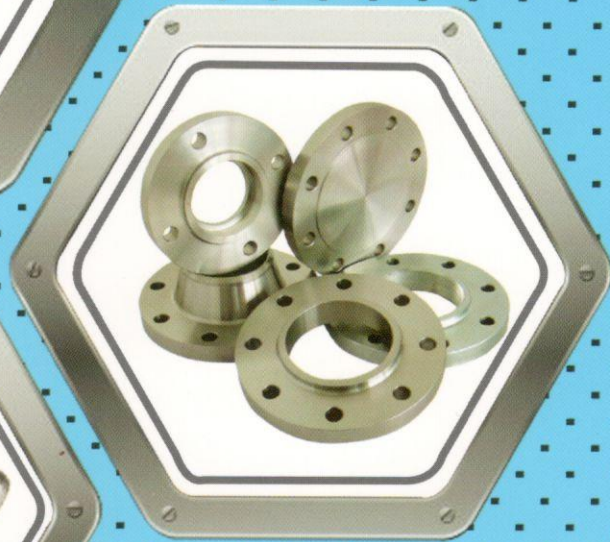




SANKALP FORGE & ALLOYS

An ISO 9001:2008 Certified Co.



Your
Trust
We
Care

About Us

Fulfilling each and every requirement of patrons from mechanical industry, our firm **Sankalp Forge & Alloys** is highly recognized in market for providing best engineering products. Established in the year 2011, our firm is a leading manufacturer, exporters and suppliers of **SS Fittings and Forge Fittings, Socket Weld Fittings, Buttweld Fittings, Metal Flanges, Pipes and Tubes, Round Bar, Sheets and Plates, Threaded Fittings and Outlets**. Our product range comprises of Stainless Steel Flanges, Nickel Alloy Flanges, Carbon Steel Flanges and many other products. These presented products are superior in quality and optimal in finishing. Moreover to this, these products are weather proof and made of rust proof metal that is recommended by industry professionals. Besides this, these engineering products are available in the market in various sizes and shapes. Engineers of our firm have deep expertise in relevant work. Moreover to this, these products are prepared employing highly technical machines. In addition to this, these presented products are made of superior quality metal that is procured from certified suppliers available in market. Experts obtain these products after proper inspection on various parameters set by industry professionals. These products are durable and smoothly finished with the use of best finishing tools.

Under the guidance of our team is offering best product in market. His proper assistance to team members and far vision of market has made us ahead in competitive market.





BUTT WELD FITTINGS

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

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

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

Others: Monel, Nickel, Inconel, Hastalloy, Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed Steel, Zinc, Lead, etc.

Types: Elbow, Tee, Reducer, Return Bends, Stub-Ends, Cap, Collar, Cross, Insert etc.

Size: 1/4" NB TO 32" NB. (Seamless & Welded)

Wall Thickness: Sch. 5S To Sch. XXS.



FORGED FITTINGS

Stainless Steel: ASTM A182 F304/ 304L/ 304H/ 316/ 316L/ 317/ 317L/ 321/310/ 347/ 904L etc.

Carbon Steel: ASTM A105 / A694 F42/46/ 52/56/ 60/ 65/70 / A350 LF3/ A350 Lf2.

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

Others: Monel, Nickel, Inconel, Hastalloy, Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed Steel, Zinc, Lead, etc.

Types: Elbow, Tee, Union, Cross, Coupling, Cap, Bushing , Plug, Swage Nipple, Welding Boss, Hexagon Nipple, Barrel Nipple, Welding Nipple, Parraler Nipple, Street Elbow, Hexagon Nut, Hose Nipple, Bend, Adapter, Insert, Weldolet, Elbowlet, Sockolet, Thredolet, Nipolet, Letrolet, etc.

Size: 1/4" NB TO 4" NB. (Socketweld & Threaded)

Class: 3000#, 6000#, 9000#.



FLANGES

Stainless Steel: ASTM A182 F304/ 304L/ 304H/ 316/ 316L/ 317/ 317L/ 321/ 310/ 347/ 904L etc.

Carbon Steel: ASTM A105/ A694F42/46/52/56/60/65/70/A350 LF3/A350 LF2, etc.

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

Others: Monel, Nickel, Inconel, Hastalloy, Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed Steel, Zinc, Lead, etc.

Types: Weldneck, Slipon, Blind, Socket Weld, Lap Joint, Spectacles, Ring Joint, Orifcae, Long Weldneck, Deck Flange, RTJ, Flange

Size: 1/2" NB TO 24" NB.

Class: 150#, 300#, 400#, 600#, 900#, 1500# & 2500#.



PIPES

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

Carbon Steel: ASTM A53 GR. B/ A106 GR. B/ API 5L GRADE B/ API 5L GR.X42/46/52/56/60/65/70/

Low Temperature, Carbon Steel: A333 Gr.3/ Gr.6 etc.

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

Nickel Alloys: Monel, Nickel, Inconel, Hastalloy, Titanium, Tantalum, Bismuth, Aluminium, High Speed Steel,

Non Ferrous Metal: Copper, Brass, Bronze, Zinc, Lead etc.

Types: Round , Square, Rectangular.

Size: Upto 24" NB. (Seamless & Welded)

Wall Thickness: Sch. 5S to Sch. XXS



FASTENERS

Stainless Steel: AISI 302, 304, 304L, 316, 316L, 310, 317, 317L, 321, 347, 410, 420, 904L etc.

Alloy Steel: 4.6, 5.6, 6.6, 8.8, 10.9 & 12.9 / 'R', 'S', 'T' Conditions.

Carbon Steel: Bare Condition, Galvanized, Phosphetised, Cadium Plated, Hot Deep Galvanized, Bloodied, Nickel Chrome Plated, etc.

Non Ferrous Metal: Copper, Brass, Aluminium, Titanium, Nichrome, Al. Bronze Phosphorous Bronze, etc.

Types: Bolts, Nuts, Washers, Anchor Fasteners, Stud Bolts, Eye Bolt, Stud, Threaded Rod, Cotter Pin, Socket Screw, Fine Fasteners & Spares, Foundation Fasteners, etc.



SHEETS, PLATES, COILS & RODS

Material Grade: Stainless Steel, Nickel Alloys, Carbon Steel, Alloy Steel, Other Ferrous & Non-Ferrous Metals.

Types: Sheet, Plates, Strips, Round Bars, Wires, Channel, etc.

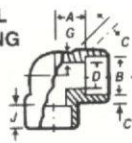


FORGED FITTINGS

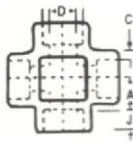
Stainless Steel	: A182 304, 304L, 304H, 3016, 3016L, 3016H, 316Ti, 321, 347, 347H, 904L.
Carbon Steel	: A105, A105N
Low Alloy Steel	: A350 LF2, LF3, LF6.
Alloy Steel	: A182 F1, F11, F22, E9, F91, F92.
Duplex Steel	: A182 F51, F60, UNS S31803, UNS S2205
Super Duplex Steel	: A 182 F44, F53, F55, SMO 254, UNS S31254, UNS S32750, UNS S32760.
High Nickel Alloys	: Nickel 200, 201, Monel K 400 & 500. Inconel 600, 601, 625, 800, 825, Hastelloy C276, Alloy 20.
Cupro Nickel	: 90/10 (UNS C70600), 70/30 (UNSC71500)
Others	: Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed Steel, Zinc, Lead etc.
Type	: Elbow, Tee, Coupling, Cap, Plug, Adaptor, Socket, Cross, Nipple, Bhusing, Boss, Insert, Union, Thermowell Stub, Weldolets, Sweepolets, Threadolets, Nepolets, Elbolets, Flexolets, Sockolets, Latrolets, Brazolets, Coupolets.
Size	: 1/4" NB to 4" NB. (socketweld & Threaded)
Class	: 3000#, 6000#, 9000#

DIMENSIONS OF SOCKET WELD FITTINGS (ANSI B 16.11)

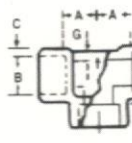
FORGED STEEL
SOCKET-WELDING
FITTINGS
ANSI B16.11



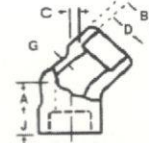
ELBOW 90 DEG



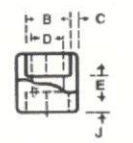
CROSS



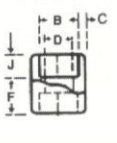
TEE



ELBOW 45 DEG



COUPLING

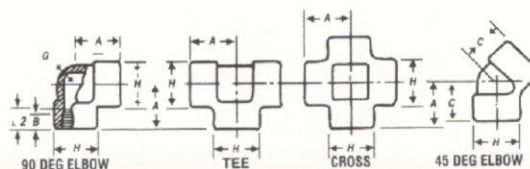


HALF COUPLING

Nom. Pipe Size	Socket bore Dia. (2) B	Bore Diameter of (2) Fitting D		Socket Wall Thickness (1) C						Depth of Socket J Min.	Centre to Bottom of Socket - A						Laying Lengths		Tolerances			
		Pressure Class Designation		Pressure Class Designation							90DEG Elbows, Tees, and Crosses			45DEG Elbows			E	F	A	E	F	
		3000	6000	9000	Ave.	Min.	Ave.	Min.	Ave.		Min.	3000	6000	9000	3000	6000						9000
		3000	6000	9000	Ave.	Min.	Ave.	Min.	Ave.		Min.	3000	6000	9000	3000	6000	9000					
1/8	10.92	7.59	4.80	3.17	3.17	3.96	3.42		9.65	11.17	11.17		7.87	7.87		6.35	15.74	0.76	1.52	0.76		
	10.66	6.07	3.20																			
1/4	14.35	10.00	7.11	3.78	3.30	4.59	4.01		9.65	11.17	13.46		7.87	7.87		6.35	15.74	0.76	1.52	0.76		
	14.09	8.48	5.58																			
3/8	17.78	13.28	9.88	4.01	3.50	5.02	4.36		9.65	13.46	15.74		7.87	11.17		6.35	17.52	1.52	3.04	1.52		
	17.25	11.76	8.35																			
1/2	22.04	16.56	12.54	7.62	4.68	4.08	5.96	5.18	9.34	8.17	9.65	15.74	19.05	25.40	11.17	12.70	15.74	9.65	22.35	1.52	3.04	1.52
	21.71	15.03	11.02	6.09																		
3/4	27.30	21.69	16.30	11.78	4.90	4.26	6.95	6.04	9.77	8.55	12.70	19.05	22.35	28.44	12.70	14.22	19.05	9.65	23.87	1.52	3.04	1.52
	27.05	20.16	14.78	10.26																		
1	34.03	27.40	21.46	15.97	5.68	4.97	7.92	6.93	11.37	9.95	12.70	22.35	26.92	31.75	14.22	17.52	20.57	12.70	28.44	2.03	4.06	2.09
	33.78	25.88	19.93	14.45																		
1.1/4	42.79	35.81	30.22	23.52	6.07	5.28	7.92	6.93	12.14	10.61	12.70	26.92	31.75	35.05	17.52	20.51	22.35	12.70	30.22	2.03	4.06	2.09
	42.54	34.30	28.70	21.99																		
1.1/2	48.89	41.65	34.74	28.70	6.35	5.53	8.91	7.79	12.70	11.12	12.70	31.71	38.10	38.10	20.57	25.40	25.40	12.70	31.75	2.03	4.06	2.03
	48.64	40.13	33.22	27.17																		
2	61.36	53.26	43.61	38.93	6.93	6.04	10.92	9.49	13.84	12.11	15.74	38.10	41.14	58.84	25.40	28.44	28.44	19.05	41.14	2.03	4.06	2.03
	61.11	52.20	41.90	37.41																		
2.1/2	74.18	64.23			8.76	7.67					15.74	41.14						19.05	43.09	2.54	5.08	2.54
	73.18	61.18																				
3	90.17	79.45			9.52	8.30					15.74	57.15						19.05	44.45	2.54	5.08	2.54
	89.78	76.40																				
4	115.82	103.78			10.89	9.34					19.05	66.54						19.05	47.75	2.54	5.08	2.54
	115.44	100.73																				

DIMENSIONS OF THREADED FITTINGS

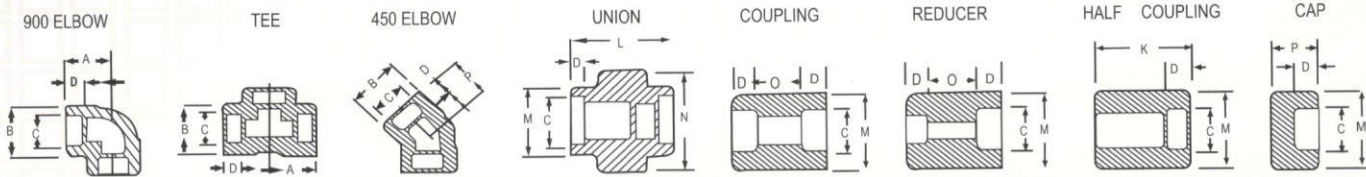
FORGED STEEL
THREADED FITTINGS
ANSI B16.11



Nom. Pipe Size	A			C			H			G			Min.	
	2000	3000	6000	2000	3000	6000	2000	3000	6000	2000	3000	6000	B	L ₂
1/8	20.57	20.57	24.63	17.52	17.52	18.93	22.35	22.30	25.40	3.175	3.11	6.350	6.303	6.70
1/4	20.57	24.63	28.44	17.52	18.93	22.35	22.35	25.40	33.20	3.175	3.302	6.604	8.128	10.205
3/8	24.63	28.44	33.27	18.93	22.35	25.40	25.40	33.27	38.10	3.175	2.505	6.985	9.544	10.298
1/2	28.44	33.27	38.10	22.35	25.40	28.44	33.27	38.10	45.97	3.175	4.089	8.153	10.922	13.555
3/4	33.27	38.10	44.45	25.40	28.44	33.27	38.10	45.97	55.62	3.175	4.318	8.534	12.700	13.860
1	38.10	44.45	50.80	28.44	33.27	35.05	45.97	55.62	61.97	3.688	4.978	9.931	14.732	17.843
1-1/4	44.45	50.80	63.45	33.27	35.05	42.92	55.62	61.97	75.43	3.688	5.283	10.591	17.018	17.952
1-1/2	50.80	60.45	76.02	33.05	42.92	43.68	61.97	75.43	84.07	4.013	5.568	11.074	17.780	18.376
2	60.45	63.50	82.55	42.92	43.68	52.32	75.43	84.07	101.60	4.267	7.137	12.090	19.050	19.138
2-1/2	76.20	82.55	95.25	52.37	52.32	63.50	91.94	101.60	120.65	5.613	7.645	15.290	23.622	28.905
3	85.85	92.25	106.42	63.50	63.50	79.24	109.47	120.65	146.05	5.994	8.839	16.637	25.408	30.500
4	106.42	114.30	114.30	78.24	78.24	79.24	146.05	152.40	152.40	6.555	11.669	18.684	27.777	33.000

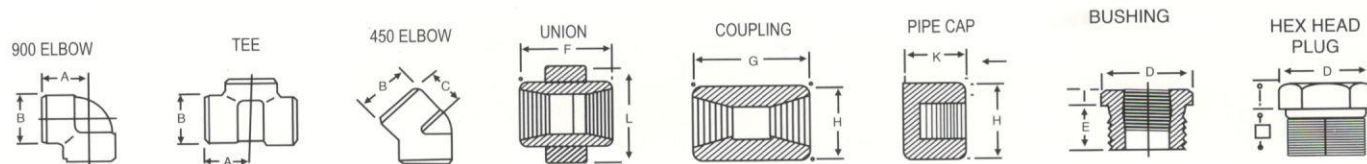


SOCKET WELD FITTING TO ANSI B-16.11



NOM BORE	PIPE O.D.	3000 LBS.								COMMON FACTORS				6000 LBS.					
		A max.	B max.	K	J	L	M	N	P	Q	C min.	D min.	O min.	O max.	A	B	M	K	N
1/8"	10.3	22	18.5	26	16	40	17.3	32	15	10	10.7	10	5	8	22	22	20	25	46
1/4"	13.7	22	22	26	18	43	21.2	32	15	10	14.1	10	5	8	27	25	24	25	51
3/8"	17.2	25	25	26	19	48	25.4	36	16.5	10	17.6	10	3	9	27	28	28	26	60
1/2"	21.3	27	32	30	21	51	31	41	16.5	10	21.7	10	6	13	31	34	34	31	72
3/4"	26.7	34	38	36	24	57	37	50	19.5	13	27	13	6	13	37	42	41	35	80
1"	33.4	37	46	40	25	64	45.2	60	22.5	13	33.8	13	9	17	42	50	50	40	94
1 1/4"	42.2	42	56	40	29	70	55	70	22.5	13	42.6	13	9	17	47	59	58	41	100
1 1/2"	48.3	47	62	40	30	79	61.4	78	24	13	48.7	13	9	17	53	67	66	43	122
2"	60.3	56	75	52	37	89	75	95	29	13	61.2	16	15	23	59	84	83	55	
2 1/2"	73.02	60	92	52	48	114	91.3	125	32	16	73.8	16	14	24		102		56	
3"	89.00	76	110	52	51	127	108.8	140	35	16	89.8	16	14	24		121		58	
4"	114.50	88	137	58		150	136.9		42	19	115.5	19	14	24		152		64	

FORGED SCREWED FITTING TO ANSI B-16.11 3000/6000 LBS. THREADED TO ASA B 2.1



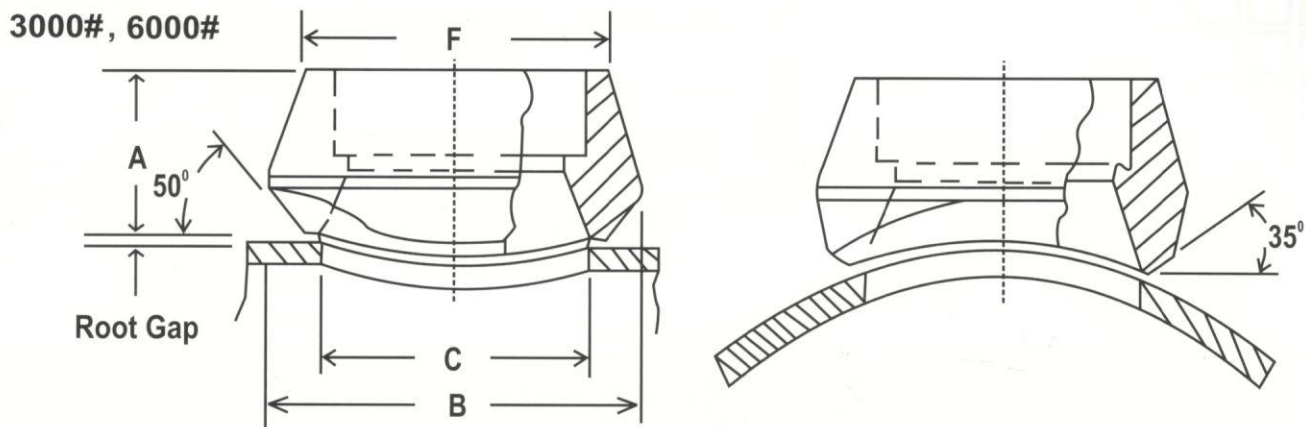
(DIMENSIONS IN MM)

NOM BORE	PIPE O.D.	3000 LBS								COMMON FACTORS				6000 LBS					
		A	B	C	G	H	K	D	E	F	I	J	L	A	B	C	G	H	K
1/8"	10.3	21	22	17	32	16	19	11	10	40	-	6	-	25	25	19	32	22	-
1/4"	13.7	25	25	19	35	19	25	16	11	43	3	6	32	29	33	22	35	25	27
3/8"	17.2	29	33	22	38	22	25	17.5	13	48	4	8	38	33	38	25	38	32	27
1/2"	21.3	33	38	25	48	29	32	22	15	51	5	8	46	38	46	29	48	38	33
3/4"	26.7	38	46	29	51	35	37	27	16	57	6	10	51	44	56	33	51	44	38
1"	33.4	44	56	33	60	44	41	35	19	64	6	10	60	51	62	35	60	57	43
1 1/4"	42.2	51	62	35	67	57	44	44.5	21	70	7	14	72	60	75	43	67	64	46
1 1/2"	48.3	60	75	43	79	64	44	51	21	79	8	16	80	64	84	44	79	76	48
2"	60.3	64	84	45	86	76	48	63.5	22	88	9	17	94	83	102	52	86	92	51
2 1/2"	73.02	83	102	52	92	92	60	76	27	118	10	21	122	95	121	64	92	108	64
3"	89.0	95	121	64	108	108	65	89	29	121	10	25	140	106	146	79	108	127	68
4"	114.5	114	152	79	121	140	68	117.5	32	150	13	25	180	114	152	79	121	159	75

DIMENSIONS AND OTHERS SPECIFICATIONS AS PER CUSTOMERS REQUIREMENTS ARE AVAILABLE ON REQUEST



FORGED STEEL OUTLET FITTINGS SOCKOLET MSS SP- 97



Outlet Size	A		B		C	
	3000#	6000#	3000#	6000#	3000#	6000#
1/2	25.4	31.8	34.9	44.5	23.8	19.1
3/4	27.0	36.5	44.5	50.8	30.2	25.4
1	33.3	39.7	54.0	61.9	36.5	33.3
1 1/4	33.3	41.3	65.1	69.9	44.5	38.1
1 1/2	34.9	42.9	73.0	62.6	50.8	49.2
2	38.1	52.4	88.9	103.2	65.1	69.9
2 1/2	46.0	-	103.2	-	76.2	-
3	50.8	-	122.2	-	93.7	-
4	57.2	-	152.4	-	102.7	-

Applicable Run Pipe Size are From out-let to 36"

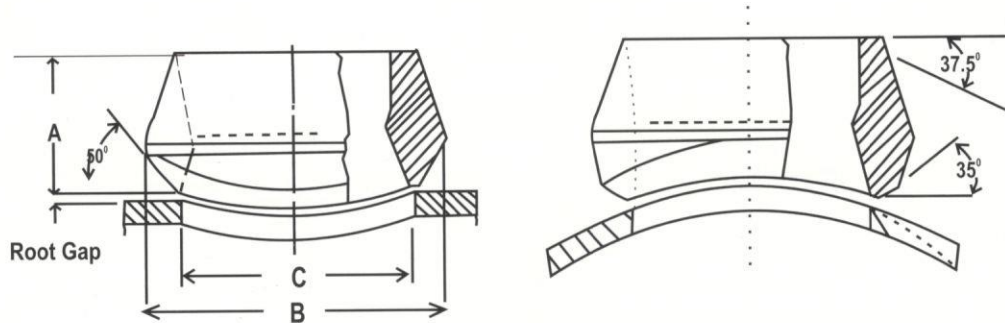
For the 3000# and 6000# Sockolets and Threadolets, Inside Bore, Thread, Socket Bore and Socket depth Dimensions are According to MSS SP-97

Pipe Schedule Numbers and Weight Designation are in According with MSS SP-97

When Ordering Sockolets and Threadolets, Includes the Quantity, Run and Out-let Size, Item and Rating (or Schedule Number) and Material



FORGED STEEL OUTLET FITTINGS WELDOLETS STD (Sch 40), XS (Sch 80) MSS SP- 97



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
1 1/2	33.3	33.3	73.0	73.0	50.8	50.8
2	38.1	38.1	88.9	88.9	65.1	65.1
2 1/2	41.3	41.3	103.2	103.2	76.2	76.2
3	44.5	44.5	122.2	122.2	93.7	93.7
4	50.8	50.8	152.4	152.4	120.7	120.7
5	57.2	57.2	179.4	179.4	141.3	141.3
6	60.3	77.8	215.9	225.4	169.9	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	350.6
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	508.8	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

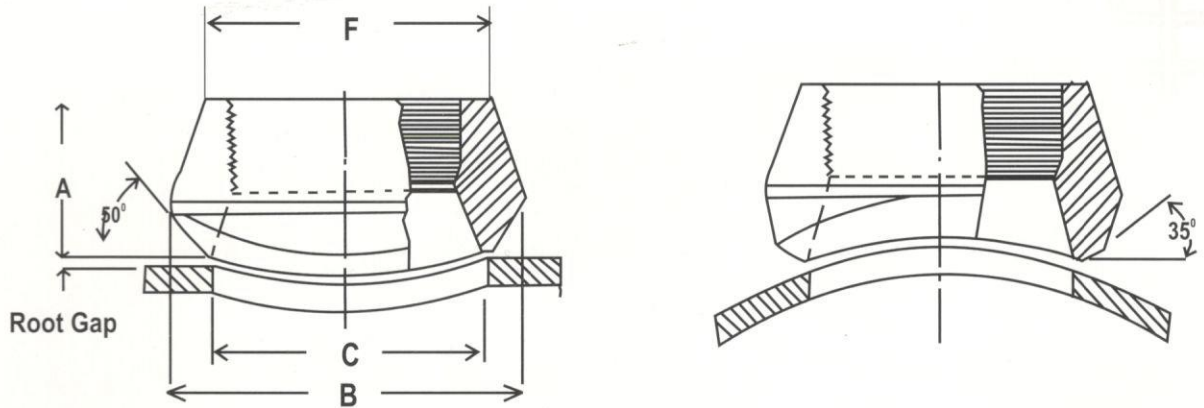
Applicable Run Pipe Size are From out-let to 36"

Standard Weight Fittings are the same as Schedule 40 Fittings Unit 10" and Extra Fittings are the same as Schedule 80 Unit 8"

Pipe Schedule Numbers and Weight Designation are in According with MSS SP-97

When Ordering Sockolets and Thredolets, Includes the Quantity, Run and Out-let Size, Item and Rating (or Schedule Number)and Material

FORGED STEEL OUTLET FITTINGS THREADOLETS MSS SP- 97



Outlet Size	A		B		C	
	3000#	6000#	3000#	6000#	3000#	6000#
1/2	25.4	31.8	34.9	44.5	23.8	19.1
3/4	27.0	36.5	44.5	50.8	30.2	25.4
1	33.3	39.7	54.0	61.9	36.5	33.3
1 1/4	33.3	41.3	65.1	69.9	44.5	38.1
1 1/2	34.9	42.9	73.0	62.6	50.8	49.2
2	38.1	52.4	88.9	103.2	65.1	69.9
2 1/2	46.0	-	103.2	-	76.2	-
3	50.8	-	122.2	-	93.7	-
4	57.2	-	152.4	-	102.7	-

Applicable Run Pipe Size are From out-let to 36"

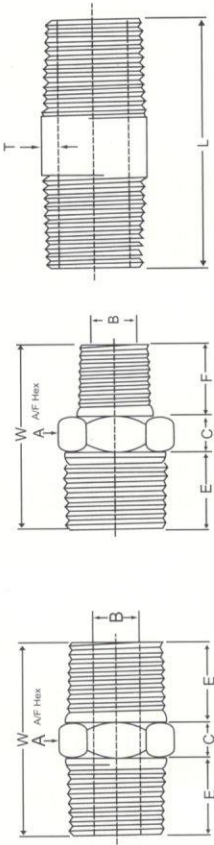
For the 3000# and 6000# Socklets and Threadlets, Inside Bore, Thread, Socket Bore and Socket depth Dimensions are According to MSS SP-97

Pipe Schedule Numbers and Weight Designation are in According with MSS SP-97

When Ordering Socklets and Threadlets, Includes the Quantity, Run and Out-let Size, Item and Rating (or Schedule Number)and Material

Socket Weld and Threaded Fittings

Hexagonal and Round Nipples - BS 3799



Hexagonal Nipples

Round Nipples

Hexagonal nipple dimensions (based on BS 3799:1974)

Nominal Size	Reducing		A min	B		C min	E min	F min	W min
	mm	in		3000 lb	6000 lb				
1/8	6	-	11	5	2	6	10	-	26
1/4	8	-	15	8	6	6	15	-	36
3/8	10	8 x 6	15	5	2	6	15	10	31
1/2	15	1/4 x 1/8	18	11	8	8	16	-	40
3/4	20	3/8 x 1/4	22	14	11	8	20	-	48
1	25	1/2 x 3/8	22	11	8	8	20	16	44
1 1/2	40	1/2 x 1/2	27	14	11	8	20	15	43
2	50	3/4 x 1/2	27	19	13	10	21	-	52
2 1/2	65	1 x 3/4	27	14	11	9	21	20	50
3	80	1 x 1/2	35	24	17	10	25	16	46
3 1/2	100	1 1/4 x 1/2	35	19	13	10	25	21	56
4	120	1 1/2 x 1/2	50	38	30	16	26	20	55
4 1/2	140	1 3/4 x 1/2	50	24	17	16	26	25	67
5	160	2 x 1/2	50	19	13	16	26	21	63
5 1/2	180	2 1/4 x 1/2	50	14	11	16	26	20	62
6	200	2 1/2 x 1/2	62	49	39	17	27	-	71
6 1/2	220	3 x 1/2	62	38	30	17	27	26	70
7	240	3 1/4 x 1/2	62	24	17	18	27	25	70
7 1/2	260	3 1/2 x 1/2	62	19	13	17	27	21	65
8	280	4 x 1/2	62	14	11	18	27	20	65

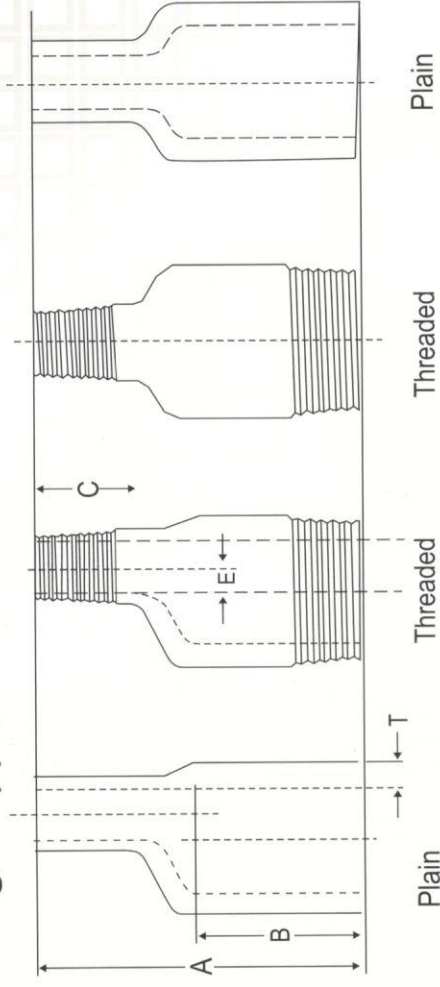
Round nipple dimensions (based on BS 3799:1974)

Nominal Size	Standard Lengths		Wall Thickness	
	mm	in	3000 lb	6000 lb
1/8	50	75	mm	mm
1/4	50	75	150	150
3/8	50	75	150	150
1/2	75	100	150	150
3/4	75	100	150	150
1	75	100	150	150
1 1/2	75	100	150	150
2	75	100	150	150
2 1/2	75	100	150	150
3	75	100	150	150
4	100	125	150	150

Note: Other round nipple lengths, L, are available when specified

Socket Weld and Threaded Fittings

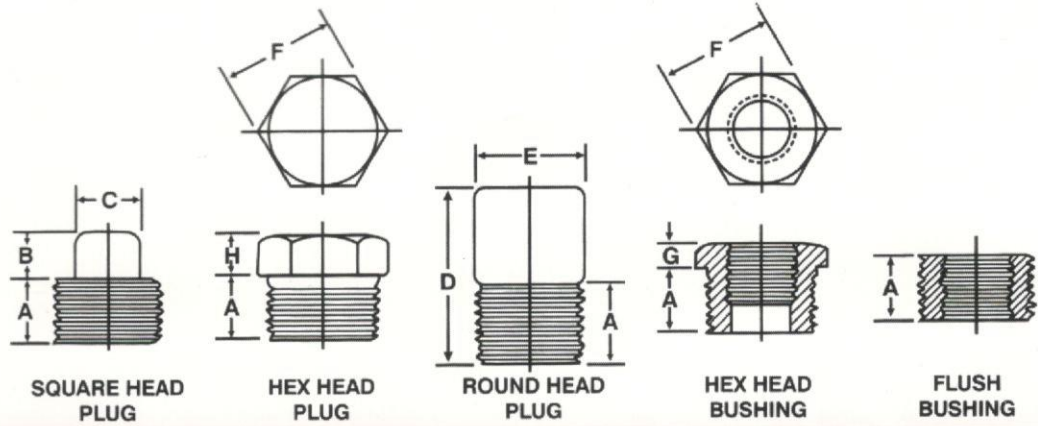
Swage Nipples - BS 3799



Dimensions of swage nipples (BS 3799:1974)

Nominal Size	Parallel Length, min			Eccentricity		Wall ; Thickness	
	A	B	C	E	Threaded / Plain	Plain	Threaded
in	mm	mm	mm	3000 lb	6000 lb	6000 lb	6000 lb
3/8 x 1/4	76	48	16	mm	mm	-	-
1/2 x 3/8	89	56	19	1.6	-	-	-
3/4 x 1/2	89	56	19	1.6	-	-	-
1 x 3/4	95	57	22	3.2	-	-	-
1 1/2 x 1	95	57	22	2.4	2.4	Schedule 160	XXS
2 x 1 1/2	95	57	22	4.0	-	-	-
2 1/2 x 2	102	64	22	2.8	2.0	Schedule 80	XXS
3 x 2 1/2	102	64	22	5.2	4.4	-	-
3 1/2 x 3	114	70	25	6.7	6.4	-	-
4 x 3 1/2	114	70	25	9.5	8.3	-	-
4 1/2 x 4	114	70	25	11.9	10.7	-	-
5 x 4 1/2	165	108	29	5.6	5.2	-	-
5 1/2 x 5	165	108	29	12.7	11.5	-	-
6 x 5 1/2	165	108	29	15.5	13.5	-	-
6 1/2 x 6	165	108	29	17.5	15.9	-	-
7 x 6 1/2	178	114	32	4.8	3.2	-	-
7 1/2 x 7	178	114	32	10.3	8.3	-	-
8 x 7 1/2	203	133	41	7.1	6.7	-	-
8 1/2 x 8	203	133	41	11.9	9.9	-	-
9 x 8 1/2	203	133	41	17.5	15.5	-	-
9 1/2 x 9	229	140	48	11.9	10.7	-	-
10 x 9 1/2	229	140	48	19.1	17.5	-	-

HIGH PRESSURE FITTING ANSI B 16.11: 1996 Steel Plugs and Bushings



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

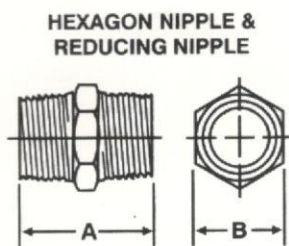


Fig. 5 & 6

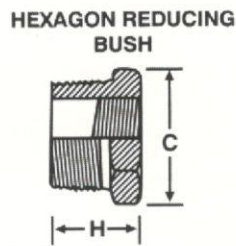


Fig. 7



Fig. 8

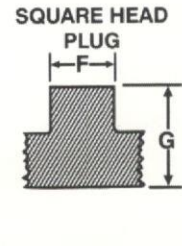


Fig. 9

	Nominal Bore											
	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
A	1.37	1.5	1.68	2.12	2.31	2.62	2.80	2.87	3.06	3.12	3.5	4.1
B	0.525	0.600	0.820	0.920	1.10	1.39	1.86	2.05	2.50	3.125	3.625	5.51
C	0.525	0.600	0.820	0.920	1.10	1.39	1.86	2.05	2.50	3.125	3.625	5.51
D	0.25	0.25	0.28	0.31	0.37	0.37	0.37	0.44	0.50	0.62	0.75	0.89
E	0.600	0.820	0.920	1.10	1.48	1.67	2.25	2.375	2.750	3.35	4.45	5.50
F	0.250	0.34	0.4	0.50	0.56	0.75	0.87	1.05	1.25	1.44	1.50	2.00
G	0.56	0.75	0.75	0.93	1.00	1.25	1.37	1.37	1.68	1.87	2.06	2.43
H	0.68	0.68	0.68	0.87	0.93	1.18	1.37	1.43	1.62	1.81	2.06	2.50

- 1) Available on demand
- 2) All dimensions are in inches



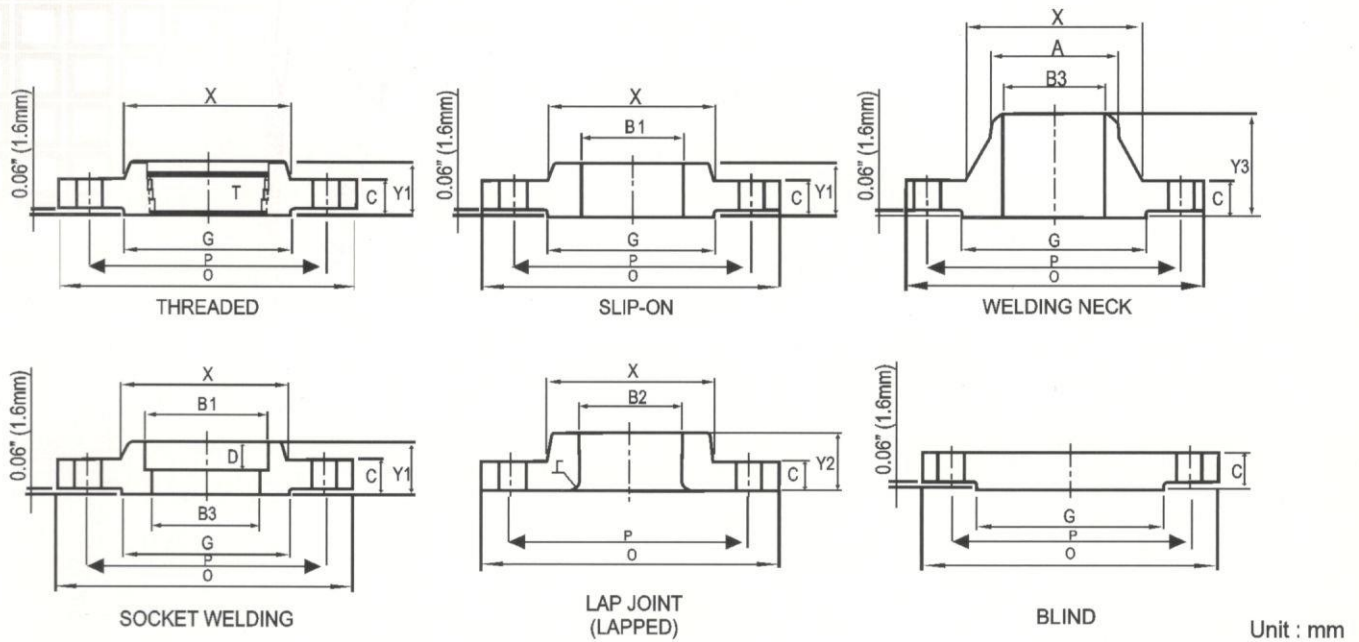
FLANGES

Stainless Steel	: ASTM182F 304/304L/304H/316/3016L/317/ 31/321/347/904L etc.
Carbon Steel	: ASTM A105/ A694 F42/46/52/56/60/65/70/A350 LF3/A350 LF2, etc.
Alloy Steel	: ASTM AF1/ F5/F9/F11/F22/F91/ etc.
Duplex Steel	: 2205 (Duplex), 2507, (Super Duplex) UNS-31803, 32750, 32760, 32990
Super Duplex Steel	: UNS S31254, UNS S32750, UNS S32760.
High Nickel Alloys	: Monel, Nickel, Inconel, Hastelloy
Cupro Nickel	: 90/10 (UNS C70600), 70/30 (UNSC71500)
Others	: Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed, Zinc, Lead, Cupro Nickel etc.
Type	: Weldneck, Slipon, Blind, Socket Weld, Lap Joint, Spectacles, Ring Joint, Oriface, Long Weldneck, Flange, etc.
Size	: 1/8" NB to 42" NB.
Class	: 150#, 300#, 600#, 900#, 1500# & 2500#.

Also as per the National & International Standard.

CLASS 150 FLANGES

ANSI B 16.5 FORGED FLANGES



Normal Pipe Size	Outside Diam. of Flanges	Thk. of Flange Min.	Diam. of Hub	O.D. of Raised Face	Hub Diam. Chamfer of W.N	LENGTH THROUGH HUB				BORE			Corner Radius of Bore of Lapped Flange	Depth of Socket	DRILLING				LENGTH OF STUD BOLTS		
						Threaded Slip-on Socket Welding	Lapped	Welding Neck	Thread Length	Slip-on Socket Welding	Lapped	Welding Neck Socket Welding			Diam. of Bolt Circle	Diam. of Bolt Holes	Number of Bolts	Diam. of Bolts (Inch)	Machine Bolts		Stud Bolts
																			Y1	Y2	
15	89.0	11.2	30.2	35.1	21.3	15.7	15.7	47.8	15.7	22.4	22.9	3.0	9.7	60.5	15.8	4	1/2	50.8	57.2	-	
20	98.5	12.7	38.1	42.9	26.7	15.7	15.7	52.3	15.7	27.7	28.2	3.0	11.2	69.9	15.8	4	1/2	50.8	63.5	-	
25	108.0	14.2	49.3	50.8	33.5	17.5	17.5	55.6	17.5	34.5	35.1	3.0	12.7	79.3	15.8	4	1/2	57.2	63.5	76.2	
32	117.5	15.7	58.7	63.5	42.2	20.6	20.6	57.2	20.6	43.2	43.7	4.8	14.2	88.9	15.8	4	1/2	57.2	69.9	82.6	
40	127.0	17.5	65.0	73.2	48.3	22.4	22.4	62.0	22.4	49.5	50.0	6.4	15.8	98.6	15.8	4	1/2	63.5	69.9	82.6	
50	152.5	19.1	77.7	91.9	60.5	25.4	25.4	63.5	25.4	62.0	62.5	7.9	17.5	120.7	19.1	4	5/8	69.9	82.6	95.3	
65	178.0	22.4	90.4	104.6	73.2	28.4	28.4	69.9	28.4	74.7	75.4	7.9	19.1	139.7	19.1	4	5/8	76.2	88.9	101.6	
80	190.5	23.9	108.0	127.0	88.9	30.2	30.2	69.9	30.2	90.7	91.4	9.7	20.6	152.4	19.1	4	5/8	76.2	88.9	101.6	
90	216.0	23.9	122.2	139.7	101.6	31.8	31.8	71.4	31.8	103.4	104.1	9.7	-	177.8	19.1	8	5/8	76.2	88.9	101.6	
100	228.5	23.9	134.9	157.2	114.3	33.3	33.3	76.2	33.3	116.1	116.8	11.2	-	190.5	19.1	8	5/8	76.2	88.9	101.6	
125	254.0	23.9	163.6	185.7	141.2	36.6	36.6	88.9	36.6	143.8	144.5	11.2	-	215.9	22.4	8	3/4	82.6	95.3	108.0	
150	279.5	25.4	192.0	215.9	168.4	39.6	39.6	88.9	39.6	170.7	171.5	12.7	-	241.3	22.4	8	3/4	82.6	101.6	114.3	
200	343.0	28.4	246.1	269.7	219.2	44.5	44.5	101.6	44.5	221.5	222.3	12.7	-	298.5	22.4	8	3/4	88.9	108.0	120.7	
250	406.5	30.2	304.8	323.9	273.1	49.3	49.3	101.6	49.3	276.4	277.4	12.7	-	362.0	25.4	12	7/8	101.6	114.3	127.0	
300	482.5	31.8	365.3	381.0	323.9	55.6	55.6	114.3	55.6	327.2	328.2	12.7	-	431.8	25.4	12	7/8	101.6	120.7	133.4	
350	533.5	35.1	400.1	412.8	355.6	57.2	79.2	127.0	57.2	359.2	360.2	12.7	-	476.3	28.5	12	1	114.3	133.4	146.1	
400	597.0	36.6	457.2	469.9	406.4	63.5	87.4	127.0	63.5	410.5	411.2	12.7	-	539.8	31.8	16	1	114.3	133.4	146.1	
450	635.0	39.6	505.0	533.4	457.2	68.3	96.8	139.7	68.3	461.8	462.3	12.7	-	577.9	31.8	16	1 1/8	127.0	146.1	158.8	
500	698.5	42.9	558.8	584.2	508.0	73.2	103.1	144.5	73.2	513.1	514.4	12.7	-	635.0	35.1	20	1 1/8	139.7	158.8	171.5	
600	813.0	47.8	663.4	692.2	609.6	82.6	111.3	152.4	82.6	616.0	616.0	12.7	-	749.3	35.1	20	1 1/8	152.4	171.5	184.2	

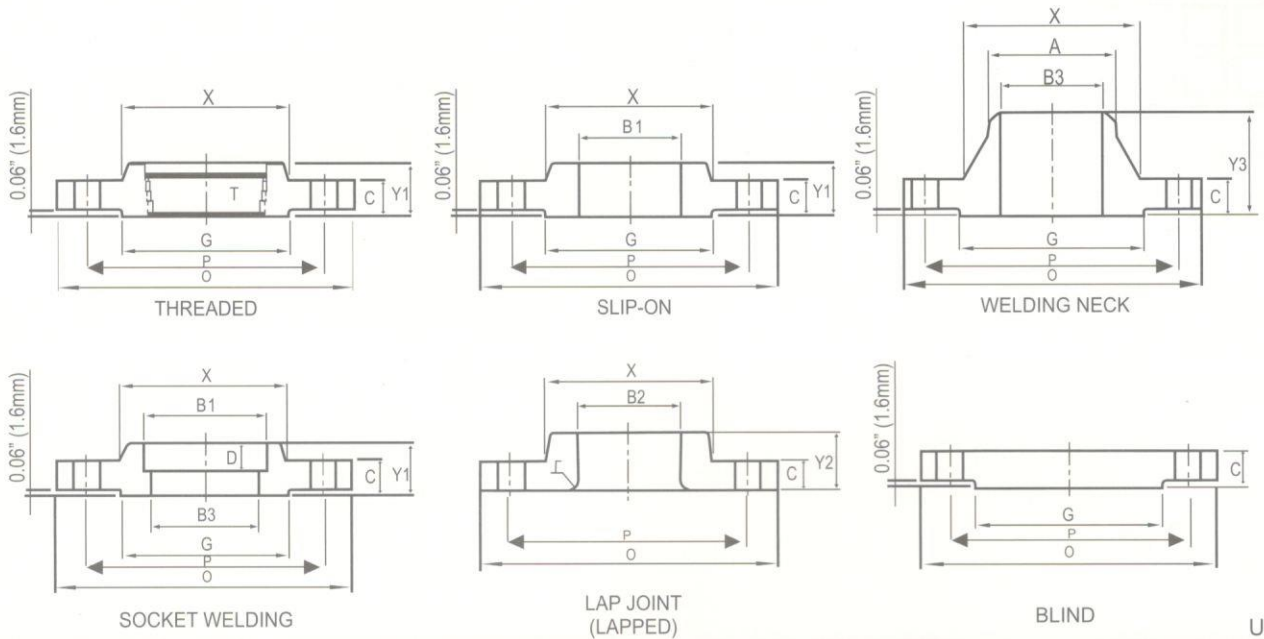
To be specified by Purchaser

- Blind Flanges may be made with the same hub as that used for slip-on Flanges or without hub.
- The gasket surface and backside (bearing surface for bolting) are made parallel within 1 degree. To accomplish parallels, spot facing is carried out according to MSS SP-9, without reducing thickness ©
- Depth of socket (D) is covered by ANSI B 16.5 only in sizes through 3 inch, over 3 inch is at the manufacture's option.



CLASS 300 FLANGES

ANSI B 16.5 FORGED FLANGES



Unit : mm

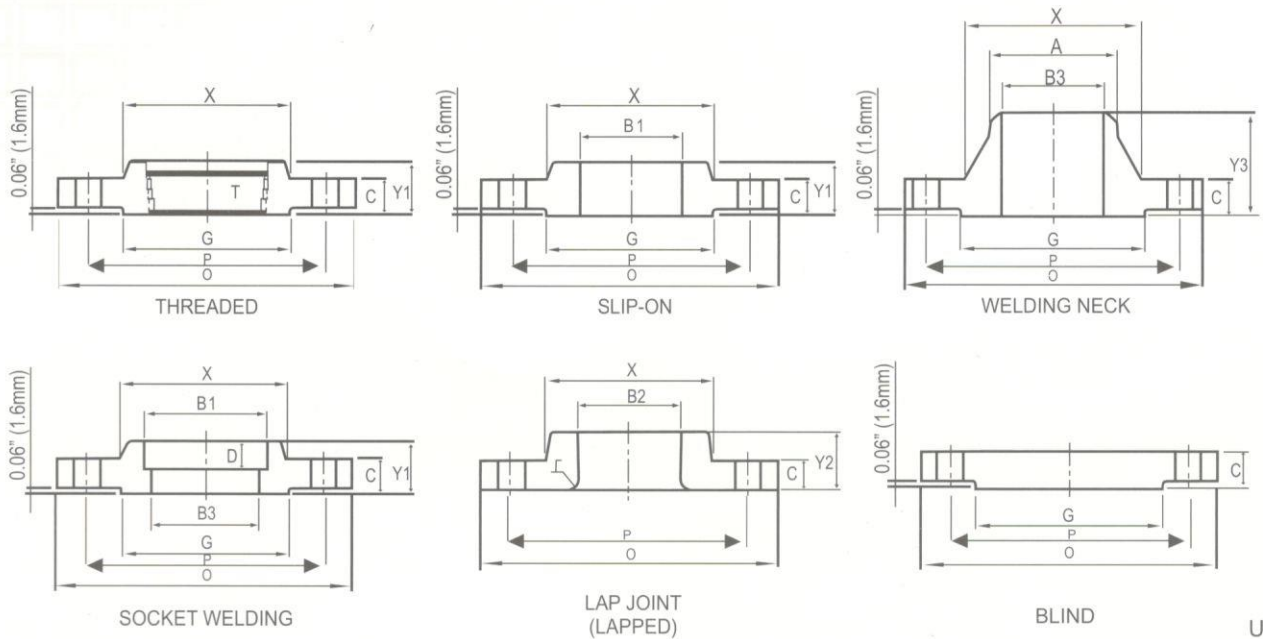
Normal Pipe Size	Outside Diam. of Flanges	Thk. of Flange Min.	Diam. of Hub	O.D. of Raised Face	Hub Diam. Chamfer of W.N	LENGTH THROUGH HUB			Thread Length	BORE			Corner Radius of Bore of Lapped Flange	Counter Bore Threaded Flange Min.	Depth of Socket	DRILLING				LENGTH OF STUD BOLTS		
						Threaded Slip-on Socket Welding	Lapped	Welding Neck		Slip-on Socket Welding	Lapped	Welding Neck Socket Welding				Diam. of Bolt Circle	Diam. of Bolt Holes	Number of Bolts	Diam. of Bolts (inch)	Machine Bolts		Stud Bolts
																				0.06 in Raised Face	0.06 in Raised Face	
O	c	x	G	A	Y1	Y2	Y3	T	B1	B2	B3	r	Q	D	P							
15	95.5	14.2	38.1	35.1	21.3	22.4	22.4	52.3	15.7	22.4	22.9	3.0	23.6	9.7	66.5	15.7	4	1/2	57.2	63.5	76.2	
20	117.5	15.7	47.8	42.9	26.7	25.4	25.4	57.2	15.7	27.7	28.2	3.0	29.0	11.2	82.6	19.1	4	5/8	63.5	76.2	88.9	
25	124.0	17.5	53.8	50.8	33.5	26.9	26.9	62.0	17.5	34.5	35.1	3.0	35.8	12.7	88.9	19.1	4	5/8	63.5	76.2	88.9	
32	133.5	19.1	63.5	63.5	42.2	26.9	26.9	65.0	20.6	43.2	43.7	4.8	44.5	14.2	98.6	19.1	4	5/8	69.9	82.6	95.3	
40	155.5	20.6	69.9	73.2	48.3	30.2	30.2	68.3	22.4	49.5	50.0	6.4	50.5	15.7	114.3	22.4	4	3/4	76.2	88.9	101.6	
50	165.0	22.4	84.1	91.9	60.5	33.3	33.3	69.9	28.4	62.0	62.5	7.9	63.5	17.5	127.0	19.1	8	5/8	76.2	88.9	101.6	
65	190.5	25.4	100.1	104.6	73.2	38.1	38.1	76.2	31.8	74.7	75.4	7.9	76.2	19.1	149.4	22.4	8	3/4	82.6	101.6	114.3	
80	209.5	28.4	117.3	127.0	88.9	42.9	42.9	79.2	31.8	90.7	91.4	9.7	92.2	20.6	168.1	22.4	8	3/4	88.9	108.0	120.7	
90	228.5	30.2	133.4	139.7	101.6	44.5	44.5	81.0	36.6	103.4	104.1	9.7	104.9	22.4	184.2	22.4	8	3/4	95.3	108.0	127.0	
100	254.0	31.8	146.1	157.2	114.3	47.8	47.8	85.9	36.6	116.1	116.8	11.2	117.6	-	200.2	22.4	8	3/4	95.3	114.3	127.0	
125	279.5	35.1	177.8	185.7	141.2	50.8	50.8	96.6	42.9	143.8	144.5	11.2	144.5	-	235.0	22.4	8	3/4	108.0	120.7	133.4	
150	317.5	36.6	206.2	215.9	168.4	52.3	52.3	98.6	46.0	170.7	171.5	12.7	171.5	-	269.7	22.4	12	3/4	108.0	120.7	139.7	
200	381.0	41.1	260.4	269.7	219.2	62.0	62.0	111.3	50.8	221.5	222.3	12.7	222.3	-	330.2	22.4	12	7/8	120.7	139.7	152.4	
250	444.5	47.8	320.5	323.9	273.1	66.5	95.3	117.3	55.6	276.4	277.4	12.7	276.4	-	387.4	25.4	16	1	139.7	158.8	171.5	
300	520.5	50.8	374.5	381.0	323.9	73.2	101.6	130.0	60.5	327.2	328.2	12.7	328.7	-	450.9	28.4	16	11/8	146.1	171.5	184.2	
350	584.0	53.8	425.5	412.8	355.6	76.2	111.3	142.7	63.5	359.2	360.2	12.7	360.4	-	514.4	31.8	20	11/8	158.8	177.8	190.5	
400	647.5	57.2	482.6	469.9	406.4	82.6	120.7	146.1	68.3	410.5	411.2	12.7	411.2	-	571.5	31.8	20	11/4	165.1	190.5	230.2	
450	711.0	60.5	533.4	533.4	457.2	88.9	130.0	158.8	69.9	461.8	462.3	12.7	462.0	-	628.7	35.1	24	11/4	171.5	196.9	209.6	
500	774.5	63.5	587.2	584.2	508.0	95.3	139.7	162.1	73.2	513.1	514.4	12.7	512.8	-	685.8	35.1	24	11/4	184.2	203.2	222.3	
600	914.5	69.9	701.5	692.2	609.6	106.4	152.4	168.1	82.6	616.0	616.0	12.7	614.4	-	812.8	41.1	24	11/2	203.2	228.6	254.0	

To be specified by Purchaser

- Blind Flanges may be made with the same hub as that used for slip-on Flanges or without hub.
- The gasket surface and backside (bearing surface for bolting) are made parallel within 1 degree. To accomplish parallels, spot facing is carried out according to MSS SP-9, without reducing thickness ©
- Depth of socket (D) is covered by ANSI B 16.5 only in sizes through 3 inch, over 3 inch is at the manufacture's option.

CLASS 600 FLANGES

ANSI B 16.5 FORGED FLANGES



Unit : mm

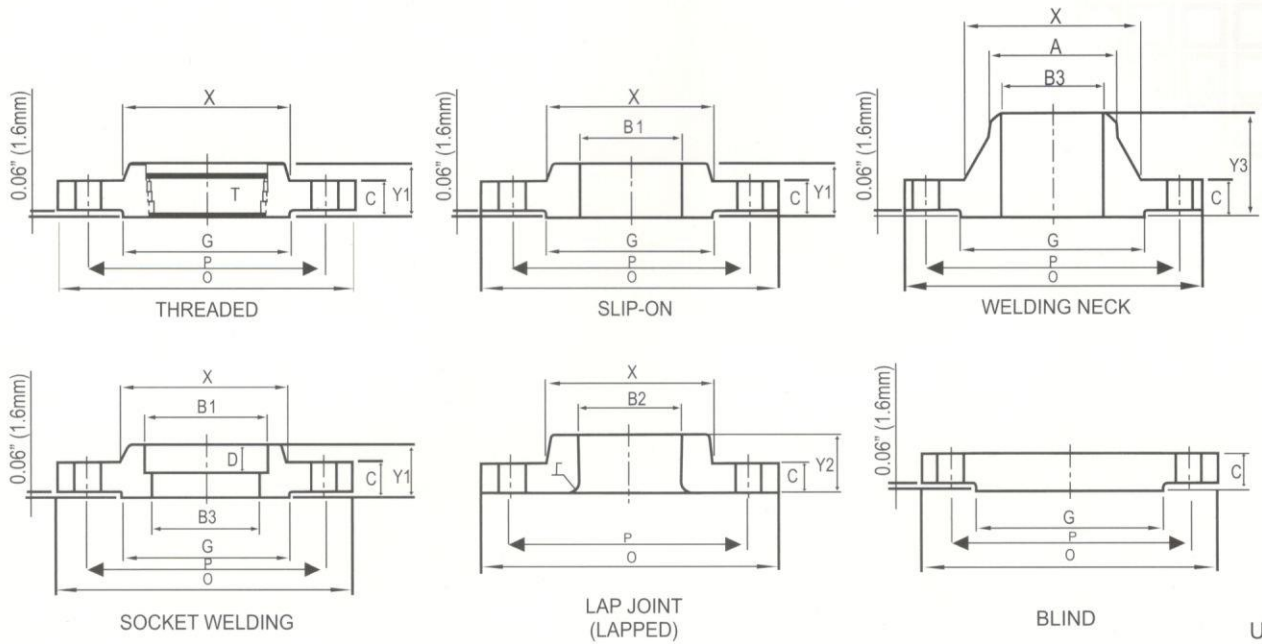
Normal Pipe Size	Outside Diam. of Flanges	Thk. of Flange Min.	Diam. of Hub	O.D. of Raised Face	Hub Diam. Chamfer of W.N	LENGTH THROUGH HUB			Thread Length	BORE			Corner Radius of Bore of Lapped Flange	Counter Bore Threaded Flange Min.	Depth of Socket	DRILLING			LENGTH OF STUD BOLTS			
						Threaded Slip-on Socket Welding	Lapped	Welding Neck		Slip-on Socket Welding	Lapped	Welding Neck Socket Welding				Diam. of Bolt Circle	Diam. of Bolt Holes	Number of Bolts	Diam. of Bolts (inch)	Raised Face (0.25 inch)	Male & Female of Tongue & Groove	Ring Joint
	O	C	X	G	A	Y1	Y2	Y3	T	B1	B2	B3	r	Q	D	P						
15	95.5	14.2	38.1	35.1	21.3	22.4	22.4	52.3	15.7	22.4	22.9		3.0	23.6	9.7	66.5	15.7	4	1/2	76.2	69.9	76.2
20	117.5	15.7	47.8	42.9	26.7	25.4	25.4	57.2	15.7	27.7	28.2		3.0	29.0	11.2	82.6	19.1	4	5/8	88.9	82.6	88.9
25	124.0	17.5	53.8	50.8	33.5	26.9	26.9	62.0	17.5	34.5	35.1		3.0	35.8	12.7	88.9	19.1	4	5/8	88.9	82.6	88.9
32	133.5	20.6	63.5	63.5	42.2	28.4	28.4	66.5	20.6	43.2	43.7		4.8	44.5	14.2	98.6	19.1	4	5/8	95.3	86.9	95.3
40	155.5	22.4	69.9	73.2	48.3	31.8	31.8	69.9	22.4	49.5	50.0		6.4	50.5	15.7	114.3	22.4	4	3/4	108.0	101.6	108.0
50	165.0	25.4	84.1	91.9	60.5	36.6	36.6	73.2	28.4	62.0	62.5		7.9	63.5	17.5	127.0	19.1	8	5/8	108.0	101.6	108.0
65	190.5	28.4	100.1	104.6	73.2	51.1	41.1	79.2	31.8	74.7	75.4		7.9	76.2	19.1	149.4	22.4	8	3/4	120.7	114.3	120.7
80	209.5	31.8	117.3	127.0	88.9	46.0	46.0	82.6	35.1	90.7	91.4		9.7	92.2	20.6	168.1	22.4	8	3/4	127.0	120.7	127.0
90	228.5	35.1	133.4	139.7	101.6	49.3	49.3	85.9	39.6	103.4	104.1		9.7	104.9	-	184.2	25.4	8	7/8	139.7	133.4	139.7
100	273.0	38.1	152.4	157.2	114.3	53.8	53.8	101.6	41.1	116.1	116.8		11.2	117.6	-	215.9	25.4	8	7/8	146.1	139.7	146.1
125	330.0	44.5	189.0	185.7	141.2	60.5	60.5	114.3	47.8	143.8	144.5		11.2	144.5	-	266.7	28.4	8	1	165.1	158.8	165.1
150	355.5	47.8	222.3	215.9	168.4	66.5	66.5	117.3	50.8	170.7	171.5		12.7	171.5	-	292.1	28.4	12	1	171.5	165.1	171.5
200	419.0	55.6	273.1	269.7	219.2	76.2	76.2	133.4	57.2	221.5	222.3		12.7	222.3	-	349.3	31.8	12	11/8	190.5	184.2	196.9
250	508.0	63.5	342.9	323.9	273.1	85.9	111.3	152.4	65.0	276.4	277.4		12.7	276.4	-	431.8	35.1	16	11/4	215.9	209.6	215.9
300	559.0	66.6	400.1	381.0	323.9	91.9	117.3	155.4	69.9	327.2	328.2		12.7	328.7	-	489.0	35.1	20	11/4	222.3	215.9	222.3
350	603.5	69.9	431.8	412.8	355.6	93.7	127.0	165.1	73.2	359.2	360.2		12.7	360.4	-	527.1	38.1	20	13/8	235.0	228.6	235.0
400	686.0	76.2	495.3	469.9	406.4	106.4	139.7	177.8	77.7	410.5	411.2		12.7	411.2	-	603.3	41.1	20	11/2	254.0	247.7	254.0
450	743.0	82.6	546.1	533.4	457.2	117.3	152.4	184.2	79.2	461.8	462.3		12.7	462.0	-	654.1	44.5	20	15/8	273.1	266.7	273.1
500	813.0	88.9	609.6	584.2	508.0	128.0	165.1	190.5	82.6	513.1	514.4		12.7	512.8	-	723.9	44.5	24	15/8	285.8	279.4	291.1
600	940.0	101.6	717.6	692.2	609.6	139.7	184.2	203.2	91.9	616.0	616.0		12.7	614.4	-	838.2	50.8	24	17/8	330.2	323.9	336.6

To be specified by purchaser

- Blind Flanges may be made with the same hub as that used for slip-on Flanges or without hub.
- The gasket surface and backside (bearing surface for bolting) are made parallel within 1 degree. To accomplish parallelisms, spot facing is carried out according to MSS SP-9, without reducing thickness @ 6.35 mm extra thickness.
- Dimensions of size 1/2" through 3 1/2" are the same as for class 400 flanges.
- Depth of socket (D) is covered by ANSI B 16.5 only in sizes through 3 inch, over 3 inch is at the manufacture's option.

CLASS 900 FLANGES

ANSI B 16.5 FORGED FLANGES



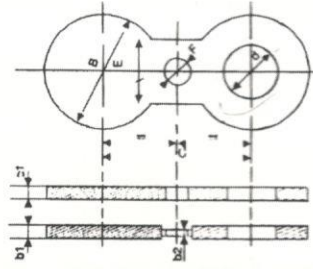
Unit : mm

Normal Pipe Size	Outside Diam. of Flanges	Thk. of Flange Min.	Diam. of Hub	Hub Diam. Chamfer of W.N	LENGTH THROUGH HUB			Thread Length	BORE			Corner Radius of Bore of Lapped Flange	Counter Bore Threaded Flange Min.	Depth of Socket	DRILLING			LENGTH OF STUD BOLTS			
					Threaded Slip-on Socket Welding	Lapped	Welding Neck		Slip-on	Lapped	Welding Neck				Diam. of Bolt Circle	Diam. of Bolt Holes	Number of Bolts	Diam. of Bolts (inch)	Raised Face (0.25 inch)	Male & Female of Tongue & Groove	Ring Joint
	O	C	X	A	Y1	Y2	Y3	T	B1	B2	B3	r	Q	D	P						
15	120.7	22.4	38.1	21.3	31.8	31.8	60.5	22.4	22.4	22.9		3.0	23.6	9.7	82.6	22.4	4	3/4	108.0	101.6	108.0
20	130.0	25.4	44.5	26.7	35.1	36.1	69.9	25.4	27.7	28.2		3.0	29.0	11.2	88	22.4	4	3/4	114.3	108.0	114.3
25	149.4	28.4	52.3	33.5	41.1	41.1	73.2	28.4	34.5	35.1		3.0	35.8	12.7	101.6	25.4	4	7/8	127.0	120.7	127.0
32	158.8	28.4	63.5	42.2	41.1	41.1	73.2	30.2	43.2	43.7		4.8	44.5	14.2	111.3	25.4	4	7/8	127.0	120.7	127.0
40	177.8	31.8	69.9	48.3	44.5	44.5	82.6	31.8	49.5	50.0		6.4	50.5	15.7	124.0	28.4	4	1	139.7	133.4	139.7
50	215.9	38.1	104.5	60.5	57.2	57.2	101.6	38.1	62.0	62.5		7.9	63.5	17.5	165.1	25.4	8	7/8	146.1	138.7	146.1
65	244.3	41.1	124.0	73.2	63.5	63.5	104.6	47.8	74.7	75.4		7.9	76.2	19.1	190.5	28.4	8	1	158.8	152.4	158.8
80	241.3	38.1	127.0	88.9	53.8	53.8	101.6	41.1	90.7	91.4		9.7	92.2	-	190.5	25.4	8	7/8	146.1	139.7	146.1
100	292.1	44.5	158.8	114.3	69.9	69.9	114.3	47.8	116.1	116.8		11.2	117.6	-	235.0	31.8	8	11/8	171.5	165.1	171.5
125	349.3	50.8	190.5	141.2	79.2	79.2	127.0	53.8	143.8	144.5		11.2	144.5	-	279.4	35.1	8	11/4	190.5	184.2	190.5
150	381.0	55.6	235.0	168.4	85.9	85.9	139.7	57.2	170.7	171.5		12.7	171.5	-	317.5	31.8	12	11/8	190.5	184.2	190.5
200	469.9	63.5	298.5	219.2	101.6	114.3	162.5	63.5	221.5	222.3		12.7	222.3	-	393.7	38.1	12	13/8	222.3	215.9	222.3
250	546.1	69.9	368.3	273.1	108.0	127.0	184.2	71.4	276.4	277.4		12.7	276.4	-	469.9	38.1	16	13/8	235.0	228.6	235.0
300	609.5	79.2	419.1	323.9	117.3	142.7	200.2	76.2	327.2	328.2		12.7	328.7	-	533.4	38.1	20	13/8	254.0	247.7	254.0
350	641.4	85.9	450.9	355.6	130.0	155.4	212.9	82.6	359.2	360.2		12.7	360.4	-	558.8	41.1	20	11/2	273.1	266.7	279.4
400	704.9	88.9	508.0	406.4	133.4	165.1	215.9	85.9	410.5	411.2		12.7	411.2	-	616.0	44.5	20	15/8	285.8	279.4	292.1
450	787.4	101.6	565.2	457.2	152.4	190.5	228.6	88.9	461.8	462.3		12.7	462.0	-	685.8	50.8	20	17/8	323.9	317.5	336.6
500	857.3	108.0	622.3	508.0	158.8	209.6	247.7	91.9	513.1	514.4		12.7	512.8	-	749.3	53.8	20	2	349.3	342.9	362.0
600	1041.4	139.7	749.3	609.6	203.2	266.7	292.1	101.6	616.0	616.0		12.7	614.4	-	901.7	68.5	20	2 1/2	438.2	431.8	457.2

To be specified by purchaser

3. Dimensions of sizes 1/2" through 3 1/2" are the same as for class 1500 Flanges.
 4. Socket welding flanges may be provided in NPS 1/2" through 2 1/2" using 1500 dimensions.
 5. 6.35 mm extra thickness.

Spectacle Blinds



ON	150 lbs							300 lbs						
	B	d	C	E	b1	b2	F	B	d	C	E	b1	b2	F
1/2	44	15	60	25	6.5	4	16	51	18	67	30	6.5	4	16
3/4	54	22	70	30	6.5	4	16	63	22	83	35	6.5	4	16
1	63	28.5	79	35	6.5	4	16	70	28.5	89	40	6.5	4	16
1 1/4	73	35	89	40	6.5	4	16	79	35	98	45	6.5	4	16
1 1/2	82	41.5	98	50	6.5	4	16	82	41.5	114	55	6.5	4	23
2	101	54	121	50	6.5	4	19	108	54	125	28	6.5	4	16
2 1/2	120	66.5	140	50	6.5	4	19	127	66.5	149	35	6.5	4	23
3	133	79.5	152	50	6.5	4	19	146	79.5	168	40	9.5	6	23
3 1/2	159	92	178	60	6.5	4	19	152	92	184	45	9.5	6	23
4	171	108	191	45	6.5	4	19	178	108	200	50	12.5	8	23
5	193	133.5	216	50	9.5	6	22	212	133.5	235	60	12.5	8	23
6	219	159	241	55	9.5	6	22	247	159	270	45	18	8	23
8	276	209.5	298	60	12.5	8	22	305	209.5	330	55	19	10	23
10	336	260.5	362	70	16	8	28	359	260.5	387	45	25.5	14	23
12	406	305	432	65	22.5	10	28	419	305	451	50	28.5	18	23
14	441	336.5	476	70	25.5	14	29	476	336.5	514	45	32	20	23
16	505	387.5	540	70	25.5	14	28	530	387.5	572	50	36.5	22	23
18	540	438	578	70	25.5	14	32	587	438	629	45	41.5	24	23
20	597	469	635	70	28.5	16	32	645	489	686	50	44.5	24	23
22	657	546	692	65	35	20	35	702	546	743	50	44.5	24	23
24	708	590.5	750	75	35	20	35	765	590.5	813	60	54	40	23
26	762	641.5	806	70	51	32	35	822	641.5	876	50	73	60	23
28	826	692	864	60	51	32	35	895	692	940	60	73	60	23
30	870	743	914	65	54	34	35	940	43	997	60	85	70	23
32	936	794	978	65	54	34	41	1003	794	1054	65	85	70	23
34	978	844.5	1029	65	57	34	41	1044	844.5	1105	70	98	80	23
36	1035	895.5	1086	60	67	34	41	1105	895.5	1168	65	98	80	23

ON	450 lbs							600 lbs						
	B	d	C	E	b1	b2	F	B	d	C	E	b1	b2	F
1/2	51	16	67	30	6.5	4	16	51	16	67	30	6.5	4	16
3/4	63	22	83	35	6.5	4	16	63	22	83	35	6.5	4	16
1	70	28.5	89	40	9.5	6	19	70	28.5	89	40	9.5	6	19
1 1/4	79	35	98	45	9.5	6	19	79	35	98	50	9.5	6	19
1 1/2	92	41.5	114	55	9.5	6	23	92	41.5	114	55	9.5	6	23
2	108	54	127	28	9.5	6	16	108	54	127	28	9.5	6	16
2 1/2	127	63.5	149	35	9.5	6	23	127	63.5	149	35	12.5	8	23
3	146	79.5	168	40	12.5	8	23	146	79.5	168	40	16	10	23
3 1/2	159	92	184	45	12.5	8	23	159	92	184	45	16	10	23
4	174	105	200	50	16	10	23	190	105	216	55	16	10	23
5	209	130	235	60	16	10	23	238	130	267	70	22.5	14	23
6	244	155.5	270	45	19	12	23	263	155.5	292	45	25.8	15	23
8	301	203	330	58	22.5	14	23	317	203	349	55	32	20	23
10	355	257	387	45	28.5	16	23	390	257	432	45	38	24	23
12	416	305	451	50	38	24	23	454	305	489	40	44.5	30	23
14	479	336.5	514	45	41.5	26	23	489	336.5	527	40	51	36	23
16	533	387.5	572	50	47.5	30	23	562	387.5	603	50	57	40	23
18	590	438	629	45	57	40	23	609	438	654	55	63	50	23
20	644	489	686	50	57	40	23	679	489	724	50	70	64	23
22	698	540	743	50	70	55	23	730	540	778	55	70	64	23
24	765	590.5	813	60	70	55	23	787	590.5	838	55	82	68	23
26	819	641.5	876	50	85	70	23	851	641.5	915	50	101	85	23
28	889	692.2	783	60	85	70	23	911	692.2	965	55	101	85	23
30	930	734	997	60	98	80	23	959	734	1022	60	110	90	23
32	1000	794	918	65	98	80	23	1119	794	1080	60	110	90	23
34	1041	844.5	1105	70	108	90	23	1060	844.5	1130	65	117	100	23
36	1105	895.5	1168	55	110	95	23	1117	895.5	1194	65	124	110	23

NOTE : 1) Preferable one piece except for stainless and allied steels, which can be manufactured in 3 pieces.
 2) Dimensions of other standards available on request.



DIMENSIONAL OF PIPE FLANGES AS PER TABLE BS-10

Table D: For Working Steam Pressure upto 50 lbs per sq.inch

Nominal Pipe Size	O.D of Pipe	Dia.of Flange	Dia.of BoltCircle	No. of Bolt	Dia. of Bolt	Thickness
1/2"	21.3	95.3	66.7	4	12.7	4.8
3/4"	26.7	101.6	73.0	4	12.7	4.8
1"	33.4	114.3	82.6	4	12.7	4.8
1 1/4"	42.2	120.7	87.6	4	12.7	6.4
1 1/2"	48.3	133.4	98.4	4	12.7	6.4
2"	60.3	152.4	114.3	4	15.9	7.9
2 1/2"	73.0	165.1	127.0	4	15.9	7.9
3"	88.9	184.2	146.1	4	15.9	9.5
3 1/2"	101.6	203.2	165.1	4	15.9	9.5
4"	114.3	215.9	177.8	4	15.9	9.5
5"	141.3	254.0	209.6	8	15.9	12.7
6"	168.3	279.4	228.6	8	15.9	12.7
7"	190.5	304.8	260.4	8	15.9	12.7
8"	219.1	336.6	292.1	8	15.9	12.7
9"	244.5	368.3	323.9	8	15.9	15.9
10"	273.0	406.4	355.6	8	19.1	15.9
12"	323.0	457.2	406.4	12	19.1	15.9
14"	355.6	527.1	469.9	12	22.2	19.1
16"	406.4	577.9	520.7	12	22.2	19.1
18"	457.2	641.4	584.2	12	22.2	22.2
20"	508.0	704.9	641.4	16	22.5	25.4
24"	609.6	825.5	755.7	16	25.4	28.6

Table E: For Working Steam Pressure 50 lbs upto 100 lbs per sq.inch

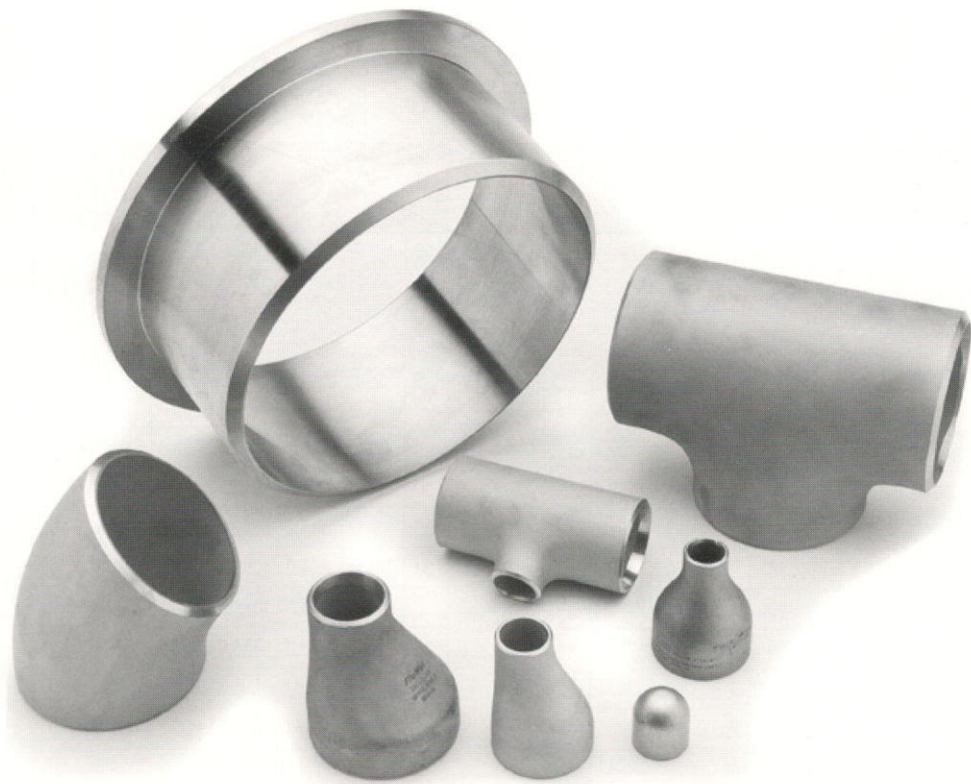
Nominal Pipe Size	Dia.of Flange	Dia. of Bolt Circle	No. of Bolt	Dia. of Bolt	Thickness
1/2"	95.3	66.7	4	12.7	6.4
3/4"	101.6	73.0	4	12.7	6.4
1"	114.3	82.6	4	12.7	7.1
1 1/4"	120.7	87.6	4	12.7	7.9
1 1/2"	133.4	98.4	4	12.7	8.7
2"	152.4	114.3	4	15.9	9.5
2 1/2"	165.1	127.0	4	15.9	10.3
3"	184.2	146.1	4	15.9	11.1
3 1/2"	203.2	165.1	4	15.9	11.9
4"	215.9	177.8	4	15.9	12.7
5"	254.0	209.6	8	15.9	14.3
6"	279.4	228.6	8	15.9	17.5
7"	304.8	260.4	8	15.9	19.1
8"	336.6	292.1	8	15.9	19.1
9"	368.3	323.9	8	15.9	20.6
10"	406.4	355.6	8	19.1	22.2
12"	457.2	406.4	12	19.1	25.4
14"	527.1	469.9	12	22.2	25.4
16"	577.9	520.7	12	22.2	25.4
18"	641.4	584.2	12	22.2	28.6
20"	704.9	641.4	16	22.5	31.8
24"	825.5	755.7	16	25.4	38.1

Table F: For Working Steam Pressure above 100 lbs and upto 150 lbs per sq.inch

Nominal Pipe Size	O.D of Pipe	Dia.of Flange	Dia. of Bolt Circle	No. of Bolt	Dia. of Bolt	Thickness
1/2"	21.3	95.3	66.7	4	12.7	9.5
3/4"	26.7	101.6	73.0	4	12.7	9.5
1"	33.4	120.7	87.3	4	15.9	9.5
1 1/4"	42.2	133.4	98.4	4	15.9	12.7
1 1/2"	48.3	139.7	104.8	4	15.9	12.7
2"	60.3	165.1	127.0	4	15.9	15.9
2 1/2"	73.0	184.2	146.1	8	15.9	15.9
3"	88.9	203.2	165.1	8	15.9	15.9
3 1/2"	101.6	215.9	177.8	8	15.9	19.1
4"	114.3	228.6	190.5	8	15.9	19.1
5"	141.3	279.4	235.0	8	19.1	22.2
6"	168.3	304.8	260.4	12	19.1	22.2
7"	190.3	336.6	292.1	12	19.1	22.2
8"	219.1	368.3	323.9	12	19.1	25.4
9"	244.5	406.4	355.6	12	22.2	25.4
10"	273.0	431.8	381.0	12	22.2	25.4
12"	323.0	489.0	438.2	16	22.2	28.6
14"	355.6	552.5	495.3	16	25.4	31.8
16"	406.4	609.6	552.5	20	25.4	31.8
18"	457.2	673.1	609.6	20	28.6	34.9
20"	508.0	736.6	673.1	24	28.6	38.1
24"	609.6	850.9	781.1	24	31.8	41.3

Table H: For Working Steam Pressure above 150 lbs and upto 250 lbs per sq.inch

Nominal Pipe Size	Dia.of Flange	Dia. of Bolt Circle	No. of Bolt	Dia. of Bolt	Thickness
1/2"	114.3	82.6	4	15.9	12.7
3/4"	114.3	82.6	4	15.9	12.7
1"	120.78	87.3	4	15.9	14.3
1 1/4"	133.4	98.4	4	15.9	17.5
1 1/2"	139.7	104.8	4	15.9	17.5
2"	165.1	127.0	4	15.9	19.1
2 1/2"	184.2	146.1	8	15.9	19.1
3"	203.2	165.1	8	15.9	22.2
3 1/2"	215.9	177.8	8	15.9	22.2
4"	228.6	190.5	8	15.9	25.4
5"	279.4	235.0	8	19.1	28.6
6"	304.8	260.4	12	19.1	28.6
7"	336.6	292.1	12	19.1	31.8
8"	368.3	323.9	12	19.1	31.8
9"	406.4	355.6	12	22.2	34.9
10"	431.8	381.0	12	22.2	34.9
12"	489.0	438.2	16	22.2	38.1
14"	552.5	495.3	16	25.4	41.3
16"	609.6	552.5	20	25.4	44.5
18"	673.1	609.6	20	28.6	47.6
20"	736.6	673.1	24	28.6	50.6
24"	850.9	781.1	25	31.8	57.2

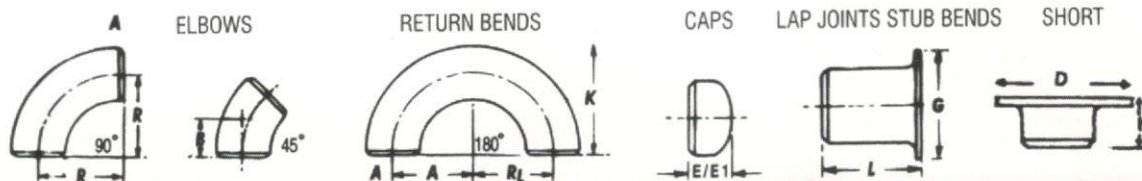


BUTT-WLED FITTINGS

Stainless Steel	: A182 304, 304L, 304H, 3016, 3016L, 3016H, 316TI, 321, 347, 347H, 904L.
Carbon Steel	: ASTM A234 WPB/A420 WPL3/A420 WP6/MSS-SP-75 WPHY 42/ 46/ 52/ 56/60/65/70/A53GR.B/A106 GR.B/ASM 192/A179/ etc
Alloy Steel	: ASTM A234 WP1/WP9/WP11/WP22/WP91 etc.
Duplex Steel	: UNS S31803, UNS S2205
Super Duplex Steel	: UNS S31254, UNS S32750, UNS S32760.
High Nickel Alloys	: Nickel 200, 201, Monel K 400 & 500. Inconel 600, 601, 625, 800, 825, Hastelloy C276, Alloy 20, Smo-254
Cupro Nickel	: 90/10 (UNS C70600), 70/30 (UNSC71500)
Others	: Monel, Nickel, Inconel, Hastelloy, Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed, Zinc, Lead etc.
Type	: Elbow, Tee, Reducer, Return Bends, Stub-Ends, Cap, Collar, Cross
Size	: 1/4" NB to 32" NB. (Seamless) & 1/4" NB (Welded)
Wall Thickness	: Sch. 55 to sch. XXS.



DIMENSION OF BUTT WELDING FITTINGS TO ANSI B 16.9/MSS SP 43

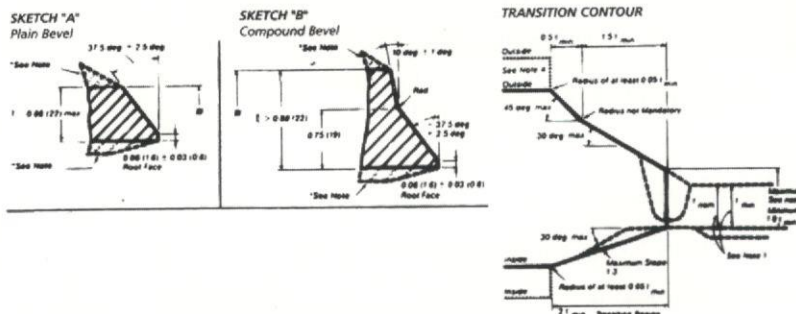


NOM BORE	PIPE OD	RADIUS 'R'						LENGTH 'L'			
		1 D	1.5 D	B 1.5 D	K	E/E1	G	MSS SP 43	ANSI B 16.9	D	h
1/2	21.3	12.7	38.1	15.9	48	25.4	34.9	50.8	76.2	45	8
3/4	26.7	19.05	38.1	19.0	51	25.4	42.8	50.8	76.2	54	8
1	33.4	25.4	38.1	22.2	56	38.1	50.8	50.8	101.6	64	10
1 1/4	42.1	31.75	47.6	25.0	70	38.1	63.5	50.8	101.6	74	12
1 1/2	48.3	38.1	57.15	28.6	83	38.1	73.0	50.8	101.6	84	12
2	60.3	50.8	76.2	35.0	106	44*	92.0	63.5	152.4	102	16
2 1/2	73.0	63.5	95.25	44.0	132	51*	106	63.5	152.4	122	16
3	88.9	76.2	114.3	50.8	159	64*	127.0	63.5	152.4	138	18
3 1/2	101.6	88.9	133.35	57.2	184	76*	139.7	76.2	152.4	148	18
4	114.3	101.3	152.4	63.5	210	76*	157.2	76.2	152.4	158	20
5	141.3	127.0	190.5	79.4	262	89*	185.7	76.2	208.2	188	20
6	168.3	152.4	228.6	95.3	313	102*	218	88.9	203.2	212	25
8	219.1	203.2	304.8	127.0	414	127*	270.0	101.6	203.2	270	30
10	373.1	254.0	381.0	158.7	518	152*	324.0	127.0	254.0	325	30
12	323.9	304.8	457.2	190.5	619	176*	361.0	152.4	254.0	380	35
14	355.6	355.6	533.4	222.2	711	191*	412.8	152.4	305.0	415	40
16	406.4	406.4	609.6	254.0	---	203*	470.0	152.4	305.0	470	40

NOM BORE	PIPE OD	RADIUS 'R'						LENGTH 'L'			
		1 D	1.5 D	B 1.5 D	K	E/E1	G	MSS SP 43	ANSI B 16.9	D	h
18	457.2	457.2	685.8	285.7	914	229*	533.4	152.4	305.0	535	40
20	508.0	508.0	762.0	317.6	1016	254*	584.2	152.4	305.0	585	40
22	558.8	558.8	838.2	343.0	1118	254*	641.4	152.4	305.0	642	40
24	609.6	609.6	914.4	381.0	1219	305*	692.2	152.4	305.0	693	40
26	660.0	660.0	991.0	405.0	---	267.0	---	---	---	---	---
28	711.0	711.0	1067.0	438.0	---	267.0	---	---	---	---	---
30	762.0	762.0	1143.0	470.0	---	267.0	---	---	---	---	---
32	813.0	813.0	1219.0	502.0	---	267.0	---	---	---	---	---
34	864.0	864.0	1295.0	533.0	---	267.0	---	---	---	---	---
36	914.0	914.0	1372.0	565.0	---	267.0	---	---	---	---	---
38	965.0	965.0	1448.0	600.0	---	305.0	---	---	---	---	---
40	1016.0	1016.0	1524.0	632.0	---	305.0	---	---	---	---	---
42	1067.0	1067.0	1600.0	660.0	---	305.0	---	---	---	---	---
44	1118.0	1118.0	1676.0	695.0	---	343.0	---	---	---	---	---
46	1168.0	1168.0	1753.0	727.0	---	343.0	---	---	---	---	---
48	1219.0	1219.0	1829.0	759.0	---	343.0	---	---	---	---	---
---	---	---	---	---	---	---	---	---	---	---	---

* All dimensions are in mm

EDGE PERPETRATION AS PER ANSI B 16.9 - B 16.25



Normal wall Thickness	End Preparation
Less than x*	Cut square or slightly chamfer, at mrfs option
x* to 0.88 incl (22)	Plain bevel as in sketch "A" above
More than 0.88 (22)	Compound bevel as in sketch "B" above x* = 0.19 (5) for carbon steel or Ferritic Alloy Steel and 0.12 (4) for Austenitic Alloy steel.

- The value 1 min is whichever of the following as applicable :
(a) the minim ordered wall thickness of the pipe;
(b) 0.875 times the nominal wall thickness of pipe ordered to a pipe schedule wall thickness which has as under tolerance of 12.5%
- The maximum thickness at end of the component is :
(a) The greater of 1 min. + 0.15 in, (4mm) or 1.15 t min, when ordered on a minium wall basis
(b) The greater of t min , +0.15 in, (4 mm) or 1.10 t nom. When ordered on a nominal wall basis
- Weld bevel is shown for illustrations only.
- Where transition using maximum slope do no intersect outside surface, as shown by phantom outline, maximum slopes shown or alternate radii shown in phantom outline shall be used.
- Dimension is parenthesis are in millimeters. Other are in inches.

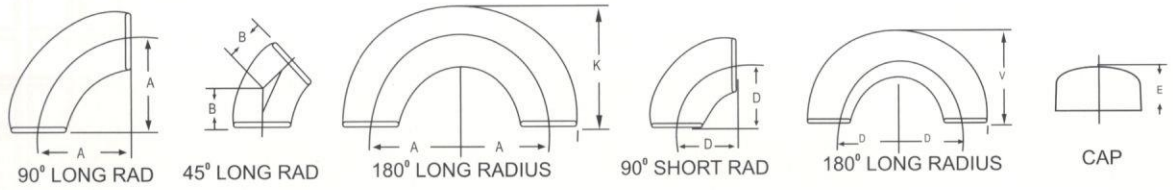
Note : 2. The shape of cap shall be ellipsoidal.

Note : 2. Of specification ANSI b 16.9 for cap E1 & E2 to be consider

Length E1 applies for thickness greater than that given in column "Limiting wall Thickness" for NPS 24 (DIN 600) & smaller, For NPS 26 (DN 650) and larger, length E1 shall be by agreement between manufacturer and purchaser

*E1 Height

BUTT WELDING FITTINGS

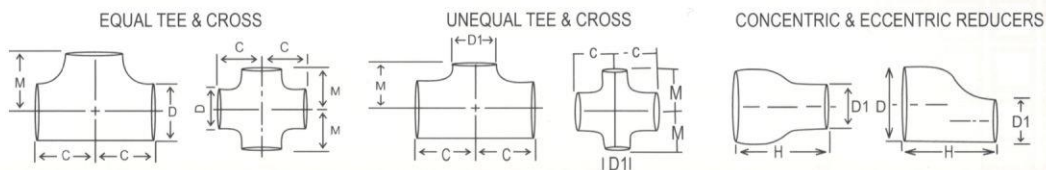


DIMENSIONAL STANDARD ANSI B-16.9 AND B-16.28

Nominal Pipe Size	Pipe O.D.	Centre to End			Back to Face		
		A	B	D	E	V	K
1/2	21.3	38	16	---	25	---	43
3/4	26.7	29	11	25	25	---	43
1	33.4	38	22	32	38	41	56
1 1/4	42.2	48	25	38	38	52	70
1 1/2	48.3	57	29	51	38	62	83
2	60.3	76	35	64	38	81	106
2 1/2	73.0	95	44	76	38	100	132
3	88.9	114	51	89	51	121	159
3 1/2	101.6	133	57	102	64	140	184
4	114.3	152	64	127	64	159	210
5	141.3	190	79	152	76	197	262
6	168.3	229	95	203	89	237	313
8	219.1	305	127	254	102	313	414
10	273.1	381	159	305	127	391	518
12	323.9	457	190	356	152	467	619
14	355.6	533	222	406	165	538	711
16	406.4	610	254	457	178	610	813
18	457.0	686	286	508	203	686	914
20	508.0	762	318	559	229	762	1016
22	559.0	838	343	610	254	838	1118
24	610.0	914	381	660	267	914	1219
26	660.0	991	406	711	267	---	---
28	711.0	1067	438	762	267	---	---
30	762.0	1143	470	813	267	---	---
32	813.0	1219	502	864	267	---	---
34	864.0	1295	533	914	267	---	---
36	914.0	1372	565	965	267	---	---
38	965.0	1448	600	1016	305	---	---
40	1016.0	1524	632	1067	305	---	---
42	1067.0	1600	660	1118	305	---	---
44	1118.0	1676	695	1168	343	---	---
46	1168.0	1753	727	1219	343	---	---
48	1219.0	1829	759	---	343	---	---



DIMENSIONS OF BUTT WELDING FITTINGS TO ANSI B 16.9 (upto 48") / MSS SP 43 (upto 24")



Nominal Pipe Size	Center to End Run	Center to End Branch	Length	Nominal Pipe Size	Center to End Run	Center to End Branch	Length	Nominal Pipe Size	Center to End Run	Center to End Branch	Length	Nominal Pipe Size	Center to End Run	Center to End Branch	Length	Nominal Pipe Size	Center to End Run	Center to End Branch	Length	Nominal Pipe Size	Center to End Run	Center to End Branch	Length
D x D1	C	M	H	D x D1	C	M	H	D x D1	C	M	H	D x D1	C	M	H	D x D1	C	M	H	D x D1	C	M	H
1 x 1	38	38	—	5 x 5	124	124	-	18 x 18	343	343	-	30 x 30	559	559	-	38 x 38	711	711	-	44 x 44	813	762	-
1 x 1/2	38	38	51	5 x 2	124	105	127	18 x 16	343	330	381	30 x 28	559	546	610	38 x 36	711	711	610	44 x 42	813	762	610
1 x 3/4	38	38	51	5 x 2 1/2	124	108	127	18 x 14	343	330	381	30 x 26	559	546	610	38 x 34	711	698	610	44 x 40	813	749	610
1 1/4 x 1 1/4	48	48	51	5 x 3	124	111	127	18 x 12	343	321	381	30 x 24	559	533	610	38 x 32	711	688	610	44 x 38	813	737	610
1 1/4 x 1/2	48	48	51	5 x 3 1/2	124	114	127	18 x 10	343	308	381	30 x 22	559	521	610	38 x 30	711	673	610	44 x 36	813	724	610
1 1/4 x 3/4	48	48	51	5 x 4	124	117	127	18 x 8	343	298	(381)	30 x 20	559	(508)	(610)	38 x 28	711	648	610	44 x 34	813	724	(610)
1 1/4 x 1	48	48	51	6 x 6	143	143	-	20 x 20	381	381	-	30 x 20	559	(495)	(610)	38 x 26	711	648	610	44 x 32	813	711	(610)
1 1/2 x 1 1/2	57	57	-	6 x 2 1/2	143	121	140	20 x 18	381	368	508	30 x 16	559	(483)	(610)	38 x 24	711	635	(610)	44 x 30	813	711	(610)
1 1/2 x 1/2	57	57	64	6 x 3	143	124	140	20 x 16	381	356	508	30 x 14	559	(483)	(610)	38 x 22	711	622	(610)	44 x 28	813	698	(610)
1 1/2 x 3/4	57	57	64	6 x 3 1/2	143	127	140	20 x 14	381	356	508	30 x 12	559	(473)	(610)	38 x 20	711	610	(610)	44 x 26	813	698	(610)
1 1/2 x 1	57	57	64	6 x 4	143	130	140	20 x 12	381	346	508	30 x 10	559	460	(610)	38 x 18	711	597	(610)	44 x 24	813	698	(610)
1 1/2 x 1 1/4	57	57	64	6 x 5	143	137	140	20 x 10	381	333	(508)	32 x 32	597	597	-	40 x 40	749	749	-	44 x 22	813	686	(610)
2 x 2	64	64	-	8 x 8	178	178	-	20 x 8	381	324	(508)	32 x 30	597	584	610	40 x 38	749	749	610	44 x 20	813	686	(610)
2 x 3/4	64	44	76	8 x 6	178	168	152	22 x 22	419	419	-	32 x 28	597	572	610	40 x 36	749	737	610	46 x 46	851	800	-
2 x 1	64	51	76	8 x 5	178	162	152	22 x 20	419	406	508	32 x 26	597	572	610	40 x 34	749	724	610	46 x 44	851	800	711
2 x 1 1/4	64	57	76	8 x 4	178	156	152	22 x 18	419	384	508	32 x 24	597	559	610	40 x 32	749	711	610	46 x 42	851	787	711
2 x 1 1/2	64	60	76	8 x 3 1/2	178	152	152	22 x 16	419	381	508	32 x 22	597	546	(610)	40 x 30	749	689	610	46 x 40	851	775	711
2 1/2 x 2 1/2	76	76	-	10 x 10	216	216	-	22 x 14	419	381	508	32 x 20	597	533	(610)	40 x 28	749	673	(610)	46 x 38	851	762	711
2 1/2 x 1	76	57	89	10 x 8	216	203	178	22 x 12	419	371	(508)	32 x 18	597	521	(610)	40 x 26	749	673	(610)	46 x 36	851	762	(711)
2 1/2 x 1 1/4	76	64	89	10 x 6	216	194	178	22 x 10	419	359	(508)	32 x 16	597	508	(610)	40 x 24	749	660	(610)	46 x 34	851	749	(711)
2 1/2 x 1 1/2	76	67	89	10 x 5	216	194	178	24 x 24	432	432	-	32 x 14	597	508	(610)	40 x 22	749	648	(610)	46 x 32	851	749	(711)
2 1/2 x 2	76	70	89	10 x 4	216	184	178	24 x 22	432	432	508	34 x 34	635	635	-	40 x 20	749	635	(610)	46 x 30	821	737	(711)
3 x 3	86	86	-	12 x 12	254	254	-	24 x 20	432	432	508	34 x 32	635	622	610	40 x 18	749	622	(610)	46 x 28	851	737	(711)
3 x 1 1/4	86	70	89	12 x 10	254	241	203	24 x 18	432	419	508	34 x 30	635	610	610	42 x 42	762	711	-	46 x 26	851	737	(711)
3 x 1 1/2	86	73	89	12 x 8	254	229	203	24 x 16	432	406	508	34 x 28	635	597	610	42 x 40	762	711	610	46 x 24	851	724	(711)
3 x 2	86	76	89	12 x 6	254	219	203	24 x 14	432	406	(508)	34 x 26	635	597	610	42 x 38	762	711	610	46 x 22	851	724	(711)
3 x 2 1/2	86	83	89	12 x 5	254	216	203	24 x 12	432	397	(508)	34 x 24	635	584	(610)	42 x 36	762	711	610	48 x 48	889	838	-
3 1/2 x 3 1/2	95	95	-	14 x 14	279	279	-	24 x 10	432	384	(508)	34 x 22	635	572	(610)	42 x 34	762	711	610	48 x 46	889	838	711
3 1/2 x 1 1/2	95	79	102	14 x 12	279	270	330	26 x 26	495	495	-	34 x 20	635	559	(610)	42 x 32	762	711	610	48 x 44	889	838	711
3 1/2 x 2	95	93	102	14 x 10	279	257	330	26 x 24	495	483	610	34 x 18	635	546	(610)	42 x 30	762	711	610	48 x 42	889	813	711
3 1/2 x 2 1/2	95	89	102	14 x 8	279	248	330	26 x 22	495	470	610	34 x 16	635	533	(610)	42 x 28	762	698	(610)	48 x 40	889	813	711
3 1/2 x 3	95	92	102	14 x 6	279	238	330	26 x 20	495	457	610	36 x 36	673	673	-	42 x 26	762	698	(610)	48 x 38	889	813	(711)
4 x 4	105	105	-	16 x 16	305	305	-	26 x 18	495	444	610	36 x 34	673	660	610	42 x 24	762	660	(610)	48 x 36	889	787	(711)
4 x 1 1/2	105	86	102	16 x 14	305	305	356	26 x 16	495	432	(610)	36 x 32	673	648	610	42 x 22	762	660	(610)	48 x 34	889	787	(711)
4 x 2	105	89	102	16 x 12	305	295	356	26 x 14	495	432	(610)	36 x 30	673	635	610	42 x 20	762	660	(610)	48 x 32	889	787	(711)
4 x 2 1/2	105	95	102	16 x 10	305	283	356	26 x 12	495	422	(610)	36 x 28	673	622	610	42 x 18	762	648	(610)	48 x 30	889	762	(711)
4 x 3	105	98	102	16 x 8	305	273	356	28 x 28	521	521	-	36 x 26	673	622	610	42 x 16	762	635	(610)	48 x 28	889	762	(711)
4 x 3 1/2	105	102	102	16 x 6	305	264	(356)	28 x 26	521	521	610	36 x 24	673	610	(610)	48 x 26	889	762	(610)	48 x 26	889	762	(711)
								28 x 24	521	508	610	36 x 22	673	597	(610)	48 x 24	889	737	(711)	48 x 24	889	737	(711)
								28 x 22	521	495	610	36 x 20	673	584	(610)	48 x 22	889	737	(711)				
								28 x 20	521	483	610	36 x 18	673	572	(610)								
								28 x 18	521	470	(610)	36 x 16	673	559	(610)								
								28 x 16	521	457	(610)												
								28 x 14	521	457	(610)												
								28 x 12	521	448	(610)												

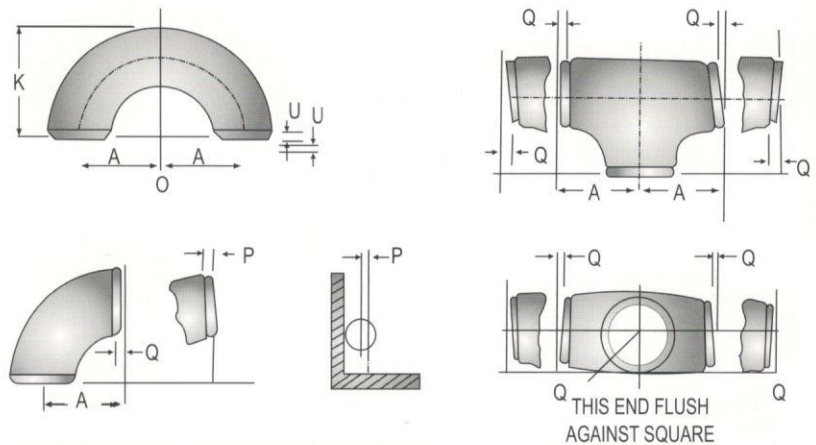
1. Figures in brackets are as per the manufacturer's standard
2. Outlet dimension M for run sizes NPS 14 (DN 350) and large is recommended but not required.

All dimensions in mm

DIMENSIONAL TOLERANCES IN MM OF BUTTWELD FITTINGS TO ANSI B 16.9/B 16.28

All Fittings				90° and 45° Elbows and Tees	Reducers and Lap Joints Stub Ends	Caps	180 Degree Returns			Lap Joint Stub Ends		
Nominal Pipe Size (NPS)	Outside Diameter at Bevel(1) D	Inside Diameter at End (2), (3)	Wall Thickness (2) t	Center to End Dimension A,B,C,M	Overall Length L.H.	Overall Length E	Center to Center Dimension O	Back to Face Dimension K	Alignment of Ends U	Outside Diameter of Lap G	Thickness of Lap T	Fillet Radius of Lap R
½ to 2 ½	± 1	± 0.8		± 2	± 2	± 4	± 7	± 7	± 1	±0, -1	±2, -0	±0, -1
3 to 3 ½	± 1	± 1.6		± 2	± 2	± 4	± 7	± 7	± 1	±0, -1	±2, -0	±0, -1
4	+ 2-1	± 1.6	Not Less than	± 2	± 2	± 4	± 7	± 7	± 1	±0, -1	±2, -0	±0, -2
5 to 6	+3, -2	± 1.6	87.5%	± 2	± 2	± 7	± 7	± 7	± 1	±0, -1	±2, -0	±0, -2
8	+3, -2	± 1.6	of	± 2	± 2	± 7	± 7	± 7	± 1	±0, -1	±2, -0	±0, -2
10	+4, -3	± 3.2	Nominal	± 2	± 2	± 7	± 10	± 7	± 2	±0, -2	±2, -0	±0, -2
12 to 18	+4, -3	± 3.2	Thickness	± 3	± 3	± 7	-	± 7	± 2	±0, -2	±2, -0	±0, -2
20 to 24	+6, -5	± 4.8		± 3	± 3	± 7	-	-	-	-	-	-
26 to 30	+7, -5	± 4.8		± 3	± 5	± 10	-	-	-	-	-	-
32 to 48	+7, -5	± 4.8		± 5	± 5	± 10	-	-	-	-	-	-

Nominal Pipe Size (MPS)	Angularity Tol.	
	Off Angle O	Off Plane P
1/2 to 4	1	2
5 to 8	2	4
10 to 12	3	5
14 to 16	3	7
18 to 24	4	10
26 to 30	5	10
32 to 42	5	13
44 to 48	5	20



DIMENSIONAL TOLERANCES IN MM FOR SOCKETWELD FITTINGS TO ANSI B-16.11

Nominal Bore Inch	Elbows Tees Crosses	Couplings	Half Couplings	All Fittings	Bore diameter of Fittings	Fittings Wall Thickness	Concentricity of Bores
	Center to Bottom of Socket	Bottom to Bottom of Socket	Bottom of Socket to opposite Face	Bore diameter of Socket			
1/8 & 1/4	± 0.8	± 1.6	± 0.8			Not less than	Socket and
3/8 to 3/4	± 1.6	± 3.0	± 1.6	± 0.3	± 0.4	Nominal	Fittings Bore
1 to 2	± 2.0	± 4.0	± 2.0			Pipe Wall	within
2½" to 4	± 2.5	± 5	± 2.5	± 0.4		Thickness	± 0.8

DIMENSIONAL TOLERANCES IN MM FOR SCREWED FITTINGS TO ANSI B-16.11

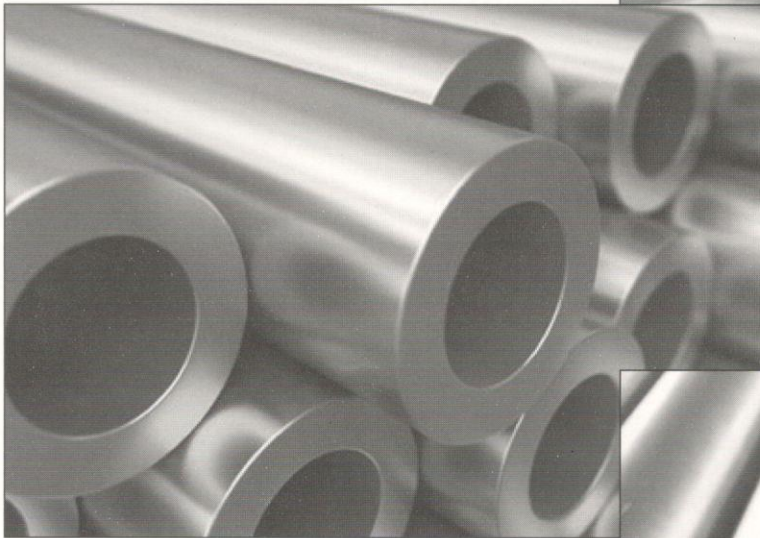
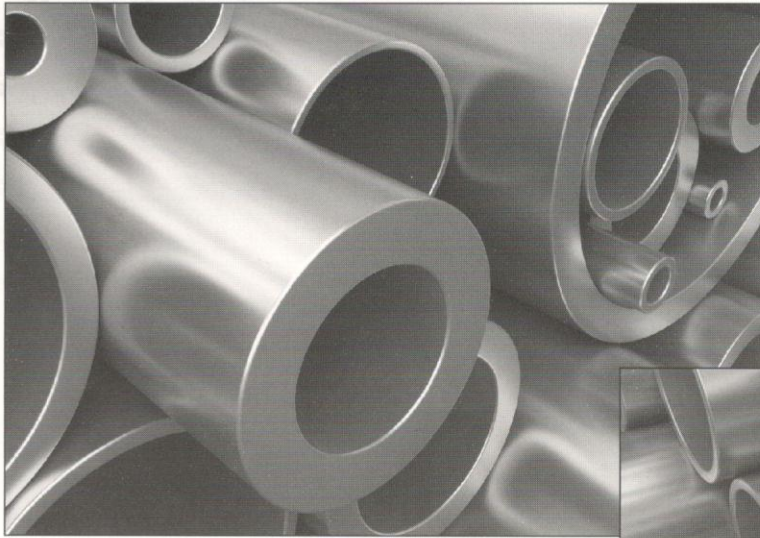
Nominal Bore Inch	Elbows Tees Crosses		Couplings* Half Couplings		Bushing Plug.			
	Center to End	Diameter of Bore	Overall Length	Diameter	Height of Head	Length Under Head	Across Flat	Overall Length
½ to ¾	+ 0.8	+ 1.6	± 1.6	+1.6	±0.8	±1.6	+0	± 1.6
		- 0.8		- 0			- 0.8	
1 to 2	+ 1.6	+ 2.4	± 3.2	+2.4	±1.6	±2.4	+0	± 2.4
		- 1.6	- 0	- 0			- 1.6	



CHEMICAL COMPOSITION OF STAINLESS STEEL

Grade	Chemical Composition - Per cent									Nearest Equivalent Specification		
	AISI	C Max	Mn Max	P Max	S Max	Si Max	Cr	Ni	Mo	Other Element	I.S	En
201		≤0.15	5.50~7.50	≤0.060	≤0.030	≤1.00	16.00/18.00	3.50~5.50	-	N≤0.25	-	-
202		≤0.15	7.50~10.00	≤0.060	≤0.030	≤1.00	17.00/19.00	4.00~6.00	-	N≤0.25	-	-
301		0.15	2.0max	0.045	0.040	1.0	16.0/18.0	6.0/8.0	-	-	10Cr 17Ni7	-
302		0.15	2.0	0.045	0.030	1.0	17.0/19.0	8.0/10.0	-	-	07Cr18Ni9	En-58A
303		0.15	2.0	0.045	-	1.0	17.0/19.0	8.0/10.0	-	-	15Cr18Ni9	En-58M
304		0.08	2.0	0.045	0.030	1.0	18.0/20.0	8.0/10.0	-	-	04Cr18Ni10	En-58E
304L		0.030	2.0	0.045	0.030	1.0	18.0/20.0	8.0/10.0	-	-	02Cr18Ni11	-
308		0.08	2.0	0.040	0.030	1.0	10.0/21.0	10.0/12.0	-	-	-	-
309		0.20	2.0max	0.045	0.030	1.0	22.0/24.0	12.0/15.0	-	-	20Cr24Ni12	-
309S		0.08	2.0	0.045	0.030	1.0	22.0/24.0	12.0/15.0	-	-	-	-
310		0.25	2.0	0.045	0.030	1.50	24.0/26.0	19.0/22.0	-	-	10Cr25Ni12	-
310S		0.08	2.0	0.045	0.030	1.50	24.0/26.0	19.0/22.0	-	-	-	-
316		0.08	2.0	0.045	0.030	1.0	16.0/18.0	10.0/14.0	2.0/3.0	-	04Cr17Ni12Mo2	En 58H
316L		0.030	2.0	0.045	0.030	1.0	16.0/18.0	10.0/14.0	2.0/3.0	-	03Cr17Ni12Mo2	-
316TI		0.080	2.0	0.045	0.030	1.0	16.0/18.0	10.0/14.0	2.0/3.0	Ti5xCmin	-	-
317		0.08	2.0	0.045	0.030	1.0	18.0/20.0	11.0/15.0	3.0/4.0	-	-	-
317L		0.030	2.0	0.045	0.030	1.0	18.0/20.0	11.0/15.0	3.0/4.0	-	Tiy5 c Min	-
321		0.08	2.0	0.045	0.030	1.0	17.0/19.0	9.0/12.0	-	Ti5xCmin	04Cr18Ni10Ti20	En-58C
347		0.08	2.0	0.045	0.030	1.0	17.0/19.0	9.0/12.0	-	Nb/Ta10xCmin	04Cr18Ni10Nb-40	En-58G
403		0.15	1.0	0.040	0.030	0.50	11.5/13.0	0.60	-	-	-	-
409		0.030	1.00	0.040	0.030	1.00	10.50/11.75	0.50max	-	6X%Cmin.75 max	-	-
409M		0.028	0.8/1.5	0.040	0.030	1.00	10.8/12.5	1.5max	-	T10.25/0.75	-	-
410		0.15	1.0	0.040	0.030	1.0	11.5/13.5	0.60	-	-	12Cr13	En-58A
410S		0.08	1.0	0.040	0.030	1.0	11.5/13.5	0.60max	-	-	-	-
416		0.15	1.25	0.060	0.15	1.00	12.00/14.00	-	≤0.60	-	N0.25 max	-
420		over.15	1.0	0.040	0.030	1.0	12.0/14.0	0.60	-	-	22Cr13	En56C&D
430		0.12	1.00	0.040	0.030	0.75	16.00/18.00	0.60	-	-	07Cr17	En-60
431		0.20	1.0max	0.040	0.030	1.0	15.0/17.0	1.25/2.50	0.75max	-	15Cr16Ni2	En-57
440A		0.60/0.70	1.0	0.040	0.030	1.0	16/18	-	-	-	-	-
440B		0.75	1.0	0.040	0.030	1.0	16.0/18.0	-	0.75max	-	-	-
440C		0.95	1.0	0.040	0.030	1.0	16/18	-	0.75max	-	-	-
446		0.20	1.50max	0.040	0.030	1.0	23.0/27.0	0.60max	-	N-25max	-	-
17.4PH0.07		1.0	0.040	0.030	1.0	15/17.50	3/5	-	cv.3.00	-	-	-
UNS S31803		0.03	2.0	0.030	0.020	1.00	21.0/23.0	4.5/6.5	2.5/3.5	N - 0.08 / 0.20	-	-
UNS S32760		0.03	1.0	0.03	0.01	1.0	24.0/26.0	6.0/8.0	3.0/4.0	N - 0.20 / 0.30	-	-
UNS S32750		0.03	1.0	0.035	0.02	0.80	24.0/26.0	6.0/8.0	3.0/5.0	N - 0.24 / 0.32	-	-
UNS S32550		0.04	1.5	0.04	0.030	1.00	24.0/27.0	4.50/6.50	2.9/3.9	N - 0.10 / 0.25	-	-

Range of
Pipes

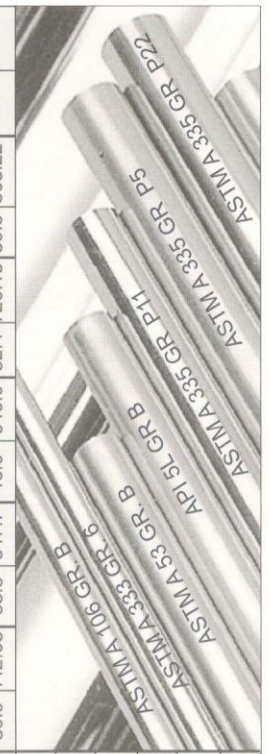


Stainless Steel Pipe Dimension (as Per Ansi B 36.19-1965)

Nominal Bore		Outside Diameter	Schedule 5S		Schedule 10S		Schedule 20S		Schedule 40S		Schedule 80S		Schedule 160S		Schedule XXS	
mm	INCH	mm	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)
3	1/8	10.3	1.24	0.276	1.24	0.28	1.5	0.33	1.73	0.37	2.41	0.47	-	-	-	-
6	1/4	13.7	1.24	0.390	1.65	0.49	2.00	0.58	2.24	0.631	3.02	0.80	-	-	-	-
10	3/8	17.1	1.24	0.490	1.65	0.63	2.00	0.74	2.31	0.845	3.20	1.10	-	-	-	-
15	1/2	21.3	1.65	0.800	2.11	1.00	2.30	1.07	2.77	1.27	3.75	1.62	4.75	1.94	7.47	2.55
20	3/4	26.7	1.65	1.03	2.11	1.28	2.55	1.52	2.87	1.68	3.91	2.20	5.54	2.89	7.82	3.63
25	1	33.4	1.65	1.30	2.77	2.09	2.55	1.94	3.38	2.50	4.55	3.24	6.35	4.24	9.09	5.45
32	1.1/4	42.2	1.65	1.65	2.77	2.70	3.00	2.90	3.56	3.38	4.85	4.47	6.35	5.61	9.70	7.77
40	1.1/2	48.3	1.65	1.91	2.77	3.11	3.00	3.55	3.68	4.05	5.08	5.41	7.14	7.25	10.16	9.54
50	2	60.3	1.65	2.40	2.77	3.93	3.00	4.24	3.91	5.44	5.54	7.48	8.74	11.1	11.07	13.44
65	2.1/2	73.0	2.11	3.69	3.05	5.26	4.00	6.81	5.16	8.63	7.01	11.4	9.53	14.9	14.2	20.39
80	3	88.9	2.11	4.51	3.05	6.45	4.00	8.37	5.49	11.30	7.62	15.2	11.1	21.3	15.24	27.65
100	4	114.3	2.11	5.84	3.05	8.36	4.50	12.18	6.02	16.07	8.56	22.3	13.49	33.54	17.12	41.03
125	5	141.3	2.77	9.47	3.40	11.57	5.00	16.80	6.55	21.8	9.53	31.97	15.88	49.11	19.05	57.43
150	6	168.3	2.77	11.32	3.40	13.84	6.35	25.36	7.11	28.3	10.97	42.7	18.2	67.56	21.95	79.22
200	8	219.1	2.77	14.79	3.76	19.96	6.35	33.31	8.18	42.6	12.7	64.6	23.0	111.2	22.23	107.8
250	10	273.1	3.40	22.63	4.19	27.78	6.35	41.77	9.27	60.5	12.7	96.0	28.6	172.4	25.40	155.15
300	12	323.9	3.96	31.25	4.57	36.00	6.35	49.7	9.52	73.88	12.7	132.0	33.32	238.76	25.40	186.97
350	14	355.6	3.96	34.36	4.78	41.3	7.92	67.80	11.13	94.59	19.05	158.08	35.71	281.70	-	-
400	16	406.4	4.19	41.56	4.78	47.29	7.92	77.83	12.7	123.30	21.41	203.33	40.46	365.11	-	-
450	18	457.2	4.19	46.80	4.78	53.42	7.92	87.71	14.27	155.80	23.8	254.36	45.71	466.40	-	-
500	20	508.0	4.78	59.25	5.54	68.71	9.53	117.14	15.09	183.42	26.19	311.2	49.99	564.68	-	-
600	24	609.6	5.54	82.47	6.35	94.45	9.53	141.12	17.48	255.41	30.96	442.08	59.54	808.22	-	-

CARBON STEEL & ALLOY STEEL PIPE DIMENSIONS ANSI B 36.10

Nominal Pipe size	O/D	Schedule 10		Schedule 20		Schedule 30		Schedule STD		Schedule 40		Schedule 60		Schedule XS		Schedule 80		Schedule 100		Schedule 120		Schedule 140		Schedule 160		Schedule XXS						
		MM	INCH	W.T.	KG/M	W.T.	KG/M	W.T.	KG/M	W.T.	KG/M	W.T.	KG/M	W.T.	KG/M	W.T.	KG/M	W.T.	KG/M	W.T.	KG/M	W.T.	KG/M	W.T.	KG/M	W.T.	KG/M	W.T.	KG/M			
3	1/8	10.3						1.73	0.37	1.73	0.37			2.41	0.47	2.41	0.47															
6	1/4	13.7						2.24	0.63	2.24	0.63			3.02	0.80	3.02	0.80															
10	3/8	17.1						2.31	0.84	2.31	0.84			3.20	1.10	3.20	1.10															
15	1/2	21.3						2.77	1.27	2.77	1.27			3.73	1.62	3.73	1.62								4.78	1.95	7.5	2.55				
20	3/4	26.7						2.87	1.69	2.87	1.69			3.91	2.20	3.91	2.20								5.56	2.90	7.82	3.64				
25	1	33.4						3.38	2.50	3.38	2.50			4.55	3.24	4.55	3.24								6.35	4.24	9.1	5.45				
32	1 1/4	42.2						3.56	3.39	3.56	3.39			4.85	4.47	4.85	4.47								6.35	5.61	9.7	7.77				
40	1 1/2	48.3						3.68	4.05	3.68	4.05			5.08	5.41	5.08	5.41								7.14	7.25	10.2	9.56				
50	2	60.3						3.91	5.44	3.91	5.44			5.54	7.48	5.54	7.48								8.74	11.11	11.1	13.4				
65	2 1/2	73.0						5.16	8.63	5.16	8.63			7.01	11.41	7.01	11.41									9.53	14.92	14.0	20.4			
80	3	88.9						5.49	11.3	5.49	11.3			7.62	15.3	7.62	15.3									11.13	21.35	15.24	27.7			
90	3 1/2	101.6						5.74	13.57	5.74	13.57			8.08	18.63	8.08	18.63															
100	4	114.3						6.02	16.07	6.02	16.07			8.56	22.3	8.56	22.3				11.13	28.32				13.5	33.5	17.12	41.03			
125	5	141.3						6.55	21.77	6.55	21.77			9.53	30.9	9.53	30.9				12.7	40.2				15.9	49.11	19.0	57.4			
150	6	168.3						7.11	28.26	7.11	28.26			10.97	42.5	10.97	42.5				14.3	54.2				18.3	67.5	21.95	79.22			
200	8	219.1						8.18	42.5	8.18	42.5			12.7	64.6	12.7	64.6			15.1	75.92	18.3	90.4	20.6	100.9	23.0	111.27	22.23	108.0			
250	10	273.0						9.27	60.3	9.27	60.3			12.7	81.5	12.7	81.5			18.3	114.7	21.44	133.0	25.4	155	28.6	172.3	25.4	155.0			
300	12	323.8						9.53	73.8	9.53	73.8			14.27	109.0	14.27	109.0			21.4	160.0	25.4	187.0	28.6	208	33.3	238.7	25.4	187.0			
350	14	355.6						9.53	81.3	9.53	81.3			15.09	126.0	15.09	126.0			23.8	195.0	27.8	224.0	31.8	253.5	35.7	281					
400	16	406.4						9.53	93.3	9.53	93.3			16.66	160.0	16.66	160.0			26.2	245.0	30.9	286.0	36.53	333	40.5	366.0					
450	18	457.2						9.53	105.0	9.53	105.0			19.05	206.0	19.05	206.0			29.36	310.0	34.0	363.0	39.7	408.3	45.2	459.0					
500	20	508.0						9.53	117.2	9.53	117.2			20.62	248.0	20.62	248.0			32.5	381.0	38.1	441.0	44.4	508	50.0	564.0					
550	22	558.8						9.53	129.0	9.53	129.0			22.2	294.0	22.2	294.0			34.9	451.0	41.3	527.0	47.6	600	54.0	672.0					
600	24	610.0						9.53	141.0	9.53	141.0			24.61	355.0	24.61	355.0			30.9	442.08	38.8	547.7	46.0	640.0	52.4	720.15	59.5	808.22			
650	26	660.0						9.53	153.0	9.53	153.0			12.7	202	12.7	202															
700	28	711.0						9.53	165.0	9.53	165.0			12.7	218	12.7	218															
750	30	762.0						9.53	176.0	9.53	176.0			12.7	235	12.7	235															
800	32	812.8						9.53	188.2	9.53	188.2			12.7	251	12.7	251															
850	34	863.6						9.53	200.0	9.53	200.0			12.7	266	12.7	266															
900	36	914.4						9.53	212.0	9.53	212.0			12.7	282	12.7	282															



All Dimensions in millimeters, W.T. = Wall Thickness, KG/M = Kilograms per Meter.



Stainless Steel Pipe, Schedule, Dimension

DESIGNATION		O/D	NOMINAL WALL THICKNESS														
OF DIAMETER		DIA	SCH.5S		SCH.5		SCH.10S		SCH.10		SCH.20S		SCH.30		SCH.40S		SCH.40
(A)	(B)	METER MM	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK
3	1/8	10.3	1.0	0.23			1.2	0.27			1.5	.33			1.73	0.37	
6	1/4	13.72	1.2	0.37			1.65	0.49			2.00	.58			2.24	0.64	
10	3/8	17.2	1.2	0.47			1.65	0.63			2.00	.74			2.31	0.87	
15	1/2	21.3	1.65	0.81	1.65	0.81	2.11	1.02	2.11	1.02	2.5	1.15			2.77	1.29	
20	3/4	26.7	1.65	1.03	1.65	1.03	2.11	1.30	2.11	1.30	2.5	1.49			2.87	1.71	
25	1	33.4	1.65	1.31	1.65	1.31	2.77	2.12	2.77	2.12	3.00	2.24			3.38	2.54	
32	1-1/4	42.2	1.65	1.67	1.65	1.67	2.77	2.73	2.77	2.73	3.00	2.90			3.56	3.44	
40	1-1/2	48.3	1.65	1.93	1.65	1.93	2.77	3.15	2.77	3.15	3.00	3.35			3.68	4.11	
50	2	60.3	1.65	2.42	1.65	2.42	2.77	3.99	2.77	3.99	3.5	4.90			3.91	5.52	
65	2-1/2	73.0	2.11	3.75	2.11	3.75	3.05	5.34	3.05	5.34	3.5	6.00			5.16	8.77	
80	3	88.9	2.11	4.59	2.11	4.59	3.05	6.56	3.05	6.56	4.00	8.37			5.49	11.50	
90	3-1/2	101.6	2.11	5.25	2.11	5.25	3.05	7.53	3.05	7.53	4.00	9.62			5.74	13.78	
100	4	114.3	2.11	5.93	2.11	5.93	3.05	8.50	3.05	8.50	4.5	12.18			6.02	16.32	
125	5	141.3	2.77	9.61	2.77	9.61	3.40	11.74	3.40	11.74	5.00	16.80			6.55	22.10	
150	6	168.3	2.77	11.47	2.77	11.47	3.40	14.04	3.40	14.04	5.5	22.08			7.11	28.69	
200	8	219.1	2.77	15.00	2.77	15.00	3.76	20.27	3.76	20.27	6.35	33.82	7.04	37.38	8.18	43.20	
250	10	273.1	3.40	22.95	3.40	22.95	4.19	28.20	4.19	28.20	6.35	42.41	7.80	51.81	9.27	61.22	
300	12	323.9	3.96	31.72	4.19	33.60	4.57	36.54	4.57	36.54	6.35	50.48	8.38	66.20	9.53	75.01	10.31
350	14	355.6	3.96	34.86			4.78	41.99	6.35	55.53	7.92	68.95	9.53	82.58	9.53	82.58	11.13
400	16	406.4	4.19	42.20			4.78	48.07	6.35	63.61	7.92	79.03	9.53	94.70	9.53	94.70	12.70
450	18	457.2	4.19	47.46			4.78	54.15	6.35	71.69	7.92	89.10	11.13	124.32	9.53	106.83	14.27
500	20	508.0	4.78	60.23			5.54	69.70	6.35	79.76	9.53	118.93	12.70	157.51	9.53	118.93	15.06
550	22	558.8	4.78	65.95			5.54	76.75	6.35	87.84	9.53	131.07	12.70	173.66	9.53	131.07	15.88
600	24	609.6	5.54	83.80			6.35	95.92	6.35	95.92	9.53	143.20	14.27	212.72	9.53	143.20	17.45
650	26	660.4							7.92	129.40	12.70	205.97			9.53	155.32	
700	28	711.2							7.92	139.47	12.70	222.13	15.88	276.48	9.53	167.44	
750	30	762.0	6.35	120.15			7.92	149.55	7.92	149.55	12.70	238.28	15.88	296.68	9.53	179.56	
800	32	812.8							7.92	159.62	12.70	254.44	15.88	316.88	9.53	191.69	17.48
850	34	863.6							7.92	169.64	12.70	270.50	15.88	336.96	9.53	203.74	17.48
900	36	914.4							7.92	179.77	12.70	286.75	15.88	357.28	9.53	215.93	19.05



Wall Thickness, Weight/meter

			NOMINAL WALL THICKNESS																
SCH 60		SCH 80 S		SCH.80		SCH.100		SCH.120		SCH.140		SCH.160		SCH.XXS					
WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR			
			2.41	0.47															
			3.02	0.82															
			3.20	1.12															
			3.73	1.64									4.78	1.98	7.47	2.59			
			3.91	2.23									5.56	2.94	7.82	3.69			
			4.55	3.29									6.35	4.30	9.09	5.53			
			4.85	4.53									6.35	5.59	9.70	7.88			
			5.08	5.49									7.14	7.35	10.16	9.69			
			5.54	7.60									8.74	11.29	11.07	13.65			
			7.01	11.60									9.53	15.15	14.02	20.72			
			7.62	15.51									11.13	21.67	15.24	28.11			
			8.08	18.92											16.15	34.56			
			8.56	22.66					11.13	28.75			13.49	34.05	17.12	41.66			
			9.53	31.44					12.70	40.90			15.88	49.87	19.05	58.31			
			10.97	43.21					14.27	55.03			18.26	68.59	21.95	79.2			
	10.81	53.90	12.70	65.63			15.06	76.93	18.24	91.73	20.62	102.47	23.01	112.97	22.23	108.00			
	12.20	82.80	12.70	82.80	15.06	97.27	18.24	116.38	21.41	134.90	25.40	155.50	28.58	174.95	25.40	155.5			
80.94	14.27	110.62	12.70	98.95	17.45	133.88	21.41	162.14	25.40	189.82	28.58	211.31	33.32	242.40	25.40	189.82			
96.00	15.06	128.42	12.70	109.04	19.05	160.54	23.80	197.74	27.76	227.88	31.75	257.47	35.71	286.04					
125.20	16.66	162.59	12.70	125.20	21.41	206.40	26.19	249.34	30.94	290.88	36.53	338.32	40.46	370.74					
158.27	19.05	209.00	12.70	141.35	23.80	258.29	29.36	314.54	34.93	369.34	39.67	414.74	45.24	466.67					
185.89	20.62	251.65	12.70	157.51	26.19	315.97	32.54	387.41	38.10	448.30	44.45	515.94	49.99	573.31					
216.04	22.23	298.55	12.70	173.66	28.57	379.70	34.92	457.83	41.27	535.17	47.62	609.30	53.97	682.57					
258.74	24.59	360.21	12.70	189.82	30.94	448.30	38.89	555.76	46.02	649.44	52.37	730.72	59.51	819.70					
			12.70	205.97	24.66D-t														
			12.70	222.13	1000														
			1270	238.28	Wt/pam + formula														
348.11			12.70	254.44	Weight stainless steel pipe														
370.22			12.70	270.50	OD (mm) - W.T. (mm) XW.T. (mm) X 0.02466 = Kg. per mtr.														
427.09			12.70	286.75															



ASTM SPECIFICATION & TOLERANCE FOR TUBING & PIPING

Specification	Allowable Outside Diameter Variation in mm	Allowable Wall Thickness Variation	Exact Length Tolerance in mm	Testing
ASTM-A213 Seamless Boiler Superheater and Heat Exchanger Tubes	Nominal Diameter	%Over %Under	Over Under	Flattening Test Tension Test Flare Test Hardness Test 100% Hydrostatic test Refer to ASTM A-450
	Under 25.4	+20 -0	3.175 0	
	25.4-38.1 incl	+22 -0	3.175 0	
	38.1-50.8 excl	+22 -0	3.176 0	
	50.8-63.5 excl	+2 -0	4.46 0	
	63.5-76.2 excl	+22 -0	4.76 0	
	76.2-101.6 incl	+22 -0	4.76 0	
ASTM-A249 Welded Boiler Superheater Heat Exchanger And Condenser Tubes	Under 25.4	+10 -10	3.175 0	Tension Test Flattening Test Flange Test Reverse Bend Test Hardness Test 100% Hydrostatic Test Refer to ASTM A-450
	25.4-38.1 inch	+10 -10	3.175 0	
	38.1-50.8 Excl	+10 -10	3.175 0	
	50.0-63.5 excl	+10 -10	4.762 0	
	63.5-76.2 excl	+10 -10	4.762 0	
	76.2-101.6 incl	+10 -10	4.762 0	
		Minimum wall tubes + 10%0 available On request		
ASTM-A269 Seamless & Welded Tubing for General Service.	Upto 12.7	+15 -15	3.2 0	Flare Test (Seamless Only) Flange Test (Welded Only) Hardness Test Reverse Flattening Test (Welded only) 100% Hydrostatic Test Refer to ASTM - A269
	12.7-38.1 excl	+10 -10	3.2 0	
	38.1-88.9 excl	+10 -10	4.8 0	
	88.9-139.7 excl	+10 -10	4.8 0	
	139.7-203.2 excl	+10 -10	4.8 0	
ASTM-A312 Seamless & Welded Pipe	3.175-38.1 incl	Minimum Wall	6.4 0	Tension Test Flattening Test 100% Hydrostatic Test Refer to ASTM A-530
	38.1-1016 incl	12.5% under nominal wall Specified	6.4 0	
	101.6-203.2 incl		6.4 0 (Normally Random) Lengths ordered	
ASTM-A-358 Welded pipe	219.08-750 mm or 0.01 inch	-0.3	6.0	Refer to ASTM A-530
ASTM A-409 welded	355.6 - 750 mm	+0.2% to +0.4%		Refer to ASTM A530

Formula - Pipe Weight Kg. / Mtr. • (OD - Thick x Thick x 0.02466 = Kg. per Mtr.

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	Yield Strength mini-MPa	Elong mini %	Brinell	Hardness Rockwell		
A240	304	0.08	2.00	0.045	0.030	0.75	8.00-10.5	18.00-20.0					205	201	40	201	92	
	304L	0.03	2.00	0.045	0.030	0.75	8.00-12.0	18.00-20.0					170	201	40	201	92	
	316	0.08	2.00	0.045	0.030	1.50	19.0-22.0	24.0-26.0					205	217	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				205	217	40	217	95	
A 387 Class1 Class2	317L	0.03	2.00	0.045	0.030	0.75	10.0-14.0	16.0-18.0	2.00-3.00				170	217	40	217	95	
	321	0.08	2.00	0.045	0.030	0.75	11.0-15.0	18.0-20.0	3.00-4.00				205	217	40	217	95	
	347	0.08	2.00	0.045	0.030	0.75	9.00-12.0	17.0-19.0		Ti>0.070 Cb+Ta>0.010			205	217	40	217	95	
	2	0.05-0.21	0.55-0.80	0.035	0.040	0.15-0.40		0.50-0.80	0.45-0.60			Class 2	Class 1	Class 2	40	201	92	
A 515	5	0.15	0.30-0.60	0.04	0.030	0.050		4.00-6.00	0.45-0.65			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			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			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			240	310	22	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			230	275	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			205	310	18	max201HB	max92HRB		
	22	0.05-0.17	0.30-0.60	0.035	0.035	0.50		2.00-2.50	0.90-1.10			205	310	18	max201HB	max92HRB		
	55	0.22	0.90	0.035	0.04	0.15-0.40						205		27				
	60	0.27	0.90	0.035	0.04	0.15-0.40						220		25				
	65	0.31	0.90	0.035	0.04	0.15-0.40						240		23				
A 516	70	0.33	1.20	0.035	0.04	0.15-0.40					450-585		260		21			
	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			
A 537	Class 1	0.28	0.85-1.20	0.035	0.04	0.15-0.40					485-620		260		21			
	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		485-620		345		22			

IS-2002-62 STEEL PLATES FOR BOILERS

Designation	c max	Chemical Composition				Tensile Test				Elongation	
		Si max	P max	S max	Tensile strength Mpa	Yield strength Mpa	Yield Strength Mpa	Test Piece	%min		
IS 2002-1	0.18	0.10-0.35	0.040	0.040	362-442	540	5.65So 46So	26	26		
IS 2002-2A	0.20	0.10-0.35	0.050	0.050	412-491	491	5.60So 46So	25	29		
IS 2002-2B	0.22	0.10-0.35	0.050	0.050	510-608	491	5.65So 46So	20	24		

IS-2062-92 STEEL FOR GENERAL STRUCTURAL PURPOSES

Grade	Designation	% Chemical Composition					Tensile strength (N/mm ²)	Yield Strength (Mpa)	Bend test	Std. test Piece Charpy V Notch Impact Energy, Joule min
		C max	MN max	S max	P max	Si max				
A	FE410 WA	0.23	1.5	0.050	0.050	0.42	41.8	250	3t	
B	FE410 WB	0.22	1.5	0.045	0.045	0.40	41.8	250	t<25mm	2t for 27 3t for t>25mm
C	FE410 WC	0.20	1.5	0.040	0.040	0.36	41.8	250	2t	27

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



IS - 2002 - 62 STEEL PLATES FOR BOILERS

Designation	Chemical Composition					Tensile test			Elongation	
	C% max	Mn%	Si% max	P% max	S% max	Tensile Strength Kf/mm ²	Yield Strength Kf/mm ² min		Test	%min piece
IS 2002-1	0.18	0.5-1.2	0.15-0.35	0.035	0.040	36.7-49	24	23	5.65√Sc	24
IS 2002-2	0.20	0.5-1.2	0.15-0.35	0.035	0.040	41.7-54	27	26	5.65√Sc	22
IS 2002-3	0.22	0.5-1.2	0.15-0.35	0.035	0.040	46.8-59	29.5	29	5.65√Sc	21

CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES OF IS : 2062 - 1999

Grade Designation	Ladle Analysis, Percent, Max	Carbon	Deoxidation Equivalent (CE), Max	Mode	Supply Condition				
						C (3)	Mn (4)	S (5)	P (6)
A	Fe 410W A	0.23	1.50	0.050	0.050	0.40	0.42	Semi-killed or Killed	As rolled
B	Fe 410W B	0.22	1.50	0.045	0.045	0.40	0.41	Killed	As rolled Plates above 12 mm may be normalized/controlled cooled if agreed to between the purchaser and the manufacturer
C	Fe 410W C	0.20	1.50	0.040	0.040	0.40	0.39	Killed	As rolled Plates above 12 mm shall be normalized/controlled cooled

NOTES

1.Ce based on ladle analysis = $C + \frac{Mn}{6} + \frac{Cr+Mo+V}{5} + \frac{Ni+Cu}{15}$

Grade	Designation	Tensile Strength Min, MPa	Yield Stress, Min, MPa			Percent Elongation at Gauge Length $5.65 \sqrt{S_0}$ Min	Internal Diameter Of Bend Min	Charpy V. Notch Impact Energy J, Min
			<20 mm	20-40 mm	>40 mm			
A	Fe 410W A	410	250	240	230	23	3t	-
B	Fe 410W B	410	250	240	230	23	2t for less than or equal to 25 mm thick products 3t for more than 25 mm thick product	27 (see Note1)
C	Fe 410W C	410	250	240	230	23	2t	27

NOTES

1 For Grade B material, the minimum Charpy V-notch impact energy is to be guaranteed at 0°C, if agreed to between the manufacturer and the purchaser.

2 For Grade C material, the minimum Charpy, V-notch impact energy shall be guaranteed at any one of the three temperatures, namely 0°C or -20°C or -40°C, as specified by the purchaser.

3 't' is the thickness of the material.

4 The Impact values are given for a standard test piece. When tested with subsidiary test pieces, the values shall not be less than

Test Piece Size (mm)	Charpy V-Notch Impact Energy J, Min
10 x 7.5	22
10 x 5	19.5

ASTM A 537 -35 PRESSURE VESSEL PLATES, HEAT TREATED, CARBON MANGANESES-SILICON STEEL

Designation	Chemical Composition										Heat Treatment	Tensile Strength			Elongation %min	
	C% max	Mn%	Si		P% max	S% max	Cu% max	Ni% max	Cr% max	Mo% max		Thickness in mm	Tensile Strength Ksi(MPa)	Yield Strength Ksi (MPa) min	GL=8 in or 200 mm	GL=2 in or 50 mm
A 537 -1	0.24	0.15-0.50	0.70-1.35	1.0-1.60	0.035	0.040	0.035	0.25	0.25	0.08	Normalised	t<2-1 (64) 2-1/2<t <4 (100)	70-90 (485-620) 65-85 (450-585)	50 (345) 45 (310)	18	22
A 537-2	0.24	0.15-0.50	0.70-1.35	1.0-1.60	0.035	0.040	0.035	0.25	0.25	0.08	Quenched & Tempered	t<2-1/2 (64) 2-1/2<t 4 (100)	80-100 (500-690) 75-95 (515-655)	60 (415) 55 (380)	-	22



SUMMARY OF SPECIFICATIONS FOR BRASS BARS, RODS AND SECTIONS

SPECIFICATION			COMPOSITION							PROPERTIES		
Material Designation	Original	Near equivalent	Cu %	Zn	Pb.	Sn.	Fe.	Min.	Al	Other Elements	U.Ts. Min. Kgs./mm.	Elongation Min%
Leaded Copper	--	--	Remainder	--	.6-1.0	--	--	--	--	Impurities 0.2%	23.55	45-10
Berillium copper	BS 2874 C 109	--	Remainder	--	--	--	--	--	--	Telli. 3-7% Impu. 2% max	23.35	45-10
Phosphours deodidised Non arsenical Copper	BS 2874 C 106	-- min	99.85	--	--	--	--	--	--	Phos. 0.13-0.50 Ni. 0.1% max Arse. 0.5% max Impu. 0.6% max	23-35	45-8
Cadmium Copper	BS 2874 C 108	--	Remainder	--	--	--	--	--	--	Cap..5-1.5% Impu. 0.5%	26-63	45.2

Summary Of Specifications For Brass And Copper Tubes

SPECIFICATION			COMPOSITION							PROPERTIES			
Material Designation	Original	Near equivalent	Cu %	As.	Zn	Pb.	Sn.	Fe	Min.	Al	Other Elements	U.Ts. Min. Kgs./mm.	Elongation Min%
Brass tubes (63/37) for General Purposes	IS 407-1966 Ally 2	--	59.63%	.06% max.	Bai.	.80% max.	.07% max.	.07 max.	--	--	Impu. 30% max	Annealed 29-38 Half hard 38 Hard 46	--
High Conductivity Electrolytic Copper	BS 2871-1969 C 101	BS 1977-63	99.9%min	--	--	.005%	--	--	--	--	0.03%	23.35	55-6%
Copper Rods & Tubes for General engineering purposes	BS 2871 C 106	ASTM B-280 1958	99.85% min	.0.05%	--	--	--	--	--	--	Phos..013-050% Nickel.01% Imp..06%	23.35	45-8%
Copper rods & tubes for General engineering purposes.	BS 2871 C 107	BS 24 Part 5	99.2%min	.3.5%	--	--	--	--	--	--	Phos..013-050% Nickel.15% Imp..07%	23-35	45.8%
Seamless tubes for Gas installation	-do-	--	99.2 or 99.8.5	.3-5 or nil.	--	.15%	--	--	--	--	.070	17 min	--
Seamless tubes for Steam Services	-do-	BS 1306	99.2 or 99.85	3.5 or nil.	--	.15%	--	--	--	--	.070	14.5	--

Wrought Copper And Copper Alloy Tubes Tolerances On Wall Thickness (is : 5493 - 1969)

Specified Wall Thickness	Tolerances Maximum on specified wall Thickness (plus & Minus)	Maximum Wall thickness at any point	Minimum Wall thickness at any point
mm	mm	mm	mm
0.5	0.05	0.58	0.43
0.6	0.07	0.71	0.51
0.8	0.07	0.91	0.71
1.0	0.10	1.16	0.86
1.2	0.10	1.37	1.06
1.5	0.12	1.70	1.35
2.0	0.15	2.23	1.82

Specified Wall Thickness	Tolerances Maximum on specified wall Thickness (plus & Minus)	Maximum Wall thickness at any point	Minimum Wall thickness at any point
mm	mm	mm	mm
2.5	0.16	2.70	2.2
3	0.20	3.25	2.64
4	0.25	4.47	3.66
5	0.31	5.5	4.6
6	0.36	6.50	5.50
8	0.39	8.50	7.50
10	0.50	11.00	9.30



STAINLESS STEEL BRIGHT (PEELED/TURNED)

We, within a short span has become a major source for Stainless Steel Rolled / Forged / Peeled Rounds, Rcs, Blooms & Billets. We have huge stocks for our quality products which are supplied on time at lowest possible rates meeting most of our customer's requirement.

Product Range

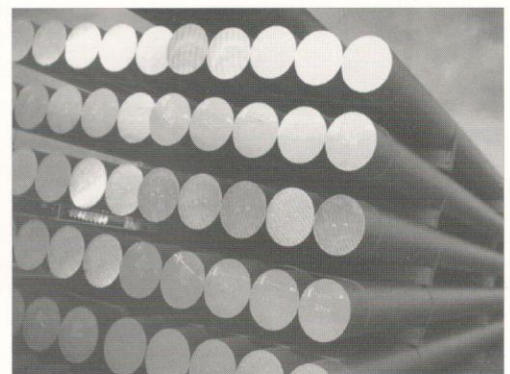
Condition	Peeled, Centreless & Polished	Peeled & Polished	Peeled (Rough Turned)	Forged, Rough Turned
Grades 316L,	201, 202, 301,303, 304, 304L, 310, 316, 316L, 321, 410,		304, 304L, 316L, 410, 416	303, 304, 304L, 316, 416, 416,
420, , 430, 431, 430F & others			420, 430	410, 416, 420, 431
Diameter	20mm to 85mm	85mm to 140mm	25mm to 140mm	150mm to 400mm
(Size) Diameter	(3/4" to 3-1/4") h9 (Din 671)	(3-1/4" to 5 - 1/2") h 11	(1" to 5-1/2") K 12/K 13	(6" to 16") -0mm to
+3mmTolerance	(ASTM A484)		(Din 1013)	(-0"/+0.12")
Length	3/4/5, 6/6 meter (12/14ft/20 feet)	3/4/5, 6/6 meter (12/14ft/20 feet)	3/4/5,6/6 meter 10 feet, 16 feet	3 meter - 5 meter
Length Tolerance	-0/+200mm of + 100mm to + 50mm (-0"/1 feet or +4" or 2")	-0/+ 200mm or +100mm or +50mm (-0"/+1 feet or +4" or 2")	-0/+ 100mm or 500mm (-0"/+3 feet or+2 feet)	-0/+2 meter -(-0/+6 feet)

Stainless Steel Wires

Diameter (Size)	Thick/Medium Wire - 1mm to 8mm (0.039" to 0.314")	
Grade	201, 202, 204Cu, 302, 302HQ, 303, 304, 304L, 304HC, 310, 316, 316L, 321, 304LER, 308LER, 316LER, 420, 430L	
Surface Finish	Matt, Bright Drawn, Bright Shiny, EPQ, Coated, De-coated	
Diameter	Diameter	Tolerance
Tolerance	0.80 mm (0.0314") to < 1.50 mm (0.0590") 1.50 mm (0.0590") to < 2.00 mm (0.0787") 2.00 mm (0.0787") to < 4.00 mm (0.1574") 4.00 mm (0.1574") to < 6.00 mm (0.236")	+/-0.013 mm (0.0005") +/-0.013 mm (0.0006") +/-0.025 mm (0.0009") +/-0.030 mm (0.0011")
Tensile Strength	Type	Tensile In Kg/mm ²
	Soft 1/4 Hard 1/2 Hard Full Hard	60-75 75-90 90-140 140-200 or ASTM A313 / DIN 17224
Packing	<ul style="list-style-type: none"> - HDPE wrapped coils of 20 kg. to 250 kg. - Pattern laid coils on MS Carriers / spiders (200 Kg. to 1000 kg.) - Coils on wooden pallets (100 kg to 800 kg) - Cheese coils (500 kg -1000 kg) - Drum Packing - Fine wire in Spools from Din 80 to Din 250 	

Stainless Steel Bright Bars (Cold Drawn)

Condition Ground	Cold Drawn and Polished	Cold Drawn, Center less	Cold Drawn, Center less
		Ground & Polished	and Polished (Strain Hardened)
Grades	201, 202, 303, 304, 304L, 310, 316, 316L, 321, 410, 420, 416, 430, 431, 430F, & others	304, 304L, 316, 316L	
Diameter	2mm to 5mm	6mm to 22mm	10mm to 40mm
(Size)	(1/8" to 3/16)	(1/4" to 7/8")	(3/8" to 1-1/2")
Diameter	h9 (Din 671), h11	h9 (Din 671)	h9 (Din 671), h11
Tolerance	ASTM A 484	ASTM A 484	ASTM A 484
Length	3/4/5, 6/6 meter (12/14ft/20 feet)	3/4/5, 6/6 meter (12/14ft/20 feet)	3/4/5, 6/6 meter (12/14/20 feet)
Length	-0/+ 200mm of	-0/+200mm or	-0/+200mm



Stainless Steel Hexagon & Square Bars

Type	Cold Drawn and Polished(Squares)	Cold Drawn and Polished (Hexagons)
Grades	304, 304L, 316, 316L	304, 304L, 316, 316L
Diameter	5mm to 40mm (1/4" to 1-1/2")	10mm to 40mm (3/8" to 1-1/2")
Diameter	h 11	h 11
Tolerance	(ASTM A 484)	(ASTM A 484)
Length	3/4/6 meter (12/14ft/20feet)	3/4/6 meter (12/14ft/20 feet)
Length	-0/+500mm (-0"/+2 feet)	-0/+500mm or+ 100mm or +50mm

Stainless Steel Cold Heading Wires

Condition	Cold drawn, Annealed and Pickled
Diameter	1.6 mm to 17 mm (1/16" to 11/16")
Tensile Strength	65kg / mm2 max
Packing	HDPE wrapped coils of 300 kg to 500 kg

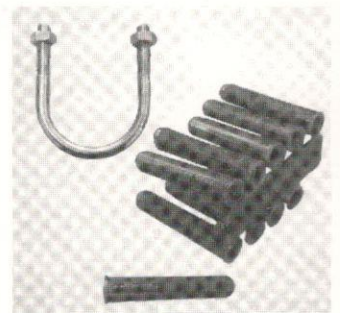
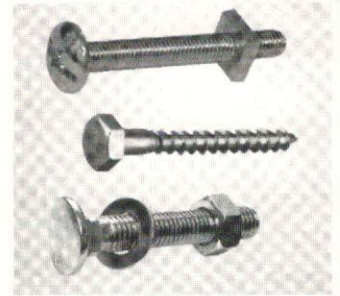
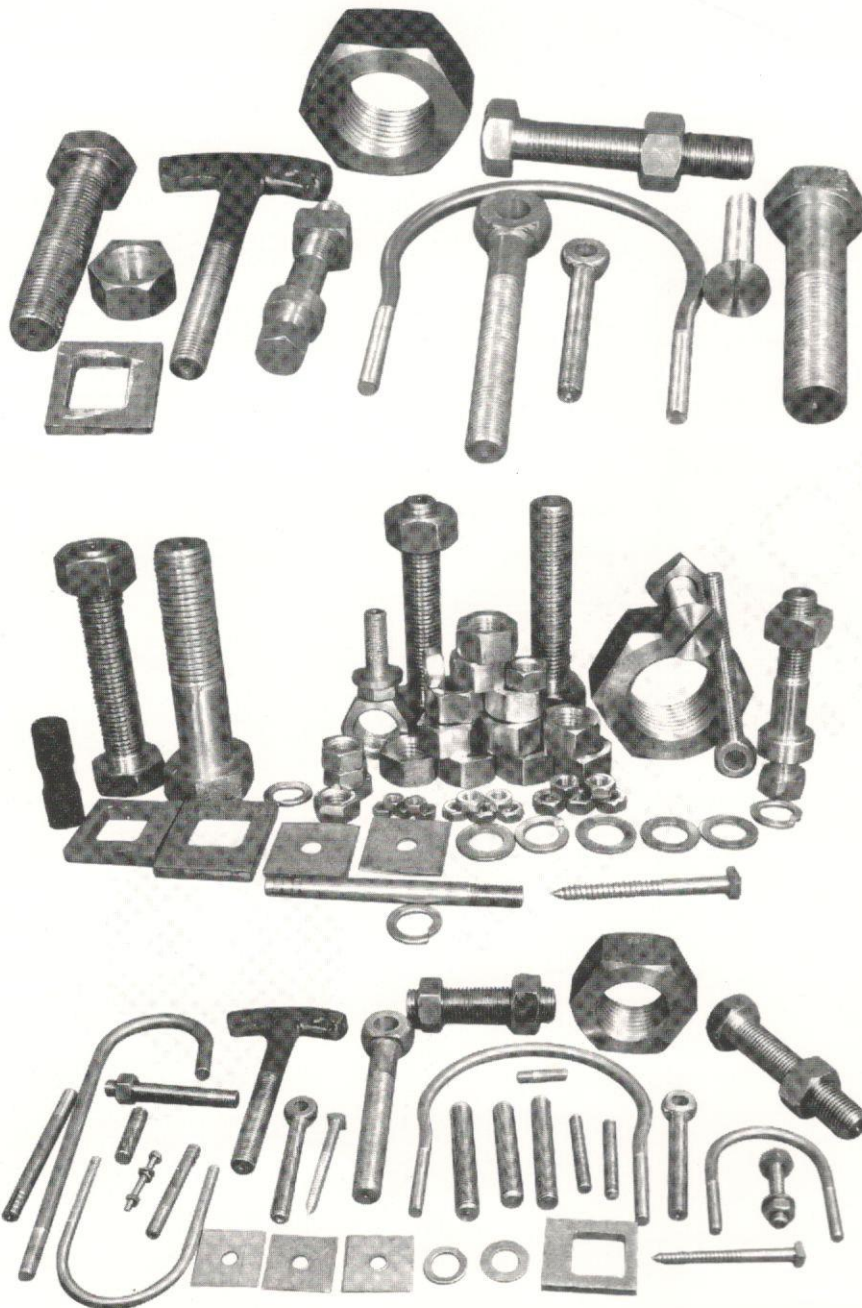
Summary Of Specifications For Brass Bars, Rods And Sections

Material Designation	SPECIFICATION			COMPOSITION						PROPERTIES			
	Original	Near equivalent	Cu %	Zn	Pb.	Sn.	Fe.	Min.	Al	Other Elements	U.Ts. Min. Kgs./mm.	Elongation Min%	
1. Free Cutting Brass	BS 2874 C2.124	--	60 to 63	Remainder	2.5 to 3.7	--	--	--	--	--	28	12	
2. Free Cutting Brass	BS 2874 CZ 121	IS 319	55 to 60	Remainder	2.0 to 3.5	--	--	--	--	--	39	15	
3. Leaded Brass	Din 1756 MS 58	--	56.5-59.5	Remainder	10 to 3	--	--	--	--	--	39.50	9.15	
4. Forging Brass	IS 3488.66	BS218/63	56.5-60	Remainder	1.0 to 2.5	--	--	--	--	--	35	25	
5. Lead Free Brass	BS2874 CZ 109	BS 1949	59 to 60	Remainder	--	--	--	--	--	--	34	26	
6. High Tensile Brass Rods	BS 2874 CZ 114	BS 250	56 to 60	Remainder	--	.2-1	.25-1.2	3.2	1.5 min	--	47	18	
7. High Tensile Brass Rods	BS 2874 CZ115	BS 1001	56 to 60	Remainder	.5 to 1.5	.6-1-1	.25-1.2	3.2	2 min	--	55	12	
8. High Tensile Brass Rods	IS 320/ 1962		56 to 59	Remainder	.5	.25-1.75	--	2.20	.2 min	.5 min	53	15	
	Alloy I		56 to 59	Remainder	.5	0.5 min	--	0.5-1.2	.2-1.2	.25min	47	20	
	Alloy II		57 to 61	Remainder	.75 to 1	1.0 min	--	0.1-0.2	.5-2	.5 min	53	15	
9. Naval Brass	IS 291/ 1961 Grade I	BS 2872 CZ 112 BS 251/63	61 to 64	Remainder	--	1 to 1.5	--	--	--	--	35	18	
10. Naval Brass	IS 291/ 1961 Grade II	BS 2874 CZ 113 BS 252/ 1963	59 to 62	Remainder	.5 to 1	.5 to	--	--	--	--	35	16	
11. Aluminium Bronze	BS 2874 CA 103	BS 2032	Remainder	--	--	--	--	--	8.8-10	Iron + 4% max Nickel	53	34	
12. Aluminium Bronze	BS 2874 CA 104	BS 2033	Remainder	--	--	--	4.6%	0.5	8.5-11%	Nickel 4-6%	71 min 67 min	12 min 25 min	
13. Aluminium Silicon Bronze	ASTM B 283/56	--	89%	--	--	--	--	--	6.5 to .8	Sill	67 min	25 min	
14. Maganese Broze	ASTM B-138/58 Alloy A Alloy B		57.60 63.68	Remainder Remainder	-- --	0.5 1.5 0.5 max	8.2 2.4	05.5 25.5	0.25 max 3.6		53 80	25 10	
15. Copper Nickel	ASTM B-41164	--	Remainder	0.5% max	1% max		0.1%	--	--	1 1.62S i 1.0 4-08	63	8	
16. Nickel Silver Alloy	BS2874 NS 101	--	44.47	Remainder	1.2.5	--	0.40% Max	0.20.50	--	Ni.9.0-11.0	47	8 min	
17. Electrolytic Touch Pitih	BS 2874 C101	--	99.9%	--	0.005%	--	--	--	--	Impurities 0.03%	23-35	5.5-6%	

Tolerances On Mean Outside Diameter

Outside Specified	Tolerance	
	Normal	Reduced
mm	mm	mm
	±	±
Up to 10	0.08	0.045
Over 10 to 18	0.10	0.045
Over 18 to 32	0.12	0.055
Over 32 to 50	0.15	0.70

FASTENERS



The following table represents size range, product standards and material grades of fasteners like stainless steel, carbon steel & alloy etc. our range includes

MATERIAL TYPE :

- Stainless Steel : AISI 302, 304, 304L, 316, 316L, 310, 317, 317L, 321, 347, 410, 420, 904L etc. 4.6, 5.6, 6.6, 8.8, 10.9 & 12.9 / 'R', 'S', 'T', Conditions.
- Carbon Steel : Bare Condition, Galvanized, Phosphetised, Cadmium Plated etc.
- Alloy Steel : Hot Deep Galvanized, Bloodied, Nickel Chrome Plated, etc.
- Others : Copper, Brass, Aluminum, Titanium, Nichrome, Al. Bronze, Phosphorous Bronze, etc.
- Types : Bolts, Nuts, Washers, Anchor Fasteners, Stud Bolts, Eye Bolt Stud, Threaded Rod, Cotter Pin, Socket Screw, Fine Fasteners & Spares, Foundation Fasteners, etc.

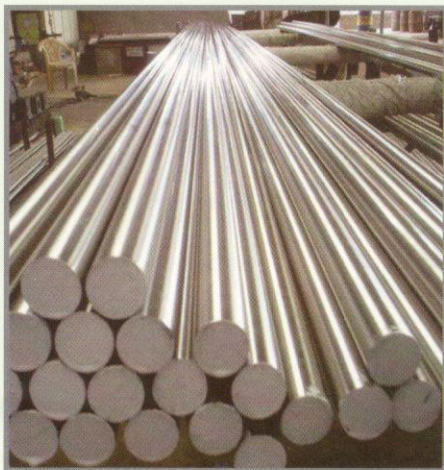
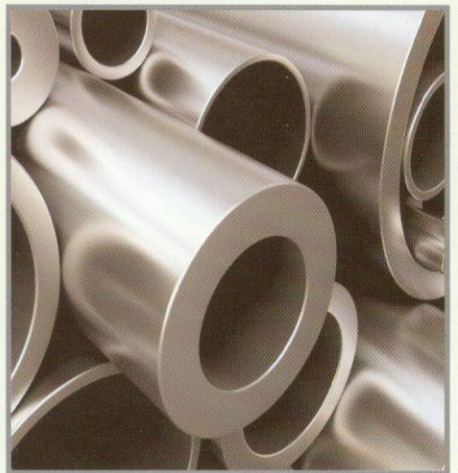
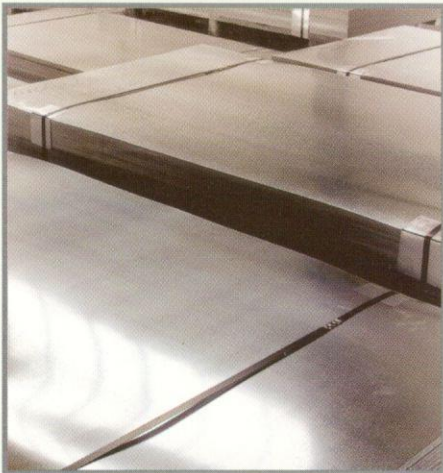
FORMULA OF CALCULATING WEIGHT

1)	Weight of Stainless Steel Pipe O.D. (mm) - W. Thick (mm) X W. Thick (mm) X 0.0248 = Wt. Per Mtr O.D. (mm) - W. Thick (mm) X W. Thick (mm) X 0.00756 = Wt. Per Feet
2)	Weight of Stainless Steel Round Bar Dia (mm) X Dia (mm) X 0.00623 = Wt. per Mtr. Dia (mm) X Dia (mm) X 0.0019 = Wt. per Feet
3)	Weight of Stainless Steel Square Bar Dia (mm) X Dia (mm) X 0.00788 = Wt. per Mtr. Dia (mm) X Dia (mm) X 0.0024 = Wt. per Feet
4)	Weight of Stainless Steel Hexagonal Bar A/F (mm) X A/F (mm) X 0.00680 = Wt. per Mtr. A/F (mm) X A/F (mm) X 0.002072 = Wt. per Feet
5)	Weight of Stainless Steel Flat Bar Width (mm) X Thickness (mm) X 0.00798 = Weight per Mtr. Width (mm) X Thickness (mm) X 0.00243 = Weight per Feet
6)	Weight of Stainless Steel Sheets & Plates Lenght (Mtrs) X Width (Mtrs) X Thick (mm) X 8 = Weight per PC Lenght (Feet) X Width (Feet) X Thick (mm) X 3/4 = Weight per PC
7)	Weight of Stainless Steel Circle Dia (mm) X Dia (mm) X Thick (mm) ÷ 160 = Gms. per PC Dia (mm) X Dia (mm) X Thick (mm) X 0.0000063 = Kg. per PC
8)	Weight of Brass Pipes / Copper Pipes O.D. (mm) - W. Thick (mm) X W. Thick (mm) X 0.0260 = Wt. Per Mtr.
9)	Weight Lead Pipe O.D (mm) - W. Thick (mm) X W. Thick (mm) X 0.0345 = Wt. Per Mtr
10)	Weight of Aluminium Pipe O.D. (mm) - W. Thick (mm) X W. Thick (mm) X 0.0083 = Wt. per Mtr.
11)	Weight of Aluminium Sheet Lenght (Mtrs) X Width(Mtrs) X Thick (mm) X 2.69 = Weight per PC
12)	Weight Conversion of Mtr. to Ft. Meter = 3.2808 Foot
13)	Barlow's Formula for calculating bursting pressure $P = 2ST/D$ or $t-DP/2S$ or $S-DP/2T$ or $D=2ST/P$ P = Bursting Pressure P Si., S= Tensile Strenght of tube, T = Wall Thickness (in inches) D = Outside Diameter (in inches)
14)	Formula for Healthy Business Honesty + Quality of Goods + Quick Service + Reasonable Rate = Good Healthy Business



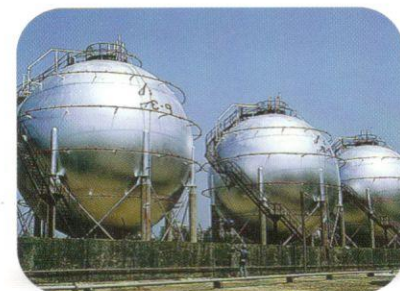


PHOTO GALLERY



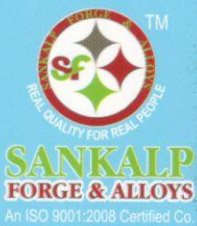
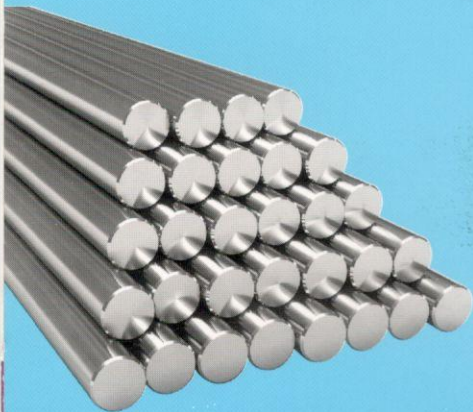
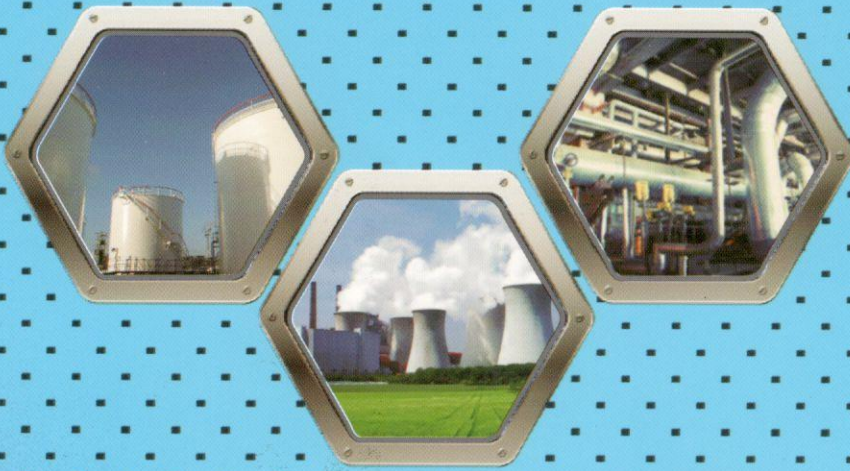


Application Industry



- PHARMACY INDUSTRIES
- FOOD INDUSTRIES
- OIL & GAS INDUSTRIES
- TEXTILE INDUSTRIES
- CEMENT INDUSTRIES
- REFINERY PLANTS
- POWER
- FIRE FALLING SYSTEMS
- CHEMICAL
- FERTILIZERS
- PAPER & PULP MILLS
- SUGAR INDUSTRIES
- WATER PIPING SYSTEMS
- BEVERAGE INDUSTRIES
- ENGINEERING





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