.8			6.9	3.1
10	254	10.750	273	11	0.125	3.2	7.000	178	8.5	3.8
				Sch 5S	0.134	3.4			9.1	4.1
				Sch 10S	0.165	4.2			11.1	5.1
12	305	12.750	324	11	0.125	3.2	8.000	203	11.5	5.2
				Sch 5S	0.156	4.0			14.3	6.5
				Sch 10S	0.180	4.6			16.5	7.5
14	356	14.000	356	10S	0.125	3.2	13.000	330	20.5	9.3
				10	0.140	3.6			23.0	10.4
				Sch 5S	0.156	4.0			25.6	11.6
				Sch 10S	0.188	4.8			30.8	14.0
16	406	16.000	406	11	0.125	3.2	14.000	356	25.3	11.5
				10	0.140	3.6			28.3	12.8
				Sch 5S	0.165	4.2			33.3	15.1
				Sch 10S	0.188	4.8			37.9	17.2
18	457	18.000	457	11	0.125	3.2	15.000	381	30.5	13.9
				10	0.140	3.6			34.2	15.5
				Sch 5S	0.165	4.2			40.2	18.2
				Sch 10S	0.188	4.8			45.8	20.8
20	508	20.000	508	10	0.140	3.6	20.000	508	50.7	23.0
				1/4"	0.250	6.4			90.0	40.8
				Sch 5S	0.188	4.8			67.7	30.7
				Sch 10S	0.218	5.5			78.6	35.6
24	610	24.000	610	10	0.140	3.6	20.000	508	60.9	27.6
				3/16"	0.188	4.8			81.4	36.9
				Sch 5S	0.218	5.5			94.5	42.9
				Sch 10S	0.250	6.4			108.2	49.1
30	762	30.000	762	3/16"	0.188	4.8	24.000	610	122.2	55.4
				Sch 5S	0.250	6.4			162.6	73.8
				Sch 10S	0.312	7.9			202.5	91.9
36	914	36.000	914	3/16"	0.188	4.8	24.000	610	146.8	66.6
				Sch 5S	0.250	6.4			195.4	88.6
				Sch 10S	0.312	7.9			243.5	110.4
42	1067	42.000	1067	3/16"	0.188	4.8	24.000	610	171.4	77.8
				1/4"	0.250	6.4			228.2	103.5
				5/16"	0.313	7.9			284.8	129.2
48	1219	48.000	1219	3/16"	0.188	4.8	28.000	711	228.7	103.7
				1/4"	0.250	6.4			304.5	138.1
				5/16"	0.313	7.9			380.2	172.4

General Notes:

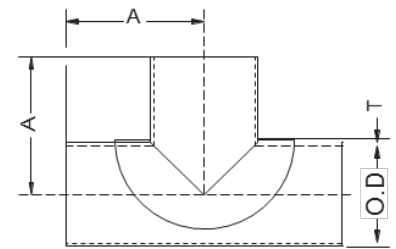
- Material: Stainless Steel 304L, 316L, 317L. Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Other diameter and thickness available upon request.

NPS Tees & Crosses ASTM A774

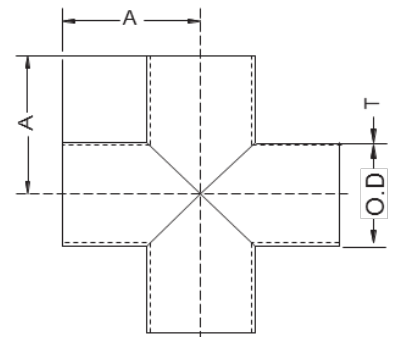
NPS Nominal Pipe Size		O.D. Outside Diameter		T [Nominal Thickness]			A		Weight			
									Tee		Cross	
In	mm	In	mm	Gal/Sch	In	mm	In	mm	lb	kg	lb	kg
3	76	3.500	89	14	0.078	2.0	3.375	86	2.5	1.1	3.3	1.5
				11	0.125	3.2			3.9	1.8	5.2	2.4
				Sch 5S	0.083	2.1			2.6	1.2	3.5	1.6
				Sch 10S	0.120	3.0			3.7	1.7	5.0	2.3
4	102	4.500	114	14	0.078	2.0	4.125	105	3.9	1.8	5.2	2.4
				11	0.125	3.2			6.2	2.8	8.2	3.7
				Sch 5S	0.083	2.1			4.1	1.9	5.5	2.5
				Sch 10S	0.120	3.0			5.9	2.7	7.9	3.6
5	127	5.563	141	14	0.078	2.0	4.875	124	5.7	2.6	7.6	3.4
				11	0.125	3.2			9.1	4.1	12.1	5.5
				Sch 5S	0.109	2.8			7.9	3.6	10.6	4.8
				Sch 10S	0.134	3.4			9.7	4.4	12.9	5.9
6	152	6.625	168	14	0.078	2.0	5.625	143	7.9	3.6	10.5	4.7
				11	0.125	3.2			12.5	5.7	16.7	7.6
				Sch 5S	0.109	2.8			10.9	5.0	14.6	6.6
				Sch 10S	0.134	3.4			13.4	6.1	17.8	8.1
8	203	8.625	219	14	0.078	2.0	7.000	178	12.8	5.8	17.0	7.7
				11	0.125	3.2			20.3	9.2	27.1	12.3
				Sch 5S	0.109	2.8			17.8	8.1	23.7	10.7
				Sch 10S	0.148	3.8			24.0	10.9	32.0	14.5
10	254	10.750	273	11	0.125	3.2	8.500	216	30.9	14.0	41.1	18.7
				Sch 5S	0.134	3.4			33.0	15.0	44.1	20.0
				Sch 10S	0.165	4.2			40.6	18.4	54.1	24.5
				11	0.125	3.2			43.1	19.6	57.5	26.1
12	305	12.750	324	Sch 5S	0.150	4.0	10.000	254	53.7	24.4	71.6	32.5
				Sch 10S	0.180	4.6			61.8	28.1	82.5	37.4
				11	0.125	3.2			52.1	23.7	69.5	31.5
				Sch 5S	0.156	4.0			64.9	29.5	86.6	39.3
14	356	14.000	356	Sch 10S	0.188	4.8	11.000	279	78.1	35.4	104.1	47.2
				11	0.125	3.2			65.1	29.5	86.8	39.4
				10	0.140	3.6			72.8	33.0	97.1	44.0
				Sch 5S	0.165	4.2			85.7	38.9	114.3	51.8
16	406	16.000	406	Sch 10S	0.188	4.8	12.000	305	97.5	44.2	130.0	59.0
				11	0.125	3.2			82.4	37.4	109.9	49.9
				10	0.140	3.6			92.3	41.8	123.0	55.8
				Sch 5S	0.165	4.2			108.6	49.3	144.8	65.7
18	457	18.000	457	Sch 10S	0.188	4.8	13.500	343	123.6	56.0	164.7	74.7
				10	0.140	3.6			114.0	51.7	152.0	68.9
				1/4"	0.250	6.4			202.4	91.8	269.9	122.4
				Sch 5S	0.188	4.8			152.3	69.1	203.1	92.1
20	508	20.000	508	Sch 10S	0.218	5.5	15.000	381	176.8	80.2	235.7	106.9
				10	0.140	3.6			155.2	70.4	206.9	93.9
				3/16"	0.188	4.8			207.5	94.1	276.6	125.5
				Sch 5S	0.218	5.5			240.9	109.3	321.2	145.7
24	610	24.000	610	Sch 10S	0.250	6.4	17.000	432	275.9	125.1	367.8	166.9
				3/16"	0.188	4.8			336.1	152.5	448.2	203.3
				Sch 5S	0.250	6.4			447.2	202.9	596.3	270.5
				Sch 10S	0.312	7.9			557.0	252.6	742.6	336.9
30	762	30.000	762	3/16"	0.188	4.8	22.000	559	486.4	220.6	648.5	294.1
				Sch 5S	0.250	6.4			647.3	293.6	863.1	391.5
				Sch 10S	0.312	7.9			806.5	365.8	1075.3	487.8
				3/16"	0.188	4.8			600.0	272.2	800.0	362.9
36	914	36.000	914	1/4"	0.250	6.4	30.000	711	798.8	362.3	1065.0	483.1
				5/16"	0.312	7.9			995.4	451.5	1327.2	602.0
				3/16"	0.188	4.8			808.6	366.8	1078.1	489.0
				1/4"	0.250	6.4			1076.7	488.4	1435.6	651.2
48	1219	48.000	1219	5/16"	0.312	7.9	35.000	838	1342.0	608.7	1789.3	811.6



Tee



Tee with reinforcement



Cross [Note (1)]

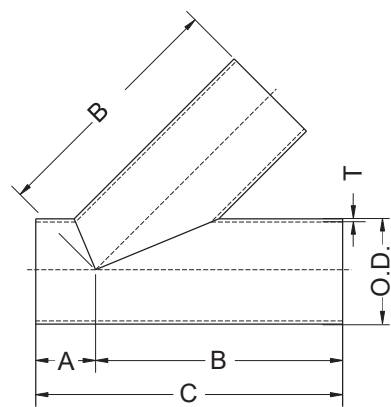
General Notes:

- Material: Stainless Steel 304L, 316L, 317L. Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Other diameter and thickness available upon request.

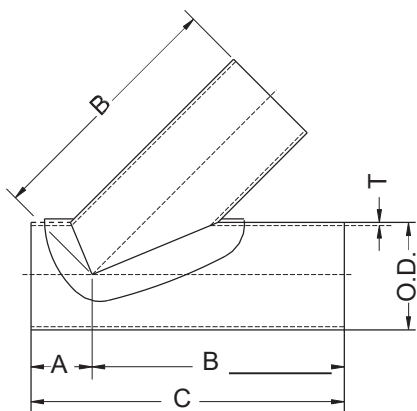
Note:

- The addition of reinforcement may be necessary. Upon request, the verification can be performed by our quality department. Please contact a technical representative for more information.

NPS Laterals ASTM A774



45° Lateral



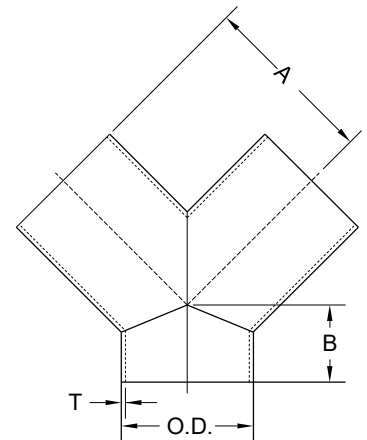
45° Lateral
with reinforcement

NPS Nominal Pipe Size		O.D. Outside Diameter		T [Nominal Thickness]			A		B		C		Weight	
In	mm	In	mm	Ga / Sch	In	mm	In	mm	In	mm	In	mm	lb	kg
3	76	3.500	89	14	0.078	2.0	3.000	76	10.000	254	13.000	330	5.6	2.5
				11	0.125	3.2							8.8	4.0
				Sch 5S	0.083	2.1							5.9	2.7
				Sch 10S	0.120	3.0							8.5	3.9
4	102	4.500	114	14	0.078	2.0	3.000	76	12.000	305	15.000	381	8.5	3.8
				11	0.125	3.2							13.5	6.1
				Sch 5S	0.083	2.1							9.0	4.1
				Sch 10S	0.120	3.0							12.9	5.9
5	127	5.563	141	14	0.078	2.0	3.500	89	13.500	343	17.000	432	11.9	5.4
				11	0.125	3.2							18.9	8.6
				Sch 5S	0.109	2.8							16.5	7.5
				Sch 10S	0.134	3.4							20.2	9.2
6	152	6.625	168	14	0.078	2.0	3.500	89	14.500	368	18.000	457	15.1	6.9
				11	0.125	3.2							24.1	10.9
				Sch 5S	0.109	2.8							21.0	9.5
				Sch 10S	0.134	3.4							25.8	11.7
8	203	8.625	219	14	0.078	2.0	4.500	114	17.500	445	22.000	559	24.0	10.9
				11	0.125	3.2							38.2	17.3
				Sch 5S	0.109	2.8							33.4	15.2
				Sch 10S	0.148	3.8							45.1	20.5
10	254	10.750	273	11	0.125	3.2	5.000	127	20.500	521	25.500	648	55.7	25.2
				Sch 5S	0.134	3.4							59.6	27.0
				Sch 10S	0.165	4.2							73.2	33.2
				11	0.125	3.2							78.4	35.5
12	305	12.750	324	Sch 5S	0.156	4.0	5.500	140	24.500	622	30.000	762	97.6	44.2
				Sch 10S	0.180	4.6							112.3	51.0
				11	0.125	3.2							94.8	43.0
				Sch 5S	0.156	4.0							118.1	53.5
14	356	14.000	356	Sch 10S	0.188	4.8	6.000	152	27.000	686	33.000	838	141.9	64.4
				11	0.125	3.2							120.2	54.5
				10	0.140	3.6							134.5	61.0
				Sch 5S	0.165	4.2							158.3	71.8
16	406	16.000	406	Sch 10S	0.188	4.8	6.500	165	30.000	762	36.500	927	180.1	81.7
				11	0.125	3.2							144.5	65.6
				10	0.140	3.6							161.7	73.4
				Sch 5S	0.165	4.2							190.4	86.3
18	457	18.000	457	Sch 10S	0.188	4.8	7.000	178	32.000	813	39.000	991	216.6	98.3
				10	0.140	3.6							197.6	89.6
				1/4"	0.250	6.4							350.9	159.2
				Sch 5S	0.188	4.8							264.0	119.7
20	508	20.000	508	Sch 10S	0.218	5.5	8.000	203	35.000	889	43.000	1092	306.5	139.0
				10	0.140	3.6							273.9	124.2
				3/16"	0.188	4.8							366.1	166.1
				Sch 5S	0.218	5.5							425.1	192.8
24	610	24.000	610	Sch 10S	0.250	6.4	9.000	229	40.500	1029	49.500	1257	486.8	220.8
				3/16"	0.188	4.8							550.0	249.5
				Sch 5S	0.250	6.4							731.8	331.9
				Sch 10S	0.312	7.9							911.4	413.4
30	762	30.000	762	3/16"	0.188	4.8	10.000	254	49.000	1245	59.000	1499	880.9	399.6
				Sch 5S	0.250	6.4							1172.5	531.9
				Sch 10S	0.312	7.9							1460.8	662.6
				3/16"	0.188	4.8							1171.4	531.3
36	914	36.000	914	1/4"	0.250	6.4	24.000	610	60.000	1524	84.000	2134	1559.5	707.4
				5/16"	0.312	7.9							1943.4	881.5
				3/16"	0.188	4.8							1478.3	670.6
				1/4"	0.250	6.4							1968.5	892.9
42	1067	42.000	1067	5/16"	0.312	7.9	26.000	660	69.000	1753	95.000	2413	2453.5	1112.9
				3/16"	0.188	4.8								
48	1219	48.000	1219	1/4"	0.250	6.4	27.000	686	77.000	1956	104.000	2642		
				5/16"	0.312	7.9								

General Notes:

- Material: Stainless Steel 304L, 316L, 317L. Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Other diameter and thickness available upon request.

NPS Nominal Pipe Size		O.D. Outside Diameter		T [Nominal Thickness]			A		B		Weight	
In	mm	In	mm	Ga / Sch	In	mm	In	mm	In	mm	lb	kg
3	76	3.500	89	14	0.078	2.0	5.500	140	3.000	76	3.4	1.5
				11	0.125	3.2					5.4	2.4
				Sch 5S	0.083	2.1					3.6	1.6
				Sch 10S	0.120	3.0					5.2	2.3
4	102	4.500	114	14	0.078	2.0	6.500	165	3.000	76	5.0	2.3
				11	0.125	3.2					8.0	3.6
				Sch 5S	0.083	2.1					5.3	2.4
				Sch 10S	0.120	3.0					7.7	3.5
5	127	5.563	141	14	0.078	2.0	7.500	191	3.500	89	7.2	3.3
				11	0.125	3.2					11.5	5.2
				Sch 5S	0.109	2.8					10.0	4.5
				Sch 10S	0.134	3.4					12.3	5.6
6	152	6.625	168	14	0.078	2.0	8.000	203	3.500	89	9.1	4.1
				11	0.125	3.2					14.4	6.5
				Sch 5S	0.109	2.8					12.6	5.7
				Sch 10S	0.134	3.4					15.5	7.0
8	203	8.625	219	14	0.078	2.0	9.000	229	4.500	114	13.7	6.2
				11	0.125	3.2					21.8	9.9
				Sch 5S	0.109	2.8					19.0	8.6
				Sch 10S	0.148	3.8					25.7	11.7
10	254	10.750	273	11	0.125	3.2	11.000	279	5.000	127	32.7	14.8
				Sch 5S	0.134	3.4					35.0	15.9
				Sch 10S	0.165	4.2					43.0	19.5
				11	0.125	3.2	12.000	305	5.500	140	42.4	19.2
12	305	12.750	324	Sch 5S	0.156	4.0					52.8	24.0
				Sch 10S	0.180	4.6					60.8	27.6
				11	0.125	3.2	14.000	356	6.000	152	53.7	24.4
14	356	14.000	356	Sch 5S	0.156	4.0					66.9	30.3
				Sch 10S	0.188	4.8					80.4	36.5
				11	0.125	3.2	15.000	381	6.500	165	66.0	29.9
16	406	16.000	406	10	0.140	3.6					73.8	33.5
				Sch 5S	0.165	4.2					86.9	39.4
				Sch 10S	0.188	4.8					98.9	44.8
				11	0.125	3.2	16.500	419	7.000	178	81.4	36.9
18	457	18.000	457	10	0.140	3.6					91.1	41.3
				Sch 5S	0.165	4.2					107.2	48.6
				Sch 10S	0.188	4.8					122.0	55.4
20	508	20.000	508	10	0.140	3.6	18.000	457	8.000	203	111.5	50.6
				1/4"	0.250	6.4					197.9	89.8
				Sch 5S	0.188	4.8					148.9	67.5
				Sch 10S	0.218	5.5					172.9	78.4
24	610	24.000	610	10	0.140	3.6	22.000	559	9.000	229	161.3	73.2
				3/16"	0.188	4.8					215.6	97.8
				Sch 5S	0.218	5.5					250.3	113.6
				Sch 10S	0.250	6.4	25.000	635	10.000	254	286.7	130.0
30	762	30.000	762	3/16"	0.188	4.8					305.6	138.6
				Sch 5S	0.250	6.4					406.6	184.4
				Sch 10S	0.312	7.9					506.3	229.7
				3/16"	0.188	4.8	28.000	711	24.000	610	489.4	222.0
36	914	36.000	914	Sch 5S	0.250	6.4					651.4	295.5
				Sch 10S	0.312	7.9					811.6	368.1
				3/16"	0.188	4.8	31.000	787	26.000	660	628.5	285.1
42	1067	42.000	1067	1/4"	0.250	6.4					836.8	379.6
				5/16"	0.312	7.9					1042.8	473.0
				3/16"	0.188	4.8	34.000	864	27.000	686	775.9	352.0
48	1219	48.000	1219	1/4"	0.250	6.4					1033.2	468.7
				5/16"	0.312	7.9					1287.8	584.1



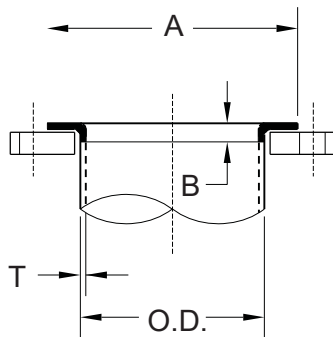
General Notes:

- Material: Stainless Steel 304L, 316L, 317L. Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Other diameter and thickness available upon request.
- The addition of reinforcement may be necessary. Upon request, the verification can be performed by our quality department. Please contact a technical representative for more information.

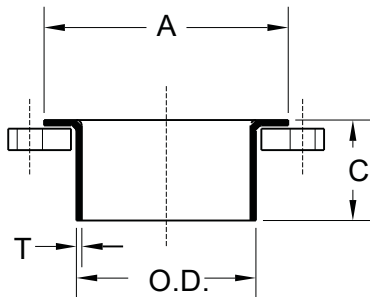
NPS Pressed Collars ASTM A774



Pressed Collars



Long Neck Collars
Type "C"



NPS Nominal Pipe Size		O.D. Outside Diameter		T [Nominal Thickness]			A		B		Weight	
In	mm	In	mm	in	mm		In	mm	In	mm	lb	kg
1 1/2	38	1.900	48	1/8"	0.125	3.2	2.875	73	0.625	16	0.2	0.1
2	51	2.375	60	1/8"	0.125	3.2	3.500	89	0.625	16	0.3	0.1
2 1/2	64	2.875	73	1/8"	0.125	3.2	4.500	114	0.625	16	0.4	0.2
3	76	3.500	89	1/8"	0.125	3.2	5.000	127	0.625	16	0.6	0.3
4	102	4.500	114	1/8"	0.125	3.2	6.500	165	0.625	16	0.9	0.4
5	127	5.563	141	1/8"	0.125	3.2	7.500	191	0.625	16	1.0	0.5
6	152	6.625	168	1/8"	0.125	3.2	8.500	216	0.625	16	1.3	0.6
8	203	8.625	219	1/8"	0.125	3.2	10.750	273	0.625	16	1.9	0.9
10	254	10.750	273	1/8"	0.125	3.2	13.000	330	0.625	16	2.5	1.1
12	305	12.750	324	1/8"	0.125	3.2	15.000	381	0.625	16	3.5	1.6

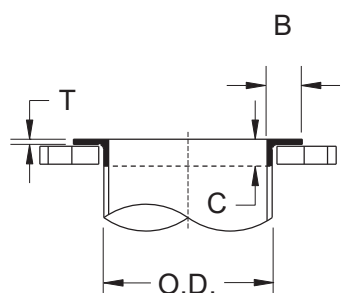
NPS Nominal Pipe Size		O.D. Outside Diameter		T [Nominal Thickness]			A		C		Weight	
In	mm	In	mm	Sch	In	mm	In	mm	In	mm	lb	kg
2	51	2.500	64	10S	0.109	2.8	3.625	92	2.500	64	0.9	0.4
3	76	3.500	89	10S	0.120	3.0	5.000	127	2.500	64	1.3	0.6
4	102	4.500	114	10S	0.120	3.0	6.188	157	3.000	76	2.0	0.9
6	152	6.625	168	10S	0.134	3.4	8.500	216	3.500	89	3.8	1.7
8	203	8.625	219	10S	0.134	3.4	10.750	273	4.000	102	5.8	2.6
10	254	10.750	273	10S	0.148	3.8	13.000	330	5.000	127	9.9	4.5

General Notes:

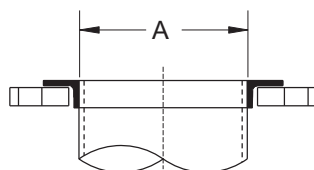
- Material: Stainless Steel 304L, 316L, 317L. Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.

NPS Angle Collars ASTM A774

NPS Nominal Pipe Size		O.D. Outside Diameter		A		Angle Dimensions B-C-T		Weight	
In	mm	In	mm	In	mm	In	mm.	lb	kg
3	76	3.500	89	3.563	90	3/4 x 3/4 x 1/8	19 x 19 x 3.2	0.5	0.2
4	102	4.500	114	4.563	116	1 x 1 x 1/8	25 x 25 x 3.2	0.9	0.4
5	127	5.563	141	5.625	143	1 x 1 x 1/8	25 x 25 x 3.2	1.2	0.5
6	152	6.625	168	6.688	170	1 x 1 x 1/8	25 x 25 x 3.2	1.4	0.6
						1 x 1 x 3/16	25 x 25 x 4.8	2.0	0.9
8	203	8.625	219	8.750	222	1 1/4 x 1 1/4 x 1/8	32 x 32 x 3.2	2.3	1.0
						1 1/4 x 1 1/4 x 3/16	32 x 32 x 4.8	3.4	1.5
10	254	10.750	273	10.875	276	1 1/4 x 1 1/4 x 1/8	32 x 32 x 3.2	2.8	1.3
						1 1/4 x 1 1/4 x 3/16	32 x 32 x 4.8	4.2	1.9
12	305	12.750	324	12.875	327	1 1/2 x 1 1/2 x 1/8	38 x 38 x 3.2	4.1	1.9
						1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8	6.0	2.7
14	356	14.000	356	14.094	358	1 1/2 x 1 1/2 x 1/8	38 x 38 x 3.2	4.5	2.0
						1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8	6.6	3.0
16	406	16.000	406	16.125	410	1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8	7.5	3.4
						1 1/2 x 1 1/2 x 1/4	38 x 38 x 6.3	9.7	4.4
18	457	18.000	457	18.125	460	1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8	8.5	3.8
						1 1/2 x 1 1/2 x 1/4	38 x 38 x 6.3	11.0	5.0
20	508	20.000	508	20.125	511	1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8	9.4	4.3
						1 1/2 x 1 1/2 x 1/4	38 x 38 x 6.3	12.2	5.5
24	610	24.000	610	24.125	613	2 x 2 x 3/16	51 x 51 x 4.8	15.3	6.9
						2 x 2 x 1/4	51 x 51 x 6.3	19.9	9.0
30	762	30.000	762	30.125	765	2 x 2 x 1/4	51 x 51 x 6.3	24.9	11.3
						2 x 2 x 3/8	51 x 51 x 9.5	36.6	16.6
36	914	36.000	914	36.125	918	2 x 2 x 1/4	51 x 51 x 6.3	38.5	17.5
						2 x 2 x 3/8	51 x 51 x 9.5	64.6	29.3
42	1067	42.000	1067	42.125	1070	2 1/2 x 2 1/2 x 1/4	64 x 64 x 6.3	44.9	20.4
						2 1/2 x 2 1/2 x 3/8	64 x 64 x 9.5	75.4	34.2
48	1219	48.000	1219	48.125	1222	2 1/2 x 2 1/2 x 1/4	64 x 64 x 6.3	51.4	23.3
						2 1/2 x 2 1/2 x 3/8	64 x 64 x 9.5	86.3	39.1



Butt Weld Angle Collars
(Use with Backing Flanges)
P. 3-14

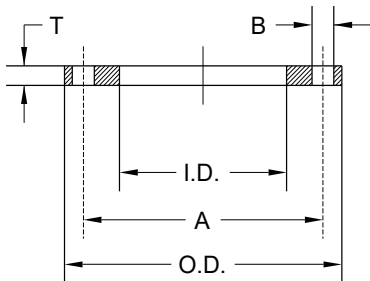


Slip-on Angle Collars
(Use with Slip-on Backing Flanges)
P. 3-15



General Notes:

- Material: Stainless Steel 304L, 316L, 317L. Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Other diameter and thickness available upon request.

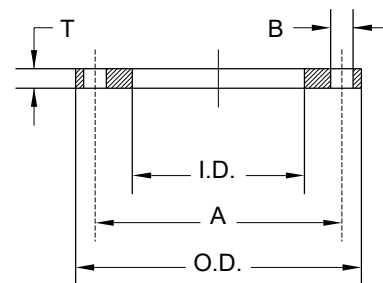


NPS Nominal Pipe Size	O.D.	I.D.	A	# of holes	B	T	Weight
In mm	In mm	In mm	In mm		In mm	In mm	lb kg
1 1/2	5.00	2.150	3.875	4	0.625	0.750	3.6
38	127	55	98		16	19	1.6
2	6.000	2.625	4.750	4	0.750	0.750	4.7
51	152	67	121		19	19	2.1
2 1/2	7.000	3.125	5.500	4	0.750	0.750	6.2
64	178	79	140		19	19	2.8
3	7.500	3.875	6.000	4	0.750	0.750	7.1
76	191	98	152		19	19	3.2
4	9.000	4.875	7.500	8	0.750	0.750	9.5
102	229	124	191		19	19	4.3
5	10.000	5.938	8.500	8	0.875	0.750	10.7
127	254	151	216		22	19	4.9
6	11.000	7.000	9.500	8	0.875	0.750	12.3
152	279	178	241		22	19	5.6
8	13.500	9.000	11.750	8	0.875	0.750	17.7
203	343	229	298		22	19	8.0
10	16.000	11.250	14.250	12	1.000	1.000	30.2
254	406	286	362		25	25	13.7
12	19.000	13.250	17.000	12	1.000	1.000	43.5
305	483	337	432		25	25	19.7
14	21.000	14.750	18.750	12	1.125	1.125	55.0
356	533	375	476		29	29	24.9
16	23.500	16.750	21.250	16	1.125	1.125	66.0
406	597	425	540		29	29	29.9
18	25.000	18.750	22.750	16	1.250	1.250	81.4
457	635	476	578		32	32	36.9
20	27.500	20.875	25.000	20	1.250	1.250	86.3
508	699	530	635		32	32	39.1
24	32.000	24.875	29.500	20	1.375	1.375	121.0
610	813	632	749		35	35	54.9
30	38.750	31.000	36.000	28	1.375	1.625	176.0
762	984	787	914		35	41	79.8
36	46.000	37.000	42.750	32	1.625	1.625	237.0
914	1168	940	1086		41	41	107.5
42	53.000	43.000	49.500	36	1.625	1.750	337.0
1067	1346	1092	1257		41	44	152.9
48	59.500	49.000	56.000	44	1.625	2.000	455.0
1219	1511	1247	1422		41	51	206.4

General Notes:

- Material: Carbon Steel with chemical composition of ASTM/ASME A283 Grade D or equivalent, or ASTM/ASME A105 available upon request.
- Finish: Galvanized to ASTM A 123.
- Drilling: 1 1/2" to 24" ASME B16.5 Class150, 30" to 48" ASME B16.47 Class150 series "A".
- Suggested Maximum Working Pressure : See technical section.
- Other diameter and thickness available upon request..

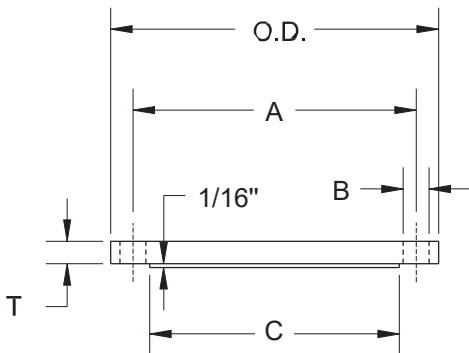
NPS Nominal Pipe Size	O.D.	I.D.	A	# of holes	B	T	Weight
In mm	In mm	In mm	In mm		In mm	In mm	lb kg
3 76	7.500 191	4.188 106	6.000 152	4	0.750 19	0.750 19	7.1 3.2
4 102	9.000 229	5.188 132	7.500 191	8	0.750 19	0.750 19	9.5 4.3
5 127	10.000 254	6.250 159	8.500 216	8	0.875 22	0.750 19	10.7 4.9
6 152	11.000 279	7.313 186	9.500 241	8	0.875 22	0.750 19	12.3 5.6
8 203	13.500 343	9.313 237	11.750 298	8	0.875 22	0.750 19	17.7 8.0
10 254	16.000 406	11.563 294	14.250 362	12	1.000 25	1.000 25	30.2 13.7
12 305	19.000 483	13.563 344	17.000 432	12	1.000 25	1.000 25	43.5 19.7
14 356	21.000 533	15.000 381	18.750 476	12	1.125 29	1.125 29	55.0 24.9
16 406	23.500 597	17.000 432	21.250 540	16	1.125 29	1.125 29	66.0 29.9
18 457	25.000 635	19.250 489	22.750 578	16	1.250 32	1.250 32	81.4 36.9
20 508	27.500 699	21.375 543	25.000 635	20	1.250 32	1.250 32	86.3 39.1
24 610	32.000 813	25.375 645	29.500 749	20	1.375 35	1.375 35	121.0 54.9
30 762	38.750 984	31.750 806	36.000 914	28	1.375 35	1.625 41	176.0 79.8
36 914	46.000 1168	37.750 959	42.750 1086	32	1.625 41	1.625 41	237.0 107.5
42 1067	53.000 1346	43.750 1111	49.500 1257	36	1.625 41	1.750 44	337.0 152.9
48 1219	59.500 1511	49.750 1264	56.000 1422	44	1.625 41	2.000 51	455.0 206.4



General Notes:

- Material: Carbon Steel with chemical composition of ASTM/ASME A283 Grade D or equivalent, or ASTM/ASME A105 available upon request.
- Finish: Galvanized to ASTM A 123.
- Drilling: 1 1/2" to 24" ASME B16.5 Class150, 30" to 48" ASME B16.47 Class150 series "A".
- Suggested Maximum Working Pressure : See technical section.
- Other diameter and thickness available upon request..

Blind Flanges



Nominal Diameter	O.D.	A	# of holes	B	C	T	Weight
In mm	In mm	In mm		In mm	In mm	In mm	lb kg
1 1/2 38	5.000 127	3.875 98	4	0.625 16	3.000 76	0.750 19	4.3 2.0
2 51	6.000 152	4.750 121	4	0.750 19	3.500 89	0.750 19	6.2 2.8
2 1/2 64	7.000 178	5.500 140	4	0.750 19	4.500 114	0.750 19	8.5 3.9
3 76	7.500 191	6.000 152	4	0.750 19	5.000 127	0.750 19	9.8 4.4
4 102	9.000 229	7.500 191	8	0.750 19	6.500 165	0.750 19	14.0 6.4
5 127	10.000 254	8.500 216	8	0.875 22	7.375 187	0.750 19	17.6 8.0
6 152	11.000 279	9.500 241	8	0.875 22	8.375 213	0.750 19	21.0 9.5
8 203	13.500 343	11.750 298	8	0.875 22	10.625 270	0.750 19	32.2 14.6
10 254	16.000 406	14.250 362	12	1.000 25	13.000 330	1.000 25	58.0 26.3
12 305	19.000 483	17.000 432	12	1.000 25	15.625 397	1.000 25	83.1 37.7
14 356	21.000 533	18.750 476	12	1.125 29	17.250 438	1.125 29	113.0 51.3
16 406	23.500 597	21.250 540	16	1.125 29	19.750 502	1.125 29	142.0 64.4
18 457	25.000 635	22.750 578	16	1.250 32	21.125 537	1.250 32	179.0 81.2
20 508	27.500 699	25.000 635	20	1.250 32	23.375 594	1.250 32	217.5 98.7
24 610	32.000 813	29.500 749	20	1.375 35	27.750 705	1.375 35	323.0 146.5
30 762	38.750 984	36.000 914	28	1.375 35	34.250 870	1.500 38	530.0 240.4
36 914	46.000 1168	42.750 1086	32	1.625 41	40.750 1035	1.500 38	755.0 342.5
42 1067	53.000 1346	49.500 1257	36	1.625 41	46.750 1187	1.500 38	906.0 411.0
48 1219	59.500 1511	56.000 1422	44	1.625 41	52.750 1340	1.750 44	1334.0 605.1

General Notes:

- Material: Carbon Steel with chemical composition of ASTM/ASME A283 Grade D or equivalent, or ASTM/ASME A105 available upon request.
- Finish: Galvanized to ASTM A 123.
- Drilling: 1 1/2" to 24" ASME B16.5 Class150, 30" to 48" ASME B16.47 Class150 series "A".
- Suggested Maximum Working Pressure : See technical section.
- Other diameter and thickness available upon request..

Summary of specification

Pipes, fittings and flanges in this section are usually intended for high-temperature and general corrosive operations.

With our cutting edge technology and equipment our pipes and fittings offer an excellent price /quality ratio.

All our pipes and fittings are manufactured, heat treated, inspected, tested, and marked according to the requirements of the respective specifications. Thereafter a Manufacturer Test Report is issued for each batch.

The DB Piping group pipes and fittings are made from base materials ASTM A-240-304L & 316L; other alloys are available upon request.

This section includes:

- ASTM A 312 and ASME SA-312 welded pipes. [Note (1 and 2)]
- ASTM A 403 and ASME SA-403 fittings
Grade WP, Class-S, W, WX and WU.
(See Table 1 for a brief description of the class)
- ASTM A 182 and ASME SA-182 stainless steel flanges.
- ASTM A 105 and ASME SA-105 carbon steel galvanized lap-joint flanges.

NPS [Nominal Pipe Size] diameter and thickness [Note (4)] of pipes and fittings are governed by ASME B36.19.

The maximum allowable operating pressure for pipe shall be calculated according to the pipe equation with or without longitudinal weld (as applicable) of the latest version of the applicable ASME code.

The dimensions of the fittings are governed by ASME B16.9.

The fittings are supplied with bevelled ends.

The maximum allowable working pressure for fittings (WP) is equivalent to the one for pipes of the same category (e.g.: Type of construction, diameter, thickness, chemical and mechanical requirements).

Dimensions and maximum allowable working pressure for flanges can be found inside ASME B16.5

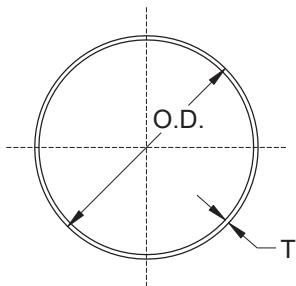
Notes:

1. ASTM A312 and ASME SA-312 seamless pipes can be provided upon request.
2. ASTM A 269 and ASTM A 409 pipes can be supplied upon request.
3. Non-destructive examination is not performed on class" W" fittings when the welding process is done without filler addition.
4. In accordance with specifications ASTM A 312 / ASME SA-312 and ASTM A 403 / ASME SA-403 allowable tolerance will never be less than 87.5% of the nominal thickness at any measured point.

Grade	Class	Construction	Nondestructif Examination
WP	S	Seamless	None
WP	W	Welded	Radiography or Ultrasonic ⁽³⁾
WP	WX	Welded	Radiography
WP	WU	Welded	Ultrasonic

Table 1

NPS Pipe ASTM A312 & ASME SA-312

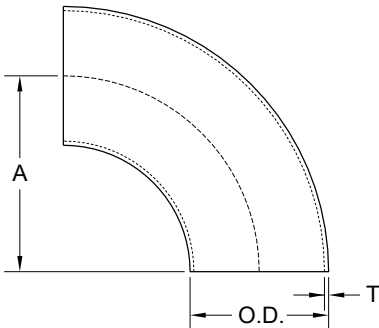


NPS Nominal Pipe Size		O.D. Outside Diameter		Nominal Thickness and Weight											
				Schedule 5S				Schedule 10S				Schedule 40S			
				T		Weight		T		Weight		T		Weight	
In	mm	In	mm	In	mm	lb / ft	kg / m	In	mm	lb / ft	kg / m	In	mm	lb / ft	kg / m
3/4	19	1.050	27	0.065	1.7	0.7	1.0	0.083	2.1	0.9	1.3	0.113	2.9	1.2	1.7
1	25	1.315	33	0.065	1.7	0.9	1.3	0.109	2.8	1.4	2.1	0.133	3.4	1.7	2.6
1 1/4	32	1.660	42	0.065	1.7	1.1	1.7	0.109	2.8	1.8	2.8	0.140	3.6	2.3	3.5
1 1/2	38	1.900	48	0.065	1.7	1.3	1.9	0.109	2.8	2.1	3.2	0.145	3.7	2.8	4.1
2	51	2.375	60	0.065	1.7	1.6	2.4	0.109	2.8	2.7	4.0	0.154	3.9	3.7	5.6
2 1/2	64	2.875	73	0.083	2.1	2.5	3.8	0.120	3.0	3.6	5.4	0.203	5.2	5.9	8.8
3	76	3.500	89	0.083	2.1	3.1	4.6	0.120	3.0	4.4	6.6	0.216	5.5	7.8	11.6
4	102	4.500	114	0.083	2.1	4.0	6.0	0.120	3.0	5.7	8.6	0.237	6.0	11.0	16.5
5	127	5.563	141	0.109	2.8	6.5	9.7	0.134	3.4	8.0	11.9	0.258	6.6	15.0	22.3
6	152	6.625	168	0.109	2.8	7.8	11.6	0.134	3.4	9.5	14.2	0.280	7.1	19.4	29.0
8	203	8.625	219	0.109	2.8	10.1	15.1	0.148	3.8	13.7	20.4	0.322	8.2	29.2	43.6
10	254	10.750	273	0.134	3.4	15.6	23.2	0.165	4.2	19.1	28.5	0.365	9.3	41.4	61.8
12	305	12.750	324	0.156	4.0	21.5	32.0	0.180	4.6	24.7	36.9	0.375	9.5	50.7	75.6
14	356	14.000	356	0.156	4.0	23.6	35.2	0.188	4.8	28.4	42.3	0.375	9.5	55.9	83.3
16	406	16.000	406	0.165	4.2	28.6	42.6	0.188	4.8	32.5	48.5	0.375	9.5	64.1	95.5
18	457	18.000	457	0.165	4.2	32.2	48.0	0.188	4.8	36.6	54.6	0.375	9.5	72.3	107.7
20	508	20.000	508	0.188	4.8	40.6	60.6	0.218	5.5	47.1	70.3	0.375	9.5	80.5	120.0
24	610	24.000	610	0.218	5.5	56.7	84.5	0.250	6.4	64.9	96.8	0.375	9.5	96.9	144.4

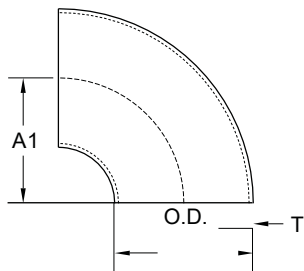
General Notes:

- Nominal diameter and thickness: According to ASME B36.19.
- Thickness Tolerance: According to A / SA-312 will never be less than 87.5% of the nominal thickness.
- Material: Stainless Steel TP-304L and TP-316L. Other alloys are available upon request.
- Maximum operating pressure: Must be calculated using the latest version of the applicable ASME code.

90° Elbows NPS ASTM A 403 & ASME SA-403



**90° Elbow
(Long Radius)**



**90° Elbow
(Short Radius)**

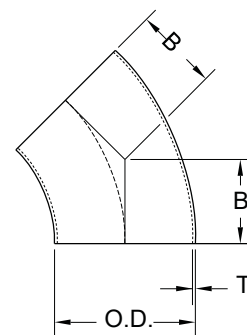
NPS Nominal Pipe Size		O.D. Outside Diameter		T [Nominal Thickness]			90° Elbow Long Radius				90° Elbow Short Radius			
							A		Weight		A1		Weight	
In	mm	In	mm	Sch	In	mm	In	mm	lb	kg	In	mm	lb	kg
1 1/2	38	1.900	48	5S	0.065	1.7	2.250	57	0.4	0.2				
				10S	0.109	2.8			0.6	0.3				
				40S	0.145	3.7			0.8	0.4				
2	51	2.375	60	5S	0.065	1.7	3.000	76	0.6	0.3				
				10S	0.109	2.8			1.1	0.5				
				40S	0.154	3.9			1.5	0.7				
2 1/2	64	2.875	73	5S	0.083	2.1	3.750	95	1.2	0.6				
				10S	0.120	3.0			1.8	0.8				
				40S	0.203	5.2			2.9	1.3				
3	76	3.500	89	5S	0.083	2.1	4.500	114	1.8	0.8				
				10S	0.120	3.0			2.6	1.2				
				40S	0.216	5.5			4.6	2.1				
4	102	4.500	114	5S	0.083	2.1	6.000	152	3.1	1.4				
				10S	0.120	3.0			4.5	2.0				
				40S	0.237	6.0			8.7	3.9				
5	127	5.563	141	5S	0.109	2.8	7.500	191	6.4	2.9				
				10S	0.134	3.4			7.8	3.5				
				40S	0.258	6.6			14.7	6.7				
6	152	6.625	168	5S	0.109	2.8	9.000	229	9.1	4.1				
				10S	0.134	3.4			11.2	5.1				
				40S	0.280	7.1			22.9	10.4				
8	203	8.625	219	5S	0.109	2.8	12.000	305	15.9	7.2	8.000	203	10.6	4.8
				10S	0.148	3.8			21.5	9.8			14.4	6.5
				40S	0.322	8.2			45.9	20.8			30.6	13.9
10	254	10.750	273	5S	0.134	3.4	15.000	381	30.5	13.9	10.000	254	20.4	9.2
				10S	0.165	4.2			37.5	17.0			25.0	11.3
				40S	0.365	9.3			81.4	36.9			54.2	24.6
12	305	12.750	324	5S	0.156	4.0	18.000	457	50.6	23.0	12.000	305	33.7	15.3
				10S	0.180	4.6			58.3	26.4			38.9	17.6
				40S	0.375	9.5			119.5	54.2			79.7	36.1
14	356	14.000	356	5S	0.156	4.0	21.000	533	64.9	29.4	14.000	356	43.3	19.6
				10S	0.188	4.8			78.0	35.4			52.0	23.6
				40S	0.375	9.5			153.6	69.7			102.4	46.4
16	406	16.000	406	5S	0.165	4.2	24.000	610	89.7	40.7	16.000	406	59.8	27.1
				10S	0.188	4.8			102.1	46.3			68.1	30.9
				40S	0.375	9.5			201.2	91.3			134.2	60.9
18	457	18.000	457	5S	0.165	4.2	27.000	686	113.7	51.6	18.000	457	75.8	34.4
				10S	0.188	4.8			129.4	58.7			86.3	39.1
				40S	0.375	9.5			255.4	115.8			170.3	77.2
20	508	20.000	508	5S	0.188	4.8	30.000	762	159.9	72.5	20.000	508	106.6	48.4
				10S	0.218	5.5			185.1	84.0			123.4	56.0
				40S	0.375	9.5			316.0	143.3			210.6	95.5
24	610	24.000	610	5S	0.218	5.5	36.000	914	267.1	121.2	24.000	610	178.1	80.8
				10S	0.250	6.4			305.9	138.8			203.9	92.5
				40S	0.375	9.5			456.4	207.0			304.3	138

General Notes:

- Material: Stainless Steel 304L, 316L. Other alloys available on request.
- Grade WP - Class W, WX, WU, (Class S on request).
- Diameter and thickness: ASME B36.19.
- Dimensions: ASME B16.9.
- Thickness Tolerance: According to A / SA-403 will never be less than 87.5% of the nominal thickness.
- Dimensional Tolerance: ASME B16.9, Table 13.
- Bevel: ASME B16.9, Table 12.
- Allowable Pressure Rating: Must be calculated using the latest version of the applicable ASME code.

45° Elbows NPS ASTM A 403 & ASME SA-403

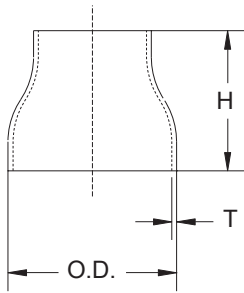
NPS Nominal Pipe Size		O.D. Outside Diameter		T [Nominal Thickness]			B		Weight		S/R 45 Elbows			
											B		Weight	
In	mm	In	mm	Sch	In	mm	In	mm	lb	kg	In	mm	lb	kg
1 1/2	38	1.900	48	5S	0.065	1.7	1.125	29	0.2	0.1				
				10S	0.109	2.8			0.3	0.1				
				40S	0.145	3.7			0.4	0.2				
2	51	2.375	60	5S	0.065	1.7	1.375	35	0.3	0.1				
				10S	0.109	2.8			0.5	0.2				
				40S	0.154	3.9			0.7	0.3				
2 1/2	64	2.875	73	5S	0.083	2.1	1.750	44	0.6	0.3				
				10S	0.120	3.0			0.9	0.4				
				40S	0.203	5.2			1.5	0.7				
3	76	3.500	89	5S	0.083	2.1	2.000	51	0.9	0.4				
				10S	0.120	3.0			1.3	0.6				
				40S	0.216	5.5			2.3	1.0				
4	102	4.500	114	5S	0.083	2.1	2.500	64	1.6	0.7				
				10S	0.120	3.0			2.3	1.0				
				40S	0.237	6.0			4.3	2.0				
5	127	5.563	141	5S	0.109	2.8	3.120	79	3.2	1.4				
				10S	0.134	3.4			3.9	1.8				
				40S	0.258	6.6			7.3	3.3				
6	152	6.625	168	5S	0.109	2.8	3.750	95	4.6	2.1				
				10S	0.134	3.4			5.6	2.5				
				40S	0.280	7.1			11.4	5.2				
8	203	8.625	219	5S	0.109	2.8	5.000	127	8.0	3.6	4.000	102	5.3	2.4
				10S	0.148	3.8			10.8	4.9			7.2	3.3
				40S	0.322	8.2			23.0	10.4			15.3	3.5
10	254	10.750	273	5S	0.134	3.4	6.250	159	15.3	6.9	5.000	127	10.2	4.6
				10S	0.165	4.2			18.7	8.5			12.5	5.7
				40S	0.365	9.3			40.7	18.5			26.1	12.3
12	305	12.750	324	5S	0.156	4.0	7.500	191	25.3	11.5	6.000	153	16.9	7.7
				10S	0.180	4.6			29.1	13.2			19.5	8.8
				40S	0.375	9.5			59.8	27.1			39.9	18.1
14	356	14.000	356	5S	0.156	4.0	8.750	222	32.5	14.7	7.000	178	21.7	9.8
				10S	0.188	4.8			39.0	17.7			26.0	11.8
				40S	0.375	9.5			76.8	34.8			51.2	23.2
16	406	16.000	406	5S	0.165	4.2	10.000	254	44.9	20.4	8.000	203	29.9	13.1
				10S	0.188	4.8			51.0	23.2			34.5	15.5
				40S	0.375	9.5			100.6	45.6			67.1	30.5
18	457	18.000	457	5S	0.165	4.2	11.250	286	56.9	25.8	9.000	229	37.9	17.2
				10S	0.188	4.8			64.7	29.3			43.2	19.6
				40S	0.375	9.5			127.7	57.9			85.2	38.6
20	508	20.000	508	5S	0.188	4.8	12.500	318	80.0	36.3	10.000	305	53.3	24.2
				10S	0.218	5.5			92.6	42.0			61.7	28.0
				40S	0.375	9.5			158.0	71.7			105.3	47.8
24	610	24.000	610	5S	0.218	5.5	15.000	381	133.6	60.6	12.000	361	89.1	40.4
				10S	0.250	6.4			152.9	69.4			102.0	46.3
				40S	0.375	9.5			228.2	104			153.5	69.1



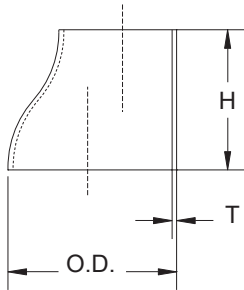
General Notes:

- Material: Stainless Steel 304L, 316L. Other alloys available on request.
- Grade WP - Class W, WX, WU, (Class S on request).
- Diameter and thickness: ASME B36.19.
- Dimensions: ASME B16.9.
- Thickness Tolerance: According to A / SA-403 will never be less than 87.5% of the nominal thickness.
- Dimensional Tolerance: ASME B16.9, Table 13.
- Bevel: ASME B16.9, Table 12.
- Allowable Pressure Rating: Must be calculated using the latest version of the applicable ASME code.

NPS Reducers ASTM A 403 & ASME SA-403



Concentric Reducer



Eccentric Reducer

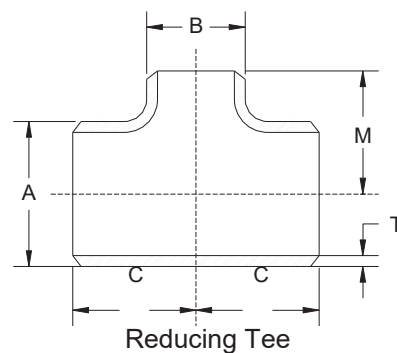
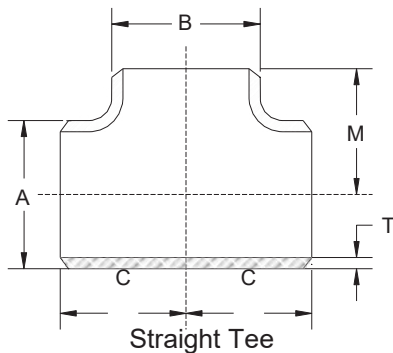
NPS Nominal Pipe Size		O.D. Outside Diameter		T [Nominal Thickness]			H		Weight	
In	mm	In	mm	Sch	In	mm	In	mm	lb	kg
1 1/2	38	1.900	48	5S	0.065	1.7	2.500	64	0.3	0.1
				10S	0.109	2.8			0.4	0.2
				40S	0.145	3.7			0.6	0.3
2	51	2.375	60	5S	0.065	1.7	3.000	76	0.4	0.2
				10S	0.109	2.8			0.7	0.3
				40S	0.145	3.7			0.9	0.4
2 1/2	64	2.875	73	5S	0.083	2.1	3.500	89	0.7	0.3
				10S	0.120	3.0			1.1	0.5
				40S	0.203	5.2			1.7	0.8
3	76	3.500	89	5S	0.083	2.1	3.500	89	0.9	0.4
				10S	0.120	3.0			1.3	0.6
				40S	0.216	5.5			2.3	1.0
4	102	4.500	114	5S	0.083	2.1	4.000	102	1.3	0.6
				10S	0.120	3.0			1.9	0.9
				40S	0.237	6.0			3.7	1.7
5	127	5.563	141	5S	0.109	2.8	5.000	127	2.7	1.2
				10S	0.134	3.4			3.3	1.5
				40S	0.258	6.6			6.2	2.8
6	152	6.625	168	5S	0.109	2.8	5.500	140	3.6	1.6
				10S	0.134	3.4			4.4	2.0
				40S	0.280	7.1			8.9	4.0
8	203	8.625	219	5S	0.109	2.8	6.000	152	5.1	2.3
				10S	0.148	3.8			6.9	3.1
				40S	0.322	8.2			14.6	6.6
10	254	10.750	273	5S	0.134	3.4	7.000	178	9.1	4.1
				10S	0.165	4.2			11.1	5.1
				40S	0.365	9.3			24.2	11.0
12	305	12.750	324	5S	0.156	4.0	8.000	203	14.3	6.5
				10S	0.180	4.6			16.5	7.5
				40S	0.375	9.5			33.8	15.3
14	356	14.000	356	5S	0.156	4.0	13.000	330	40.2	18.2
				10S	0.188	4.8			30.8	14.0
				40S	0.375	9.5			60.5	27.4
16	406	16.000	406	5S	0.165	4.2	14.000	356	33.3	15.1
				10S	0.188	4.8			37.9	17.2
				40S	0.375	9.5			74.7	33.9
18	457	18.000	457	5S	0.165	4.2	15.000	381	40.2	18.2
				10S	0.188	4.8			45.8	20.8
				40S	0.375	9.5			90.3	41.0
20	508	20.000	508	5S	0.188	4.8	20.000	508	67.9	30.8
				10S	0.218	5.5			78.6	35.6
				40S	0.375	9.5			134.1	60.8
24	610	24.000	610	5S	0.218	5.5	20.000	508	94.5	42.9
				10S	0.250	6.4			108.2	49.1
				40S	0.375	9.5			161.4	73.2

General Notes:

- Material: Stainless Steel 304L, 316L. Other alloys available on request.
- Grade WP - Class W, WX, WU, (Class S on request).
- Diameter and thickness: ASME B36.19.
- Dimensions: ASME B16.9.
- Thickness Tolerance: According to A / SA-403 will never be less than 87.5% of the nominal thickness.
- Dimensional Tolerance: ASME B16.9, Table 13.
- Bevel: ASME B16.9, Table 12.
- Allowable Pressure Rating: Must be calculated using the latest version of the applicable ASME code.

NPS Tees ASTM A 403 & ASME SA-403

Run				Outlet				C		M		SCH 10S				SCH 40S			
NPS Nominal Pipe Size		A		NPS Nominal Pipe Size		B						T		Weight		T		Weight	
In	mm	In	mm	In	mm	In	mm	In	mm	In	mm	In	mm	lb	kg	In	mm	lb	kg
1 1/2	38	1.900	48	1/2	13	0.840	21	2.250	57	2.250	57	0.109	2.8	1.3	0.6	0.145	3.7	2.0	0.9
				3/4	19	1.050	27			2.250	57			1.4	0.6			2.1	1.0
				1	25	1.315	33			2.250	57			1.5	0.7			1.2	0.5
				1 1/4	32	1.660	42			2.250	57			1.5	0.7			2.3	1.0
				1 1/2	38	1.900	48			2.250	57			1.5	0.7			2.3	1.0
2	51	2.375	60	3/4	19	1.050	27	2.500	64	1.750	44	0.109	2.8	1.4	0.6	0.154	3.9	3.3	1.5
				1	25	1.315	33			2.000	51			1.7	0.8			3.5	1.6
				1 1/4	32	1.660	42			2.250	57			1.7	0.8			3.6	1.6
				1 1/2	38	1.900	48			2.375	60			1.8	0.8			3.8	1.7
				2	51	2.375	60			2.500	64			1.8	0.8			3.8	1.7
				1 1/2	38	1.900	48			2.375	60			1.8	0.8			3.8	1.7
				2	51	2.375	60			2.500	64			1.8	0.8			3.8	1.7
				2 1/2	64	2.875	73			3.000	76			2.5	1.1			5.0	2.3
2 1/2	64	2.875	73	1	25	1.315	33	3.000	76	2.250	57	0.120	3.0	2.5	1.1	0.203	5.2	5.0	2.3
				1 1/4	32	1.660	42			2.500	64			2.6	1.2			5.3	2.4
				1 1/2	38	1.900	48			2.625	67			2.7	1.2			5.5	2.5
				2	51	2.375	60			2.750	70			3.0	1.4			6.0	2.7
				2 1/2	64	2.875	73			3.000	76			3.0	1.4			6.0	2.7
3	76	3.500	89	1 1/4	32	1.660	42	3.375	86	2.750	70	0.120	3.0	3.6	1.6	0.216	5.5	6.3	2.8
				1 1/2	38	1.900	48			2.875	73			3.7	1.7			6.3	2.8
				2	51	2.375	60			3.000	76			3.8	1.7			6.5	2.9
				2 1/2	64	2.875	73			3.250	83			3.9	1.8			6.8	3.1
				3	76	3.500	89			3.375	86			3.9	1.8			7.0	3.2
4	102	4.500	114	1 1/2	38	1.900	48	4.125	105	3.375	86	0.120	3.0	5.4	2.4	0.237	6.0	11.1	5.0
				2	51	2.375	60			3.500	89			5.4	2.5			11.2	5.1
				2 1/2	64	2.875	73			3.750	95			5.5	2.5			11.3	5.1
				3	76	3.500	89			3.875	98			5.6	2.5			11.6	5.3
				4	89	4.500	114			4.125	105			5.7	2.6			12.0	5.4
5	127	5.563	141	2	51	2.375	60	4.875	124	4.125	105	0.134	3.4	10.8	4.9	0.258	6.6	19.0	8.6
				2 1/2	64	2.875	73			4.250	108			11.1	5.0			19.5	8.8
				3	76	3.500	89			4.375	111			11.4	5.2			20.0	9.1
				4	102	4.500	114			4.625	117			12.0	5.4			21.0	9.5
				5	127	5.563	141			4.875	124			12.0	5.4			21.5	9.8
6	152	6.625	168	2 1/2	64	2.875	73	5.625	143	4.750	121	0.134	3.4	15.7	7.1	0.280	7.1	32.0	14.5
				3	76	3.500	89			4.875	124			16.0	7.3			32.5	14.7
				4	102	4.500	114			5.125	130			16.5	7.5			33.5	15.2
				5	127	5.563	141			5.375	137			17.0	7.7			34.5	15.6
				6	152	6.625	168			5.625	143			17.0	7.7			35.0	15.9
8	203	8.625	219	4	102	4.500	114	7.000	178	6.125	156	0.148	3.8	23.9	10.8	0.322	8.2	51.7	23.5
				5	127	5.563	141			6.375	162			24.5	11.1			53.0	24.0
				6	152	6.625	168			6.625	168			25.0	11.3			54.0	24.5
				8	203	8.625	219			7.000	178			25.0	11.3			55.0	24.9



NPS Tees ASTM A 403 & ASME SA-403

Run				Outlet				C		M		SCH 10S				SCH 40S			
NPS Nominal Pipe Size		A		NPS Nominal Pipe Size		B						T		Weight		T		Weight	
In	mm	In	mm	In	mm	In	mm	In	mm	In	mm	In	mm	lb	kg	In	mm	lb	kg
10	254	10.750	273	4	102	4.500	114	8.500	216	7.250	184	0.165	4.2	30.1	13.7	0.365	9.3	80.0	36.3
				5	127	5.563	141			7.500	191			32.3	14.7			81.0	36.7
				6	152	6.625	168			7.625	194			36.3	16.5			83.0	37.6
				8	203	8.625	219			8.000	203			37.0	16.8			84.5	38.3
				10	254	10.750	273			8.500	216			37.0	16.8			85.0	38.6
12	305	12.750	324	5	127	5.563	141	10.000	254	8.500	216	0.180	4.6	49.8	22.6	0.375	9.5	110.0	49.9
				6	152	6.625	168			8.625	219			51.7	23.5			114.0	51.7
				8	203	8.625	219			9.000	229			53.0	24.0			117.0	53.1
				10	254	10.750	273			9.500	241			54.0	24.5			119.0	54.0
				12	305	12.750	324			10.000	254			54.0	24.5			120.0	54.4
14	356	14.000	356	6	152	8.625	219	11.000	279	9.375	238	0.188	4.8	51.5	23.4	0.375	9.5	153.0	69.4
				8	203	8.625	219			9.750	248			52.5	23.8			155.0	70.3
				10	254	10.750	273			10.125	257			53.5	24.3			158.0	71.7
				12	305	12.750	324			10.625	270			54.3	24.6			160.0	72.6
				14	356	14.000	356			11.000	279			59.6	27.0			165.0	74.8
16	406	16.000	406	6	152	8.625	219	12.000	305	10.375	264	0.188	4.8	65.1	29.5	0.375	9.5	176.0	79.8
				8	203	8.625	219			10.750	273			67.1	30.4			180.0	81.6
				10	254	10.750	273			11.125	283			69.3	31.4			186.0	84.4
				12	305	12.750	324			11.625	295			71.2	32.3			191.0	86.6
				14	356	14.000	356			12.000	305			72.4	32.8			194.0	88.0
18	457	18.000	457	6	152	8.625	219	12.000	305	12.000	305	0.188	4.8	75.9	34.4	0.375	9.5	199.0	90.3
				8	203	10.750	273			11.750	298			81.5	37.0			196.0	88.9
				10	254	10.750	273			12.125	308			83.5	37.9			222.0	100.7
				12	305	12.750	324			12.625	321			86.5	39.2			230.0	104.3
				14	356	14.000	356			13.000	330			88.7	40.2			236.0	107.0
20	508	20.000	508	16	406	16.000	406	15.000	381	13.000	330	0.218	5.5	90.2	40.9	0.375	9.5	241.0	109.3
				18	457	18.000	457			13.500	343			94.7	43.0			249.0	112.9
				8	203	10.750	273			12.750	324			124.0	56.2			328.0	148.8
				10	254	10.750	273			13.125	333			126.0	57.2			332.0	150.6
				14	356	14.000	356			14.000	356			126.0	57.2			336.0	152.4
24	610	24.000	610	16	406	16.000	406	17.000	432	14.000	356	0.250	6.4	127.0	57.6	0.375	9.5	338.0	153.3
				18	457	18.000	457			14.500	368			128.0	58.1			340.0	154.2
				20	508	20.000	508			15.000	381			130.0	59.0			347.0	157.4
				12	305	12.750	324			15.625	397			191.0	86.6			510.0	231.3
				14	356	14.000	356			16.000	406			192.0	87.1			513.0	232.7
				16	406	16.000	406			16.000	406			193.0	87.5			516.0	234.1
				18	457	18.000	457			16.500	419			194.0	88.0			519.0	235.4
				20	508	20.000	508			17.000	432			195.0	88.5			522.0	236.8
				24	610	24.000	610			17.000	432			200.0	90.7			528.0	239.5

General Notes:

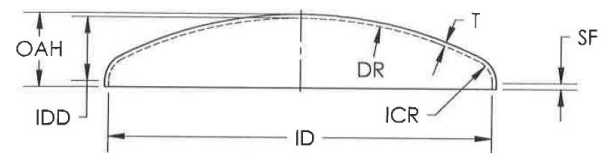
- Material: Stainless Steel 304L, 316L. Other alloys available on request.
- Grade WP - Class W, WX, WU, (Class S on request).
- Diameter and thickness: ASME B36.19.
- Dimensions: ASME B16.9.
- Thickness Tolerance: According to A / SA-403 will never be less than 87.5% of the nominal thickness.
- Dimensional Tolerance: ASME B16.9, Table 13.
- Bevel: ASME B16.9, Table 12.
- Allowable Pressure Rating: Must be calculated using the latest version of the applicable ASME code.



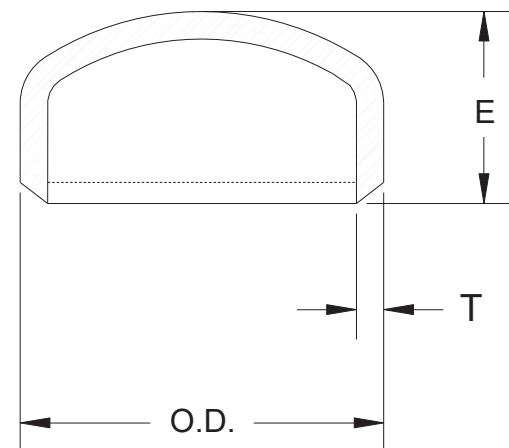
NPS Caps ASTM A 403 & ASME SA-403

NPS Nominal Pipe Size		O.D. Outside Diameter		T [Nominal Thickness]			E		Weight	
In	mm	In	mm	Identifi- cation	In	mm	In	mm	lb	kg
1 1/2	38	1.900	48	5S	0.065	1.7	1.50	38	0.2	0.1
				10S	0.109	2.8			0.3	0.1
				40S	0.145	3.7			0.4	0.2
2	51	2.375	60	5S	0.065	1.7	1.50	38	0.2	0.1
				10S	0.109	2.8			0.4	0.2
				40S	0.154	3.9			0.6	0.3
2 1/2	64	2.875	73	5S	0.083	2.1	1.50	38	0.4	0.2
				10S	0.120	3.0			0.5	0.2
				40S	0.203	5.2			0.9	0.4
3	76	3.500	89	5S	0.083	2.1	2.00	51	0.6	0.3
				10S	0.120	3.0			0.8	0.4
				40S	0.216	5.5			1.5	0.7
4	102	4.500	114	5S	0.083	2.1	2.50	64	0.9	0.4
				10S	0.120	3.0			1.3	0.6
				40S	0.237	6.0			2.5	1.1
5	127	5.563	141	5S	0.109	2.8	3.00	76	2.0	0.9
				10S	0.134	3.4			2.4	1.1
				40S	0.258	6.6			4.7	2.1
6	152	6.625	168	5S	0.109	2.8	3.50	89	2.5	1.1
				10S	0.134	3.4			3.1	1.4
				40S	0.280	7.1			6.5	2.9
8	203	8.625	219	5S	0.109	2.8	4.00	102	4.0	1.8
				10S	0.148	3.8			5.5	2.5
				40S	0.322	8.2			11.9	5.4
10	254	10.750	273	5S	0.134	3.4	5.00	127	8.1	3.7
				10S	0.165	4.2			10.0	4.5
				40S	0.365	9.3			22.0	10.0
12	305	12.750	324	5S	0.156	4.0	6.00	152	13.5	6.1
				10S	0.180	4.6			14.7	6.7
				40S	0.375	9.5			30.7	13.9
14	356	14.000	356	5S	0.156	4.0	6.50	165	-----	-----
				10S	0.188	4.8			18.0	8.2
				40S	0.375	9.5			33.0	15.0
16	406	16.000	406	5S	0.165	4.2	7.00	178	-----	-----
				10S	0.188	4.8			23.0	10.4
				40S	0.375	9.5			42.0	19.1
18	457	18.000	457	5S	0.165	4.2	8.00	203	-----	-----
				10S	0.188	4.8			29.0	13.2
				40S	0.375	9.5			55.0	24.9
20	508	20.000	508	5S	0.188	4.8	9.00	229	-----	-----
				10S	0.218	5.5			37.0	16.8
				40S	0.375	9.5			68.0	30.8
24	610	24.000	610	5S	0.218	5.5	10.50	267	-----	-----
				10S	0.250	6.4			58.0	26.3
				40S	0.375	9.5			96.0	1.0

ASME FLANGED & DISHED HEAD



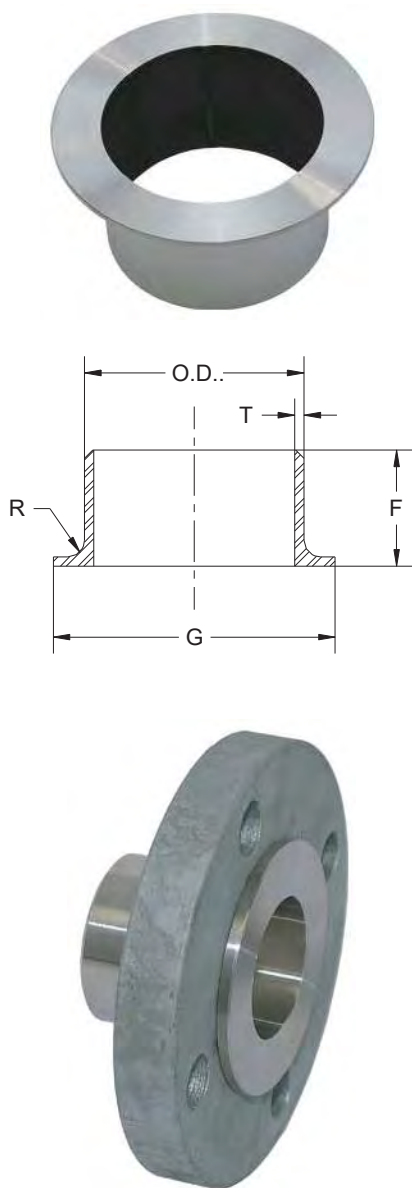
Ellipsoidal Shaped Cap



General Notes:

- Material: Stainless Steel 304L, 316L. Other alloys available on request.
- Grade WP - Class W, WX, WU, (Class S on request).
- Diameter and thickness: ASME B36.19.
- Dimensions: ASME B16.9.
- Thickness Tolerance: According to A / SA-403 will never be less than 87.5% of the nominal thickness.
- Dimensional Tolerance: ASME B16.9, Table 13.
- Bevel: ASME B16.9, Table 12.
- Allowable Pressure Rating: Must be calculated using the latest version of the applicable ASME code.

NPS Stub-Ends ASTM A 403 & ASME SA-403



NPS Nominal Pipe Size		O.D. Outside Diameter		T [Nominal Thickness]			F		G		R		Weight	
In	mm	In	mm	Sch.	In	mm	In	mm	In	mm	In	mm	lb	kg
1 1/2	38	1.900	48	10S	0.109	2.8	2.000	51	2.875	73	0.250	6	0.6	0.2
				40S	0.145	3.7							0.9	0.4
2	51	2.375	60	10S	0.109	2.8	2.500	64	3.625	92	0.313	8	0.9	0.4
				40S	0.154	3.9							1.2	0.5
2 1/2	64	2.875	73	10S	0.120	3.0	2.500	64	4.125	105	0.313	8	1.1	0.5
				40S	0.203	5.2							1.8	0.8
3	76	3.500	89	10S	0.120	3.0	2.500	64	5.000	127	0.375	10	1.6	0.7
				40S	0.216	5.5							2.5	1.1
4	102	4.500	114	10S	0.120	3.0	3.000	76	6.188	157	0.438	11	2.5	1.1
				40S	0.237	6.0							4.0	1.8
5	127	5.563	141	10S	0.134	3.4	3.000	76	7.313	186	0.438	11	3.5	1.6
				40S	0.258	6.6							5.6	2.5
6	152	6.625	168	10S	0.134	3.4	3.500	89	8.500	216	0.500	13	4.8	2.2
				40S	0.280	7.1							8.3	3.7
8	203	8.625	219	10S	0.148	3.8	4.000	102	10.625	270	0.500	13	7.7	3.5
				40S	0.322	8.2							13.0	5.9
10	254	10.750	273	10S	0.165	4.2	5.000	127	12.750	324	0.500	13	12.1	5.5
				40S	0.365	9.3							23.0	10.4
12	305	12.750	324	10S	0.180	4.6	6.000	152	15.000	381	0.500	13	18.0	8.2
				40S	0.375	9.5							33.0	15.0
14	356	14.000	356	10S	0.188	4.8	6.000	152	16.250	413	0.500	13	22.3	10.1
				40S	0.375	9.5							37.6	17.1
16	406	16.000	406	10S	0.188	4.8	6.000	152	18.500	470	0.500	13	27.5	12.5
				40S	0.375	9.5							46.3	21.0
18	457	18.000	457	10S	0.188	4.8	6.000	152	21.000	533	0.500	13	35.2	16.0
				40S	0.375	9.5							64.0	29.0
20	508	20.000	508	10S	0.218	5.5	6.000	152	23.000	584	0.500	13	49.8	22.6
				40S	0.375	9.5							74.2	33.7
24	610	24.000	610	10S	0.250	6.4	6.000	152	27.250	692	0.500	13	77.4	35.1
				40S	0.375	9.5							95.0	43.1

**Stub-end illustrated with
Galvanized Lap-joint Flange**
(See P 4-12 & 4-13 for Lap-joint detail)

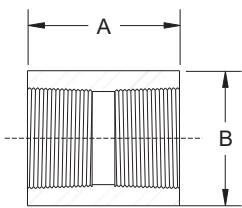
General Notes:

- Material: Stainless Steel 304L, 316L. Other alloys available on request.
- Grade WP - Class W, WX, WU, (Class S on request).
- Diameter and thickness: ASME B36.19.
- Dimensions: ASME B16.9. (Short Pattern)
- Thickness Tolerance: According to A / SA-403 will never be less than 87.5% of the nominal thickness.
- Dimensional Tolerance: ASME B16.9, Table 13.
- Bevel: ASME B16.9, Table 12.
- Allowable Pressure Rating: Must be calculated using the latest version of the applicable ASME code.

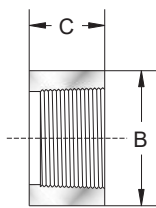
NPS Couplings ASTM A 182 & ASME SA-182

ASME B16.11, Class 3000

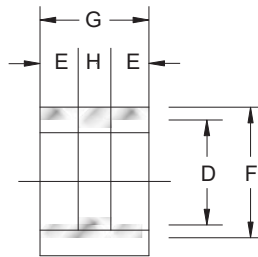
NPS Nominal Pipe Size	A	B	C	D	E	F	G	H	Weight	
									Coupling	Half Coupling
In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	lb kg	lb kg
1/8	1.250	0.750	0.625	0.420	0.375	0.750	1.000	0.250	0.13	0.07
3	32	19	16	11	10	19	25	6	0.1	0.03
1/4	1.375	0.750	0.688	0.555	0.375	0.875	1.000	0.250	0.13	0.07
6	35	19	17	14	10	22	25	6	0.1	0.03
3/8	1.500	0.875	0.750	0.690	0.438	1.000	1.125	0.250	0.31	0.16
10	38	22	19	18	11	25	29	6	0.1	0.1
1/2	1.875	1.125	1.313	0.855	0.500	1.250	1.375	0.375	0.25	0.13
13	48	29	33	22	13	32	35	10	0.1	0.1
3/4	2.000	1.375	1.000	1.065	0.563	1.500	1.500	0.375	0.44	0.22
19	51	35	25	27	14	38	38	10	0.2	0.1
1	2.375	1.750	1.188	1.330	0.625	1.750	1.750	0.500	0.63	0.32
25	60	44	30	34	16	44	44	13	0.3	0.1
1 1/4	2.625	2.25	1.313	1.675	0.688	2.250	1.875	0.500	1.56	0.78
32	67	57	33	43	17	57	48	13	0.7	0.4
1 1/2	3.125	2.500	1.563	1.915	0.750	2.500	2.000	0.500	2.19	1.10
38	79	64	40	49	19	64	51	13	1.0	0.5
2	3.375	3.000	1.688	2.406	0.875	3.000	2.500	0.750	4.50	2.25
51	86	76	43	61	22	76	64	19	2.0	1.0
2 1/2	3.625	3.625	1.813	2.906	0.875	3.625	2.500	0.750	6.25	3.13
64	92	92	46	74	22	92	64	19	2.8	1.4
3	4.250	4.250	2.125	3.535	1.000	4.250	2.750	0.750	6.75	3.38
76	108	108	54	90	25	108	70	19	3.1	1.5
4	4.750	5.500	2.375	4.545	1.125	5.500	3.000	0.750	16.75	8.38
102	121	140	60	115	29	140	76	19	7.6	3.8



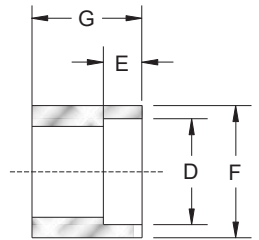
Threaded Coupling



Threaded Half-Coupling

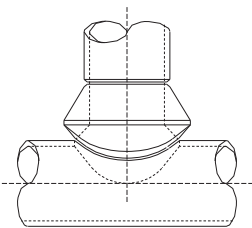


Socket-Welding Coupling

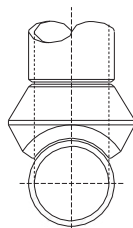


Socket-Welding Half-Coupling

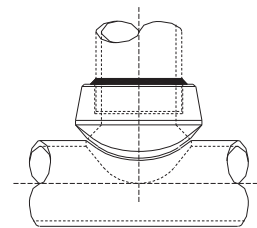
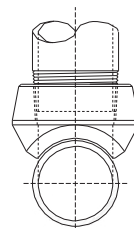
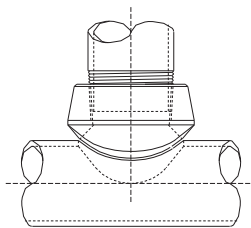
Also available, Integrally Reinforced Forged Branch Outlet Fittings. (A/SA-182, MSS-SP 97)



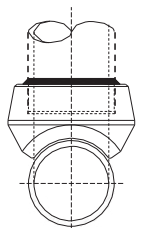
Buttwelding



Threaded



Socket Welding

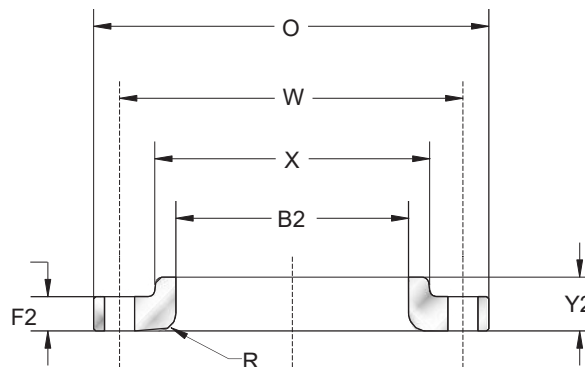


NPS Lap-joints ASTM A105 & ASME SA-105 Class 150, Galvanized

NPS Nominal Pipe Size	O	F2	X	Y2	B2	R	W Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Weight
In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm		lb kg
1 1/2	5.00	0.69	2.56	0.88	1.97	0.25	3.88	5/8	4	3.0
38	127	18	65	22	50	6	99	16		1.4
2	6.00	0.75	3.06	1.00	2.46	0.31	4.75	3/4	4	5.0
51	152	19	78	25	62	8	121	19		2.3
2 1/2	7.00	0.88	3.56	1.12	2.97	0.31	5.50	3/4	4	7.0
64	178	22	90	28	75	8	140	19		3.2
3	7.50	0.94	4.25	1.19	3.60	0.38	6.00	3/4	4	8.0
76	191	24	108	30	91	10	152	19		3.6
4	9.00	0.94	5.31	1.31	4.60	0.44	7.50	3/4	8	13.0
102	229	24	135	33	117	11	191	19		5.9
5	10.00	0.94	6.44	1.44	5.69	0.44	8.50	7/8	8	15.0
127	254	24	164	37	145	11	216	22		6.8
6	11.00	1.00	7.56	1.56	6.75	0.50	9.50	7/8	8	19.0
152	279	25	192	40	171	13	241	22		8.6
8	13.50	1.12	9.69	1.75	8.75	0.50	11.75	7/8	8	30.0
203	343	28	246	44	222	13	298	22		13.6
10	16.00	1.19	12.00	1.94	10.92	0.50	14.25	1	12	43.0
254	406	30	305	49	277	13	362	25		19.5
12	19.00	1.25	14.38	2.19	12.92	0.50	17.00	1	12	64.0
305	483	32	365	56	328	13	432	25		29.1
14	21.00	1.38	15.75	3.12	14.18	0.50	18.75	1 1/8	12	105.0
356	533	35	400	79	360	13	476	29		47.7
16	23.50	1.44	18.00	3.44	16.19	0.50	21.25	1 1/8	16	140.0
406	597	37	457	87	411	13	540	29		63.6
18	25.00	1.56	19.88	3.81	18.20	0.50	22.75	1 1/4	16	160.0
457	635	40	505	97	462	13	578	32		72.7
20	27.50	1.69	22.00	4.06	20.25	0.50	25.00	1 1/4	20	195.0
508	699	43	559	103	514	13	635	32		88.6
24	32.00	1.88	26.12	4.38	24.25	0.50	29.50	1 3/8	20	275.0
610	813	48	663	111	616	13	749	35		125.0

General Notes:

- Material: Forged Carbon Steel, ASTM A105 and ASME SA-105.
- Finish: Galvanized to ASTM A 123.
- Dimension: ASME B16.5 Class 150.
- Maximum Allowable Working Pressure:
See ASME B16.5 material group, Table F2-1.1 material group 1.1, or contact our technical representatives.
- Other classes available on request.

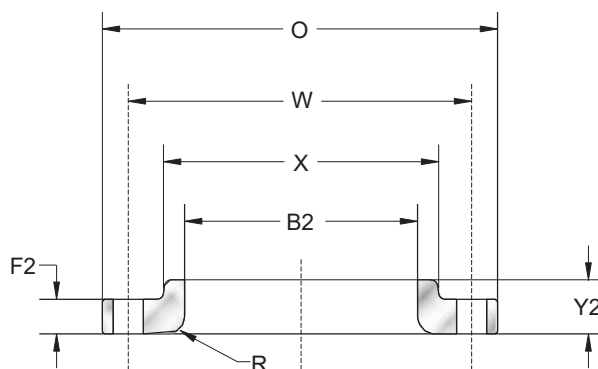


NPS Lap-joints ASTM A105 & ASME SA-105 Class 300, Galvanized

NPS Nominal Pipe Size	O	F2	X	Y2	B2	R	W Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Weight
In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm		lb kg
1 1/2	6.12	0.81	2.75	1.19	1.97	0.25	4.50	7/8	4	6.0
38	155	21	70	30	50	6	114	22		2.7
2	6.50	0.88	3.31	1.31	2.46	0.31	5.00	3/4	8	7.0
51	165	22	84	33	62	8	127	19		3.2
2 1/2	7.50	1.00	3.94	1.50	2.97	0.31	5.88	7/8	8	10.0
64	191	25	100	38	75	8	149	22		4.5
3	8.25	1.12	4.62	1.69	3.60	0.38	6.62	7/8	8	13.0
76	210	28	117	43	91	10	168	22		5.9
4	10.00	1.25	5.75	1.88	4.60	0.44	7.88	7/8	8	22.0
102	254	32	146	48	117	11	200	22		10.0
5	11.00	1.38	7.00	2.00	5.69	0.44	9.25	7/8	8	28.0
127	279	35	178	51	145	11	235	22		12.7
6	12.50	1.44	8.12	2.06	6.75	0.50	10.62	7/8	12	39.0
152	318	37	206	52	171	13	270	22		17.7
8	15.00	1.62	10.25	2.44	8.75	0.50	13.00	1	12	58.0
203	381	41	260	62	222	13	330	25		26.4
10	17.50	1.88	12.62	3.75	10.92	0.50	15.25	1 1/8	16	91.0
254	445	48	321	95	277	13	387	29		41.4
12	20.50	2.00	14.75	4.00	12.92	0.50	17.75	1 1/4	16	140.0
305	521	51	375	102	328	13	451	32		63.6
14	23.00	2.12	16.75	4.38	14.18	0.50	20.25	1 1/4	20	190.0
356	584	54	425	111	360	13	514	32		86.4
16	25.50	2.25	19.00	4.75	16.19	0.50	22.50	1 3/8	20	250.0
406	648	57	483	121	411	13	572	35		113.6
18	28.00	2.38	21.00	5.12	18.20	0.50	24.75	1 3/8	24	295.0
457	711	60	533	130	462	13	629	35		134.1
20	30.50	2.50	23.12	5.50	20.25	0.50	27.00	1 3/8	24	370.0
508	775	64	587	140	514	13	686	35		168.2
24	36.00	2.75	27.62	6.00	24.25	0.50	32.00	1 5/8	24	550.0
610	914	70	702	152	616	13	813	41		250.0

General Notes:

- Material: Forged Carbon Steel, ASTM A105 and ASME SA-105.
- Finish: Galvanized to ASTM A 123.
- Dimension: ASME B16.5 Class 300.
- Maximum Allowable Working Pressure:
See ASME B16.5 material group, Table F2-1.1 material group 1.1, or contact our technical representatives.
- Other classes available on request.



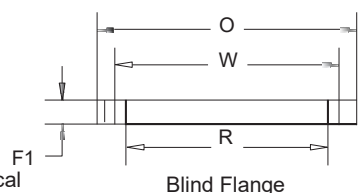
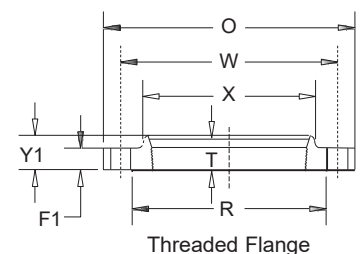
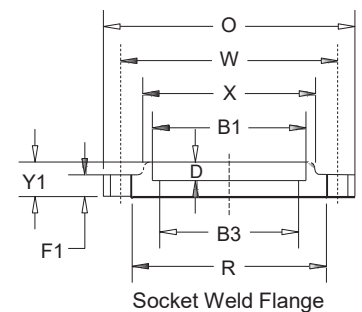
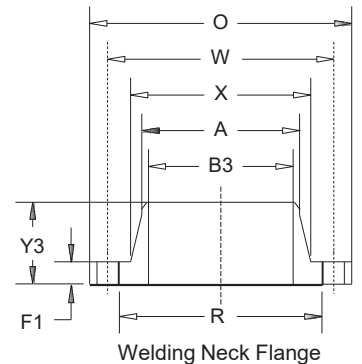
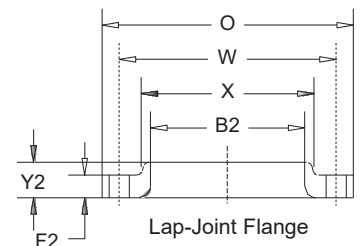
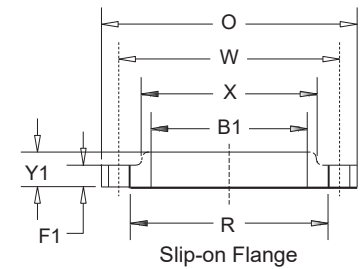
NPS ASTM A182 & ASME SA-182 Class 150

NPS Nominal Pipe Size	O	F1	F2	X	A	Y1	Y2	Y3	T	Bore			r	D	R
										B1	B2	B3			
In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm
3/4	3.88	0.44	0.50	1.50	1.05	0.56	0.62	2.00	0.62	1.09	1.11	0.82	0.12	0.44	1.69
19	98	11	13	38	27	14	16	51	16	28	28	21	3	11	43
1	4.25	0.50	0.56	1.94	1.32	0.62	0.69	2.12	0.69	1.36	1.38	1.05	0.12	0.50	2.00
25	108	13	14	49	34	16	18	54	18	35	35	27	3	13	51
1 1/4	4.62	0.56	0.62	2.31	1.66	0.75	0.81	2.19	0.81	1.70	1.72	1.38	0.19	0.56	2.50
32	117	14	16	59	42	19	21	56	21	43	44	35	5	14	64
1 1/2	5.00	0.62	0.69	2.56	1.90	0.81	0.88	2.38	0.88	1.95	1.97	1.61	0.25	0.62	2.88
38	127	16	18	65	48	21	22	60	22	50	50	41	6	16	73
2	6.00	0.69	0.75	3.06	2.38	0.94	1.00	2.44	1.00	2.44	2.46	2.07	0.31	0.69	3.62
51	152	17	19	78	60	24	25	62	25	62	62	53	8	18	92
2 1/2	7.00	0.81	0.88	3.56	2.88	1.06	1.12	2.69	1.12	2.94	2.97	2.47	0.31	0.75	4.12
64	178	21	22	90	73	27	28	68	28	75	75	63	8	19	105
3	7.50	0.88	0.94	4.25	3.50	1.12	1.19	2.69	1.19	3.57	3.60	3.07	0.38	0.81	5.00
76	191	22	24	108	89	28	30	68	30	91	91	78	10	21	127
4	9.00	0.88	0.94	5.31	4.50	1.25	1.31	2.94	1.31	4.57	4.60	4.03	0.44	-----	6.19
102	229	22	24	135	114	32	33	75	33	116	117	102	11	-----	157
5	10.00	0.88	0.94	6.44	5.56	1.38	1.44	3.44	1.44	5.66	5.69	5.05	0.44	-----	7.31
127	254	22	24	164	141	35	37	87	37	144	145	128	11	-----	186
6	11.00	0.94	1.00	7.56	6.63	1.50	1.56	3.44	1.56	6.72	6.75	6.07	0.50	-----	8.50
152	279	24	25	192	168	38	40	87	40	171	171	154	13	-----	216
8	13.50	1.06	1.12	9.69	8.63	1.69	1.75	3.94	1.75	8.72	8.75	7.98	0.50	-----	10.62
203	343	27	28	246	219	43	44	100	44	221	222	203	13	-----	270
10	16.00	1.12	1.19	12.00	10.75	1.88	1.94	3.94	1.94	10.88	10.92	10.02	0.50	-----	12.75
254	406	28	30	305	273	48	49	100	49	276	277	255	13	-----	324
12	19.00	1.19	1.25	14.38	12.75	2.12	2.19	4.44	2.19	12.88	12.92	12.00	0.50	-----	15.00
305	483	30	32	365	324	54	56	113	56	327	328	305	13	-----	381
14	21.00	1.31	1.38	15.75	14.00	2.19	3.12	4.94	2.25	14.14	14.18	Must be specified at time of purchase	0.50	-----	16.25
356	533	33	35	400	356	56	79	125	57	359	360		13	-----	413
16	23.50	1.38	1.44	18.00	16.00	2.44	3.44	4.94	2.50	16.16	16.19		0.50	-----	18.50
406	597	35	37	457	406	62	87	125	64	410	411		13	-----	470
18	25.00	1.50	1.56	19.88	18.00	2.62	3.81	5.44	2.69	18.18	18.20		0.50	-----	21.00
457	635	38	40	505	457	67	97	138	68	462	462		13	-----	533
20	27.50	1.62	1.69	22.00	20.00	2.81	4.06	5.62	2.88	20.20	20.25		0.50	-----	23.00
508	699	41	43	559	508	71	103	143	73	513	514		13	-----	584
24	32.00	1.81	1.88	26.12	24.00	3.19	4.38	5.94	3.25	24.25	24.25		0.50	-----	27.25
610	813	46	48	663	610	81	111	151	83	616	616		13	-----	692

NPS Flanges ASTM A182 & ASME SA-182

Class 150

Drilling			Approximate Weight				Nominal Pipe Size (NPS)
W Diameter of Bolt Circle	Diameter of Bolt Holes	Number of bolts	Threaded Slip-on Socket Welding	Lap Joint	Welding Neck	Blind	
In mm	In mm		lb kg	lb kg	lb kg	lb kg	
2.75 70	5/8 16	4	2.0 0.9	2.0 0.9	2.0 0.9	2.0 0.9	3/4 19
3.12 79	5/8 16	4	2.0 0.9	2.0 0.9	3.0 1.4	2.0 0.9	1 25
3.50 89	5/8 16	4	3.0 1.4	3.0 1.4	3.0 1.4	3.0 1.4	1 1/4 32
3.88 98	5/8 16	4	3.0 1.4	3.0 1.4	4.0 1.8	4.0 1.8	1 1/2 38
4.75 121	3/4 19	4	5.0 2.3	5.0 2.3	6.0 2.7	5.0 2.3	2 51
5.50 140	3/4 19	4	7.0 3.2	7.0 3.2	8.0 3.6	7.0 3.2	2 1/2 64
6.00 152	3/4 19	4	8.0 3.6	8.0 3.6	10.0 4.5	9.0 4.1	3 76
7.50 191	3/4 19	8	13.0 5.9	13.0 5.9	15.0 6.8	17.0 7.7	4 102
8.50 216	7/8 22	8	15.0 6.8	15.0 6.8	19.0 8.6	20.0 9.1	5 127
9.50 241	7/8 22	8	19.0 8.6	19.0 8.6	24.0 10.9	26.0 11.8	6 152
11.75 298	7/8 22	8	30.0 13.6	30.0 13.6	39.0 17.7	45.0 20.5	8 203
14.25 362	1 25	12	43.0 19.5	43.0 19.5	52.0 23.6	70.0 31.8	10 254
17.00 432	1 25	12	64.0 29.1	64.0 29.1	80.0 36.4	110.0 50.0	12 305
18.75 476	1 1/8 29	12	90.0 40.9	105.0 47.7	110.0 50.0	140.0 63.6	14 356
21.25 540	1 1/8 29	16	98.0 44.5	140.0 63.6	140.0 63.6	180.0 81.8	16 406
22.75 578	1 1/4 32	16	130.0 59.1	160.0 72.7	150.0 68.2	220.0 100.0	18 457
25.00 635	1 1/4 32	20	165.0 75.0	195.0 88.6	180.0 81.8	285.0 129.5	20 508
29.50 749	1 3/8 35	20	220.0 100.0	275.0 125.0	260.0 118.2	430.0 195.5	24 610



General Notes:

- Material: Stainless Steel F304L & F316L. Other grades available on request.
- Dimension: ASME B16.5 Class 150. Others Class available on request.
- Maximum Allowable Working Pressure: See ASME B16.5 Table F2-2.3 material group 2.3, or contact our technical representatives.

NPS Flanges ASTM A182 & ASME SA-182

Class 300

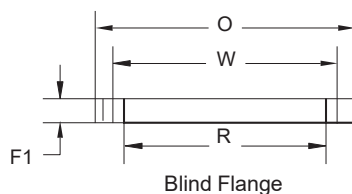
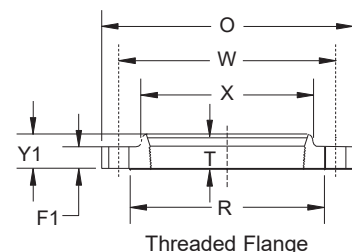
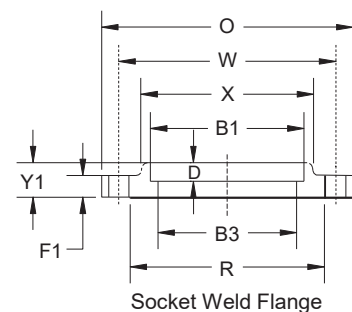
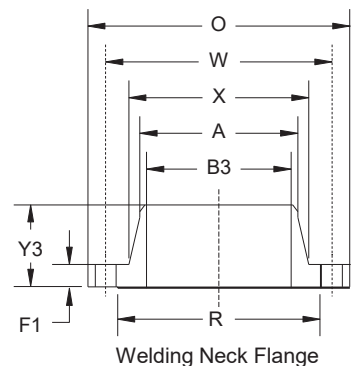
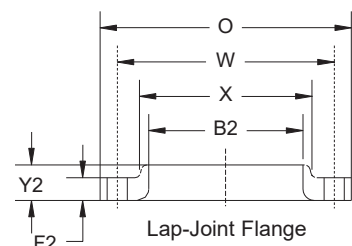
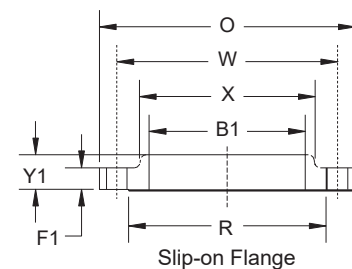
NPS Nominal Pipe Size	O	F1	F2	X	A	Y1	Y2	Y3	T	Bore			r	D	R
										B1	B2	B3			
In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm
3/4	4.62	0.56	0.62	1.88	1.05	0.94	1.00	2.19	0.62	1.09	1.11	0.82	0.12	0.44	1.69
19	117	14	16	48	27	24	25	56	16	28	28	21	3	11	43
1	4.88	0.62	0.69	2.12	1.32	1.00	1.06	2.38	0.69	1.36	1.38	1.05	0.12	0.50	2.00
25	124	16	18	54	34	25	27	60	18	35	35	27	3	13	51
1 1/4	5.25	0.69	0.75	2.50	1.66	1.00	1.06	2.50	0.81	1.70	1.72	1.38	0.19	0.56	2.50
32	133	18	19	64	42	25	27	64	21	43	44	35	5	14	64
1 1/2	6.12	0.75	0.81	2.75	1.90	1.13	1.19	2.63	0.88	1.95	1.97	1.61	0.25	0.63	2.88
38	155	19	21	70	48	29	30	67	22	50	50	41	6	16	73
2	6.50	0.81	0.88	3.31	2.38	1.25	1.31	2.69	1.12	2.44	2.46	2.07	0.31	0.69	3.62
51	165	21	22	84	60	32	33	68	28	62	62	53	8	17	92
2 1/2	7.50	0.94	1.00	3.94	2.88	1.44	1.50	2.94	1.25	2.94	2.97	2.47	0.31	0.75	4.12
64	191	24	25	100	73	37	38	75	32	75	75	63	8	19	105
3	8.25	1.06	1.12	4.62	3.50	1.63	1.69	3.06	1.25	3.57	3.60	3.07	0.38	0.81	5.00
76	210	27	28	117	89	41	43	78	32	91	91	78	10	21	127
4	10.00	1.19	1.25	5.75	4.50	1.82	1.88	3.32	1.44	4.57	4.60	4.03	0.44	-----	6.19
102	254	30	32	146	114	46	48	84	37	116	117	102	11	-----	157
5	11.00	1.31	1.38	7.00	5.56	1.94	2.00	3.82	1.69	5.66	5.69	5.05	0.44	-----	7.31
127	279	33	35	178	141	49	51	97	43	144	145	128	11	-----	186
6	12.50	1.38	1.44	8.12	6.63	2.00	2.06	3.82	1.81	6.72	6.75	6.07	0.50	-----	8.50
152	318	35	37	206	168	51	52	97	46	171	171	154	13	-----	216
8	15.00	1.56	1.62	10.25	8.63	2.38	2.44	4.32	2.00	8.72	8.75	7.98	0.50	-----	10.62
203	381	40	41	260	219	60	62	110	51	221	222	203	13	-----	270
10	17.50	1.81	1.88	12.62	10.75	2.56	3.75	4.56	2.19	10.88	10.92	10.02	0.50	-----	12.75
254	445	46	48	321	273	65	95	116	56	276	277	255	13	-----	324
12	20.50	1.94	2.00	14.75	12.75	2.82	4.00	5.06	2.38	12.88	12.92	12.00	0.50	-----	15.00
305	521	49	51	375	324	72	102	129	60	327	328	305	13	-----	381
14	23.00	2.06	2.12	16.75	14.00	2.94	4.38	5.56	2.50	14.14	14.18	Must be specified at time of purchase	0.50	-----	16.25
356	584	52	54	425	356	75	111	141	64	359	360		13	-----	413
16	25.50	2.19	2.25	19.00	16.00	3.19	4.75	5.69	2.69	16.16	16.19		0.50	-----	18.50
406	648	56	57	483	406	81	121	145	68	410	411		13	-----	470
18	28.00	2.31	2.38	21.00	18.00	3.44	5.12	6.19	2.75	18.18	18.20		0.50	-----	21.00
457	711	59	60	533	457	87	130	157	70	462	462		13	-----	533
20	30.50	2.44	2.50	23.12	20.00	3.69	5.50	6.32	2.88	20.20	20.25		0.50	-----	23.00
508	775	62	64	587	508	94	140	161	73	513	514		13	-----	584
24	36.00	2.69	2.75	27.62	24.00	4.13	6.00	6.56	3.25	24.25	24.25		0.50	-----	27.25
610	914	68	70	702	610	105	152	167	83	616	616		13	-----	692

NPS Flanges ASTM A182 & ASME SA-182 Class 300

Drilling			Approximate Weight				Nominal Pipe Size (NPS)
W Diameter of Bolt Circle	Diameter of Bolt Holes	Number of bolts	Threaded Slip-on Socket Welding	Lap Joint	Welding Neck	Blind	
In mm	In mm		lb kg	lb kg	lb kg	lb kg	
3.25	3/4	4	3.0	3.0	3.0	3.0	3/4
83	19		1.4	1.4	1.4	1.4	19
3.50	3/4	4	3.0	3.0	4.0	3.0	1
89	19			1.4	1.8	1.4	25
3.88	3/4	4	4.0	4.0	5.0	4.0	1 1/4
99	19			1.8	2.3	1.8	32
4.50	7/8	4	6.0	6.0	7.0	6.0	1 1/2
114	22			2.7	3.2	2.7	38
5.00	3/4	8	7.0	7.0	9.0	8.0	2
127	19		3.2	3.2	4.1	3.6	51
5.88	7/8	8	10.0	10.0	12.0	12.0	2 1/2
149	22		4.5	4.5	5.5	5.5	64
6.62	7/8	8	13.0	13.0	15.0	16.0	3
168	22		5.9	5.9	6.8	7.3	76
7.88	7/8	8	22.0	22.0	25.0	27.0	4
200	22		10.0	10.0	11.4	12.3	102
9.25	7/8	8	28.0	28.0	32.0	35.0	5
235	22		12.7	12.7	14.5	15.9	127
10.62	7/8	12	39.0	39.0	42.0	50.0	6
270	22		17.7	17.7	19.1	22.7	152
13.00	1	12	58.0	58.0	67.0	81.0	8
330	25		26.4	26.4	30.5	36.8	203
15.25	1 1/8	16	81.0	91.0	91.0	125.0	10
387	29		36.8	41.4	41.4	56.8	254
17.75	1 1/4	16	115.0	140.0	140.0	185.0	12
451	32		52.3	63.6	63.6	84.1	305
20.25	1 1/4	20	165.0	190.0	180.0	250.0	14
514	32		75.0	86.4	81.8	113.6	356
22.50	1 3/8	20	190.0	250.0	250.0	295.0	16
572	35		86.4	113.6	113.6	134.1	406
24.75	1 3/8	24	250.0	295.0	320.0	395.0	18
629	35		113.6	134.1	145.5	179.5	457
27.00	1 3/8	24	315.0	370.0	400.0	505.0	20
686	35		143.2	168.2	181.8	229.5	508
32.00	1 5/8	24	475.0	550.0	580.0	790.0	24
813	41		215.9	250.0	263.6	359.1	610

General Notes:

- Material: Stainless Steel F304L & F316L. Other grades available on request.
- Dimension: ASME B16.5 Class 300. Others Class available on request.
- Maximum Allowable Working Pressure: See ASME B16.5 Table F2-2.3 material group 2.3, or contact our technical representatives.





Slip-On Flanges

The slip-on flange has a low hub because the pipe slips into the flange prior to welding. It is welded both inside and out to provide sufficient strength and prevent leakage. Slip-on flanges are all bored slightly larger than the O.D. of the matching pipe. They are preferred over welding neck flanges by many users due to their lower initial cost, but final installation cost is probably not much less than that of the welding neck flange because of the additional welding involved.



Lap-Joint Flanges

The lap joint flange is practically identical to a slip-on flange except it has a radius at the intersection of the bore and flange face. This radius is necessary to have the flange accommodate a lap joint stub end. Normally, a lap joint flange and stub end are mated together in an assembly system.



Welding Neck Flanges

The welding neck flange is normally referred to as the "high hub" flange. It is designed to transfer stresses to the pipe, thereby reducing high stress concentration at the base of the flange. The welding neck flange is the best designed butt-welding flange of those currently available because of the design.



Socket Welding Flanges

The socket welding flange is similar to a slip-on flange except it has a bore and a counter bore dimension. The counter bore is slightly larger than the O.D. of the matching pipe, allowing the pipe to be inserted into the flange similar to a slip-on flange. The diameter of the smaller bore is the same as the I.D. of the matching pipe. A restriction is built into the bottom of the bore which sets as a shoulder for the pipe to rest on. This eliminates any restriction in flow when using a socket welding flange.



Threaded (Screwed) Flanges

The threaded flange is similar to the slip-on flange, but the bore is threaded. Its chief merit is that it can be assembled without welding, explaining its use in low pressure services at ordinary atmospheric temperatures, and in highly explosive areas where welding creates a hazard.



Blind Flanges

The blind flange is a flange without a bore. It is used to close off the ends of a piping system and / or a pressure vessel opening. It also permits easy access to the interior of line or vessel once it has been sealed and must be reopened.

O.D. Pipe ASTM A 778 & Fittings ASTM A 774

Summary of specification

Our O.D. (Outside Diameter) pipes and fittings in austenitic stainless steel are manufactured as per specification ASTM A 778 for pipe and ASTM A 774 for fittings.

With our high-tech equipment, pipe and fittings offer an excellent price/quality ratio. Pipe and fittings in inventory of this class are manufactured from ASTM A 240-304L & 316L base material. Other alloys are available upon request.

Pipes and fittings manufactured as per ASTM A 778 & ASTM A 774 specifications are commonly used in pulp and paper mills, water treatment plants and other industries where corrosion resistance is not essential [*See Note (1)*]. Longitudinal seams are welded as per our qualified welding procedures using automatic or semi-automatic state of the art plasma welding torches in a single or double set-up. This welding procedure reduces greatly the effects of carbides precipitation in the heated affected zone.

Pipe and fittings can be supplied in a wide range of diameters and wall thicknesses.

For each lot of pipe, a tension, reverse, forward bend tests is performed.

Welded elbows can be supplied as smooth flow or mitred construction, reducers are supplied as conical, tees, crosses and laterals are supplied as nozzle-welded.

Dimensions and tolerances of fabricated fittings are in the technical section, see Page 7-6. Special fittings can be supplied to customer design and size when required.

Only visual examination is performed on fitting.

Pipe and fittings are also pickled and passivated as per ASTM A-380 to maintain corrosion resistance and to prevent surface discoloration from free iron oxidation.

Base metal analysis is traceable to the original mill certificates.

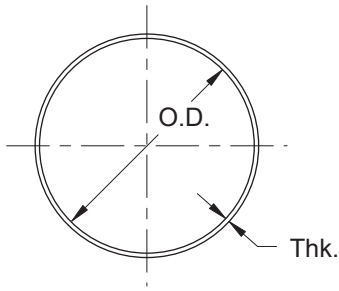
As per ASTM A-778 & A-774, tolerance of nominal thickness permissible shall be $\pm 12.5\%$

Pipe and fittings are normally furnished in square cut ends but can also be provided with beveled ends.

Note

1. For heat treated pipe and fittings, please refer to section 4.0 of NPS ASTM A-312 and ASTM A-403.

O.D. Pipes ASTM A778

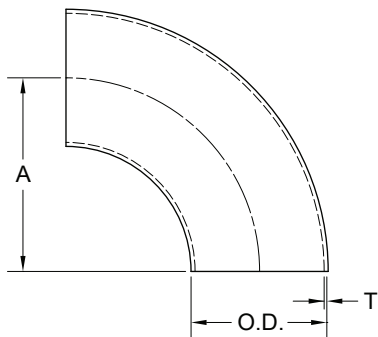


O.D. Outside Diameter		Thickness and Weight									
		14 gauge		11 gauge		10 gauge		3/16" th.		1/4" th.	
		0.078 in / 2.0mm		0.125 in / 3.2 mm		0.140 in / 3.6 mm		0.1875 in / 4.7 mm		0.25 in / 6.3 mm	
Inches	mm	lb / ft	kg / m	lb / ft	kg / m	lb / ft	kg / m	lb / ft	kg / m	lb / ft	kg / m
1 1/2	38	1.3	2.0	2.2	3.3						
2	51	1.8	2.6	2.9	4.3						
2 1/2	64	2.2	3.3	3.6	5.3						
3	76	2.6	3.9	4.3	6.4						
4	102	3.5	5.2	5.6	8.4						
5	127	4.3	6.4	7.0	10.4						
6	152	5.2	7.7	8.4	12.5						
8	203	6.9	10.2	11.1	16.5						
10	254			13.8	20.6						
12	305			16.6	24.7						
14	356			19.3	28.7	21.6	32.2				
16	406			22.0	32.8	24.7	36.7	33.1	49.3		
18	457			24.8	36.9	27.7	41.3	37.2	55.3		
20	508			27.5	40.9	30.8	45.8	41.3	61.4	55.3	82.4
24	610			33.0	49.1			49.5	73.6	66.3	98.6
30	762			41.2	61.3			61.7	91.9	82.7	123.0
36	914			49.4	73.5			74.0	110.1	99.1	147.4
42	1067			57.6	85.7			86.3	128.4	115.5	171.8
48	1219			65.8	97.9			98.5	146.6	131.9	196.3

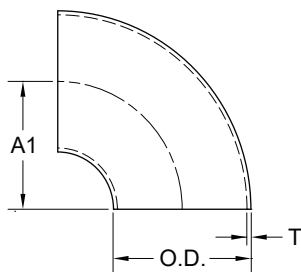
General Notes:

- Material: Stainless Steel 304L, 316L, 317L, Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section..
- Other diameter and thickness available upon request

O.D. 90° Elbows ASTM A774



90° Elbow
Long Radius



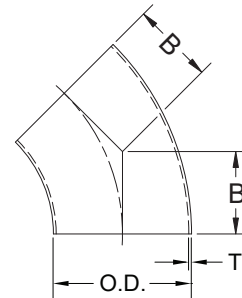
90° Elbow
Short Radius

O.D. Outside Diameter		T [Nominal Thickness]			90° Elbow, Long Radius				90° Elbow, Short Radius			
		Gauge			A		Weight		A1		Weight	
In	mm		In	mm	In	mm	lb	kg	In	mm	lb	kg
1 1/2	38	14	0.078	2.0	2.250	57	0.4	0.2				
		11	0.125	3.2			0.7	0.3				
2	51	14	0.078	2.0	3.000	76	0.7	0.3				
		11	0.125	3.2			1.1	0.5				
2 1/2	64	14	0.078	2.0	3.750	95	1.1	0.5				
		11	0.125	3.2			1.8	0.8				
3	76	14	0.078	2.0	4.500	114	1.5	0.7				
		11	0.125	3.2			2.5	1.1				
4	102	14	0.078	2.0	6.000	152	2.7	1.2				
		11	0.125	3.2			4.4	2.0				
5	127	14	0.078	2.0	7.500	191	4.3	1.9				
		11	0.125	3.2			6.9	3.1				
6	152	14	0.078	2.0	9.000	229	6.1	2.8				
		11	0.125	3.2			9.9	4.5				
8	203	14	0.078	2.0	12.000	305	10.8	4.9	8.000	203	-----	-----
		11	0.125	3.2			17.4	7.9			11.6	5.3
10	254	11	0.125	3.2	15.000	381	27.2	12.3	10.000	254	18.1	8.2
		11	0.125	3.2			39.0	17.7			26.0	11.8
12	305	11	0.125	3.2	18.000	457	53.1	24.1	14.000	356	-----	-----
		3/16"	0.188	4.8			79.9	36.3			53.3	24.2
14	356	11	0.125	3.2	21.000	533	69.2	31.4			-----	-----
		3/16"	0.188	4.8			104.2	47.3			69.5	31.5
16	406	10	0.140	3.6	24.000	610	87.5	39.7	16.000	406	51.7	23.5
		3/16"	0.188	4.8			131.8	59.8			69.5	31.5
18	457	11	0.125	3.2	27.000	686	176.3	80.0	18.000	457	87.8	39.8
		1/4"	0.250	6.4			217.3	98.6			117.5	53.3
20	508	11	0.125	3.2	30.000	762	108.0	49.0	20.000	508	-----	-----
		3/16"	0.188	4.8			162.5	73.7			108.3	49.1
24	610	1/4"	0.250	6.4	36.000	914	217.3	98.6			144.9	65.7
		3/16"	0.188	4.8			233.6	106.0			-----	-----
30	762	1/4"	0.250	6.4	45.000	1143	312.3	141.7	24.000	610	208.2	94.5
		3/16"	0.188	4.8			364.5	165.3			-----	-----
		1/4"	0.250	6.4			487.0	220.9	30.000	762	324.7	147.3

General Notes:

- Material: Stainless Steel 304L, 316L, 317L, Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.

O.D. Outside Diameter		T [Nominal Thickness]			45° Elbow			
					B		Weight	
In	mm	Gauge	In	mm	In	mm	lb	kg
1 1/2	38	14	0.078	2.0	1.120	28	0.2	0.1
		11	0.125	3.2			0.3	0.1
2	51	14	0.078	2.0	1.375	35	0.3	0.2
		11	0.125	3.2			0.6	0.3
2 1/2	64	14	0.078	2.0	1.750	44	0.5	0.2
		11	0.125	3.2			0.9	0.4
3	76	14	0.078	2.0	2.000	51	0.8	0.4
		11	0.125	3.2			1.3	0.6
4	102	14	0.078	2.0	2.500	64	1.4	0.6
		11	0.125	3.2			2.2	1.0
5	127	14	0.078	2.0	3.120	79	2.1	1.0
		11	0.125	3.2			3.4	1.6
6	152	14	0.078	2.0	3.750	95	3.1	1.4
		11	0.125	3.2			4.9	2.2
8	203	14	0.078	2.0	5.000	127	5.4	2.5
		11	0.125	3.2			8.7	4.0
10	254	11	0.125	3.2	6.250	159	13.6	6.2
12	305	11	0.125	3.2	7.500	191	19.5	8.9
14	356	11	0.125	3.2	8.750	222	26.5	12.0
		3/16"	0.188	4.8			40.0	18.1
16	406	11	0.125	3.2	10.000	254	34.6	15.7
		10	0.140	3.6			38.8	17.6
18	457	3/16"	0.188	4.8	11.250	286	52.1	23.6
		1/4"	0.250	6.4			88.1	40.0
20	508	11	0.125	3.2	12.500	318	54.0	24.5
		3/16"	0.188	4.8			81.3	36.9
24	610	1/4"	0.250	6.4	15.000	381	108.7	49.3
		3/16"	0.188	4.8			116.8	53.0
30	762	1/4"	0.250	6.4	18.625	473	156.2	70.8
		3/16"	0.188	4.8			182.3	82.7
		1/4"	0.250	6.4			243.5	110.5



General Notes:

- Material: Stainless Steel 304L, 316L, 317L, Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.

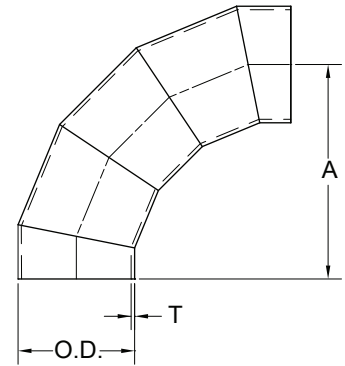
O.D. Mitred Elbows ASTM A774 Weight Table



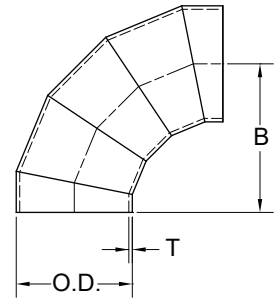
O.D. Outside Diameter		T	90° Elbow Long Radius		90° Elbow Short Radius		45° Elbow	
In	mm	Gauge	lb	kg	lb	kg	lb	kg
1 1/2	38	14	1.1	0.5	0.7	0.3	0.5	0.2
		11	1.8	0.8	1.2	0.5	0.8	0.4
2	51	14	1.5	0.7	1.1	0.5	0.7	0.3
		11	2.5	1.1	1.7	0.8	1.2	0.5
3	64	14	2.0	0.9	1.5	0.7	1.1	0.5
		11	3.3	1.5	2.4	1.1	1.7	0.8
3	76	14	2.7	1.2	1.9	0.9	1.3	0.6
		11	4.4	2.0	3.1	1.4	2.1	0.9
4	102	14	4.2	1.9	3.0	1.4	2.2	1.0
		11	6.7	3.1	4.9	2.2	3.6	1.6
5	127	14	5.9	2.7	4.3	2.0	3.1	1.4
		11	9.5	4.3	7.0	3.2	5.0	2.3
6	152	14	7.9	3.6	5.5	2.5	4.1	1.9
		11	12.8	5.8	8.9	4.0	6.7	3.0
8	203	14	12.8	5.8	8.2	3.7	6.1	2.8
		11	20.6	9.4	13.3	6.0	9.8	4.4
10	254	11	30.3	13.7	20.2	9.2	14.4	6.5
12	305	11	41.7	18.9	26.4	12.0	19.9	9.0
14	356	11	55.0	25.0	35.8	16.3	23.2	10.5
		10	61.7	28.0	40.2	18.2	26.0	11.8
16	406	11	70.1	31.8	43.8	19.9	28.2	12.8
		10	78.6	35.7	49.1	22.3	31.6	14.3
18	457	3/16	105.6	47.9	66.0	29.9	42.5	19.3
		11	87.0	39.5	54.2	24.6	33.7	15.3
20	508	10	97.6	44.3	60.8	27.6	37.8	17.1
		3/16	131.0	59.4	81.6	37.0	50.7	23.0
24	610	11	148.6	67.4	96.2	43.6	58.1	26.3
		10	166.6	75.6	107.8	48.9	65.1	29.5
30	762	3/16	223.5	101.4	144.6	65.6	87.3	39.6
		1/4	298.8	135.6	193.4	87.7	116.7	52.9
36	914	3/16	340.5	154.5	205.1	93.1	148.6	67.4
		1/4	455.0	206.4	274.1	124.3	198.5	90.0
42	1067	3/16	482.0	218.6	275.4	124.9	213.7	97.0
		1/4	643.8	292.0	367.9	166.9	285.5	129.5
48	1219	3/16	647.9	293.9	355.5	161.3	290.7	131.9
		1/4	865.2	392.5	474.7	215.3	388.2	176.1
48	1219	3/16	838.3	380.3	445.4	202.0	379.5	172.1
		1/4	1119.2	507.7	594.6	269.7	506.6	229.8

O.D. Mitred Elbows ASTM A774

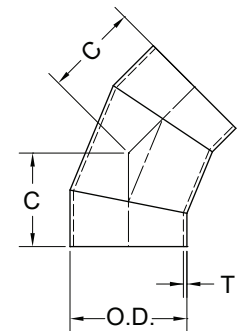
O.D. Outside Diameter		T [Nominal Thickness]			90° Elbow Long Radius		90° Elbow Short Radius		45° Elbow	
					A		B		C	
In	mm	Gauge	In	mm	In	mm	In	mm	In	mm
1 1/2	38	14 11	0.078 0.125	2.0 3.2	2.250	057	1.500	038	1.000	025
2	51	14 11	0.078 0.125	2.0 3.2	3.000	076	2.000	051	1.250	032
2 1/2	64	14 11	0.078 0.125	2.0 3.2	3.750	095	2.500	064	1.500	038
3	76	14 11	0.078 0.125	2.0 3.2	4.500	114	3.000	076	1.875	048
4	102	14 11	0.078 0.125	2.0 3.2	6.000	152	4.000	102	2.500	064
5	127	14 11	0.078 0.125	2.0 3.2	7.500	191	5.000	127	3.125	079
6	152	14 11	0.078 0.125	2.0 3.2	9.000	227	6.000	152	3.750	096
8	203	14 11	0.078 0.125	2.0 3.2	12.000	305	8.000	203	5.000	127
10	254	11	0.125	3.2	15.000	381	10.000	254	6.250	159
12	305	11	0.125	3.2	18.000	457	12.000	305	7.500	191
14	356	11 10	0.125 0.140	3.2 3.6	21.000	533	14.000	356	8.750	222
16	406	11 10 3/16	0.125 0.140 0.188	3.2 3.6 4.8	24.000	610	16.000	406	10.000	254
18	457	11 10 3/16	0.125 0.140 0.188	3.2 3.6 4.8	27.000	686	18.000	457	11.250	286
20	508	11 10 3/16 1/4	0.125 0.140 0.188 0.250	3.2 3.6 4.8 6.4	30.000	762	20.000	508	12.500	318
24	610	11 10 3/16 1/4	0.125 0.140 0.188 0.250	3.2 3.6 4.8 6.4	36.000	914	24.000	610	15.000	381
30	762	3/16 1/4	0.188 0.250	4.8 6.4	45.000	1143	30.000	762	18.750	476
36	914	3/16 1/4	0.188 0.250	4.8 6.4	54.000	1372	36.000	914	22.500	572
42	1067	3/16 1/4	0.188 0.250	4.8 6.4	63.000	1600	42.000	1067	26.000	660
48	1219	3/16 1/4	0.188 0.250	4.8 6.4	72.000	1826	48.000	1219	30.000	762



90° Mitred Elbow
Long Radius



90° Mitred Elbow
Short Radius

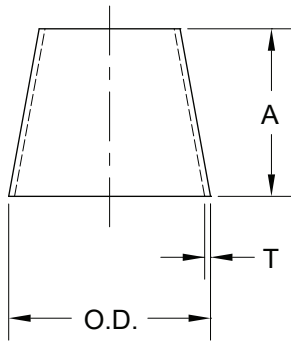


45° Mitred Elbow

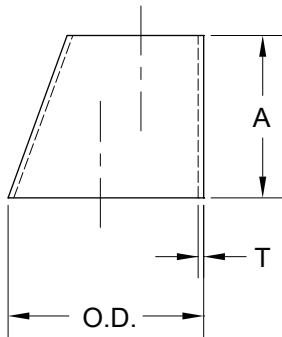
General Notes:

- Material: Stainless Steel 304L, 316L, 317L, Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Other diameter and thickness available upon request.

O.D. Reducers ASTM A774



Concentric Reducer



Eccentric Reducer

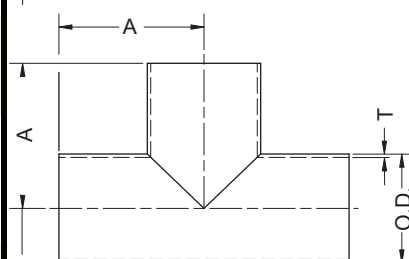
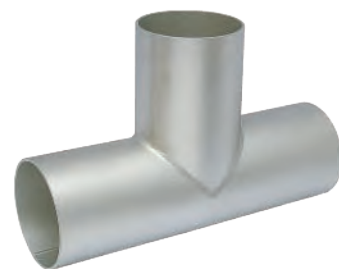
O.D. Outside Diameter		T [Nominal Thickness]			A		Weight	
In	mm	Gauge	Po	mm	In	mm	lb	kg
1 1/2	38	14	0.078	2.0	2.500	64	0.3	0.1
		11	0.125	3.2			0.5	0.2
2	51	14	0.078	2.0	3.000	76	0.4	0.2
		11	0.125	3.2			0.7	0.3
2 1/2	64	14	0.078	2.0	3.500	89	0.6	0.3
		11	0.125	3.2			1.0	0.5
3	76	14	0.078	2.0	3.500	89	0.8	0.3
		11	0.125	3.2			1.2	0.6
4	102	14	0.078	2.0	4.000	102	1.2	0.5
		11	0.125	3.2			1.9	0.9
5	127	14	0.078	2.0	5.000	127	1.8	0.8
		11	0.125	3.2			2.9	1.3
6	152	14	0.078	2.0	5.500	140	2.4	1.1
		11	0.125	3.2			3.8	1.7
8	203	14	0.078	2.0	6.000	152	3.4	1.6
		11	0.125	3.2			5.6	2.5
10	254	11	0.125	3.2	7.000	178	8.1	3.7
		12	0.125	3.2			11.0	5.0
12	305	11	0.125	3.2	8.000	203	20.9	9.5
		14	0.125	3.2			23.4	10.6
14	356	10	0.140	3.6	13.000	330	25.7	11.7
		11	0.125	3.2			28.8	13.1
16	406	10	0.140	3.6	14.000	356	38.7	17.6
		3/16	0.188	4.8			31.0	14.0
18	457	11	0.125	3.2	15.000	381	34.7	15.7
		10	0.140	3.6			46.6	21.1
20	508	3/16	0.188	4.8	20.000	508	45.8	20.8
		11	0.125	3.2			51.4	23.3
24	610	10	0.140	3.6	20.000	508	69.0	31.3
		3/16	0.188	4.8			92.2	41.8
30	762	1/4	0.250	6.4	24.000	610	54.9	24.9
		11	0.125	3.2			61.6	27.9
36	914	10	0.140	3.6	24.000	610	82.6	37.5
		3/16	0.188	4.8			110.5	50.1
42	1067	1/4	0.250	6.4	24.000	610	123.8	56.1
		3/16	0.188	4.8			165.4	75.0
48	1219	1/4	0.250	6.4	28.000	711	148.4	67.3
		3/16	0.188	4.8			198.2	89.9
48	1219	1/4	0.250	6.4	28.000	711	173.0	78.5
		3/16	0.188	4.8			231.0	104.8
48	1219	1/4	0.250	6.4	28.000	711	230.5	104.5
		3/16	0.188	4.8			307.7	139.6

General Notes:

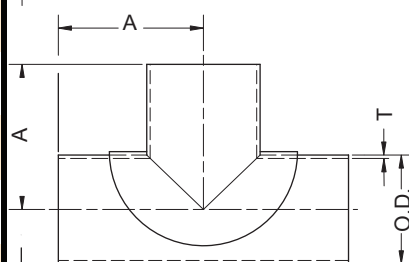
- Material: Stainless Steel 304L, 316L, 317L, Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Other diameter and thickness available upon request.

O.D. Tees and Cross ASTM A774

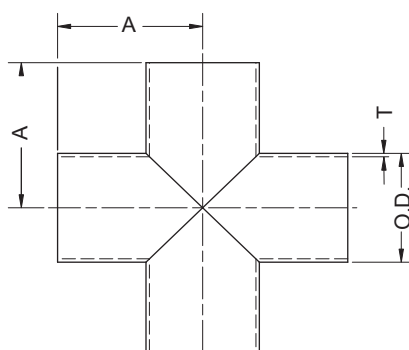
O.D. Outside Diameter		T [Nominal Thickness]			A		Weight			
							Tee		Cross	
In	mm	Gauge	In	mm	In	mm	lb	kg	lb	kg
3	76	14	0.078	2.0	3.375	76	2.0	0.9	2.7	1.2
		11	0.125	3.2			3.5	1.6	4.7	2.1
4	102	14	0.078	2.0	4.125	105	3.0	1.4	4.0	1.8
		11	0.125	3.2			4.5	2.0	6.0	2.7
5	127	14	0.078	2.0	4.875	124	4.5	2.0	6.0	2.7
		11	0.125	3.2			6.8	3.1	9.0	4.1
6	152	14	0.078	2.0	5.625	143	6.0	2.7	8.0	3.6
		11	0.125	3.2			9.0	4.1	12.0	5.4
8	203	14	0.078	2.0	7.000	178	9.0	4.1	12.0	5.4
		11	0.125	3.2			15.0	6.8	20.0	9.1
10	254	11	0.125	3.2	8.500	216	22.0	10.0	29.3	13.3
		10	0.140	3.6			43.0	19.5	57.2	26.0
12	305	11	0.125	3.2	10.000	254	30.0	13.6	39.9	18.1
		10	0.140	3.6			40.0	18.2	53.2	24.2
14	356	11	0.125	3.2	11.000	279	51.0	23.2	67.8	30.8
		10	0.140	3.6			55.0	25.0	73.2	33.3
16	406	3/16	0.188	4.8	12.000	305	76.0	35.0	101.1	45.9
		11	0.125	3.2			63.0	28.6	83.8	38.1
18	457	10	0.140	3.6	13.500	343	68.0	30.8	90.4	41.1
		3/16	0.188	4.8			95.0	43.1	126.4	57.4
20	508	11	0.125	3.2	15.000	381	75.0	34.0	99.8	45.3
		10	0.140	3.6			80.0	36.5	106.4	48.4
24	610	3/16	0.188	4.8	17.000	432	112.0	50.8	149.0	67.7
		1/4	0.250	6.4			150.0	68.0	199.5	90.7
30	762	11	0.125	3.2	22.000	559	100.0	45.4	133.0	60.7
		10	0.140	3.6			107.0	48.5	142.3	64.7
36	914	3/16	0.188	4.8	28.000	711	150.0	58.0	199.5	90.7
		1/4	0.250	6.4			200.0	90.7	266.0	120.9
42	1067	3/16	0.188	4.8	31.000	787	240.0	108.9	319.2	145.1
		1/4	0.250	6.4			325.0	147.4	432.3	196.5
48	1219	3/16	0.188	4.8	34.000	864	288.0	130.9	383.0	174.1
		1/4	0.250	6.4			390.0	177.3	518.7	235.8
		3/16	0.188	4.8			336.0	152.7	446.9	203.1
		1/4	0.250	6.4			455.0	206.8	605.2	275.1
		3/16	0.188	4.8			384.0	174.6	510.7	232.1
		1/4	0.250	6.4			520.0	236.4	691.6	314.4



Tee



Tee with reinforcement



Cross [Note (1)]

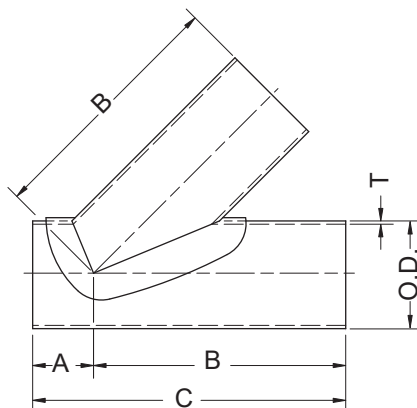
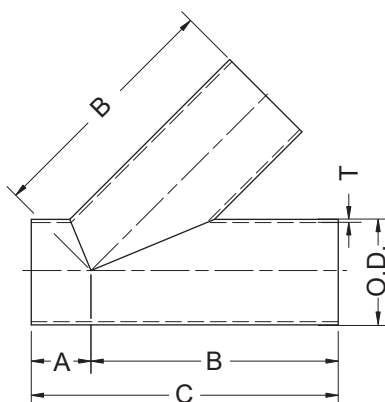
General Notes:

- Material: Stainless Steel 304L, 316L, 317L, Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Other diameter and thickness available upon request.

Note:

- The addition of reinforcement may be necessary. Upon request, the verification can be performed by Douglas Barwick, please contact a technical representative for more information.

O.D. Laterals ASTM A774



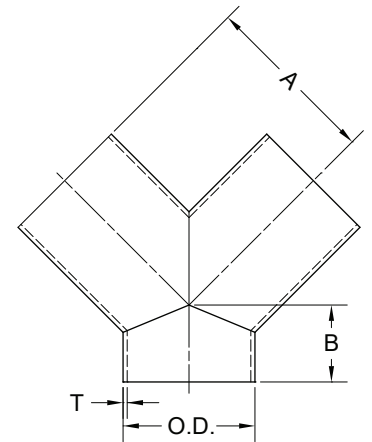
45° Lateral
with reinforcement.

O.D. Outside Diameter		T [Nominal Thickness]			A		B		C		Weight	
In	mm	Gauge	In	mm	In	mm	In	mm	In	mm	lb	kg
1 1/2	38	14 11	0.078 0.125	2.0 3.2	2.000	51	7.000	178	9.000	229	1.8 3.0	0.8 1.3
2	51	14 11	0.078 0.125	2.0 3.2	2.500	64	8.000	203	10.500	267	2.7 4.5	1.2 2.0
2 1/2	64	14 11	0.078 0.125	2.0 3.2	2.500	64	9.500	241	12.000	305	3.9 6.4	1.8 2.9
3	76	14 11	0.078 0.125	2.0 3.2	3.000	76	10.000	254	13.000	330	5.0 8.2	2.3 3.7
4	102	14 11	0.078 0.125	2.0 3.2	3.000	76	12.000	305	15.000	381	7.8 12.7	3.5 5.8
5	127	14 11	0.078 0.125	2.0 3.2	3.500	89	13.500	343	17.000	432	11.0 17.8	5.0 8.1
6	152	14 11	0.078 0.125	2.0 3.2	3.500	89	14.500	368	18.000	457	14.0 22.7	6.4 10.3
8	203	14 11	0.078 0.125	2.0 3.2	4.500	114	17.500	445	22.000	559	22.7 36.5	10.3 16.6
10	254	11	0.125	3.2	5.000	127	20.500	521	25.500	648	53.0	24.1
12	305	11	0.125	3.2	5.500	140	24.500	622	30.000	762	75.3	34.1
14	356	11 10	0.125 0.140	3.2 3.6	6.000	152	27.000	686	33.000	838	96.5 108.2	43.8 49.1
16	406	11 10 3/16	0.125 0.140 0.188	3.2 3.6 4.8	6.500	165	30.000	762	36.500	927	122.1 136.9 183.9	55.4 62.1 83.4
18	457	11 10 3/16	0.125 0.140 0.188	3.2 3.6 4.8	7.000	178	32.000	813	39.000	991	146.6 164.3 220.6	66.5 74.5 100.1
20	508	11 10 3/16 1/4	0.125 0.140 0.188 0.250	3.2 3.6 4.8 6.4	8.000	203	35.000	889	43.000	1092	178.8 200.4 269.0 359.8	81.1 90.9 122.0 163.2
24	610	11 10 3/16 1/4	0.125 0.140 0.188 0.250	3.2 3.6 4.8 6.4	9.000	229	40.500	1029	49.500	1257	247.3 277.1 371.9 497.1	112.2 125.7 168.7 225.5
30	762	3/16 1/4	0.188 0.250	4.8 6.4	10.000	254	49.000	1245	59.000	1499	556.9 744.1	252.6 337.5
36	914	3/16 1/4	0.188 0.250	4.8 6.4	24.000	610	60.000	1524	84.000	2134	890.2 1188.9	403.8 539.3
42	1067	3/16 1/4	0.188 0.250	4.8 6.4	26.000	660	69.000	1753	95.000	2413	1181.9 1578.2	536.1 715.9
48	1219	3/16 1/4	0.188 0.250	4.8 6.4	27.000	686	77.000	1956	104.000	2642	1489.9 1989.1	675.8 902.3

General Notes:

- Material: Stainless Steel 304L, 316L, 317L, Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Other diameter and thickness available upon request.

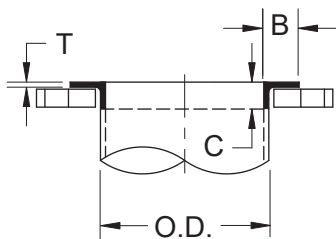
O.D. Outside Diameter		T [Nominal Thickness]			A		B		Weight	
In	mm	Gauge	In	mm	In	mm	In	mm	lb	kg
1 1/2	38	14	0.078	2.0	3.375	86	2.000	51	1.0	0.4
		11	0.125	3.2					1.6	0.7
2	51	14	0.078	2.0	4.500	114	2.500	64	1.7	0.8
		11	0.125	3.2					2.8	1.3
2 1/2	64	14	0.078	2.0	5.000	127	2.500	64	2.3	1.0
		11	0.125	3.2					3.7	1.7
3	76	14	0.078	2.0	5.500	140	3.000	76	3.1	1.4
		11	0.125	3.2					5.0	2.3
4	102	14	0.078	2.0	6.500	165	3.000	76	4.6	2.1
		11	0.125	3.2					7.5	3.4
5	127	14	0.078	2.0	7.500	191	3.500	89	6.7	3.0
		11	0.125	3.2					10.8	4.9
6	152	14	0.078	2.0	8.000	203	3.500	89	8.4	3.8
		11	0.125	3.2					13.6	6.2
8	203	14	0.078	2.0	9.000	229	4.500	114	12.9	5.9
		11	0.125	3.2					20.8	9.4
10	254	11	0.125	3.2	11.000	279	5.000	127	31.1	14.1
		11	0.125	3.2					40.7	18.5
12	305	11	0.125	3.2	12.000	305	5.500	140	54.7	24.8
		10	0.140	3.6					61.3	27.8
14	356	11	0.125	3.2	14.000	356	6.000	152	67.0	30.4
		10	0.140	3.6					75.1	34.1
16	406	11	0.125	3.2	15.000	381	6.500	165	100.9	45.8
		10	0.140	3.6					124.3	56.4
18	457	3/16	0.188	4.8	16.500	419	7.000	178	82.6	37.5
		10	0.140	3.6					92.5	42.0
20	508	3/16	0.188	4.8	18.000	457	8.000	203	113.0	51.3
		1/4	0.250	6.4					151.7	68.8
24	610	11	0.125	3.2	22.000	559	9.000	229	202.9	92.1
		10	0.140	3.6					145.6	66.1
30	762	3/16	0.188	4.8	25.000	635	10.000	254	163.2	74.0
		1/4	0.250	6.4					219.0	99.3
36	914	11	0.125	3.2	28.000	711	24.000	610	292.7	132.8
		10	0.140	3.6					309.4	140.3
42	1067	3/16	0.188	4.8	31.000	787	26.000	660	413.4	187.5
		1/4	0.250	6.4					494.5	224.3
48	1219	3/16	0.188	4.8	34.000	864	27.000	686	660.5	299.6
		1/4	0.250	6.4					634.2	287.7
									846.8	384.1
									782.0	354.7
									1044.0	473.6

**General Notes:**

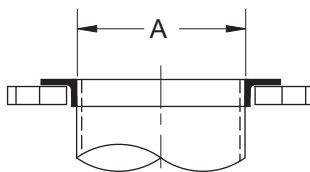
- Material: Stainless Steel 304L, 316L, 317L, Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Other diameter and thickness available upon request.
- The addition of reinforcement may be necessary. Upon request, the verification can be performed by Douglas Barwick, please contact a technical representative for more information.

O.D. Angle Collars ASTM A774

O.D. Outside Diameter		A	Angle Dimension B-C-T		Weight	
In	mm		In	mm.	lb	kg
3	76	Outside of pipe diameter + 1/16" (1.8 mm)	3/4 x 3/4 x 1/8	19 x 19 x 3.2	0.5	0.2
4	102		1 x 1 x 1/8	25 x 25 x 3.2	0.8	0.4
5	127		1 x 1 x 1/8	25 x 25 x 3.2	1.0	0.5
6	152		1 x 1 x 1/8	25 x 25 x 3.2	1.3	0.6
			1 x 1 x 3/16	25 x 25 x 4.8	1.8	0.8
8	203		1 1/4 x 1 1/4 x 1/8	32 x 32 x 3.2	2.1	1.0
			1 1/4 x 1 1/4 x 3/16	32 x 32 x 4.8	3.2	1.4
10	254		1 1/2 x 1 1/2 x 1/8	38 x 38 x 3.2	2.6	1.2
			1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8	4.0	1.8
12	305		1 1/2 x 1 1/2 x 1/8	38 x 38 x 3.2	3.9	1.8
			1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8	5.7	2.6
14	356		1 1/2 x 1 1/2 x 1/8	38 x 38 x 3.2	4.5	2.0
			1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8	6.6	3.0
16	406	Outside of pipe diameter + 1/8" (3.2 mm)	1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8	7.5	3.4
			1 1/2 x 1 1/2 x 1/4	38 x 38 x 6.3	9.8	4.4
18	457		1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8	8.5	3.8
			1 1/2 x 1 1/2 x 1/4	38 x 38 x 6.3	11.0	5.0
20	508		1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8	9.4	4.3
			1 1/2 x 1 1/2 x 1/4	38 x 38 x 6.3	12.3	5.6
24	610		2 x 2 x 3/16	51 x 51 x 4.8	15.3	7.0
			2 x 2 x 1/4	51 x 51 x 6.3	20.0	9.1
30	762		2 x 2 x 1/4	51 x 51 x 6.3	25.1	11.4
			2 x 2 x 3/8	51 x 51 x 9.5	36.9	16.7
36	914		2 x 2 x 1/4	64 x 64 x 6.3	38.6	17.5
			2 x 2 x 3/8	64 x 64 x 9.5	65.0	29.5
42	1067		2 1/2 x 2 1/2 x 1/4	64 x 64 x 6.3	45.1	20.4
			2 1/2 x 2 1/2 x 3/8	64 x 64 x 9.5	75.9	34.4
48	1219		2 1/2 x 2 1/2 x 1/4	64 x 64 x 6.3	51.5	23.4
			2 1/2 x 2 1/2 x 3/8	64 x 64 x 9.5	86.7	39.3



Butt Weld Angle Collars
For using with Backing Flanges
See P. 2-14



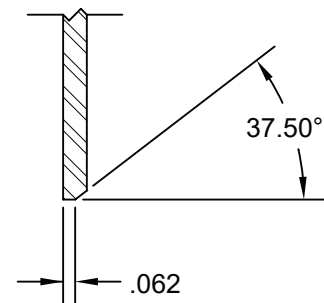
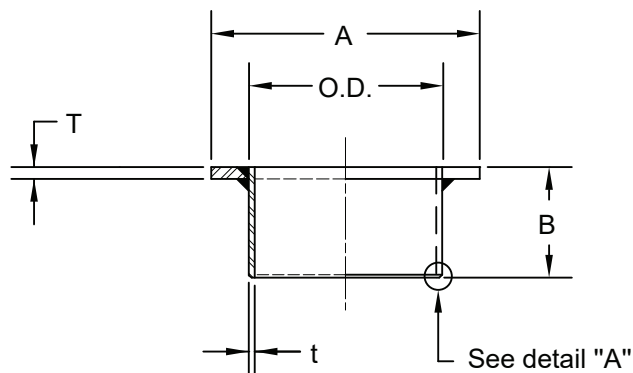
Slip-on Angle Collars
For using with Slip-on Backing Flange
See P. 2-15



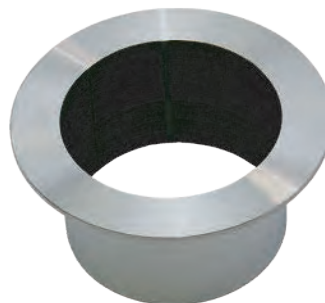
General Notes:

- Material: Stainless Steel 304L, 316L, 317L, Other alloys available upon request.
- Suggested Maximum Working Pressure : See technical section.
- Fabrication Tolerance: See technical section.
- Other diameter and thickness available upon request.

O.D. Outside Diameter		t [Nominal Thickness]		T	A		B		Weigth	
In	mm	In	mm.		In	mm	In	mm	lb	kg
6	152	0.125	3.2	"T" Not less than "t"	8.500	216	3.500	89	3.4	1.5
8	203	0.125	3.2		10.625	270	4.000	102	5.0	2.3
10	254	0.125	3.2		12.750	324	5.000	127	7.5	3.4
12	305	0.125	3.2		15.000	381	6.000	152	10.5	4.8
14	356	0.140	3.6		16.250	413	6.000	152	12.9	5.9
16	406	0.187	4.7		18.500	470	6.000	152	19.5	8.8
18	457	0.187	4.7		21.000	533	6.000	152	22.8	10.3
20	508	0.250	6.4		23.000	584	6.000	152	33.5	15.2
24	610	0.250	6.4		27.500	699	6.000	152	40.9	18.6
30	762	0.312	7.9		33.750	857	6.000	152	65.4	29.7
36	914	0.312	7.9		40.250	1022	6.000	152	96.5	43.8



Detail "A" [Note 1]



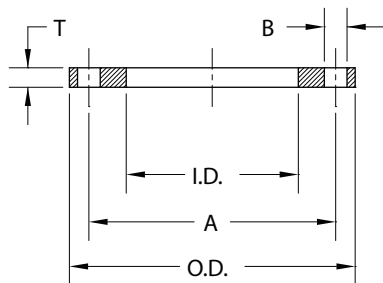
General Notes:

- Material: Stainless Steel 304L, 316L, 317L, Other alloys available upon request.
- [T] not less than [t].
- The two faces are machined, the contact face is machined between 125 and 250 microinches (AARH)
- Solution Annealing on request.
- Other diameter, thicknesses and sizes available upon request.

Note:

- Bevel for thickness (t) > 1/8" (3mm)

O.D. Backing Flanges

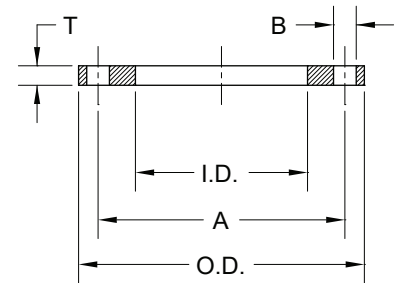


Nominal Diameter	O.D.	I.D.	A	# of holes	B	T	Weight
In mm	In mm	In mm	In mm		In mm	In mm	lb kg
1 1/2 38	5.000 127	1.750 44	3.875 98	4	0.625 16	0.750 19	3.6 1.6
2 51	6.000 152	2.250 57	4.750 121	4	0.750 19	0.750 19	4.7 2.1
2 1/2 64	7.000 178	2.750 70	5.500 140	4	0.750 19	0.750 19	6.2 2.8
3 76	7.500 191	3.375 86	6.000 152	4	0.750 19	0.750 19	7.1 3.2
4 102	9.000 229	4.375 111	7.500 191	8	0.750 19	0.750 19	9.5 4.3
5 127	10.000 254	5.375 137	8.500 216	8	0.875 22	0.750 19	10.7 4.9
6 152	11.000 279	6.375 162	9.500 241	8	0.875 22	0.750 19	12.3 5.6
8 203	13.500 343	8.375 213	11.750 298	8	0.875 22	0.750 19	17.7 8.0
10 254	16.000 406	10.500 267	14.250 362	12	1.000 25	1.000 25	30.2 13.7
12 305	19.000 483	12.500 318	17.000 432	12	1.000 25	1.000 25	43.5 19.7
14 356	21.000 533	14.500 368	18.750 476	12	1.125 29	1.125 29	55.0 24.9
16 406	23.500 597	16.500 419	21.250 540	16	1.125 29	1.125 29	66.0 29.9
18 457	25.000 635	18.500 470	22.750 578	16	1.250 32	1.250 32	81.4 36.9
20 508	27.500 699	20.500 521	25.000 635	20	1.250 32	1.250 32	86.3 39.1
24 610	32.000 813	24.500 622	29.500 749	20	1.375 35	1.375 35	121.0 54.9
30 762	38.750 984	30.625 778	36.000 914	28	1.375 35	1.625 41	176.0 79.8
36 914	46.000 1168	36.625 930	42.750 1086	32	1.625 41	1.625 41	237.0 107.5
42 1067	53.000 1346	42.625 1083	49.500 1257	36	1.625 41	1.750 44	337.0 152.9
48 1219	59.500 1511	48.625 1235	56.000 1422	44	1.625 41	2.000 51	455.0 206.4

General Notes:

- Material: Carbon Steel with chemical composition and mechanical strength equivalent to ASTM A 105.
- Finish: Galvanized to ASTM A 123
- Drilling: 1 1/2" to 24" ASME B16.5 Class150, 30" to 48" ASME B16.47 Class150 serie "A"
- Suggested Maximum Working Pressure : See technical section.
- Other diameter and thickness available upon request.

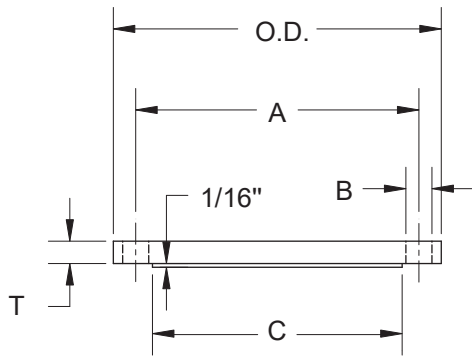
Nominal Diameter	O.D.	I.D.	A	# of holes	B	T	Weight
In mm	In mm	In mm	In mm		In mm	In mm	lb kg
3 76	7.500 191	3.688 94	6.000 152	4	0.750 19	0.750 19	7.1 3.2
4 102	9.000 229	4.688 119	7.500 191	8	0.750 19	0.750 19	9.5 4.3
5 127	10.000 254	5.688 144	8.500 216	8	0.875 22	0.750 19	10.7 4.9
6 152	11.000 279	6.688 170	9.500 241	8	0.875 22	0.750 19	12.3 5.6
8 203	13.500 343	6.880 175	11.750 298	8	0.875 22	0.750 19	17.7 8.0
10 254	16.000 406	10.813 275	14.250 362	12	1.000 25	1.000 25	30.2 13.7
12 305	19.000 483	12.813 325	17.000 432	12	1.000 25	1.000 25	43.5 19.7
14 356	21.000 533	14.813 376	18.750 476	12	1.125 29	1.125 29	55.0 24.9
16 406	23.500 597	16.938 430	21.250 540	16	1.125 29	1.125 29	66.0 29.9
18 457	25.000 635	19.000 483	22.750 578	16	1.250 32	1.250 32	81.4 36.9
20 508	27.500 699	21.000 533	25.000 635	20	1.250 32	1.250 32	86.3 39.1
24 610	32.000 813	25.000 635	29.500 749	20	1.375 35	1.375 35	121.0 54.9
30 762	38.750 984	31.250 794	36.000 914	28	1.375 35	1.625 41	176.0 79.8
36 914	46.000 1168	37.250 946	42.750 1086	32	1.625 41	1.625 41	237.0 107.5
42 1067	53.000 1346	43.250 1099	49.500 1257	36	1.625 41	1.750 44	337.0 152.9
48 1219	59.500 1511	49.250 1251	56.000 1422	44	1.625 41	2.000 51	455.0 206.4



General Notes:

- Material: Carbon Steel with chemical composition and mechanical strength equivalent to ASTM A 105.
- Finish: Galvanized to ASTM A 123
- Drilling: 1 1/2" to 24" ASME B16.5 Class150, 30" to 48" ASME B16.47 Class150 serie "A"
- Suggested Maximum Working Pressure : See technical section.
- Other diameter and thickness available upon request.

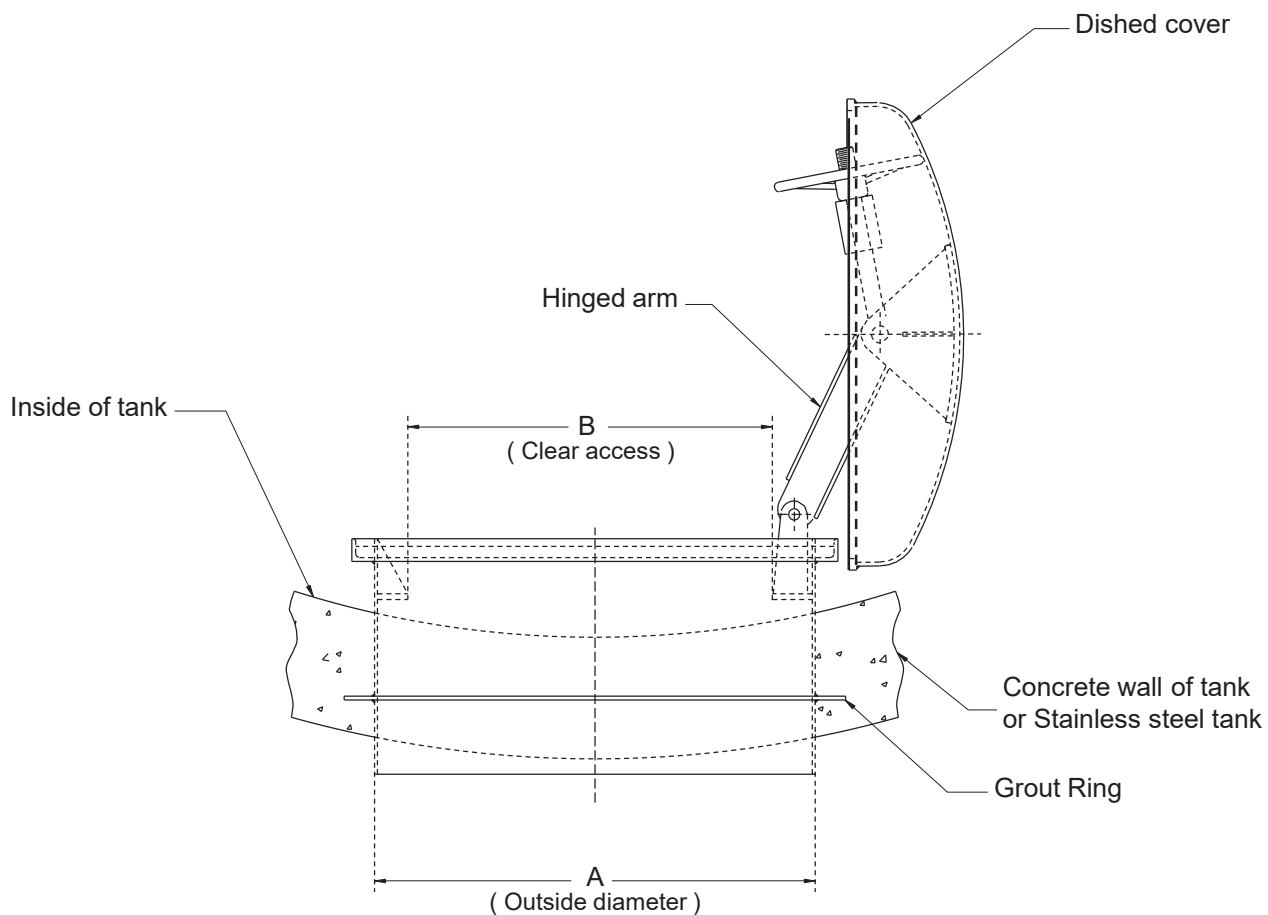
Blind Flanges



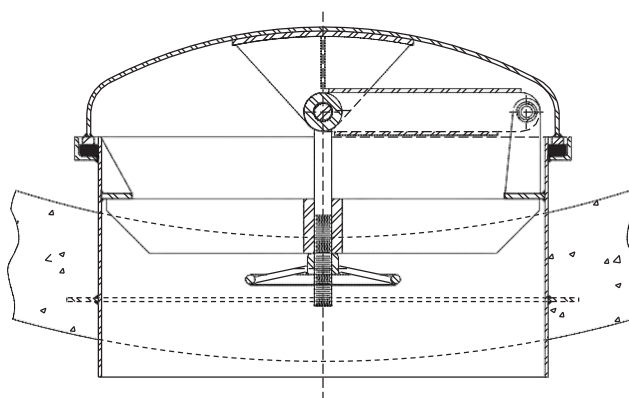
Nominal Diameter	O.D.	A	# of holes	B	C	T	Weight
In mm	In mm	In mm		In mm	In mm	In mm	lb kg
1 1/2 38	5.000 127	3.875 98	4	0.625 16	3.000 76	0.750 19	4.3 2.0
2 51	6.000 152	4.750 121	4	0.750 19	3.500 89	0.750 19	6.2 2.8
2 1/2 64	7.000 178	5.500 140	4	0.750 19	4.500 114	0.750 19	8.5 3.9
3 76	7.500 191	6.000 152	4	0.750 19	5.000 127	0.750 19	9.8 4.4
4 102	9.000 229	7.500 191	8	0.750 19	6.500 165	0.750 19	14.0 6.4
5 127	10.000 254	8.500 216	8	0.875 22	7.375 187	0.750 19	17.6 8.0
6 152	11.000 279	9.500 241	8	0.875 22	8.375 213	0.750 19	21.0 9.5
8 203	13.500 343	11.750 298	8	0.875 22	10.625 270	0.750 19	32.2 14.6
10 254	16.000 406	14.250 362	12	1.000 25	13.000 330	1.000 25	58.0 26.3
12 305	19.000 483	17.000 432	12	1.000 25	15.625 397	1.000 25	83.1 37.7
14 356	21.000 533	18.750 476	12	1.125 29	17.250 438	1.125 29	113.0 51.3
16 406	23.500 597	21.250 540	16	1.125 29	19.750 502	1.125 29	142.0 64.4
18 457	25.000 635	22.750 578	16	1.250 32	21.125 537	1.250 32	179.0 81.2
20 508	27.500 699	25.000 635	20	1.250 32	23.375 594	1.250 32	217.5 98.7
24 610	32.000 813	29.500 749	20	1.375 35	27.750 705	1.375 35	323.0 146.5
30 762	38.750 984	36.000 914	28	1.375 35	34.250 870	1.500 38	530.0 240.4
36 914	46.000 1168	42.750 1086	32	1.625 41	40.750 1035	1.500 38	755.0 342.5
42 1067	53.000 1346	49.500 1257	36	1.625 41	46.750 1187	1.500 38	906.0 411.0
48 1219	59.500 1511	56.000 1422	44	1.625 41	52.750 1340	1.750 44	1334.0 605.1

General Notes:

- Material: Carbon Steel with chemical composition and mechanical strength equivalent to ASTM A 105 and 316L Stainless Steel liner.
- Finish: Galvanized to ASTM A 123
- Drilling: 1 1/2" to 24" ASME B16.5 Class150, 30" to 48" ASME B16.47 Class150 serie "A"
- Suggested Maximum Working Pressure : See technical section.
- Other diameter and thickness available upon request.



Open position dished manway



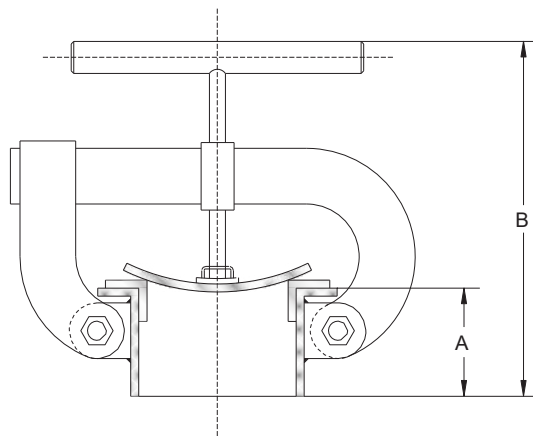
Closed position dished manway

General Notes:

- Design can be different from illustration. Contact DBI representative for actual design.
- Material : Stainless Steel 304L, 316L. Other alloys available upon request.
- Dim "A" available from 24" up to 48". Dim "B" from 20" up to 42".

Quick Opening Clean-Out

I.D. Inside Diameter		T		A		B		Weight	
In	mm	In	mm	In	mm	In	mm	lb	kg
3	76	0.125	3.2	2.500	64	10.750	273	11.0	5.0
4	102	0.125	3.2	3.000	76	11.000	279	13.0	5.9
6	152	0.125	3.2	3.500	89	12.250	311	20.0	9.1
8	203	0.140	3.6	4.000	102	12.000	305	28.0	12.7
10	254	0.140	3.6	5.000	127	14.500	368	34.0	15.4
12	305	0.140	3.6	6.000	152	15.500	394	44.0	20.0
14	356	0.188	4.8	7.000	178	18.000	457	60.0	27.2
16	406	0.188	4.8	8.000	203	19.250	489	80.0	36.3



*Fabricated for an easy installation at the end of pipe or on elbows.
It offers a quick and easy access to the interior of pipe for inspection and cleaning.*

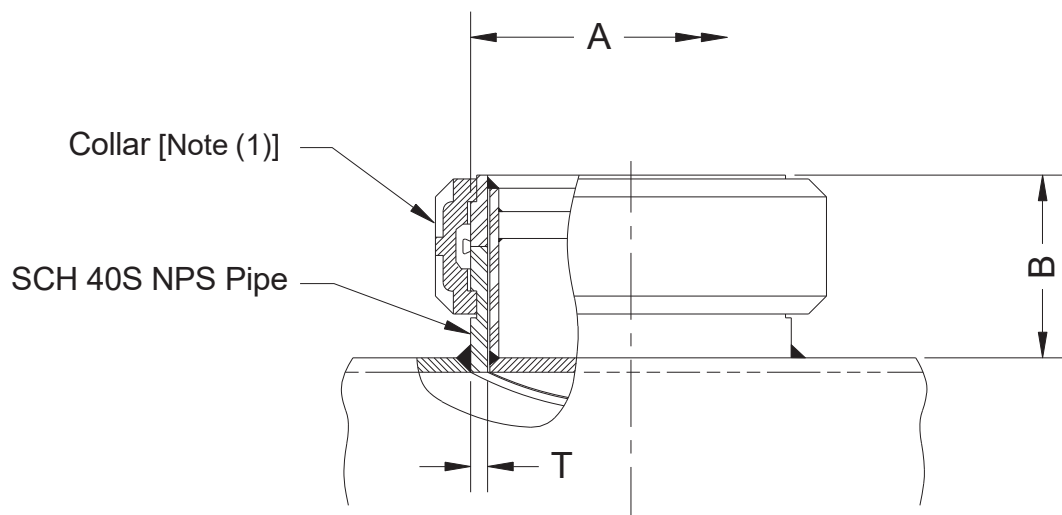


General Note:

a. Material : Stainless Steel 304L.

Grooved Style Clean-Outs

Nominal Diameter		T		A		B	
inches	mm	in	mm	in	mm	in	mm
3	76	0.216	5.5	3.500	89	2.750	70
4	102	0.237	6.0	4.500	114	2.750	70
6	152	0.280	7.1	6.625	168	2.750	70



The cover of this type of clean-out is provided with a snugly fitting plug, which provides a smooth bore on the interior of the pipe, thus eliminating stock hang-up.

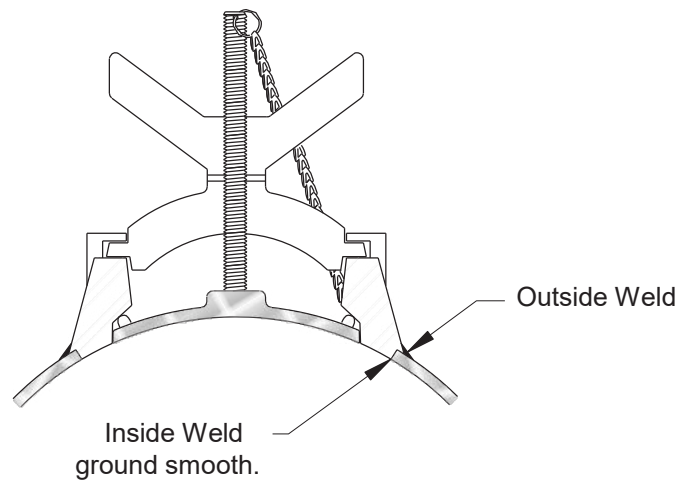
General Notes:

- a. Material: Stainless Steel 316L .
- b. Available upon request in larger size.

Note:

- 1. Usually provided with a Victaulic® collar Style 78 Snap-Joint.

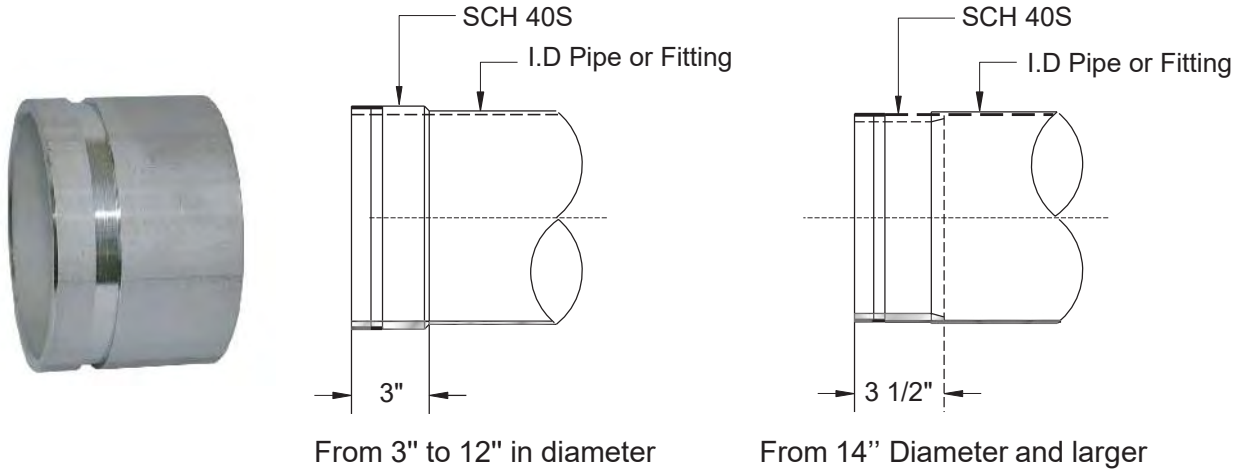
Diamond Clean-Outs



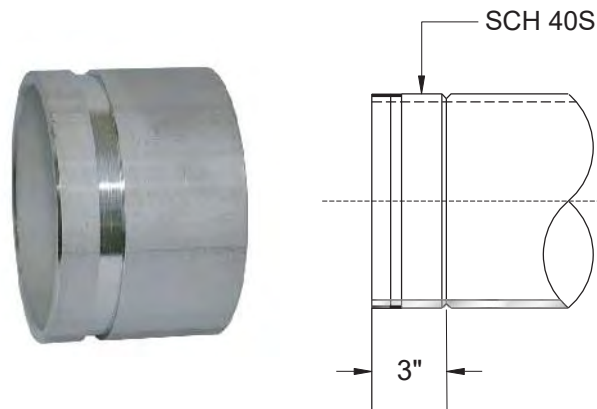
Clean-out number	For installation on			
	90° Elbows	45° Elbows	Reducers	Pipe
in / mm	in / mm	in / mm	in / mm	in / mm
# 4	4 102	4 102	6 152	6 13
# 6	6 152	6 152	8 & 10 203 & 254	8 & 10 203 & 254
# 8	8 203	8 203	12 to 16 304 to 406	12 to 16 304 to 406
# 10	10 254	10 254	18 to 22 457 to 559	18 to 22 457 to 559
# 12	12 to 18 300 to 450	12 to 18 300 to 450	24 & larger 610 & larger	24 & larger 610 & larger

General Notes:

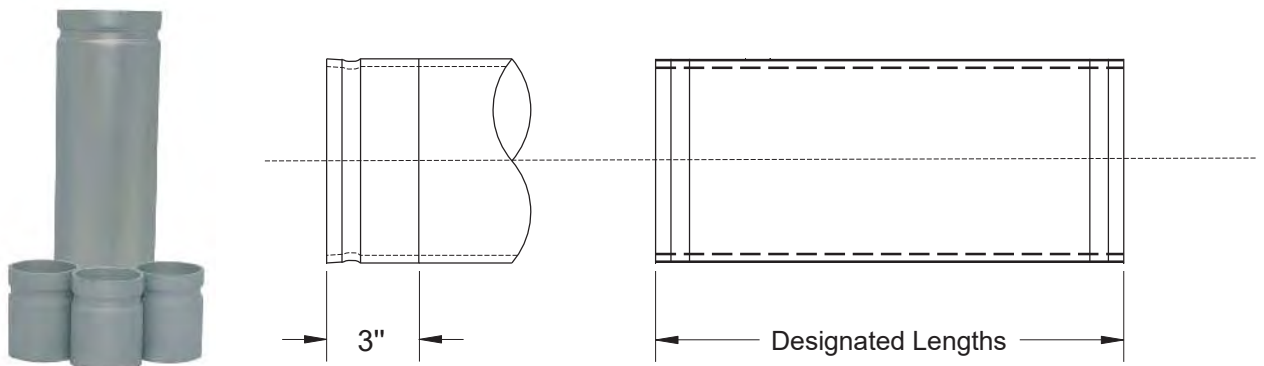
- Constructed of all 316L Stainless Steel parts, including the wing nut.
- High sealing strengths (the higher the pressure the tighter cover seals).
- Permit quick flushing when installed on both sides of pumps and valves without removing bolted connections.
- Quick and easy visual access into piping systems, tanks and vessels.
- No tools required to open.



Cut Groove for use with I.D. Pipes and Fittings



Cut Groove for use with NPS Pipes and Fittings Sch 5S, 10S and 40S



Rolled Groove and AGS⁽¹⁾ for use with I.D. and NPS Pipes and Fittings

General Notes:

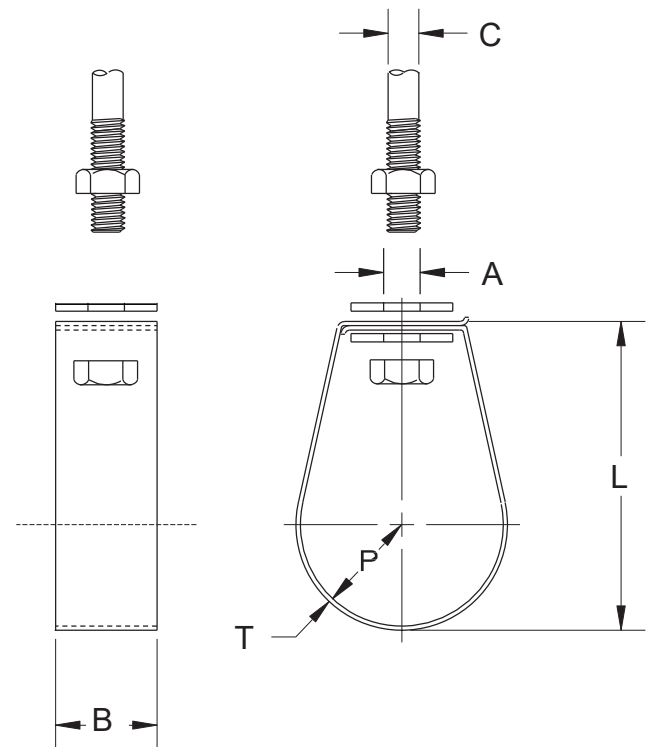
- Material : Stainless Steel 304L, 316L. Other alloys available upon request.
- Available from stock in sizes 3" to 12" with standard groove.
- Larger sizes and other adaptor styles available upon request for both I.D. & NPS pipe.

Note:

- For use with Victaulic® flexible and rigid collar AGS (Advance Groove System) for NPS 14" to 24", Sch 10S.

Pipe Hangers

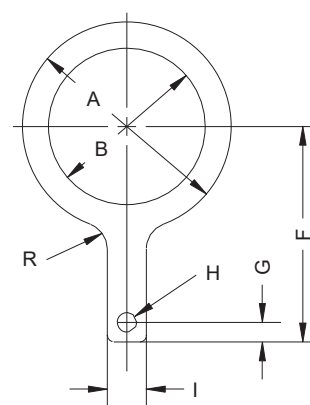
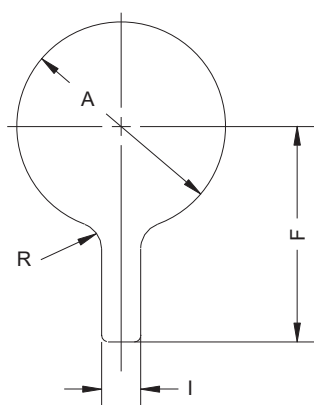
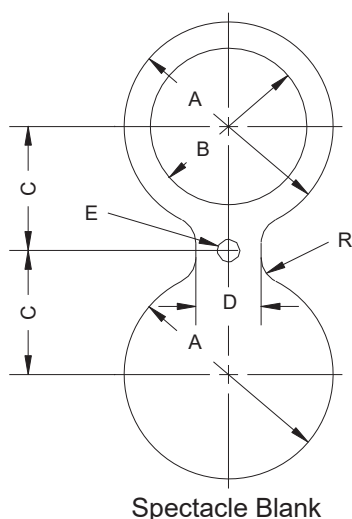
Nominal Diameter	A	B	C	L	R	T
In mm	In mm	In mm	In mm	In mm	In mm	In mm
1	0.563	1.5	0.5	2.0	0.563	0.078
25.4	14.3	38.1	12.7	50.8	14.3	2.0
1 1/4	0.563	1.5	0.5	3.0	0.688	0.078
31.8	14.3	38.1	12.7	76.2	17.5	2.0
1 1/2	0.563	1.5	0.5	3.0	0.813	0.078
38.1	14.3	38.1	12.7	76.2	20.6	2.0
2	0.563	1.5	0.5	4.0	1.062	0.078
50.8	14.3	38.1	12.7	101.6	27.0	2.0
2 1/2	0.563	1.5	0.5	5.0	1.313	0.078
63.5	14.3	38.1	12.7	127.0	33.3	2.0
3	0.563	3.0	0.5	6.0	1.563	0.078
76.2	14.3	76.2	12.7	152.4	3.0	2.0
4	0.563	3.0	0.5	7.0	2.125	0.078
101.6	14.3	76.2	12.7	177.8	54.0	2.0
6	0.563	3.0	0.5	9.0	3.125	0.078
152.4	14.3	76.2	12.7	228.6	79.4	2.0
8	0.563	3.0	0.5	11.0	4.125	0.125
203.2	14.3	76.2	12.7	279.4	104.8	3.2
10	0.563	3.0	0.5	13.0	5.188	0.125
254.0	14.3	76.2	12.7	330.2	131.8	3.2
12	0.563	3.0	0.5	15.0	6.188	0.125
304.8	14.3	76.2	12.7	381.0	157.2	3.2
14	0.688	3.0	0.6	17.0	7.188	0.125
355.6	17.5	76.2	15.9	431.8	182.6	3.2
16	0.688	3.0	0.6	19.0	8.188	0.125
406.4	17.5	76.2	15.9	482.6	208.0	3.2
18	0.688	3.0	0.6	21.0	9.188	0.188
457.2	17.5	76.2	15.9	533.4	233.4	4.8
20	0.688	3.0	0.6	23.0	10.188	0.188
508.0	17.5	76.2	15.9	584.2	258.8	4.8
24	0.688	4.0	0.6	27.0	12.3	0.188
609.6	17.5	101.6	15.9	685.8	311.2	4.8
30	0.688	4.0	0.6	34.0	15.3	0.188
762.0	17.5	101.6	15.9	863.6	387.4	4.8
36	0.688	4.0	0.6	40.0	18.3	0.250
914.4	17.5	101.6	15.9	1016.0	463.6	6.4



General Note:

- a. Material: Stainless Steel 304L.
- b. Hardware not included.

Nominal Diameter	A	B	C	D	E	F	G	H	I	R	Thk
In mm	In mm		In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm	In mm
2	4.000	Inside of pipe, unless otherwise specified.	2.375	2.000	0.750	5.500	0.500	0.500	1.000	1.000	0.250
50.8	101.6		60.3	50.8	19.1	139.7	12.7	12.7	25.4	25.4	6.4
2 1/2	4.750		2.750	2.000	0.750	6.000	0.500	0.500	1.000	1.000	0.250
63.5	120.7		69.9	50.8	19.1	152.4	12.7	12.7	25.4	25.4	6.4
3	5.250		3.000	2.500	0.750	6.250	0.500	0.750	1.000	1.000	0.250
76.2	133.4		76.2	63.5	19.1	158.8	12.7	19.1	25.4	25.4	6.4
4	6.750		3.750	2.500	0.750	7.000	0.500	0.750	1.000	1.000	0.375
101.6	171.5		95.3	63.5	19.1	177.8	12.7	19.1	25.4	25.4	9.5
6	8.625		4.750	3.000	0.875	8.000	0.500	0.750	1.000	1.000	0.500
152.4	219.1		120.7	76.2	22.2	203.2	12.7	19.1	25.4	25.4	12.7
8	10.875		5.875	3.000	0.875	9.250	0.750	0.750	1.500	1.000	0.500
203.2	276.2		149.2	76.2	22.2	235.0	19.1	19.1	38.1	25.4	12.7
10	13.250		7.125	4.000	1.000	10.500	0.750	0.750	1.500	1.000	0.625
254.0	336.6		181.0	101.6	25.4	266.7	19.1	19.1	38.1	25.4	15.9
12	16.000		8.500	4.000	1.000	12.000	0.750	0.750	1.500	1.000	0.750
304.8	406.4		215.9	101.6	25.4	304.8	19.1	19.1	38.1	25.4	19.1
14	17.625		9.375	4.250	1.125	13.000	0.750	0.750	1.500	1.000	0.750
355.6	447.7		238.1	108.0	28.6	330.2	19.1	19.1	38.1	25.4	19.1
16	20.125		10.625	4.250	1.125	14.250	0.750	0.750	1.500	1.000	1.000
406.4	511.2		269.9	108.0	28.6	362.0	19.1	19.1	38.1	25.4	25.4
18	21.500		11.375	4.500	1.250	15.000	0.750	0.750	1.500	1.000	1.000
457.2	546.1		288.9	114.3	31.8	381.0	19.1	19.1	38.1	25.4	25.4
20	23.750		12.500	4.750	1.250	16.250	0.750	0.750	1.500	1.000	1.125
508.0	603.3		317.5	120.7	31.8	412.8	19.1	19.1	38.1	25.4	28.6
24	28.125		14.750	5.500	1.375	18.500	0.750	0.750	1.500	1.000	1.250
609.6	714.4		374.7	139.7	34.9	469.9	19.1	19.1	38.1	25.4	31.8



General Notes:

- These Line Blanks are designed to be used with flanges having the dimension to ASME B16.5 Class 150.
- Material : Stainless Steel 304L, 316L. Other alloys available upon request.
- Thickness: See "Thk". Other thicknesses and designs available upon request.
- Maximum Allowable Working Pressure must be calculated with the ASME B31 code applicable.
- Tolerances: $\pm 1/16"$.

Suggested Maximum Working Pressure .
I.D. Pipe and Fittings ASTM A 778 / A 774.
For Maximum Working Temperature of 200°F (93°C).

Inside Diameter		Nominal Thickness			Pipes & Reducers		Elbows		Mitred Elbows		Tees [Note (1)]		Laterals [Note (1)]	
In	mm	Gauge	In	mm	psig	kPa	psig	kPa	psig	kPa	psig	kPa	psig	kPa
4	102	14	0.078	2.0	545	3758	490	3378	315	2172	270	1862	170	1172
		11	0.125	3.2	875	6033	785	5412	550	3792	435	2999	270	1862
5	127	14	0.078	2.0	435	2999	395	2723	240	1655	215	1482	135	931
		12	0.109	2.8	610	4206	550	3792	360	2482	305	2103	190	1310
		11	0.125	3.2	700	4826	630	4344	425	2930	350	2413	215	1482
6	152	14	0.078	2.0	365	2517	330	2275	195	1344	180	1241	112	772
		12	0.109	2.8	510	3516	460	3172	290	1999	255	1758	155	1069
		11	0.125	3.2	585	4033	525	3620	340	2344	290	1999	180	1241
8	203	14	0.078	2.0	275	1896	250	1724	135	931	135	931	85	586
		12	0.109	2.8	380	2620	340	2344	205	1413	190	1310	120	827
		11	0.125	3.2	435	2999	390	2689	245	1689	215	1482	135	931
10	254	12	0.109	2.8	305	2103	275	1896	155	1069	150	1034	95	655
		11	0.125	3.2	350	2413	315	2172	185	1276	175	1207	110	758
12	305	12	0.109	2.8	255	1758	230	1586	125	862	125	862	80	552
		11	0.125	3.2	290	1999	260	1793	150	1034	145	1000	90	621
		11	0.125	3.2	250	1724	225	1551	200	1379	125	862	75	517
14	356	10	0.140	3.6	280	1931	250	1724	220	1517	140	965	85	586
		3/16	0.188	4.8	375	2586	340	2344	295	2034	185	1276	110	758
		11	0.125	3.2	220	1517	200	1379	175	1207	110	758	60	414
16	406	10	0.140	3.6	245	1689	220	1517	195	1344	120	827	65	448
		3/16	0.188	4.8	330	2275	300	2068	260	1793	165	1138	90	621
		11	0.125	3.2	195	1344	175	1207	155	1069	95	655	50	345
18	457	10	0.140	3.6	220	1517	195	1344	170	1172	110	758	55	379
		3/16	0.188	4.8	290	1999	260	1793	230	1586	145	1000	75	517
		11	0.125	3.2	175	1207	160	1103	135	931	85	586	45	310
20	508	10	0.140	3.6	195	1344	175	1207	155	1069	95	655	50	345
		3/16	0.188	4.8	260	1793	235	1620	205	1413	130	896	70	483
		1/4	0.250	6.4	350	2413	315	2172	270	1862	175	1207	95	655
24	610	11	0.125	3.2	145	1000	130	896	115	793	70	483	35	241
		10	0.140	3.6	165	1138	145	1000	125	862	80	552	40	276
		3/16	0.188	4.8	220	1517	200	1379	170	1172	110	758	50	345
30	762	1/4	0.250	6.4	290	1999	260	1793	225	1551	145	1000	70	483
		3/16	0.188	4.8	175	1207	155	1069	135	931	85	586	35	241
		1/4	0.250	6.4	235	1620	210	1448	180	1241	115	793	45	310
36	914	3/16	0.188	4.8	145	1000	130	896	110	758	65	448	35	241
42	1067	1/4	0.250	6.4	195	1344	175	1207	150	1034	85	586	50	345
		3/16	0.188	4.8	125	862	110	758	100	689	50	345	35	241
48	1219	1/4	0.250	6.4	165	1138	150	1034	130	896	65	448	50	345
		3/16	0.188	4.8	110	758	100	689	85	586	40	276	30	207
		1/4	0.250	6.4	145	1000	130	896	115	793	55	379	45	310

General Notes:

- a. Pressure ratings are limited to non-toxic, non-lethal, non-flammable liquids in non-cyclic, vibration-free service, and/or where ASME B-31 Codes are not applicable.
b. Thickness tolerance to ASTM A 778 & A 774.

Note:

1. Pressure ratings of tees & laterals can be increased by the use of reinforcing pads. Please contact our technical services.

Suggested Maximum Working Pressure .
NPS Pipe and Fittings ASTM A 778 / A 774.
For Maximum Working Temperature of 200°F (93°C).

NPS Nominal Pipe Size		Outside Diameter		Nominal Thickness			Pipes & Reducers		Pressed Elbows		Mitred Elbows		Tees [Note (1)]		Laterals [Note (1)]	
In	mm	In	mm	Gauge	In	mm	psig	kPa	psig	kPa	psig	kPa	psig	kPa	psig	kPa
4	102	4.5	114	14	0.078	2.0	505	3482	450	3103	380	2620	250	1724	155	1069
				5S	0.083	2.1	535	3689	485	3344	405	2792	265	1827	165	1138
				12	0.109	2.8	710	4895	640	4413	535	3689	355	2448	220	1517
				10S	0.120	3.0	790	5447	710	4895	595	4102	390	2689	245	1689
				11	0.125	3.2	825	5688	740	5102	620	4275	410	2827	255	1758
5	127	5.563	141	14	0.078	2.0	405	2792	365	2517	305	2103	200	1379	125	862
				5S	0.109	2.8	570	3930	515	3551	425	2930	285	1965	175	1207
				11	0.125	3.2	660	4551	595	4102	490	3378	325	2241	200	1379
				10S	0.134	3.4	710	4895	640	4413	530	3654	350	2413	215	1482
				14	0.078	2.0	340	2344	305	2103	260	1793	168	1158	105	724
6	152	6.625	168	5S	0.109	2.8	475	3275	430	2965	365	2517	235	1620	145	1000
				11	0.125	3.2	550	3792	495	3413	420	2896	275	1896	170	1172
				10S	0.134	3.4	590	4068	530	3654	450	3103	295	2034	180	1241
				14	0.078	2.0	260	1793	230	1586	200	1379	125	862	80	552
				5S	0.109	2.8	365	2517	325	2241	280	1931	180	1241	110	758
8	203	8.625	219	11	0.125	3.2	420	2896	375	2586	320	2206	210	1448	130	896
				10S	0.148	3.8	450	3103	405	2792	345	2379	225	1551	140	965
				12	0.109	2.8	290	1999	260	1793	225	1551	140	965	90	621
				11	0.125	3.2	335	2310	300	2068	260	1793	160	1103	105	724
				5S	0.134	3.4	360	2482	320	2206	275	1896	170	1172	110	758
10	254	10.750	273	10S	0.165	4.2	445	3068	400	2758	340	2344	215	1482	135	931
				12	0.109	2.8	245	1689	220	1517	190	1310	115	793	75	517
				11	0.125	3.2	280	1931	250	1724	220	1517	130	896	85	586
				5S	0.156	4.0	350	2413	315	2172	275	1896	165	1138	110	758
				10S	0.180	4.6	405	2792	365	2517	315	2172	195	1344	125	862
14	356	14.0	356	11	0.125	3.2	255	1758	230	1586	200	1379	120	827	80	552
				10	0.140	3.6	285	1965	255	1758	225	1551	135	931	90	621
				5S	0.156	4.0	320	2206	285	1965	255	1758	150	1034	100	689
				10S	0.188	4.8	385	2654	350	2413	305	2103	185	1276	120	827
				11	0.125	3.2	220	1517	200	1379	175	1207	95	655	65	448
16	406	16.0	406	10	0.140	3.6	250	1724	225	1551	200	1379	110	758	70	483
				5S	0.165	4.2	295	2034	265	1827	235	1620	128	883	85	586
				10S	0.188	4.8	335	2310	305	2103	265	1827	145	1000	95	655
				11	0.125	3.2	195	1344	175	1207	155	1069	85	586	50	345
				10	0.140	3.6	220	1517	200	1379	175	1207	95	655	60	414
18	457	18.0	457	5S	0.165	4.2	260	1793	235	1620	205	1413	115	793	70	483
				10S	0.188	4.8	300	2068	270	1862	235	1620	130	896	80	552
				10	0.140	3.6	200	1379	180	1241	160	1103	85	586	55	379
				5S	0.188	4.8	268	1848	240	1655	215	1482	115	793	75	517
				10S	0.218	5.5	310	2137	280	1931	245	1689	135	931	85	586
20	508	20.0	508	1/4	0.250	6.4	360	2482	325	2241	285	1965	155	1069	100	689
				10	0.140	3.6	165	1138	150	1034	130	896	60	414	40	276
				3/16	0.188	4.8	225	1551	200	1379	175	1207	85	586	55	379
				5S	0.218	5.5	260	1793	235	1620	205	1413	100	689	65	448
				10S	0.250	6.4	300	2068	270	1862	235	1620	115	793	75	517
24	610	24.0	610	3/16	0.188	4.8	180	1241	160	1103	140	965	75	517	35	241
				5S	0.250	6.4	235	1620	210	1448	190	1310	100	689	45	310
				10S	0.312	7.9	295	2034	265	1827	235	1620	125	862	60	414
				3/16	0.188	4.8	145	1000	130	896	115	793	60	414	40	276
				1/4	0.250	6.4	195	1344	175	1207	155	1069	80	552	50	345
30	762	30.0	762	5/16	0.312	7.9	245	1689	220	1517	195	1344	105	724	65	448
				3/16	0.188	4.8	125	862	110	758	100	689	45	310	35	241
				1/4	0.250	6.4	165	1138	150	1034	130	896	60	414	50	345
				5/16	0.312	7.9	205	1413	190	1310	165	1138	80	552	65	448
				3/16	0.188	4.8	105	724	100	689	85	586	40	276	35	241
36	914	36.0	914	1/4	0.250	6.4	145	1000	130	896	115	793	55	379	45	310
				5/16	0.312	7.9	180	1241	165	1138	145	1000	70	483	55	379
				3/16	0.188	4.8	105	724	100	689	85	586	40	276	35	241
				1/4	0.250	6.4	145	1000	130	896	115	793	55	379	45	310
				5/16	0.312	7.9	180	1241	165	1138	145	1000	70	483	55	379

General Notes:

- a. Pressure ratings are limited to non-toxic, non-lethal, non-flammable liquids in non-cyclic, vibration-free service, and/or where ASME B-31 Codes are not applicable.
b. Thickness tolerance to ASTM A 778 & A 774.

Note:

1. Pressure ratings of tees & laterals can be increased by the use of reinforcing pads. Please contact our technical services.

Suggested Maximum Working Pressure.
ASTM A774 Collars and Carbon Steel Backing Flanges.
For Maximum Working Temperature of 200°F (93°C).

Nominal Diameter		Pressed Collars ⁽¹⁻²⁻³⁾		Rolled Collars ⁽¹⁻²⁻³⁾		Backing Flanges ⁽¹⁻⁵⁻⁶⁾		Blind Flanges ⁽¹⁻⁵⁻⁶⁾	
						Carbon Steel. Up to 200° F max.		Carbon Steel. Up to 200° F max.	
In	mm	psig	kPa	psig	kPa	psig	kPa	psig	kPa
1 1/2	38	150	1034	150	1034	300	2068	300	2068
2	51	150	1034	150	1034	300	2068	300	2068
2 1/2	64	150	1034	150	1034	300	2068	300	2068
3	76	150	1034	150	1034	300	2068	300	2068
4	102	150	1034	150	1034	300	2068	300	2068
5	127	150	1034	150	1034	300	2068	300	2068
6	152	150	1034	150	1034	300	2068	300	2068
8	203	150	1034	150	1034	175	1207	200	1379
10	254	150	1034	150	1034	225	1551	300	2068
12	305	150	1034	150	1034	150	1034	225	1551
14	356	n/a	n/a	150	1034	175	1207	225	1551
16	406	n/a	n/a	150	1034	125	862	175	1207
18	457	n/a	n/a	150	1034	150	1034	200	1379
20	508	n/a	n/a	150	1034	125	862	175	1207
24	610	n/a	n/a	150	1034	100	689	150	1034
30	762	n/a	n/a	125/150 ⁽⁴⁾	862/1034	100	689	125	862
36	914	n/a	n/a	125/150 ⁽⁴⁾	862/1034	70	483	90	621
42	1067	n/a	n/a	125	862	60	414	90	621
48	1219	n/a	n/a	125	862	60	414	90	621

Notes:

1. Pressure ratings are limited to non-toxic, non-lethal, non-flammable liquids in non-cyclic, vibration-free service, and/or where ASME B-31 Codes are not applicable.
2. Thickness tolerance to ASTM A 778 & A 774.
3. The leak test over 150 psig is not suggested with the use of smooth face collars.
4. Use 0.250" for 125 psig and 0.375" for 150 psig.
5. The suggested maximum working pressures are based on the thickness (see pages 2-15 to 2-17 and 3-14 to 3-16) with gasket, bolts and torque as recommended by our technical department.
6. The hydrostatic test pressure should not exceed 1.3 x Maximum Working Pressure indicated in table.

Reinforcement of Stainless Steel Pipe

for Full Vacuum For Maximum Design Temperature of 200°F (93°C).

Nominal Diameter		Nominal Thickness			Maximum Spacing		Dimension of reinforcing rings		
In	mm	Ga / Sch	In	mm	In	mm	Type	In	mm.
6	152	14	0.078	2.0	-	-	-	-	-
		11	0.125	3.2	-	-	-	-	-
		5S	0.109	2.8	-	-	-	-	-
8	203	14	0.078	2.0	80	2032	B	1 1/2 x 1/4	38 x 4.8
		11	0.125	3.2	-	-	-	-	-
		5S	0.109	2.8	-	-	-	-	-
10	254	11	0.109	2.8	-	-	-	-	-
		5S	0.134	3.4	-	-	-	-	-
12	305	11	0.125	3.2	120	3048	B	1 1/2 x 1/4	38 x 4.8
		5S	0.156	4.0	-	-	-	-	-
14	356	11	0.125	3.2	120	3048	B	1 1/2 x 1/4	38 x 4.8
		10	0.140	3.6	-	-	-	-	-
		5S	0.156	4.0	-	-	-	-	-
16	406	11	0.125	3.2	80	2032	A	1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8
		10	0.140	3.6	115	2921	A	1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8
		5S	0.165	4.2	200	5080	A	1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8
		3/16	0.188	4.8	-	-	-	-	-
18	457	11	0.125	3.2	60	1524	A	1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8
		10	0.140	3.6	95	2413	A	1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8
		5S	0.165	4.2	145	3683	A	1 1/2 x 1 1/2 x 3/16	38 x 38 x 4.8
		3/16	0.188	4.8	-	-	-	-	-
20	508	11	0.125	3.2	60	1524	A	1 1/2 x 1 1/2 x 1/4	38 x 38 x 6.4
		10	0.140	3.6	80	2032	A	1 1/2 x 1 1/2 x 1/4	38 x 38 x 6.4
		5S	0.188	4.8	160	4064	A	1 1/2 x 1 1/2 x 1/4	38 x 38 x 6.4
		10S	0.218	5.5	-	-	-	-	-
		1/4	0.250	6.4	-	-	-	-	-
24	610	3/16	0.188	4.8	120	3048	A	2 x 2 x 1/8	50 x 50 x 3.2
		5S	0.218	5.5	180	4572	A	2 x 2 x 1/8	50 x 50 x 3.2
		10S	0.250	6.4	-	-	-	-	-
30	762	3/16	0.188	4.8	80	2032	A	2 x 2 x 3/16	50 x 50 x 4.8
		5S	0.250	6.4	180	4572	A	2 x 2 x 3/16	50 x 50 x 4.8
		10S	0.312	7.9	-	-	-	-	-
36	914	3/16	0.188	4.8	72	1829	A	2 x 2 x 3/16	50 x 50 x 4.8
		1/4	0.250	6.4	144	3658	A	2 x 2 x 1/4	50 x 50 x 6.4
42	1067	3/16	0.188	4.8	60	1524	A	2 x 2 x 3/16	50 x 50 x 4.8
		1/4	0.250	6.4	120	3048	A	2 1/2 x 2 1/2 x 1/4	64 x 64 x 6.4
48	1219	3/16	0.188	4.8	48	1219	A	2 x 2 x 1/4	50 x 50 x 6.4
		1/4	0.250	6.4	96	2438	A	2 1/2 x 2 1/2 x 1/4	64 x 64 x 6.4

General Notes:

- Type of reinforcement: A = Angle, B = Flat bar.
- Minimum total weld length on each side shall not be less than half of the circumference.

Maximum Unsupported Span for Pipe.

For Stainless Steel Pipe filled with water.

Nominal Diameter		Thickness													
		Gauge 14		Gauge 11		Gauge 10		3/16"		1/4"		SCH 5S		SCH 10S	
		0.78" 2mm		0.125" 3.2mm		0.14" 3.6 mm		0.1875" 4.8 mm		0.25" 6.3 mm					
In	mm	Ft	m	Ft	m	Ft	m	Ft	m	Ft	m	Ft	m	Ft	m
2 1/2	64	11.0	3.4	11.0	3.4							11.0	3.4	11.0	3.4
3	76	11.0	3.4	12.0	3.7							11.0	3.4	12.0	3.7
4	102	13.0	4.0	13.0	4.0							13.0	4.0	13.0	4.0
5	127	13.0	4.0	14.0	4.3							14.0	4.3	15.0	4.6
6	152	14.0	4.3	16.0	4.9							15.0	4.6	16.0	4.9
8	203	14.0	4.3	17.0	5.2							16.0	4.9	17.0	5.2
10	254			17.0	5.2	18.0	5.5					18.0	5.5	19.0	5.8
12	305			18.0	5.5	18.0	5.5					19.0	5.8	20.0	6.1
14	356			18.0	5.5	19.0	5.8					20.0	6.1	21.0	6.4
16	406			18.0	5.5	19.0	5.8	21.0	6.4			20.0	6.1	21.0	6.4
18	457			18.0	5.5	19.0	5.8	22.0	6.7			21.0	6.4	22.0	6.7
20	508					19.0	5.8	22.0	6.7	24.0	7.3	22.0	6.7	23.0	7.0
24	610							22.0	6.7	25.0	7.6	24.0	7.3	25.0	7.6
30	762							21.0	6.4	26.0	7.9	26.0	7.9	28.0	8.5
36	914							15.0	4.6	25.0	7.6				
42	1067							11.0	3.4	19.0	5.8				
48	1219							9.0	2.7	15.0	4.6				

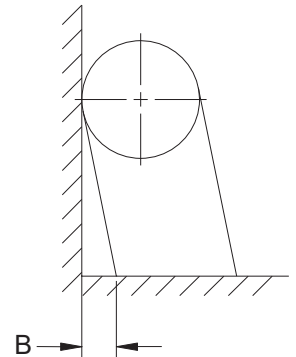
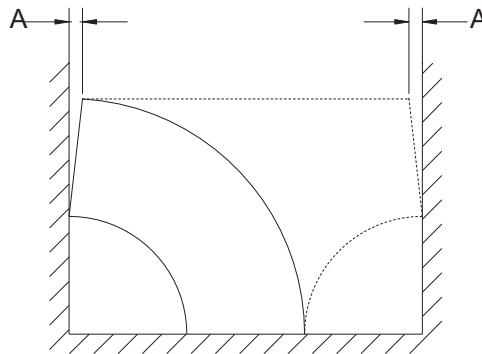
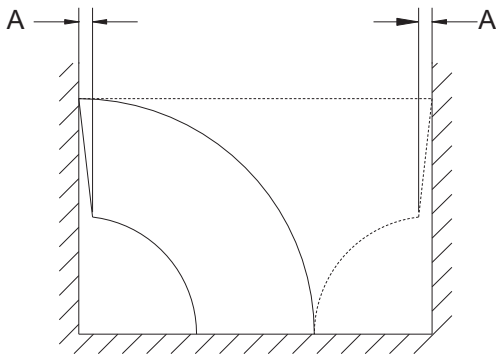
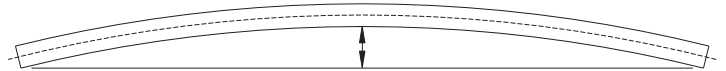
General Note:

- a. The data in the table above is valid for pipes operating at temperatures not exceeding 200° F (93° C) and supported on at least one third of the circumference and without additional live or dead load.

Tolerances of Pipe and Fittings. I.D. & NPS, ASTM A 778 / A 774

Nominal Diameter		All pipe and fittings		- Elbows (90° & 45°) - Laterals - Tees - Wyes	Reducers & Collars	Backing flanges & blind flanges		Squareness for all pipes & fittings		Ovality at welding end for all pipes & fittings	Nominal Diameter	
in.	mm	O.D. at welding end	Wall Th'k	Center to end dimension	Overall length	O.D & I.D.	Bolt circle	A	B		in.	mm
1 1/2	38	± 1/32"	Shall be ± 12.5% of nominal thickness. In accordance with ASTM A-312, A403, A774 & A778	± 1/16"	± 1/16"	± 1/8"	± 1/16"	1/32"	1/16"	± 1/16"	1 1/2	38
2	51	± 0.8mm		±1.6 mm	±1.6 mm			0.8 mm	1.6 mm	± 1.6 mm	2	51
2 1/2	64										2 1/2	64
3	76										3	76
4	102										4	102
6	152	+ 1/16"						1/16"	1/8"	± 3/32"	6	152
8	203	- 1/32"						1.6 mm	3.2 mm	± 2.4 mm	8	203
		+ 1.6 mm										
		- 0.8mm										
10	254	+ 3/32"		± 3/32"	± 3/32"	± 3.2 mm	± 1.6 mm	3/32"	3/16"	± 1/8"	10	254
12	305	-1/32		± 2.4 mm	± 2.4 mm			2.4 mm	4.8 mm	± 3.2 mm	12	305
14	356	+2.4 mm		± 1/8"	± 1/8"				1/4"	± 5/32"	14	356
16	406	-0.8 mm		± 3.2 mm	± 3.2 mm				6.4 mm	± 4 mm	16	406
18	457							1/8"	3/8"		18	457
20	508	+ 1/8"						3.2 mm	9.5 mm	± 3/16"	20	508
24	610									± 4.8 mm	24	610
30	762							3/16"		± 1/4"	30	762
36	914	-1/32						4.8 mm	1/2"	± 6.4 mm	36	914
40	1016	+3.2 mm							12.7 mm		40	1016
42	1067	-0.8 mm									42	1067
48	1219										48	1219

Pipe straightness = 0.025 in per foot / 2mm per meter



Spooling Fabrication Tolerances

1. Scope

1.1 This standard covers general pipe shop fabricating tolerances for prefabricated piping assemblies.

2. Linear tolerances

2.1 The tolerances on linear dimensions (intermediate or overall) apply to the face to face, face to end, and end to end measurements of fabricated straight pipe and headers; center to end or center to face of bends; as illustrated on fig.1. These tolerances are not cumulative.

2.2 Linear tolerance on "A" are $\pm 1/8"$ (3.0 mm) for size 10" and under, $\pm 3/16"$ (5 mm) for size 12" through 24" and $\pm 1/4"$ (6 mm) for size over 24" through 36".

2.3 Linear tolerances on "A" for size over 36" are subject to tolerance of $\pm 1/4"$ (6 mm), increasing by $\pm 1/16"$ (2 mm) for each 12" in diameter over 36"

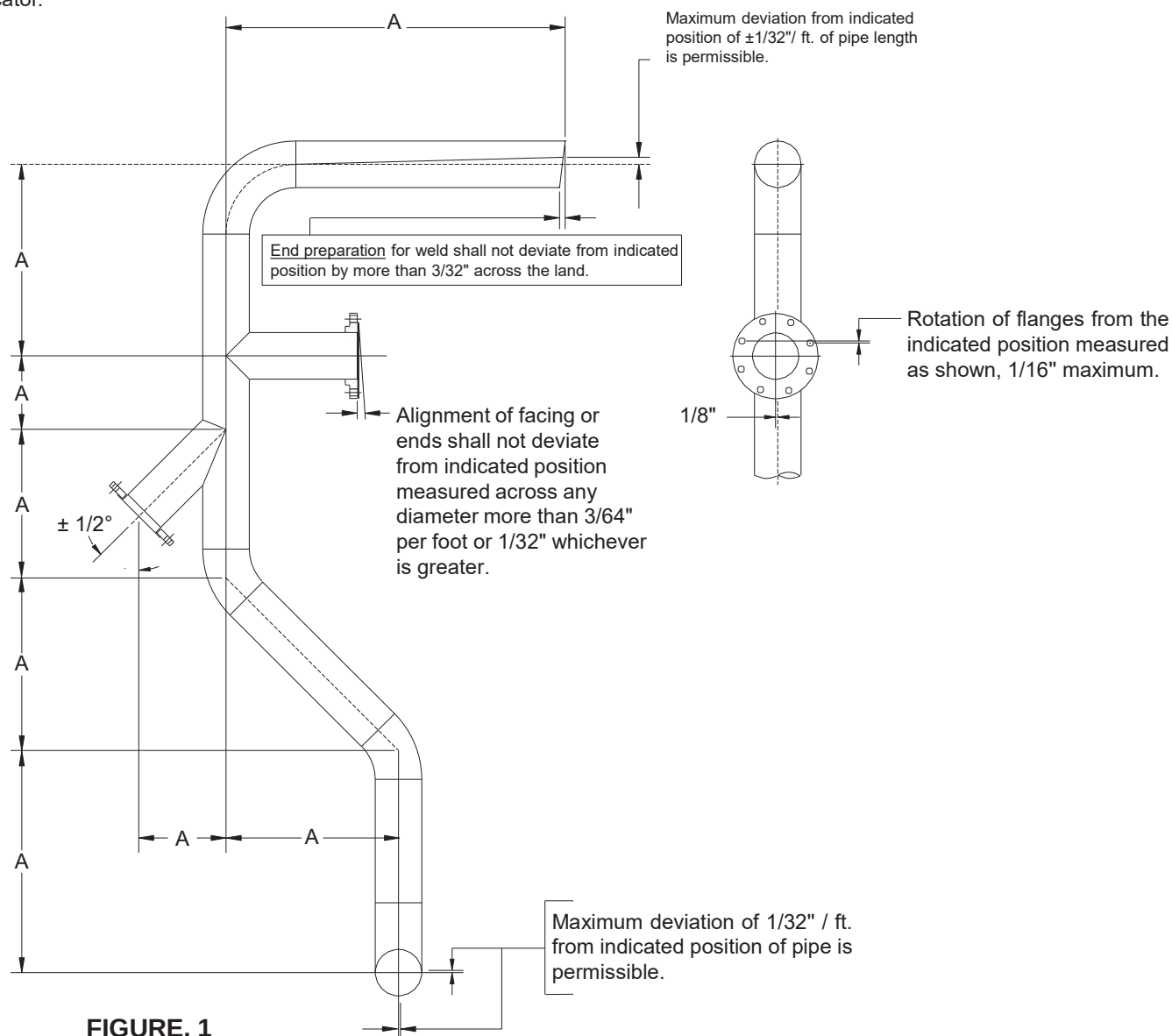
2.4 Due to the cumulative effects of tolerances on fitting or flanges, when joined without intervening pipe segments, deviations in excess of those specified in paragraphs 2.2 and 2.3 may occur.

3. Angularity and rotation tolerances.

3.1 Angularity tolerance across the face of flanges, weld end preparation and on rotation of flanges are as stated on Fig 1.

4. Closer tolerances

4.1 When closer tolerances than those given in paragraphs 2.2, 2.3 and 2.4, they shall be subject to agreement between the Purchaser and Fabricator.





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