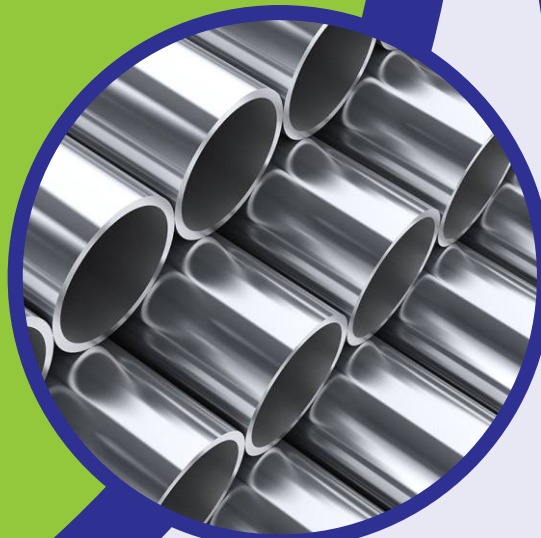




**Manufacturers
Wholesalers
Exporters &
Suppliers of**

- Tube Fittings,
- Ferrule Fittings,
- Compression Fittings,
- Instrumentation Fittings,
- Flanges,
- Butt Weld Fittings.



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About Neelkamal

Neelkamal Alloys today are the major manufacturer, supplier and exporters of the wide range of ferrous and non-ferrous metal products. We have successfully created an important place in the market under the mentorship of Mr. Parasmal C. Shah. For a decade now we have given services to many companies with different qualities of Flanges, Stainless Steel and Carbon Steel Pipe Fittings, Pipes, Sheet, Fasteners, Plates suitable for various applications.

We are incomplete without the support of our industrious staff who works constantly towards achieving the goal of producing quality products. The experienced team is qualified professionals who are well apt in different techniques which are needed to produce premium grade ferrous and non-ferrous metal products. They are able people who know everything from sourcing quality raw material from reputed vendors to testing the engineered components these people are expert.

Who We Are

We take privilege to introduce ourselves as a prime manufacturer, exporters and suppliers various quality of Stainless Steel and Carbon Steel Pipe Fittings, Flanges, Fasteners, Pipes, Sheet, Plates suitable for various applications. we are in this field for nearly a decade rendering our services to many public and private sector companies of your repute.

Our Vision & Mission

Neel Kamal Alloys (NK Alloys) welcome you to let us have an opportunity to meet and understand your specific requirements and let us assure you of personal attention and no matter how little or bulk your needs are”

- As such your kind favor is solicited to oblige us with your enquiries to enable us to quote minimum prices with full assurance to execute your order to your utmost satisfaction and we want register with your firm.
- We satisfy our valued clients, our people and society at large, as well as contribute to the task of nation building by perpetual improvement in quality and services.
- We hope in building long term relations with you, whereupon we can provide you with our best quality products and services.
- We'll be looking forward for your precious response and promise most competitive rates and good business.



Buttweld Fittings

Types of Buttweld Fittings: Buttweld Elbow, 45 Degree BW Elbow, 90 Degree BW Elbow, 180 Degree BW Elbow, Short Radius Elbow, Long Radius Elbow, Buttweld Tee, Equal Tee, Unequal Tee, Reducing Tee, Barred Tee, Pipe Tee, Buttweld Cross, Buttweld Reducers, Concentric Reducer, Eccentric Reducer, Buttweld Pipe Cap, Butt Weld Nipple, Butt Weld Stub Ends.

Diameter range: 1", 2", 3", 4", 6", 8" and up to 36".

Thickness range: Schedule 10, schedule 40, schedule 80, XS, XXS and SCH 160

Stainless Steel: ASTM A403 WP 304/ 304L/ 304H/ 316/ 316L/ 317/ 317L/ 321/ 310/ 347/ 904L/ etc.

Carbon Steel: ASTM A234 WPB / A420 WPL3/ A420 WPL6/ MSS-SP-75 WPHY 42/46/52/56/60/65/70 etc.

Alloy Steel: ASTM A234 WP1/ WP5/ WP9/ WP11/ WP22/ WP91/ etc.

High Nickel Alloy:

Inconel: 600 /601 /625 /800 /825 /718

Hastelloy: C4 /C22 /C276 /B2 /B3

Nickel: 200/201

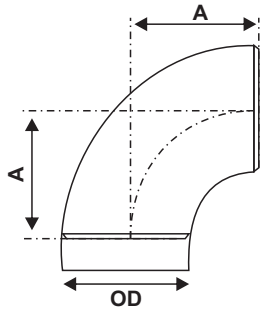
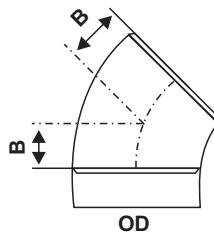
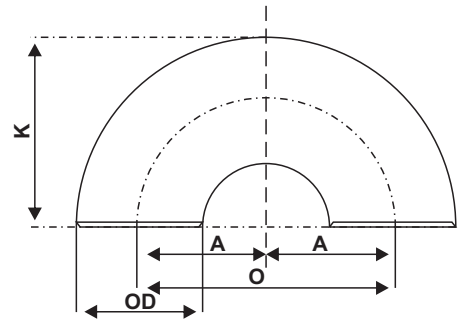
Cupro-Nickel: 70/30, 90/10, 95/5

Duplex Steel: S31803 / S32205

Super Duplex Steel: S32750 S32760

Titanium: 1 /2 /3 /4 /5 /7

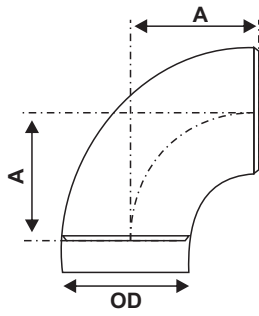
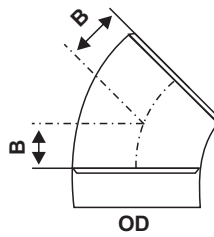
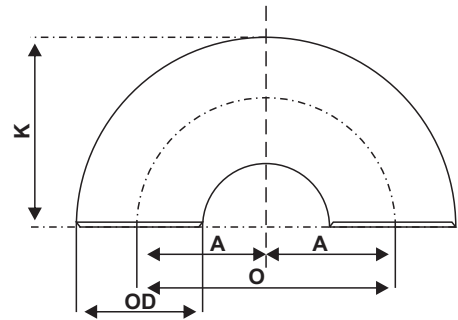


LR ELBOW & LR RETURN / U BEND

90° LR ELBOW

45° LR ELBOW

180° LR RETURN / U BEND
B16.9

Nominal Pipe Size (NPS)	Outside Diameter at Bevel (O/D)	Dimension A	Dimension B	Center to Center O	Back to Face K
1/2"	21.3	38	16	76	48
3/4"	26.7	38	19	76	51
1"	33.4	38	22	76	56
1.1/4"	42.2	48	25	95	70
1.1/2"	48.3	57	29	114	83
2"	60.3	76	35	152	106
2.1/2"	73.0	95	44	190	132
3"	88.9	114	51	229	159
3.1/2"	101.6	133	57	267	184
4"	114.3	152	64	305	210
5"	141.3	190	79	381	262
6"	168.3	229	95	457	313
8"	219.1	305	127	610	414
10"	273.0	381	159	762	518
12"	323.8	457	190	914	619
14"	355.6	533	222	1067	711
16"	406.4	610	254	1219	813
18"	457.0	686	286	1372	914
20"	508.0	762	318	1524	1016
22"	559.0	838	343	1676	1118
24"	610.0	914	381	1829	1219
26"	660.0	991	406	-----	-----
28"	711.0	1067	438	-----	-----
30"	762.0	1143	470	-----	-----
32"	813.0	1219	502	-----	-----
34"	864.0	1295	533	-----	-----
36"	914.0	1372	565	-----	-----

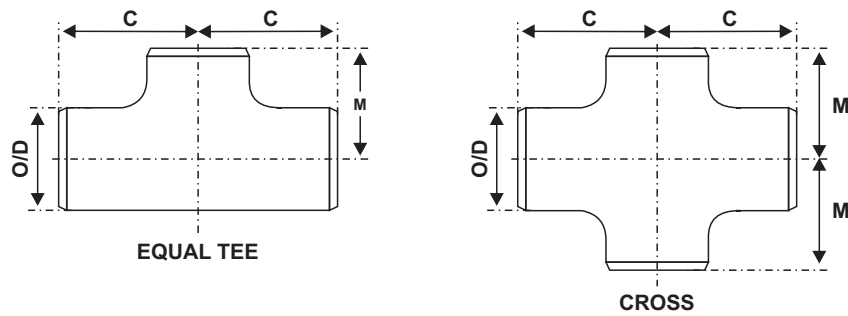
Note: All Dimensions are in millimeters (mm)
Dimension for 40" and above on request



SR ELBOW & SR RETURN / U BEND

90° SR ELBOW

45° SR ELBOW

180° SR RETURN / U BEND
B16.9 / B16.28

Nominal Pipe Size (NPS)	Outside Diameter at Bevel (O/D)	Dimension A	Dimension B	Center to Center O	Back to Face K
1/2"	21.3	----	----	----	----
3/4"	26.7	----	----	----	----
1"	33.4	25	----	51	41
1.1/4"	42.2	32	----	64	52
1.1/2"	48.3	38	----	76	62
2"	60.3	51	----	102	81
2.1/2"	73.0	64	----	127	100
3"	88.9	76	31.6	152	121
3.1/2"	101.6	89	36.8	178	140
4"	114.3	102	42.1	203	159
5"	141.3	127	52.6	254	197
6"	168.3	152	63.4	305	237
8"	219.1	203	84.2	406	313
10"	273.0	254	105.2	508	391
12"	323.8	305	126.3	610	467
14"	355.6	356	147.3	711	533
16"	406.4	406	168.3	813	610
18"	457.0	457	189.4	914	686
20"	508.0	508	210.4	1016	762
22"	559.0	559	231.5	1118	838
24"	610.0	610	252.5	1219	914

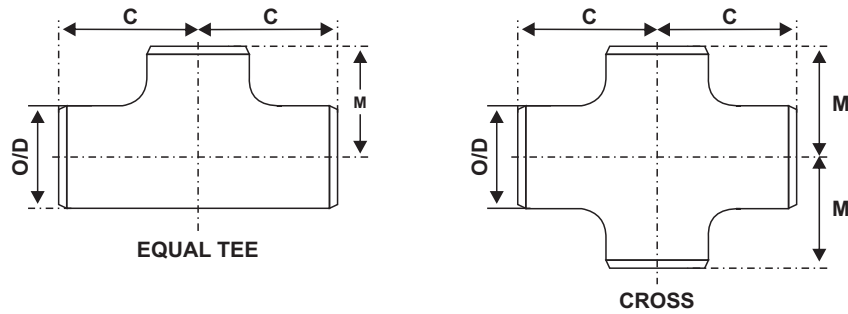
Note: All Dimensions are in millimeters (mm)


EQUAL TEE & CROSS

B16.9

Nominal Pipe Size (NPS)	Outside Diameter at Bevel (O/D)	Run 'C'	Outlet 'm'
1/2"	21.3	25	25
3/4"	26.7	29	29
1"	33.4	38	38
1.1/4"	42.2	48	48
1.1/2"	48.3	57	57
2"	60.3	64	64
2.1/2"	73.0	76	76
3"	88.9	86	86
3.1/2"	101.6	95	95
4"	114.3	105	105
5"	141.3	124	124
6"	168.3	143	143
8"	219.1	178	178
10"	273.0	216	216
12"	323.8	254	254
14"	355.6	279	279
16"	406.4	305	305
18"	457.0	343	343
20"	508.0	381	381
22"	559.0	419	419
24"	610.0	432	432
26"	660.0	495	495
28"	711.0	521	521
30"	762.0	559	559
32"	813.0	597	597
34"	864.0	635	635
36"	914.0	673	673

Note: All Dimensions are in millimeters (mm)
Dimension for 40" and above on request.

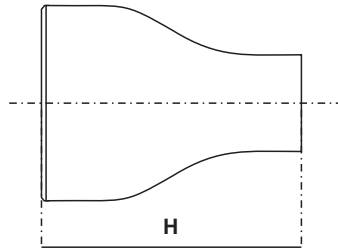
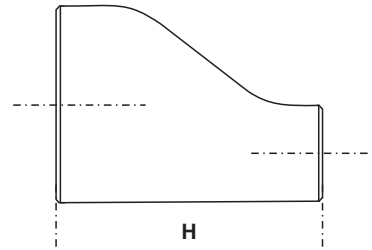


UNEQUAL TEE & UNEQUAL CROSS

B16.9

Nominal Pipe Size (NPS)	Outside Diameter at Bevel (O/D)		Center to Center		Nominal Pipe Size (NPS)	Outside Diameter at Bevel (O/D)		Center to Center	
	Run	Outlet	Run 'C'	Outlet 'M'		Run	Outlet	Run 'C'	Outlet 'M'
1/2" x 3/8"	21.3	17.3	25	25	10" x 8"	273.0	219.1	216	203
1/2" x 1/4"	21.3	13.7	25	25	10" x 6"	273.0	168.3	216	194
					10" x 5"	273.0	141.3	216	191
3/4" x 1/2"	26.7	21.3	29	29	10" x 4"	273.0	114.3	216	184
3/4" x 3/8"	26.7	17.3	29	29					
					12" x 10"	323.8	273.0	254	241
1" x 3/4"	33.4	26.7	38	38	12" x 8"	323.8	219.1	254	229
1" x 1/2"	33.4	21.3	38	38	12" x 6"	323.8	168.3	254	219
					12" x 5"	323.8	141.3	254	216
1.1/4" x 1"	42.2	33.4	48	48					
1.1/4" x 3/4"	42.2	26.7	48	48	14" x 12"	355.6	323.8	279	270
1.1/4" x 1/2"	42.2	21.3	48	48	14" x 10"	355.6	273.0	279	257
					14" x 8"	355.6	219.1	279	248
1.1/2 x 1.1/4"	48.3	42.2	57	57	14" x 6"	355.6	168.3	279	238
1.1/2 x 1"	48.3	33.4	57	57					
1.1/2 x 3/4"	48.3	26.7	57	57	16" x 14"	406.4	355.6	305	305
1.1/2 x 1/2"	48.3	21.3	57	57	16" x 12"	406.4	323.8	305	295
					16" x 10"	406.4	273.0	305	283
2" x 1.1/2"	60.3	48.3	64	60	16" x 8"	406.4	219.1	305	273
2" x 1.1/4"	60.3	42.2	64	57	16" x 6"	406.4	168.3	305	264
2" x 1"	60.3	33.4	64	51					
2" x 3/4"	60.3	26.7	64	44	18" x 16"	457.0	406.4	343	330
					18" x 14"	457.0	355.6	343	330
2.1/2 x 2"	73.0	60.3	76	70	18" x 12"	457.0	323.8	343	321
2.1/2 x 1.1/2"	73.0	48.3	76	67	18" x 10"	457.0	273.0	343	308
2.1/2 x 1.1/4"	73.0	42.2	76	64	18" x 8"	457.0	219.1	343	298
2.1/2 x 1"	73.0	33.4	76	57					
					20" x 18"	508.0	457.0	381	368
3" x 2.1/2"	89.9	73.0	86	83	20" x 16"	508.0	406.4	381	356
3" x 2"	89.9	60.3	86	76	20" x 14"	508.0	355.6	381	356
3" x 1.1/2"	89.9	48.3	86	73	20" x 12"	508.0	323.8	381	346
3" x 1.1/4"	89.9	42.2	86	70	20" x 10"	508.0	273.0	381	333
					20" x 8"	508.0	219.1	381	324
3.1/2" x 3"	101.6	88.9	95	92					
3.1/2" x 2.1/2"	101.6	73.0	95	89	22" x 20"	559.0	508.0	419	406
3.1/2" x 2"	101.6	60.3	95	83	22" x 18"	559.0	457.0	419	394
3.1/2" x 1.1/2"	101.6	48.3	95	79	22" x 16"	559.0	406.4	419	381
					22" x 14"	559.0	355.6	419	381
4" x 3.1/2"	114.3	101.6	105	102	22" x 12"	559.0	323.8	419	381
4" x 3"	114.3	88.9	105	98	22" x 10"	559.0	273.0	419	359
4" x 2.1/2"	114.3	73.0	105	95					
4" x 2"	114.3	60.3	105	89	24" x 22"	610.0	559.0	432	432
4" x 1.1/2"	114.3	48.3	105	86	24" x 20"	610.0	508.0	432	432
					24" x 18"	610.0	457.0	432	419
5" x 4"	141.3	114.3	124	117	24" x 16"	610.0	406.4	432	406
5" x 3.1/2"	141.3	101.6	124	114	24" x 14"	610.0	355.6	432	406
5" x 3"	141.3	88.9	124	111	24" x 12"	610.0	323.8	432	397
5" x 2.1/2"	141.3	73.0	124	108	24" x 10"	610.0	273.0	432	384
5" x 2"	141.3	60.3	124	105					
					26" x 24"	660.0	610.0	495	483
6" x 5"	168.3	141.3	143	137	26" x 22"	660.0	559.0	495	470
6" x 4"	168.3	114.3	143	130	26" x 20"	660.0	508.0	495	457
6" x 3.1/2"	168.3	101.6	143	127	26" x 18"	660.0	457.0	495	444
6" x 3"	168.3	88.9	143	124	26" x 16"	660.0	406.4	495	432
6" x 2.1/2"	168.3	73.0	143	121	26" x 14"	660.0	355.6	495	432
					26" x 12"	660.0	323.8	495	422
8" x 6"	219.1	168.3	178	168					
8" x 5"	219.1	141.3	178	162	28" x 26"	711.0	660.0	521	521
8" x 4"	219.1	114.3	178	156	28" x 24"	711.0	610.0	521	508
8" x 3.1/2"	219.1	101.6	178	152	28" x 22"	711.0	559.0	521	495
					28" x 20"	711.0	508.0	521	483

Note: All Dimensions are in millimeters (mm)
Dimension for 30" and above on request.

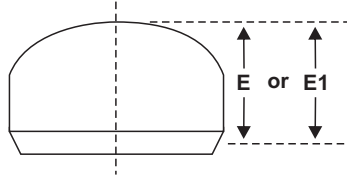


REDUCER: CONCENTRIC & ECCENTRIC

CONCENTRIC REDUCER

CONCENTRIC REDUCER
B16.9

Nominal Pipe Size (NPS)	Outside Diameter at Bevel (O/D)		End to End	Nominal Pipe Size (NPS)	Outside Diameter at Bevel (O/D)		End to End
	Run	Outlet	H		Run	Outlet	H
3/4" x 1/2" 3/4" x 3/8"	26.7 26.7	21.3 17.3	38 38	12" x 10" 12" x 8" 12" x 6" 12" x 5"	323.8 323.8 323.8 323.8	273.0 219.1 168.3 141.3	203 203 203 203
1" x 3/4" 1" x 1/2"	33.4 33.4	26.7 21.3	51 51	14" x 12" 14" x 10" 14" x 8" 14" x 6"	355.6 355.6 355.6 355.6	323.8 273.0 219.1 168.3	330 330 330 330
1.1/4" x 1" 1.1/4" x 3/4" 1.1/4" x 1/2"	42.2 42.2 42.2	33.4 26.7 21.3	51 51 51	16" x 14" 16" x 12" 16" x 10" 16" x 8"	406.4 406.4 406.4 406.4	355.6 323.8 273.0 219.1	356 356 356 356
1.1/2" x 1.1/4" 1.1/2" x 1" 1.1/2" x 3/4" 1.1/2" x 1/2"	48.3 48.3 48.3 48.3	42.2 33.4 26.7 21.3	64 64 64 64	18" x 16" 18" x 14" 18" x 12" 18" x 10"	457.0 457.0 457.0 457.0	406.4 356.6 323.8 273.0	381 381 381 381
2" x 1.1/2" 2" x 1.1/4" 2" x 1" 2" x 3/4"	60.3 60.3 60.3 60.3	48.3 42.2 33.4 26.7	76 76 76 76	20" x 18" 20" x 16" 20" x 14" 20" x 12"	508.0 508.0 508.0 508.0	457.0 406.0 355.6 323.8	508 508 508 508
2.1/2" x 2" 2.1/2" x 1.1/2" 2.1/2" x 1.1/4" 2.1/2" x 1"	73.0 73.0 73.0 73.0	60.3 48.3 42.2 33.4	89 89 89 89	22" x 20" 22" x 18" 22" x 16" 22" x 14"	559.0 559.0 559.0 559.0	508.0 457.0 406.4 355.6	508 508 508 508
3" x 2.1/2" 3" x 2" 3" x 1.1/2" 3" x 1.1/4"	88.9 88.9 88.9 88.9	73.0 60.3 48.3 42.2	89 89 89 89	24" x 22" 24" x 20" 24" x 18" 24" x 16"	610.0 610.0 610.0 610.0	559.0 508.0 457.0 406.4	508 508 508 508
3.1/2" x 3" 3.1/2" x 2.1/2" 3.1/2" x 2" 3.1/2" x 1.1/2"	101.6 101.6 101.6 101.6	88.9 73.0 60.3 48.3	102 102 102 102	26" x 24" 26" x 22" 26" x 20" 26" x 18"	660.0 660.0 660.0 660.0	610.0 559.0 508.0 457.0	610 610 610 610
4" x 3.1/2" 4" x 3" 4" x 2.1/2" 4" x 2" 4" x 1.1/2"	114.3 114.3 114.3 114.3 114.3	101.6 88.9 73.0 60.3 48.3	102 102 102 102 102	28" x 26" 28" x 24" 28" x 20" 28" x 18"	711.0 711.0 711.0 711.0	660.0 610.0 508.0 457.0	610 610 610 610
5" x 4" 5" x 3.1/2" 5" x 3" 5" x 2.1/2" 5" x 2"	141.3 141.3 141.3 141.3 141.3	114.3 101.6 88.9 73.0 60.3	127 127 127 127 127	30" x 28" 30" x 26" 30" x 24" 30" x 20"	762.0 762.0 762.0 762.0	711.0 660.0 610.0 508.0	610 610 610 610
6" x 5" 6" x 4" 6" x 3.1/2" 6" x 3" 6" x 2.1/2"	168.3 168.3 168.3 168.3 168.3	141.3 114.3 101.6 88.9 73.0	140 140 140 140 140	32" x 30" 32" x 28" 32" x 26" 32" x 24"	813.0 813.0 813.0 813.0	762.0 711.0 660.0 610.0	610 610 610 610
8" x 6" 8" x 5" 8" x 4" 8" x 3.1/2"	219.1 219.1 219.1 219.1	168.3 141.3 114.3 101.6	152 152 152 152	34" x 32" 34" x 30" 34" x 26" 34" x 24"	864.0 864.0 864.0 864.0	813.0 762.0 660.0 610.0	610 610 610 610
10" x 8" 10" x 6" 10" x 5" 10" x 4"	273.0 273.0 273.0 273.0	219.1 168.3 141.3 114.3	178 178 178 178				

Note: All Dimensions are in millimeters (mm)
Dimension for 36" and above on request.



CAPS

B16.9

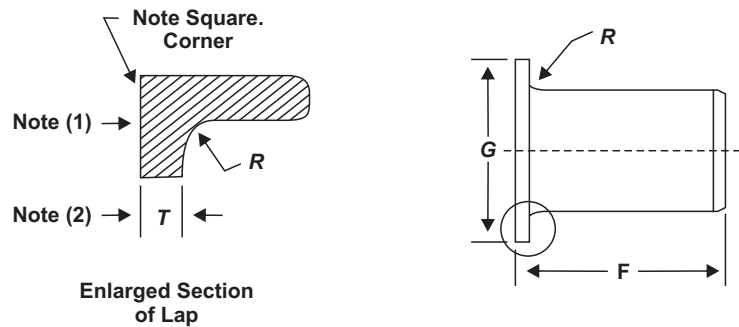
Nominal Pipe Size (NPS)	Outside Diameter at Bevel D	Length (1)	Limiting wall Thickness for Length E	Length (2) E1
1/2	0.84	1.00	0.18	1.00
3/4	1.05	1.00	1.15	1.00
1	1.32	1.50	0.18	1.50
1.1/4	1.66	1.50	0.19	1.50
1.1/2	1.90	1.50	0.20	1.50
2	2.38	1.50	0.22	1.75
2.1/2	2.88	1.50	0.28	2.00
3	3.50	2.00	0.30	2.50
3.1/2	4.00	2.50	0.32	3.00
4	4.50	2.50	0.34	3.00
5	5.56	3.00	0.38	3.50
6	6.62	3.50	0.43	4.00
8	8.62	4.00	0.50	5.00
10	10.75	5.00	0.50	6.00
12	12.75	6.00	0.50	7.00
14	14.00	6.50	0.50	7.50
16	16.00	7.00	0.50	8.00
18	18.00	8.00	0.50	9.00
20	20.00	9.00	0.50	10.00
22	22.00	10.00	0.50	10.00
24	24.00	10.50	0.50	12.00
26	26.00	10.50	----	----
28	28.00	10.50	----	----
30	30.00	10.50	----	----
32	32.00	10.50	----	----
34	34.00	10.50	----	----
36	36.00	10.50	----	----
38	38.00	12.00	----	----
40	40.00	12.00	----	----
42	42.00	12.00	----	----
44	44.00	13.50	----	----
46	46.00	13.50	----	----
48	48.00	13.50	----	----

GENERAL NOTE:

- (a) Dimensions are in inches.
 (b) The shape of this caps shall be ellipsoidal and shall conform to the shape requirements as given in the ASME Boiler and Pressure vessel Code

NOTES:

- (1) Length E applies for thickness not exceeding given in column "Limiting Wall Thickness for Length E".
 (2) Length E1 applies for thickness greater than that given in column "Limiting Wall Thickness" for NPS 24 and smaller. For NPS 26 and larger, length E1 shall be by agreement between manufacturer and purchaser

LAP-JOINT STUB ENDS B16.9


Nominal Pipe Size (NPS)	Outside Diameter of Barrel		Long Pattern Length (F) Notes (3)(4)	Short Pattern Length (F) Notes (3)(4)	Radius of Fillet R Note (5)	Diameter of Lap (G) Note (6)
	Max	Min				
1/2"	0.896	0.809	3	2	0.12	1.38
3/4"	1.106	1.019	3	2	0.12	1.69
1"	1.376	1.284	4	2	0.12	2
1.1/4"	1.716	1.629	4	2	0.19	2.5
1.1/2"	1.965	1.869	4	2	0.25	2.88
2"	2.456	2.344	6	2.5	0.31	3.62
2.1/2"	2.966	2.844	6	2.5	0.31	4.12
3"	3.596	3.469	6	2.5	0.38	5
3.1/2"	4.096	3.969	6	3	0.38	5.5
4"	4.593	4.469	6	3	0.44	6.19
5"	5.683	5.532	6	3	0.44	7.3
6"	6.743	6.594	8	3.5	0.5	8.5
8"	8.743	8.594	8	4	0.5	10.62
10"	10.913	10.719	8	5	0.5	12.75
12"	12.913	12.719	10	6	0.5	15
14"	14.17	13.969	10	6	0.5	16.25
16"	16.18	15.969	12	6	0.5	18.5
18"	18.19	17.969	12	6	0.5	21
20"	20.24	19.969	12	6	0.5	23
22"	22.24	21.969	12	6	0.5	25.25
24"	24.24	23.969	12	6	0.5	27.25

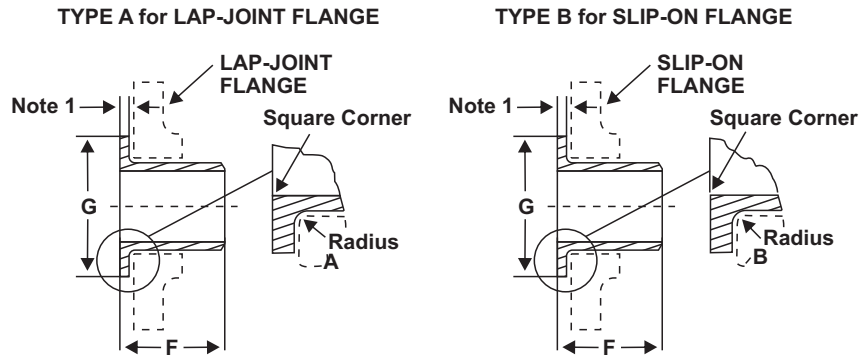
GENERAL NOTE:

- All Dimensions are in inches.
- For Tolerance see B/W Fitting tolerance chart
- Service conditions and joint construction often dictate end length requirements. Therefore, the purchaser must specify long or short fitting when ordering.

NOTES:

- Gasket face finish shall be in accordance with ASME B 16.5 for raised face flanges.
- The lap thickness T shall not be less than nominal pipe wall thickness (see B/W Fitting tolerance chart)
- When short pattern stub ends are used with larger flanges in classes 300 and 600, with most sizes in classes 900 and higher, and when long pattern stub ends are used with larger flanges in classes 1500 and 2500, it may be necessary to increase the length of the stub ends in order to avoid covering the weld with the flange. Such increases in length shall be matter of agreement between the Manufacturer and Purchaser.
- When special facings such as tongue and groove, male and female, etc., are employed, additional lap thickness must be provided and such additional thickness shall be in addition to (not include in) the basic length F.
- These dimensions conform to the radius established for lap joint flanges in ASME B16.5.
- This dimension conforms to standard machined facings shown in ASME B16.5. the back face of the lap shall be machined to conform to the surface on which it seats. Where ring joint facing are to be applied, use dimension K as given in ASME B16.5.



LAP-JOINT STUB ENDS MSS SP 43

MSS SP 43

Nominal Pipe Size (NPS)	Outside Diameter of Barrel	Out side Diameter of Lap G	Stub Ends		
			Length F*	Radius* of Fillet	
				A - nominal and max	B (max)
1/2	0.84	1.38	2	0.12	0.03
3/4	1.05	1.69	2	0.12	0.03
1	1.32	2	2	0.12	0.03
1 1/4	1.66	2.5	2	0.19	0.03
1 1/2	1.9	2.88	2	0.25	0.03
2	2.38	3.63	2.5	0.31	0.03
2 1/2	2.88	4.13	2.5	0.31	0.03
3	3.5	5	2.5	0.38	0.03
3 1/2	4	5.5	3	0.38	0.03
4	4.5	6.19	3	0.44	0.03
5	5.56	7.31	3	0.44	0.06
6	6.63	8.5	3.5	0.5	0.06
8	8.63	10.62	4	0.5	0.06
10	10.75	12.75	4	0.5	0.06
12	12.75	15	6	0.5	0.06
14	14	16.25	6	0.5	0.06
16	16	18.5	6	0.5	0.06
18	18	21	6	0.5	0.06
20	20	23	6	0.5	0.06
24	24	27.25	6	0.5	0.06

ALL DIMENSION ARE IN INCHES

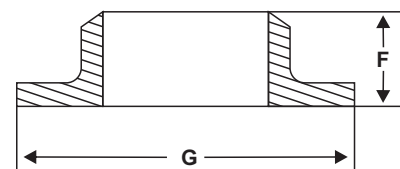
* These lengths and radii for use with Schedule 40S or thinner pipe.

Note 1. The minimum lap thickness shall not be less than nominal pipe wall thickness.

Note 2. Contact faces of stub ends shall have a modified spiral or concentric serration.

PRESSED STUBENDS / WELDING COLLARS

Nominal Pipe Size (NPS)	Outside Diameter of Barrel	Out side Diameter of Lap G	Height 'F'
1/2	0.84	1.38	0.31
3/4	1.05	1.69	0.31
1	1.32	2	0.39
1 1/4	1.66	2.5	0.47
1 1/2	1.9	2.88	0.47
2	2.38	3.63	0.62
2 1/2	2.88	4.13	0.62
3	3.5	5	0.70
3 1/2	4	5.5	0.78
4	4.5	6.19	0.78
5	5.56	7.31	0.98
6	6.63	8.5	0.98
8	8.63	10.62	1.18
10	10.75	12.75	1.37
12	12.75	15	1.57



Note: 1) All Dimension are in inches

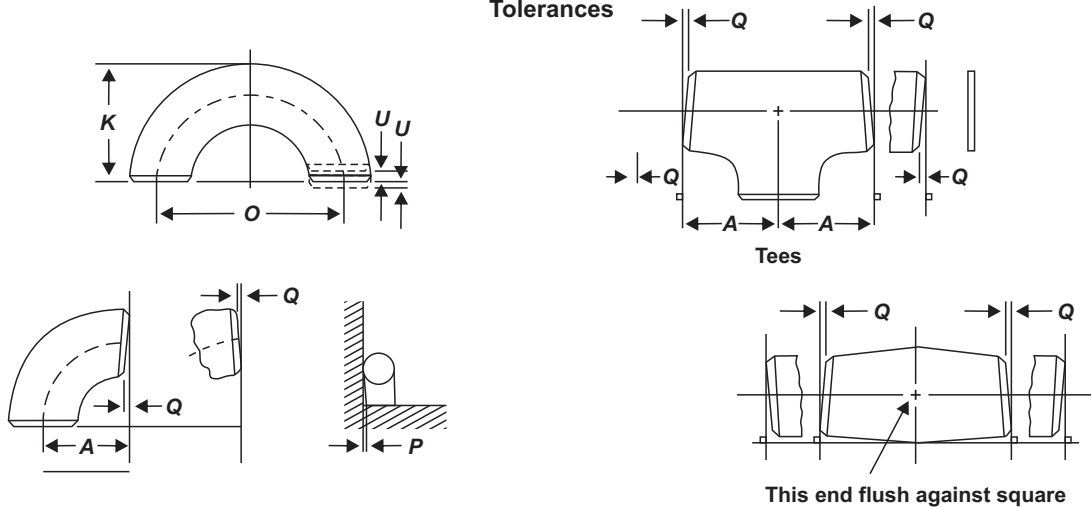
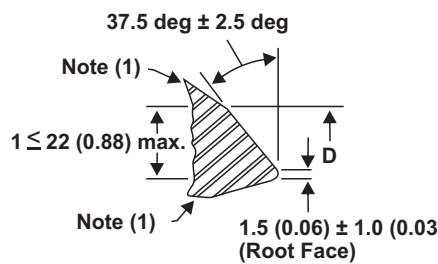
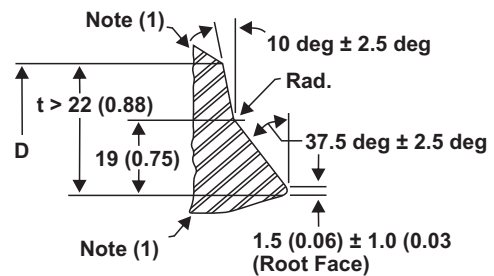
2) Thk as per Sch 10S/40S etc.

3) Also can be manufactured in DIN Standard or as per your drawings



DIMENSION TOLERANCE OF PIPE FITTING ANSI B16.9 / B16.28 / MSS SP - 43

ALL FITTINGS				90°/60°/45° 30° ELBOW & TEES		REDUCERS & STUBEND		180° RETURNS			CAPS		ANGULARITY TOLERANCE					
Nominal Pipe Size INCH/MM	Outsider Diameter at Bevel	Inside Dia Meter	Wall Thickness at End	Center to End	Overall Length Dimension	Center to End	Back to Face Dimension	Alignment of End Dimension	Overall Length	Nominal Pipe Size	Off Angel Inch/mm	Off Plane						
D		T		A,B,C,M	H,F	O	K	U	E	Q		P						
(1) B16.9	MSS SP43	(2) B16.9	B16.9 MSS SP43	B16.9 MSS SP43	B16.9 MSS SP43	B16.9 MSS SP43	B16.9 MSS SP43	B16.9 MSS SP43	B16.9 MSS SP43	B16.9 MSS SP43	B16.9	B16.9						
1/2" - 2 1/2" 15 - 65	+1.6 ±0.8		±0.8		FROM 1/2"-18" 15-600	FROM 3/4"	FROM 1/2"-24" 15-600	FROM 1/2"-8" 15-200					±3	±3.17	1/2" - 4" 15 - 100	±1	±2	
3" - 3 1/2" 80 - 90		±0.80													5" - 8" 125 - 200	±2	±4	
4" 100	+1.6				±2	±1.60	±2	±1.60	±6	±6.35	±6.0	±6.4	±1	±0.8	10" - 12" 250 - 300	±3	±5	
5" - 8" 125 - 150	+2.4 -1.6	+1.60 -0.80	+1.6										±6	±6.35	14" - 16" 350 - 400	±3	±7	
8" 200				Not Less Than 87.5% Nominal Thk											18" - 24" 450 - 600	±4	±10	
10" - 18" 250 - 450	+4 -3.2	+2.38 -0.80	+3.2	Not Less Than 87.5% Nominal Thk	±2.40		±2.38		±10	±10				±2.0	±1.60	26" - 30" 650 - 750	±5	±10
20" - 24" 500 - 600	+6.4 -4.8	+3.17 -0.79													32" - 42" 800 - 1050	±5	±13	
26" - 30" 650 - 750	+6.4 -4.8	+4.8	+4.8		±3								±10		44" - 48" 1100 - 1200	±5	±20	
32" - 48" 800 - 1200	+6.4 -4.8				±5		±5								42" - 48" 1050 - 1200	±5	±20	

Tolerances

Welding Bevels and Root Face

(a) Plain Bevel

(a) Compound Bevel
Nominal Wall Thickness

Less than x (Note (2) x to 22 (0.88), inclusive
more than 22 (0.88)

End Preparation

Cut Square or Slightly chamfer, at manufacturer's option (not illustrated) Plain as in illustration
(a) above Compound bevel as in illustration (b) above



Flanges

Types of Flanges: Slip On Flanges, Weld Neck Flanges, Socket Weld Flanges, Blind Flanges, Spectacle Blind Flanges, Lap Joint Flanges, Reducing Flanges, Threaded Flanges, Square Flanges, Long Neck Weld Flanges, Expander Flange, Spade and Ring Spacer Flange, Weldo Flange / Nipo Flange, Orifice Flanges, Loose Flanges, High Hub Blind Flanges, Screwed Flanges, Plate Flanges.

Flange Face Type: Raised Face, Flat Face, Ring Joint, Male and Female, Tongue and Groove, Lap Joint

Flange Finish: Smooth, Serrated, Stock

Pressure Class: 150#, 300#, 400#, 600#, 900#, 1500# and 2500#, PN6, PN10, PN16, PN25, Pn40, and PN64.

Size: 1/2" (15 NB) to 48" (1200NB)

Carbon Steel: ASTM A105, ASTM A350 LF1/2, ASTM A181

Alloy Steel: ASTM A182F1 /F2 /F5 /F7 /F9 /F11 /F12 /F22

Stainless Steel: ASTM A182 F304/ F304L/ F304H/ F316/ F316L/ F317/ F317L/ F321/ F310/ F347/ F904L/ etc.

Duplex Steel: S31803 / S32205

Super Duplex Steel: S32750 S32760

Titanium: 1 /2 /3 /4 /5 /7

High Nickel Alloy:

Monel: ASTM / ASME SB 564 400 /K500

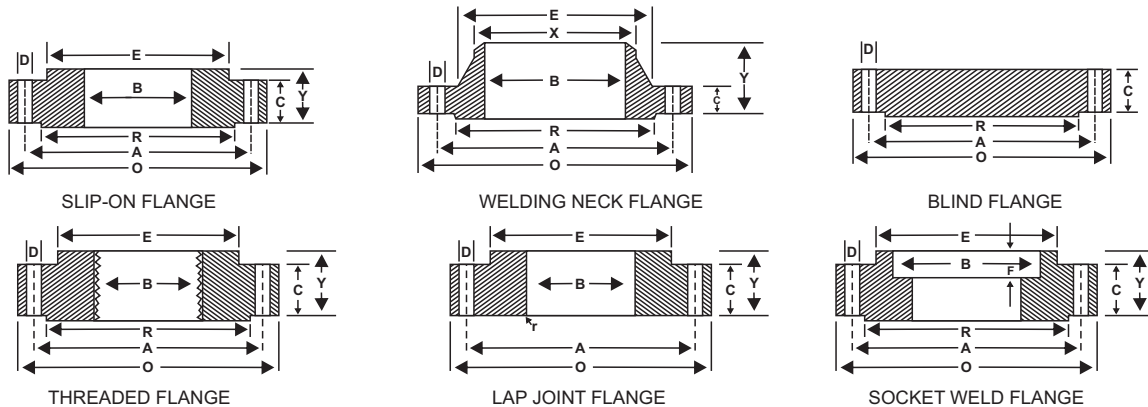
Inconel: 600 /601 /625 /800 /825 /718

Hastelloy: C4 /C22 /C276 /B2 /B3

Nickel: 200/201

Cupro-Nickel: 70/30, 90/10, 95/5



FLANGES CLASS 150 & 300

DIMENSION OF CLASS 150 FLANGES AS PER B 16.5

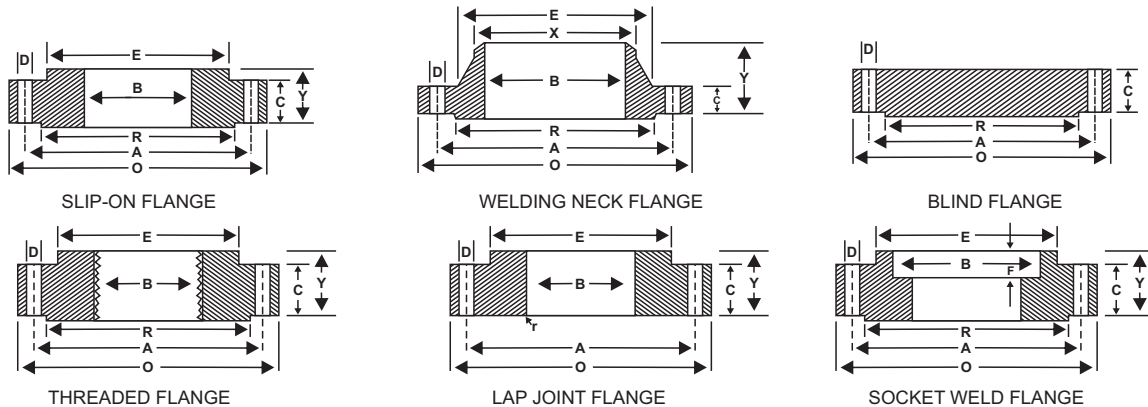
Nominal Pipe Size	Flange Dia O	Dia of Bolt Circle A	No. of Bolt Holes D	No. of Holes	Thk of Flange C	Dia of Hub E	Length through Hub			Dia Bore		Dia of R/F R	Depth of Socket F	Pipe Dia X
							S/O & S/W Y	W/N Y	L/J Y	S/O & S/W B	L/J B			
15	88.9	60.3	15.9	4	11.1	30.2	15.9	47.6	15.9	22.3	22.9	34.9	9.5	21.33
20	98.4	69.8	15.9	4	12.7	38.1	15.9	52.4	15.9	27.7	28.2	42.9	11.1	26.67
25	107.9	79.4	15.9	4	14.3	49.2	17.5	55.6	17.5	34.5	35.0	50.8	12.7	33.40
32	117.5	88.9	15.9	4	15.9	58.7	20.6	57.1	20.6	43.2	43.7	63.5	14.3	42.16
40	127.0	98.4	15.9	4	17.5	65.1	22.2	61.9	22.2	49.5	50.0	73.0	15.9	48.26
50	152.4	120.6	19.0	4	19.0	77.8	25.4	63.5	25.4	62.0	62.5	92.1	17.5	60.31
65	177.8	139.7	19.0	4	22.2	90.5	28.6	69.8	28.6	74.7	75.4	104.8	19.0	73.02
80	190.5	152.4	19.0	4	23.8	107.9	30.2	69.8	30.2	90.7	91.4	127.0	20.6	88.90
100	228.6	190.5	19.0	8	23.8	134.9	33.3	76.2	33.3	116.1	116.8	157.2	23.8	114.30
125	254.0	215.9	22.2	8	23.8	163.5	36.5	88.9	36.5	143.8	144.5	185.7	23.8	141.30
150	279.4	241.3	22.2	8	25.4	192.1	39.7	88.9	39.7	170.7	171.4	215.9	27.0	168.27
200	342.9	298.4	22.2	8	28.6	246.1	44.4	101.6	44.4	221.5	222.2	269.9	31.7	219.07
250	406.4	361.9	25.4	2	30.2	304.8	49.2	101.6	49.2	276.3	277.4	323.8	33.3	273.05
300	482.6	431.8	25.4	2	31.8	365.1	55.6	114.3	55.6	327.1	328.2	381.0	39.7	323.85
350	533.4	476.2	28.6	2	34.9	400.0	57.1	127.0	79.4	359.1	360.2	412.7	41.3	355.60
400	596.9	539.7	28.6	6	36.5	457.0	63.5	127.0	87.3	410.5	411.2	469.9	44.4	406.40
450	635.0	577.8	31.7	6	39.7	504.8	68.3	139.7	96.8	461.8	462.3	533.4	49.2	457.20
500	698.5	635.0	31.7	0	42.9	558.8	73.0	144.5	103.2	513.1	514.3	584.2	54.0	508.00
600	812.8	749.3	34.9	20	47.6	663.6	82.5	152.4	111.1	615.9	615.9	692.1	63.5	609.60

DIMENSION OF CLASS 300 FLANGES AS PER B 16.5

Nominal Pipe Size	Flange Dia O	Dia of Bolt Circle A	No. of Bolt Holes D	No. of Holes	Thk of Flange C	Dia of Hub E	Length through Hub			Dia Bore		Dia of R/F R	Depth of Socket F	Pipe Dia X
							S/O & S/W Y	W/N Y	L/J Y	S/O & S/W B	L/J B			
15	95.2	66.7	15.9	4	14.3	38.1	22.2	52.4	22.2	22.3	22.9	34.9	9.5	21.33
20	117.5	82.5	19.0	4	15.9	47.6	25.4	57.1	25.4	27.7	28.2	42.9	11.1	26.67
25	123.8	88.9	19.0	4	17.5	54.0	27.0	61.9	27.0	34.5	35.0	50.8	12.7	33.40
32	133.3	98.4	19.0	4	19.0	63.5	27.0	65.1	27.0	43.2	43.7	63.5	14.3	42.16
40	155.6	114.3	22.2	4	20.6	69.8	30.2	68.3	30.2	49.5	50.0	73.0	15.9	48.26
50	165.1	127.0	19.0	8	22.2	84.1	33.3	69.8	33.3	62.0	62.5	92.1	17.5	60.31
65	190.5	149.2	22.2	8	25.4	100.0	38.1	76.2	38.1	74.7	75.4	104.8	19.0	73.02
80	209.5	168.3	22.2	8	28.6	117.5	42.9	79.4	42.9	90.7	91.4	127.0	20.6	88.90
100	254.0	200.0	22.2	8	31.8	146.0	47.6	85.7	47.6	116.1	116.8	157.2	23.8	114.30
125	279.4	234.9	22.2	8	34.9	177.8	50.8	98.4	50.8	143.8	144.5	185.7	23.8	141.30
150	317.5	269.9	22.2	12	36.5	206.4	52.4	98.4	52.4	170.7	171.4	215.9	27.0	168.27
200	381.0	330.2	25.4	12	41.3	260.3	61.9	111.1	61.9	221.5	222.2	269.9	31.7	219.07
250	444.5	387.3	28.6	16	47.6	320.7	66.7	117.5	95.2	276.3	277.4	323.8	33.3	273.05
300	520.7	450.8	31.7	16	50.8	374.6	73.0	130.2	101.6	327.1	328.2	381.0	39.7	323.85
350	584.2	514.3	31.7	20	54.0	425.4	76.2	142.9	111.1	359.1	360.2	412.7	41.3	355.60
400	647.7	571.5	34.9	20	57.2	482.6	82.5	146.0	120.6	410.5	411.2	469.9	44.4	406.40
450	711.2	628.5	34.9	24	60.3	533.4	88.9	158.7	130.2	461.8	462.3	533.4	49.2	457.20
500	774.7	685.8	34.9	24	63.5	587.4	95.2	161.9	139.7	513.1	514.3	584.2	54.0	508.00
600	914.4	812.8	41.3	24	69.8	701.7	106.4	168.3	152.4	615.9	615.9	692.1	63.5	609.60

Metric values are direct conversion from Inches table of B16.5



FLANGES CLASS 600 & 900

DIMENSION OF CLASS 600 FLANGES AS PER B 16.5

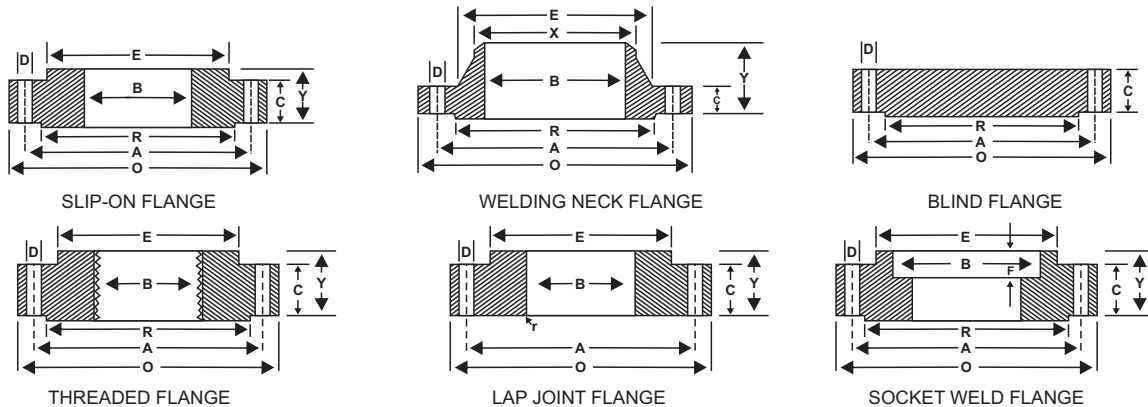
Nominal Pipe Size	Flange Dia O	Dia of Bolt Circle A	No. of Bolt Holes D	No. of Holes	Thk of Flange C	Dia of Hub E	Length through Hub			Dia Bore		Dia of R/F R	Depth of Socket F	Pipe Dia X
							S/O & S/W Y	W/N Y	L/J Y	S/O & S/W B	L/J B			
							Y	Y	Y	B	B			
15	95.2	66.7	15.9	4	14.3	38.1	22.2	52.4	22.3	22.3	28.8	34.9	9.5	21.33
20	117.5	82.5	19.0	4	15.9	47.6	25.4	57.1	25.4	27.7	28.1	42.9	11.1	26.67
25	123.8	88.9	19.0	4	17.5	54.0	27.0	61.9	26.9	34.5	35.0	50.8	12.7	33.40
32	133.3	98.4	19.0	4	20.6	63.5	28.6	66.7	28.4	43.2	43.6	63.5	14.2	42.16
40	155.6	114.3	22.2	4	22.2	69.8	31.7	69.8	31.7	49.5	50.0	73.0	15.8	48.26
50	165.1	127.0	19.0	8	25.4	84.1	36.5	73.0	36.5	62.0	62.4	92.1	17.4	60.31
65	190.5	149.2	22.2	8	28.6	100.0	41.3	79.4	41.1	74.7	75.4	104.8	19.0	73.02
80	209.5	168.3	22.2	8	31.8	117.5	46.0	82.5	45.9	90.7	91.4	127.0	-	88.90
100	273.0	215.9	25.4	8	38.1	152.4	54.0	101.6	53.8	116.1	116.8	157.2	-	114.30
125	330.2	266.7	28.6	8	44.4	188.9	60.3	114.3	60.4	143.8	141.5	185.7	-	141.30
150	355.6	292.1	28.6	12	47.6	222.2	66.7	117.5	66.5	170.7	171.4	215.9	-	168.27
200	419.1	349.2	31.7	12	55.6	273.0	76.2	133.3	76.2	221.5	222.2	269.9	-	219.07
250	508.0	431.8	34.9	16	63.5	342.9	85.7	152.4	111.2	276.3	277.3	323.8	-	273.05
300	558.8	488.9	34.9	20	66.7	400.0	92.1	155.6	117.3	327.1	328.1	381.0	-	323.85
350	603.2	527.0	38.1	20	69.9	431.8	93.7	165.1	127.0	359.1	360.1	412.7	-	355.60
400	685.8	603.2	41.3	20	76.2	495.3	106.4	177.8	139.7	410.5	411.2	469.9	-	406.40
450	742.9	654.0	44.4	20	82.6	546.1	117.5	184.1	152.4	461.8	462.2	533.4	-	457.20
500	812.8	723.9	44.4	24	88.9	609.6	127.0	190.5	165.1	513.1	514.3	584.2	-	508.00
600	939.8	838.2	50.8	24	101.6	717.5	139.7	203.2	184.1	615.9	615.9	692.1	-	609.60

DIMENSION OF CLASS 900 FLANGES AS PER B 16.5

Nominal Pipe Size	Flange Dia O	Dia of Bolt Circle A	No. of Bolt Holes D	No. of Holes	Thk of Flange C	Dia of Hub E	Length through Hub			Dia Bore		Dia of R/F R	Depth of Socket F	Pipe Dia X
							S/O & S/W Y	W/N Y	L/J Y	S/O & S/W B	L/J B			
							Y	Y	Y	B	B			
15	120.6	82.5	22.2	4	22.2	38.1	31.7	60.3	31.7	22.3	22.8	34.9	9.5	21.33
20	130.2	88.9	22.2	4	25.4	44.4	34.9	69.8	35.0	27.7	28.1	42.9	11.1	26.67
25	149.2	101.6	25.4	4	28.6	52.4	41.3	73.0	41.1	34.5	35.0	50.8	12.7	33.40
32	158.7	111.1	25.4	4	28.6	63.5	41.3	73.0	41.1	43.2	43.6	63.5	14.2	42.16
40	177.8	123.8	28.6	4	31.8	69.8	44.4	82.5	44.4	49.5	50.0	73.0	15.8	48.26
50	215.9	165.1	25.4	8	38.1	104.8	57.1	101.6	57.1	62.0	62.4	92.1	17.4	60.31
65	244.5	190.5	28.6	8	41.3	123.8	63.5	104.8	63.5	74.7	75.4	104.8	19.0	73.02
80	241.3	190.5	25.4	8	38.1	127.0	53.9	101.6	53.8	90.7	91.4	127.0	-	88.90
100	292.1	234.9	31.7	8	44.4	158.7	69.8	114.3	69.8	116.0	116.8	157.1	-	114.30
125	349.2	279.4	35.0	8	50.8	190.5	79.3	127.0	79.2	143.7	144.5	185.7	-	141.30
150	381.0	317.5	31.7	12	55.6	234.9	85.8	139.7	85.8	170.6	171.4	215.9	-	168.27
200	469.9	393.7	38.1	12	63.5	298.4	101.6	162.0	114.3	221.4	222.2	269.8	-	219.07
250	546.1	469.9	38.1	16	69.8	368.3	107.9	184.1	127.0	276.3	277.3	323.8	-	273.05
300	609.6	533.4	38.1	20	79.3	419.1	117.4	200.0	142.7	327.1	328.1	381.0	-	323.85

Metric values are direct conversion from Inches table of B16.5



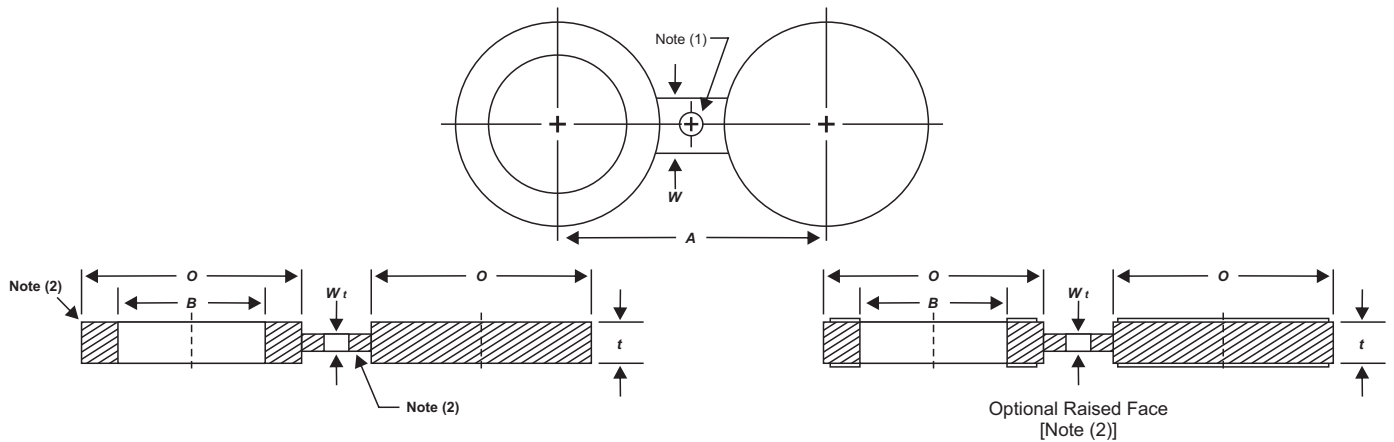
FLANGES CLASS 1500 & 2500

DIMENSION OF CLASS 1500 FLANGES AS PER B 16.5

Nominal Pipe Size	Flange Dia O	Dia of Bolt Circle A	No. of Bolt Holes D	No. of Holes	Thk of Flange C	Dia of Hub E	Length through Hub			Dia Bore		Dia of R/F R	Depth of Socket F	Pipe Dia X
							S/O & S/W Y	W/N Y	L/J Y	S/O & S/W B	L/J B			
15	120.6	82.5	22.2	4	22.2	38.1	31.7	60.3	31.7	22.3	22.8	34.9	9.5	21.33
20	130.2	88.9	22.2	4	25.4	44.4	34.9	69.8	34.9	27.7	28.1	42.9	11.1	26.67
25	149.2	101.6	25.4	4	28.6	52.4	41.3	73.0	41.3	34.5	35.0	50.8	12.7	33.40
32	158.7	111.1	25.4	4	28.6	63.5	41.3	73.0	41.3	43.2	43.6	63.5	14.2	42.16
40	177.8	123.8	28.6	4	31.8	69.8	44.4	82.5	44.4	49.5	50.0	73.0	15.8	48.26
50	215.9	165.1	25.4	8	38.1	104.8	57.1	101.6	57.1	62.0	62.0	92.1	17.4	60.31
65	244.5	190.5	28.6	8	41.3	123.8	63.5	104.8	63.5	74.7	75.4	104.8	19.0	73.02
80	266.7	203.2	31.7	8	47.6	133.3	73.0	117.5	73.0	90.7	91.4	127.0	-	88.90
100	311.1	241.3	34.9	8	54.0	161.9	90.5	123.0	90.4	116.1	116.8	157.2	-	114.30
125	374.6	292.1	41.3	8	73.0	196.8	104.8	155.6	104.8	143.8	144.5	185.7	-	141.30
150	393.7	317.5	38.1	12	82.6	228.6	119.1	171.4	119.1	170.7	171.4	215.9	-	168.27
200	482.6	393.7	44.4	12	92.1	292.1	142.9	212.7	142.8	221.5	222.2	269.9	-	219.07
250	584.2	482.6	50.8	12	107.9	368.3	158.7	254.0	177.8	276.3	277.3	323.8	-	273.05
300	673.1	571.5	54.0	16	123.8	450.8	181.0	285.5	218.9	327.1	328.1	381.0	-	323.85

DIMENSION OF CLASS 2500 FLANGES AS PER B 16.5

Nominal Pipe Size	Flange Dia O	Dia of Bolt Circle A	No. of Bolt Holes D	No. of Holes	Thk of Flange C	Dia of Hub E	Length through Hub			Dia Bore		Dia of R/F R	Depth of Socket F	Pipe Dia X
							S/O & S/W Y	W/N Y	L/J Y	S/O & S/W B	L/J B			
15	133.3	88.9	22.2	4	30.2	42.9	39.7	73.0	39.7	22.3	22.3	34.9	-	21.33
20	139.7	95.2	22.2	4	31.7	50.8	42.9	79.4	42.9	27.7	27.7	42.9	-	26.67
25	158.7	107.9	25.4	4	34.9	57.1	47.7	88.9	47.7	34.5	34.5	50.8	-	33.40
32	184.1	130.2	28.6	4	38.1	73.0	52.4	95.2	52.4	43.2	43.2	63.5	-	42.16
40	203.2	146.0	31.7	4	44.4	79.4	60.3	111.1	60.3	49.5	49.5	73.0	-	48.26
50	234.9	171.4	28.6	8	50.8	95.2	69.8	127.0	69.8	62.4	62.4	92.1	-	60.31
65	266.7	196.8	31.7	8	57.1	114.3	79.4	142.9	79.4	74.7	74.7	104.8	-	73.02
80	304.8	228.6	34.9	8	66.7	133.3	92.1	168.3	92.1	90.7	90.7	127.0	-	88.90
100	355.6	273.0	41.3	8	76.2	165.1	107.9	190.5	107.9	116.1	116.1	157.2	-	114.30
125	419.1	323.8	47.6	8	92.1	203.2	130.0	228.6	130.0	143.8	143.8	185.7	-	141.30
150	482.6	368.3	54.0	8	107.9	234.9	152.4	273.0	152.4	170.7	170.7	215.9	-	168.27
200	552.4	438.1	54.0	12	127.0	304.8	177.8	317.5	177.8	221.5	221.5	269.9	-	219.07
250	673.1	539.7	66.7	12	165.1	374.6	228.6	419.1	228.6	276.3	276.3	323.8	-	273.05
300	762.0	619.1	73.0	12	184.1	441.3	254.0	463.5	254.0	327.1	327.1	381.0	-	323.85

Metric values are direct conversion from Inches table of B16.5

SPECTACLE BLANKS / FIGURE 8 / SPACER & BLANKS (B16.48)


CLASS 150					
NPS	Inside Diameter B	Outside Diameter O	Centerline Dimension A	Thickness t	Web Width W
1/2	0.62	1.75	2.38	0.12	1.50
3/4	0.82	2.12	2.75	0.12	1.50
1	1.05	2.50	3.12	0.12	1.50
1 1/4	1.66	2.88	3.50	0.25	1.50
1 1/2	1.90	3.25	3.88	0.25	1.50
2	2.38	4.00	4.75	0.25	2.00
2 1/2	2.88	4.75	5.50	0.25	2.00
3	3.50	5.25	6.00	0.25	2.50
3 1/2	4.00	6.25	7.00	0.38	2.50
4	4.50	6.75	7.50	0.38	2.50
5	5.56	7.62	8.50	0.38	3.00
6	6.62	8.62	9.50	0.50	3.00
8	8.62	10.88	11.75	0.50	3.00
10	10.75	13.25	14.25	0.62	4.00
12	12.75	16.00	17.00	0.75	4.00
14	14.00	17.62	18.75	0.75	4.25
16	16.00	20.12	21.25	0.88	4.25
18	18.00	21.50	22.75	1.00	4.50
20	20.00	23.75	25.00	1.12	4.75
24	24.00	28.12	29.50	1.25	5.50

CLASS 300					
NPS	Inside Diameter B	Outside Diameter O	Centerline Dimension A	Thickness t	Web Width W
1/2	0.62	2.00	2.62	0.25	1.50
3/4	0.82	2.50	3.25	0.25	1.50
1	1.05	2.75	3.50	0.25	1.50
1 1/4	1.66	3.12	3.88	0.25	1.50
1 1/2	1.90	3.62	4.50	0.25	1.50
2	2.38	4.25	5.00	0.38	2.00
2 1/2	2.88	5.00	5.88	0.38	2.00
3	3.50	5.75	6.62	0.38	2.50
3 1/2	4.00	6.38	7.25	0.50	2.50
4	4.50	7.00	7.88	0.50	2.50
5	5.56	8.38	9.25	0.62	3.00
6	6.62	9.75	10.62	0.62	3.00
8	8.62	12.00	13.00	0.88	3.00
10	10.75	14.12	15.25	1.00	4.00
12	12.75	16.50	17.75	1.12	4.00
14	14.00	19.00	20.25	1.25	4.25
16	16.00	21.12	22.50	1.50	4.25
18	18.00	23.38	24.75	1.62	4.50
20	20.00	25.62	27.00	1.75	4.75
24	24.00	30.38	32.00	2.00	5.50

CLASS 600					
NPS	Inside Diameter B	Outside Diameter O	Centerline Dimension A	Thickness t	Web Width W
1/2	0.62	2.00	2.62	0.25	1.50
3/4	0.82	2.50	3.25	0.25	1.50
1	1.05	2.75	3.50	0.25	2.25
1 1/4	1.44	3.12	3.88	0.38	2.25
1 1/2	1.68	3.62	4.50	0.38	2.62
2	2.16	4.25	5.00	0.38	2.25
2 1/2	2.64	5.00	5.88	0.50	2.62
3	3.26	5.75	6.62	0.50	2.62
3 1/2	3.76	6.25	7.25	0.62	3.00
4	4.26	7.50	8.50	0.62	3.00
5	5.30	9.38	10.50	0.75	3.38
6	6.36	10.38	11.50	0.88	3.38
8	8.33	12.50	13.75	1.12	3.75
10	10.42	15.62	17.00	1.38	4.12
12	12.39	17.88	19.25	1.62	4.12
14	13.62	19.25	20.75	1.75	4.50
16	15.62	22.12	23.75	2.00	4.88
18	17.62	24.00	25.75	2.12	5.25
20	19.56	26.75	28.50	2.50	5.25
24	23.50	31.00	33.00	2.88	6.00

CLASS 900					
NPS	Inside Diameter B	Outside Diameter O	Centerline Dimension A	Thickness t	Web Width W
1/2	0.62	2.38	3.25	0.25	1.50
3/4	0.82	2.62	3.50	0.25	1.50
1	1.05	3.00	4.00	0.25	2.25
1 1/4	1.44	3.38	4.38	0.38	2.25
1 1/2	1.68	3.75	4.88	0.38	2.62
2	2.16	5.50	6.50	0.50	2.25
2 1/2	2.64	6.38	7.50	0.50	2.62
3	3.26	6.50	7.50	0.62	2.62
4	4.26	8.00	9.25	0.75	3.00
5	5.30	9.62	11.00	0.88	3.38
6	6.36	11.25	12.50	1.00	3.38
8	8.33	14.00	15.50	1.38	3.75
10	10.42	17.00	18.50	1.62	4.12
12	12.39	19.50	21.00	1.88	4.12
14	13.62	20.38	22.00	2.12	4.50
16	15.62	22.50	24.25	2.38	4.88
18	17.62	25.00	27.00	1.75	5.25
20	19.56	27.38	29.50	2.00	5.25
24	23.50	32.88	35.50	2.12	6.00

- NOTES:**
- Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.
 - Optional raised face to be mentioned by purchaser.
 - The handle or web (tie bar) may be integral or attached to the line blank or spacer.
 - The thickness of the web (or tie bar) dimension, Wt, shall be as determined as it shall be capable of supporting the weight of the blank or spacer in all orientation without permanent deformation of web.

Dimension of other Classes & RTJ Flanges on request





Flanges Types & Specifications

ASME/ANSI B16.5	:	Welding Neck Flange, Slipon Flanges, Blind Flange, High Hub Blind Flange, Socket Weld Flange, Lap Joint Flange, Threaded Flange, Ring Type Joint Flange
Pressure Class	:	150, 300, 400, 600, 900, 1500, 2500
ASME/ANSI/B16.47	:	Welding neck Flange, Blind Flange (Series A&B)
Pressure Class	:	75, 150, 300, 400, 600, 900
ASME/ANSI B16.36	:	(Orifice Flanges) Welding Neck Flange, Slipon Flange, Threaded Flange
Pressure Class	:	300, 400, 600, 900, 1500, 2500
BS 4504 SEC 3.1	:	Welding Flange (111/134), Hubbed Slipon Flange (112), Hubbed Threaded Flange (113), Lapped Pipe End Flange (133), Plate Flange (101), Loose Plate Flange (102), Loose Plate with Weld-neck Flange (104), Blank Flange (105)
Pressure Class	:	Pn 2.5 to Pn 100
Din Flanges	:	DIN2527, DIN2566, DIN2573, DIN2576, DIN2641, DIN2642, DIN2655, DIN2656, DIN2627, DIN2628, DIN2629, DIN2631, DIN2632, DIN2633, DIN2634, DIN2635, DIN2636, DIN2637, DIN2638, Dn2673
Pressure Class	:	Pn 6 to Pn 100
ANFOR NFE 29-230	:	Plate Flange (01), Loose Plate Flange (02, 03, 04) Blind Flange (05) Welding Neck Flange (11), Hubbed Slip on Flange (12), Screwed Flange (13), Hubbed Socket Welding Flange (14), Loose Hubbed Flange (15), Integral Flange (21)
Pressure Class	:	Pn 2.5 to Pn 40
PR EN 1092-1 Flanges	:	Plate Flange (01), Loose Plate Flange (02,04), Blind Flange (05), Welding Neck Flange (11), Hubbed Slip on Flange (12), Screwed Flange (13), Integral Flange (21)
Pressure Class	:	Pn 2.5 to Pn 100
BS TABLE FLANGES	:	Slipon & Blind
Type	:	D, E, F, H etc.

All the above Dimensions are Available on request.



Forged Fittings

Threaded Fittings, Socketweld Fittings, 90 Deg Threaded Elbow, 45 Deg Threaded Elbow, Threaded Equal Tee, Threaded Unequal Tee, Threaded Equal Cross, Threaded Unequal Cross, Threaded Pipe Cap, Threaded Union, Threaded Full Coupling, Threaded Half Coupling, Threaded Reducing Coupling, Hex Nipple, Hex Head Plug, Square Head Plug, Hex Head Bushing, Swage Nipple, 90 Deg Socket weld Elbow, 45 Deg Socket weld Elbow, Socket weld Equal Tee, Socket weld Unequal Tee, Socket weld Equal Cross, Socket weld Unequal Cross, Socket weld Pipe Cap, Socket weld Union, Socket weld Full Coupling, Socket weld Half Coupling, Socket weld Reducing Coupling, etc.

Pressure Class: 2000#, 3000#, 6000#, 9000#

Sizes: 1/8 and 4 inches

Stainless Steel: ASTM A182 F304/ F304L/ F304H/ F309S/ F309H/ F310S/ F310H/ F316/ F316Ti/ F316H/ F316L/ F317/ F317L/ F321/ F321H/ F347/ F347H/ F904L.

Carbon Steel: ASTM A105/A694/ A350 LF3/A350 LF2

Alloy Steel: ASTM A182 F1/ F5/ F9/ F11/ F22/ F91

High Nickel Alloy:

Inconel: 600 /601 /625 /800 /825 /718

Hastelloy: C4 /C22 /C276 /B2 /B3

Nickel: 200/201

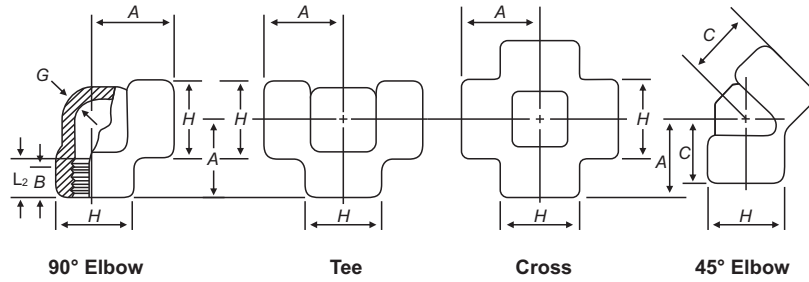
Cupro-Nickel: 70/30, 90/10, 95/5

Duplex Steel: S31803 / S32205

Super Duplex Steel: S32750 S32760

Titanium: 1 /2 /3 /4 /5 /7

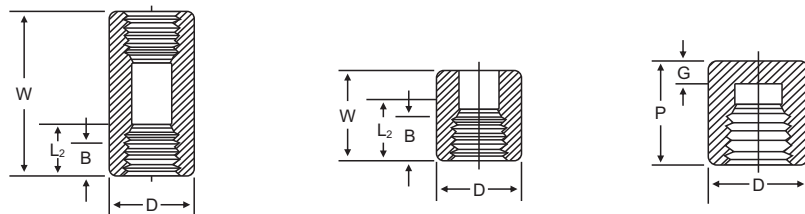


FORGED THREADED FITTINGS


Nominal Pipe Size	Center to End Elbows, Tees, Crosses A			Center to End 45° Elbow C			Outside Diameter of Bend H			Minimum Wall Thickness G			Length of Thread Min (1)	
	2000	3000	6000	2000	3000	6000	2000	3000	6000	2000	3000	6000	B	L ₂
1/8	0.81	0.81	0.97	0.69	0.69	0.75	0.88	0.88	1.00	0.125	0.125	0.250	0.25	0.2639
1/4	0.81	0.97	1.12	0.69	0.75	0.88	0.88	1.00	1.31	0.125	0.130	0.260	0.32	0.4018
3/8	0.97	1.12	1.31	0.75	0.88	1.00	1.00	1.31	1.50	0.125	0.138	0.275	0.36	0.4078
1/2	1.12	1.31	1.50	0.88	1.00	1.12	1.31	1.50	1.81	0.125	0.161	0.321	0.43	0.5337
3/4	1.31	1.50	1.75	1.00	1.12	1.31	1.50	1.81	2.19	0.125	0.170	0.336	0.50	0.5457
1	1.50	1.75	2.00	1.12	1.31	1.38	1.81	2.19	2.44	0.145	0.196	0.391	0.58	0.6828
1 1/4	1.75	2.00	2.38	1.31	1.38	1.69	2.19	2.44	2.97	0.153	0.208	0.417	0.67	0.7068
1 1/2	2.00	2.38	2.50	1.38	1.69	1.72	2.44	2.97	3.31	0.158	0.219	0.436	0.70	0.7235
2	2.38	2.50	3.25	1.69	1.72	2.06	2.97	3.31	4.00	0.168	0.281	0.476	0.75	0.7565
2 1/2	3.00	3.25	3.75	2.06	2.06	2.50	3.62	4.00	4.75	0.221	0.301	0.602	0.93	1.138
3	3.38	3.75	4.19	2.50	2.50	3.12	4.31	4.75	5.75	0.236	0.348	0.655	1.02	1.200
4	4.19	4.50	4.50	3.12	3.12	3.12	5.75	6.00	6.00	0.258	0.440	0.735	1.09	1.300

General Note: Dimension are in inches

NOTE: Dimension B is minimum length of perfect thread. The length of useful thread (B plus threads with fully formed roots and flat crests) shall not be less than L₂ (effective length of external thread) requires by American National Standard for Pipe Threads (ANSI/ASME B1.20.1).

COUPLING & CAPS

Coupling
Half-Coupling
Cap
B16.11

Nominal Pipe Size	End to End Couplings W	End to End Caps P		Outside Diameter D		End Wall Thickness G Min.		Length of Thread Min (2)	
	3000 & 6000	3000	6000	3000	6000	3000	6000	B	L ₂
1/8	1.25	0.75	-	0.62	0.88	0.19	-	0.25	0.2639
1/4	1.38	1.00	1.06	0.75	1.00	0.19	0.25	0.32	0.4018
3/8	1.50	1.00	1.06	0.88	1.25	0.19	0.25	0.36	0.4078
1/2	1.88	1.25	1.31	1.12	1.50	0.25	0.31	0.43	0.5337
3/4	2.00	1.44	1.50	1.38	1.75	0.25	0.31	0.50	0.5457
1	2.38	1.62	1.69	1.75	2.25	0.38	0.44	0.58	0.6828
1 1/4	2.62	1.75	1.81	2.25	2.50	0.38	0.44	0.67	0.7068
1 1/2	3.12	1.75	1.88	2.50	3.00	0.44	0.50	0.70	0.7235
2	3.38	1.88	2.00	3.00	3.62	0.50	0.62	0.75	0.7565
2 1/2	3.62	2.38	2.50	3.62	4.25	0.62	0.75	0.93	1.138
3	4.25	2.56	2.6	4.25	5.00	0.75	0.88	1.02	1.200
4	4.75	2.69	2.94	5.50	6.25	0.88	1.12	1.09	1.300

General Note: Dimension are in inches

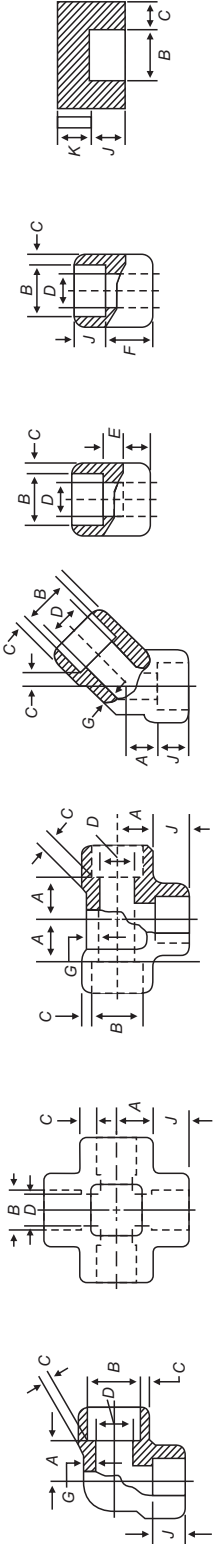
NOTES: 1) Class 2000 and NPS 1/8 Class 6000 couplings, half couplings, and caps are not included in this Standard.

2) Dimension B is minimum length of perfect thread. The length of useful thread (B plus threads with fully formed roots and flat crests) shall not be less than L₂ (effective length of external thread) requires by American National Standard for Pipe Threads (ANSI/ASME B1.20.1).

DIMENSION OF STREET ELBOW & WELDING BOSS ON REQUEST

SOCKET WELDING FITTINGS

B16.11

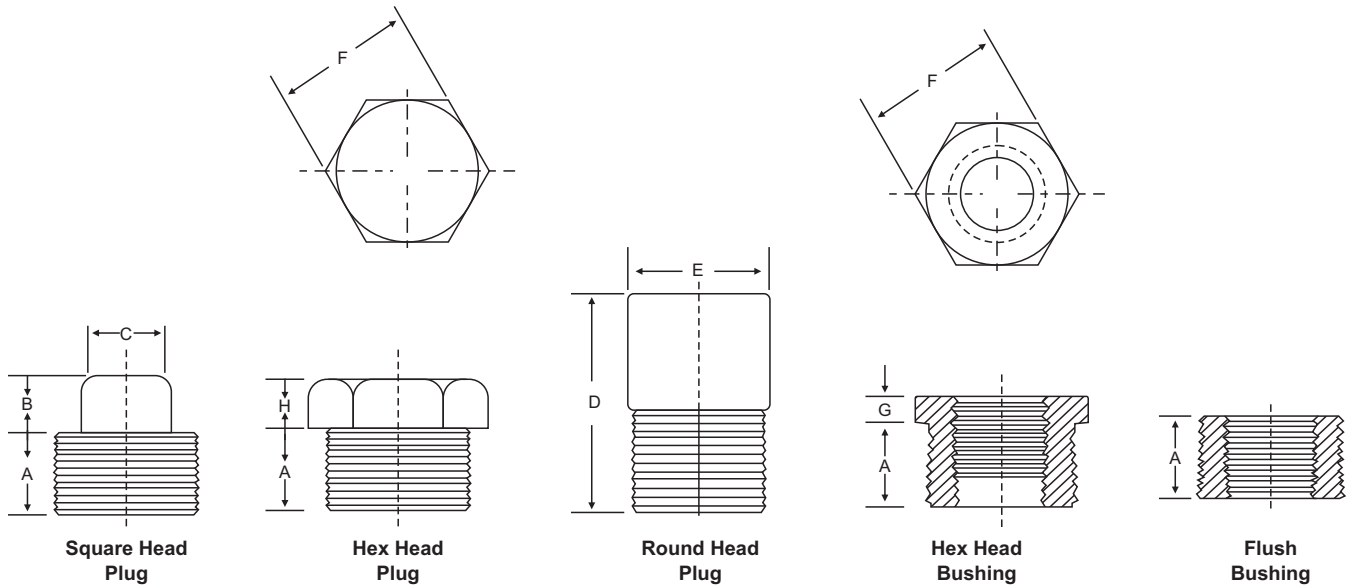


Nom Pipe Size	Socket Bore Dia.(2) B	Bore Diameter of Fitting (2) D	Socket Wall Thickness (1) C						Body Wall G			Center to Bottom of socket - A		Laying Lengths		Tolerance ±		End Wall Thickness K mm										
			Class Designation			Class Designation			Class Designation			90° Elbows, Tees and Crosses		45° Elbows		Couplings E	Half Couplings F	A	E	F	Class Designation							
			3000	6000	9000	3000	6000	9000	Min.	Min.	Min.	3000	6000	9000	3000						6000	9000	3000	6000	9000			
1/8	0.440 0.420	0.299 0.239	0.189 0.126	0.125	0.125	0.156	0.135	0.095	0.124	0.38	0.44	0.44	0.31	0.31	0.25	0.62	0.03	0.06	0.03	0.19	0.25							
																						0.149	0.130	0.181	0.158	0.119	0.145	0.38
1/4	0.575 0.555	0.394 0.334	0.280 0.220	0.158	0.138	0.198	0.172	0.126	0.158	0.38	0.53	0.62	0.31	0.44	0.25	0.69	0.06	0.12	0.06	0.19	0.25							
																						0.158	0.138	0.198	0.172	0.126	0.158	0.38
3/8	0.710 0.690	0.523 0.389	0.389 0.329	0.184	0.161	0.235	0.204	0.147	0.188	0.38	0.62	0.75	1.00	0.44	0.38	0.94	0.06	0.12	0.06	0.25	0.31							
																						0.184	0.161	0.235	0.204	0.147	0.188	0.294
1/2	0.875 0.855	0.652 0.592	0.494 0.434	0.193	0.168	0.274	0.238	0.154	0.219	0.50	0.75	0.88	1.12	0.50	0.56	1.12	0.08	0.16	0.08	0.38	0.50							
																						0.193	0.168	0.274	0.238	0.154	0.219	0.308
3/4	1.085 1.065	0.854 0.794	0.642 0.464	0.224	0.196	0.312	0.273	0.179	0.250	0.50	0.88	1.06	1.25	0.81	0.81	1.00	0.08	0.16	0.08	0.50	0.62							
																						0.224	0.196	0.312	0.273	0.179	0.250	0.358
1	1.350 1.330	1.094 1.019	0.845 0.629	0.239	0.208	0.312	0.273	0.191	0.250	0.50	1.06	1.25	1.38	0.69	0.81	1.00	0.08	0.16	0.08	0.50	0.62							
																						0.239	0.208	0.312	0.273	0.191	0.250	0.382
1 1/4	1.695 1.675	1.410 1.350	1.190 0.926	0.250	0.218	0.351	0.307	0.200	0.281	0.50	1.25	1.50	1.62	2.12	1.00	1.12	0.08	0.16	0.08	0.50	0.62							
																						0.250	0.218	0.351	0.307	0.200	0.281	0.400
1 1/2	1.935 1.915	1.640 1.580	1.368 1.130	0.273	0.238	0.430	0.374	0.545	0.477	0.62	1.50	1.62	2.12	1.00	1.12	1.12	0.08	0.16	0.08	0.50	0.62							
																						0.273	0.238	0.430	0.374	0.545	0.477	0.62
2	2.426 2.406	2.097 2.037	1.717 1.533	0.345	0.302	0.545	0.477	0.62	0.75	0.62	1.62	2.25	2.62	1.62	1.62	1.62	0.08	0.16	0.08	0.50	0.62							
																						0.345	0.302	0.545	0.477	0.62	1.62	2.25
2 1/2	2.931 2.906	2.529 2.409	2.006 1.866	0.375	0.327	0.545	0.477	0.62	0.75	0.62	1.62	2.25	2.62	1.62	1.62	1.62	0.08	0.16	0.08	0.50	0.62							
																						0.375	0.327	0.545	0.477	0.62	1.62	2.25
3	3.560 3.535	3.128 3.008	2.406 2.266	0.421	0.368	0.545	0.477	0.62	0.75	0.62	1.62	2.25	2.62	1.62	1.62	1.62	0.08	0.16	0.08	0.50	0.62							
																						0.421	0.368	0.545	0.477	0.62	1.62	2.25
4	4.570 4.545	4.086 3.966	3.128 2.988	0.421	0.368	0.545	0.477	0.62	0.75	0.62	1.62	2.25	2.62	1.62	1.62	1.62	0.08	0.16	0.08	0.50	0.62							
																						0.421	0.368	0.545	0.477	0.62	1.62	2.25

General Note: Dimensions are in inches

 Note: 1) Average of socket wall Thickness around periphery shall be no less than listed. The minimum value are permitted in localized areas
 2) Upper and lower values for each size are the respective maximum and minimum dimension.


PLUGS AND BUSHING

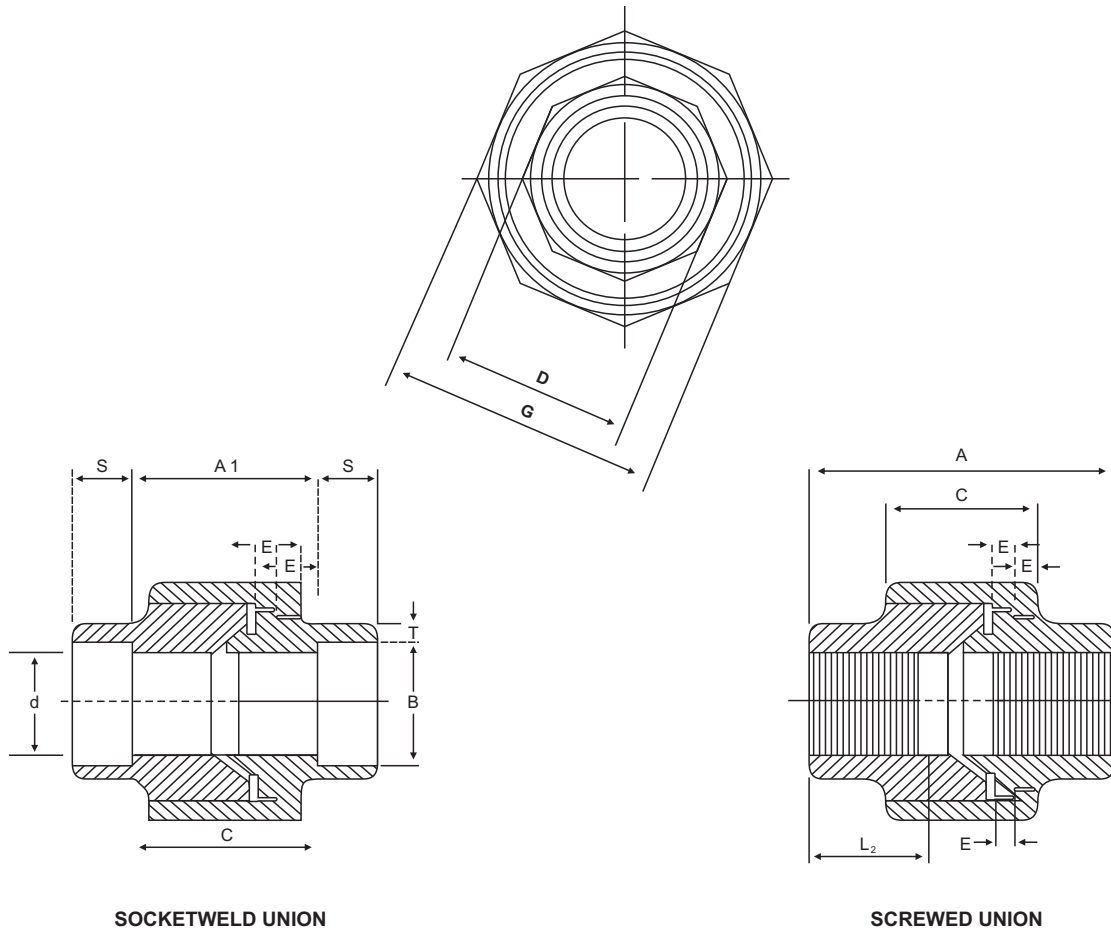


B16.11

Nominal Pipe Size	Length (Minimum) A	Plugs Square Head		Plugs Round Head		Hex Plugs & Bushing		
		Height of Square (Minimum) B	Width Flats (Minimum) C	Nominal Diameter of Head E	Length (Minimum) D	Width Flats (Nominal) F	Hex height (Min.)	
							Bushing G	Plug H
1/8	0.38	0.25	0.28	0.41	1.38	0.44	-	0.25
1/4	0.44	0.25	0.38	0.53	1.62	0.62	0.12	0.25
3/8	0.50	0.31	0.44	0.69	1.62	0.69	0.16	0.31
1/2	0.56	0.38	0.56	0.84	1.75	0.88	0.19	0.31
3/4	0.62	0.44	0.62	1.06	1.75	1.06	0.22	0.38
1	0.75	0.50	0.81	1.31	2.00	1.38	0.25	0.38
1 1/4	0.81	0.56	0.94	1.69	2.00	1.75	0.28	0.56
1 1/2	0.81	0.62	1.12	1.91	2.00	2.00	0.31	0.62
2	0.88	0.69	1.31	2.38	2.50	2.50	0.34	0.69
2 1/2	1.06	0.75	1.50	2.88	2.75	3.00	0.38	0.75
3	1.12	0.81	1.69	3.50	2.75	3.50	0.41	0.81
4	1.25	1.00	2.50	4.50	3.00	4.62	0.50	1.00

General Note: Dimension are in inches

NOTE: Cautionary Note Regarding Hex Head Bushing. Hex Head Bushings of one-size reduction not be used in services wherein they might be subject to harmful loads and forces other than internal pressures.

SOCKETWELD & SCREWED UNION

SOCKETWELD UNION
SCREWED UNION
BS 3799

Nominal Size		3000 lbs.									Depth of Socket (min.) S	Socket Wall Thickness (min.) T
		End to End A	Width Union nut (min.) G	Height of Union nut (min.) C	Width A/F of ends (min.) D	Thickness of shoulder (min.) E	Length of thread (min.) L ₂	Distance between bottoms of Socket (min) A1	Bore diameter of Sockets (min.) B	Bore diameter of Union d		
Inches	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/8	(6)	40	32	16	17	3.2	6.70	17	10.7	6.8	10	3.2
1/4	(8)	43	32	18	19	3.2	10.21	17	14.1	9.2	10	3.3
3/8	(10)	48	36	19	22	3.2	10.36	17	17.6	12.5	10	3.5
1/2	(15)	51	43	21	30	4.0	13.56	18	21.8	15.5	10	4.1
3/4	(20)	57	50	24	36	4.8	13.86	20	27.4	21.0	13	4.3
1	(25)	64	60	25	41	4.8	17.34	26	34.1	26.5	13	5.0
1 1/4	(32)	70	70	29	50	5.6	17.93	28	42.9	35.0	13	5.3
1 1/2	(40)	79	78	30	60	5.6	18.38	30	49.0	40.5	13	5.6
2	(50)	89	95	37	70	6.4	19.22	36	61.0	52.0	16	6.1
2 1/2	(65)	118	125	48	85	9.6	28.89	57	73.8	62.0	16	7.7
3	(80)	121	140	51	100	12.7	30.48	70	89.7	78.0	16	8.3

All Dimension are in millimeters (mm)
NOTE: Other external forms of nut & ends are permissible provided the minimum dimensions shown in this table are maintained.
Bore diameter of Sockets corresponds to schedule 40 pipe, subject to tolerance.


Outlets/ Olets

Types of Outlets: Weldolet, Thredolet, Sockolet, Elbolet, Insert Weldolet, Brazolet, Coupolet, Nipolet, Flexolet, Latrolet, Sweepolet.

Size: 1/8"NB TO 4"NB (DN6 x DN100)

Class: 3000 LBS, 6000 LBS & 9000 LBS (Sch40, Sch80/Xs Sch160 Xxs)

Standards: ASME/ANSI B16.11, MSS-SP-97, MSS-SP-79, JIS B2316, BS 3799, etc.

Connect Type: Welded, threaded, BW, SW

Stainless steel: ASTM A182 F304, F304L, F316, F316L, F317L, F321, F321H, F347, F347H, F310, F904L, etc.

Carbon Steel: ASTM A105, ASTM A350 LF1/2, ASTM A181

Alloy Steel: ASTM A182F1 /F2 /F5 /F7 /F9 /F11 /F12 /F22

Duplex Steel: S31803 / S32205

Super Duplex Steel: S32750 S32760

Titanium: 1 /2 /3 /4 /5 /7

High Nickel Alloy:

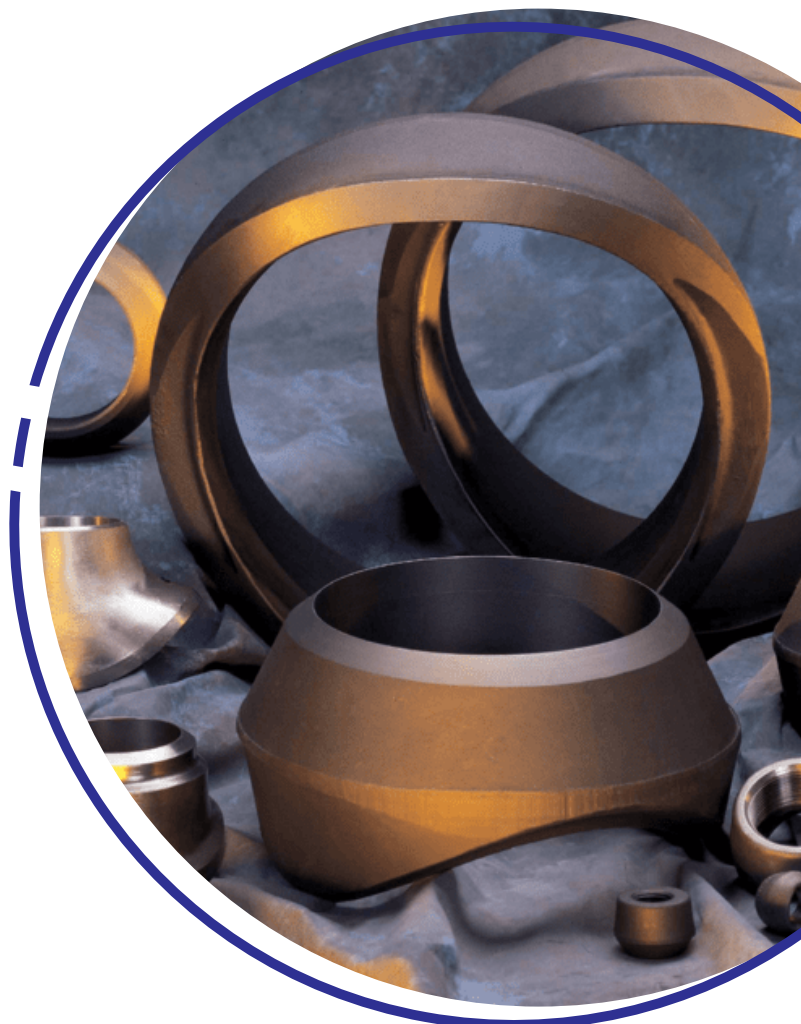
Monel: ASTM / ASME SB 564 400 /K500

Inconel: 600 /601 /625 /800 /825 /718

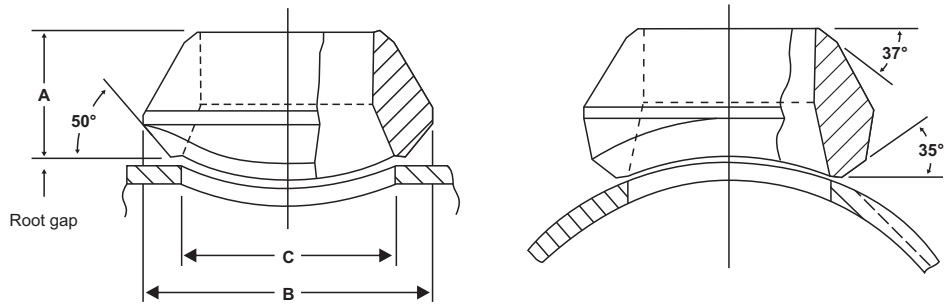
Hastelloy: C4 /C22 /C276 /B2 /B3

Nickel: 200/201

Cupro-Nickel: 70/30, 90/10, 95/5



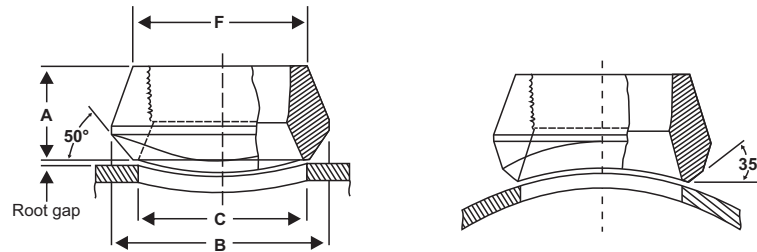
Welding Outlet
STD(Sch40), XS(Sch 80)



MSS SP 97

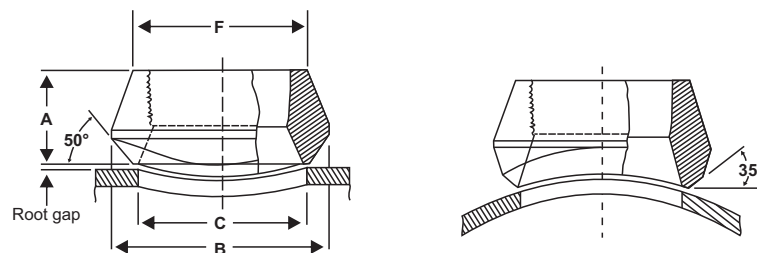
Outlet Size	A		B		C	
	3000#	6000#	3000#	6000#	3000#	6000#
1/2	19.1	19.1	34.9	34.9	23.8	23.8
3/4	22.2	22.2	44.5	44.5	30.2	30.2
1	27.0	27.0	54.0	54.0	36.5	36.5
1 1/4	31.8	31.8	65.1	65.1	44.5	44.5
1 1/2	33.3	33.3	73.0	73.0	50.8	50.8
2	38.1	38.1	88.9	88.9	65.1	65.1
2 1/2	41.3	41.3	103.2	103.2	76.2	76.2
3	44.5	44.5	122.2	122.2	93.7	93.7
4	50.8	50.8	152.4	152.4	120.7	120.7
5	57.2	57.2	179.4	179.4	141.3	141.3
6	60.3	77.8	215.9	225.4	169.3	169.3
8	69.9	98.5	263.5	292.1	220.7	220.7
10	77.8	93.7	322.3	323.9	274.7	265.1
12	85.7	103.2	377.8	379.4	325.4	317.5
14	88.9	100.0	409.6	431.8	357.2	350.8
16	93.7	106.4	463.6	466.7	408.0	403.2
18	96.8	111.1	520.7	523.9	458.8	455.6
20	101.6	119.1	571.5	582.6	508.0	509.6
24	115.9	139.7	689.0	708.0	614.4	638.2
26	119.1	146.1	738.2	765.2	666.8	692.2

All Dimensions are in millimeters (mm)

**Socketweld Outlet
3000# 6000#**

MSS SP 97

Outlet Size	A		B		C	
	3000#	6000#	3000#	6000#	3000#	6000#
1/2	25.4	31.8	34.9	44.5	23.8	19.1
3/4	27.0	36.5	44.5	50.8	30.2	25.4
1	33.3	39.7	54.0	61.9	36.5	33.3
1 1/4	33.3	41.3	65.1	69.9	44.5	38.1
1 1/2	34.9	42.9	73.0	82.6	50.8	49.2
2	38.1	58.7	88.9	103.2	65.1	58.7
2 1/2	46.0	-	103.2	-	76.2	-
3	50.8	-	122.2	-	93.7	-
4	57.2	-	152.4	-	120.7	-

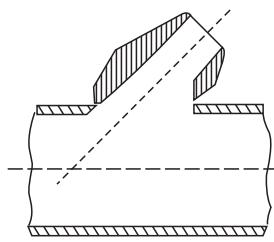
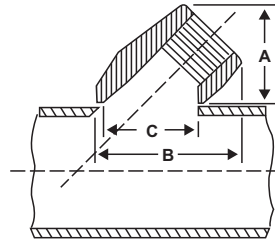
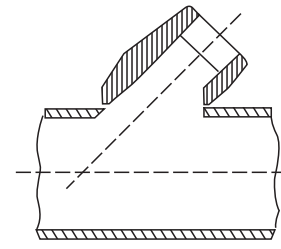
All Dimensions are in millimeters (mm)

**Threaded Outlet
3000# 6000#**

MSS SP 97

Outlet Size	A		B		C	
	3000#	6000#	3000#	6000#	3000#	6000#
1/2	25.4	31.8	34.9	44.5	23.8	19.1
3/4	27.0	36.5	44.5	50.8	30.2	25.4
1	33.3	39.7	54.0	61.9	36.5	33.3
1 1/4	33.3	41.3	65.1	69.9	44.5	38.1
1 1/2	34.9	42.9	73.0	82.6	50.8	49.2
2	38.1	52.4	88.9	103.2	65.1	69.9
2 1/2	46.0	-	103.2	-	76.2	-
3	50.8	-	122.2	-	93.7	-
4	57.2	-	152.4	-	120.7	-

All Dimensions are in millimeters (mm)



LATERAL OUTLETS

BUTT WELD

THREADED

SOCKET - WELD
MSS SP 97

Nominal Run Pipe Size Inches	Outlet Size Inches	DIMENSIONS					
		3000 # Threaded and Socket Weld Std. and XS Butt-Weld			6000 # Threaded and Socket Weld Sch. 160 and XXS Butt-Weld		
		A	B	C	A	B	C
2 1/2 - 1 1/4 12 - 3	1/4	1 9/16	2 5/16	1 7/16	1 9/16	2 5/16	1 7/16
2 1/2 - 1 1/4 12 - 3	3/8	1 9/16	2 5/16	1 7/16	1 9/16	2 5/16	1 7/16
2 1/2 - 1 1/4 12 - 3	1/2	1 9/16	2 5/16	1 7/16			
1 1/2 - 1 1/4 5 - 2 12 - 6	1/2				1 13/16	2 3/4	1 3/4
1 1/2 - 1 1/4 5 - 2 12 - 6	3/4	1 13/16	2 3/4	1 3/4			
2 1/2 - 2 5 - 3 12 - 6	3/4				2 1/8	3 1/4	2 1/8
2 1/2 - 2 5 - 3 12 - 6	1	2 1/8	3 1/4	2 1/8	2 1/2	3 13/16	2 5/8
2 1/2 - 2 5 - 3 12 - 6	1 1/4	2 1/2	3 13/16	2 5/8	2 3/4	4 1/4	3
2 1/2 - 2 5 - 3 12 - 6	1 1/2	2 3/4	4 1/4	3			
5 - 4 8 - 6 12 - 10	1 1/2				3 3/8	5 3/8	4 1/8
5 - 4 8 - 6 12 - 10	2	3 3/8	5 3/8	4 1/8			
ORDER TO SPECIFIC RUN PIPE SIZE	** 2 1/2	3 1/2	5 1/4	4 3/16			
	** 3	3 13/16	6 1/4	4 15/16			
	** 4	4 3/4	7 7/8	6 7/16			
	** 6	6 1/2	10 11/16	9			
	** 8	8	14 1/4	12 5/16			
	** 10	10	10 11/16	15 3/8			
	** 12	12 3/8	11 9/16	18 3/8			

All Dimensions are in Inches

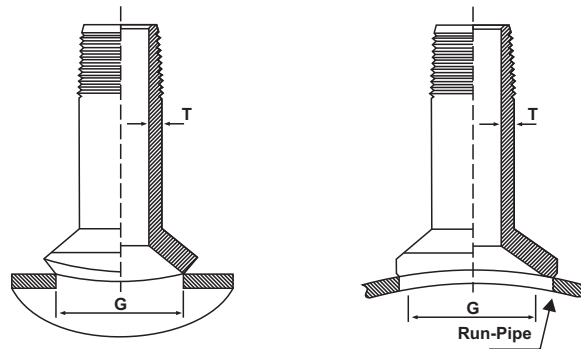


NIPPLE OUTLETS

(in millimeters)

Run-Pipe Size	Outlet Size	Wall-T	G	Unit Weight (kg)
36-3/4	1/2	7.3	23.9	0.36
36-1	3/4	7.9	30.2	0.56
36-1 1/4	1	8.9	36.6	0.84
36-1 1/2	1 1/4	9.7	44.5	1.22
36-2	1 1/2	10.2	50.8	2.00
36-2 1/2	2	11.2	65.0	3.12

All Dimensions are in millimeters (mm)



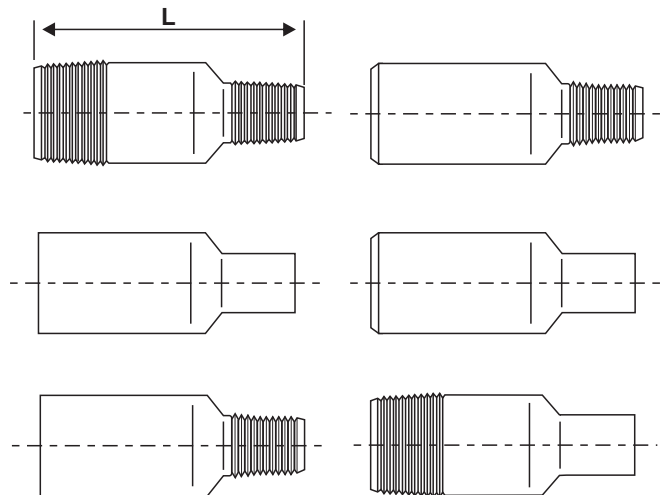
MSS SP-97

Swaged Nipple

(in millimeters)

Large end Size	Small and Size	Length-L
1/2	3/8-1/8	70
3/4	1/2-1/8	76
1	3/4-1/8	89
1 1/4	1-1/8	102
1 1/2	1 1/4-1/8	114
2	1 1/2-1/8	165
2 1/2	2-1/8	178
3	2 1/2-1/8	203
3 1/2	3-1/8	203
4	3 1/2-1/8	229

All Dimensions are in millimeters (mm)



MSS SP- 95 / BS 3799

TBE Threaded both end

PBE plain both end

PLE/TSE Plain large end-Threaded small end

BLE/TSE Beveled large end-Threaded small end

BLE/PSE Beveled large end-Plain small end

TLE/PSE Threaded large end-Plain small end

Dimension of Elbow Outlet & Swept Outlet on Request



Pipes

Size: 1/8"NB TO 30"NB IN

Schedule: SCH20, SCH30, SCH40, STD, SCH80, XS, SCH60, SCH80, SCH120, SCH140, SCH160, XXS

Type: Seamless / ERW / Welded / Fabricated / LSAW Pipes

Form: Round, Square, Rectangular, Hydraulic Etc.

Length: Single Random, Double Random & Cut Length.

End: Plain End, Beveled End, Threaded

Stainless Steel: ASTM A312 304/ 304L/ 304H/ 316/ 316L/ 317/ 317L/ 321/ 310/ 347/ 904L/ etc.

Carbon Steel: ASTM A53/ ASTM A106/ API5L / API-5L Gr X60/ API-5L Gr X65PSL1 / PSL2/ ASTM A333, etc.

Alloy Steel: ASTM A335 P1/ P5/ P9/ P11/ P22/ P91/ etc.

High Nickel Alloy:

Inconel: 600 /601 /625 /800 /825 /718

Hastelloy: C4 /C22 /C276 /B2 /B3

Nickel: 200/201

Cupro-Nickel: 70/30, 90/10, 95/5

Duplex Steel: S31803 / S32205

Super Duplex Steel: S32750 S32760

Titanium: 1/2 /3 /4 /5 /7



Round Bars

Finish: Black, Bright Polished, Rough Turned, NO.4 Finish, Matt Finish, BA Finish

Length: 1 to 6 Meters, Custom Cut Lengths

Form: Round Bars, Square Bars, Hex Bars, Rectangle Bars, Flat Bars, Threaded Bars, Billet, Ingot, Forging, etc.

Stainless Steel: ASTM A276 304/ 304L/ 304H/ 316/ 316L/ 317/ 317L/ 321/ 310/ 347/ 904L/ etc.

Carbon Steel: AISI 1018/ AISI 1045/ ASTM A105/ ASTM A350 LF2, EN Series

Alloy Steel: ASTM A182 F1/ F5/ F9/ F11/ F22/ F91/ etc.

High Nickel Alloy:

Inconel: 600 /601 /625 /800 /825 /718

Hastelloy: C4 /C22 /C276 /B2 /B3

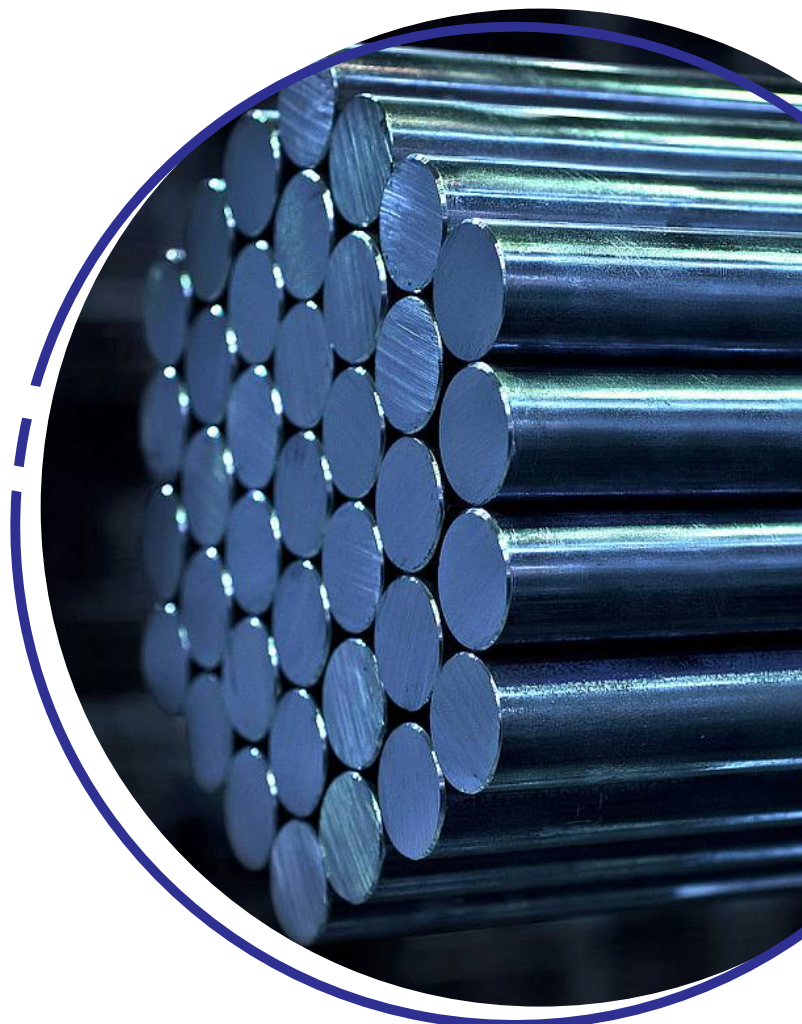
Nickel: 200/201

Cupro-Nickel: 70/30, 90/10, 95/5

Duplex Steel: S31803 / S32205

Super Duplex Steel: S32750 S32760

Titanium: 1 /2 /3 /4 /5 /7



Sheets/ Plates/ Coils

Surface: 2B, 2D, BA, NO.1, NO.4, NO.8, 8K, mirror, checkered, embossed, hair line, sand blast, Brush, etching, etc.

Finish: Hot rolled plate (HR), Cold rolled sheet (CR), 2B, 2D, BA NO (8), SATIN (Met with Plastic Coated)

Form: Coils, Foils, Rolls, Plain Sheet, Shim Sheet, Perforated Sheet, Chequered Plate, Strip, Flats, Blank (Circle), Ring (Flange) etc.

Thickness: 4mm-100mm

Width: 1000mm, 1219mm, 1500mm, 1800mm, 2000mm, 2500mm, 3000mm, 3500mm, etc.

Length: 2000mm, 2440mm, 3000mm, 5800mm, 6000mm, etc.

Stainless Steel: ASTM A240 304/ 304L/ 304H/ 316/ 316L/ 317/ 317L/ 321/ 310/ 347/ 904L/ etc.

Carbon Steel: ASTM A515 Gr 60, Gr 70/ ASTM A516 Gr 60, Gr 65, Gr 70 / C45 / EN8 / ASTM A572 Gr 42/50.

Alloy Steel: ASTM A387 Grade 1/5/9/11/22/91/92

High Nickel Alloy:

Inconel: 600 /601 /625 /800 /825 /718

Hastelloy: C4 /C22 /C276 /B2 /B3

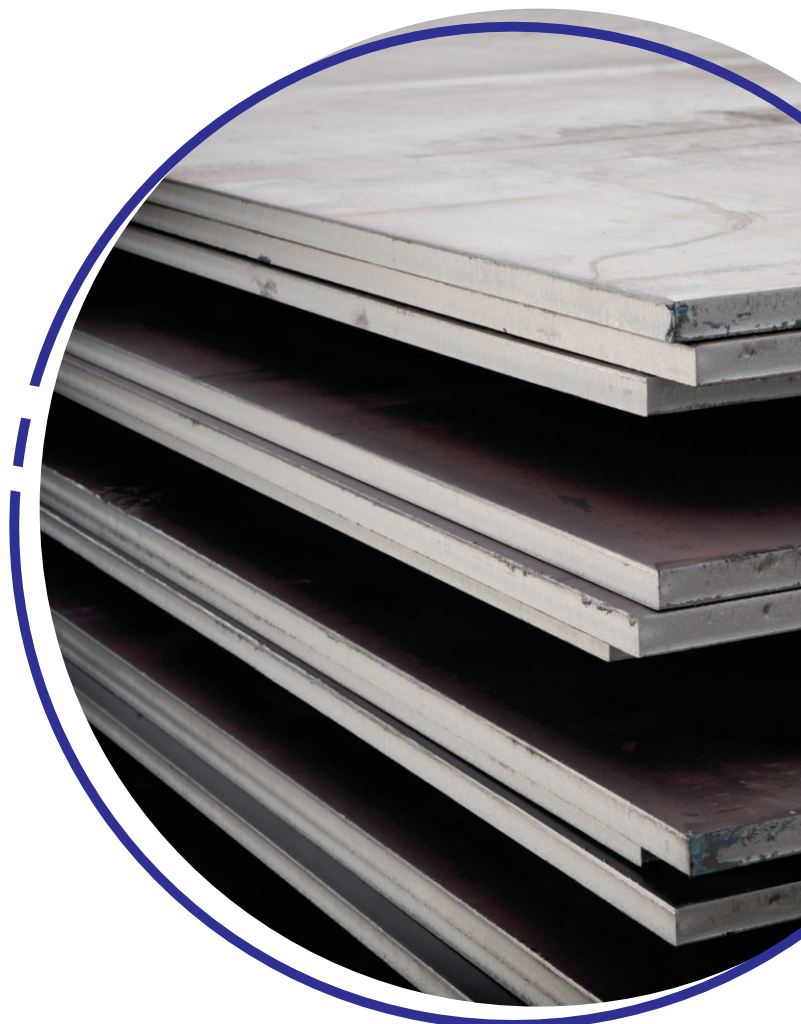
Nickel: 200/201

Cupro-Nickel: 70/30, 90/10, 95/5

Duplex Steel: S31803 / S32205

Super Duplex Steel: S32750 S32760

Titanium: 1/2 /3 /4 /5 /7



Fasteners

Type of Fasteners: Bolts, Screws, Nuts, Washers, Rivets, Concrete Anchors, Inserts, Threaded Rod, Retaining Rings, Hex Head Bolts, Square Bolts, U bolts, Eye bolts, T bolt, Hex Bolt, Lag Bolts, Counter sunk Bolts, Hex Head nuts, Square nuts, Lock nuts, Eye nuts, wing nuts, T nuts, Panel Nuts, Coupling Nuts, Dome nuts, Acorn Nuts, Flat Washer, Lock Washer, Sealing Washer, Split Washer, Slot Washer, Machine Washer, Star Washer Springs – Wire Spring & Flat Spring.

Stainless Steel: ASTM A193 304/ 304L/ 304H/ 316/ 316L/ 317/ 317L/ 321/ 310/ 347/ 904L/ etc.

Carbon Steel: Grade A/ B / C

Alloy Steel: B6 / B7 / B7M / B16 / 2 / 2HM / 2H / GR 6/ GR 7 / GR 7M

High Nickel Alloy:

Inconel: 600 /601 /625 /800 /825 /718

Hastelloy: C4 /C22 /C276 /B2 /B3

Nickel: 200/201

Cupro-Nickel: 70/30, 90/10, 95/5

Duplex Steel: S31803 / S32205

Super Duplex Steel: S32750 S32760


Titanium: 1/2 /3 /4 /5 /7





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