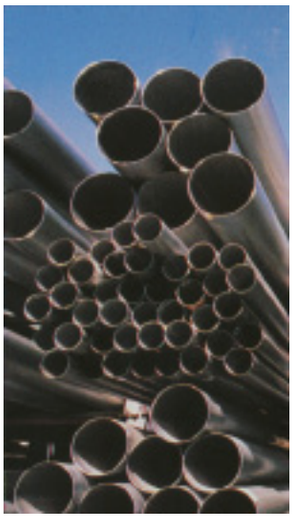
Stainless Steel Piping Products

Stainless Steel and Other Corrosion Resistant Metal Pipe, Tubing, Flanges and Fittings

ALASKAN COPPER



ALASKAN COPPER WORKS

Alaskan stainless steel pipe and fittings are found throughout the world in installations for the chemical, fertilizer, pulp and paper, marine, food, beverage and other process industries.

This catalog on stainless steel piping products lists the dimensions and weights of the most commonly specified sizes. Note that in addition to the austenitic stainless steel grades, Alaskan also manufactures pipe and fittings in austenitic-ferritic (duplex) stainless steel grades, copper-nickel (see separate catalog), aluminum, titanium, zirconium, and the nickel based and copper based alloys.

Contact one of our sales representatives for assistance with your inquiries for price and availability or the placement of your next order.

Automatic straight-seam welding from both sides using the gas tungstenarc process produces pipe and tubing in sizes up to 24 inch diameter in continuous lengths up to 20 feet. Sizes up to 60 inch diameter are available using other equally refined welding techniques.

Buttwelding fittings range from 1/2 inch to 60 inches in diameter.

The drawn outlet tee offers a smooth contour alternative to nozzle weld construction.

Picking and passivation enhances the appearance, and in certain cases, the corrosion resistance of Alaskan stainless steel pipe and fittings.

A "Cotton Test" checks the smoothness of the interior surface of pulp mill head box piping.

Flanges are offered in a wide variety of alloys and configurations.

These stub ends illustrate some of the many styles available.

Threaded fittings are stocked in most common sizes and alloys.

The Alaskan "business card test" checks the smoothness of our finest interior finish, which exceeds the smoothness attainable with complicated electropolishing methods.

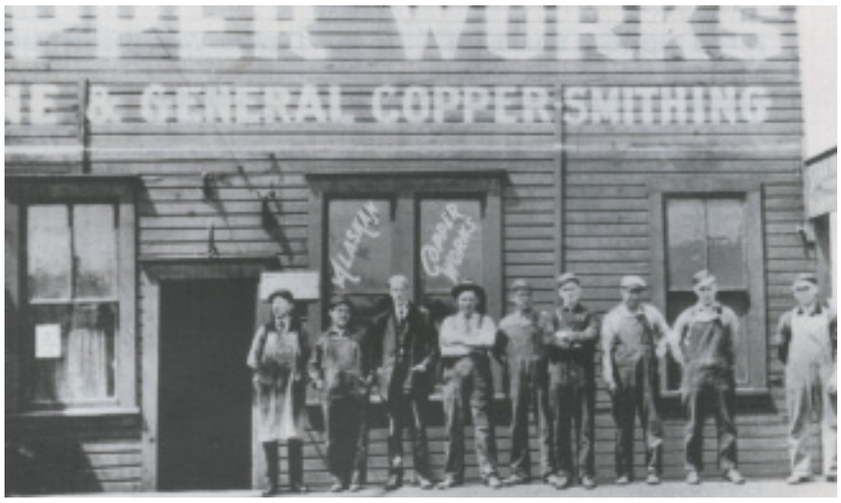
Prefabricated piping systems, produced by our Fabrication Division, result in reduced field welds and installation cost.

History

When Alaskan Copper Works was founded as a marine coppersmithing company in 1913, one of its major activities was forming and brazing pipe and pipe fittings made from copper, brass and bronze, primarily for use in the Pacific Northwest shipbuilding industry.

Beginning in the 1920's, many of the area's growing process industries, such as pulp and paper, which had relied on wood stave and cast iron as corrosion resistant materials for their tanks and piping, welcomed the development of a new weldable alloy, silicon bronze. This alloy had special advantages in weight, cost and corrosion resistance. Alaskan Copper Works participated in the transition to this innovative metal and in the development of the welding techniques necessary for its proper fabrication.

In the 1930's, alloys with even better corrosion resistance, such as the austenitic stainless steels, became available and quickly came into general use not only in the pulp and paper industry but also in the other process industries then beginning to develop, such as petrochemical and food processing. Again, Alaskan Copper Works participated in the application of these new, advantageous materials and in the development of the welding and fabricating procedures required to maximize their usefulness.



Alaskan Copper Works yesterday

Over the intervening years, improvements in our manufacturing capacities have seen the standard lengths of most pipe sizes increase from 4 feet to 10 feet and then to 20 feet. Die-formed smooth-flow elbows began to be made in small sizes and gradually advanced to include larger sizes and many radii and wall thicknesses. Other advances over the years have led to tees being made with smooth-drawn outlets, the development of many available choices in the types of stub ends for different services and our manufacturing of pipe and fittings to advanced specifications and in "exotic" alloys, including our qualification to produce fittings for the nuclear power industry.

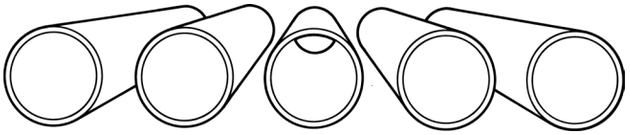
As a result, today's customers of the Stainless Products Division of Alaskan Copper Works benefit from the accumulated experience of one of the nation's largest organizations devoted exclusively to the manufacturing of pipe and pipe fittings in stainless steels, high-nickel alloys, duplex stainless alloys, copper-nickel alloys, aluminum, titanium, zirconium, copper and other weldable corrosion resistant alloys.


Alasan Copper Works today.

Contents

Stainless Steel Pipe and Tubing

"As Welded" Pipe and Tubing



- "As Welded" pipe and tubing is the most economical type of stainless steel piping and is available in the widest variety of diameters and wall thicknesses for maximum design flexibility and cost advantage.
- "As Welded" pipe and tubing is rolled and welded from ASTM A240 material and is normally supplied untested.
- ASTM A 778 is considered to be the most applicable ASTM specification for "as welded" pipe and tubing. ASTM 358 HT- O and ASTM A 409 HT-O also apply to "as welded" pipe but require more extensive testing.
- Alloys stocked include Types 304, 304L, 316, 316L and 317L. However, "as welded" pipe and tubing can nor mally be produced in any weldable corrosion resistant alloy.
- Available in 20 foot exact lengths.
- Non-standard diameters and cut lengths are available. ID size tubing is available.

Weight per Foot

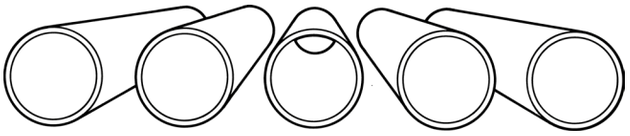
		Wall Thickness:					**Listed in Inches with Corresponding Manufacturer's Standard Gauge**						
Nominal	Outside	16	14	12	11	10							
Pipe Size	Diameter	.060	.075	.105	.120	.134	.165	.187	.218	.250	.312	.375	.500
	2	1.3	1.6	2.2	2.5	2.7							
2	2 3/8	1.5	1.9	2.6	3.0	3.3			5.1				
	2 1/2	1.6	2.0	2.7	3.1	3.5							
2 1/2	2 7/8	1.8	2.3	3.2	3.6	4.0							
	3	1.9	2.4	3.3	3.8	4.2							
3	3 1/2	2.3	2.8	3.9	4.4	4.9	6.0	6.8	7.8	8.9			
	4	2.6	3.2	4.5	5.1	5.7	6.9	7.8	9.0	10.2			
4	4 1/2	2.9	3.6	5.0	5.7	6.4	7.8	8.8	10.2	11.6			
	5	3.2	4.0	5.6	6.4	7.1	8.7	9.8	11.4	13.0			
5	5 9/16	3.6	4.5	6.3	7.1	8.0	9.7	11.0	12.7	14.5			
	6	3.9	4.9	6.8	7.7	8.6	10.5	11.9	13.8	15.7			
6	6 5/8	4.3	5.4	7.5	8.5	9.5	11.7	13.2	15.3	17.4	21.5	25.6	
	8	5.2	6.5	9.1	10.3	11.5	14.1	16.0	18.5	21.2	26.2	31.3	41.0
8	8 5/8	5.6	7.0	9.8	11.2	12.4	15.3	17.3	20.0	22.9	28.4	33.8	44.4
	10	6.5	8.1	11.4	13.0	14.5	17.7	20.1	23.3	26.6	33.0	39.5	51.9
10	10 3/4	7.0	8.8	12.2	13.9	15.6	19.1	21.6	25.1	28.7	35.6	42.5	56.0
	12	7.8	9.8	13.7	15.6	17.4	21.3	24.2	28.1	32.1	39.9	47.7	62.9
12	12 3/4	8.3	10.4	14.5	16.6	18.5	22.7	25.7	29.9	34.2	42.4	50.7	67.0
	14		11.4	16.0	18.2	20.3	25.0	28.2	32.8	37.6	46.7	55.9	73.8
	16		13.1	18.2	20.8	23.2	28.6	32.3	37.6	43.0	53.5	64.1	84.7
	18		14.7	20.5	23.5	26.2	32.2	36.4	42.4	48.5	60.3	72.3	95.7
	20		16.3	22.8	26.1	29.1	35.8	40.5	47.1	54.0	67.2	80.5	107
	22		18.0	25.1	28.7	32.0	39.4	44.6	51.9	59.4	74.0	88.7	118
	24		19.6	27.4	31.3	35.0	43.0	48.7	56.7	64.9	80.8	96.9	128
	26		21.3	29.7	34.0	37.9	46.6	52.8	61.4	70.4	87.6	105	139
	28			32.0	36.6	40.8	50.2	56.9	66.2	75.8	94.4	113	150
	30				39.2	43.8	53.8	61.0	71.0	81.3	101	121	161
	32				41.8	46.7	57.4	65.0	75.7	86.8	108	130	172
	34				44.4	49.6	61.0	69.1	80.5	92.2	115	138	183
	36				47.1	52.5	64.6	73.2	85.3	97.7	122	146	194
	38				49.7	55.5	68.3	77.3	90.0	103	129	154	205
	40				52.3	58.4	71.9	81.4	94.8	109	135	162	216
	42				54.9	61.3	75.5	85.5	100	114	142	171	227
	44				57.6	64.3	79.1	89.6	104	120	149	179	238
	46				60.2	67.2	82.7	93.7	109	125	156	187	249
	48				62.8	70.1	86.3	97.7	114	131	163	195	260

All weights are in pounds per foot, based on a metal density of .29 lb/in^3. Dimensions are in inches.

Alloys: pg. 55 Tolerances: pg. 57 Specifications: pg. 52, 53

Stainless Steel Pipe and Tubing

"Annealed" Welded and Seamless Pipe

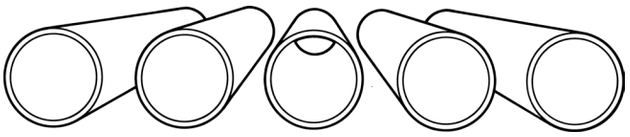


- "Annealed" pipe is used when the specifications referenced below are required and is available only in the NPS diameters and schedule wall thicknesses shown.
- Welded "annealed" pipe is available per ASTM A 312, ASME SA-312 and ASTM A 358, A 376, A 409 and MIL-P-24691 (corrosion tested) and is stocked in most sizes through 24" diameter.
- Seamless "annealed" pipe is available per ASTM A 312 and MIL-P-24691 (corrosion tested) and is stocked through 4" size.
- Alloys stocked include Types 304, 304L, 316, 316L and 317L. Other corrosion resistant alloys are available.
- Available in 20 foot random lengths.

Nominal Pipe Size	Outside Diameter	**Sch 5s**	Wt/Ft	**Sch 10s**	Wt/Ft	**Sch 40s**	Wt/Ft	**Sch 80s**	Wt/Ft	**Sch 160**	Wt/Ft	**XX Strong**	Wt/Ft
1/8	.405			**.049**	.19	**.068**	.25	**.095**	.32				
1/4	.540			**.065**	.31	**.088**	.40	**.119**	.50				
3/8	.675			**.065**	.43	**.091**	.58	**.126**	.76				
1/2	.840	**.065**	.55	**.083**	.69	**.109**	.87	**.147**	1.1	**.187**	1.3	**.294**	1.8
3/4	1.05	**.065**	.70	**.083**	.88	**.113**	1.2	**.154**	1.5	**.218**	2.0	**.308**	2.5
1	1.31	**.065**	.88	**.109**	1.4	**.133**	1.7	**.179**	2.2	**.250**	2.9	**.358**	3.7
1 1/4	1.66	**.065**	1.1	**.109**	1.8	**.140**	2.3	**.191**	3.1	**.250**	3.9	**.382**	5.3
1 1/2	1.90	**.065**	1.3	**.109**	2.1	**.145**	2.8	**.200**	3.7	**.281**	5.0	**.400**	6.6
2	2 3/8	**.065**	1.6	**.109**	2.7	**.154**	3.7	**.218**	5.1	**.343**	7.6	**.436**	9.2
2 1/2	2 7/8	**.083**	2.5	**.120**	3.6	**.203**	5.9	**.276**	7.8	**.375**	10.2	**.552**	14.0
3	3 1/2	**.083**	3.1	**.120**	4.4	**.216**	7.8	**.300**	10.5	**.438**	14.7	**.600**	19.0
3 1/2	4	**.083**	3.6	**.120**	5.1	**.226**	9.3	**.318**	12.8			**.636**	23.4
4	4 1/2	**.083**	4.0	**.120**	5.7	**.237**	11.0	**.337**	15.3	**.531**	23.0	**.674**	28.2
5	5 9/16	**.109**	6.5	**.134**	8.0	**.258**	15.0	**.375**	21.3	**.625**	33.7	**.750**	39.5
6	6 5/8	**.109**	7.8	**.134**	9.5	**.280**	19.4	**.432**	29.2	**.719**	46.4	**.864**	54.4
8	8 5/8	**.109**	10.1	**.148**	13.7	**.322**	29.2	**.500**	44.4	**.906**	76.5	**.875**	74.1
10	10 3/4	**.134**	15.6	**.165**	19.1	**.365**	41.4	**.500**	56.0	**1.125**	118	**1.00**	107
12	12 3/4	**.156**	21.5	**.180**	24.7	**.375**	50.7	**.500**	67.0	**1.312**	164	**1.00**	128
	14	**.156**	23.6	**.188**	28.4	**.375**	55.9	**.500**	73.8				
	16	**.165**	28.6	**.188**	32.5	**.375**	64.1	**.500**	84.7				
	18	**.165**	32.2	**.188**	36.6	**.375**	72.3	**.500**	95.7				
	20	**.188**	40.7	**.218**	47.1	**.375**	80.5	**.500**	107				
	22	**.188**	44.8	**.218**	51.9	**.375**	88.7	**.500**	118				
	24	**.218**	56.7	**.250**	64.9	**.375**	96.9	**.500**	128				
	26					**.375**	105	**.500**	139				
	28					**.375**	113	**.500**	150				
	30	**.250**	81.3	**.312**	101	**.375**	121	**.500**	161				
	32					**.375**	130	**.500**	172				
	34					**.375**	138	**.500**	183				
	36	**.250**		**.312**		**.375**	146	**.500**	194				
	40					**.375**	162	**.500**	216				
	42					**.375**	171	**.500**	227				
	48					**.375**	195	**.500**	260				

All weights are in pounds per foot, based on a metal density of .29 lb/in^3
Thicknesses shown under Sch 40s for sizes 14"-24" and 30" are specified by MSS SP-43. All other thicknesses shown under Sch 40s and Sch 80s for 14" and larger are not specified by any standard. Alaskan will use the schedule thicknesses shown for all sizes not specified by standard unless otherwise directed.
Dimensions are per ANSI B36.19 and ANSI B36.10 and are listed in inches.
Alloys: pg. 55 Tolerances: pg. 57 Specifications: pg. 52, 53

"Annealed" Welded and Seamless Tubing



- "Annealed" tubing is used when the specifications referenced below are required. This tubing is primarily used for instrumentation, heat exchangers and in some ornamental applications.
- Welded "annealed" tubing is available per ASTM A 249, ASME SA-249 and ASTM A 269 and is stocked to 4" OD and available up to 8" OD.
- Seamless "annealed" tubing is available per ASTM A 213, ASME SA -213 and ASTM A 269 and is stocked to 2" OD and available up to 6" OD.
- Alloys stocked include Types 304, 304L, 316, 316L and 317L. Other corrosion resistant alloys are available.
- Available in 20 foot random lengths.

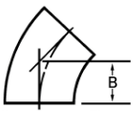
	Weight per Foot								
Outside	Wall Thickness:		Listed in Inches						
Diameter	.020	.028	.035	.049	.065	.083	.095	.109	.120
1/16	.01								
1/8	.02	.03	.03	.04					
3/16	.04	.05	.06	.07	.09				
1/4	.05	.07	.08	.11	.13	.15			
5/16	.06	.09	.11	.14	.18	.21			
3/8	.08	.11	.13	.17	.22	.26			
7/16	.09	.13	.15	.21	.26	.32			
1/2	.10	.14	.18	.24	.31	.38	.42	.47	.50
9/16	.12	.16	.20	.28	.35	.44			
5/8	.13	.18	.23	.31	.40	.49	.55	.61	.66
3/4	.16	.22	.27	.38	.49	.61	.68	.76	.83
7/8	.19	.26	.32	.44	.58	.72	.81	.91	.99
1	.21	.30	.37	.51	.66	.83	.94	1.1	1.2
1 1/4			.46	.64	.84	1.1	1.2	1.4	1.5
1 5/16			.49	.68	.89	1.1	1.3	1.4	1.6
1 1/2			.56	.78	1.0	1.3	1.5	1.7	1.8
1 5/8			.61	.84	1.1	1.4	1.6	9.4	2.0
1 3/4			.66	.91	1.2	1.5	1.7	2.0	2.1
2			.75	1.0	1.4	1.7	2.0	2.3	2.5
2 1/4				1.2	1.6	2.0	2.2	2.6	2.8
2 3/8				1.2	1.6	2.1	2.4	2.7	3.0
2 1/2				1.3	1.7	2.2	2.5	2.8	3.0
2 7/8					2.0	2.5	2.9	3.3	3.6
3					2.1	2.6	3.0	3.4	3.8
3 1/2					2.4	3.1	3.5	4.0	4.4
4					2.8	3.6	4.1	4.6	5.1
4 1/2					3.2	4.0	4.6	5.2	5.7
5					3.5	4.5	5.1	5.8	6.4
6					4.2	5.4	6.1	7.0	7.7
8					5.6	7.2	8.2	9.4	10.3

All weights are in pounds per foot, based on a metal density of .29 lb/in^3
Dimensions are in inches.
Alloys: pg. 55 Tolerances: pg. 57 Specifications: pg. 52, 53

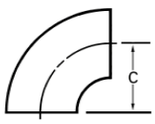
Stainless Steel Welding Elbows

Smooth Flow Elbows

Long Radius 90°



Long Radius 45°



Short Radius 90°

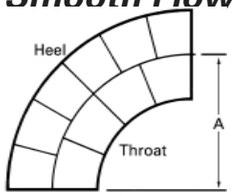
■ Elbows and other fitting configurations (see pages 7 thru 20) are available in either the "as welded" or "an nealed" condition in accordance with one of the specifications referenced below.
■ "As welded" elbows and other "as welded" fittings are the most economical type of stainless steel fittings and are available in the widest variety of diameters and wall thicknesses for maximum design flexibility and cost advantage. They are formed and welded from ASTM A 240 material and are generally used with "as welded" piping. ASTM 774 is considered to be the most applicable ASTM specification for "as welded" elbows and other "as welded" fittings.
■ "Annealed" elbows and other "annealed" fittings are available per ASTM A 403, Classes WP-S, WP-W, WP-WX and CR are generally used with "annealed" pipe. (See page 55 for a detailed explanation of ASTM A 403).
■ "Annealed" elbows and other "annealed" fittings may be specified to ASME SA-403 and are available Section VIII (Division 1) of the ASME Boiler and Pressure Vessel Code.
■ Alloys stocked include Types 304, 304L, 316, 316L and 317L. However, elbows and other fitting configurations can normally be produced in any weldable corrosion resistant alloy.
■ Non-standard diameters and elbow angles are available.
■ ID size elbows are available.

Nominal Pipe Size	Outside Diameter	A	B	C
	1/2	3/4	5/16	
1/2	.840	1 1/2	5/8	
	3/4	1 1/8	7/16	
3/4	1.05	1 1/8	7/16	
	1	1 1/2	7/8	
1	1.31	1 1/2	7/8	
	1 1/4	1 7/8	1	
1 1/4	1.66	1 7/8	1	
	1 1/2	2 1/4	1 1/8	
1 1/2	1.90	2 1/4	1 1/8	
	2	3	1 3/8	
2	2 3/8	3	1 3/8	
	2 1/2	3 3/4	1 3/4	
2 1/2	2 7/8	3 3/4	1 3/4	
	3	4 1/2	2	3
3	3 1/2	4 1/2	2	3
	4	6	2 1/2	4
4	4 1/2	6	2 1/2	4

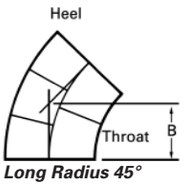
Nominal Pipe Size	Outside Diameter	A	B	C
	5	7 1/2	3 1/8	5
5	5 9/16	7 1/2	3 1/8	5
	6	9	3 3/4	6
6	6 5/8	9	3 3/4	6
	8	12	5	8
8	8 5/8	12	5	8
	10	15	6 1/4	10
10	10 3/4	15	6 1/4	10
	12	18	7 1/2	12
12	12 3/4	18	7 1/2	12
	14	21	8 3/4	14
	16	24	10	16
	18	27	11 1/4	18
	20	30	12 1/2	20
	22	33	13 1/2	22
	24	36	15	24
	30	*45	18 1/2	(Pg. 7)
	36	*54	22 1/4	(Pg. 7)

Dimensions for LR 90° and LR 45° elbows per ANSI B16.9. Short Radius 90° elbow dimensions per ANSI B16.28.
Dimensions are in inches. *Indicates 4 piece construction.
Alloys: pg. 55 Wall Thicknesses: pg. 45-47 Tolerances: pg. 57 Specifications: 53, 54. Shipping Weights: pg. 45-47

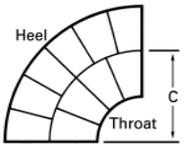
Smooth Flow Elbows Made With Die-Formed Panels



Long Radius 90°



Long Radius 45°



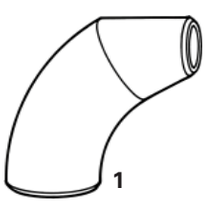
Short Radius 90°

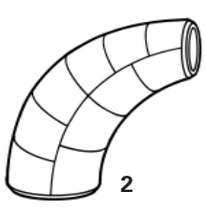
- Available in either the "as welded" or "annealed" condition as described more fully under smooth flow elbows on page 6.
- Alloys stocked include Types 304, 304L, 316, 316L and 317L. However, elbows can normally be produced in any weldable corrosion resistant alloy. These elbows have a smooth contour design and are made from multiple panels for ease of fabrication. Die-formed panel elbows are not "mitered" elbows.
- Non-standard diameters and elbow angles are available.
- ID size elbows are available.

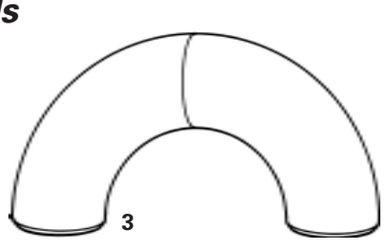
Nominal Pipe Size	Outside Diameter	A	Throat Panels	Heel Panels	B	Throat Panels	Heel Panels	C	Throat Panels	Heel Panels
	26	39	4	6	16	2	3	26	4	6
	28	42	4	6	17 1/4	2	3	28	4	6
	30	45	4	6	18 1/2	2	3	30	4	6
	32	48	4	6	19 3/4	2	3	32	4	6
	36	54	4	6	22 1/4	2	3	36	4	6
	40	60	4	6	24 7/8	2	3	40	4	6
	42	63	4	6	26	2	3	42	4	6
	48	72	4	6	29 7/8	2	3	48	4	6

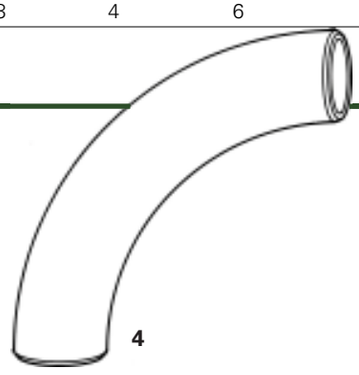
Dimensions for LR 90° and LR 45° elbows per ANSI B16.9. Short Radius 90° elbow dimensions per Alaskan standard.
Dimensions are in inches.
Alloys: pg. 55 Wall Thicknesses: pg. 45-47 Tolerances: pg. 57 Shipping Weights: pg. 45-47

Special Welding Elbows and Bends





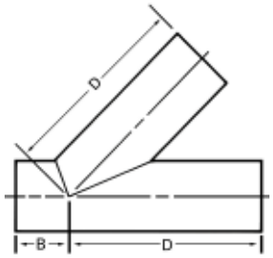




1. **Cut-Back Transition Reducing Elbow**
   An economical reducing elbow which is available in standard long and short radius configurations.
   Supplied in NPS and tube size and diameters 4" through 24" and is available in all stainless steel and other weldable corrosion resistant alloys.
   Can be supplied in non-standard degrees of bend.
2. **Smooth Flow Reducing Elbow**
   Available in long radius, short radius, non-standard center-line radius and variable radius configurations.
   Supplied in standard and non-standard diameters and available in all stainless steel and other weldable corrosion resistant alloys.
   Normally made with die-formed panels, also available in half-shell construction.
3. **180° Return Bend**
   Available in standard long and short radius configurations and supplied in NPS, tube size and non-standard diameters.
   Available in all stainless steel and other weldable corrosion resistant alloys.
   Can be manufactured to meet non-standard dimensional requirements.
4. **Special Radius Bend**
   Available in any center-line radii, where the minimum center-line radius is 3 times the outside diameter.
   Supplied in NPS, tube size, ID size and non-standard diameters.
   Available in all stainless steel and most other weldable corrosion resistant alloys.
   Can be supplied in non-standard degrees of bend.

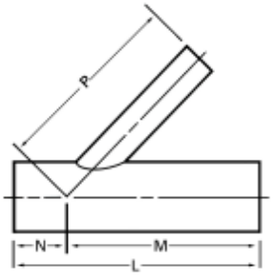
Stainless Steel Laterals

45˚ Laterals



Nozzle-Welded Outlets

45˚ Reducing Laterals



- Available in either the "as welded" or "annealed" condition as described more fully under smooth flow elbows on page 6.
- Alloys stocked include Types 304, 304L, 316, 316L and 317L. However, laterals can normally be produced in any weldable corrosion resistant alloy.
- Non-standard diameters, reductions and angles are available.
- ID size laterals are available.

Nominal Pipe Size	Outside Diameter	D	B
	3/4	5	1
3/4	1.05	5	1
	1	5 3/4	1 3/4
1	1.31	5 3/4	1 3/4
	1 1/4	6 1/4	1 3/4
1 1/4	1.66	6 1/4	1 3/4
	1 1/2	7	2
1 1/2	1.90	7	2
	2	8	2 1/2
2	2 3/8	8	2 1/2
	2 1/2	9 1/2	2 1/2
2 1/2	2 7/8	9 1/2	2 1/2
	3	10	3
3	3 1/2	10	3
	4	12	3
4	4 1/2	12	3

Nominal Pipe Size	Outside Diameter	D	B
	5	13 1/2	3 1/2
5	5 9/16	13 1/2	3 1/2
	6	14 1/2	3 1/2
6	6 5/8	14 1/2	3 1/2
	8	17 1/2	4 1/2
8	8 5/8	17 1/2	4 1/2
	10	20 1/2	5
10	10 3/4	20 1/2	5
	12	24 1/2	5 1/2
12	12 3/4	24 1/2	5 1/2
	14	27	6
	16	30	6 1/2
	18	32	7
	20	35	8
	24	40 1/2	9
	30	49	10

45˚ Reducing Laterals

Listed in the following table are dimensions of reducing laterals with outlet diameters equal to or smaller than those shown. Reducing laterals with run diameters 16" and smaller or with outlet sizes larger than those shown have the same dimensions as straight-sized laterals.

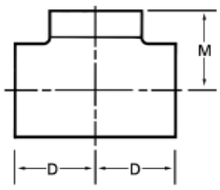
Nominal Pipe Size Run		Outlet	Outside Diameter Run		Outlet	L	M	N	P
			18	X	8	26	25	1	27 1/2
18	X	8	18	X	8 5/8	26	25	1	27 1/2
			20	X	10	28	27	1	29 1/2
20	X	10	20	X	10 3/4	28	27	1	29 1/2

Nominal Pipe Size Run		Outlet	Outside Diameter Run		Outlet	L	M	N	P
			24	X	12	32	31 1/2	1/2	34 1/2
24	X	12	24	X	12 3/4	32	31 1/2	1/2	34 1/2
			30	X	14	39	39	0	42

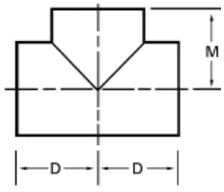
Dimensions are per ANSI B16.1, Class 125 and are listed in inches.

Alloys: pg. 55 Wall Thicknesses: pg. 51 Tolerances: pg. 57 Specifications: pg. 53, 54 Shipping Weights: pg. 51

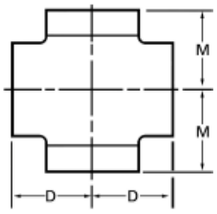
Stainless Steel Tees and Crosses



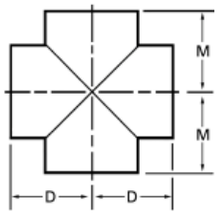
Drawn Outlets



Nozzle-Welded Outlets



Drawn Outlets



Nozzle-Welded Outlets

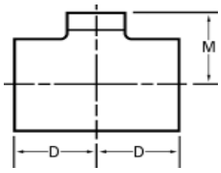
■ Available in either the "as welded" or "annealed" condition as described more fully under smooth flow elbows on page 6.
■ Alloys stocked include Types 304, 304L, 316, 316L and 317L. However, tees and crosses can normally be produced in any weldable corrosion resistant alloy.
■ Non-standard sizes and dimensions are available.
■ ID size tees and crosses are available.

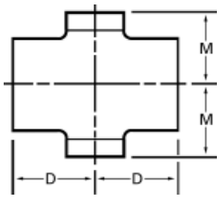
Nominal Pipe Size	Outside Diameter	D	M
	1/2	1	1
1/2	.840	1	1
	3/4	1 1/8	1 1/8
3/4	1.05	1 1/8	1 1/8
	1	1 1/2	1 1/2
1	1.31	1 1/2	1 1/2
	1 1/4	1 7/8	1 7/8
1 1/4	1.66	1 7/8	1 7/8
	1 1/2	2 1/4	2 1/4
1 1/2	1.90	2 1/4	2 1/4
	2	2 1/2	2 1/2
2	2 3/8	2 1/2	2 1/2
	2 1/2	3	3
2 1/2	2 7/8	3	3
	3	3 3/8	3 3/8
3	3 1/2	3 3/8	3 3/8
	4	4 1/8	4 1/8
4	4 1/2	4 1/8	4 1/8
	5	4 7/8	4 7/8
5	5 9/16	4 7/8	4 7/8
	6	5 5/8	5 5/8
6	6 5/8	5 5/8	5 5/8

Nominal Pipe Size	Outside Diameter	D	M
	8	7	7
8	8 5/8	7	7
	10	8 1/2	8 1/2
10	10 3/4	8 1/2	8 1/2
	12	10	10
12	12 3/4	10	10
	14	11	11
	16	12	12
	18	13 1/2	13 1/2
	20	15	15
	22	16 1/2	16 1/2
	24	17	17
	26	19 1/2	19 1/2
	28	20 1/2	20 1/2
	30	22	22
	32	23 1/2	23 1/2
	34	25	25
	36	26 1/2	26 1/2
	38	28	28
	40	29 1/2	29 1/2
	42	30	28
	48	35	33

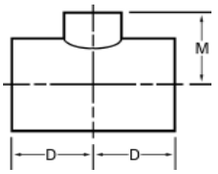
Note: Under ANSI B16.9, for sizes 26" and larger, outlet dimension "M" is recommended but not mandatory.
Dimensions are in inches.
Alloys: pg. 55 Wall Thicknesses: pg. 48, 49 Tolerances: pg. 57 Specifications: pg. 53, 54 Shipping Weights: pg. 48, 49

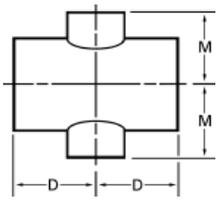
Reducing Tees and Crosses





Drawn Outlets





Nozzle-Welded Outlets

- Available in either the "as welded" or "annealed" condition as described more fully under smooth flow elbows on page 6.
- Alloys stocked include Types 304, 304L, 316, 316L and 317L. However, reducing tees and crosses can normally be produced in any weldable corrosion resistant alloy.
- Non-standard sizes and dimensions are available.
- ID size rducing tees and crosses are available.

Nominal Pipe Size	Outside Diameter Run	Outlet	D	M
3/4 x 3/4 x 1/2	1.05 x 1.05 x	.840	1 1/8	1 1/8
1 x 1 x 3/4	1.31 x 1.31 x	1.05	1 1/2	1 1/2
x 1/2		.840	1 1/2	1 1/2
1 1/4 x 1 1/4 x 1	1.66 x 1.66 x	1.31	1 7/8	1 7/8
x 3/4		1.05	1 7/8	1 7/8
x 1/2		.840	1 7/8	1 7/8
1 1/2 x 1 1/2 x 1 1/4	1.90 x 1.90 x	1.66	2 1/4	2 1/4
x 1		1.31	2 1/4	2 1/4
x 3/4		1.05	2 1/4	2 1/4
x 1/2		.840	2 1/4	2 1/4
	2 x 2 x	1 1/2	2 1/2	2 3/8
		1 1/4	2 1/2	2 1/4
		1	2 1/2	2
2 x 2 x 1 1/2	2 3/8 x 2 3/8 x	1.90	2 1/2	2 3/8
x 1 1/4		1.66	2 1/2	2 1/4
x 1		1.31	2 1/2	2
	2 1/2 x 2 1/2 x	2	3	2 3/4
		1 1/2	3	2 5/8
		1 1/4	3	2 1/2
2 1/2 x 2 1/2 x 2	2 7/8 x 2 7/8 x	2 3/8	3	2 3/4
x 1 1/2		1.90	3	2 5/8
x 1 1/4		1.66	3	2 1/2
	3 x 3 x	2 1/2	3 3/8	3 1/4
		2	3 3/8	3
		1 1/2	3 3/8	2 7/8
		1 1/8	3 3/8	2 3/4
3 x 3 x 2 1/2	3 1/2 x 3 1/2 x	2 7/8	3 3/8	3 1/4
x 2		2 3/8	3 3/8	3
x 1 1/2		1.90	3 3/8	2 7/8
x 1		1.66	3 3/8	2 3/4
	4 x 4 x	3	4 1/8	3 7/8
		2 1/2	4 1/8	3 3/4
		2	4 1/8	3 1/2
		1 1/2	4 1/8	3 3/8

Nominal Pipe Size	Outside Diameter Run	Outlet	D	M
4 x 4 x 3	4 1/2 x 4 1/2 x	3 1/2	4 1/8	3 7/8
x 2 1/2		2 7/8	4 1/8	3 3/4
x 2		2 3/8	4 1/8	3 1/2
x 1 1/2		1.90	4 1/8	3 3/8
	5 x 5 x	4	4 7/8	4 5/8
		3	4 7/8	4 3/8
		2 1/2	4 7/8	4 1/4
		2	4 7/8	4 1/8
5 x 5 x 4	5 9/16 x 5 9/16 x	4 1/2	4 7/8	4 5/8
x 3		3 1/2	4 7/8	4 3/8
x 2 1/2		2 7/8	4 7/8	4 1/4
x 2		2 3/8	4 7/8	4 1/8
	6 x 6 x	5	5 5/8	5 3/8
		4	5 5/8	5 1/8
		3	5 5/8	4 7/8
		2 1/2	5 5/8	4 3/4
6 x 6 x 5	6 5/8 x 6 5/8 x	5 9/16	5 5/8	5 3/8
x 4		4 1/2	5 5/8	5 1/8
x 3		3 1/2	5 5/8	4 7/8
x 2 1/2		2 7/8	5 5/8	4 3/4
	8 x 8 x	6	7	6 5/8
		5	7	6 3/8
		4	7	6 1/8
		3	7	5 7/8
8 x 8 x 6	8 5/8 x 8 5/8 x	6 5/8	7	6 5/8
x 5		5 9/16	7	6 3/8
x 4		4 1/2	7	6 1/8
x 3		3 1/2	7	5 7/8
	10 x 10 x	8	8 1/2	8
		6	8 1/2	7 5/8
		5	8 1/2	7 1/2
		4	8 1/2	7 1/4
10 x 10 x 8	10 3/4 x 10 3/4 x	8 5/8	8 1/2	8
x 6		6 5/8	8 1/2	7 5/8
x 5		5 9/16	8 1/2	7 1/2
x 4		4 1/2	8 1/2	7 1/4

Dimensions are per ANSI B16.9 and are listed in inches.

Alloys: pg. 55 Wall Thicknesses: pg. 48, 49 Tolerances: pg. 57 Specifications: pg. 53, 54

Reducing Tees and Crosses (continued)

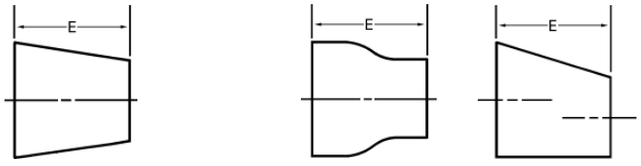
Nominal Pipe Size	Outside Diameter Run	Outlet	D	M
	12 x 12	x 10	10	9 1/2
		x 8	10	9
		x 6	10	8 5/8
		x 5	10	8 1/2
12 x 12 x 10	12 3/4 x 12 3/4	x 10 3/4	10	9 1/2
x 8		x 8 5/8	10	9
x 6		x 6 5/8	10	8 5/8
x 5		x 5 9/16	10	8 1/2
	14 x 14	x 12	11	10 5/8
		x 10	11	10 1/8
		x 8	11	9 3/4
		x 6	11	9 3/8
14 x 14 x 12	14 x 14	x 12 3/4	11	10 5/8
x 10		x 10 3/4	11	10 1/8
x 8		x 8 5/8	11	9 3/4
x 6		x 6 5/8	11	9 3/8
	16 x 16	x 14	12	12
		x 12	12	11 5/8
		x 10	12	11 7/8
		x 8	12	10 3/4
		x 6	12	10 3/8
16 x 16 x 12	16 x 16	x 12 3/4	12	11 5/8
x 10		x 10 3/4	12	11 1/8
x 8		x 8 5/8	12	10 3/4
x 6		x 6 5/8	12	10 3/8
	18 x 18	x 16	13 1/2	13
		x 14	13 1/2	13
		x 12	13 1/2	12 5/8
		x 10	13 1/2	12 1/8
		x 8	13 1/2	11 3/4
18 x 18 x 12	18 x 18	x 12 3/4	13 1/2	12 5/8
x 10		x 10 3/4	13 1/2	12 1/8
x 8		x 8 5/8	13 1/2	11 3/4

Nominal	Outside Diameter Run	Outlet	D	M
	20 x 20	x 18	15	14 1/2
		x 16	15	14
		x 14	15	14
		x 12	15	13 5/8
		x 10	15	13 1/8
20 x 20 x 12	20 x 20	x 12 3/4	15	13 5/8
x 10		x 10 3/4	15	13 1/8
	22 x 22	x 20	16 1/2	16
		x 18	16 1/2	15 1/2
		x 16	16 1/2	15
		x 14	16 1/2	15
		x 12	16 1/2	14 5/8
22 x 22 x 12	22 x 22	x 12 3/4	16 1/2	14 5/8
	24 x 24	x 22	17	17
		x 20	17	17
		x 18	17	16 1/2
		x 16	17	16
		x 14	17	16
	30 x 30	x 24	22	21
		x 22	22	20 1/2
		x 20	22	20
		x 18	22	19 1/2
		x 16	22	19
	36 x 36	x 30	26 1/2	25
		x 24	26 1/2	24
		x 20	26 1/2	23
		x 18	26 1/2	22 1/2
	42 x 42	x 36	30	28
		x 30	30	28
		x 24	30	26
		x 20	30	26

Note: Under ANSI B16.9, for sizes 26" and larger, outlet dimension "M" is recommended but not mandatory.
Dimensions are in inches.
Alloys: pg. 55 Wall Thicknesses: pg. 48, 49 Tolerances: pg. 57 Specifications: 53, 54

Reducers

Concentric and Eccentric Reducers



Conical Bell-Shaped

Concentric **Eccentric**

- Available in either the "as welded" or "annealed" condition as described more fully under smooth flow elbows on page 6.
- Alloys stocked include Types 304, 304L, 316, 316L and 317L. However, concentric and eccentric reducers can normally be produced in any weldable corrosion resistant alloy.
- Non-standard sizes and reductions are available.
- ID size reducers are available.
- Some common sizes can be provided bell-shaped.

Nominal Pipe Size	Outside Diameter	E
3/4 x 1/2	1.05 x .840	1 1/2
1 x 3/4	1.31 x 1.05	2
x 1/2	x .840	2
1 1/4 x 1	1.66 x 1.31	2
x 3/4	x 1.05	2
x 1/2	x .840	2
1 1/2 x 1 1/4	1.90 x 1.66	2 1/2
x 1	x 1.31	2 1/2
x 3/4	x 1.05	2 1/2
x 1/2	x .840	2 1/2
	2 x 1 1/2	3
	x 1 1/4	3
	x 1	3
	x 3/4	3
2 x 1 1/2	2 3/8 x 1.90	3
x 1 1/4	x 1.66	3
x 1	x 1.31	3
x 3/4	x 1.05	3
	2 1/2 x 2	3 1/2
	x 1 1/2	3 1/2
	x 1 1/4	3 1/2
	x 1	3 1/2
2 1/2 x 2	2 7/8 x 2 3/8	3 1/2
x 1 1/2	x 1.90	3 1/2
x 1 1/4	x 1.66	3 1/2
x 1	x 1.31	3 1/2
	3 x 2 1/2	3 1/2
	x 2	3 1/2
	x 1 1/2	3 1/2
	x 1 1/4	3 1/2
3 x 2 1/2	3 1/2 x 2 7/8	3 1/2
x 2	x 2 3/8	3 1/2
x 1 1/2	x 1.90	3 1/2
x 1 1/4	x 1.66	3 1/2

Nominal Pipe Size	Outside Diameter	E
	4 x 3	4
	x 2 1/2	4
	x 2	4
	x 1 1/2	4
4 x 3	4 1/2 x 3 1/2	4
x 2 1/2	x 2 7/8	4
x 2	x 2 3/8	4
x 1 1/2	x 1.90	4
	5 x 4	5
	x 3	5
	x 2 1/2	5
	x 2	5
5 x 4	5 9/16 x 4 1/2	5
x 3	x 3 1/2	5
x 2 1/2	x 2 7/8	5
x 2	x 2 3/8	5
	6 x 5	5 1/2
	x 4	5 1/2
	x 3	5 1/2
	x 2 1/2	5 1/2
6 x 5	6 5/8 x 5 9/16	5 1/2
x 4	x 4 1/2	5 1/2
x 3	x 3 1/2	5 1/2
x 2 1/2	x 2 7/8	5 1/2
	8 x 6	6
	x 5	6
	x 4	6
	x 3	6
8 x 6	8 5/8 x 6 5/8	6
x 5	x 5 9/16	6
x 4	x 4 1/2	6

Dimensions are per ANSI B16.9 and are in inches.

Alloys: pg. 55 Wall Thicknesses: pg. 50 Tolerances: pg. 57 Specifications: pg. 53, 54 Shipping Weights: pg. 50

Concentric and Eccentric Reducers (continued)

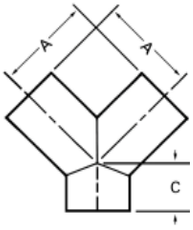
Nominal Pipe Size	Outside Diameter	E
	10 x 8	7
	x 6	7
	x 5	7
	x 4	7
10 x 8	10 3/4 x 8 5/8	7
x 6	x 6 5/8	7
x 5	x 5 9/16	7
x 4	x 4 1/2	7
	12 x 10	8
	x 8	8
	x 6	8
	x 5	8
12 x 10	12 3/4 x 10 3/4	8
x 8	x 8 5/8	8
x 6	x 6 5/8	8
x 5	x 5 9/16	8
	14 x 12	13
	x 10	13
	x 8	13
	x 6	13
14 x 12	14 x 12 3/4	13
x 10	x 10 3/4	13
x 8	x 8 5/8	13
x 6	x 6 5/8	13
	16 x 14	14
	x 12	14
	x 10	14
	x 8	14
16 x 12	16 x 12 3/4	14
x 10	x 10 3/4	14
x 8	x 8 5/8	14
	18 x 16	15
	x 14	15
	x 12	15
	x 10	15
	x 8	15
18 x 12	18 x 12 3/4	15
x 10	x 10 3/4	15
x 8	x 8 5/8	15

		E
	20 x 18	20
	x 16	20
	x 14	20
	x 12	20
	x 10	20
20 x 12	20 x 12 3/4	20
x 10	x 10 3/4	20
	22 x 20	20
	x 18	20
	x 16	20
	x 14	20
	x 12	20
22 x 12	22 x 12 3/4	20
	24 x 22	20
	x 20	20
	x 18	20
	x 16	20
	x 14	20
	30 x 24	24
	x 20	24
	x 18	24
	x 16	24
	36 x 30	24
	x 24	24
	x 20	24
	x 18	24
	42 x 36	24
	x 30	24
	x 24	24
	x 20	24
	48 x 42	28
	x 36	28
	x 30	28
	x 24	28

Dimensions are per ANSI B16.9 and are in inches.
Alloys: pg. 55 Wall Thicknesses: pg. 50 Tolerances: pg. 57 Specifications: pg. 53, 54 Shipping Weights: pg. 50

Stainless Steel Wyes and Adaptors

True Wyes



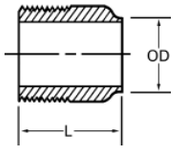
Nozzle-Welded Outlets

- Available in either the "as welded" or "annealed" condition as described more fully under smooth flow elbows on page 6.
- Alloys stocked include Types 304, 304L, 316, 316L and 317L. However, true wyes can normally be produced in any weldable corrosion resistant alloy.
- Non-standard sizes and dimensions are available.
- ID size true wyes are available.

Nominal Pipe Size	Outside Diameter	A	C
1	1.31	3 1/2	1 3/4
1 1/4	1.66	3 3/4	1 3/4
1 1/2	1.90	4	2
2	2 3/8	4 1/2	2 1/2
2 1/2	2 7/8	5	2 1/2
3	3 1/2	5 1/2	3
	4	6 1/2	3
4	4 1/2	6 1/2	3
	5	7 1/2	3 1/2
5	5 9/16	7 1/2	3 1/2
	6	8	3 1/2
6	6 5/8	8	3 1/2
	8	9	4 1/2
8	8 5/8	9	4 1/2
	10	11	5
10	10 3/4	11	5
	12	12	5 1/2
12	12 3/4	12	5 1/2
	14	14	6
	16	15	6 1/2
	18	16 1/2	7
	20	18	8
	24	22	9
	30	25	10

Dimensions are per ANSI B16.1, Class 125 and are listed in inches.
Note: Unless specified, dimensions for reducing wyes will be the same as straight-sized wyes.
Alloys: pg. 55 Wall Thicknesses: pg. 51 Tolerances: pg. 57 Specifications: pg. 53, 54 Shipping Weights: pg. 51

Thread x Buttwelding (NPT x OD) Adaptors



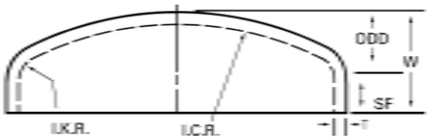
- Used to provide a NPT threaded end that can be welded to OD tubing.
- Furnished with American National Standard Taper Pipe Threads per ANSI B2.1.
- Machined to .062" thickness at OD end with other thicknesses provided upon request.

Size					L
3/4	NPT	x	3/4	OD	1 5/8
1	NPT	x	1	OD	1 3/4
1 1/4	NPT	x	1 1/4	OD	1 3/4
1 1/2	NPT	x	1 1/2	OD	1 3/4
2	NPT	x	2	OD	1 13/16
2 1/2	NPT	x	2 1/2	OD	2 5/16
3	NPT	x	3	OD	2 1/2
4	NPT	x	4	OD	2 9/16

Dimensions are in inches.

Stainless Steel Heads and Caps

ASME Flanged and Dished Heads



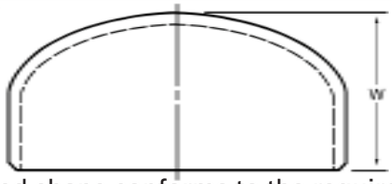
- Formed shape conforms to the requirements of the ASME Code for torispherical heads.
- ASME heads are available in both OD and NPS sizes and often provide an economical alternative to caps.
- Alloys stocked include Types 304, 304L, 316, 316L and 317L. However, F & D Heads can normally be produced in any weldable corrosion resistant alloy.

Nominal Pipe Size	Outside Diameter	ODD	SF	W
	1	5/8	1/2	1 1/8
	1 1/2	11/16	1/2	1 3/16
	2	3/4	1/2	1 1/4
2	2 3/8	13/16	1/2	1 5/16
	2 1/2	13/16	1/2	1 5/16
2 1/2	2 7/8	7/8	1/2	1 3/8
	3	7/8	1/2	1 3/8
3	3 1/2	15/16	1/2	1 7/16
	4	1	1/2	1 1/2
4	4 1/2	1 11/16	1/2	1 9/16
	5	1 1/8	1/2	1 5/8
5	5 9/16	1 3/16	1/2	1 11/16
	6	1 3/4	1/2	2 1/4
6	6 5/8	1 13/16	1/2	2 5/16

Nominal Pipe Size	Outside Diameter	ODD	SF	W
	8	2	1/2	2 1/2
8	8 5/8	2 1/16	1/2	2 9/16
	10	2 1/4	1/2	2 3/4
10	10 3/4	2 5/16	1/2	2 13/16
	12	2 1/2	1/2	3
12	12 3/4	2 5/8	1/2	3 1/8
	14	2 3/4	1/2	3 1/4
	16	3	1/2	3 1/2
	18	3 15/16	1/2	3 13/16
	20	3 5/8	1/2	4 1/8
	22	3 15/16	1/2	4 7/16
	24	4 1/4	1/2	4 3/4
	30	5 5/16	1/2	5 13/16
	36	6 5/16	1/2	6 13/16

Inside knuckle radius (I.K.R.) minimum=6% of outside diameter or 3T, whichever is greater.
Inside crown radius (I.C.R.) shall not exceed the outside diameter.
"SF" refers to straight flange length normally supplied, however special SF lengths can be provided. "W" refers to nominal height normally provided.
"ODD" refers to outside depth of dish. Dimensions are in inches.

Caps



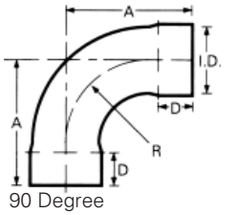
- Formed shape conforms to the requirements of the ASME Code for ellipsoidal heads.
- Caps are generally available only in the NPS dimensions and schedule wall thicknesses shown.
- Supplied per ASTM A 403 and ASME SA-403 (See page 51 for a detailed explanation of these Specifications).
- Dimensions listed are per ANSI B16.9.
- Alloys stocked include Types 304, 304L, 316, 316L and 317L.

Nominal Pipe Size	Outside Diameter	W	Sch 10s	Weight	Sch 40s	Weight	Sch 80s	Weight
1/2	.840	1	.083	.03	.109	.12	.147	.15
3/4	1.05	1	.083	.03	.113	.16	.154	.20
1	1.31	1 1/2	.109	.10	.133	.20	.179	.30
1 1/4	1.66	1 1/2	.109	.13	.140	.30	.191	.40
1 1/2	1.90	1 1/2	.109	.23	.145	.40	.200	.50
2	2 3/8	1 1/2	.109	.30	.154	.60	.218	.75
2 1/2	2 7/8	1 1/2	.120	.40	.203	.90	.276	1.0
3	3 1/2	2	.120	.72	.216	1.5	.300	1.8
4	4 1/2	2 1/2	.120	1.3	.237	2.5	.318	3.0
5	5 9/16	3	.134	2.3	.258	4.5	.375	5.5
6	6 5/8	3 1/2	.134	3.3	.280	6.5	.432	10.1
8	8 5/8	4	.148	5.5	.322	12.1	.500	16.2
10	10 3/4	5	.165	11.0	.365	20.1	.500	28.0
12	12 3/4	6	.180	14.5	.375	30.2	.500	36.1

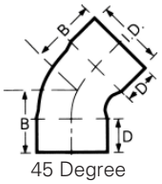
Dimensions are in inches. All weights are in pounds, based on a metal density of .29 lb/in^3

Stainless Steel Belled End Welding Fittings

Belled End Elbows



90 Degree



45 Degree

- Belled end fittings offer an alternative welding method which allows quick alignment of the welding surfaces.
- The fittings are made from ASTM A 312 stainless steel welded pipe.
- Alloys stocked include Types 304L and 316L.
- Sizes stocked are to 2" nominal pipe size with larger sizes available upon request.
- Wall thickness stocked is Schedule 10s with Schedule 5s available upon request.

90˚ Elbows

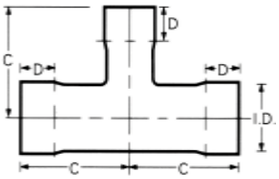
Nominal Pipe Size	Inside Diameter	Wall Thickness	A	D	R	Weight
1/2	.840	.083	2 11/16	5/8	1 1/2	.29
3/4	1.05	.083	2 9/16	5/8	1 1/8	.40
1	1.31	.109	2 13/16	5/8	1 1/2	.63
1 1/4	1.66	.109	3 1/16	3/4	1 7/8	.77
1 1/2	1.90	.109	3 7/16	7/8	2 1/4	.99
2	2 3/8	.109	4 7/16	15/16	3	1.72

All weights are in pounds based on a metal density of .29 lb/in.^{3}

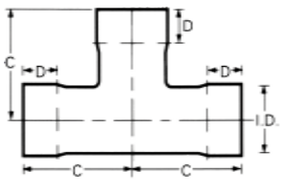
45˚ Elbows

Nominal Pipe Size	Inside Diameter	Wall Thickness	B	D	Weight
1/2	.840	.083	1 13/16	5/8	.24
3/4	1.05	.083	1 7/8	5/8	.34
1	1.31	.109	1 15/16	5/8	.52
1 1/4	1.66	.109	1 15/16	3/4	.64
1 1/2	1.90	.109	2 1/8	7/8	.78
2	2 3/8	.109	2 11/16	3	1.35

Belled End Tees



Straight



Reducing

- Belled end fittings offer an alternative welding method which allows quick alignment of the welding surfaces.
- The fittings are made from ASTM A 312 stainless steel welded pipe.
- Alloys stocked include Types 304L and 316L.
- Sizes stocked are to 2" nominal pipe size with larger sizes available upon request.
- Wall thickness stocked is Schedule 10s with Schedule 5s available upon request.
- Reducing tees available upon request.

Straight Tee

Nominal Pipe Size	Inside Diameter	Wall Thickness	C	D	Weight
1/2	.840	.083	2 1/4	5/8	.29
3/4	1.05	.083	2 1/2	5/8	.40
1	1.31	.109	2 3/4	5/8	.63
1 1/4	1.66	.109	3	3/4	.77
1 1/2	1.90	.109	3 1/4	7/8	.99
2	2 3/8	.109	3 7/8	15/16	1.72

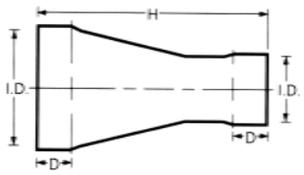
All weights are in pounds based on a metal density of .29 lb/in.^{3}

Reducing Tee

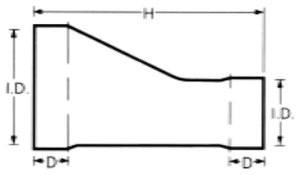
Nominal Pipe Size					Inside Diameter					C	D	Weight
3/4	x	3/4	x	1/2	1.05	x	1.05	x	.840	2 1/2	5/8	.40
1	x	1	x	1/2	1.31	x	1.31	x	.840	2 3/4	5/8	.63
1	x	1	x	3/4	1.31	x	1.31	x	1.05	2 3/4	5/8	.63
1 1/4	x	1 1/4	x	1/2	1.66	x	1.66	x	.840	3	3/4	.77
1 1/4	x	1 1/4	x	3/4	1.66	x	1.66	x	1.05	3	3/4	.77
1 1/4	x	1 1/4	x	1	1.66	x	1.66	x	1.31	3	3/4	.77
1 1/2	x	1 1/2	x	1/2	1.90	x	1.90	x	.840	3 1/4	7/8	.99
1 1/2	x	1 1/2	x	3/4	1.90	x	1.90	x	1.05	3 1/4	7/8	.99
1 1/2	x	1 1/2	x	1	1.90	x	1.90	x	1.31	3 1/4	7/8	.99
1 1/2	x	1 1/2	x	1 1/4	1.90	x	1.90	x	1.66	3 1/4	7/8	.99
2	x	2	x	1/2	2 3/8	x	2 3/8	x	.840	3 7/8	15/16	1.72
2	x	2	x	3/4	2 3/8	x	2 3/8	x	1.05	3 7/8	15/16	1.72
2	x	2	x	1	2 3/8	x	2 3/8	x	1.31	3 7/8	15/16	1.72
2	x	2	x	1 1/4	2 3/8	x	2 3/8	x	1.66	3 7/8	15/16	1.72
2	x	2	x	1 1/2	2 3/8	x	2 3/8	x	1.90	3 7/8	15/16	1.72

Stainless Steel Belled End Welding Fittings

Belled End Reducers



Concentric



Eccentric

- Belled end fittings offer an alternative welding method which allows quick alignment of the welding surfaces.
- The fittings are made from ASTM A 312 stainless steel welded pipe.
- Alloys stocked include Types 304L and 316L.
- Sizes stocked are to 2" nominal pipe size with larger sizes available upon request.
- Wall thickness stocked is Schedule 10s with Schedule 5s available upon request.

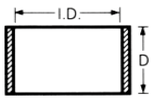
Concentric Reducers

Nominal Pipe Size	Inside Diameter	H	D	Weight
3/4 x 1/2	1.05 x .840	3 3/8	5/8	.29
1 x 1/2	1.31 x .840	3 3/8	5/8	.37
1 x 3/4	1.31 x 1.05	3 3/8	5/8	.38
1 1/4 x 3/4	1.66 x 1.05	3 3/8	3/4 x 5/8	.48
1 1/4 x 1	1.66 x 1.31	3 3/8	3/4 x 5/8	.52
1 1/2 x 3/4	1.90 x 1.05	3 3/8	7/8 x 5/8	.50
1 1/2 x 1	1.90 x 1.31	3 3/8	7/8 x 5/8	.50
1 1/2 x 1 1/4	1.90 x 1.66	3 3/8	3/4 x 5/8	.52
2 x 1	2 3/8 x 1.31	3 3/8	7/8 x 5/8	.50

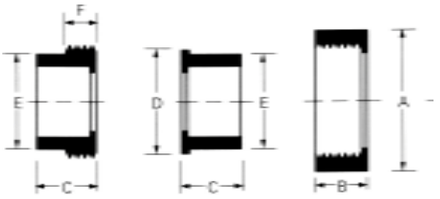
Eccentric Reducers

Nominal Pipe Size	Inside Diameter	H	D	Weight
3/4 x 1/2	1.05 x .840	3 3/8	5/8	.29
1 x 1/2	1.31 x .840	3 3/8	5/8	.37
1 x 3/4	1.31 x 1.05	3 3/8	5/8	.38
1 1/4 x 3/4	1.66 x 1.05	3 3/8	3/4 x 5/8	.48
1 1/4 x 1	1.66 x 1.31	3 3/8	3/4 x 5/8	.52
1 1/2 x 3/4	1.90 x 1.05	3 3/8	7/8 x 5/8	.50
1 1/2 x 1	1.90 x 1.31	3 3/8	7/8 x 5/8	.50
1 1/2 x 1 1/4	1.90 x 1.66	3 3/8	3/4 x 5/8	.52
2 x 1	2 3/8 x 1.31	3 3/8	7/8 x 5/8	.50

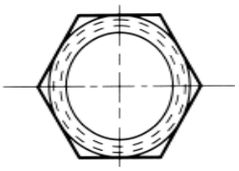
Coupling Alternatives



Aligning Connector



Union



- Aligning connectors offer an alternative joining method which allows quick alignment of the welding surfaces.
- Stocked in Type 316L.
- Sizes stocked are to 2" nominal pipe size with larger sizes available upon request.

Aligning Connectors (Welding Couplings)

Nominal Pipe Size	Inside Diameter	D	Wall Thickness	Weight
1/2	.851	1 1/8	.083	.06
3/4	1.061	1 1/8	.083	.10
1	1.326	1 1/4	.109	.13
1 1/4	1.676	1 1/4	.109	.28
1 1/2	1.918	1 3/8	.109	.28
2	2.393	1 3/8	.109	.39

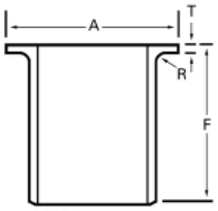
- Eliminates the necessity of tack welding or clamping prior to welding.
- Accurate bore provides slip-fit alignment of ID fittings to OD of pipe.
- Stocked in Type 316L.
- Sizes stocked are to 2" nominal pipe size with larger sizes available upon request

150# Unions, Socket Type

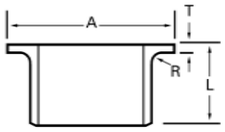
Nominal Pipe Size	Nut		Head and Tail Piece				Gasket Size	
	A	B	C	D	E	F	Thickness	OD x ID
1/2	1 5/8	13/16	5/8	1 3/8	1 3/16	3/8	1/16 or 1/8	1 11/32 x 3/4
3/4	2 1/4	13/16	5/8	1 13/16	1 5/8	3/8	1/16 or 1/8	1 25/32 x 15/16
1	2 1/2	13/16	3/4	2	1 7/8	3/8	1/16 or 1/8	2 1/32 x 1 3/16
1 1/4	3	13/16	3/4	2 9/16	2 3/8	3/8	1/16 or 1/8	2 17/32 x 1 9/16
1 1/2	3	7/8	3/4	2 11/16	2 1/2	3/8	1/16 or 1/8	2 21/32 x 1 13/16
2	3 1/2	7/8	3/4	2 15/16	2 3/4	1/8	1/16 or 1/8	2 29/32 x 2 1/4

Stainless Steel Buttwelding Stub Ends

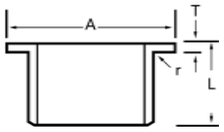
A 403 Lap-Joint Stub Ends (Compared With Alaskan Stub Ends)



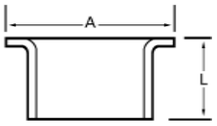
ANSI - Long Pattern



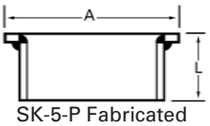
ANSI - Short Pattern
(MSS, Type A)



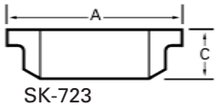
MSS, Type B



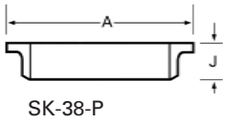
SK-3-P (Type C)



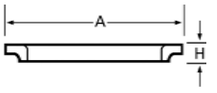
SK-5-P Fabricated



SK-723



SK-38-P



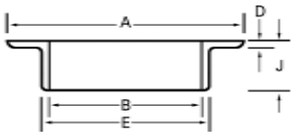
SK-2-P

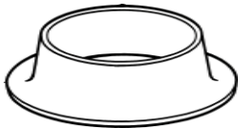
- Lap-joint stub ends specified in ASTM A 403 are normally available in NPS sizes only, conforming to either ANSI MSS Type A or Type B dimensions.
- Dimensions are specified per ANSI B16.9 or MSS SP-43. These stub ends are normally used with "annealed" pipe and fittings.
- The illustrations above are included to show some alternatives to A 403 lap-joint stub ends.

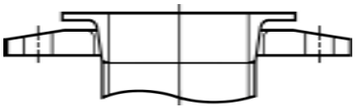
Nominal Pipe Size	Outside Diameter	Lap Diameter A	F	L	Fillet R	Fillet r	SK 723 C	SK38-P J	SK 2-P H
1/2	.840	1 3/8	3	2	1/8	1/32			
3/4	1.05	1 11/16	3	2	1/8	1/32			
1	1.31	2	4	2	1/8	1/32			
1 1/4	1.66	2 1/2	4	2	3/16	1/32			
1 1/2	1.90	2 7/8	4	2	1/4	1/32		1 1/4	5/8
2	2 3/8	3 5/8	6	2 1/2	5/16	1/32	1 7/8	1 1/4	5/8
2 1/2	2 7/8	4 1/8	6	2 1/2	5/16	1/32		1 1/4	3/4
3	3 1/2	5	6	2 1/2	3/8	1/32	2	1 1/4	3/4
4	4 1/2	6 3/16	6	3	7/16	1/32	2 1/8	1 1/4	3/4
5	5 9/16	7 5/16	8	3	7/16	1/16		1 3/8	3/4
6	6 5/8	8 1/2	8	3 1/2	1/2	1/16	2 3/8	1 3/8	3/4
8	8 5/8	10 5/8	8	4	1/2	1/16	2 5/8	1 1/2	3/4
10	10 3/4	12 3/4	10	5	1/2	1/16	2 7/8	1 5/8	7/8
12	12 3/4	15	10	6	1/2	1/16	3 1/8	1 5/8	7/8
	14	16 1/4	12	6	1/2	1/16	6	1 3/4	7/8
	16	18 1/2	12	6	1/2	1/16		1 3/4	7/8
	18	21	12	6	1/2	1/16		2	7/8
	20	23	12	6	1/2	1/16		2	7/8
	22	25 1/4	12	6	1/2	1/16		2	
	24	27 1/4	12	6	1/2	1/16		2	7/8
	28	31 1/2	12	6	1/2	1/16			
	30	34 1/8	12	6	1/2	1/16		2	
	32	35 3/4	12	6	1/2	1/16			
	34	38 5/8	12	6	1/2	1/16			
	36	40 3/8	12	6	1/2	1/16		2	
	40	45 3/8	12	6	1/2	1/16			
	42	47 1/8	12	6	1/2	1/16			
	48	53 3/4	12	6	1/2	1/16			

T: Minimum lap thickness is equal to the nominal pipe wall thickness.
Dimensions are in inches.

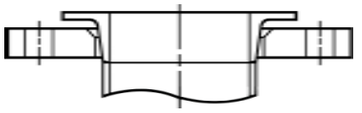
SK-38 and SK-38-P Stainless Steel Buttwelding Stub Ends







As shown with Alaskan SK-39
or SK-39-P backing flange



As shown with Alaskan SK-70
or SK-70-P backing flange

- Machined face provide dependable gasket seating in an economical stainless steel stub end.
- Designed for buttwelding to "as welded" pipe, tube and fittings.
- The thick cross section combines strength with dimensional stability.
- Cast in ACI grade CF3M (316L) and (317L), or forged in T-316-L.
- Weld ends are machine beveled to 37 1/2° with a 1/16" land.
- Alaskan SK-38 stub ends are normally used with Alaskan SK-39 steel backing flanges. Alaskan SK-38-P stub ends are normally used with Alaskan SK-39-P steel backing flanges.

SK-38

Made to Fit OD Tube Size Diameters

Tube OD	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	22	24
A (Lap Dia.)	2 7/8	3 5/8	4 1/8	5	6	7	8 1/2	10 5/8	12 3/4	15	16 1/4	18 1/2	21	23		27 1/4
B (ID Bore)	1 1/4	1 7/8	2 3/8	2 13/16	3 13/16	4 13/16	5 13/16	7 13/16	9 13/16	11 3/4	13 3/4	15 3/4	17 3/4	19 3/4		23 1/2
J (Length)	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 3/8	1 3/8	1 1/2	1 5/8	1 5/8	1 3/4	1 3/4	2	2		2
D	3/16	3/16	3/16	3/16	3/16	3/16	3/16	1/4	9/32	5/16	5/16	5/16	3/8	3/8		3/8
E	1 5/8	2 1/8	2 5/8	3 1/8	4 1/8	5 1/8	6 1/8	8 1/8	10 1/8	12 1/8	14 1/8	16 1/8	18 1/8	20 1/8		24 1/8
Weights	.6	.75	1.0	1.5	2.0	2.7	3.0	5.5	6.8	10.0	10.5	11.3	18.0	19.7		26.5

SK-38-P

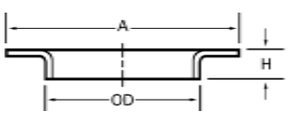
Made to Fit Nominal Pipe Size Diameters

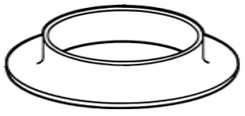
Nominal Pipe Size	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14 thru 24 see SK-3
Pipe OD		1.90	2 3/8	2 7/8	3 1/2	4 1/2	5 9/16	6 5/8	8 5/8	10 3/4	12 3/4	
A (Lap Dia.)		2 7/8	3 5/8	4 1/8	5	6 3/16	7 5/16	8 1/2	10 5/8	12 3/4	15	
B (ID Bore)		1 5/8	2 1/8	2 5/8	3 3/16	4 3/16	5 1/4	6 5/16	8 5/16	10 3/8	12 3/8	
J (Length)		1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 3/8	1 3/8	1 1/2	1 5/8	1 5/8	
D		3/16	3/16	3/16	3/16	3/16	3/16	3/16	1/4	9/32	5/16	
E		1.90	2 3/8	2 7/8	3 1/2	4 1/2	5 9/16	6 5/8	8 5/8	10 3/4	12 3/4	
Weights		.5	.75	1.0	1.2	1.7	2.5	2.7	4.0	6.5	9.0	

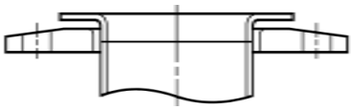
Dimensions are in inches. All weights are in pounds based on a metal density of .29 lb/in^3

Stainless Steel Buttwelding Stub Ends

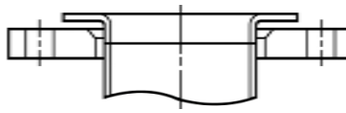
SK-2 and SK-2-P Short Flared Stainless Steel Stub Ends







As shown with Alaskan SK-39
or SK-39-P backing flange



As shown with Alaskan SK-70
or SK-70-P backing flange

- A short length, flared type stub end normally used for buttwelding to "as welded" pipe, tube and fittings.
- Provides an inexpensive means of "Van Stone" flanging when butt welding is required.
- Available in all stainless steel and most other weldable corrosion resistant alloys (aluminum alloys not in cluded).
- Available in 12 Ga. (.105), 10 Ga. (.134) and $^{3}/_{16}$" thicknesses.
- Alaskan SK-2 stub ends are normally used with Alaskan SK-39 steel backing flanges. Alaskan SK-2-P stub ends are normally used with Alaskan SK-39-P steel backing flanges.

SK-2

Made to Fit OD Tube Size Diameters

Tube OD	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
H (Length)	5/8	5/8	3/4	3/4	3/4	3/4	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	7/8
A (Lap Dia.)	2 1/2	3 1/4	3 3/4	4 3/8	5 1/2	6 11/16	7 3/4	9 3/4	11 3/4	14 1/8	16 1/4	18 1/2	21	23	27 1/4
Weights (10 Ga)	.20	.30	.40	.50	.70	1.0	1.2	1.6	2.3	2.8	3.5	4.1	5.0	5.9	6.7

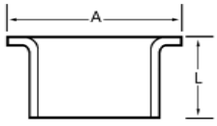
SK-2-P

Made to Fit Nominal Pipe Size Diameters

Nominal Pipe Size	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14 thru 24 see SK-2
Pipe OD	1.90	2 3/8	2 7/8	3 1/2	4 1/2	5 9/16	6 5/8	8 5/8	10 3/4	12 3/4	
H (Length	5/8	5/8	3/4	3/4	3/4	3/4	3/4	3/4	7/8	7/8	
A (Lap Dia.)	2 7/8	3 5/8	4 1/8	5	6 3/16	7 5/16	8 1/2	10 5/8	12 3/4	15	
Weights (10 Ga)	.25	.35	.45	.62	.92	1.1	1.3	1.9	2.6	3.1	

Dimensions are in inches. All weights are in pounds based on a metal density of .29 lb/in^3

SK-3 and SK-3-P Stainless Steel Flared Stub Ends



- A flared type stub end used for buttwelding to pipe, tube and fittings. Often referred to as a "Type C" stub end.
- Available in all stainless steel and most other weldable corrosion resistant alloys (aluminim alloys not included).
- Supplied in wall thicknesses to match the pipe or tubing thickness.
- Available in MSS, Alaskan Standard, and special lengths.
- Alaskan SK-3 stub ends are normally used with Alaskan SK-39 steel backing flanges. Alaskan SK-3-P stub ends are normally used with Alaskan SK-39-P steel backing flanges.

SK-3

Made to Fit OD Tube Size Diameters

Tube OD	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
A (Lap Dia.)	1 3/8	1 3/4	2 1/8	2 1/2	3 1/4	3 3/4	4 3/8	5 1/2	6 11/16	7 3/4	9 3/4	11 3/4	14 1/8	16 1/4	18 1/2	21	23	27 1/4
L (Alaskan Std.)	1 3/8	2	1 7/8	1 3/4	2	2	2 1/8	2 3/8	2 3/8	2 3/8	2	2 1/2	2	3	3	3	3	5

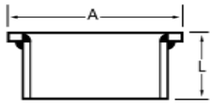
SK-3-P

Made to Fit Nominal Pipe Size Diameters

Nominal Pipe Size	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
Pipe OD	1.05	1.31	1.66	1.90	2 3/8	2 7/8	3 1/2	4 1/2	5 9/16	6 5/8	8 5/8	10 3/4	12 3/4	14	16	18	20	24
A (Lap Dia.)	1 11/16	2	2 1/2	2 7/8	3 5/8	4 1/8	5	6 3/16	7 5/16	8 1/2	10 5/8	12 3/4	15	16 1/4	18 1/2	21	23	27 1/4
L (Alaskan Std.)	2	2	2	2	2 1/2	2 1/2	2 1/2	3	3	3 1/2	4	5	6	6	6	6	6	6

Dimensions are in inches.

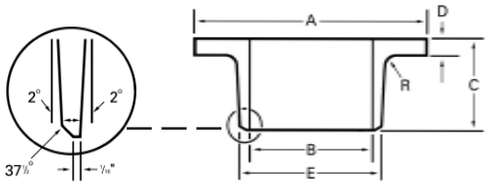
SK-5 and SK-5-P Stainless Steel Fabricated Stub Ends

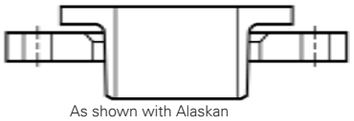


- A fabricated type stub end designed for use when non-standard diameters, special wall thicknesses or alloy types do not permit flaring.
- Available in MSS, Alaskan Standard and special lengths.
- Alaskan SK-5 stub ends are normally used with Alaskan SK-39 steel backing flanges. Alaskan SK-5-P stub ends are normally used with Alaskan SK-39-P steel backing flanges.

Stainless Steel Buttwelding Stub Ends

SK-722 and SK-723 Heavy Cast Stainless Steel Stub Ends





As shown with Alaskan
SK-70 or SK-70-P backing flange.

- Machined bore and face provides dependable gasket seating in an economical heavy cast stainless steel stub end.
- Designed for buttwelding to heavy wall pipe, tube and fittings.
- The thick cross section combines strength with dimensional stability.
- Available in ACI grade CF-3M (316L) and (317L).
- Normally used with Alaskan SK-70 or SK-70-P steel backing flanges or forged steel lap-joint backing flanges.

SK-722

Made to Fit OD Tube Size Diameters

Tube OD	2	3	4	5	6	8	10	12	14
A (Lap Dia.)	3 7/8	5 1/8	6 1/2	7 1/4	8 3/8	10 5/8	12 7/8	15 3/8	16 5/8
B (ID Bore)	1 3/4	2 3/4	3 3/4	4 3/4	5 3/4	7 3/4	9 3/4	11 5/8	13 5/8
C (Length)	2 1/2	2 1/2	2 5/8	3	3	3	3 1/2	6	6
D	3/8	1/2	9/16	5/8	5/8	5/8	5/8	5/8	5/8
E	2 3/16	3 3/16	4 3/16	5 1/4	6 1/4	8 1/4	10 1/4	12 1/4	14 1/4
R	5/16	3/8	7/16	1/2	1/2	1/2	1/2	1/2	1/2
Weights	2.2	3.7	5.5	8.0	10.0	13.3	19.0	37.5	45.0

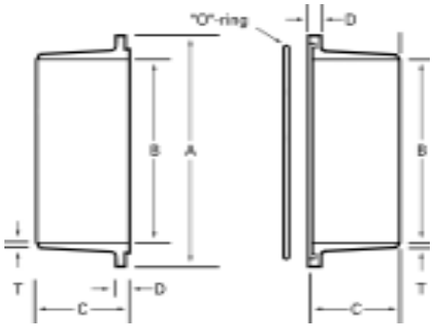
SK-723

Made to Fit Nominal Pipe Size Dimaters

Nominal Pipe Size	2	3	4	6	8	10	12	14 See SK-722
Pipe OD	2 3/8	3 1/2	4 1/2	6 5/8	8 5/8	10 3/4	12 3/4	
A (Lap Dia.)	3 11/16	5 1/16	6 1/4	8 9/16	10 11/16	12 13/16	15 1/16	
B (ID Bore)	2	3	4	6	8	10	12	
C (Length)	1 7/8	2	2 1/8	2 3/8	2 5/8	2 7/8	3 1/8	
D	3/16	7/32	1/4	5/16	5/16	3/8	3/8	
E	2 3/8	3 1/2	4 1/2	6 5/8	8 5/8	10 3/4	12 3/4	
R	5/16	3/8	7/16	1/2	1/2	1/2	1/2	
Weights	1.2	1.8	3.8	8.2	10.8	17.3	22.4	

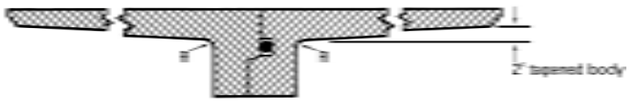
Dimensions are in inches. All weights are in pounds based on a metal density of .29 lb/in^3

SK-611 and SK-612 Metalap Cast Stainless Steel Stub End Sets



Male
Stub End

Female
Stub End



Male and Female
Metalap Stub Endswith "O"-ring

- Machine tapered male and female shoulders facilitates close tolerance assembly and near perfect inside diam eter alignment.
- The compressed “O” -ring forms a water tight seal when bolted together with backing flanges.
- Metal to metal seating at bore eliminates gasket protrusion.
- Weld ends are machine beveled to match the pipe or tubing wall thickness.
- Designed for use in polished pipe and tubing systems where normal gasketed joints would cause an unaccept able pulp stock build-up.
- Supplied as fabricated stub ends to fit ID piping, special diameters and sizes larger than 24".
- Available in ACI grades CF-3 (304L), CF-3M (316L) and (317L).
- Alaskan SK-611 stub end sets are normally used with Alaskan SK-39 steel backing flanges. Alaskan SK-612 stub end sets are normally used with Alaskan SK-39-P steel backing flanges.
- Other sizes upon request.

SK-611

Made to Fit OD Tube Size Diameters

Tube OD	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36
A (Lap Dia.)	8 1/2	10 5/8	12 3/4	15	16 1/4	18 1/2	21	23	25 1/2	27 1/4	29 1/4	31 1/4	33 3/4	35 3/4	37 3/4	40 1/4
B (ID Bore)	Bore to match tubing specified															
C (Length)	3	3	3 1/2	4	4	4	4	4	4	4	4	4	4	4	4	4
D	5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8	3/4	3/4	3/4	3/4	3/4
R (Min. Radius)	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
T	Wall thickness to match tubing specified															
Weights per set*	9.1	13.1	16.2	20.0	44.0	48	62	68	70	76	83	91	99.0	105	113	120

SK-611 Made to fit tube size diameters

SK-612

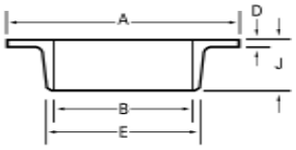
Made to Fit Nominal Pipe Size Diameters (Identical to SK-611 Except for B Dimension)

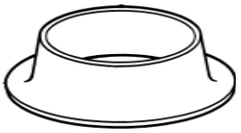
Nominal Pipe Size	6	8	10	12	14 thru 36 see SK-611
Pipe OD	6 5/8	8 5/8	10 3/4	12 3/4	
B (ID Bore)	Bore to match tubing specified				
Weights per set*	9.0	11.8	15.0	19.0	

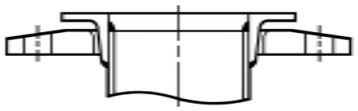
Dimensions are in inches. All weights are pounds based on a metal density of .29 lb/in^3
* Varies with wall thickness.

Stainless Steel Slip-On Stub Ends

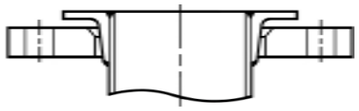
SK-38-SO and SK-38-PSO Stainless Steel Slip-On Stub Ends







Recommended welding configuration allowing maximum length adjustment. As shown with Alaskan SK-39-SO or SK-39-PSO backing flanges.



Recommended welding configuration when interior finish is critical. As shown with Alaskan SK-70-SO or SK-70-PSO backing flanges.

- Machined face provides dependable gasket seating in an economical stainless steel slip-on stub end.
- Designed to slip-on and weld to “as welded” pipe, tube and fittings.
- The thick cross section combines strength with dimensional stability.
- Slip-on design provides for length adjustment and ease of fit-up prior to welding.
- Material thickness of the stub end adds overall reinforcement.
- Alaskan SK-38-SO can be used as butt welding stub end on light-wall ID tubing.
- Cast in ACI grade CF-3M (316L) and (317L), or forged in T-316-L.
- Alaskan SK-38-SO slip-on stub ends are normally used with Alaskan SK-39-SO steel backing flanges.
- Alaskan SK-38-PSO stub ends are normally used with Alaskan SK-39-PSO steel backing flanges.

SK-38-SO

Made to Fit OD Tube Size Diameters

Tube OD	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	30	36
A (Lap Dia.)	3 5/8	4 1/8	5	6 3/16	8 1/2	10 5/8	12 3/4	15	16 1/4	18 1/2	21	23	27 1/4	33 3/4	40 3/8
B (ID Bore)	2 1/16	2 9/16	3 1/16	4 1/16	6 1/16	8 1/16	10 1/16	12 1/16	14 1/16	16 1/16	18 1/16	20 1/16	24 1/16	30 1/16	36 1/8
J (Length)	1 1/4	1 1/4	1 1/4	1 1/4	1 3/8	1 1/2	1 5/8	1 5/8	1 3/4	1 3/4	2	2	2	2	2
D	3/16	3/16	3/16	3/16	3/16	1/4	1/4	5/16	5/16	5/16	3/8	3/8	3/8	9/16	11/16
E	2 5/16	2 13/16	3 5/16	4 5/16	6 3/8	8 3/8	10 3/8	12 7/16	14 7/16	16 7/16	18 7/16	20 7/16	24 7/16	30 15/16	37 1/8
Weights	.75	1.0	1.2	2.0	3.0	5.5	6.7	9.5	10.5	11.2	18.0	19.7	26.5	45	

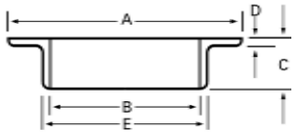
SK-38-PSO

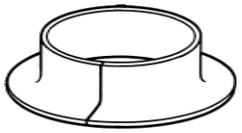
Made to Fit Nominal Pipe Size Diameters

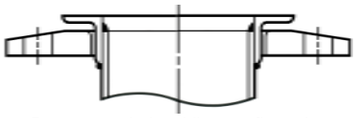
Nominal Pipe Size	1	1 1/2	2	2 1/2	3	4	6	8	10	12	14 thru 24 see SK-38-SO
Pipe OD			2 3/8	2 7/8	3 1/2	4 1/2	6 5/8	8 5/8	10 3/4	12 3/4	
A (Lap Dia.)			3 5/8	4 1/8	5	6 3/16	8 1/2	10 5/8	12 3/4	15	
B (ID Bore)			2 7/16	2 15/16	3 9/16	4 9/16	6 11/16	8 11/16	10 13/16	12 13/16	
J (Length)			1 1/4	1 1/4	1 1/4	1 1/4	1 3/8	1 1/2	1 5/8	1 5/8	
D			3/16	3/16	3/16	3/16	3/16	1/4	1/4	5/16	
E			2 3/4	3 1/4	3 7/8	4 7/8	7	9 1/16	11 3/16	13 3/16	
Weights			.75	.90	1.0	2.0	3.0	4.5	6.0	8.5	

Dimensions are in inches. All weights are in pounds based on a metal density of .29 lb/in^3

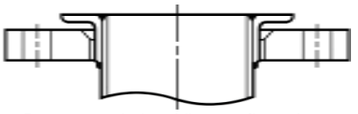
SK-36-SO and SK-36-PSO Stainless Steel Slip-On Angle Face Rings







Recommended welding configuration allowing maximum length adjustment. As shown with Alaskan SK-39-SO or SK-39-PSO backing flanges.



Recommended welding configuration when interior finish is critical. As shown with Alaskan SK-70-SO or SK-70-PSO backing flanges.

- Designed to slip-on and weld to "as welded" pipe, tube and fittings, they provide for length adjustment and ease of fit-up prior to welding.
- Rolled and welded using ASTM A 276 angle or ASTM A 240 plate.
- Available in Types 304L, 316L and 317L stainless steel.
- Can be supplied in non-standard sizes.
- Alaskan SK-36-SO slip-on angle face rings are normally used with Alaskan SK-39-SO steel backing flanges.
- Alaskan SK-36-PSO slip-on angle face rings are normally used with Alaskan SK-39-PSO steel backing flanges.

SK-36-SO

Made to Fit OD Tube Size Diameters

Tube OD	3	4	6	8	10	12	14	16	18	20	22	24	28	30	32	36	42	48
A (Lap Dia.)	4 9/16	5 9/16	8 1/16	10 1/16	12 1/16	15 1/16	17 1/16	19 1/16	21 1/16	23 1/16		28 1/16		34 1/8		41 1/8	47 3/16	53 3/16
B (ID Bore)	3 1/16	4 1/16	6 1/16	8 1/16	10 1/16	12 1/16	14 1/16	16 1/16	18 1/16	20 1/16		24 1/16		30 1/8		36 1/8	42 3/16	48 3/16
C (Length)	3/4	3/4	1	1	1	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2		2		2		2 1/2	2 1/2	2 1/2
D	1/8	1/8	1/8	1/8	3/16	1/4	1/4	1/4	1/4	1/4		1/4		3/8		3/8	3/8	3/8
E	3 5/16	4 5/16	6 5/16	8 7/16	10 7/16	12 9/16	14 9/16	16 9/16	18 9/16	20 9/16		24 9/16		30 7/8		36 7/8	42 15/16	48 15/16
Weights	.75	1.0	1.3	2.5	3.5	8.0	9.5	10.0	11.1	11.5		20.0		35.0		52.0	61.0	70.0

SK-36-PSO

Made to Fit Nominal Pipe Size Diameters

Nominal Pipe Size	3	4	6	8	10	12	14 thru 48 see SK-36-SO
Pipe OD	3 1/2	4 1/2	6 5/8	8 5/8	10 3/4	12 3/4	
A (Lap Dia.)	5 1/16	6 1/16	8 11/16	10 11/16	12 13/16	15 13/16	
B (ID Bore)	3 9/16	4 9/16	6 11/16	8 11/16	10 13/16	12 13/16	
C (Length)	3/4	3/4	1	1	1	1 1/2	
D	1/8	1/8	1/8	1/8	3/16	1/4	
E	3 13/16	4 13/16	6 15/16	9 1/16	11 3/16	13 3/16	
Weights	.75	1.0	1.5	3.0	4.0	8.5	

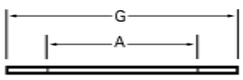
Dimensions are in inches. Weights are in pounds.
All weights are in pounds based on a metal density of .29 lb/in^3

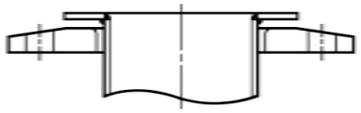
Slip-on Angle Face Rings - Lightweight

Nominal Pipe Size	28	30	32	36	42	48
Pipe OD						
A (Lap Dia.)						
B (ID Bore)						
C (Length)	2	2	2	2	2	2
D	1/4	1/4	1/4	1/4	1/4	1/4
E						
Weights						

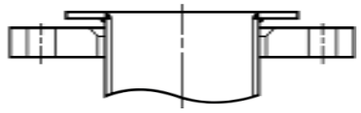
Stainless Steel Face Rings

SK-1 and SK-1-P Stainless Steel Slip-On Face Rings





As shown with Alaskan SK-39 or SK-39-P backing flanges.



As shown with Alaskan SK-70 or SK-70-P backing flanges.

- A flat face ring designed for welding to the ends of "as welded" pipe, tube and fittings.
- Provides the most inexpensive means of "Van Stone" flanging.
- Available in all stainless steel and most other weldable corrosion resistant alloys.
- Available in 12 Ga. (.105) and heavier thicknesses.
- Can be supplied in non-standard sizes and in reducing sizes.
- Alaskan SK-1 face rings are normally used with Alaskan SK-39 steel backing flanges. Alaskan SK-1-P face rings are normally used with Alaskan SK-39-P steel backing flanges.

SK-1

Made to Fit OD Tube Size Diameters																			
Tube OD	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	30	36	42	48
A (ID)	1 9/16	2 1/16	2 9/16	3 1/16	4 1/16	5 1/16	6 1/16	8 1/16	10 1/16	12 1/16	14 1/16	16 1/16	18 1/16	20 1/16	24 1/16	30 1/16	36 1/16	42 1/16	48 1/16
G (Lap Dia.)	2 1/2	3 1/4	3 3/4	4 3/8	5 1/2	6 11/16	7 3/4	9 3/4	11 3/4	14 1/8	16 1/4	18 1/2	21	23	27 1/4	34 1/8	40 3/8	47 1/8	53 3/4
Weights (12 Ga)	.09	.15	.18	.23	.33	.46	.56	.72	.88	1.3	1.6	2.0	2.7	3.0	3.9	6.2	7.9	10.8	13.8
Weights (10 Ga)	.12	.19	.29	.30	.42	.59	.72	.92	1.1	1.7	2.0	2.6	3.5	3.9	5.0	8.0	10.0	13.8	17.6
Weights (.250)	.22	.36	.43	.56	.78	1.1	1.3	1.7	2.1	3.1	3.8	4.8	6.5	7.2	9.3	14.8	18.8	25.7	33.0

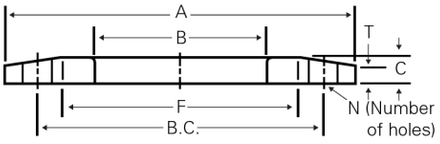
SK-1-P

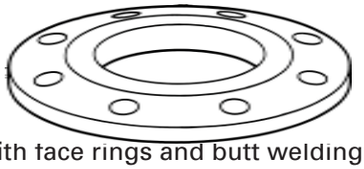
Made to Fit Nominal Pipe Size Diameters															
Nominal Pipe Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14 thru 48 see SK-1
Pipe OD	.84	1.05	1.315	1.66	1.90	2 3/8	2 7/8	3 1/2	4 1/2	5 9/16	6 5/8	8 5/8	10 3/4	12 3/4	
A (ID)	.875	1.125	1.375	1.75	2	2 7/16	2 15/16	3 9/16	4 9/16	5 5/8	6 11/16	8 11/16	10 13/16	12 13/16	
G (Lap Dia.)	1 3/8	1 11/16	2	2 1/2	2 7/8	3 5/8	4 1/8	5	6 3/16	7 5/16	8 1/2	10 5/8	12 3/4	15	
Weights (12 Ga)					.10	.17	.20	.29	.42	.52	.66	.90	1.1	1.5	
Weights (10 Ga)					.13	.22	.26	.38	.53	.67	.84	1.2	1.4	1.9	
Weights (.250)					.24	.41	.48	.70	.99	1.3	1.6	2.1	2.6	3.5	

Dimensions are in inches. All weights are in pounds based on a metal density of .29 lb/in^3

Backing Flanges

SK-39 and SK-39-P Backing Flanges





- An economical, light-weight backing flange for use with face rings and butt welding type stub ends.
- Tapered face on the flange improves visibility during gasket alignment.
- Cast in commercial quality steel or machined from ASTM A 36 plate.
- Cast or drilled hole patterns per ANSI B16.1, Class 125 (identical to ANSI B16.5, Class 150).
- Coated with red oxide primer. Galvanized, epoxy and other coatings are also available.
- Normally used with Alaskan SK-1 and SK-1-P face rings and all Alaskan butt welding stub ends.
- Also available in T304 and T316 Stainless Steel.

SK-39

Made to Fit OD Tube Size Stub Ends

Tube OD	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18
A (OD)	3 7/8	4 1/4	4 5/8	5	6	7	7 1/2	9	10	11	13 1/2	16	19	21	23 1/2	25
B (ID)	1	1 1/4	1 1/2	1 7/8	2 3/8	2 7/8	3 3/8	4 3/8	5 3/8	6 1/2	8 1/2	10 1/2	12 1/2	14 1/2	16 5/8	18 5/8
C (THK)	3/8	3/8	3/8	1/2	5/8	5/8	5/8	5/8	3/4	3/4	3/4	7/8	7/8	1	1	1 1/8
B.C.	2 3/4	3 1/8	3 1/2	3 7/8	4 3/4	5 1/2	6	7 1/2	8 1/2	9 1/2	11 3/4	14 1/4	17	18 3/4	21 1/4	22 3/4
Hole SIze	5/8	5/8	5/8	5/8	3/4	3/4	3/4	3/4	7/8	7/8	7/8	1	1	1 1/8	1 1/8	1 1/4
N	4	4	4	4	4	4	4	8	8	8	8	12	12	12	16	16
F	1 3/4	2 1/4	2 5/8	3	3 5/8	4 5/8	5	6 3/16	7 3/8	8 1/2	10 5/8	12 3/4	15	16 1/4	18 1/2	21
T	1/4	1/4	1/4	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1/2	1/2	1/2	1/2	5/8
Weights	0.8	1.0	1.2	2.0	3.0	4.7	5.0	7.0	9.5	10.0	14.0	21.5	30.0	34.0	44.0	52.0

Tube OD	20	24	30	32	36
A (OD)	27 1/2	32	38 3/4	41 3/4	46
B (ID)	20 5/8	24 5/8	30 5/8	32 5/8	36 5/8
C (THK)	1 1/8	1 1/8	1 1/4	1 1/4	1 1/4
B.C.	25	29 1/2	36	38 1/2	42 3/4
Hole SIze	1 1/4	1 3/8	1 3/8	1 5/8	1 5/8
N	20	20	28	28	32
F	23	27 5/8	33 3/4	35 3/4	40 1/4
T	5/8	5/8	3/4	3/4	3/4
Weights	61.0	91.0	130	170	190

SK-39-P

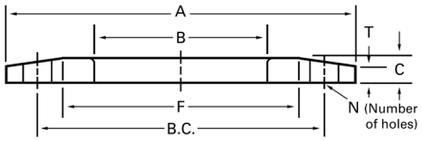
Made to Fit Nominal Pipe Size Stub Ends (Identical to SK-39 Except for B Dimensions)

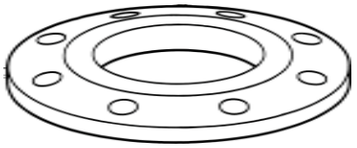
Nominal Pipe Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14 thru 24 see SK-39
Pipe OD	.840	1.05	1.31	1.66	1.90	2 3/8	2 7/8	3 1/2	4 1/2	5 9/16	6 5/8	8 5/8	10 3/4	12 3/4	
B (ID)	1 1/16	1 1/4	1 9/16	1 15/16	2 1/8	2 5/8	3 1/8	3 3/4	4 3/4	5 7/8	7	9	11 1/8	13 1/8	
Weights	0.7	0.9	0.9	1.0	1.7	2.8	4.2	4.5	6.7	7.5	9.5	12.5	19.0	28.0	

Dimensions are in inches. All weights are in pounds based on a metal density of .2836 lb/in^3
When ordering galvanized flanges, specify SK-39G or SK-39-PG.

Backing Flanges

SK-39-SO and SK-39-PSO Backing Flanges





- An economical light-weight backing flange for use with slip-on type stub ends.
- Tapered face on the flange improves visibility during gasket alignment.
- Cast in commercial quality steel or machined from ASTM A 36 plate.
- Cast or drilled hole patterns per ANSI B16.1, Class 125 (identical to ANSI B16.5, Class 150).
- Coated with red oxide primer. Galvanized, epoxy and other coatings are also available.
- Normally used with Alaskan slip-on stub ends SK-36-SO, SK-36-PSO, SK-38-SO, SK-38-PSO.
- Also available in T304 and T316 Stainless Steel.

SK-39-SO

Made to Fit With OD Tube Size Slip-On Stub Ends

Tube OD	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	30	36	42
A (OD)	6	7	7 1/2	9	10	11	13 1/2	16	19	21	23 1/2	25	27 1/2	32	38 3/4	46	53
B (ID)	2 5/8	3 1/8	3 3/4	4 3/4	5 7/8	7	9	11 1/8	13 1/8	15	17	19	21	25	31	37	43 1/2
C (THK)	5/8	5/8	5/8	5/8	3/4	3/4	3/4	7/8	7/8	1	1	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4	1 1/4
B.C.	4 3/4	5 1/2	6	7 1/2	8 1/2	9 1/2	11 3/4	14 1/4	17	18 3/4	21 1/4	22 3/4	25	29 1/2	36	42 3/4	48 1/2
Hole Size	3/4	3/4	3/4	3/4	7/8	7/8	7/8	1	1	1 1/8	1 1/8	1 1/4	1 1/4	1 3/8	1 3/8	1 5/8	1 5/8
N	4	4	4	8	8	8	8	12	12	12	16	16	20	20	28	32	36
F	3 5/8	4 5/8	5	6 3/16	7 3/8	8 1/2	10 5/8	12 3/4	15	16 1/4	18 1/2	21	23	27 5/8	34 1/2	39	46 1/4
T	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1/2	1/2	1/2	1/2	5/8	5/8	5/8	3/4	3/4	3/4
Weights	2.8	4.2	4.5	6.7	7.5	9.5	12.5	19.0	28.0	32.0	42.0	50.0	58.0	82.0	115	145	195

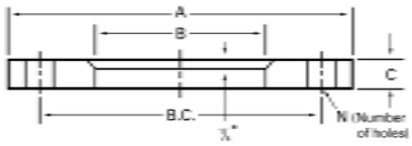
SK-39-PSO

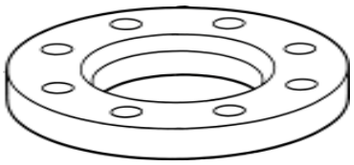
Made to Fit With Nominal Pipe Size Slip-On Stub Ends (Identical to SK-39-SO Except for B Dimension)

Nominal Pipe Size	2	2 1/2	3	4	5	6	8	10	12	14 thru 24 see SK-39-SO
Pipe OD	2 3/8	2 7/8	3 1/2	4 1/2	5 9/16	6 5/8	8 5/8	10 3/4	12 3/4	
B (ID)	3	3 1/2	4 1/8	5 1/8	6 1/4	7 3/8	9 3/8	11 5/8	13 5/8	
Weights	2.7	4.0	4.3	5.5	7.0	7.5	11.0	16.5	26.0	

Dimensions are in inches. All weights are in pounds based on a metal density of .2836 lb/in^3
When ordering galvanized flanges, specify SK-39-SOG or SK-39-PSOG.

SK-70 and SK-70-P Cast Steel Backing Flanges





- A medium-weight steel backing flange for use with buttwelding type stub ends when a normal tapered steel backing flange is not desired.
- Cast in commercial quality steel.
- Cast hole patterns per ANSI B16.1, Class 125 (identical to ANSI B16.5, Class 150 through 24" size).
- Coated with red oxide primer. Galvanized, epoxy and other coatings are also available.
- Normally used with Alaskan SK-1 and SK-1-P face rings and all Alaskan butt welding stub ends.

SK-70

Made to Fit With OD Tube Size Stub Ends

Tube OD	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48
A (OD)	6	7	7 1/2	9	11	13 1/2	16	19	21	23 1/2	25	27 1/2	32	38 3/4	46	53	59 1/2
B (ID)	2 3/8	2 7/8	3 3/8	4 3/8	6 1/2	8 1/2	10 1/2	12 1/2	14 1/2	16 5/8	18 5/8	20 5/8	24 5/8	30 5/8	36 5/8	42 5/8	48 5/8
C (THK)	5/8	5/8	3/4	3/4	7/8	7/8	1	1	1	1	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4	1 3/8	1 3/8
B.C.	4 3/4	5 1/2	6	7 1/2	9 1/2	11 3/4	14 1/4	17	18 3/4	21 1/4	22 3/4	25	29 1/2	36	42 3/4	49 1/2	56
Hole Size	3/4	3/4	3/4	3/4	7/8	7/8	1	1	1 1/8	1 1/8	1 1/4	1 1/4	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8
N	4	4	4	8	8	8	12	12	12	16	16	20	20	28	32	36	44
Weights	3.8	5.3	7.0	9.5	14.0	20.0	29.5	42.6	47.6	56.5	64.1	74.5	94.5	141	191	302	323

SK-70-P

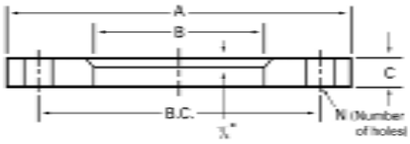
Made to Fit With Nominal Pipe Size Stub Ends (Identical to SK-70 Except for B Dimension)

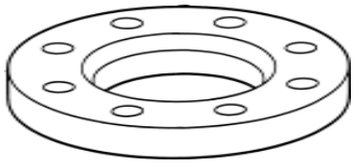
Nominal Pipe Size	2	2 1/2	3	4	6	8	10	12	14 thru 48 see SK-70
Pipe OD	2 3/8	2 7/8	3 1/2	4 1/2	6 5/8	8 5/8	10 3/4	12 3/4	
B (ID)	2 5/8	3 1/8	3 3/4	4 3/4	7	9	11 1/8	13 1/8	
Weights	3.7	5.1	6.6	8.9	12.6	18.4	26.5	39.0	

Dimensions are in inches. All weights are in pounds based on a metal density of .2836 lb/in^3
When ordering galvanized flanges, specify SK-70G or SK-70-PG.

Steel Backing Flanges

SK-70-SO and SK-70-PSO Cast Steel Backing Flanges





- A medium-weight steel backing flange for use with slip-on type stub ends when a normal tapered steel backing flange is not desired.
- Cast in commercial quality steel.
- Cast hole patterns per ANSI B16.1, Class 125 (identical to ANSI B16.5, Class 150 through 24" size).
- Coated with red oxide primer. Galvanized, epoxy and other coatings are also available.
- Normally used with Alaskan slip-on stub ends SK-36-SO, SK-36-PSO, SK-38-SO and SK-38-PSO.

SK-70-SO

Made to Fit WIth OD Tube Size Slip-On Stub Ends

Tube OD	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48
A (OD)	6	7	7 1/2	9	11	13 1/2	16	19	21	23 1/2	25	27 1/2	32	38 3/4	46	53	59 1/2
B (ID)	2 5/8	3 1/8	3 3/4	4 3/4	7	9	11 1/8	13 1/8	15	17	19	21	25	31 1/4	37 1/4	43 3/8	49 3/8
C (THK)	5/8	5/8	3/4	3/4	7/8	7/8	1	1	1	1	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4	1 3/8	1 3/8
B.C.	4 3/4	5 1/2	6	7 1/2	9 1/2	11 3/4	14 1/4	17	18 3/4	21 1/4	22 3/4	25	29 1/2	36	42 3/4	49 1/2	56
Hole Size	3/4	3/4	3/4	3/4	7/8	7/8	1	1	1 1/8	1 1/8	1 1/4	1 1/4	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8
N	4	4	4	8	8	8	12	12	12	16	16	20	20	28	32	36	44
Weights	3.7	5.1	6.6	8.7	12.6	18.3	26.5	39.0	44.3	53.6	59.3	70.6	89.8	131	178	254	301

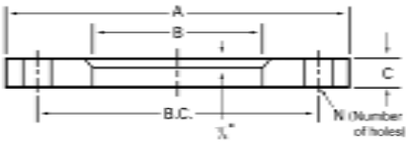
SK-70-PSO

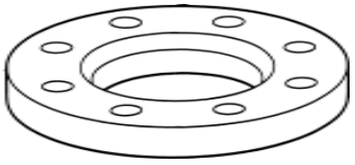
Made to Fit With Nominal Pipe Size Slip-On Stub Ends (Identical to SK-70-SO Except for B Dimension)

Nominal Pipe Size	2	2 1/2	3	4	6	8	10	12	14 thru 48 see SK-70-SO
Pipe OD	2 3/8	2 7/8	3 1/2	4 1/2	6 5/8	8 5/8	10 3/4	12 3/4	
B (ID)	3	3 1/2	4 1/8	5 1/8	7 3/8	9 3/8	11 5/8	13 5/8	
Weights	3.4	4.7	6.1	8.2	11.6	16.9	23.9	36.0	

Dimensions are in inches. All weights are in pounds based on a metal density of .2836 lb./in.^{3}
When ordering galvanized flanges, specify SK-70-SOG or SK-70-PSOG.

SK-40 and SK-40-P Steel Backing Flanges





- Designed for situations where a standard cast steel backing flange cannot be used.
- Made from carbon steel plate per ASTM A 36.
- Drilled hole patterns per ANSI B16.1, Class 125 or Class 250 (identical to ANSI B16.5, Class 150 or Class 300 through 24" size).
- Coated with red oxide primer. Galvanized, epoxy and other coatings are also available.
- Can be manufactured in non-standard sizes, drill patterns and thicknesses.
- Alaskan SK-40 and SK-40-P steel backing flanges can be used with any of the Alaskan slip-on or butt welding stub ends.

SK-40

Drilling per Class 125
Made to Fit With OD Tube Size Stub Ends

Tube OD	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	30	36	42	48
A (OD)	6	7	7 1/2	9	10	11	13 1/2	16	19	21	23 1/2	25	27 1/2	32	38 3/4	46	53	59 1/2
B (ID)	2 1/4	2 7/8	3 1/4	4 1/4	5 3/8	6 3/8	8 3/8	10 3/8	12 3/8	14 1/2	16 5/8	18 5/8	20 5/8	24 5/8	30 5/8	36 5/8	42 5/8	48 5/8
C (THK)	1/2	1/2	1/2	1/2	1/2	5/8	5/8	5/8	3/4	3/4	3/4	3/4	3/4	3/4	1	1	1 1/8	1 1/4
B.C.	4 3/4	5 1/2	6	7 1/2	8 1/2	9 1/2	11 3/4	14 1/4	17	18 3/4	21 1/4	22 3/4	25	29 1/2	36	42 3/4	49 1/2	56
Hole Size	3/4	3/4	3/4	3/4	7/8	7/8	7/8	1	1	1 1/8	1 1/8	1 1/4	1 1/4	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8
N	4	4	4	8	8	8	8	12	12	12	16	16	20	20	28	32	36	44
Weights	3.1	4.2	4.7	6.3	7.1	9.9	14.2	18.3	31.8	35.6	42	43	50	63	113	153	247	294

Drilling per Class 250

Tube OD	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	30	36	42	48
A (OD)	6 1/2	7 1/2	8 1/4	10	11	12 1/2	15	17 1/2	20 1/2	23	25 1/2	28	30 1/2	36	43	50	57	65
B (ID)	2 3/8	2 7/8	3 3/8	4 3/8	5 3/8	6 1/2	8 1/2	10 1/2	12 1/2	14 1/2	16 5/8	18 5/8	20 5/8	24 5/8	30 5/8	36 5/8	42 5/8	48 5/8
C (THK)	5/8	5/8	5/8	3/4	3/4	7/8	7/8	7/8	1	1	1	1	1	1 1/8	1 1/4	1 1/4	1 3/8	1 1/2
B.C.	5	5 7/8	6 5/8	7 7/8	9 1/4	10 5/8	13	15 1/4	17 3/4	20 1/4	22 1/2	24 3/4	27	32	39 1/4	46	52 3/4	60 3/4
Hole Size	3/4	7/8	7/8	7/8	7/8	7/8	1	1 1/8	1 1/4	1 1/4	1 3/8	1 3/8	1 3/8	1 5/8	1 7/8	2 1/8	2 1/8	2 1/8
N	8	8	8	8	8	12	12	16	16	20	20	24	24	24	28	32	36	40
Weights	4.4	5.8	6.9	12.4	14.2	20.2	27.2	34.0	52.9	63.6	74.4	86.7	102	156	225	281	388	560

SK-40-P

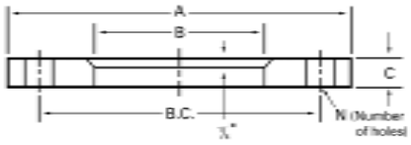
Drilling per Class 125 or 250
Made to Fit With Nominal Pipe Size Stub Ends (Identical to SK-40 Except for B Dimension.)

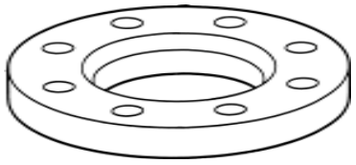
Nominal Pipe Size	2	2 1/2	3	4	5	6	8	10	12	14 thru 48 see SK-40
Pipe OD	2 3/8	2 7/8	3 1/2	4 1/2	5 9/16	6 5/8	8 5/8	10 3/4	12 3/4	
B (ID)	2 5/8	3 1/8	3 3/4	4 3/4	5 7/8	7	9	11 1/8	13 1/8	
Weights (125)	3.2	4.0	4.3	6.3	6.4	9.0	13.1	15.3	29.2	
Weights (250)	4.2	5.0	6.6	11.8	13.3	18.9	25.7	31.3	50.3	

Dimensions are in inches. All weights are in pounds based on a metal density of .2836 lb/in^3
When ordering galvanized flanges, specify SK-40G or SK-40-PG.

Cast Stainless Steel Backing Flanges

SK-35 and SK-35-P Cast Stainless Steel Backing Flanges
SK-35-SO and SK-35-PSO





- A medium-weight stainless steel backing flange for use with buttwelding or slip-on type stub end when a stainless steel backing flange is desired.
- Available in ACI grade CF-3M (316L) and (317L).
- Cast hole patterns per ANSI B16.1, Class 125 (identical to ANSI B16.5, Class 150 through 24" size).
- Can be manufactured in special sizes, drill patterns and thicknesses.
- Normally used with Alaskan SK-1 and SK-1-P face rings and all Alaskan butt welding or slip-on type stub ends.

SK-35

Made to Fit With OD Tube Size Stub Ends

Tube OD	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48
A (OD)	6	7	7 1/2	9	11	13 1/2	16	19	21	23 1/2	25	27 1/2	32	38 3/4	46	53	59 1/2
B (ID)	2 3/8	2 7/8	3 3/8	4 3/8	6 1/2	8 1/2	10 1/2	12 1/2	14 1/2	16 5/8	18 5/8	20 5/8	24 5/8	30 5/8	36 5/8	42 5/8	48 5/8
C (THK)	5/8	5/8	3/4	3/4	7/8	7/8	1	1	1	1	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4	1 3/8	1 3/8
B.C.	4 3/4	5 1/2	6	7 1/2	9 1/2	11 3/4	14 1/4	17	18 3/4	21 1/4	22 3/4	25	29 1/2	36	42 3/4	49 1/2	56
Hole Size	3/4	3/4	3/4	3/4	7/8	7/8	1	1	1 1/8	1 1/8	1 1/4	1 1/4	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8
N	4	4	4	8	8	8	12	12	12	16	16	20	20	28	32	36	44
Weights	4.0	5.5	7.3	9.8	14.5	20.7	30.5	43.9	49.1	58.2	63.3	76.8	97.3	146	197	281	332

SK-35-P

Made to Fit with Nominal Pipe Size Stub Ends (Identical to SK-35 Except for B Dimension)

Nominal Pipe Size	2	2 1/2	3	4	6	8	10	12	14 thru 48 see SK-35
Pipe OD	2 3/8	2 7/8	3 1/2	4 1/2	6 5/8	8 5/8	10 3/4	12 3/4	
B (ID)	2 5/8	3 1/8	3 3/4	4 3/4	7	9	11 1/8	13 1/8	
Weights	3.8	5.3	6.8	9.2	13.2	19.0	27.4	40.3	

SK-35-SO

Made to Fit With OD Tube Size Slip-On Stub Ends (Identical to SK-35 Except for B Dimension)

Tube OD	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	28	30	36	42	48
A (OD)	6	7	7 1/2	9	11	13 1/2	16	19	21	23 1/2	25	27 1/2	32		38 3/4	46	53	59 1/2
B (ID)	2 5/8	3 1/8	3 3/4	4 3/4	7	9	11 1/8	13 1/8	15	17	19	21	25		31 1/4	37 1/4	43 3/8	49 3/8
Weights	3.8	5.3	6.8	9.2	13.2	19.0	27.4	40.3	45.7	55.3	59.7	72.8	92.5		135	184	261	309

SK-35-PSO

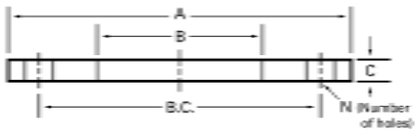
Made to Fit with Nominal Pipe Size Slip-On Stub Ends (Identical to SK-35-SO Except for B Dimension

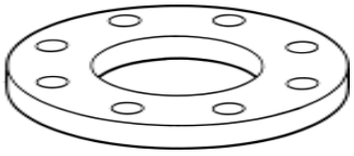
Nominal Pipe Size	2	2 1/2	3	4	6	8	10	12	14 thru 48 see SK-35-SO
Pipe OD	2 3/8	2 7/8	3 1/2	4 1/2	6 5/8	8 5/8	10 3/4	12 3/4	
B (ID)	3	3 1/2	4 1/8	5 1/8	7 3/8	9 3/8	11 5/8	13 5/8	
Weights	3.5	4.9	6.3	8.6	12.1	17.6	24.8	37.2	

Dimensions are in inches. All weights are in pounds based on a metal density of .29 lb/in^3

Stainless Steel Slip-On Flanges

Sk-37 and SK-37-P Stainless Steel Slip-On Flanges





- An economical, light-weight stainless steel flange designed for welding to pipe, tube and fittings.
- Available in ACI grade CF-3M (316L) and (317L), and T-304L and T316L.
- Drilled hole patterns per ANSI B16.1, Class 125 (identical to ANSI B16.5, Class 150 through 24" size).
- Can be supplied bored and chamfered for use as a backing flange (but see SK-35, page 34 and SK-39, pages 29 and 30.)

SK-37

Made to Fit OD Tube Size Diameters

Tube OD	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14
A (OD)	5	6	7	7 1/2	9	10	11	13 1/2	16	19	21
B (ID)	1 9/16	2 1/16	2 9/16	3 1/16	4 1/16	5 1/16	6 1/16	8 1/16	10 1/16	12 1/16	14 1/8
C (THK)	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	3/4
B.C.	3 7/8	4 3/4	5 1/2	6	7 1/2	8 1/2	9 1/2	11 3/4	14 1/4	17	18 3/4
Hole Size	5/8	3/4	3/4	3/4	3/4	7/8	7/8	7/8	1	1	1 1/8
N	4	4	4	4	8	8	8	8	12	12	12
Weights				5.0	6.7	7.6	8.7				38.3

SK-37 (continued)

Made to Fit OD Tube Size Diameters

Tube OD	16	18	20	22	24	26	28	30	32	34	36
A (OD)	23 1/2	25	27 1/2	29 1/2	32	34 1/4	36 1/2	38 3/4	41 3/4	43 3/4	46
B (ID)	16 1/8	18 1/8	20 1/8	22 1/8	24 1/8	26 1/8	28 1/8	30 1/8	32 1/8	34 1/8	36 1/8
C (THK)	3/4	3/4	3/4	3/4	3/4	1	1	1	1	1	1
B.C.	21 1/4	22 3/4	25	27 1/4	29 1/2	31 3/4	34	36	38 1/2	40 1/2	42 3/4
Hole Size	1 1/8	1 1/4	1 1/4	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8
N	16	16	20	20	20	24	28	28	28	32	32
Weights	46.0	47	54.1	56.0	68.4	102	112	122	145	152	164

SK-37 Made to fit OD size diameters.

SK-37-P

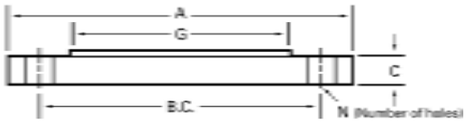
Made to Fit Nominal Pipe Size Diameters (Identical to SK-37 Except for B Dimension)

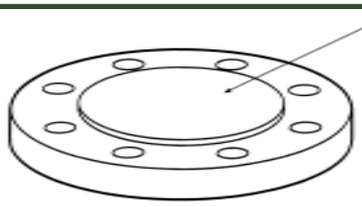
Nominal Pipe Size	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14 thru 36 see SK-37
Pipe OD	1.90	2 3/8	2 7/8	3 1/2	4 1/2	5 9/16	6 5/8	8 5/8	10 3/4	12 3/4	
B (ID)	2	2 7/16	2 15/16	3 9/16	4 9/16	5 5/8	6 11/16	8 11/16	10 13/16	12 13/16	
Weights				4.6	6.2	6.9	7.8				

Dimensions are in inches. All weights are in pounds based on a metal density of .29 lb/in^3

Blind Flanges

SK-84 Carbon Steel Flanges, Stainless Steel Clad





- The most economical blind flange configuration with a stainless steel wetted surface.
- Flange is made from carbon steel plate per ASTM A 36 and then clad with a 16 GA. (.060) 316L ASTM A 240 stainless steel liner, with the liner diameter as shown.
- Drilled hole patterns per ANSI B16.1, Class 125 or Class 250 (identical to ANSI B16.5, Class 150 or Class 300 through 24" size.
- Coated with red oxide primer. Galvanized, epoxy and other coatings are also available.
- Can be manufactured in non-standard sizes, drill patterns and thicknesses.

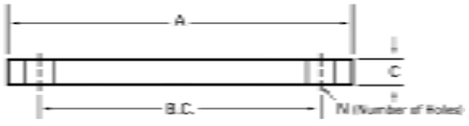
Drilling per Class 125

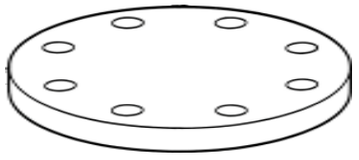
Nominal Pipe Size	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	30	36	42	48
A (OD)	6	7	7 1/2	9	10	11	13 1/2	16	19	21	23 1/2	25	27 1/2	32	38 3/4	46	53	59 1/2
C (THK)	1/2	1/2	1/2	1/2	1/2	5/8	5/8	5/8	3/4	3/4	3/4	3/4	3/4	3/4	1	1	1 1/8	1 1/4
G	3 5/8	4 1/8	5	6 3/16	7 5/16	8 1/2	10 5/8	12 3/4	15	16 1/4	18 1/2	21	23	27 1/4	33 3/4	40 1/4	47	53 1/2
B.C.	4 3/4	5 1/2	6	7 1/2	8 1/2	9 1/2	11 3/4	14 1/4	17	18 3/4	21 1/4	22 3/4	25	29 1/2	36	42 3/4	49 1/2	56
Hole Size	3/4	3/4	3/4	3/4	7/8	7/8	7/8	1	1	1 1/8	1 1/8	1 1/4	1 1/4	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8
N	4	4	4	8	8	8	8	12	12	12	16	16	20	20	28	32	36	44
Weights	3.9	5.4	6.4	9.1	10.7	17.0	26.1	36.3	61.5	75.5	93.7	107	130	175	339	476	712	994

Drilling per Class 250

Nominal Pipe Size	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	30	36	42	48
A (OD)	6 1/2	7 1/2	8 1/4	10	11	12 1/2	15	17 1/2	20 1/2	23	25 1/2	28	30 1/2	36	43	50	57	65
C (THK)	5/8	5/8	5/8	3/4	3/4	7/8	7/8	7/8	1	1	1	1	1	1 1/8	1 1/4	1 1/4	1 3/8	1 1/2
G	3 5/8	4 1/8	5	6 3/16	7 5/16	8 1/2	10 5/8	12 3/4	15	16 1/4	18 1/2	21	23	27 1/4	37 3/16	43 11/16	50 7/16	58 7/16
B.C.	5	5 7/8	6 5/8	7 7/8	9 1/4	10 5/8	13	15 1/4	17 3/4	20 1/4	22 1/2	24 3/4	27	32	39 1/4	46	52 3/4	60 3/4
Hole Size	3/4	7/8	7/8	7/8	7/8	7/8	1	1 1/8	1 1/4	1 1/4	1 3/8	1 3/8	1 3/8	1 5/8	1 7/8	2 1/8	2 1/8	2 1/8
N	8	8	8	8	8	12	12	16	16	20	20	24	24	24	28	32	36	40
Weights	5.4	7.2	9.0	16.2	20.0	29.7	43.1	58.5	92.0	115	142	171	205	319	507	683	982	1399

SK-85 Cast Stainless Steel Blind Flanges





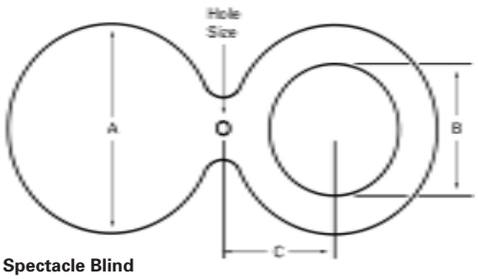
- An economical light-weight all stainless steel blind flange for use when a stainless clad steel blind flange is not permitted.
- Available in ACI grade CF-3M (316L) and (317L). All surfaces are fully machined.
- Drilled hole patterns per ANSI B16.1, Class 125 (identical to ANSI B16.5, Class 150 through 24" size).

Nominal Pipe Size	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	30	36
A (OD)	6	7	7 1/2	9	10	11	13 1/2	16	19	21	23 1/2	25	27 1/2	32	38 3/4	46
C (THK)	3/8	3/8	1/2	1/2	1/2	1/2	5/8	5/8	5/8	3/4	3/4	3/4	3/4	3/4	1	1
B.C.	4 3/4	5 1/2	6	7 1/2	8 1/2	9 1/2	11 3/4	14 1/4	17	18 3/4	21 1/4	22 3/4	25	29 1/2	36	42 3/4
Hole Size	3/4	3/4	3/4	3/4	7/8	7/8	7/8	1	1	1 1/8	1 1/8	1 1/4	1 1/4	1 3/8	1 3/8	1 5/8
N	4	4	4	8	8	8	8	12	12	12	16	16	20	20	28	32
Weights	2.9	4.0	6.1	8.7	10.7	13.1	25.1	34.7	49.7	72.7	90.9	102	124	168	330	463

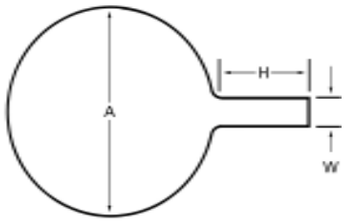
Dimensions are in inches. Weights are in pounds.

Special Blind Flanges and Vee Grip Flanges

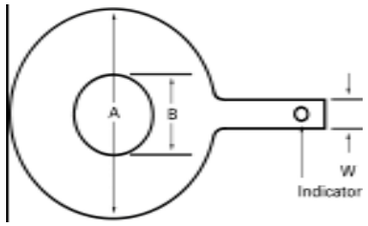
Special Blind Flanges



Spectacle Blind



"Banjo" Blank

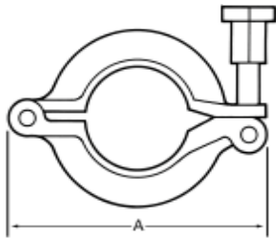


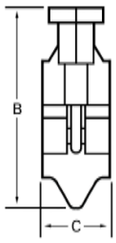
Open Spacer

- Designed for the intermittent opening and closing of light-wall piping systems.
- Available in thicknesses from 14 Ga. (.075) through $^{1}/_{2}$ " (.500).
- Supplied in all stainless steel and most other corrosion resistant alloys.
- Can be made in non-standard sizes and in reducing sizes.
- Drilled hole patterns per ANSI B16.5, Class 150.

Nominal Pipe Size	2	2 $^{1}/_{2}$	3	4	6	8	10	12	14	16	18	20	24
A (OD)	3 $^{7}/_{8}$	4 $^{5}/_{8}$	5 $^{1}/_{8}$	6 $^{5}/_{8}$	8 $^{1}/_{2}$	10 $^{3}/_{4}$	13 $^{1}/_{8}$	15 $^{7}/_{8}$	17 $^{1}/_{2}$	20	21 $^{3}/_{8}$	23 $^{5}/_{8}$	28
B (ID)	Bore made to required specifications												
W	1	1	1	1	1	1 $^{1}/_{2}$	1 $^{1}/_{2}$	1 $^{1}/_{2}$	1 $^{1}/_{2}$	1 $^{1}/_{2}$	1 $^{1}/_{2}$	1 $^{1}/_{2}$	1 $^{1}/_{2}$
C	2 $^{3}/_{8}$	2 $^{3}/_{4}$	3	3 $^{3}/_{4}$	4 $^{3}/_{4}$	5 $^{7}/_{8}$	7 $^{1}/_{8}$	8 $^{1}/_{2}$	9 $^{3}/_{8}$	10 $^{5}/_{8}$	11 $^{3}/_{8}$	12 $^{1}/_{2}$	14 $^{3}/_{4}$
Hole Size	$^{3}/_{4}$	$^{3}/_{4}$	$^{3}/_{4}$	$^{3}/_{4}$	$^{7}/_{8}$	$^{7}/_{8}$	1	1	1 $^{1}/_{8}$	1 $^{1}/_{8}$	1 $^{1}/_{4}$	1 $^{1}/_{4}$	1 $^{3}/_{8}$
H	3	3	3	3	3 $^{1}/_{2}$	3 $^{1}/_{2}$	3 $^{1}/_{2}$	2 $^{1}/_{2}$	4	4	4	4	4

"Vee Grip" Flanges





"Vee Grip" Flange with Face Rings and Gasket

- Designed for quick assembly and disassembly of piping systems.
- Available to fit nominal pipe size and tube size diameters.
- Cast of ductile iron and painted with silver bright aluminum. Toggle bolts are made of stainless steel.
- Flange is supplied with gasket only.
- 12 Ga. (.105) stainless steel "Vee Grip" face rings or stub ends are ordered and supplied seperately.

Made to Fit OD Tube Size Diameters

Tube OD	3	4	6	8	10
A	5 $^{1}/_{4}$	6 $^{1}/_{4}$	8 $^{1}/_{2}$	10 $^{1}/_{2}$	13
B	7 $^{1}/_{2}$	9	10 $^{3}/_{4}$	13 $^{5}/_{8}$	16 $^{1}/_{4}$
C	1 $^{3}/_{4}$	1 $^{7}/_{8}$	1 $^{7}/_{8}$	1 $^{7}/_{8}$	1 $^{7}/_{8}$
Weights	4.5	5.0	7.0	9.5	17.0

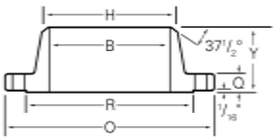
Made to Fit Nominal Pipe Size Diameters

Nominal Pipe Size	3	4	6	8	10
Pipe OD	3 $^{1}/_{2}$	4 $^{1}/_{2}$	6 $^{5}/_{8}$	8 $^{5}/_{8}$	10 $^{3}/_{4}$
A	5 $^{13}/_{16}$	6 $^{11}/_{16}$	9 $^{1}/_{16}$	11 $^{1}/_{16}$	13 $^{13}/_{16}$
B	8 $^{1}/_{16}$	9 $^{1}/_{2}$	11 $^{1}/_{2}$	14 $^{5}/_{16}$	17 $^{1}/_{16}$
C	1 $^{7}/_{8}$	1 $^{7}/_{8}$	1 $^{7}/_{8}$	1 $^{7}/_{8}$	1 $^{7}/_{8}$
Weights	4.8	5.3	7.3	9.8	17.3

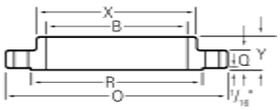
Dimensions are in inches. Weights are in pounds

Forged Stainless Steel Flanges

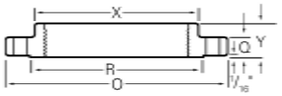
Flanges, ANSI Class 150



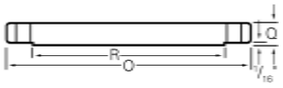
Welding Neck



Slip-On



Threaded



Blind

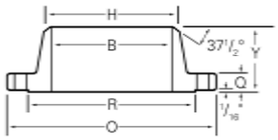
- A forged stainless steel flange normally used with “annealed” pipe for 150 pound pressure systems.
- Alloys stocked include Grades F304, F304L, F316, F316L and F317L.
- Flanges conform dimensionally to ANSI B16.5, Class150.
- Heavier class flanges and non-standard flanges are available.
- Flanges with a standard raised-face are stocked but are available with a variety of other facings.
- Material conforms to ASTM A 182 and ASME SA-182.
- Reducing flanges and socket-welding flanges are supplied machined from blind flanges.

Pipe Size	H	O	Q	R	X	Bolt Holes	Bolt Circle	B Weld Neck	B Slip-On	B Lap Joint	Y Weld Neck	Y Threaded Slip-On	Y Lap Joint	Weights Weld Neck	Slip-On	Blind	Lap Joint	Threaded
1/2	.840	3 1/2	7/16	1 3/8	1 3/16	4 - 5/8	2 3/8	.62	.88	.90	1 7/8	5/8	5/8	**2**	**1**	**2**	**1**	**1**
3/4	1.05	3 7/8	1/2	1 11/16	1 1/2	4 - 5/8	2 3/4	.82	1.09	1.11	2 1/16	5/8	5/8	**2**	**2**	**2**	**2**	**2**
1	1.31	4 1/4	9/16	2	1 15/16	4 - 5/8	3 1/8	1.05	1.36	1.38	2 3/16	11/16	11/16	**3**	**2**	**2**	**2**	**2**
1 1/4	1.66	4 5/8	5/8	2 1/2	2 5/16	4 - 5/8	3 1/2	1.38	1.70	1.72	2 1/4	13/16	13/16	**3**	**3**	**3**	**3**	**3**
1 1/2	1.90	5	11/16	2 7/8	2 9/16	4 - 5/8	3 7/8	1.61	1.95	1.97	2 7/16	7/8	7/8	**4**	**3**	**3**	**3**	**3**
2	2 3/8	6	3/4	3 5/8	3 1/16	4 - 3/4	4 3/4	2.07	2.44	2.46	2 1/2	1	1	**6**	**5**	**4**	**5**	**5**
2 1/2	2 7/8	7	7/8	4 1/8	3 9/16	4 - 3/4	5 1/2	2.47	2.94	2.97	2 3/4	1 1/8	1 1/8	**10**	**8**	**7**	**8**	**8**
3	3 1/2	7 1/2	15/16	5	4 1/4	4 - 3/4	6	3.07	3.57	3.60	2 3/4	1 3/16	1 3/16	**12**	**9**	**9**	**9**	**10**
3 1/2	4	8 1/2	15/16	5 1/2	4 13/16	8 - 3/4	7	3.55	4.07	4.10	2 13/16	1 1/4	1 1/4	**12**	**11**	**13**	**11**	**12**
4	4 1/2	9	15/16	6 3/16	5 5/16	8 - 3/4	7 1/2	4.03	4.57	4.60	3	1 5/16	1 5/16	**17**	**13**	**17**	**12**	**13**
5	5 9/16	10	15/16	7 5/16	6 7/16	8 - 7/8	8 1/2	5.05	5.66	5.69	3 1/2	1 7/16	1 7/16	**21**	**15**	**20**	**13**	**15**
6	6 5/8	11	1	8 1/2	7 9/16	8 - 7/8	9 1/2	6.07	6.72	6.75	3 1/2	1 9/16	1 9/16	**26**	**17**	**27**	**18**	**20**
8	8 5/8	13 1/2	1 1/8	10 5/8	9 11/16	8 - 7/8	11 3/4	7.98	8.72	8.75	4	1 3/4	1 3/4	**42**	**28**	**47**	**28**	**30**
10	10 3/4	16	1 3/16	12 3/4	12	12-1	14 1/4	10.02	10.88	10.92	4	1 15/16	1 15/16	**54**	**40**	**67**	**36**	**41**
12	12 3/4	19	1 1/4	15	14 3/8	12-1	17	12.00	12.88	12.92	4 1/2	2 3/16	2 3/16	**88**	**61**	**123**	**60**	**65**
14	14	21	1 3/8	16 1/4	15 3/4	12 -1 1/8	18 3/4	*	14.14	14.18	5	2 1/4	3 1/8	**114**	**83**	**139**	**77**	**85**
16	16	23 1/2	1 7/16	18 1/2	18	16 -1 1/8	21 1/4	*	16.16	16.19	5	2 1/2	3 7/16	**142**	**106**	**187**	**104**	**93**
18	18	25	1 9/16	21	19 7/8	16 -1 1/4	22 3/4	*	18.18	18.20	5 1/2	2 11/16	3 13/16	**165**	**109**	**217**	**146**	**120**
20	20	27 1/2	1 11/16	23	22	20 -1 1/4	25	*	20.20	20.25	5 11/16	2 7/8	4 1/16	**197**	**148**	**283**	**159**	**155**
24	24	32	1 7/8	27 1/4	26 1/8	20 -1 3/8	29 1/2	*	24.25	24.25	6	3 1/4	4 3/8	**268**	**204**	**415**	**195**	**210**

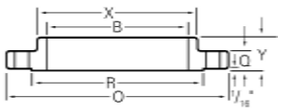
* To be specified by purchaser.
Dimensions are in inches. All weights are in pounds based on a metal density of .29 lb/in^3

Forged Stainless Steel Flanges

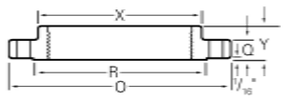
Flanges, ANSI Class 300



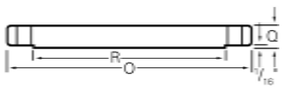
Welding Neck



Slip-On



Threaded



Blind

- A forged stainless steel flange normally used with "annealed" pipe for 300 pound pressure systems.
- Alloys stocked include Grades F304L and F316L.
- Flanges conform dimensionally to ANSI B16.5, Class 300.
- Heavier class flanges and non-standard flanges are available.
- Flanges with a standard raised-face are stocked but are available with a variety of other standard facings.
- Material conforms to ASTM A 182 and ASME SA-182.
- Reducing flanges and socket-welding flanges are supplied machined from blind flanges.

Nominal Pipe Size	H	O	Q	R	X	Bolt Holes	Bolt Circle	B Weld Neck	B Slip-On	B Lap Joint	Y Weld Neck	Y Threaded Slip-On	Y Lap Joint	Weights Weld Neck	Slip-On	Blind	Lap Joint	Threaded
1/2	.840	3 3/4	9/16	1 3/8	1 1/2	4 - 5/8	2 5/8	.62	.88	.90	2 1/16	7/8	7/8	2	2	3	2	2
3/4	1.05	4 5/8	5/8	1 11/16	1 7/8	4 - 3/4	3 1/4	.82	1.09	1.11	2 1/4	1	1	3	3	3	2	3
1	1.31	4 7/8	11/16	2	2 1/8	4 - 3/4	3 1/2	1.05	1.36	1.38	2 7/16	1 1/16	1 1/16	4	3	4	3	3
1 1/4	1.66	5 1/4	3/4	2 1/2	2 1/2	4 - 3/4	3 7/8	1.38	1.70	1.72	2 9/16	1 1/16	1 1/16	5	5	6	5	5
1 1/2	1.90	6 1/8	13/16	2 7/8	2 3/4	4 - 7/8	4 1/2	1.61	1.95	1.97	2 11/16	1 3/16	1 3/16	7	7	7	7	7
2	2 3/8	6 1/2	7/8	3 5/8	3 5/16	8 - 3/4	5	2.07	2.44	2.46	2 3/4	1 5/16	1 5/16	8	7	8	7	7
2 1/2	2 7/8	7 1/2	1	4 1/8	3 15/16	8 - 7/8	5 7/8	2.47	2.94	2.97	3	1 1/2	1 1/2	12	10	12	10	10
3	3 1/2	8 1/4	1 1/8	5	4 5/8	8 - 7/8	6 5/8	3.07	3.57	3.60	3 1/8	1 11/16	1 11/16	18	13	16	15	14
3 1/2	4	9	1 3/16	5 1/2	5 1/4	8 - 7/8	7 1/4	3.55	4.07	4.13	3 3/16	1 3/4	1 3/4	20	16	21	16	16
4	4 1/2	10	1 1/4	6 3/16	5 3/4	8 - 7/8	7 7/8	4.03	4.57	4.60	3 3/8	1 7/8	1 7/8	24	24	28	24	24
5	5 9/16	11	1 3/8	7 5/16	7	8 - 7/8	9 1/4	5.05	5.66	5.69	3 7/8	2	2	36	29	37	29	31
6	6 5/8	12 1/2	1 7/16	8 1/2	8 1/8	12 - 7/8	10 5/8	6.07	6.72	6.75	3 7/8	2 1/16	2 1/16	45	36	48	38	36
8	8 5/8	15	1 5/8	10 5/8	10 1/4	12-1	13	7.98	8.72	8.75	4 3/8	2 7/16	2 7/16	69	56	79	55	56
10	10 3/4	17 1/2	1 7/8	12 3/4	12 5/8	16 -1 1/8	15 1/4	10.02	10.92	10.88	4 5/8	2 5/8	3 3/4	100	77	120	88	80
12	12 3/4	20 1/2	2	15	14 3/4	16 -1 1/4	17 3/4	12.00	12.88	12.92	5 1/8	2 7/8	4	142	113	183	139	110
14	14	23	2 1/8	16 1/4	16 3/4	20 -1 1/4	20 1/4	*	14.14	14.18	5 5/8	3	4 3/8	206	159	241	184	164
16	16	25 1/2	2 1/4	18 1/2	19	20 -1 3/8	22 1/2	*	16.16	16.19	5 3/4	3 1/4	4 3/4	249	210	315	234	220
18	18	28	2 3/8	21	21	24 -1 3/8	24 3/4	*	18.18	18.20	6 1/4	3 1/2	5 1/8	306	253	414	305	280
20	20	30 1/2	2 1/2	23	23 1/8	24 -1 3/8	27	*	20.20	20.25	6 3/8	3 3/4	5 1/2	369	307	515	375	325
24	24	36	2 3/4	27 1/4	27 5/8	24 -1 5/8	32	*	24.25	24.25	6 5/8	4 3/16	6	519	490	800	530	490

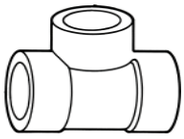
* To be specified by purchaser.
Dimensions are in inches. All weights are in pounds based on a metal density of .29 lb/in^3

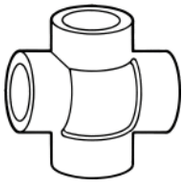
Socket Weld Fittings and Bosses

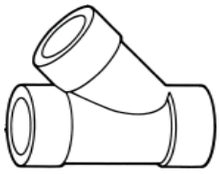
Socket Weld Fittings, Classes 3000 and 6000

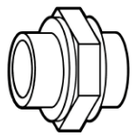

90° Elbow


45° Elbow

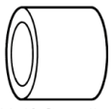

Tee

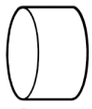

Cross

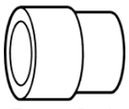

Lateral

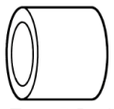

Union


Coupling


Half Coupling


Cap

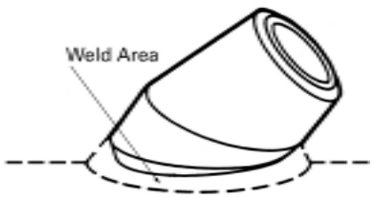

Type 1 Reducer Insert


Type 2 Reducer Insert

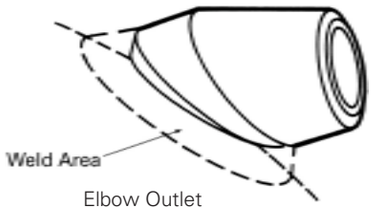
- Fittings are normally used with “annealed” pipe for higher pressure service and where socket-welding is desired for ease of assembly.
- Eliminates the necessity of tack welding or clamping prior to welding.
- Accurate bore provides slip fit alignment of ID fittings to OD of pipe.
- Alloys stocked include Types 304L, 316L, 317L and other corrosion resistant alloys.
- Sizes range from $^{1}/_{8}$" to 4" NPS with larger sizes upon application.
- Dimensions are in accordance with ANSI B16.11, MSS SP-79 and applicable ASME, ASTM Specifications.
- Available in non-standard sizes and dimensions.

Bosses


Straight
Piping Outlet



Lateral Outlet



Elbow Outlet

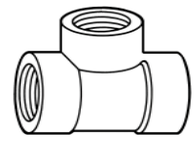
- Boss outlets offer a recommended method of installing outlets on piping systems, tanks and other fabrications.
- Bosses provide a contoured internal joint with a gradual transition from header to branch allowing full penetra tion welds while reducing installation costs over tees or other nozzle connections.
- Boss outlets can be supplied with threaded, socket weld or buttwelding ends.
- Alloys stocked include Types 304L, 316L, 317L, and other corrosion resistant alloys.
- Bosses can be manufactured to non-standard dimensions or in alternate alloys and are available in full and reducing sizes.

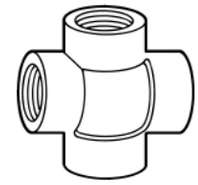
Stainless Steel Threaded Fittings

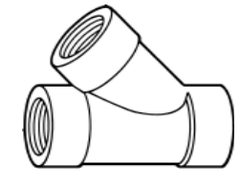
Threaded Fittings, Classes 150, 3000 and 6000

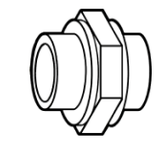

90° Elbow


45° Elbow


Tee

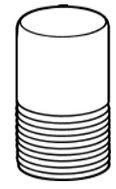

Cross

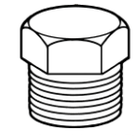

Lateral


Union


Hex Bushing


Flush Bushing


Round Head Plug

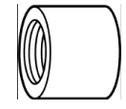

Hex Head Plug

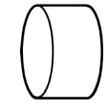

Square Head Plug

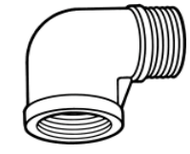

Welding Spud

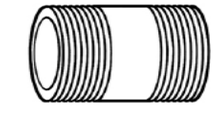

Coupling

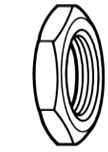

Reducer


Half Coupling


Cap


Street Elbow

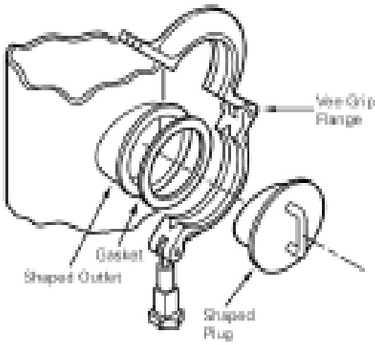

Nipple

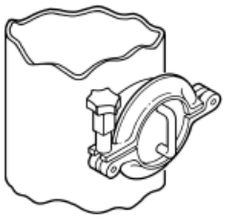

Lock Nut

- Alloys stocked include Types 304, 316, 317L and other corrosion resistant alloys.
- Sizes range from $^{1}/_{8}$ " to 4" NPS with larger sizes upon application.
- Class 150 fittings conform to ANSI B16.3, Class 150.
- Class 3000 and Class 6000 fittings conform to ANSI B2.1 and ANSI B16.11.
- Special length nipples can be provided in Schedules 40s and 80s.
- Fittings are available in non-standard alloys, sizes and dimensions upon request.

Special Stainless Steel Fittings

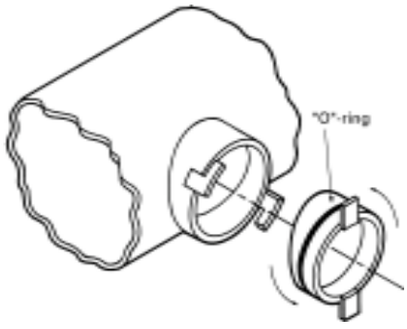
Vee Grip Plug Type Cleanouts

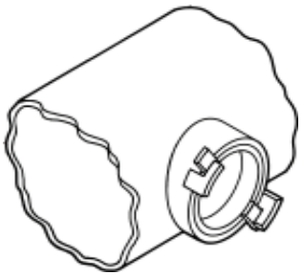




■ A convenient stainless steel cleanout assembly available in 3" through 10" NPS diameters and tube size diam eters.
■ Shaped to fit on any size pipe, tubing or fitting or other special configuration.
■ Normally supplied in 12 Ga (.105) and 10 Ga (.134) stainless steel alloys with other thicknesses also available.

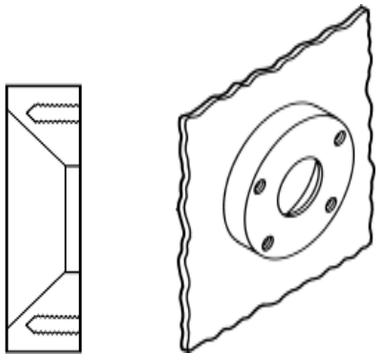
Orbit Twist Out Type Cleanouts





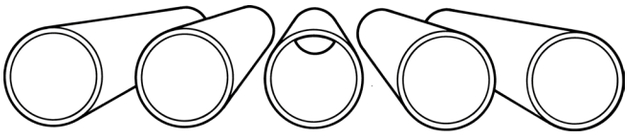
■ A twist out type stainless steel cleanout assembly available in 4" and 6" diameters and shaped to fit on any size pipe, tubing diameter or special configuration.
■ All working surfaces are fully machined.
■ Available in cast stainless steel ACI grade CF-3M (316L).

SK-812 Level Transmitter Flange



■ A ready-made standard flange which enables the mounting of sensitive measuring devices.
■ Saddle contour is normally cut “in field” to suit, thus minimizing line obstruction.
■ Available with or without conically tapered holes, with raised or flat facing.
■ Holes can be drilled and tapped with standard pattern or with offset holes as required.
■ Available in cast stainless steel ACI grade CF-3M (316L) and other alloys upon application.
■ May also be used as 3", Class 150 flange pad on piping or tanks.

Nominal Pipe Size Dimensions By Schedule

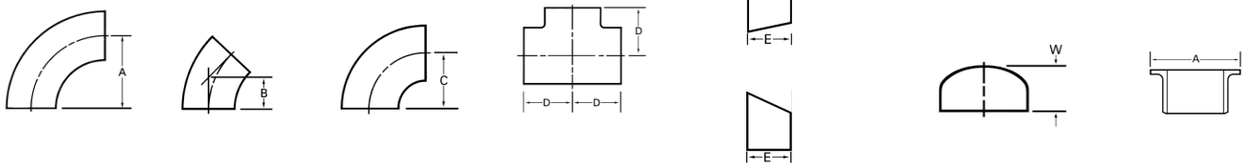


Nominal Pipe Size	Outside Diameter	**Sch 5s**	Sch 10	**Sch 10s**	Sch 20	Sch 30	Std. Wt.	Sch 40	**Sch 40s**	Sch 60	Extra Strong	Sch 80	**Sch 80s**	Sch 100
1/8	.405			**.049**			.068	.068	**.068**		.095	.095	**.095**	
1/4	.540			**.065**			.088	.088	**.088**		.119	.119	**.119**	
3/8	.675			**.065**			.091	.091	**.091**		.126	.126	**.126**	
1/2	.840	**.065**		**.083**			.109	.109	**.109**		.147	.147	**.147**	
3/4	1.05	**.065**		**.083**			.113	.113	**.113**		.154	.154	**.154**	
1	1.31	**.065**		**.109**			.133	.133	**.133**		.179	.179	**.179**	
1 1/4	1.66	**.065**		**.109**			.140	.140	**.140**		.191	.191	**.191**	
1 1/2	1.90	**.065**		**.109**			.145	.145	**.145**		.200	.200	**.200**	
2	2 3/8	**.065**		**.109**			.154	.154	**.154**		.218	.218	**.218**	
2 1/2	2 7/8	**.083**		**.120**			.203	.203	**.203**		.276	.276	**.276**	
3	3 1/2	**.083**		**.120**			.216	.216	**.216**		.300	.300	**.300**	
3 1/2	4	**.083**		**.120**			.226	.226	**.226**		.318	.318	**.318**	
4	4 1/2	**.083**		**.120**			.237	.237	**.237**		.337	.337	**.337**	
5	5 9/16	**.109**		**.134**			.258	.258	**.258**		.375	.375	**.375**	
6	6 5/8	**.109**		**.134**			.280	.280	**.280**		.432	.432	**.432**	
8	8 5/8	**.109**		**.148**	.250	.277	.322	.322	**.322**	.406	.500	.500	**.500**	.594
10	10 3/4	**.134**		**.165**	.250	.307	.365	.365	**.365**	.500	.500	.594	**.500**	.719
12	12 3/4	**.156**		**.180**	.250	.330	.375	.406	**.375**	.562	.500	.688	**.500**	.844
	14	**.156**	.250	**.188**	.312	.375	.375	.438	**.375**	.594	.500	.750	**.500**	.938
	16	**.165**	.250	**.188**	.312	.375	.375	.500	**.375**	.656	.500	.844	**.500**	1.031
	18	**.165**	.250	**.188**	.312	.438	.375	.562	**.375**	.750	.500	.938	**.500**	1.156
	20	**.188**	.250	**.218**	.375	.500	.375	.594	**.375**	.812	.500	1.031	**.500**	1.281
	22	**.188**	.250	**.218**	.375	.500	.375		**.375**	.875	.500	1.125	**.500**	1.375
	24	**.218**	.250	**.250**	.375	.562	.375	.688	**.375**	.969	.500	1.219	**.500**	1.531
	26		.312		.500		.375		**.375**		.500		**.500**	
	28		.312		.500	.625	.375		**.375**		.500		**.500**	
	30	**.250**	.312	**.312**	.500	.625	.375		**.375**		.500		**.500**	
	32		.312		.500	.625	.375	.688	**.375**		.500		**.500**	
	34		.312		.500	.625	.375	.688	**.375**		.500		**.500**	
	36	**.250**	.312		.500	.625	.375	.750	**.375**		.500		**.500**	
	40						.375		**.375**		.500		**.500**	
	42						.375		**.375**		.500		**.500**	
	48						.375		**.375**		.500		**.500**	

Thicknesses for stainless steel products are specified by ANSI B36.19 and are shown in bold face type.
Thicknesses for carbon steel products are specified by ANSI B36.10 and are shown in regular type.
Thicknesses shown under Sch 40s for sizes 14" -24" and 30" are specified by MSS SP-43.
All other thicknesses shown under Sch 40s and Sch 80s for sizes 14" and larger are not specified by any standard.
Alaskan will use schedule thicknessses shown for all sizes not specified by a standard unless otherwise directed.
Dimensions are in inches.

Weights

Stainless Steel Buttwelding Fittings By Schedule



Schedule 5s

Nominal Pipe Size	Wall Thk	LR 90	LR 45	SR 90	Tee	Reducer	Cap	MSS Type A Stub End
1/2	.065	.11	.05		.11		.02	.10
3/4	.065	.10	.05		.16	.10	.03	.12
1	.065	.17	.09		.27	.21	.06	.16
1 1/4	.065	.28	.14		.43	.25	.08	.22
1 1/2	.065	.38	.19		.60	.32	.14	.26
2	.065	.65	.32		1.0	.41	.18	.41
2 1/2	.083	1.3	.63		1.5	.64	.28	.64
3	.083	1.8	.92		2.0	.78	.50	.80
4	.083	3.2	1.6		3.2	1.2	.80	1.2
5	.109	6.4	3.2	4.3	6.0	2.5	1.3	2.1
6	.109	9.2	4.6	6.1	8.2	3.3	1.6	3.0
8	.109	15.9	8.0	10.6	13.1	4.5	2.1	4.3
10	.134	30.5	15.3	20.4	24.3	8.2	3.8	8.4
12	.156	50.6	25.3	33.7	39.3	13.0	6.2	12.9

Schedule 10s

Nominal Pipe Size	Wall Thk	LR 90	LR 45	SR 90	Tee	Reducer	Cap	MSS Type A Stub End
1/2	.083	.14	.07		.14		.03	.12
3/4	.083	.13	.07		.20	.16	.03	.15
1	.109	.21	.11		.44	.38	.10	.27
1 1/4	.109	.33	.17		.71	.44	.13	.36
1 1/2	.109	.63	.32		.99	.59	.23	.43
2	.109	1.1	.53		1.4	.71	.30	.68
2 1/2	.120	1.8	.89		2.2	1.0	.40	.91
3	.120	2.6	1.3		2.9	1.2	.72	1.2
4	.120	4.5	2.3		4.6	1.8	1.3	1.8
5	.134	7.8	3.9	5.2	7.4	3.1	2.3	3.3
6	.134	11.2	5.6	7.5	10.1	4.1	3.3	5.1
8	.148	21.6	10.8	14.4	17.8	5.9	5.5	6.4
10	.165	37.5	18.7	25.1	29.9	10.1	11.0	12.4
12	.180	58.3	29.2	38.9	45.2	16.3	14.5	15.2

Schedule 40s

Nominal Pipe Size	Wall Thk	LR 90	LR 45	SR 90	Tee	Reducer	Cap	MSS Type A Stub End
1/2	.109	.17	.09		.18		.12	.25
3/4	.113	.19	.10		.26	.17	.16	.34
1	.133	.32	.16	.20	.45	.40	.20	.43
1 1/4	.140	.58	.29	.38	.89	.45	.30	.60
1 1/2	.145	.81	.40	.55	1.3	.70	.40	.75
2	.154	1.5	.73	.98	1.9	.90	.60	1.2
2 1/2	.203	3.1	1.6	1.9	3.5	1.5	.90	1.8
3	.216	4.6	2.3	3.1	5.1	2.2	1.5	2.5
4	.237	8.5	4.2	5.8	8.3	3.4	2.5	3.8
5	.258	14.3	7.2	9.8	13.7	5.8	4.5	5.9
6	.280	22.9	11.5	15.3	19.4	7.8	6.5	8.1
8	.322	45.9	23.2	30.1	37.3	13.7	12.1	14.3
10	.365	81.3	40.7	57.2	62.8	22.1	20.1	23.2
12	.375	120	59.8	79.7	92.9	31.3	30.2	33.1

Schedule 80s

Nominal Pipe Size	Wall Thk	LR 90	LR 45	SR 90	Tee	Reducer	Cap	MSS Type A Stub End
1/2	.147	.22	.11		.23		.15	.35
3/4	.154	.22	.11		.34	.18	.20	.50
1	.179	.44	.22	.29	.68	.34	.30	.81
1 1/4	.191	.75	.38	.50	1.2	.50	.40	1.1
1 1/2	.200	1.1	.54	.74	1.7	.78	.50	1.3
2	.218	2.1	1.1	1.1	2.6	1.2	.75	2.9
2 1/2	.276	3.9	2.1	2.6	4.8	2.2	1.0	4.1
3	.300	6.3	3.1	4.1	6.9	2.9	1.8	6.4
4	.318	12.1	6.1	8.1	12.9	4.8	3.0	8.2
5	.375	20.9	10.5	13.9	19.7	8.2	5.5	15.3
6	.432	34.4	17.2	22.9	28.9	14.1	10.1	21.1
8	.500	69.8	34.9	46.5	57.5	19.7	16.2	32.9
10	.500	110	55.0	73.3	87.4	29.5	28.0	50.3
12	.500	158	78.9	105	123	41.3	36.1	62.8

Weights

Stainless Steel LR 90˚ Elbows

		Wall Thickness: Listed in Inches with Corresponding Manufacturer's Standard Gauge													
Nominal Pipe Size	Outside Diameter	16 .060	14 .075	12 .105	11 .120	10 .134	.165	.187	.218	.250	.312	.375	.500	.625	.750
1/2	.840	*													
	3/4	.07													
3/4	1.05	*													
	1	.12													
1	1.31	*													
	1 1/4	.19													
1 1/4	1.66	*													
	1 1/2	.28													
1 1/2	1.90	*													
	2	.50	.62	.85	.97	1.1									
2	2 3/8	.60	.74	1.0	1.2	1.3	1.6		2.0						
	2 1/2	.79	.98	1.3	1.5	1.7	2.1								
2 1/2	2 7/8	.91	1.1	1.6	1.8	2.0	2.4	2.7	3.1						
	3	1.1	1.4	2.0	2.2	2.5	3.0	3.4	3.9						
3	3 1/2	1.3	1.7	2.3	2.6	2.9	3.5	4.0	4.6						
	4	2.0	2.5	3.5	4.0	4.4	5.4	6.1	7.1	8.0					
4	4 1/2	2.3	2.8	4.0	4.5	5.0	6.1	6.9	8.0	9.1					
	5	3.2	4.0	5.5	6.3	7.0	8.6	9.7	11.2	12.7					
5	5 9/16	3.5	4.4	6.2	7.0	7.8	9.6	10.8	12.5	14.3	17.6				
	6	4.6	5.7	8.0	9.1	10.1	12.4	14.0	16.2	18.5	22.9	27.2	35.4		
6	6 5/8	5.1	6.3	8.8	10.1	11.2	13.7	15.5	18.0	20.5	25.4	30.2	39.4		
	8	8.2	10.2	14.2	16.2	18.1	22.2	25.1	29.1	33.3	41.2	49.1	64.4		
8	8 5/8	8.8	11.0	15.4	17.5	19.5	24.0	27.1	31.5	36.0	44.5	53.1	69.8		
	10	12.8	16.0	22.3	25.5	28.4	34.8	39.4	45.8	52.3	64.9	77.5	102		
10	10 3/4	13.8	17.2	24.0	27.4	30.5	37.5	42.4	49.3	56.3	69.9	83.5	110		
	12	18.5	23.0	32.2	36.7	41.1	50.3	56.9	66.2	75.7	93.9	112	148		
12	12 3/4	19.6	24.5	34.2	39.0	43.5	53.5	60.5	70.4	80.5	100	120	158	195	232
	14		31.4	43.8	50.1	55.8	68.6	77.6	90.3	103	128	154	203	251	299
	16		41.0	57.3	65.4	73.0	89.7	102	118	135	168	201	266	330	393
	18			72.6	82.9	92.5	114	129	150	171	213	255	338	420	500
	20			89.7	102	114	141	159	185	212	264	316	419	520	620
	22				124	138	170	193	224	257	320	383	508	631	753
	24				148	165	203	229	267	306	381	456	605	753	898
	26					193	238	269	314	359	447	536	712	885	1057
	28					224	276	313	364	417	519	623	826	1028	1228
	30					258	317	359	418	479	597	715	950	1182	1413
	32					293	361	409	476	545	679	815	1082	1347	1610
	34					331	407	461	537	616	767	920	1223	1522	1820
	36					371	457	518	603	691	860	1032	1372	1709	2043
	38					414	509	577	672	770	959	1151	1529	1905	2279
	40					459	564	639	745	853	1063	1276	1696	2113	2528
	42					506	622	705	821	941	1173	1407	1871	2331	2789
	48					661	813	921	1073	1230	1533	1840	2447	3051	3651

All weights are in pounds based on a metal density of .29 lb/in^3

* See page 44 for wall thicknesses and weights of small schedule fittings.

Weights

Stainless Steel LR 45° Elbows

Nominal Pipe Size	Outside Diameter	16 .060	14 .075	12 .105	11 .120	10 .134	.165	.187	.218	.250	.312	.375	.500	.625	.750
1/2	.840	*													
	3/4	.03													
3/4	1.05	*													
	1	.06													
1	1.31	*													
	1 1/4	.10													
1 1/4	1.66	*													
	1 1/2	.14													
1 1/2	1.90	*													
	2	.25	.31	.43	.48	.54									
2	2 3/8	.30	.37	.51	.58	.64	.78		1.0						
	2 1/2	.39	.49	.67	.77	.85	1.0								
2 1/2	2 7/8	.45	.56	.78	.89	.99	1.2	1.3	1.6						
	3	.57	.71	.98	1.1	1.2	1.5	1.7	2.0						
3	3 1/2	.66	.83	1.1	1.3	1.5	1.8	2.0	2.3						
	4	1.0	1.3	1.8	2.0	2.2	2.7	3.1	3.5	4.0					
4	4 1/2	1.1	1.4	2.0	2.3	2.5	3.1	3.5	4.0	4.6					
	5	1.6	2.0	2.8	3.1	3.5	4.3	4.8	5.6	6.4					
5	5 9/16	1.8	2.2	3.1	3.5	3.9	4.8	5.4	6.3	7.1	8.8				
	6	2.3	2.9	4.0	4.5	5.1	6.2	7.0	8.1	9.3	11.4	13.6	17.7		
6	6 5/8	2.5	3.2	4.4	5.0	5.6	6.9	7.8	9.0	10.3	12.7	15.1	19.7		
	8	4.1	5.1	7.1	8.1	9.1	11.1	12.5	14.6	16.6	20.6	24.6	32.2		
8	8 5/8	4.4	5.5	7.7	8.8	9.8	12.0	13.5	15.7	18.0	22.3	26.6	34.9		
	10	6.4	8.0	11.2	12.7	14.2	17.4	19.7	22.9	26.2	32.4	38.7	51.0		
10	10 3/4	6.9	8.6	12.0	13.7	15.3	18.7	21.2	24.6	28.2	35.0	41.8	55.0		
	12	9.2	11.5	16.1	18.4	20.5	25.2	28.5	33.1	37.8	47.0	56.1	74.1		
12	12 3/4	9.8	12.2	17.1	19.5	21.8	26.7	30.3	35.2	40.2	50.0	59.8	78.9	97.6	116
	14		15.7	21.9	25.0	27.9	34.3	38.8	45.1	51.7	64.2	76.8	101	126	149
	16		20.5	28.7	32.7	36.5	44.9	50.8	59.1	67.6	84.1	101	133	165	196
	18			36.3	41.5	46.3	56.9	64.4	74.9	85.7	107	128	169	210	250
	20			44.8	51.2	57.1	70.3	79.5	92.6	106	132	158	209	260	310
	22				62.0	69.2	85.1	96.3	112	128	160	191	254	315	376
	24				73.8	82.4	101	115	134	153	190	228	303	376	449
	26					96.7	119	135	157	180	224	268	356	443	528
	28					112	138	156	182	208	260	311	413	514	614
	30					129	159	180	209	239	298	358	475	591	706
	32					147	180	204	238	273	340	407	541	674	805
	34					166	204	231	269	308	384	460	611	761	910
	36					186	228	259	301	345	430	516	686	854	1022
	38					207	255	288	336	385	480	575	765	953	1139
	40					229	282	320	372	427	532	638	848	1057	1264
	42					253	311	352	411	471	586	704	935	1166	1395
	48					330	407	461	537	615	767	920	1224	1525	1826

Weights

Stainless Steel Short Radius 90˚ Elbows

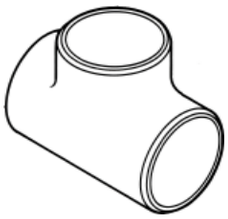
		Wall Thickness:		Listed in Inches with Corresponding Manufacturer's Standard Guage											
Nominal Pipe Size	Outside Diameter	16 .060	14 .075	12 .105	11 .120	10 .134	.165	.187	.218	.250	.312	.375	.500	.625	.750
1	1.31		*												
1 1/4	1.66		*												
1 1/2	1.90		*												
2	2 3/8		*												
2 1/2	2 7/8		*												
	3		.90	1.3	1.5	1.6									
3	3 1/2		1.1	1.5	1.7	1.9	2.4								
	4		1.7	2.3	2.7	3.0	3.6	4.1	4.7	5.4	6.6				
4	4 1/2		1.9	2.6	3.0	3.3	4.1	4.6	5.3	6.1	7.5	8.9			
	5		2.6	3.7	4.2	4.7	5.7	6.4	7.5	8.5	10.5	12.4	16.1		
5	5 9/16		2.9	4.1	4.7	5.2	6.4	7.2	8.3	9.5	11.7	13.9	18.1		
	6		3.8	5.3	6.1	6.7	8.3	9.3	10.8	12.3	15.2	18.1	23.6		
6	6 5/8		4.2	5.9	6.7	7.5	9.2	10.3	12.0	13.7	16.9	20.1	26.3		
	8		6.8	9.5	10.8	12.1	14.8	16.7	19.4	22.2	27.5	32.7	42.9		
8	8 5/8		7.3	10.2	11.7	13.0	16.0	18.1	21.0	24.0	29.7	35.4	46.5		
	10		10.7	14.9	17.0	18.9	23.2	26.3	30.5	34.9	43.3	51.7	68.0		
10	10 3/4		11.5	16.0	18.3	20.4	25.0	28.3	32.9	37.6	46.6	55.7	73.3		
	12		15.4	21.4	24.5	27.3	33.5	37.9	44.1	50.4	62.6	74.9	98.7		
12	12 3/4		16.3	22.8	26.0	29.0	35.7	40.3	46.9	53.7	66.6	79.7	105	130	155
	14		20.9	29.2	33.4	37.2	45.7	51.8	60.2	68.9	85.6	102	135	167	199
	16		27.3	38.2	43.6	48.7	59.8	67.7	78.8	90.2	112	134	177	220	262
	18			48.4	55.3	61.7	75.8	85.8	99.9	114	142	170	225	280	333
	20			59.8	68.3	76.2	93.7	106	123	141	176	211	279	347	413
	22				82.7	92.2	113	128	150	171	213	255	338	421	502
	24				98.4	110	135	153	178	204	254	304	404	502	599
	26					129	159	180	209	240	298	358	474	590	705
	28					150	184	208	243	278	346	415	551	686	819
	30					172	211	239	279	319	398	477	633	788	942
	32					196	241	272	317	363	453	543	721	898	1073
	34					221	272	308	358	411	511	614	815	1015	1213
	36					248	305	345	402	460	574	688	914	1139	1362
	38					276	339	385	448	513	639	767	1020	1270	1519
	40					306	376	426	496	569	709	851	1131	1409	1685
	42					337	415	470	547	627	782	938	1247	1554	1860
	48					441	542	614	716	820	1022	1227	1631	2034	2434

All weights are in pounds based on a metal density of .29 lb/in^3

*See page 44 for wall thicknesses and weights of small schedule fittings.

Weights

Stainless Steel Tees



		Wall Thickness: Listed in Inches with Corresponding Manufacturer's Standard Guage													
Nominal Pipe Size	Outside Diameter	16 .060	14 .075	12 .105	11 .120	10 .134	.165	.187	.218	.250	.312	.375	.500	.625	.750
1/2	.840	*													
3/4	1.05	*													
	1	.20													
1	1.31	*													
	1 1/4	.31													
1 1/4	1.66	*													
	1 1/2	.46													
1 1/2	1.90	*													
	2	.66	.82	1.1	1.3	1.4	1.7								
2	2 3/8	.76	.94	1.3	1.5	1.6	2.0								
	2 1/2	.99	1.2	1.7	1.9	2.1	2.6	2.9	3.4						
2 1/2	2 7/8	1.1	1.4	1.9	2.2	2.4	2.9	3.3	3.8						
	3	1.3	1.6	2.3	2.6	2.9	3.5	3.9	4.5						
3	3 1/2	1.5	1.9	2.6	2.9	3.3	4.0	4.5	5.2						
	4	2.1	2.6	3.7	4.2	4.7	5.7	6.4	7.4	8.4					
4	4 1/2	2.3	2.9	4.0	4.6	5.1	6.2	7.0	8.1	9.2					
	5	3.1	3.9	5.4	6.1	6.8	8.3	9.4	10.9	12.4	15.3				
5	5 9/16	3.4	4.2	5.8	6.6	7.4	9.0	10.2	11.8	13.5	16.6	19.7			
	6	4.3	5.3	7.4	8.4	9.4	11.5	13.0	15.0	17.1	21.2	25.1	32.7		
6	6 5/8	4.6	5.7	7.9	9.0	10.1	12.3	13.9	16.2	18.4	22.8	27.1	35.3		
	8	6.9	8.7	12.1	13.8	15.3	18.8	21.3	24.7	28.2	34.9	41.6	54.4		
8	8 5/8	7.3	9.1	12.7	14.5	16.2	19.8	22.4	26.0	29.7	36.8	43.9	57.5		
	10	10.5	13.0	18.2	20.8	23.2	28.4	32.1	37.7	42.7	52.9	63.1	83.0		
10	10 3/4	11.0	13.7	19.1	21.8	24.3	29.9	33.8	39.2	44.8	55.6	66.4	87.4		
	12	14.7	18.3	25.6	29.2	32.6	40.0	45.2	52.6	60.1	74.6	89.2	118		
12	12 3/4	15.3	19.1	26.6	30.4	33.9	41.6	47.1	54.8	62.6	77.8	92.9	123		
	14		23.1	32.2	36.8	41.0	50.4	57.0	66.3	75.8	94.2	113	149		
	16		28.3	39.5	45.1	50.3	61.8	70.0	81.4	93.2	116	139	183		
	18			50.0	57.1	63.8	78.4	88.7	103	118	147	176	233		
	20			61.8	70.6	78.8	96.8	110	128	146	182	218	288		
	22			74.9	85.5	95.4	117	133	155	177	220	264	350		
	24			82.3	93.9	105	129	146	170	195	242	290	385	478	570
	26				119	133	164	186	216	248	308	369	490	609	727
	28				134	150	184	208	243	278	346	415	550	685	817
	30				154	172	212	240	279	320	398	478	634	789	942
	32				176	196	242	274	319	365	455	545	724	901	1076
	34				199	222	273	310	360	413	514	617	819	1020	1219
	36				224	250	307	348	405	464	578	693	921	1147	1371
	38				249	278	343	388	452	518	645	774	1028	1281	1531
	40				277	309	380	431	502	575	716	859	1141	1422	1700
	42				283	316	388	440	512	587	731	877	1166	1453	1738
	48				382	426	525	594	683	794	989	1187	1578	1967	2354

All weights are in pounds based on a metal density of .29 lb/in^3

Weights

Stainless Steel Crosses

		Wall Thickness:	Listed in Inches with Corresponding Manufacturer's Standard Guage												
Nominal Pipe Size	Outside Diameter	16 .060	14 .075	12 .105	11 .120	10 .134	.165	.187	.218	.250	.312	.375	.500	.625	.750
1/2	.840	*													
3/4	1.05	*													
	1	.24													
1	1.31	*													
	1 1/4	.31													
1 1/4	1.66	*													
	1 1/2	.56													
1 1/2	1.90	*													
	2	.79	1.0	1.4	1.5	1.7	2.1								
2	2 3/8	.89	1.1	1.5	1.7	1.9	2.3								
	2 1/2	1.2	1.5	2.0	2.3	2.6	3.1								
2 1/2	2 7/8	1.3	1.6	2.2	2.5	2.8	3.4	3.8	4.4						
	3	1.6	1.9	2.7	3.1	3.4	4.1	4.6	5.4						
3	3 1/2	1.7	2.1	3.0	3.4	3.7	4.6	5.1	5.9						
	4	2.5	3.1	4.3	4.9	5.4	6.6	7.4	8.6	9.8					
4	4 1/2	2.6	3.3	4.6	5.2	5.8	7.1	8.0	9.2	10.5					
	5	3.6	4.5	6.2	7.1	7.9	9.6	10.8	12.5	14.3	17.5				
5	5 9/16	3.8	4.7	6.5	7.4	8.3	10.1	11.4	13.3	15.1	18.6				
	6	4.9	6.1	8.4	9.6	10.7	13.1	14.8	17.2	19.6	24.1	28.6	37.2		
6	6 5/8	5.1	6.4	8.9	10.1	11.2	13.8	15.5	18.0	20.6	25.4	30.1	39.3		
	8	7.8	9.7	13.6	15.5	17.3	21.2	23.9	27.7	31.7	39.2	46.6	61.0		
8	8 5/8	8.1	10.0	14.0	16.0	17.8	21.8	24.7	28.7	32.7	40.5	48.3	63.2		
	10	11.7	14.6	20.3	23.2	25.9	31.7	35.9	41.7	47.6	59.0	70.4	92.5		
10	10 3/4	12.0	15.0	20.9	23.9	26.6	32.7	36.9	42.9	49.0	60.8	72.5	95.4		
	12	16.3	20.4	28.4	32.4	36.2	44.4	50.2	58.4	66.7	82.8	98.9	130		
12	12 3/4	16.7	20.8	29.1	33.2	37.0	45.4	51.4	59.8	68.3	84.8	101	134		
	14		25.2	35.2	40.2	44.8	55.0	62.3	72.4	82.8	103	123	162		
	16		30.4	42.5	48.6	54.2	66.6	75.3	87.6	100	125	149	197		
	18		38.6	53.9	61.5	68.6	84.3	95.5	111	127	158	189	250		
	20		47.6	66.6	76.0	84.8	104	118	137	157	195	234	310		
	22		57.6	80.6	92.0	103	126	143	166	190	237	284	376		
	24		62.1	86.8	99.1	111	136	154	179	205	255	306	405	504	601
	26		80.6	113	129	144	177	200	233	266	332	398	527	655	782
	28			125	143	160	196	222	259	297	369	443	587	730	872
	30				165	184	226	256	298	342	425	510	677	842	1005
	32				188	210	258	292	341	390	486	582	773	962	1149
	34				213	238	292	331	385	442	550	659	876	1090	1302
	36				239	267	328	372	433	496	618	741	984	1226	1465
	38				267	298	367	415	484	554	690	828	1100	1369	1637
	40				296	331	407	461	537	615	766	919	1221	1521	1819
	42				291	324	399	452	526	603	752	902	1198	1492	1784
	48				398	444	546	619	721	826	1029	1235	1642	2046	2448

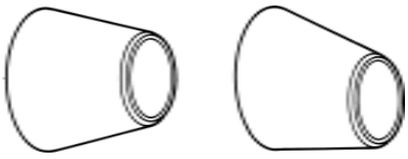
All weights are in pounds based on a metal density of .29 lb/in^3

Note: Weights shown are for "as welded" crosses. For ASTM A 403 crosses add approximately 25% to weights shown.

*See page 44 for wall thicknesses and weights of small schedule fittings.

Weights

Stainless Steel Reducers



Nominal Pipe Size	Outside Diameter	Wall Thickness: Listed in inches with corresponding Manufacturer's Standard Guage													
		16	14	12	11	10									
		.060	.075	.105	.120	.134	.165	.187	.218	.250	.312	.375	.500	.625	.750
3/4 x 1/2	1.05 x .840	*													
1 x 3/4	1.31 x 1.05	*													
1 1/4 x 1	1.66 x 1.31	*													
1 1/2 x 1 1/4	1.90 x 1.66	*													
	2 x 1 1/2	.29	.36	.49	.56	.62									
2 x 1 1/2	2 3/8 x 1.90	.36	.44	.61	.69	.77	.93	1.0	1.2	1.4					
	2 1/2 x 2	.44	.54	.75	.85	.94									
2 1/2 x 2	2 7/8 x 2 3/8	.51	.64	.88	1.0	1.1	1.4	1.5	1.7	2.0					
	3 x 2 1/2	.54	.67	.93	1.1	1.2	1.4	1.6	1.8	2.1					
3 x 2 1/2	3 1/2 x 2 7/8	.63	.78	1.1	1.2	1.4	1.7	1.9	2.2	2.5					
	4 x 3	.78	1.0	1.3	1.5	1.7	2.1	2.3	2.7	3.1					
4 x 3	4 1/2 x 3 1/2	.90	1.1	1.6	1.8	2.0	2.4	2.7	3.1	3.6					
	5 x 4	1.2	1.6	2.2	2.5	2.7	3.4	3.8	4.4	5.0	6.1				
5 x 4	5 9/16 x 4 1/2	1.4	1.7	2.4	2.8	3.1	3.8	4.3	4.9	5.6	6.9				
	6 x 4	1.5	1.9	2.6	3.0	3.3	4.1	4.6	5.3	6.0	7.4				
6 x 4	6 5/8 x 4 1/2	1.7	2.1	2.9	3.3	3.7	4.5	5.1	5.9	6.8	8.3				
	8 x 6	2.3	2.9	4.0	4.6	5.1	6.2	7.1	8.2	9.4	11.6	13.8			
8 x 6	8 5/8 x 6 5/8	2.5	3.1	4.4	5.0	5.6	6.8	7.7	8.9	10.2	12.6	15.1			
	10 x 8	3.5	4.3	6.0	6.9	7.7	9.4	10.6	12.3	14.1	17.5	20.8			
10 x 8	10 3/4 x 8 5/8		4.6	6.5	7.4	8.2	10.1	11.4	13.3	15.2	18.8	22.5			
	12 x 10		6.0	8.4	9.6	10.7	13.1	14.9	17.3	19.7	24.5	29.3	38.6		
12 x 10	12 3/4 x 10 3/4		6.4	9.0	10.3	11.4	14.0	15.9	18.5	21.1	26.2	31.3	41.3		
	14 x 12			16.1	18.4	20.5	25.2	28.5	33.1	37.9	47.0	56.2	74.2	91.9	109
14 x 12	14 x 12 3/4			16.6	19.0	21.2	26.0	29.5	34.3	39.2	48.7	58.2	76.9	95.2	113
	16 x 14			20.0	22.8	25.5	31.3	35.4	41.2	47.2	58.6	70.1	92.7	115	137
	18 x 16			24.3	27.7	310	38.0	43.1	50.1	57.4	71.3	85.4	113	140	167
	20 x 18			36.2	41.3	46.1	56.7	64.2	74.7	85.5	106	127	169	210	250
	22 x 20			40.0	45.7	51.0	62.7	71.0	82.7	94.6	118	141	187	232	277
	24 x 22			43.9	50.1	55.9	68.7	77.8	90.6	104	129	155	205	255	304
	30 x 24				69.2	77.3	95.0	108	125	144	179	214	285	354	423
	36 x 30				84.2	94.0	116	131	153	175	218	261	347	432	517
	42 x 36				99.1	111	136	154	180	206	256	308	409	509	609
	48 x 42				134	150	184	208	243	278	347	416	553	690	826

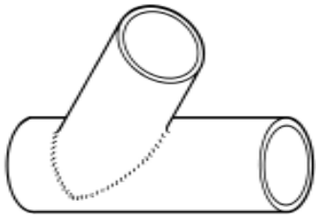
All weights are in pounds based on a metal density of .29 lb/in^3

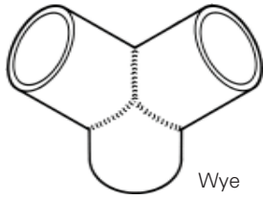
Note: Concentric and eccentric reducers of the same size reduction weigh approximately the same. Exact concentric weights are shown.

*See page 44 for wall thickness and weights of small schedule fittings.

Weights

Stainless Steel Laterals and Wyes


Lateral


Wye

Laterals

	Wall Thickness:	Listed in Inches with Corresponding Manufacturer's Standard Guage												
Outside Diameter	16 .060	14 .075	12 .105	11 .120	10 .134	.165	.187	.218	.250	.312	.375	.500	.625	.750
4	5.0	6.3	8.7	9.9	11.1	13.5	15.2	17.6	20.0					
4 1/2	5.6	7.0	9.7	11.0	12.2	15.0	16.9	19.5	22.2					
5	7.0	8.8	12.2	13.9	15.5	18.9	21.4	24.7	28.2	34.7				
5 9/16	7.8	9.6	13.3	15.2	16.9	20.7	23.4	27.1	30.9	38.2				
6	8.8	11.0	15.3	17.4	19.4	23.8	27.0	31.2	35.5	43.9				
6 5/8	9.5	11.9	16.6	18.9	21.1	25.8	29.2	33.8	38.6	47.8				
8	14.0	17.5	24.4	27.9	31.1	38.1	43.2	50.0	57.1	70.8	84.2			
8 5/8	14.9	18.6	25.9	29.6	32.9	40.4	45.9	53.1	60.6	75.2	89.6			
10	20.1	25.1	35.1	40.0	44.6	54.8	62.2	72.0	82.0	102	122			
10 3/4	21.3	26.5	37.0	42.3	47.2	57.9	65.8	76.1	87.0	108	129			
12	28.6	35.7	49.8	56.8	63.4	77.9	88.5	102	117	146	174			
12 3/4	29.9	37.3	52.1	59.5	66.4	81.5	92.7	107	123	153	182			
14		45.2	63.1	72.0	80.4	98.7	112	130	149	185	221			
16		56.8	79.3	90.6	101	124	141	164	187	233	279	368		
18		67.2	93.9	107	120	147	167	194	222	276	331	438	543	
20			114	131	146	179	203	236	270	337	403	534	663	791
24			157	179	200	245	279	324	371	462	553	734	912	1088
30			232	265	296	364	414	480	550	686	821	1090	1357	1622

Wyes

	Wall Thickness:	Listed in Inches with Corresponding Manufacturer's Standard Guage												
Outside Diameter	16 .060	14 .075	12 .105	11 .120	10 .134	.165	.187	.218	.250	.312	.375	.500	.625	.750
4	2.9	3.7	5.1	5.8	6.5	7.9	8.9	10.3	11.7					
4 1/2	3.2	4.0	5.6	6.4	7.1	8.7	9.8	11.4	13.0					
5	4.2	5.2	7.3	8.3	9.3	11.3	12.8	14.8	16.9	20.8				
5 9/16	4.6	5.7	8.0	9.1	10.1	12.4	14.0	16.2	18.5	22.8				
6	5.2	6.5	9.0	10.3	11.5	14.0	15.9	18.4	21.0	25.9				
6 5/8	5.6	7.0	9.8	11.1	12.4	15.2	17.2	19.9	22.7	28.1				
8	7.7	9.7	13.5	15.4	17.1	21.0	23.8	27.6	31.5	39.0	46.5			
8 5/8	8.2	10.2	14.2	16.3	18.1	22.2	25.1	29.2	33.3	41.3	49.3			
10	11.5	14.4	20.0	22.9	25.5	31.3	35.4	41.1	47.0	58.3	69.6			
10 3/4	12.1	15.1	21.1	24.1	26.9	33.0	37.3	43.4	49.6	61.5	73.5			
12	14.7	18.3	25.6	29.2	32.6	40.1	45.3	52.7	60.3	74.8	89.4			
12 3/4	15.3	19.1	26.7	30.5	34.0	41.8	47.3	55.0	62.9	78.1	93.4			
14		24.6	34.4	39.2	43.8	53.8	60.8	70.8	81.0	101	120			
16		29.6	41.3	47.2	52.7	64.7	73.2	85.2	97.5	121	145	192		
18		36.2	50.5	57.7	64.4	79.2	89.6	104	119	148	178	235	292	
20			61.6	70.3	78.5	96.5	109	127	146	181	217	287	357	426
24			89.2	102	114	140	158	184	211	263	315	418	520	620
30			122	139	155	191	216	252	288	359	431	572	712	850

All weights are in pounds based on a metal density of .29 lb/in^3

Specifications

Pipe and Tubing

"As Welded" Grade
Alaskan "as welded" pipe and tubing is straight- seam welded using ASME qualified automatic gas tungsten-arc procedures and can be supplied in a wide range of diameters and wall thicknesses from any of the weldable corrosion resistant alloys. Normally funnished with square cut ends, pipe with beveled, belled, or roll-grooved ends can be provided. Spot radiography or 100% radiography of welded seams can also be performed. Alaskan pickles and passivates its pipe and tubing to maintain corrosion resistance and to prevent surface discoloration from free iron oxidation.
"As welded" pipe and tubing is commonly used in pulp and paper mills, food processing plants, and other industries where corrosion resistance is essential.

ASTM A 778
This specification covers welded unannealed stainless steel pipe intended for low to moderate temperatures and corrosive service where heat treatment is not required for corrosion resistance. A 778 is considered to be the most applicable ASTM specification for "as welded" pipe and differs from it only in that a transverse guided-bend test and a transverse tension test are required per lot.

ASTM A 213 (ASME SA -213 is identical)
This specification coversminimum wall thickness seamless austenitic stainless steel tubing intended for high temperature usage such as boiler, superheater and heat exchanger tubes. Production is generally limited to tubing $^{1}/_{8}$" inside diameter to 5" outside diameter and .015" to .500" inclusive in wall thickness. All material is to be furnished in the heat treated condition. Alaskan stocks "average wall" austenitic A 213 tubing.

ASTM A 249 (ASME SA-249 is generally identical)
This specification covers welded austenitic stainless steel tubing intended for high temperature usage such as a boiler, superheater, heat exchanger, or condenser tubes. Production is generally limited to tubing $^{1}/_{8}$" inside diameter through 5" outside diameter and .015" to .320" inclusive in wall thickness. All material is to be furnished in the heat-treated condition.
The principle manufacturing procedures specified under A 249 are:
1. Automatic welding process with no addition of filler metal.
2. Hydrostatic or non-destructive electric test of each tube.
3. Tension, flattening, flange, reverse-bend and hardness test required each lot.

ASTM A 269
This specification covers seamless and welded austenitic stainless steel tubing intended for low or high temperature and general corrosive service. Production is generally limited to tubing $^{1}/_{4}$" inside diameter and larger and .020" in nominal wall thickness and heaver. All material is to be furnished in the heat treated condition. Mechanical requirements are the same as listed under A 249. Alaskan stocks A 269 tubing to 4" OD, with up to 8" OD available.

ASTM A 312 (ASME SA-312 is generally identical)
This specification covers seamless and straight-seam welded stainless steel pipe intended for high temperature and general corrosive service. The A 312 manufacturing process is suited to high-volume production and is therefore generally limited to diameters and schedule wall thicknesses shown in ANSI B36.10 and ANSI B36.19 (See page 4, 40). Alaskan stocks A 312 pipe with immediate delivary available from a complete inventory of both common and special alloys.
The principal manufacturing procedures specified under A 312 are:
1. Welding without the addition of
filler metal.
2. Annealing after welding.
3. Tension and flattening tests per lot.
4. Hydrostatic or electric testing of each length up to 8" size.

Specifications

Pipe and Tubing (continued)

ASTM A 358 (ASME SA-358 is generally identical with some additional requirements)
This specification covers stainless steel pipe intended for high temperature and general corrosive service. Production is generally limited to diameters and schedule wall thicknesses of 8" and larger as shown in ANSI B36.10 and ANSI B36.19 (See page 4, 40). Pipe is normally welded with filler metal (except the root pass on Class 4) and can be specified as: (a) single or double welded; (b) 100%, spot, or no radiography; (c) heat treated after welding, made from annealed plate and not heat treated after welding, or made from unannealed plate and not heat treated after welding.
The principle manufacturing procedures specified under A 358 are:
1. Hydrostatic testing of each length (unless waived).
2. Transverse guided-bend tests and transverse tension tests per lot.

ASTM A 376 (ASME SA-376 is generally identical) This specification covers seamless austenitic stainless steel pipe intended for high temperature service. Among the grades covered are five H grades and two nitrogen grades that are specifically intended for high temperature service. All material is furnished in the heat treated condition unless waived and specifically marked "HT-O". Hydrostatic tests are required for each length of pipe. Tension and flattening tests are required per lot.

ASTM A 409 (ASME SA-409 is generally identical with some additional requirements)
This specification covers Schedule 5s and 10s straight-seam or spiral-seam welded stainless steel pipe intended for high temperature and general corrosive service. Production is normally limited to sizes of 14" through 30", however, special diameters, lengths and alloys can be specified. Pipe manufactured to A 409 may be heated after welding, made from annealed plate and not heat treated after welding, or made from unannealed plate and not heat treated after welding. The principal manufacturing procedures specified under A 409
are:
1. Either hydrostatic, air or gas pressure testing per lot.
2. Transverse guided-bend test and transverse tension test each length.

MIL-P-24691
Formerly MIL-P-1144 this specification covers seamless and welded austenitic stainless steel pipe intended for elevated temperature and general corrosive service, including cryogenic applications. This specification is approved for use by the Naval Sea Systems Command and is available for use by all Departments and Agencies of the Department of Defense. All pipe is to be furnished in the heat treated condition and subjected to nondestructive electric or hydrostatic pressure test as applicable. Tension, flattening and intergranular corrosion tests are required by lot.

Welding Fittings

"As Welded" Grade
Alaskan "as welded" fittings are welded using ASME qualified welding procedures and can be supplied in a wide range of diameters and wall thicknesses from any of the weldable corrosion resistant alloys. Welding elbows can be provided with smooth flow or mitered construction, tees and crosses can be drawn outlet or nozzle-welded types and reducers can be conical or bell-shaped. Alaskan manufactures "as welded" fittings to ANSI B16.9, ANSI B16.28 or MSS SP-43 dimensions, with weld ends furnished square cut. Fittings with special dimensions or those that require beveled, belled or roll-grooved ends can be provided. Spot radiography or 100% radiography of welded seams can also be performed. Alaskan pickles and passivates its fittings to maintain corrosion resistant and to prevent surface discoloration from free iron oxidation. "As welded" fittings are commonly used with "as welded" pipe and tubing in pulp and paper mills, food processing plants and other industries where corrosion resistance is essential.

ASTM A 774
This specification covers "as welded" stainless steel pipe fittings for low pressure piping intended for low to moderate temperatures and general corrosive service where heat treatment is not required for corrosion resistance. Fittings are normally furnished per MSS-SP-43 dimensions unless otherwise agreed upon between the purchaser and manufacturer. A 774 is generally considered to be the most applicable ASTM specification for "as welded" fittings.

Specifications

Welding Fittings (continued)

ASTM A 403

This specification includes seamless and welded wrought austenitic stainless steel buttwelding fittings and consists of two general Classes, WP and CR. Class WP fittings are manufactured to the dimensional requirements of ANSI B16.9 or ANSI B16.28 and have pressure ratings equal to that prescribed for the specific matching pipe. Class CR fittings are manufactured to the dimensional requirements and pressure ratings of MSS SP-43. Both Classes require carbide solution heat treatment which includes rapid cooling to prevent reprecipitation of carbides. Fitting sub-classes covered by ASTM A 403 include the following specific requirements:

Sub-class	Requirement
WP-S	Seamless construction
WP-W	Welded fittings where fitting construction welds are 100% radiographed or ultrasonically examined and where welds made with the addition of filler metal in any starting material (e.g., welded pipe) are 100% radiographed.
WP-WX	Welded fittings where all welds are 100% radiographed or ultrasonically examined.
CR	Seamless or welded fittings with no nondestructive testing required.

Special fittings with sizes and shapes not included in the above dimensional specifications can be ordered per A 403, provided they are marked "S9" and meet all other requirements of the sub-class specified.

ASME SA-403

This specification includes seamless and welded wrought austenitic stainless steel buttwelding fittings intended for use as commercial components that comply with Sections I, IV and VIII and nuclear power plant components that comply with Section III of the ASME Boiler and Pressure Vessel Code. With the exception of changes in tensile properties of 304L, 316L and 316N, and the additional requirements for ASME Code documentation, this specification is identical to ASTM A 403. Alaskan produces and stocks SA-403 quality fittings, welded with filler metal and stamped with the "U" symbol (Section VIII) under a Certificate of Authorization from the American Society of Mechanical Engineers.

ASTM B 361

This specification includes seamless and welded aluminum and aluminum alloy buttwelding fittings manufactured to the dimensional requirements of ANSI B16.9 and B16.28 and are generally available in diameters and schedule wall thicknesses shown in ANSI B36.10 and ANSI B36.19 (See page 40).

ASTM B 363

This specification covers seamless and welded unalloyed titanium buttwelding fittings intended for general corrosion resisting and elevated temperature service. Dimensions are in accordance with ANSI B16.9 or MSS SP-43 standards and are generally available in diameters and schedule wall thicknesses shown in ANSI B36.10 and ANSI B36.19 (See page 40). Alaskan manufactures these fittings using ASME qualified welders and welding procedures.

ASTM B 366

This specification includes seamless and welded wrought nickle and nickel alloy buttwelding fittings and consists of two general Classes, WP and CR. Class WP fittings are manufactured to the dimensional requirements of ANSI B16.9 or ANSI B16.28 and have pressure ratings equal to that prescribed for the specified matching pipe. Class SP-43. CR fittings are manufactured to the dimensional requirements and have pressure ratings of MSSHeat treating is optional as agreed upon with the purchaser. Fitting sub-classes covered by ASTM B 366 include the following specific requirements:

Sub-class	Requirement
WP-S	Seamless construction
WP-W	Welded fittings where fitting construction welds are 100% radiographed or ultrasonically examined and where welds made with the addition of filler metal in any starting material (e.g., welded pipe) are 100% radiographically examined.
WP-WX	Welded fittings where all welds are 100% radiographically or ultrasonically examined.
CR	Seamless or welded fittings with no nondestructive testing required.

Chemical Analysis

Stainless Steel Wrought Alloys

Type	UNS Designation	ASTM Mat'l Spec	Carbon % Max	Manganese % Max	Phosphorus % Max	Sulfer % Max	Silicon % Max	Molybdenum %	Chromium %	Nickel %	Other Elements %
304	S30400	A 240	.08	2.0	.045	0.03	1.0		18.0-20.0	8.0-10.5	N .10 max
304L	S30403	A 240	.03	2.0	.045	0.03	1.0		18.0-20.0	8.0-12.0	N .10 max
304H	S30409	A 240	.04-.10	2.0	.045	0.03	1.0		18.0-20.0	8.0-10.5	
309S	S30908	A 240	.08	2.0	.045	0.03	1.0		22.0-24.0	12.0-15.0	
310S	S31008	A 240	.08	2.0	.045	0.03	1.5		24.0-26.0	19.0-22.0	
316	S31600	A 240	.08	2.0	.045	0.03	1.0	2.0-3.0	16.0-18.0	10.0-14.0	N .10 max
316L	S31603	A 240	.03	2.0	.045	0.03	1.0	2.0-3.0	16.0-18.0	10.0-14.0	N .10 max
316H	S31609	A 240	.04-.10	2.0	.045	0.03	1.0	2.0-3.0	16.0-18.0	10.0-14.0	
317	S31700	A 240	.08	2.0	.045	0.03	1.0	3.0-4.0	18.0-20.0	11.0-15.0	N .10 max
317L	S31703	A 240	.03	2.0	.045	0.03	1.0	3.0-4.0	18.0-20.0	11.0-15.0	N .10 max
321	S32100	A 240	.08	2.0	.045	0.03	1.0		17.0-19.0	9.0-12.0	Ti=5 x C to .7
321H	S32109	A 240	.04-.10	2.0	.045	0.03	1.0		17.0-19.0	9.0-12.0	Ti=4 x C to .7
347	S34700	A 240	.08	2.0	.045	0.03	1.0		17.0-19.0	9.0-13.0	Cb+Ta=10 x C to 1.1
347H	S34709	A 240	.04-.10	2.0	.045	0.03	1.0		17.0-19.0	9.0-13.0	Cb+Ta=8 x C to 1.0
*	S31803	A 240	.03	2.0	.030	0.02	1.0	2.5-3.5	21.0-23.0	4.5-6.5	N .08 -.20
**	S32550	A 240	.04	1.5	.040	0.03	1.0	2.0-4.0	24.0-27.0	4.5-6.5	Cu 1.5-2.5 N .10-.25
254 SMO	S31254	A 240	.020	1.0	.030	.010	.80		19.5-20.5	17.5-18.5	Mo 6.0-6.5 Cu 0.5-1.0 N 0.18-0.22
AL-6XN	N08367		.020						19.75-20.75	24.0-26.0	Mo 6.0-6.5 Cu N 0.19-0.21

Stainless Steel Cast Alloys

A.C.I.[1] Type	Wrought Equivalent	Carbon %Max	Manganese %Max	Phosphorus %Max	Sulfer %Max	Silicon %Max	Chromium %	Nickel %	Other Elements %
CF-8	304	.08	1.5	.04	.04	2.0	18.0-21.0	8.0-11.0	Mo .50 max
CF-3	304L	.03	1.5	.04	.04	2.0	17.0-21.0	8.0-12.0	Mo .50 max
CH-20	309	.20	1.5	.04	.04	2.0	22.0-26.0	12.0-15.0	Mo .50 max
CK-20	310	.20	1.5	.04	.04	1.75	23.0-27.0	19.0-22.0	Mo .50 max
CF-8M	316	.08	1.5	.04	.04	1.5	18.0-21.0	9.0-12.0	Mo 2.0-3.0
CF-3M	316L	.03	1.5	.04	.04	1.5	17.0-21.0	9.0-13.0	Mo 2.0-3.0
CG-8M	317	.08	1.5	.04	.04	1.5	18.0-21.0	9.0-13.0	Mo 3.0-4.0
***	317L	.03	1.5	.04	.04	1.5	18.0-21.0	9.0-13.0	Mo 3.0-4.0
CF-8C	347	.08	1.5	.04	.04	2.0	18.0-21.0	9.0-12.0	Cb= 8 x C to 1.0
CN-7M	20CB	.07	1.5	.04	.04	1.5	19.0-22.0	27.5-30.5	Mo 2.0 to 3.0 Cu 3.0 to 4.0

Aluminum Wrought Alloys

Alloy	UNS Designation	ASTM Mat'l Spec	Manganese % Max	Magnesium %	Iron % Max	Zinc % Max	Silicon % Max	Titanium % Max	Copper % Max	Chromium %	Aluminum %
3003	A93003	B 209	1.0-1.5		.7	.10	.6		.05-.20		r
5083	A95083	B 209	.40-1.0	4.0-4.9	.40	.25	.40	.15	.10	.05-.25	r
5086	A95086	B 209	.20-.7	3.5-4.5	.50	.25	.40	.15	.10	.05-.25	r
6061	A96061	B 209	.15	.80-1.2	.7	.25	.40-.8	.15	.15-.40	.04-.35	r

[1] Formerly Alloy Casting Institute, now called Steel Founders Society of America
*Commonly referred to as Al 2205™
** Commonly referred to as Ferralium 255®
*** Not an ACI alloy
r = remainder
Note: Chemistry for wrought alloys is for sheet and plate only. Different material specifications apply to other forms.

Chemical Analysis (continued)

Nickel Base Wrought Alloys

Symbol[1] and Grade	UNS Desig-nation	ASTM Mat'l Spec	Carbon % Max	Manga-nese % Max	Phos-phorus % Max	Copper % Max	Iron % Max	Molyb-denum %	Chro-mium %	Nickel %	Other Elements %Max
N (200)	N02200	B 162	.15	.35		.25	.40			99.0 min	Si .35 S .01
NL (201)	N02201	B 162	.02	.35		.25	.40			99.0 min	Si .35 S .01
NC (400)	NO4400	B 127	.30	2.0		28.0-34.0	2.5			63.0 min	Si .5 S .024
NC1 (600)	N06600	B 168	.15	1.0		.50	6.0-10.0		14.0-17.0	72.0 min	Si .5 S .015
NIC (800)	N08800	B 409	.10	1.5		.75	39.5 min		19.0-23.0	30.0-35.0	Si 1.0 S .015 Tl .15-.60 AL .15-.60
NIC (800 HT)	NO8810	B 409	.05-.10	1.5		.75	39.5		20.75	25.0	C 0.020 Mo 6.5 N 0.20 Mn 0.50 Cw 0.15
330 (RA 330)	N08330	B 536	.10	2.0	.030	1.0	r		17.0-20.0	34.0-37.0	Si .75-1.5 S .03 Pb .005 Sn .025
NICMC (825)	N08825	B 424	.05	1.0		1.5-3.0	22.0 min	2.5-3.5	19.5-23.5	38.0-46.0	Si .5 S .03 Al .2 Ti .6-1.2
20CB (20Cb-3)	N08020	B 463	.07	2.0	.045	3.0-4.0	r	2.0-3.0	19.0-21.0	32.0-38.0	Si 1.0 S .035 Cb+Ta 8 x C to 1.0
HB-2 (Hast B-2)	N10665	B 333	.02	1.0	.040		2.0	26.0-30.0	1.0 max	r	Si .10 S .03 Co 1.0
HC276 (Hast C-276)	N10276	B 575	.02	1.0	.040		4.0-7.0	15.0-17.0	14.5-16.5	r	Si .08 S .03 Co 2.5 V .35 W 3.0-4.5
HC4 (Hast C-4)	N06455	B 575	.015	1.0	.040		3.0	14.0-17.0	14.0-18.0	r	Si .08 S .03 Co 2.0 Ti .70
HG3 (Hast G-3)	N06985	B 582	.015	1.0	.040	1.5-2.5	18.0-21.0	6.0-8.0	21.0-23.5	r	Si 1.0 S .03 Co 5.0 W 1.5 Cb+Ta .50
HN (Hast N)	N10003	B 434	.04-.08	1.0	.015	.35	5.0	15.0-18.0	6.0-8.0	r	Si 1.0 S .02 Co .2 W .5 V .5 B.01 Al+Ti .5
HX (Hast X)	N06002	B 435	.05-.15	1.0	.040		17.0-20.0	8.0-10.0	20.5-23.0	r	Si 1.0 S .03 Co .5-2.5 W .2-1.0
NCMC (625)	N06625	B 443	.10	.50	.015		5.0	8.0-10.0	20.0-23.0	58.0 min	Si .5 S .015 Co 1.0 (if determined) Al .4 Ti .4 Cb+Ta 3.15-4.15
904L	N08904	B 625	.020	2.0	.045	1.0-2.0	r	4.0-5.0	19.0-23.0	23.0-28.0	Si 1.0 S .035

[1]As listed in ASTM B 366, Table 1 (except Alloy 904L)

Titanium Wrought Alloys

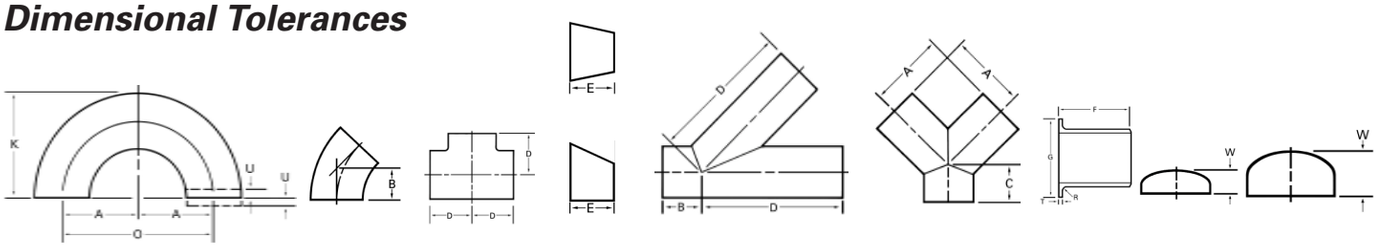
Grade	ASTM Mat'l Spec	Nitrogen %Max	Carbon %Max	Hydrogen %Max	Iron %Max	Oxygen %Max	Titanium %	Residuals (each) %Max	Residuals (total) %Max	Other Elements %
Grade 1	B 265	.03	.10	.015	.20	.18	r	.10	.40	
Grade 2	B 265	.03	.10	.015	.30	.25	r	.10	.40	
Grade 3	B 265	.05	.10	.015	.30	.35	r	.10	.40	
Grade 4	B 265	.05	.10	.015	.50	.40	r	.10	.40	
Grade 5	B 265	.05	.10	.015	.40	.20	r	.10	.40	Al 5.5-6.75 V 3.5-4.5
Grade 6	B 265	.05	.10	.020	.50	.20	r	.10	.40	Al 4.0-6.0 Sn 2.0-3.0
Grade 7	B 265	.03	.10	.015	.30	.25	r	.10	.40	Pd .12-.25
Grade 10	B 265	.05	.10	.020	.35	.18	r	.10	.40	Sn 3.75-5.25 Mo 10.0-13.0 Zr 4.5-7.5
Grade 11	B 265	.03	.10	.015	.20	.18	r	.10	.40	Pd .12-.25
Grade 12	B 265	.03	.08	.015	.30	.25	r	.10	.40	Mo .2-.4 Ni .6-.9

r = remainder

Note: Chemistry for wrought alloys is for sheet and plate only. Different material specifications apply to other forms.

Standard Tolerances

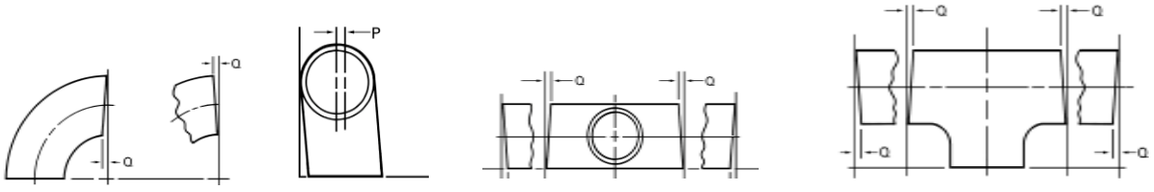
Dimensional Tolerances



	Pipe, Tube and all Fittings			90° & 45° Ells, tees, Lats & Wyes	Reducing & Lap-Joint Stub Ends	Caps & Heads	180° Returns			Lap-Joint Stub Ends		
Nominal Pipe size	Outside Diameter at Bevel(1)	Inside Diameter at End (2)	Wall Thickness (2)	Center-to-End A,B C,D	Overall Length E,F	Overall Height W	Center-to-Center O	Back-to-Face K	Alignment of Ends U	Outside Diameter of Lap G	Lap Thickness T	Fillet Radius of Lap R
1/2 to 2 1/2	+0.06 - 0.03	±0.03	*	±0.06	±0.06	±0.12	±0.25	±0.25	±0.03	+0 - 0.03	+0.06 - 0	+0 - 0.03
3 to 3 1/2	±0.06	±0.06	*	±0.06	±0.06	±0.12	±0.25	±0.25	±0.03	+0 - 0.03	+0.06 - 0	+0 - 0.03
4	±0.06	±0.06	*	±0.06	±0.06	±0.12	±0.25	±0.25	±0.03	+0 - 0.03	+0.06 - 0	+0 - 0.06
5 to 8	+0.09 - 0.06	±0.06	*	±0.06	±0.06	±0.25	±0.25	±0.25	±0.03	+0 - 0.03	+0.06 - 0	+0 - 0.06
10 to 18	+0.16 - 0.12	±0.12	*	±0.09	±0.09	±0.25	±0.38	±0.25	±0.06	+0 - 0.06	+0.06 - 0	+0 - 0.06
20 to 24	+0.25 - 0.19	±0.19	*	±0.09	±0.09	±0.25	±0.38	±0.25	±0.06	+0 - 0.06	+0.06 - 0	+0 - 0.06
26 to 30	+0.25 - 0.19	±0.19	*	±0.12	±0.19	±0.38						
32 to 48	+0.25 - 0.19	±0.19	*	±0.19	±0.19	±0.38						

*Not less than 87.5% of nominal thickness
(1)Out-of-round is the sum of absolute values of plus and minus tolerance.
(2)The inside diameter at ends and the nominal wall thicknesses are to be specified by the purchaser.
Note: For "as welded" pipe and fittings, outside diameter tolerances given are applicable to circumferential measure.

Angularity Tolerances



Nominal Pipe Size	Off Angle (Q)	Off Plane (P)
1/2 to 4	± 0.03	± 0.06
5 to 8	± 0.06	± 0.12
10 to 12	± 0.09	± 0.19
14 to 16	± 0.09	± 0.25
18 to 24	± 0.12	± 0.38
26 to 30	± 0.19	± 0.38
32 to 42	± 0.19	± 0.50
44 to 48	± 0.19	± 0.75

Dimensions are in inches.

Standard Tolerances

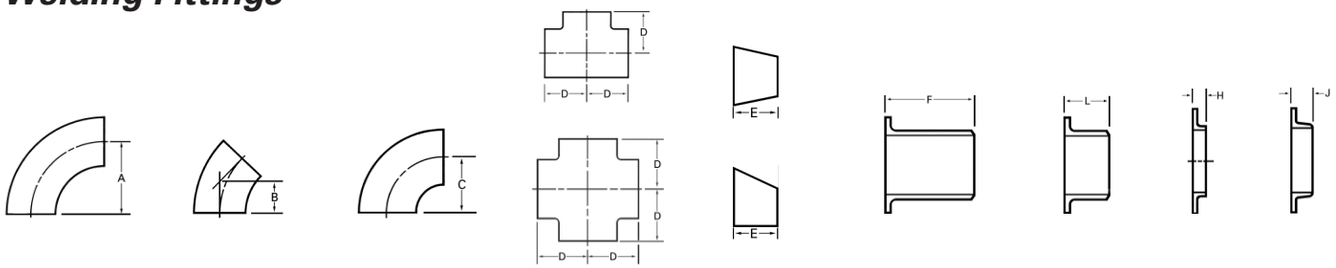
Stainless Steel Bar

Conforms to ASTM A 484

Round Bar/Cold Finished		Round Bar/Hot Rolled and Rough Turned			Square Bar and Hexagons/Cold Finished	
Size	Tolerances	Size	Tolerances Size	Out of Round	Size	Tolerances
Under $^{5}/_{16}$"	+/- 0.001	Over 2" to 2 $^{1}/_{2}$"	+ $^{1}/_{32}$, - 0	0.023	Under $^{5}/_{16}$"	+.000, - 0.002
Over $^{5}/_{16}$" to $^{1}/_{2}$" incl.	+/- 0.0015	Over 2 $^{1}/_{2}$" to 3 $^{1}/_{2}$"	+ $^{3}/_{64}$, - 0	0.035	Over $^{5}/_{16}$" to under $^{1}/_{2}$"	+.000, - 0.003
Over $^{1}/_{2}$" to 1" incl.	+/- 0.002	Over 3 $^{1}/_{2}$" to 4 $^{1}/_{2}$"	+ $^{1}/_{16}$, - 0	0.046	$^{1}/_{2}$" to 1" incl.	+.000, -0.004
Over 1" to under 1 $^{1}/_{2}$"	+/- 0.0025	Over 4 $^{1}/_{2}$" to 5 $^{1}/_{2}$"	+ $^{5}/_{64}$, - 0	0.058	Over 1" to 2" incl.	+.000, -0.006
1 $^{1}/_{2}$" to 4" incl.	+/- 0.003	Over 5 $^{1}/_{2}$" to 6 $^{1}/_{2}$"	+ $^{1}/_{8}$, - 0	0.070	Over 2" to 3" incl.	+.000, -0.008
Over 4" to 4 $^{1}/_{2}$" incl.	+/- 0.005	Over 6 $^{1}/_{2}$" to 8"	+ $^{5}/_{32}$, - 0	0.085	Over 3"	+.000, -0.011
Over 4 $^{1}/_{2}$" to 6" incl.	+/- 0.008					

Dimensional Summary

Welding Fittings



		B16.9	B16.9	*B16.28	B16.9	B16.9	B16.9	SP-43	ACW STD	ACW STD
Nominal Pipe Size	Outside Diameter	LR 90° A	LR 45° B	SR 90° C	Tee or [1] Cross D	Reducer E	ANSI Stub End F	MSS Stub End L	SK-2 SK-2-P Stub End H	SK-38, SK-38-P Stub End J
1/2	.840	1 1/2	5/8		1		3	2		
3/4	1.05	1 1/8**	7/16**		1 1/8	1 1/2	3	2		
1	1.31	1 1/2	7/8	1	1 1/2	2	4	2		
1 1/4	1.66	1 7/8	1	1 1/4	1 7/8	2	4	2		
1 1/2	1.90	2 1/4	1 1/8	1 1/2	2 1/4	2 1/2	4	2	5/8	1 1/4
2	2 3/8	3	1 3/8	2	2 1/2	3	6	2 1/2	5/8	1 1/4
2 1/2	2 7/8	3 3/4	1 3/4	2 1/2	3	3 1/2	6	2 1/2	3/4	1 1/4
3	3 1/2	4 1/2	2	3	3 3/8	3 1/2	6	2 1/2	3/4	1 1/4
4	4 1/2	6	2 1/2	4	4 1/8	4	6	3	3/4	1 1/4
5	5 9/16	7 1/2	3 1/8	5	4 7/8	5	8	3	3/4	1 3/8
6	6 5/8	9	3 3/4	6	5 5/8	5 1/2	8	3 1/2	3/4	1 3/8
8	8 5/8	12	5	8	7	6	8	4	3/4	1 1/2
10	10 3/4	15	6 1/4	10	8 1/2	7	10	5	7/8	1 5/8
12	12 3/4	18	7 1/2	12	10	8	10	6	7/8	1 5/8
14	14	21	8 3/4	14	11	13	12	6	7/8	1 3/4
16	16	24	10	16	12	14	12	6	7/8	1 3/4
18	18	27	11 1/4	18	13 1/2	15	12	6	7/8	2
20	20	30	12 1/2	20	15	20	12	6	7/8	2
22	22	33	13 1/2	22	16 1/2	20	12			
24	24	36	15	24	17	20	12	6	7/8	2
26	26	39	16	26	19 1/2	24				
28	28	42	17 1/4	28	20 1/2	24				
30	30	45	18 1/2	30	22	24				
32	32	48	19 3/4	32	23 1/2	24				
34	34	51	21	34	25	24				
36	36	54	22 1/4	36	26 1/2	24				
38	38	57	23 5/8	38	28	24				
40	40	60	24 7/8	40	29 1/2	24				
42	42	63	26 1/8	42	***	24				
44	44	66	27 3/8	44		24				
46	46	69	28 5/8	46		28				
48	48	72	29 7/8	48		28				

* 26" through 48" sizes are per Alaskan Standard
** Recommended not requried
*** See page 9 for dimensions
Note: Dimensions for welding fittings with OD or ID tubing size diameters are identical to the fitting dimensions above for the corresponding NPS sizes.
Dimensions are in inches.
[1] See page 10 and 11 for reducing sizes.

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Alaskan's facilities for radiography, liquid penetrant examination, ultrasonic gaging, hydrotesting and dimensional checking further confirm the quality that the program creates. Our program of proven procedures also enables the certification of parts and pressure vessels with the symbols of UM, U and U2 in accordance with Section VIII of the ASME Boiler and Pressure Vessel Code. Your purchase of **Alaskan** quality-crafted products will enable us to share with you our experience, knowledge and dependability.

Hydrotesting verifies pressure capabilities of pipe and tubing.

Liquid penetrant examination locates hidden surface defects.

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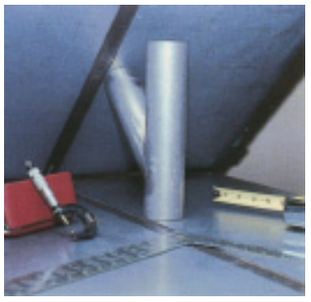

Geometric accuracy is checked on all fittings.

Radiographic examination checks the integrity of welds.

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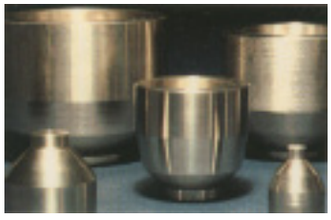

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