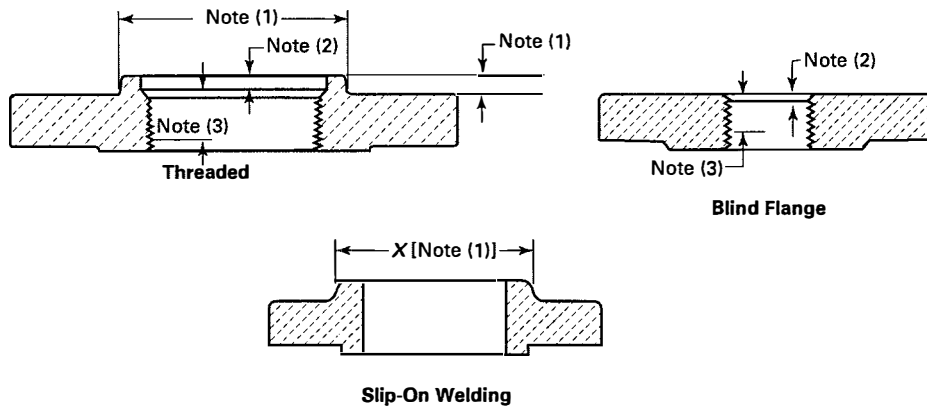


Table II-6 Reducing Threaded and Slip-On Flanges for Classes 150 Through 2500 Pipe Flanges



1	2	3	4	5	6
Nominal Pipe Size [Note (4)]	Smallest Size of Reducing Outlet Requiring Hub Flanges [Note (1)]	Nominal Pipe Size [Note (4)]	Smallest Size of Reducing Outlet Requiring Hub Flanges [Note (1)]	Nominal Pipe Size [Note (4)]	Smallest Size of Reducing Outlet Requiring Hub Flanges [Note (1)]
1	1/2	3 1/2	1 1/2	12	3 1/2
1 1/4	1/2	4	1 1/2	14	3 1/2
1 1/2	1/2	5	1 1/2	16	4
2	1	6	2 1/2	18	4
2 1/2	1 1/4	8	3	20	4
3	1 1/4	10	3 1/2	24	4

NOTES:

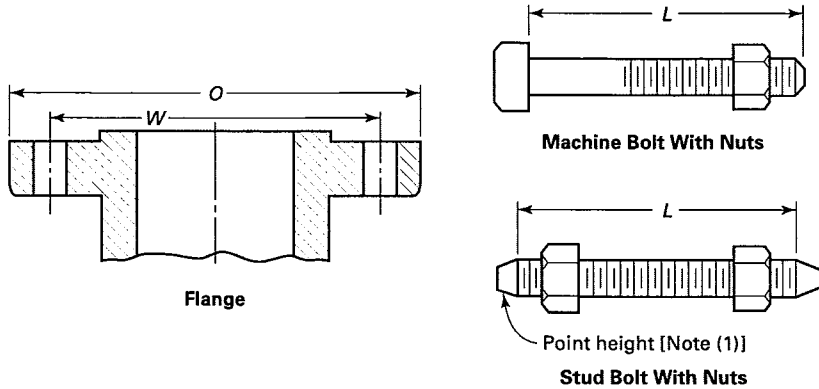
- (1) The hub dimensions shall be at least as large as those of the standard flanges of the size to which the reduction is being made, except flanges reducing to a size smaller than those of columns 2, 4, and 6 may be made from blind flanges (see Example B).
- (2) Class 150 flanges do not have a counterbore. Class 300 and higher pressure flanges will have a depth of counterbore of 0.25 in. for NPS 2 and smaller tapping and 0.38 in. for NPS 2 1/2 and larger. The diameter *Q* of counterbore is the same as that given in the tables of the threaded flanges for the corresponding tapping.
- (3) The minimum length of effective threads shall be at least equal to dimension *T* of the corresponding pressure class threaded flange as shown in the tables but does not necessarily extend for the face of the flange. For thread of threaded flanges, see para. 6.9.
- (4) For the method of designating reducing threaded and reducing slip-on flanges, see para. 3.3 and the example below.

EXAMPLES:

- (1) The size designation is NPS 6 × 2 1/2 — Class 300 reducing threaded flange. This flange has the following dimensions:
 NPS 2 1/2 = taper pipe thread tapping (ASME B1.20.1)
 12.5 in. = diameter of regular NPS 6 Class 300 threaded flange
 1.44 in. = thickness of regular NPS 6 Class 300 threaded flange
 7.0 in. = diameter of hub for regular NPS 5 Class 300 threaded flange. Hub diameter may be one size smaller to reduce machining. In this example, a hub diameter of NPS 2 1/2 would be the smallest acceptable.
 0.62 in. = height of hub for regular NPS 5 Class 300 threaded flange
 Other dimensions the same as for regular NPS 6 Class 300 threaded flange, Table II-12.
- (2) The size designation is NPS 6 × 2 — Class 300 reducing threaded flange. Use regular NPS 6 Class 300 blind flange tapped with NPS 2 taper pipe thread (ASME B1.20.1).

(17)

Table II-7 Templates for Drilling Class 150 Pipe Flanges and Flanged Fittings



Nominal Pipe Size, NPS	Outside Diameter of Flange, O	Drilling [Notes (2), (3)]				Length of Bolts, L [Note (4)]		
		Diameter of Bolt Circle, W	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Stud Bolts [Note (1)]		Machine Bolts
						Raised Face 0.06 in.	Ring Joint	Raised Face 0.06 in.
1/2	3.50	2.38	5/8	4	1/2	2.25	...	2.00
3/4	3.88	2.75	5/8	4	1/2	2.50	...	2.00
1	4.25	3.12	5/8	4	1/2	2.50	3.00	2.25
1 1/4	4.62	3.50	5/8	4	1/2	2.75	3.25	2.25
1 1/2	5.00	3.88	5/8	4	1/2	2.75	3.25	2.50
2	6.00	4.75	3/4	4	5/8	3.25	3.75	2.75
2 1/2	7.00	5.50	3/4	4	5/8	3.50	4.00	3.00
3	7.50	6.00	3/4	4	5/8	3.50	4.00	3.00
3 1/2	8.50	7.00	3/4	8	5/8	3.50	4.00	3.00
4	9.00	7.50	3/4	8	5/8	3.50	4.00	3.00
5	10.00	8.50	7/8	8	3/4	3.75	4.25	3.25
6	11.00	9.50	7/8	8	3/4	4.00	4.50	3.25
8	13.50	11.75	7/8	8	3/4	4.25	4.75	3.50
10	16.00	14.25	1	12	7/8	4.50	5.00	4.00
12	19.00	17.00	1	12	7/8	4.75	5.25	4.00
14	21.00	18.75	1 1/8	12	1	5.25	5.75	4.50
16	23.50	21.25	1 1/8	16	1	5.25	5.75	4.50
18	25.00	22.75	1 1/4	16	1 1/8	5.75	6.25	5.00
20	27.50	25.00	1 1/4	20	1 1/8	6.25	6.75	5.50
22	29.50	27.25	1 3/8	20	1 1/4	6.75	7.25	6.00
24	32.00	29.50	1 3/8	20	1 1/4	6.75	7.25	6.00

GENERAL NOTES:

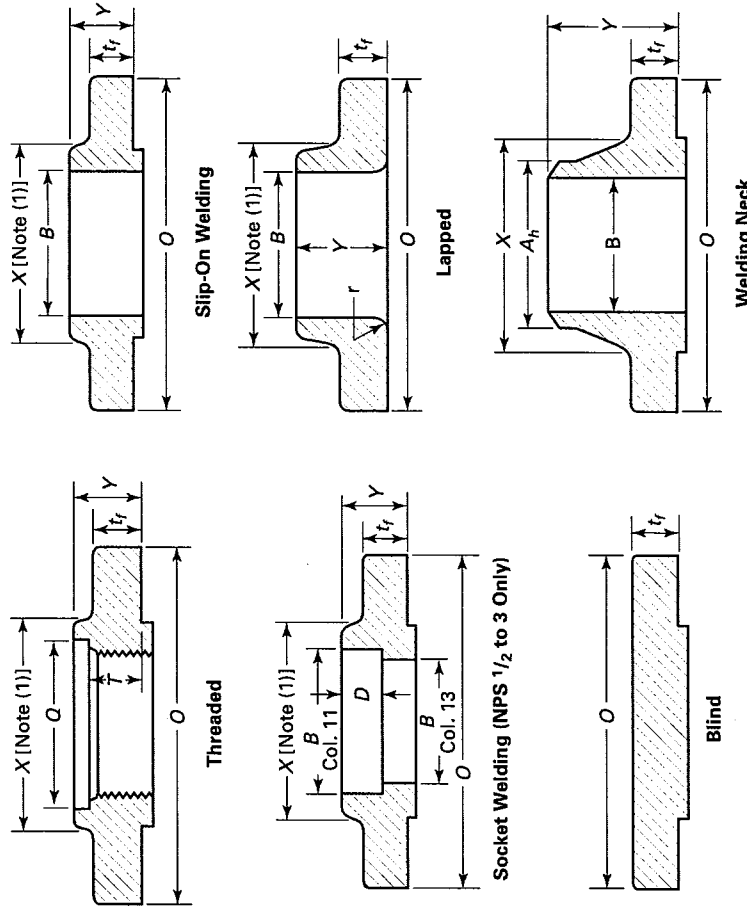
- (a) Dimensions are in inches.
- (b) For other dimensions, see Tables II-8 and II-9.

NOTES:

- (1) The length of the stud bolt does not include the height of the points (see para. 6.10.2).
- (2) For flange bolt holes, see para. 6.5.
- (3) For spot facing, see para. 6.6.
- (4) Bolt lengths not shown in the table may be determined in accordance with Nonmandatory Appendix C (see para. 6.10.2).

ASME B16.5-2017

Table II-8 Dimensions of Class 150 Flanges



1	2	3	4	5	6	Length Through Hub			Bore			14	15	
						7	8	9	10	11	12			13
Nominal Pipe Size	Outside Diameter of Flange, O	Minimum Thickness of Flange, t_f [Notes (2)-(4)]	Minimum Thickness of Lap Joint	Minimum Diameter of Hub, X	Diameter Beginning of Chamfer Welding Neck, A_h [Note (5)]	Threaded Slip-On Socket Welding, Y	Welding Neck, Lapped, Y	Welding Neck, Lapped, Y	Minimum Thread Length Threaded, T [Note (6)]	Minimum Slip-On Socket Welding, B	Minimum Slip-On Socket Welding, Lapped, B	Welding Neck/Socket Welding, B [Note (7)]	Corner Bore Radius of Lapped Flange and Pipe, r	Depth of Socket, D
$3/4$	3.88	0.44	0.50	1.50	1.05	0.56	0.62	2.00	0.62	1.09	1.11	0.82	0.12	0.44
1	4.25	0.50	0.56	1.94	1.32	0.62	0.69	2.12	0.69	1.36	1.38	1.05	0.12	0.50
$1 1/4$	4.62	0.56	0.62	2.31	1.66	0.75	0.81	2.19	0.81	1.70	1.72	1.38	0.19	0.56
$1 1/2$	5.00	0.62	0.69	2.56	1.90	0.81	0.88	2.38	0.88	1.95	1.97	1.61	0.25	0.62
2	6.00	0.69	0.75	3.06	2.38	0.94	1.00	2.44	1.00	2.44	2.46	2.07	0.31	0.69

(17)

Table II-8 Dimensions of Class 150 Flanges (Cont'd)

1	2	3	4	5	6	7 Length Through Hub				10	11 Bore		13	14	15
						Diameter Beginning of Chamfer		Threaded Slip-On Socket			Welding Neck, Lapped					Minimum Thread Length Threaded		Minimum Slip-On Socket Welding		Welding Neck/Socket Welding		Corner Bore Radius of Lapped Flange and Pipe, and Socket Depth
Nominal Pipe Size	Outside Diameter O	Minimum Thickness of Flange, t_f [Notes (2)-(4)]	Minimum Thickness of Lap Joint	Diameter of Hub, X	Welding Neck, A_h [Note (5)]	Threaded Slip-On Socket Welding, Y	Lapped Socket Welding, Y	Welding Neck, Y	Minimum Thread Length Threaded, T [Note (6)]	Minimum Slip-On Socket Welding, B	Minimum Slip-On Socket Welding, B	Welding Neck/Socket Welding, B	Welding Neck/Socket Welding, B	Corner Bore Radius of Lapped Flange and Pipe, r	Depth of Socket, D
2½	7.00	0.81	0.88	3.56	2.88	1.06	1.12	2.69	1.12	2.94	2.97	2.47	2.47	0.31	0.75
3	7.50	0.88	0.94	4.25	3.50	1.12	1.19	2.69	1.19	3.57	3.60	3.07	3.07	0.38	0.81
3½	8.50	0.88	0.94	4.81	4.00	1.19	1.25	2.75	1.25	4.07	4.10	3.55	3.55	0.38	...
4	9.00	0.88	0.94	5.31	4.50	1.25	1.31	2.94	1.31	4.57	4.60	4.03	4.03	0.44	...
5	10.00	0.88	0.94	6.44	5.56	1.38	1.44	3.44	1.44	5.66	5.69	5.05	5.05	0.44	...
6	11.00	0.94	1.00	7.56	6.63	1.50	1.56	3.44	1.56	6.72	6.75	6.07	6.07	0.50	...
8	13.50	1.06	1.12	9.69	8.63	1.69	1.75	3.94	1.75	8.72	8.75	7.98	7.98	0.50	...
10	16.00	1.12	1.19	12.00	10.75	1.88	1.94	3.94	1.94	10.88	10.92	10.02	10.02	0.50	...
12	19.00	1.19	1.25	14.38	12.75	2.12	2.19	4.44	2.19	12.88	12.92	12.00	12.00	0.50	...
14	21.00	1.31	1.38	15.75	14.00	2.19	3.12	4.94	2.25	14.14	14.18	Note (8)	Note (8)	0.50	...
16	23.50	1.38	1.44	18.00	16.00	2.44	3.44	4.94	2.50	16.16	16.19	Note (8)	Note (8)	0.50	...
18	25.00	1.50	1.56	19.88	18.00	2.62	3.81	5.44	2.69	18.18	18.20	Note (8)	Note (8)	0.50	...
20	27.50	1.62	1.69	22.00	20.00	2.81	4.06	5.62	2.88	20.20	20.25	Note (8)	Note (8)	0.50	...
22	29.50	1.75	1.81	24.00	22.00	3.06	4.25	5.82	...	22.22	22.25	Note (8)	Note (8)	0.50	...
24	32.00	1.81	1.88	26.12	24.00	3.19	4.38	5.94	3.25	24.25	24.25	Note (8)	Note (8)	0.50	...

GENERAL NOTES:

- (a) Dimensions are in inches.
- (b) For tolerances, see section 7.
- (c) For facings, see para. 6.4.
- (d) For flange bolt holes, see para. 6.5 and Table II-7.
- (e) For spot facing, see para. 6.6.
- (f) For reducing threaded and slip-on flanges, see Table II-6.
- (g) Blind flanges may be made with or without hubs at the manufacturer's option.
- (h) For reducing welding neck flanges, see para. 6.8.

NOTES:

- (1) This dimension is for the large end of the hub, which may be straight or tapered. Taper shall not exceed 7 deg on threaded, slip-on, socket-welding, and lapped flanges.
- (2) The minimum thickness of these loose flanges, in sizes NPS 3½ and smaller, is slightly greater than the thickness of flanges on fittings, Table II-9, which are reinforced by being cast integral with the body of the fitting.
- (3) When these flanges are required with flat face, the flat face may be either the full t_f dimension thickness plus 0.06 in. or the t_f dimension thickness without the raised face height. See para. 6.3.2 for additional restrictions.
- (4) The flange dimensions illustrated are for regularly furnished 0.06-in. raised face (except lapped), for requirements of other facings, see Figure II-6.
- (5) For welding end bevel, see para. 6.7.
- (6) For thread of threaded flanges, see para. 6.9.

ASME B16.5-2017

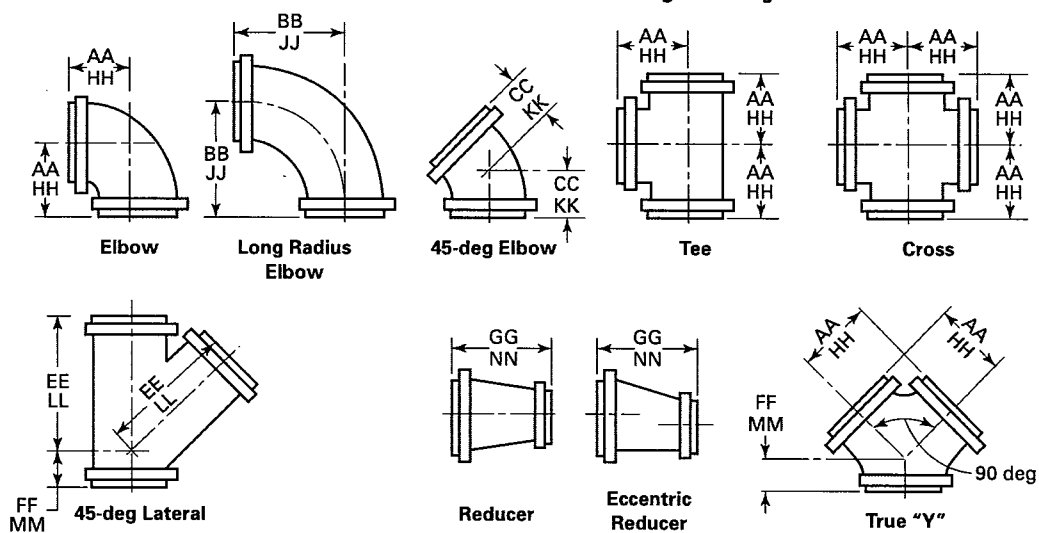
Table II-8 Dimensions of Class 150 Flanges (Cont'd)

(17)

NOTES (Cont'd):

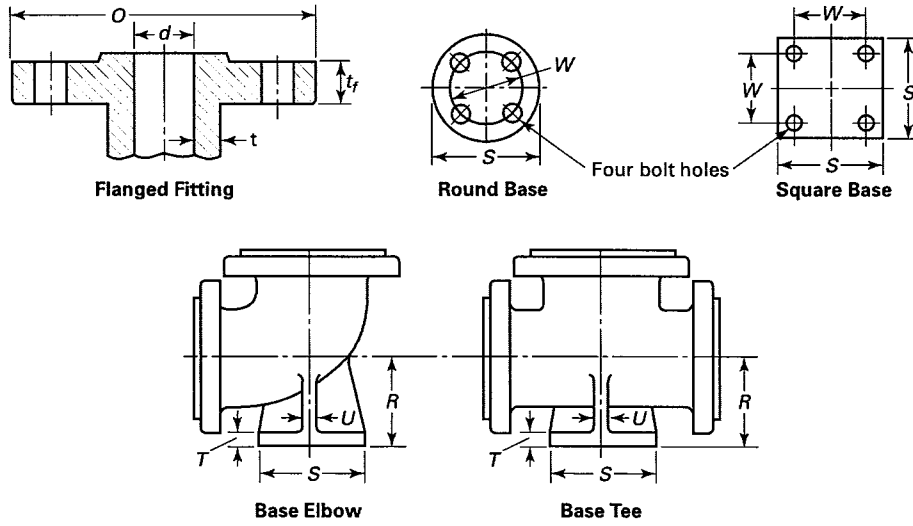
- (7) Dimensions in column 13 correspond to the inside diameters of pipe as given in ASME B36.10M for standard wall pipe. The thickness of standard wall is the same as Schedule 40 in sizes NPS 10 and smaller. Tolerances in para. 7.5.2 apply. These bore sizes are furnished unless otherwise specified by the purchaser.
- (8) To be specified by the purchaser.

Table II-9 Dimensions of Class 150 Flanged Fittings



1	2	3	4	5	6	7	8	9	10	11	12	
Nominal Pipe Size, NPS	Outside Diameter of Flange, <i>O</i>	Minimum Thickness of Flange, <i>t_f</i> [Notes (1)-(3)]	Minimum Wall Thickness of Fitting, <i>t_m</i>	Inside Diameter of Fitting, <i>d</i>	0.06-in. Raised Face (Flange Edge) [Note (4)]						Ring Joint [Note (4)]	
					Center-to-Surface of Raised Face Elbow, Tee, Cross, and True "Y," <i>AA</i>	Center-to-Surface of Raised Face Long Radius Elbow, <i>BB</i>	Center-to-Surface of Raised Face 45-deg Elbow, <i>CC</i>	Long Center-to-Surface of Raised Face Lateral, <i>EE</i>	Short Center-to-Surface of Raised Face True "Y," <i>FF</i>	Contact Surface-to-Surface of Raised Face Reducer, <i>GG</i> [Note (5)]	Center-to-End Elbow Tee, Cross, and True "Y," <i>HH</i> [Note (6)]	
1/2	3.50	0.31	0.11	0.50	...	...	...	...	...	...	...
3/4	3.88	0.34	0.12	0.75	...	...	...	...	...	...	...
1	4.25	0.38	0.16	1.00	3.50	5.00	1.75	5.75	1.75	4.50	3.75	
1 1/4	4.62	0.44	0.19	1.25	3.75	5.50	2.00	6.25	1.75	4.50	4.00	
1 1/2	5.00	0.50	0.19	1.50	4.00	6.00	2.25	7.00	2.00	4.50	4.25	
2	6.00	0.56	0.22	2.00	4.50	6.50	2.50	8.00	2.50	5.00	4.75	
2 1/2	7.00	0.62	0.22	2.50	5.00	7.00	3.00	9.50	2.50	5.50	5.25	
3	7.50	0.69	0.22	3.00	5.50	7.75	3.00	10.00	3.00	6.00	5.75	
3 1/2	8.50	0.75	0.25	3.50	6.00	8.50	3.50	11.50	3.00	6.50	6.25	
4	9.00	0.88	0.25	4.00	6.50	9.00	4.00	12.00	3.00	7.00	6.75	
5	10.00	0.88	0.28	5.00	7.50	10.25	4.50	13.50	3.50	8.00	7.75	
6	11.00	0.94	0.28	6.00	8.00	11.50	5.00	14.50	3.50	9.00	8.25	
8	13.50	1.06	0.31	8.00	9.00	14.00	5.50	17.50	4.50	11.00	9.25	
10	16.00	1.12	0.34	10.00	11.00	16.50	6.50	20.50	5.00	12.00	11.25	
12	19.00	1.19	0.38	12.00	12.00	19.00	7.50	24.50	6.50	14.00	12.25	
14	21.00	1.31	0.41	13.25	14.00	21.50	7.50	27.00	6.00	16.00	14.25	
16	23.50	1.38	0.44	15.25	15.00	24.00	8.00	30.00	6.50	18.00	15.25	
18	25.00	1.50	0.47	17.25	16.50	26.50	8.50	32.00	7.00	19.00	16.75	
20	27.50	1.62	0.50	19.25	18.00	29.00	9.50	35.00	8.00	20.00	18.25	
24	32.00	1.81	0.57	23.25	22.00	34.00	11.00	40.50	9.00	24.00	22.25	

Table II-9 Dimensions of Class 150 Flanged Fittings (Cont'd)



13	14	15	16	17	18	19	20	21	22	23	1	
Ring Joint [Note (4)]										Base Drilling [Note (11)]		
Center-to-End Long Radius Elbow, JJ [Note (6)]	Center-to-End 45-deg Elbow, KK [Note (6)]	Long Center-to-End Lateral, LL [Note (6)]	Short Center-to-End Lateral and True "Y," MM [Note (6)]	End-to-End Reducer, NN [Notes (5), (6)]	Center-to-Base, R [Notes (7)-(9)]	Diameter of Round Base or Width of Square Base, S [Note (7)]	Thickness of Base, T [Notes (7)-(10)]	Thickness of Ribs, U [Note (7)]	Bolt Circle or Bolt Spacing, W	Diameter of Drilled Holes	Nominal Pipe Size, NPS	
...	...	...	...	...	...	...	...	...	...	...	1/2
...	...	...	...	...	...	...	...	...	...	...	3/4
5.25	2.00	6.00	2.00	...	...	...	...	...	...	...	1
5.75	2.25	6.50	2.00	...	...	...	...	...	...	...	1 1/4
6.25	2.50	7.25	2.25	...	...	...	...	...	...	...	1 1/2
6.75	2.75	8.25	2.75	...	4.12	4.62	0.50	0.50	3.50	5/8	2	
7.25	3.25	9.75	2.75	...	4.50	4.62	0.50	0.50	3.50	5/8	2 1/2	
8.00	3.25	10.25	3.25	...	4.88	5.00	0.56	0.56	3.88	5/8	3	
8.75	3.75	11.75	3.25	...	5.25	5.00	0.56	0.56	3.88	5/8	3 1/2	
9.25	4.25	12.25	3.25	...	5.50	6.00	0.62	0.62	4.75	3/4	4	
10.50	4.75	13.75	3.75	...	6.25	7.00	0.69	0.65	5.50	3/4	5	
11.75	5.25	14.75	3.75	...	7.00	7.00	0.69	0.65	5.50	3/4	6	
14.25	5.75	17.75	4.75	...	8.38	9.00	0.94	0.94	7.50	3/4	8	
16.75	6.75	20.75	5.25	...	9.75	9.00	0.94	0.94	7.50	3/4	10	
19.25	7.75	24.75	5.75	...	11.25	11.00	1.00	1.00	9.50	7/8	12	
21.75	7.75	27.25	6.25	...	12.50	11.00	1.00	1.00	9.50	7/8	14	
24.25	8.25	30.25	6.75	...	13.75	11.00	1.00	1.00	9.50	7/8	16	
26.75	8.75	32.25	7.25	...	15.00	13.50	1.12	1.12	11.75	7/8	18	
29.25	9.75	35.25	8.25	...	16.00	13.50	1.12	1.12	11.75	7/8	20	
34.25	11.25	40.75	9.25	...	18.50	13.50	1.12	1.12	11.75	7/8	24	