SFF Scandinavian Fittings & Flanges

TECHNICAL CATALOGUE

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STAINLESS STEEL AUSTENITIC GRADES

MATERIALS								MECHANICAL CHARACTERISTICS					CHEMICAL ANALYSIS				
GRADE	ASTM PLATES	ASTM PIPES WELDED	ASTM PIPES SMLS	ASTM FITTINGS	ASTM FORGINGS	UNS	W.N.	DENSITY Kg/dm³	TENSILE STRENGTH Min N/mm²	YELD POINT Min N/mm²	ELON-GATION 2" min %	MAX HARDNESS HB/HRB	C % max	Cr %	Ni %	Mo %	OTHER ELEMENTS %
304	A240	A312	A312	A403	A182	S30400	1.4301	8.0	515	205	40	201/92	0.08	18÷20	8÷10.5	-	N 0,1 max
304 L	A240	A312	A312	A403	A182	S30403	1.4306	8.0	485	170	40	201/92	0.03	18÷20	8÷12	-	N 0,1 max
321	A240	A312	A312	A403	A182	S32100	1.4541	8.0	515	205	40	217/95	0.08	17÷19	9÷12	-	Ti 5x (Co+N)÷0.70
347	A240	A312	A312	A403	A182	S34700	1.4550	8.0	515	205	40	201/92	0.08	17÷19	9÷13	-	Cb 10xC ÷ 1.00
316	A240	A312	A312	A403	A182	S31600	1.4401	8.0	515	205	40	217/95	0.08	16÷18	10÷14	2÷3	N 0,1 max
316 L	A240	A312	A312	A403	A182	S31603	1.4404	8.0	485	170	40	217/95	0.03	16÷18	10÷14	2÷3	N 0,1 max
316 Ti	A240	A312	A312	-	A182	S31635	1.4571	8.0	515	205	40	217/95	0.08	16÷18	10÷14	2÷3	N 0,1 max Ti 5x(Co+N)÷0.70
317 L	A240	A312	A312	A403	A182	S31703	1.4438	8.0	515	205	40	217/95	0.03	18÷20	11÷15	3÷4	N 0,1 max
309 S	A240	A312	A312	A403	A182	S30908	1.4828	8.0	515	205	40	217/95	0.08	22÷24	12÷15	-	-
310 S	A240	A312	A312	A403	A182	S31008	1.4845	8.0	515	205	40	217/95	0.08	24÷26	19÷22	-	-
410 S	A240	-	-	-	A182	S41008	1.4000	7.7	415	205	22	183/89	0.08	11.5÷13.5	0.6 max	-	-
904 L	A240	A358	A312	-	-	N08904	1.4539	8.0	490	215	35	180/80	0.02	19÷23	23÷28	4÷5	-
6 MO	A240	A358	A312	A403	A182	N08926	1.4529	8.0	650	295	35	-/-	0.02	19÷21	24÷26	6÷7	N 0.15÷0.25
254 SMO	A240	A358	A312	A403	A182	S31254	1.4547	8.0	650	300	35	223/96	0.02	19.5÷20.5	17.5÷18.5	6÷6.5	N 0.18÷0.22
4565 S	A240	A358	A312	A403	A182	S34565	1.4565	8.0	800	420	30	-/-	0.03	23÷25	16÷18	3.5÷5.0	N 0.4÷0.6 Mn 3.5÷6.5

DUPLEX STEELS

MATERIALS								MECHANICAL CHARACTERISTICS					CHEMICAL ANALYSIS				
GRADE	ASTM PLATES	ASTM PIPES WELDED	ASTM PIPES-SMLS	ASTM - FITTINGS	ASTM - FORGINGS	UNS	W.N.	DENSITY Kg/dm³	TENSILE STRENGTH Min N/mm²	YELD POINT Min N/mm²	ELON-GATION 2" min %	MAX HARDNESS HB/HRB	C % max	Cr %	Ni %	Mo %	OTHER ELEMENTS %
DUPLEX	A240	A928	A790	A815	A182	S31803 / S32205	1.4462	7.9	620	450	25	290/-	0.03	21÷23	4.5÷6.5	2.5÷3.5	N 0.08÷0.20
SUPER DUPLEX	A240	A928	A790	A815	A182	S32750	1.4410	7.9	795	550	15	310/-	0.03	24÷26	6÷8	3÷5	N 0.24÷0.32
SUPER DUPLEX	A240	A928	A790	A815	A182	S32760	1.4501	7.9	750-895	550	25	270/-	0.03	24÷26	6÷8	3÷4	N 0.2÷0.3
LEAN DUPLEX	A240	A928	A790	-	-	S32304	1.4362	7.9	600	400	25	290	0.03	23	4,5	0,3	N 0,1
LEAN DUPLEX	A240	A928	A790	-	-	S32003		7.9	620	450	25	290	0.03	21	3,5	1,7	N 0,17

	MATERIALS							MECHANICAL CHARACTERISTICS					CHEMICAL ANALYSIS				
GRADE	ASTM PLATES	ASTM PIPES WELDED	ASTM PIPES SMLS	ASTM FITTINGS	ASTM FORGINGS	UNS	W.N.	DENSITY Kg/dm³	TENSILE STRENGTH Min N/mm²	YELD POINT Min N/mm²	ELON-GATION 2" min %	MAX HARDNESS HB/HRB	C % max	Cr %	Ni %	Mo %	OTHER ELEMENTS %
NICKEL 200	B162	B725	B161	B366	B564	N02200	2.4066	8.9	380	103	40	140/80	0.15	-	98.4÷99.6	-	-
NICKEL 201	B162	B725	B161	B366	-	N02201	2.4068	8.9	345	80	40	135/75	0.01	-	98.4÷99.6	-	-
ALLOY 400	B127	B725	B165	B366	B564	N04400	2.4360	8.8	485	195	35	140/80	0.30	-	63 min	-	-
ALLOY 600	B168	B517	B167	B366	B564	N06600	2.4816	8.4	550	240	30	180/90	0.15	14÷17	72 min	-	-
ALLOY 601	B168		B167	-	-	N06601	2.4851	8.1	550	205	30	180/90	0.10	21÷25	58÷63	-	-
ALLOY 625	B443	B705	B444	B366	B564	N06625	2.4856	8.5	758	379	30	-/-	0.10	20÷23	58 min	8÷10	Co 1,0 max Ti 0.40 max Cb + Ta 3.15÷4.15
ALLOY 800H	B409	B514	B407	B366	B564	N08810	1.4958	8.0	450	170	30	-/-	0.05÷0.1	19÷23	30÷35	-	Ti 0.15÷0.60
ALLOY 800HT	B408		B407	B366	B564	N08811	1.4959	8.0	450	170	30	-/-	0.06÷0.5	19÷23	30÷35	-	Ti 0.15÷0.60 Al + Ti 0.85÷1.2
ALLOY 825	B424	B705	B423	B366	B564	N08825	2.4858	8.1	586	241	30	165/87	0.05	19.5÷23.5	38÷46	2.5÷3.5	Ti 0.6÷1.2
ALLOY B2	B333	B619	B622	B366	B564	N10665	2.4617	9.2	760	350	40	226/100	0.02	1 max	Balance	26÷30	Co 1 max
ALLOY B3	B333	B619	B622	B366	B564	N10675	2.4600	9.2	760	350	40	226/100	0.01	1÷3	65 min	27÷32	Co 3 max W 3 max
ALLOY B4	B333	B619	B622	B366	B564	N10629	2.4600	9.2	760	350	40	226/100	0.01	0.5÷1.5	Balance	26÷30	Co 2.5 max
ALLOY C22	B575	B619	B622	B366	B564	N06022	2.4602	8.7	690	310	45	226/100	0.015	20÷22.5	Balance	12.5÷14.5	W 2.5÷3.5 Co 2.5 max V 0.35 max
ALLOY 59	B575	B619	B622	B366	B564	N06059	2.4605	8.8	710	350	45	226/100	0.01	22÷24	Balance	15÷16.5	-
ALLOY C276	B575	B619	B622	B366	B564	N10276	2.4819	8.9	690	283	40	226/100	0.01	14.5÷16.5	Balance	15÷17	Co 2.5 max W 3÷4.5
ALLOY C4	B575	B619	B622	B366	-	N06455	2.4610	8.6	690	276	40	226/100	0.015	14÷18	Balance	14÷17	Ti 0.7 max
ALLOY X	B435	B619	B622	B366	-	N06002	2.4665	8.3	655	240	35	-/-	0.05÷0.15	20.5÷23	Balance	8÷10	W 0.2÷1.0
ALLOY G30	B582	B619	B622	B366	-	N06030	2.4603	8.2	586	241	30	-/-	0.03	28÷31.5	Balance	4÷6	W 1.5÷4 Co 5max Cb + Ta 0.3÷1.5
Cu Ni 90/10	B171	EEMUA -144	EEMUA -144	EEMUA -146	EEMUA-145	C70600	2.0872	8.9	275	105	30	-/-	0.05	-	+Cb 9÷11	-	Zn 0.50 max Pb 0.02 max

TITANIUM

MATERIALS								MECHANICAL CHARACTERISTICS				CHEMICAL ANALYSIS				
GRADE	ASTM PLATES	ASTM PIPES WELDED	ASTM PIPES SMLS	ASTM FITTINGS	ASTM FORGINGS	UNS	W.N.	DENSITY Kg/dm³	TENSILE STRENGTH Min N/mm²	YELD POINT Min N/mm²	ELON-GATION 2" min %	MAX HARDNESS HB/HRB	C % max	Cr %	Ni %	Mo %	OTHER ELEMENTS %
Ti Gr. 1	B265	B862	B861	B363	B381	R50250	3.7025	4.5	240	170-310	24	-/-	0.08	0.015	0.18	0.20	-
Ti Gr. 2	B265	B862	B861	B363	B381	R50400	3.7035	4.5	345	275-450	20	-/-	0.08	0.015	0.25	0.30	-
Ti Gr. 3	B265	B862	B861	B363	B381	R50550	3.7055	4.5	450	380-550	18	-/-	0.08	0.015	0.35	0.30	-
Ti Gr. 7	B265	B862	B861	B363	B381	R52400	3.7235	4.5	345	275-450	20	-/-	0.08	0.015	0.25	0.30	Pd 0.12÷0.25
Ti Gr. 12	B265	B862	B861	B363	B381	R53400	3.7105	4.5	483	345	18	-/-	0.08	0.015	0.25	0.30	Ni 0.6÷0.9 Mo 0.2÷0.4

CARBON STEEL

MATERIALS								MECHANICAL CHARACTERISTICS				CHEMICAL ANALYSIS				
GRADE	ASTM PLATES	ASTM PIPES WELDED	ASTM PIPES-SMLS	ASTM - FITTINGS	ASTM - FORGINGS	UNS	W.N.	DENSITY Kg/dm³	TENSILE STRENGTH Min N/mm²	YELD POINT Min N/mm²	ELON-GATION 2" min %	MAX HARDNESS HB/HRB	C % max	Cr %	Ni %	Mo %	OTHER ELEMENTS %
CS Type 235	A516	A672 CC60. CC70 / API 5L Gr.B	A106 Gr.B	A234 Gr.WPB	A105		-	7,8	415-655	240	24	-/-	0,3	0,4 max	0,29-1,06	0,4 max	Si 0,10 min; Mo 0,5 max
CS Type 235 LT	A516	A671 CC60. CC70	A333 Gr.6	A420 WPL6	A350 LF2		-45 °C	7,8	415-655	240	22		0,3	0,3 max	0,5-1,35	0,4 max	Si 0,15-0,4 ; Mo 0,12 max
CS Type 360 LT	A516	A671 CC60. CC70	API 5L X52	A860 WPHY52	A694 F52		-45 °C	7,8	455	360	25		0,2	0,3 max	1,0-1,45	0,5 max	Si 0,15-0,4 ; Mo 0,25 max

WEIGHT CALCULATIONS

GRADE	DENSITY [kg/dm3]	WEIGHT DEVIATION(304L)
SS304L	7,90	0,00
310, 316L, 317L	7,95	0,63
410-430	7,70	-2,52
Duplex 22 Cr	7,80	-1,27
254 SMO -904 L	8,00	1,26
Sanicro 28	8,10	2,53
Nickel 200-201	8,89	12,53
Monel 400	8,83	11,77
Inconel 600	8,42	6,58
Inconel 601	8,06	2,03
Inconel 625	8,44	6,84
Incoloy 800	7,95	0,63
Incoloy 825	8,14	3,04
Incoloy DS	7,91	0,13
Hastelloy B	9,24	16,96
Hastelloy B-2	9,22	16,71
Hastelloy C-4	8,64	9,37
Hastelloy C-276	8,87	12,28
Carpenter 20 CB-3	8,10	2,53
Titanium	4,51	-42,91
Super duplex 25 Cr	7,80	-1,27

Pipe Weights ASME B36.10M

For carbon steel pipes the below formula applies:

Pipe Weight [kg/m] = 0.0246615 x (OD[mm] - wt[mm]) x wt[mm]

For weights per meter of pipe and tube of other materials replace the constant (0.0246615) in the formula above as follows:

MATERIAL	FACTOR
Alloy 400 = (Monel)	0,02765
Alloy 600 = (Inconel)	0,02639
Alloy 800 = (Incoloy)	0,02513
Aluminium =	0,00848
Copper =	0,02796
Copper-Nickel =	0,02796
Duplex =	0,02450
Stainless Steel =	0,02504
Titanium =	0,01414
254 SMO -904 L =	0,02513
Super duplex =	0,02450

PIPE SCHEDULE CHART (MM)

ASME B36.19 - B36.10 - PIPE DIMENSIONS IN MM AND WEIGHTS IN KG

DN (mm)	NPS (Inch)	O.D. (mm)	5s	5	10s	10	20	30	STD 40s	40	60	XS 80s	80	100	120	140	160	XXS
-	1/8"	10,3			1,24 0,3	Identical to 10s		1,45 0,3	1,73 0,4	Identical to 40s & «std»		2,41 0,5	Identical to 80s & «XS»					
-	1/4"	13,7			1,65 0,5			1,85 0,5	2,24 0,6			3,02 0,8						
10	3/8"	17,1			1,65 0,6			1,85 0,7	2,31 0,9			3,20 1,1						
15	1/2"	21,3	1,65 0,8	Identical to 5s	2,11 1,0			2,41 1,1	2,77 1,3			3,73 1,6					4,75 2,0	7,47 2,6
20	3/4"	26,7	1,65 1,0		2,11 1,3			2,41 1,4	2,87 1,7			3,91 2,2					5,56 2,9	7,82 3,7
25	1"	33,4	1,65 1,3		2,77 2,1			2,90 2,2	3,38 2,5			4,55 3,3					6,35 4,3	9,09 5,5
32	1 1/4"	42,2	1,65 1,7		2,77 2,7			2,97 2,9	3,56 3,4			4,85 4,5					6,35 5,7	9,70 7,9
40	1 1/2"	48,3	1,65 1,9		2,77 3,2			3,18 3,5	3,68 4,1			5,08 5,5					7,14 7,4	10,15 9,7
50	2"	60,3	1,65 2,4		2,77 4,0			3,18 4,5	3,91 5,5			5,54 7,6					8,74 11,1	11,07 13,4
65	2 1/2"	73,0	2,11 3,8		3,05 5,3			4,78 8,0	5,16 8,6			7,01 11,4					9,53 14,0	14,02 20,4
80	3"	88,9	2,11 4,6		3,05 6,5			4,78 9,9	5,49 11,3			7,62 15,3					11,13 21,4	15,24 27,7
-	3 1/2"	101,6	2,11 5,2		3,05 7,4			4,78 11,4	5,74 13,6			8,08 18,6						
100	4"	114,3	2,11 5,8		3,05 8,4			4,78 12,9	6,02 16,1			8,56 22,3			11,13 28,3		13,49 33,5	17,12 41,0
125	5"	141,3	2,77 9,5		3,40 11,6				6,55 21,8			9,53 31,0			12,7 40,3		15,88 49,1	19,05 57,4
150	6"	168,3	2,77 11,3		3,40 13,8				7,11 28,3			10,97 42,6			14,27 54,2		18,26 67,6	21,95 79,2
200	8"	219,1	2,77 14,8		3,76 20,0		6,35 33,3	7,04 36,8	8,18 42,6		10,31 53,1	12,7 64,6		15,09 75,9	18,26 90,4	20,62 100,9	23,01 111,3	22,23 107,9
250	10"	273,0	3,40 22,6		4,19 27,8		6,35 42,4	7,80 51,8	9,27 60,3		12,7 81,6	12,7 81,6	15,09 96,0	18,26 114,8	21,44 133,1	25,4 155,2	28,58 172,3	25,40 155,2
300	12"	323,8	3,96 31,3		4,57 36,0		6,35 49,7	8,38 65,2	9,53 73,9	10,31 79,7	14,27 109,0	12,7 97,4	17,48 132,1	21,44 159,9	25,4 187,0	28,58 208,1	33,32 238,8	25,4 187,0
350	14"	355,6	3,96 34,4		4,78 41,3	6,35 54,7	7,92 67,9	9,53 81,3	9,53 81,3	11,13 94,6	15,09 126,7	12,7 107,4	19,05 158,1	23,83 195,0	27,79 224,7	31,75 253,5	35,71 281,7	
400	16"	406,4	4,19 41,6		4,78 47,3	6,35 62,6	7,92 77,8	9,53 93,3	9,53 93,3	12,70 123,3	16,66 160,1	12,7 123,3	21,44 203,5	26,19 245,6	30,96 286,6	36,53 333,2	40,49 365,4	
450	18"	457,0	4,19 46,8		4,78 53,3	6,35 70,6	7,92 87,7	11,13 122,4	9,53 105,2	14,27 155,8	19,05 205,7	12,7 139,2	23,83 254,6	29,36 309,6	34,93 363,6	39,67 408,3	45,24 459,4	
500	20"	508,0	4,78 59,3		5,54 68,6	6,35 78,6	9,53 117,52	12,7 155,1	9,53 117,2	15,09 183,4	20,62 247,8	12,7 155,1	26,19 311,2	32,54 381,5	38,10 441,5	44,45 508,1	50,01 564,8	
-	22"	559,0	4,78 65,2		5,54 75,5	6,35 86,5	9,53 129,1	12,7 171,1	9,53 129,1		22,23 299,3	12,7 171,1	28,58 373,8	34,93 451,5	41,28 527,0	47,63 600,6	53,98 672,3	
600	24"	610,0	5,54 82,5		6,35 94,5	6,35 94,5	9,53 141,1	14,27 209,6	9,53 141,1	17,48 255,4	24,61 355,3	12,7 187,1	30,96 442,1	35,89 547,7	46,02 640,0	52,37 720,2	59,54 808,2	
-	26"	660,0				7,92 127,4	12,7 202,7		9,53 152,9			12,7 202,7						
700	28"	711,0				7,92 137,2	12,7 218,7	15,88 271,2	9,53 164,9			12,7 218,7						
-	30"	762,0	6,35 118,3		7,92 147,4	7,92 147,3	12,7 324,7	15,88 292,2	9,53 176,8			12,7 324,7						
800	32"	813,0				7,92 157,2	12,7 250,7	15,88 316,9	9,53 188,8	17,48 342,9		12,7 250,6						
-	34"	864,0				7,92 167,2	12,7 266,6	15,88 332,1	9,53 200,3	17,48 365,0		12,7 266,6						
900	36"	914,0				7,92 177,0	12,7 282,3	15,88 351,7	9,53 212,6	19,05 420,4		12,7 282,3						

Note: Each cell are divided in two values. Upper values are wall thickness in mm, lower values are weights in kg/m.
Specific steel weight used for calculation is 8.0. Titanium weight is approximately 57% of the table values.

DN: Nominal Diameter - SI description of pipe size in mm
NPS: Nominal Pipe Size - description of pipe size in inch
OD: Outside Diamtere of pipe. Sch5s and 10s do not permit threading according to ANSI B1.20.1
Sch.40s and 80s in the table are applicable up to and including 12»

PIPE SCHEDULE CHART (INCH)

ASME B36.19 - B36.10 - PIPE DIMENSIONS IN INCH AND WEIGHTS IN KG

NPS (Inch)	O.D. (Inch)	5s	5	10s	10	20	30	STD 40s	40	60	XS 80s	80	100	120	140	160	XXS
1/8"	0,405			0,049 0,3	Identical to 10s		0,057 0,3	0,068 0,4	Identical to 40s & «std»		0,095 0,5	Identical to 80s & «XS»					
1/4"	0,540			0,065 0,5			0,073 0,5	0,088 0,6			0,119 0,8						
3/8"	0,675			0,065 0,6			0,073 0,7	0,091 0,9			0,126 1,1						
1/2"	0,840	0,065 0,8	Identical to 5s	0,083 1,0			0,095 1,1	0,109 1,3			0,147 1,6					0,187 2,0	0,294 2,6
3/4"	1,050	0,065 1,0		0,083 1,3			0,095 1,4	0,113 1,7			0,154 2,2					0,219 2,9	0,308 3,7
1"	1,315	0,065 1,3		0,109 2,1			0,114 2,2	0,133 2,5			0,179 3,3					0,250 4,3	0,358 5,5
1 1/4"	1,660	0,065 1,7		0,109 2,7			0,117 2,9	0,140 3,4			0,191 4,5					0,250 5,7	0,382 7,9
1 1/2"	1,900	0,065 1,9		0,109 3,2			0,125 3,5	0,145 4,1			0,200 5,5					0,281 7,4	0,400 9,7
2"	2,375	0,065 2,4		0,109 4,0			0,125 4,5	0,154 5,5			0,218 7,6					0,344 11,1	0,436 13,4
2 1/2"	2,875	0,083 3,8		0,120 5,3			0,188 8,0	0,203 8,6			0,276 11,4					0,375 14,0	0,552 20,4
3"	3,500	0,083 4,6		0,120 6,5			0,188 9,9	0,216 11,3			0,300 15,3					0,438 21,4	0,600 27,7
3 1/2"	4,000	0,083 5,2		0,120 7,4			0,188 11,4	0,226 13,6			0,318 18,6						
4"	4,500	0,083 5,8		0,120 8,4			0,188 12,9	0,237 16,1			0,337 22,3			0,438 28,3		0,531 33,5	0,674 41,0
5"	5,563	0,109 9,5		0,134 11,6				0,258 21,8			0,375 31,0			0,500 40,3		0,625 49,1	0,750 57,4
6"	6,625	0,109 11,3		0,134 13,8				0,280 28,3			0,432 42,6			0,562 54,2		0,719 67,6	0,864 79,2
8"	8,625	0,109 14,8		0,148 20,0		0,250 33,3	0,277 36,8	0,322 42,6		0,406 53,1	0,500 64,6		0,594 75,9	0,719 90,4	0,8112 100,9	0,906 111,3	0,875 107,9
10"	10,75	0,134 22,6		0,165 27,8		0,250 42,4	0,307 51,8	0,365 60,3		0,500 81,6	0,500 81,6	0,594 96,0	0,719 114,8	0,844 133,1	1,000 155,2	1,125 172,3	1,000 155,2
12"	12,75	0,156 31,3		0,180 36,0		0,250 49,7	0,330 65,2	0,375 73,9	0,406 79,7	0,562 109,0	0,500 97,4	0,688 132,1	0,844 159,9	1,000 187,0	1,125 208,1	1,312 238,8	1,000 187,0
14"	14,00	0,156 34,4		0,188 41,3	0,250 54,7	0,12 67,9	0,375 81,3	0,375 81,3	0,438 94,6	0,594 126,7	0,500 107,4	0,750 158,1	0,938 195,0	1,094 224,7	1,250 253,5	1,406 281,7	
16"	16,00	0,165 41,6		0,188 47,3	0,250 62,6	0,312 77,8	0,375 93,3	0,375 93,3	0,500 123,3	0,656 160,1	0,500 123,3	0,844 203,5	1,031 245,6	1,219 286,6	1,438 333,2	1,594 365,4	
18"	18,00	0,165 46,8		0,188 53,3	0,250 70,6	0,312 87,7	0,438 122,4	0,375 105,2	0,562 155,8	0,750 205,7	0,500 139,2	0,938 254,6	1,156 309,6	1,375 363,6	1,562 408,3	1,781 459,4	
20"	20,00	0,188 59,3		0,218 68,6	0,250 78,6	0,375 117,2	0,500 155,1	0,375 117,2	0,594 183,4	0,812 247,8	0,500 155,1	1,031 311,2	1,281 381,5	1,500 441,5	1,750 508,1	1,969 564,8	
22"	22,00	0,188 65,2		0,218 75,5	0,250 86,5	0,375 129,1	0,500 171,1	0,375 129,1		0,875 299,3	0,500 171,1	1,125 373,8	1,375 451,5	1,625 527	1,875 600,6	2,125 672,3	
24"	24,00	0,218 82,5		0,250 94,5	0,250 94,5	0,375 141,1	0,562 209,6	0,375 141,1	0,688 255,4	0,969 355,3	0,500 187,1	1,219 442,1	1,531 547,7	1,812 640,0	2,062 720,2	2,344 808,2	
26"	26,00				0,312 127,4	0,500 202,7		0,375 152,9			0,500 202,7						
28"	28,00				0,312 137,2	0,500 218,7	0,625 271,2	0,375 164,9			0,500 218,7						
30"	30,00	0,250 118,3		0,312 147,4	0,312 147,3	0,500 324,7	0,625 292,2	0,375 176,8			0,500 324,7						
32"	32,00				0,312 157,2	0,500 250,7	0,625 316,9	0,375 188,8	0,688 342,9		0,500 250,6						
34"	34,00				0,312 167,2	0,500 266,6	0,625 332,1	0,375 200,3	0,688 365,0		0,500 266,6						
36	36,00				0,312 177,0	0,500 282,3	0,625 351,7	0,375 212,6	0,750 420,4		0,500 282,3						

Note: Each cell are divided in two values. Upper values are wall thickness in inch, lower values are weights in kg/m.
Specific steel weight used for calculation is 8.0. Titanium weight is approximately 57% of the table values.

NPS: Nominal Pipe Size - description of pipe size in inch
OD: Outside Diameter of pipe. Sch5s and 10s do not permit threading according to ANSI B1.20.1
Sch.40s and 80s in the table are applicable up to and including 12»

WEIGHT OF FITTINGS

90 ° Elbow

90° ELBOWS, BW FITTINGS (LONG RADIUS)

N.B. SIZE		APPROXIMATE WEIGTHS IN KG																
Inches	Metric	SCH 5S	SCH 10S	SCH 10	SCH 20	SCH 30	SCH 40S	STD. WALL	SCH 40	SCH 60	SCH 80S	XS	SCH 80	SCH 100	SCH 120	SCH 140	SCH 160	XXS
1/2"	15	0,06	0,06				0,08	0,08	0,08		0,10	0,18	0,18				0,22	
3/4"	20	0,06	0,07				0,09	0,08	0,08		0,12	0,20	0,20				0,25	
1"	25	0,09	0,15				0,16	0,15	0,15		0,22	0,20	0,20				0,30	0,40
1 1/4"	32	0,14	0,25				0,25	0,25	0,25		0,40	0,35	0,35				0,44	0,61
1 1/2"	40	0,17	0,30				0,40	0,36	0,36		0,50	0,60	0,60				0,80	0,90
2"	50 65	0,30	0,50				0,70	0,65	0,65		0,90	0,94	0,94				1,50	1,80
2 1/2"		0,70	0,85				1,40	1,28	1,28		1,80	1,70	1,70				2,35	3,21
3"	80	0,90	1,20				2,20	2,03	2,03		3,00	2,75	2,75				4,00	5,20 -
3 1/2"	90	1,20	1,70				2,90	2,87	2,87		4,00	3,95	3,95				-	
4"	100	1,50	2,20				4,20	3,90	3,90		6,20	5,40	5,40		6,95		9,00	10,30
5"	125	3,00	3,60				6,90	6,50	6,50		9,60	8,85	8,85		12,62		15,44	18,11
6"	150	4,50	5,40				11,00	10,20	10,20		16,30	15,35	15,35		23,00		27,00	30,00
8"	200	7,80	10,60		16,57	17,50	21,50	20,30	20,30	26,30	33,10	29,90	29,90	38	40,50	52	58,00	54,50
10"	250	14,50	19,50		25,79	31,30	38,50	37,00	37,00	48,60	52,00	48,60	57,11	75	85	97	123,00	97
12"	300	23,10	27,50		37,23	46,06	60,00	54,00	58,15	82,62	80	70	94,82	123	140	157	180,00	140
14"	350	30,80	36,00	54,47	59,93	68,00	70,00	68,00	79,96	111,26		94,35	132,16	188	190	224	247,50	
16"	400	45,30	47,50	63,20	78,09	89,20	92,00	89,20	124,75	161,17		124,75	204,30	260	274	323	367,00	
18"	450	56,60	60,00	82	99,43	139,83	122	112,9	177,06	231,54		157,5	287,84	390	405	422	545,00	
20"	500	75,00	100	100	142,4	194,30	150	142,4	230,00	311,44		194,3	390,90	476	508	607	770,00	
22"	550			120	178	250,20		178,00		412,70		236	523,40	638	700	850	1020	
24"	600	130,00	140	146	202	318,70	210	202,00	384,00	533,90		268,50	667,40	820	954	1100	1270	

* Nom. weights are for CARBON STEEL

WEIGHT OF FITTINGS

45 ° Elbow

45° ELBOWS, BW FITTINGS

N.B. SIZE		APPROXIMATE WEIGTHS IN KG																
Inches	Metric	SCH 5S	SCH 10S	SCH 10	SCH 20	SCH 30	SCH 40S	STD. WALL	SCH 40	SCH 60	SCH 80S	XS	SCH 80	SCH 100	SCH 120	SCH 140	SCH 160	XXS
1/2"	15	0,02	0,03				0,04	0,04	0,04		0,05	0,08	0,08				0,12	
3/4"	20	0,03	0,03				0,04	0,04	0,04		0,05	0,08	0,08				0,12	
1"	25	0,05	0,09				0,12	0,08	0,08		0,15	0,10	0,10				0,14	0,19
1 1/4"	32	0,09	0,12				0,15	0,12	0,12		0,25	0,18	0,18				0,22	0,30
1 1/2"	40	0,11	0,17				0,22	0,18	0,18		0,30	0,25	0,25				0,33	0,45
2"	50	0,14	0,25				0,35	0,32	0,32		0,50	0,47	0,47				0,70	0,84
2 1/2"	65	0,34	0,48				0,75	0,64	0,64		1,00	0,85	0,85				1,20	1,60
3"	80	0,48	0,62				1,05	1,02	1,02		1,50	1,37	1,37				2,00	2,60
3 1/2"	90	0,55	0,76				1,45	1,43	1,43		2,00	1,97	1,97				-	-
4"	100	0,75	1,10				2,10	1,95	1,95		3,10	2,70	2,70		3,47		4,00	5,20
5"	125	1,50	1,80				3,40	3,25	3,25		4,80	4,42	4,42		6,31		7,50	9,08
6"	150	2,25	2,75				5,40	5,10	5,10		8,20	7,67	7,67		9,81		14,00	15,00
8"	200	4,00	5,30		9,00	10,35	10,70	11,15	11,15	13,34	16,50	14,95	14,95	19,07	21,59	26,00	29,00	27,00
10"	250	7,25	9,80		18,50	19,65	19,30	20,50	20,50	24,30	26,00	24,30	30,00	37,55	41,77	48,50	61,00	48,5
12"	300	11,60	13,60		24,75	26,03	29,70	27,00	29,57	41,31	40,00	35,00	49,94	61,50	70,82	79,00	90,34	70,8
14"	350	15,40	18,10	25,00	32,00	34,00	35,40	34,00	39,98	55,84		47,17	69,92	94,00	95,00	112,00	123,94	
16"	400	22,60	23,80	32,00	46,50	48,00	46,20	48,00	62,37	80,81		62,37	102,15	130,00	137,00	161,50	183,00	
18"	450	28,40	30,00	41,00	56,00	69,91	59,80	60,00	88,53	115,77		79,00	143,92	195,00	202,50	211,00	272,00	
20"	500	37,40	50,00	50,00	71,20	97,16	74,00	71,20	114,00	155,72		97,16	195,67	238,00	254,00	303,50	385,00	
22"	550			60,00	89	128,10		89,00		205,35		118,00	256,70	329,00	365,00	425,00	510,00	
24"	600	63,50	71,00	73,00	102,95	159,35	105,00	102,95	192,04	266,95		141,20	333,70	410,00	477,00	545,00	635,00	

*** Nom. weights are for CARBON STEEL**

WEIGHT OF FITTINGS

Equal Tee

EQUAL TEES, BW FITTINGS

N.B. SIZE		APPROXIMATE WEIGTHS IN KG																
Inches	Metric	SCH 5S	SCH 10S	SCH 10	SCH 20	SCH 30	SCH 40S	STD. WALL	SCH 40	SCH 60	SCH 80S	XS	SCH 80	SCH 100	SCH 120	SCH 140	SCH 160	XXS
1/2" 3/4"	15 20	0,09 0,10	0,10 0,13				0,12 0,17	0,16 0,20	0,16 0,20		0,25 0,38	0,25 0,27	0,25 0,27				0,28 0,29	0,38
1" 1 1/4" 1 1/2"	25 32 40	0,18 0,35 0,45	0,28 0,50 0,70				0,30 0,60 0,90	0,29 0,53 0,77	0,29 0,53 0,77		0,50 1,05 1,50	0,35 0,65 0,96	0,35 0,65 0,96				0,45 0,77 1,21	0,58 1,05 1,56
2" 2 1/2"	50 65	0,55 1,00	0,85 1,40				1,30 2,20	1,88 2,69	1,88 2,69		2,15 3,00	1,90 3,07	1,90 3,07				2,25 3,42	2,69 4,54
3" 3 1/2"	80 90	1,55 2,50	1,80 2,70				3,30 4,10	3,82 5,18	3,82 5,18		3,80 5,52	4,50 6,17	4,50 6,17				6,21 -	7,63 -
4"	100	3,30	3,50				5,30	6,00	6,00		7,65	8,44	8,44		9,00		15,53	17,00
5"	125	5,90	6,10				9,40	9,94	9,94		13,50	12,94	12,94		18,00		23,93	25,00
6"	150	7,80	8,10				11,00	16,48	16,48		19,30	19,30	19,30		24,00		38,59	39,00
8"	200	14,00	15,60		29,00	31,00	21,00	33,00	33,00	34,50	33,00	34,50	34,50	43,65	50,00	54,00	71,00	69,00
10"	250	25,00	27,00		34,70	36,77	36,00	49,35	49,35	58,57	60,00	58,57	68,00	74,00	93,00	99,00	120,00	98
12"	300	38,00	40,00		59,00	61,74	62,00	65,00	70,50	102,60	78,00	84,90	115,00	136,00	150,00	177,00	184,00	150
14"	350	40,00	48,00	87,16	90,00	93,00	79,00	93,00	114,41	141,20	115,00	127,12	165,00	206,00	240,00	275,00	300,00	
16"	400	52,00	59,00	90,80	100,00	115,00	100,00	115,00	167,52	207,93	167,00	167,52	249,00	305,00	330,00	385,00	425,00	
18"	450	68,00	77,00	94,50	127,12	181,14	130,00	135,00	238,35	277,85	190,00	190,00	322,00	380,00	450,00	500,00	590,00	
20"	500	78,00	103,00	120,00	168,00	265,00	162,00	168,00	320,52	378,64	245,00	245,00	459,05	540,00	590,00	720,00	790,00	
22"	550			143,00	200	355,00		200,00		510,00		280,00	600,00	725,00	840,00	950,00	1100,00	
24"	600	90,00	155,00	170,00	240,00	443,55	225,00	240,00	570,68	656,48	350,00	350,00	748,00	910,00	1100,00	1180,00	1310,00	

* Nom. weights are for CARBON STEEL

WEIGHT OF FITTINGS

Reducing Tee.

REDUCING TEES, BW FITTINGS

N.B. SIZE		APPROXIMATE WEIGTHS IN KG																
Inches	Metric	SCH 5S	SCH 10S	SCH 10	SCH 20	SCH 30	SCH 40S	STD. WALL	SCH 40	SCH 60	SCH 80S	XS	SCH 80	SCH 100	SCH 120	SCH 140	SCH 160	XXS
1/2"	15	0,11	0,09				0,10	0,16	0,16		0,13	0,25	0,25				0,27	0,4
3/4"	20		0,13				0,15	0,25	0,25		0,19	0,34	0,34					
1"	25	0,17	0,27				0,28	0,35	0,35		0,36	0,40	0,40				0,46	0,57
1 1/4"	32	0,31	0,46				0,53	0,60	0,60		0,64	0,60	0,60				0,80	1,09
1 1/2"	40	0,39	0,67				0,78	0,80	0,80		0,92	0,99	0,99				1,25	1,62
2"	50	0,49	0,77				1,15	1,50	1,50		1,43	2,05	2,05				2,27	2,73
2 1/2"	65	0,88	1,21				1,98	2,08	2,08		2,80	3,37	3,37				3,45	4,58
3"	80	1,39	1,70				3,00	3,00	3,00		4,00	4,25	4,25				5,60	7,70
3 1/2"	90	2,24	2,15				4,15	4,09	4,09		4,90	6,52	6,52				-	-
4"	100	2,94	3,10				4,70	5,27	5,27		6,95	7,50	7,50				15,90	17,00
5"	125	5,30	5,50				8,50	8,22	8,22		10,20	12,10	12,10		18,10		23,00	26,20
6"	150	7,00	7,25				12,30	16,00	16,00		12,20	18,00	18,00		29,00		30,00	38,00
8"	200	12,60	14,00				18,80	28,00	28,00		25,30	34,00	34,00		52,00		52,00	51,00
10"	250	22,40	24,10		29,00	29,00	31,80	41,00	41,00	53,00	44,80	58,00	71,00	73,00	89,00		109,00	99
12"	300	33,80	35,50		43,00	62,00	55,70	63,00	67,00	103,00	75,20	85,00	103,00	126,00	149,00	160,00	171,00	150
14"	350	36,30	43,60		95,00	103,00	71,10	111,00	114,00	141,00		127,00	143,00	206,00	235,00	275,00	300,00	
16"	400	46,70	53,00	84,00	100,00	119,00	90,00	119,00	167,00	208,00		167,00	200,00	260,00	320,00	360,00	410,00	
18"	450	60,70	68,90	105,00	127,00	164,00	116,00	135,00	238,00	257,00		190,00	279,00	380,00	440,00	475,00	550,00	
20"	500	69,80	93,00	112,00	168,00	218,00	146,00	168,00	265,00	351,00		218,00	410,00	540,00	570,00	680,00	770,00	
22"	550			210,00	220	280,00		220,00		445,00		280,00	513,00	725,00	820,00	910,00	1020,00	
24"	600	121,00	140,00	151,00	227,00	373,00	207,00	227,00		595,00		350,00	675,00	910,00	1080,00	1160,00	1290,00	

N.B. Weights are of the smallest reduction.

* Nom. weights are for CARBON STEEL

WEIGHT OF FITTINGS

End Caps

END CAPS, BW FITTINGS

N.B. SIZE		APPROXIMATE WEIGTHS IN KG																
Inches	Metric	SCH 5S	SCH 10S	SCH 10	SCH 20	SCH 30	SCH 40S	STD. WALL	SCH 40	SCH 60	SCH 80S	XS	SCH 80	SCH 100	SCH 120	SCH 140	SCH 160	XXS
1/2" 3/4"	15 20	0,04 0,05	0,04 0,06				0,05 0,06	0,03 0,06	0,03 0,06		0,06 0,07	0,05 0,10	0,05 0,10					
1" 1 1/4" 1 1/2"	25 32 40	0,08 0,09 0,10	0,09 0,13 0,14				0,13 0,17 0,23	0,10 0,14 0,20	0,10 0,14 0,20		0,14 0,18 0,25	0,13 0,20 0,23	0,13 0,20 0,23				0,15 0,23 0,30	0,20 0,28 0,36
2" 2 1/2"	50 65	0,16 0,25	0,20 0,30				0,27 0,45	0,30 0,50	0,30 0,50		0,35 0,50	0,30 0,50	0,30 0,50				0,55 0,90	0,59 1,00
3" 3 1/2"	80 90	0,40 0,55	0,45 0,60				0,70 1,00	0,70 1,40	0,70 1,40		0,85 1,15	0,90 1,70	0,90 1,70				1,40 -	1,78 -
4"	100	0,60	0,65				1,20	1,60	1,60		1,60	2,00	2,00		2,31		2,75	3,17
5"	125	0,90	1,05				1,90	2,30	2,30		2,60	3,00	3,00		3,89		5,00	5,50
6"	150	1,25	1,40				3,20	3,60	3,60		4,50	4,00	4,00		6,02		7,50	8,10
8"	200	2,10	2,50		4,50	5,00	5,70	5,50	5,50	7,00	7,40	8,40	8,40	11,00	15,50	18,50	20,00	19,50
10"	250	4,30	4,90		7,00	7,63	9,20	10,00	10,00	13,60	12,40	13,60	16,20	21,00	24,00	27,00	30,00	29,3
12"	300	6,40	7,00		9,00	13,00	13,00	15,00	19,00	22,00	16,60	22,00	26,90	32,50	41,00	42,00	44,50	41
14"	350	7,80	8,50	14,00	15,50	17,00	16,50	17,00	23,00	32,00		27,00	34,70	42,00	47,00	52,00	60,00	
16"	400	13,50	14,50	18,00	20,00	23,00	22,00	23,00	30,00	37,00		30,00	43,50	54,00	64,00	73,00	79,00	
18"	450	17,20	18,00	22,00	25,00	30,30	27,00	29,00	39,00	66,00		32,00	72,50	75,00	88,00	93,00	104,00	
20"	500	25,00	27,50	31,00	36,00	49,00	34,00	36,00	66,70	94,50		49,00	98,50	100,00	105,00	153,00	170,00	
22"	550			35,50	42	59,00		42,00		107,00		51,00	120,00	135,00	150,00	198,00	220,00	
24"	600	34,00	35,00	40,00	52,00	74,50	45,00	52,00	93,00	120,00		60,00	150,00	180,00	200,00	250,00	285,00	

* Nom. weights are for CARBON STEEL

WEIGHT OF FITTINGS

Concentric Reducer

Eccentric Reducer

END CAPS, BW FITTINGS

N.B. SIZE		APPROXIMATE WEIGTHS IN KG																
Inches	Metric	SCH 5S	SCH 10S	SCH 10	SCH 20	SCH 30	SCH 40S	STD. WALL	SCH 40	SCH 60	SCH 80S	XS	SCH 80	SCH 100	SCH 120	SCH 140	SCH 160	XXS
1/2"	15	0,08	0,10				0,13	0,07	0,07		0,18	0,10	0,10				0,14	0,19
3/4"	20																	
1"	25	0,08	0,13				0,16	0,13	0,13		0,21	0,16	0,16				0,21	0,28
1 1/4"	32	0,10	0,18				0,22	0,17	0,17		0,27	0,23	0,23				0,29	0,39
1 1/2"	40	0,12	0,21				0,28	0,26	0,26		0,36	0,35	0,35				0,46	0,61
2"	50	0,19	0,31				0,45	0,41	0,41		0,59	0,57	0,57				0,84	1,03
2 1/2"	65	0,32	0,47				0,80	0,77	0,77		1,05	1,01	1,01				1,33	1,81
3"	80	0,41	0,59				1,10	1,00	1,00		1,49	1,36	1,36				1,89	2,47
3 1/2"	90	0,54	0,77				1,50	1,40	1,40		2,00	1,89	1,89				-	-
4"	100	0,63	0,90				1,80	1,60	1,60		2,40	2,27	2,27				3,41	4,18
5"	125	1,25	1,50				3,00	2,80	2,80		4,10	3,93	3,93		5,68		6,26	7,31
6"	150	1,60	2,00				4,30	3,90	3,90		6,20	5,95	5,95		7,58		9,40	11,08
8"	200	2,30	3,20				6,90	6,50	6,50		10,10	9,86	9,86		13,70		16,90	18,00
10"	250	4,20	5,20		7,50	9,00	11,50	10,70	10,70	14,50	15,60	14,50	17,00	20,40	23,60	27,40	30,60	29
12"	300	6,80	8,00		10,16	13,20	16,60	15,00	16,30	22,20	21,60	19,80	26,80	32,40	38,00	42,30	48,60	42
14"	350	12,50	15,30		22,60	26,80	30,50	26,90	31,10	42,00		35,50	42,00	64,00	73,00	78,00	86,00	
16"	400	16,50	18,80	28,00	27,90	33,10	37,60	33,00	43,80	57,00		44,00	72,20	83,00	97,00	112,00	121,00	
18"	450	19,80	22,50	34,00	33,30	48,00	44,90	40,00	59,00	79,00		53,00	96,70	116,00	136,00	145,00	159,00	
20"	500	30,00	33,00	50,00	58,00	79,00	67,00	59,00	93,00	126,00		79,00	158,00	163,00	178,00	305,00	340,00	
22"	550			57,00	61	92,00		65,00		150,00		87,00	188,00	201,00	233,00	415,00	460,00	
24"	600	43,00	49,00	63,00	72,00	107,00	79,00	72,00	129,00	180,00		95,00	228,00	241,00	295,00	540,00	610,00	

N.B. Weights are of the smallest reduction i.e. the heaviest

WEIGHT OF FLANGES

Flange Welding Neck ASME B16.5

150 LB PIPE FLANGES

N.B. SIZE		APPROXIMATE WEIGTHS IN KG					
Inches	Metric	Weld Neck	Blind	Slip-on	Lap Joint	Threaded	Socket Weld
1/2"	15	0,6	1,2	0,8	0,8	0,8	0,8
3/4"	20	0,8	1,3	0,9	0,9	0,9	0,9
1"	25	1,1	1,4	1,0	1,0	1,0	1,0
1 1/4"	32	1,4	1,8	1,3	1,3	1,3	1,3
1 1/2"	40	1,8	2,2	1,5	1,5	1,5	1,4
2"	50	2,7	2,8	2,3	2,3	2,3	2,3
2 1/2"	65	4,0	4,7	3,7	3,7	3,7	3,0
3"	80	4,5	5,5	4,2	4,2	4,2	3,5
3 1/2"	90	6,2	6,8	5,3	5,3	5,3	-
4"	100	7,0	8,0	5,9	5,9	5,9	
5"	125	8,6	9,0	7,0	7,0	7,0	
6"	150	10,8	12,0	8,5	8,5	8,5	
8"	200	18,0	20,0	13,5	13,5	13,5	
10"	250	24,0	32,0	19,5	19,5	19,5	
12"	300	37,0	40,0	29,0	29,0	29,0	
14"	350	47,0	59,0	39,0	45,0	39,0	
16"	400	58,0	77,0	47,0	58,0	47,0	
18"	450	64,0	95,0	54,0	66,0	54,0	
20"	500	77,0	123,0	70,0	84,0	70,0	
24"	600	118,0	186,0	95,0	118,0	95,0	

* Nom. weights are for CARBON STEEL

300 LB PIPE FLANGES

N.B. SIZE		APPROXIMATE WEIGTHS IN KG					
Inches	Metric	Weld Neck	Blind	Slip-on	Lap Joint	Threaded	Socket Weld
1/2"	15	1,5	1,5	1,2	1,2	1,2	1,2
3/4"	20	1,8	1,6	1,3	1,3	1,3	1,3
1"	25	2,0	2,0	1,4	1,4	1,4	1,4
1 1/4"	32	2,5	2,5	1,8	1,8	1,9	1,8
1 1/2"	40	3,5	3,0	2,5	2,5	2,8	2,5
2"	50	4,0	3,5	3,0	3,0	3,3	3,0
2 1/2"	65	5,0	5,5	4,5	4,5	4,6	4,5
3"	80	7,0	7,0	6,0	6,0	6,3	6,0
3 1/2"	90	9,2	9,0	7,5	7,5	7,8	-
4"	100	11,0	12,0	10,1	10,1	10,2	
5"	125	14,0	15,8	12,5	12,5	12,9	
6"	150	19,0	23,0	17,5	17,5	18,0	
8"	200	30,0	37,0	26,0	26,0	26,0	
10"	250	41,0	58,0	38,0	41,0	38,0	
12"	300	62,0	83,0	52,0	63,0	52,0	
14"	350	84,0	107,0	74,0	86,0	74,0	
16"	400	111,0	139,0	100,0	109,0	100,0	
18"	450	138,0	177,0	127,0	138,0	127,0	
20"	500	171,0	223,0	147,0	170,0	147,0	
24"	600	247,0	342,0	208,0	241,0	213,0	

* Nom. weights are for CARBON STEEL

WEIGHT OF FLANGES

Flange Welding Neck ASME B16.5

400 LB PIPE FLANGES

N.B. SIZE		APPROXIMATE WEIGTHS IN KG				
Inches	Metric	Weld Neck	Blind	Slip-on	Lap Joint	Threaded
4"	100	16,0	15,0	13,0	13,0	15,0
5"	125	19,0	21,0	18,5	18,5	20,0
6"	150	26,0	28,0	25,0	25,0	28,0
8"	200	40,0	43,0	34,0	34,0	37,0
10"	250	57,0	65,0	54,0	51,0	60,0
12"	300	80,0	95,0	70,0	69,0	76,0
14"	350	105,0	126,0	85,0	95,0	93,0
16"	400	131,0	163,0	120,0	127,0	132,0
18"	450	159,0	206,0	150,0	157,0	165,0
20"	500	190,0	256,0	185,0	191,0	205,0
24"	600	275,0	387,0	260,0	279,0	285,0

* Nom. weights are for CARBON STEEL

600 LB PIPE FLANGES

N.B. SIZE		APPROXIMATE WEIGTHS IN KG					
Inches	Metric	Weld Neck	Blind	Slip-on	Lap Joint	Threaded	Socket Weld
1/2" 3/4"	15 20	1,5 2,0	0,7 1,2	1,3 1,4	1,3 1,4	1,4 1,6	1,3 1,4
1" 1 1/4" 1 1/2"	25 32 40	2,5 3,2 4,5	1,5 2,0 3,2	1,8 2,1 3,1	1,8 2,1 3,1	2,1 2,6 3,3	1,8 2,6 3,1
2" 2 1/2"	50 65	5,5 8,0	4,3 6,0	4,0 5,4	4,0 5,4	4,4 6,0	4,0 5,5
3" 3 1/2"	80 90	10,5 15,6	8,0 10,5	7,0 8,9	7,0 8,9	7,4 9,5	7,0 -
4"	100	19,0	18,0	16,0	16,0	17,0	
5"	125	31,0	28,5	25,0	25,0	27,0	
6"	150	37,0	35,5	30,0	30,0	32,0	
8"	200	53,0	58,0	43,0	43,0	46,0	
10"	250	86,0	98,0	70,0	89,0	74,0	
12"	300	102,0	125,0	86,0	109,0	90,0	
14"	350	150,0	151,0	100,0	132,0	108,0	
16"	400	190,0	215,0	142,0	182,0	150,0	
18"	450	240,0	287,0	175,0	213,0	188,0	
20"	500	295,0	366,0	221,0	274,0	230,0	
24"	600	365,0	532,0	315,0	393,0	325,0	

* Nom. weights are for CARBON STEEL

WEIGHT OF FLANGES

Flange Welding Neck ASME B16.5

900 LB PIPE FLANGES

N.B. SIZE		APPROXIMATE WEIGTHS IN KG				
Inches	Metric	Weld Neck	Blind	Slip-on	Lap Joint	Threaded
3"	80	14,5	14,5	11,6	11,6	11,9
4"	100	23,0	24,0	19,8	19,8	20,0
5"	125	37,0	39,0	32,0	32,0	33,0
6"	150	50,0	51,0	41,0	41,2	42,0
8"	200	85,0	89,0	71,0	85,0	72,0
10"	250	118,0	130,0	100,0	126,0	101,0
12"	300	163,0	175,0	133,0	168,0	134,0
14"	350	186,0	206,0	152,0	180,0	154,0
16"	400	224,0	259,0	184,0	222,0	186,0
18"	450	300,0	367,0	258,0	304,0	260,0
20"	500	373,0	463,0	317,0	394,0	320,0
24"	600	680,0	875,0	608,0	753,0	611,0

1500 LB PIPE FLANGES

N.B. SIZE		APPROXIMATE WEIGTHS IN KG					
Inches	Metric	Weld Neck	Blind	Slip-on	Lap Joint	Threaded	Socket Weld
1/2" 3/4"	15 20	2,0 3,0	1,8 2,4	1,8 2,4	1,7 2,3	1,8 2,4	1,7 2,3
1" 1 1/4" 1 1/2"	25 32 40	4,0 4,6 6,5	4,0 5,8 6,5	3,5 4,0 5,5	3,4 3,9 5,4	3,5 4,0 5,5	3,4 3,9 5,4
2" 2 1/2"	50 65	11,5 15,8	11,5 15,5	10,0 13,9	11,3 15,9	10,0 13,9	9,8 13,7
3"	80	22,00	22,00	-	21,30	-	-
4"	100	30,0	33,0	-	34,0	-	-
5"	125	58,0	60,0	-	63,0	-	-
6"	150	70,0	72,0	-	77,0	-	-
8"	200	119,0	122,0	-	129,0	-	-
10"	250	204,0	210,0	-	219,0	-	-
12"	300	303,0	315,0	-	285,0	-	-
14"	350	426,0	460,0	-	360,0	-	-
16"	400	567,0	610,0	-	460,0	-	-
18"	450	737,0	835,0	-	621,0	-	-
20"	500	930,0	1062,0	-	772,0	-	-
24"	600	1510,0	1712,0	-	1236,0	-	-

* Nom. weights are for CARBON STEEL

WEIGHT OF FLANGES

Flange Welding Neck ASME B16.5

2500 LB PIPE FLANGES

N.B. SIZE		APPROXIMATE WEIGTHS IN KG				
Inches	Metric	Weld Neck	Blind	Slip-on	Lap Joint	Threaded
1/2"	15	3,6	3,3	-	3,0	3,0
3/4"	20	4,0	3,9		4,0	4,0
1"	25	6,0	5,0	-	5,0	5,0
1 1/4"	32	9,0	8,1		8,0	8,0
1 1/2"	40	13,0	11,5		11,0	11,0
2"	50	19,0	17,6	-	17,0	17,0
2 1/2"	65	24,0	26,0		24,0	25,0
3"	80	43,00	39,00	-	36,00	-
4"	100	66,0	60,0	-	55,0	-
5"	125	111,0	100,0	-	93,0	-
6"	150	172,0	140,0	-	142,0	-
8"	200	261,0	236,0	-	214,0	-
10"	250	485,0	450,0	-	407,0	-
12"	300	730,0	650,0	-	573,0	-

WEIGHT OF STUB ENDS

Stub End

STUB ENDS, BW FITTINGS (MSS SP-43)

N.B. SIZE		APPROXIMATE WEIGHTS IN KG			
Inches	Metric	Sch 5S	Sch. 10S	Sch. 40S	Sch. 80s
1/2"	15	0,03	0,04	0,09	0,12
3/4"	20	0,04	0,06	0,12	0,16
1"	25	0,06	0,08	0,15	0,22
1 1/4"	32	0,08	0,10	0,20	0,31
1 1/2"	40	0,11	0,14	0,28	0,39
2"	50	0,17	0,20	0,41	0,69
2 1/2"	65	0,25	0,33	0,66	1,05
3"	80	0,35	0,44	0,89	1,46
3 1/4"	90	0,50	0,63	1,26	1,54
4"	100	0,61	0,76	1,52	2,49
5"	125	1,06	1,33	2,66	3,55
6"	150	1,20	1,51	3,02	5,49
8"	200	2,09	2,61	5,22	9,97
10"	250	3,63	4,54	9,08	13,75
12"	300	5,33	6,67	13,25	19,64
14"	350	5,81	7,26	14,53	29,00
16"	400	6,54	8,17	16,34	37,50
18"	450	7,72	9,65	19,30	49,25
20"	500	8,54	10,67	21,34	60,00
22"	550	9,80	11,60	23,00	77,50
24"	600	10,26	12,83	25,65	88,25

* Nom. weights are for CARBON STEEL

WEIGHT OF STUB ENDS

Stub End

STUB ENDS, BW FITTINGS (ASME B16.9)

N.B. SIZE		APPROXIMATE WEIGHTS IN KG												
Inches	Metric	SCH 10	SCH 20	SCH 30	STD.	SCH 40	SCH 60	XS	SCH 80	SCH 100	SCH 120	SCH 140	SCH 160	XXS
1/2"	15				0,13			0,14						0,30
3/4"	20				0,18			0,20						0,35
1"	25				0,29			0,38					0,50	0,66
1 1/4"	32				0,41			0,54					0,67	0,95
1 1/2"	40				0,54			0,67					0,90	1,20
2"	50				0,98			1,34					2,01	2,46
2 1/2"	65				1,54			2,05					2,69	3,71
3"	80				2,10			2,80					3,93	5,18
3 1/4"	90				2,47			2,94						6,25
4"	100				2,99			4,17			5,27		6,29	7,68
5"	125				5,22			7,41			9,60		11,79	13,84
6"	150				6,79			10,27			13,04		16,25	19,20
8"	200		7,99	8,84	10,28		12,81	15,63		18,21	21,83	24,55	26,79	26,16
10"	250		12,10	14,87	17,86		23,80	23,94	28,13	33,57	38,98	45,54	50,45	
12"	300		14,64	19,29	21,88	23,21	32,23	29,38	38,84	47,32	55,80	62,05	71,43	
14"	350	18,00	15,80	28,57	28,57	32,59	44,20	39,73	54,92					
16"	400	19,75	16,65	32,14	32,14	43,30	56,70	42,86	71,88					
18"	450	24,25	21,30	44,20	38,00	56,25	74,20	50,00	91,52					
20"	500	36,00	31,70	55,80	41,96	65,63	88,40	55,81	112,10					
22"	550	42,95	37	65,00	46,88	78,00	109,00	62,07	142,00					
24"	600	50,05	45,55	75,90	50,45	91,52	128,60	67,41	160,00					

* Nom. weights are for CARBON STEEL

WEIGHT OF FORGED FITTINGS

Threaded Fitting Elbow 90⁰

Threaded Fitting Equal Tee

THREADED FITTINGS - B16.11/BS3799

PRODUCT	RATING	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	2000 lbs	0,08	0,08	0,11	0,23	0,28	0,46	0,80	1,00	1,60	2,30	4,35	10,25
	3000 lbs	0,14	0,14	0,27	0,37	0,60	1,08	1,22	2,45	2,50	5,25	7,40	13,00
90 ° Elbows	6000 lbs	0,31	0,31	0,50	0,69	1,25	1,65	2,75	3,22	6,25	10,00	17,00	18,00
	2000 lbs	0,10	0,10	0,11	0,21	0,24	0,39	0,70	0,85	1,23	3,00	3,50	9,00
	3000 lbs	0,13	0,13	0,25	0,36	0,53	0,78	1,02	1,70	2,35	5,40	6,00	10,50
45 ° Elbows	6000 lbs	0,25	0,25	0,35	0,60	0,95	1,22	1,35	2,55	5,60	8,00	15,50	13,00
	2000 lbs	0,12	0,12	0,18	0,29	0,39	0,55	0,93	1,30	1,80	3,00	5,50	14,00
	3000 lbs	0,21	0,21	0,31	0,49	0,80	1,31	1,61	3,20	3,55	6,50	9,25	17,00
Tees	6000 lbs	0,41	0,41	0,60	0,94	1,59	2,14	3,39	4,50	10,00	13,00	19,50	18,00
	2000 lbs	0,14	0,14	0,19	0,34	0,42	0,75	1,15	1,45	2,25	4,50	7,15	15,00
	3000 lbs	0,22	0,22	0,40	0,63	0,99	1,63	1,97	3,70	4,90	10,50	11,50	21,70
Crosses	6000 lbs	0,45	0,45	0,70	1,16	1,80	2,50	4,10	5,20	12,30	14,00	25,00	23,00
	3000 lbs	0,05	0,05	0,06	0,14	0,20	0,39	0,73	1,03	1,35	2,30	3,15	5,80
Couplings	6000 lbs	0,10	0,10	0,12	0,37	0,45	1,00	1,65	1,85	2,80	4,00	5,50	10,00
	3000 lbs	0,02	0,03	0,03	0,07	0,11	0,20	0,37	0,51	0,666	1,15	1,57	2,90
Half Couplings	6000 lbs	0,04	0,05	0,06	0,19	0,23	0,50	0,83	0,92	1,40	2,00	2,75	5,00
	3000 lbs	0,04	0,05	0,06	0,13	0,21	0,37	0,60	0,73	1,10	2,31	3,00	4,50
Caps	6000 lbs	-	0,16	0,20	0,29	0,40	0,70	1,10	1,35	2,10	3,50	4,80	7,50
Street Elbows	3000 lbs	-	0,13	0,23	0,33	0,53	0,94	1,30	1,47	2,30	-	-	-
Welding boss		0,20	0,23	0,29	0,38	0,53	0,83	1,31	1,86	-	-	-	-
	3000 (XS)	0,07	0,08	0,11	0,16	0,22	0,31	0,44	0,53	0,74	1,12	1,46	2,15
Pipe Nipple - 100mm	6000 (XXS)	-	-	-	0,25	0,36	0,54	0,77	0,95	1,31	2,00	2,65	4,00
Plug - Square head		0,01	0,02	0,03	0,05	0,09	0,17	0,27	0,40	0,60	0,89	1,25	3,10
Plug - Round head		0,04	0,05	0,07	0,13	0,22	0,32	0,50	0,72	1,35	2,20	3,30	6,00
Plug - Hex.head		0,02	0,03	0,05	0,07	0,13	0,22	0,41	0,49	0,77	1,16	1,94	4,50
	3000 lbs	0,14	0,17	0,21	0,31	0,49	0,83	1,22	1,53	2,30	5,00	6,25	-
Unions FF	6000 lbs	0,20	0,30	0,50	1,12	1,60	2,15	2,42	4,73	6,50	9,50	19,20	-
Unions MF	3000 lbs	0,16	0,21	0,27	0,46	0,61	0,99	1,55	1,9	2,9	-	-	-
Hex Head bushing		-	0,02	0,03	0,06	0,10	0,17	0,33	0,42	0,62	1,27	1,65	3,10
Hex Nipples		0,02	0,03	0,06	0,08	0,15	0,24	0,37	0,45	-	-	-	-
Swage nipples		0,04	0,05	0,09	0,14	0,17	0,32	0,49	0,60	0,93	-	-	-
plain		0,11	0,13	0,18	0,23	0,29	0,55	0,80	1,10	1,40	-	-	-
Screwed		0,17	0,22	0,29	0,33	0,50	0,75	0,95	1,60	2,10	-	-	-

* Nom. weights are for CARBON STEEL

NOTE: All weights are given in kilograms (kg) and are approximate weights for steel
Titanium weights can be calculated as 57% of table values.

WEIGHT OF SOCKET WELD FITTINGS

Socket Weld Fitting Elbow 90⁰

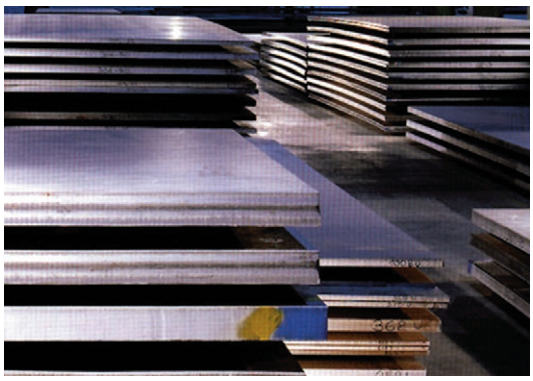
Socket Weld Fitting - Equal Tee

SOCKET WELD FITTINGS - B16.11/BS3799

PRODUCT	RATING	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	3000 lbs	0,08	0,08	0,12	0,24	0,29	0,48	0,75	0,95	1,65	2,50	4,30	9,70
90⁰ Elbows	6000 lbs	0,15	0,17	0,30	0,43	0,66	1,14	1,60	2,70	2,95	-	-	-
	3000 lbs	0,08	0,08	0,10	0,19	0,25	0,38	0,58	0,83	1,15	2,05	3,40	9,00
45⁰ Elbows	6000 lbs	0,12	0,12	0,24	0,30	0,53	0,86	1,07	1,90	2,35	-	-	-
	3000 lbs	0,12	0,12	0,19	0,31	0,40	0,58	0,91	1,25	2,10	3,15	5,25	13,50
Tees	6000 lbs	0,21	0,21	0,40	0,56	0,91	1,41	1,75	3,56	4,10	-	-	-
	3000 lbs	0,14	0,14	0,21	0,34	0,47	0,80	1,25	1,50	2,23	3,95	6,50	16,00
Crosses	6000 lbs	0,26	0,26	0,50	0,67	1,06	1,79	2,15	4,45	5,40	-	-	-
Unions	3000 lbs	0,14	0,18	0,23	0,39	0,52	0,73	1,20	1,56	2,30	5,00	7,15	-
	3000 lbs	0,05	0,05	0,07	0,11	0,15	0,26	0,37	0,42	0,77	1,10	1,40	2,35
Couplings	6000 lbs	0,07	0,07	0,10	0,15	0,34	0,37	0,49	0,68	1,24	-	-	-
	3000 lbs	0,03	0,04	0,06	0,14	0,18	0,30	0,51	0,65	0,92	1,40	2,50	3,50
Caps	6000 lbs	0,08	0,08	0,14	0,18	0,21	0,46	0,70	0,89	1,20	-	-	-
Welding Boss		0,20	0,23	0,29	0,38	0,53	0,83	1,31	1,86	-	-	-	-

* Nom. weights are for CARBON STEEL

WEIGHT OF PLATES



Steel plates

PLATE - METRIC

THICKNESS	WEIGHTS IN KG						
	Wt per sq.mtr	Wt pr. sp ft	2000 x 1000mm	2500 x 1250mm	3000 x 1500mm	4000 x 2000mm	6000 x 2000mm
5mm	40,925	3,802	82	128	184	327	491
6mm	49,111	4,563	98	153	221	393	589
8mm	65,483	6,084	131	205	295	524	786
10mm	81,845	7,604	164	256	368	655	982
12mm	98,222	9,125	196	307	442	786	1179
15mm	122,778	11,406	246	384	553	982	1473
20mm	163,689	15,207	327	512	737	1310	1964
25mm	204,622	19,01	409	639	921	1637	2456
30mm	245,556	22,813	491	767	1105	1964	2947
40mm	327,378	30,414	655	1023	1473	2619	3929
50mm	409,244	38,02	819	1279	1842	3274	4911

* Nom. weights are for CARBON STEEL

WEIGHT OF BAR

Steel bars

ROUND BAR - METRIC

SIZE	WEIGHTS IN KG	
mm	Wt pr. Mtr	Wt per Ft
0,5	0,0015	0,0004
1,0	0,0062	0,0018
1,5	0,014	0,0042
2	0,025	0,0076
2,5	0,039	0,012
3	0,055	0,017
3,5	0,076	0,023
4	0,099	0,03
4,5	0,125	0,038
5	0,154	0,047
5,5	0,187	0,057
6	0,222	0,068
6,5	0,26	0,079
7	0,302	0,092
7,5	0,347	0,106
8	0,395	0,12
8,5	0,445	0,136
9	0,499	0,152
9,5	0,556	0,169
10	0,617	0,188
11	0,746	0,227
12	0,888	0,271
13	1,04	0,317
14	1,21	0,369
15	1,39	0,424
16	1,58	0,482
17	1,78	0,543
18	2	0,61
19	2,23	0,68
20	2,47	0,753
21	2,72	0,829
22	2,98	0,908
23	3,26	0,994
24	3,55	1,08
25	3,85	1,17
26	4,17	1,27
27	4,5	1,37
28	4,83	1,47
30	5,55	1,69
32	6,31	1,92
33	6,71	2,05
35	7,55	2,3
36	7,99	2,44

SIZE	WEIGHTS IN KG	
mm	Wt pr. Mtr	Wt per Ft
38	8,9	2,71
39	9,38	2,86
40	9,86	3,01
42	10,88	3,32
45	12,48	3,8
48	14,21	4,33
50	15,41	4,7
52	16,67	5,08
55	18,65	5,69
56	19,33	5,89
58	20,74	6,32
60	22,2	6,77
62	23,7	7,22
64	25,25	7,7
65	26,05	7,94
68	28,51	8,69
70	30,21	9,21
72	31,96	9,74
75	34,68	10,57
80	39,46	12,03
90	49,94	15,22
100	61,65	18,79
110	74,6	22,74
120	88,8	27,07
130	104	31,7
140	121	36,88
150	139	42,37
160	158	48,16
170	178	54,26
180	200	60,96
190	223	67,97
200	247	75,3
220	298	90,8
240	355	108

SIZE	WEIGHTS IN KG	
mm	Wt pr. Mtr	Wt per Ft
250	385	117
260	417	127
280	483	147
300	555	169
320	631	192
340	713	217
350	755	230
360	799	244
380	890	271
400	986	301
500	1540	469

* Nom. weights are for CARBON STEEL

NORSOK STANDARD M-630 - TABLE 1 - MATERIAL SELECTION MENU FOR PIPING SYSTEM

PRODUCT	CARBON STEEL TYPE 235[1]	CARBON STEEL TYPE 235 LT IMPACT TESTED	CARBON STEEL TYPE 360LT IMPACT TESTED	STAINLEES STEEL TYPE 316	STAINLESS STEEL TYPE 22CR DUPLEX	STAINLEES STEEL TYPE 25CR DUPLEX	STAINLEES STEEL TYPE 6MO[2]	CU/NI 90/10 AND OTHER COPPER ALLOYS	NICKEL ALLOY	TITANIUM GRADE 2[3]	HIGH STRENGTH LOW ALLOYED STEEL
PIPES SEAMLESS	ISO 3183:07 A106 Grade B	ISO 3183:07 A333 Grade 6	API 5L Grade X52	A312 Grade TP316	A790 UNS S31803 UNS S32205	A790 UNS S32550 UNS S32750 UNS S32760	A312 UNS S31354 UNS N08367 UNS N08926	B466 UNS C70600	B444 UNS N06625	B861 Grade 2	A519 AISI 4130
PIPES WELDED	API 5L Grade B ASTM A672 CC60, CC70 Class 12, 22	A671 Grade CC60, CC70 Class 12/22	A671 Grade C70 Class 12/22	A312 Grade TP316 A358 Grade 316 Class 1/3/4	A928 UNSS31803 UNS S32205 Class 1/3/5	A928 UNS S32550 UNS S32750 UNS S32760 Class 1/3/5	A358 UNS S31354 UNS N08367 UNS N08926 Class S/W/W/WX	B467 UNS C70600	B705 UNS N06625	B862 Grade 2	
FITTINGS	A234 Grade WPB	A420 Grade WPL 6	A860 Grade WPHY 52	A403 Grade WP 316 Class S/W/WX	A815 UNS S31803 UNS S 32205 Class S/W/WX	A815 UNS S32550 UNS S32750 UNS S32760 CLASS S/W/WX	A403 WP S31254, UNS N08367, UNS N08926 CLASS S/W/WX	UNS C70600	B366 UNS N06625	B363 Grade WPT2 or WPT2W	A234 AISI 4130
FORGINGS	A105	A350 Grade LF2	A694 Grade F52	A182 Grade F316	A182 Grade F51 Grade F60	A182 F53/F55/F61	A182 GRADE F44 UNS N08367 UNS N08926	UNS C70600	B564 UNS N06625	B381 Grade F2	ASTM A 788 AISI 4140 API 6A 60K (AISI 4130) A182 F22
PLATE	A516 Grade 60/70	A516 Grade 60/70	A516 Grade 70	A240 Grade 316	A240 UNS S31803 UNS S32205	A240 UNS S31254, UNS N08367, UNS N08926	A 240 UNS S31254 UNS N08367 UNS N08926	B171 UNS C70600	B443 UNS N06625	B256 Grade 2	
CASTINGS	A216 Grade WCB	A352 Grade LCC	A352 Grade LCC	A351 Grade CF8M or CF3M	A995 UNS Grade 4 (J92205)	A995 A5 (UNS J93404) A6 (UNS J93380)	A 351 CK-3MCuN, CN-3MN	B148 UNS C95800	A494 Grade CW-6MC and CX2MW	B367 Grade C2	ASTM A 487 Gr 2B/2C
BARS				A479 UNS S31600	A479 UNS S31803 UNS S32205	A479 UNS S32550 UNS S32750 UNS S32760	A479 UNS S31254 UNS N08367 UNS N08926		B446 UNS N06625	B348 Grade 2	
TUBES				A269 Grade 316	A789 UNS S31803 UNS S32205	A798 UNS S32550 UNS S32750 UNS S32760	A269 UNS S31254 UNS N08367 UNS N08926		B444 UNS N06625	B338 Grade 2	

Note 1) Type 235 should be used in piping systems with minimum designs temperature above or equal to -15° C and thickness less than 16mm.
Note 2) The grades UNS N08367 and N08926 are considered equivalent to UNS S31254. The grade CN-3MN is considered equivalent to CK-3MCuN.
Note 3) GOST VT-1-0 is considered equivalent to Grade 2.

COLLECTION OF MATERIAL DATA SHEETS

NORSOK standard Collection of Material Data Sheets and Element Data Sheets M-630:2020
Annex A. Material Data Sheets (MDS)

INDEX

MDS NO.	REV. NO.	STANDARD AND GRADE[1)]	PRODUCTS
CARBON STEEL TYPE 235			
C31/C3IS	1	A 106-06 Grade B	Seamless pipes
C32/C32S	1	API 5L Grade B A 672 Grade CC60, CC65, CC70	Welded pipes
C33/C33S/C33SH	1	A 234 Grade WPB, WPBW	Wrought fittings
C34S	1	A 105	Forgings
C35/C35S/C35SH	1	A 516 Grade 60, 65, 70	Plates
C36/C36S	1	A 216 Grade WCB	Castings
C37S	1	A 696 Grade B, C / A105	Bars
CARBON STEEL TYPE 235LT			
C41/C41S	1	A 333 Grade 6	Seamless pipes
C42/C42S	1	A 671 Grade CC60, CC65, CC70	Welded pipes
C43/C43S/C43SH	1	A 420 Grade WPL 6	Wrought fittings
C44/C44S	1	A 350 Grade LF 2	Forgings
C45/C45S/C45SH	1	A 516 Grade 60, 65, 70	Plates
C46/C46S	1	A 352 Grade LCC	Castings
C47S	1	A 696 Grade B or and C A 350 Grade LF2	Bars
CARBON STEEL TYPE 360LT			
C51S	1	API 5L Grade X52	Seamless pipes
C53/C53S/C53SH	1	A 860 WPHY 52	Wrought fittings
C54S	1	A 694 Grade F52	Forgings
FERRITIC/AUSTENITIC STAINLESS STEEL TYPE 22CR DUPLEX			
D41	6	A 790 UNS S31803, UNS S32205	Seamless pipes
D42	6	A 928 UNS S31803, UNS S32205	Welded pipes
D43	6	A 815 UNS S31803, UNS S32205	Wrought fittings
D44	6	A 182 Grade F51, F61	Forgings
D45	6	A 240 UNS S31803, UNS S32205	Plates
D46	6	A 995 Grade 4A (UNS J92205)	Castings
D47	6	A 276/479 UNS S31803, UNS S32205	Bars
D48	6	A 789 UNS S31803, UNS S32205	Tubes
D49	1	A 988 UNS S31803, UNS S32205	HIP Parts
FERRITIC/AUSTENITIC STAINLESS STEEL TYPE 25CR DUPLEX			
D51	6	A 790 UNS S32550, S32750 and S32760	Seamless pipes
D52	6	A 928 UNS S32550, S32750 and S32760	Welded pipes
D53	6	A 815 UNS S32550, S32750 and S32760	Wrought fittings
D54	6	A 182 Grade F53 (UNS S32750) A 182 Grade F55 (UNS S32760)	Forgings
D55	6	A 240 UNS S32750 and S32760	Plates
D56	6	A 995 Grade 6A (UNS J93380), Grade 5A (UNS J93404)	Castings
D57	6	A 276 UNS S32750 and S32760	Bars
D58	6	A 789 UNS S32750 and S32760	Tubes
D59/D59L	3	A 1082 UNS S32750 and S32760. Strain H.	Studs, bolts and nuts
D60/D60L	3	A 1082 UNS S32750 and S32761. SA	Studs, bolts and nuts

COLLECTION OF MATERIAL DATA SHEETS

MDS NO.	REV. NO.	STANDARD AND GRADE[1]	PRODUCTS
COPPER/NICKEL 90/10			
K11	1	EEMUA 234 grade 7060X	Seamless pipes and tubes
K12	1	EEMUA 234 grade 7060X	Welded pipes
K13	1	EEMUA 234 grade 7060X	Fittings
K14	1	EEMUA 234 grade 7060X	Flanges
K15	1	B 171 UNS C70600	Plates
K16	1	B 148 UNS C95800	Castings
K17	1	B 151 UNS C70600	Rod and bar
NICKEL ALLOY TYPE 625			
N10	1	F 468/467 UNS N06625	Studs, bolts and nuts
N11	1	B 444 UNS N06625	Seamless pipes and tubes
N12	1	B 705 UNS N06625	Welded Pipes
N13	1	B 366 UNS N06625	Wrought fittings
N14	1	B 564 UNS N06625	Forgings
N15	1	B 443 UNS N06625	Plates
N16	1	A 494/A957 Grade CW-6MC, CXZMW	Castings
N17	1	B 446 UNS N06625	Bars
N19	1	B 834 UNS N06625	HIP Parts
N1A	1	F 3056 UNS N06625	Additive manufacturing
N20	1	API 6ACRA UNS N07718, 120K	Studs, bolts and nuts
N2A	1	F 3055 UNS N07718	Additive manufacturing
AUSTENITIC STAINLESS STEEL TYPE 6MO			
R11	6	A 312 UNS S31254, UNS N08367, N08926	Seamless pipes
R12	6	A 358 UNS S31254, UNS N08367, N08926	Welded pipes
R13	6	A 403 UNS S31254, N08367, N08926	Wrought fittings
R14	6	A 182 Grade F44, UNS N08367, N08926	Forgings
R15	6	A 240 UNS S31254, N08367, N08926	Plates
R16/R16S	6	A 351 Grade CK-3MCuN, CN-3MN	Castings
R17	6	A 276 / A479 UNS S31254, N08367, N08926	Bars
R18	6	A 269 UNS S 31254, N08367, N08926	Tubes
R19	1	A 988 UNS S31254, N08367	HIP Parts
AUSTENITIC STAINLESS STEEL TYPE 565			
R21	3	A 312 UNS S34565	Seamless pipes
R22	3	A 358 UNS S34565	Welded pipes
R23	3	A 403 UNS S34565	Wrought fittings
R24	3	A 182 Grade F49	Forgings
R25	3	A 240 UNS S34565	Plates
R27	3	A 276/A479 UNS S34565	Bars
R29	1	A 988 UNS S34565	HIP Parts
AUSTENITIC STAINLESS STEEL TYPE 316			
S11	1	A 312 Grade TP316	Seamless pipes
S12	1	A 358 Grade 316	Welded pipes
S13	1	A 403 Grade WP316	Wrought fittings
S14	1	A 182 Grade F 316	Forgings
S15	1	A 240 Grade 316	Plates
S16	1	A 351 Grade CF3M, CF8M	Castings
S17	1	A 276/A479 Grade 316	Bars
S18	1	A 269 Grade TP316	Tubes
S1A	1	F 3184 UNS 531603	Additive manufacturing
S39	1	A 453 Grade 660	Bolting

COLLECTION OF MATERIAL DATA SHEETS

MDS NO.	REV. NO.	STANDARD AND GRADE[1)]	PRODUCTS
TITANIUM GRADE 2			
T21	1	B 861 Grade 2	Seamless pipes
T22	1	B 862 Grade 2	Welded pipes
T23	1	B 363 Grade WPT2/WPT2W	Wrought fittings
T24	1	B 381 Grade F2	Forgings
T25	1	B 265 Grade 2	Plates
T26	1	B 367 Grade 2	Castings
T27	1	B 348 Grade 2	Bars
T28	1	B 338 Grade 2	Castings
T2A	1	F 3302 UNS R50550, UNS R56400, UNS R56401	Additive manufacturing
HIGH STRENGTH LOW ALLOY STEEL			
X11S	1	A 519 AISI 4130	Seamless pipes
X13S	1	A 234 AISI 4130	Wrought fittings
X14S	1	API 6A A151 4130 60K	Forgings
X16/X16S	1	A 487 Grade 2B, 2C	Castings
X20	1	A 320 Grade L7, L43, L7M A 194 Grade 7 and 7M	Studs, bolts and nuts
X24S	1	A 788 Grade AISI 4140	Forgings
X29	1	A 193 Grade B7, B7M A 194 Grade 2H, and ZHM	Studs, bolts and nuts
X34S	1	A 182 Grade F22; SMYS 415/450/485	Forgings
HSLA STEEL TYPE 415, 450 AND 485			
CH61S	1	API 5L Grade X60, X65 and X70	Seamless pipes
CH63/CH63S/CH635H	1	A 860 WPHY 60, WPHY 65, WPHY 70	Wrought fittings
CH64S	1	A 694 Grade F60, F65, F70	Forgings

Note 1: The current year of issue of standards referenced is shown for guidance only. The latest year of issue shall be used unless otherwise specifically agreed.

For NORSOK Materials Data Sheet details see:

https://www.standard.no/fagomrader/energi-og-klima/petroleum/norsok-standards/#.YqmQjnY8ybg

For Equinor Materials Data Sheet details see:

TR2000

https://tr2000.equinor.com/TR2000/index.jsp

DIMENSIONS OF SEAMLESS AND WELDED PIPE - ASME-B36.10 and B36.19

DN	PIPE SIZE "	OD [mm]	SCH 5S	SCH 10S	SCH 10	SCH 20	SCH 30	SCH 40S STD	SCH 40	SCH 60	SCH 80S XS	SCH 80	SCH 100	SCH 120	SCH 140	SCH 160	XXS
3	1/8"	10.29	-	1.24	-	-	-	1.73	1.73	-	2.41	2.41	-	-	-	-	-
6	1/4"	13.72	-	1.65	-	-	-	2.24	2.24	-	3.02	3.02	-	-	-	-	-
10	3/8"	17.15	-	1.65	-	-	-	2.31	2.31	-	3.20	3.20	-	-	-	-	-
15	1/2"	21.34	1.65	2.11	-	-	-	2.77	2.77	-	3.73	3.73	-	-	-	4.78	7.47
20	3/4"	26.67	1.65	2.11	-	-	-	2.87	2.87	-	3.91	3.91	-	-	-	5.56	7.82
25	1"	33.40	1.65	2.77	-	-	-	3.38	3.38	-	4.55	4.55	-	-	-	6.35	9.09
32	1 1/4"	42.16	1.65	2.77	-	-	-	3.56	3.56	-	4.85	4.85	-	-	-	6.35	9.70
40	1 1/2"	48.26	1.65	2.77	-	-	-	3.68	3.68	-	5.08	5.08	-	-	-	7.14	10.15
50	2"	60.33	1.65	2.77	-	-	-	3.91	3.91	-	5.54	5.54	-	-	-	8.74	11.07
65	2 1/2"	73.03	2.11	3.05	-	-	-	5.16	5.16	-	7.01	7.01	-	-	-	9.53	14.02
80	3"	88.90	2.11	3.05	-	-	-	5.49	5.49	-	7.62	7.62	-	-	-	11.13	15.24
90	3 1/2"	101.60	2.11	3.05	-	-	-	5.74	5.74	-	8.08	8.08	-	-	-	-	16.15
100	4"	114.30	2.11	3.05	-	-	-	6.02	6.02	-	8.56	8.56	-	11.13	-	13.49	17.12
125	5"	141.30	2.77	3.40	-	-	-	6.55	6.55	-	9.53	9.53	-	12.70	-	15.88	19.05
150	6"	168.28	2.77	3.40	-	-	-	7.11	7.11	-	10.97	10.97	-	14.27	-	18.26	21.95
200	8"	219.08	2.77	3.76	-	6.35	7.04	8.18	8.18	10.31	12.70	12.70	15.09	18.26	20.62	23.01	22.23
250	10"	273.05	3.40	4.19	-	6.35	7.80	9.27	9.27	12.70	12.70	15.09	18.26	21.44	25.40	28.58	25.40
300	12"	323.85	3.96	4.57	-	6.35	8.38	9.53	10.31	14.27	12.70	17.48	21.44	25.40	28.58	33.32	25.40
350	14" O.D	355.60	3.96	4.78	6.35	7.92	9.53	9.53	11.13	15.09	12.70	19.05	23.83	27.79	31.75	35.71	-
400	16" O.D	406.40	4.19	4.78	6.35	7.92	9.53	9.53	12.70	16.67	12.70	21.44	26.19	30.96	36.53	40.49	-
450	18" O.D	457.20	4.19	4.78	6.35	7.92	11.13	9.53	14.27	19.05	12.70	23.83	29.36	34.93	39.67	45.24	-
500	20" O.D	508.00	4.78	5.54	6.35	9.53	12.70	9.53	15.09	20.62	12.70	26.19	32.54	38.10	44.45	50.01	-
550	22" O.D	558.80	4.78	5.54	6.35	9.53	12.70	9.53	-	22.23	12.70	28.58	34.93	41.28	47.63	53.98	-
600	24" O.D	609.60	5.54	6.35	6.35	9.53	14.27	9.53	17.48	24.61	12.70	30.94	38.89	46.02	52.37	59.54	-
650	26" O.D	660.40	-	-	7.92	12.70	-	9.53	-	-	12.70	-	-	-	-	-	-
700	28" O.D	711.20	-	-	7.92	12.70	15.88	9.53	-	-	12.70	-	-	-	-	-	-
750	30" O.D	762.00	6.35	7.92	7.92	12.70	15.88	9.53	-	-	12.70	-	-	-	-	-	-
800	32" O.D	812.80	-	-	7.92	12.70	15.88	9.53	17.48	-	12.70	-	-	-	-	-	-
850	34" O.D	863.60	-	-	7.92	12.70	15.88	9.53	17.48	-	12.70	-	-	-	-	-	-
900	36" O.D	914.40	-	-	7.92	12.70	15.88	9.53	19.05	-	12.70	-	-	-	-	-	-
950	38" O.D	965.20	-	-	-	-	-	9.53	-	-	12.70	-	-	-	-	-	-
1000	40" O.D	1016.00	-	-	-	-	-	9.53	-	-	12.70	-	-	-	-	-	-
1050	42" O.D	1066.80	-	-	-	-	-	9.53	-	-	12.70	-	-	-	-	-	-
1100	44" O.D	1117.60	-	-	-	-	-	9.53	-	-	12.70	-	-	-	-	-	-
1150	46" O.D	1168.40	-	-	-	-	-	9.53	-	-	12.70	-	-	-	-	-	-

Pipe Weights ASME B36.10M

Pipe Weight [kg/m] = 0.0246615 (OD[mm] -wt[mm]) * wt[mm] (* for Carbon Steel , ref also section 1b Weight Comparison)

DIMENSIONS AND WEIGHTS

OF SEAMLESS AND WELDED PIPES ACC TO ASME B36.10 / ASME B36.19 INCLUDING DIMENSIONS TO API 5L

Weights refer to Carbon Steel. Density = 7,8 kg/dm3

SIZE	OUTSIDE DIAMETER		WALL THICKNESS		INNER DIAMETER	WEIGHT		INDENTIFICATION	
								STD	
[inch]	[DN]	[mm]	[inch]	[mm]	[mm]	[lb/ft]	[kg/m]	XS;XXS	SCHEDULE
1/8"	3	10,29	0,068	1,73	6,8	0,24	0,4	STD	40
			0,095	2,41	5,5	0,31	0,5	XS	80
1/4"	6	13,72	0,088	2,24	9,2	0,42	0,6	STD	40
			0,119	3,02	7,7	0,54	0,8	XS	80
3/8"	10	17,10	0,091	2,31	12,5	0,54	0,8	STD	40
			0,126	3,20	10,7	0,74	1,1	XS	80
1/2"	15	21,30	0,109	2,77	15,8	0,87	1,3	STD	40
			0,147	3,73	13,8	1,08	1,6	XS	80
			0,188	4,78	11,7	1,34	2,0		160
			0,294	7,47	6,4	1,75	2,6	XXS	
3/4"	20	26,67	0,113	2,87	21,0	1,14	1,7	STD	40
			0,154	3,91	18,9	1,48	2,2	XS	80
			0,219	5,56	15,6	1,95	2,9		160
			0,308	7,82	11,1	2,42	3,6	XXS	
1"	25	33,40	0,133	3,38	26,6	1,68	2,5	STD	40
			0,179	4,55	24,3	2,15	3,2	XS	80
			0,250	6,35	20,7	2,82	4,2		160
			0,358	9,09	15,2	3,70	5,5	XXS	
1-1/4"	32	42,16	0,140	3,56	35,1	2,27	3,4	STD	40
			1,280	32,50	4,5	3,00	4,5	XS	80
			1,161	29,50	5,6	3,76	5,6		160
			0,382	9,70	22,8	5,21	7,8	XXS	
1-1/2"	40	48,26	0,145	3,68	40,9	2,72	4,1	STD	40
			0,200	5,08	38,1	3,63	5,4	XS	80
			0,281	7,14	34,0	4,86	7,2		160
			0,400	10,15	28,0	6,41	9,5	XXS	
2"	50	60,30	0,065	1,65	57,0	1,61	2,4		5
			0,083	2,11	56,1	2,02	3,0		
			0,109	2,77	54,8	2,62	3,9		10
			0,125	3,18	53,9	3,03	4,5		30
			0,141	3,58	53,1	3,36	5,0		
			0,154	3,91	52,5	3,63	5,4	STD	40
			0,172	4,37	51,6	4,03	6,0		
			0,188	4,78	50,7	4,37	6,5		
			0,218	5,54	49,2	5,04	7,5	XS	80
			0,250	6,35	47,6	5,71	8,5		
			0,281	7,14	46,0	6,32	9,4		
			0,344	8,74	42,8	7,46	11,1		160
			0,436	11,07	38,2	9,01	13,4	XXS	
2-1/2"	65	73,03	0,083	2,11	68,8	2,49	3,7		5
			0,109	2,77	67,5	3,23	4,8		
			0,120	3,05	66,9	3,56	5,3		10
			0,125	3,18	66,7	3,70	5,5		
			0,141	3,58	65,8	4,10	6,1		
			0,156	3,96	65,1	4,50	6,7		
			0,172	4,37	64,3	4,97	7,4		
			0,188	4,78	63,4	5,38	8,0		30
			0,203	5,16	62,7	5,78	8,6	STD	40

DIMENSIONS AND WEIGHTS

OF SEAMLESS AND WELDED PIPES ACC TO ASME B36.10 / ASME B36.19 INCLUDING DIMENSIONS TO API 5L

Weights refer to Carbon Steel. Density = 7,8 kg/dm3

SIZE	OUTSIDE DIAMETER		WALL THICKNESS		INNER DIAMETER	WEIGHT		INDENTIFICATION	
								STD	
[inch]	[DN]	[mm]	[inch]	[mm]	[mm]	[lb/ft]	[kg/m]	XS;XXS	SCHEDULE
			0,216	5,49	62,0	6,12	9,1		
			0,250	6,35	60,3	6,99	10,4		
			0,276	7,01	59,0	7,66	11,4	XS	80
			0,375	9,53	54,0	10,02	14,9		160
			0,552	14,02	45,0	13,71	20,4	XXS	
3"	80	88,90	0,083	2,11	84,7	3,03	4,5		5
			0,109	2,77	83,4	3,97	5,9		
			0,120	3,05	82,8	4,37	6,5		10
			0,125	3,18	82,6	4,50	6,7		
			0,141	3,58	81,7	5,04	7,5		
			0,156	3,96	81,0	5,58	8,3		
			0,172	4,37	80,2	6,12	9,1		
			0,188	4,78	79,3	6,66	9,9		30
			0,216	5,49	77,9	7,60	11,3	STD	40
			0,250	6,35	76,2	8,67	12,9		
			0,281	7,14	74,6	9,68	14,4		
			0,300	7,62	73,7	10,29	15,3	XS	80
			0,438	11,13	66,6	14,39	21,4		160
			0,600	15,24	58,4	18,62	27,7	XXS	
3-1/2"	90	101,60	0,083	2,11	97,4	3,50	5,2		5
			0,109	2,77	96,1	4,57	6,8		
			0,120	3,05	95,5	4,97	7,4		10
			0,125	3,18	95,3	5,18	7,7		
			0,141	3,58	94,4	5,85	8,7		
			0,156	3,96	93,7	6,39	9,5		
			0,172	4,37	92,9	7,06	10,5		
			0,188	4,78	92,0	7,66	11,4		30
			0,226	5,74	90,1	9,14	13,6	STD	40
			0,250	6,35	88,9	10,02	14,9		
			0,281	7,14	87,3	11,16	16,6		
			0,318	8,08	85,4	12,50	18,6	XS	80
4"	100	114,30	0,083	2,11	110,1	3,90	5,8		5
			0,109	2,77	108,8	5,11	7,6		
			0,120	3,05	108,2	5,65	8,4		10
			0,125	3,18	108,0	5,85	8,7		
			0,141	3,58	107,1	6,59	9,8		
			0,156	3,96	106,4	7,26	10,8		
			0,172	4,37	105,6	8,00	11,9		
			0,188	4,78	104,7	8,67	12,9		30
			0,203	5,16	104,0	9,34	13,9		
			0,219	5,56	103,2	10,02	14,9		
			0,237	6,02	102,3	10,82	16,1	STD	40
			0,250	6,35	101,6	11,36	16,9		
			0,281	7,14	100,0	12,71	18,9		
			0,312	7,92	98,5	13,98	20,8		
			0,337	8,56	97,2	14,99	22,3	XS	80
			0,438	11,13	92,0	19,03	28,3		120
			0,531	13,49	87,3	22,52	33,5		160

DIMENSIONS AND WEIGHTS

OF SEAMLESS AND WELDED PIPES ACC TO ASME B36.10 / ASME B36.19 INCLUDING DIMENSIONS TO API 5L

Weights refer to Carbon Steel. Density = 7,8 kg/dm3

SIZE	OUTSIDE DIAMETER		WALL THICKNESS		INNER DIAMETER	WEIGHT		INDENTIFICATION	
								STD	
[inch]	[DN]	[mm]	[inch]	[mm]	[mm]	[lb/ft]	[kg/m]	XS;XXS	SCHEDULE
			0,674	17,12	80,1	27,56	41,0	XXS	
5"	125	141,30	0,083	2,11	137,1	4,84	7,2		
			0,109	2,77	135,8	6,39	9,5		5
			0,125	3,18	135,0	7,26	10,8		
			0,134	3,40	134,5	7,80	11,6		10
			0,156	3,96	133,4	9,01	13,4		
			0,188	4,78	131,7	10,82	16,1		
			0,219	5,56	130,2	12,50	18,6		
			0,258	6,55	128,2	14,66	21,8	STD	40
			0,281	7,14	127,0	15,87	23,6		
			0,312	7,92	125,5	17,55	26,1		
			0,344	8,74	123,8	19,23	28,6		
			0,375	9,53	122,3	20,84	31,0	XS	80
			0,500	12,70	115,9	27,09	40,3		120
			0,625	15,88	109,6	33,01	49,1		160
			0,750	19,05	103,2	38,59	57,4	XXS	
6"	150	168,28	0,083	2,11	164,1	5,85	8,7		
			0,109	2,77	162,8	7,60	11,3		
			0,125	3,18	162,0	8,74	13,0		
			0,134	3,40	161,5	9,28	13,8		10
			0,141	3,58	161,1	9,75	14,5		
			0,156	3,96	160,4	10,82	16,1		
			0,172	4,37	159,6	11,90	17,7		
			0,188	4,78	158,7	12,97	19,3		
			0,203	5,16	158,0	13,98	20,8		
			0,219	5,56	157,2	14,99	22,3		
			0,250	6,35	155,6	16,47	24,5		
			0,280	7,11	154,1	19,03	28,3	STD	40
			0,312	7,92	152,5	21,04	31,3		
			0,344	8,74	150,8	23,13	34,4		
			0,375	9,53	149,3	25,08	37,3		
			0,432	10,97	146,4	28,64	42,6	XS	80
			0,500	12,70	142,9	32,74	48,7		
			0,562	14,27	139,8	36,44	54,2		120
			0,625	15,88	136,6	40,13	59,7		
			0,719	18,26	131,8	45,45	67,6		160
			0,750	19,05	130,2	47,13	70,1		
			0,864	21,95	124,4	53,24	79,2	XXS	
			0,875	22,23	123,8	53,85	80,1		
8"	200	219,08	0,109	2,77	213,6	9,95	14,8		5
			0,125	3,18	212,8	11,36	16,9		
			0,148	3,76	211,6	13,45	20,0		10
			0,156	3,96	211,2	14,12	21,0		
			0,188	4,78	209,5	17,01	25,3		
			0,203	5,16	208,8	18,29	27,2		
			0,219	5,56	208,0	19,70	29,3		
			0,250	6,35	206,4	22,39	33,3		
			0,277	7,04	205,0	24,74	36,8		30

DIMENSIONS AND WEIGHTS

OF SEAMLESS AND WELDED PIPES ACC TO ASME B36.10 / ASME B36.19 INCLUDING DIMENSIONS TO API 5L

Weights refer to Carbon Steel. Density = 7,8 kg/dm3

SIZE	OUTSIDE DIAMETER		WALL THICKNESS		INNER DIAMETER	WEIGHT		INDENTIFICATION	
								STD	
[inch]	[DN]	[mm]	[inch]	[mm]	[mm]	[lb/ft]	[kg/m]	XS;XXS	SCHEDULE
			0,312	7,92	203,3	27,70	41,2		
			0,322	8,18	202,7	28,64	42,6	STD	40
			0,344	8,74	201,6	30,45	45,3		
			0,375	9,53	200,1	33,14	49,3		
			0,406	10,31	198,5	35,70	53,1		60
			0,438	11,13	196,8	38,39	57,1		
			0,500	12,70	193,7	43,43	64,6	xs	80
			0,562	14,27	190,6	48,47	72,1		
			0,594	15,09	188,9	51,03	75,9		100
			0,625	15,88	187,4	53,51	79,6		
			0,719	18,26	182,6	60,77	90,4		120
			0,750	19,05	181,0	63,19	94,0		
			0,812	20,62	177,9	67,83	100,9		140
			0,875	22,23	174,7	72,54	107,9	XXS	
			0,906	23,01	173,1	74,82	111,3		
			1,000	25,40	168,3	81,55	121,3		
10"	250	273,05	0,134	3,40	266,2	15,19	22,6		5
			0,156	3,96	265,1	17,68	26,3		
			0,165	4,19	264,6	18,69	27,8		
			0,188	4,78	263,4	21,24	31,6		
			0,203	5,16	262,7	22,92	34,1		
			0,219	5,56	261,9	24,67	36,7		
			0,250	6,35	260,3	28,10	41,8		20
			0,279	7,09	258,8	31,26	46,5		
			0,307	7,80	257,4	34,29	51,0		30
			0,344	8,74	255,5	38,32	57,0		
			0,365	9,27	254,5	40,54	60,3	STD	40
			0,438	11,13	250,7	48,34	71,9		
			0,500	12,70	247,6	54,86	81,6	XS	60
			0,562	14,27	244,5	61,24	91,1		
			0,594	15,09	242,8	64,54	96,0		80
			0,625	15,88	241,3	67,70	100,7		
			0,719	18,26	236,5	77,18	114,8		100
			0,812	20,62	231,8	86,32	128,4		
			0,844	21,44	230,1	89,48	133,1		120
			0,875	22,23	228,5	92,44	137,5		
			0,938	23,83	255,3	98,49	146,5		
			1,000	25,40	222,2	104,34	155,2	XXS	140
			1,125	28,58	215,9	115,83	172,3		160
			1,250	31,75	209,5	127,06	189,0		
12"	300	323,85	0,156	3,96	315,9	21,04	31,3		5
			0,172	4,37	315,1	23,13	34,4		
			0,180	4,57	314,7	24,20	36,0		
			0,188	4,78	314,2	25,28	37,6		
			0,203	5,16	313,5	27,29	40,6		
			0,344	8,74	306,3	45,65	67,9		
			0,375	9,53	304,7	49,68	73,9	STD	
			0,406	10,31	303,2	53,58	79,7		40

DIMENSIONS AND WEIGHTS

OF SEAMLESS AND WELDED PIPES ACC TO ASME B36.10 / ASME B36.19 INCLUDING DIMENSIONS TO API 5L

Weights refer to Carbon Steel. Density = 7,8 kg/dm3

SIZE	OUTSIDE DIAMETER		WALL THICKNESS		INNER DIAMETER	WEIGHT		INDENTIFICATION	
								STD	
[inch]	[DN]	[mm]	[inch]	[mm]	[mm]	[lb/ft]	[kg/m]	XS;XXS	SCHEDULE
			0,500	12,70	298,4	65,55	97,5	XS	
			0,562	14,27	295,3	73,28	109,0		60
			0,625	15,88	292,1	81,08	120,6		
			0,688	17,48	288,8	88,81	132,1		80
			0,750	19,05	285,7	96,27	143,2		
			0,812	20,62	282,6	103,66	154,2		
			0,844	21,44	280,9	107,50	159,9		100
			0,875	22,23	279,4	111,19	165,4		
			0,938	23,83	276,1	118,52	176,3		
			1,000	25,40	273,0	125,71	187,0	XXS	120
			1,062	26,97	269,9	132,77	197,5		
			1,125	28,58	266,7	139,90	208,1		140
			1,250	31,75	260,3	153,75	228,7		
			1,312	33,32	257,2	160,54	238,8		160
14"	350	355,60	0,156	3,96	347,7	23,13	34,4		5
			0,188	4,78	346,0	27,83	41,4		
			0,203	5,16	345,3	29,98	44,6		
			0,210	5,33	344,9	30,92	46,0		
			0,219	5,56	344,5	32,27	48,0		
			0,250	6,35	342,9	36,77	54,7		10
			0,281	7,14	341,3	41,28	61,4		
			0,312	7,92	339,8	45,65	67,9		20
			0,344	8,74	338,1	50,29	74,8		
			0,375	9,53	336,6	54,66	81,3	STD	30
			0,406	10,31	335,0	59,03	87,8		
			0,438	11,13	333,3	63,60	94,6		40
			0,469	11,91	331,8	67,83	100,9		
			0,500	12,70	330,2	72,20	107,4	XS	
			0,562	14,27	327,1	80,74	120,1		
			0,594	15,09	325,4	85,18	126,7		60
			0,625	15,88	323,9	89,41	133,0		
			0,688	17,48	320,6	98,02	145,8		
			0,750	19,05	317,5	106,29	158,1		80
			0,812	20,62	314,4	114,49	170,3		
			0,875	22,23	311,2	122,89	182,8		
			0,938	23,83	307,9	131,09	195,0		
			1,000	25,40	304,8	139,03	206,8		
			1,062	26,97	301,7	146,96	218,6		
			1,094	27,79	300,0	151,06	224,7		120
			1,125	28,58	298,4	154,96	230,5		
			1,250	31,75	292,1	170,49	253,6		140
			1,406	35,71	284,2	189,38	281,7		160
			2,000	50,80	254,0	256,67	381,8		
			2,125	53,98	247,7	269,92	401,5		
			2,200	55,88	243,8	277,65	413,0		
			2,500	63,50	228,6	307,50	457,4		
16"	400	406,40	0,165	4,19	398,0	27,97	41,6		5
			0,188	4,78	396,8	31,80	47,3		

DIMENSIONS AND WEIGHTS

OF SEAMLESS AND WELDED PIPES ACC TO ASME B36.10 / ASME B36.19 INCLUDING DIMENSIONS TO API 5L

Weights refer to Carbon Steel. Density = 7,8 kg/dm3

SIZE	OUTSIDE DIAMETER		WALL THICKNESS		INNER DIAMETER	WEIGHT		INDENTIFICATION	
								STD	
[inch]	[DN]	[mm]	[inch]	[mm]	[mm]	[lb/ft]	[kg/m]	XS;XXS	SCHEDULE
			0,203	5,16	396,1	34,35	51,1		
			0,219	5,56	395,3	36,97	55,0		
			0,250	6,35	393,7	42,08	62,6		
			0,281	7,14	392,1	47,26	70,3		
			0,312	7,92	390,6	52,30	77,8		20
			0,344	8,74	388,9	57,61	85,7		
			0,375	9,53	387,4	62,72	93,3	STD	30
			0,406	10,31	385,8	67,70	100,7		
			0,438	11,13	384,1	72,94	108,5		
			0,469	11,91	382,6	77,92	115,9		
			0,500	12,70	381,0	82,89	123,3	XS	40
			0,562	14,27	377,9	92,77	138,0		
			0,625	15,88	374,7	102,79	152,9		
			0,656	16,66	373,1	107,63	160,1		60
			0,688	17,48	371,4	112,74	167,7		
			0,750	19,05	368,3	122,35	182,0		
			0,812	20,62	365,2	131,90	196,2		
			0,844	21,44	363,5	136,81	203,5		80
			0,875	22,23	362,0	141,58	210,6		
			0,938	23,83	358,7	151,13	224,8		
			1,000	25,40	355,6	160,40	238,6		
			1,031	26,19	354,0	165,11	245,6		
			1,062	26,97	352,5	169,68	252,4		
			1,125	28,58	349,3	179,03	266,3		
			1,188	30,18	346,0	188,24	280,0		
			1,219	30,96	344,5	192,67	286,6		120
			1,250	31,75	342,9	197,18	293,3		
			1,438	36,53	333,3	224,00	333,2		140
			1,594	40,49	325,4	245,65	365,4		160
18"	450	457,20	0,165	4,19	448,6	31,46	46,8		5
			0,188	4,78	447,4	35,83	53,3		
			0,219	5,56	445,9	41,61	61,9		
			0,250	6,35	444,3	47,46	70,6		10
			0,281	7,14	442,7	53,24	79,2		
			0,312	7,92	441,2	59,03	87,8		20
			0,344	8,74	439,5	64,94	96,6		
			0,375	9,53	438,0	70,72	105,2	STD	
			0,406	10,31	436,4	76,37	113,6		
			0,438	11,13	434,7	82,29	122,4		30
			0,469	11,91	433,2	87,87	130,7		
			0,500	12,70	431,6	93,58	139,2	XS	
			0,562	14,27	428,5	104,74	155,8		40
			0,625	15,88	425,3	116,10	172,7		
			0,688	17,48	422,0	127,39	189,5		
			0,750	19,05	418,9	138,29	205,7		60
			0,812	20,62	415,8	149,18	221,9		
			0,875	22,23	412,6	160,20	238,3		
			0,938	23,83	409,3	171,16	254,6		80

DIMENSIONS AND WEIGHTS

OF SEAMLESS AND WELDED PIPES ACC TO ASME B36.10 / ASME B36.19 INCLUDING DIMENSIONS TO API 5L

Weights refer to Carbon Steel. Density = 7,8 kg/dm3

SIZE	OUTSIDE DIAMETER		WALL THICKNESS		INNER DIAMETER	WEIGHT		INDENTIFICATION	
								STD	
[inch]	[DN]	[mm]	[inch]	[mm]	[mm]	[lb/ft]	[kg/m]	XS;XXS	SCHEDULE
			1,000	25,40	406,2	181,71	270,3		
			1,062	26,97	403,1	192,27	286,0		
			1,125	28,58	399,9	202,96	301,9		
			1,156	29,36	398,3	208,13	309,6		100
			1,188	30,18	396,7	213,58	317,7		
			1,250	31,75	393,5	223,87	333,0		
			1,375	34,93	387,2	244,44	363,6		120
			1,562	39,67	377,7	274,49	408,3		140
			1,781	45,24	366,5	308,84	459,4		160
20"	500	508,00	0,188	4,78	498,4	39,87	59,3		5
			0,219	5,56	496,9	46,32	68,9		
			0,250	6,35	495,3	52,84	78,6		
			0,281	7,14	493,7	59,29	88,2		
			0,312	7,92	492,2	65,68	97,7		
			0,344	8,74	490,5	72,34	107,6		
			0,375	9,53	489,0	78,79	117,2	STD	20
			0,406	10,31	487,4	85,04	126,5		
			0,438	11,13	485,7	91,70	136,4		
			0,469	11,91	484,2	97,95	145,7		
			0,500	12,70	482,6	104,27	155,1	XS	30
			0,562	14,27	479,5	116,77	173,7		
			0,594	15,09	477,8	123,29	183,4		40
			0,625	15,88	476,3	129,55	192,7		
			0,688	17,48	473,0	142,12	211,4		
			0,750	19,05	469,9	154,42	229,7		
			0,812	20,62	466,8	166,59	247,8		60
			0,875	22,23	463,6	179,03	266,3		
			0,938	23,83	460,3	191,26	284,5		
			1,000	25,40	457,2	203,23	302,3		
			1,031	26,19	455,6	209,21	311,2		
			1,062	26,97	454,1	215,06	319,9		
			1,125	28,58	450,9	227,16	337,9		
			1,188	30,18	447,7	239,06	355,6		
			1,250	31,75	444,5	250,69	372,9		
			1,281	32,54	442,9	256,47	381,5		100
			1,312	33,32	441,4	262,18	390,0		
			1,375	34,93	438,2	273,95	407,5		
			1,500	38,10	431,8	296,81	441,5		120
			1,750	44,45	419,1	341,58	508,1		140
			1,969	50,01	408,0	379,70	564,8		160
22"	550	558,80	0,188	4,78	549,4	43,83	65,2		5
			0,219	5,56	547,9	51,03	75,9		
			0,250	6,35	546,3	58,15	86,5		10
			0,281	7,14	544,7	65,34	97,2		
			0,312	7,92	543,2	72,34	107,6		
			0,344	8,74	541,5	79,73	118,6		
			0,375	9,53	540,0	86,79	129,1	STD	20
			0,406	10,31	538,4	93,78	139,5		

DIMENSIONS AND WEIGHTS

OF SEAMLESS AND WELDED PIPES ACC TO ASME B36.10 / ASME B36.19 INCLUDING DIMENSIONS TO API 5L

Weights refer to Carbon Steel. Density = 7,8 kg/dm3

SIZE	OUTSIDE DIAMETER		WALL THICKNESS		INNER DIAMETER	WEIGHT		INDENTIFICATION	
								STD	
[inch]	[DN]	[mm]	[inch]	[mm]	[mm]	[lb/ft]	[kg/m]	XS;XXS	SCHEDULE
			0,438	11,13	536,7	101,11	150,4		
			0,469	11,91	535,2	108,03	160,7		
			0,500	12,70	533,6	115,03	171,1	XS	30
			0,562	14,27	530,5	128,87	191,7		
			0,625	15,88	527,3	142,99	212,7		
			0,688	17,48	524,0	156,91	233,4		
			0,750	19,05	520,9	170,55	253,7		
			0,812	20,62	517,8	184,07	273,8		
			0,875	22,23	514,6	197,85	294,3		60
			0,938	23,83	511,3	211,43	314,5		
			1,000	25,40	508,2	224,67	334,2		
			1,062	26,97	505,1	237,85	353,8		
			1,125	28,58	501,9	251,29	373,8		80
			1,188	30,18	498,6	264,61	393,6		
			1,250	31,75	495,5	277,51	412,8		
			1,312	33,32	492,4	290,35	431,9		
			1,375	34,93	489,2	303,46	451,4		
			1,438	36,53	485,9	316,44	470,7		
			1,500	38,10	482,8	329,01	489,4		
			1,625	41,28	476,5	354,29	527,0		120
			1,875	47,63	463,8	403,76	600,6		140
			2,125	53,98	451,1	451,97	672,3		160
24"	600	609,60	0,218	5,54	599,0	55,46	82,5		5
			0,250	6,35	597,3	63,53	94,5		10
			0,281	7,14	595,7	71,39	106,2		
			0,312	7,92	594,2	79,06	117,6		
			0,344	8,74	592,5	87,13	129,6		
			0,375	9,53	591,0	94,86	141,1	STD	20
			0,406	10,31	589,4	102,52	152,5		
			0,438	11,13	587,7	110,52	164,4		
			0,469	11,91	586,2	118,12	175,7		
			0,500	12,70	584,6	125,78	187,1	XS	
			0,562	14,27	581,5	140,91	209,6		30
			0,625	15,88	578,3	156,44	232,7		
			0,688	17,48	575,0	171,70	255,4		
			0,750	19,05	571,9	186,62	277,6		
			0,812	20,62	568,8	201,48	299,7		
			0,875	22,23	565,6	216,61	322,2		
			0,938	23,83	562,3	231,60	344,5		
			0,969	24,61	560,8	238,86	355,3		60
			1,000	25,40	559,2	246,18	366,2		
			1,062	26,97	556,1	260,71	387,8		
			1,125	28,58	552,9	275,50	409,8		
			1,188	30,18	549,6	290,08	431,5		
			1,219	30,96	548,1	297,21	442,1		
			1,250	31,75	546,5	304,34	452,7		
			1,312	33,32	543,4	318,52	473,8		
			1,375	34,93	540,2	333,04	495,4		

DIMENSIONS AND WEIGHTS

OF SEAMLESS AND WELDED PIPES ACC TO ASME B36.10 / ASME B36.19 INCLUDING DIMENSIONS TO API 5L

Weights refer to Carbon Steel. Density = 7,8 kg/dm3

SIZE	OUTSIDE DIAMETER		WALL THICKNESS		INNER DIAMETER	WEIGHT		INDENTIFICATION	
								STD	
[inch]	[DN]	[mm]	[inch]	[mm]	[mm]	[lb/ft]	[kg/m]	XS;XXS	SCHEDULE
			1,437	36,50	537,0	347,43	516,8		
			1,500	38,10	533,8	361,21	537,3		
			1,531	38,89	532,2	368,20	547,7		100
			1,562	39,67	530,7	374,72	557,4		
			1,812	46,02	518,0	430,25	640,0		120
			2,062	52,37	505,3	484,17	720,2		140
			2,344	59,54	490,9	543,33	808,2		160
26"	650	660,40	0,250	6,35	647,3	68,84	102,4		
			0,281	7,14	645,7	77,31	115,0		
			0,312	7,92	644,2	85,65	127,4		10
			0,344	8,74	642,5	94,39	140,4		
			0,375	9,53	641,0	102,79	152,9	STD	
			0,406	10,31	639,4	111,06	165,2		
			0,438	11,13	637,7	119,73	178,1		
			0,469	11,91	636,2	127,93	190,3		
			0,500	12,70	634,6	136,27	202,7	XS	20
			0,562	14,27	631,5	152,74	227,2		
			0,625	15,88	628,3	169,55	252,2		
			0,688	17,48	625,0	186,22	277,0		
			0,750	19,05	621,9	202,42	301,1		
			0,812	20,62	618,8	218,55	325,1		
			0,875	22,23	615,6	235,03	349,6		
			0,938	23,83	612,3	251,29	373,8		
			1,000	25,40	609,2	267,23	397,5		
28"	700	711,20	0,250	6,35	698,3	74,15	110,3		
			0,281	7,14	696,7	83,29	123,9		
			0,312	7,92	695,2	92,30	137,3		10
			0,344	8,74	693,5	101,78	151,4		
			0,375	9,53	692,0	110,86	164,9	STD	
			0,406	10,31	690,4	119,80	178,2		
			0,438	11,13	688,7	129,14	192,1		
			0,469	11,91	687,2	138,02	205,3		
			0,500	12,70	685,6	147,03	218,7	XS	20
			0,562	14,27	682,5	164,84	245,2		
			0,625	15,88	679,3	182,32	271,2		30
			0,688	17,48	676,0	201,01	299,0		
			0,750	19,05	672,9	218,55	325,1		
			0,812	20,62	669,8	236,03	351,1		
			0,875	22,23	666,6	253,85	377,6		
			0,938	23,83	663,3	271,46	403,8		
			1,000	25,40	660,2	288,67	429,4		
30"	750	762,00	0,250	6,35	749,3	79,53	118,3		5
			0,281	7,14	747,7	89,34	132,9		
			0,312	7,92	746,2	99,03	147,3		
			0,344	8,74	744,5	109,18	162,4		
			0,375	9,53	743,0	118,86	176,8	STD	
			0,406	10,31	741,4	128,47	191,1		
			0,438	11,13	739,7	138,55	206,1		

DIMENSIONS AND WEIGHTS

OF SEAMLESS AND WELDED PIPES ACC TO ASME B36.10 / ASME B36.19 INCLUDING DIMENSIONS TO API 5L

Weights refer to Carbon Steel. Density = 7.8 kg/dm3

SIZE	OUTSIDE DIAMETER		WALL THICKNESS		INNER DIAMETER	WEIGHT		INDENTIFICATION	
								STD	
[inch]	[DN]	[mm]	[inch]	[mm]	[mm]	[lb/ft]	[kg/m]	XS;XXS	SCHEDULE
			0,469	11,91	738,2	148,10	220,3		
			0,500	12,70	736,6	157,78	234,7	XS	20
			0,562	14,27	733,5	176,87	263,1		
			0,625	15,88	730,3	196,44	292,2		30
			0,688	17,48	727,0	215,73	320,9		
			0,750	19,05	723,9	264,87	394,0		
			0,812	20,62	720,8	253,45	377,0		
			0,875	22,23	717,6	272,61	405,5		
			0,938	23,83	714,3	291,63	433,8		
			1,000	25,40	711,2	310,18	461,4		
			1,062	26,97	708,1	328,67	488,9		
			1,125	28,58	704,8	347,50	516,9		
			1,188	30,18	701,6	366,18	544,7		
			1,250	31,75	698,5	384,40	571,8		
32"	800	812,80	0,250	6,35	800,3	84,91	126,3		
			0,281	7,14	798,7	95,39	141,9		
			0,312	7,92	797,2	105,68	157,2		10
			0,344	8,74	795,5	116,50	173,3		
			0,375	9,53	794,0	126,92	188,8		
			0,406	10,31	792,4	137,21	204,1		
			0,438	11,13	790,7	147,97	220,1		
			0,469	11,91	789,2	158,18	235,3		
			0,500	12,70	787,6	168,47	250,6	XS	20
			0,562	14,27	784,5	188,97	281,1		
			0,625	15,88	781,3	209,88	312,2		30
			0,688	17,48	778,0	230,52	342,9		40
			0,750	19,05	774,9	250,76	373,0		
			0,812	20,62	771,8	270,86	402,9		
			0,875	22,23	768,6	291,43	433,5		
			0,938	23,83	765,3	311,80	463,8		
			1,000	25,40	762,2	331,63	493,3		
			1,062	26,97	759,1	351,46	522,8		
			1,125	28,58	755,8	371,70	552,9		
			1,188	30,18	752,6	391,66	582,6		
			1,250	31,75	794,5	411,23	611,7		
34"	850	863,60	0,250	6,35	851,3	90,29	134,3		
			0,281	7,14	849,7	101,45	150,9		
			0,312	7,92	848,2	112,40	167,2		
			0,344	8,74	846,5	123,90	184,3		
			0,375	9,53	845,0	134,66	200,3	STD	
			0,406	10,31	843,4	145,95	217,1		
			0,438	11,13	841,7	157,38	234,1		
			0,469	11,91	840,2	168,27	250,3		
			0,500	12,70	838,6	179,23	266,6	XS	20
			0,562	14,27	835,5	201,01	299,0		
			0,625	15,88	832,3	223,26	332,1		30
			0,688	17,48	829,0	245,31	364,9		40
			0,750	19,05	825,9	266,82	396,9		

DIMENSIONS AND WEIGHTS

OF SEAMLESS AND WELDED PIPES ACC TO ASME B36.10 / ASME B36.19 INCLUDING DIMENSIONS TO API 5L

Weights refer to Carbon Steel. Density = 7,8 kg/dm3

SIZE	OUTSIDE DIAMETER		WALL THICKNESS		INNER DIAMETER	WEIGHT		INDENTIFICATION	
								STD	
[inch]	[DN]	[mm]	[inch]	[mm]	[mm]	[lb/ft]	[kg/m]	XS;XXS	SCHEDULE
			0,812	20,62	822,8	288,34	428,9		
			0,875	22,23	819,6	310,25	461,5		
			0,938	23,83	816,3	331,90	493,7		
			1,000	25,40	813,2	353,14	525,3		
			1,062	26,97	810,1	374,25	556,7		
			1,125	28,58	806,8	395,83	588,8		
			1,188	30,18	803,6	417,21	620,6		
			1,250	31,75	800,5	438,05	651,6		
36"	900	914,40	0,250	6,35	901,3	95,53	142,1		
			0,281	7,14	899,7	107,36	159,7		
			0,312	7,92	898,2	118,99	177,0		10
			0,344	8,74	896,5	131,16	195,1		
			0,375	9,53	895,0	142,92	212,6	STD	
			0,406	10,31	893,4	154,49	229,8		
			0,438	11,13	891,7	166,25	247,3		
			0,469	11,91	890,2	178,08	264,9		
			0,500	12,70	888,6	189,78	282,3	XS	20
			0,562	14,27	885,5	212,50	316,1		
			0,625	15,88	882,3	236,44	351,7		30
			0,688	17,48	879,0	259,83	386,5		
			0,750	19,05	875,9	282,62	420,4		40
			0,812	20,62	872,8	305,41	454,3		
			0,875	22,23	869,6	328,67	488,9		
			0,938	23,83	866,3	351,66	523,1		
			1,000	25,40	863,2	374,18	556,6		
			1,062	26,97	860,1	396,64	590,0		
			1,125	28,58	856,8	419,50	624,0		
			1,188	30,18	853,6	442,22	657,8		
			1,250	31,75	850,5	464,40	690,8		
38"	950	965,20	0,312	7,92	949,1	125,65	186,9		
			0,344	8,74	947,5	138,55	206,1		
			0,375	9,53	945,9	150,92	224,5		
			0,406	10,31	944,4	163,16	242,7		
			0,438	11,13	942,7	176,00	261,8		
			0,469	11,91	941,2	188,17	279,9		
			0,500	12,70	939,6	200,47	298,2		
			0,562	14,27	936,5	224,94	334,6		
			0,625	15,88	933,2	249,88	371,7		
			0,688	17,48	930,0	274,55	408,4		
			0,750	19,05	926,9	298,76	444,4		
			0,812	20,62	923,8	322,82	480,2		
			0,875	22,23	920,5	347,43	516,8		
			0,938	23,83	917,3	371,83	553,1		
			1,000	25,40	914,2	395,63	588,5		
40"	1000	1 016,00	0,312	7,92	1 000,2	132,37	196,9		
			0,344	8,74	998,5	145,95	217,1		
			0,375	9,53	996,9	158,99	236,5		
			0,406	10,31	995,4	171,90	255,7		

DIMENSIONS AND WEIGHTS

OF SEAMLESS AND WELDED PIPES ACC TO ASME B36.10 / ASME B36.19 INCLUDING DIMENSIONS TO API 5L

Weights refer to Carbon Steel. Density = 7,8 kg/dm3

SIZE	OUTSIDE DIAMETER		WALL THICKNESS		INNER DIAMETER	WEIGHT		INDENTIFICATION	
								STD	
[inch]	[DN]	[mm]	[inch]	[mm]	[mm]	[lb/ft]	[kg/m]	XS;XXS	SCHEDULE
			0,438	11,13	993,7	185,41	275,8		
			0,469	11,91	992,2	198,18	294,8		
			0,500	12,70	990,6	211,23	314,2		
			0,562	14,27	987,5	236,97	352,5		
			0,625	15,88	984,2	263,33	391,7		
			0,688	17,48	981,0	289,34	430,4		
			0,750	19,05	977,9	314,82	468,3		
			0,812	20,62	974,8	340,24	506,1		
			0,875	22,23	971,5	366,25	544,8		
			0,938	23,83	968,3	392,00	583,1		
			1,000	25,40	965,2	417,14	620,5		
42"	1050	1 066,80	0,344	8,74	1 049,6	153,28	228,0		
			0,375	9,53	1 048,0	166,72	248,0		
			0,406	10,31	1 046,4	180,84	269,0		
			0,438	11,13	1 044,8	194,96	290,0		
			0,469	11,91	1 043,2	208,40	310,0		
			0,500	12,70	1 041,6	221,85	330,0		
			0,562	14,27	1 038,4	248,74	370,0		
			0,625	15,88	1 035,2	276,30	411,0		
			0,688	17,48	1 032,0	303,87	452,0		
			0,750	19,05	1 029,0	330,76	492,0		
			0,812	20,62	1 025,8	357,65	532,0		
			0,875	22,23	1 022,6	384,54	572,0		
			0,938	23,83	1 019,4	413,45	615,0		
			1,000	25,40	1 016,2	438,32	652,0		
44"	1100	1 117,60	0,344	8,74	1 150,6	160,67	239,0		
			0,375	9,53	1 149,0	174,79	260,0		
			0,406	10,31	1 147,4	189,58	282,0		
			0,438	11,13	1 145,8	204,37	304,0		
			0,469	11,91	1 144,2	218,49	325,0		
			0,500	12,70	1 142,6	232,61	346,0		
			0,562	14,27	1 139,4	260,84	388,0		
			0,625	15,88	1 136,2	289,75	431,0		
			0,688	17,48	1 133,0	318,66	474,0		
			0,750	19,05	1 130,0	346,89	516,0		
			0,812	20,62	1 126,8	375,13	558,0		
			0,875	22,23	1 123,6	403,36	600,0		
			0,938	23,83	1 120,4	432,27	643,0		
			1,000	25,40	1 117,2	459,83	684,0		
46"	1150	1 168,40	0,344	8,74	1 140,6	168,07	250,0		
			0,375	9,53	1 139,0	182,86	272,0		
			0,406	10,31	1 137,4	197,65	294,0		
			0,438	11,13	1 135,8	213,11	317,0		
			0,469	11,91	1 134,2	228,57	340,0		
			0,500	12,70	1 132,6	243,36	362,0		
			0,562	14,27	1 129,4	272,94	406,0		
			0,625	15,88	1 126,2	303,19	451,0		
			0,688	17,48	1 123,0	333,45	496,0		

DIMENSIONS AND WEIGHTS

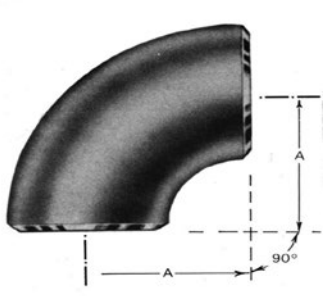
OF SEAMLESS AND WELDED PIPES ACC TO ASME B36.10 / ASME B36.19 INCLUDING DIMENSIONS TO API 5L

Weights refer to Carbon Steel. Density = 7,8 kg/dm3

SIZE	OUTSIDE DIAMETER		WALL THICKNESS		INNER DIAMETER	WEIGHT		INDENTIFICATION	
								STD	
[inch]	[DN]	[mm]	[inch]	[mm]	[mm]	[lb/ft]	[kg/m]	XS;XXS	SCHEDULE
			0,750	19,05	1 120,0	363,03	540,0		
			0,812	20,62	1 116,8	392,61	584,0		
			0,875	22,23	1 113,6	422,18	628,0		
			0,938	23,83	1 110,4	451,76	672,0		
			1,000	25,40	1 107,2	481,34	716,0		
48"	1200	1 219,20	0,344	8,74	1 201,6	175,46	261,0		
			0,375	9,53	1 200,0	190,92	284,0		
			0,406	10,31	1 198,4	206,39	307,0		
			0,438	11,13	1 196,8	222,52	331,0		
			0,469	11,91	1 195,2	238,66	355,0		
			0,500	12,70	1 193,6	254,12	378,0		
			0,562	14,27	1 190,4	285,04	424,0		
			0,625	15,88	1 187,2	316,64	471,0		
			0,688	17,48	1 184,0	348,24	518,0		
			0,750	19,05	1 181,0	379,16	564,0		
			0,812	20,62	1 177,8	410,08	610,0		
			0,875	22,23	1 174,6	441,01	656,0		
			0,938	23,83	1 171,4	471,93	702,0		
			1,000	25,40	1 168,2	502,86	748,0		

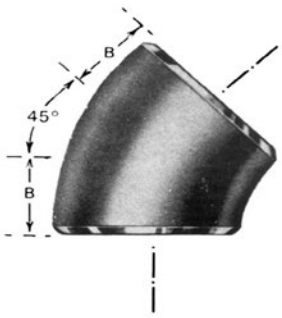
BUTT-WELD-FITTING - ASME B16.9/MSS SP-75

LONG RADIUS ELBOWS



90° long radius Elbow

90° long radius Elbow



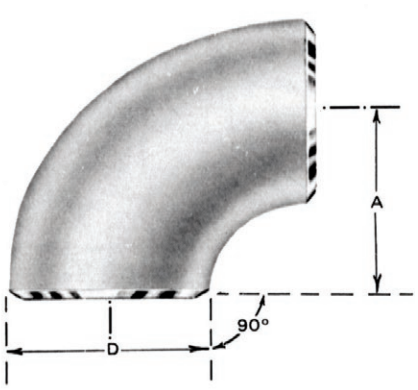
45° long radius Elbow

ASME B16.9			
N.B	O.D. AT BEVEL	A (mm)	B (mm)
1/2"	21,3	38	16
3/4"	26,7	38	19
1"	33,4	38	22
1 1/4"	42,2	48	25
1 1/2"	48,3	57	29
2"	60,3	76	35
2 1/2"	73,0	95	44
3"	88,9	114	51
3 1/2"	101,6	133	57
4"	114,3	152	64
5"	141,3	190	79
6"	168,3	229	95
8"	219,1	305	127
10"	273,0	381	159
12"	32,8	457	190
14"	355,6	533	222
16"	406,4	610	254
18"	457,0	686	286
20"	508,0	762	318
22"	559,0	838	343
24"	610,0	914	381
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
38"	965,0	1448	600
40"	1016,0	1524	632
42"	1067,0	1600	660
44"	1118,0	1676	695
46"	1168,0	1753	727
48"	1219,0	1829	759

MSS-SP-75			
N.B.	O.D. AT BEVEL	A (mm)	B (mm)
16"	406,4	610	254
18"	457,0	686	286
20"	508,0	762	318
22"	559,0	838	343
24"	610,0	914	381
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
38"	965,0	1448	600
40"	1016,0	1524	632
42"	1067,0	1600	660
44"	1118,0	1676	695
46"	1168,0	1753	727
48"	1219,0	1829	759

BUTT-WELD-FITTING - ASME B16.9/MSS SP-75

SHORT RADIUS ELBOWS



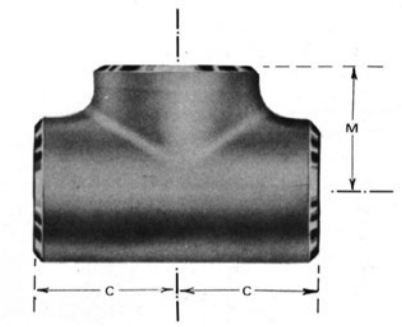
90° Short Radius Elbow

SHORT RADIUS ELBOWS

ASME B16.9		
N.B. (INCH)	Outside Diameter at Bevel (mm)	Center to End, A (mm)
1"	33,4	25
1 1/4"	42,2	32
1 1/2"	48,3	38
2"	60,3	51
2 1/2"	73	64
3"	88,9	76
3 1/2"	101,6	89
4"	114,3	102
5"	141,3	127
6"	168,3	152
8"	219,1	203
10"	273	254
12"	323,8	305
14"	355,6	356
16"	406,4	406
18"	457	457
20"	508	508
22"	559	559
24"	610	610

BUTT-WELD-FITTING - ASME B16.9/MSS SP-75

TEES
EQUAL TEES



Equal Tee

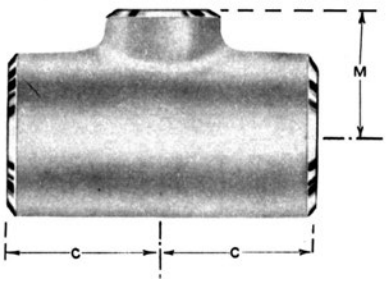
Equal Tee

ASME B16.9			
N.B	O.D. AT BEVEL	C (mm)	M (mm)
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
38"	965,0	711	711
40"	1016,0	749	749
42"	1067,0	762	711
44"	1118,0	813	762
46"	1168,0	851	800
48"	1219,0	889	838

MSS-SP-75			
N.B.	O.D. AT BEVEL	C (mm)	M (mm)
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
38"	965,0	711	711
40"	1016,0	749	749
42"	1067,0	762	711
44"	1118,0	813	762
46"	1168,0	851	800
48"	1219,0	889	838

BUTT-WELD-FITTING - ASME B16.9/MSS SP-75

REDUCING OUTLET TEES



Reducing Outlet Tee

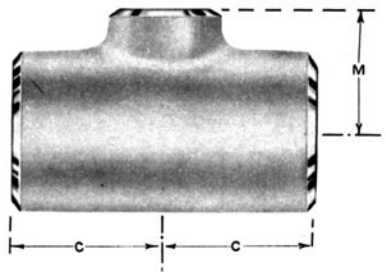
Reducing Outlet Tee

ASME B16.9					
N.B		O.D. AT BEVEL		RUN	OUTLET
Run	Outlet	Run	Outlet	C	M
1/2"	3/8"	21,3	17,3	25	25
1/2"	1/4"	21,3	13,7	25	25
3/4"	1/2"	26,7	21,3	29	29
3/4"	3/8"	26,7	17,3	29	29
1"	3/4"	33,4	26,7	38	38
1"	1/2"	33,4	21,3	38	38
1 1/4"	1"	42,2	33,4	48	48
1 1/4"	3/4"	42,2	26,7	48	48
1 1/4"	1/2"	42,2	21,3	48	48
1 1/2"	1 1/4"	48,3	42,2	57	57
1 1/2"	1"	48,3	33,4	57	57
1 1/2"	3/4"	48,3	26,7	57	57
1 1/2"	1/2"	48,3	21,3	57	57
2"	1 1/2"	60,3	48,3	64	60
2"	1 1/4"	60,3	42,2	64	57
2"	1"	60,3	33,4	64	51
2"	3/4"	60,3	26,7	64	44
2 1/2"	2"	73,0	60,3	76	70
2 1/2"	1 1/2"	73,0	48,3	76	67
2 1/2"	1 1/4"	73,0	42,2	76	64
2 1/2"	1"	73,0	33,4	76	57
3"	2 1/2"	88,9	73,0	86	83
3"	2"	88,9	60,3	86	76
3"	1 1/2"	88,9	48,3	86	73
3"	1 1/4"	88,9	42,2	86	70
3 1/2"	3"	101,6	88,9	95	92
3 1/2"	2 1/2"	101,6	73,0	95	89
3 1/2"	2"	101,6	60,3	95	83
3 1/2"	1 1/2"	101,6	48,3	95	79
4"	3 1/2"	114,3	101,6	105	102
4"	3"	114,3	88,9	105	98
4"	2 1/2"	114,3	73,0	105	95
4"	2"	114,3	60,3	105	89
4"	1 1/2"	114,3	48,3	105	86
5"	4"	141,3	114,3	124	117
5"	3 1/2"	141,3	101,6	124	114
5"	3"	141,3	88,9	124	111
5"	2 1/2"	141,3	73,0	124	108
5"	2"	141,3	60,3	124	105
6"	5"	168,3	141,3	143	137
6"	4"	168,3	114,3	143	130
6"	3 1/2"	168,3	101,6	143	127
6"	3"	168,3	88,9	143	124
6"	2 1/2"	168,3	73,0	143	121

MSS-SP-75					
N.B.		O.D. AT BEVEL		RUN	OUTLET
Run	Outlet	Run	Outlet	C	M

BUTT-WELD-FITTING - ASME B16.9/MSS SP-75

REDUCING OUTLET TEES - CONTINUED



Reducing Outlet Tee

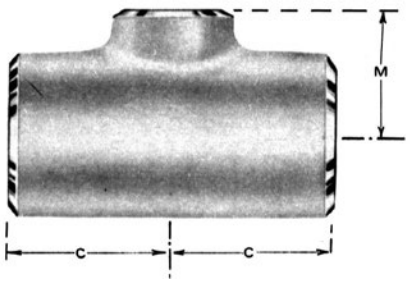
Reducing Outlet Tee

ASME B16.9					
N.B		O.D. AT BEVEL		RUN	OUTLET
Run	Outlet	Run	Outlet	C	M
8"	6"	219,1	168,3	178	168
8"	5"	219,1	141,3	178	162
8"	4"	219,1	114,3	178	156
8"	3 1/2"	219,1	101,6	178	152
10"	8"	273,0	219,0	216	203
10"	6"	273,0	168,3	216	194
10"	5"	273,0	141,3	216	191
10"	4"	273,0	114,3	216	184
12"	10"	323,8	273,0	254	241
12"	8"	323,8	219,1	254	229
12"	6"	323,8	168,3	254	219
12"	5"	323,8	141,3	254	216
14"	12"	355,6	323,8	279	270
14"	10"	355,6	273,0	279	257
14"	8"	355,6	219,1	279	248
14"	6"	355,6	168,3	279	238
16"	14"	406,4	355,6	305	305
16"	12"	406,4	323,8	305	295
16"	10"	406,4	273,0	305	283
16"	8"	406,4	219,1	305	273
16"	6"	406,4	168,3	305	264
18"	16"	457,0	406,4	343	330
18"	14"	457,0	355,6	343	330
18"	12"	457,0	323,8	343	330
18"	10"	457,0	273,0	343	321
18"	8"	457,0	219,1	343	308
20"	18"	508,0	457,0	381	298
20"	16"	508,0	406,4	381	368
20"	14"	508,0	355,6	381	356
20"	12"	508,0	323,8	381	346
20"	10"	508,0	273,0	381	333
20"	8"	508,0	219,0	381	324
22"	20"	559,0	508,0	419	406
22"	18"	559,0	457,0	419	394
22"	16"	559,0	406,4	419	381
22"	14"	559,0	355,6	419	381
22"	12"	559,0	323,8	419	371
22"	10"	559,0	273,0	419	359
24"	22"	610,0	559,0	432	432
24"	20"	610,0	508,0	432	432
24"	18"	610,0	457,0	432	419
24"	16"	610,0	406,4	432	406
24"	14"	610,0	355,6	432	406
24"	12"	610,0	323,8	432	397
24"	10"	610,0	273,0	432	384

MSS-SP-75					
N.B.		O.D. AT BEVEL		RUN	OUTLET
Run	Outlet	Run	Outlet	C	M
16"	14"	406,4	355,6	305	305
16"	12"	406,4	323,8	305	295
16"	10"	406,4	273,0	305	283
16"	8"	406,4	219,1	305	273
16"	6"	406,4	168,3	305	264
18"	16"	457,0	406,4	343	330
18"	14"	457,0	355,6	343	330
18"	12"	457,0	323,8	343	321
18"	10"	457,0	273,0	343	308
18"	8"	457,0	219,1	343	298
20"	18"	508,0	457,0	381	368
20"	16"	508,0	406,4	381	356
20"	14"	508,0	355,6	381	356
20"	12"	508,0	323,8	381	346
20"	10"	508,0	273,0	381	333
20"	8"	508,0	219,1	381	324
22"	20"	559,0	508,0	419	406
22"	18"	559,0	457,0	419	394
22"	16"	559,0	406,4	419	381
22"	14"	559,0	355,6	419	381
22"	12"	559,0	323,8	419	371
22"	10"	559,0	273,0	419	359
24"	22"	610,0	559,0	432	432
24"	20"	610,0	508,0	432	432
24"	18"	610,0	457,0	432	419
24"	16"	610,0	406,4	432	406
24"	14"	610,0	355,6	432	406
24"	12"	610,0	323,8	432	397
24"	10"	610,0	273,0	432	384

BUTT-WELD-FITTING - ASME B16.9/MSS SP-75

REDUCING OUTLET TEES - CONTINUED



Reducing Outlet Tee

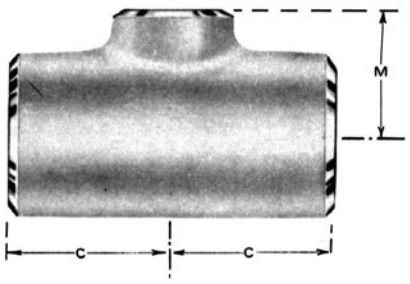
Reducing Outlet Tee

ASME B16.9					
N.B		O.D. AT BEVEL		RUN	OUTLET
Run	Outlet	Run	Outlet	C	M
26"	24"	660	610,0	495	483
26"	22"	660	559,0	495	470
26"	20"	660	508,0	495	457
26"	18"	660	457,0	495	444
26"	16"	660	406,4	495	432
26"	14"	660	355,6	495	432
26"	12"	660	323,8	495	422
28"	26"	711	660,0	521	521
28"	24"	711	610,0	521	508
28"	22"	711	559,0	521	495
28"	20"	711	508,0	521	483
28"	18"	711	457,0	521	470
28"	16"	711	406,4	521	457
28"	14"	711	355,6	521	457
28"	12"	711	323,8	521	448
30"	28"	762	711,0	559	546
30"	26"	762	660,0	559	546
30"	24"	762	610,0	559	533
30"	22"	762	559,0	559	521
30"	20"	762	508,0	559	508
30"	18"	762	457,0	559	495
30"	16"	762	406,4	559	483
30"	14"	762	355,6	559	483
30"	12"	762	323,8	559	473
30"	10"	762	273,0	559	460
32"	30"	813	762,0	597	584
32"	28"	813	711,0	597	572
32"	26"	813	660,0	597	572
32"	24"	813	610,0	597	559
32"	22"	813	559,0	597	546
32"	20"	813	508,0	597	533
32"	18"	813	457,0	597	521
32"	16"	813	406,4	597	508
32"	14"	813	355,6	597	508
34"	32"	864	813,0	635	622
34"	30"	864	762,0	635	610
34"	28"	864	711,0	635	597
34"	26"	864	660,0	635	597
34"	24"	864	610,0	635	854
34"	22"	864	559,0	635	572
34"	20"	864	508,0	635	559
34"	18"	864	457,0	635	546
34"	16"	864	406,4	635	533

MSS-SP-75					
N.B.		O.D. AT BEVEL		RUN	OUTLET
Run	Outlet	Run	Outlet	C	M
26"	24"	660	610,0	495	483
26"	22"	660	559,0	495	470
26"	20"	660	508,0	495	457
26"	18"	660	457,0	495	444
26"	16"	660	406,4	495	432
26"	14"	660	355,6	495	432
26"	12"	660	323,8	495	422
28"	26"	711	660,0	521	521
28"	24"	711	610,0	521	508
28"	22"	711	559,0	521	495
28"	20"	711	508,0	521	483
28"	18"	711	457,0	521	470
28"	16"	711	406,4	521	457
28"	14"	711	355,6	521	457
28"	12"	711	323,8	521	448
30"	28"	762	711,0	559	546
30"	26"	762	660,0	559	546
30"	24"	762	610,0	559	533
30"	22"	762	559,0	559	521
30"	20"	762	508,0	559	508
30"	18"	762	457,0	559	495
30"	16"	762	406,4	559	483
30"	14"	762	355,6	559	483
30"	12"	762	323,8	559	473
30"	10"	762	273,0	559	460
32"	30"	813	762,0	597	584
32"	28"	813	711,0	597	572
32"	26"	813	660,0	597	572
32"	24"	813	610,0	597	559
32"	22"	813	559,0	597	546
32"	20"	813	508,0	597	533
32"	18"	813	457,0	597	521
32"	16"	813	406,4	597	508
32"	14"	813	355,6	597	508
34"	32"	864	813,0	635	622
34"	30"	864	762,0	635	610
34"	28"	864	711,0	635	597
34"	26"	864	660,0	635	597
34"	24"	864	610,0	635	854
34"	22"	864	559,0	635	572
34"	20"	864	508,0	635	559
34"	18"	864	457,0	635	546
34"	16"	864	406,4	635	533

BUTT-WELD-FITTING - ASME B16.9/MSS SP-75

REDUCING OUTLET TEES - CONTINUED



Reducing Outlet Tee

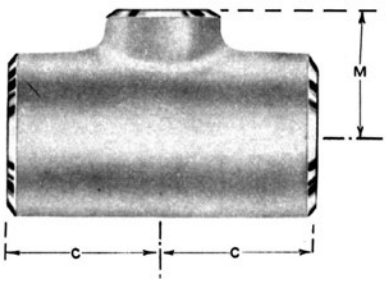
Reducing Outlet Tee

ASME B16.9					
N.B		O.D. AT BEVEL		RUN	OUTLET
Run	Outlet	Run	Outlet	C	M
36"	34"	914	864,0	673	660
36"	32"	914	813,0	673	648
36"	30"	914	762,0	673	635
36"	28"	914	711,0	673	622
36"	26"	914	660,0	673	622
36"	24"	914	610,0	673	610
36"	22"	914	559,0	673	597
36"	20"	914	508,0	673	584
36"	18"	914	457,0	673	572
36"	16"	914	406,4	673	559
38"	36"	965	914,0	711	711
38"	34"	965	864,0	711	698
38"	32"	965	813,0	711	686
38"	30"	965	762,0	711	673
38"	28"	965	711,0	711	648
38"	26"	965	660,0	711	648
38"	24"	965	610,0	711	635
38"	22"	965	559,0	711	622
38"	20"	965	508,0	711	610
38"	18"	965	457,0	711	597
40"	38"	1016	965,0	749	749
40"	36"	1016	914,0	749	737
40"	34"	1016	864,0	749	724
40"	32"	1016	813,0	749	711
40"	30"	1016	762,0	749	698
40"	28"	1016	711,0	749	673
40"	26"	1016	660,0	749	673
40"	24"	1016	610,0	749	660
40"	22"	1016	559,0	749	648
40"	20"	1016	508,0	749	635
40"	18"	1016	457,0	749	622
42"	40"	1067	1016,0	762	711
42"	38"	1067	968,0	762	711
42"	36"	1067	914,0	762	711
42"	34"	1067	864,0	762	711
42"	32"	1067	813,0	762	711
42"	30"	1067	762,0	762	711
42"	28"	1067	711,0	762	698
42"	26"	1067	660,0	762	698
42"	24"	1067	610,0	762	660
42"	22"	1067	559,0	762	660
42"	20"	1067	508,0	762	660
42"	18"	1067	457,0	762	648
42"	16"	1067	406,4	762	635

MSS-SP-75					
N.B.		O.D. AT BEVEL		RUN	OUTLET
Run	Outlet	Run	Outlet	C	M
36"	34"	914	864,0	673	660
36"	32"	914	813,0	673	648
36"	30"	914	762,0	673	635
36"	28"	914	711,0	673	622
36"	26"	914	660,0	673	622
36"	24"	914	610,0	673	610
36"	22"	914	559,0	673	597
36"	20"	914	508,0	673	584
36"	18"	914	457,0	673	572
36"	16"	914	406,4	673	559
38"	36"	965	914,0	711	711
38"	34"	965	864,0	711	698
38"	32"	965	813,0	711	686
38"	30"	965	762,0	711	673
38"	28"	965	711,0	711	648
38"	26"	965	660,0	711	648
38"	24"	965	610,0	711	635
38"	22"	965	559,0	711	622
38"	20"	965	508,0	711	610
38"	18"	965	457,0	711	597
40"	38"	1016	965,0	749	749
40"	36"	1016	914,0	749	737
40"	34"	1016	864,0	749	724
40"	32"	1016	813,0	749	711
40"	30"	1016	762,0	749	698
40"	28"	1016	711,0	749	673
40"	26"	1016	660,0	749	673
40"	24"	1016	610,0	749	660
40"	22"	1016	559,0	749	648
40"	20"	1016	508,0	749	635
40"	18"	1016	457	749	622
42"	36"	1067	914	762	711
42"	34"	1067	864	762	711
42"	32"	1067	813	762	711
42"	30"	1067	762	762	711
42"	28"	1067	711	762	698
42"	26"	1067	660	762	698
42"	24"	1067	610	762	660
42"	22"	1067	559	762	660
42"	20"	1067	508	762	660
42"	18"	1067	457	762	648
42"	16"	1067	406,4	762	635

BUTT-WELD-FITTING - ASME B16.9/MSS SP-75

REDUCING OUTLET TEES - CONTINUED



Reducing Outlet Tee

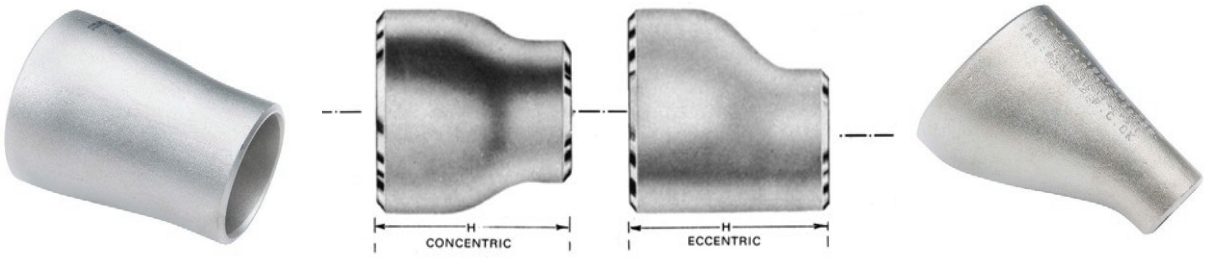
Reducing Outlet Tee

ASME B16.9					
N.B		O.D. AT BEVEL		RUN	OUTLET
Run	Outlet	Run	Outlet	C	M
44"	42"	1118	1067	813	762
44"	40"	1118	1016	813	749
44"	38"	1118	965	813	737
44"	36"	1118	914	813	724
44"	34"	1118	864	813	724
44"	32"	1118	813	813	711
44"	30"	1118	762	813	711
44"	28"	1118	711	813	698
44"	26"	1118	660	813	698
44"	24"	1118	610	813	698
44"	22"	1118	559	813	686
44"	20"	1118	508	813	686
46"	44"	1168	1118	851	800
46"	42"	1168	1067	851	787
46"	40"	1168	1016	851	775
46"	38"	1168	965	851	762
46"	36"	1168	914	851	762
46"	34"	1168	864	851	749
46"	32"	1168	813	851	749
46"	30"	1168	762	851	737
46"	28"	1168	711	851	737
46"	26"	1168	660	851	737
46"	24"	1168	610	851	724
46"	22"	1168	559	851	724
48"	46"	1219	1168	889	838
48"	44"	1219	1118	889	838
48"	42"	1219	1067	889	813
48"	40"	1219	1016	889	813
48"	38"	1219	965	889	813
48"	36"	1219	914	889	787
48"	34"	1219	864	889	787
48"	32"	1219	813	889	787
48"	30"	1219	762	889	762
48"	28"	1219	711	889	762
48"	26"	1219	660	889	762
48"	24"	1219	610	889	737
48"	22"	1219	559	889	737

MSS-SP-75					
N.B.		O.D. AT BEVEL		RUN	OUTLET
Run	Outlet	Run	Outlet	C	M
44"	42"	1118	1067	813	762
44"	40"	1118	1016	813	749
44"	38"	1118	965	813	737
44"	36"	1118	914	813	724
44"	34"	1118	864	813	724
44"	32"	1118	813	813	711
44"	30"	1118	762	813	711
44"	28"	1118	711	813	698
44"	26"	1118	660	813	698
44"	24"	1118	610	813	698
44"	22"	1118	559	813	686
44"	20"	1118	508	813	686
46"	44"	1168	1118	851	800
46"	42"	1168	1067	851	787
46"	40"	1168	1016	851	775
46"	38"	1168	965	851	762
46"	36"	1168	914	851	762
46"	34"	1168	864	851	749
46"	32"	1168	813	851	749
46"	30"	1168	762	851	737
46"	28"	1168	711	851	737
46"	26"	1168	660	851	737
46"	24"	1168	610	851	724
46"	22"	1168	559	851	724
48"	46"	1219	1168	889	838
48"	44"	1219	1118	889	838
48"	42"	1219	1067	889	813
48"	40"	1219	1016	889	813
48"	38"	1219	965	889	813
48"	36"	1219	914	889	787
48"	34"	1219	864	889	787
48"	32"	1219	813	889	787
48"	30"	1219	762	889	762
48"	28"	1219	711	889	762
48"	26"	1219	660	889	762
48"	24"	1219	610	889	737
48"	22"	1219	559	889	737

BUTT-WELD-FITTING - ASME B16.9/MSS SP-75

REDUCERS
CONCENTRIC AND ECCENTRIC REDUCERS



Concentric Reducer

Eccentric Reducer

ASME B16.9				
N.B		O.D. AT BEVEL		H
L.E.	S.E.	L.E.	S.E.	
3/4"	3/8"	26,7	17,1	
3/4"	1/2"	26,7	21,3	
1"	3/4"	33,4	26,7	
1"	1/2"	33,4	21,3	
1 1/4"	1"	42,2	33,4	
1 1/4"	3/4"	42,2	26,7	
1 1/4"	1/2"	42,2	21,3	
1 1/2"	1 1/4"	48,3	42,2	
1 1/2"	1"	48,3	33,4	
1 1/2"	3/4"	48,3	26,7	
1 1/2"	1/2"	48,3	21,3	
2"	1 1/2"	60,3	48,3	
2"	1 1/4"	60,3	42,2	
2"	1"	60,3	33,4	
2"	3/4"	60,3	26,7	
2 1/2"	2"	73,0	60,3	
2 1/2"	1 1/2"	73,0	48,3	
2 1/2"	1 1/4"	73,0	42,2	
2 1/2"	1"	73,0	33,4	
3"	2 1/2"	88,9	73	
3"	2"	88,9	60,3	
3"	1 1/2"	88,9	48,3	
3"	1 1/4"	88,9	42,2	
3 1/2"	3"	101,6	88,9	
3 1/2"	2 1/2"	101,6	73	
3 1/2"	2"	101,6	60,3	
3 1/2"	1 1/2"	101,6	48,3	
3 1/2"	1 1/4"	101,6	42,2	
4"	3 1/2"	114,3	101,6	
4"	3"	114,3	88,9	
4"	2 1/2"	114,3	73	
4"	2"	114,3	60,3	
4"	1 1/2"	114,3	48,3	
5"	4"	141,3	114,3	127
5"	3 1/2"	141,3	101,6	127
5"	3"	141,3	88,9	127
5"	2 1/2"	141,3	73,0	127
5"	2"	141,3	60,3	127
6"	5"	168,3	141,3	140
6"	4"	168,3	114,3	140
6"	3 1/2"	168,3	101,6	140
6"	3"	168,3	88,9	140
6"	2 1/2"	168,3	73,0	140
8"	6"	219,1	168,3	152

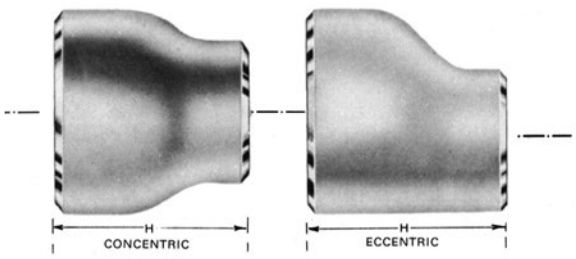
MSS-SP-75				
N.B.		O.D. AT BEVEL		H
L.E.	S.E.	L.E.	S.E.	

Note: LE = Large End
SE = Small End

BUTT-WELD-FITTING - ASME B16.9/MSS SP-75

REDUCERS
CONCENTRIC AND ECCENTRIC REDUCERS - CONTINUED

Concentric Reducer



Eccentric Reducer

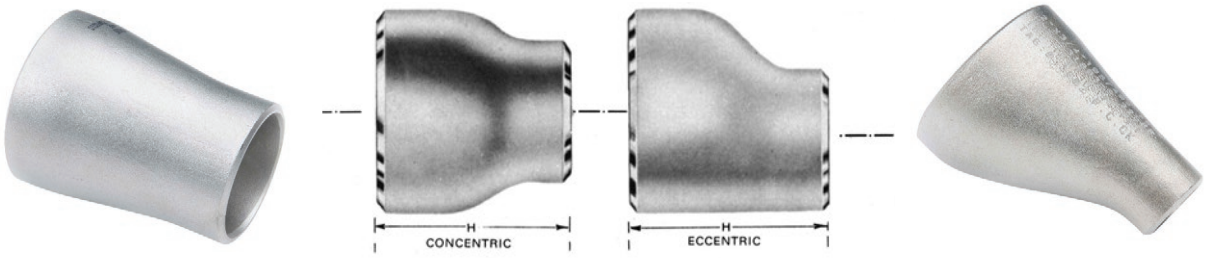
ASME B16.9				
N.B		O.D. AT BEVEL		
L.E.	S.E.	L.E.	S.E.	H
8"	5"	219,1	141,3	152
8"	4"	219,1	114,3	152
8"	3 1/2"	219,1	101,6	152
10"	8"	273,0	219,1	178
10"	6"	273,0	168,3	178
10"	5"	273,0	141,3	178
10"	4"	273,0	114,3	178
12"	10"	323,8	273,0	203
12"	8"	323,8	219,1	203
12"	6"	323,8	168,3	203
12"	5"	323,8	141,3	203
14"	12"	355,6	323,8	330
14"	10"	355,6	273,0	330
14"	8"	355,6	219,1	330
14"	6"	355,6	168,3	330
16"	14"	406,4	355,6	356
16"	12"	406,4	323,8	356
16"	10"	406,4	273,0	356
16"	8"	406,4	219,1	356
18"	16"	457,2	406,4	381
18"	14"	457,2	355,1	381
18"	12"	457,2	323,8	381
18"	10"	457,2	273,0	381
20"	18"	508	457	508
20"	16"	508	406,4	508
20"	14"	508	355,6	508
20"	12"	508	323,8	508
22"	20"	559	508	508
22"	18"	559	457	508
22"	16"	559	406,4	508
22"	14"	559	355,6	508
24"	22"	610	559	508
24"	20"	610	509	508
24"	18"	610	457	508
24"	16"	610	406,4	508
26"	24"	660	640	610
26"	22"	660	559	610
26"	20"	660	509	610
26"	18"	660	457	610
28"	26"	711	660	610
28"	24"	711	610	610
28"	20"	711	508	610
28"	18"	711	457	610

MSS-SP-75				
N.B.		O.D. AT BEVEL		
L.E.	S.E.	L.E.	S.E.	H
16"	14"	406,4	355,6	356
16"	12"	406,4	323,8	356
16"	10"	406,4	273	356
16"	8"	406,4	219,1	356
18"	16"	457,2	406,4	381
18"	14"	457,2	355,6	381
18"	12"	457,2	323,8	381
18"	10"	457,2	273	381
20"	18"	508	457	508
20"	16"	508	406,4	508
20"	14"	508	355,6	508
20"	12"	508	323,8	508
22"	20"	559	509	508
22"	18"	559	457	508
22"	16"	559	406,4	508
22"	14"	559	355,6	508
24"	22"	610	559	508
24"	20"	610	508	508
24"	18"	610	457	508
24"	16"	610	406,4	508
26"	24"	660	610	610
26"	22"	660	559	610
26"	20"	660	509	610
26"	18"	660	457	610
28"	26"	711	660	610
28"	24"	711	610	610
28"	22"	711	559	610
28"	20"	711	509	610
28"	18"	711	457	610

Note: LE = Large End
SE = Small End

BUTT-WELD-FITTING - ASME B16.9/MSS SP-75

REDUCERS
CONCENTRIC AND ECCENTRIC REDUCERS - CONTINUED



Concentric Reducer

Eccentric Reducer

ASME B16.9				
N.B		O.D. AT BEVEL		
L.E.	S.E.	L.E.	S.E.	H
30"	28"	762	711	610
30"	26"	762	660	610
30"	24"	762	610	610
30"	20"	762	508	610
32"	30"	813	762	610
32"	28"	813	711	610
32"	26"	813	660	610
32"	24"	813	610	610
34"	32"	864	813	610
34"	30"	864	762	610
34"	26"	864	660	610
34"	24"	864	610	610
36"	34"	914	864	610
36"	32"	914	813	610
36"	30"	914	762	610
36"	26"	914	660	610
36"	24"	914	610	610
38"	36"	965	914	610
38"	34"	965	864	610
38"	32"	965	813	610
38"	30"	965	762	610
38"	28"	965	711	610
38"	26"	965	660	610
40"	38"	1016	965	610
40"	36"	1016	914	610
40"	34"	1016	864	610
40"	32"	1016	813	610
40"	30"	1016	862	610
42"	40"	1067	1016	610
42"	38"	1067	965	610
42"	36"	1067	914	610
42"	34"	1067	864	610
42"	32"	1067	813	610

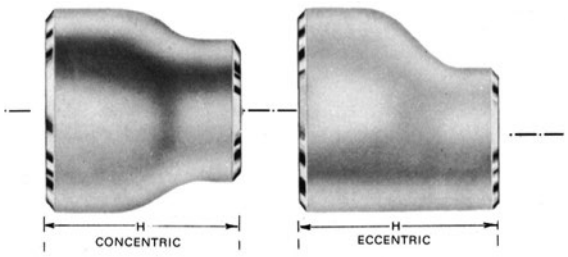
MSS-SP-75				
N.B.		O.D. AT BEVEL		
L.E.	S.E.	L.E.	S.E.	H
30"	28"	762	711	610
30"	26"	762	660	610
30"	24"	762	610	610
30"	22"	762	559	610
30"	20"	762	509	610
32"	30"	813	762	610
32"	28"	813	711	610
32"	26"	813	660	610
32"	24"	813	610	610
34"	32"	864	813	610
34"	30"	864	762	610
34"	28"	864	711	610
34"	26"	864	660	610
34"	24"	864	610	610
36"	34"	914	864	610
36"	32"	914	813	610
36"	30"	914	762	610
36"	28"	914	711	610
36"	26"	914	660	610
36"	24"	914	610	610
38"	36"	965	914	610
38"	34"	965	864	610
38"	32"	965	813	610
38"	30"	965	762	610
38"	28"	965	711	610
38"	26"	965	660	610
38"	24"	965	610	610
38"	22"	965	559	610
38"	20"	965	508	610
40"	38"	1016	965	610
40"	36"	1016	914	610
40"	34"	1016	864	610
40"	32"	1016	813	610
40"	30"	1016	762	610
40"	28"	1016	711	610
40"	26"	1016	660	610
40"	24"	1016	610	610
40"	22"	1016	559	610
40"	20"	1016	508	610
42"	40"	1067	1016	610
42"	38"	1067	965	610
42"	36"	1067	914	610
42"	34"	1067	864	610
42"	32"	1067	813	610

Note: LE = Large End
SE = Small End

BUTT-WELD-FITTING - ASME B16.9/MSS SP-75

REDUCERS
CONCENTRIC AND ECCENTRIC REDUCERS - CONTINUED

Concentric Reducer



Eccentric Reducer

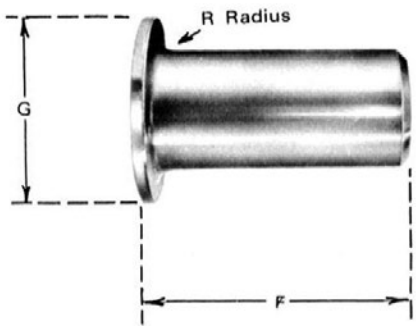
ASME B16.9				
N.B		O.D. AT BEVEL		
L.E.	S.E.	L.E.	S.E.	H
42"	30"	1067	762	610
44"	42"	1118	1067	610
44"	40"	1118	1016	610
44"	38"	1118	965	610
44"	36"	1118	914	610
46"	44"	1168	1118	711
46"	42"	1168	1067	711
46"	40"	1168	1016	711
46"	38"	1168	965	711
48"	46"	1219	1168	711
48"	44"	1219	1118	711
48"	42"	1219	1067	711
48"	40"	1219	1016	711

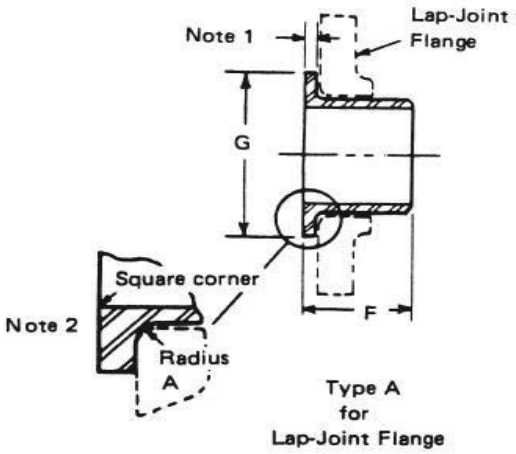
MSS-SP-75				
N.B.		O.D. AT BEVEL		
L.E.	S.E.	L.E.	S.E.	H
42"	30"	1067	762	610
42"	28"	1067	711	610
42"	26"	1067	660	610
42"	24"	1067	610	610
42"	22"	1067	559	610
44"	42"	1118	1067	610
44"	40"	1118	1016	610
44"	38"	1118	965	610
44"	36"	1118	914	610
44"	34"	1118	864	610
44"	32"	1118	813	610
44"	30"	1118	762	610
44"	28"	1118	711	610
44"	26"	1118	660	610
44"	24"	1118	610	610
44"	22"	1118	559	610
46"	44"	1168	1118	711
46"	42"	1168	1067	711
46"	40"	1168	1016	711
46"	38"	1168	965	711
46"	36"	1168	914	711
46"	34"	1168	864	711
46"	32"	1168	813	711
46"	30"	1168	762	711
46"	28"	1168	711	711
46"	26"	1168	660	711
46"	24"	1168	610	711
48"	46"	1219	1168	711
48"	44"	1219	1118	711
48"	42"	1219	1067	711
48"	40"	1219	1016	711
48"	38"	1219	965	711
48"	36"	1219	914	711
48"	34"	1219	864	711
48"	32"	1219	813	711
48"	30"	1219	762	711
48"	28"	1219	711	711
48"	26"	1219	660	711
48"	24"	1219	610	711

Note: LE = Large End
SE = Small End

BUTT-WELD-FITTING - ASME B16.9/MSS SP-75

STUB ENDS
LAP-JOINT STUB ENDS





LAP-JOINT STUB ENDS (dimension in mm)

ASME B16.9 - LONG TYPE						
NB	O.D. AT BEVEL	F	RAD of Fillet R	Dia of Lap G	OD of Barrel Max	Min
1/2"	21,3	76	3	35	22,8	20,5
3/4"	26,7	76	3	43	28,1	25,9
1"	33,4	102	3	51	35,0	32,6
1 1/4"	42,2	102	5	64	43,6	41,4
1 1/2"	48,3	102	6	73	49,9	47,5
2"	60,3	152	8	92	62,4	59,5
2 1/2"	73,0	152	8	105	75,3	72,2
3"	88,9	152	10	127	91,3	88,1
3 1/2"	101,6	152	10	140	104,0	100,8
4"	114,3	152	11	157	116,7	113,5
5"	141,3	203	11	186	144,3	140,5
6"	168,3	203	13	216	171,3	167,5
8"	219,1	203	13	270	222,1	218,3
10"	273,0	254	13	324	277,2	272,3
12"	323,8	254	13	381	328,0	323,1
14"	355,6	305	13	413	359,9	354,8
16"	406,4	305	13	470	411,0	405,6
18"	507,0	305	13	533	462,0	456,0
20"	508,0	305	13	584	514,0	507,0
22"	559,0	305	13	641	565,0	558,0
24"	610,0	305	13	692	616,0	609,0

ASME B16.9 - Short type / MSS SP-43 Type A						
NB	O.D. AT BEVEL	F	RAD of Fillet R	Dia of Lap G	OD of Barrel Max	Min
1/2"	21,3	51	3	35	22,8	20,5
3/4"	26,7	51	3	43	28,1	25,9
1"	33,4	51	3	51	35,0	32,6
1 1/4"	42,2	51	5	64	43,6	41,4
1 1/2"	48,3	51	6	73	49,9	47,5
2"	60,3	64	8	92	62,4	59,5
2 1/2"	73,0	64	8	105	75,3	72,2
3"	88,9	64	10	127	91,3	88,1
3 1/2"	101,6	76	10	140	104,0	100,8
4"	114,3	76	11	157	116,7	113,5
5"	141,3	76	11	186	144,3	140,5
6"	168,3	89	13	216	171,3	167,5
8"	219,1	102	13	270	222,1	218,3
10"	273,0	127	13	324	277,2	272,3
12"	323,8	152	13	381	328,0	323,1
14"	355,6	152	13	413	359,9	354,8
16"	406,4	152	13	470	411,0	405,6
18"	507,0	152	13	533	462,0	456,0
20"	508,0	152	13	584	514,0	507,0
22"	559,0	152	13	641	565,0	558,0
24"	610,0	152	13	692	616,0	609,0

When used with the higher pressure flanges, it may be necessary to increase the length of stub ends in sizes 12in and larger. Such increase in length shall be a matter of agreement between the manufacturer and purchaser.

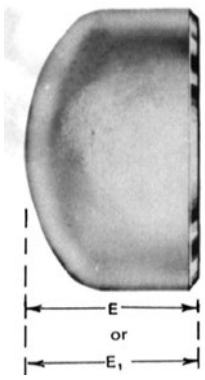
R – These dimensions conform to the radius established for lap-joint flanges in American National Standard Steel Pipe Flanges and Flanged Fittings ANSI B16.5.

G – The dimension conform to standard machined facings shown in the American National Standard Steel Pipe Flanges and Flanged Fittings ANSI B16.5. The back face of the lap shall be machined to conform to the surface on which it seats. Where ring joint facings are to be applied use dimension ´K´ as given in ANSI B16.5.

F – When special facings such as tongoue-groove, male-female, etc. are employed, additional lap thickness must be provided and such additional thickness shall be in addition to (not included in) the basic length ´F´´.

BUTT-WELD-FITTING - ASME B16.9/MSS SP-75

END CAPS



Note:
E = Thickness not exceeding Limited W.T.
E1 = Thickness greater than Limited W.T.

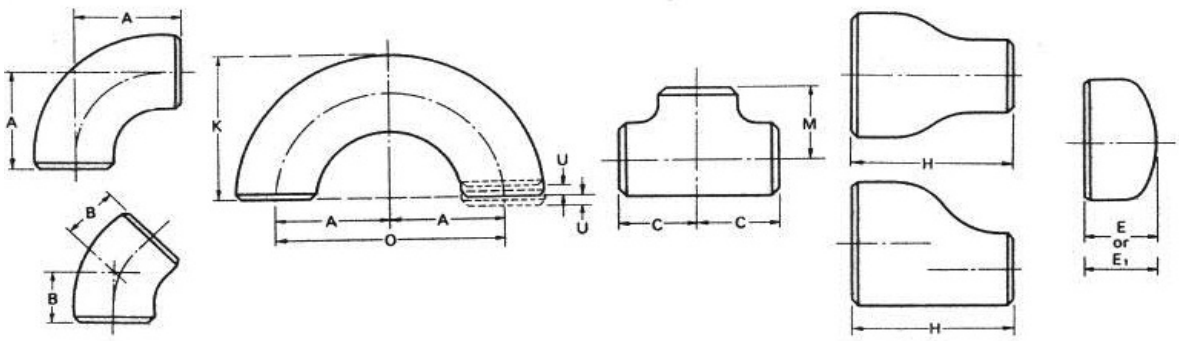
END CAPS (dimension in mm)

End Cap

ASME B16.9				
NB	O.D. AT BEVEL	# E	LIMITED W.T. FOR LENGHT E	E_1
1/2"	21,3	25	4,57	25
3/4"	26,7	25	3,81	25
1"	33,4	38	4,57	38
1 1/4"	42,2	38	4,83	38
1 1/2"	48,3	38	5,08	38
2"	60,3	38	5,59	44
2 1/2"	73,0	38	7,11	51
3"	88,9	51	7,62	64
3 1/2"	101,6	64	8,13	76
4"	114,3	64	8,64	76
5"	141,3	76	9,65	89
6"	168,3	89	10,92	102
8"	219,1	102	12,70	127
10"	273,0	127	12,70	152
12"	323,8	152	12,70	178
14"	355,6	165	12,70	191
16"	406,4	178	12,70	203
18"	457,0	203	12,70	229
20"	508,0	229	12,70	254
22"	559,0	254	12,70	254
24"	610,0	267	12,70	305
26"	660,0	267		
28"	711,0	267		
30"	762,0	267		
32"	813,0	267		
34"	864,0	267		
36"	914,0	267		
38"	965,0	305		
40"	1016,0	305		
42"	1067,0	305		
44"	1118,0	343		
46"	1168,0	343		
48"	1219	343		

MSS SP-75				
NB	O.D. AT BEVEL	# E	LIMITED W.T. FOR LENGHT E	E_1
16"	406,4	178	25,4	203
18"	457	203	25,4	229
20"	508	229	25,4	254
22"	559	254	25,4	279
24"	610	267	25,4	305
26"	660	267	25,4	305
28"	711	267	25,4	305
30"	762	267	25,4	305
32"	813	267	25,4	305
34"	864	267	25,4	305
36"	914	267	25,4	305
38"	965	305	25,4	343
40"	1016	305	25,4	343
42"	1067	305	25,4	343
44"	1118	343	25,4	381
46"	1168	343	25,4	381
48"	1219	343	25,4	381

TOLERANCES - ASME B16.9/B16.28



Elbows | 180° returns | Tee | Reducers | Cap

ALL FITTINGS				90 ° AND 45 ° ELBOWS & TEES	REDUCERS AND LAP-JOINT STUB ENDS	CAPS	180 DEG RETURNS			LAP-JOINT ENDS	
Nominal Pipe Size (inch)	Outside* diameter at bevel (1), (2)	Inside* diameter at end (1) (3) (4)	Wall Thickness (3)	Centre- to end dimension A,B,C,M	Overall Length F,H	Overall Length E	Centre-to-centre Dimensions O	Back-to face dimensions K	Alignement of ends U	Outside Diameter of lap G	Fillet Radius of Lap R
1/2 - 2 ½	+1.6 -0.8	±0.8		±2	±2	±3	±6	±6	±1	+0 -1	+0 -1
3 - 3 1/2	±1.6	±1.6	Not	±2	±2	±3	±6	±6	±1	+0 -1	+0 -1
4	±1.6	±1.6		±2	±2	±3	±6	±6	±1	+0 -1	+0 -2
5-8	+2.4-1.6	±1.6		±2	±2	±6	±6	±6	±1	+0 -1	+0 -2
10-18	+4.0 -3.2	±3.2		±2	±2	±6	±10	±6	±2	+0 -2	+0 -2
20 - 24	+6.4 -4.8	±4.8		±2	±2	±6	±10	±6	±2	+0 -2	+0 -2
26 - 30	+6.4-4.8	±4.8		±3	±5	±10					
32 - 48	+6.4-4.8	±4.8		±5	±5	±10					

NOTE:

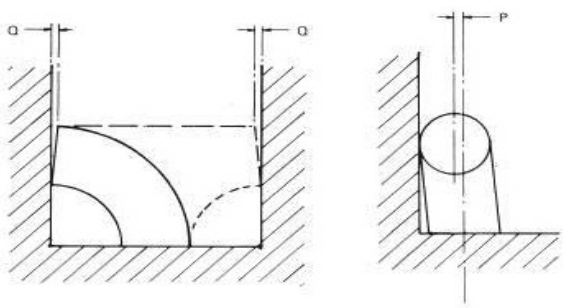
1) Out-of-round is the sum of absolute values of plus and minus tolerance.

2) This tolerance may be exceeded in localized areas of formed fittings where increased wall thicknss is required to meet design requirements of para. 2.2.

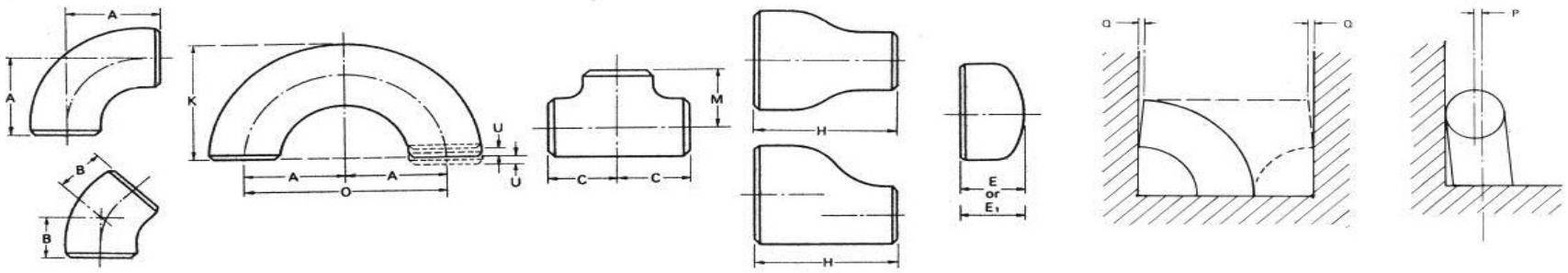
3) The inside diameter and the nominal wall thichknesses at ends are to be specified by the purchaser.

4) Unless otherwise specified by the purchaser, these tolerances apply to the nominal inside diameter, which equals the difference between the nominal outside and twice the nominal wall thickness.

NOMINAL PIPE SIZE (INCH)	ANGULARITY TOLERANCES	
	Off Angle Q (mm)	Off Plane P (mm)
1/2"- 4"	1	2
5"- 8"	2	4
10" - 12"	3	5
14" - 16 "	3	6
18" - 24"	4	10
26" - 30"	5	10
32" - 42"	5	13
44" - 48"	5	19



TOLERANCES ALL FITTINGS - MSS SP-75



Elbows 180 ° Returns Tee Reducers Cap

NOMINAL PIPE SIZE	INSIDE DIAMETER AT END	WALL THICKNESS	OUT-OF ROUNDNESS		CENTER-TO-END DIMENSIONS A,B,C,M			OVERALL LENGTH H	OVERALL LENGTH E	ANGULARITY Q	ELBOWS OFF PLANE P	REDUCERS OFF PLANE P
			At ends of fittings		Throughout body of Elbows	Tees & 1,5R Elbows	3R Elbows	Reducers	Caps			
			Elbows	Other								
16" to 24 "	± 2.3	- 0.3	4.8	3.1	2.5%	± 2.3	± 3.1	± 2.3	± 6.4	1.6	6.4	2.5%
26" to 36"	± 2.3	- 0.3	Note 5	3.1	2.5%	± 3.1	± 6.4	± 4.8	± 9.7	2.3	12.7	2.5%
38" to 48"	± 3.1	- 0.3	Note 5	3.1	2.5%	± 4.8	± 9.7	± 9.7	± 9.7	3.1	19.1	2.5%

NOTE:

1) The inside diameter at end shall be determined by circumferential measurements, and the tolerance refers to variations from nominal I.D. calculations by OD nom - 2(Tnom).

2) Out-of-roundness tolerances shall be the difference between the maximum and minimum diameters measured on any radial cross-section.

3) Minus 0.3 mm except that isolated non-continuous reduction are permitted in accordance with subsection 13.2.1 outside is to be treated

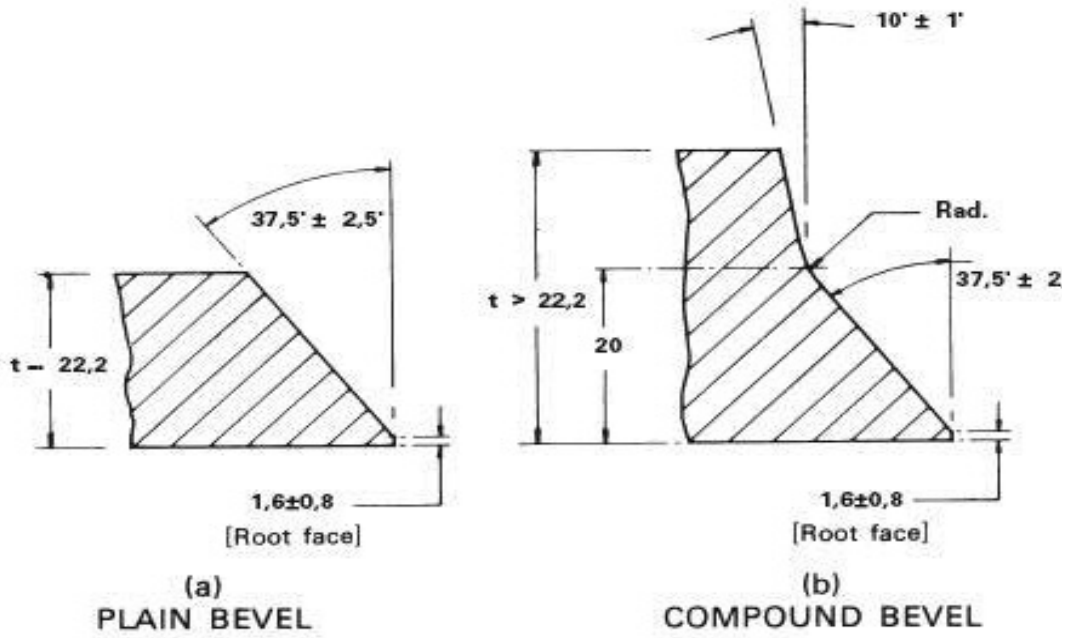
4)When elbows are intended for field segmenting, out-of-roundness tolerance may be furnished to 1% by agreement between the manufacturer and the purchaser.
It is recognized that extra thickness, if any, may be on the I.D.

5) Out-of-roundness tolerances at ends shall be 1% of diameter for NPS 26 and larger.

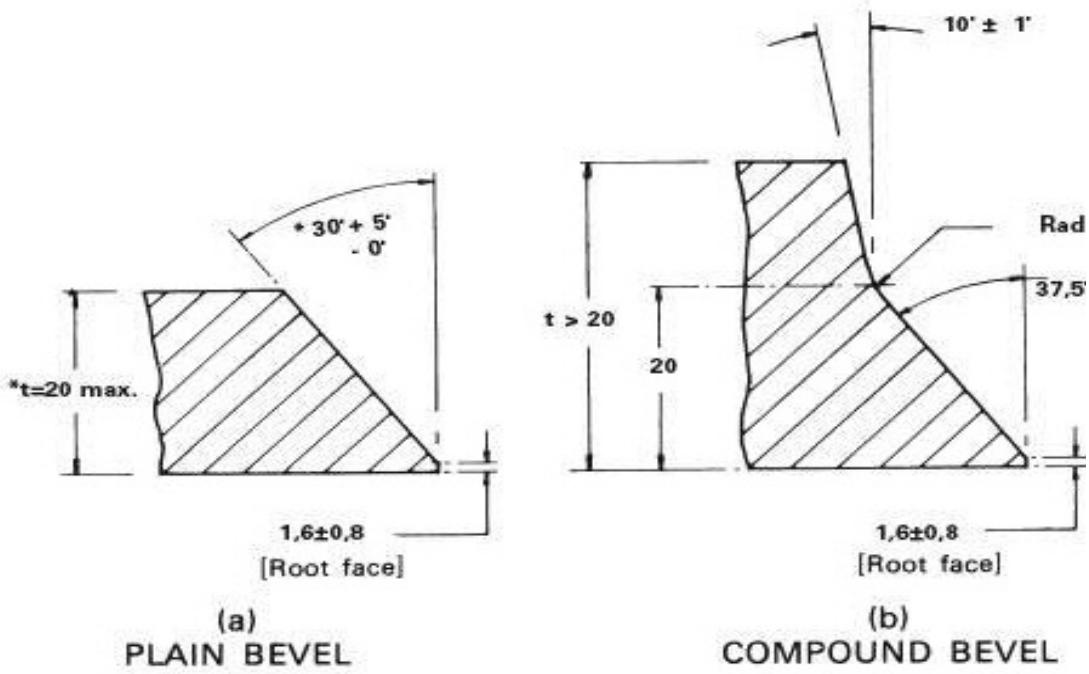
6) Percent of O.D.

NOTE: Outside diameter may be tapered at angle to 30° beyond weld bevel.

WELDING BEVEL FOR FITTINGS - ASME B16.9 / B16.28 (MM)



WELDING BEVEL FOR FITTINGS - MSS SP-75 (MM)



NOTE: Plain bevel up to t ≤ 25,4 mm at manufacturers option.
Plain bevel may be 37,5° up to ≤ 24" at manufacturers option

MANIFOLD FITTINGS - DESIGNED TO MEET INTERNATIONAL STANDARD

Manifold Fittings have been designed in accordance with the following standard:

MSS SP-75	Specification for High Test Wrought Butt Weld Fittings.
ASME B31.3	Chemical Plant and Petroleum Refinery Piping.
ASME B16.9	Factory Made Wrought Steel Butt Weld Fittings.
ISO 15156	Sulfide Stress Cracking Resistant Metallic Material for Oilfield Equipment.
ASME VIII	Division 1 Section 13.10 Boiler and Pressure Vessel Code.
API 6A	Specification for Wellhead and Christmas Tree Equipment.

MANIFOLD FITTINGS - DESIGNED IN TWO STANDARD PRODUCT LEVELS

Manufacture provide levels of standard products to meet requirements for 5.000 psi and 10.000 psi services.

	5000 PSI	10000 PSI
Max cold working pressure	5.000 psi	10.000 psi
Max test pressure	10.000 psi	15.000 psi
Max operation temp.	400deg F	400deg F
Min. operation temp	-50deg C	-50deg C
Nominal sizes	2" to 6"	2" to 6"
Min. yield stress	52K psi	75K psi
Material	Carbon	Low Alloy
	Manganese	Steel
	Steel	

Designed for high performance under hazardous conditions

Manifold Fittings have been designed to address a number of factors which are vital in achieving high performance in hazardous oilfield service.

Erosion and corrosion

All fittings have wall thickness designed with ample erosion and corrosion allowance.

Weldability

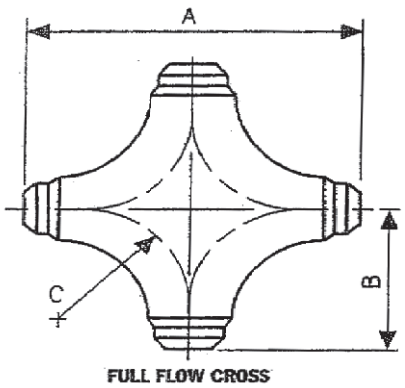
Materials have been selected with particular emphasis of their weldability and compability with common piping materials.

Flow characteristics

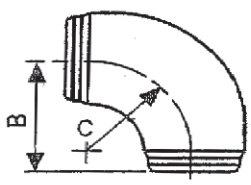
The internal bores of forged fittings are machined on sophisticated computer controlled machining centres to ensure smooth uninterruptet transitions from bore to bore. Flow characteristics are enchanced to their maximum potential.

MANIFOLD FITTINGS - NOMINAL DIMENSIONS IN MM.

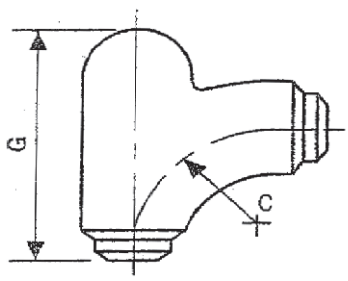
MANIFOLD FITTINGS NOMINAL DIMENSIONS IN MM							
SIZE (NB)	A	B	C	D	E	F	G
2"	406,4	203,2	152,4	330,2	---	203,2	386,1
3"	406,4	203,2	152,4	330,2	304,8	203,2	386,1
4"	558,8	279,4	208,3	406,4	355,6	279,4	495,3
5"	609,6	304,8	241,3	482,6	406,4	292,1	586,5
6"	762	381	304,8	685,8	609,6	330,2	805,2



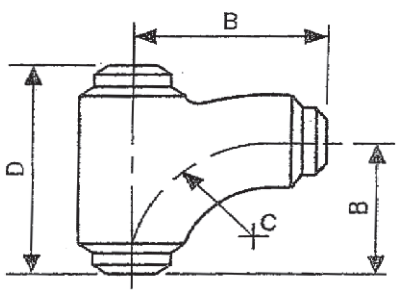
FULL FLOW CROSS



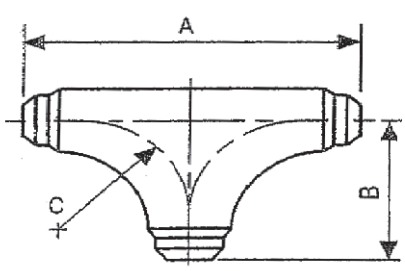
LONG SWEEP 90° ELBOW



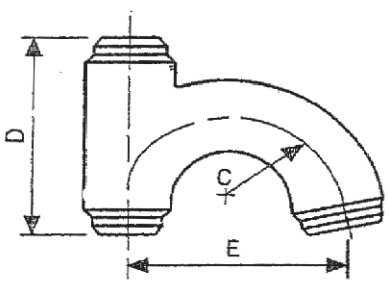
LONG SWEEP TEE WITH TOP INTEGRAL BULLPLUG



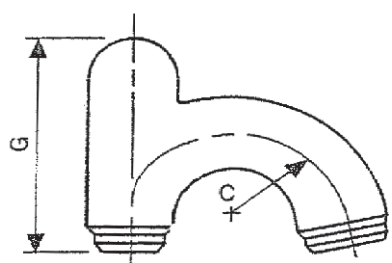
LONG SWEEP TEE



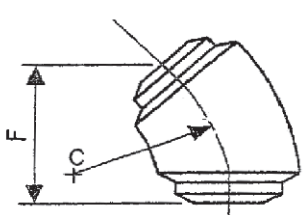
LONG SWEEP FULL FLOW TEE



STANDPIPE GOOSENECK 160° WITH TOP OUTLET

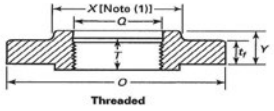


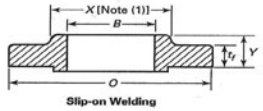
STANDPIPE GOOSENECK WITH TOP INTEGRAL BULLPLUG

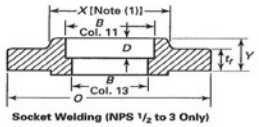


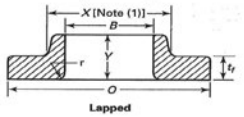
G SWEEP 45° ELBOW

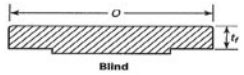
DIMENSION OF CLASS 150 FLANGES - ASME B16.5

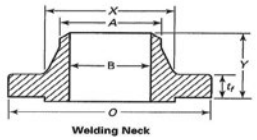


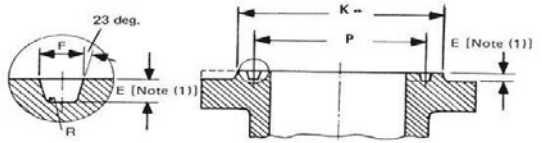


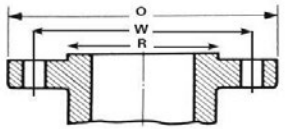


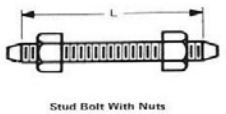












	FLANGE DIMENSIONS		HUB DIMENSIONS		LENGTH THROUGH HUB			THREADED FLANGE		SW	BORE			RF DIMENSIONS		RTJ DIMENSIONS						BOLT HOLE DRILLING				STUD BOLT LENGHT	
Nominal Pipe size	OD Flange	Thickn.	Large end	Small end	Thr. Slip SW	Lapped	Weld Neck	Counter bore	Thread length	Socket depth	Slip-on SW	Lapped	Weld Neck	OD	Height	OD	Height	Groove number	Groove Pitch	Groove Depth	Groove Width	Bolt Circle	Bolt hole	No of bolts	Bolt diam.	2,0mm RF	Ring Joint
NPS	O	tf. min.	X	A	Y	Y	Y	Q min.	T min.	D	B min.	B min.	B	R		K	E		P	E	F	W	Bh	B min.	B min.	L	L
1/2"	90	9,6	30	21,3	14	16	46		16	10	22,2	22,9	15,8	34,9	2							60,3	15,9	4	1/2"	55	
3/4"	100	11,2	38	26,7	14	16	51		16	11	27,7	28,2	20,9	42,9	2							69,9	15,9	4	1/2"	65	
1"	110	12,7	49	33,4	16	17	54		17	13	34,5	34,9	26,6	50,8	2	63,5	6,35	R15	47,63	6,35	8,74	79,4	15,9	4	1/2"	65	75
1 1/4"	115	14,3	59	42,2	19	21	56		21	14	43,2	43,7	35,1	63,5	2	73	6,35	R17	57,15	6,35	8,74	88,9	15,9	4	1/2"	70	85
1 1/2"	125	15,9	65	48,3	21	22	60		22	16	49,5	50	40,9	73	2	82,5	6,35	R19	65,07	6,35	8,74	98,4	15,9	4	1/2"	70	85
2"	150	17,5	78	60,3	24	25	62		25	17	61,9	62,5	52,5	92,1	2	102	6,35	R22	82,55	6,35	8,74	120,7	19,1	4	5/8"	85	95
2 1/2"	180	20,7	90	73	27	29	68		29	19	74,6	75,4	62,7	104,8	2	121	6,35	R25	101,60	6,35	8,74	139,7	19,1	4	5/8"	90	100
3"	190	22,3	108	88,9	29	30	68		30	21	90,7	91,4	77,9	127	2	133	6,35	R29	114,30	6,35	8,74	152,4	19,1	4	5/8"	90	100
3 1/2"	215	22,3	122	101,6	30	32	70		32		103,4	104,1	90,1	139,7	2	154	6,35	R33	131,78	6,35	8,74	177,8	19,1	8	5/8"	90	100
4"	230	22,3	135	114,3	32	33	75		33		116,1	116,8	102,3	157,2	2	171	6,35	R36	149,23	6,35	8,74	190,5	19,1	8	5/8"	90	100
5"	255	22,3	164	141,3	35	36	87		36		143,8	144,4	128,2	185,7	2	194	6,35	R40	171,45	6,35	8,74	215,9	22,2	8	3/4"	95	110
6"	280	23,9	192	168,3	38	40	87		40		170,7	171,4	154,1	215,9	2	219	6,35	R43	193,68	6,35	8,74	241,3	22,2	8	3/4"	100	115
8"	345	27	246	219,1	43	44	100		44		221,5	222,2	202,7	269,9	2	273	6,35	R48	247,65	6,35	8,74	298,5	22,2	8	3/4"	110	120
10"	405	28,6	305	273	48	49	100		49		276,2	277,4	254,6	323,8	2	330	6,35	R52	304,80	6,35	8,74	362	25,4	12	7/8"	115	125
12"	485	30,2	365	323,8	54	56	113		56		327	328,2	304,8	381	2	406	6,35	R56	381	6,35	8,74	431,8	25,4	12	7/8"	120	135
14"	535	33,4	400	355,6	56	79	125		57		359,2	360,2	To be	412,8	2	425	6,35	R59	396,88	6,35	8,74	476,3	28,6	12	1"	135	145
16"	595	35	457	406,4	62	87	125		64		410,5	411,2	speci-	469,9	2	483	6,35	R64	454,03	6,35	8,74	539,8	28,6	16	1"	135	145
18"	635	38,1	505	457	67	97	138		68		461,8	462,3	fied	533,4	2	546	6,35	R68	517,53	6,35	8,74	577,9	31,8	16	1 1/8"	145	160
20"	700	41,3	559	508	71	103	143		73		513,1	514,4	by pur-	584,2	2	597	6,35	R72	558,80	6,35	8,74	635	31,8	20	1 1/8"	160	170
24"	815	46,1	663	610	81	111	151		83		616	616	chaser.	692,2	2	711	6,35	R76	673,10	6,35	8,74	749,3	34,9	20	1 1/4"	170	185

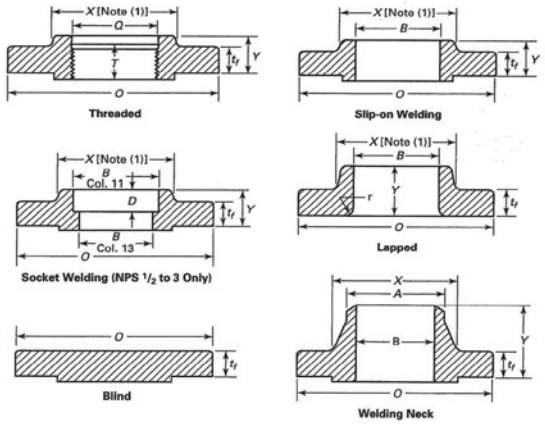
Note : All dimensions except NPS and Bolt Diameter are in millimeters.

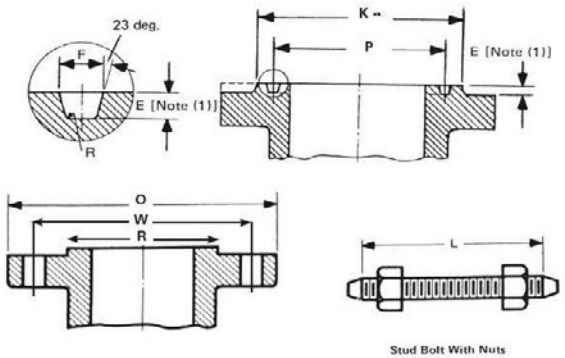
Note : The dimensions B for Socket Welding Flange equals B for Welding Neck.

Note(1): The tolerance for E is only applicable for groove depth

Note: # Lapped flange shall be 1.6 mm thicker than table value.

DIMENSION OF CLASS 300 FLANGES - ASME B16.5



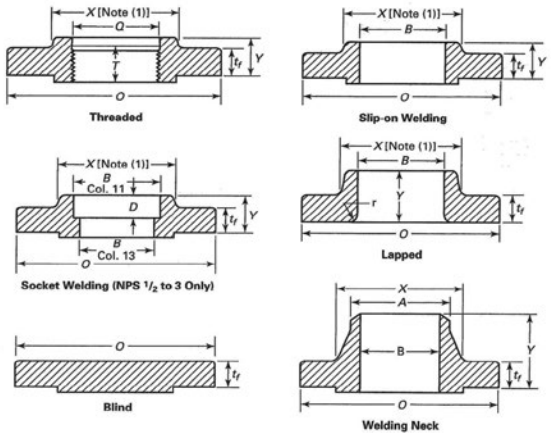


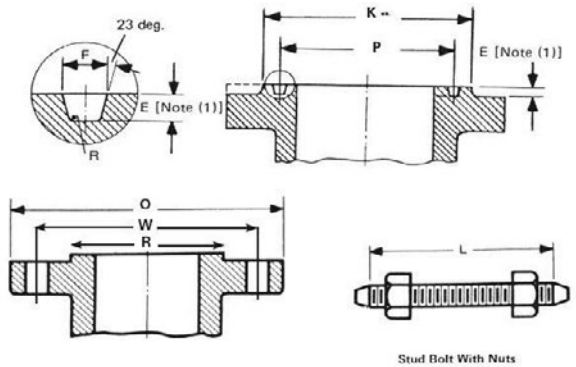
	FLANGE DIMENSION		HUB DIMENSION		LENGTH THROUGH HUB			THREADED FLANGE		SW	BORE			RF DIMENSION		RTJ DIMENSION				BOLT HOLE DRILLING					STUD BOLT LENGHT		
Nominal Pipe size	OD Flange	Thickn.	Large end	Small end	Thr. Slip. Sw	Lapped	Weld neck	Counter bore	Thread lenght	Socket depth	Slip-on SW	Lapped	Weld neck	OD	Height	OD	Height	Groove number	Groove Pitch	Groove Depth	Groove Width	Bolt Circle	Bolt hole	No of bolts	Bolt diam.	2,0mm RF	Ring Joint
NPS	O	tf. min.	X	A	Y	Y	Y	Q min.	T min.	D	B min.	B min.	B	R		K	E		P	E	F	W	Bh			L	L
1/2"	95	12,7	38	21,3	21	22	51	23,6	16	10	22,2	22,9	15,8	34,9	2	51	5,54	R11	34,14	5,54	7,14	66,7	15,9	4	1/2"	65	75
3/4"	115	14,3	48	26,7	24	25	56	29	16	11	27,7	28,2	20,9	42,9	2	63,5	6,35	R13	42,88	6,35	8,74	82,6	19,1	4	5/8"	75	90
1 "	125	15,9	54	33,4	25	27	60	35,8	18	13	34,5	34,9	26,6	50,8	2	70	6,35	R16	50,8	6,35	8,74	88,9	19,1	4	5/8"	75	90
1 1/4"	135	17,5	64	42,2	25	27	64	44,4	21	14	43,2	43,7	35,1	63,5	2	79,5	6,35	R18	60,33	6,35	8,74	98,4	19,1	4	5/8"	85	95
1 1/2"	155	19,1	70	48,3	29	30	67	50,3	23	16	49,5	50	40,9	73	2	90,5	6,35	R20	68,27	6,35	8,74	114,3	22,2	4	3/4"	90	100
2"	165	20,7	84	60,3	32	33	68	63,5	29	17	61,9	62,5	52,5	92,1	2	108	7,92	R23	82,55	7,92	11,91	127	19,1	8	5/8"	90	100
2 1/2"	190	23,9	100	73	37	38	75	76,2	32	19	74,6	75,4	62,7	104,8	2	127	7,92	R26	101,6	7,92	11,91	149,2	22,2	8	3/4"	100	115
3"	210	27	117	88,9	41	43	78	92,2	32	21	90,7	91,4	77,9	127	2	146	7,92	R31	123,83	7,92	11,91	168,3	22,2	8	3/4"	110	120
3 1/2"	230	28,6	133	101,6	43	44	79	104,9	37		103,4	104,1	90,1	139,7	2	159	7,92	R34	131,78	7,92	11,91	184,2	22,2	8	3/4"	110	125
4"	255	30,2	146	114,3	46	48	84	117,6	37		116,1	116,8	102,3	157,2	2	175	7,92	R37	149,23	7,92	11,91	200	22,2	8	3/4"	115	125
5"	280	33,4	178	141,3	49	51	97	144,4	43		143,8	144,4	128,2	185,7	2	210	7,92	R41	180,98	7,92	11,91	235	22,2	8	3/4"	120	135
6"	320	35	206	168,3	51	52	97	171,4	47		170,7	171,4	154,1	215,9	2	241	7,92	R45	211,12	7,92	11,91	269,9	22,2	12	3/4"	120	140
8"	380	39,7	260	219,1	60	62	110	222,2	51		221,5	222,2	202,7	269,9	2	302	7,92	R49	269,88	7,92	11,91	330,2	25,4	12	7/8"	140	150
10"	445	46,1	321	273	65	95	116	276,2	56		276,2	277,4	254,6	323,8	2	356	7,92	R53	323,85	7,92	11,91	387,4	28,6	16	1"	160	170
12"	520	49,3	375	323,8	71	102	129	328,6	61		327	328,2	304,8	381	2	413	7,92	R57	381	7,92	11,91	450,8	31,8	16	1 1/8"	170	185
14"	585	52,4	425	355,6	75	111	141	360,4	64		359,2	360,2		412,8	2	457	7,92	R61	419,1	7,92	11,91	514,4	31,8	20	1 1/8"	180	190
16"	650	55,6	483	406,4	81	121	144	411,2	69		410,5	411,2	To be	469,9	2	508	7,92	R65	469,9	7,92	11,91	571,5	34,9	20	1 1/4"	190	205
18"	710	58,8	533	457	87	130	157	462	70		461,8	462,3	specified	533,4	2	575	7,92	R69	533,4	7,92	11,91	628,6	34,9	24	1 1/4"	195	210
20"	775	62	587	508	94	140	160	512,8	74		513,1	514,4	by	584,2	2	635	9,53	R73	584,2	9,53	13,49	685,8	34,9	24	1 1/4"	205	220
24"	915	68,3	702	610	105	152	167	614,4	83		616	616	purchaser	692,2	2	749	11,13	R77	692,15	11,13	16,66	812,8	41,3	24	1 1/2"	230	255

Note : All dimensions except NPS and Bolt Diameter are in millimeters.
Note : The dimensions B for Socket Welding Flange equals B for Welding Neck.

Note(1): The tolerance for E is only applicable for groove depth
Note: # Lapped flange shall be 1.6 mm thicker than table value.

DIMENSION OF CLASS 600 FLANGES - ASME B16.5





	FLANGE DIMENSIONS		HUB DIMENSIONS		LENGTH THROUGH HUB			THREADED FLANGE		SW	BORE			RF DIMENSION		RTJ DIMENSION						BOLT HOLE DRILLING			STUD BOLT LENGHT		
Nominal Pipe Size	OD Flange	Thickn.	Large end	Small end	Thr.slip SW	Lapped	Weld neck	Counter bore	Thread length	Socket depth	Slip-on SW	Lapped	Weld neck	OD	Height	OD	Height	Groove No	Groove Pitch	Groove Depth	Groove Width	Bolt Circle	Bolt hole	No of RF	Bolt diam	7.0 mm RF	Ring Joint
NPS	o	tf. min.	X	A	Y	Y	Y	Q min	T min	D	B min	B min	B	R		K	E		P	E	F	W	Bh			L	L
1/2"	95	14,3	38	21,3	22	22	52	23,6	16	10	22,2	22,9		34,9	7.0	51	5,54	R11	34,14	5,54	7,14	66,7	15,9	4	1/2"	75	75
3/4"	115	15,9	48	26,7	25	25	57	29,0	16	11	27,7	28,2		42,9	7.0	63,5	6,35	R13	42,88	6,35	8,74	82,6	19,1	4	5/8"	90	90
1"	125	17,5	54	33,4	27	27	62	35,8	18	13	34,5	34,9		50,8	7.0	70	6,35	R16	50,8	6,35	8,74	88,9	19,1	4	5/8"	90	90
1 1/4"	135	20,7	64	42,2	29	29	67	44,4	21	14	43,2	43,7		63,5	7.0	79,5	6,35	R18	60,33	6,35	8,74	98,4	19,1	4	5/8"	95	95
1 1/2	155	22,3	70	48,3	32	32	70	50,6	23	16	49,5	50,0		73	7.0	90,5	6,35	R20	68,27	6,35	8,74	114,3	22,2	4	3/4"	110	110
2"	165	25,4	84	60,3	37	37	73	63,5	29	17	61,9	62,5		92,1	7.0	108	7,92	R23	82,55	7,92	11,91	127	19,1	8	5/8"	110	110
2 1/2"	190	28,6	100	73,0	41	41	79	76,2	32	19	74,6	75,4		104,8	7.0	127	7,92	R26	101,6	7,92	11,91	149,2	22,2	8	3/4"	120	120
3"	210	31,8	117	88,9	46	46	83	92,2	35	21	90,7	91,4		127	7.0	146	7,92	R31	123,83	7,92	11,91	168,3	22,2	8	3/4"	125	125
3 1/2"	230	35,0	133	101,6	49	49	86	104,9	40		103,4	104,1		139,7	7.0	169	7,92	R34	131,78	7,92	11,91	184,2	25,4	8	7/8"	140	140
4"	275	38,1	152	114,3	54	54	102	117,6	42		116,1	116,8		157,2	7.0	175	7,92	R37	149,23	7,92	11,91	215,9	25,4	8	7/8"	145	145
5"	330	44,5	189	141,3	60	60	114	144,4	48		143,8	144,4		185,7	7.0	210	7,92	R41	180,98	7,92	11,91	266,7	28,6	8	1"	165	165
6"	355	47,7	222	168,3	67	67	117	171,4	51		170,7	171,4		215,9	7.0	241	7,92	R45	211,12	7,92	11,91	292,1	28,6	12	1"	170	170
8"	420	55,6	273,0	219,1	76	76	133	222,2	58		221,5	222,2		269,9	7.0	302	7,92	R49	269,88	7,92	11,91	349,2	31,8	12	1 1/8"	195	195
10"	510	63,5	343	273,0	86	111	152	276,2	66		276,2	277,4		323,8	7.0	356	7,92	R53	323,85	7,92	11,91	431,8	34,9	16	1 1/4"	215	215
12"	560	66,7	400	323,8	92	117	156	328,6	70		327,0	328,2		381	7.0	413	7,92	R57	381	7,92	11,91	489	34,9	20	1 1/4"	220	220
14"	605	69,9	432	355,6	94	127	165	360,4	74		359,2	360,2		412,8	7.0	457	7,92	R61	419,1	7,92	11,91	527	38,1	20	1 3/8"	235	235
16"	685	76,2	495	406,4	106	140	178	411,2	78		410,5	411,2	To be	469,9	7.0	508	7,92	R65	469,9	7,92	11,91	603,2	41,3	20	1 1/2"	255	255
18"	745	82,6	546	457,0	117	152	184	462,0	80		461,8	514,4	specified	533,4	7.0	575	7,92	R69	533,4	7,92	11,91	654	44,5	20	1 5/8"	275	275
20"	815	88,9	610	508,0	127	165	190	512,8	83		513,1	616,0	by	584,2	7.0	635	9,53	R73	584,2	9,53	13,49	723,9	44,5	24	1 5/8"	285	285
24"	940	101,6	718	610,0	140	184	203	614,4	93		616,0		Purchaser	692,2	7.0	749	11,13	R77	692,15	11,13	16,66	838,2	50,8	24	1 7/8"	330	330

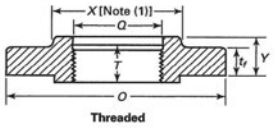
Note : All dimensions except NPS and Bolt Diameter are in millimeters.

Note : The dimensions B for Socket Welding Flange equals B for Welding Neck.

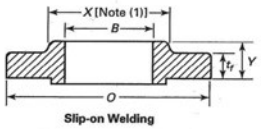
Note(1): The tolerance for E is only applicable for groove depth

Note: # Lapped flange shall be 1.6 mm thicker than table value.

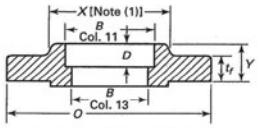
DIMENSION OF CLASS 900 FLANGES - ASME B16.5



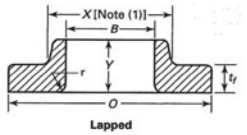
Threaded



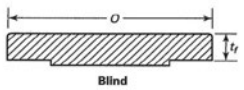
Slip-on Welding



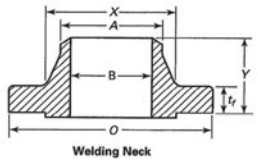
Socket Welding (NPS 1/2 to 3 Only)



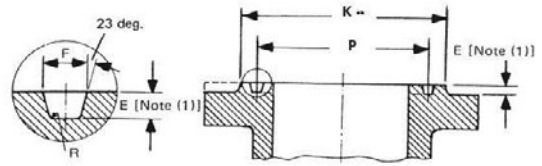
Lapped

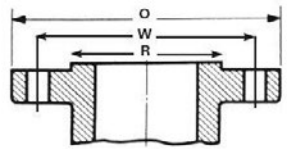


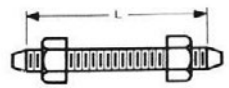
Blind



Welding Neck







Stud Bolt With Nuts

	FLANGE DIMENSIONS		HUB DIMENSIONS		LENGTH THRUGH HUB			TREADED FLANGE		SW	BORE			RF DIMENSION		RTJ DIMENSION						BOLT HOLE DRILLING				STUD BOLT LENGHT	
Nominal Pipe Size	OD Flange	Thickn.	Large end	Small end	Thr.slip	Lapped	Weld neck	Counter bore	Thread length	Socket depth	Slip-on	Lapped	Weld neck	OD	Height	Od	Height	Groove No	Groove Pitch	Groove Depth	Groove Width	Bolt Circle	Bolt hole	No of RF	Bolt diam	7.0 mm RF	Ring Joint
NPS	o	tf. min.	X	A	Y	Y	Y	Q min	T min	D	B min	B min	B	R		K	E		P	E	F	W	Bh			L	L
1/2"																											
3/4"																											
1"																											
1 1/4"																											
1 1/2"			Use Class 1500 dimensions in these sizes													Use Class 1500 dimensions in these sizes											
2"																											
2 1/2"																											
3"	240	38,1	127,0	88,9	54	54	102	92,2	42	...	90,7	91,4		127,0	7.0	156,0	7,9	R31	123,83	7,92	11,91	190,5	25,4	8	7/8"	145,0	145,0
4"	290	44,5	159,0	114,3	70	70	114	117,6	48	...	116,1	116,8		157,2	7.0	181,0	7,9	R37	149,23	7,92	11,91	235,0	31,8	8	1 1/8"	170,0	170,0
5"	350	50,8	190,0	141,3	79	79	127	144,4	54	...	143,8	144,4		185,7	7.0	216,0	7,9	R41	180,98	7,92	11,91	279,4	34,9	8	1 1/4"	190,0	190,0
6"	380	55,6	235,0	168,3	86	86	140	171,4	58	...	170,7	171,4		215,9	7.0	241,0	7,9	R45	211,12	7,92	11,91	317,5	31,8	12	1 1/8"	190,0	195,0
8"	470	63,5	298,0	219,1	102	114	162	222,2	64	...	221,5	222,2		269,9	7.0	308,0	7,9	R49	269,88	7,92	11,91	393,7	38,1	12	1 3/8"	220,0	220,0
10"	545	69,9	368,0	273,0	108	127	184	276,2	72	...	276,2	277,4		323,8	7.0	362,0	7,9	R53	323,85	7,92	11,91	469,9	38,1	16	1 3/8 "	235,0	235,0
12"	610	79,4	419,0	323,8	117	143	200	328,6	77	...	327,0	328,2		381,0	7.0	419,0	7,9	R57	381,00	7,92	11,91	533,4	38,1	20	1 3/8"	255,0	255,0
14"	640	85,8	451,0	355,6	130	156	213	360,4	83	...	359,2	360,2		412,8	7.0	467,0	11,13	R62	419,10	11,13	16,66	558,8	41,3	20	1 1/2 "	275,0	280,0
16"	705	88,9	508,0	406,4	133	165	216	411,2	86	...	410,5	411,2	To be	469,9	7.0	524,0	11,13	R66	469,90	11,13	16,66	616,0	44,5	20	1 5/8"	285,0	290,0
18"	785	101,6	565,0	457,0	152	190	229	462,0	89	...	461,8	462,3	specified	533,4	7.0	594,0	12,70	R70	533,40	12,70	19,84	685,8	50,8	20	1 7/8"	325,0	335,0
20"	855	108,0	622,0	508,0	159	210	248	512,8	93	...	513,1	514,4	by	584,2	7.0	648,0	12,70	R74	584,20	12,70	19,84	749,3	54,0	20	2"	350,0	360,0
24"	1040	139,7	749,0	610,0	203	267	292	614,4	102	...	616,0	616,0	Purchaser	692,2	7.0	772,0	15,88	R78	692,15	15,88	26,97	901,7	66,7	20	2 1/2"	440,0	455,0

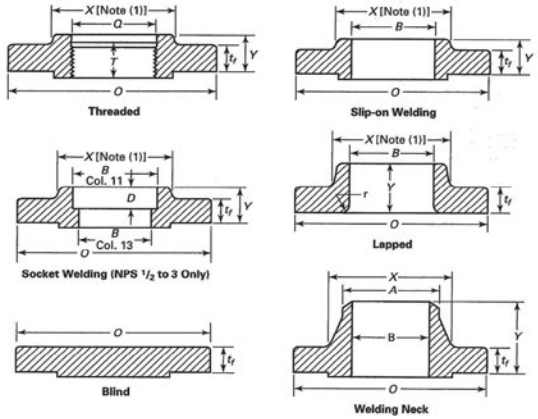
Note : All dimensions except NPS and Bolt Diameter are in millimeters.

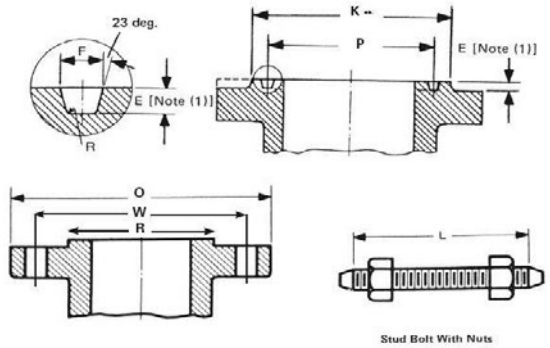
Note : The dimensions B for Socket Welding Flange equals B for Welding Neck.

Note(1): The tolerance for E is only applicable for groove depth

Note: # Lapped flange shall be 1.6 mm thicker than table value.

DIMENSION OF CLASS 1500 FLANGES - ASME B16.5



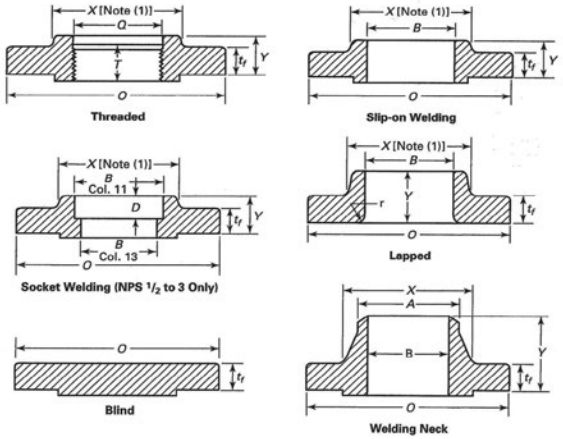


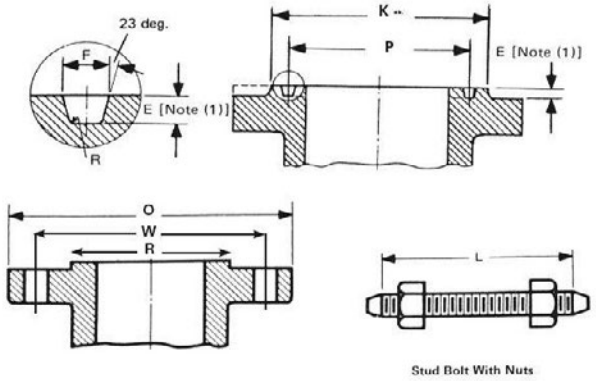
	FLANGE DIMENSIONS		HUB DIMENSIONS		LENGTH THROUGH HUB			THREADED FLANGE		SW	BORE			RF DIMENSION		RTJ DIMENSION						BOLT HOLE DRILLING				STUD BOLT LENGHT	
Nominal Pipe Size	OD Flange	Thickn.	Large end	Small end	Thr.slip SW	Lapped	Weld neck	Counter bore	Thread length	Socket depth	Slip-on	Lapped	Weld neck	OD	Height	OD	Height	Groove No	Groove Pitch	Groove Depth	Groove Width	Bolt Circle	Bolt hole	No of RF	Bolt diam	7.0 mm RF	Ring Joint
NPS	o	tf. min.	X	A	Y	Y	Y	Q min	T min	D	B min	B min	B	R		K	E		P	E	F	W	Bh			L	L
1/2"	120	22,3	38	21,3	32	32	60	23,6	23	10	22,2	22,9		34,9	7,0	60,5	6,35	R12	39,67	6,35	8,74	82,6	22,2	4	3/4"	110	110
3/4"	130	25,4	44	26,7	35	35	70	29,0	26	11	27,7	28,2		42,9	7,0	66,5	6,35	R14	44,45	6,35	8,74	88,9	22,2	4	3/4"	115	115
1"	150	28,6	52	33,4	41	41	73	35,8	29	13	34,5	34,9		50,8	7,0	71,5	6,35	R16	50,80	6,35	8,74	101,6	25,4	4	7/8"	125	125
1 1/4"	160	28,6	64	42,2	41	41	73	44,4	31	14	43,2	43,7		63,5	7,0	81,0	6,35	R18	60,33	6,35	8,74	111,1	25,4	4	7/8"	125	125
1 1/2"	180	31,8	70	48,3	44	44	83	50,6	32	16	49,5	50,0		73,0	7,0	92,0	6,35	R20	68,27	6,35	8,74	123,8	28,6	4	1"	140	140
2"	215	38,1	105	60,3	57	57	102	63,5	39	17	61,9	62,5		92,1	7,0	124,0	7,92	R24	95,25	7,92	11,91	165,1	25,4	8	7/8"	145	145
2 1/2"	245	41,3	124	73,0	64	64	105	76,2	48	19	74,6	75,4		104,8	7,0	137,0	7,92	R27	107,95	7,92	11,91	190,5	28,6	8	1"	160	160
3"	265	47,7	133	88,9	...	73	117	...	...	...	...	91,4		127,0	7,0	168,0	7,92	R35	136,53	7,92	11,91	203,2	31,8	8	1 1/8"	180	180
4"	310	54,0	162	114,3	...	90	124	...	...	...	...	116,8		157,2	7,0	194,0	7,92	R39	161,93	7,92	11,91	241,3	34,9	8	1 1/4"	195	195
5"	375	73,1	197	141,3	...	105	156	...	...	...	...	144,4		185,7	7,0	229,0	7,92	R44	193,68	7,92	11,91	292,1	41,3	8	1 1/2"	250	250
6"	395	82,6	229	168,3	...	119	171	...	...	...	...	171,4		215,9	7,0	248,0	9,53	R46	211,14	11,13	13,49	317,5	38,1	12	1 3/8"	260	265
8"	485	92,1	292	219,1	...	143	213	...	...	...	...	222,2		169,9	7,0	318,0	11,13	R50	269,88	11,13	16,66	393,7	44,5	12	1 5/8"	290	300
10"	585	108,0	368	273,0	...	178	254	...	...	...	...	277,4		323,8	7,0	371,0	11,13	R54	323,85	14,27	16,66	482,6	50,8	12	1 7/8"	335	345
12"	675	123,9	451	323,8	...	219	283	...	...	...	...	328,2		381,0	7,0	438,0	14,27	R58	381,0	15,88	23,01	571,5	54,0	16	2"	375	385
14"	750	133,4	495	355,6	...	241	298	...	...	...	...	360,2		412,8	7,0	489,0	15,88	R63	419,10	17,48	26,97	635,0	60,3	16	2 1/4"	405	425
16"	825	146,1	552	406,4	...	260	311	...	...	...	...	411,2	To be	469,9	7,0	546,0	17,48	R67	469,90	17,48	30,18	704,8	66,7	16	2 1/2"	445	470
18"	915	162,0	597	457,0	...	276	327	...	...	...	...	462,3	specified	533,4	7,0	613,0	17,48	R71	533,40	17,48	30,18	774,7	73,0	16	2 3/4"	495	525
20"	985	177,8	641	508,0	...	292	356	...	...	...	...	514,4	by	584,2	7,0	637,0	17,48	R75	584,20	17,48	33,32	831,8	79,4	16	3"	540	565
24"	1170	203,2	762	610,0	...	330	406	...	...	...	...	616,0	Purchaser	692,2	7,0	794,0	20,62	R79	692,15	20,62	36,53	990,6	92,1	16	3 1/2"	615	650

Note : All dimensions except NPS and Bolt Diameter are in millimeters.
Note : The dimensions B for Socket Welding Flange equals B for Welding Neck.

Note(1): The tolerance for E is only applicable for groove depth
Note: # Lapped flange shall be 1.6 mm thicker than table value.

DIMENSION OF CLASS 2500 FLANGES - ASME B16.5





	FLANGE DIMENSIONS		HUB DIMENSIONS		LENGTH THROUGH HUB			THREADED FLANGE		SW	BORE			RF DIMENSION		RTJ DIMENSION						BOLT HOLE DRILLING				STUD BOLT LENGHT	
Normal Pipe Size	OD Flange	Thickn.	Large end	Small end	Thr.slip sw	Lapped	Weld neck	Counter bore	Thread length	Socket depth	Slip-on	Lapped	Weld neck	OD	Height	OD	Height	Groove No	Groove Pitch	Groove Depth	Groove Width	Bolt Circle	Bolt hole	No of RF	Bolt diam	7.0 m m RF	Ring Joint
NPS	o	tf. min.	X	A	Y	Y	Y	Q min	T min	D	B min	B min	B	R		K	E		P	E	F	W	Bh			L	L
1/2"	135	30,2	43	21,3	40	40	73	23,6	29	...	...	22,9		34,9	7,0	65	6,35	R13	42,88	6,35	8,74	88,9	22,2	4	3/4"	120	120
3/4"	140	31,8	51	26,7	43	43	79	29,0	32	...	...	28,2		42,9	7,0	73	6,35	R16	50,80	6,35	8,74	95,2	22,2	4	3/4"	125	125
1"	160	35,0	57	33,4	48	48	89	35,8	35	...	...	34,9		50,8	7,0	82,5	6,35	R18	60,33	6,35	8,74	108,0	25,4	4	7/8"	140	140
1 1/4"	185	38,1	73	42,2	52	52	95	44,4	39	...	...	43,7		63,5	7,0	102	7,92	R21	72,23	7,92	11,91	130,2	28,6	4	1"	150	150
1 1/2"	205	44,5	79	48,3	60	60	111	50,6	45	...	...	50,0		73,0	7,0	114	7,92	R23	82,55	7,92	11,91	146,0	31,8	4	1 1/8"	170	170
2"	235	50,9	95	60,3	70	70	127	63,5	51	...	...	62,5		92,1	7,0	133	7,92	R26	101,60	7,92	11,91	171,4	28,6	8	1"	180	180
2 1/2"	265	57,2	114	73,0	79	79	143	76,2	58	...	...	75,4		104,8	7,0	149	9,52	R28	111,13	9,52	13,49	196,8	31,8	8	1 1/8"	195	205
3"	305	66,7	133	88,9	...	92	168	...	...	...	...	91,4		127,0	7,0	168	9,52	R32	127,00	9,52	13,49	228,6	34,9	8	1 1/4"	220	230
4"	355	76,2	165	114,3	...	108	190	...	...	...	...	116,8		157,2	7,0	203	11,13	R38	157,18	11,13	16,66	273,0	41,3	8	1 1/2"	255	260
5"	420	92,1	203	141,3	...	130	229	...	...	...	...	144,4		185,7	7,0	241	12,70	R42	190,50	12,70	19,84	323,8	47,6	8	1 3/4"	300	310
6"	485	108,0	235	168,3	...	152	273	...	...	...	...	171,4	To be	215,9	7,0	279	12,70	R47	228,6	12,70	19,84	368,3	54,0	8	2"	345	355
8"	550	127,0	305	219,1	...	178	318	...	...	...	...	222,2	specified	269,9	7,0	340	14,27	R51	279,40	14,27	23,01	438,2	54,0	12	2"	380	395
10"	675	165,1	375	273,0	...	229	419	...	...	...	...	277,4	by	323,8	7,0	425	11,48	R55	342,90	11,48	30,18	539,8	66,7	12	2 1/2"	490	510
12"	760	184,2	441	323,8	...	254	464	...	...	...	...	328,2	Purchaser	381,0	7,0	495	11,48	R60	406,40	11,48	33,32	619,1	73,0	12	2 3/4"	540	560

Note : All dimensions except NPS and Bolt Diameter are in millimeters.
Note : The dimensions B for Socket Welding Flange equals B for Welding Neck.

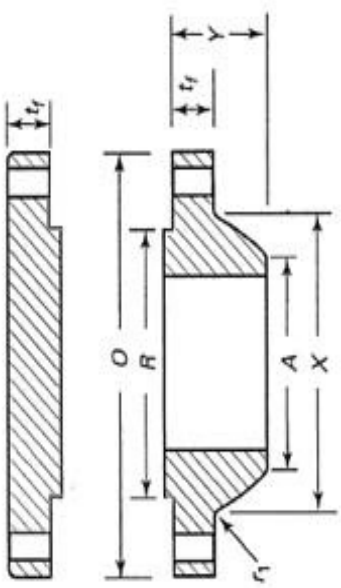
Note(1): The tolerance for E is only applicable for groove depth
Note: # Lapped flange shall be 1.6 mm thicker than table value.

TOLERANCES - B16.5

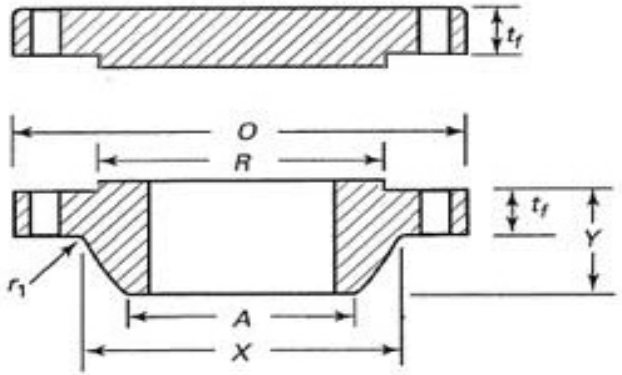
DENOMINATION	DESCRIPTION	SIZE RANGE	TOLERANCE
O	Outside diameter flange ring	<=24"	± 1,6 mm
		>=26"	± 3,2mm
B	Inside diameter/bore	Weld neck:	
		>=10"	± 1,0 mm
		12"-18"	± 1,5 mm
		<= 20"	+ 3,5 / - 1,5 mm
		Slip-on Joint, socket weld, threaded	
		>=10"	+1,0 / -0,0 mm
		<=12 "	+ 1,5 / - 0,0 mm
A	Diameter smal end	>=5"	+ 2,0 / - 1,0 mm
	of HUB / WN end	<=6"	+ 4,0 / - 1,0 mm
X	Diameter of HUB base	>=24" (dimension X)	+ 1,6 / - 0,8 mm
		<=26" (dimension X)	+ 3,2 / -0,8 mm
W	Drilling and facing	Bolt circle diameter	± 1,5 mm
		center to center adjacent bolt holes	± 0,8 mm
		max eccentricity between bolt circle diameter	
		and machining facing diameter	
		>=2 1/2"	0,8 mm
		>=3"	1,5 mm
Y	Overall HUB Lenghth	<=4"	± 1,5 mm
	of WN flanges	5" - 10"	+ 1,5 / - 3,0 mm
		>= 12 "	+ 3,0 / - 5,0 mm
tf	Thickness of flange ring	<=18"	+ 3,0 / - 0,0 mm
		>=20"	+ 5,0 / - 0,0 mm
E	Groove depth	Applicable for groove depth only	+ 0,4 / - 0,0 mm
F	Groove width		± 0,2 mm
P	Groove pitch		± 0,13 mm
K	RTJ raised portion		+ 0,50 / -0,00 mm
R	RF raised portion	2.0 millimeter RF height	± 1.0 mm
		7.0 millimeter RF height	± 0,5 mm

1) These tolerances are not coverd by ASME B 16,5

DIMENSION FLANGES - ASME B16.47 SERIE A/MSS-SP-44



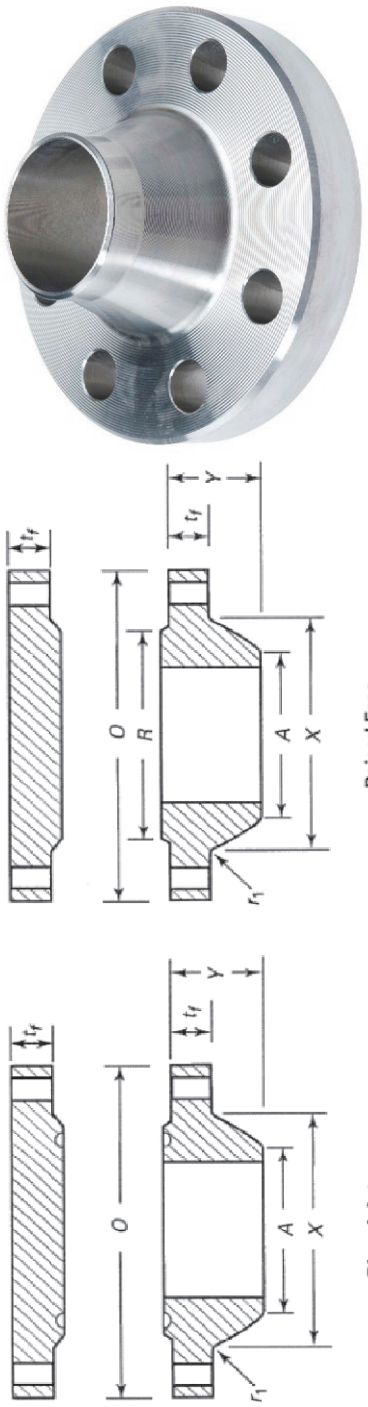
DN	NPS	O.D. OF FLANGE O [mm]	MINIMUM THICKNESS OF FLANGE TF [mm] WNF	MINIMUM THICKNESS OF FLANGE TF [mm] BLIND	LENGTH THROUGH HUB Y [mm]	RAISED FACE DIAM. , R[mm]	HUB DIAM. TOP. A [mm]	DIAM. OF HUB. X [mm]	NUMBER OF BOLT HOLES	DIAM. OF BOLT D [in]	WEIGHT WN	WEIGHT BLIND
650	26"	870	66.7	66.7	119	749	660.4	676	24	1-1/4"	147	321
700	28"	925	69.9	69.9	124	800	711.2	727	28	1-1/4"	168	379
750	30"	985	73.1	73.1	135	857	762.0	781	28	1-1/4"	196	449
800	32"	1060	79.4	79.4	143	914	812.8	832	28	1-1/2"	245	558
850	34"	1110	81.0	81.0	148	965	863.6	883	32	1-1/2"	263	625
900	36"	1170	88.9	88.9	156	1022	914.4	933	32	1-1/2"	310	757
950	38"	1240	85.8	85.8	156	1073	965.2	991	32	1-1/2"	346	826
1000	40"	1290	88.9	88.9	162	1124	1016.0	1041	36	1-1/2"	373	924
1050	42"	1345	95.3	95.3	170	1194	1066.8	1092	36	1-1/2"	427	1080
1100	44"	1405	100.1	100.1	176	1245	1117.6	1143	40	1-1/2"	475	1229
1150	46"	1455	101.6	101.6	184	1295	1168.4	1197	40	1-1/2"	508	1342
1200	48"	1510	106.4	106.4	191	1359	1219.2	1248	44	1-1/2"	561	1516
1250	50"	1570	109.6	109.6	202	1410	1270.0	1302	44	1-3/4"	603	1667
1300	52"	1625	114.3	114.3	208	1461	1320.8	1353	44	1-3/4"	666	1866
1350	54"	1685	119.1	119.1	214	1511	1371.6	1403	44	1-3/4"	736	2088
1400	56"	1745	122.3	122.3	227	1575	1422.4	1457	48	1-3/4"	818	2307
1450	58"	1805	127.0	127.0	233	1626	1473.2	1508	48	1-3/4"	895	2553
1500	60"	1855	130.2	130.2	238	1676	1524.0	1559	52	1-3/4"	941	2764
											Weight for RF	



DIMENSION FLANGES - ASME B16.47 SERIE A/MSS-SP-44

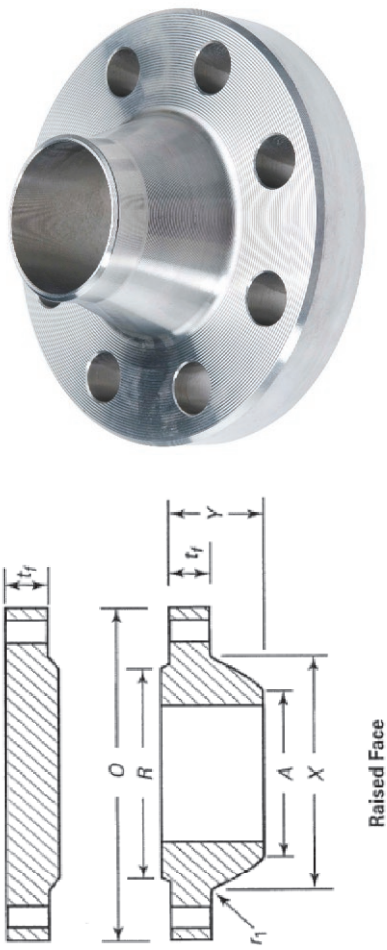
DN	NPS	O.D. OF FLANGE O [mm]	MINIMUM THICKNESS OF FLANGE TF [mm] WNF	MINIMUM THICKNESS OF FLANGE TF [mm] BLIND	LENGTH THROUGH HUB Y [mm]	RAISED FACE DIAM. , R[mm]	HUB DIAM. TOP, A [mm]	DIAM. OF HUB, X [mm]	NUMBER OF BOLT HOLES	DIAM. OF BOLT D [in]	WEIGHT WN	WEIGHT BLIND
650	26"	970	77,8	82,6	183	749	660,4	721	28	1-5/8"	280	477
700	28"	1035	84,2	88,9	195	800	711,2	775	28	1-5/8"	339	585
750	30"	1090	90,5	93,7	208	857	762,0	827	28	1-3/4"	390	684
800	32"	1150	96,9	98,5	221	914	812,8	881	28	1-7/8"	448	794
850	34"	1205	100,1	103,2	230	965	863,6	937	28	1-7/8"	504	918
900	36"	1270	103,2	109,6	240	1022	914,4	991	32	2"	559	1072
950	38"	1170	106,4	106,4	179	1029	965,2	994	32	1-1/2"	309	899
1000	40"	1240	112,8	112,8	192	1086	1016,0	1048	32	1-5/8"	374	1065
1050	42"	1290	117,5	117,5	198	1137	1066,8	1099	32	1-5/8"	409	1206
1100	44"	1355	122,3	122,3	205	1194	1117,6	1149	32	1-3/4"	464	1378
1150	46"	1415	127,0	127,0	214	1245	1168,4	1203	28	1-7/8"	536	1570
1200	48"	1465	131,8	131,8	222	1302	1219,2	1254	32	1-7/8"	572	1743
1250	50"	1530	138,2	138,2	230	1359	1270,0	1305	32	2"	648	1982
1300	52"	1580	142,9	142,9	237	1410	1320,8	1356	32	2"	697	2193
1350	54"	1660	150,9	150,9	251	1467	1371,6	1410	28	2-1/4"	837	2537
1400	56"	1710	152,4	152,4	259	1518	1422,4	1464	28	2-1/4"	884	2727
1450	58"	1760	157,2	157,2	265	1575	1473,2	1514	32	2-1/4"	929	2974
1500	60"	1810	162,0	162,0	271	1626	1524,0	1565	32	2-1/4"	990	3249
											Weight for RF	

DIMENSION FLANGES - ASME B16.47 SERIE A/MSS-SP-44



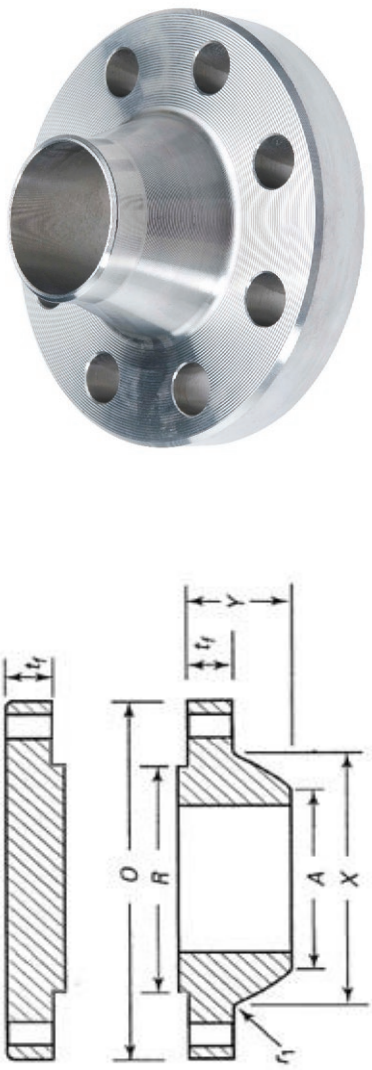
DN	NPS	O.D. OF FLANGE O [mm]	MINIMUM THICKNESS OF FLANGE TF [mm] WNF	MINIMUM THICKNESS OF FLANGE TF [mm] BLIND	LENGTH THROUGH HUB Y [mm]	RAISED FACE DIAM., R[mm]	HUB DIAM. TOP. A [mm]	DIAM. OF HUB. X [mm]	NUMBER OF BOLT HOLES	DIAM. OF BOLT D [in]	WEIGHT WN	WEIGHT BLIND
650	26"	1015	108.0	125.5	222	749	660.4	748	28	1-7/8"	445	802
700	28"	1075	111.2	131.8	235	800	711.2	803	28	2"	499	937
750	30"	1130	114.3	139.7	248	857	762.0	862	28	2"	566	1106
800	32"	1195	117.5	147.7	260	914	812.8	918	28	2-1/4"	635	1298
850	34"	1245	120.7	154.0	270	965	863.6	973	28	2-1/4"	696	1477
900	36"	1315	123.9	162.0	283	1022	914.4	1032	28	2-1/2"	789	1720
950	38"	1270	152.4	155.0	254	1054	965.2	1022	28	2-1/4"	650	1590
1000	40"	1320	158.8	162.0	264	1111	1016.0	1073	32	2-1/4"	698	1694
1050	42"	1405	168.3	171.5	279	1168	1066.8	1127	28	2-1/2"	865	2027
1100	44"	1455	173.1	177.8	289	1226	1117.6	1181	32	2-1/2"	917	2245
1150	46"	1510	179.4	185.8	300	1276	1168.4	1235	32	2-1/2"	1019	2542
1200	48"	1595	189.0	195.3	316	1334	1219.2	1289	32	2-3/4"	1207	2950
1250	50"	1670	196.9	203.2	329	1384	1270.0	1343	28	3"	1412	3380
1300	52"	1720	203.2	209.6	337	1435	1320.8	1394	32	3"	1481	3681
1350	54"	1780	209.6	217.5	349	1492	1371.6	1448	32	3"	1623	4090
1400	56"	1855	217.5	225.5	362	1543	1422.4	1502	32	3-1/4"	1829	4585
1450	58"	1905	222.3	231.8	370	1600	1473.2	1553	32	3-1/4"	1939	4985
1500	60"	1995	233.4	242.9	389	1657	1524.0	1610	28	3-1/2"	2336	5749
											Weight RTJ 26"-36"	
											Weight RF for 38"-60	

DIMENSION FLANGES - ASME B16.47 SERIE A/MSS-SP-44



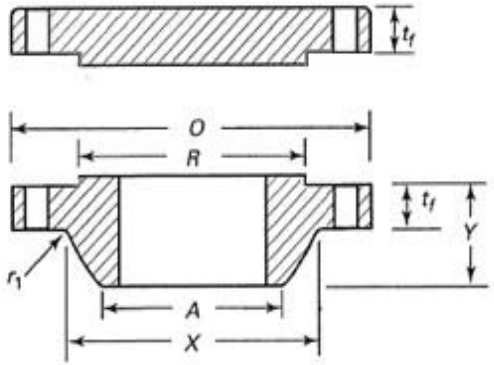
DN	NPS	O.D. OF FLANGE O [mm]	MINIMUM THICKNESS OF FLANGE TF [mm] WNF	MINIMUM THICKNESS OF FLANGE TF [mm] BLIND	LENGTH THROUGH HUB Y [mm]	RAISED FACE DIAM., R[mm]	HUB DIAM. TOP, A [mm]	DIAM. OF HUB, X [mm]	NUMBER OF BOLT HOLES	DIAM. OF BOLT D [in]	WEIGHT WN	WEIGHT BLIND
650	26"	1085	139.7	160.4	286	749	660.4	775	20	2-3/4""	690	1138
700	28"	1170	142.9	171.5	298	800	711.2	832	20	3"	811	1400
750	30"	1230	149.3	182.6	311	857	762.0	889	20	3"	937	1667
800	32"	1315	158.8	193.7	330	914	812.8	946	20	3-1/4"	1119	2001
850	34"	1395	165.1	204.8	349	965	863.6	1006	20	3-1/2"	1319	2399
900	36"	1460	171.5	214.4	362	1022	914.4	1064	20	3-1/2"	1489	2763
950	38"	1460	190.5	215.9	352	1099	965.2	1073	20	3-1/2"	1421	2685
1000	40"	1510	196.9	223.9	364	1162	1016.0	1127	24	3-1/2"	1503	2949
1050	42"	1560	206.4	231.8	371	1213	1066.8	1176	24	3-1/2"	1637	3279
1100	44"	1650	214.4	242.9	391	1270	1117.6	1235	24	3-3/4"	1906	3809
1150	46"	1735	225.5	255.6	411	1334	1168.4	1292	24	4"	2229	4422
1200	48"	1785	233.4	263.6	419	1384	1219.2	1343	24	4"	2394	4859
1250	50"	-	-	-	-	-	-	-	-	-	-	-
1300	52"	-	-	-	-	-	-	-	-	-	-	-
1350	54"	-	-	-	-	-	-	-	-	-	-	-
1400	56"	-	-	-	-	-	-	-	-	-	-	-
1450	58"	-	-	-	-	-	-	-	-	-	-	-
1500	60"	-	-	-	-	-	-	-	-	-	-	-
											Weight RTJ for 26"-36"	
											Weight RF for 38"-48"	

DIMENSION FLANGES - ASME B16.47 SERIE B



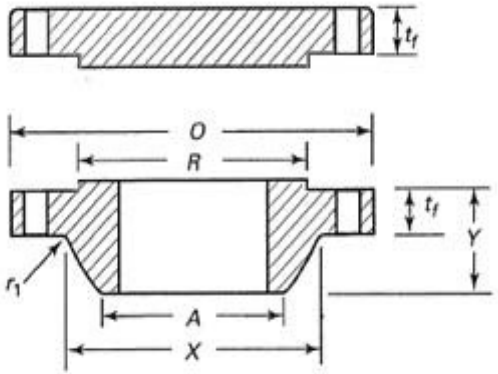
DN	NPS	O.D. OF FLANGE O [mm]	MINIMUM THICKNESS OF FLANGE TF [mm] WNF	MINIMUM THICKNESS OF FLANGE TF [mm] BLIND	LENGTH THROUGH HUB Y [mm]	RAISED FACE DIAM. . R[mm]	HUB DIAM. TOP. A [mm]	DIAM. OF HUB. X [mm]	NUMBER OF BOLT HOLES	DIAM. OF BOLT D [in]	WEIGHT WN	WEIGHT BLIND
650	26"	785	39.8	43.0	87	711	661.9	684	36	3/4"	61	177
700	28"	835	43.0	46.2	94	762	712.7	735	40	3/4"	70.3	214
750	30"	885	43.0	49.3	98	813	763.5	787	44	3/4"	76.6	256
800	32"	940	44.6	52.5	106	864	814.3	840	48	3/4"	87.6	304
850	34"	1005	47.7	55.7	109	921	865.1	892	40	7/8"	106	367
900	36"	1055	50.9	57.3	116	972	915.9	945	44	7/8"	120	417
950	38"	1125	52.5	62.0	122	1022	968.2	997	40	1"	144	507
1000	40"	1175	54.1	65.2	127	1080	1019.0	1049	44	1"	156	579
1050	42"	1225	57.3	66.8	132	1130	1069.8	1102	48	1"	172	647
1100	44"	1275	58.9	70.0	135	1181	1120.6	1153	52	1"	184	732
1150	46"	1340	60.4	73.1	143	1235	1171.4	1205	40	1-1/8"	216	846
1200	48"	1390	63.6	76.3	148	1289	1222.2	1257	44	1-1/8"	235	946
1250	50"	1445	66.8	79.5	152	1340	1273.0	1308	48	1-1/8"	369	899
1300	52"	1495	68.4	82.7	156	1391	1323.8	1360	52	1-1/8"	269	1175
1350	54"	1550	70.0	85.8	160	1441	1374.6	1413	56	1-1/8"	293	1312
1400	56"	1600	71.6	89.0	165	1492	1425.4	1465	60	1-1/8"	311	1445
1450	58"	1675	73.1	91.9	173	1543	1476.2	1516	48	1-1/4"	372	1640
1500	60"	1725	74.7	95.4	178	1600	1527.0	1570	52	1-1/4"	394	1799

DIMENSION FLANGES - ASME B16.47 SERIE B



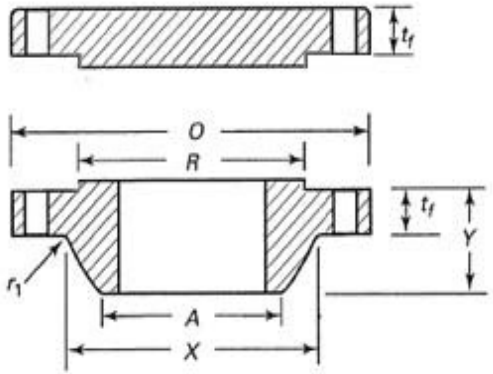
DN	NPS	O.D. OF FLANGE O [mm]	MINIMUM THICKNESS OF FLANGE TF [mm] WNF	MINIMUM THICKNESS OF FLANGE TF [mm] BLIND	LENGTH THROUGH HUB Y [mm]	RAISED FACE DIAM. , R[mm]	HUB DIAM. TOP, A [mm]	DIAM. OF HUB, X [mm]	NUMBER OF BOLT HOLES	DIAM. OF BOLT D [in]	WEIGHT WN	WEIGHT BLIND
650	26"	865	87,4	87,4	168	737	665,2	702	32	1-1/4"	186	404
700	28"	920	87,4	87,4	148	787	716,0	756	36	1-1/4"	203	456
750	30"	990	92,1	92,1	156	845	768,4	813	36	1-3/8"	248	554
800	32"	1055	101,6	101,6	167	902	819,2	864	32	1-1/2"	306	693
850	34"	1110	101,6	101,6	171	953	870,0	918	36	1-1/2"	328	765
900	36"	1170	101,6	101,6	179	1010	920,8	965	32	1-5/8"	368	858
950	38"	1220	109,6	109,6	165	1060	971,6	1016	36	1-5/8"	411	1004
1000	40"	1275	114,3	114,3	197	1114	1022,4	1067	40	1-5/8"	444	1131
1050	42"	1335	117,5	117,5	203	1168	1074,7	1118	36	1-3/4"	498	1279
1100	44"	1385	125,5	125,5	213	1219	1125,5	1173	40	1-3/4"	549	1465
1150	46"	1460	127,0	128,6	221	1270	1176,3	1229	36	1-7/8"	647	1675
1200	48"	1510	127,0	133,4	222	1327	1227,1	1278	40	1-7/8"	667	1857
1250	50"	1560	136,6	138,2	233	1378	1277,9	1330	44	1-7/8"	735	2050
1300	52"	1615	141,3	142,6	241	1429	1328,7	1383	48	1-7/8"	782	2254
1350	54"	1675	135,0	147,7	238	1480	1379,5	1435	48	1-7/8"	816	2519
1400	56"	1765	152,4	155,4	267	1537	1430,3	1494	36	2-1/4"	1089	2948
1450	58"	1825	152,4	160,4	273	1594	1481,1	1548	40	2-1/4"	1164	3254
1500	60"	1880	149,3	165,1	270	1651	1557,3	1599	40	2-1/4"	1184	3539

DIMENSION FLANGES - ASME B16.47 SERIE B

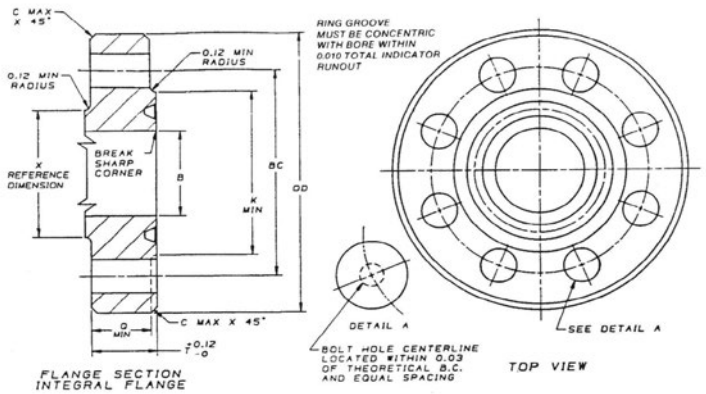


DN	NPS	O.D. OF FLANGE O [mm]	MINIMUM THICKNESS OF FLANGE TF [mm] WNF	MINIMUM THICKNESS OF FLANGE TF [mm] BLIND	LENGTH THROUGH HUB Y [mm]	RAISED FACE DIAM. , R[mm]	HUB DIAM. TOP, A [mm]	DIAM. OF HUB, X [mm]	NUMBER OF BOLT HOLES	DIAM. OF BOLT D [in]	WEIGHT WN	WEIGHT BLIND
650	26"	890	111,2	111,3	181	727	660,4	698	28	1-5/8"	251	534
700	28"	950	115,9	115,9	190	784	711,2	752	28	1-3/4"	294	636
750	30"	1020	125,5	127,0	205	841	762,0	806	28	1-7/8""	366	801
800	32"	1085	130,2	134,9	216	895	812,8	860	28	2"	423	958
850	34"	1160	141,3	144,2	233	953	863,6	914	24	2-1/4"	534	1174
900	36"	1215	146,1	150,9	243	1010	914,4	968	28	2-1/4"	574	1330
950	38"	-	-	-	-	-	-	-	-	-	-	-
1000	40"	-	-	-	-	-	-	-	-	-	-	-
1050	42"	-	-	-	-	-	-	-	-	-	-	-
1100	44"	-	-	-	-	-	-	-	-	-	-	-
1150	46"	-	-	-	-	-	-	-	-	-	-	-
1200	48"	-	-	-	-	-	-	-	-	-	-	-
1250	50"	-	-	-	-	-	-	-	-	-	-	-
1300	52"	-	-	-	-	-	-	-	-	-	-	-
1350	54"	-	-	-	-	-	-	-	-	-	-	-
1400	56"	-	-	-	-	-	-	-	-	-	-	-
1450	58"	-	-	-	-	-	-	-	-	-	-	-
1500	60"	-	-	-	-	-	-	-	-	-	-	-

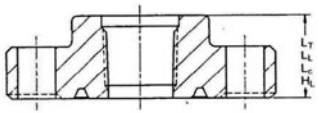
DIMENSION FLANGES - ASME B16.47 SERIE B



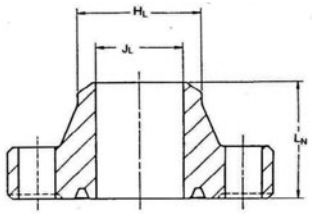
DN	NPS	O.D. OF FLANGE O [mm]	MINIMUM THICKNESS OF FLANGE TF [mm] WNF	MINIMUM THICKNESS OF FLANGE TF [mm] BLIND	LENGTH THROUGH HUB Y [mm]	RAISED FACE DIAM. , R[mm]	HUB DIAM. TOP, A [mm]	DIAM. OF HUB, X [mm]	NUMBER OF BOLT HOLES	DIAM. OF BOLT D [in]	WEIGHT WN	WEIGHT BLIND
650	26"	1020	135,0	154,0	259	762	660,4	743	20	2-1/2"	527	942
700	28"	1105	147,7	166,7	276	819	711,2	797	20	2-3/4"	662	1183
750	30"	1180	155,6	176,1	289	876	762,0	851	20	3"	784	1423
800	32"	1240	160,4	186,0	303	927	812,8	908	20	3"	882	1662
850	34"	1315	171,5	195,0	319	991	863,6	962	20	3-1/4"	1044	1958
900	36"	1345	173,1	201,7	325	1029	914,4	1016	24	3"	1057	2128
950	38"	-	-	-	-	-	-	-	-	-	-	-
1000	40"	-	-	-	-	-	-	-	-	-	-	-
1050	42"	-	-	-	-	-	-	-	-	-	-	-
1100	44"	-	-	-	-	-	-	-	-	-	-	-
1150	46"	-	-	-	-	-	-	-	-	-	-	-
1200	48"	-	-	-	-	-	-	-	-	-	-	-
1250	50"	-	-	-	-	-	-	-	-	-	-	-
1300	52"	-	-	-	-	-	-	-	-	-	-	-
1350	54"	-	-	-	-	-	-	-	-	-	-	-
1400	56"	-	-	-	-	-	-	-	-	-	-	-
1450	58"	-	-	-	-	-	-	-	-	-	-	-
1500	60"	-	-	-	-	-	-	-	-	-	-	-



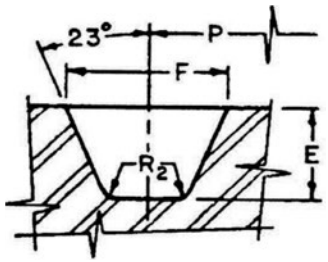
Flange, Welding Neck. Ring Type Joint (RTJ)



Threaded Flange



Weld Neck Flange



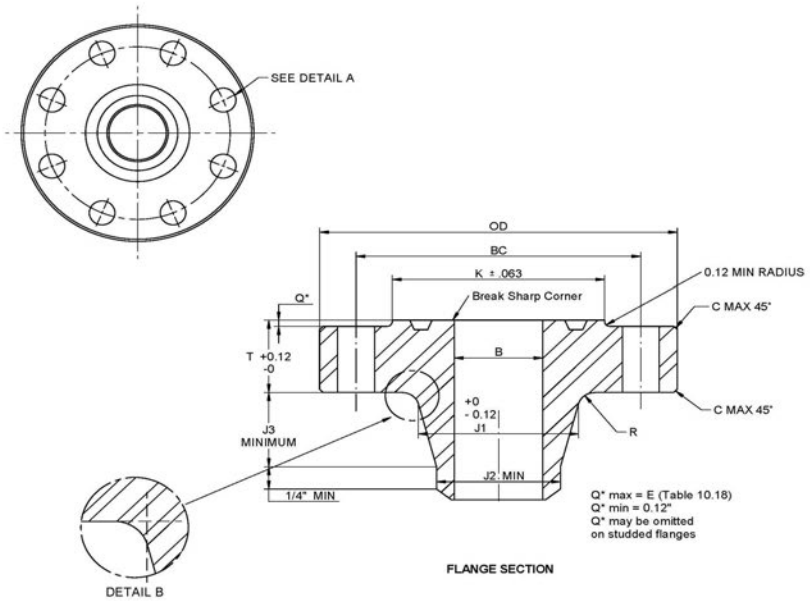
Groove

TYPE 6B WELD NECK FLANGES - 5000 PSI

NOMINAL SIZE	NOM. BORE	MAX BORE	OD FLANGE	RAISED FACE OD	TOTAL THICKN.	BASIC THICKN. DIAM.	LARGE HUB DIAM.	SMALL HUB	HUB LENGTH	OD BOLT CIRCLE	NO.OF BOLTS	BOLT DIAM.	BOLT HOLE DIAM.	STUD BOLT LENGTH	RING NUMBER	PITCH OF GROOVE	WIDTH OF GROOVE	DEPTH OF GROOVE
(INCH)		JL	OD	K	T	Q	X	HL	LN	BC		(INCH)		Lssb	R/RX	p	F	E
2 1/16"	52	43,7	215	124	46,1	38,1	104,8	60,3	109,5	165,1	8	7/8"	26	150	24	95,25	11,91	7,9
2 9/16"	65	54,9	245	137	49,3	41,3	123,8	73	112,7	190,5	8	1"	29	165	27	107,95	11,91	7,9
3 1/8"	79	67,5	265	168	55,6	47,7	133,3	88,9	125,4	203,2	8	1 1/8"	32	185	35	136,53	11,91	7,9
4 1/16"	103	88,1	310	194	62	54	161,9	114,3	131,8	241,3	8	1 1/4"	35	205	39	161,93	11,91	7,9
5 1/8"	130	110,3	375	229	81	73,1	196,8	141,3	163,5	292,1	8	1 1/2"	42	255	44	193,68	11,91	7,9
7 1/16"	178	132,6	395	248	92,1	82,6	228,6	168,3	181	317,5	12	1 3/8"	39	275	46	211,15	13,49	9,7
9"	228	173,8	485	318	103,2	92,1	292,1	219,1	223,8	393,7	12	1 5/8"	45	305	50	269,88	16,66	11,2
11"	279	216,7	585	371	119,1	108	368,3	273,1	265,1	482,6	12	1 7/8"	51	350	54	323,85	16,66	11,2

Note 1: All dimensions except NPS and bolt diameter in millimeters

Note 2: Weld neck, Threaded and integral flanges are available in 2000, 3000 and 5000 psi rating

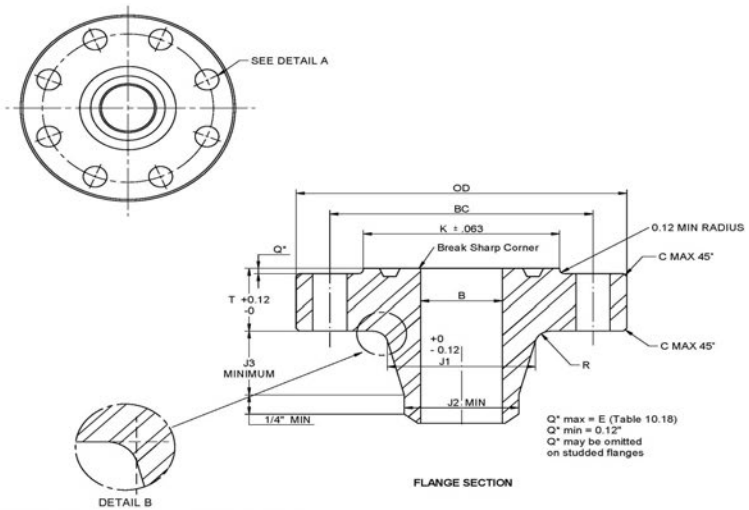


Flange, Welding Neck, Ring Type Joint (RTJ)

TYPE 6BX WELD NECK FLANGES - 10.000 PSI

NOMINAL SIZE	NOM. BORE	MAX BORE	OD FLANGE	RAISED FACE OD	TOTAL THICKN.	LARGE HUB DIAM.	SMALL HUB SIAM.	HUB LENGTH	OD BOLT CIRCLE	NO.OF BOLTS	BOLT DIAM.	BOLT HOLE DIAM.	STUD BOLT LENGTH	RING NO.	OD OF GROOVE	WIDTH OF GROOVE	DEPTH OF GROOVE
(INCH)	B	B	OD	K	T	J1	J2	J3	BC		(INCH)		Lssb	BX	G	N	E
10.000 psi																	
1 13/16"	46	46.8	185	105	42.1	88.9	65.1	48.4	146	8	3/4"	23	125	151	77.77	11.84	5.56
2 1/16"	52	53.2	200	111	44.1	100	74.6	51.6	158.8	8	3/4"	23	135	152	86.23	12.65	5.95
2 9/16"	65	65.9	230	132	51.2	120.7	92.1	57.2	184.2	8	7/8"	26	150	153	102.77	14.07	6.75
3 1/16"	78	78.6	270	152	58.4	142.1	110.3	63.5	215.9	8	1"	29	170	154	119	15.39	7.54
4 1/16"	103	104	315	185	70.3	182.6	146.1	73	258.8	8	1 1/8"	32	205	155	150.62	17.73	8.33
5 1/8"	130	131	360	221	79.4	223.8	182.6	81	300	12	1 1/8"	32	220	169	176.66	16.92	9.53
7 1/16"	179	180.2	480	302	103.2	301.6	254	95.2	403.2	12	1 1/2"	42	285	156	241.83	23.39	11.11
9"	228	229.4	550	359	123.9	374.7	327.1	93.7	476.2	16	1 1/2"	42	330	157	299.06	26.39	12.7
11"	279	280.2	655	429	141.3	450.9	400.1	103.2	565.2	16	1 3/4"	48	380	158	357.23	29.18	14.29
13 5/8"	346	346.9	770	518	168.3	552.5	495.3	114.3	673.1	20	1 7/8"	51	440	159	432.64	32.49	15.88
16 3/4"	425	426.2	870	576	168.3	655.3	601.7	76.2	776.3	24	1 7/8"	51	445	162	478.33	17.91	8.33

Note 1: All dimensions except NPS and bolt diameter in millimeters
Note 2: Weld neck, Blind and Test flanges are available in 10.000, 15.000 and 20.000 psi rating
Note 3: Integral flanges are available in 2000, 3000, 5000, 10.000, 15.000 and 20.000 psi rating



Flange, Welding Neck. Ring Type Joint (RTJ)

TYPE 6BX WELD NECK FLANGES - 15.000/20.000 PSI

NOMINAL SIZE	NOM. BORE	MAX BORE	OD FLANGE	RAISED FACE OD	TOTAL THICKN.	LARGE HUB DIAM.	SMALL HUB SIAM.	HUB LENGTH	OD BOLT CIRCLE	NO.OF BOLTS	BOLT DIAM.	BOLT HOLE DIAM.	STUD BOLT LENGTH	RING NO.	OD OF GROOVE	WIDTH OF GROOVE	DEPTH OF GROOVE
(INCH)	B	B	OD	K	T	J1	J2	J3	BC		(INCH)		Lssb	BX	G	N	E
15.000 psi																	
1 13/16"	46	46.8	210	106	45.3	97.6	71.4	47.6	160.3	8	7/8"	26	140	151	77.77	11.84	5.56
2 1/16"	52	53.2	220	114	50.8	111.1	82.6	54	174.6	8	7/8"	26	150	152	86.23	12.65	5.95
2 9/16"	65	65.9	255	133	57.2	128.6	100	57.2	200	8	1"	29	170	153	102.77	14.07	6.75
3 1/16"	78	78.6	290	154	64.3	154	122.2	63.5	230.2	8	1 1/8"	32	190	154	119	15.39	7.54
4 1/16"	103	104.0	360	194	78.6	195.3	158.8	73	290.5	8	1 3/8"	39	235	155	150.62	17.73	8.33
5 1/8"	130	131.0	420	225	98.5	244.5	200	81.8	342.9	12	1 1/2"	42	290	169	176.66	16.92	9.53
7 1/16"	179	180.2	505	305	119.1	325.4	276.2	92.1	428.6	16	1 1/2"	42	325	156	241.83	23.39	11.11
20.000 psi																	
1 13/16"	46	46.8	255	117	63.5	133.4	109.5	49.2	203.2	8	1"	29	190	151	77.77	11.84	5.56
2 1/16"	52	53.2	285	132	71.5	154	127	52.4	230.2	8	1 1/8"	32	210	152	86.23	12.65	5.95
2 9/16"	65	65.9	325	151	79.4	173	144.5	58.7	261.9	8	1 1/4"	35	235	153	102.77	14.07	6.75
3 1/16"	78	78.6	355	171	85.8	192.1	160.3	63.5	287.3	8	1 3/8"	39	255	154	119	15.39	7.54
4 1/16"	103	104	445	219	106.4	242.9	206.4	73	357.2	8	1 3/4"	48	310	155	150.62	17.73	8.33
7 1/16"	179	180.2	655	352	165.1	385.8	338.1	96.8	554	16	2"	54	445	156	241.83	23.39	11.11

Note 1: All dimensions except NPS and bolt diameter in millimeters
Note 2: Weld neck, Blind and Test flanges are available in 10.000, 15.000 and 20.000 psi rating
Note 3: Integral flanges are available in 2000, 3000, 5000, 10.000, 15.000 and 20.000 psi rating

COMPACT FLANGES NORSOK L-005 (NCF5)/ISO 27509

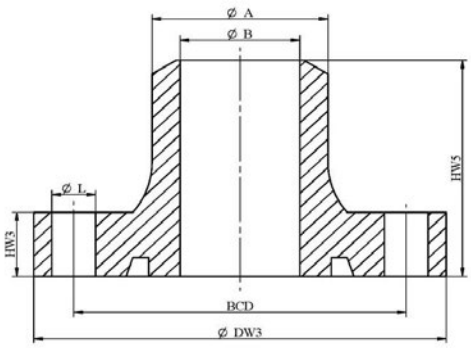
A summary of the DNs applicable to each rating class is given in Table.

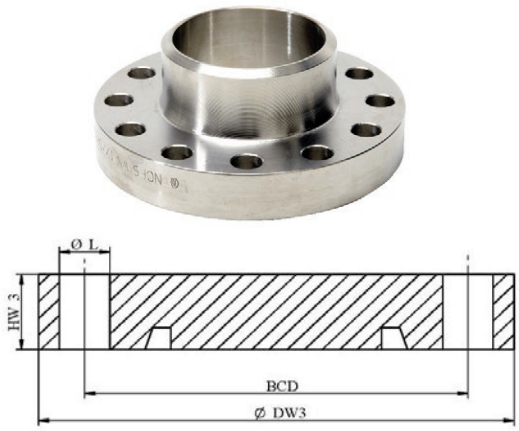
DN	NPS	CL 600	CL 900	CL 1500	CL 2500
15	1/2"	Equal to CL 2500	Equal to CL 2500	Equal to CL 2500	•
20	3/4"				•
25	1"				•
40	1 1/2"				•
50	2"	Equal to CL 1500	Equal to CL 1500	•	•
65	2 1/2"			•	•
80	3"	Equal to CL 900	•	•	•
100	4"		•	•	•
125	5"		•	•	•
150	6"	•	•	•	•
200	8"	•	•	•	•
250	10"	•	•	•	•
300	12"	•	•	•	•
350	14"	•	•	•	•
400	16"	•	•	•	•
450	18"	•	•	•	•
500	20"	•	•	•	•
550	22"	•	•	•	•
600	24"	•	•	•	•
650	26"	•	•	•	
700	28"	•	•	•	
750	30"	•	•	•	
800	32"	•	•	•	
850	34"	•	•	•	
900	36"	•	•	•	
950	38"	•	•	•	
1000	40"	•	•	•	
1050	42"	•	•	•	
1100	44"	•	•	•	
1150	46"	•	•	•	
1200	48"	•	•	•	

NOTE "Equal to CL xxxx" means that the dimensions are equal for the referred pressure class, the flange shall then be marked with the higher pressure class.

COMPACT FLANGES NORSOK L-005 (NCF5)/ISO 27509

DIMENSION CLASS 600

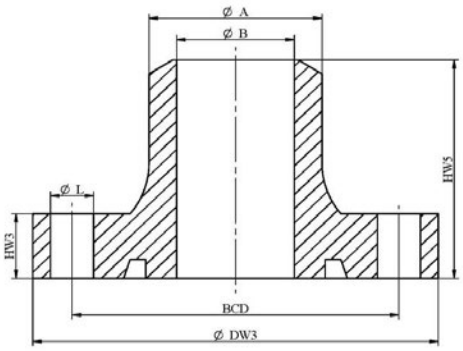


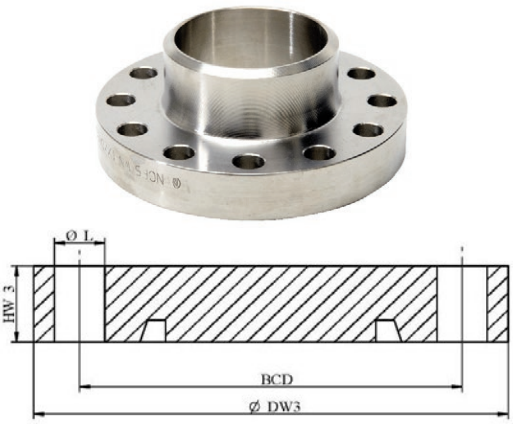


DN	NPS	DW3 [mm]	HW3 [mm]	HW5 [mm]	BCD [mm]	A [mm]	B [mm]	NUMBER OF HOLES	DIAM. [inch]
15	1/2"	93	20	51	67,3	21,3	15,8-11,7	4	1/2"
20	3/4"	98	20	53	72,7	26,7	21,0-15,6	4	1/2"
25	1"	105	20	56	79,4	33,4	27,9-20,7	4	1/2"
40	1 1/2"	121	23	64	95,3	48,3	42,8-34,0	8	1/2"
50	2"	136	23	60	110	60,3	54,8-42,8	8	1/2"
65	2 1/2"	149	26	66	123,1	73,0	66,9-59,0	12	1/2"
80	3"	161	25	61	134,9	88,9	82,8-73,7	12	1/2"
100	4"	203	31	70	171,7	114,3	108,2-97,2	12	5/8"
125	5"	230	35	78	198,6	141,3	134,5-122,2	12	5/8"
150	6"	258	36	75	226,8	168,3	154,1-146,4	12	5/8"
200	8"	312	43	87	280,4	219,1	206,4-193,7	20	5/8"
250	10"	382	53	102	344,8	273,1	260,4-242,9	20	3/4"
300	12"	450	60	108	407,7	323,9	307,1-288,9	20	7/8"
350	14"	482	64	113	439,2	355,6	339,8-317,5	24	7/8"
400	16"	547	73	122	499	406,4	387,3-363,5	24	1"
450	18"	614	80	131	560,1	457,2	438,1-409,5	24	1-1/8"
500	20"	664	86	139	610,6	508,0	482,6-455,6	28	1-1/8"
550	22"	730	94	149	670,7	558,8	533,4-501,6	24	1-1/4"
600	24"	785	100	158	725,6	609,6	584,2-547,7	28	1-1/4"
650	26"	835	105	166	775,6	660,4	632,0-604,4	32	1-1/4"
700	28"	900	112	176	835,2	711,2	679,4-655,2	32	1-3/8"
800	32"	1016	126	195	945,7	812,8	777,8-752,8	32	1-1/2"
850	34"	1081	133	205	1004,8	863,6	828,6-799,6	32	1-5/8"
900	36"	1134	145	214	1058,4	914,4	876,3-842,4	32	1-5/8"
950	38"	1196	147	223	1115	965,2	925,2-893,2	32	1-3/4"
1000	40"	1251	153	232	1169,6	1016,0	976,0-936,0	36	1-3/4"
1050	42"	1312	165	241	1225,2	1066,8	1022,4-986,8	32	1-7/8"
1100	44"	1365	170	249	1278,5	1117,6	1073,2-1027,6	36	1-7/8"
1150	46"	1438	174	262	1345,9	1168,4	1124,0-1078,4	36	2"
1200	48"	1490	189	270	1397,4	1219,2	1169,2-1129,2	36	2"

COMPACT FLANGES NORSOK L-005 (NCF5)/ISO 27509

DIMENSION CLASS 900

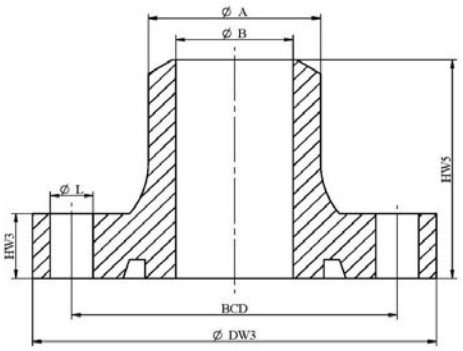


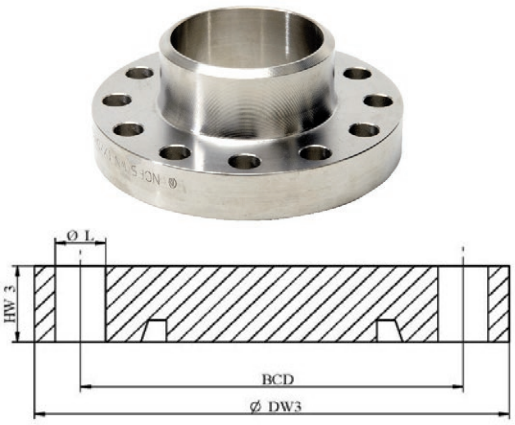


DN	NPS	DW3 [mm]	HW3 [mm]	HW5 [mm]	BCD [mm]	A [mm]	B [mm]	NUMBER OF HOLES	DIAM. [inch]
15	1/2"	93	20	51	67,3	21,3	15,8-11,7	4	1/2"
20	3/4"	98	20	53	72,7	26,7	21,0-15,6	4	1/2"
25	1"	105	20	56	79,4	33,4	26,6-20,7	4	1/2"
40	1 1/2"	121	23	64	95,3	48,3	42,8-34,0	8	1/2"
50	2"	136	23	60	110	60,3	54,8-42,8	8	1/2"
65	2 1/2"	149	26	66	123,1	73,0	66,9-53,9	12	1/2"
80	3"	161	25	61	134,9	88,9	82,8-66,6	12	1/2"
100	4"	203	31	70	171,7	114,3	108,2-92,0	12	5/8"
125	5"	230	35	78	198,6	141,3	128,2-115,9	12	5/8"
150	6"	263	40	87	231,6	168,3	154,1-139,8	16	5/8"
200	8"	330	50	98	293,2	219,1	206,4-182,6	20	3/4"
250	10"	397	60	110	354,8	273,1	257,5-230,2	20	7/8"
300	12"	462	68	119	413,9	323,9	307,1-273,1	20	1"
350	14"	497	73	127	449,3	355,6	336,5-300,0	24	1"
400	16"	567	82	140	513,8	406,4	381,0-344,5	24	1-1/8"
450	18"	633	90	153	574	457,2	434,9-398,5	24	1-1/4"
500	20"	700	99	166	635,5	508,0	482,6-442,9	24	1-3/8"
550	22"	764	107	179	693,6	558,8	514,3-488,9	24	1-1/2"
600	24"	830	115	191	754,2	609,6	581,1-531,8	24	1-5/8"
650	26"	894	124	204	812,8	660,4	620,4-588,4	24	1-3/4"
700	28"	948	141	214	866,4	711,2	666,8-631,2	24	1-3/4"
800	32"	1081	157	239	988,4	812,8	762,8-722,8	24	2"
850	34"	1160	158	254	1057,1	863,6	813,6-763,6	24	2-1/4"
900	36"	1214	176	265	1110,7	914,4	870,0-814,4	24	2-1/4"
950	38"	1291	174	279	1176,8	965,2	905,2-855,2	24	2-1/2"
1000	40"	1344	190	290	1230	1016,0	956,0-906,0	24	2-1/2"
1050	42"	1396	192	300	1282,1	1066,8	1016,8-946,8	28	2-1/2"
1100	44"	1451	211	310	1336,8	1117,6	1053,6-997,6	28	2-1/2"
1150	46"	1527	219	324	1401,9	1168,4	1096,4-1038,4	28	2-3/4"
1200	48"	1618	218	342	1482	1219,2	1147,2-1089,2	28	3"

COMPACT FLANGES NORSOK L-005 (NCF5)/ISO 27509

DIMENSION CLASS 1500

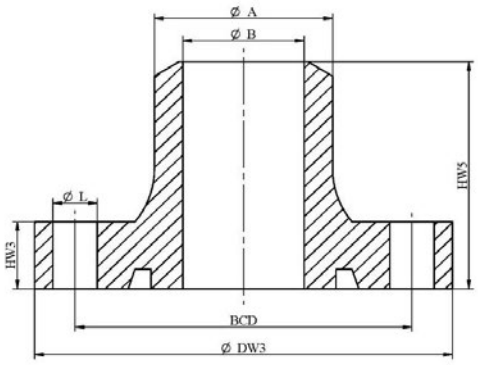


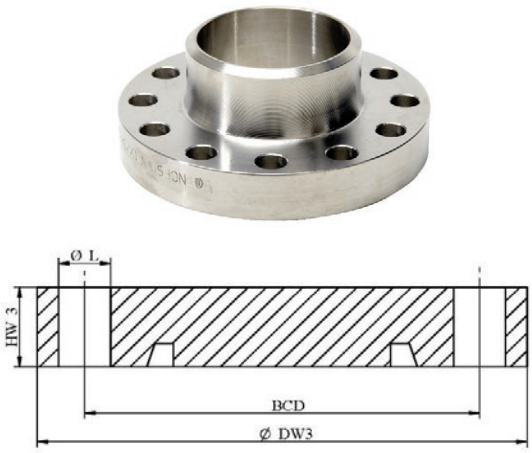


DN	NPS	DW3 [mm]	HW3 [mm]	HW5 [mm]	BCD [mm]	A [mm]	B [mm]	NUMBER OF HOLES	DIAM. [inch]
15	1/2"	93	20	51	67,3	21,3	15,8-6,4	4	1/2"
20	3/4"	98	20	53	72,7	26,7	21,0-11,1	4	1/2"
25	1"	105	20	56	79,4	33,4	26,6-15,2	4	1/2"
40	1 1/2"	121	23	64	95,3	48,3	40,9-28,0	8	1/2"
50	2"	136	23	60	110	60,3	52,5-38,2	8	1/2"
65	2 1/2"	149	26	66	123,1	73,0	62,7-45,0	12	1/2"
80	3"	180	30	73	148,3	88,9	77,9-58,4	12	5/8"
100	4"	224	37	86	187	114,3	102,3-80,1	12	3/4"
125	5"	261	43	92	218,6	141,3	122,2-103,2	12	7/8"
150	6"	307	50	101	258,8	168,3	146,4-124,4	12	1"
200	8"	365	60	115	317,4	219,1	193,7-169,1	16	1"
250	10"	453	75	136	393,6	273,1	247,7-215,9	16	1-1/4"
300	12"	508	83	151	449	323,9	295,4-257,3	20	1-1/4"
350	14"	558	89	162	493,1	355,6	317,5-284,2	20	1-3/8"
400	16"	626	105	180	555,2	406,4	363,5-325,4	20	1-1/2"
450	18"	704	111	198	622,3	457,2	409,5-366,7	20	1-3/4"
500	20"	778	126	217	690,7	508,0	455,6-408,0	20	1-7/8"
550	22"	850	142	234	757,9	558,8	488,9-450,8	20	2"
600	24"	933	146	253	829,3	609,6	547,7-490,5	20	2-1/4"
650	26"	990	172	269	887	660,4	596,4-540,4	20	2-1/4"
700	28"	1051	182	285	947,2	711,2	639,2-591,2	24	2-1/4"
800	32"	1155	202	311	1040,8	812,8	732,8-672,8	24	2-1/2"
850	34"	1232	214	328	1107,1	863,6	783,6-713,6	24	2-3/4"
900	36"	1339	222	352	1191,3	914,4	824,4-754,4	20	3-1/4"
950	38"	1416	226	369	1257,5	965,2	865,2-805,2	20	3-1/2"
1000	40"	1452	250	382	1305	1016,0	916,0-846,0	24	3-1/4"
1050	42"	1549	257	402	1379,5	1066,8	966,8-886,8	20	3-3/4"
1100	44"	1583	275	413	1424,2	1117,6	1007,6-927,6	24	3-1/2"
1150	46"	1666	281	433	1496,5	1168,4	1048,4-948,4	24	3-3/4"
1200	48"	1714	303	445	1544,7	1219,2	1099,2-989,2	24	3-3/4"

COMPACT FLANGES NORSOK L-005 (NCF5)/ISO 27509

DIMENSION CLASS 2500

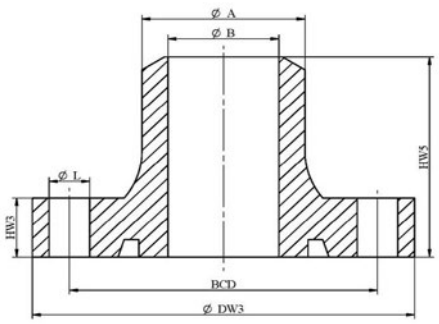


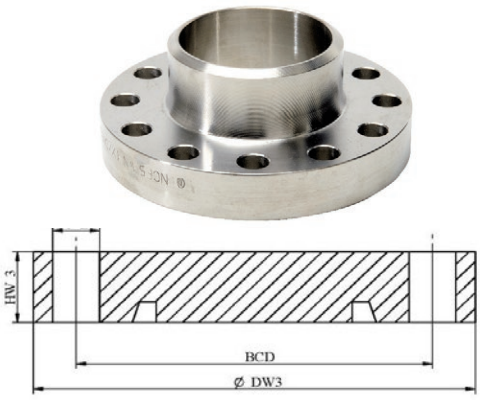


DN	NPS	DW3 [mm]	HW3 [mm]	HW5 [mm]	BCD [mm]	A [mm]	B [mm]	NUMBER OF HOLES	DIAM. [inch]
15	1/2"	93	20	51	67,3	21,3	15,8-6,4	4	1/2"
20	3/4"	98	20	53	72,7	26,7	21,0-11,1	4	1/2"
25	1"	105	20	56	79,4	33,4	26,6-15,2	4	1/2"
40	1 1/2"	121	23	64	95,3	48,3	40,9-23,3	8	1/2"
50	2"	147	27	72	116,2	60,3	52,5-31,9	8	5/8"
65	2 1/2"	179	32	81	141,6	73,0	59,0-41,0	8	3/4"
80	3"	209	36	85	166,3	88,9	77,9-53,9	8	7/8"
100	4"	248	44	95	200,4	114,3	97,2-69,9	8	1"
125	5"	278	50	106	230,2	141,3	109,5-91,3	12	1"
150	6"	322	58	120	268,8	168,3	146,4-108,3	12	1-1/8"
200	8"	408	72	145	343,7	219,1	188,9-147,1	12	1-3/8"
250	10"	485	88	172	415	273,1	242,9-183,1	16	1-1/2"
300	12"	564	99	195	483,2	323,9	288,9-213,9	16	1-3/4"
350	14"	618	108	211	531,2	355,6	317,5-245,6	16	1-7/8"
400	16"	718	125	238	615,1	406,4	363,5-276,4	16	2-1/4"
450	18"	780	136	260	676,3	457,2	409,4-317,2	16	2-1/4"
500	20"	849	147	282	735	508,0	455,6-348,0	16	2-1/2"
550	22"	958	163	310	821,8	558,8	450,8-388,8	16	3"
600	24"	1039	176	334	891,3	609,6	504,9-419,6	16	3-1/4"

COMPACT FLANGES NORSOK L-005 (NCF5)/ISO 27509

WEIGHT CLASS 600



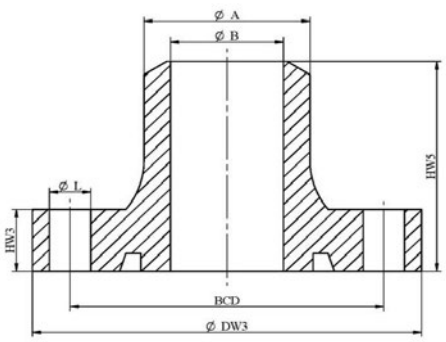


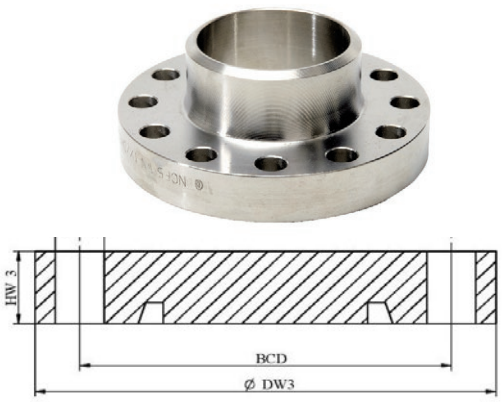
NOMINAL SIZE		THICKNESS		WEIGHTS (EACH)	
DN	NPS	Sch.	mm	Weld neck (WN) kg	Blind (BLD) kg
15	1/2"	40	2,77	0,92	0,91
15	1/2"	160	4,78	0,96	
20	3/4"	40	2,87	1	1
20	3/4"	160	5,56	1,1	
25	1"	10S	2,77	1,2	1,2
25	1"	160	6,35	1,3	
40	1-1/2"	10S	2,77	1,6	1,7
40	1-1/2"	160	7,14	1,9	
50	2"	10S	2,77	2	2,3
50	2"	160	8,74	2,4	
65	2-1/2"	10S	3,05	2,5	3
65	2-1/2"	80	7,01	2,9	
80	3"	10S	3,05	2,6	3,4
80	3"	80	7,62	3,1	
100	4"	10S	3,05	4,9	6,9
100	4"	80	8,56	5,9	
125	5"	10S	3,40	6,8	10,2
125	5"	80	9,53	8,3	
150	6"	40	7,11	9,2	13
150	6"	80	10,97	10	
200	8"	10S	3,76	12	23
200	8"	80	12,70	16	
250	10"	20	6,35	23	43
250	10"	100	18,26	31	
300	12"	30	8,38	37	69
300	12"	80	17,48	44	
350	14"	20	7,92	41	84
350	14"	120	19,05	52	
400	16"	30	9,53	60	123
400	16"	80	21,44	73	

NOMINAL SIZE		THICKNESS		WEIGHTS (EACH)	
DN	NPS	Sch.	mm	Weld neck (WN) kg	Blind (BLD) kg
450	18"	STD	9,53	81	170
500	20"	30	12,70	99	214
500	20"	80	26,19	121	
550	22"	30	12,70	131	287
550	22"	80	28,58	161	
600	24"	XS	12,70	153	353
600	24"	80	30,96	194	
650	26"	ISO	14,20	174	419
650	26"	ISO	28,00	210	
700	28"	30	15,88	218	520
700	28"	ISO	28,00	253	
750	30"	30	15,88	248	617
750	30"	ISO	30,00	295	
800	32"	40	17,48	301	748
800	32"	ISO	30,00	348	
850	34"	40	17,48	356	894
850	34"	ISO	32,00	417	
900	36"	40	19,05	422	1078
900	36"	ISO	36,00	499	
950	38"	ISO	20,00	472	1112
950	38"	ISO	36,00	552	
1000	40"	ISO	20,00	519	1379
1000	40"	ISO	40,00	629	
1050	42"	ISO	22,20	626	1645
1050	42"	ISO	40,00	733	
1100	44"	ISO	22,20	672	1832
1100	44"	ISO	45,00	820	
1150	46"	ISO	22,20	778	2079
1150	46"	ISO	45,00	942	
1200	48"	ISO	25,00	904	2436
1200	48"	ISO	45,00	1058	

COMPACT FLANGES NORSOK L-005 (NCF5)/ISO 27509

WEIGHT CLASS 900



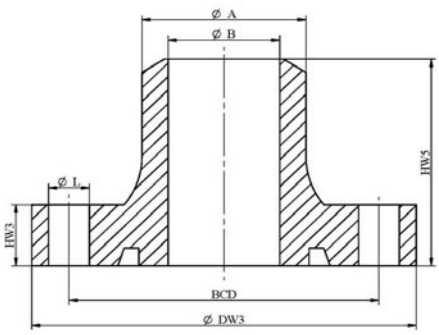


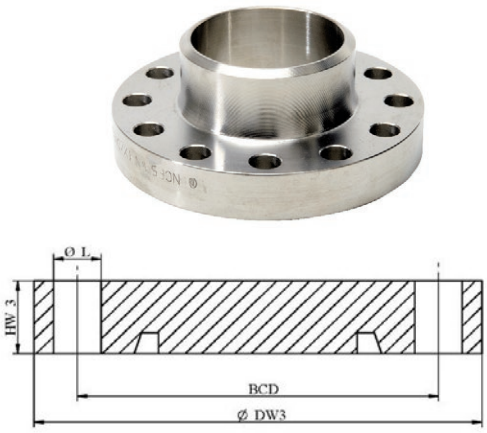
NOMINAL SIZE		THICKNESS		WEIGHTS (EACH)	
DN	NPS	Sch.	mm	Weld neck (WN) kg	Blind (BLD) kg
15	1/2"	40	2,77	0,92	0,91
15	1/2"	160	4,78	0,96	
20	3/4"	40	2,87	1	1
20	3/4"	160	5,56	1,1	
25	1"	40	3,38	1,2	1,2
25	1"	160	6,35	1,3	
40	1-1/2"	10S	2,77	1,6	1,7
40	1-1/2"	160	7,14	1,9	
50	2"	10S	2,77	2	2,3
50	2"	160	8,74	2,4	
65	2-1/2"	10S	3,05	2,5	3
65	2-1/2"	160	9,53	3,1	
80	3"	10S	3,05	2,6	3,4
80	3"	160	11,13	3,5	
100	4"	10S	3,05	4,9	6,9
100	4"	120	11,13	6,4	
125	5"	40	6,55	7,7	10,2
125	5"	120	12,70	9,1	
150	6"	40	7,11	10,8	15,3
150	6"	120	14,27	13,1	
200	8"	20	6,35	18,3	29,8
200	8"	120	18,26	24	
250	10"	30	7,80	30,5	52,3
250	10"	120	21,44	39,6	
300	12"	30	8,38	44,5	80,5
300	12"	120	25,40	59,1	
350	14"	30	9,53	53,6	99,9
350	14"	120	27,79	71,9	
400	16"	40	12,70	81,5	147
400	16"	120	30,96	105	

NOMINAL SIZE		THICKNESS		WEIGHTS (EACH)	
DN	NPS	Sch.	mm	Weld neck (WN) kg	Blind (BLD) kg
450	18"	30	11,13	106	202
500	20"	30	12,70	142	274
500	20"	100	32,54	180	
550	22"	60	22,23	199	352
550	22"	100	34,93	228	
600	24"	30	14,27	225	448
600	24"	100	38,89	290	
650	26"	ISO	20,00	292	560
650	26"	ISO	36,00	342	
700	28"	ISO	22,20	346	671
700	28"	ISO	40,00	407	
750	30"	ISO	17,50	394	816
750	30"	ISO	45,00	503	
800	32"	ISO	25,00	502	982
800	32"	ISO	45,00	591	
850	34"	ISO	25,00	614	1208
850	34"	ISO	50,00	739	
900	36"	ISO	25,00	688	1391
900	36"	ISO	50,00	827	
950	38"	ISO	30,00	847	1653
950	38"	ISO	55,00	1001	
1000	40"	ISO	30,00	937	1874
1000	40"	ISO	55,00	1106	
1050	42"	ISO	32,00	1010	2067
1050	42"	ISO	60,00	1215	
1100	44"	ISO	32,00	1110	2318
1100	44"	ISO	60,00	1332	
1150	46"	ISO	36,00	1320	2690
1150	46"	ISO	65,00	1571	
1200	48"	ISO	36,00	1595	3215
1200	48"	ISO	65,00	1873	

COMPACT FLANGES NORSOK L-005 (NCF5)/ISO 27509

WEIGHT CLASS 1500



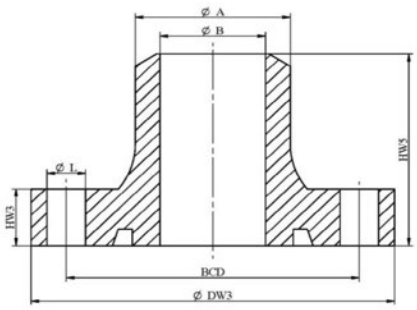


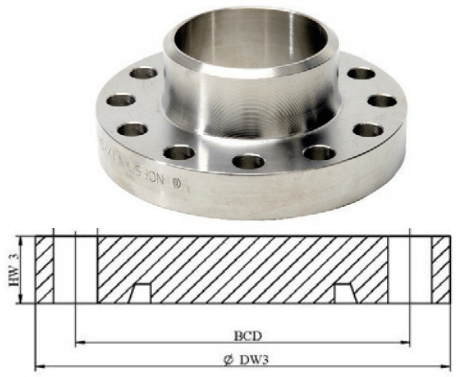
NOMINAL SIZE		THICKNESS		WEIGHTS (EACH)	
DN	NPS	Sch.	mm	Weld neck (WN) kg	Blind (BLD) kg
15	1/2"	40	2,77	0,92	0,91
15	1/2"	XXS	7,47	0,99	
20	3/4"	40	2,87	1	1
20	3/4"	XXS	7,82	1,1	
25	1"	40	3,38	1,2	1,2
25	1"	XXS	9,09	1,4	
40	1-1/2"	40	3,68	1,7	1,7
40	1-1/2"	XXS	10,15	2	
50	2"	40	3,91	2,1	2,3
50	2"	XXS	11,07	2,6	
65	2-1/2"	40	5,16	2,7	3
65	2-1/2"	XXS	14,02	3,5	
80	3"	40	5,49	4,4	5,1
80	3"	XXS	15,24	5,6	
100	4"	40	6,02	8,2	9,8
100	4"	XXS	17,12	10	
125	5"	80	9,53	13	15,6
125	5"	XXS	19,05	16	
150	6"	80	10,97	21	25,2
150	6"	XXS	21,95	25	
200	8"	80	12,70	33	43,3
200	8"	ISO	25,00	39	
250	10"	60	12,70	61	84,1
250	10"	160	28,58	73	
300	12"	60	14,27	81	117
300	12"	160	33,32	100	
350	14"	80	19,05	109	152
350	14"	160	35,71	129	
400	16"	80	21,44	158	228
400	16"	160	40,49	187	

NOMINAL SIZE		THICKNESS		WEIGHTS (EACH)	
DN	NPS	Sch.	mm	Weld neck (WN) kg	Blind (BLD) kg
450	18"	80	23,83	210	302
500	20"	80	26,19	291	423
500	20"	160	50,01	347	
550	22"	100	34,93	407	573
550	22"	160	53,98	459	
600	24"	80	30,96	485	706
600	24"	160	59,54	578	
650	26"	ISO	32,00	623	949
650	26"	ISO	60,00	729	
700	28"	ISO	36,00	732	1126
700	28"	ISO	60,00	837	
750	30"	ISO	36,00	862	1330
750	30"	ISO	65,00	1007	
800	32"	ISO	40,00	930	1510
800	32"	ISO	70,00	1092	
850	34"	ISO	40,00	1103	1815
850	34"	ISO	75,00	1316	
900	36"	ISO	45,00	1422	2223
900	36"	ISO	80,00	1664	
950	38"	ISO	50,00	1647	2526
950	38"	ISO	80,00	1877	
1000	40"	ISO	50,00	1812	2941
1000	40"	ISO	85,00	2104	
1050	42"	ISO	50,00	2159	3453
1050	42"	ISO	90,00	2529	
1100	44"	ISO	55,00	2350	3863
1100	44"	ISO	95,00	2746	
1150	46"	ISO	60,00	2708	4355
1150	46"	ISO	110,00	3244	
1200	48"	ISO	60,00	2997	5000
1200	48"	ISO	115,00	3630	

COMPACT FLANGES NORSOK L-005 (NCF5)/ISO 27509

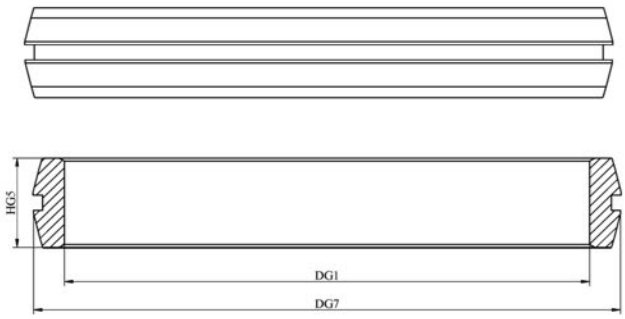
WEIGHT CLASS 2500





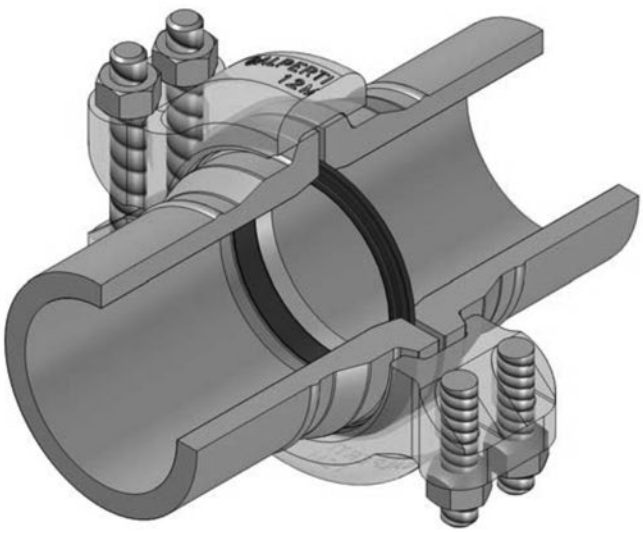
NOMINAL SIZE		NECK WALL THICKNESS		APPROXIMATE WEIGHTS (EACH)	
DN	NPS	Sch.	mm	Weld neck (WN) kg	Blind (BLD) kg
15	1/2"	40	2,77	0,9	0,9
15	1/2"	XXS	7,47	1	
20	3/4"	40	2,87	1	1
20	3/4"	XXS	7,82	1,1	
25	1"	40	3,38	1,2	1,2
25	1"	XXS	9,09	1,4	
40	1-1/2"	40	3,68	1,7	1,7
40	1-1/2"	ISO	12,50	2,1	
50	2"	40	3,91	2,9	3
50	2"	ISO	14,20	3,6	
65	2-1/2"	80	7,01	5,3	5,4
65	2-1/2"	ISO	16,00	6,2	
80	3"	40	5,59	7,6	8,4
80	3"	ISO	17,50	9,2	
100	4"	80	8,53	13	14
100	4"	ISO	22,20	16	
125	5"	160	15,88	19	20
125	5"	ISO	25,00	22	
150	6"	80	10,97	27	32
150	6"	ISO	30,00	34	
200	8"	100	15,09	55	65
200	8"	ISO	36,00	68	
250	10"	80	15,09	87	110
250	10"	ISO	45,00	115	
300	12"	80	17,48	131	168
300	12"	ISO	55,00	177	
350	14"	80	19,05	173	223
350	14"	ISO	55,00	226	
400	16"	80	21,44	268	346
400	16"	ISO	65,00	351	
450	18"	80	23,88	348	453
500	20"	80	26,19	439	580
500	20"	ISO	80,00	591	
550	22"	160	53,98	708	808
550	22"	ISO	85,00	809	
600	24"	140	52,37	870	1027
600	24"	ISO	95,00	1035	

COMPACT FLANGES SEALRINGS NORSOK L-005 (NCF5)/ISO 27509



DN	NPS (inch)	IX size	DG1 mm	DG7 mm	HG5 mm	WEIGHT kg
15	1/2"	IX15	22,2	30,19	10	0,02
20	3/4"	IX20	27,2	35,2	10	0,03
25	1"	IX25	34,2	42,22	10	0,03
40	1 1/2"	IX40	49,3	58,21	10,56	0,05
50	2"	IX50	61,3	71,13	11,78	0,08
65	2 1/2"	IX65	74,4	85,05	12,98	0,12
80	3"	IX80	89,5	100,96	14,24	0,17
100	4"	IX100	115,7	128,85	16,19	0,28
125	5"	IX125	142	156,75	17,94	0,42
150	6"	IX150	170,2	186,66	19,64	0,62
200	8"	IX200	220,5	238,54	22,36	0,99
250	10"	IX250	274,9	298,42	25,2	1,85
300	12"	IX300	325	347,36	27,15	2,18
350	14"	IX350	357,1	380,32	28,46	2,60
400	16"	IX400	409,3	434,27	30,47	3,43
450	18"	IX450	459,4	486,23	32,28	4,38
500	20"	IX500	511,6	539,2	34,06	5,27
550	22"	IX550	561,7	591,18	35,69	6,48
600	24"	IX600	611,9	642,16	37,25	7,55
700	28"	IX700	714,1	747,16	40,25	10,40
750	30"	IX750	766,3	800,16	41,69	11,80
800	32"	IX800	816,4	851,16	43,03	13,30
850	34"	IX850	866,6	902,18	44,34	14,80
900	36"	IX900	918,7	956,19	45,65	17,10
950	38"	IX950	968,8	1007,21	46,88	18,90
1000	40"	IX1000	1021,0	1060,23	48,12	20,90
1050	42"	IX1050	1071,1	1111,26	49,29	23,00
1100	44"	IX1100	1121,3	1162,28	50,43	25,10
1150	46"	IX1150	1173,4	1215,31	51,59	27,50
1200	48"	IX1200	1223,6	1266,35	52,68	29,90

CLAMP® CONNECTORS



The G-LOK® Clamp Connector is a fully proven alternative to the conventional flanged connection used throughout the oil, gas, petrochemical and power generation industries.

Produced in a comprehensive range of sizes and materials they offer versatility, compactness, weight and cost effectiveness in connecting piping system.

The Connector is designed to meet ASME B 16.5, ASME VIII, API 6A/Q1 and other design codes.

The design has the approval of Lloyds, DNV and Stoomwezen. Fully fire tested in accordance with API 6FB parts 1 and 2. Also gas tested to meet all aspects of ASME B31.3 Chapter IX (e.g. 1400 bar at 180°C Gas test with bending).

Clamp Connectors offer:

- **Easy assembly**
- **Compact construction**
- **Reduced weight**
- **Metal to metal sealing technology – re-usable**
- **Flexibility**
- **Full design approval**

EXTERNAL LOADING

Tension

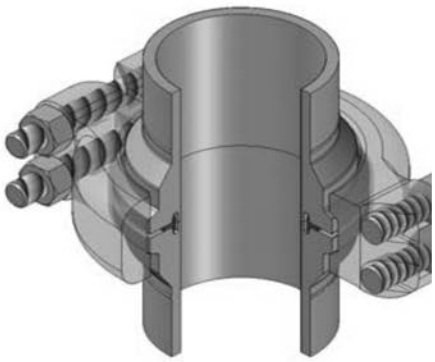
The G-LOK® connector is capable of withstanding higher tensile loads than a conventional ANSI flange.
Tensile loads can cause conventional flange faces to separate, providing a leak path across the flange face. With the pressure energised bore seal, this does not occur and the G-LOK® connector will remain leak tight.

Bending

G-LOK® connectors are designed to withstand severe bending loads without leaking or loosening.
Independent tests evaluating G-LOK® clamp connectors have shown that even under severe pressure and bending conditions, the connector does not leak and the bolting remains tight.
Increasing the bending moment to ultimate failure of the pipe has not resulted in connector leakage.
For application with high bending loads hubs can be offered with recessed seal.

Compression

As in most cases the bearing area of the sealring rib is larger than the cross section of the adjoining pipe it becomes impossible to over compress the sealring within the GLOK ® connector. For normal piping applications, the compressive limits are governed by other factors such as piping flexibility analysis or anchor loads and in practice the GLOK ® connector will always perform under the applied compressive loading.



Thermal Shock

G-LOK® connectors have been applied to both Cryogenic and high temperature service which are subject to thermal transient conditions. For very severe thermal shock (i.e.quenching), the connectors can be provided with thermal shrouds to protect the sealring lips from the full effects of the thermal shock.
The shrouded configuration also offers protection of the seal ring from erosive flow.

QUALITY ASSURANCE

GALPERTI ENGINEERING has been successfully audited and awarded the prestigious BS EN ISO 9001accreditation for its thorough Quality Assurance Programme.

This ensures strict compliance with all relevant Regulatory Specifications and codes including ANSI, API, ASME, BS, NACE. Material specifications for ASTM and BS are adhered to, and full traceability of all components is assured.

Using the latest CNC machine tools in a modern factory environment, manufacturing is carried out in accordance with all current specifications.

G-LOK® connectors, in addition to meeting the current Industry Standards for Interchangeability, can be supplied in accordance with various design codes/regulations including:

- **ANSI/ASME**
- **API**
- **BS 5500**
- **UK Offshore Regulations**
- **Customers' special requirements**
- **Country Codes**

API 6FB FIRE TESTING - ASME B 31.3 CHAPTER IX GAS TEST

The need for correct analysis of product performance is a prerequisite when specifying pipe connectors. Having successfully completed strain gauge testing under full load conditions, fire testing to API 6FB parts 1 and 2 and full gas testing under the conditions of ASME B 31.3 CHAPTER IX GAS at temperature plus bending, the G-LOK® range of clamp connectors suits most applications.

Independent testing and witnessing, resulting in Lloyds Register Type Approval, coupled with extensive Finite Element Analysis during the fire test programme, affords clients one of the most comprehensively tested clamp connector available.

G-LOK® - THE ADVANTAGES

The G-LOK® Connector is designed to offer the strength and sealing integrity of a welded joint and the versatility of a mechanical joint. It serves the same purpose as a bolted flange assembly, with the advantages of being more easily installed, lighter and smaller.
A self-energized, pressure activated connection, the G-LOK® clamp-type connector consists of four basic elements:

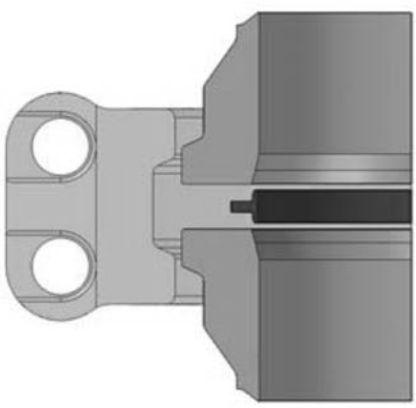
- **Hub**
- **Clamps**
- **Seal**
- **Bolting**

The hubs are usually welded to pipe; the seal is installed and the bolting is tightened on the clamps to form a pipe connector that provides superior strength and leak integrity. The G-LOK® is commonly used in service with temperatures of up to 650°C. The G-LOK® also excels in high pressure applications, where working pressure of 30,000 psi is not uncommon. The G-LOK® clamp has been designed for the optimum strength of a bolted connection.

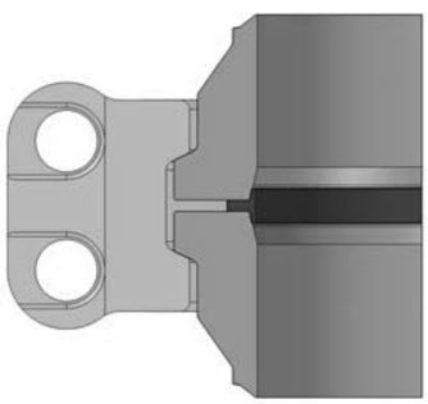
Since the bolts are perpendicular to the axis of the pipe, they do not receive direct bending and pressure loads. This system of clamping provides greater strength than ANSI or API flanges at a fraction of the seal size and weight as a result of this design. Less bolting torque is required for proper seating of the seal.

The design of the connector provides considerable stored energy in the system when compared with ANSI or API flanges. This stored energy works to provide leak resistance during thermal cycling and maintains proper bolt loading.

When properly installed, the G-LOK® will usually provide greater bending and torsional strength than the connecting pipe. The full face contact of the connector resists bending and ensures rigidity not provided by other clamp-type connectors. The pressure and temperature limitations are determined only by the materials of construction.



G-LOK® std free position



G-LOK® std made-up position

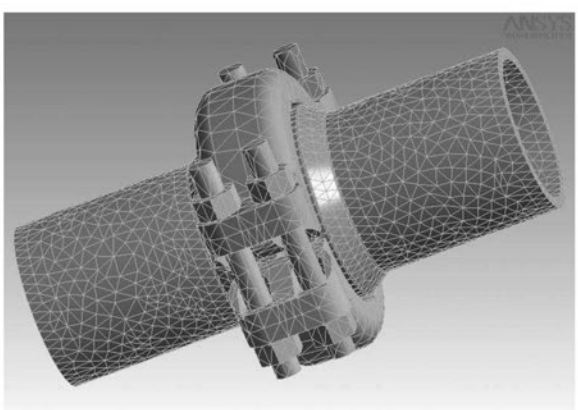
HOW THE G-LOK® CONNECTORS SEALS

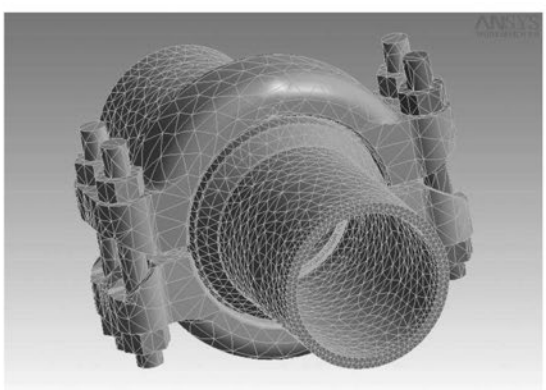
The seal ring in the G-LOK® resembles a "T" in cross section. The base of the "T" is the rib that is held by abutting hub faces as the connection is made up. The top of the "T" forms the lips that seal against the inner surfaces of the hubs.

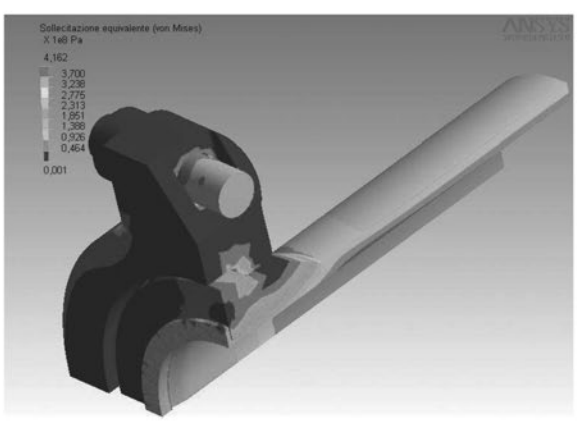
In the assembly of the connection, the clamps fit over the two hubs, and as they draw the hubs together the seal ring rib ensures proper seal alignment. As the hubs are drawn together by the clamp assembly, the seal ring lips deflect against the inner sealing surfaces of the hubs. This deflection elastically loads the lips of the seal ring against the inner sealing surface of the hub, forming the self-energized seal.

Internal pressure reinforces this seal, so the sealing action of the G-LOK® is both self-energized and pressure energized. G-LOK® clamp connectors are interchangeable with other connectors designed and manufactured according to the same standard.

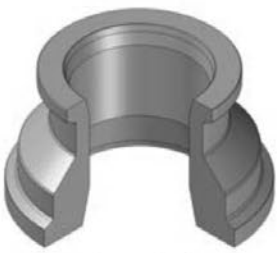
The G-LOK® connector has been designed for many different critical service applications. Many of these involve rapid cyclic operating conditions over extended periods of time, with various combinations of both pressure and temperature. To ensure compliance with the applicable design codes with regard to these severe thermal and pressure excursions, G-LOK® utilizes state of the art engineering technology. Finite Element Analysis (FEA) allows the detailed examination of all connector elements under these varying conditions.







OTHER CONFIGURATIONS


Adaptor hub

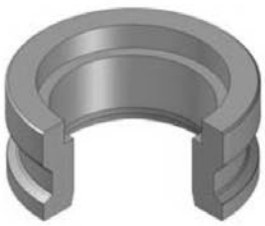

Transition reducer hub


Transition enlarging hub


Hub spade

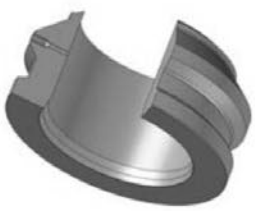

Hub spacer


Hub nozzle

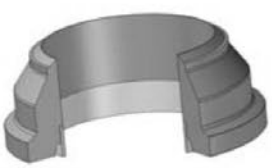

Socked weld hub


Threaded hub


Rigid interface


Pressure tapped hub


Test port hub – back seal test


Two pieces shrouded hub


Integral shrouded hub


Hub weld overlaid on seal area & bore


Hub weld overlaid on seal area only


Weld-o-hub


Thermowell hub


Hubbed elbow


Hubbed tee


Valve end


Transition seal ring


Orifice seal ring


Blind seal ring


Anti corrosion drain hole

BOLTING UP TENSION AND TORQUE VALUES

CLAMP SIZE	PIPE SIZE	BOLT SIZE	RECOMMENDED BOLT TENSION RESIDUAL (kN)	MAXIMUM BOLT TENSION RESIDUAL (kN)	MINIMUM BOLT TORQUE u=0,10 (Nm)	MAXIMUM BOLT TORQUE u=0,10 (Nm)
1	1"	1/2"	8.3	12.4	20	29
1.5	1.5"	5/8"	22	33	59	87
2	2"	3/4"	24	36	57	83
B	2"	7/8"	47	69	163	241
3	3"	3/4"	34	49	79	116
C	3"	7/8"	47	69	163	241
4	4"	7/8"	47	69	163	241
D	4"	1"	63	92	225	327
5	5"	1"	63	92	225	327
E	6"	1"	63	92	225	327
6	6"	1-1/8"	81	119	351	517
F	6"	1-1/8"	81	119	351	517
XF	6"	1-1/4"	103	152	486	716
ZX	6"	1-1/4"	103	152	486	716
G	6"	1-3/8"	129	189	652	961
XG	6"	1-3/8"	129	189	652	961
8	8"	1-1/4"	103	152	486	716
X8	8"	1-3/8"	129	189	652	961
12M	12"	1-3/4"	220	324	1376	2013
X12M	12"	2"	295	435	2054	3024
14	14"	1-5/8"	187	275	1089	1604
X14	14"	1-5/8"	187	275	1089	1604
R	14"	1-7/8"	248	367	1558	2279
A-P	14"	2"	295	435	2054	3024
5P	14"	2-1/2"	478	703	4048	5961
16	16"	1-3/4"	220	324	1376	2013
X16	16"	1-3/4"	220	324	1376	2013
18	18"	1-7/8"	248	367	1558	2279
X18	18"	1-7/8"	248	367	1558	2279
U	18"	2-1/2"	478	703	4048	5961
20	20"	2"	295	435	2054	3024
X20	20"	2"	295	435	2054	3024
V	20"	2-1/4"	398	583	2690	4328
3V	20"	2-1/4"	398	583	2690	4328
5V	20"	2-1/2"	478	703	4048	5961
W	22"	2-1/4"	398	583	2690	4328
3W	22"	2-1/2"	478	703	4048	5961
24	24"	2-1/4"	398	583	2690	4328
X24	24"	2-1/4"	398	583	2690	4328
Y	24"	2-3/4"	505	802	4515	7182
3Y	24"	3-1/4"	833	1227	8963	12006
28	28"	3-1/4"	833	1227	8963	12006
30	30"	3-1/4"	833	1227	8963	12006
32	32"	3-1/4"	833	1227	8963	12006
34	34"	3-1/4"	833	1227	8963	12006
36	36"	3-1/4"	833	1227	8963	12006

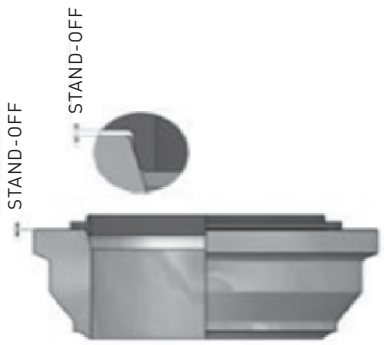
Note:
- In case of friction coefficient different from 0,1 or different bolt material please contact our technical department

BOLTING UP TENSION AND TORQUE VALUES

CLAMP SIZE	PIPE SIZE	BOLT SIZE	RECOMMENDED BOLT TENSION RESIDUAL (kN)	MAXIMUM BOLT TENSION RESIDUAL (kN)	MINIMUM BOLT TORQUE u=0,10 (Nm)	MAXIMUM BOLT TORQUE u=0,10 (Nm)
1	1"	1/2"	1.87	2.79	14.8	21.4
1.5	1.5"	5/8"	4.95	7.42	43.5	64.2
2	2"	3/4"	5.40	8.09	42.1	61.3
B	2"	7/8"	10.6	15.5	120.3	177.9
3	3"	3/4"	7.64	11.02	58.3	85.6
C	3"	7/8"	10.6	15.5	120.3	177.9
4	4"	7/8"	10.6	15.5	120.3	177.9
D	4"	1"	14.2	20.7	166.1	241.3
5	5"	1"	14.2	20.7	166.1	241.3
E	6"	1"	14.2	20.7	166.1	241.3
6	6"	1-1/8"	18.2	26.8	259.0	381.5
F	6"	1-1/8"	18.2	26.8	259.0	381.5
XF	6"	1-1/4"	23.2	34.2	358.7	528.4
ZX	6"	1-1/4"	23.2	34.2	358.7	528.4
G	6"	1-3/8"	29.0	42.5	481.2	709.2
XG	6"	1-3/8"	29.0	42.5	481.2	709.2
8	8"	1-1/4"	23.2	34.2	358.7	528.4
X8	8"	1-3/8"	29.0	42.5	481.2	709.2
12M	12"	1-3/4"	49.5	72.8	1015.5	1485.6
X12M	12"	2"	66.3	97.8	1515.9	2231.7
14	14"	1-5/8"	42.0	61.8	803.7	1183.8
X14	14"	1-5/8"	42.0	61.8	803.7	1183.8
R	14"	1-7/8"	55.8	82.5	1149.8	1681.9
A-P	14"	2"	66.3	97.8	1515.9	2231.7
5P	14"	2-1/2"	107.5	158.0	2987.4	4399.2
16	16"	1-3/4"	49.5	72.8	1015.5	1485.6
X16	16"	1-3/4"	49.5	72.8	1015.5	1485.6
18	18"	1-7/8"	55.8	82.5	1149.8	1681.9
X18	18"	1-7/8"	55.8	82.5	1149.8	1681.9
U	18"	2-1/2"	107.5	158.0	2987.4	4399.2
20	20"	2"	66.3	97.8	1515.9	2231.7
X20	20"	2"	66.3	97.8	1515.9	2231.7
V	20"	2-1/4"	89.5	131.1	1985.2	3194.1
3V	20"	2-1/4"	89.5	131.1	1985.2	3194.1
5V	20"	2-1/2"	107.5	158.0	2987.4	4399.2
W	22"	2-1/4"	89.5	131.1	1985.2	3194.1
3W	22"	2-1/2"	107.5	158.0	2987.4	4399.2
24	24"	2-1/4"	89.5	131.1	1985.2	3194.1
X24	24"	2-1/4"	89.5	131.1	1985.2	3194.1
Y	24"	2-3/4"	113.5	180.3	3332.1	5300.3
3Y	24"	3-1/4"	187.3	275.8	6614.7	8860.4
28	28"	3-1/4"	187.3	275.8	6614.7	8860.4
30	30"	3-1/4"	187.3	275.8	6614.7	8860.4
32	32"	3-1/4"	187.3	275.8	6614.7	8860.4
34	34"	3-1/4"	187.3	275.8	6614.7	8860.4
36	36"	3-1/4"	187.3	275.8	6614.7	8860.4

Note:
- In case of friction coefficient different from 0,1 or different bolt material please contact our technical department

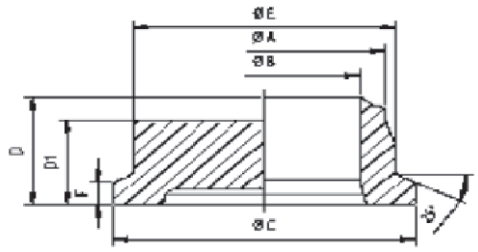
STAND-OFF VALUES



SEAL RING SIZE	STAND-OFF NOMINAL		STAND-OFF FOR RE-USE	
	(mm)	(inch)	(mm)	(inch)
4	0.40	0.016	0.20	0.008
5	0.40	0.016	0.20	0.008
7	0.45	0.018	0.23	0.009
8	0.45	0.018	0.23	0.009
11	0.45	0.018	0.23	0.009
13	0.47	0.019	0.24	0.009
14	0.50	0.020	0.25	0.010
16	0.50	0.020	0.25	0.010
20	0.55	0.022	0.28	0.011
23	0.60	0.024	0.30	0.012
25	0.60	0.024	0.30	0.012
27	0.65	0.026	0.33	0.013
31	0.70	0.028	0.35	0.014
34	0.75	0.030	0.38	0.015
40	0.80	0.031	0.40	0.016
42	0.80	0.031	0.40	0.016
46	0.90	0.035	0.45	0.018
54	0.89	0.035	0.45	0.018
56	0.90	0.035	0.45	0.018
62	1.10	0.043	0.55	0.022
64	1.00	0.039	0.50	0.020
67	1.10	0.043	0.55	0.022
72	1.10	0.043	0.55	0.022
73	1.11	0.044	0.56	0.022
74	1.11	0.044	0.56	0.022
76	1.20	0.047	0.60	0.024
87	1.20	0.047	0.60	0.024
91	1.20	0.047	0.60	0.024
92	1.41	0.056	0.71	0.028
94	1.40	0.055	0.70	0.028
97	1.50	0.059	0.75	0.030
102	1.70	0.067	0.85	0.033
106	1.70	0.067	0.85	0.033
112	1.40	0.055	0.70	0.028
114	2.23	0.088	1.12	0.044
116	1.37	0.054	0.69	0.027

SEAL RING SIZE	STAND-OFF NOMINAL		STAND-OFF FOR RE-USE	
	(mm)	(inch)	(mm)	(inch)
120	1.80	0.071	0.90	0.035
122	1.80	0.071	0.90	0.035
124	0.98	0.039	0.49	0.019
125	1.36	0.054	0.68	0.027
130	1.90	0.075	0.95	0.037
134	2.00	0.079	1.00	0.039
137	1.50	0.059	0.75	0.030
140	1.90	0.075	0.95	0.037
144	2.00	0.079	1.00	0.039
152	2.10	0.083	1.05	0.041
160	2.30	0.091	1.15	0.045
162	2.48	0.098	1.24	0.049
170	2.50	0.098	1.25	0.049
180	2.70	0.106	1.35	0.053
185	2.70	0.106	1.35	0.053
192	2.90	0.114	1.45	0.057
200	3.00	0.118	1.50	0.059
213	3.15	0.124	1.58	0.062
220	3.25	0.128	1.63	0.064
232	3.40	0.134	1.70	0.067
240	3.55	0.140	1.78	0.070
244	3.55	0.140	1.78	0.070
248	3.55	0.140	1.78	0.070
251	3.55	0.140	1.78	0.070
254	3.40	0.134	1.70	0.067
260	3.40	0.134	1.70	0.067
280	4.00	0.157	2.00	0.079
292	4.20	0.165	2.10	0.083
303	4.20	0.165	2.10	0.083
320	4.21	0.166	2.11	0.083
330	4.20	0.165	2.10	0.083
338	4.20	0.165	2.10	0.083
344	4.20	0.165	2.10	0.083
354	4.20	0.165	2.10	0.083
378	4.20	0.165	2.10	0.083
390	4.20	0.165	2.10	0.083

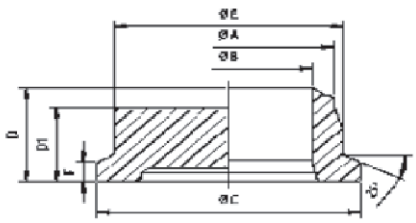
STANDARD HUBS (MM)



Buttweld Hub

NPS	SCH	G-LOK® SIZE	PIPE O.D. A (mm)	INSIDE DIAMETER B (mm)	OUTSIDE DIAMETER C (mm)	BW HUB LENGTH D (mm)	BLIND HUB LENGTH D1 (mm)	HUB BACK FACE Ø E (mm)	LIP THICKNESS F (mm)	BW HUB WEIGHT kg	BLIND HUB WEIGHT kg
0.5"	40	1GR5	21.30	15.80	50.80	44.50	44.50	38.10	7.95	0.30	0.40
0.5"	80	1GR5	21.30	13.90	50.80	44.50	44.50	38.10	7.95	0.30	0.40
0.5"	160	1GR4	21.30	11.80	50.80	44.50	44.50	38.10	7.95	0.30	0.40
0.5"	XXS	1GR4	21.30	6.40	50.80	44.50	44.50	38.10	7.95	0.30	0.40
0.75"	40	1GR7	26.70	20.90	50.80	44.50	44.50	38.10	7.95	0.20	0.40
0.75"	80	1GR7	26.70	18.90	50.80	44.50	44.50	38.10	7.95	0.20	0.40
0.75"	160	1GR5	26.70	15.60	50.80	44.50	44.50	38.10	7.95	0.30	0.40
0.75"	XXS	1GR4	26.70	11.00	50.80	44.50	44.50	38.10	7.95	0.30	0.40
1"	40	1GR11	33.40	26.60	50.80	44.50	44.50	38.10	7.95	0.20	0.40
1"	80	1GR11	33.40	24.30	50.80	44.50	44.50	38.10	7.95	0.20	0.40
1"	160	1GR7	33.40	20.70	50.80	44.50	44.50	38.10	7.95	0.30	0.40
1"	XXS	1GR5	33.40	15.20	50.80	44.50	44.50	38.10	7.95	0.30	0.40
1"	10mm	1GR5	33.40	13.40	50.80	44.50	44.50	38.10	7.95	0.40	0.40
1.5"	40	1.5GR14	48.30	40.90	79.40	60.30	54.00	60.30	11.10	0.70	1.30
1.5"	80	1.5GR14	48.30	38.10	79.40	60.30	54.00	60.30	11.10	0.80	1.30
1.5"	80	1.5GR13	48.30	38.10	79.40	60.30	54.00	60.30	12.70	0.80	1.30
1.5"	160	1.5GR14	48.30	34.00	79.40	60.30	54.00	60.30	11.10	0.80	1.30
2"	40	2GR20	60.30	52.50	92.10	69.90	50.80	73.00	11.10	1.00	1.60
2"	80	2GR20	60.30	49.20	92.10	69.90	50.80	73.00	11.10	1.10	1.60
2"	160	2GR20	60.30	42.90	92.10	69.90	50.80	73.00	11.10	1.20	1.60
2"	160	2GR16	60.30	42.90	92.10	69.90	50.80	73.00	11.10	1.30	1.70
2"	XXS	2GR14	60.30	38.10	92.10	69.90	50.80	73.00	11.10	1.50	1.80
2"	12,5mm	2GR14	60.30	35.30	92.10	69.90	50.80	73.00	11.10	1.60	1.80
2"	14,2mm	2GR14	60.30	31.90	92.10	69.90	50.80	73.00	11.10	1.60	1.80
2"	17,5mm	2GR11	60.30	25.30	92.10	69.90	44.50	73.00	12.70	1.90	1.70
2.5"	XXS	2.5-3GR20	73.00	45.00	127.00	82.60	63.50	101.60	12.70	3.50	4.30
3"	80	3GR27	88.90	73.70	127.00	82.60	63.50	101.60	12.70	2.30	4.00
3"	160	3GR25	88.90	66.70	127.00	82.60	63.50	101.60	12.70	2.90	4.10
3"	XXS	3GR23	88.90	58.50	127.00	82.60	63.50	101.60	12.70	3.40	4.20
3"	16mm	3GR23	88.90	56.90	127.00	82.60	63.50	101.60	12.70	3.50	4.20
3"	17,5mm	3GR23	88.90	53.90	127.00	82.60	63.50	101.60	12.70	3.60	4.20
3"	25mm	3GR14	88.90	38.90	127.00	82.60	54.00	101.60	12.70	4.50	3.90
4"	40	4GR40	114.30	102.30	152.40	92.10	54.00	127.00	12.70	2.80	4.70
4"	80	4GR40	114.30	97.20	152.40	92.10	54.00	127.00	12.70	3.20	4.70
4"	120	4GR34	114.30	92.10	152.40	92.10	73.00	127.00	12.70	4.10	7.10
4"	160	4GR34	114.30	87.30	152.40	92.10	73.00	127.00	12.70	4.40	7.10
4"	XXS	4GR31	114.30	80.10	152.40	92.10	73.00	127.00	12.70	5.20	7.30
4"	17,5mm	4GR31	114.30	79.30	152.40	92.10	73.00	127.00	12.70	5.30	7.30
4"	20mm	4GR27	114.30	74.30	152.40	92.10	73.00	127.00	12.70	5.70	7.40
4"	22,2mm	4GR27	114.30	69.90	152.40	92.10	73.00	127.00	12.70	5.90	7.40
5"	5	5GR54	141.30	135.80	190.50	111.10	88.90	165.10	15.88	5.10	14.70
5"	40	5GR52	141.30	128.20	190.50	111.10	73.00	165.10	15.88	5.40	11.10
5"	80	5GR52	141.30	122.30	190.50	111.10	73.00	165.10	15.88	5.90	11.10
5"	120	5GR46	141.30	115.90	190.50	111.10	73.00	165.10	15.88	7.70	11.50
5"	XXS	5GR40	141.30	103.30	190.50	111.10	88.90	165.10	15.88	9.90	14.70
5"	22,2mm	5GR40	141.30	96.90	190.50	111.10	88.90	165.10	15.88	10.50	14.70
6"	40	6GR62	168.30	154.10	235.00	117.50	73.00	196.90	19.05	9.30	16.00
6"	80	6GR62	168.30	146.30	235.00	117.50	73.00	196.90	19.05	9.90	16.00
6"	120	6GR62	168.30	139.70	235.00	117.50	73.00	196.90	19.05	10.10	16.00
6"	120	6GR56	168.30	139.70	235.00	117.50	88.90	196.90	20.63	12.70	21.40
6"	120	6GR54	168.30	139.70	235.00	117.50	88.90	196.90	20.63	13.10	21.40
6"	160	6GR52	168.30	131.90	235.00	117.50	88.90	196.90	20.63	14.50	21.40
6"	160	6GR54	168.30	131.90	235.00	117.50	88.90	196.90	20.63	14.00	21.40
6"	XXS	6GR52	168.30	124.50	235.00	117.50	88.90	196.90	20.63	15.30	21.40
6"	XXS	6GR54	168.30	124.50	235.00	117.50	88.90	196.90	20.63	14.50	21.40
6"	25mm	6GR46	168.30	118.30	235.00	117.50	85.70	196.90	20.63	17.10	21.10
6"	28mm	6GR46	168.30	112.30	235.00	117.50	85.70	196.90	20.63	17.70	21.10
8"	60	8GR82	219.10	198.50	292.10	136.50	76.20	254.00	19.05	14.50	26.50
8"	100	8GR76	219.10	188.90	292.10	136.50	76.20	254.00	19.05	18.50	27.20
8"	120	8GR72	219.10	182.70	292.10	136.50	88.90	254.00	19.05	21.80	33.00
8"	140	8GR76	219.10	177.90	292.10	136.50	76.20	254.00	19.05	19.10	27.30
8"	140	8GR72	219.10	177.90	292.10	136.50	88.90	254.00	19.05	22.40	33.00
8"	160	8GR72	219.10	173.10	292.10	136.50	88.90	254.00	19.05	22.90	33.00
8"	160	8GR67	219.10	173.10	292.10	136.50	88.90	254.00	19.05	24.70	33.50
8"	25mm	8GR72	219.10	169.10	292.10	136.50	88.90	254.00	19.05	23.10	33.00

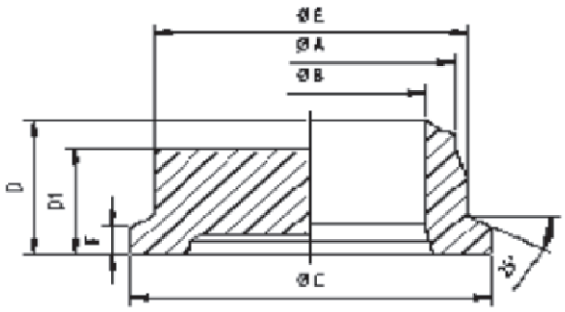
STANDARD HUBS (MM)



Buttweld Hub

NPS	SCH	G-LOK® SIZE	PIPE O.D. A (mm)	INSIDE DIAMETER B (mm)	OUTSIDE DIAMETER C (mm)	BW HUB LENGTH D (mm)	BLIND HUB LENGTH D1 (mm)	HUB BACK FACE Ø E (mm)	LIP THICKNESS F (mm)	BW HUB WEIGHT kg	BLIND HUB WEIGHT kg
8"	25mm	8GR67	219.10	169.10	292.10	136.50	88.90	254.00	19.05	25.20	33.50
8"	28mm	8GR72	219.10	163.10	292.10	136.50	88.90	254.00	19.05	23.10	33.00
8"	28mm	8GR64	219.10	163.10	292.10	136.50	108.00	254.00	19.05	27.50	41.60
8"	30mm	8GR64	219.10	159.10	292.10	136.50	108.00	254.00	19.05	28.00	41.60
8"	32mm	8GR64	219.10	155.10	292.10	136.50	108.00	254.00	19.05	28.30	41.60
8"	32mm	8GR62	219.10	155.10	292.10	136.50	108.00	254.00	19.05	30.10	42.10
8"	36mm	8GR62	219.10	147.10	292.10	136.50	108.00	254.00	19.05	31.10	42.10
10"	60	10H97	273.00	247.60	346.10	152.40	88.90	295.30	31.75	25.90	45.20
10"	100	10H94	273.00	236.60	346.10	152.40	95.30	295.30	31.75	30.70	49.30
10"	120	10H91	273.00	230.20	346.10	152.40	127.00	295.30	31.74	33.10	69.00
10"	120	10H92	273.00	230.20	346.10	152.40	127.00	295.30	31.75	32.50	69.00
10"	120	10H94	273.00	230.20	346.10	152.40	95.30	295.30	31.75	31.80	49.30
10"	140	10H94	273.00	222.20	346.10	152.40	95.30	295.30	31.75	32.50	49.30
10"	140	10H87	273.00	222.20	346.10	152.40	108.00	295.30	31.75	37.30	57.00
10"	160	10H84	273.00	215.80	346.10	152.40	108.00	295.30	31.75	40.60	58.00
10"	28mm	10H84	273.00	217.00	346.10	152.40	108.00	295.30	31.75	40.30	58.00
10"	30mm	10H84	273.00	213.00	346.10	152.40	108.00	295.30	31.75	41.20	58.00
10"	36mm	10H84	273.00	201.00	346.10	152.40	108.00	295.30	31.75	43.00	58.00
10"	36mm	10H82	273.00	201.00	346.10	152.40	127.00	295.30	31.75	44.80	69.00
10"	40mm	10H76	273.00	193.00	346.10	152.40	127.00	295.30	31.75	48.80	69.00
10"	45mm	10H72	273.00	183.00	346.10	152.40	127.00	295.30	31.75	53.00	70.00
12"	60	12M120	323.80	295.20	406.40	168.30	98.50	355.60	34.93	38.70	72.00
12"	80	12M114	323.80	289.00	406.40	168.30	142.90	355.60	34.92	47.10	113.00
12"	100	12M112	323.80	281.00	406.40	168.30	108.00	355.60	31.75	48.20	80.00
12"	120	12M112	323.80	273.00	406.40	168.30	108.00	355.60	31.75	50.00	80.00
12"	120	12M106	323.80	273.00	406.40	168.30	133.40	355.60	34.93	55.00	102.00
12"	160	12M102	323.80	257.20	406.40	168.30	133.40	355.60	34.93	63.00	103.00
12"	25mm	12M112	323.80	273.80	406.40	168.30	108.00	355.60	31.75	50.00	100.00
12"	31,8mm	12M102	323.80	260.20	406.40	168.30	133.40	355.60	34.93	62.00	103.00
12"	32mm	12M102	323.80	259.80	406.40	168.30	133.40	355.60	34.93	62.00	103.00
12"	36mm	12M102	323.80	251.80	406.40	168.30	133.40	355.60	34.93	64.00	103.00
12"	45mm	12M94	323.80	233.80	406.40	168.30	133.40	355.60	34.93	74.00	104.00
12"	50mm	12M87	323.80	223.80	406.40	168.30	142.90	355.60	34.93	80.00	113.00
14"	60	X14GR130	355.60	325.40	438.20	177.80	104.80	400.10	19.05	43.50	91.00
14"	80	X14GR124	355.60	317.50	438.20	177.80	133.40	400.10	20.63	45.50	126.00
14"	80	X14GR125	355.60	317.50	438.20	177.80	133.40	400.10	20.60	46.00	120.00
14"	100	X14GR130	355.60	308.00	438.20	177.80	104.80	400.10	19.05	47.90	91.00
14"	120	X14GR120	355.60	300.00	438.20	177.80	120.70	400.10	20.63	61.00	109.00
14"	140	X14GR120	355.60	292.00	438.20	177.80	120.70	400.10	20.63	64.00	109.00
14"	160	X14GR112	355.60	284.20	438.20	177.80	120.70	400.10	17.45	72.00	110.00
14"	55mm	X14GR97	355.60	245.60	438.20	177.80	133.40	400.10	20.63	94.00	126.00
14"	60mm	X14GR94	355.60	235.60	438.20	177.80	133.40	400.10	20.63	100.00	127.00
16"	60	X16GR152	406.40	373.00	495.30	196.90	111.10	457.20	19.05	55.00	125.00
16"	100	X16GR140	406.40	354.00	495.30	196.90	120.70	457.20	19.05	78.00	141.00
16"	120	X16GR140	406.40	344.60	495.30	196.90	120.70	457.20	19.05	82.00	141.00
16"	120	X16GR137	406.40	344.60	495.30	196.90	120.70	457.20	17.45	83.00	141.00
16"	140	X16GR140	406.40	333.40	495.30	196.90	120.70	457.20	19.05	86.00	141.00
16"	140	X16GR137	406.40	333.40	495.30	196.90	120.70	457.20	17.45	87.00	141.00
16"	160	X16GR130	406.40	325.40	495.30	196.90	136.50	457.20	19.05	101.00	164.00
16"	34,9mm	X16GR134	406.40	336.60	495.30	196.90	136.50	457.20	19.05	91.00	163.00
16"	50mm	X16GR120	406.40	306.40	495.30	196.90	130.20	457.20	20.63	117.00	159.00
16"	55mm	X16GR120	406.40	296.40	495.30	196.90	130.20	457.20	20.63	122.00	159.00
16"	65mm	X16GR112	406.40	276.40	495.30	196.90	130.20	457.20	17.45	135.00	160.00
18"	60	X18GR170	457.20	419.20	552.50	209.60	120.70	514.40	19.05	75.00	174.00
18"	100	X18GR160	457.20	398.40	552.50	209.60	139.70	514.40	19.05	101.00	208.00
18"	120	X18GR152	457.20	387.40	552.50	209.60	139.70	514.40	19.05	115.00	210.00
18"	160	X18GR152	457.20	366.80	552.50	209.60	139.70	514.40	19.05	126.00	210.00
18"	160	X18GR144	457.20	366.80	552.50	209.60	139.70	514.40	19.05	135.00	213.00
18"	55mm	X18GR140	457.20	347.20	552.50	209.60	139.70	514.40	19.05	151.00	214.00
18"	60mm	X18GR134	457.20	337.20	552.50	209.60	139.70	514.40	19.05	161.00	215.00
20"	40	X20GR210	508.00	477.80	622.30	222.30	108.00	584.20	19.05	85.00	190.00
20"	60	X20GR185	508.00	466.80	622.30	222.30	146.10	584.20	19.05	103.00	279.00
20"	60	X20GR192	508.00	466.80	622.30	222.30	130.20	584.20	19.05	98.00	244.00
20"	100	X20GR180	508.00	443.00	622.30	222.30	146.10	584.20	19.05	135.00	282.00
20"	120	X20GR170	508.00	431.80	622.30	222.30	146.10	584.20	19.05	155.00	285.00
20"	160	X20GR170	508.00	408.00	622.30	222.30	146.10	584.20	19.05	169.00	285.00
20"	160	X20GR162	508.00	408.00	622.30	222.30	146.10	584.20	19.04	175.00	290.00
20"	34,9mm	X20GR180	508.00	438.20	622.30	222.30	146.10	584.20	19.05	137.00	282.00
20"	55mm	X20GR160	508.00	398.00	622.30	222.30	146.10	584.20	19.05	191.00	288.00
20"	60mm	X20GR152	508.00	388.00	622.30	222.30	146.10	584.20	19.05	206.00	291.00
20"	65mm	X20GR152	508.00	378.00	622.30	222.30	146.10	584.20	19.05	213.00	291.00
24"	40	X24GR244	609.60	574.80	749.30	247.70	152.40	698.50	25.40	102.00	414.00
24"	60	X24GR220	609.60	560.40	749.30	247.70	174.60	698.50	25.40	185.00	491.00
24"	100	X24GR210	609.60	531.80	749.30	247.70	174.60	698.50	25.40	232.00	496.00
24"	120	X24GR210	609.60	517.60	749.30	247.70	174.60	698.50	25.40	245.00	496.00
24"	160	X24GR200	609.60	490.60	749.30	247.70	174.60	698.50	25.40	287.00	500.00
24"	65mm	X24GR192	609.60	479.60	749.30	247.70	174.60	698.50	25.40	309.00	503.00

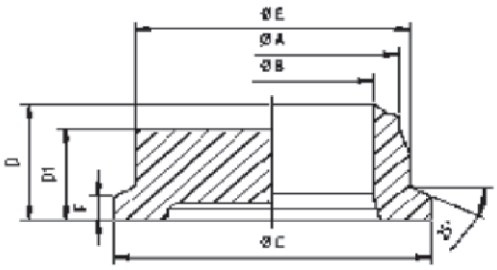
HEAVY DUTY HUBS (MM)



Buttweld Hub

NPS	SCH	G-LOK® SIZE	PIPE O.D. A (mm)	INSIDE DIAMETER B (mm)	OUTSIDE DIAMETER C (mm)	BW HUB LENGTH D (mm)	BLIND HUB LENGTH D1 (mm)	HUB BACK FACE Ø E (mm)	LIP THICKNESS F (mm)	BW HUB WEIGHT kg	BLIND HUB WEIGHT kg
2"	40	B20	60.30	52.50	120.70	82.60	63.50	95.30	15.88	2.80	3.70
2"	80	B20	60.30	49.20	120.70	82.60	63.50	95.30	15.88	2.90	3.70
2"	160	B16	60.30	42.90	120.70	82.60	63.50	95.30	15.88	3.20	3.80
2"	XXS	B14	60.30	38.10	120.70	82.60	63.50	95.30	15.88	3.40	3.90
3"	40	C27	88.90	77.90	139.70	88.90	66.70	114.30	15.88	3.30	5.10
3"	80	C27	88.90	73.70	139.70	88.90	66.70	114.30	15.88	3.60	5.10
3"	160	C25	88.90	66.70	139.70	88.90	66.70	114.30	15.88	4.20	5.30
3"	XXS	C23	88.90	58.50	139.70	88.90	66.70	114.30	15.88	4.70	5.50
4"	40	D40	114.30	102.30	171.50	101.60	73.00	146.10	15.88	5.40	8.70
4"	80	D40	114.30	97.20	171.50	101.60	73.00	146.10	15.88	5.80	8.70
4"	120	D34	114.30	92.10	171.50	101.60	73.00	146.10	15.88	6.80	9.10
4"	160	D34	114.30	87.30	171.50	101.60	73.00	146.10	15.88	7.20	9.10
4"	17,5mm	D31	114.30	79.30	171.50	101.60	73.00	146.10	15.88	8.10	9.40
4"	20mm	D27	114.30	74.30	171.50	101.60	73.00	146.10	15.88	8.60	9.50
6"	120	ZX54	168.30	139.70	268.00	196.00	95.30	230.00	21.14	31.70	30.00
6"	XXS	ZX52	168.30	124.50	268.00	196.00	95.30	230.00	21.14	32.50	31.00
6"	32mm	ZX42	168.30	104.30	268.00	196.00	95.30	230.00	21.14	38.80	32.10
8"	25mm	X8GR72	219.10	169.10	292.10	136.50	88.90	254.00	19.05	23.10	33.00
8"	25mm	X8GR67	219.10	169.10	292.10	136.50	88.90	254.00	19.05	25.20	33.50
8"	28mm	X8GR64	219.10	163.10	292.10	136.50	108.00	254.00	19.05	27.50	41.60
8"	32mm	X8GR64	219.10	155.10	292.10	136.50	108.00	254.00	19.05	28.30	41.60
8"	36mm	X8GR62	219.10	147.10	292.10	136.50	108.00	254.00	19.05	31.10	42.10
10"	120	X10H91	273.00	230.20	346.10	152.40	127.00	295.30	31.74	44.50	69.00
10"	120	X10H92	273.00	230.20	346.10	152.40	127.00	295.30	31.75	44.00	69.00
10"	36mm	X10H84	273.00	201.00	346.10	152.40	108.00	295.30	31.75	43.00	69.00
10"	36mm	X10H82	273.00	201.00	346.10	152.40	127.00	295.30	31.75	44.80	69.00
12"	25mm	X12M112	323.80	273.80	406.40	168.30	108.00	355.60	31.75	50.00	100.00
12"	36mm	X12M102	323.80	251.80	406.40	168.30	133.40	355.60	34.93	64.00	103.00
12"	45mm	X12M94	323.80	233.80	406.40	168.30	133.40	355.60	34.93	74.00	104.00
12"	50mm	X12M87	323.80	223.80	406.40	168.30	142.90	355.60	34.93	80.00	113.00
14"	60	A-P130	355.60	325.40	469.90	184.20	152.40	419.10	30.16	64.00	158.00
14"	80	AP-124	355.60	317.50	469.90	184.20	152.40	419.10	31.75	81.50	162.00
14"	80	AP-125	355.60	317.50	469.90	184.20	152.40	419.10	31.72	81.00	161.00
14"	100	A-P130	355.60	308.00	469.90	184.20	152.40	419.10	30.16	69.00	158.00
14"	120	A-P120	355.60	300.00	469.90	184.20	152.40	419.10	31.75	83.00	161.00
14"	140	A-P120	355.60	292.00	469.90	184.20	152.40	419.10	31.75	85.00	161.00
14"	160	A-P112	355.60	284.20	469.90	184.20	152.40	419.10	28.57	93.00	162.00
14"	25mm	A-P120	355.60	305.60	469.90	184.20	152.40	419.10	31.75	80.00	161.00
14"	34,9mm	A-P112	355.60	285.80	469.90	184.20	152.40	419.10	28.57	92.00	162.00
14"	34,9mm	A-P120	355.60	285.80	469.90	184.20	152.40	419.10	31.75	87.00	161.00
14"	36mm	A-P112	355.60	283.60	469.90	184.20	152.40	419.10	28.57	93.00	162.00

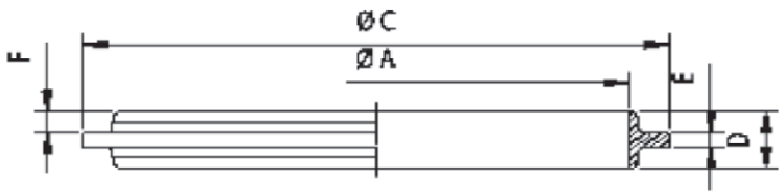
HEAVY DUTY HUBS (MM)



Buttweld Hub

NPS	SCH	G-LOK® SIZE	PIPE O.D. A (mm)	INSIDE DIAMETER B (mm)	OUTSIDE DIAMETER C (mm)	BW HUB LENGTH D (mm)	BLIND HUB LENGTH D1 (mm)	HUB BACK FACE Ø E (mm)	LIP THICKNESS F (mm)	BW HUB WEIGHT kg	BLIND HUB WEIGHT kg
14"	38mm	A-P112	355.60	279.60	469.90	184.20	152.40	419.10	28.57	95.00	162.00
14"	40mm	A-P112	355.60	275.60	469.90	184.20	152.40	419.10	28.57	96.00	162.00
14"	55mm	A-P97	355.60	245.60	469.90	184.20	146.00	419.10	31.75	117.00	158.00
14"	60mm	A-P94	355.60	235.60	469.90	184.20	146.00	419.10	31.75	122.00	159.00
16"	60	S152	406.40	373.00	533.40	200.00	162.00	482.60	42.88	99.00	225.00
16"	100	S140	406.40	354.00	533.40	200.00	162.00	482.60	42.88	121.00	228.00
16"	120	S140	406.40	344.60	533.40	200.00	162.00	482.60	42.88	126.00	228.00
16"	120	S137	406.40	344.60	533.40	200.00	162.00	482.60	41.28	127.00	228.00
16"	140	S140	406.40	333.40	533.40	200.00	162.00	482.60	42.88	129.00	228.00
16"	140	S137	406.40	333.40	533.40	200.00	162.00	482.60	41.28	131.00	228.00
16"	160	S130	406.40	325.40	533.40	200.00	178.00	482.60	42.88	144.00	254.00
16"	28mm	S140	406.40	350.40	533.40	200.00	162.00	482.60	42.88	123.00	228.00
16"	34,9mm	S134	406.40	336.60	533.40	200.00	178.00	482.60	42.88	135.00	253.00
16"	40mm	S130	406.40	326.40	533.40	200.00	178.00	482.60	42.88	144.00	254.00
16"	45mm	S130	406.40	316.40	533.40	200.00	178.00	482.60	42.88	148.00	254.00
16"	50mm	S120	406.40	306.40	533.40	200.00	190.00	482.60	44.47	162.00	274.00
16"	55mm	S120	406.40	296.40	533.40	200.00	190.00	482.60	44.47	166.00	274.00
18"	100	U160	457.20	398.40	635.00	222.20	184.00	584.20	41.28	203.00	380.00
18"	120	U152	457.20	387.40	635.00	222.20	184.00	584.20	41.28	218.00	382.00
18"	160	U152	457.20	366.80	635.00	222.20	184.00	584.20	41.28	230.00	382.00
18"	160	U144	457.20	366.80	635.00	222.20	184.00	584.20	41.28	239.00	384.00
18"	34,9mm	U152	457.20	387.40	635.00	222.20	184.00	584.20	41.28	218.00	382.00
18"	44mm	U152	457.20	369.20	635.00	222.20	184.00	584.20	41.28	229.00	382.00
18"	45mm	U152	457.20	367.20	635.00	222.20	184.00	584.20	41.28	230.00	382.00
18"	50mm	U152	457.20	357.20	635.00	222.20	184.00	584.20	41.28	232.00	382.00
18"	55mm	U140	457.20	347.20	635.00	222.20	184.00	584.20	41.28	256.00	385.00
20"	60	3V185	508.00	466.80	660.40	228.60	187.00	609.60	31.75	211.00	405.00
20"	60	3V192	508.00	466.80	660.40	228.60	159.00	609.60	31.75	156.00	337.00
20"	100	3V180	508.00	443.00	660.40	228.60	181.00	609.60	31.75	193.00	393.00
20"	120	3V170	508.00	431.80	660.40	228.60	187.00	609.60	31.75	215.00	411.00
20"	160	3V170	508.00	408.00	660.40	228.60	187.00	609.60	31.75	229.00	411.00
20"	160	3V162	508.00	408.00	660.40	228.60	187.00	609.60	31.74	218.00	411.00
20"	34,9mm	3V180	508.00	438.20	660.40	228.60	181.00	609.60	31.75	196.00	393.00
20"	55mm	3V160	508.00	398.00	660.40	228.60	178.00	609.60	31.75	252.00	397.00
20"	60mm	3V152	508.00	388.00	660.40	228.60	178.00	609.60	31.75	266.00	399.00
20"	65mm	3V152	508.00	378.00	660.40	228.60	178.00	609.60	31.75	273.00	399.00
24"	40	3Y244	609.60	574.80	793.80	254.00	181.00	743.00	41.28	242.00	564.00
24"	60	3Y220	609.60	560.40	793.80	254.00	245.00	743.00	41.28	325.00	796.00
24"	100	3Y210	609.60	531.80	793.80	254.00	203.00	743.00	41.28	373.00	658.00
24"	120	3Y210	609.60	517.60	793.80	254.00	203.00	743.00	41.28	387.00	658.00
24"	160	3Y200	609.60	490.60	793.80	254.00	203.00	743.00	41.28	430.00	669.00
24"	65mm	3Y192	609.60	479.60	793.80	254.00	203.00	743.00	41.28	453.00	672.00
26"	160	26GR210	660.40	531.40	793.80	254.00	203.00	743.00	41.28	489.00	679.00
28"	60mm	28GR232	711.20	591.20	992.30	349.00	250.00	941.50	41.28	858.00	1329.00
30"	140	30GR248	762.00	631.00	992.30	323.60	250.00	941.50	41.28	783.00	1318.00
30"	31,8mm	30GR280	762.00	698.40	992.30	323.60	250.00	941.50	41.28	610.00	1300.00
32"	120	32GR270	812.80	690.00	1087.00	369.80	300.00	1036.00	41.28	958.00	1557.00
34"	60	34GR320	863.60	793.90	1087.00	345.00	300.00	1036.00	41.28	692.00	1523.00
36"	75mm	36GR303	914.40	764.40	1087.00	345.00	300.00	1036.00	41.28	846.00	1559.00

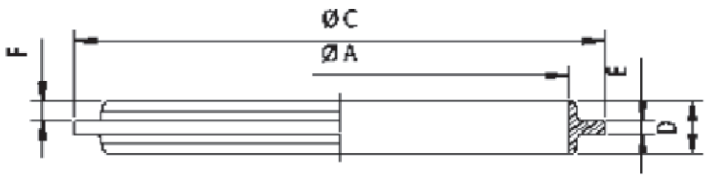
SEAL RING (MM - INCH)



Seal Ring

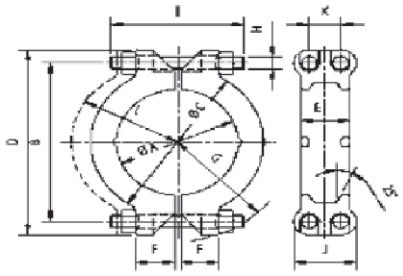
SIZE	INSIDE DIAMETER A		OUTSIDE DIAMETER C		OVERALL THICKNESS D		RIB THICKNESS E		LIP DEPTH F		SEALRING WEIGHT	
	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(kg)	(B)
4	12.79	0.504	25.40	1.000	9.53	0.375	3.17	0.125	3.18	0.125	0.01	0.022
5	15.96	0.628	27.80	1.094	9.53	0.375	3.17	0.125	3.18	0.125	0.01	0.022
7	23.08	0.909	34.90	1.374	9.53	0.375	3.17	0.125	3.18	0.125	0.02	0.044
8	25.55	1.006	40.80	1.606	9.53	0.375	3.17	0.125	3.18	0.125	0.03	0.066
11	28.73	1.131	44.00	1.732	9.53	0.375	3.17	0.125	3.18	0.125	0.03	0.066
13	38.10	1.500	60.30	2.374	9.61	0.378	3.17	0.125	3.22	0.127	0.05	0.110
14	40.90	1.610	66.70	2.626	14.29	0.563	6.35	0.250	3.97	0.156	0.13	0.287
16	47.71	1.878	68.30	2.689	15.87	0.625	6.35	0.250	4.76	0.187	0.12	0.265
20	53.24	2.096	82.50	3.248	19.05	0.750	6.35	0.250	6.35	0.250	0.20	0.441
23	61.21	2.410	88.90	3.500	19.05	0.750	6.35	0.250	6.35	0.250	0.20	0.441
25	69.15	2.722	101.60	4.000	19.05	0.750	6.35	0.250	6.35	0.250	0.30	0.661
27	78.71	3.099	108.00	4.252	19.05	0.750	6.35	0.250	6.35	0.250	0.30	0.661
31	83.50	3.287	114.30	4.500	19.05	0.750	6.35	0.250	6.35	0.250	0.30	0.661
34	94.66	3.727	127.00	5.000	19.05	0.750	6.35	0.250	6.35	0.250	0.40	0.882
40	104.32	4.107	139.70	5.500	25.40	1.000	6.34	0.250	9.53	0.375	0.50	1.102
42	107.50	4.232	168.30	6.626	25.40	1.000	6.34	0.250	9.53	0.375	0.90	1.984
46	121.85	4.797	157.20	6.189	25.40	1.000	6.34	0.250	9.53	0.375	0.60	1.323
52	136.14	5.360	168.30	6.626	25.40	1.000	6.34	0.250	9.53	0.375	0.60	1.323
53	139.70	5.500	171.90	6.768	25.40	1.000	6.34	0.250	9.53	0.375	0.61	1.345
54	139.70	5.500	173.10	6.815	25.40	1.000	6.34	0.250	9.53	0.375	0.66	1.455
56	147.25	5.797	190.50	7.500	25.40	1.000	6.34	0.250	9.53	0.375	0.80	1.764
62	156.50	6.161	200.00	7.874	34.93	1.375	9.53	0.375	12.70	0.500	1.50	3.307
64	167.60	6.598	222.40	8.756	34.93	1.375	9.53	0.375	12.70	0.500	1.90	4.189
67	177.14	6.974	222.30	8.752	34.93	1.375	9.53	0.375	12.70	0.500	1.70	3.748
72	186.70	7.350	241.30	9.500	34.93	1.375	9.53	0.375	12.70	0.500	2.00	4.409
73	190.38	7.495	245.00	9.646	34.93	1.375	9.53	0.375	12.70	0.500	2.00	4.409
74	193.04	7.600	247.60	9.748	34.93	1.375	9.53	0.375	12.70	0.500	2.10	4.630
76	199.40	7.850	254.00	10.000	34.93	1.375	9.53	0.375	12.70	0.500	2.20	4.850
82	212.10	8.350	257.20	10.126	34.93	1.375	9.53	0.375	12.70	0.500	2.00	4.409
84	218.40	8.598	282.60	11.126	34.93	1.375	9.53	0.375	12.70	0.500	2.70	5.952
87	227.90	8.972	282.60	11.126	34.93	1.375	9.53	0.375	12.70	0.500	2.40	5.291
91	231.70	9.122	330.40	13.008	35.45	1.396	9.56	0.376	12.95	0.510	4.20	9.259
92	235.00	9.252	297.40	11.709	34.93	1.375	9.53	0.375	12.70	0.500	2.90	6.393
94	243.80	9.598	304.80	12.000	34.93	1.375	9.53	0.375	12.70	0.500	2.80	6.173
97	253.30	9.972	304.80	12.000	34.93	1.375	9.53	0.375	12.70	0.500	2.60	5.732
102	262.90	10.350	304.80	12.000	34.93	1.375	9.53	0.375	12.70	0.500	2.30	5.071

SEAL RING (MM - INCH)



Seal Ring

SIZE	INSIDE DIAMETER A		OUTSIDE DIAMETER C		OVERALL THICKNESS D		RIB THICKNESS E		LIP DEPTH F		SEALRING WEIGHT	
	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(kg)	(B)
106	275.60	10.850	323.90	12.752	34.93	1.375	9.53	0.375	12.70	0.500	2.70	5.952
112	288.30	11.350	358.80	14.126	41.28	1.625	15.88	0.625	12.70	0.500	5.50	12.125
114	292.87	11.530	343.00	13.504	35.31	1.390	9.51	0.374	12.90	0.508	3.00	6.614
116	298.45	11.750	358.80	14.126	34.93	1.375	9.53	0.375	12.70	0.500	3.26	7.187
120	308.30	12.138	352.40	13.874	34.93	1.375	9.53	0.375	12.70	0.500	2.70	5.952
122	314.70	12.390	358.80	14.126	34.93	1.375	9.53	0.375	12.70	0.500	2.70	5.952
124	317.50	12.500	371.50	14.626	35.33	1.391	9.53	0.375	12.90	0.508	3.70	8.157
125	320.64	12.624	368.35	14.502	35.34	1.391	9.60	0.378	12.87	0.507	3.30	7.275
130	332.20	13.079	381.00	15.000	38.10	1.500	12.70	0.500	12.70	0.500	3.90	8.598
134	344.90	13.579	393.70	15.500	38.10	1.500	12.70	0.500	12.70	0.500	4.10	9.039
137	354.40	13.953	419.10	16.500	41.28	1.625	15.88	0.625	12.70	0.500	6.20	13.669
140	357.60	14.079	419.10	16.500	38.10	1.500	12.70	0.500	12.70	0.500	5.00	11.023
144	370.30	14.579	431.80	17.000	38.10	1.500	12.70	0.500	12.70	0.500	5.20	11.464
152	389.30	15.327	450.90	17.752	38.10	1.500	12.70	0.500	12.70	0.500	5.50	12.125
160	408.40	16.079	469.90	18.500	38.10	1.500	12.70	0.500	12.70	0.500	5.70	12.566
162	412.63	16.245	470.00	18.504	38.43	1.513	12.73	0.501	12.85	0.506	5.80	12.787
170	433.50	17.067	495.30	19.500	44.50	1.752	12.70	0.500	15.90	0.626	6.70	14.771
180	459.10	18.075	520.70	20.500	44.50	1.752	12.70	0.500	15.90	0.626	7.10	15.653
185	473.10	18.626	540.00	21.260	44.50	1.752	12.70	0.500	15.90	0.626	7.50	16.535
192	490.70	19.319	558.80	22.000	44.50	1.752	12.70	0.500	15.90	0.626	8.10	17.857
200	509.70	20.067	577.90	22.752	44.50	1.752	12.70	0.500	15.90	0.626	8.40	18.519
210	535.30	21.075	609.60	24.000	50.80	2.000	12.70	0.500	19.05	0.750	10.20	22.487
212	541.65	21.325	616.00	24.252	50.80	2.000	12.70	0.500	19.05	0.750	9.98	22.002
213	544.80	21.449	619.10	24.374	50.80	2.000	12.70	0.500	19.05	0.750	10.40	22.928
220	561.10	22.091	635.00	25.000	50.80	2.000	12.70	0.500	19.05	0.750	10.50	23.148
232	592.90	23.343	666.80	26.252	50.80	2.000	12.70	0.500	19.05	0.750	11.10	24.471
240	612.40	24.110	692.20	27.252	50.80	2.000	12.70	0.500	19.05	0.750	11.60	25.573
244	625.10	24.610	704.90	27.752	50.80	2.000	12.70	0.500	19.05	0.750	12.20	26.896
251	642.00	25.276	721.80	28.417	50.80	2.000	12.70	0.500	19.05	0.750	12.00	26.455
254	650.90	25.626	736.60	29.000	50.80	2.000	12.70	0.500	19.05	0.750	12.70	27.998
260	663.60	26.126	749.30	29.500	50.80	2.000	12.70	0.500	19.05	0.750	13.50	29.762
264	676.30	26.626	762.00	30.000	50.80	2.000	12.70	0.500	19.05	0.750	13.70	30.203
270	690.00	27.165	775.70	30.539	50.80	2.000	12.70	0.500	19.05	0.750	13.50	29.762
280	714.90	28.146	797.00	31.378	50.80	2.000	12.70	0.500	19.05	0.750	13.90	30.644
292	746.60	29.394	819.20	32.252	50.80	2.000	12.70	0.500	19.05	0.750	13.20	29.101
303	768.40	30.252	841.00	33.110	50.80	2.000	12.70	0.500	19.05	0.750	13.10	28.880
320	828.20	32.606	900.80	35.465	50.80	2.000	12.70	0.500	19.05	0.750	14.10	31.085
330	841.85	33.144	914.50	36.004	50.80	2.000	12.70	0.500	19.05	0.750	14.30	31.526
338	860.00	33.858	932.60	36.717	50.80	2.000	12.70	0.500	19.05	0.750	14.60	32.187
344	879.95	34.644	974.00	38.346	50.80	2.000	12.70	0.500	19.05	0.750	18.30	40.344
354	900.00	35.433	994.00	39.134	50.80	2.000	12.70	0.500	19.05	0.750	18.70	41.226
378	954.00	37.559	1070.00	42.126	50.80	2.000	12.70	0.500	19.05	0.750	31.20	68.784
390	986.00	38.819	1080.00	42.520	50.80	2.000	12.70	0.500	19.05	0.750	20.40	44.974



Standard Clamp Set

Stud Bolts With Nuts

STANDARD CLAMPS

CL.	CLAMP I.D A (mm)	BOLT CENTRES B (mm)	CLAMP O.D. C (mm)	OVERALL LENGTH D (mm)	CLAMP WIDTH E (mm)	LUG HEIGHT F (mm)	CLAMP CLEARANCE G (mm)	BOLT Ø H (mm)	BOLT LENGHT (2) I (mm)	BOLT LUG WIDTH J (mm)	BOLT PITCH K (mm)	ASSEMBLY CLEARANCE L (mm)	CLAMP WEIGHT (Kg)
1	43	81	71	108	35	25	67	1/2"	92	59	32	52	1.7
1.5	68	127	114	165	51	37	97	5/8"	127	79	41	80	4.6
2	81	146	129	190	51	41	111	3/4"	138	90	46	89	6.4
3	111	191	175	234	60	52	136	3/4"	162	89	46	121	10
4	137	216	206	267	60	62	156	7/8"	191	105	52	140	14
5	175	260	248	314	76	73	184	1"	224	113	59	164	22
6	213	321	305	381	89	76	217	1-1/8"	253	122	62	205	34
8	270	387	368	464	90	86	256	1-1/4"	285	149	73	242	51
10H	311	464	454	559	143	118	316	1-5/8"	373	188	92	305	105
12M	372	559	527	654	149	118	364	1-3/4"	406	191	95	349	140
X14	416	565	543	660	127	129	373	1-5/8"	432	187	92	343	110
X16	473	610	600	705	127	156	411	1-3/4"	495	194	98	376	130
X18	530	654	657	749	127	170	445	1-7/8"	546	203	105	409	135
X20	600	719	740	818	127	205	497	2"	629	216	111	455	120
X24	719	870	878	987	165	221	577	2-1/4"	686	241	127	547	300

LIGHT WEIGHT CLAMPS

CL.	CLAMP I.D A (mm)	BOLT CENTRES B (mm)	CLAMP O.D. C (mm)	OVERALL LENGTH D (mm)	CLAMP WIDTH E (mm)	LUG HEIGHT F (mm)	CLAMP CLEARANCE G (mm)	BOLT Ø H (mm)	BOLT LENGTH (2) I (mm)	BOLT LUG WIDTH J (mm)	BOLT PITCH K (mm)	ASSEMBLY CLEARANCE L (mm)	CLAMP WEIGHT (Kg)
14	416	565	533	660	102	118	360	1-5/8"	373	187	92	338	105
16	473	622	584	718	102	124	394	1-3/4"	419	194	98	368	117
18	530	686	645	781	102	127	343	1-7/8"	464	203	105	402	137
20	600	765	718	864	102	140	473	2"	470	216	111	444	164
24	719	927	870	1041	146	156	560	2-1/4"	527	241	127	543	296

HEAVY DUTY CLAMPS

CL.	CLAMP I.D A (mm)	BOLT CENTRES B (mm)	CLAMP O.D. C (mm)	OVERALL LENGTH D (mm)	CLAMP WIDTH E (mm)	LUG HEIGHT F (mm)	CLAMP CLEARANCE G (mm)	BOLT Ø H (mm)	BOLT LENGTH (2) I (mm)	BOLT LUG WIDTH J (mm)	BOLT PITCH K (mm)	ASSEMBLY CLEARANCE L (mm)	CLAMP WEIGHT (Kg)
B	105	184	175	229	73	59	141	7/8"	181	99	51	120	13
C	124	203	197	254	76	62	151	7/8"	189	103	52	133	16
D	156	243	229	299	76	68	175	1"	211	113	59	153	20
E	175	260	248	314	76	73	184	1"	224	113	59	164	22
F	213	321	305	381	89	76	217	1-1/8"	253	122	62	205	34
XF	213	343	327	406	102	83	234	1-1/4"	279	130	70	216	48
ZX	246	410	388	485	125	105	273	1-1/4"	325	150	75	250	90
G	257	406	375	477	116	89	271	1-3/8"	322	152	80	259	64
XG	257	406	381	508	127	114	284	1-3/8"	365	152	80	262	81
X8	270	413	384	483	105	86	271	1-3/8"	287	152	83	251	59
X10H	311	495	464	591	165	119	338	1-3/4"	407	191	95	310	145
X12M	372	591	546	692	184	132	398	2"	470	216	114	358	225
R	435	572	581	670	146	175	400	1-7/8"	559	203	108	382	171
A-P	435	635	584	737	154	114	403	2"	419	210	108	383	175
5P	435	711	651	838	203	143	465	2-1/2"	508	267	140	417	360
T	500	689	645	781	159	127	435	2"	457	216	114	418	192
S	500	765	699	892	229	149	500	2-1/2"	559	267	140	445	440
U	602	860	794	991	222	165	541	2-1/2"	559	279	140	501	450
V	627	762	805	870	165	233	535	2-1/4"	686	235	127	509	330
3V	627	889	837	997	203	152	563	2-1/4"	610	235	127	524	440
5V	627	953	887	1080	248	178	593	2-1/2"	610	279	140	550	720
W	716	914	864	1016	159	165	566	2-1/4"	578	235	127	545	484
3W	716	940	926	1054	203	241	627	2-1/2"	749	279	140	576	534
Y	760	984	953	1111	229	221	642	2-3/4"	730	279	152	593	570
3Y	760	1137	1080	1299	322	222	711	3-1/4"	762	362	191	656	1372
28"-30"(1)	959	1373	1279	1545	336	230	810	3-1/4"	762	376	205	770	2057
32"-34"-36"(1)	1054	1468	1354	1640	322	222	853	3-1/4"	762	362	191	813	2066

LINE BLINDS - ASME B16.48

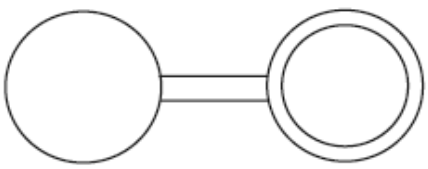
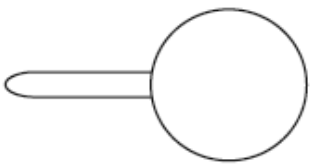


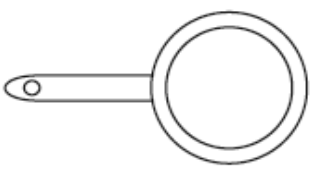
Figure-8 Blank

Spectacle Blind.



Paddle Blank

Spade



Paddle Spacer

Spacer RTJ

The below tables and figures give overall dimensions in accordance with ASME B16.48
For further details see ASME B16.48

Tolerances for facings shall be in accordance with ASME B16.5.

Thickness tolerances are:
NPS 18 and smaller –zero + 3.0 mm (0.12 inch)
NPS 20 and larger –zero + 4.8 mm (0.19 inch)

SPACER IDENTIFICATION

In order to differentiate between an installed paddle spacer and a paddle blank, it is required that there must be an externally visible distinction between the two as required below.

Spade Handles
Handles for paddle blanks shall be solid with no openings.

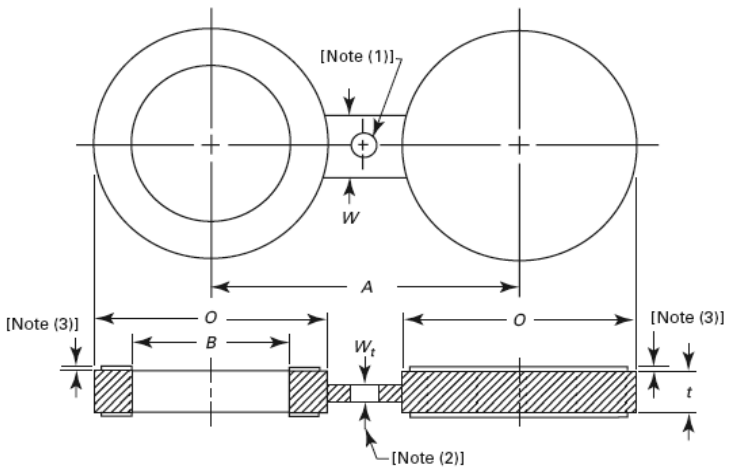
Spacer Handles
Handles for paddle spacers shall have a single through indicator hole located near the end of the handle.

The hole diameter shall not be less than 12 mm (1/2 inch.).

Handle
The handle or web (tie bar) may be integral or attached to the line blank or spacer.
The web and its attachment shall be capable of supporting the weight of the blank or spacer in all orientations without permanent deformation to the web.

ASME B16.48 DIMENSIONS OF CLASS 150

Raised Face Figure-8 Blanks



Spectacle Blind

NPS	INSIDE DIA [B] [mm]	OUTSIDE DIA [O] [mm]	CENTERLINE DIMENSION [A] [mm]	WEB WIDTH, [W], [mm]	THK [t] [mm]	THK [t] [mm] FF TR2000 SST: SLBN	THK [t] [mm] FF NORSOK EDS: NLB1
1/2"	16	45	60	38	3,0	5,0	5,0
3/4"	21	54	70	38	3	6,0	6,0
1"	27	64	80	38	3,0	6,0	6,0
1-1/4"	42	73	90	38	6,4	-	-
1-1/2"	48	83	100	38	6,4	6,0	6,0
2"	61	102	120	51	6,4	7,0	7,0
2-1/2"	73	107	140	51	6,4	-	-
3"	89	133	150	64	6,4	9,0	9,0
3-1/2"	102	159	175	64	9,7	-	-
4"	114	172	190	64	9,7	10,0	10,0
5"	141	194	215	76	9,7	-	-
6"	168	219	240	76	12,7	14,0	14,0
8"	219	276	300	76	12,7	16,0	16,0
10"	273	337	360	102	15,7	19,0	19,0
12"	324	406	430	102	19,1	22,0	22,0
14"	356	448	475	108	19,1	24,0	24,0
16"	406	511	460	108	22,4	27,0	27,0
18"	457	546	580	114	25,4	30,0	30,0
20"	508	603	635	121	28,4	32,0	32,0
24"	610	714	750	140	31,8	38,0	38,0

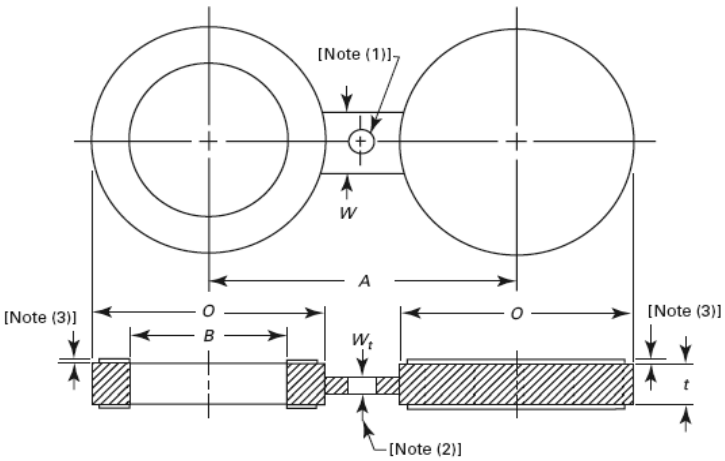
Notes:

(1) The hole dimension shall be identical in size to the flange bolt hole, and situated so as it does not interfere with the flange bolts.

(2) The thickness of the web (or tie bar) dimension, Wt, shall be as determined under general.

ASME B16.48 DIMENSIONS OF CLASS 300

Raised Face Figure-8 Blanks



Spectacle Blind

NPS	INSIDE DIA [B] [mm]	OUTSIDE DIA [O] [mm]	CENTERLINE DIMENSION [A] [mm]	WEB WIDTH, [W], [mm]	THK [t] [mm]	THK [t] [mm] FF TR2000 SST: SLBN	THK [t] [mm] FF NORSOK EDS: NLB1
1/2"	16	51	65	38	6,4	5,0	5,0
3/4"	21	64	80	38	6,4	6,0	6,0
1"	27	70	90	38	6,4	6,0	6,0
1-1/4"	42	79	100	38	6,4	-	-
1-1/2"	48	92	115	38	6,4	8,0	8,0
2"	61	108	125	51	9,7	10,0	10,0
2-1/2"	73	127	150	51	9,7	-	-
3"	89	146	170	64	9,7	13,0	13,0
3-1/2"	102	162	185	64	12,7	-	-
4"	114	178	200	64	12,7	15,0	15,0
5"	141	213	235	76	15,7	-	-
6"	168	248	270	76	15,7	20,0	20,0
8"	219	305	330	76	22,4	24,0	24,0
10"	273	359	385	102	25,4	29,0	29,0
12"	324	419	450	102	28,4	34,0	34,0
14"	356	483	515	108	31,8	37,0	37,0
16"	406	536	570	108	38,1	41,0	41,0
18"	457	594	630	114	41,1	46,0	46,0
20"	508	651	685	121	44,5	50,0	50,0
24"	610	772	810	140	50,8	60,0	60,0

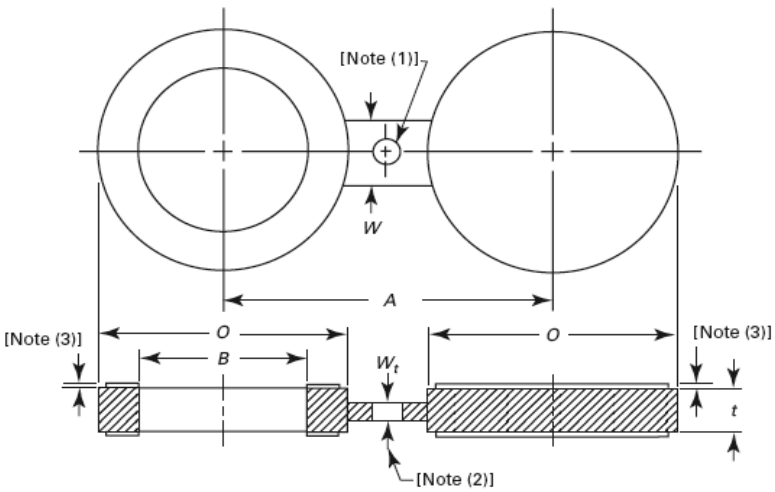
Notes:

(1) The hole dimension shall be identical in size to the flange bolt hole, and situated so as it does not interfere with the flange bolts.

(2) The thickness of the web (or tie bar) dimension, Wt, shall be as determined under general.

ASME B16.48 DIMENSIONS OF CLASS 600

Raised Face Figure-8 Blanks



Spectacle Blind

NPS	INSIDE DIA [B] [mm]	OUTSIDE DIA [O] [mm]	CENTERLINE DIMENSION [A] [mm]	WEB WIDTH, [W], [mm]	THK [t] [mm]	THK [t] [mm] FF TR2000 SST: SLBN	THK [t] [mm] FF NORSOK EDS: NLB1
1/2"	16	51	65	38	6,4	5,0	-
3/4"	21	64	80	38	6,4	6,0	-
1"	27	70	90	57	6,4	6,0	-
1-1/4"	43	79	100	57	9,7	-	-
1-1/2"	43	92	115	67	9,7	10,0	-
2"	55	108	125	57	9,7	10,0	-
2-1/2"	67	127	150	67	12,7	-	-
3"	83	146	170	67	12,7	15,0	-
3-1/2"	96	159	185	76	15,7	-	-
4"	108	191	215	76	15,7	20,0	-
5"	135	238	265	86	19,1	-	-
6"	162	264	290	86	22,4	25,0	-
8"	212	318	350	95	28,4	35,0	-
10"	265	397	430	105	35,1	40,0	-
12"	315	454	490	105	41,1	45,0	-
14"	346	489	525	114	44,5	50,0	-
16"	397	562	605	124	50,8	55,0	-
18"	448	610	655	133	53,8	65,0	-
20"	497	679	725	133	63,5	70,0	-
24"	597	787	840	152	73,2	80,0	-

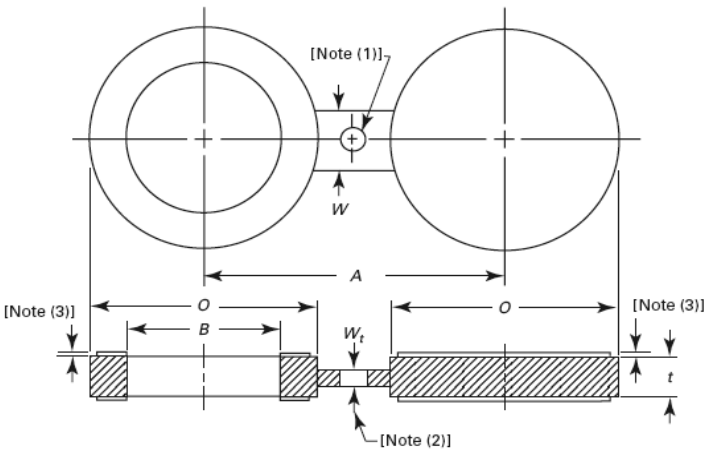
Notes:

(1) The hole dimension shall be identical in size to the flange bolt hole, and situated so as it does not interfere with the flange bolts.

(2) The thickness of the web (or tie bar) dimension, Wt, shall be as determined under general.

ASME B16.48 DIMENSIONS OF CLASS 900

Raised Face Figure-8 Blanks



Spectacle Blind

NPS	INSIDE DIA [B] [mm]	OUTSIDE DIA [O] [mm]	CENTERLINE DIMENSION [A] [mm]	WEB WIDTH, [W], [mm]	THK [t] [mm]	THK [t] [mm] FF TR2000 SST: SLBN	THK [t] [mm] FF NORSOK EDS: NLB1
1/2"	16	60	80	38	6,4	-	-
3/4"	21	67	90	41	6,4	-	-
1"	27	76	100	57	6,4	-	-
1-1/4"	37	86	110	57	9,7	-	-
1-1/2"	43	95	125	67	9,7	-	-
2"	55	140	165	57	12,7	-	-
2-1/2"	67	162	190	67	12,7	-	-
3"	83	165	190	67	15,7	-	-
4"	108	203	235	76	19,1	-	-
5"	135	244	280	86	22,4	-	-
6"	162	286	320	86	25,4	-	-
8"	212	356	395	95	35,1	-	-
10"	265	432	470	105	41,1	-	-
12"	315	495	535	105	47,8	-	-
14"	346	518	560	114	53,8	-	-
16"	397	572	615	124	60,5	-	-
18"	448	635	685	133	66,5	-	-
20"	497	696	750	133	73,2	-	-
24"	597	835	900	152	88,9	-	-

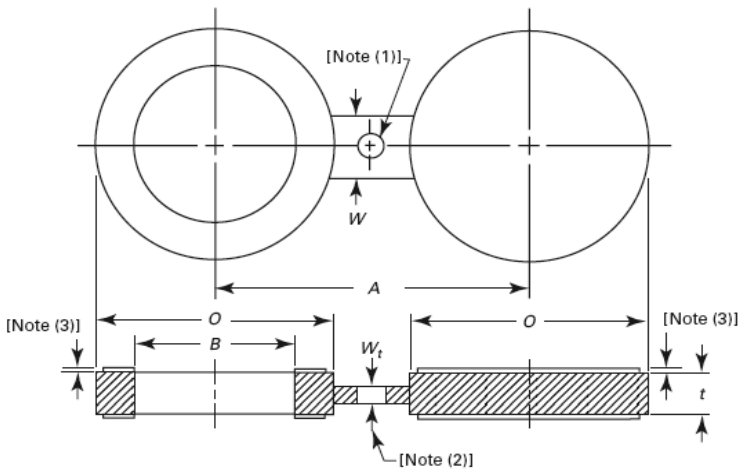
Notes:

(1) The hole dimension shall be identical in size to the flange bolt hole, and situated so as it does not interfere with the flange bolts.

(2) The thickness of the web (or tie bar) dimension, Wt, shall be as determined under general.

ASME B16.48 DIMENSIONS OF CLASS 1500

Raised Face Figure-8 Blanks



Spectacle Blind

NPS	INSIDE DIA [B] [mm]	OUTSIDE DIA [O] [mm]	CENTERLINE DIMENSION [A] [mm]	WEB WIDTH, [W], [mm]	THK [t] [mm]	THK [t] [mm] FF TR2000 SST: SLBN	THK [t] [mm] FF NORSOK EDS: NLB1
1/2"	16	61	80	38	6,4	-	-
3/4"	21	67	90	41	9,7	-	-
1"	27	76	100	64	9,7	-	-
1-1/4"	35	86	110	64	9,7	-	-
1-1/2"	41	95	125	70	12,7	-	-
2"	53	140	165	70	12,7	-	-
2-1/2"	63	162	190	76	15,7	-	-
3"	78	172	205	76	19,1	-	-
4"	102	206	240	89	22,4	-	-
5"	128	251	290	89	28,4	-	-
6"	154	279	320	89	35,1	-	-
8"	203	349	395	102	41,1	-	-
10"	255	432	480	114	50,8	-	-
12"	303	518	570	114	60,5	-	-
14"	333	575	635	127	66,5	-	-
16"	381	638	705	133	76,2	-	-
18"	429	702	775	146	85,9	-	-
20"	478	752	830	152	95,3	-	-
24"	575	899	990	178	111,3	-	-

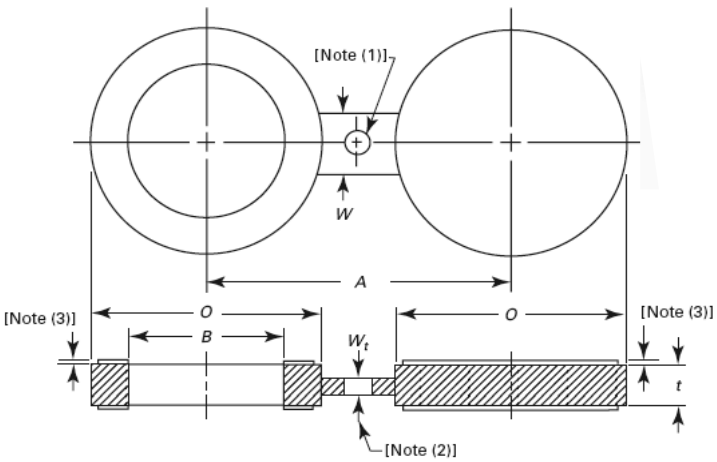
Notes:

(1) The hole dimension shall be identical in size to the flange bolt hole, and situated so as it does not interfere with the flange bolts.

(2) The thickness of the web (or tie bar) dimension, Wt, shall be as determined under general.

ASME B16.48 DIMENSIONS OF CLASS 2500

Raised Face Figure-8 Blanks



Spectacle Blind

NPS	INSIDE DIA [B] [mm]	OUTSIDE DIA [O] [mm]	CENTERLINE DIMENSION [A] [mm]	WEB WIDTH, [W], [mm]	THK [t] [mm]	THK [t] [mm] FF TR2000 SST: SLBN	THK [t] [mm] FF NORSOK EDS: NLB1
1/2"	16	67	90	38	9,7	-	-
3/4"	21	73	95	41	9,7	-	-
1"	27	83	110	64	9,7	-	-
1-1/4"	35	102	130	64	12,7	-	-
1-1/2"	41	114	145	70	15,7	-	-
2"	53	143	170	70	15,7	-	-
2-1/2"	63	165	195	76	19,1	-	-
3"	78	194	230	76	22,4	-	-
4"	102	232	275	89	28,4	-	-
5"	128	276	325	89	35,1	-	-
6"	154	314	370	89	41,1	-	-
8"	198	384	440	102	53,8	-	-
10"	248	473	540	114	66,5	-	-
12"	289	546	620	114	79,2	-	-

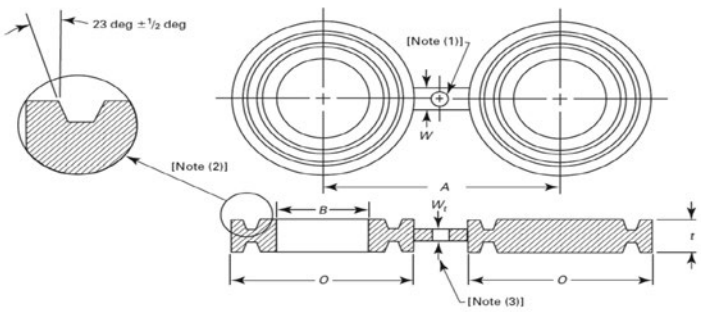
Notes:

(1) The hole dimension shall be identical in size to the flange bolt hole, and situated so as it does not interfere with the flange bolts.

(2) The thickness of the web (or tie bar) dimension, Wt, shall be as determined under general.

ASME B16.48 DIMENSIONS OF CLASS 600

Ring Joint Facing Figure-8 Blanks



Spectacle Blind- Ring Joint Facing

NPS	INSIDE DIA [B] [mm]	OUTSIDE DIA [O] [mm]	CENTERLINE DIMENSION [A] [mm]	WEB WIDTH, [W], [mm]	THK [t] [mm]	THK [t] [mm] FF TR2000 SST: SLBN	THK [t] [mm] FF NORSOK EDS: NLB1
1/2"	21	51	65	38	19,1	20,0	20,0
3/4"	27	64	80	45	22,4	24,0	24,0
1"	34	70	90	51	22,4	24,0	24,0
1-1/4"	42	79	100	51	22,4	-	-
1-1/2"	48	90	115	57	22,4	24,0	24,0
2"	61	108	125	57	28,4	30,0	30,0
2-1/2"	73	127	150	57	31,8	-	-
3"	89	146	170	57	31,8	34,0	34,0
3-1/2"	102	159	185	64	35,1	-	-
4"	114	175	215	64	35,1	38,0	46,0
5"	141	210	265	70	38,1	-	-
6"	168	241	290	83	44,5	46,0	46,0
8"	219	302	350	95	50,8	53	53,0
10"	273	356	430	102	57,2	60,0	60,0
12"	324	413	490	121	63,5	67,0	67,0
14"	356	457	525	127	66,5	72,0	72,0
16"	406	508	605	127	73,2	79,0	79,0
18"	457	575	655	127	79,2	88,0	88,0
20"	508	635	725	127	88,9	98,0	98,0
24"	610	749	840	152	104,6	115,0	115,0

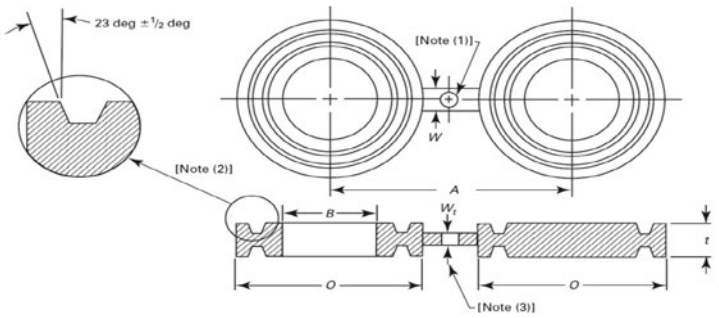
Notes:

(1) The hole dimension shall be identical in size to the flange bolt hole, and situated so as it does not interfere with the flange bolts.

(2) The thickness of the web (or tie bar) dimension, Wt, shall be as determined under general.

ASME B16.48 DIMENSIONS OF CLASS 900

Ring Joint Facing Figure-8 Blanks



Spectacle Blind- Ring Joint Facing

NPS	INSIDE DIA [B] [mm]	OUTSIDE DIA [O] [mm]	CENTERLINE DIMENSION [A] [mm]	WEB WIDTH, [W], [mm]	THK [t] [mm]	THK [t] [mm] FF TR2000 SST: SLBN	THK [t] [mm] FF NORSOK EDS: NLB1
1/2"	21	61	80	38	22,4	25,0	25,0
3/4"	27	67	90	45	22,4	26,0	26,0
1"	34	71	100	51	22,4	26,0	26,0
1-1/4"	42	81	110	51	25,4	-	-
1-1/2"	48	92	125	64	25,4	30,0	30,0
2"	61	124	165	51	31,8	38,0	38,0
2-1/2"	73	137	190	67	35,1	-	-
3"	89	155	190	67	35,1	38,0	38,0
4"	114	181	235	73	41,1	42,0	42,0
5"	141	216	280	73	44,5	-	-
6"	168	241	315	73	47,8	52,0	52,0
8"	219	308	395	80	57,2	61,0	61,0
10"	273	362	470	121	63,5	69,0	69,0
12"	324	419	535	121	73,2	79,0	79,0
14"	356	467	560	121	82,6	91,0	91,0
16"	406	524	615	127	91,9	100,0	100,0
18"	457	594	685	133	101,6	113,0	113,0
20"	508	648	750	127	111,3	122,0	122,0
24"	610	772	900	140	133,4	146,0	146,0

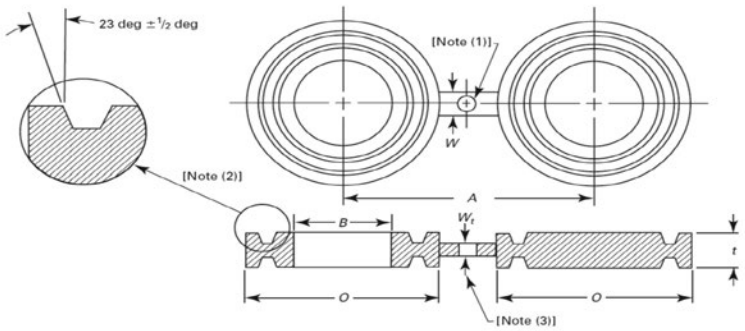
Notes:

(1) The hole dimension shall be identical in size to the flange bolt hole, and situated so as it does not interfere with the flange bolts.

(2) The thickness of the web (or tie bar) dimension, Wt, shall be as determined under general.

ASME B16.48 DIMENSIONS OF CLASS 1500

Ring Joint Facing Figure-8 Blanks



Spectacle Blind- Ring Joint Facing

NPS	INSIDE DIA [B] [mm]	OUTSIDE DIA [O] [mm]	CENTERLINE DIMENSION [A] [mm]	WEB WIDTH, [W], [mm]	THK [t] [mm]	THK [t] [mm] FF TR2000 SST: SLBN	THK [t] [mm] FF NORSOK EDS: NLB1
1/2"	21	61	80	38	22,4	25,0	25,0
3/4"	27	67	90	45	25,4	26,0	26,0
1"	34	71	100	54	25,4	26,0	26,0
1-1/4"	42	81	110	54	25,4	-	-
1-1/2"	48	92	125	57	28,4	30,0	30,0
2"	61	124	165	54	35,1	38,0	38,0
2-1/2"	73	137	190	57	38,1	-	-
3"	89	168	205	73	44,5	46,0	46,0
4"	114	194	240	76	47,8	52,0	52,0
5"	141	229	290	76	53,8	-	-
6"	168	248	315	79	60,5	65,0	65,0
8"	219	318	395	86	73,2	80,0	80,0
10"	273	371	480	133	82,5	91,0	91,0
12"	324	438	570	133	101,6	110,0	110,0
14"	356	489	635	140	111,3	121,0	121,0
16"	406	546	705	146	124,0	135,0	135,0
18"	457	613	775	152	133,0	148,0	148,0
20"	508	673	830	165	142,7	159,0	159,0
24"	610	794	990	178	168,1	188,0	188,0

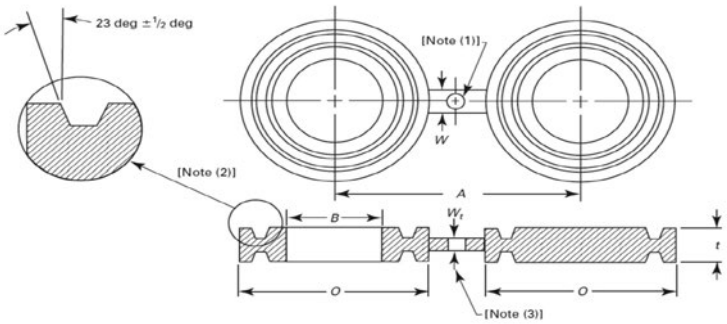
Notes:

(1) The hole dimension shall be identical in size to the flange bolt hole, and situated so as it does not interfere with the flange bolts.

(2) The thickness of the web (or tie bar) dimension, Wt, shall be as determined under general.

ASME B16.48 DIMENSIONS OF CLASS 2500

Ring Joint Facing Figure-8 Blanks



Spectacle Blind- Ring Joint Facing

NPS	INSIDE DIA [B] [mm]	OUTSIDE DIA [O] [mm]	CENTERLINE DIMENSION [A] [mm]	WEB WIDTH, [W], [mm]	THK [t] [mm]	THK [t] [mm] FF TR2000 SST: SLBN	THK [t] [mm] FF NORSOK EDS: NLB1
1/2"	21	65	90	38	25,4	30,0	30,0
3/4"	27	73	95	45	28,4	32,0	32,0
1"	34	83	110	54	28,4	32,0	32,0
1-1/4"	42	102	130	54	35,1	-	-
1-1/2"	48	114	145	61	38,1	40,0	40,0
2"	61	133	170	57	41,1	45,0	45,0
2-1/2"	73	149	195	61	47,8	-	-
3"	89	168	230	76	50,8	55,0	55,0
4"	114	203	270	83	63,5	66,0	66,0
5"	141	241	325	89	73,2	-	-
6"	168	279	370	95	82,6	88,0	88,0
8"	219	340	440	95	98,6	106,0	106,0
10"	273	425	540	91	117,3	129,0	129,0
12"	324	495	620	152	133,4	147,0	147,0

Notes:

(1) The hole dimension shall be identical in size to the flange bolt hole, and situated so as it does not interfere with the flange bolts.

(2) The thickness of the web (or tie bar) dimension, Wt, shall be as determined under general.

BRANCH OUTLETS - O'LETS.

Basis for Design of O´lets:

Manufacturer standard:
The O´lets in this catalogue are based on a single manufacturer's standard design and denominations. The standard design is based on ASME B31.3, but O´lets may be designed, manufactured and verified to other requirements at the client's request.

Height standardisation:
The table-listed heights (A) of reducing weldolets – buttweld, socket weld and threaded outlets – are identical to the heights standardised in MSS SP-97, except the 3000lbs socket weld outlets in sizes 2 ½" – 4". However, it should be noted that the height stated as standard may have to be changed due to the actual/ specific design required for specific size/ wall thickness combinations.

Design optimisation:
O´lets may be designed and manufactured to the customer's specific design requirements, i.e. O´lets can be designed to specific design parameters (e.g. PCS) and/ or Norsok EDS NOL1 to reduce the welding required in the crotch area.

Design verification:
Drawings and calculations for each individual O´let may be provided, if requested by the client at the enquiry stage.

Dimension unification:
O´lets may also be designed to fit a range of run header dimensions – i.e., each O´let will be suitable for use on various header pipe sizes. This design will, however, require more welding during fabrication, as the O´let dimensions cannot be optimised to a specific size and the actual design parameters.

Design details required for optimization of O´lets:
- Design code
- Design pressure & rating
- Design temperature
- Material grade / allowable stress
- Wall thickness – for header and branch pipes
- Corrosion allowance
- Wall thickness tolerance

Types of O´lets
- Buttweld Outlet (O´let) – Butt Weld / Socket Weld / Threade
- Elbow Outlet – Butt Weld / Socket Weld / Threaded
- Lateral Outlet – Butt Weld / Socket Weld / Threaded
- Nipple Outlet – Butt Weld / Threaded / Plain end
- Insert Branch Outlet
- Flanged Buttweld Outlet
- Flanged Nipple Outlet

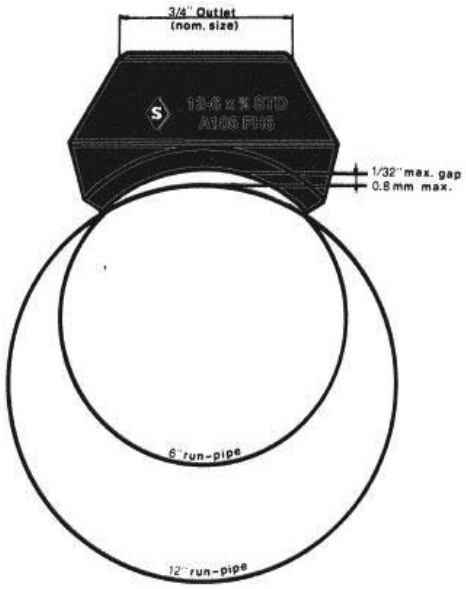
Weldolet

O-LETS

DIMENSIONS UNIFICATION

In order to reduce warehouse inventory, our outlets have been unified to fit on different run-pipe sizes with gap maximum of 1/32" between the run-pipe and outlet. This does not cause any problems during welding.

Threadolet



BUTTWELD-OUTLETS, STANDARD AND EXTRA STRONG, SOCKET-OUTLETS & THREADED-OUTLETS 3000LBS.

OUTLET SIZE	RUN-PIPE SIZES									
1/2"	1/2	3/4	1	1 1/2-1 1/4	2 1/2-2	8-3	36-10			
3/4"	3/4	1	1 1/2-1 1/4	2 1/2-2	5-3	12-6	36-14			
1"	1	1 1/4	1 1/2	2	2 1/2	3 1/2-3	5-4	10-6	36-12	
1 1/4"	1 1/4	1 1/2	2	2 1/2	3 1/2-3	5-4	8-6	18-10	36-20	
1 1/2"	1 1/2	2	2 1/2	3	4 3 1/2	6-5	12-8	24-14	36-26	
2"	2	2 1/2	3	3 1/2	4	5	6	10-8	18-12	36-20
2 1/2"	2 1/2	3	3 1/2	4	5	6	8	12-10	18-14	36-20
3"	3	3 1/2	4	5	6	8	10	14-12	20-16	36-24
3 1/2"	3 1/2	4	5	6	8	10	14-12	20-16	36-24	
4"	4	5	6	8	10	14-12	20-16	36-24		

Outlet over 4" order to specific run-pipe size

BUTTWELD-OUTLETS SCH. 160 AND XXS

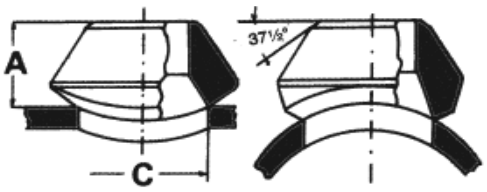
OUTLET SIZE	RUN-PIPE SIZES									
1/2"	1/2	1 1/4-3/4	36-1 1/2							
3/4"	1-3/4	2 - 1 1/4	6 - 2 1/2	36-8						
1"	1	2 1/2-1 1/4	10-3	36-12						
1 1/4"	1 1/2-1 1/4	2 1/2-2	10-3	36-12						
1 1/2"	1 1/2	2 1/2-2	3 1/2-3	8-4	20-10	36-24				
2"	2	2 1/2	3 1/2-3	5-4	8-6	18-10	36-20			

Outlet over 2" order to specific run-pipe size

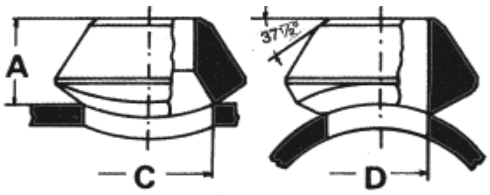
BUTTWELD-OUTLETS & THREADED-OUTLETS 6000LBS.

OUTLET SIZE	RUN-PIPE SIZES									
1/2"	1-3/4	2- 1 1/4	6-2 1/2	36-8						
3/4"	1	2 1/2-1 1/4	10-3	36-12						
1"	11/4-1 1/2	2 1/2-2	10-3	36-12						
1 1/4"	1 1/2	2 1/2-2	3 1/2-3	8-4	20-10	36-24				
1 1/2"	2	2 1/2	3 1/2-3	5-4	8-6	18-10	36-20			
2"	2 1/2	3	4	5	6	10-8	20-12	36-24		

BUTWELD OUTLETS



REDUCING SIZE



FULL SIZE

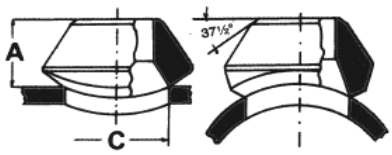
BUTWELD OUTLETS - STANDARD

OUTLET SIZE	REDUCED SIZES			FULL SIZES			
(inch.)	A (mm)	C (mm)	Approx. Weigth	A (mm)	C (mm)	D (mm)	Approx. Weight
1/2"	19	24	0,1	19	24	15,8	0,1
3/4"	22,2	30	0,1	22,2	30	21	0,1
1"	27	36,5	0,3	27	36,5	26,6	0,2
1 1/4"	31,5	44,5	0,4	31,5	44,5	35	0,3
1 1/2"	33,4	51	0,5	33,4	51	40,9	0,4
2"	38	65	0,8	38	65	52,5	0,7
2 1/2"	41,2	76,2	1,1	41,2	76,2	62,8	1
3"	44,5	93,5	1,8	44,5	93,5	78	1,7
3 1/2"	47,5	112,6	2,5	47,5	112,6	90,2	2,3
4"	51	120,5	2,9	51	120,5	102,2	3,1
5"	57	141,3	4,7	57	141,3	128,2	3,9
6"	60,3	170	6,5	60,3	170	154	6,7
8"	69,8	220,5	10,7	69,8	220,5	202,5	13
10"	78	274	18	78	274	254	16
12"	86	324	27	86	324	304,5	27
14"	89	356	30	89	356	336,5	32

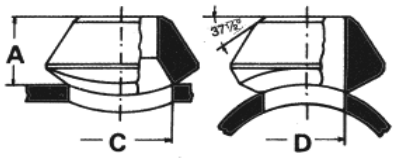
BUTWELD OUTLETS - EXTRA STRONG

OUTLET SIZE	REDUCED SIZES			FULL SIZES			
(inch.)	A (mm)	C (mm)	Approx. Weigth	A (mm)	C (mm)	D (mm)	Approx. Weight
1/2"	19,0	24	0,1	19	24	13,9	0,1
3/4"	22,2	30	0,1	22,2	30	18,9	0,1
1"	27	36,5	0,2	25,4	36,5	24,3	0,2
1 1/4"	31,5	44,5	0,4	28,5	44,5	32,8	0,3
1 1/2"	33,4	51	0,5	31,5	51	38,1	0,4
2"	38	65	0,8	38	65	49,3	0,8
2 1/2"	41,2	76,2	1,2	41,2	76,2	59	1,2
3"	44,5	93,5	1,9	44,5	93,5	73,7	1,9
3 1/2"	47,5	112,6	2,6	47,5	112,6	85,4	2,3
4"	51	120,5	3	51	120,5	97,2	3,5
5"	57	141,3	4,8	57	141,3	122,3	4,3
6"	78	170	10,5	78	170	146,3	6,8
8"	98,5	220	17	98,5	220	194	14,6
10"	94	265	21	95,3	265	247,5	21
12"	103	316	28	100	320	298	28
14"	100	351	32	105,5	355	330	34,5

BUTWELD OUTLETS - CONTINUED



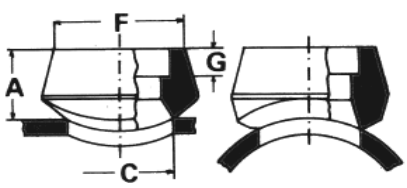
REDUCING SIZE



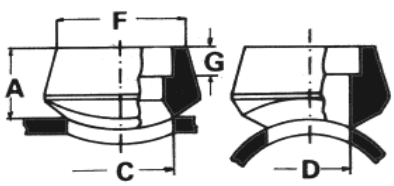
FULL SIZE

BUTTWELD OUTLETS - SCH. 160 AND XXS

OUTLET SIZE	REDUCED SIZES			FULL SIZES		
(inch.)	A (mm)	C (mm)	Approx. Weight	A (mm)	C (mm)	Approx. Weight
1/2"	28,5	14,3	0,1	28,5	14,3	0,1
3/4"	31,5	19	0,3	31,5	19	0,3
1"	38	25,5	0,4	38	25,5	0,4
1 1/4"	44,5	33,4	0,6	44,5	33,4	0,6
1 1/2"	50,7	38	0,8	50,7	38	0,8
2"	55,5	42,9	1	55,5	42,9	1
2 1/2"	61,8	53,9	1,6	61,8	53,9	1,6
3"	73	73	2,9	73	73	2,9
4"	84	98,4	4,8	84	98,4	4,8
5"	93,5	122,2	6,5	93,5	122,2	6,5
6"	104,7	146	12,8	104,7	146	13,8



REDUCING SIZE



FULL SIZE

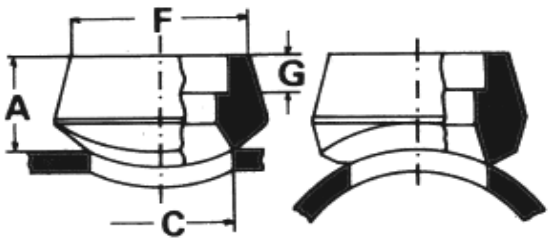
SOCKETWELD OUTLETS - 3000LBS (SOCKET WELD TO ASME/ANSI B16.11)

OUTLET SIZE	REDUCED SIZES					FULL SIZES					
(inch.)	A (mm)	C (mm)	F (mm)	G (mm)	Approx. Weight	A (mm)	C (mm)	D (mm)	F (mm)	G (mm)	Approx. Weigth
1/2"	25,5	24	31,8	10	0,1	25,5	22,4	16	31,8	10	0,1
3/4"	27	30	36,6	13	0,2	27	30	21	36,8	13	0,1
1"	33,4	36,5	46,1	13	0,3	33,4	36,5	26,7	46,1	13	0,3
1 1/4"	33,4	44,5	55,6	13	0,4	33,4	44,5	35	55,6	13	0,3
1 1/2"	34,8	51	62	13	0,5	34,8	51	40,9	62	13	0,4
2"	38	65	74,7	16	0,7	38	65	52,5	74,7	16	0,6
2 1/2"	46	76,2	87,4	16	1,3	46	76,2	62,8	87,4	16	1
3"	50,7	93,5	104,8	16	1,7	50,7	93,5	77,9	104,8	16	1,7
3 1/2"	53,8	101,5	122,3	19	2	53,8	112,8	90,1	117,5	19	2
4"	57	120,5	130,2	19	3,3	57	127	102,2	130,2	19	3

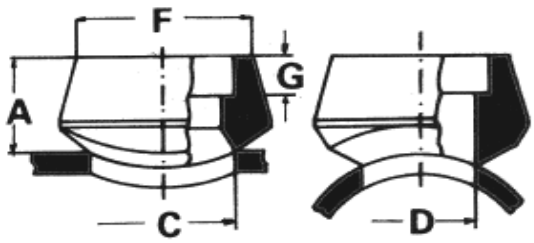
SOCKETWELD OUTLETS - 6000LBS
(SOCKET WELD TO ASME/ANSI B16.11)

OUTLET SIZE	REDUCED SIZES				
(inch.)	A (mm)	C (mm)	F (mm)	G (mm)	Approx. Weight
1/2"	31,5	19	40	10	0,3
3/4"	36,5	25,5	46	13	0,4
1"	39,6	33,4	57,2	13	0,6
1 1/4"	41	38	65,1	13	0,8
1 1/2"	42,7	49,3	76,3	13	0,9
2"	52,1	70	92,1	16	2,4

THREADED OUTLETS



REDUCING SIZE



FULL SIZE

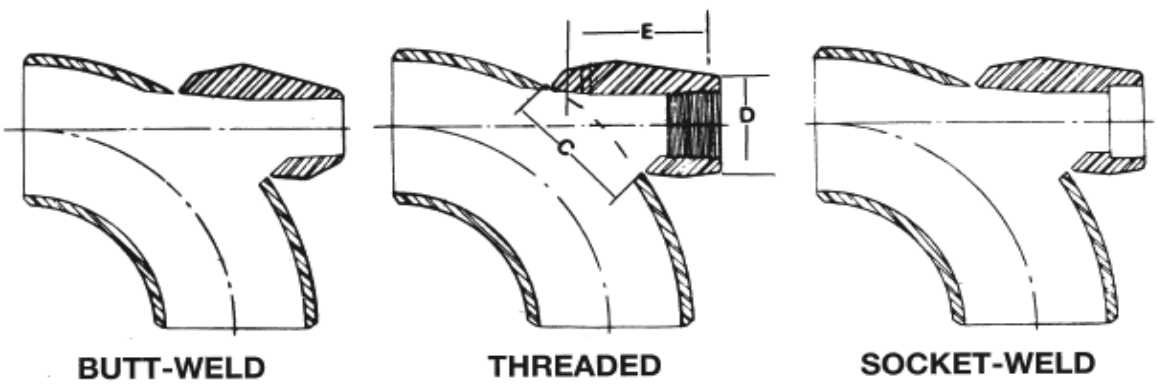
THREADED OUTLETS - 3000LBS

OUTLET SIZE	REDUCED SIZES				FULL SIZES				
(inch.)	A (mm)	C (mm)	F (mm)	Approx. Weight	A (mm)	C (mm)	D (mm)	F (mm)	Approx. Weight
1/2"	26,5	24	31,8	0,1	25,5	24	16	31,80	0,1
3/4"	27	30	36,6	0,2	27	30	20,7	36,6	0,1
1"	33,4	36,5	46,1	0,3	33,4	36,5	27	46,1	0,2
1 1/4"	33,4	44,5	55,6	0,4	33,4	44,5	34,9	55,6	0,3
1 1/2"	34,8	51	62	0,5	34,8	51	41,2	62	0,4
2"	38	65	74,7	0,8	38	65	52,4	74,7	0,7
2 1/2"	46	76,2	87,4	1,4	46	76,2	63,5	87,4	1,1
3"	50,7	93,5	104,8	2	50,7	93,5	77,8	104,8	2
3 1/2"	53,8	101,5	122,3	2,6	53,3	112,8	90,5	117,5	2,1
4"	57	120,5	130,2	3,2	55,5	120,5	103,2	130,2	3,1

THREADED OUTLETS - 6000LBS

OUTLET SIZE	REDUCING SIZES			
(inch.)	A (mm)	C (mm)	F (mm)	Approx. Weight
1/2"	31,5	19	40	0,2
3/4"	36,5	25,5	46	0,4
1"	39,6	33,4	57,2	0,6
1 1/4"	41	38	65,1	0,7
1 1/2"	42,7	49,3	76,3	0,9
2"	52,1	70	92,1	2,3

ELBOW OUTLET



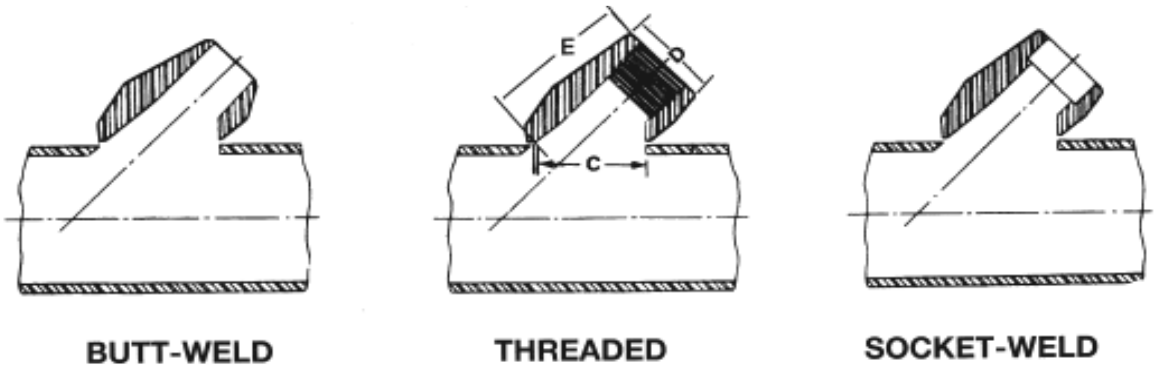
Dimensions for all three styles are the same except for the "D" dimension on the butt welding outlet which matches the proper schedule on the branch pipe.

ELBOW OUTLETS- 3000 AND 6000 LBS

NOMINAL ELBOW SIZE	NOMINAL ELBOW SIZE	Outlet Size	DIMENSIONS						WEIGHT	
			3000 lb	6000 lb	3000 lb	6000 lb	3000 lb	6000 lb	3000 LB	6000 LB
(Inch) 3000 lb	(Inch) 6000lb	Inches	C (mm)	C (mm)	D (mm)	D (mm)	E (mm)	E (mm)	Approx. Wt. Kg	Approx. Wt.kg
36-1 1/4	36-1 1/4	1/4	38,1	38,1	31,8	31,8	38,1	38,1	0,23	0,34
36-1 1/4	36-1 1/4	3/8	38,1	38,1	31,8	31,8	38,1	38,1	0,23	0,34
36-1 1/4	36-1 1/4	1/2	38,1	43,6	31,8	35,7	38,1	45,2	0,30	0,39
36-1 1/4	36-2	3/4	43,6	54	35,7	45,2	45,2	54,4	0,34	0,57
36-2	36-2	1	54	73	45,2	54,8	52,4	55,6	0,52	1
36-2	36-2	1 1/4	73	79,4	54,8	63,5	55,6	58,8	0,86	1,77
36-2	36-3	1 1/2	79,4	106,4	63,5	82,6	58,8	69,9	1,20	2,8
36-3		2	106,4		82,6		69,9		2,39	

Note:
3000 lbs Threaded and Socket Weld standard and extra strong Butt-Weld
6000 lbs Threaded and Socket Weld schedule 160 and double extra strong Butt-Weld

LATERAL OUTLET



ELBOW OUTLETS- 3000 AND 6000 LBS

NOMINAL ELBOW SIZE	NOMINAL ELBOW SIZE	OUTLET SIZE	DIMENSIONS						WEIGHT	
			3000 lb	6000 lb	3000 lb	6000 lb	3000 lb	6000 lb	3000 LB	6000 LB
(Inch) 3000 lb	(Inch) 6000 lb	Inches	C (mm)	C (mm)	D (mm)	D (mm)	E (mm)	E (mm)	Approx. Wt. Kg	Approx. Wt. Kg
12 - 1 1/4	12 - 2 1/2	1/4	36,5	36,5	31,8	31,8	39,7	39,7	0,23	0,34
12 - 1 1/4	12 - 1 1/4	3/8	36,5	36,5	31,8	31,8	39,7	39,7	0,23	0,34
12 - 1 1/4	12 - 1 1/4	1/2	36,5	43,6	31,8	35,7	39,7	47,6	0,30	0,39
12 - 1 1/4	12-2	3/4	43,6	54	35,7	45,2	47,6	57,2	0,34	0,57
12 - 2	12-2	1	54	67,5	45,2	54,8	57,2	61,9	0,52	1
12 - 2	12-2	1 1/4	67,5	76,2	54,6	63,5	61,9	66,7	0,86	1,32
12 - 2	12-4	1 1/2	76,2	104,8	63,5	82,6	66,7	81	1,20	2,80
12-4		2	104,8		82,6		81		3,29	

Note:

3000 lbs Threaded and Socket Weld standard and extra strong Butt-Weld

6000 lbs Threaded and Socket Weld schedule 160 and double extra strong Butt-Weld

INSERT BRANCH OUTLET

Insert Branch Outlets are available for any header wall thickness.
The below dimensions are applicable for header wall thickness up to and including XS.

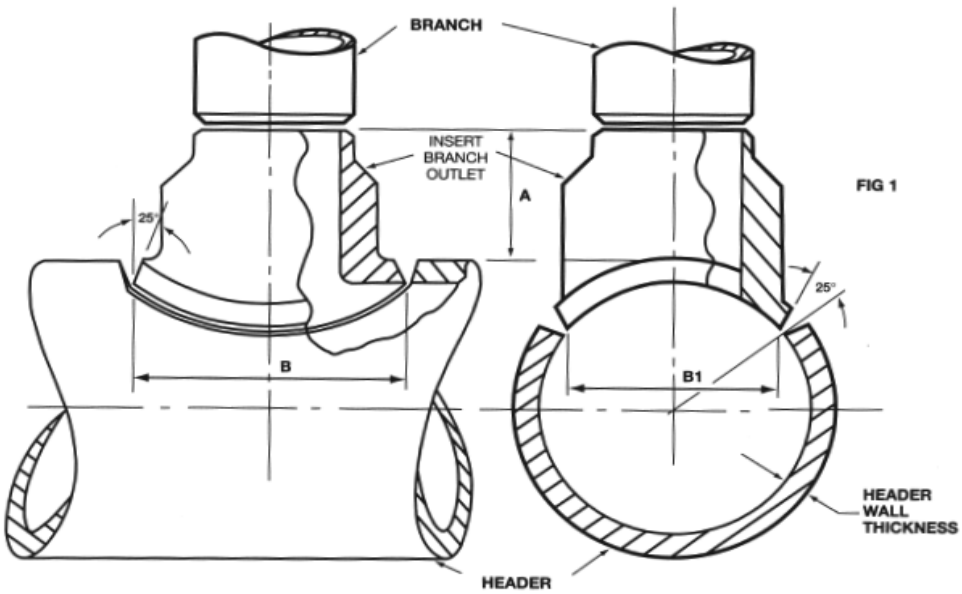
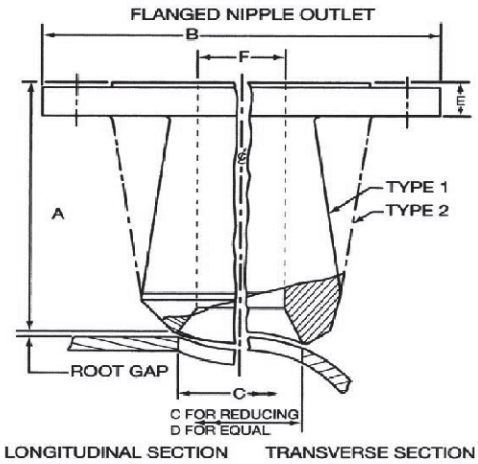


FIG 1

INSERT BRANCH OUTLET

OUTLET SIZE (INCH)	A (mm)	MIN.HEADER PIPE SIZE	
1/2"	32	1 1/2"	Other dimensions available at specific request
3/4"	32	2"	
1"	32	2"	
1 1/4"	32	2"	
1 1/2"	38	2 1/2"	
2"	44	3"	
3"	51	4"	
4"	60	6"	
6"	68	8"	
8"	76	10"	
10"	79	12"	
12"	86	16"	
14"	92	18"	
16"	95	20"	
18"	117	22"	
20"	130	24"	
24"	143	30"	

FLANGED NIPPLE OUTLET



Nipo Flange

FLANGED NIPPLE OUTLET - 150#

OUTLET SIZE	B	E	C STD/XS	C STD/XXS	TYPE 1
1/2"	88,9	11,2	24	14,3	1
3/4"	98,6	12,7	30	19	1
1"	108	14,3	36,5	25,5	1
1 1/4"	117,5	15,9	44,5	33,4	1
1 1/2"	127	17,5	51	38	1
2"	152,4	19,1	65	42,9	1

Note: A=150mm except for 2" 2500# which is 190mm

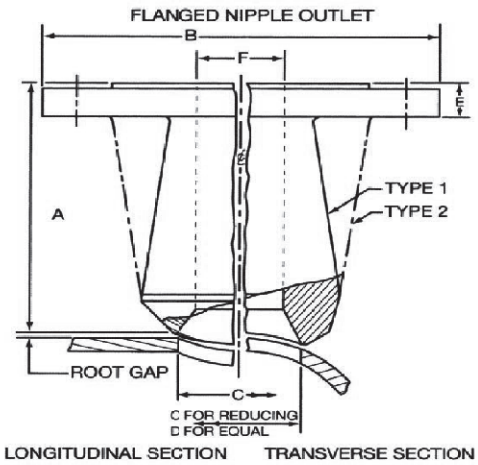
FLANGED NIPPLE OUTLET - 300#

OUTLET SIZE	B	E	C STD/XS	C 160/XXS	TYPE STD/XS	TYPE 160/XXS
1/2"	95,3	14,3	24	14,3	2	2
3/4"	117,5	15,9	30	19	2	2
1"	123,8	17,5	36,5	25,5	1	2
1 1/4"	133,4	19	44,5	33,4	1	2
1 1/2"	155,6	20,6	51	38	1	1
2"	165,1	22,2	65	42,9	1	2

FLANGED NIPPLE OUTLET - 600#

OUTLET SIZE	B	E	C STD/XS	C 160/XXS	TYPE STD/XS	TYPE 160/XXS
1/2"	95,3	20,7	24	14,3	2	2
3/4"	117,5	22,3	30	19	2	2
1"	123,8	23,9	36,5	25,5	1	2
1 1/4"	133,4	27	44,5	33,4	1	2
1 1/2"	155,6	28,6	51	38	1	1
2"	165,1	31,8	65	42,9	1	2

FLANGED NIPPLE OUTLET - CONTINUED



Nipo Flange

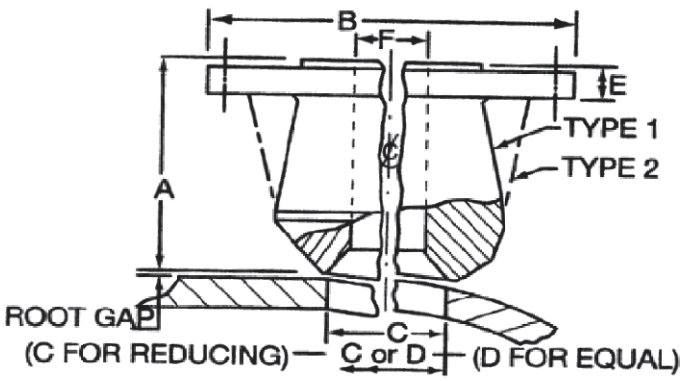
FLANGED NIPPLE OUTLET - 900# / 1500#

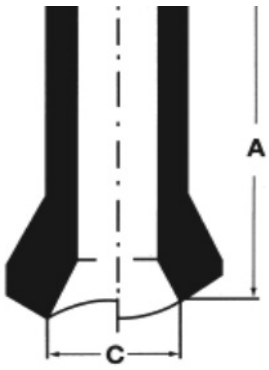
OUTLET SIZE	B	E	C STD/XS	C 160/XXS	TYPE STD/XS	TYPE 160/XXS
1/2"	120,7	28,6	24	14,3	2	2
3/4"	130,2	31,8	30	19	1	1
1"	149,2	35	36,5	25,5	1	2
1 1/4"	158,8	35	44,5	33,4	1	2
1 1/2"	177,8	38,1	51	38	1	1
2"	215,9	44,5	65	42,9	2	2

FLANGED NIPPLE OUTLET - 2500#

OUTLET SIZE	B	E	C STD/XS	C 160/XXS	TYPE
1/2"	133,4	36,6	24	14,3	2
3/4"	139,7	38,1	30	19	2
1"	158,8	41,3	36,5	25,5	2
1 1/4"	184,2	44,5	44,5	33,4	2
1 1/2"	203,2	50,8	51	38	2
2"	235	57,2	65	42,9	2

FLANGED BUTTELD OUTLET





Flanged Buttweld Outlet is available also for larger sizes than listed below (up to 24" for 150# to 1500#).
Flanged Buttweld Outlet is available in all pressure classes - below listed 150# and 2500# are typical - others available at request.

The dimensions below are based on RF type flanges. Other facings may be supplied at request.
The C dimensions listed are based on Std wall for header and branch pipe.
Any wall may be supplied at request. The bore (F) equals the nominal bore of the branch pipe.

FLANGED BUTTWELD OUTLET - 150#

OUTLET SIZE	B	E	A	C	TYPE
1/2"	88,9	11,2	65	24	1
3/4"	98,6	12,7	75	30	1
1"	108	14,3	85	36,5	1
1 1/4"	117,5	15,9	90	44,5	1
1 1/2"	127	17,5	95	51	1
2"	152,4	19,1	105	65	1
2 1/2"	177,8	22,3	112	76,2	1
3"	190,5	23,8	115	93,5	1
3 1/2"	215,9	23,8	120	112,6	1
4"	228,6	23,8	130	120,5	1
5"	254	23,8	146	141,3	1
6"	279,4	25,4	150	170	1
8"	342,9	28,6	175	220,5	1
10"	406,4	30,2	180	274	1
12"	482,6	31,8	200	324	1

FLANGED BUTTWELD OUTLET - 2500#

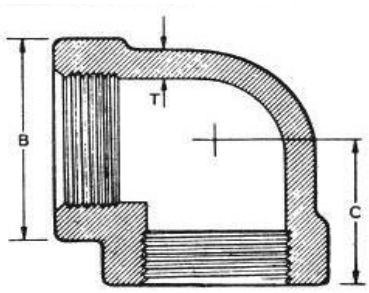
OUTLET SIZE	B	E	A	C	TYPE
1/2"	133,4	36,5	100	24	2
3/4"	139,7	38,1	110	30	2
1"	158,8	41,3	125	36,5	2
1 1/4"	184,2	44,5	135	44,5	2
1 1/2"	203,2	50,8	150	51	2
2"	235	57,2	170	65	2
2 1/2"	266,7	63,5	190	76,2	2
3"	304,8	73	220	93,5	2
4"	355,6	82,6	250	120,5	2
5"	419,1	98,4	290	141,3	2
6"	482,6	114,3	340	170	2
8"	552,5	133,4	395	220,5	2
10"	673,1	171,5	505	274	2
12"	762	190,5	555	324	2

NIPPLE OUTLET - 3000 / 6000 LB

OUTLET SIZE	A	C	C
	3000lb	6000lb	
1/2"	89	24	14,5
3/4"	89	30	19
1"	89	36,5	25,5
1 1/4"	89	44,5	33,4
1 1/2"	89	51	38
2"	89	65	43

Available with plain / bevel / threaded end

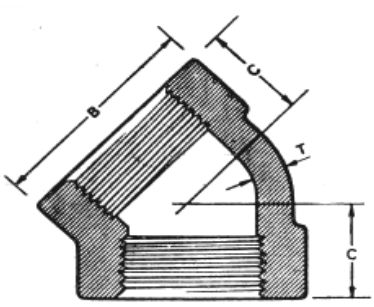
ELBOWS - THREADED B16.11



90 ° Elbow Threaded

90 ° ELBOWS-THREADED B16.11

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	B	22	22	25	33	38	46	56	62	75	92	109	146
	C	21	21	25	28	33	38	44	51	60	76	86	106
2000 LB	T	3,18	3,18	3,18	3,18	3,18	3,68	3,89	4,01	4,27	5,61	5,99	6,55
	App Wt	0,08	0,08	0,11	0,23	0,28	0,46	0,8	1	1,6	2,3	4,35	10,25
	B	22	25	33	38	46	56	62	75	84	102	121	152
	C	21	25	28	33	38	44	51	60	64	83	95	114
3000 LB	T	3,18	3,3	3,51	4,09	4,32	4,98	5,28	5,56	7,14	7,65	8,84	11,18
	App Wt	0,14	0,14	0,27	0,37	0,6	1,08	1,22	2,45	2,5	5,25	7,4	13
	B	25	33	38	46	56	62	75	84	102	121	146	152
	C	25	28	33	38	44	51	60	64	83	95	106	114
6000 LB	T	6,35	6,6	6,98	8,15	8,53	9,93	10,59	11,07	12,09	15,29	16,64	18,67
	App Wt	0,31	0,31	0,5	0,69	1,25	1,65	2,75	3,22	6,25	10	17	18

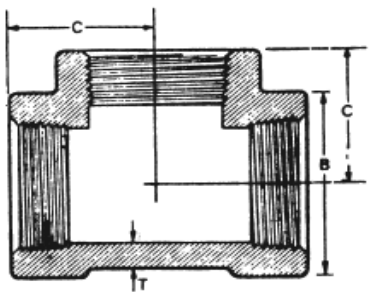


45 ° Elbow Threaded

45 ° ELBOWS-THREADED B16.11

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	B	22	22	25	33	38	46	56	62	75	92	109	146
	C	17	17	19	22	25	28	33	35	43	52	64	79
2000 LB	T	3,18	3,18	3,18	3,18	3,18	3,68	3,89	4,01	4,27	5,61	5,99	6,55
	App Wt	0,1	0,1	0,11	0,21	0,24	0,39	0,7	0,85	1,23	3	3,5	9
	B	22	25	33	38	46	56	62	75	84	102	121	152
	C	17	19	22	25	28	33	35	43	44	52	64	79
3000 LB	T	3,18	3,3	3,51	4,09	4,32	4,98	5,28	5,56	7,14	7,65	8,84	11,18
	App Wt	0,13	0,13	0,25	0,36	0,53	0,78	1,02	1,7	2,35	5,4	6	10,5
	B	25	33	38	46	56	62	75	84	102	121	146	152
	C	19	22	25	28	33	35	43	44	52	64	79	79
6000 LB	T	6,35	6,6	6,98	8,15	8,53	9,93	10,59	11,07	12,09	15,29	16,64	18,67
	App Wt	0,25	0,25	0,35	0,6	0,95	1,22	1,35	2,55	5,6	8	15,5	13

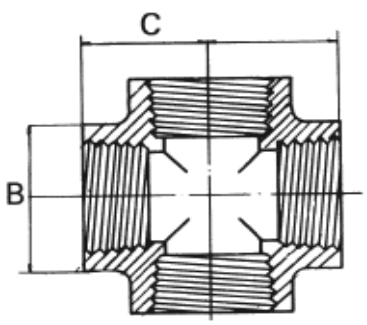
TEES & CROSSES - THREADED B16.11



Tee Threaded

TEES - THREADED-B16.11

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	B	22	22	25	33	38	46	56	62	75	92	109	146
	C	21	21	25	28	33	38	44	51	60	76	86	106
2000 LB	T	3,18	3,18	3,18	3,18	3,18	3,68	3,89	4,01	4,27	5,61	5,99	6,55
	App Wt	0,12	0,12	0,18	0,29	0,39	0,55	0,93	1,3	1,8	3	5,5	14
	B	22	25	33	38	46	56	62	75	84	102	121	152
	C	21	25	28	33	38	44	51	60	64	83	95	114
3000 LB	T	3,18	3,3	3,51	4,09	4,32	4,98	5,28	5,56	7,14	7,65	8,84	11,18
	App Wt	0,21	0,21	0,31	0,49	0,8	1,31	1,61	3,2	3,55	6,5	9,25	17
	B	25	33	38	46	56	62	75	84	102	121	146	152
	C	25	28	33	38	44	51	60	64	83	95	106	114
6000 LB	T	6,35	6,6	6,98	8,15	8,53	9,93	10,59	11,07	12,09	15,29	16,64	18,67
	App Wt	0,41	0,41	0,6	0,94	1,59	2,14	3,39	4,5	10	13	19,5	18

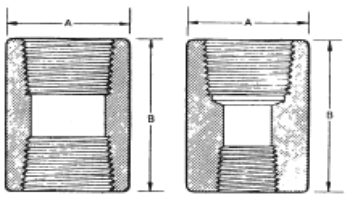


Cross Threaded

CROSSES - THREADED B16.11

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	B	22	22	25	33	38	46	56	62	75	92	109	146
	C	21	21	25	28	33	38	44	51	60	76	86	106
2000 LB	T	3,18	3,18	3,18	3,18	3,18	3,68	3,89	4,01	4,27	5,61	5,99	6,55
	App Wt	0,14	0,14	0,19	0,34	0,42	0,75	1,15	1,45	2,25	4,5	7,15	15
	B	22	25	33	38	46	56	62	75	84	102	121	152
	C	21	25	28	33	38	44	51	60	64	83	95	114
3000 LB	T	3,18	3,3	3,51	4,09	4,32	4,98	5,28	5,56	7,14	7,65	8,84	11,18
	App Wt	0,22	0,22	0,4	0,63	0,99	1,63	1,97	3,7	4,9	10,5	11,5	21,7
	B	25	33	38	46	56	62	75	84	102	121	146	152
	C	25	28	33	38	44	51	60	64	83	95	106	114
6000 LB	T	6,35	6,6	6,98	8,15	8,53	9,93	10,59	11,07	12,09	15,29	16,64	18,67
	App Wt	0,45	0,45	0,7	1,16	1,8	2,5	4,1	5,2	12,3	14	25	23

COUPLINGS AND CAPS - THREADED B16.11



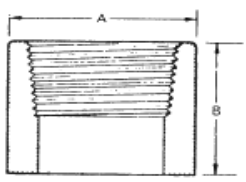
Couplings Equal and Reducing.

NPT Coupling Equal

NPT Coupling Reducing

COUPLINGS - THREADED B16.11

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	A	16	19	22	28	35	44	57	64	76	92	108	140
	B	32	35	38	48	51	60	67	79	86	92	108	121
3000 LB	App Wt	0,05	0,05	0,06	0,14	0,2	0,39	0,73	1,03	1,35	2,3	3,15	5,8
	A	22	25	32	38	44	57	64	76	92	108	127	159
	B	32	35	38	48	51	60	67	79	86	92	108	121
6000 LB	App Wt	0,1	0,1	0,12	0,37	0,45	1	1,65	1,85	2,8	4	5,5	10

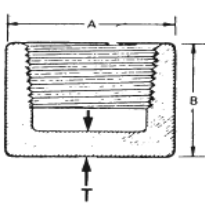


Half Couplings

Half Couplings

HALF COUPLINGS - THREADED B16.11

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	A	16	19	22	28	35	44	57	64	76	92	108	140
	B	16	17,5	19	24	25,5	30	33,5	39,5	43	46	54	60,5
3000 LB	App Wt	0,02	0,03	0,03	0,07	0,11	0,2	0,37	0,51	0,66	1,15	1,57	2,9
	A	22	25	32	38	44	57	64	76	92	108	127	159
	B	16	17,5	19	24	25,5	30	33,5	39,5	43	46	54	60,5
6000 LB	App Wt	0,04	0,05	0,06	0,19	0,23	0,5	0,83	0,92	1,4	2	2,75	5



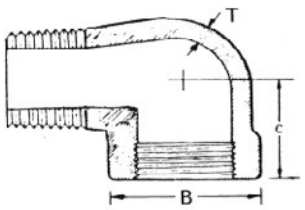
Cap

NPT Cap

CAPS - THREADED B16.11

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	A	16	19	22	28	35	44	57	64	76	92	108	140
	B	19	25	25	32	37	41	44	44	48	60	65	68
3000 LB	T	4,8	4,8	4,8	6,4	6,4	9,7	9,7	11,2	12,7	15,7	19	22,4
	App Wt	0,04	0,05	0,06	0,13	0,21	0,37	0,6	0,73	1,1	2,31	3	4,5
	A		25	32	38	44	57	64	76	92	108	127	159
	B		27	27	33	38	43	46	48	51	64	68	75
6000 LB	T		6,4	6,4	7,9	7,9	11,2	11,2	12,7	15,7	19	22,4	28,4
	App Wt		0,16	0,2	0,29	0,4	0,7	1,1	1,35	2,1	3,5	4,8	7,5

STREET ELBOW, WELDING BOSS AND SQUARE HEAD - THREADED



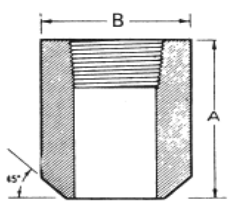
Street Elbow

Street Elbow

STREET ELBOWS-MALE/FEMALE-THREADED B16.11

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
	B	19	25	32	38	44	51	62	70	84
	C	19	22	25	28	35	44	51	64	64
3000 LB	T	3,18	3,3	3,51	4,09	4,32	4,98	5,28	5,56	7,14
	App Wt		0,13	0,23	0,33	0,53	0,94	1,3	1,47	2,3
	B	25	32	38	44	51	62	70	84	102
	C	22	25	28	35	44	51	54	64	83
6000 LB	T	5,08	5,66	6,98	8,15	8,53	9,93	10,59	11,07	12,09
	App Wt		0,16	0,2	0,29	0,4	0,7	1,1	1,35	2,1

NOTE:At manufacturer option, the dimension C of the table for threaded tees may be used instead of C in the above table

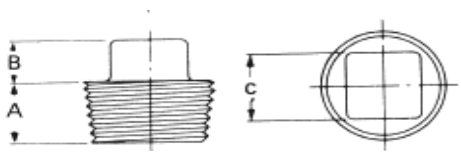


Welding Boss Threaded

Welding Boss Threaded

WELDING BOSS-THREADED BS3799

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/2"	2"
	A	38	41	45	51	51	51	51	51
3000 LB	B	16	19	22	29	35	45	64	76
6000 LB	B	22	26	32	38	45	60	76	95
	App Wt	0,2	0,24	0,3	0,37	0,5	0,8	1,29	1,78



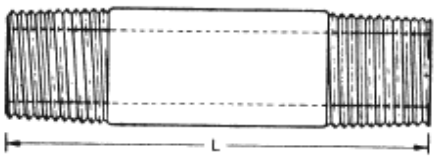
Square head

Square head

SQUARE HEAD PLUG (ASME B16.11)

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	A	10	11	13	14	16	19	21	21	22	27	28	32
3000 LB	B	6	6	8	10	11	13	14	16	18	19	21	25
6000 LB	C	7	10	11	14	16	21	24	28	32	36	41	65
	App Wt	0,01	0,02	0,03	0,05	0,09	0,17	0,27	0,4	0,6	0,89	1,25	3,1

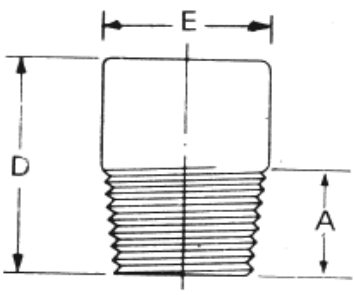
PIPE NIPPLES, ROUND HEAD PLUGS AND HEXAGON HEAD PLUGS - THREADED



Pipe Nipple

PIPE NIPPLES THREADED-BS3799

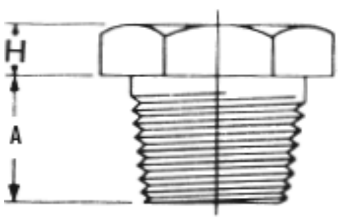
	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
Lenght L	100 mm is our standard,but any lenght will be provided on request											
Pipe wall:	Available in any standard Schedule,e.g Sch80-3000 lb, SchXXS-6000 lb											
End types	Threaded, bevelled or plain											
3000 lbs-XS	0,07	0,08	0,11	0,16	0,22	0,31	0,44	0,53	0,74	1,12	1,46	2,15
6000 lbs-XXS				0,25	0,36	0,54	0,77	0,95	1,31	2	2,65	4



Round Head Plug

ROUND HEAD PLUGS-THREADED-B16.11

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
3000 LB	A	10	11	3	14	16	19	21	21	22	27	28	32
	D	35	41	41	44	44	51	51	51	64	70	70	76
6000 LB	E	10	14	18	21	27	33	43	48	60	73	89	114
	App Wt	0,04	0,05	0,07	0,13	0,22	0,32	0,5	0,72	1,35	2,2	3,3	6

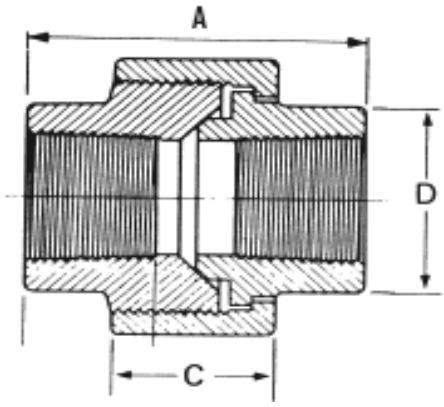


Hex Head Plug

HEXAGON HEAD PLUG-THREADED-B16.11

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
3000 LB	A	10	11	3	14	16	19	21	21	22	27	28	32
	H	6	6	8	8	10	10	14	16	18	19	21	25
6000 LB	F	11	16	18	22	27	36	46	50	65	75	90	115
	App Wt	0,02	0,03	0,05	0,07	0,13	0,22	0,41	0,49	0,77	1,61	1,94	4,5

UNIONS - THREADED - BS3799



Union Threaded

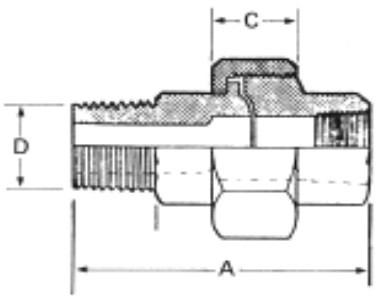
UNIONS-THREADED - BS3799 - 3000 LBS

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	A	40	43	48	51	57	64	70	79	89	118	121	
	B	32	32	36	43	50	60	70	78	95	125	140	
	C	16	18	19	21	24	25	29	30	37	48	51	
3000 lb	D	17	19	22	30	36	41	50	60	70	85	100	
	App Wt	0,14	0,17	0,21	0,31	0,49	0,83	1,22	1,53	2,3	5	6,25	

UNIONS-THREADED - BS3799 - 6000 LBS

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	A	44,5	44,5	50,8	60,5	57,2	57,2	76,2	88,9	108	108	127	
	B	39,6	39,6	42,9	53,8	58,4	73,2	79,2	88,9	120,7	152,4	190,5	
6000 lb	C	22,4	22,4	26,9	26,9	26,9	34,8	34,8	34,8	47,8	53,8	50,8	
	D	23,9	23,9	31,8	36,6	44,5	55,6	63,5	76,2	88,9	108	127	
	App Wt	0,2	0,3	0,5	1,12	1,6	2,15	2,42	4,73	6,5	9,5	19,2	

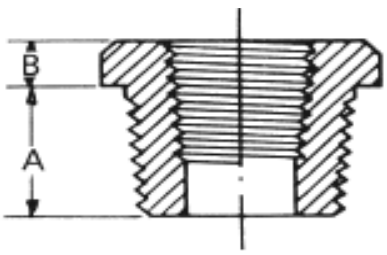
UNIONS-MALE X FEMALE AND HEXAGON HEAD BUSHING

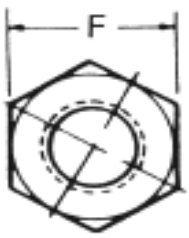


Union-Male/Female

UNIONS-MALE X FEMALE (MF), THREADED X 2,THREADED + SOCKET WELDED

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
	A	49,5	54,1	60,7	65	72,6	83,1	90,7	99,6	111,3
3000 LB	B	32	32	36,1	42,9	50	59,9	70,1	78	95
	C	16	18	19,1	21,1	23,9	24,9	29	30	37,1
	D	17	19,1	22,1	30	36,1	40,9	50	59,9	70,1
	App Wt	0,16	0,21	0,27	0,46	0,61	0,99	1,55	1,9	2,9



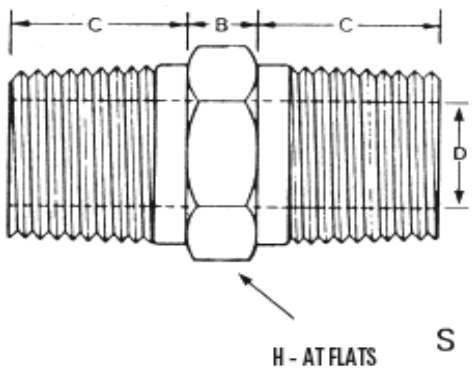


Hexagon Head Bush

HEXAGON HEAD BUSHING-THREADED B16.11

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	A		11	13	14	16	19	21	21	22	27	28	32
3000 LB	B		3	4	5	6	6	7	8	9	10	10	13
6000 LB	F		16	18	22	27	36	46	50	65	75	90	115
	Av App Wt		0,02	0,03	0,06	0,1	0,17	0,33	0,42	0,62	1,27	1,65	3,1

HEXAGON NIPPLES AND CLOSE TAPER NIPPLES

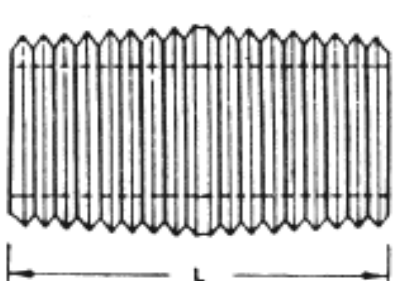


Hexagon Nipple

HEXAGON NIPPLES-THREADED BS3799

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/2"	2"
	B	6	6	8	8	10	10	16	17
	C	10	15	16	20	21	25	26	27
3000 LB	D	5	8	11	14	19	24	38	49
6000LB	D	2	6	8	11	13	17	30	39
	H	11	15	18	22	27	35	50	62

Note: Reduction sizes are also available,but not included in above table



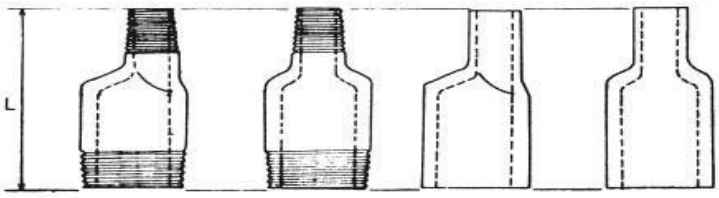
Close Taper Nipple

CLOSE TAPER NIPPLES

	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
Standard L Lenght		19,1	25,4	28,6	31,8	38,1	44,5	50,8	50,8	50,8	60,3	76,2	88,9

Available in any Standard Production Schedule - Wall Thickness,e.g Sch 40,80,160,xxs

SWAGED NIPPLES AND 90⁰ ELBOWS-SOCKET WELD B16.11

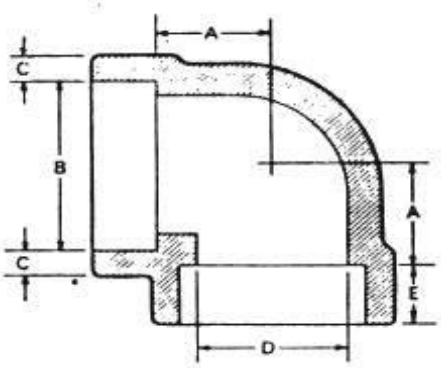


Swage Nipple

SWAGED NIPPLES

LARGE END DIMENSIONS	3/8"	1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"
Length [mm]	76	89	95	102	114	165	178	203	229

Note:3000 lbs minimum from thickness Sch80,6000 lbs
from thicness Sch160/XXS respectively for plain vs screwed.



Socket Weld Elbow 90°

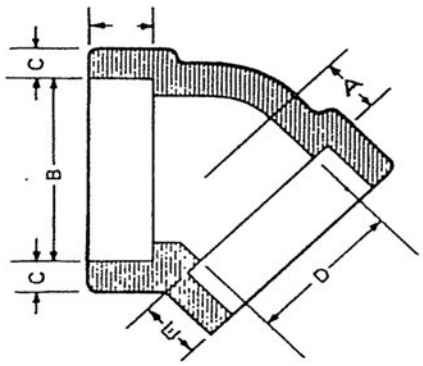
90° ELBOWS-SOCKET WELD-B16.11 - 3000 LBS

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	A	11	11	13,5	15,5	19	22,5	27	32	38	41	57	66,5
	B min	10,8	14,2	17,6	21,8	27,2	33,9	42,7	48,8	61,2	73,9	89,8	115,2
3000 LB	B max	11,2	14,6	18	22,2	27,6	34,3	43,1	49,2	61,7	74,4	90,3	115,7
	C min	3,18	3,3	3,5	4,09	4,27	4,98	5,28	5,54	6,04	7,67	8,3	9,35
	D min	6,1	8,5	11,8	15	20,2	25,9	34,3	40,1	51,7	61,2	76,4	100,7
	D max	7,6	10	13,3	16,6	21,7	27,4	35,8	41,6	53,3	64,2	79,4	103,8
	E	9,5	9,5	9,5	9,5	12,5	12,5	12,5	16	16	16	16	19
	App Wt	0,08	0,08	0,12	0,24	0,29	0,48	0,75	0,95	1,65	2,5	4,3	9,7

90° ELBOWS-SOCKET WELD-B16.11 - 6000 LBS

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	A	11	13,5	15,5	19	22,5	27	32	38	41			
	B min	10,8	14,2	17,6	21,8	27,2	33,9	42,7	48,8	61,2			
6000 LB	B max	11,2	14,6	18	22,2	27,6	34,3	43,1	49,2	61,7			
	C min	3,43	4,01	4,37	5,18	6,04	6,93	6,93	7,8	9,5			
	D min	3,2	5,6	8,4	11	14,8	19,9	28,7	32,2	42,1			
	E	4,8	7,1	9,9	12,5	16,3	21,5	30,2	34,7	43,6			
	E	9,5	9,5	9,5	9,5	12,5	12,5	12,5	12,5	16			
	App Wt	0,15	0,17	0,3	0,43	0,66	1,14	1,6	2,7	2,95			

45⁰ ELBOWS-SOCKET WELD-B16.11



Socket Weld Elbow 45 °

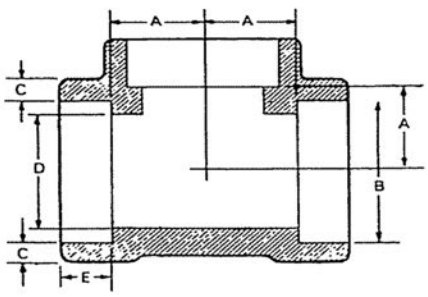
45° ELBOWS-SOCKET WELD B16.11 - 3000 LBS

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	A	8	8	8	11	13	14	17,5	20,5	25,5	28,5	32	41
	B min	10,8	14,2	17,6	21,8	27,2	33,9	42,7	48,8	61,2	73,9	89,8	115,2
3000 LB	B max	11,2	14,6	18	22,2	27,6	34,3	43,1	49,2	61,7	74,4	90,3	115,7
	C min	3,18	3,3	3,5	4,09	4,27	4,98	5,28	5,54	6,04	7,67	8,3	9,35
	D min	6,1	8,5	11,8	15	20,2	25,9	34,3	40,1	51,7	61,2	76,4	100,7
	D max	7,6	10	13,3	16,6	21,7	27,4	35,8	41,6	53,3	64,2	79,4	103,8
	E	9,5	9,5	9,5	9,5	12,5	12,5	12,5	12,5	16	16	16	19
	App Wt	0,08	0,08	0,1	0,19	0,38	0,38	0,58	0,83	1,15	2,05	3,4	9

45° ELBOWS-SOCKET WELD B16.11 - 6000 LBS

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	A	8	8	11	12,5	14	17,5	20,5	25,5	28,5			
	B min	10,8	14,2	17,6	21,8	27,2	33,9	42,7	48,8	61,2			
6000 LB	B max	11,2	14,6	18	22,2	27,6	34,3	43,1	49,2	61,7			
	C min	3,43	4,01	4,37	5,18	6,04	6,93	6,93	7,8	9,5			
	D min	3,2	5,6	8,4	11	14,8	19,9	28,7	33,2	42,1			
	D max	4,8	7,1	9,9	12,5	16,3	21,5	30,2	34,7	43,6			
	E	9,5	9,5	9,5	9,5	12,5	12,5	12,5	12,5	16			
	App Wt	0,12	0,12	0,24	0,3	0,53	0,86	1,07	1,9	2,35			

TEES-EQUAL & REDUCING-SOCKET WELD-B16.11



Socket Weld Tee Equal

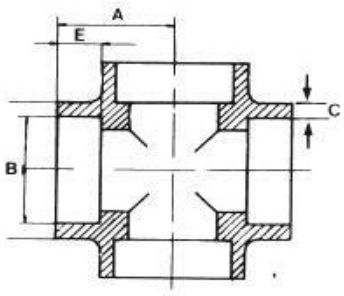
TEES-EQUAL & REDUCING-SOCKET WELD-B16.11 - 3000 LBS

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	A	11	11	13,5	15,5	19	22,5	27	32	38	41	57	66,5
	B min	10,8	14,2	17,6	21,8	27,2	33,9	42,7	48,8	61,2	73,9	89,8	115,2
3000 LB	B max	11,2	14,6	18	22,2	27,6	34,3	43,1	49,2	61,7	74,4	90,3	115,7
	C min	3,18	3,3	3,5	4,09	4,27	4,98	5,28	5,54	6,04	7,67	8,3	9,35
	D min	6,1	8,5	11,8	15	20,2	25,9	34,3	40,1	51,7	61,2	76,4	100,7
	D max	7,6	10	13,3	16,6	21,7	27,4	35,8	41,6	53,3	64,2	79,4	103,8
	E	9,5	9,5	9,5	9,5	12,5	12,5	12,5	12,5	16	16	16	19
	App Wt	0,12	0,12	0,19	0,31	0,4	0,58	0,91	1,25	2,1	3,15	5,25	13,5

TEES-EQUAL & REDUCING-SOCKET WELD-B16.11 - 6000 LBS

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	A	11	13,5	15,5	19	22,5	27	32	38	41			
	B min	10,8	14,2	17,6	21,8	27,2	33,9	42,7	48,8	61,2			
6000 LB	B max	11,2	14,6	18	22,2	27,6	34,3	43,1	49,2	61,7			
	C min	3,43	4,01	4,37	5,18	6,04	6,93	6,93	7,8	9,5			
	D min	3,2	5,6	8,4	11	14,8	19,9	28,7	33,2	42,1			
	D max	4,8	7,1	9,9	12,5	16,3	21,5	30,2	34,7	43,6			
	E	9,5	9,5	9,5	9,5	12,5	12,5	12,5	12,5	16			
	App Wt	0,21	0,21	0,4	0,56	0,91	1,41	1,75	3,56	4,1			

CROSSES & UNIONS



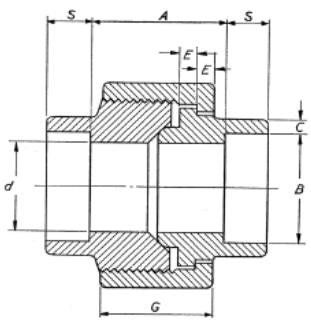
Cross-Socket Weld

CROSSES-SOCKET WELD B16.11 - 3000 LBS

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	A	11	11	13,5	15,5	19	22,5	27	32	38	41	57	66,5
	B min	10,8	14,2	17,6	21,8	27,2	33,9	42,7	48,8	61,2	73,9	89,8	115,2
3000 LB	B max	11,2	14,6	18	22,2	27,6	34,3	43,1	49,2	61,7	74,4	90,3	115,7
	C min	3,18	3,3	3,5	4,09	4,27	4,98	5,28	5,54	6,04	7,67	8,3	9,35
	D min	6,1	8,5	11,8	15	20,2	25,9	34,3	40,1	51,7	61,2	76,4	100,7
	D max	7,6	10	13,3	16,6	21,7	27,4	35,8	41,6	53,3	64,2	79,4	103,8
	E	9,5	9,5	9,5	9,5	12,5	12,5	12,5	12,5	16	16	16	19
	App Wt	0,14	0,14	0,21	0,34	0,47	0,8	1,25	1,5	2,23	3,95	6,5	16

CROSSES-SOCKET WELD B16.11 - 6000 LBS

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	A	11	13,5	15,5	19	22,5	27	32	38	41			
	B min	10,8	14,2	17,6	21,8	27,2	33,9	42,7	48,8	61,2			
6000 LB	B max	11,2	14,6	18	22,2	27,6	34,3	43,1	49,2	61,7			
	C min	3,43	4,01	4,37	5,18	6,04	6,93	6,93	7,8	9,5			
	D min	3,2	5,6	8,4	11	14,8	19,9	28,7	33,2	42,1			
	D max	4,8	7,1	9,9	12,5	16,3	21,5	30,2	34,7	43,6			
	E	9,5	9,5	9,5	9,5	12,5	12,5	12,5	12,5	16			
	App Wt	0,26	0,26	0,5	0,67	10,6	1,79	2,15	4,45	5,4			



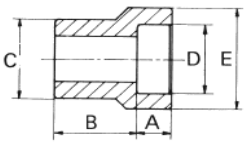
Socket Weld Union.

UNIONS-SOCKET WELD BS3799

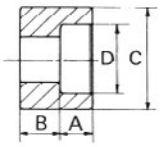
RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"
	A	17	17	17	18	20	26	28	30	36	57	70
3000 LB	B	10,7	14,1	17,6	21,8	27,4	34,1	42,9	49	61	73,8	89,7
	C	3,2	3,3	3,5	4,1	4,3	5	5,3	5,6	6,1	7,7	8,3
	D	6,8	9,2	12,5	15,5	21	26,5	35	40,5	52	62	78
	E	3,2	3,2	3,2	4	4,8	4,8	5,6	5,6	6,4	9,6	12,7
	F	32	32	36	41	50	60	70	78	95	125	140
	S	10	10	10	1013	13	13	13	13	16	16	16
	App Wt	0,14	0,18	0,23	0,39	0,52	0,73	1,2	1,56	2,3	5	7,15

Note: 6000 lbs is available with manufacturer standard dimensions

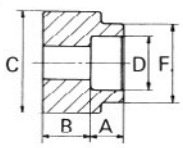
REDUCING INSERT AND COUPLINGS - SOCKET WELD



Type 1



Type 2

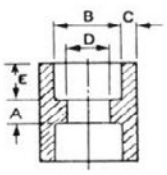


Type 3

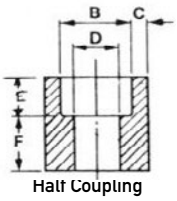

Reducing Insert Socket Weld

REDUCING INSERT 3000LB - SOCKET WELD

NB	C	D	A	B	E	F	TYPE
1/2" x 3/8"	47	17,5	10,9	23,9	25,9		1
1/2" x 1/4"	47	14	9,4	16			2
3/4" x 1/2"	26,9	21,6	12,4	25,4	32		1
3/4" x 3/8"	26,9	17,5	10,9	14			2
3/4" x 1/4"	26,9	14	9,4	16		22,1	3
1" x 3/4"	33,5	27,2	14,5	28,4	38,1		1
1" x 1/2"	33,5	21,6	12,4	20,6			2
1" x 3/8"	33,5	16,5	10,9	22,1		25,9	3
1" x 1/4"	33,5	14	9,4	23,9		22,1	3
1 1/4" x 1"	42,4	33,8	16	32	45		1
1 1/4" x 3/4"	42,4	27,2	14,5	20,6			2
1 1/4" x 1/2"	42,4	21,6	12,4	22,1		32	3
1 1/4" x 1 1/4"	48,4	42,5	17,5	33	56,9		1
1 1/4" x 1"	48,4	33,8	16	20,6			2
1 1/2" x 3/4"	48,4	27,2	14,5	22,1		38,1	3
1 1/2" x 1/2"	48,4	21,6	12,4	24,1		32	3
2" x 1/2"	60,6	48,8	19,1	20,6			2
2" x 1 1/4"	60,6	42,7	17,5	22,1		56,9	3
2" x 1"	60,6	33,8	16	24,1		45	3
2" x 3/4"	60,6	27,2	14,5	25,4		38,1	3
2" x 1/2"	60,6	21,6	12,4	26,9		32	3



Coupling



Half Coupling


Coupling - Socket Weld

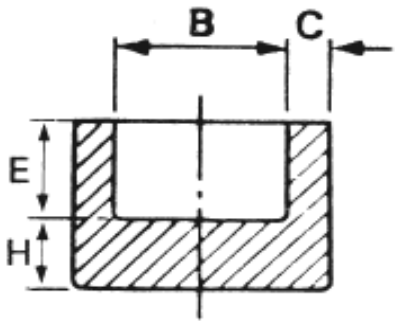

Half Coupling - Socket Weld

COUPLING & HALF COUPLING-SOCKET WELD B16.11

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	A	6,5	6,5	6,5	9,5	9,5	12,5	12,5	12,5	19	19	19	19
	B min	10,8	14,2	17,6	21,8	27,2	33,9	42,7	48,8	61,2	73,9	89,8	115,2
3000 LB	B max	11,2	14,6	18	22,2	27,6	34,3	43,1	49,2	61,7	74,4	90,3	115,7
	C min	3,18	3,3	3,5	4,09	4,27	4,98	5,28	5,54	6,04	7,67	8,3	9,35
	D min	6,1	8,5	11,8	15	20,2	25,9	34,3	40,1	51,7	61,2	76,4	100,7
	D max	7,6	10	13,3	16,6	21,7	27,4	35,8	41,6	53,3	64,2	79,4	103,8
	E	9,5	9,5	9,5	9,5	12,5	12,5	12,5	12,5	16	16	16	19
	F	16	16	17,5	22,5	24	28,5	30	32	41	43	44,5	48
	App Wt	0,05	0,05	0,07	0,11	0,15	0,26	0,37	0,42	0,77	1,1	1,4	2,35

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	A	6,5	6,5	6,5	9,5	9,5	12,5	12,5	12,5	19			
	B min	10,8	14,2	17,6	21,8	27,2	33,9	42,7	48,8	61,2			
6000 LB	B max	11,2	14,6	18	22,2	27,6	34,3	43,1	49,2	61,7			
	C min	3,43	4,01	4,37	5,18	6,04	6,93	6,93	7,8	9,5			
	D min	3,2	5,6	8,4	11	14,8	19,9	28,7	33,2	42,1			
	D max	4,8	7,1	9,9	12,5	16,3	21,5	30,2	34,7	43,6			
	E	9,5	9,5	9,5	9,5	12,5	12,5	12,5	12,5	16			
	F	16	16	17,5	22,5	24	28,5	30	32	41			
	App Wt	0,07	0,07	0,1	0,15	0,34	0,37	0,49	0,68	1,24			

CAPS AND WELDING BOSS - SOCKET WELD

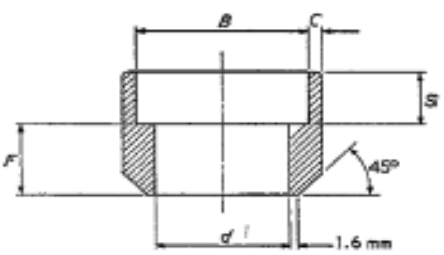


Cap- Socket Weld

CAPS- SOCKET WELD B16.11

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	B min	10,8	14,2	17,6	21,8	27,2	33,9	42,7	48,8	61,2	73,9	89,8	115,2
	B max	11,2	14,6	18	22,2	27,6	34,3	43,1	49,2	61,7	74,4	90,3	115,7
3000 LB	C min	3,18	3,3	3,5	4,09	4,27	4,98	5,28	5,54	6,04	7,67	8,3	9,35
	E	9,5	9,5	9,5	9,5	12,5	12,5	12,5	12,5	16	16	16	19
	H	4,8	4,8	4,8	6,4	6,4	9,6	9,6	11,2	12,7	15,7	19	22,4
	App Wt	0,03	0,04	0,06	0,14	0,18	0,3	0,51	0,65	0,92	1,4	2,5	3,5

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	B min	10,8	14,2	17,6	21,8	27,2	33,9	42,7	48,8	61,2			
	B max	11,2	14,6	18	22,2	27,6	34,3	43,1	49,2	61,7			
6000 LB	C min	3,43	4,01	4,37	5,18	6,04	6,93	6,93	7,8	9,5			
	E	9,5	9,5	9,5	9,5	12,5	12,5	12,5	12,5	16			
	H	6,4	6,4	6,4	7,9	7,9	11,2	11,2	12,7	15,7			
	App Wt	0,08	0,08	0,14	0,18	0,21	0,46	0,7	0,89	1,2			

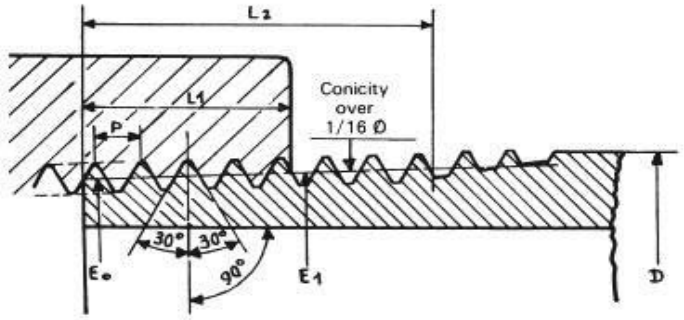


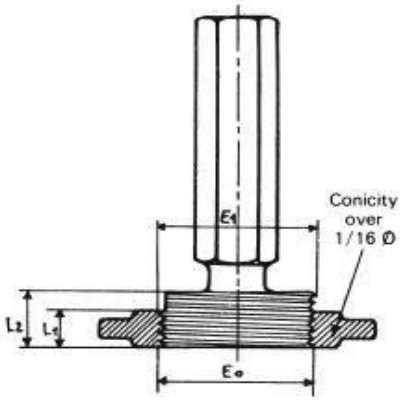
Welding Boss - Socket Weld.

Welding Boss - Socket Weld.

WELDING BOSS-SOCKET WELD BS3799

RATING	DIMS	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/2"	2"
	B	10,7	14,1	17,6	21,8	27,4	34,1	49	61
3000 LB	C	3,2	3,3	3,5	4,1	4,3	5	5,6	6,1
6000 LB	C				5,2	6,1	7	7,8	9,5
	D	THROUGH BORE,Sch40-3000lb,Sch160-6000lb							
	F	28	32	34	38	38	35	32	29
	S	10	10	11	13	13	16	19	22
	App Wt	0,2	0,23	0,29	0,38	0,53	0,83	1,31	1,86





Taper Pipe Threads, NPT

NOMINAL SIZE OF TUBE	OUTSIDE DIAMETER OF THE TUBE D		NUMBER OF THREADS PER INCH	DIAMETER OF PITCH P		DIAMETER OF THE PITCH OF THE BOLT AT THE OUTSIDE OF THE THREAD EO		THE PITCH OF THE BOLT AT THE INSIDE END OF THE THREAD E1		EFFICIENT LENGTH OF THE THREAD L2		LENGTH OF THE HAND PACKING L1		INCREASE OF THE DIAMETER PER ROTATION	
	mm	Inch		mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch
1/8"	10,29	0,405	27	0,94	0,03704	9,233	0,36351	9,489	0,3736	6,703	0,2639	4,102	0,1615	0,0586	0,00231
1/4"	13,72	0,54	18	1,411	0,05556	12,126	0,47739	12,487	0,49163	10,205	0,4018	5,786	0,2278	0,0881	0,00347
3/8"	17,14	0,675	18	1,411	0,05556	15,545	0,61201	15,929	0,62701	10,358	0,4078	6,096	0,24	0,0881	0,00347
1/2"	21,34	0,84	14	1,814	0,07143	19,264	0,75843	19,772	0,77843	13,556	0,5337	8,128	0,32	0,1132	0,00446
3/4"	26,67	1,05	14	1,814	0,07143	24,579	0,96768	25,117	0,98887	13,86	0,5457	8,61	0,339	0,1132	0,00446
1"	33,4	1,315	11,5	2,209	0,08696	30,826	1,121363	31,461	1,23863	17,343	0,6828	10,16	0,4	0,1379	0,00543
1 1/4"	42,16	1,66	11,5	2,209	0,08696	39,551	1,55713	40,218	1,58338	17,952	0,7068	10,668	0,42	0,1379	0,00543
1 1/2"	48,26	1,9	11,5	2,209	0,08696	45,621	1,79609	46,287	1,82234	18,337	0,7235	10,668	0,42	0,1379	0,00543
2"	60,32	2,375	11,5	2,209	0,08696	57,633	2,26902	58,325	2,29627	19,215	0,7565	11,074	0,436	0,1379	0,00543
2 1/2"	73,02	2,875	8	3,175	0,125	69,076	2,71953	70,159	2,76216	28,892	1,1375	17,322	0,682	0,1983	0,00781
3"	88,9	3,5	8	3,175	0,125	84,852	3,34062	86,068	3,3885	30,48	1,2	19,456	0,766	0,1983	0,00781
3 1/2"	101,6	4	8	3,175	0,125	97,472	3,8375	98,776	3,88881	31,75	1,25	20,853	0,821	0,1983	0,00781
4"	114,3	4,5	8	3,175	0,125	110,093	4,33438	111,433	4,38712	33,02	1,3	21,437	0,844	0,1983	0,00781

Note: All sizes in the table correspond to the ASME B1.20.1 and API 5 L Standards

SFF SUBSEA DIVISION

To meet the challenges of an increasing demand for subsea applications and more specialized products, SFF has established a separate department.

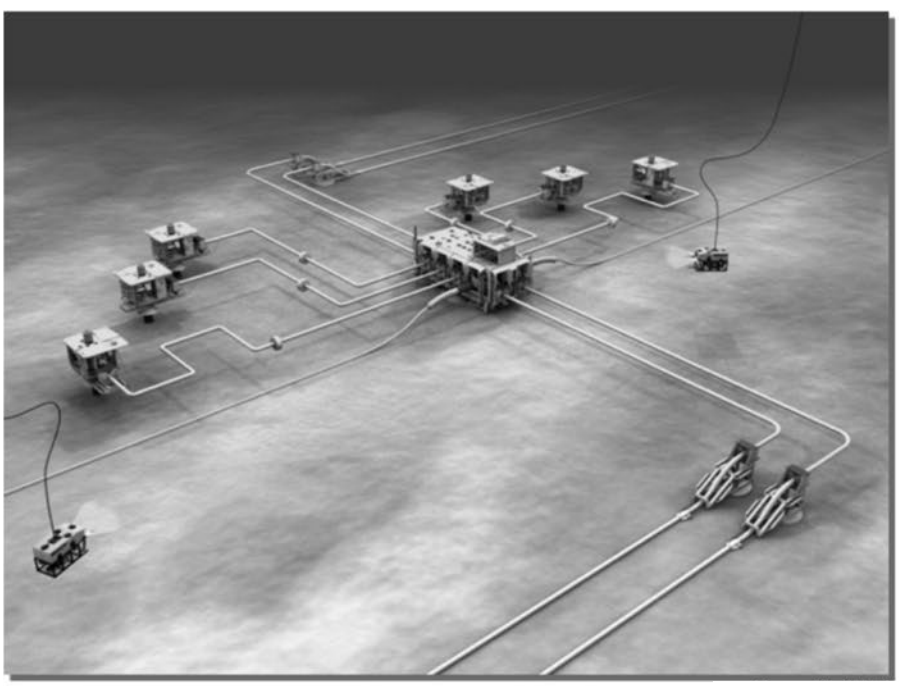
This department is trained to handle the challenges connected to subsea piping components.

During our years in SFF we have earned a record of supplying quality products with reliable technical backup. Together with our clients we cooperate to find the very best solution. Presented with any challenges, our experienced staff will contribute with extensive material know-how and technical guidance in a joint effort to solve any particular requirements.

All items are tested and certified to the most stringent specifications and are produced according to the client's specifications as well as relevant standards, such as ASTM, ASME, API, ANSI, BS, DIN, DNV & and they are Norsok M650 approved.

Our assortment includes:

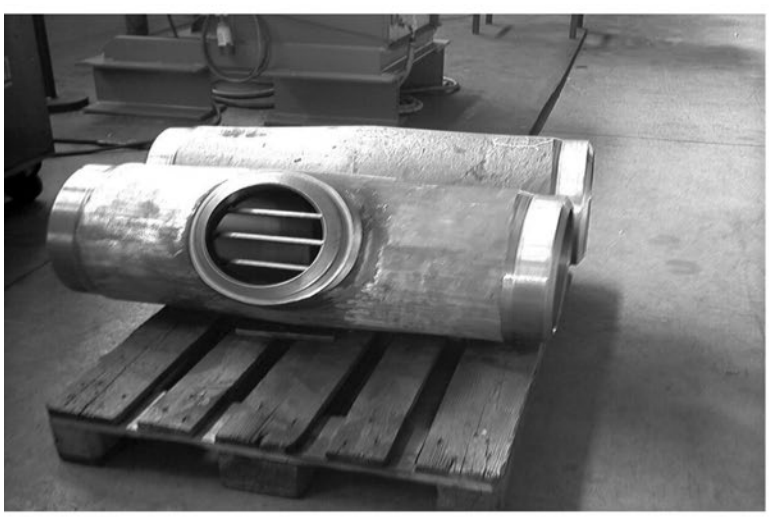
- 3D and 5D bends (pigable)
- Controlled ID Pipes
- Lateral & Barred Tee's
- Special Hubs
- Manifolds
- Y-Pieces
- Bulkheads
- Line Pipe Components
- Well Jumper Pipes
- Buckle Arrestor
- Swivel Stacks
- Strainers
- Sealpots
- Etc.



TYPICAL SUBSEA COMPONENTS

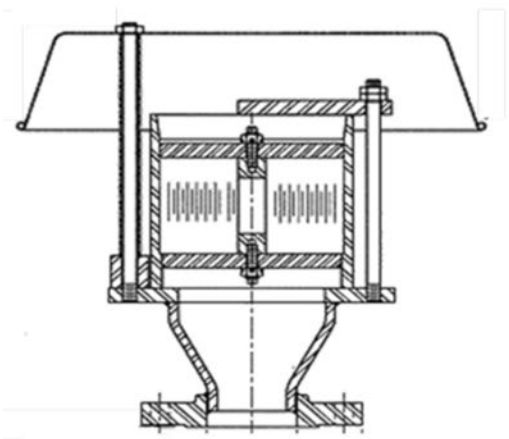
Piggable 5D Bend

Fabricated Subsea Line-Pipe spool

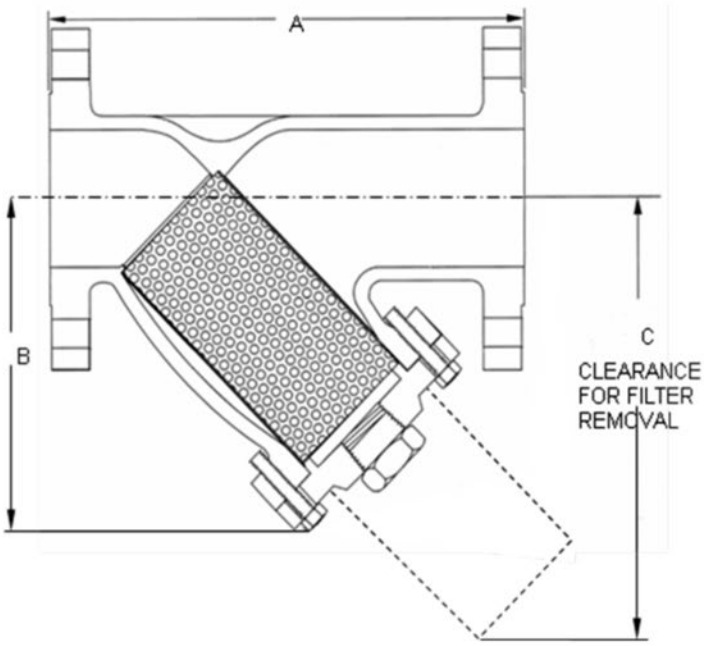


Barred Tee

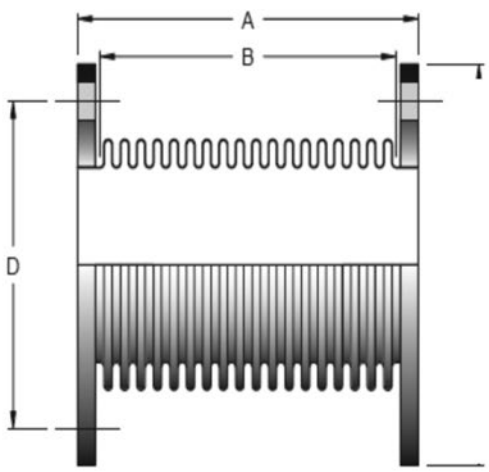
TYPICAL SPECIAL ITEMS



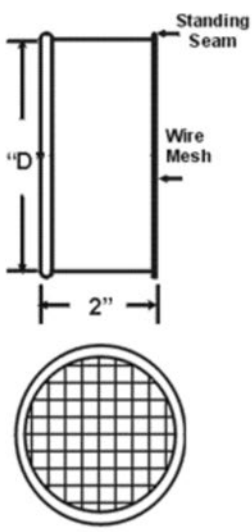
Flame Arrestor



Y-Type Strainer



Bellow – Expansion Joint



Bird Screen

STUD BOLTS

SFF has built up an extensive stock of stud bolts from 0,5" to 2,5" diameter in the following material grades:

Carbon Steel
- ASTM A320 L7 (Hot dip galvanized)
- ASTM A194 B7

Super Duplex
- ASTM 1082 UNS S32760

Stainless Steel
- UNS FG/SA (impact test to –46 degr.C)
- UNS FLT/SA (impact test to –101 degr.C)

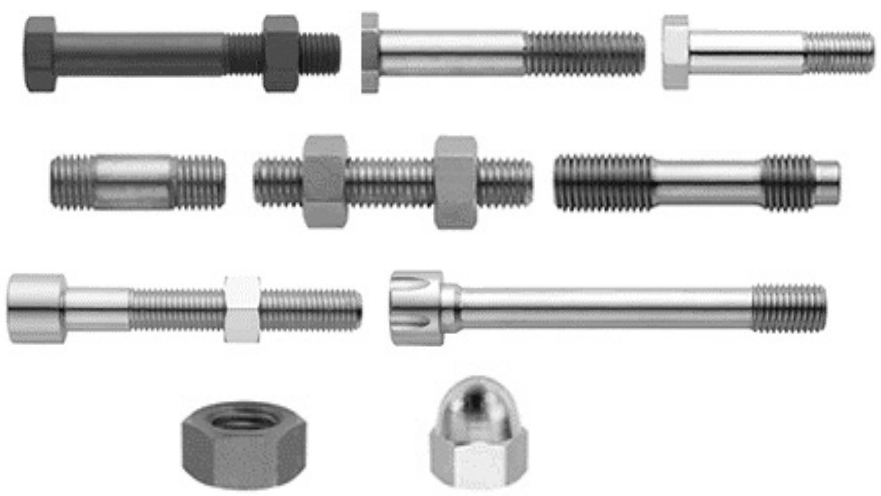
All stocked c/w 2 nuts.

In addition to our stock we are able to deliver all other kinds of bolts, screws, nuts and washers such as:

- Hex bolts
- Countersunk bolts
- Machine bolts

- Hexagon socket screws
- Set screws
- Cap screws

- Hexagon Nuts (FLAT/SPH)
- Lock Nuts
- Dome nuts



Material grades:
A193 B8 (304)
A193 B8M (316)
ASTM A320 L7
ASTM A193 B7
ASTM A193 B16
ASTM A1082
ASTM A1082 UNS 32760 FG/SA
ASTM A1082 UNS 32760 FLT/SA

Surface treatment:
Self colour
Hot dip galvanized
Electro galvanized
PTFE
Xylan
Phosphated

We have a wide network of manufacturers who supports us with fast delivery and high product quality and knowledge, enabling us to deliver to any request you might have.

STUDBOLT DIMENSION FOR ALL FLANGE TYPES

Studbolts with Nuts.

STUD BOLTS LENGTHS FOR FLANGES TO BS 1560 AND ASME B.16.5

RATING	150				300				600			
NOMINAL SIZE			LENGTH				LENGTH				LENGTH	
	N°	DIAM STUD	RF	RTJ	N°	DIAM STUD	RF	RTJ	N°	DIAM STUD	RF	RTJ
1/2"	4	1/2"	2 1/4		4	1/2"	2 1/2	3"	4	1/2"	3	3
		M14	60			M14	65	80		M14	80	80
3/4"	4	1/2"	2 1/2	3	4	5/8"	3	3 1/2	4	5/8"	3 1/2	3 1/2
		M14	65			M16	80	90		M16	90	90
1"	4	1/2"	2 1/2	3	4	5/8"	3	3 1/2	4	5/8"	3 1/2	3 1/2
		M14	65	80		M16	80	90		M16	90	90
1 1/4"	4	1/2"	2 3/4	3,25	4	5/8"	3,25	3 3/4	4	5/8"	3 3/4	3 3/4
		M14	70	85		M16	85	100		M16	100	100
1 1/2"	4	1/2"	2 3/4	3,25	4	3/4"	3,5	4	4	3/4"	4 1/4	4 1/4
		M14	70	85		M20	90	105		M20	110	110
2"	4	5/8"	3 1/4	3,75	8	5/8"	3,5	4	8	5/8"	4 1/4	4 1/4
		M16	85	100		M16	90	105		M16	110	110
2 1/2"	4	5/8"	3 1/2	4	8	3/4"	4	4 1/2	8	3/4"	4 3/4	4 3/4
		M16	90	105		M20	105	115		M20	125	125
3"	4	5/8"	3 1/2	4	8	3/4"	4,25	4 1/4	8	3/4"	5	5
		M16	90	105		M20	110	125		M20	130	130
4"	8	5/8"	3 1/2	4	8	3/4"	4,5	5	8	7/8"	6 3/4	5 3/4
		M16	90	105		M20	115	130		M22	150	150
5"	8	3/4"	3 3/4	4,25	8	3/4"	4,75	5 1/4	8	1"	6 3/4	6 1/2
		M20	100	110		M20	125	135		M27	170	170
6"	8	3/4"	4	4,5	12	3/4"	4,75	5 1/2	12	1"	6 3/4	6 3/4
		M20	105	115		M20	125	140		M27	175	175
8"	8	3/4"	4 1/4	4,75	12	7/8"	5,5	6	12	1 1/8"	7 1/2	7 3/4
		M20	110	125		M22	140	155		M30	195	200
10"	12	7/8"	4 1/2	5	16	1"	6,25	6 3/4	16	1 1/4"	8 1/2	8 1/2
		M22	115	130		M27	160	175		M33	220	220
12"	12	7/8"	4 3/4	5,25	16	1 1/8"	6,75	7 1/4	20	1 1/4"	8 3/4	8 3/4
		M22	125	135		M30	175	185		M33	225	225
14"	12	1"	5 1/4	5,75	20	1 1/8"	7	7 1/2	20	1 3/8"	9 1/4	9 1/4
		M27	135	150		M30	180	195		M36	235	235
16"	16	1"	5 1/4	5,75	20	1 1/4"	7,5	8	20	1 1/2"	10	10
		M27	135	150		M33	195	205		M39	255	255
18"	16	1 1/8"	5 3/4	6,25	24	1 1/4"	7,75	8 1/4	20	1 5/8"	10 3/4	10 3/4
		M30	150	160		M33	200	210		M42	275	275
20"	20	1 1/8"	6 1/4	6,75	24	1 1/4"	8	8 3/4	24	1 5/8"	11 1/4	11 1/2
		M30	160	175		M33	205	225		M42	290	295
24"	20	1 1/4"	6 3/4	7,25	24	1 1/2"	9	10	24	1 7/8"	13	13 1/4
		M33	175	185		M39	230	255		M48	335	340

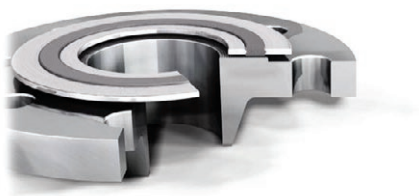
STUDBOLT DIMENSION FOR ALL FLANGE TYPES

Studbolts with Nuts.

STUD BOLTS LENGTHS FOR FLANGES TO ANSI/ASME B16.5

RATING	900				1500				2500			
NOMINAL SIZE	N°	DIAM STUD	LENGTH RF	LENGTH RTJ	N°	DIAM STUD	LENGTH RF	LENGTH RTJ	N°	DIAM STUD	LENGTH RF	LENGTH RTJ
1/2"	4	3/4" M20	4 1/4" 115	4 1/4" 115	4	3/4" M20	4 1/4" 115	4 1/4" 115	4	3/4" M20	4 3/4" 125	4 3/4" 125
3/4"	4	3/4" M20	4 1/2" 120	4 1/2" 120	4	3/4" M20	4 1/2" 120	4 1/2" 120	4	3/4" M20	5" 135	5" 135
1"	4	7/8" M22	5" 135	5" 135	4	7/8" M22	5" 135	5" 135	4	7/8" M22	5 1/2" 145	5 1/2" 145
1 1/4"	4	7/8" M22	5" 135	5" 135	4	7/8" M22	5" 135	5" 135	4	1" M27	6" 160	6" 160
1 1/2"	4	1" M27	5 1/2" 145	5 1/2" 145	4	1" M27	5 1/2" 145	5 1/2" 145	4	1 1/8" M30	6 3/4" 180	6 3/4" 180
2"	8	7/8" M22	5 3/4" 150	5 3/4" 150	8	7/8" M22	5 3/4" 150	5 3/4" 150	8	1" M27	7" 185	7" 185
2 1/2"	8	1" M27	6 1/4" 165	6 1/4" 165	8	1" M27	6 1/4" 165	6 1/4" 165	8	1 1/8" M30	7 3/4" 205	8" 215
3"	8	7/8" M22	5 3/4" 150	5 3/4" 150	8	1 1/8" M30	7" 185	7" 185	8	1 1/4" M33	8 3/4" 235	9" 240
4"	8	1 1/8" M30	6 3/4" 180	6 3/4" 180	8	1 1/4" M33	7 3/4" 205	7 3/4" 205	8	1 1/2" M39	10" 265	10 1/4" 270
5"	8	1 1/4" M33	7 1/2" 200	7 1/2" 200	8	1 1/2" M39	9 3/4" 260	9 3/4" 260	8	1 3/4" M45	11 3/4" 310	12 1/4" 320
6"	12	1 1/8" M30	7 1/2" 200	7 3/4" 205	12	1 3/8" M36	10 1/4" 270	10 1/2" 280	8	2" M52	13 1/2" 355	14" 365
8"	12	1 3/8" M36	8 3/4" 235	8 3/4" 235	12	1 5/8" M42	11 1/2" 305	12 3/4" 335	12	2" M52	15" 390	15 1/2" 405
10"	16	1 3/8" M36	9 1/4" 245	9 1/4" 245	12	1 7/8" M48	13 1/4" 350	13 1/2" 355	12	2 1/2" M64	19 1/4" 500	20" 520
12"	20	1 3/8" M36	10" 265	10" 265	16	2" M52	14 3/4" 385	15 1/4" 400	12	2 3/4" M68	21 1/4" 550	22" 570
14"	20	1 1/2" M39	10 3/4" 285	11" 290	16	2 1/4" M56	16" 415	16 3/4" 435				
16"	20	1 5/8" M42	11 1/4" 295	11 1/2" 305	16	2 1/2" M64	17 1/2" 455	18 1/2" 480				
18"	20	1 7/8" M48	12 3/4" 335	13 1/4" 350	16	2 3/4" M68	19 1/2" 505	20 3/4" 540				
20"	20	2" M52	13 3/4" 360	14 1/4" 375	16	3" M76	21 1/4" 550	22 1/4" 575				
24"	20	2 1/2" M64	17 1/4" 450	18" 470	16	3 1/2" M90	24 1/4" 625	25 1/2" 660				

SPIRAL WOUND GASKETS



Spiral Wound Gasket

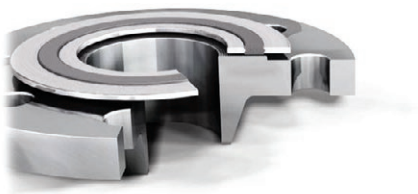
ASME B16.20 for ASME B16.47 Series A Flanges

	INNER DIAMETER - INNER RING				OUTER DIAMETER - OUTER RING			
NPS	150	300	600	900	150	300	600	900
26"	654,1	654,1	647,7	660,4	774,7	835,2	866,9	882,7
28"	704,9	704,9	698,5	711,2	831,9	898,7	914,4	946,2
30"	755,7	755,7	755,7	768,4	882,7	952,5	971,6	1009,7
32"	806,5	806,5	812,8	812,8	939,8	1006,6	1022,4	1073,2
34"	857,3	857,3	863,6	863,6	990,6	1057,4	1073,2	1136,7
36"	908,1	908,1	917,7	920,8	1047,8	1117,6	1130,3	1200,2
38"	958,9	952,5	952,5	1009,7	1111,3	1054,1	1104,9	1200,2
40"	1009,7	1003,3	1009,7	1060,5	1162,1	1114,6	1155,7	1251,0
42"	1060,5	1054,1	1066,8	1111,3	1219,2	1165,4	1219,1	1301,8
44"	1111,3	1104,9	1111,3	1155,7	1276,4	1219,2	1270,0	1368,6
46"	1162,1	1152,7	1162,1	1219,2	1327,2	1273,3	1327,2	1435,1
48"	1212,9	1209,8	1219,2	1270,0	1384,3	1324,1	1390,7	1485,9
50"	1263,7	1244,6	1270,0		1435,1	1378,0	1447,8	
52"	1314,5	1320,8	1320,8		1492,3	1428,8	1498,6	
54"	1358,9	1352,6	1378,0		1549,4	1492,3	1555,8	
56"	1409,7	1403,4	1428,8		1606,6	1543,1	1612,9	
58"	1460,5	1447,8	1473,2		1663,7	1593,9	1663,7	
60"	1511,3	1524,0	1530,4		1714,5	1644,7	1733,6	

ASME B16.20 for ASME B16.47 Series B Flanges

	INNER DIAMETER - INNER RING				OUTER DIAMETER - OUTER RING			
NPS	150	300	600	900	150	300	600	900
26"	654,1	654,1	644,7	666,8	725,4	771,7	765,3	832,2
28"	704,9	704,9	685,8	718,6	776,2	825,5	819,2	901,7
30"	755,7	755,7	755,7	781,1	827,0	886,0	879,6	958,9
32"	806,5	806,5	793,8	838,2	881,1	939,8	933,5	1016,0
34"	857,3	857,3	850,9	895,4	935,0	993,9	997,0	1073,2
36"	908,1	908,1	901,7	920,8	987,6	1047,8	1047,8	1124,0
38"	958,9	971,6	952,5	1009,7	1044,7	1098,6	1104,9	1200,2
40"	1009,7	1022,4	1009,7	1060,5	1095,5	1149,4	1155,7	1251,0
42"	1060,5	1085,9	1066,8	1111,3	1146,3	1200,1	1219,2	1301,8
44"	1111,3	1124,0	1111,3	1155,7	1197,1	1251,0	1270,0	1368,6
46"	1162,1	1178,1	1162,1	1219,2	1255,8	1317,8	1327,2	1435,1
48"	1212,9	1231,9	1219,2	1270,0	1306,6	1368,6	1390,7	1485,9
50"	1263,7	1267,0	1270,0		1357,4	1419,4	1447,8	
52"	1314,5	1317,8	1320,8		1408,2	1470,2	1498,6	
54"	1365,3	1365,3	1378,0		1463,8	1530,4	1555,8	
56"	1422,4	1428,8	1428,8		1514,6	1593,9	1612,9	
58"	1478,0	1484,4	1473,2		1579,6	1655,8	1663,7	
60"	1535,2	1557,3	1530,4		1630,4	1706,6	1733,6	

SPIRAL WOUND GASKETS



Spiral Wound Gasket

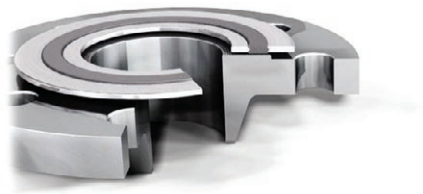
In case metric bolts are used

DN/NPS		OUTER DIAMETER - OUTER RING		
DN	NPS	150	300	600
15,0	1/2"	46,5	52,5	52,5
20,0	3/4"	56,0	64,5	64,5
25,0	1"	65,5	71,0	71,0
32,0	1-1/4"	76,2	82,6	82,6
40,0	1-1/2"	84,5	94,5	94,5
50,0	2"	102,5	109,0	109,0
65,0	2-1/2"	124,0	130,3	130,3
80,0	3"	134,5	148,5	148,5
100,0	4"	172,5	180,0	192,0
125,0	5"	196,9	215,9	241,3
150,0	6"	221,5	250,0	265,0
200,0	8"	278,5	306,0	319,0
250,0	10"	338,0	360,0	399,0
300,0	12"	408,0	421,0	456,0
350,0	14"	449,0	484,5	491,0
400,0	16"	513,0	538,5	564,0
450,0	18"	548,0	595,5	612,0
500,0	20"	605,0	653,0	682,0
600,0	24"	716,5	774,0	790,0

NS-EN 1514-2

INNER DIAMETER - INNER RING		OUTER DIAMETER - OUTER RING					
		10	16	25	40	63	100
10	15	48	48	48	48	58	58
15	19	53	53	53	53	63	63
20	24	63	63	63	63	74	74
25	30	73	73	73	73	84	84
32	39	84	84	84	84	90	90
40	45	94	94	94	94	105	105
50	56	109	109	109	109	115	121
65	72	129	129	129	129	140	146
80	84	144	144	144	144	150	156
100	108	164	164	170	170	176	183
125	133	194	194	196	196	213	220
150	160	220	220	226	226	250	260
200	209	275	275	286	293	312	327
250	262	330	331	343	355	367	394
300	311	380	386	403	420	427	461
350	355	440	446	460	477	489	515
400	406	491	498	517	549	546	575
450	452	541	558	567	574		
500	508	596	620	627	631	660	708
600	610	698	737	734	750	768	816
700	710	813	807	836		883	956
800	811	920	914	945		994	
900	909	1020	1014	1045		1114	

SPIRAL WOUND GASKETS



Spiral Wound Gasket

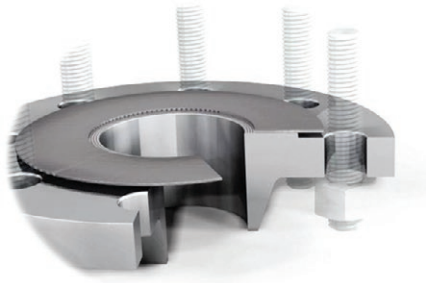
ASME B16.20 for ASME B16.5 Flanges

DN/ NPS		INNER DIAMETER - INNER RING						OUTER DIAMETER - OUTER RING					
DN/ NPS	NPS	150	300	600	900	1500	2500	150	300	600	900	1500	2500
15,0	1/2"	14,2	14,2	14,2	14,2	14,2	14,2	47,8	54,1	54,1	63,5	63,5	69,9
20,0	3/4"	20,6	20,6	20,6	20,6	20,6	20,6	57,2	66,8	66,8	69,9	69,9	76,2
25,0	1"	26,9	26,9	26,9	26,9	26,9	26,9	66,8	73,2	73,2	79,5	79,5	85,9
32,0	1 1/4"	38,1	38,1	38,1	33,3	33,3	33,3	76,2	82,6	82,6	88,9	88,9	104,9
40,0	1 1/2"	44,5	44,5	44,5	41,4	41,4	41,4	85,9	95,3	95,3	98,6	98,6	117,6
50,0	2"	55,6	55,6	55,6	52,3	52,3	52,3	104,9	111,3	111,3	143,0	143,0	146,1
65,0	2 1/2"	66,5	66,5	66,5	63,5	63,5	63,5	124,0	130,3	130,3	165,1	165,1	168,4
80,0	3"	81,0	81,0	81,0	78,7	78,7	78,7	136,7	149,4	149,4	168,4	174,8	196,9
100,0	4"	104,6	104,6	104,6	102,6	97,8	97,8	174,8	181,1	193,8	206,5	209,6	235,0
125,0	5"	131,8	131,8	128,3	128,3	124,5	124,5	196,9	215,9	241,3	247,7	254,0	279,4
150,0	6"	157,2	157,2	154,9	154,9	147,3	147,3	222,3	251,0	266,7	289,1	282,7	317,5
200,0	8"	215,9	215,9	205,7	196,9	196,9	196,9	279,4	308,1	320,8	358,9	352,6	387,4
250,0	10"	268,2	268,2	255,3	246,1	246,1	246,1	339,9	362,0	400,1	435,1	435,1	476,3
300,0	12"	317,5	317,5	307,3	292,1	292,1	292,1	409,7	422,4	457,2	498,6	520,7	549,4
350,0	14"	349,3	349,3	342,9	320,8	320,8		450,9	485,9	492,3	520,7	577,9	
400,0	16"	400,1	400,1	389,9	374,7	368,3		514,4	539,8	565,2	574,8	641,4	
450,0	18"	449,3	449,3	438,2	425,5	425,5		549,4	596,9	612,9	638,3	704,9	
500,0	20"	500,1	500,1	489,0	482,6	476,3		606,6	654,1	682,8	698,5	755,7	
600,0	24"	603,3	603,3	590,6	590,6	577,9		717,6	774,7	790,7	833,2	901,0	

FLAT GASKETS

ASME B16.21. for ASME B16.5 Flanges Type RF

NOM. DIAM	ID.	OD. 150#	OD. 300#	OD. 600#	OD. 900#
Dim	mm	mm	mm	mm	mm
1/2"	21	48	54	54	64
3/4"	27	57	67	67	70
1"	33	67	73	73	79
1-1/4"	42	76	83	83	89
1-1/2"	49	86	95	95	99
2"	60	105	111	111	143
2-1/2"	73	124	130	130	165
3"	89	137	149	149	168
3-1/2"	102	162	165	162	N/A
4"	114	175	181	194	206
5"	141	197	216	241	246
6"	168	222	251	267	289
8"	219	279	308	321	359
10"	273	340	362	400	435
12"	324	410	422	457	498
14"	356	451	486	492	521
16"	406	514	540	565	575
18"	457	549	597	613	638
20"	508	607	654	683	699
24"	610	718	775	790	838



Flat Graphite Gasket

ASME B16.21. for ASME B16.47
Flanges Series A RF

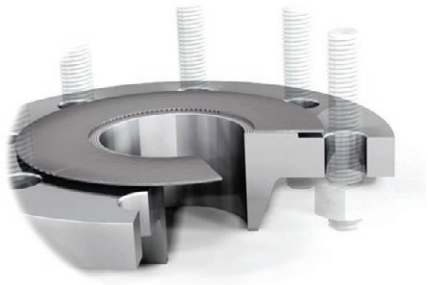
NOM. DIAM	ID.	OD. 150#	OD. 300#	OD. 600#
Dim	mm	mm	mm	mm
22"**	559	660	705	734
26"	660	775	835	867
28"	711	832	899	914
30"	762	883	953	972
32"	813	940	1006	1022
34"	864	991	1057	1073
36"	914	1048	1118	1130
38"	965	1111	1054	1105
40"	1016	1162	1115	1156
42"	1067	1219	1165	1219
44"	1118	1276	1219	1270
46"	1168	1327	1273	1327
48"	1219	1384	1324	1391
50"	1270	1435	1378	1448
52"	1321	1492	1429	1499
54"	1372	1549	1492	1556
56"	1422	1607	1543	1613
58"	1473	1664	1594	1664
60"	1524	1715	1645	1721

**not in the ASME B16.47

ASME B16.21. for ASME B16.47
Flanges Series B RF

NOM. DIAM.	ID.	OD. 150#	OD. 300#	OD. 600#
Dim	mm	mm	mm	mm
26"	660	725	772	765
28"	711	776	826	819
30"	762	827	886	879
32"	813	881	940	933
34"	864	935	994	997
36"	914	988	1048	1048
38"	965	1044	1099	
40"	1016	1095	1149	
42"	1067	1146	1200	
44"	1118	1197	1251	
46"	1168	1256	1318	
48"	1219	1307	1369	
50"	1270	1357	1419	
52"	1321	1408	1470	
54"	1372	1464	1556	
56"	1422	1514	1594	
58"	1473	1580	1656	
60"	1524	1630	1705	

FLAT GASKETS



Flat Graphite Gasket

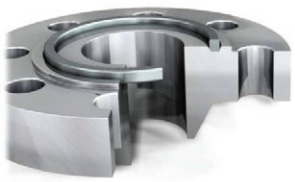
ASME B16.21. for ASME B16.5 Flanges 150# with bolt hole

NOM. DIAM	ID.	OD.	HOLES	HOLES	BCD
Dim	mm	mm	pcs.	dia.	mm
1/2"	21	89	4	15,7	60,45
3/4"	27	99	4	15,7	69,85
1"	33	108	4	15,7	79,25
1-1/4"	42	117	4	15,7	88,9
1-1/2"	49	127	4	15,7	98,55
2"	60	152	4	19,1	120,65
2-1/2"	73	178	4	19,1	139,7
3"	89	191	4	19,1	152,4
3-1/2"	102	216	8	19,1	177,8
4"	114	229	8	19,1	190,5
5"	141	254	8	22,4	215,9
6"	168	279	8	22,4	241,3
8"	219	343	8	22,4	298,45
10"	273	406	12	25,4	361,95
12"	324	483	12	25,4	431,8
14"	356	533	12	28,4	476,25
16"	406	597	16	28,4	539,75
18"	457	635	16	31,8	577,85
20"	508	699	20	31,8	635
24"	610	813	20	35,1	749,3

ASME B16.21. for ASME B16.5 Flanges 300# with bolt hole

NOM. DIAM	ID.	OD.	HOLES	HOLES	BCD
Dim	mm	mm	pcs.	dia.	mm
1/2"	21	95	4	15,7	66,55
3/4"	27	117	4	19,1	82,55
1"	33	124	4	19,1	88,9
1-1/4"	42	133	4	19,1	98,55
1-1/2"	49	155	4	22,4	114,3
2"	60	165	8	19,1	127
2-1/2"	73	191	8	22,4	149,35
3"	89	210	8	22,4	168,15
3-1/2"	102	229	8	22,4	184,15
4"	114	254	8	22,4	200,15
5"	141	279	8	22,4	234,95
6"	168	318	12	22,4	269,75
8"	219	381	12	25,4	330,2
10"	273	445	16	28,4	387,35
12"	324	521	16	31,8	450,85
14"	356	584	20	31,8	514,35
16"	406	648	20	35,1	571,5
18"	457	711	24	35,1	628,65
20"	508	775	24	35,1	685,8
24"	610	914	24	41,1	812,8

RING JOINTS - TYPE R-BX-RX-LX



BX Gasket

RX Gasket

ASME B16.20 - API 6A

NOM. DIAM.		FLANGES ASME / ANSI B16.5 - ISO/ DIS7005 ASME B 16.47 SERIES A (MSS SP 44)					FLANGES API 6B		
ASME ANSI	ISO	150# PN20	300/600# PN 50-100	900# PN 150	1500# PN 250	2500# PN 420	2000#	3000#	5000#
1/2"	15		R-11	R-12	R-12	R-13			
3/4"	20		R-13	R-14	R-14	R-16			
1"	25	R-15	R-16	R-16	R-16	R-18	R-16	R-16	R-16
1-1/4"	32	R-17	R-18	R-18	R-18	R-21	R-18	R-18	R-18
1-1/2"	40	R-19	R-20	R-20	R-20	R-23	R-20	R-20	R-20
2"	50	R-22	R-23	R-24	R-24	R-26	R-23	R-24	R-24
2-1/2"	65	R-25	R-26	R-27	R-27	R-28	R-26	R-27	R-27
3"	80	R-29	R-31	R-31	R-35	R-32	R-31	R-31	R-35
3-1/2"	90	R-33	R-34						R-37
4"	100	R-36	R-37	R-37	R-39	R-38	R-37	R-37	R-39
5"	125	R-40	R-41	R-41	R-44	R-42	R-41	R-41	R-44
6"	150	R-43	R-45	R-45	R-46	R-47	R-45	R-45	R-46
8"	200	R-48	R-49	R-49	R-50	R-51	R-49	R-49	R-50
10"	250	R-52	R-53	R-53	R-54	R-55	R-53	R-53	R-54
12"	300	R-56	R-57	R-57	R-58	R-60	R-57	R-57	
14"	350	R-59	R-61	R-62	R-63		R-61	R-61	
16"	400	R-64	R-65	R-66	R-67		R-65	R-66	
18"	450	R-68	R-69	R-70	R-71		R-69	R-70	
20"	500	R-72	R-73	R-74	R-75		R-73	R-74	
22"	550	R-80	R-81						
24"	600	R-76	R-77	R-78	R-79				
26"	650		R-93	R-100					
28"	700		R-94	R-101					
30"	750		R-95	R-102					
32"	800		R-96	R-103					
34"	850		R-97	R-104					
36"	900		R-98	R-105					

ASME B16.20 - API 6A

	FLANGES API 6BX					
NOM. DIA	2000#	3000#	5000#	10000#	15000#	20000#
1-11/16"				BX-150	BX-150	
1-13/16"				BX-151	BX-151	BX-151
2-1/16"				BX-152	BX-152	BX-152
2-9/16"				BX-153	BX-153	BX-153
3-1/16"				BX-154	BX-154	BX-154
4-1/16"				BX-155	BX-155	BX-155
5-1/8"				BX-169		
6-5/8"				BX-170	BX-170	
7-1/16"				BX-156	BX-156	BX-156
8-9/16"				BX-171	BX-171	
9"				BX-157	BX-157	
11"				BX-158	BX-158	
11-5/322				BX-172	BX-172	
13-5/8"			BX-160	BX-159	BX-159	
16-3/4"			BX-161	BX-162	BX-162	
			BX-162			
18-3/4"			BX-163	BX-164	BX-164	
21-1/4"			BX-165	BX-166		
26-3/4"	BX-167	BX-168				
30"	BX-303	BX-303				

ASME B 16.20 - API 6A

	FLANGES API 6B		
NOM. DIA	2000#	3000#	5000#
1-3/8"			RX-201
1-1/2"	RX-20	RX-20	RX-20
1-13/16"			RX-205
2"	RX-23	RX-24	RX-24
2-1/2"	RX-26	RX-27	RX-27
2-9/16"			RX-210
3"	RX-31	RX-31	RX-35
3-1/8"			RX-25
4"	RX-37	RX-37	RX-39
4-1/16"			RX-215
5"	RX-41	RX-41	RX-44
6"	RX-45	RX-45	RX-46
8"	RX-49	RX-49	RX-50
10"	RX-53	RX-53	RX-54
12"	RX-57	RX-57	
14"			RX-63
16"	RX-65	RX-66	
18"	RX-69	RX-70	
20"	RX-73	RX-74	

TECHNICAL CONVERSION FACTORS

Energy

FROM		TO		MULTIPLY BY
Joule	(J)	kilopond metre	(kpm)	0,1020
Joule	(J)	kilowatt hour	(kWh)	$0{,}2778 \times 10^{-6}$
Joule	(J)	foot pound weight	(ftlbwgt)	0,7376
Joule	(J)	kilocalorie	(kcal)	$0{,}2388 \times 10^{-3}$
Joule	(J)	British Thermal Unit	(BThU)	$0{,}9479 \times 10^{-3}$
kilopond meter	(kpm)	kilowatt hour	(kWh)	$2{,}7233 \times 10^{-6}$
kilopond meter	(kpm)	foot pound weight	(ftlbwgt)	7,2307
kilopond meter	(kpm)	kilocalorie	(kcal)	$2{,}3425 \times 10^{-3}$
kilopond meter	(kpm)	British Thermal Unit	(BThU)	$9{,}2954 \times 10^{-3}$
kilopond meter	(kpm)	Joule	(J)	9,8067
kilowatt hour	(kWh)	foot pound weight	(ftlbwgt)	$2{,}6553 \times 10^{6}$
kilowatt hour	(kWh)	kilocalorie	(kcal)	859,85
kilowatt hour	(kWh)	British Thermal Unit	(BThU)	$3{,}4118 \times 10^{-3}$
kilowatt hour	(kWh)	Joule	(J)	$3{,}6000 \times 10^{6}$
kilowatt hour	(kWh)	kilopond metre	(kpm)	$0{,}3672 \times 10^{6}$
foot pound weight	(ftlbwgt)	kilocalorie	(kcal)	$0{,}3238 \times 10^{-3}$
foot pound weight	(ftlbwgt)	British Thermal Unit	(BThU)	$1{,}2851 \times 10^{-3}$
foot pound weight	(ftlbwgt)	Joule	(J)	1,3558
foot pound weight	(ftlbwgt)	kilopond metre	(kpm)	0,1383
foot pound weight	(ftlbwgt)	kilowatt hour	(kWh)	$0{,}3766 \times 10^{-6}$
kilocalorie	(kcal)	British Thermal Unit	(BThU)	3,9683
kilocalorie	(kcal)	Joule	(J)	4186,8
kilocalorie	(kcal)	kilopond metre	(kpm)	426,89
kilocalorie	(kcal)	kilowatt hour	(kWh)	$1{,}1630 \times 10^{-3}$
kilocalorie	(kcal)	foot pound weight	(ftlbwgt)	3088,3
British Thermal Unit	(BThU)	Joule	(J)	1055,0
British Thermal Unit	(BThU)	kilopond metre	(kpm)	107,58
British Thermal Unit	(BThU)	kilowatt hour	(kWh)	293,10
British Thermal Unit	(BThU)	foot pound weight	(ftlbwgt)	778,0
British Thermal Unit	(BThU)	kilocalorie	(kcal)	0,2520

TECHNICAL CONVERSION FACTORS

PRESSURE:

FROM		TO		MULTIPLY BY
Bar	(Bar)	Mega Pascals	(MPa)	0,1
Bar	(Bar)	Pounds per sq inch	(psi)	14,5038
Mega Pascals	(MPa)	Pounds per sq inch	(psi)	145,038
Mega Pascals	(MPa)	Bar	(Bar)	10
Pounds per sq inch	(psi)	Bar	(Bar)	0,068947
Pounds per sq inch	(psi)	Mega Pascals	(MPa)	$6{,}8947 \times 10^{-3}$

STRESS:

FROM		TO		MULTIPLY BY
Newton/sq mm.	(N/mm^2)	Thousand of pounds/sq i	(ksi)	0,1450
Newton/sq mm.	(N/mm^2)	Tons per sq inch	(ton/sq in)	0,06475
Thousand of pounds/sq i	(ksi)	Tons per sq inch	(ton/sq in)	0,4464
Thousand of pounds/sq i	(ksi)	Newtons/sq mm N/mm^2	(N/mm^2)	6,8947
Tons per sq inch	(ton/sq in)	Newtons/sq mm N/mm^2	(N/mm^2)	15,4443
Tons per sq inch	(ton/sq in)	Thousand of pounds/sq i	(ksi)	2,240
Newton/sq mm.	(N/mm^2)	Mega Pascals	(MPa)	1

TEMPERATURE:

FROM		TO		FORMULA
Celsius	(°C)	Fahrenheit	(°F)	multiply by 9/5 and add 32
Celsius	(°C)	Kelvin	(°K)	add 273,15
Kelvin	(°K)	Fahrenheit	(°F)	multiply by 9/5 and subtract 459,67
Fahrenheit	(°F)	Celsius	(°C)	subtact 32 and multiply by 5/9
Kelvin	(°K)	Celsius	(°C)	Subtract 273,15
Fahrenheit	(°F)	Kelvin	(°K)	multiply by 5/9 and add 255,37

FORCE:

FROM		TO		MULTIPLY BY
Newtons	(N)	kilopond	(kp)	0,1020
Newtons	(N)	pound weight	(lbwgt)	0,2248
Kilopond	(kp)	pound weight	(lbwgt)	2,2046
Kilopond	(kp)	Newtons	(N)	9,8067
pound weight	(lbwgt)	Newtons	(N)	4,4482
pound weight	(lbwgt)	kilopond	(kp)	0,4536

TECHNICAL CONVERSION FACTORS

LENGTH

FROM METRIC		TO IMPERIAL		MULTIPLY BY
micron	µm	milliinch	(mil)	0,03937
millimeter	(mm.)	inch	(in)	0,03937
meter	(m)	foot	(ft)	3,2808
meter	(m)	yard	(yd)	1,0963
meter	(m)	chain		0,1491
meter	(m)	furlong		0,0050
meter	(m)	fathom		0,5468
kilometer	(km)	mile		0,6214

FROM IMPERAL		TO METRIC		MULTIPLY BY
milliinch	(mil)	micron	(µm)	25,40
inch	(in)	millimeter	(mm)	25,4000
foot	(ft)	meter	(m)	0,3048
yard	(yd)	meter	(m)	0,9144
chain		meter	(m)	20,1168
furlong		meter	(m)	201,168
fathom		meter	(m)	1,8288
mile		kilometer	(km)	1,6093

AREA

FROM METRIC		TO IMPERIAL		MULTIPLY BY
sq millimeter	(mm^2)	sq inch	(sq in)	0,0015
sq centimeter	(cm^2)	sq inch	(sq in)	0,1550
sq meter	(m^2)	sq foot	(sq ft)	10,7636
sq meter	(m^2)	sq yard	(sq yd)	1,1960
sq meter	(m^2)	acre		0,0002
sq kilometer	(km^2)	sq mile		0,3861

FROM IMPERAL		TO METRIC		MULTIPLY BY
sq inch	(sq in)	sq millimeter	(mm^2)	645,1600
sq inch	(sq in)	sq centimeter	(cm^2)	6,4516
sq foot	(sq ft)	sq meter	(m^2)	0,0929
sq yard	(sq yd)	sq meter	(m^2)	0,8361
acre		sq meter	(m^2)	4046,86
sq mile		sq kilometer	(km^2)	2,5898

VOLUME

FROM METRIC		TO IMPERIAL		MULTIPLY BY
cubic centmeter	(cc^3)	cubic inch	(cu in)	0,0610
cubic meter	(m^3)	cubic foot	(cu ft)	35,3134
cubic meter	(m^3)	liter	(l)	1000,0000
liter	(l)	pint	(pt)	1,7599
liter	(l)	imperial gallon		0,2198
liter	(l)	us gallon		0,2642
liter	(l)	us barrel		0,0063
us barrel		us gallon		42,0000

FROM IMPERAL		TO METRIC		MULTIPLY BY
cubic inch	(cu in)	cubic centmeter	(cc^3)	16,3871
cubic foot	(cu ft)	cubic meter	(m^3)	0,0283
liter	(l)	cubic meter	(m^3)	0,0010
pint	(pt)	liter	(l)	0,5682
imperial gallon		liter	(l)	4,5460
us gallon		liter	(l)	3,7854
us barrel		liter	(l)	158,98
us gallon		us barrel		0,0238

WEIGHT

FROM METRIC		TO IMPERIAL		MULTIPLY BY
gram	(g)	dram	(dr)	0,5644
gram	(g)	grain	(gr)	15,4324
gram	(g)	ounce	(oz)	0,0353
gram	(g)	pound	(lb)	0,0022
kilogram	(kg)	pound	(lb)	2,2046
kilogram	(kg)	hundredweight	(cwt)	0,0197
metric ton	(t)	kilogram	(kg)	1000,0000
metric ton	(t)	ton	(t)	0,9842

FROM IMPERAL		TO METRIC		MULTIPLY BY
dram	(dr)	gram	(g)	1,7718
grain	(gr)	gram	(g)	0,0648
ounce	(oz)	gram	(g)	28,3495
pound	(lb)	gram	(g)	453,5923
pound	(lb)	kilogram	(kg)	0,4536
hundredweight	(cwt)	kilogram	(kg)	50,8023
kilogram	(kg)	metric ton	(t)	0,0010
ton	(t)	metric ton	(t)	1,0161

Norsok Standard
http://www.standard.no/

British Standards Institution
http://www.bsi-global.com/

American Petroleum Institute
http://www.api.org/

American society of mechanical engineers
http://www.asme.org/

American society for testing of materials
http://www.astm.org/

Manufacturers standardization society of the valve and fittings industry
http://mss-hq.org/

National association of corrosion engineers
http://www.nace.org/

The International Association of Oil & Gas Producers
https://www.iogp.org/bookstore/product/s563v02/

TR2000 https://tr2000.equinor.com/TR2000/index.jsp

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