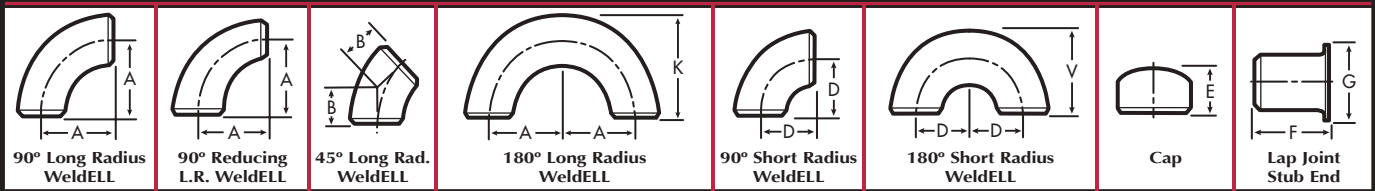
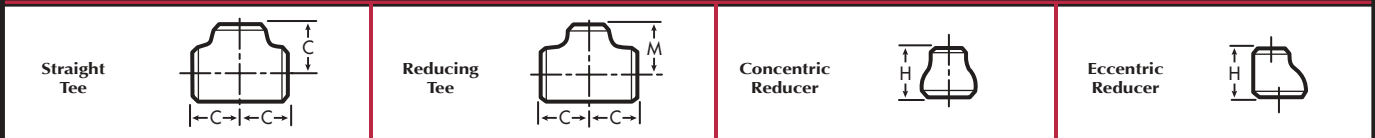


SEAMLESS WELDING FITTINGS



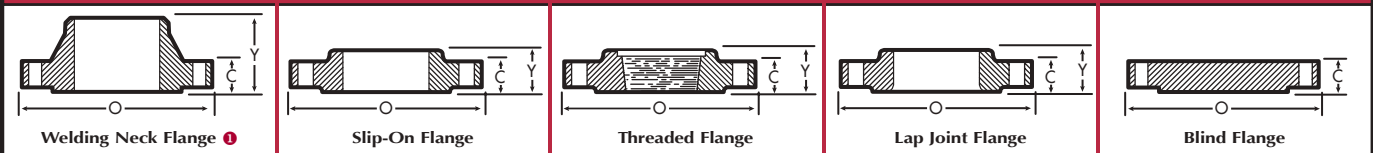
Nom. Pipe Size	Pipe O.D.	WALL THICKNESS											A	B	K	D	V	E	F		G	Nom. Pipe Size				
		Light Wall	Sch 20	Sch 30	Std	Sch 40	Sch 60	XH	Sch 80	Sch 100	Sch 120	Sch 140							Sch 160	XXH			ASA	MSS		
1/2	.840	.083			.109	.109		.147	.147				.188	.294	1 1/2	5/8	1 7/8			1	3	2	1 3/8	1/2		
3/4	1.050	.083			.113	.113		.154	.154				.219	.308	1 1/8	7/16	1 11/16			1	3	2	1 11/16	3/4		
1	1.315	.109			.133	.133		.179	.179				.250	.358	1 1/2	7/8	2 3/16	1	1 5/8	1 1/2	4	2	2	2	1	
1 1/4	1.660	.109			.140	.140		.191	.191				.250	.382	1 7/8	1	2 3/4	1 1/4	1 5/8	1 1/2	4	2	2	2 1/2	1 1/4	
1 1/2	1.900	.109			.145	.145		.200	.200				.281	.400	2 1/4	1 1/8	3 1/4	1 1/2	2 7/16	1 1/2	4	2	2	2 7/8	1 1/2	
2	2.375	.109			.154	.154		.218	.218				.344	.436	3	1 3/8	4 3/16	2	3 3/16	1 1/2	6	2 1/2	3	5/8	2	
2 1/2	2.875	.120			.203	.203		.276	.276				.375	.552	3 3/4	1 3/4	5 3/16	2 1/2	3 15/16	1 1/2	6	2 1/2	4	1 1/8	2 1/2	
3	3.500	.120			.216	.216		.300	.300				.438	.600	4 1/2	2	6 1/4	3	4 3/4	2	6	2 1/2	5	3	3	
3 1/2	4.000	.120			.226	.226		.318	.318				.531	.636	5 1/4	2 1/4	7 1/4	3 1/2	5 1/2	2 1/2	6	3	5 1/2	3 1/2	4	
4	4.500	.120			.237	.237		.337	.337		.438		.531	.674	6	2 1/2	8 1/4	4	6 1/4	2 1/2	6	3	6 3/16	4	4	
5	5.563	.134			.258	.258		.375	.375		.500		.625	.750	7 1/2	3 1/8	10 5/16	5	7 3/4	3	8	3	7 5/16	5	5	
6	6.625	.134			.280	.280		.432	.432		.562		.719	.864	9	3 3/4	12 5/16	6	9 5/16	3 1/2	8	3 1/2	8 1/2	6	6	
8	8.625	.148	.250	.277	.322	.322	.406	.500	.500	.594	.719	.812	.906	.875	12	5	16 5/16	8	12 5/16	4	8	4	10 5/8	8	8	
10	10.750	.165	.250	.307	.365	.365	.500	.500	.594	.719	.844	1.000	1.125	1.000	15	6 1/4	20 3/8	10	15 3/8	5	10	5	12 3/4	10	10	
12	12.750	.180	.250	.330	.375	.406	.562	.500	.688	.844	1.000	1.125	1.312	1.000	18	7 1/2	24 3/8	12	18 3/8	6	10	6	15	12	12	
14	14.000	.250	.312	.375	.375	.438	.594	.500	.750	.938	1.094	1.250	1.406		21	8 3/4	28	14	21	6 1/2	12		16 1/4	14	14	
16	16.000	.250	.312	.375	.375	.500	.656	.500	.844	1.031	1.219	1.438	1.594		24	10	32	16	24	7	12		18 1/2	16	16	
18	18.000	.250	.312	.438	.375	.562	.750	.500	.938	1.156	1.375	1.562	1.781		27	11 1/4	36	18	27	8	12		21	18	18	
20	20.000	.250	.375	.500	.375	.594	.812	.500	1.031	1.281	1.500	1.750	1.969		30	12 1/2	40	20	30	9	12		23	20	20	
24	24.000	.250	.375	.562	.375	.688	.969	.500	1.219	1.531	1.812	2.062	2.344		36	15	48	24	36	10 1/2	12		27 1/4	24	24	
30	30.000	.312	.500	.625	.375			.500							45	18 1/2	60	30	45	10 1/2					30	30
36	36.000	.312	.500	.625	.375	.750		.500							54	22 1/4		36	54	10 1/2					36	36
42	42.000				.375			.500							63	26		42		12					42	42
48	48.000				.375			.500							72	29 3/4		48		13 1/2					48	48



Nom. Pipe Size	Tee				Nom. Pipe Size	Tee				Nom. Pipe Size	Reducer				Nom. Pipe Size	Reducer														
	Outlet	C	M	H		Outlet	C	M	H		Outlet	C	M	H		Outlet	C	M	H											
3/4	3/4	1 1/8			3 1/2	3 1/2	3 3/4			10	10	8 1/2			20	20	15			36	36	26 1/2			42	42	30	28	24	24
1/2	1 1/8	1 1/8	1 1/2			3	3 3/4	3 5/8	4			8	8 1/2	8		7		18	15		14 1/2	20				30	26 1/2	25	24	
1	1	1 1/2			4	2 1/2	3 3/4	3 1/2	4	12	6	8 1/2	7 5/8	7	24	16	15	14	20			12	15	13 5/8	20					
	3/4	1 1/2	1 1/2	2		2	3 3/4	3 1/4	4			5	8 1/2	7 1/2		7		14	15	14	20			10	15	13 1/8	20			
1 1/4	1 1/4	1 7/8			5	1 1/2	3 3/4	3 1/8	4	14	4	8 1/2	7 1/4	7	24	12	10					12	10	13 5/8	20					
	1	1 7/8	1 7/8	2		4	4 1/8					12	10					10	10	9 1/2	8				10	15	13 1/8	20		
1 1/2	3/4	1 7/8	1 7/8	2	6	3 1/2	4 1/8	4	4	16	8	10	9	8	30	8	10	9	8			8	10	9	8					
	1/2	1 7/8	1 7/8	2		2 1/2	4 1/8	3 3/4	4			6	10	8 5/8		8		24	17	17	20			20	17	17	20			
2	1 1/2	2 1/4			8	2	4 1/8	3 1/2	4	18	5	10	8 1/2	8	36	18	17	16 1/2	20			18	17	16 1/2	20					
	1 1/4	2 1/4	2 1/4	2 1/2		1 1/2	4 1/8	3 3/8	4			14	11					16	17	16	20			16	17	16	20			
2 1/2	1	2 1/4	2 1/4	2 1/2	10	3/4	2 1/4	2 1/4	2 1/2	14	3	4 7/8	4 5/8	5	24	12	11	10 5/8	13			14	17	16	20					
	3/4	2 1/4	2 1/4	2 1/2		4	4 7/8	4 5/8	5			10	11	10 1/8		13		12	17	15 5/8	20			12	17	15 5/8	20			
3	1/2	2 1/4	2 1/4	2 1/2	12	3 1/2	4 7/8	4 1/2	5	16	3 1/2	4 7/8	4 1/2	5	30	8	11	9 3/4	13			10	17	15 1/8	20					
	2	2 1/2				3	4 7/8	4 3/8	5			6	11	9 3/8		13		30	22					30	22					
3 1/2	1 1/2	2 1/2	2 3/8	3	14	2 1/2	4 7/8	4 1/4	5	18	16	12			36	24	22	21	24			24	22	21	24					
	1 1/4	2 1/2	2 1/4	3		2	4 7/8	4 1/8	5			14	12	12		14		20	22	20	24			20	22	20	24			
4	1	2 1/2	2	3	16	3	5 5/8			20	6	5 5/8			30	12	12	11 5/8	14			18	22	19 1/2	24					
	3/4	2 1/2	1 3/4	3		5	5 5/8	5 3/8	5 1/2			10	12	11 1/8		14		16	22	19	24			16	22	19	24			
4 1/2	2 1/2	3			18	2 1/2	5 5/8	5 1/8	5 1/2	24	8	12	10 3/4	14	36	14	22	19	24			14	22	19	24					
	2	3	2 3/4	3 1/2		3 1/2	5 5/8	5	5 1/2			6	12	10 3/8		14		36	26 1/2					36	26 1/2					
5	1 1/2	3	2 5/8	3 1/2	20	3	5 5/8	4 7/8	5 1/2	24	18	13 1/2			36	30	26 1/2	25	24			30	26 1/2	25	24					
	1 1/4	3	2 1/2	3 1/2		2 1/2	5 5/8	4 3/4	5 1/2			16	13 1/2	13		15		24	26 1/2	24	24			24	26 1/2	24	24			
6	1	3	2 1/4	3 1/2	24	8	7			30	14	13 1/2	13	15	42	20	26 1/2	23	24			20	26 1/2	23	24					
	3	3 3/8				6	7	6 5/8	6			12	13 1/2	12 5/8		15		18	26 1/2	22 1/2	24			18	26 1/2	22 1/2	24			
7	2 1/2	3 3/8	3 1/4	3 1/2	30	5	7	6 3/8	6	36	10	13 1/2	12 1/8	15	48	16	26 1/2	22	24			16	26 1/2	22	24					
	2	3 3/8	3	3 1/2		4	7	6 1/8	6			8	13 1/2	11 3/4		15		42	30	28				42	30	28				
8	1 1/2	3 3/8	2 7/8	3 1/2	36	3 1/2	7	6	6	42					48	36	30	28	24			36	30	28	24					
	1 1/4	3 3/8	2 3/4	3 1/2														42	30	28	24			42	30	28	24			
9					42					48					48	24	30	26	24			24	30	26	24					
																		48	35	33				48	35	33				
10					48					48					48	42	35	32	28			42	35	32	28					
																		48	35	31	28			48	35	31	28			
																30	35	30	28			30	35	30	28					

NOTES 1 Light Wall thicknesses are identical to stainless steel Schedule 10S in sizes thru 12", and to Schedule 10 in sizes 14" and larger.
 2 Standard Wall thicknesses are identical to stainless steel Schedule 40S in sizes thru 12".
 3 XH Wall thicknesses are identical to stainless steel Schedule 80S in sizes thru 12".
 4 May be of welded pipe, x-rayed and stress-relieved.
 5 See ANSI B16.9 for cap lengths when wall thicknesses are greater than XH.

ANSI FORGED STEEL FLANGES



Nom. Pipe Size	150 LB. FLANGES								300 LB. FLANGES								400 LB. FLANGES								Nom. Pipe Size
	O	C	Y			Bolt Circle	No. & Size of Holes	O	C	Y			Bolt Circle	No. & Size of Holes	O	C	Y			Bolt Circle	No. & Size of Holes				
1/2	3 1/2	7/16	1 7/8	5/8	5/8	2 3/8	4-5/8	3 3/4	9/16	2 1/16	7/8	7/8	2 5/8	4-5/8	3 3/4	9/16	2 1/16	7/8	7/8	2 5/8	4-5/8	1/2			
3/4	3 7/8	1/2	2 1/16	5/8	5/8	2 3/4	4-5/8	4 5/8	5/8	2 1/4	1	1	3 1/4	4-3/4	4 5/8	5/8	2 1/4	1	1	3 1/4	4-3/4	3/4			
1	4 1/4	9/16	2 3/16	11/16	11/16	3 1/8	4-5/8	4 7/8	11/16	2 7/16	1 1/16	1 1/16	3 1/2	4-3/4	4 7/8	11/16	2 7/16	1 1/16	1 1/16	3 1/2	4-3/4	1			
1 1/4	4 5/8	5/8	2 1/4	13/16	13/16	3 1/2	4-5/8	5 1/4	3/4	2 9/16	1 1/16	1 1/16	3 7/8	4-3/4	5 1/4	13/16	2 5/8	1 1/8	1 1/8	3 7/8	4-3/4	1 1/4			
1 1/2	5	11/16	2 7/16	7/8	7/8	3 7/8	4-5/8	6 1/8	13/16	2 11/16	1 3/16	1 3/16	4 1/2	4-7/8	6 1/8	7/8	2 3/4	1 1/4	1 1/4	4 1/2	4-7/8	1 1/2			
2	6	3/4	2 1/2	1	1	4 3/4	4-3/4	6 1/2	7/8	2 3/4	1 5/16	1 5/16	5	8-3/4	6 1/2	1	2 7/8	1 7/16	1 7/16	5	8-3/4	2			
2 1/2	7	7/8	2 3/4	1 1/8	1 1/8	5 1/2	4-3/4	7 1/2	1	3	1 1/2	1 1/2	5 7/8	8-7/8	7 1/2	1 1/8	3 1/8	1 5/8	1 5/8	5 7/8	8-7/8	2 1/2			
3	7 1/2	15/16	2 3/4	1 3/16	1 3/16	6	4-3/4	8 1/4	1 1/8	3 1/8	1 11/16	1 11/16	6 5/8	8-7/8	8 1/4	1 1/4	3 1/4	1 13/16	1 13/16	6 5/8	8-7/8	3			
3 1/2	8 1/2	15/16	2 13/16	1 1/4	1 1/4	7	8-3/4	9	1 3/16	3 3/16	1 3/4	1 3/4	7 1/4	8-7/8	9	1 3/8	3 3/8	1 15/16	1 15/16	7 1/4	8-1	3 1/2			
4	9	15/16	3	1 5/16	1 5/16	7 1/2	8-3/4	10	1 1/4	3 3/8	1 7/8	1 7/8	7 7/8	8-7/8	10	1 3/8	3 1/2	2	2	7 7/8	8-1	4			
5	10	15/16	3 1/2	1 7/16	1 7/16	8 1/2	8-7/8	11	1 3/8	3 7/8	2	2	9 1/4	8-7/8	11	1 1/2	4	2 1/8	2 1/8	9 1/4	8-1	5			
6	11	1	3 1/2	1 9/16	1 9/16	9 1/2	8-7/8	12 1/2	1 7/16	3 7/8	2 1/16	2 1/16	10 5/8	12-7/8	12 1/2	1 5/8	4 1/16	2 1/4	2 1/4	10 5/8	12-1	6			
8	13 1/2	1 1/8	4	1 3/4	1 3/4	11 3/4	8-7/8	15	1 5/8	4 3/8	2 7/16	2 7/16	13	12-1	15	1 7/8	4 5/8	2 11/16	2 11/16	13	12-11/8	8			
10	16	1 3/16	4	1 15/16	1 15/16	14 1/4	12-1	17 1/2	1 7/8	4 5/8	2 5/8	3 3/4	15 1/4	16-11/8	17 1/2	2 1/8	4 7/8	2 7/8	4	15 1/4	16-11/4	10			
12	19	1 1/4	4 1/2	2 3/16	2 3/16	17	12-1	20 1/2	2	5 1/8	2 7/8	4	17 3/4	16-11/4	20 1/2	2 1/4	5 3/8	3 1/8	4 1/4	17 3/4	16-13/8	12			
14	21	1 3/8	5	2 1/4	3 1/8	18 3/4	12-11/8	23	2 1/8	5 5/8	3	4 3/8	20 1/4	20-11/4	23	2 3/8	5 7/8	3 5/16	4 5/8	20 1/4	20-13/8	14			
16	23 1/2	1 7/16	5	2 1/2	3 7/16	21 1/4	16-11/8	25 1/2	2 1/4	5 3/4	3 1/4	4 3/4	20 1/2	20-13/8	25 1/2	2 1/2	6	3 11/16	5	20 1/2	20-11/2	16			
18	25	1 9/16	5 1/2	2 11/16	3 13/16	22 3/4	16-11/4	28	2 3/8	6 1/4	3 1/2	5 1/8	24 3/4	24-13/8	28	2 5/8	6 1/2	3 7/8	5 3/8	24 3/4	24-11/2	18			
20	27 1/2	1 11/16	5 11/16	2 7/8	4 1/16	25	20-11/4	30 1/2	2 1/2	6 3/8	3 3/4	5 1/2	27	24-13/8	30 1/2	2 3/4	6 5/8	4	5 3/4	27	24-15/8	20			
24	32	1 7/8	6	3 1/4	4 3/8	29 1/2	20-13/8	36	2 3/4	6 5/8	4 3/8	6	32	24-15/8	36	3	6 7/8	4 1/2	6 1/4	32	24-17/8	24			

Nom. Pipe Size	600 LB. FLANGES								900 LB. FLANGES								1500 LB. FLANGES								Nom. Pipe Size
	O	C	Y			Bolt Circle	No. & Size of Holes	O	C	Y			Bolt Circle	No. & Size of Holes	O	C	Y			Bolt Circle	No. & Size of Holes				
1/2	3 3/4	9/16	2 1/16	7/8	7/8	2 5/8	4-5/8	4 3/4	7/8	2 3/8	1 1/4	1 1/4	3 1/4	4-7/8	4 3/4	7/8	2 3/8	1 1/4	1 1/4	3 1/4	4-7/8	1/2			
3/4	4 5/8	5/8	2 1/4	1	1	3 1/4	4-3/4	5 1/8	1	2 3/4	1 3/8	1 3/8	3 1/2	4-7/8	5 1/8	1	2 3/4	1 3/8	1 3/8	3 1/2	4-7/8	3/4			
1	4 7/8	11/16	2 7/16	1 1/16	1 1/16	3 1/2	4-3/4	5 7/8	1 1/8	2 7/8	1 5/8	1 5/8	4	4-1	5 7/8	1 1/8	2 7/8	1 5/8	1 5/8	4	4-1	1			
1 1/4	5 1/4	13/16	2 5/8	1 1/8	1 1/8	3 7/8	4-3/4	6 1/4	1 1/8	2 7/8	1 5/8	1 5/8	4 3/8	4-1	6 1/4	1 1/8	2 7/8	1 5/8	1 5/8	4 3/8	4-1	1 1/4			
1 1/2	6 1/8	7/8	2 3/4	1 1/4	1 1/4	4 1/2	4-7/8	7	1 1/4	3 1/4	1 3/4	1 3/4	4 7/8	4-11/8	7	1 1/4	3 1/4	1 3/4	1 3/4	4 7/8	4-11/8	1 1/2			
2	6 1/2	1	2 7/8	1 7/16	1 7/16	5	8-3/4	8 1/2	1 1/2	4	2 1/4	2 1/4	6 1/2	8-1	8 1/2	1 1/2	4	2 1/4	2 1/4	6 1/2	8-1	2			
2 1/2	7 1/2	1 1/8	3 1/8	1 5/8	1 5/8	5 7/8	8-7/8	9 5/8	1 5/8	4 1/8	2 1/2	2 1/2	7 1/2	8-11/8	9 5/8	1 5/8	4 1/8	2 1/2	2 1/2	7 1/2	8-11/8	2 1/2			
3	8 1/4	1 1/4	3 1/4	1 13/16	1 13/16	6 5/8	8-7/8	9 1/2	1 1/2	4	2 1/8	2 1/8	7 1/2	8-1	10 1/2	1 7/8	4 5/8	2 7/8	2 7/8	8	8-11/4	3			
3 1/2	9	1 3/8	3 3/8	1 15/16	1 15/16	7 1/4	8-1	•	•	•	•	•	•	•	•	•	•	•	•	•	•	3 1/2			
4	10 3/4	1 1/2	4	2 1/8	2 1/8	8 1/2	8-1	11 1/2	1 3/4	4 1/2	2 3/4	2 3/4	9 1/4	8-11/4	12 1/4	2 1/8	4 7/8	3 9/16	3 9/16	9 1/2	8-13/8	4			
5	13	1 3/4	4 1/2	2 3/8	2 3/8	10 1/2	8-11/8	13 3/4	2	5	3 1/8	3 1/8	11	8-13/8	14 3/4	2 7/8	6 1/8	4 1/8	4 1/8	11 1/2	8-15/8	5			
6	14	1 7/8	4 5/8	2 5/8	2 5/8	11 1/2	12-11/8	15	2 3/16	5 1/2	3 3/8	3 3/8	12 1/2	12-11/4	15 1/2	3 1/4	6 3/4	4 11/16	4 11/16	12 1/2	12-11/2	6			
8	16 1/2	2 3/16	5 1/4	3	3	13 3/4	12-11/4	18 1/2	2 1/2	6 3/8	4	4 1/2	15 1/2	12-11/2	19	3 5/8	8 3/8	5 5/8	5 5/8	15 1/2	12-13/4	8			
10	20	2 1/2	6	3 3/8	4 3/8	17	16-13/8	21 1/2	2 3/4	7 1/4	4 1/4	5	18 1/2	16-11/2	23	4 1/4	10	6 1/4	7	19	12-2	10			
12	22	2 5/8	6 1/8	3 5/8	4 5/8	19 1/4	20-13/8	24	3 1/8	7 7/8	4 5/8	5 5/8	21	20-11/2	26 1/2	4 7/8	11 1/8	7 1/8	8	22 1/2	16-21/2	12			
14	23 3/4	2 3/4	6 1/2	3 11/16	5	20 3/4	20-11/2	25 1/4	3 3/8	8 3/8	5 1/8	6 1/8	22	20-15/8	29 1/2	5 1/4	11 3/4	•	9 1/2	25	16-23/8	14			
16	27	3	7	4 3/16	5 1/2	23 3/4	20-15/8	27 3/4	3 1/2	8 1/2	5 1/4	6 1/2	24 1/4	20-13/4	32 1/2	5 3/4	12 1/4	•	10 1/4	27 3/4	16-25/8	16			
18	29 1/4	3 1/4	7 1/4	4 5/8	6	25 3/4	20-13/4	31	4	9	6	7 1/2	27	20-2	36	6 3/8	12 7/8	•	10 7/8	30 1/2	16-27/8	18			
20	32	3 1/2	7 1/2	5	6 1/2	28 1/2	24-13/4	33 3/4	4 1/4	9 3/4	6 1/4	8 1/4	29 1/2	20-21/8	38 3/4	7	14	•	11 1/2	32 3/4	16-31/8	20			
24	37	4	8	5 1/2	7 1/4	33	24-2	41	5 1/2	11 1/2	8	10 1/2	35 1/2	20-25/8	46	8	16	•	13	39	16-35/8	24			

Nom. Pipe Size	WELDING NECK FLANGE BORES 1 1/8															
	Outside Diam.	Light Wall	Sch 20	Sch 30	Std. Wall	Sch 40	Sch 60	XH	Sch 80	Sch 100	Sch 120	Sch 140	Sch 160	XXH		
1/2	.840	.674	•	•	.622	.622	•	.546	.546	•	•	•	.464	.252		
3/4	1.050	.884	•	•	.824	.824	•	.742	.742	•	•	•	.612	.434		
1	1.315	1.097	•	•	1.049	1.049	•	.957	.957	•	•	•	.815	.599		
1 1/4	1.660	1.442	•	•	1.380	1.380	•	1.278	1.278	•	•	•	1.160	.896		
1 1/2	1.900	1.682	•	•	1.610	1.610	•	1.500	1.500	•	•	•	1.338	1.100		
2	2.375	2.157	•	•	2.067	2.067	•	1.939	1.939	•	•	•	1.687	1.503		
2 1/2	2.875	2.635	•	•	2.469	2.469	•	2.323	2.323	•	•	•	2.125	1.771		
3	3.500	3.260	•	•	3.068	3.068	•	2.900	2.900	•	•	•	2.624	2.300		
3 1/2	4.000	3.760	•	•	3.548	3.548	•	3.364	3.364	•	•	•	•	2.728		
4	4.500	4.260	•	•	4.026	4.026	•	3.826	3.826	•	•	•	3.438	3.152		
5	5.563	5.295	•	•	5.047	5.047	•	4.813	4.813	•	•	•	4.313	4.063		
6	6.625	6.357	•	•	6.065											