



RHINO FITT^{UK}

A Quality Product of WEC (LEEDS) Co.

Butt Weld Fittings

• Carbon Steel • Stainless Steel • Special Alloys



AN ISO 9001:2015 CERTIFIED COMPANY





W.E.C (Leeds) Ltd, established in the UK in 1997, is today a leading name in the Manufacture and Distribution of specialised hoses for the Oil and Petrochemical industry.

Recognising the opportunity in the piping industry W.E.C (Leeds) ramped up manufacturing to become a major PFV (Pipes, Fittings & Valves), branded as Rhinofitt. Today Rhinofitt is the preferred vendor across UK and Europe for enterprise level projects.

Upping the ante in the international market, based on our success in Europe, we are now one of the leading brands worldwide. Rhinofitt is known for offering a good quality product at competitive prices whilst maintaining a high standard of service and technical know how, supported by our wide network of distributors.

W.E.C (Leeds) recognises the need to offer the highest standards of customer service and this has always been a fundamental rule in our business model as well as our success both for existing and potential new clients.

Within the Rhinofitt range we provide all types of pipe fittings and flanges in various grades of Carbon Steel and Stainless Steel manufactured to the highest quality standards.





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Capabilities

Carbon Steel

- ASTM A234 / A234M
- ASTM A420 / A420M

Stainless Steel

- ASTM A403 / A403M
- Duplex & Super Duplex ASTM A815 / A815M

Product Range

Size

- ½" to 60"
- Larger sizes available on request

Wall Thickness

- Sch 20 to Sch XXS
- Special Wall Thickness on request

Type

- Elbows, Equal & Reducing Tees, Eccentric and Concentric Reducers, and Caps

Grade

- ASTM A234 (WPB), ASTM A420 (WPL6)
- ASTM A403 / A403M (WP304L) / (WP316L)
- ASTM A815 Gr. S31803 / S32750 / S32760

Pipe Material

- Carbon Steel
- Stainless Steel
- Available in Seamless and Welded

Applicable Standards

ASTM A234 / A234M WPB Fittings
Piping Fittings of Wrought Carbon Steel
and Alloy Steel for Moderate and High
Temperature Service

ASTM A420 / A420M WPL6 Fittings
Piping Fittings of Wrought Carbon Steel
and Alloy Steel for Low – Temperature
Service

ASTM A860 / A860M (WPHY 52 Fittings)
Wrought High Strength Low – Alloy Steel
Buttweld Fittings

ASTM A815 / A815M Fittings
Wrought Ferritic / Austenitic Pipe Fittings

ASME B16.90
Factory Made Wrought Butt Welding
Fittings

MSS-SP-75
High Test Wrought Butt - Welded Fittings

NACE MR0175 / ISO 15156
Metals for Sulfide Stress Cracking and
Stress Corrosion Cracking Resistance in
Sour Oilfield Environments



At RHINOFITT we ensure that all our products undergo the most stringent process of testing and analysis.

Testing

Destructive Testing

- Tensile Test
- Charpy Impact Test (0°C to -60°C)
- Macro Hardness Test
- Metallographic Test
- Guided or Welded Bend Test for Welded Materials
- Hydrogen Induced Cracking Test (HIC) – Sour Service
- Sulphite Stress Cracking Test (SSC) – Sour Service
- Intergranular Corrosion Test
- Pitting and Crevice Corrosion Resistance Test
- Ferrite Count

Non - Destructive Testing

- Dimensional Inspection
- Positive Material Identification (PMI)
- Surface Hardness Test
- Ultrasonic Thickness Check
- Penetrant Test – Liquid Penetrant Test (LPT)
- Ultrasonic Flaw Detection (UTFD)
- Radiography Inspection (RT)
- Eddy Current Test (ET)
- Drift Test / Pigging
- Hydrostatic Test

Heat Treatment

Temperature

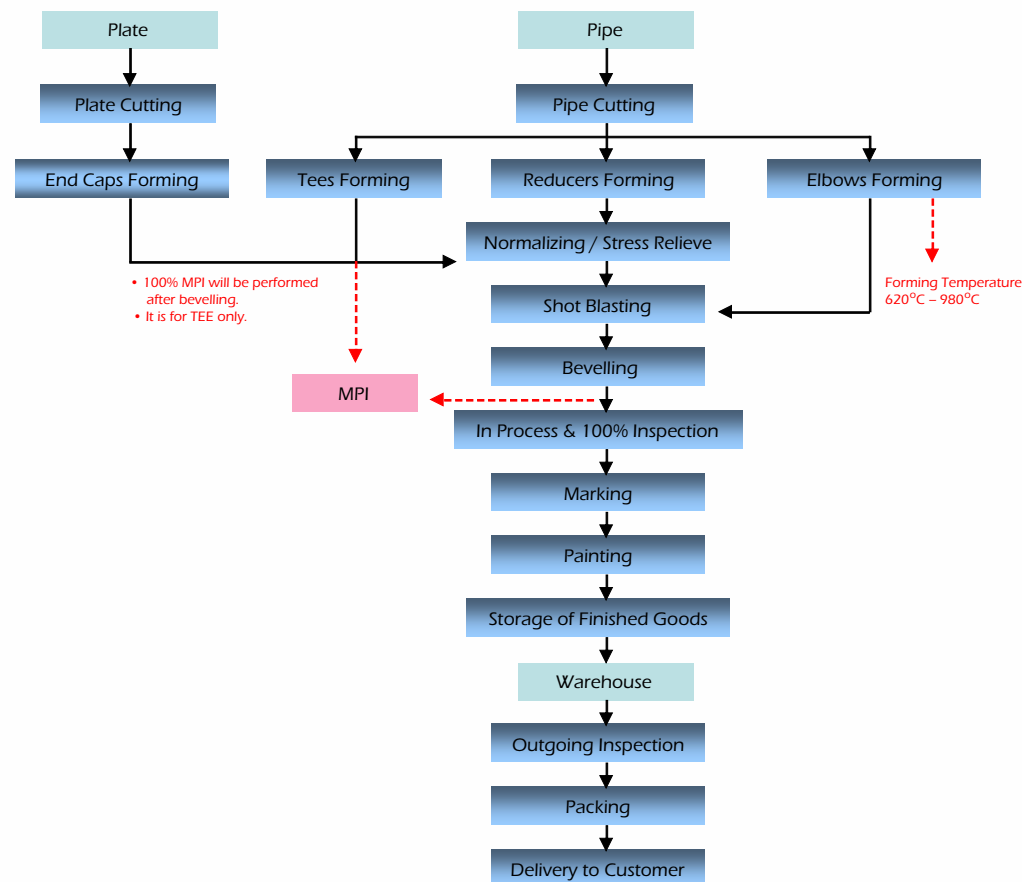
- Up to 1200°C

Post Heat Treatment

- Stress Relieved
- Tempering
- Normalizing
- Quenched

Note : The above tests are subject to customer's requirement on the standard/specification compliance.

Manufacturing Process





Wrought Steel Butt-welding Fittings



90° Elbow Long Radius



90° Elbow Short Radius



45° Elbow Long Radius



180° Long Radius
Return Elbow



180° Short Radius
Return Elbow



Equal Tee



Reducing Tee



Reducer (Concentric)



Reducer (Eccentric)



End Cap



Stainless Steel Butt-welding Fittings



90° Elbow Long Radius



90° Elbow Short Radius



45° Elbow Long Radius



180° Elbow Long Radius



180° Elbow Short Radius



Equal Tee



Reducing Tee



Reducer (Concentric)

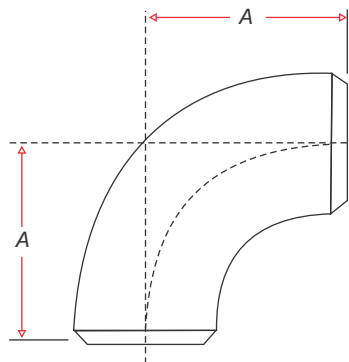


Reducer (Eccentric)



Cap

90° LONG RADIUS ELBOWS



ASME B16.9

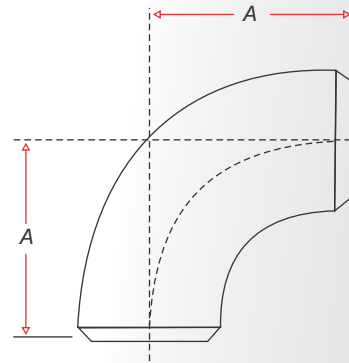
Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Sch. 10s Wall thk.	Sch. 40s Wall thk.	SCH STD Wall thk.	Weight kg	SCH 40 Wall thk.	Weight kg	SCH XS Wall thk.	Weight kg	SCH 80 Wall thk.	Weight kg	SCH 120 Wall thk.	Weight kg	SCH 160 Wall thk.	Weight kg	SCH XXS Wall thk.	Weight kg
½"	21.3	2.11	2.77	2.77	0.08	2.77	0.08	3.73	0.1	3.73	0.1			4.78	0.12	7.47	0.18
¾"	26.7	2.11	2.87	2.87	0.11	2.87	0.11	3.91	0.14	3.91	0.14			5.56	0.13	7.82	0.22
1"	33.4	2.77	3.38	3.38	0.16	3.38	0.16	4.55	0.2	4.55	0.2			6.35	0.26	9.09	0.36
1¼"	42.2	2.77	3.56	3.56	0.27	3.56	0.27	4.85	0.36	4.85	0.36			6.35	0.42	9.7	0.64
1½"	48.3	2.77	3.68	3.68	0.4	3.68	0.4	5.08	0.53	5.08	0.53			7.14	0.7	10.15	0.93
2"	60.3	2.77	3.91	3.91	0.67	3.91	0.67	5.54	0.9	5.54	0.9			8.74	1.5	11.07	1.69
2½"	73	3.05	5.16	5.16	1.37	5.16	1.37	7.01	1.79	7.01	1.79			9.53	2.33	14.02	3.43
3"	88.9	3.05	5.49	5.49	2.08	5.49	2.08	7.62	2.74	7.62	2.74			11.13	4.1	15.24	5.25
4"	114.3	3.05	6.02	6.02	3.95	6.02	3.95	8.56	5.4	8.56	5.4	11.13	7.2	13.49	8.6	17.12	10.4
5"	141.3	3.40	6.56	6.55	6.67	6.55	6.67	9.53	9.34	9.53	9.34	12.7	12.7	15.88	17.6	19.05	17.6
6"	168.3	3.40	7.11	7.11	10.4	7.11	10.4	10.97	15.5	10.97	15.5	14.27	21.1	18.26	28	21.95	31.8
8"	219.1	3.76	8.18	8.18	20.9	8.18	20.9	12.7	31.3	12.7	31.3	18.26	46.05	23.01	56.72	22.23	55
10"	273.1	4.90	9.27	9.27	37	9.27	37	12.7	49.4	15.09	57.11	21.44	84.55	28.58	109.7	25.4	98.65
12"	323.9	4.57	9.52	9.53	54	10.31	58.15	12.7	71.2	17.48	94.82	25.4	140	33.32	182.42	25.4	140
14"	355.6	4.78		9.53	69.3	11.13	79.96	12.7	91.5	19.05	132.16	27.79	197	35.71	246.5		
16"	406.4	4.78		9.53	91.2	12.7	120	12.7	120	21.44	204.3	30.96	227.5	40.49	365.9		
18"	457.2	4.78		9.53	116	14.27	177.06	12.7	153	23.83	287.84	34.93	412	45.24	519		
20"	508	5.54		9.53	143.3	15.09	230	12.7	190.3	26.19	390.9	38.1	554.6	50.01	716		
22"	559	5.54		9.53	174.5	-		12.7	230.5	28.58	523.4	41.28	728	53.98	886		
24"	610	6.35		9.53	207	17.48	384	12.7	274.5	30.96	667.4	46.02	964	59.54	1,250.00		

* All dimensions in mm.

* All weights indicated are approximate.

Other sizes available on request.

90° LONG RADIUS ELBOWS



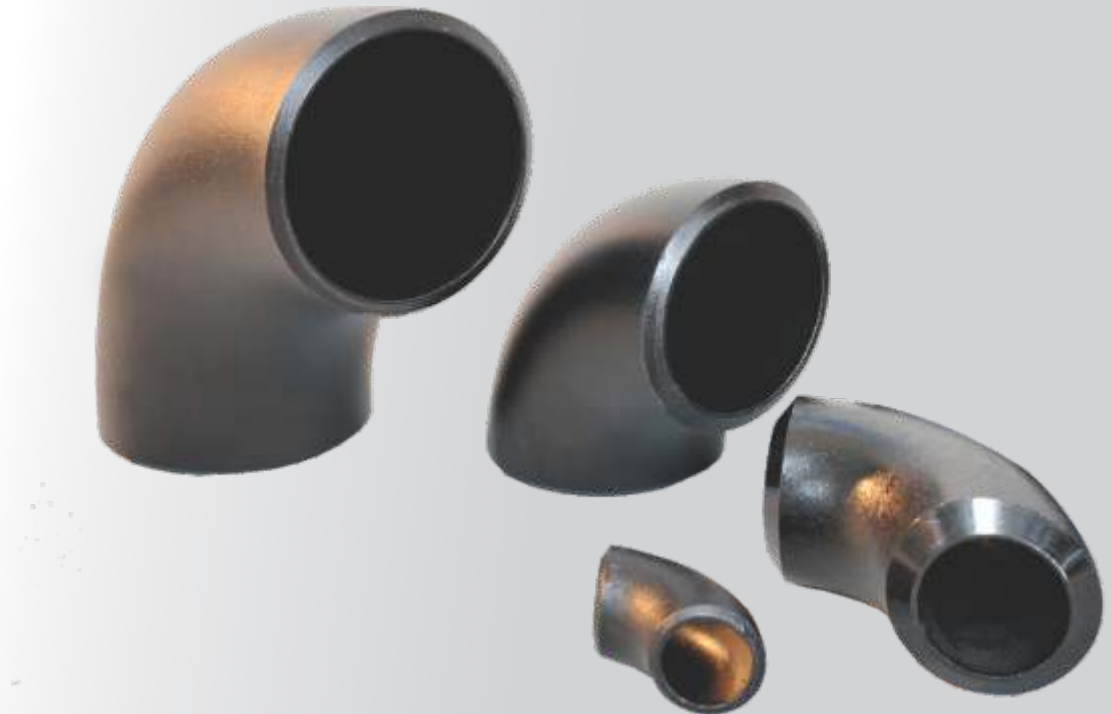
ASME B16.9

Nominal Pipe Size (NPS)	Outside Diameter at Bevel	SCH STD		SCH XS	
		Wall thk.	Weight kg	Wall thk.	Weight kg
26"	660.0	9.53	247.00	12.70	328.00
28"	711.0	9.53	276.00	12.70	356.00
30"	762.0	9.53	331.00	12.70	429.00
32"	813.0	9.53	362.00	12.70	468.00
34"	864.0	9.53	409.00	12.70	530.00
36"	914.0	9.53	478.00	12.70	635.00
38"	965.0	9.53	510.00	12.70	664.00
40"	1016.0	9.53	566.00	12.70	738.00
42"	1067.0	9.53	616.00	12.70	820.00
44"	1118.0	9.53	686.00	12.70	896.00
46"	1168.0	9.53	749.00	12.70	979.00
48"	1219.0	9.53	816.00	12.70	1068.00

* All dimensions in mm.

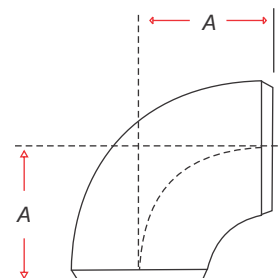
* All weights indicated are approximate.
Other sizes available on request.

HIGHER
W.T.
ON REQUEST





90° SHORT RADIUS ELBOWS



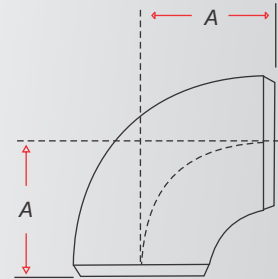
ASME B16.9

Nominal Pipe Size (NPS)	Outside Diameter at Bevel	SCH STD		SCH 40		SCH XS		SCH 80		SCH 120		SCH 160		SCH XXS	
		Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg
1"	33.4	3.38	0.11	3.38	0.11	4.55	0.14	4.55	0.14			6.35	0.17	9.09	0.22
1¼"	42.2	3.56	0.18	3.56	0.18	4.85	0.24	4.85	0.24			6.35	0.31	9.70	0.43
1½"	48.3	3.68	0.25	3.68	0.25	5.08	0.34	5.08	0.34			7.14	0.43	10.15	0.57
2"	60.3	3.91	0.44	3.91	0.44	5.54	0.62	5.54	0.62			8.74	0.92	11.07	1.13
2½"	73.0	5.16	0.91	5.16	0.91	7.01	1.19	7.01	1.19			9.53	1.49	14.02	2.19
3"	88.9	5.49	1.38	5.49	1.38	7.62	1.85	7.62	1.85			11.13	2.60	15.24	3.49
4"	114.3	6.02	2.60	6.02	2.60	8.56	3.60	8.56	3.60	11.13	4.50	13.49	5.35	17.12	6.79
5"	141.3	6.55	4.40	6.55	4.40	9.53	6.20	9.53	6.20	12.70	9.10	15.88	11.40	19.05	13.53
6"	168.3	7.11	6.85	7.11	6.85	10.97	10.30	10.97	10.30	14.27	14.60	18.26	18.20	21.95	21.33
8"	219.1	8.18	13.70	8.18	13.70	12.70	20.60	12.70	20.60	18.26	33.50	23.01	40.57	22.23	39.50
10"	273.1	9.27	24.50	9.27	24.50	12.70	32.80	15.09	40.00	21.44	64.80	28.58	83.95	25.40	75.60
12"	323.9	9.53	36.00	10.31	40.00	12.70	47.00	17.48	66.28	25.40	87.60	33.32	114.00	25.40	89.50
14"	355.6	9.53	46.20	11.13	55.39	12.70	61.20	19.05	93.07	27.79	130.00	35.71	162.00		
16"	406.4	9.53	61.00	12.70	80.10	12.70	80.10	21.44	136.20	30.96	190.30	40.49	242.50		
18"	457.2	9.53	77.50	14.27	117.59	12.70	102.00	23.83	191.60	34.93	272.50	45.24	344.50		
20"	508.0	9.53	96.00	15.09	153.45	12.70	126.30	26.19	260.14	38.10	368.00	50.01	476.00		
22"	559.0	9.53	117.50			12.70	154.00	28.58	350.50	41.28	485.00	53.98	625.00		
24"	610.0	9.53	138.50	17.48	256.00	12.70	183.50	30.96	443.55	46.02	641.50	59.54	833.00		

* All dimensions in mm.

* All weights indicated are approximate.
Other sizes available on request.

90° SHORT RADIUS ELBOWS



ASME B16.9

Nominal Pipe Size (NPS)	Outside Diameter at Bevel	SCH STD		SCH XS	
		Wall thk.	Weight kg	Wall thk.	Weight kg
26"	660.0	9.53	159.50	12.70	204.00
30"	762.0	9.53	216.00	12.70	285.00
36"	914.0	9.53	313.00	12.70	423.00
38"	965.0	9.53	340.00	12.70	452.00
40"	1016.0	9.53	377.00	12.70	501.00
42"	1067.0	9.53	416.00	12.70	553.00
44"	1118.0	9.53	457.00	12.70	607.00
46"	1168.0	9.53	499.00	12.70	664.00
48"	1219.0	9.53	544.00	12.70	723.00

* All dimensions in mm.

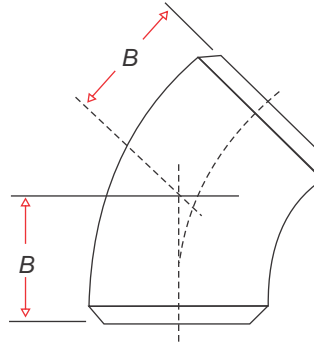
* All weights indicated are approximate.
Other sizes available on request.

HIGHER
W.T.
ON REQUEST





45° LONG RADIUS ELBOWS



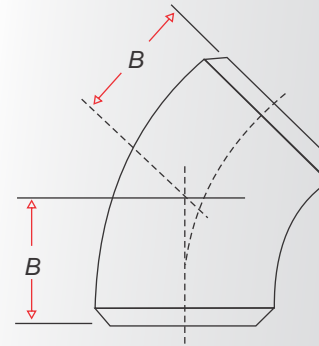
ASME B16.9

Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Sch.10s	Sch.40s	SCH STD		SCH 40		SCH XS		SCH 80		SCH 120		SCH 160		SCH XXS	
		Wall thk.	Wall thk.	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg
½"	21.3	2.11	2.77	2.77	0.04	2.77	0.04	3.73	0.05	3.73	0.05			4.78	0.05	7.47	0.08
¾"	26.7	2.11	2.87	2.87	0.06	2.87	0.06	3.91	0.07	3.91	0.07			5.56	0.06	7.82	0.1
1"	33.4	2.77	3.38	3.38	0.08	3.38	0.08	4.55	0.1	4.55	0.1			6.35	0.13	9.09	0.18
1¼"	42.2	2.77	3.56	3.56	0.13	3.56	0.13	4.85	0.18	4.85	0.18			6.35	0.21	9.7	0.32
1½"	48.3	2.77	3.68	3.68	0.19	3.68	0.19	5.08	0.25	5.08	0.25			7.14	0.33	10.15	0.47
2"	60.3	2.77	3.91	3.91	0.33	3.91	0.33	5.54	0.45	5.54	0.45			8.74	0.71	11.07	0.85
2½"	73	3.05	5.16	5.16	0.69	5.16	0.69	7.01	0.9	7.01	0.9			9.53	1.17	14.02	1.72
3"	88.9	3.05	5.49	5.49	1.02	5.49	1.02	7.62	1.37	7.62	1.37			11.13	1.92	15.24	2.63
4"	114.3	3.05	6.02	6.02	1.95	6.02	1.95	8.56	2.68	8.56	2.68	11.13	3.5	13.49	4.2	17.12	5.09
5"	141.3	3.40	6.56	6.55	3.31	6.55	3.31	9.53	4.63	9.53	4.63	12.7	6.15	15.88	7.46	19.05	8.8
6"	168.3	3.40	7.11	7.11	5.13	7.11	5.13	10.97	7.57	10.97	7.57	14.27	10.2	18.26	13.7	21.95	15.4
8"	219.1	3.76	8.18	8.18	10.3	8.18	10.3	12.7	15.4	12.7	15.4	18.26	22.6	23.01	26.6	22.23	26.6
10"	273.1	4.90	9.27	9.27	18.3	9.27	18.3	12.7	24.4	15.09	30	21.44	41.3	28.58	53.7	25.4	47.9
12"	323.9	4.57	9.52	9.53	27	10.31	29.57	12.7	35.5	17.48	49.94	25.4	68.6	33.32	90	25.4	68.6
14"	355.6	4.78		9.53	34.5	11.13	39.98	12.7	45.4	19.05	69.92	27.79	97.5	35.71	123		
16"	406.4	4.78		9.53	44.5	12.7	59.3	12.7	59.3	21.44	102.15	30.96	143.5	40.49	183		
18"	457.2	4.78		9.53	57.5	14.27	88.53	12.7	76	23.83	143.92	34.93	205	45.24	259		
20"	508	5.54		9.53	71	15.09	114	12.7	94	26.19	195.67	38.1	277	50.01	357.5		
22"	559	5.54		9.53	86.5			12.7	114.3	28.58	256.7	41.28	363	53.98	469		
24"	610	6.35		9.53	103	17.48	192.04	12.7	137	30.96	333.7	46.02	481.5	59.54	625		

* All dimensions in mm.

* All weights indicated are approximate.
Other sizes available on request.

45° LONG RADIUS ELBOWS



ASME B16.9

Nominal Pipe Size (NPS)	Outside Diameter at Bevel	SCH STD		SCH XS	
		Wall thk.	Weight kg	Wall thk.	Weight kg
26"	660.0	9.53	124.00	12.70	164.00
28"	711.0	9.53	154.00	12.70	193.00
30"	762.0	9.53	165.00	12.70	214.00
32"	813.0	9.53	193.00	12.70	255.00
34"	864.0	9.53	210.00	12.70	279.00
36"	914.0	9.53	235.00	12.70	318.00
38"	965.0	9.53	272.00	12.70	354.00
40"	1016.0	9.53	295.00	12.70	397.00
42"	1067.0	9.53	320.00	12.70	425.00
44"	1118.0	9.53	363.00	12.70	488.00
46"	1168.0	9.53	408.00	12.70	530.00
48"	1219.0	9.53	454.00	12.70	567.00

* All dimensions in mm.

* All weights indicated are approximate.
Other sizes available on request.

HIGHER
W.T.
ON REQUEST

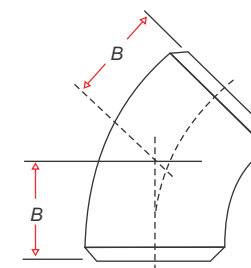
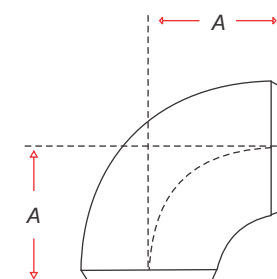
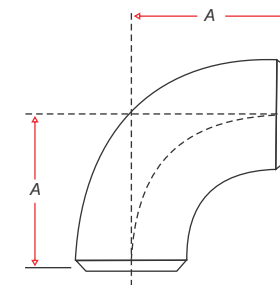


While every care has been taken in the preparation of the information in this catalogue, the Company accepts no liability for any loss or damage either direct or consequential arising out of use of this catalogue. This compilation is for reference only, for further details please refer to relevant Standards.



DIMENSIONS OF ELBOWS

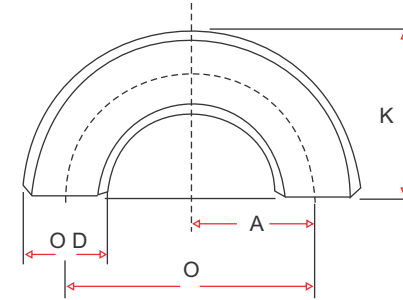
Nominal Pipe Size (NPS)	DN	Outside Diameter at Bevel	Center - to - End		
			90 Deg LR Elbows A	45 Deg LR Elbows B	90 Deg SR Elbows A
½"	15	21.3	38	16	
¾"	20	26.7	38	19	
1"	25	33.4	38	22	25
1¼"	32	42.2	48	25	32
1½"	40	48.3	57	29	38
2"	50	60.3	76	35	51
2½"	65	73	95	44	64
3"	80	88.9	114	51	76
4"	100	114.3	152	64	102
5"	125	141.3	190	79	127
6"	150	168.3	229	95	152
8"	200	219.1	305	127	203
10"	250	273	381	159	254
12"	300	323.9	457	190	305
14"	350	355.6	533	222	353
16"	400	406.4	610	254	406
18"	450	457.2	686	286	457
20"	500	508	762	318	508
22"	550	559	838	343	559
24"	600	610	914	381	610
26"	650	660	991	406	
28"	700	711	1067	438	
30"	750	762	1143	470	
32"	800	813	1219	502	
34"	850	864	1295	533	
36"	900	914	1372	565	
40"	950	1016	1524	632	
42"	1050	1067	1600	660	
48"	1200	1219	1829	759	



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180° LONG RADIUS RETURN ELBOWS



ASME B16.9

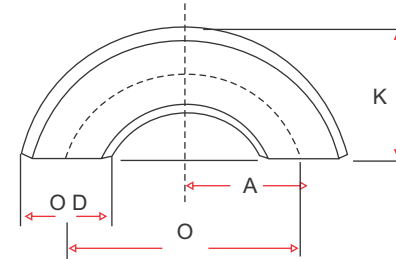
Nominal Pipe Size (NPS)	Outside Diameter at Bevel	SCH STD		SCH 40		SCH XS		SCH 80		SCH 120		SCH 160		SCH XXS	
		Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg
½"	21.3	2.77		2.77		3.73		3.73				4.78		7.47	
¾"	26.7	2.87		2.87		3.91		3.91				5.56		7.82	
1"	33.4	3.38	0.31	3.38	0.31	4.55	0.40	4.55	0.40			6.35	0.54	9.09	0.68
1¼"	42.2	3.68	0.76	3.68	0.76	5.08	1.00	5.08	1.00			6.35	1.36	9.70	1.80
1½"	48.3	3.56	0.53	3.56	0.53	4.85	0.69	4.85	0.69			7.14	0.88	10.15	1.22
2"	60.3	3.91	1.36	3.91	1.36	5.54	1.85	5.54	1.85			8.74	2.80	11.07	3.36
2½"	73.0	5.16	2.67	5.16	2.67	7.01	3.50	7.01	3.50			9.53	4.68	14.02	5.40
3"	88.9	5.49	4.19	5.49	4.19	7.62	5.62	7.62	5.62			11.13	8.04	15.24	10.34
4"	114.3	6.02	7.94	6.02	7.94	8.56	11.00	8.56	11.00	11.13	14.22	13.49	16.84	17.12	20.60
5"	141.3	6.55	13.50	6.55	13.50	9.53	19.00	9.53	19.00	12.70	25.30	15.88	30.84	19.05	36.20
6"	168.3	7.11	20.90	7.11	20.90	10.97	31.30	10.97	31.30	14.27	40.84	18.26	50.92	21.95	59.80
8"	219.1	8.18	41.90	8.18	41.90	12.70	63.50	12.70	63.50	18.65	90.92	23.01	111.86	22.23	108.80
10"	273.1	9.27	74.40	9.27	74.40	12.70	100.20	15.09	120.62	21.44	167.08	28.58	216.38	25.40	194.82
12"	323.9	9.53	109.30	10.31	120.14	12.70	143.80	17.48	198.72	25.40	281.74	33.32	359.80	25.40	281.74
14"	355.6	9.53	140.20	11.13	166.12	12.70	184.60	19.05	277.36	27.79	395.08	35.71	495.40		
16"	406.4	9.53	183.70	12.70	242.20	12.70	242.20	21.44	408.34	30.96	576.10	40.49	734.30		
18"	457.2	9.53	233.10	14.27	352.42	12.70	308.00	23.83	575.14	34.93	822.42	45.24	1039.18		
20"	508.0	9.53	288.90	15.09	459.92	12.70	381.50	26.19	782.06	38.10	1109.16	50.01	1435.00		
22"	559.0	9.53	349.70			12.70	462.70	28.58	1032.70	41.28	1454.08	53.98	1879.00		
24"	610.0	9.53	417.30	17.48	768.20	12.70	533.40	30.96	1329.42	46.02	1928.20	59.54	2502.00		

* All dimensions in mm.

* All weights indicated are approximate.
Other sizes available on request.



180° SHORT RADIUS RETURN ELBOWS



ASME B16.9

Nominal Pipe Size (NPS)	Outside Diameter at Bevel	SCH STD		SCH 40		SCH XS		SCH 80		SCH 120		SCH 160		SCH XXS	
		Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg
½"	21.3	2.77		2.77		3.73		3.73				4.78		7.47	
¾"	26.7	2.87		2.87		3.91		3.91				5.56		7.82	
1"	33.4	3.38	0.23	3.38	0.23	4.55		4.55				6.35	0.34	9.09	0.44
1 ¼"	42.2	3.68	0.36	3.68	0.36	5.08		5.08				6.35	0.62	9.70	0.86
1 ½"	48.3	3.56	0.50	3.56	0.50	4.85	0.68	4.85	0.68			7.14	0.86	10.15	1.14
2"	60.3	3.91	0.86	3.91	0.86	5.54	1.32	5.54	1.32			8.74	1.84	11.07	2.26
2 ½"	73.0	5.16	1.82	5.16	1.82	7.01	2.36	7.01	2.36			9.53	2.98	14.02	4.38
3"	88.9	5.49	2.72	5.49	2.72	7.62	3.72	7.62	3.72			11.13	5.20	15.24	6.98
4"	114.3	6.02	5.53	6.02	5.53	8.56	7.44	8.56	7.44	11.13	9.00	13.49	10.70	17.12	13.58
5"	141.3	6.55	8.70	6.55	8.70	9.53	12.56	9.53	12.56	12.70	18.20	15.88	22.80	19.05	27.06
6"	168.3	7.11	14.92	7.11	14.92	10.97	20.73	10.97	20.73	14.27	29.20	18.26	36.40	21.95	42.60
8"	219.1	8.18	29.44	8.18	29.44	12.70	43.66	12.70	43.66	18.65	67.00	23.01	81.14	22.23	79.00
10"	273.1	9.27	50.80	9.27	50.80	12.70	64.87	15.09		21.44	129.60	28.58	167.90	25.40	151.20
12"	323.9	9.53	71.22	10.31		12.70	96.16	17.48		25.40	175.20	33.32	228.00	25.40	179.00
14"	355.6	9.53	94.35	11.13		12.70	122.92	19.05		22.79	260.00	35.71	324.00		
16"	406.4	9.53	116.58	12.70		12.70	153.77	21.44		30.96	380.60	40.49	485.00		
18"	457.2	9.53	167.42	14.27		12.70	192.77	23.83		34.93	545.00	45.24	689.00		
20"	508.0	9.53	188.10	15.09		12.70	251.75	26.19		38.10	736.00	50.01	952.00		
22"	559.0	9.53				12.70		28.58		41.28	970.00	53.98	1250.00		
24"	610.0	9.53	268.53	17.48		12.70	352.90	30.96		46.02	1283.00	59.54	1666.00		

* All dimensions in mm.

* All weights indicated are approximate.
Other sizes available on request.

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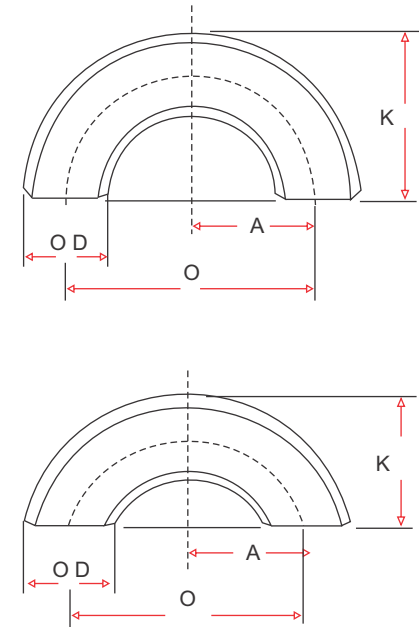


DIMENSIONS OF ELBOWS 180°

Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Center - to - Center O	Back - to - Face K
1/2"	21	76	48
3/4"	27	57	43
1"	33	76	56
1 1/4"	42	95	70
1 1/2"	48	114	83
2"	60	152	106
2 1/2"	73	191	132
3"	89	229	159
4"	114	305	210
5"	141	381	262
6"	168	457	313
8"	219	610	414
10"	273	762	518
12"	324	914	619
14"	356	1067	711
16"	406	1219	813
18"	457	1372	914
20"	508	1524	1016
22"	559	1676	1118
24"	610	1829	1219

* All dimensions in mm.

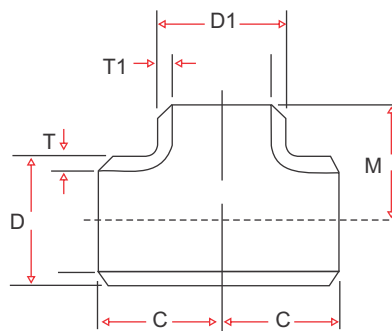
* All weights indicated are approximate.
Other sizes available on request.



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EQUAL TEES



ASME B16.9

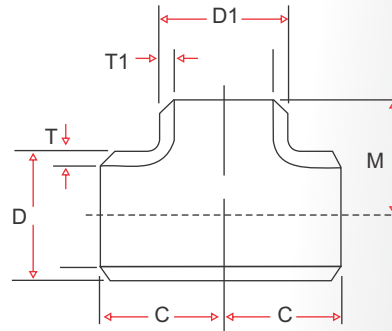
Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Sch. 10s Wall thk.	Sch. 40s Wall thk.	SCH STD Wall thk.	Weight kg	SCH 40 Wall thk.	Weight kg	SCH XS Wall thk.	Weight kg	SCH 80 Wall thk.	Weight kg	SCH 120 Wall thk.	Weight kg	SCH 160 Wall thk.	Weight kg	SCH XXS Wall thk.	Weight kg
½"	21.3	2.11	2.77	2.77	0.11	2.77	0.11	3.73	0.14	3.73	0.14			4.78	0.28		
¾"	26.7	2.11	2.87	2.87	0.16	2.87	0.16	3.91	0.21	3.91	0.21			5.56	0.29	7.82	0.38
1"	33.4	2.77	3.38	3.38	0.32	3.38	0.32	4.55	0.41	4.55	0.41			6.35	0.45	9.09	0.58
1¼"	42.2	2.77	3.56	3.56	0.57	3.56	0.57	4.85	0.76	4.85	0.76			6.35	0.77	9.7	1.05
1½"	48.3	2.77	3.68	3.68	0.8	3.68	0.8	5.08	1.08	5.08	1.08			7.14	1.21	10.15	1.56
2"	60.3	2.77	3.91	3.91	1.17	3.91	1.17	5.54	1.67	5.54	1.67			8.74	2.25	11.07	2.69
2½"	73	3.05	5.16	5.16	2.28	5.16	2.28	7.01	3.05	7.01	3.05			9.53	3.42	14.02	4.54
3"	88.9	3.05	5.49	5.49	3.05	5.49	3.05	7.62	4.24	7.62	4.24			11.13	6.21	15.24	7.63
4"	114.3	3.05	6.02	6.02	5.17	6.02	5.17	8.56	7.36	8.56	7.36			13.49	15.53	17.12	17
5"	141.3	3.40	6.56	6.55	8.36	6.55	8.36	9.53	12.12	9.53	12.12	12.7	18	15.88	23.93	19.05	25
6"	168.3	3.40	7.11	7.11	12.32	7.11	12.32	10.97	18.86	10.97	18.86	14.27	24	18.26	38.59	21.95	39
8"	219.1	3.76	8.18	8.18	22.87	8.18	22.87	12.7	30.9	12.7	30.9	18.26	50	23.01	71	22.23	69
10"	273.1	4.90	9.27	9.27	36.45	9.27	36.45	12.7	48.3	15.09	68	21.44	93	28.58	120		
12"	323.9	4.57	9.52	9.53	55.9	10.31	70.5	12.7	72.58	17.48	115	25.4	150	33.32	184		
14"	355.6	4.78		9.53	70.1	11.13	114.41	12.7	76.8	19.05	165	27.79	240	35.71	300		
16"	406.4	4.78		9.53	87.25	12.7	105.6	12.7	105.6	21.44	249	30.96	330	40.49	425		
18"	457.2	4.78		9.53	107.05	14.27	238.35	12.7	184	23.83	322	34.93	450	45.24	590		
20"	508	5.54		9.53	129.6	15.09	320.52	12.7	176	26.19	459.05	38.1	590	50.01	790		
22"	559	5.54		9.53	163.9	-		12.7	203.7	28.58	600	41.28	840	53.98	1100		
24"	610	6.35		9.53	186.3	17.48	570.68	12.7	232	30.96	748	46.02	1100	59.54	1310		

* All dimensions in mm.

* All weights indicated are approximate.
Other sizes available on request.



EQUAL TEES



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Nominal Pipe Size (NPS)	Outside Diameter at Bevel	SCH STD		SCH XS	
		Wall thk.	Weight kg	Wall thk.	Weight kg
26"	660.0	9.53	213.00	12.70	270.00
28"	711.0	9.53	240.00	12.70	305.00
30"	762.0	9.53	277.00	12.70	351.00
32"	813.0	9.53	316.00	12.70	401.00
34"	864.0	9.53	357.00	12.70	453.00
36"	914.0	9.53	401.00	12.70	509.00
38"	965.0	9.53	447.00	12.70	569.00
40"	1016.0	9.53	497.00	12.70	631.00
42"	1067.0	9.53	526.00	12.70	669.00
44"	1118.0	9.53	591.00	12.70	752.00
46"	1168.0	9.53	647.00	12.70	823.00
48"	1219.0	9.53	706.00	12.70	898.00

* All dimensions in mm.

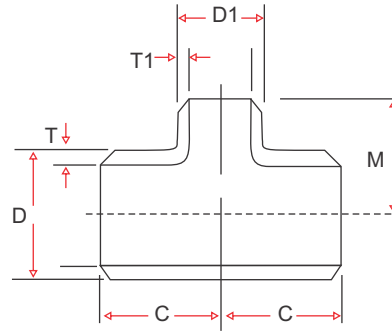
* All weights indicated are approximate.
Other sizes available on request.

HIGHER
W.T.
ON REQUEST





REDUCING TEES



ASME B16.9

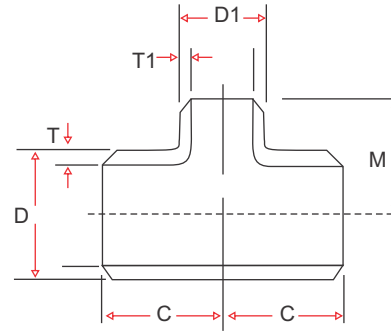
Nominal Pipe Size (NPS)	Outside Diameter mm		SCH STD			SCH 40			SCH XS			SCH 80		
			Wall thk.		Weight	Wall thk.		Weight	Wall thk.		Weight	Wall thk.		Weight
			T	T1	kg	T	T1	kg	T	T1	kg	T	T1	kg
¾" x ½"	26.7	21.3	2.87	2.77	0.15	2.87	2.77	0.15	3.91	3.73	0.21	3.91	3.73	0.21
1" x ½"	33.4	21.3	3.38	2.77	0.30	3.38	2.77	0.30	4.55	3.73	0.40	4.55	3.73	0.40
¾"		26.7		2.87	0.30		2.87	0.30		3.91	0.40		3.91	0.40
1¼" x ½"	42.2	21.3	3.56	2.77	0.52	3.56	2.77	0.52	4.85	3.73	0.70	4.85	3.73	0.70
¾"		26.7		2.87	0.54		2.87	0.54		3.91	0.72		3.91	0.72
1"		33.4		3.38	0.54		3.38	0.54		4.55	0.72		4.55	0.72
1½" x ½"	48.3	21.3	3.68	2.77	0.70	3.68	2.77	0.70	5.08	3.73	0.99	5.08	3.73	0.99
¾"		26.7		2.87	0.74		2.87	0.74		3.91	1.06		3.91	1.06
1"		33.4		3.38	0.74		3.38	0.74		4.55	1.06		4.55	1.06
1¼"		42.2		3.56	0.76		3.56	0.76		4.85	1.06		4.85	1.06
2" x ½"	60.3	21.3	3.91	2.77	1.03	3.91	2.77	1.03	5.54	3.73	1.44	5.54	3.73	1.44
¾"		26.7		2.87	1.10		2.87	1.10		3.91	1.54		3.91	1.54
1"		33.4		3.38	1.12		3.38	1.12		4.55	1.54		4.55	1.54
1¼"		42.2		3.56	1.12		3.56	1.12		4.85	1.54		4.85	1.54
1½"		48.3		3.68	1.14		3.68	1.14		5.08	1.57		5.08	1.57
2½" x 1"	73.0	33.4	5.16	3.38	2.13	5.16	3.38	2.13	7.01	4.55	2.75	7.01	4.55	2.75
1¼"		42.2		3.56	2.17		3.56	2.17		4.85	2.80		4.85	2.80
1½"		48.3		3.68	2.20		3.68	2.20		5.08	2.86		5.08	2.86
2"		60.3		3.91	2.20		3.91	2.20		5.54	2.95		5.54	2.95

* All dimensions in mm.

* All weights indicated are approximate.
Other sizes available on request.



REDUCING TEES



ASME B16.9

Nominal Pipe Size (NPS)	Outside Diameter mm		SCH STD			SCH 40			SCH XS			SCH 80		
			Wall thk.		Weight	Wall thk.		Weight	Wall thk.		Weight	Wall thk.		Weight
			T	T1	kg	T	T1	kg	T	T1	kg	T	T1	kg
3" x 1"	88.9	33.4	5.49	3.38	2.68	5.49	3.38	2.68	7.62	4.55	3.69	7.62	4.55	3.69
1¼"		42.2		3.56	2.73		3.56	2.73		4.85	3.69		4.85	3.69
1½"		48.3		3.68	2.73		3.68	2.73		5.08	3.76		5.08	3.76
2"		60.3		3.91	2.88		3.91	2.88		5.54	3.90		5.54	3.90
2½"		73.0		5.16	2.93		5.16	2.93		7.01	4.09		7.01	4.09
4" x 1"	114.3	33.4	6.02	3.38	4.67	6.02	3.38	4.67	8.56	4.55	6.86	8.56	4.55	6.86
1¼"		42.2		3.56	4.89		3.56	4.89		4.85	6.96		4.85	6.96
1½"		48.3		3.68	4.96		3.68	4.96		5.08	7.06		5.08	7.06
2"		60.3		3.91	4.96		3.91	4.96		5.54	7.06		5.54	7.06
2½"		73.0		5.16	4.96		5.16	4.96		7.01	7.16		7.01	7.16
3"		88.9		5.49	5.17		5.49	5.17		7.62	7.36		7.62	7.36
5" x 2"	141.3	60.3	6.55	3.91	7.39	6.55	3.91	7.39	9.53	5.54	10.75	9.53	5.54	10.75
2½"		73.0		5.16	7.59		5.16	7.59		7.01	11.02		7.01	11.02
3"		88.9		5.49	7.77		5.49	7.77		7.62	11.29		7.62	11.29
4"		114.3		6.02	7.97		6.02	7.97		8.56	11.57		8.56	11.57
6" x 2"	168.3	60.3	7.11	3.91	10.80	7.11	3.91	10.80	10.97	5.54	16.30	10.97	5.54	16.30
2½"		73.0		5.16	10.94		5.16	10.94		7.01	16.48		7.01	16.48
3"		88.9		5.49	11.18		5.49	11.18		7.62	17.46		7.62	17.46
4"		114.3		6.02	11.31		6.02	11.31		8.56	17.80		8.56	17.80
5"		141.3		6.55	12.32		6.55	12.32		9.53	18.86		9.53	18.86
8" x 3"	219.1	88.9	8.18	5.49	19.35	8.18	5.49	19.35	12.70	7.62	23.18	12.70	7.62	23.18
4"		114.3		6.02	20.10		6.02	20.10		8.56	27.20		8.56	27.20
5"		141.3		6.55	20.49		6.55	20.49		9.53	28.43		9.53	28.43
6"		168.3		7.11	21.05		7.11	21.05		10.97	29.05		10.97	29.05

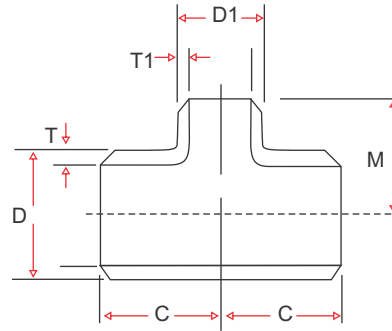
* All dimensions in mm.

* All weights indicated are approximate.

Other sizes available on request.



REDUCING TEES



ASME B16.9

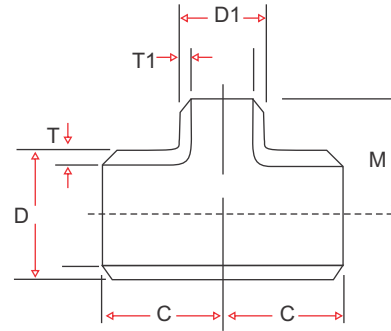
Nominal Pipe Size (NPS)	Outside Diameter mm		SCH STD			SCH 40			SCH XS			SCH 80		
			Wall thk.		Weight	Wall thk.		Weight	Wall thk.		Weight	Wall thk.		Weight
			T	T1	kg	T	T1	kg	T	T1	kg	T	T1	kg
10" x 3"	273.1	88.9	9.27	5.49	27.34	9.27	5.49	27.34	12.70	7.62	36.23	15.09	7.62	
4"		114.3		6.02	29.89		6.02	29.89		8.56	39.61		8.56	53.00
5"		141.3		6.55	32.08		6.55	32.08		9.53	42.51		9.53	53.00
6"		168.3		7.11	33.54		7.11	33.54		10.97	44.44		10.97	54.00
8"		219.1		8.18	34.27		8.18	34.27		12.70	41.41		12.70	71.00
12" x 4"	323.9	114.1	9.53	6.02	41.93	10.31	6.02		12.70	8.56	54.44	17.48	8.56	
5"		141.3		6.55	45.84		6.55	64.00		9.53	59.52		9.53	82.00
6"		168.1		7.11	49.20		7.11	64.00		10.97	63.88		10.97	82.00
8"		219.1		8.18	51.43		8.18	64.00		12.70	66.78		12.70	82.00
10"		273.0		9.27	52.55		9.27	67.00		12.70	68.23		15.09	103.00
14" x 6"	355.6	168.3	9.53	7.11	57.49	11.13	7.11	109.00	12.70	10.97	64.46	19.05	10.97	122.00
8"		219.1		8.18	61.69		8.18	109.00		12.70	69.17		12.70	122.00
10"		273.0		9.27	64.50		9.27	109.00		12.70	72.32		15.09	141.00
12"		323.9		9.53	65.90		10.31	114.00		12.70	73.89		17.48	143.00
16" x 6"	406.4	168.3	9.53	7.11	65.44	12.70	7.11	160.00	12.70	10.97	77.80	21.44	10.97	163.00
8"		219.1		8.18	71.55		8.18	160.00		12.70	86.60		12.70	163.00
10"		273.0		9.27	76.78		9.27	160.00		12.70	92.93		15.09	163.00
12"		323.9		9.53	80.27		10.31	161.00		12.70	97.16		17.48	181.00
14"		355.6		9.53	82.02		11.13	167.00		12.70	99.27		19.05	200.00

* All dimensions in mm.

* All weights indicated are approximate.
Other sizes available on request.



REDUCING TEES



ASME B16.9

Nominal Pipe Size (NPS)	Outside Diameter mm		SCH STD			SCH 40			SCH XS			SCH 80		
			Wall thk.		Weight	Wall thk.		Weight	Wall thk.		Weight	Wall thk.		Weight
			T	T1	kg	T	T1	kg	T	T1	kg	T	T1	kg
18" x 8"	457.0	219.1	9.53	8.18	105.45	14.27	8.18	150.00	12.70	12.70	124.70	23.88	12.70	205.00
10"		273.0		9.27	105.45		9.27	150.00		12.70	124.70		15.09	225.00
12"		323.9		9.53	107.05		10.31	194.00		12.70	184.00		17.48	234.00
14"		355.6		9.53	107.05		11.13	194.00		12.70	184.00		19.05	258.00
16"		406.4		9.53	107.05		12.70	238.00		12.70	184.00		21.44	279.00
20" x 8"	508.0	219.1	9.53	8.18	128.70	15.09	8.18	220.00	12.70	12.70	160.00	26.19	12.70	228.00
10"		273.0		9.27	128.70		9.27	220.00		12.70	160.00		15.09	293.00
12"		323.9		9.53	128.70		10.31	224.00		12.70	160.00		17.48	324.00
14"		355.6		9.53	129.60		11.13	224.00		12.70	176.00		19.05	324.00
16"		406.4		9.53	129.60		12.70	230.00		12.70	176.00		21.44	355.00
18"		457.2		9.53	129.60		14.27	265.00		12.70	176.00		23.88	410.00
22" x 10"	559.0	273.0	9.53	9.27	154.30	-			12.70	12.70	203.70	28.58	15.09	374.00
12"		323.9		9.53	154.30					12.70	203.70		17.48	374.00
14"		355.6		9.53	154.30					12.70	203.70		19.05	374.00
16"		406.4		9.53	163.90					12.70	203.70		21.44	415.00
18"		457.2		9.53	163.90					12.70	203.70		23.88	415.00
20"		508.0		9.53	163.90					12.70	203.70		26.19	513.00
24" x 10"	610.0	273.0	9.53	9.27	172.80	17.48	9.27	308.00	12.70	12.70	204.50	30.96	15.09	452.00
12"		323.9		9.53	172.80		10.31	308.00		12.70	204.50		17.48	452.00
14"		355.6		9.53	172.80		11.13	309.00		12.70	204.50		19.05	490.00
16"		406.4		9.53	172.80		12.70	309.00		12.70	204.50		21.44	490.00
18"		457.2		9.53	186.30		14.27	390.00		12.70	232.00		23.88	533.00
20"		508.0		9.53	186.30		15.09	390.00		12.70	232.00		26.19	606.00
22"		559.0		9.53	186.30		-			12.70	232.00		28.58	675.00

* All dimensions in mm.

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Other sizes available on request.

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REDUCING TEES

Nominal Pipe Size (NPS)	Outside Diameter mm		SCH STD			SCH XS		
			Wall thk.		Weight	Wall thk.		Weight
			T	T1	kg	T	T1	kg
26" x 12"	660.0	324.0	9.52	9.52	231.00	12.70	12.70	293.00
14"		356.0		9.52	239.00		12.70	300.00
16"		406.0		9.52	247.00		12.70	309.00
18"		457.0		9.52	255.00		12.70	323.00
20"		508.0		9.52	264.00		12.70	330.00
22"		559.0		9.52	272.00		12.70	340.00
24"		610.0		9.52	280.00		12.70	340.00
28" x 12"	711.0	324.0	9.52	9.52		12.70	12.70	
14"		356.0		9.52			12.70	
16"		406.0		9.52			12.70	
18"		457.0		9.52			12.70	
20"		508.0		9.52			12.70	
22"		559.0		9.52			12.70	
24"		610.0		9.52			12.70	
26"		660.0		9.52			12.70	
30" x 10"	762.0	273.0	9.52	9.52	296.00	12.70	12.70	377.00
12"		324.0		9.52	304.00		12.70	385.00
14"		356.0		9.52	312.00		12.70	395.00
16"		406.0		9.52	321.00		12.70	405.00
18"		457.0		9.52	330.00		12.70	417.00
20"		508.0		9.52	340.00		12.70	429.00
22"		559.0		9.52	351.00		12.70	441.00
24"		610.0		9.52	361.00		12.70	452.00
26"		660.0		9.52	372.00		12.70	463.00
28"		711.0		9.52	380.00		12.70	475.00
32" x 14"	813.0	356.0	9.52	9.52	415.00	12.70	12.70	523.00
16"		406.0		9.52	425.00		12.70	535.00
18"		457.0		9.52	436.00		12.70	547.00
20"		508.0		9.52	448.00		12.70	562.00
22"		559.0		9.52	460.00		12.70	577.00
24"		610.0		9.52	472.00		12.70	591.00
26"		660.0		9.52	482.00		12.70	605.00
28"		711.0		9.52	493.00		12.70	616.00
30"		762.0		9.52	506.00		12.70	628.00

Nominal Pipe Size (NPS)	Outside Diameter mm		SCH STD			SCH XS		
			Wall thk.		Weight	Wall thk.		Weight
			T	T1	kg	T	T1	kg
34" x 16"	864.0	406.0	9.52	9.52	415.00	12.70	12.70	523.00
18"		457.0		9.52	425.00		12.70	535.00
20"		508.0		9.52	436.00		12.70	547.00
22"		559.0		9.52	448.00		12.70	562.00
24"		610.0		9.52	460.00		12.70	577.00
26"		660.0		9.52	472.00		12.70	591.00
28"		711.0		9.52	482.00		12.70	605.00
30"		762.0		9.52	493.00		12.70	616.00
32"		813.0		9.52	506.00		12.70	628.00
36" x 16"	914.0	406.0	9.52	9.52	472.00	12.70	12.70	602.00
18"		457.0		9.52	483.00		12.70	611.00
20"		508.0		9.52	493.00		12.70	621.00
22"		559.0		9.52	502.00		12.70	622.00
24"		610.0		9.52	513.00		12.70	643.00
26"		660.0		9.52	526.00		12.70	654.00
28"		711.0		9.52	537.00		12.70	670.00
30"		762.0		9.52	548.00		12.70	685.00
32"		813.0		9.52	561.00		12.70	700.00
34"		864.0		9.52	574.00		12.70	715.00
40" x 18"	1016.0	457.0	9.52	9.52	540.00	12.70	12.70	650.00
20"		508.0		9.52	552.00		12.70	665.00
22"		559.0		9.52	565.00		12.70	682.00
24"		610.0		9.52	582.00		12.70	700.00
26"		660.0		9.52	595.00		12.70	723.00
28"		711.0		9.52	611.00		12.70	740.00
30"		762.0		9.52	627.00		12.70	763.00
32"		813.0		9.52	643.00		12.70	802.00
34"		864.0		9.52	659.00		12.70	840.00
36"		914.0		9.52	659.00		12.70	840.00
38"		965.0		9.52	664.00		12.70	875.00

* All dimensions in mm.

* All weights indicated are approximate.
Other sizes available on request.

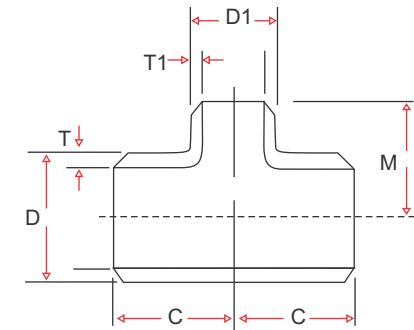
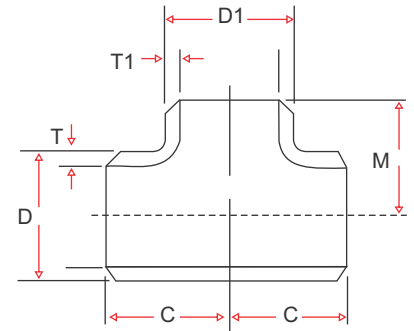
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DIMENSIONS OF EQUAL AND REDUCING TEES

Nominal Pipe Size (NPS)	Outside Diameter at Bevel		Center - to - End	
	Run D	Outlet D ₁	Run C	Outlet (1) M
½" x ½"	21.3	21.3	25.4	25.4
¾" x ¾"	26.7	26.7	28.4	28.4
x ½"		21.3		28.4
1" x 1"	33.4	33.4	38.1	38.1
x ¾"		26.7		38.1
x ½"		21.3		38.1
1¼" x 1¼"	42.2	42.2	47.8	47.8
x 1"		33.4		47.8
x ¾"		26.7		47.8
x ½"		21.3		47.8
1½" x 1½"	48.3	48.3	57.2	57.2
x 1¼"		42.2		57.2
x 1"		33.4		57.2
x ¾"		26.7		57.2
x ½"		21.3		57.2
2" x 2"	60.3	60.3	63.5	63.5
x 1½"		48.3		60.5
x 1¼"		42.2		57.2
x 1"		33.4		50.8
x ¾"		26.7		44.4
x ½"		21.3		44.4
2½" x 2½"	73	73	76.2	76.2
x 2"		60.3		69.8
x 1½"		48.3		67
x 1¼"		42.2		63.5
x 1"		33.4		57.2

Nominal Pipe Size (NPS)	Outside Diameter at Bevel		Center - to - End	
	Run D	Outlet D ₁	Run C	Outlet (1) M
3" x 3"	88.9	88.9	85.9	85.9
x 2½"		73		82.6
x 2"		60.3		76.2
x 1½"		48.3		73.2
x 1¼"		42.2		69.8
x 1"		33.4		69.8
4" x 4"	114.3	114.3	104.6	104.6
x 3½"		101.6		101.6
x 3"		88.9		98.6
x 2½"		73		95.2
x 2"		60.3		88.9
x 1½"		48.3		85.9
x 1¼"		42.2		85.9
x 1"		33.5		85
5" x 5"	141.3	141.3	124	124
x 4"		114.3		117.3
x 3½"		101.6		114.3
x 3"		88.9		111.3
x 2½"		73		108
x 2"		60.3		104.6
6" x 6"	168.3	168.3	142.7	142.7
x 5"		141.3		136.7
x 4"		114.3		130
x 3½"		101.6		127
x 3"		88.9		124
x 2½"		73		120.6
x 2"		60.3		121



* All dimensions in mm.

* All weights indicated are approximate.
Other sizes available on request.

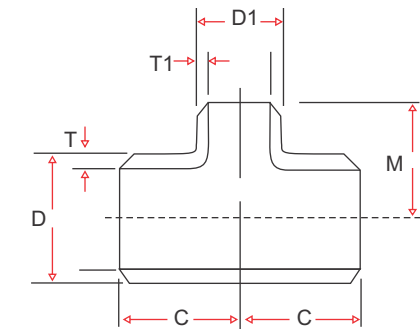
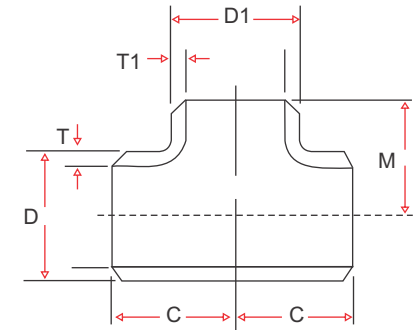
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DIMENSIONS OF EQUAL AND REDUCING TEES

Nominal Pipe Size (NPS)	Outside Diameter at Bevel		Center - to - End	
	Run D	Outlet D ₁	Run C	Outlet (1) M
8" x 8"	219.1	219.1	177.8	177.8
x 6"		168.3		168.1
x 5"		141.3		162.1
x 4"		114.3		155.4
x 3½"		101.6		152.4
x 3"		88.9		152
10" x 10"	273.1	273.1	215.9	215.9
x 8"		219.1		203.2
x 6"		168.3		193.5
x 5"		141.3		190.5
x 4"		114.3		184.2
x 3"		88.9		184.2
12" x 12"	323.9	323.9	254	254
x 10"		273.1		241.3
x 8"		219.1		228.6
x 6"		168.3		218.9
x 5"		141.3		215.9
x 4"		114.3		215.9
14" x 14"	355.6	355.6	279.4	279.4
x 12"		323.9		269.7
x 10"		273.1		257
x 8"		219.1		247.6
x 6"		168.3		238.3
16" x 16"	406.4	406.4	304.8	304.8
x 14"		355.6		304.8
x 12"		323.9		295.1
x 10"		273.1		282.4
x 8"		219.1		273
x 6"		168.3		263.7

Nominal Pipe Size (NPS)	Outside Diameter at Bevel		Center - to - End	
	Run D	Outlet D ₁	Run C	Outlet (1) M
18" x 18"	457.2	457.2	342.9	342.9
x 16"		406.4		330.2
x 14"		355.6		330.2
x 12"		323.9		320.5
x 10"		273.1		307.8
x 8"		219.1		298.4
20" x 20"	508	508	381	381
x 18"		457.2		369.3
x 16"		406.4		355.6
x 14"		355.6		355.6
x 12"		323.9		345.9
x 10"		273.1		333.2
x 8"		219.1		323.8
22" x 22"	558.8	558.8	419.1	419.1
x 20"		508		406.4
x 18"		457.2		393.7
x 16"		406.4		381
x 14"		355.6		381
x 12"		323.8		371.3
x 10"		273.1		358.6
24" x 24"	609.6	609.6	431.8	431.8
x 22"		558.8		431.8
x 20"		508		431.8
x 18"		457.2		419.1
x 16"		406.4		406.4
x 14"		355.6		406.4
x 12"		323.9		396.7
x 10"		273.1		384



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DIMENSIONS OF EQUAL AND REDUCING TEES

Nominal Pipe Size (NPS)	Outside Diameter at Bevel		Center - to - End	
	Run D	Outlet D ₁	Run C	Outlet (1) M
26" x 26"	660	660	495	495
x 24"		610		483
x 22"		559		470
x 20"		508		457
x 18"		457		444
x 16"		406		432
x 14"		356		432
x 12"		324		422
28" x 28"	711	711	521	521
x 26"		660		521
x 24"		610		508
x 22"		559		495
x 20"		508		483
x 18"		457		470
x 16"		406		457
x 14"		356		457
x 12"		324		448
30" x 30"	762	762	559	559
x 28"		711		546
x 26"		660		546
x 24"		610		533
x 22"		559		521
x 20"		508		508
x 18"		457		495
x 16"		406		483
x 14"		356		483
x 12"		324		473
x 10"		273		460
32" x 32"	813	813	597	597
x 28"		711		572
x 26"		660		572
x 24"		610		559
x 22"		559		546
x 20"		508		533
x 18"		457		521
x 16"		406		508
x 14"		356		508

Nominal Pipe Size (NPS)	Outside Diameter at Bevel		Center - to - End	
	Run D	Outlet D ₁	Run C	Outlet (1) M
34" x 34"	864	864	635	635
x 32"		813		622
x 30"		762		610
x 28"		711		597
x 26"		660		597
x 24"		610		584
x 22"		559		572
x 20"		508		559
x 18"		457		546
x 16"		406		533
36" x 36"	914	914	673	673
x 34"		864		660
x 32"		813		648
x 30"		762		635
x 28"		711		622
x 26"		660		622
x 24"		610		610
x 22"		559		597
x 20"		508		584
x 18"		457		572
x 16"		406		559
40" x 40"	1016	1016	749	749
x 38"		965		749
x 36"		914		737
x 34"		864		724
x 32"		813		711
x 30"		762		698
x 28"		711		673
x 26"		660		673
x 24"		610		660
x 22"		559		648
x 20"		508		635
x 18"		457		622

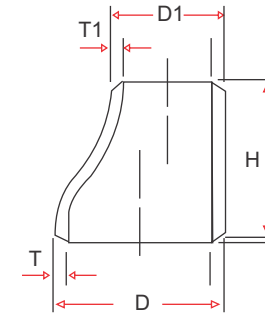
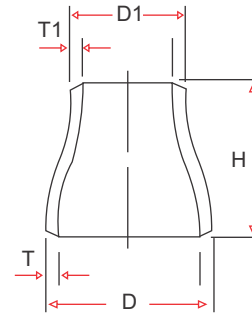
Nominal Pipe Size (NPS)	Outside Diameter at Bevel		Center - to - End	
	Run D	Outlet D ₁	Run C	Outlet (1) M
42" x 42"	1067	1067	762	762
x 40"		1016		711
x 38"		965		711
x 36"		914		711
x 34"		864		711
x 32"		813		711
x 30"		762		711
x 28"		711		698
x 26"		660		698
x 24"		610		660
x 22"		559		660
x 20"		508		660
x 18"		457		648
x 16"		406		635
48" x 48"	1219	1219	889	889
x 46"		1168		838
x 44"		1118		838
x 42"		1067		813
x 40"		1016		813
x 38"		965		813
x 36"		914		787
x 34"		864		787
x 32"		813		787
x 30"		762		762
x 28"		711		762
x 26"		660		762
x 24"		610		737
x 22"		559		737

* All dimensions in mm.
* All weights indicated are approximate.
Other sizes available on request.

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CONCENTRIC & ECCENTRIC REDUCERS



ASME B16.9

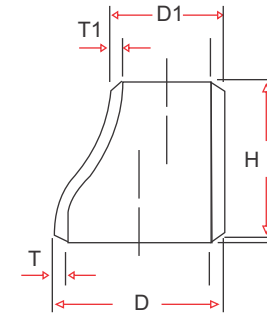
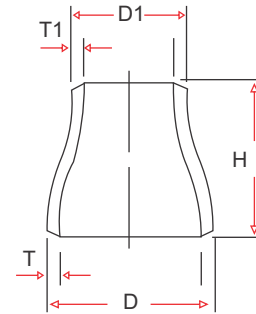
Nominal Pipe Size (NPS)	Outside Diameter mm		SCH STD			SCH 40			SCH XS			SCH 80		
			Wall thk.		Weight	Wall thk.		Weight	Wall thk.		Weight	Wall thk.		Weight
			T	T1	kg	T	T1	kg	T	T1	kg	T	T1	kg
¾" x ½"	26.7	21.3	2.87	2.77	0.06	2.87	2.77	0.06	3.91	3.73	0.08	3.91	3.73	0.08
1" x ½"	33.4	21.3	3.38		0.13	3.38	2.77	0.13	4.55	3.73	0.16	4.55	3.73	0.16
¾"		26.7		2.87	0.12		2.87	0.12		3.91	0.15		3.91	0.15
1¼" x ½"	42.2	21.3	3.56	2.77	0.18	3.56	2.77	0.18	4.85	3.73	0.23	4.85	3.73	0.23
¾"		26.7		2.87	0.17		2.87	0.17		3.91	0.22		3.91	0.22
1"		33.4		3.38	0.16		3.38	0.16		4.55	0.21		4.55	0.21
1½" x ½"	48.3	21.3	3.68	2.77	0.28	3.68	2.77	0.28	5.08	3.73	0.65	5.08	3.73	0.65
¾"		26.7		2.87	0.27		2.87	0.27		3.91	0.63		3.91	0.63
1"		33.4		3.38	0.26		3.38	0.26		4.55	0.60		4.55	0.60
1¼"		42.2		3.56	0.25		3.56	0.25		4.85	0.33		4.85	0.33
2" x ½"	60.3	21.3	3.91	2.77	0.42	3.91	2.77	0.42	5.54	3.73	0.58	5.54	3.73	0.58
¾"		26.7		2.87	0.41		2.87	0.41		3.91	0.55		3.91	0.55
1"		33.4		3.38	0.40		3.38	0.40		4.55	0.54		4.55	0.54
1¼"		42.2		3.56	0.38		3.56	0.38		4.85	0.51		4.85	0.51
1½"		48.3		3.68	0.38		3.68	0.38		5.08	0.51		5.08	0.51
2½" x 1"	73.0	33.4	5.16	3.38	0.76	5.16	3.38	0.76	7.01	4.55	0.99	7.01	4.55	0.99
1¼"		42.2		3.56	0.74		3.56	0.74		4.85	0.95		4.85	0.95
1½"		48.3		3.68	0.71		3.68	0.71		5.08	0.92		5.08	0.92
2"		60.3		3.91	0.73		3.91	0.73		5.54	0.95		5.54	0.95

* All dimensions in mm.

* All weights indicated are approximate.
Other sizes available on request.



CONCENTRIC & ECCENTRIC REDUCERS



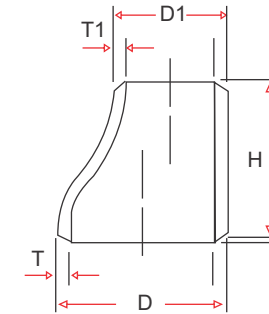
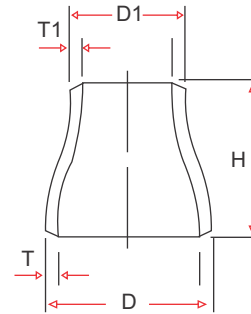
ASME B16.9

Nominal Pipe Size (NPS)	Outside Diameter mm		SCH STD			SCH 40			SCH XS			SCH 80		
			Wall thk.		Weight	Wall thk.		Weight	Wall thk.		Weight	Wall thk.		Weight
			T	T1	kg	T	T1	kg	T	T1	kg	T	T1	kg
3" x 1"	88.9	33.4	5.49	3.38	0.99	5.49	3.38	0.99	7.62	4.55	1.34	7.62	4.55	1.34
1 1/4"		42.2		3.56	0.96		3.56	0.96		4.85	1.30		4.85	1.30
1 1/2"		48.3		3.68	0.92		3.68	0.92		5.08	1.24		5.08	1.24
2"		60.3		3.91	0.89		3.91	0.89		5.54	1.21		5.54	1.21
2 1/2"		73.0		5.16	0.94		5.16	0.94		7.01	1.25		7.01	1.25
4" x 1"	114.3	33.4	6.02	3.38	1.61	6.02	3.38	1.61	8.56	4.55	2.22	8.56	4.55	2.22
1 1/4"		42.2		3.56	1.58		3.56	1.58		4.85	2.19		4.85	2.19
1 1/2"		48.3		3.68	1.54		3.68	1.54		5.08	2.13		5.08	2.13
2"		60.3		3.91	1.48		3.91	1.48		5.54	2.04		5.54	2.04
2 1/2"		73.0		5.16	1.44		5.16	1.44		7.01	2.00		7.01	2.00
3"		88.9		5.49	1.45		5.49	1.45		7.62	2.02		7.62	2.02
5" x 2"	141.3	60.3	6.55	3.91	2.10	6.55	3.91	2.10	9.53	5.54	2.98	9.53	5.54	2.98
2 1/2"		73.0		5.16	2.16		5.16	2.16		7.01	3.02		7.01	3.02
3"		88.9		5.49	2.27		5.49	2.27		7.62	3.18		7.62	3.18
4"		114.3		6.02	2.50		6.02	2.50		8.56	3.52		8.56	3.52
6" x 2"	168.3	60.3	7.11	3.91	3.17	7.11	3.91	3.17	10.97	5.54	4.77	10.97	5.54	4.77
2 1/2"		73.0		5.16	3.07		5.16	3.07		7.01	4.62		7.01	4.62
3"		88.9		5.49	3.04		5.49	3.04		7.62	4.56		7.62	4.56
4"		114.3		6.02	3.30		6.02	3.30		8.56	4.96		8.56	4.96
5"		141.3		6.55	3.57		6.55	3.57		9.53	5.38		9.53	5.38

* All dimensions in mm.

* All weights indicated are approximate.
Other sizes available on request.

CONCENTRIC & ECCENTRIC REDUCERS



ASME B16.9

Nominal Pipe Size (NPS)			Outside Diameter mm		SCH STD			SCH 40			SCH XS			SCH 80		
					Wall thk.		Weight	Wall thk.		Weight	Wall thk.		Weight	Wall thk.		Weight
					T	T1	kg	T	T1	kg	T	T1	kg	T	T1	kg
8"	x	3"	219.1	88.9	8.18	5.49	5.06	8.18	5.49	5.06	12.70	7.62	7.70	12.70	7.62	7.70
		4"		114.3		6.02	5.10		6.02	5.10		8.56	7.68		8.56	7.68
		5"		141.3		6.55	5.40		6.55	5.40		9.53	8.14		9.53	8.14
		6"		168.3		7.11	5.71		7.11	5.71		10.97	8.63		10.97	8.63
10"	x	4"	273.1	114.3	9.27	6.02	9.73	9.27	6.02	9.73	12.70	8.56	13.15	15.09	8.56	17.00
		5"		141.3		6.55	9.51		6.55	9.51		9.53	12.84		9.53	17.00
		6"		168.3		7.11	8.82		7.11	8.82		10.97	11.93		10.97	17.00
		8"		219.1		8.18	9.58		8.18	9.58		12.70	12.90		12.70	17.00
12"	x	4"	323.9	114.1	9.53	6.02	14.12	10.31	6.02		12.70	8.56	18.63	17.48	8.56	
		5"		141.3		6.55	13.57		6.55	16.30		9.53	17.91		9.53	26.80
		6"		168.1		7.11	13.02		7.11	16.30		10.97	17.17		10.97	26.80
		8"		219.1		8.18	12.70		8.18	16.30		12.70	16.70		12.70	26.80
		10"		273.0		9.27	13.60		9.27	16.30		12.70	18.00		15.09	26.80
14"	x	6"	355.6	168.3	9.53	7.11	22.81	11.13	7.11	31.10	12.70	10.97	30.14	19.05	10.97	52.20
		8"		219.1		8.18	22.49		8.18	31.10		12.70	29.72		12.70	52.20
		10"		273.0		9.27	23.60		9.27	31.10		12.70	31.20		15.09	52.20
		12"		323.9		9.53	25.40		10.31	31.10		12.70	33.60		17.48	52.20
16"	x	6"	406.4	168.3	9.53	7.11	29.83	12.70	7.11		12.70	10.97	39.43	21.44	10.97	
		8"		219.1		8.18	28.34		8.18	43.80		12.70	37.46		12.70	72.20
		10"		273.0		9.27	27.96		9.27	43.80		12.70	36.96		15.09	72.20
		12"		323.9		9.53	29.60		10.31	43.80		12.70	39.20		17.48	72.20
		14"		355.6		9.53	31.00		11.13	43.80		12.70	41.10		19.05	72.20

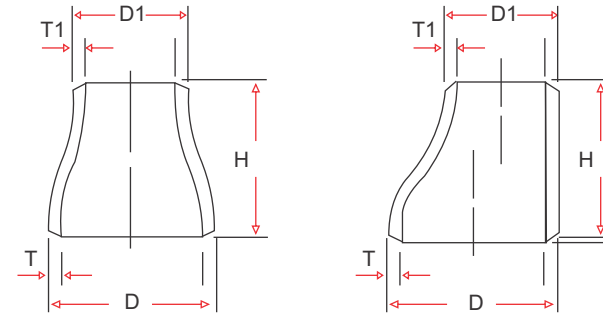
* All dimensions in mm.

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Other sizes available on request.



CONCENTRIC & ECCENTRIC REDUCERS



ASME B16.9

Nominal Pipe Size (NPS)	Outside Diameter mm	SCH STD			SCH 40			SCH XS			SCH 80		
		Wall thk.		Weight	Wall thk.		Weight	Wall thk.		Weight	Wall thk.		Weight
		T	T1	kg	T	T1	kg	T	T1	kg	T	T1	kg
18" x 8"	457.2 219.1	9.53	8.18	37.30	14.27	8.18		12.70	12.70	49.40	23.88	12.70	
10"	273.0		9.27	36.40		9.27	59.00		12.70	48.20		15.09	96.70
12"	323.9		9.53	35.60		10.31	59.00		12.70	47.10		17.48	96.70
14"	355.6		9.53	35.70		11.13	59.00		12.70	47.40		19.05	96.70
16"	406.4		9.53	37.80		12.70	59.00		12.70	50.10		21.44	96.70
20" x 8"	508.0 219.1	9.53	8.18	55.00	15.09	8.18		12.70	12.70	72.90	26.19	12.70	
10"	273.0		9.27	54.00		9.27			12.70	71.60		15.09	
12"	323.9		9.53	53.10		10.31	93.00		12.70	70.30		17.48	158.00
14"	355.6		9.53	52.20		11.13	93.00		12.70	69.00		19.05	158.00
16"	406.4		9.53	53.50		12.70	93.00		12.70	71.10		21.44	158.00
18"	457.2		9.53	56.40		14.27	93.00		12.70	74.90		23.88	158.00
22" x 10"	559.0 273.0	9.53	9.27	60.70	-			12.70	12.70	80.40	28.58	15.09	
12"	323.9		9.53	59.60					12.70	79.00		17.48	
14"	355.6		9.53	58.60					12.70	77.60		19.05	188.00
16"	406.4		9.53	57.50					12.70	76.20		21.44	188.00
18"	457.2		9.53	59.40					12.70	78.90		23.88	188.00
20"	508.0		9.53	62.40					12.70	82.90		26.19	188.00
24" x 10"	610.0 273.0	9.53	9.27	67.50	17.48	9.27		12.70	12.70	89.40	30.96	15.09	
12"	323.9		9.53	66.30		10.31			12.70	87.90		17.48	
14"	355.6		9.53	65.20		11.13			12.70	86.30		19.05	
16"	406.4		9.53	64.00		12.70	129.00		12.70	84.80		21.44	228.00
18"	457.2		9.53	63.00		14.27	129.00		12.70	83.30		23.88	228.00
20"	508.0		9.53	65.70		15.09	129.00		12.70	87.30		26.19	228.00
22"	559.0		9.53	68.40		-			12.70	91.00		28.58	228.00

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CONCENTRIC & ECCENTRIC REDUCERS

Nominal Pipe Size (NPS)	Outside Diameter mm		SCH STD			SCH XS		
			Wall thk.		Weight	Wall thk.		Weight
			T	T1	kg	T	T1	kg
26" x 18"	660.0	457.0		9.53	91.00		12.70	115.00
20"		508.0		9.53	91.00		12.70	115.00
22"		559.0		9.53	91.00		12.70	125.00
24"		610.0	9.53	9.53	91.00	12.70	12.70	125.00
28" x 18"	711.0	457.0		9.53			12.70	
20"		508.0		9.53			12.70	
24"		610.0		9.53			12.70	
26"		660.0	9.53	9.53		12.70	12.70	
30" x 20"	762.0	508.0		9.53	100.00		12.70	143.00
24"		610.0		9.53	100.00		12.70	143.00
26"		660.0		9.53			12.70	143.00
28"		711.0	9.53	9.53	100.00	12.70	12.70	143.00
32" x 24"	813.0	610.0		9.53			12.70	
26"		660.0		9.53			12.70	
28"		711.0		9.53			12.70	
30"		762.0	9.53	9.53		12.70	12.70	
34" x 24"	864.0	610.0		9.53	123.00		12.70	162.00
28"		711.0		9.53	123.00		12.70	162.00
30"		762.0		9.53	123.00		12.70	162.00
32"		813.0	9.53	9.53	123.00	12.70	12.70	162.00

Nominal Pipe Size (NPS)	Outside Diameter mm		SCH STD			SCH XS		
			Wall thk.		Weight	Wall thk.		Weight
			T	T1	kg	T	T1	kg
36" x 24"	914.0	610.0		9.53	145.00		12.70	160.00
26"		660.0		9.53	150.00		12.70	160.00
30"		762.0		9.53	154.00		12.70	165.00
32"		813.0		9.53	154.00		12.70	165.00
34"		864.0	9.53	9.53	154.00	12.70	12.70	165.00
40" x 30"	1,016.0	762.0		9.53	168.00		12.70	175.00
32"		813.0		9.53	168.00		12.70	175.00
34"		864.0		9.53	168.00		12.70	175.00
36"		914.0		9.53	177.00		12.70	196.00
38"		965.0	9.53	9.53	177.00	12.70	12.70	196.00
42" x 30"	1,067.0	762.0		9.53	191.00		12.70	209.00
32"		813.0		9.53	191.00		12.70	209.00
x 34"		864.0		9.53	191.00		12.70	209.00
36"		914.0		9.53	202.00		12.70	222.00
38"		965.0		9.53	202.00		12.70	222.00
48" x 40"	1,219.0	1,016.0	9.53	9.53	202.00	12.70	12.70	222.00
42"		1,067.0		9.53	241.00		12.70	266.00
44"		1,118.0		9.53	241.00		12.70	266.00
46"		1,168.0		9.53	241.00	12.70	12.70	266.00

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DIMENSIONS OF CONCENTRIC & ECCENTRIC REDUCERS

Nominal Pipe Size (NPS)	Outside Diameter at Bevel		End - to - End
	D	D ₁	
¾" x ½"	26.7	21.3	38.1
1" x ¾"	33.4	26.7	50.8
x ½"		21.3	
1¼" x 1"	42.2	33.4	50.8
x ¾"		26.7	
x ½"		21.3	
1½" x 1¼"	48.3	42.2	63.5
x 1"		33.4	
x ¾"		26.7	
x ½"		21.3	
2" x 1½"	60.3	48.3	76.2
x 1¼"		42.2	
x 1"		33.4	
x ¾"		26.7	
2½" x 2"	73	60.3	88.9
x 1½"		48.3	
x 1¼"		42.2	
x 1"		33.4	
3" x 2½"	88.9	73	88.9
x 2"		60.3	
x 1½"		48.3	
x 1¼"		42.2	
x 1"		33.4	
4" x 3½"	114.3	101.6	101.6
x 3"		88.9	
x 2½"		73	
x 2"		60.3	
x 1½"		48.3	
x 1¼"		42.2	
x 1"		33.4	

Nominal Pipe Size (NPS)	Outside Diameter at Bevel		End - to - End
	D	D ₁	
5" x 4"	141.3	114.3	127
x 3½"		101.6	
x 3"		88.9	
x 2½"		73	
x 2"		60.3	
6" x 5"	168.3	141.3	139.7
x 4"		114.3	
x 3½"		101.6	
x 3"		88.9	
x 2½"		73	
x 2"		60.3	
8" x 6"	219.1	168.3	152.4
x 5"		141.3	
x 4"		114.3	
x 3½"		101.6	
x 3"		88.9	
10" x 8"	273.1	219.1	177.8
x 6"		168.3	
x 5"		141.3	
x 4"		114.3	
12" x 10"	323.9	273.1	203.2
x 8"		219.1	
x 6"		168.3	
x 5"		141.3	
x 4"		114.3	
14" x 12"	355.6	323.9	330.2
x 10"		273.1	
x 8"		219.1	
x 6"		168.3	

Nominal Pipe Size (NPS)	Outside Diameter at Bevel		End - to - End
	D	D ₁	
16" x 14"	406.4	355.6	355.6
x 12"		323.9	
x 10"		273.1	
x 8"		219.1	
x 6"		168.3	
18" x 16"	457.2	406.4	381
x 14"		355.6	
x 12"		323.9	
x 10"		273.1	
x 8"		219.1	
20" x 18"	508	457.2	508
x 16"		406.4	
x 14"		355.6	
x 12"		323.9	
x 10"		273.1	
x 8"		219.1	
22" x 20"	558.8	508	508
x 18"		457.2	
x 16"		406.4	
x 14"		355.6	
x 12"		323.9	
x 10"		273.1	
24" x 22"	609.6	558.8	508
x 20"		508	
x 18"		457.2	
x 16"		406.4	
x 14"		355.6	
x 12"		323.9	
x 10"		273.1	

* All dimensions in mm.

* All weights indicated are approximate.
Other sizes available on request.

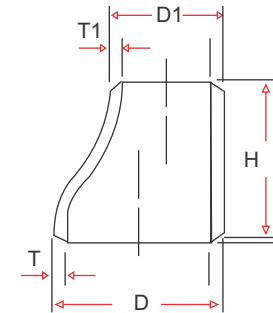
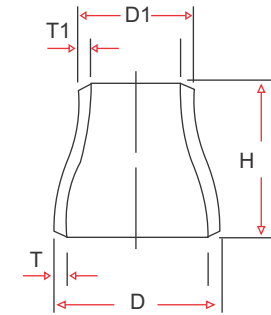
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DIMENSIONS OF CONCENTRIC & ECCENTRIC REDUCERS

Nominal Pipe Size (NPS)		Outside Diameter at Bevel		End - to - End
		D	D ₁	
26" x 24"		660	610	610
x 22"			559	
x 20"			508	
x 18"			457	
28" x 26"		711	660	610
x 24"			610	
x 20"			508	
x 18"			457	
30" x 28"		762	711	610
x 26"			660	
x 24"			610	
x 20"			508	
32" x 30"		813	762	610
x 28"			711	
x 26"			660	
x 24"			610	
34" x 32"		864	813	610
x 30"			762	
x 28"			711	
x 24"			610	

Nominal Pipe Size (NPS)		Outside Diameter at Bevel		End - to - End
		D	D ₁	
36" x 34"		914	864	610
x 32"			813	
x 30"			762	
x 26"			660	
x 24"			610	
40" x 38"		1016	965	610
x 36"			914	
x 34"			864	
x 32"			813	
x 30"			762	
42" x 40"		1067	1016	610
x 38"			965	
x 36"			914	
x 34"			864	
x 32"			813	
48" x 46"		1219	1168	711
x 44"			1118	
x 42"			1067	
x 40"			1016	

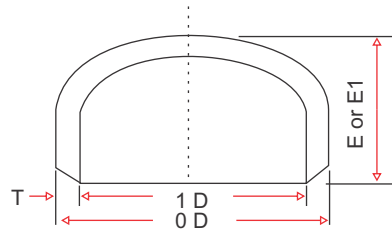


* All dimensions in mm.
* All weights indicated are approximate.
Other sizes available on request.

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CAPS



ASME B16.9

Nominal Pipe Size (NPS)	Outside Diameter at Bevel	SCH STD		SCH 40		SCH XS		SCH 80		SCH 120		SCH 160		SCH XXS	
		Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg	Wall thk.	Weight kg
½"	21.3	2.77	0.04	2.77	0.04	3.73	0.05	3.73	0.05			4.78			
¾"	26.7	2.87	0.05	2.87	0.05	3.91	0.07	3.91	0.07			5.56			
1"	33.4	3.38	0.11	3.38	0.11	4.55	0.15	4.55	0.15			6.35	0.15	9.09	0.20
1 ¼"	42.2	3.56	0.18	3.56	0.18	4.85	0.24	4.85	0.24			6.35	0.23	9.70	0.28
1 ½"	48.3	3.68	0.22	3.68	0.22	5.08	0.30	5.08	0.30			7.14	0.30	10.16	0.36
2"	60.3	3.91	0.26	3.91	0.26	5.54	0.33	5.54	0.33			8.74	0.55	11.07	0.59
2 ½"	73.0	5.16	0.42	5.16	0.42	7.01	0.57	7.01	0.57			9.53	0.90	14.02	1.00
3"	88.9	5.49	0.67	5.49	0.67	7.62	0.92	7.62	0.92			11.13	1.40	15.24	1.78
4"	114.3	6.02	1.33	6.02	1.33	8.56	1.76	8.56	1.76	11.13	2.31	13.49	2.75	17.12	3.17
5"	141.3	6.55	1.99	6.55	1.99	9.53	2.73	9.53	2.73	12.70	3.89	15.88	5.00	19.05	5.50
6"	168.3	7.11	3.00	7.11	3.00	10.97	4.40	10.97	4.40	14.27	6.02	18.26	7.50	21.95	8.10
8"	219.1	8.18	5.43	8.18	5.43	12.70	7.91	12.70	7.91	18.26	15.50	23.01	20.00	22.22	19.50
10"	273.1	9.27	8.92	9.27	8.92	12.70	12.20	15.09	16.20	21.44	24.00	28.58	30.00		
12"	323.9	9.53	13.10	10.31	19.00	12.70	17.40	17.48	26.90	25.40	41.00	33.32	44.50		
14"	355.6	9.53	15.90	11.13	23.00	12.70	21.20	19.05	34.70	27.79	47.00	35.71	60.00		
16"	406.4	9.53	20.00	12.70	26.70	12.70	26.70	21.44	43.50	30.96	64.00	40.49	79.00		
18"	457.0	9.53	27.65	14.27	39.00	12.70	36.52	23.88	72.50	34.93	88.00	45.24	104.00		
20"	508.0	9.53	35.60	15.09	66.70	12.70	46.98	26.19	98.50	38.10	105.00	50.01	170.00		
22"	559.0	9.53	39.00	-		12.70	56.60	28.58	120.00	41.28	150.00	53.98	220.00		
24"	610.0	9.53	46.00	17.48	93.00	12.70	64.60	30.96	150.00	46.02	200.00	59.54	285.00		

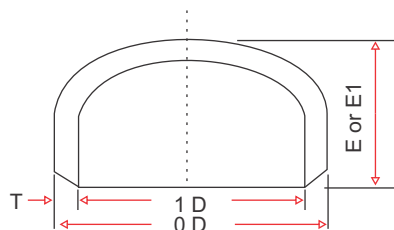
* All dimensions in mm.

* All weights indicated are approximate.

Other sizes available on request.



CAPS



ASME B16.9

Nominal Pipe Size (NPS)	Outside Diameter at Bevel	SCH STD		SCH XS	
		Wall thk.	Weight kg	Wall thk.	Weight kg
26"	660.0	9.53	50.00	12.70	66.00
28"	711.0	9.53	56.00	12.70	74.80
30"	762.0	9.53	60.00	12.70	79.00
32"	813.0	9.53	68.00	12.70	93.40
34"	864.0	9.53	72.60	12.70	96.91
36"	914.0	9.53	87.00	12.70	107.00
38"	965.0	9.53	86.20	12.70	124.70
40"	1016.0	9.53	95.30	12.70	129.30
42"	1067.0	9.53	102.00	12.70	134.00
44"	1118.0	9.53	120.20	12.70	167.80
46"	1168.0	9.53	136.00	12.70	186.00
48"	1219.0	9.53	159.00	12.70	215.50

* All dimensions in mm.

* All weights indicated are approximate.
Other sizes available on request.

HIGHER
W.T.
ON REQUEST

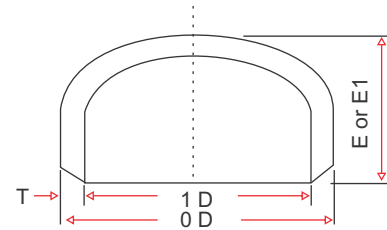


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DIMENSIONS OF CAPS

Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Length (1) E	Limiting Wall Thickness for Length E	Length (2) E ₁
½"	21.3	25.4	4.6	25.4
¾"	26.7	25.4	3.8	25.4
1"	33.4	38.1	4.6	38.1
1 ¼"	42.2	38.1	4.8	38.1
1 ½"	48.3	38.1	5.1	38.1
2"	60.3	38.1	5.6	44.4
2 ½"	73	38.1	7.1	50.8
3"	88.9	50.8	7.6	63.5
4"	114.3	63.5	8.6	76.2
5"	141.3	76.2	9.7	88.9
6"	168.3	88.9	10.9	101.6
8"	219.1	101.6	12.7	127
10"	273.1	127	12.7	152.4
12"	323.9	152.4	12.7	177.8
14"	355.6	165.1	12.7	190.5
16"	406.4	177.8	12.7	203.2
18"	457.2	203.2	12.7	228.6
20"	508	228.6	12.7	254
22"	558.8	254	12.7	254
24"	609.6	266.7	12.7	304.8
26"	660	267		
28"	711	267		
30"	762	267		
32"	813	267		
34"	864	267		
36"	914	267		
40"	1016	305		
42"	1067	305		
48"	1219	343		



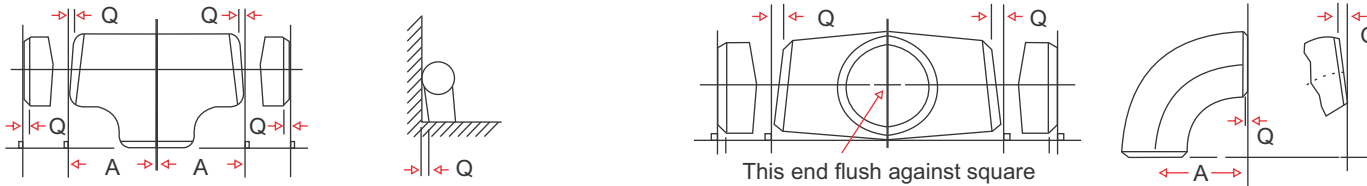
* All dimensions in mm.

* All weights indicated are approximate.
Other sizes available on request.

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ASME B16.9 DIMENSIONS TOLERANCE



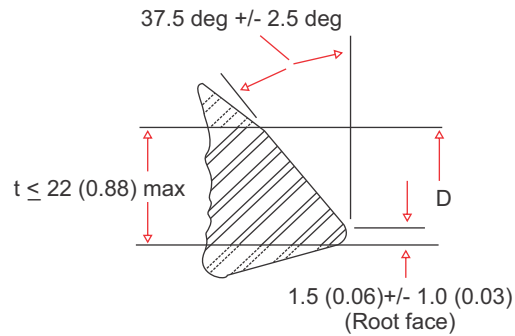
Nominal Pipe Size (NPS)	All Fittings						Center to End Dimension		Overall Length	
	Outside Diameter at Bevel	Inside Diameter at End	Wall Thickness	Overall Length of Cap	Angularity					
					Off Angle	Off Plane	90°, 45° Long and Short Radius Elbows	Tees	Reducers	Caps
(Notes : 1 & 2)	(Notes : 1, 3 & 4)	(Note 3)	E	Q	P	A, B	C, M	H	E	
½" - 2½"	+1.6, -0.8	±0.8	Not Less than 87.5% of Nominal Thickness Marked on Fittings	±3	±1	±2	±2	±2	±2	±3
3" - 4"	±1.6	±1.6		±3	±1	±2	±2	±2	±2	±3
5" - 8"	+2.4, -1.6	±1.6		±6	±2	±4	±2	±2	±2	±6
10" - 12"	+4.0, -3.2	±3.2		±6	±3	±5	±2	±2	±2	±6
14" - 16"	+4.0, -3.2	±3.2		±6	±3	±6	±2	±2	±2	±6
18"	+4.0, -3.2	±3.2		±6	±4	±10	±2	±2	±2	±6
20" - 24"	+6.4, -4.8	±4.8		±6	±4	±10	±2	±2	±2	±6

* All dimensions are in mm. Tolerances are equal plus and minus except as noted.

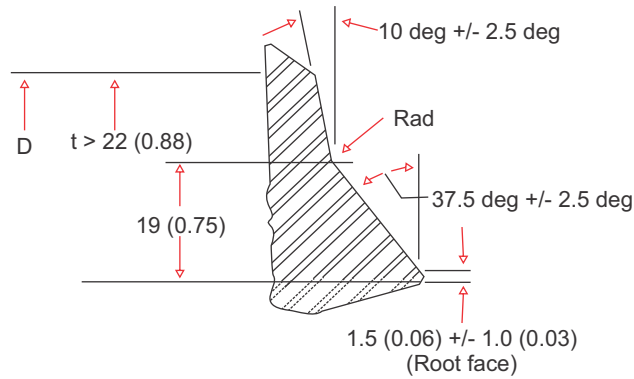
Notes:

- 1.) Out-of-round is the sum of absolute values of plus and minus tolerance.
- 2.) The inside diameter and the nominal wall thicknesses at ends are to be specified by the Purchaser. Wall thickness tolerance applies throughout the Fittings.
- 3.) Unless otherwise specified by the Purchaser, these tolerances apply to the nominal inside diameter, which equals the difference between the nominal outside diameter and twice the nominal wall thickness.

ASME B16.9 WELDING END PREPARATIONS



(a) Plain Bevel



(b) Compound Bevel

Nominal Wall Thickness, t	End Preparation
Less than x (Note)	Cut square or slightly chamfer, at Manufacturer's option (not illustrated)
x to 22 (0.88), inclusive	Plain bevel as in sketch (a) above.
More than 22 (0.88)	Compound bevel as in sketch (b) above.

* Dimensions in parenthesis are in inches.

* Other dimensions are in mm.

Note : x = 5 (0.19) for Carbon Steel or Ferritic Alloy Steel.



STEEL PIPE, BUTTWELD FITTINGS & FLANGE TO ASME STANDARDS

ASME B36.10 STEEL PIPE DIMENSIONS										APPROXIMATE MASS OF POPULAR SIZES													
STEEL PIPE DIMENSIONS			PIPE			BUTTWELD FITTINGS			A.S.M.E. FLANGES														
			Outside Diam.	Inside Diam.	Identification	Steel Pipe	90° LR Elbows	Tees Equal	Con. & Ecc. Red.	#150 (PN20)		#300 (PN50)		#600 (PN100)	#900 (PN150)								
NOMINAL SIZE			Sld.	Sch.																			
INCH	MM	mm	X.S.	No.	kg/m	kg/ea	kg/ea	kg/ea	kg/ea	kg/ea	kg/ea	kg/ea	kg/ea	kg/ea	kg/ea	kg/ea	kg/ea	kg/ea	kg/ea	kg/ea	kg/ea	kg/ea	
1/2"	15	21.3	Sld.	40	1.27	0.08	0.16	-	-	-	-	-	.45	.79	.57	.73	.91	.79	.91	.79	.91	2.00	
			XS	80	1.62	0.10	0.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/4"	20	26.7	Sld.	40	1.69	0.08	0.21	0.07	0.07	0.10	0.07	0.10	.68	.86	.91	1.25	1.41	1.13	1.13	1.59	2.72		
			XS	80	2.20	0.11	0.27	0.10	0.10	0.14	0.18	.95	1.09	1.09	1.36	1.81	1.77	1.86	3.86	6.35			
1"	25	33.4	Sld.	40	2.50	0.17	0.34	0.14	0.14	0.18	0.23	0.32	1.13	1.41	1.25	2.04	2.27	2.68	2.72	4.54			
1-1/4"	32	42.2	Sld.	40	3.39	0.28	0.64	0.18	0.18	0.23	0.32	0.41	1.13	1.41	1.25	2.04	2.27	2.68	2.72	4.54			
			XS	80	4.47	0.39	0.75	0.23	0.32	0.41	0.54	0.68	0.91	1.13	1.41	1.25	2.04	2.27	2.68	2.72	4.54		
1-1/2"	40	48.3	Sld.	40	4.05	0.39	0.95	0.27	0.27	0.32	0.41	0.54	1.36	1.81	1.70	2.81	3.06	2.83	3.74	6.35			
			XS	80	5.41	0.50	1.13	0.32	0.41	0.54	0.68	0.91	1.13	1.41	1.25	2.04	2.27	2.68	2.72	4.54			
2"	50	60.3	Sld.	40	5.44	0.68	1.45	0.41	0.41	0.54	0.68	0.91	2.22	2.83	2.77	3.13	3.74	3.52	4.65	10.89			
2-1/2"	65	73.0	Sld.	40	8.63	1.36	2.45	0.68	0.68	0.91	1.13	1.36	3.82	4.42	4.04	4.54	5.56	5.44	6.44	16.33			
			XS	80	11.41	1.82	2.95	0.91	1.13	1.36	1.69	2.20	2.50	2.81	3.06	2.83	3.74	3.52	4.65	10.89			
3"	80	88.9	Sld.	40	11.29	2.18	3.45	0.91	0.91	1.27	1.59	1.81	4.08	5.22	5.44	6.12	7.37	7.26	8.50	14.51			
3-1/2"	90	101.6	Sld.	40	13.57	2.86	4.30	1.27	1.27	1.59	1.81	2.18	5.94	7.48	7.37	9.53	11.79	11.79	17.24	23.13			
			XS	80	15.27	2.86	4.30	1.27	1.59	1.81	2.18	5.94	7.48	7.37	9.53	11.79	11.79	17.24	23.13				
4"	100	114.3	Sld.	40	16.07	4.2	5.7	1.59	1.59	2.18	2.7	3.8	6.12	9.53	9.07	12.70	15.42	15.88	30.84	39.01			
5"	125	141.3	Sld.	40	21.77	6.8	9.1	2.7	2.7	3.8	4.5	5.9	6.12	9.53	9.07	12.70	15.42	15.88	30.84	39.01			
			XS	80	30.97	10.0	11.8	3.8	4.5	5.9	6.12	9.53	9.07	12.70	15.42	15.88	30.84	39.01					
6"	150	168.3	Sld.	40	28.26	10.9	13.6	3.9	3.9	5.4	6.8	9.1	8.16	11.34	12.70	16.33	19.96	20.87	34.02	49.90			
8"	200	219.1	Sld.	40	42.55	21.8	25	5.9	5.9	8.6	11.8	13.6	12.70	19.05	21.77	25.40	32.21	38.10	52.16	84.82			
			XS	80	64.64	33.1	33.5	8.6	11.8	13.6	16.9	20.0	21.8	25.9	32.2	35.3	44.0	53.3	84.3	107.0	157.4		
10"	250	273.1	Sld.	40	60.31	38.6	41	10	10	14	18.8	21.8	17.24	25.40	31.75	35.38	44.00	53.34	90.36	121.56			
12"	300	323.9	Sld.	40	81.55	52	54	14	14	19	24	28	27.22	38.10	45.36	50.80	64.41	86.18	101.60	168.74			
			XS	60	81.55	52	54	14	19	24	28	37	46	53	64	77	91	111	138	181	217		
14"	350	355.6	Sld.	40	81.33	73	73	28	28	37	46	53	35.38	51.26	58.97	74.39	84.37	107.05	157.40	254.92			
16"	400	406.4	Sld.	30	93.27	98	91	35	35	46	53	61	42.18	63.50	77.11	101.60	111.58	145.15	209.11	310.71			
			XS	40	123.30	130	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120		
18"	450	457	Sld.	-	105.16	120	135	40	40	53	61	77	52.62	68.04	102.51	126.10	138.35	181.89	217.27	419.12			
20"	500	508	Sld.	20	117.15	150	168	61	61	82	95	107	65.32	81.65	123.38	149.69	174.63	231.33	312.98	527.96			
			XS	30	155.12	200	245	245	245	245	245	245	245	245	245	245	245	245	245	245	245		
24"	600	610	Sld.	20	141.12	220	240	77	77	95	107	129	91.63	118.84	203.21	222.26	247.21	342.92	443.16	680.39			
30"	750	762	Sld.	-	176.84	332	388	107	107	143	172	212	142.88	163.29	326.59	367.41	421.84	680.39	975.22	1564.89			
			XS	20	234.67	440	484	484	484	484	484	484	484	484	484	484	484	484	484	484	484		
36"	900	914	Sld.	-	212.56	481	588	129	129	172	212	254	217.72	235.87	510.29	544.31	589.67	1031.92	1564.89				
			XS	20	282.27	638	731	172	172	212	254	254	254	254	254	254	254	254	254	254	254		

APPROXIMATE MASS PER UNIT FOR AUSTENITIC STAINLESS STEEL PIPE AND FITTINGS CAN BE OBTAINED BY APPLYING A FACTOR OF 1.015

MASS IN KILOGRAMS - kg.

DIMENSIONS



ASTM STANDARDS

Summary of the main ASTM Standards generally used in the petroleum industries.

ASTM	Grade	UNS Designation	CHEMICAL REQUIREMENTS %										MECHANICAL REQUIREMENTS							
			C	Mn	Pmax	Smax	Si	Ni	Cr	Mo	Others	Tensile Strenght		Yield Strength		Elongation min%	Red. of Area min. %	Hardness	Impact Test at	
												Min. MPa	Min. ksi	Min. MPa	Min. ksi				°C	°F
A105			0.35 max	0.60-1.05	0.040	0.050	0.35 max	0.40 max	0.30 max	0.12 max	Cu<0.40 - V<0.03 Cb<0.02	485	70	250	36	22	30	137-187HB		
A106	B		0.30 max	0.29-1.06	0.035	0.035	0.10 min	0.40 max	0.40 max	0.15 max	Cu<0.40 - V<0.08	415	60	240	35	L30T16.5				
A182	F5a	K42544	0.25 max	0.60 max	0.040	0.030	0.50 max	0.50 max	4.0-6.0	0.44-0.55		620	90	450	65	22	50	187-248HB		
	F11	K11572	0.10-0.20	0.30-0.8	0.040	0.040	0.50-1.00		1.0-1.50	0.44-0.65		485	70	275	40	20	30	143-207HB		
	F22	K21590	0.05-0.15	0.30-0.6	0.040	0.040	0.50 max		2.0-2.50	0.87-1.13		515	75	310	45	20	30	156-207HB		
	F304	S30400	0.08 max	2.00 max	0.040	0.030	1.00 max	8.0-11.0	18.0-20.0			515	75	205	30	30	50			
	F304L	S30403	0.035 max	2.00 max	0.040	0.030	1.00 max	8.0-13.0	18.0-20.0			485	70	170	25	30	50			
	F316	S31600	0.08 max	2.00 max	0.040	0.030	1.00 max	10.0-14.0	16.0-18.0	2.00-3.00		515	75	205	30	30	50			
	F316L	S31603	0.035 max	2.00 max	0.040	0.030	1.00 max	10.0-15.0	16.0-18.0	2.00-3.00		485	70	170	25	30	50			
	F321	S32100	0.08 max	2.00 max	0.040	0.030	1.00 max	9.0-12.0	17.0 min		5C<Ti<0.70%	515	75	205	30	30	50			
	F347	S34700	0.08 max	2.00 max	0.040	0.030	1.00 max	9.0-13.0	17.0-20.0		10C<Cb+Ta<1.10%	515	75	205	30	30	50			
	F51	S31803	0.03 max	2.00 max	0.030	0.020	1.00 max	4.5-6.5	21.0-23.0	2.5-3.5	N0.08-0.20	620	90	450	65	25	45			
A312	TP304	S30400	0.08 max	2.00 max	0.040	0.030	0.75 max	8.0-11.0	18.0-20.0			515	75	205	30	L35T25				
	TP304L	S30403	0.035 max	2.00 max	0.040	0.030	0.75 max	8.0-13.0	18.0-20.0			485	70	170	25	L35T25				
	TP316	S31600	0.08 max	2.00 max	0.040	0.030	0.75 max	11.0-14.0	16.0-18.0	2.00-3.00		515	75	205	30	L35T25				
	TP316L	S31603	0.035 max	2.00 max	0.040	0.030	0.75 max	10.0-15.0	16.0-18.0	2.00-3.00		485	70	170	25	L35T25				
	TP321	S32100	0.08 max	2.00 max	0.040	0.030	0.75 max	9.0-13.0	17.0-20.0		5C<Ti<0.70%	515	75	205	30	L35T25				
	TP347	S34700	0.08 max	2.00 max	0.040	0.030	0.75 max	9.0-13.0	17.0-20.0		10C<Cb+Ta<1%	515	75	205	30	L35T25				
A333	6		0.30 max	0.29-1.06	0.025	0.025	0.10 min					415	60	240	35	L30T16.5			-45	-50
A335	P5	K41545	0.15 max	0.30-0.60	0.025	0.025	0.50 max		4.00-6.00	0.45-0.65		415	60	205	30	L30T20				
	P11	K11597	0.05-0.15	0.30-0.60	0.025	0.025	0.50-1.00		1.00-1.50	0.44-0.65		415	60	205	30	L30T20				
	P22	K21590	0.05-0.15	0.30-0.60	0.025	0.025	0.50 max		1.90-2.60	0.87-1.13		415	60	205	30	L30T20		max197HB		
A350	LF2		0.30 max	1.35 max	0.035	0.040	0.15-0.30	0.40 max	0.30 max	0.12 max	Cu<0.40 Cb<0.02 V<0.03	485-655	70-95	250	36	22	30		-45.6	-50
A420	WPL6		0.30 max	0.39-1.06	0.030	0.030	0.10 min					415-585	60-85	240	35	L30T16.5			-45.6	-50
A403	WP304		0.08 max	2.00 max	0.045	0.030	1.00 max	8.0-11.00	18.0-20.0			515	75	205	30	L28T20				
	WP304L		0.035 max	2.00 max	0.045	0.030	1.00 max	8.0-13.00	18.0-20.0			485	70	170	25	L28T20				
	WP347		0.08 max	2.00 max	0.045	0.030	1.00 max	9.0-13.00	17.0-20.0		a)	515	75	205	30	L28T20				
	WP316		0.08 max	2.00 max	0.045	0.030	1.00 max	10.0-14.00	16.0-18.0	2.00-3.00		515	75	205	30	L28T20				
	WP316L		0.035 max	2.00 max	0.045	0.030	1.00 max	10.0-15.00	16.0-18.0	2.00-3.00		485	70	170	25	L28T20				
	WP321		0.08 max	2.00 max	0.045	0.030	1.00 max	9.0-13.00	17.0-20.0		b)	515	75	205	30	L28T20				

a) Niobium + Tantalum content must be : not 10 times minus than Carbon content and not 1.10% more.

b) Titanium content must be : not 5 times minus than Carbon content and not 0.70% more.



PIPE SCHEDULE

Nominal Pipe Size inches	OD mm	10	20	30	STD	40	60	XS	80	100	120	140	160	XXS	VOL.
1/8"	10.30				1.73 0.37	← SAME AS STANDARD W.T. (Std. W.T.) →				← SAME AS EXTRA STRONG W.T. (XS) →					0.0001
1/4"	13.70				2.24 0.63			2.41 0.47							0.0002
3/8"	17.10				2.31 0.84			3.02 0.80							0.0003
1/2"	21.30				2.77 1.27			3.20 1.10					4.78 1.95	7.47 2.55	0.0004
3/4"	26.70				2.87 1.69			3.73 1.62					5.56 2.90	7.82 3.64	0.0007
1"	33.40				3.38 2.50			3.91 2.20					6.35 4.24	9.09 5.45	0.0011
1-1/4"	42.20				3.56 3.39			4.55 4.85					6.35 5.61	9.70 7.77	0.0018
1-1/2"	48.30				3.68 4.05			5.08 5.41					7.14 7.25	10.15 9.56	0.0023
2"	60.30				3.91 5.44			5.54 7.48					8.74 11.11	11.07 13.44	0.0036
2-1/2"	73.00				5.16 8.63			7.01 11.41					9.53 14.92	14.02 20.39	0.0053
3"	88.90				5.49 11.29			7.62 15.27					11.13 21.35	15.24 27.68	0.0079
3-1/2"	101.60				5.74 13.57			8.08 18.63							0.0103
4"	114.30				6.02 16.07			8.56 22.32			11.13 28.32		13.49 33.54	17.12 41.03	0.0130
5"	141.30				6.55 21.77			9.53 30.97			12.70 40.28		15.88 49.11	19.05 57.43	0.0199
6"	168.30				7.11 28.26			10.97 42.56			14.27 54.20		18.26 67.56	21.95 79.22	0.028
8"	219.10		6.35 33.31	7.04 36.81	8.18 42.55		10.31 53.08	12.70 64.64		15.09 75.92	18.26 90.44	20.62 100.92	23.01 111.27	22.23 107.92	0.048
10"	273.10		6.35 41.77	7.80 51.03	9.27 60.31		12.70 81.55	12.70 81.55	15.09 81.55	18.26 114.75	21.44 133.06	25.40 155.15	28.58 172.33	25.40 155.15	0.074
12"	323.90		6.35 49.73	8.38 65.20	9.53 73.88	10.31 79.73	14.27 108.96	12.70 97.46	17.48 132.08	21.44 159.91	25.40 186.97	28.58 208.14	33.32 238.76	25.40 186.97	0.104
14"	355.60	6.35 54.69	7.92 67.90	9.53 81.33	9.53 81.33	11.13 94.55	15.09 126.71	12.70 107.39	19.05 158.10	23.83 194.96	27.79 224.65	31.75 253.56	35.71 281.70		0.126
16"	406.40	6.35 62.64	7.92 77.83	9.53 93.27	9.53 93.27	12.70 123.30	16.66 160.12	12.70 123.30	21.44 203.53	26.19 245.56	30.96 286.64	36.53 333.19	40.49 365.35		0.165
18"	457.00	6.35 70.57	7.92 87.71	11.13 122.38	9.53 105.16	14.27 155.80	19.05 205.74	12.70 139.15	23.88 254.55	28.36 309.62	34.93 363.56	39.67 408.26	45.24 459.37		0.208
20"	508.00	6.35 78.55	9.53 117.15	12.70 155.12	9.53 117.15	15.09 183.42	20.62 247.83	12.70 155.12	26.19 311.17	32.54 381.53	38.10 441.49	44.45 508.11	50.01 564.81		0.258
22"	559.00	6.35 86.54	9.53 129.13	12.70 171.09	9.53 129.13		22.23 294.25	12.70 171.09	28.58 373.83	34.93 451.42	41.28 527.02	47.63 600.63	53.98 672.26		0.312
24"	610.00	6.35 94.53	9.53 141.12	14.27 209.64	9.53 141.12	17.48 255.41	24.61 355.26	12.70 187.06	30.96 442.08	38.89 547.71	46.02 640.03	52.37 720.15	59.54 808.22		0.372
26"	660.00	7.92 127.36	SAME AS EXTRA STRONG W.T. (XS)					12.70							0.435
28"	711.00	7.92 137.32		15.88 271.21	9.53 164.85			12.70							0.505
30"	762.00	7.92 147.28		15.88 292.18	9.53 176.84			12.70							0.580
32"	813.00	7.92 157.24		15.88 312.15	9.53 188.82	17.48 342.91		12.70							0.660
34"	864.00	7.92 167.20		15.88 332.12	9.53 200.31	17.48 364.90		12.70							0.746
36"	914.00	7.92 176.96		15.88 351.70	9.53 212.56	19.05 420.42		12.70							0.835
38"	965.00				9.53			12.70							0.931
40"	1016.00				9.53			12.70							1.032
42"	1067.00				9.53			12.70							1.138
44"	1118.00				9.53			12.70							1.249
46"	1168.00				9.53			12.70							1.364
48"	1219.00				9.53			12.70							1.485

Wall Thickness = MM Weight = Kg/Meter Volume = m³ / m





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