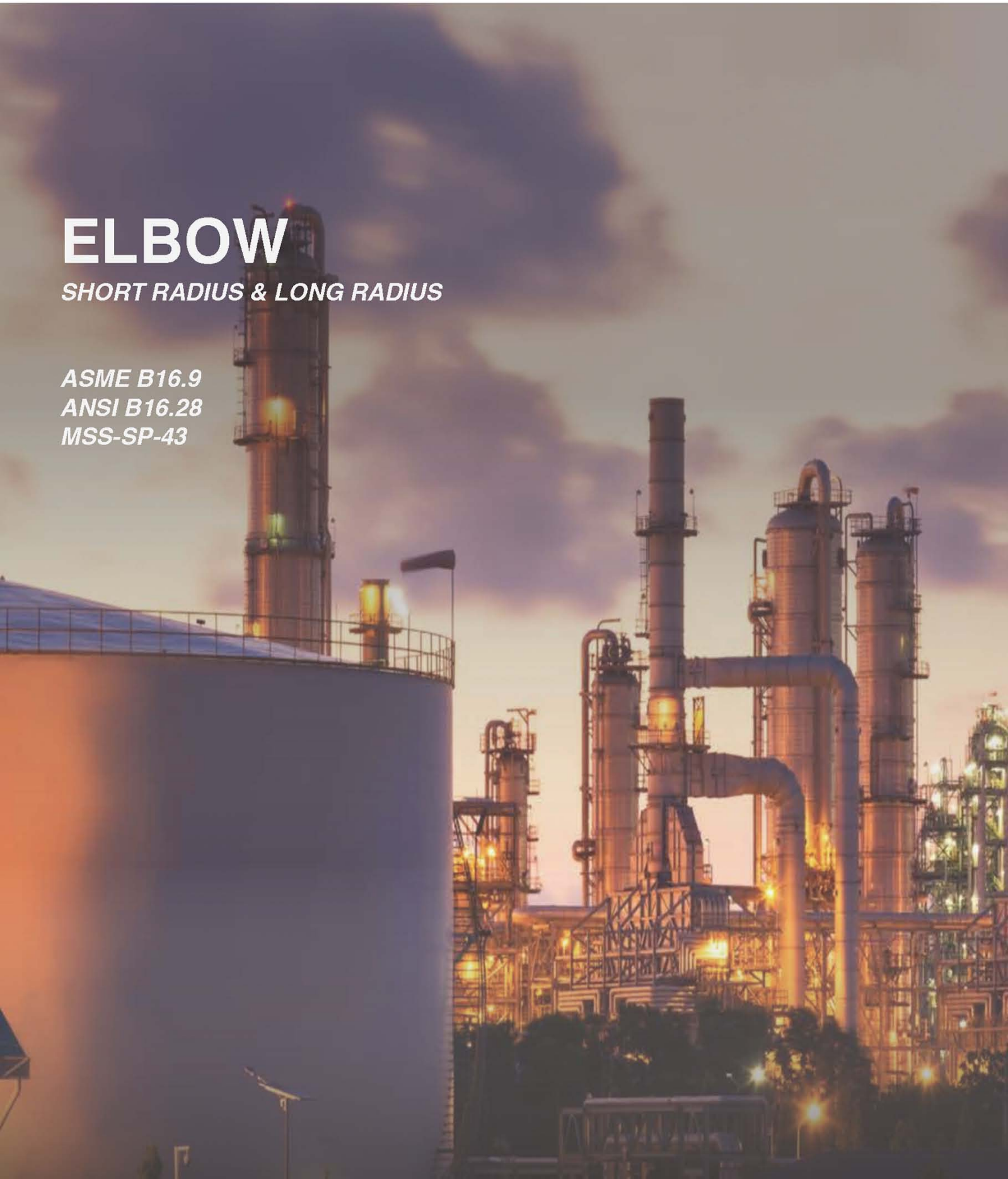




ELBOW

SHORT RADIUS & LONG RADIUS

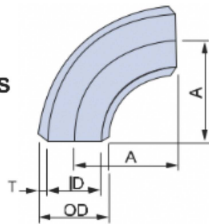
*ASME B16.9
ANSI B16.28
MSS-SP-43*



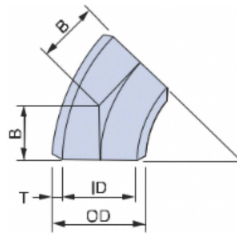
ELBOW

Long & Short Radius

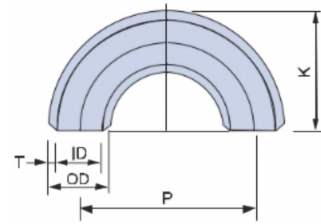
ASME / ANSI B 16.9
ANSI B 16.28
MSS SP-43



90°ELBOW (LONG)

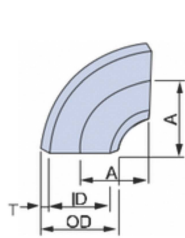


45°ELBOW

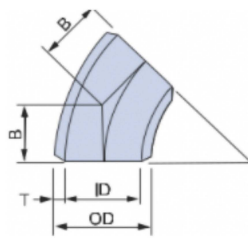


180°ELBOW

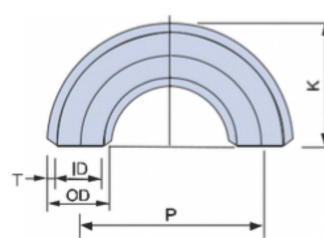
Nominal Pipe Size	Dimensions		Wall Thickness		Long Radius	Short Radius
	OD	ID	Sch. No.	c		
	mm	mm		mm	mm	mm
1/2	21.34	18.04	5s	1.65	A = 38.1 B = 15.7 P = 76.2 K = 47.8	-
		17.12	10s	2.11		
		15.80	Std/40 40s	2.77		
		13.88	XS/80 80s	3.73		
		11.78	160	4.78		
		6.40	XXS	7.47		
3/4	26.67	23.37	5s	1.65	A = 38.1 B = 19.1 P = 76.2 K = 50.8	-
		22.45	10s	2.11		
		20.93	Std/40 40s	2.87		
		18.85	XS/80 80s	3.91		
		15.55	160	5.56		
		11.03	XXS	7.82		
1	33.40	30.10	5s	1.65	A = 38.1 B = 22.4 P = 76.2 K = 55.6	A = 25.4 P = 50.8 K = 41.1
		27.86	10s	2.77		
		26.64	Std/40 40s	3.38		
		24.30	XS/80 80s	4.55		
		20.70	160	6.35		
		15.22	XXS	9.09		
1 1/4	42.16	38.86	5s	1.65	A = 47.6 B = 25.4 P = 95.3 K = 69.9	A = 31.8 P = 63.5 K = 52.3
		36.62	10s	2.77		
		35.04	Std/40 40s	3.56		
		32.46	XS/80 80s	4.85		
		29.46	160	6.35		
		22.76	XXS	9.70		
1 1/2	48.26	44.96	5s	1.65	A = 57.2 B = 28.4 P = 114.3 K = 82.6	A = 38.1 P = 76.2 K = 62.0
		42.72	10s	2.77		
		40.90	Std/40 40s	3.68		
		38.10	XS/80 80s	5.08		
		33.98	160	7.14		
		27.94	XXS	10.16		
2	60.32	57.02	5s	1.65	A = 76.2 B = 35.1 P = 152.4 K = 106.4	A = 50.8 P = 101.6 K = 81.0
		54.78	10s	2.77		
		52.50	Std/40 40s	3.91		
		49.24	XS/80 80s	5.54		
		42.84	160	8.74		
		38.18	XXS	11.07		



90°ELBOW (SHORT)



45°ELBOW



180°ELBOW

ELBOW

Long & Short Radius

ASME / ANSI B 16.9

ANSI B 16.28

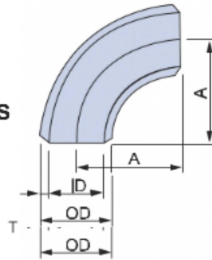
MSS SP-43

Nominal Pipe Size	Dimensions		Wall Thickness		Long Radius	Short Radius
	OD	ID	Sch. No.	t		
inch	mm	mm		mm	mm	mm
2 1/2	73.03	68.81	5s	2.11	A = 95.3 B = 44.5 P = 190.5 K = 131.8	A = 63.5 P = 127.0 K = 100.1
		66.93	10s	3.05		
		62.71	Std/40 40s	5.16		
		59.01	XS/80 80s	7.01		
		53.99	160	9.52		
		44.99	XXS	14.02		
3	88.90	84.68	5s	2.11	A = 114.3 B = 50.8 P = 228.6 K = 158.8	A = 76.2 P = 152.4 K = 120.7
		82.80	10s	3.05		
		77.92	Std/40 40s	5.49		
		73.66	XS/80 80s	7.62		
		66.66	160	11.12		
		58.42	XXS	15.24		
3 1/2	101.60	97.38	5s	2.11	A = 133.4 B = 57.2 P = 266.7 K = 184.2	A = 88.9 P = 177.8 K = 139.7
		95.50	10s	3.05		
		90.12	Std/40 40s	5.74		
		85.44	XS/80 80s	8.08		
		-	120	-		
		-	160	-		
4	114.30	110.08	5s	2.11	A = 152.4 B = 63.5 P = 304.8 K = 209.6	A = 101.6 P = 203.2 K = 158.8
		108.20	10s	3.05		
		102.26	Std/40 40s	6.02		
		97.18	XS/80 80s	8.56		
		92.06	120	11.12		
		87.32	160	13.49		
5	141.30	135.76	5s	2.77	A = 190.5 B = 79.2 P = 381.0 K = 261.9	A = 127.0 P = 254.0 K = 196.9
		134.50	10s	3.40		
		128.20	Std/40 40s	6.55		
		122.24	XS/80 80s	9.53		
		115.90	120	12.70		
		109.54	160	15.88		
6	168.30	162.76	5s	2.77	A = 228.6 B = 95.3 P = 457.2 K = 312.7	A = 152.4 P = 304.8 K = 236.5
		161.50	10s	3.40		
		154.08	Std/40 40s	7.11		
		146.36	XS/80 80s	10.97		
		139.76	120	14.27		
		131.78	160	18.26		
		124.42	XXS	21.94		

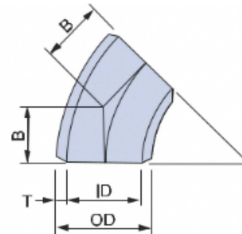
ELBOW

Long & Short Radius

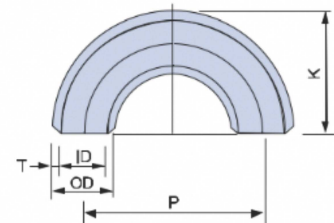
ASME / ANSI B 16.9
 ANSI B 16.28
 MSS SP-43



90° ELBOW (LONG)

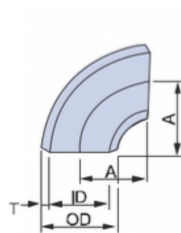


45° ELBOW

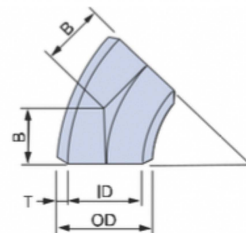


180° ELBOW

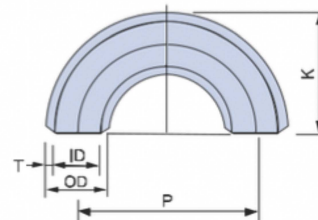
Nominal Pipe Size	Dimensions		Wall Thickness		Long Radius	Short Radius
	OD	ID	Sch. No.	t		
inch	mm	mm		mm	mm	mm
8	219.08	213.54	5s	2.77	A = 304.8 B = 127.0 P = 609.6 K = 414.3	A = 203.2 P = 406.4 K = 312.7
		211.56	10s	3.76		
		206.38	20	6.35		
		205.00	30	7.04		
		202.72	Std/40 40s	8.18		
		198.46	60	10.31		
		193.68	XS/80 80s	12.70		
		188.90	100	15.09		
		182.56	120	18.26		
		177.84	140	20.62		
		173.06	160	23.01		
		174.64	XXS	22.22		
10	273.05	266.25	5s	3.40	A = 381.0 B = 158.8 P = 762.0 K = 517.7	A = 254.0 P = 508.0 K = 390.7
		264.67	10s	4.19		
		260.35	20	6.35		
		257.45	30	7.80		
		254.51	Std/40 40s	9.27		
		247.65	XS/60 80s	12.70		
		242.87	80	15.09		
		236.53	100	18.26		
		230.17	120	21.44		
		222.25	140/XXS	25.40		
		215.89	160	28.58		
12	323.80	315.88	5s	3.96	A = 457.2 B = 190.5 P = 914.4 K = 619.3	A = 304.8 P = 609.6 K = 466.9
		314.66	10s	4.57		
		311.10	20	6.35		
		307.04	30	8.38		
		304.76	Std/40s	9.52		
		303.18	40	10.31		
		298.40	XS/80s	12.70		
		295.26	60	14.27		
		288.84	80	17.48		
		280.92	100	21.44		
		273.00	120/XXS	25.40		
		266.64	140	28.58		
		257.16	160	33.32		



90° ELBOW (SHORT)



45° ELBOW



180° ELBOW

ELBOW

Long & Short Radius

ASME / ANSI B 16.9

ANSI B 16.28

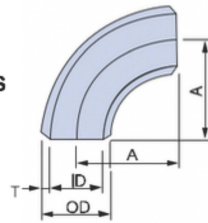
MSS SP-43

Nominal Pipe Size	Dimensions		Wall Thickness		Long Radius	Short Radius
	OD	ID	Sch. No.	t		
	inch	mm		mm	mm	mm
14	355.60	347.68	5s	3.96	A = 533.4 B = 222.3 P = 1066.8 K = 711.2	A = 355.6 P = 711.2 K = 533.4
		346.04	10s	4.78		
		342.90	10	6.35		
		339.76	20	7.92		
		336.56	Std/30	9.52		
		333.34	40	11.13		
		330.20	XS	12.70		
		325.42	60	15.09		
		317.50	80	19.05		
		307.94	100	23.83		
		300.02	120	27.79		
		292.10	140	31.75		
		284.18	160	35.71		
16	406.40	398.02	4.19	4.19	A = 609.6 B = 254.0 P = 1219.2 K = 812.8	A = 406.4 P = 812.8 K = 609.6
		396.84	4.78	4.78		
		393.70	6.35	6.35		
		390.56	7.92	7.92		
		387.36	9.52	9.52		
		381.00	12.70	12.70		
		373.08	16.66	16.66		
		363.52	21.44	21.44		
		354.02	26.19	26.19		
		344.48	30.96	30.96		
		333.36	36.52	36.52		
		325.42	40.49	40.49		
18	457.20	448.82	4.19	4.19	A = 685.8 B = 285.8 P = 1371.6 K = 914.4	A = 457.2 P = 914.4 K = 685.8
		447.64	4.78	4.78		
		444.50	6.35	6.35		
		441.36	7.92	7.92		
		434.96	11.12	11.12		
		438.16	9.52	9.52		
		431.80	12.70	12.70		
		428.66	14.27	14.27		
		419.10	19.05	19.05		
		409.56	23.82	23.82		
		398.48	29.36	29.36		
		387.36	34.92	34.92		
		377.86	39.67	39.67		
		366.72	45.24	45.24		

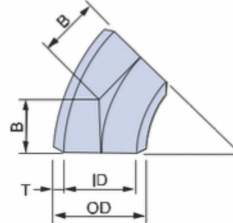
ELBOW

Long & Short Radius

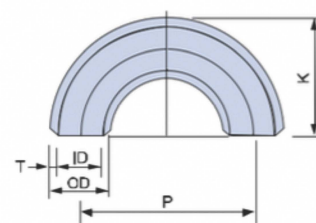
ASME / ANSI B 16.9
ANSI B 16.28
MSS SP-43



90° ELBOW (LONG)

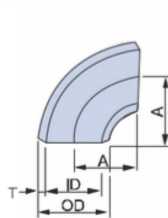


45° ELBOW

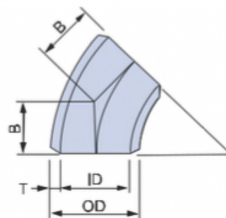


180° ELBOW

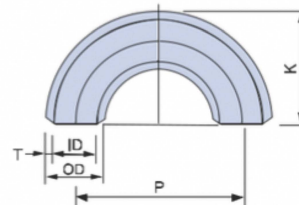
Nominal Pipe Size	Dimensions		Wall Thickness		Long Radius	Short Radius
	OD	ID	Sch. No.	t		
inch	mm	mm		mm	mm	mm
20	508.00	498.44	5s	4.78	A = 762.0 B = 317.5 P = 1524.0 K = 1016.0	A = 508.0 P = 1016.0 K = 762.0
		496.92	10s	5.54		
		495.30	10	6.35		
		488.96	Std/20	9.52		
		482.60	XS/30	12.70		
		477.82	40	15.09		
		466.76	60	20.62		
		455.62	80	26.19		
		442.92	100	32.54		
		431.80	120	38.10		
		419.10	140	44.45		
		407.98	160	50.01		
22	558.80	549.24	5s	4.78	A = 838.2 B = 342.9 P = 1676.4 K = 1117.6	A = 558.8 P = 1117.6 K = 838.2
		547.72	10s	5.54		
		546.10	10	6.35		
		539.76	Std/20	9.52		
		533.40	XS/30	12.70		
		514.36	60	22.22		
		501.64	80	28.58		
		488.96	100	34.92		
		476.24	120	41.28		
		463.56	140	47.62		
		450.84	160	53.98		
24	609.60	598.52	5s	5.54	A = 914.4 B = 381.0 P = 1828.8 K = 1219.2	A = 609.6 P = 1219.2 K = 914.4
		596.90	10s	6.35		
		596.90	10	6.35		
		590.56	Std/20	9.52		
		584.20	XS	12.70		
		581.06	30	14.27		
		574.64	40	17.48		
		560.38	60	24.61		
		547.68	80	30.96		
		531.82	100	38.89		
		517.56	120	46.02		
		504.86	140	52.37		
		490.52	160	59.54		
26	660.40	644.56	10	7.92	A = 990.6 B = 406.4	A = 660.4
		644.36	Std	9.52		
		635.00	XS/20	12.70		



90°ELBOW (SHORT)



45°ELBOW



180°ELBOW

ELBOW

Long & Short Radius

ASME / ANSI B 16.9

ANSI B16.28

MSS SP-43

Nominal Pipe Size	Dimensions		Wall Thickness		Long Radius	Short Radius
	O D	I D	Sch. No.	t		
				mm		
inch	mm	mm		mm	mm	mm
28	711.20	695.36	10	7.92	A = 1066.8 B = 438.2	A = 711.0
		692.16	Std	9.52		
		685.80	XS/20	12.70		
		679.44	30	15.88		
30	762.00	749.30	5s	6.35	A = 1143.0 B = 469.9	A = 762.0
		746.16	10s	7.92		
		746.16	10	7.92		
		742.96	Std	9.52		
		736.60	XS/20	12.70		
		730.24	30	15.88		
32	812.80	796.96	10	7.92	A = 1219.2 B = 501.7	A = 813.0
		793.76	Std	9.52		
		787.40	XS/20	12.70		
		781.04	30	15.88		
		777.84	40	17.48		
34	863.60	847.76	10	7.92	A = 1295.4 B = 533.4	A = 864.0
		844.56	Std	9.52		
		838.20	XS/20	12.70		
		831.84	30	15.88		
		828.64	40	17.48		
36	914.40	898.56	10	7.92	A = 1371.6 B = 565.2	A = 914.4
		895.34	Std	9.53		
		889.00	XS/20	12.70		
		882.64	30	15.88		
		876.30	40	19.05		
38	965.20	946.16	Std/40	9.52	A = 1447.8 B = 600.0	A = 965.2
		939.80	XS/80	12.70		
40	1016.00	996.96	Std/40	9.52	A = 1524.0 B = 631.8	A = 1016.0
		990.60	XS/80	12.70		
42	1066.80	1047.76	Std/40	9.52	A = 1600.2 B = 660.4	A = 1066.8
		1041.40	XS/80	12.70		
44	1117.60	1098.56	Std/40	9.52	A = 1676.4 B = 695.3	A = 1117.6
		1092.20	XS/80	12.70		
46	1168.40	1149.36	Std/40	9.52	A = 1752.6 B = 727.1	A = 1168.4
		1143.00	XS/80	12.70		
48	1219.20	1200.16	Std/40	9.52	A = 1828.8 B = 758.8	A = 1219.2
		1193.80	XS/80	12.70		