RAHUL STEEL INDIA

IN ISO 9001:2015 CERTIFIED COMPANY

Manufacturers, Stockist & Suppliers of:
Stainless Steel, Carbon Steel, Alloys Steel,
Pipes, Tubes, Sheet, Plates Flanges & Fittings
& All Industrial Raw Materials

- MSL
- JINDAL
- TATA
- SURYA
- ASIAN
- APOLLO
- ISMT
- BHUSHAN

www.rahulsteelindia.in

APPLICATIONS

01 PHARMACEUTICALS

02 & CERAMIC PLANT

03 IRON & STEEL PLANT

04 PETRO CHEMICAL PLANT

05 ACID & CHEMICAL INDUSTRIES

06 CIVIL CONSTRUCTION

07 DAIRY INDUSTRIES

08 AUTOMOBILE INDUSTRIES

09 HEAVY MACHINERIES

10 TEXTILE INDUSTRIES

11 POWER SECTORS

12 REFINERIES

13 FOOD INDUSTRIES

14 PAPER & PULP INDUSTRIES

15 SUGAR MILLS

& MANY MORE....

rahulsteel55@yahoo.com | inforsi646@gmail.com

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ORGANISATION SETUP

Name of Firm	:	**RAHUL STEEL INDIA**
Office	:	Plot No. 03/2467, Gate No. 02, Opp. Anugraha Tower, Basant Vihar Colony, Gondwara, Raipur C.G.
E-mail Id	:	rahulsteel55@yahoo.com inforsi646@gmail.com
Website	:	www.rahulsteelindia.in
Year of Establishment	:	2012
ISO Certificate	:	ISO 9001:2015
GST No.	:	22AJUPC6618F1ZA
Pan No.	:	AJUPC6618F
Bord of Proprietor	:	Dalaram R Choudhary
Management Head	:	**Mr.Kishan Choudhary (Management Head)** +91 90390 86732 **Mr.Saroj Das (Accounts Head)** +91 97700 84041 **Mr.Shankar Choudhary (Sales Marketing)** +91 92130 05852 **Mr.Shreeram Choudhary (Sales Marketing)** +91 98790 86732
Head Office	:	Mumbai, India
Branch Office	:	Ahmedabad, India

RAHUL STEEL INDIA

AN ISO 9001:2015 CERTIFIED COMPANY

Tel: 0771- 4053986 | M.: +91 90390 86732 | 98790 86732

Respected Customer,

Sub : Registration of Our Firm in your approved list of vendor For Suppliers of all Type of Ferrors & Non-ferrous Metals.

We carry this moments to present ourselves as one of the leading and largest Importers, Stockist and Suppilers of all types of Ferrous and Non-Ferrous Metals, We are also manufacturers of stainless Steel pipes in all grades, Shapes and Sizes.

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

Any Registration formalities to be fulfiilled, please feel free to correspond, it not only be our pleasure but 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, RAHUL STEEL INDIA

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PRODUCT RANGE

Dear Sir,

We take this opportunity to introduce ourselves as on of the leading IMPORTERS, STOCKIST & SUPPLIERS of the following materials.

1. **TATA/ZENITH/JINDAL, M.S. & G.I. ERW** Pipes as per IS 1239 & IS 3589 Fe 330/410.

2. **TATA / MSL / ISMT / IMPORTED,** origin C.S. Seamless Pipes Pipes confirming to A 106 grade B/SA 179/DIN 17175/A - 333 grade 6/API-5L and ERW / Seamless Boiler tubes as per BS 3059.

3. **C.S. / F.C.S. (A234 / A105/ G.I. (IS))** Pipe - Fitting (B.W. / S.W. / Screwed) and C.S. (IS 2062) / F.C.S. (A105)Flanges (S.O. / Blind / S.W. / Weldneck IBR & Non IBR.

4. **S.S.** (304 / 316/ 304L / 316L) Welded & Seamless pipe, Tubes Confirming to A 312 / A 213 & Plates.

5. **S.S.** (304 / 316) Welded & Seamless pipe-fittings (B.W. / S.W. / Screwed) confirming to A 403/ A 182F & Flanges confirming to A240 / A 182F.

6. Polyprophylene & H.D. P.E. Pipe-fitting & Flanges, Polyprophylene moulded ball valves, non return valves, Foot Valves, Sight Glass & Diaphragm Valves.

7. All types of ball valves in C.I. / C.C.S. / C.S.S. constructions & S.S. Sold bar stock gate, globe, check, Needle, Safety Relief, Foot, Float & Flush Bottom Valves, C.I. Tyrose Valves, C.I. Wafer Type check valve, C.I. Rubberlined Flap type Non Return valves, & Diaphragm Valves, C.I. / C.C.S. Stairners, C.I. Butterfly Valves, C.I. Pulp Valves, C.I. Pinch valves, C.I. Lubricating plug valves & C.I. Foot Valves.

8. C.C.S. / C.S.S. / F.C.S. / F.S.S. Gate, Globe & Non return valves, M.S. & S. S. Sight flow indicator, C.I. Float/Bucket type steam trap & thermic fluid valves.

9. **"H GURU" & "FIEBIG"** pressure, vacuum & compound gauges & Weather proof diaphragm gauges/

10. **"H GURU" & "FIEBIG"** Vapour pressure & mercury in steel temprature gauges and suitable thermowells.

ALL THE ABOVE SAID ITEMS WE WILL BE PRODUCED MANUFACTURERS, IBR & GOVT. LAB TEST CERTIFICATES UNDER APPROVEED BY ANY THIRD PARTY INSPECTION AGENCIES.

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QUALITY OF PRODUCT

ASTM- AMERICAN SOCIETY FOR TESTING AND MATERIALS

A 53	Welded and Seamless Steel Pipe.
A 106	Seamless Carbon Steel Pipe for High-temperature Service
A 120	Back and Hote-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses.
A 135	Electric Resistance Welded Steel Pipe.
A 161	Seamless Low-carbon and Carbon-Molybdenum Steel Tubes for Refinery Service.
A 178	Electric Resistance Welded Carbon Steel Boiler Tubes.
A 179	Seamless Cold-down low-Carbon Steel Heat-Exchanger and Condenser Tubes.
A 192	Seamless Carbon Steel Boiler Tubes for high Pressure Service.
A 199	Seamless Cold-drawn Intermediate Alloy-Steel Heat-Exchanger and Condenser Tubes.
A 200	Seamless ntermediate Alloy-STeel Tubes for Refinery Service.
A 209	Seamless Carbon-Molybdenum Alloy-Steel Boler and Super-Heater Tubes.
A 210	Seamless Meium-Carbon Steel Boiler and Superheater Tubes.
A 211	Spiral Welded Steel of Iron Pipe.
A 213	Seamless Ferrtic and Austenitic Alloy Steel Boiler, Super-Heater and Heat-Exchanger Tubes.
A 214	Electric-Resistance-Welded Carbon Steel Heat -Exchanger and Condenser Tubes.
A 226	Electric-Resistance Welded Carbon Steel Boiler and SuperHeater Tubes for High-Pressure Service.
A 249	Welded Austentic Steel Boiler, Super Heater, Heat-Exchanger and Condenser Tubes.
A 250	Electric-Resistance-Welded Carbon-Molybdenum Alloy-Steel Boiler and Super Heater Tubes.
A 252	Welded and Seamless Steel Pipe Piles.
A 268	Seamless and welded perritic Steel Tubing for general Service.
A 269	Seamless and welded Austenitic Stainless Steel tubing for general service.
A 270	Seamless and welded Austenitic Stainless Steel Sanitary tubing
A 271	Seamless Austenitic Chromium-Nicket Steel Tubes for Refinery Service.
A 312	Seamless and Welded austenitic Stainless Steel Pipe.
A 333	Seamless and welded Steel Pipe for low Tempreture Service.
A 334	Seamless and Welded Carbon and Alloy-Steel Tubes for Low-Tempreture Service.
A 335	Seamless Ferritic Alloy Steel Pipe for High-Tempreture Service.
A 376	Seamless Austenitic Steel Pipe For High-Tempreture Central-Station Service.

BS- BRITISH STANDARDS

1367	Steel Tubes and Tubulare (Suitable for Screwing to BS 21 Pipe Threads)
3059	Steel Boiler and Super heater Tubes.
1139	Steel Tubes for Scaffolding.
1775	Steel Tubes for Mechanical. Structural and General Engineering Purposes.
3601	Steel Pipes and Tubes for pressure purposes, Carbnon Steel Ordinary Duties.
3602	Steel Pipes and tubes for pressure Purposes carbon Steel High Duties.
3603	Steel Pipes and Tubes for Pressure Purposes Carbon and Alloy Steel Low Tempreture Duties.
3604	Steel Pipes and Tubes for Pressure Purposes Low and Medium Alloy Steel.
3605	Steel Pipes and Tubes for Pressure Purposes Austenitic Medium Alloy Steel.

JIS- JAPANESE INDUSTRIAL STANDARDS

G 3452	Carbon Steel Pipes for Ordinary Piping.
G 3454	Carbon Steel Pipes for Pressure Service.
G 3455	Carbon Steel Pipe for High Pressure Service.
G 3456	Carbon Steel Pipes for High Temreture Service.
G 3457	Electric Arc Welded Carbon Steel Pipe.
G 3458	Alloy Steel Pipes.
G 3459	Austenitc Stainless Steel Pipes.
G 3460	Steel Purpose Low Temprture Serice.
G 3461	Carbon Steel Boiler and Heat Exchanger Tubes.
G 3462	Alloy Steel Boler And Heat Exchanger Tubes.
G 3463	Stainless Steel Boiler an Heat Echanger Tubes.
G 3464	Steel Heat Exchanger Tubes for low Tempretures Services.
G 3444	Carbon Steel tubes for General Structual Purposes.
G 3445	Carbon Steel Tubes for Machine Sturctural Purposes.
G 3441	Alloy Steel Tubes for Structure Purposes.
G 5525	Steel Pipe Piles.
G 3465	Seamless Steel Tubes for Drilling (Drill Rods)
G 3429	Seamless Steel Tubes for high pRessure Gas Cylinder.
G 3442	Galvanized Steel Pipe for Water Sevice.
G 3443	Coating Steel Pipe for Water Service.
G 3451	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 Certifcate Astm 333 Gr. 6 & Astm 335 P-11, P5, P22

Carbon Steel Seamless Pipes	ASTM A 106 Grade B
Carbon Steel Seamless Boiler Tubes	BS/3059/68/Part I CDS ST-33
	BS/3059/68/Part/HFS ST-33
Seamless Boiler Tubes	ASTM 210 A-1/DIN 17175/ ST 35-8
ERW Boiler Tubes	BS/3059/68 Part I ERW ST-33
CDW Boiler Tubes	BS/3059/68 Part I CDW ST-33
Alloy Steel Seamless Pipes	ASTM 335 P-1, P-5, P-11, P-22
Alloy Steel Seamless Tubes	ASTM 213 T-11, T-22, ASTM 209 T-1 Din 17175 Grade 3 15 MO3
Low Tempreture Seamless Pipes	ASTM A 333 Grade 6
Low Tempreture Seamless Tubes	ASTM A 334 Grade 1
Heat Exchanger Tubes	ASTM A 179
API Line Pipe	API 5 L Grade B
MS ERW Pipes	IS 1239 Part I-1979
Hot Deep Galvanised Pipes	IS 1239 Part I-1979
Big Diameter ERW Pipes	IS3589
M.S. Square & Rectangula Section	ISS 4923 / ASTM - A500
M.S. General Engineering Tubes	BSS / 1775, IS 3074 ISS 4711, ISS 3601

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BLACK & GALVANIZED STEEL TUBES CONFORMING TO

IS: 1239 (I)

Nominal Bore(NB)		Class	Outside Diameter		Thickness	SWG	Mass of Black Tube	
			MIN	MAX			P/E	S/S
mm	inches		mm	mm	mm		kg/mm	kg/mm
		L	21.00	21.40	2.00	14	0.947	0.956
15	(½")	M	21.00	21.80	2.60	12	1.21	1.22
		H	21.00	21.80	3.20	10	1.44	1.45
		L	26.40	26.90	2.30	13	1.38	1.39
20	(¾")	M	26.50	27.30	2.60	12	1.56	1.57
		H	26.50	27.30	3.20	10	1.87	1.88
		L	33.20	33.80	2.60	12	1.98	2.00
25	(1")	M	33.30	34.20	3.20	10	2.41	2.43
		H	33.30	34.20	4.00	8	2.93	2.95
		L	41.90	42.50	2.60	12	2.54	2.57
32	(1¼")	M	42.00	42.90	3.20	10	3.10	3.13
		H	42.00	42.90	4.00	8	3.79	3.82
		L	47.80	48.40	2.90	11	3.23	3.27
40	(1½")	M	47.90	48.80	3.20	10	3.56	3.60
		H	47.90	48.80	4.00	8	4.37	4.41

Nominal Bore(NB)		Class	Outside Diameter		Thickness	SWG	Mass of Black Tube	
			MIN	MAX			P/E	S/S
mm	inches		mm	mm	mm		kg/mm	kg/mm
		L	59.6	60.2	2.9	11	4.08	4.15
50	(2")	M	59.7	60.8	3.6	9	5.03	5.10
		H	59.7	60.8	4.5	7	6.19	6.26
		L	75.2	76.0	3.2	10	5.71	5.83
65	(2.5")	M	75.3	76.6	3.6	9	6.42	6.54
		H	75.3	76.6	4.5	7	7.93	8.05
		L	87.9	88.7	3.2	10	6.72	6.89
80	(3")	M	88.0	89.5	4.0	8	8.36	8.53
		H	88.0	89.5	4.8	6	9.90	10.10
		L	113.0	113.9	3.6	9	9.75	10.10
100	(4")	M	113.1	115.0	4.5	7	12.20	12.50
		H	113.1	115.0	5.4	5	14.50	14.80
125	(5")	M	138.5	140.8	4.8	6	15.90	16.40
		H	138.5	140.8	5.4	5	17.90	18.40
150	(6")	M	163.9	166.5	4.8	6	18.90	19.50
		H	163.9	166.5	5.4	5	21.30	21.90

ERW PIPES FOR WATER & SEWAGE CONFORMING TO IS: 3589

SIZE		CONVENTIONAL MASS PER UNIT LENGTH (kg/m)											
NB	OD	WALL THICKNESS (mm)											
mm	mm	4.00	4.30	4.65	4.85	5.00	5.40	5.60	6.00	6.35	7.00	8.00	9.50
150	168.30	16.21	17.39	18.77	19.55	20.13	21.69	-	24.01	25.36	27.84	-	-
175	193.70	18.71	20.08	21.68	22.59	23.27	25.07	-	27.77	29.34	32.23	36.63	-
200	219.10	21.22	22.78	24.59	25.62	26.40	28.46	29.48	31.53	33.31	36.61	41.65	49.10
250	273.10	26.54	28.50	30.78	32.08	33.06	35.65	36.94	39.52	41.77	45.93	52.30	61.75
300	323.90	31.55	33.89	36.61	38.16	39.32	42.41	43.96	47.04	49.73	54.70	62.32	73.65
350	355.60	34.68	37.25	40.24	41.95	43.23	46.63	48.33	51.73	54.69	60.18	68.57	81.08
400	406.40	-	-	-	-	-	53.40	55.35	59.24	-	68.94	78.60	92.98
450	457.0	-	-	-	-	-	60.14	62.34	66.73	-	77.68	88.58	104.84
500	508.0	-	-	-	-	-	66.93	69.38	74.28	-	86.48	98.64	116.78

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

Weight : Light ± 5% Medium/Heavy : ± 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 tempreture for tubes for conveying steam

The maximum permissble Pressure and temperature for tubes with screwed and socketed joint shall be as fellows.

MAXIMUM PERMISSIBLE PRESSURE AND TEMPRETURE FOR TUBES WITH STEEL COUPLING OR SCREWED AND SOCKETED JOINTS

Nominal Bore	Maximum Permissible Pressure		Maximum Permissible Temperature
	N/mm^2	Kg/Cm^2	°C
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 mm	0.69	7.04	171
Over 125 mm upto and including 150 mm	0.50	5.10	160

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TOLERANCE

ASTM SPECIFICATION FOR TUBING & PIPEING

ASTM SPECIFICATION	ALLOWABLE ALLOWABLE OUTSIDE DIAMETER VARIATION MM VARIATION			WALL THICKNESS	TESTING
ASTM 213	Nominal Diameter	OVER	UNDER	%	
Seamless Feritic and Austenitic tubes	Under 25.4mm 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	+ 20% -0 +20% -0 +22% -0 +22% -0 +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 .1524 .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 PipeSize Inch	Out Side Diameter ASTM	Wall Thickness And Weight											
		Sch. 5S		Sch. 10S		Sch. 40S		Sch. 80S		Sch. 160S		Sch. xxx	
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
1¼"	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
1½"	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
2½"	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	21.369	15.24	28.68
3½"	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	28.863	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	160.230	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	0.304	0.372	0.441	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

DIAMENSION ANS B 36-10

Size of Pipes & Tubes			Nominal Thickness and weight													
			Number of Schedule													
			5S		10S		10		20		30		40		60	
Nominal		Outside in Inch.	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m
Inch.	DN															
1/8"	6	10.3	-	-	1.28	0.28	-	-	1.60	0.345	-	-	1.73	0.37	-	-
1/4"	8	13.7	-	-	1.65	0.49	-	-	2.00	0.580	-	-	2.24	0.63	-	-
3/8"	10	17.1	-	-	1.65	0.63	-	-	2.00	0.750	-	-	2.31	0.84	-	-
1/2"	15	21.3	1.65	0.81	2.11	1.00	-	-	2.30	1.070	-	-	2.77	1.27	-	-
3/4"	20	26.7	1.65	1.03	2.11	1.28	-	-	2.50	1.500	-	-	2.87	1.69	-	-
1"	25	33.4	1.65	1.29	2.77	2.08	-	-	3.00	2.240	-	-	3.38	2.50	-	-
1¼"	32	42.2	1.65	1.65	2.77	2.69	-	-	3.00	2.910	-	-	3.56	3.39	-	-
1½"	40	48.3	1.65	1.90	2.77	3.12	-	-	3.00	3.370	-	-	3.68	4.05	-	-
2"	50	60.3	1.65	2.38	2.77	3.94	-	-	3.00	4.263	-	-	3.91	5.44	-	-
2½"	65	73.0	2.11	3.70	3.05	5.26	-	-	4.00	6.486	-	-	5.16	8.63	-	-
3"	80	88.9	2.11	4.50	3.05	6.45	-	-	4.00	8.423	-	-	5.49	11.29	-	-
3½"	90	101.6	2.11	5.20	3.05	7.40	-	-	4.50	10.838	-	-	5.74	13.57	-	-
4"	100	114.3	2.11	5.81	3.05	8.34	-	-	4.50	12.555	-	-	6.02	16.07	-	-
5"	125	141.3	2.77	9.45	3.40	11.56	-	-	5.00	16.900	-	-	6.55	21.77	-	-
6"	150	168.3	2.77	11.31	3.40	13.82	-	-	6.35	24.150	-	-	7.11	28.26	-	-
8"	200	219.1	2.77	14.78	3.76	19.94	-	-	6.35	33.31	7.04	36.81	8.18	42.55	10.31	53.08
10"	250	273.0	3.40	22.62	4.19	27.83	-	-	6.35	41.75	7.80	51.01	9.27	60.29	12.70	81.52
12"	300	323.9	3.96	33.00	4.57	36.00	-	-	6.35	49.71	8.38	65.18	10.31	79.70	14.27	108.92
14"	350	355.6	3.96	34.23	4.78	41.18	6.35	54.69	7.92	67.90	9.53	81.25	11.13	94.55	15.09	126.71
16"	400	406.4	4.19	41.60	4.78	47.38	6.35	62.64	7.92	77.83	9.53	93.17	12.70	123.30	16.66	160.12
18"	450	457.2	4.19	46.83	4.78	53.18	6.35	70.60	7.92	87.75	11.13	122.43	14.27	155.87	19.05	205.83
20"	500	508.0	4.78	59.22	5.54	68.50	6.35	78.55	9.53	117.02	12.70	155.12	15.09	183.42	20.62	247.83
22"	550	558.8	4.78	63.75	5.54	73.81	6.35	86.50	9.53	129.01	12.70	171.01	-	-	22.23	294.25
24"	600	609.6	5.54	82.60	6.35	94.37	6.35	94.46	9.53	140.88	14.27	209.50	17.48	254.24	24.61	355.02
26"	650	660.4	-	-	-	-	7.92	127.43	12.70	202.85	-	-	-	-	-	-
28"	700	711.2	-	-	-	-	7.92	137.42	12.70	218.73	15.88	272.18	-	-	-	-
30"	750	762.0		-	-	-	7.92	147.36	12.70	234.64	15.88	292.06	-	-	-	-
32"	800	812.8		-	-	-	7.92	157.28	12.70	250.55	15.88	311.95	17.48	342.70	-	-
34"	850	863.6	-	-	-	-	7.92	167.20	12.70	266.46	15.88	331.83	17.48	364.58	-	-
36"	900	914.4	-	-	-	-	7.92	177.13	12.70	282.36	15.88	351.72	19.05	420.56	-	-

N.B. : thickness and weight "Standard" "Extra Song" & "Double Extra Strong" within swell edges have a correspondent Value in "schedule" for different thickness that suitable the weight can preceeds by following formula 24.66 (d/t/t)

DIAMENSION ANS B 36-10

		Nominal Thickness and weight													
		Number of Schedule													
80		100		120		140		160		Standard (STD)		Extra Strong		Double Ex. Strong	
Nominal in Inch.	Outside in Inch.	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m
2.41	0.47	-	-	-	-	-	-	-	-	1.73	0.37	2.41	0.47	-	-
3.02	0.80	-	-	-	-	-	-	-	-	2.24	0.63	3.02	0.80	-	-
3.20	1.10	-	-	-	-	-	-	-	-	2.31	0.84	3.20	1.10	-	-
3.73	1.62	-	-	-	-	-	-	4.78	1.95	2.77	1.27	3.73	1.62	7.47	2.55
3.91	2.20	-	-	-	-	-	-	5.56	2.90	2.87	1.69	3.91	2.20	7.82	3.64
4.55	3.24	-	-	-	-	-	-	6.35	4.24	3.38	2.50	4.55	3.24	9.09	5.45
4.85	4.47	-	-	-	-	-	-	6.35	5.61	3.56	3.39	4.85	4.47	9.70	7.77
5.08	5.41	-	-	-	-	-	-	7.14	7.25	3.68	4.05	5.08	5.41	10.15	9.56
5.54	7.48	-	-	-	-	-	-	8.74	11.11	3.91	5.44	5.54	7.48	11.07	13.44
7.01	11.41	-	-	-	-	-	-	9.53	14.90	5.16	8.63	7.01	11.41	14.02	20.39
7.62	15.27	-	-	-	-	-	-	11.13	21.35	5.49	11.29	7.62	15.27	15.24	27.68
8.08	18.63	-	-	-	-	-	-	-	-	5.74	13.57	8.08	18.63	-	-
8.56	22.32	-	-	11.13	28.32	-	-	13.49	33.54	6.02	16.07	8.56	22.32	17.12	41.03
9.53	30.94	-	-	12.70	40.28	-	-	15.88	49.11	6.55	21.77	9.53	30.94	19.05	57.43
10.97	42.56	-	-	14.27	54.20	-	-	18.26	67.56	7.11	28.26	10.97	42.56	21.95	79.22
12.70	64.64	15.09	75.92	18.26	90.44	20.62	100.92	23.01	111.27	8.18	42.55	12.70	64.64	22.22	107.88
15.09	95.97	18.26	114.70	21.44	133.00	25.40	155.09	28.58	172.33	9.27	60.29	12.70	81.52	25.40	155.09
17.48	132.04	21.44	159.86	25.40	186.91	28.58	208.00	33.32	238.68	9.53	73.78	12.70	97.43	25.40	186.91
19.05	158.10	23.83	194.96	27.79	224.65	31.75	253.56	35.71	281.70	9.53	81.25	12.70	107.39	-	-
21.44	203.53	26.19	245.56	30.96	286.64	36.53	333.19	40.49	365.35	9.53	93.17	12.70	123.30	-	-
23.83	254.67	29.36	309.76	34.92	363.64	39.67	408.45	45.24	459.59	9.53	105.10	12.70	139.20	-	-
26.19	311.17	32.54	381.53	38.10	441.49	44.45	508.11	50.01	564.81	9.53	117.02	12.70	155.10	-	-
28.58	373.83	34.93	451.52	41.28	527.02	47.63	600.63	53.98	672.26	9.53	129.01	12.70	171.01	-	-
30.96	441.78	38.89	547.73	46.02	639.58	52.37	719.63	59.54	807.63	9.53	140.88	12.70	186.94	-	-
-	-	-	-	-	-	-	-	-	-	9.53	152.80	12.70	202.85	-	-
-	-	-	-	-	-	-	-	-	-	9.53	164.80	12.70	218.73	-	-
-	-	-	-	-	-	-	-	-	-	9.53	176.73	12.70	234.64	-	-
-	-	-	-	-	-	-	-	-	-	9.53	188.66	12.70	250.55	-	-
-	-	-	-	-	-	-	-	-	-	9.53	200.59	12.70	266.46	-	-
-	-	-	-	-	-	-	-	-	-	9.53	212.52	12.70	282.36	-	-

N.B. : thickness and weight "Standard" "Extra Song" & "Double Extra Strong" within swell edges have a correspondent Value in "schedule" for different thickness that suitable the weight can preceeds by following formula 24.66 (d/t/t)

COMPARISON TABLE OF DIN - ASTM - API - BS

		TENSILE STRENGHT		YIELD POINT		ELONGATION MIN %	%	%	%	%
		DaN/mm² kgf/mm² abt	ltn/in² abt	DaN/mm² kgf/mm² abt	ltn/in² abt	abt	C	Si	Mn	P=Max
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	29-36	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 PIIPE	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	32.5	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 3601 HFS 22	34.6	22	21.3	13.5	700/253TONF/N²	0.21		0.70	0.06
	BS 3601 HFS 27	42.5	27	25.2	16		0.25		0.70	0.05
	BS 3601 HFS 35	55.1	35	31.5	20		0.40		1.20	0.05
	BS 3601 HFS 23	36.0-47.2	23-30	21.3	13.5		0.20	(0.10-0.35)	0.30/0.70	0.05
	BS 3601 HFS 27	42.5-55.1	27-35	25.2	16		0.25	(0.10-0.35)	0.30/0.70	0.05
	BS 3601 HFS 35	55.1-67.7	35-43	31.5	20		0.35	(0.10-0.35)	0.30/1.10	0.05
	BS 3659/3 ERW	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	A 335P12/P11		3604 Gr620
	10 Cr Mo 910	0.04	0.90/0.10	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 I GRA	St 35	3601 HFS 22
	A 53 B					ASA B36.10		API 5L GRA	St 45	3601 HFS 27
	A 106 A	0.058				ASA B36.10		API 5L GRA	St. 35.8	3059 / 1-2
	A 106 B	0.058				ASA B36.10		API I GRA	St. 45.8	3059 / 5-6
	ASTMA 333/1	0.06				ASA B36.10			TTSt. 35N	3603LT 27
	A 333/3	0.05			3.18/3.82	ASA B36.10			10 Ni 14	3603 503 LT 100
	ASTMA 335 P1	0.045	0.44/0.65			ASA B36.10			15 MO 316MO5	3059 / 7-8
	P2	0.045	0.440.65	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
	P22	0.03	0.87/1.13	1.9/2.6		ASA B36.10			13 Cr.Mo910	3604 Gr. 622
	P5	0.03	0.45/0.65	4-6		ASA B36.10			12Cr.Mo195	3604 Gr. 625
API-LING PIIPE	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 3601 HFS 22	0.05						A 53 A	St. 35	
	BS 3601 HFS 27	0.06						A 53 B	St. 45	
	BS 3601 HFS 35	0.05							St. 55	
	BS 3601 HFS 23	0.05						A 106 A	St. 36.8	
	BS 3601 HFS 27	0.05						A 106 B	St. 45.8	
	BS 3601 HFS 35	0.05						A 106 C		
	BS 3659/3 ERW	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	0.045	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
DIN/17175/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
		Tensil Strength MFA	Yeild Strength MPA Min	Elongation 50 MMMin 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
2.002.50	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 b we right. It is this addition of chromium that gives the steel is unique stainless, corrosion resisting properties. The Corrosion resistance and other useful properties of the steel are enhanced by increased chromiium contene 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%	07Cr. 18Ni9	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	12.5/15.0	-	-	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	0.045	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	-	-
317N	0.08	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
17.4PH	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:0.50/0.10	-	-
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	X10CrNiS18 09	-	S30300
304	1.4301	X04Cr19Ni9	304S15	SUS304	14 23 33	Z6CN18.09	X5CrNi18 10	0Cr19Ni9	S30400
304L	1.4306	X02Cr19Ni10	304S11	SUS304L	14 23 52	Z2CN18.10	X2CrNi18 11	00Cr19Ni11	S30403
310	1.4845	X20Cr25Ni20	310S24	SUS310S	14 23 61	Z12CN25.20	X22CrNi25 20	0Cr25Ni20	S31008
316	1.4401	X04Cr17Ni12Mo2	316S31	SUS316	14 23 47	Z6CND17.11	X8CrNiMo 17 13	0Cr17Ni12Mo2	S31603
316L	1.4404	X02CrNi12Mo2	316S11	SUS316L	14 23 48	Z2CND 17.12	X2CrNiMo 17 12	00Cr17Ni14Mo2	S31603
321	1.4541	X04Cr18Ni10Ti	321S31	SUS321	14 23 37	Z6CNT18.12	X6CrNiti18 11	0Cr189NiTi	S32100





CHEMICAL COMPOSITIOIN 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 max	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'	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	0.5-3	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

NB/Ta 3.15-4.15 2V 0.35 3Nb/Ta Nb/Ta0.5 max., Mb6.8,Ph 0.04 Cb&Ta8Xcmin. 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					
			Elongation, % (G.L. : 2 in or 50mm)				Hardless Test, Max	
			Full Section Specimen	Strip Specimen		Round Specimen	Brinel	Rockwell
				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 316 H	75 (515)	30 (205)	35	35	56t+ 17.50	28	192	B 90
TP316L	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	-	192	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/mm² min	YS (0.2% Offset) Kg/mm² Min	% EL in 50 mm min.	R.A. % min.
AUSTENTIC					
302	Annealed	53.0	21.0	40	50
304					
304L				do	do
309	Annealed	do	do		
310	(Hot Finished)				
316					
316L					
317	Annealed			40	50
	(Hot Finished)	53.0	21.0	do	do
321	"	do	do	do	do
347	"	do	do		
Ferritic					
430	Annealed	49.0	28.0	20	45
435	"	49.0	28.0	20	45
MARTENSITIC					
403	Annealed	49.0	28.0	20.0	45.0
	Hardned & Tempered	84.4	63.5	12.0	40.0
410	Annealed	49.0	28.0	20.0	45.0
	Hardned & Tempered	84.0	63.5	12.0	40.0

Typical Mechanical Properties Of Stainless Steel / Sheets / Plates

AISI TYPE	Condition	UTS Kg/mm² min	YS (0.2% Offset) Kg/mm² min.)	% EL in 50 mm min.	Hardness Max. RB.
AUSTENTIC					
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

1. Hot rolled, annealed and pickled, this finish is mainly uses where appearance is secondary.

2D. Dull, Smooth cold rolled finish : Best Suited for deep drawing Operations due to better relaton of lubricants.

3B. Most commonly used finish obtained by skinpass on 2D finish material.

3. A polished finish obtained with coarse abrasive of 100-120 grain size.
4. A standard polished finish produced with abrasive (grain size 120 to 150) finer than those under for no. 3 finish.
5. Dull Satin finish; tempico brushed; used for architectural applications where high lustre is undersirable.
6. Has a high degree of reflectivity; produced by buffing of finely ground surgface, but the grit lines are not removed fully.
7. 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.

BUTT-WELD FITINGS

45° ELBOW

90° ELBOW

180° ELBOW

CAP

ECCO REDUCER

REDUCING TEE

EQUAL TEE

CONC. REDUCER

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 WP304, 304L, 304H, 316, 316L, 316Ti, 317, 317L, 321, 309, 310, 310S, 347, 347H, 904L etc.
Carbon Steel	:	ASTM A-234 WPB/A420 WPL 3/A420 WPL6/MSS-SP-75 WPHY 42/46/52/56/60/65/70 etc. (IBR & NON IBR)
Alloy Steel	:	ASTM A234, GR.WP1, WP5, W9, WP11, WP12, WP22, WP91 etc.
Others	:	Monel, Nickel, Inconel, Hastalloy, Copper, Brass, Bronze, Titanium, Bismuth, Aluminium, High Speed Steel, Zinc, Lead etc.
Type	:	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, throught the desired cross-section with diversion of flow to the desired point

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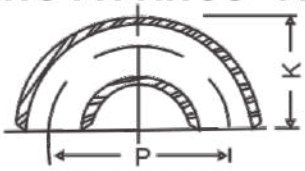
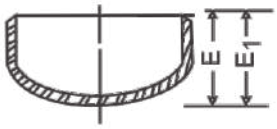
SEAMLESS BUTT-WELDING FITTINGS • ANSI B 16.9-1986

90° L.R. Elbow

45° L.R. Elbow



180° L.R. Elbow



CAP

Nominal Pipe Size	90° L.R. Elbow	45° Long Radius Elbow		180Ü L.R. Return		Cap	Cap
	Centre To Face	Centre To Face	Centre Line Radius	Centre Line Centre	Back to Face	Lenght	Lenght
	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- Lenght of Caps applicable to wall thickness of Schedule 40 and Schedule Extra Strong.
2. E-1- Lenght 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.

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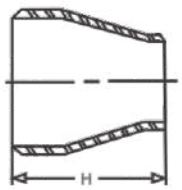
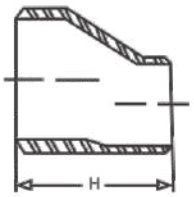
SEAMLESS BUTT-WELDING FITTINGS . ANSI B 16.9 - 1986





Nominal Pipe Size	Length H
20 X 10	38
20 X 15	38
25 X 10*	51
25 X 15	51
25 X 20	51
32 X 15	51
32 X 20	51
32 X 25	51
40 X 15	64
40 X 20	64
40 X 25	64
40 X 32	64
50 X 20	76
50 X 25	76
50 X 32	76
50 X 40	76
65 X 25	89
65 X 32	89
65 X 40	89
65 X 50	89
80 X 25*	89
80 X 32	89
80 X 40	89
80 X 50	89
80 X 65	89

Nominal Pipe Size	Length H
90 X 32	38
90 X 40	38
90 X 50	51
90 X 65	51
90 X 80	51
100 X 25*	51
100 X 32*	51
100 X 40	51
100 X 50	64
100 X 65	64
100 X 80	64
100 X 90	64
125 X 50	76
125 X 65	76
125 X 80	76
125 X 90	76
125 X 100	89
150 X 50*	89
150 X 65	89
150 X 80	89
150 X 90	89
150 X 100	89
150 X 125	89
200 X 80*	89
200 X 90	89

Nominal Pipe Size	Length H
200 X 100	38
200 X 125	38
200 X 150	51
250 X 80*	51
250 X 100	51
250 X 125	51
250 X 150	51
250 X 200	51
300 X 100*	64
300 X 125	64
300 X 150	64
300 X 200	64
300 X 250	76
350 X 150	76
350 X 200	76
350 X 250	76
350 X 300	89
400 X 200	89
400 X 250	89
400 X 300	89
400 X 350	89
450 X 250	89
450 X 300	89
450 X 350	89
450 X 400	89

Nominal Pipe Size	Length H
500 X 300	508
500 X 350	508
500 X 400	508
500 X 450	508
550 X 350	508
550 X 400	508
550 X 450	508
550 X 500	508
600 X 400	508
600 X 450	508
600 X 500	508

NOTES : All Dimensions in mm.
Not covered by the specification.
Thickness & outside diameter of reducers shall correspond to those of appropriate nominal pipe size.

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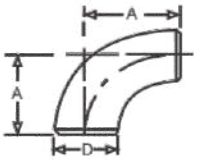
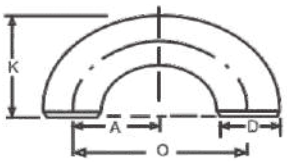
SEAMLESS BUTT-WELDING FITTINGS • ANSI B 16.28



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 pipoe size.

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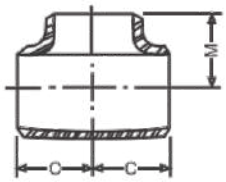
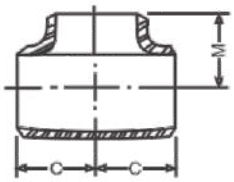
SEAMLESS BUTT-WELDING FITTINGS • ANSI B 16.9 - 1986



EQUAL TEE



REDUCIND OUTLET TEE

EQUAL TEE			REDUCIND 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 X10*	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 X250	254	241			

NOTES : Not covered by specification.
Thickness & outside diameter of tees shall correspond to those appropriate nominal pipe size.

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DIMENSIONAL TOLERANCE FOR SEAMESS BUTT WELDING FITTINGS

ANSI B 16.9 & 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	Centre to End Dimensions	Overall length	End to End	Centre to Centre Dimension	Back to Face Dmension	Alignment of Ends	ANGULARITY	
											Vertical Face	Longitudinal Axis
15 to 65	±	1	± 0.8	Not less than 87.5% of nominal thickness	± 2	± 4	± 2	± 7	± 7	± 1	± 1	± 2
80 to 90	±	1	± 1.6		± 2	± 4	± 2	± 7	± 7	± 1	± 1	± 2
100	± / -	2 / 1	± 1.6		± 2	± 4	± 2	± 7	± 7	± 1	± 1	± 2
125 to 150	+ / -	3 / 1	± 1.6		± 2	± 7	± 2	± 7	± 7	± 1	± 2	± 4
200	±	2	± 1.6		± 2	± 7	± 2	± 7	± 7	± 1	± 2	± 4
250	+ / -	4 / 3	± 3.2		± 2	± 7	± 2	± 10	± 7	± 2	± 3	± 5
300	+ / -	4 / 3	± 3.2		± 3	± 7	± 3	± 10	± 7	± 2	± 3	± 5
350 to 400	+ / -	4 / 3	± 3.2		± 3	± 7	± 3	± 10	± 7	± 2	± 3	± 7
450	+ / -	4 / 3	± 3.2		± 3	± 7	± 3	± 10	± 7	± 2	± 4	± 10
500 to 600	+ / -	6 / 5	± 4.8		± 3	± 7	± 3	± 10	± 7	± 2	± 4	± 10

NOTES : 1. Dimensions are in Millimeter.
2. Out - of - round is the sum of absolute values of plus & minus Tolerances.

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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/ 904L etc.
Carbon Steel	:	ASTM A105/ A105N/ A694 F42/46/52/56/60/65/70/A350LF3/A350LF2 etc.
Alloy Steel	:	ASTM A182 F1/F5/F9/F11/F22/F91etc.
Others	:	Monel, Nickel, Inconel, Hastalloy, Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed Steel, Zinc, Lead etc.
Type	:	Elbow, Tee, Union, Cross, Coupling, Cap, Bushing, Plug, Swage nipple, Welding Boss, Hexagon Nipple, Barrel 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 Range	:	1/8" NB to 4" NB (Socketweld)
Wall Thickness	:	150#, 3000#, 6000# & 9000#.

Used To Allow Flow Of Fuilds, Like Steam, Water, Air, Oil, Etc, Through The Desired Size Of Flowing Cross-section With Diversion Of Flow To The Desired Point Under Critical Working Conditions.

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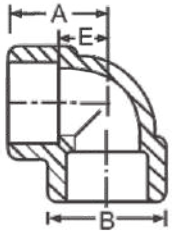
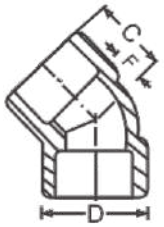
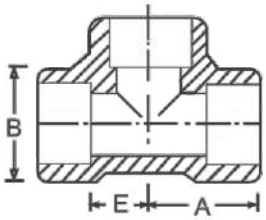
SOCKET WELDING FITTINGS • ANSI B 16.11 - 1973







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

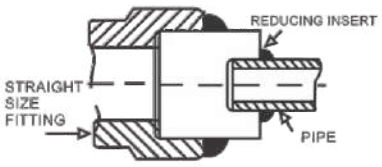
6	10.65	3.20	4.80	21	22	11	0.23	17	22	8	0.25	21	22	11	0.45
8	14.10	5.60	7.10	25	25	14	0.40	19	25	8	0.31	25	25	14	0.48
10	17.55	8.40	9.90	29	33	16	0.23	22	33	11	0.25	29	33	16	0.45
15	21.70	11.00	12.50	33	38	19	0.40	25	38	12	0.31	33	38	19	0.48
20	27.05	14.80	16.30	38	46	22	0.65	29	46	14	0.59	38	46	22	0.93
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

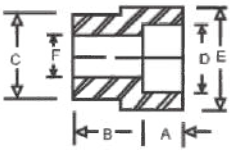
9000 POUND

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

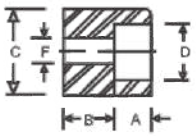
NOTES : All Dimensions given in millimeter approx weights given in kg.
3000 pound fittings are regularly used for both Schedule 40 and Schedule 80 Pipe and warrant the Schedule 80 rating.
6000 pound fittings are regularly used for Schedule 160 pipe and warrant the Schedule 160 rating.
9000 pound fittings 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

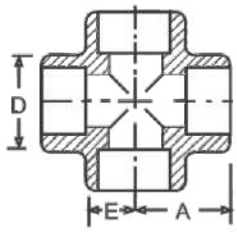


INSERT TYPE 2

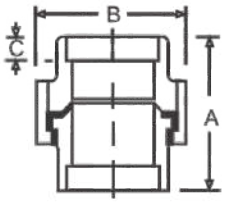
Nominal Pipe Size		Common Dimensions Diameter		3000 POUND					6000 POUND				
		C	D	INSERT TYPE	A	B	E	F	INSERT TYPE	A	B	E	F
15	X 10	21.60	17.55	1	11	24	25	12	1	13	33	29	9
	X 8	21.60	14.10	2	10	16	-	9	1	11	33	29	7
	X 6	20.60	10.65	2	10	16	-	7	1	10	33	29	4
20	X 15	26.90	21.70	1	13	25	32	16	1	14	37	41	12
	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	X32	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
	X20	18.50	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 here in above are nominal.

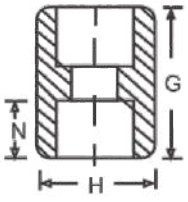
SOCKET WELDING FITTINGS • ANSI B 16.11 - 1973



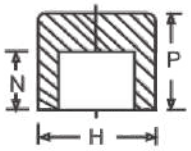
CROSS



UNION



COUPLING



CAP

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.

SCREWED FITTINGS


EQUAL TEE


CROSS


STREET ELBOW


M/F UNION


COPLLING


CAP


UNION


SQ HEAD PLUG


HEX BUSHING


FLUSH BUSHING


HEX HEAD PLUG


BARREL


HEX NIPPLES

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:

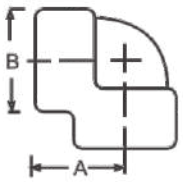
MATERIAL TYPE:-

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/ A350LF3/ A350 LF2 etc.
Alloy Steel	:	ASTM A182 F1/F5/F9/F11/F22/F91etc.
Others	:	Monel, Nickel, Inconel, Hastalloy, Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed Steel, Zinc, Lead etc.
Type	:	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 Range	:	1/8" NB to 4" NB (Threaded)
Wall Thickness	:	150#, 3000#, 6000# & 9000#.

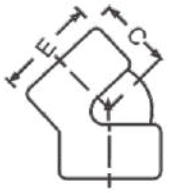
Used to allow of fluids through desired sizes of flowing cross - section with diversion of flow to the desired points under normal condition.

rahulsteel55@yahoo.com | inforsi646@gmail.com
www.rahulsteelindia.in

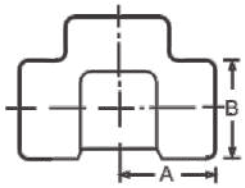
SCREWED FITTINGS • ANSI B 16.11 - 1973



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

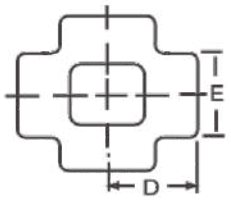
6	21	22	0.11	17	22	0.11	21	22	0.11
8	25	25	0.17	19	25	0.11	25	25	0.17
10	29	33	0.29	22	33	0.23	29	33	0.37
15	33	38	0.60	25	38	0.34	33	38	0.54
20	38	46	0.63	29	46	0.54	38	46	0.85
25	44	56	1.02	33	56	0.85	44	56	1.13
32	51	62	1.25	35	62	0.97	51	62	1.42
40	60	75	1.59	43	75	1.36	60	75	2.27
50	64	84	2.47	45	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

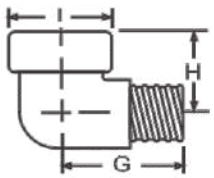
6	25	25	0.11	19	25	0.11	25	25	0.23
8	29	33	0.29	22	33	0.23	29	33	0.45
10	33	38	0.48	25	38	0.23	33	38	0.63
15	38	46	0.74	29	46	0.65	38	46	0.97
20	44	56	1.19	33	56	0.99	44	56	1.65
25	51	62	1.59	35	62	1.22	51	62	2.10
32	60	75	3.06	43	75	2.13	60	75	3.46
40	64	84	3.40	44	84	2.61	64	84	4.37
50	83	102	6.10	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 810 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.

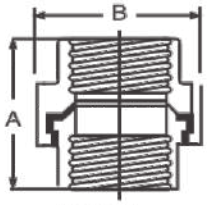
SCREWED FITTINGS • ANSI B 16.11 - 1973



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

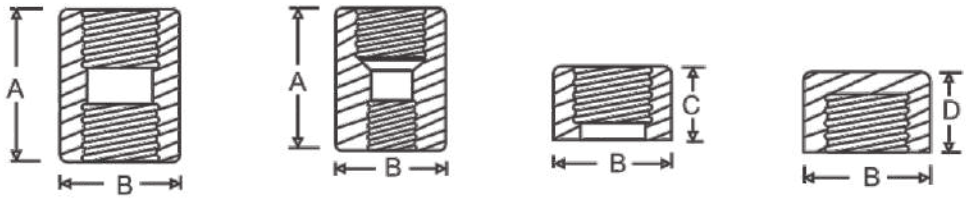
6	21	22	0.20	32	22	27	0.11	42	32	0.14
8	25	25	0.27	32	22	27	0.11	44	32	0.14
10	29	33	0.45	38	25	32	0.17	51	38	0.20
15	33	38	0.68	41	29	38	0.23	54	46	0.34
20	38	46	1.13	48	35	44	0.40	57	51	0.43
25	44	56	1.61	57	44	51	0.65	69	60	0.65
32	51	62	1.87	67	51	62	1.02	72	72	0.97
40	60	75	2.95	71	54	70	1.36	80	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

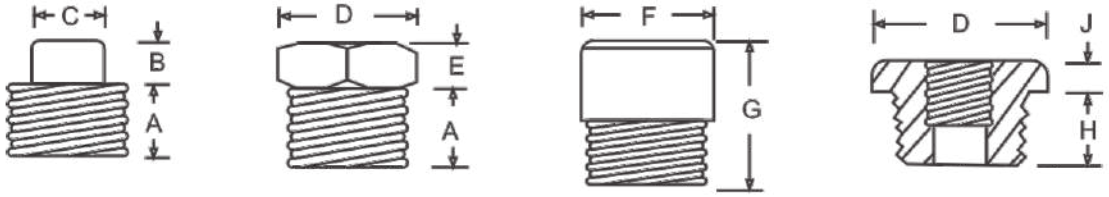
Nominal Pipe Size	Common Diameter	COUPLING		REDUCING COUPLING		HALF COUPLING		CAP	
	B	A	APPROX WEIGHT	A	APPROX WEIGHT	C	APPROX WEIGHT	D	APPROX WEIGHT
6	16	32	0.06	-	-	16	0.03	13	0.02
8	19	35	0.06	35	0.06	18	0.03	25	0.03
10	22	38	0.11	38	0.11	19	0.09	25	0.06
15	29	48	0.11	48	0.11	24	0.09	32	0.11
20	35	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 40 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 manufactures 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

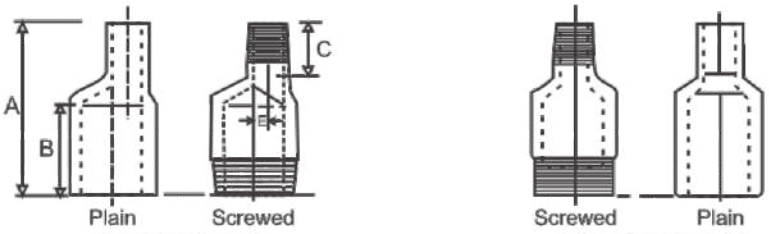


Nominal Pipe Size	Square Head Plug			Hexagon Head Plug			Round Head Plug		Hexagon Head Bushing		
	A (Min)	B (Min)	C (Min)	A (Min)	D (Min)	E (Min)	F (Min)	G (Min)	D (Min)	H (Min)	J (Min)
6	9.5	6	7.0		11.0	6	10	35	-	-	-
8	11.0	6	9.5		16.0	6	13	41	16.0	11.0	3
10	12.7	8	11.0		17.5	8	17	41	17.5	12.7	4
15	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 WEEIGHT			
	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 wtights given in kg.
All items on this page are manufactured from bar stock or forging, depending upon size and type of fittings.

DIMENSION OF SWAGE • NIPPLES BS-3799 - 1974



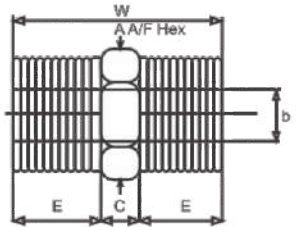
ECCENTRIC CONCENTRIC

TABLE - 12

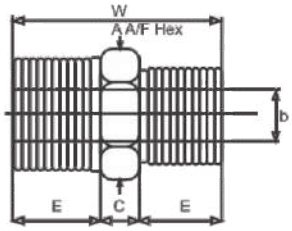
Nominal Pipe Size	Parallel length			Eccentricity (E)	
	A (minm.)	B (minm.)	C (minm.)	3000 Pound	6000 Pound
10 X 8	76	48	16	1.6	-
15 X 10	89	56	19	1.6	-
15 X 8	89	56	19	3.2	-
20 X 15	95	57	22	2.4	2.4
20 X 10	95	57	22	4	-
25 X 20	102	64	22	2.8	2.0
25 X 15	102	64	22	5.2	4.4
40 X 25	114	70	25	6.7	6.4
40 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 diameter 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.

DIMENSION OF HEXAGONAL NIPPLES • BS-3799 - 1974



EQUAL



EQUAL

TABLE - 8

Nominal Pipe Size		A	W	E	B		C	F
Equal	Reducing	(min.)	(min.)	(min.)	3000 Pound	3000 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 here in 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

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, 32 NPS, 40 NPS and 50 NPS	±4
For Sizes 65 NPS and larger	±5

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

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 catalouge.

90º and 45º Elbows	6 NPS through 100 NPS
Tees	6 NPS through 100 NPS
Crosses	6 NPS through 100 NPS
Coupling	6 NPS through 100 NPS

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.

BORE DIAMETER OF SOCKET

For Sizes 50 NPS and Smaller	+ 0.25 - 0.00
For Sizes 65 NPS and Larger	+ 0.35 - 0.00

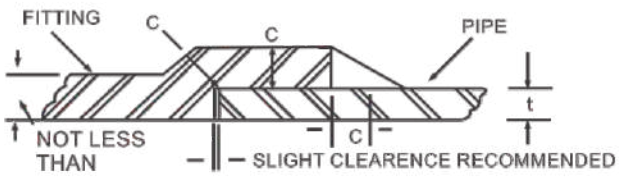
CONCENTRICITY OF BORES

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

COINCIDENCE OF AXES

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

FILLET WELD DIMENSIONS

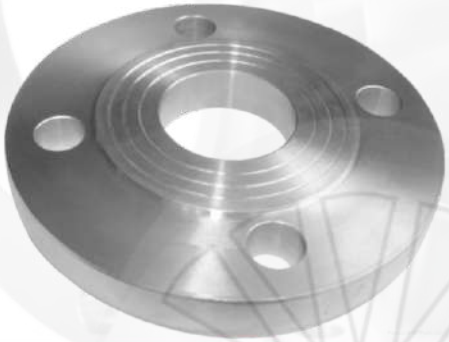


Minimum requirements for socket and fillet weld dimension as prescribed in the american standard code for pressure piping, ASA B31.1

FLANGES

SCREWED

BLIND



SLIP-ON

WELDNECK

FORGED FITTINGS SOCKET WELD

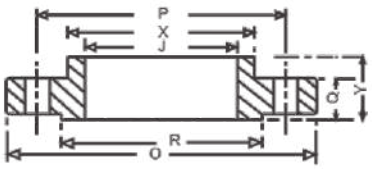
The following table represents size range, product standards and material grades of industrial steel flanges, stainless steel, carbon steel & alloy steel flanges etc. The range includes:

MATERIAL TYPE:-

Stainless Steel	:	ASTM A-240/A182 F 304, 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/F22/F91etc.
Others	:	Monel, Nickel, Inconel, Hastalloy, Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed Steel, Zinc, Lead etc.
Type	:	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
Wall Thickness	:	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 equipment, instruments, etc, to be installe dinto the flowing media for proper control of the flow,
- To allow provision for easy maintenance of the processing systems under any working condition.

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

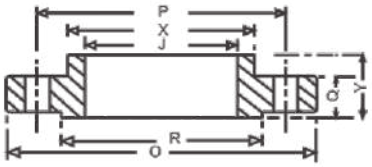


CLASS 150

Nominal Pipe Size	Outside Diameter of Flange O		Thickness of Flange (min) Q		Diameter of Raised Face R		Diameter of Bore J		Length Through Hub Y		Diameter of Hub at Base X		Number of bolt Holes	Diameter of Bolt		Diameter of Bolt Circle P	
inch	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	2¾	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.
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	4¾	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	1¾	44.5	9.11/16	246.1	8	¾	19.1	11¾	298.5
10	16	406.4	1.3/16	30.2	12¾	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	15¾	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	22¾	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 1/16 inch (1.6mm)
Diameter of bolt-holes shall not be 1/

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

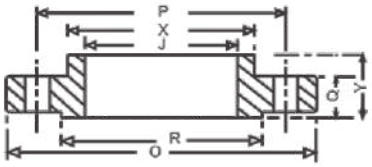


CLASS 300

Nominal Pipe Size	Outside Diameter of Flange O		Thickness of Flange (min) Q		Diameter of Raised Face R		Diameter of Bore J		Length Through Hub Y		Diameter of Hub at Base X		Number of bolt Holes	Diameter of Bolt		Diameter of Bolt Circle P	
inch	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	n	inch	mm	inch	mm
½	3.3/4	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	3¼	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	3½	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	3.7/8	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	1¾	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	16¼	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 1/16 inch (1.6mm)
Diameter of bolt-holes shall not be 1/8" (3.2mm) greater than the diameter of bolt.

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

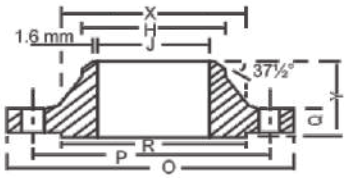


CLASS 600

Nominal Pipe Size	Outside Diameter of Flange O		Thickness of Flange (min) Q		Diameter of Raised Face R		Diameter of Bore J		Length Through Hub Y		Diameter of Hub at Base X		Number of bolt Holes	Diameter of Bolt		Diameter of Bolt Circle P	
inch	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	n	inch	mm	inch	mm
½	3.3/4	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	3¼	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	3½	88.9
1¼	5¼	133.4	13/16	20.6	2½	63.5	1.70	43.20	1.1/8	28.6	2½	63.5	4	5/8	15.9	3.7/8	98.4
1½	6.1/8	155.6	7/8	22.2	2.7/8	73.0	1.95	49.50	1¼	31.8	2¾	69.9	4	¾	19.1	4½	114.3
2	6½	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
2½	6½	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	¾	19.1	5.7/8	149.2
3	8¼	209.6	1¼	31.8	5	127.0	3.57	90.70	1.13/16	46.0	4.5/8	117.5	8	¾	19.1	6.5/8	168.3
3½	9	228.6	1.3/8	34.9	5½	139.7	4.07	103.40	1.15/16	49.2	5¼	133.4	8	7/8	22.2	7¼	184.2
4	10¾	273.1	1½	38.1	6.3/16	157.2	4.57	116.10	2.1/8	54.0	6	152.4	8	7/8	22.2	8½	215.9
5	13	330.2	1¾	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	10½	266.7
6	14	355.6	1.7/8	47.6	8½	215.9	6.72	170.70	2.5/8	66.7	8¾	222.3	12	1	25.4	11½	292.1
8	16½	419.1	2.3/16	55.6	10.5/8	269.9	8.72	221.50	3	76.2	10¾	273.1	12	1.1/8	28.6	13¾	349.3
10	20	508.0	2½	63.5	12¾	323.9	10.88	276.40	3.3/8	85.7	13½	342.9	16	1¼	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	15¾	400.1	20	1¼	31.8	19¼	489.0
14	23¾	603.3	2¾	69.9	16¼	412.8	14.14	359.20	3.11/16	93.7	17	431.8	20	1.3/8	34.9	29¾	527.1
16	27	685.8	3	76.2	18½	469.9	16.16	410.50	4.3/16	106.4	18½	495.3	20	1½	38.1	23¾	603.3
18	29¼	743.0	3¼	82.6	21	533.4	18.18	461.80	4.5/8	117.5	21½	546.1	22	1.5/8	41.3	25¾	654.1
20	32	812.8	3½	88.9	23	584.2	20.20	513.10	5	127.0	24	609.6	24	1.5/8	41.3	28½	723.9
22	34¼	870.0	3¾	95.3	25¼	641.4	22.22	564.40	5¼	133.4	26¼	666.8	24	1¾	44.5	30.5/8	777.9
24	37	939.8	4	101.6	27¼	692.2	24.25	616.00	5½	139.7	28¼	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 1/16 inch (1.6mm)
Diameter of bolt-holes shall not be 1/8" (3.2mm) greater than the diameter of bolt.

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



CLASS 150

Nominal Pipe Size	Outside Diameter of Flange O		Thickness of Flange (min) Q		Diameter of Raised Face R		Diameter of Bore J		Length Through Hub Y		Diameter of Hub at Base X		Diameter of Hub at Point of Weight H		Number of bolt Holes	Diameter of Bolt		Diameter of Bolt Circle P	
inch	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	mm	inch	mm
½	3¼	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	a½	12.7	2.3/8	60.3
¾	3.7/8	98.4	½	12.7	1.11/16	42.9	0.82	20.83	2.1/16	52.4	1½	38.1	1.05	26.7	4	½	12.7	2¾	69.9
1	4¼	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	½	12.7	3.1/8	79.4
1¼	4.5/8	117.5	5/8	15.9	2½	63.5	1.38	35.05	2¼	57.2	2.5/16	58.7	1.66	42.2	4	½	12.7	3½	88.9
1½	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	½	12.7	3.7/8	98.4
2	6	152.4	¾	19.1	3.5/8	92.1	2.07	52.58	2½	63.5	3.1/16	77.8	2.38	60.4	4	5/8	15.9	4¾	120.7
2½	7	177.8	7/8	22.2	4.1/8	104.8	2.47	62.75	2¾	69.9	3.9/16	90.5	2.88	73.1	4	5/8	15.9	5½	139.7
3	7½	190.5	15/16	23.8	5	127.0	3.07	77.98	2¾	69.9	4¼	108.2	3.50	88.9	4	5/8	15.9	6	152.4
3½	8½	215.9	15/16	23.8	5½	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	7½	190.5
5	10	254.0	15/16	23.8	7.5/16	185.7	5.05	128.27	3½	88.9	6.7/16	163.5	5.56	141.2	8	¾	19.1	8½	215.9
6	11	279.4	1	25.4	8½	215.9	6.07	154.18	3½	88.9	7.9/16	192.1	6.63	168.4	8	¾	19.1	9½	241.3
8	13½	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	¾	19.1	11¾	298.5
10	16	406.4	1.3/16	30.2	12¾	323.9	10.02	254.51	4	101.6	12	304.8	10.75	273.0	12	7/8	22.2	14¼	362.0
12	19	482.6	1¼	31.8	15	381.0	12.00	304.80	4½	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	16¼	412.8	13.25	336.55	5	127.0	15¾	400.1	14.00	355.6	12	1	25.4	18¾	476.3
16	23½	596.9	1.7/16	36.5	18½	469.9	15.25	387.35	5	127.0	18	457.2	16.00	406.4	16	1	25.4	21¼	539.8
18	25	635.0	1.9/16	39.7	21	533.4	17.25	438.15	5½	139.7	19.7/8	504.8	18.00	457.2	16	1.1/8	28.6	22¾	577.9
20	27½	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	29½	749.3	1.13/16	46.0	25¼	641.4	21.25	539.70	5.7/8	149.5	24	609.6	22.00	558.8	20	1¼	31.8	27¼	692.2
24	32	812.8	1.7/8	47.6	27¼	692.2	23.25	590.50	6	152.4	26.1/8	663.6	24.00	609.6	20	1¼	31.8	28½	749.3

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

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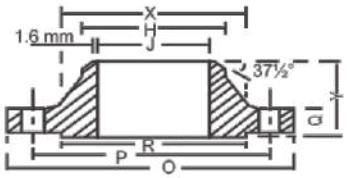
DIMENSION OF WELD NECK FLANGES • ANSI B16.5 - 1988



CLASS 300

Nominal Pipe Size	Outside Diameter of Flange O		Thickness of Flange (min) Q		Diameter of Raised Face R		Diameter of Bore J		Length Through Hub Y		Diameter of Hub at Base X		Diameter of Hub at Point of Weight H		Number of bolt Holes	Diameter of Bolt		Diameter of Bolt Circle P	
inch	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	mm	inch	mm
½	3.3/4	95.3	9/16	14.3	1.3/8	34.9	0.62	15.75	2.1/16	52.4	1½	38.1	0.84	21.3	4	½	12.7	2.5/8	66.7
¾	4.5/8	117.5	5/8	15.9	1.11/16	42.9	0.82	20.83	2¼	57.2	1.7/8	47.6	1.05	26.7	4	5/8	15.9	3¼	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	3½	88.9
1¼	5¼	133.4	¾	19.1	2½	63.5	1.38	35.05	2.9/16	65.1	2½	63.5	1.66	42.2	4	5/8	15.9	3.7/8	98.4
1½	6.1/8	155.6	13/16	20.6	2.7/8	73.0	1.61	40.89	2.11/16	68.3	2¾	69.9	1.90	48.3	4	¾	19.1	4½	114.3
2	6½	165.1	7/8	22.2	3.5/8	92.1	2.07	52.58	2¾	69.9	3.5/16	84.1	2.38	60.4	8	5/8	15.9	5	127.0
2½	7½	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	¾	19.1	5.7/8	149.2
3	8¼	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	¾	19.1	6.5/8	168.3
3½	9	228.6	1.3/16	30.2	5½	139.7	3.55	90.17	3.3/16	81.0	5¼	133.4	4.00	101.6	8	¾	19.1	7¼	184.2
4	10	254.0	1¼	31.8	6.3/16	157.2	4.03	102.36	3.3/8	85.7	5¾	146.1	4.50	114.3	8	¾	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	¾	19.1	9¼	235.0
6	12½	317.5	1.7/16	36.5	8½	215.9	6.07	154.18	3.7/8	98.4	8.1/8	206.4	6.63	168.4	12	¾	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	10¼	260.4	8.63	219.2	12	7/8	22.2	13	330.2
10	17½	444.5	1.7/8	47.6	12¾	323.9	10.02	254.51	4.5/8	117.5	12.5/8	32.07	10.75	273.0	16	1	25.4	15¼	387.4
12	20½	520.7	2	50.8	15	381.0	12.00	304.80	5.1/8	130.2	14¾	374.7	12.75	323.8	16	1.1/8	28.6	17¾	450.9
14	23	584.2	2.1/8	54.0	16	412.8	13.25	336.55	5.5/8	142.9	16¾	425.5	14.00	355.6	20	1.1/8	28.6	20¼	514.4
16	25½	647.7	2¼	57.2	18¾	469.9	15.25	387.35	5¾	146.1	19	482.6	16.00	406.4	20	1¼	31.8	22½	571.5
18	28	711.2	2.3/8	60.3	21	533.4	17.25	438.15	6¼	158.8	21	533.4	18.00	457.2	24	1¼	31.8	24¾	628.7
20	30½	774.7	2½	63.5	23	584.2	19.25	488.90	6.3/8	161.9	23.1/8	587.4	20.00	508.0	24	1¼	31.8	27	685.8
22	33	838.2	2.5/8	66.7	25¼	641.4	21.25	539.70	6½	165.1	25¼	641.3	22.00	558.8	24	1½	38.1	29¼	743.0
24	36	914.4	2¾	69.9	27¼	692.2	23.25	590.50	6.5/8	168.3	27.5/8	701.7	24.00	609.6	24	1½	38.1	32	812.8

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

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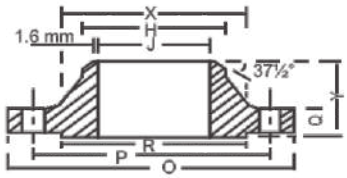

CLASS 600

Nominal Pipe Size	Outside Diameter of Flange O		Thickness of Flange (min) Q		Diameter of Raised Face R		Diameter of Bore J		Length Through Hub Y		Diameter of Hub at Base X		Diameter of Hub at Point of Weight H		Number of bolt Holes	Diameter of Bolt		Diameter of Bolt Circle P	
inch	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	mm	inch	mm
½	3.3/4	92.5	9/16	14.3	1.3/8	34.9	0.55	14.00	2.1/16	52.4	1½	38.1	0.84	21.3	4	½	12.7	2.5/8	66.7
¾	4.5/8	117.5	5/8	15.9	1.11/16	42.9	0.74	18.80	2¼	57.2	1.7/8	47.6	01.05	26.7	4	5/8	15.9	3¼	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	3½	88.9
1¼	5¼	133.4	13/16	20.6	2½	63.5	1.28	32.50	2.5/8	66.7	2½	63.5	1.66	42.2	4	5/8	15.9	3.7/8	98.4
1½	6.1/8	155.6	7/8	22.2	2.7/8	73.0	1.50	38.10	2¾	69.9	2¾	69.9	1.90	48.3	4	¾	19.1	4½	114.3
2	6½	165.1	1	25.4	3.5/8	92.1	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
2½	7½	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	¾	19.1	5.7/8	149.2
3	8¼	209.6	1¼	31.8	5	127.0	2.90	73.70	3¼	82.6	4.5/8	117.5	3.50	88.9	8	¾	19.1	6.5/8	168.3
3½	9	228.6	1.3/8	34.9	5½	139.7	3.36	85.30	3.3/8	85.7	5¼	133.4	4.00	101.6	8	7/8	22.2	7¼	184.2
4	10¾	273.1	1½	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	8½	215.9
5	13	330.2	1¾	44.5	7.5/16	185.7	4.81	122.20	4½	114.3	7.7/16	188.9	5.56	141.2	8	1	25.4	10½	266.7
6	14	355.6	1.7/8	47.6	8½	215.9	5.76	146.30	4.5/8	117.5	8¾	222.3	6.63	168.4	12	1	25.4	11½	292.1
8	16½	419.1	2.3/16	55.6	10.5/8	269.9	7.63	193.80	5¼	133.4	10¾	273.1	8.63	219.2	12	1.1/8	28.6	13¾	349.3
10	20	508.0	2.1/4	63.5	12¾	323.9	9.75	247.70	6	152.4	13½	342.9	10.75	273.0	16	1¼	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	15¾	400.1	12.75	323.8	20	1¼	31.8	19¼	489.0
14	23¾	603.3	2¾	69.9	16¼	412.8	As Specified by Purchaser		6½	165.1	17	431.8	14.00	355.6	20	1.3/8	34.9	20¾	527.1
16	27	685.8	3	76.2	18.1/2	469.9			7	177.8	19½	495.3	16.00	406.4	20	1½	38.1	23¾	603.3
18	29¼	743.0	3	82.6	21	533.4			7¼	184.2	21½	546.1	18.00	457.2	20	1.5/8	41.3	25¾	654.1
20	32	812.8	3½	88.9	23	584.2			7½	190.5	24	609.6	20.00	508.0	24	1.5/8	41.3	28½	723.9
22	34¼	870.0	3¾	95.3	25¼	641.4			7¾	196.9	26¼	666.8	22.00	558.8	24	1¾	44.5	30.5/8	777.9
24	37	939.8	4	101.6	27¼	692.2			8	203.2	28¼	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 1/16 inch (1.6mm)
Diameter of bolt-holes shall not be 1/8" (3.2mm) greater than the diameter of bolt.

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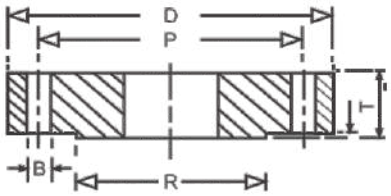
M.S. FLAT FACE OR RAISED FACE FLANGE • P N - 10



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

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TABLE D

FOR WORKING STEAM PRESSURE UPTO 50 LBS PER SQ. INCH

Nominal Pipe Size	O.D. of Pipe	O.D.	P.C. D.	No. of Bolt	Dia of Bolt	Thickness
1 / 2"	21.3	95.3	66.7	4	12.7	4.8
3 / 4"	26.7	101.3	73.0	4	12.7	4.8
1"	33.4	114.3	82.6	4	12.7	4.8
1-1/4"	42.2	120.7	87.3	4	12.7	6.4
1-1/2"	48.3	133.4	98.4	4	12.7	6.4
2"	60.3	152.4	114.3	4	15.9	7.9
2-1/2"	73.0	165.1	127.0	4	15.9	7.9
3"	88.9	184.2	145.1	4	15.9	9.5
3-1/2"	101.6	203.2	165.1	4	15.9	9.5
4"	114.3	215.9	177.8	4	15.9	9.5
5"	141.3	254.0	209.6	8	15.9	12.7
6"	168.3	279.4	235.6	8	15.9	12.7
7"	190.5	304.8	260.4	8	15.9	12.7
8"	219.1	336.6	292.1	8	15.9	12.7
9"	244.5	368.3	323.9	8	15.9	15.9
10"	273.0	406.4	355.6	8	19.1	15.9
12"	323.9	457.2	406.4	12	19.1	15.9
14"	355.6	527.1	469.6	12	22.2	19.1
16"	406.4	577.9	520.7	12	22.2	19.1
18"	457.2	641.4	584.2	12	22.2	22.2
20"	508.0	704.9	641.4	16	22.5	25.4
24"	609.6	825.5	755.7	16	25.4	28.6

TABLE E

FOR WORKING STEAM PRESSURE UPTO 100 LBS PER SQ. INCH

Nominal Pipe Size	O.D. of Pipe	O.D.	P.C. D.	No. of Bolt	Dia of Bolt	Thickness
1 / 2"	21.3	95.3	66.7	4	12.7	6.4
3 / 4"	26.7	101.3	73.0	4	12.7	6.4
1"	33.4	114.3	82.6	4	12.7	7.1
1-1/4"	42.2	120.7	87.3	4	12.7	7.9
1-1/2"	48.3	133.4	98.4	4	12.7	8.7
2"	60.3	152.4	114.3	4	15.9	9.5
2-1/2"	73.0	165.1	127.0	4	15.9	10.3
3"	88.9	184.2	145.0	4	15.9	11.1
3-1/2"	101.6	203.2	165.1	8	15.9	11.9
4"	114.3	215.9	177.8	8	15.9	12.7
5"	141.3	254.0	209.6	8	15.9	14.3
6"	168.3	279.4	235.6	8	19.1	17.5
7"	190.5	304.8	260.4	8	19.1	19.1
8"	219.1	336.6	292.1	8	19.1	19.1
9"	244.5	368.3	323.9	12	19.1	20.6
10"	273.0	406.4	355.6	12	19.1	22.2
12"	323.9	457.2	406.4	12	22.2	25.4
14"	355.6	527.1	469.6	12	22.2	25.4
16"	406.4	577.9	520.7	12	22.2	25.4
18"	457.2	641.4	584.2	16	22.2	28.6
20"	508.0	704.9	641.0	16	22.2	31.8
24"	609.6	825.5	755.7	16	25.4	38.1

TABLE F FOR WORKING STEAM PRESSURE

ABOVE 100 LBS AND UPTO 150 LBS PER SQ. INCH

Nominal Pipe Size	O.D. of Pipe	O.D.	P.C. D.	No. of Bolt	Dia of Bolt	Thickness
1 / 2"	21.3	95.3	66.7	4	12.7	9.5
3 / 4"	26.7	101.3	73.0	4	12.7	9.5
1"	33.4	120.7	87.3	4	15.9	9.5
1-1/4"	42.2	133.4	98.4	4	15.9	12.7
1-1/2"	48.3	139.7	104.8	4	15.9	12.7
2"	60.3	165.1	127.0	4	15.9	15.9
2-1/2"	73.0	184.2	145.0	8	15.9	15.9
3"	88.9	203.2	165.1	8	15.9	15.9
3-1/2"	101.6	215.9	177.8	8	15.9	19.1
4"	114.3	228.6	190.5	8	15.9	19.1
5"	141.3	279.4	235.0	8	19.1	22.2
6"	168.3	304.8	260.4	12	19.1	22.2
7"	190.5	336.6	292.1	12	19.1	22.2
8"	219.1	368.3	323.9	12	19.1	25.0
9"	244.5	406.4	355.6	12	22.2	25.0
10"	273.0	431.8	381.0	12	22.2	25.0
12"	323.9	489.0	438.2	16	22.2	28.6
14"	355.6	552.5	495.3	16	25.4	31.8
16"	406.4	609.6	552.5	20	25.4	31.8
18"	457.2	673.1	609.6	20	28.6	34.9
20"	508.0	736.6	673.1	24	28.6	38.1
24"	609.6	850.9	781.1	24	31.8	41.3

TABLE H For working Steam pressure

ABOVE 150 LBS AND UPTO 250 LBS PER SQ. INCH

Nominal Pipe Size	O.D. of Pipe	O.D.	P.C. D.	No. of Bolt	Dia of Bolt	Thickness
1 / 2"	21.3	114.3	82.6	4	15.9	12.7
3 / 4"	26.7	114.3	82.6	4	15.9	12.7
1"	33.4	120.7	87.3	4	15.9	14.3
1-1/4"	42.2	133.4	98.4	4	15.9	17.0
1-1/2"	48.3	139.7	104.8	4	15.9	17.0
2"	60.3	165.1	127.0	4	15.9	19.1
2-1/2"	73.0	184.2	145.0	8	15.9	19.1
3"	88.9	203.0	165.1	8	15.9	22.2
3-1/2"	101.6	215.9	177.8	8	15.9	22.2
4"	114.3	228.6	190.5	8	15.9	25.4
5"	141.3	279.4	235.0	8	19.1	28.6
6"	168.3	304.8	260.4	12	19.1	28.6
7"	190.5	336.6	292.1	12	19.1	31.8
8"	219.1	368.3	323.9	12	19.1	31.8
9"	244.5	406.4	355.6	12	22.2	34.9
10"	273.0	431.8	381.0	12	22.2	34.9
12"	323.9	489.0	438.2	16	22.2	38.1
14"	355.6	552.5	495.3	16	25.4	41.3
16"	406.4	609.6	552.5	20	25.4	44.5
18"	457.2	673.1	609.6	20	28.6	47.6
20"	508.0	736.6	673.1	24	28.6	50.8
24"	609.6	850.9	781.1	24	31.8	57.2

NOTE : FOR 12.7 MM AND 15.87 BOLTS DIA THE DIAMETERS OF THE HOLES WILL BE 1.58MM LARGER AND FOR 19.01 AND ABOVE THE HOLE DIA WILL BE 3.17 LARGER.

DIMENSIONAL TOLERANCE FOR FLANGES • ANSI B - 16.5

Outside Diameter	When O.D. is < or =24"*(610 mm.) > 24"(610 mm.)	± ±	1/16" (1.6 mm.) 1/8" (3.2 mm)	Outside Diameter	When O.D. is < or =24"*(610 mm.) > 24"(610 mm.)	± ±	1/16" (1.6 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 Contact Face	1/16" (1.6 mm.) Raised Faced		
Diameter of Hub at Base	< & = 12" (300 mm.)	+ -	3/32" (2.4 mm.) 1/16" (1.6 mm.)		1/4"(6.4 mm) Raised Face : Tongue & Grroved (Male / Female)	± ±	1/32" (0.8 mm.) 1/16" (1.6 mm.)
	> & = 14" (350 mm.)	±	1/8" (3.2 mm.)	Diameter of Hub of Hub at Base	< & = 24" (610 mm) >24" (610 mm)	± ±	1/16"(1.6 mm) 1/8" (3.2 mm)
Diameter of Contact Face	1/16" (1.6 mm.) Raised Faced	±	1/32" (0.8 mm.)	Diameter of Hub at point of welding	NPS < & = 5" (125 mm)	+ -	3/32"(2.4mm) 1/32"(0.8mm)
	1/4"(6.4 mm) Raised Face : Tongue & Grroved (Male / Female)	±	1/64" (0.4 mm.)		NPS > & = 8" (150 mm)	+ -	5/32"(4 mm) 1/32"(0.8mm)
Diameter of Counterbore	NPS < & = 10" (250mm.)	+ -	1/32" (0.8 mm.) 0				
	NPS > & = 12" 300 mm	+ -	1/16" (1.6 mm.) 0				
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 : NPS < & = 2.5" (65mm)	±	1/32" (0.8 mm.)		Eccentricity of Bolt Circle & Facing with respect to bore : NPS < & = 2.5" (65mm)	±	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.) 0	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) 0
Length Thrugh Hub	NPS < & = 10" (250 mm)	±	1/16" (1.6 mm.)	Length Thrugh Hub	NPS < & = 10" (250 mm)	±	1/16" (1.6 mm)
	NPS > & = 22" (300 mm)	±	1/8" (3.2 mm.)		NPS > & = 22" (300 mm)	±	1/8" (3.2 mm)

IS 2002 - 62 STEEL PLATES BOILERS

Destination			CHEMICAL COMPOSITION			TENSILE TEST			ELONGATION	
	C max	MIN	SI max	P max	S max	Tensile Strength	Yield Strength Kfg/mm³		Tes Pieces	% min
Is 2002.1	0.18	0.5 1.2	0.15-0.35	0.035	0.040	36.7-49	24	23	5.65/So	24
Is 2002.2	0.20	0.5 1.2	0.15-0.35	0.035	0.040	41.754	27	26	5.65/So	22
Is 2002.3	0.22	0.5 1.2	0.15-0.35	0.035	0.040	46.759	29.5	29	5.65/So	21

IS 2002 - 92 STEEL FOR GENERAL STRUCTURAL PURPOSEIS

Grd.	Designation	% Chemical Composition						Supply Condition	Tensile Strength (min) kgm/m²	Yield Strength (min) kgmm²			% EL. in gauge length 5.56/So	Bend Test	Std. test piece charpy V notch impact energy joule min	Remark
		C max	MIN max	S max	P max	SI max	C. E. max									
A	FE410WA	0.23	1.5	0.050	0.050		0.42	AS rolled	41.8	25.50	24.48	23.45	23	3t		
B	FE410WB	0.22	1.5	0.045	0.045	0.40	0.41	As rolled Plates above 12mm may be normalised if agreed to between manufacture & purchaser	41.8	25.50	24.48	23.45	23	2t 1<25mm 3t for > 25 mm	27	min Charpy impact energy to be quranteed to O.C. agreed between manufactures purchaser
C	FE410WC	0.20	1.5	0.040	0.040	0.40	0.39	As rolled Plates above 12mm may be normalised	41.8	25.50	24.48	23.45	23	2t	27	Properties to be quaranted at any one of two temp namely 20C or 40C as specified by Purchaser

ASTM A537 - 35 PRESSURE VESSEL PLATES, HEAT TREATED, CARBON - MANAGANESE - SILICONE STEEL

Designation	CHEMICAL COMPOSITION %											TENSILE TEST			Elongation % min	
	C max	Si max	Mn Thickness in mm		P max	S max	CU max	Ni max	Cr max	Mo max		Thickness in mm	Tensile Strength	Yield Strength Kis (mpa)	GL=8in or 200mm	GL=2in or 50mm
			t<1-1/2(38)	t > 1-1/2												
A537-1	0.24	0.15-5.15	0.70-1.35	1.0-1.60	0.035	0.040	0.035	0.25	0.25	0.08	Normalised	t<2-1/2(64) 2-1/2<t <4(100)	70-90 (485-620) 65-85 (450-585)	50 (345) 43 (310)	18	22
A537-2	0.24	0.15-0.15	0.70-1.35	1.0-1.60	0.035	0.040	0.035	0.25	0.25	0.08	Normalised	t<2-1/2(64) 2-1/2<t <4(100)	80-100 (550-690) 75-95 (515_655)	60 (415) 45 (380)	18	22

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

Designation	CHEMICAL COMPOSITION				CHEMICAL COMPOSITION			
	C max	min max	P max	S max	Tensil strength Ksi (mpa	Yield Strength Ksi (Mpa) min	Elogation % in	
							GL=8in	GL=2in
A258 A	0.17	0.90	0.035	0.035	45.65 (310-450)	24(165)	27	30
A258 B	0.22	0.90	0.035	0.035	50.70 (345-485)	27(185)	25	28
A258 B	0.28	0.90	0.035	0.035	55.75 (380-515)	30(205)	23	27

ASTM A353 - 78 PRESSURE VESSEL PLATES, ALLOY STEEL, 9 PERCENT NICKEL, DOUBLE NORMALIZED AND TEMPERED

Chemical Composition %							Tensile Test		
Designation	C max	Si max	Mn max	P max	S max	Ni	Tensile Strength ksi (Mpa)	Yield Strength ksi (Mpa) min	Elongation % Min Gl = 2 In Or 50 Mm
A 353	0.13	0.15-0.30	0.90	0.035	0.040	0.50-9.50	100-120 (690-825)	75(515)	20

ASTM 387 - 78 PRESSURE VESSE, PLATES, ALLOY STEEL, CHROMIUM - MOLYBDENUM

CHEMICAL COMPOSITION %										
Designation	Specification	C max	Si max	Mn max	P max	S	Cr	Mo	Tensile Strength ksi (Mpa)	Yield Strength (0.2% Offset) ksi (Mpa) min
A 387	Grade 2	0.21	0.15-0.30	0.55-0.80	0.035	0.040	0.50-0.80	0.45-0.60	55-80 (380-550)	33 (230)
	Grade 12	0.17	0.15-0.30	0.40-0.65	0.035	0.040	0.80-1.15	0.45-0.60	55-80 (380-550)	33 (230)
	Grade 11	0.17	0.50-0.80	0.40-0.65	0.035	0.040	1.00-1.50	0.45-0.65	60-85 (415-585)	35 (240)
	Grade 22	0.15"	0.5 max	0.30-0.60	0.035	0.035	2.00-2.50	0.90-1.10	60-85 (415-585)	30 (205)
	Grade 21	0.15"	0.5 mac	0.30-0.60	0.035	0.035	2.75-3.25	0.90-1.10	60-85 (415-585)	30 (205)
	Grade 5	0.15"	0.5 max	0.30-0.60	0.040	0.030	4.00-6.00	0.45-.0.65	60-85 (415-585)	30 (205)
	Grade 7	0.15"	1.00 max	0.30-0.60	0.030	0.030	6.00-8.00	0.45-0.65	60-85 (415-585)	30 (205)
	Grade 9	0.15"	1.00 max	0.30-0.60	0.030	0.030	8.00-10.00	0.90-1.10	60-85 (415-585)	30 (205)

1. The carbon content for plates over 5 in. (127 mm) in thickness is 0.17% max. on product analysis.

2. (i) For pates Under 0.312 in. (7.92 mm) in thickness, a deduction of 1.25% from the specified percentage of elongation shall be made for each decrease of 10.031 in. (079 mm) of the specified thickness under 0.312 in.

   (ii) For plates over 3.5 in (88.9 mm) in thickness, a deduction of 0.5% from the specified percentage of elongation in 2 in. (50 mm) shall be made for each increase of 0.5 in. of the specified thickness over 3.5 in. This deduction shall not exceed 3%.

   (iii) For plates up to the including 3/4 in. thickness, if the precentage of elongation of an 8 in. or 200 mm gauge length test specimen falls not more than 3% below the amount prescribed, the elongation shall be considered satisfactory provided the percentage of elongation in 2 in. (50 mm) across the break is not less than 25%.

3. Measured on round test specimen.

4. Measured on flat test specimen.

5. Applicable to annealed and normalized - tempered m,aterials.

6. Not applicable to annealed material.

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ASTM A515 - 78 PRESSURE VESSEL PLATES, CARBON STEEL FOR INTERMEDIATE AND HIGHER - TEMPERATURE 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 *2	Gl = 2 in
A 515-55	t<1 (25) t<t<2(5) 2<t<4(100) 4<t<8(200) t<8	0.20 0.22 0.24 0.26 0.28	0.15-0.30	0.90	0.035	0.04	55-75 (380-515)	30(205)	23	27
A 515-60	t<1 (25) t<t<2(50) 2<t<4(100) 4<t<8(200) t<8	0.24 0.27 0.29 0.31 0.31	0.15-0.30	0.90	0.035	0.04	60-80 (415-550)	32(220)	21	25
A 515-65	t<1 (25) t<t<2(50) 2<t<4(100) 4<t<8(200) t<8	0.28 0.31 0.33 0.33 0.33	0.15-0.30	0.90	0.035	0.04	65-85 (450-585)	35(240)	19	23
A515-70	t<1 (25) t<t<2(50) 2<t<4(100) 4<t<8(200) t<8	0.31 0.35 0.35 0.35 0.35	0.15-0.30	0.90	0.035	0.04	70-90 (485-620)	38(260)	17	21

ASTM A-516-78 PRESSURE VESSEL PLATE, CARBON STEEL FOR INTERMEDIATE AND HIGHER - TEMPRETURE 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 *2 or 200 mm	Gl = 2 in or 50 mm
A 515-55	t<1 (13) t<t<2(50) 2<t<4(100) 4<t<8(200) t<8	0.18 0.20 0.22 0.24 0.26	0.15-0.30	0.60-0.90	0.035	0.04	55-75 (380-515)	30(205)	23	27
A 515-60	t<1 (13) t<t<2(50) 2<t<4(100) 4<t<8(200) t<8	0.21 0.23 0.25 0.27 0.27	0.15-0.30	0.60-0.90	0.035	0.04	60-80 (415-550)	32(220)	21	25
A 515-65	t<1 (13) t<t<2(50) 2<t<4(100) 4<t<8(200) t<8	0.24 1.26 0.28 0.29 0.29	0.15-0.30	0.60-0.90	0.035	0.04	65-85 (450-585)	35(240)	19	23
A515-70	t<1 (13) t<t<2(50) 2<t<4(100) 4<t<8(200) t<8	0.272 0.28 0.31 0.031 0.31	0.15-0.30	0.85-1.20	0.035	0.04	70-90 (485-620)	38(260)	17	21

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M.S. ANGLES

Size in mm	Weight in kgs. per feet	Weight in kgs. per Mtr.
20X20X3	0.274	0.899
25X25X3	0.335	1.099
25X25X5	0.548	1.800
31X31X3	0.390	1.280
35X35X5	0.792	2.599
37X37X3	0.518	1.700
40X40X3	0.548	1.798
40X40X5	0.915	3.002
40X40X6	1.066	3.498
50X50X5	1.158	3.799
50X50X6	1.372	4.502
60X60X6	1.645	5.397
65X65X6	1.767	5.798
65X65X8	2.346	7.697
65X65X10	2.864	9.397
75X75X6	2.072	6.798
75X75X8	2.712	8.898
75X75X10	3.352	10.998
80X80X8	2.925	9.597
90X90X6	2.499	8.199
90X90X8	3.292	10.801
90X90X10	4.084	13.400
100X100X6	2.804	9.200
100X100X8	3.687	12.097
100X100X10	4.545	14.912
100X100X12	5.395	17.701
110X110X2	5.028	19.699
130X130X10	6.004	19.700

M.S. BEAMS

Size in mm	Weight in kgs. per feet	Weight in kgs.
100x50	2.712	8.900
125x75	4.023	13.199
150x75	4.571	14.997
175x85	5.943	19.499
200x100	7.893	25.897
250x25	11.612	38.099
300x140	14.782	48.500
350x140	16.125	52.906
400x140	19.080	62.601
450x150	22.280	73.100
500x180	26.730	87.700
600x210	37.370	122.600

M.S. CHANNELS

75x40	2.172	7.126
100x50	2.925	9.597
125x5	3.992	13.098
150x75	5.120	16.799
175x75	5.973	19.597
200x75	6.796	22.298
250x80	9.326	30.599
300x90	11.063	36.298
400x100	15.270	50.300
150x150x10	6.950	22.803
150x150x12	8.290	27.199
150x150x16	10.911	35.799
150x150x20	13.441	44.100

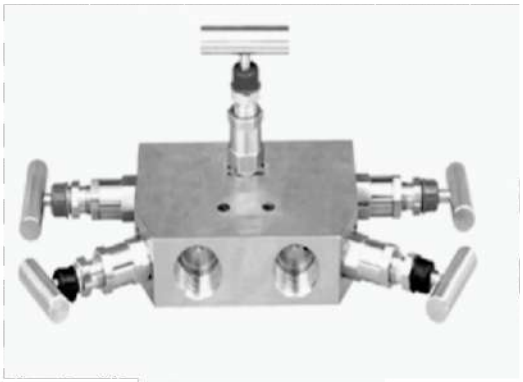
CHEQUERED PLATES

Size in mm	Weight in kgs. per Sq. / Ft.	Weight in kgs. per Sq. / Mt.
5	4.210	45.300
6	4.942	53.200
8	6.400	68.900
10	7.860	84.600
12	9.318	100.300

GALVANISED SHEETS

Gauge	MM	Weight in kgs. per Sq. / Ft.	Weight in kgs. per Sq. / Mt.
16	1.60	1.170	12.596
18	1.20	0.936	10.072
20	0.91	0.760	8.070
22	0.71	0.606	6.527
24	0.63	0.490	5.277
26	0.50	0.396	4.267
28	0.40	0.324	3.486
30	0.31	0.266	2.866

MANIFOLDS AND VALVES



APPLICATIONS

- Precise regulation and shut off of gases, liquids, vacuum and airlines.
- Test Benches, manifolds, sampling line, drains, control panels, vents, etc.
- Suited to control of oil, water, toxic fuids, chemicals, asir and steam service.
- Differential Measurement of liwuid, viscous and gaseous media
- Equializing, calibrating, draining or venting.
- Custody transfer
- Solids in suspension.
- Cryogenic and toxic fuids.
- Nuclear service.

TUBE FITTINGS

FEATURES

- Other instrumentation fittings in different variety of material like Brass, SS 304, SS 316, SS 316L, SS 316TI, Duplex, Monel, Hastelloy C etc.
- Complete interchangeability in the field.
- Reusable - connect and disconnect.
- Special thread cuts ensure no galling.
- Higher rated fittings up to 10,000 PSI optional.
- Capable for usage in varying tube material, hardness and wall thickness.

ACCESSORIES AND MISCELLANEOUS


PRODUCTS

- LED / LCD / LOOP POWERED INDICATORS
- PID / MICROPROCESSOR BASSED CONTROLLERS
- FLAMEPROOF HOUSINGS
- I/P CONVERTORS
- EARTHING RELAYS
- GAUGE COCKS
- OVERLOAD PROTECTORS
- SIPHONS
- COOLING TOWERS

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:

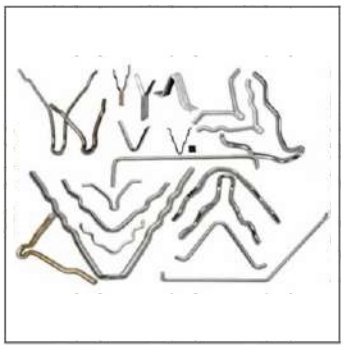
MATERIAL TYPE:-

Stainless Steel	:	AISI 302, 304, 304L, 316, 316L, 310, 317, 317L, 321, 347, 410, 420, 904L etc. 4.6, 5.6, 6.6, 9.9, 10.9 & 12.9 / 'R', 'S', 'T' Conditions.
Carbon Steel	:	Bare Condition, Galvanized, Phosphetised, Cadium Plated etc.
Alloy Steel	:	Hot Deep Galvanized, Bloodied, Nickel Chrome Plated etc.
Others	:	Copper, Brass, Aluminum, Titanium, Nichrome, Al. Bronze, Phosphorous Bronze etc.
Type	:	Bolts, Nuts, Washers, Anchor Fasteners, Stud Bolt, Eye Bolt, Stud, Threaded Rod, Cotter Pin, Socket Screw, Fine Fasteners & Spares, Foundation Fasteners etc.

S.S. ANCHOR

S.S. Anchor is our own Mfg. As per Your Drawing & Any Grade
S.S. Anchor for Caste Ball Lining & Ceramic Fiber



CAM LOCK CUPPLING


Female Adaptor


Male Coupler


Hose Tail Coupler


Female Coupler


Hose Tail Adaptor


Male Adaptor


Dust Cap


Dust Plug

S S BELLOW HOSE PIPE

UN TITAL


Male Connector


Male Bore Through Connector


Male Elbow


Bulk Head Male Connector


Male Elbow 45


Male Run Tee


Male Branch Tee


Female Connector


Bulkhead Female Connector


Female Elbow


Female Run Tee


Female Branch Tee


Union


Reducing Union


Bulkhead Union


Union Elbow


Union Tee


Reducer


Bulkhead Reducer


Male Adapter


Female Adapter


Port Connector


Reducing Connector


Male Pipe Weld Connector


Male Pipe Weld Elbow


Tube Socket Weld Connector


Tube Plug


Tube Cap


Nut


Front Ferrule

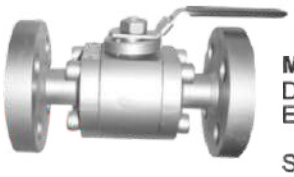
KNIFE GATE VALVE

CAST CARBON STEEL
RATING : 150#
ENDS : FLANGED / LUGGED TYPE
SIZE : 50 WM 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 MM TO 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 / 3PC
ENDS : SCREWED / SOCKET ERLD / 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 / PNEMATICALL
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 / POLY PROPYLENE
ENDS : SCREWED / SOCKER WELD / FLANGED
SIZE : 15 MM TO 400 MM
STAINLESS STEEL
MCC : SS 304 / 316 (BAR STOCK0
DESIGN : 1 PC / 3 PC
ENDS : SCREWED / SOCKET WELD / FLANGED
SIZE : 6 MM TO 100 MM

INVESTMENT CASTING STEAM TRAP

STAINLESS STEEL
ENDS : SCREWED / SOCKET WELD
SIZE : 5 MM TO 25 MM
MAX IINLET : 35 KG / CM² AT 425 C PRESSURE
MIN. PRESS. : 0.25 KG/ CM²

DIAPHRAGM VALVE

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

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

BODY : ASTM A 216 GR. ECB
TRMS : 13Cr STEEL/18 Cr 8 Ni
SPRING : SPRING STEEL
MAX. SET PRES : 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
MCC : SS 304 / 316 (150#)
SIZE : 15 MM TO 150 MM
INVESTMENT CASTING
MCC : CF8 / CF8M (150#)
SIZE : 24 MM TO 150 MM

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
DESING (MFG.) STD.	BS 5352	BS 1873 / DIN 3356
TEST (INSPECTION) STD.	BS 6755	BS 6755

GATE VALVE

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

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 : 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 6 D	ANSI 16.34
DESING (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
DESING (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
DESGIN : 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 500 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 6155 / 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 ACYUATED
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

QUALITY POLICY

Our Excellence

Quality is our prime concern. We are able to maintain high quality standards through our committed personnel and sound infrastructure. We ensure that finest quality material is used for products.

To ensure the quality of each material, we are providing materials Test Certificate alog wit supply.

Our team of experts maintain a visit on the quality of the products. Evry Single piece is attached with test certificates and reports. We are continually improving our quality to serve our clients better.

OUR FACILITIES

We have a sound infrastrucure. Our spacious warehouse warehouse has the capacity to store large quantities of products.

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Our qualified professionals have served as beacon not only for us but also for the entire industry in establishing top-notch quality standards.

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RAHUL STEEL INDIA can offer you material with inspection of and third. Third party inspection offers quality and thorough Inspection for buyers. The Inspection Agency can be nominated by client or we can arrange the third party inspection by various world class reputed agency like below...

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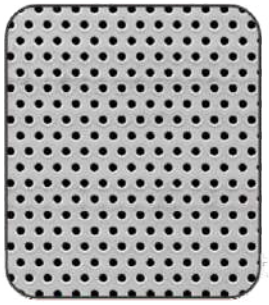
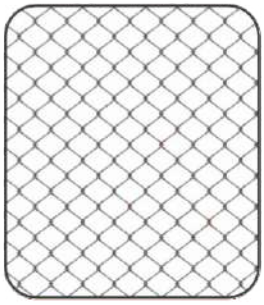


FORMULA OF CALCULATING WEIGHT

01. Weight of S.S. Sheets & Plates :
Length (mm) X Width (mm) X Thick (MM) X 0.000008 = Wt. Per PC
Length (fit) X Width (Mtrs) X Thick (mm) X ¾ = Wt. Per PC

02. Weight of S.S. Circle
Dia (mm) X Dia (mm) X Thick (mm) / 160 = Gms. Per PC
Dia (mm) X Dia (mm) X Thick (mm) X 0.00000063 = Kg. Per PC.

03. Weight of S.S. Pipe
O.D. (mm) – W Thick (mm) X W.Thick (mm) X 0.0248 = Wt. Per Feet.
O.D. (mm) – W Thick (mm) X W.Thick (mm) X 0.00758 = Wt. Per Mtr.

04. Weight of S.S. Round Bar.
Dia (mm) X Dia (mm) X 0.00623 = Wt. Per. Mtr.
Dia (mm) X Dia (mm) X 0.0019 = Wt. Per. Feet.

05. Weight of S.S. Square Bar
Dia (mm) X Dia (mm) X 0.00788 = Wt. Per. Mtr
Dia (mm) X Dia (mm) X 0.0024 = Wt.Per. Feet.

06. Weight of S.S. Hexagonal Bar
Dia (mm) X Dia (mm) X 0.00680 = Wt. Per.Mtr
Width (mm) X Dia (mm) X 0.002072 = Wt. Per Feet

07. Weight of S.S. Flate Bar
Width (mm) X Thick (mm) X 0.00798 = Wt.Per Mtr.
Width (mm) X Thick (mm) X 0.00243 = Wt.Per Feet.

08. Weight of Brass Pipe / Copper Pipe
O.D. (mm) – Thick (mm) X Thick (mm) X 0.0260 = Wt. Per Mtr.

09. Weight of Aluminium Pipe
O.D. (mm) – Thick (mm) X Thick (mm) X 0.0083 = Wt.Per. Mtr.

10. Weight of Aluminium Sheet
Length (Mtr) X Width (Mtr) X Thick (mm) X 2.69 = Wt.Per PC

11. Weight of Conversion of Mtr to Feet
Wt of 1 Mtr.÷3.2808 = Wt.Per Feet.

12.
1 Feet = 0.3048 meter
1 Mtr. = 3.2808 ft.
1 inch. = 25.4 mm
1 Pound = 0.454 (45359243) kgs.

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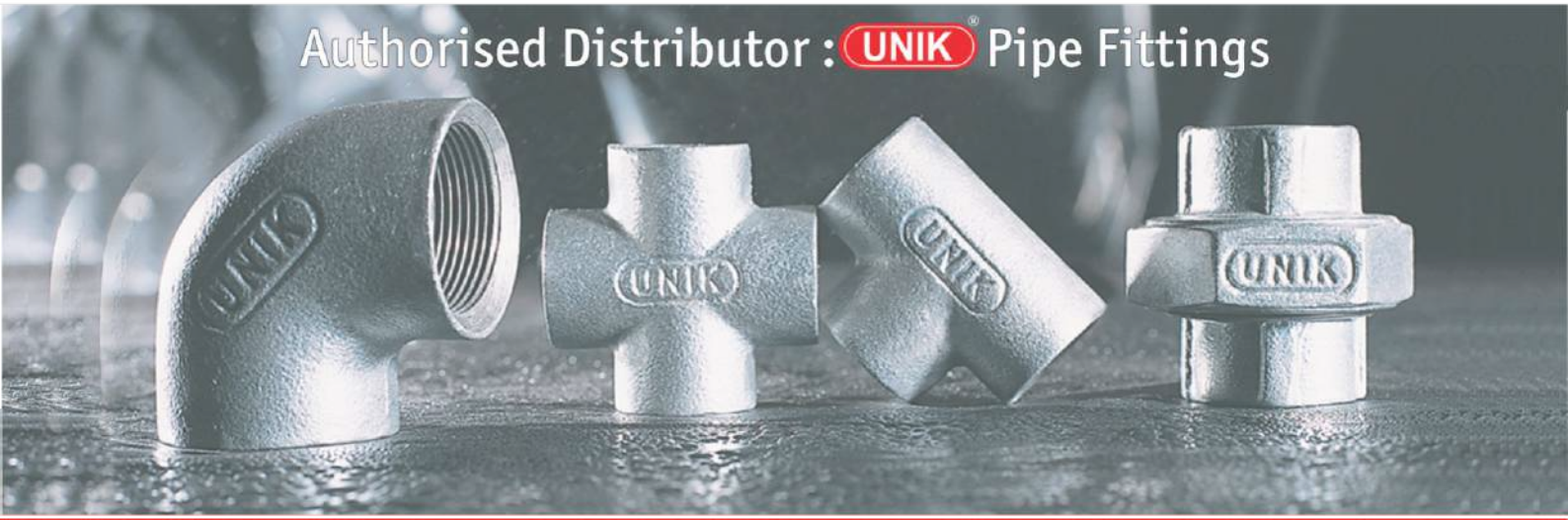

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