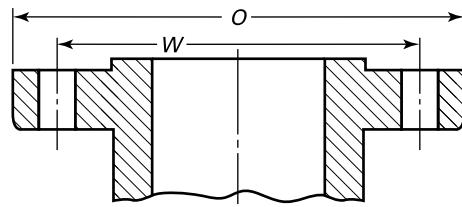
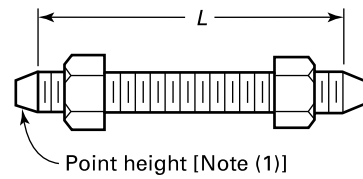


Table 21 Templates for Drilling Class 2500 Pipe Flanges

(20)



Flange



Stud Bolt With Nuts

1	2	3	4	5	6	7	8	9
Nominal Pipe Size, NPS	Outside Diameter of Flange, <i>O</i>	Drilling (2), (3)				Length of Bolts, <i>L</i> (1), (4)		
		Diameter of Bolt Circle, <i>W</i>	Diameter of Bolt Holes, in.	Number of Bolts	Diameter of Bolts, in.	6.4-mm Raised Face	Male and Female/ Tongue and Groove	Ring Joint
1/2	133	88.9	7/8	4	3/4	120	115	120
3/4	140	95.2	7/8	4	3/4	125	120	125
1	159	108.0	1	4	7/8	140	135	140
1 1/4	184	130.0	1 1/8	4	1	150	145	150
1 1/2	203	146.0	1 1/4	4	1 1/8	170	165	170
2	235	171.4	1 1/8	8	1	180	170	180
2 1/2	267	196.8	1 1/4	8	1 1/8	195	190	205
3	305	228.6	1 3/8	8	1 1/4	220	215	230
4	356	273.0	1 5/8	8	1 1/2	255	250	260
5	419	323.8	1 7/8	8	1 3/4	300	290	310
6	483	368.3	2 1/8	8	2	345	335	355
8	552	438.2	2 1/8	12	2	380	375	395
10	673	539.8	2 5/8	12	2 1/2	490	485	510
12	762	619.3	2 7/8	12	2 3/4	540	535	560

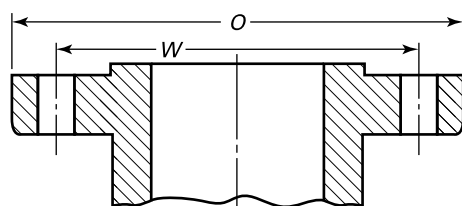
GENERAL NOTES:

- (a) Dimensions are in millimeters, except for diameters of bolts and bolt holes, which are in inches.
 (b) For other dimensions, see Table 22.

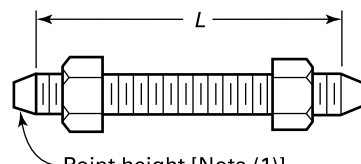
NOTES:

- (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 with Nonmandatory Appendix C (see para. 6.10.2).

Table 21C Templates for Drilling Class 2500 Pipe Flanges



Flange



Point height [Note (1)]

Stud Bolt With Nuts

1	2	3	4	5	6	7	8	9
Nominal Pipe Size	Outside Diameter of Flange, <i>O</i>	Drilling (2), (3)				Length of Bolts, <i>L</i> (1), (4)		
		Diameter of Bolt Circle, <i>W</i>	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Raised Face 0.25 in.	Male and Female/ Tongue and Groove	Ring Joint
1/2	5.25	3.50	7/8	4	3/4	4.75	4.50	4.75
3/4	5.50	3.75	7/8	4	3/4	5.00	4.75	5.00
1	6.25	4.25	1	4	7/8	5.50	5.25	5.50
1 1/4	7.25	5.12	1 1/8	4	1	6.00	5.75	6.00
1 1/2	8.00	5.75	1 1/4	4	1 1/8	6.75	6.50	6.75
2	9.25	6.75	1 1/8	8	1	7.00	6.75	7.00
2 1/2	10.50	7.75	1 1/4	8	1 1/8	7.75	7.50	8.00
3	12.00	9.00	1 3/8	8	1 1/4	8.75	8.50	9.00
4	14.00	10.75	1 5/8	8	1 1/2	10.00	9.75	10.25
5	16.50	12.75	1 7/8	8	1 3/4	11.75	11.50	12.25
6	19.00	14.50	2 1/8	8	2	13.50	13.25	14.00
8	21.75	17.25	2 1/8	12	2	15.00	14.75	15.50
10	26.50	21.25	2 5/8	12	2 1/2	19.25	19.00	20.00
12	30.00	24.38	2 7/8	12	2 3/4	21.25	21.00	22.00

GENERAL NOTES:

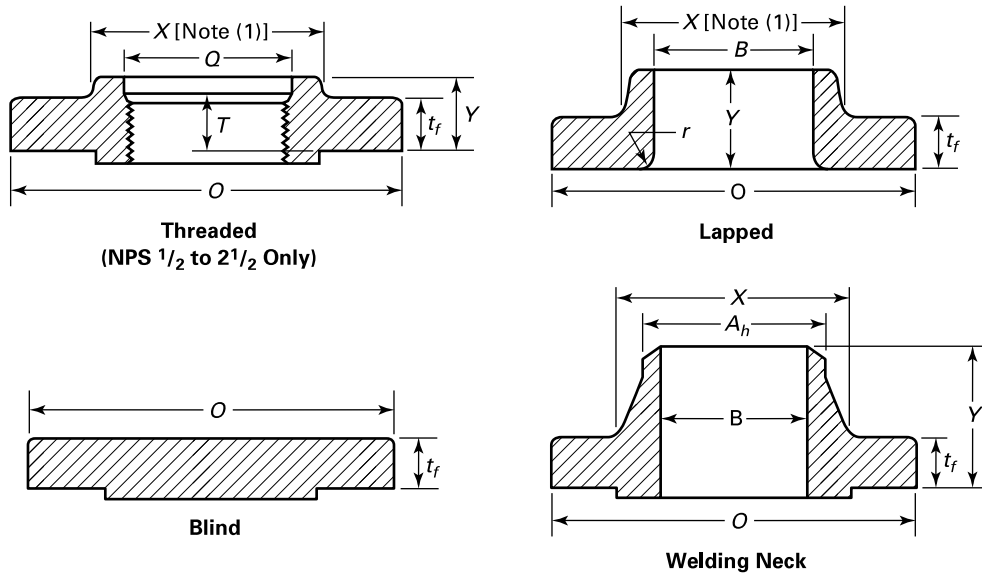
- (a) Dimensions are in inches.
 (b) For other dimensions, see Table 22C.

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).

Table 22 Dimensions of Class 2500 Flanges

(20)



1	2	3	4	5	6	7	8	9	10	11	12	13
Nom. Pipe Size, NPS	Outside Diam. of Flange, O	Min. Thickness of Flange, t_f	Diam. of Hub, X	Hub Diam. Beginning of Chamfer Welding Neck, A_h (2)	Length Through Hub			Minimum Thread Length Threaded Flange, T (3)	Bore		Corner Bore Radius of Lapped Flange and Pipe, r	Minimum Counterbore Threaded Flange, Q
					Threaded, Y	Lapped, Y	Welding Neck, Y		Min. Lapped, B	Welding Neck, B		
1/2	133	30.2	43	21.3	40	40	73	28	22.9	(4)	3	23.6
3/4	140	31.8	51	26.7	43	43	79	32	28.2	(4)	3	29.0
1	159	35.1	57	33.5	48	48	89	35	35.1	(4)	3	35.8
1 1/4	184	38.1	73	42.2	52	52	95	38	43.7	(4)	5	44.4
1 1/2	203	44.4	79	48.3	60	60	111	44	50.0	(4)	6	50.5
2	235	50.8	95	60.5	70	70	127	51	62.5	(4)	8	63.5
2 1/2	267	57.2	114	73.2	79	79	143	57	75.4	(4)	8	76.2
3	305	66.5	133	88.9	...	92	168	...	91.4	(4)	10	...
4	356	76.2	165	114.3	...	108	190	...	116.8	(4)	11	...
5	419	91.9	203	141.2	...	130	229	...	144.5	(4)	11	...
6	483	108.0	235	168.4	...	152	273	...	171.4	(4)	13	...

Table 22 Dimensions of Class 2500 Flanges (Cont'd)

1	2	3	4	5	6	7	8	9	10	11	12	13
Nom. Pipe Size, NPS	Outside Diam. of Flange, <i>O</i>	Min. Thickness of Flange, <i>t_f</i>	Diam. of Hub, <i>X</i>	Hub Diam. Beginning of Chamfer Welding Neck, <i>A_h</i> (2)	Length Through Hub			Minimum Thread Length Threaded Flange, <i>T</i> (3)	Bore		Corner Bore Radius of Lapped Flange and Pipe, <i>r</i>	Minimum Counterbore Threaded Flange, <i>Q</i>
					Threaded, <i>Y</i>	Lapped, <i>Y</i>	Welding Neck, <i>Y</i>		Min. Lapped, <i>B</i>	Welding Neck, <i>B</i>		
8	552	127.0	305	219.2	...	178	318	...	222.2	(4)	13	...
10	673	165.1	375	273.0	...	229	419	...	277.4	(4)	13	...
12	762	184.2	441	323.8	...	254	464	...	328.2	(4)	13	...

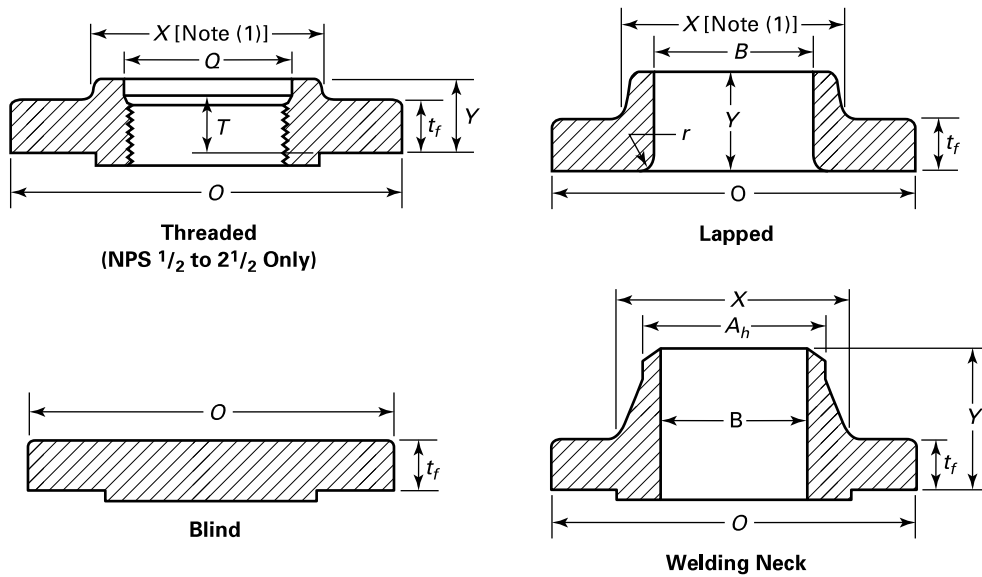
GENERAL NOTES:

- (a) Dimensions are in millimeters, except for diameters of bolts and bolt holes, which 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 21](#).
- (e) For spot facing, see [para 6.6](#).
- (f) For reducing threaded and slip-on flanges, see [Table 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 and lapped flanges. This dimension is defined as the diameter at the intersection between the hub taper and back face of the flange.
- (2) For welding end bevel, see [para. 6.7](#).
- (3) For thread of threaded flanges, see [para. 6.9](#).
- (4) To be specified by the purchaser.

Table 22C Dimensions of Class 2500 Flanges



1	2	3	4	5	Length Through Hub			9	Bore		12	13
Nominal Pipe Size	Outside Diameter of Flange, <i>O</i>	Minimum Thickness of Flange, <i>t_f</i>	Diameter of Hub, <i>X</i>	Hub Diameter Beginning of Chamfer Welding Neck, <i>A_h</i> (2)	Threaded, <i>Y</i>	Lapped, <i>Y</i>	Welding Neck <i>Y</i>	Minimum Thread Length Threaded Flange, <i>T</i> (3)	Minimum Lapped, <i>B</i>	Welding Neck, <i>B</i>	Corner Bore Radius of Lapped Flange and Pipe, <i>r</i>	Minimum Counterbore Threaded Flange, <i>Q</i>
½	5.25	1.19	1.69	0.84	1.56	1.56	2.88	1.12	0.90	(4)	0.12	0.93
¾	5.50	1.25	2.00	1.05	1.69	1.69	3.12	1.25	1.11	(4)	0.12	1.14
1	6.25	1.38	2.25	1.32	1.88	1.88	3.50	1.38	1.38	(4)	0.12	1.41
1¼	7.25	1.50	2.88	1.66	2.06	2.06	3.75	1.50	1.72	(4)	0.19	1.75
1½	8.00	1.75	3.12	1.90	2.38	2.38	4.38	1.75	1.97	(4)	0.25	1.99
2	9.25	2.00	3.75	2.38	2.75	2.75	5.00	2.00	2.46	(4)	0.31	2.50
2½	10.50	2.25	4.50	2.88	3.12	3.12	5.62	2.25	2.97	(4)	0.31	3.00
3	12.00	2.62	5.25	3.50	...	3.62	6.62	...	3.60	(4)	0.38	...
4	14.00	3.00	6.50	4.50	...	4.25	7.50	...	4.60	(4)	0.44	...
5	16.50	3.62	8.00	5.56	...	5.12	9.00	...	5.69	(4)	0.44	...
6	19.00	4.25	9.25	6.63	...	6.00	10.75	...	6.75	(4)	0.50	...
8	21.75	5.00	12.00	8.63	...	7.00	12.50	...	8.75	(4)	0.50	...
10	26.50	6.50	14.75	10.75	...	9.00	16.50	...	10.92	(4)	0.50	...
12	30.00	7.25	17.38	12.75	...	10.00	18.25	...	12.92	(4)	0.50	...

Table 22C Dimensions of Class 2500 Flanges (Cont'd)

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 21C](#).
- (e) For spot facing, see [para. 6.6](#).
- (f) For reducing threaded and slip-on flanges, see [Table 6C](#).
- (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 and lapped flanges.
- (2) For welding end bevel, see [para. 6.7](#).
- (3) For threads in threaded flanges, see [para. 6.9](#).
- (4) To be specified by the purchaser.