



PIPE FITTINGS



ABOUT US

We manufacture Tubineu brand steel pipe fittings to international standards and specifications, using the highest quality raw materials, well maintained machinery and equipment, and highly qualified personnel,.

Production is planned to achieve the highest quality products and each process is closely monitored at every stage of the manufacturing process.

Quality is ensured by non-destructive and destructive testing, starting with raw materials, testing after each process, and ending with the final product, the final product will be inspected and certified by the QA/QC of our company before shipping to the customers.

The goal is to complete all activities in the shortest possible time in order to deliver the goods on time.

PRODUCT

Seamless and Welded Buttweld Fittings

Sizes: 1/2" to 48"

Materials: Stainless, Carbon, Alloy, Duplex, Ni-alloys

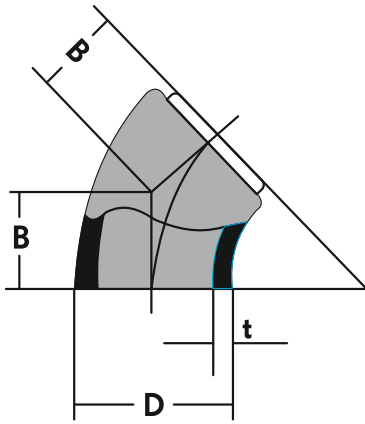
Standards: All international standards

Technical details such as, dimensions, weights and materials specification provided in this catalogue.

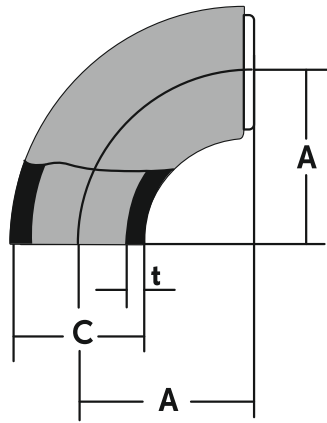
APPLICATION

Our pipe fittings are used by the following industries:

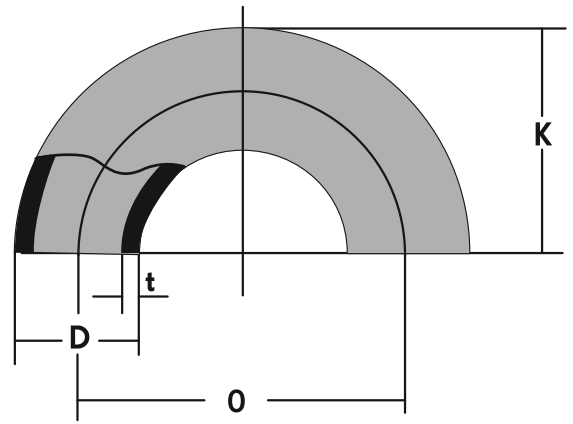
Oil and gas, Power plants, Chemical industry, Petrochemical industry, Pharmaceutical industry, Food and milk, Water treatment, Pulp and paper, Shipping industry, Steel industry, General Engineering.



45°



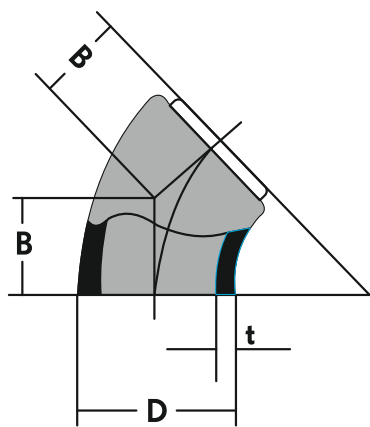
90°



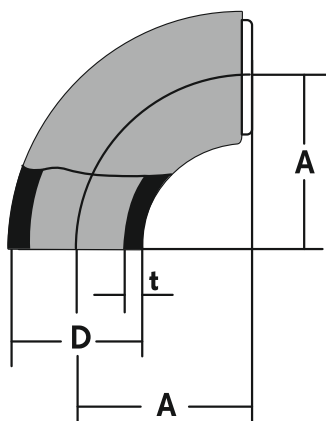
180°

Nominal Pipe Size inch	Dimensions		
	Outside Diameter at Level: D		Center End: A/B Center to Center: O Back to Face: K
	Inch	mm	
1/2	0.840	21.3	A=38.1 B=15.7 O=76.2 K=47.8
3/4	1.050	26.7	A=38.1 B=15.7 O=76.2 K=50.8
1	1.315	33.4	A=38.1 B=15.7 O=76.2 K=45.6
1 1/4	1.660	42.2	A=47.8 B=25.4 O=95.3 K=69.9
1 1/2	1.900	48.3	A=57.2 B=28.4 O=114.3 K=82.6
2	2.375	60.3	A=76.2 B=35.1 O=152.4 K=106.4
2 1/2	2.875	73.0	A=95.3 B=44.5 O=190.5 K=131.8
3	3.500	88.9	A=114.3 B=50.8 O=228.6 K=158.8

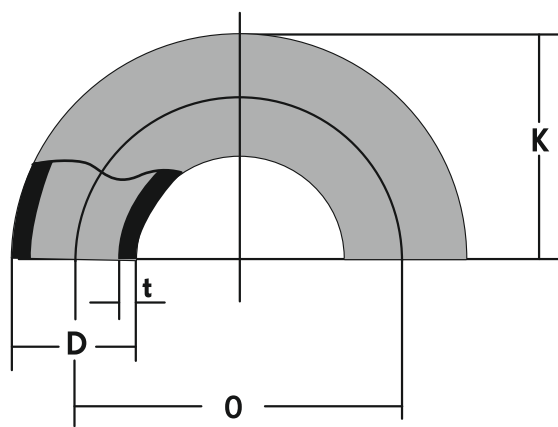
Sch. No.	Wall Thickness: t		Approx Weight		
	t		45° Kg	90° Kg	180° Kg
	Inch	mm			
Std/40 XS/80	0.109	2.77	0.04	0.08	0.16
	0.147	3.73	0.05	0.10	0.20
Std/40 XS/80	0.113	2.87	0.04	0.08	0.16
	0.154	3.91	0.07	0.14	0.28
Std/40 XS/80 160	0.133	3.38	0.08	0.15	0.30
	0.179	4.55	0.10	0.19	0.38
	0.250	6.35	0.13	0.25	0.50
Std/40 XS/80 160	0.140	3.54	0.13	0.25	0.50
	0.191	4.85	0.17	0.33	0.66
	0.250	6.35	0.21	0.42	0.84
Std/40 XS/80 160 XXS	0.145	3.68	0.18	0.36	0.72
	0.200	5.08	0.25	0.49	0.98
	0.281	7.14	0.33	0.65	1.30
	0.400	10.15	0.43	0.86	1.72
Std/40 XS/80 160 XXS	0.154	3.91	0.33	0.65	1.30
	0.218	5.54	0.45	0.90	1.80
	0.344	8.74	0.67	1.33	2.66
	0.436	11.07	0.81	1.61	3.22
Std/40 XS/80 160 XXS	0.203	5.16	0.65	1.29	2.58
	0.276	7.01	0.86	1.71	3.42
	0.375	9.53	1.12	2.23	4.46
	0.552	14.02	1.53	3.05	6.10
Std/40 XS/80 160 XXS	0.216	5.49	1.02	2.03	4.06
	0.300	7.62	1.37	2.74	5.48
	0.438	11.13	1.92	3.83	7.66
	0.600	15.24	2.49	4.97	9.94



45°



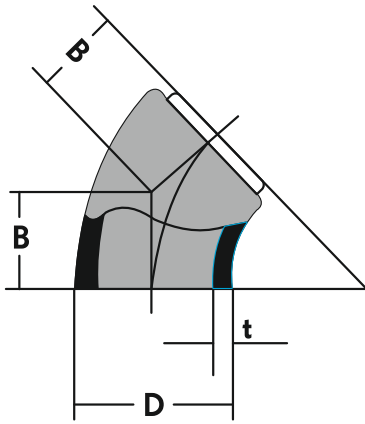
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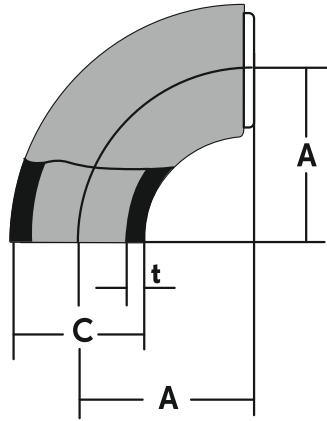
180°

Nominal Pipe Size inch	Dimensions		
	Outside Diameter at Bevel: D		Center End: A/B Center to Center: O Back to Face: K
	Inch	mm	mm
4	4.500	114.3	A=152.4 B=6.5 O=304.8 K=209.6
5	5.563	141.3	A=190.5 B=79.2 O=381.0 K=261.9
6	6.626	168.3	A=228.6 B=95.3 O=457.2 K=312.7
8	8.625	219.1	A=304.8 B=127.0 O=609.6 K=414.3
10	10.750	273.0	A=381.0 B=158.8 O=762.0 K=517.7

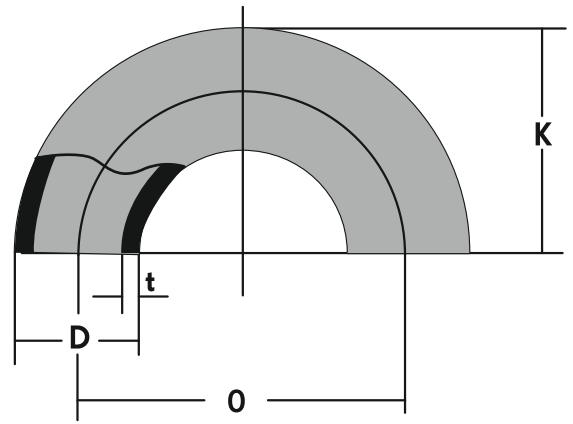
Sch. No.	Wall Thickness: t		Approx Weight		
	t		45° Kg	90° Kg	180° Kg
	Inch	mm			
Std/4	0.237	6.02	1.93	3.85	7.70
XS/80	0.337	8.56	2.67	5.34	10.7
120	0.438	11.13	3.39	6.78	13.6
160	0.531	13.49	4.02	8.03	16.1
XXS	0.674	12.12	4.91	9.82	19.6
Std/4	0.258	6.55	3.26	6.51	13.0
XS/80	0.375	9.53	4.26	9.21	18.5
120	0.500	12.70	6.05	12.1	24.2
160	0.625	15.88	7.35	14.7	29.4
XXS	0.750	19.05	8.60	17.2	34.4
Std/4	0.280	7.11	5.05	10.1	20.2
XS/80	0.432	10.97	7.65	15.3	30.6
120	0.562	14.27	9.75	19.5	39.0
160	0.719	18.26	12.1	24.2	48.4
XXS	0.864	21.95	14.2	28.4	56.4
20	0.250	6.35	7.95	15.9	31.8
30	0.277	7.04	8.80	17.6	35.2
Std/40	0.322	8.18	10.2	20.4	40.8
60	0.406	10.31	12.7	25.4	50.8
XS/80	0.500	12.70	15.5	30.9	61.8
100	0.594	15.09	18.2	36.3	72.6
120	0.719	18.26	21.7	43.3	86.6
140	0.812	20.62	24.2	48.3	96.6
160	0.906	23.01	26.7	53.3	107
XXS	0.875	22.23	25.9	51.7	103
20	0.250	6.35	12.5	25.0	50.0
30	0.307	7.80	15.3	30.5	61.0
Std/40	0.365	9.72	18.1	36.1	72.2
XS/60	0.500	12.70	24.4	48.8	97.6
80	0.594	15.09	28.7	57.3	115
100	0.719	18.26	34.3	68.6	137
120	0.844	21.44	39.8	79.5	169
140/XXS	1.000	25.40	46.4	92.8	186
160	1.125	28.58	51.5	103	206



45°



90°

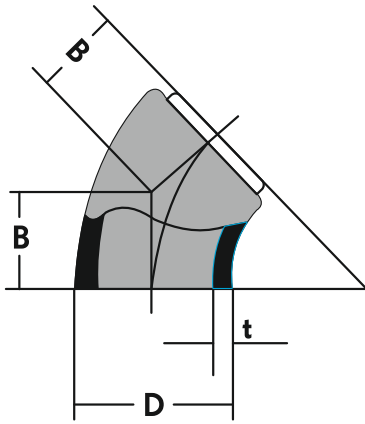


180°

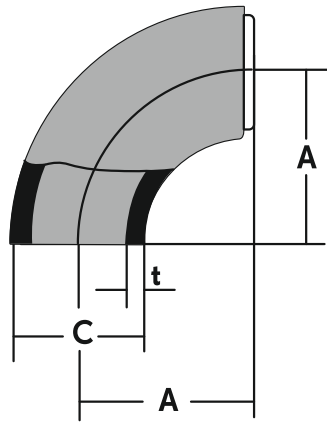
Nominal Pipe Size inch	Dimensions		
	Outside Diameter at Bevel: D		Center End: A/B Center to Center: O Back to Face: K
	Inch	mm	mm
12	12.750	323.9	A=457.2 B=190.5 O=914.4 K=619.3
14	14.000	355.6	A=533.4 B=222.3 O=1066.8 K=711.2
16	16.000	406.4	A=304.8 B=254.0 O=1219.2 K=812.8
18	18.000	457.0	A=685.8 B=285.8 O=1371.6 K=914.4

Sch. No.	Wall Thickness: t		Approx Weight		
	t		45° Kg	90° Kg	180° Kg
	Inch	mm			
20	0.250	6.35	17.9	35.7	71.4
30	0.330	8.38	23.4	45.8	93.6
Std	0.375	9.53	26.6	53.1	106
40	0.406	10.31	28.7	57.8	115
XS	0.500	12.70	35.0	70.0	140
60	0.562	14.27	39.1	78.2	156
80	0.688	17.48	47.4	94.7	189
100	0.844	21.44	57.5	115	230
120XXS	1.000	25.40	67.0	134	268
140	1.125	28.58	74.5	149	298
160	1.312	33.32	85.5	171	342
20	0.250	6.35	22.9	45.5	91.6
10	0.312	7.92	28.5	56.9	114
Std/30	0.375	9.53	34.1	68.1	136
40	0.438	11.13	39.6	79.2	158
XS	0.500	12.70	45.0	90.0	180
60	0.594	15.09	53.0	106	212
80	0.750	19.05	66.0	132	264
100	0.938	23.83	81.5	163	326
120	1.094	27.79	94.0	188	376
140	1.250	31.75	106	212	424
160	1.406	35.71	118	236	472
10	0.250	6.35	30.0	60.0	120
20	0.312	7.92	37.3	74.5	149
Std/30	0.375	9.53	44.7	89.3	179
XS/40	0.500	12.70	59.0	118	236
60	0.656	16.66	76.5	153	306
80	0.844	21.44	97.5	195	390
100	1.031	26.19	118	235	470
120	1.219	30.96	137	274	548
140	1.438	36.53	160	319	638
160	1.594	40.49	175	350	700
10	0.250	6.35	38.1	76.1	152
20	0.312	7.92	47.3	94.5	169
30	0.438	11.13	66.0	132	264
Std	0.375	9.53	56.5	113	226
XS	0.500	12.70	75.0	150	300
40	0.562	14.27	84.0	168	336
60	0.750	19.05	111	222	444
80	0.938	23.83	137	274	548
100	1.156	29.36	167	334	668
120	1.375	34.93	196	392	784
140	1.562	39.67	220	440	880
160	1.781	45.24	246	492	984

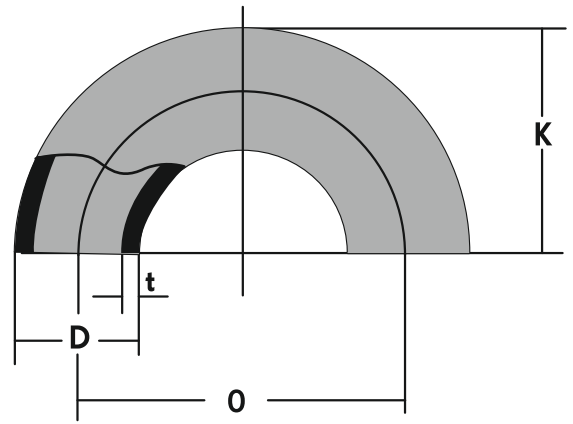
Elbows Long Radius ASME/ANSI B16.9



45°



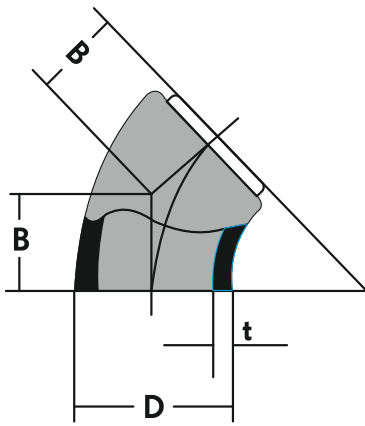
90°



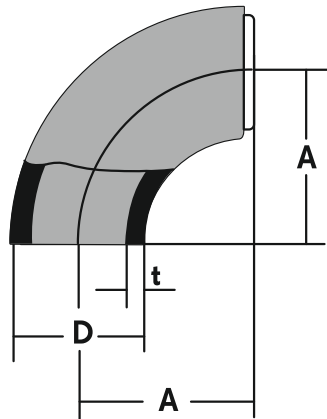
180°

Nominal Pipe Size inch	Dimensions		
	Outside Diameter at Bevel: D		Center End: A/B Center to Center: O Back to Face: K
	Inch	mm	mm
20	20.000	508.0	A=762.0 B=317.5 O=1524.0 K=1016.0
22	22.000	559.0	A=838.2 B=342.9 O=1676.4 K=1117.6
24	24.000	610.0	A=914.4 B=381.0 O=1828.8 K=1219.2
26	26.000	660.0	A=990.6 B=406.4

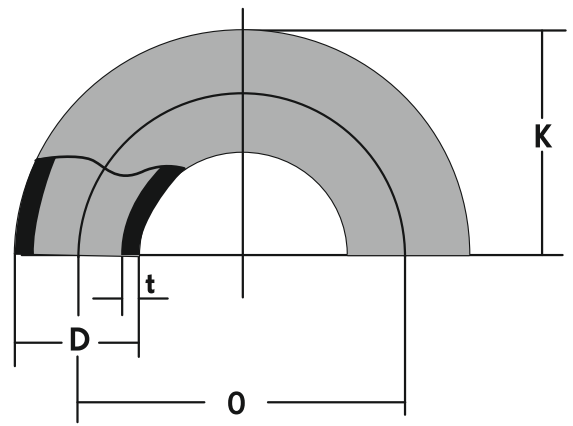
Sch. No.	Wall Thickness: t		Approx Weight		
	t		45° Kg	90° Kg	180° Kg
	Inch	mm			
10	0.250	6.35	47.0	94.0	188
Std/20	0.375	9.63	70.0	140	280
XS/30	0.500	12.70	93.0	186	372
40	0.594	15.09	110	219	438
60	0.812	20.62	149	297	594
80	1.031	26.19	185	372	744
100	1.281	32.54	229	457	914
120	1.500	38.10	264	528	1056
140	1.750	44.45	305	609	1218
160	1.969	50.01	338	676	1352
10	0.250	6.35	57.0	114	228
Srd/20	0.375	9.53	85.0	170	340
XS/30	0.500	12.70	113	225	450
60	0.875	22.23	194	387	774
80	1.125	28.58	248	492	984
100	1.375	34.93	297	594	1188
120	1.625	41.28	347	694	1388
140	1.875	47.63	395	790	1580
160	2.125	53.98	443	885	1770
10	0.250	6.35	68	136	272
Srd/20	0.375	9.53	101	202	404
XS	0.500	12.70	135	269	538
30	0.562	14.27	151	301	602
40	0.688	17.48	183	366	732
60	0.969	24.61	255	510	1020
80	1.219	30.96	317	634	1268
100	1.531	38.89	393	786	1572
120	1.812	46.03	460	919	1838
140	2.062	52.37	515	1033	2060
160	2.344	59.34	580	1160	2320
10	0.312	7.92	99	198	
Std	0.375	9.53	119	238	
XS/20	0.500	12.70	158	316	



45°



90°

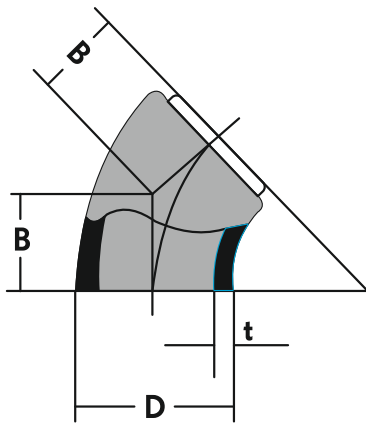


180°

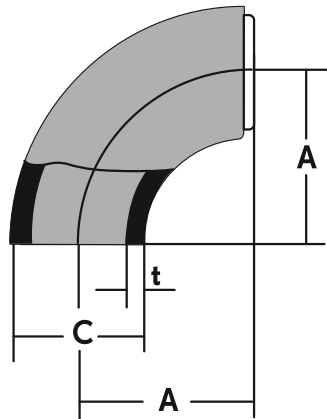
Nominal Pipe Size inch	Dimensions		
	Outside Diameter at Bevel: D		Center End: A/B Center to Center: O Back to Face: K
	Inch	mm	mm
28	28.000	711.0	A=1066.8 B=469.9
30	30.000	762.0	A= 1143.0 B=469.9
32	32.000	813.0	A= 1219.2 B=501.7
34	34.00	864.0	A= 1295.4 B=533.4
36	36.000	914.0	A= 1371.6 B=565.2
38	38.000	965.0	A= 1448.0 B=600.0
40	40.000	1016.0	A= 1524.0 B=632.0

Sch. No.	Wall Thickness: t		Approx Weight		
	t		45° Kg	90° Kg	180° Kg
	Inch	mm			
10	0.312	7.92	115	230	
Std	0.375	9.53	138	276	
XS/20	0.500	12.70	184	367	
30	0.625	15.88	228	456	
10	0.312	7.92	132	264	
Std	0.375	9.53	159	318	
XS/20	0.500	12.70	211	421	
30	0.625	15.88	262	524	
10	0.312	7.92	151	301	
Std	0.375	9.53	181	362	
XS/20	0.500	12.70	240	480	
30	0.625	15.88	299	597	
40	0.688	17.48	328	656	
10	0.312	7.92	170	340	
Std	0.375	9.53	204	408	
XS/20	0.500	12.70	271	542	
30	0.625	15.88	338	675	
40	0.688	17.48	371	742	
10	0.312	7.92	191	381	
Std	0.375	9.53	229	458	
XS/20	0.500	12.70	304	608	
30	0.625	15.88	379	758	
40	0.750	19.05	453	906	
Std	0.375	9.53	257	514	1028
XS	0.500	12.7	341.5	683	1366
Std	0.375	9.53	285	570	1140
XS	0.500	12.7	378.5	757	1514

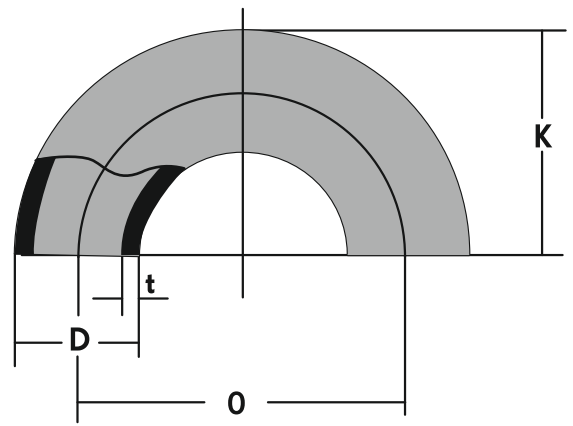
Elbows Long Radius ASME/ANSI B16.9



45°



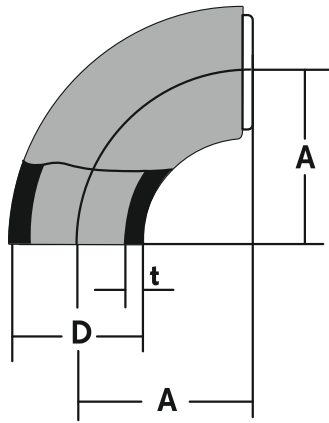
90°



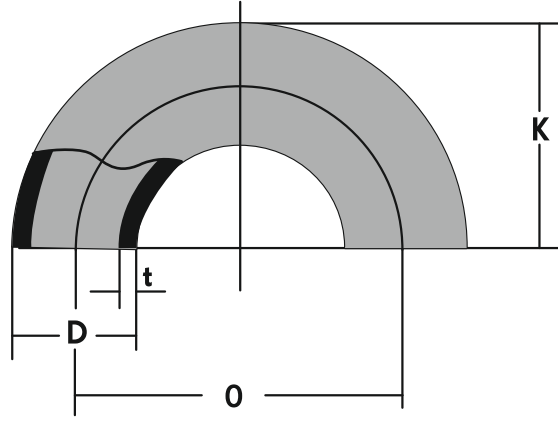
180°

Nominal Pipe Size inch	Dimensions		
	Outside Diameter at Bevel: D		Center End: A/B Center to Center: O Back to Face: K
	Inch	mm	mm
42	42.000	1067.0	A=1600.0 B=695.0
44	44.000	1118.0	A=1667.0 B=695.0
46	46.000	1168.0	A=1753.0 B=727.0
48	48.000	1219.0	A=1829.0 B=759.0

Sch. No.	Wall Thickness: t		Approx Weight		
	t		45° Kg	90° Kg	180° Kg
	Inch	mm			
Std XS	0.375	9.53	314.5	625	1258
	0.500	12.7	418	836	1672
Std XS	0.375	9.53	345.5	691	1382
	0.500	12.7	459	918	1836
Std XS	0.375	9.53	375.5	753	1506
	0.500	12.7	501.5	1003	2006
Std XS	0.375	9.53	411	822	1644
	0.500	12.7	546	1092	2184



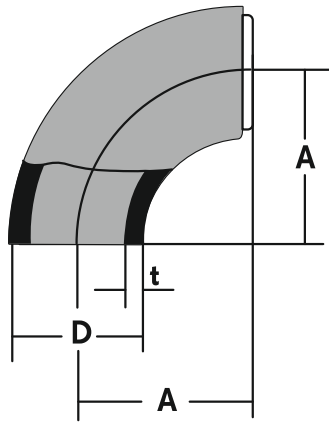
90°



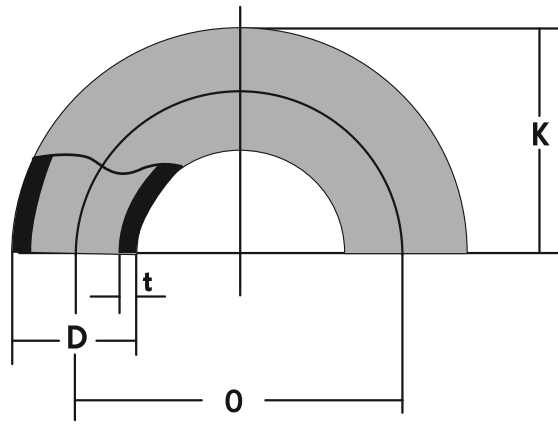
180°

Nominal Pipe Size inch	Dimensions		
	Outside Diameter at Bevel: D		Center End: A/B Center to Center: O Back to Face: K
	Inch	mm	mm
1	1.315	33.4	A=25.4 O=50.8 K=41.1
1 1/4	1.660	42.2	A=31.8 O=101.6 K=120.7
1 1/2	1.900	48.3	A=38.1 O=76.2 K=62.0
2	2.375	60.3	A=50.8 O=101.6 K=81.0
2 1/2	2.875	73.0	A=63.5 O=127.0 K=100.1
3	3.500	88.9	A=76.2 O=152.4 K=120.7
4	4.500	114.3	A=101.6 O=203.2 K=158.8
5	5.563	141.3	A=127.0 O=254.0 K=196.9

Sch. No.	Wall Thickness: t		Approx Weight	
	t		90° Kg	180° Kg
	Inch	mm		
Std/40 XS/80 160 XXS	0.133	3.38	0.10	0.20
	0.179	4.55	0.13	0.26
	0.250	6.35	0.17	0.34
	0.358	9.09	0.22	0.44
Std/40 XS/80 160 XXS	0.140	3.56	0.17	0.34
	0.191	4.85	0.22	0.44
	0.250	6.35	0.28	0.56
	0.382	9.70	0.39	0.78
Std/40 XS/80 160 XXS	0.145	3.68	0.24	0.48
	0.200	5.08	0.32	0.64
	0.281	7.14	0.43	0.86
	0.400	10.15	0.57	1.14
Std/40 XS/80 160 XXS	0.154	3.91	0.45	0.86
	0.248	5.54	0.60	1.20
	0.344	8.74	0.89	1.78
	0.436	11.07	1.07	2.14
Std/40 XS/80 160 XXS	0.203	5.16	0.86	1.72
	0.276	7.01	1.14	2.28
	0.375	9.53	1.49	2.98
	0.552	14.02	2.03	4.06
Std/40 XS/80 160 XXS	0.216	5.49	1.35	2.70
	0.300	7.62	1.83	3.66
	0.438	11.13	2.56	5.12
	0.600	15.24	3.31	6.62
Std/40 XS/80 120 160 XXS	0.237	6.02	2.57	5.14
	0.337	8.56	3.56	7.12
	0.438	11.13	4.52	9.04
	0.531	13.49	5.35	10.70
XXS	0.674	17.12	6.54	13.08
Std/40 XS/80 120 160 XXS	0.258	6.55	4.34	8.68
	0.375	9.53	6.18	12.40
	0.500	12.70	8.04	16.10
	0.625	15.88	9.80	19.60
	0.750	19.05	11.45	22.90



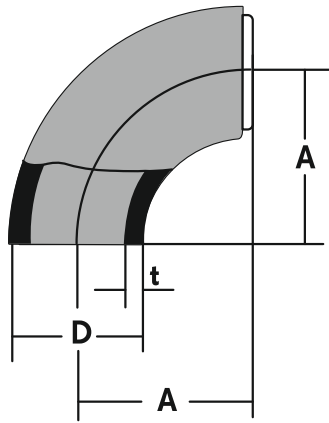
90°



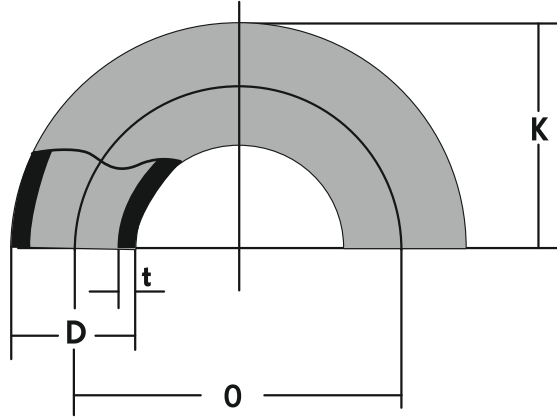
180°

Nominal Pipe Size inch	Dimensions		
	Outside Diameter at Bevel: D		Center End: A/B Center to Center: O Back to Face: K
	Inch	mm	mm
6	6.625	168.03	A=152.4 O=304.8 K=236.5
8	8.625	219.1	A=203.2 O=406.4 K=312.7
10	10.750	273.0	A=254.0 O=508.0 K=390.7
12	12.750	323.9	A=304.8 O=609.6 K=466.9

Sch. No.	Wall Thickness: t		Approx Weight	
	t		90° Kg	180° Kg
	Inch	mm		
Std/40	0.280	7.11	6.77	13.5
XS/80	0.432	10.97	10.2	20.4
120	0.562	14.27	13.0	26.0
160	0.719	18.26	16.2	32.4
XXS	0.864	21.95	19.0	38.0
20	0.250	6.35	10.6	21.2
30	0.277	7.04	11.8	23.6
Std/40	0.322	8.18	13.6	27.2
60	0.406	10.31	16.9	33.8
XS/80	0.500	12.70	20.9	41.8
100	0.594	15.09	24.2	48.4
120	0.719	18.26	28.8	57.6
140	0.812	20.62	32.2	64.4
160	0.906	23.01	35.5	71.0
XXS	0.875	22.23	34.4	68.8
20	0.250	6.35	16.7	33.4
30	0.307	7.80	20.4	40.8
Std/40	0.365	9.27	24.1	48.2
XS/60	0.500	12.70	32.5	65.0
180	0.594	15.09	38.2	76.4
100	0.719	18.26	45.7	91.4
120	0.844	21.44	53.0	106.0
140/XXS	1.000	25.40	61.9	124.0
160	1.125	28.58	68.7	137.0
20	0.250	6.35	23.8	47.6
30	0.330	8.38	31.2	62.4
Std	0.375	9.53	35.4	70.8
40	0.406	10.31	38.2	76.4
60	0.562	14.27	52.2	104.0
XS	0.500	12.70	46.7	93.4
80	0.688	17.48	63.1	126.0
100	0.844	21.44	76.5	153.0
120/XXS	1.000	25.40	89.5	179.0
140	1.125	28.58	99.6	199.0
160	1.312	33.32	114.0	228.0



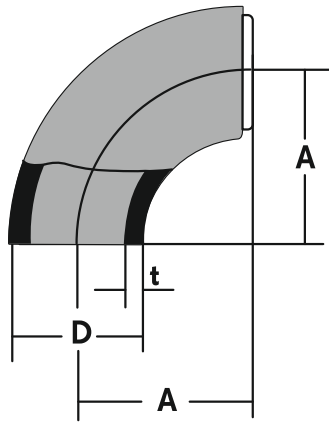
90°



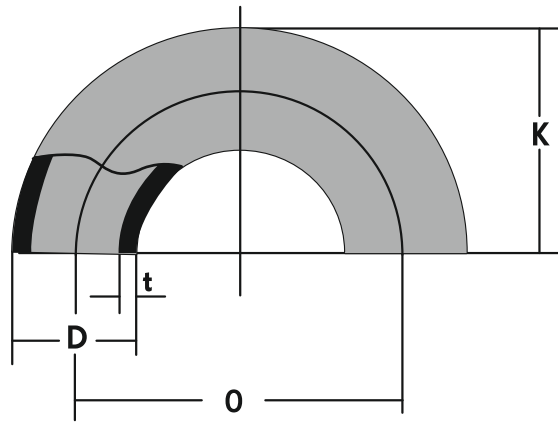
180°

Nominal Pipe Size inch	Dimensions		
	Outside Diameter at Bevel: D		Center End: A/B Center to Center: O Back to Face: K
	Inch	mm	mm
14	14.000	355.6	A=355.6 O=711.2 K=533.4
16	16.000	406.4	A=406.4 O=812.8 K=609.6
18	18.000	457.0	A=457.0 O=914.4 K=685.4
20	20.000	508.0	A=508.0 O=1016.0 K=762.0

Sch. No.	Wall Thickness: t		Approx Weight	
	t		90° Kg	180° Kg
	Inch	mm		
10	0.250	6.35	30.6	61.2
20	0.312	7.92	37.9	75.8
Std/30	0.375	9.53	45.4	90.8
40	0.438	11.13	52.8	106
XS	0.500	12.70	60.0	120
60	0.594	15.09	70.6	141
80	0.750	19.05	88.3	177
100	0.938	23.83	109	218
120	1.094	27.79	125	250
140	1.250	31.75	142	284
160	1.406	35.71	157	314
10	0.250	6.35	40.0	80.0
30	0.312	7.92	49.7	99.0
Std/30	0.375	9.53	59.5	119
XS/40	0.500	12.70	78.7	157
60	0.656	16.66	102	204
80	0.844	21.44	130	260
100	1.031	26.19	157	314
120	1.219	30.96	183	366
140	1.438	36.53	213	426
160	1.594	40.49	233	466
10	0.250	6.35	50.7	101
20	0.312	7.92	63.0	126
Std	0.375	9.53	75.6	151
30	0.438	11.13	87.9	176
40	0.562	14.27	112	224
XS	0.750	19.05	148	296
60	0.500	12.70	100	200
80	0.938	23.83	183	366
100	1.156	29.36	222	444
120	1.375	34.93	261	522
140	1.562	39.67	293	586
160	1.781	45.24	330	660
10	0.250	6.35	62.7	123
Std/20	0.375	9.53	93.4	187
XS/30	0.500	12.70	124	248
40	0.594	15.09	146	292
60	0.812	20.62	198	396
80	1.031	26.19	248	496
100	1.281	32.54	304	608
120	1.500	38.10	352	705
140	1.750	44.45	405	810
160	1.969	50.01	451	902



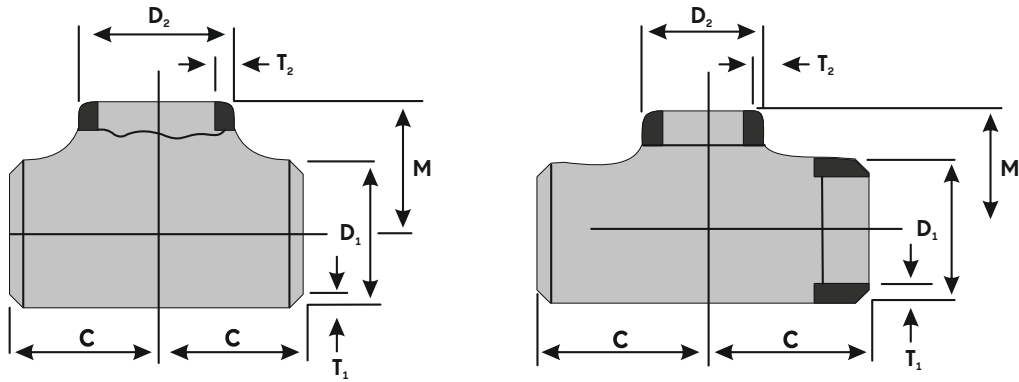
90°



180°

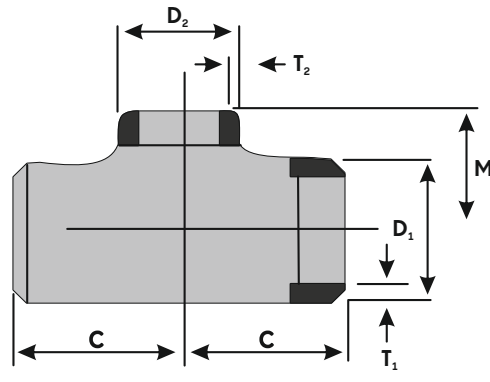
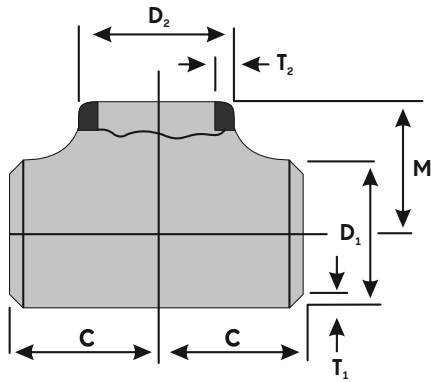
Nominal Pipe Size inch	Dimensions		
	Outside Diameter at Bevel: D		Center End: A/B Center to Center: O Back to Face: K
	Inch	mm	mm
22	22.000	559	A=558.8 O=1117.6 K=838.3
24	24.000	610	A=609.6 O=1219.2 K=914.4

Sch. No.	Wall Thickness: t		Approx Weight	
	t		90° Kg	180° Kg
	Inch	mm		
10	0.250	6.35	75.9	152
Std/20	0.375	9.53	113	226
XS/40	0.500	12.70	150	300
60	0.875	22.23	258	516
80	1.125	28.58	328	656
100	1.375	34.93	396	792
120	1.625	41.28	462	924
140	1.875	47.63	527	1054
160	2.125	53.98	590	1180
10	0.250	6.35	90.5	181
Std/20	0.375	9.53	135	270
30	0.562	14.27	201	402
40	0.688	17.48	244	488
60	0.969	24.61	340	680
XS	0.500	12.70	179	358
80	1.219	30.96	423	846
100	1.531	38.89	524	1048
120	1.812	46.02	612	1224
140	2.062	52.37	689	1378
160	2.344	59.54	773	1546

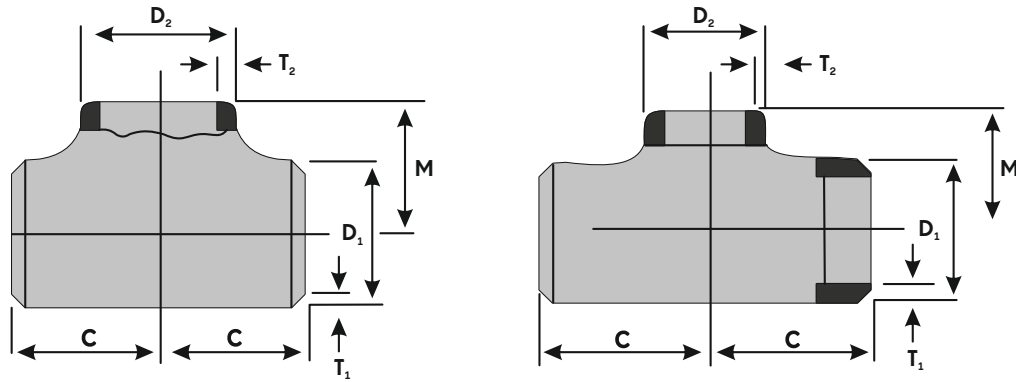


Nominal Diameter		Outside	Center to End		Approx Weight							
DN	INCH	D ₁ X D ₂	C	M	SCH5s	SCH10s	SCH20s	STD	SCH40	XS	SCH80	SCH120
20 x 20	3/4 x 3/4	25 x 25 26.7 x 26.7	29	29	0.07	0.10	0.12	0.13	0.13	0.16	0.16	—
					0.08	0.11	0.13	0.15	0.15	0.18	0.18	—
20 x 15	3/4 x 1/2	25 x 18 26.7 x 21.3	29	29	0.06	0.09	0.11	0.12	0.12	0.15	0.15	—
					0.07	0.10	0.12	0.13	0.13	0.16	0.16	—
25 x 25	1 x 1	32 x 32 33.4 x 33.4	38	38	0.11	0.19	0.21	0.23	0.23	0.30	0.30	—
					0.12	0.20	0.22	0.25	0.25	0.32	0.32	—
25 x 20	1 x 3/4	32 x 35 33.4 x 26.7	38	38	0.10	0.18	0.20	0.22	0.22	0.28	0.28	—
					0.11	0.19	0.21	0.24	0.24	0.31	0.31	—
25 x 15	1 x 1/2	32 x 18 33.4 x 21.3	38	38	0.09	0.17	0.19	0.21	0.21	0.27	0.27	—
					0.10	0.18	0.20	0.23	0.23	0.30	0.30	—
32 x 32	1.1/4 x 1.1/4	38 x 38 42.2 x 42.2	48	48	0.19	0.36	0.39	0.42	0.42	0.63	0.63	—
					0.20	0.39	0.45	0.52	0.52	0.73	0.73	—
32 x 25	1.1/4 x 1	38 x 32 42.2 x 33.4	48	48	0.18	0.33	0.37	0.40	0.40	0.58	0.58	—
					0.19	0.35	0.39	0.42	0.42	0.68	0.68	—
32 x 20	1.1/4 x 3/4	38 x 35.5 42.2 x 26.7	48	48	0.17	0.31	0.34	0.38	0.38	0.55	0.55	—
					0.18	0.32	0.38	0.40	0.40	0.65	0.65	—
32 x 15	1.1/4 x 1/2	38 x 18 42.2 x 21.3	48	48	0.16	0.30	0.35	0.36	0.36	0.52	0.52	—
					0.17	0.31	0.35	0.38	0.38	0.62	0.62	—
40 x 40	1.1/2 x 1.1/2	45 x 45 48.3 x 48.3	57	57	0.35	0.59	0.65	0.78	0.78	1.08	1.08	—
					0.45	0.69	0.76	0.88	0.88	1.18	1.18	—
40 x 32	1.1/2 x 1/4	45 x 38 48.3 x 42.5	57	57	0.32	0.54	0.63	0.72	0.72	0.99	0.99	—
					0.42	0.65	0.75	0.82	0.82	1.09	1.09	—
40 x 25	1.1/2 x 1	45 x 32 48.3 x 33.4	57	57	0.27	0.45	0.52	0.60	0.60	0.83	0.83	—
					0.37	0.65	0.73	0.80	0.80	1.08	1.08	—
40 x 20	1.1/2 x 3/4	45 x 25 48.3 x 26.7	57	57	0.26	0.44	0.51	0.58	0.58	0.80	0.80	—
					0.36	0.65	0.66	0.68	0.68	1.00	1.00	—
40 x 15	1.1/2 x 1/2	45 x 18 48.3 x 21.3	57	57	0.25	0.42	0.48	0.56	0.56	0.78	0.78	—
					0.35	0.62	0.64	0.66	0.66	0.78	0.78	—
50 x 50	2 x 2	57 x 57 60.3 x 60.3	64	64	0.49	1.03	1.11	1.15	1.15	1.65	1.65	—
					0.50	1.05	1.13	1.18	1.18	1.67	1.67	—
50 x 40	2 x 1.1/2	57 x 45 60.3 x 48.3	64	60	0.44	0.93	1.01	1.04	1.04	1.48	1.48	—
					0.45	0.95	1.03	1.06	1.06	1.50	1.50	—
50 x 32	2 x 1.1/4	57 x 38 60.3 x 42.2	64	57	0.40	0.81	0.88	0.98	0.98	1.37	1.37	—
					0.43	0.89	0.94	1.00	1.00	1.42	1.42	—
50 x 25	2 x 1	57 x 32 60.3 x 33.4	64	51	0.39	0.72	0.83	0.92	0.92	1.31	1.31	—
					0.40	0.84	0.88	0.94	0.94	1.34	1.34	—
50 x 20	2 x 3/4	57 x 25 60.3 x 33.4	64	44	0.37	0.70	0.77	0.87	0.87	1.24	1.24	—
					0.38	0.80	0.85	0.90	0.90	1.27	1.27	—
65 x 65	2.1/2 x 2.1/2	76 x 76 73.0 x 73.0	76	76	0.87	1.25	1.73	2.12	2.12	2.88	2.88	—
					0.86	1.21	1.65	2.10	2.10	2.80	2.80	—
65 x 50	2.1/2 x 2	76 x 57 73.0 x 60.3	76	70	0.82	1.17	1.54	2.00	2.00	2.70	2.70	—
					0.81	1.16	1.49	1.98	1.98	2.65	2.65	—
65 x 40	2.1/2 x 1.1/2	76 x 45 73.0 x 48.3	76	67	0.77	1.11	1.41	1.89	1.89	2.56	2.56	—
					0.76	1.10	1.38	1.88	1.88	2.55	2.55	—
65 x 32	2.1/2 x 1.1/4	76 x 38 73.0 x 42.0	76	64	0.75	1.10	1.35	1.80	1.80	2.50	2.50	—
					0.74	1.08	1.30	1.89	1.89	2.25	2.25	—
65 x 25	2.1/2 x 1	76 x 32 73.0 x 33.4	76	57	0.76	1.10	1.34	1.86	1.86	2.53	2.53	—
					0.70	1.07	1.28	1.81	1.81	2.08	2.08	—

Tees (Straight and Reducing) ASME/ANSI B16.9

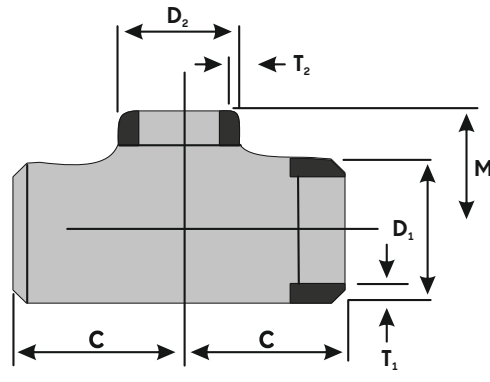
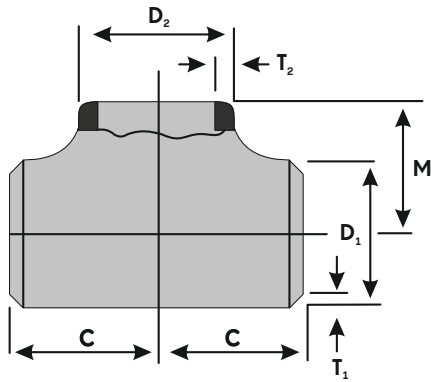


Nominal Diameter		Outside	Center to End		Approx Weight							
DN	INCH	D ₁ X D ₂	C	M	SCH5s	SCH10s	SCH20s	STD	SCH40	XS	SCH80	SCH120
80 x 80	3 x 3	89 x 89	86	86	1.16	1.68	2.21	3.02	3.02	4.19	4.19	—
80 x 65	3 x 2.1/2	89 x 57 88.9 x 73.0	86	83	1.11 1.10	1.62 1.60	2.13 2.08	2.89 2.87	2.89 2.87	4.02 3.98	4.02 3.98	—
80 x 50	3 x 2	89 x 57 88.9 x 60.3	86	76	1.06 1.07	1.53 1.55	2.05 2.10	2.76 2.79	2.76 2.79	3.81 3.82	3.81 3.82	—
80 x 40	3 x 1.1/2	89 x 65 88.9 x 48.3	86	73	1.01 1.03	1.49 1.50	1.98 2.01	2.67 2.69	2.67 2.69	3.70 3.73	3.70 3.73	—
80 x 32	3 x 1.1/4	89 x 38 88.9 x 42.2	86	70	1.00 1.00	1.46 1.45	1.97 1.95	2.65 2.60	2.65 2.60	3.68 3.60	3.68 3.60	—
90 x 90	3.1/2 x 3.1/2	101.6 x 101.6	95	95	1.33	1.92	2.53	3.61	3.61	5.08	5.08	—
90 x 80	3.1/2 x 3	101.6 x 88.9	95	92	1.26	1.82	2.41	3.43	3.43	4.83	4.83	—
90 x 65	3.1/2 x 2.1/2	101.6 x 73.0	95	89	1.22	1.76	2.35	3.32	3.32	4.67	4.67	—
90 x 50	3.1/2 x 2	101.6 x 60.3	95	83	1.20	1.73	2.31	3.25	3.25	4.57	4.57	—
90 x 40	3.1/2 x 1.1/2	101.6 x 48.3	95	79	1.17	1.70	2.26	3.21	3.21	4.51	4.51	—
100 x 100'	4 x 4	108 x 108 114.3 x 114.3	105	105	1.66 1.75	2.41 2.54	3.02 3.26	4.75 5.01	4.75 5.01	6.75 7.12	6.75 7.12	8.78 9.26
100 x 90	4 x 3.1/2	114.3 x 101.6	105	102	1.70	2.46	3.19	4.85	4.85	6.89	6.89	8.96
100 x 80	4 x 3	108 x 89 114.3 x 88.9	105	98	1.55 1.61	2.24 2.33	3.16 3.21	4.42 4.60	4.42 4.60	6.27 6.52	6.27 6.52	8.15 8.48
100 x 65	4 x 2.1/2	108 x 76 114.3 x 73.0	105	95	1.53 1.60	2.21 2.31	3.09 3.11	4.36 4.56	4.36 4.56	6.50 6.50	6.50 6.50	8.45 8.45
100 x 60	4 x 2	108 x 57 114.3 x 60.3	105	89	1.51 1.57	2.19 2.29	3.08 3.19	4.32 4.41	4.32 4.41	6.13 6.12	6.13 6.12	7.97 9.26
100 x 40	4 x 1.1/2	108 x 45 114.3 x 48.3	105	86	1.50 1.55	2.29 2.24	2.92 3.19	4.22 4.00	4.22 4.00	6.03 6.02	6.03 6.02	7.88 9.11
125 x 125	5 x 5	108 x 133 114.3 x 141.3	124	124	3.18 3.37	3.91 4.14	6.17 6.31	7.53 7.98	7.53 7.98	10.9 11.6	10.9 11.6	16.4 15.4
125 x 100	5 x 4	133 x 108 141.3 x 114.3	124	117	3.03 3.15	3.73 3.90	5.76 5.91	7.20 7.52	7.20 7.52	10.4 10.8	10.4 10.8	13.9 14.5
125 x 90	5 x 3.1/2	140.3 x 101.6	124	114	3.09	3.83	5.83	7.39	7.39	10.6	10.6	14.2
125 x 80	5 x 3	133 x 89 141.3 x 88.9	124	111	2.90 3.02	3.59 3.74	5.42 5.71	6.92 7.21	6.92 7.21	10.0 10.4	10.0 10.4	13.3 13.8
125 x 65	5 x 2.1/2	133 x 76 141.3 x 73.0	124	108	2.85 3.00	3.59 3.73	5.40 5.71	6.92 7.20	6.92 7.20	10.0 10.4	10.0 10.4	13.3 13.8
125 x 50	5 x 2	133 x 57 141.3 x 60.3	124	105	2.80 3.92	3.58 3.73	5.38 5.70	6.92 7.20	6.92 7.20	10.0 10.4	10.0 10.4	13.3 13.8
150 x 150	6 x 6	159 x 159 168.3 x 168.3	143	143	4.09 4.32	5.03 5.31	8.91 9.10	10.5 11.1	10.5 11.1	16.2 17.1	16.2 17.1	21.0 22.2
150 x 125	6 x 5	159 x 133 168.3 x 141.3	143	137	3.84 4.13	4.73 5.06	8.33 9.01	9.88 10.6	9.88 10.6	15.2 16.3	15.2 16.3	19.8 21.3
150 x 100	6 x 4	159 x 108 168.3 x 114.6	143	130	3.76 3.95	4.64 4.87	8.21 8.55	9.70 10.2	9.70 10.2	14.9 15.6	14.9 15.6	19.3 20.3
150 x 90	6 x 3.1/2	168.3 x 101.6	143	127	3.91	4.82	8.46	10.1	10.1	15.5	15.5	20.1
150 x 80	6 x 3	159 x 89 168.3 x 88.9	143	124	3.72 3.93	4.56 4.82	8.09 8.43	9.56 10.1	9.56 10.1	14.7 15.3	14.7 15.3	19.0 20.2
150 x 65	6 x 2.1/2	159 x 76 168.3 x 73.0	143	121	3.70 3.81	4.51 4.72	7.93 8.33	9.51 10.2	9.51 10.2	14.6 15.2	14.6 15.2	19.2 20.0

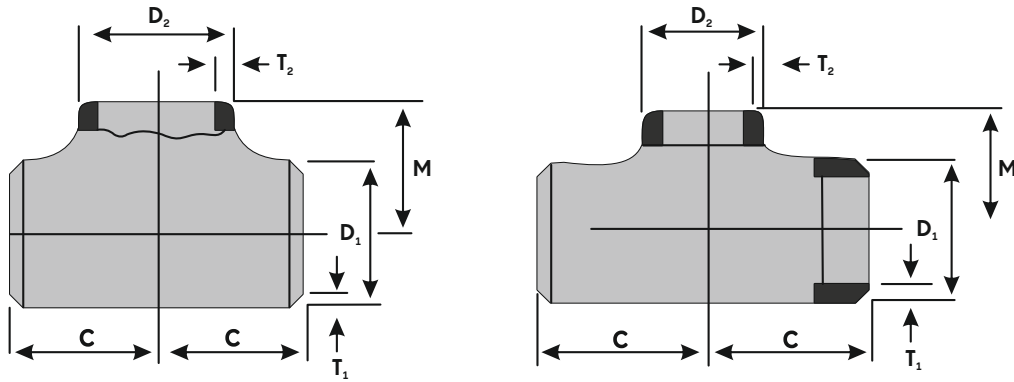


Nominal Diameter		Outside	Center to End		Approx Weight							
DN	INCH	$D_1 \times D_2$	C	M	SCH5s	SCH10s	SCH20s	STD	SCH40	XS	SCH80	SCH120
200	8x8	219 x 219	178	178	7.72	10.4	17.7	22.8	22.8	35.4	35.4	50.4
200 x 150	8x6	219 x 159	178	168	6.74	9.20	16.4	19.9	19.9	30.9	30.9	44.4
		219.1 x 141.3			7.17	9.74	16.4	21.1	21.1	32.8	32.8	47.2
200 x 125	8x5	219 x 133	178	162	6.61	8.89	15.1	19.5	19.5	30.2	30.2	43.5
		219.1 x 141.3			7.03	9.55	16.1	20.7	20.7	32.2	32.2	46.3
200 x 100	8x4	219 x 108	178	156	6.43	8.73	14.7	19.0	19.0	29.4	29.4	42.3
		219.1 x 114.3			6.84	9.39	15.6	19.9	19.9	31.3	31.3	45.0
200 x 90	8x3.1/2	219.1 x 101.6	178	152	6.84	9.18	15.5	19.8	19.8	31.1	31.1	44.2
250 x 250	10x10	273 x 273	216	216	14.6	18.04	27.39	40.4	40.4	51.1	51.1	95.21
250 x 200	10x8	273 x 219	216	208	13.3	16.4	24.9	35.4	35.4	49.8	49.8	84.1
250 x 150	10x6	273 x 159	216	194	11.4	15.0	21.3	31.4	31.4	42.7	42.7	72.1
		273.1 x 168.3			12.1	15.0	22.7	33.4	33.4	45.4	45.4	76.7
250 x 125	10x5	273 x 133	216	191	11.2	14.6	20.9	30.7	30.7	41.8	41.8	70.6
		273.1 x 141.3			11.9	14.6	22.2	32.7	32.7	44.5	44.5	75.1
250 x 100	10x4	273 x 108	216	184	11.0	14.4	20.6	30.3	30.3	41.2	41.2	69.6
		273.1 x 141.3			11.7	14.4	21.9	32.2	32.2	42.9	42.9	74.1
300 x 300	12x12	325 x 325	254	284	21.5	24.8	34.5	51.8	51.8	69.0	69.0	138
		323.9 x 323.9			21.5	24.8	34.5	51.8	51.8	69.0	69.0	138
300 x 250	12x10	325 x 273	254	241	20.4	23.6	32.8	49.2	49.2	65.6	65.6	131
		323.9 x 273.1			20.3	23.4	32.1	49.1	49.1	65.2	65.2	130
300 x 200	12x8	325 x 291	254	229	20.2	23.3	32.3	48.4	48.4	64.4	64.4	128
		323.9 x 219.1			20.0	23.1	32.1	48.2	48.2	64.2	64.2	118
300 x 150	12x6	325 x 159	254	219	18.4	22.5	29.5	44.3	44.3	59.0	59.0	118
		323.9 x 168.3			19.5	22.7	31.3	47.1	47.1	62.7	62.7	136
300 x 125	12x5	325 x 133	254	216	18.0	20.8	28.8	43.6	43.6	57.8	57.8	115
		323.9 x 141.3			19.1	22.1	30.7	46.3	46.3	61.5	61.5	126
350 x 350	14x14	377 x 377	279	279	27.4	33.1	54.9	66.1	66.1	88.0	88.0	192
		355.6 x 355.6			25.7	31.1	51.5	62.2	62.2	82.7	82.7	181
350 x 300	14x12	377 x 325	279	270	25.6	31.1	51.6	62.1	62.1	82.7	82.7	181
		355.6 x 323.9			24.2	29.2	48.5	58.3	58.3	77.7	77.7	170
350 x 250	14x10	377 X 273	279	257	25.1	30.3	50.3	60.5	60.5	80.7	80.7	171
		355.6 X 273.1			23.7	28.6	47.4	57.0	57.0	76.0	76.0	161
350 x 200	14x8	377 X 219	2797	248	24.6	29.7	49.2	59.2	59.2	78.0	78.0	167
		355.6 X 219.1			23.1	27.9	46.2	55.7	55.7	74.2	74.2	157
350 x 150	14x6	377 X 159	279	238	24.0	29.0	48.1	57.9	57.9	77.1	77.1	163
		355.6 X 168.3			22.3	27.1	45.6	54.2	54.2	77.8	77.8	156
400 x 400	16x16	426 X 426	305	305	33.1	38.0	63.0	75.9	75.9	101	101	246
		406.4 X 406.4			31.4	36.1	59.8	72.3	72.3	96.1	96.1	234
400 x 350	16x14	426 X 377	305	305	32.0	36.8	60.9	73.6	73.6	97.8	97.8	238
		406.4 X 355.6			30.4	34.9	57.9	70.1	70.1	92.9	92.9	226
400 x 300	16x12	426 X 325	305	295	31.0	35.6	59.0	71.4	71.4	94.7	94.7	230
		406.4 X 323.9			28.2	34.4	57.7	69.1	69.1	89.2	89.2	209
400 x 250	16x10	426 X 273	305	283	30.2	34.7	57.6	69.9	69.9	92.5	92.5	225
		406.4 X 273.1			28.7	33.0	54.7	66.6	66.6	87.8	87.8	209
400 x 200	16x8	426 X 219	305	273	29.5	33.9	56.2	68.4	68.4	90.2	90.2	219
		406.4 X 219.1			28.1	32.3	53.5	65.1	65.1	86	86	

Tees (Straight and Reducing) ASME/ANSI B16.9

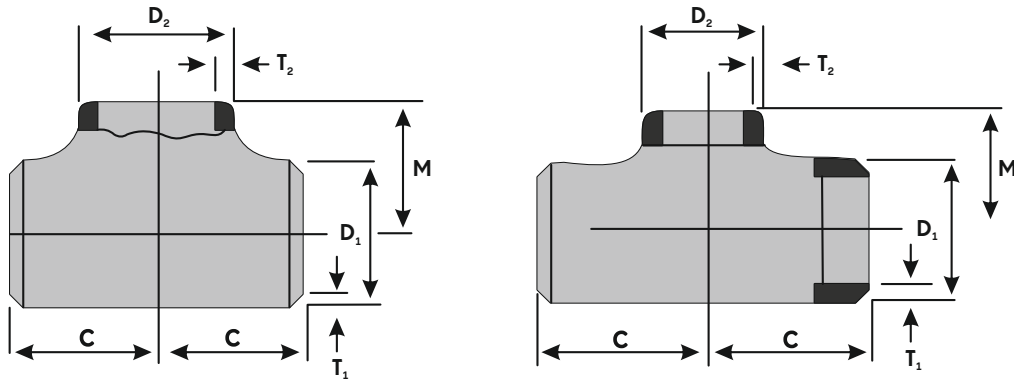


Nominal Diameter		Outside	Center to End		Approx Weight							
DN	INCH	D ₁ X D ₂	C	M	SCH5s	SCH10s	SCH20s	STD	SCH40	XS	SCH80	SCH120
400 x 150	16 x 6	426 x 159 406.4 x 168.3	305	264	29.2 27.7	33.5 31.8	55.6 52.8	67.6 64.4	90.1 85.8	89.2 84.8	163 155	217 206
450 x 450	18 x 18	478 x 478 457 x 457	343	243	41.9 39.8	47.8 45.5	79.2 75.4	95.3 88.9	142 136	127 120	233 218	349 332
450 x 400	18 x 16	478 x 426 457 x 406.4	343	330	41.0 39.0	46.8 44.5	77.5 73.8	93.3 88.9	140 133	144 118	233 222	342 325
450 x 350	18 x 14	478 x 377 406.4 x 355.6	343	330	40.4 38.3	46.1 43.8	76.3 72.5	91.9 87.3	137 130	142 135	229 228	336 320
450 x 300	18 x 12	478 x 325 457 x 323.9	343	321	39.8 37.3	45.4 42.6	75.2 70.6	90.6 85.0	135 127	140 131	226 213	331 216
450 x 250	18 x 10	478 x 273 457 x 273.1	343	308	39.3 37.3	44.9 42.6	74.4 70.6	89.6 85.0	134 127	138 131	223 212	228 216
450 x 200	18 x 8	478 x 219 457 x 291.1	343	298	38.8 36.9	44.3 42.1	73.4 69.7	89.1 84.7	132 126	137 130	220 209	225 213
500 x 500	20 x 20	529 x 529 508 x 508	381	381	58.9 56.3	68.2 65.3	117 112	117 112	186 178	156 149	322 308	469 449
500 x 450	20 x 18	529 x 478 508 x 457	381	368	57.9 55.4	67.1 64.2	115 110	115 110	183 175	154 147	317 303	462 441
500 x 400	20 x 16	529 x 426 508 x 406.4	381	356	57.0 54.7	66.0 63.4	113 109	113 109	180 173	151 145	312 299	454 436
500 x 350	20 x 14	529 x 377 508 x 355.6	381	356	56.0 53.7	64.9 62.3	111 107	111 107	177 170	148 142	306 294	446 428
500 x 300	20 x 12	529 x 325 508 x 323.9	381	346	55.0 52.8	63.8 61.2	109 105	109 105	174 167	146 140	301 289	438 421
500 x 250	20 x 10	529 x 273 508 x 273.1	381	333	54.4 52.2	63.0 60.5	108 104	108 104	172 165	144 138	298 286	433 416
500 x 200	20 x 8	529 x 219 508 x 219.1	381	324	53.7 51.5	62.3 59.7	107 102	107 102	170 163	142 137	294 282	428 410
550 x 550	22 x 22	559 x 559	419	419	73.5	85.2	146	146	265	195	—	635
550 x 500	22 x 20	559 x 508	419	406	70.7	81.9	141	141	257	187	—	610
550 x 450	22 x 18	559 x 457	419	394	67.7	78.5	135	135	240	180	—	584
550 x 400	22 x 16	559 x 406.4	419	381	66.2	76.7	132	132	235	179	—	571
550 x 350	22 x 14	559 x 355.6	419	381	65.5	75.9	130	130	230	174	—	565
550 x 300	22 x 12	559 x 323.9	419	371	64.0	74.2	127	127	225	170	—	552
550 x 250	22 x 10	559 x 273.1	419	359	62.5	72.5	124	124	220	166	—	540
600 x 600	24 x 24	630 x 630 610 x 610	432	432	96.0 93.9	110 107	165 161	165 161	300 295	220 215	503 496	797 779
600 x 550	24 x 22	610 x 559	432	432	90.1	103	155	155	285	206	—	748
600 x 500	24 x 20	630 x 529 610 x 508	432	432	92.2 86.4	105 99.4	158 148	158 148	290 270	211 198	491 472	765 701
600 x 450	24 x 18	630 x 478 610 x 457	432	419	88.4 84.5	101 96.6	152 145	152 145	280 265	202 193	478 466	734 694
600 x 400	24 x 16	630 x 426 610 x 406.4	432	406	86.4 83.2	99.1 95.7	148 143	148 143	270 260	198 191	472 463	718 690
600 x 350	24 x 14	630 x 377 610 x 355.6	432	406	85.5 81.7	98.0 93.5	147 140	147 140	265 255	195 187	469 457	710 678
600 x 300	24 x 12	630 x 325 610 x 323.9	432	397	83.5 79.8	95.8 91.5	143 137	143 137	255 250	191 182	463 451	678 662
600 x 250	24 x 10	630 x 273 610 x 273.1	495	384	81.6 77.9	93.6 89.3	140 134	140 134	257 245	187 178	457 445	662 647

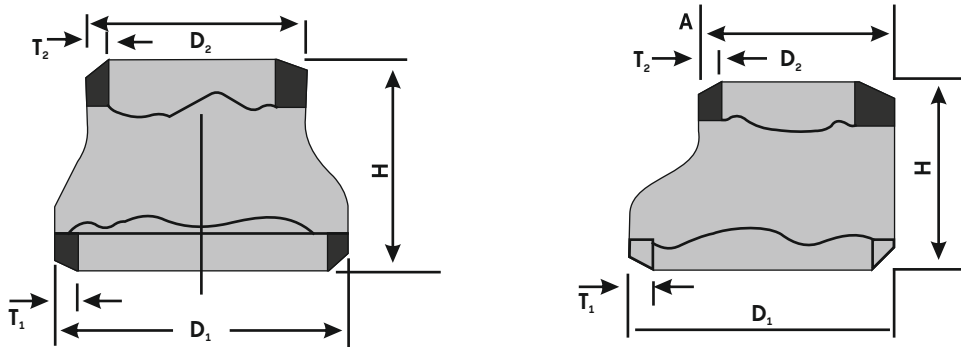


Nominal Diameter		Outside	Center to End		Approx Weight							
DN	INCH	D ₁ X D ₂	C	M	SCH5s	SCH10s	SCH20s	STD	SCH40	XS	SCH80	SCH120
650 x 650	26 x 26	660 x 660	495	495	—	—	274	206	—	274	—	—
650 x 600	26 x 24	660 x 610	495	483	—	—	263	197	—	263	—	—
650 x 550	26 x 22	660 x 559	495	470	—	—	252	189	—	252	—	—
650 x 500	26 x 20	660 x 508.0	495	457	—	—	246	185	—	246	—	—
650 x 450	26 x 18	660 x 547.2	495	444	—	—	244	183	—	244	—	—
650 x 400	26 x 16	660 x 406.4	495	432	—	—	238	179	—	238	—	—
650 x 350	26 x 14	660 x 355.6	495	432	—	—	233	175	—	233	—	—
650 x 300	26 x 12	660 x 323.9	495	422	—	—	227	171	—	227	—	—
700 x 400	28 x 28	720 x 720 711 x 711	521	521	—	—	309 305	232 229	—	300 305	—	—
700 x 650	28 x 26	711 x 660	521	521	—	—	293	222	—	293	—	—
700 x 600	28 x 24	720 x 630 711 x 610	510	508	—	—	296 284	222 211	—	296 275	—	—
700 x 550	28 x 22	711 x 559	521	495	—	—	273	204	—	272	—	—
700 x 500	28 x 20	720 x 529 711 x 508	521	483	—	—	296 275	222 199	—	296 265	—	—
700 x 450	28 x 18	720 x 478 711 x 457	521	470	—	—	278 265	208 195	—	275 263	—	—
700 x 400	28 x 16	720 x 426 711 x 406.4	521	457	—	—	275 259	206 190	—	268 259	—	—
700 x 350	28 x 14	720 x 377 711 x 355.6	521	457	—	—	268 253	201 183	—	260 253	—	—
700 x 300	28 x 12	720 x 325 711 x 323.9	521	448	—	—	262 244	197 179	—	256 244	—	—
750 x 750	30 x 30	762 x 762	559	559	176	200	352	264	—	352	—	—
750 x 700	30 x 28	762 x 711	559	546	—	—	338	254	—	338	—	—
750 x 650	30 x 26	762 x 660	559	546	—	—	323	243	—	323	—	—
750 x 600	30 x 24	762 x 610	559	533	158	197	317	238	—	317	—	—
750 x 550	30 x 22	762 x 559	559	521	157	195	314	235	—	314	—	—
750 x 500	30 x 20	762 x 508	559	508	153	174	306	230	—	306	—	—
750 x 450	30 x 18	762 x 457	559	495	149	170	299	224	—	299	—	—
750 x 400	30 x 16	762 x 406.6	559	483	146	166	292	219	—	292	—	—
750 x 350	30 x 14	762 x 655.6	559	483	141	166	282	211	—	285	—	—
750 x 300	30 x 12	762 x 323.9	559	473	137	156	275	206	—	275	—	—
750 x 250	30 x 10	762 x 273	559	460	132	150	264	198	—	264	—	—
800 x 800	32 x 32	820 x 820 813 x 813	597	597	—	—	405 402	303 302	—	405 402	—	—
800 x 750	32 x 30	813 x 762	597	584	—	—	386	290	—	386	—	—

Tees (Straight and Reducing) ASME/ANSI B16.9

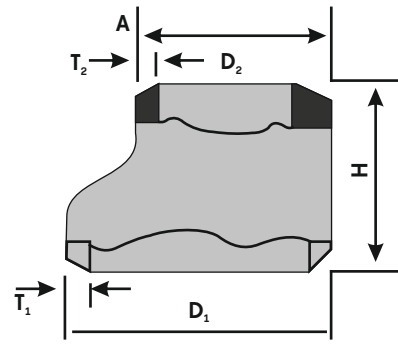
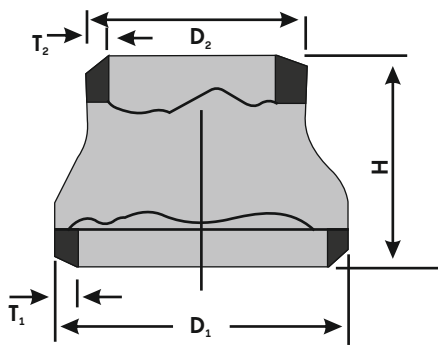


Nominal Diameter		Outside	Center to End		Approx Weight							
DN	INCH	$D_1 \times D_2$	C	M	SCH5s	SCH10s	SCH20s	STD	SCH40	XS	SCH80	SCH120
800 x 700	32 x 28	820 x 720 813 x 711	597	572	-	-	388 370	291 277	-	388 370	-	-
800 x 650	32 x 26	813 x 660	597	572	-	-	362	271	-	362	-	-
800 x 600	32 x 24	820 x 630 813 x 610	597	559	-	-	372 358	279 268	-	365 359	-	-
800 x 550	32 x 22	813 x 559	597	546	-	-	350	262	-	350	-	-
800 x 500	32 x 20	820 x 529 813 x 508	597	533	-	-	364 342	273 256	-	364 342	-	-
800 x 450	32 x 18	820 x 478 813 x 457	597	521	-	-	360 334	270 250	-	360 334	-	-
800 x 400	32 x 16	820 x 426 813 x 406.4	597	508	-	-	352 322	264 241	-	352 322	-	-
800 x 350	32 x 14	820 x 377 813 x 355.6	597	508	-	-	344 313	258 235	-	344 314	-	-
850 x 850	34 x 34	864 X 864	635	635	-	-	455	341	626	415	-	-
850 x 800	34 x 32	864 X 813	635	622	-	-	437	328	610	437	-	-
850 x 750	34 x 30	864 X 762	635	610	-	-	419	314	-	419	-	-
850 x 700	34 x 28	864 X 711	635	597	-	-	409	307	-	409	-	-
850 x 650	34 x 26	864 X 660	635	597	-	-	405	304	-	405	-	-
850 x 600	34 x 24	864 X 610	635	584	-	-	396	297	545	396	-	-
850 x 550	34 x 22	864 X 559	635	572	-	-	387	290	532	387	-	-
850 x 500	34 x 20	864 X 508	635	559	-	-	378	283	520	378	-	-
850 x 450	34 x 18	864 X 457	635	546	-	-	364	273	501	364	-	-
850 x 400	34 x 16	864 x 406.4	635	533	-	-	355	266	488	355	-	-
900 x 900	36 x 36	920 x 920 914 x 914	673	673	-	-	514 511	648 639	786 767	543 511	-	-
900 x 850	36 x 34	914 x 864	673	660	-	-	490	619	736	511	-	-
900 x 800	36 x 32	920 x 820 914 x 813	673	648	-	-	494 470	370 353	741 690	494 470	-	-
900 x 750	36 x 30	914 x 762	673	635	-	-	460	345	-	460	-	-
900 x 700	36 x 28	920 x 720 914 x 711	673	622	-	-	473 455	355 341	-	473 455	-	-
900 x 650	36 x 26	914 x 660	673	622	-	-	444	333	667	447	-	-
900 x 600	36 x 24	914 x 610	673	610	-	-	434	326	651	434	-	-
900 x 550	36 x 22	914 x 559	673	597	-	-	424	318	636	424	-	-
900 x 500	36 x 20	920 x 529 914 x 508	673	584	-	-	463 409	347 306	685 598	462 409	-	-
900 x 450	36 x 18	920 x 478 914 x 452	673	572	-	-	458 398	343 299	693 613	457 398	-	-
900 x 400	36 x 16	920 x 426 914 x 406.4	673	559	-	-	447 383	335 287	669 575	447 383	-	-

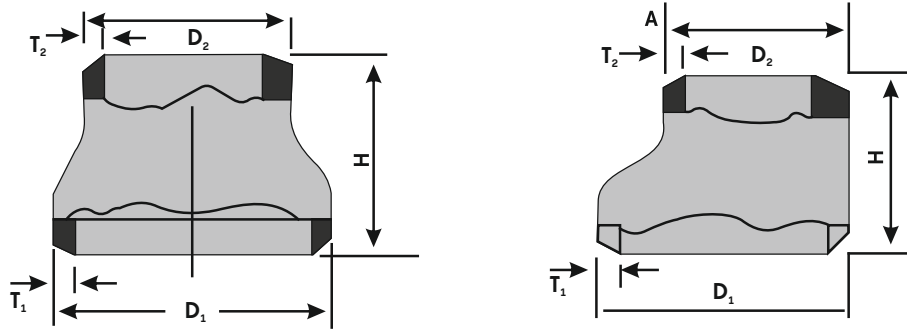


Nominal Diameter		Outside	Center to End	Approx Weight							
DN	INCH	D ₁ x D ₂	H	SCH5s	SCH10s	SCH20s	STD	SCH40s	XS	SCH80s	SCH120s
20 x 15	3/4 x 1/2	25 x 18	38	0.03	0.04	0.049	0.05	0.05	0.07	0.07	—
		26.7 x 21.3		0.04	0.04	0.05	0.06	0.06	0.07	0.07	—
25 x 20	1 x 3/4	32 x 25	51	0.06	0.09	0.11	0.11	0.11	0.14	0.14	—
		33.4 x 26.7		0.06	0.10	0.11	0.11	0.11	0.14	0.14	—
25 x 15	1 x 1/2	32 x 18	51	0.05	0.08	0.09	0.09	0.09	0.12	0.12	—
		33.4 x 21.3		0.06	0.09	0.10	0.10	0.10	0.13	0.13	—
32 x 25	1.1/4 x 1	38 x 32	51	0.07	0.11	0.125	0.14	0.14	0.18	0.18	—
		42.2 x 33.4		0.08	0.12	0.137	0.15	0.15	0.20	0.20	—
32 x 20	1.1/4 x 3/4	38 x 25	51	0.06	0.10	0.125	0.13	0.13	0.16	0.16	—
		42.2 x 26.7		0.07	0.11	0.13	0.14	0.14	0.18	0.18	—
32 x 15	1.1/4 x 1/2	38 x 18	51	0.06	0.09	0.1	0.11	0.11	0.14	0.14	—
		42.2 x 21.3		0.07	0.11	0.125	0.12	0.13	0.17	0.17	—
40 x 32	1.1/2 x 1.1/4	45 x 38	64	0.11	0.17	0.19	0.22	0.22	0.29	0.29	—
		48.3 x 42.2		0.11	0.19	0.22	0.24	0.24	0.32	0.32	—
40 x 25	1.1/2 x 1	45 x 32	64	0.10	0.16	0.18	0.20	0.20	0.27	0.27	—
		48.3 x 33.4		0.10	0.17	0.20	0.22	0.22	0.29	0.29	—
40 x 20	1.1/2 x 3/4	45 x 25	64	0.09	0.15	0.1	0.18	0.18	0.24	0.24	—
		48.3 x 26.7		0.10	0.16	—	0.20	0.20	0.26	0.26	—
40 x 15	1.1/2 x 1/2	45 x 18	64	0.08	0.13	0.15	0.16	0.16	0.21	0.21	—
		48.3 x 21.3		0.09	0.15	0.17	0.19	0.19	0.24	0.24	—
50 x 40	2 x 1.1/2	57 x 45	76	0.16	0.26	0.33	0.35	0.35	0.47	0.47	—
		60 x 48.3		0.17	0.27	0.35	0.37	0.37	0.51	0.51	—
50 x 32	2 x 1.1/4	57 x 38	76	0.15	0.24	0.30	0.32	0.32	0.44	0.44	—
		60.3 x 42.2		0.16	0.26	0.33	0.35	0.35	0.48	0.48	—
50 x 25	2 x 1	57 x 32	76	0.14	0.22	0.27	0.30	0.30	0.41	0.41	—
		60.3 x 33.4		0.14	0.24	0.30	0.32	0.32	0.44	0.44	—
65 x 50	2.1/2 x 2	76 x 57	89	0.30	0.43	0.52	0.70	0.70	0.92	0.92	—
		73.0 x 60.3		0.30	0.43	0.53	0.70	0.70	0.92	0.92	—
65 x 40	2.1/2 x 1.1/2	76 x 45	89	0.28	0.40	0.5	0.64	0.64	0.84	0.84	—
		73.0 x 48.3		0.28	0.40	0.5	0.63	0.63	0.83	0.83	—
65 x 30	2.1/2 x 1.1/4	76 x 38	89	0.26	0.38	0.45	0.60	0.60	0.79	0.79	—
		73.0 x 42.2		0.27	0.38	0.45	0.60	0.60	0.79	0.79	—
65 x 25	2.1/2 x 1	76 x 32	89	0.25	0.36	0.4	0.57	0.57	0.75	0.75	—
		73.0 x 33.4		0.25	0.35	0.4	0.56	0.56	0.73	0.73	—
80 x 65	3 x 2.1/2	89 x 76	89	0.38	0.54	0.72	0.93	0.93	1.26	1.26	—
		88.9 x 73.0		0.37	0.53	0.7	0.91	0.91	1.23	1.23	—
80 x 50	3 x 2	89 x 57	89	0.34	0.48	0.64	0.83	0.83	1.11	1.11	—
		88.9 x 60.3		0.35	0.49	0.65	0.84	0.84	1.13	1.13	—
80 x 40	3 x 1.1/2	89 x 45	89	0.31	0.45	0.6	0.76	0.76	1.02	1.02	—
		88.69 x 48.3		0.32	0.45	0.6	0.78	0.78	1.05	1.05	—

Reducers (Concentric and Eccentric) ASME/ANSI B16.9

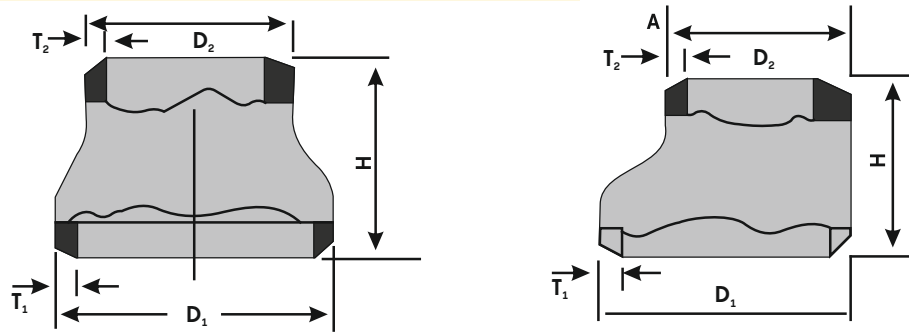


Nominal Diameter		Outside	Center to End	Approx Weight								
DN	INCH	D ₁ x D ₂	H	SCH5s	SCH10s	SCH20s	STD	SCH40s	XS	SCH80s	SCH120s	
90 x 80	3.1/2 x 3	101.6 x 88.9	102	0.50	0.72	1.09	1.29	1.77	1.77	1.77	—	
90 x 65	3.1/2 x 2.1/2	101.6 x 73.0	102	0.46	0.66	1.0	1.12	1.12	1.63	1.63	—	
90 x 50	3.1/2 x 2	101.6 x 60.3	102	0.43	0.62	0.95	1.10	1.10	1.51	1.51	—	
90 x 40	3.1/2 x 1.1/2	101.6 x 48.3	102	0.41	0.58	—	1.03	1.03	1.40	1.40	—	
100 x 90	4 x 3.1/2	114.3 x 101.6	102	0.57	0.82	—	1.55	1.55	2.41	2.41	2.38	
100 x 80	4 x 3	108 x 89 114.3 x 88.9	102	0.52 0.54	0.75 0.77	—	1.41 1.46	1.41 1.46	1.94 2.02	1.94 2.02	2.18 2.24	
100 x 65	4 x 2.1/2	108 x 76 114.3 x 73.0	102	0.49 0.50	0.70 0.72	0.93 0.96	1.32 1.35	1.32 1.35	1.82 1.87	1.82 1.87	2.05 2.1	
100 x 50	4 x 2	108 x 57 114.3 x 60.3	102	0.44 0.48	0.64 0.68	0.85 0.90	1.19 1.27	1.19 1.27	1.64 1.75	1.64 1.75	1.87 1.98	
125 x 100	5 x 4	133 x 108 141.3 x 114.3	127	1.04 1.11	1.27 1.35	1.89 2.01	2.35 2.50	2.35 2.50	3.33 3.55	3.33 3.55	4.31 4.60	
125 x 90	5 x 3.1/2	141.3 x 101.6	127	1.06	1.29	1.92	2.38	2.38	3.38	3.38	4.4	
125 x 80	5 x 3	133 x 89 141.3 x 88.9	127	0.97 1.01	1.18 1.23	1.76 1.83	2.17 2.27	2.17 2.27	3.07 3.22	3.07 3.22	4.0 4.19	
125 x 65	5 x 2.1/2	133 x 76 141.3 x 73.0	127	0.92 0.95	1.12 1.16	1.67 1.72	2.06 2.14	2.06 2.14	2.91 3.02	2.91 3.02	3.8 3.98	
150 x 125	6 x 5	159 x 133 168.3 x 141.3	140	1.40 1.48	1.71 1.81	2.54 2.67	3.42 3.64	3.42 3.64	5.14 5.47	5.14 5.47	6.52 6.95	
150 x 100	6 x 4	159 x 108 168.3 x 114.3	140	1.29 1.37	1.58 1.67	2.35 2.48	3.15 3.36	3.15 3.36	4.72 5.03	4.72 5.03	5.97 6.38	
150 x 90	6 x 3.1/2	168.03 x 101.6	140	1.32	1.61	2.39	3.23	3.23	4.83	4.83	6.8	
150 x 80	6 x 3	159 x 89 168.3 x 88.9	140	1.21 1.26	1.48 1.53	2.20 2.27	2.96 3.07	2.96 3.07	4.41 4.58	4.41 4.58	5.64 5.85	
200 x 150	8 x 6	219 x 159 219.1 x 168.3	152	2.00 2.04	2.70 2.75	4.30 4.38	5.65 5.77	5.65 5.77	8.55 8.73	8.55 8.73	11.9 12.2	
200 x 125	8 x 5	219 x 133 219.1 x 141.3	152	1.90 1.93	2.56 2.60	4.07 4.14	5.35 5.44	5.35 5.44	8.09 8.23	8.09 8.23	11.2 11.4	
200 x 100	8 x 4	219 x 108 219.1 x 114.3	152	1.80 1.86	2.43 2.46	3.86 3.92	5.07 5.14	5.07 5.14	7.64 7.75	7.64 7.75	10.6 10.7	
250 x 200	10 x 8	273 x 219	178	3.43	4.56	6.75	9.74	9.74	15.5	15.5	21.4	
250 x 150	10 x 6	273 x 159 273.1 x 168.3	178	3.27 3.38	4.15 4.21	6.59 6.69	8.83 8.96	8.83 8.96	14.0 14.2	14.0 14.2	19.2 19.5	
250 x 125	10 x 5	273 x 133 273.3 x 141.3	178	3.25 3.29	3.99 4.04	6.34 6.42	8.47 9.59	8.47 9.59	13.4 13.6	13.4 13.6	18.4 18.6	

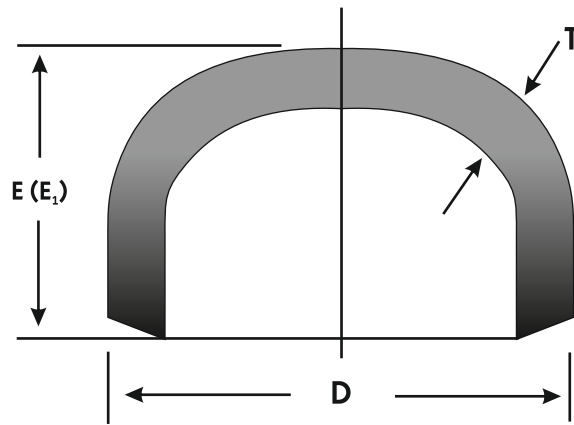


Nominal Diameter		Outside	Center to End	Approx Weight								
DN	INCH	D ₁ x D ₂	H	SCH5s	SCH10s	SCH20s	STD	SCH40s	XS	SCH80s	SCH120s	
300 x 250	12 x 10	325 x 273	203	5.98	6.89	9.38	13.9	15.0	18.3	24.8	35.1	
		323.9 x 273.1		5.97	6.888	9.36	13.9	15.0	18.3	24.8	35.0	
300 x 200	12 x 8	325 x 219	203	5.57	6.42	8.73	12.9	14.0	17.0	23.0	32.4	
		233.9 x 168.3		5.56	6.41	8.70	12.9	13.9	17.0	23.0	32.3	
300 x 150	12 x 6	325 x 159	203	5.17	5.95	8.10	12.0	12.9	15.7	21.2	29.6	
		323.9 x 168.3		5.22	6.00	8.14	12.1	13.0	15.9	21.4	30.0	
350 x 300	14 x 12	377 x 325	330	11.4	13.7	22.2	26.6	30.9	35.1	51.6	73.3	
		355.6 x 323.9		11.0	13.2	21.4	26.6	29.8	33.8	49.8	70.6	
350 x 250	14 x 10	377 x 273	330	10.6	12.8	20.7	24.8	28.8	32.7	48.0	68.0	
		355.6 x 273.1		10.2	12.3	19.9	23.8	27.7	31.4	46.1	65.3	
350 x 200	14 x 8	377 x 219	330	9.89	11.9	19.2	23.0	26.7	30.3	44.5	62.8	
		355.6 x 219.1		9.46	11.4	18.4	22.0	25.5	29.0	42.5	59.9	
350 x 150	14 x 6	377 x 159	330	9.63	11.0	17.75	21.1	24.5	27.8	40.7	57.3	
		355.6 x 168.3		9.22	10.5	16.95	20.2	23.5	26.6	38.9	54.7	
400 x 350	16 x 14	426 x 377	356	14.9	16.9	27.4	32.9	43.5	43.5	71.7	101	
		406.4 x 355.6		14.1	16.1	26.0	31.2	41.2	41.2	67.9	95.4	
400 x 300	16 x 12	426 x 325	356	14.0	16.0	25.9	31.0	40.9	40.9	67.4	94.7	
		406.4 x 323.9		13.6	15.4	25.0	29.9	39.5	39.5	65.1	91.3	
400 x 250	16 x 10	426 x 273	356	13.2	15.0	24.3	29.1	38.4	38.4	63.1	88.5	
		406.4 x 273.1		12.7	14.5	23.5	28.1	37.1	37.1	60.9	85.3	
400 x 200	16 x 8	426 x 219	356	12.4	14.1	22.8	27.3	36.0	36.0	59.1	82.6	
		406.4 x 219.1		11.9	13.6	21.9	26.2	34.6	34.6	56.7	79.2	
400 x 150	16 x 6	426 x 159	356	11.5	13.1	21.18	25.3	33.3	33.3	54.5	75.9	
		406.4 x 168.3		9.96	12.7	20.45	24.5	32.3	32.3	52.7	73.4	
450 x 400	18 x 16	478 x 426	381	17.9	20.4	33.1	39.7	58.8	52.6	96.1	137	
		457 x 406.4		17.1	19.5	31.6	37.9	56.1	50.1	91.6	131	
450 x 350	18 x 14	478 x 377	381	17.1	19.4	31.5	37.7	55.8	49.9	91.1	130	
		457 x 355.6		16.2	18.5	29.5	35.8	53.0	47.4	86.3	123	
450 x 300	18 x 12	478 x 325	381	16.2	18.5	29.9	35.8	53.0	47.4	86.3	123	
		457 x 323.9		15.7	17.9	28.9	34.7	51.2	45.8	83.4	119	
450 x 250	18 x 12	478 x 273	381	15.4	17.6	28.4	34.1	50.3	45.0	81.8	116	
		457 x 273.1		14.8	16.9	27.3	32.8	48.4	43.3	78.6	112	
450 x 200	18 x 8	478 x 219	381	14.5	16.5	36.7	32.0	47.3	42.3	76.7	109	
		457 x 219.1		14.0	15.9	35.7	30.8	45.5	40.7	73.7	104	
500 x 450	20 x 18	529 x 478	508	30.4	35.2	59.1	59.1	92.5	78.2	156	213	
		508 x 457		29.1	33.7	56.6	56.6	88.6	74.9	150	213	
500 x 400	20 x 16	529 x 426	508	28.9	33.4	56.2	56.2	87.9	74.4	149	211	
		508 x 406.4		27.7	32.0	53.8	53.8	84.1	71.1	142	201	
500 x 350	20 x 14	529 x 377	508	27.6	31.9	53.6	53.6	83.8	70.9	142	200	
		508 x 355.6		26.3	30.4	51.0	51.0	79.7	67.4	135	190	
500 x 300	20 x 12	529 x 325	508	26.2	30.4	50.8	50.8	79.4	67.2	134	189	
		508 x 323.9		25.4	29.4	49.3	49.3	77.0	65.1	130	183	

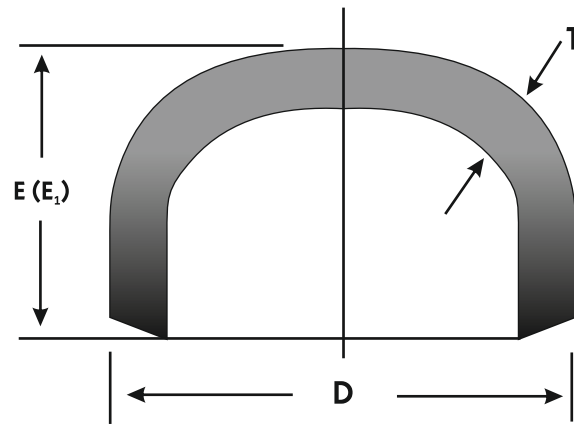
Reducers (Concentric and Eccentric) ASME/ANSI B16.9



Nominal Diameter		Outside	Center to End	Approx Weight								
DN	INCH	D ₁ x D ₂	H	SCH5s	SCH10s	SCH20s	STD	SCH40s	XS	SCH80s	SCH120s	
500 x 250	20 x 10	529 x 273 508 x 273.1	508	24.8 24.0	28.7 27.8	48.2 46.7	48.2 46.7	75.2 72.6	63.7 61.7	127 123	179 173	
500 x 200	20 x 8	529 x 219 508 x 219.1	508	23.5 22.7	27.1 26.2	45.5 43.9	45.5 43.9	70.9 68.5	60.1 58.0	119 115	168 162	
500 x 500	22 x 20	559 x 508	508	32.1	37.3	62.7	62.7	—	83.0	182	255	
550 x 450	22 x 18	559 x 457	508	30.8	35	59.9	59.9	—	79.3	174	243	
550 x 400	22 x 16	226 x 406.6	508	29.4	34.0	57.2	57.2	—	75.7	165	216	
550 x 350	22 x 14	559 x 355.6	508	28.0	32.5	54.5	54.5	—	72.1	157	286	
600 x 550	24 x 22	610 x 559	508	28.0	46.8	68.8	68.8	—	91.2	215	311	
600 x 500	24 x 20	630 x 529 610 x 508	508	40.4 39.2	46.2 44.9	68.0 66.0	68.0 66.0	123 119	307 298	212 206	307 298	
600 x 450	24 x 18	630 x 478 610 x 457	508	39.1 37.6	44.7 43.1	65.8 63.6	65.8 63.6	119 114	296 284	205 197	296 284	
600 x 400	24 x 16	630 x 426 610 x 406.4	508	37.5 36.1	43.0 41.3	63.1 60.7	63.1 60.7	114 110	283 272	197 189	283 272	
650 x 600	26 x 24	660 x 610	610	—	—	119	89.8	—	119	—	—	
650 x 550	26 x 22	660 x 559	610	—	—	114	86.3	—	114	—	—	
650 x 500	26 x 20	660 x 508	610	—	—	110	83.0	—	110	—	—	
650 x 450	26 x 18	660 x 457	610	—	—	105	79.0	—	105	—	—	
700 x 650	28 x 26	711 x 660	610	—	—	129	97.1	—	129	—	—	
700 x 600	28 x 24	720 x 630 711 x 610	610	— —	— —	127 124	95.7 93.6	— —	127 124	— —	— —	
700 x 550	28 x 22	711 x 559	610	—	—	120	90.4	—	120	—	—	
750 x 700	30 x 28	762 x 711	610	—	—	139	104	—	139	—	—	
750 x 650	30 x 26	762 x 660	610	—	—	133	101	—	133	—	—	
750 x 600	30 x 24	762 x 610	610	66.4	82.7	130	97.8	—	130	—	—	
750 x 550	30 x 22	762 x 559	610	63.9	80.0	125	94.5	—	125	—	—	
800 x 750	32 x 30	813 x 762	610	—	—	148	112	—	148	—	—	
800 x 700	32 x 28	820 x 720 813 x 711	610	— —	— —	145 144	109 108	— —	145 144	— —	— —	
800 x 650	32 x 26	813 x 660	610	—	—	139	105	—	139	—	—	
800 x 600	32 x 24	820 x 720 813 x 610	610	— —	— —	138 135	104 102	— —	138 135	— —	— —	
850 x 800	34 x 32	864 x 83	610	—	—	158	119	—	158	—	—	
850 x 750	34 x 30		610	—	—	153	116	—	153	—	—	
850 x 700	34 x 28	864 x 762	610	—	—	149	112	—	149	—	—	
850 x 650	34 x 28	864 x 711	610	—	—	145	109	—	145	—	—	
900 x 850	36 x 34	914 x 864	610	—	—	168	126	—	168	—	—	
900 x 800	36 x 32	920 x 820 914 x 813	610	— —	— —	164 163	124 123	— —	164 163	— —	— —	
900 x 750	36 x 30	914 x 762	610	—	—	159	120	—	159	—	—	
900 x 700	36 x 28	920 x 720 914 x 711	610	— —	— —	156 155	118 117	— —	156 155	— —	— —	

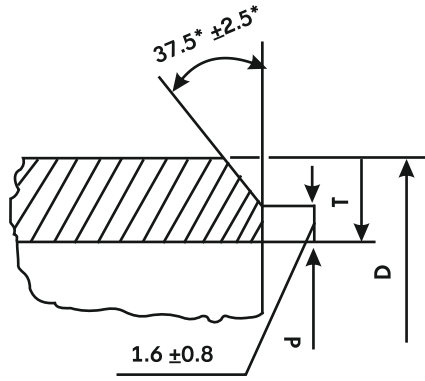


Nominal Diameter		Outside CD	Center to End		Approx Weight							
DN	INCH		E (E ₁)	E (E ₂)	SCH5s	SCH10s	SCH20s	STD	SCH40s	XS	SCH80s	SCH120s
300	12	325	152	178	5.12	6.40	9.90	13.5	14.6	17.9	28.3	94.0
		323.9			5.11	6.39	9.43	13.3	14.4	17.7	27.1	91.0
		318			5.02	6.27	9.40	13.2	14.2	17.3	26.8	90.5
350	14	377	165	191	6.00	8.46	14.0	15.9	19.9	22.5	38.5	105
		355.6			5.66	7.98	13.2	15.9	18.8	21.2	35.2	99.0
400	16	426	178	203	6.93	9.91	17.4	21.0	28.2	28.0	52.0	116
		406.4			6.30	7.53	12.5	20.0	26.7	26.7	49.1	111
450	18	478	203	220	7.90	9.01	22.3	26.9	43.8	35.6	76.1	131
		457.2			7.52	8.58	21.2	25.6	41.4	34.1	69.1	125
500	20	529	254	254	10.5	12.02	33.2	33.2	57.6	44.2	103	141
		508.0			10.1	11.7	31.9	31.9	54.0	42.5	93.7	136
550	22	559	267	—	12.1	22.6	38.8	38.8	78.3	51.7	116	168
600	24	630	267	304	14.8	26.4	47.4	46.5	92.3	61.9	177	172
		610			14.3	26.1	45.1	45.1	90.1	60.1	160	164
650	26	660	267	—	23.3	26.9	67.3	50.5	103.5	67.3	—	—
700	28	720	267	—	21.1	32.4	75.9	56.9	151.1	75.6	—	—
		711			38.7	49.7	94.9	56.2	212.3	74.9	—	—
750	30	762	267	—	41.4	57.7	82.8	62.1	117.3	82.8	—	—
800	32	820	267	—	43.4	58.3	92.0	70.6	127	92.0	—	—
		813			43.1	57.7	91.2	70.0	116	91.2	—	—
850	34	864	267	—	57.2	68.5	105	78.7	144	105	—	—
900	36	920	267	—	60.3	74.6	115	86.3	172	115	—	—
		914			59.1	72.1	114	85.7	171	114	—	—

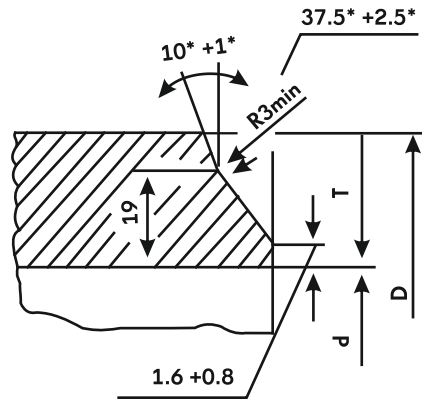


Nominal Diameter		Outside	Center to End		Approx Weight							
DN	INCH	CD	E (E ₁)	E (E ₂)	SCH5s	SCH10s	SCH20s	STD	SCH40s	XS	SCH80s	SCH120s
15	1/2	18 21.3	25		0.019 0.022	0.024 0.028	0.027 0.033	0.031 0.037	0.031 0.037	0.042 0.050	0.042 0.050	0.057 0.063
20	3/4	25 26.7	25		0.027 0.029	0.033 0.035	0.038 0.041	0.045 0.048	0.045 0.048	0.060 0.065	0.060 0.065	0.079 0.086
25	1	32 33.7	38		0.049 0.052	0.083 0.087	0.091 0.093	0.101 0.106	0.101 0.106	0.136 0.143	0.136 0.143	0.176 0.182
32	1.1/4	38 42.4	38		0.058 0.065	0.099 0.110	0.111 0.25	0.126 0.141	0.126 0.141	0.173 0.193	0.173 0.193	0.213 0.237
40	1.1/2	45 48.3	38		0.071 0.076	0.118 0.127	0.138 0.148	0.158 0.169	0.158 0.169	0.218 0.234	0.218 0.234	0.294 0.323
50	2	57 60.3	38	44	0.094 0.099	0.156 0.165	0.189 0.200	0.221 0.234	0.221 0.234	0.313 0.331	0.313 0.331	0.387 0.426
65	2.1/2	76 73.0	38	51	0.167 0.161	0.241 0.232	0.391 0.312	0.409 0.393	0.409 0.393	0.555 0.543	0.555 0.543	0.676 0.634
80	3	89	51	64	0.254	0.367	0.490	0.660	0.660	0.917	0.917	1.469
90	3.1/2	101.6	64	76	0.355	0.512	0.739	0.965	0.965	1.36	1.36	1.891
100	4	108 114.3	64	76	0.387 0.410	0.561 0.594	0.810 0.882	1.11 1.17	1.11 1.17	1.58 1.67	1.58 1.67	2.01 2.16
125	5	133 139.7 141.3	76	89	0.769 0.808 0.817	0.945 0.933 1.00	1.339 1.421 1.473	1.82 1.91 1.93	1.82 1.91 1.93	2.65 2.78 2.81	2.65 2.78 2.81	3.52 3.70 3.74
150	6	159 168.3 165.2	89	102	1.07 1.13 1.11	1.31 1.39 1.36	1.843 2.00 1.97	2.74 2.90 2.85	2.74 2.90 2.85	4.22 4.47 4.39	4.22 4.47 4.39	5.50 5.82 5.72
200	8	219 216.1	102	127	1.76 1.74	2.38 2.35	4.03 3.98	5.19 5.13	5.19 5.13	8.05 7.95	8.05 7.95	11.6 11.5
250	10	273 267.4	127	152	3.35 3.29	4.14 4.05	6.27 6.14	9.15 5.96	9.15 5.96	12.5 12.2	16.8 16.4	23.9 23.4

End Preparation of Butt-Welding Fittings to ASME/ANSI B16.9, B16.28



(a) <22
Wall Thickness <22



(b) <22
Wall Thickness <22

ASME/ANSI B16.9, B16.28

Tolerances for Butt-Welding Fittings

Items	Type Of Pipe	DN (in.) Nominal Pipe Size							
		1/2-2 _{1/2}	3-3 _{1/2}	4	5-8	10-18	20-24	26-30	32-48
Outside Diameter At Bevel	ALL Tubing	+1.52 -0.76		± 1.52		+ 2.29 - 1.52	+ 4.06 - 03.5	+ 6.35 - 4.83	
Inside Diameter At Bevel		± 0.76		± 1.52		± 3.05		± 4.83	
Wall Thickness		87.5% Not Less Than 87.5% Of Nominal Wall Thickness							
Center To End	45°, 90° elbows, tees, crosses	± 1.52			± 2.29		± 3.05		± 4.83.
Center To Center	180° 180° elbows	± 6.35			± 9.65				
Back To End		± 6.35							
U		± 0.76			± 1.52				
	Reducers, Lap Joint Stub Ends	± 1.52			± 2.29		± 4.83.		
Length	Tube cap	± 3.05			± 6.35		± 9.65		
Diameter of Lap	Lap Joint Stub Ends	0 -0.76			0 1.52		-		
Thickness of Lap		+ 1.52 0						-	
Radius of An arc		0 -0.76			0 -1.52		-		

Note:

- 1) About the inside diameter at bevel we should guarantee the tolerances of out side diameter at bevel and nominal wall thickness in priority except the special requirement.
- 2) The inside diameter at bevel is the mathematics difference between outside diameter at bevel and double nominal wall thickness.

ASME/ANSI B16.9, B16.28

Angularity Tolerance of Butt-Welding Fittings

Nominal Pipe Size DN(in.)	Elbows, Tees, Crosses	
	X	Y
1/2-4	0.76	1.52
5-8	1.52	3.05
10-12	2.29	4.83
14-16	2.29	6.35
18-24	3.05	9.65
26-30	48.3	9.65
32-42		12.70
44-48		19.05

MATERIAL

Item	Standard and Code	Grade	Chemical Composition % Max or Range													Mechanical Requirements												
			C	Mn	P	S	Si	Cr	Mo	Ni	Cu	Other	Tensile Strength	Yield Point	Elongation %	HB max	Other											
FITTING	ASTM A234/A234M	WPB	0.30	0.29-1.06	0.050	0.058	0.10min	0.40	0.15	0.40	0.40	0.40	0.40	0.40	0.40	0.15	0.40	0.40	0.40	0.40	0.40	0.40	415-585	240	22	197	-	
		WPC	0.35	0.29-1.06	0.050	0.058	0.10min	0.40	0.15	0.40	0.40	0.40	0.40	0.40	0.40	0.15	0.40	0.40	0.40	0.40	0.40	0.40	485-655	275	22	197	-	
		WP1	0.28	0.30-0.90	0.045	0.45	0.010-0.050	-	-	0.44-0.65	-	-	-	-	-	-	0.44-0.65	-	-	-	-	-	-	380-550	205	22	197	-
		WP12CL1	0.05-0.02	0.30-0.80	0.045	0.45	0.60	0.80-1.25	0.44-0.65	-	-	-	-	-	-	-	0.44-0.65	-	-	-	-	-	-	415-585	220	22	197	-
		WP12CL2	0.05-0.02	0.30-0.80	0.045	0.45	0.60	0.80-1.25	0.44-0.65	-	-	-	-	-	-	-	0.44-0.65	-	-	-	-	-	-	485-655	275	22	197	-
		WP11CL1	0.05-0.02	0.30-0.60	0.030	0.030	0.030	0.030	0.50-1.00	1.00-1.50	0.44-0.65	-	-	-	-	-	0.44-0.65	-	-	-	-	-	-	415-585	205	22	197	-
		WP11CL1	0.05-0.02	0.30-0.80	0.040	0.040	0.040	0.040	0.50-1.00	1.00-1.50	0.44-0.65	-	-	-	-	-	0.44-0.65	-	-	-	-	-	-	485-655	275	22	197	-
		WP11CL3	0.05-0.02	0.30-0.80	0.040	0.040	0.040	0.040	0.50-1.00	1.00-1.50	0.44-0.65	-	-	-	-	-	0.44-0.65	-	-	-	-	-	-	820-650	310	22	197	-
		WP22CL1	0.05-0.15	0.30-0.60	0.040	0.040	0.040	0.040	0.50	1.90-2.60	0.87-1.13	-	-	-	-	-	0.87-1.13	-	-	-	-	-	-	415-585	205	22	197	-
		WP22CL3	0.05-0.15	0.30-0.60	0.040	0.040	0.040	0.040	0.50	1.90-2.60	0.87-1.13	-	-	-	-	-	0.87-1.13	-	-	-	-	-	-	520-690	310	22	197	-
		WP5CL1	0.15	0.30-0.60	0.040	0.030	0.040	0.030	0.50	4.0-6.0	0.44-0.65	-	-	-	-	-	0.44-0.65	-	-	-	-	-	-	415-585	205	22	217	-
		WP5C13	0.15	0.30-0.60	0.040	0.030	0.040	0.030	0.50	4.0-6.0	0.44-0.65	-	-	-	-	-	0.44-0.65	-	-	-	-	-	-	520-690	310	22	217	-
		WP9CL1	0.15	0.30-0.60	0.030	0.030	0.030	0.030	1.00	8.00-10.0	0.90-1.10	-	-	-	-	-	0.90-1.10	-	-	-	-	-	-	415-585	205	22	217	-
		WP9CL3	0.156	0.30-0.60	0.030	0.030	0.030	0.030	1.00	8.00-10.0	0.90-1.10	-	-	-	-	-	0.90-1.10	-	-	-	-	-	-	520-690	310	22	217	-
		WPR	0.20	0.40-1.06	0.045	0.030	0.045	0.030	-	-	-	0.75-1.25	0.75-1.25	0.75-1.25	0.75-1.25	0.75-1.25	-	-	-	-	-	-	-	435-650	315	20/28	217	-
		WP91	0.08-0.12	0.30-0.60	0.020	0.030	0.020	0.030	0.20-0.50	8.0-9.5	0.85-1.05	-	-	-	-	-	0.85-1.05	-	-	-	-	-	-	585-760	415	20	248	-
		WP911	0.09-0.13	0.30-0.60	0.020	0.030	0.020	0.030	0.10-0.50	8.0-10.5	0.90-1.10	-	-	-	-	-	0.90-1.10	-	-	-	-	-	-	620-840	440	20	248	-
		WP304	0.08	2.00	0.045	0.030	0.045	0.030	1.00	18.0-20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	515	205	28	-	-
		WP304H	0.04-0.10	2.00	0.045	0.030	0.045	0.030	1.00	18.0-20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	515	205	28	-	-
		WP304L	0.035	2.00	0.045	0.030	0.045	0.030	1.00	18.0-20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	485	170	28	-	-
		WP304LN	0.030	2.00	0.045	0.030	0.045	0.030	0.75	18.0-20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	515	205	28	-	-
		WP304N	0.08	2.00	0.045	0.030	0.045	0.030	0.75	18.0-20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	550	240	28	-	-
		WP309	0.15	2.00	0.045	0.030	0.045	0.030	1.00	22.0-24.0	-	-	-	-	-	-	-	-	-	-	-	-	-	515	205	28	-	-
		WP310	0.15	2.00	0.045	0.030	0.045	0.030	1.50	24.0-26.0	-	-	-	-	-	-	-	-	-	-	-	-	-	515	205	28	-	-
		WP316	0.08	2.00	0.045	0.030	0.045	0.030	1.00	16.0-18.0	2.00-3.00	-	-	-	-	-	2.00-3.00	-	-	-	-	-	-	515	205	28	-	-
		WP316H	0.04-0.10	2.00	0.045	0.030	0.045	0.030	1.00	16.0-18.0	2.00-3.00	-	-	-	-	-	2.00-3.00	-	-	-	-	-	-	515	205	28	-	-
		WP316LN	0.30	2.00	0.045	0.030	0.045	0.030	0.75	16.0-18.0	2.00-3.00	-	-	-	-	-	2.00-3.00	-	-	-	-	-	-	515	205	28	-	-
WP316L	0.035	2.00	0.045	0.030	0.045	0.030	1.00	16.0-18.0	2.00-3.00	-	-	-	-	-	2.00-3.00	-	-	-	-	-	-	485	170	28	-	-		
WP316N	0.08	2.00	0.045	0.030	0.045	0.030	0.75	16.0-18.0	2.00-3.00	-	-	-	-	-	2.00-3.00	-	-	-	-	-	-	550	240	28	-	-		
WP317	0.08	2.00	0.045	0.030	0.045	0.030	1.00	18.0-20.0	3.0-1.0	-	-	-	-	-	3.0-1.0	-	-	-	-	-	-	515	205	28	-	-		
WP317L	0.030	2.00	0.045	0.030	0.045	0.030	1.00	18.0-20.0	3.0-4.0	-	-	-	-	-	3.0-4.0	-	-	-	-	-	-	515	205	28	-	-		
WP321	0.08	2.00	0.045	0.030	0.045	0.030	1.00	17.0-20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	515	205	28	-	-		
WP321H	0.04-0.10	2.00	0.045	0.030	0.045	0.030	1.00	17.0-20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	515	205	28	-	-		
WP347	0.08	2.00	0.045	0.030	0.045	0.030	1.00	17.0-20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	515	205	28	-	-		
WP347H	0.04-0.10	2.00	0.045	0.030	0.045	0.030	1.00	17.0-20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	515	205	28	-	-		
WP348	0.08	2.00	0.045	0.030	0.045	0.030	1.00	17.0-20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	515	205	28	-	-		
WP348H	0.04-0.1	2.00	0.045	0.030	0.045	0.030	1.00	17.0-20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	515	205	28	-	-		

Note: The bevel can be made according to the special requirements of the customers.

ASTM A420/A420M

Type of the steel	ASTM Grade	Chemical Composition (%)						
		C	Mn	P	S	Si	Ni	Cu
Carbon Steel	WPL9 ^{B,C}	0.30	0.39-1.06	0.048	0.058	0.10min	-	-
2%Nickel(1%Copper)Steel	WPL9	0.20	0.40-1.06	0.045	0.050	-	1.60-2.24	0.75-1.25
3.5% Nickel Steel	WPL3 ^D	0.20	0.31-0.64	0.050	0.050	0.13-0.37	3.18-3.82	-
9% Nickel Steel	WPL8 ^E	0.13	0.90	0.045	0.045	0.13-0.37	8.40-9.60	-

Type of the Steel	ASTM Grade	Mechanical Properties				Impact Test			Post Weld Heat-Treatment		
		Tensile Strength MPa	Yield Strength MPa	Elongation 2 or 50 mm.mm%		Size of specimens mm	Min. average of 3 specimens J	Min. average of 1 specimens Only J	Test Temperature C	Temperature C	Min. holding time min.
				Long	Trasv.						
Carbon Steel	WPL6	415	240	30	16.5	10x10	17.6	13.6	-46.6	595-650	1h25.4mm 3.4hmin
						10x7.5	13.6	10.8			
						10x5	9.5	7.0			
						10x2.5	5.4	4.1			
2%Nidel(1% Copper)Steel	WPL9 ¹	435	315	28	18	10x10	17.6	13.6	-73.3	550-585	1h25.4mm 2h min
						10x7.5	13.6	10.8			
						10x5	9.5	7.0			
						10x2.5	5.4	4.1			
3.5% Nickel Steel	WPL3	450	240	30	20	10x10	17.6	13.6	-10.1.1	540-620	1/4h25.4mm 1h min.
						10x7.5	13.6	10.8			
						10x5	9.5	7.0			
						10x2.5	5.4	4.1			
9% Nickel Steel	WPL8	690	515	22	-	10x10	33.9	27.1	-195.6	565-595	1/2h/25.4mm 1h min.
						10x7.5	28.5	23.1			
						10x5	23.1	19.0			
						10x2.5	10.8	8.1			





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