

Offshore Drilling & Pipeline Equipment

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API and ANSI Flanges

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5

API Flanges are designed and manufactured in accordance with the following specifications:

API 6A	Specification for Wellhead and Christmas Tree Equipment.
ANSI B31.3	Chemical Plant and Petroleum Refinery Piping.
ASME VIII	Boiler and Pressure Vessel Code.
MSS-SP-55	Quality Standards for Steel Castings for Valves, Flanges and Fittings and other Piping Components.
NACE MR-01-75	Sulphide Stress Cracking Resistant Metallic Materials for Oilfield Equipment

Flanges are available as Weld Neck, Integral, Blind, Target & Test Blind for use with the following pressure ratings:

TABLE 5A.0

Max. Working Pressure	4,000 PSI	3,000 PSI	5,000 PSI	10,000 PSI	15,000 PSI	20,000 PSI
Test Pressure	4,000 PSI	6,000 PSI	7,500 PSI	15,000 PSI	22,500 PSI	30,000 PSI
Production Specific Levels	1,2 & 3	1,2 & 3	1,2 & 3	2,3 & 4	3 & 4	3 & 4
API Temperature Rating	K (-60° C) to Y (+345° C)	K (-60° C) to Y (+345° C)	K (-60° C) to Y (+345° C)	K (-60° C) to Y (+345° C)	K (-60° C) to Y (+345° C)	K (-60° C) to Y (+345° C)
API Specified Min. Yield	Y (+345° C)					
Min. Tensile	60,000 PSI	60,000 PSI	60,000 PSI	60,000 PSI	75,000 PSI	75,000 PSI
Material	85,000 PSI API 60K	85,000 PSI API 60K	85,000 PSI API 60K	85,000 PSI API 60K	95,000 PSI API 75K	95,000 PSI API 75K
API Specified Min. Yield	45,000 PSI	45,000 PSI	45,000 PSI	60,000 PSI	75,000 PSI	75,000 PSI
Min. Tensile	70,000 PSI	70,000 PSI	70,000 PSI	85,000 PSI	95,000 PSI	95,000 PSI
Material	API 45K	API 45K	API 45K	API 60K	API 75K	API 75K

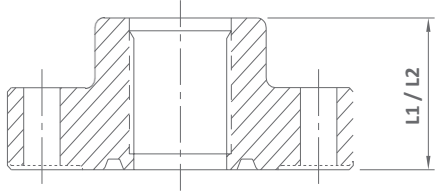
Please contact IVP Solutions for any special material or dimensional requirements.

Max. working pressures stated are suitable for temperatures up to 121°C.

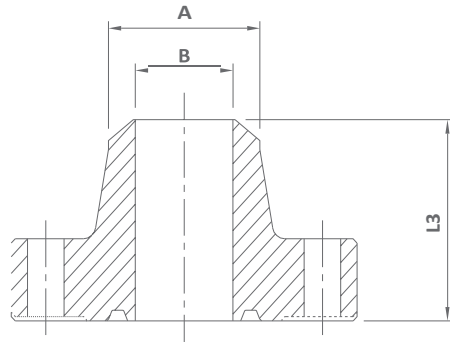
De-rating of max. working pressure will occur as the operating temperature increases above 121°C. Consult IVP Solutions for further details.

IVP Solutions generally offer AISI 4130 with 85,000 PSI min yield and 105,000 PSI min tensile.





Threaded Flange



Weld Neck Line Pipe Flange

TABLE 5A.1

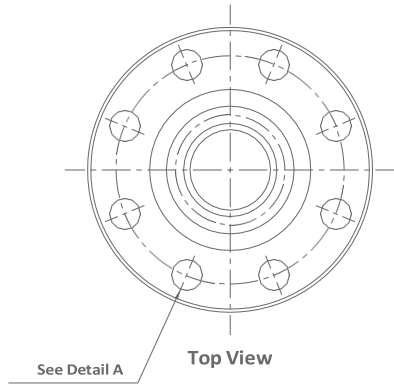
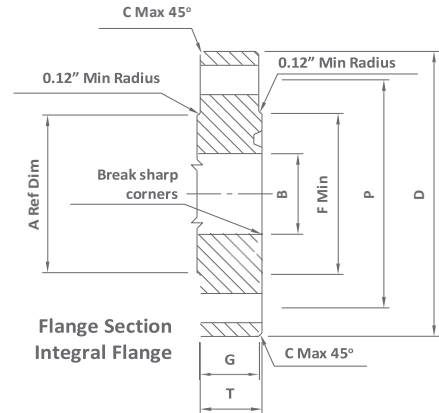
2,000 PSI Hub and Bore Dimensions				
Nominal Size and Bore of Flange	Hub Length Welding Neck Line-Pipe Flange	Neck Diameter Welding Neck Line-Pipe Flange	Tolerance	Maximum Bore of Welding Neck Flange
-	L±0.06	A	A	B
21/16	3.19	2.38	+0.09/-0.03	2.10
29/16	3.44	2.88	+0.09/-0.03	2.50
31/8	3.56	3.50	+0.09/-0.03	3.10
41/16	4.31	4.50	+0.09/-0.03	4.06
51/8	4.81	5.56	+0.09/-0.08	4.84
71/16	4.94	6.63	+0.16/-0.03	5.79
9	5.56	8.63	+0.16/-0.03	7.84
11	6.31	10.75	+0.16/-0.03	9.78
135/8	-	-	-	-
163/4	-	-	-	-
21¼	-	-	-	-

NOTE: All dimensions in (inches).



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Ring groove must be concentric with bore within 0.010 total indicator runoff

Detail A
Bolt hole centreline located within 0.03 of the theoretical B.C. and equal spacing

TABLE 5A.2

2,000 PSI Hub and Bore Dimensions

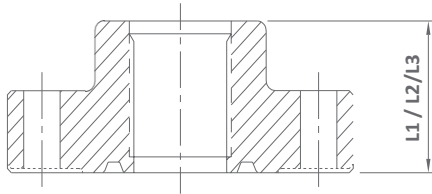
Nominal Size and Bore of Flange	Maximum Bore	Outside Diameter of Flange	Tolerance	Maximum Chamfer	Diameter of Raised Face	Total Thickness of Flange	Basic Thickness of Flange	Diameter of Hub	Diameter of Bolt Circle	Number of Bolts	Diameter of Bolts	Diameter of Bolt Holes	Bolt Hole Tolerance (see note)	Length of Bolts	Ring Number, R or RX
-	B	D	D	C	F	T	G	A	P	-	-	-	-	-	-
21/16	2.09	6.50	±0.06	0.12	4.25	1.31	1.00	3.31	5.00	8	5/8	0.75	0.06	4.50	23
29/16	2.59	7.50	±0.06	0.12	5.00	1.44	1.12	3.94	5.88	8	3/4	0.88	0.06	5.00	26
31/8	3.22	8.25	±0.06	0.12	5.75	1.56	1.25	4.62	6.62	8	3/4	0.88	0.06	5.25	31
41/16	4.28	10.75	±0.06	0.12	6.88	1.81	1.50	6.00	8.50	8	7/8	1.00	0.06	6.00	37
51/8	5.16	13.00	±0.06	0.12	8.25	2.06	1.75	7.44	10.50	8	1	1.12	0.06	6.75	41
71/16	7.16	14.00	±0.12	0.25	9.50	2.19	1.88	8.75	11.50	12	1	1.12	0.06	7.00	45
9	9.03	16.50	±0.12	0.25	11.88	2.50	2.19	10.75	13.75	12	11/8	1.25	0.06	8.00	49
11	11.03	20.00	±0.12	0.25	14.00	2.81	2.50	13.50	17.00	16	1¼	1.38	0.06	8.75	53
135/8	13.66	22.00	±0.12	0.25	16.25	2.94	2.62	15.75	19.25	20	1¼	1.38	0.06	9.00	57
163/4	16.78	27.00	±0.12	0.25	20.00	3.31	3.00	19.50	23.75	20	11/2	1.62	0.09	10.25	65
21¼	21.28	32.00	±0.12	0.25	25.00	3.88	3.50	24.00	28.50	24	15/8	1.75	0.09	11.75	73

NOTE: All dimensions in (inches). Minimum Bolt Hole Tolerance is -0.02"

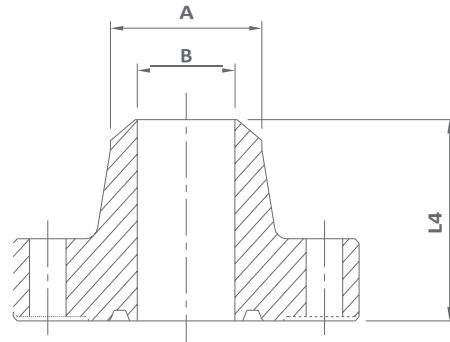


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Threaded Flange



Weld Neck Line Pipe Flange

TABLE 5A.3

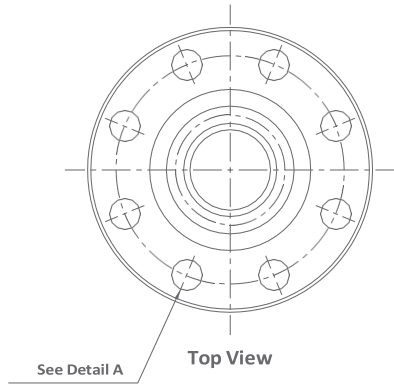
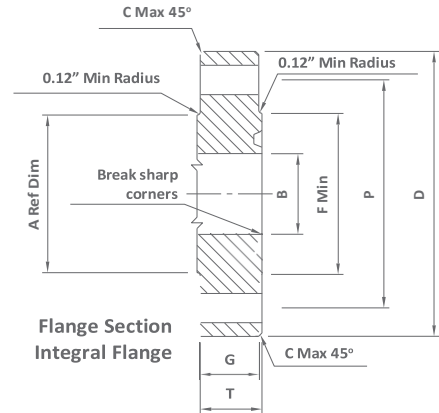
3,000 PSI Hub and Bore Dimensions					
Nominal Size and Bore of Flange	Hub Length Tubing Flange	Hub Length Welding Neck Line-Pipe Flange	Neck Diameter Welding Neck Line-Pipe Flange	Tolerance	Maximum Bore of Welding Neck Flange
-	L	L4±0.06	A	A	B
21/16	2.56	4.31	2.38	+0.09/-0.03	1.97
29/16	2.81	4.44	2.88	+0.09/-0.03	2.35
31/8	2.94	4.31	3.50	+0.09/-0.03	2.93
41/16	3.50	4.81	4.50	+0.09/-0.03	3.86
51/8	-	5.31	5.56	+0.09/-0.03	4.84
71/16	-	5.81	6.63	+0.16/-0.03	5.79
9	-	6.69	8.63	+0.16/-0.03	7.47
11	-	7.56	10.75	+0.16/-0.03	9.34
135/8	-	-	-	-	-
163/4	-	-	-	-	-
203/4	-	-	-	-	-

NOTE: All dimensions in (inches).



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Ring groove must be concentric with bore within 0.010 total indicator runoff

Detail A
Bolt hole centreline located within 0.03 of the theoretical B.C. and equal spacing

TABLE 5A.4

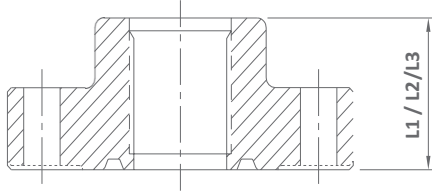
3,000 PSI Hub and Bore Dimensions																
Nominal Size and Bore of Flange	Maximum Bore	Outside Diameter of Flange	Tolerance	Maximum Chamfer	Diameter of Raised Face	Total Thickness of Flange	Basic Thickness of Flange	Diameter of Hub	Diameter of Bolt Circle	Number of Bolts	Diameter of Bolts	Diameter of Bolt Holes	Bolt Hole Tolerance (see note)	Length of Bolts	Ring Number, R or RX	
-	B	D	D	C	F	T	G	A	P	-	-	-	-	-	-	
21/16	2.09	8.50	±0.06	0.12	4.88	1.81	1.50	4.12	6.50	8	7/8	1.00	+0.06	6.00	24	
29/16	2.59	9.62	±0.06	0.12	5.38	1.94	1.62	4.88	7.50	8	1	1.12	+0.06	6.50	27	
31/8	3.22	9.50	±0.06	0.12	6.12	1.81	1.50	5.00	7.50	8	7/8	1.00	+0.06	6.00	31	
41/16	4.28	11.50	±0.06	0.12	7.12	2.06	1.75	6.25	9.25	8	11/8	1.25	+0.06	7.00	37	
51/8	5.16	13.75	±0.06	0.12	8.50	2.31	2.00	7.50	11.00	8	1 1/4	1.38	+0.06	7.75	41	
71/16	7.16	15.00	±0.12	0.25	9.50	2.50	2.19	9.25	12.50	12	1 1/8	1.25	+0.06	8.00	45	
9	9.03	18.50	±0.12	0.25	12.12	2.81	2.50	11.75	15.50	12	1 3/8	1.50	+0.06	9.00	49	
11	11.03	21.50	±0.12	0.25	14.25	3.06	2.75	14.50	18.50	16	1 3/8	1.50	+0.06	9.50	53	
135/8	13.66	24.00	±0.12	0.25	16.50	3.44	3.12	16.50	21.00	20	1 3/8	1.50	+0.06	10.25	57	
163/4	16.78	27.75	±0.12	0.25	20.62	3.94	3.50	20.00	24.25	20	15/8	1.75	+0.09	11.75	66	
203/4	20.78	33.75	±0.12	0.25	25.50	4.75	4.25	24.50	29.50	20	2	2.12	+0.09	14.50	74	

NOTE: All dimensions in (inches). Minimum Bolt Hole Tolerance is -0.02"

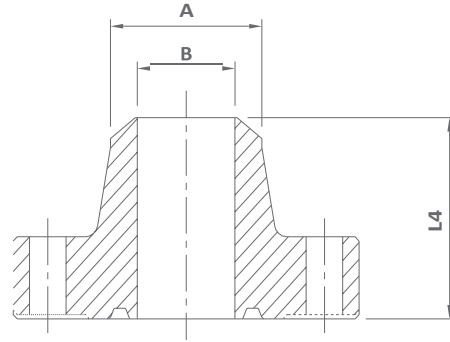


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Threaded Flange



Weld Neck Line Pipe Flange

TABLE 5A.5

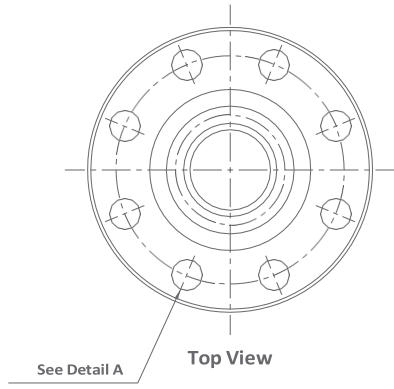
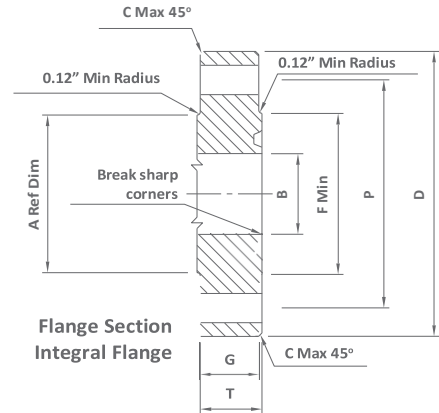
5,000 PSI Hub and Bore Dimensions					
Nominal Size and Bore of Flange	Hub Length Tubing Flange	Hub Length Welding Neck Line-Pipe Flange	Neck Diameter Welding Neck Line-Pipe Flange	Tolerance	Maximum Bore of Welding Neck Flange
-	L	L4±0.06	A	A	B
2 1/16	2.56	4.31	2.38	+0.09/-0.03	1.72
2 9/16	2.81	4.44	2.88	+0.09/-0.03	2.16
3 1/8	3.19	4.94	3.50	+0.09/-0.03	2.65
4 1/16	3.88	5.19	4.50	+0.09/-0.03	3.47
5 1/8	-	6.44	5.56	+0.09/-0.03	4.34
7 1/16	-	7.13	6.63	+0.16/-0.03	5.22
9	-	8.81	8.63	+0.16/-0.03	6.84
11	-	10.44	10.75	+0.16/-0.03	8.53

NOTE: All dimensions in (inches).



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Ring groove must be concentric with bore within 0.010 total indicator runoff

Detail A
Bolt hole centreline located within 0.03 of the theoretical B.C. and equal spacing

TABLE 5A.6

5,000 PSI Hub and Bore Dimensions

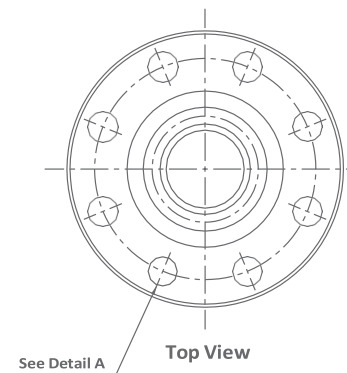
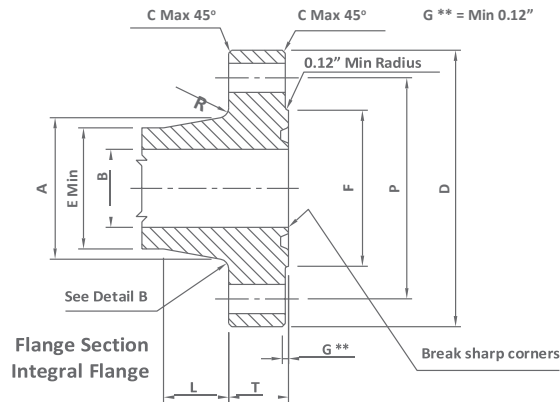
Nominal Size and Bore of Flange	Maximum Bore	Outside Diameter of Flange	Tolerance	Maximum Chamfer	Diameter of Raised Face	Total Thickness of Flange	Basic Thickness of Flange	Diameter of Hub	Diameter of Bolt Circle	Number of Bolts	Diameter of Bolts	Diameter of Bolt Holes	Bolt Hole Tolerance (see note)	Length of Bolts	Ring Number, R or RX
-	B	D	D	C	F	T	G	A	P	-	-	-	-	-	-
21/16	2.09	8.50	±0.06	0.12	4.88	1.81	1.5	4.12	6.5	8	7/8	1	0.06	6.00	24
29/16	2.59	9.62	±0.06	0.12	5.38	1.94	1.62	4.88	7.5	8	1	1.12	0.06	6.50	27
31/8	3.22	10.5	±0.06	0.12	6.62	2.19	1.88	5.25	8.0	8	7/8	1.25	0.06	7.25	35
41/16	4.28	12.25	±0.06	0.12	7.62	2.44	2.12	6.38	9.5	8	11/8	1.38	0.06	8.00	39
51/8	5.16	14.75	±0.06	0.12	9.00	3.19	2.88	7.75	11.5	8	1½	1.62	0.06	10.00	44
71/16	7.16	15.50	±0.12	0.25	9.75	3.62	3.25	9.00	12.5	12	11/8	1.50	0.06	10.75	46
9	9.03	19.00	±0.12	0.25	12.5	4.06	3.62	11.50	15.5	12	13/8	1.75	0.09	12.00	50
11	11.03	23.00	±0.12	0.25	14.63	4.69	4.25	14.50	19.0	12	13/8	2.00	0.09	13.75	54

NOTE: All dimensions in (inches). Minimum Bolt Hole Tolerance is -0.02"



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Ring groove must be concentric with bore within 0.010 total indicator runout



Detail A
Bolt hole centreline located within 0.03 of the theoretical B.C. and equal spacing

TABLE 5A.7

2,000, 3,000, 5,000 and 10,000 PSI Hub and Bore Dimensions

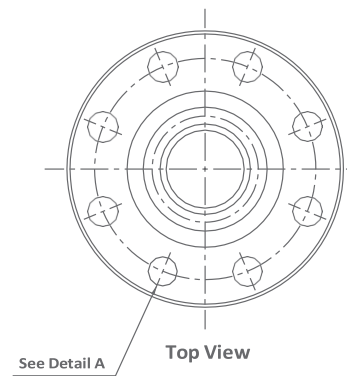
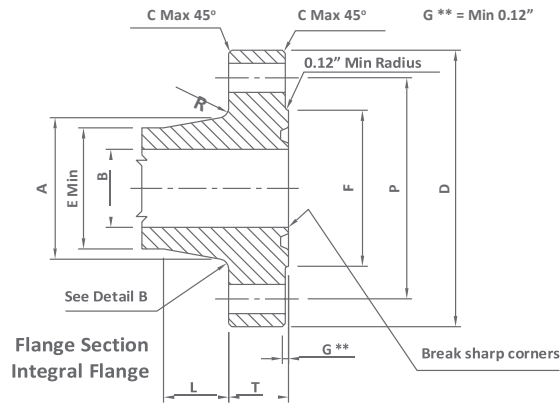
Nominal Size and Bore of Flange	Maximum Bore	Outside Diameter of Flange	Tolerance	Maximum Chamfer	Diameter of Raised Face	Total Thickness of Flange	Large Diameter of Hub	Small Diameter of Hub	Length of Hub	Radius of Hub	Diameter of Bolt Circle	Number of Bolts	Diameter of Bolts	Diameter of Bolts HHoles	Bolt Hole Tolerance (see note)	Length of Bolts	Ring Number R, RX or BX
-	B	D	D	C	F	T	A	E	L	R	P	-	-	-	-	-	-
2000 PSI																	
263/4	26.78	41.00	±0.12	0.25	31.69	4.97	32.91	29.25	7.31	0.62	37.50	20	13/4	1.88	+0.09	13.75	167
30	30.03	44.19	±0.12	0.25	35.75	5.28	36.69	32.80	7.75	0.62	40.94	32	15/8	1.75	+0.09	14.25	303
3000 PSI																	
263/4	26.78	43.38	±0.12	0.25	32.75	6.34	34.25	30.56	7.31	0.62	39.38	24	2	2.12	+0.09	17.00	168
30	30.03	46.68	±0.12	0.25	36.31	6.58	38.19	34.30	7.75	0.62	42.94	32	17/8	2.00	+0.09	17.75	303
5000 PSI																	
135/8	13.66	26.5	±0.12	0.25	18.00	4.44	18.94	16.69	4.50	0.62	23.25	16	15/8	1.75	+0.09	12.50	160
163/4	16.78	30.38	±0.12	0.25	21.06	5.13	21.88	20.75	3.00	0.75	26.62	16	17/8	2.00	+0.09	14.50	162
183/4	18.78	35.62	±0.12	0.25	24.69	6.53	26.56	23.56	6.00	0.62	31.62	20	2	2.12	+0.09	17.50	163
21¼	21.28	39.00	±0.12	0.25	27.62	7.12	29.88	26.75	6.50	0.69	34.88	24	2	2.12	+0.09	18.75	165

NOTE: All dimensions in (inches). Minimum Bolt Hole Tolerance is -0.02"



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Ring groove must be concentric with bore within 0.010 total indicator runoff



Detail A
Bolt hole centreline located within 0.03 of the theoretical B.C. and equal spacing

TABLE 5A.7 (CONT.)

2,000, 3,000, 5,000 and 10,000 PSI Hub and Bore Dimensions

Nominal Size and Bore of Flange	Maximum Bore	Outside Diameter of Flange	Tolerance	Maximum Chamfer	Diameter of Raised Face	Total Thickness of Flange	Large Diameter of Hub	Small Diameter of Hub	Length of Hub	Radius of Hub	Diameter of Bolt Circle	Number of Bolts	Diameter of Bolts	Diameter of Bolts HHoles	Bolt Hole Tolerance (see note)	Length of Bolts	Ring Number R, RX or BX
-	B	D	D	C	F	T	A	E	L	R	P	-	-	-	-	-	-
10000 PSI																	
113/16	1.84	7.38	±0.06	0.12	4.12	1.66	3.50	2.56	1.91	0.38	5.75	8	3/4	0.88	+0.06	5.00	151
21/16	2.09	7.88	±0.06	0.12	4.38	1.73	3.94	2.94	2.03	0.38	6.25	8	3/4	0.88	+0.06	5.50	152
29/16	2.59	9.12	±0.06	0.12	5.19	2.02	4.75	3.62	2.25	0.38	7.25	8	7/8	1.00	+0.06	6.00	153
31/16	3.09	10.62	±0.06	0.12	6.00	2.3	5.59	4.34	2.50	0.38	8.50	8	1	1.12	+0.06	6.75	154
41/16	4.09	12.44	±0.06	0.12	7.28	2.77	7.19	5.75	2.88	0.38	10.19	8	11/8	1.25	+0.06	8.00	155
51/6	5.16	14.06	±0.06	0.12	8.69	3.12	8.81	7.19	3.19	0.38	11.81	12	11/8	1.25	+0.06	8.75	169
71/16	7.09	18.88	±0.12	0.25	11.88	4.06	11.88	10.00	3.75	0.62	15.88	12	11/2	1.62	+0.09	11.25	156
9	9.03	21.75	±0.12	0.25	14.12	4.88	14.75	12.88	3.69	0.62	18.75	16	11/2	1.62	+0.09	13.00	157
11	11.03	25.75	±0.12	0.25	16.88	5.56	17.75	15.75	4.06	0.62	22.25	16	13/4	1.88	+0.09	15.00	158
135/8	13.66	30.25	±0.12	0.25	20.38	6.62	21.75	19.50	4.50	0.62	26.50	20	17/8	2.00	+0.09	17.25	159
163/4	16.78	34.31	±0.12	0.25	22.69	6.62	25.81	23.69	3.00	0.75	30.56	24	17/8	2.00	+0.09	17.50	162
183/4	18.78	40.94	±0.12	0.25	27.44	8.78	29.62	26.56	6.12	0.62	36.44	24	2	2.38	+0.09	22.50	164
21	21.28	45.00	±0.12	0.25	30.75	9.50	33.38	30.00	6.50	0.81	40.25	24	21/2	2.62	+0.09	24.50	166

NOTE: All dimensions in (inches). Minimum Bolt Hole Tolerance is -0.02"



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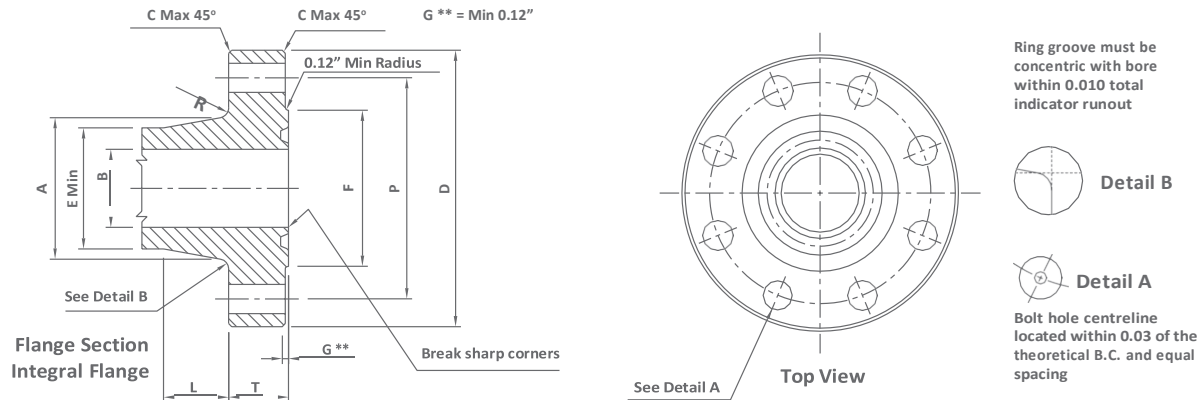


TABLE 5A.8

15,000 and 20,000 PSI Hub and Bore Dimensions

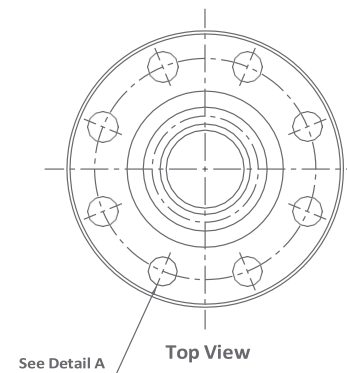
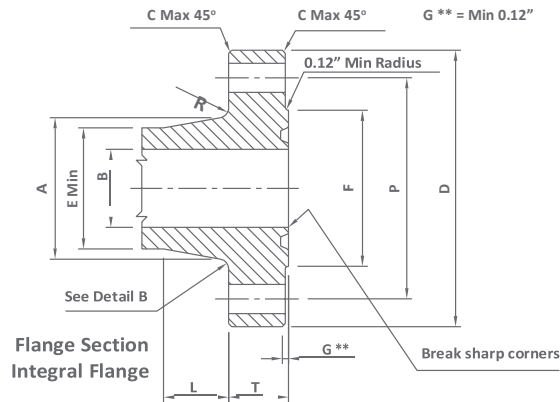
Nominal Size and Bore of Flange	Maximum Bore	Outside Diameter of Flange	Tolerance	Maximum Chamfer	Diameter of Raised Face	Total Thickness of Flange	Large Diameter of Hub	Small Diameter of Hub	Length of Hub	Radius of Hub	Diameter of Bolt Circle	Number of Bolts	Diameter of Bolts	Diameter of Bolts HHoles	Bolt Hole Tolerance (see note)	Length of Bolts	Ring Number BX
-	B	D	D	C	F	T	A	E	L	R	P	-	-	-	-	-	-
15000 PSI																	
113/16	1.84	8.19	±0.06	0.12	4.19	1.78	3.84	2.81	1.88	0.38	6.31	8	7/8	1.00	+0.06/-0.02	5.50	151
21/16	2.09	8.75	±0.06	0.12	4.50	2.00	4.38	3.25	2.12	0.38	6.88	8	7/8	1.00	+0.06/-0.02	6.00	152
29/16	2.59	10.00	±0.06	0.12	5.25	2.25	5.06	3.94	2.25	0.38	7.88	8	1	1.12	+0.06/-0.02	6.75	153
31/16	3.09	11.31	±0.06	0.12	6.06	2.53	6.06	4.81	2.50	0.38	9.06	8	11/8	1.25	+0.06/-0.02	7.50	154
41/16	4.09	14.19	±0.06	0.12	7.62	3.09	7.69	6.25	2.88	0.38	11.44	8	13/8	1.50	+0.06/-0.02	9.25	155
51/8	5.16	16.50	±0.06	0.12	8.88	3.88	9.62	7.88	3.22	0.62	13.50	12	11/2	1.62	+0.09/-0.02	11.50	169
71/16	7.09	19.88	±0.12	0.25	12.00	4.69	12.81	10.88	2.62	0.62	16.88	16	11/2	1.62	+0.09/-0.02	12.75	156
9	9.03	25.50	±0.12	0.25	15.00	5.75	17.00	13.75	4.88	0.62	21.75	16	17/8	2.00	+0.09/-0.02	15.75	157
11	11.03	32.00	±0.12	0.25	17.88	7.38	23.00	16.81	9.28	0.62	28.00	20	2	2.12	+0.09/-0.02	19.25	158
135/8	13.66	34.88	±0.12	0.25	21.31	8.06	23.44	20.81	4.50	1.00	30.38	20	2 1/4	2.38	+0.09/-0.02	21.25	159
183/4	18.78	45.75	±0.12	0.25	28.44	10.06	32.00	28.75	6.12	1.00	40.00	20	3	3.12	+0.12/-0.02	26.75	164

NOTE: All dimensions in (inches). Minimum Bolt Hole Tolerance is -0.02"



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Ring groove must be concentric with bore within 0.010 total indicator runout



Detail B



Detail A

Bolt hole centreline located within 0.03 of the theoretical B.C. and equal spacing

TABLE 5A.8 (CONT.)

15,000 and 20,000 PSI Hub and Bore Dimensions

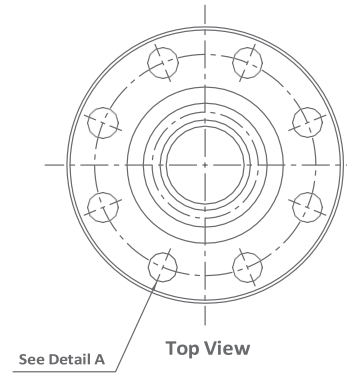
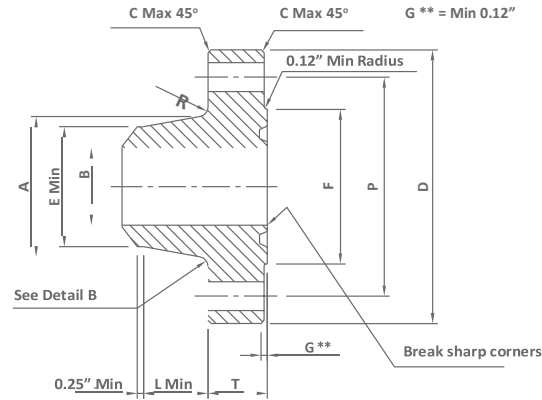
Nominal Size and Bore of Flange	Maximum Bore	Outside Diameter of Flange	Tolerance	Maximum Chamfer	Diameter of Raised Face	Total Thickness of Flange	Large Diameter of Hub	Small Diameter of Hub	Length of Hub	Radius of Hub	Diameter of Bolt Circle	Number of Bolts	Diameter of Bolts	Diameter of Bolts HHoles	Bolt Hole Tolerance (see note)	Length of Bolts	Ring Number BX
-	B	D	D	C	F	T	A	E	L	R	P	-	-	-	-	-	-
20000 PSI																	
113/16	1.84	10.12	±0.06	0.12	4.62	2.50	5.25	4.31	1.94	0.38	8.00	8	1	1.12	+0.06/-0.02	7.50	151
21/16	2.09	11.31	±0.06	0.12	5.19	2.81	6.06	5.00	2.06	0.38	9.06	8	11/8	1.25	+0.06/-0.02	8.25	152
29/16	2.59	12.81	±0.06	0.12	5.94	3.12	6.81	5.69	2.31	0.38	10.31	8	1¼	1.38	+0.06/-0.02	9.25	153
31/16	3.09	14.06	±0.06	0.12	6.75	3.38	7.56	6.31	2.50	0.38	11.31	8	13/8	1.5	+0.06/-0.02	10.00	154
41/16	4.09	17.56	±0.06	0.12	8.62	4.19	9.56	8.12	2.88	0.38	14.06	8	13/4	1.88	+0.06/-0.02	12.25	155
71/16	7.09	25.81	±0.12	0.25	13.88	6.50	15.19	13.31	3.81	0.62	21.81	16	2	2.12	+0.09/-0.02	17.50	156
9	9.03	31.69	±0.12	0.25	17.38	8.06	18.94	16.88	4.25	1.00	27.00	16	21/2	2.62	+0.09/-0.02	22.38	157
11	11.03	34.75	±0.12	0.25	19.88	8.81	22.31	20.00	4.06	1.00	29.50	16	23/4	2.88	+0.09/-0.02	23.75	158
135/8	13.66	45.75	±0.12	0.25	24.19	11.50	27.31	24.75	5.25	1.00	40.00	20	3	3.12	+0.12/-0.02	30.00	159

NOTE: All dimensions in (inches). Minimum Bolt Hole Tolerance is -0.02"



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This data represents the standard material stocked and supplied in the IVP-Solutions product range. Other material specifications available upon request.



Ring groove must be concentric with bore within 0.010 total indicator runoff



Detail A
Bolt hole centreline located within 0.03 of the theoretical B.C. and equal spacing

TABLE 5A.9

10,000, 15,000 and 20,000 PSI Hub and Bore Dimensions

Nominal Size and Bore of Flange	Maximum Bore	Outside Diameter of Flange	Tolerance	Maximum Chamfer	Diameter of Raised Face	Total Thickness of Flange	Large Diameter of Hub	Small Diameter of Hub	Length of Hub	Radius of Hub	Diameter of Bolt Circle	Number of Bolts	Diameter of Bolts	Diameter of Bolt Holes	Bolt Hole Tolerance (see note)	Length of Bolts	Ring Number R _x or BX
-	B	D	D	C	F	T	A	E	L	R	P	-	-	-	-	-	-
10000 PSI																	
113/16	1.84	7.38	±0.06	0.12	4.12	1.66	3.50	2.56	1.91	0.38	5.75	8	3/4	0.88	+0.06/-0.02	5.00	151
21/16	2.09	7.88	±0.06	0.12	4.38	1.73	3.94	2.94	2.03	0.38	6.25	8	3/4	0.88	+0.06/-0.02	5.50	152
29/16	2.59	9.12	±0.06	0.12	5.19	2.02	4.75	3.62	2.25	0.38	7.25	8	7/8	1.00	+0.06/-0.02	6.00	153
31/16	3.09	10.62	±0.06	0.12	6.00	2.30	5.59	4.34	2.50	0.38	8.50	8	1	1.12	+0.06/-0.02	6.75	154
41/16	4.09	12.44	±0.06	0.12	7.28	2.77	7.19	5.75	2.88	0.38	10.19	8	11/8	1.25	+0.06/-0.02	8.00	155
51/6	5.16	14.06	±0.06	0.12	8.69	3.13	8.81	7.19	3.19	0.38	11.81	12	11/8	1.25	+0.06/-0.02	8.75	169
71/16	7.09	18.88	±0.12	0.25	11.88	4.06	11.88	10.00	3.75	0.62	15.88	12	11/2	1.62	+0.09/-0.02	11.25	156
9	9.03	21.75	±0.12	0.25	14.12	4.88	14.75	12.88	3.69	0.62	18.75	16	11/2	1.62	+0.09/-0.02	13.00	157
11	11.03	25.75	±0.12	0.25	16.88	5.56	17.75	15.75	4.06	0.62	22.25	16	13/4	1.88	+0.09/-0.02	15.00	158
135/8	13.66	30.25	±0.12	0.25	20.38	6.62	21.75	19.50	4.50	0.62	26.50	20	17/8	2.00	+0.09/-0.02	17.25	159
163/4	16.78	34.31	±0.12	0.25	22.69	6.62	25.81	23.69	3.00	0.75	30.56	24	17/8	2.00	+0.09/-0.02	17.50	162

NOTE: All dimensions in (inches). Minimum Bolt Hole Tolerance is -0.02"



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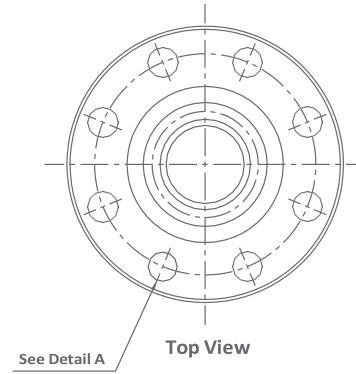
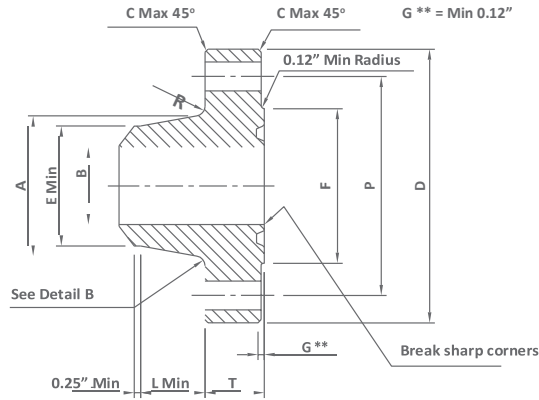


TABLE 5A.9 (CONT.)

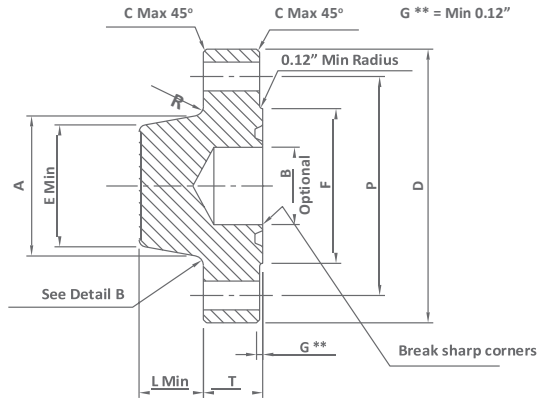
10,000, 15,000 and 20,000 PSI Hub and Bore Dimensions																	
Nominal Size and Bore of Flange	Maximum Bore	Outside Diameter of Flange	Tolerance	Maximum Chamfer	Diameter of Raised Face	Total Thickness of Flange	Large Diameter of Hub	Small Diameter of Hub	Length of Hub	Radius of Hub	Diameter of Bolt Circle	Number of Bolts	Diameter of Bolts	Diameter of Bolts HHoles	Bolt Hole Tolerance (see note)	Length of Bolts	Ring Number R, RX or BX
-	B	D	D	C	F	T	A	E	L	R	P	-	-	-	-	-	-
15000 PSI																	
113/16	1.84	8.19	±0.06	0.12	4.19	1.78	3.84	2.81	1.88	0.38	6.31	8	7/8	0.88	+0.06/-0.02	5.50	151
21/16	2.09	8.75	±0.06	0.12	4.50	2.00	4.38	3.25	2.12	0.38	6.88	8	7/8	0.88	+0.06/-0.02	6.00	152
29/16	2.59	10.00	±0.06	0.12	5.25	2.25	5.06	3.94	2.25	0.38	7.88	8	1	1.00	+0.06/-0.02	6.75	153
31/16	3.09	11.31	±0.06	0.12	6.06	2.53	6.06	4.81	2.50	0.38	9.06	8	11/8	1.12	+0.06/-0.02	7.50	154
41/16	4.09	14.19	±0.06	0.12	7.62	3.09	7.69	6.25	2.88	0.38	11.44	8	13/8	1.25	+0.06/-0.02	9.25	155
51/8	5.16	16.50	±0.06	0.12	8.88	3.88	9.62	7.88	3.22	0.62	13.50	12	11/2	1.25	+0.09/-0.02	11.50	169
71/16	7.09	19.88	±0.12	0.25	12.00	4.69	12.81	10.88	3.62	0.62	16.88	16	11/2	1.62	+0.09/-0.02	12.75	156
20000 PSI																	
113/16	1.84	10.12	±0.06	0.12	4.62	2.50	5.25	4.31	1.91	0.38	8.00	8	1	1.12	+0.06/-0.02	7.50	151
21/16	2.09	11.31	±0.06	0.12	5.19	2.81	6.06	5.00	2.06	0.38	9.06	8	11/8	1.25	+0.06/-0.02	8.25	152
29/16	2.59	12.81	±0.06	0.12	5.94	3.12	6.81	5.69	2.31	0.38	10.31	8	1 1/4	1.38	+0.06/-0.02	9.25	153
31/16	3.09	14.06	±0.06	0.12	6.75	3.38	7.56	6.31	2.50	0.38	11.31	8	13/8	1.50	+0.06/-0.02	10.00	154
41/16	4.09	17.56	±0.06	0.12	8.62	4.19	9.56	8.12	2.88	0.38	14.06	8	13/4	1.88	+0.09/-0.02	12.25	155
71/16	7.09	25.81	±0.12	0.25	13.88	6.50	15.19	13.31	3.81	0.62	21.81	16	2	2.12	+0.09/-0.02	17.50	156

NOTE: All dimensions in (inches). Minimum Bolt Hole Tolerance is -0.02"



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Ring groove must be concentric with bore within 0.010 total indicator runout



Detail B



Detail A

Bolt hole centreline located within 0.03 of the theoretical B.C. and equal spacing

TABLE 5A.10

10,000, 15,000 and 20,000 PSI Hub and Bore Dimensions

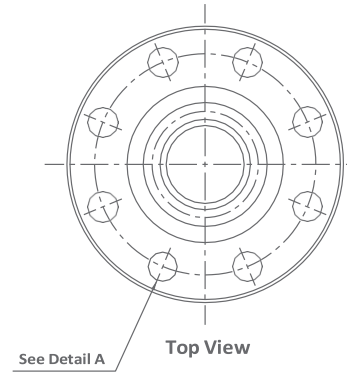
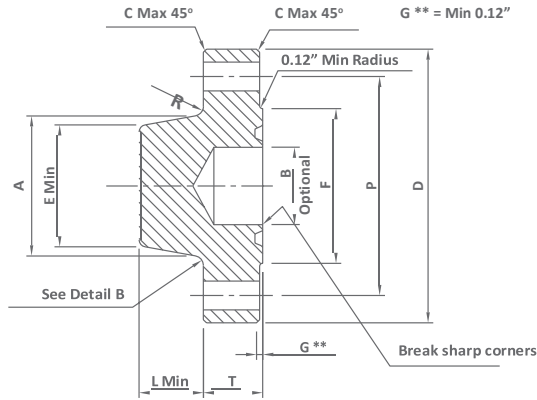
Nominal Size and Bore of Flange	Maximum Bore	Outside Diameter of Flange	Tolerance	Maximum Chamfer	Diameter of Raised Face	Total Thickness of Flange	Large Diameter of Hub	Small Diameter of Hub	Length of Hub	Radius of Hub	Diameter of Bolt Circle	Number of Bolts	Diameter of Bolts	Diameter of Bolt Holes	Bolt Hole Tolerance (see note)	Length of Bolts	Ring Number R, RX or BX
-	B	D	D	C	F	T	G	A	P	-	-	-	-	-	-	-	-
10000 PSI																	
113/16	1.84	7.38	±0.06	0.12	4.12	1.66	3.50	2.56	1.91	0.38	5.75	8	3/4	0.88	+0.06/-0.02	5.00	151
21/16	2.09	7.88	±0.06	0.12	4.38	1.73	3.94	2.94	2.03	0.38	6.25	8	3/4	0.88	+0.06/-0.02	5.50	152
29/16	2.59	9.12	±0.06	0.12	5.19	2.02	4.75	3.62	2.25	0.38	7.25	8	7/8	1.00	+0.06/-0.02	6.00	153
31/16	3.09	10.62	±0.06	0.12	6.00	2.30	5.59	4.34	2.50	0.38	8.50	8	1	1.12	+0.06/-0.02	6.75	154
41/16	4.09	12.44	±0.06	0.12	7.28	2.77	7.19	5.75	2.88	0.38	10.19	8	11/8	1.25	+0.06/-0.02	8.00	155
51/8	5.16	14.06	±0.06	0.12	8.69	3.13	8.81	7.19	3.19	0.38	11.81	12	11/8	1.25	+0.06/-0.02	8.75	169
15000 PSI																	
113/16	1.84	8.19	±0.06	0.12	4.19	1.78	3.84	2.81	1.88	0.38	6.31	8	1	1.00	+0.06/-0.02	5.50	151
21/16	2.09	8.75	±0.06	0.12	4.50	2.00	4.38	3.25	2.12	0.38	6.88	8	11/8	1.00	+0.06/-0.02	6.00	152
29/16	2.59	10.00	±0.06	0.12	5.25	2.25	5.06	3.94	2.25	0.38	7.88	8	1 1/4	1.12	+0.06/-0.02	6.75	153
31/16	3.09	11.31	±0.06	0.12	6.06	2.53	6.06	4.81	2.50	0.38	9.06	8	13/8	1.25	+0.06/-0.02	7.50	154
41/16	4.09	14.19	±0.06	0.12	7.62	3.09	7.69	6.25	2.88	0.38	11.44	8	13/4	1.50	+0.06/-0.02	9.25	155
51/8	5.16	16.50	±0.06	0.12	8.88	3.88	9.62	7.88	3.22	0.62	13.50	12	2	1.62	+0.09/-0.02	11.50	169

NOTE: All dimensions in (inches). Minimum Bolt Hole Tolerance is -0.02"



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This data represents the standard material stocked and supplied in the IVP-Solutions product range. Other material specifications available upon request.



Ring groove must be concentric with bore within 0.010 total indicator runout



Detail B
Detail A
Bolt hole centreline located within 0.03 of the theoretical B.C. and equal spacing

TABLE 5A.10

10,000, 15,000 and 20,000 PSI Hub and Bore Dimensions

Nominal Size and Bore of Flange	Maximum Bore	Outside Diameter of Flange	Tolerance	Maximum Chamfer	Diameter of Raised Face	Total Thickness of Flange	Large Diameter of Hub	Small Diameter of Hub	Length of Hub	Radius of Hub	Diameter of Bolt Circle	Number of Bolts	Diameter of Bolts	Diameter of Bolt Holes	Bolt Hole Tolerance (see note)	Length of Bolts	Ring Number R, RX or BX
-	B	D	D	C	F	T	G	A	P	-	-	-	-	-	-	-	-
20000 PSI																	
113/16	1.84	10.12	±0.06	0.12	4.62	2.50	5.25	4.31	1.94	0.38	8.00	8	1	1.12	+0.06/-0.02	7.50	151
21/16	2.09	11.31	±0.06	0.12	5.19	2.81	6.06	5.00	2.06	0.38	9.06	8	11/8	1.25	+0.06/-0.02	8.25	152
29/16	2.59	12.81	±0.06	0.12	5.94	3.12	6.81	5.69	2.31	0.38	10.31	8	1¼	1.38	+0.06/-0.02	9.25	153
31/16	3.09	14.06	±0.06	0.12	6.75	3.38	7.56	6.31	2.50	0.38	11.31	8	13/8	1.50	+0.06/-0.02	10.00	154
41/16	4.09	17.56	±0.06	0.12	8.62	4.19	9.56	8.12	2.88	0.38	14.06	8	13/4	1.88	+0.06/-0.02	12.25	155

NOTE: All dimensions in (inches). Minimum Bolt Hole Tolerance is -0.02"



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This data represents the standard material stocked and supplied in the IVP-Solutions product range. Other material specifications available upon request.

ANSI Flanges are designed in accordance with the following specifications:

- ANSI B16.5** Pipe Flanges and Flanged Fittings.
- ANSI B31.3** Chemical Plant and Petroleum Refinery Piping.
- ASME VIII** Boiler and Pressure Vessel Code.
- MSS-SP-55** Quality Standards for Steel Castings for Valves, Flanges and Fittings and other Piping Components.
- NACE MR-01-75** Sulphide Stress Cracking Resistant Metallic Materials for Oilfield Equipment.

Flanges are available as Weld Neck, Integral, Blind, Target & Test Blind for use with the following pressure ratings:

TABLE 5B.0

Rating	150lb	300lb	400lb	600lb	900lb	1,500lb	2,500lb
Max working pressure	285 PSI	740 PSI	990 PSI	1480 PSI	2220 PSI	3705 PSI	6170 PSI
Test Pressure	450 PSI	1125 PSI	1500 PSI	2225 PSI	3350 PSI	5575 PSI	9275 PSI
Operating Temperature Range	-28 to +540°C	-28 to +540°C	-28 to +540°C	-28 to +540°C	-28 to +540°C	-28 to +540°C	-28 to +540°C

Please contact IVP Solutions for any special materials or threaded, slip on or lapped flange dimension.

Max. working pressures stated are based upon carbon steel material group 1.1 @ 38°C in accordance with ANSI B16.5

De-rating of max. working pressure will occur as the operating temperature increases above 38°C. Consult IVP Solutions for further details.



NOTE: All dimensions in (inches).

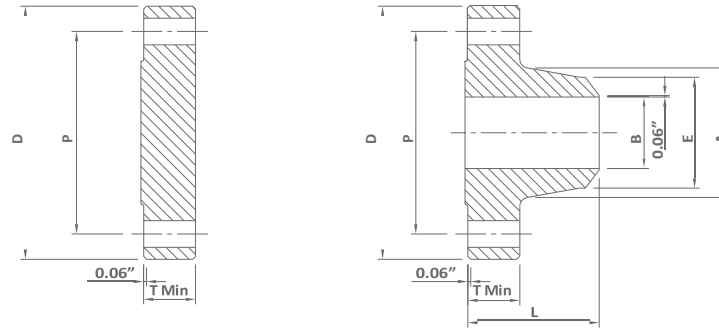


TABLE 5B.1

Class 150 Flanges												
Nominal Pipe Size (NPS)	Outside Diameter of Flange	Thickness of Flange Min.	Diameter of Hub	Hub ϕ Start of Chamfer Welding Neck	Length Through Hub	Bore	Drilling				Length of Bolts	
							Welding Neck	Welding Neck	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Holes	Diameter of Bolts
D	T	A	E	L	B	P						
1/2	3.50	0.44	1.19	0.84	1.88	0.62	2.38	0.62	4	1/2	2.25	...
3/4	3.88	0.50	1.50	1.05	2.06	0.82	2.75	0.62	4	1/2	2.50	...
1	4.25	0.56	1.94	1.32	2.19	1.05	3.12	0.62	4	1/2	2.50	3.00
1 1/4	4.62	0.62	2.31	1.66	2.25	1.38	3.50	0.62	4	1/2	2.75	3.25
1 1/2	5.00	0.69	2.56	1.90	2.44	1.61	3.88	0.62	4	1/2	2.75	3.25
2	6.00	0.75	3.06	2.38	2.50	2.07	4.75	0.75	4	5/8	3.25	3.75
2 1/2	7.00	0.88	3.56	2.88	2.75	2.47	5.50	0.75	4	5/8	3.50	4.00
3	7.50	0.94	4.25	3.50	2.75	3.07	6.00	0.75	4	5/8	3.50	4.00
3 1/2	8.50	0.94	4.81	4.00	2.81	3.55	7.00	0.75	8	5/8	3.50	4.00
4	9.00	0.94	5.31	4.50	3.00	4.03	7.50	0.75	8	5/8	3.50	4.00
5	10.00	0.94	6.44	5.56	3.50	5.05	8.50	0.88	8	3/4	3.75	4.25
6	11.00	1.00	7.56	6.63	3.50	6.07	9.50	0.88	8	3/4	4.00	4.50
8	13.50	1.12	9.69	8.63	4.00	7.98	11.75	0.88	8	3/4	4.25	4.75
10	16.00	1.19	12.00	10.75	4.00	10.02	14.25	1.00	12	7/8	4.50	5.00
12	19.00	1.25	14.38	12.75	4.50	12.00	17.00	1.00	12	7/8	4.75	5.25
14	21.00	1.38	15.75	14.00	5.00		18.75	1.12	12	1	5.25	5.75
16	23.50	1.44	18.00	16.00	5.00		21.25	1.12	16	1	5.25	5.75
18	25.00	1.56	19.88	18.00	5.50	To be specified by purchaser	22.75	1.25	16	11/8	5.75	6.25
20	27.50	1.69	22.00	20.00	5.69		25.00	1.25	20	11/8	6.25	6.75
24	32.00	1.88	26.12	24.00	6.00		29.50	1.38	20	11/8	6.75	7.25



NOTE: All dimensions in (inches).

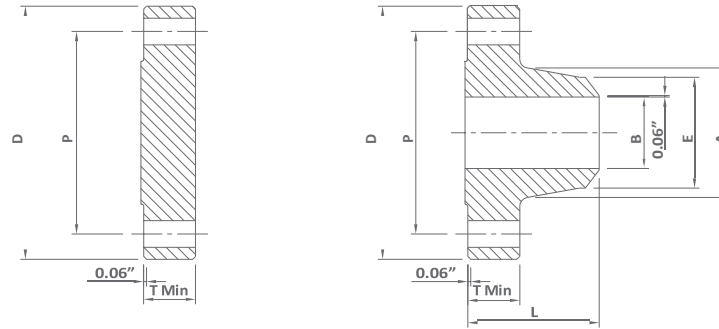


TABLE 5B.2

Class 300 Flanges												
Nominal Pipe Size (NPS)	Outside Diameter of Flange	Thickness of Flange Min.	Diameter of Hub	Hub ϕ Beginning of Chamfer Welding Neck	Length Through Hub Welding Neck	Bore Welding Neck	Drilling				Length of Bolts	
							Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Holes	Diameter of Bolts	Stud Bolts	
	D	T	A	E	L	B	P					
1/2	3.75	0.56	1.50	0.84	2.06	0.62	2.62	0.62	4	1/2	2.50	3.00
3/4	4.62	0.62	1.88	1.05	2.25	0.82	3.25	0.75	4	5/8	3.00	3.50
1	4.88	0.69	2.12	1.32	2.44	1.05	3.50	0.75	4	5/8	3.00	3.50
1 1/4	5.25	0.75	2.50	1.66	2.56	1.38	3.88	0.75	4	5/8	3.25	3.75
1 1/2	6.12	0.81	2.75	1.90	2.69	1.61	4.50	0.88	4	3/4	3.50	4.00
2	6.50	0.88	3.31	2.38	2.75	2.07	5.00	0.75	8	5/8	3.50	4.00
2 1/2	7.50	1.00	3.94	2.88	3.00	2.47	5.88	0.88	8	3/4	4.00	4.50
3	8.25	1.12	4.62	3.50	3.12	3.07	6.62	0.88	8	3/4	4.25	4.75
3 1/2	9.00	1.19	5.25	4.00	3.19	3.55	7.25	0.88	8	3/4	4.25	5.00
4	10.00	1.25	5.75	4.50	3.38	4.03	7.88	0.88	8	3/4	4.50	5.00
5	11.00	1.38	7.00	5.56	3.88	5.05	9.25	0.88	8	3/4	4.75	5.25
6	12.50	1.44	8.12	6.63	3.88	6.07	10.62	0.88	12	3/4	4.75	5.50
8	15.00	1.62	10.25	8.63	4.38	7.98	13.00	1.00	12	7/8	5.50	6.00
10	17.50	1.88	12.62	10.75	4.62	10.02	15.25	1.12	16	1	6.25	6.75
12	20.50	2.00	14.75	12.75	5.12	12.00	17.75	1.25	16	1 1/8	6.75	7.25
14	23.00	2.12	16.75	14.00	5.62	12.00	20.25	1.25	20	1 1/8	7.00	7.50
16	25.50	2.25	19.00	16.00	5.75		22.50	1.38	20	1 1/8	7.50	8.00
18	28.00	2.38	21.00	18.00	6.25	To be specified by purchaser	24.75	1.38	24	1 1/8	7.75	8.25
20	30.50	2.50	23.12	20.00	6.38		27.00	1.38	24	1 1/8	8.00	8.75
24	36.00	2.75	27.62	24.00	6.62		32.00	1.62	24	1 1/8	9.00	10.00



NOTE: All dimensions in (inches).

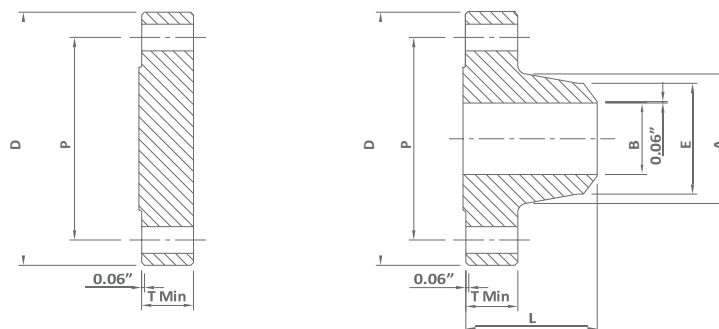


TABLE 5B.3

Class 400 Flanges												
Nominal Pipe Size (NPS)	Outside Diameter of Flange	Thickness of Flange Min.	Diameter of Hub	Hub ϕ Beginning of Chamfer Welding Neck	Length Through Hub	Bore	Drilling				Length of Bolts	
							Welding Neck	Welding Neck	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Holes	Diameter of Bolts
D	T	A	E	L	B	P						
1/2	3.75	0.56	1.50	0.84	2.06	To be specified by purchaser	2.62	0.62	4	1/2	3.00	3.00
3/4	4.62	0.62	1.88	1.05	2.25		3.25	0.75	4	5/8	3.50	3.50
1	4.88	0.69	2.12	1.32	2.44		3.50	0.75	4	5/8	3.50	3.50
1 1/4	5.25	0.81	2.50	1.66	2.62		3.88	0.75	4	5/8	3.75	3.75
1 1/2	6.12	0.88	2.75	1.90	2.75		4.50	0.88	4	3/4	4.25	4.25
2	6.50	1.00	3.31	2.38	2.88		5.00	0.75	8	5/8	4.25	4.25
2 1/2	7.50	1.12	3.94	2.88	3.12		5.88	0.88	8	3/4	4.75	4.75
3	8.25	1.25	4.62	3.50	3.25		6.62	0.88	8	3/4	5.00	5.00
3 1/2	9.00	1.38	5.25	4.00	3.38		7.25	1.00	8	7/8	5.50	5.50
4	10.00	1.38	5.75	4.50	3.50		7.88	1.00	8	7/8	5.50	5.50
5	11.00	1.50	7.00	5.56	4.00		9.25	1.00	8	7/8	5.75	5.75
6	12.50	1.62	8.12	6.63	4.06		10.62	1.00	12	7/8	6.00	6.00
8	15.00	1.88	10.25	8.63	4.62		13.00	1.12	12	1	6.75	6.75
10	17.50	2.12	12.62	10.75	4.88		15.25	1.25	16	1 1/8	7.50	7.50
12	20.50	2.25	14.75	12.75	5.38		17.75	1.38	16	1 1/4	8.00	8.00
14	23.00	2.38	16.75	14.00	5.88		20.25	1.38	20	1 1/2	8.25	8.25
16	25.50	2.50	19.00	16.00	6.00		22.50	1.50	20	1 3/8	8.75	8.75
18	28.00	2.62	21.00	18.00	6.50		24.75	1.50	24	1 3/8	9.00	9.00
20	30.50	2.75	23.12	20.00	6.62		27.00	1.62	24	1 1/2	9.50	9.75
24	36.00	3.00	27.62	24.00	6.88		32.00	1.88	24	1 3/4	10.50	11.00



NOTE: All dimensions in (inches).

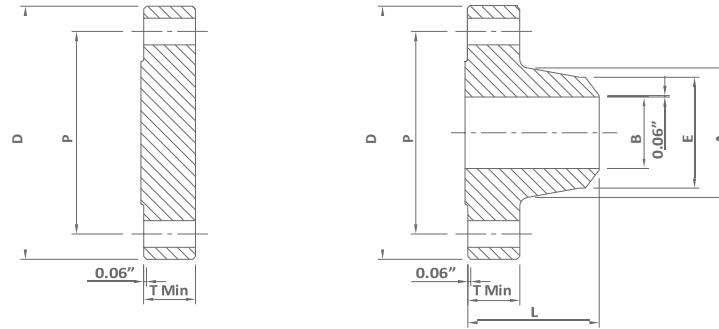


TABLE 5B.4

Class 600 Flanges												
Nominal Pipe Size (NPS)	Outside Diameter of Flange	Thickness of Flange Min.	Diameter of Hub	Hub ϕ Beginning of Chamfer Welding Neck	Length Through Hub	Bore	Drilling				Length of Bolts	
							Welding Neck	Welding Neck	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Holes	Diameter of Bolts
	D	T	A	E	L	B	P					
1/2	3.75	0.56	1.50	0.84	2.06		2.62	0.62	4	1/2	3.00	3.00
3/4	4.62	0.62	1.88	1.05	2.25		3.25	0.75	4	5/8	3.50	3.50
1	4.88	0.69	2.12	1.32	2.44		3.50	0.75	4	5/8	3.50	3.50
1 1/4	5.25	0.81	2.50	1.66	2.62		3.88	0.75	4	5/8	3.75	3.75
1 1/2	6.12	0.88	2.75	1.90	2.75		4.50	0.88	4	3/4	4.25	4.25
2	6.50	1.00	3.31	2.38	2.88		5.00	0.75	8	5/8	4.25	4.25
2 1/2	7.50	1.12	3.94	2.88	3.12		5.88	0.88	8	3/4	4.75	4.75
3	8.25	1.25	4.62	3.50	3.25		6.62	0.88	8	3/4	5.00	5.00
3 1/2	9.00	1.38	5.25	4.00	3.38		7.25	1.00	8	7/8	5.50	5.50
4	10.75	1.50	6.00	4.50	4.00	To be specified by purchaser	8.50	1.00	8	7/8	5.75	5.75
5	13.00	1.75	7.44	5.56	4.50		10.50	1.12	8	7/8	6.50	6.50
6	14.00	1.88	8.75	6.63	4.62		11.50	1.12	12	7/8	6.75	6.75
8	16.50	2.19	10.75	8.63	5.25		13.75	1.25	12	1	7.50	7.75
10	20.00	2.50	13.50	10.75	6.00		17.00	1.38	16	1 1/8	8.50	8.50
12	22.00	2.62	15.75	12.75	6.12		19.25	1.38	20	1 1/4	8.75	8.75
14	23.75	2.75	17.00	14.00	6.50		20.75	1.50	20	1 1/4	9.25	9.25
16	27.00	3.00	19.50	16.00	7.00		23.75	1.62	20	1 3/8	10.00	10.00
18	29.25	3.25	21.50	18.00	7.25		25.75	1.75	20	1 3/8	10.75	10.75
20	32.00	3.50	24.00	20.00	7.50		28.50	1.75	24	1 1/2	11.25	11.50
24	37.00	4.00	28.25	24.00	8.00	33.00	2.00	24	1 3/4	13.00	13.25	



NOTE: All dimensions in (inches).

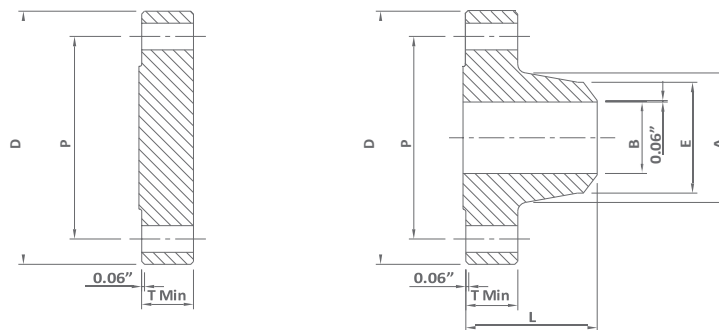


TABLE 5B.5

Class 900 Flanges												
Nominal Pipe Size (NPS)	Outside Diameter of Flange	Thickness of Flange Min.	Diameter of Hub	Hub ϕ Beginning of Chamfer Welding Neck	Length Through Hub	Bore	Drilling				Length of Bolts	
							Welding Neck	Welding Neck	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Holes	Diameter of Bolts
	D	T	A	E	L	B	P					
1/2	4.75	0.88	1.50	0.84	2.38	To be specified by purchaser	3.25	0.88	4	3/4	4.25	4.25
3/4	5.12	1.00	1.75	1.05	2.75		3.50	0.88	4	3/4	4.50	4.50
1	5.88	1.12	2.06	1.32	2.88		4.00	1.00	4	7/8	5.00	5.00
1 1/4	6.25	1.12	2.50	1.66	2.88		4.38	1.00	4	7/8	5.00	5.00
1 1/2	7.00	1.25	2.75	1.90	3.25		4.88	1.12	4	1	5.50	5.50
2	8.50	1.50	4.12	2.38	4.00		6.50	1.00	8	7/8	5.75	5.75
2 1/2	9.62	1.62	4.88	2.88	4.12		7.50	1.12	8	1	6.25	6.25
3	9.50	1.50	5.00	3.50	4.00		7.50	1.00	8	7/8	5.75	5.75
4	11.50	1.75	6.25	4.50	4.50		9.25	1.25	8	11/8	6.75	6.75
5	13.75	2.00	7.50	5.56	5.00		11.00	1.38	8	1 1/4	7.50	7.50
6	15.00	2.19	9.25	6.63	5.50		12.50	1.25	12	1 1/8	7.50	7.75
8	18.50	2.50	11.75	8.63	6.38		15.50	1.50	12	1 3/8	8.75	8.25
10	21.50	2.75	14.50	10.75	7.25		18.50	1.50	16	1 3/8	9.25	9.25
12	24.00	3.12	16.50	12.75	7.88		21.00	1.50	20	1 3/8	10.00	10.00
14	25.25	3.38	17.75	14.00	8.38		22.00	1.62	20	1 1/2	10.75	11.00
16	27.75	3.50	20.00	16.00	8.50		24.25	1.75	20	1 5/8	11.25	11.50
18	31.00	4.00	22.25	18.00	9.00		27.00	2.00	20	1 7/8	12.75	13.25
20	33.75	4.25	24.50	20.00	9.75		29.50	2.12	20	2	13.75	14.25
24	41.00	5.50	29.50	24.00	11.50		35.50	2.62	20	2 1/2	17.25	18.00



NOTE: All dimensions in (inches).

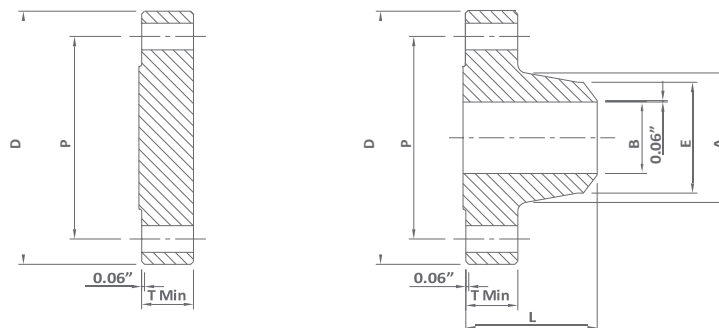


TABLE 5B.6

Class 1500 Flanges												
Nominal Pipe Size (NPS)	Outside Diameter of Flange	Thickness of Flange Min.	Diameter of Hub	Hub ϕ Beginning of Chamfer Welding Neck	Length Through Hub	Bore	Drilling				Length of Bolts	
							Welding Neck	Welding Neck	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Holes	Diameter of Bolts
	D	T	A	E	L	B	P					
1/2	4.75	0.88	1.50	0.84	2.38	To be specified by purchaser	3.25	0.88	4	3/4	4.25	4.25
3/4	5.12	1.00	1.75	1.05	2.75		3.50	0.88	4	3/4	4.50	4.50
1	5.88	1.12	2.06	1.32	2.88		4.00	1.00	4	7/8	5.00	5.00
1 1/4	6.25	1.12	2.50	1.66	2.88		4.38	1.00	4	7/8	5.00	5.00
1 1/2	7.00	1.25	2.75	1.90	3.25		4.88	1.12	4	1	5.50	5.50
2	8.50	1.50	4.12	2.38	4.00		6.50	1.00	8	7/8	5.75	5.75
2 1/2	9.62	1.62	4.88	2.88	4.12		7.50	1.12	8	1	6.25	6.25
3	10.50	1.88	5.25	3.50	4.62		8.00	1.25	8	1 1/8	7.00	7.00
4	12.25	2.12	6.38	4.50	4.88		9.50	1.38	8	1 1/4	7.75	7.75
5	14.75	2.88	7.75	5.56	6.12		11.50	1.62	8	1 1/2	9.75	9.75
6	15.50	3.25	9.00	6.63	6.75		12.50	1.50	12	1 3/8	10.25	10.50
8	19.00	3.62	11.50	8.63	8.38		15.50	1.75	12	1 5/8	11.50	12.75
10	23.00	4.25	14.50	10.75	10.00		19.00	2.00	12	1 7/8	13.25	13.50
12	26.50	4.88	17.75	12.75	11.12		22.50	2.12	16	2	14.75	15.25
14	29.50	5.25	19.50	14.00	11.75		25.00	2.38	16	2 1/4	16.00	16.75
16	32.50	5.75	21.75	16.00	12.25		27.75	2.62	16	2 1/2	17.50	18.50
18	36.00	6.38	23.50	18.00	12.88		30.50	2.88	16	2 3/4	19.50	20.75
20	38.75	7.00	25.25	20.00	14.00		32.75	3.12	16	3	21.25	22.25
24	46.00	8.00	30.00	24.00	16.00		39.00	3.62	16	3 1/2	24.25	25.50



NOTE: All dimensions in (inches).

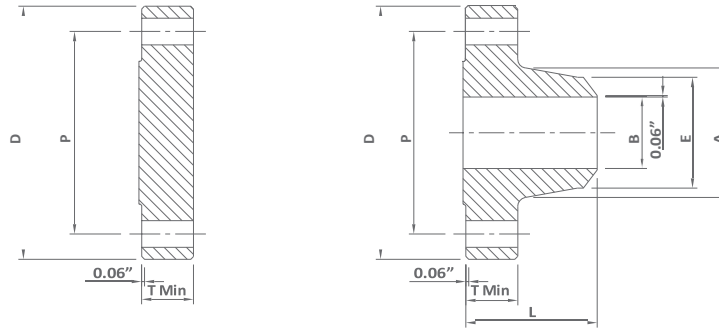


TABLE 5B.7

Class 2500 Flanges												
Nominal Pipe Size (NPS)	Outside Diameter of Flange	Thickness of Flange Min.	Diameter of Hub	Hub ϕ Beginning of Chamfer Welding Neck	Length Through Hub	Bore	Drilling				Length of Bolts	
							Welding Neck	Welding Neck	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Holes	Diameter of Bolts
	D	T	A	E	L	B	P					
1/2	5.25	1.19	1.69	0.84	2.88	To be specified by purchaser	3.50	0.88	4	3/4	4.75	4.75
3/4	5.50	1.25	2.00	1.05	3.12		3.75	0.88	4	3/4	5.00	5.00
1	6.25	1.38	2.25	1.32	3.50		4.25	1.00	4	7/8	5.50	5.50
1 1/4	7.25	1.50	2.88	1.66	3.75		5.12	1.12	4	1	6.00	6.00
1 1/2	8.00	1.75	3.12	1.90	4.38		5.75	1.25	4	1 1/8	6.75	6.75
2	9.25	2.00	3.75	2.38	5.00		6.75	1.12	8	1	7.00	7.00
2 1/2	10.50	2.25	4.50	2.88	5.62		7.75	1.25	8	1 1/8	7.75	8.00
3	12.00	2.62	5.25	3.50	6.62		9.00	1.38	8	1 1/4	8.75	9.00
4	14.00	3.00	6.50	4.50	7.50		10.75	1.62	8	1 1/2	10.00	10.25
5	16.50	3.62	8.00	5.56	9.00		12.75	1.88	8	1 3/4	11.75	12.25
6	19.00	4.25	9.25	6.63	10.75		14.50	2.12	8	2	13.50	14.00
8	21.75	5.00	12.00	8.63	12.50		17.25	2.12	12	2	15.00	15.50
10	26.50	6.50	14.75	10.75	16.50	21.25	2.62	12	2 1/2	19.25	20.00	
12	30.00	7.25	17.38	12.75	18.25	24.38	2.88	12	2 3/4	21.25	22.00	





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