Fastwell™

FASTWELL™
FITTINGS INDUSTRIES

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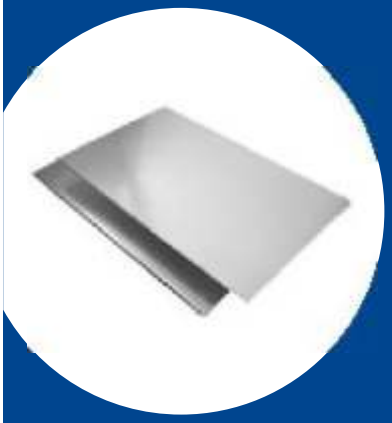


Stainless Steel

Alloy Steel

Carbon Steel

CUSTOMER SATISFACTION THROUGH EFFICIENT LOGISTICS

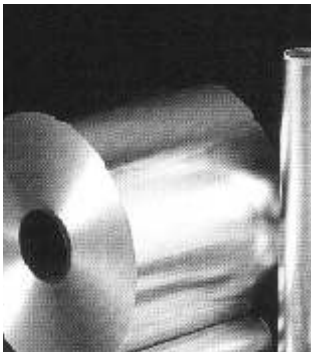
We are a professionally managed company started by a team of dynamic young Entrepreneurs. We are in the business of Manufacturing, Importing & Exporting & Stocking of all Ferrous & Non-ferrous metals/products used in various core industries.

We are one of the leading manufacturers, exporters & suppliers of Stainless Steel, Carbon Steel, Alloy Steel, Copper, Brass, Monel, Inconel, Aluminium, Hastalloy, Lead in the shape of Pipes, Tubes, Rods, Sheets, Plates, Wires, Angles, Coils, Strips and the entire range of Pipes Fittings such as BW/ SW/Screwed/ Forged & Compression Type with Ferrules such as Elbows, Tees, Reducers, Stubends, Flanges, Unions, Caps, Nipples, Couplings, Elbowlets, Weldolets, Nuts, Bolts, Studs, Washers, Valves & Gaskets etc.

Right product for the right requirement at the right price, i.e. rather than a mere supplier of the product we take utmost efforts in understanding the client's requirement, identifying the need product at the right price.

Over a decade of successful growth has prompted us to look into other export markets with renewed vigour. Today we are exporting to various countries like US, European, African, Far East etc. What makes us tick and what is our common hallmark is an eye for quality & a true sense of service.

We will be glad if you could register us in your list of your approved vendors & send us your regular enquiries.



SUMMARY OF THE MAIN ASTM STANDARDS GENERALLY USED FOR PIPING

ASTM	Grade	Chemical requirement percent (%)										Mechanical requirements			
		C Max	MN max	P max	S max	Si max	Ni	Cr	Mo	Cu	Others	Tensile Strength mini- Mpa	Yeild Strength mini-MPa	Elong. mini %	Impact test at C F
A53	A	0.25	0.95	0.05	0.06		0.40max	0.40max	0.15max	0.40max	0.08max	330	205	36	
	B	0.30	1.20	0.05	0.06		0.40max	0.40max	0.15max	0.40max	0.08max	415	240	29.5	
A106	A	0.25	0.27-0.93	0.035	0.035	0.10min	0.40max	0.40max	0.15max	0.40max	0.08max	330	205	L35-T25	
	B	0.30	0.29-1.06	0.035	0.035	0.10min	0.40max	0.40max	0.15max	0.40max	0.08max	415	240	L30-T16.5	
	C	0.35	0.29-1.06	0.035	0.035	0.10min	0.40max	0.40max	0.15max	0.40max	0.08max	485	275	L30-T16.5	
A312	TP 304	0.08	2.00	0.040	0.030	0.75	8.00-11.0	18.0-20.0				515	205	L35-T25	
	TP 304L	0.035	2.00	0.040	0.030	0.75	8.00-13.0	18.0-20.0				485	170	L35-T25	
	TP 310S	0.08	2.00	0.045	0.030	0.75	19.0-22.0	24.0-26.0	0.75 max			515	205	L35-T25	
	TP 316	0.08	2.00	0.040	0.030	0.75	11.0-14.0	16.0-18.0	2.00-3.00			515	205	L35-T25	
	TP316L	0.035	2.00	0.040	0.030	0.75	10.0-15.0	16.0-18.0	2.00-3.00			485	170	L35-T25	
	TP317L	0.035	2.00	0.040	0.030	0.75	11.0-15.0	18.0-20.0	3.00-4.00			515	205	L35-T25	
	TP 321	0.08	2.00	0.040	0.030	0.75	9.00-13.0	17.0-20.0			Ti >5xC< 0.70	515	205	L35-T25	
	TP 347	0.08	2.00	0.040	0.030	0.75	9.00-13.0	17.0-20.0			Cb + Ta > 10xC < 1.10	515	205	L35-T25	
A333	3	0.19	0.31-0.64	0.025	0.025	0.18-0.37	3.18-3.82					450	240	L30-T20	-100 -150
	4	0.12	0.50-1.05	0.025	0.025	0.08-0.37	0.47-0.98	0.44-1.01		0.40-0.75	Ai 0.40-0.30	415	240	L30-T16.5	-100 -150
	6	0.30	0.29-1.06	0.025	0.025	0.10 min						415	240	L30-T16.5	- 45 - 50
	7	0.19	0.90	0.025	0.025	0.13-0.32	2.03-2.57					450	240	L30-T22	- 75 - 100
	8	0.13	0.90	0.025	0.025	0.13-0.32	8.40-9.60					690	515	L22	-195 -320
	9	0.20	0.40-1.06	0.025	0.025		1.60-2.24			0.75-1.25		435	315	L28	- 75 - 100
A335	P1	0.10-0.20	0.30-0.80	0.025	0.025	0.10-0.05			0.44-0.65			380	205	L30-T20	
	P2	0.10-0.20	0.30-0.61	0.025	0.025	0.10-0.30		0.50-0.81	0.44-0.65			380	205	L30-T20	
	P5	0.15	0.30-0.60	0.025	0.025	0.50		4.00-6.00	0.45-0.65			415	205	L30-T20	
	P9	0.15	0.30-0.60	0.025	0.025	0.25-1.00		8.00-10.0	0.90-1.10			415	205	L30-T20	
	P11	0.05-0.15	0.30-0.60	0.025	0.025	0.50-1.00		1.00-1.50	0.44-0.65			415	205	L30-T20	
	P12	0.05-0.15	0.30-0.61	0.025	0.025	0.50		0.80-1.25	0.44-0.65			415	220	L30-T20	
	P15	0.05-0.15	0.30-0.60	0.025	0.025	1.15-1.65		-	0.44-0.65			415	205	L30-T20	
	P21	0.05-0.15	0.30-0.60	0.025	0.025	0.50		2.65-3.35	0.80-1.06			415	205	L30-T20	
	P22	0.05-0.15	0.30-0.60	0.025	0.025	0.50		1.90-2.60	0.87-1.13			415	205	L30-T20	
	P91	0.08-0.12	0.30-0.60	0.025	0.025	0.20-0.50	0.40max	8.00-9.50	0.85-1.05		Cb-0.06-0.10, Vo 0.18-0.25, N-0.030-0.070 Ai -0.40 max	585	415	L20	
A358	TP304	0.08	2.00	0.045	0.030	0.75	8.0-10.50	18.0-20.0	-			Class 1 : Double welded pipes & full Radiography			
	TP310	0.08	2.00	0.045	0.030	0.50	19.0-22.0	24.0-26.0	-			Class 2 : Double welded no Radiography			
	TP316	0.08	2.00	0.045	0.030	0.75	10.0-14.0	16.0-18.0	2.0-3.0			Class 3 : Single welded full Radiography			
	TP316L	0.08	2.00	0.045	0.030	0.75	10.0-14.0	16.0-18.0	2.0-3.0			Class 4 : Single welded full Radiography root pass without addition of filter			
	TP317L	0.030	2.00	0.045	0.030	0.75	11.0-15.0	18.0-20.0	3.0-4.0						
	TP321	0.08	2.00	0.045	0.030	0.75	9.0-12.0	17.0-19.0	-		Ti >5xC< 0.70	Class 5 : Double Welded spot Radiography			
	TP 347	0.08	2.00	0.045	0.030	0.75	9.0-13.0	17.0-19.0	-		Cb + Ta > 10xC < 1.10				

Formula - Sheet Width Required for Rolled & Welded Pipes - O. D. (mm) - Thickness (mm) x 3.14 = Sheet Width.

L-Longitudinal
T- Transverse

SUMMARY OF THE MAIN ASTM STANDARDS GENERALLY USED FOR SHEETS / PLATES

ASTM	Grade	Chemical requirements percent (%)										Mechanical requirements				
		C max	Mn max	P max	S max	Si max	Ni	Cr.	Mo	Cu	Others	Tensile Strength mini-MPa	Yeild Strength mini-MPa	Elong mini %	Hardness Brinell	Rockwell
A240	304	0.08	2.00	0.045	0.030	0.75	8.00-10.5	18.00-20.0				515	205	40	201	92
	304L	0.03	2.00	0.045	0.030	0.75	8.00-12.0	18.00-20.0				485	170	40	201	92
	310	0.08	2.00	0.045	0.030	1.50	19.0-22.0	24.0-26.0				515	205	40	217	95
	316	0.08	2.00	0.045	0.030	0.75	10.0-14.0	16.0-18.0	2.00-3.00			515	205	40	217	95
	316L	0.03	2.00	0.045	0.030	0.75	10.0-14.0	16.0-18.0	2.00-3.00			485	170	40	217	95
	317L	0.03	2.00	0.045	0.030	0.75	11.0-15.0	18.0-20.0	3.00-4.00			515	205	40	217	95
	321	0.08	2.00	0.045	0.030	0.75	9.00-12.0	17.0-19.0			Ti >5xC< 0.70	515	205	40	217	95
	347	0.08	2.00	0.045	0.030	0.75	9.00-13.0	17.0-19.0			Cb + Ta > 10xC < 1.10	515	205	40	201	92
A 387 Class1 Class2	2	005-0.21	0.55-0.80	0.035	0.040	0.15-0.40		0.50-0.80	0.45-0.60			Class 1 / Class 2	Class 1 / Class 2			
	5	0.15	0.30-0.60	0.04	0.030	0.050		4.00-6.00	0.45-0.65			380 / 486	230 / 310	22	max201HB	max92HRB
	7	0.15	0.30-0.60	0.030	0.030	1.00		6.00-8.00	0.45-0.65			415 / 515	205 / 310	18	max202HB	max92HRB
	9	0.15	0.30-0.60	0.030	0.030	1.00		8.00-10.0	0.90-1.10			415 / 515	205 / 310	18	max217HB	max95HRB
	11	0.04-0.17	0.40-0.65	0.035	0.04	0.50-0.80		1.00-1.50	0.45-0.65			415 / 515	205 / 310	18	max217HB	max95HRB
	12	0.04-0.17	0.40-0.65	0.035	0.04	0.15-0.40		0.80-1.15	0.45-0.60			415 / 515	240 / 310	22	max217HB	max95HRB
	21	0.04-0.17	0.30-0.60	0.035	0.035	0.50		2.75-3.25	0.90-1.10			380 / 450	230 / 275	22	max217HB	max95HRB
	22	0.05-0.17	0.30-0.60	0.035	0.035	0.50		2.00-2.50	0.90-1.10			415 / 515	205 / 310	18	max201HB	max92HRB
A 515	55	0.22	0.90	0.035	0.04	0.15-0.40						380-515	205	27		
	60	0.27	0.90	0.035	0.04	0.15-0.40						415-550	220	25		
	65	0.31	0.90	0.035	0.04	0.15-0.40						450-585	240	23		
	70	0.33	1.20	0.035	0.04	0.15-0.40						485-620	260	21		
A 516	55	0.20	0.60-1.20	0.035	0.04	0.15-0.40						380-515	205	27		
	60	0.23	0.85-1.20	0.035	0.04	0.15-0.40						415-550	202	25		
	65	0.26	0.85-1.20	0.035	0.04	0.15-0.40						450-585	240	23		
	70	0.28	0.85-1.20	0.035	0.04	0.15-0.40						485-620	260	21		
A 537	Class 1	0.24	0.70-1.35	0.035	0.040	0.15-0.40	0.25 max	0.80 max	0.35 max			485-620	345	22		
	Class 2	0.24	0.70-1.35	0.035	0.040	0.15-0.40	0.25 max	0.80 max	0.35 max			550-690	415	22		

IS-2062-92 STEEL FOR GENERAL STRUCTURAL PURPOSES

Grade	Designation	% Chemical Composition						Tensile strength (Min) Kg/mm2	Yield Strength (Min) Mpa			%El.in gauge length 5.56OSo	Bend Test	Std.test Piece charpy V Notch Impact Energy Joule min
		C max	MN max	S max	P max	Si max	C. E. max		<20 min	<20-40 min	>40min			
A	FE410 WA	0.23	1.5	0.050	0.050	-	0.42	41.8	250	240	230	23	3t	-
B	FE410 WB	0.22	1.5	0.045	0.045	0.40	0.41	41.8	250	250	230	23	t<25mm	2t for 27 3t for t>25mm
C	FE410 WC	0.20	1.5	0.040	0.040	0.40	0.36	41.8	250	250	230	23	2t	27

IS-2002-62 STEEL PLATES FOR BOILERS

	Chemical Composition				Tensile Test		Elongation	
Designation	c max	Si max	P max	S max	Tensile strength Mpa	Yield Strength Mpa	Test Piece	%min
IS 2002-1	0.18	0.10-0.35	0.040	0.040	362-442	540	5.65oSo 4oSo	26 30
IS 2002-2A	0.20	0.10-0.35	0.050	00.50	412-491	491	5.60oSo 4oSo	25 29
IS 2002-2B	0.22	0.10-0.35	0.050	0.050	510-608	491	5.65oSo 4oSo	20 24

Formula - Weight of Stainless Steel Sheets/Plates = Length (mm) x Width (mm) x Thickness (mm) x 7.86 = Kg./Sheet.

TOLERANCE

DIMENSIONAL VARIATION AS PER ASTM SPECIFICATIONS FOR TUBES

Tube Specification ASTM	Out Side Diameter (mm)	Permissible variations in Outside Diameter (mm)				Permissible variations in Wall Thickness (mm)												Under All THK. HFS/ CFS/ WLD
		Over		Under		Over												
						2.4 Wt.			>2.4 t0 3.8 Ind.			>3.8-4.6 Ind.			>4.6		
		HF Seamles	CFS and Welded	HFS	CFS and Welded	HFS	CFS	WLD	HFS	CFS	WLD	HFS	CFS	WLD	HFS	CFS	WLD	
A-213 Seamless Ferritic& Austinitic Tube	Under 25.4		0.10		0.10		20%			20%			20%			20%		
	25.4 to 38.1Incl.		0.15		0.15													
	Over 38.1 to 50.8 Excl.		0.20		0.20	40%		18%	35%		18%	33%		18%	28%		18%	
A 249 Welded Heat Ex. & Condenser Tube	Over 50.8 to 63.5 Excl.	0.4	0.25	0.8	0.25													○
	Over 63.5 to 76.2 Excl.		0.30		0.30		22%			22%			22%			22%		
A 269 Seamless & Welded Austinitc S. S.Tubes	Over 76.2 to 101.6 Incl.		0.38		0.38													
	Over 101.6 to 190.5 Incl.		0.38	1.2	0.64													

DIMENSIONAL VARIATION AS PER ASTM SPECIFICATIONS FOR PIPES

Tubes Specification ASTM	Nominal Pipe Size(mm)	Permissible variations in Outside Diameter (mm)		Permissible variations in THK	Permissible variations in Length (mm)		Straight tolerance
		Over	Under		Over	Under	Max. curvature in any metere Length
A 106 CS Seamless Pipe for High Temp.	3 to 40 Incl	0.4	0.8	-12.5%	6	0	Up to 125 mm O/D & 12 mm THK Pipe -0.76 mm
	Over 40 to 100 Incl.	0.8	0.8				
A 312 Seamless & Welded Austinitic SS Pipes	Over 100 to 200 Incl.	1.6	0.8				Over125 mm O/D to 200 mm O/D Incl. -1.15 mm
	Over 200 to 450 Incl.	2.4	0.8				
A333 Seamless & Welded pipe for LT Service	Over 450 to 650 Incl.	3.2	0.8	Except for Welded pipe will filler Metal Added			
A 335 Seamless Ferritic Alloy Steel Pipe for High Temp. Service	Over 650 to 850 Incl.	4.0	0.8				Over 200 mm O/D to 324 mm O/D Inclusive -1.52 mm
	Over 850 to 1200	4.8	0.8				
A 358 ERW Austinitic Cr-NiAs pipe for High Temp.serv.	All Sizes (upto 200 NB)	+0.5% (Based on Circum-ferencial Measurement)	-0.5%	-0.3 mm			3 mm 3/metres
A409 ERW Large Dia Austinitic Steel Pipes	450 to 750 (SCH 5 S & 10 S)	+0.2% +0.4% Based on Circumferential Measurement	+0.2% (For T<4.8mm) -0.4% (For T 4.8 mm)	-0.46 mm			4.8mm/3 metres

CARBON STEEL & STAINLESS STEEL WEIGHT PER KG/MTR.

Nominal pipe size	O, D mm	10	20	30	STD	40	60	XS	80	100	120	140	160	XXS	Nominal pipe size	FIGURES BASED ON AUSTENITIC STEEL 5S	10S	40S	80S	SHIPPING Vol/m m³
1/8	10,30				1,73 **0,37**	1,73 **0,37**		2,41 **0,47**	2,41 **0,47**						1/8		1,24 **0,28**	1,73 **0,36**	2.41 **0.48**	0,0001
1/4	13,70				2,24 **0,63**	2,24 **0,63**		3,02 **0,80**	3,02 **0,80**						1/4		1,65 **0,51**	2,24 **0,64**	3.02 **0.82**	0,0002
3/8	17,10				2,31 **0,84**	2,31 **0,84**		3,20 **1,10**	3,20 **1,10**						3/8		1,65 **0,64**	2,31 **0,86**	3.20 **1.12**	0,0003
1/2	21,30				2,77 **1,27**	2,77 **1,27**		3,73 **1,62**	3,73 **1,62**				4,78 **1,95**	7,47 **2,55**	1/2	1,65 **0,82**	2,11 **1,01**	2,77 **1,30**	3.73 **1.65**	0,0004
3/4	26,70				2,87 **1,69**	2,87 **1,69**		3,91 **2,20**	3,91 **2,20**				5,56 **2,90**	7,82 **3,64**	3/4	1,65 **1,04**	2,11 **1,31**	2,87 **1,71**	3.91 **2.24**	0,0007
1	33,40				3,38 **2,50**	3,38 **2,50**		4,55 **3,24**	4,55 **3,24**				6,35 **4,24**	9,09 **5,45**	1	1,65 **1,33**	2,77 **2,13**	3,38 **2,55**	4.55 **3.29**	0,0011
1 1/4	42,20				3,56 **3,39**	3,56 **3,39**		4,85 **4,47**	4,85 **4,47**				6,35 **5,61**	9,70 **7,77**	1 1/4	1,65 **1,68**	2,77 **2,76**	3,56 **3,46**	4.85 **4.56**	0,0018
1 1/2	48,30				3,68 **4,05**	3,68 **4,05**		5,08 **5,41**	5,08 **5,41**				7,14 **7,25**	10,15 **9,56**	1 1/2	1,65 **1,95**	2,77 **3,17**	3,68 **4,13**	5.08 **5.51**	0,0023
2	60,30				3,91 **5,44**	3,91 **5,44**		5,54 **7,48**	5,54 **7,48**				8,74 **11,11**	11,07 **13,44**	2	1,65 **2,24**	2,77 **4,01**	3,91 **5,54**	5.54 **7.63**	0,0036
2 1/2	73,00				5,16 **8,63**	5,16 **8,63**		7,01 **11,41**	7,01 **11,41**				9,53 **14,92**	14,02 **20,39**	2 1/2	2,11 **3,77**	3,05 **5,36**	5,16 **8,81**	7.01 **11.64**	0,0053
3	88,90				5,49 **11,29**	5,49 **11,29**		7,62 **15,27**	7,62 **15,27**				11,13 **21,35**	15,24 **27,68**	3	2,11 **4,60**	3,05 **6,59**	5,49 **11,52**	7.62 **15.59**	0,0079
3 1/2	101,60				5,74 **13,57**	5,74 **13,57**		8,08 **18,63**	8,08 **18,63**				- -	- -	3 1/2	2,11 **5,29**	3,05 **7,55**	5,74 **13,84**	8.08 **19.01**	0,0103
4	114,30				6,02 **16,07**	6,02 **16,07**		8,56 **22,32**	8,56 **22,32**		11,13 **28,32**		13,49 **33,54**	17,12 **41,03**	4	2,11 **5,96**	3,05 **8,52**	6,02 **16,40**	8.56 **22.77**	0,0130
5	141,30				6,55 **21,77**	6,55 **21,77**		9,53 **30,97**	9,53 **30,97**		12,70 **40,28**		15,88 **49,11**	19,05 **57,43**	5	2,77 **9,67**	3,40 **11,82**	6,55 **22,20**	9.53 **31.59**	0,0199
6	168,30				7,11 **28,26**	7,11 **28,26**		10,97 **42,56**	10,97 **42,56**		14,27 **54,20**		18,26 **67,56**	21,95 **79,22**	6	2,77 **11,55**	3,40 **14,13**	7,11 **28,83**	10.97 **43.42**	0,028
8	219,10		6,35 **33,31**	7,04 **36,81**	8,18 **42,55**	8,18 **42,55**	10.30 53.10	12,70 **64,64**	12,70 **64,64**	15,09 **75,92**	18,26 **90,44**	20,62 **100,92**	23,01 **111,27**	22,23 **107,92**	8	2,77 **15,09**	3,76 **20,37**	8,18 **43,39**	12.70 **65.95**	0,048
10	273,10		6,35 **41,77**	7,80 **51,03**	9,27 **60,31**	9,27 **60,31**	12.70 81.50	12,70 **81,55**	15,09 **96,01**	18,26 **114,75**	21,44 **133,06**	25,40 **155,15**	28,58 **172,33**	25,40 **155,15**	10	3,40 **23,08**	4,19 **28,34**	9,27 **61,52**	12.70 **83.19**	0,074
12	323,90		6,35 **49,73**	8,38 **65,20**	9,53 **73,88**	10,31 **79,73**	14.30 109.00	12,70 **97,46**	17,48 **132,08**	21,44 **159,91**	25,40 **186,97**	28,58 **208,14**	33,32 **238,76**	25,40 **186,97**	12	3,96 **31,89**	4,57 **36,73**	9,53 **75,32**	12.70 **99.43**	0,104
14	355,60	6,35 **54,69**	7,92 **67,90**	9,53 **81,33**	9,53 **81,33**	11,13 **94,55**	15.10 126.40	12,70 **107,39**	19,05 **158,10**	23,83 **194,96**	27,79 **224,65**	31,75 **253,56**	35,71 **281,70**		14	3,96 **35,06**	4,78 **42,14**			0,126
16	406,40	6,35 **62,64**	7,92 **77,83**	9,53 **93,27**	9,53 **93,27**	12,70 **123,30**	16.70 160.00	12,70 **123,30**	21,44 **203,53**	26,19 **245,56**	30,96 **286,64**	363,53 **333,19**	40,49 **365,35**		16	4,19 **42,41**	4,78 **48,26**			0,165
18	457,00	6,35 **70,57**	7,92 **87,71**	11,13 **122,38**	9,53 **105,16**	14,27 **155,80**	19.00 206.00	12,70 **139,15**	23,83 **254,55**	29,36 **309,62**	34,93 **363,56**	39,67 **408,26**	45,24 **459,37**		18	4,19 **47,77**	4,78 **54,36**			0,208
20	508,00	6,35 **78,55**	9,53 **117,15**	12,70 **155,12**	9,53 **117,15**	15,09 **183,42**	20.60 248.5	12,70 **155,12**	26,19 **311,17**	32,54 **381,53**	38,10 **441,49**	44,45 **508,11**	50,01 **564,81**		20	4,78 **60,46**	5,54 **70,00**			0,258
22	559,00	6,35 **86,54**	9,53 **129,13**	12,70 **171,09**	9,53 **129,13**	- -	22.20 294.00	12,70 **171,09**	28,58 **373,83**	34,93 **451,42**	41,28 **527,02**	47,63 **600,63**	53,98 **672,26**		22	4,78 **66,57**	5,54 **77,06**			0,312
24	610,00	6,35 **94,53**	9,53 **141,12**	14,27 **209,64**	9,53 **141,12**	17,48 **255,41**	24.60 355.00	12,70 **187,06**	30,96 **442,08**	38,89 **547,71**	46,02 **640,03**	52,37 **720,15**	59,54 **808,22**		24	5,54 **84,16**	6,35 **96,37**			0,372
26	660,00	7,92 **127,36**	12,70 **202,72**	- -	9,53 **152,87**	- -		12,70 **202,72**							26					0,435
28	711,00	7,92 **137,32**	12,70 **218,69**	15,88 **271,21**	9,53 **164,85**	- -		12,70 **218,69**							28					0,505
30	762,00	7,92 **147,28**	12,70 **234,67**	15,88 **292,18**	9,53 **176,84**	- -		12,70 **234,67**							30	6,35 **120,72**	7,92 **150,36**			0,580
32	813,00	7,92 **157,24**	12,70 **250,64**	15,88 **312,15**	9,53 **188,82**	17,48 **342,91**		12,70 **250,64**							32					0,660
34	864,00	7,92 **167,20**	12,70 **266,61**	15,88 **332,12**	9,53 **200,31**	17,48 **364,90**		12,70 **266,61**							34					0,746
36	914,00	7,92 **176,96**	12,70 **282,27**	15,88 **351,70**	9,53 **212,56**	19,05 **420,42**		12,70 **282,27**							36					0,835
38	965,00				9,53 **224,54**			12,70 **298,24**							38					0,931
40	1016,00				9,53 **236,53**			12,70 **314,22**							40					1,032
42	1067,00				9,53 **248,52**			12,70 **330,19**							42					1,138
44	1118,00				9,53 **260,50**			12,70 **346,16**							44					1,249
46	1168,00				9,53 **272,25**			12,70 **351,82**							46					1,364
48	1219,00				9,53 **284,24**			12,70 **377,79**							48					1,485

Value for information only

ASTM A105/A105 M FORGED SOCKET WELD, SCREWED, CARBON STEEL PIPE FITTINGS

ASTM GRADE	C	Mn	Si	S	P	Cr	Ni	Mo	Other	Tensile (MPa)	Psi Yield (MPa)	Elongation %	Hardness	Redu %
A 105/105M	0.35 max	0.60 1.05	0.35 max	0.50 max	0.040 max	-	-	-	C4 - 0.40 Vn - 0.03 Cu - 0.02	485	(250)	22-	187 HB max	30
ASTM A182 / A18M AUSTENITIC, STAINLESS STEEL FORGED (S W), SCREWED, FLANGES, FOR HIGH TEMPS, SERVICES														
A 182/182M F 304	0.08 max	2.00 max	1.00 max	0.03 max	0.04 max	18.0 20.0	8.0 11.0	-	-	515	205	30	-	50
A 182/182M F 304L	0.035 max	2.00 max	1.00 max	0.03 max	0.04 max	18.0 20.0	8.0 13.0	-	-	485	170	30	223	50
A 182/182M F 316	0.08 max	2.00 max	1.00 max	0.03 max	0.04 max	16.0 18.0	10.0 14.0	2.0 3.0	-	515	205	30 25	-	50 45
A 182/182M F 316L	0.35 max	2.00 max	1.00 max	0.03 max	0.04 max	16.0 18.0	10.0 15.0	2.0 3.0	-	485	170	30	-	50
A182/182M F316H	0.04 0.10	2.00 max	1.00 max	0.03 max	0.04 max	16.0 18.0	10.0 14.0	2.0 3.0	-	515	205	30	-	50
A 182/182M F 321	0.08 max	2.00 max	1.00 max	0.03 max	0.04 max	17.0 min	9.0 12.0	-	Ti >5xC < 0.70	515	205	30	-	50
A 182/182M F 310	0.15 max	2.00 max	1.00 max	0.03 max	0.04 max	24.0 26.0	19.0 22.0	-	-	515	205	30	-	50
A 182/182M F 317L	0.030 max	2.00 max	1.00 max	0.03 max	0.045 max	18.0 20.0	11.0 15.0	3.00 4.0	-	485	170	30	-	50
A 182/182M F 347H	0.04 0.10	2.00 max	1.00 max	0.03 max	0.04 max	17.0 20.0	9.0 13.0		Cb + Ta > 10 xC < 1.10	515	205	30	-	50
ASMA A182/A182M FORGED ALLOY STEEL, (S.W), SCREWED, FLANGES, FOR HIGH TEMPERATURE SERVICES														
A 182/182M F1	0.28 max	0.60 0.90	0.15 0.35	0.045 max	0.045 max		-	0.44 0.65	-	485	275	20	143-192	30
A 182/182M F12 class2	0.10 0.20	0.30 0.80	0.10 0.60	0.04 max	0.04 max	0.80 1.25	-	0.44 0.65	-	485	275	20	143-207	30
A 182/182M F11 class 2	0.10 0.20	0.30 0.80	0.50 1.00	0.04 max	0.04 max	1.0 1.50	-	0.44 0.65	-	485	275	20	143-207	30
A 182/182M F22 class 3	0.05 0.15	0.30 0.80	0.5 max	0.04 max	0.04 max	2.00 2.50	0.5 max.	0.90 1.10	-	515	310	20	156-207	30
A 182/182M F5	0.15 max	0.30 0.60	0.50 max	0.03 max	0.03 max	4.0 6.0	0.5 max	0.44 0.65	-	485	275	20	143-217	35
A 182/182M F9	0.05 max	0.30 0.60	0.50 max	0.03 max	0.03 max	8.0 10.0	-	0.90 1.10	-	585	386	20	179-217	40

ASTM A234/234M PIPING FITTINGS OR WROUGHT CARBON STEEL FOR MODERATE AND ELEVATED TEMPERATURES

ASTM GRADE	C	Mn	Si	S	P	Cr	Ni	Mo	Other	Tensile Ps(MPa)	Yield	Elongation %	Hardness HB
A 234 WPB	0.30 max.	0.29 1.06	0.10 min.	0.058 max	0.050 max	-	-	-	-	415-585	240	22	197
A 234 WPC	0.35 max	0.29 1.06	0.10 min	0.058 max	0.050 max	-	-	-	-	485-655	275	22	197
ASTM A234 / 234M PIPE FITTINGS OF WROUGHT ALLOY STEEL FOR MODERATE AND ELEVATED TEMPERATURES													
A 234/234M WP12 CL-1	0.05 0.20	0.30 0.80	0.60 max	0.045 max	0.035 max	0.80-1.25	-	0.44 0.65	-	415-58)	220	22	197
A 234/234M WP12 CL-2	0.05 0.20	0.30 0.80	0.60 max	0.045 max	0.045 max	0.80-1.25	-	0.44 0.65	-	485-655	275	22	197
A 234/234M WP11CL-1	0.05 0.15	0.30 0.60	0.50 1.00	0.030 max	0.030 max	1.00 1.50	-	0.44 0.65	-	415-585	205	22	197
A 234/234M WP11 CL-2	0.05 0.20	0.30 0.60	0.50 1.00	0.040 max	0.040 max	1.00 1.50	-	0.44 0.65	-	485-655	275	22	197
A 234/234M WP11CL-3	0.05 0.20	0.30 0.60	0.50 1.00	0.040 max	0.040 max	1.00 1.50	-	0.44 0.65	-	520-690	310	22	197
A 234/234M WP22 CL-1	0.05 0.15	0.30 0.60	0.50 max	0.040 max	0.040 max	1.90 2.60	-	0.87 1.13	-	415-585	205	22	197
A 234/234M WP22 CL-3	0.05 0.15	0.30 0.60	0.50 max	0.040 max	0.040 max	1.90 2.60	-	0.87 1.13	-	520-690	310	22	197
A 234/234M WP 5	0.15 max	0.30 0.60	0.50 max	0.030 max	0.040 max	4.00 6.00	-	0.44 0.65	-	415-585	205	22	217
A 234/234M WP 9	0.15 max	0.30 0.60	0.25 1.00	0.030 max	0.030 max	8.00 10.00	-	0.90 1.10	-	415-585	205	22	217
ASMA 403 / A 403M WROUGHT AUSTENITIC STAINLESS STEEL PIPE FITTINGS													
A 403/403M WP 304	0.08 max	2.00	1.00	0.030	0.045	18.00 20.00	8.00 11.00	-	-	515	205	20	
A 403/403M WP 304L	0.035 max	2.00	1.00	0.030	0.045	18.00 20.00	8.00 13.00	-	-	485	170	20	-
A 403/403M WP 309	0.015 max	2.00	1.00	0.030	0.045	22.00 24.00	12.00 15.00	-	-	515	205	20	-
A 403/403M WP 310	0.015 max	2.00	1.50	0.030	0.045	24.00 26.00	19.00 22.00	-	-	515	205	20	-
A 403/403M WP 316	0.08 max	2.00	1.00	0.030	0.045	16.00 18.00	10.00 14.00	2.00 3.00	-	515	205	20	-
A 403/403M WP 316 L N	0.030 max	2.00	0.75	0.030	0.040	16.00 18.00	11.00 14.00	2.00 3.00	N 0.1-0.16	515	205	20	-
A 403/403M WP 316L	0.035 max	2.00	1.00	0.030	0.045	16.00 18.00	10.00 15.00	2.00 3.00	-	485	170	20	-
A 403/403M WP 317L	0.030 max	2.00	1.00	0.030	0.045	18.00 20.00	11.00 15.00	3.00 4.00	-	515	205	20	-
A 403/403M WP 321	0.08 max	2.00	1.00	0.030	0.045	17.00 20.00	9.00 13.00	-	Ti >5xC< 0.70	515	205	20	-
A 403/403M WP 347H	0.04-0.10	2.00	1.00	0.030	0.045	17.00 20.00	9.00 13.00	-	Cb + Ta > 10xC < 1.10	515	205	20	-

ASTM A 815/A 815M WROUGHT FERRITIC /AUSTENITIC & MARTENSITIC STAINLESS STEEL PIPE FITTINGS

ASTM GRADE	C	Mn	Si	S	P	Cr	Ni	Mo	Other	Tensile (Mpa)	Yield Strip/Round	Elongation %	Hardness Brinell	Matl.
A 815 WP 27	0.010	0.75	0.40	0.020	0.020	25-27.5	0.50	0.75-1.50	Cu- 0.20	450-600	40 275	20.0	190	FERRITIC
A 815 WP430	0.12	1.00	1.0	0.030	0.040	16-18	0.50	-	-	450-620	35 240	20.0	190	FERRITIC
A 185 WP 446	0.20	1.5	0.75	0.030	0.040	23-30	0.50	-	Ni-10-0.25	425-655	40 275	18.0	207	FERRITIC
A 815 WP 410	0.15	1.00	1.0	0.030	0.040	11.5-13.5	0.50	-	-	425-655	30 205	20.0	207	MARTENISTIC
A 815 WP 429	0.12	1.00	0.75	0.03	0.04	14-16	0.50			620-795	65 450	25.0	190	FERRITIC

ASTM A 350/ A350M FORGED SOCKET WELD, SCREWED , CARBON STEEL LOW-TEMPARATURE SERVICE PIPE FITTINGS

ASTM GRADE	C	Mn	Si	S	P	Cr	Ni	Mo	Other	Tensile (Mpa)	Yield (Mpa)	Elongation Strip\Round	Jutos.Av.Ml	Redu. in Area.(%)
A350 LF1	0.30 max	1.35 max	0.15 0.30	0.040 max	0.035 max	0.30 max	0.40 max	0.12 max	Cu-0.4 max Cb-0.02 max Va-0.3 max	415-585	205	25	18/14 (-28.9°)	38
A LF2	0.30 max	1.35 max	0.15 0.30	0.040 max	0.035 max	0.30 max	0.40 max	0.12 max	Cu-0.4 max Cb-0.02 max Va-0.03 max	485-655	250	30	20/16 (-45.6°)	30
A LF3	0.20 max	0.90 max	0.20 0.35	0.040 max	0.035 max	0.30 max	3.25 3.75	0.12 max	Cu-0.4 max Cb-0.02 max Va-0.03 max	485-655	260	30	20/16 (-101.1°)	35
A LF5	0.30 max	1.35 max	0.20 0.35	0.040 max	0.035 max	0.30 max	1.0 2.0	0.12 max	Cu-0.4 max Cb-0.02 max Va-0.03 max	CL-1 415-585 CL- 2 485-655	CL-1 205 CL-2 260	CL-1 25 CL-2 30	20/16 (CL1&2-59.4°)	CL 1.38 CL 2.35
A LF6	0.22 max	1.15 1.50	0.15 0.30	0.025 max	0.025 max	0.30 max	0.40 max	0.12 max	Cu-0.4 max Cb-0.02 max Va-0.4-0.11 Nit-0.01-0.03	CL-1 455-495 CL- 2 515-655	CL1 360 CL2 415	CL-1 30 CL-2 28	CL.1 -20/16 CL.2 27/20 (CL.1&2-50°)	40
A LF9	0.20 max	0.40 1.06	-	0.040 max	0.035 max	0.30 max	1.60 2.24	0.12 max	Cu-0.75-1.25 Cb-0.02 max Va-0.03	(435-605)	315	28	18/14 (-73.3°)	38

ASTM A 420/A 420M WROUGHT CARBON STEEL LOW-TEMPARATURE SERVICE PIPE FITTINGS

A 420 WPL-6	0.30 max	0.39 1.06	0.10 min	0.030 max	0.030 max	-	-	-	-	415-585	240	22	17.6/13.6 (-45°)
A WPL9	0.20 max	0.40 1.06	-	0.030	0.030	-	1.60 2.24	-	Cu-0.75-1.25	435-610	315	20	17.6/13.6 (-75°)
A WPL 3	0.20 max	0.31 0.64	0.13 0.37	0.05	0.05	-	3.18 3.82	-	-	450-620	240	22	17.6/13.6 (-100°)
A WPL 8	0.13 max	0.90 max	0.13 0.37	0.030	0.030	-	8.40 9.60	-	-	690-865	515	16	33.9/27.1 (-195°)

ASTM A 193/A 193M ALLOY STEEL, CARBON STEEL & STAINLESS STEEL BOLTING FOR HIGH TEMPERATURE SERVICE

ASTM GRADE	C	Mn	Si	S	P	Cr	Ni	Mo	Other	Hardness	Tensile (MPa)	Yield (MPa)	Elongation in Area %	Redu
A193 B8-B8A	0.08	2.00	1.00	0.03	0.045	18.00	8.00	-	-	223HB	515	205	30	50
AISI Type 304		max	max	max	max	20.00	10.50	-	-					
A193B8-B8MA	0.08	2.00	1.00	0.03	0.045	16.00	10.00	2.00		223HB	515	205	30	50
AISI Type 316	max	max	max	max	max	18.00	14.00	3.00		223HB				
A193B8T-B8TA	0.08	2.00	1.00	0.03	0.045	17.00	9.00	-	Ti>5xC	223HB	515	205	30	50
AISI Type 321	max	max	max	max	max	19.00	12.00		<0.70					
A193 B8C-B8CA	0.08	2.00	1.00	0.03	0.045	17.00	9.00	-	Cb+Ta>10	192HB	515	205	30	50
AISI Type 347	max	max	max	max	max	19.00	13.00		x C <1.10					
A193B6-B6X	0.15	1.00	1.00	0.03	0.040	11.50	-			-	760	585	15	50
AISI Type 410	max	-	max	max	max	13.50								
A193 B7-B7M	0.37	0.65	0.15	0.04	0.035	0.75	-	0.15	-	-	860	720	16	50
Alloy Steel (Cr. Mo)	0.49	1.10	0.35	max	max	1.20	-	0.25	-	-				
A193B5	0.10	1.00	1.00	0.03	0.040	4.00	-	0.40	-	-	690	550	16	50
A S -5% Cr.AISI50 1	min	max	max	max	max	6.00								

ASTM A 194/ 194 M CARBON STEEL, ALLOY STEEL & STAINLESS STEEL NUTS BOLTS FOR HIGH PRESSURE & HIGH TEMPERATURE SERVICE

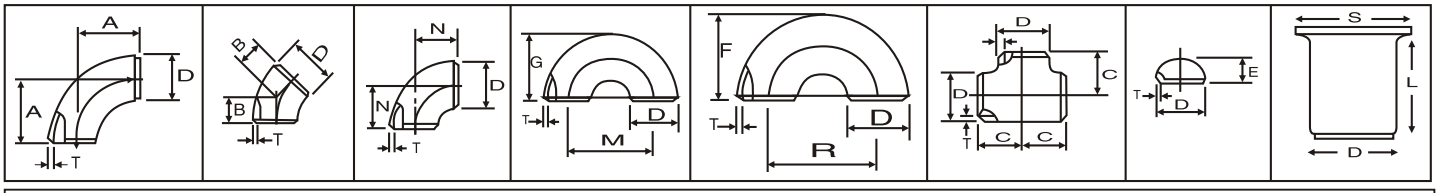
A1948/8A AISI Type 304	0.08 max	2.00 max	1.00 max	0.030 max	0.045 max	18.00 20.00	8.00 10.50	-	-	126 - 300 Grade 8 126 - 192 Grade 8 A	
A 194 8M/8MA AISI Type 316	0.08 max	2.00 max	1.00 max	0.030 max	0.045 max	16.00 18.00	10.00 14.00	2.00 3.00	-	126 - 300 Grade 8m 126 - 192 Grade 8 MA	
A194/ 8T/8TA AISI Type 321	0.08 max	2.00 max	1.00 max	0.030 max	0.045 max	17.00 19.00	9.00 12.00	- -	Ti >5xC < 0.70	126 - 300 Grade 8T	
A194/ 8C/8CA AISI Type 347	0.08 max	2.00 max	1.00 max	0.030 max	0.045 max	17.00 19.00	9.00 13.00	-	Cb + Ta > 10 xC < 1.10	126 - 300 Grade 8C 126 - 192 Grade 8 CA	
A194-6 AISI Type 410	0.15 max	1.00 max	1.00 max	0.030 max	0.040 max	11.50 13.50	-	-		228- 271	
A194 2 2HM & 2H Carbon Steel	0.40 min	1.00 max	0.40 max	0.050 max	0.040 max	- -	- -	- -	- -	159-352Gr.2 248 -352Gr.2H 159-237Gr.2HM	
A194-7/7M Alloy Steel	0.37 0.49	0.65 1.10	0.15 0.35	0.04 max	0.40 max	0.75 1.20	- -	0.15 0.25	- -	248-352Gr.7 159-237Gr.7M	
A194-B-5 AISI501	0.10 max	1.00 max	1.00 max	0.030 max	0.040 max	4.00 6.00	- -	0.40 0.65	- -	248-352 (HRC-24-38)	

ASTM SPECIFICATION - NICKEL ALLOYS

UNS No.	Corrosion Resistant Fittings	Asme Pressure Fittings	Pipe / Tubes Seamless	Pipe Welded	Tube Welded	Plate Sheet Strips	Round Bar / Wires	Forging Stock
2200	CRN	WPN	B 161	*	*	B 162	B 160	B 564
2201	CRNL	WPNL	B 161	*	*	B 162	B 160	*
4400	CRNL	WPNC	B 165			B 127	B 164	B 564
6002	CR HX	WPHX	B 622	B 619	B 626	B 435	B 572	*
6007	CR HG	WPHG	B 622	B 619	B 626	B 582	B 581	
6022	CR HC 22	WPHC 22	B 622	B 619	B 626	B 575	B 574	B 564
6025	CRV 602	WPV 602	B 163 / B167	*	*	B 168	B 166	*
6030	CRHG 30	WPHG 30	B 622	B 619	B 626	B 582	B 581	*
6045	CRV 45TM	WPV 45TM	B163 / B167	*	*	B168	B166	*
6058	CR 2120	WP 2120	B 622	B 619	B 626	B 575	B 574	B 564
6059	CR 5923	WP 5923	B 622	B 629	B 626	B 575	B 574	B 564
6200	CRHC 2000	WPHC 2000	B 622	B 619	B 626	B 575	B 574	B 564
6210	CRM 21	WPM 21	B 622	B 619	B 626	B 575	B 574	B 564
6230	CRH 230	WPH 230	B 622	B 619	B 626	B 435	B 572	B 564
6455	CR HC 4	WPHC 4	B 622	B 619	B 626	B 575	B 574	*
6600	CRNCI	WPNCI	B 167	B 517	B 516	B 168	B166	B 564
6603	CR 603 GT	WP 603GT	B163 / B 167	B 517	B 516	B 168	B 166	B 564
6625	CRN CMC	WPNCMC	B 444	B 705	B 704	B 443	B 446	B 564
6686	CRIN 686	WPIN 686	B163 / B 622	B 619	B 626	B 575	B 574	B 564
6219	CR 626SI	WP 626SI	B 444	B 705	B 704	B 443	B 446	B 564
6985	CR HG3	WPHG 3	B 622	B 619	B 626	B 582	B 581	*
8020	CR 20 CB	WP 20 CB	B 729	B 464	B 468	B 463	B 473	B 462
8031	CR 3127	WP 3127	B 622	B 619	B 626	B 625	B 649	B 564
8120	CRH 120	WPH 120	B 407	B 514	B 515	B 409	B 408	B 564
8330	CR 330	WP 330	B 535	B 710	*	B 536	B 512	B 511
8367	CR 6XN	WP 6XN	B 690	B 675	B 676	B 688	B 472 B 691	B 564 / B 462
8800	CRNIC	WPNIC	B 407	B 514	B 515	B 409	B 408	B 564
8810	CRNIC 10	WPNIC 10	B 407	B 514	B 515	B 409	B 408	B 564
8811	CRNIC 11	WPNIC 11	B 407	*	*	B 409	B 408	B 564
8825	CRNICMC	WPNICMC	B 423	B 705	B 704	B 424	B 425	B 564
8904	CR 904L	WP 904L	B 677	B 673	B 674	B 625	B 649	*
8925	CR 1925	WP 1925	B 677	B 673	B 674	B 625	B 649	*
8926	CR 1925N	WP 1925N	B 677	B 673	B 674	B 625	B 649	*
10001	CR HB	WPHB	B 622	B 619	B 626	B 333	B 335	*
10003	CR HN	WPHN	*	*	*	B 434	B 573	*
10242	CR H242	WP H242	B 622	B 619	B 626	B 434	B 573	B 564
10276	CR HC 276	WPHC 276	B 622	B 619	B 626	B 575	B 574	B 564
10624	CRB 10	WPB 10	B 622	B 619	B 626	B 333	B 335	B 564
10629	CRVB 4	WPVB 4	B 622	B 619	B 626	B 333	B 335	B 564
10665	CR HB2	WPHB 2	B 622	B 619	B 626	B 333	B 335	B 564
10675	CR HB3	WPHB 3	B 622	B 619	B 626	B 333	B 335	B 564
12160	CRH 160	WPH 160	B 622	B 619	B 626	B 435	B 572	B 564
20033	CR 3033	WP 3033	B 622	B 619	B 626	B 625	B 649	B 564 / B 472
30556	CRH 556	WPH 556	B 622	B 619	B 626	B 435	B 572	*

BUTT WELDING FITTING TI ANSI B 16.9

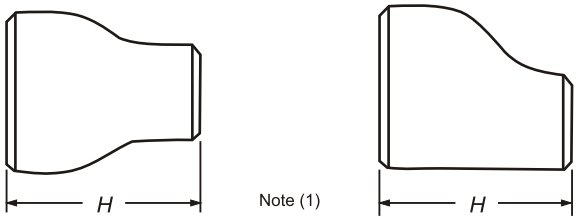
ELBOWS | RETURN BENDS | LONG RADIUS | EQUAL TEES | CAPS | SHORT STUBENDS



BUTT WELDING PIPE FITTING DIMENSIONAL STANDARD ANSI B-16.9, B-16.28 & MSS SP 43

Nominal Pipe Size		Outside Diameter	Center to Face				Back to Face			Center to Center			Length 'L'	
													MSSSP43	B16.9
Inch.	mm	D	A	B	C	N	E	F	G	R	M	S	L	L
1/2	15	21.3	19.05	7.94	25.4	_	25.4	47.63	_	76.2		34.93	50.8	76.2
3/4	20	26.7	28.58	14.29	28.58	_	25.4	42.86	_	57.15		42.86	50.8	76.2
1	25	33.4	38.1	22.23	38.1	25.4	38.1	55.56	41.28	76.2	50.8	50.8	50.8	101.6
1.1/4	32	42.2	47.63	25.4	47.63	31.75	38.1	69.85	52.39	95.25	63.5	63.5	50.8	101.6
1.1/2	40	48.3	57.15	28.53	57.15	38.1	38.1	82.55	61.91	114.3	76.2	73.2	50.8	101.6
2	50	60.3	76.2	34.93	63.5	50.8	38.1	106.36	80.96	152.4	101.6	92.08	63.5	152.4
2.1/2	65	73	95.25	44.45	76.2	63.5	38.1	131.76	100.01	190.5	127	104.78	63.5	152.4
3	80	88.9	114.3	50.8	85.73	76.2	50.8	158.75	120.65	228.6	152.4	127	63.5	152.4
3.1/2	90	1016	133.35	57.15	95.25	88.9	63.5	184.15	139.7	266.7	177.8	139.7	76.2	152.4
4	100	114.3	152.4	63.5	104.78	101.6	63.5	209.55	158.75	304.8	203.2	157.16	76.2	152.4
5	125	141.3	190.5	79.37	123.83	127	76.2	261.94	196.85	381	254	185.74	76.2	203.2
6	150	168.3	228.6	95.25	142.88	152.4	88.9	312.74	236.54	457.2	304.8	215.9	88.9	203.2
8	200	219.1	304.8	127	177.8	203.2	101	414.34	312.74	609.6	406.4	269.88	101.6	203.2
10	250	273.1	381	158.7	215.9	254	127	514.53	390.53	762	508	323.85	127	254
12	300	323.9	457.2	190.5	254	304.8	152.4	619.13	466.73	914.4	609.5	381	152.4	254
14	350	355.6	533.4	222.25	279.4	355.6	165.1	711.2	533.4	1066.8	711.2	412.75	152.4	304.8
16	400	406.4	609.6	254	304.8	406.4	177.8	812.8	609.8	1219.2	812.8	469.9	152.4	304.8
18	450	457.2	685.8	285.75	342.9	457.2	203.2	914.4	685.8	1371.6	914.4	533.4	152.4	304.8
20	500	508	762	317.5	381	508	228.6	1016	762	1524	1016	584.2	152.4	304.8
22	550	559	838.2	342.9	419.1	558.8	254	1117.6	838.2	1676.4	1117	692.15	152.4	304.8
24	600	610	914.4	381	431.8	609.6	266.7	1219.2	914.4	1828.8	1219.2	692.15	152.4	304.8
26	650	660	990.6	406.4	495.3	_	266.7							
28	700	711	1066.8	438.15	520.7	_	266.7							
30	750	762	1143	469.9	588.8	_	266.7							
32	800	813	1219.2	501.65	596.9	_	266.7							
34	850	864	1295.4	533.4	635	_	266.7							
36	900	914	1371.6	565.15	673.1	_	266.7							
38	950	965	1447.8	600.08	711.2	_	304.8							
40	1000	1016	1524	631.83	749.3	_	304.8							
42	1050	1067	1600.2	660.4	762	_	304.8							
44	1100	1118	1676.4	695.33	812.8	_	342.9							
46	1150	1168	1752.6	727.09	850.9	_	342.9							
48	1200	1219	1828.8	758.83	889	_	342.9							

DIMENSIONS OF REDUCERS



Nominal Pipe Size (NPS)	DN	Outside Diameter at Bevel		End-to-End H
		Large End	Small End	
3/4 x ½	20 x 10	26.7	21.3	38
3/4 x 3/8	20 x 10	26.7	17.3	38
1 x 3/4	25 x 20	33.4	26.7	51
1 x 1/2	25 x 15	33.4	21.3	51
1 1/4 x 1	32 x 25	42.2	33.4	51
1 1/4 x 3/4	32 x 20	42.2	26.7	51
1 1/4 x 1/2	32 x 15	42.2	21.3	51
1 1/2 x 1 1/4	40 x 32	48.3	42.2	64
1 1/2 x 1	40 x 25	48.3	33.4	64
1 1/2 x 3/4	40 x 20	48.3	26.7	64
1 1/2 x 1/2	40 x 15	48.3	21.3	64
2 x 1 1/2	50 x 40	60.3	48.2	76
2 x 1 1/4	50 x 32	60.3	42.2	76
2 x 1	50 x 25	60.3	33.4	76
2 x 3/4	50 x 20	60.3	26.7	76
2 1/2 x 2	65 x 50	73.0	60.3	89
2 1/2 x 1 1/2	65 x 40	73.0	48.3	89
2 1/2 x 1 1/4	65 x 32	73.0	42.2	89
2 1/2 x 1	65 x 25	73.0	33.4	89
3 x 2 1/2	80 x 65	88.9	73.0	89
3 x 2	80 x 50	88.9	60.3	89
3 x 1 1/2	80 x 40	88.9	48.3	89
3 x 1 1/4	80 x 32	88.9	42.2	89
3 1 /2 X 3	90 x 80	101.6	88.9	102
3 1 /2 X 2 1/2	90 x 65	101.6	73.0	102
3 1 /2 X 2	90 x 50	101.6	60.3	102
3 1 /2 X 1 1/2	90 x 40	101.6	48.3	102
3 1 /2 X 1 1/4	90 x 32	101.6	42.2	102
4 x 3 1/2	100 x 90	114.3	101.6	102
4 x 3	100 x 80	114.3	88.9	102
4 x 2 1/2	100 x 65	114.3	73.0	102
4 x 2	100 x 50	114.3	60.3	102
4 x 1 1/2	100 x 40	114.3	48.3	102
5 x 4	125 x 100	141.3	114.3	127
5 x 3 1/2	125 x 90	141.3	101.6	127
5 x 3	125 x 80	141.3	88.9	127
5 x 2 1/2	125 x 65	141.3	73.0	127
5 x 2	125 x 50	141.3	60.3	127
6 x 5	150 x 125	168.3	141.3	140
6 x 4	150 x 100	168.3	114.3	140
6 x 3 1/2	150 x 90	168.3	101.6	140
6 x 3	150 x 80	168.3	88.9	140
6 x 2 1/2	150 x 65	168.3	73.0	140
8 x 6	200 x 150	219.1	168.3	152
8 x 5	200 x 125	219.1	141.3	152
8 x 4	200 x 100	219.1	114.3	152
8 x 3 ½	200 x 90	219.1	101.6	152

Nominal Pipe Size (NPS)	DN	Outside Diameter at Bevel		End-to-End H
		Large End	Small End	
10 x 8	250 x 200	273.0	219.1	178
10 x 6	250 x 150	273.0	168.3	178
10 x 5	250 x 125	273.0	141.3	178
10 x 4	250 x 100	273.0	114.3	178
12 x 10	300 x 250	323.8	273.0	203
12 x 8	300 x 200	323.8	219.1	203
12 x 6	300 x 150	323.8	168.3	203
12 x 5	300 x 125	323.8	141.3	203
14 x 12	350 x 300	355.6	323.8	330
14 x 10	350 x 250	355.6	273.0	330
14 x 8	350 x 200	355.6	219.1	330
14 x 6	350 x 150	355.6	168.3	330
16 x 14	400 x 350	406.4	355.6	356
16 x 12	400 x 300	406.4	323.8	356
16 x 10	400 x 250	406.4	273.0	356
16 x 8	400 x 200	406.4	219.1	356
18 x 16	450 x 400	457.0	406.4	381
18 x 14	450 x 350	457.0	355.6	381
18 x 12	450 x 300	457.0	323.8	381
18 x 10	450 x 250	457.0	273.0	381
20 x 18	500 x 450	508.0	457.0	508
20 x 16	500 x 400	508.0	406.4	508
20 x 14	500 x 350	508.0	355.6	508
20 x 12	500 x 300	508.0	323.9	508
22 x 20	550 x 500	559.0	508.0	508
22 x 18	550 x 450	559.0	457.0	508
22 x 16	550 x 400	559.0	406.4	508
22 x 14	550 x 350	559.0	355.4	508
24 x 22	600 x 550	610.0	559.0	508
24 x 20	600 x 500	610.0	508.0	508
24 x 18	600 x 450	610.0	457.0	508
24 x 16	600 x 400	610.0	406.4	508
26 x 24	650 x 600	660.0	610.0	610
26 x 22	650 x 550	660.0	559.0	610
26 x 20	650 x 500	660.0	508.0	610
26 x 18	650 x 450	660.0	457.0	610
28 x 26	700 x 650	711.0	660.0	610
28 x 24	700 x 600	711.0	610.0	610
28 x 22	700 x 550	711.0	508.0	610
28 x 20	700 x 500	711.0	457.0	610
30 x 28	750 x 700	762.0	711.0	610
30 x 26	750 x 650	762.0	660.0	610
30 x 24	750 x 600	762.0	610.0	610
30 x 22	750 x 550	762.0	508.0	610

Nominal Pipe Size (NPS)	DN	Outside Diameter at Bevel		End-to-End H
		Large End	Small End	
32 x 30	800 x 750	813.0	762.0	610
32 x 28	800 x 700	813.0	711.0	610
32 x 26	800 x 650	813.0	660.0	610
32 x 24	800 x 600	813.0	610.0	610
34 x 32	850 x 800	864.0	813.0	610
34 x 30	850 x 750	864.0	762.0	610
34 x 28	850 x 700	864.0	660.0	610
34 x 26	850 x 650	864.0	610.0	610
36 x 34	900 x 850	914.0	864.0	610
36 x 32	900 x 800	914.0	813.0	610
36 x 30	900 x 750	914.0	762.0	610
36 x 28	900 x 700	914.0	660.0	610
36 x 26	900 x 650	914.0	610.0	610
38 x 36	950 x 900	965.0	914.0	610
38 x 34	950 x 850	965.0	864.0	610
38 x 32	950 x 800	965.0	813.0	610
38 x 30	950 x 750	965.0	762.0	610
38 x 28	950 x 700	965.0	711.0	610
38 x 26	950 x 650	965.0	660.0	610
40 x 38	1000 x 950	1016.0	965.0	610
40 x 36	1000 x 900	1016.0	914.0	610
40 x 34	1000 x 850	1016.0	864.0	610
40 x 32	1000 x 800	1016.0	813.0	610
40 x 30	1000 x 750	1016.0	762.0	610
42 x 40	1050 x 1000	1067.0	1016.0	610
42 x 38	1050 x 950	1067.0	965.0	610
42 x 36	1050 x 900	1067.0	914.0	610
42 x 34	1050 x 850	1067.0	864.0	610
42 x 32	1050 x 800	1067.0	813.0	610
42 x 30	1050 x 750	1067.0	762.0	610
44 x 42	1100 x 1050	1118.0	1067.0	610
44 x 40	1100 x 1000	1118.0	1016.0	610
44 x 38	1100 x 950	1118.0	965.0	610
44 x 36	1100 x 900	1118.0	914.0	610
46 x 44	1150 x 1100	1168.0	1118.0	711
46 x 42	1150 x 1050	1168.0	1067.0	711
46 x 40	1150 x 1000	1168.0	1016.0	711
46 x 38	1150 x 950	1168.0	965.0	711
48 x 46	1200 x 1150	1219.0	1168.0	711
48 x 44	1200 x 1100	1219.0	1118.0	711
48 x 42	1200 x 1050	1219.0	1067.0	711
48 x 40	1200 x 1000	1219.0	1016.0	711

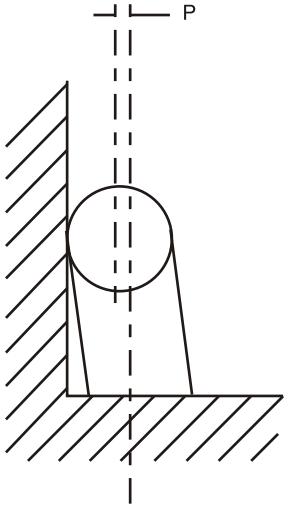
GENERAL NOTE :
All dimensions are in milimeters.

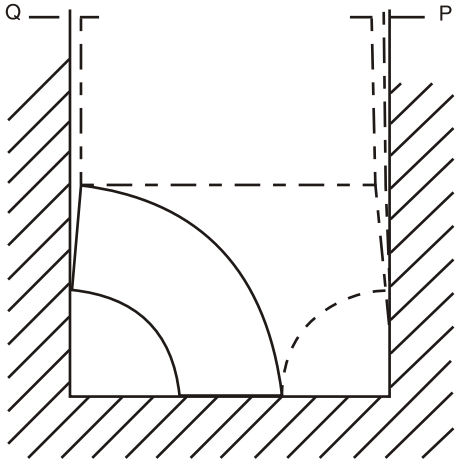
NOTE :
(1) White the figure illustrates a “bell shaped” reducer, the use of conical reducer is not prohibited.

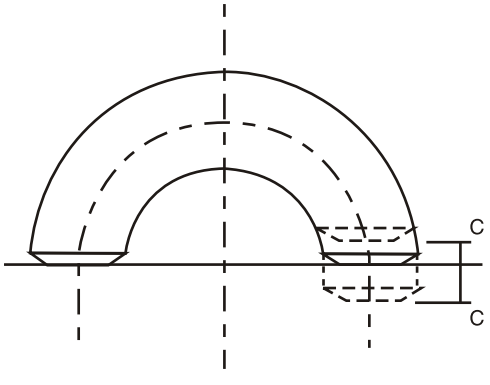
DIMENSIONAL TOLERANCES AS PER ANSI B 16.9/ 16.28 & MSS-SP 43
BUTT WELD PIPE FITTINGS

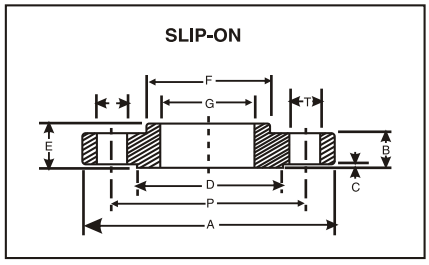
ALL FITTINGS				90° / 45° ELBOWS & TEES	Reducers and Lap-joint Stub-Ends	CAPS	180° RETURNS			LAP-JOINT STUB ENDS		
Nominal Pipe Size	Outside Diameter at Bevel	Inside Diameter at End	Wall Thickness	Center to End Dimension	Overall Length	Overall Length	Center to Center Dimensions	Back to Face Dimension	Alignment of Ends	Fillet**Radius of Lap	O. D of Lap	Thk of Laps
15-65	+1.59 -0.80	±0.80	Not Less Than 87½% of Nominal Thickness	±1.59	±1.59	±3.17	±6.35	±6.35	±0.80	+0 -0.79	+0 -0.79	+1.59 -0
80-90	±1.59	±1.59		±1.59	±1.59	±3.17	±6.35	±6.35	±0.80	+0 -0.79	+0 -0.79	+1.59 -0
100	±1.59	±1.59		±1.59	±1.59	±3.17	±6.35	±6.35	±0.80	+0 -1.59	+0 -0.79	+1.59 -0
125-200	+2.38 -1.59	±1.59		±1.59	±1.59	±6.35	±6.35	±6.35	±0.80	+0 -1.59	+0 -0.79	+1.59 -0
250-450	+3.97 -3.17	±3.17		±2.38	±2.38	±6.35	±9.53	±6.35	±1.59	+0 -1.59	+0 -1.59	+1.59 -0
500-600	+6.35 -4.76	±4.76		±2.38	±2.38	±6.35	±9.53	±6.35	±1.59	+0 -1.59	+0 -1.59	+1.59 -0
650-750	+6.35 -4.76	±4.76		±3.17	±4.76	±9.53						
800-1200	+6.35 -4.76	±4.76		±4.76	±4.76	±9.53						

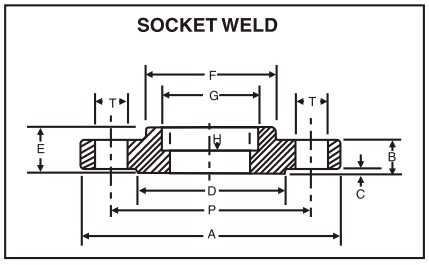
Nominal Pipe Size	Angularity Tol.	
	Off Angle Q	Off Plane P
15-100	0.80	1.59
125-200	1.5	3.17
250-300	2.38	4.76
350-450	2.38	6.35
450-600	3.17	9.53
650-750	4.76	9.53
800-1050	4.76	12.70
100-1200	4.76	19.05

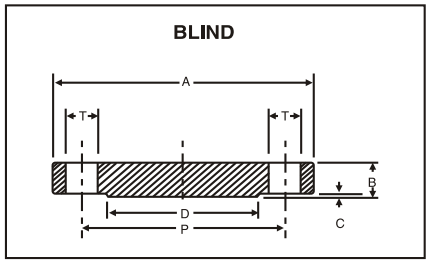












DIMENSIONS OF CLASS 150 FLANGES AS PER ANSI B 16.5

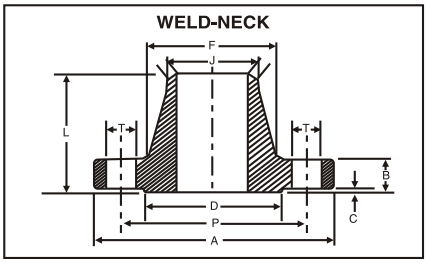
N.B.	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	T	No.of Holes
15	89	11.1	1.6	35	16	30	22.4	9.5	21.3	-	48	16	16	23.0	60.3	3.0	15.9	4
20	98	12.7	1.6	43	16	38	27.7	11.0	26.7	-	52	16	16	28.0	69.8	3.0	15.9	4
25	108	14.3	1.6	51	17	49	34.5	12.5	33.4	-	56	17	17	35.0	79.4	3.0	15.9	4
32	117	15.9	1.6	64	21	59	43.2	14.5	42.2	-	57	21	21	43.5	88.9	5.0	15.9	4
40	127	17.5	1.6	73	22	65	49.5	16.0	48.3	-	62	22	22	50.0	98.4	6.5	15.9	4
50	152	19.0	1.6	92	25	78	62.0	17.5	60.3	-	64	25	25	62.5	120.6	8.0	19.0	4
65	178	22.2	1.6	105	29	90	74.7	19.0	73.0	-	70	29	29	75.5	139.7	8.0	19.0	4
80	190	23.8	1.6	127	30	108	90.7	20.5	88.9	-	70	30	30	91.5	152.4	9.5	19.0	4
90	216	23.8	1.6	140	32	122	103.4	-	101.6	-	71	32	32	104.0	177.8	9.5	19.0	8
100	229	23.8	1.6	157	33	135	116.1	-	114.3	-	76	33	33	117.0	190.5	11.0	19.0	8
125	254	23.8	1.6	186	37	164	143.8	-	141.3	-	89	37	37	145.0	215.9	11.0	22.2	8
150	279	25.4	1.6	216	40	192	170.7	-	168.3	-	89	40	40	171.0	241.3	12.5	22.2	8
200	343	28.6	1.6	270	44	246	221.5	-	219.1	-	102	44	44	222.0	293.4	12.5	22.2	8
250	406	30.2	1.6	324	49	305	276.4	-	273.0	-	102	49	49	277.0	362.0	12.5	25.4	12
300	483	31.8	1.6	381	56	365	327.2	-	323.9	-	114	56	56	328.0	431.8	12.5	25.4	12
350	533	34.9	1.6	413	57	400	359.2	-	355.6	-	127	57	79	360.0	476.2	12.5	28.6	12
400	597	36.5	1.6	470	64	457	410.5	-	406.4	-	127	64	87	411.0	539.8	12.5	28.6	16
450	635	39.7	1.6	533	68	505	461.8	-	457.2	-	140	68	97	462.0	577.8	12.5	31.8	16
500	698	42.9	1.6	584	73	559	513.1	-	508.0	-	144	73	103	514.0	635.0	12.5	31.8	20
600	813	47.6	1.6	692	83	664	616.0	-	609.6	-	152	83	111	616.0	749.3	12.5	34.9	20

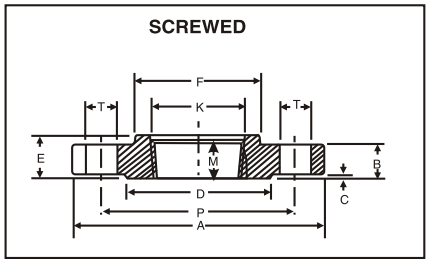
DIMENSIONS OF CLASS 300 FLANGES AS PER ANSI B 16.5

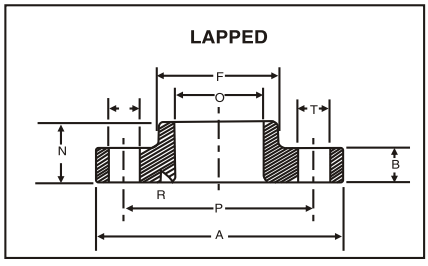
N.B.	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	T	No.of Holes
15	95	14.3	1.6	35	22	38	22.4	9.5	21.3	23.5	52	16	22	23.0	66.7	3.0	15.9	4
20	117	15.9	1.6	43	25	48	27.7	11.0	26.7	29.0	57	16	25	28.0	82.6	3.0	19.0	4
25	124	17.5	1.6	51	27	54	34.5	12.5	33.4	36.0	62	17	27	35.0	88.9	3.0	19.0	4
32	133	19.0	1.6	64	27	64	43.2	14.5	42.2	44.5	65	21	27	43.5	98.4	5.0	19.0	4
40	156	20.6	1.6	73	30	70	49.5	16.0	48.3	50.5	68	22	30	50.0	114.3	6.5	22.2	4
50	165	22.2	1.6	92	33	84	62.0	17.5	60.3	63.5	70	29	33	62.5	127.0	8.0	19.0	8
65	190	25.4	1.6	105	38	100	74.7	19.0	73.0	76.0	76	32	38	75.5	149.2	8.0	22.2	8
80	210	28.6	1.6	127	43	117	90.7	20.5	88.9	92.0	79	32	43	91.5	168.3	9.5	22.2	8
90	229	30.2	1.6	140	44	133	103.4	-	101.6	105.0	81	37	44	104.0	184.2	9.5	22.2	8
100	254	31.8	1.6	157	48	146	116.1	-	114.3	118.0	86	37	48	117.0	200.0	11.0	22.2	8
125	279	34.9	1.6	186	51	178	143.8	-	141.3	145.0	98	43	51	145.0	235.0	11.0	22.2	8
150	318	36.5	1.6	216	52	206	170.7	-	168.3	171.0	98	46	52	171.0	269.9	12.5	22.2	12
200	381	41.3	1.6	270	62	260	221.5	-	219.1	222.0	111	51	62	222.0	330.2	12.5	25.4	12
250	444	47.6	1.6	324	67	321	276.4	-	273.0	276.0	117	56	95	277.0	387.4	12.5	28.6	16
300	521	50.8	1.6	381	73	375	327.2	-	323.9	329.0	130	60	102	328.0	450.8	12.5	31.8	16
350	584	54.0	1.6	413	76	425	359.2	-	355.6	360.0	143	64	111	360.0	514.4	12.5	31.8	20
400	648	57.2	1.6	470	83	483	410.5	-	406.4	411.0	146	68	121	411.0	571.5	12.5	34.9	20
450	711	60.3	1.6	533	89	533	461.8	-	457.2	462.0	159	70	130	462.0	628.6	12.5	34.9	24
500	775	63.5	1.6	584	95	587	513.1	-	508.0	513.0	162	73	140	514.0	685.8	12.5	34.9	24
600	914	69.8	1.6	692	106	702	616.0	-	609.6	614.0	168	83	152	616.0	812.8	12.5	41.3	24

1) All dimensions are in Millimeters

2) Flanges except Lap Joint will be furnished with (1.6) Raised Face, which is included in “Thickness(C)” and “Length through Hub(Y)”.







DIMENSIONS OF CLASS 600 FLANGES AS PER ANSI B 16.5

N.B.	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	T	No.of Holes
15	95	14.3	6.4	35	22	38	22.4	9.5	21.3	23.5	52	16	22	23.0	66.7	3.0	15.9	4
20	117	15.9	6.4	43	25	48	27.7	11.0	26.7	29.0	57	16	25	28.0	82.6	3.0	19.0	4
25	124	17.5	6.4	51	27	54	34.5	12.5	33.4	36.0	62	17	27	35.0	88.9	3.0	19.0	4
32	133	20.6	6.4	64	29	64	43.2	14.5	42.2	44.5	67	21	29	43.5	98.4	5.0	19.0	4
40	156	22.2	6.4	73	32	70	49.5	16.0	48.3	50.5	70	22	32	50.0	114.3	6.5	22.2	4
50	165	25.4	6.4	92	37	84	62.0	17.5	60.3	63.5	73	29	37	62.5	127.0	8.0	19.0	8
65	190	28.6	6.4	105	41	100	74.7	19.0	73.0	76.0	79	32	41	75.5	149.2	8.0	22.2	8
80	210	31.8	6.4	127	46	117	90.7	20.5	88.9	92.0	83	35	46	91.5	168.3	9.5	22.2	8
90	229	34.9	6.4	140	49	133	103.4	-	101.6	105.0	86	40	49	104.0	184.2	9.5	25.4	8
100	273	38.1	6.4	157	54	152	116.1	-	114.3	118.0	102	41	54	117.0	215.9	11.0	25.4	8
125	330	44.4	6.4	186	60	189	143.8	-	141.3	145.0	114	48	60	145.0	266.7	11.0	28.6	8
150	356	47.6	6.4	216	67	222	170.7	-	168.3	171.0	117	51	67	171.0	292.1	12.5	28.6	12
200	419	55.6	6.4	270	76	273	221.5	-	219.1	222.0	133	57	76	222.0	349.2	12.5	31.8	12
250	508	63.5	6.4	324	86	343	276.4	-	273.0	276.0	152	65	111	277.0	431.8	12.5	34.9	16
300	559	66.7	6.4	381	92	400	327.2	-	323.9	329.0	156	70	117	328.0	489.0	12.5	34.9	20
350	603	69.8	6.4	413	94	432	359.2	-	355.6	360.0	165	73	127	360.0	527.0	12.5	38.1	20
400	686	76.2	6.4	470	106	495	410.5	-	406.4	411.0	178	78	140	411.0	603.2	12.5	41.3	20
450	743	82.6	6.4	533	117	546	461.8	-	457.2	462.0	184	79	152	462.0	654.0	12.5	44.4	20
500	813	88.9	6.4	584	122	610	513.1	-	508.0	513.0	190	83	165	514.0	723.9	12.5	44.4	24
600	940	101.6	6.4	692	140	718	616.0	-	609.6	614.0	203	92	184	616.0	838.2	12.5	50.8	24

DIMENSIONS OF CLASS 1500 FLANGES AS PER ANSI B 16.5

N.B.	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	T	No.of Holes
15	121	22.2	6.4	35	32	38	22.4	9.5	21.3	23.5	60	22	32	23.0	82.6	3.0	22.2	4
20	130	25.4	6.4	43	35	44	27.7	11.0	26.7	29.0	70	25	35	28.0	88.9	3.0	22.2	4
25	149	28.6	6.4	51	41	52	34.5	12.5	33.4	36.0	73	29	41	35.0	101.6	3.0	25.4	4
32	159	28.6	6.4	64	41	64	43.2	14.5	42.2	44.5	73	30	41	43.5	111.1	5.0	25.4	4
40	178	31.8	6.4	73	44	70	49.5	16.0	48.3	50.5	83	32	44	50.0	123.8	6.5	28.6	4
50	216	38.1	6.4	92	57	105	62.0	17.5	60.3	63.5	102	38	57	62.5	165.1	8.0	25.4	8
65	244	41.3	6.4	105	64	124	74.7	19.0	73.0	76.0	105	48	64	75.5	190.5	8.0	28.6	8
80	267	47.6	6.4	127	73	133	-	-	88.9	92.0	117	51	73	91.5	203.2	9.5	31.8	8
100	311	54.0	6.4	157	91	162	-	-	114.3	118.0	124	57	91	117.0	241.3	11.0	34.9	8
125	325	73.0	6.4	186	105	197	-	-	141.3	145.0	156	64	105	145.0	292.1	11.0	41.3	8
150	394	82.6	6.4	216	119	229	-	-	168.3	171.0	171	70	119	171.0	317.5	12.5	38.1	12
200	483	92.1	6.4	270	143	292	-	-	219.1	222.0	213	75	143	222.0	393.7	12.5	44.4	12
250	584	108.0	6.4	324	159	368	-	-	273.0	276.0	254	84	178	277.0	482.6	12.5	50.8	12
300	673	123.8	6.4	381	181	451	-	-	323.9	329.0	283	92	219	328.0	571.5	12.5	54.0	16
350	749	133.4	6.4	413		495	-	-	356.6	-	298	-	241	360.0	635.0	12.5	60.3	16
400	826	146.1	6.4	470		552	-	-	406.4	-	311	-	260	411.0	704.8	12.5	66.7	16
450	914	161.9	6.4	533		597	-	-	457.2	-	327	-	276	462.0	774.7	12.5	73.0	16
500	984	178.0	6.4	584		641	-	-	508.0	-	356	-	292	514.0	831.8	12.5	79.4	16
600	1168	203.0	6.4	692		762	-	-	609.6	-	406	-	330	616.0	990.6	12.5	92.0	16

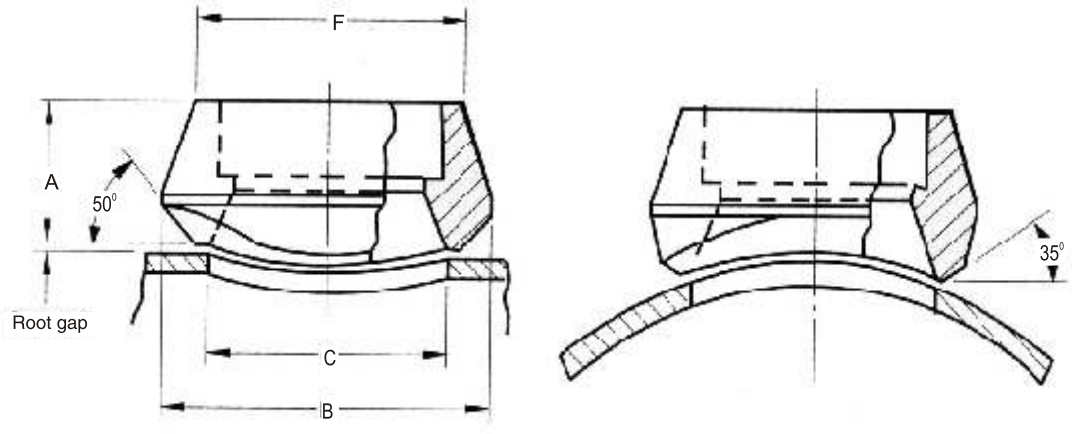
1) All dimensions are in Millimeters

2) Flanges except Lap Joint will be furnished with (1.6) Raised Face, which is included in “Thickness(C)” and “Length through Hub(Y)”.

FORGE STEEL OUTLET FITTINGS

Sockolets

3000# 6000#



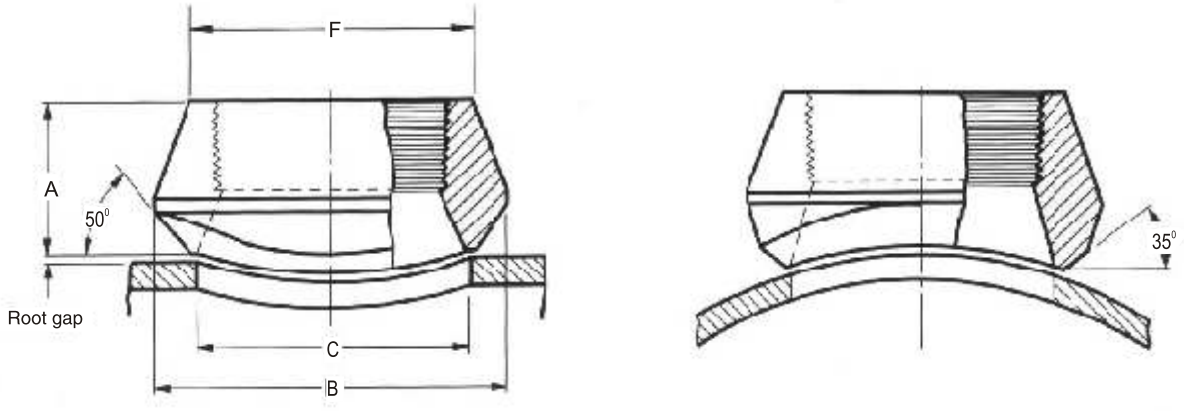
Outlet Size	A		B		C	
	3000#	6000#	3000#	6000#	3000#	6000#
1/2	25.4	31.8	34.9	44.5	23.8	19.1
3/4	27.0	36.5	44.5	50.8	30.2	25.4
1	33.3	39.7	54.0	61.9	36.5	33.3
11/4	33.3	41.3	65.1	69.9	44.5	38.1
11/2	34.9	42.9	73.0	82.6	50.8	49.2
2	38.1	58.7	88.9	103.2	65.1	58.7
21/2	46.0	-	103.2	-	76.2	-
3	50.8	-	122.2	-	93.7	-
4	57.2	-	152.4	-	120.7	-

Applicable Run Pipe Sizes are From out-Let to 36"
For the 3000# and 6000# Sockolets and Thredolets, Inside Bore, Thread, Socket Bore and Socket depth Dimensions are According to ANSI B16.11
Pipe Schedule Numbers and Weight Designation are in Accordance With ANSI B36.10
When Ordering Sockolets and Thredolets, Include The Quantity, Run and Out-Let Size, Item And Rating(or Schedule Number)and Material

FORGE STEEL OUTLET FITTINGS

Thredolets

3000# 6000#



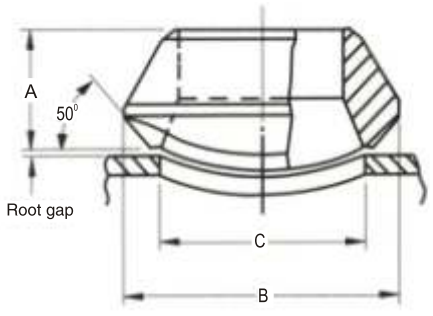
Outlet Size	A		B		C	
	3000#	6000#	3000#	6000#	3000#	6000#
1/2	25.4	31.8	34.9	44.5	23.8	19.1
3/4	27.0	36.5	44.5	50.8	30.2	25.4
1	33.3	39.7	54.0	61.9	36.5	33.3
11/4	33.3	41.3	65.1	69.9	44.5	38.1
11/2	34.9	42.9	73.0	82.6	50.8	49.2
2	38.1	52.4	88.9	103.2	65.1	69.9
21/2	46.0	-	103.2	-	76.2	-
3	50.8	-	122.2	-	93.7	-
4	57.2	-	152.4	-	120.7	-

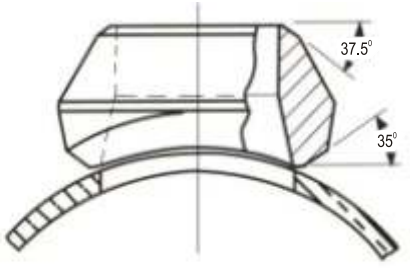
Applicable Run Pipe Sizes are From out-Let to 36"
For the 3000# and 6000# Sockolets and Thredolets, Inside Bore, Thread, Socket Bore and Socket depth Dimensions are According to ANSI B16.11
Pipe Schedule Numbers and Weight Designation are in Accordance With ANSI B36.10
When Ordering Sockolets and Thredolets, Include The Quantity, Run and Out-Let Size, Item And Rating(or Schedule Number)and Material

FORGED STEEL OUTLET FITTINGS

Weldolets

STD(Sch40), XS(Sch 80)





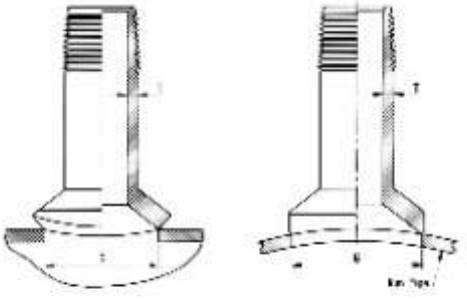
Outlet Size	A		B		C	
	STD	XS	STD	XS	STD	XS
1/2	19.1	19.1	34.9	34.9	23.8	23.8
3/4	22.2	22.2	44.5	44.5	30.2	30.2
1	27.0	27.0	54.0	54.0	36.5	36.5
1 1/4	31.8	31.8	65.1	65.1	44.5	44.5
11/2	33.3	33.3	73.0	73.0	50.8	50.8
2	38.1	38.1	88.9	88.9	65.1	65.1
2 1/2	41.3	41.3	103.2	103.2	76.2	76.2
3	44.5	44.5	122.2	122.2	93.7	93.7
4	50.8	50.8	152.4	152.4	120.7	120.7
5	57.2	57.2	179.4	179.4	141.3	141.3
6	60.3	77.8	215.9	225.4	169.9	169.9
8	69.9	98.5	263.5	292.1	220.7	220.7
10	77.8	93.7	322.3	323.9	274.7	265.1
12	85.7	103.2	377.8	379.4	325.4	317.5
14	88.9	100.0	409.6	431.8	357.2	350.8
16	93.7	106.4	463.6	466.7	408.0	403.2
18	96.8	111.1	520.7	523.9	458.8	455.6
20	101.6	119.1	571.5	582.6	508.0	509.6
24	115.9	139.7	689.0	708.0	614.4	638.2
26	119.1	146.1	738.2	765.2	666.8	692.2

Applicable Run Pipe Sizes are From out-Let to 36"
Standard Weight Fittings are the Same as Schedule 40 Fittings Until 10" and Extra Strong Fittings are the Same as Schedule 80 Until 8"
Pipe Schedule Numbers and Weight Designations are in Accordance With ANSI B36.10
When Ordering Weldolet, Include The Quantity, Size (Run and Out-Let) Description (Weldolets, Schedule Number) And Material

FORGED STEEL OUTLET FITTINGS
Nipple Outlets 3000#

(in millimeters)

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

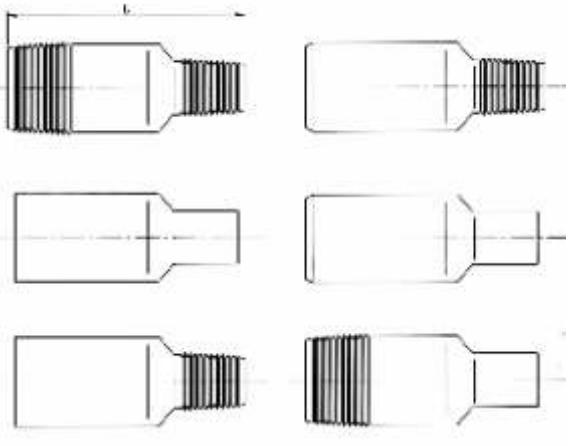


MSS SP- 97

Swaged Nipple

(in millimeters)

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

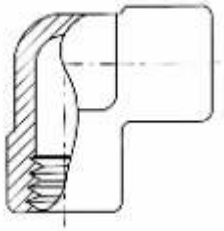


MSS SP- 95

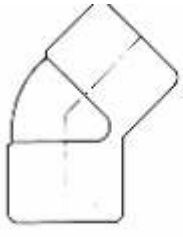
TBE Threaded both end
PBE Plain both end
PLE/TSE Plain large end-Threaded small end
BLE/TSE Beveled large end -Threaded small end
BLE/PSE Beveled large end -Plain small end
TLE/PSE Threaded large end-Plain small end

FORGED STEEL THREADED FITTINGS
90 Elbow, 90 Elbow, Tee, Cross, Coupling, Half Coupling, Cap 2000# 3000# 6000#

Nom. Pipe size	Minimum Wall Thickness			Approx. Weight(kg)													
				Pressure Class Designation													
	T			6000							6000						
	2000	3000	6000	90° Elbow	45° Elbow	Tee	Cross	Coupling	Half Coupling	Cap	90° Elbow	45° Elbow	Tee	Cross	Coupling	Half Coupling	Cap
1/8	3.18	3.18	6.35	0.14	0.11	0.14	0.23	0.05	0.02	0.03	0.17	0.11	0.17	0.17	0.08	0.05	0.07
1/4	3.18	3.30	6.60	0.14	0.11	0.14	0.23	0.05	0.02	0.04	0.17	0.11	0.17	0.17	0.10	0.05	0.08
3/8	3.18	3.51	6.98	0.14	0.11	0.14	0.23	0.06	0.03	0.06	0.29	0.24	0.37	0.45	0.18	0.08	0.11
1/2	3.18	4.09	8.15	0.23	0.20	0.31	0.40	0.13	0.06	0.11	0.40	0.31	0.54	0.68	0.31	0.15	0.25
3/4	3.18	4.32	8.53	0.31	0.29	0.43	0.51	0.19	0.08	0.19	0.63	0.54	0.85	1.13	0.43	0.20	0.34
1	3.68	4.98	9.93	0.51	0.43	0.65	0.77	0.38	0.17	0.34	1.02	0.85	1.41	1.61	0.87	0.39	0.64
1 1/4	3.89	5.28	10.59	0.72	0.63	0.91	1.13	0.71	0.33	0.57	1.18	0.97	1.59	1.87	1.04	0.50	1.00
1 1/2	4.01	5.56	11.07	0.91	0.74	1.25	1.45	0.96	0.45	0.68	2.22	1.81	2.90	2.95	1.70	0.82	1.32
2	4.27	7.14	12.09	1.59	1.22	2.10	2.38	1.36	0.63	1.18	2.35	2.00	3.11	3.69	2.44	1.18	2.36
2 1/2	5.61	7.65	15.29	2.95	3.52	3.94	7.46	2.09	0.98	2.27	4.76	3.35	5.96	7.60	4.04	1.95	2.99
3	5.99	8.84	16.64	4.99	5.13	5.98	8.85	2.95	1.39	3.86	6.55	5.34	9.24	8.96	6.10	2.95	4.35
4	6.55	11.18	18.67	1.03	8.68	12.36	14.83	5.56	2.63	5.90	13.78	8.65	17.92	14.51	11.00	5.35	7.71



90 Elbow



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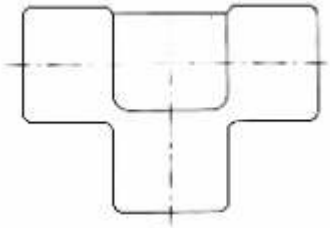

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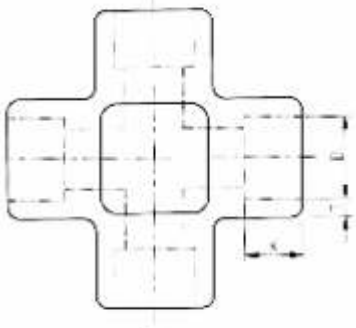

Cross

Coupling

Half Coupling

Cap

ANSI B 16.11

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