

## COMPANY PROFILE

Introducing you to one of the leading and prominent ISO-certified Indian steel company with a track record of success, achievement, and considerable progress in the steel industry in India.

Citizen Tube Industries was established in 1992 and have already helped several customers in India and abroad for the past 3 decades to provide them with the best steel quality they want.

Since CTI is the number one priority of our customers on a national and international level we are delighted to tell you the factual reason behind our tremendous success and experience that how we have earned and built customer's trust in the past 30 years.

### What Makes CTI Stand Out Among Others

- CTI has widely recognized worldwide for providing steel with excellence and distinguished quality.
- The management team of CTI is well trained enough that it always makes sure to meet all the requirements of customers and do everything possible to assist them.
- We at CTI have a spectrum analyser and testing equipment to check the mechanical performance of steel products to meet the customer's satisfaction.
- CTI has a separate team of inspectors who keenly observe all the batches and bars of steel to test the quality before delivering them to the customers.
- The inspection team also measures the length, width, and thickness also scrutinizes the chemical composition and mechanical attainment of steel to ensure that our customers can source the best quality product from us.
- We make sure that the steel our customers received should be free from any type of contamination like mud, dust, oil, or any other external material.
- Our team also checks that the steel we provide should not have any cracks, divisions, splits, breaches, and any other malformation on it.
- Our timely delivery and quality products at a fair price are what makes us stand out among others in the steel industry and helped us gain the long customer loyalty with satisfaction.

Contact us :

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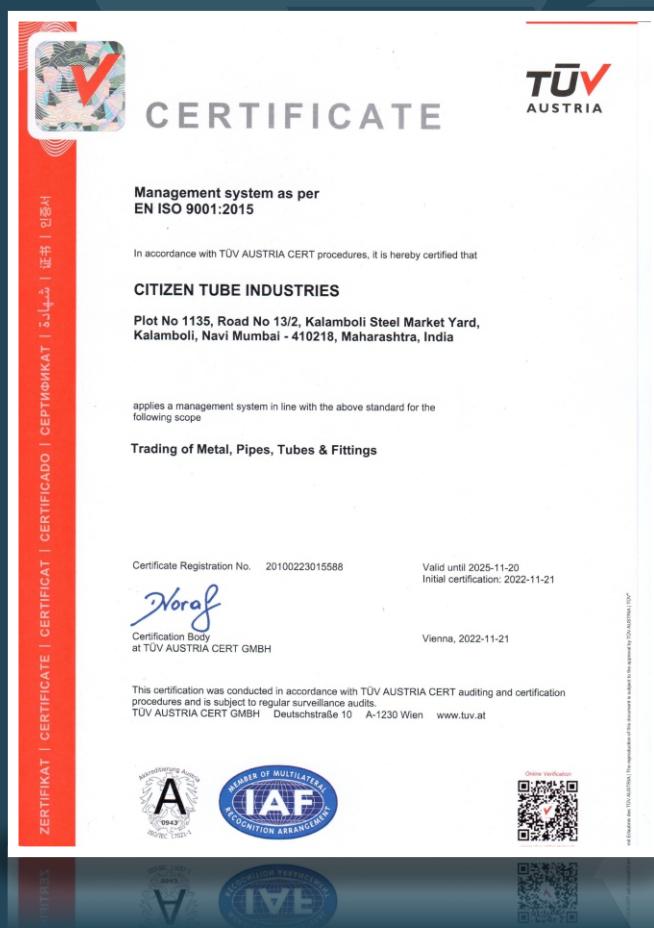


- Oil & Gas
- Petrochemicals
- Agro Chemicals
- Fire Safety Product
- Shipping
- Engineering
- Dairy & Food Processing
- Pharmaceuticals

### Our Product range :

Butt weld Fittings, Socket weld fittings, Flanges, Fasteners in order to further expand the market and our product offerings we are very actively involved in importing, stocking, exporting & supply of stainless steel, carbon steel, alloy steel in the form of pipes, tubes, sheets, plates, rods, tube fittings, wire mesh, etc.

# CERTIFICATES



EN ISO 9001:2015

MEMBERSHIP

## PRODUCT RANGE

**Stainless Steel :** ASTMA312 TP 304/ 304L/ 304H/ 316/ 316L/ 317/ 317L/ 321/ 310/ 347/ 904L etc.

**Carbon Steel :** ASTMA53 GR. B/ A106 GR. B/ API 5L GRADE B/ API 5L GR. X42/ 46/ 52/ 56/ 60/ 65/ 70/ Low Temperature, Carbon Steel: A333 Gr.3/ Gr.6 etc.

**Alloy Steel :** ASTMA335 GR. P1/ P5/ P9/ P11/ P22/ P91 etc.

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

**Duplex & Super Duplex Steel :** UNS S31803, UNS S32750, UNS S32760, 904L, Alloy 20

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

Types : Round, Square, Rectangular.

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

**Wall Thickness :** Sch. 5S to Sch. XXS

### Stainless Steel Coils, Sheets & Plates as per

ASTM A 240 Gr. TP 304, 304L, 304LN, 309, 309S, 309H, 310S, 310H, 316, 316L, 316H, 316LN, 316TI, 317, 317L, 321, 321H, 347, 347H, 348, 348H, 409, 410, 420, 430 etc.

**Alloy Steel Plates** as per ASTM A 387 Gr. 2, 5, 9, 11, 12 & 22 in class 1 & 2, ASTM A 204, Gr. A & B, DIN 17175 Gr. 15Mo3 & 16Mo3 with IBR Test Certificate.

**Carbon Steel / Boiler Quality Plates** as per IS 2062 Gr. A, B & C, IS 2002 Gr. 1& 2, ASTM A516 Gr. 60 & 70 ASTM A515 Gr. 70.

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

**Duplex & Super Duplex Steel:** UNS S31803, UNS S32750, UNS 532760, 904L, Alloy 20 Types: Sheet, Plates, Strips, etc.

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

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

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

**Duplex & Super Duplex Steel :** UNS S31803, UNS S32750, UNS S32760, 904L, Alloy 20

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

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

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

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

## PIPES & TUBES



## SHEET, PLATES & COIL



## BUTTWELD FITTINGS



**Stainless Steel :** ASTMA182 F304/304L/304H/316/316L/317/317L/321/310/347/904L etc.

**Carbon Steel :** ASTMA105/A694 F42/46/52/56/60/65/70/A350 LF3/A350 LF2F.

**Alloy Steel :** ASTMA 182 F1/F5/F/F11/F22/F91 etc.

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

**Types :** Elbow, Tee, Union, Cross, Coupling, Cap, Bushing, Plug, Swage Nipple, Welding Boss, Hexagon Nipple, Barrel Nipple, Welding Nipple, Parallel Nipple, Street Elbow, Hexagon Nut, Hose Nipple, Bend, Adapter, Insert, Wedolet, Eblowlet, Sockolet, Therdolet, Nipolet, Letrolet, etc.

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

**Class :** 3000#, 6000#, 9000#.

## FORGED SOCKETWELD & SCREWED FITTINGS



**Stainless Steel :** ASTMA182 F304/304L/304H/316/316L/317/317L /321/310/347/904L etc.

**Carbon Steel :** ASTMA105/A694 F42/46/52/56/60/65/70/A350 LF3/A350 LF2, etc.

**Alloy Steel :** ASTMA182 F1/F5/F9/F11/F22/F91 etc.

**Duplex & Super Duplex Steel :** UNS S31803, UNS S32750, UNS S32760, 904L, Alloy 20

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

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

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

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

**Stainless Steel:** ASTMA182 F304/304L/304H/316/316L/317/317L/ 321/310/347/904L etc.

**Carbon Steel:** ASTM A105/A694 F42/46/52/56/60/65/70/A350 LF3/ A350 LF2.

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

**Duplex & Super Duplex Steel:** UNS S31803, UNS S32750, UNS S32760, 904L, Alloy 20

Other: Stainless Steel, Nickel Alloys, Carbon Steel, Alloy Steel, Monel, Nickel, Inconel, Hastalloy, Copper, Brass, Bronze, Titanium, Tantalum, Bimuth, Aluminium, High Speed Steel, Zinc, Lead, Etc.

**Types:** Nipples, Adaptors, Crosses, Union Ball Joints, Reducing Bushing, Reducers, Pipe Caps, Couplings, Pipe Plug, Hollow Hex Plug, Elbow, Reducing Union, 90 Deg. Union Elbow, Reducing 90 Deg. Union Elbow Etc. Extender Leg 90 Deg. Union Elbow, 45 Deg. Union Elbow, Union Tee, Female Connector, Male Connector, Manifold Tee, Locator Union, Extended Run Leg Union Tee, Reducing Tee, Tribow, ATW Weld Ring, Tube Socket weld To Pipe Butt Weld, Tube Butt Weld To Tube Socket Weld, Port Connector, Etc.

## FLANGES



## FERRULE FITTINGS



## MANUFACTURING :

### BUTTWELD / SOCKETWELD / THREADED FITTING & FLANGES



This is to introduce ourselves as the most reliable outsourcing partners for manufacturing of butt welding pipe fittings, socket weld, pipe fittings, flanges & tubular components in all kinds of steel. Our panel of experienced manufacturers ensures excellent quality fittings meeting exacting standards of National & International quality.

These Pipe Fittings are manufactured from ferrous metals such as Carbon Steel, Alloy Steel, Low Temperature Carbon Steel & Stainless Steel. Both Seamless and E.R.W. Pipe Fittings are Produced by our special manufacturing process involving either hot or cold forming. We are fully capable of manufacturing Pipe fittings made to customer's specifications in terms of type, dimensions, material & quantity under any third party inspection.

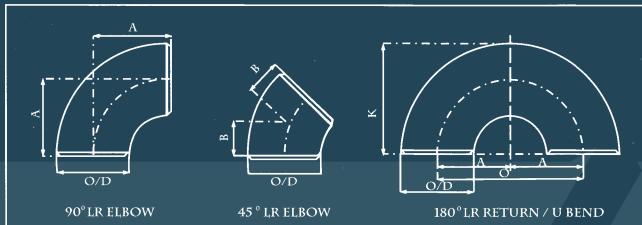
These Pipe Fittings are perfectly round, rugged, leak proof, corrosion resistant (Where ever required), meeting all the requirements to ASA/BS/DIN/ISI codes. These quality fittings extend the life of piping systems, facilitate direct pipe welding, permit compact installations & reduce the space necessary for installing a piping network.

## FACILITIES

- Hydraulic Press
- Oil Fired Furnace with Temp. Recorder
- Universal Testing Machine
- Hardness Tester
- Chemical Laboratory
- Hacksaw cutting Machines
- Lathe Machines
- Plate Rolling Machines
- Grinding Machines
- Drilling Machines
- Moto Generator Welding Sets (Advan)
- AC Welding Sets (Advan)
- DC Rectifier Welding Sets (Advan)
- Computer & Software

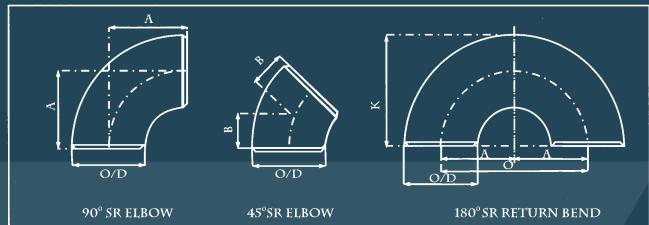
# BUTTWELD FITTINGS

## L R ELBOW & L R RETURN / U BEND



B16.9

## S R ELBOW & S R RETURN BEND



B16.9 / B16.28

L R ELBOW & L R RETURN / U BEND

B16.9

Nominal Pipe Size (NPS)	Outside Diameter at Bevel (O/D)	Dimension A	Dimension B	Center to Center O	Back to Face K
1/2"	21.3	38	16	76	48
3/4"	26.7	38	19	76	51
1"	33.4	38	22	76	56
1.1/4"	42.2	48	25	95	70
1.1/2"	48.3	57	29	114	83
2"	60.3	76	35	152	106
2.1/2"	73.0	95	44	190	132
3"	88.9	114	51	229	159
3.1/2"	101.6	133	57	267	184
4"	114.3	152	64	305	210
5"	141.3	190	79	381	262
6"	168.3	229	95	457	313
8"	219.1	305	127	610	414
10"	273.0	381	159	762	518
12"	323.8	457	190	914	619
14"	355.6	533	222	1067	711
16"	406.4	610	254	1219	813
18"	457.0	686	286	1372	914
20"	508.0	762	318	1524	1016
22"	559.0	838	343	1676	1118
24"	610.0	914	381	1829	1219
26"	660.0	991	406	....	....
28"	711.0	1067	438	....	....
30"	762.0	1143	470	....	....
32"	813.0	1219	502	....	....
34"	864.0	1295	533	....	....
36"	914.0	1372	565	....	....

Note : All Dimensions are in millimeters (mm) Dimension for 38" and above on request.

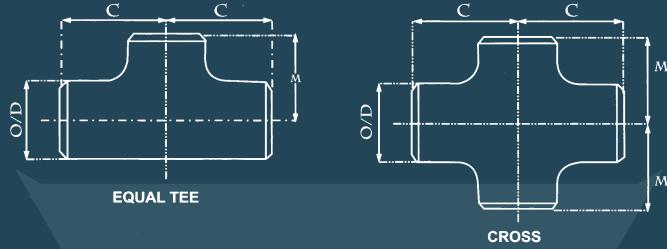
SR ELBOW & SR RETURN BEND

B16.9 / B16.28

Nominal Pipe Size (NPS)	Outside Diameter at Bevel (O/D)	Dimension A	Dimension B	Center to Center O	Back to Face K
1/2"	21.3	....	....	....	....
3/4"	26.7	....	....	....	....
1"	33.4	25	...	51	41
1.1/4"	42.2	32	...	64	52
1.1/2"	48.3	38	...	76	62
2"	60.3	51	...	102	81
2.1/2"	73.0	64	...	127	100
3"	88.9	76	31.6	152	121
3.1/2"	101.6	89	36.8	178	140
4"	114.3	102	42.1	203	159
5"	141.3	127	52.6	254	197
6"	168.3	152	63.4	305	237
8"	219.1	203	84.2	406	313
10"	273.0	254	105.2	508	391
12"	323.8	305	126.3	610	467
14"	355.6	356	147.3	711	533
16"	406.4	406	168.3	813	610
18"	457.0	457	189.4	914	686
20"	508.0	508	210.4	1016	762
22"	559.0	559	231.5	1118	838
24"	610.0	610	252.5	1219	914

Note : All Dimensions are in millimeters (mm)

## BUTTWELD FITTINGS



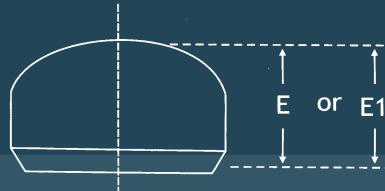
EQUAL TEE, CROSS

B16.9

Nominal Pipe Size (NPS)	Outside Diameter at Bevel (O/D)	Run 'C'	Outlet 'M'
1/2"	21.3	25	25
3/4"	26.7	29	29
1"	33.4	38	38
1.1/4"	42.2	48	48
1.1/2"	48.3	57	57
2"	60.3	64	64
2.1/2"	73.0	76	76
3"	88.9	86	86
3.1/2"	101.6	95	95
4"	114.3	105	105
5"	141.3	124	124
6"	168.3	143	143
8"	219.1	178	178
10"	273.0	216	216
12"	323.8	254	254
14"	355.6	279	279
16"	406.4	305	305
18"	457.0	343	343
20"	508.0	381	381
22"	559.0	419	419
24"	610.0	432	432
26"	660.0	495	495
28"	711.0	521	521
30"	762.0	559	559
32"	813.0	597	597
34"	864.0	635	635
36"	914.0	673	673

**Note :** All Dimensions are in millimeters (mm)  
Dimension for 38" and above on request.

### EQUAL TEE, CROSS & CAPS



CAPS

B16.9

Nominal Pipe Size (NPS)	Outside Diameter at Bevel D	Length (1) E	Limiting Wall Thickness for Length E	Length (2) E1
1/2	0.84	1.00	0.18	1.00
3/4	1.05	1.00	0.15	1.00
1	1.32	1.50	0.18	1.50
1 1/4	1.66	1.50	0.19	1.50
1 1/2	1.90	1.50	0.20	1.50
2	2.38	1.50	0.22	1.75
2 1/2	2.88	1.50	0.28	2.00
3	3.50	2.00	0.30	2.50
3 1/2	4.00	2.50	0.32	3.00
4	4.50	2.50	0.34	3.00
5	5.56	3.00	0.38	3.50
6	6.62	3.50	0.43	4.00
8	8.62	4.00	0.50	5.00
10	10.75	5.00	0.50	6.00
12	12.75	6.00	0.50	7.00
14	14.00	6.50	0.50	7.50
16	16.00	7.00	0.50	8.00
18	18.00	8.00	0.50	9.00
20	20.00	9.00	0.50	10.00
22	22.00	10.00	0.50	10.00
24	24.00	10.50	0.50	12.00
26	26.00	10.50	...	...
28	28.00	10.50	...	...
30	30.00	10.50	...	...
32	32.00	10.50	...	...
34	34.00	10.50	...	...
36	36.00	10.50	...	...
38	38.00	12.00	...	...
40	40.00	12.00	...	...
42	42.00	12.00	...	...
44	44.00	13.50	...	...
46	46.00	13.50	...	...
48	48.00	13.50	...	...

#### GENERAL NOTE :

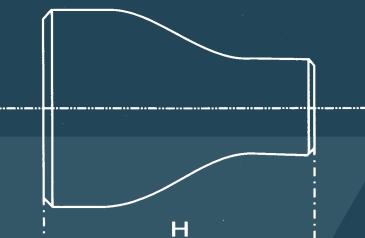
- (a) Dimensions are in inches.
- (b) The shape of these caps shall be ellipsoidal and shall conform to the shape requirements as given in the ASME Boiler and Pressure Vessel Code

#### NOTES :

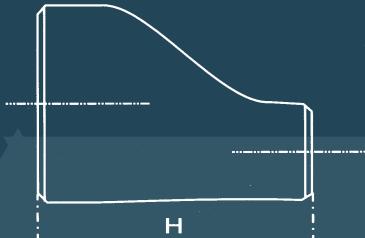
- (1) Length E applies for thickness not exceeding that given in column "Limiting Wall Thickness for Length E".
- (2) Length E1 applies for thickness greater than that given in column "Limiting Wall Thickness" for NPS 24 and smaller For NPS 26 and larger, length E1 shall be by agreement between manufacturer and purchaser.

# BUTTWELD FITTINGS

## REDUCER : CONCENTRIC & ECCENTRIC



CONCENTRIC REDUCER



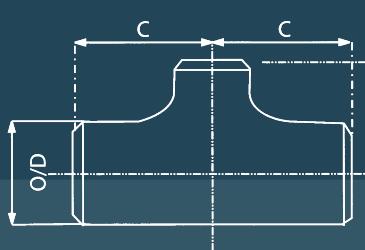
ECCENTRIC REDUCER

B16.9

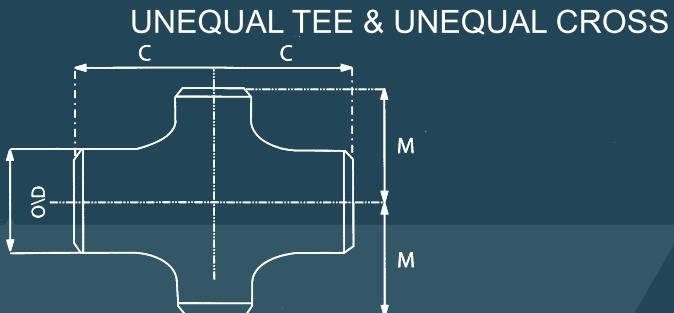
Nominal Pipe Size (NPS)	Outside Diameter at Bevel (O/D)			Nominal Pipe Size (NPS)	Outside Diameter at Bevel (O/D)		
	Run	Outlet	H		Run	Outlet	H
3/4" x 1/2"	26.7	21.3	38	12" x 10"	323.8	273.0	203
3/4" x 3/8"	26.7	17.3	38	12" x 8"	323.8	219.1	203
1" x 3/4"	33.4	26.7	51	12" x 6"	323.8	168.3	203
1" x 1/2"	33.4	21.3	51	12" x 5"	323.8	141.3	203
1.1/4" x 1"	42.2	33.4	51	14" x 12"	355.6	323.8	330
1.1/4" x 3/4"	42.2	26.7	51	14" x 10"	355.6	273.0	330
1.1/4" x 1/2"	42.2	21.3	51	14" x 8"	355.6	219.1	330
1.1/2" x 1.1/4"	48.3	42.2	64	14" x 6"	355.6	168.3	330
1.1/2" x 1"	48.3	33.4	64	16" x 14"	406.4	355.6	356
1.1/2" x 3/4"	48.3	26.7	64	16" x 12"	406.4	323.8	356
1.1/2" x 1/2"	46.3	21.3	64	16" x 10"	406.4	273.0	356
2" x 1.1/2"	60.3	48.3	76	16" x 8"	406.4	219.1	356
2" x 1.1/4"	60.3	42.2	76	18" x 16"	457.0	406.4	381
2" x 1"	60.3	33.4	76	18" x 14"	457.0	356.6	381
2" x 3/4"	60.3	26.7	76	18" x 12"	457.0	323.8	381
2.1/2" x 2"	73.0	60.3	89	18" x 10"	457.0	273.0	381
2.1/2" x 1.1/2"	73.0	48.3	89	20" x 18"	508.0	457.0	508
2.1/2" x 1.1/4"	73.0	42.2	89	20" x 16"	508.0	406.4	508
2.1/2" x 1"	73.0	33.4	89	20" x 14"	508.0	355.6	508
3" x 2.1/2"	88.9	73.0	89	20" x 12"	508.0	323.8	508
3" x 2"	88.9	60.3	89	22" x 20"	559.0	508.0	508
3" x 1.1/2"	88.9	48.3	89	22" x 18"	559.0	457.0	508
3" x 1.1/4"	88.9	42.2	89	22" x 16"	559.0	406.4	508
3.1/2" x 3"	101.6	88.9	102	22" x 14"	559.0	355.6	508
3.1/2" x 2.1/2"	101.6	73.0	102	24" x 22"	610.0	559.0	508
3.1/2" x 2"	101.6	60.3	102	24" x 20"	610.0	508.0	508
3.1/2" x 1.1/2"	101.6	48.3	102	24" x 18"	610.0	457.0	508
4" x 3.1/2"	114.3	101.6	102	24" x 16"	610.0	406.4	508
4" x 3"	114.3	88.9	102	26" x 24"	660.0	610.0	610
4" x 2.1/2"	114.3	73.0	102	26" x 22"	660.0	559.0	610
4" x 2"	114.3	60.3	102	26" x 20"	660.0	508.0	610
4" x 1.1/2"	114.3	48.3	102	26" x 18"	660.0	457.0	610
5" x 4"	141.3	114.3	127	28" x 26"	711.0	660.0	610
5" x 3.1/2"	141.3	101.6	127	28" x 24"	711.0	610.0	610
5" x 3"	141.3	88.9	127	28" x 20"	711.0	508.0	610
5" x 2.1/2"	141.3	73.0	127	28" x 18"	711.0	457.0	610
5" x 2"	141.3	60.3	127	30" x 28"	762.0	711.0	610
6" x 5"	168.3	141.3	140	30" x 26"	762.0	660.0	610
6" x 4"	168.3	114.3	140	30" x 24"	762.0	610.0	610
6" x 3.1/2"	168.3	101.6	140	30" x 20"	762.0	508.0	610
6" x 3"	168.3	88.9	140	32" x 30"	813.0	762.0	610
6" x 2.1/2"	168.3	73.0	140	32" x 28"	813.0	711.0	610
8" x 6"	219.1	168.3	152	32" x 26"	813.0	660.0	610
8" x 5"	219.1	141.3	152	32" x 24"	813.0	610.0	610
8" x 4"	219.1	114.3	152	34" x 32"	864.0	813.0	610
8" x 3.1/2"	219.1	101.6	152	34" x 30"	864.0	762.0	610
10" x 8"	273.0	219.1	178	34" x 26"	864.0	660.0	610
10" x 6"	273.0	168.3	178	34" x 24"	864.0	610.0	610
10" x 5"	273.0	141.3	178				
10" x 4"	273.0	114.3	178				

Note : All Dimensions are in millimeters (mm)  
Dimension for 36" and above on request.

## BUTTWELD FITTINGS



UNEQUAL TEE



CROSS UNEQUAL

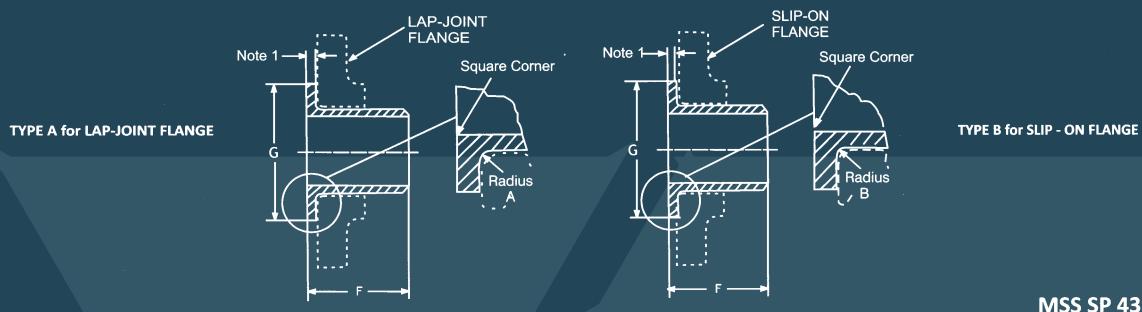
B16.9

Nominal Pipe Size (NPS)	Outside Diameter at Bevel (O/D)		Center - to - Center		Nominal Pipe Size (NPS)	Outside Diameter at Bevel (O/D)		Center - to - Center	
	Run	Outlet	Run'C'	Outlet 'M'		Run	Outlet	Run'C'	Outlet 'M'
1/2" x 3/8"	21.3	17.3	25	25	10" x 8"	273.0	219.1	216	203
1/2" x 1/4"	21.3	13.7	25	25	10" x 6"	273.0	168.3	216	194
3/4" x 1/2"	26.7	21.3	29	29	10" x 5"	273.0	141.3	216	191
3/4" x 3/8"	26.7	17.3	29	29	10" x 4"	273.0	114.3	216	184
1" x 3/4"	33.4	26.7	38	38	12" x 10"	323.8	273.0	254	241
1" x 1/2"	33.4	21.3	38	38	12" x 8"	323.8	219.1	254	229
1.1/4" x 1"	42.2	33.4	48	48	12" x 6"	323.8	168.3	254	219
1.1/4" x 3/4"	42.2	26.7	48	48	12" x 5"	323.8	141.3	254	216
1.1/4" x 1/2"	42.2	21.3	48	48	14" x 12"	355.6	323.8	279	270
1.1/2" x 1.1/4"	48.3	42.2	57	57	14" x 10"	355.6	273.0	279	257
1.1/2" x 1"	48.3	33.4	57	57	14" x 8"	355.6	219.1	279	248
1.1/2" x 3/4	48.3	26.7	57	57	14" x 6"	355.6	168.3	279	238
1.1/2" x 1/2"	48.3	21.3	57	57	16" x 14"	406.4	355.6	305	305
2" x 1.1/2"	60.3	48.3	64	60	16" x 12"	406.4	323.8	305	295
2" x 1.1/4"	60.3	42.2	64	57	16" x 10"	406.4	273.0	305	283
2" x 1"	60.3	33.4	64	51	16" x 8"	406.4	219.1	305	273
2" x 3/4"	60.3	26.7	64	44	16" x 6"	406.4	168.3	305	264
2.1/2" x 2"	73.0	60.3	76	70	18" x 16"	457.0	406.4	343	330
2.1/2" x 1.1/2"	73.0	48.3	76	67	18" x 14"	457.0	355.6	343	330
2.1/2" x 1.1/4"	73.0	42.2	76	64	18" x 12"	457.0	323.8	343	321
2.1/2" x 1"	73.0	33.4	76	57	18" x 10"	457.0	273.0	343	308
3" x 2.1/2"	88.9	73.0	86	83	18" x 8"	457.0	219.1	343	298
3" x 2"	88.9	60.3	86	76	20" x 18"	508.0	457.0	381	368
3" x 1.1/2"	88.9	48.3	86	73	20" x 16"	508.0	406.4	381	356
3" x 1.1/4"	88.9	42.2	86	70	20" x 14"	508.0	355.6	381	356
3.1/2" x 3"	101.6	88.9	95	92	20" x 12"	508.0	323.8	381	346
3.1/2" x 2.1/2"	101.6	73.0	95	89	20" x 10"	508.0	273.0	381	333
3.1/2" x 2"	101.6	60.3	95	83	20" x 8"	508.0	219.1	381	324
3.1/2" x 1.1/2"	101.6	48.3	95	79	22" x 20"	559.0	508.0	419	406
4" x 3.1/2"	114.3	101.6	105	102	22" x 18"	559.0	457.0	419	394
4" x 3"	114.3	88.9	105	98	22" x 16"	559.0	406.4	419	381
4" x 2.1/2"	114.3	73.0	105	95	22" x 14"	559.0	355.6	419	381
4" x 2"	114.3	60.3	105	89	22" x 12"	559.0	323.8	419	371
4" x 1.1/2"	114.3	48.3	105	86	22" x 10"	559.0	273.0	419	359
5" x 4"	141.3	114.3	124	117	24" x 22"	610.0	559.0	432	432
5" x 3.1/2"	141.3	101.6	124	114	24" x 20"	610.0	508.0	432	432
5" x 3"	141.3	88.9	124	111	24" x 18"	610.0	457.0	432	419
5" x 2.1/2"	141.3	73.0	124	108	24" x 16"	610.0	406.4	432	406
5" x 2"	141.3	60.3	124	105	24" x 14"	610.0	355.6	432	406
6" x 5"	168.3	141.3	143	137	24" x 12"	610.0	323.8	432	397
6" x 4"	168.3	114.3	143	130	24" x 10"	610.0	273.0	432	384
6" x 3.1/2"	168.3	101.6	143	127	26" x 24"	660.0	610.0	495	483
6" x 3"	168.3	88.9	143	124	26" x 22"	660.0	559.0	495	470
6" x 2.1/2"	168.3	73.0	143	121	26" x 20"	660.0	508.0	495	457
8" x 6"	219.1	168.3	178	168	26" x 18"	660.0	457.0	495	444
8" x 5"	219.1	141.3	178	162	26" x 16"	660.0	406.4	495	432
8" x 4"	219.1	114.3	178	156	26" x 14"	660.0	355.6	495	432
8" x 3.1/2"	219.1	101.6	178	152	26" x 12"	660.0	323.8	495	422

Note : All Dimensions are in millimeters (mm)  
Dimension for 30" and above on request.

# BUTTWELD FITTINGS

## LAP-JOINT STUB ENDS MSS SP 43



Nominal Pipe Size	Outside Diameter at Bevel	Out side Diameter of lap G	Stub Ends		
			Length F*	Radius* of Fillet	
				A - nominal and max	B (max)
1/2	0.84	1.38	2	0.12	0.03
3/4	1.05	1.69	2	0.12	0.03
1	1.32	2	2	0.12	0.03
1 1/4	1.66	2.5	2	0.19	0.03
1 1/2	1.9	2.88	2	0.25	0.03
2	2.38	3.63	2.5	0.31	0.03
2 1/2	2.88	4.13	2.5	0.31	0.03
3	3.5	5	2.5	0.38	0.03
3 1/2	4	5.5	3	0.38	0.03
4	4.5	6.19	3	0.44	0.03
5	5.56	7.31	3	0.44	0.06
6	6.63	8.5	3.5	0.5	0.06
8	8.63	10.62	4	0.5	0.06
10	10.75	12.75	4	0.5	0.06
12	12.75	15	6	0.5	0.06
14	14	16.25	6	0.5	0.06
16	16	18.5	6	0.5	0.06
18	18	21	6	0.5	0.06
20	20	23	6	0.5	0.06
24	24	27.25	6	0.5	0.06

All Dimension are in Inches

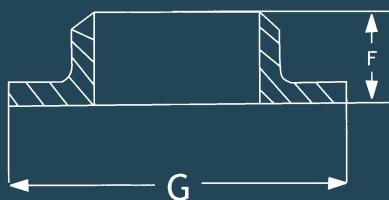
\* These lengths and radii for use with Schedule 40S or thinner pipe.

Note 1. The minimum lap thickness shall not be less than nominal pipe wall thickness.

Note 2. Contact faces of stub ends shall have a modified spiral or concentric serration.

## PRESSED STUBENDS / WELDING COLLARS

NOMINAL BORE (INCH)	OUTSIDE DIAMETER AT BEVEL	OUT SIDE DIAMETER OF LAP G	HEIGHT 'F'
1/2	0.84	1.38	0.31
3/4	1.05	1.69	0.31
1	1.32	2	0.39
1 1/4	1.66	2.5	0.47
1 1/2	1.9	2.88	0.47
2	2.38	3.63	0.62
2 1/2	2.88	4.13	0.62
3	3.5	5	0.70
3 1/2	4	5.5	0.78
4	4.5	6.19	0.78
5	5.56	7.31	0.98
6	6.63	8.5	0.98
8	8.63	10.62	1.18
10	10.75	12.75	1.37
12	12.75	15	1.57



NOTE : 1) All Dimension are in Inches

2) Thk as per Sch10S/40S etc.

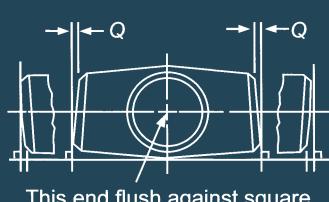
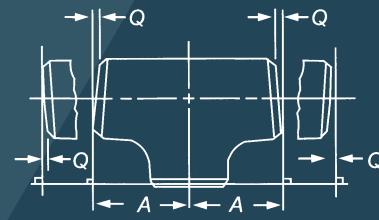
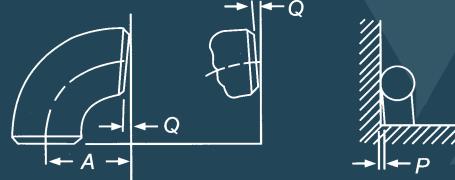
3) Also can be manufactured in DIN Standard or as per your drawings

# BUTTWELD FITTINGS

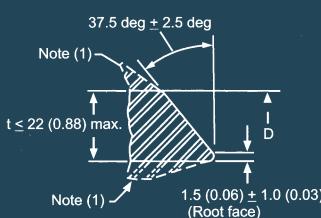
## DIMENSIONAL TOLERANCE OF PIPE FITTING ANSI B16.9 / B16.28 / MSS SP - 43

ALL FITTINGS				90°/60°/45° 30° ELBOWS & TEES		REDUCERS & STUBEND		180° RETURNS				CAPS		ANGULARITY TOLERANCE				
Nominal Pipe size INCH/MM	Outside Diameter at Bevel	Inside Dia Meter	Wall Thickness at End	Center to End		Overall Length Dimension	Center to End	Back to Face Dimension		Alignment of End Dimensions	Overall Length	Nominal Pipe Size	Off Angel Inch/mm	Off Plane				
	D			T	A,B,C,M	H, F	O	K	U	E		Q	P					
	(1) B16.9	MSS SP43	(2) B16.9	B16.9	MSS SP43	B16.9	MSS SP43	B16.9	MSS SP43	B16.9	MSS SP43	B16.9	MSS SP43					
1/2" - 2 1/2" 15 - 65	+1.6 -0.8		±0.8			FROM 1/2" TO 18 15 TO 600	FROM 3/4" 15 TO 600	FROM 1/2" - 24" 15 - 600	FROM 1/2" - 8" 15 - 200			±3	±3.17	1/2" - 4" 15 - 100	±1	±2		
3" - 3 1/2" 80 - 90		±0.80												5" - 8" 125 - 200	±2	±4		
4" 100	±1.6		±1.6			+2	±1.60	+2	±1.60	+6	±6.35	±6.0	±6.4	+1	±0.8	10" - 12" 250 - 300	±3	±5
5" - 6" 125 - 150	+2.4	+1.60														14" - 16" 350 - 400	±3	±7
8" 200	-1.6	-0.80														18" - 24" 450 - 600	±4	±10
10" - 18" 250 - 450	+4 -3.2	+2.38 -0.80	±3.2													26" - 30" 650 - 750	±5	±10
20" - 24" 500 - 600	+6.4 -4.8	+3.17 -0.79														32" - 42" 800 - 1050	±5	±13
26" - 30" 650 - 750	+6.4 -4.8	+4.8	±4.8													44" - 48" 1100 - 1200	±5	±20
32" - 48" 800 - 1200	+6.4 -4.8															42 - 48" 1050 - 1200	±5	±20

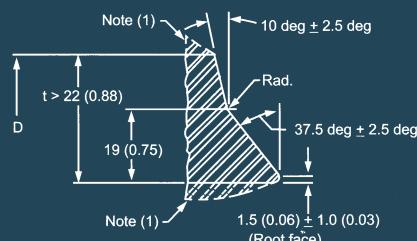
### Tolerances



### Welding Bevels and Root Face



(a) Plain Bevel



(b) Compound Bevel

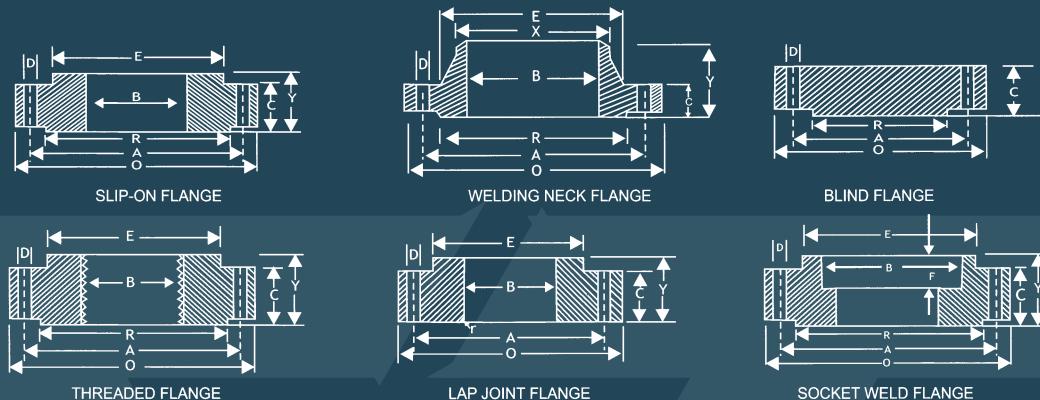
### Nominal Wall Thickness

### End Preparation

Less than x (Note (2)) x to 22 (0.88), inclusive  
More than 22 (0.88)

Cut Square or Slightly Chamfer, at manufacturer's option (not illustrated) Plain as in illustration (a) above Compound bevel as in illustration (b) above

## FLANGES 150 & 300



DIMENSIONS OF CLASS 150 FLANGES AS PER B16.5

Nominal Pipe Size	Flange Dia	Dia of Bolt Circle	No. Of Bolt Holes	No. Of Holes	Thk of Flange	Dia of Hub	Length through Hub			Dia Bore		Dia of R/F	Depth of Socket	Pipe Dia
							S/O & S/W	W/N	L/J	S/O & S/W	L/J			
O	A	D			C	E	Y	Y	Y	B	B	R	F	X
15	88.9	60.3	15.9	4	11.1	30.2	15.9	47.6	15.9	22.3	22.9	34.9	9.5	21.33
20	98.4	69.8	15.9	4	12.7	38.1	15.9	52.4	15.9	27.7	28.2	42.9	11.1	26.67
25	107.9	79.4	15.9	4	14.3	49.2	17.5	55.6	17.5	34.5	35.0	50.8	12.7	33.40
32	117.5	88.9	15.9	4	15.9	58.7	20.6	57.1	20.6	43.2	43.7	63.5	14.3	42.16
40	127.0	98.4	15.9	4	17.5	65.1	22.2	61.9	22.2	49.5	50.0	73.0	15.9	48.26
50	152.4	120.6	19.0	4	19.0	77.8	25.4	63.5	25.4	62.0	62.5	92.1	17.5	60.31
65	177.8	139.7	19.0	4	22.2	90.5	28.6	69.8	28.6	74.7	75.4	104.8	19.0	73.02
80	190.5	152.4	19.0	4	23.8	107.9	30.2	69.8	30.2	90.7	91.4	127.0	20.6	88.90
100	228.6	190.5	19.0	8	23.8	134.9	33.3	76.2	33.3	116.1	116.8	157.2	23.8	114.30
125	254.0	215.9	22.2	8	23.8	163.5	36.5	88.9	36.5	143.8	144.5	185.7	23.8	141.30
150	279.4	241.3	22.2	8	25.4	192.1	39.7	88.9	39.7	170.7	171.4	215.9	27.0	168.27
200	342.9	298.4	22.2	8	28.6	246.1	44.4	101.6	44.4	221.5	222.2	269.9	31.7	219.07
250	406.4	361.9	25.4	12	30.2	304.8	49.2	101.6	49.2	276.3	277.4	323.8	33.3	273.05
300	482.6	431.8	25.4	12	31.8	365.1	55.6	114.3	55.6	327.1	328.2	381.0	39.7	323.85
350	533.4	476.2	28.6	12	34.9	400.0	57.1	127.0	79.4	359.1	360.2	412.7	41.3	355.60
400	596.9	539.7	28.6	16	36.5	457.2	63.5	127.0	87.3	410.5	411.2	469.9	44.4	406.40
450	635.0	577.8	31.7	16	39.7	504.8	68.3	139.7	96.8	461.8	462.3	533.4	49.2	457.20
500	698.5	635.0	31.7	20	42.9	558.8	73.0	144.5	103.2	513.1	514.3	584.2	54.0	508.00
600	812.8	749.3	34.9	20	47.6	663.6	82.5	152.4	111.1	615.9	615.9	692.1	63.5	609.60

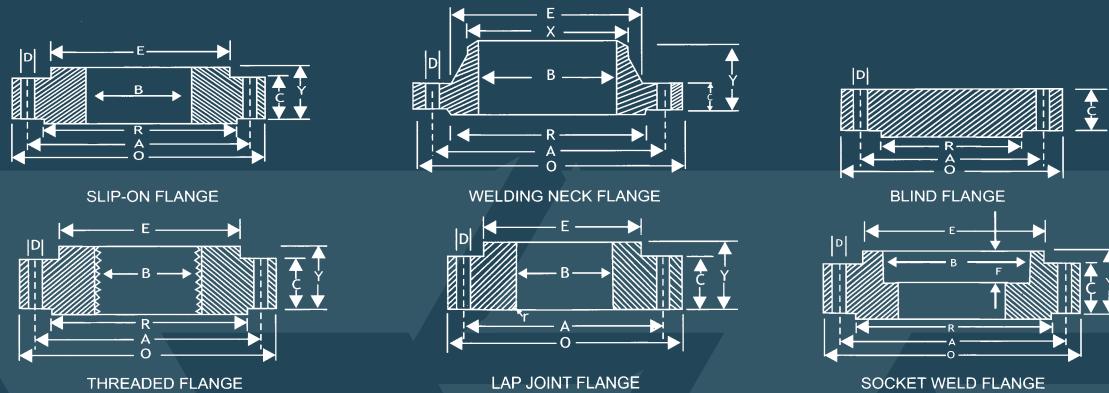
DIMENSIONS OF CLASS 300 FLANGES AS PER B16.5

Nominal Pipe Size	Flange Dia	Dia of Bolt Circle	No. Of Bolt Holes	No. Of Holes	Thk of Flange	Dia of Hub	Length through Hub			Dia Bore		Dia of R/F	Depth of Socket	Pipe Dia
							S/O & S/W	W/N	L/J	S/O & S/W	L/J			
O	A	D			C	E	Y	Y	Y	B	B	R	F	X
15	95.2	66.7	15.9	4	14.3	38.1	22.2	52.4	22.2	22.3	22.9	34.9	9.5	21.33
20	117.5	82.5	19.0	4	15.9	47.6	25.4	57.1	25.4	27.7	28.2	42.9	11.1	26.67
25	123.8	88.9	19.0	4	17.5	54.0	27.0	61.9	27.0	34.5	35.0	50.8	12.7	33.40
32	133.3	98.4	19.0	4	19.0	63.5	27.0	65.1	27.0	43.2	43.7	63.5	14.3	42.16
40	155.6	114.3	22.2	4	20.6	69.8	30.2	68.3	30.2	49.5	50.0	73.0	15.9	48.26
50	165.1	127.0	19.0	8	22.2	84.1	33.3	69.8	33.3	62.0	62.5	92.1	17.5	60.31
65	190.5	149.2	22.2	8	25.4	100.0	38.1	76.2	38.1	74.7	75.4	104.8	19.0	73.02
80	209.5	168.3	22.2	8	28.6	117.5	42.9	79.4	42.9	90.7	91.4	127.0	20.6	88.90
100	254.0	200.0	22.2	8	31.8	146.0	47.6	85.7	47.6	116.1	116.8	157.2	23.8	114.30
125	279.4	234.9	22.2	8	34.9	177.8	50.8	98.4	50.8	143.8	144.5	185.7	-	141.30
150	317.5	269.9	22.2	12	36.5	206.4	52.4	98.4	52.4	170.7	171.4	215.9	-	168.27
200	381.0	330.2	25.4	12	41.3	260.3	61.9	111.1	61.9	221.5	222.2	269.9	-	219.07
250	444.5	387.3	28.6	16	47.6	320.7	66.7	117.5	95.2	276.3	277.4	323.8	-	273.05
300	520.7	450.8	31.7	16	50.8	374.6	73.0	130.2	101.6	327.1	328.2	381.0	-	323.85
350	584.2	514.3	31.7	20	54.0	425.4	76.2	142.9	111.1	359.1	360.2	412.7	-	355.60
400	647.7	571.5	34.9	20	57.2	482.6	82.5	146.0	120.6	410.5	411.2	469.9	-	406.40
450	711.2	628.5	34.9	24	60.3	533.4	88.9	158.7	130.2	461.8	462.3	533.4	-	457.20
500	774.7	685.8	34.9	24	63.5	587.4	95.2	161.9	139.7	513.1	514.3	584.2	-	508.00
600	914.4	812.8	41.3	24	69.8	701.7	106.4	168.3	152.4	615.9	615.9	692.1	-	609.60

Metric values are direct conversion from Inches table of B16.5

Flanges except Lap Joint will be furnished with (1.6 mm) raised face, Which is included in "Thickness" (C) and Length Through Hub (Y).

## FLANGES 600 & 900



DIMENSIONS OF CLASS 600 FLANGES AS PER B 16.5

Nominal Pipe Size	Flange Dia	Dia of Bolt Circle	No. of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Length through Hub			Dia Bore		Dia of R/F	Depth of Socket	Pipe Dia
							S/O & S/W	W/N	L/J	S/O & S/W	L/J			
O	A	D	C	E	Y	Y	Y	B	B	R	F	X		
15	95.2	66.7	15.9	4	14.3	38.1	22.2	52.4	22.3	22.8	34.9	9.5	21.33	
20	117.5	82.5	19.0	4	15.9	47.6	25.4	57.1	25.4	27.7	28.1	42.9	11.1	26.67
25	123.8	88.9	19.0	4	17.5	54.0	27.0	61.9	26.9	34.5	35.0	50.8	12.7	33.40
32	133.3	98.4	19.0	4	20.6	63.5	28.6	66.7	28.4	43.2	43.6	63.5	14.2	42.16
40	155.6	114.3	22.2	4	22.2	69.8	31.7	69.8	31.7	49.5	50.0	73.0	15.8	48.26
50	165.1	127.0	19.0	8	25.4	84.1	36.5	73.0	36.5	62.0	62.4	92.1	17.4	60.31
65	190.5	149.2	22.2	8	28.6	100.0	41.3	79.4	41.1	74.7	75.4	104.8	19.0	73.02
80	209.5	168.3	22.2	8	31.8	117.5	46.0	82.5	45.9	90.7	91.4	127.0	-	88.90
100	273.0	215.9	25.4	8	38.1	152.4	54.0	101.6	53.8	116.1	116.8	157.2	-	114.30
125	330.2	266.7	28.6	8	44.4	188.9	60.3	114.3	60.4	143.8	141.5	185.7	-	141.30
150	355.6	292.1	28.6	12	47.6	222.2	66.7	117.5	66.5	170.7	171.4	215.9	-	168.27
200	419.1	349.2	31.7	12	55.6	273.0	76.2	133.3	76.2	221.5	222.2	269.9	-	219.07
250	508.0	431.8	34.9	16	63.5	342.9	85.7	152.4	111.2	276.3	277.3	323.8	-	273.05
300	558.8	488.9	34.9	20	66.7	400.0	92.1	155.6	117.3	327.1	328.1	381.0	-	323.85
350	603.2	527.0	38.1	20	69.9	431.8	93.7	165.1	127.0	359.1	360.1	412.7	-	355.60
400	685.8	603.2	41.3	20	76.2	495.3	106.4	177.8	139.7	410.5	411.2	469.9	-	406.40
450	742.9	654.0	44.4	20	82.6	546.1	117.5	184.1	152.4	461.8	462.2	533.4	-	457.20
500	812.8	723.9	44.4	24	88.9	609.6	127.0	190.5	165.1	513.1	514.3	584.2	-	508.00
600	939.8	838.2	50.8	24	101.6	717.5	139.7	203.2	184.1	615.9	615.9	692.1	-	609.60

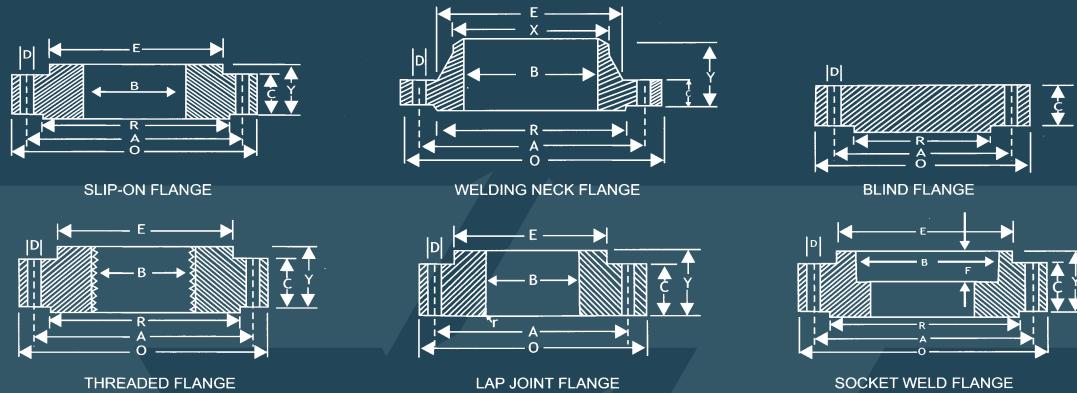
DIMENSIONS OF CLASS 900 FLANGES AS PER B 16.5

Nominal Pipe Size	Flange Dia	Dia of Bolt Circle	Dai Of Bolt Holes	No. Of Holes	Thk of Flange	Dia of Hub	Length through Hub			Dia Bore		Dia of R/F	Depth of Socket	Pipe Dia
							S/O & S/W	W/N	L/J	S/O & S/W	L/J			
O	A	D	C	E	Y	Y	Y	B	B	R	F	X		
15	120.6	82.5	22.2	4	22.2	38.1	31.7	60.3	31.7	22.3	22.8	34.9	9.5	21.33
20	130.2	88.9	22.2	4	25.4	44.4	34.9	69.8	35.0	27.7	28.1	42.9	11.1	26.67
25	149.2	101.6	25.4	4	28.6	52.4	41.3	73.0	41.1	34.5	35.0	50.8	12.7	33.40
32	158.7	111.1	25.4	4	28.6	63.5	41.3	73.0	41.1	43.2	43.6	63.5	14.2	42.16
40	177.8	123.8	28.6	4	31.8	69.8	44.4	82.5	44.4	49.5	50.0	73.0	15.8	48.26
50	215.9	165.1	25.4	8	38.1	104.8	57.1	101.6	57.1	62.0	62.4	92.1	17.4	60.31
65	244.5	190.5	28.6	8	41.3	123.8	63.5	104.8	63.5	74.7	75.4	104.8	19.0	73.02
80	241.3	190.5	25.4	8	38.1	127.0	53.9	101.6	53.8	90.7	91.4	127.0	-	88.90
100	292.1	234.9	31.7	8	44.4	158.7	69.8	114.3	69.8	116.0	116.8	157.1	-	114.30
125	349.2	279.4	35.0	8	50.8	190.5	79.3	127.0	79.2	143.7	114.5	185.7	-	141.30
150	381.0	317.5	31.7	12	55.6	234.9	85.8	139.7	85.8	170.6	171.4	215.9	-	168.27
200	469.9	393.7	38.1	12	63.5	298.4	101.6	162.0	114.3	221.4	222.2	269.8	-	219.07
250	546.1	469.9	38.1	16	69.8	368.3	107.9	184.1	127.0	276.3	277.3	323.8	-	273.05
300	609.6	533.4	38.1	20	79.3	419.1	117.4	200.0	142.7	327.1	328.1	381.0	-	323.85

Metric values are direct conversion from Inches table of B16.5

RF Thickness 6.3 mm Extra to be provided (Except Lap Joint Flange & FF Flanges).

## FLANGES 1500 & 2500



DIMENSIONS OF CLASS 1500 FLANGES AS PER B16.5

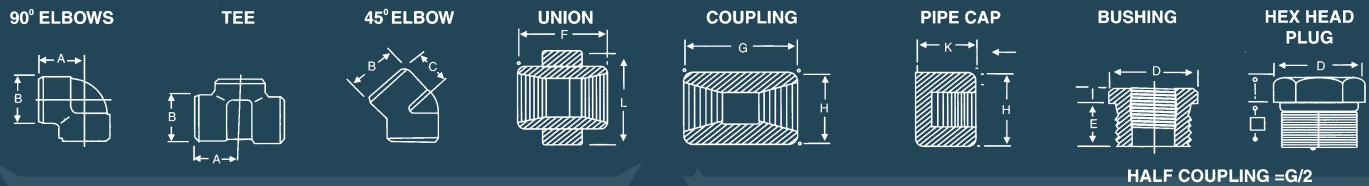
Nominal Pipe Size	Flange Dia	Dia of Bolt Circle	Dai Of Bolt Holes	No. Of Holes	Thk of Flange	Dia of Hub	Length through Hub			Dia Bore		Dia of R/F	Depth of Socket	Pipe Dia
							S/O & S/W	W/N	L/J	S/O & S/W	L/J			
O	A	D	C	E	Y	Y	Y	B	B	R	F	X		
15	120.6	82.5	22.2	4	22.2	38.1	31.7	60.3	31.7	22.3	22.8	34.9	9.5	21.33
20	130.2	88.9	22.2	4	25.4	44.4	34.9	69.8	34.9	27.7	28.1	42.9	11.1	26.67
25	149.2	101.6	25.4	4	28.6	52.4	41.3	73.0	41.3	34.5	35.0	50.8	12.7	33.40
32	158.7	111.1	25.4	4	28.6	63.5	41.3	73.0	41.3	43.2	43.6	63.5	14.2	42.16
40	177.8	123.8	28.6	4	31.8	69.8	44.4	82.5	44.4	49.5	50.0	73.0	15.8	48.26
50	215.9	165.1	25.4	8	38.1	104.8	57.1	101.6	57.1	62.0	62.0	92.1	17.4	60.31
65	244.5	190.5	28.6	8	41.3	123.8	63.5	104.8	63.5	74.7	75.4	104.8	19.0	73.02
80	266.7	203.2	31.7	8	47.6	133.3	73.0	117.5	73.0	90.7	91.4	127.0	-	88.90
100	311.1	241.3	34.9	8	54.0	161.9	90.5	123.0	90.4	116.1	116.8	157.2	-	114.30
125	374.6	292.1	41.3	8	73.0	196.8	104.8	155.6	104.8	143.8	144.5	185.7	-	141.30
150	393.7	317.5	38.1	12	82.6	228.6	119.1	171.4	119.1	170.7	171.4	215.9	-	168.27
200	482.6	393.7	44.4	12	92.1	292.1	142.9	212.7	142.8	221.5	222.2	269.9	-	219.07
250	584.2	482.6	50.8	12	107.9	368.3	158.7	254.0	177.8	276.3	277.3	323.8	-	273.05
300	673.1	571.5	54.0	16	123.8	450.8	181.0	285.5	218.9	327.1	328.1	381.0	-	323.85

DIMENSIONS OF CLASS 2500 FLANGES AS PER B16.5

Nominal Pipe Size	Flange Dia	Dia of Bolt Circle	Dai Of Bolt Holes	No. Of Holes	Thk of Flange	Dia of Hub	Length through Hub			Dia Bore		Dia of R/F	Depth of Socket	Pipe Dia
							S/O & S/W	W/N	L/J	S/O & S/W	L/J			
O	A	D	C	E	Y	Y	Y	B	B	R	F	X		
15	133.3	88.9	22.2	4	30.2	42.9	39.7	73.0	39.7	22.3	22.3	34.9	-	21.33
20	139.7	95.2	22.2	4	31.7	50.8	42.9	79.4	42.9	27.7	27.7	42.9	-	26.67
25	158.7	107.9	25.4	4	34.9	57.1	47.7	88.9	47.7	34.5	34.5	50.8	-	33.40
32	184.1	130.2	28.6	4	38.1	73.0	52.4	95.2	52.4	43.2	43.2	63.5	-	42.16
40	203.2	146.0	31.7	4	44.4	79.4	60.3	111.1	60.3	49.5	49.5	73.0	-	48.26
50	234.9	171.4	28.6	8	50.8	95.2	69.8	127.0	69.8	62.4	62.4	92.1	-	60.31
65	266.7	196.8	31.7	8	57.1	114.3	79.4	142.9	79.4	74.7	74.7	104.8	-	73.02
80	304.8	228.6	34.9	8	66.7	133.3	92.1	168.3	92.1	90.7	90.7	127.0	-	88.90
100	355.6	273.0	41.3	8	76.2	165.1	107.9	190.5	107.9	116.1	116.1	157.2	-	114.30
125	419.1	323.8	47.6	8	92.1	203.2	130.0	228.6	130.0	143.8	143.8	185.7	-	141.30
150	482.6	368.3	54.0	8	107.9	234.9	152.4	273.0	152.4	170.7	170.7	215.9	-	168.27
200	552.4	438.1	54.0	12	127.0	304.8	177.8	317.5	177.8	221.5	221.5	269.9	-	219.07
250	673.1	539.7	66.7	12	165.1	374.6	228.6	419.1	228.6	276.3	276.3	323.8	-	273.05
300	762.0	619.1	73.0	12	184.1	441.3	254.0	463.5	254.0	327.1	327.1	381.0	-	323.85

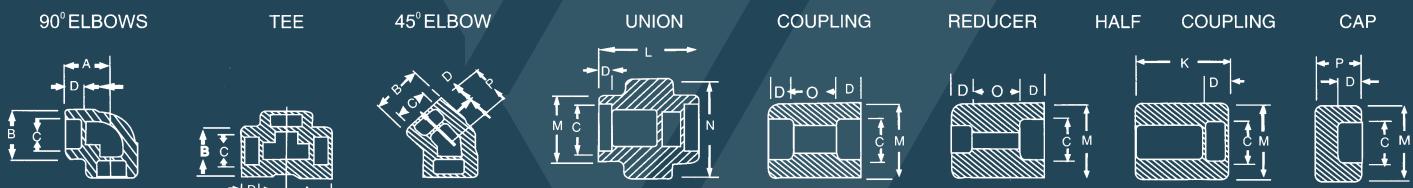
Metric values are direct conversion from Inches table of B16.5  
RF Thickness 6.3 mm Extra to be provided (Except Lap Joint Flange & FF Flanges).

## FORGED SCREWED & SOCKET WELD



DIMENSION IN MM OF FORGED SCREWED FITTINGS TO ANSI B-16.11 THREADED TO ASA B 2.1

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



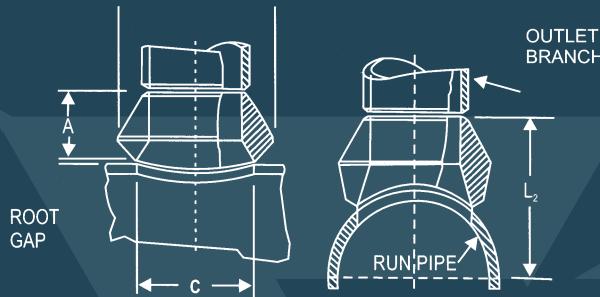
SOCKET WELD FITTING TO ANSI B-16.11

NOM	PIPE	3000 L.B.S.					COMMON FACTORS						6000 L.B.S.							
		BORE	O.D.	A	B	K	J	L	M	N	P	Q	C	D	O	O	A	B	M	K
1/8"		10.3	22	18.5	26	16	40	17.3	32	17.5	10	10.7	10	5	8	22	22	20	25	46
1/4"		13.7	22	22	26	18	43	21.2	32	17.5	10	14.1	10	5	8	27	25	24	25	51
3/8"		17.2	25	25	26	19	48	25.4	36	19	10	17.6	10	3	9	27	28	28	26	60
1/2"		21.3	27	32	30	21	51	31	43	22	10	21.7	10	6	13	31	34	34	31	72
3/4"		26.7	34	38	36	24	57	37	50	25	13	27	13	6	13	37	42	41	35	80
1"		33.4	37	46	40	25	64	45.2	60	27	13	33.8	13	9	17	42	50	50	40	94
1 1/4"		42.2	42	56	40	29	70	55	70	30	13	42.6	13	9	17	47	59	58	41	100
1 1/2"		48.3	47	62	40	30	79	61.4	78	32	13	48.7	13	9	17	53	67	66	43	122
2"		60.3	56	75	52	37	89	75	95	38	13	61.2	16	15	23	59	84	83	55	
2 1/2"		73.02	60	92	52	48	114	91.3	125	38	16	73.8	16	14	24		102		56	
3"		89.00	76	110	52	51	127	108.8	140	44	16	89.8	16	14	24		121		58	
4"		114.50	88	137	58		150	136.9		48	19	115.5	19	14	24		152		64	

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

## OUTLET FITTINGS

REDUCING & FLAT SIZE  
EXTRA STRONG, RUN AND BRANCH FORGED



Outlet Size Inches	Dimensions (Inches)		
	A	B	C
1/8	5/8	1	5/8
1/4	5/8	1	5/8
3/8	3/4	1-1/4	3/4
1/2	3/4	1-3/8	1-5/16
3/4	7/8	1-3/4	1-3/16
1	1-1/16	2-1/8	1-7/16
1-1/4	1-1/4	2-9/16	1-3/4
1-1/2	1-5/16	2-7/8	2
2	1-1/2	3-1/2	2-9/16
2-1/2	1-5/8	4-1/16	3
3	1-3/4	4-13/16	3-11/16
3-1/2	1-7/8	5-3/8	4
4	2	6	4-3/4
5	2-1/4	7-1/16	5-9/16
6	3-1/16	8-7/8	6-11/16
8	3-7/8	11-1/2	8-11/16
10	3-11/16	12-3/4	10-7/16
12	4-1/16	14-15/16	12-1/2
14	3-15/16	17	13-13/16
16	4-3/16	18-3/8	15-7/8
18	4-3/8	20-3/8	17-15/16
20	4-11/16	22-15/16	20-1/16
24	5-1/2	27-7/8	24-3/16
26	5-3/4	30-1/8	27-1/4

30, 36 and larger sizes available on application.

### SIZE ON SIZE SCHEDULE 160 & DOUBLE EXTRA STRONG RUN AND BRANCH FORGED & OUTLET FITTINGS

Each Outlet size listed is available to fit any run curvature.

Larger Sizes Available on Application.

Design per MSS-SP-97. BW ends per B16.9 and B16.25

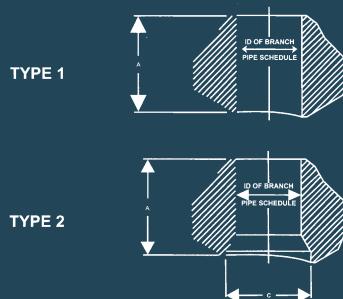
#### RUN PIPE SIZES

Outlet sizes 4" and less fit a number of run pipe sizes, and the fittings are marked accordingly.



Outlet Size (Inches)	Dimensions (Inches)		
	A	B	C
1/2	1-1/8	1-3/8	9/16
3/4	1-1/4	1-3/4	3/4
1	1-1/2	2	1
1-1/4	1-3/4	2-7/16	1-5/16
1-1/2	2	2-3/4	1-1/2
2	2-3/16	3-3/16	1-11/16
2-1/2	2-7/16	3-13/16	2-1/8
3	2-7/8	4-3/4	2-7/8
4	3-5/16	6	3-7/8
5	3-11/16	7-3/8	4-13/16
6	4-1/8	8-11/16	5-3/4
8-24	For dimensions see Heavy Wall Weldolet, page 53		

### HEAVY WALL FORGED



The Heavy Wall Forged Weldolet® is an integrally reinforced branch connection.

It provides the economical and engineering answer to the problem of welding outlet fittings on high pressure, high temperature piping and pressure vessels.

Type 1 - Straight through bore design

Type 2 - Conventional tapered bore design



## S.S. INSTRUMENTAL FERRULE FITTINGS



Union Elbow



Male Elbow



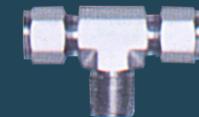
Female Elbow



Union Tee



Male Run Tee



Male Branch Tee



Female Run Tee



Female Branch Tee



Union Cross



45 Deg. Elbow



Tube end Closure



Bulk Head Elbow



Positionable Male Elbow



Butt Weld Pipe Elbow



Union



Reducing Union



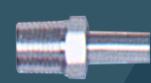
Bulkhead Union



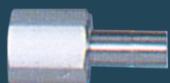
Male Connector



Female Connector



Male Adaptor



Female Adaptor



Design

: Double Ferrule Type & Single Ferrule

Size Range

: 1/16" Tube OD to 2" Tube OD

End Connection

: OD / NPT / BSP / SW / BW

Material

: SS 316 / SS 304 / CS / Monel / Brass

### S.S. TEE/ELBOW FERRULE FITTINGS

- S.S. Union Tee
- S.S. Male Branch Tee
- S.S. Female Branch Tee
- S.S. Male Elbow
- S.S. Cross
- S.S. Valve Body
- S.S. Union
- S.S. Union Tee
- S.S. Male Branch Tee
- S.S. Female Branch Tee
- S.S. Male Elbow
- S.S. Cross
- S.S. Valve Body
- S.S. Union

### MANIFOLD VALVES

Design	: Two Way, Three Way, Five Way, Maniflod Straight & 'T' Type & 'H' Type
End Connection	: NPT / BSP / Flange (1/8" to 1")
Material	: SS 316 / SS 304 / CS / Brass / Monel
Pressure Rating	: 10,000 psig



### NEEDLE VALVES

Needle Valves are available in size, range of 1/8" to 1" with Double Ferrule Tube connection and NPT, BSP, BSPT, Threaded male / female connections with maximum working pressure 10,000 psi. Valves are available in Stainless Steel of all grades, Monel, Brass, C.S. etc.



### SYPHON TUBES

Type	: Stainless Steel 304 & 316 Gr. in U Type, Trumpet Type (Pigtail & Coil Type)
Application	: Connected between the pressure gauge & process in applications where high temperature above 65Deg C for e.g. stream. These Syphon Tubes acts as a cooling coil and protects the gauge from high temperature vapors



## STOCKIST OF :

### PIPES

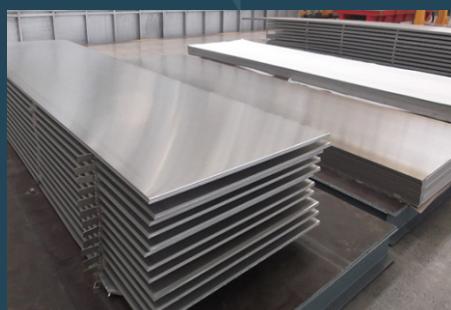
• SURAJ STAINLESS LTD.	• SANDVIK MATERIAL TECHNOLOGY	• HAYNES INTERNATIONAL INC
• RATNAMANI METALS & TUBES LTD.	• ARCELOR MITTAL TUBULAR PRODUCTS	• SPECIAL METALS CORPORATION
• JINDAL	• THYSSENKRUPP VDM	• RATHGIBSON INC
• ISMT	• SANDVIK STEEL	• SPECIAL METALS CORP. (SMC)
• FINE TUBES LTD.	• SANDVIK P + P	• TUBACEX TUBOS
• SUMITOMO JAPAN	• CENTRAVIS	
• DMV	• PRODUCTOS TUBULARES	

### PLATES

• OUTOKUMPU	• THYSSENKRUPP STAINLESS	• POSCO
• AZOVSTAL IRON & STEEL WORKS	• ARCELOR MITTAL INOX BRASIL	• JINDAL
• ACRONI	• NORTH AMERICAN STAINLESS	• NIPPON STEEL &
• ACERINOX EUROPA, S.A.U.	• COLUMBUS STAINLESS PVT LTD	• SUMIKIN STAINLESS STEEL CORP.
• APERAM STAINLESS	• HAYNES INTERNATIONAL INC	• SAIL

### ROUND BARS

• VIRAJ LIMITED	• MUKAND LTD	• CARPENTER TECHNOLOGY CORP.
• ATIALLVAC	• SPECIAL METALS CORPORATION	• HAYNES INTERNATIONAL INC
• THYSSENKRUPP VDM	• OUTOKUMPU VDM	• BGH EDELSTAHL SIEGEN GMBH



## PIPES & TUBES :

### PIPES DETAILS

#### **Stainless & Duplex Steel Pipes**

Leveraging on our finest manufacturing unit and experienced work force, our company offers stainless and duplex steel pipes. High quality pipes are stainless because of a protective layer on their surfaces which reduces the rate of corrosion to almost negligible levels. Available in different grades and dimensions, these stainless steel and duplex steel pipes are widely used in various industries such as construction, cement, petrochemical and more.

#### **Carbon & Alloy Steel Pipes :**

We are one of the most trusted manufacturers for offering finest range of Carbon and Alloy Steel pipes. Used in different industries for diverse applications, these pipes can be availed in standard as well as customized dimensions as per the requirement of the clients. These pipes are appreciated for their sturdy and precise construction. We are known for offering our product range at reasonable prices and delivering consignment within given time frame.

#### **Nickel & Copper Alloy Pipes :**

Adopting the highest industry standards, we manufacture finest range of nickel and copper alloy pipes. These pipes are fabricated from qualitative raw material as per global demand and ensures accurate precision. Available in wide range of technical specifications, our comprehensive range is highly acknowledged in Indian as well as overseas market for their attributes of high strength, excellent finish, and complete reliability in services.



#### **Stainless Steel :**

ASTM / ASME SA 312 GR. TP 304, 304L, 304H, 309S, 309H, 3105, 310H, 316, 31611, 316H, 316LN, 317, 317L, 321, 321H, 347, 347H, 904L. ASTM / ASME SA 358 CL 1 & CL 3 GR . 304, 304L, 304H, 309S, 309H, 310S, 310H, 316, 316H, 321, 321H 347.

#### **Duplex Steel :**

ASTM / ASME SA 790 UNS NO 531803, UNS 532750 UNS 532760, 904L etc.

#### **Carbon Steel :**

ASTM / ASME A 53 GR. A & B, ASTMA 106 GR. A, B & C. API 5L GR. B, API 5L X 42, X 46, X 52, X 60, X 65 & X 70. ASTM / ASME A 691 GRA, B & C.

#### **Alloy Steel :**

ASTM / ASME A 335 GR P 1, P 5, P 9, P 11, P 12, P 22, P 23, P 91 ASTM / ASME A 691 GR 1 CR, 1 1/4 CR, 2 1/4 CR,

#### **Nickel Alloy :**

ASTM / ASME SB 163 UNS 2200 (NICKEL 200)  
ASTM / ASME SB 163 UNS 2201 (NICKEL 201)  
ASTM / ASME SB 163 / 165 UNS 4400 (MONEL 400)  
ASTM / ASME SB 464 UNS 8020 (ALLOY 20 / 20 CB 3)  
ASTM / ASME SB 704/705 UNS 8825 INCONEL (825)  
ASTM / ASME SB 167 / 517 UNS 6600 (INCONEL 600)  
ASTM / ASME SB 167 UNS 6601 (INCONEL 601)  
ASTM / ASME SB 704 / 705 UNS 6625 (INCONEL 625)  
ASTM / ASME SB 619/622/626 UNS 10276  
(HASTELLOY C 276)

#### **Copper Alloy :**

ASTM / ASME SB 111 UNS NO. C 10100, 10200, 10300, 10800, 12000, 12200, 70600, 71500.  
ASTM / ASME SB 466 UNS NO. C 70600 ( CU -NI-90/10),

# PIPES & TUBES :

## STAINLESS STEEL PIPE DIMENSION & WEIGHT-KG. PER MTR. (ANSI B36.19)

Nominal Bore		Outside Diameter		Schedule 5S		Schedule 10S		Schedule 40S		Schedule 80S		Schedule 160S		Schedule XXS	
mm	INCH	mm	mm	Wt mm	Weight (Kg/m)	Wt mm	Weight (Kg/m)	Wt mm	Weight (Kg/m)	Wt mm	Weight (Kg/m)	Wt mm	Weight (Kg/m)	Wt mm	Weight (Kg/m)
3	1/8	10.3	10.3	1.24	0.276	1.24	0.28	1.73	0.37	2.41	0.47	-	-	-	-
6	1/4	13.7	13.7	1.24	0.390	1.65	0.49	2.24	0.631	3.02	0.80	-	-	-	-
10	3/8	17.1	17.1	1.24	0.490	1.65	0.63	2.31	0.845	3.20	1.10	-	-	-	-
15	1/2	21.3	21.3	1.65	0.800	2.11	1.00	2.77	1.27	3.75	1.62	4.75	1.94	7.47	2.55
20	3/4	26.7	26.7	1.65	1.03	2.11	1.28	2.87	1.68	3.91	2.20	5.54	2.89	7.82	3.63
25	1	33.4	33.4	1.65	1.30	2.77	2.09	3.38	2.50	4.55	3.24	6.35	4.24	9.09	5.45
32	1 1/4	42.2	42.2	1.65	1.65	2.77	2.70	3.56	3.38	4.85	4.47	6.35	5.61	9.70	7.77
40	1 1/2	48.3	48.3	1.65	1.91	2.77	3.11	3.68	4.05	5.08	5.41	7.14	7.25	10.16	9.54
50	2	60.3	60.3	1.65	2.40	2.77	3.93	3.91	5.44	5.54	7.48	8.74	11.1	11.07	13.44
65	2 1/2	73.0	73.0	2.11	3.69	3.05	5.26	5.16	8.63	7.01	11.4	9.53	14.9	14.2	20.39
80	3	88.9	88.9	2.11	4.51	3.05	6.45	5.49	11.30	7.62	15.2	11.1	21.3	15.24	27.65
100	4	114.3	114.3	2.11	5.84	3.05	8.36	6.02	16.07	8.56	22.3	13.49	33.54	17.12	41.03
125	5	141.3	141.3	2.77	9.47	3.40	11.57	6.55	21.8	9.53	31.97	15.88	49.11	19.05	57.43
150	6	168.3	168.3	2.77	11.32	3.40	13.84	7.11	28.3	10.97	42.7	18.2	67.56	21.95	79.22
200	8	219.1	219.1	2.77	14.79	3.76	19.96	8.18	42.6	12.07	64.6	23.0	111.2	22.23	107.8
250	10	273.1	273.1	3.40	22.63	4.19	27.78	9.27	60.5	15.08	96.0	28.6	172.4	25.40	155.15
300	12	323.9	323.9	3.96	31.25	4.57	36.00	9.52	73.88	17.45	132.0	33.32	238.76	25.40	186.97
350	14	355.6	355.6	3.96	34.36	4.78	41.3	11.13	94.59	19.05	158.08	35.71	281.70	-	-
400	16	406.4	406.4	4.19	41.56	4.78	47.29	12.7	123.30	21.41	203.33	40.46	365.11	-	-
450	18	457.2	457.2	4.19	46.80	4.78	53.42	14.27	155.80	23.8	254.36	45.71	466.40	-	-
500	20	508.0	508.0	4.78	59.25	5.54	68.71	15.09	183.42	26.19	311.2	49.99	564.68	-	-
600	24	609.6	609.6	5.54	82.47	6.35	94.45	17.48	255.41	30.96	442.08	59.54	808.22	-	-

## CARBON STEEL SEAMLESS PIPE DIMENSION & WEIGHT - KG. PER MTR. (ANSI B 36.10)

Nominal Pipe size	O/D	Schedule 10		Schedule 20		Schedule 30		Schedule STD		Schedule 40		Schedule 60		Schedule Extra Strong (XS)		Schedule 80		Schedule 100		Schedule 120		Schedule 140		Schedule 160		Schedule Double Extra Strong (XXS)					
		mm	inch	mm	kg/m	mm	kg/m	mm	kg/m	wall	wt.	wall	wt.	wall	wt.	wall	wt.	wall	wt.	wall	wt.	wall	wt.	wall	wt.	wall	wt.	wall	wt.		
3	1/8	10.3						1.73	0.37	1.73	0.37			2.41	0.47	2.41	0.47														
6	1/4	13.7						2.24	0.63	2.24	0.63			3.02	0.80	3.02	0.80														
10	3/8	17.1						2.31	0.84	2.31	0.84			3.20	1.10	3.20	1.10														
15	1/2	21.3						2.77	1.27	2.77	1.27			3.73	1.62	3.73	1.62											4.78	1.95	7.5	2.55
20	3/4	26.7						2.87	1.69	2.87	1.69			3.91	2.20	3.91	2.20											5.6	2.90	7.82	3.64
25	1	33.4						3.38	2.50	3.38	2.50			4.55	3.24	4.55	3.24											6.35	4.24	9.1	5.45
32	1 1/4	42.2						3.56	3.39	3.56	3.39			4.85	4.47	4.85	4.47											6.35	5.61	9.7	7.77
40	1 1/2	48.3						3.68	4.05	3.68	4.05			5.08	5.41	5.08	5.41											7.14	7.25	10.2	9.56
50	2	60.3						3.91	5.44	3.91	5.44			5.54	7.48	5.54	7.48											8.74	11.11	11.07	13.4
65	2 1/2	73.0						5.16	8.63	5.16	8.63			7.01	11.41	7.01	11.41										9.53	14.92	14.0	20.4	
80	3	88.9						5.49	11.3	5.49	11.3			7.62	15.27	7.62	15.3										11.13	21.35	15.24	27.7	
90	3 1/2	101.6						5.74	13.57	5.74	13.57			8.08	18.63	8.08	18.63										-	16.2	34.1		
100	4	114.3						6.02	16.07	6.02	16.07			8.56	22.3	8.56	22.3										11.13	28.32		13.5	
125	5	141.3						6.55	21.77	6.55	21.77			9.53	30.9	9.53	30.9										12.7	40.2		15.9	
150	6	168.3						7.11	28.26	7.11	28.26			10.97	42.5	10.97	42.5										14.3	54.2		18.3	
200	8	219.1						6.35	33.3	7.0	36.8	8.18	42.5	8.18	42.55	10.31	53.10	12.7	64.6	12.7	64.5	15.1	75.92	18.3	90.4	20.6	100.9	23.0	111.27	22.23	108.0
250	10	273.0						6.35	41.7	7.8	51.3	9.27	60.3	9.27	60.31	12.70	81.50	12.7	81.5	15.1	96.0	18.3	114.7	21.44	133.0	25.4	155	28.6	172.3	25.4	155.0
300	12	323.9						6.35	49.7	8.4	65.2	9.53	73.8	10.31	79.73	14.30	109.0	12.7	97.4	17.5	132.0	21.4	160.0	25.4	187.0	28.6	208	33.3	238.7	25.4	187.0
350	14	355.6	6.35	54.6	7.92	67.9	9.53	81.3	9.53	81.3	11.13	94.55	15.10	126.4	12.7	107.4	19.0	158.0	23.8	195.0	27.8	224.0	31.8	253.5	35.7	281.7					
400	16	406.4	6.35	62.6	7.92	77.9	9.53	93.3	9.53	93.3	12.7	123.3	16.70	160.0	12.7	123.3	21.44	203.5	26.2	245.5	30.9	286.6	36.53	333	40.5	365.4					
450	18	457.0	6.35	70.5	7.92	87.7	11.13	122.4	9.53	105.0	14.27	156.0	19.05	206.0	12.7	139.0	23.8	254.6	29.36	309.6	34.9	363.6	39.7	408.3	45.2	459.4					
500	20	508.0	6.35	78.5	9.53	117.2	12.7	155.1	9.53	117.2	15.09	183.4	20.62	248.5	12.7	155.1	26.2	311.2	32.54	381.5	38.1	441.5	44.4	508	50.0	564.8					
550	22	559.0	6.35	86.5	9.53	129.0	12.7	171.0	9.53	129.0			22.20	294.0	12.7	171.0	28.6	373.8	34.9	451.4	41.3	527.0	47.6	600	54.0	672.0					
600	24	610.0	6.35	94.5	9.53	141.0	14.3	209.7	9.53	141.0	17.48	255.4	24.61	355.0	12.7	187.0	30.96	442.08	38.89	547.7	46.0	640.0	52.4	720.15	59.5	808.22					
650	26	660.0	7.92	127.0	12.7	203.0			9.53	153.0						12.7	202.7														
700	28	711.0	7.92	137.4	12.7	218.7	15.88	271.2	9.53	16																					

# PIPES & TUBES :

## STAINLESS STEEL SEAMLESS & WELDED PIPES CHEMICAL & PHYSICAL PROPERTIES

Grade	Chemical Composition										Tensile Test				
	C	Si	Mn	P Max	S Max	Cr	Mo	Ni	Other Elements	Tensile Strength kg/mm² min	Yield Point Strength kg/mm² min	Elongation in 2 or 50mm min%			
												Curved strip and Tubular Specimens		Longitudinal	Transverse
TP304	0.08 max	0.75 max	2.0 max	0.040	0.030	18.0-20.0		8.00-11.0	-	52.52	20.90	35	-	-	25
TP304H	0.04-0.10	0.75 max	2.0 max	0.040	0.030	18.0-20.0		8.00-11.0	-	52.52	20.90	35	-	-	25
TP304L	0.035 max	0.75 max	2.0 max	0.040	0.030	18.0-20.0		8.00-13.0	-	49.46	17.34	35	-	-	25
TP304N	0.08 max	0.75 max	2.0 max	0.040	0.030	18.0-20.0		8.00-11.0	N 0.10-0.16	56.10	24.61	35	-	-	25
TP304LN	0.035 max	0.75 max	2.0 max	0.040	0.030	18.0-20.0		8.00-11.0	N 0.10-0.16	52.52	20.90	35	-	-	25
TP309S	0.08 max	0.75 max	2.0 max	0.045	0.030	22.0-24.0	0.75 Max	12.0-15.0	-	52.52	20.90	35	-	-	25
TP310S	0.08 max	0.75 max	2.0 max	0.045	0.030	24.0-26.0	0.75 Max	19.0-22.0	-	52.52	20.90	35	-	-	25
TP316	0.08 max	0.75 max	2.0 max	0.040	0.030	16.0-18.0	2.00-3.00	11.0-14.0	-	52.52	20.90	35	-	-	25
TP316H	0.04-0.10	0.75 max	2.0 max	0.040	0.030	16.0-18.0	2.00-3.00	11.0-14.0	-	52.52	20.90	35	-	-	25
TP316L	0.035 max	0.75 max	2.0 max	0.040	0.030	16.0-18.0	2.00-3.00	10.0-15.0	-	49.46	17.34	35	-	-	25
TP316N	0.08 max	0.75 max	2.0 max	0.040	0.030	16.0-18.0	2.00-3.00	11.0-14.0	N 0.10-0.16	56.10	24.61	35	-	-	25
TP316LN	0.035 max	0.75 max	2.0 max	0.040	0.030	16.0-18.0	2.00-3.00	11.0-14.0	N 0.10-0.16	52.52	20.90	35	-	-	25
TP317	0.08 max	0.75 max	2.0 max	0.040	0.030	18.0-20.0	3.00~4.00	11.0-14.0	-	52.52	20.90	35	-	-	25
TP317L	0.035 max	0.75 max	2.0 max	0.040	0.030	18.0-20.0	3.00~4.00	11.0-15.0	-	52.52	20.90	35	-	-	25
TP321	0.08 max	0.75 max	2.0 max	0.040	0.030	17.0-20.0		9.0-13.0	Ti5xC%-0.70	52.52	20.90	35	-	-	25
TP321H	0.04-0.10	0.75 max	2.0 max	0.040	0.030	17.0-20.0		9.0-13.0	Ti4xC%-0.60	52.52	20.90	35	-	-	25
TP347	0.08 max	0.75 max	2.0 max	0.040	0.030	17.0-20.0		9.0-13.0	Nb+TA10xC%-1.00	52.52	20.90	35	-	-	25
TP347H	0.04-0.10	0.75 max	2.0 max	0.040	0.030	17.0-20.0		9.0-13.0	Nb+TA8xC%~1	52.52	20.90	35	-	-	25
TP348	0.08 max	0.75 max	2.0 max	0.040	0.030	17.0-20.0		9.0-13.0	Nb+TA10xC%~1	52.52	20.90	35	-	-	25
TP348H	0.04-0.10	0.75 max	2.0 max	0.040	0.030	17.0-20.0		9.0-13.0	Nb+TA8xC%~1	52.52	20.90	35	-	-	25
TPXM-10	0.08 max	1.00 max	8.00-10.00	0.040	0.030	19.0-21.50		5.50-7.50	NO.15~0.40	63.22	35.18	35	-	-	25
TPXM-11	0.04 max	1.00 max	8.00-10.00	0.040	0.030	19.0-21.50		5.50-7.50	NO.15~0.40	63.22	35.18	35	-	-	25
A240 TP304	0.08 max	0.75 max	2.0 max	0.045	0.030	18.0-20.0	-	8.00-10.50	NO.10 Max						Class 1 : Double welded pipes & full Radiography  Class 2 : Double welded no Radiography  Class 3 : Single welded full Radiography  Class 4 : Single welded full Radiography rootpass without addition of filler metal  Class 5 : Double welded spot Radiography
TP310S	0.08 max	0.75 max	2.0 max	0.045	0.030	24.0-26.0	-	19.0-22.0							
TP316	0.08 max	0.75 max	2.0 max	0.045	0.030	16.0-18.0	2.0-3.0	10.0-14.0	NO.10 Max						
TP316L	0.035 max	0.75 max	2.0 max	0.045	0.030	16.0-18.0	2.0-3.0	10.0-14.0	NO.10 Max						
TP317L	0.035 max	0.75 max	2.0 max	0.045	0.030	18.0-20.0	3.0-4.0	11.0-15.0	NO.10 Max						
TP321	0.08 max	0.75 max	2.0 max	0.045	0.030	17.0-19.0	-	9.0-12.0	NO.10 Max						
TP347	0.08 max	0.75 max	2.0 max	0.045	0.030	17.0-19.0	-	9.0-13.0	Cb+TA10xC/1.0						

Class 1 :  
Double welded pipes & full Radiography  
  
Class 2 :  
Double welded no Radiography  
  
Class 3 :  
Single welded full Radiography  
  
Class 4 :  
Single welded full Radiography rootpass without addition of filler metal  
  
Class 5 :  
Double welded spot Radiography

# PIPES & TUBES :

## CARBON STEEL, ALLOY STEEL, LOW TEMP, PIPE AND TUBES SPECIFICATION

CHEMICAL ANALYSIS										MECHANICAL PROPERTIES			SPECIFIC REQUIREMENT
										TENSILE STRENGTH	YIELD STRENGTH	ELONGATION	
SPECIFICATION	WT	C%	Mn %	P % MAX	S% MAX	Si%	Cr%	Mo%	Mpa	Mpa	50mm MIN Longitudinal		
ASTM A 53/A	AW	0.25MAX	0.95MAX	0.050	0.060	-	-	-	331MIN	207MIN	36	Cr 0.40 Mo 0.15 Cu 0.40 Ni 0.08 Va Five elements not to exceed 1%	
ASTM A 53/B	AW	0.30MAX	1.20MAX	0.050	0.060	-	-	-	413MIN	240MIN	29.5		
ASTM A 106/A	AW	0.25MAX	0.27-0.93	0.025	0.025	0.10MIN	0.40MAX	0.15MAX	330MIN	205MIN	35/28		
ASTM A 106/B	AW	0.30MAX	0.29-1.06	0.025	0.025	0.10MIN	0.40MAX	0.15MAX	415 MIN	240MIN	30/22		
ASTM A 106/C	AW	0.35MAX	0.29-1.06	0.025	0.025	0.10MIN	0.40MAX	0.15MAX	485MIN	275MIN	30/22		
ASTM A 179	MW	0.06-018	0.27-0.63	0.048	0.048	-	-	-	325MIN	180MIN	35.0	Hardness 72 HRB Max	
ASTM A 214	MW	0.18MAX	0.27-0.63	0.050	0.050	-	-	-	385MIN	180MIN	35.0	Hardness 72 HRB Max	
ASTM A 192	MW	0.06-0.18	0.27-0.63	0.048	0.048	0.25MAX	-	-	325MIN	180MIN	35.0	Hardness 77 HRB Max	
ASTM A 209/T1	MW	0.10-0.20	0.30-0.80	0.045	0.045	0.10-0.50	-	0.44-0.65	380MIN	205MIN	30/22	Hardness 80 HRB Max	
ASTM A 209/T1a	MW	0.15-0.25	0.30-0.80	0.045	0.045	0.10-0.50	-	0.44-0.65	365MIN	195MIN	30/22	Hardness 81 HRB Max	
ASTM A 209/T1B	MW	0.14MAX	0.30-0.80	0.045	0.045	0.10-0.50	-	0.44-0.65	415MIN	220MIN	30/22	Hardness 77 HRB Max	
ASTM A 210/A-1	MW	0.27max	0.93max	0.048	0.058	0.10MIN	-	-	415MIN	255MIN	30/22	Hardness 79 HRB Max	
ASTM A 210/C	MW	0.35MAX	0.29-1.06	0.048	0.058	0.10MIN	-	-	485MIN	275MIN	30/22	Hardness 89 HRB Max	
ASTM A 213/T2	MW	0.10/0.20	0.30-0.61	0.045	0.045	0.10-0.30	0.50-0.81	0.44-0.65	415MIN	205MIN	30/22	Hardness 85 HRB Max	
ASTM A 213/T5	MW	0.15MAX	0.30-0.60	0.030	0.030	0.50MAX	4.00-6.00	0.44-0.65	415MIN	205MIN	30/22	Hardness 85 HRB Max	
ASTM A 213/T11	MW	0.15MAX	0.30-0.60	0.030	0.030	0.50-1.00	1.00-1.50	0.44-0.65	415MIN	205MIN	30/22	Hardness 85 HRB Max	
ASTM A 213/T12	MW	0.15MAX	0.30-0.61	0.045	0.045	0.50MAX	0.80-1.25	0.44-0.65	415MIN	205MIN	30/22	Hardness 85 HRB Max	
ASTM A 213/T22	MW	0.15MAX	0.30-0.60	0.030	0.030	0.50MAX	1.90-2.60	0.87-1.13	415MIN	205MIN	30/22	Hardness 85 HRB Max	
ASTM A 333/1	AW	0.30MAX	0.40-1.06	0.025	0.025	-	-	-	380MIN	205MIN	25/20	IMPACT AS -50F FOR 40X10J/18/14 -50F40X10J/18/14 90 HRB MAX	
ASTM A 333/6	AW	0.30MAX	0.29-1.06	0.025	0.025	0.10MIN	-	-	415MIN	240MIN	30/22		
ASTM A 334/1	AW	0.30MAX	0.40-1.06	0.025	0.025	-	-	-	380MIN	205MIN	35/28		
ASTM A 334/6	MW	0.30MAX	0.29-1.06	0.025	0.025	0.10MIN	-	-	415MIN	240MIN	30/22		
ASTM A 335/P1	AW	0.10-0.20	0.30-0.80	0.025	0.025	0.10-0.50	-	0.44-0.65	380MIN	205MIN	30/22		
ASTM A 335/P2	AW	0.10-0.20	0.30-0.61	0.025	0.025	0.10-0.30	0.50-0.81	0.44-0.65	380MIN	205MIN	30/22		
ASTM A 335/P5	AW	0.15MAX	0.30-0.60	0.025	0.025	0.50MAX	4.00-6.00	0.45-0.65	415MIN	205MIN	30/22		
ASTM A 335/P9	AW	0.15MAX	0.30-0.60	0.025	0.025	0.25-1.00	8.00-10.00	0.09-1.10	415MIN	172MIN	30/22		
ASTM A 335/P11	AW	0.15MAX	0.30-0.60	0.025	0.025	0.50-1.00	1.00-1.50	0.44-0.65	415MIN	205MIN	30/22		
ASTM A 335/P12	AW	0.15MAX	0.30-0.61	0.025	0.025	0.50MAX	0.80-1.25	0.44-0.65	415MIN	205MIN	50/22		
ASTM A 335/P22	AW	0.15MAX	0.30-0.60	0.025	0.025	0.50MAX	1.90-2.60	0.87-1.13	415MIN	205MIN	30/22		
BS/3059/1/33		0.15Max	0.30-0.70	0.050	0.050	-	-	-	324-441	186MIN	25		
BS/3059/2/33		0.15MAX	0.40-0.70	0.050	0.050	0.10-0.35	-	-	324-441	186MIN	21		
BS/3059/2/45		0.12-0.18	0.90-1.20	0.035	0.035	0.10-0.35	-	-	441-560	245MIN	22		
BS/3059/2/620		0.10-0.15	0.40-0.70	0.040	0.040	0.10-0.35	0.70-1.10	0.45-0.65	441-618	235MIN	22		
DIN/17175/ST35.8		0.17MAX	0.40MIN	0.040	0.040	0.35MAX	-	-	340-441	235MIN	25		
DIN/17175/ST45.8		0.22MAX	0.45MIN	0.040	0.040	0.10-0.35	-	-	441-540	255 MIN	25		
DIN/17175/15MO3		0.12-0.20	0.50-0.80	0.040	0.040	0.10-0.35	-	0.25-0.35	441-540	284MIN	21		
DIN/17175/13CrMo44		0.10-0.18	0.40-0.70	0.040	0.040	0.10-0.35	0.70-1.60	0.40-0.50	441-570	294MIN	22		
DIN/17175/10CrM910		0.15MAX	0.40-0.60	0.040	0.040	0.15-0.50	2.0-2.5	0.9-1.10	441-570	294MIN	22		
ASTM A 199/T5	MW	0.50-0.15	0.30-0.60	0.030	0.030	0.50MAX	4.00-6.00	0.45-0.65	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX	
ASTM A 199/T11	MW	0.05-0.15	0.30-0.60	0.030	0.030	0.50-1.00	1.00-1.50	0.44-0.65	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX	
ASTM A 199/T22	MW	0.05-0.15	0.30-0.60	0.030	0.030	0.50MAX	1.90-2.60	0.87-1.13	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX	
ASTM A 199/T4	MW	0.15MAX	0.30-0.60	0.030	0.030	0.50-1.00	2.15-2.85	0.44-0.65	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX	
ASTM A 199/T7	MW	0.15MAX	0.30-0.60	0.030	0.030	0.50-1.00	6.00-8.00	0.45-0.65	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX	
ASTM A 200/T5	MW	0.15MAX	0.30-0.60	0.030	0.030	0.50-1.00	4.00-6.00	0.45-0.65	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX	
ASTM A 200/T11	MW	0.05-0.15	0.30-0.60	0.030	0.030	0.50-1.00	1.00-1.50	0.44-0.65	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX	
ASTM A 200/T22	MW	0.05-0.15	0.30-0.60	0.030	0.030	0.50MAX	1.90-2.60	0.87-1.13	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX	
ASTM A 200/T4	MW	0.05-0.15	0.30-0.60	0.030	0.030	0.50-1.00	2.15-2.85	0.44-0.65	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX	
ASTM A 200/T7	MW	0.15MAX	0.30-0.60	0.030	0.030	0.50-1.00	6.00-8.00	0.45-0.65	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX	
ASTM A 199/T9	MW	0.15MAX	0.30-0.60	0.030	0.030	0.25-1.00	8.00-10.0	0.90-1.10	415MIN	170MIN	30/22	HARDNESS 89 HRB MAX	

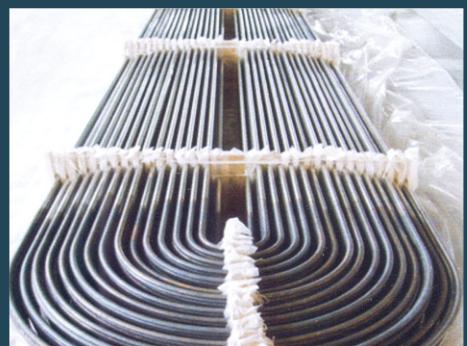
## PIPES & TUBES :

### STAINLESS STEEL SEAMLESS TUBE

Products	Size Range	Thickness	Specification
Heat Exchanger Tubes	10.00 MM To 50.80 MM OD	1.00 MM To 6.00 MM	ASTM A-213, A-268, A-269, A-270, A-789 DIN 17456 & 17458 (Class-1) U-Tubes as per Customer's Drawing
Instrumentation Tubes	6.00 MM To 25.40 MM OD	0.50 MM to 6.00 MM	ASTM A-213, A-269 DIN 17456 & DIN 17458 (Class-1)
Pipes	1/8" NB To 1" NB Above 1" NB To 4" NB Above 4" NB To 8" NB	SCH. 5S, 10S, 40S, 80S, SCH. 5S, 10S, 40S SCH. 5S, 10S, 40S	ASTM A-312, A-790
Grades : TP-304/L/LN/H, TP-316/L/LN/H/Ti, TP-317L, TP-321/H, TP-347/H, TP-405, TP-410, TP-430 UNS 31500, 31803, 32205			

### STAINLESS STEEL WELDED TUBE

Products	Size / Range	Thickness	Specification
Instrumentation, Heat Exchanger and General Engineering Tubes	10.00 MM To 114.30 MM OD	0.70 MM To 4.00 MM	A-249, A-268, A-269, A-270, A-554, A-688, A-778, A-789 DIN-17455 & 17457 (Class-1) U-Tubes as per Customer's Drawing
Automobile Exhaust Tubes	20.00 MM To 88.90 MM OD	0.70 MM To 2.00 MM	As per Customer's Requirement
Welded Pipes	1/8" NB To 1" NB Above 1" NB To 2" Above 2" NB To 8" NB	Sch.5S, 10S, 40S & 80S NB Sch.5S, 10s, & 40S Sch.5S, 10S & 40S	ASTM A-312, A-554, A-778, A-790
Grades : TP-304/L/LN/H, TP-316/L/LN/H/Ti, TP-317L, TP-321/H, TP-347/H, TP-409, TP-410, TP-430Ti, TP-439 UNS 31254, 31500, 31803, 32205			



**HEAT EXCHANGER STRAIGHT TUBE**

**U - TUBE**

**CONDENSER TUBE**

#### Application :

The products manufactured finds wide range of application in Oil and Gas Exploration, Refineries & Petrochemicals, Thermal and Nuclear Power Plants, Chemical Industries, Fertilizer Plant, Desalination Plants, Aero-Space, Pharmaceutical, Food and Dairy, Automobile, Sugar, Paper Industries etc.

# PIPES & TUBES :

## SWG DIMENSIONS AND WEIGHTS (SWG WALL THICKNESS)

Outside diameter		22 SWG 0.711mm	20 SWG 0.914mm	18 SWG 1.218mm	16 SWG 1.625mm	14 SWG 2.032mm	12 SWG 2.641mm	11 SWG 2.946mm	10 SWG 3.257mm
Inches	mm	Kg/m							
1/4"	6.350	--	0.124	0.157	0.192	--	--	--	--
5/16"	7.950	--	0.161	0.205	0.257	--	--	--	--
3/8"	9.525	--	0.197	0.253	0.321	0.381	--	--	--
1/2"	12.700	0.213	0.270	0.350	0.451	0.543	0.665	0.720	--
5/8"	15.875	0.270	0.342	0.447	0.580	0.704	0.875	0.954	--
3/4"	19.050	--	0.415	0.544	0.709	0.866	1.090	1.190	1.290
7/8"	22.225	0.383	0.488	0.641	0.838	1.030	1.300	1.420	1.550
1"	25.400	0.440	0.560	0.738	0.967	1.190	1.510	1.660	1.800
1 1/4"	31.750	0.553	0.706	0.931	1.230	1.510	1.930	2.130	2.320
1 1/2"	38.100	0.666	0.851	1.130	1.480	1.840	2.350	2.590	2.840
1 3/4"	44.450	0.779	0.996	1.320	1.740	2.160	2.770	3.060	3.350
2"	50.800	0.892	1.140	1.510	2.000	2.480	3.190	3.530	3.870
2 1/2"	63.500	--	--	1.900	2.520	3.130	4.030	4.470	4.910
3"	76.200	--	--	2.290	3.030	3.770	4.870	5.400	5.640
3 1/2"	88.900	--	--	2.670	3.550	4.420	5.700	6.340	6.970
4"	101.600	--	--	3.060	4.070	5.070	6.540	7.280	8.010
5"	127.000	--	--	3.628	4.970	6.010	7.926	--	9.673
5 1/2"	139.700	--	--	4.000	5.481	6.624	8.736	--	10.675
6"	152.400	--	--	4.360	6.000	7.330	9.545	--	11.699
6 1/2"	161.100	--	--	4.720	6.480	7.840	10.419	--	12.720

## TOLERANCE OF ASTM SPECIFICATION STAINLESS STEEL TUBES AND PIPES

Specification	Allowable Outside Diameter Variation in mm				Allowable wall thickness Variation		Exact Length Tolerances in mm		Testing
Specification	Diameter	Over	Under		Over %	Under%	Over	Under	Testin
ASTM - 270 Seamless & Welded Sanitary Tubes	25.4	.05	.20		+12.5	-12.5	3.2	0	Reverse Flattering test 100% Hydrostatic test External polish on all tubes Refer to ASTM A-270
	38.1	.05	.20		+12.5	-12.5	3.2	0	
	50.8	.05	.28		+12.5	-12.5	3.2	0	
	63.5	.05	.28		+12.5	-12.5	3.2	0	
	76.2	.08	.30		+12.5	-12.5	3.2	0	
	101.6	.08	.38		+12.5	-12.5	3.2	0	
ASTM A - 249 Welded Boiler, Super heater, Heat Exchanger and Condenser Tubes	Under 25.4	0.1016	0.1016		+10	-10	3.175	0	Tension Test, Fletting test Flare Test * Reverse Bend Test Hardness Test 100% Hydrostatic Test *Reverse Flattering Test Refer to ASTM A-450 Whenever applicable
	25.4 - 38.1 incl.	0.1524	0.1524		+10	-10	3.175	0	
	38.1 - 50.8 excl.	0.2032	0.2032		+10	-10	3.175	0	
	50.8 - 63.5 excl.	0.2540	0.2540		+10	-10	3.76	0	
	63.5 - 76.2 excl.	0.3048	0.3048		+10	-10	4.76	0	
	76.2 - 101.6 incl.	0.3810	0.3810		+10	-10	4.76	0	
ASTM A - 312 Seamless & Welded Pipes Test	13.7 - 48.3 incl.	0.40	0.79		Minimum Wall tubes 12.5% under nominal wall Specified		0	Tension Test	
	48.3 - 114.3 incl.	0.79	0.79				0	Fletting Test	
	114.3 - 220 incl.	1.59	0.79				6.4	(Normally Random lengths ordered)	100% Hydrostatic
ASTM A - 269 Seamless & Welded Service	Upto 12.7	0.13	0.13		+15	-15	3.2	0	Tension Test Flange Test (Welded only) Hardness Test Reverse Flattering test (Welded only) 100% Hydrostatic Test Refer to ASTM A-269
	12.7 - 38.1 excl.	0.13	0.13		+10	-10	3.2	0	
	38.1 - 88.9 excl.	0.25	0.25		+10	-10	4.8	0	
	88.9 - 139.7 excl.	0.38	0.38		+10	-10	4.8	0	
	139.7 - 203.2 excl.	0.76	0.76		+10	-10	4.8	0	
ASTM A - 213 Seamless Boiler, Superheater and Heat Exchanger Tubes	Upto 25.4	0.1016	0.1016		+20	-0	3.175	0	Tension Test Flattening Test Hardness test 100% Hydrostatic Test Refer to ASTMA-450
	25.4 - 38.1 incl.	0.1524	0.1524		+20	-0	3.175	0	
	38.1 - 50.8 excl.	0.2032	0.2032		+22	-0	3.176	0	
	50.8 - 63.5 excl.	0.2540	0.2540		+22	-0	3.760	0	
	63.5 - 73.2 excl.	0.3048	0.3048		+22	-0	4.760	0	
	76.2 - 101.6 incl.	0.3810	0.3810		+22	-0	4.760	0	
ASTM A - 268 Seamless & Welded Fermitic Stainless Steel tubes	Upto 12.7	0.13	0.13		+15	-15	3.2	0	Tension Test Flange Test CERW only Hardness Test Reverse Flattering Test 100% Hydrostatic Test
	12.7 - 38.1 excl.	0.13	0.13		+10	-10	3.2	0	
	38.1 - 88.9 excl.	0.25	0.25		+10	-10	4.8	0	
	88.9 - 168.9 excl.	0.38	0.38		+10	-10	4.8	0	
ASTM A - 358 For Welded big Diameter Pipes	For all size		+0.5%	0.5%	No Limit	-0.3 mm	Customer's Specification		

# SHEET / PLATES & COILS :

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

ASTM	Grade	Chemical requirements percent (%)								Mechanical requirements													
		C max	Mn max	P max	S max	Ni max	Cr	Mo	Cu	Others	Tensile Strength min-MPa	Yield Strength min-MPa	Elong min %	Brunell	Hardness Rockwell								
<b>A240</b>	304	0.08	2.00	0.045	0.030	0.75	8.00-10.5	18.00-20.0			515	205	40	201	92								
	304L	0.03	2.00	0.045	0.030	0.75	8.00-12.0	18.00-20.0			485	170	40	201	92								
	310	0.08	2.00	0.045	0.030	1.50	19.0-22.0	24.0-26.0			515	205	40	217	95								
	316	0.08	2.00	0.045	0.030	0.75	10.0-14.0	16.0-18.0	2.00-3.00		515	205	40	217	95								
	316L	0.03	2.00	0.045	0.030	0.75	10.0-14.0	16.0-18.0	2.00-3.00		485	170	40	217	95								
	317L	0.03	2.00	0.045	0.030	0.75	11.0-15.0	18.0-20.0	3.00-4.00		515	205	40	217	95								
	321	0.08	2.00	0.045	0.030	0.75	9.00-12.0	17.0-19.0	Ti 5% C<0.70		515	205	40	217	95								
	347	0.08	2.00	0.045	0.030	0.75	9.00-13.0	17.0-19.0	Cr 18 Ti 8% C<1.10		515	205	40	201	92								
<b>A 387</b>	2	005-0.21	0.55-0.80	0.035	0.040	0.15-0.40		0.50-0.80	0.45-0.60	Class 1	Class 2	Class 1	Class 2										
	5	0.15	0.30-0.60	0.04	0.030	0.050		4.00-6.00	0.45-0.65	380	486	230	310	22	max201HB max92HRB								
	7	0.15	0.30-0.60	0.030	0.030	1.00		6.00-8.00	0.45-0.65	415	515	205	310	18	max202HB max92HRB								
	9	0.15	0.30-0.60	0.030	0.030	1.00		8.00-10.0	0.90-1.10	415	515	205	310	18	max217HB max95HRB								
	11 Class1	0.04-0.17	0.40-0.65	0.035	0.04	0.50-0.80		1.00-1.50	0.45-0.65	415	515	240	310	22	max217HB max95HRB								
	12 Class2	0.04-0.17	0.40-0.65	0.035	0.04	0.15-0.40		0.80-1.15	0.45-0.60	380	450	230	275	22	max217HB max95HRB								
	21	0.04-0.17	0.30-0.60	0.035	0.035	0.50		2.75-3.25	0.90-1.10	415	515	205	310	18	max201HB max92HRB								
	22	0.05-0.17	0.30-0.60	0.035	0.035	0.50		2.00-2.50	0.90-1.10	415	515	205	310	18	max201HB max92HRB								
<b>A 515</b>	55	0.22	0.90	0.035	0.04	0.15-0.40				380-515	205	205	27										
	60	0.27	0.90	0.035	0.04	0.15-0.40				415-550	220	220	25										
	65	0.31	0.90	0.035	0.04	0.15-0.40				450-585	240	240	23										
	70	0.33	1.20	0.035	0.04	0.15-0.40				485-620	260	260	21										
	55	0.20	0.60-1.20	0.035	0.04	0.15-0.40				380-515	205	205	27										
	60	0.23	0.85-1.20	0.035	0.04	0.15-0.40				415-550	202	202	25										
	65	0.26	0.85-1.20	0.035	0.04	0.15-0.40				450-585	240	240	23										
	70	0.28	0.85-1.20	0.035	0.04	0.15-0.40				485-620	260	260	21										
<b>A 516</b>	Class 1	0.24	0.70-1.35	0.035	0.040	0.15-0.40	0.25 max	0.80 max	0.35 max		485-620	345	345	22									
	Class 2	0.24	0.70-1.35	0.035	0.040	0.15-0.40	0.25 max	0.80 max	0.35 max		550-690	415	415	22									
<b>A 537</b>	IS-2002-62 STEEL PLATES FOR GENERAL STRUCTURAL PURPOSES	Chemical Composition																					
	Grade Designation	% Chemical Composition	Tensile Strength (Min) Mpa		Bend Test		Sidest Peice charpy V Notch Impact Energy Joule min		C max		S max		P max		S max		Tensile Test		Elongation				
A	FE410WA	0.23	1.5	0.050	0.050	-	0.42	41.8	250	240	230	23	3t	-	IS 2002-1	0.18	0.10-0.35	0.040	0.040	362-442	540	5.650So 40So	26 30
B	FE410WB	0.22	1.5	0.045	0.045	0.41	41.8	250	250	230	23	t<25mm 2t for 27mm	t>25mm 3t for 25mm	IS 2002-2A	0.20	0.10-0.35	0.050	0.050	412-491	491	5.600So 40So	25 29	
C	FE410WC	0.20	1.5	0.040	0.040	0.40	0.36	41.8	250	250	230	23	2t	27	IS 2002-2B	0.22	0.10-0.35	0.050	0.050	510-608	491	5.650So 40So	20 24

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

## IS-2002-62 STEEL PLATES FOR BOILERS

Grade Designation	Chemical Composition	Tensile Strength Yield Strength Mpa			Tensile Strength Yield Strength Mpa			Tensile Test			Elongation		
		C max	S max	P max	C max	S max	P max	Test Piece	%min				
IS 2002-1	0.18	0.10-0.35	0.040	0.040	362-442	540	5.650So 40So	26 30					
IS 2002-2A	0.20	0.10-0.35	0.050	0.050	412-491	491	5.600So 40So	25 29					
IS 2002-2B	0.22	0.10-0.35	0.050	0.050	510-608	491	5.650So 40So	20 24					

# STAINLESS STEEL BRIGHT BARS :

## STAINLESS STEEL BRIGHT BARS (PEELED/TURNED)

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

### Product Range

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

### Stainless Steel Wires

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

### Stainless Steel Bright Bars (Cold Drawn)

Condition	Cold Drawn and Polished	Cold Drawn, Center less Ground & Polished	Cold Drawn, Center less Ground and Polished (Strain Hardened)
Grades	201, 202, 303, 304, 304L, 310, 316, 316L, 321, 410, 420, 416, 430, 431, 430F, & others		304, 304L, 316, 316L
Diameter (Size)	2mm to 5mm (1/8" to 3/16")	6mm to 22mm (1/4" to 7/8")	10mm to 40mm (3/8" to 1-1/2")
Diameter Tolerance	h9 (Din 671), h11	h9 (Din 671)	h9 (Din 671), h11
Length	3/4/5, 6/6 meter (12/14ft/20 feet)	3/4/5, 6/6 meter (12/14ft/20 feet)	3/4/5, 6/6 meter (12/14/20 feet)
Length Tolerance	-0/+ 200mm of +100mm or+50mm (-0"/+1 feet or+ 4" or 2")	-0/+200mm or +100mm or +50mm (-0"/+1 feet or+4" or 2")	-0/+200mm (-0"/+1 feet)



### Stainless Steel Hexagon & Square Bars

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

### Stainless Steel Cold Heading Wires

Condition	Cold drawn, Annealed and Pickled
Diameter	1.6 mm to 17 mm (1/16" to 11/16")
Tensile Strength	65kg / mm <sup>2</sup> max
Packing	HDPE wrapped coils of 300 kg to 500 kg
Grades	202, 304, 304L, 316, 316L, 304HC, 302HQ

# FORMULA OF CALCULATING WEIGHT

## 1) **Weight of S.S. Pipe**

O.D. (mm) - W. Thick (mm) x W. Thick (mm) x 0.0248 = Wt. Per Mtr.  
O.D. (mm) - W. Thick (mm) x W. Thick (mm) x 0.00756 = Wt. Per Feet.

## 2) **Weight of 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.

## 3) **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.

## 4) **Weight of S.S. Hexagonal Bar**

A/F (mm) x A/F (mm) x 0.00680 = Wt. Per Mtr.  
A/F (mm) x A/F (mm) x 0.002072 = Wt. Per Feet.

## 5) **Weight of S.S. Flat Bar**

Width (mm) x Thick (mm) x 0.00798 = Wt. Per Mtr.  
Width (mm) x Thick (mm) x 0.00243 = Wt. Per Feet.

## 6) **Weight of S.S. Sheets & Plates**

Length (Mtrs) x Width (Mtrs) x Thick (mm) x 8 = Kg. Per Sheet.  
Length (Ft) x Width (Ft) x Thick (mm) x 3/4 = Kg. Per Sheet.

## 7) **Weight of S.S. Circle**

Dia (mm) x Dia (mm) x Thick (mm) 4- 160 = Gms. Per PC  
Dia (mm) x Dia (mm) x Thick (mm) x 0.0000063 = Kg. Per PC

## 8) **Weight of Brass Pipe / Copper Pipe**

O.D. (mm) - Thick (mm) x Thick (mm) x 0.0260 = Wt. Per Mtr.

## 9) **Weight of Lead Pipe**

O.D. (mm) - Wt. (mm) x Wt. (mm) x 0.0345 = Wt. Per Mtr.

## 10) **Weight of Aluminium Pipe**

O.D. (mm) - Thick (mm) x Thick (mm) x 0.0083 = Wt. Per Mtr.

## 11) **Weight of Aluminium Sheet**

Length (Mtr.) x Width (Mtr.) x Thick (mm) x 2.69 = Wt. Per PC

## 12) **Weight of Conversion of Mtr. To Feet**

Weight of 1 Mtr. ÷ 3.2808 = Feet

## 13) **Formula for Calculating Width of Sheet for making Pipe**

Outer DIA - Wall Thickness x 22/7 Width of Sheet

## 14) **Formula For Healthy Business**

Honesty + Quality of Goods + Quick Service  
+ Reasonable rate = Good Health of Business

## QUALITY ASSURANCE :

Every manufacturer phase is carried out with modern technique and is under surveillance of our quality team that ensures all our products meet the national / international standards.

### "NO COMPROMISE IN QUALITY" IS OUR MOTTO

Thus, main goal of CTI is high quality products. We have adopted quality analyst personnel to ensure complete satisfaction to our clients. As there is always a scope of betterment we are continually improving upon quality of products.

We have a stringent parameters set for the quality which are followed by all our employees. They see to it that the products are in accordance with the national / international standards.

From the time of procurement of raw material till the final delivery of the products, at every stage, our products are checked for various chemical and mechanical properties using the equipment certified by the Government and its agencies.

## THIRD PARTY INSPECTION :



Larsen & Toubro Ltd.



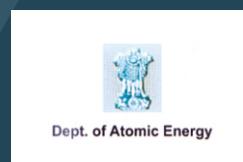
Emaar Projects India



Nuclear Power Corp.  
of India Ltd.



IBR  
Approved



Dept. of Atomic Energy



Electromech Engg.



TUV  
INDIA



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TATA  
Project



BUREAU  
VERITAS



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MIC-INDIA



सेल SAIL



एनटीपीसी  
NTPC



ओंग्कर्जीसी  
ONGC

## APPLICATION INDUSTRIES :



DAM PROJECT



PAPER MILLS



FERTILIZER PLANT



OFFSHORE PLATFORM



SUGAR PLANT



PETROCHEMICAL INDUSTRIES



STEEL PLANT



PHARMACEUTICAL PLANT