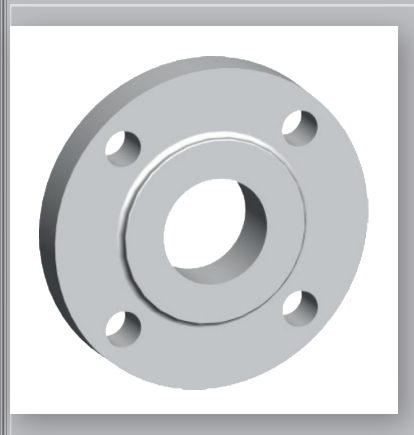
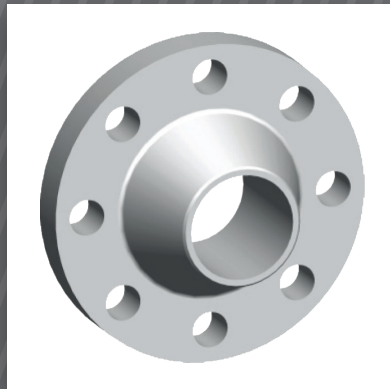
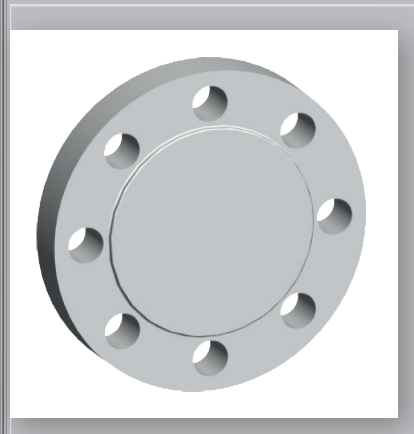




PPF PIPE FITTINGS (PAHANG)



BUTTWELD FLANGES



Pahang Pipe Fittings

PPF is one of the leading manufacturers of Buttweld fittings and flanges.

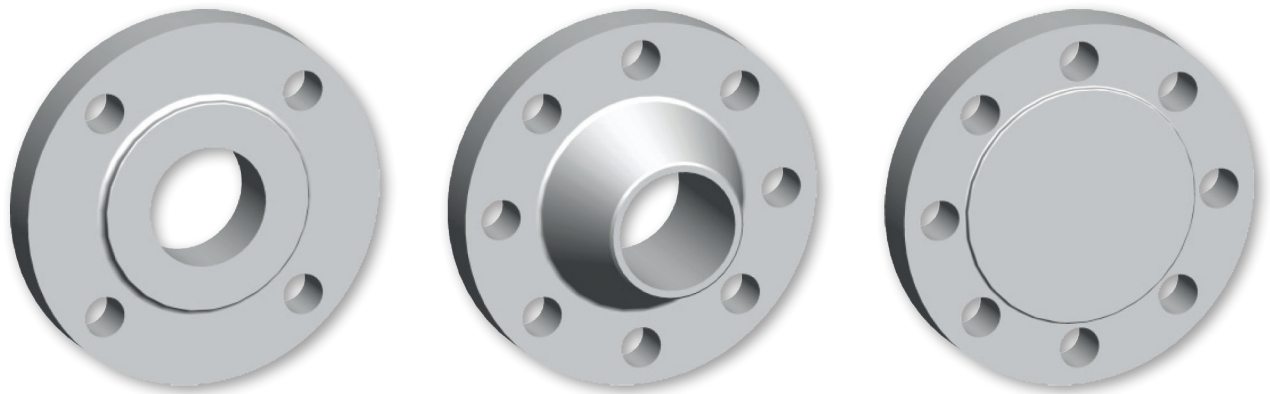
Our highly specialized product range is capable of catering the requirements of Power Generation, LPG Production, Oil Refining, Water lines, Petro Chemical Units and all other Steel applications.

Our well-equipped factory is having mass production facility and thus producing complete range of Buttweld fittings and flanges.

Presently we are having a production facility for size range up to 24" to 60" for fittings and flanges.

We continue our effort for actively conducting the research and development works in this vast area of pipe fittings so as to meet the ever growing future requirements.

Pahang years-long experience has helped us to achieve the approvals by different government agencies for its quality and reliability. Our stringent quality control methods and continuous R&D works by our excellent team of staffs helps us to maintain the internationally reputed quality.





FLANGES

GENERAL INFORMATION

A Flange is a method of connecting pipes, valves, pumps and other equipment to form a pipework system. It also provides easy access for cleaning, inspection or modification. Flanges are usually welded or screwed into such systems and then joined with bolts.

Flange Types

This flange is circumferentially welded into the system at its neck which means that the integrity of the butt welded area can be easily examined by radiography. The bores of both pipe and flange match, which reduces turbulence and erosion inside the pipeline.

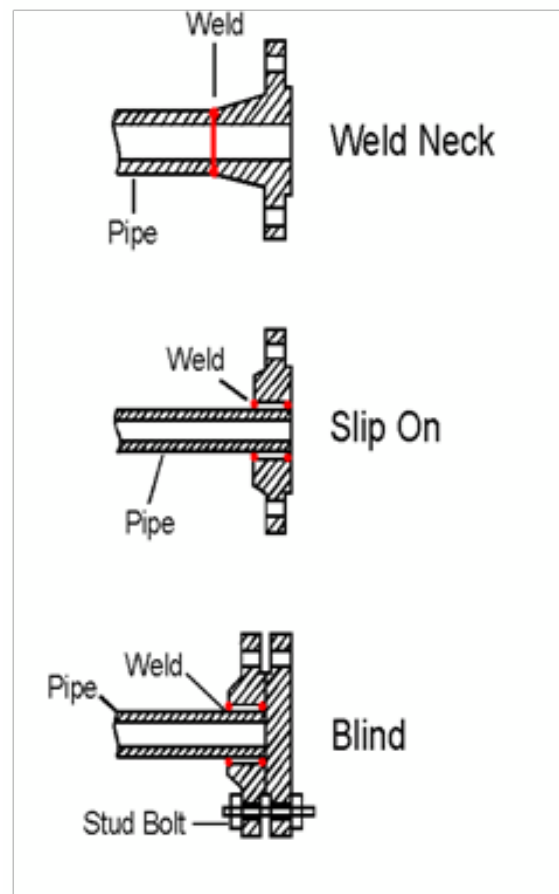
The weld neck is therefore favoured in critical applications

This flange is slipped over the pipe and then fillet welded. Slip-on flanges are easy to use in fabricated applications.

This flange is used to blank off pipelines, valves and pumps, it can also be used as an inspection cover. It is sometimes referred to as a blanking flange.

This flange is counter bored to accept the pipe before being fillet welded. The bore of the pipe and flange are both the same therefore giving good flow characteristics.

This is a method of ensuring leak proof flange connection at high pressures. A metal ring is compressed into a hexagonal groove on the face of the flange to make the seal. This jointing method can be employed on Weld Neck, Slip-on and Blind Flanges.



BUTT WELD FLANGES

Summary of materials used for flanges

	ASME/ ANSI B16.5	ASME B16.47 Series A (or MSS SP 441)	ASME B16.47 Series B (or API 6052)	BS 4504	BS 3293	BS 103
Forging (ASTM A 182)	✓	✓	✓	✓	✓	✓
Plate (ASTM A 240)4	✓			✓		✓
Bar5						✓
Casting6	✓			✓		✓

Notes

- MSS SP-44 flanges are designated Series A flanges in ASME B16.47.
 - API 605 has been cancelled. API 605 flanges are designated Series B flanges in ASME B16.47.
 - BS 10, although obsolete, remains in use for light weight economy stainless steel flanges.
 - Within specification ANSI B16.5, plate can only be used to provide blind flanges.
 - Most small BS 10 flanges are made from bar.
 - Castings are not included in this manual.
- △ Materials. Most standards specify the material from which the flange is produced. The purchaser should specify the exact requirements.
- △ Flange Sizes. All sizes and grades compatible to standard pipe ranges and wall thicknesses (pressure ratings) are available. The table below provides a summary.
- △ Flange Face. There are various face configurations for flanges. Typically: flat face, raised face, tongue and groove, ring joint.
- △ Face Finish. The finish on the face of a flange is measured as an Arithmetical Average Roughness Height (AARH). The finish is determined by the standard used. For example, ANSI B16.5 specifies face finishes within a range 125AARH -500AARH (3.2 Ra to 12.5 Ra). Other finishes are available on request, for example 1.6 Ra max, 1.6/3.2 Ra, 3.2/6.3 Ra or 6.3/12.5 Ra. The range 3.2/6.3 Ra is most common.

Summary of flange sizes specified by common standards

Flange Type	Specifications				
	ASME/ ANSI B16.5	ASME B16.47 Series A (or MSS SP-44 ¹)	ASME B16.47 Series B (or API 605 ²)	BS 4504 (ISO 7005-1)	BS 3293
	Nominal Pipe Sizes				
	< NPS 26	≥NPS 26	≥NPS 26	DN 10 to DN 4000	≥ NPS 26
	Nominal Pressure (Class)				
	Class (lb)	Class (lb)	Class (lb)	PN (bar)	Class (lb)
Weld Neck	150-2500	150-900	75-900	2.5-40	150-600
Slip-on	150-1500	-	-	2.5-40	150-600
Blind	150-2500	300-900	300-900	2.5-40	-
Lap Joint	150-2500	-	-	6-40 ³	-
Socket Weld	150-1500	-	-	N/A	-
Threaded	150-2500	-	-	6-40	-
Flat/Raised Facings	As above	As above	As above	As above	As above
Ring Joint Facings	150-2500	300-900	300-900	2.5-40	300-600
Other Facings	150-2500 ³	-	-	2.5-40	-

Notes

- MSS SP-44 flanges are designated Series A flanges in ASME B16.47. It also covers flanges in the range NPS 12 to 24, these being equivalent to ASME/ANSI B16.5 flanges in the same range (except for the addition of NPS 22 in MSS SP-44).
- API 605 has been cancelled. API 605 flanges are designated Series B flanges in ASME B16.47. Ranges quoted are based On ASME B16.47 Series B.
- Dimensions not covered in this summary.



ASME/ANSI B16.5-1996 AND B16.47-1996

American national standards ASME/ANSI B16.5 and B16.47 together cover pipe flanges up to NPS 60 (NPS 48 is the largest detailed in this summary). ASME/ANSI B16.47 covers two series of flanges, Series A which is equivalent to MSS SP-44 (the 1996 Edition of MSS SP-44 complies with B16.47 tolerances), and Series B which is equivalent to API 605 (API 605 is now cancelled).

Dimensions and Tolerances

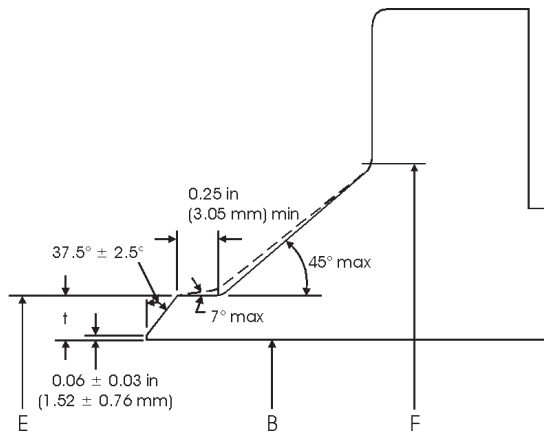
Tolerances on flange dimensions (ASME/ANSI B16.5 and B16.47, and MSS SP-44)

Dimension	Range	Tolerance	
		In	mm
General and Blind Flanges (For blind flange dimensions see page 8-23 for B16.5, page 8-46 for B16.47 :(Series A / MSS SP-44 and page 8-51 for B16.47 Series B / API 605			
G (raised face diameter)	≤ NPS 24	±0.03	±0.76
	≥ NPS 26, with 0.06 in raised face	±0.08	±2.03
	≥ NPS 26, with 0.25 in raised face	±0.04	±1.02
I (bolt hole diameter)	All	No tolerance in B16.5 or B16.47	
J (bolt circle diameter)	All	±0.06	±1.52
Centre to centre of adjacent bolt holes	All	±0.03	±0.76
Eccentricity of bolt circle and machined facing diameters	≤ NPS 2½	±0.03	±0.76
	≥ NPS 3	±0.06	±1.52
Weld Neck Flanges ¹ (For dimensions see page 8-10 for B16.5, page 8-46 for B16.47 Series A / MSS SP-44 and page 8-51 for B16.47 Series B / API 605):			
D (overall length)	≤ NPS 4	+0.06	+1.52
	NPS 5 to 10	+0.06, -0.12	+1.52, -3.05
	NPS 12 to 24	+0.12, -0.18	+3.05, -4.57
	≥ NPS 26	±0.19	±4.83
Thickness of hub	All	> 87.5% of pipe nominal wall thickness	
Slip on (see page 8-17), Lap Joint (see page 8-32 for dimensions) and Socket Welding (see page 8-30 for dimensions) Flanges:			
B (inside diameter, or bore)	≤ NPS 10	+0.03, -0.0	+0.76, -0.0
	≥ NPS 12	+0.06, -0.0	+1.52, -0.0
Threaded Flanges (see page 8-40 for dimensions):			
B (counterbore) (Not applicable for Class 150 lb)	≤ NPS 10	+0.03, -0.0	+0.76, -0.0
	≥ NPS 12	+0.06, -0.0	+1.52, -0.0
(Ring Joint Facing (See page 8-6 for dimensions; see page 8-9 for tolerances			

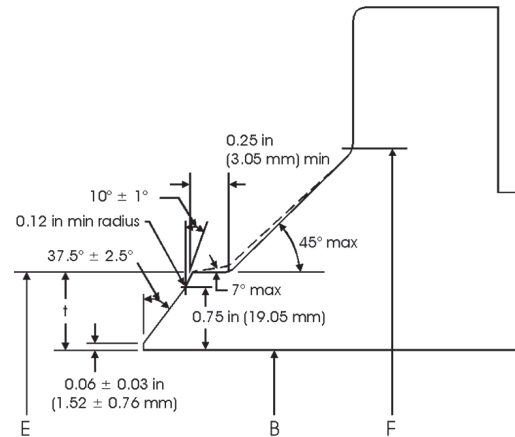
BUTT WELD FLANGES

ASME/ANSI B16.5 & B16.47

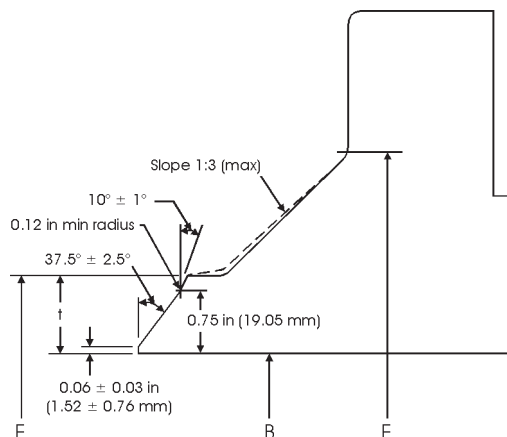
Weld Neck Flanges - Welding Ends



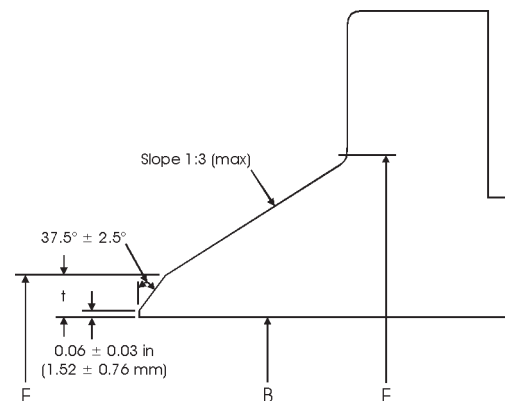
ASME/ANSI B16.5 (NPS $\frac{1}{2}$ to 24) Weld Neck Flange Bevel (with no backing ring) for Wall Thicknesses (t) from 0.19 to 0.88 in (4.83 to 22.35 mm).



ASME/ANSI B16.5 (NPS $\frac{1}{2}$ to 24) Weld Neck Flange Bevel (with no backing ring) for Wall Thicknesses (t) > 0.88 in (22.35 mm).



ASME B16.47 and MSS SP-44 (>NPS 24) Weld Neck Flange Bevel (with no backing ring) for Wall Thickness (t) = 0.19 to 0.88 in (4.83 to 22.35 mm).



ASME B16.47 and MSS SP-44 (>NPS 24) Weld Neck Flange Bevel (with no backing ring) for Wall Thicknesses (t) > 0.88 in (22.35 mm).

Tolerances on welding end dimensions (ASME/ANSI B16.5 and B16.47, and MSS SP-44)

Dimension	Range	Tolerance	
		In	mm
E (outside diameter at welding end)	≤ NPS 5	+0.09, -0.03	+2.29, -0.76
	NPS 6 to 24	+0.16, -0.03	+4.06, -0.76
	≥ NPS 26	+0.21, -0.06	+5.33, -1.52
B (inside diameter of flange)	B ≤ NPS 10	±0.03	±0.76
	B ≥ NPS 12 to 18	+/-0.03	±0.76
	B ≥ NPS 20	+0.12, -0.06	+3.05, -1.52
t (thickness at weld bevel)	All	>87.5%	

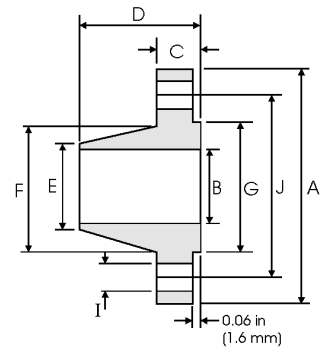
Note

t = Nominal wall thickness of the pipe. Additional thickness at the weld bevel (up to 0.5 x t) may be provided on the inside or outside diameter (or partially on both) of the hub if it is used with light walled higher strength pipe. Hub diameter, F, may also be increased.



BUTT WELD FLANGES

WELD NECK FLANGES - ANSI B16.5 CLASS # 150

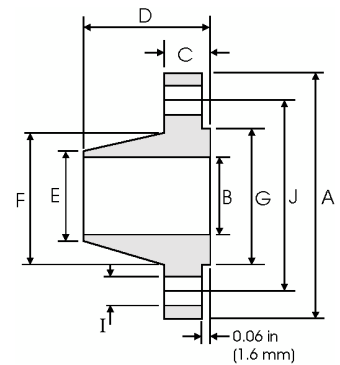


Pipe	Flange Data					Hub Data		Raised Face	Drilling Data			Weight
Nominal Pipe Size	Outside Diameter	Overall Diameter	Inside Diameter	Flange Thickness min	Overall Length	Diameter at Weld Bevel	Hub Diameter	Face Diameter	Number of Holes	Bolt Hole Diameter	Diameter of Circle of Holes	
		A	B	C	D	E	F	G	H	I	J	
	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm		in mm	in mm	/kg piece
½	0.840 21.30	3.500 88.90	0.620 15.70	0.440 11.20	1.880 47.80	0.840 21.30	1.190 30.20	1.380 35.00	4	0.620 15.70	2.380 60.45	0.48
¾	1.050 26.70	3.880 98.60	0.820 20.80	0.500 12.70	2.060 52.30	1.050 26.70	1.500 38.10	1.690 42.90	4	0.620 15.70	2.750 69.85	0.71
1	1.315 33.40	4.250 108.0	1.050 26.70	0.560 14.20	2.190 55.60	1.320 33.50	1.940 49.30	2.000 50.80	4	0.620 15.70	3.120 79.25	1.01
1 1/4	1.660 42.20	4.620 117.3	1.380 35.10	0.620 15.70	2.250 57.15	1.660 42.20	2.310 58.70	2.500 63.50	4	0.620 15.70	3.500 88.90	1.33
1 1/2	1.900 48.30	5.000 127.0	1.610 40.90	0.690 17.50	2.440 62.00	1.900 48.30	2.560 65.00	2.880 73.15	4	0.620 15.70	3.880 98.60	1.72
2	2.375 60.30	6.000 152.4	2.070 52.60	0.750 19.10	2.500 63.50	2.380 60.45	3.060 77.70	3.620 91.90	4	0.750 19.10	4.750 120.7	2.58
2 1/2	2.875 73.00	7.000 177.8	2.470 62.70	0.880 22.40	2.750 69.85	2.880 73.15	3.560 90.40	4.120 104.6	4	0.750 19.10	5.500 139.7	4.11
3	3.500 88.90	7.500 190.5	3.070 78.00	0.940 23.90	2.750 69.85	3.500 88.90	4.250 108.0	5.000 127.0	4	0.750 19.10	6.000 152.4	4.92
3 1/2	4.000 101.6	8.500 215.9	3.550 90.20	0.940 23.90	2.810 71.40	4.000 101.6	4.810 122.2	5.500 139.7	8	0.750 19.10	7.000 177.8	6.08
4	4.500 114.3	9.000 228.6	4.030 102.4	0.940 23.90	3.000 76.20	4.500 114.3	5.310 134.9	6.190 157.2	8	0.750 19.10	7.500 190.5	6.84
5	5.563 141.3	10.00 254.0	5.050 128.3	0.940 23.90	3.500 88.90	5.560 141.2	6.440 163.6	7.310 185.7	8	0.880 22.40	8.500 215.9	8.56
6	6.625 168.3	11.00 279.4	6.070 154.2	1.000 25.40	3.500 88.90	6.630 168.4	7.560 192.0	8.500 215.9	8	0.880 22.40	9.500 241.3	10.6
8	8.625 219.1	13.50 342.9	7.980 202.7	1.120 28.40	4.000 101.6	8.630 219.2	9.690 246.1	10.62 269.7	8	0.880 22.40	11.75 298.5	17.6
10	10.75 273.0	16.00 406.4	10.02 254.5	1.190 30.20	4.000 101.6	10.75 273.0	12.00 304.8	12.75 323.8	12	1.000 25.40	14.25 362.0	24.0
12	12.75 323.8	19.00 482.6	12.00 304.8	1.250 31.75	4.500 114.3	12.75 323.8	14.38 365.3	15.00 381.0	12	1.000 25.40	17.00 431.8	36.5
14	14.00 355.6	21.00 533.4	To be specified by Purchaser	1.380 35.10	5.000 127.0	14.00 355.6	15.75 400.1	16.25 412.7	12	1.120 28.40	18.75 476.3	48.4
16	16.00 406.4	23.50 596.9		1.440 36.60	5.000 127.0	16.00 406.4	18.00 475.2	18.50 469.9	16	1.120 28.40	21.25 539.8	60.6
18	18.00 457.2	25.00 635.0		1.560 39.60	5.500 139.7	18.00 457.2	19.88 505.0	21.00 533.4	16	1.250 31.75	22.75 577.9	68.3
20	20.00 508.0	27.50 698.5		1.690 42.90	5.690 144.5	20.00 508.0	22.00 558.8	23.00 584.2	20	1.250 31.75	25.00 635.0	84.5
24	24.00 609.6	32.00 812.8		1.880 47.80	6.000 152.4	24.00 609.6	26.12 663.4	27.25 692.1	20	1.380 35.10	29.50 749.3	115

Notes

- Values quoted assume 40S/Standard wall thickness.
- Weights are based on manufacturer's data and are approximate.

WELD NECK FLANGES - ANSI B16.5 CLASS # 300



Pipe		Flange Data				Hub Data		Raised Face	Drilling Data			Weight
Nominal Pipe Size	Outside Diameter	Overall Diameter	Inside Diameter	Flange Thickness min	Overall Length	Diameter at Weld Bevel	Hub Diameter	Face Diameter	Number of Holes	Bolt Hole Diameter	Diameter of Circle of Holes	/kg piece
		A	B	C	D	E	F	G	H	I	J	
	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm		in mm	in mm	
1/2	0.840 21.30	3.750 95.20	0.620 15.70	0.560 14.20	2.060 52.30	0.840 21.30	1.500 38.10	1.380 35.00	4	0.620 15.70	2.620 66.55	0.75
3/4	1.050 26.70	4.620 117.3	0.820 20.80	0.620 15.70	2.250 57.15	1.050 26.70	1.880 47.70	1.690 42.90	4	0.750 19.00	3.250 82.50	1.26
1	1.315 33.40	4.880 123.9	1.050 26.70	0.690 17.50	2.440 62.00	1.320 33.50	2.120 53.80	2.000 50.80	4	0.750 19.00	3.500 88.90	1.52
1 1/4	1.660 42.20	5.250 133.3	1.380 35.10	0.750 19.00	2.560 65.00	1.660 42.20	2.500 63.50	2.500 63.50	4	0.750 19.00	3.880 98.50	2.03
1 1/2	1.900 48.30	6.120 155.4	1.610 40.90	0.810 20.60	2.690 68.30	1.900 48.30	2.750 69.85	2.880 73.15	4	0.880 22.30	4.500 114.3	2.89
2	2.375 60.30	6.500 165.1	2.070 52.60	0.880 22.30	2.750 69.85	2.380 60.45	3.310 84.00	3.620 91.90	8	0.750 19.00	5.000 127.0	3.40
2 1/2	2.875 73.00	7.500 190.5	2.470 62.70	1.000 25.40	3.000 76.20	2.880 73.15	3.940 100.0	4.120 104.6	8	0.880 22.30	5.880 149.3	5.17
3	3.500 88.90	8.250 209.5	3.070 78.00	1.120 28.40	3.120 79.25	3.500 88.90	4.620 117.3	5.000 127.0	8	0.880 22.30	6.620 168.1	6.93
3 1/2	4.000 101.6	9.000 228.6	3.550 90.20	1.190 30.20	3.190 81.00	4.000 101.6	5.250 133.3	5.500 139.7	8	0.880 22.30	7.250 184.1	8.67
4	4.500 114.3	10.00 254.0	4.030 102.4	1.250 31.70	3.380 85.80	4.500 114.3	5.750 146.0	6.190 157.2	8	0.880 22.30	7.880 200.1	11.2
5	5.563 141.3	11.00 279.4	5.050 128.3	1.380 35.00	3.880 98.50	5.560 141.2	7.000 177.8	7.310 185.7	8	0.880 22.30	9.250 234.9	15.1
6	6.625 168.3	12.50 317.5	6.070 154.2	1.440 36.50	3.880 98.50	6.630 168.4	8.120 206.2	8.500 215.9	12	0.880 22.30	10.62 269.7	19.1
8	8.625 219.1	15.00 381.0	7.980 202.7	1.620 41.10	4.380 111.2	8.630 219.2	10.25 260.3	10.62 269.7	12	1.000 25.40	13.00 330.2	29.9
10	10.75 273.0	17.50 444.5	10.02 254.5	1.880 47.70	4.620 117.3	10.75 273.0	12.62 320.5	12.75 323.8	16	1.120 28.40	15.25 387.3	42.7
12	12.75 323.8	20.50 520.7	12.00 304.8	2.000 50.80	5.120 130.0	12.75 323.8	14.75 374.6	15.00 381.0	16	1.250 31.70	17.75 450.8	61.8
14	14.00 355.6	23.00 584.2	To be specified by Purchaser	2.120 53.80	5.620 142.7	14.00 355.6	16.75 425.4	16.25 412.7	20	1.250 31.70	20.25 514.3	85.8
16	16.00 406.4	25.50 647.7		2.250 57.15	5.750 146.0	16.00 406.4	19.00 482.6	18.50 469.9	20	1.380 35.00	22.50 571.5	106
18	18.00 457.2	28.00 711.2		2.380 60.45	6.250 158.7	18.00 457.2	21.00 533.4	21.00 533.4	24	1.380 35.00	24.75 628.6	131
20	20.00 508.0	30.50 774.7		2.500 63.50	6.380 162.0	20.00 508.0	23.12 587.2	23.00 584.2	24	1.380 35.00	27.00 685.8	158
24	24.00 609.6	36.00 914.4		2.750 69.85	6.620 168.1	24.00 609.6	27.62 701.5	27.25 692.1	24	1.620 41.10	32.00 812.8	230

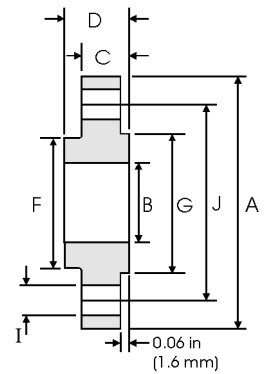
Notes

- Values quoted assume 40S/Standard wall thickness.
- Weights are based on manufacturer's data and are approximate.



BUTT WELD FLANGES

SLIP ON FLANGES - ANSI B16.5 CLASS # 150



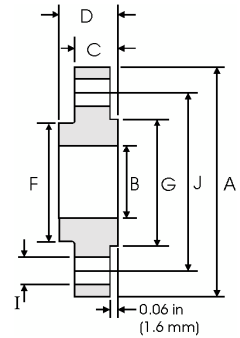
Pipe		Flange Data				Hub	Raised Face	Drilling Data			Weight
Nominal Pipe Size	Outside Diameter	Overall Diameter	Inside Diameter	Flange Thickness min	Overall Length	Hub Diameter	Face Diameter	Number of Holes	Bolt Hole Diameter	Diameter of Circle of Holes	/kg piece
		A	B	C	D	F	G	H	I	J	
	in mm	in mm	in mm	in mm	in mm	in mm	in mm		in mm	in mm	
1/2	0.840 21.30	3.500 88.90	0.880 22.40	0.440 11.20	0.620 15.70	1.190 30.20	1.380 35.10	4	0.620 15.70	2.380 60.45	0.39
3/4	1.050 26.70	3.880 98.60	1.090 27.70	0.500 12.70	0.620 15.70	1.500 38.10	1.690 42.90	4	0.620 15.70	2.750 69.85	0.56
1	1.315 33.40	4.250 108.0	1.360 34.50	0.560 14.20	0.690 17.50	1.940 49.30	2.000 50.80	4	0.620 15.70	3.120 79.25	0.78
1 1/4	1.660 42.20	4.620 117.3	1.700 43.20	0.620 15.70	0.810 20.60	2.310 58.70	2.500 63.50	4	0.620 15.70	3.500 88.90	1.03
1 1/2	1.900 48.30	5.000 127.0	1.950 49.50	0.690 17.50	0.880 22.40	2.560 65.00	2.880 73.15	4	0.620 15.70	3.880 98.60	1.32
2	2.375 60.30	6.000 152.4	2.440 62.00	0.750 19.10	1.000 25.40	3.060 77.70	3.620 91.90	4	0.750 19.10	4.750 120.7	2.06
2 1/2	2.875 73.00	7.000 177.8	2.940 74.70	0.880 22.40	1.120 28.40	3.560 90.40	4.120 104.6	4	0.750 19.10	5.500 139.7	3.28
3	3.500 88.90	7.500 190.5	3.570 90.70	0.940 23.90	1.190 30.20	4.250 108.0	5.000 127.0	4	0.750 19.10	6.000 152.4	3.85
3 1/2	4.000 101.6	8.500 215.9	4.070 103.4	0.940 23.90	1.250 31.75	4.810 122.2	5.500 139.7	8	0.750 19.10	7.000 177.8	4.81
4	4.500 114.3	9.000 228.6	4.570 116.1	0.940 23.90	1.310 33.30	5.310 134.9	6.190 157.2	8	0.750 19.10	7.500 190.5	5.30
5	5.563 141.3	10.00 254.0	5.660 143.8	0.940 23.90	1.440 36.60	6.440 163.6	7.310 185.7	8	0.880 22.40	8.500 215.9	6.07
6	6.625 168.3	11.00 279.4	6.720 170.7	1.000 25.40	1.560 39.60	7.560 192.0	8.500 215.9	8	0.880 22.40	9.500 241.3	7.45
8	8.625 219.1	13.50 342.9	8.720 221.5	1.120 28.40	1.750 44.50	9.690 246.1	10.62 269.7	8	0.880 22.40	11.75 298.5	12.1
10	10.75 273.0	16.00 406.4	10.88 276.3	1.190 30.20	1.940 49.30	12.00 304.8	12.75 323.9	12	1.000 25.40	14.25 362.0	16.5
12	12.75 323.8	19.00 482.6	12.88 327.1	1.250 31.75	2.190 55.60	14.38 365.3	15.00 381.0	12	1.000 25.40	17.00 431.8	26.2
14	14.00 355.6	21.00 533.4	14.14 359.1	1.380 35.10	2.250 57.15	15.75 400.1	16.25 412.8	12	1.120 28.40	18.75 476.3	34.6
16	16.00 406.4	23.50 596.9	16.16 410.5	1.440 36.60	2.500 63.50	18.00 457.2	18.50 469.9	16	1.120 28.40	21.25 539.8	44.8
18	18.00 457.2	25.00 635.0	18.18 461.8	1.560 39.60	2.690 68.30	19.88 505.0	21.00 533.4	16	1.250 31.75	22.75 577.9	48.9
20	20.00 508.0	27.50 698.5	20.20 513.1	1.690 42.90	2.880 73.15	22.00 558.8	23.00 584.2	20	1.250 31.75	25.00 635.0	61.9
24	24.00 609.6	32.00 812.8	24.25 616.0	1.880 47.80	3.250 82.60	26.12 663.4	27.25 692.2	20	1.380 35.10	29.50 749.3	86.9

Notes

- Weights are based on manufacturer's data and are approximate.

BUTT WELD FLANGES

SLIP ON FLANGES - ANSI B16.5 CLASS # 300



Pipe		Flange Data				Hub	Raised Face	Drilling Data			Weight
Nominal Pipe Size	Outside Diameter	Overall Diameter	Inside Diameter	Flange Thickness min	Overall Length	Hub Diameter	Face Diameter	Number of Holes	Bolt Hole Diameter	Diameter of Circle of Holes	kg/ piece
		A	B	C	D	F	G	H	I	J	
	in mm	in mm	in mm	in mm	in mm	in mm	in mm		in mm	in mm	
1/2	0.840 21.30	3.750 95.20	0.880 22.40	0.560 14.20	0.880 22.40	1.500 38.10	1.380 35.10	4	0.620 15.70	2.620 66.55	0.64
3/4	1.050 26.70	4.620 117.3	1.090 27.70	0.620 15.70	1.000 25.40	1.880 47.70	1.690 42.90	4	0.750 19.10	3.250 82.50	1.12
1	1.315 33.40	4.880 123.9	1.360 34.50	0.690 17.50	1.060 26.90	2.120 53.80	2.000 50.80	4	0.750 19.10	3.500 88.90	1.36
1 1/4	1.660 42.20	5.250 133.3	1.700 43.20	0.750 19.00	1.060 26.90	2.500 63.50	2.500 63.50	4	0.750 19.10	3.880 98.60	1.68
1 1/2	1.900 48.30	6.120 155.4	1.950 49.50	0.810 20.60	1.190 30.20	2.750 69.85	2.880 73.15	4	0.880 22.40	4.500 114.3	2.49
2	2.375 60.30	6.500 165.1	2.440 62.00	0.880 22.30	1.310 33.20	3.310 84.00	3.620 91.90	8	0.750 19.10	5.000 127.0	2.87
2 1/2	2.875 73.00	7.500 190.5	2.940 74.70	1.000 25.40	1.500 38.10	3.940 100.0	4.120 104.6	8	0.880 22.40	5.880 149.4	4.32
3	3.500 88.90	8.250 209.5	3.570 90.70	1.120 28.40	1.690 42.90	4.620 117.3	5.000 127.0	8	0.880 22.40	6.620 168.1	5.85
3 1/2	4.000 101.6	9.000 228.6	4.070 103.4	1.190 30.20	1.750 44.40	5.250 133.3	5.500 139.7	8	0.880 22.40	7.250 184.2	7.34
4	4.500 114.3	10.00 254.0	4.570 116.1	1.250 31.70	1.880 47.70	5.750 146.0	6.190 157.2	8	0.880 22.40	7.880 200.1	9.61
5	5.563 141.3	11.00 279.4	5.660 143.8	1.380 35.00	2.000 50.80	7.000 177.8	7.310 185.7	8	0.880 22.40	9.250 234.9	12.3
6	6.625 168.3	12.50 317.5	6.720 170.7	1.440 36.50	2.060 52.30	8.120 206.2	8.500 215.9	12	0.880 22.40	10.62 269.7	15.6
8	8.625 219.1	15.00 381.0	8.720 221.5	1.620 41.10	2.440 61.90	10.25 260.3	10.62 269.7	12	1.000 25.40	13.00 330.2	24.2
10	10.75 273.0	17.50 444.5	10.88 276.3	1.880 47.70	2.620 66.55	12.62 320.5	12.75 323.9	16	1.120 28.40	15.25 387.3	34.1
12	12.75 323.8	20.50 520.7	12.88 327.1	2.000 50.80	2.880 73.15	14.75 374.6	15.00 381.0	16	1.250 31.70	17.75 450.8	49.8
14	14.00 355.6	23.00 584.2	14.14 359.1	2.120 53.80	3.000 76.20	16.75 425.4	16.25 412.8	20	1.250 31.70	20.25 514.4	69.9
16	16.00 406.4	25.50 647.7	16.16 410.5	2.250 57.15	3.250 82.50	19.00 482.6	18.50 469.9	20	1.380 35.00	22.50 571.5	88.1
18	18.00 457.2	28.00 711.2	18.18 461.8	2.380 60.45	3.500 88.90	21.00 533.4	21.00 533.4	24	1.380 35.00	24.75 628.7	109
20	20.00 508.0	30.50 774.7	20.20 513.1	2.500 63.50	3.750 95.20	23.12 587.2	23.00 584.2	24	1.380 35.00	27.00 685.8	134
24	24.00 609.6	36.00 914.4	24.25 616.0	2.750 69.85	4.190 106.4	27.62 701.5	27.25 692.2	24	1.620 41.00	32.00 812.8	201

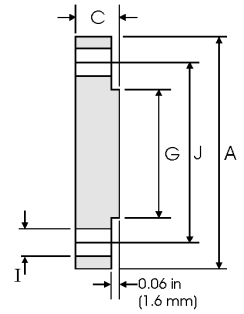
Notes

- Weights are based on manufacturer's data and are approximate.



BUTT WELD FLANGES

BLIND FLANGES - ANSI B16.5 CLASS # 150

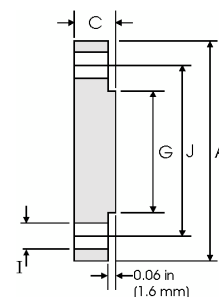


Pipe		Flange Data		Raised Face	Drilling Data			Weight
Nominal Pipe Size	Outside Diameter	Overall Diameter	Flange Thickness min	Face Diameter	Number of Holes	Bolt Hole Diameter	Diameter of Circle of Holes	kg/piece
		A	C	G	H	I	J	
	in mm	in mm	in mm	in mm		in mm	in mm	
1/2	0.840 21.30	3.500 88.90	0.440 11.20	1.380 35.10	4	0.620 15.70	2.380 60.45	0.42
3/4	1.050 26.70	3.880 98.60	0.500 12.70	1.690 42.90	4	0.620 15.70	2.750 69.85	0.61
1	1.315 33.40	4.250 108.0	0.560 14.20	2.000 50.80	4	0.620 15.70	3.120 79.25	0.86
1 1/4	1.660 42.20	4.620 117.3	0.620 15.70	2.500 63.50	4	0.620 15.70	3.500 88.90	1.17
1 1/2	1.900 48.30	5.000 127.0	0.690 17.50	2.880 73.15	4	0.620 15.70	3.880 98.60	1.53
2	2.375 60.30	6.000 152.4	0.750 19.10	3.620 91.90	4	0.750 19.10	4.750 120.7	2.42
2 1/2	2.875 73.00	7.000 177.8	0.880 22.40	4.120 104.6	4	0.750 19.10	5.500 139.7	3.94
3	3.500 88.90	7.500 190.5	0.940 23.90	5.000 127.0	4	0.750 19.10	6.000 152.4	4.93
3 1/2	4.000 101.6	8.500 215.9	0.940 23.90	5.500 139.7	8	0.750 19.10	7.000 177.8	6.17
4	4.500 114.3	9.000 228.6	0.940 23.90	6.190 157.2	8	0.750 19.10	7.500 190.5	7.00
5	5.563 141.3	10.00 254.0	0.940 23.90	7.310 185.7	8	0.880 22.40	8.500 215.9	8.63
6	6.625 168.3	11.00 279.4	1.000 25.40	8.500 215.9	8	0.880 22.40	9.500 241.3	11.3
8	8.625 219.1	13.50 342.9	1.120 28.40	10.62 269.7	8	0.880 22.40	11.75 298.5	19.6
10	10.75 273.0	16.00 406.4	1.190 30.20	12.75 323.9	12	1.000 25.40	14.25 362.0	28.8
12	12.75 323.8	19.00 482.6	1.250 31.75	15.00 381.0	12	1.000 25.40	17.00 431.8	43.2
14	14.00 355.6	21.00 533.4	1.380 35.10	16.25 412.8	12	1.120 28.40	18.75 476.3	58.1
16	16.00 406.4	23.50 596.9	1.440 36.60	18.50 469.9	16	1.120 28.40	21.25 539.8	76.0
18	18.00 457.2	25.00 635.0	1.560 39.60	21.00 533.4	16	1.250 31.75	22.75 577.9	93.7
20	20.00 508.0	27.50 698.5	1.690 42.90	23.00 584.2	20	1.250 31.75	25.00 635.0	122
24	24.00 609.6	32.00 812.8	1.880 47.80	27.25 692.2	20	1.380 35.10	29.50 749.3	185

Notes

- Weights are based on manufacturer's data and are approximate.

BLIND FLANGES - ANSI B16.5 CLASS # 300



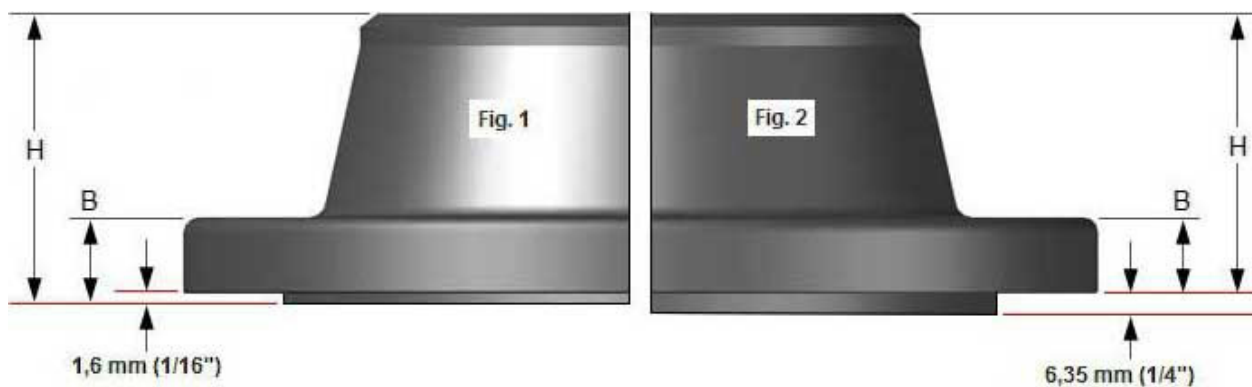
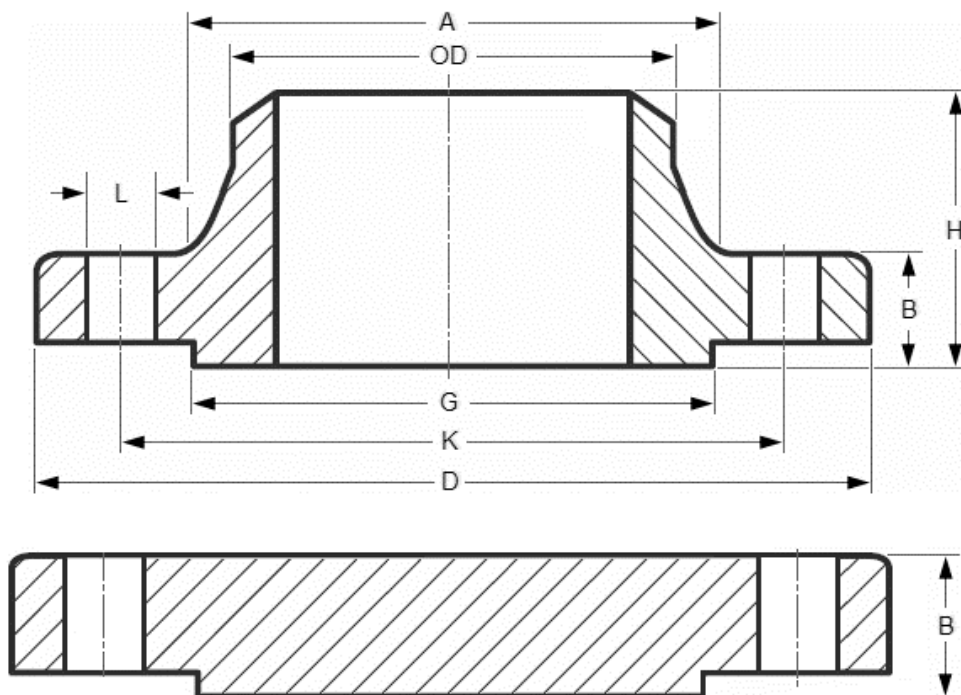
Pipe		Flange Data		Raised Face	Drilling Data			Weight
Nominal Pipe Size	Outside Diameter	Overall Diameter	Flange Thickness min	Face Diameter	Number of Holes	Bolt Hole Diameter	Diameter of Circle of Holes	kg/piece
		A	C	G	H	I	J	
	in mm	in mm	in mm	in mm		in mm	in mm	
½	0.840 21.30	3.750 95.20	0.560 14.20	1.380 35.10	4	0.620 15.70	2.620 66.55	0.64
¾	1.050 26.70	4.620 117.3	0.620 15.70	1.690 42.90	4	0.750 19.00	3.250 82.50	1.11
1	1.315 33.40	4.880 123.9	0.690 17.50	2.000 50.80	4	0.750 19.00	3.500 88.90	1.39
1¼	1.660 42.20	5.250 133.3	0.750 19.00	2.500 63.50	4	0.750 19.00	3.880 98.50	1.79
1½	1.900 48.30	6.120 155.4	0.810 20.60	2.880 73.15	4	0.880 22.3	4.500 114.3	2.66
2	2.375 60.30	6.500 165.1	0.880 22.30	3.620 91.90	8	0.750 19.10	5.000 127.0	3.18
2½	2.875 73.00	7.500 190.5	1.000 25.40	4.120 104.6	8	0.880 22.30	5.880 149.3	4.85
3	3.500 88.90	8.250 209.5	1.120 28.40	5.000 127.0	8	0.880 22.30	6.620 168.1	6.81
3½	4.000 101.6	9.000 228.6	1.190 30.20	5.500 139.7	8	0.880 22.30	7.250 184.1	8.71
4	4.500 114.3	10.00 254.0	1.250 31.70	6.190 157.2	8	0.880 22.30	7.800 200.1	11.5
5	5.563 141.3	11.00 279.4	1.380 35.00	7.310 185.7	8	0.880 22.30	9.250 234.9	15.6
6	6.625 168.3	12.50 317.5	1.440 36.50	8.500 215.9	12	0.880 22.30	10.62 269.7	20.9
8	8.625 219.1	15.00 381.0	1.620 41.10	10.62 269.7	12	1.000 25.40	13.00 330.2	34.3
10	10.75 273.0	17.50 444.5	1.880 47.70	12.75 323.9	16	1.120 28.40	15.25 387.3	53.3
12	12.75 323.8	20.50 520.7	2.000 50.80	15.00 381.0	16	1.250 31.70	17.75 450.8	78.8
14	14.00 355.6	23.00 584.2	2.120 53.80	16.25 412.8	20	1.250 31.70	20.25 514.3	105
16	16.00 406.4	25.50 647.7	2.250 57.15	18.50 469.9	20	1.380 35.00	22.50 571.5	137
18	18.00 457.2	28.00 711.2	2.380 60.45	21.00 533.4	24	1.380 35.00	24.75 628.6	175
20	20.00 508.0	30.50 774.7	2.500 63.50	23.00 584.2	24	1.380 35.00	27.00 685.8	221
24	24.00 609.6	36.00 914.4	2.750 69.85	27.25 692.2	24	1.620 41.10	32.00 812.8	339

Notes

- Weights are based on manufacturer's data and are approximate.



DIMENSIONS WELD NECK & BLIND FLANGES ASME B16.47 SERIES A



DIMENSIONS WELD NECK & BLIND FLANGES

ASME B16.47 SERIES A

CLASS # 150

CLASS 150 - NPS 26 - NPS 48												
NPS	OD	D	B (WNF)	B (BLF)	H	A	G	K	L	No of Bolts	Stud Bolt Dia x L	
26	660.4	870	66.7 68.3	66.7 68.3	119 120.6	676	749	806.4	34.9	24	1.1/4	222
28	711.2	925	69.9 71.5	69.9 71.5	124 125.6	727	800	863.6	34.9	28	1.1/4	228
30	762	985	73.1 74.7	73.1 74.7	135 136.6	781	857	914.4	34.9	28	1.1/4	234
32	812.8	1060	79.4 81	79.4 81	143 144.6	832	914	977.9	41.3	28	1.1/2	266
34	863.6	1110	81 82.6	81 82.6	148 149.6	883	965	1028.7	41.3	32	1.1/2	266
36	914.4	1170	88.9 90.5	88.9 90.5	156 157.6	933	1022	1085.8	41.3	32	1.1/2	279
38	965.2	1240	85.8 87.4	85.8 87.4	156 157.6	991	1073	1149.4	41.3	32	1.1/2	279
40	1016	1290	88.9 90.5	88.9 90.5	162 163.6	1041	1124	1200.2	41.3	36	1.1/2	279
42	1066.8	1345	95.3 96.9	95.3 96.9	170 171.6	1092	1194	1257.3	41.3	36	1.1/2	292
44	1117.6	1405	100.1 101.7	100.1 101.7	176 177.6	1143	1245	1314.4	41.3	40	1.1/2	304
46	1168.4	1455	101.6 103.2	101.6 103.2	184 185.6	1197	1295	1365.2	41.3	40	1.1/2	304
48	1219.2	1510	106.4 108	106.4 108	191 192.6	1248	1359	1422.4	41.3	44	1.1/2	317



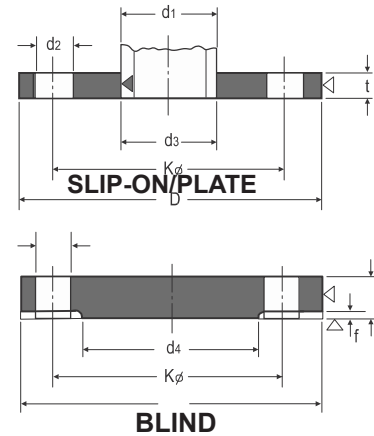
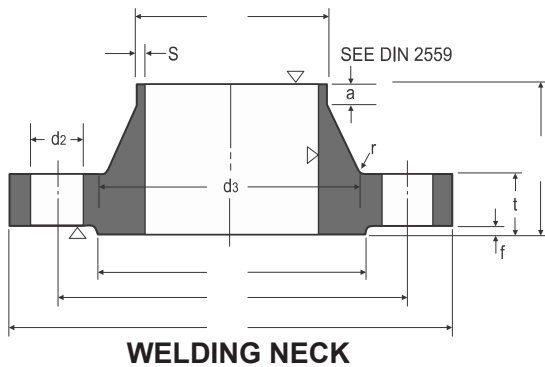
DIMENSIONS WELD NECK & BLIND FLANGES ASME B16.47 SERIES A CLASS # 300

CLASS 300 - NPS 26 - NPS 48												
NPS	OD	D	B (WNF)	B (BLF)	H	A	G	K	L	No of Bolts	Stud Bolt Dia x L	
26	660.4	970	77.8 79.4	82.6 84.2	183 184.6	721	749	876.3	44.5	28	1.5/8	273
28	711.2	1035	84.2 85.8	88.9 90.5	195 196.6	775	800	939.8	44.5	28	1.5/8	285
30	762	1090	90.5 92.1	93.7 95.3	208 209.6	827	857	997	47.6	28	1.3/4	304
32	812.8	1150	96.9 98.5	98.5 100.1	221 222.6	881	914	1054.1	50.8	28	1.7/8	317
34	863.6	1205	100.1 101.7	103.2 104.8	230 231.6	937	965	1104.9	50.8	28	1.7/8	330
36	914.4	1270	103.2 104.8	109.6 111.2	240 241.6	991	1022	1168.4	54	32	2	342
38	965.2	1170	106.4 108	106.4 108	179 180.6	994	1029	1092.2	41.3	32	1.1/2	317
40	1016	1240	112.8 114.4	112.8 114.4	192 193.6	1048	1086	1155.7	44.5	32	1.5/8	336
42	1066.8	1290	117.5 119.1	117.5 119.1	198 199.6	1099	1137	1206.5	44.5	32	1.5/8	349
44	1117.6	1355	122.3 123.9	122.3 123.9	205 206.6	1149	1194	1263.6	47.6	32	1.3/4	361
46	1168.4	1415	127 128.6	127 128.6	214 215.6	1203	1245	1320.8	50.8	28	1.7/8	381
48	1219.2	1465	131.8 133.4	131.8 133.4	222 223.6	1254	1302	1371.6	50.8	32	1.7/8	387

BUTT WELD FLANGES

DIMENSIONS, SIZES AND SPECIFICATION OF BS 4505 AND EN 1092 FLANGES SLIP ON FLANGES, BLIND FLANGES, WELDING NECK FLANGES PN16

PN16/16 BAR



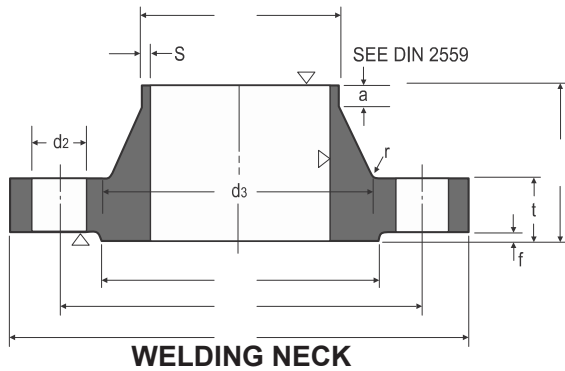
Bore		Common Dimension						Hub				Raised Face		Drilling			Approx. Weight(kg)		
Nominal Bore	d 1	D	t			K	T	d 3	s	r	a	d 4	f	Number of Bolt	Dia. of Bolt		d 2	DIN 2633	DIN 2543
			Welding Neck	Slip-on (no-hub)	Blind														
10 15 20	14 17.2*) 20 21.3*) 25 26.9*)	90 95 105	14 14 16	14 14 16	14 14 16	60 65 75	35 35 38	25 28 30 32 38 40	1.8 2.0 2.3	4 4 4	6 6 6	40 45 58	2 2 2	4 4 4	M12 M12 M12	(1/2») (1/2») (1/2»)	14 14 14	0.63 0.72 1.01	0.580 0.648 0.952
25 32 40	30 33.7*) 38 42.4*) 44.5 48.3*)	115 140 150	16 16 16	16 16 16	16 16 16	85 100 110	38 40 42	42 45 52 56 60 64	2.6 2.6 2.6	4 6 6	6 6 7	68 78 88	2 2 3	4 4 4	M12 M16 M16	(1/2») (5/8») (5/8»)	14 18 18	1.23 1.80 2.09	1.14 1.69 1.86
50 65 80	57 60.3*) 76.1*) 88.9*)	165 185 200	18 18 20	18 18 20	18 18 20	125 145 160	45 45 50	72 75 90 105	2.9 2.9 2.2	6 6 8	8 10 10	102 122 138	3 3 3	4 4 8	M16 M16 M16	(5/8») (5/8») (5/8»)	18 18 18	2.88 3.66 4.77	2.53 3.06 3.70
100 125 150	108 114.3*) 133 139.7*) 159 168.3*)	220 250 285	20 22 22	20 22 22	20 22 22	180 210 240	52 55 55	125 131 150 156 175 184	3.6 4.0 4.5	8 8 10	12 12 12	158 188 212	3 3 3	8 8 8	M16 M16 M20	(5/8») (5/8») (3/4»)	18 18 23	5.65 8.42 10.4	4.62 6.30 7.75
200 250 300	216 219.1*) 267 273*) 318	340 405 460	24 26 28	24 26 28	24 26 28	295 355 410	62 70 78	232 235 285 292 338 344	5.9 6.3 7.1	10 12 12	16 16 16	268 320 378	3 3 4	12 12 12	M20 M24 M24	(3/4») (7/8») (7/8»)	23 27 27	16.1 24.9 35.1	11.0 15.6 22.0
350 400 500	355.6*) 368 406.4*) 419 508*) 521	520 580 715	30 32 34	30 32 36	30 32 34	470 525 650	82 85 90	390 445 548	8.0 8.0 8.0	12 12 12	16 16 16	438 490 610	4 4 4	16 16 20	M24 M27 M30	(7/8») (1») (1 1/8«)	27 30 33	47.8 63.5 102.0	28.7 36.3 59.3
600 700 800	609.6*) 622 711.2*) 720 812.8*) 820	840 910 1025	36 36 38	40 - -	- - -	770 840 950	95 100 105	652 755 855	8.8 8.8 10.0	12 12 12	18 18 20	725 795 900	5 5 5	20 24 24	M33 M33 M36	(1 1/4«) (1 1/4«) (1«)	36 36 39	- - -	- - -
900 1000	914.4*) 920 1016*) 1020	1125 1255	40 42	- -	- -	1050 1170	110 120	955 1058	10.0 10.0	12 16	20 20	1000 1115	5 5	28 28	M36 M39	(13/8«) (1 1/2«)	39 42	- -	- -



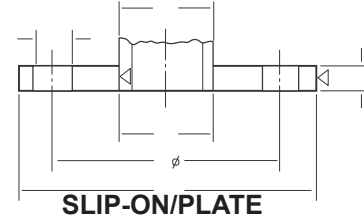
BUTT WELD FLANGES

DIMENSIONS, SIZES AND SPECIFICATION OF BS 4505 AND EN 1092 FLANGES SLIP ON FLANGES, BLIND FLANGES, WELDING NECK FLANGES PN16

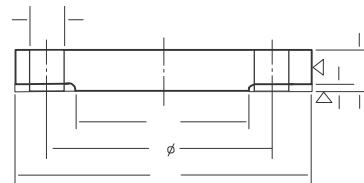
PN25/25BAR



WELDING NECK



SLIP-ON/PLATE



BLIND

Bore		Common Dimension						Hub				Raised Face		Drilling			Approx. Weight(kg)	
Nominal Bore	d ₁	D	t			K	T	d ₃	s	r	a	d ₄	f	Nominal of Bolt	Dia. of Bolt	d ₂	DIN 2632	DIN 2576
			Welding Neck	Slip-on	Blind													
10	14 (17.2")	90	16	16	16	60	35	25										
15	20 (21.3")	95	16	16	16	65	38	28	1.8	4	6	40	2	4	M12	(1/2")	14	0.72
20	25 (26.9")	105	18	18	18	75	40	30	2.0	4	6	45	2	4	M12	(1/2")	14	0.81
								32	2.3	4	6	58	2	4	M12	(1/2")	14	1.24
								38										
								40										
25	30 (33.7")	115	18	18	18	85	40	42	2.6	4	6	68	2	4	M12	(1/2")	14	1.38
32	38 (42.4")	140	18	18	18	100	42	46	2.6	6	6	78	2	4	M16	(5/8")	18	2.03
40	44.5 (48.3")	150	18	18	18	110	45	52	2.6	6	7	88	3	4	M16	(5/8")	18	2.35
								56										
								60										
								64										
50	57 (60.3")	165	20	20	20	125	48	72	2.9	6	8	102	3	4	M16	(5/8")	18	3.20
65	76.1 (76.1")	185	22	22	22	145	52	75	2.9	6	10	122	3	8	M16	(5/8")	18	4.29
80	88.9 (88.9")	200	24	24	24	160	58	90	3.2	8	12	138	3	8	M16	(5/8")	18	5.88
								105										
100	108 (114.3")	235	24	24	24	190	65	128	3.6	8	12	162	3	8	M20	(3/4")	23	7.54
125	133 (139.7")	270	26	26	26	220	68	134	4.0	8	12	188	3	8	M24	(7/8")	27	10.8
150	159 (168.3")	300	28	28	28	250	75	155	4.5	10	12	218	3	8	M24	(7/8")	27	14.5
								162										
								182										
								192										
200	216 (219.1")	360	30	30	30	310	80	240										
250	267 (273")	425	32	32	32	370	88	244	6.3	10	16	278	3	12	M24	(7/8")	27	22.3
300	318 (318")	485	34	34	34	430	92	292	7.1	12	18	335	3	12	M27	(1")	30	33.5
								298	8.0	12	18	395	4	16	M27	(1")	30	46.3
								345										
								352										
350	355.6 (368")	555	38	38	38	490	100	398	8.0	12	20	450	4	16	M30	(1 1/4")	33	68.0
400	406.4 (419")	620	40	40	40	550	110	452	8.8	12	20	505	4	16	M33	(1 1/4")	36	89.7
500	508 (521")	730	44	44	44	660	125	558	10.0	12	20	615	4	20	M33	(1 1/4")	36	138.0
600	609.6 (622")	845	46	-	-	770	125	660	11.0	12	20	720	5	20	M36	(1 3/8")	39	-
700	711.2 (720")	960	46	-	-	875	125	760	12.5	12	20	820	5	24	M39	(1 1/2")	42	-
800	812.8 (820")	1085	50	-	-	990	135	865	14.2	12	22	930	5	24	M45	(1 3/4")	48	-
900	914.4 (920")	1185	54	-	-	1090	145	968	16.0	12	24	1030	5	28	M45	(1 3/4")	48	-
1000	1016 (1020")	1320	58	-	-	1210	155	1070	17.5	16	24	1140	5	28	M52	(2")	56	-

PPF PIPE FITTINGS (PAHANG)

BUTT WELD FLANGES

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