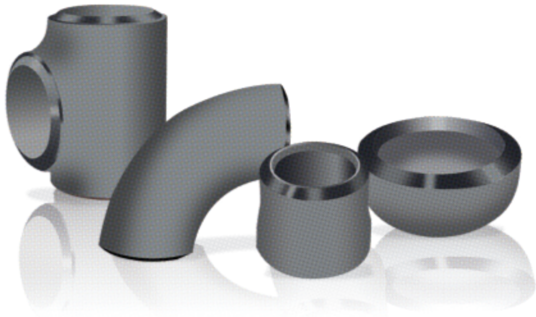
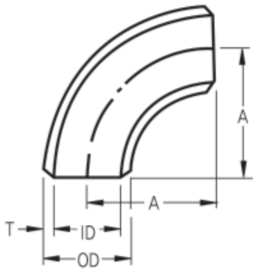


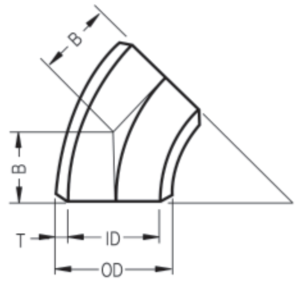
ASME

TK corporation

90° Elbows(Long)
45° Elbows(Long)

STD (Sch 40)





ASME B16.9 (in inches)

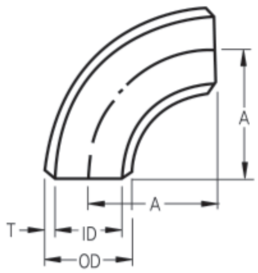
Nominal Pipe Size	Outside Diameter OD	Inside Diameter ID	Wall Thickness T	Center to End A	Center to End B
½	0.840	0.622	0.109	1½	⅝
¾	1.050	0.824	0.113	1½	¾
1	1.315	1.049	0.133	1½	⅞
1¼	1.660	1.380	0.140	1⅞	1
1½	1.900	1.610	0.145	2¼	1⅛
2	2.375	2.067	0.154	3	1⅜
2½	2.875	2.469	0.203	3¾	1¾
3	3.500	3.068	0.216	4½	2
3½	4.000	3.548	0.226	5¼	2¼
4	4.500	4.026	0.237	6	2½
5	5.563	5.047	0.258	7½	3⅛
6	6.625	6.065	0.280	9	3¾
8	8.625	7.981	0.322	12	5
10	10.750	10.020	0.365	15	6¼
12	12.750	12.000	0.375	18	7½
*12	12.750	11.938	0.406	18	7½
14	14.000	13.250	0.375	21	8¾
*14	14.000	13.124	0.438	21	8¾
16	16.000	15.250	0.375	24	10
*16	16.000	15.000	0.500	24	10
18	18.000	17.250	0.375	27	11¼
*18	18.000	16.876	0.562	27	11¼
20	20.000	19.250	0.375	30	12½
*20	20.000	18.812	0.594	30	12½
22	22.000	21.250	0.375	33	13½
24	24.000	23.250	0.375	36	15
*24	24.000	22.624	0.688	36	15
26	26.000	25.250	0.375	39	16
28	28.000	27.250	0.375	42	17¼
30	30.000	29.250	0.375	45	18½

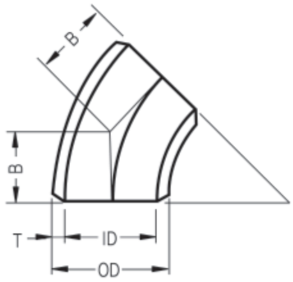
- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 122
- Asterisks(*) Denote Sch 40
- Wall Thickness Conform to ASME B 36.10M Specifications for STD and Sch 40 Wall Pipe

Wrought Steel Butt - Weld Fittings

90° Elbows(Long)
45° Elbows(Long)

STD (Sch 40)





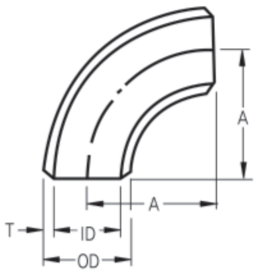
ASME B16.9 (in inches)

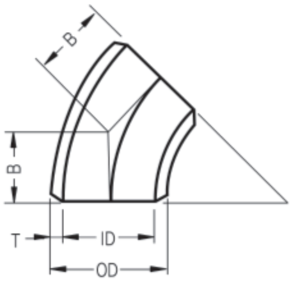
Nominal Pipe Size	Outside Diameter OD	Inside Diameter ID	Wall Thickness T	Center to End A	Center to End B
32	32.000	31.250	0.375	48	19¾
*32	32.000	30.624	0.688	48	19¾
34	34.000	33.250	0.375	51	21
*34	34.000	32.624	0.688	51	21
36	36.000	35.250	0.375	54	22¼
*36	36.000	34.500	0.750	54	22¼
38	38.000	37.250	0.375	57	23⅝
40	40.000	39.250	0.375	60	24⅞
42	42.000	41.250	0.375	63	26
44	44.000	43.250	0.375	66	27⅜
46	46.000	45.250	0.375	69	28⅝
48	48.000	47.250	0.375	72	29⅞
50	50.000	49.250	0.375	75	31⅛
52	52.000	51.250	0.375	78	32¼
54	54.000	53.250	0.375	81	33½
56	56.000	55.250	0.375	84	34¾
58	58.000	57.250	0.375	87	36
60	60.000	59.250	0.375	90	37¼
62	62.000	61.250	0.375	93	38½
64	64.000	63.250	0.375	96	39¾
66	66.000	65.250	0.375	99	41
68	68.000	67.250	0.375	102	42¼
70	70.000	69.250	0.375	105	43½
72	72.000	71.250	0.375	108	44¾
74	74.000	73.250	0.375	111	46
76	76.000	75.250	0.375	114	47¼
78	78.000	77.250	0.375	117	48½
80	80.000	79.250	0.375	120	49¾
82	82.000	81.250	0.375	123	51
84	84.000	83.250	0.375	126	52¼

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 122
- Asterisks(*) Denote Sch 40
- Wall Thickness Conform to ASME B 36.10M Specifications for STD and Sch 40 Wall Pipe

90° Elbows(Long)
45° Elbows(Long)

XS (Sch 80)





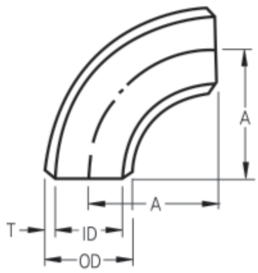
ASME B16.9 (in inches)

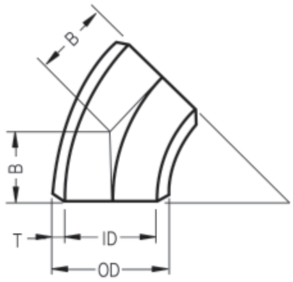
Nominal Pipe Size	Outside Diameter OD	Inside Diameter ID	Wall Thickness T	Center to End A	Center to End B
½	0.840	0.546	0.147	1 ½	⅝
¾	1.050	0.742	0.154	1 ½	¾
1	1.315	0.957	0.179	1 ½	⅞
1¼	1.660	1.278	0.191	1 ⅞	1
1½	1.900	1.500	0.200	2 ¼	1 ⅛
2	2.375	1.939	0.218	3	1 ⅜
2½	2.875	2.323	0.276	3 ¾	1 ¾
3	3.500	2.900	0.300	4 ½	2
3½	4.000	3.364	0.318	5 ¼	2 ¼
4	4.500	3.826	0.337	6	2 ½
5	5.563	4.813	0.375	7 ½	3 ⅛
6	6.625	5.761	0.432	9	3 ¾
8	8.625	7.625	0.500	12	5
10	10.750	9.750	0.500	15	6 ¼
*10	10.750	9.562	0.594	15	6 ¼
12	12.750	11.750	0.500	18	7 ½
*12	12.750	11.374	0.688	18	7 ½
14	14.000	13.000	0.500	21	8 ¾
*14	14.000	12.500	0.750	21	8 ¾
16	16.000	15.000	0.500	24	10
*16	16.000	14.312	0.844	24	10
18	18.000	17.000	0.500	27	11 ¼
*18	18.000	16.124	0.938	27	11 ¼
20	20.000	19.000	0.500	30	12 ½
*20	20.000	17.938	1.031	30	12 ½
22	22.000	21.000	0.500	33	13 ½
*22	22.000	19.750	1.125	33	13 ½
24	24.000	23.000	0.500	36	15
*24	24.000	21.562	1.219	36	15
26	26.000	25.000	0.500	39	16

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 122
- Asterisks(*) Denote Sch 80
- Wall Thickness Conform to ASME B 36.10M Specifications for STD and Sch 40 Wall Pipe

90° Elbows(Long)
45° Elbows(Long)

XS (Sch 80)





ASME B16.9

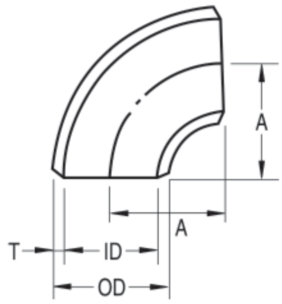
(in inches)

Nominal Pipe Size	Outside Diameter OD	Inside Diameter ID	Wall Thickness T	Center to End A	Center to End B
28	28.000	27.000	0.500	42	17¼
30	30.000	29.000	0.500	45	18½
32	32.000	31.000	0.500	48	19¾
34	34.000	33.000	0.500	51	21
36	36.000	35.000	0.500	54	22¼
38	38.000	37.000	0.500	57	23⅝
40	40.000	39.000	0.500	60	24⅞
42	42.000	41.000	0.500	63	26
44	44.000	43.000	0.500	66	27⅜
46	46.000	45.000	0.500	69	28⅝
48	48.000	47.000	0.500	72	29⅞
50	50.000	49.000	0.500	75	31⅛
52	52.000	51.000	0.500	78	32¼
54	54.000	53.000	0.500	81	33½
56	56.000	55.000	0.500	84	34¾
58	58.000	57.000	0.500	87	36
60	60.000	59.000	0.500	90	37¼
62	62.000	61.000	0.500	93	38½
64	64.000	63.000	0.500	96	39¾
66	66.000	65.000	0.500	99	41
68	68.000	67.000	0.500	102	42¼
70	70.000	69.000	0.500	105	43½
72	72.000	71.000	0.500	108	44¾
74	74.000	73.000	0.500	111	46
76	76.000	75.000	0.500	114	47¼
78	78.000	77.000	0.500	117	48½
80	80.000	79.000	0.500	120	49¾
82	82.000	81.000	0.500	123	51
84	84.000	83.000	0.500	126	52¼

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 122
- Asterisks(*) Denote Sch 80
- Wall Thickness Conform to ASME B 36.10M Specifications for STD and Sch 40 Wall Pipe

90° Elbows(Short)

STD (Sch 40)



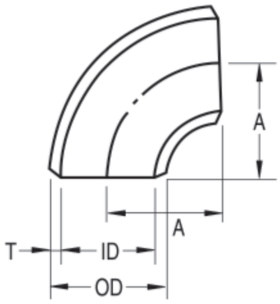
ASME B16.9 (in inches)

Nominal Pipe Size	Outside Diameter OD	Inside Diameter ID	Wall Thickness T	Center to End A
1	1.315	1.049	0.133	1
1¼	1.660	1.380	0.140	1¼
1½	1.900	1.610	0.145	1½
2	2.375	2.067	0.154	2
2½	2.875	2.469	0.203	2½
3	3.500	3.068	0.216	3
3½	4.000	3.548	0.226	3½
4	4.500	4.026	0.237	4
5	5.563	5.047	0.258	5
6	6.625	6.065	0.280	6
8	8.625	7.981	0.322	8
10	10.750	10.020	0.365	10
12	12.750	12.000	0.375	12
*12	12.750	11.938	0.406	12
14	14.000	13.250	0.375	14
*14	14.000	13.124	0.438	14
16	16.000	15.250	0.375	16
*16	16.000	15.000	0.500	16
18	18.000	17.250	0.375	18
*18	18.000	16.876	0.562	18
20	20.000	19.250	0.375	20
*20	20.000	18.812	0.594	20
22	22.000	21.250	0.375	22
24	24.000	23.250	0.375	24
*24	24.000	22.624	0.688	24
26	26.000	25.250	0.375	26
28	28.000	27.250	0.375	28
30	30.000	29.250	0.375	30

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 122
- Asterisks(*) Denote Sch 40
- Wall Thickness Conform to ASME B 36.10M Specifications for STD and Sch 40 Wall Pipe

90° Elbows(Short)

STD (Sch 40)



ASME B16.9

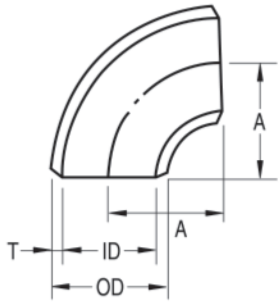
(in inches)

Nominal Pipe Size	Outside Diameter OD	Inside Diameter ID	Wall Thickness T	Center to End A
32	32.000	31.250	0.375	32
*32	32.000	30.624	0.688	32
34	34.000	33.250	0.375	34
*34	34.000	32.624	0.688	34
36	36.000	35.250	0.375	36
*36	36.000	34.500	0.750	36
38	38.000	37.250	0.375	38
40	40.000	39.250	0.375	40
42	42.000	41.250	0.375	42
44	44.000	43.250	0.375	44
46	46.000	45.250	0.375	46
48	48.000	47.250	0.375	48
50	50.000	49.250	0.375	50
52	52.000	51.250	0.375	52
54	54.000	53.250	0.375	54
56	56.000	55.250	0.375	56
58	58.000	57.250	0.375	58
60	60.000	59.250	0.375	60
62	62.000	61.250	0.375	62
64	64.000	63.250	0.375	64
66	66.000	65.250	0.375	66
68	68.000	67.250	0.375	68
70	70.000	69.250	0.375	70
72	72.000	71.250	0.375	72
74	74.000	73.250	0.375	74
76	76.000	75.250	0.375	76
78	78.000	77.250	0.375	78
80	80.000	79.250	0.375	80

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 122
- Asterisks(*) Denote Sch 40
- Wall Thickness Conform to ASME B 36.10M Specifications for STD and Sch 40 Wall Pipe

90° Elbows(Short)

XS (Sch 80)



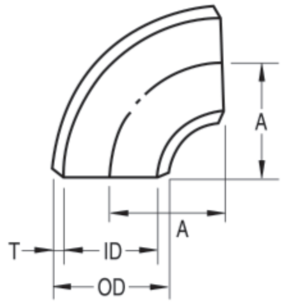
ASME B16.9 (in inches)

Nominal Pipe Size	Outside Diameter OD	Inside Diameter ID	Wall Thickness T	Center to End A
1	1.315	0.957	0.179	1
1¼	1.660	1.278	0.191	1¼
1½	1.900	1.500	0.200	1½
2	2.375	1.939	0.218	2
2½	2.875	2.323	0.276	2½
3	3.500	2.900	0.300	3
3½	4.000	3.364	0.318	3½
4	4.500	3.826	0.337	4
5	5.563	4.813	0.375	5
6	6.625	5.761	0.432	6
8	8.625	7.625	0.500	8
10	10.750	9.750	0.500	10
*10	10.750	9.562	0.594	10
12	12.750	11.750	0.500	12
*12	12.750	11.374	0.688	12
14	14.000	13.000	0.500	14
*14	14.000	12.500	0.750	14
16	16.000	15.000	0.500	16
*16	16.000	14.312	0.844	16
18	18.000	17.000	0.500	18
*18	18.000	16.124	0.938	18
20	20.000	19.000	0.500	20
*20	20.000	17.938	1.031	20
22	22.000	21.000	0.500	22
*22	22.000	19.750	1.125	22
24	24.000	23.000	0.500	24
*24	24.000	21.562	1.219	24
26	26.000	25.000	0.500	26

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 122
- Wall Thickness Conform to ASME B 36.10M Specifications for XS and Sch 80 Wall Pipe
- Asterisks(*) Denote Sch 80

90° Elbows(Short)

XS (Sch 80)



ASME B16.9

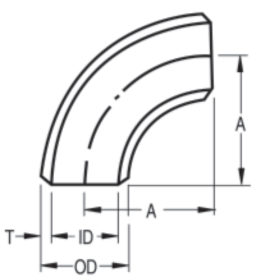
(in inches)

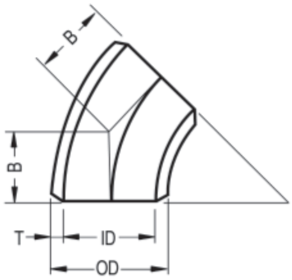
Nominal Pipe Size	Outside Diameter OD	Inside Diameter ID	Wall Thickness T	Center to End A
28	28.000	27.000	0.500	28
30	30.000	29.000	0.500	30
32	32.000	31.000	0.500	32
34	34.000	33.000	0.500	34
36	36.000	35.000	0.500	36
38	38.000	37.000	0.500	38
40	40.000	39.000	0.500	40
42	42.000	41.000	0.500	42
44	44.000	43.000	0.500	44
46	46.000	45.000	0.500	46
48	48.000	47.000	0.500	48
50	50.000	49.000	0.500	50
52	52.000	51.000	0.500	52
54	54.000	53.000	0.500	54
56	56.000	55.000	0.500	56
58	58.000	57.000	0.500	58
60	60.000	59.000	0.500	60
62	62.000	61.000	0.500	62
64	64.000	63.000	0.500	64
66	66.000	65.000	0.500	66
68	68.000	67.000	0.500	68
70	70.000	69.000	0.500	70
72	72.000	71.000	0.500	72
74	74.000	73.000	0.500	74
76	76.000	75.000	0.500	76
78	78.000	77.000	0.500	78
80	80.000	79.000	0.500	80

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 122
- Wall Thickness Conform to ASME B 36.10M Specifications for XS and Sch 80 Wall Pipe
- Asterisks(*) Denote Sch 80

90° Elbows(Long, Short)
45° Elbows(Long, Short)

Sch20,60,100,120,140,160,XXS





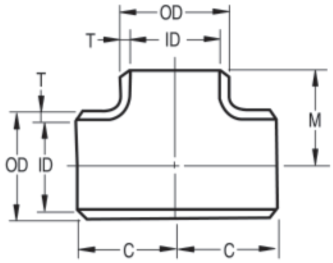
ASME B16.9 (in inches)

Nominal Pipe Size	Outside Diameter OD	Wall Thickness T							Center to End		
									A		B
		Sch 20	Sch 60	Sch 100	Sch 120	Sch 140	Sch 160	XXS	Long	Short	Long
½	0.840	–	–	–	–	–	0.188	0.294	1½		⅝
¾	1.050	–	–	–	–	–	0.219	0.308	1½		7/16
1	1.315	–	–	–	–	–	0.250	0.358	1½	1	⅞
1¼	1.660	–	–	–	–	–	0.250	0.382	1⅞	1¼	1
1½	1.900	–	–	–	–	–	0.281	0.400	2¼	1½	1⅛
2	2.375	–	–	–	–	–	0.344	0.436	3	2	1⅜
2½	2.875	–	–	–	–	–	0.375	0.552	3¾	2½	1¾
3	3.500	–	–	–	–	–	0.438	0.600	4½	3	2
4	4.500	–	–	–	0.438	–	0.531	0.674	6	4	2½
5	5.563	–	–	–	0.500	–	0.625	0.750	7½	5	3⅛
6	6.625	–	–	–	0.562	–	0.719	0.864	9	6	3¾
8	8.625	0.250	0.406	0.594	0.719	0.812	0.906	0.875	12	8	5
10	10.750	0.250	0.500	0.719	0.844	1.000	1.125	1.000	15	10	6¼
12	12.750	0.250	0.562	0.844	1.000	1.125	1.312	1.000	18	12	7½
14	14.000	0.312	0.594	0.938	1.094	1.250	1.406	–	21	14	8¾
16	16.000	0.312	0.656	1.031	1.219	1.438	1.594	–	24	16	10
18	18.000	0.312	0.750	1.156	1.375	1.562	1.781	–	27	18	11¼
20	20.000	0.375	0.812	1.281	1.500	1.750	1.969	–	30	20	12½
22	22.000	0.375	0.875	1.375	1.625	1.875	2.125	–	33	22	13½
24	24.000	0.375	0.969	1.531	1.812	2.062	2.344	–	36	24	15

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 122
- Wall Thickness Conform to ASME B 36.10M Specifications

Tees (Straight)

STD (Sch 40), XS(Sch 80)



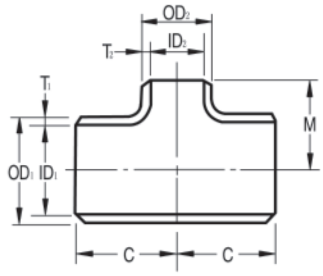
ASME B16.9 (in inches)

Nominal Pipe Size	Outside Diameter OD	STD(Sch 40)		XS(Sch 80)		Center to End	
		ID	T	ID	T	Run C	Outlet M
½	0.840	0.622	0.109	0.546	0.147	1	1
¾	1.050	0.824	0.113	0.742	0.154	1⅛	1⅛
1	1.315	1.049	0.133	0.957	0.179	1½	1½
1¼	1.660	1.380	0.140	1.278	0.191	1⅞	1⅞
1½	1.900	1.610	0.145	1.500	0.200	2¼	2¼
2	2.375	2.067	0.154	1.939	0.218	2½	2½
2½	2.875	2.469	0.203	2.323	0.276	3	3
3	3.500	3.068	0.216	2.900	0.300	3⅜	3⅜
3½	4.000	3.548	0.226	3.364	0.318	3¾	3¾
4	4.500	4.026	0.237	3.826	0.337	4⅛	4⅛
5	5.563	5.047	0.258	4.813	0.375	4⅞	4⅞
6	6.625	6.065	0.280	5.761	0.432	5⅝	5⅝
8	8.625	7.981	0.322	7.625	0.500	7	7
10	10.750	10.020	0.365	9.750	0.500	8½	8½
*10	10.750	–	–	9.562	0.594	8½	8½
12	12.750	12.000	0.375	11.750	0.500	10	10
*12	12.750	11.938	0.406	11.374	0.688	10	10
14	14.000	13.250	0.375	13.000	0.500	11	11
*14	14.000	13.124	0.438	12.500	0.750	11	11
16	16.000	15.250	0.375	15.000	0.500	12	12
*16	16.000	15.000	0.500	14.312	0.844	12	12
18	18.000	17.250	0.375	17.000	0.500	13½	13½
*18	18.000	16.876	0.562	16.124	0.938	13½	13½
20	20.000	19.250	0.375	19.000	0.500	15	15
*20	20.000	18.812	0.594	17.938	1.031	15	15
22	22.000	21.250	0.375	21.000	0.500	16½	16½
*22	22.000	–	–	19.750	1.125	16½	16½
24	24.000	23.250	0.375	23.000	0.500	17	17
*24	24.000	22.624	0.688	21.562	1.219	17	17
26	26.000	25.250	0.375	25.000	0.500	19½	19½
28	28.000	27.250	0.375	27.000	0.500	20½	20½
30	30.000	29.250	0.375	29.000	0.500	22	22
32	32.000	31.250	0.375	31.000	0.500	23½	23½
*32	32.000	30.624	0.688	–	–	23½	23½
34	34.000	33.250	0.375	33.000	0.500	25	25
*34	34.000	32.624	0.688	–	–	25	25
36	36.000	35.250	0.375	35.000	0.500	26½	26½
*36	36.000	34.500	0.750	–	–	26½	26½
38	38.000	37.250	0.375	37.000	0.500	28	28
40	40.000	39.250	0.375	39.000	0.500	29½	29½
42	42.000	41.250	0.375	41.000	0.500	30	28
44	44.000	43.250	0.375	43.000	0.500	32	30
46	46.000	45.250	0.375	45.000	0.500	33½	31½
48	48.000	47.250	0.375	47.000	0.500	35	33

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 124
- Asterisks(*) Denote Sch 40and Sch 80

Tees (Reducing)

STD (Sch 40), XS(Sch 80)



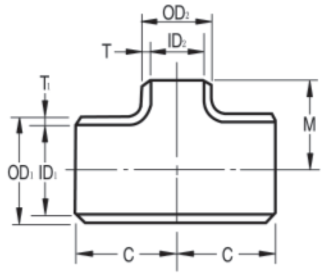
ASME B16.9 (in inches)

Nominal Pipe Size	Outside Diameter OD_1	Outside Diameter OD_2	STD(Sch 40) Large End T_1	STD(Sch 40) Small End T_2	XS(Sch 80) Large End T_1	XS(Sch 80) Small End T_2	Center to End Run C	Center to End Outlet M
¾ × ¾ × ½	1.050	0.840	0.113	0.109	0.154	0.147	1⅛	1⅛
1 × 1 × ¾	1.315	1.050	0.133	0.113	0.179	0.154	1½	1½
1 × 1 × ½	1.315	0.840	0.133	0.109	0.179	0.147	1½	1½
1¼ × 1¼ × 1	1.660	1.315	0.140	0.133	0.191	0.179	1⅞	1⅞
1¼ × 1¼ × ¾	1.660	1.050	0.140	0.113	0.191	0.154	1⅞	1⅞
1½ × 1½ × 1¼	1.900	1.660	0.145	0.140	0.200	0.191	2¼	2¼
1½ × 1½ × 1	1.900	1.315	0.145	0.133	0.200	0.179	2¼	2¼
1½ × 1½ × ¾	1.900	1.050	0.145	0.113	0.200	0.154	2¼	2¼
2 × 2 × 1½	2.375	1.900	0.154	0.145	0.218	0.200	2½	2⅜
2 × 2 × 1¼	2.375	1.660	0.154	0.140	0.218	0.191	2½	2¼
2 × 2 × 1	2.375	1.315	0.154	0.133	0.218	0.179	2½	2
2½ × 2½ × 2	2.875	2.375	0.203	0.154	0.276	0.218	3	2¾
2½ × 2½ × 1½	2.875	1.900	0.203	0.145	0.276	0.200	3	2⅝
2½ × 2½ × 1¼	2.875	1.660	0.203	0.140	0.276	0.191	3	2½
3 × 3 × 2½	3.500	2.875	0.216	0.203	0.300	0.276	3⅜	3¼
3 × 3 × 2	3.500	2.375	0.216	0.154	0.300	0.218	3⅜	3
3 × 3 × 1½	3.500	1.900	0.216	0.145	0.300	0.200	3⅜	2⅞
3½ × 3½ × 3	4.000	3.500	0.226	0.216	0.318	0.300	3¾	3⅝
3½ × 3½ × 2½	4.000	2.875	0.226	0.203	0.318	0.276	3¾	3½
3½ × 3½ × 2	4.000	2.375	0.226	0.154	0.318	0.218	3¾	3¼
3½ × 3½ × 1½	4.000	1.900	0.226	0.145	0.318	0.200	3¾	3⅛
4 × 4 × 3½	4.500	4.000	0.237	0.226	0.337	0.318	4⅛	4
4 × 4 × 3	4.500	3.500	0.237	0.216	0.337	0.300	4⅛	3⅞
4 × 4 × 2½	4.500	2.875	0.237	0.203	0.337	0.276	4⅛	3¾
4 × 4 × 2	4.500	2.375	0.237	0.154	0.337	0.218	4⅛	3½
5 × 5 × 4	5.563	4.500	0.258	0.237	0.375	0.337	4⅞	4⅝
5 × 5 × 3½	5.563	4.000	0.258	0.226	0.375	0.318	4⅞	4½
5 × 5 × 3	5.563	3.500	0.258	0.216	0.375	0.300	4⅞	4⅜
5 × 5 × 2½	5.563	2.875	0.258	0.203	0.375	0.276	4⅞	4¼
6 × 6 × 5	6.625	5.563	0.280	0.258	0.432	0.375	5⅝	5⅜
6 × 6 × 4	6.625	4.500	0.280	0.237	0.432	0.337	5⅝	5⅛
6 × 6 × 3½	6.625	4.000	0.280	0.226	0.432	0.318	5⅝	5
6 × 6 × 3	6.625	3.500	0.280	0.216	0.432	0.300	5⅝	4⅞
8 × 8 × 6	8.625	6.625	0.322	0.280	0.500	0.432	7	6⅝
8 × 8 × 5	8.625	5.563	0.322	0.258	0.500	0.375	7	6⅜
8 × 8 × 4	8.625	4.500	0.322	0.237	0.500	0.337	7	6⅛
10 × 10 × 8	10.750	8.625	0.365	0.322	0.500	0.500	8½	8
10 × 10 × 6	10.750	6.625	0.365	0.280	0.500	0.432	8½	7⅝
10 × 10 × 5	10.750	5.563	0.365	0.258	0.500	0.375	8½	7½
*10 × 10 × 8	10.750	8.625	–	–	0.594	0.500	8½	8
*10 × 10 × 6	10.750	6.625	–	–	0.594	0.432	8½	7⅝
*10 × 10 × 5	10.750	5.563	–	–	0.594	0.375	8½	7½

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 124
- Asterisks(*) Denote Sch 40 and Sch 80

Tees (Reducing)

STD (Sch 40), XS(Sch 80)



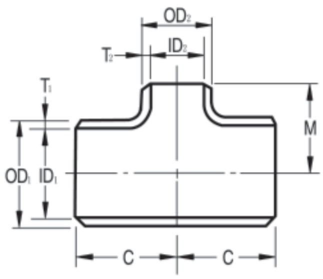
ASME B16.9 (in inches)

Nominal Pipe Size	Outside Diameter OD_1	Outside Diameter OD_2	STD(Sch 40) Large End T_1	STD(Sch 40) Small End T_2	XS(Sch 80) Large End T_1	XS(Sch 80) Small End T_2	Center to End Run C	Center to End Outlet M
12 × 12 × 10	12.750	10.750	0.375	0.365	0.500	0.500	10	9½
12 × 12 × 8	12.750	8.625	0.375	0.322	0.500	0.500	10	9
12 × 12 × 6	12.750	6.625	0.375	0.280	0.500	0.432	10	8⅝
*12 × 12 × 10	12.750	10.750	0.406	0.365	0.688	0.594	10	9½
*12 × 12 × 8	12.750	8.625	0.406	0.322	0.688	0.500	10	9
*12 × 12 × 6	12.750	6.625	0.406	0.280	0.688	0.432	10	8⅝
14 × 14 × 12	14,000	12.750	0.375	0.375	0.500	0.500	11	10⅝
14 × 14 × 10	14,000	10.750	0.375	0.365	0.500	0.500	11	10⅛
14 × 14 × 8	14,000	8.625	0.375	0.322	0.500	0.500	11	9¾
*14 × 14 × 12	14,000	12.750	0.438	0.406	0.750	0.688	11	10⅝
*14 × 14 × 10	14,000	10.750	0.438	0.365	0.750	0.594	11	10⅛
*14 × 14 × 8	14,000	8.625	0.438	0.322	0.750	0.500	11	9¾
16 × 16 × 14	16.000	14.000	0.375	0.375	0.500	0.500	12	12
16 × 16 × 12	16.000	12.750	0.375	0.375	0.500	0.500	12	11⅝
16 × 16 × 10	16.000	10.750	0.375	0.365	0.500	0.500	12	11⅛
*16 × 16 × 14	16.000	14.000	0.500	0.438	0.844	0.750	12	12
*16 × 16 × 12	16.000	12.750	0.500	0.406	0.844	0.688	12	11⅝
*16 × 16 × 10	16.000	10.750	0.500	0.365	0.844	0.594	12	11⅛
18 × 18 × 16	18.000	16.000	0.375	0.375	0.500	0.500	13½	13
18 × 18 × 14	18.000	14.000	0.375	0.375	0.500	0.500	13½	13
18 × 18 × 12	18.000	12.750	0.375	0.375	0.500	0.500	13½	12⅝
*18 × 18 × 16	18.000	16.000	0.562	0.500	0.938	0.844	13½	13
*18 × 18 × 14	18.000	14.000	0.562	0.438	0.938	0.750	13½	13
*18 × 18 × 12	18.000	12.750	0.562	0.406	0.938	0.688	13½	12⅝
20 × 20 × 18	20.000	18.000	0.375	0.375	0.500	0.500	15	14½
20 × 20 × 16	20.000	16.000	0.375	0.375	0.500	0.500	15	14
20 × 20 × 14	20.000	14.000	0.375	0.375	0.500	0.500	15	14
*20 × 20 × 18	20.000	18.000	0.594	0.562	1.031	0.938	15	14½
*20 × 20 × 16	20.000	16.000	0.594	0.500	1.031	0.844	15	14
*20 × 20 × 14	20.000	14.000	0.594	0.438	1.031	0.750	15	14
22 × 22 × 20	22.000	20.000	0.375	0.375	0.500	0.500	16½	16
22 × 22 × 18	22.000	18.000	0.375	0.375	0.500	0.500	16½	15½
22 × 22 × 16	22.000	16.000	0.375	0.375	0.500	0.500	16½	15
*22 × 22 × 20	22.000	20.000	–	–	1.125	1.031	16½	16
*22 × 22 × 18	22.000	18.000	–	–	1.125	0.938	16½	15½
*22 × 22 × 16	22.000	16.000	–	–	1.125	0.844	16½	15
24 × 24 × 22	24.000	22.000	0.375	0.375	0.500	0.500	17	17
24 × 24 × 20	24.000	20.000	0.375	0.375	0.500	0.500	17	17
24 × 24 × 18	24.000	18.000	0.375	0.375	0.500	0.500	17	16½
*24 × 24 × 22	24.000	22.000	–	–	1.219	1.125	17	17
*24 × 24 × 20	24.000	20.000	0.688	0.594	1.219	1.031	17	17
*24 × 24 × 18	24.000	18.000	0.688	0.562	1.219	0.938	17	16½

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 124
- Asterisks(*) Denote Sch 40 and Sch 80

Tees (Reducing)

STD (Sch 40), XS(Sch 80)



ASME B16.9

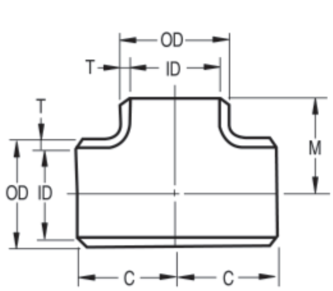
(in inches)

Nominal Pipe Size	Outside Diameter OD_1	Outside Diameter OD_2	STD(Sch 40)		XS(Sch 80)		Center to End	
			Large End T_1	Small End T_2	Large End T_1	Small End T_2	Run C	Outlet M
26×26×22	26.000	22.000	0.375	0.375	0.500	0.500	19½	18½
26×26×18	26.000	18.000	0.375	0.375	0.500	0.500	19½	17½
26×26×16	26.000	16.000	0.375	0.375	0.500	0.500	19½	17
28×28×24	28.000	24.000	0.375	0.375	0.500	0.500	20½	20
28×28×20	28.000	20.000	0.375	0.375	0.500	0.500	20½	19
28×28×18	28.000	18.000	0.375	0.375	0.500	0.500	20½	18½
30×30×26	30.000	26.000	0.375	0.375	0.500	0.500	22	21½
30×30×22	30.000	22.000	0.375	0.375	0.500	0.500	22	20½
30×30×20	30.000	20.000	0.375	0.375	0.500	0.500	22	20
32×32×28	32.000	28.000	0.375	0.375	0.500	0.500	23½	22½
32×32×24	32.000	24.000	0.375	0.375	0.500	0.500	23½	22
32×32×22	32.000	22.000	0.375	0.375	0.500	0.500	23½	21½
*32×32×24	32.000	24.000	0.688	0.688	–	–	23½	22
34×34×30	34.000	30.000	0.375	0.375	0.500	0.500	25	24
34×34×26	34.000	26.000	0.375	0.375	0.500	0.500	25	23½
34×34×22	34.000	22.000	0.375	0.375	0.500	0.500	25	22½
36×36×32	36.000	32.000	0.375	0.375	0.500	0.500	26½	25½
36×36×28	36.000	28.000	0.375	0.375	0.500	0.500	26½	24½
36×36×24	36.000	24.000	0.375	0.375	0.500	0.500	26½	24
*36×36×32	36.000	32.000	0.750	0.688	–	–	26½	25½
*36×36×24	36.000	24.000	0.750	0.688	–	–	26½	24
38×38×34	38.000	34.000	0.375	0.375	0.500	0.500	28	27½
38×38×30	38.000	30.000	0.375	0.375	0.500	0.500	28	26½
38×38×26	38.000	26.000	0.375	0.375	0.500	0.500	28	25½
40×40×36	40.000	36.000	0.375	0.375	0.500	0.500	29½	29
40×40×32	40.000	32.000	0.375	0.375	0.500	0.500	29½	28
40×40×28	40.000	28.000	0.375	0.375	0.500	0.500	29½	26½
42×42×38	42.000	38.000	0.375	0.375	0.500	0.500	30	28
42×42×34	42.000	34.000	0.375	0.375	0.500	0.500	30	28
42×42×30	42.000	30.000	0.375	0.375	0.500	0.500	30	28
44×44×40	44.000	40.000	0.375	0.375	0.500	0.500	32	29½
44×44×36	44.000	36.000	0.375	0.375	0.500	0.500	32	28½
44×44×32	44.000	32.000	0.375	0.375	0.500	0.500	32	28
46×46×42	46.000	42.000	0.375	0.375	0.500	0.500	33½	31
46×46×38	46.000	38.000	0.375	0.375	0.500	0.500	33½	30
46×46×34	46.000	34.000	0.375	0.375	0.500	0.500	33½	29½
48×48×44	48.000	44.000	0.375	0.375	0.500	0.500	35	33
48×48×40	48.000	40.000	0.375	0.375	0.500	0.500	35	32
48×48×36	48.000	36.000	0.375	0.375	0.500	0.500	35	31

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 124
- Asterisks(*) Denote Sch 40 and Sch 80

Tees (Straight)

Sch20,60,100,120,160, XXS



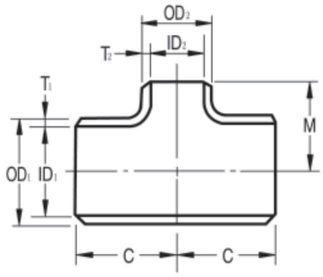
ASME B16.9 (in inches)

Nominal Pipe Size	Outside Diameter OD	Wall Thickness T						Center to End	
		Sch 20	Sch 60	Sch 100	Sch 120	Sch 160	XXS	Run C	Outlet M
½	0.840	–	–	–	–	0.188	0.294	1	1
¾	1.050	–	–	–	–	0.219	0.308	1⅛	1⅛
1	1.315	–	–	–	–	0.250	0.358	1½	1½
1¼	1.660	–	–	–	–	0.250	0.382	1⅞	1⅞
1½	1.900	–	–	–	–	0.281	0.400	2¼	2¼
2	2.375	–	–	–	–	0.344	0.436	2½	2½
2½	2.875	–	–	–	–	0.375	0.552	3	3
3	3.500	–	–	–	–	0.438	0.600	3⅜	3⅜
4	4.500	–	–	–	0.438	0.531	0.674	4⅛	4⅛
5	5.563	–	–	–	0.500	0.625	0.750	4⅞	4⅞
6	6.625	–	–	–	0.562	0.719	0.864	5⅝	5⅝
8	8.625	0.250	0.406	0.594	0.719	0.906	0.875	7	7
10	10.750	0.250	0.500	0.719	0.844	1.125	1.000	8½	8½
12	12.750	0.250	0.562	0.844	1.000	1.132	1.000	10	10
14	14.000	0.312	0.594	0.938	1.094	1.406		11	11
16	16.000	0.312	0.656	1.031	1.219	1.594		12	12
18	18.000	0.312	0.750	1.156	1.375	1.781		13½	13½
20	20.000	0.375	0.812	1.281	1.500	1.969		15	15
22	22.000	0.375	0.875	1.375	1.625	2.125		16½	16½
24	24.000	0.375	0.969	1.531	1.812	2.344		17	17

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 124
- Wall Thickness Conform to ASME B 36.10M Specifications

Tees (Reducing)

Sch 120, 160, XXS



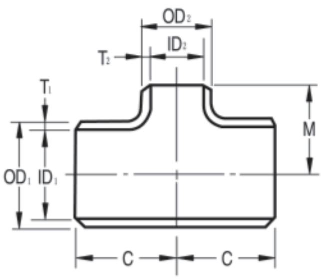
ASME B16.9 (in inches)

Nominal Pipe Size	Outside Diameter OD_1, OD_2	Wall Thickness T_1, T_2			Center to End	
		Sch 120	Sch 160	XXS	Run C	Outlet M
¾ × ¾ × ½	1.050 0.840	–	0.219 0.188	0.308 0.294	1⅛	1⅛
1 × 1 × ¾	1.315 1.050	–	0.250 0.219	0.358 0.308	1½	1½
1 × 1 × ½	1.315 0.840	–	0.250 0.188	0.358 0.294	1½	1½
1¼ × 1¼ × 1	1.660 1.315	–	0.250 0.250	0.382 0.358	1⅞	1⅞
1¼ × 1¼ × ¾	1.660 1.050	–	0.250 0.219	0.382 0.308	1⅞	1⅞
1½ × 1½ × 1¼	1.900 1.660	–	0.281 0.250	0.400 0.382	2¼	2¼
1½ × 1½ × 1	1.900 1.315	–	0.281 0.250	0.400 0.358	2¼	2¼
1½ × 1½ × ¾	1.900 1.050	–	0.281 0.219	0.400 0.308	2¼	2¼
2 × 2 × 1½	2.375 1.900	–	0.344 0.281	0.436 0.400	2½	2⅜
2 × 2 × 1¼	2.375 1.660	–	0.344 0.250	0.436 0.382	2½	2¼
2 × 2 × 1	2.375 1.315	–	0.344 0.250	0.436 0.358	2½	2
2½ × 2½ × 2	2.875 2.375	–	0.375 0.344	0.552 0.436	3	2¾
2½ × 2½ × 1½	2.875 1.900	–	0.375 0.281	0.552 0.400	3	2⅝
3 × 3 × 2½	3.500 2.875	–	0.438 0.375	0.600 0.552	3⅜	3¼
3 × 3 × 2	3.500 2.375	–	0.438 0.344	0.600 0.436	3⅜	3
4 × 4 × 3	4.500 3.500	–	0.531 0.438	0.674 0.600	4⅛	3⅞
4 × 4 × 2½	4.500 2.875	–	0.531 0.375	0.674 0.552	4⅛	3¾
4 × 4 × 2	4.500 2.375	–	0.531 0.344	0.674 0.436	4⅛	3½
5 × 5 × 4	5.563 4.500	0.500 0.438	0.625 0.531	0.750 0.674	4⅞	4⅝
5 × 5 × 3	5.563 3.500	–	0.625 0.438	0.750 0.600	4⅞	4⅜
5 × 5 × 2½	5.563 2.875	–	0.625 0.375	0.750 0.552	4⅞	4¼
6 × 6 × 5	6.625 5.563	0.562 0.500	0.719 0.625	0.864 0.750	5⅝	5⅜
6 × 6 × 4	6.625 4.500	0.562 0.438	0.719 0.531	0.864 0.674	5⅝	5⅛
6 × 6 × 3	6.625 3.500	–	0.719 0.438	0.864 0.600	5⅝	4⅞
8 × 8 × 6	8.625 6.625	0.719 0.562	0.906 0.719	0.875 0.864	7	6⅝
8 × 8 × 5	8.625 5.563	0.719 0.500	0.926 0.625	0.875 0.750	7	6⅜
8 × 8 × 4	8.625 4.500	0.719 0.438	0.906 0.531	0.875 0.674	7	6⅛

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 124
- Wall Thickness Conform to ASME B 36.10M Specifications

Tees (Reducing)

Sch 20,60,100,120,140,160,XXS

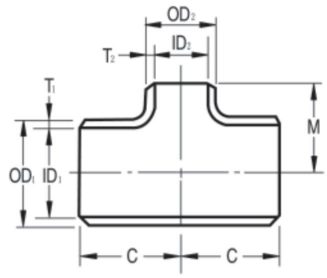


ASME B16.9 (in inches)

Nominal Pipe Size	Outside Diameter OD_1, OD_2	Wall Thickness T_1, T_2							Center to End	
		Sch 20	Sch 60	Sch 100	Sch 120	Sch 140	Sch 160	XXS	Run C	Outlet M
10×10×8	10.750 8.625	0.250 0.250	0.500 0.406	0.719 0.594	0.844 0.719	1.000 0.812	1.125 0.906	1.000 0.875	8½	8
10×10×6	10.750 6.625	–	–	–	0.844 0.562	–	1.125 0.719	1.000 0.864	8½	7⅝
10×10×5	10.750 5.563	–	–	–	0.844 0.500	–	1.125 0.625	1.000 0.750	8½	7½
12×12×10	12.750 10.750	0.250 0.250	0.562 0.500	0.844 0.719	1.000 0.844	1.125 1.000	1.312 1.125	1.000 1.000	10	9½
12×12×8	12.750 8.625	0.250 0.250	0.562 0.406	0.844 0.594	1.000 0.719	1.125 0.812	1.312 0.906	1.000 0.875	10	9
12×12×6	12.750 6.625	–	–	–	1.000 0.562	–	1.312 0.719	1.000 0.864	10	8⅝
14×14×12	14.000 12.750	0.312 0.250	0.594 0.562	0.938 0.844	1.094 1.000	1.250 1.125	1.406 1.312	–	11	10⅝
14×14×10	14.000 10.750	0.312 0.250	0.594 0.500	0.938 0.719	1.094 0.844	1.125 1.000	1.406 1.125	–	11	10⅛
14×14×8	14.000 8.625	0.312 0.250	0.594 0.406	0.938 0.594	1.094 0.719	1.250 0.812	1.406 0.906	–	11	9¾
16×16×14	16.000 14.000	0.312 0.312	0.656 0.594	1.031 0.938	1.219 1.094	1.438 1.250	1.594 1.406	–	12	12
16×16×12	16.000 12.750	0.312 0.250	0.656 0.562	1.031 0.844	1.219 1.000	1.438 1.125	1.594 1.312	–	12	11⅝
16×16×10	16.000 10.750	0.312 0.250	0.656 0.500	1.031 0.719	1.219 0.844	1.438 1.000	1.594 1.125	–	12	11⅛
18×18×16	18.000 16.000	0.312 0.312	0.750 0.656	1.156 1.031	1.375 1.219	1.562 1.438	1.781 1.574	–	13½	13
18×18×14	18.000 14.000	0.312 0.312	0.750 0.594	1.156 0.938	1.375 1.094	1.562 1.250	1.781 1.406	–	13½	13
18×18×12	18.000 12.750	0.312 0.250	0.750 0.562	1.156 0.844	1.375 1.000	1.562 1.125	1.781 1.312	–	13½	12⅝
20×20×18	20.000 18.000	0.375 0.312	0.812 0.750	1.281 1.156	1.500 1.375	1.750 1.562	1.969 1.781	–	15	14½
20×20×16	20.000 16.000	0.375 0.312	0.812 0.656	1.281 1.031	0.500 1.219	1.750 1.438	1.969 1.594	–	15	14
20×20×14	20.000 14.000	0.375 0.312	0.812 0.594	1.281 0.938	1.500 1.094	1.750 1.250	1.769 1.406	–	15	14
22×22×20	22.000 20.000	0.375 0.375	0.875 0.812	1.375 1.281	1.625 1.500	1.875 1.750	2.125 1.969	–	16½	16
22×22×18	22.000 18.000	0.375 0.312	0.875 0.750	1.375 1.156	1.625 1.375	1.875 1.562	2.125 1.781	–	16½	15½
22×22×16	22.000 16.000	0.375 0.312	0.875 0.656	1.375 1.031	1.625 1.219	1.875 1.438	2.125 1.594	–	16½	15
24×24×22	24.000 22.000	0.375 0.375	0.969 0.875	1.531 1.375	1.812 1.625	2.062 1.875	2.344 2.125	–	17	17
24×24×20	24.000 20.000	0.375 0.375	0.969 0.812	1.531 1.281	1.812 1.500	2.062 1.750	2.344 1.969	–	17	17
24×24×18	24.000 18.000	0.375 0.312	0.969 0.750	1.531 1.156	1.812 1.375	2.062 1.562	2.344 1.781	–	17	16½

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 124
- Wall Thickness Conform to ASME B 36.10M Specifications

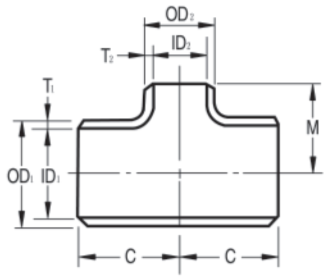
Tees



(in inches)

NPS		TEE			
		OD1	OD2	C	M
50	50	50.00	50.00	36.50	34.50
50	48	50.00	48.00	36.50	33.00
50	46	50.00	46.00	36.50	32.00
50	44	50.00	44.00	36.50	31.00
50	42	50.00	42.00	36.50	30.00
50	40	50.00	40.00	36.50	29.00
50	38	50.00	38.00	36.50	29.00
52	52	52.00	52.00	38.00	36.00
52	50	52.00	50.00	38.00	35.00
52	48	52.00	48.00	38.00	34.00
52	46	52.00	46.00	38.00	33.00
52	44	52.00	44.00	38.00	32.00
52	42	52.00	42.00	38.00	31.00
52	40	52.00	40.00	38.00	30.00
52	38	52.00	38.00	38.00	30.00
54	54	54.00	54.00	39.50	37.50
54	52	54.00	52.00	39.50	36.00
54	50	54.00	50.00	39.50	35.00
54	48	54.00	48.00	39.50	34.00
54	46	54.00	46.00	39.50	33.00
54	44	54.00	44.00	39.50	32.00
54	40	54.00	40.00	39.50	31.00
54	28	54.00	28.00	39.50	31.00
54	20	54.00	20.00	39.50	31.00
56	56	56.00	56.00	41.00	38.00
56	54	56.00	54.00	41.00	37.00
56	52	56.00	52.00	41.00	36.00
56	50	56.00	50.00	41.00	35.00
56	48	56.00	48.00	41.00	34.00
56	46	56.00	46.00	41.00	33.00
56	44	56.00	44.00	41.00	32.00
56	40	56.00	40.00	41.00	32.00
56	28	56.00	28.00	41.00	32.00
56	20	56.00	20.00	41.00	32.00
58	58	58.00	58.00	42.50	39.00
58	56	58.00	56.00	42.50	38.00
58	54	58.00	54.00	42.50	37.00
58	52	58.00	52.00	42.50	36.00
58	50	58.00	50.00	42.50	35.00
58	48	58.00	48.00	42.50	34.00
58	46	58.00	46.00	42.50	33.00
58	44	58.00	44.00	42.50	33.00
60	60	60.00	60.00	44.00	40.00
60	58	60.00	58.00	44.00	39.00
60	56	60.00	56.00	44.00	38.00
60	54	60.00	54.00	44.00	37.00
60	52	60.00	52.00	44.00	36.00
60	50	60.00	50.00	44.00	35.00

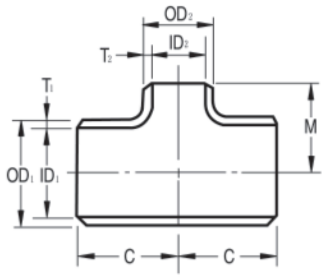
Tees



(in inches)

NPS		TEE			
		OD1	OD2	C	M
60	48	60.00	48.00	44.00	34.00
60	46	60.00	46.00	44.00	34.00
60	40	60.00	40.00	44.00	34.00
60	28	60.00	28.00	44.00	34.00
60	20	60.00	20.00	44.00	34.00
62	62	62.00	62.00	45.00	40.50
62	60	62.00	60.00	45.00	39.00
62	58	62.00	58.00	45.00	38.00
62	56	62.00	56.00	45.00	37.00
62	54	62.00	54.00	45.00	36.00
62	52	62.00	52.00	45.00	35.00
62	50	62.00	50.00	45.00	35.00
64	64	64.00	64.00	46.00	41.00
64	62	64.00	62.00	46.00	40.00
64	60	64.00	60.00	46.00	39.00
64	58	64.00	58.00	46.00	38.00
64	56	64.00	56.00	46.00	37.00
64	54	64.00	54.00	46.00	36.00
64	52	64.00	52.00	46.00	36.00
66	66	66.00	66.00	48.00	42.00
66	64	66.00	64.00	48.00	41.00
66	62	66.00	62.00	48.00	40.00
66	60	66.00	60.00	48.00	39.00
66	58	66.00	58.00	48.00	38.00
66	56	66.00	56.00	48.00	37.00
66	54	66.00	54.00	48.00	37.00
68	68	68.00	68.00	49.00	43.00
68	66	68.00	66.00	49.00	42.00
68	64	68.00	64.00	49.00	41.00
68	62	68.00	62.00	49.00	40.00
68	60	68.00	60.00	49.00	39.00
68	58	68.00	58.00	49.00	38.00
68	56	68.00	56.00	49.00	38.00
70	70	70.00	70.00	50.00	44.00
70	68	70.00	68.00	50.00	43.00
70	66	70.00	66.00	50.00	42.00
70	64	70.00	64.00	50.00	41.00
70	62	70.00	62.00	50.00	40.00
70	60	70.00	60.00	50.00	39.00
70	58	70.00	58.00	50.00	39.00
72	72	72.00	72.00	52.00	45.00
72	70	72.00	70.00	52.00	44.00
72	68	72.00	68.00	52.00	43.00
72	66	72.00	66.00	52.00	42.00
72	64	72.00	64.00	52.00	41.00
72	62	72.00	62.00	52.00	40.00
72	60	72.00	60.00	52.00	40.00
74	74	74.00	74.00	53.00	46.00
74	72	74.00	72.00	53.00	45.00
74	70	74.00	70.00	53.00	44.00
74	68	74.00	68.00	53.00	43.00

Tees

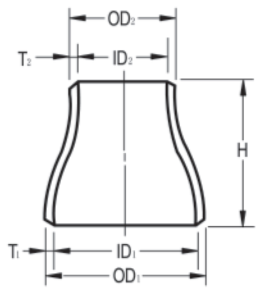


(in inches)

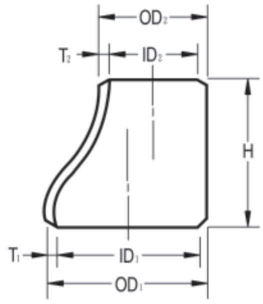
NPS		TEE			
		OD1	OD2	C	M
74	66	74.00	66.00	53.00	42.00
74	64	74.00	64.00	53.00	41.00
74	62	74.00	62.00	53.00	41.00
76	76	76.00	76.00	54.00	47.00
76	74	76.00	74.00	54.00	46.00
76	72	76.00	72.00	54.00	45.00
76	70	76.00	70.00	54.00	44.00
76	68	76.00	68.00	54.00	43.00
76	66	76.00	66.00	54.00	42.00
76	64	76.00	64.00	54.00	42.00
78	78	78.00	78.00	55.00	48.00
78	76	78.00	76.00	55.00	47.00
78	74	78.00	74.00	55.00	46.00
78	72	78.00	72.00	55.00	45.00
78	70	78.00	70.00	55.00	44.00
78	68	78.00	68.00	55.00	43.00
78	66	78.00	66.00	55.00	43.00
80	80	80.00	80.00	56.00	49.00
80	78	80.00	78.00	56.00	48.00
80	76	80.00	76.00	56.00	47.00
80	74	80.00	74.00	56.00	46.00
80	72	80.00	72.00	56.00	45.00
80	70	80.00	70.00	56.00	44.00
80	68	80.00	68.00	56.00	44.00
82	82	82.00	82.00	57.00	50.00
82	80	82.00	80.00	57.00	49.00
82	78	82.00	78.00	57.00	48.00
82	76	82.00	76.00	57.00	47.00
82	74	82.00	74.00	57.00	46.00
82	72	82.00	72.00	57.00	45.00
82	70	82.00	70.00	57.00	45.00
84	84	84.00	84.00	58.00	51.00

Reducers

STD (Sch 40), XS(Sch 80)



Concentric



Eccentric

ASME B16.9

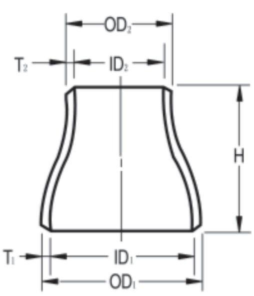
(in inches)

Nominal Pipe Size	Outside Diameter OD_1	Outside Diameter OD_2	STD(Sch 40)				XS(Sch 80)				End to End H
			Large End		Small End		Large End		Small End		
			ID_1	T_1	ID_2	T_2	ID_1	T_1	ID_1	T_2	
¾ × ½	1.050	0.840	0.824	0.113	0.622	0.109	0.742	0.514	0.546	0.147	1½
1 ×	1.315	1.050	1.049	0.133	0.824	0.113	0.957	0.179	0.742	0.154	2
1 ×	1.315	0.840	1.049	0.133	0.622	0.109	0.957	0.179	0.546	0.147	2
1¼ ×1	1.660	1.315	1.380	0.140	1.049	0.133	1.278	0.191	0.957	0.179	2
1¼ × ¾	1.660	1.050	1.380	0.140	0.824	0.113	1.278	0.191	0.742	0.154	2
1¼ × ½	1.660	0.840	1.380	0.140	0.622	0.109	1.278	0.191	0.546	0.147	2
1½ ×1¼	1.900	1.660	1.610	0.145	1.380	0.140	1.500	0.200	1.278	0.191	2½
1½ ×1	1.900	1.315	1.610	0.145	1.049	0.133	1.500	0.200	0.957	0.179	2½
1½ × ¾	1.900	1.050	1.610	0.145	0.824	0.113	1.500	0.200	0.742	0.154	2½
2 ×1½	2.375	1.900	2.067	0.154	1.610	0.145	1.939	0.218	1.500	0.200	3
2 ×1¼	2.375	1.660	2.067	0.154	1.380	0.140	1.939	0.218	1.278	0.191	3
2 ×1	2.375	1.315	2.067	0.154	1.049	0.133	1.939	0.218	0.957	0.179	3
2 × ¾	2.375	1.050	2.067	0.154	0.824	0.113	1.939	0.218	0.742	0.154	3
2½ ×2	2.875	2.375	2.469	0.203	2.067	0.154	2.323	0.276	1.939	0.218	3½
2½ ×1½	2.875	1.900	2.469	0.203	1.610	0.145	2.323	0.276	1.500	0.200	3½
2½ ×1¼	2.875	1.660	2.469	0.203	1.380	0.140	2.323	0.276	1.278	0.191	3½
2½ ×1	2.875	1.315	2.469	0.203	1.049	0.133	2.323	0.276	0.957	0.179	3½
3 ×2½	3.500	2.875	3.068	0.216	2.469	0.203	2.900	0.300	2.323	0.276	3½
3 ×2	3.500	2.375	3.068	0.216	2.067	0.154	2.900	0.300	1.939	0.218	3½
3 ×1½	3.500	1.900	3.068	0.216	1.610	0.145	2.900	0.300	1.500	0.200	3½
3 ×1¼	3.500	1.660	3.068	0.216	1.380	0.140	2.900	0.300	1.278	0.191	3½
3½ ×3	4.000	3.500	3.548	0.226	0.368	0.216	3.364	0.318	2.900	0.300	4
3½ ×2½	4.000	2.875	3.548	0.226	2.469	0.203	3.364	0.318	2.323	0.276	4
3½ ×2	4.000	2.375	3.548	0.226	2.067	0.154	3.364	0.318	1.939	0.218	4
3½ ×1½	4.000	1.900	3.548	0.226	1.610	0.145	3.364	0.318	1.500	0.200	4
4 ×3½	4.500	4.000	4.026	0.237	3.548	0.226	3.826	0.337	3.364	0.318	4
4 ×3	4.500	3.500	4.026	0.237	3.068	0.216	3.826	0.337	2.900	0.300	4
4 ×2½	4.500	2.875	4.026	0.237	2.469	0.203	3.826	0.337	2.323	0.276	4
4 ×2	4.500	2.375	4.026	0.237	2.607	0.154	3.826	0.337	1.939	0.218	4
5 ×4	5.563	4.500	5.047	0.258	4.026	0.237	4.813	0.375	3.826	0.337	5
5 ×3½	5.563	4.000	5.047	0.258	3.548	0.226	4.813	0.375	3.364	0.318	5
5 ×3	5.563	3.500	5.047	0.258	3.068	0.216	4.813	0.375	2.900	0.300	5
5 ×2½	5.563	2.875	5.047	0.258	2.469	0.203	4.813	0.375	2.323	0.276	5
6 ×5	6.625	5.563	6.065	0.280	5.047	0.258	5.761	0.432	4.813	0.375	5½
6 ×4	6.625	4.500	6.065	0.280	4.026	0.237	5.761	0.432	3.826	0.337	5½
6 ×3½	6.625	4.000	6.065	0.280	3.548	0.226	5.761	0.432	3.364	0.318	5½
6 ×3	6.625	3.500	6.065	0.280	3.068	0.216	5.761	0.432	2.900	0.300	5½
6 ×2½	6.625	2.875	6.065	0.280	2.469	0.203	5.761	0.432	2.323	0.276	5½
8 ×6	8.625	6.625	7.981	0.322	6.065	0.280	7.625	0.500	5.761	0.432	6
8 ×5	8.625	5.563	7.981	0.322	5.047	0.258	7.625	0.500	4.813	0.375	6
8 ×4	8.625	4.500	7.981	0.322	4.026	0.237	7.625	0.500	3.826	0.337	6
8 ×3½	8.625	4.000	7.981	0.322	3.548	0.226	7.625	0.500	3.364	0.318	6
10 ×8	10.750	8.625	10.020	0.365	7.981	0.322	9.750	0.500	7.625	0.500	7
10 ×6	10.750	6.625	10.020	0.365	6.065	0.280	9.750	0.500	5.761	0.432	7
10 ×5	10.750	5.563	10.020	0.365	5.047	0.258	9.750	0.500	4.813	0.375	7
10 ×4	10.750	4.500	10.020	0.365	4.026	0.237	9.750	0.500	3.826	0.337	7
*10 ×8	10.750	8.625	–	–	–	–	9.562	0.594	7.625	0.500	7
*10 ×6	10.750	6.626	–	–	–	–	9.562	0.594	5.761	0.432	7
*10 ×5	10.750	5.563	–	–	–	–	9.562	0.594	4.813	0.375	7
*10 ×4	10.750	4.500	–	–	–	–	9.562	0.594	3.826	0.337	7

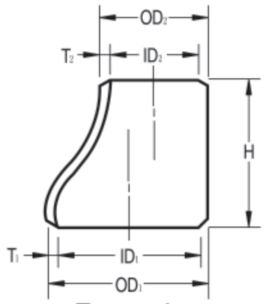
- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 125
- Asterisks(*) Denote Sch 80

Reducers

STD (Sch 40), XS(Sch 80)



Concentric



Eccentric

ASME B16.9

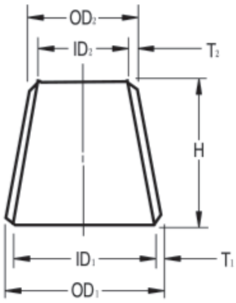
(in inches)

Nominal Pipe Size	Outside Diameter OD_1	Outside Diameter OD_2	STD(Sch 40) Large End ID_1	STD(Sch 40) Large End T_1	STD(Sch 40) Small End ID_2	STD(Sch 40) Small End T_2	XS(Sch 80) Large End ID_1	XS(Sch 80) Large End T_1	XS(Sch 80) Small End ID_2	XS(Sch 80) Small End T_2	End to End H
12×10	12.750	10.750	12.000	0.375	10.020	0.365	11.750	0.500	9.750	0.500	8
12× 8	12.750	8.625	12.000	0.375	7.981	0.322	11.750	0.500	7.625	0.500	8
12× 6	12.750	6.625	12.000	0.375	6.065	0.280	11.750	0.500	5.761	0.432	8
12× 5	12.750	5.563	12.000	0.375	5.047	0.258	11.750	0.500	4.813	0.375	8
*12×10	12.750	10.750	11.938	0.406	10.020	0.365	11.374	0.688	9.562	0.594	8
*12× 8	12.750	8.625	11.938	0.406	7.981	0.322	11.374	0.688	7.625	0.500	8
*12× 8	12.750	6.625	11.938	0.406	6.065	0.280	11.374	0.688	5.761	0.432	8
*12× 5	12.750	5.563	11.938	0.406	5.047	0.258	11.374	0.688	4.813	0.375	8
14×12	14.000	12.750	13.250	0.375	12.000	0.375	13.000	0.500	11.750	0.500	13
14×10	14.000	10.750	13.250	0.375	10.020	0.365	13.000	0.500	9.750	0.500	13
14× 8	14.000	8.625	13.250	0.375	7.981	0.322	13.000	0.500	7.625	0.500	13
*14×12	14.000	12.750	13.124	0.438	11.938	0.406	12.500	0.750	11.374	0.688	13
*14×10	14.000	10.750	13.124	0.438	10.020	0.365	12.500	0.750	9.562	0.594	13
*14× 8	14.000	8.625	13.124	0.438	7.981	0.322	12.500	0.750	7.625	0.500	13
16×14	16.000	14.000	15.250	0.375	13.250	0.375	15.000	0.500	13.000	0.500	14
16×12	16.000	12.750	15.250	0.375	12.000	0.375	15.000	0.500	11.750	0.500	14
16×10	16.000	10.750	15.250	0.375	10.020	0.365	15.000	0.500	9.750	0.500	14
*16×14	16.000	14.000	15.000	0.500	13.124	0.438	14.312	0.844	12.500	0.750	14
*16×12	16.000	12.750	15.000	0.500	11.938	0.406	14.312	0.844	11.374	0.688	14
*16×10	16.000	10.750	15.000	0.500	10.020	0.365	14.312	0.844	9.562	0.594	14
18×16	18.000	16.000	17.250	0.375	15.250	0.375	17.000	0.500	15.000	0.500	15
18×14	18.000	14.000	17.250	0.375	13.250	0.375	17.000	0.500	13.000	0.500	15
18×12	18.000	12.750	17.250	0.375	12.000	0.375	17.000	0.500	11.750	0.500	15
*18×16	18.000	16.000	16.876	0.562	15.000	0.500	16.124	0.938	14.312	0.844	15
*18×14	18.000	14.000	16.876	0.562	13.124	0.438	16.124	0.938	12.500	0.750	15
*18×12	18.000	12.750	16.876	0.562	11.938	0.406	16.124	0.938	11.374	0.688	15
20×18	20.000	18.000	19.250	0.375	17.250	0.375	19.000	0.500	17.000	0.500	20
20×16	20.000	16.000	19.250	0.375	15.250	0.375	19.000	0.500	15.000	0.500	20
20×14	20.000	14.000	19.250	0.375	13.250	0.375	19.000	0.500	13.000	0.500	20
*20×18	20.000	18.000	18.812	0.562	16.876	0.562	17.938	1.031	16.124	0.938	20
*20×16	20.000	16.000	18.812	0.562	15.000	0.500	17.938	1.031	14.312	0.844	20
*20×14	20.000	14.000	18.812	0.562	13.124	0.438	17.938	1.031	12.500	0.750	20
22×20	22.000	20.000	21.250	0.375	19.250	0.375	21.000	0.500	19.000	0.500	20
22×18	22.000	18.000	21.250	0.375	17.250	0.375	21.000	0.500	17.000	0.500	20
22×16	22.000	16.000	21.250	0.375	15.250	0.375	21.000	0.500	15.000	0.500	20
*22×20	22.000	20.000	–	–	–	–	19.750	1.125	17.938	1.031	20
*22×18	22.000	18.000	–	–	–	–	19.750	1.125	16.124	0.938	20
*22×16	22.000	16.000	–	–	–	–	19.750	1.125	14.312	0.844	20
24×22	24.000	22.000	23.250	0.375	21.250	0.375	23.000	0.500	21.000	0.500	20
24×20	24.000	20.000	23.250	0.375	19.250	0.375	23.000	0.500	19.000	0.500	20
24×18	24.000	18.000	23.250	0.375	17.250	0.375	23.000	0.500	17.000	0.500	20
*24×22	24.000	22.000	–	–	–	–	21.562	1.129	19.750	1.125	20
*24×20	24.000	20.000	22.624	0.688	18.812	0.594	21.562	1.219	17.938	1.031	20
*24×18	24.000	18.000	22.624	0.688	16.876	0.562	21.562	1.219	16.124	0.938	20
26×22	26.000	22.000	25.250	0.375	21.250	0.375	25.000	0.500	21.000	0.500	24
26×18	26.000	18.000	25.250	0.375	17.250	0.375	25.000	0.500	17.000	0.500	24
26×16	26.000	16.000	25.250	0.375	15.250	0.375	25.000	0.500	15.000	0.500	24
28×24	28.000	24.000	27.250	0.375	23.250	0.375	27.000	0.500	23.000	0.500	24
28×20	28.000	20.000	27.250	0.375	19.250	0.375	27.000	0.500	19.000	0.500	24
28×18	28.000	18.000	27.250	0.375	17.250	0.375	27.000	0.500	17.000	0.500	24

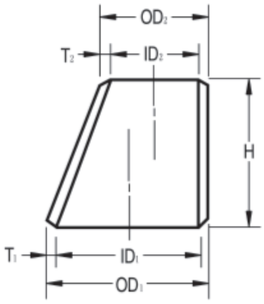
- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 125
- Asterisks(*) Denote Sch 40 and Sch 80

Reducers

STD (Sch 40), XS(Sch 80)



Concentric



Eccentric

ASME B16.9

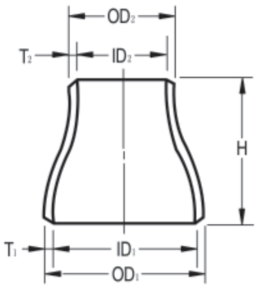
(in inches)

Nominal Pipe Size	Outside Diameter OD_1	Outside Diameter OD_2	STD(Sch 40)				XS(Sch 80)				End to End H
			Large End		Small End		Large End		Small End		
			ID_1	T_1	ID_2	T_2	ID_1	T_1	ID_2	T_2	
30×26	30.000	26.000	29.250	0.375	25.250	0.375	29.000	0.500	25.000	0.500	24
30×22	30.000	22.000	29.250	0.375	21.250	0.375	29.000	0.500	21.000	0.500	24
30×20	30.000	20.000	29.250	0.375	19.250	0.375	29.000	0.500	19.000	0.500	24
32×28	32.000	28.000	31.250	0.375	27.250	0.375	31.000	0.500	27.000	0.500	24
32×24	32.000	24.000	31.250	0.375	23.250	0.375	31.000	0.500	23.000	0.500	24
32×22	32.000	22.000	31.250	0.375	21.250	0.375	31.000	0.500	21.000	0.500	24
*32×24	32.000	24.000	30.624	0.688	22.264	0.688	–	–	–	–	24
34×30	34.000	30.000	33.250	0.375	29.250	0.375	33.000	0.500	29.000	0.500	24
34×26	34.000	26.000	33.250	0.375	25.250	0.375	33.000	0.500	25.000	0.500	24
34×22	34.000	22.000	33.250	0.375	21.250	0.375	33.000	0.500	21.000	0.500	24
36×32	36.000	32.000	35.250	0.375	31.250	0.375	35.000	0.500	31.000	0.500	24
36×28	36.000	28.000	35.250	0.375	27.250	0.375	35.000	0.500	27.000	0.500	24
36×24	36.000	24.000	35.250	0.375	23.250	0.375	35.000	0.500	23.000	0.500	24
*36×32	36.000	32.000	34.500	0.750	30.624	0.688	–	–	–	–	24
*36×24	36.000	24.000	34.500	0.750	22.624	0.688	–	–	–	–	24
38×34	38.000	34.000	37.250	0.375	33.250	0.375	37.000	0.500	33.000	0.500	24
38×30	38.000	30.000	37.250	0.375	29.250	0.375	37.000	0.500	29.000	0.500	24
38×26	38.000	26.000	37.250	0.375	29.250	0.375	37.000	0.500	25.000	0.500	24
40×36	40.000	36.000	39.250	0.375	35.250	0.375	39.000	0.500	35.000	0.500	24
40×32	40.000	32.000	39.250	0.375	31.250	0.375	39.000	0.500	31.000	0.500	24
40×28	40.000	28.000	39.250	0.375	27.250	0.375	39.000	0.500	27.000	0.500	24
42×38	42.000	38.000	41.250	0.375	37.250	0.375	41.000	0.500	37.000	0.500	24
42×34	42.000	34.000	41.250	0.375	33.250	0.375	41.000	0.500	33.000	0.500	24
42×30	42.000	30.000	41.250	0.375	29.250	0.375	41.000	0.500	29.000	0.500	24
44×40	44.000	40.000	43.250	0.375	39.250	0.375	43.000	0.500	39.000	0.500	24
44×36	44.000	36.000	43.250	0.375	35.250	0.375	43.000	0.500	35.000	0.500	24
44×32	44.000	32.000	43.250	0.375	31.250	0.375	43.000	0.500	31.000	0.500	24
46×42	46.000	42.000	45.250	0.375	41.250	0.375	45.000	0.500	41.000	0.500	28
46×38	46.000	38.000	45.250	0.375	37.250	0.375	45.000	0.500	37.000	0.500	28
46×34	46.000	34.000	45.250	0.375	33.250	0.375	45.000	0.500	33.000	0.500	28
48×44	48.000	44.000	47.250	0.375	43.250	0.375	47.000	0.500	43.000	0.500	28
48×40	48.000	40.000	47.250	0.375	39.250	0.375	47.000	0.500	39.000	0.500	28
48×36	48.000	36.000	47.250	0.375	35.250	0.375	47.000	0.500	37.000	0.500	28

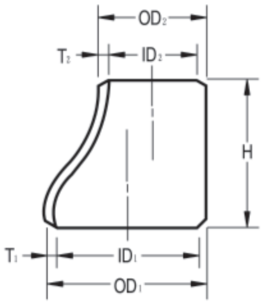
- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 125
- Asterisks(*) Denote Sch 40

Reducers

Sch 120, 160, XXS



Concentric



Eccentric

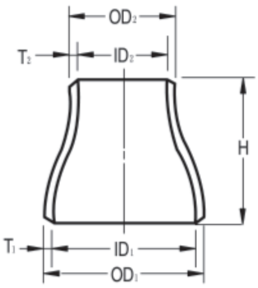
ASME B16.9 (in inches)

Nominal Pipe Size	Outside Diameter OD_1, OD_2	Wall Thickness T_1, T_2			End to End
		Sch 120	Sch 160	XXS	H
¾ × ½	1.050 0.840	–	0.219 0.188	0.308 0.294	1½
1 × ¾	1.315 1.050	–	0.250 0.219	0.358 0.308	2
1 × ½	1.315 0.840	–	0.250 0.188	0.358 0.294	2
1¼ × 1	1.660 1.315	–	0.250 0.250	0.382 0.358	2
1¼ × ¾	1.660 1.050	–	0.250 0.219	0.382 0.308	2
1½ × 1¾	1.900 1.660	–	0.281 0.250	0.400 0.382	2½
1 × 1½	1.900 1.315	–	0.281 0.250	0.400 0.358	2½
1½ × ¾	1.900 1.050	–	0.281 0.219	0.400 0.308	2½
2 × 1½	2.375 1.900	–	0.344 0.281	0.436 0.400	3
2 × 1¼	2.375 1.660	–	0.344 0.250	0.436 0.382	3
2 × 1	2.375 1.315	–	0.344 0.250	0.436 0.358	3
2½ × 2	2.875 2.375	–	0.375 0.344	0.552 0.436	3½
2½ × 1½	2.875 1.900	–	0.375 0.281	0.552 0.400	3½
2½ × 1¼	2.875 1.660	–	0.375 0.250	0.552 0.382	3½
3 × 2½	3.500 2.875	–	0.438 0.375	0.600 0.552	3½
3 × 2	3.500 2.375	–	0.438 0.344	0.600 0.436	3½
3 × 1½	3.500 1.900	–	0.438 0.281	0.600 0.400	3½
3 × 1¼	3.500 1.660	–	0.438 0.250	0.600 0.382	3½
4 × 3	4.500 3.500	–	0.531 0.438	0.674 0.600	4
4 × 2½	4.500 2.875	–	0.531 0.375	0.674 0.552	4
4 × 2	4.500 2.375	–	0.531 0.344	0.674 0.436	4
5 × 4	5.563 4.500	0.500 0.438	0.625 0.531	0.750 0.674	5
5 × 3	5.563 3.500	–	0.625 0.438	0.750 0.600	5
5 × 2½	5.563 2.875	–	0.625 0.375	0.750 0.552	5

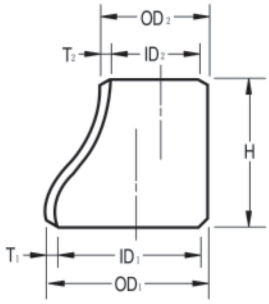
- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 125
- Wall Thickness Conform to ASME B 36.10M Specifications

Reducers

Sch20,60,100,120,140,160, XXS



Concentric



Eccentric

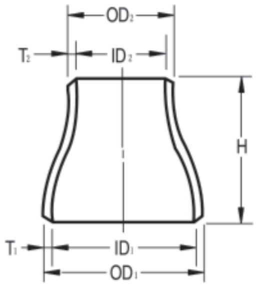
ASME B16.9 (in inches)

Nominal Pipe Size	Outside Diameter OD_1, OD_2	Wall Thickness T_1, T_2							End to End
		Sch 20	Sch 60	Sch 100	Sch 120	Sch 140	Sch 160	Xxs	H
6× 5	6.625 5.563	–	–	–	0.562 0.500	–	0.719 0.625	0.854 0.750	5½
6× 4	6.625 4.500	–	–	–	0.562 0.438	–	0.719 0.531	0.864 0.674	5½
6× 3	6.625 3.500	–	–	–	–	–	0.719 0.438	0.864 0.600	5½
6× 2½	6.625 2.875	–	–	–	–	–	0.719 0.375	0.864 0.552	5½
8× 6	8.625 6.625	–	–	–	0.719 0.562	–	0.906 0.719	0.875 0.864	6
8× 5	8.625 5.563	–	–	–	0.719 0.500	–	0.906 0.625	0.875 0.750	6
8× 4	8.625 4.500	–	–	–	0.719 0.438	–	0.906 0.531	0.875 0.674	6
10× 8	10.750 8.625	0.250 0.250	0.500 0.406	0.719 0.594	0.844 0.719	1.000 0.812	1.125 0.906	1.000 0.875	7
10× 6	10.750 6.625	–	–	–	0.844 0.562	–	1.125 0.719	1.000 0.864	7
10× 5	10.750 5.563	–	–	–	0.844 0.500	–	1.125 0.625	1.000 0.750	7
10× 4	10.750 4.500	–	–	–	0.844 0.438	–	1.125 0.531	1.000 0.674	7
12×10	12.750 10.750	0.250 0.250	0.562 0.500	0.844 0.719	1.000 0.844	1.125 1.000	1.312 1.125	1.000 1.000	8
12× 8	12.750 8.625	0.250 0.250	0.562 0.406	0.844 0.594	1.000 0.719	1.125 0.812	1.312 0.906	1.000 0.875	8
12× 6	12.750 6.625	–	–	–	1.000 0.562	–	1.312 0.719	1.000 0.864	8
14×12	14.000 12.750	0.312 0.250	0.594 0.562	0.938 0.844	1.094 1.000	1.250 1.125	1.406 1.312	–	13
14×10	14.000 10.750	0.312 0.250	0.594 0.500	0.938 0.719	1.094 0.844	1.250 1.000	1.406 1.125	–	13
14× 8	14.000 8.625	0.312 0.250	0.594 0.406	0.938 0.594	1.094 0.719	1.250 0.812	1.406 0.906	–	13
16×14	16.000 14.000	0.312 0.312	0.656 0.594	1.031 0.938	1.219 1.094	1.438 1.250	1,594 1.406	–	14
16×12	16.000 12.750	0.312 0.250	0.656 0.562	1.031 0.844	1.219 1.000	1.438 1.125	1.594 1.312	–	14
16×10	16.000 10.750	0.312 0.250	0.656 0.500	1.031 0.719	1.219 0.844	1.438 1.000	1.594 1.125	–	14
18×16	18.000 16.000	0.312 0.312	0.750 0.656	1.156 1.031	1.375 1.219	1.562 1.438	1.781 1.594	–	15
18×14	18.000 14.000	0.312 0.312	0.750 0.594	1.156 0.938	1.375 1.094	1.562 1.250	1.781 1.406	–	15
18×12	18.000 12.750	0.312 0.250	0.750 0.562	1.156 0.844	1.375 1.000	1.562 1.125	1.781 1.312	–	15

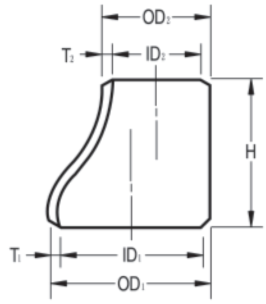
- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 125
- Wall Thickness Conform to ASME B 36.10M Specifications

Reducers

Sch20,60,100,120,140,160



Concentric



Eccentric

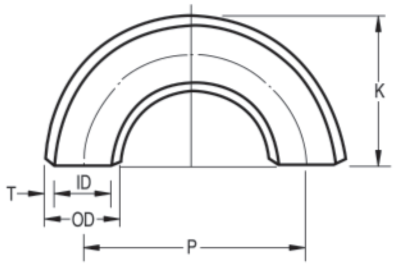
ASME B16.9 (in inches)

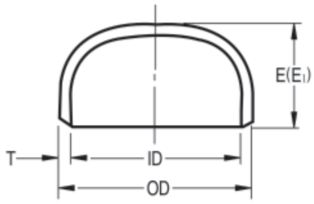
Nominal Pipe Size	Outside Diameter OD_1, OD_2	Wall Thickness T_1, T_2						End to End
		Sch 20	Sch 60	Sch 100	Sch 120	Sch 140	Sch 160	H
20×18	20.000 18.000	0.375 0.312	0.812 0.750	1.281 1.156	1.500 1.375	1.750 1.562	1.969 1.781	20
20×16	20.000 16.000	0.375 0.312	0.812 0.656	1.281 1.031	1.500 1.219	1.750 1.438	1.969 1.594	20
20×14	20.000 14.000	0.375 0.312	0.812 0.594	1.281 0.938	1.500 1.094	1.750 1.250	1.969 1.406	20
22×20	22.000 20.000	0.375 0.375	0.875 0.812	1.375 1.281	1.625 1.500	1.875 1.750	2.125 1.969	20
22×18	22.000 18.000	0.375 0.312	0.875 0.750	1.375 1.156	1.625 1.375	1.875 1.562	2.125 1.781	20
22×16	22.000 16.000	0.375 0.312	0.875 0.656	1.375 1.031	1.625 1.219	1.875 1.438	2.125 1.594	20
24×22	24.000 22.000	0.375 0.375	0.969 0.875	1.531 1.375	1.812 1.625	2.062 1.875	2.344 2.125	20
24×20	24.000 20.000	0.375 0.375	0.969 0.812	1.531 1.281	1.812 1.500	2.062 1.750	2.344 1.969	20
24×18	24.000 18.000	0.375 0.312	0.969 0.750	1.531 1.156	1.812 1.375	2.062 1.562	2.344 1.781	20

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 125
- Wall Thickness Conform to ASME B 36.10M Specifications

180° Elbows(Long, Short) Caps

STD (Sch 40), XS (Sch80)





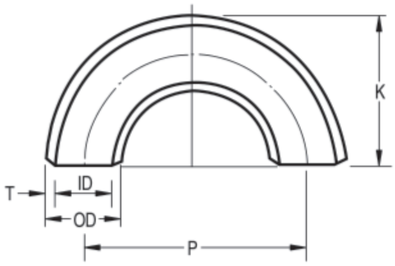
ASME B16.9 (in inches)

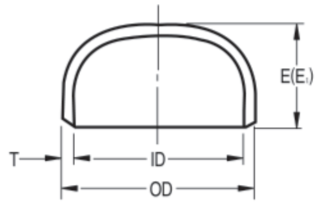
Nominal Pipe Size	Outside Diameter OD	STD(Sch 40)		XS(Sch 80)		Length E	Limiting Wall Thickness For Length E	Length E1	Long		Short	
		ID	T	ID	T				P	K	P	K
½	0.840	0.622	0.109	0.546	0.147	1.00	0.18	1.00	3.00	1.88	–	–
¾	1.050	0.824	0.113	0.742	0.154	1.00	0.15	1.00	2.25	1.69	–	–
1	1.315	1.049	0.133	0.957	0.179	1.50	0.18	1.50	3.00	2.19	2.00	1.62
1¼	1.660	1.380	0.140	1.278	0.191	1.50	0.19	1.50	3.75	2.75	2.50	2.06
1½	1.900	1.610	0.145	1.500	0.200	1.50	0.20	1.50	4.50	3.25	3.00	2.44
2	2.375	2.067	0.154	1.939	0.218	1.50	0.22	1.75	6.00	4.19	4.00	3.19
2½	2.875	2.469	0.203	2.323	0.276	1.50	0.28	2.00	7.50	5.19	5.00	3.94
3	3.500	3.068	0.216	2.900	0.300	2.00	0.30	2.50	9.00	6.25	6.00	4.75
3½	4.000	3.548	0.226	3.364	0.318	2.50	0.32	3.00	10.50	7.25	7.00	5.50
4	4.500	4.026	0.237	3.826	0.337	2.50	0.34	3.00	12.00	8.25	8.00	6.25
5	5.563	5.047	0.258	4.813	0.375	3.00	0.38	3.50	15.00	10.31	10.00	7.75
6	6.625	6.065	0.280	5.761	0.432	3.50	0.43	4.00	18.00	12.31	12.00	9.31
8	8.625	7.981	0.322	7.625	0.500	4.00	0.50	5.00	24.00	16.31	16.00	12.31
10	10.750	10.020	0.365	9.750	0.500	5.00	0.50	6.00	30.00	20.38	20.00	15.38
*10	10.750	–	–	9.562	0.594	5.00	0.50	6.00	30.00	20.38	20.00	15.38
12	12.750	12.000	0.375	11.750	0.500	6.00	0.50	7.00	36.00	24.38	24.00	18.38
*12	12.750	11.938	0.406	11.374	0.688	6.00	0.50	7.00	36.00	24.38	24.00	8.38
14	14.000	13.250	0.375	13.000	0.500	6.50	0.50	7.50	42.00	28.00	28.00	21.00
*14	14.000	13.124	0.438	12.500	0.750	6.50	0.50	7.50	42.00	28.00	28.00	21.00
16	16.000	15.250	0.375	15.000	0.500	7.00	0.50	8.00	48.00	32.00	32.00	24.00
*16	16.000	15.000	0.500	14.312	0.844	7.00	0.50	8.00	48.00	32.00	32.00	24.00
18	18.000	17.250	0.375	17.000	0.500	8.00	0.50	9.00	54.00	36.00	36.00	27.00
*18	18.000	16.876	0.562	16.124	0.938	8.00	0.50	9.00	54.00	36.00	36.00	27.00
20	20.000	19.250	0.375	19.000	0.500	9.00	0.50	10.00	60.00	40.00	40.00	30.00
*20	20.000	18.812	0.594	17.938	1.031	9.00	0.50	10.00	60.00	40.00	40.00	30.00
22	22.000	21.250	0.375	21.000	0.500	10.00	0.50	10.00	66.00	44.00	44.00	33.00
*22	22.000	–	–	19.750	1.125	10.00	0.50	10.00	66.00	44.00	44.00	33.00
24	24.000	23.250	0.375	23.000	0.500	10.50	0.50	12.00	72.00	48.00	48.00	36.00
*24	24.000	22.624	0.688	21.562	1.219	10.50	0.50	12.00	72.00	48.00	48.00	36.00
26	26.000	25.250	0.375	25.000	0.500	10.50	–	–	–	–	–	–
28	28.000	27.250	0.375	27.000	0.500	10.50	–	–	–	–	–	–
30	30.000	29.250	0.375	29.000	0.500	10.50	–	–	–	–	–	–
32	32.000	31.250	0.375	31.000	0.500	10.50	–	–	–	–	–	–
*32	32.000	30.624	0.688	–	–	10.50	–	–	–	–	–	–
34	34.000	33.250	0.375	33.000	0.500	10.50	–	–	–	–	–	–
*34	34.000	32.624	0.688	–	–	10.50	–	–	–	–	–	–
36	36.000	35.250	0.375	35.000	0.500	10.50	–	–	–	–	–	–
*36	36.000	34.500	0.750	–	–	10.50	–	–	–	–	–	–
38	38.000	37.250	0.375	37.000	0.500	12.00	–	–	–	–	–	–
40	40.000	39.250	0.375	39.000	0.500	12.00	–	–	–	–	–	–
42	42.000	41.250	0.375	41.000	0.500	12.00	–	–	–	–	–	–
44	44.000	43.250	0.375	43.000	0.500	13.50	–	–	–	–	–	–
46	46.000	45.250	0.375	45.000	0.500	13.50	–	–	–	–	–	–
48	48.000	47.250	0.375	47.000	0.500	13.50	–	–	–	–	–	–

- Length E applies for thickness not exceeding that given in column “Limiting Wall Thickness for Length E.”
- Length E_1 applies for thickness greater than that given in column “Limiting Wall Thickness” for NPS 24 and smaller for NPS 26 and lager, length E_1 shall be by agreement between manufacturer and Purchaser.
- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 122
- Asterisks(*) Denote Sch 40 and Sch 80

180° Elbows(Long, Short) Caps

Sch20,60,100,120,140,160,XXS





ASME B16.9

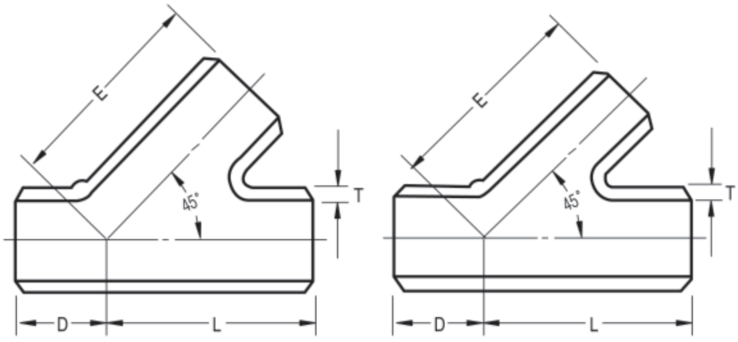
(in inches)

Nominal Pipe Size	Outside Diameter OD	Wall Thickness T							Length E	Limiting Wall Thickness For Length E	Length E_1	Long		Short	
		Sch20	Sch60	Sch100	Sch120	Sch140	Sch160	XXS				P	K	P	K
½	0.840	–	–	–	–	–	0.188	0.294	1.00	0.18	1.00	3.00	1.88	–	–
¾	1.050	–	–	–	–	–	0.219	0.308	1.00	0.15	1.00	2.25	1.69	–	–
1	1.315	–	–	–	–	–	0.250	0.358	1.50	0.18	1.50	3.00	2.19	2.00	1.62
1¼	1.660	–	–	–	–	–	0.250	0.382	1.50	0.19	1.50	3.75	2.75	2.50	2.06
1½	1.900	–	–	–	–	–	0.281	0.400	1.50	0.20	1.50	4.50	3.25	3.00	2.44
2	2.375	–	–	–	–	–	0.344	0.436	1.50	0.22	1.75	6.00	4.19	4.00	3.19
2½	2.875	–	–	–	–	–	0.375	0.552	1.50	0.28	2.00	7.50	5.19	5.00	3.94
3	3.500	–	–	–	–	–	0.438	0.600	2.00	0.30	2.50	9.00	6.25	6.00	4.75
4	4.500	–	–	–	0.438	–	0.531	0.674	2.50	0.34	3.00	12.00	8.25	8.00	6.25
5	5.563	–	–	–	0.500	–	0.625	0.750	3.00	0.38	3.50	15.00	10.31	10.00	7.75
6	6.625	–	–	–	0.562	–	0.719	0.864	3.50	0.43	4.00	18.00	12.31	12.00	9.31
8	8.625	0.250	0.406	0.594	0.719	0.812	0.906	0.875	4.00	0.50	5.00	24.00	16.31	16.00	12.31
10	10.750	0.250	0.500	0.719	0.844	1.000	1.125	1.000	5.00	0.50	6.00	30.00	20.38	20.00	15.38
12	12.750	0.250	0.562	0.844	1.000	1.125	1.312	1.000	6.00	0.50	7.00	36.00	24.38	24.00	18.38
14	14.000	0.312	0.594	0.938	1.094	1.250	1.406	–	6.50	0.50	7.50	42.00	28.00	28.00	21.00
16	16.000	0.312	0.656	1.031	1.219	1.438	1.594	–	7.00	0.50	8.00	48.00	32.00	32.00	24.00
18	18.000	0.312	0.750	1.156	1.375	1.562	1.781	–	8.00	0.50	9.00	54.00	36.00	36.00	27.00
20	20.000	0.375	0.812	1.281	1.500	1.750	1.969	–	9.00	0.50	10.00	60.00	40.00	40.00	30.00
22	22.000	0.375	0.875	1.375	1.625	1.875	2.125	–	10.00	0.50	10.00	66.00	44.00	44.00	33.00
24	24.000	0.375	0.969	1.531	1.812	2.062	2.344	–	10.50	0.50	12.00	72.00	48.00	48.00	36.00

- Length E applies for thickness not exceeding that given in column "Limiting Wall Thickness for Length E."
- Length E_1 applies for thickness greater than that given in column "Limiting Wall Thickness" for NPS 24 and smaller for NPS 26 and lager, length E_1 shall be by agreement between manufacturer and Purchaser.
- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- For Approx Weight See Page 122
- Wall Thickness Conform to ASME B 36.10M Specifications

Laterals

STD, XS



Straight   Reducing

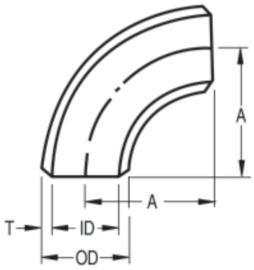
(in inches)

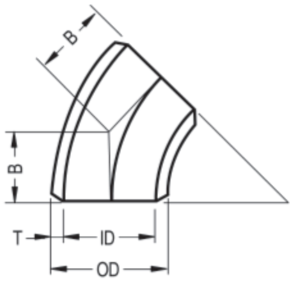
Nominal Pipe Size of Run	Center-to-End Dimension		STD		XS	
	L & E	D	ID	T	ID	T
1	3½	1¾	1.049	0,133	0.957	0.179
1¼	4¼	2	1.380	0,140	1.278	0.191
1½	5	2½	1.610	0,145	1.500	0.200
2	6	3¼	2.067	0,154	1.939	0.218
2½	7	3½	2.469	0,203	2.323	0.276
3	7¾	3¾	3.068	0,216	2.900	0.300
3½	8⅜	4	3.548	0,226	3.364	0.318
4	8½	4½	4.026	0,237	3.826	0.337
5	11	4¾	5.047	0,258	4.813	0.375
6	12½	5¼	6.065	0,280	5.761	0.432
8	15¼	6¼	7.981	0,322	7.625	0.500
10	18	7	10.020	0,365	9.750	0.500
12	21½	8	12.000	0,375	11.750	0.500
14	25	10	13.250	0,375	13.000	0.500
16	28½	12	15.250	0,375	15.000	0.500
18	32	13	17.250	0,375	17.000	0.500
20	35	14	19.250	0,375	19.000	0.500
24	41¼	16¼	23.250	0,375	23.000	0.500

- Pressure-temperature ratings : Laterals are rated for either 40% of the maximun allowable working pressure for the size and weight schedule of the mating pipe, or 100% of the maximun allowable working pressure for the size and weight schedule of the mating pipe in the latter case, ASME B31.3 is used to calculate reinforcement requirements unless otherwise specified.
- Wall Thickness Conform to ASME B 36.10M Specifications

90° Elbows(Long, Short)
45° Elbows(Long)

Sch 5S, 10S, 40S, 80S





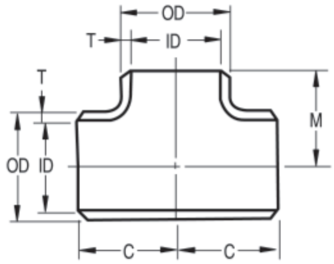
ASME B16.9, MSS SP-43 (in inches)

Nominal Pipe Size	Outside Diameter OD	5s	10s		40s		80s	Center to End		
								Long		Short
		T	ID	T	ID	T	T	A	B	A
½	0.840	0.065	0,674	0,083	0.622	0.109	0.147	1½	⅝	–
¾	1.050	0.065	0,884	0,083	0.824	0.113	0.154	1½	7/16	–
1	1.315	0.065	1,097	0,109	1.049	0.133	0.179	1½	⅞	1
1¼	1.660	0.065	1,442	0,109	1.380	0.140	0.191	1⅞	1	1¼
1½	1.900	0.065	1,682	0,109	1.610	0.145	0.200	2¼	1⅛	1½
2	2.375	0.065	2,157	0.109	2.067	0.154	0.218	3	1⅜	2
2½	2.875	0.083	2,635	0,120	2.469	0.203	0.276	3¾	1¾	2½
3	3.500	0.083	3,260	0,120	3.068	0.216	0.300	4½	2	3
3½	4.000	0.083	3,760	0,120	3.548	0.226	0.318	5¼	2¼	3½
4	4.500	0.083	4,260	0,120	4.026	0.237	0.337	6	2½	4
5	5.563	0.109	5,295	0,134	5.047	0.258	0.375	7½	3⅛	5
6	6.625	0.109	6,357	0,134	6.065	0.280	0.432	9	3¾	6
8	8.625	0.109	8,329	0,148	7.981	0.322	0.500	12	5	8
10	10.750	0.134	10,420	0,165	10.020	0.365	0.500	15	6¼	10
12	12.750	0.156	12,390	0,180	12.000	0.375	0.500	18	7½	12
14	14.000	0.156	13,624	0,188	–	–	–	21	8¾	14
16	16.000	0.165	15,624	0,188	–	–	–	24	10	16
18	18.000	0.165	17,624	0.188	–	–	–	27	11¼	18
20	20.000	0.188	19,564	0,218	–	–	–	30	12½	20
22	22.000	0.188	21,564	0,218	–	–	–	33	13½	22
24	24.000	0.218	23,500	0,250	–	–	–	36	15	24
30	30.000	0.250		–	–	–	–	45	18½	30

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- Wall Thickness Conform to ASME B 36.19M

Tees(Straight)

Sch 5S, 10S, 40S, 80S



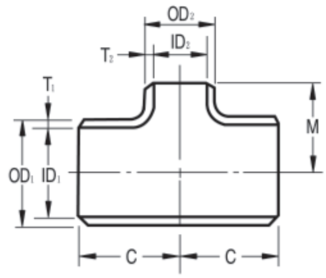
ASME B16.9 MSS SP-43 (in inches)

Nominal Pipe Size	Outside Diameter OD	5s	10s		40s		80s	Center to End	
		T	ID	T	ID	T	T	Run C	Outlet M
½	0.840	0.065	0.674	0.083	0.622	0.109	0.147	1	1
¾	1.050	0.065	0.884	0.083	0.824	0.113	0.154	1⅛	1⅛
1	1.315	0.065	1.097	0.109	1.049	0.133	0.179	1½	1½
1¼	1.660	0.065	1.442	0.109	1.380	0.140	0.191	1⅞	1⅞
1½	1.900	0.065	1.682	0.109	1.610	0.145	0.200	2¼	2¼
2	2.375	0.065	2.157	0.109	2.067	0.154	0.218	2½	2½
2½	2.875	0.083	2.635	0.120	2.469	0.203	0.276	3	3
3	3.500	0.083	3.260	0.120	3.068	0.216	0.300	3⅜	3⅜
3½	4.000	0.083	3.760	0.120	3.548	0.226	0.318	3¾	3¾
4	4.500	0.083	4.260	0.120	4.026	0.237	0.337	4⅛	4⅛
5	5.563	0.109	5.295	0.134	5.047	0.258	0.375	4⅞	4⅞
6	6.625	0.109	6.357	0.134	6.065	0.280	0.432	5⅝	5⅝
8	8.625	0.109	8.329	0.148	7.981	0.322	0.500	7	7
10	10.750	0.134	10.420	0.165	10.020	0.365	0.500	8½	8½
12	12.750	0.156	12.390	0.180	12.000	0.375	0.500	10	10
14	14.000	0.156	13.624	0.188	–	–	–	11	11
16	16.000	0.165	15.624	0.188	–	–	–	12	12
18	18.000	0.165	17.624	0.188	–	–	–	13½	13½
20	20.000	0.188	19.564	0.218	–	–	–	15	15
22	22.000	0.188	21.564	0.218	–	–	–	16½	16½
24	24.000	0.218	23.500	0.250	–	–	–	17	17
30	30.000	0.250	–	–	–	–	–	22	22

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- Wall Thickness Conform to ASME B 36.19M

Tees (Reducing)

Sch 5S, 10S, 40S, 80S



ASME B16.9 MSS SP-43

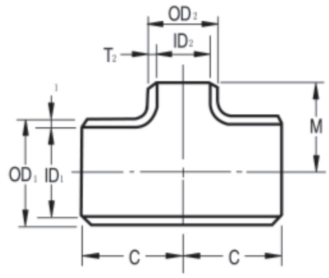
(in inches)

Nominal Pipe Size	Outside Diameter OD1	Outside Diameter OD2	Wall Thickness T								Center to End	
			5s		10s		40s		80s		Run C	Outlet M
			T1	T2	T1	T2	T1	T2	T1	T2		
¾ × ¾ × ½	1.050	0.840	0.065	0.065	0.083	0.083	0.113	0.109	0.154	0.147	1⅛	1⅛
1¼ × 1 × ¾	1.315	1.050	0.065	0.065	0.109	0.083	0.133	0.113	0.179	0.154	1½	1½
1 × 1 × ½	1.315	0.840	0.065	0.065	0.109	0.083	0.133	0.109	0.179	0.147	1½	1½
1¼ × 1¼ ×1	1.660	1.315	0.065	0.065	0.109	0.109	0.140	0.133	0.191	0.179	1⅞	1⅞
1¼ × 1¼ × ¾	1.660	1.050	0.065	0.065	0.109	0.083	0.140	0.113	0.191	0.154	1⅞	1⅞
1½ × 1½ ×1¼	1.900	1.660	0.065	0.065	0.109	0.109	0.145	0.140	0.200	0.191	2¼	2¼
1½ × 1½ ×1	1.900	1.315	0.065	0.065	0.109	0.109	0.145	0.133	0.200	0.179	2¼	2¼
1½ × 1½ × ¾	1.900	1.050	0.065	0.065	0.109	0.083	0.145	0.113	0.200	0.154	2¼	2¼
2 × 2 ×1½	2.375	1.900	0.065	0.065	0.109	0.109	0.154	0.145	0.218	0.200	2½	2⅜
2 × 2 ×1¼	2.375	1.660	0.065	0.065	0.109	0.109	0.154	0.140	0.218	0.191	2½	2¼
2 × 2 ×1	2.375	1.315	0.065	0.065	0.109	0.109	0.154	0.133	0.218	0.179	2½	2
2½ × 2½ ×2	2.875	2.375	0.083	0.065	0.120	0.109	0.203	0.154	0.276	0.218	3	2¾
2½ × 2½ ×1½	2.875	1.900	0.083	0.065	0.120	0.109	0.203	0.145	0.276	0.200	3	2⅝
2½ × 2½ ×1¼	2.875	1.660	0.083	0.065	0.120	0.109	0.203	0.140	0.276	0.191	3	2½
3 × 3 ×2½	3.500	2.875	0.083	0.065	0.120	0.120	0.216	0.203	0.300	0.276	3⅜	3¼
3 × 3 ×2	3.500	2.375	0.083	0.065	0.120	0.109	0.216	0.154	0.300	0.218	3⅜	3
3 × 3 ×1½	3.500	1.900	0.083	0.065	0.120	0.109	0.216	0.145	0.300	0.200	3⅜	2⅞
3½ × 3½ ×3	4.000	3.500	0.083	0.083	0.120	0.120	0.226	0.216	0.318	0.300	3¾	3⅝
3½ × 3½ ×2½	4.000	2.875	0.083	0.083	0.120	0.120	0.226	0.203	0.318	0.276	3¾	2½
3½ × 3½ ×2	4.000	2.375	0.083	0.065	0.120	0.109	0.226	0.154	0.318	0.218	3¾	3¼
3½ × 3½ ×1½	4.000	1.900	0.083	0.065	0.120	0.109	0.226	0.145	0.318	0.200	3¾	3⅛
4 × 4 ×3½	4.500	4.000	0.083	0.083	0.120	0.120	0.237	0.226	0.337	0.318	4⅛	4
4 × 4 ×3	4.500	3.500	0.083	0.083	0.120	0.120	0.237	0.216	0.337	0.300	4⅛	3⅞
4 × 4 ×2½	4.500	2.875	0.083	0.083	0.120	0.120	0.237	0.203	0.337	0.276	4⅛	3¾
4 × 4 ×2	4.500	2.375	0.083	0.065	0.120	0.120	0.237	0.154	0.337	0.218	4⅛	3½
5 × 5 ×4	5.563	4.500	0.109	0.083	0.134	0.120	0.258	0.237	0.375	0.337	4⅞	4⅝
5 × 5 ×3½	5.563	4.000	0.109	0.083	0.134	0.120	0.258	0.226	0.375	0.318	4⅞	4½
5 × 5 ×3	5.563	3.500	0.109	0.083	0.134	0.120	0.258	0.216	0.375	0.300	4⅞	4⅜
5 × 5 ×2½	5.563	2.875	0.109	0.083	0.134	0.120	0.258	0.203	0.375	0.276	4⅞	4¼
6 × 6 ×5	6.625	5.563	0.109	0.109	0.134	0.134	0.280	0.258	0.432	0.375	5⅝	5⅜
6 × 6 ×4	6.625	4.500	0.109	0.083	0.134	1.120	0.280	0.237	0.432	0.337	5⅝	5⅛
6 × 6 ×3½	6.625	4.000	0.109	0.083	0.134	1.120	0.280	0.226	0.432	0.318	5⅝	5
6 × 6 ×3	6.625	3.500	0.109	0.083	0.134	1.120	0.280	0.216	0.432	0.300	5⅝	4⅞

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- Wall Thickness Conform to ASME B 36.19M

Tees (Reducing)

Sch 5S. 10S, 40S, 80S



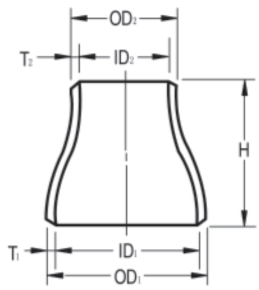
ASME B16.9 MSS SP-43 (in inches)

Nominal Pipe Size	Outside Diameter OD_1	Outside Diameter OD_2	Wall Thickness T								Center to End	
			5s		10s		40s		80s		Run C	Outlet M
			T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2		
8 × 8 × 6	8.625	6.625	0.109	0.109	0.148	0.134	0.322	0.280	0.500	0.432	7	6⅝
8 × 8 × 5	8.625	5.563	0.109	0.109	0.148	0.134	0.322	0.258	0.500	0.375	7	6⅜
8 × 8 × 4	8.625	4.500	0.109	0.083	0.148	0.120	0.322	0.237	0.500	0.337	7	6⅛
10 ×10 × 8	10.750	8.625	0.134	0.109	0.165	0.148	0.365	0.322	0.500	0.500	8½	8
10 ×10 × 6	10.750	6.625	0.134	0.109	0.165	0.134	0.365	0.280	0.500	0.432	8½	7⅝
10 ×10 × 5	10.750	5.563	0.134	0.109	0.165	0.134	0.365	0.258	0.500	0.375	8½	7½
12 ×12 ×10	12.750	10.750	0.156	0.134	0.180	0.165	0.375	0.365	0.500	0.500	10	9½
12 ×12 × 8	12.750	8.625	0.156	0.109	0.180	0.148	0.375	0.322	0.500	0.500	10	9
12 ×12 × 6	12.750	6.625	0.156	0.109	0.180	0.134	0.375	0.280	0.500	0.432	10	8⅝
14 ×14 ×12	14.000	12.750	0.156	0.156	0.188	0.180	–	–	–	–	11	10⅝
14 ×14 ×10	14.000	10.750	0.156	0.134	0.188	0.165	–	–	–	–	11	10⅛
14 ×14 × 8	14.000	8.625	0.156	0.109	0.188	0.148	–	–	–	–	11	9¾
16 ×16 ×14	16.000	14.000	0.165	0.156	0.188	0.188	–	–	–	–	12	12
16 ×16 ×12	16.000	12.750	0.165	0.156	0.188	0.180	–	–	–	–	12	11⅝
16 ×16 ×10	16.000	10.750	0.165	0.134	0.188	0.165	–	–	–	–	12	11⅛
18 ×18 ×16	18.000	16.000	0.165	0.165	0.188	0.188	–	–	–	–	13½	13
18 ×18 ×14	18.000	14.000	0.165	0.156	0.188	0.188	–	–	–	–	13½	13
18 ×18 ×12	18.000	12.750	0.165	0.156	0.188	0.180	–	–	–	–	13½	12⅜
20 ×20 ×18	20.000	18.000	0.188	0.165	0.218	0.188	–	–	–	–	15	14½
20 ×20 ×16	20.000	16.000	0.188	0.165	0.218	0.188	–	–	–	–	15	14
20 ×20 ×14	20.000	14.000	0.188	0.156	0.218	0.188	–	–	–	–	15	14
22 ×22 ×20	22.000	20.000	0.188	0.188	0.218	0.218	–	–	–	–	16½	16
22 ×22 ×18	22.000	18.000	0.188	0.165	0.218	0.188	–	–	–	–	16½	15½
22 ×22 ×16	22.000	16.000	0.188	0.165	0.218	0.188	–	–	–	–	16½	15
24 ×24 ×22	24.000	22.000	0.218	0.188	0.250	0.218	–	–	–	–	17	17
24 ×24 ×20	24.000	20.000	0.218	0.188	0.250	0.218	–	–	–	–	17	17
24 ×24 ×18	24.000	18.000	0.218	0.165	0.250	0.188	–	–	–	–	17	16½
30 ×30 ×24	30.000	24.000	0.250	0.218	–	–	–	–	–	–	22	21
30 ×30 ×22	30.000	22.000	0.250	0.188	–	–	–	–	–	–	22	20½
30 ×30 ×20	30.000	20.000	0.250	0.188	–	–	–	–	–	–	22	20

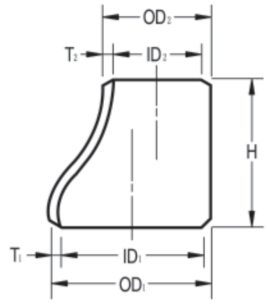
- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- Wall Thickness Conform to ASME B 36.19M

Reducers

Sch 5S. 10S, 40S, 80S



Concentric



Eccentric

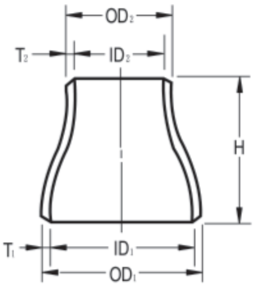
ASME B16.9 MSS SP-43 (in inches)

Nominal Pipe Size	Outside Diameter OD$_1$	Outside Diameter OD$_2$	Wall Thickness T: 5s T$_1$	5s T$_2$	10s T$_1$	10s T$_2$	40s T$_1$	40s T$_2$	80s T$_1$	80s T$_2$	End to End H
¾ × ½	1.050	0.840	0.065	0.065	0.083	0.083	0.113	0.109	0.154	0.147	1½
1 × ¾	1.315	1.050	0.065	0.065	0.109	0.083	0.133	0.113	0.179	0.154	2
1 × ½	1.315	0.840	0.065	0.065	0.109	0.083	0.133	0.109	0.179	0.147	2
1¼ × 1	1.660	1.135	0.065	0.065	0.109	0.109	0.140	0.133	0.191	0.179	2
1¼ × ¾	1.660	1.050	0.065	0.065	0.109	0.083	0.140	0.113	0.191	0.154	2
1¼ × ½	1.660	0.840	0.065	0.065	0.109	0.083	0.140	0.109	0.191	0.147	2
1½ × 1¼	1.900	1.660	0.065	0.065	0.109	0.109	0.145	0.140	0.200	0.191	2½
1½ × 1	1.900	1.315	0.065	0.065	0.109	0.109	0.145	0.133	0.200	0.179	2½
1½ × ¾	1.900	1.050	0.065	0.065	0.109	0.083	0.145	0.113	0.200	0.154	2½
1½ × ½	1.900	0.840	0.065	0.065	0.109	0.083	0.145	0.109	0.200	0.147	2½
2 × 1½	2.375	1.900	0.065	0.065	0.109	0.109	0.154	0.145	0.218	0.200	3
2 × 1¼	2.375	1.660	0.065	0.065	0.109	0.109	0.154	0.140	0.218	0.191	3
2 × 1	2.375	1.315	0.065	0.065	0.109	0.109	0.154	0.133	0.218	0.179	3
2 × ¾	2.375	1.050	0.065	0.065	0.109	0.083	0.154	0.113	0.218	0.154	3
2½ × 2	2.875	2.375	0.083	0.065	0.120	0.109	0.203	0.154	0.276	0.218	3½
2½ × 1½	2.875	1.900	0.083	0.065	0.120	0.109	0.203	0.145	0.276	0.200	3½
2½ × 1¼	2.875	1.660	0.083	0.065	0.120	0.109	0.203	0.140	0.276	0.191	3½
3 × 2½	3.500	2.875	0.083	0.083	0.120	0.120	0.216	0.203	0.300	0.276	3½
3 × 2	3.500	2.375	0.083	0.065	0.120	0.109	0.216	0.154	0.300	0.218	3½
3 × 1½	3.500	1.900	0.083	0.065	0.120	0.109	0.216	0.145	0.300	0.200	3½
3 × 1¼	3.500	1.660	0.083	0.065	0.120	0.109	0.216	0.140	0.300	0.191	3½
3½ × 3	4.000	3.500	0.083	0.083	0.120	0.120	0.226	0.216	0.318	0.300	4
3½ × 2½	4.000	2.875	0.083	0.083	0.120	0.120	0.226	0.203	0.318	0.276	4
3½ × 2	4.000	2.375	0.083	0.065	0.120	0.109	0.226	0.154	0.318	0.218	4
4 × 3½	4.500	4.000	0.083	0.083	0.120	0.120	0.237	0.226	0.337	0.318	4
4 × 3	4.500	3.500	0.083	0.083	0.120	0.120	0.237	0.216	0.337	0.300	4
4 × 2½	4.500	2.875	0.083	0.083	0.120	0.120	0.237	0.203	0.337	0.276	4
4 × 2	4.500	2.375	0.083	0.065	0.120	0.109	0.237	0.154	0.337	0.218	4
5 × 4	5.563	4.500	0.109	0.083	0.134	0.120	0.258	0.237	0.375	0.337	5
5 × 3½	5.563	4.000	0.109	0.083	0.134	0.120	0.258	0.226	0.375	0.318	5
5 × 3	5.563	3.500	0.109	0.083	0.134	0.120	0.258	0.216	0.375	0.300	5
5 × 2½	5.563	2.875	0.109	0.083	0.134	0.120	0.258	0.203	0.375	0.276	5
6 × 5	6.625	5.563	0.109	0.109	0.134	0.134	0.280	0.258	0.432	0.375	5½
6 × 4	6.625	4.500	0.109	0.083	0.134	0.120	0.280	0.237	0.432	0.337	5½
6 × 3½	6.625	4.000	0.109	0.083	0.134	0.120	0.280	0.226	0.432	0.318	5½
6 × 3	6.625	3.500	0.109	0.083	0.134	0.120	0.280	0.216	0.432	0.300	5½

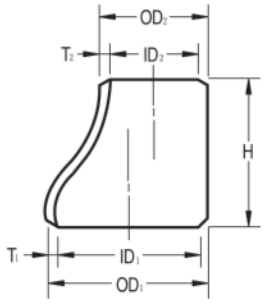
- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- Wall Thickness Conform to ASME B 36.19M

Reducers

Sch 5S, 10S, 40S, 80S



Concentric



Eccentric

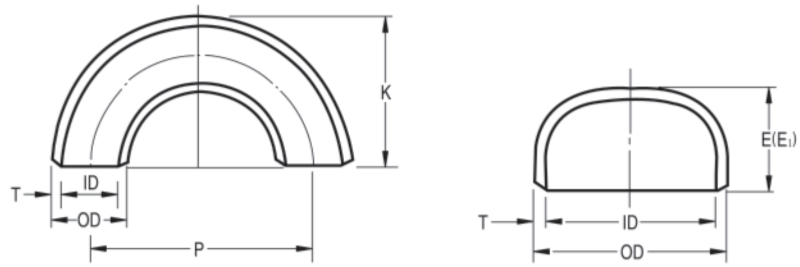
ASME B16.9 MSS SP-43 (in inches)

Nominal Pipe Size	Outside Diameter OD_1	Outside Diameter OD_2	Wall Thickness T								End to End H
			5s		10s		40s		80s		
			T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	
8 × 6	8.625	6.625	0.109	0.109	0.148	0.134	0.322	0.280	0.500	0.432	6
8 × 5	8.625	5.563	0.109	0.109	0.148	0.134	0.322	0.258	0.500	0.375	6
8 × 4	8.625	4.500	0.109	0.083	0.148	0.120	0.322	0.237	0.500	0.337	6
10 × 8	10.750	8.625	0.134	0.109	0.165	0.148	0.365	0.322	0.500	0.500	7
10 × 6	10.750	6.625	0.134	0.109	0.165	0.134	0.365	0.280	0.500	0.432	7
10 × 5	10.750	5.563	0.134	0.109	0.165	0.134	0.365	0.258	0.500	0.375	7
12 ×10	12.750	10.750	0.156	0.134	0.180	0.165	0.375	0.365	0.500	0.500	8
12 × 8	12.750	8.625	0.156	0.109	0.180	0.148	0.375	0.322	0.500	0.500	8
12 × 6	12.750	6.625	0.156	0.109	0.180	0.134	0.375	0.280	0.500	0.432	8
14 ×12	14.000	12.750	0.156	0.156	0.188	0.180	–	–	–	–	13
14 ×10	14.000	10.750	0.156	0.134	0.188	0.165	–	–	–	–	13
14 × 8	14.000	8.625	0.156	0.109	0.188	0.148	–	–	–	–	13
16 ×14	16.000	14.000	0.165	0.156	0.188	0.188	–	–	–	–	14
16 ×12	16.000	12.750	0.165	0.156	0.188	0.180	–	–	–	–	14
16 ×10	16.000	10.750	0.165	0.134	0.188	0.165	–	–	–	–	14
18 ×16	18.000	16.000	0.165	0.165	0.188	0.188	–	–	–	–	15
18 ×14	18.000	14.000	0.165	0.156	0.188	0.188	–	–	–	–	15
18 ×12	18.000	12.750	0.165	0.156	0.188	0.180	–	–	–	–	15
20 ×18	20.000	18.000	0.188	0.165	0.218	0.188	–	–	–	–	20
20 ×16	20.000	16.000	0.188	0.165	0.218	0.188	–	–	–	–	20
20 ×14	20.000	14.000	0.188	0.156	0.218	0.188	–	–	–	–	20
22 ×20	22.000	20.000	0.188	0.188	0.218	0.218	–	–	–	–	20
22 ×18	22.000	18.000	0.188	0.165	0.218	0.188	–	–	–	–	20
22 ×16	22.000	16.000	0.188	0.165	0.218	0.188	–	–	–	–	20
24 ×22	24.000	22.000	0.218	0.188	0.250	0.218	–	–	–	–	20
24 ×20	24.000	20.000	0.218	0.188	0.250	0.218	–	–	–	–	20
24 ×18	24.000	18.000	0.218	0.165	0.250	0.188	–	–	–	–	20
30 ×24	30.000	24.000	0.250	0.218	–	–	–	–	–	–	24
30 ×22	30.000	22.000	0.250	0.188	–	–	–	–	–	–	24
30 ×20	30.000	20.000	0.250	0.188	–	–	–	–	–	–	24

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- Wall Thickness Conform to ASME B 36.19M

180°Elbows(Long, Short) Caps

Sch 5S, 10S, 40S, 80S

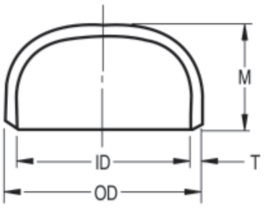


ASME B16.9, MSS SP-43 (in inches)

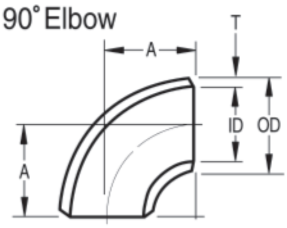
Nominal Pipe Size	Outside Diameter OD	Wall Thickness T				Length E	Limiting Wall Thickness For Length E	Length E_1	Long		Short	
		5s	10s	40s	80s				P	K	P	K
½	0.840	0.065	0.083	0.109	0.147	1.00	0.18	1.00	3.00	1.88	–	–
¾	1.050	0.065	0.083	0.113	0.154	1.00	0.15	1.00	2.25	1.69	–	–
1	1.315	0.065	0.109	0.133	0.179	1.50	0.18	1.50	3.00	2.19	2.00	1.62
1¼	1.660	0.065	0.109	0.140	0.191	1.50	0.19	1.50	3.75	2.75	2.50	2.06
1½	1.900	0.065	0.109	0.145	0.200	1.50	0.20	1.50	4.50	3.25	3.00	2.44
2	2.375	0.065	0.109	0.154	0.218	1.50	0.22	1.75	6.00	4.19	4.00	3.19
2½	2.875	0.083	0.120	0.203	0.276	1.50	0.28	2.00	7.50	5.19	5.00	3.94
3	3.500	0.083	0.120	0.216	0.300	2.00	0.30	2.50	9.00	6.25	6.00	4.75
3½	4.000	0.083	0.120	0.226	0.318	2.50	0.32	3.00	10.50	7.25	7.00	5.50
4	4.500	0.083	0.120	0.237	0.337	2.50	0.34	3.00	12.00	8.25	8.00	6.25
5	5.563	0.109	0.134	0.258	0.375	3.00	0.38	3.50	15.00	10.31	10.00	7.75
6	6.625	0.109	0.134	0.280	0.432	3.50	0.43	4.00	18.00	12.31	12.00	9.31
8	8.625	0.109	0.148	0.322	0.500	4.00	0.50	5.00	24.00	16.31	16.00	12.31
10	10.750	0.134	0.165	0.365	0.500	5.00	0.50	6.00	30.00	20.38	20.00	15.38
12	12.750	0.156	0.180	0.375	0.500	6.00	0.50	7.00	36.00	24.38	24.00	18.38
14	14.000	0.156	0.188	–	–	6.50	0.50	7.50	42.00	28.00	28.00	21.00
16	16.000	0.165	0.188	–	–	7.00	0.50	8.00	48.00	32.00	32.00	24.00
18	18.000	0.165	0.188	–	–	8.00	0.50	9.00	54.00	36.00	36.00	27.00
20	20.000	0.188	0.218	–	–	9.00	0.50	10.00	60.00	40.00	40.00	30.00
22	22.000	0.188	0.218	–	–	10.00	0.50	10.00	66.00	44.00	44.00	33.00
24	24.000	0.218	0.250	–	–	10.50	0.50	12.00	72.00	48.00	48.00	36.00
30	30.000	0.250	0.312	–	–	10.50	–	–	–	–	–	–

- Length E applies for thickness not exceeding that given in column "Limiting Wall Thickness for Length E."
- Length E_1 applies for thickness greater than that given in column "Limiting Wall Thickness" for NPS 24 and smaller for NPS 26 and lager, length E_1 shall be by agreement between manufacturer and Purchaser.
- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- Wall Thickness Conform to ASME B 36.19M

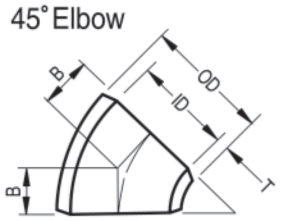
Cap



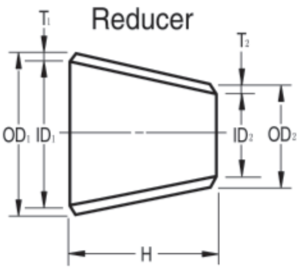
90° Elbow



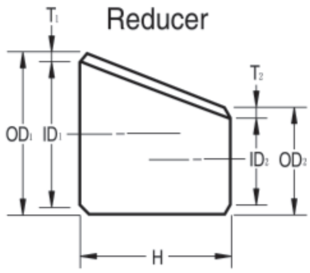
45° Elbow



Concentric Reducer



Eccentric Reducer



(in inches)

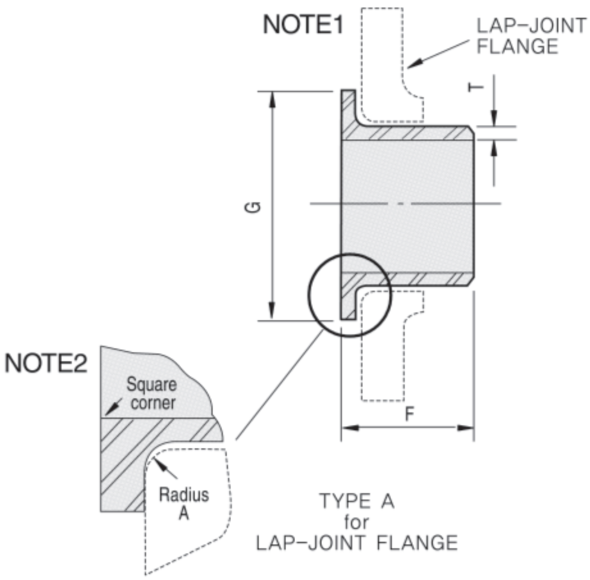
NPS	ELBOW					
	OD	SCH		LONG		SHORT
		STD	X−S	A	B	A
50	50.0	9.5	12.7	75.00	31.07	50.00
52	52.0	9.5	12.7	78.00	32.31	52.00
54	54.0	9.5	12.7	81.00	33.55	54.00
56	56.0	9.5	12.7	84.00	34.79	56.00
58	58.0	9.5	12.7	87.00	36.04	58.00
60	60.0	9.5	12.7	90.00	37.28	60.00
62	62.0	9.5	12.7	93.00	38.52	62.00
64	64.0	9.5	12.7	96.00	39.76	64.00
66	66.0	9.5	12.7	99.00	41.01	66.00
68	68.0	9.5	12.7	102.00	42.25	68.00
70	70.0	9.5	12.7	105.00	43.49	70.00
72	72.0	9.5	12.7	108.00	44.74	72.00
74	74.0	9.5	12.7	111.00	45.98	74.00
76	76.0	9.5	12.7	114.00	47.22	76.00
78	78.0	9.5	12.7	117.00	48.46	78.00
80	80.0	9.5	12.7	120.00	49.71	80.00
82	82.0	9.5	12.7	123.00	50.95	82.00

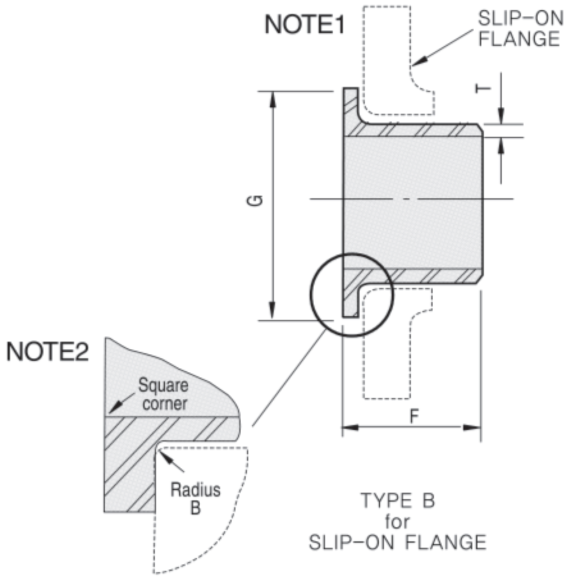
−. REDUCER : 50″ 이상 전 사양 CONICAL TYPE으로 제작 가능, "H"치수는 고객의 사양에 의거.

−. CAP : 50″ 이상 전 사양 제작 가능, "M"치수는 고객의 사양에 의거

Lap Joint(Stub Ends)

Sch 5S, 10S, 40S,





MSS SP-43 (in inches)

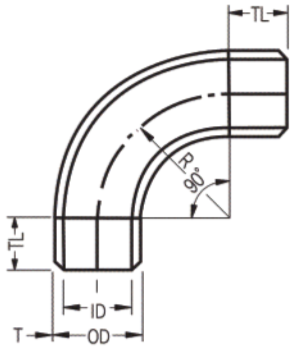
Nominal Pipe Size	Outside Diameter OD	Length F	Dia. of Lap-G Nominal & Maximum	Radius of Fillet		Wall Thickness T			Approx. Weight(kg)		
				A Nominal Max	B Max.	Sch 5s	Sch 10s	Sch 40s	Sch 5s	Sch 10s	Sch 40s
½	0.84	2.00	1.38	0.12	0.03	0.065	0.083	0.109	0.049	0.062	0.079
¾	1.05	2.00	1.69	0.12	0.03	0.065	0.083	0.113	0.064	0.081	0.101
1	1.32	2.00	2.00	0.12	0.03	0.065	0.109	0.133	0.082	0.134	0.160
1¼	1.66	2.00	2.50	0.19	0.03	0.065	0.109	0.140	0.109	0.178	0.225
1½	1.90	2.00	2.88	0.25	0.03	0.065	0.109	0.145	0.129	0.213	0.279
2	2.38	2.50	3.62	0.31	0.03	0.065	0.109	0.154	0.204	0.338	0.471
2½	2.88	2.50	4.12	0.31	0.03	0.083	0.120	0.203	0.313	0.448	0.740
3	3.50	2.50	5.00	0.38	0.03	0.083	0.120	0.216	0.400	0.574	1.01
3½	4.00	3.00	5.50	0.38	0.03	0.083	0.120	0.226	0.522	0.150	1.38
4	4.50	3.00	6.19	0.44	0.03	0.083	0.120	0.237	0.606	0.870	1.68
5	5.56	3.00	7.31	0.44	0.06	0.109	0.134	0.258	0.985	1.21	2.28
6	6.62	3.50	8.50	0.50	0.06	0.109	0.134	0.280	1.34	1.64	3.37
8	8.62	4.00	10.62	0.50	0.06	0.109	0.148	0.322	1.96	2.65	5.67
10	10.75	5.00	12.75	0.50	0.06	0.134	0.165	0.365	3.57	4.38	9.55
12	12.75	6.00	15.00	0.50	0.06	0.156	0.180	0.375	5.85	6.74	13.8
14	14.00	6.00	16.25	0.50	0.06	0.156	0.188	×	6.42	7.73	×
16	16.00	6.00	18.50	0.50	0.06	0.165	0.188	×	7.91	9.00	×
18	18.00	6.00	21.00	0.50	0.06	0.165	0.188	×	9.24	10.5	×
20	20.00	6.00	23.00	0.50	0.06	0.188	0.218	×	11.7	13.5	×
24	24.00	6.00	27.25	0.50	0.06	0.218	0.250	×	16.5	18.9	×

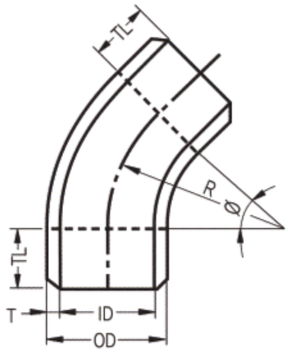
- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 120
- Wall Thickness Conform to ASME B 36.19M

1. Minimun Lap Thickness Shall Not Be Less Than Nominnal Wall Thickness.
2. Contact Faces of Stub Ends Shall Have a Modified Spiral or Concentric Serration.

Pipe Bend

STD (Sch 40)





ASME B16.9

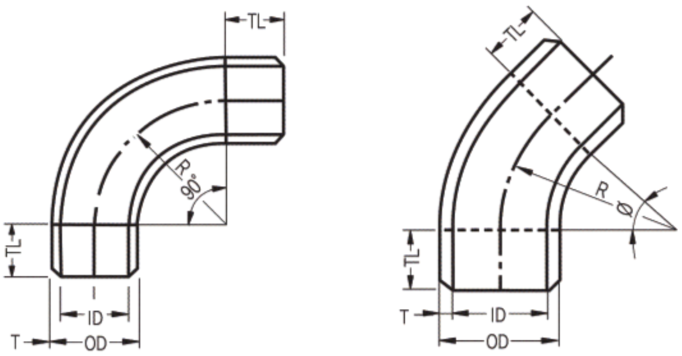
(in inches)

Nominal Pipe Size	Outside Diameter OD	Inside Diameter ID	Wall Thickness T
½	0.840	0.622	0.109
¾	1.050	0.824	0.113
1	1.315	1.049	0.133
1¼	1.660	1.380	0.140
1½	1.900	1.610	0.145
2	2.375	2.067	0.154
2½	2.875	2.469	0.203
3	3.500	3.068	0.216
3½	4.000	3.548	0.226
4	4.500	4.026	0.237
5	5.563	5.047	0.258
6	6.625	6.065	0.280
8	8.625	7.981	0.322
10	10.750	10.020	0.365
12	12.750	12.000	0.375
*12	12.750	11.938	0.406
14	14.000	13.250	0.375
*14	14.000	13.124	0.438
16	16.000	15.250	0.375
*16	16.000	15.000	0.500
18	18.000	17.250	0.375

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- TL, R, Ø : Specified in Purchaser order
- For General Bending Range See Page 58
- Asterisks(*) Denote Sch 40

Pipe Bend

STD (Sch 40)



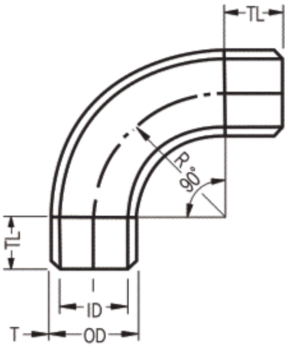
ASME B16.9 (in inches)

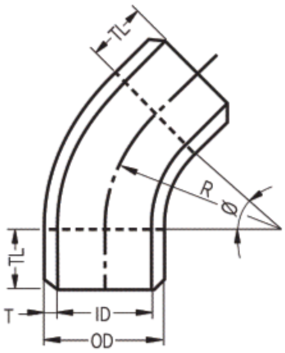
Nominal Pipe Size	Outside Diameter OD	Inside Diameter ID	Wall Thickness T
*18	18.000	16.876	0.562
20	20.000	19.250	0.375
*20	20.000	18.812	0.594
22	22.000	21.250	0.375
24	24.000	23.250	0.375
*24	24.000	22.624	0.688
26	26.000	25.250	0.375
28	28.000	27.250	0.375
30	30.000	29.250	0.375
32	32.000	31.250	0.375
*32	32.000	30.624	0.688
34	34.000	33.250	0.375
*34	34.000	32.624	0.688
36	36.000	35.250	0.375
*36	36.000	34.500	0.750
38	38.000	37.250	0.375
40	40.000	39.250	0.375
42	42.000	41.250	0.375
44	44.000	43.250	0.375
46	46.000	45.250	0.375
48	48.000	47.250	0.375

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- TL, R, Ø : Specified in Purchaser order
- For General Bending Range See Page 58
- Asterisks(*) Denote Sch 40

Pipe Bend

XS (Sch 80)





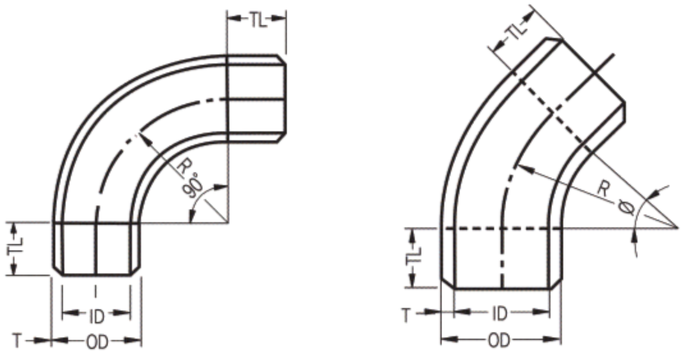
ASME B16.9 (in inches)

Nominal Pipe Size	Outside Diameter OD	Inside Diameter ID	Wall Thickness T
½	0.840	0.546	0.147
¾	1.050	0.742	0.154
1	1.315	0.957	0.179
1¼	1.660	1.278	0.191
1½	1.900	1.500	0.200
2	2.375	1.939	0.218
2½	2.875	2.323	0.276
3	3.500	2.900	0.300
3½	4.000	3.364	0.318
4	4.500	3.826	0.337
5	5.563	4.813	0.375
6	6.625	5.761	0.432
8	8.625	7.625	0.500
10	10.750	9.750	0.500
*10	10.750	9.562	0.594
12	12.750	11.750	0.500
*12	12.750	11.374	0.688
14	14.000	13.000	0.500
*14	14.000	12.500	0.750
16	16.000	15.000	0.500
*16	16.000	14.312	0.844

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- TL, R, Ø : Specified in Purchaser order
- For General Bending Range See Page 58
- Asterisks(*) Denote Sch 80

Pipe Bend

XS (Sch 80)



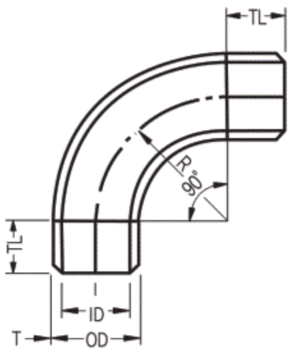
ASME B16.9 (in inches)

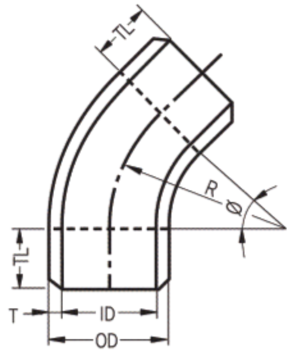
Nominal Pipe Size	Outside Diameter OD	Inside Diameter ID	Wall Thickness T
18	18.000	17.000	0.500
*18	18.000	16.124	0.938
20	20.000	19.000	0.500
*20	20.000	17.938	1.031
22	22.000	21.000	0.500
*22	22.000	19.750	1.125
24	24.000	23.000	0.500
*24	24.000	21.562	1.219
26	26.000	25.000	0.500
28	28.000	27.000	0.500
30	30.000	29.000	0.500
32	32.000	31.000	0.500
34	34.000	33.000	0.500
36	36.000	35.000	0.500
38	38.000	37.000	0.500
40	40.000	39.000	0.500
42	42.000	41.000	0.500
44	44.000	43.000	0.500
46	46.000	45.000	0.500
48	48.000	47.000	0.500

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- TL, R, Ø : Specified in Purchaser order
- For General Bending Range See Page 58
- Asterisks(*) Denote Sch 80

Reducers

Sch20,60,100,120,140,160,XXS



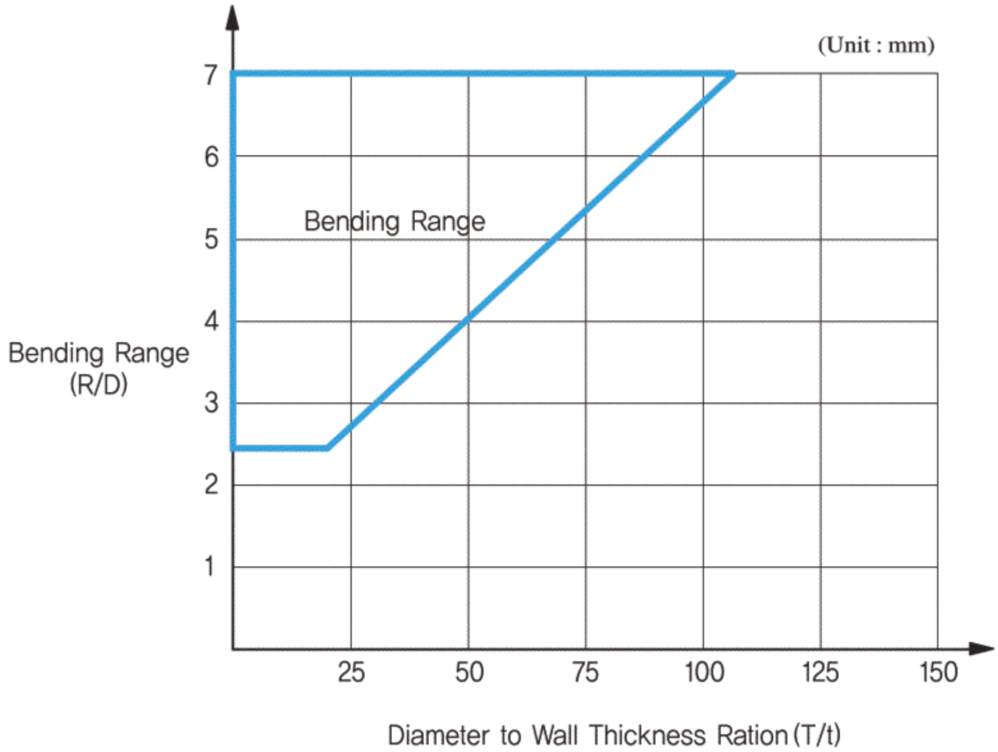


ASME B16.9 (in inches)

Nominal Pipe Size	Outside Diameter OD	Wall Thickness T						
		Sch 20	Sch 60	Sch 100	Sch 120	Sch 140	Sch 160	XXS
½	0.840	–	–	–	–	–	0.188	0.294
¾	1.050	–	–	–	–	–	0.219	0.308
1	1.315	–	–	–	–	–	0.250	0.358
1¼	1.660	–	–	–	–	–	0.250	0.382
1½	1.900	–	–	–	–	–	0.281	0.400
2	2.375	–	–	–	–	–	0.344	0.436
2½	2.875	–	–	–	–	–	0.375	0.552
3	3.500	–	–	–	–	–	0.438	0.600
4	4.500	–	–	–	0.438	–	0.531	0.674
5	5.563	–	–	–	0.500	–	0.625	0.750
6	6.625	–	–	–	0.562	–	0.719	0.864
8	8.625	0.250	0.406	0.594	0.719	0.812	0.906	0.875
10	10.750	0.250	0.500	0.719	0.844	1.000	1.125	1.000
12	12.750	0.250	0.562	0.844	1.000	1.125	1.312	1.000
14	14.000	0.312	0.594	0.938	1.094	1.250	1.406	–
16	16.000	0.312	0.656	1.031	1.219	1.438	1.594	–
18	18.000	0.312	0.750	1.156	1.375	1.562	1.781	–
20	20.000	0.375	0.812	1.281	1.500	1.750	1.969	–
22	22.000	0.375	0.875	1.375	1.625	1.875	2.125	–
24	24.000	0.375	0.969	1.531	1.812	2.062	2.344	–

- For Bevel Details See Page 115
- For Dimensional Tolerances See Page 114
- TL, R, Ø : Specified in Purchaser order
- For General Bending Range See Page 58

Generl Bending Range



Where :

D = Pipe Diameter in mm

t = Pipe Wall Thickness in mm

R = Bending Radius in mm

※Bending Range

- Max. Size(O.D) : 48inch
- Max. Pipe Thickness : 50mm