

Section 5. API and ANSI Flanges

Section 5a API 6A TYPE 6B and 6BX Flanges

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, Blinds, Target & Test Blinds for use with the following pressure ratings:-

MAX. WORKING PRESSURE	2,000 PSI	3,000 PSI	5,000 PSI	10,000 PSI	15,000 PSI	20,000 PSI
TEST PRESSURE	3,000 PSI	4,500 PSI	7,500 PSI	15,000 PSI	22,500 PSI	30,000 PSI
PRODUCT SPECIFICATION LEVELS	1,2,3 & 4	1,2,3 & 4	1,2,3 & 4	1,2,3 & 4	1,2,3 & 4	1,2,3 & 4
API TEMPERATURE RATING	K (-60 DEG C) TO Y (+345 DEG C)	K (-60 DEG C) TO Y (+345 DEG C)	K (-60 DEG C) TO Y (+345 DEG C)	K (-60 DEG C) TO Y (+345 DEG C)	K (-60 DEG C) TO Y (+345 DEG C)	K (-60 DEG C) TO Y (+345 DEG C)
INTEGRAL, BLIND, TARGET BLIND & TEST FLANGES						
Min.YIELD	60,000 PSI	60,000 PSI	60,000 PSI	60,000 PSI	75,000 PSI	75,000 PSI
Min.TENSILE	85,000 PSI	85,000 PSI	85,000 PSI	85,000 PSI	95,000 PSI	95,000 PSI
MATERIAL	API 60K	API 60K	API 60K	API 60K	API 75K	API 75K
WELD NECK FLANGES						
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

GENERAL NOTE: Please contact RB Pipetech 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 RB Pipetech for further details.

Section 5a. Type 6B Flanges for 2000 psi Rated Working Pressure

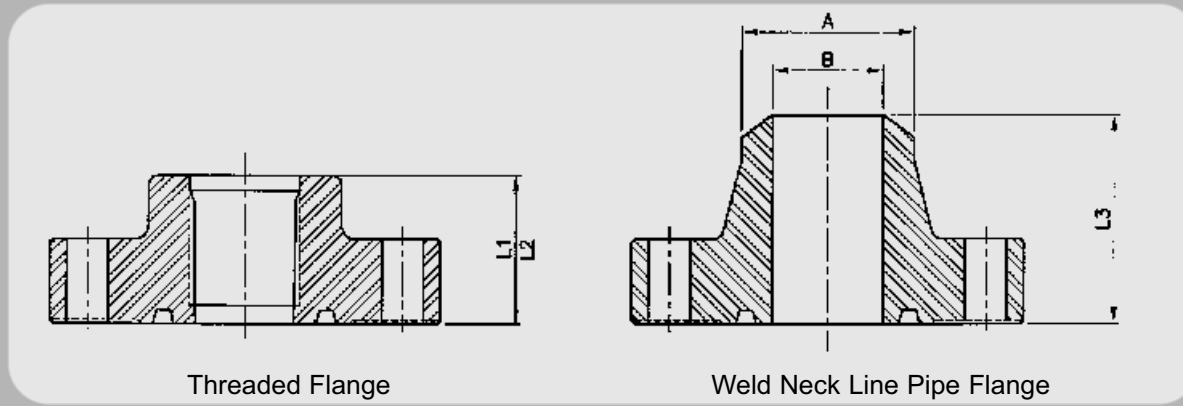


Table 5a.1 Hub and Bore Dimensions

Nominal Size and Bore of Flange	Hub Length Threaded Line-Pipe Flange	Hub Length Threaded Casing Flange	Hub Length Welding Neck Line-Pipe Flange	Neck Diameter Welding Neck Line-Pipe Flange	Tolerance	Maximum Bore of Welding Neck Flange
	L1	l2	l3±0.06	A	A	B
2 1/16	1.75	—	3.19	2.38	+0.09/-0.03	2.10
2 9/16	1.94	—	3.44	2.88	+0.09/-0.03	2.50
3 1/8	2.12	—	3.56	3.50	+0.09/-0.03	3.10
4 1/16	2.44	3.50	4.31	4.50	+0.09/-0.03	4.06
5 1/8	2.69	4.00	4.81	5.56	+0.09/-0.08	4.84
7 1/16	2.94	4.50	4.94	6.63	+0.16/-0.03	5.79
9	3.31	5.00	5.56	8.63	+0.16/-0.03	7.84
11	3.69	5.25	6.31	10.75	+0.16/-0.03	9.78
13 3/8	3.94	3.94	—	—	—	—
16 3/4	4.50	4.50	—	—	—	—
21 1/4	5.38	5.38	—	—	—	—

GENERAL NOTES: Dimensions are in inches.

Section 5a. Type 6B Flanges for 2000 psi Rated Working Pressure

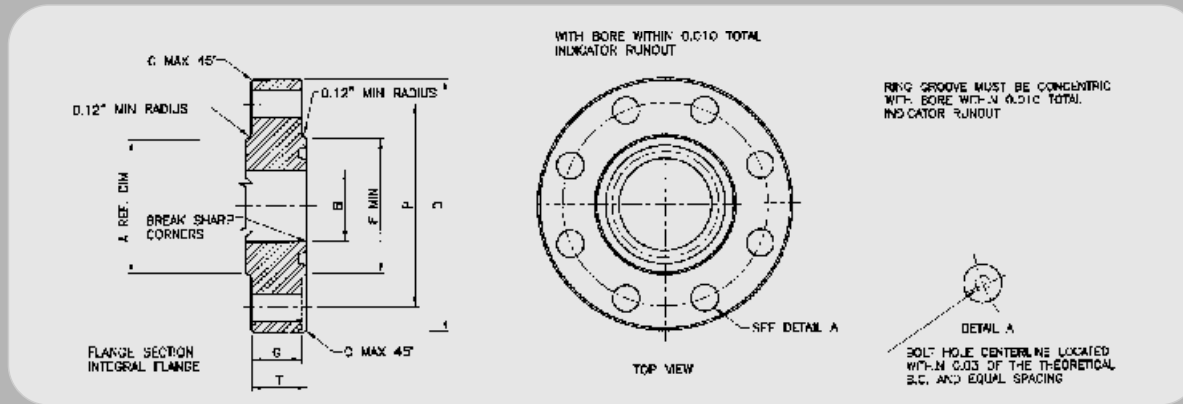
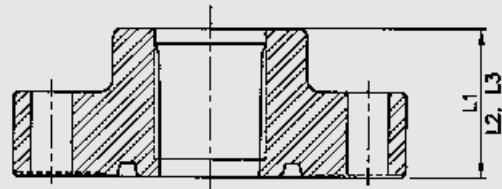


Table 5a.2 Hub and Bore Dimensions

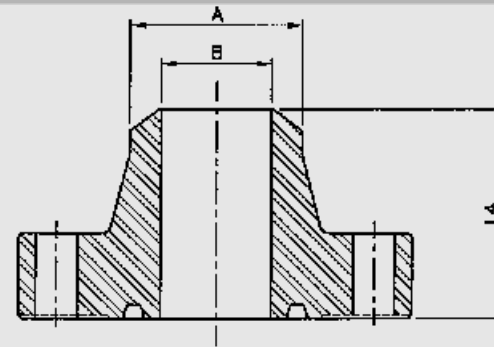
Nominal Size and Bore of Flange	Maximum Bore	Outside Diameter of Flange	Tolerance	Maximum Chamfer	Diameter of Raised Face	Total Thickness of Flange	Basic Thickness of Flange	Diameter of Hub	Diameter of Bolt Circle	Number of Bolts	Diameter of Bolts	Diameter of Bolt Holes	Bolt Hole Tolerance (see note)	Length of Bolts	Ring number, R or RX
	B	D	D	C	F	T	G	A	P						
2 1/16	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
2 3/16	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
3 1/8	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
4 1/16	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
5 1/8	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
7 1/16	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	1 1/8	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	1 1/4	1.38	+0.06	8.75	53
13 3/8	13.66	22.00	±0.12	0.25	16.25	2.94	2.62	15.75	19.25	20	1 1/4	1.38	+0.06	9.00	57
16 3/4	16.78	27.00	±0.12	0.25	20.00	3.31	3.00	19.50	23.75	20	1 1/2	1.62	+0.09	10.25	65
21 1/4	21.28	32.00	±0.12	0.25	25.00	3.88	3.50	24.00	28.50	24	1 5/8	1.75	+0.09	11.75	73

GENERAL NOTES: Dimensions are in inches.
Minimum Bolt Hole Tolerance is -0.02"

Section 5a. Type 6B Flanges for 3000 psi Rated Working Pressure



Threaded Flange



Weld Neck Line Pipe Flange

Table 5a.3 Hub and Bore Dimensions

Nominal Size and Bore of Flange	Hub Length Threaded Line-Pipe Flange	Hub Length Threaded Casing 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 ₁ L	2 L	3 L	4±0.06	A	A	B
2 1/16	2.56	—	2.56	4.31	2.38	+0.09/-0.03	1.97
2 3/16	2.81	—	2.81	4.44	2.88	+0.09/-0.03	2.35
3 1/8	2.44	—	2.94	4.31	3.50	+0.09/-0.03	2.93
4 1/16	3.06	3.50	3.50	4.81	4.50	+0.09/-0.03	3.86
5 1/8	3.44	4.00	—	5.31	5.56	+0.09/-0.03	4.84
7 1/16	3.69	4.50	—	5.81	6.63	+0.016/-0.03	5.79
9	4.31	5.00	—	6.69	8.63	+0.016/-0.03	7.47
11	4.56	5.25	—	7.56	10.75	+0.016/-0.03	9.34
13 5/8	4.94	4.94	—	—	—	—	—
16 3/4	5.06	5.69	—	—	—	—	—
20 3/4	6.75	6.75	—	—	—	—	—

GENERAL NOTES: Dimensions are in inches.

Section 5a. Type 6B Flanges for 3000 psi Rated Working Pressure

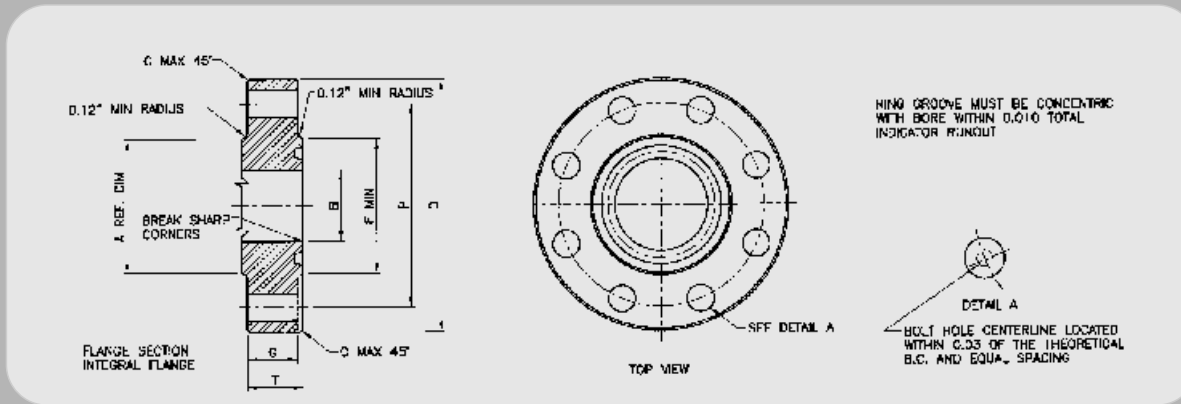
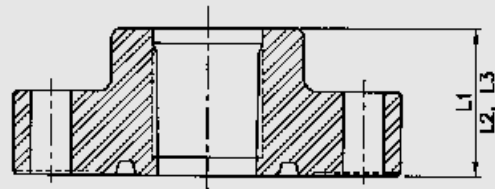


Table 5a.4 Hub and Bore Dimensions

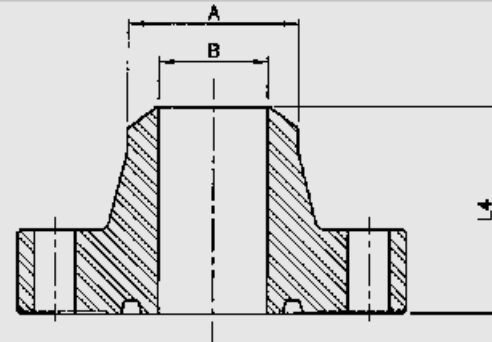
Nominal Size and Bore of Flange	Maximum Bore	Outside Diameter of Flange	Tolerance	Maximum Chamfer	Diameter of Raised Face	Total Thickness of Flange	Basic Thickness of Flange	Diameter of Hub	Diameter of Bolt Circle	Number of Bolts	Diameter of Bolts	Diameter of Bolt Holes	Bolt Hole Tolerance (see note)	Length of Stud Bolts	Ring number, R or RX
	B	D	D	C	F	T	G	A	P						
2 1/16	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
2 3/16	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
3 1/8	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
4 1/16	4.28	11.50	±0.06	0.12	7.12	2.06	1.75	6.25	9.25	8	1 1/8	1.25	+0.06	7.00	37
5 1/8	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
7 1/8	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
13 1/8	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
16 3/4	16.78	27.75	±0.12	0.25	20.62	3.94	3.50	20.00	24.25	20	1 3/8	1.75	+0.09	11.75	66
20 3/4	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

GENERAL NOTES: Dimensions are in inches.
Minimum Bolt Hole Tolerance is -0.02"

Section 5a. Type 6B Flanges for 5000 psi Rated Working Pressure



Threaded Flange



Weld Neck Line Pipe Flange

Table 5a.5 Hub and Bore Dimensions

Nominal Size and Bore of Flange	Hub Length Threaded Line-Pipe Flange	Hub Length Threaded Casing 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 ₁ L	2 L	3 L	4±0.06	A	A	B
2 1/16	2.56	—	2.56	4.31	2.38	+0.09/-0.03	1.72
2 3/16	2.81	—	2.81	4.44	2.88	+0.09/-0.03	2.16
3 1/8	3.19	—	3.19	4.94	3.50	+0.09/-0.03	2.65
4 1/16	3.88	3.88	3.88	5.19	4.50	+0.09/-0.03	3.47
5 1/8	4.44	4.44	—	6.44	5.56	+0.09/-0.03	4.34
7 1/16	5.06	5.06	—	7.13	6.63	+0.016/-0.03	5.22
9	6.06	6.06	—	8.81	8.63	+0.016/-0.03	6.84
11	6.69	6.69	—	10.44	10.75	+0.016/-0.03	8.53

GENERAL NOTES: Dimensions are in inches.

Section 5a. Type 6B Flanges for 5000 psi Rated Working Pressure

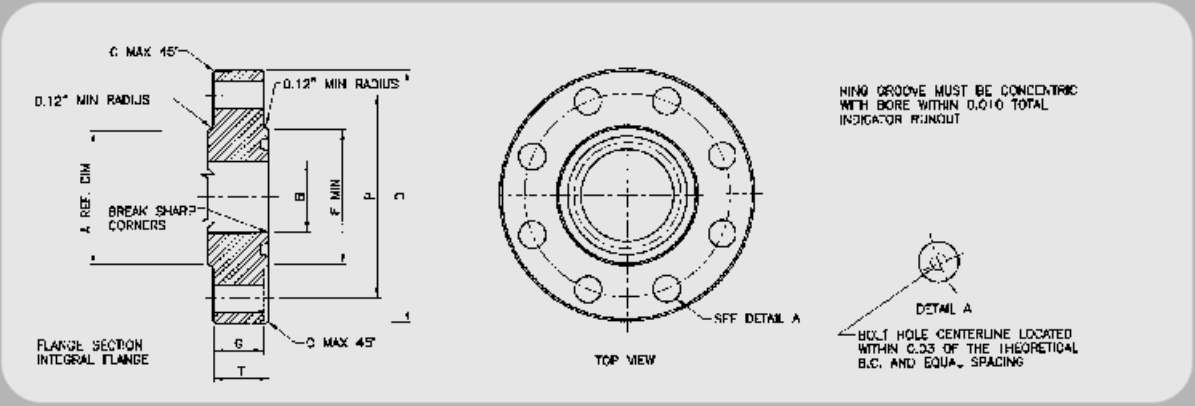


Table 5a.6 Hub and Bore Dimensions

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 Stud Bolts	Ring number, R or RX
	B	D	D	C	F	T	G	A	P						
2 1/16	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
2 9/16	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
3 1/8	3.22	10.50	±0.06	0.12	6.62	2.19	1.88	5.25	8.00	8	1 1/8	1.25	+0.06	7.25	35
4 1/16	4.28	12.25	±0.06	0.12	7.62	2.44	2.12	6.38	9.50	8	1 1/4	1.38	+0.06	8.00	39
5 1/8	5.16	14.75	±0.06	0.12	9.00	3.19	2.88	7.75	11.50	8	1 1/2	1.62	+0.06	10	44
7 1/16	7.16	15.50	±0.12	0.25	9.75	3.62	3.25	9.00	12.50	12	1 3/8	1.50	+0.06	10.75	46
9	9.03	19.00	±0.12	0.25	12.50	4.06	3.62	11.50	15.50	12	1 3/8	1.75	+0.09	12.00	50
11	11.03	23.00	±0.12	0.25	14.63	4.69	4.25	14.50	19.00	12	1 3/8	2.00	+0.09	13.75	54

GENERAL NOTES: Dimensions are in inches.
Minimum Bolt Hole Tolerance is -0.02"

Section 5a. Type 6BX Integral Flanges for 2000, 3000, 5000 and 10,000 psi Rated Working Pressure

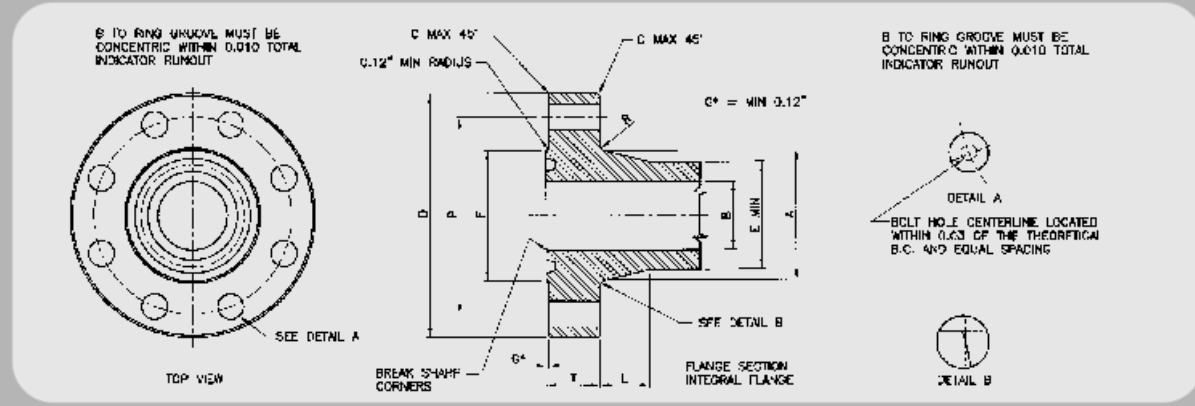


Table 5a.7 Hub and Flange Dimensions

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)	Minimum Length of Stud Bolts	Ring Number
	B	D	D	C	F	T	A	E	L	R	P						BX
2000 psi																	
26 3/4	26.78	41.00	±0.12	0.25	31.69	4.97	32.91	29.25	7.31	0.62	37.50	20	1/4	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	1/8	1.75	+0.09	14.25	303
3000 psi																	
26 3/4	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	1/8	2.00	+0.09	17.75	303
5000 psi																	
13 3/8	13.66	26.50	±0.12	0.25	18.00	4.44	18.94	16.69	4.50	0.62	23.25	16	1/8	1.75	+0.09	12.50	160
16 3/4	16.78	30.38	±0.12	0.25	21.06	5.13	21.88	20.75	3.00	0.75	26.62	16	1/8	2.00	+0.09	14.50	162
18 3/4	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
21 1/4	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

GENERAL NOTES: Dimensions are in inches.
Minimum Bolt Hole Tolerance is -0.02"

Table 5a.7 Hub and Flange 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)	Minimum Length of Stud Bolts	Ring Number
B	D	D	C	F	T	A	E	L	R	P							BX
10000 psi																	
1 ¹³ / 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
2 ¹ / 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	5.20	152
2 ⁹ / 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
3 ¹ / 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	6.75	154
4 ¹ / ₁₆	4.09	12.44	±0.06	0.12	7.28	2.77	7.19	5.75	2.88	0.38	10.19	8	1 ¹ / ₈	1.25	+0.06	8.00	155
5 ¹ / ₈	5.16	14.06	±0.06	0.12	8.69	3.12	8.81	7.19	3.19	0.38	11.81	12	1 ¹ / ₈	1.25	+0.06	8.75	169
7 ¹ / ₁₆	7.09	18.88	±0.12	0.25	11.88	4.06	11.88	10.00	3.75	0.62	15.88	12	1 ¹ / 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	1 ¹ / 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	1 ³ / ₄	1.88	+0.09	15.00	158
13 ³ / ₈	13.66	30.25	±0.12	0.25	20.38	6.62	21.75	19.50	4.50	0.62	26.50	20	1 ¹ / ₈	2.00	+0.09	17.25	159
16 ³ / ₄	16.78	34.31	±0.12	0.25	22.69	6.62	25.81	23.69	3.00	0.75	30.56	24	1 ¹ / ₈	2.00	+0.09	17.50	162
18 ³ / 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 ¹ / ₄	2.38	+0.09	22.50	164
21 ¹ / ₄	21.28	45.00	±0.12	0.25	30.75	9.50	33.38	30.00	6.50	0.81	40.25	24	2 ¹ / ₂	2.62	+0.09	24.50	166

GENERAL NOTES: Dimensions are in inches.
Minimum Bolt Hole Tolerance is- 0.02"

Section 5a. Type 6BX Integral Flanges for 15,000 and 20,000 psi Rated Working Pressure

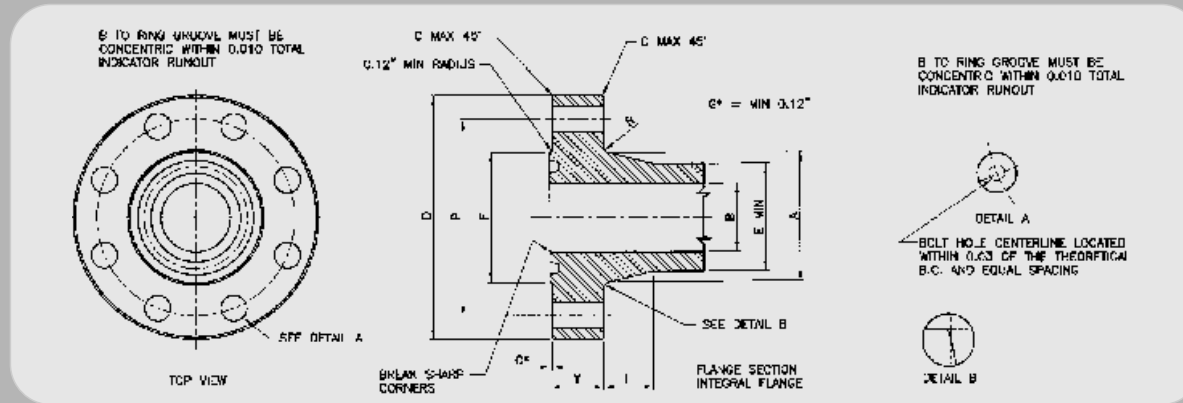


Table 5a.8 Hub and Flange Dimensions

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)	Minimum Length of Stud Bolts	Ring Number
B	D	D	C	F	T	A	E	L	R	P							BX
15000 psi																	
1 13/16	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	+06	5.50	151
2 1/16	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	+06	6.00	152
2 9/16	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	+06	6.75	153
3 1/16	3.09	11.31	±0.06	0.12	6.06	2.53	6.06	4.81	2.50	0.38	9.06	8	1 1/8	1.25	+06	7.50	154
4 1/16	4.09	14.19	±0.06	0.12	7.62	3.09	7.69	6.25	2.88	0.38	11.44	8	1 3/8	1.50	+06	9.25	155
5 1/8	5.16	16.50	±0.06	0.12	8.88	3.88	9.62	7.88	3.22	0.62	13.50	12	1 1/2	1.62	+09	11.50	169
7 1/16	7.09	19.88	±0.12	0.25	12.00	4.69	12.81	10.88	2.62	0.62	16.88	16	1 1/2	1.62	+09	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	1 7/8	2.00	+09	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	+09	19.25	158
13 3/8	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	+09	21.25	159
18 3/4	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	+12	26.75	164

GENERAL NOTES: Dimensions are in inches.
Minimum Bolt Hole Tolerance is - 0.02"

Table 5a.8 Hub and Flange 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)	Minimum Length of Stud Bolts	Ring Number
B	D	D	C	F	T	A	E	L	R	P							BX
20000 psi																	
1 ¹³ / 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	7.50	151
2 ¹ / ₁₆	2.09	11.31	±0.06	0.12	5.19	2.81	6.06	5.00	2.06	0.38	9.06	8	1 ¹ / ₈	1.25	+0.06	8.25	152
2 ⁹ / 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	9.25	153
3 ¹ / ₁₆	3.09	14.06	±0.06	0.12	6.75	3.38	7.56	6.31	2.50	0.38	11.31	8	1 ¹ / ₈	1.50	+0.06	10.00	154
4 ¹ / ₁₆	4.09	17.56	±0.06	0.12	8.62	4.19	9.56	8.12	2.88	0.38	14.06	8	1 ¹ / ₄	1.88	+0.09	12.25	155
7 ¹ / 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	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	2 ¹ / ₂	2.62	+0.09	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	2 ³ / ₄	2.88	+0.09	23.75	158
13 ⁵ / 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	30.00	159

GENERAL NOTES: Dimensions are in inches.
Minimum Bolt Hole Tolerance is -0.02"

Section 5a. Type 6BX Welding Neck Flanges for 10,000, 15,000 and 20,000 psi Rated Working Pressure

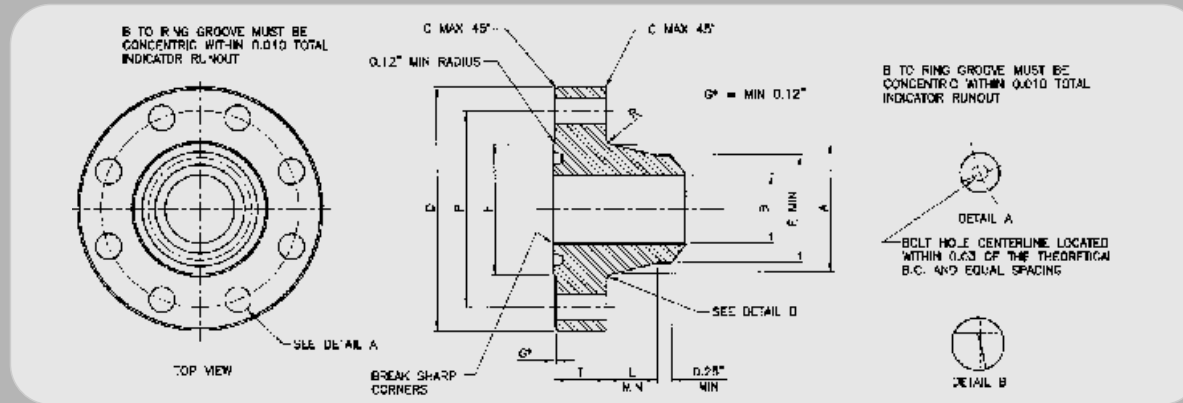


Table 5a.9 Hub and Flange Dimensions

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)	Minimum Length of Stud Bolts	Ring Number
B	D	D	C	F	T	A	E	L	R	P							BX
10000 psi																	
1 1/16	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	.88	+0.06	5.00	151
2 1/16	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	.88	+0.06	5.25	152
2 3/16	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
3 1/16	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	6.75	154
4 1/16	4.09	12.44	±0.06	0.12	7.28	2.77	7.19	5.75	2.88	0.38	10.19	8	1 1/8	1.25	+0.06	8.00	155
5 1/8	5.16	14.06	±0.06	0.12	8.69	3.13	8.81	7.19	3.19	0.38	11.81	12	1 1/8	1.25	+0.06	8.75	169
7 1/16	7.09	18.88	±0.12	0.25	11.88	4.06	11.88	10.00	3.75	0.62	15.88	12	1 1/2	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	1 1/2	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	1 3/4	1.88	+0.09	15.00	158
13 5/8	13.66	30.25	±0.12	0.25	20.38	6.62	21.75	19.50	4.50	0.62	26.50	20	1 7/8	2.00	+0.09	17.25	159
16 3/4	16.78	34.31	±0.12	0.25	22.69	6.62	25.81	23.69	3.00	0.75	30.56	24	1 7/8	2.00	+0.09	17.50	162

GENERAL NOTES: Dimensions are in inches.
Minimum Bolt Hole Tolerance is - 0.02"

Table 5a.9 Hub and Flange 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)	Minimum Length of Stud Bolts	Ring Number
B	D	D	C	F	T	A	E	L	R	P							BX
15000 psi																	
1 13/16	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	5.50	151
2 1/16	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	6.00	152
2 9/16	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	6.75	153
3 1/16	3.09	11.31	±0.06	0.12	6.06	2.53	6.06	4.81	2.50	0.38	9.06	8	1 1/8	1.25	+0.06	7.50	154
4 1/16	4.09	14.19	±0.06	0.12	7.62	3.09	7.69	6.25	2.88	0.38	11.44	8	1 3/8	1.50	+0.06	9.25	155
5 3/8	5.16	16.50	±0.06	0.12	8.88	3.88	9.62	7.88	3.22	0.62	13.50	12	1 1/2	1.62	+0.09	11.50	169
7 1/16	7.09	19.88	±0.12	0.25	12.00	4.69	12.81	10.88	3.62	0.62	16.88	16	1 1/2	1.62	+0.09	12.75	156
20000 psi																	
1 13/16	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	7.50	151
2 1/16	2.09	11.31	±0.06	0.12	5.19	2.81	6.06	5.00	2.06	0.38	9.06	8	1 1/8	1.25	+0.06	8.25	152
2 9/16	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	9.25	153
3 1/16	3.09	14.06	±0.06	0.12	6.75	3.38	7.56	6.31	2.50	0.38	11.31	8	1 3/8	1.50	+0.06	10.00	154
4 1/16	4.09	17.56	±0.06	0.12	8.62	4.19	9.56	8.12	2.88	0.38	14.06	8	1 3/4	1.88	+0.09	12.25	155
7 1/16	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	17.50	156

GENERAL NOTES: Dimensions are in inches.
Minimum Bolt Hole Tolerance is -0.02"

Section 5a. Type 6BX Blind and Test Flanges for 10,000, 15,000 and 20,000 psi Rated Working Pressure

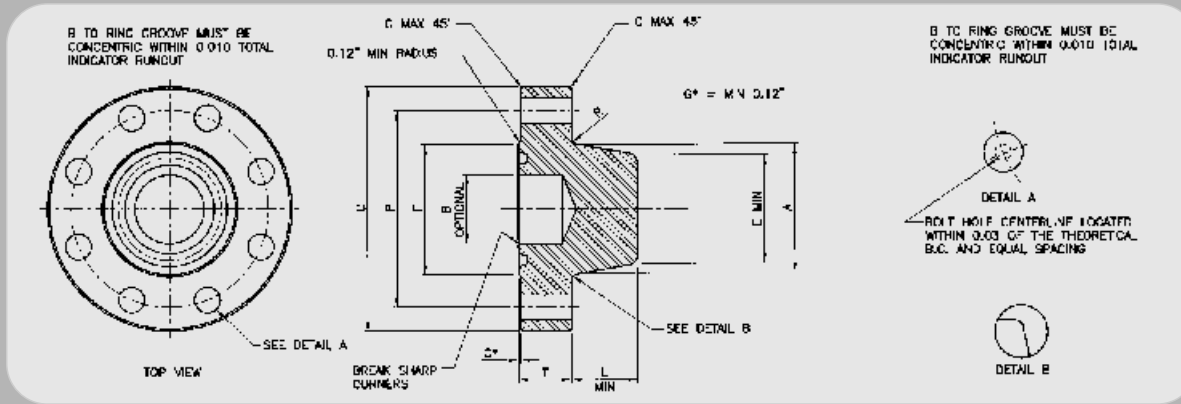


Table 5a.10 Hub and Flange Dimensions

Nominal Size and Bore of Flange	Maximum Bore (optional)	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)	Minimum Length of Stud Bolts	Ring Number
B	D	D	C	F	T	A	E	L	R	P							BX
10000 psi																	
1 13/16	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	.88	+0.06	5.00	151
2 1/16	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	.88	+0.06	5.25	152
2 9/16	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
3 1/16	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	6.75	154
4 1/16	4.09	12.44	±0.06	0.12	7.28	2.77	7.19	5.75	2.88	0.38	10.19	8	1 1/8	1.25	+0.06	8.00	155
15000 psi																	
1 13/16	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	5.50	151
2 1/16	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	6.00	152
2 9/16	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	6.75	153
3 1/16	3.09	11.31	±0.06	0.12	6.06	2.53	6.06	4.81	2.50	0.38	9.06	8	1 1/8	1.25	+0.06	7.50	154
4 1/16	4.09	14.19	±0.06	0.12	7.62	3.09	7.69	6.25	2.88	0.38	11.44	8	1 1/8	1.50	+0.06	9.25	155

GENERAL NOTES: Dimensions are in inches.
Minimum Bolt Hole Tolerance is - 0.02"

Table 5a.10 Hub and Flange Dimensions

Nominal Size and Bore of Flange	Maximum Bore (optional)	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)	Minimum Length of Stud Bolts	Ring Number
B	D	D	D	C	F	T	A	E	L	R	P						BX
20000 psi																	
1 ¹³ / 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	7.50	151
2 ¹ / ₁₆	2.09	11.31	±0.06	0.12	5.19	2.81	6.06	5.00	2.06	0.38	9.06	8	1 ¹ / ₈	1.25	+0.06	8.25	152
2 ⁹ / 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	9.25	153
3 ¹ / ₁₆	3.09	14.06	±0.06	0.12	6.75	3.38	7.56	6.31	2.50	0.38	11.31	8	1 ¹ / ₈	1.50	+0.06	10.00	154
4 ¹ / ₁₆	4.09	17.56	±0.06	0.12	8.62	4.19	9.56	8.12	2.88	0.38	14.06	8	1 ¹ / ₄	1.88	+0.09	12.25	155

GENERAL NOTES: Dimensions are in inches.
 Minimum Bolt Hole Tolerance is - 0.02"

Section 5. API and ANSI Flanges

Section 5b ANSI B16.5 Flanges

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, Blinds, Target & Test Blinds for use with the following pressure ratings:-

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 DEG C	-28 TO +540 DEG C	-28 TO +540 DEG C	-28 TO +540 DEG C	-28 TO +540 DEG C	-28 TO +540 DEG C	-28 TO +540 DEG C

GENERAL NOTE: Please contact GonPetro for any special materials or threaded, slip on or lapped flange dimensions.
 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 GonPetro for further details.

Section 5b. ANSI B16.5 Flanges

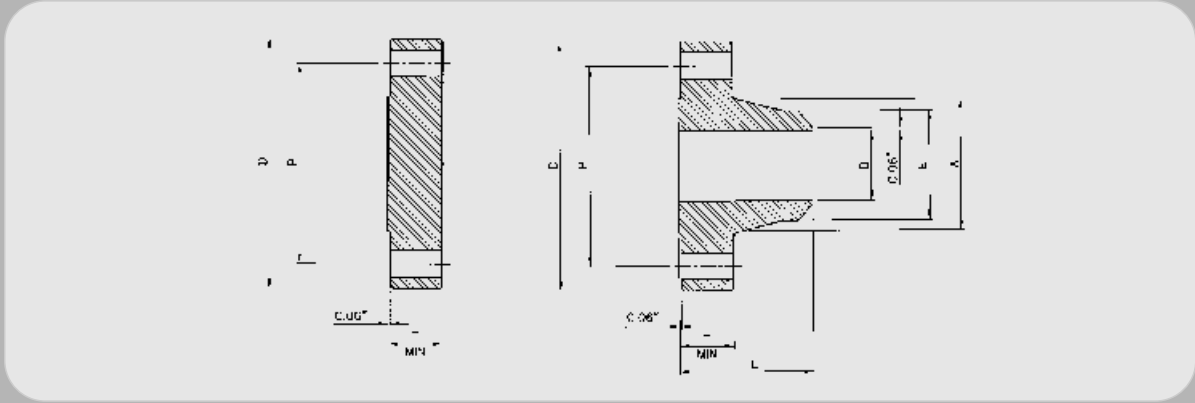


Table 5b.1 Class 150 Flanges

Nominal Pipe Size	Outside Diameter of Flange 'D'	Thickness of Flange Min. 'T'	Diameter of Hub 'A'	Hub Diameter Beginning of Chamfer Welding Neck 'E'	Length Through Hub Welding Neck 'L'	Bore Welding Neck 'B'	Drilling				Length of Bolts	
							Diameter of Bolt Circle 'P'	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Stud Bolts	
											0.06 in. Raised Face	Ring Joint
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

GENERAL NOTE: Dimensions are in inches

Table 5b.1 Class 150 Flanges

Nominal Pipe Size	Outside Diameter of Flange	Thickness of Flange Min.	Diameter of Hub	Hub Diameter 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 Bolts	Diameter of Bolts	Stud Bolts	
													0.06 in. Raised Face	Ring Joint
	'D'	'T'	'A'	'E'	'L'	'B'	'P'							
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		22.75	1.25	16	1 1/8	5.75	6.25		
20	27.50	1.69	22.00	20.00	5.69		25.00	1.25	20	1 1/8	6.25	6.75		
24	32.00	1.88	26.12	24.00	6.00		29.50	1.38	20	1 1/4	6.75	7.25		

GENERAL NOTE: Dimensions are in inches

Section 5b. ANSI B16.5 Flanges

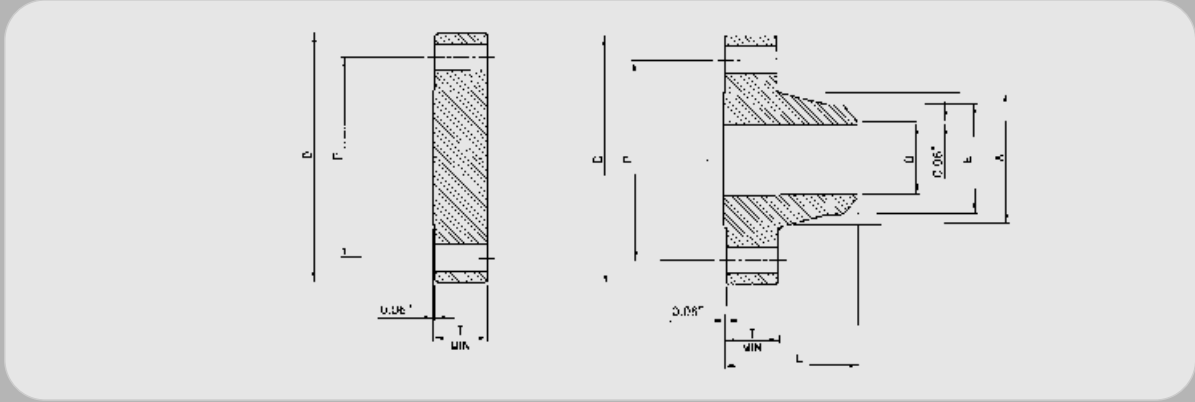


Table 5b.2 Class 300 Flanges

Nominal Pipe Size	Outside Diameter of Flange	Thickness of Flange Min.	Diameter of Hub	Hub Diameter Beginning of Chamfer Welding Neck	Length Through Hub	Bore	Drilling				Length of Bolts		
							Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	0.06 in. Raised Face	Ring Joint	
	'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	3/8	3.00	3.50	
1	4.88	0.69	2.12	1.32	2.44	1.05	3.50	0.75	4	3/8	3.00	3.50	
1 1/4	5.25	0.75	2.50	1.66	2.56	1.38	3.88	0.75	4	3/8	3.25	3.75	
1 1/2	6.12	0.81	2.75	1.90	2.69	1.61	4.50	0.88	4	1/4	3.50	4.00	
2	6.50	0.88	3.31	2.38	2.75	2.07	5.00	0.75	8	3/8	3.50	4.00	
2 1/2	7.50	1.00	3.94	2.88	3.00	2.47	5.88	0.88	8	1/4	4.00	4.50	
3	8.25	1.12	4.62	3.50	3.12	3.07	6.62	0.88	8	1/4	4.25	4.75	
3 1/2	9.00	1.19	5.25	4.00	3.19	3.55	7.25	0.88	8	1/4	4.25	5.00	
4	10.00	1.25	5.75	4.50	3.38	4.03	7.88	0.88	8	1/4	4.50	5.00	

GENERAL NOTE: Dimensions are in inches

Table 5b.2 Class 300 Flanges

Nominal Pipe Size	Outside Diameter of Flange	Thickness of Flange Min.	Diameter of Hub	Hub Diameter 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 Bolts	Diameter of Bolts	Stud Bolts		
											0.06 in. Raised Face	Ring Joint	
	'D'	'T'	'A'	'E'	'L'	'B'	'P'						
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	To be specified by purchaser	22.50	1.38	20	1 1/4	7.50	8.00	
18	28.00	2.38	21.00	18.00	6.25		24.75	1.38	24	1 1/4	7.75	8.25	
20	30.50	2.50	23.12	20.00	6.38		27.00	1.38	24	1 1/4	8.00	8.75	
24	36.00	2.75	27.62	24.00	6.62		32.00	1.62	24	1 1/2	9.00	10.00	

GENERAL NOTE: Dimensions are in inches

Section 5b. ANSI B16.5 Flanges

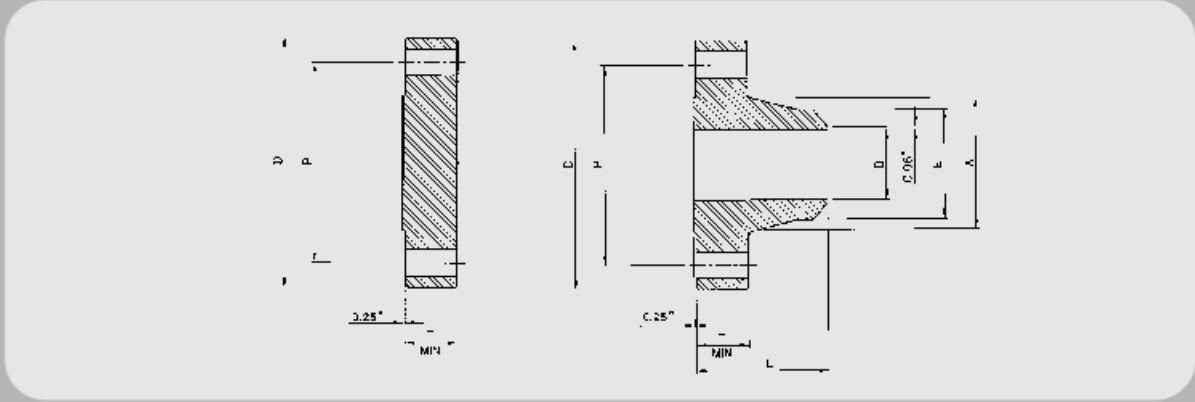


Table 5b.3 Class 400 Flanges

Nominal Pipe Size	Outside Diameter of Flange	Thickness of Flange Min.	Diameter of Hub	Hub Diameter Beginning of Chamfer Welding Neck	Length Through Hub	Bore	Drilling				Length of Bolts		
							Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	0.25 in. Raised Face	Ring Joint	
	'D'	'T'	'A'	'E'	'L'	'B'	'P'						
1/2													
3/4													
1	1/4												
1	1/2												
2													
	2 1/2												
3													
	3 1/2												

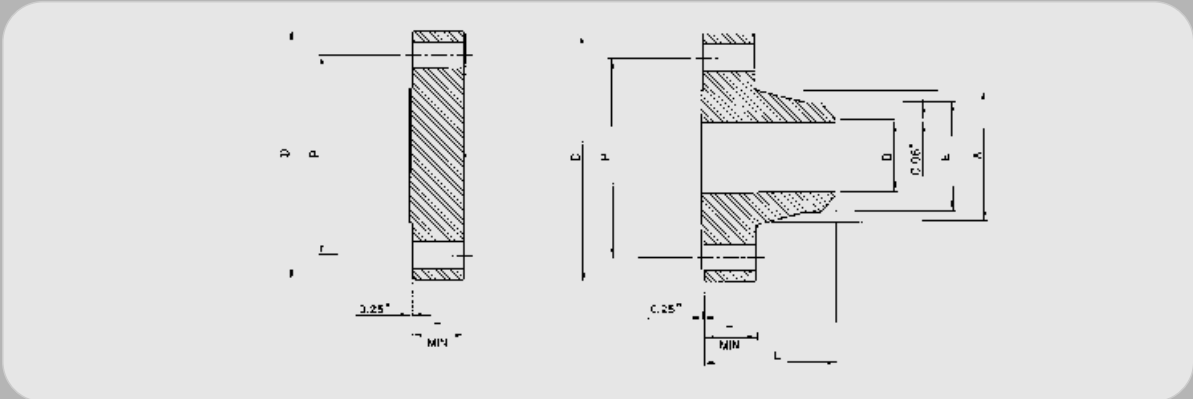
Use Class 600 dimensions in these sizes

GENERAL NOTE: Dimensions are in inches

Table 5b.3 Class 400 Flanges

Nominal Pipe Size	Outside Diameter of Flange	Thickness of Flange Min.	Diameter of Hub	Hub Diameter 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 Bolts	Diameter of Bolts	Stud Bolts	
													0.25 in. Raised Face	Ring Joint
	'D'	'T'	'A'	'E'	'L'	'B'	'P'							
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	To be specified by purchaser	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 1/4	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		

GENERAL NOTE: Dimensions are in inches



Nominal Pipe Size	Outside Diameter of Flange	Thickness of Flange Min.	Diameter of Hub	Hub Diameter Beginning of Chamfer Welding Neck	Length Through Hub	Bore	Drilling				Length of Bolts	
							Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	0.25 in. Raised Face	Ring Joint
	'D'	'T'	'A'	'E'	'L'	'B'	'P'					
1/2	3.75	0.56	1.50	0.84	2.06	2.38	2.62	0.62	4	1/2	3.00	3.00
3/4	4.62	0.62	1.88	1.05	2.25	To be specified by purchaser	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	8.50	1.00	8	7/8	5.75	5.75	

GENERAL NOTE: Dimensions are in inches

Table 5b.4 Class 600 Flanges

Nominal Pipe Size	Outside Diameter of Flange 'D'	Thickness of Flange Min. 'T'	Diameter of Hub 'A'	Hub Diameter Beginning of Chamfer Welding Neck 'E'	Length Through Hub Welding Neck 'L'	Bore Welding Neck 'B'	Drilling				Length of Bolts	
							Diameter of Bolt Circle 'P'	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Stud Bolts	
											0.25 in. Raised Face	Ring Joint
5	13.00	1.75	7.44	5.56	4.50	To be specified by purchaser	10.50	1.12	8	1	6.50	6.50
6	14.00	1.88	8.75	6.63	4.62		11.50	1.12	12	1	6.75	6.75
8	16.50	2.19	10.75	8.63	5.25		13.75	1.25	12	1 $\frac{1}{8}$	7.50	7.75
10	20.00	2.50	13.50	10.75	6.00		17.00	1.38	16	1 $\frac{1}{4}$	8.50	8.50
12	22.00	2.62	15.75	12.75	6.12		19.25	1.38	20	1 $\frac{1}{4}$	8.75	8.75
14	23.75	2.75	17.00	14.00	6.50		20.75	1.50	20	1 $\frac{3}{8}$	9.25	9.25
16	27.00	3.00	19.50	16.00	7.00		23.75	1.62	20	1 $\frac{1}{2}$	10.00	10.00
18	29.25	3.25	21.50	18.00	7.25		25.75	1.75	20	1 $\frac{5}{8}$	10.75	10.75
20	32.00	3.50	24.00	20.00	7.50		28.50	1.75	24	1 $\frac{5}{8}$	11.25	11.50
24	37.00	4.00	28.25	24.00	8.00		33.00	2.00	24	1 $\frac{7}{8}$	13.00	13.25

GENERAL NOTE: Dimensions are in inches

Section 5b. ANSI B16.5 Flanges

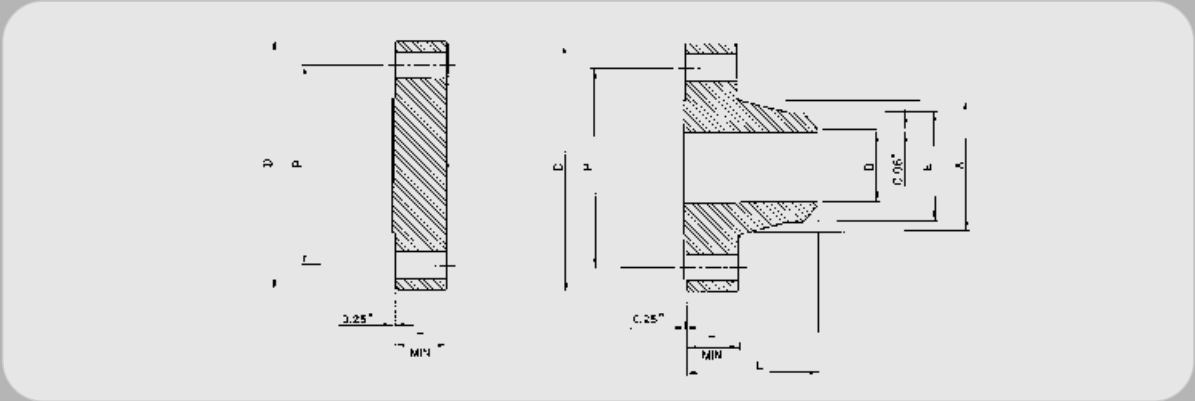


Table 5b.5 Class 900 Flanges

Nominal Pipe Size	Outside Diameter of Flange	Thickness of Flange Min.	Diameter of Hub	Hub Diameter Beginning of Chamfer Welding Neck	Length Through Hub	Bore	Drilling				Length of Bolts	
							Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	0.25 in. Raised Face	Ring Joint
	'D'	'T'	'A'	'E'	'L'	'B'	'P'	'E'				
1/2												
3/4												
1												
1	1/4											
1	1/2											
2												
2	1/2											
Use Class 1500 dimensions in these sizes												
3	9.50	1.50	5.00	3.50	4.00	To be specified by purchaser	7.50	1.00	8	7/8	5.75	5.75
4	11.50	1.75	6.25	4.50	4.50	To be specified by purchaser	9.25	1.25	8	1 1/8	6.75	6.75

GENERAL NOTE: Dimensions are in inches

Table 5b.5 Class 900 Flanges

Nominal Pipe Size	Outside Diameter of Flange 'D'	Thickness of Flange Min. 'T'	Diameter of Hub 'A'	Hub Diameter Beginning of Chamfer Welding Neck 'E'	Length Through Hub	Bore	Drilling				Length of Bolts	
					Welding Neck 'L'	Welding Neck 'B'	Diameter of Bolt Circle 'P'	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Stud Bolts	
											0.25 in. Raised Face	Ring Joint
5	13.75	2.00	7.50	5.56	5.00		11.00	1.38	8	1¼	7.50	7.50
6	15.00	2.19	9.25	6.63	5.50		12.50	1.25	12	1⅝	7.50	7.75
8	18.50	2.50	11.75	8.63	6.38		15.50	1.50	12	1⅝	8.75	8.75
10	21.50	2.75	14.50	10.75	7.25	To be specified by purchaser	18.50	1.50	16	1⅝	9.25	9.25
12	24.00	3.12	16.50	12.75	7.88		21.00	1.50	20	1⅝	10.00	10.00
14	25.25	3.38	17.75	14.00	8.38		22.00	1.62	20	1½	10.75	11.00
16	27.75	3.50	20.00	16.00	8.50		24.25	1.75	20	1⅝	11.25	11.50
18	31.00	4.00	22.25	18.00	9.00		27.00	2.00	20	1⅝	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	2½	17.25	18.00

GENERAL NOTE: Dimensions are in inches

Section 5b. ANSI B16.5 Flanges

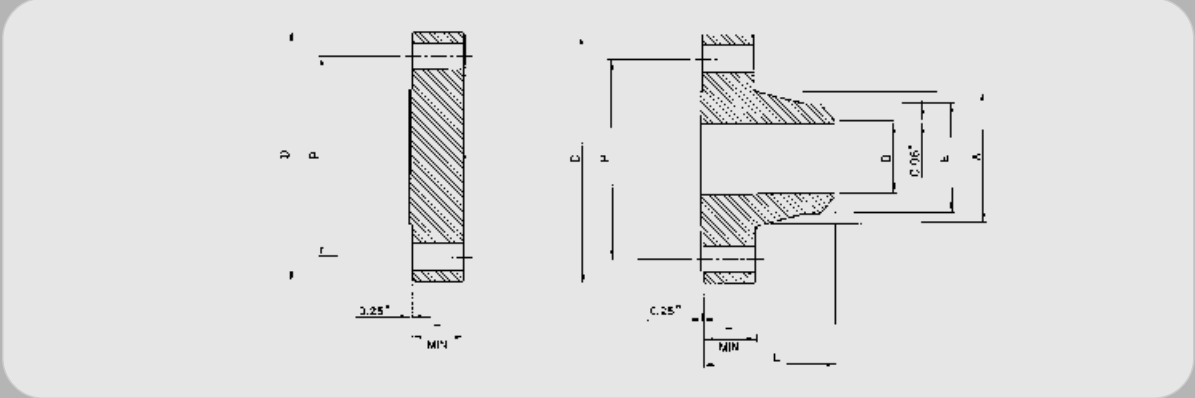


Table 5b.6 Class 1500 Flanges

Nominal Pipe Size	Outside Diameter of Flange 'D'	Thickness of Flange Min. 'T'	Diameter of Hub 'A'	Hub Diameter Beginning of Chamfer Welding Neck 'E'	Length Through Hub Welding Neck 'L'	Bore Welding Neck 'B'	Drilling				Length of Bolts	
							Diameter of Bolt Circle 'P'	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Stud Bolts	
											0.25 in. Raised Face	Ring Joint
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	

GENERAL NOTE: Dimensions are in inches

Table 5b.6 Class 1500 Flanges

Nominal Pipe Size	Outside Diameter of Flange 'D'	Thickness of Flange Min. 'T'	Diameter of Hub 'A'	Hub Diameter Beginning of Chamfer Welding Neck 'E'	Length Through Hub Welding Neck 'L'	Bore Welding Neck 'B'	Drilling				Length of Bolts	
							Diameter of Bolt Circle 'P'	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Stud Bolts	
											0.25 in. Raised Face	Ring Joint
5	14.75	2.88	7.75	5.56	6.12	To be specified by purchaser	11.50	1.62	8	1½	9.75	9.75
6	15.50	3.25	9.00	6.63	6.75		12.50	1.50	12	1⅝	10.25	10.50
8	19.00	3.62	11.50	8.63	8.38		15.50	1.75	12	1⅝	11.50	12.75
10	23.00	4.25	14.50	10.75	10.00		19.00	2.00	12	1⅝	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	2¼	16.00	16.75
16	32.50	5.75	21.75	16.00	12.25		27.75	2.62	16	2½	17.50	18.50
18	36.00	6.38	23.50	18.00	12.88		30.50	2.88	16	2¾	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	3½	24.25	25.50

GENERAL NOTE: Dimensions are in inches

Section 5b. ANSI B16.5 Flanges

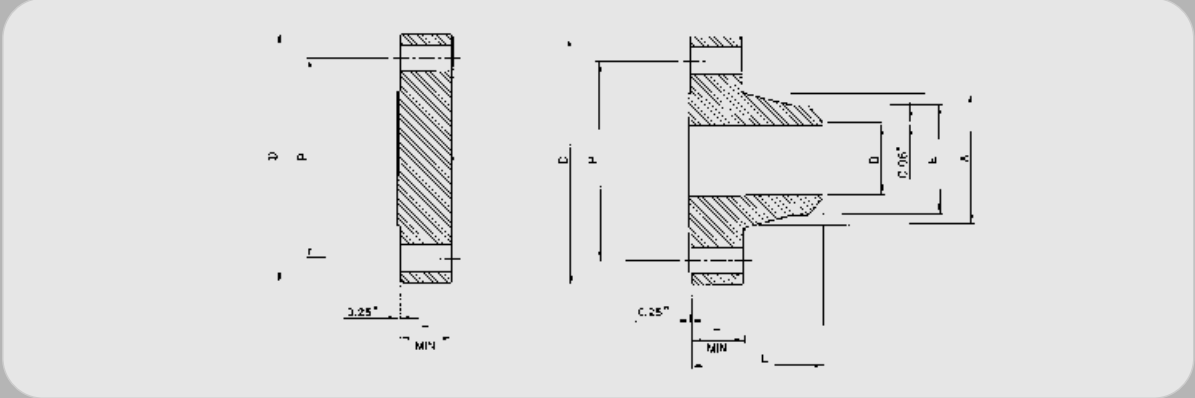


Table 5b.7 Class 2500 Flanges

Nominal Pipe Size	Outside Diameter of Flange	Thickness of Flange Min.	Diameter of Hub	Hub Diameter Beginning of Chamfer Welding Neck	Length Through Hub	Bore	Drilling				Length of Bolts	
							Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	0.25 in. Raised Face	Ring Joint
	'D'	'T'	'A'	'E'	'L'	'B'	'P'					
1/2	5.25	1.19	1.69	0.84	2.88		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	To be specified by purchaser	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

GENERAL NOTE: Dimensions are in inches

Table 5b.7 Class 2500 Flanges

Nominal Pipe Size	Outside Diameter of Flange 'D'	Thickness of Flange Min. 'T'	Diameter of Hub 'A'	Hub Diameter Beginning of Chamfer Welding Neck 'E'	Length Through Hub	Bore	Drilling				Length of Bolts	
					Welding Neck 'L'	Welding Neck 'B'	Diameter of Bolt Circle 'P'	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Stud Bolts	
											0.25 in. Raised Face	Ring Joint
5	16.50	3.62	8.00	5.56	9.00		12.75	1.88	8	1¼	11.75	12.25
6	19.00	4.25	9.25	6.63	10.75	To be specified by purchaser	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	2½	19.25	20.00
12	30.00	7.25	17.38	12.75	18.25		24.38	2.88	12	2¾	21.25	22.00

GENERAL NOTE: Dimensions are in inches