Flanges

A flange is designed to connect sections of pipe or tube, or to join the pipe or tube to an assembly such as a pressure vessel, valve or pump. Flanges are joined by bolting, and sealing is completed with the use of gaskets and other sealing methods, and fixed to the piping system by welding or threading.

A comprehensive range of Table D and E flanges to AS 2129, and forged flanges to ASME standards in ratings of class, are stocked by Prochem throughout Australia in sizes DN 15 (NPS 1/2") though to DN 400 (NPS 16").

Larger sizes to DN 1500 (NPS 60") and ratings to Class 2500 are also available through our worldwide network of quality approved mills and stockists.

Standard stocks include 304L and 316L stainless steels, with many other materials available on request including Cr-Mo, low temperature alloys, nickel based alloys and duplex grades. All flanges can be supplied complete with material certificates in strict accordance with the applicable standards, under the control of Prochem's ISO 9001:2008 quality assurance program.

FLANGE FACINGS

The most common types of flange facings are:-

- Flat Face (commonly used on AS 2129 Flanges) and
- Raised Face (commonly used on ASME Flanges)

Other facings include:-

- Ring-Joint (RTJ)
- Tongue and Groove
- Male and Female (Spigot and Recess)
- O-Ring Groove (O-Ring Spigot and O-Ring Groove)

MANUFACTURING STANDARDS

In Australia, flanges are commonly manufactured to the following standards:

1. AS 2129 – Flanges for Pipes, Valves and Fittings

They are commonly known as “Table” flanges, (e.g. Table D) and are usually made from plate or forgings, hence the pipe bore and tube bore slip-on or blind are the most common forms.

The standard covers nominal sizes DN 15 (NPS 1/2") to DN 3000 (NPS 120") in Table D, and DN 1200 (NPS 48") in Table E, but flanges up to DN 400 (NPS 16") are normally available off the shelf, in 304(L) or 316(L) grades. The F and Table H flanges are also reasonably popular and a range is carried off the shelf. The other rating classes of Table A, J, K, R, S and T are less common usage than Table D or E.

2. AS 4087 – Metallic Flanges for Waterworks Purposes

Formerly included in AS 2129, this standard covers nominal sizes of DN 15 (NPS 1/2") to DN 1200 (NPS 48") in various materials and pressure ratings designated by their allowable operating pressure (AOP) – PN Rating – but the nominal size range is limited to DN 50 (NPS 2") to DN 1200 (NPS 48") with pressure ratings of PN 16, PN 21 and PN 35 for stainless steel grades of material. These flanges are generally stocked in sizes DN 50 (NPS 2") to DN 600 (NPS 24") with a PN 16 pressure rating. The other sizes and pressure ratings are available with a lead time.

3. ASME B16.5 - Pipe Flanges and Fittings

These are commonly referred to by their pressure rating class, (e.g. ANSI 150 or 150lb). This standard specifies that for the standard 304(L) and 316(L) grades, the flanges must be forged, (except for blind flanges which can be made from plate).

The most commonly stocked flanges are slip-on, weld neck and blind. (Note that the slip-on flange has a hub similar to the lap joint flange and they should not be misinterpreted).

The standard covers sizes up to DN 15 (NPS 1/2") to DN 600 (NPS 24"), in Class ratings of 150, 300, 400, 600, 900, 1500 and 2500.

4. ASME B16.47 - Large Diameter Steel Flanges

This standard covers the size range of DN 650 (NPS 26") to DN 1500 (NPS 60"). In Series A, Class ratings of 150, 300, 400, 600 and 900 are covered. In Series B, Class ratings of 150, 300, 400, 600 and 900 are covered. These flanges are not commonly stocked, but are available on a lead time.

5. ASME B16.36 - Orifice Flanges

This standard covers DN 25 (NPS 1") to DN 600 (NPS 24") in Class ratings of 300, 400, 600, 900, 1500 and 2500. These flanges are not commonly stocked, but are available on a lead time.

6. ASME B16.48 – Line Blanks

The standard covers a range of line blanks in nominal sizes DN 15 (NPS 1/2") to DN 600 (NPS 24") for installation between ASME B16.5 flanges in Class ratings of 150, 300, 600, 900, 1500 and 2500 and replaces the API 590 Standard. The facing finishes are in accordance with ASME B16.5 and are listed as raised face, male ring-joint and female ring-joint.

The Line Blanks come in different configurations and they are defined as:-

Figure-8 Blank - A figure-8 blank (also known as a spectacle blank or blind) is a pressure retaining plate with one solid end and the other end is open. The two ends are connected with a web or tie bar.

Paddle Blank - A paddle blank (also known as a spade blind) is similar to the solid end of a figure-8 blank. It has a plain radial handle and it is generally used in conjunction with a paddle spacer in larger sizes.

Paddle Spacer - A paddle spacer (also known as a ring spacer) is similar to the open end of a figue-8 blank. It has a plain radial handle and it is generally used in conjunction with a paddle blank in larger sizes.

7. EN 1092-1 Flanges and their Joints – Circular Flanges for Pipes, Valves, Fittings and Accessories, PN Designated – Part 1: Steel Flanges

The flanges listed in this standard have been derived from various other standards around the world. This standard encompasses flanges that were listed in BS 4504-3.1 and ISO 7005-1 and the opportunity was taken to revise some of the technical requirements applicable to DIN origin flanges.

The standard covers nominal sizes DN 10 (NPS 3/8") to DN 4000 (NPS 160") with pressure designations PN 2.5 to PN 400. These flanges are generally stocked in sizes DN 25 (NPS 1") to DN 300 (NPS 12") with a pressure designation of PN 16 in pipe bore and tube bore slip-on, along with blind flanges.

Other standards in less common use or that may appear on old specifications include:

BS 1560 Section 3.1 – Circular Flanges for Pipes, Valves and Fittings (class designated). This has been now superseded by EN 1759-1.

BS 4504-3.1 – Circular flanges for pipes, valves and fittings (PN designated). Steel, cast iron and copper alloy flanges. Specification for steel flanges. This standard has been now superseded by EN 1092-1.

EN 1759-1 – Flanges and their Joints. Circular Flanges for Pipes, Valves, Fittings and Accessories, class-designated. Steel Flanges, NPS 1/2 to 24.

ISO 7005-1 – Pipe Flanges – Part 1: Steel Flanges for Industrial and General Service Piping Systems

DIN – There are a range of DIN standards which cover flanges and these include but are not limited to the DIN 2500 and DIN 2600 series of standards. The DIN 2500 and DIN 2600 series of standards have been replaced by EN 1092-1.

Table Flanges

Raised Face Weld Neck Flanges

Threaded Flanges

Raised Face Slip-On (left)
and Socketweld Flanges

Raised Face Blind Flanges

Blind Plate Flanges

TYPES AND APPLICATIONS

Slip-On Weld Flange – The flange is slipped over the pipe or tube and welded (usually both inside and outside) to provide strength and to prevent leaks. These flanges are at the low cost end of the scale, and do not require high accuracy when cutting the pipe or tube to length. They can sometimes have a boss or hub, and can be made with a bore to suit pipe or tube.

Weld Neck Flange – This flange is designed to be joined to a piping system by butt welding. It is relatively expensive because of its long neck, but is preferred for high stress applications. The neck transmits stresses to the pipe, reducing stress concentrations at the base of the flange. The gradual transition of thickness from the base to the neck to the wall thickness at the butt weld provides important reinforcement of the flange. The bore of the flange matches the bore of the pipe, reducing turbulence and erosion.

Threaded Flange – This is similar to the slip-on flange in outline, but the bore is threaded, thus enabling assembly without welding. This obviously limits its application to relatively low pressure piping systems. The flange may be welded around the joint after assembly, but this is not considered a satisfactory method of increasing its use in pressure applications.

Socketweld Flange – This is similar to a slip-on flange in outline, but the bore is counter-bored to accept the pipe. The diameter of the remaining bore is the same as the inside diameter of the pipe. The flange is attached to the pipe by a fillet weld around the hub of the flange. An optional internal weld may be applied in high stress applications. Its biggest use is in high pressure systems such as hydraulic and steam lines.

Lap Joint Flange – This is again similar to a slip-on flange, but it has a radius at the intersection of the bore and the flange face, and no raised face, to accommodate a lap joint stub end. The face of the stub end forms the gasket face of the flange. This type of flange is used in applications where sections of the piping system need to be dismantled quickly and easily for inspection or replacement, because the stub end is welded to the pipe, not the flange. As the flange is not welded to the pipe, this allows for easy alignment to the mating flange.

Blind Flange – This is a flange without a bore and is used to shut off a piping system or vessel opening. It also permits easy access to vessels or piping systems for inspection purposes.

Loose Flange – This is usually used with a pressed collar, where the flange is placed behind the collar before the collar is welded to the pipe or tube. The flange is not welded, and thus allows for easy alignment. As the flange is not in direct contact with the liquid, alternative materials can be used for the flange.

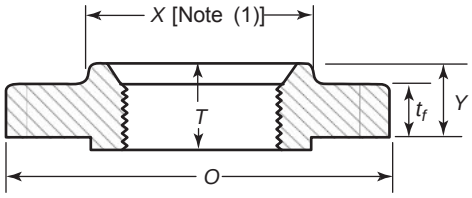
Lap Joint

Flanged Buttweld Outlets and Flanged Buttweld Nipple Outlets

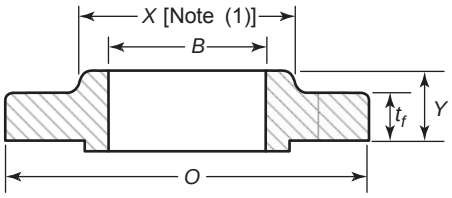
Forged Flanges Class 150 – Class 2500

Spectacle Blind

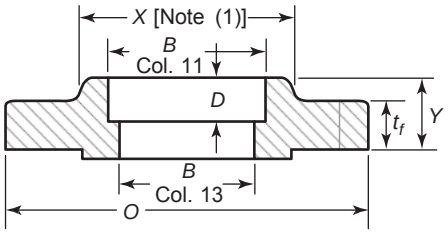
(13)



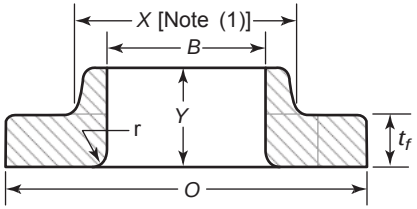
Threaded



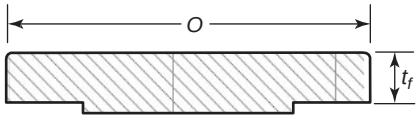
Slip-On Welding



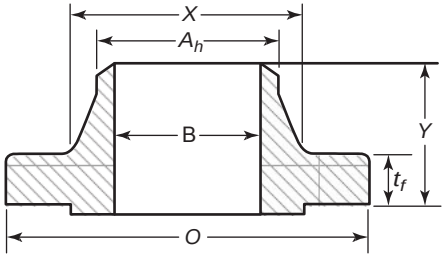
Socket Welding (NPS $^1/_2$ to 3 Only)



Lapped



Blind

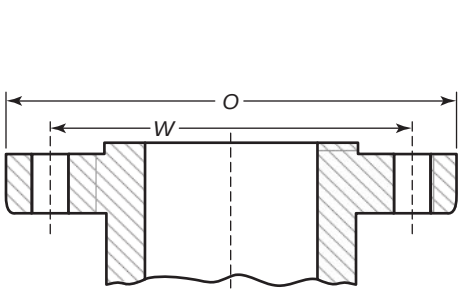


Welding Neck

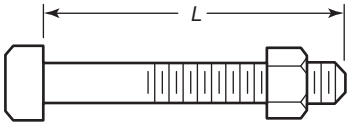
Table 8 Dimensions of Class 150 Flanges (Cont'd)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
						Length Through Hub				Bore				
Nominal Pipe Size, NPS	Outside Diameter of Flange, O	Minimum Thickness of Flange, t_f [Notes (2)-(4)]	Minimum Thickness Lap Joint, t_f	Diameter of Hub, X	Hub Diameter Beginning of Chamfer Welding Neck, A_h [Note (5)]	Threaded/ Slip-on/ Socket Welding, Y	Lapped, Y	Welding Neck, Y	Minimum Thread Length Threaded, T [Note (6)]	Minimum Slip-on/ Socket Welding, B	Minimum Lapped, B	Welding Neck/ Socket Welding, B [Note (7)]	Corner Bore Radius of Lapped Flange and Pipe, r	Depth of Socket, D
½	90	9.6	11.2	30	21.3	14	16	46	16	22.2	22.9	15.8	3	10
¾	100	11.2	12.7	38	26.7	14	16	51	16	27.7	28.2	20.9	3	11
1	110	12.7	14.3	49	33.4	16	17	54	17	34.5	34.9	26.6	3	13
1¼	115	14.3	15.9	59	42.2	19	21	56	21	43.2	43.7	35.1	5	14
1½	125	15.9	17.5	65	48.3	21	22	60	22	49.5	50.0	40.9	6	16
2	150	17.5	19.1	78	60.3	24	25	62	25	61.9	62.5	52.5	8	17
2½	180	20.7	22.3	90	73.0	27	29	68	29	74.6	75.4	62.7	8	19
3	190	22.3	23.9	108	88.9	29	30	68	30	90.7	91.4	77.9	10	21
3½	215	22.3	23.9	122	101.6	30	32	70	32	103.4	104.1	90.1	10	. . .
4	230	22.3	23.9	135	114.3	32	33	75	33	116.1	116.8	102.3	11	. . .
5	255	22.3	23.9	164	141.3	35	36	87	36	143.8	144.4	128.2	11	. . .
6	280	23.9	25.4	192	168.3	38	40	87	40	170.7	171.4	154.1	13	. . .
8	345	27.0	28.6	246	219.1	43	44	100	44	221.5	222.2	202.7	13	. . .
10	405	28.6	30.2	305	273.0	48	49	100	49	276.2	277.4	254.6	13	. . .
12	485	30.2	31.8	365	323.8	54	56	113	56	327.0	328.2	304.8	13	. . .
14	535	33.4	35.0	400	355.6	56	79	125	57	359.2	360.2	Note (8)	13	. . .
16	595	35.0	36.6	457	406.4	62	87	125	64	410.5	411.2	Note (8)	13	. . .
18	635	38.1	39.7	505	457.0	67	97	138	68	461.8	462.3	Note (8)	13	. . .
20	700	41.3	42.9	559	508.0	71	103	143	73	513.1	514.4	Note (8)	13	. . .
24	815	46.1	47.7	663	610.0	81	111	151	83	616.0	616.0	Note (8)	13	. . .

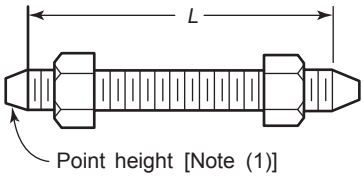
Table 7 Templates for Drilling Class 150 Pipe Flanges and Flanged Fittings (13)



Flange



Machine Bolt With Nuts



Stud Bolt With Nuts

1	2	3	4	5	6	7	8	9
						Length of Bolts, L [Note (4)]		
		Drilling [Notes (2), (3)]				Stud Bolts [Note (1)]		Machine Bolts
Nominal Pipe Size, NPS	Outside Diameter of Flange, O	Diameter of Bolt Circle, W	Diameter of Bolt Holes, in.	Number of Bolts	Diameter of Bolts, in.	2-mm Raised Face	Ring Joint	2-mm Raised Face
1/2	90	60.3	5/8	4	1/2	55	. . .	50
3/4	100	69.9	5/8	4	1/2	65	. . .	50
1	110	79.4	5/8	4	1/2	65	75	55
1 1/4	115	88.9	5/8	4	1/2	70	85	55
1 1/2	125	98.4	5/8	4	1/2	70	85	65
2	150	120.7	3/4	4	5/8	85	95	70
2 1/2	180	139.7	3/4	4	5/8	90	100	75
3	190	152.4	3/4	4	5/8	90	100	75
3 1/2	215	177.8	3/4	8	5/8	90	100	75
4	230	190.5	3/4	8	5/8	90	100	75
5	255	215.9	7/8	8	3/4	95	110	85
6	280	241.3	7/8	8	3/4	100	115	85
8	345	298.5	7/8	8	3/4	110	120	90
10	405	362.0	1	12	7/8	115	125	100
12	485	431.8	1	12	7/8	120	135	100
14	535	476.3	1 1/8	12	1	135	145	115
16	595	539.8	1 1/8	16	1	135	145	115
18	635	577.9	1 1/4	16	1 1/8	145	160	125
20	700	635.0	1 1/4	20	1 1/8	160	170	140
24	815	749.3	1 3/8	20	1 1/4	170	185	150

GENERAL NOTES:

(a) Dimensions of Table 7 are in millimeters, except for diameters of bolts and bolt holes, which are in inch units. For dimensions in inch units, refer to Mandatory Appendix II, Table II-7.

(b) For other dimensions, see Tables 8 and 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).

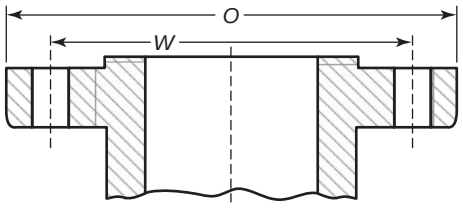
(13)

Table 11 Dimensions of Class 300 Flanges (Cont'd)

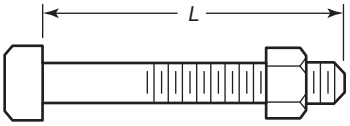
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
						Length Through Hub				Bore					
Nominal Pipe Size, NPS	Outside Diameter of Flange, O	Minimum Thickness of Flange, t_f [Notes (2)–(4)]	Minimum Thickness Lap Joint, t_f	Diameter of Hub, X	Hub Diameter Beginning of Chamfer Welding, Neck, A_h [Note (4)]	Threaded/ Slip-On/ Socket Welding, Y	Lapped, Y	Welding Neck, Y	Minimum Thread Length Threaded, T [Note (5)]	Minimum Slip-On/ Socket Welding, B	Minimum Lapped, B	Welding Neck/ Socket Welding, B [Note (6)]	Corner Radius of Bore of Lapped Flange and Pipe, r	Minimum Counter-bore Threaded Flange, Q	Depth of Socket, D
½	95	12.7	14.3	38	21.3	21	22	51	16	22.2	22.9	15.8	3	23.6	10
¾	115	14.3	15.9	48	26.7	24	25	56	16	27.7	28.2	20.9	3	29.0	11
1	125	15.9	17.5	54	33.4	25	27	60	18	34.5	34.9	26.6	3	35.8	13
1¼	135	17.5	19.1	64	42.2	25	27	64	21	43.2	43.7	35.1	5	44.4	14
1½	155	19.1	20.7	70	48.3	29	30	67	23	49.5	50.0	40.9	6	50.3	16
2	165	20.7	22.3	84	60.3	32	33	68	29	61.9	62.5	52.5	8	63.5	17
2½	190	23.9	25.4	100	73.0	37	38	75	32	74.6	75.4	62.7	8	76.2	19
3	210	27.0	28.6	117	88.9	41	43	78	32	90.7	91.4	77.9	10	92.2	21
3½	230	28.6	30.2	133	101.6	43	44	79	37	103.4	104.1	90.1	10	104.9	. . .
4	255	30.2	31.8	146	114.3	46	48	84	37	116.1	116.8	102.3	11	117.6	. . .
5	280	33.4	35.0	178	141.3	49	51	97	43	143.8	144.4	128.2	11	144.4	. . .
6	320	35.0	36.6	206	168.3	51	52	97	47	170.7	171.4	154.1	13	171.4	. . .
8	380	39.7	41.3	260	219.1	60	62	110	51	221.5	222.2	202.7	13	222.2	. . .
10	445	46.1	47.7	321	273.0	65	95	116	56	276.2	277.4	254.6	13	276.2	. . .
12	520	49.3	50.8	375	323.8	71	102	129	61	327.0	328.2	304.8	13	328.6	. . .
14	585	52.4	54.0	425	355.6	75	111	141	64	359.2	360.2	Note (7)	13	360.4	. . .
16	650	55.6	57.2	483	406.4	81	121	144	69	410.5	411.2	Note (7)	13	411.2	. . .
18	710	58.8	60.4	533	457.0	87	130	157	70	461.8	462.3	Note (7)	13	462.0	. . .
20	775	62.0	63.5	587	508.0	94	140	160	74	513.1	514.4	Note (7)	13	512.8	. . .
24	915	68.3	69.9	702	610.0	105	152	167	83	616.0	616.0	Note (7)	13	614.4	. . .

(13)

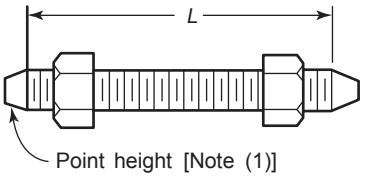
Table 10 Templates for Drilling Class 300 Pipe Flanges and Flanged Fittings



Flange



Machine Bolt With Nuts



Stud Bolt With Nuts

1	2	3	4	5	6	7	8	9
		Drilling [Notes (2), (3)]				Length of Bolts, L [Note (4)]		
						Stud Bolts [Note (1)]		Machine Bolts
Nominal Pipe Size, NPS	Outside Diameter of Flange, O	Diameter of Bolt Circle, W	Diameter of Bolt Holes, in.	Number of Bolts	Diameter of Bolts, in.	2-mm Raised Face	Ring Joint	2-mm Raised Face
1/2	95	66.7	5/8	4	1/2	65	75	55
3/4	115	82.6	3/4	4	5/8	75	90	65
1	125	88.9	3/4	4	5/8	75	90	65
1 1/4	135	98.4	3/4	4	5/8	85	95	70
1 1/2	155	114.3	7/8	4	3/4	90	100	75
2	165	127.0	3/4	8	5/8	90	100	75
2 1/2	190	149.2	7/8	8	3/4	100	115	85
3	210	168.3	7/8	8	3/4	110	120	90
3 1/2	230	184.2	7/8	8	3/4	110	125	95
4	255	200.0	7/8	8	3/4	115	125	95
5	280	235.0	7/8	8	3/4	120	135	110
6	320	269.9	7/8	12	3/4	120	140	110
8	380	330.2	1	12	7/8	140	150	120
10	445	387.4	1 1/8	16	1	160	170	140
12	520	450.8	1 1/4	16	1 1/8	170	185	145
14	585	514.4	1 1/4	20	1 1/8	180	190	160
16	650	571.5	1 3/8	20	1 1/4	190	205	165
18	710	628.6	1 3/8	24	1 1/4	195	210	170
20	775	685.8	1 3/8	24	1 1/4	205	220	185
24	915	812.8	1 5/8	24	1 1/2	230	255	205

GENERAL NOTES:

(a) Dimensions of Table 10 are in millimeters, except for diameters of bolts and bolt holes, which are in inch units. For dimensions in inch units, refer to Mandatory Appendix II, Table II-10.

(b) For other dimensions, see Tables 11 and 12.

NOTES:

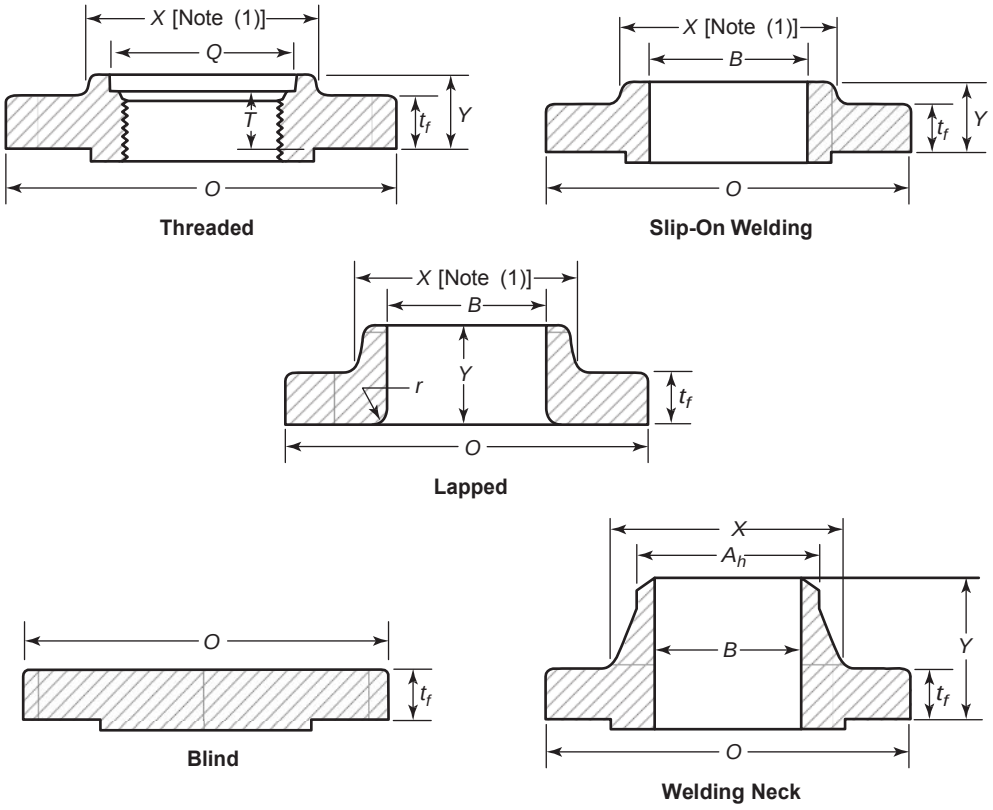
(1) Length of stud bolt does not include the height of the points (see para. 6.10.2).

(2) For flange bolt holes, see para. 6.5.

(3) For spot facing, see para 6.6.

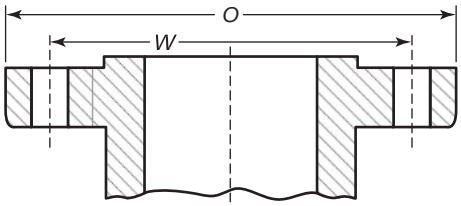
(4) Bolt lengths not shown in the table may be determined in accordance with Nonmandatory Appendix C (see para. 6.10.2).

Table 14 Dimensions of Class 400 Flanges

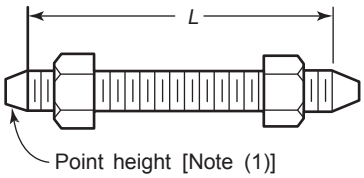


1	2	3	4	5	6	7	8	9	10	11	12	13	14
Nom. Pipe Size, NPS	Outside Diam. of Flange, O	Min. Thickness of Flange, t_f	Diam. of Hub, X	Hub Diam. Beginning of Chamfer Welding Neck, A_h [Note (2)]	Length Through Hub Threaded/ Slip-On, Y	Lapped, Y	Welding Neck, Y	Minimum Thread Length Threaded Flange, T [Note (3)]	Bore Min. Slip-On, B	Min. Lapped, B	Welding Neck, B	Corner Bore Radius of Lapped Flange and Pipe, r	Minimum Counterbore Threaded Flange, Q
½ ¾ 1 1¼ 1½ 2 2½ 3 3½	Use Class 600 dimensions in these sizes [Note (4)]												
4	255	35.0	146	114.3	51	51	89	37	116.1	116.8	Note (5)	11	117.6
5	280	38.1	178	141.3	54	54	102	43	143.8	144.5	Note (5)	11	144.4
6	320	41.3	206	168.3	57	57	103	46	170.7	171.4	Note (5)	13	171.4
8	380	47.7	260	219.1	68	68	117	51	221.5	222.2	Note (5)	13	222.2
10	445	54.0	321	273.0	73	102	124	56	276.2	277.4	Note (5)	13	276.2
12	520	57.2	375	323.8	79	108	137	61	327.0	328.2	Note (5)	13	328.6
14	585	60.4	425	355.6	84	117	149	64	359.2	360.2	Note (5)	13	360.4
16	650	63.5	483	406.4	94	127	152	69	410.5	411.2	Note (5)	13	411.2
18	710	66.7	533	457.0	98	137	165	70	461.8	462.3	Note (5)	13	462.0
20	775	69.9	587	508.0	102	146	168	74	513.1	514.4	Note (5)	13	512.8
24	915	76.2	702	610.0	114	159	175	83	616.0	616.0	Note (5)	13	614.4

Table 13 Templates for Drilling Class 400 Pipe Flanges



Flange



Stud Bolt With Nuts

1	2	3	4	5	6	7	8	9
		Drilling [Notes (2), (3)]				Length of Bolts, L [Notes (1), (4)]		
Nominal Pipe Size, NPS	Outside Diameter of Flange, O	Diameter of Bolt Circle, W	Diameter of Bolt Holes, in.	Number of Bolts	Diameter of Bolts, in.	7-mm Raised Face	Male and Female/ Tongue and Groove	Ring Joint
1/2 3/4 1 1 1/4 1 1/2 2 2 1/2 3 3 1/2	Use Class 600 dimensions in these sizes							
4	255	200.0	1	8	7/8	140	135	140
5	280	235.0	1	8	7/8	145	135	145
6	320	269.9	1	12	7/8	150	145	150
8	380	330.0	1 1/8	12	1	170	165	170
10	445	387.4	1 1/4	16	1 1/8	190	185	190
12	520	450.8	1 3/8	16	1 1/4	205	195	205
14	585	514.4	1 3/8	20	1 1/4	210	205	210
16	650	571.5	1 1/2	20	1 3/8	220	215	220
18	710	628.6	1 1/2	24	1 3/8	230	220	230
20	775	685.8	1 5/8	24	1 1/2	240	235	250
24	915	812.8	1 7/8	24	1 3/4	265	260	280

GENERAL NOTES:

(a) Dimensions of Table 13 are in millimeters, except for the diameter of bolts and bolt holes, which are in inch units. For dimensions in inch units, refer to Mandatory Appendix II, Table II-13.

(b) For other dimensions, see Table 14.

NOTES:

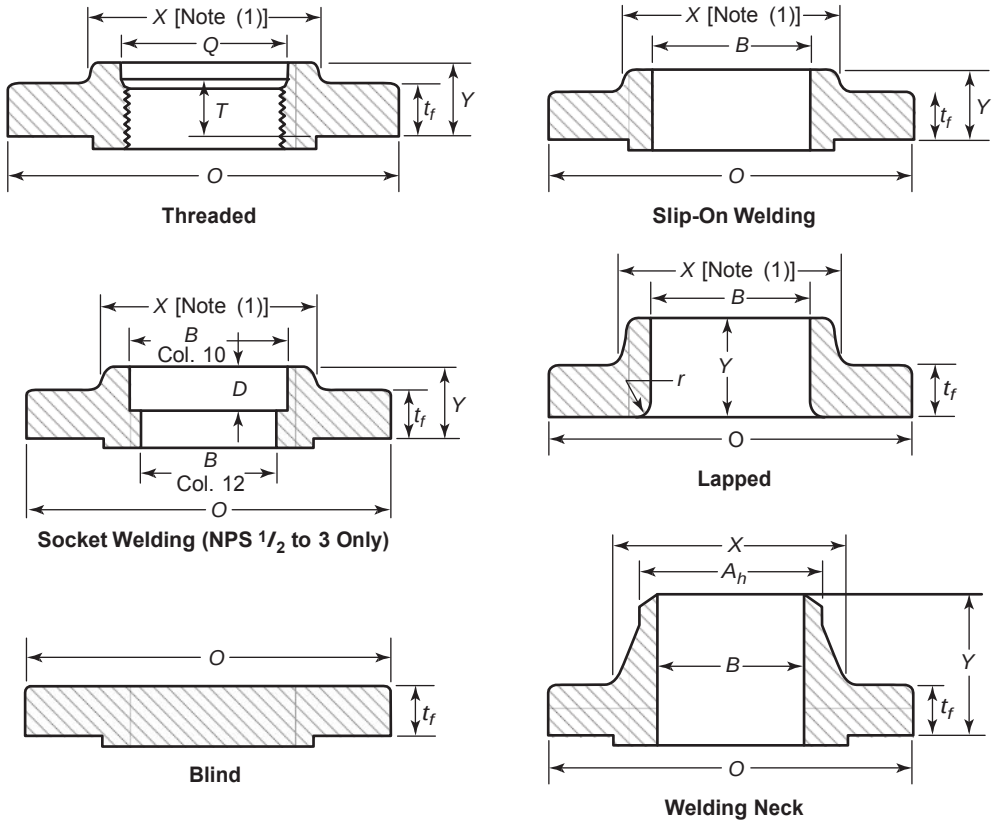
(1) The length of the stud bolt does not include the height of the points. See para. 6.10.2.

(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 16 Dimensions of Class 600 Flanges



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
					Length Through Hub				Bore					
Nominal Pipe Size, NPS	Outside Diameter of Flange, O	Minimum Thickness of Flange, t_f	Diameter of Hub, X	Hub Diameter Beginning of Chamfer Welding Neck, A_h [Note (2)]	Threaded/ Slip-On/ Socket Welding, Y	Lapped, Y	Welding Neck, Y	Minimum Thread Length Threaded Flange, T [Note (3)]	Minimum Slip-On/ Socket Welding, B	Minimum Lapped, B	Welding Neck/ Socket Welding, B	Corner Bore Radius of Lapped Flange and Pipe, r	Minimum Counterbore Threaded Flange, Q	Depth of Socket, D
1/2	95	14.3	38	21.3	22	22	52	16	22.2	22.9	Note (4)	3	23.6	10
3/4	115	15.9	48	26.7	25	25	57	16	27.7	28.2	Note (4)	3	29.0	11
1	125	17.5	54	33.4	27	27	62	18	34.5	34.9	Note (4)	3	35.8	13
1 1/4	135	20.7	64	42.2	29	29	67	21	43.2	43.7	Note (4)	5	44.4	14
1 1/2	155	22.3	70	48.3	32	32	70	23	49.5	50.0	Note (4)	6	50.6	16

Table 16 Dimensions of Class 600 Flanges (Cont'd)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
					Length Through Hub				Bore					
Nominal Pipe Size, NPS	Outside Diameter of Flange, O	Minimum Thickness of Flange, t_f	Diameter of Hub, X	Hub Diameter Beginning of Chamfer Welding Neck, A_h [Note (2)]	Threaded/ Slip-On/ Socket Welding, Y	Lapped, Y	Welding Neck, Y	Minimum Thread Length Threaded Flange, T [Note (3)]	Minimum Slip-On/ Socket Welding, B	Minimum Lapped, B	Welding Neck/ Socket Welding, B	Corner Bore Radius of Lapped Flange and Pipe, r	Minimum Counterbore Threaded Flange, Q	Depth of Socket, D
2	165	25.4	84	60.3	37	37	73	29	61.9	62.5	Note (4)	8	63.5	17
$2\frac{1}{2}$	190	28.6	100	73.0	41	41	79	32	74.6	75.4	Note (4)	8	76.2	19
3	210	31.8	117	88.9	46	46	83	35	90.7	91.4	Note (4)	10	92.2	21
$3\frac{1}{2}$	230	35.0	133	101.6	49	49	86	40	103.4	104.1	Note (4)	10	104.9	. . .
4	275	38.1	152	114.3	54	54	102	42	116.1	116.8	Note (4)	11	117.6	. . .
5	330	44.5	189	141.3	60	60	114	48	143.8	144.4	Note (4)	11	144.4	. . .
6	355	47.7	222	168.3	67	67	117	51	170.7	171.4	Note (4)	13	171.4	. . .
8	420	55.6	273	219.1	76	76	133	58	221.5	222.2	Note (4)	13	222.2	. . .
10	510	63.5	343	273.0	86	111	152	66	276.2	277.4	Note (4)	13	276.2	. . .
12	560	66.7	400	323.8	92	117	156	70	327.0	328.2	Note (4)	13	328.6	. . .
14	605	69.9	432	355.6	94	127	165	74	359.2	360.2	Note (4)	13	360.4	. . .
16	685	76.2	495	406.4	106	140	178	78	410.5	411.2	Note (4)	13	411.2	. . .
18	745	82.6	546	457.0	117	152	184	80	461.8	462.3	Note (4)	13	462.0	. . .
20	815	88.9	610	508.0	127	165	190	83	513.1	514.4	Note (4)	13	512.8	. . .
24	940	101.6	718	610.0	140	184	203	93	616.0	616.0	Note (4)	13	614.4	. . .

GENERAL NOTES:

(a) Dimensions of Table 16 are in millimeters, except for the diameter of the bolts and bolt holes, which are in inch units. For dimensions in inch units, refer to Mandatory Appendix II, Table II-16.

(b) For tolerance, see section 7.

(c) For facings, see para. 6.4.

(d) For flange bolt holes, see para. 6.5 and Table 15.

(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:

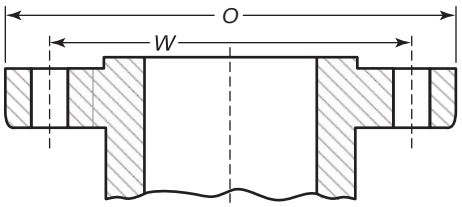
(1) This dimension is for the large end of the hub, which may be straight or tapered. Taper shall not exceed 7 deg on threaded, slip-on, socket-welding, and lapped flanges. This dimension is defined as the diameter at the intersection between the hub taper and back face of the flange.

(2) For welding end bevel, see para. 6.7.

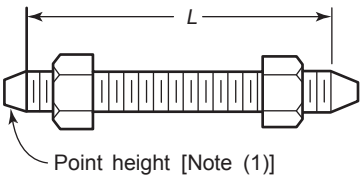
(3) For thread of threaded flanges, see para. 6.9.

(4) To be specified by the Purchaser.

Table 15 Templates for Drilling Class 600 Pipe Flanges and Flanged Fittings



Flange



Stud Bolt With Nuts

1	2	3	4	5	6	7	8	9
		Drilling [Notes (2), (3)]				Length of Bolts, L [Notes (1), (4)]		
Nominal Pipe Size, NPS	Outside Diameter of Flange, O	Diameter of Bolt Circle, W	Diameter of Bolt Holes, in.	Number of Bolts	Diameter of Bolts, in.	7-mm Raised Face	Male and Female/ Tongue and Groove	Ring Joint
1/2	95	66.7	5/8	4	1/2	75	70	75
3/4	115	82.6	3/4	4	5/8	90	85	90
1	125	88.9	3/4	4	5/8	90	85	90
1 1/4	135	98.4	3/4	4	5/8	95	90	95
1 1/2	155	114.3	7/8	4	3/4	110	100	110
2	165	127.0	3/4	8	5/8	110	100	110
2 1/2	190	149.2	7/8	8	3/4	120	115	120
3	210	168.3	7/8	8	3/4	125	120	125
3 1/2	230	184.2	1	8	7/8	140	135	140
4	275	215.9	1	8	7/8	145	140	145
5	330	266.7	1 1/8	8	1	165	160	165
6	355	292.1	1 1/8	12	1	170	165	170
8	420	349.2	1 1/4	12	1 1/8	190	185	195
10	510	431.8	1 3/8	16	1 1/4	215	210	215
12	560	489.0	1 3/8	20	1 1/4	220	215	220
14	605	527.0	1 1/2	20	1 3/8	235	230	235
16	685	603.2	1 5/8	20	1 1/2	255	250	255
18	745	654.0	1 3/4	20	1 5/8	275	265	275
20	815	723.9	1 3/4	24	1 5/8	285	280	290
24	940	838.2	2	24	1 7/8	330	325	335

GENERAL NOTES:

(a) Dimensions of Table 15 are in millimeters, except for the diameters of the bolts and bolt holes, which are expressed in inch units. For dimensions in inch units, refer to Mandatory Appendix II, Table II-15.

(b) For other dimensions, see Table 16.

NOTES:

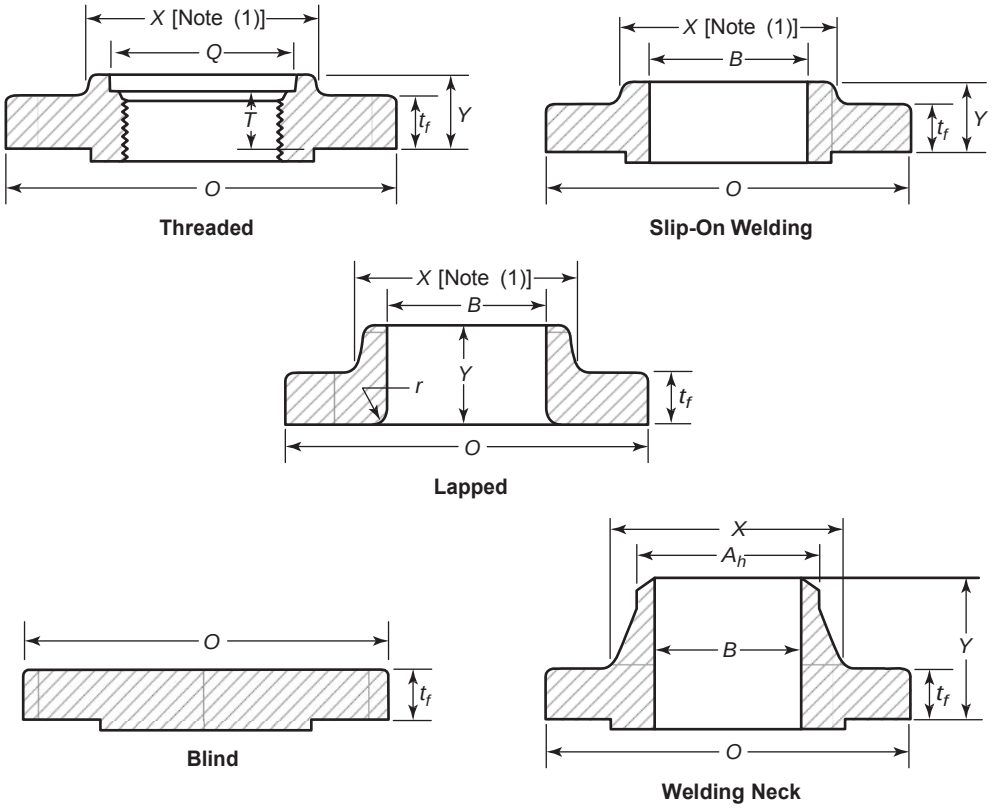
(1) The length of the stud bolt does not include the height of the points (see para 6.10.2).

(2) For flange bolt holes, see para. 6.5.

(3) For spot facing, see para 6.6.

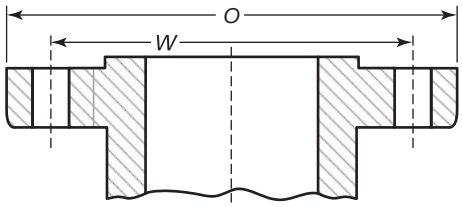
(4) Bolt lengths not shown in the table may be in accordance with Nonmandatory Appendix C (see para. 6.10.2).

Table 18 Dimensions of Class 900 Flanges

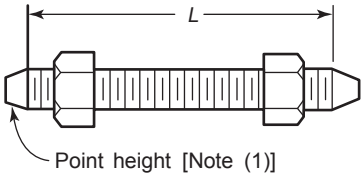


1	2	3	4	5	6	7	8	9	10	11	12	13	14
Nom. Pipe Size, NPS	Outside Diam. of Flange, O	Min. Thickness of Flange, t_f	Diam. of Hub, X	Hub Diam. Beginning of Chamfer Welding Neck, A_h [Note (2)]	Length Through Hub			Minimum Thread Length Threaded Flange, T [Note (3)]	Bore		Welding Neck, B	Corner Bore Radius of Lapped Flange and Pipe, r	Minimum Counterbore Threaded Flange, Q
					Threaded/ Slip-On, Y	Lapped, Y	Welding Neck, Y		Min. Slip-On, B	Min. Lapped, B			
½ ¾ 1 1¼ 1½ 2 2½	Use Class 1500 dimensions in these sizes [Note (4)]												
3	240	38.1	127	88.9	54	54	102	42	90.7	91.4	Note (5)	10	92.2
4	290	44.5	159	114.3	70	70	114	48	116.1	116.8	Note (5)	11	117.6
5	350	50.8	190	141.3	79	79	127	54	143.8	144.4	Note (5)	11	144.4
6	380	55.6	235	168.3	86	86	140	58	170.7	171.4	Note (5)	13	171.4
8	470	63.5	298	219.1	102	114	162	64	221.5	222.2	Note (5)	13	222.2
10	545	69.9	368	273.0	108	127	184	72	276.2	277.4	Note (5)	13	276.2
12	610	79.4	419	323.8	117	143	200	77	327.0	328.2	Note (5)	13	328.6
14	640	85.8	451	355.6	130	156	213	83	359.2	360.2	Note (5)	13	360.4
16	705	88.9	508	406.4	133	165	216	86	410.5	411.2	Note (5)	13	411.2
18	785	101.6	565	457.0	152	190	229	89	461.8	462.3	Note (5)	13	462.0
20	855	108.0	622	508.0	159	210	248	93	513.1	514.4	Note (5)	13	512.8
24	1,040	139.7	749	610.0	203	267	292	102	616.0	616.0	Note (5)	13	614.4

Table 17 Templates for Drilling Class 900 Pipe Flanges and Flanged Fittings



Flange



Stud Bolt With Nuts

1	2	3	4	5	6	7	8	9
Nominal Pipe Size, NPS	Outside Diameter of Flange, O	Drilling [Notes (2), (3)]				Length of Bolts, L [Notes (1), (4)]		
		Diameter of Bolt Circle, W	Diameter of Bolt Holes, in.	Number of Bolts	Diameter of Bolts, in.	7-mm Raised Face	Male and Female/ Tongue and Groove	Ring Joint
1/2 3/4 1 1 1/4 1 1/2 2 2 1/2	Use Class 1500 dimensions in these sizes							
3	240	190.5	1	8	7/8	145	140	145
4	290	235.0	1 1/4	8	1 1/8	170	165	170
5	350	279.4	1 3/8	8	1 1/4	190	185	190
6	380	317.5	1 1/4	12	1 1/8	190	185	195
8	470	393.7	1 1/2	12	1 3/8	220	215	220
10	545	469.9	1 1/2	16	1 3/8	235	230	235
12	610	533.4	1 1/2	20	1 3/8	255	250	255
14	640	558.8	1 5/8	20	1 1/2	275	265	280
16	705	616.0	1 3/4	20	1 5/8	285	280	290
18	785	685.8	2	20	1 7/8	325	320	335
20	855	749.3	2 1/8	20	2	350	345	360
24	1,040	901.7	2 5/8	20	2 1/2	440	430	455

GENERAL NOTES:

(a) Dimensions of Table 17 are in millimeters, except for diameters of bolts and bolt holes, which are in inch units. For dimensions in inch units, refer to Mandatory Appendix II, Table II-17.

(b) For other dimensions, see Tables 18 and 19.

NOTES:

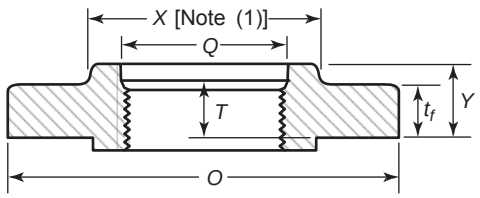
(1) The length of the stud bolt does not include the height of the points (see para 6.10.2).

(2) For flange bolt holes, see para. 6.5.

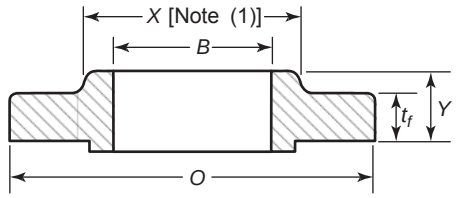
(3) For spot facing, see para. 6.6.

(4) Bolt lengths not shown in the table may be determined in accordance with Nonmandatory Appendix C (see para. 6.10.2).

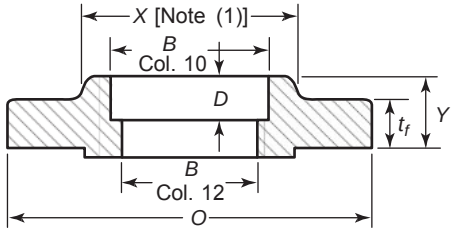
Table 20 Dimensions of Class 1500 Flanges



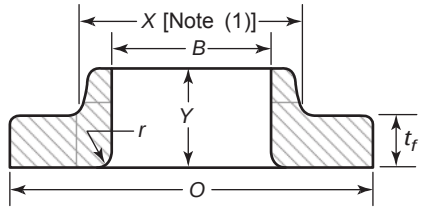
Threaded (NPS 1/2 to 2 1/2 Only)



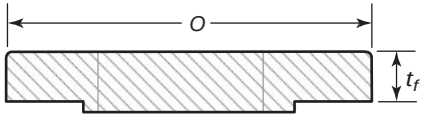
Slip-On Welding (NPS 1/2 to 2 1/2 Only)



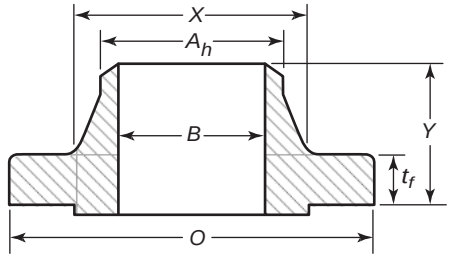
Socket Welding (NPS 1/2 to 2 1/2 Only)



Lapped



Blind



Welding Neck

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
					Length Through Hub				Bore					
Nominal Pipe Size, NPS	Outside Diameter of Flange, O	Minimum Thickness of Flange, t_f	Diameter of Hub, X	Hub Diameter Beginning of Chamfer Welding Neck, A_h [Note (2)]	Threaded/ Slip-On/ Socket Welding, Y	Lapped, Y	Welding Neck, Y	Minimum Thread Length Threaded Flange, T [Note (3)]	Minimum Slip-On/ Socket Welding, B	Minimum Lapped, B	Welding Neck/ Socket Welding, B	Corner Bore Radius of Lapped Flange and Pipe, r	Minimum Counterbore Threaded Flange, Q	Depth of Socket, D
1/2	120	22.3	38	21.3	32	32	60	23	22.2	22.9	Note (4)	3	23.6	10
3/4	130	25.4	44	26.7	35	35	70	26	27.7	28.2	Note (4)	3	29.0	11
1	150	28.6	52	33.4	41	41	73	29	34.5	34.9	Note (4)	3	35.8	13
1 1/4	160	28.6	64	42.2	41	41	73	31	43.2	43.7	Note (4)	5	44.4	14

Table 20 Dimensions of Class 1500 Flanges (Cont'd)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
					Length Through Hub				Bore					
Nominal Pipe Size, NPS	Outside Diameter of Flange, O	Minimum Thickness of Flange, t_f	Diameter of Hub, X	Hub Diameter Beginning of Chamfer Welding Neck, A_h [Note (2)]	Threaded/ Slip-On/ Socket Welding, Y	Lapped, Y	Welding Neck, Y	Minimum Thread Length Threaded Flange, T [Note (3)]	Minimum Slip-On/ Socket Welding, B	Minimum Lapped, B	Welding Neck/ Socket Welding, B	Corner Bore Radius of Lapped Flange and Pipe, r	Minimum Counterbore Threaded Flange, Q	Depth of Socket, D
1½	180	31.8	70	48.3	44	44	83	32	49.5	50.0	Note (4)	6	50.6	16
2	215	38.1	105	60.3	57	57	102	39	61.9	62.5	Note (4)	8	63.5	17
2½	245	41.3	124	73.0	64	64	105	48	74.6	75.4	Note (4)	8	76.2	19
3	265	47.7	133	88.9	. . .	73	117	. . .	. . .	91.4	Note (4)	10	. . .	. . .
4	310	54.0	162	114.3	. . .	90	124	. . .	. . .	116.8	Note (4)	11	. . .	. . .
5	375	73.1	197	141.3	. . .	105	156	. . .	. . .	144.4	Note (4)	11	. . .	. . .
6	395	82.6	229	168.3	. . .	119	171	. . .	. . .	171.4	Note (4)	13	. . .	. . .
8	485	92.1	292	219.1	. . .	143	213	. . .	. . .	222.2	Note (4)	13	. . .	. . .
10	585	108.0	368	273.0	. . .	178	254	. . .	. . .	277.4	Note (4)	13	. . .	. . .
12	675	123.9	451	323.8	. . .	219	283	. . .	. . .	328.2	Note (4)	13	. . .	. . .
14	750	133.4	495	355.6	. . .	241	298	. . .	. . .	360.2	Note (4)	13	. . .	. . .
16	825	146.1	552	406.4	. . .	260	311	. . .	. . .	411.2	Note (4)	13	. . .	. . .
18	915	162.0	597	457.0	. . .	276	327	. . .	. . .	462.3	Note (4)	13	. . .	. . .
20	985	177.8	641	508.0	. . .	292	356	. . .	. . .	514.4	Note (4)	13	. . .	
24	1 170	203.2	762	610.0	. . .	330	406	. . .	. . .	616.0	Note (4)	13	. . .	. . .

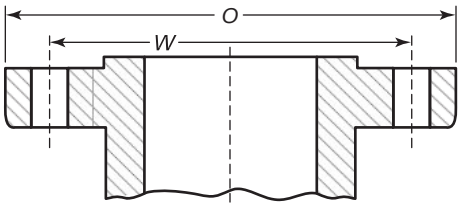
GENERAL NOTES:

(a) Dimensions of Table 20 are in millimeters. For dimensions in inch units, refer to Mandatory Appendix II, Table II-20.
(b) For tolerances, see section 7.
(c) For facings, see para. 6.4.
(d) For flange bolt holes, see para. 6.5 and Table 19.
(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.

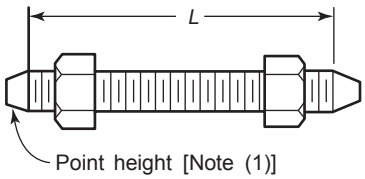
NOTES:

(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, slip-on, socket-welding, 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 19 Templates for Drilling Class 1500 Pipe Flanges



Flange



Stud Bolt With Nuts

1	2	3	4	5	6	7	8	9
		Drilling [Notes (2), (3)]				Length of Bolts, L [Notes (1), (4)]		
Nominal Pipe Size, NPS	Outside Diameter of Flange, O	Diameter of Bolt Circle, W	Diameter of Bolt Holes, in.	Number of Bolts	Diameter of Bolts, in.	7-mm Raised Face	Male and Female/ Tongue and Groove	Ring Joint
1/2	120	82.6	7/8	4	3/4	110	100	110
3/4	130	88.9	7/8	4	3/4	115	110	115
1	150	101.6	1	4	7/8	125	120	125
1 1/4	160	111.1	1	4	7/8	125	120	125
1 1/2	180	123.8	1 1/8	4	1	140	135	140
2	215	165.1	1	8	7/8	145	140	145
2 1/2	245	190.5	1 1/8	8	1	160	150	160
3	265	203.2	1 1/4	8	1 1/8	180	170	180
4	310	241.3	1 3/8	8	1 1/4	195	190	195
5	375	292.1	1 5/8	8	1 1/2	250	240	250
6	395	317.5	1 1/2	12	1 3/8	260	255	265
8	485	393.7	1 3/4	12	1 5/8	290	285	300
10	585	482.6	2	12	1 7/8	335	330	345
12	675	571.5	2 1/8	16	2	375	370	385
14	750	635.0	2 3/8	16	2 1/4	405	400	425
16	825	704.8	2 5/8	16	2 1/2	445	440	470
18	915	774.7	2 7/8	16	2 3/4	495	490	525
20	985	831.8	3 1/8	16	3	540	535	565
24	1 170	990.6	3 5/8	16	3 1/2	615	610	650

GENERAL NOTES:

(a) Dimensions of Table 19 are in millimeters, except for the diameters of the bolts and bolt holes, which are in inch units. For dimensions in inch units, refer to Mandatory Appendix II, Table II-19.

(b) For other dimensions, see Table 20.

NOTES:

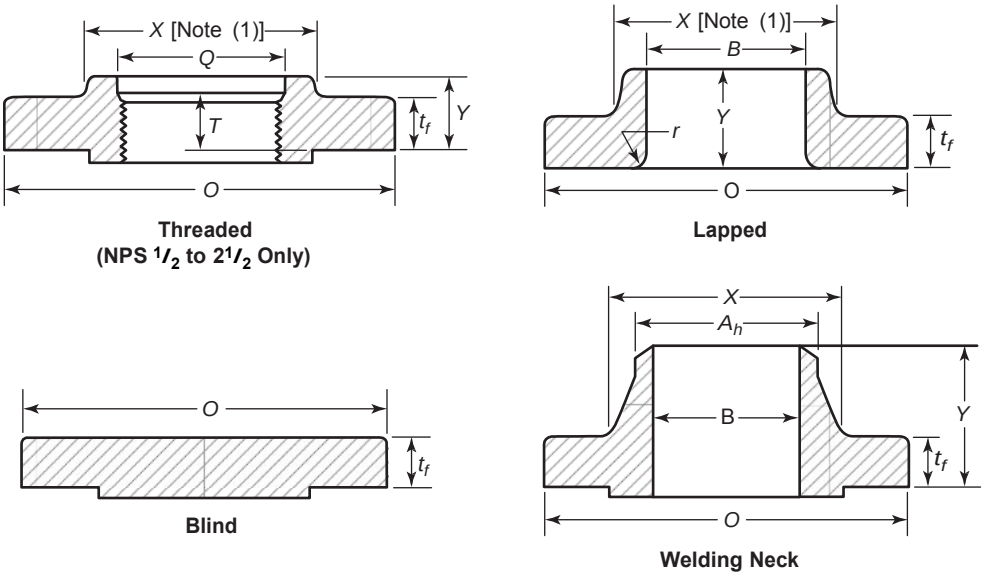
(1) The length of the stud bolt does not include the height of the points (see para. 6.10.2).

(2) For flange bolt holes, see para. 6.5.

(3) For spot facing, see para. 6.6.

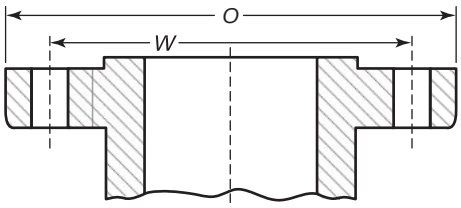
(4) Bolt lengths not shown in the table may be determined in accordance with Nonmandatory Appendix C (see para. 6.10.2).

Table 22 Dimensions of Class 2500 Flanges

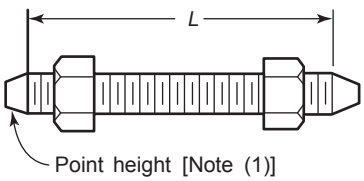


1	2	3	4	5	6	7	8	9	10	11	12	13
Nom. Pipe Size, NPS	Outside Diam. of Flange, O	Min. Thickness of Flange, t_f	Diam. of Hub, X	Hub Diam. Beginning of Chamfer Welding Neck, A_h [Note (2)]	Length Through Hub			Minimum Thread Length Threaded Flange, T [Note (3)]	Bore		Corner Bore Radius of Lapped Flange and Pipe, r	Minimum Counterbore Threaded Flange, Q
					Threaded, Y	Lapped, Y	Welding Neck, Y		Min. Lapped, B	Welding Neck, B		
1/2	135	30.2	43	21.3	40	40	73	29	22.9	Note (4)	3	23.6
3/4	140	31.8	51	26.7	43	43	79	32	28.2	Note (4)	3	29.0
1	160	35.0	57	33.4	48	48	89	35	34.9	Note (4)	3	35.8
1 1/4	185	38.1	73	42.2	52	52	95	39	43.7	Note (4)	5	44.4
1 1/2	205	44.5	79	48.3	60	60	111	45	50.0	Note (4)	6	50.6
2	235	50.9	95	60.3	70	70	127	51	62.5	Note (4)	8	63.5
2 1/2	265	57.2	114	73.0	79	79	143	58	75.4	Note (4)	8	76.2
3	305	66.7	133	88.9	. . .	92	168	. . .	91.4	Note (4)	10	. . .
4	355	76.2	165	114.3	. . .	108	190	. . .	116.8	Note (4)	11	. . .
5	420	92.1	203	141.3	. . .	130	229	. . .	144.4	Note (4)	11	. . .
6	485	108.0	235	168.3	. . .	152	273	. . .	171.4	Note (4)	13	. . .
8	550	127.0	305	219.1	. . .	178	318	. . .	222.2	Note (4)	13	. . .
10	675	165.1	375	273.0	. . .	229	419	. . .	277.4	Note (4)	13	. . .
12	760	184.2	441	323.8	. . .	254	464	. . .	328.2	Note (4)	13	. . .

Table 21 Templates for Drilling Class 2500 Pipe Flanges



Flange



Stud Bolt With Nuts

1	2	3	4	5	6	7	8	9
		Drilling [Notes (2), (3)]				Length of Bolts, L [Notes (1), (4)]		
Nominal Pipe Size, NPS	Outside Diameter of Flange, O	Diameter of Bolt Circle, W	Diameter of Bolt Holes, in.	Number of Bolts	Diameter of Bolts, in.	7-mm Raised Face	Male and Female/ Tongue and Groove	Ring Joint
1/2	135	88.9	7/8	4	3/4	120	115	120
3/4	140	95.2	7/8	4	3/4	125	120	125
1	160	108.0	1	4	7/8	140	135	140
1 1/4	185	130.2	1 1/8	4	1	150	145	150
1 1/2	205	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	265	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	355	273.0	1 5/8	8	1 1/2	255	250	260
5	420	323.8	1 7/8	8	1 3/4	300	290	310
6	485	368.3	2 1/8	8	2	345	335	355
8	550	438.2	2 1/8	12	2	380	375	395
10	675	539.8	2 5/8	12	2 1/2	490	485	510
12	760	619.1	2 7/8	12	2 3/4	540	535	560

GENERAL NOTES:

(a) Dimensions of Table 21 are in millimeters, except for the diameters of the bolts and bolt holes, which are in inch units. For dimensions in inch units, refer to Mandatory Appendix II, Table II-21.

(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.

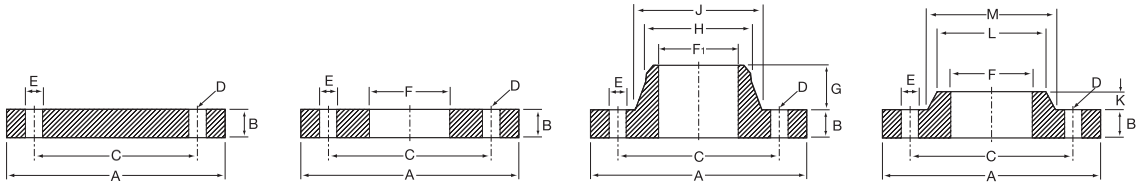
(4) Bolt lengths not shown in the table may be determined with Nonmandatory Appendix C (see para. 6.10.2).

TABLE FLANGES TABLE D

Size				Bolting Details				Bolting Details		Welding Neck			Boss Details		
DN mm	Nominal Pipe Size inch	Outside Diameter of Flange A	Forged B	C	D	E	Metric	F	Welding Neck F1	Total Length of Neck G	Diameter at Small End of Neck H	Diameter at Large End of Neck J	Length of Boss Details K	Diameter of Boss at Small End Min. L	Diameter at Root of Boss Max. M
15	1/2	95	5*	67	4	14	M12	BORE OF FLANGES TO SUIT EITHER PIPE OR TUBE OD – REFER PIPE & TUBE DIMENSIONS ON PAGES 36 & 37	BORE TO SUIT PIPE SCHEDULE – TO BE SPECIFIED BY THE PURCHASER	22	22	27	10	33	38
20	3/4	100	5*	73	4	14	M12			22	27	33	11	38	44
25	1	115	5*	83	4	14	M12			22	34	43	11	48	52
32	1-1/4	120	6*	87	4	14	M12			25	43	49	11	56	58
40	1-1/2	135	6*	98	4	14	M12			29	49	59	13	62	70
50	2	150	8*	114	4	18	M16			29	61	70	13	75	79
65	2-1/2	165	8*	127	4	18	M16			32	76	83	16	90	93
80	3	185	10*	165	4	18	M16			35	89	102	16	106	112
100	4	215	10*	178	4	18	M16			41	115	130	19	133	140
125	5	255	13	210	8	18	M16			44	142	152	19	160	171
150	6	280	13	235	8	18	M16			48	169	184	19	186	197
200	8	335	13	292	8	22	M20			51	220	241	22	241	254
250	10	405	16	356	8	22	M20			64	274	292	27	298	310
300	12	455	19	406	12	26	M24			70	324	343	29	349	360
350	14	525	22	470	12	26	M24			73	356	387	-	-	-
400	16	580	22	521	12	26	M24			-	-	-	-	-	-
450	18	640	25	584	12	26	M24			-	-	-	-	-	-
500	20	705	29	641	16	26	M24			-	-	-	-	-	-
600	24	825	32	756	16	30	M27			-	-	-	-	-	-

Flanges less than 12 mm thickness may suffer unacceptable distortion after welding to pipe.

Size		Approximate piece weight in Kilograms		
DN mm	NPS inch	Blind	Pipe Slip-On	Tube Slip-On
15	1/2	0.26	0.24	0.25
20	3/4	0.29	0.27	0.28
25	1	0.39	0.36	0.37
32	1-1/4	0.51	0.45	0.48
40	1-1/2	0.66	0.57	0.60
50	2	1.1	0.88	0.94
65	2-1/2	1.3	1.0	1.1
80	3	2.1	1.6	1.7
100	4	2.8	2.0	2.2
125	5	5.1	3.5	3.8
150	6	6.2	3.9	4.3
200	8	9.0	5.0	5.6
250	10	16.1	8.6	9.6
300	12	24.0	11.5	12.9
350	14	37.0	19.5	19.5
400	16	45.4	22.5	22.5
450	18	63.1	30.3	30.2
500	20	88.6	41.6	41.6
600	24	134.0	59.1	59.2



BLIND | SLIP-ON WELDING | WELDING NECK | BOSSED

Notes:

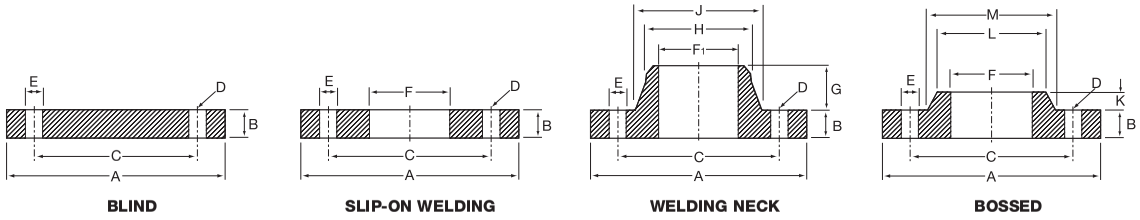
1. All dimensions are in millimetres.
2. Only the Flat Face variant of each type of flange has been illustrated as they are the most commonly available. Other variants available are Raised Face, Flat with O-Ring Groove or Spot-Faced and other flange facing types may change the “B” dimension, please contact your local Prochem office for more information.
3. For Threaded Flanges a Boss Flange is used to accommodate the thread. The Thread Form and Thread Type are not specified in the Standard, please contact your local Prochem office for more information.
4. All weights are appoximates only.

TABLE FLANGES TABLE E

Size										Welding Neck			Boss Details		
DN mm	Nominal Pipe Size inch	Outside Diameter of Flange A	Forged or Plate; Thickness of Flange Min. B	Pitch Circle Diameter C	Number of Holes D	Diameter of Holes E	Diameter of Bolts Metric	Slip-On or Bossed F	Welding Neck F1	Total Length of Neck G	Diameter at Small End of Neck H	Diameter at Large End of Neck J	Length of Boss Details K	Diameter of Boss at Small End Min. L	Diameter at Root of Boss Max. M
15	1/2	95	6*	67	4	14	M12	BORE OF FLANGES TO SUIT EITHER PIPE OR TUBE OD – REFER PIPE & TUBE DIMENSIONS ON PAGES 36 & 37	TO BE SPECIFIED BY THE PURCHASER	22	22	27	10	33	38
20	3/4	100	6*	73	4	14	M12			22	27	33	11	38	44
25	1	115	7*	83	4	14	M12			22	34	43	11	48	52
32	1-1/4	120	8*	87	4	14	M12			25	43	49	11	56	58
40	1-1/2	135	9*	98	4	14	M12			29	49	59	13	62	70
50	2	150	10*	114	4	18	M16			29	61	70	13	75	79
65	2-1/2	165	10*	127	4	18	M16			32	76	83	16	90	93
80	3	185	11*	146	4	18	M16			35	89	102	16	106	112
100	4	215	13	178	8	18	M16			41	102	130	19	133	140
125	5	255	14	210	8	18	M16			44	142	152	19	160	171
150	6	280	17	235	8	22	M20			48	169	184	19	186	191
200	8	335	19	292	8	22	M20			51	220	241	22	241	249
250	10	405	22	356	12	22	M20			64	274	292	27	298	310
300	12	455	25	406	12	26	M24			70	324	343	29	349	354
350	14	525	29	470	12	26	M24			73	356	387	-	-	-
400	16	580	32	521	12	26	M24			-	-	-	-	-	-
450	18	640	35	584	16	26	M24			-	-	-	-	-	-
500	20	705	38	641	16	26	M24			-	-	-	-	-	-
600	24	8025	48	756	16	33	M30			-	-	-	-	-	-

**Flanges less than 12 mm thickness may suffer unacceptable distortion after welding to pipe.*

Size		Approximate piece weight in Kilograms		
DN mm	NPS inch	Blind	Pipe Slip-On	Tube Slip-On
15	1/2	0.31	0.29	0.30
20	3/4	0.35	0.32	0.33
25	1	0.55	0.50	0.52
32	1-1/4	0.68	0.59	0.63
40	1-1/2	0.99	0.85	0.90
50	2	1.3	1.1	1.2
65	2-1/2	1.6	1.3	1.4
80	3	2.3	1.7	1.9
100	4	3.6	2.5	2.7
125	5	5.5	3.7	4.1
150	6	8.0	4.9	5.5
200	8	12.9	7.2	8.0
250	10	21.9	11.6	13.0
300	12	31.2	14.8	16.7
350	14	48.7	25.7	25.7
400	16	66.0	32.8	32.8
450	18	87.7	41.8	41.7
500	20	116.1	54.5	54.5
600	24	200.0	87.8	87.9



Notes:

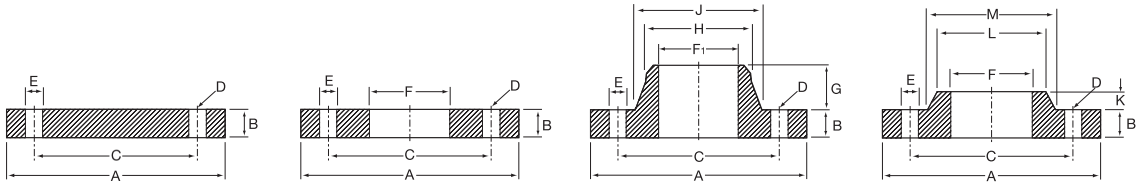
1. All dimensions are in millimetres.
2. Only the Flat Face variant of each type of flange has been illustrated as they are the most commonly available. Other variants available are Raised Face, Flat with O-Ring Groove or Spot-Faced and other flange facing types may change the “B” dimension, please contact your local Prochem office for more information.
3. For Threaded Flanges a Boss Flange is used to accommodate the thread. The Thread Form and Thread Type are not specified in the Standard, please contact your local Prochem office for more information.
4. All weights are appoximates only.

TABLE FLANGES TABLE F

Size				Bolting Details				Bolting Details		Welding Neck			Boss Details		
DN mm	Nominal Pipe Size inch	Outside Diameter of Flange A	Forged B	C	D	E	Metric	F	Welding Neck F1	Total Length of Neck G	Diameter at Small End of Neck H	Diameter at Large End of Neck J	Length of Boss Details K	Diameter of Boss at Small End Min. L	Diameter at Root of Boss Max. M
15	1/2	95	10*	67	4	14	M12	BORE OF FLANGES TO SUIT EITHER PIPE OR TUBE OD – REFER PIPE & TUBE DIMENSIONS ON PAGES 36 & 37	TO BE SPECIFIED BY THE PURCHASER	22	22	27	10	33	38
20	3/4	100	10*	73	4	14	M12			22	27	33	11	38	44
25	1	120	10*	87	4	18	M16			29	34	43	11	48	52
32	1-1/4	135	13	98	4	18	M16			35	43	52	11	56	64
40	1-1/2	140	13	105	4	18	M16			35	49	59	13	62	70
50	2	165	16	127	4	18	M16			35	61	70	13	75	93
65	2-1/2	185	16	146	8	18	M16			38	76	86	16	90	112
80	3	205	16	165	8	18	M16			44	89	102	16	106	130
100	4	230	19	191	8	18	M16			51	115	130	19	133	152
125	5	280	22	235	8	22	M20			57	142	159	19	160	191
150	6	305	22	260	12	22	M20			57	169	184	19	186	216
200	8	370	25	324	12	22	M20			67	220	241	22	241	279
250	10	430	29	381	12	26	M24			73	274	298	27	298	329
300	12	490	32	438	16	26	M24			79	324	352	29	349	386
350	14	550	35	495	16	30	M27			86	356	387	-	-	-
400	16	610	41	552	20	30	M27			-	-	-	-	-	-
450	18	675	44	610	20	33	M30			-	-	-	-	-	-
500	20	735	51	673	24	33	M30			-	-	-	-	-	-
600	24	850	57	781	24	36	M30			-	-	-	-	-	-

**Flanges less than 12 mm thickness may suffer unacceptable distortion after welding to pipe.*

Size		Approximate piece weight in Kilograms		
DN mm	NPS inch	Blind	Pipe Slip-On	Tube Slip-On
15	1/2	0.52	0.49	0.51
20	3/4	0.58	0.53	0.56
25	1	0.82	0.75	0.78
32	1-1/4	1.4	1.2	1.3
40	1-1/2	1.5	1.3	1.4
50	2	2.6	2.2	2.3
65	2-1/2	3.2	2.6	2.8
80	3	4.0	3.2	3.4
100	4	6.0	4.4	4.8
125	5	10.3	7.5	8.1
150	6	12.1	8.1	8.8
200	8	20.6	13.1	14.1
250	10	32.2	18.6	20.5
300	12	46.1	25.0	27.4
350	14	63.4	35.5	35.5
400	16	91.2	48.7	48.7
450	18	119.9	62.2	62.2
500	20	164.7	82.0	82.0
600	24	247.6	114.4	114.5



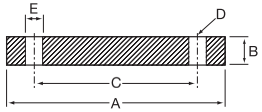
Notes:

1. All dimensions are in millimetres.
2. Only the Flat Face variant of each type of flange has been illustrated as they are the most commonly available. Other variants available are Raised Face, Flat with O-Ring Groove or Spot-Faced and other flange facing types may change the “B” dimension, please contact your local Prochem office for more information.
3. For Threaded Flanges a Boss Flange is used to accommodate the thread. The Thread Form and Thread Type are not specified in the Standard, please contact your local Prochem office for more information.
4. All weights are appoximates only.

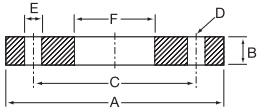
TABLE FLANGES TABLE H

Size										Welding Neck			Boss Details		
DN (metric)	Nominal Pipe Size (inch)	Outside Diameter of Flange A	Forged or Plate; Thickness of Flange Min. B	Pitch Circle Diameter C	Number of Holes D	Diameter of Holes E	Diameter of Bolts Metric	Slip-On or Bossed F	Welding Neck F1	Total Length of Neck G	Diameter at Small End of Neck H	Diameter at Large End of Neck J	Length of Boss Details K	Diameter of Boss at Small End Min. L	Diameter at Root of Boss Max. M
15	1/2	115	13	83	4	18	M16	BORE OF FLANGES TO SUIT EITHER PIPE OR TUBE OD – REFER PIPE & TUBE DIMENSIONS ON PAGES 36 & 37	TO BE SPECIFIED BY THE PURCHASER	29	22	30	10	33	48
20	3/4	115	13	83	4	18	M16			29	27	35	11	38	48
25	1	120	14	87	4	18	M16			29	34	43	11	48	52
32	1-1/4	135	17	98	4	18	M16			35	43	52	11	56	64
40	1-1/2	140	17	105	4	18	M16			35	49	59	13	62	70
50	2	165	19	127	4	18	M16			35	61	70	13	75	93
65	2-1/2	185	19	146	8	18	M16			38	76	86	16	90	112
80	3	205	22	165	8	18	M16			44	89	102	16	106	130
100	4	230	25	191	8	18	M16			51	115	130	19	133	152
125	5	280	29	235	8	22	M20			57	142	159	19	160	191
150	6	305	29	260	12	22	M20			57	169	184	19	186	216
200	8	370	32	324	12	22	M20			67	220	241	22	241	279
250	10	430	35	371	12	26	M24			73	274	298	27	298	329
300	12	490	41	438	16	26	M24			79	324	352	29	349	386
350	14	550	48	495	16	30	M27			86	356	387	-	-	-
400	16	610	54	552	20	30	M27			-	-	-	-	-	-
450	18	675	60	610	20	33	M30			-	-	-	-	-	-
500	20	735	67	673	24	33	M30			-	-	-	-	-	-
600	24	850	76	781	24	36	M33			-	-	-	-	-	-

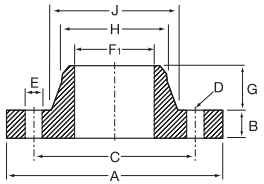
Size		Approximate piece weight in Kilograms		
DN mm	NPS inch	Blind	Pipe Slip-On	Tube Slip-On
15	1/2	0.97	0.94	0.96
20	3/4	0.97	0.92	0.94
25	1	1.2	1.1	1.1
32	1-1/4	1.8	1.6	1.7
40	1-1/2	2.0	1.7	1.8
50	2	3.1	2.7	2.8
65	2-1/2	3.8	3.1	3.3
80	3	5.5	4.4	4.6
100	4	7.9	5.9	6.3
125	5	13.6	9.9	10.6
150	6	15.9	10.7	11.7
200	8	26.4	16.7	18.1
250	10	38.9	22.5	24.7
300	12	59.1	32.0	35.1
350	14	86.9	48.8	48.8
400	16	120.1	64.1	64.1
450	18	163.6	84.8	84.8
500	20	216.4	107.8	107.8
600	24	330.2	152.5	152.7



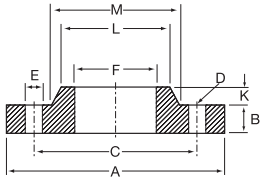
BLIND



SLIP-ON WELDING

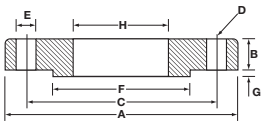


WELDING NECK

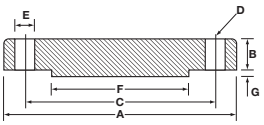


BOSSED

EN 1092-1 DIN FLANGES



Slip-On – Type 01



Blind – Type 05

PN 06

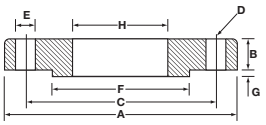
Size					Bolting Details						Bore	Masses of flanges	
DN mm	Nominal Pipe Size inch	Outside Diam. of Flange A	Forged or Plate; Thickness of Flange Min. B1-Type01	Forged or Plate; Thickness of Flange Min. B2-Type05	Pitch Circle Diam. C	Number of Holes D	Diam. of Holes E	Diam. of Bolts Bolts Metric	Diam. of Raised Face F	Height of Raised Face G	Slip-On H	Type 01 (kg)	Type 05 (kg)
10	3/8	75	12	12	50	4	11	M10	35	2	BORE OF FLANGES TO SUIT EITHER PIPE OR TUBE OD - REFER PIPE & TUBE DIMENSIONS ON PAGES 36 & 37	0.36	0.38
15	1/2	80	12	12	55	4	11	M10	40	2		0.40	0.44
20	3/4	90	14	14	65	4	11	M10	50	2		0.59	0.66
25	1	100	14	14	75	4	11	M10	60	2		0.72	0.82
32	1-1/4	120	16	14	90	4	14	M12	70	2		1.16	1.18
40	1-1/2	130	16	14	100	4	14	M12	80	3		1.35	1.39
50	2	140	16	14	110	4	14	M12	90	3		1.48	1.62
65	2-1/2	160	16	14	130	4	14	M12	110	3		1.86	2.14
80	3	190	18	16	150	4	18	M16	128	3		2.95	3.43
100	4	210	18	16	170	4	18	M16	148	3		3.26	4.22
125	5	240	20	18	200	8	18	M16	178	3		4.31	6.10
150	6	265	20	18	225	8	18	M16	202	3		4.76	7.51
200	8	320	22	20	280	8	18	M16	258	3		6.88	12.30
250	10	375	24	22	335	12	18	M16	312	3		8.92	18.50
300	12	440	24	22	395	12	22	M20	365	4		11.90	25.50
350	14	490	26	22	445	12	22	M20	415	4		16.80	31.80
400	16	540	28	22	495	16	22	M20	465	4		19.80	38.50
450	18	595	30	24	550	16	22	M20	520	4		24.60	51.20
500	20	645	30	24	600	20	22	M20	570	4		26.40	60.10
600	24	755	32	30	705	20	26	M24	670	5		34.80	103.00

PN 10

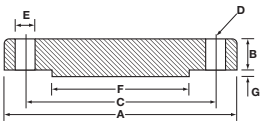
Size					Bolting Details						Bore	Masses of flanges	
DN mm	Nominal Pipe Size inch	Outside Diam. of Flange A	Forged or Plate; Thickness of Flange Min. B1-Type01	Forged or Plate; Thickness of Flange Min. B2-Type05	Pitch Circle Diam. C	Number of Holes D	Diam. of Holes E	Diam. of Bolts Bolts Metric	Diam. of Raised Face F	Height of Raised Face G	Slip-On H	Type 01 (kg)	Type 05 (kg)
10	3/8	90	14	16	60	4	14	M12	40	2	BORE OF FLANGES TO SUIT EITHER PIPE OR TUBE OD - REFER PIPE & TUBE DIMENSIONS ON PAGES 36 & 37	0.60	0.72
15	1/2	95	14	16	65	4	14	M12	45	2		0.67	0.81
20	3/4	105	16	18	75	4	14	M12	58	2		0.94	1.14
25	1	115	16	18	85	4	14	M12	68	2		1.11	1.38
32	1-1/4	140	18	18	100	4	18	M16	78	2		1.82	2.03
40	1-1/2	150	18	18	110	4	18	M16	88	3		2.08	2.35
50	2	165	20	18	125	4	18	M16	102	3		2.73	2.88
65	2-1/2	185	20	18	145	8	18	M16	122	3		3.16	3.51
80	3	200	20	20	160	8	18	M16	138	3		3.60	4.61
100	4	220	22	20	180	8	18	M16	158	3		4.39	5.65
125	5	250	22	22	210	8	18	M16	188	3		5.41	8.13
150	6	285	24	22	240	8	22	M20	212	3		7.14	10.5
200	8	340	24	24	295	8	22	M20	268	3		9.27	16.5
250	10	395	26	26	350	12	22	M20	320	3		11.8	24.1
300	12	445	26	26	400	12	22	M20	370	4		13.6	30.8
350	14	505	30	26	460	16	22	M20	430	4		20.4	39.6
400	16	565	32	26	515	16	26	M24	482	4		27.5	49.4
450	18	615	36	28	565	20	26	M24	532	4		33.6	63.0
500	20	670	38	28	620	20	26	M24	585	4		40.2	75.2
600	24	780	42	34	725	20	30	M27	685	5		54.5	124

Notes:
1. All dimensions are in millimetres.
2. Only the Raised Face variant of each type of flange has been illustrated. Other variants available are Flat Face, Flat with O-Ring Groove or Spot-Faced and other flange facing types may change the “B” dimension, please contact your local TPS office for more information.
3. For Threaded Flanges a Boss Flange is used to accommodate the thread. The Thread Form and Thread Type are not specified in the Standard, please contact your local TPS office for more information.
4. All weights are appoximates only.

EN 1092-1 DIN FLANGES



Slip-On – Type 01



Blind – Type 05

PN 16

Size					Bolting Details						Bore	Masses of flanges	
DN mm	Nominal Pipe Size inch	Outside Diam. of Flange A	Forged or Plate; Thickness of Flange Min. B1-Type01	Forged or Plate; Thickness of Flange Min. B2-Type05	Pitch Circle Diam. C	Number of Holes D	Diam. of Holes E	Diam. of Bolts Bolts Metric	Diam. of Raised Face F	Height of Raised Face G	Slip-On H	Type 01 (kg)	PN 16 (kg)
10	3/8	90	14	16	60	4	14	M12	40	2	BORE OF FLANGES TO SUIT EITHER PIPE OR TUBE OD - REFER PIPE & TUBE DIMENSIONS ON PAGES 36 & 37	0.60	0.72
15	1/2	95	14	16	65	4	14	M12	45	2		0.67	0.81
20	3/4	105	16	18	75	4	14	M12	58	2		0.94	1.14
25	1	115	16	18	85	4	14	M12	68	2		1.11	1.38
32	1-1/4	140	18	18	100	4	18	M16	78	2		1.82	2.03
40	1-1/2	150	18	18	110	4	18	M16	88	3		2.08	2.35
50	2	165	20	18	125	4	18	M16	102	3		2.73	2.88
65	2-1/2	185	20	18	145	8	18	M16	122	3		3.16	3.51
80	3	200	20	20	160	8	18	M16	138	3		3.60	4.61
100	4	220	22	20	180	8	18	M16	158	3		4.39	5.65
125	5	250	22	22	210	8	18	M16	188	3		5.41	8.13
150	6	285	24	22	240	8	22	M20	212	3		7.14	10.5
200	8	340	26	24	295	12	22	M20	268	3		9.73	16.2
250	10	405	29	26	355	12	26	M24	320	3		14.2	25.0
300	12	460	32	28	410	12	26	M24	378	4		19.0	35.1
350	14	520	35	30	470	16	26	M24	438	4		28.2	48.0
400	16	580	38	32	525	16	30	M27	490	4		35.9	63.5
450	18	640	42	40	585	20	30	M27	550	4		46.1	96.6
500	20	715	46	44	650	20	33	M30	610	4		64.0	133
600	24	840	55	54	770	20	36	M33	725	5		102	226

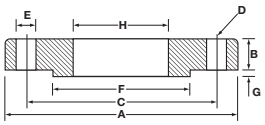
PN 25

Size					Bolting Details						Bore	Masses of flanges	
DN mm	Nominal Pipe Size inch	Outside Diam. of Flange A	Forged or Plate; Thickness of Flange Min. B1-Type01	Forged or Plate; Thickness of Flange Min. B2-Type05	Pitch Circle Diam. C	Number of Holes D	Diam. of Holes E	Diam. of Bolts Bolts Metric	Diam. of Raised Face F	Height of Raised Face G	Slip-On H	Type 01 (kg)	Type 05 (kg)
10	3/8	90	14	16	60	4	14	M12	40	2	BORE OF FLANGES TO SUIT EITHER PIPE OR TUBE OD - REFER PIPE & TUBE DIMENSIONS ON PAGES 36 & 37	0.60	0.72
15	1/2	95	14	16	65	4	14	M12	45	2		0.67	0.81
20	3/4	105	16	18	75	4	14	M12	58	2		0.94	1.14
25	1	115	16	18	85	4	14	M12	68	2		1.11	1.38
32	1-1/4	140	18	18	100	4	18	M16	78	2		1.82	2.03
40	1-1/2	150	18	18	110	4	18	M16	88	3		2.08	2.35
50	2	165	20	20	125	4	18	M16	102	3		2.73	3.20
65	2-1/2	185	22	22	145	8	18	M16	122	3		3.48	4.29
80	3	200	24	24	160	8	18	M16	138	3		4.32	5.54
100	4	235	26	24	190	8	22	M20	162	3		6.07	7.60
125	5	270	28	26	220	8	26	M24	188	3		8.19	10.8
150	6	300	30	28	250	8	26	M24	218	3		10.3	14.6
200	8	360	32	30	310	12	26	M24	278	3		14.3	22.5
250	10	425	35	32	370	12	30	M27	335	3		20.1	33.5
300	12	485	38	34	430	16	30	M27	395	4		26.6	46.3
350	14	555	42	38	490	16	33	M30	450	4		41.8	68.1
400	16	620	48	40	550	16	36	M33	505	4		57.6	89.7
450	18	670	54	50	600	20	36	M33	555	4		69.8	130
500	20	730	58	51	660	20	36	M33	615	4		87.0	159
600	24	845	68	66	770	20	39	M36	720	5		127	278

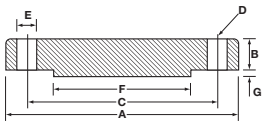
Notes:

1. All dimensions are in millimetres.
2. Only the Raised Face variant of each type of flange has been illustrated. Other variants available are Flat Face, Flat with O-Ring Groove or Spot-Faced and other flange facing types may change the "B" dimension, please contact your local TPS office for more information.
3. For Threaded Flanges a Boss Flange is used to accommodate the thread. The Thread Form and Thread Type are not specified in the Standard, please contact your local TPS office for more information.
4. All weights are appoximates only.

EN 1092-1 DIN FLANGES



Slip-On – Type 01



Blind – Type 05

PN 40

Size					Bolting Details						Bore	Masses of flanges	
DN mm	Nominal Pipe Size inch	Outside Diam. of Flange A	Forged or Plate; Thickness of Flange Min. B1-Type01	Forged or Plate; Thickness of Flange Min. B2-Type05	Pitch Circle Diam. C	Number of Holes D	Diam. of Holes E	Diam. of Bolts Bolts Metric	Diam. of Raised Face F	Height of Raised Face G	Slip-On H	Type 01 (kg)	Type 05 (kg)
10	3/8	90	14	16	60	4	14	M12	40	2	BORE OF FLANGES TO SUIT EITHER PIPE OR TUBE OD - REFER PIPE & TUBE DIMENSIONS ON PAGES 36 & 37	0.60	0.72
15	1/2	95	14	16	65	4	14	M12	45	2		0.67	0.81
20	3/4	105	16	18	75	4	14	M12	58	2		0.94	1.14
25	1	115	16	18	85	4	14	M12	68	2		1.11	1.38
32	1-1/4	140	18	18	100	4	18	M16	78	2		1.82	2.03
40	1-1/2	150	18	18	110	4	18	M16	88	3		2.08	2.35
50	2	165	20	20	125	4	18	M16	102	3		2.73	3.20
65	2-1/2	185	22	22	145	8	18	M16	122	3		3.48	4.29
80	3	200	24	24	160	8	18	M16	138	3		4.32	5.54
100	4	235	26	24	190	8	22	M20	162	3		6.07	7.60
125	5	270	28	26	220	8	26	M24	188	3		8.19	10.8
150	6	300	30	28	250	8	26	M24	218	3		10.3	14.6
200	8	375	36	36	320	12	30	M27	285	3		17.9	28.8
250	10	450	42	38	385	12	33	M30	345	3		29.3	44.4
300	12	515	52	42	450	16	33	M30	410	4		45.1	64.2
350	14	580	58	46	510	16	36	M33	465	4		66.7	89.5
400	16	660	65	50	585	16	39	M36	535	4		97.1	127
450	18	685		57	610	20	39	M36	560	4		-	154
500	20	755		57	670	20	42	M39	615	4		-	188
600	24	890		72	795	20	48	M45	735	5		-	331

Notes:
1. All dimensions are in millimetres.
2. Only the Raised Face variant of each type of flange has been illustrated. Other variants available are Flat Face, Flat with O-Ring Groove or Spot-Faced and other flange facing types may change the "B" dimension, please contact your local TPS office for more information.
3. For Threaded Flanges a Boss Flange is used to accommodate the thread. The Thread Form and Thread Type are not specified in the Standard, please contact your local TPS office for more information.
4. All weights are appoximates only.

TEMPERATURE/PRESSURE ratings for austenitic and austenitic-ferritic steels.

Max. allowable temperature TS °C	PN 6		PN 10		PN 16		PN 25		PN40	
	304	316	304	316	304	316	304	316	304	316
	304 L	316 L	304 L	316 L	304 L	316 L	304 L	316 L	304 L	316 L
Max. allowable pressure PS bar										
RT (-10 to 50)	6	6	10	10	16	16	25.0	25.0	40.0	40.0
100	5.1	6	8.6	10	13.7	16	21.5	25.0	34.4	40.0
150	4.6	5.4	7.7	9	12.3	14.5	19.2	22.7	30.8	36.3
200	4.2	5	7	8.4	11.2	13.4	17.5	21.0	28.0	33.7
250	3.9	4.7	6.5	7.9	10.4	12.7	16.3	19.8	26.0	31.8
300	3.6	4.4	6	7.4	9.6	11.8	15.1	18.5	24.1	29.7
350	3.4	4.2	5.7	7.1	9.2	11.4	14.4	17.8	23.0	28.5
400	3.3	4.1	5.5	6.8	8.8	10.9	13.8	17.1	22.0	27.4
450	3.2	4	5.3	6.7	8.5	10.7	13.3	16.8	21.4	26.9
500	3.1	3.9	5.1	6.6	8.3	10.5	12.9	16.5	20.7	26.4
550	2.6	3.9	4.3	6.5	7	10.4	10.9	16.3	17.5	26.0
560	2.4	3.8	4	6.4	6.4	10.3	10.1	16.0	16.1	25.7
570	2.2	3.8	3.7	6.3	5.9	10.1	9.2	15.8	14.8	25.4
580	2	3.7	3.4	6.2	5.4	10.0	8.5	15.6	13.7	25.0
590	1.8	3.7	3	6.1	4.9	9.9	7.7	15.4	12.3	24.7
600	1.6	3.3	2.8	5.6	4.4	8.9	7.0	14.0	11.2	22.4

Note 1: groupe 10E0 material based on ASME SA 240 and grades 304, 304 L, 304 H
Note 2: groupe 14E0 material based on ASME SA 240 and grades 316, 316 L, 316 H.