



NEW TECH STEELS (INDIA)

*Stockists & Suppliers of : S.S. STEEL, COILS, PLATES, PATTAS,
PIPES, (ERW, SEAMLESS) FITTINGS, RODS, COPPER, BRASS, ALUMINIUM, MONEL, NICKEL,
TITANIUM & ALL FERROUS & NON-FERROUS METALS*

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NEW TECH STEELS (INDIA)

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ORGANISATION SETUP

NAME OF FIRM : NEW TECH STEELS (INDIA)

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YEAR OF ESTABLISHMENT : 2010

NAME OF BANK : YES BANK,
Mumbai - 400 004.

VAT TIN No. : 27620744761 V w.e.f. 20-01-2010

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PAN NO. : AIUPC3654N

LEAD MANAGEMENT TEAM : SHANKAR CHOUDHARY
98332 28079



Respected Customer,

Sub. : Registration of Our Firm in your approved list of vendor for
Suppliers of all Types of Ferrous & Non-Ferrous Metals.

We carry this moments to present ourselves as one of the leading and largest Importer, Exporter Stockist and Supplier of all types of Ferrous and Non-Ferrous Metals, We are also Manufacturer of Stainless Steel Pipes, Fittings & Flanges in all Grades, Shapes and Sizes.

We have a technical know-how in this trade and are well versed in project and maintainence suppliers to various organizations in CHEMICALS, FERTILISERS, PETROCHEMICALS, NUCLEAR POWER, THERMAL POWDER, CEMENT, PAPER, REFINERIES, STEEL PLANTS etc. catering towards their requirements, on repeat order basis, in their various manufacturing cum production programmes, with our display of quality products on convenient terms.

Any Registration formalities to be fulfilled, please feel free to correspond, it not only be our pleasure but due respect in doing so, awaiting the opportunity of serving your prestigious firm intimes to come.

Thanking you and assuring you of our time bound services, at all times.

For **NEW TECH STEELS (INDIA)**



RANGE OF PRODUCTS

1. STAINLESS STEEL PIPES / TUBES
(304/304L/316/316L/317/317L/321/310S/904L ERW/EFW AND SEAMLESS CONFIRMING TO A312 / A213/A269/358) SIZE 1/2" TO 32"
2. M.S. / G.I. ERW PIPES
AS PER IS 1239, IS 3589 SQUARE & RECTANGULAR ISS 4923 / ASTM A 500
SIZE : 1/2" TO 20"
3. C.S. SEAMLESS PIPES
CONFIRM TO A106 GRADE B/SA 179/DIN 17175/A333 GRADE 6/API-5L/ASTM A53 GRADE B C.S.
ERW/SEAMLESS, BOILER TUBES AS PER IS 3059 IBR & NON-IBR
SIZE : 1/2" TO 24"
4. ALLOYS STEEL SEAMLESS PIPE
ASTMA 335 Gr. P11, P12, P22, P9, P5 IBR & NON IBR
SIZE : 1/2" TO 18"
5. NICKEL ALLOYS PIPES, FITTINGS, FLANGES, PLATES & FASTENER
ALLOYS 20, NICKEL 200, MONEL 400 / 500, INCONEL 600 / 601 / 625 / 800 / 825 / 925,
HASTELLOY C-276/C-22, TITANIUM, DUPLEX & SUPER DUPLEX 660A, 660B, UNS 31803, S32750,
S32760
6. STAINLESS STEEL PLATES Gr. OF 304, 304L, 316, 316L, 317, 317L, 321, 310S, 304L, 410, SIZE : 0.3
MM TO 100 MM THK.
7. M.S. / BOILER STEEL PLATES IS 2062 Gr. A IS 2002-62 ASTM A 516 Gr. 70/60 & HARDOX 400 / 500
SIZE : 3 MM TO 150 MM THK. ANGLE, CHANNEL & BEAMS
8. C.S. PIPE FITTINGS & FLANGES C.S. / FCS (A234 / A105) G.I. (ISI) (BW/SW/SCREWED) FLANGES
IS 2062 / FCS A105/SORF/BLRF/SW/WELDNECK IBR & NON-IBR
9. S.S. PIPE FITTINGS & FLANGE S.S. 304 / 304L / 316 / 316L WELDED & SEAMLESS / BW / SW /
SCREWED CONFIRMING TO A403 / A 182 F & FLANGES CONFIRMING TO A240 / A182 F / SORF /
BLRF / SW / WELDNECK
10. TUBE FITTINGS : SUCH AS MALE CONNECTOR, PIPE WELD CONNECTOR, BULK HEAD MALE
CONNECTOR, MALE ELBOW MALE RUNTEE, MALE BRANCH TEE AND MANY MORE ITEMS.
11. FASTENERS STAINLESS STEEL, CARBON STEEL, NICKEL ALLOY, HEX BOLTS, U BOLTS, EYE
BOLTS, ALLEN CAP, NUTS, LOCKNUTS, SET SCREWS, WASHERS, THREADED ROD, STONE
CLADDING CLAMPS REFRACTORY ANCHORS AND MICRO NUTS, BOLTS & WASHERS.
12. ALL SIZES OF FLEXIBLE CORRUGATED PIPE & T.C. FITTINGS.
13. ALL TYPES OF VALVES, BALL VALVE IN CI / CSS CONSTRUCTIONS & SS SOLID BAR STOCK -
GATE, GLOBE, CHECK, NEEDLE, SAFETY RELIEF, FOOT, FLAT FLUSH BUTOON VALVES C.I.
TYROSE VALVES C.I. WAFER TYPE CHECK VALVES C.I. RUBBERLINED FLAFTYPE NON RETURN
VALVES & DIAPHRM VALVES, C.I., LUBRICATING PLUG VALVES & C.I. FOOTVALVES.



QUALITY OF PRODUCT

ASTM- AMERICAN SOCIETY FOR TESTING AND MATERIALS		BS-BRITISH STANDARDS	
A 53	Welded and Seamless Steel Pipe.	1367	Steel Tubes and Tubulare (Suitable for Screwing to BS 21 Pipe Threads)
A 106	Seamless Carbon Steel Pipe for High-Temperature Service	3059	Steel Boiler and Superheater Tubes.
A 120	Back and Hote-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses.	1139	Steel Tubes for Scaffolding.
A 135	Electric-Resistance-Welded Steel Pipe.	1775	Steel Tubes for Mechanical, Structural and General Engineering Purposes.
A 161	Seamless Low-Carbon and Carbon-Molybdenum Steel tubes for Refinery Service.	3601	Steel Pipes and Tubes for Pressure Purposes, Carbon Steel Ordinary Duties.
A 178	Electric-resistance-Welded Carbon Steel Boiler Tubes.	3602	Steel Pipes and Tubes for Pressure purposes Carbon Steel High Duties.
A 179	Seamless Cold-Drawn Low-Carbon Steel Heat-Exchanger and Condenser Tubes.	3603	Steel Pipes and Tubes for Pressure Purposes Carbon and Alloy Steel Low Temperature Duties.
A 192	Seamless Carbon Steel Boiler Tubes for High Pressure Service.	3604	Steel Pipes and Tubes for Pressure Purposes Low and Medium Alloy Steel.
A 199	Seamless Cold-Drawn Intermediate Alloy-Steel Heat-Exchanger and Condenser Tubes.	3605	Steel Pipes and Tubes for Pressure Purposes Austenitic Medium Alloy Steel.
A 200	Seamless Intermediate Alloy-Steel Tubes for Refinery Service.	JIS - JAPANESE INDUSTRIAL STANDARDS	
A 209	Seamless Carbon-Molybdenum Alloy-Steel Boiler and Super-heater Tubes.	G3452	Carbon Steel Pipes for Ordinary Piping.
A 210	Seamless Medium-Carbon Steel Boiler and Superheater Tubes.	G 3454	Carbon Steel Pipes for Pressure Service.
A 211	Spiral Welded Steel or Iron Pipe.	G3455	Carbon Steel Pipe for High Pressure Service.
A 213	Seamless Ferritic and Austenitic Alloy Steel Boiler, Super-Heater, and Heat-Exchanger Tubes.	G3456	Carbon Steel Pipes for High Temperature Service.
A 214	Electric-Resistance-Welded Carbon Steel Heat-Exchanger and Condenser Tubes.	G3457	Electric Arc Welded Carbon Steel Pipe.
A 226	Electric-Resistance Welded Carbon Steel Boiler and Super-Heater Tubes for High-Pressure Service.	G3458	Alloy Steel Pipes.
A 249	Welded Austenitic Steel Boiler, Super heater, Heat-Exchanger and Condenser Tubes.	G3459	Austenitic Stainless Steel Pipes.
A 250	Electric-Resistance-Welded Carbon-Molybdenum Alloy-Steel Boiler and Super heater Tubes.	G3460	Steel Purpose Low Temperature Service.
A 252	Welded and Seamless Steel Pipe Piles.	G3461	Carbon Steel Boiler and HeatExchanger Tubes.
A 268	Seamless and Welded Perritic Steel Tubing for General Service.	G3462	Alloy Steel Boiler and Heat Exchanger Tubes.
A 269	Seamless and Welded Austenitic Stainless Steel Tubing for General Service.	G3463	Stainless Steel Boiler and Heat Exchanger Tubes.
A 270	Seamless and Welded Austenitic Stainless Steel Sanitary Tubing.	G3464	Steel Heat Exchanger Tubes for Low Temperature Services.
A 271	Seamless Austenitic Chromium-Nicket Steel Tubes for Refinery Service.	G3444	Carbon Steel Tubes for General Structural Purposes.
A 312	Seamless and Welded Austenitic Stainless Steel Pipe.	G3445	Carbon Steel Tubes for Machine Structural Purposes.
A 333	Seamless and Welded Steel Pipe for Low Temperature Service.	G3441	Alloy Steel Tubes for Structure Purposes.
A 334	Seamless and Welded Carbon and Alloy-Steel Tubes for Low-Temperature Service.	G5525	Steel Pipe Piles.
A 335	Seamless Ferritic Alloy Steel Pipe for High-Temperature Service.	G3465	Seamless Steel Tubes for Drilling (Drill Rods)
A 376	Seamless Austenitic Steel Pipe for High-Temperature Central-Station Service.	G3429	Seamless Steel Tubes for High Pressure Gas Cylinder
		G3442	Galvanized Steel Pipe for Water Service.
		G3443	Coating Steel Pipe for Water Service.
		G3451	Deformed Pipe for Coating Steel Pipe for Water Service.
Available Ex-Stock with Test Certificate and IBR Test Certificates in form IIIA/IIIB Available Ex-Stock with Certificate ASTM 333 gr. 6 & ASTM 335 P-11, P5, P22			
• Carbon Steel Seamless Pipes	ASTM A 106 Grade B	• Low Temperature Seamless Pipes	ASTM A 333 Grade 6
• Carbon Steel Seamless Boiler Tubes	BS/3059/68/Part I CDS ST-33	• Low Temperature Seamless Tubes	ASTM A 334 Grade 1
• Seamless Boiler Tubes	BS/3059/68/Part/HFS ST-33	• Heat Exchanger Tubes	ASTM A 179
• ERW Boiler Tubes	ASTM 210 A-1/DIN 17175/ST 35-8	• API Line Pipe	API 5 L Grade B
• CDW Boiler Tubes	BS/3059/68 Part I ERW ST-33	• MS ERW Pipes	IS 1239 Part I-1979
• Alloy Steel Seamless Pipes	BS/3059/68 Part I CDW ST-33	• Hot Deep Galvanised Pipes	IS 1239 Part I-1979
• Alloy Steel Seamless Tubes	ASTM 335 P-1, P-5, P-11, P-22	• Big Diameter ERW Pipes	IS 3589
	ASTM 213 T-11, T-22, ASTM 209 T-1	• M.S. Square & Rectangula Section	ISS 4923 / ASTM - A500
	Din 17175 Grade 3 15 M03	• M.S. General Engineering Tubes	BSS / 1775, IS 3074
			ISS 4711, ISS 3601



SPECIFICATION FOR MILD STEEL TUBES AND TUBULARS CONFORMING TO IS - 1239 (PART I) : 1990



Nominal Bore (NB)	Class	Outside Diameter MAX MIN		Thickness	SWG	Mass of Black Tube P/E S/S		Black Plain End			Calculated Wt. of Galvanised Tube P/E S/S		Galvanised S & S			
		mm	mm			Kg/mm	Kg/mm	Mtrs/Ton	Ft/Ton	Pcs/Blde	Kg/m	Kg/m	Mtrs/Ton	Ft/Ton	Pcs/Blde	
15	(1/2")	L	21.40	21.00	2.00	14	0.947	0.956	1056	3465	176	0.999	1.008	992	3255	165
		M	21.80	21.00	2.60	12	1.21	1.22	826	2710	138	1.264	1.274	785	2575	131
		H	21.80	21.00	3.20	10	1.44	1.45	694	2277	116	1.494	1.504	665	2182	111
20	(3/4")	L	26.90	26.40	2.30	13	1.38	1.39	725	2379	121	1.441	1.451	689	2260	115
		M	27.30	26.50	2.60	12	1.56	1.57	641	2103	107	1.622	1.632	613	2011	102
		H	27.30	26.50	3.20	10	1.87	1.88	535	1755	89	1.923	1.933	517	1696	86
25	(1")	L	33.80	33.20	2.60	12	1.98	2.00	505	1657	84	2.062	2.082	480	1575	80
		M	34.20	33.30	3.20	10	2.41	2.43	415	1362	69	2.495	2.515	398	1306	66
		H	34.20	33.30	4.00	8	2.93	2.95	341	1119	57	3.028	3.048	328	1076	55
32	(1 1/4")	L	42.50	41.90	2.60	12	2.54	2.57	394	1293	66	2.641	2.671	374	1227	62
		M	42.90	42.00	3.20	10	3.10	3.13	323	1060	54	3.207	3.237	309	1014	52
		H	42.90	42.00	4.00	8	3.79	3.82	264	866	44	3.887	3.917	255	837	43
40	(1 1/2")	L	48.40	47.80	2.90	11	3.93	3.27	310	1017	52	3.358	3.398	294	965	46
		M	48.80	47.90	3.20	10	3.56	3.60	281	922	47	3.681	3.721	269	883	45
		H	48.80	47.90	4.00	8	4.37	4.41	229	751	38	4.485	4.525	221	725	37
50	(2")	L	60.20	59.60	2.90	11	4.08	4.15	245	805	41	4.225	4.295	233	764	39
		M	60.80	59.70	3.60	9	5.03	5.10	199	653	33	5.166	5.236	191	627	32
		H	60.80	59.70	4.50	7	6.19	6.26	162	531	27	6.349	6.419	156	512	26
65	(2 1/2")	L	76.00	75.20	3.20	10	5.71	5.83	175	574	29	5.898	6.018	166	545	28
		M	76.60	75.30	3.60	9	6.42	6.54	156	512	26	6.621	6.741	144	486	25
		H	76.60	75.30	4.50	7	7.93	8.05	126	413	21	8.095	8.215	122	400	20
80	(3")	L	88.70	87.90	3.20	10	6.72	6.89	149	489	25	6.925	7.122	140	459	23
		M	89.50	88.00	4.00	8	8.36	8.53	120	394	20	8.586	8.756	114	374	19
		H	89.50	88.00	4.80	6	9.90	10.40	101	331	17	10.109	10.609	97	318	16
100	(4")	L	113.90	113.00	3.60	9	9.75	10.00	103	338	17	10.276	10.586	94	308	16
		M	115.00	113.10	4.50	7	12.20	12.50	82	269	14	12.758	13.258	75	246	13
		H	115.00	113.10	5.40	5	14.50	14.80	69	226	12	15.252	15.552	64	210	11
125	(5")	M	140.80	138.50	4.80	6	15.90	16.40	63	207	11	16.649	17.149	58	190	10
		H	140.80	138.50	5.40	5	17.90	18.40	56	184	9	18.619	19.119	52	171	9
150	(6")	M	166.50	163.90	4.80	6	18.90	19.50	53	174	9	19.700	20.300	49	161	8
		H	166.50	163.90	5.40	5	21.30	21.90	47	154	8	22.322	22.922	44	144	7

TOLERANCE : Thickness : Light : + Unlimited Medium / Heavy : + Unlimited
- 8% - 10%

Weight : Light \pm 5% Medium/Heavy : \pm 7.5%
(For quantities per load of 10 Tonnes Minimum)

HYDRO TEST PRESSURE : 5 MPa

IS : 1239 (Part I) - 1979 Mild Steel Tubes Maximum Permissible Pressure And Temperature for Tubes for Conveying Steam

The maximum permissible pressure and temperature for tubes with screwed and socketed joint shall be as follows.

MAXIMUM PERMISSIBLE PRESSURE AND TEMPERATURE FOR TUBES WITH STEEL COUPLINGS OR SCREWED AND SOCKETED JOINTS

Nominal Bore	Maximum Permissible Pressure		Maximum Permissible Temperature °C
	N/mm ²	Kg/Cm ²	
mm	1.20	12.24	260
Up to and including 25 mm	1.03	10.50	260
Over 25 mm upto and including 40 mm	0.86	8.77	260
Over 40 mm upto and including 80 mm	0.69	7.04	260
Over 80 mm upto and including 100 mm	0.83	8.47	177
Over 100 mm upto and including 125	0.69	7.04	171
Over 125 mm upto and including 150 mm	0.50	5.10	160



TOLERANCE

ASTM SPECIFICATION FOR TUBING & PIPEING

ASTM SPECIFICATION	ALLOWABLE ALLOWABLE OUTSIDE DIAMETER VARIATION IN MM VARIATIONS		WALL THICKNESS	TESTING	
	OVER	UNDER			
ASTM 213	Nominal Diameter				
Seamless Ferritic and Austenitic tubes	Under 25.4mm	.1016	.1016	+20% -0	
	25.4 - 38.1 inclu	.1524	.1525	+20% -0	
	38.1 - 50.8 exclu	.2032	.2032	+22% -0	
	50.8 - 63.5 exclu	.254	.254	+22% -0	
	63.5 - 76.2 exclu	.3048	.3048	+22% -0	
	76.2 - 101.6 inclu	.381	.381	+22% -0	
Refer to ASTM A - 450					
ASTM - 249 Welded Heat exchanger and condenser tubes	Under 25.4 mm 25.4 - 38.1 inclu 38.1 - 50.8 exclu 50.8 - 63.5 exclu 63.5 - 76.2 exclu 76.2 - 101.6 inclu	.1016 .1524 .2032 .254 .3048 .381	.1016 .1525 .2032 .254 .3048 .381	± 10% ± 10% ± 10% ± 10% ± 10%	Refer to ASTM A - 450
ASTM - 269 Seamless and Welded Austenitic S.S. tubes	Up to 12.7 mm 25.7 to 38.1 mm 38.1 to 88.9 mm 88.9 to 139.7 mm 139.7 to 203.2 mm	0.13 0.13 0.25 0.38 0.76	0.13 0.13 0.25 0.38 0.76	± 15% ± 10% ± 10% ± 10% ± 10% S	Refer to ASTM A - 450
ASTM - 312 Seamless and Welded Austenitic Pipe	13.72 - 48.26 mm 60.33 - 114.3 141.3 - 219.08 169.28 - 219.08 273.05 - 373.85	±0.04 ±0.79 ±0.59 ±0.59 ±2.38	-0.79 -0.79 -0.79 -0.79 -0.79	-12.5%	Refer to ASTM A - 530
ASTM - 358 Welded Austenitic pipe	219.08 750 mm	± 0.5%		3.0 mm	Refer to ASTM A - 530
ASTM - 409 Welded Austenitic pipe	335.6 750 mm		± 22% -0 ± 22%	-0.46 mm	Refer to ASTM A - 530



STAINLESS STEEL PIPE SERIES (ANSI B 36.10, B36.19)

Nominal Pipe Size Inch	Outside Diameter ASTM	Wall Thickness and Weight											
		Sch. 5S		Sch. 10S		Sch. 40S		Sch. 80S		Sch. 160S		Sch. xx	
1/8"	10.29	--	--	1.24	0.280	1.73	0.370	2.41	0.475	--	--	--	--
1/4"	13.72	--	--	1.65	0.498	2.24	0.643	3.02	0.808	--	--	--	--
3/8"	17.15	--	--	1.65	0.640	2.31	0.857	3.20	1.116	--	--	--	--
1/2"	21.34	1.65	0.812	2.11	1.014	2.77	1.286	3.73	1.642	4.78	1.979	7.47	2.59
3/4"	26.67	1.65	1.032	2.11	1.300	2.87	1.708	3.91	2.225	5.56	2.934	7.82	3.69
1"	33.40	1.65	1.310	2.77	2.121	3.38	2.537	4.55	3.282	6.35	4.294	9.09	5.52
1 1/4"	42.16	1.65	1.671	2.77	2.728	3.56	3.435	4.85	4.524	6.35	5.685	9.70	7.87
1 1/2"	48.26	1.65	1.923	2.77	3.150	3.68	4.101	5.08	5.484	7.14	7.339	10.16	9.68
2"	60.33	1.65	2.421	2.77	3.986	3.91	5.515	5.54	7.588	8.71	11.240	11.07	13.63
2 1/2"	73.03	2.11	3.741	3.05	5.336	5.16	8.756	7.01	11.570	9.52	15.115	14.02	20.68
3"	88.90	2.11	4.578	3.05	6.546	5.49	11.448	7.62	15.484	11.13	21.639	15.24	28.06
3 1/2"	101.16	2.11	5.248	3.05	7.514	5.74	13.756	8.08	18.891	--	--	--	--
4"	114.30	2.11	5.918	3.05	8.483	6.02	16.296	8.56	22.628	13.49	33.990	17.12	41.59
5"	141.30	2.77	9.593	3.40	11.721	6.55	22.065	9.52	31.364	15.87	49.760	19.05	58.22
6"	168.28	2.77	11.461	3.40	14.014	7.11	28.648	10.97	43.143	18.24	68.420	21.95	80.30
8"	219.08	2.77	14.979	3.76	20.240	8.18	43.129	12.70	65.526	23.01	112.790	22.23	109.40
10"	273.05	3.40	22.920	4.19	28.163	9.27	61.131	12.70	82.661	28.57	174.620	25.40	--
12"	323.82	3.96	31.669	4.57	36.477	9.52	74.810	12.70	98.790	33.32	242.010	25.40	--
14"	355.60	3.96	--	4.78	41.923	11.13	95.840	19.05	160.208	35.71	285.580	--	--
16"	406.40	4.19	--	4.78	47.993	12.70	124.990	21.44	--	40.49	--	--	--
18"	457.20	4.19	--	4.78	54.064	14.20	157.260	23.83	--	45.24	--	--	--
20"	508.00	4.78	--	5.54	69.590	15.09	185.950	26.20	--	50.00	--	--	--

STAINLESS STEEL TUBING SERIES

Wall Thickness in mm	0.5	0.6	0.7	0.8	1.0	1.2	1.6	2.0	2.6	3.0	3.2	3.6
O.D. in mm	Weight in kg/mt											
06.0	0.069	0.081	0.093	0.104	0.125	0.144	0.176	--	--	--	--	--
10.0	0.119	0.141	0.163	0.184	0.225	0.264	0.336	--	--	--	--	--
12.7	0.153	0.182	0.210	0.238	0.293	0.345	0.444	--	--	--	--	--
14.0	0.169	0.201	0.233	0.264	0.325	0.384	0.496	--	--	--	--	--
15.87	0.192	0.229	0.266	0.301	0.372	0.440	0.571	0.694	--	--	--	--
19.0	0.231	0.276	0.320	0.364	0.450	0.534	0.696	0.850	1.066	1.200	1.264	--
25.0	0.306	0.366	0.425	0.484	0.600	0.714	0.936	1.150	1.456	1.650	1.744	1.926
25.4	0.311	0.372	0.432	0.492	0.610	0.726	0.952	1.170	1.482	1.680	1.776	1.962
31.8	--	--	--	--	--	0.918	1.208	1.490	1.898	2.160	2.288	2.538
38.0	--	--	--	--	--	1.104	1.456	1.800	2.301	2.625	2.784	3.096
44.5	--	--	--	--	--	1.299	1.716	2.125	2.724	3.113	3.304	3.681
50.8	--	--	--	--	--	--	1.968	2.440	3.133	3.585	3.308	4.248
63.5	--	--	--	--	--	--	2.476	3.075	3.959	4.538	4.824	5.391
76.1	--	--	--	--	--	--	2.980	3.705	4.778	5.483	5.832	6.525
101.6	--	--	--	--	--	--	4.000	4.980	6.435	7.395	7.872	8.820
114.3	--	--	--	--	--	--	4.453	5.547	7.173	8.247	8.780	9.840
127	--	--	--	--	--	--	4.955	6.175	7.989	9.188	9.785	10.980
152.4	--	--	--	--	--	--	5.960	7.429	9.620	11.070	11.752	13.231



DIMENSION ANSI B 36-10

Size of Pipes & Tubes		Nominal Thickness and Weight													
		Number of Schedule													
		5S		10S		10		20		30		40		60	
Nominal in Inch.	Outside in mm	mm	Kg/m	mm	Kg/m	mm	Kg/m	mm	Kg/m	mm	Kg/m	mm	Kg/m	mm	Kg/m
1/8"	10.3	--	--	1.28	0.28	--	--	1.60	0.345	--	--	1.73	0.36	--	--
1/4"	13.7	--	--	1.65	0.49	--	--	2.00	0.580	--	--	2.24	0.63	--	--
3/8"	17.1	--	--	1.65	0.63	--	--	2.00	0.750	--	--	2.31	0.85	--	--
1/2"	21.3	1.65	0.81	2.11	1.00	--	--	2.00	1.165	--	--	2.77	1.26	--	--
3/4"	26.7	1.65	1.03	2.11	1.28	--	--	2.50	1.500	--	--	2.87	1.68	--	--
1"	33.4	1.65	1.29	2.77	2.08	--	--	3.00	2.262	--	--	3.38	2.5	--	--
1 1/4"	42.2	1.65	1.65	2.77	2.69	--	--	3.00	2.910	--	--	3.56	3.38	--	--
1 1/2"	48.3	1.65	1.90	2.77	3.12	--	--	3.00	3.370	--	--	3.68	4.05	--	--
2"	60.3	1.65	2.38	2.77	3.94	--	--	3.00	4.263	--	--	3.91	5.43	--	--
2 1/2"	73.0	2.11	3.70	3.05	5.26	--	--	4.00	6.486	--	--	5.16	8.62	--	--
3"	88.9	2.11	4.50	3.05	6.45	--	--	4.00	8.423	--	--	5.49	11.29	--	--
3 1/2"	101.6	2.11	5.20	3.05	7.40	--	--	4.50	10.838	--	--	5.74	13.56	--	--
4"	114.3	2.11	5.81	3.05	8.34	--	--	4.50	12.555	--	--	6.02	16.06	--	--
5"	141.3	2.77	9.45	3.40	11.56	--	--	5.00	16.900	--	--	6.55	21.76	--	--
6"	168.3	2.77	11.31	3.40	13.82	--	--	6.35	24.150	--	--	7.11	28.23	--	--
8"	219.1	2.77	14.78	3.76	19.94	--	--	6.35	33.28	7.04	36.76	8.18	42.49	10.31	53.07
10"	273.0	3.40	22.62	4.19	27.83	--	--	6.35	41.73	7.80	50.96	9.27	60.24	12.70	81.46
12"	323.9	3.96	31.42	4.57	36.00	--	--	6.35	49.68	8.38	65.14	10.31	79.71	14.27	108.97
14"	355.6	3.96	34.23	4.78	41.18	6.35	54.63	7.92	67.98	9.52	81.21	11.13	94.31	15.0	126.51
16"	406.4	4.19	41.60	4.78	47.38	6.35	62.58	7.92	77.92	9.52	93.10	12.70	123.18	16.66	160.64
18"	457.2	4.19	46.83	4.78	53.18	6.35	70.53	7.92	87.85	11.13	122.12	14.27	155.90	19.05	205.62
20"	508.0	4.78	59.22	5.54	68.50	6.35	78.47	9.52	116.67	12.70	154.97	15.09	183.14	20.62	247.79
22"	558.8	4.78	63.75	5.54	73.81	6.35	86.42	9.52	128.89	12.70	170.86	--	--	22.22	293.80
24"	609.6	5.54	82.60	6.35	94.37	6.35	94.37	9.52	140.81	14.27	209.54	17.48	254.74	24.61	354.62
26"	660.4	--	--	--	--	7.92	127.58	12.70	202.65	--	--	--	--	--	--
28"	711.2	--	--	--	--	7.92	137.52	12.70	218.54	15.88	271.94	--	--	--	--
30"	762.0	--	--	--	--	7.92	147.45	12.70	234.44	15.88	293.90	--	--	--	--
32"	812.8	--	--	--	--	7.92	158.12	12.70	250.33	15.88	311.67	17.48	342.17	--	--
34"	863.6	--	--	--	--	7.92	167.32	12.70	266.22	15.88	331.54	17.48	364.01	--	--
36"	914.4	--	--	--	--	7.92	177.26	12.70	282.12	15.88	351.41	19.05	420.21	--	--



DIMENSION ANSI B 36-10

		Nominal Thickness and Weight													
		Number of Schedule													
80		100		120		140		160		Standard		Extra Strong		Double Ex. Strong	
mm	Kg/m	mm	Kg/m	mm	Kg/m	mm	Kg/m	mm	Kg/m	mm	Kg/m	mm	Kg/m	mm	Kg/m
2.41	0.46	--	--	--	--	--	--	--	--	1.73	0.36	2.41	0.46	-	--
3.02	0.80	--	--	--	--	--	--	--	--	2.24	0.63	3.02	0.80	--	--
3.20	1.10	--	--	--	--	--	--	--	--	2.31	0.85	3.20	1.10	--	--
3.73	1.62	--	--	--	--	--	--	4.78	1.95	2.77	1.26	3.73	1.62	7.47	2.54
3.91	2.19	--	--	--	--	--	--	5.56	2.89	2.87	1.68	3.91	2.19	7.82	3.63
4.55	3.23	--	--	--	--	--	--	6.35	4.23	3.38	2.50	4.55	3.23	9.09	5.45
4.85	4.46	--	--	--	--	--	--	6.35	5.60	3.56	3.38	4.85	4.46	9.70	7.75
5.08	5.40	--	--	--	--	--	--	7.14	7.23	3.68	4.05	5.08	5.40	10.16	9.54
5.54	7.47	--	--	--	--	--	--	8.74	11.10	3.91	5.43	5.54	7.47	11.07	13.44
7.01	11.40	--	--	--	--	--	--	9.52	14.90	5.16	8.62	7.01	11.40	14.02	20.29
7.62	15.25	--	--	--	--	--	--	11.13	21.30	5.49	11.90	7.62	15.25	15.24	27.65
8.08	18.62	--	--	--	--	--	--	--	--	5.74	13.56	8.08	18.62	--	--
8.56	22.29	--	--	11.13	28.25	--	--	13.49	33.51	6.02	16.06	8.56	22.29	17.12	40.99
9.52	30.92	--	--	12.70	40.24	--	--	15.88	49.05	6.55	21.76	9.52	30.92	19.05	57.37
10.97	42.52	--	--	14.27	54.20	--	--	18.26	67.47	7.11	28.23	10.97	42.52	20.95	79.11
12.70	64.97	15.09	75.79	18.26	90.32	20.62	100.89	23.01	111.18	8.18	42.49	12.70	64.97	22.22	107.78
15.09	95.84	18.26	114.59	21.44	132.85	25.40	154.97	28.58	172.11	9.27	60.24	15.09	95.84	25.40	154.97
17.48	131.81	21.44	159.67	25.40	186.75	28.58	207.87	33.32	238.60	9.52	73.76	17.48	131.81	25.40	186.75
19.05	157.94	23.83	194.64	27.79	224.36	31.75	253.32	35.71	281.49	9.52	81.21	19.05	157.94	--	--
21.44	203.26	26.19	245.64	30.96	286.33	36.53	332.72	40.49	364.94	9.52	93.13	21.44	203.26	--	--
23.83	254.24	29.36	309.55	34.92	363.33	39.37	408.21	45.24	459.18	9.52	105.05	23.83	254.24	--	--
26.19	310.91	32.54	381.20	38.10	441.06	44.45	507.63	50.01	564.24	9.52	116.97	26.19	310.91	--	--
28.58	373.27	34.92	450.75	41.28	526.24	47.62	599.76	53.98	671.28	9.52	128.89	28.58	373.27	--	--
30.96	441.30	38.89	546.84	46.02	639.18	52.37	716.16	59.54	806.74	9.52	140.81	30.96	441.30	--	--
--	--	--	--	--	--	--	--	--	--	9.52	152.73	--	--	--	--
--	--	--	--	--	--	--	--	--	--	9.52	164.65	--	--	--	--
--	--	--	--	--	--	--	--	--	--	9.52	176.57	--	--	--	--
--	--	--	--	--	--	--	--	--	--	9.52	188.50	--	--	--	--
--	--	--	--	--	--	--	--	--	--	9.52	200.42	--	--	--	--
--	--	--	--	--	--	--	--	--	--	9.52	212.34	--	--	--	--

N. B. : Thickness and weights "Standard" "Extra Strong" & "Double Extra Strong" within swell edges have a correspondent value in "Schedule" for different thickness that suitable the weights can proceeds by following formula 24.66 (D. t/t)



COMPARISON TABLE OF DIN - ASTM - API - BS

	TENSILE STRENGTH		YIELD POINT		ELONGATION MIN % abt	%	%	%	%	
	DaN/mm ² kgf/mm ² abt	ltn/in ² abt	DaN/mm ² kgf/mm ² abt	ltn/in ² abt						C
DIN	St 00	35-45	22-29	24	15	25				
	St 36	35-45	22-29	24	15	25	0.18			0.05
	St 45	45-55	29-35	26	16.5	21	0.25			0.05
	St 55	55-65	35-41	30	19	17	0.36			0.05
	St 52	52-62	33-39	36	23	22	0.20	0.55	1.50	0.05
	St 35.8	35-45	22-29	24	15	25	0.17	0.35	0.40	0.05
	St 45.8	45-55	29-35	26	16.5	21	0.22	0.10/0.35	0.45	0.05
	TT St 35 N	35-45	22-29	23	14.5	25	0.16	0.10/0.35	0.40/0.60	0.045
	15 Mo 3	45-55	29-35	29	18.5	22	0.12/0.20	0.15/0.35	0.50/0.80	0.04
	16 Mo 5	387	24				0.10/0.20	0.10/0.50	0.30/0.80	0.045
	13 Cr Mo 44	45-58	29-37	30	19	22	0.10/0.18	0.15/0.35	0.40/0.70	0.04
	10 Cr Mo 910	45-60	29-38	27	17	20	0.15	0.10/0.50	0.40/0.60	0.04
	12 Cr Mo 195	42	27	18	11.5	21	0.15	0.50	0.30/0.60	0.03
	MECHANICAL									
	C 35	60-	38-	32	20	20	0.35	0.40	0.60	0.04
St 52-3	52-62	33-39	34	21.5	22	0.20	0.55	1.50	0.05	
ASTM	ASTMA 53 A	33.7	21	21.1	13.5	35		(0.10-0.30)		0.048
	A 53 B	42.2	27	24.6	15.5	30	0.25	(0.10-0.30)		0.048
	A 106 A	33.7	21	21.1	13.5	35	0.30	0.10	0.27/0.93	0.048
	A 106 B	42.2	27	24.6	15.5	30	0.30	0.10	0.29/1.06	0.048
	ASTMA 333/1	38.7	24.5	21.1	13.5	35	0.19		0.40/1.06	0.05
	A 333/3	45.7	29	24.6	15.5	30	0.10/0.20	0.18/0.37	0.31/0.64	0.05
	ASTMA 335 P1	38.7	24.5	21.1	13.5	30	0.10/0.20	0.10/0.50	0.30/0.80	0.045
	P2	38.7	24.5	21.1	13.5	30	0.15	0.10/0.30	0.30/0.61	0.045
	P11	42.2	27	21.1	13.5	30	0.15	0.50/1.00	0.30/0.60	0.03
	P12	42.2	27	21.1	13.5	30	0.15	0.50	0.30/0.61	0.045
	P22	42.2	27	21.1	13.5	30	0.15	0.50	0.30/0.60	0.03
	P5	42.2	27	21.1	13.5	30		0.05	0.30/0.60	0.03
API-LING PIPE	API 5 L GRA	33.7	21	21.1	13.5	Variable	0.22		0.90	0.04
	API 5 L GRB	42.2	27	24.6	15.5	Variable	0.27		1.15	0.04
	API 5 L X 42	42.2	27	29.5	19	Variable	0.29		1.25	0.04
	API 5 L X 46	44.3	28	32.3	20	Variable	0.31		1.35	0.04
	API 5 L X 56	49.9	31.5	39.2	25	Variable	0.26		1.35	0.04
	API 5 L X 60	52.7	33.5	42.2	27	Variable	0.26		1.35	0.04
	API 5 L X 65	56.2	35.5	42.7	29	Variable	0.26		1.40	0.04
BS	BS 3601HFS 22	34.6	22	21.3	13.5	700/253TONF/N ¹	0.21		0.70	0.06
	BS 3601HFS 27	42.5	27	25.2	16		0.25		0.70	0.05
	BS 3601HFS 35	55.1	35	31.5	20		0.40		1.20	0.05
	BS 3602HFS 23	36.2-47.2	23-30	21.3	13.5		0.20	(0.10-0.35)	0.30/0.70	0.05
	BS 3602HFS 27	42.5-55.1	27-35	25.2	16		0.25	(0.10-0.35)	0.30/0.70	0.05
	BS 3602HFS 35	55.1-67.7	35-43	31.5	20		0.35	(0.10-0.35)	0.30/1.10	0.05
	BS 3059/3ERW	31.5-44.1	20.28	--	--					0.05



COMPARISON TABLE OF DIN - ASTM - API - BS

	% S=Max	% Mo	% Cr.	% Ni	Standard For Size+Tol	Technical Spec.	CORRESPONDING QUALITY		
							A.S.A.	DIN	BS
DIN	St 00				DIN 2448	DIN 1629/2			
	St 35	0.05			DIN 2448	DIN 1629/3	A 53 A		3601 HFS22
	St 45	0.05			DIN 2448	DIN 1629/3	A 53 B		3601 HFS27
	St 55	0.05			DIN 2448	DIN 1629/3			3601 HFS35
	St 52	0.05			DIN 2448	DIN 1629/3			
	St 35.8	0.05			DIN 2448	DIN 1629/3	A 106 A		3059/1-2
	St 45.8	0.05			DIN 2448	DIN 17175	A 106 B		3059/5-6
	TT St 35 N	0.045			DIN 2448	S.E.WERKSTBL680	A 333 GR		3603 LT 27
	15 Mo 3	0.04	0.25/0.35		DIN 2448	DIN 17175	A 335 P1		3059 / 7-8
	16 Mo 5	0.045	0.45/0.65		DIN 2448	WERKST BS-120	A 335 P1		3059 / 7-8
	13 Cr Mo 44	0.04	0.40/0.50	0.70/1.00	DIN 2448	DIN 17175	A335P12/P11		3604 Gr620
	10 Cr Mo 910	0.04	0.90/1.10	2.0/2.50	DIN 2448	DIN 17175	A 335P22		3604 Fr.622
	12 Cr Mo 195	0.03	0.45/0.65	4-6	DIN 2448	WERKST BL-231	A335P5		3604 Gr.625
	MECHANICAL								
	C 35	0.035					DIN 17200		
St 52-3	0.05					DIN 17100			
ASTM	ASTMA 53 A				ASA B36.10		API 5LGRA	St. 35	3601HFS 22
	A 53 B				ASA B36.10		API 5LGRA	St. 45	3601HFS 27
	A 106 A	0.058			ASA B36.10		API 5LGRA	St. 35.8	3059/1-2
	A 106 B	0.058			ASA B36.10		API 5LGRA	St. 45.8	3059/5-6
	ASTMA 333/1	0.06			ASA B36.10			TTSt. 35N	3603LT 27
	A 333/3	0.05			ASA B36.10			10 Ni 14	3603 503 LT100
	ASTMA 335 P1	0.045	0.44/0.65		ASA B36.10			15 MO 316M05	3059/7-8
	P2	0.045	0.44/0.65	0.50/0.81	ASA B36.10			13 Cr.MO44	
	P11	0.03	0.44/0.65	1-1.5	ASA B36.10			13 Cr.MO44	3604 Gr.621
	P12	0.045	0.44/0.65	0.8/1.25	ASA B36.10			13 Cr.MO44	3604 Gr.620
API-LING PIPE	API 5 L GRA	0.05			ASA B36.10		ASTM 53A		
	API 5 L GRB	0.05			ASA B36.10		ASTM 53A		
	API 5 L X 42	0.05			ASA B36.10				
	API 5 L X 46	0.05			ASA B36.10				
	API 5 L X 56	0.05			ASA B36.10				
	API 5 L X 60	0.05			ASA B36.10				
	API 5 L X 65	0.05			ASA B36.10				
BS	BS 3601HFS 22	0.05					A 53 A	St. 35	
	BS 3601HFS 27	0.06					A 53 B	St. 45	
	BS 3601HFS 35	0.05						St. 55	
	BS 3602HFS 23	0.05					A 106 A	St. 36.8	
	BS 3602HFS 27	0.05					A 106 B	St. 45.8	
	BS 3602HFS 35	0.05					A 106 C		
	BS 3059/3ERW	0.05						St. 35.8	



CHEMICAL ANALYSIS

SPECIFICATION	WT	C%	Mn%	P% MAX	S% MAX	St%
ASTM A53/A	AW	0.25 MAX	0.95 MAX	0.050	0.060	----
ASTM A53/B	AW	0.30 MAX	1.20 MAX	0.050	0.060	----
ASTM A106/A	AW	0.25 MAX	0.27-0.93	0.035	0.035	0.10 MIN
ASTM A106/B	AW	0.30 MAX	0.29-1.06	0.035	0.035	0.10 MIN
ASTM A106/C	AW	0.35 MAX	0.29-1.06	0.035	0.035	0.10 MIN
ASTM A333/1	AW	0.30 MAX	0.40-1.06	0.025	0.025	----
ASTM A333/6	AW	0.30 MAX	0.29-1.06	0.025	0.025	0.10 MIN
ASTM A334/1	MW	0.30 MAX	0.40-1.06	0.025	0.025	----
ASTM A334/6	MW	0.30 MAX	0.29-1.06	0.025	0.025	0.10 MIN
ASTM A179	MW	0.06-0.18	0.27-0.63	0.048	0.048	----
ASTM A214	MW	0.18 MAX	0.27-0.63	0.050	0.050	----
ASTM A192	MW	0.06-0.138	0.27-0.63	0.048	0.046	0.25 MAX
ASTM A210/A-1	MW	0.27 MAX	0.93 MAX	0.048	0.058	0.10 MIN
ASTM A210/C	MW	0.35 MAX	0.29-1.06	0.048	0.058	0.10 MIN
ASTM A209/T1	MW	0.10-0.20	0.30-0.80	0.045	0.045	0.10-0.50
ASTM A335/P1	AW	0.10-0.20	0.30-0.80	0.025	0.025	0.10-0.50
ASTM A335/P2	AW	0.10-0.20	0.30-0.61	0.025	0.025	0.10-0.30
ASTM A335/P11	AW	0.15 MAX	0.30-0.60	0.025	0.025	0.50-1.00
ASTM A335/P12	AW	0.15 MAX	0.30-0.61	0.025	0.025	0.50 MAX
ASTM A335/P22	AW	0.15 MAX	0.30-0.61	0.025	0.025	0.50 MAX
ASTM A335/P5	AW	0.15 MAX	0.30-0.60	0.025	0.025	0.50 MAX
ASTM A335/P9	AW	0.15 MAX	0.30-0.60	0.030	0.030	0.25-1.00
BS/3059/1/320		0.15 MAX	0.30-0.70	0.050	0.050	----
BS/3059/2/360		0.17 MAX	0.40-0.80	0.035	0.035	0.10-0.35
BS/3059/2/440		0.12-0.18	0.90-1.20	0.035	0.035	0.10-0.35
BS/3059/2/620		0.10-0.15	0.40-0.70	0.040	0.040	0.10-0.35
DIN/17175/ST35.8		0.17 MAX	0.40 MIN	0.040	0.040	0.35 MAX
DIN17175/ST45.8		0.22 MAX	0.45 MIN	0.040	0.040	0.10-0.35
DIN/17175/12Mo3		0.12-0.20	0.50-0.80	0.040	0.040	0.10-0.35
DIN/17175/13CrMo44		0.10-0.18	0.40-0.70	0.040	0.040	0.10-0.35
DIN/17175/10CrMo910		0.15 MAX	0.40-0.60	0.040	0.040	0.15-0.50



MECHANICAL PROPERTIES

Cr. %	Mor %	MECHANICAL PROPERTIES			SPECIAL REQUIREMENT
		Tensile Strength MPA	Yield Strength MPA Min	Elongation 50 mm Min Longitudinal	
---	---	331 MIN	207	36	---
---	---	413 MIN	240	29.5	---
0.40 MAX	0.15 MAX	330 MIN	205	35/28	CR MO CU NI VA
0.40 MAX	0.15 MAX	415 MIN	240	30/22	0.40 .15 .40 .40 .08
0.40 MAX	0.15 MAX	485 MIN	275	30/22	Five elements not to Ex. 1%
---	---	380 MIN	205	25/20	Impact Test 50° F x 10 J18
---	---	415 MIN	240	30/18	Impact Test 50° F x 10 J18
---	---	380 MIN	205	35/28	.50° F10 x 10J18 85 HRB MAX
---	---	415 MIN	240	30/22	.50° F10 x 10J18 85 HRB MAX
---	---	325 MIN	180	35.0	Hardness 72 HRB MAX
---	---	385 MIN	180	35.0	Hardness 72 HRB MAX
---	---	325 MIN	180	35.0	Hardness 77 HRB MAX
---	---	415 MIN	265	30/22	Hardness 79 HRB MAX
---	---	485 MIN	275	30/22	Hardness 89 HRB MAX
---	0.44-0.65	380 MIN	205	30/22	Max. Temp 475°C 80HRB MAX
---	0.44-0.65	380 MIN	205	30	Maximum Temp. 550°C
0.50-0.81	0.44-0.65	380 MIN	205	30	Maximum Temp. 550°C
1.00-1.50	0.44-0.65	415 MIN	205	30	Maximum Temp. 575°C
0.80-1.25	0.44-0.65	415 MIN	205	30	Maximum Temp. 560°C
1.90-2.60	0.87-1.13	415 MIN	205	30	Maximum Temp. 600°C
4.00-6.00	0.44-0.65	415 MIN	205	30	Maximum Temp. 600°C
8.00-10.0	0.90-1.10	415 MIN	172	30/22	Maximum Temp. 625°C
---	---	324-441	188	26	Maximum Temp. 454°C
---	---	360-500	235	21	Maximum Temp. 454°C
---	---	440-580	245	22	Maximum Temp. 475°C
0.70-1.10	0.45-0.65	441-618	235	22	Maximum Temp. 560°C
---	---	340-441	235	25	Maximum Temp. 454°C
---	---	441-540	255	25	Maximum Temp. 454°C
---	0.25-0.35	441-540	284	21	Maximum Temp. 550°C
0.70-1.00	0.40-0.50	441-570	294	22	Maximum Temp. 550°C
2.00-2.50	0.90-1.10	441-570	294	22	Maximum Temp. 600°C



STAINLESS STEEL

Stainless steel is essentially a low carbon steel which contains chromium at 10% or more by weight. It is this addition of chromium that gives the steel its unique stainless, corrosion resisting properties. The corrosion resistance and other useful properties of the steel are enhanced by increased chromium content and the addition of other elements such as molybdenum, nickel and nitrogen.

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'
AUSTENITIC												
201	0.15	5.5/7.5	0.06	0.03	1	16.0/18.0	3.5/5.5	-	-	-	-	-
202	0.15	7.5/10	0.06	0.03	1	17.0/19.0	4.0/6.0	-	-	-	-	-
301	0.15	2.0max	0.045	0.040	1.0	16.0/18.0	6.0/8.0	-	-	-	10Cr17Ni7	-
302	0.15	2.0	0.045	0.030	1.0	17.0/19.0	8.0/10.0	-	E-4-3-4%	-	07Cr18Ni9	En-58A
302HQ	0.03	2.0	0.045	0.03	1	17.0/19.0	9.0/10.0	-	CU:3-4.0	-	-	-
303	0.15	2.0	0.045	0.15min	1.0	17.0/19.0	8.0/10.0	-	E-4-1% max	-	15Cr18Ni9	En-58M
303EHS	0.15	2.0	0.02	0.3-0.33	1	17.0/19.0	8.0/10.0	-	CU:1% Max	-	-	-
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	8.0/12.0	-	-	-	02Cr18Ni11	-
304H.C	0.05	2.0	0.040	0.03	1	18.0/20.0	8.5/9.5	-	CU:2-2.50	-	-	-
308	0.08	2.0	0.045	0.030	1.0	18.0/21.0	10.0/12.0	-	-	-	-	-
308LER	0.02	1.5/2.0	0.025	0.02	0.5	19.0/21.0	9.5/11.0	-	-	-	-	-
309	0.20	2.0 max	0.045	0.030	1.0	22.0/24.0	12.0/15.0	-	-	-	20Cr24Ni12	-
309LER	0.03	1.5/2.5	0.02	0.015	0.5	23.0/25.0	12.0/14.0	-	-	-	-	-
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	-	-	-	-	-
314	0.25	2.0	0.040	0.030	1.5to3	25.0/26.0	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	-
316LER	0.02	1.5/2.0	0.02	0.02	0.5	18.0/20.0	12.0/14.0	2.0/2.75	-	-	-	-
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	N:0.10/0.22	-	-	-
317LN	0.03	2.0	0.045	0.03	1	18.0/20.0	11.0/15.0	3.0/4.0	N:0.10/0.22	-	-	-
321	0.08	2.0	0.045	0.030	1.0	17.0/19.0	9.0/12.0	-	Ti5Cmin	-	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
904L	0.02	2.0	0.045	0.035	1	19.0/23.0	23.0/28.0	4.0-5.0	CU:1-2	-	-	-
FERRITIC												
410	0.15	1.00	0.04	0.03	1.0	11.50/13.5	0.60	-	-	-	12Cr13	En-56A
416	0.15	1.25	0.06	0.15min	1.0	12.0/14.0	1.25/2.50	-	-	-	-	-
420	0.15min	1.0	0.04	0.03	1.0	12.0/14.0	0.60	-	-	-	-	En-56C&D
430	0.12	1.0	0.04	0.03	1.0	16.0/18.0	0.60	-	-	-	07Cr17	En-60
430L	0.03	1.0	0.04	0.03	1.0	16.0/18.0	0.60	-	-	-	-	-
430F	0.12	1.25	0.06	0.15min	1.0	16.0/18.0	0.60	-	-	-	-	-
431	0.2	1.0	0.04	0.03	1.0	15.0/17.0	1.25/2.5	-	-	-	-	En-57
17.4-PH	0.07	1.0	0.04	0.03	1.0	15.0/17.0	3.0/5.0	-	NB:0.15/0.45	-	-	-
DUPLEX												
1905	0.03	1.2/1.8	0.04	0.03	1.2/2	18.0/19.0	4.3/5.2	2.5/3	N:0.5/0.10	-	-	-
2205	0.03	2	0.03	0.02	1.0	21.0/23.0	4.5/6.5	2.5/3.5	N:0.8/0.20	-	-	-
2506	0.08	1.0	0.04	0.03	0.75	26.0/28.0	4/5	1.3/2	-	-	-	-



FEATURES OF STAINLESS STEEL

- Corrosion Resistance
- Aesthetic Appearance
- Lower Total Life Cycle Cost
- Fire and Heat Resistance
- Strength-to-Weight Advantage
- 100% Recyclable
- Hygiene
- Impact Resistance

EQUIVALENT TABLE FOR VARIOUS SPECIFICATIONS

USA AISI NO	GERMANY DIN	INDIA IS	BRITAIN BS	JAPAN JIS	SWEDEN SIS	FRANCE AFNOR	ITALY UNI	CHINA GB	USN DESIGNATION
303	1.4305	X10Cr18Ni9S	303S31	SUS303	-	Z10CCNF18.09	X10CrNiS1809	-	S30300
304	1.4301	X04Cr19Ni9	304S15	SUS304	142333	Z6CN18.09	X5CrNi1810	0Cr19Ni9	S30400
304L	1.4306	X02Cr19Ni10	304S11	SUS304L	142352	Z2CN18.10	X2CrNi1811	00Cr19Ni11	S30403
310	1.4845	X20Cr25Ni20	310S24	SUS310S	142361	Z12CN25.20	X22CrNi2520	0Cr25Ni20	S31008
316	1.4401	X04Cr17Ni12Mo2	316S31	SUS316	142347	Z6CND17.11	X8CrNiMo1713	0Cr17Ni12Mo2	S31603
316L	1.4404	X02Cr17Ni12Mo2	316S11	SUS316L	142348	Z2CND17.12	X2CrNiMo1712	00Cr17Ni14Mo2	S31603
321	1.4541	X04Cr18Ni10Ti	321S31	SUS321	142337	Z6CNT18.12	X6CrNiTi1811	0Cr18NiTi	S32100



CHEMICAL COMPOSITION OF NICKEL ALLOYS CHEMICAL ANALYSIS

Grade Name	Ni min	Co max	Cr	Mo	W	Fe max	Si max	Mn max	C max	Cu max	Al	Ti max	S max	P max
Nickel 200	99.0	-	-	-	-	0.4	0.35	0.35	0.01	0.25	-	-	0.01	-
Nickel 201	99.0	-	-	-	-	0.4	0.35	0.35	0.02	0.25	-	-	0.01	-
Monel 400	63.0	-	-	-	-	2.5	0.5	2.0	0.30	28-34	-	-	0.024	-
Monel K500	63.0	-	-	-	-	2.0	0.5	1.5	0.25	27-33	2.3-3.2	0.4-0.9	0.01	-
Inconel 600	72.0	-	14-17	-	-	6-10	0.5	1.0	0.15	0.5	-	-	0.015	-
Inconel 601	58-63	-	21-25	-	-	Rest	0.5	1.0	0.10	1.0	1.0-1.7	-	0.015	-
Inconel 625 ¹	58.0	1.0	20-23	8-10	-	5.0	0.5	0.5	0.10	-	0.4	0.4	0.015	0.015
Incolloy 800	30-35	-	19-23.5	-	-	Rest	1.0	1.5	0.10	0.75	0.15-0.6	0.15-0.6	0.015	-
Incolloy 800H	30-35	-	19-23.5	-	-	Rest	1.0	1.5	0.05-0.1	0.75	0.15-0.6	0.15-0.6	0.015	-
Incolloy 825	38-46	-	19-23.5	2.5-3.5	-	Rest	0.5	1.0	0.05	1.5-3	0.2	0.5-1.2	0.03	-
Hastalloy B-2	Rest	1.0	1.0	26-30	-	2.0	0.10	1.0	0.02	-	-	-	0.03	0.04
Hastalloy C276 ²	Rest	2.5	14-16.5	15-17	3-4.5	4-7	0.08	1.0	0.01	-	-	-	0.03	0.04
Hastalloy C-4	Rest	2.0	14-18	14-17	-	3.0	0.08	1.0	0.015	-	-	0.7	0.03	0.04
Hastalloy G3 ³	Rest	5.0	21-23.5	6-8	1.5	18-21	1.0	1.0	0.015	1.5-2.5	-	-	0.03	-
Incolloy DS	34.5-41	17-19	-	-	-	Rest	1.9-2.6	0.8-1.5	0.1	0.5	-	0.2	0.03	-
Alloy 20 ⁴	32-38	-	19-21	2-3	-	Rest	1.0	2.0	0.07	3-4	-	-	0.035	0.045

¹Nb/Ta 3.15-4.15

²V 0.35 ³Nb/Ta

³Nb/Ta 0.5 max., Mb 6.8, Ph 0.04

⁴Cb&Ta 8xc min. 1.0 max



Typical Mechanical Properties of Stainless Steel Pipe / Tube

Grade	Tensile Strength min. Ksi. (Mpa)	Yield Point min Ksi (Mpa)	Mechanical Properties, min				Hardness Test, Max	
			Full Section Specimen	Elongation, % (G.L. : 2 in or 50mm)		Round Specimen	Brinell	Rockwell
				Strip Specimen				
				t≥6/16 in	t≥5/16 in			
TP 304	75 (515)	30 (205)	35	35	56t + 17.50	28	192	B 90
TP 304 H	75 (515)	30 (205)	35	35	56t + 17.50	28	192	B 90
TP 304 L	70 (485)	25 (170)	35	35	56t + 17.50	28	192	B 90
TP 304N	80 (550)	35 (240)	35	35	56t + 17.50	28	192	B 90
TP 304LN	75 (515)	30 (205)	35	35	56t + 17.50	28	192	B 90
TP 309	75 (515)	30 (205)	35	35	56t + 17.50	28	192	B 90
TP 310	75 (515)	30 (205)	35	35	56t + 17.50	28	192	B 90
TP 316	75 (515)	30 (205)	35	35	56t + 17.50	28	192	B 90
TP 316H	75 (515)	30 (205)	35	35	56t + 17.50	28	192	B 90
TP 316L	70 (485)	25 (170)	35	35	56t + 17.50	28	192	B 90
TP 316 N	80 (550)	35 (240)	35	35	56t + 17.50	28	192	B 90
TP 316LN	75 (515)	30 (205)	35	35	56t + 17.50	28	192	B 90
TP 317	75 (515)	30 (205)	35	35	56t + 17.50	28	192	B 90
TP 321	75 (515)	30 (205)	35	35	56t + 17.50	28	192	B 90
TP 321 H	75 (515)	30 (205)	35	35	56t + 17.50	28	192	B 90
TP 347	75 (515)	30 (205)	35	35	56t + 17.50	28	192	B 90
TP 347 H	75 (515)	30 (205)	35	35	56t + 17.50	28	192	B 90
TP 405	60 (414)	30 (207)	20	20	* 2	-	207	B 90
TP 410	60 (414)	30 (207)	20	20	* 2	--	207	B 90
TP 429	60 (414)	35 (141)	20	20	* 2	--	190	B 90
TP 430	60 (414)	35 (141)	20	20	* 2	--	190	B 90
TP 443	70 (483)	40 (276)	20	20	* 2	--	207	B 90
TP 446	70 (783)	40 (276)	18	18	* 2	--	207	B 90
TP 329	90 (621)	70 (483)	20	20	* 2	--	271	B 90
TP 409	60 (414)	30 (207)	20	20	* 2	--	207	B 90
TP XM-8	60 (414)	30 (207)	20	20	* 2	--	190	B 90
TP 316 TI	75 (515)	30 (205)	35	35	56t + 17.50	28	190	B 90



Typical Mechanical Properties of Stainless Steel Bars

AISI TYPE	Condition	UTS Kg/mm ² min	YS (0.2% Offset) Kg/mm ² min	% EL in 50 mm min.	R. A. % min.
AUSTENITIC					
302	Annealed (Hot Finished)	53.0	21.0	40	50
304					
304L					
309					
310					
316					
316L					
317	Annealed (Hot Finished)	53.0	21.0	40	50
321	"	do	do	do	do
347	"	do	do	do	do
FERRITIC					
430	Annealed	49.0	28.0	20	45
436	"	49.0	28.0	20	45
MARTENSITIC					
403	Annealed	49.0	28.0	20.0	45.0
	Hardened & tempered	84.4	63.5	12.0	40.0
410	Annealed	49.0	28.0	20.0	45.0
	Hardened & Tempered	84.0	63.5	12.0	40.0

Typical Mechanical Properties of Stainless Steel Sheets / Plates

AISI TYPE	Condition	UTS Kg/mm ² min.	YS (0.2% Offset) Kg./mm ² min.)	% EL in 50mm min.	Hardness Max. RB.
AUSTENITIC					
301	Annealed	53.0	21.0	40.0	94
302	"	53.0	21.0	40.0	94
304	"	53.0	21.0	40.0	94
304L	"	49.0	17.5	40.0	94
309	"	53.0	21.0	40.0	95
310	"	53.0	21.0	40.0	95
316	"	53.0	21.0	40.0	96
316L	"	49.0	17.5	40.0	96
317	"	53.0	21.0	35.0	96
321	"	53.0	21.0	40.0	94
347	"	53.0	21.0	40.0	94
FERRITIC					
430	"	45.5	21.0	22.0	94
446	"	53.0	28.0	20.0	95
MARTENSITIC					
403	"	45.5	21.0	20.0	94
410	"	45.5	21.0	22.0	88

STAINLESS STEEL SHEET FINISH

Finish Number : _____ Description _____

- Hot rolled, annealed and pickled, this finish is mainly used where appearance is secondary.
- 2D. Dull, Smooth cold rolled finish: Best suited for deep drawing operations due to better relation of lubricants.
- 3B. Most commonly used finish obtained by Skinpass on 2D finish material.
- A polished finish obtained with coarse abrasive of 100-120 grain size.
- A standard polished finish produced with abrasive (grain size 120 to 150) finer than those under for No. 3 finish.
- Dull satin finish; tempico brushed; Used for architectural applications where high lustre is undesirable.
- Has a high degree of reflectivity; produced by buffing of finely ground surface, but the grit lines are not removed fully.
- Mirror finish used for applications requiring high reflectivity like press palates, small mirrors, reflectors.
Hairline : A Special polished finish exhibiting continuous lines produced by abrasive.



Products

BUTT-WELD FITTINGS



The following table represents size range, product standards and material grades of industrial pipe fittings like stainless steel, carbon steel & alloy steel pipe fittings etc. The range includes:

MATERIAL TYPE :-

Stainless Steel	: ASTM A403 WP 304, 304L, 304H, 316, 316L, 316Ti, 317, 317L, 321, 309, 310, 310S, 347, 347H, 904L etc...
Carbon Steel	: ASTM A-234 WPB / A420 WPL3/A420 WPL6/ MSS-SP-75 WPHY 42/46/52/56/60/65/70 etc. (IBR & NON IBR)
Alloy Steel	: ASTM A 234, GR. WP1, WP5, WP9, WP11, WP12, 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, Nipple, Cross, Insert etc.
Size Range	: 1/8" NB TO 48" NB. [Seamless & ERW (Welded)]
Wall Thickness	: Sch. 5S To Sch. XXS

Used to allow flow of fluids, like steam, water, air, oil, etc. through the desired cross-section with diversion of flow to the desired points



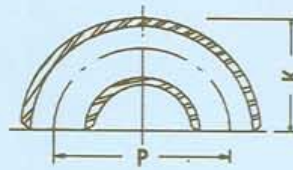
SEAMLESS BUTT-WELDING FITTINGS • ANSI B 16.9 - 1986



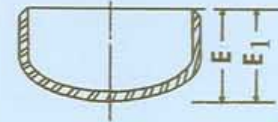
90° L. R. ELBOW



45° L. R. ELBOW



180° L. R. ELBOW



CAP

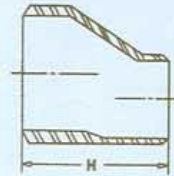
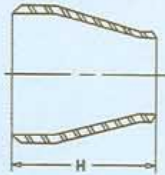
ALL DIMENSIONS IN MM

Nominal Pipe Size	90° L.R. Elbow	45° Long Radius Elbow		180° L.R. Return		Cap	Cap
	CENTRE TO FACE	Centre to Face	Centre Line Radius	Centre to Centre	Back to Face	Length	Length
	A	B		P	K	E	E ₁
15	38	16	38	76	48	25	25
*20	29	11	29	57	43	25	25
25	38	22	38	76	56	38	38
32	48	25	48	95	70	38	38
40	57	29	57	114	83	38	38
50	76	35	76	152	106	38	44
65	95	44	95	191	132	38	51
80	114	51	114	229	159	51	64
90	133	57	133	267	184	64	76
100	152	64	152	305	210	64	76
125	190	79	190	381	262	76	89
150	229	95	229	457	313	89	102
200	305	127	305	610	414	102	127
250	381	159	381	762	518	127	152
300	457	190	457	914	619	152	178
350	533	222	533	1067	711	165	191
400	610	254	610	1219	813	178	203
450	686	286	686	1372	914	203	229
500	762	318	762	1524	1016	229	254
550	838	343	838	1676	1118	254	254
600	914	381	914	1829	1219	267	305

- NOTES :
1. E-Length of Caps applicable to wall thickness of Schedule 40 and Schedule Extra Strong.
 2. E1-Length of Caps applicable to all other schedule / wall thickness high than Schedule 40 and Schedule Extra Strong.
 3. * Dimensions A & B for Nominal Pipe Size 20 may be 38 & 19 respectively at the option of manufacturer.
 4. Thickness & outside diameter of above fittings shall correspond to those of appropriate nominal pipe size.



SEAMLESS BUTT-WELDING FITTINGS • ANSI B 16.9 - 1986



ECCENTRIC REDUCERS

Nominal Pipe Size	Length H	Nominal Pipe Size	Length H	Nominal Pipe Size	Length H	Nominal Pipe Size	Length H
20 x 10	38	90 x 32	38	200 x 100	38	500 x 300	508
20 x 15	38	90 x 40	38	200 x 125	38	500 x 350	508
25 x 10*	51	90 x 50	51	200 x 150	51	500 x 400	508
25 x 15	51	90 x 65	51	250 x 80*	51	500 x 450	508
25 x 20	51	90 x 80	51	250 x 100	51	550 x 350	508
32 x 15	51	100 x 25*	51	250 x 125	51	550 x 400	508
32 x 20	51	100 x 32*	51	250 x 150	51	550 x 450	508
32 x 25	51	100 x 40	51	250 x 200	51	550 x 500	508
40 x 15	64	100 x 50	64	300 x 100*	64	600 x 400	508
40 x 20	64	100 x 65	64	300 x 125	64	600 x 450	508
40 x 25	64	100 x 80	64	300 x 150	64	600 x 500	508
40 x 32	64	100 x 90	64	300 x 200	64		
50 x 20	76	125 x 50	76	300 x 250	76		
50 x 25	76	125 x 65	76	350 x 150	76		
50 x 32	76	125 x 80	76	350 x 200	76		
50 x 40	76	125 x 90	76	350 x 250	76		
65 x 25	89	125 x 100	89	350 x 300	89		
65 x 32	89	150 x 50*	89	400 x 200	89		
65 x 40	89	150 x 65	89	400 x 250	89		
65 x 50	89	150 x 80	89	400 x 300	89		
80 x 25*	89	150 x 90	89	400 x 350	89		
80 x 32	89	150 x 100	89	450 x 250	89		
80 x 40	89	150 x 125	89	450 x 300	89		
80 x 50	89	200 x 80*	89	450 x 350	89		
80 x 65	89	200 x 90	89	450 x 400	89		

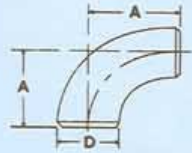
NOTES : ALL DIMENSIONS IN MM.

Not covered by the specification.

Thickness & outside diameter of reducers shall correspond to those of appropriate nominal pipe size.



SEAMLESS BUTT-WELDING FITTINGS • ANSI B 16.28



90° SHORT RADIUS ELBOW



180° SHORT RADIUS ELBOW

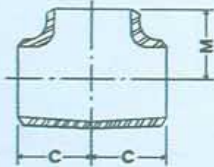
Nominal Pipe Size				
25	33	25	51	41
32	42	32	64	52
40	48	38	76	62
50	60	51	102	81
65	73	64	127	100
80	89	76	152	121
90	102	89	178	140
100	114	102	203	159
125	141	127	254	197
150	168	152	305	236
200	219	203	406	313
250	273	254	508	391
300	324	305	610	467
350	356	356	711	533
400	406	406	813	610
450	457	457	914	686
500	508	508	1016	762
550	559	559	1118	838
600	610	610	1219	914

NOTES : ALL DIMENSIONS IN MM.

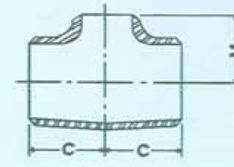
Thickness & outside diameter of above fittings shall correspond to those of appropriate nominal pipe size.



SEAMLESS BUTT-WELDING FITTINGS • ANSI B 16.9 - 1986



EQUAL TEE



REDUCING OUTLET TEE

EQUAL TEE			REDUCING OUTLET TEE								
Nominal Pipe Size	Centre to End C	Centre to End M	Nominal Pipe Size	Centre to End C	Centre to End M	Nominal Pipe Size	Centre to End C	Centre to End M	Nominal Pipe Size	Centre to End C	Centre to End M
15	25	25	15 x 15 x 8	25	25	100 x 100 x 40	105	86	350 x 350 x 150	279	238
20	29	29	15 x 15 x 10	25	25	100 x 100 x 50	105	89	350 x 350 x 200	279	248
25	38	38	20 x 20 x 10	29	29	100 x 100 x 65	105	95	350 x 350 x 250	279	257
32	48	48	20 x 20 x 15	29	29	100 x 100 x 80	105	98	350 x 350 x 300	279	270
40	57	57	25 x 25 x 10*	38	38	100 x 100 x 90	105	102	400 x 400 x 150	305	264
50	64	64	25 x 25 x 15	38	38	125 x 125 x 50	124	105	400 x 400 x 200	305	273
65	76	76	25 x 25 x 20	38	38	125 x 125 x 65	124	108	400 x 400 x 250	305	283
80	86	86	32 x 32 x 15	48	48	125 x 125 x 80	124	111	400 x 400 x 300	305	295
90	95	95	32 x 32 x 20	48	48	125 x 125 x 90	124	114	400 x 400 x 350	305	305
100	105	105	32 x 32 x 25	48	48	125 x 125 x 100	124	117	450 x 450 x 200	343	298
125	124	124	40 x 40 x 15	57	57	150 x 150 x 150*	143	121	450 x 450 x 250	343	308
150	143	143	40 x 40 x 20	57	57	150 x 150 x 65	143	121	450 x 450 x 300	343	321
200	178	178	40 x 40 x 25	57	57	150 x 150 x 80	143	124	450 x 450 x 350	343	330
250	216	216	40 x 40 x 32	57	57	150 x 150 x 90	143	127	450 x 450 x 400	343	330
300	254	254	50 x 50 x 20	64	44	150 x 150 x 100	143	130	500 x 500 x 200	381	324
350	279	279	50 x 50 x 25	64	51	150 x 150 x 125	143	137	500 x 500 x 250	381	333
400	305	305	50 x 50 x 32	64	57	200 x 200 x 80*	178	152	500 x 500 x 300	381	346
450	343	343	50 x 50 x 40	64	60	200 x 200 x 90	178	152	500 x 500 x 350	381	356
500	381	381	65 x 65 x 25	76	57	200 x 200 x 100	178	156	500 x 500 x 400	381	356
550	419	419	65 x 65 x 32	76	64	200 x 200 x 125	178	162	500 x 500 x 450	381	368
600	432	432	65 x 65 x 40	76	67	200 x 200 x 150	178	168	600 x 600 x 250	432	384
			65 x 65 x 50	76	70	250 x 250 x 80*	216	184	600 x 600 x 300	432	397
			80 x 80 x 25*	86	67	250 x 250 x 90*	216	184	600 x 600 x 350	432	406
			80 x 80 x 32	86	70	250 x 250 x 100	216	184	600 x 600 x 400	432	406
			80 x 80 x 40	86	73	250 x 250 x 125	216	191	600 x 600 x 450	432	419
			80 x 80 x 50	86	76	250 x 250 x 150	216	194	600 x 600 x 500	432	432
			80 x 80 x 65	86	83	250 x 250 x 200	216	203			
			90 x 90 x 40	95	79	300 x 300 x 100*	254	216			
			90 x 90 x 50	95	83	300 x 300 x 125	254	216			
			90 x 90 x 65	95	89	300 x 300 x 150	254	219			
			90 x 90 x 80	95	92	300 x 300 x 200	254	229			
						300 x 300 x 250	254	241			

NOTES : Not covered by specification.

Thickness & outside diameter of tees shall correspond to those of appropriate nominal pipe size.



DIMENSIONAL TOLERANCES FOR SEAMLESS BUTT WELDING FITTINGS ANSI B 16.9 & B 16.28

Nominal Pipe Size	All Fittings			45° to 90° Elbows & Tees	Caps	Reducers	180° Returns			All Fittings	
	Outside Diameter at Bevel	Inside Diameter at End	Wall Thickness	Center to End Dimensions	Overall Length	End to End	Centre to Centre Dimension	Back to Face Dimension	Alignment of Ends	ANGULARITY	
										Vertical Face	Longitudinal Axis
15 to 65	± 1	± 0.8		± 2	± 4	± 2	± 7	± 7	± 1	± 1	± 2
80 to 90	± 1	± 1.6	Not	± 2	± 4	± 2	± 7	± 7	± 1	± 1	± 2
100	± 2	± 1.6	less	± 2	± 4	± 2	± 7	± 7	± 1	± 1	± 2
	- 1										
125 to 150	+ 3	± 1.6	than	± 2	± 7	± 2	± 7	± 7	± 1	± 2	± 4
	- 1										
200	± 2	± 1.6	87.5%	± 2	± 7	± 2	± 7	± 7	± 1	± 2	± 4
250	+ 4	± 3.2	of	± 2	± 7	± 2	± 10	± 7	± 2	± 3	± 5
	- 3										
300	+ 4	± 3.2	nominal	± 3	± 7	± 3	± 10	± 7	± 2	± 3	± 5
	- 3										
350 to 400	+ 4	± 3.2	thickness	± 3	± 7	± 3	± 10	± 7	± 2	± 3	± 7
	- 3										
450	+ 4	± 3.2		± 3	± 7	± 3	± 10	± 7	± 2	± 4	± 10
	- 3										
500 to 600	+ 6	± 4.8		± 3	± 7	± 3	± 10	± 7	± 2	± 4	± 10
	- 5										

NOTE : 1. Dimensions are in Millimeter.
2. Out - of - round is the sum of absolute values of Plus & Minus Tolerances.



Products

SOCKET-WELD FITTINGS



45° ELBOW



90° ELBOW



EQUAL TEE



FULL COUPLING



CAP



UNION

FORGED FITTINGS SOCKET WELD

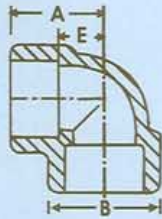
The following table represents size range, product standards and material grades of forged high pressure fittings, socket weld like stainless steel, carbon steel & alloy steel etc. The range includes:

MATERIAL TYPE :-	
Stainless Steel	: ASTM A182 F304/ 304L/ 304H/ 316/ 316L/ 317/ 317L/ 321/ 310/ 347/ 904L/ etc.
Carbon Steel	: ASTM A105/ A105N/ A694 F42/46/52/56/60/65/70 / 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	: Elbow, Tee, Union, Cross, Coupling, Cap, Bushing, Plug, Swage Nipple, Welding Boss, Hexagon Nipple, Barrel Nipple, Welding Nipple, Parallel Nipple, Street Elbow, Hexagon Nut, Hose Nipple, Bend, Adapter, Insert, Cross, Weldolet, Elbowlet, Sockolet, Thredolet, Nipolet, Letrolet, etc.
Size	: 1/8" NB TO 4" NB. (Socketweld)
Class	: 150#, 3000#, 6000# & 9000#.

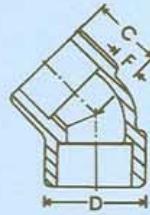
Used to allow flow of fluids, like steam, water, air, oil, etc. through the desired size of flowing cross-section with diversion of flow to the desired points under critical working conditions.



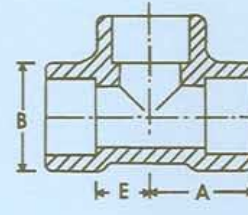
SOCKET WELDING FITTINGS • ANSI B 16.11 - 1973



90° ELBOW



45° ELBOW



TEE

3000 POUND

Nominal Pipe Size	Comm. Diameter of Socket Min.	Comm. Diam. of Bore		90° ELBOW				45° ELBOW				TEE			
		Min.	Max.	A	B	E	Approx Weight	C	D	F	Approx Weight	A	B	E	Approx Weight
6	10.65	6.10	7.60	21	21	11	0.06	17	22	8	0.06	21	22	11	0.11
8	14.10	8.50	10.00	21	22	11	0.06	17	22	8	0.06	21	22	11	0.11
10	17.55	11.80	13.30	25	25	14	0.11	19	25	8	0.09	25	25	14	0.14
15	21.70	15.00	16.60	29	33	16	0.23	22	33	11	0.20	29	33	16	0.31
20	27.05	20.20	21.70	33	38	19	0.31	25	38	12	0.23	33	38	19	0.40
25	33.80	25.90	27.40	38	46	22	0.48	29	46	14	0.40	38	46	22	0.65
32	42.55	34.30	35.80	44	56	27	0.74	33	56	18	0.59	44	56	27	0.97
40	48.65	40.10	41.70	51	62	32	0.97	35	62	21	0.79	51	62	32	1.11
50	61.10	51.70	53.50	60	75	38	1.61	43	75	25	1.30	60	75	38	2.01
65	73.80	61.20	64.20	76	92	41	2.89	52	92	29	3.35	76	92	41	4.03
80	89.80	76.40	79.50	86	110	57	4.94	64	110	32	5.22	86	110	57	6.21
100	115.45	100.70	103.80	106	146	67	10.75	79	146	41	8.96	106	146	67	12.90

6000 POUND

6	10.65	3.20	4.80	21	22	11	0.23	17	22	8	0.25	21	22	11	0.45
8	14.10	5.60	7.10	25	25	14	0.40	19	25	8	0.31	25	25	14	0.48
10	17.55	8.40	9.90	29	33	16	0.23	22	33	11	0.25	29	33	16	0.45
15	21.70	11.00	12.50	33	38	19	0.40	25	38	12	0.31	33	38	19	0.48
20	27.05	14.80	16.30	38	46	22	0.65	29	46	14	0.59	38	46	22	0.93
25	33.80	19.90	21.50	44	56	27	1.13	33	56	18	0.91	44	56	27	1.53
32	42.55	28.70	30.20	51	62	32	1.47	35	62	21	1.19	51	62	32	1.96
40	48.65	33.20	34.70	60	75	38	2.36	43	75	25	2.15	60	75	38	3.54
50	61.10	42.10	43.60	64	84	41	2.89	45	84	29	2.67	64	84	41	3.94

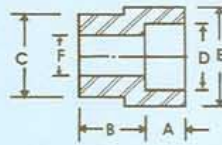
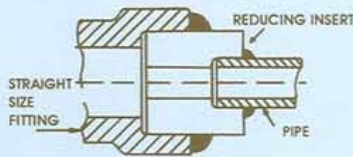
9000 POUND

15	21.70	5.60	7.20	33	38	19	0.60	25	38	12	0.47	33	38	19	0.72
20	27.05	10.30	11.80	38	46	22	0.95	29	46	14	0.89	38	46	22	1.40
25	33.80	14.50	16.00	44	56	27	1.70	33	56	18	1.37	44	56	27	2.30
32	42.55	22.00	23.50	51	62	32	2.20	35	62	21	2.79	51	62	32	2.94
40	48.65	27.20	28.70	60	75	38	3.54	43	75	25	3.23	60	75	38	5.31
50	61.10	37.40	38.90	64	84	41	4.34	45	84	29	4.00	64	84	41	5.91

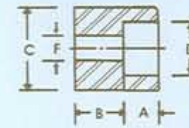
NOTES : All dimensions given in millimeter Approx weights given in Kg.
 3000 pound fittings are regularly used for both Schedule 40 and Schedule 80 pipe and warrant the Schedule 80 rating.
 6000 pound fittings are regularly used for Schedule 160 pipe and warrant the Schedule 160 rating.
 9000 pound fittings are regularly used for Schedule XXS pipe and warrant the Schedule XXS rating.
 Reducing fittings are furnished by boring straight size blanks.



SOCKET WELDING REDUCING INSERTS • ANSI B 16.11 - 1973



INSERT TYPE 1



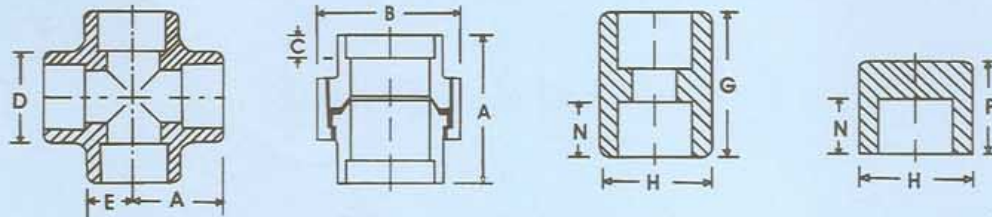
INSERT TYPE 2

Nominal Pipe Size	Common Dimensions Diameter	3000 POUND							6000 POUND				
		C	D	INSERT TYPE	A	B	E	F	INSERT TYPE	A	B	E	F
15	X 10	21.60	17.55	1	11	24	25	12	1	13	33	29	9
	X 8	21.60	14.10	2	10	16	--	9	1	11	33	29	7
	X 6	21.60	10.65	2	10	16	--	7	1	10	33	29	4
20	X 15	26.90	21.70	1	13	25	32	16	1	14	37	41	12
	X 10	26.90	17.55	2	11	14	--	12	1	13	37	29	9
	X 8	26.90	14.10	2	10	16	--	9	2	11	37	--	7
	X 6	26.90	10.65	2	10	16	--	7	2	10	22	--	4
25	X 20	33.70	27.05	1	14	24	38	21	1	16	41	48	16
	X 15	33.70	21.70	2	13	21	--	16	1	14	43	41	12
	X 10	33.70	17.55	2	11	22	--	12	2	13	22	--	9
	X 8	33.70	14.10	2	10	24	--	9	2	11	24	--	7
32	X 25	42.40	33.80	1	16	27	44	27	1	17	46	57	21
	X 20	42.40	27.05	2	14	21	--	21	1	16	44	51	16
	X 15	42.40	21.70	2	13	22	--	16	2	14	22	--	12
40	X 32	48.50	42.55	1	17	30	54	35	1	19	54	67	29
	X 25	48.50	33.80	2	16	21	--	27	1	17	54	57	21
	X 20	48.50	27.05	2	14	22	--	21	2	16	27	--	16
	X 15	48.50	21.70	2	13	24	--	16	2	14	29	--	12
50	X 40	61.00	48.65	2	19	21	--	41	1	22	51	76	34
	X 32	61.00	42.55	2	17	22	--	35	1	19	51	68	29
	X 25	61.00	33.80	2	16	24	--	27	2	17	22	--	21
	X 20	61.00	27.05	2	14	25	--	21	2	16	24	--	16
	X 15	61.00	21.70	2	13	27	--	16	2	14	25	--	12
65	X 50	73.70	61.10	1	22	49	75	52	1	22	68	89	43
	X 40	73.70	48.65	2	19	44	--	41	2	22	35	--	34
	X 32	73.70	42.55	2	17	46	--	35	2	19	38	--	29
	X 25	73.70	33.80	2	16	44	--	27	2	17	40	--	21
80	X 65	89.70	73.80	1	22	46	92	63	1	25	76	111	54
	X 50	89.70	61.10	2	22	41	--	52	2	22	40	--	43
	X 40	89.70	48.65	2	19	40	--	41	2	22	40	--	34
	X 32	89.70	42.55	2	17	40	--	35	2	19	43	--	29
	X 25	89.70	33.80	2	16	38	--	27	2	17	44	--	21
100	X 80	115.10	89.80	2	29	54	--	78	1	32	86	127	67
	X 65	115.10	73.80	2	22	52	--	63	2	25	44	--	54
	X 50	115.10	61.10	2	22	54	--	52	2	22	48	--	43
	X 40	115.10	48.65	2	19	54	--	41	2	22	48	--	34

NOTES : All dimensions given in millimeter.
 3000 pound fittings are regularly used for both Schedule 40 and Schedule 80 pipe and warrant the Schedule 80 rating.
 6000 pound fittings are regularly used for Schedule 160 pipe and warrant the Schedule 160 rating.
 9000 pound fittings are regularly used for Schedule XXS pipe and warrant the Schedule XXS rating.
 All dimensions herein above are nominal.



SOCKET WELDING FITTINGS • ANSI B 16.11 - 1973



3000 POUND

Nominal Pipe Size	CROSS				UNION				COUPLING				CAP			
	A	D	E	APPROX WEIGHT	A	B	C	APPROX WEIGHT	G	H	N	APPROX WEIGHT	H	N	P	APPROX WEIGHT
6	21	22	11	0.14	42	32	10	0.15	25	19	10	0.06	19	10	16	0.06
8	21	22	11	0.14	44	32	10	0.15	25	22	10	0.06	22	10	17	0.06
10	25	25	14	0.14	51	38	10	0.28	29	25	11	0.09	25	11	19	0.09
15	29	33	16	0.37	54	46	10	0.38	35	32	13	0.11	32	13	22	0.11
20	33	38	19	0.51	57	51	13	0.45	38	38	14	0.17	38	14	25	0.17
25	38	46	22	0.71	69	60	13	0.71	44	45	16	0.34	45	16	27	0.20
32	44	56	27	1.11	72	72	13	1.20	48	56	17	0.51	56	17	30	0.48
40	51	62	32	1.47	80	80	13	1.50	51	63	19	0.59	63	19	33	0.54
50	60	75	38	2.49	89	95	16	2.58	64	75	22	0.91	75	22	40	0.91
65	76	92	41	7.17	118	125	16	6.10	64	92	22	1.49	92	22	43	1.36
80	86	110	57	9.16	130	144	16	8.79	70	110	25	2.07	110	25	49	2.10
100	106	146	67	14.29	150	176	20	13.49	76	138	29	3.91	138	29	55	3.86

6000 POUND

6	21	22	11	0.45	44	32	10	0.51	25	19	10	0.05	19	11	24	0.05
8	25	25	14	0.45	51	38	10	0.51	25	25	10	0.10	25	11	24	0.10
10	29	33	16	0.45	54	46	10	0.65	29	28	11	0.17	28	11	24	0.17
15	33	38	19	0.54	57	51	10	0.91	35	34	13	0.23	34	13	25	0.17
20	38	46	22	1.13	69	60	13	1.81	38	40	14	0.34	40	14	27	0.29
25	44	56	27	1.81	72	72	13	2.00	44	50	16	0.71	50	16	32	0.54
32	51	62	32	2.33	80	80	13	2.49	48	59	17	0.82	59	17	35	0.63
40	60	75	38	4.08	89	95	13	3.90	51	67	19	1.36	67	19	38	1.02
50	64	84	41	4.31	118	125	16	6.49	64	83	22	2.15	83	22	46	1.31

9000 POUND

15	33	38	19	1.24	57	51	10	0.98	35	40	13	0.23	40	13	27	0.30
20	38	46	22	2.04	69	60	13	1.90	38	48	14	0.34	48	14	32	0.55
25	44	56	27	2.60	72	72	13	2.10	44	56	16	0.71	56	16	35	0.65
32	51	62	32	4.17	80	80	13	2.60	48	67	17	0.82	67	17	38	1.05
40	60	75	38	5.25	89	95	13	4.10	51	74	19	1.36	74	19	46	1.35
50	64	84	41	10.05	118	125	16	6.60	64	90	22	2.15	90	22	51	2.95

NOTES : All dimensions given in millimeter Approx weights given in Kg.
 Half Coupling and Reducing Couplings are available with same overall dimension as straight couplings.
 3000 pound fittings are regularly used for both Schedule 40 and Schedule 80 pipe and warrant the Schedule 80 rating.
 6000 pound fittings are regularly used for Schedule 160 pipe and warrant the Schedule 160 rating.
 9000 pound fittings are regularly used for Schedule XXS pipe and warrant the Schedule XXS rating.
 All Unions are with Octagonal Nuts. For common dimensions, refer to Socket Welding Fittings, Elbows, Tees etc.



Products

SCREWED FITTINGS



EQUAL TEE



CROSS



STREET ELBOW



M/F UNION



COUPLING



CAP



UNION



SQ HEAD PLUG



HEX BUSHING



FLUSH BUSHING



HEX HEAD PLUG



BARREL



HEX NIPPLE

FORGED FITTINGS SCREWED

The following table represents size range, product standards and material grades of forged high pressure fittings, Screwed like stainless steel, carbon steel & alloy steel etc. The range includes:

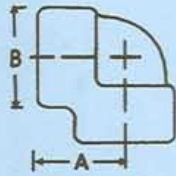
MATERIAL TYPE :-

Stainless Steel	: ASTM A182 F304/304L/304H/316/316L/317/317L/321/310/347/904L/ etc.
Carbon Steel	: ASTM A105/ A105N/ A694 F42/46/52/56/60/65/70/ 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	: 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, Cross, Weldolet, Elbowlet, Sockolet, Thredolet, Nipolet, Letrolet, etc.
Size	: 1/8" NB TO 4" NB. (Threaded)
Class	: 150#, 3000#, 6000# & 9000#.

Used to allow flow of fluids through desired sizes of flowing cross-section with diversion of flow to the desired points under normal working condition.



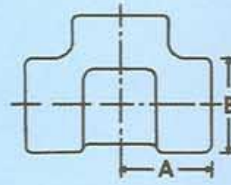
SCREWED FITTINGS • ANSI B 16.11 - 1973



90° ELBOW



45° ELBOW



TEE

2000 POUND

Nominal Pipe Size	90° ELBOW			45° ELBOW			TEE		
	A	B	Approx Weight	C	E	Approx Weight	A	B	Approx Weight
6	21	22	0.11	17	22	0.06	21	22	0.11
8	21	22	0.11	17	22	0.06	21	22	0.11
10	25	25	0.14	19	25	0.11	25	25	0.14
15	29	33	0.25	22	33	0.20	29	33	0.25
20	33	38	0.31	25	38	0.29	33	38	0.43
25	38	46	0.51	29	46	0.43	38	46	0.65
32	44	56	0.77	33	56	0.63	44	56	0.91
40	51	62	1.02	35	62	0.74	51	62	1.25
50	60	75	1.59	43	75	1.2	60	75	2.10
65	76	92	2.95	52	92	3.52	76	92	3.94
80	86	110	4.76	64	110	5.13	86	110	5.98
100	106	146	10.31	79	146	8.68	106	146	12.36

3000 POUND

6	21	22	0.11	17	22	0.11	21	22	0.11
8	25	25	0.17	19	25	0.11	25	25	0.17
10	29	33	0.29	22	33	0.23	29	33	0.37
15	33	38	0.60	25	38	0.34	33	38	0.54
20	38	46	0.63	29	46	0.54	38	46	0.85
25	44	56	1.02	33	56	0.85	44	56	1.13
32	51	62	1.25	35	62	0.97	51	62	1.42
40	60	75	1.59	43	75	1.36	60	75	2.27
50	64	84	2.47	45	84	1.93	64	84	3.05
65	83	102	4.86	52	102	3.35	83	102	5.96
80	95	121	6.56	64	121	4.76	95	121	9.24
100	114	152	13.78	79	152	8.65	114	152	17.92

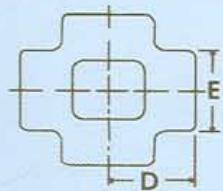
6000 POUND

6	25	25	0.11	19	25	0.11	25	25	0.23
8	29	33	0.29	22	33	0.23	29	33	0.45
10	33	38	0.48	25	38	0.23	33	38	0.63
15	38	46	0.74	29	46	0.65	38	46	0.97
20	44	56	1.19	33	56	0.99	44	56	1.65
25	51	62	1.59	35	62	1.22	51	62	2.10
32	60	75	3.06	43	75	2.13	60	75	3.46
40	64	84	3.40	44	84	2.61	64	84	4.37
50	83	102	6.10	52	102	4.31	83	102	8.56
65	95	121	9.47	64	121	6.80	95	121	12.73
80	106	146	15.68	79	146	13.86	106	146	20.70
100	114	152	15.78	79	152	18.65	114	152	27.92

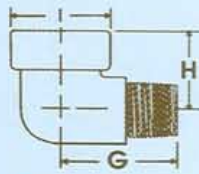
NOTES : All dimensions given in millimeter Approx weights given in Kg.
 3000 pound fittings may be rated the same as Schedule 40 threaded pipe.
 6000 pound fittings may be rated the same as Schedule 80 threaded pipe.
 9000 pound fittings may be rated the same as Double Extra Strong threaded pipe.
 Reducing fittings are furnished by boring and tapping straight size blanks.
 All dimensions have in above are nominal.



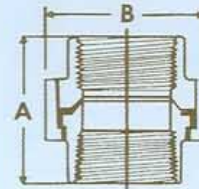
SCREWED FITTINGS • ANSI B 16.11 - 1973



CROSS



STREET ELBOW



UNION

2000 POUND

Nominal Pipe Size	CROSS			STREET ELBOW				UNION		
	D	E	Approx Weight	G	H	I	Approx Weight	A	B	Approx Weight
6	21	22	0.23					42	32	0.14
8	21	22	0.23					44	32	0.14
10	25	25	0.32					51	38	0.20
15	29	33	0.40					54	46	0.34
20	33	38	0.51					57	51	0.43
25	38	46	0.77					69	60	0.65
32	44	56	1.13					72	72	0.97
40	51	62	1.45					80	80	1.25
50	60	75	2.38					89	95	2.01
65	76	92	7.46					113	125	5.50
80	86	110	8.85					130	144	8.00
100	106	146	14.83					150	170	12.80

3000 POUND

6	21	22	0.20	32	22	27	0.11	42	32	0.14
8	25	25	0.27	32	22	27	0.11	44	32	0.14
10	29	33	0.45	38	25	32	0.17	51	38	0.20
15	33	38	0.68	41	29	38	0.23	54	46	0.34
20	38	46	1.13	48	35	44	0.40	57	51	0.43
25	44	56	1.61	57	44	51	0.65	69	60	0.65
32	51	62	1.87	67	51	62	1.02	72	72	0.97
40	60	75	2.95	71	54	70	1.36	80	80	1.25
50	64	84	3.69	84	64	84	2.35	89	95	2.01
65	83	102	7.60	--	--	--	--	118	125	5.50
80	95	121	8.96	--	--	--	--	130	144	8.00
100	114	152	14.52	--	--	--	--	150	176	12.80

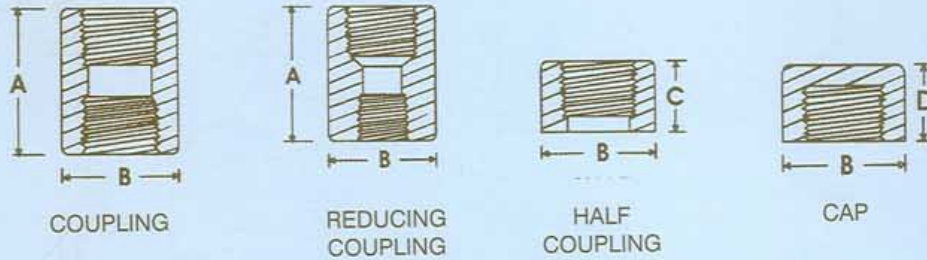
6000 POUND

6	25	25	0.25	--	--	--	--	44	32	0.45
8	29	33	0.54	38	25	32	0.17	51	38	0.45
10	33	38	0.68	41	29	38	0.20	54	46	0.59
15	38	46	1.25	48	35	44	0.45	57	51	0.85
20	44	56	1.96	57	44	51	0.74	69	60	1.39
25	51	62	2.55	67	51	62	1.13	72	72	1.76
32	60	75	4.88	71	54	70	1.67	80	80	3.01
40	64	84	5.22	84	64	84	2.92	89	95	4.00
50	83	102	10.07	--	--	--	--	118	125	6.10
65	95	121	12.47	--	--	--	--	130	144	9.40
80	106	146	24.50	--	--	--	--	150	176	15.50
100	114	152	34.52	--	--	--	--	--	--	--

NOTES : All dimensions given in millimeter Approx weights given in Kg.
 3000 pound fittings may be rated the same as Schedule 40 threaded pipe.
 6000 pound fittings may be rated the same as Schedule 80 threaded pipe.
 9000 pound fittings may be rated the same as Double Extra Strong threaded pipe.
 Reducing fittings are furnished by boring and tapping straight size blanks.
 All dimensions have in above are nominal.



SCREWED FITTINGS • ANSI B 16.11 - 1973



3000 POUND

Nominal Pipe Size	Common Diameter B	COUPLING		REDUCING COUPLING		HALF COUPLING		CAP	
		A	Approx Weight	A	Approx Weight	C	Approx Weight	D	Approx Weight
6	16	32	0.06	--	--	16	0.03	13	0.02
8	19	35	0.06	35	0.06	18	0.03	25	0.03
10	22	38	0.11	38	0.11	19	0.09	25	0.06
15	29	48	0.11	48	0.11	24	0.09	32	0.11
20	35	51	0.20	51	0.20	26	0.11	37	0.14
25	44	60	0.29	60	0.29	30	0.14	41	0.23
32	57	67	0.71	67	0.71	34	0.34	44	0.45
40	64	79	0.99	79	0.99	40	0.51	44	0.74
50	76	86	1.42	86	1.42	43	0.71	48	1.42
65	92	92	1.81	92	1.81	46	0.91	60	2.27
80	108	108	3.06	108	3.06	54	1.53	65	3.86
100	140	121	7.60	121	7.60	61	3.80	68	6.35

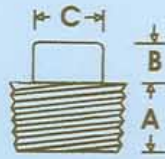
6000 POUND

6	22	32	0.09	--	--	16	0.04	--	0.03
8	25	35	0.09	35	0.09	18	0.04	27	0.06
10	32	38	0.11	38	0.11	19	0.06	27	0.11
15	38	48	0.23	48	0.23	24	0.11	33	0.14
20	44	51	0.45	51	0.45	26	0.23	38	0.23
25	57	60	0.97	60	0.97	30	0.48	43	0.48
32	64	67	1.08	67	1.08	34	0.54	46	0.75
40	76	79	1.99	79	1.99	40	0.99	48	1.42
50	92	86	3.52	86	3.52	43	1.76	51	2.27
65	108	92	4.88	92	4.88	46	2.44	64	3.86
80	127	108	6.12	108	6.12	54	3.06	68	6.35
100	159	121	11.11	121	11.11	61	5.56	75	10.43

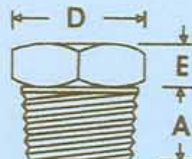
NOTES : All dimensions given in millimeter Approx weights given in Kg.
 3000 pound fittings may be rated the same as Schedule 80 threaded pipe.
 6000 pound fittings may be rated the same as Double Extra Strong threaded pipe.
 Screwed Coupling, Reducing Coupling, Half Couplings and Caps are manufactured in 3000 & 6000 Pound classes only.
 All items on this page are manufactured from bar stock or forging, depending upon size and type of fittings.
 All dimensions have in above are nominal.



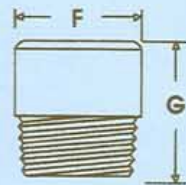
SCREWED FITTINGS • ANSI B 16.11 - 1973



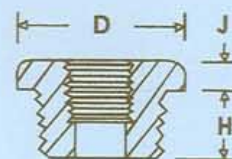
SQUARE HEAD
PLUG



HEXAGON HEAD
PLUG



ROUND HEAD
PLUG



HEXAGON HEAD
BUSHING

Nominal Pipe Size	Square Head Plug			Hexagon Head Plug			Round Head Plug			Hexagon Head Bushing		
	A (Min)	B (Min)	C (Min)	A (Min)	D (Min)	E (Min)	F (Min)	G (Min)	D (Min)	H (Min)	J (Min)	
6	9.5	6	7.0		11.0	6	10	35	--	--	--	
8	11.0	6	9.5		16.0	6	13	41	16.0	11.0	3	
10	12.7	8	11.0		17.5	8	17	41	17.5	12.7	4	
15	14.5	10	14.5		22.0	8	21	44	22.0	14.5	5	
20	16.0	11	16.0		27.0	10	27	44	27.0	16.0	6	
25	19.0	13	20.5		35.0	10	33	51	35.0	19.0	6	
32	20.5	14	24.0		44.5	14	43	51	44.5	20.5	7	
40	20.5	16	28.5		51.0	16	48	51	51.0	20.5	8	
50	22.0	17	33.5		63.5	17	60	64	63.5	22.0	9	
65	27.0	19	38.0		76.0	19	73	70	76.0	27.0	10	
80	28.5	21	43.0		89.0	21	89	70	89.0	28.5	10	
100	32.0	25	63.5		117.5	32	114	76	117.5	32.0	13	

Nominal Pipe Size	APPROX. WEIGHT			
	Square Head Plug	Hex. Head Plug	Round Head Plug	Hex. Head Bushing
6	0.01	0.03	0.06	--
8	0.01	0.03	0.06	0.03
10	0.03	0.06	0.09	0.03
15	0.06	0.09	0.11	0.03
20	0.09	0.14	0.17	0.06
25	0.14	0.23	0.34	0.09
32	0.25	0.51	0.51	0.17
40	0.40	0.63	0.71	0.31
50	0.68	1.02	1.36	0.74
65	1.02	1.76	2.15	1.08
80	1.31	2.67	3.46	1.59
100	3.26	5.90	5.84	3.77

NOTES : All dimensions given in millimeter, Approx weights given in Kg.
All items on this page are manufactured from bar stock or forging, depending upon size and type of fittings.



DIMENSIONS OF SWAGE NIPPLES • BS-3799 - 1974

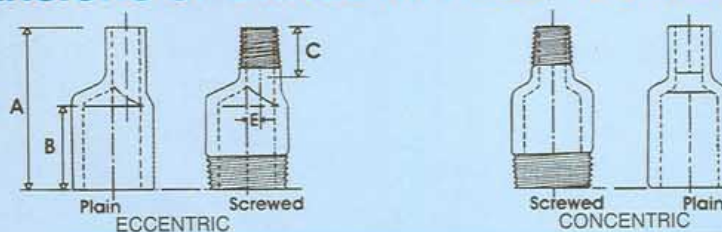


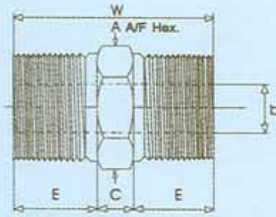
TABLE - 12

Nominal Pipe Size	Parallel Length			Eccentricity (E)	
	A (minm.)	B (minm.)	C (minm.)	3000 Pound	6000 Pound
10 x 8	76	48	16	1.6	--
15 x 10	89	56	19	1.6	--
15 x 8	89	56	19	3.2	--
20 x 15	95	57	22	2.4	2.4
20 x 10	95	57	22	4	--
25 x 20	102	64	22	2.8	2.0
25 x 15	102	64	22	5.2	4.4
40 x 25	114	70	25	6.7	6.4
40 x 20	114	70	25	9.5	8.3
40 x 15	114	70	25	11.9	10.7
50 x 40	165	108	29	5.6	5.2
50 x 25	165	108	29	12.7	11.5
50 x 20	165	108	29	15.5	13.5
50 x 15	165	108	29	17.5	15.9
65 x 50	178	114	32	4.8	3.2
65 x 40	178	114	32	10.3	8.3
80 x 65	203	133	41	7.1	6.7
80 x 50	203	133	41	11.9	9.9
80 x 40	203	133	41	17.5	15.5
100 x 80	229	140	48	11.9	10.7
100 x 65	229	140	48	19.1	17.5

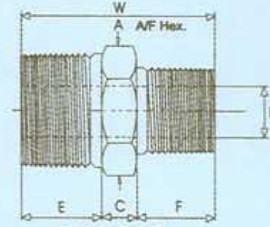
NOTES : All dimensions given in millimeter.
 Thickness and outside diameters of swage nipples shall correspond to those of the appropriate nominal pipe size.
 All dimensions herein above are nominal and subject to nominal manufacturing tolerances.



DIMENSIONS OF HEXAGONAL NIPPLES • BS-3799 - 1974



EQUAL



REDUCING

TABLE - 8

Nominal Pipe Size		A	W	E	b		C	F
Equal	Reducing	(min.)	(min.)	(min.)	3000 Pound	6000 Pound	(min.)	(min.)
6	--	11	26	10	5	2	6	--
8	--	15	36	15	8	6	6	--
--	8 x 6	15	31	15	5	2	6	10
10	--	18	40	16	11	8	8	--
--	10 x 8	18	39	16	8	6	8	15
15	--	22	48	20	14	11	8	--
--	15 x 10	22	44	20	11	8	8	16
--	15 x 8	22	43	20	8	6	8	15
20	--	27	52	21	19	13	10	--
--	20 x 15	27	50	21	14	11	9	20
--	20 x 10	27	46	21	11	8	9	16
25	--	35	60	25	24	17	10	--
--	25 x 20	35	56	25	19	13	10	21
--	25 x 15	35	55	25	14	11	10	20
40	--	50	68	26	38	30	16	--
--	40 x 25	50	67	26	24	17	16	25
--	40 x 20	50	63	26	19	13	16	21
--	40 x 15	50	62	26	14	11	16	20
50	--	62	71	27	49	39	17	--
--	50 x 40	62	70	27	38	30	17	26
--	50 x 25	62	70	27	24	17	18	25
--	50 x 20	62	65	27	19	13	17	21
--	50 x 15	62	65	27	14	11	18	20

NOTES : All dimensions given in millimeter.
All dimensions herein above are nominal and subject to nominal manufacturing tolerances.



DIMENSIONAL TOLERANCES FOR FORGED STEEL SCREWED AND SOCKET WELDING FITTINGS • ANSI B16.11

CENTRE TO BOTTOM OF SOCKET

For Sizes 6 NPS and 8 NPS	±0.8
For Sizes 10 NPS, 15 NPS and 20 NPS	±1.5
For Sizes 25 NPS, 32 NPS, 40 NPS and 50 NPS	±2
For Sizes 65 NPS and larger	±2.5

Sizes 15 NPS through 80 NPS are included for use with Schedule 160 pipe. Fittings for use with Double Extra Strong pipe are not included in this standard.

BOTTOM TO BOTTOM OF SOCKETS COUPLINGS

For Sizes 6 NPS and 8 NPS	±1.5
For Sizes 10 NPS, 15 NPS and 20 NPS	±3
For Sizes 25 NPS, 40 NPS and 50 NPS	±4
For Sizes 65 and larger	±5

BORE DIAMETER OF SOCKET

For Sizes 50 NPS and smaller	+ 0.25 - 0.00
For Sizes 65 NPS and larger	+ 0.35 - 0.00

CONCENTRICITY OF BORES

The socket and fitting bores shall be concentric within a tolerance of ± 0.8 for all sizes.

BOTTOM TO SOCKET TO OPPOSITE FACE HALF COUPLINGS

For Sizes 6 NPS and 8 NPS	±0.8
For Sizes 10 NPS, 15 NPS and 20 NPS	±1.5
For Sizes 25 NPS, 32 NPS, 40 NPS and 50 NPS	±2
For Sizes 65 NPS and larger	±2.5

COINCIDENCE OF AXES

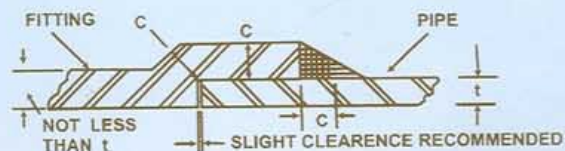
The maximum allowable variation in the alignment of the Socket and fitting bore axes shall be 1.5 mm in 304.8 mm.

AMERICAN STANDARD B 16.11

This standard covers the following range of sizes for use with Schedules 40 and 80 pipe as of the publication date of this catalogue.

90° and 45° Elbows	6 NPS through 100 NPS
Tees	6 NPS through 100 NPS
Crosses	6 NPS through 100 NPS
Couplings	6 NPS through 100 NPS

FILLET WELD DIMENSIONS



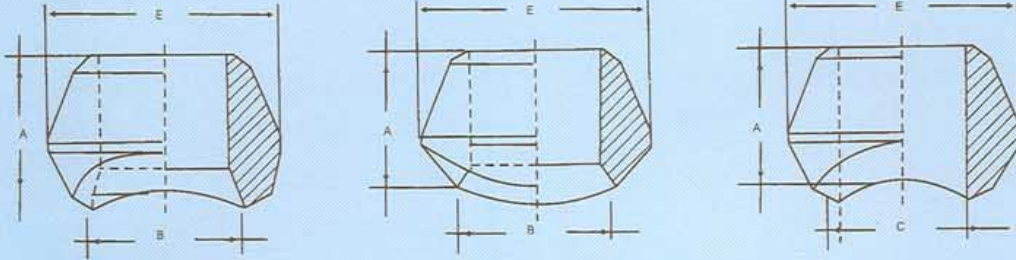
C-Minimum = 1.25t (but not less than 4.0 mm.)

t = Minimum Pipe Wall thickness

Minimum requirements for socket and fillet weld dimensions as prescribed in the American Standard Code for Pressure Piping, ASA B31.1



WELDOLET STANDARD WEIGHT



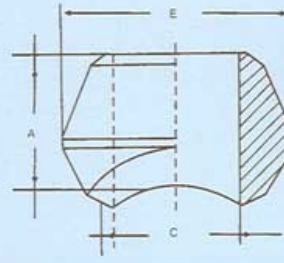
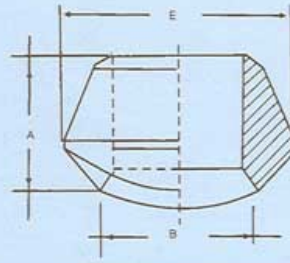
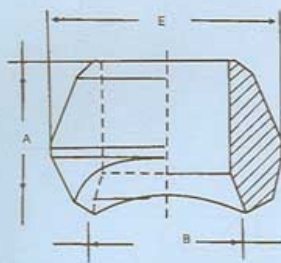
NOMINAL SIZE	REDUCING SIZE					FULL SIZE		Weight Kg.
	mm	A inch	mm	B inch	E mm	mm	C inch	
1/8	16	5/8	16	5/8	-	-	-	-
1/4	16	5/8	16	5/8	-	-	-	-
3/8	19	3/4	19	3/4	-	-	-	-
1/2	19	3/4	24	1.5/16	34.92	16	5/8	0.07
3/4	22	7/8	30	1.3/16	41.27	20.5	13/16	0.12
1	27	1.1/16	36.5	1.7/16	50.4	26	1.1/32	0.18
1 1/4	32	1 1/4	44.5	1.3/4	60.37	35	1.3/8	0.32
1 1/2	33.5	1.5/16	51	2	73.02	41	1.5/8	0.36
2	38	1 1/2	65	2.9/16	88.9	52.5	2.1/16	0.70
2 1/2	41.5	1.5/8	76	3	103.18	62	2.7/16	1.10
3	44.5	1 3/4	93.5	3.11/16	122.23	78	3.1/16	1.70
3 1/2	47.5	1.7/8	101.5	4	136.52	90.5	3.9/16	2.25
4	51	2	120.5	4.3/4	152.40	101.5	4	3.05
5	57	2 1/4	141	5.9/16	180.97	128.5	5.1/16	4.85
6	60.5	2.3/8	170	6.11/16	215.90	154	6.1/16	7.50
8	70	2 3/4	220.5	8.11/16	263.52	201.5	7.15/16	12.7
10	78	3.1/16	264.5	10.13/16	319.08	254	10	20.0
12	85.5	3.3/8	325.5	12.13/16	377.82	304.5	12	29.4
14	89	3 1/2	357	14.1/16	409.57	336.5	13.1/4	31.8
16	93.5	3.11/16	408	16.1/16	463.55	387.5	15.1/4	41.7
18	101.5	4	459	18.1/16	527.05	438	17.1/4	56.7
20	114.5	4 1/2	510	20.1/16	585.78	489	19.1/4	79.3
24	124	4.7/8	611	24.1/16	708.02	590.5	23.1/4	127





WELDOLET

SCHED. 160 & DOUBLE EXTRA STRONG

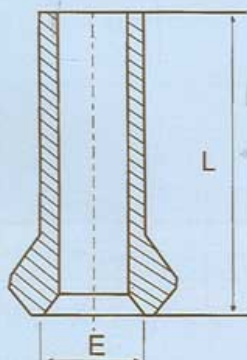


NOMINAL SIZE	REDUCING SIZE				E mm	FULL SIZE		Weight Kg.
	mm	A inch	mm	B inch		mm	C inch	
1/2	28.5	1.1/8	14	9/16	34.92	11.5	7/16	0.15
3/4	31.5	1.1/4	19	3/4	44.45	15.5	5/8	0.32
1	38	1.1/2	25.5	1	50.4	21	13/16	0.38
1 1/4	44.5	1.3/4	33.5	1.5/16	61.91	29.5	1.3/16	0.60
1 1/2	51	2	38	1.1/2	69.85	34	1.5/16	0.85
2	55.5	2.3/16	43	1.11/16	80.96	43	1.11/16	1.00
2 1/2	62	2.7/16	54	2.1/8	96.83	54	2.1/8	1.70
3	73	2.7/8	73	2.7/8	120.65	66.5	2.5/8	2.95
4	84	3.5/16	98.5	3.7/8	152.40	87	3.7/16	4.95
5	93.5	3.11/16	122	4.13/16	187.32	109.5	4.5/16	6.80
6	105	4.1/8	146	5.3/4	220.66	132	5.3/16	13.7



NIPPOLET

Thread, SW, BW end



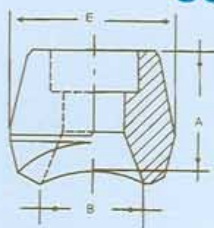
NOMINAL SIZE	3000 lbs			6000 lbs		
	B		Weight Kg.	B		Weight Kg.
	mm	inch		mm	inch	
1/4	16	5/8	0.20	-	-	-
3/8	19	3/4	0.23	-	-	-
1/2	24	1.5/16	0.25	14	9/16	0.25
3/4	30	1.3/16	0.40	19	3/4	0.50
1	36.5	1.7/16	0.65	25.5	1	0.70
1 1/4	44.5	1.3/4	0.75	33.5	15/16	0.88
1 1/2	50.8	2	0.95	38	1 1/2	1.15
2	65	2.9/16	1.45	43	1 11/16	1.50



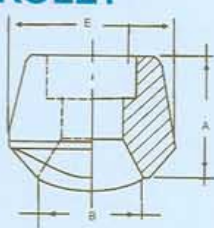
NEW TECH STEELS (INDIA)

Tel. : 022-6659 5569 • Mob. : 98332 28079 • Web. : www.newtechsteelsindia.com

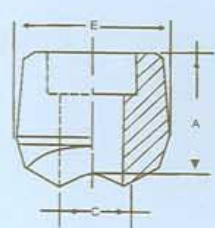
SOCKOLET



REDUCING SIZE



FULL SIZE



3000 lbs

NOMINAL SIZE	REDUCING SIZE					FULL SIZE		Weight Kg.
	A		B		E	C		
	mm	inch	mm	inch	mm	mm	inch	
1/8	19	3/4	16	5/8	25.4	-	-	-
1/4	19	3/4	16	5/8	25.4	-	-	-
3/8	20.5	13/16	19	3/4	31.75	-	-	-
1/2	25.5	1	24	15/16	35.71	14	9/16	0.12
3/4	27	1.1/16	30	1.3/16	43.65	19	3/4	0.19
1	33.5	1.5/16	36.5	1.7/16	50.40	24	15/16	0.31
1 1/4	33.5	1.5/16	44.5	1.3/4	65.08	32	1.1/4	0.45
1 1/2	35	1.3/8	51	2	72.23	38	1.1/2	0.50
2	38	1.1/2	65	2.9/16	88.10	49	1.15/16	0.87
2 1/2	46	1.13/16	76	3	103.10	59	2.5/16	1.50
3	51	2	93.5	3.11/16	122.20	73.5	2.7/8	2.15
3 1/2	54	2.1/8	101.5	4	132.55	85	3.5/16	2.80
4	57	2.1/4	120.5	4.3/4	151.60	97	3.13/16	3.50
5	66.67	-	141.28	-	185.73	-	-	-
6	69.85	-	169.86	-	219.07	-	-	-

6000 lbs

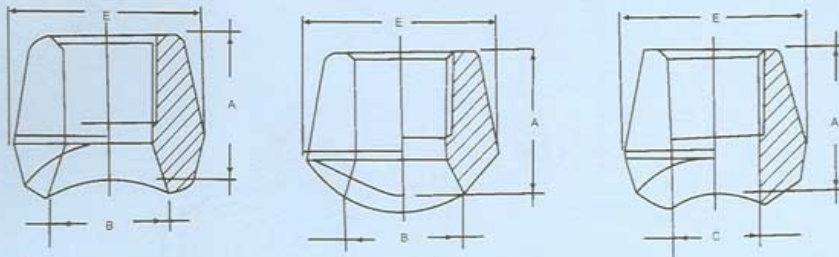
NOMINAL SIZE	REDUCING SIZE				
	A		B		E
	mm	inch	mm	inch	mm
1/4	28.5	1.1/8	14	9/16	-
3/8	28.5	1.1/8	14	9/16	-
1/2	31.5	1.1/4	19	3/4	43.65
3/4	36.5	1.7/16	25.5	1	49.60
1	39.5	1.9/16	33.5	1.5/16	61.91
1 1/4	39.5	1.9/16	38	1.1/2	69.05
1 1/2	43	1.11/16	49	1.15/16	82.55
2	52.5	2.1/16	59	2.5/16	102.39

9000 lbs

NOMINAL SIZE	REDUCING SIZE				
	A		B		Kg.
	mm	inch	mm	inch	
1/4	31.5	1.1/4	19	3/4	0.32
3/4	36.5	17/16	25.5	1	0.55
1	39.5	19/16	33.5	1.5/16	0.95
1 1/2	43	1.11/16	49	1.15/16	1.50
2	52.5	2.1/16	59	2.5/16	2.90



THREDOLET



3000 lbs

NOMINAL SIZE	REDUCING SIZE					FULL SIZE		Weight Kg.
	A		B		E	C		
	mm	inch	mm	inch	mm	mm	inch	
1/8	19	3/4	16	5/8	25.4	-	-	-
1/4	19	3/4	16	5/8	25.4	-	-	-
3/8	20.5	13/16	19	3/4	31.75	-	-	-
1/2	25.5	1	24	15/16	35.71	14	9/16	0.12
3/4	27	1.1/16	30	1.3/16	43.65	19	3/4	0.19
1	33.5	1.5/16	36.5	1.7/16	50.40	24	15/16	0.31
1 1/4	33.5	1.5/16	44.5	1.3/4	65.08	32	1.1/4	0.45
1 1/2	35	1.3/8	51	2	72.23	38	1.1/2	0.50
2	38	1.1/2	65	2.9/16	88.10	49	1.15/16	0.87
2 1/2	46	1.13/16	76	3	103.18	59	2.5/16	1.50
3	51	2	93.5	3.11/16	122.23	73.5	2.7/8	2.15
3 1/2	54	2.1/8	101.5	4	132.55	85	3.5/16	2.85
4	57	2.1/4	120.5	4.3/4	151.00	97	3.13/16	3.60
5	66.67	-	141.28	-	185.73	-	-	-
6	69.85	-	-	-	-	-	-	-

6000 lbs

NOMINAL SIZE	REDUCING SIZE				
	A		B		E
	mm	inch	mm	inch	mm
1/4	28.5	1.1/8	14	9/16	34.13
3/8	28.5	1.1/8	14	9/16	34.13
1/2	31.5	1.1/4	19	3/4	43.65
3/4	36.5	1.7/18	25.5	1	49.60
1	39.5	1.9/16	33.5	1.5/16	61.91
1 1/4	39.5	1.9/16	38	1.1/2	69.05
1 1/2	43	1.11/16	49	1.15/16	82.55
2	52.5	2.1/16	59	2.5/16	102.39



Products

FLANGES



SLIP-ON



SCREWED



BLIND



WELDNECK

FLANGES :

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

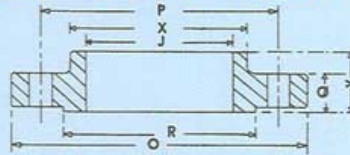
MATERIAL TYPE:-

Stainless Steel	: ASTM A-240 / A182 F304, 304L, 304H, 316, 316L 316Ti, 309, 309H, 310, 310S, 317, 317L, 321, 347, 904L.
Carbon Steel	: ASTM A105/ IS-2062, A350 LF3/ A350 LF2, LF3, etc. (IBR & NON IBR)
Alloy Steel	: ASTM A182 F1, F5, F9, F11, F12, F22, F91 etc.
Others	: Monel, Nickel, Inconel, Hastalloy, Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed Steel, Zinc, Lead, etc.
Types	: SLIPON, BLIND, WELD NECK, SOCKET WELD, SCREWED, LAP JOINT, RING JOINT, SPECTACLE, ORIFCAE, REDUCING, PLATE, PLATE BLANK ETC...
Size Range	: 1/2" NB TO 48" NB
Standard	: 150#, 300#, 600#, 900#, 1500#, 2500#, BS-10 Standard Table D, E, F, H & ALSO DIN Standard.

- Used to connect ends of pipes, inlets & outlets of equipments allowing flow from one point to the desired points with necessary diversion of flow of fluids like air, steam, water, oil etc.
- To allow equipments, instruments, etc. to be installed into the flowing media for proper control of the flow.
- To allow provisions for easy maintenance of the processing systems under any working condition.



DIMENSIONS OF SLIP ON FLANGES • ANSI B16.5-1988



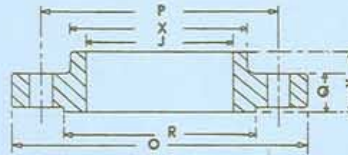
CLASS 150

Nominal Pipe Size	Outside Diameter of Flange		Thickness of Flange (min)		Diameter of Raised Face		Diameter of Bore		Length Through Hub		Diameter of Hub at Base		Number of Bolt Holes	Diameter of Bolt		Diameter of Bolt Circle	
	O	Q	R	J	Y	X	P										
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	n	inch	mm	inch	mm
½	3½	88.9	7/16	11.	1.3/8	34.9	0.88	22.40	5/8	15.9	1.3/16	30.2	4	½	12.7	2.3/8	60.3
¾	3.7/8	98.4	½	12.7	1.11/16	42.9	1.09	27.70	5/8	15.9	1½	38.1	4	½	12.7	2¼	69.9
1	4¼	108.0	9/16	14.3	2	50.8	1.36	34.50	11/16	17.5	1.15/16	49.2	4	½	12.7	3.1/8	79.4
1¼	4.5/8	117.5	5/8	15.9	2½	63.5	1.70	43.20	13/16	20.6	2.5/16	58.7	4	½	12.7	3½	88.9
1½	5	127.0	11/16	17.5	2.7/8	73.0	1.95	49.50	7/8	22.2	2.9/16	65.1	4	½	12.7	3.7/8	98.4
2	6	152.4	¾	19.1	3.5/8	92.1	2.44	62.00	1	25.4	3.1/16	77.8	4	5/8	15.9	4¼	120.7
2½	7	177.8	7/8	22.2	4.1/8	104.8	2.94	74.70	1.1/8	28.6	3.9/16	90.5	4	5/8	15.9	5½	139.7
3	7½	190.5	15/16	23.8	5	127.0	3.57	90.70	1.3/16	30.2	4¼	108.0	4	5/8	15.9	6	152.4
3½	8½	215.9	15/16	23.8	5½	139.7	4.07	103.40	1¼	31.8	4.13/16	122.2	8	5/8	15.9	7	177.8
4	9	228.6	15/16	23.8	6.3/16	157.2	4.57	116.10	1.5/16	33.3	5.5/16	134.9	8	5/8	15.9	7½	190.5
5	10	254.0	15/16	23.8	7.5/16	185.7	5.66	143.80	1.7/16	38.5	6.7/16	163.5	8	¾	19.1	8½	215.9
6	11	279.4	1	25.4	8½	215.9	6.72	170.70	1.9/16	39.7	7.9/16	192.1	8	¾	19.1	9½	241.3
8	13½	342.9	1.1/8	28.6	10.5/8	269.9	8.72	221.50	1¼	44.5	9.11/16	246.1	8	¾	19.1	11¼	298.5
10	16	406.4	1.3/16	30.2	12¼	323.9	10.88	276.40	1.15/16	49.2	12	304.8	12	7/8	22.2	14¼	362.0
12	19	482.6	1¼	31.8	15	381.0	12.88	327.20	2.3/16	55.6	14.3/8	365.1	12	7/8	22.2	17	431.8
14	21	533.4	1.3/8	34.9	16¼	412.8	14.14	359.20	2¼	57.2	15¼	400.1	12	1	25.4	18¾	476.3
16	23½	596.9	1.7/16	36.5	18½	469.9	16.16	410.50	2½	63.5	18	457.2	16	1	25.4	21¼	539.8
18	25	635.0	1.9/16	39.7	21	533.4	18.18	461.80	2.11/16	68.3	19.7/8	504.8	16	1.1/8	28.6	22¼	577.9
20	27½	698.5	1.11/16	42.9	23	584.2	20.20	513.10	2.7/8	73.0	22	558.8	20	1.1/8	28.6	25	635.0
22	29½	749.3	1.13/16	46.0	25¼	641.4	22.22	564.40	3.1/8	79.4	24	609.6	20	1¼	31.8	27¼	692.2
24	32	812.8	1.7/8	47.6	27¼	692.2	24.25	616.00	3.1/4	82.6	26.1/8	663.6	20	1¼	31.8	29½	749.3

NOTES : Dimensions of Thickness Q & of Length through Hub Y include thickness of raised face 1/16 inch (1.6mm)
Diameter of bolt-holes shall not be 1/8" (3.2mm) greater than the diameter of bolt.



DIMENSIONS OF SLIP ON FLANGES • ANSI B16.5-1988



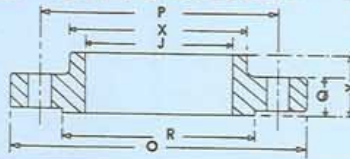
CLASS 300

Nominal Pipe Size	Outside Diameter of Flange		Thickness of Flange (min)		Diameter of Raised Face		Diameter of Bore		Length Through Hub		Diameter of Hub at Base		Number of Bolt Holes	Diameter of Bolt		Diameter of Bolt Circle	
	O	Q	R	J	Y	X	n	P									
inch	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	n	inch	mm	inch	mm
½	¾	95.3	9/16	14.3	1.3/8	34.9	0.88	22.40	7/8	22.2	1½	38.1	4	½	12.7	2.5/8	66.7
¾	4.5/8	117.5	5/8	15.9	1.11/16	42.9	1.09	27.70	1	25.4	1.7/8	47.6	4	5/8	15.9	¾	82.6
1	4.7/8	123.8	11/16	17.5	2	50.8	1.36	34.50	1.1/16	27.0	2.1/8	54.0	4	5/8	15.9	¾	88.9
1¼	5¼	133.4	¾	19.1	2½	63.5	1.70	43.20	1.1/16	27.0	2½	63.5	4	5/8	15.9	¾	98.4
1½	6.1/8	155.6	13/16	20.6	2.7/8	73.0	1.95	49.50	1.3/16	30.2	2¾	69.9	4	¾	19.1	4½	114.3
2	6½	165.1	7/8	22.2	3.5/8	92.1	2.44	62.00	1.5/16	33.3	3.5/16	84.1	8	5/8	15.9	5	127.0
2½	6½	190.5	1	25.4	4.1/8	104.8	2.94	74.70	1½	38.1	3.15/16	100.0	8	¾	19.1	5.7/8	149.2
3	8¼	209.6	1.1/8	28.6	5	127.0	3.57	90.70	1.11/16	42.9	4.5/8	117.5	8	¾	19.1	6.5/8	168.3
3½	9	228.6	1.3/16	30.2	5½	139.7	4.07	103.40	1¼	44.5	5¼	133.4	8	¾	19.1	7¼	184.2
4	10	254.0	1¼	31.8	6.3/16	157.2	4.57	116.10	1.7/8	47.6	5¾	146.1	8	¾	19.1	7.7/8	200.0
5	11	279.4	1.3/8	34.9	7.5/16	185.7	5.66	143.80	2	50.8	7	177.8	8	¾	19.1	9¼	235.0
6	12½	317.5	1.7/16	36.5	8½	215.9	6.72	170.70	2.1/16	52.4	8.1/8	206.4	12	¾	19.1	10.5/8	269.9
8	15	381.0	1.5/8	41.3	10.5/8	269.9	8.72	221.50	2.7/16	61.9	10¼	260.4	12	7/8	22.2	13	330.2
10	17½	444.5	1.7/8	47.6	12¾	323.9	10.88	276.40	2.5/8	66.7	12.5/8	320.7	16	1	25.4	15¼	387.4
12	20½	520.7	2	50.8	15	381.0	12.88	327.20	2.7/8	73.0	14¾	374.7	16	1.1/8	28.6	17¾	450.9
14	23	584.2	2.1/8	54.0	16¾	412.8	14.14	359.20	3	76.2	16¾	425.5	20	1.1/8	28.6	20¼	514.4
16	25½	647.7	2¼	57.2	18½	469.9	16.16	410.50	3¼	82.6	19	482.6	20	1¼	31.8	22½	571.5
18	28	711.2	2.3/8	60.3	21	533.4	18.18	461.80	3½	88.9	21	533.4	24	1¼	31.8	24¾	628.7
20	30½	774.7	2½	63.5	23	584.2	20.20	513.10	3¾	95.3	23.1/8	587.4	24	1¼	31.8	27	685.8
22	33	838.2	2.5/8	66.7	25¼	641.4	22.22	564.40	4	101.6	25¼	641.4	24	1½	38.1	29¼	743.0
24	36	914.4	2¾	69.9	27¼	692.2	24.25	616.00	4.3/16	106.4	27.5/8	701.7	24	1½	38.1	32	812.8

NOTES : Dimensions of Thickness Q & of Length through Hub Y include thickness of raised face 1/16 inch (1.6mm)
Diameter of bolt-holes shall not be 1/8" (3.2mm) greater than the diameter of bolt.



DIMENSIONS OF SLIP ON FLANGES • ANSI B16.5-1988



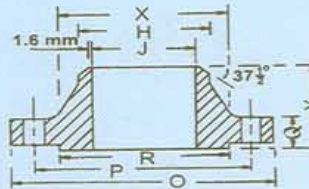
CLASS 600

Nominal Pipe Size	Outside Diameter of Flange		Thickness of Flange (min)		Diameter of Raised Face		Diameter of Bore		Length Through Hub		Diameter of Hub at Base		Number of Bolt Holes	Diameter of Bolt		Diameter of Bolt Circle	
	O		Q		R		J		Y		X				P		
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	n	inch	mm	inch	mm
1/2	3 3/4	95.3	9/16	14.3	1 3/8	34.9	0.88	22.40	7/8	22.2	1 1/2	38.1	4	1/2	12.7	2 5/8	66.7
3/4	4 5/8	117.5	5/8	15.9	1 11/16	42.9	1.09	27.70	1	25.4	1 7/8	47.6	4	5/8	15.9	3 1/4	82.6
1	4 7/8	123.8	11/16	17.5	2	50.8	1.36	34.50	1 1/16	27.0	2 1/8	54.0	4	5/8	15.9	3 1/2	88.9
1 1/4	5 1/4	133.4	13/16	20.6	2 1/2	63.5	1.70	43.20	1 1/8	28.6	2 1/2	63.5	4	5/8	15.9	3 7/8	98.4
1 1/2	6 1/8	155.6	7/8	22.2	2 7/8	73.0	1.95	49.50	1 1/4	31.8	2 3/4	69.9	4	3/4	19.1	4 1/2	114.3
2	6 1/2	165.1	1	25.4	3 5/8	92.1	2.44	62.00	1 7/16	36.5	3 5/16	84.1	8	5/8	15.9	5	127.0
2 1/2	6 1/2	190.5	1 1/8	28.6	4 1/8	104.8	2.94	74.70	1 5/8	41.3	3 15/16	100.0	8	3/4	19.1	5 7/8	149.2
3	8 1/4	209.6	1 1/4	31.8	5	127.0	3.57	90.70	1 13/16	46.0	4 5/8	117.5	8	3/4	19.1	6 5/8	168.3
3 1/2	9	228.6	1 3/8	34.9	5 1/2	139.7	4.07	103.40	1 15/16	49.2	5 1/4	133.4	8	7/8	22.2	7 1/4	184.2
4	10 3/4	273.1	1 1/2	38.1	6 3/16	157.2	4.57	116.10	2 1/8	54.0	6	152.4	8	7/8	22.2	8 1/2	215.9
5	13	330.2	1 3/4	44.5	7 5/16	185.7	5.66	143.80	2 3/8	60.3	7 7/16	188.9	8	1	25.4	10 1/2	266.7
6	14	355.6	1 7/8	47.6	8 1/2	215.9	6.72	170.70	2 5/8	66.7	8 3/4	222.3	12	1	25.4	11 1/2	292.1
8	16 1/2	419.1	2 3/16	55.6	10 5/8	269.9	8.72	221.50	3	76.2	10 3/4	273.1	12	1 1/8	28.6	13 3/4	349.3
10	20	508.0	2 1/2	63.5	12 3/4	323.9	10.88	276.40	3 3/8	85.7	13 1/2	342.9	16	1 1/4	31.8	17	431.8
12	22	558.8	2 5/8	66.7	15	381.0	12.88	327.20	3 5/8	92.1	15 3/4	400.1	20	1 1/4	31.8	19 1/4	489.0
14	23 3/4	603.3	2 3/4	69.9	16 1/4	412.8	14.14	359.20	3 11/16	93.7	17	431.8	20	1 3/8	34.9	20 3/4	527.1
16	27	685.8	3	76.2	18 1/2	469.9	16.16	410.50	4 3/16	106.4	18 1/2	495.3	20	1 1/2	38.1	23 3/4	603.3
18	29 1/4	743.0	3 1/4	82.6	21	533.4	18.18	461.80	4 5/8	117.5	21 1/2	546.1	22	1 5/8	41.3	25 3/4	654.1
20	32	812.8	3 1/2	88.9	23	584.2	20.20	513.10	5	127.0	24	609.6	24	1 5/8	41.3	28 1/2	723.9
22	34 1/4	870.0	3 3/4	95.3	25 1/4	641.4	22.22	564.40	5 1/4	133.4	26 3/4	666.8	24	1 3/4	44.5	30 5/8	777.9
24	37	939.8	4	101.6	27 3/4	692.2	24.25	616.00	5 1/2	139.7	28 3/4	717.6	24	1 7/8	47.6	33	838.2

NOTES : Dimensions of Thickness Q & of Length through Hub Y include thickness of raised face 1/16 inch (1.6mm)
Diameter of bolt-holes shall not be 1/8" (3.2mm) greater than the diameter of bolt.



DIMENSIONS OF WELD NECK FLANGES • ANSI B16.5-1988



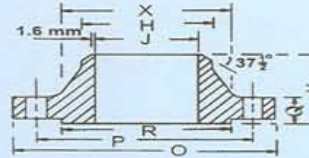
CLASS 150

Nominal Pipe Size	Outside Diameter of Flange		Thickness of Flange (min)		Diameter of Raised Face		Diameter of Bore		Length Through Hub		Diameter of Hub at Base		Diameter of Hub at Point of Weight		Number of Bolt Holes	Diameter of Bolt		Diameter of Bolt Circle	
	O	Q	R	J	Y	X	H	n	P										
inch	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	n	inch	mm	inch	mm
1/2	3 1/4	88.9	7/16	11.1	1.3/8	34.9	0.62	15.75	1.7/8	47.6	1.3/16	30.2	0.84	21.3	4	1/2	12.7	2.3/8	60.3
3/4	3 7/8	98.4	1/2	12.7	1.11/16	42.9	0.82	20.83	2.1/16	52.4	1 1/2	38.1	1.05	26.7	4	1/2	12.7	2 1/4	69.9
1	4 1/4	108.0	9/16	14.3	2	50.8	1.05	26.67	2.3/16	55.6	1.15/16	49.2	1.32	33.5	4	1/2	12.7	3.1/8	79.4
1 1/4	4.5/8	117.5	5/8	15.9	2 1/2	63.5	1.38	35.05	2 1/4	57.2	2.5/16	58.7	1.66	42.2	4	1/2	12.7	3 1/2	88.9
1 1/2	5	127.0	11/16	17.5	2.7/8	73.0	1.61	40.89	2.7/16	61.9	2.9/16	65.1	1.90	48.3	4	1/2	12.7	3.7/8	98.4
2	6	152.4	3/4	19.1	3.5/8	92.1	2.07	52.58	2 1/2	63.5	3.1/16	77.8	2.38	60.4	4	5/8	15.9	4 1/4	120.7
2 1/2	7	177.8	7/8	22.2	4.1/8	104.8	2.47	62.75	2 3/4	69.9	3.9/16	90.5	2.88	73.1	4	5/8	15.9	5 1/2	139.7
3	7 1/2	190.5	15/16	23.8	5	127.0	3.07	77.98	2 3/4	69.9	4 1/4	108.0	3.50	88.9	4	5/8	15.9	6	152.4
3 1/2	8 1/2	215.9	15/16	23.8	5 1/2	139.7	3.55	90.17	2.13/16	71.4	4.13/16	122.2	4.00	101.6	8	5/8	15.9	7	177.8
4	9	228.6	15/16	23.8	6.3/16	157.2	4.03	102.36	3	76.2	5.5/16	134.9	4.50	114.3	8	5/8	15.9	7 1/2	190.5
5	10	254.0	15/16	23.8	7.5/16	185.7	5.05	128.27	3 1/2	88.9	6.7/16	163.5	5.56	141.2	8	3/4	19.1	8 1/2	215.9
6	11	279.4	1	25.4	8.1/2	215.9	6.07	154.18	3 1/2	88.9	7.9/16	192.1	6.63	168.4	8	3/4	19.1	9 1/2	241.3
8	13 1/2	342.9	1.1/8	28.6	10.5/8	269.9	7.98	202.69	4	101.6	9.11/16	246.1	8.63	219.2	8	3/4	19.1	11 1/4	298.5
10	16	406.4	1.3/16	30.2	12 3/4	323.9	10.02	254.51	4	101.6	12	304.8	10.75	273.0	12	7/8	22.2	14 1/4	362.0
12	19	482.6	1 1/4	31.8	15	381.0	12.00	304.80	4 1/2	114.3	14.3/8	365.1	12.75	323.8	12	7/8	22.2	17	431.8
14	21	533.4	1.3/8	34.9	16 1/4	412.8	13.25	336.55	5	127.0	15 3/4	400.1	14.00	355.6	12	1	25.4	18 3/4	476.3
16	23 3/8	596.9	1.7/16	36.5	18 1/2	469.9	15.25	387.35	5	127.0	18	457.2	16.00	406.4	16	1	25.4	21 1/4	539.8
18	25	635.0	1.9/16	39.7	21	533.4	17.25	438.15	5 1/2	139.7	19.7/8	504.8	18.00	457.2	16	1.1/8	28.6	22 3/4	577.9
20	27 1/2	698.5	1.11/16	42.9	23	584.2	19.25	488.90	5.1/16	144.5	22	558.8	20.00	508.0	20	1.1/8	28.6	25	635.0
22	29 1/2	749.3	1.13/16	46.0	25 1/4	641.4	21.25	539.70	5.7/8	149.2	24	609.6	22.00	558.8	20	1 1/4	31.8	27 1/4	692.2
24	32	812.8	1.7/8	47.6	27 3/4	692.2	23.25	590.50	6	152.4	26.1/8	663.6	24.00	609.6	20	1 1/4	31.8	28 1/2	749.3

NOTES : Dimensions of Thickness Q & of Length through Hub Y include thickness of raised face 1/16 inch (1.6mm)
Diameter of bolt-holes shall not be 1/8" (3.2mm) greater than the diameter of bolt.



DIMENSIONS OF WELD NECK FLANGES • ANSI B16.5-1988



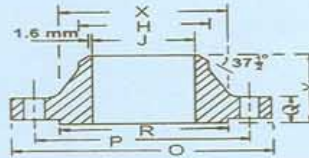
CLASS 300

Nominal Pipe Size	Outside Diameter of Flange		Thickness of Flange (min)		Diameter of Raised Face		Diameter of Bore		Length Through Hub		Diameter of Hub at Base		Diameter of Hub at Point of Weight		Number of Bolt Holes	Diameter of Bolt		Diameter of Bolt Circle	
	O	Q	R	J	Y	X	H	n	P										
inch	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	n	inch	mm	inch	mm
1/2	3 3/4	95.3	9/16	14.3	1.3/8	34.9	0.62	15.75	2.1/16	52.4	1 1/2	38.1	0.84	21.3	4	7/8	12.7	2.5/8	66.7
3/4	4.5/8	117.5	5/8	15.9	1.11/16	42.9	0.82	20.83	2 1/4	57.2	1.7/8	47.6	1.05	26.7	4	5/8	15.9	3/4	82.6
1	4.7/8	123.8	11/16	17.5	2	50.8	1.05	26.67	2.7/16	61.9	2.1/8	54.0	1.32	33.5	4	5/8	15.9	3 1/2	88.9
1 1/4	5 1/4	133.4	3/4	19.1	2 1/2	63.5	1.38	35.05	2.9/16	65.1	2 1/2	63.5	1.66	42.2	4	5/8	15.9	3.7/8	98.4
1 1/2	6.1/8	155.6	13/16	20.6	2.7/8	73.0	1.61	40.89	2.11/16	68.3	2 3/4	69.9	1.90	48.3	4	3/4	19.1	4 1/2	114.3
2	6 1/2	165.1	7/8	22.2	3.5/8	92.1	2.07	52.58	2 3/4	69.9	3.5/16	84.1	2.38	60.4	8	5/8	15.9	5	127.0
2 1/2	7 1/2	190.5	1	25.4	4.1/8	104.8	2.47	62.74	3	76.2	3.15/16	100.0	2.88	73.1	8	3/4	19.1	5.7/8	149.2
3	8 1/4	209.6	1.1/8	28.6	5	127.0	3.07	77.98	3.1/8	79.4	4.5/8	117.5	3.50	88.9	8	3/4	19.1	6.5/8	168.3
3 1/2	9	228.6	1.3/16	30.2	5 1/2	139.7	3.55	90.17	3.3/16	81.0	5 1/4	133.4	4.00	101.6	8	3/4	19.1	7 1/4	184.2
4	10	254.0	1 1/4	31.8	6.3/16	157.2	4.03	102.36	3.3/8	85.7	5 3/4	146.1	4.50	114.3	8	3/4	19.1	7.7/8	200.0
5	11	279.4	1.3/8	34.9	7.5/16	185.7	5.05	128.27	3.7/8	98.4	7	177.8	5.56	141.2	8	3/4	19.1	9 1/4	235.0
6	12 1/2	317.5	1.7/16	36.5	8 1/2	215.9	6.07	154.18	3.7/8	98.4	8.1/8	206.4	6.63	168.4	12	3/4	19.1	19.5/8	269.9
8	15	381.0	1.5/8	41.3	10.5/8	269.9	7.98	202.69	4.3/8	111.1	10 1/4	260.4	8.63	219.2	12	7/8	22.2	13	330.2
10	17 1/2	444.5	1.7/8	47.6	12 3/4	323.9	10.02	254.51	4.5/8	117.5	12.5/8	320.7	10.75	273.0	16	1	25.4	15 1/4	387.4
12	20 1/2	520.7	2	50.8	15	381.0	12.00	304.80	5.1/8	130.2	14 3/4	374.7	12.75	323.8	16	1.1/8	28.6	17 3/4	450.9
14	23	584.2	2.1/8	54.0	16	412.8	13.25	336.55	5.5/8	142.9	16 3/4	425.5	14.00	355.6	20	1.1/8	28.6	20 1/4	514.4
16	25 1/2	647.7	2 1/4	57.2	18 3/4	469.9	15.25	387.35	5 3/4	146.1	19	482.6	16.00	406.4	20	1 1/4	31.8	22 1/2	571.5
18	28	711.2	2.3/8	60.3	21	533.4	17.25	438.15	6 1/4	158.8	21	533.4	18.00	457.2	24	1 1/4	31.8	24 3/4	628.7
20	30 1/2	774.7	2 1/2	63.5	23	584.2	19.25	488.90	6.3/8	161.9	23.1/8	587.4	20.00	508.0	24	1 1/4	31.8	27	685.8
22	33	838.2	2.5/8	66.7	25 1/4	641.4	21.25	539.70	6 1/2	165.1	25 1/4	641.3	22.00	558.8	24	1 1/2	38.1	29 1/4	743.0
24	36	914.4	2.3/4	69.9	27 1/4	692.2	23.25	590.50	6.5/8	168.3	27.5/8	701.7	24.00	609.6	24	1 1/2	38.1	32	812.8

NOTES : Dimensions of Thickness Q & of Length through Hub Y include thickness of raised face 1/16 inch (1.6mm)
Diameter of bolt-holes shall not be 1/8" (3.2mm) greater than the diameter of bolt.



DIMENSIONS OF WELD NECK FLANGES • ANSI B16.5-1988



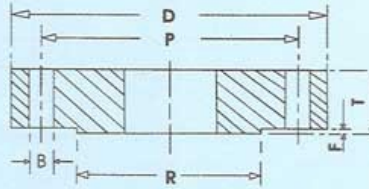
CLASS 600

Nominal Pipe Size	Outside Diameter of Flange		Thickness of Flange (min)		Diameter of Raised Face		Diameter of Bore		Length Through Hub		Diameter of Hub at Base		Diameter of Hub at Point of Weight		Number of Bolt Holes	Diameter of Bolt		Diameter of Bolt Circle	
	O	Q	R	J	Y	X	H	n	P										
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	n	inch	mm	inch	mm
1/2	3 3/4	92.5	9/16	14.3	1 3/8	34.9	0.55	14.00	2 1/16	52.4	1 1/2	38.1	0.84	21.3	4	1/2	12.7	2 5/8	66.7
3/4	4 5/8	117.5	5/8	15.9	1 11/16	42.9	0.74	18.80	2 1/4	57.2	1 7/8	47.6	1.05	26.7	4	5/8	15.9	3 1/4	82.6
1	4 7/8	123.8	11/16	17.5	2	50.8	0.96	24.40	2 7/16	61.9	2 1/8	54.0	1.32	33.5	4	5/8	15.9	3 1/2	88.9
1 1/4	5 1/4	133.4	13/16	20.6	2 1/2	63.5	1.28	32.50	2 5/8	66.7	2 1/2	63.5	1.66	42.2	4	5/8	15.9	3 7/8	98.4
1 1/2	6 1/8	155.6	7/8	22.2	2 7/8	73.0	1.50	38.10	2 3/4	69.9	2 3/4	69.9	1.90	48.3	4	3/4	19.1	4 1/2	114.3
2	6 1/2	165.1	1	25.4	3 5/8	92.11	1.94	49.30	2 7/8	73.0	3 5/16	84.1	2.38	60.4	8	5/8	15.9	5	127.0
2 1/2	7 1/2	190.5	1 1/8	28.6	4 1/8	104.8	2.32	58.90	3 1/8	79.4	3 15/16	100.0	2.88	73.1	8	3/4	19.1	5 7/8	149.2
3	8 1/4	209.6	1 1/4	31.8	5	127.0	2.90	73.70	3 3/4	82.6	4 5/8	117.5	3.50	88.9	8	3/4	19.1	6 5/8	168.3
3 1/2	9	228.6	1 3/8	34.9	5 1/2	139.7	3.36	85.30	3 3/8	85.7	5 1/4	133.4	4.00	101.6	8	7/8	22.2	7 1/4	184.2
4	10 3/4	273.1	1 1/2	38.1	6 3/16	157.2	3.83	97.30	4	101.6	6	152.4	4.50	114.3	8	7/8	22.2	8 1/2	215.9
5	13	330.2	1 3/4	44.5	7 5/16	185.7	4.81	122.20	4 1/2	114.3	7 7/16	188.9	5.56	141.2	8	1	25.4	10 1/2	266.7
6	14	355.6	1 7/8	47.6	8 1/2	215.9	5.76	146.30	4 5/8	117.5	8 3/4	222.3	6.63	168.4	12	1	25.4	11 1/2	292.1
8	16 1/2	419.1	2 3/16	55.6	10 5/8	269.9	7.63	193.80	5 1/4	133.4	10 3/4	273.1	8.63	219.2	12	1 1/8	28.6	13 3/4	349.3
10	20	508.0	2 1/4	63.5	12 3/4	323.9	9.75	247.70	6	152.4	13 1/2	342.9	10.75	273.0	16	1 1/4	31.8	17	431.8
12	22	558.8	2 5/8	66.7	15	381.0	11.75	298.40	6 1/8	155.6	15 3/4	400.1	12.75	323.8	20	1 1/4	31.8	19 1/4	489.0
14	23 3/4	603.3	2 3/4	69.9	16 1/4	412.8	As Specified by Purchaser		6 1/2	165.1	17	431.8	14.00	355.6	20	1 3/8	34.9	20 3/4	527.1
16	27	685.8	3	76.2	18 1/2	469.9			7	177.8	19 1/2	495.3	16.00	406.4	20	1 1/2	38.1	23 3/4	603.3
18	29 1/4	743.0	3 1/8	82.6	21	533.4			7 1/4	184.2	21 1/2	546.1	18.00	457.2	20	1 5/8	41.3	25 3/4	654.1
20	32	812.8	3 1/2	88.9	23	584.2			7 1/2	190.5	24	609.6	20.00	508.0	24	1 5/8	41.3	28 1/2	723.9
22	34 3/4	870.0	3 3/4	95.3	25 1/4	641.4			7 3/4	196.9	26 1/4	666.8	22.00	558.8	24	1 3/4	44.5	30 5/8	777.9
24	37	939.8	4	101.6	27 1/4	692.2			8	203.2	28 3/4	717.6	24.00	609.6	24	1 7/8	47.6	33	838.2

NOTES : Dimensions of Thickness Q & of Length through Hub Y include thickness of raised face 1/16 inch (1.6mm)
Diameter of bolt-holes shall not be 1/8" (3.2mm) greater than the diameter of bolt.



M. S. FLAT FACE OR RAISED FACE FLANGE • P N - 10



ALL DIMENSIONS IN MM.

Nominal Bore	Dia of Flange D	Thickness T	Raised Face		Bolt Circle Diam. P	Nos. of Holes	Dia of Holes B
			Diam R	Thick F			
10	90	14	40	2	60	4	14
15	95	14	45	2	65	4	14
20	105	16	58	2	75	4	14
25	115	16	68	2	85	4	14
32	140	18	78	2	100	4	18
40	150	18	88	3	110	4	18
50	165	20	102	3	125		18
65	185	20	122	3	145	4	18
80	200	22	138	3	160	8	18
100	220	22	158	3	180	8	18
125	250	24	188	3	210	8	18
150	285	24	212	3	240	8	22
200	340	26	268	3	295	8	22
250	395	28	320	3	350	12	22
300	445	28	370	4	400	12	22
350	505	30	430	4	460	16	22
400	565	32	482	4	515	16	26
450	615	32	532	4	565	20	26
500	670	38	585	4	620	20	26
600	780	42	685	5	725	20	30
700	895	46	800	5	840	24	30
800	1015	52	905	5	950	24	33



DIMENSIONS OF PLAIN FLANGES • B. S. 10 : 1962

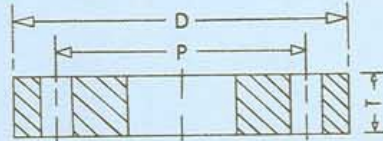


TABLE-D : For Working Steam Pressure upto 50 lbs./sq. inch

Flange Size Designation (Nominal Bore of Pipe)	Approx. Outside Diameter of Steel Pipe H		Diameter of Flange		Bolt Circle Diameter		Number of Bolt Holes N	Diameter of Bolts B*		Thickness T	
			inch	mm	inch	mm		inch	mm	inch	mm
1/2	27/32	21.43	3/4	95.25	2.5/8	66.68	4	1/2	12.70	3/16	4.76
3/4	1.1/16	26.99	4	101.60	2.7/8	73.03	4	1/2	12.70	3/16	4.76
1	1.11/32	34.13	4 1/2	114.30	3 1/4	82.55	4	1/2	12.70	3/16	4.76
1 1/4	1.11/16	42.86	4 3/4	120.65	3.7/16	87.31	4	1/2	12.70	1/4	6.35
1 1/2	1.23/32	48.42	5 1/4	133.35	3.7/8	98.43	4	1/2	12.70	1/4	6.35
2	2.3/8	60.33	6	152.40	4 1/2	114.30	4	5/8	15.88	5/16	7.94
2 1/2	3	76.20	6 1/2	165.10	5	127.00	4	5/8	15.88	5/16	7.94
3	3 1/2	88.90	7 1/4	184.15	5 3/4	146.05	4	5/8	15.88	3/8	9.53
3 1/2	4	101.60	8	203.20	6 1/2	165.10	4	5/8	15.88	3/8	9.53
4	4 1/2	114.30	8 1/2	215.90	7	177.80	4	5/8	15.88	3/8	9.53
5	5 1/2	139.70	10	254.00	8 1/4	209.55	8	5/8	15.88	1/2	12.70
6	6 1/2	165.10	11	279.40	9 1/4	234.95	8	5/8	15.88	1/2	12.70
	6.5/8	168.28									
7	7.5/8	193.68	12	304.80	10 1/4	260.35	8	5/8	15.88	1/2	12.70
8	8.5/8	219.08	13 1/4	336.55	11 1/2	292.10	8	5/8	15.88	1/2	12.70
9	9.5/8	244.48	14 1/2	368.30	12 3/4	323.85	8	5/8	15.88	5/8	15.88
10	10 1/4	273.05	15	406.40	14	355.60	8	3/4	19.05	5/8	15.88
12	12 3/4	323.85	18	457.20	16	406.40	12	3/4	19.05	3/4	19.05
13	14	355.60	19 1/4	488.95	17 1/4	438.15	12	3/4	19.05	3/4	19.05
14	15	381.00	20 3/4	527.05	18 1/2	469.90	12	7/8	22.23	7/8	22.23
15	16	406.40	21 1/4	552.45	19 1/2	495.30	12	7/8	22.23	7/8	22.23
16	-	-	22 3/4	577.85	20 1/2	520.70	12	7/8	22.23	7/8	22.23
17	18	457.20	24	609.60	21 1/4	552.45	12	7/8	22.23	1	25.40
18	-	-	25 1/4	641.35	23	584.20	12	7/8	22.23	1	25.40
19	20	508.00	26 1/2	673.10	24	609.60	12	7/8	22.23	1	25.40
20	-	-	27 3/4	704.85	25 1/4	641.35	16	7/8	22.23	1.1/8	28.58
21	22	558.80	29	736.60	26 1/2	673.10	16	7/8	22.23	1.1/8	28.53
22	-	-	30	762.00	27 1/2	698.50	16	1	25.40	1.1/8	28.53
23	24	609.60	31	787.40	28 1/2	723.90	16	1	25.40	1.1/8	28.53
24	-	-	32 1/2	825.50	29 1/4	755.65	16	1	25.40	1 1/4	31.75

NOTE : B* - For 1/2" & 5/8" Bolts, diameter of holes shall be 1/16" (1.6mm) larger than the bolt and for 3/4" bolts & sizes above, diameter of hole shall be not more than 1/8" (3.2mm) larger than the bolts.



DIMENSIONS OF PLAIN FLANGES • B. S. 10 : 1962

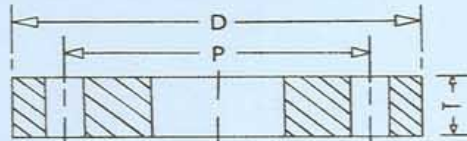


TABLE-E : For Working Steam Pressure above 50 & upto 100 lbs./sq. inch

Flange Size Designation (Nominal Bore of Pipe)	Approx. Outside Diameter of Steel Pipe H		Diameter of Flange		Bolt Circle Diameter		Number of Bolt Holes N	Diameter of Bolts B*		Thickness T	
			inch	mm	inch	mm		inch	mm	inch	mm
1/2	27/32	21.43	3 3/4	95.25	2 5/8	66.68	4	1/2	12.70	1/4	6.35
3/4	1.1/16	26.99	4	101.60	2 7/8	73.03	4	1/2	12.70	1/4	6.35
1	1.11/32	34.13	4 1/2	114.30	3 1/4	82.55	4	1/2	12.70	9/32	7.14
1 1/4	1.11/16	42.86	4 3/4	120.65	3 7/16	87.31	4	1/2	12.70	5/16	7.94
1 1/2	1.23/32	48.42	5 1/4	133.35	3 7/8	98.43	4	1/2	12.70	11/32	8.73
2	2.3/8	60.33	6	152.40	4 1/2	114.30	4	5/8	15.88	3/8	9.53
2 1/2	3	76.20	6 1/2	165.10	5	127.00	4	5/8	15.88	13/32	10.32
3	3 1/2	88.90	7 1/4	184.15	5 3/4	146.05	4	5/8	15.88	7/16	11.11
3 1/2	4	101.60	8	203.20	6 1/2	165.10	4	5/8	15.88	15/32	11.91
4	4 1/2	114.30	8 1/2	215.90	7	177.80	4	5/8	15.88	1/2	12.70
5	5 1/2	139.70	10	254.00	8 1/4	209.55	8	5/8	15.88	9/16	14.29
6	6 1/2	165.10	11	279.40	9 1/4	234.95	8	3/4	19.05	11/16	17.46
	6 5/8	168.28									
7	7 5/8	193.68	12	304.80	10 1/4	260.35	8	3/4	19.05	3/4	19.05
8	8 5/8	219.08	13 3/4	336.55	11 1/2	292.10	8	3/4	19.05	3/4	19.05
9	9 5/8	244.48	14 1/2	368.30	12 3/4	323.85	12	3/4	19.05	13/16	20.64
10	10 3/4	273.05	15	406.40	14	355.60	12	3/4	19.05	7/8	22.23
12	12 3/4	323.85	18	457.20	16	406.40	12	7/8	22.23	1	25.40
13	14	355.60	19 3/4	488.95	17 1/4	438.15	12	7/8	22.23	1	25.40
14	15	381.00	20 3/4	527.05	18 1/2	469.90	12	7/8	22.23	1 1/8	28.58
15	16	406.40	21 3/4	552.45	19 1/2	495.30	12	7/8	22.23	1 1/4	31.75
16	-	-	22 3/4	577.85	20 1/2	520.70	12	7/8	22.23	1 1/4	31.75
17	18	457.20	24	609.60	21 3/4	552.45	12	7/8	22.23	1 3/8	34.93
18	-	-	25 1/4	641.35	23	584.20	16	7/8	22.23	1 3/8	34.93
19	20	508.00	26 1/2	673.10	24	609.60	16	7/8	22.23	1 1/2	38.10
20	-	-	27 3/4	704.85	25 1/4	641.35	16	7/8	22.23	1 1/2	38.10
21	22	558.80	29	736.60	26 1/2	673.10	16	1	25.40	1 5/8	41.28
22	-	-	30	762.00	27 1/2	698.50	16	1	25.40	1 3/8	44.45
23	24	609.60	31	787.40	28 1/2	723.90	16	1	25.40	1 3/8	44.45
24	-	-	32 1/2	825.50	29 3/4	755.65	16	1 1/8	28.58	1 7/8	47.63

NOTE : B* - For 1/2" & 5/8" Bolts, diameter of holes shall be 1/16" (1.6mm) larger than the bolt and for 3/4" bolts & sizes above, diameter of hole shall be not more than 1/8" (3.2mm) larger than the bolts.



DIMENSIONS OF PLAIN FLANGES • B. S. 10 : 1962

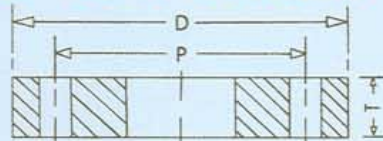


TABLE-F : For Working Steam Pressure above 100 & upto 150 lbs./sq. inch

Flange Size Designation (Nominal Bore of Pipe)	Approx. Outside Diameter of Steel Pipe H		Diameter of Flange		Bolt Circle Diameter		Number of Bolt Holes N	Diameter of Bolts B*		Thickness T	
			inch	mm	inch	mm		inch	mm	inch	mm
1/2	27/32	21.43	3 3/4	95.25	2 5/8	66.68	4	1/2	12.70	1/4	9.53
3/4	1.1/16	26.99	4	101.60	2 7/8	73.03	4	1/2	12.70	1/4	9.53
1	1.11/32	34.13	4 3/4	120.65	3 7/16	87.31	4	5/8	15.88	9/32	9.53
1 1/4	1.11/16	42.86	5 1/4	133.35	3 7/8	98.43	4	5/8	15.88	1/2	12.70
1 1/2	1.23/32	48.42	5 1/2	139.70	4 1/2	104.78	4	5/8	15.88	1/2	12.70
2	2.3/8	60.33	6 1/2	165.10	5	127.00	4	5/8	15.88	5/8	15.88
2 1/2	3	76.20	7 1/4	184.15	5 1/4	146.05	8	5/8	15.88	5/8	15.88
3	3 1/2	88.90	8	203.20	6 1/2	165.10	8	5/8	15.88	5/8	15.88
3 1/2	4	101.60	8 1/2	215.90	7	177.80	8	5/8	15.88	3/4	19.05
4	4 1/2	114.30	9	228.60	7 1/2	190.50	8	5/8	15.88	3/4	19.05
5	5 1/2	139.70	11	279.40	9 1/4	234.95	8	3/4	19.05	7/8	22.23
6	6 1/2	165.10	12	304.80	10 1/4	260.35	12	3/4	19.05	7/8	22.23
	6 5/8	168.28									
7	7 5/8	193.68	13 3/4	336.55	11 1/2	292.10	12	3/4	19.05	7/8	22.23
8	8 5/8	219.08	14 1/2	368.30	12 3/4	323.85	12	3/4	19.05	1	25.40
9	9 5/8	244.48	16	406.40	14	355.60	12	7/8	22.23	1 1/8	28.58
10	10 3/4	273.05	17	431.80	15	381.00	12	7/8	22.23	1 1/8	28.58
12	12 3/4	323.85	19 1/4	488.95	17 1/4	438.15	16	7/8	22.23	1 1/4	31.75
13	14	355.60	20 3/4	527.05	18 1/2	469.90	16	1	25.40	1 3/8	34.93
14	15	381.00	21 3/4	552.45	19 1/2	495.30	16	1	25.40	1 3/8	34.93
15	16	406.40	22 3/4	577.85	20 1/2	520.70	16	1	25.40	1 1/2	38.10
16	-	-	24	609.60	21 3/4	552.45	20	1	25.40	1 1/2	41.28
17	18	457.20	25 1/4	641.35	23	584.20	20	1	25.40	1 3/4	44.45
18	-	-	26 1/2	673.10	24	609.60	20	1 1/8	28.58	1 3/4	44.45
19	20	508.00	27 3/4	704.85	25 1/4	641.35	20	1 1/8	28.58	1 3/4	44.45
20	-	-	29	736.60	26 1/2	673.10	24	1 1/8	28.58	2	50.80
21	22	558.80	30	762.00	27 1/2	698.50	24	1 1/8	28.58	2	50.80
22	-	-	31	787.40	28 1/2	723.90	24	1 1/8	28.58	2 1/8	53.98
23	24	609.60	32 1/2	825.50	29 3/4	755.65	24	1 1/4	31.75	2 1/4	57.15
24	-	-	33 1/2	850.90	30 3/4	781.05	24	1 1/4	31.75	2 1/4	57.15

NOTE : B* - For 1/2" & 5/8" Bolts, diameter of holes shall be 1/16" (1.6mm) larger than the bolt and for 3/4" bolts & sizes above, diameter of hole shall be not more than 1/8" (3.2mm) larger than the bolts.



DIMENSIONS OF PLAIN FLANGES • B. S. 10 : 1962

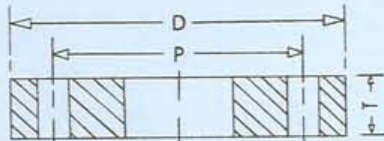


TABLE-H : For Working Steam Pressure above 150 & upto 250 lbs./sq. inch

Flange Size Designation (Nominal Bore of Pipe)	Approx. Outside Diameter of Steel Pipe H		Diameter of Flange		Bolt Circle Diameter		Number of Bolt Holes N	Diameter of Bolts B*		Thickness T	
			inch	mm	inch	mm		inch	mm	inch	mm
1/2	27/32	21.43	4 1/2	114.30	3 1/4	82.55	4	5/8	15.88	1/2	12.70
3/4	1.1/16	26.99	4 1/2	114.30	3 1/4	82.55	4	5/8	15.88	1/2	12.70
1	1.11/32	34.13	4 3/4	120.65	3.7/16	87.31	4	5/8	15.88	9/16	14.29
1 1/4	1.11/16	42.86	5 1/4	133.35	3.7/8	98.43	4	5/8	15.88	11/16	17.46
1 1/2	1.23/32	48.42	5 1/2	139.70	4.1/8	104.78	4	5/8	15.88	11/16	17.46
2	2.3/8	60.33	6 1/2	165.10	5	127.00	4	5/8	15.88	3/4	19.05
2 1/2	3	76.20	7 1/4	184.15	5 3/4	146.05	8	5/8	15.88	3/4	19.05
3	3 1/2	88.90	8	203.20	6 1/2	165.10	8	5/8	15.88	7/8	22.23
3 1/2	4	101.60	8 1/2	215.90	7	177.80	8	5/8	15.88	7/8	22.23
4	4 1/2	114.30	9	228.60	7 1/2	190.50	8	5/8	15.88	1	25.40
5	5 1/2	139.70	11	279.40	9 1/4	234.95	8	3/4	19.05	1.1/8	28.58
6	6 1/2	165.10	12	304.80	10 1/4	260.35	12	3/4	19.05	1.1/8	28.58
	6.5/8	168.28									
7	7.5/8	193.68	13 1/4	336.55	11 1/2	292.10	12	3/4	19.05	1 1/4	31.75
8	8.5/8	219.08	14 1/2	368.30	12 3/4	323.85	12	3/4	19.05	1 1/4	31.75
9	9.5/8	244.48	16	406.40	14	355.60	12	7/8	22.23	1.3/8	34.93
10	10 1/4	273.05	17	431.80	15	381.00	12	7/8	22.23	1.3/8	34.93
12	12 3/4	323.85	19 1/4	488.95	17 1/4	438.15	16	7/8	22.23	1.5/8	41.28
13	14	355.60	20 3/4	527.05	18 1/2	469.90	16	1	25.40	1 3/4	44.45
14	15	381.00	21 3/4	552.45	19 1/2	495.30	16	1	25.40	1.7/8	47.63
15	16	406.40	22 3/4	577.85	20 1/2	520.70	16	1	25.40	2	50.80
16	-	-	24	609.60	21 3/4	552.45	20	1	25.40	2.1/8	53.98
17	18	457.20	25 1/4	641.35	23	584.20	20	1	25.40	2 1/4	57.15
18	-	-	26 1/2	673.10	24	609.60	20	1.1/8	28.58	2.3/8	60.33
19	20	508.00	27 3/4	704.85	25 1/4	641.35	20	1.1/8	28.58	2 1/2	63.50
20	-	-	29	736.60	26 1/2	673.10	24	1.1/8	28.58	2.5/8	66.68
21	22	558.80	30	762.00	27 1/2	698.50	24	1.1/8	28.58	2 3/4	69.85
22	-	-	31	787.40	28 1/2	723.90	24	1.1/8	28.58	2 3/4	69.85
23	24	609.60	32 1/2	825.50	29 3/4	755.65	24	1 1/4	31.75	3	76.20
24	-	-	33 1/2	850.90	30 3/4	781.05	24	1 1/4	31.75	3	76.20

NOTE : B* - For 5/8" Bolts, diameter of holes shall be 1/16" (1.6mm) larger than the bolt and for 3/4" bolts & sizes above, diameter of hole shall be not more than 1/8" (3.2mm) larger than the bolts.



DIMENSIONAL TOLERANCES FOR FLANGES • ANSI B - 16.5

Outside Diameter	When O.D. is < or = 24"(610 mm.)	± 1/16" (1.6 mm)	Outside Diameter	When O.D. is < or = 24"(610 mm.)	± 1/16" (1.6 mm)	
	> 24"(610 mm.)	± 1/8" (3.2 mm)		> 24"(610 mm.)	± 1/8" (3.2 mm)	
Inside Diameter	Threaded	To Standard Gauge limits		Inside Diameter	NPS < &= 10" (250 mm.)	± 1/32"(0.8 mm)
	Slip-on and Lap Joint :-				NPS is 12"(300 mm) to 18"(450 mm)	± 1/16"(1.6 mm)
	NPS < &= 10" (250 mm.)	+ 1/32"(0.8 mm.)	0	NPS > &= 20"(500 mm)	+ 1/8"(3.2 mm)	- 1/16"(1.6 mm)
	NPS > &= 12" (300 mm.)	+ 1/16" (1.6 mm.)	0			
Diameter of Hub at Base	< &= 12" (300 mm.)	+ 3/32"(2.4 mm.)	Diameter of Hub at Base	< &= 24"(610 mm)	± 1/16"(1.6 mm)	
	> &= 14"(350 mm.)	± 1/8" (3.2 mm.)		> 24"(610 mm)	± 1/8"(3.2 mm)	
Diameter of Contact Face	1/16"(1.6 mm.) Raised Face	± 1/32" (0.8 mm.)	Diameter of Hub at Base			
	1/4"(6.4 mm) Raised Face : Tongue & Grooved (Male / Female)	± 1/64" (0.4 mm)		Diameter of Hub at Point of Welding	NPS < &= 5"(125 mm)	+ 3/32"(2.4mm)
Diameter of Counterbore	NPS < &= 10" (250 mm)	+ 1/32" (0.8mm.)		NPS > &= 6"(150 mm)	+ 5/32"(4 mm)	- 1/32"(0.8 mm)
	NPS > &= 12" 300 mm)	+ 1/16" (1.6mm.)				
Drilling	Bolt Circle Diameter	± 1/16(1.6 mm)	Drilling	Bolt Circle Diameter	± 1/16"(1.6 mm)	
	Bolt Hole Spacing	± 1/32" (0.8 mm)		Bolt Hole Spacing	± 1/32"(0.8 mm)	
	Eccentricity of Bolt Circle & Facing with respect to Bore :			Eccentricity of Bolt Circle & Facing with respect to Bore :		
	NPS < &= 2.5"(65 mm)	± 1/32"(0.8 mm)		NPS < &= 2.5"(65 mm)	± 1/32"(0.8 mm)	
	NPS > &= 3" (80 mm)	± 1/16"(1.6 mm)		NPS > &= 3"(80 mm)	± 1/16"(1.6 mm)	
Thickness	NPS < &= 18" (450 mm)	+ 1/8"(3.2 mm)	Thickness	NPS < &= 18"(450 mm)	+ 1/8"(3.2 mm)	- 0
	NPS > &= 20"(500 mm)	+ 3/16"(4.8 mm)		0	NPS > &= 20"(500 mm)	+ 3/16"(4.8 mm)
Length Through Hub	NPS < &= 10"(250 mm)	± 1/16"(1.6 mm)	Length Through Hub	NPS < &= 10"(250 mm)	± 1/16"(1.6 mm)	
	NPS > &= 12"(300 mm)	± 1/8" 3.2 mm)		NPS > &= 12"(300 mm)	± 1/8"(3.2 mm)	



CARBON STEEL PLATES IS 8500

CHEMICAL COMPOSITION						
Grade IS 8500	Ladle Analysis					
	C% Max	Mn% Max	S% Max	P% Max	Si% Max	C.E% Max
Fe 440	0.20	1.30	0.050 0.040	0.050 0.040	0.45	0.40
Fe 440B	0.20	1.30	0.050 0.040	0.050 0.040	0.45	0.40
Fe 490	0.20	1.50	0.050 0.040	0.050 0.040	0.45	0.42
Fe 490 B	0.20	1.50	0.050 0.040	0.050 0.040	0.45	0.44
Fe 540	0.20	1.60	0.045 0.040	0.045 0.040	0.45	0.44
Fe 540B	0.20	1.60	0.045 0.040	0.045 0.040	0.45	0.44
Fe 570	0.22	1.60	0.045 0.040	0.045 0.040	0.45	0.46
Fe 570B	0.22	1.60	0.045 0.040	0.045 0.040	0.45	0.46
Fe 590	0.22	1.60	0.045 0.040	0.045 0.040	0.45	0.48
Fe 590B	0.22	1.80	0.045 0.040	0.045 0.040	0.45	0.48

MECHANICAL PROPERTIES										
Grade IS 8500	Tensile Strength (Min) MPa	Yield Strength (Min)				Elongation Percent (Min) 5.65√S ₀	Bend (Internal diameter) Min		Charpy V-notch Impact toughness, Joules, Min (Average of 3 Values) Room ToMP°-20°C	
		<16 mm Mpa	16-40 mm MPa	41-63 mm MPa	>63 mm MPa		<12 mm	12-25 mm	-	-
Fe 440	440	300	290	280	By agreement	22	2t	3t	-	-
Fe 440B	440	300	290	280	-	22	2t	3t	50	30
Fe 490	490	350	330	320	-	22	2t	3t	-	-
Fe 490B	490	350	330	320	-	22	2t	3t	50	25
Fe540	540	410	390	380	-	20	2t	3t	-	-
Fe 540B	540	410	390	380	-	20	2t	3t	50	25
Fe 570	570	450	430	420	-	20	2t	3t	-	-
Fe 570B	570	450	430	420	-	20	2t	3t	45	20
Fe 590	590	450	430	420	-	20	2t	3t	-	-
Fe 590B	590	450	430	420	-	20	2t	3t	45	20

SAILMA HIGH STRENGTH MICRO ALLOY STRUCTURAL STEEL (SEMI KILLED)

CHEMICAL COMPOSITION					
Grade	C% Max	Mn% Max	S% Max	P% Max	Nb+V+Ti% Max
SAILMA 300	0.25	1.50	0.055	0.055	0.20
SAILMA 300HI	0.20	1.50	0.040	0.040	0.20
SAILMA 350	0.25	1.50	0.040	0.040	0.20
SAILMA 350HI	0.20	1.50	0.040	0.040	0.20
SAILMA 410	0.25	1.50	0.040	0.040	0.20
SAILMA 410HI	0.20	1.50	0.040	0.040	0.20
SAILMA 450	0.25	1.50	0.040	0.040	0.20
SAILMA 450HI	0.20	1.50	0.040	0.040	0.20

MECHANICAL PROPERTIES						
Grade	UTC (MPa)	YS (MPa) Min	Ei. % Min 5.54√S ₀	IMPACT CHARPYV 0°C-20°C Joules (Min)		Bend Test
SAILMA 300	440-560	300	20	-	-	3T
SAILMA 300HI	440-560	300	21	40	-	3T
SAILMA 350	490-610	350	20	-	-	3T
SAILMA 350HI	490-610	350	21	40	30	3T
SAILMA #10	510-660	410	19	-	-	3T
SAILMA 410HI	540-660	410	20	35	25	3T
SAILMA 450	570-720	450	18	-	-	3T
SAILMA 450HI	570-720	450	19	30	20	3T



ASTM A387-78 PRESSURE VESSEL PLATES, ALLOY STEEL, CHROMIUM - MOLYBDENUM

CHEMICAL COMPOSITION %									Tensile Test										
Designation	Specification	C max	Si	Mn	P max	S max	Cr	Mo	Class 1*5				Class 2*6				Heat Treatment Tempering Temperature		
									Tensile Strength Ksi (MPa)	Yield Strength (0.2% offset) Ksi (MPa) min	Elongation %min		Reduction of area % min.	Tensile Strength Ksi (MPa)	Yield Strength (0.2% offset) Ksi (MPa) min	Elongation %min		Reduction of area % min.	
										GL=8 in.*2 or 200 mm	GL=2in. or 50 m			GL=8 in.*2 or 200 mm	GL=2in. or 50 m				
	Grade 2	0.05 0.21	0.15-0.40	0.55-0.80	0.035	0.035	0.50-0.80	0.45-0.60	55-80 (380-550)	33 (230)	18	22	--	70-90 (485-620)	45 (310)	18	22	--	1,150°F(620°C) and over
	Grade 12	0.05 0.17	0.15-0.40	0.40-0.65	0.035	0.035	0.80-1.15	0.45-0.60	55-80 (380-550)	38 (230)	18	22	--	65-85 (450-585)	40 (275)	19	22	--	
	Grade 11	0.05 0.17	0.50-0.80	0.40-0.65	0.035	0.035	1.00-1.50	0.45-0.65	60-85 (415-585)	35 (240)	19	22	--	75-100 (515-690)	45 (310)	18	22	--	
A 387	Grade 22	0.05 0.15*	0.50 max	0.30-0.60	0.035	0.035	2.00-2.50	0.90-1.10	60-55 (415-585)	30 (205)	--	18	45*3 40*4	75-100 (515-690)	45 (310)	18	45*3 40*4	1,250°F(675°C) and over	
	Grade 21	0.05 0.15*	0.50 max	0.30-0.60	0.035	0.035	2.75-3.25	0.90-1.10	60-85 (415-585)	30 (205)	--	18	45*3 40*4	75-100 (515-690)	45 (310)	18	45*3 40*4		
	Grade 5	0.15	0.50max	0.30-0.60	0.040	0.030	4.00-6.00	0.45-0.65	60-85 (415-585)	30 (205)	--	18	45*3 40*4	75-100 (515-690)	45 (310)	18	45*3 40.4	1,300°F(705°C) and over	
	Grade 9	0.15	1.00 max	0.30-0.60	0.030	0.030	8.00-10.00	0.85-1.10	60-85 (415-585)	30 (205)	--	18	45*3 40*4	75-100 (515-690)	45 (310)	18	45*3 40.4	1,250°F(675°C) and over	
	Grade 91	0.10	0.3	0.4	0.018	0.002	9.00	1.00			--	--	--	690-720	560-600	--	18	45*3 40.4	1,050°F(750°C) and over

CARBON STEEL SHEETS AND PLATES

Common Name	ASTM Spec.	Chemistry (General)					Mechanical Properties				Typical Application
		C% max	Mn% max	P% max	S% max	Si% max	Tensile Strength ksi	Yield Strength ksi	Elong. in 2"	Brinell *	
Mild Steel, CQ	S355J2G-3	0.20	1.60	0.035	0.035	0.55	71	51 min.	21%		This material is intended for parts where bending, moderate forming or drawing and welding may be involved. Used for tanks, barrels, farm implements, etc.
Commercial Quality	IS8500 FE540	0.20	0.60	0.040	0.040	0.045	78	59 min.	20%		
Structural Quality	A36	0.25*	0.80-1.20*	0.040	0.050	0.40	58 to 80	36 min.	23% min.	119 to 159	Used in riveted, bolted or welded construction of bridges buildings and for general structural purposes.
	S275JR	0.21	1.5	0.45	0.45	NIL	60 to 80	40 min.	22% min.		
	IS2062Gr.A	0.23	0.50	0.050	0.050	0.40	60 to 80	36 min.	23% min.		
HSLA corrosion resistant	A588 B	0.20	1.35	0.04	0.05	0.50	70 min	50 min	21%	147 min	Same basic properties as other HSLA steels with added resistance to corrosion. Often used in bridges or structures where maintenance cost considerations are important
	CORTEN A	0.10	0.45	0.14	0.03	0.50	70 min	51 min	21% min		
T-1, Construction Alloys	A514 B	.12-.21	0.70-1.00	0.035	0.20-0.35		110 to 130	100 min	18%	228 min	Nearly 3 times as strong as A36 Used as liners for construction equipment, mining machinery, chutes, wear plates, etc.

Please note : charts are for guidance only for exact specification, please checkout with out sales team.



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IS - 2002 - 62 STEEL PLATES FOR BOILERS

Designation	Chemical Composition					Tensile Test			Elongation	
	C% max	Mn%	Si% max	P% max	S% max	Tensile Strength Kl/mm ²	Yield Strength Kl/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	Mn	S	P
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
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	20-40	> 40			
(1)	(2)	(3)	mm (4)	mm (5)	mm (6)	(7)	(8)	(9)
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 Note 1)
C	Fe 410W C	410	250	240	230	23	2t	27

NOTES

- 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.
- For Grade C material, the minimum Charpy V-notch impact energy shall be guaranteed at any one of three temperatures, namely 0°C or -20°C or 40°C, as specified by the purchaser.
- 't' is the thickness of the material.
- The Impact values are given for a standard test piece. When tested with subsidiary test pieces, the values shall not be less than $\begin{matrix} 10 \times 7.5 \\ 10 \times 5 \end{matrix}$ Test Place Size (mm) Charpy V-Notch Impact Energy J, Min $\begin{matrix} 22 \\ 19.5 \end{matrix}$

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

Designation	Chemical Composition										Tensile Strength			Elongation %min		
	C% max	Mn%	t < 1-1/2 (38)	t > 1-1/2	P% max	S% max	Cu% max	Ni% max	Cr% max	Mo% max	Heat Treatment	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 537-2	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	Normalised	t < 2-1 (64) 2-1/2 < t < 4 (100)	70-90 (485-620) 65-85 (450-585)	50 (345) 45 (310)	--	22
											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)		



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ASTM A 285-80 PRESSURE VESSEL PLATES, CARBON STEEL LOW AND INTERMEDIATE TENSILE

Designation	Chemical Composition				Tensile Strength Ksi(MPa)	Yield Strength Ksi(MPa)	Elongation %min GL=8 in	GL=2 in
	C% max	Mn% max	P% max	S% max				
A 285	0.70	0.90	0.035	0.035	45-65 (310-450)	24(165)	27	30
A 285 B	0.22	0.90	0.035	0.035	50-70 (385-485)	27(185)	25	28
A 285 C	0.28	0.90	0.035	0.035	55-75 (380-515)	30(205)	23	27

ASTM A515-78 PRESSURE VESSEL PLATES, CARBON STEEL, FOR INTERMEDIATE & HIGHER TEMP. SERVICE

Designation	Chemical Composition, %						Tensile Test			
	Thickness in (mm)	C% max	Si%	Mn% max	P% max	S% max	Tensile Strength Ksi (MPa)	Yield Strength Ksi (Mpa), min	Elongation, % min	
									GL=8 in	GL=2 in
A 515-55	1<t(25)	0.20	0.15-0.30	0.90	0.035	0.040	55-75 (380-515)	30 (205)	23	27
	1<t<2(50)	0.22								
	2<t<1(100)	0.24								
	4<t<8(200)	0.26								
	t<10	0.28								
A 515-60	1<t(25)	0.24	0.15-0.30	0.90	0.035	0.040	60-80 (415-550)	32 (220)	21	25
	1<t<2(50)	0.27								
	2<t<4(100)	0.29								
	4<t<8(200)	0.31								
	t<8	0.31								
A 515-65	1<t(25)	0.28	0.15-0.30	0.90	0.035	0.040	65-85 (450-585)	35 (240)	19	23
	1<t<2(50)	0.31								
	2<t<4(100)	0.33								
	4<t<8(200)	0.33								
	t<8	0.33								
A515-70	1<t(25)	0.31	0.15-0.30	0.90	0.035	0.040	70-90 (485-620)	38 (260)	17	21
	1<t<2(50)	0.33								
	2<t<4(100)	0.35								
	4<t<8(200)	0.35								
	t<8	0.35								

ASTM A516-78 PRESSURE VESSEL PLATES, CARBON STEEL, FOR INTERMEDIATE & HIGHER TEMP. SERVICE

Designation	Chemical Composition, %						Tensile Test			
	Thickness in (mm)	C% max	Si%	Mn% max	P% max	S% max	Tensile Strength Ksi (MPa)	Yield Strength Ksi (Mpa), min	Elongation, % min	
									GL=8 in	GL=2 in
A 516-55	T<1/2(13)	0.18	0.15-0.30	0.60-0.90	0.035	0.040	55-75 (380-515)	30(205)	23	27
	1<t<2(50)	0.20								
	2<t<4(100)	0.22								
	4<t<8(200)	0.24								
	t<8	0.26								
A 516-60	T<1/2(13)	0.21	0.15-0.30	0.60-0.90	0.035	0.040	60-80 (415-550)	32(220)	21	25
	1<t<2(50)	0.23								
	2<t<4(100)	0.25								
	4<t<8(200)	0.27								
	t<8	0.27								
A 516-65	1<t/2(13)	0.24	0.15-0.30	0.85-1.20	0.035	0.040	65-85 (450-585)	35 (240)	19	23
	1<t<2(50)	0.26								
	2<t<4(100)	0.28								
	4<t<8(200)	0.29								
	t<8	0.29								
A 516-70	1<t/2(13)	0.27	0.15-0.30	0.85-1.20	0.035	0.040	70-90 (485-620)	38 (260)	17	21
	1<t<2(50)	0.28								
	2<t<4(100)	0.30								
	4<t<8(200)	0.31								
	t<8	0.31								



ABRASION RESISTANT PLATES

(AR Steel Plate) with superior forming, welding and wear characteristic. This steel plate, with its high Brinell Hardness (BHN) rating, is particularly suited to the mining equipments, earth moving equipment, are and aggregates processing, road target backstop and bullet trap application.

200 BRINEL WEAR RESISTANT STEELS

GRADE	CHEMICAL COMPOSITION						MECHANICAL PROPERTIES
	C% max	Mn% max	P% max	S% max	Si% max	CE max	
SAILHARD	0.23	1.6	0.050	0.050	0.50	--	HARDNESS - 200 BHN (MIN)
Al 0.10 max, Cr 0.65 max, Nb +V+Ti 0.15 max							

400 BRINEL WEAR RESISTANT STEELS

	CHEMICAL COMPOSITION IN %											Typical Values			
	C	SI	P	S	Mn	Ni	Cr	Mo	B	Ai	Ti	Hardness HB	Ys Mpa	UTS Mpa	E %
FORA 400	0.20	0.005	1.030		0.02	0.8	1.00	0.30	0.005			870-430	1100	1350	13
HARDDOX 400	0.20	0.70	0.0025		1.6	1	0.8	0.8	0.005			360-440	1000	1250	10
RAEX 400	0.20	0.70	0.030	0.015	1.7	0.7	1.5	0.5				370-430	1000	1250	10
X AR 400	0.20	0.70	0.030		1.7	0.8	1.5	0.5	0.005			360-430	1000	1300	11
BRINAR 400	0.18	0.50	0.015	0.005	1.40	1.2	1.5	0.60		0.015		340-440	900	1200	12
DILLIDUR 400	0.20	0.70	1.030		1.7	0.7	1	0.5	0.005			340-430	1000	1250	10
DUROSTAT 400	0.18	0.60	0.025	0.010	2.10		1.00	0.50	0.005		0.050	340-440	1000	1250	10

500 BRINEL WEAR RESISTANT STEELS

	CHEMICAL COMPOSITION IN %											Typical Values			
	C	SI	P	S	Mn	Ni	Cr	Mo	B	Ai	Ti	Hardness HB	Ys Mpa	UTS Mpa	E %
FORA 500	0.28	0.50	0.025	0.010	1.30		0.60	0.05	0.005		0.050	460-540	1200	1550	8
HARDDOX 500	0.30	0.70	0.025	0.010	1.6	1	1	0.6	0.005			460-540	1200	1550	8
RAEX 400	0.30	0.70	0.030	0.015	1.7	0.7	1.5	0.5	0.005			450-530	1250	1600	8
X AR 500	0.30	0.70	0.035	0.015	1.70	0.8	1	0.50	0.005			450-530	1250	1600	8
BRINAR 500	0.25	0.40	0.015	0.005	1.50	0.30	1.60	0.7		0.015		430-540	1250	1550	12
DILLIDUR 500	0.30	0.50	0.025	0.010	1.6	1.0	1.5	0.5	0.005			470-530	1300	1650	8
DUROSTAT 500	0.30	0.50	0.025	0.010	2.10		1.00	0.50	0.005		0.050	460-540	1200	1550	8



NEW TECH STEELS (INDIA)

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Valves



GLOBE VALVE

BS 5352 / BS 6755 / BS 1873 / BS 6755
 ASME B 16.34 DIN 3356
STAINLESS STEEL (BAR STOCK)
 RATING : 150# / 300#
 SIZE : 8 MM TO 100 MM
FORGED CARBON STEEL / S. STEEL
 RATING : 150# / 300# / 800# / 1500#
 SIZE : 15 MM TO 400 MM
CAST CARBON STEEL / S. STEEL, ALLOY STEEL
 RATING : 150# / 300# / 600# / 900#
 SIZE : 15 MM TO 400 MM
CAST IRON
 RATING : 125 / 150#
 SIZE : 25 MM TO 600 MM

	FORGED RANGE	CAST IRON
DESIGN (Mfg.) STD.	BS 5352	BS 1873 / DIN 3356
TEST (INSPECTION) STD.	BS 6755	BS 6755

BS 1414 / BS 5352 / API 600
 API 602 / API 6D / ASME B
 16.34 / API 598



GATE VALVE

STAINLESS STEEL (BAR STOCK)
 RATING : 150# / 300#
 SIZE : 8 MM TO 100 MM
FORGED CARBON STEEL / S. STEEL
 RATING : 150# / 300# / 800# / 1500#
 SIZE : 15 MM TO 50 MM
CAST CARBON STEEL / S. STEEL
ALLOY STEEL
 RATING : 150# / 300# / 800# / 900#
 SIZE : 25 MM TO 600 MM
CAST IRON
 RATING : 125# / 150#
 SIZE : 25 MM TO 600 MM

	FORGED RANGE	CAST IRON
PRESS. / TEMP. RATING	ANSI 16.34 / API 6D	ANSI B 16.34
DESIGN (Mfg.) STD.	API 602 / BS 5352	API 600 / API 6D
TEST (INSPECTION) STD.	API 598 BS 6755	API 598 / API 6D

BS 6755 / BS 1868
 ASME B 16.34 / API 6D



NON RETURN VALVE

STAINLESS STEEL (BAR STOCK)
 RATING : 150# / 300#
 SIZE : 8 MM TO 100 MM
FORGED CARBON STEEL / S. STEEL
 RATING : 150# / 300# / 800# / 1500#
 SIZE : 15 MM TO 400 MM
CAST CARBON STEEL / S. STEEL ALLOY STEEL
 RATING : 150# / 300# / 600# / 900#
 SIZE : 15 MM TO 400 MM
CAST IRON
 RATING : 125 / 150#
 SIZE : 25 MM TO 600 MM

	FORGED RANGE	CAST IRON
DESIGN (Mfg.) STD.	BS 5352	BS 1873 / DIN 3356
TEST (INSPECTION) STD.	BS 6755	BS 6755



BUTTERFLY VALVE

API 609 / BS 5155 / IS 13095 / CAST IRON
 OPERATING : LEVER / MANUAL GEAR
 DESIGN : SURE SEAL / REPLACEABLE
 RUBBER LINING
 ENDS : WAFER TYPE / DOUBLE FLANGE
 SIZE : LUG TYPE
 DESIGN : 40 MM TO 500 MM
 OPERATION : OFFSET DISC
 SIZE : LEVER / GEAR (ISI MARKED)
 350 MM TO 1200 MM
CAST CARBON STEEL
 DESIGN : SURE SEAL / REPLACEABLE
 ENDS : RUBBER LINING
 SIZE : WAFER TYPE
 40 MM TO 400 MM
STAINLESS STEEL
 DESIGN : OFFSET DISC.
 OPERATION : LEVER / MANUAL / GEAR
 ENDS : WAFER TYPE
 SIZE : 40 MM TO 400 MM
 Mfg. STD : BS 5155 / AWWA C 504 API 609 / IS 13095
 TEST STD. : BS 5155 / BS 6755



SPHERICAL DISC VALVE

BODY & DISC : CF8/CF8M/C.I. / WCB
 SEAT : PTFE (Available EPDM
 Metal to Metal)
 GLAND : PTFE
 BEARING : PTFE
 OPER. TEMP. : -50°C to 38°C
 -50°C to 220°C (Soft Seat)
 -50°C to 600°C (M to M)
 HANDLE : M.S. / S. STEEL
 PLATE MOUNTING : NAMUR / STANDARD
 OPERATION : HAND LEVER TYPE
 WORM GEAR BOX TYPE
 PNEUMATIC ACTUATED
 ELECTRICAL ACTUATED
 SIZE : 40 MM TO 900 MM



STRAINER

CAST CARBON STEEL / S. STEEL
 DESIGN : Y-TYPE (PN 40 / DIN 3356 / BS 1873
 SIZE : 15 MM TO 300 MM
STAINLESS STEEL
 DESIGN : Y-TYPE (150#)
 ENDS : SCREWED / SOCKET WELD
 SIZE : 15 MM TO 80 MM
CAST IRON
 DESIGN : Y-TYPE (150#)
 ENDS : SCREWED / FLANGED
 SIZE : 15 MM TO 300 MM
 DESIGN : POT TYPE
 ENDS : FLANGED
 SIZE : 40 MM TO 300 MM
 DESIGN : T-TYPE (DIRT BOX)
 ENDS : FLANGED
 SIZE : 25 MM TO 300 MM



DIN GLOBE VALVE

BS 6755 / BS 1873 / ASME B 16.34 / DIN 3356
CAST CARBON STEEL / S. STEEL
 RATING : PN 40 / PN 64
 SIZE : 25 MM TO 300 MM
 DESIGN STD : BS 1873 / DIN 3356
 TEST (INSPECTION) STD : BS 6755
CAST IRON
 RATING : PN 10 / PN 16
 SIZE : 15 MM TO 250 MM



DIN NON RETURN VALVE

CAST CARBON STEEL S. STEEL / ALLOY STEEL
 RATING : PN 40 / PN 64
 SIZE : 15 MM TO 300 MM
CAST IRON
 RATING : PN 10 / PN 16
 SIZE : 15 MM TO 250 MM



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GLOBE VALVE

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 SIZE : 15 MM TO 400 MM
CAST CARBON STEEL / S. STEEL, ALLOY STEEL
 RATING : 150# / 300# / 600# / 900#
 SIZE : 15 MM TO 400 MM
CAST IRON
 RATING : 125 / 150#
 SIZE : 25 MM TO 600 MM

	FORGED RANGE	CAST IRON
DESIGN (Mfg.) STD.	BS 5352	BS 1873 / DIN 3356
TEST (INSPECTION) STD.	BS 6755	BS 6755

BS 1414 / BS 5352 / API 600
 API 602 / API 6D / ASME B
 16.34 / API 598



GATE VALVE

STAINLESS STEEL (BAR STOCK)
 RATING : 150# / 300#
 SIZE : 8 MM TO 100 MM
FORGED CARBON STEEL / S. STEEL
 RATING : 150# / 300# / 800# / 1500#
 SIZE : 15 MM TO 50 MM
CAST CARBON STEEL / S. STEEL
ALLOY STEEL
 RATING : 150# / 300# / 800# / 900#
 SIZE : 25 MM TO 600 MM
CAST IRON
 RATING : 125# / 150#
 SIZE : 25 MM TO 600 MM

	FORGED RANGE	CAST IRON
PRESS. / TEMP. RATING	ANSI 16.34 / API 6D	ANSI B 16.34
DESIGN (Mfg.) STD.	API 602 / BS 5352	API 600 / API 6D
TEST (INSPECTION) STD.	API 598 BS 6755	AI 598 / API 6D

NON RETURN VALVE

BS 6755 / BS 1868
 ASME B 16.34 / API 6D



STAINLESS STEEL (BAR STOCK)
 RATING : 150# / 300#
 SIZE : 8 MM TO 100 MM
FORGED CARBON STEEL / S. STEEL
 RATING : 150# / 300# / 800# / 1500#
 SIZE : 15 MM TO 400 MM
CAST CARBON STEEL / S. STEEL ALLOY STEEL
 RATING : 150# / 300# / 600# / 900#
 SIZE : 15 MM TO 400 MM
CAST IRON
 RATING : 125 / 150#
 SIZE : 25 MM TO 600 MM

	FORGED RANGE	CAST IRON
DESIGN (Mfg.) STD.	BS 5352	BS 1873 / DIN 3356
TEST (INSPECTION) STD.	BS 6755	BS 6755

BUTTERFLY VALVE



API 609 / BS 5155 / IS 13095 / CAST IRON
 OPERATING : LEVER / MANUAL GEAR
 DESIGN : SURE SEAL / REPLACEABLE
 RUBBER LINING
 ENDS : WAFER TYPE / DOUBLE FLANGE
 SIZE : LUG TYPE
 DESIGN : 40 MM TO 500 MM
 OPERATION : OFFSET DISC
 SIZE : LEVER / GEAR (ISI MARKED)
 350 MM TO 1200 MM
CAST CARBON STEEL
 DESIGN : SURE SEAL / REPLACEABLE
 ENDS : RUBBER LINING
 SIZE : WAFER TYPE
 40 MM TO 400 MM

STAINLESS STEEL
 DESIGN : OFFSET DISC.
 OPERATION : LEVER / MANUAL / GEAR
 ENDS : WAFER TYPE
 SIZE : 40 MM TO 400 MM
 Mfg. STD. : BS 5155 / AWWA C 504 API 609 / IS 13095
 TEST STD. : BS 5155 / BS 6755

SPHERICAL DISC VALVE



BODY & DISC : CF8/CF8M/C.I. / WCB
SEAT : PTFE (Available EPDM
 Metal to Metal)
GLAND : PTFE
BEARING : PTFE
OPER. TEMP. : -50°C to 38°C
 -50°C to 220°C (Soft Seat)
 -50°C to 600°C (M to M)
HANDLE : M.S. / S. STEEL
PLATE MOUNTING : NAMUR / STANDARD
OPERATION : HAND LEVER TYPE
 WORM GEAR BOX TYPE
 PNEUMATIC ACTUATED
 ELECTRICAL ACTUATED
SIZE : 40 MM TO 900 MM

DIN GLOBE VALVE



BS 6755 / BS 1873 / ASME B 16.34 / DIN 3356
CAST CARBON STEEL / S. STEEL
 RATING : PN 40 / PN 64
 SIZE : 25 MM TO 300 MM
 DESIGN STD : BS 1873 / DIN 3356
 TEST (INSPECTION) STD : BS 6755
CAST IRON
 RATING : PN 10 / PN 16
 SIZE : 15 MM TO 250 MM

STRAINER

CAST CARBON STEEL / S. STEEL
 DESIGN : Y-TYPE (PN 40 / DIN 3356 / BS 1873
 SIZE : 15 MM TO 300 MM
STAINLESS STEEL
 DESIGN : Y-TYPE (150#)
 ENDS : SCREWED / SOCKET WELD
 SIZE : 15 MM TO 80 MM
CAST IRON
 DESIGN : Y-TYPE (150#)
 ENDS : SCREWED / FLANGED
 SIZE : 15 MM TO 300 MM
 DESIGN : POT TYPE
 ENDS : FLANGED
 SIZE : 40 MM TO 300 MM
 DESIGN : T-TYPE (DIRT BOX)
 ENDS : FLANGED
 SIZE : 25 MM TO 300 MM



DIN NON RETURN VALVE



CAST CARBON STEEL S. STEEL / ALLOY STEEL
 RATING : PN 40 / PN 64
 SIZE : 15 MM TO 300 MM
CAST IRON
 RATING : PN 10 / PN 16
 SIZE : 15 MM TO 250 MM



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KNIFE GATE VALVE

CAST CARBON STEEL
 RATING : 150#
 ENDS : FLANGED / LUGGED TYPE
 SIZE : 50 MM TO 600 MM

STAINLESS STEEL
 RATING : 150 #
 ENDS : FLANGED / LUGGED TYPE
 SIZE : 50 MM TO 600 MM

CAST IRON
 RATING : 150 #
 ENDS : FLANGED / LUGGED TYPE
 SIZE : 50 MMT O 600 MM



Wafer Type Check Valve

CARBON STEEL
 SIZE : 25 MM TO 600 MM
 ENDS : WAFER TYPE

STAINLESS STEEL
 SIZE : 25 MM TO 600 MM
 ENDS : WAFER TYPE



INVESTMENT CASTING BALL VALVE

MCC : WCB / CF8 CF8M CF3 / CF3M
 DESIGN : 1 PC / 2PC / 3 PC
 ENDS : SCREWED / SOCKET WELD / FLANGED
 SIZE : 6 MM TO 100 MM
 DESIGN STD : BS 5351 / API 6D
 TEST STD : BS 6755 / API 6D



PULP VALVE

CAST IRON
 END : WAFER TYPE
 OPERATION : MANUALLY / PNEUMATICALLY
 SIZE : 40 MM TO 500 MM



FORGED BALL VALVE

FORGED CARBON STEEL / S. STEEL
 DESIGN : 3 PC / BS 5351 / API 609
 ENDS : SCREWED / SOCKET WELD
 SIZE : 15 MM TO 50 MM
 TEST (INSPECTION) STD : BS 6755 / API 607 / API 6D



FORGED BALL VALVE

CAST IRON
 DESIGN : 1 PC / 3 PC
 ENDS : SCREWED / SOCKET WELD / FLANGED
 SIZE : 15 MM TO 100 MM

CARBON STEEL / CAST CARBON STEEL / POLYPROPYLENE
 ENDS : SCREWED / SOCKET WELD / FLANGED
 SIZE : 15 MM TO 400 MM

STAINLESS STEEL
 MCC : SS 304 / 316 (BAR STOCK)
 DESIGN : 1 PC / 3 PC
 ENDS : SCREWED / SOCKET WELD / FLANGED
 SIZE : 6 MM TO 100 MM



INVESTMENT CASTING STEAM TRAP

STAINLESS STEEL
 ENDS : SCREWED / SOCKETWELD
 SIZE : 5 MM TO 25 MM
 MAX INLET : 35KG / CM² AT 425°C
 PRESSURE
 MIN. PRESS. : 0.25 KG/CM²



DIAPHRAGM VALVE

CAST IRON / S S 304 / 316
 LINING : NATURAL RUBBER / EBONITE / NEOPRENE / NITRILE
 SIZE : 15 MM TO 200 MM
 ENDS : SCREWED / FLANGED / TRICLOVER



C. Steel Straight, Pattern Spring Loaded Bolted Bonnet SAFETY VALVE

BODY : ASTM A216 Gr. WCB
 TRMS : 13Cr STEEL/18 Cr 8 Ni
 SPRING : SPRING STEEL
 MAX. SET PRESS : 14 KG. CM²
 ENDS : FLANGED TO DIN 2545
 HYD-TEST PRESS : BODY : 854 Psig (60KgCm²)
 SIZE RANGE : 25 MM TO 150 MM



TUBE CLASS

CARBON STEEL
 MCC : EN 8 (150#)
 SIZE : 15 MM TO 100 MM

STAINLESS STEEL
 MOC : SS 304 / 316 (150#)
 SIZE : 15 MM TO 150 MM

INVESTMENT CASTING
 MOC : CF8 / CF8M (150#)
 SIZE : 24MM TO 150 MM



Vent Valve

Available in stainless steel and carbon steel material of construction



Globe & Gate Valve

M.O.C: SS316L, SS316, SS304, A105, F91, F22

Size : 1/2" to 6"

End Conn.: SW/ NPT/ BSP/ BSPT

Pressure Range: 150#, 800#, 1500#, 2500#, 4500#

Check Valve

Metal Industrial Corporation Non-Return Valve are designed with large orifice for maximum flow and low-pressure drop. These provide reliable operation of gases or liquids for set pressure upto 6,000 psi, with various material construction and cracking pressure.



Air Header

Manufactured in stainless steel and carbon steel with various end connections.

Condensate Pot

Manufactured in stainless steel and carbon steel with various NB pipes of Sch 40/80.





Sampling Cylinder

Available in stainless steel and carbon steel NB pipes of Sch 40/80 with various items capacity.

Syphone

Manufactured from various NB pipes of Stainless Steel and carbon steel with various end connections in coil or 'U' type.



Thermowell

Made in various MOC to suit application with fabricated or bar stock design having end connection as thread or flange and construction straight, tapered or stepped, Hydro Pneumatic test, good concentricity, radiography and ultrasonic test ensure reliable products.

Over Load Protector

Protect pressure instrument from over pressure.



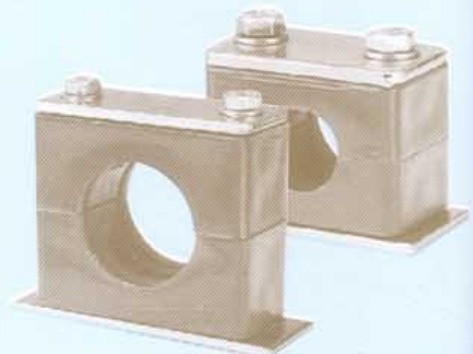
Pulsation Dampener

Reduce impact of process pulsation impact on pressure instrument.



Pipe Clamp

Single and double tube clamps in light and heavy duty for mounting tube.





Compression Tube Fitting

Gaugeability, Interchangeability and Corrosion resistance are the features of Metal Industrial Corporation Compression Tube Fittings, which provide a leak proof, torque free seal at all tubing connections in instrumentation and process tubing.

Precision Pipe Fitting

Threaded in-line pipe fittings are made of various material depending upon application, Taper threads provide self sealant. In parallel thread 'O' rings are recommended.



Tube Fittings

Our Metal Industrial Corporation's Single Ferrule & Double Fittings are designed / manufactured for process & instrumentation tubing which provide a leak proof torque free seal at all tubing connection & eliminate Costly & Hazardous leaks.

Material : Stainless Steel, Carbon Steel, Brass & Nickel Alloys.

Tube OD : 1/16" to 1" (3mm to 25.4mm)

End Connection : 1/16" to 1" (NPT, BSP, BSPT, Socket Weld & Plain End)

Working Pressures : Upto 2000 to 6000 PSI



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Needle & Globe Valves

For Effective leak proof, safe & Most Reliable Connection Choose Metal Industrial Corporation Instrumentation Needle Valve.

Material : Stainless Steel, Brass Extruded & Forged, Forged Carbon Steel & Alloy Steel & Gun Metal Casting.

Size : 1/8" to 1"

Type : Male Female Thread Screwed, Tube OD, Socket Weld

Pressure Rating : Varies as per M.O.C. & Media i.e. upto 6000 PSI Hydraulically & 3000 PSI Pneumatically.



Manifold Valves

Designed to isolate / drain / Calibrate pressure gauge, pressure transmitters & differential pressure transmitter. They are offered in two mounting arrangements viz. direct mounting and line mounting remote from instrument i.e. 'T' Type & 'H' Type.

Material : Stainless Steel, Brass Extruded & Forged, Forged Carbon Steel, & Alloy Steel & Gun Metal Casting.

Process End : 1/2" NPT (F) Optional drain 1/4" (F) with plug, Female Pipe to Female Pipe to Flange Tube Fittings to Flange, Flange to Flange

Working Pressures : Upto 6000 PSI

Range : 2 Way, 3 Way, 5 Way



Ball Valves

Design for application on instrument Lines, Gas Sampling Lines, Pneumatic systems, pilot Plants, Analyzer Labs etc. These valves performs of ON/OFF FUNCTION.

TYPE : 2/3/4/5 Way, 1 Piece, 2 Piece, 3 Piece Design, Quarter Turn, Half Turn, Full Turn i.e. L Port (90°), T Port (Full Turn)

Material : Stainless Steel, Brass Extruded & Forged, Forged Carbon Steel & Alloy Steel & Gun Metal Casting.

Connection : 1/8" to 1"

Pattern : Screwed Pipe, Socket Weld Type, Butt Weld Type & Flanged end, Tube OD Connection i.e. thread connection BSP, BSPT, NPT & as per ASA & BS specification

Pressure Rating : 0 to 2000 PSI Hydraulically & 0 to 300 PSI Pneumatically.





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FASTENERS



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

APPLICATIONS :

- ◆ IRON & STEEL PLANTS
- ◆ PETRO CHEMICAL PLANTS
- ◆ ACID & CHEMICAL INDUSTRIES
- ◆ MINES
- ◆ AUTOMOBILE INDUSTRIES
- ◆ HEAVY MACHINERIES
- ◆ DISTILLERIES
- ◆ CEMENT PLANTS
- ◆ ELECTRIC & ELECTRONIC INDUSTRIES
- ◆ SPACE CENTRES
- ◆ FERTILIZER INDUSTRIES
- ◆ FOOD INDUSTRIES
- ◆ OIL & GAS INDUSTRIES
- ◆ PAPER & PULP INDUSTRIES
- ◆ PHARMACEUTICALS
- ◆ POWER SECTORS
- ◆ REFINERIES
- ◆ SUGAR MILLS
- ◆ TEXTILE INDUSTRIES

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NEW TECH STEELS (INDIA)

Stockists & Suppliers of : S.S. STEEL, COILS, PLATES, PATTAS,
PIPES, (ERW, SEAMLESS) FITTINGS, RODS, COPPER, BRASS, ALUMINIUM, MONEL, NICKEL,
TITANIUM & ALL FERROUS & NON-FERROUS METALS

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